

CHAPTER

27

**FLIGHT
CONTROLS**



**737-600/700/800/900
FAULT ISOLATION MANUAL**

**CHAPTER 27
FLIGHT CONTROLS**

Subject/Page	Date	COC	Subject/Page	Date	COC	Subject/Page	Date	COC
27-EFFECTIVE PAGES			27-11 TASKS (cont)			27-11 TASKS (cont)		
1 thru 6	Oct 15/2023		211	Jun 15/2023		247	Oct 15/2021	
27-HOW TO USE THE FIM			212	Oct 15/2021		248	BLANK	
1	Oct 15/2021		213	Oct 15/2021		27-21 TASKS		
2	Oct 15/2021		214	Oct 15/2021		201	Oct 15/2021	
3	Oct 15/2021		215	Oct 15/2021		202	Oct 15/2021	
4	Oct 15/2021		216	Oct 15/2021		203	Oct 15/2021	
5	Oct 15/2021		217	Oct 15/2021		204	Oct 15/2021	
6	Oct 15/2021		218	Oct 15/2021		205	Oct 15/2021	
27-FAULT CODE INDEX			219	Oct 15/2021		206	Oct 15/2021	
101	Oct 15/2021		R 220	Oct 15/2023		207	Oct 15/2021	
102	Feb 15/2023		221	Oct 15/2021		208	Oct 15/2021	
R 103	Oct 15/2023		R 222	Oct 15/2023		209	Oct 15/2021	
R 104	Oct 15/2023		223	Oct 15/2021		210	Oct 15/2021	
O 105	Oct 15/2023		224	Oct 15/2021		211	Oct 15/2021	
106	BLANK		225	Oct 15/2021		212	Oct 15/2021	
27-MAINT MSG INDEX			226	Oct 15/2021		213	Oct 15/2021	
101	Oct 15/2021		227	Oct 15/2021		214	Oct 15/2021	
102	Oct 15/2021		228	Oct 15/2021		215	Oct 15/2021	
103	Oct 15/2021		R 229	Oct 15/2023		216	Oct 15/2021	
104	Oct 15/2021		230	Oct 15/2021		217	Oct 15/2021	
105	Oct 15/2021		231	Oct 15/2021		218	Oct 15/2021	
106	Oct 15/2021		R 232	Oct 15/2023		219	Oct 15/2021	
107	Oct 15/2021		233	Oct 15/2021		220	Oct 15/2021	
108	Jun 15/2022		R 234	Oct 15/2023		221	Oct 15/2021	
109	Jun 15/2022		O 235	Oct 15/2023		222	Oct 15/2021	
110	Jun 15/2022		O 236	Oct 15/2023		223	Oct 15/2021	
27-11 TASKS			O 237	Oct 15/2023		224	Oct 15/2021	
201	Oct 15/2021		O 238	Oct 15/2023		225	Oct 15/2021	
202	Oct 15/2021		O 239	Oct 15/2023		226	Oct 15/2021	
203	Oct 15/2021		O 240	Oct 15/2023		227	Oct 15/2021	
204	Oct 15/2021		O 241	Oct 15/2023		228	Oct 15/2021	
205	Feb 15/2022		O 242	Oct 15/2023		229	Oct 15/2021	
206	Feb 15/2022		O 243	Oct 15/2023		230	Oct 15/2021	
207	Jun 15/2023		O 244	Oct 15/2023		231	Oct 15/2021	
208	Jun 15/2023		245	Oct 15/2021		232	Oct 15/2021	
209	Jun 15/2023		246	Oct 15/2021		233	Oct 15/2021	
210	Jun 15/2023							

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27-EFFECTIVE PAGES



**737-600/700/800/900
FAULT ISOLATION MANUAL**

**CHAPTER 27
FLIGHT CONTROLS**

Subject/Page	Date	COC	Subject/Page	Date	COC	Subject/Page	Date	COC
27-21 TASKS (cont)			27-31 TASKS (cont)			27-32 TASKS (cont)		
234	Oct 15/2021		227	Oct 15/2021		226	Feb 15/2022	
235	Oct 15/2021		228	Feb 15/2022		227	Oct 15/2022	
236	Oct 15/2021		229	Feb 15/2022		228	Oct 15/2021	
237	Oct 15/2021		230	Oct 15/2021		229	Feb 15/2022	
238	Oct 15/2021		231	Jun 15/2022		230	Feb 15/2022	
239	Oct 15/2021		232	Jun 15/2022		231	Oct 15/2021	
240	Oct 15/2021	C	233	Jun 15/2022		232	Oct 15/2021	
241	Oct 15/2021		234	Jun 15/2022		233	Oct 15/2021	
242	Oct 15/2021	C	235	Jun 15/2022		234	Oct 15/2021	
27-31 TASKS			236	BLANK		235	Oct 15/2021	
201	Oct 15/2021		27-32 TASKS			236	Oct 15/2021	
202	Oct 15/2021		201	Oct 15/2021		237	Oct 15/2021	
203	Oct 15/2021		202	Oct 15/2021		238	Oct 15/2021	
204	Oct 15/2021		203	Oct 15/2021		239	Oct 15/2021	
205	Oct 15/2021		204	Jun 15/2022		240	Oct 15/2021	
206	Oct 15/2021		205	Jun 15/2022		241	Oct 15/2021	
207	Oct 15/2021		206	Oct 15/2021		242	Oct 15/2021	
208	Oct 15/2021		207	Oct 15/2021		243	Feb 15/2022	
209	Oct 15/2021		208	Oct 15/2021		244	Feb 15/2022	
210	Oct 15/2021		209	Oct 15/2021		245	Feb 15/2022	
211	Oct 15/2021		R 210	Oct 15/2023		246	Feb 15/2022	
212	Oct 15/2021		R 211	Oct 15/2023		247	Feb 15/2022	
213	Oct 15/2021		R 212	Oct 15/2023		248	Feb 15/2022	
214	Oct 15/2021		213	Oct 15/2021		249	Feb 15/2022	
215	Oct 15/2021		214	Oct 15/2021		R 250	Oct 15/2023	
216	Oct 15/2021		215	Oct 15/2021		R 251	Oct 15/2023	
217	Oct 15/2021		216	Oct 15/2021		R 252	Oct 15/2023	
218	Oct 15/2021		217	Oct 15/2021		R 253	Oct 15/2023	
219	Oct 15/2021		218	Oct 15/2021		R 254	Oct 15/2023	
220	Oct 15/2021		219	Oct 15/2021		R 255	Oct 15/2023	
221	Oct 15/2021		220	Oct 15/2021		R 256	Oct 15/2023	
222	Oct 15/2021		221	Oct 15/2021		O 257	Oct 15/2023	
223	Oct 15/2021		222	Oct 15/2021		O 258	Oct 15/2023	
224	Oct 15/2021		223	Oct 15/2021		O 259	Oct 15/2023	
225	Oct 15/2021		224	Oct 15/2021		O 260	Oct 15/2023	
226	Oct 15/2021		225	Oct 15/2021		O 261	Oct 15/2023	

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27-EFFECTIVE PAGES

Page 2
Oct 15/2023

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details



**737-600/700/800/900
FAULT ISOLATION MANUAL**

**CHAPTER 27
FLIGHT CONTROLS**

Subject/Page	Date	COC	Subject/Page	Date	COC	Subject/Page	Date	COC
27-32 TASKS (cont)			27-41 TASKS (cont)			27-51 TASKS (cont)		
O 262	Oct 15/2023		207	Oct 15/2021		206	Oct 15/2021	
O 263	Oct 15/2023		208	Oct 15/2021		207	Oct 15/2021	
O 264	Oct 15/2023		209	Oct 15/2021		208	Oct 15/2021	
O 265	Oct 15/2023		210	Oct 15/2021		209	Oct 15/2021	
O 266	Oct 15/2023		211	Oct 15/2021		210	Oct 15/2021	
O 267	Oct 15/2023		212	Oct 15/2021		211	Oct 15/2021	
O 268	Oct 15/2023		213	Oct 15/2021		212	Oct 15/2021	
O 269	Oct 15/2023		214	Oct 15/2021		213	Oct 15/2021	
O 270	Oct 15/2023		215	Oct 15/2021		214	Oct 15/2021	
O 271	Oct 15/2023		216	Oct 15/2021		215	Oct 15/2021	
O 272	Oct 15/2023		217	Oct 15/2021		216	Feb 15/2023	
O 273	Oct 15/2023		218	Oct 15/2021		217	Feb 15/2023	
O 274	Oct 15/2023		219	Oct 15/2021		218	Feb 15/2023	
O 275	Oct 15/2023		220	Oct 15/2021		219	Feb 15/2023	
O 276	Oct 15/2023		221	Oct 15/2021		220	Feb 15/2023	
O 277	Oct 15/2023		222	Oct 15/2021		221	Feb 15/2023	
O 278	Oct 15/2023		223	Oct 15/2021		222	Feb 15/2023	
O 279	Oct 15/2023		224	Oct 15/2021		223	Feb 15/2023	
O 280	Oct 15/2023		225	Oct 15/2021		224	Feb 15/2023	
O 281	Oct 15/2023		226	Oct 15/2021		225	Feb 15/2023	
O 282	Oct 15/2023		227	Oct 15/2021		226	Feb 15/2023	
A 283	Oct 15/2023		228	Oct 15/2021		227	Feb 15/2023	
A 284	Oct 15/2023		229	Oct 15/2021		228	Feb 15/2023	
A 285	Oct 15/2023		230	Oct 15/2021		229	Feb 15/2023	
A 286	Oct 15/2023		231	Oct 15/2021		230	Feb 15/2023	
A 287	Oct 15/2023		232	Oct 15/2021		231	Feb 15/2023	
A 288	Oct 15/2023		233	Oct 15/2021		232	Feb 15/2023	
A 289	Oct 15/2023		234	Oct 15/2021		233	Feb 15/2023	
A 290	BLANK		235	Oct 15/2021		234	Feb 15/2023	
27-41 TASKS			236	BLANK		235	Feb 15/2023	
201	Oct 15/2021		27-51 TASKS			236	Feb 15/2023	
202	Oct 15/2021		201	Oct 15/2021		237	Feb 15/2023	
203	Oct 15/2021		202	Oct 15/2021		238	Feb 15/2023	
204	Oct 15/2021		203	Oct 15/2021		239	Oct 15/2021	
205	Oct 15/2021		204	Oct 15/2021		240	Oct 15/2021	
206	Oct 15/2021		205	Oct 15/2021		241	Oct 15/2021	

A = Added, R = Revised, D = Deleted, O = Overflow, C = Customer Originated Change

27-EFFECTIVE PAGES



**737-600/700/800/900
FAULT ISOLATION MANUAL**

**CHAPTER 27
FLIGHT CONTROLS**

Subject/Page	Date	COC	Subject/Page	Date	COC	Subject/Page	Date	COC
27-51 TASKS (cont)			27-51 TASKS (cont)			27-59 TASKS		
242	Oct 15/2021		278	Oct 15/2021		201	Feb 15/2022	
243	Oct 15/2021		279	Oct 15/2021		202	Feb 15/2022	
244	Oct 15/2021		280	Oct 15/2021		203	Feb 15/2022	
245	Oct 15/2021		281	Oct 15/2021		204	Feb 15/2022	
246	Oct 15/2021		282	Oct 15/2021		205	Oct 15/2021	
247	Oct 15/2021		283	Oct 15/2021		206	Oct 15/2021	
248	Oct 15/2021		284	Oct 15/2021		207	Oct 15/2021	
249	Oct 15/2021		285	Oct 15/2021		208	Feb 15/2022	
250	Oct 15/2021		286	Oct 15/2021		209	Oct 15/2021	
251	Oct 15/2021		287	Oct 15/2021		210	Oct 15/2021	
252	Oct 15/2021		288	Oct 15/2021		211	Oct 15/2021	
253	Oct 15/2021		289	Oct 15/2021		212	Oct 15/2021	
254	Oct 15/2021		290	Oct 15/2021		213	Oct 15/2021	
255	Oct 15/2021		291	Oct 15/2021		214	Oct 15/2021	
256	Oct 15/2021		292	Oct 15/2021		215	Oct 15/2021	
257	Oct 15/2021		293	Oct 15/2021		216	Oct 15/2021	
258	Feb 15/2023		294	Oct 15/2021		217	Oct 15/2021	
259	Oct 15/2021		295	Oct 15/2021		218	Oct 15/2021	
260	Feb 15/2023		296	Oct 15/2021		219	Oct 15/2021	
261	Feb 15/2023		297	Oct 15/2021		220	Oct 15/2021	
262	Feb 15/2023		298	Oct 15/2021		221	Oct 15/2021	
263	Feb 15/2023		298.1	Oct 15/2021		222	Oct 15/2021	
264	Oct 15/2021		298.2	Oct 15/2021		223	Oct 15/2021	
265	Feb 15/2023		298.3	Oct 15/2021		224	Oct 15/2021	
266	Oct 15/2021		298.4	Oct 15/2021		225	Oct 15/2021	
267	Oct 15/2021		298.5	Oct 15/2021		226	Oct 15/2021	
268	Oct 15/2021		298.6	Oct 15/2021		227	Feb 15/2022	
269	Oct 15/2021		298.7	Oct 15/2021		228	Feb 15/2022	
270	Oct 15/2021		298.8	Oct 15/2021		229	Feb 15/2022	
271	Oct 15/2021		298.9	Oct 15/2021		230	Feb 15/2022	
272	Oct 15/2021		298.10	Oct 15/2021		231	Feb 15/2022	
273	Oct 15/2021		298.11	Oct 15/2021		232	Feb 15/2022	
274	Oct 15/2021		298.12	Oct 15/2021		233	Feb 15/2022	
275	Oct 15/2021		298.13	Oct 15/2021		234	Feb 15/2022	
276	Oct 15/2021		298.14	BLANK		235	Feb 15/2022	
277	Oct 15/2021					236	Feb 15/2022	

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27-EFFECTIVE PAGES

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 4
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

**CHAPTER 27
FLIGHT CONTROLS**

Subject/Page	Date	COC	Subject/Page	Date	COC	Subject/Page	Date	COC
27-59 TASKS (cont)			27-62 TASKS (cont)			27-62 TASKS (cont)		
237	Feb 15/2022		O 212	Oct 15/2023		O 248	Oct 15/2023	
238	Feb 15/2022		O 213	Oct 15/2023		O 249	Oct 15/2023	
239	Feb 15/2022		O 214	Oct 15/2023		O 250	Oct 15/2023	
240	Feb 15/2022		O 215	Oct 15/2023		O 251	Oct 15/2023	
241	Feb 15/2022		O 216	Oct 15/2023		O 252	Oct 15/2023	
242	Feb 15/2022		O 217	Oct 15/2023		O 253	Oct 15/2023	
243	Feb 15/2022		O 218	Oct 15/2023		O 254	Oct 15/2023	
244	Feb 15/2022		R 219	Oct 15/2023		O 255	Oct 15/2023	
245	Oct 15/2021		R 220	Oct 15/2023		O 256	Oct 15/2023	
246	Oct 15/2021		O 221	Oct 15/2023		O 257	Oct 15/2023	
247	Oct 15/2021		O 222	Oct 15/2023		O 258	Oct 15/2023	
248	Oct 15/2021		R 223	Oct 15/2023		O 259	Oct 15/2023	
249	Feb 15/2022		O 224	Oct 15/2023		O 260	Oct 15/2023	
250	Feb 15/2022		O 225	Oct 15/2023		O 261	Oct 15/2023	
251	Feb 15/2022		O 226	Oct 15/2023		O 262	Oct 15/2023	
252	BLANK		R 227	Oct 15/2023		O 263	Oct 15/2023	
27-61 TASKS			R 228	Oct 15/2023		O 264	Oct 15/2023	
201	Oct 15/2021		O 229	Oct 15/2023		O 265	Oct 15/2023	
202	Oct 15/2021		O 230	Oct 15/2023		O 266	Oct 15/2023	
203	Oct 15/2021		R 231	Oct 15/2023		O 267	Oct 15/2023	
204	Oct 15/2021		R 232	Oct 15/2023		O 268	Oct 15/2023	
205	Oct 15/2021		O 233	Oct 15/2023		A 269	Oct 15/2023	
206	Oct 15/2021		O 234	Oct 15/2023		A 270	BLANK	
207	Oct 15/2021		O 235	Oct 15/2023		27-81 TASKS		
208	Oct 15/2021		R 236	Oct 15/2023		201	Oct 15/2022	
27-62 TASKS			R 237	Oct 15/2023		202	Oct 15/2022	
201	Jun 15/2023		O 238	Oct 15/2023		203	Oct 15/2022	
202	Jun 15/2023		O 239	Oct 15/2023		204	Oct 15/2022	
203	Jun 15/2023		R 240	Oct 15/2023		205	Oct 15/2022	
204	Oct 15/2021		O 241	Oct 15/2023		206	Oct 15/2022	
205	Oct 15/2021		O 242	Oct 15/2023		207	Oct 15/2021	
206	Oct 15/2021		O 243	Oct 15/2023		208	Oct 15/2021	
207	Jun 15/2023		R 244	Oct 15/2023		209	Oct 15/2021	
R 208	Oct 15/2023		O 245	Oct 15/2023		210	Oct 15/2021	
R 209	Oct 15/2023		O 246	Oct 15/2023		211	Oct 15/2021	
R 210	Oct 15/2023		O 247	Oct 15/2023		212	Jun 15/2022	
O 211	Oct 15/2023							

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27-EFFECTIVE PAGES

Page 5
Oct 15/2023

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details



**737-600/700/800/900
FAULT ISOLATION MANUAL**

**CHAPTER 27
FLIGHT CONTROLS**

Subject/Page	Date	COC	Subject/Page	Date	COC	Subject/Page	Date	COC
27-81 TASKS (cont)			27-83 TASKS (cont)			27-88 TASKS (cont)		
213	Jun 15/2022		202	Oct 15/2021		223	Oct 15/2021	
214	Jun 15/2022		203	Oct 15/2021		224	Oct 15/2021	
215	Jun 15/2022		204	Oct 15/2021		225	Feb 15/2022	
216	Jun 15/2022		205	Oct 15/2022		226	Feb 15/2022	
217	Jun 15/2022		206	Oct 15/2021		227	Feb 15/2022	
218	Jun 15/2022		207	Oct 15/2021		228	Feb 15/2022	
219	Jun 15/2022		208	Oct 15/2021		229	Feb 15/2022	
220	Jun 15/2022		209	Oct 15/2021		230	Feb 15/2022	
R 221	Oct 15/2023		210	BLANK		231	Feb 15/2022	
R 222	Oct 15/2023		27-83 TASK SUPPORT			232	Feb 15/2022	
R 223	Oct 15/2023		301	Oct 15/2021		233	Feb 15/2022	
R 224	Oct 15/2023		302	Oct 15/2021		234	Feb 15/2022	
R 225	Oct 15/2023		303	Oct 15/2021		235	Feb 15/2022	
226	Jun 15/2022		304	BLANK		236	Feb 15/2022	
227	Jun 15/2022		27-88 TASKS			237	Feb 15/2022	
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229	Jun 15/2022		202	Oct 15/2021		239	Feb 15/2022	
230	Jun 15/2022		R 203	Oct 15/2023		240	Feb 15/2022	
231	Jun 15/2022		R 204	Oct 15/2023		241	Feb 15/2022	
232	Jun 15/2022		R 205	Oct 15/2023		242	Feb 15/2022	
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234	Jun 15/2022		R 207	Oct 15/2023		244	Feb 15/2022	
235	Oct 15/2022		R 208	Oct 15/2023		245	Feb 15/2022	
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237	Jun 15/2022		R 210	Oct 15/2023		247	Feb 15/2022	
238	Jun 15/2022		R 211	Oct 15/2023		248	Feb 15/2022	
239	Jun 15/2022		R 212	Oct 15/2023				
240	Jun 15/2022		O 213	Oct 15/2023				
241	Jun 15/2022		O 214	Oct 15/2023				
242	Jun 15/2022		O 215	Oct 15/2023				
27-81 TASK SUPPORT			O 216	Oct 15/2023				
301	Oct 15/2021		O 217	Oct 15/2023				
302	Oct 15/2021		218	Oct 15/2021				
303	Oct 15/2021		219	Oct 15/2021				
304	Oct 15/2021		220	Oct 15/2021				
27-83 TASKS			221	Oct 15/2021				
201	Oct 15/2022		222	Oct 15/2021				

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27-EFFECTIVE PAGES

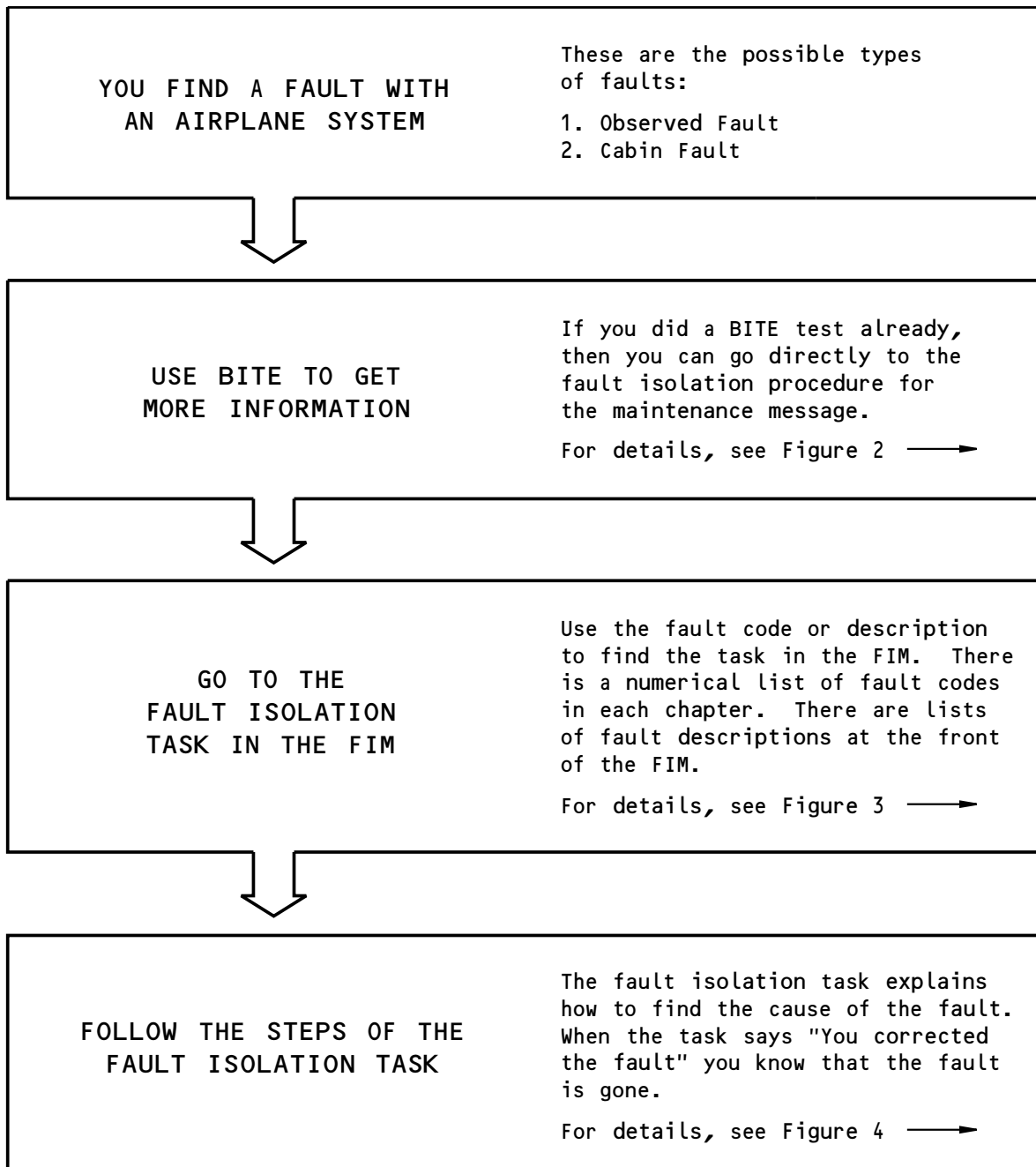
Page 6
Oct 15/2023

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details



**737-600/700/800/900
FAULT ISOLATION MANUAL**



G04902 S0000148576_V1

**Basic Fault Isolation Process
Figure 1**

EFFECTIVITY
SIA ALL

27-HOW TO USE THE FIM

D633A103-SIA

Page 1
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

Some airplane systems have built-in test equipment (BITE). IF the system finds a fault when you do a BITE test, it will give you a maintenance message.

A maintenance message can be any of these:

- a code
- a text message
- a light
- an indication.

To find the fault isolation task for a maintenance message, go to the Maintenance Message Index in the chapter for the applicable system.

If you do not know which chapter is the correct one, look at the list at the front of any Maintenance Message Index. For each system or component (LRU) that has BITE, this list gives the chapter number where you can find the Index that you need.

Find the maintenance message for the applicable LRU or system in the Index. Then find the task number on the same line as the maintenance message. Go to the task in the FIM and do the steps of the task (see Figure 4).

G04950 S0000148578_V1

**Getting Fault Information from BITE
Figure 2**

EFFECTIVITY
SIA ALL

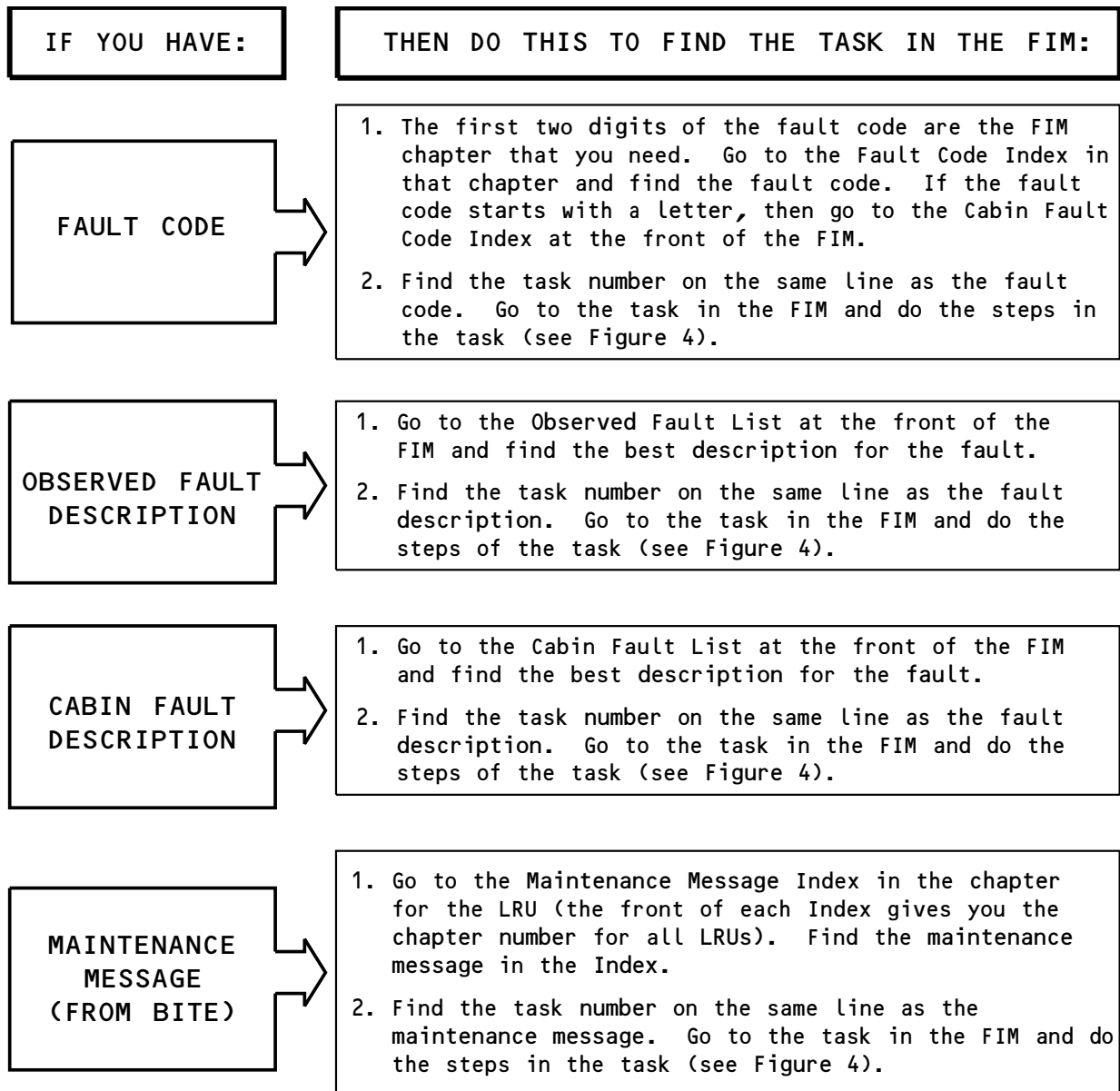
27-HOW TO USE THE FIM

D633A103-SIA

Page 2
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**



G04979 S0000148579_V2

**Finding the Fault Isolation Task in the FIM
Figure 3**

EFFECTIVITY
SIA ALL

27-HOW TO USE THE FIM

D633A103-SIA

Page 3
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

ASSUMED CONDITIONS AT START OF TASK

- External electrical power is ON
- Hydraulic power and pneumatic power are OFF
- Engines are shut down
- No equipment in the system is deactivated

POSSIBLE CAUSES

- The list of possible causes has the most likely cause first and the least likely cause last.
- You can use the maintenance records of your airline to determine if the fault occurred before. Compare the list of possible causes to the past maintenance actions. This will help prevent repetition of the same maintenance actions.

INITIAL EVALUATION PARAGRAPH

- The primary purpose of the Initial Evaluation paragraph at the start of the task is to help you find out if you can detect the fault right now:
 - If you cannot detect the fault right now, then the task cannot isolate the fault and the Initial Evaluation paragraph will say that there was an intermittent fault.
 - If you have an intermittent fault, you must use your judgement (and follow your airline's policy) to decide which maintenance action to take. Then monitor the airplane to see if the fault happens again on subsequent flights.
- The Initial Evaluation paragraph can also help you find out which Fault Isolation Procedure to use to isolate and correct the fault.

FAULT ISOLATION STEPS

- The FIM task steps are presented in a specified order. The "If... then" statements will guide you along a logical path. But if you do not plan to follow the FIM task exactly, make sure that you read it before you start to isolate the fault. Some FIM procedures start with important steps that have an effect on the other steps in the procedure.
- When you are at the endpoint of the path, the step says "...you corrected the fault." Complete the step and exit the procedure.

G05009 S0000148580_V3

Doing the Fault Isolation Task Figure 4

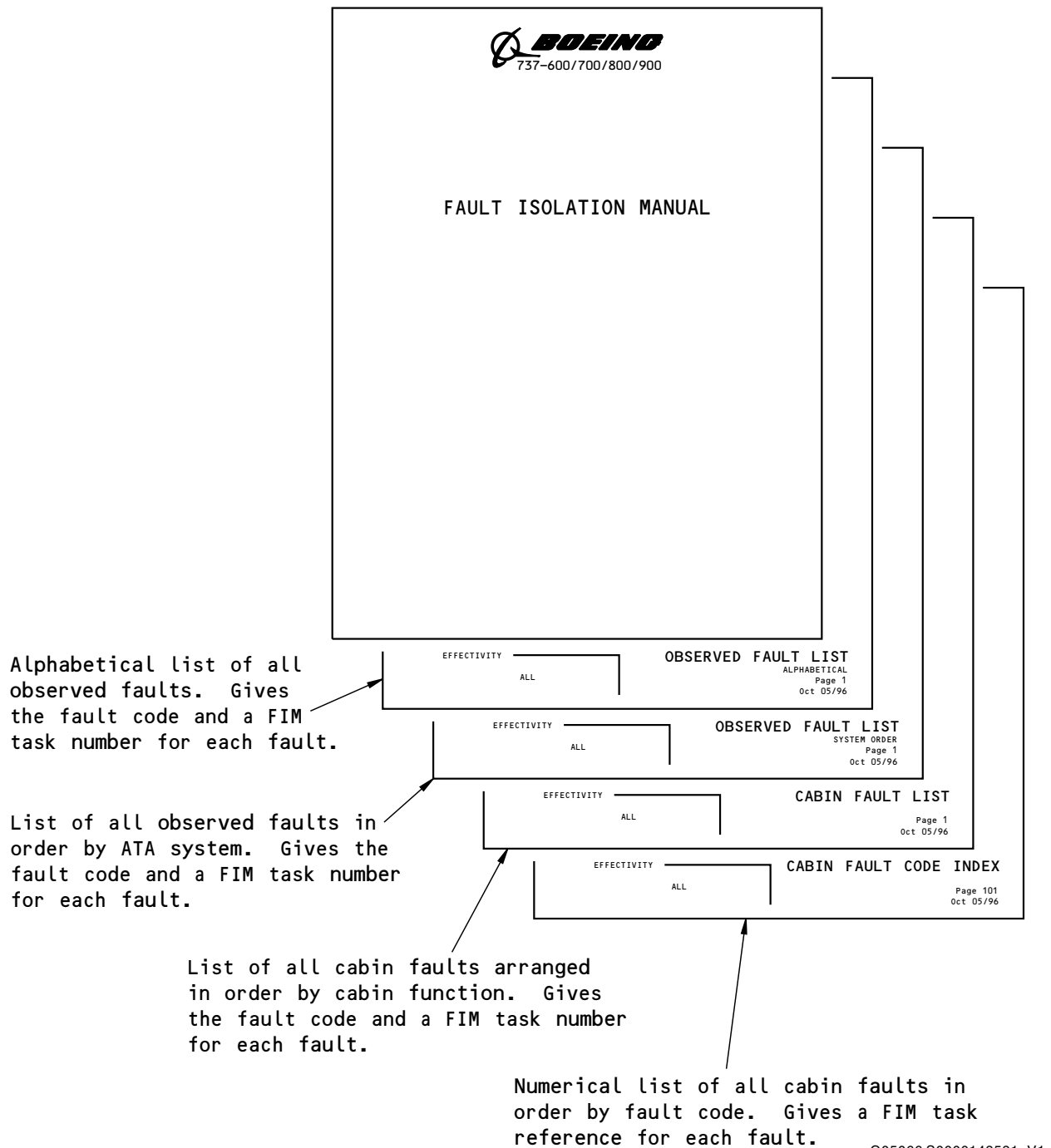
EFFECTIVITY
SIA ALL

27-HOW TO USE THE FIM

D633A103-SIA

Page 4
Oct 15/2021

 BOEING
737-600/700/800/900
FAULT ISOLATION MANUAL



Subjects at Front of FIM
Figure 5

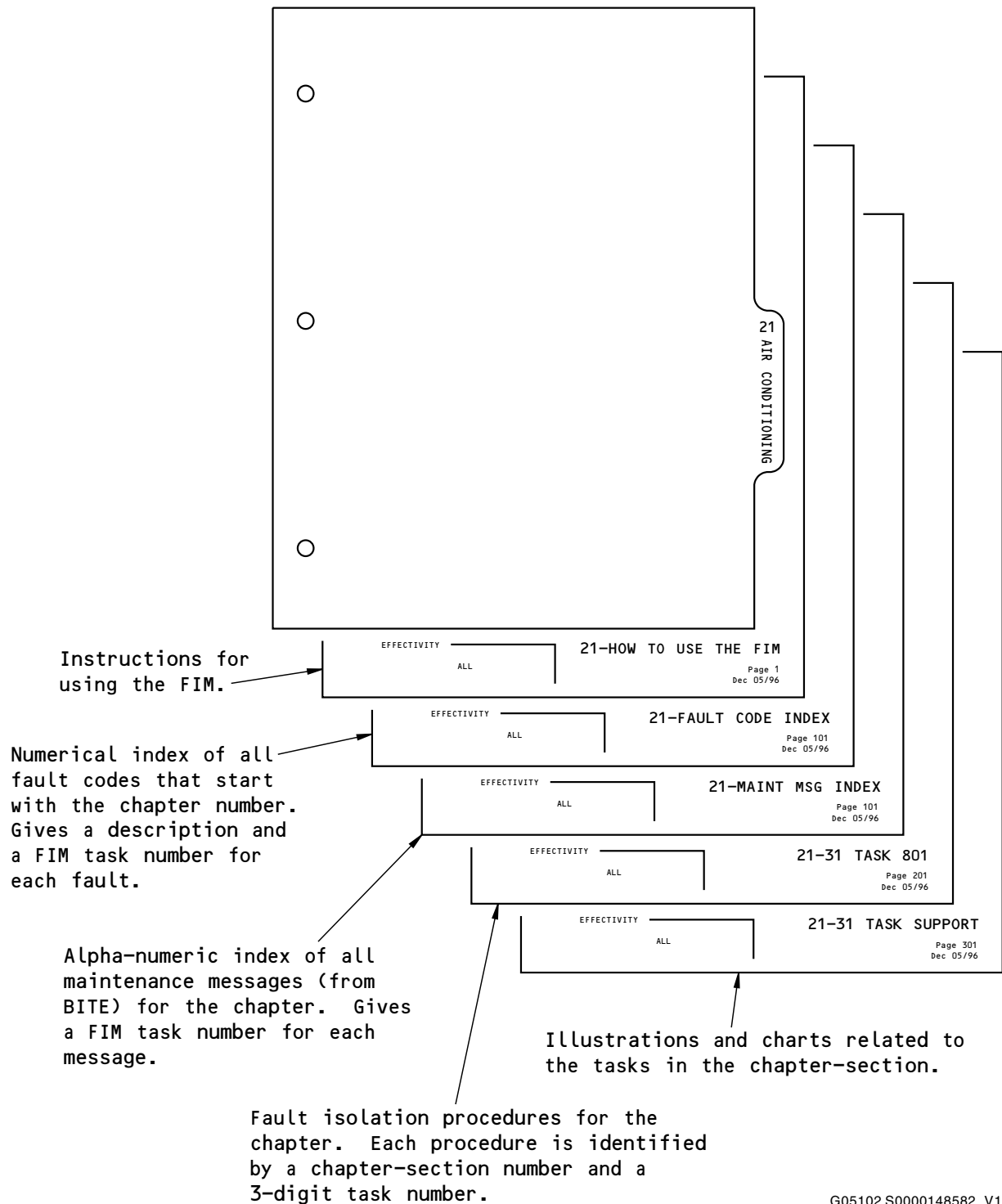
EFFECTIVITY
SIA ALL

27-HOW TO USE THE FIM

D633A103-SIA

Page 5
Oct 15/2021

BOEING
737-600/700/800/900
FAULT ISOLATION MANUAL



G05102 S0000148582_V1

Subjects in Each FIM Chapter
Figure 6

EFFECTIVITY	
SIA ALL	

27-HOW TO USE THE FIM

D633A103-SIA

Page 6
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

FAULT CODE	FAULT DESCRIPTION	GO TO FIM TASK
270 010 00	FLT CONTROL A LOW PRESSURE light: light on.	27-21 TASK 813
270 020 00	FLT CONTROL B LOW PRESSURE light: light on.	27-21 TASK 814
270 081 00	Flight control surface position indication: missing indication for one or more surfaces.	31-63 TASK 825
271 010 41	Aileron: does not move to full travel - left.	27-11 TASK 805
271 010 42	Aileron: does not move to full travel - right.	27-11 TASK 805
271 010 48	Aileron: does not move to full travel - left and right.	27-11 TASK 806
271 020 41	Aileron: does not operate - left.	27-11 TASK 807
271 020 42	Aileron: does not operate - right.	27-11 TASK 807
271 020 48	Aileron: does not operate - left and right.	27-11 TASK 812
271 030 31	Control wheel: does not move freely - captain's.	27-11 TASK 813
271 030 32	Control wheel: does not move freely - first officer's.	27-11 TASK 813
271 040 31	Control wheel: has too much play - captain's.	27-11 TASK 801
271 040 32	Control wheel: has too much play - first officer's.	27-11 TASK 801
271 040 48	Control wheel: has too much play - captain's and first officer's.	27-11 TASK 801
271 050 41	Wing down aileron trim: does not operate - left.	27-11 TASK 814
271 050 42	Wing down aileron trim: does not operate - right.	27-11 TASK 814
271 050 48	Wing down aileron trim: does not operate - left and right.	27-11 TASK 815
271 060 41	Aileron: Does not go back to neutral - left.	27-11 TASK 803
271 060 42	Aileron: Does not go back to neutral - right.	27-11 TASK 803
271 060 48	Aileron: Does not go back to neutral - left and right.	27-11 TASK 802
271 070 31	Control wheel: high force, hydraulic power on - captain's.	27-11 TASK 804
271 070 32	Control wheel: high force, hydraulic power on - first officer's.	27-11 TASK 804
271 070 48	Control wheel: high force, hydraulic power on - captain's and first officer's.	27-11 TASK 804
271 080 31	Control wheel: high force, hydraulic power off - captain's.	27-11 TASK 809
271 080 32	Control wheel: high force, hydraulic power off - first officer's.	27-11 TASK 809
271 080 48	Control wheel: high force, hydraulic power off - captain's and first officer's.	27-11 TASK 809
271 090 31	Control wheel: light force in one or both directions - captain's.	27-11 TASK 811
271 090 32	Control wheel: light force in one or both directions - first officer's.	27-11 TASK 811
271 090 48	Control wheel: light force in one or both directions - captain's and first officer's.	27-11 TASK 811
271 100 31	Control wheel: does not stay in the center position from one direction - captain's.	27-11 TASK 810
271 100 32	Control wheel: does not stay in the center position from one direction - first officer's.	27-11 TASK 810

EFFECTIVITY
SIA ALL

27-FAULT CODE INDEX

D633A103-SIA

Page 101
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

FAULT CODE	FAULT DESCRIPTION	GO TO FIM TASK
271 100 48	Control wheel: does not stay in the center position from one direction - captain's and first officer's.	27-11 TASK 810
271 110 00	Aileron: slow response to control wheel movement, hydraulic power on.	27-11 TASK 808
271 120 00	Aileron: high trim.	27-11 TASK 816
272 010 41	Nose rudder trim: does not operate - left.	27-21 TASK 801
272 010 42	Nose rudder trim: does not operate - right.	27-21 TASK 802
272 010 48	Nose rudder trim: does not operate - left and right.	27-21 TASK 803
272 015 00	Rudder trim: high.	27-21 TASK 818
272 020 00	RUDDER TRIM indicator: does not operate correctly.	27-21 TASK 804
272 030 00	RUDDER TRIM indicator: light not on.	27-21 TASK 805
272 040 00	Rudder: does not move correctly.	27-21 TASK 806
272 050 00	Rudder: does not move freely.	27-21 TASK 807
272 060 00	Rudder: surface has excessive play.	27-21 TASK 808
272 070 00	Rudder: STBY RUD ON light is on.	27-21 TASK 817
272 070 31	Rudder pedals: Adjustment crank does not move freely - captain's.	27-21 TASK 809
272 070 32	Rudder pedals: Adjustment crank does not move freely - first officer's.	27-21 TASK 809
272 080 31	Rudder pedals: Adjustment crank turns but rudder pedals do not move - captain's.	27-21 TASK 810
272 080 32	Rudder pedals: Adjustment crank turns but rudder pedals do not move - first officer's.	27-21 TASK 810
272 090 31	Rudder pedals: do not move freely - captain's.	27-21 TASK 811
272 090 32	Rudder pedals: do not move freely - first officer's.	27-21 TASK 811
272 092 00	Rudder pedals: kick back during flight.	27-21 TASK 816
272 100 00	Trim switch: does not operate correctly.	27-21 TASK 812
273 010 00	Autopilot: Travel is not within limits, column force is normal.	27-31 TASK 809
273 020 31	Control column: does not move freely - captain's.	27-31 TASK 801
273 020 32	Control column: does not move freely - first officer's.	27-31 TASK 801
273 030 00	Elevator: control cable tension repeatedly checks low.	27-31 TASK 802
273 040 00	Elevator: does not move correctly.	27-31 TASK 810
273 050 00	Elevator: Too much play in elevator surface.	27-31 TASK 804
273 060 00	FEEL DIFF PRESS light: light on.	27-31 TASK 815
273 070 00	Vibration in aft and forward fuselage.	27-31 TASK 806
273 080 00	Neutral shift: does not operate correctly.	27-31 TASK 807
273 090 00	Pitch control: Too sensitive in control wheel steering mode (airplane overreacts to column input).	27-31 TASK 811

EFFECTIVITY
SIA ALL

27-FAULT CODE INDEX

D633A103-SIA

Page 102
Feb 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

FAULT CODE	FAULT DESCRIPTION	GO TO FIM TASK
273 100 00	Pitch up or pitch down of airplane too much.	27-31 TASK 808
273 110 00	Control column: shaker does not operate during test.	27-32 TASK 836
273 115 00	Control column: shaker operates continuously.	27-32 TASK 834
273 120 00	Elevator tab surface: has too much play.	27-31 TASK 805
273 130 00	Control column: low force.	27-31 TASK 812
273 140 00	Control column: high force, hydraulic power on.	27-31 TASK 813
273 150 00	Control column: high force, hydraulic power off.	27-31 TASK 814
273 155 00	Elevator: hard to operate during landing.	27-31 TASK 817
273 160 31	SPD LIM shows - captain's.	27-32 TASK 831
273 160 32	SPD LIM shows - first officer's.	27-32 TASK 833
274 010 00	Stabilizer: control cable tension repeatedly checks low.	27-41 TASK 801
274 020 00	Stabilizer: fails to trim - nose down.	27-41 TASK 802
274 030 00	Stabilizer: fails to trim - nose up.	27-41 TASK 803
274 040 00	Stabilizer: fails to trim - nose up and nose down.	27-41 TASK 804
274 060 00	Stabilizer: Too much play in stabilizer surface.	27-41 TASK 813
274 070 00	Stabilizer trim: does not move freely.	27-41 TASK 805
274 080 00	Stabilizer trim: moves with slow speed only.	27-41 TASK 810
274 120 00	Stabilizer trim: wheel coasts more than 2.5 turns (flaps down).	27-41 TASK 811
274 130 00	Stabilizer trim: does not hold position in flight.	27-41 TASK 812
274 150 31	Stabilizer trim switches: do not operate trim up - captain's.	27-41 TASK 806
274 150 32	Stabilizer trim switches: do not operate trim up - first officer's.	27-41 TASK 808
274 160 31	Stabilizer trim switches: do not operate trim down - captain's.	27-41 TASK 806
274 160 32	Stabilizer trim switches: do not operate trim down - first officer's.	27-41 TASK 808
274 170 31	Stabilizer trim switches: do not operate trim up and trim down - captain's.	27-41 TASK 807
274 170 32	Stabilizer trim switches: do not operate trim up and trim down - first officer's.	27-41 TASK 809
275 020 00	Flaps: load relief occurs at wrong airspeed.	27-51 TASK 803
275 030 00	Flap position indicator: has fast movement.	27-51 TASK 844
275 040 00	Flap position indicator: has needles split.	27-51 TASK 840
275 050 00	Flap position indicator: has slow movement.	27-51 TASK 845
275 060 00	Flap position indicator: needle(s) do not operate.	27-51 TASK 841
275 070 00	Flap position indicator: needle(s) stick.	27-51 TASK 842
275 080 00	Flaps: do not operate with primary control.	27-51 TASK 836
275 081 00	Flaps: Trailing Edge Flap Lockout on Approach.	27-51 TASK 836
275 090 00	Flaps: do not operate with alternate control.	27-51 TASK 837

EFFECTIVITY
SIA ALL

27-FAULT CODE INDEX

D633A103-SIA

Page 103
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

FAULT CODE	FAULT DESCRIPTION	GO TO FIM TASK
275 091 00	Flaps: do not extend with alternate control.	27-51 TASK 838
275 092 00	Flaps: Do not retract with alternate control.	27-51 TASK 839
275 100 00	Flaps: lever does not move freely.	27-51 TASK 843
275 110 00	Flaps: operation is fast.	27-51 TASK 844
275 120 00	Flaps: operation is slow.	27-51 TASK 845
275 140 00	Flaps: TE Flap Transmission Torque Trip Indicator extended.	27-51 TASK 849
276 010 00	Spoilers: spoiler panel(s) float.	27-61 TASK 801
276 020 00	SPEED BRAKE ARMED Light: does not operate.	27-62 TASK 803
276 025 00	SPEED BRAKE ARMED Light: is on but the speedbrakes do not operate.	27-62 TASK 815
276 030 00	SPEED BRAKE DO NOT ARM Light: light on.	27-62 TASK 802
276 032 00	SPEED BRAKE ARMED Light and the SPEED BRAKE DO NOT ARM Light: do not operate.	27-62 TASK 816
276 035 00	SPEEDBRAKES EXTENDED light: light on with airplane on the ground.	27-62 TASK 814
276 040 00	Speed Brake: Auto extend does not operate.	27-62 TASK 804
276 050 00	Speed Brake: Auto retract does not operate.	27-62 TASK 805
276 060 00	Speed Brake: chatters.	27-62 TASK 806
276 070 00	Speed Brake: Flight detent does not operate.	27-61 TASK 802
276 080 00	Speed Brake: lever does not move freely.	27-62 TASK 807
276 090 00	Spoilers: flight spoilers do not operate.	27-61 TASK 802
276 100 00	Spoilers: ground spoilers do not operate.	27-61 TASK 803
276 110 00	Spoilers: do not move in one direction.	27-61 TASK 804
276 111 41	Spoilers: Airplane rolls left when the spoilers are deployed.	27-61 TASK 805
276 111 42	Spoilers: Airplane rolls right when the spoilers are deployed.	27-61 TASK 805
276 210 02	Speed Brake Control System: Flight Spoiler does not fully deploy during Ground Speedbrake Operation - No. 2.	27-62 TASK 817
276 210 03	Speed Brake Control System: Flight Spoiler does not fully deploy during Ground Speedbrake Operation - No. 3.	27-62 TASK 817
276 210 04	Speed Brake Control System: Flight Spoiler does not fully deploy during Ground Speedbrake Operation - No. 4.	27-62 TASK 817
276 210 05	Speed Brake Control System: Flight Spoiler does not fully deploy during Ground Speedbrake Operation - No. 5.	27-62 TASK 817
276 210 08	Speed Brake Control System: Flight Spoiler does not fully deploy during Ground Speedbrake Operation - No. 8.	27-62 TASK 817
276 210 09	Speed Brake Control System: Flight Spoiler does not fully deploy during Ground Speedbrake Operation - No. 9.	27-62 TASK 817

EFFECTIVITY
SIA ALL

27-FAULT CODE INDEX

D633A103-SIA

Page 104
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

FAULT CODE	FAULT DESCRIPTION	GO TO FIM TASK
276 210 10	Speed Brake Control System: Flight Spoiler does not fully deploy during Ground Speedbrake Operation - No. 10.	27-62 TASK 817
276 210 11	Speed Brake Control System: Flight Spoiler does not fully deploy during Ground Speedbrake Operation - No. 11.	27-62 TASK 817
278 010 00	Leading Edge Flaps: droops too much with hydraulic pressure off.	27-81 TASK 801
278 020 00	Leading Edge Flaps and Slats: do not extend during alternate system operation.	27-81 TASK 802
278 030 00	Leading Edge Flaps and Slats: do not extend during normal system operation.	27-81 TASK 803
278 040 00	Leading Edge Flaps and Slats: Do not retract.	27-81 TASK 803
278 041 00	Leading Edge Flaps and Slats: do not retract from the mid-extend position (LE Lockout).	27-81 TASK 812
278 050 00	Leading Edge Flaps and Slats: one or more Leading Edge Surfaces operate slowly.	27-81 TASK 805
278 060 00	AUTO SLAT FAIL light: light on.	27-32 TASK 801
278 070 01	Leading Edge Flaps: TRANSIT light stays on - 1.	27-88 TASK 820
278 070 02	Leading Edge Flaps: TRANSIT light stays on - 2.	27-88 TASK 820
278 070 03	Leading Edge Flaps: TRANSIT light stays on - 3.	27-88 TASK 820
278 070 04	Leading Edge Flaps: TRANSIT light stays on - 4.	27-88 TASK 820
278 080 01	Leading Edge Slats: TRANSIT light stays on - 1.	27-88 TASK 820
278 080 02	Leading Edge Slats: TRANSIT light stays on - 2.	27-88 TASK 820
278 080 03	Leading Edge Slats: TRANSIT light stays on - 3.	27-88 TASK 820
278 080 04	Leading Edge Slats: TRANSIT light stays on - 4.	27-88 TASK 820
278 080 05	Leading Edge Slats: TRANSIT light stays on - 5.	27-88 TASK 820
278 080 06	Leading Edge Slats: TRANSIT light stays on - 6.	27-88 TASK 820
278 080 07	Leading Edge Slats: TRANSIT light stays on - 7.	27-88 TASK 820
278 080 08	Leading Edge Slats: TRANSIT light stays on - 8.	27-88 TASK 820

EFFECTIVITY
SIA ALL

27-FAULT CODE INDEX

D633A103-SIA

Page 105
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

<u>LRU/SYSTEM</u>	<u>SHORT NAME</u>	<u>CHAPTER</u>
Air Data Inertial Reference System	ADIRS	34
Air Traffic Controller Transponder - 1 (Left)	ATC XPDR - 1 (L)	34
Air Traffic Controller Transponder - 2 (Right)	ATC XPDR - 2 (R)	34
Airborne Vibration Monitor System Signal Conditioner	AVM SIG COND	77
Antiskid Control Unit	ANTISKID	32
Attendant Control Panel	ACP	23
Automatic Direction Finder Receiver - 1	ADF RECVR - 1	34
Automatic Direction Finder Receiver - 2	ADF RECVR - 2	34
Autothrottle Computer	A/T COMPUTER	22
Auxiliary Power Unit	APU	49
Auxiliary Power Unit Generator Control Unit	APU GCU	24
Bus Power Control Unit	BPCU	24
Cabin Pressure Controller	CAB PRESS CON	21
Cargo Electronic Unit - Lower Aft	CEU - LWR AFT	26
Cargo Electronic Unit - Lower Forward	CEU - LWR FWD	26
Cargo Electronic Unit - Main Aft	CEU - MAIN AFT	26
Cargo Fire Control Panel	CFCP	26
Common Display System	CDS	31
Compartment Overheat Detection Control Module	WING/BODY OHT	26
Digital Flight Control System	DFCS	22
Distance Measurement Equipment Interrogator	DME INTROGTR	34
Electrical Meters, Battery, and Galley Power Module	P5-13	24
Electronic Engine Controller - 1	ENGINE - 1	73
Electronic Engine Controller - 2	ENGINE - 2	73
Emergency Locator Transmitter	ELT	23
Engine Accessory Unit	EAU	78
Engine Accessory Unit/TR DEPLOY ENG 1	EAU/TR DPLOY-ENG 1	78
Engine Accessory Unit/TR DEPLOY ENG 2	EAU/TR DPLOY-ENG 2	78
Engine Accessory Unit/TR STOW ENG 1	EAU/TR STOW-ENG 1	78
Engine Accessory Unit/TR STOW ENG 2	EAU/TR STOW-ENG 2	78
Engine and Auxiliary Power Unit Fire Detection Control Module	ENG/APU FIRE	26
Enhanced Digital Flight Control Computer-A	EDFCC-A	22
Enhanced Digital Flight Control System	EDFCS	22
Flap/Slat Electronics Unit	FSEU	27
Flight Data Acquisition Unit	FDAU	31

EFFECTIVITY
SIA ALL

27-MAINT MSG INDEX

D633A103-SIA

Page 101
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

<u>LRU/SYSTEM</u>	<u>SHORT NAME</u>	<u>CHAPTER</u>
Flight Management Computer System	FMCS	34
Fuel Quantity Indicating System	FQIS	28
Generator Control Unit - 1	GCU - 1	24
Generator Control Unit - 2	GCU - 2	24
Ground Proximity Computer	GROUND PROX	34
High Frequency Transceiver	HF XCVR	23
Multi-Mode Receiver	MMR	34
Nitrogen Generation System BITE Display Unit	NGS	47
Pack Flow Temperature Controller	PFTC	21
Pack/Zone Temperature Controller - Left	PACK/ZN CON - L	21
Pack/Zone Temperature Controller - Right	PACK/ZN CON - R	21
Proximity Switch Electronics Unit	PSEU	32
Radio Altimeter Receiver/Transmitter	RADIO ALTIMTR	34
Satellite Communications System	SATCOM	23
Stall Management Yaw Damper Computer - 1	SMYD - 1	27
Stall Management Yaw Damper Computer - 2	SMYD - 2	27
Traffic Alert and Collision Avoidance System Computer	TCAS COMPUTER	34
VHF Omnidirectional Ranging Marker Beacon Receiver	VOR/MKR RCVR	34
Very High Frequency Transceiver	VHF XCVR	23
Waste Tank Logic Control Module	WASTE TANK	38
Weather Radar Receiver/Transmitter	WEATHER RADAR	34
Window Heat Control Unit - Left Forward	WHCU - L FWD	30
Window Heat Control Unit - Left Side	WHCU - L SIDE	30
Window Heat Control Unit - Right Forward	WHCU - R FWD	30
Window Heat Control Unit - Right Side	WHCU - R SIDE	30
Window Heat Control Unit 1 - Left Forward and Right Side	WHCU1 - L FWD/R SIDE	30
Window Heat Control Unit 2 - Right Forward and Left Side	WHCU2 - R FWD/L SIDE	30

EFFECTIVITY
SIA ALL

27-MAINT MSG INDEX

D633A103-SIA

Page 102
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
FSEU	27-51101 FSEU FAILED	27-51 TASK 805
FSEU	27-51102 FSEU FAILED	27-51 TASK 806
FSEU	27-51103 FSEU FAILED	27-51 TASK 807
FSEU	27-51105 FSEU FAILED	27-88 TASK 801
FSEU	27-51106 FSEU FAILED	27-51 TASK 815
FSEU	27-51107 FSEU FAILED	27-51 TASK 816
FSEU	27-51108 FSEU FAILED	27-51 TASK 817
FSEU	27-51109 FSEU FAILED	27-51 TASK 818
FSEU	27-51110 FSEU FAILED	27-88 TASK 802
FSEU	27-51351 TE FLAP UCM	27-51 TASK 830
FSEU	27-51401 IN BYP REA UNKN	27-51 TASK 808
FSEU	27-51402 ALT MODE IS ARMED	27-51 TASK 847
FSEU	27-51403 ALT ARM SW DISAG	27-51 TASK 847
FSEU	27-51404 FLP LOAD RLF 40	27-51 TASK 809
FSEU	27-51405 FLP LOAD RLF 30	27-51 TASK 810
FSEU	27-51406 FLP LOAD RELIEF	27-51 TASK 831
FSEU	27-51407 TE FAIL TO DRIVE	27-51 TASK 848
FSEU	27-51417 FLAP LVR SENSOR	27-51 TASK 811
FSEU	27-51427 FLAP LEVER	27-51 TASK 819
FSEU	27-51429 BYP VLV SW DISAG	27-51 TASK 812
FSEU	27-51430 FLP LOAD RLF 10	27-51 TASK 850
FSEU	27-52259 TE FLAP SNSR L	27-51 TASK 813
FSEU	27-52260 TE FLAP SNSR R	27-51 TASK 820
FSEU	27-52261 TE FLAPS SNSR DIS	27-51 TASK 832
FSEU	27-52407 TE FLAP SNSR L C	27-51 TASK 814
FSEU	27-52408 TE FLAP SNSR R C	27-51 TASK 821
FSEU	27-52418 ECS	27-51 TASK 827
FSEU	27-53250 FLAP 1 SKEW	27-59 TASK 801
FSEU	27-53251 FLAP 2 SKEW	27-59 TASK 802
FSEU	27-53252 FLAP 3 SKEW	27-59 TASK 803
FSEU	27-53253 FLAP 4 SKEW	27-59 TASK 804
FSEU	27-53254 FLAP 5 SKEW	27-59 TASK 805
FSEU	27-53255 FLAP 6 SKEW	27-59 TASK 806
FSEU	27-53256 FLAP 7 SKEW	27-59 TASK 807
FSEU	27-53257 FLAP 8 SKEW	27-59 TASK 808

EFFECTIVITY
SIA ALL

27-MAINT MSG INDEX

D633A103-SIA

Page 103
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
FSEU	27-53258 FLAP SKEW	27-59 TASK 809
FSEU	27-53279 L 28VAC EXC INV	27-51 TASK 822
FSEU	27-53280 R 28VAC EXC INV	27-51 TASK 823
FSEU	27-53409 FLAP 1 SKEW CON	27-59 TASK 810
FSEU	27-53410 FLAP 2 SKEW CON	27-59 TASK 811
FSEU	27-53411 FLAP 3 SKEW CON	27-59 TASK 812
FSEU	27-53412 FLAP 4 SKEW CON	27-59 TASK 813
FSEU	27-53413 FLAP 5 SKEW CON	27-59 TASK 814
FSEU	27-53414 FLAP 6 SKEW CON	27-59 TASK 815
FSEU	27-53415 FLAP 7 SKEW CON	27-59 TASK 816
FSEU	27-53416 FLAP 8 SKEW CON	27-59 TASK 817
FSEU	27-53428 TE BYP VALVE	27-51 TASK 824
FSEU	27-54402 NO A/S DATA	27-51 TASK 825
FSEU	27-54403 A/S DATA INVALID	27-51 TASK 846
FSEU	27-54419 RUDDER LIMITER	27-51 TASK 828
FSEU	27-54423 FLR OUTPUT	27-51 TASK 829
FSEU	27-58335 FLAP LD RLF LT	27-51 TASK 833
FSEU	27-58400 TE FLAP INDICATN	27-51 TASK 826
FSEU	27-81200 SL1 PROX OUTBOARD	27-88 TASK 803
FSEU	27-81201 SL1 PROX INBOARD	27-88 TASK 804
FSEU	27-81202 SL2 PROX OUTBOARD	27-88 TASK 803
FSEU	27-81203 SL2 PROX INBOARD	27-88 TASK 804
FSEU	27-81204 SL3 PROX OUTBOARD	27-88 TASK 803
FSEU	27-81205 SL3 PROX INBOARD	27-88 TASK 804
FSEU	27-81206 SL4 PROX OUTBOARD	27-88 TASK 803
FSEU	27-81207 SL4 PROX INBOARD	27-88 TASK 804
FSEU	27-81208 SL5 PROX OUTBOARD	27-88 TASK 803
FSEU	27-81209 SL5 PROX INBOARD	27-88 TASK 804
FSEU	27-81210 SL6 PROX OUTBOARD	27-88 TASK 803
FSEU	27-81211 SL6 PROX INBOARD	27-88 TASK 804
FSEU	27-81212 SL7 PROX OUTBOARD	27-88 TASK 803
FSEU	27-81213 SL7 PROX INBOARD	27-88 TASK 804
FSEU	27-81214 SL8 PROX OUTBOARD	27-88 TASK 803
FSEU	27-81215 SL8 PROX INBOARD	27-88 TASK 804
FSEU	27-81216 F1 PROX RETRACT	27-88 TASK 805

EFFECTIVITY
SIA ALL

27-MAINT MSG INDEX

D633A103-SIA

Page 104
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
FSEU	27-81217 F1 PROX EXTEND	27-88 TASK 806
FSEU	27-81218 F2 PROX RETRACT	27-88 TASK 805
FSEU	27-81219 F2 PROX EXTEND	27-88 TASK 806
FSEU	27-81220 F3 PROX RETRACT	27-88 TASK 805
FSEU	27-81221 F3 PROX EXTEND	27-88 TASK 806
FSEU	27-81222 F4 PROX RETRACT	27-88 TASK 805
FSEU	27-81223 F4 PROX EXTEND	27-88 TASK 806
FSEU	27-81224 MULTIPLE PROX	27-88 TASK 807
FSEU	27-81225 SL2 PROX RETRACT	27-88 TASK 808
FSEU	27-81226 SL3 PROX RETRACT	27-88 TASK 808
FSEU	27-81227 SL4 PROX RETRACT	27-88 TASK 808
FSEU	27-81228 SL5 PROX RETRACT	27-88 TASK 808
FSEU	27-81229 SL6 PROX RETRACT	27-88 TASK 808
FSEU	27-81230 SL7 PROX RETRACT	27-88 TASK 808
FSEU	27-81231 SL2 PROX RET FAIL	27-88 TASK 809
FSEU	27-81232 SL3 PROX RET FAIL	27-88 TASK 809
FSEU	27-81233 SL4 PROX RET FAIL	27-88 TASK 809
FSEU	27-81234 SL5 PROX RET FAIL	27-88 TASK 809
FSEU	27-81235 SL6 PROX RET FAIL	27-88 TASK 809
FSEU	27-81236 SL7 PROX RET FAIL	27-88 TASK 809
FSEU	27-81237 LE RETR SENSORS	27-88 TASK 815
FSEU	27-81238 L RETR SENSORS	27-88 TASK 815
FSEU	27-81239 R RETR SENSORS	27-88 TASK 815
FSEU	27-81277 PROGRAM PINS	27-51 TASK 834
FSEU	27-81278 INV APL TYPE	27-51 TASK 834
FSEU	27-81281 AUTOSLAT INPUT 1	27-83 TASK 806
FSEU	27-81282 AUTOSLAT INPUT 2	27-83 TASK 806
FSEU	27-81283 ASYM ENABLED	27-88 TASK 819
FSEU	27-81301 SLAT 1 EXTEND	27-88 TASK 810
FSEU	27-81302 SLAT 1 FULL EXT	27-88 TASK 811
FSEU	27-81303 SLAT 1 IN TRANS	27-88 TASK 812
FSEU	27-81304 SLAT 2 EXTEND	27-88 TASK 810
FSEU	27-81305 SLAT 2 FULL EXT	27-88 TASK 811
FSEU	27-81306 SLAT 2 IN TRANS	27-88 TASK 812
FSEU	27-81307 SLAT 3 EXTEND	27-88 TASK 810

EFFECTIVITY
SIA ALL

27-MAINT MSG INDEX

D633A103-SIA

Page 105
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
FSEU	27-81308 SLAT 3 FULL EXT	27-88 TASK 811
FSEU	27-81309 SLAT 3 IN TRANS	27-88 TASK 812
FSEU	27-81310 SLAT 4 EXTEND	27-88 TASK 810
FSEU	27-81311 SLAT 4 FULL EXT	27-88 TASK 811
FSEU	27-81312 SLAT 4 IN TRANS	27-88 TASK 812
FSEU	27-81313 SLAT 5 EXTEND	27-88 TASK 810
FSEU	27-81314 SLAT 5 FULL EXT	27-88 TASK 811
FSEU	27-81315 SLAT 5 IN TRANS	27-88 TASK 812
FSEU	27-81316 SLAT 6 EXTEND	27-88 TASK 810
FSEU	27-81317 SLAT 6 FULL EXT	27-88 TASK 811
FSEU	27-81318 SLAT 6 IN TRANS	27-88 TASK 812
FSEU	27-81319 SLAT 7 EXTEND	27-88 TASK 810
FSEU	27-81320 SLAT 7 FULL EXT	27-88 TASK 811
FSEU	27-81321 SLAT 7 IN TRANS	27-88 TASK 812
FSEU	27-81322 SLAT 8 EXTEND	27-88 TASK 810
FSEU	27-81323 SLAT 8 FULL EXT	27-88 TASK 811
FSEU	27-81324 SLAT 8 IN TRANS	27-88 TASK 812
FSEU	27-81325 FLAP 1 EXTEND	27-88 TASK 813
FSEU	27-81326 FLAP 1 IN TRANS	27-88 TASK 814
FSEU	27-81327 FLAP 2 EXTEND	27-88 TASK 813
FSEU	27-81328 FLAP 2 IN TRANS	27-88 TASK 814
FSEU	27-81329 FLAP 3 EXTEND	27-88 TASK 813
FSEU	27-81330 FLAP 3 IN TRANS	27-88 TASK 814
FSEU	27-81331 FLAP 4 EXTEND	27-88 TASK 813
FSEU	27-81332 FLAP 4 IN TRANS	27-88 TASK 814
FSEU	27-81333 MASTER EXTEND	27-88 TASK 817
FSEU	27-81334 MASTER IN TRANS	27-88 TASK 818
FSEU	27-81352 L LE SL EXT UCM	27-81 TASK 806
FSEU	27-81353 R LE SL EXT UCM	27-81 TASK 806
FSEU	27-81354 LE SLAT EXT UCM	27-81 TASK 806
FSEU	27-81355 L LE SL FE UCM	27-81 TASK 806
FSEU	27-81356 R LE SL FE UCM	27-81 TASK 806
FSEU	27-81357 LE SLAT FE UCM	27-81 TASK 806
FSEU	27-81358 L LE FL EXT UCM	27-81 TASK 806
FSEU	27-81359 R LE FL EXT UCM	27-81 TASK 806

EFFECTIVITY
SIA ALL

27-MAINT MSG INDEX

D633A103-SIA

Page 106
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
FSEU	27-81360 LE FLAP EXT UCM	27-81 TASK 806
FSEU	27-81420 LE INTRANS	27-81 TASK 809
FSEU	27-81421 TAKEOFF WARNING	27-81 TASK 811
FSEU	27-81424 LE UCM SOV	27-81 TASK 807
FSEU	27-81425 LE CRZ DEPRESS	27-81 TASK 808
FSEU	27-81426 LE UCM	27-81 TASK 810
FSEU	27-83350 AUTOSLAT	27-83 TASK 806
PSEU	27-62001 SPDBRK DN FAULT	27-62 TASK 808
PSEU	27-62002 SBRK GT ARMD FLT	27-62 TASK 809
PSEU	27-62003 ALT L LT 800 FLT	32-61 TASK 823
PSEU	27-62004 ALT R LT 800 FLT	32-61 TASK 823
PSEU	27-65001 ALT L LT 800	32-61 TASK 823
PSEU	27-65002 ALT R LT 800	32-61 TASK 823
PSEU	27-65003 SBRK GT ARMED	27-62 TASK 809
PSEU	27-65004 SPDBRK DOWN	27-62 TASK 808
PSEU	27-66001 SPDBRK EXT FLT	27-62 TASK 810
SMYD - 1	22-21001 SMYD YD fault	22-23 TASK 801
SMYD - 1	22-21002 YD 28VAC no power	22-23 TASK 802
SMYD - 1	22-21003 YD 28VDC no power	22-23 TASK 803
SMYD - 1	22-21004 YD LVDT error	22-23 TASK 804
SMYD - 1	22-21005 flap sig disagree	22-23 TASK 806
SMYD - 1	22-21006 YD servo loop	22-23 TASK 809
SMYD - 1	22-21007 no X-CH data	22-23 TASK 807
SMYD - 1	22-21008 X-CH invalid	22-23 TASK 801
SMYD - 1	22-21009 X-CH cmd disagree	22-23 TASK 808
SMYD - 1	27-31000 SMYD fault	27-32 TASK 832
SMYD - 1	27-31001 SMYD SW fault	27-32 TASK 832
SMYD - 1	27-31002 S/S no power	27-32 TASK 805
SMYD - 1	27-31003 SM 28VAC invalid	27-32 TASK 807
SMYD - 1	27-31005 FLAP sig error	27-32 TASK 811
SMYD - 1	27-31006 LE shows asymetry	27-32 TASK 813
SMYD - 1	27-31007 air/gnd in air	27-32 TASK 814
SMYD - 1	27-31009 SW tst sw short	27-32 TASK 815
SMYD - 1	27-31010 prgm pin error	27-32 TASK 816
SMYD - 1	27-31011 no AD data	27-32 TASK 803

EFFECTIVITY
SIA ALL

27-MAINT MSG INDEX

D633A103-SIA

Page 107
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
SMYD - 1	27-31012 AD data invalid	27-32 TASK 817
SMYD - 1	27-31013 AD out of range	27-32 TASK 817
SMYD - 1	27-31014 no IR1 data	27-32 TASK 803
SMYD - 1	27-31015 IR1 data invalid	27-32 TASK 818
SMYD - 1	27-31016 IR1 out of range	27-32 TASK 818
SMYD - 1	27-31017 no IR2 data	27-32 TASK 803
SMYD - 1	27-31018 IR2 data invalid	27-32 TASK 818
SMYD - 1	27-31019 IR2 out of range	27-32 TASK 818
SMYD - 1	27-31020 no DEU data	27-32 TASK 819
SMYD - 1	27-31021 DEU data invalid	27-32 TASK 821
SMYD - 1	27-31022 DEU out of range	27-32 TASK 821
SMYD - 1	27-31023 no MCP data	27-32 TASK 825
SMYD - 1	27-31024 MCP data invalid	27-32 TASK 826
SMYD - 1	27-31025 no FMC data	27-32 TASK 822
SMYD - 1	27-31026 FMC data invalid	27-32 TASK 824
SMYD - 1	27-31027 FMC out of range	27-32 TASK 824
SMYD - 1	27-31028 AOA sig inactive	27-32 TASK 809
SMYD - 1	27-31029 FLAP sig inactive	27-32 TASK 811
SMYD - 1	27-31030 air/gnd inactive	27-32 TASK 830
SMYD - 1	27-31031 AOA vane bent	27-32 TASK 809
SMYD - 1	27-31032 AOA sel invalid	27-32 TASK 809
SMYD - 1	27-31033 INVALID PART NUM	27-32 TASK 835
SMYD - 1	27-81001 SMYD A/S fault	27-32 TASK 832
SMYD - 1	27-81002 A/S no power	27-83 TASK 801
SMYD - 1	27-81003 A/S vlv ckt open	27-83 TASK 802
SMYD - 1	27-81004 A/S flt tst fail	27-83 TASK 803
SMYD - 2	22-22001 SMYD YD fault	22-23 TASK 801
SMYD - 2	22-22002 YD 28VAC no power	22-23 TASK 802
SMYD - 2	22-22003 YD 28VDC no power	22-23 TASK 803
SMYD - 2	22-22004 YD LVDT error	22-23 TASK 805
SMYD - 2	22-22005 flap sig disagree	22-23 TASK 806
SMYD - 2	22-22006 YD servo loop	22-23 TASK 810
SMYD - 2	22-22007 no X-CH data	22-23 TASK 807
SMYD - 2	22-22008 X-CH invalid	22-23 TASK 801
SMYD - 2	22-22009 X-CH cmd disagree	22-23 TASK 808

EFFECTIVITY
SIA ALL

27-MAINT MSG INDEX

D633A103-SIA

Page 108
Jun 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
SMYD - 2	27-22001 whl sig error	31-31 TASK 806
SMYD - 2	27-32000 SMYD fault	27-32 TASK 802
SMYD - 2	27-32001 SMYD SW fault	27-32 TASK 802
SMYD - 2	27-32002 S/S no power	27-32 TASK 806
SMYD - 2	27-32003 SM 28VAC no power	27-32 TASK 808
SMYD - 2	27-32005 FLAP sig error	27-32 TASK 812
SMYD - 2	27-32006 LE shows asymetry	27-32 TASK 813
SMYD - 2	27-32007 air/gnd in air	27-32 TASK 814
SMYD - 2	27-32009 SW test sw short	27-32 TASK 815
SMYD - 2	27-32010 prgm pin error	27-32 TASK 816
SMYD - 2	27-32011 no AD data	27-32 TASK 804
SMYD - 2	27-32012 AD data invalid	27-32 TASK 817
SMYD - 2	27-32013 AD out of range	27-32 TASK 817
SMYD - 2	27-32014 no IR1 data	27-32 TASK 804
SMYD - 2	27-32015 IR1 data invalid	27-32 TASK 818
SMYD - 2	27-32016 IR1 out of range	27-32 TASK 818
SMYD - 2	27-32017 no IR2 data	27-32 TASK 804
SMYD - 2	27-32018 IR2 data invalid	27-32 TASK 818
SMYD - 2	27-32019 IR2 out of range	27-32 TASK 818
SMYD - 2	27-32020 no DEU data	27-32 TASK 820
SMYD - 2	27-32021 DEU data invalid	27-32 TASK 821
SMYD - 2	27-32022 DEU out of range	27-32 TASK 821
SMYD - 2	27-32023 no MCP data	27-32 TASK 828
SMYD - 2	27-32024 MCP data invalid	27-32 TASK 826
SMYD - 2	27-32025 no FMC data	27-32 TASK 823
SMYD - 2	27-32026 FMC data invalid	27-32 TASK 824
SMYD - 2	27-32027 FMC out of range	27-32 TASK 824
SMYD - 2	27-32028 AOA sig error	27-32 TASK 810
SMYD - 2	27-32029 FLAP sig error	27-32 TASK 812
SMYD - 2	27-32030 air/gnd inactive	27-32 TASK 830
SMYD - 2	27-32031 AOA vane bent	27-32 TASK 810
SMYD - 2	27-32032 AOA sel invalid	27-32 TASK 810
SMYD - 2	27-32033 INVALID PART NUM	27-32 TASK 835
SMYD - 2	27-82001 SMYD A/S fault	27-32 TASK 802
SMYD - 2	27-82002 A/S no power	27-83 TASK 801

EFFECTIVITY
SIA ALL

27-MAINT MSG INDEX

D633A103-SIA

Page 109
Jun 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
SMYD - 2	27-82003 A/S vlv ckt open	27-83 TASK 802
SMYD - 2	27-82004 A/S flt tst fail	27-83 TASK 803

EFFECTIVITY
SIA ALL

27-MAINT MSG INDEX

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 110
Jun 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

801. High Control Wheel Play - Fault Isolation

A. Description

- (1) The roll control system for the ailerons and the flight spoilers use cable force input from the control wheels to control the PCU's which supply hydraulic power to move the ailerons. Two PCU's are connected through a crank and crankshaft to aileron body quadrants. If one body quadrant can not move, the PCU's move and shear the quadrant to disconnect it.
- (2) This fault isolation procedure is used for high control wheel play.

B. Possible Causes

- (1) Body cables AA and AB loose or broken.
- (2) Control wheel drum components loose, worn, or damaged.
- (3) Control bus cables ACBA and ACBB loose or broken.
- (4) Transfer mechanism components loose, worn, or damaged.
- (5) Aileron trim mechanism

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00786	FLIGHT CONTROL TRIM CONT AIL

D. Related Data

- (1) (SSM 27-10-01)

E. Initial Evaluation

- (1) Do this check of the aileron control wheel movement:



WARNING

MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Pressurize the hydraulic systems A and B. To pressurize, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (b) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00786	FLIGHT CONTROL TRIM CONT AIL

- (c) Move the captain's or first officer's control wheel fully clockwise and then fully counterclockwise.
- (d) Make sure there is not excessive play in the control wheel.

NOTE: The ailerons should begin to move when the control wheel is turned.

- 1) If there is not excessive play in the control wheel, then there was an intermittent fault. Do this step to complete the task:

EFFECTIVITY
SIA ALL

27-11 TASK 801

D633A103-SIA

Page 201
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

- a) Remove the hydraulic systems A and B pressure. These are the tasks:
 - Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805
 - Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801
- (e) If there is excessive play in the control wheel movement, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do these checks of the body cables AA and AB tension and the aileron control wheel drum:
 - (a) Turn the control wheel and make sure the aileron control quadrant operates correctly.
 - 1) If the control quadrant does not operate correctly, then check the tension of left body cables AA and AB. To adjust the tension, do this task: Aileron Cables Adjustment, AMM TASK 27-11-00-820-801.
 - a) If you needed to adjust the tension of the left body cables, then do the Repair Confirmation at the end of this task.
 - b) If you did not need to adjust the tension of the left body cables, inspect the aileron control wheel drum.
 - <1> Turn the control wheel and make sure the aileron control wheel drum operates correctly.
 - <a> If the control wheel drum does not operate correctly, check the drum, control column, and control wheel for loose, worn, or damaged parts. Repair or replace parts as necessary and do the Repair Confirmation at the end of this task.
 - If the control wheel drum operates correctly, continue with the fault isolation.
 - 2) If the control quadrant does operate correctly, then continue.
- (2) Do these checks of the control bus drum cables ACBA and ACBB and the aileron transfer mechanism:

NOTE: Do this test for high control wheel play on the first officer's control wheel only.

 - (a) Do a check of the cables ACBA and ACBB for correct cable tension. To adjust the cable tension, do this task: Aileron Cables Adjustment, AMM TASK 27-11-00-820-801.
 - 1) If you needed to adjust cables ACBA and ACBB, then do the Repair Confirmation at the end of this task.
 - 2) If you did not need to adjust the tension of cables ACBA and ACBB, inspect the aileron transfer mechanism.
 - a) Turn the first officer's control wheel and make sure the transfer mechanism operates correctly.
 - <1> If the transfer mechanism does not operate correctly, check the transfer mechanism, control column, and control wheel for loose, worn, or damaged parts. Repair or replace parts as necessary and do the Repair Confirmation at the end of this task.
 - <2> If the transfer mechanism operates correctly, continue with the fault isolation.
- (3) Do this check of the aileron trim feel and centering mechanism:
 - (a) Operate the aileron trim control switches and examine the movement of the aileron trim actuator.

EFFECTIVITY
SIA ALL

27-11 TASK 801

D633A103-SIA

Page 202
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 1) If the aileron trim actuator moves properly, then do these steps:
 - a) Replace the feel and centering mechanism. These are the tasks:
 - Aileron Feel and Centering Unit Removal, AMM TASK 27-11-81-000-801
 - Aileron Feel and Centering Unit Installation, AMM TASK 27-11-81-400-801
 - b) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do this check of the aileron control wheel play:
 - (a) Turn the captain's, then the first officer's, control wheel fully clockwise and then fully counterclockwise and make sure there is no excessive play.
 - 1) If there is no excessive control wheel play, then you corrected the fault.
 - a) Remove pressure from the hydraulics A and B systems. To remove the pressure, do this task: Pressure from the Aileron Hydraulic Systems A and B - Deactivation, AMM TASK 27-11-00-860-801.

END OF TASK

802. Left and Right Aileron Do Not Go To The Neutral Position - Fault Isolation

A. Description

- (1) This fault isolation procedure is for when both left and right ailerons do not go to the neutral position when the control wheel is in the neutral position.

B. Possible Causes

- (1) Body cables AA and AB tension
- (2) Blockage of the body cables AA and AB.

C. Related Data

- (1) (SSM 27-10-01)

D. Initial Evaluation

- (1) Do this check to see if the ailerons are at the neutral position when the control wheel is centered:



WARNING

MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Pressurize the hydraulic systems A and B. To pressurize, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (b) Turn the captain's or first officer's control wheel clockwise at least 6 units of trim then release and allow the control wheel to go to its neutral position.

NOTE: Make sure the index mark on the captain's or first officer's control wheel aligns with the zero mark on the control column.

EFFECTIVITY
SIA ALL

27-11 TASKS 801-802

D633A103-SIA

Page 203
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (c) Make sure the left wing aileron and the right wing aileron are in the neutral/rig position.

NOTE: The aileron is in the rig position when the aftmost inboard edge of the aileron lower surface, just forward of the tab leading edge, is 0.35 ± 0.03 inch (straight line distance normal to the aileron hinge line) below the adjacent fixed lower trailing edge surface.

- 1) If the left wing aileron and the right wing ailerons are in the neutral/rigged position, then there was an intermittent fault. Do this step to complete the task:
- a) Remove the hydraulic systems A and B pressure. To remove hydraulic pressure, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
- (d) If the left wing aileron and the right wing aileron are not in the neutral/rig position, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

- (1) Do a check of the left and right body cables AA and AB for correct cable tension. To check the cable tension, do this task: Aileron Cables Adjustment, AMM TASK 27-11-00-820-801.
- (a) If you needed to adjust the left or right body cable tensions, then do the Repair Confirmation at the end of this task.
- (b) If the body cable tension is correct, then continue.
- (2) Do a check of the left and right body cables AA and AB for objects that can cause a blockage.
- (a) If there are objects that can cause a blockage, then do these steps:
- 1) Remove the unwanted objects.
- 2) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) Do this check of the aileron neutral position when the control wheel is centered:



WARNING

MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Make sure hydraulic systems A and B are pressurized. To pressurize, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (b) Turn the captain's or first officer's control wheel clockwise at least 6 units of trim then release and allow the control wheel to go to its neutral position.
- NOTE: Make sure the index mark on the captain's or first officer's control wheel aligns with the zero mark on the control column.
- (c) Make sure the left wing aileron and the right wing aileron are in the neutral/rig position.
- NOTE: The aileron is in the rig position when the aftmost inboard edge of the aileron lower surface, just forward of the tab leading edge, is 0.35 ± 0.03 inch (straight line distance normal to the aileron hinge line) below the adjacent fixed lower trailing edge surface.
- (d) If the left wing aileron and the right wing ailerons are in the neutral/rigged position, then you corrected the fault.

EFFECTIVITY
SIA ALL

27-11 TASK 802

D633A103-SIA

Page 204
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 1) Remove the hydraulic systems A and B pressure. To remove the pressure, do this task: Pressure from the Aileron Hydraulic Systems A and B - Deactivation, AMM TASK 27-11-00-860-801.

END OF TASK

803. Left or Right Aileron Does Not Go To The Neutral Position - Fault Isolation

A. Description

- (1) This fault isolation procedure is used when the left or right aileron does not go to the neutral position when the control wheel is in the neutral position.

B. Possible Causes

- (1) Bus cables ABSA and ABSB tension.
- (2) Blockage of the aileron body cables ABSA and ABSB.

C. Related Data

- (1) (SSM 27-10-01)
- (2) (SSM 27-11-11)

D. Initial Evaluation

- (1) Do this check of the aileron position when the control wheel is at the centered position:



MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Pressurize the hydraulic systems A and B, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (b) Move the captain's or first officer's control wheel clockwise at least 6 units of trim and then release and allow the control wheel to go to its neutral position.
NOTE: Make sure that the index mark on the captain's or first officer's control wheel aligns with the zero mark on the control column.
 - 1) Make sure that the left wing aileron and the right wing aileron are in the neutral/rig position.
NOTE: The aileron rig position is measured 3.0 $\pm$ 0.1 in. (76.2 $\pm$ 2.5 mm) forward of the aft, inboard corner of the fixed lower panel, and 3.0 $\pm$ 0.1 in. (76.2 $\pm$ 2.5 mm) forward of the aft, outboard corner of the aileron. At this location, the distance between the lower surface of the fixed lower panel and the lower surface of the aileron should be 0.19 $\pm$ 0.03 in. (4.83 $\pm$ 0.76 mm).
- (c) If the left wing aileron and the right wing ailerons were in the neutral/rigged position, then there was an intermittent fault. Do this step to complete this task:
 - 1) Remove the hydraulic systems A and B pressure, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
- (d) If the left wing aileron or right wing aileron did not go to the neutral/rig position, then do the Fault Isolation Procedure below.

EFFECTIVITY
SIA ALL

27-11 TASKS 802-803

D633A103-SIA

Page 205
Feb 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

E. Fault Isolation

- (1) Do a tension check the bus cables ABSA and ABSB, do this task: Aileron Cables Adjustment, AMM TASK 27-11-00-820-801.
 - (a) If you needed to adjust the cable tension, then do the Repair Confirmation at the end of this task.
 - (b) If the cable tension did not need any adjustment, then continue.
- (2) Do a check of the bus cables ABSA and ABSB for objects that might cause a blockage.
 - (a) Remove any unwanted objects that can cause a blockage.
 - (b) If there was a blockage, then do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) Do this check of the aileron position:
 - (a) Center the control wheel and then check the position of the ailerons.
 - 1) Turn the captain's or first officer's control wheel clockwise at least 6 units of trim then release and allow the control wheel to go to its neutral position.
NOTE: Make sure that the index mark on the captain's or first officer's control wheel aligns with the zero mark on the control column.
 - 2) Make sure that the left wing aileron and the right wing aileron are in the neutral/rig position.
NOTE: The aileron rig position is measured 3.0 $\pm$ 0.1 in. (76.2 $\pm$ 2.5 mm) forward of the aft, inboard corner of the fixed lower panel, and 3.0 $\pm$ 0.1 in. (76.2 $\pm$ 2.5 mm) forward of the aft, outboard corner of the aileron. At this location, the distance between the lower surface of the fixed lower panel and the lower surface of the aileron should be 0.19 $\pm$ 0.03 in. (4.83 $\pm$ 0.76 mm).
 - 3) Turn the captain's or first officer's control wheel counterclockwise for at least 6 units of trim then release and allow the control wheel to go to its neutral position.
NOTE: Make sure that the index mark on the captain's or first officer's control wheel aligns with the zero mark on the control column.
 - 4) Make sure that the left wing aileron and the right wing aileron are in the neutral/rig position.
NOTE: The aileron rig position is measured 3.0 $\pm$ 0.1 in. (76.2 $\pm$ 2.5 mm) forward of the aft, inboard corner of the fixed lower panel, and 3.0 $\pm$ 0.1 in. (76.2 $\pm$ 2.5 mm) forward of the aft, outboard corner of the aileron. At this location, the distance between the lower surface of the fixed lower panel and the lower surface of the aileron should be 0.19 $\pm$ 0.03 in. (4.83 $\pm$ 0.76 mm).
 - (b) If the left wing aileron and the right wing aileron are in the neutral/rigged position, then you corrected the fault. Do this step to complete this task:
 - 1) Remove the hydraulic systems A and B pressure, do this task: Pressure from the Aileron Hydraulic Systems A and B - Deactivation, AMM TASK 27-11-00-860-801.

———— **END OF TASK** ————

EFFECTIVITY
SIA ALL

27-11 TASK 803

D633A103-SIA

Page 206
Feb 15/2022



737-600/700/800/900
FAULT ISOLATION MANUAL

804. High Control Wheel Force Is Necessary to Start Aileron Movement In Both Directions With Hydraulic Power On - Fault Isolation

A. Description

- (1) This fault isolation procedure is used for when high control wheel force is necessary to start aileron movement in both directions with hydraulic power on.

B. Possible Causes

- (1) Aileron centering cam bearing is binding or has corrosion.
- (2) Aileron trim and centering unit
- (3) Left body cables AA and AB damaged or chafed.
- (4) Left body cables AA and AB blockage
- (5) Left body cables AA and AB tension
- (6) Control column support bearing
- (7) Roll force transducer wire bundle too tight
- (8) Control column U-joint bearing
- (9) Control drum bearing
- (10) Control wheel bearings, gears, U-joints
- (11) Aileron aft control quadrant
- (12) Power Control Unit (PCU) rod ends and linkage
- (13) Autopilot actuator rod ends and linkage
- (14) PCU control valve

C. Related Data

- (1) SSM 27-10-01

D. Initial Evaluation

- (1) Do this check of the control wheel force:



MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

- (a) Pressurize the hydraulic systems A and B. This is the task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (b) Do a check of the force necessary to start moving the ailerons. This is the task: Aileron Control Wheel Force Test, AMM TASK 27-11-00-700-805.
 - 1) If the control wheel force needed to move the ailerons is correct, then there was an intermittent fault. Do this step to complete the task:
 - a) Remove the hydraulic systems A and B pressure. This is the task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
 - 2) If the force needed to move the ailerons is not correct, then do the Fault Isolation Procedure below.

EFFECTIVITY
SIA ALL

27-11 TASK 804

D633A103-SIA

Page 207
Jun 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

E. Fault Isolation Procedure

- (1) Do a check of the aileron centering cam bearing [70] for corrosion and binding: (Figure 201)
 - (a) Loosen the nuts [10] to relieve the tension from the springs [30].
 - 1) Record the number of turns to put the springs [30] back to their usual tension.
 - (b) Remove the cotter pins [15], pin [20] and washers [25] from the arm assembly [65].
 - (c) Disconnect the springs [30] from the eyebolts [35] and from the support assembly [40].
 - (d) Rotate the aileron centering cam bearing [70] by hand.
 - 1) Examine if it turns smoothly and freely.
 - 2) Examine if there are signs of corrosion.
 - 3) Examine if the aileron centering cam bearing [70] was sliding on the cam surface.
 - (e) If the aileron centering cam bearing [70] is binding or show signs of corrosion or sliding on the cam surface, do these steps to replace the aileron centering cam bearing [70]:
 - 1) Remove the cotter pin [45], bolt [50], washer [55], nut [60] and arm assembly [65] from the support assembly [40].
 - 2) Remove the cotter pin [90], nut [85], washer [80], and bolt [75].
 - 3) Replace the aileron centering cam bearing [70].
 - 4) Install the cotter pin [90], nut [85], washer [80], and bolt [75] on the arm assembly [65].
 - 5) Install the arm assembly [65] on the support assembly [40] with the bolt [50], washer [42], washer [55], nut [60] and cotter pin [45].
 - a) Install washers [42] under the head of the bolt [50] to provide maximum clearance between the bolt [50] and the aileron trim actuator.
 - b) Make sure that the cotter pin [45] or bolt [50] does not touch the aileron trim actuator.
 - 6) Install the pin [20] and washers [25] onto the arm assembly [65] with cotter pins [15].
 - 7) Install the springs [30] onto the eyebolts [35] and pin [20].
 - 8) Tighten the nuts [10] to their initial position.
 - 9) Do the Repair Confirmation at the end of this task.
 - (f) If the aileron centering cam bearing [70] operates smoothly and shows no signs of sliding on the cam, then do these steps:
 - 1) Install the pin [20] and washers [25] onto the arm assembly [65] with cotter pins [15].
 - 2) Install the springs [30] onto the eyebolts [35] and pin [20].
 - 3) Tighten the nuts [10] to their initial position, then continue.
- (2) Do this check of the aileron trim and centering mechanism friction:
 - (a) Disconnect the left body cables AA and AB at the aileron aft control quadrant.
 - (b) Disconnect the aileron PCU control rods and the autopilot actuator control rods.
 - (c) Disconnect the centering springs from the centering mechanism roller arm.
 - (d) Turn the aileron aft control quadrant by hand and check for friction in the trim and centering mechanism bearings and check for friction in the roller arm bearing.



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 1) If the friction in the aileron trim mechanism bearing or roller arm bearing is not satisfactory, then do these steps:
 - a) Replace the aileron trim and centering mechanism. These are the tasks:
 - Aileron Feel and Centering Unit Removal, AMM TASK 27-11-81-000-801
 - Aileron Feel and Centering Unit Installation, AMM TASK 27-11-81-400-801
 - b) Do the Repair Confirmation at the end of this task.
- 2) If the friction of the roller arm bearing and centering mechanism bearing is satisfactory, then continue.
- (e) Re-connect the PCU and autopilot actuator control rods, body cables and centering spring.
- (3) Do a check of the left body cables for damage. This is the task: Control Cable Wire Rope - Inspection, AMM TASK 20-20-31-200-801.
 - (a) If the left body cables AA or AB are chafed or damaged, then do these steps:
 - 1) Replace the damaged cables. These are the tasks:
 - Control Cables Removal, AMM TASK 20-10-91-000-801
 - Control Cables Installation, AMM TASK 20-10-91-400-801
 - 2) Do the Repair Confirmation at the end of this task.
 - (b) If the left body cables AA and AB were not damaged, then continue.
- (4) Do this check of the left body cables AA and AB for blockage:
 - (a) If the cables have a blockage, remove the objects, then do the Repair Confirmation at the end of this task.
 - (b) If the left body cables AA and AB were not blocked, then continue.
- (5) Do a check to make sure the left body cables AA and AB tension is correct. This is the task: Aileron Cables Adjustment, AMM TASK 27-11-00-820-801.
 - (a) If you needed to adjust the cable tension, then do the Repair Confirmation at the end of this task.
 - (b) If you did not need to adjust the cable tension, then continue.
- (6) Do a check for friction in the captain's or first officer's control column support bearing:
 - (a) Move the control column fully forward and then fully aft and check for excessive friction.
 - 1) If there is excessive friction in the control column, then do these steps:
 - a) Replace the control column support bearing. These are the tasks:
 - Control Column Support Bearing Removal, AMM TASK 27-31-54-000-801
 - Control Column Support Bearing Installation, AMM TASK 27-31-54-400-801
 - b) Do the Repair Confirmation at the end of this task.
 - 2) If you do not find a problem with the control column friction, then continue.
- (7) Do a check to make sure the roll force transducer wire cable is not too tight.
 - (a) Turn the captain's control wheel fully counterclockwise and make sure the roll force transducer cable does not prevent control wheel movement.
 - (b) If the roll force transducer cable restricts control wheel movement, then do these steps:
 - 1) Adjust the roll force transducer cable. This is the task: Roll Force Transducer Installation, AMM TASK 22-11-11-400-801.

EFFECTIVITY
SIA ALL

27-11 TASK 804

D633A103-SIA

Page 209
Jun 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 2) Do the Repair Confirmation at the end of this task.
- (c) If the transducer cable does not restrict the movement of the control wheel, then continue.
- (8) Do this check to make sure there is not high friction in the control column U-joint bearing.
 - (a) Move the captain's or first officer's control wheel fully clockwise and then fully counterclockwise and check for high friction.

NOTE: An indication of high friction in the u-joint bearing is an intermittent ratchet while you move the control wheel.
 - (b) If you detect high friction, then do these steps:
 - 1) Replace the bearing and pressure seal. This is the task: Control Column - Installation, AMM TASK 27-31-51-400-801.
 - 2) Do the Repair Confirmation at the end of this task.
 - (c) If you do not detect high friction in the control column, then continue.
- (9) Do this friction check of the aileron transfer mechanism control drum bearing:
 - (a) Disconnect the aileron spring cartridge in the wheel well.
 - (b) Turn the captain's or first officer's control wheel clockwise 12 degrees then counterclockwise 12 degrees and make sure the friction of the control drum bearing is satisfactory.
 - 1) If the friction is not satisfactory, then do these steps:
 - a) Replace the aileron transfer mechanism. These are the tasks:
 - Aileron Transfer Mechanism Removal, AMM TASK 27-11-61-000-801
 - Aileron Transfer Mechanism Installation, AMM TASK 27-11-61-400-801
 - b) Do the Repair Confirmation at the end of this task.
 - 2) If the friction is satisfactory, then continue.
- (10) Do a check for friction in the control wheel bearings, gears and U-joint.
 - (a) Turn the captain's or first officer's control wheel fully clockwise and then fully counterclockwise and check for high friction in the control wheel bearings, gears, upper column bearings or U-joints.

NOTE: An indication of gears out of adjustment is a continuous ratchet while you turn the control wheel.

 - 1) If you detect high friction, then do these steps:
 - a) Replace the bearings or adjust the gears as necessary.
 - b) Do the Repair Confirmation at the end of this task.
 - 2) If you do not detect high friction, then continue.
- (11) Do this check of the control quadrant bearing and pressure seal for friction.
 - (a) Turn the aileron aft control quadrant by hand and check for friction in the upper shaft bearings and pressure seal of the control quadrant shaft.
 - 1) If the friction in the control shaft bearing and pressure seal is not satisfactory, then do these steps:
 - a) Replace the aileron body quadrant. This is the task: Aileron Feel and Centering Unit Removal, AMM TASK 27-11-81-000-801.
 - b) Do the Repair Confirmation at the end of this task.

EFFECTIVITY
SIA ALL

27-11 TASK 804

D633A103-SIA

Page 210
Jun 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 2) If the friction is satisfactory, then continue.
- (12) Do a check of the aileron PCU control rod ends and linkages.
 - (a) Replace any parts if they are worn or bent.
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If the rod ends or linkages are not damaged, then continue.
- (13) Do a check of the autopilot actuator control rod ends and linkage. This is the task: Autopilot Aileron Actuator Linkage Inspection, AMM TASK 22-11-25-200-801.
 - (a) If the rod ends or linkage is damaged, then do these steps:
 - 1) Replace any parts that are worn or bent. This is the task: Autopilot Aileron Actuator Removal, AMM TASK 22-11-25-000-801.
 - 2) Do the Repair Confirmation at the end of this task.
 - (b) If the rod ends or linkage are not damage, then continue.
- (14) Do a check of the aileron PCU control valve. This is the task Aileron Power Control Unit Linkage Removal, AMM TASK 27-11-14-000-801.
 - (a) If any of the parts are damaged, do these steps:
 - 1) Replace the parts that are broken, bent, or worn.
 - 2) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) Do a check of the control wheel force.



WARNING

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- (a) Make sure the hydraulic systems A and B are pressurized. This is the task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (b) Do a check of the control wheel force necessary to move the ailerons. This is the task: Aileron Control Wheel Force Test, AMM TASK 27-11-00-700-805.
 - 1) If the force needed to move the ailerons is correct, then you corrected the fault. Do this step to complete this task:
 - a) Remove the hydraulic systems A and B pressure. This is the task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

———— **END OF TASK** ————

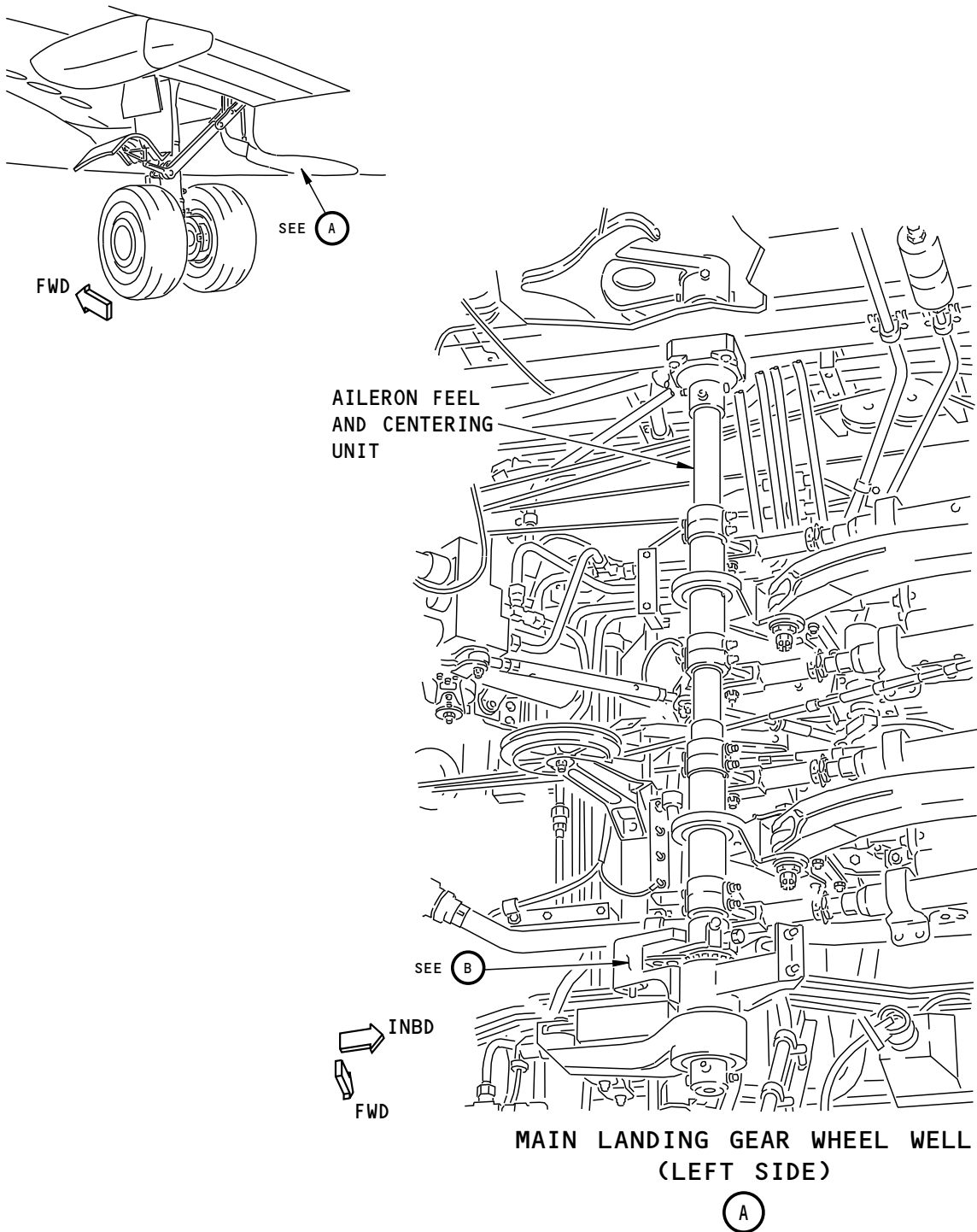
EFFECTIVITY
SIA ALL

27-11 TASK 804

D633A103-SIA

Page 211
Jun 15/2023

BOEING
737-600/700/800/900
FAULT ISOLATION MANUAL



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Aileron Centering Cam Bearing - Fault Isolation
Figure 201/27-11-00-990-801 (Sheet 1 of 2)

EFFECTIVITY
SIA ALL

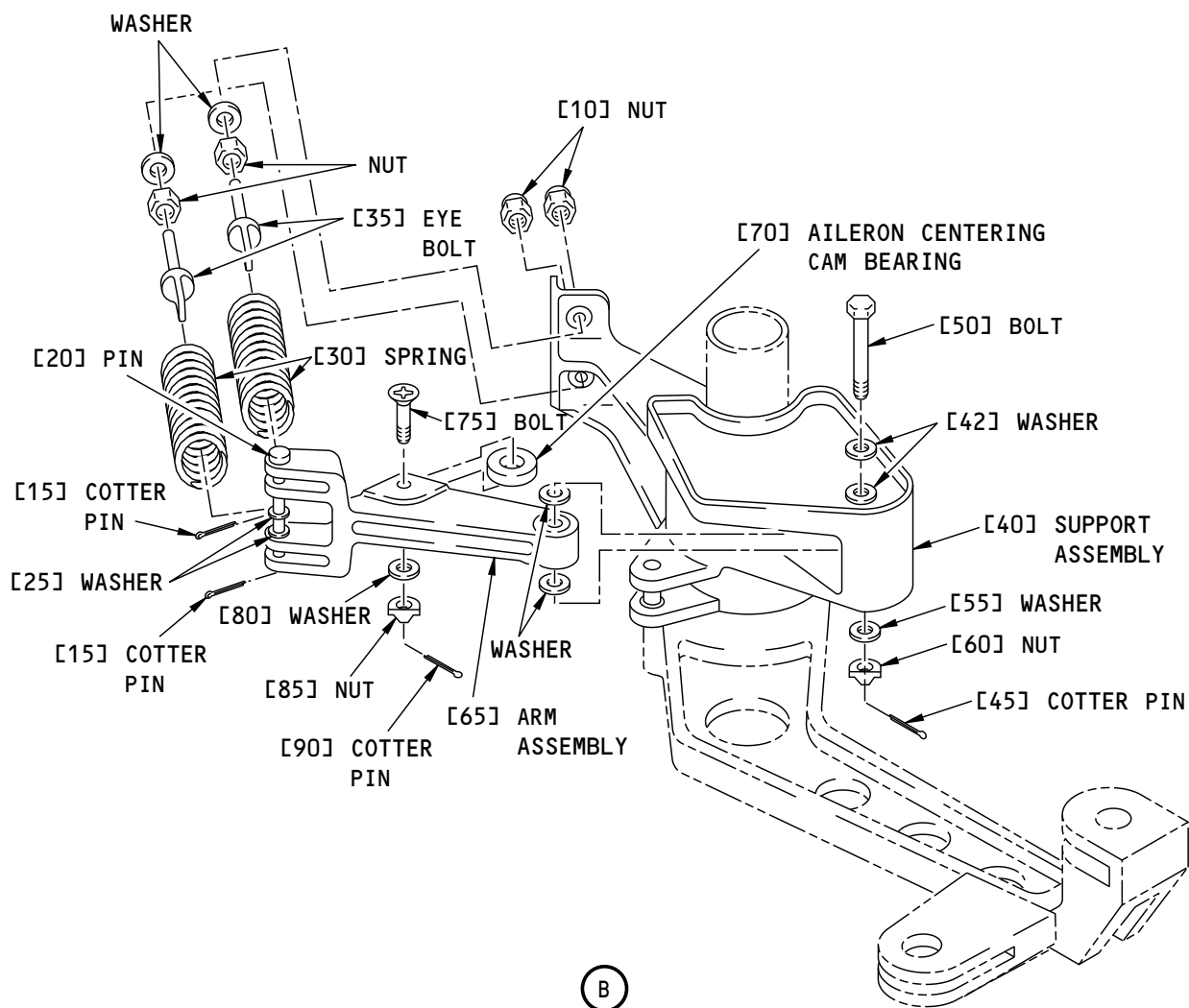
27-11 TASK 804

D633A103-SIA

Page 212
 Oct 15/2021

ECCN 9E991 BOEING PROPRIETARY - See title page for details

737-600/700/800/900 FAULT ISOLATION MANUAL



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Aileron Centering Cam Bearing - Fault Isolation
Figure 201/27-11-00-990-801 (Sheet 2 of 2)

— EFFECTIVITY
SIA ALL

27-11 TASK 804

Page 213
Oct 15/2021

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details



**737-600/700/800/900
FAULT ISOLATION MANUAL**

805. Aileron Left or Aileron Right Does Not Move To Full Travel - Fault Isolation

A. Description

- (1) The roll control system for the ailerons and the flight spoilers use cable force input from the control wheels to control the PCU's which supply hydraulic power to the move the ailerons. Two PCU's are connected through a crank and crankshaft to aileron body quadrants. If one body quadrant can not move the PCU's moves and shear the quadrant to disconnect it.
- (2) This fault isolation procedure is used for either the left or right ailerons do not move through the full range of travel.

B. Possible Causes

- (1) Aileron bus cables ABSA and ABSB tension.
- (2) Aileron bus cables ABSA and ABSB blockage.

C. Related Data

- (1) (SSM 27-10-01)

D. Initial Evaluation

- (1) Do this check of the aileron control surface travel limits:
 - (a) Do a travel limits check of the left and right ailerons. To do the check, do this task: Aileron Travel Test, AMM TASK 27-11-00-700-809.
 - (b) If the left and right wing ailerons moved through the correct range of travel, then there was an intermittent fault. Do this step to complete this task:
 - 1) Remove the hydraulic systems A and B pressure. To remove hydraulic pressure, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
 - (c) If the left aileron or the right aileron did not move through the full range of travel, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

- (1) Do a check of the aileron bus cables ABSA and ABSB tension. To check the tension, do this task: Aileron Cables Adjustment, AMM TASK 27-11-00-820-801.
 - (a) If you needed to adjust the tension of aileron bus cables ABSA and ABSB, then do the Repair Confirmation at the end of this task.
 - (b) If you did not need to adjust the cable tension, then continue.
- (2) Do a check of the aileron cables ABSA and ABSB for any objects that can cause a blockage.
 - (a) If you find a blockage, then do the these steps:
 - 1) Remove the unwanted objects.
 - 2) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) Do this check of the aileron control surface travel limits:
 - (a) Do a travel limits check of the left and right ailerons. To do this check, do this task: Aileron Travel Test, AMM TASK 27-11-00-700-809.
 - (b) If the left wing and right wing ailerons moved through the correct range of travel, then you corrected the fault. Do this step to complete this task:

EFFECTIVITY
SIA ALL

27-11 TASK 805

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 214
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 1) Remove the hydraulic systems A and B pressure. To remove the pressure, do this task: Pressure from the Aileron Hydraulic Systems A and B - Deactivation, AMM TASK 27-11-00-860-801.

————— **END OF TASK** —————

806. Ailerons Left and Right Do Not Move To Full Travel - Fault Isolation

A. Description

- (1) The roll control system for the ailerons and the flight spoilers use cable force input from the control wheels to control the PCU's which supply hydraulic power to the move the ailerons. Two PCU's are connected through a crank and crankshaft to aileron body quadrants. If one body quadrant can not move the PCU's moves and shear the quadrant to disconnect it.
- (2) This fault isolation procedure is used when both left and right ailerons do not move through the full range of travel.

B. Possible Causes

- (1) Left aileron body cables AA and AB tension.
- (2) Left aileron body cables AA and AB blockage.

C. Related Data

- (1) (SSM 27-10-01)

D. Initial Evaluation

- (1) Do this check of the aileron control surface travel limits:
 - (a) Do the aileron travel test. To check the limits, do this task: Aileron Travel Test, AMM TASK 27-11-00-700-809.
 - (b) If the left and right wing ailerons moved through the correct range of travel, then there was an intermittent fault. Do this step to complete this task:
 - 1) Remove the hydraulic systems A and B pressure. To remove hydraulic pressure, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
 - (c) If the left and right ailerons did not move through the full range of travel, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

- (1) Do a tension check of the left body cables AA and AB. To check the tension, do this task: Aileron Cables Adjustment, AMM TASK 27-11-00-820-801.
 - (a) If you needed to adjust the tension of body cables AA and AB, then do the Repair Confirmation at the end of this task.
 - (b) If you did not need to adjust the cable tension, then continue.
- (2) Do a check of the left body cables AA and AB for any objects that can cause a blockage.
 - (a) If you find any objects which cause a blockage, then do these steps:
 - 1) Remove the unwanted objects.
 - 2) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) Do this check of the aileron control surface travel limits:
 - (a) To check the aileron travel limits, do this task: Aileron Travel Test, AMM TASK 27-11-00-700-809.

EFFECTIVITY
SIA ALL

27-11 TASKS 805-806

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 215
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (b) If the left and right wing ailerons moved through the correct range of travel, then you corrected the fault. Do this step to complete this task:
- 1) Remove the hydraulic systems A and B pressure. To remove hydraulic pressure, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

END OF TASK

807. Aileron Does Not Operate Left or Aileron Does Not Operate Right - Fault Isolation

A. Description

- (1) The roll control system for the ailerons and the flight spoilers use cable force input from the control wheels to control the PCU's which supply hydraulic power to the move the ailerons. Two PCU's are connected through a crank and crankshaft to aileron body quadrants. If one body quadrant can not move the PCU's moves and shear the quadrant to disconnect it.
- (2) This fault isolation procedure is used when the left aileron trim does not operate, or when the right aileron trim does not operate.

B. Possible Causes

- (1) Blockage in aileron bus cables ABSA and ABSB.
- (2) Tension in the aileron bus cables ABSA and ABSB.

C. Related Data

- (1) (SSM 27-10-01)
- (2) (SSM 27-11-11)

D. Initial Evaluation

- (1) Do this check of the aileron control system movement:



MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Pressurize the hydraulic systems A and B. To pressurize, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (b) Move the captain's or first officer's control wheel fully clockwise and check to make sure the left wing aileron moves down and the right wing aileron moves up.
- (c) Move the captain's or first officer's control wheel fully counterclockwise and check to make sure the right wing aileron moves down and the left wing aileron moves up.
- (d) If the left and right wing ailerons moved correctly, then there was an intermittent fault. Do this step to complete this task:
 - 1) Remove the hydraulic systems A and B pressure. To remove the pressure, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
- (e) If the left or right ailerons did not move, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

- (1) Do this blockage check of the left or right aileron bus cables:
 - (a) While turning the captain's or first officer's control wheel clockwise, make sure the aileron bus drums move together.

EFFECTIVITY
SIA ALL

27-11 TASKS 806-807

D633A103-SIA

Page 216
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (b) If the aileron bus drums do not move together, then do these steps to check the aileron bus cables ABSA and ABSB for a blockage.
 - 1) If you find a blockage, remove the objects and then do the Repair Confirmation at the end of this task.
 - 2) If you did not find a blockage, then continue.
- (2) Do a check of the left or right aileron bus cables ABSA and ABSB for correct tension. To check the tension, do this task: Aileron Cables Adjustment, AMM TASK 27-11-00-820-801.
 - (a) If you needed to adjust the cable tension, do the Repair Confirmation at the end of this procedure.

F. Repair Confirmation

- (1) Do this check of the aileron control system movement:
 - (a) Move the captain's or first officer's control wheel fully clockwise and check to make sure the left wing aileron moves down and the right wing aileron moved up.
 - (b) Move the captain's or first officer's control wheel fully counterclockwise and check to make sure the right wing aileron moves down and the left wing aileron moves up.
 - (c) If the left and right wing ailerons moved correctly when the control wheel was turned clockwise and counterclockwise, then you corrected the fault. Do this step to complete this task:
 - 1) Remove the hydraulic systems A and B pressure. To remove hydraulic pressure, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

————— **END OF TASK** —————

808. Slow Aileron Response to Control Wheel Input With Hydraulic Power On - Fault Isolation

A. Description

- (1) This fault isolation procedure is used when the ailerons are slow to respond to control wheel input.

B. Possible Causes

- (1) Aileron PCU
- (2) Aileron bus cables ABSA and ABSB damage.
- (3) Aileron bus cables ABSA and ABSB blockage.
- (4) Aileron bus cables ABSA and ABSB tension.

C. Related Data

- (1) (SSM 27-10-01)
- (2) (SSM 27-11-11)

EFFECTIVITY
SIA ALL

27-11 TASKS 807-808

D633A103-SIA

Page 217
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

D. Initial Evaluation

- (1) Do this check of the aileron control response:



WARNING

MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Pressurize the hydraulic systems A and B. To pressurize, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (b) Move the captain's or first officer's control wheel clockwise and then counterclockwise and make sure there is no delay in aileron response to control wheel movement.
NOTE: The ailerons should begin to move immediately after the control wheel is turned clockwise or counterclockwise.
- (c) If the aileron response to control wheel movement is satisfactory, there was an intermittent fault. Do this step to complete this task:
 - 1) Remove the hydraulic systems A and B pressure. To remove the pressure, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
- (d) If the ailerons response to control wheel input is not satisfactory, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

- (1) Do this check of the aileron PCUs:
- (a) On the pilot's overhead panel, set the FLT CONTROL A switch to ON and the FLT CONTROL B switch to OFF.
 - (b) Move the captain's or first officer's control wheel clockwise and then counterclockwise and check to make sure the bottom PCU moves the ailerons.
NOTE: If the PCU works correctly, the force needed to move the ailerons will be close to the force needed to move the ailerons with both working PCUs. If the PCU does not move the ailerons, you can still move the ailerons but the wheel force necessary to manually drive through the PCU will be much higher.
 - 1) If the aileron PCU does not move the ailerons, then do these steps:
 - a) Replace the bottom PCU. These are the tasks:
 - Aileron Power Control Unit - Removal, AMM TASK 27-11-71-000-801
 - Aileron Power Control Unit - Installation, AMM TASK 27-11-71-400-801
 - b) Do the Repair Confirmation at the end of this task.
 - (c) On the pilot's overhead panel, set the FLT CONTROL A switch to OFF and the FLT CONTROL B switch to ON.
 - (d) Move the captain's or first officer's control wheel clockwise and then counterclockwise and check to make sure the top PCU moves the ailerons.
NOTE: If the PCU does work correctly, the force will be close to the force needed to move the ailerons with both working PCUs. If the PCU does not move the ailerons, you can still move the ailerons but the force necessary to manually drive through the PCU will be much higher.

EFFECTIVITY
SIA ALL

27-11 TASK 808

D633A103-SIA

Page 218
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

- 1) If the aileron PCU does not move the ailerons, then do these steps:
 - a) Replace the top PCU. These are the tasks:
 - Aileron Power Control Unit - Removal, AMM TASK 27-11-71-000-801
 - Aileron Power Control Unit - Installation, AMM TASK 27-11-71-400-801
 - b) Do the Repair Confirmation at the end of this task.
- (e) If you did not need to replace an aileron PCU, then continue.
- (2) Do this check of the aileron bus cables ABSA and ABSB for damage:
 - (a) If the cables are chafed or damaged, then do these steps:
 - 1) Replace the aileron bus cables ABSA and ABSB. These are the tasks:
 - Control Cables Removal, AMM TASK 20-10-91-000-801
 - Control Cables Installation, AMM TASK 20-10-91-400-801
 - 2) Do the Repair Confirmation at the end of this task.
 - (b) If the aileron bus cables were not damaged, then continue.
- (3) Do this check for blockage of the aileron bus cables ABSA and ABSB.
 - (a) If you find a blockage in the aileron bus cables, then do these steps:
 - 1) Remove the objects.
 - 2) Do the Repair Confirmation section at the end of this task.
 - (b) If you did not find a blockage, then continue.
- (4) Do a check of the aileron bus cables ABSA and ABSB tension. To do the check, do this task: Aileron Cables Adjustment, AMM TASK 27-11-00-820-801.
 - (a) If you needed to adjust the bus cable tension, then do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) Do this check of the aileron control system response:



WARNING

MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Make sure the hydraulic systems A and B are pressurized. To pressurize, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (b) Make sure FLT CONTROL A and FLT CONTROL B switches are in the on position.
- (c) Move the captain's or first officer's control wheel clockwise and then counterclockwise and make sure there is no delay in aileron response to control wheel input.

NOTE: The aileron's should begin to move immediately after the control wheel is turned clockwise or counterclockwise.
- (d) If the aileron response to control wheel input is satisfactory, then you corrected the fault. Do this step to complete this task:

EFFECTIVITY
SIA ALL

27-11 TASK 808

D633A103-SIA

Page 219
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 1) Remove the hydraulic systems A and B pressure. To remove the pressure, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

————— **END OF TASK** —————

809. High Control Wheel Force With Hydraulic Power Off - Fault Isolation

A. Description

- (1) The roll control system for the Ailerons and the Flight Spoilers use cable force input from the control wheels to control the PCU's which supply hydraulic power to move the Ailerons.
- (2) This Fault Isolation Procedure is used when the Control Wheel force to move the Ailerons is too high with hydraulic power off, but the Control Wheel force is satisfactory with hydraulic power on.

B. Possible Causes

- (1) Aileron bus cables ABSA and ABSB damage
- (2) Aileron bus cables ABSA and ABSB blockage
- (3) Right body cables AA and AB damaged
- (4) Right body cables AA and AB blockage
- (5) Body cables AA and AB adjustment
- (6) Aileron Balance Panel seal
- (7) Spoiler Ratio Changer linkage friction
- (8) Spoiler Ratio Changer friction
- (9) Spoiler Mixer friction
- (10) Aileron Autopilot Actuator adjustment

C. Related Data

- (1) SSM 27-10-01
- (2) SSM 27-11-11

D. Initial Evaluation

- (1) Do this check of the control wheel force:
 - (a) Remove the pressurize the hydraulic systems A and B. This is the task: Pressure from the Aileron Hydraulic Systems A and B - Deactivation, AMM TASK 27-11-00-860-801.
 - (b) Move the captain's or first officer's control wheel and check the force necessary to move the ailerons.
 - 1) If the force needed to move the ailerons is not high, then there was an intermittent fault.
 - 2) If the force needed to move the ailerons is high, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

- (1) Do a check of the aileron bus cables ABSA and ABSB for damage (Control Cable Wire Rope - Inspection, AMM TASK 20-20-31-200-801).
 - (a) If the aileron bus cables ABSA or ABSB are chafed or damaged, then do these steps:
 - 1) Replace the damaged cables. These are the tasks:
 - Control Cables Removal, AMM TASK 20-10-91-000-801
 - Control Cables Installation, AMM TASK 20-10-91-400-801

EFFECTIVITY
SIA ALL

27-11 TASKS 808-809

D633A103-SIA

Page 220
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 2) Do the Repair Confirmation at the end of this task.
- (b) If the aileron bus cables are not damaged, then continue.
- (2) Do a blockage check of the aileron bus cables ABSA and ABSB.
 - (a) If the cables have a blockage, remove the objects, then do the Repair Confirmation at the end of this task.
 - (b) If the aileron bus cables ABSA and ABSB were not blocked, then continue.
- (3) Do a damage check of the right body cables AA and AB (Control Cable Wire Rope - Inspection, AMM TASK 20-20-31-200-801).
 - (a) If the right body cables AA or AB are chafed or damaged, then do these steps:
 - 1) Replace the damaged cables. These are the tasks:
 - Control Cables Removal, AMM TASK 20-10-91-000-801
 - Control Cables Installation, AMM TASK 20-10-91-400-801
 - 2) Do the Repair Confirmation at the end of this task.
 - (b) If the right body cables AA and AB are not damaged, then continue.
- (4) Do a blockage check of the right body cables AA and AB.
 - (a) If the cables have a blockage, remove the objects, then do the Repair Confirmation at the end of this task.
 - (b) If the left body cables AA and AB were not blocked, then continue.
- (5) Do this adjustment check of the left and right body cables AA and AB.
 - (a) Make sure that rig pin A/S-1 can be installed in the bottom of the transfer mechanism.
 - 1) If rig pin A/S-1 cannot be easily installed, then do these steps:
 - a) Adjust the body cables. This is the task: Aileron Cables Adjustment, AMM TASK 27-11-00-820-801.
 - b) Do the Repair Confirmation section at the end of this task.
 - 2) If rig pin A/S-1 can be easily installed, then continue.
- (6) Do this check of the Aileron Balance Panel seals (Aileron Balance Panels Removal, AMM TASK 27-11-31-000-801).
 - (a) Make sure that the Balance Panel seals are not damaged and the seal clearance is correct.
 - 1) Replace the seals if they are damaged.
 - 2) Adjust the seal clearance if the clearance is not correct.
 - (b) If you replaced a seal or needed to adjust the seal clearance, then do the Repair Confirmation at the end of this task.
 - (c) If the seals were not damaged or the seals did not need adjustment, then continue.
- (7) Do a check of the Spoiler Ratio Changer linkage (Spoiler Ratio Changer - Removal, AMM TASK 27-61-31-000-801).
 - (a) Disconnect the right body cables AA and AB.
 - (b) Disconnect the input rod of the Aileron spring cartridge and Ratio Changer.
 - (c) Turn the control quadrant by hand and check the friction in the input linkage of the Spoiler Ratio Changer linkage.
 - 1) If the friction is not satisfactory, then do these steps:

EFFECTIVITY
SIA ALL

27-11 TASK 809

D633A103-SIA

Page 221
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- a) Replace the linkage of the Spoiler Ratio Changer.
 - b) Do the Repair Confirmation at the end of this task.
 - 2) If the friction in the Spoiler Ratio Changer input linkage is satisfactory, then continue.
- (8) Do a check on the Spoiler Ratio Changer to see if the friction is satisfactory.
 - (a) If the friction is not satisfactory, then do these steps:
 - 1) Replace the Spoiler Ratio Changer. These are the tasks:
 - Spoiler Ratio Changer - Removal, AMM TASK 27-61-31-000-801
 - Spoiler Ratio Changer - Installation, AMM TASK 27-61-31-400-801
 - 2) Do the Repair Confirmation at the end of this task.
 - (b) If the friction is satisfactory, then continue.
- (9) Do a check on the Spoiler Mixer to see if the friction is satisfactory.
 - (a) If the friction is not satisfactory, then do these steps:
 - 1) Replace the Spoiler Mixer. These are the tasks:
 - Spoiler Mixer Removal, AMM TASK 27-61-21-000-801
 - Spoiler Mixer Installation, AMM TASK 27-61-21-400-801
 - 2) Do the Repair Confirmation at the end of this task.
 - (b) If the friction is satisfactory, then continue.
- (10) Do this check of the Autopilot Aileron Actuator:
 - (a) Disconnect the Autopilot Aileron Actuator input rod from the centering unit.
 - (b) Make sure that the bearings in the input rod rotate freely.
 - (c) Move the input rod through its range of motion.
 - (d) Make sure that the force needed to move the input rod is not more than 0.5 lbf (2.2 N).
 - 1) If the force needed to move the input rod is more than 0.5 lbf (2.2 N), then do these steps:
 - a) Remove the Autopilot Aileron Actuator input rod, which connects the Autopilot Actuators to the centering unit.
 - b) Remove the Autopilot Aileron Actuator interconnect rod, which connects the two Autopilot Actuators.
 - c) Make sure that the bearings in the connecting rods move freely.
 - d) For each of the Autopilot Aileron Actuator levers, apply a force tangential to the lever to move it through its range of motion.
 - e) Make sure that the force needed to move each lever is not more than 0.25 lbf (1.11 N).
 - f) If the force needed to move the lever is more than 0.25 lbf (1.11 N), then do these steps:
 - <1> Replace the Autopilot Aileron Actuator. These are the tasks:
 - Autopilot Aileron Actuator Removal, AMM TASK 22-11-25-000-801
 - Autopilot Aileron Actuator Installation, AMM TASK 22-11-25-400-801
 - g) Install the Autopilot Aileron Actuator input rod.
 - h) Do the Repair Confirmation at the end of this task.

EFFECTIVITY
SIA ALL

27-11 TASK 809

D633A103-SIA

Page 222
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

F. Repair Confirmation

- (1) Do a check of the Control Wheel force:
 - (a) Move the Captain's or First Officer's Control Wheel and check the force necessary to start moving the ailerons.
 - 1) If the force needed to move the Ailerons is satisfactory, then you corrected the fault. Do this step to complete the task:
 - a) Remove the hydraulic systems A and B pressure. This is the task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
 - 2) If the force needed to move the Ailerons is not satisfactory, then continue the Fault Isolation Procedure at the subsequent step.

———— **END OF TASK** ————

810. Control Wheel Will Not Stay In The Center Position From One Direction - Fault Isolation

A. Description

- (1) This fault isolation procedure is used for when the control wheel will not stay in the neutral position from one direction.

B. Possible Causes

- (1) Body cable AA and AB adjustment
- (2) Roll force transducer wire bundle too tight
- (3) Aileron transfer mechanism
- (4) Control column U-joint bearing
- (5) Control column support bearing

C. Related Data

- (1) (SSM 27-10-01)
- (2) (SSM 27-11-11)

D. Initial Evaluation

- (1) Do this check to see that the control wheel returns to the centered position following control wheel input:



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- (a) Pressurize the hydraulic systems A and B. To pressurize, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (b) Make sure the control wheel centers. To do this, do this task: Control Wheel - Centering Check, AMM TASK 27-11-00-700-804.
 - 1) If the control wheel returns to the neutral position after turning the control wheel clockwise and counterclockwise, then there was an intermittent fault. Do this step to complete the task:

EFFECTIVITY
SIA ALL

27-11 TASKS 809-810

D633A103-SIA

Page 223
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

- a) Remove the pressure from the aileron hydraulic systems A and B. To do this, do this task: Pressure from the Aileron Hydraulic Systems A and B - Deactivation, AMM TASK 27-11-00-860-801.
- (c) If the control wheel does not return to the neutral position after turning the control wheel clockwise and counterclockwise, then do the Fault Isolation Procedure.

E. Fault Isolation

- (1) Do this adjustment check of the left and right body cables AA and AB.
 - (a) Insert rig pin A/S-1 into the transfer mechanism.
 - 1) If rig pin A/S-1 can not be easily installed in the transfer mechanism, then do these steps:
 - a) Adjust the left and right body cables AA and AB. To adjust the cables, do this task: Aileron Cables Adjustment, AMM TASK 27-11-00-820-801.
 - b) Do the Repair Confirmation Section at the end of this task.
 - (b) If rig pin A/S-1 easily installs in the transfer mechanism, then continue.
- (2) Do a check to see if the roll force transducer wire bundle is too tight (AMM PAGEBLOCK 22-11-11/401).
 - (a) Turn the captain's control wheel fully counterclockwise and make sure the roll force transducer wire bundle does not prevent control wheel movement.
 - (b) If the roll force transducer wire bundle restricts control wheel movement, then do these steps:
 - 1) Adjust the wire (AMM TASK 22-11-11-000-801).
 - 2) Do the Repair Confirmation at the end of this task.
 - (c) If the wire does not restrict the movement of the control wheel, then continue.
- (3) Do this check of the aileron transfer mechanism:
 - (a) Disconnect the aileron spring cartridge in the wheel well.
 - (b) Turn the control wheel clockwise and counterclockwise 12 degrees and check the aileron transfer mechanism control drum bearing friction.
 - (c) If the control drum bearing friction is not satisfactory, then do these steps:
 - 1) Replace the aileron transfer mechanism. These are the tasks:
 - Aileron Transfer Mechanism Removal, AMM TASK 27-11-61-000-801
 - Aileron Transfer Mechanism Installation, AMM TASK 27-11-61-400-801
 - 2) Do the Repair Confirmation at the end of this task.
 - (d) If the control drum bearing friction is satisfactory, then continue.
- (4) Do this check of the control column U-joint bearing:
 - (a) Turn the captain's or first officer's control wheel and check for high friction in the U-joint bearing.

NOTE: An indication of high friction in the U-joint bearing is an intermittent ratchet when you turn the control wheel.

 - 1) If the control wheel friction is high, then do these steps:
 - a) Replace the control column U-joint bearing.
 - b) Do the Repair Confirmation at the end of this task.
 - 2) If the friction in the control column is satisfactory, then continue.

EFFECTIVITY
SIA ALL

27-11 TASK 810

D633A103-SIA

Page 224
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (5) Do this check of the captain's or first officer's control column support bearing:
- (a) Move the control column fully forward and then fully aft and check for excessive friction.
- 1) If there is excessive friction in the control column, do these steps:
- a) Replace the control column support bearing. These are the tasks:
- Control Column Support Bearing Removal, AMM TASK 27-31-54-000-801
 - Control Column Support Bearing Installation, AMM TASK 27-31-54-400-801
- b) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) Do this check of the control wheel centering position. To do this, do this task: Control Wheel - Centering Check, AMM TASK 27-11-00-700-804.
- (a) If the control wheel returns to the neutral position after turning the control wheel clockwise and counterclockwise, then you corrected the fault. Do this step to complete the task:
- 1) Remove the pressure from the aileron hydraulic systems A and B. To depressurize, do this task: Pressure from the Aileron Hydraulic Systems A and B - Deactivation, AMM TASK 27-11-00-860-801.

————— **END OF TASK** —————

811. At The Adjusted Position, The Control Wheel Forces Are Light In One Or Both Directions - Fault Isolation

A. Description

- (1) This fault isolation procedure is used for when the force needed to turn the control wheel is light in the clockwise and/or counterclockwise directions.

B. Possible Causes

- (1) Body cable AA and AB adjustment
- (2) Aileron trim mechanism

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00786	FLIGHT CONTROL TRIM CONT AIL

D. Related Data

- (1) (SSM 27-10-01)
- (2) (SSM 27-11-11)

EFFECTIVITY
SIA ALL

27-11 TASKS 810-811

D633A103-SIA

Page 225
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

E. Initial Evaluation

- (1) Do a check of the aileron control wheel forces.



MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACE BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Pressurize the hydraulic systems A and B. To pressurize, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (b) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00786	FLIGHT CONTROL TRIM CONT AIL

- (c) Check the control wheel force. To check the force, do this task: Aileron Control Wheel Force Test, AMM TASK 27-11-00-700-805.
 - 1) If the control wheel force was correct, then there was an intermittent fault. Do this step to complete this task:
 - a) Remove the pressure from the aileron hydraulic systems A and B. To depressurize, do this task: Pressure from the Aileron Hydraulic Systems A and B - Deactivation, AMM TASK 27-11-00-860-801.
 - (d) If the control wheel force was not correct, then do the Fault Isolation Procedure.

F. Fault Isolation

- (1) Do this adjustment check of the left and right body cables AA and AB:
 - (a) Insert rig pin A/S-1 into the transfer mechanism.
 - 1) If rig pin A/S-1 does not easily install in the transfer mechanism, then do these steps:
 - a) Adjust the left and right body cables AA and AB. To adjust the cables, do this task: Aileron Cables Adjustment, AMM TASK 27-11-00-820-801.
 - b) Do the Repair Confirmation at the end of this task.
 - (b) If rig pin A/S-1 does easily install in the transfer mechanism, then continue.
 - (2) Do this check of the aileron trim mechanism:
 - (a) Move and hold both aileron trim switches on the P8 panel to the LEFT WING DOWN position and check the movement of the aileron trim actuator.

NOTE: Both switches must be operated at the same time.

 - 1) If the actuator movement is satisfactory, then check the aileron trim mechanism for loose or worn components. To do this, do this task: Aileron Transfer Mechanism Inspection, AMM TASK 27-11-61-210-801.
 - a) Replace the worn or loose components as necessary and then do the Repair Confirmation at the end of this task.

EFFECTIVITY
SIA ALL

27-11 TASK 811

D633A103-SIA

Page 226
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

G. Repair Confirmation

- (1) Do a check of the control wheel forces. To check this force, do this task: Aileron Control Wheel Force Test, AMM TASK 27-11-00-700-805.
 - (a) If the control wheel force is correct, then you corrected the fault. Do this step to complete the task:
 - 1) Remove hydraulics system A and B pressure. To depressurize, do this task: Pressure from the Aileron Hydraulic Systems A and B - Deactivation, AMM TASK 27-11-00-860-801.

————— **END OF TASK** —————

812. Aileron Left and Aileron Right Do Not Operate - Fault Isolation

A. Description

- (1) This fault isolation procedure is used when both left and right ailerons do not operate.

B. Possible Causes

- (1) Blockage in left body cables AA and AB.
- (2) Tension in the left body cables AA and AB.

C. Related Data

- (1) (SSM 27-10-01)
- (2) (SSM 27-11-11)

D. Initial Evaluation

- (1) Do this check of the aileron control system movement:



WARNING

MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACE BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Pressurize the hydraulic systems A and B. To pressurize, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (b) Move the captain's or first officer's control wheel fully clockwise, and check to make sure the left wing aileron moves down and the right wing aileron moves up.
- (c) Move the captain's or first officer's control wheel fully counterclockwise, and check to make sure the right wing aileron moves down and the left wing aileron moves up.
- (d) If both left and right wing ailerons operated correctly when the control wheel was turned clockwise and counterclockwise, then there was an intermittent fault. Do this step to complete this task:
 - 1) Remove the hydraulic systems A and B pressure. To depressurize, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
- (e) If the left and right ailerons did not operate, then do the Fault Isolation Procedure.

EFFECTIVITY
SIA ALL

27-11 TASKS 811-812

D633A103-SIA

Page 227
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

E. Fault Isolation Procedure

- (1) Do a check for a blockage in the left body cables AA and AB.
 - (a) If you find a blockage in body cables AA and AB, then remove the objects, and do the Repair Confirmation at the end of this task.
 - (b) If you did not find a blockage in the left body cables, then continue.
- (2) Do a tension check of the left body cables AA and AB. To check the tension, do this task: Aileron Cables Adjustment, AMM TASK 27-11-00-820-801.
 - (a) If you needed to adjust the cable tension, then do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) Do this check of the aileron control surface movement:



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- (a) Make sure the hydraulic systems A and B are pressurized. To pressurize, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (b) Move the captain's or first officer's control wheel fully clockwise check to make sure the left wing aileron moves up and the right wing aileron moves down.
- (c) Move the captain's or first officer's control wheel fully counterclockwise and check to make sure the right wing aileron moves down and the left wing aileron moves up.
- (d) If the left and right wing ailerons moved correctly, then you corrected the fault. Do this step to complete this task:
 - 1) Remove the hydraulic systems A and B pressure. To depressurize, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

————— **END OF TASK** —————

813. Captain's or First Officer's Control Wheel/Column Does Not Move Freely - Fault Isolation

A. Description

- (1) The flight crew use two conventional control wheels to control roll. A transfer mechanism supplies a mechanical link between the two control wheels. If the control wheel cannot move, the transfer mechanism permits the pilot to operate the other control wheel. If the right control wheel cannot move, the captain can operate the left control wheel after overriding the force of the torsion spring and the force of the feel and centering mechanism. If the left control wheel cannot move, the first officer can operate the right control wheel after overriding only the force of the torsion spring.
- (2) This fault isolation procedure is used when the Captain's or First Officer's control wheel does not move freely.

B. Possible Causes

- (1) Transfer cables ACBA and ACBB rigging
- (2) Body cables AA and AB rigging

EFFECTIVITY
SIA ALL

27-11 TASKS 812-813

D633A103-SIA

Page 228
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (3) Aileron feel and centering unit adjustment
- (4) Feel and centering unit cam or cam follower bearing
- (5) Aileron transfer mechanism bearing
- (6) Transfer mechanism cable rigging
- (7) Control wheel and control column friction
- (8) PCU control rod end damage
- (9) PCU control valve damage
- (10) Aileron trim mechanism adjustment
- (11) Aileron autopilot actuator adjustment
- (12) Aileron body quadrant friction
- (13) Body cables AA and AB interference.
- (14) Not sufficient lubrication on control column aileron transfer mechanism paddle.
- (15) Flight controls hydraulic module malfunction
- (16) Lack of lubrication.

C. Related Data

- (1) SSM 27-10-01
- (2) SSM 27-11-11

D. Circuit Breakers

- (1) Do this task: Supply Electrical Power, AMM TASK 24-22-00-860-811.
- (2) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	12	C00204	FLIGHT CONTROL SHUTOFF VALVES SPOILER
B	13	C00363	FLIGHT CONT SHUTOFF VALVES FLT CONT
C	13	C01074	FLIGHT CONT SHUTOFF VALVES FLT CONT
D	18	C00786	FLIGHT CONTROL TRIM CONT AIL

- (3) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	11	C00133	INDICATOR MASTER DIM DIM/TST CONT
D	12	C00310	INDICATOR MASTER DIM BAT
D	13	C00311	INDICATOR MASTER DIM BUS 1
D	14	C00312	INDICATOR MASTER DIM BUS 2
E	12	C00314	INDICATOR MASTER DIM SECT 2
E	13	C00315	INDICATOR MASTER DIM SECT 3
E	14	C00316	INDICATOR MASTER DIM SECT 4
E	16	C00196	LANDING GEAR ANTISKID INBD
E	18	C00195	LANDING GEAR ANTISKID OUTBD
F	11	C00317	INDICATOR MASTER DIM SECT 5
F	12	C00318	INDICATOR MASTER DIM SECT 6

EFFECTIVITY
SIA ALL

27-11 TASK 813

D633A103-SIA

Page 229
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (4) Make sure that this circuit breaker is open and has safety tag:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	9	C00440	FLIGHT CONTROL AUTO SPEED BRAKE

- (5) Make sure that this circuit breaker is closed:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	8	C00544	FLIGHT RECORDER POSITION SENSOR

E. Initial Evaluation

- (1) Set the aileron trim to zero.
- (2) Move the speedbrake handle to the down and locked position.
- (3) Verify that the thrust levers are at the idle position.
- (4) Do these steps to make sure the aileron control system is rigged correctly.
 - (a) Make sure you can freely install rig pin A/S-1 from rigging pin kit, SPL-1585 in the aileron transfer mechanism.
 - (b) Make sure you can freely install rig pin A/S-15 from rigging pin kit, SPL-1585 in the aileron trim actuator.
 - (c) Remove rig pins A/S-1 and A/S-15.
- (5) Do this check of the aileron control wheel and control column movement.



KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (a) Pressurize the hydraulic systems A and B. To pressurize them, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (b) Move the Captain's or First Officer's control wheel fully clockwise and then fully counterclockwise and make sure the control wheel moves freely.

NOTE: Do not turn the control wheel more than 20 degrees per second.
- (c) Move the Captain's or First Officer's control column fully forward and the fully aft and make sure the control column moves freely.
- (d) If the control wheel and control column moved freely, then there was an intermittent fault. Do this step to complete the task:
 - 1) Remove the hydraulic systems A and B pressure. To depressurize, do this task: Pressure from the Aileron Hydraulic Systems A and B - Deactivation, AMM TASK 27-11-00-860-801.
- (e) If the control wheel or control column did not move freely, then do the Fault Isolation Procedure.

EFFECTIVITY
SIA ALL

27-11 TASK 813

D633A103-SIA

Page 230
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

F. Fault Isolation Procedure

- (1) Do this task: Aileron Feel and Centering Unit Adjustment, AMM TASK 27-11-00-820-804.

NOTE: Typically, 3-4 threads of the eyebolts are visible beyond the adjustment nuts when the centering unit is adjusted correctly.

- (a) When you do the adjustment, do these steps:

- 1) Disconnect the springs from the centering unit.
- 2) Rotate the cam follower bearing.
- 3) Check the bearing outer race and cam surface for wear.
- 4) If the bearing or cam are worn, replace the worn parts.
 - a) These are the tasks to replace the bearing.
 - Cam Follower Bearing Removal, AMM TASK 27-11-81-000-802
 - Cam Follower Bearing Installation, AMM TASK 27-11-81-400-802
 - b) These are the tasks to replace the cam.
 - Aileron Feel and Centering Unit Removal, AMM TASK 27-11-81-000-801
 - Aileron Feel and Centering Unit Installation, AMM TASK 27-11-81-400-801
 - c) Do the Repair Confirmation at the end of this task.

- 5) If the bearing and cam are not worn, continue with the fault isolation.

- (2) Disconnect the aileron transfer cables, ACBA and ACBB, and do these steps:

- (a) Disconnect the aileron spring cartridge.



WARNING

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- (b) Pressurize hydraulic systems A and B. To pressurize them, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.

- (c) Turn the Captain's control wheel fully clockwise and counterclockwise.

NOTE: Do not turn the control wheel more than 20 degrees per second.

- (d) If the control wheel moves freely, do these steps:

- 1) Loosen the right side body cables, AA and AB, to 50 lbf (222 N) tension.
- 2) Turn the First Officer's control wheel fully clockwise and counterclockwise.

NOTE: Do not turn the control wheel more than 20 degrees per second.

- a) If the control wheel turns freely, do these steps:

- <1> Remove the pressure from hydraulic systems A and B. To remove pressure, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
- <2> Replace the aileron transfer mechanism. These are the tasks:
 - Aileron Transfer Mechanism Removal, AMM TASK 27-11-61-000-801
 - Aileron Transfer Mechanism Installation, AMM TASK 27-11-61-400-801

EFFECTIVITY
SIA ALL

27-11 TASK 813

D633A103-SIA

Page 231
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

- <3> Do the Repair Confirmation at the end of this task.
 - b) If the control wheel does not turn freely, do these steps:
 - <1> Remove the pressure from hydraulic systems A and B. To remove pressure, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
 - <2> Replace the control wheel bearing.
 - <3> Do the Repair Confirmation at the end of this task.
- (3) Remove the pressure from hydraulic systems A and B. To remove pressure, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
- (4) Do a visual check of the control rod ends of the PCU linkage for damage.
 - (a) If you find parts that were damaged or worn in the PCU linkage, then do these steps:
 - 1) Replace the PCU linkage. These are the tasks:
 - Aileron Power Control Unit Linkage Removal, AMM TASK 27-11-14-000-801
 - Aileron Power Control Unit Linkage Installation, AMM TASK 27-11-14-400-801
 - 2) Do the Repair Confirmation at the end of this task.
 - (b) If you do not find any worn or damaged parts in the PCU linkage, then continue with the fault isolation.
- (5) Do this check of the Primary and Secondary PCU input pogos to make sure that they are not rigged incorrectly and causing a force fight between the PCUs:
 - (a) Do a visual check of the PCU valve arm relative to the PCU housing. The valve arm must be centered between the stops.
 - 1) If the valve arm is not centered between the stops, adjust the valve arm to center it (AMM TASK 27-11-00-820-802).
 - 2) Do the Repair Confirmation at the end of this task.
- (6) Do a check of the PCU main control valve for excessive friction.
 - (a) Disconnect the 4 pogos from the aileron PCUs. To disconnect the pogos, do this task: Aileron Power Control Unit - Removal, AMM TASK 27-11-71-000-801.
 - (b) Install a force gauge, STD-1397 on the primary or secondary pogo attach point of the aileron PCU and check the breakout force of the PCU input valve.
 - (c) If the PCU valve breakout force is 4.0 lbf (17.8 N) or less, the PCU input valve friction is acceptable. Continue with the fault isolation.
 - (d) If the PCU valve breakout force is more than 4.0 lbf (17.8 N), do these steps:
 - 1) Repair or replace the PCU. These are the tasks:
 - Aileron Power Control Unit - Removal, AMM TASK 27-11-71-000-801
 - Aileron Power Control Unit - Installation, AMM TASK 27-11-71-400-801
 - 2) Do the Repair Confirmation at the end of this task.
- (7) Do this check of the Captain's control wheel.
 - (a) Disconnect the left side body cables AA and AB.
 - (b) Turn the control wheel fully clockwise and counterclockwise.
NOTE: Do not turn the control wheel more than 20 degrees per second.
 - (c) If the control wheel does not turn freely, do these steps.
 - 1) Replace the control wheel bearing.

EFFECTIVITY
SIA ALL

27-11 TASK 813

D633A103-SIA

Page 232
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 2) Do the Repair Confirmation at the end of this task.
- (d) If the control wheel turns freely, continue with the fault isolation.
- (8) Do the following checks of the aileron trim mechanism:
 - (a) Verify that the cam roller is not dirty and can turn freely. Clean as necessary.
 - (b) Verify that the cam surface is not dirty or corroded. Clean as necessary.
- (9) Do this check of the autopilot aileron actuator.
 - (a) Disconnect the autopilot aileron actuator input rod from the centering unit.
 - (b) Make sure the bearings in the input rod rotate freely.
 - (c) Move the input rod through its range of motion.
 - (d) Make sure the force needed to move the input rod is not more than 0.5 lbf (2.2 N).
 - 1) If the force needed to move the input rod is more than 0.5 lbf (2.2 N), do these steps:
 - a) Remove the autopilot aileron actuator input rod, which connects the autopilot actuators to the centering unit.
 - b) Remove the autopilot aileron actuator interconnect rod, which connects the two autopilot actuators.
 - c) Make sure the bearings in the connecting rods move freely.
 - d) For each of the autopilot aileron actuator levers, apply a force tangential to the lever to move it through its range of motion.
 - e) Make sure the force needed to move each lever is not more than 0.25 lbf (1.11 N).
 - f) If the force needed to move the lever is more than 0.25 lbf (1.11 N), do these steps:
 - <1> Replace the autopilot aileron actuator. These are the tasks:
 - Autopilot Aileron Actuator Removal, AMM TASK 22-11-25-000-801
 - Autopilot Aileron Actuator Installation, AMM TASK 22-11-25-400-801
 - <2> Do the Repair Confirmation at the end of this task.
 - 2) If the force needed to move the input rod is not more than 0.5 lbf (2.2 N), continue with the fault isolation.
 - (10) Make sure the aileron feel and centering unit turns freely.
 - (a) If the feel and centering unit does not turn freely, do these steps:
 - 1) Replace the feel and centering unit. These are the tasks:
 - Aileron Feel and Centering Unit Removal, AMM TASK 27-11-81-000-801
 - Aileron Feel and Centering Unit Installation, AMM TASK 27-11-81-400-801
 - 2) Do the Repair Confirmation at the end of this task.
 - (b) If the feel and centering unit turns freely, continue with the fault isolation.
 - (11) Do this check of the aileron body quadrant for excessive friction or binding.
 - (a) Turn the control quadrant and check for friction in the bearings and pressure seal of the control quadrant shaft.
 - 1) If you feel excessive friction, then do these steps:
 - a) Replace the aileron body quadrant (AMM TASK 27-11-81-000-801).

EFFECTIVITY
SIA ALL

27-11 TASK 813

D633A103-SIA

Page 233
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

- b) Do the Repair Confirmation at the end of this task.
 - 2) If you do not find excessive friction in the control quadrant, continue with the fault isolation.
- (12) Check for the following conditions in the left and right body cable runs:
 - (a) A cable pulley that cannot turn easily.
 - 1) Lift the cable slightly off of each pulley and turn the pulley in each direction. If the pulley does not easily turn, the pulley needs to be replaced. Replace as necessary, and do the Repair Confirmation at the end of this task.

NOTE: Inspection of the cable body run requires removing the floor panels or the cargo liners.
 - (b) A bent cable pulley.
 - 1) Lift the cable slightly off of each pulley and turn the pulley one revolution in each direction. If the pulley moves out of alignment with the cable or if the cable touches the pulley guides as the pulley turns, the pulley is bent and needs to be replaced. Replace the pulley as necessary, and do the Repair Confirmation at the end of this task.
 - (c) Unwanted objects (such as insulation blankets, cargo liners, tools, etc.) interfering with the cable run.
 - 1) Locate and remove any unwanted objects, as necessary. Do the Repair Confirmation at the end of this task.
- (13) Make sure the control column paddle is lubricated.
 - (a) Examine the control column paddle to make sure lubricant is applied to it.
 - (b) If there is no lubricant on the paddle, apply solid film lubricant, D00113 or lubricant, D50108, as applicable. Refer to CMM 27-16-01.
 - 1) If necessary, remove the Aileron Transfer Mechanism to get access to the paddle and fork assembly.
 - Aileron Transfer Mechanism Removal, AMM TASK 27-11-61-000-801
 - Aileron Transfer Mechanism Installation, AMM TASK 27-11-61-400-801
 - (c) Do the Repair Confirmation at the end of this task.
- (14) If no problem is found with the control system components, replace the flight controls hydraulic module. These are the tasks:
 - Flight Controls Hydraulic Module Removal, AMM TASK 27-09-21-000-801
 - Flight Controls Hydraulic Module Installation, AMM TASK 27-09-21-400-801
 - (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Reconnect all linkages in the aileron control system.
 - (a) Aileron spring cartridge
 - (b) Aileron PCU linkage
 - (c) Aileron PCU pogos
 - (d) Autopilot aileron actuator input rod
- (2) Reconnect all cables in the aileron control system.
 - (a) Left and right body cables AA and AB

EFFECTIVITY
SIA ALL

27-11 TASK 813

D633A103-SIA

Page 234
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (b) Aileron transfer cables ACBA and ACBB
- (3) Make sure the cables are at the correct tension.
 - (a) If necessary, do this task: Aileron Cables Adjustment, AMM TASK 27-11-00-820-801.
- (4) Do this check of the aileron control wheel and column movement:



WARNING

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- (a) Make sure hydraulic systems A and B are pressurized. To pressurize them, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (b) Turn the Captain's, then the First Officer's, control wheel fully clockwise and then fully counterclockwise. Using the force gauge, STD-1397, push down on the handgrip knobs of the control wheel. Make sure that no excessive force is required to turn the control wheel. Control wheel forces should not exceed the values in Table 201.

Table 201 Force Required at Control Wheel Positions

Control Wheel Position Degrees	Force Required pound-inches (newton-meters)
Breakout	29.0 (3.28)
5	35.5 (4.01)
20	56.0 (6.33)
40	89.5 (10.11)
75	123.5 (13.96)

- (c) Move the Captain's then the First Officer's control column fully forward and then fully aft and check to make sure the control column moves smoothly.
- (d) If the control wheel and control column move smoothly, then you corrected the fault.
 - 1) Remove pressure from the hydraulics A and B systems. To remove the hydraulic pressure, do this task: Pressure from the Aileron Hydraulic Systems A and B - Deactivation, AMM TASK 27-11-00-860-801.
 - 2) Restore the electrical system to its pre-test configuration, as necessary. Do this task: Remove Electrical Power, AMM TASK 24-22-00-860-812.
- (e) If the control wheel and control column did not move smoothly, then continue the Fault Isolation Procedure at the subsequent step.

END OF TASK

EFFECTIVITY
SIA ALL

27-11 TASK 813

D633A103-SIA

Page 235
Oct 15/2023



737-600/700/800/900
FAULT ISOLATION MANUAL

814. Wing Down Aileron Trim Does Not Operate Left or Wing Down Aileron Trim Does Not Operate Right - Fault Isolation

A. Description

- (1) In manual aileron trim operation, the pilot trims out unwanted control wheel forces with aileron trim switches and the trim actuator. When the pilot moves the aileron trim switches on the aisle stand, the switches send a signal to the aileron trim actuator. The trim actuator moves the feel and centering. The feel and centering unit provides input to the aileron PCU which mechanically moves the aileron through the wing cables and quadrant.
- (2) This fault isolation procedure is used when the ailerons do not operate when the aileron trim control switches are held in the LEFT WING DOWN position or when the aileron does not operate when the aileron trim control switches are held in the RIGHT WING DOWN position.

B. Possible Causes

- (1) Aileron trim actuator, M1124
- (2) Wiring problem
- (3) Aileron trim control switch on the aileron/rudder trim control module, M1126

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00786	FLIGHT CONTROL TRIM CONT AIL

D. Related Data

- (1) (SSM 27-10-01)
- (2) (SSM 27-11-11)
- (3) (WDM 27-11-11)

E. Initial Evaluation

- (1) Do this check of the aileron trim switch operation:



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- (a) Pressurize the hydraulic systems A and B. To pressurize them, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (b) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00786	FLIGHT CONTROL TRIM CONT AIL

- (c) For the left wing aileron trim system that does not operate, do these steps:

EFFECTIVITY
SIA ALL

27-11 TASK 814

D633A103-SIA

Page 236
Oct 15/2023



737-600/700/800/900 FAULT ISOLATION MANUAL

- 1) Move both aileron trim switches on the P8 panel to the LEFT WING DOWN position.
NOTE: Both switches must be operated at the same time.
- 2) If the left and right wing ailerons do not move, then do the Fault Isolation Procedure below.
- 3) If the left and right wing ailerons do move, then there was an intermittent fault. Do this step to complete this task:
 - a) Remove the hydraulic systems A and B pressure. To remove pressure, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
- (d) For the right wing aileron trim system that does not operate, do these steps:
 - 1) Move both aileron trim switches on the P8 panel to the RIGHT WING DOWN position.
NOTE: Both switches must be operated at the same time.
 - 2) If the left and right wing ailerons do not move, then do the Fault Isolation Procedure below.
 - 3) If the left and right wing ailerons do move, then there was an intermittent fault. Do this step to complete the task:
 - a) Remove the hydraulic systems A and B pressure. To remove pressure, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

F. Fault Isolation Procedure

- (1) Do this check of the aileron trim actuator, M1124:

- (a) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00786	FLIGHT CONTROL TRIM CONT AIL

- (b) Disconnect connector D2928 from the aileron trim actuator, M1124.
 - (c) Close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00786	FLIGHT CONTROL TRIM CONT AIL

- (d) Do these steps if the left aileron trim system did not operate:
 - 1) Move and hold the aileron trim switches on the P8 panel to the LEFT WING DOWN position.
 - 2) Make sure there is 115v AC between pin 3 and pin 2 of connector D2928.
 - 3) If there is 115v AC between pin 3 and pin 2 of connector D2928, then do these steps:
 - a) Release the aileron trim switches.
 - b) Replace the aileron trim actuator, M1124. These are the tasks:
 - Aileron Trim Actuator Removal, AMM TASK 27-11-54-000-801
 - Aileron Trim Actuator Installation, AMM TASK 27-11-54-400-801
 - c) Do the Repair Confirmation at the end of this task.
 - 4) If there is not 115v AC between pin 3 and pin 2 of connector D2928, then release the aileron trim switches and continue.

EFFECTIVITY
SIA ALL

27-11 TASK 814

D633A103-SIA

Page 237
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (e) Do these steps if the right aileron trim system is not operating:
- 1) Move and hold the aileron trim switches on the P8 panel to the RIGHT WING DOWN position.
 - 2) Make sure there is 115v AC between pin 1 and pin 2 of connector D2928.
 - 3) If there is 115v AC between pin 1 and pin 2 of connector D2928, then do these steps:
 - a) Release the aileron trim switches.
 - b) Replace the aileron trim actuator, M1124. These are the tasks:
 - Aileron Trim Actuator Installation, AMM TASK 27-11-54-400-801
 - Aileron Trim Actuator Removal, AMM TASK 27-11-54-000-801
 - c) Do the Repair Confirmation at the end of this task.
 - 4) If there is not 115v AC between pin 1 and pin 2 of connector D2928, then release the aileron trim switches and then continue.
- (f) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00786	FLIGHT CONTROL TRIM CONT AIL

- (g) Re-connect connector D2928 to the aileron trim actuator, M1124.
- (2) Do this check of the wiring:
- (a) Disconnect connector D2930 from the aileron/rudder trim control panel.
 - (b) Close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00786	FLIGHT CONTROL TRIM CONT AIL

- (c) Move and hold the aileron trim switches to the RIGHT WING DOWN position.
- (d) Make sure there is 115v AC between pin 10 pin 8 of D2930.
 - 1) If there is not 115v AC, then do these steps:
 - a) Do a wiring check between structure ground and pin 8 of connector D2930.
 - b) Do a wiring check between the circuit breaker 6D18, FLIGHT CONTROL TRIM CONT AIL, and pin 10 of D2930.
 - c) If you needed to repair any of these circuits, then do the Repair Confirmation at the end of this task.
 - 2) If there is 115v AC, then continue.
- (e) Open this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00786	FLIGHT CONTROL TRIM CONT AIL

- (f) Re-connect connector D2930 to the aileron/rudder trim control panel.
- (3) Do this check of the aileron trim control switches:
- (a) Remove connector D40222P from the E4-2 shelf.

EFFECTIVITY
SIA ALL

27-11 TASK 814



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (b) Close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00786	FLIGHT CONTROL TRIM CONT AIL

- (c) Move and hold the aileron trim switches to the RIGHT WING DOWN position.
- (d) Do a check for 115v AC between pins A3 and A1 of D40222P.
- (e) Release the aileron trim switches.
- (f) Move and hold the aileron trim switches to the LEFT WING DOWN position.
- (g) Do a check for 115v AC between pins A2 and A1 of D40222P.
- (h) Release the aileron trim switches.
- (i) If there is not 115v AC between pins A2 and A1 or if there is not 115v AC between pins A3 and A1, then do these steps:
- 1) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00786	FLIGHT CONTROL TRIM CONT AIL

- 2) Replace the aileron trim control switch. These are the tasks:
- Trim Control Switches Removal, AMM TASK 27-11-94-000-802
 - Trim Control Switches Installation, AMM TASK 27-11-94-400-802
- 3) Re-connect connector D40222P in the E4-2 shelf.
- 4) Close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00786	FLIGHT CONTROL TRIM CONT AIL

- 5) Do the Repair Confirmation at the end of this task.
- (j) If there is 115v AC between pins A3 and A1, and between pins A2 and A1 of D40222P, then continue.
- (4) Do a wiring check between these pins of connector D40222P at the E4-2 shelf and connector D2928 at the aileron trim actuator.

D40222P	D2928
pin A2	pin 3
pin A1	pin 2
pin A3	pin 1

- (a) If you needed to repair the wiring, then do the Repair Confirmation at the end of this task.
- (b) Open this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00786	FLIGHT CONTROL TRIM CONT AIL

- (c) Re-connect connector D40222P and connector D2928.

EFFECTIVITY
SIA ALL

27-11 TASK 814

D633A103-SIA

Page 239
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (d) Close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00786	FLIGHT CONTROL TRIM CONT AIL

G. Repair Confirmation

- (1) Do this check of the aileron trim switch system:



WARNING

MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Make sure the hydraulic systems A and B are pressurized. To pressurize them, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.

- (b) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00786	FLIGHT CONTROL TRIM CONT AIL

- (c) To make sure the left aileron trim switch operates, do these steps:

- 1) Move both aileron trim switches on the P8 panel to the LEFT WING DOWN position.

NOTE: Both switches must be operated at the same time.

- 2) If the left and right wing ailerons move, then you corrected the fault. Do this step to complete this task:

- a) Remove the hydraulic systems A and B pressure. To remove pressure, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

- (d) To make sure the right aileron trim switch operates, do these steps:

- 1) Move both aileron trim switches on the P8 panel to the RIGHT WING DOWN position.

NOTE: Both switches must be operated at the same time.

- 2) If the left and right wing ailerons move, then you corrected the fault. Do this step to complete this task:

- a) Remove the hydraulic systems A and B pressure. To remove pressure, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

————— **END OF TASK** —————

815. Wing Down Aileron Trim Does Not Operate Left and Right - Fault Isolation

A. Description

- (1) In manual aileron trim operation, the pilot trims out unwanted control wheel forces with aileron trim switches and the trim actuator. When the pilot moves the aileron trim switches on the aisle stand, the switches send a signal to the aileron trim actuator. The trim actuator moves the feel and centering unit. This movement goes to the aileron PCU. Aileron PCU movement mechanically moves the aileron through the wing cables and quadrant.

EFFECTIVITY
SIA ALL

27-11 TASKS 814-815

D633A103-SIA

Page 240
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (2) This fault isolation procedure is used when the ailerons fail to operate for LEFT WING DOWN and RIGHT WING down aileron trim switch commands.

B. Possible Causes

- (1) Aileron trim actuator, M1124
- (2) Aileron trim control switch on the aileron/rudder trim control module, M1126
- (3) Wiring problem

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00786	FLIGHT CONTROL TRIM CONT AIL

D. Related Data

- (1) (SSM 27-10-01)
- (2) (SSM 27-11-11)
- (3) (WDM 27-11-11)

E. Initial Evaluation

- (1) Do this check of the aileron trim switch operation:



MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Pressurize the hydraulic systems A and B. To pressurize them, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (b) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00786	FLIGHT CONTROL TRIM CONT AIL

- (c) Move both aileron trim switches on the P8 panel to the LEFT WING DOWN position and make sure the left and right wing ailerons move.
NOTE: Both switches must be operated at the same time.
- (d) Move both aileron trim switches on the P8 panel to the RIGHT WING DOWN position and make sure the left and right wing ailerons move.
NOTE: Both switches must be operated at the same time.
- (e) If the left and right wing ailerons do not move when the aileron switches were moved to the LEFT WING DOWN and RIGHT WING DOWN positions, then the do the Fault Isolation Procedure below.
- (f) If the left and right wing ailerons do move correctly when the aileron switches were held in the LEFT WING DOWN and RIGHT WING DOWN positions, then there was an intermittent fault. Do this step to complete the task:

EFFECTIVITY
SIA ALL

27-11 TASK 815

D633A103-SIA

Page 241
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 1) Remove the hydraulic systems A and B pressure. To remove the pressure, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

F. Fault Isolation Procedure

- (1) Do this check of the aileron trim actuator, M1124:

- (a) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00786	FLIGHT CONTROL TRIM CONT AIL

- (b) Disconnect connector D2928 from the aileron trim actuator, M1124.

- (c) Close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00786	FLIGHT CONTROL TRIM CONT AIL

- (d) Move and hold the aileron trim switches on the P8 panel to the RIGHT WING DOWN position.

- (e) Make sure there is 115v AC between pins 1 and 2 of connector D2928.

- (f) Move and hold the aileron trim switches on the P8 panel to the LEFT WING DOWN position.

- (g) Make sure there is 115v AC between pins 3 and 2 of connector D2928

- (h) If there is 115v AC between pins 1 and 2 and 115v AC between pins 3 and 2 above, then do these steps:

- 1) Release the aileron trim switches.
 - 2) Replace the aileron trim actuator, M1124. These are the tasks:
 - Aileron Trim Actuator Removal, AMM TASK 27-11-54-000-801
 - Aileron Trim Actuator Installation, AMM TASK 27-11-54-400-801

- 3) Do the Repair Confirmation section at the end of this task.

- (i) If there is not 115v AC between pin 1 and pin 2 and between pin 3 and pin 2 of connector D2928, then continue.

- (j) Release the aileron trim switches.

- (k) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00786	FLIGHT CONTROL TRIM CONT AIL

- (l) Re-connect connector D2928 to the aileron trim actuator, M1124, then continue.

- (2) Do a check of the aileron trim switch outputs from the aileron/rudder trim control module, M1126:

- (a) Make sure that this circuit breaker is open:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00786	FLIGHT CONTROL TRIM CONT AIL

EFFECTIVITY
SIA ALL

27-11 TASK 815

D633A103-SIA

Page 242
Oct 15/2023



737-600/700/800/900 FAULT ISOLATION MANUAL

- (b) Remove connector D40222P from the E4-2 shelf.
- (c) Close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00786	FLIGHT CONTROL TRIM CONT AIL

- (d) Move and hold the aileron trim switches to the RIGHT WING DOWN position.
 - (e) Make sure there is 115v AC between pins A3 and A1 of connector D40222P.
 - (f) Move and hold the aileron trim switches to the LEFT WING DOWN position.
 - (g) Make sure there is 115v AC between pins A2 and A1 of connector D40222P.
 - (h) If there is 115v AC between pins A3 and A1 and pins A2 and A1, then skip the next step.
- (3) Do a check of the aileron/rudder trim control switches and wiring.
- (a) Open this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00786	FLIGHT CONTROL TRIM CONT AIL

- (b) Remove connector D2930 from the P8-43 Panel.
- (c) Close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00786	FLIGHT CONTROL TRIM CONT AIL

- (d) Do a check of the wire between pin 8 of connector D2930 and structure ground.
 - 1) Repair the circuit, if it is necessary.
- (e) Do a check of the circuit between circuit breaker 6D18, FLIGHT CONTROL TRIM CONT AIL, and pin 10 of connector D2930.
- (f) If you needed to repair these circuits, then do these steps:
 - 1) Open this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00786	FLIGHT CONTROL TRIM CONT AIL

- 2) Re-connect connector D2930 to the P8-43 Panel.
- 3) Close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00786	FLIGHT CONTROL TRIM CONT AIL

- 4) Do the Repair Confirmation at the end of this task.
- (g) If you do not find a problem with these circuits, then do these steps:
 - 1) Replace the aileron switches. These are the tasks:

EFFECTIVITY
SIA ALL

27-11 TASK 815

D633A103-SIA

Page 243
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- Trim Control Switches Removal, AMM TASK 27-11-94-000-802
- Trim Control Switches Installation, AMM TASK 27-11-94-400-802

- 2) Do the Repair Confirmation at the end of this task.
- (4) Do a wiring check between the aileron trim switch and the aileron trim actuator.
- (a) Open this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00786	FLIGHT CONTROL TRIM CONT AIL

- (b) Disconnect connector D40222P at the E4-2 shelf and disconnect connector D2928 from the aileron trim actuator.
- (c) Close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00786	FLIGHT CONTROL TRIM CONT AIL

- (d) Do a wiring check between these pins of connector D40222P at the E4-2 shelf, and connector D2928 at the aileron trim actuator.

D40222P		D2928
pin A3	.....	pin 1
pin A2	.....	pin 3
pin A1	.....	pin 2

- 1) If you needed to repair any of these circuits, then do the Repair Confirmation at the end of this task.
- (e) Do a check to make sure the pins and sockets of connectors D40222P, D2928, and the mating connectors, are not damaged.
- 1) If you needed to repair any pins or sockets, then do the Repair Confirmation at the end of this task.
- (f) Open this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00786	FLIGHT CONTROL TRIM CONT AIL

- (g) Re-connect connector D2930 and connector D2928.
- (h) Close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00786	FLIGHT CONTROL TRIM CONT AIL

EFFECTIVITY
SIA ALL

27-11 TASK 815

D633A103-SIA

Page 244
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

G. Repair Confirmation

- (1) Do this check of the aileron trim switch operation:



WARNING

MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Make sure hydraulic systems A and B are pressurized. If not pressurized, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.

- (b) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	18	C00786	FLIGHT CONTROL TRIM CONT AIL

- (c) Move and hold both aileron trim switches on the P8 panel to the RIGHT WING DOWN position and make sure the left and right wing ailerons move correctly.

NOTE: Both switches must be operated at the same time.

- (d) Move and hold both aileron trim switches on the P8 panel to the LEFT WING DOWN position and make sure the left and right ailerons move correctly.

NOTE: Both switches must be operated at the same time.

- (e) If the left and right wing ailerons moved correctly when the aileron trim switches were held to the LEFT WING DOWN and RIGHT WING DOWN, then you corrected the fault. Do this step to complete the task.

- 1) Remove the hydraulic systems A and B pressure. To remove pressure, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

END OF TASK

816. High Aileron Trim - Fault Isolation

A. Description

- (1) The lateral trim that is necessary to keep straight and level flight during cruise, and with the flaps extended, must not be more than the limits shown in Table 202.

NOTE: There are no specific limits or requirements for lateral trim outside of these flight conditions.

NOTE: For High Rudder Trim see High Rudder Trim - Fault Isolation, 27-21 TASK 818.

Table 202 Lateral Trim Limits

Flight Condition	Aileron Trim	Rudder Trim	Airspeed	Altitude (feet)
Cruise (Flaps UP/Gear UP)	0.75 unit	0.5 unit left 1.0 unit right	0.78 mach	37,000 or higher
Low Speed (Flaps UP/Gear UP)	0.75 unit	0.75 unit	250 kias	10,000 to 17,000

EFFECTIVITY
SIA ALL

27-11 TASKS 815-816

D633A103-SIA

Page 245
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

Table 202 Lateral Trim Limits (Continued)

Flight Condition	Aileron Trim	Rudder Trim	Airspeed	Altitude (feet)
Flaps Extended to 1 unit (Gear UP)	1.0 unit ^{*[1]}	1.0 unit	Flaps 1 Maneuver Speed	10,000 to 17,000
Flaps Extended to 15 units (Landing Gear Extended)	1.0 unit ^{*[1] [2]}	1.0 unit	Flaps 15 Maneuver Speed	10,000 to 17,000
Flaps Extended to 40 units (Landing Gear Extended)	1.3 unit ^{*[2]}	1.0 unit	Vref+5	10,000 to 17,000

^{*[1]} The aileron trim change between flap positions 1 and 15 must be less than 1.0 unit.

^{*[2]} The aileron trim change between flap positions 15 and 40 must be less than 1.4 units. An aileron trim requirement shift from side to side is acceptable, provided it is within the limit of 1.4 units.

B. Initial Evaluation

- (1) Do this task: Trailing Edge Flap Drive System Inspection, AMM TASK 27-51-00-210-801.
 - (a) Replace or repair any damaged parts.
- (2) Do this task: Trailing Edge Flap Actuation System Inspection, AMM TASK 27-51-00-210-802.
 - (a) Replace or repair any damaged parts.
- (3) Make sure the ailerons are adjusted correctly. To check the ailerons, do this task: Do A Check of the Aileron System Adjustment, AMM TASK 27-11-00-820-805.

NOTE: Make sure the aileron downrig is symmetric between the left and right aileron in the limit of 0.10 in. (2.54 mm).
- (4) Make sure the rudder is adjusted correctly. To check the rudder, do this task: Rudder Centering Test, AMM TASK 27-21-00-700-815-002.
- (5) Do a test flight to find the lateral trim necessary for straight and level flight in the following conditions:

NOTE: Use the captains control wheel to determine the trim limits. One unit of aileron trim is equal to six degrees of control wheel rotation.

NOTE: There are no specific limits or requirements for lateral trim outside of these flight conditions.

- (a) To find the aileron trim necessary during cruise, fly with these conditions:
 - 1) Flight speed: Approximately 0.78 mach.
 - 2) Altitude: 37,000 feet or higher.
 - 3) Fuel load: Balanced in the limit of 150 pounds (68 kilograms).
 - 4) Throttles: Balanced thrust in the limit of 1 percent N1 difference, with autothrottles OFF.
 - 5) Autopilot engaged with in HDG SEL, with the wings level.
- (b) Apply rudder trim to get zero heading change.

NOTE: Keep this rudder trim position through the rest of the trim conditions.
- (c) Disengage the autopilot.

EFFECTIVITY
SIA ALL

27-11 TASK 816

D633A103-SIA

Page 246
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (d) Apply aileron trim to keep the wings level and maintain zero heading change.
- (e) Write down the amount and direction of aileron trim necessary to maintain straight and level flight.

NOTE: This is the trim for the Cruise condition.

- (f) To find the aileron trim necessary for low speed cruise, and with the flaps extended, fly with these conditions:
 - 1) Altitude: Between 10,000 to 17,000 feet.
 - 2) Fuel load: Balanced in the limit of 150 pounds (68 kilograms).
 - 3) Throttles: Balanced thrust in the limit of 1 percent N1 difference, with autothrottles OFF.
 - 4) Autopilot OFF.
- (g) Fly at 250 kias, with the flaps retracted.
- (h) Apply rudder trim to get zero heading change.
- (i) Apply aileron trim to keep the wings level and maintain zero heading change.
- (j) Write down the amount and direction of aileron trim necessary to maintain straight and level flight.

NOTE: This is the trim for the Low Speed.

- (k) Change the airspeed to flaps 1 maneuvering speed, and extend the flaps to the 1-unit position.
- (l) Apply rudder trim to get zero heading change.
- (m) Apply aileron trim to keep the wings level and maintain zero heading change.
- (n) Write down the amount and direction of aileron trim necessary to maintain straight and level flight.

NOTE: This is the trim for the flaps 1 unit.

- (o) Change the airspeed to flaps 15 maneuvering speed, and extend the flaps to the 15-unit position, and extend the landing gear.
- (p) Apply rudder trim to get zero heading change.
- (q) Apply aileron trim to keep the wings level and maintain zero heading change.
- (r) Write down the amount and direction of aileron trim necessary to maintain straight and level flight.

NOTE: This is the trim for the flaps 15 units.

- (s) Change the airspeed to Vref +5 knots, and extend the flaps to the 40-unit position.
- (t) Apply rudder trim to get zero heading change.
- (u) Apply aileron trim to keep the wings level and maintain zero heading change.
- (v) Write down the amount and direction of aileron trim necessary to maintain straight and level flight.

NOTE: This is the trim for the flaps 40 units.

- (6) Adjustment of the lateral trim is necessary when the trim is not in the limits shown in Table 202. To adjust the lateral trim, do this task: Trailing Edge Flap Adjustment for Lateral Trim and Test, AMM TASK 27-09-71-820-801.

———— **END OF TASK** ————

EFFECTIVITY
SIA ALL

27-11 TASK 816

D633A103-SIA

Page 247
Oct 15/2021



737-600/700/800/900
FAULT ISOLATION MANUAL

801. Rudder Trim Does Not Operate Left - Fault Isolation

A. Description

- (1) The pilots trim out unwanted rudder pedal forces with the rudder trim switches and rudder trim actuator. When the pilots move the rudder trim switches on the aisle stand, the switches send a signal to the rudder trim actuator. The trim actuator moves the rudder feel and centering unit. This movement goes to the rudder PCU. Rudder PCU movement mechanically moves the rudder.
- (2) The rudder trim knob mechanically connects to the two rudder trim switches. They are part of the aileron/rudder trim control module.
- (3) The pilot controls the rudder trim with the rudder trim knob. The rudder trim switches directly control the rudder trim actuator to move left or right.

B. Possible Causes

- (1) Wiring problem
- (2) Aileron/rudder trim control module, M1126
- (3) Rudder Trim Actuator, M1125

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	19	C00787	FLIGHT CONTROL TRIM CONT RUD

D. Related Data

- (1) (SSM 27-21-11)
- (2) (WDM 27-21-11)

E. Initial Evaluation

- (1) Do a check of the rudder trim system:



WARNING

MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDER, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Pressurize the rudder hydraulic systems A and B. To pressurize them, do this task: Rudder Hydraulic System A, B, or Standby Pressurization, AMM TASK 27-21-00-800-801.
- (b) Turn the rudder trim knob to the NOSE LEFT position.
- (c) If the rudder does not move left, then do the Fault Isolation Procedure below.
- (d) If the rudder moves left, then there was an intermittent fault. Do this step to complete the task:
 - 1) Do this task: Put the Rudder Hydraulic systems A, B, and Standby Back to the Condition Before the Pressurization, AMM TASK 27-21-00-840-801.

EFFECTIVITY
SIA ALL

27-21 TASK 801

D633A103-SIA

Page 201
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

F. Fault Isolation Procedure

- (1) Do this check of the rudder trim actuator, M1125:
 - (a) Disconnect connector D2932 from the rudder trim actuator, M1125.
 - (b) Turn and hold the rudder trim knob to the NOSE LEFT position.
 - (c) Do a check for 115v AC from pin 2 to pin 13 of connector D2932 (WDM 27-21-11).
 - (d) If there is 115v AC at pin 2 of connector D2932, then do these steps:
 - 1) Release the rudder trim knob.
 - 2) Replace the rudder trim actuator, M1125. These are the tasks:
 - Rudder Trim Actuator Removal, AMM TASK 27-21-87-000-801
 - Rudder Trim Actuator Installation, AMM TASK 27-21-87-400-801
 - 3) Do the Repair Confirmation at the end of this task.
 - (e) If there is not 115v AC at pin 2 of connector D2932, then continue.
 - 1) Release the rudder trim knob.
- (2) Do this wiring check:
 - (a) Remove the aileron/rudder trim control module, M1126. To remove it, do this task: Aileron and Rudder Trim Control Module Removal, AMM TASK 27-11-94-000-801.
 - (b) Do a wiring check between these pins of connector D3116 at the aileron/rudder trim panel, P8-43 and connector D2932 at the rudder trim actuator, M1125 (WDM 27-21-11):

D3116	D2932
pin 12	pin 2
 - (c) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-connect connector D2932.
 - 3) Re-install the aileron/rudder trim control module, M1126. To install it, do this task: Aileron and Rudder Trim Control Module Installation, AMM TASK 27-11-94-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
 - (d) If you do not find a problem with the wiring, then continue.
 - 1) Re-connect connector D2932.
- (3) Install a new aileron/rudder trim control module, M1126. To install it, do this task: Aileron and Rudder Trim Control Module Installation, AMM TASK 27-11-94-400-801.
 - (a) Do the Repair Confirmation at the end of this task.

EFFECTIVITY
SIA ALL

27-21 TASK 801

D633A103-SIA

Page 202
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

G. Repair Confirmation

- (1) Do a check of the rudder trim system:



WARNING

MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDER, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Pressurize the rudder hydraulic systems A and B. To pressurize them, do this task: Rudder Hydraulic System A, B, or Standby Pressurization, AMM TASK 27-21-00-800-801.
- (b) Turn the rudder trim knob to the NOSE LEFT position.
- (c) If the rudder moves left, then you corrected the fault. Do this step to complete the task:
 - 1) Do this task: Put the Rudder Hydraulic systems A, B, and Standby Back to the Condition Before the Pressurization, AMM TASK 27-21-00-840-801.

END OF TASK

802. Rudder Trim Does Not Operate Right - Fault Isolation

A. Description

- (1) The pilots trim out unwanted rudder pedal forces with the rudder trim switches and rudder trim actuator. When the pilots move the rudder trim switches on the aisle stand, the switches send a signal to the rudder trim actuator. The trim actuator moves the rudder feel and centering unit. This movement goes to the rudder PCU. Rudder PCU movement mechanically moves the rudder.
- (2) The rudder trim knob mechanically connects to the two rudder trim switches. They are part of the aileron/rudder trim control module.
- (3) The pilot controls the rudder trim with the rudder trim knob. The rudder trim switches directly control the rudder trim actuator to move left or right.

B. Possible Causes

- (1) Wiring problem
- (2) Aileron/rudder trim control Module, M1126
- (3) Rudder trim actuator, M1125

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	19	C00787	FLIGHT CONTROL TRIM CONT RUD

D. Related Data

- (1) (SSM 27-21-11)
- (2) (WDM 27-21-11)

EFFECTIVITY
SIA ALL

27-21 TASKS 801-802

D633A103-SIA

Page 203
Oct 15/2021

737-600/700/800/900
FAULT ISOLATION MANUAL

E. Initial Evaluation

- (1) Do a check of the rudder trim system:



WARNING

MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDER, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Pressurize the rudder hydraulic systems A and B. To pressurize them, do this task: Rudder Hydraulic System A, B, or Standby Pressurization, AMM TASK 27-21-00-800-801.
- (b) Turn the rudder trim knob to the NOSE RIGHT position.
- (c) If the rudder does not move right, then do the Fault Isolation Procedure below.
- (d) If the rudder moves right, then there was an intermittent fault. Do this step to complete the task:
 - 1) Do this task: Put the Rudder Hydraulic systems A, B, and Standby Back to the Condition Before the Pressurization, AMM TASK 27-21-00-840-801.

F. Fault Isolation Procedure

- (1) Do this check of the rudder trim actuator, M1125:
 - (a) Disconnect connector D2932 from the rudder trim actuator, M1125.
 - (b) Turn and hold the rudder trim knob to the NOSE RIGHT position.
 - (c) Do a check for 115v AC from pin 3 to pin 13 of connector D2932 (WDM 27-21-11).
 - (d) If there is 115v AC at pin 3 of connector D2932, then do these steps:
 - 1) Release the rudder trim knob.
 - 2) Replace the rudder trim actuator, M1125. These are the tasks:
 - Rudder Trim Actuator Removal, AMM TASK 27-21-87-000-801
 - Rudder Trim Actuator Installation, AMM TASK 27-21-87-400-801
 - 3) Do the Repair Confirmation at the end of this task.
 - (e) If there is not 115v AC at pin 3 of connector D2932, then continue.
 - 1) Release the rudder trim knob.
- (2) Do this wiring check:
 - (a) Remove the aileron/rudder trim control module, M1126. To remove it, do this task: Aileron and Rudder Trim Control Module Removal, AMM TASK 27-11-94-000-801.
 - (b) Do a wiring check between these pins of connector D3116 at the aileron/rudder trim panel, P8-43 and connector D2932 at the rudder trim actuator, M1125 (WDM 27-21-11):

D3116

pin 8

D2932

pin 3

- (c) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-connect connector D2932.

EFFECTIVITY
SIA ALL

27-21 TASK 802

D633A103-SIA

Page 204
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 3) Re-install the aileron/rudder trim control module, M1126. To install it, do this task: Aileron and Rudder Trim Control Module Installation, AMM TASK 27-11-94-400-801.
- 4) Do the Repair Confirmation at the end of this task.
- (d) If you do not find a problem with the wiring, then continue.
 - 1) Re-connect connector D2932.
- (3) Install a new aileron/rudder trim control module, M1126. To install it, do this task: Aileron and Rudder Trim Control Module Installation, AMM TASK 27-11-94-400-801.
- (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do a check of the rudder trim system:



WARNING

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- (a) Pressurize the rudder hydraulic systems A and B. To pressurize them, do this task: Rudder Hydraulic System A, B, or Standby Pressurization, AMM TASK 27-21-00-800-801.
- (b) Turn the rudder trim knob to the NOSE RIGHT position.
- (c) If the rudder moves right, then you corrected the fault. Do this step to complete the task:
 - 1) Do this task: Put the Rudder Hydraulic systems A, B, and Standby Back to the Condition Before the Pressurization, AMM TASK 27-21-00-840-801.

END OF TASK

803. Rudder Trim Does Not Operate - Fault Isolation

A. Description

- (1) The pilots trim out unwanted rudder pedal forces with the rudder trim switches and rudder trim actuator. When the pilots move the rudder trim switches on the aisle stand, the switches send a signal to the rudder trim actuator. The trim actuator moves the rudder feel and centering unit. This movement goes to the rudder PCU. Rudder PCU movement mechanically moves the rudder.
- (2) The rudder trim knob mechanically connects to the two rudder trim switches. They are part of the aileron/rudder trim control module.
- (3) The pilot controls the rudder trim with the rudder trim knob. The rudder trim switches directly control the rudder trim actuator to move left or right.

B. Possible Causes

- (1) Wiring problem
- (2) Aileron/rudder trim control module, M1126
- (3) Rudder trim actuator, M1125

EFFECTIVITY
SIA ALL

27-21 TASKS 802-803

D633A103-SIA

Page 205
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	19	C00787	FLIGHT CONTROL TRIM CONT RUD

D. Related Data

- (1) (SSM 27-21-11)
(2) (WDM 27-21-11)

E. Initial Evaluation

- (1) Do a check of the rudder trim system:



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- (a) Pressurize the rudder hydraulic systems A and B. To pressurize them, do this task: Rudder Hydraulic System A, B, or Standby Pressurization, AMM TASK 27-21-00-800-801.
- (b) Turn the rudder trim knob to the NOSE LEFT and then to NOSE RIGHT position.
- (c) If the rudder does not move, then do the Fault Isolation Procedure below.
- (d) If the rudder moves left and right, then there was an intermittent fault. Do this step to complete the task:
- 1) Do this task: Put the Rudder Hydraulic systems A, B, and Standby Back to the Condition Before the Pressurization, AMM TASK 27-21-00-840-801.

F. Fault Isolation Procedure

- (1) Do this check of the rudder trim actuator, M1125:
- (a) Disconnect connector D2932 from the rudder trim actuator, M1125.
- (b) Turn and hold the rudder trim knob to the NOSE LEFT position.
- (c) Make sure there is 115v AC from pin 2 to pin 13 of connector D2932 (WDM 27-21-11).
- (d) Turn and hold the rudder trim knob to the NOSE RIGHT position.
- (e) Make sure there is 115v AC from pin 3 to pin 13 of connector D2932 (WDM 27-21-11).
- (f) If there is 115v AC at pins 2 and 3 of connector D2932, then do these steps:
- 1) Release the rudder trim knob.
- 2) Replace the rudder trim actuator, M1125. These are the tasks:
- Rudder Trim Actuator Removal, AMM TASK 27-21-87-000-801
 - Rudder Trim Actuator Installation, AMM TASK 27-21-87-400-801
- 3) Do the Repair Confirmation at the end of this task.
- (g) If there is not 115v AC at pins 2 and 3 of connector D2932, then continue.
- 1) Release the rudder trim knob.

EFFECTIVITY
SIA ALL

27-21 TASK 803

D633A103-SIA

Page 206
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (2) Do this wiring check:
- (a) Remove the aileron/rudder trim control module, M1126. To remove it, do this task: Aileron and Rudder Trim Control Module Removal, AMM TASK 27-11-94-000-801.
 - (b) Do a wiring check between these pins of connector D3116 at the aileron/rudder trim panel, P8-43 and connector D2932 at the rudder trim actuator, M1125 (WDM 27-21-11):

D3116	D2932
pin 10	pin 13

- (c) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-connect connector D2932.
 - 3) Re-install the aileron/rudder trim control module, M1126. To install it, do this task: Aileron and Rudder Trim Control Module Installation, AMM TASK 27-11-94-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
 - (d) If you do not find a problem with the wiring, then continue.
 - 1) Re-connect connector D2932.
- (3) Do this check of the aileron/rudder trim control module, M1126:
- (a) Do a check for 115v AC from pin 1 to pin 5 of connector D3116 (WDM 27-21-11).
 - (b) If there is not 115v AC from pin 1 to pin 5 of connector D3116, then do these steps:
 - 1) Do a check for 115v AC from pin 1 of connector D3116 to structure ground (WDM 27-21-11).
 - 2) If there is 115v AC at pin 1 of connector D3116, then do these steps:
 - a) Repair the wiring between pin 5 of connector D3116 to AC ground (WDM 27-21-11).
 - b) Re-install the aileron/rudder trim control module, M1126. To install it, do this task: Aileron and Rudder Trim Control Module Installation, AMM TASK 27-11-94-400-801.
 - c) Do the Repair Confirmation at the end of this task.
 - 3) If there is not 115v AC at pin 1 of connector D3116, then continue.
 - 4) Do a check for 115v AC at load terminal of circuit breaker C787 (WDM 27-21-11).
 - 5) If there is not 115v AC at the circuit breaker C787, then do these steps:
 - a) Replace this circuit breaker (WDM 27-21-11):

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	19	C00787	FLIGHT CONTROL TRIM CONT RUD

- b) Re-install the aileron/rudder trim control module, M1126. To install it, do this task: Aileron and Rudder Trim Control Module Installation, AMM TASK 27-11-94-400-801.
 - c) Do the Repair Confirmation at the end of this task.
- 6) If there is 115v AC at the circuit breaker C787, then continue.
- 7) Repair the wiring between pin 1 of connector D3116 at the aileron/rudder trim panel, P8-43 and the load terminal circuit breaker C787 (WDM 27-21-11).

EFFECTIVITY
SIA ALL

27-21 TASK 803



737-600/700/800/900 FAULT ISOLATION MANUAL

- a) Re-install the aileron/rudder trim control module, M1126. To install it, do this task: Aileron and Rudder Trim Control Module Installation, AMM TASK 27-11-94-400-801.
- b) Do the Repair Confirmation at the end of this task.
- (c) If there is 115v AC between pins 1 and 5 of connector D3116, then continue.
- (4) Install a new aileron/rudder trim control module, M1126. To install it, do this task: Aileron and Rudder Trim Control Module Installation, AMM TASK 27-11-94-400-801.
- (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do a check of the rudder trim system:



WARNING

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- (a) Pressurize the rudder hydraulic systems A and B. To pressurize them, do this task: Rudder Hydraulic System A, B, or Standby Pressurization, AMM TASK 27-21-00-800-801.
- (b) Turn the rudder trim knob to the NOSE RIGHT position then to NOSE LEFT position.
- (c) If the rudder moves right then left, then you corrected the fault. Do this step to complete the task:
 - 1) Do this task: Put the Rudder Hydraulic systems A, B, and Standby Back to the Condition Before the Pressurization, AMM TASK 27-21-00-840-801.

————— END OF TASK —————

804. Rudder Trim Indicator Problems - Fault Isolation

A. Description

- (1) The rudder trim indicator shows the amount of trim in units. The rudder trim indicator is on the aft end of the P8 aft electronics panel.
- (2) If there is electric failure to the rudder trim indicator, an OFF flag tells the pilot to ignore the indicator and trim without it.

B. Possible Causes

- (1) Rudder Trim Indicator, N159
- (2) Rudder Trim Actuator, M1125

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	16	C00788	FLIGHT CONTROL TRIM IND RUD

D. Related Data

- (1) (SSM 27-28-11)

EFFECTIVITY
SIA ALL

27-21 TASKS 803-804

D633A103-SIA

Page 208
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

(2) (WDM 27-28-11)

E. Initial Evaluation

- (1) Do a check of the rudder trim system. To do it, do this task: Rudder Trim System Test, AMM TASK 27-21-00-700-819-002.
 - (a) If the test fails, then do the Fault Isolation Procedure below.
 - (b) If the test passes, then you corrected the fault.

F. Fault Isolation Procedure

- (1) Replace the rudder trim indicator, N159. These are the tasks:
 - Rudder Trim Indicator Removal, AMM TASK 27-11-94-000-803
 - Rudder Trim Indicator Installation, AMM TASK 27-11-94-400-803
 - (a) Do a check of the rudder trim system. To do it, do this task: Rudder Trim System Test, AMM TASK 27-21-00-700-819-002.
 - (b) If the test passes, then you corrected the fault.
 - (c) If the test fails, then continue.
- (2) Replace the rudder trim actuator, M1125. These are the tasks:
 - Rudder Trim Actuator Removal, AMM TASK 27-21-87-000-801
 - Rudder Trim Actuator Installation, AMM TASK 27-21-87-400-801
 - (a) Do a check of the rudder trim system. To do it, do this task: Rudder Trim System Test, AMM TASK 27-21-00-700-819-002.
 - (b) If the test passes, then you corrected the fault.

———— **END OF TASK** ————

805. Rudder Trim Indicator Light Problems - Fault Isolation

A. Description

- (1) The rudder trim indicator and light are on the aft end of the P8 aft electronics panel.

B. Possible Causes

- (1) Wiring problem
- (2) Rudder trim indicator, N159

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	10	C00284	PANEL & INSTR ELEX PANEL

D. Related Data

- (1) (SSM 33-11-41)
- (2) (WDM 33-11-41)

EFFECTIVITY
SIA ALL

27-21 TASKS 804-805

D633A103-SIA

Page 209
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

E. Initial Evaluation

- (1) Open and close this circuit breaker:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	10	C00284	PANEL & INSTR ELEX PANEL

- (a) If the rudder trim indicator light is off, then do the Fault Isolation Procedure below.
(b) If the rudder trim indicator light is on, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Do this check of the power wiring:

- (a) Remove the rudder trim indicator, N159 from the aft aisle stand panel, P8. To remove it, do this task: Rudder Trim Indicator Removal, AMM TASK 27-11-94-000-803.
(b) Do a check for 5v AC from pin 1 to pin 2 of connector D2934 (WDM 33-11-41).
(c) If there is not 5V AC at pin 1 of connector D2934, then do these steps:
- 1) Repair the wiring between these pins of terminal block TB801 at panel P8 and connector D2934 at panel P8 (WDM 33-11-41):

TB801	D2934
term WB13	pin 1

- 2) Re-install the rudder trim indicator. To install it, do this task: Rudder Trim Indicator Installation, AMM TASK 27-11-94-400-803.
 - 3) If the rudder trim indicator light is on, then you corrected the fault.
- (d) If there is 5v AC at pin 1 of connector D2934, then continue.
- (2) Install a new rudder trim indicator, N159. To install it, do this task: Rudder Trim Indicator Installation, AMM TASK 27-11-94-400-803.
- (a) If the rudder trim indicator light is on, then you corrected the fault.

———— **END OF TASK** ————

806. Rudder Does Not Move Correctly - Fault Isolation

A. Description

- (1) The Rudder controls the flight attitude of the airplane about the Vertical Axis.
(2) The pilot uses the Rudder Pedals or the Rudder Trim Knob to control the Rudder. The Yaw Damper and Wheel to Rudder Interconnect systems automatically control the Rudder.

B. Possible Causes

- (1) Rudder Pedals
- (2) Rudder Control Cables
- (3) Rudder Forward Quadrant
- (4) Rudder Aft Quadrant
- (5) Rudder Torque Tube
- (6) Rudder Feel and Centering Unit
- (7) Rudder Power Control Unit (PCU)
- (8) Standby Rudder Power Control Unit (PCU)

EFFECTIVITY
SIA ALL

27-21 TASKS 805-806

D633A103-SIA

Page 210
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

C. Initial Evaluation

- (1) Do a check of the Rudder Travel:



WARNING

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- (a) Pressurize the Rudder Hydraulic Systems A and B. This is the task: Rudder Hydraulic System A, B, or Standby Pressurization, AMM TASK 27-21-00-800-801.
 - (b) Push and hold the Captain's Left Pedal until it touches the Forward Quadrant Stop.
 - 1) Measure the Rudder travel.
 - (c) If the Rudder is not 26.97 +/- 0.91 inches from the Rudder Index Mark, then do the Fault Isolation Procedure below.
 - (d) If the Rudder is 26.97 +/- 0.91 inches from the Rudder Index Mark, then continue.
 - (e) Release the Captain's Left Pedal.
 - (f) Push and hold the Captain's Right Pedal until it touches the Forward Quadrant Stop.
 - 1) Measure the Rudder travel.
 - (g) If the Rudder is not 26.97 +/- 0.91 inches from the Rudder Index Mark, then do the Fault Isolation Procedure below.
 - (h) If the Rudder is 26.97 +/- 0.91 inches from the Rudder Index Mark, then continue.
- (2) Do this check of the Rudder Pedals:
- (a) Operate the Rudder Pedals through approximately 5 full cycles.
 - (b) If the Rudder Pedals do not move freely, then do the Fault Isolation Procedure below.
 - (c) If the Rudder Pedals move freely, there was an intermittent problem.
 - 1) Do this step to complete the task: Put the Rudder Hydraulic systems A, B, and Standby Back to the Condition Before the Pressurization, AMM TASK 27-21-00-840-801

D. Fault Isolation Procedure

- (1) Do this inspection check:
- (a) Examine these components for damaged parts, loose parts, or for objects that prevent movement. Replace or repair those components that have damage.
 - 1) Rudder Pedals
 - 2) Rudder Control Cables
 - 3) Rudder Forward Quadrant
 - 4) Rudder Aft Quadrant
 - 5) Rudder Torque Tube
 - a) Check the Upper and Lower Rudder Torque Tube Bearings for any indication of misalignment or damage.
 - 6) Rudder Feel and Centering Unit

EFFECTIVITY
SIA ALL

D633A103-SIA

27-21 TASK 806

Page 211
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

- a) Make sure the Rudder Feel and Centering Unit Cam Roller Bearing rolls freely during rudder pedal operation. This roller bearing should not slide on the cam surface.
- b) Make sure there is grease visible on the Rudder Feel and Centering Unit Spring Slider Shaft.
- 7) Rudder Power Control Unit (PCU)
- 8) Standby Rudder Power Control Unit (PCU)
- (b) Do the Repair Confirmation at the end of this task.
- (2) Do a check of the Rudder Control Cables, Rudder Pedals, and Forward Quadrant Adjustment. This is the task: Rudder Control Cables RA and RB Adjustment, AMM TASK 27-21-00-820-808-002.
 - (a) If you find a problem, then do these steps:
 - 1) Adjust the Rudder Control Cables, Rudder Pedals, and Forward Quadrant. This is the task: Rudder Control Cables RA and RB Adjustment, AMM TASK 27-21-00-820-808-002.
 - 2) Do the Repair Confirmation at the end of this task.
- (3) Do a check of the Control Rod for the Main Rudder Power Control Unit (PCU) adjustment. This is the task: Control Rod for Main Rudder Power Control Unit Adjustment, AMM TASK 27-21-00-820-809-002.
 - (a) If you find a problem, then do these steps:
 - 1) Adjust the Control Rod for Main Rudder PCU. This is the task: Control Rod for Main Rudder Power Control Unit Adjustment, AMM TASK 27-21-00-820-809-002.
 - 2) Do the Repair Confirmation at the end of this task.
- (4) Do a check of the Control Rod for the Standby Power Control Unit (PCU) adjustment. This is the task: Control Rod for Standby Rudder Power Control Unit Adjustment, AMM TASK 27-21-00-820-810-002.
 - (a) If you find a problem, then do these steps:
 - 1) Adjust the Control Rod for the Standby Rudder PCU. This is the task: Control Rod for Standby Rudder Power Control Unit Adjustment, AMM TASK 27-21-00-820-810-002.
 - 2) Do the Repair Confirmation at the end of this task.

E. Repair Confirmation

- (1) Do the Rudder Travel Test. This is the task: Rudder Travel Test, AMM TASK 27-21-00-700-817-002.
- (2) If the test passes, then you corrected the problem.
- (3) If the test fails, then continue troubleshooting at the subsequent step.

————— END OF TASK —————

807. Rudder Does Not Move Freely - Fault Isolation

A. Description

- (1) The pilots use the rudder pedals to control the rudder through the cables and the Hydraulic Power Control Units (PCUs).

EFFECTIVITY
SIA ALL

27-21 TASKS 806-807

D633A103-SIA

Page 212
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

B. Possible Causes

- (1) Rudder Pedals
- (2) Rudder Control Cables
- (3) Rudder Forward Quadrant
- (4) Rudder Aft Quadrant
- (5) Rudder Torque Tube
- (6) Rudder Feel and Centering Unit
- (7) Rudder Power Control Unit (PCU)
- (8) Standby Rudder Power Control Unit (PCU)

C. Initial Evaluation

- (1) Do a check of the rudder travel:



MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDER, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Pressurize the Rudder Hydraulic Systems A and B. This is the task: Rudder Hydraulic System A, B, or Standby Pressurization, AMM TASK 27-21-00-800-801.
- (b) Make sure that the Rudder Trim Knob is at the neutral position, then perform the following steps:
 - 1) Push and hold the Captain's Left Pedal until it touches the Forward Quadrant Stop.
 - 2) Return the Captain's Left Pedal to the neutral position.
 - 3) Push and hold the Captain's Right Pedal until it touches the Forward Quadrant Stop.
 - 4) Return the Captain's Right Pedal to the neutral position.
- (c) Move the Rudder Trim Knob to NOSE LEFT until the Rudder stops and perform the following steps:
 - 1) Push and hold the Captain's Left Pedal until it touches the Forward Quadrant Stop.
 - 2) Return the Captain's Left Pedal to the neutral position.
 - 3) Push and hold the Captain's Right Pedal until it touches the Forward Quadrant Stop.
 - 4) Return the Captain's Right Pedal to the neutral position.
- (d) Move the Rudder Trim Knob to NOSE RIGHT until the Rudder Stop and perform the following steps:
 - 1) Push and hold the Captain's Left Pedal until it touches the Forward Quadrant Stop.
 - 2) Return the Captain's Left Pedal to the neutral position.
 - 3) Push and hold the Captain's Right Pedal until it touches the Forward Quadrant Stop.
 - 4) Return the Captain's Right Pedal to the neutral position.
 - 5) Return the Rudder Trim Knob to the center position.

EFFECTIVITY
SIA ALL

27-21 TASK 807

D633A103-SIA

Page 213
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (e) If the Rudder does not move freely, then do the Fault Isolation Procedure below.
- (f) If the rudder moves freely, then do these additional checks:
 - 1) Do a general visual inspection of the Forward and Aft Rudder mechanical control paths for any sign of binding.
 - a) If the check is not satisfactory, then do the Fault Isolation Procedure below.
 - b) If the check is satisfactory, then there was an intermittent problem.
- (g) Remove the hydraulic pressure. This is the task: AMM TASK 27-21-00-840-801.
- (2) Do this check of the rudder pedals:
 - (a) Operate the rudder pedals through approximately 5 full cycles.
 - (b) If the rudder pedals do not move freely, then do the Fault Isolation Procedure below.
 - (c) If the rudder pedals move freely, there was an intermittent problem.
 - 1) Do this step to complete the task: Put the Rudder Hydraulic systems A, B, and Standby Back to the Condition Before the Pressurization, AMM TASK 27-21-00-840-801

D. Fault Isolation Procedure

- (1) Do this inspection check:
 - (a) Examine these components for damaged parts, loose parts, or for objects that prevent movement. Replace or repair those components that have damage.
 - 1) Rudder Pedals
 - 2) Rudder Control Cables
 - 3) Rudder Forward Quadrant
 - 4) Rudder Aft Quadrant
 - 5) Rudder Torque Tube
 - a) Check the Upper and Lower Rudder Torque Tube Bearings for any indication of misalignment or damage.
 - 6) Rudder Feel and Centering Unit
 - a) Make sure the Rudder Feel and Centering Unit Cam Roller Bearing rolls freely during rudder pedal operation. This roller bearing should not slide on the cam surface.
 - b) Make sure there is grease visible on the Rudder Feel and Centering Unit Spring Slider Shaft.
 - 7) Rudder Power Control Unit (PCU)
 - 8) Standby Rudder Power Control Unit (PCU)
 - (b) Do the Repair Confirmation at the end of this task.

E. Repair Confirmation

- (1) Do a check of the Rudder movement:
 - (a) Push and hold the Captain's Left Rudder pedal until it touches the Forward Quadrant Stop.
 - (b) Push and hold the Captain's Right Rudder pedal until it touches the Forward Quadrant Stop.

EFFECTIVITY
SIA ALL

27-21 TASK 807

D633A103-SIA

Page 214
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (c) If the rudder moves freely, then you corrected the problem.

————— **END OF TASK** —————

808. Rudder Surface Has Excessive Play - Fault Isolation

A. Description

- (1) The rudder supplies control of the airplane in the yaw direction.
- (2) The rudder is attached at the trailing edge of the vertical stabilizer with hinges. Two power control units (PCUs) attach to the rudder and move it.

B. Possible Causes

- (1) Rudder

C. Fault Isolation Procedure

- (1) Do a check of the rudder hinge bearing and PCU freeplay. To do it, do this task: Rudder Hinge Bearing and PCU Bearing Freeplay, AMM TASK 27-21-00-700-814-002.
 - (a) If you find a problem, then do these steps:
 - 1) Examine these components for damaged parts, loose parts, or for objects that prevent smooth movement. Replace or repair those components that have damage.
 - a) Rudder hinges
 - b) Rudder power control unit (PCU) attach point to rudder surface
 - c) Standby rudder power control unit (PCU) attach point to rudder surface
 - 2) Do a test of the rudder hinge bearing and PCU freeplay. To do it, do this task: Rudder Hinge Bearing and PCU Bearing Freeplay, AMM TASK 27-21-00-700-814-002.
 - 3) If the test passed, then you corrected the fault.

————— **END OF TASK** —————

809. Rudder Pedal Adjustment Crank Does Not Move Freely - Fault Isolation

A. Description

- (1) Each pilot uses the rudder pedals to command a yaw control through the forward rudder quadrants.
- (2) The pedals of each pair move in opposite direction to each other. When the pedals move, they move the pushrods and the jackshaft yoke. This moves the jackshaft and the forward quadrant. This also move the bus rod and makes the other pair of pedals to move equally.
- (3) When the rudder pedals adjustment crank rotates, causes the yoke to move. This will only move one pair of pedals and not affect the other.

B. Possible Causes

- (1) Rudder Pedal Adjustment Cable
- (2) Rudder Jackshaft

C. Initial Evaluation

- (1) Turn the rudder pedal adjustment crank clockwise then counterclockwise.
 - (a) If the rudder pedal adjustment crank does not move freely, then do the Fault Isolation Procedure below.
 - (b) If the rudder pedal adjustment crank moves freely, then there was an intermittent fault.

EFFECTIVITY
SIA ALL

27-21 TASKS 807-809

D633A103-SIA

Page 215
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

D. Fault Isolation Procedure

- (1) Do this check of the rudder pedal adjustment cable:
 - (a) Remove this access panel:

<u>Number</u>	<u>Name/Location</u>
112A	Forward Access Door
 - (b) Examine the radius of the cable curvature for the rudder pedal adjustment cable.
 - (c) If the radius of the cable curvature is less than 5.0 inches, then do these steps:
 - 1) Adjust the radius of curvature of the cable to greater than 5.0 inches.
 - 2) Turn the rudder pedal adjustment crank clockwise then counterclockwise.
 - a) If the rudder pedal adjustment crank moves freely, then you corrected the fault.
<1> Install the following access panel:

<u>Number</u>	<u>Name/Location</u>
112A	Forward Access Door
 - (d) If the radius of the cable curvature is greater than 5.0 inches, then continue.
- (2) Do this check of the rudder jackshaft:
 - (a) Examine the rudder jackshaft for unwanted materials.
 - (b) If there are unwanted materials in the rudder jackshaft, then do these steps:
 - 1) Remove the unwanted materials from the rudder jackshaft.
 - 2) Turn the rudder pedal adjustment crank clockwise then counterclockwise.
 - a) If the rudder pedal adjustment crank moves freely, then you corrected the fault.
<1> Install the following access panel:

<u>Number</u>	<u>Name/Location</u>
112A	Forward Access Door
 - (c) If there is no unwanted materials in the rudder jackshaft, then continue.
- (3) Replace the rudder pedal adjustment cable. These are the tasks:
 - Rudder Pedal Adjustment Crank Removal, AMM TASK 27-21-41-000-801
 - Rudder Pedal Adjustment Crank Installation, AMM TASK 27-21-41-400-801
 - (a) Turn the rudder pedal adjustment crank clockwise then counterclockwise.
 - 1) If the rudder pedal adjustment crank moves freely, then you corrected the fault.
 - a) Install the following access panel:

<u>Number</u>	<u>Name/Location</u>
112A	Forward Access Door
 - (b) If the rudder pedal adjustment crank does not move freely, then continue.
- (4) Replace the rudder jackshaft. These are the tasks:
 - Rudder Forward Quadrant Removal, AMM TASK 27-21-51-000-801
 - Rudder Forward Quadrant Installation, AMM TASK 27-21-51-400-801
 - (a) Turn the rudder pedal adjustment crank clockwise then counterclockwise.

EFFECTIVITY
SIA ALL

27-21 TASK 809

D633A103-SIA

Page 216
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 1) If the rudder pedal adjustment crank moves freely, then you corrected the fault.
 - a) Install the following access panel:

<u>Number</u>	<u>Name/Location</u>
112A	Forward Access Door

————— **END OF TASK** —————

810. Rudder Pedal Problem - Fault Isolation

A. Description

- (1) Each pilot uses the rudder pedals to command a yaw control through the forward rudder quadrants.
- (2) The pedals of each pair move in opposite direction to each other. When the pedals move, they move the pushrods and the jackshaft yoke. This moves the jackshaft and the forward quadrant. This also move the bus rod and makes the other pair of pedals to move equally.

B. Possible Causes

- (1) Rudder pedal adjustment cable
- (2) Rudder jackshaft

C. Initial Evaluation

- (1) Turn the rudder pedal adjustment crank clockwise then counterclockwise.
 - (a) If the rudder pedals do not move back and forward, then do the Fault Isolation Procedure below.
 - (b) If the rudder pedals move back and forward, then there was an intermittent fault.

D. Fault Isolation Procedure

- (1) Replace the rudder pedal adjustment cable. These are the tasks:
 - Rudder Pedal Adjustment Crank Removal, AMM TASK 27-21-41-000-801
 - Rudder Pedal Adjustment Crank Installation, AMM TASK 27-21-41-400-801
 - (a) Turn the rudder pedal adjustment crank clockwise then counterclockwise.
 - (b) If the rudder pedals move back and forward, then you corrected the fault.
 - (c) If the rudder pedals do not move back and forward, then continue.
- (2) Replace the rudder jackshaft. These are the tasks:
 - Rudder Forward Quadrant Removal, AMM TASK 27-21-51-000-801
 - Rudder Forward Quadrant Installation, AMM TASK 27-21-51-400-801
 - (a) Turn the rudder pedal adjustment crank clockwise then counterclockwise.
 - (b) If the rudder pedals move back and forward, then you corrected the fault.

————— **END OF TASK** —————

EFFECTIVITY
SIA ALL

27-21 TASKS 809-810

D633A103-SIA

Page 217
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

811. Rudder Pedals Do Not Move Freely - Fault Isolation

A. Description

- (1) Each pilot uses the rudder pedals to command a yaw control through the forward rudder quadrants.
- (2) The pedals of each pair move in opposite direction to each other. When the pedals move, they move the pushrods and the jackshaft yoke. This moves the jackshaft and the forward quadrant. This also moves the bus rod and makes the other pair of pedals to move equally.
- (3) The Rudder Feel and Centering Unit gives artificial feel to the rudder pedals, centers the input to the PCU, and transmits trim inputs to the aft control components. The springs hold the roller in the center of the cam and supplies feel force to the pilot. When the pilots release the rudder pedals, the spring force causes the roller to move to the cam detent.

B. Possible Causes

- (1) Rudder Pedals
- (2) Rudder Control Cables
- (3) Rudder Pedal Tension Rods
- (4) Rudder Forward Quadrant
- (5) Rudder Feel and Centering Unit

C. Initial Evaluation

- (1) Do this check of the rudder pedals:
 - (a) Operate the Captain's Rudder Pedals several times.
 - (b) Operate the First Officer's Rudder Pedals several times.
 - (c) If the rudder pedals do not move freely, then do the Fault Isolation Procedure below.
 - (d) If the rudder pedals move freely, then do these additional checks:
 - 1) Do a general visual inspection of the forward and aft rudder mechanical control paths for any sign of binding.
 - a) If the check is not satisfactory, then do the Fault Isolation Procedure below.
 - b) If the check is satisfactory, then there was an intermittent problem.

D. Fault Isolation Procedure

- (1) Do this check of the Rudder Pedal Adjustment and Limit Travel Test. This is the task: Rudder Pedal Adjustment and Limit Travel Test, AMM TASK 27-21-00-700-813-002.
 - (a) If you find a problem, then do these steps:
 - 1) Examine these components for damaged parts, loose parts, or for objects that prevent smooth movement. Replace or repair those components that have damage.
 - a) Rudder Pedals
 - b) Rudder Control Cables
 - c) Rudder Pedal Tension Rods
 - d) Rudder Forward Quadrant
 - e) Rudder Feel and Centering Unit.
 - <1> Make sure the Rudder Feel and Centering Unit Cam Roller Bearing rolls freely during rudder pedal operation. This roller bearing should not slide on the cam surface.

EFFECTIVITY
SIA ALL

27-21 TASK 811

D633A103-SIA

Page 218
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

- <2> Make sure there is grease visible on the Rudder Feel and Centering Unit Spring Slider Shaft.
- 2) Do a check of the Rudder Pedals Adjustment. This is the task: Rudder Pedals Adjustment, AMM TASK 27-21-00-820-807-002.
 - 3) Operate the Captain's Rudder Pedals several times.
 - 4) Operate the First Officer's Rudder pedals several times.
 - 5) If the rudder pedals move freely, then you corrected the problem.
 - 6) If the rudder pedals do not move freely, then continue.
- (b) If you do not find a problem, then continue.
- (2) Do this check of the Rudder Pedals Adjustment. This is the task: Rudder Pedals Adjustment, AMM TASK 27-21-00-820-807-002.
- (a) Operate the Captain's Rudder Pedals several times.
 - (b) Operate the First Officer's Rudder Pedals several times.
 - (c) If the rudder pedals move freely, then you corrected the problem.
 - (d) If the rudder pedals do not move freely, then continue.
- (3) Do these steps to test the Rudder Feel and Centering Unit:
- (a) Set the Captain's Rudder Pedal adjustment crank to the middle position.
 - (b) Install adapter, SPL-1681 on the Captain's Left Rudder Pedal at 0 degrees from horizontal.
 - (c) Push on adapter, SPL-1681 until the Captain's Left Pedal is 3.60 +/- 0.10 inches forward from the neutral position.
 - (d) Make sure the pedal force is between 51.0 and 82.0 Pounds (227 and 365 Newtons).
 - (e) If the pedal force is within the ranges, then there was an intermittent problem.
 - (f) If the pedal force is not within the ranges, then replace the Rudder Feel and Centering Unit. These are the tasks:
 - AMM TASK 27-21-82-000-801
 - AMM TASK 27-21-82-400-801

————— END OF TASK —————

812. Rudder Trim Knob Problem - Fault Isolation

A. Description

- (1) The rudder trim knob controls the electrical trim actuator. The actuator moves the rudder and the rudder pedals to a new neutral position.
- (2) The rudder trim knob and indicator are on the aft end of the P8 aft electronics panel.

B. Possible Causes

- (1) Aileron/rudder trim control module, M1126

C. Fault Isolation Procedure

- (1) Replace the aileron/rudder trim control module, M1126. These are the tasks:
 - Aileron and Rudder Trim Control Module Removal, AMM TASK 27-11-94-000-801
 - Aileron and Rudder Trim Control Module Installation, AMM TASK 27-11-94-400-801
- (a) Operate the rudder trim knob.

EFFECTIVITY
SIA ALL

27-21 TASKS 811-812

D633A103-SIA

Page 219
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (b) If the rudder trim knob operates correctly, then you corrected the fault.

END OF TASK

813. FLT CONTROL A LOW PRESSURE Light - Fault Isolation

A. Description

- (1) The FLT CONTROL A LOW PRESSURE light monitors the pressure to ailerons, elevators, elevator feel, and rudder. It also monitors the position of the standby rudder PCU shutoff valve when the FLT CONTROL A switch is in the STBY RUD position.
- (2) This is the normal operation of the FLT CONTROL A LOW PRESSURE light:
 - (a) When the FLT CONTROL A switch is in the A ON position and the pressure to the ailerons, elevators, elevator feel, and rudder is low, the FLT CONTROL A LOW PRESSURE light will come on.
 - (b) When the FLT CONTROL A switch is in the STBY RUD position and standby rudder PCU shutoff valve is closed, the FLT CONTROL A LOW PRESSURE light will come on.

B. Possible Causes

- (1) FLT CONTROL A LOW PRESSURE light, L3
- (2) Flight control module, P5-3
- (3) Flight control system A pressure switch, S141
- (4) Standby rudder valve position relay, K10
- (5) FLT CONTROL A switch, S3
- (6) Standby rudder PCU shutoff valve, V42
- (7) Wiring problem
- (8) Flight control shutoff valve

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	11	C00362	FLIGHT CONT SHUTOFF VALVES STBY RUD

D. Related Data

- (1) (SSM 27-23-14)
- (2) (WDM 27-23-14)

E. Initial Evaluation

- (1) Do a check of the FLT CONTROL A LOW PRESSURE light:



WARNING

MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDER, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Pressurize the rudder hydraulic system A. To pressurize it, do this task: Rudder Hydraulic System A, B, or Standby Pressurization, AMM TASK 27-21-00-800-801.

EFFECTIVITY
SIA ALL

27-21 TASKS 812-813

D633A103-SIA

Page 220
Oct 15/2021



737-600/700/800/900
FAULT ISOLATION MANUAL

- (b) If the FLT CONTROL A LOW PRESSURE light is on, then do these steps:
 - 1) Set the FLT CONTROL A switch on the forward overhead panel, P5, to the STBY RUD position.
 - 2) If the FLT CONTROL A LOW PRESSURE light is on, then do the Fault Isolation Procedure I below.
 - 3) If the FLT CONTROL A LOW PRESSURE light is off, then do the Fault Isolation Procedure II below.
- (c) If the FLT CONTROL A LOW PRESSURE light is off, then do these steps:
 - 1) Set the FLT CONTROL A switch on the forward overhead panel, P5-3, to the STBY RUD position.
 - 2) If the FLT CONTROL A LOW PRESSURE light is on, then do the Fault Isolation Procedure III below.
 - 3) If the FLT CONTROL A LOW PRESSURE light is off, then there was an intermittent fault. Do this step to complete the task:
 - a) Do this task: Put the Rudder Hydraulic systems A, B, and Standby Back to the Condition Before the Pressurization, AMM TASK 27-21-00-840-801.

F. Fault Isolation Procedure I

- (1) Replace the FLT CONTROL A LOW PRESSURE light, L3.
 - (a) Do the Repair Confirmation at the end of this task.
- (2) Replace the flight control module, P5-3. These are the tasks:
 - Flight Controls Panel Removal, AMM TASK 27-09-45-000-801
 - Flight Controls Panel Installation, AMM TASK 27-09-45-400-801
 - (a) Do the Repair Confirmation at the end of this task.

G. Fault Isolation Procedure II

- (1) Do this check of the flight control system A pressure switch, S141:
 - (a) Disconnect connector D814 from the flight control system A pressure switch, S141.
 - (b) Set the FLT CONTROL A switch to the ON position.
 - (c) Do a check for 28V DC from pin 3 to pin 2 (DC ground) of connector D814.
 - (d) If there is 28V DC at pin 3 of connector D814, then do these steps:
 - 1) Replace the flight control system A pressure switch, S141. These are the tasks:
 - Low Pressure Warning Switch Removal, AMM TASK 27-09-61-000-801
 - Low Pressure Warning Switch Installation, AMM TASK 27-09-61-400-801
 - 2) Do the Repair Confirmation at the end of this task.
 - (e) If there is not 28V DC at pin 3 of connector D814, then continue.
- (2) Do this wiring check:
 - (a) Remove the flight controls panel, P5-3. To remove it, do this task: Flight Controls Panel Removal, AMM TASK 27-09-45-000-801.
 - (b) Disconnect connector D624 from the flight controls panel, P5-3.
 - (c) Do a wiring check between these pins of connector D624 at the P5-3 and connector D814 at the flight control system A pressure switch, S141:

EFFECTIVITY
SIA ALL

27-21 TASK 813

D633A103-SIA

Page 221
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 5) If you do not find a problem with the wiring, then do these steps:
 - a) Replace the standby rudder valve position relay, K10, on the flight controls panel, P5-3.
 - b) Re-connect connector D822.
 - c) Re-connect connector D624.
 - d) Re-install the flight controls panel, P5-3. To install it, do this task: Flight Controls Panel Installation, AMM TASK 27-09-45-400-801.
 - e) Do the Repair Confirmation at the end of this task.
- 6) Replace the flight controls panel, P5-3. These are the tasks:
 - Flight Controls Panel Removal, AMM TASK 27-09-45-000-801
 - Flight Controls Panel Installation, AMM TASK 27-09-45-400-801
 - a) Do the Repair Confirmation at the end of this task.
- (c) If the lever on the standby rudder PCU shutoff valve, V42, does not move to the open position, then continue.
- (2) Do this check of the flight controls module, P5-3:
 - (a) Set the FLT CONTROL A switch to the OFF position.
 - (b) Set the FLT CONTROL B switch to the STBY RUD position.
 - (c) If the lever on the standby rudder PCU shutoff valve, V42, moves to the open position, then do these steps:
 - 1) Set the FLT CONTROL B switch to the OFF position.
 - 2) Replace the FLT CONTROL system A switch, S3.
 - a) Do the Repair Confirmation at the end of this task.
 - 3) Replace the flight controls panel, P5-3. These are the tasks:
 - Flight Controls Panel Removal, AMM TASK 27-09-45-000-801
 - Flight Controls Panel Installation, AMM TASK 27-09-45-400-801
 - 4) Do the Repair Confirmation at the end of this task.
 - (d) If the lever on the standby rudder PCU shutoff valve, V42, does not move to the open position, then continue.
- (3) Do this voltage check at the standby rudder PCU shutoff valve, V42:
 - (a) Disconnect connector D822 from the standby rudder PCU shutoff valve, V42.
 - (b) Set the FLT CONTROL A switch to the STBY RUD position.
 - (c) Do a check for 28v DC from pin 2 at connector D822 to structure ground.
 - (d) If there is 28v DC at pin 2 of connector D822, then do these steps:
 - 1) Set the FLT CONTROL A switch to the OFF position.
 - 2) Replace the standby rudder PCU shutoff valve, V42.
 - 3) Do the Repair Confirmation at the end of this task.
 - (e) If there is not 28v DC at pin 2 of connector D822, then continue.
- (4) Do this wiring check:
 - (a) Set the FLT CONTROL A switch to the OFF position.
 - (b) Remove the flight controls panel, P5-3. To remove it, do this task: Flight Controls Panel Removal, AMM TASK 27-09-45-000-801.

EFFECTIVITY
SIA ALL

D633A103-SIA

27-21 TASK 813

Page 223
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (c) Disconnect connector D624 from the flight controls panel, P5-3.
- (d) Do the wiring check between these pins of connector D624 at the P5-3 and connector D822 at the standby rudder PCU shutoff valve, V42:

D624	D822
pin 25	pin 2

- (e) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-connect connector D624.
 - 3) Re-connect connector D822.
 - 4) Re-install the flight controls panel, P5-3. To install it, do this task: Flight Controls Panel Installation, AMM TASK 27-09-45-400-801.
 - 5) Do the Repair Confirmation at the end of this task.
- (f) If you do not find a problem with the wiring, then continue.
 - 1) Re-connect connector D822.

- (5) Do this check of the flight controls panel, P5-3:

- (a) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	11	C00362	FLIGHT CONT SHUTOFF VALVES STBY RUD

- (b) Do a check for 28V DC from pin 11 of connector D624 to structure ground.
 - (c) If there is 28V DC at pin 11 of connector D624, then do these steps:
 - 1) Install a new flight controls panel, P5-3. To install it, do this task: Flight Controls Panel Installation, AMM TASK 27-09-45-400-801.
 - 2) Do the Repair Confirmation at the end of this task.
 - (d) If there is not 28V DC at pin 11 of connector D624, then continue.
- (6) Do this check of the circuit breaker, C362:

- (a) Do a check for 28V DC from load terminal of the following circuit breaker to structure ground:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	11	C00362	FLIGHT CONT SHUTOFF VALVES STBY RUD

- (b) If there is not 28V DC at load terminal of circuit breaker C362, then do these steps:
 - 1) Replace the following circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	11	C00362	FLIGHT CONT SHUTOFF VALVES STBY RUD

- 2) Re-connect connector D624.
- 3) Re-install the flight controls panel, P5-3. To install it, do this task: Flight Controls Panel Installation, AMM TASK 27-09-45-400-801.

EFFECTIVITY
SIA ALL

27-21 TASK 813



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 4) Do the Repair Confirmation at the end of this task.
- (c) If there is 28V DC at load terminal of circuit breaker C362, then do these steps:
 - 1) Repair the wiring between pin 11 of connector D624 at panel P5-3 to the load terminal of circuit breaker C362 at the panel P6.
 - 2) Re-connect connector D624.
 - 3) Re-install the flight controls panel, P5-3. To install it, do this task: Flight Controls Panel Installation, AMM TASK 27-09-45-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
- (7) Replace the flight controls shutoff valve. These are the tasks:
 - Flight Controls Shutoff Valve Removal, AMM TASK 27-09-31-000-801
 - Flight Controls Shutoff Valve Installation, AMM TASK 27-09-31-400-801
- (a) Do the Repair Confirmation at the end of this task.

I. Repair Confirmation

- (1) Do a check of the FLT CONTROL A LOW PRESSURE light:



WARNING

MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDER, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Pressurize the rudder hydraulic system A. To pressurize it, do this task: Rudder Hydraulic System A, B, or Standby Pressurization, AMM TASK 27-21-00-800-801.
- (b) Make sure the FLT CONTROL A LOW PRESSURE light is off.
- (c) Set the FLT CONTROL A switch on the forward overhead panel, P5, to the STBY RUD position.
- (d) Make sure the FLT CONTROL A LOW PRESSURE light is off.
- (e) If the FLT CONTROL A LOW PRESSURE light operates correctly, then you corrected the fault. Do this step to complete the task:
 - 1) Do this task: Put the Rudder Hydraulic systems A, B, and Standby Back to the Condition Before the Pressurization, AMM TASK 27-21-00-840-801.
- (f) If the problem still exists, continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

814. FLT CONTROL B LOW PRESSURE Light - Fault Isolation

A. Description

- (1) The FLT CONTROL B LOW PRESSURE light monitors the pressure to ailerons, elevators, elevator feel, and rudder. It also monitors the position of the standby rudder PCU shutoff valve when the FLT CONTROL B switch is in the STBY RUD position.
- (2) This is the normal operation of the FLT CONTROL B LOW PRESSURE light:
 - (a) When the FLT CONTROL B switch is in the B ON position and the pressure to the ailerons, elevators, elevator feel, and rudder is low, the FLT CONTROL B LOW PRESSURE light will come on.

EFFECTIVITY
SIA ALL

27-21 TASKS 813-814

D633A103-SIA

Page 225
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (b) When the FLT CONTROL B switch is in the STBY RUD position and standby rudder PCU shutoff valve is closed, the FLT CONTROL B LOW PRESSURE light will come on.

B. Possible Causes

- (1) FLT CONTROL B LOW PRESSURE light, L5
- (2) Flight control panel, P5-3
- (3) Flight control system B pressure switch, S142
- (4) Standby rudder valve position relay, K10
- (5) FLT CONTROL B switch, S4
- (6) Standby rudder PCU shutoff valve, V42
- (7) Wiring problem
- (8) Flight control shutoff valve

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	11	C00362	FLIGHT CONT SHUTOFF VALVES STBY RUD

D. Related Data

- (1) (SSM 27-23-14)
- (2) (WDM 27-23-14)

E. Initial Evaluation

- (1) Do a check of the FLT CONTROL B LOW PRESSURE light:



WARNING

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- (a) Pressurize the rudder hydraulic system B. To pressurize it, do this task: Rudder Hydraulic System A, B, or Standby Pressurization, AMM TASK 27-21-00-800-801.
- (b) If the FLT CONTROL B LOW PRESSURE light is on, then do these steps:
 - 1) Set the FLT CONTROL B switch on the forward overhead panel, P5, to the STBY RUD position.
 - 2) If the FLT CONTROL B LOW PRESSURE light is on, then do the Fault Isolation Procedure I below.
 - 3) If the FLT CONTROL B LOW PRESSURE light is off, then do the Fault Isolation Procedure II below.
- (c) If the FLT CONTROL B LOW PRESSURE light is off, then do these steps:
 - 1) Set the FLT CONTROL B switch on the forward overhead panel, P5-3, to the STBY RUD position.
 - 2) If the FLT CONTROL B LOW PRESSURE light is on, then do the Fault Isolation Procedure III below.

EFFECTIVITY
SIA ALL

27-21 TASK 814

D633A103-SIA

Page 226
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

- 3) If the FLT CONTROL B LOW PRESSURE light is off, then there was an intermittent fault. Do this step to complete the task:
 - a) Do this task: Put the Rudder Hydraulic systems A, B, and Standby Back to the Condition Before the Pressurization, AMM TASK 27-21-00-840-801.

F. Fault Isolation Procedure I

- (1) Replace the FLT CONTROL B LOW PRESSURE light, L5.
 - (a) Do the Repair Confirmation at the end of this task.
- (2) Replace the flight control module, P5-3. These are the tasks:
 - Flight Controls Panel Removal, AMM TASK 27-09-45-000-801
 - Flight Controls Panel Installation, AMM TASK 27-09-45-400-801
 - (a) Do the Repair Confirmation at the end of this task.

G. Fault Isolation Procedure II

- (1) Do this check of the flight control system B pressure switch, S142:
 - (a) Disconnect connector D816 from the flight control system B pressure switch, S142.
 - (b) Set the FLT CONTROL B switch to the ON position.
 - (c) Do a check for 28V DC from pin 3 to pin 2 (DC ground) of connector D814.
 - (d) If there is 28V DC at pin 3 of connector D816, then do these steps:
 - 1) Replace the flight control system B pressure switch, S142. These are the tasks:
 - Low Pressure Warning Switch Removal, AMM TASK 27-09-61-000-801
 - Low Pressure Warning Switch Installation, AMM TASK 27-09-61-400-801
 - 2) Do the Repair Confirmation at the end of this task.
 - (e) If there is not 28V DC at pin 3 of connector D816, then continue.
- (2) Do this wiring check:
 - (a) Remove the flight controls panel, P5-3. To remove it, do this task: Flight Controls Panel Removal, AMM TASK 27-09-45-000-801.
 - (b) Disconnect connector D630 from the flight controls panel, P5-3.
 - (c) Do a wiring check between these pins of connector D630 at the P5-3 and connector D816 at the flight control system B pressure switch, S142:

D630	D816
pin 10	pin 3
 - (d) Do a check for ground at pin 2 of connector D816.
 - (e) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-connect connector D630.
 - 3) Re-install the flight controls panel, P5-3. To install it, do this task: Flight Controls Panel Installation, AMM TASK 27-09-45-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
 - (f) If you do not find a problem with the wiring, then continue.
 - 1) Re-connect connector D816.

EFFECTIVITY
SIA ALL

D633A103-SIA

27-21 TASK 814

Page 227
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (3) Install a new flight controls panel, P5-3. To install it, do this task: Flight Controls Panel Installation, AMM TASK 27-09-45-400-801.

(a) Do the Repair Confirmation at the end of this task.

H. Fault Isolation Procedure III

- (1) Do this check of the standby rudder PCU shutoff valve, V42:



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- (a) Set the FLT CONTROL B switch to the STBY RUD position.
- (b) If the lever on the standby rudder PCU shutoff valve, V42, moves to the open position, then do these steps:
- 1) Set the FLT CONTROL A switch to the OFF position.
 - 2) Remove the flight controls panel, P5-3. To remove it, do this task: Flight Controls Panel Removal, AMM TASK 27-09-45-000-801.
 - 3) Disconnect connector D624 from the flight controls panel, P5-3.
 - 4) Do the wiring check between these pins of connector D624 at the P5-3 and connector D822 at the standby rudder PCU shutoff valve, V42:

D624

pin 18

D822

pin 4

- 5) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect connector D822.
 - c) Re-connect connector D624.
 - d) Re-install the flight controls panel, P5-3. To install it, do this task: Flight Controls Panel Installation, AMM TASK 27-09-45-400-801.
 - e) Do the Repair Confirmation at the end of this task.
- 6) If you do not find a problem with the wiring, then do these steps:
 - a) Replace the standby rudder valve position relay, K10, on the flight controls panel, P5-3.
 - b) Re-connect connector D822.
 - c) Re-connect connector D624.
 - d) Re-install the flight controls panel, P5-3. To install it, do this task: Flight Controls Panel Installation, AMM TASK 27-09-45-400-801.
 - e) Do the Repair Confirmation at the end of this task.
- 7) Replace the flight controls panel, P5-3. These are the tasks:
 - Flight Controls Panel Removal, AMM TASK 27-09-45-000-801
 - Flight Controls Panel Installation, AMM TASK 27-09-45-400-801

EFFECTIVITY
SIA ALL

27-21 TASK 814



737-600/700/800/900 FAULT ISOLATION MANUAL

- a) Do the Repair Confirmation at the end of this task.
- (c) If the lever on the standby rudder PCU shutoff Valve, V42, does not move to the open position, then continue.
- (2) Do this check of the flight controls module, P5-3:
 - (a) Set the FLT CONTROL B switch to the OFF position.
 - (b) Set the FLT CONTROL A switch to the STBY RUD position.
 - (c) If the lever on the standby rudder PCU shutoff valve, V42, moves to the open position, then do these steps:
 - 1) Set the FLT CONTROL A switch to the OFF position.
 - 2) Replace the FLT CONTROL system B switch, S4.
 - a) Do the Repair Confirmation at the end of this task.
 - 3) Replace the flight controls panel, P5-3. These are the tasks:
 - Flight Controls Panel Removal, AMM TASK 27-09-45-000-801
 - Flight Controls Panel Installation, AMM TASK 27-09-45-400-801
 - 4) Do the Repair Confirmation at the end of this task.
 - (d) If the lever on the standby rudder PCU shutoff valve, V42, does not move to the open position, then continue.
- (3) Do this voltage check at the standby rudder PCU shutoff valve, V42:
 - (a) Disconnect connector D822 from the standby rudder PCU shutoff valve, V42.
 - (b) Set the FLT CONTROL B switch to the STBY RUD position.
 - (c) Do a check for 28v DC from pin 2 at connector D822 to structure ground.
 - (d) If there is 28v DC at pin 2 of connector D822, then do these steps:
 - 1) Set the FLT CONTROL B switch to the OFF position.
 - 2) Replace the standby rudder PCU shutoff valve, V42. These are the tasks:
 - Standby Rudder PCU Shutoff Valve Removal, AMM TASK 27-21-94-000-802
 - Standby Rudder PCU Shutoff Valve Installation, AMM TASK 27-21-94-400-802
 - 3) Do the Repair Confirmation at the end of this task.
 - (e) If there is not 28v DC at pin 2 of connector D822, then continue.
- (4) Do this wiring check:
 - (a) Set the FLT CONTROL B switch to the OFF position.
 - (b) Remove the flight controls panel, P5-3. To remove it, do this task: Flight Controls Panel Removal, AMM TASK 27-09-45-000-801.
 - (c) Disconnect connector D624 from the flight controls panel, P5-3.
 - (d) Do the wiring check between these pins of connector D624 at the P5-3 and connector D822 at the standby rudder PCU shutoff valve, V42:

D624	D822
pin 25	pin 2

- (e) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-connect connector D624.

EFFECTIVITY
SIA ALL

27-21 TASK 814



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 3) Re-connect connector D822.
- 4) Re-install the flight controls panel, P5-3. To install it, do this task: Flight Controls Panel Installation, AMM TASK 27-09-45-400-801.
- 5) Do the Repair Confirmation at the end of this task.
- (f) If you do not find a problem with the wiring, then continue.
 - 1) Re-connect connector D822.
- (5) Do this check of the flight controls panel, P5-3:
 - (a) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	11	C00362	FLIGHT CONT SHUTOFF VALVES STBY RUD

- (b) Do a check for 28V DC from pin 11 of connector D624 to structure ground.
- (c) If there is 28V DC at pin 11 of connector D624, then do these steps:
 - 1) Install a new flight controls panel, P5-3. To install it, do this task: Flight Controls Panel Installation, AMM TASK 27-09-45-400-801.
 - 2) Do the Repair Confirmation at the end of this task.
- (d) If there is not 28V DC at pin 11 of connector D624, then continue.
- (6) Do this check of the circuit breaker, C362:
 - (a) Do a check for 28V DC from load terminal of circuit breaker C362 to structure ground.
 - 1) This is the circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	11	C00362	FLIGHT CONT SHUTOFF VALVES STBY RUD

- (b) If there is not 28V DC at load terminal of circuit breaker C362, then do these steps:
 - 1) Replace the circuit breaker C362.
 - a) This is the circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	11	C00362	FLIGHT CONT SHUTOFF VALVES STBY RUD

- 2) Re-connect connector D624.
- 3) Re-install the flight controls panel, P5-3. To install it, do this task: Flight Controls Panel Installation, AMM TASK 27-09-45-400-801.
- 4) Do the Repair Confirmation at the end of this task.
- (c) If there is 28V DC at load terminal of circuit breaker C362, then do these steps:
 - 1) Repair the wiring between pin 11 of connector D624 at panel P5-3 to the load terminal of circuit breaker C362 at the panel P6.
 - 2) Re-connect connector D624.
 - 3) Re-install the flight controls panel, P5-3. To install it, do this task: Flight Controls Panel Installation, AMM TASK 27-09-45-400-801.
 - 4) Do the Repair Confirmation at the end of this task.

EFFECTIVITY
SIA ALL

27-21 TASK 814



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (7) Replace the flight controls shutoff valve. These are the tasks:
- Flight Controls Shutoff Valve Removal, AMM TASK 27-09-31-000-801
 - Flight Controls Shutoff Valve Installation, AMM TASK 27-09-31-400-801
- (a) Do the Repair Confirmation at the end of this task.

I. Repair Confirmation

- (1) Do a check of the FLT CONTROL B LOW PRESSURE light:



WARNING

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- (a) Pressurize the rudder hydraulic system B. To pressurize it, do this task: Rudder Hydraulic System A, B, or Standby Pressurization, AMM TASK 27-21-00-800-801.
- (b) Make sure the FLT CONTROL B LOW PRESSURE light is off.
- (c) Set the FLT CONTROL B switch on the forward overhead panel, P5, to the STBY RUD position.
- (d) Make sure the FLT CONTROL B LOW PRESSURE light is off.
- (e) If the FLT CONTROL B LOW PRESSURE light operates correctly, then you corrected the fault. Do this step to complete the task:
- 1) Do this task: Put the Rudder Hydraulic systems A, B, and Standby Back to the Condition Before the Pressurization, AMM TASK 27-21-00-840-801.
- (f) If the problem still exists, continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

816. Rudder Pedal Kickback During Flight Problem - Fault Isolation

A. Description

- (1) Each pilot uses the rudder pedals to command a yaw control through the forward rudder quadrants.
- (2) The pedals of each pair move in opposite direction to each other. When the pedals move, they move the pushrods and the jackshaft yoke. This moves the jackshaft and the forward quadrant. Rudder pedal input through cables actuates the aft control quadrant which rotates the torque tube via an input rod. This results in a simultaneous input to the main power control unit, standby power control unit, and the feel and centering unit.

B. Possible Causes

- (1) Binding in the control linkage to the standby actuator.
- (2) Binding in the control linkage to the main PCU.

C. Initial Evaluation

- (1) Remove all hydraulic power, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
- (a) Disconnect the input control rod from the standby input lever.

EFFECTIVITY
SIA ALL

27-21 TASKS 814-816

D633A103-SIA

Page 231
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 1) Measure the force, applied tangentially at the bolt/clevis centerline, that is required to move the lever through its total range of motion.
- 2) If the measured force is more than one pound, then do the Fault Isolation Procedure below.
- (b) Disconnect the input rod from the main PCU lever.
 - 1) Measure the force, applied tangentially at the bolt/clevis centerline, that is required to move the input crank through its total range of motion.
 - 2) If the measured force is more than 20 pounds just prior to the input crank bottoming on the manifold stops, then do the Fault Isolation Procedure below.
 - 3) If the both measured forces were within the limits, then there was an intermittent fault.

D. Fault Isolation Procedure

- (1) Do these steps to troubleshoot the binding in the control linkage to the standby actuator:
 - (a) Replace the standby actuator, These are the tasks:
 - Standby Rudder Power Control Unit Removal, AMM TASK 27-21-24-000-801
 - Standby Rudder Power Control Unit Installation, AMM TASK 27-21-24-400-801
 - (b) With the input rod still disconnected from the standby input lever, measure the force applied tangentially at the bolt/clevis centerline, that is required to move the lever through its total range of motion.
 - 1) If this force is less than one pound, then you fixed the problem.
 - 2) Connect the input control rod that you disconnected from the standby input lever.
- (2) Do these steps to troubleshoot the binding in the control linkage to the Main PCU:
 - (a) Replace the main PCU, These are the tasks:
 - Main Rudder Power Control Unit Removal, AMM TASK 27-21-91-000-803-002
 - Main Rudder Power Control Unit Installation, AMM TASK 27-21-91-400-803-002
 - (b) With the input rod still disconnected from the PCU, measure the force applied tangentially at the bolt/clevis centerline, that is required to move the lever through its total range of motion.
 - 1) If this force is less than 20 pounds prior to the input crank bottoming on the manifold stops, then you fixed the problem.
 - 2) Connect the input rod that you disconnected from the main PCU lever.

————— **END OF TASK** —————

817. STBY RUD ON Light Problems - Fault Isolation

A. Description

- (1) The STBY RUD ON light is on the P5-3 panel.
- (2) There are three different ways that the STBY RUD ON Light is illuminated:
 - (a) The flight crew selects STBY RUD ON, using system A or B Flight Control Switch on the P5-3 Panel.
 - (b) Auto Standby Logic detects low pressure on either the A or B Hydraulic Systems, flaps are not up and either in-air or Wheel Speed is greater than 60 knots.
 - (c) Force Fight Monitor (FFM) detects a force fight in the Main Rudder PCU.

EFFECTIVITY
SIA ALL

27-21 TASKS 816-817

D633A103-SIA

Page 232
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

B. Possible Causes

- (1) S1051 Flap Switch Connector (D46040)
- (2) Wiring
- (3) Force Fight Monitor
- (4) Flap Position Switch, S1051
- (5) Auto Standby Circuitry
- (6) P5-3 Flight Control Module
- (7) Main Rudder PCU

C. Related Data

- (1) SSM 27-25-11
- (2) WDM 27-25-11
- (3) SSM 27-23-11
- (4) WDM 27-23-11

D. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	15	C01628	FORCE FIGHT MONITOR

E. Initial Evaluation



MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDER, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Pressurize the Rudder Hydraulic System A, B, or Standby. This is the task: Rudder Hydraulic System A, B, or Standby Pressurization, AMM TASK 27-21-00-800-801.
 - (a) Set the FLT CONTROL A and B switches on the P5-3 panel to the ON position.
 - (b) Push the Left Rudder Pedal forward until it reaches the stop, hold for 10 seconds, then return the Left Rudder Pedal to the neutral position.
 - (c) Push the Right Rudder Pedal forward until it reaches the stop, hold for 10 seconds, then return the Right Rudder Pedal to the neutral position.
 - (d) If the STBY RUD ON light is illuminated, do the Fault Isolation Procedure I below.
 - (e) If the STBY RUD ON light is not illuminated, do the Fault Isolation Procedure II below.

F. Fault Isolation Procedure I

- (1) If the STBY RUD ON light is illuminated in the Initial Condition check, do these steps:
 - (a) If the LOW PRESSURE A or B light is illuminated on the P5-3 panel, do these steps:
 - 1) If the LOW PRESSURE A light is illuminated, do the FLT CONTROL A LOW PRESSURE Light - Fault Isolation, 27-21 TASK 813

EFFECTIVITY
SIA ALL

27-21 TASK 817

D633A103-SIA

Page 233
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- a) If you find a problem, do the steps to repair the problem, then do the steps for Repair Confirmation at the end of this task.
- 2) If the LOW PRESSURE B light is illuminated, do the FLT CONTROL B LOW PRESSURE Light - Fault Isolation, 27-21 TASK 814
 - a) If you find a problem, do the steps to repair the problem, then do the Repair Confirmation at the end of this task.
- (b) If the LOW PRESSURE A or B light is not illuminated on the P5-3 panel, continue.
- (c) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	15	C01628	FORCE FIGHT MONITOR

- (d) If the STBY RUD ON light is illuminated, do these steps:
 - 1) Remove the P5-3 overhead panel. This is the task: Flight Controls Panel Removal, AMM TASK 27-09-45-000-801.
 - 2) Do a check of the connector pins and sockets for damage.
 - a) If you find pins that are damaged or bent, repair the problem, install the P5-3 panel, then do the Repair Confirmation at the end of this task.
 - b) If you do not find a problem, continue.
 - 3) Do a check between pin 52 and pin 37 on connector D624 of the P5-3 module for open circuit.
 - a) If you do not find an open circuit, do a check of the wiring for damage.
 - <1> If you find damage, repair the wiring.
 - <a> Do the Repair Confirmation at the end of this task.
 - <2> If you do not find damage, replace the K1 AUTO STBY RELAY (SSM 27-23-11).
 - <a> Do the Repair Confirmation at the end of this task.
 - b) If you find an open circuit, continue.
 - 4) Do a check between pin 52 and pin 37 on connector D630 of the P5-3 module for open circuit.
 - a) If you do not find an open circuit, do a check of the wiring for damage.
 - <1> If you find damage, repair the wiring.
 - <a> Do the Repair Confirmation at the end of this task.
 - <2> If you do not find damage, replace the K21 STBY RUDDER ANNUN RELAY (SSM 27-23-11).
 - <a> Do the Repair Confirmation at the end of this task.
 - b) If you find an open circuit, continue.
 - 5) Do a check between pin 11 on connector D624 and pin 37 on connector D630 of the P5-3 module for open circuit.
 - a) If you do not find an open circuit, do a check of the wiring for damage.
 - <1> If you find damage, repair the wiring.
 - <a> Do the Repair Confirmation at the end of this task.

EFFECTIVITY
SIA ALL

27-21 TASK 817

D633A103-SIA

Page 234
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

- <2> If you do not find damage, examine the operation of the switches listed in the table that follows on the P5-3 Module. If necessary, replace the applicable switch.

Table 201 SWITCH OPERATION

S3 FLT CONTROL SYS A SWITCH - CONTACT GROUP 5
S4 FLT CONTROL SYS B SWITCH - CONTACT GROUP 5
S4 FLT CONTROL SYS B SWITCH - CONTACT GROUP 6

- <a> Do the Repair Confirmation at the end of this task.
- b) If you find an open circuit, install the P5-3 Panel, then continue (Flight Controls Panel Installation, AMM TASK 27-09-45-400-801)
- 6) Disconnect the connector D10197 from the Rudder Main PCU.
- 7) Do a check of the connector pins and sockets for damage.
- a) If you find a pins that are damaged or bent, do the steps to repair the problem, then do the steps for Repair Confirmation at the end of this task.
- b) If you do not find a problem, continue.
- 8) Do a check between pin 2 to pin 8 on connector D10197 of the cable for open circuit (SSM 27-23-11).
- a) If it is not open, do a check of the wiring for damage and repair the wiring, then do the steps for Repair Confirmation at the end of this task.
- <1> If you do not find any wiring damage, then do a check of the wiring between pin 12 of connector D40262 and pin 5 of connector D46040.
- <a> If you find any damage, repair the wiring.
- I. Do the Repair Confirmation at the end of this task.
- If you do not find any wiring damage, replace the Flap Position Switch. S1051. These are the tasks:
- Flap Limit Switch Removal, AMM TASK 27-51-63-000-801
 - Flap Limit Switch Installation, AMM TASK 27-51-63-400-801
- I. Do the Repair Confirmation at the end of this task.
- b) If it is open, continue.
- 9) Do a check between pin 2 to pin 8 on connector D10197 of the Rudder Main PCU for open circuit (SSM 27-23-11).
- a) If it is not open, replace the Main Rudder Power Control Unit. These are the tasks:
- Main Rudder Power Control Unit Removal, AMM TASK 27-21-91-000-803-002
 - Main Rudder Power Control Unit Installation, AMM TASK 27-21-91-400-803-002
- <1> Do the steps for Repair Confirmation at the end of this task.
- b) If it is open, connect D10197 on the Rudder Main PCU, then do the Repair Confirmation at the end of this task.
- (e) If the STBY RUD ON light is not illuminated, do these steps:

EFFECTIVITY
SIA ALL

D633A103-SIA

27-21 TASK 817

Page 235
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 1) Do a check of the linkages between the Torque Tube and the Main PCU for binding or damage.
 - a) If you find a problem, repair the problem, then do the steps for Repair Confirmation at the end of this task.
 - b) If you do not find a problem, continue.
 - 2) Measure the voltage between pin 18 and pin 20 of connector D10064 on the E1-1 Shelf in the EE Bay.
 - a) If the voltage measured is not between 2.75V DC to 7.25V DC, adjust the Main Rudder PCU. Do this task: Control Rod for Main Rudder Power Control Unit Adjustment, AMM TASK 27-21-00-820-809-002.
 - b) Do the steps for Repair Confirmation at the end of this task.
 - c) If the voltage measured is between 2.75V DC to 7.25V DC, then continue.
 - 3) Do this task: Rudder Override Operational Test, AMM TASK 27-21-00-700-823-002.
 - a) If you find a problem, repair the problem, then do the steps for Repair Confirmation at the end of this task.
 - b) If you do not find a problem, continue.
 - 4) Do this task: Main Rudder PCU Internal Hydraulic Leakage Test, AMM TASK 27-21-00-700-822-002.
 - a) If you find a problem, repair the problem, then do the steps for Repair Confirmation at the end of this task.
 - b) If you do not find a problem, replace the Main Rudder Power Control Unit. These are the tasks:
 - Main Rudder Power Control Unit Removal, AMM TASK 27-21-91-000-803-002
 - Main Rudder Power Control Unit Installation, AMM TASK 27-21-91-400-803-002
- <1> Do the Repair Confirmation at the end of this task.

G. Fault Isolation Procedure II

- (1) If the STBY RUD ON light is not illuminated in the Initial Condition check, do these steps:
 - (a) Check the S1051 Flap Switch Connector (D46040) for corrosion.
 - 1) If corrosion is present, clean or replace the connector then do the steps for Repair Confirmation at the end of this task.
 - 2) If corrosion is not present then continue.
 - (b) Do this task: Supply Electrical Power, AMM TASK 24-22-00-860-811.
 - 1) Pressurize the Hydraulic System B Reservoir. This is the task: Hydraulic Reservoirs Pressurization, AMM TASK 29-09-00-860-801.

EFFECTIVITY
SIA ALL

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

27-21 TASK 817

Page 236
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**



MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER.AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT

- 2) Pressurize Hydraulic System B. This is the task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801
- 3) Set the Flap Control Lever to the one-unit position.
- 4) Remove Hydraulic Power from System B. This is the task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
- 5) Set the FLT CONTROL A, B, and ALTERNATE FLAPS switches on the forward overhead panel, P5, to the OFF position.
- 6) Disconnect the electrical connector from the Standby Rudder Shutoff Valve.
- 7) Set the FLT CONTROL B switch on the Forward Overhead Panel, P5, to the STDBY RUD position.
 - a) Make sure the STANDBY HYD STBY RUD ON light on the Forward Overhead Panel, P5, is ON.
 - b) Make sure the standby EMDP operates.
 - c) Set the FLT CONTROL B switch to the OFF position.
 - d) Make sure the STANDBY HYD STBY RUD ON light on the forward overhead panel, P5, is OFF.
 - e) Make sure the standby EMDP stops.
- 8) Set the ALTERNATE FLAPS switch on the forward overhead panel, P5, to the ARM position.
 - a) Make sure the standby EMDP operates.
- 9) Set the ALTERNATE FLAPS switch to the OFF position.
 - a) Make sure the standby EMDP stops.
- 10) Set the FLT CONTROL A switch to the ON position.
 - a) Make sure the standby EMDP does not operate.



MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF RUDDER, THRUST REVERSERS, AND LEADING EDGE SLATS BEFORE YOU PUSH THE AIR SENSING SWITCH. RUDDER, THRUST REVERSERS, AND LEADING EDGE SLATS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- 11) Put the airplane in the air mode. This is the task: Put the Airplane in the Air Mode, AMM TASK 32-09-00-860-801
 - a) Make sure the standby EMDP operates.
 - b) Make sure the STANDBY HYD STBY RUD ON light on the Forward Overhead Panel, P5, is ON.

EFFECTIVITY
SIA ALL

27-21 TASK 817

D633A103-SIA

Page 237
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 12) Put the airplane in the ground mode. This is the task: Return the Airplane to the Ground Mode, AMM TASK 32-09-00-860-802
 - a) Make sure the standby EMDP stops.
 - b) Make sure the STANDBY HYD STBY RUD ON light on the Forward Overhead Panel, P5, is OFF.
- 13) Set the FLT CONTROL A switch to the OFF position.
- 14) Set the FLT CONTROL B switch to the ON position.
 - a) Make sure the standby EMDP does not operate.



MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF RUDDER, THRUST REVERSERS, AND LEADING EDGE SLATS BEFORE YOU PUSH THE AIR SENSING SWITCH. RUDDER, THRUST REVERSERS, AND LEADING EDGE SLATS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- 15) Put the airplane in the air mode. This is the task: Put the Airplane in the Air Mode, AMM TASK 32-09-00-860-801
 - a) Make sure the standby EMDP operates.
 - b) Make sure the STANDBY HYD STBY RUD ON light on the Forward Overhead Panel, P5, is ON.
- 16) Put the airplane in the ground mode. This is the task: Return the Airplane to the Ground Mode, AMM TASK 32-09-00-860-802
 - a) Make sure the standby EMDP stops.
 - b) Make sure the STANDBY HYD STBY RUD ON light on the forward overhead panel, P5, is OFF.
- 17) Set the FLT CONTROL B Switch to the OFF position.
- 18) Release the pressure from the Standby Hydraulic System.

NOTE: If it is necessary, operate the rudder to remove pressure from the standby hydraulic system.

 - a) If you find a problem, do the steps to repair the problem, then do the steps for Repair Confirmation at the end of this task.
 - b) If you do not find a problem, continue with the next step.
- (c) Do a check of the linkages between the Torque Tube and the Main PCU for binding or being disconnected.
 - 1) If you find a problem, repair the problem, then do the Repair Confirmation at the end of this task.
 - 2) If you do not find a problem, continue.
- (d) Make sure that the FLT CONTROL A and B switches on the P5-3 panel are in the ON positions. Measure the voltage between pin 18 and pin 20 of connector D10064 on the E1-1 shelf in the EE Bay.
 - 1) If the voltage measured is not between 2.75V DC to 7.25V DC, adjust the rudder main PCU. This is the task: Control Rod for Main Rudder Power Control Unit Adjustment, AMM TASK 27-21-00-820-809-002.
 - 2) Do the steps for Repair Confirmation at the end of this task.

EFFECTIVITY
SIA ALL

27-21 TASK 817

D633A103-SIA

Page 238
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 3) If the voltage measured is between 2.75V DC to 7.25V DC, then continue with the next step.
- (e) Do this task: Rudder Override Operational Test, AMM TASK 27-21-00-700-823-002.
 - 1) If you find a problem, repair the problem, then do the Repair Confirmation at the end of this task.
 - 2) If you do not find a problem, continue.
- (f) Do this task: Main Rudder PCU Internal Hydraulic Leakage Test, AMM TASK 27-21-00-700-822-002.
 - 1) If you find a problem, repair the problem, then do the Repair Confirmation at the end of this task.
 - 2) If you do not find a problem, there was an intermittent problem.

H. Repair Confirmation

- (1) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	15	C01628	FORCE FIGHT MONITOR

- (2) Re-connect the Standby Rudder Shutoff Valve connector.
- (3) Do a check of the STBY RUD ON light:



WARNING

MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDER, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Pressurize the Rudder Hydraulic System. This is the task: Rudder Hydraulic System A, B, or Standby Pressurization, AMM TASK 27-21-00-800-801.
- (b) Set the FLT CONTROL A and B switches on the P5-3 panel to the ON positions.
- (c) Put the airplane in the air mode. Do this task: Put the Airplane in the Air Mode, AMM TASK 32-09-00-860-801.
- (d) Move the flap control lever to the 1-unit detent position.
- (e) Make sure that the STBY RUD ON light is not illuminated.
- (f) Set the FLT CONTROL A switch on the P5-3 panel to the STDBY RUD position.
- (g) Make sure that the STBY RUD ON light is illuminated.
- (h) Set the FLT CONTROL A switch on the P5-3 panel to the OFF position.
- (i) Make sure that the STBY RUD ON light is illuminated.
- (j) Set the FLT CONTROL B switch on the P5-3 panel to the OFF position.
- (k) Make sure that the STBY RUD ON light is not illuminated.
- (l) Set the FLT CONTROL B switch on the P5-3 panel to the STDBY RUD position.
- (m) Make sure that the STBY RUD ON light is illuminated.
- (n) Set the FLT CONTROL A and B switches on the P5-3 panel to the ON positions.

EFFECTIVITY
SIA ALL

27-21 TASK 817

D633A103-SIA

Page 239
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

- (o) Push the Left Rudder Pedal forward until it reaches the stop, hold for 10 seconds, then return the Left Rudder Pedal to the neutral position.
- (p) Push the Right Rudder Pedal forward until it reaches the stop, hold for 10 seconds, then return the Right Rudder Pedal to the neutral position.
- (q) Make sure that the STBY RUD ON light is not illuminated.
- (r) Move the Flap Control Lever to the UP detent position.
- (s) Put the airplane in the ground mode. This is the task: Return the Airplane to the Ground Mode, AMM TASK 32-09-00-860-802.
- (t) Do this task: Put the Rudder Hydraulic systems A, B, and Standby Back to the Condition Before the Pressurization, AMM TASK 27-21-00-840-801.

————— END OF TASK —————

818. High Rudder Trim - Fault Isolation

A. Description

- (1) The lateral trim that is necessary to keep straight and level flight during cruise, and with the flaps extended, must not be more than the limits shown in Table 202.

NOTE: There are no specific limits or requirements for lateral trim outside of these flight conditions.

NOTE: For the High Aileron Trim see High Aileron Trim - Fault Isolation, 27-11 TASK 816.

B. FLIGHT CONTROLS LATERAL TRIM – GUIDANCE FOR IN-SERVICE ASSESSMENT

- (1) It may be necessary to conduct AMM TASK 27-09-71-820-801 to determine the appropriate lateral trim adjustment if the trim needed using the rudder only to keep wings level flight during revenue operations is greater than the values shown in the table below:

Table 202

Flight Condition ^{*[1]}	Rudder Only Trim ^{*[2]}	Airspeed	Altitude (feet)
Cruise (Flaps UP/Gear Up) ^{*[3]}	0.8 unit left / 1.3 unit right	0.75 Mach or higher	31,000 or higher
Low Speed (Flaps UP/Gear Up)	1.2 unit	230 to 270 kias	10,000 to 17,000
Flaps Extended	1.6 unit	any	any

*[1] For all flight conditions, lateral trim should be evaluated in stable atmospheric conditions with fuel load balanced in the limit of 150 pounds (68 kilograms) and throttles balanced in the limit of 1 percent N1 difference.

*[2] Trim values using the FCTM recommended rudder trim technique with zero aileron trim input. These values assume that additional rudder is used instead of the AMM limit for aileron trim.

*[3] For the cruise flight condition, rudder trim will change as the rudder system cold soaks. Rudder only trim should be evaluated at least 30 minutes after reaching cruise altitude.

NOTE: This table is provided to give operators the ability to assess reports of excessive lateral trim obtained from revenue service and to determine if further action is required to adjust the lateral trim. In order to more accurately determine if a lateral trim adjustment is required, the flight test profile of AMM TASK 27-09-71-820-801 should be accomplished.

NOTE: In addition to the rudder only trim table above (Table 202), significant and abrupt changes in lateral trim, unusual or abnormal trim, and heavy maintenance activity involving flaps, ailerons, or rudder could be reasons to conduct the flight test profile of AMM TASK 27-09-71-820-801.

EFFECTIVITY
SIA ALL

27-21 TASKS 817-818

D633A103-SIA

Page 240
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

C. Initial Evaluation

- (1) Do this task: Trailing Edge Flap Drive System Inspection, AMM TASK 27-51-00-210-801.
 - (a) Replace or repair any damaged parts.
- (2) Do this task: Trailing Edge Flap Actuation System Inspection, AMM TASK 27-51-00-210-802.
- (3) Make sure the rudder is adjusted correctly. To check the rudder, do this task: Rudder Centering Test, AMM TASK 27-21-00-700-815-002.
- (4) Make sure the ailerons are adjusted correctly. To check the ailerons, do this task: Do A Check of the Aileron System Adjustment, AMM TASK 27-11-00-820-805.
- (5) Do a test flight to find the lateral trim necessary for straight and level flight in the following conditions:

NOTE: Use the captains control wheel to determine the trim limits. One unit of aileron trim is equal to six degrees of control wheel rotation.

NOTE: There are no specific limits or requirements for lateral trim outside of these flight conditions.

- (a) To find the aileron trim necessary during cruise, fly with these conditions:
 - 1) Flight speed: Approximately 0.78 mach (594 mph).
 - 2) Altitude: 37,000 feet or higher.
 - 3) Fuel load: Balanced in the limit of 150 lb (68 kg).
 - 4) Throttles: Balanced thrust in the limit of 1 percent N1 difference, with autothrottles OFF.
 - 5) Autopilot engaged with in HDG SEL, with the wings level.
- (b) Apply rudder trim to get zero heading change.

NOTE: Keep this rudder trim position through the rest of the trim conditions.
- (c) Disengage the autopilot.
- (d) Apply aileron trim to keep the wings level and maintain zero heading change.
- (e) Write down the amount and direction of aileron trim necessary to maintain straight and level flight.

NOTE: This is the trim for the Cruise condition.
- (f) To find the aileron trim necessary for low speed cruise, and with the flaps extended, fly with these conditions:
 - 1) Altitude: Between 10,000 to 17,000 feet.
 - 2) Fuel load: Balanced in the limit of 150 lb (68 kg).
 - 3) Throttles: Balanced thrust in the limit of 1 percent N1 difference, with autothrottles OFF.
 - 4) Autopilot OFF.
 - 5) Apply rudder trim to get zero heading change.
- (g) Fly at 250 knots (288 mph), with the flaps retracted.
- (h) Apply aileron trim to keep the wings level and maintain zero heading change.
- (i) Write down the amount and direction of aileron trim necessary to maintain straight and level flight.

NOTE: This is the trim for the Low Speed.

EFFECTIVITY
SIA ALL

27-21 TASK 818

D633A103-SIA

Page 241
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (j) Change the airspeed to flaps 1 maneuvering speed, and extend the flaps to the 1-unit position.
- (k) Apply aileron trim to keep the wings level and maintain zero heading change.
- (l) Write down the amount and direction of aileron trim necessary to maintain straight and level flight.

NOTE: This is the trim for the flaps 1 unit.

- (m) Change the airspeed to flaps 15 maneuvering speed, and extend the flaps to the 15-unit position, and extend the landing gear.
- (n) Apply aileron trim to keep the wings level and maintain zero heading change.
- (o) Write down the amount and direction of aileron trim necessary to maintain straight and level flight.

NOTE: This is the trim for the flaps 15 units.

- (p) Change the airspeed to Vref +5 knots, and extend the flaps to the 40-unit position.
- (q) Apply aileron trim to keep the wings level and maintain zero heading change.
- (r) Write down the amount and direction of aileron trim necessary to maintain straight and level flight.

NOTE: This is the trim for the flaps 40 units.

- (6) Adjustment of the lateral trim is necessary when the trim is not in the limits shown in Table 202. To adjust the lateral trim, do this task: Trailing Edge Flap Adjustment for Lateral Trim and Test, AMM TASK 27-09-71-820-801.

END OF TASK

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EFFECTIVITY
SIA ALL

27-21 TASK 818

D633A103-SIA

Page 242
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

801. Control Column Does Not Move Freely - Fault Isolation

A. Description

- (1) The pilots manually control the position of the Elevators with forward and aft movement of the Control Column. The Control Column gives mechanical input to the Elevator Power Control Units (PCUs) through cables and linkages. The elevator PCUs use hydraulic pressure to mechanically move the Elevator through the Output Torque Tube.

B. Possible Causes

- (1) Control Column
- (2) Elevator Forward Control Quadrant Assembly
- (3) Aileron Transfer Mechanism Support Beam (Column Stop)

C. Initial Evaluation

- (1) Move the applicable Control Column fully aft and fully forward.
 - (a) If the Control Column moves freely, then there was an intermittent problem.
 - (b) If the Control Column does not move freely, then do the Fault Isolation Procedure below.

D. Fault Isolation Procedure

- (1) Do a check of the Control Column force. This is the task: Control Column Power Force - Test, AMM TASK 27-31-00-700-809.
 - (a) If you find a problem, then do these steps:
 - 1) Examine these components for damaged parts, loose parts, or for objects that prevent smooth movement. Replace or repair those components that have damage.
 - a) To replace the Control Column, these are the tasks:
 - Control Column - Removal, AMM TASK 27-31-51-000-801
 - Control Column - Installation, AMM TASK 27-31-51-400-801
 - b) To replace the Elevator Forward Control Quadrant Assembly, these are the tasks:
 - Elevator Forward Control Quadrant Assembly Removal, AMM TASK 27-31-61-000-801
 - Elevator Forward Control Quadrant Assembly Installation, AMM TASK 27-31-61-400-801
 - c) Make sure that an Aileron Transfer Mechanism Support Beam (Column Stop) is in the correct orientation. This is the task: Aileron Transfer Mechanism Installation, AMM TASK 27-11-61-400-801.
<1> Re-install as necessary.
 - 2) Move the applicable Control Column fully aft and fully forward.
 - 3) If the Control Column moves freely, then you corrected the problem.

————— **END OF TASK** —————

802. Elevator Control Cable Tension Repeatedly Checks Low - Fault Isolation

A. Description

- (1) The elevator control cables attach in the grooves at the lower surface of the quadrants. Each cable attaches to the quadrant. The elevator up cables (EB) run directly aft. The elevator down cables (EA) run forward around the turnaround pulley and proceed aft.

EFFECTIVITY
SIA ALL

27-31 TASKS 801-802

D633A103-SIA

Page 201
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

B. Possible Causes

- (1) Elevator control cables

C. Initial Evaluation

- (1) Do a tension check of the elevator control cables. To do it, do this task: Elevator Control Cables EA and EB and Pitch Force Transducers - Adjustment, AMM TASK 27-31-00-820-801.
 - (a) If the tension of the elevator control cables is low, then do the Fault Isolation Procedure below.
 - (b) If the tension of the elevator control cables is OK, then there was an intermittent fault.

D. Fault Isolation Procedure

- (1) Re-rig the elevator control cables:
 - (a) Re-stretch the elevator control cables. To stretch them, do this task: Elevator Control Cables EA and EB and Pitch Force Transducers - Adjustment, AMM TASK 27-31-00-820-801.
 - (b) Re-adjust the elevator control cables. To adjust them, do this task: Elevator Control Cables EA and EB and Pitch Force Transducers - Adjustment, AMM TASK 27-31-00-820-801.
 - (c) Move the control column 25 times through full travel.
 - (d) If the tension of the elevator control cables is satisfactory, then you corrected the fault.
 - (e) If the tension of the elevator control cable remains low, then continue.
- (2) Do a check of the elevator control cables. To do it, do this task: Control Cable Wire Rope - Inspection, AMM TASK 20-20-31-200-801.
 - (a) If you find a problem, then do these steps:
 - 1) Replace the elevator control cables. These are the tasks:
 - Control Cables Removal, AMM TASK 20-10-91-000-801
 - Control Cables Installation, AMM TASK 20-10-91-400-801
 - 2) Do a tension check of the elevator control cables. To do it, do this task: Elevator Control Cables EA and EB and Pitch Force Transducers - Adjustment, AMM TASK 27-31-00-820-801.
 - 3) If the tension of the elevator control cables is satisfactory, then you corrected the fault.

————— **END OF TASK** —————

804. Elevator Surface Has Too Much Freeplay - Fault Isolation

A. Description

- (1) The elevators connect with hinges to the aft right and left sections of the horizontal stabilizer. Each elevator has a tab and four balance panels. The elevator control pushrod connects the output torque tube to the elevator. When the output torque tube rotates, it moves the elevator control pushrod fore and aft, which then moves the elevator up and down.

B. Possible Causes

- (1) Elevator control pushrod
- (2) Elevator output torque tube
- (3) Elevator torque tube crank arm bearing
- (4) Elevator hinges

EFFECTIVITY
SIA ALL

27-31 TASKS 802-804

D633A103-SIA

Page 202
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

C. Initial Evaluation

- (1) Do a check of the elevator freeplay. This is the task: Elevator Output Torque Tube Buss Linkage Freeplay - Check, AMM TASK 27-31-32-200-804.
 - (a) If the check is not satisfactory, then do the Fault Isolation Procedure below.

D. Fault Isolation Procedure

- (1) Do a check of the elevator output torque tube and control pushrod wear.

Worn output torque tube crank and control pushrod bearings can cause too much freeplay.

 - (a) If you find a problem, then do these steps:
 - 1) Repair or replace the parts that have damage.
 - 2) Do a check of the elevator freeplay. This is the task: Elevator Output Torque Tube Buss Linkage Freeplay - Check, AMM TASK 27-31-32-200-804.
 - 3) If the check is satisfactory, then you corrected the fault.
 - (b) If you do not find a problem, then continue.
- (2) Do a check of the elevator output torque tube crank arm bearing.

Worn bearing can cause too much freeplay.

 - (a) If you find a problem, then do these steps:
 - 1) Repair or replace the parts that have damage.
 - 2) Do a check of the elevator freeplay. This is the task: Elevator Output Torque Tube Buss Linkage Freeplay - Check, AMM TASK 27-31-32-200-804.
 - 3) If the check is satisfactory, then you corrected the fault.
 - (b) If you do not find a problem, then continue.
- (3) Do a check of the elevator hinge wear.

Worn bearings and bushings can cause too much freeplay.

 - (a) If you find a problem, then do these steps:
 - 1) Repair or replace the parts that have too much wear or damage.
 - 2) Do a check of the elevator freeplay. This is the task: Elevator Output Torque Tube Buss Linkage Freeplay - Check, AMM TASK 27-31-32-200-804.
 - 3) If the check is satisfactory, then you corrected the fault.

————— **END OF TASK** —————

805. Elevator Tab Surface Has Too Much Freeplay - Fault Isolation

A. Description

- (1) The elevator tab attaches to the aft edge of each elevator. When the output torque tube moves, it moves the elevators and elevator tab pushrods. The elevator tab pushrods move the elevator tab on a direction that is opposite to the elevator.

B. Possible Causes

- (1) Elevator tab hinges
- (2) Elevator tab rods

C. Initial Evaluation

- (1) Do a check of the elevator tab.

These are the tasks:

EFFECTIVITY
SIA ALL

27-31 TASKS 804-805

D633A103-SIA

Page 203
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

Elevator Tab Freeplay - Check, AMM TASK 27-31-32-200-805.

Elevator Output Torque Tube Buss Linkage Freeplay - Check, AMM TASK 27-31-32-200-804.

- (a) If the check is not satisfactory, then do the Fault Isolation Procedure below.
- (b) If the check is satisfactory, then there was an intermittent fault.

D. Fault Isolation Procedure

- (1) Do a check of the elevator tab wear limits. Contact the Boeing Company for the wear limits.
- (2) Do a check of the elevator tab wear limits. Contact the Boeing Company for the wear limits.
 - (a) If you find a problem, then do these steps:
 - 1) Repair or replace the parts that have damage.
 - 2) Do a check of the elevator tab.
These are the tasks:
Elevator Tab Freeplay - Check, AMM TASK 27-31-32-200-805.
Elevator Output Torque Tube Buss Linkage Freeplay - Check, AMM TASK 27-31-32-200-804.
 - 3) If the check is satisfactory, then you corrected the fault.
- (b) If you do not find a problem, then continue.
- (3) Do a check of the elevator tab rod wear limits. Contact the Boeing Company for the wear limits.
 - (a) If you find a problem, then do these steps:
 - 1) Repair or replace the parts that have damage.
 - 2) Do a check of the elevator tab.
These are the tasks:
Elevator Tab Freeplay - Check, AMM TASK 27-31-32-200-805.
Elevator Output Torque Tube Buss Linkage Freeplay - Check, AMM TASK 27-31-32-200-804.
 - 3) If the check is satisfactory, then you corrected the fault.

————— **END OF TASK** —————

806. Elevator Vibration Problem - Fault Isolation

A. Description

- (1) Elevator vibration occurs in aft and forward fuselage (usually above 250 knots indicated airspeed).

B. Fault Isolation Procedure

- (1) Do the airframe vibration condition. Do the elevator check portion of the following task:
Conditional Inspection, AMM TASK 05-51-67-280-801.
NOTE: Do Check 8 in the table at the end of the task, as well.
 - (a) If there is no vibration in the aft and forward fuselage, then you corrected the fault.

————— **END OF TASK** —————

EFFECTIVITY
SIA ALL

27-31 TASKS 805-806

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 204
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

807. Neutral Shift Mechanism Does Not Operate Correctly - Fault Isolation

A. Description

- (1) The neutral shift function causes the elevators to move when the stabilizer moves. When the stabilizer moves, it gives a mechanical input to the elevator power control units (PCUs).

B. Possible Causes

- (1) Elevator neutral shift mechanism
- (2) Elevator feel and centering unit

C. Initial Evaluation

- (1) Do the neutral shift test. To do it, do this task: Neutral Shift - Test, AMM TASK 27-31-00-700-810.
 - (a) If the test fails, then do the Fault Isolation Procedure below.
 - (b) If the test passes, then there was an intermittent fault.

D. Fault Isolation Procedure

- (1) Adjust the input rod of the elevator neutral shift mechanism and output rod of the feel and centering unit. To adjust them, do this task: Input Rods of the Elevator Neutral Shift Mechanism and Output Rod of the Feel and Centering Unit - Adjustment, AMM TASK 27-31-00-820-804.
 - (a) Do the neutral shift test. To do it, do this task: Neutral Shift - Test, AMM TASK 27-31-00-700-810.
 - (b) If the test passes, then you corrected the fault.
 - (c) If the test fails, then continue.
- (2) Examine the elevator neutral shift mechanism for unwanted objects and damaged components.
 - (a) If you find a problem with the elevator neutral shift mechanism, then do these steps:
 - 1) Repair or replace the elevator neutral shift mechanism. These are the tasks:
 - Elevator Neutral Shift Mechanism Removal, AMM TASK 27-31-91-000-801
 - Elevator Neutral Shift Mechanism Installation, AMM TASK 27-31-91-400-801
 - 2) Do the neutral shift test. To do it, do this task: Neutral Shift - Test, AMM TASK 27-31-00-700-810.
 - 3) If the test passes, then you corrected the fault.
 - (b) If you do not find a problem with the elevator neutral shift mechanism, then continue.
- (3) Do a check of the elevator feel and centering unit:
 - (a) Disconnect the elevator neutral shift mechanism from the mach trim actuator (AMM TASK 27-31-91-000-801).
 - (b) Disconnect the output rod from the elevator feel and centering unit (AMM TASK 27-31-64-000-801).
 - (c) Rotate the crank of the elevator feel and centering unit by hand.
 - (d) If the movement is not smooth, then do these steps:
 - 1) Remove interference, repair, or replace the elevator feel and centering unit. These are the tasks:
 - Elevator Feel and Centering Unit Removal, AMM TASK 27-31-64-000-801
 - Elevator Feel and Centering Unit Installation, AMM TASK 27-31-64-400-801

EFFECTIVITY
SIA ALL

27-31 TASK 807

D633A103-SIA

Page 205
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 2) Connect the elevator neutral shift mechanism to the mach trim actuator (AMM TASK 27-31-91-400-801).
- 3) Connect the output rod to the elevator feel and centering unit (AMM TASK 27-31-64-400-801).
- 4) Do the neutral shift test. To do it, do this task: Neutral Shift - Test, AMM TASK 27-31-00-700-810.
- 5) If the test passes, then you corrected the fault.

————— **END OF TASK** —————

808. Airplane Pitch Up or Pitch Down Too Much - Fault Isolation

A. Description

- (1) The elevator tab attaches to the aft edge of each elevator. When the output torque tube moves, it moves the elevators and elevator tab pushrods. The elevator tab pushrods move the elevator tab on a direction that is opposite to the elevator.

B. Possible Causes

- (1) Elevator tab pushrods

C. Fault Isolation Procedure

- (1) Adjust the elevator tab pushrods. To adjust them, do this task: Elevator Tab Pushrods - Adjustment, AMM TASK 27-31-00-820-805.
 - (a) Do the test of the elevator power off trim. Do this task: Elevator Power Off Trim Test AMM PAGEBLOCK 27-31-00/501.
 - (b) If the test passes, then you corrected the fault.

————— **END OF TASK** —————

809. Elevator Travel Problems with Autopilot Engaged - Fault Isolation

A. Description

- (1) The elevator control system is also activated by the autopilot (SDS SUBJECT 22-11-00).

B. Possible Causes

- (1) Digital flight control system
- (2) Elevator balance panels

C. Fault Isolation Procedure

- (1) Do a check of the digital flight control system (DFCS):
 - (a) Do this task: Elevator Rigging Test, AMM TASK 22-11-00-820-802.
 - (b) If the test is not satisfactory, re-rig the components to the limit as shown on the control display unit (CDU) (AMM TASK 22-11-00-820-802).
 - (c) If the test is satisfactory, then continue.
- (2) Do a check of the elevator balance panels. To do it, do this task: Elevator Surface Friction and Balance - Test, AMM TASK 27-31-00-700-802.
 - (a) If you find a problem, then do these steps:
 - 1) Examine the balance panels for damaged parts, loose parts, or for objects that prevent smooth movement.
 - a) To replace the elevator balance panels, these are the tasks:

EFFECTIVITY
SIA ALL

27-31 TASKS 807-809

D633A103-SIA

Page 206
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- Elevator Balance Panel - Removal, AMM TASK 27-31-41-000-801
- Elevator Balance Panel - Installation, AMM TASK 27-31-41-400-801

END OF TASK

810. Elevator Does Not Move Correctly - Fault Isolation

A. Description

- (1) (SDS SUBJECT 27-31-00)

B. Possible Causes

- (1) Elevator control pushrods adjustment
- (2) Elevator control cables adjustment
- (3) Input rods of the elevator power control unit (PCU) adjustment
- (4) Damaged parts, loose parts, or objects that prevent smooth movement
- (5) Forward quadrant stops
- (6) High or low system feel forces
- (7) Broken elevator tab control mechanism springs.

C. Initial Evaluation

- (1) Do a check of the elevator limit travel test. To do it, do this task: Elevator Travel Limit - Test, AMM TASK 27-31-00-700-804.
 - (a) If the check is not satisfactory, then do the Fault Isolation Procedure below.
 - (b) If the check is satisfactory, then do these additional checks:
 - 1) Do a general visual inspection of the forward and aft elevator mechanical control paths for any sign of binding.
 - a) If the check is not satisfactory, then do the Fault Isolation Procedure below.
 - b) If the check is satisfactory, then there was an intermittent fault.

D. Fault Isolation Procedure

- (1) Do a check of the elevator control pushrods adjustment:
 - (a) Do this task: Elevator Control Pushrods - Adjustment, AMM TASK 27-31-00-820-802.
 - (b) If the adjustment check is not satisfactory, then do these steps:
 - 1) Re-adjust the applicable elevator control pushrod (Elevator Control Pushrods - Adjustment, AMM TASK 27-31-00-820-802).
 - 2) Do this task: Elevator Travel Limit - Test, AMM TASK 27-31-00-700-804.
 - 3) If the test is satisfactory, then you corrected the fault.
- (2) Do a check of the elevator control cables:
 - (a) Do this task: Elevator Control Cables EA and EB and Pitch Force Transducers - Adjustment, AMM TASK 27-31-00-820-801.
 - (b) If the adjustment check is not satisfactory, then do these steps:
 - 1) Re-adjust the applicable elevator control cable (AMM TASK 27-31-00-820-801).
 - 2) Do this task: Elevator Travel Limit - Test, AMM TASK 27-31-00-700-804.
 - 3) If the test is satisfactory, then you corrected the fault.
- (3) Do a check of the input rods of the elevator power control units (PCUs):

EFFECTIVITY
SIA ALL

27-31 TASKS 809-810

D633A103-SIA

Page 207
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (a) Do this task: Input Rods of the Elevator Power Control Unit - Adjustment, AMM TASK 27-31-00-820-803.
- (b) If the adjustment check is not satisfactory, then do these steps:
 - 1) Re-adjust the input rod of the applicable elevator PCU (AMM TASK 27-31-00-820-803).
 - 2) Do this task: Elevator Travel Limit - Test, AMM TASK 27-31-00-700-804.
 - 3) If the test is satisfactory, then you corrected the fault.
- (4) Do this inspection check:
 - (a) Examine these components for damage, loose parts, or for objects that prevent smooth movement:
 - 1) Control column
 - 2) Elevator forward control quadrants
 - 3) Elevator aft quadrants
 - 4) Output torque tube
 - 5) Elevator tab control mechanism springs.
 - (b) If you find a problem, then do these steps:
 - 1) Replace or repair the damaged components.
 - a) To replace the control column, these are the tasks:
 - Control Column - Removal, AMM TASK 27-31-51-000-801
 - Control Column - Installation, AMM TASK 27-31-51-400-801.
 - b) To replace the elevator forward control quadrant, these are the tasks:
 - Elevator Forward Control Quadrant Assembly Removal, AMM TASK 27-31-61-000-801
 - Elevator Forward Control Quadrant Assembly Installation, AMM TASK 27-31-61-400-801.
 - c) To replace the elevator aft quadrant, these are the tasks:
 - Elevator Input Torque Tube - Removal, AMM TASK 27-31-71-000-801
 - Elevator Input Torque Tube - Installation, AMM TASK 27-31-71-400-801.
 - d) To replace the output torque tube, these are the tasks:
 - Elevator Output Torque Tube Removal, AMM TASK 27-31-74-000-801
 - Elevator Output Torque Tube Installation, AMM TASK 27-31-74-400-801.
 - e) To replace the elevator tab control mechanism springs, these are the tasks:
 - Elevator Tab Control Mechanism Springs - Removal, AMM TASK 27-31-34-000-805
 - Elevator Tab Control Mechanism Springs - Installation, AMM TASK 27-31-34-400-805.
 - 2) Do this task: Elevator Travel Limit - Test, AMM TASK 27-31-00-700-804.
 - 3) If the test is satisfactory, then you corrected the fault.
 - (c) If you do not find a problem, then continue.
- (5) Do a check of the elevator feel and centering unit:

EFFECTIVITY
SIA ALL

27-31 TASK 810

D633A103-SIA

Page 208
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

- (a) Disconnect the output rod from the elevator feel and centering unit (AMM TASK 27-31-64-000-801).
- (b) Rotate the crank of the elevator feel and centering unit by hand.
- (c) If the movement is not smooth, then do these steps:
 - 1) Remove interference, repair, or replace the elevator feel and centering unit. These are the tasks:
 - Elevator Feel and Centering Unit Removal, AMM TASK 27-31-64-000-801
 - Elevator Feel and Centering Unit Installation, AMM TASK 27-31-64-400-801.
 - 2) Connect the output rod to the elevator feel and centering unit (AMM TASK 27-31-64-400-801).
 - 3) Do this task: Elevator Travel Limit - Test, AMM TASK 27-31-00-700-804.
 - 4) If the test is satisfactory, then you corrected the fault.
- (d) If the movement is smooth, then continue.
 - 1) Connect the output rod to the elevator feel and centering unit (AMM TASK 27-31-64-400-801).
- (6) Do this check of the elevator forward quadrant stops:
 - (a) Do the control column test. To do it, do this task: Control Column Travel and Centering - Test, AMM TASK 27-31-00-700-808.
 - (b) If the elevator does not move to the specified position before the control column touches the quadrant stops, then do these steps:
 - 1) Re-install the applicable quadrant stop correctly.
 - 2) Do this task: Elevator Travel Limit - Test, AMM TASK 27-31-00-700-804.
 - 3) If the test is satisfactory, then you corrected the fault.
 - (c) If the elevator moves to the specified position before the control column touches the quadrant stop, then continue.
- (7) Do this check of the system feel forces:
 - (a) Do this task: Control Column Power Force - Test, AMM TASK 27-31-00-700-809.
 - (b) If the system feel forces are high with hydraulic power on, then do this task: High Control Column Force With Hydraulic Power On - Fault Isolation, 27-31 TASK 813.
 - (c) If the system feel forces are low with hydraulic power on, then do this task: Low Control Column Force With Hydraulic Power ON - Fault Isolation, 27-31 TASK 812.
 - (d) If the system feel forces are high with hydraulic power off, then do this task: High Control Column Force With Hydraulic Power Off - Fault Isolation, 27-31 TASK 814.

END OF TASK

811. Airplane Overreacts to Control Column Input - Fault Isolation

A. Description

- (1) The elevator control cables attach in the grooves at the lower surface of the quadrants. Each cable attaches to the quadrant. The elevator up cables (EB) run directly aft. The elevator down cables (EA) run forward around the turnaround pulley and proceed aft.

EFFECTIVITY
SIA ALL

27-31 TASKS 810-811

D633A103-SIA

Page 209
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

B. Possible Causes

- (1) Control cables
- (2) Air pressure seals
- (3) Cable guard, pulleys, or brackets
- (4) Elevator forward control quadrant and bearings
- (5) Pitch force transducer
- (6) Elevator aft quadrant support
- (7) Elevator power control unit

C. Initial Evaluation

- (1) Do a check of the control column travel. To do it, do this task: Control Column Travel and Centering - Test, AMM TASK 27-31-00-700-808.
 - (a) If the check is not satisfactory, then do the Fault Isolation Procedure below.
 - (b) If the check is satisfactory, then there was an intermittent fault.

D. Fault Isolation Procedure

- (1) Do a check of the elevator feel and centering unit:
 - (a) Disconnect the output rod of the elevator feel and centering unit from the aft quadrant crank (AMM TASK 27-31-64-000-801).
 - (b) Stretch the elevator control cables. To stretch and then adjust them after they are stretched, do this task: Elevator Control Cables EA and EB and Pitch Force Transducers - Adjustment, AMM TASK 27-31-00-820-801.

NOTE: This task stretches and then adjusts the Elevator Control Cables EA and EB.
 - (c) Move the control column 25 times through full travel.
 - (d) If the tension of the elevator control cables is satisfactory, then you corrected the fault.
 - (e) If the tension of the elevator control cable remains low, then continue.
- (2) Do a tension check of the elevator control cables. To do it, do this task: Elevator Control Cables EA and EB and Pitch Force Transducers - Adjustment, AMM TASK 27-31-00-820-801.
 - (a) If you find a problem, then do these steps:
 - 1) Re-rig the elevator control cables. To rig them, do this task: Elevator Control Cables EA and EB and Pitch Force Transducers - Adjustment, AMM TASK 27-31-00-820-801.
 - 2) Do this task: Control Column Travel and Centering - Test, AMM TASK 27-31-00-700-808.
 - 3) If the test is satisfactory, then you corrected the fault.
 - (b) If you do not find a problem, then continue.
- (3) Do a check to verify that the elevator control cable moves freely through its travel:
 - (a) Disconnect the output rod of the elevator feel and centering unit from the input torque tube (AMM TASK 27-31-64-000-801).
 - (b) Disconnect the input rods of the elevator power control units (PCUs) from the input torque tube (AMM TASK 27-31-14-000-801).
 - (c) Do an inspection to check for free movement of the elevator control cable during its travel.
 - 1) If you find a problem, then do these steps:

EFFECTIVITY
SIA ALL

27-31 TASK 811

D633A103-SIA

Page 210
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

- a) Remove the components that prevent the control cable from moving freely.
 - b) Connect the output rod of the elevator feel and centering unit to the input torque tube (AMM TASK 27-31-64-400-801).
 - c) Connect the input rods of the elevator power control units (PCUs) to the input torque tube (AMM TASK 27-31-14-400-801).
 - d) Do this task: Control Column Travel and Centering - Test, AMM TASK 27-31-00-700-808.
- 2) If the test is satisfactory, then you corrected the fault.
- (d) If you do not find a problem, then continue.
- (4) Do a check of the air pressure seals:
- (a) Examine the air pressure seals for unwanted objects and damaged components (AMM TASK 27-09-17-860-801).
 - (b) If you find a problem, then do these steps:
 - 1) Remove the unwanted objects or replace the air pressure seals. These are the tasks:
 - Control Cable Half Ball Pressure Seal Removal, AMM TASK 20-10-04-000-801
 - Control Cable Half Ball Pressure Seal Installation, AMM TASK 20-10-04-400-801
 - 2) Connect the output rod of the elevator feel and centering unit to the input torque tube (AMM TASK 27-31-64-400-801).
 - 3) Connect the input rods of the elevator power control units (PCUs) to the input torque tube (AMM TASK 27-31-14-400-801).
 - 4) Do this task: Control Column Travel and Centering - Test, AMM TASK 27-31-00-700-808.
 - 5) If the test is satisfactory, then you corrected the fault.
 - (c) If you do not find a problem, then continue.
- (5) Do a check of the cable guards, control cable pulleys, and brackets on the control cable pulleys:
- (a) Examine the cable guards, control cable pulleys, and brackets on the control cable pulleys. To examine the control cable pulleys, do this task: Inspection of Pulleys, AMM TASK 20-20-31-200-805.
 - (b) If you find a problem, then do these steps:
 - 1) Remove the unwanted objects or replace the control guards.
 - 2) Remove the unwanted objects or replace the control cable pulleys. These are the tasks:
 - Control Cable Pulleys Removal, AMM TASK 20-10-09-000-801
 - Control Cable Pulleys Installation, AMM TASK 20-10-09-400-801
 - 3) Remove the unwanted objects or replace the brackets on the control cable pulleys.
 - 4) Connect the output rod of the elevator feel and centering unit to the input torque tube (AMM TASK 27-31-64-400-801).
 - 5) Connect the input rods of the elevator power control units (PCUs) to the input torque tube (AMM TASK 27-31-14-400-801).
 - 6) Do this task: Control Column Travel and Centering - Test, AMM TASK 27-31-00-700-808.

EFFECTIVITY
SIA ALL

27-31 TASK 811

D633A103-SIA

Page 211
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 7) If the test is satisfactory, then you corrected the fault.
- (c) If you do not find a problem, then continue.
 - 1) Connect the output rod of the elevator feel and centering unit to the input torque tube (AMM TASK 27-31-64-400-801).
 - 2) Connect the input rods of the elevator power control units (PCUs) to the input torque tube (AMM TASK 27-31-14-400-801).
- (6) Do a check of the elevator forward control quadrant and bearings:
 - (a) Release tension in the elevator control cables.
 - (b) Examine the elevator forward control quadrant and bearings for unwanted objects and damaged components (AMM TASK 27-31-61-000-801).
 - (c) If you find a problem, then do these steps:
 - 1) Remove the unwanted objects or replace the elevator forward control quadrant. These are the tasks:
 - Elevator Forward Control Quadrant Assembly Removal, AMM TASK 27-31-61-000-801
 - Elevator Forward Control Quadrant Assembly Installation, AMM TASK 27-31-61-400-801
 - 2) Remove the unwanted objects or replace the brackets on the control cable pulleys.
 - 3) If it is necessary, re-rig the elevator control cables (AMM TASK 27-31-00-820-801).
 - 4) Do this task: Control Column Travel and Centering - Test, AMM TASK 27-31-00-700-808.
 - 5) If the test is satisfactory, then you corrected the fault.
 - (d) If you do not find a problem, then continue.
 - 1) If it is necessary, re-rig the elevator control cables (AMM TASK 27-31-00-820-801).
- (7) Do a check of the pitch force transducer:
 - (a) Do this task: Pitch Force Transducer Adjustment (DFCS BITE Test), AMM TASK 22-11-92-820-801.
 - (b) If you find a problem, then do these steps:
 - 1) Re-rig the pitch force transducer (AMM TASK 22-11-92-820-801).
 - 2) Do this task: Control Column Travel and Centering - Test, AMM TASK 27-31-00-700-808.
 - 3) If the test is satisfactory, then you corrected the fault.
 - (c) If you do not find a problem, then continue.
- (8) Examine the pivot of the pitch force transducer for unwanted objects and damaged components (AMM TASK 22-11-92-000-801).
 - (a) If you find a problem, then do these steps:
 - 1) Remove the unwanted objects or replace the pivot (AMM TASK 22-11-92-000-801).
 - 2) Do this task: Control Column Travel and Centering - Test, AMM TASK 27-31-00-700-808.
 - 3) If the test is satisfactory, then you corrected the fault.
 - (b) If you do not find a problem, then continue.
- (9) Do a check of the elevator aft quadrant:

EFFECTIVITY
SIA ALL

27-31 TASK 811

D633A103-SIA

Page 212
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (a) Release tension in the elevator control cables.
- (b) Examine the elevator aft quadrant for unwanted objects and damaged components.
- (c) If you find a problem, then do these steps:
 - 1) Remove the unwanted objects.
 - 2) If it is necessary, re-rig the elevator control cables (AMM TASK 27-31-00-820-801).
 - 3) Do this task: Control Column Travel and Centering - Test, AMM TASK 27-31-00-700-808.
 - 4) If the test is satisfactory, then you corrected the fault.
- (d) If you do not find a problem, then continue.
- (10) Do a check of the input rods of the elevator power control units (PCUs):
 - (a) Examine the input rods of the elevator power control units for unwanted objects and damaged components.
 - (b) If you find a problem, then do these steps:
 - 1) Remove the unwanted objects or replace the elevator PCU. These are the tasks:
 - Elevator Power Control Unit - Removal, AMM TASK 27-31-14-000-801
 - Elevator Power Control Unit Installation, AMM TASK 27-31-14-400-801
 - 2) If it is necessary, re-rig the elevator control cables (AMM TASK 27-31-00-820-801).
 - 3) Do this task: Control Column Travel and Centering - Test, AMM TASK 27-31-00-700-808.
 - 4) If the test is satisfactory, then you corrected the fault.
 - (c) If you do not find a problem, then continue.
 - 1) If it is necessary, re-rig the elevator control cables (AMM TASK 27-31-00-820-801).
- (11) Do a check of the input crank of the elevator feel and centering unit:
 - (a) Examine the input crank of the elevator feel and centering unit for unwanted objects and damaged components.
 - (b) If you find a problem, then do these steps:
 - 1) Remove the unwanted objects or replace the elevator feel and centering unit. these are the tasks:
 - Elevator Feel and Centering Unit Removal, AMM TASK 27-31-64-000-801
 - Elevator Feel and Centering Unit Installation, AMM TASK 27-31-64-400-801
 - 2) Do this task: Control Column Travel and Centering - Test, AMM TASK 27-31-00-700-808.
 - 3) If the test is satisfactory, then you corrected the fault.

————— **END OF TASK** —————

812. Low Control Column Force With Hydraulic Power ON - Fault Isolation

A. Description

- (1) SDS SUBJECT 27-31-00

B. Possible Causes

- (1) Pitot System Air Pressure Leakage
- (2) Broken Springs in the Elevator Feel and Center Unit

EFFECTIVITY
SIA ALL

27-31 TASKS 811-812

D633A103-SIA

Page 213
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (3) Elevator Feel Computer Input Rod out of adjustment
- (4) Elevator Feel Computer
- (5) Elevator Feel Actuator
- (6) Elevator Feel and Centering Unit

C. Initial Evaluation

- (1) Do a check of the System Feel Forces. This is the task: Control Column Power Force - Test, AMM TASK 27-31-00-700-809.
 - (a) If the System Feel Forces are in the specified limit with Hydraulic Power ON, then there was an intermittent fault.
 - (b) If the System Feel Forces are low with Hydraulic Power ON, then do the Fault Isolation Procedure below.

D. Fault Isolation Procedure

- (1) Do the Elevator Pitot System Leak - Test, AMM TASK 27-31-17-790-801.
 - (a) If there is leakage, then repair the leakage as necessary.
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If there is no leakage, then continue.
- (2) Do this task: Elevator Feel and Centering Unit Inspection, AMM TASK 27-31-64-200-801
 - (a) If you find broken springs, then replace the Elevator Feel and Centering Unit Springs. These are the tasks:
 - Elevator Feel and Centering Spring Removal, AMM TASK 27-31-64-000-802
 - Elevator Feel and Centering Spring Installation, AMM TASK 27-31-64-400-802
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If do not find broken springs, then continue.
- (3) Adjust the Input Rod of the Elevator Feel Computer. This is the task: Input Rod of the Elevator Feel Computer - Adjustment, AMM TASK 27-31-00-820-806.
 - (a) Do the Repair Confirmation at the end of this task.
- (4) Do this check of the Elevator Feel Computer:
 - (a) Disconnect the flexible Hydraulic Pressure and Return Lines from the Elevator Feel Actuator (Elevator Feel Actuator Removal, AMM TASK 27-31-67-000-801).
 - (b) Attach a 0 to 2100 psi (0 to 14479 kPa) hydraulic pressure gauge, STD-3914 to each of the four hydraulic lines.
 - (c) Install plugs on the open ports of the Elevator Feel Actuator.
 - (d) Move the Stabilizer to set the "B" dimension at 39.89 ± 0.05 inches (4 units of trim).
 - (e) Do this check of the of the Hydraulic Lines Pressure:
 - 1) Pressurize the Pitot System to 0.56 ± 0.05 psi. This is the task: Elevator Pitot System - Pressurization, AMM TASK 27-31-17-780-801.
 - 2) Make sure that the Pressure Lines Pressure is 290 ± 35 psi more than the Return Lines.
 - 3) Pressurize the Pitot System to 3.50 ± 0.05 psi.
 - 4) Make sure that the Pressure Lines Pressure is 1375 ± 150 psi more than the Return Lines.

EFFECTIVITY
SIA ALL

27-31 TASK 812

D633A103-SIA

Page 214
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 5) Remove the pressure from the Pitot System. To remove it, do this task: Elevator Pitot System - Pressurization, AMM TASK 27-31-17-780-801.
- 6) Make sure that the pressure at the pressure lines is 180 ± 25 psi more than the Return Lines.
- 7) Remove the 0 to 2100 psi (0 to 14479 kPa) hydraulic pressure gauge, STD-3914.
- 8) Remove the plugs from the Elevator Feel Actuator.
- 9) Re-connect the hydraulic lines to the Elevator Feel Actuator.
- (f) If the pressure check is not satisfactory, then do these steps:
 - 1) Replace the Elevator Feel Computer. These are the tasks:
 - Elevator Feel Computer - Removal, AMM TASK 27-31-37-000-801
 - Elevator Feel Computer - Installation, AMM TASK 27-31-37-400-801
 - a) Do the Repair Confirmation at the end of this task.
- (g) If the pressure check is satisfactory, then continue.
- (5) Replace the Elevator Feel Actuator. These are the tasks:
 - Elevator Feel Actuator Removal, AMM TASK 27-31-67-000-801
 - Elevator Feel Actuator Installation, AMM TASK 27-31-67-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (6) Replace the Elevator Feel and Centering Unit. These are the tasks:
 - Elevator Feel and Centering Unit Removal, AMM TASK 27-31-64-000-801
 - Elevator Feel and Centering Unit Installation, AMM TASK 27-31-64-400-801
- (a) Do the Repair Confirmation at the end of this task.

E. Repair Confirmation

- (1) Do this task: Control Column Power Force - Test, AMM TASK 27-31-00-700-809.
 - (a) If the test is satisfactory, then you corrected the problem.
 - (b) If the test is not satisfactory, then you continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

813. High Control Column Force With Hydraulic Power On - Fault Isolation

A. Description

- (1) SDS SUBJECT 27-31-00

B. Possible Causes

- (1) Control cables
- (2) Cable guard, pulleys, or brackets
- (3) Elevator Feel Computer, M2641
- (4) Clogged Visco Jet-Drains
- (5) Elevator Feel Actuator
- (6) Elevator Feel and Centering Unit
- (7) Elevator Input Torque Tube
- (8) Main Power Control Unit (PCU) input rod

EFFECTIVITY
SIA ALL

27-31 TASKS 812-813

D633A103-SIA

Page 215
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

- (9) Control Column bearing
- (10) Hydraulic System

C. Initial Evaluation

- (1) Do a check of the system feel forces. This is the task: Control Column Power Force - Test, AMM TASK 27-31-00-700-809.
 - (a) If the system feel forces is in the specified limit with hydraulic power on, then there was an intermittent problem.
 - (b) If the system feel forces is high with hydraulic power on, then do the Fault Isolation Procedure below.

D. Fault Isolation Procedure

- (1) Do this check of the elevator control cable travel:
 - (a) Disconnect the output rod of the Elevator Feel and Centering Unit from the input torque tube (Elevator Feel and Centering Unit Removal, AMM TASK 27-31-64-000-801).
 - (b) Disconnect the input rods of the Elevator PCUs from the input torque tube (Elevator Power Control Unit - Removal, AMM TASK 27-31-14-000-801).
 - (c) Do an inspection check of the Elevator control cable travel.
 - (d) If you find a problem, then do these steps:
 - 1) Remove the components that prevent the control cable movement.
 - 2) Connect the output rod of the Elevator Feel and Centering Unit to the input torque tube (Elevator Feel and Centering Unit Installation, AMM TASK 27-31-64-400-801).
 - 3) Connect the input rods of the Elevator PCUs to the input torque tube (Elevator Power Control Unit Installation, AMM TASK 27-31-14-400-801).
 - 4) Do the Repair Confirmation at the end of this task.
 - (e) If you do not find a problem, then continue.
- (2) Do this check of the cable guards, control cable pulleys, and brackets on the control cable pulleys:
 - (a) Examine the cable guards, control cable pulleys, and brackets on the control cable pulleys. This is the task: Inspection of Pulleys, AMM TASK 20-20-31-200-805.
 - (b) If you find a problem, then do these steps:
 - 1) Remove the unwanted objects or replace the control cable guards.
 - 2) Remove the unwanted objects or replace the control cable pulleys. These are the tasks:
 - Control Cable Pulleys Removal, AMM TASK 20-10-09-000-801
 - Control Cable Pulleys Installation, AMM TASK 20-10-09-400-801
 - 3) Remove the unwanted objects or replace the brackets on the control cable pulleys.
 - 4) Re-connect the output rod of the Elevator Feel and Centering Unit to the input torque tube (Elevator Feel and Centering Unit Removal, AMM TASK 27-31-64-000-801).
 - 5) Re-connect the input rods of the Elevator PCUs to the input torque tube (Elevator Power Control Unit - Removal, AMM TASK 27-31-14-000-801).
 - 6) Do the Repair Confirmation at the end of this task.
 - (c) If you do not find a problem, then continue.

EFFECTIVITY
SIA ALL

27-31 TASK 813

D633A103-SIA

Page 216
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

- 1) Re-connect the output rod of the Elevator Feel and Centering Unit to the input torque tube (Elevator Feel and Centering Unit Removal, AMM TASK 27-31-64-000-801).
 - 2) Re-connect the input rods of the Elevator PCUs to the input torque tube (Elevator Power Control Unit - Removal, AMM TASK 27-31-14-000-801).
- (3) Do this check of the Elevator Feel and Centering Unit:
- (a) Make sure that hydraulic power is off.
 - 1) If it is necessary, do this task: Remove Pressure from the Elevator Hydraulic Systems A and B, AMM TASK 27-31-00-800-802.
 - (b) Make sure that the feel actuator is extended.
 - 1) If the feel actuator is not extended, do these steps to extend the actuator:
 - a) Manually turn the input (lower) torque tube quadrants or
 - b) Cycle the Control Column a few times.
 - (c) Disconnect the centering output rod from the Elevator input torque tube crank.
 - (d) Make sure that the breakout force for the centering unit is between 12 $\pm$ 2 lbf (53 $\pm$ 9 N) at the output crank attachment bolt.
 - 1) If the breakout force is more than 14 lbf (62 N), do these checks:
 - a) Examine the bearings within the feel and centering unit for signs of wears or damage.
 - b) Examine the feel and centering unit output rod for signs of wears or binding at the rod end bearings.
 - 2) If the breakout force is between 12 $\pm$ 2 lbf (53 $\pm$ 9 N), then continue with the next step.
- (4) Do this check of the torque tube support bearings:
- (a) Disconnect the cables EA and EB from the Elevator aft quadrants.
 - (b) Disconnect the following rods from the torque tube crank (see ELEVATOR INPUT TORQUE TUBE - REMOVAL/INSTALLATION, AMM 27-31-71/401):
 - Feel and centering rod
 - PCU Actuators input rods
 - Autopilot Actuator rod
 - (c) Manually rotate the torque tube and check if there are any binding.

NOTE: Slight ratcheting when the torque tube turns may indicate binding.
 - (d) Check the bearings in each end of the connecting rods that were disconnected from the torque tube.

NOTE: Each bearing should turn smoothly by hand.
 - (e) Check the Autopilot Actuator control rod for binding.
 - 1) Make sure that the force to move each rod to rotate the actuator output crank is less than 0.5 lbf (2.2 N).
 - (f) If you do not find any problems, connect the rods that you disconnected and continue with the next step.
- (5) Do this check of the Elevator cable pulleys:
- (a) Disconnect the cables EA and EB from the Elevator aft quadrants.

EFFECTIVITY
SIA ALL

27-31 TASK 813

D633A103-SIA

Page 217
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (b) Manually turn the cable pulleys and check for binding.
NOTE: A degraded pulley will exhibit some ratcheting and possible resistance.
- (c) Check for intermittent binding or interference of the cable pulleys at the aft pressure bulkhead.
- (d) Check for cable hangups, deflecting fairleads, or grommet and bent pulley brackets.
- (e) If you do not find any problems, continue with the next step.
- (6) Do this check of the Control Column:
 - (a) With the Elevator body cables slack, disconnect the cables from the forward quadrants.
 - (b) Move the Control Column forward and aft.
 - 1) Make sure that the force to move the Control Column is less than 0.5 lbf (2.2 N).
 - a) If the force to move the Control Column is more than 0.5 lbf (2.2 N), check the adjustable seals at the base of the columns, or check for degraded forward torque tube support bearings.
 - b) If the force to move the Control Column is less than 0.5 lbf (2.2 N), connect the cables that you disconnected and continue with the next step.
- (7) Do this check of the Elevator Feel Computer, M2641:
 - (a) Disconnect the flexible hydraulic pressure and return lines from the Elevator Feel Actuator (Elevator Feel Actuator Removal, AMM TASK 27-31-67-000-801).
 - (b) Attach a hydraulic pressure gage (range 0 psi (0 kPa) - 1500 psi (10,342 kPa)) to each of the four hydraulic lines.
 - (c) Install plugs on the open ports of the Elevator Feel Actuator.
 - (d) Move the stabilizer to set the "B" dimension at 39.89 +/- 0.05 inches (4 units of trim).
 - (e) Do this check of the pressure of the hydraulic lines:
 - 1) Pressurize the Pitot System to 0.56 ±0.05 psi (3.86 ±0.34 kPa). This is the task: Static and Total Air Pressure System - Pressurization, AMM TASK 34-11-00-790-802.
 - 2) Make sure that the pressure at the pressure lines is 290 ±35 psi (1999.48 ±241.32 kPa) greater than the return lines.
 - 3) Pressurize the Pitot System 3.5 ±0.05 psi (24.13 ±0.34 kPa).
 - 4) Make sure that the pressure at the pressure lines is 1375 ±150 psi (9480 ±1034 kPa) greater than the return lines.
 - 5) Remove the pressure from the Pitot System. This is the task: Static and Total Air Pressure System - Pressurization, AMM TASK 34-11-00-790-802.
 - 6) Make sure that the pressure at the pressure lines is 180 ±25 psi (1241 ±172 kPa) greater than the return lines.
 - 7) Remove the hydraulic pressure gages.
 - 8) Remove the plugs from the Elevator Feel Actuator.
 - 9) Re-connect the hydraulic lines to the Elevator Feel Actuator.
 - (f) If the pressure check is not satisfactory, then do these steps:
 - 1) Replace the Elevator Feel Computer, M2641. These are the tasks:
 - Elevator Feel Computer - Removal, AMM TASK 27-31-37-000-801
 - Elevator Feel Computer - Installation, AMM TASK 27-31-37-400-801

EFFECTIVITY
SIA ALL

27-31 TASK 813

D633A103-SIA

Page 218
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

- 2) Do the Repair Confirmation at the end of this task.
- (g) If the pressure check is satisfactory, then continue.
- (8) Examine the two Visco Jet-Drains (restrictor valves) and lower metal tubing from the pitot probe. The two drains are located behind the following access panel, below the Elevator Feel Computer, M2641:
- NOTE:** The Visco Jet-Drains are referred to as "restrictor valves" in the ELEVATOR PITOT-STATIC SYSTEM - MAINTENANCE PRACTICES, AMM 27-31-17/201.
- (a) Open this access panel:
- | <u>Number</u> | <u>Name/Location</u> |
|---------------|-----------------------------|
| 311BL | Stabilizer Trim Access Door |
- (b) If the drains (restrictor valves) are clogged, clean or replace them as necessary. This is the task: Elevator Pitot-Static System Drainage - Inspection, AMM TASK 27-31-17-200-801.
- (c) Do the Repair Confirmation at the end of this task.
- (9) Replace the Elevator Feel Actuator. These are the tasks:
- Elevator Feel Actuator Removal, AMM TASK 27-31-67-000-801
 - Elevator Feel Actuator Installation, AMM TASK 27-31-67-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (10) Replace the Elevator Feel and Centering Unit. These are the tasks:
- Elevator Feel and Centering Unit Removal, AMM TASK 27-31-64-000-801
 - Elevator Feel and Centering Unit Installation, AMM TASK 27-31-64-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (11) Replace the Elevator input torque tube. These are the tasks:
- Elevator Input Torque Tube - Removal, AMM TASK 27-31-71-000-801
 - Elevator Input Torque Tube - Installation, AMM TASK 27-31-71-400-801
- (a) Do the Repair Confirmation at the end of this task.

E. Repair Confirmation

- (1) Do this task: Control Column Power Force - Test, AMM TASK 27-31-00-700-809.
- (a) If the test is satisfactory, then you corrected the problem.
- (b) If the test is not satisfactory, then continue the Fault Isolation Procedure at the subsequent step.

————— END OF TASK —————

814. High Control Column Force With Hydraulic Power Off - Fault Isolation

A. Description

- (1) (SDS SUBJECT 27-31-00)

B. Possible Causes

- (1) Elevator tab pushrods

EFFECTIVITY
SIA ALL

27-31 TASKS 813-814

D633A103-SIA

Page 219
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

C. Initial Evaluation

- (1) Do a check of the control column input forces with the hydraulics unpressurized. To do it, do the "with hydraulics unpressurized" portion of the following task: Control Column Power Force - Test, AMM TASK 27-31-00-700-809.
 - (a) If the system feel forces are high with hydraulic power off, then do the Fault Isolation Procedure below.
 - (b) If the system feel forces are in the specified limit with hydraulic power off, then there was an intermittent fault.

D. Fault Isolation Procedure

- (1) Do this check of the elevator tab pushrods:
 - (a) Examine the elevator tab pushrods for wear and damage.
 - (b) If you find a problem, then do these steps:
 - 1) Repair or replace the applicable elevator tab pushrod (AMM TASK 27-31-34-000-803, AMM TASK 27-31-34-400-803).
NOTE: Always use new elevator tab rod nuts when you repair or replace the elevator tab rods.
 - 2) Do this task: Control Column Power Force - Test, AMM TASK 27-31-00-700-809.
 - 3) If the test is satisfactory, then you corrected the fault.

———— **END OF TASK** ————

815. FEEL DIFF PRESS Light is ON - Fault Isolation

A. Description:

- (1) The FEEL DIFF PRESS Light comes ON when these conditions occur:
 - (a) The Differential Pressure Sensing Switch on the Elevator Feel Computer detects a Hydraulic Pressure difference of 25 percent or more between Hydraulic System A and B Output Pressure.
- (2) This is the normal operation of the FEEL DIFF PRESS Light:
 - (a) When Hydraulic Systems A and B are pressurized, the FEEL DIFF PRESS Light is OFF.
 - (b) When either Hydraulic System A or B Pressure is too low or too high, the FEEL DIFF PRESS Light comes ON after a 30 second delay.
 - (c) When the Elevator Feel Shift (EFS) is activated for 30 seconds or longer, the FEEL DIFF PRESS Light will come ON.

B. Possible Causes

- (1) Wiring Problem
- (2) Circuit Breaker
- (3) Partial shorting of a Pitot Probe (A0024 or A0027)
- (4) Clogged Return Hydraulic Filter Elements
- (5) Pitot and Static Lines to the Elevator Feel Computer
- (6) Frozen Flexible Hoses due to trapped moisture
- (7) Clogged Visco Jet Drain
- (8) Excessive Hydraulic Differential Pressure caused by Erroneous Activation of the Elevator Feel Shift Module

EFFECTIVITY
SIA ALL

27-31 TASKS 814-815

D633A103-SIA

Page 220
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (9) FEEL DIFF PRESS Light, L1
- (10) Elevator Feel Computer Solenoid
- (11) Elevator Feel Computer, M2641
- (12) Clogged Return Hydraulic Filter, Pressure Module and Case-Drain Filter Elements for EMDP and EDP
- (13) 30-Second Delay Relay, R813

C. Circuit Breakers

(1)

These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	1	C00523	HEATERS CAPT PITOT
C	2	C00238	HEATERS TEMP PROBE
C	3	C01072	HEATERS ALPHA VANE LEFT
C	4	C00236	HEATERS ELEV PITOT LEFT
D	3	C01071	HEATERS ALPHA VANE RIGHT
D	4	C00237	HEATERS ELEV PITOT RIGHT
D	5	C00525	HEATERS F/O PITOT
D	6	C00524	HEATERS AUX PITOT

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C01662	SPOILER PCU SOV SYS A
A	5	C01663	SPOILER PCU SOV SYS B
B	8	C01464	FLIGHT CONTROL ELEV TAB VLV RIGHT

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	16	C01356	LANDING GEAR AIR/GND SYS 1
D	15	C01401	LANDING GEAR AIR/GND RELAY
E	14	C00316	INDICATOR MASTER DIM SECT 4

D. Related Data:

- (1) SSM 27-31-11
- (2) SSM 27-31-37
- (3) SSM 30-31-11
- (4) SSM 30-31-12
- (5) WDM 27-31-11
- (6) WDM 27-31-37
- (7) WDM 30-31-11
- (8) WDM 30-31-12

EFFECTIVITY
SIA ALL

27-31 TASK 815

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 221
Oct 15/2021



737-600/700/800/900
FAULT ISOLATION MANUAL

E. Initial Evaluation



MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT

- (1) Do this task: Elevator Hydraulic System A and B - Pressurization, AMM TASK 27-31-00-800-801.
- (2) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C01662	SPOILER PCU SOV SYS A
A	5	C01663	SPOILER PCU SOV SYS B
B	8	C01464	FLIGHT CONTROL ELEV TAB VLV RIGHT

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	16	C01356	LANDING GEAR AIR/GND SYS 1
D	15	C01401	LANDING GEAR AIR/GND RELAY

- (3) If the FEEL DIFF PRESS Light is ON, do these steps:
 - (a) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	8	C01464	FLIGHT CONTROL ELEV TAB VLV RIGHT

- 1) If the light goes OFF, do these steps:
 - a) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	8	C01464	FLIGHT CONTROL ELEV TAB VLV RIGHT

- <1> If the light comes ON after 30 seconds, put the FLT CONTROL A and B Switches to the OFF position.
- <a> If the light stays ON, do "Fault Isolation Procedure A" below.
- NOTE: The possible cause is the Elevator Feel Computer, M2641 or the wiring between Elevator Feel Computer, M2641 and the 30 Second Delay Relay.
- If the light goes OFF, do "Fault Isolation Procedure C" below.
- NOTE: The possible cause is the Return Filter Element, Pitot Lines, Static Lines, or the Elevator Feel Computer, M2641.
- <2> If the light does not come ON, then continue at the subsequent step.

EFFECTIVITY
SIA ALL

27-31 TASK 815

D633A103-SIA

Page 222
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 2) If the light does not go OFF, do these steps:
 - a) Do "Fault Isolation Procedure D" below first.

NOTE: A possible cause is the wiring between the FEEL DIFF PRESS Light, L1 or the 30-Second Delay Relay, R813.

<1> If the check is satisfactory, then do the Repair confirmation at the end of this task.
- (4) If the FEEL DIFF PRESS Light is OFF, do these steps:
 - (a) Set the FLT CONTROL A Switch to the OFF position.
 - 1) If the light does not come ON, after 30 seconds, then do "Fault Isolation Procedure B" below.

NOTE: The possible cause is the wiring between the Elevator Feel Computer, M2641 and the 30-second Delay Relay, R813, the 30-second Delay Relay, R813 or the Elevator Feel Computer, M2641.
 - 2) Do this task: Elevator Feel Shift Module - Test, AMM TASK 27-31-20-740-801.
 - 3) If the light comes ON after 30 seconds, then do "Fault Isolation Procedure C" below.

NOTE: A possible cause is entrapped air, the Return Filter Element, Pitot Lines, Static Lines, or the Elevator Feel computer, M2641.

F. Fault Isolation Procedure A

NOTE: You must do the steps in the Initial Evaluation before you can do these steps.

- (1) Do a check of the Differential Pressure Sensing Switch operation in the Elevator Feel Computer, M02641 as follows:
 - (a) Disconnect connector D756 from the Elevator Feel Computer, M2641.
 - (b) Do this task: Elevator Hydraulic System A and B - Pressurization, AMM TASK 27-31-00-800-801.
 - (c) On the Overhead Panel, P5, set the FLT CONTROL A Switch to the OFF position and the FLT CONTROL B Switch to the ON position.
 - 1) Make sure that there is continuity between pins 1 and 2 of the Elevator Feel Computer, M2641.
 - 2) Make sure that there is no continuity between pins 3 and 4 of the Elevator Feel Computer, M2641.
 - (d) On the Overhead Panel, P5, set the FLT CONTROL A Switch to the ON position and the FLT CONTROL B Switch to the OFF position.
 - 1) Make sure that there is no continuity between pins 1 and 2 of the Elevator Feel Computer, M2641.
 - 2) Make sure that there is continuity between pins 3 and 4 of the Elevator Feel Computer, M2641.
 - (e) On the Overhead Panel, P5, set the FLT CONTROL A and FLT CONTROL B Switches to the ON position.

NOTE: An Elevator Feel Computer (EFC) differential pressure switch will only be activated when there is a pressure difference of more than 25% between system A and system B.

 - 1) Make sure that there is no continuity between pins 1 and 2 of the Elevator Feel Computer, M2641.

EFFECTIVITY
SIA ALL

27-31 TASK 815

D633A103-SIA

Page 223
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 2) Make sure that there is no continuity between pins 3 and 4 of the Elevator Feel Computer, M2641.
- 3) Make sure that there is continuity between pins 1 and 5 of the Elevator Feel Computer, M2641.
- (f) Do this task: Put the Elevator Hydraulic systems A and B Back to the Condition Before the Pressurization, AMM TASK 27-31-00-840-801.
- (2) If the Differential Pressure Sensing Switch check is not satisfactory, replace the Elevator Feel Computer, M2641. These are the tasks:
 - Elevator Feel Computer - Removal, AMM TASK 27-31-37-000-801
 - Elevator Feel Computer - Installation, AMM TASK 27-31-37-400-801.
- (a) Do Repair Confirmation at the end of this task.
- (3) Do this Wiring Check:
 - (a) Make sure that the FLT CONTROL A Switch is in the OFF position.
 - (b) Make sure that the FLT CONTROL B Switch is in the ON position.
 - (c) Disconnect connector D756 from the Elevator Feel Computer, M2641.
 - (d) Disconnect connector D11179 from the 30-second Delay Relay, R813.
 - (e) Examine the wiring as follows (WDM 27-31-37):

EFC, M2641

D756

pin 3

pin 1

Relay R813

D11179

pin 3

pin 3

- (f) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-connect connector D756 to the Elevator Feel Computer, M2641.
 - 3) Re-connect connector D11179 to the 30-second Delay Relay, R813.
 - 4) Do the Repair Confirmation at the end of this task.
 - a) If the problem continues, then replace the 30-second Delay Relay (R00813) on Junction Box, J11.
- <1> Do the Repair Confirmation at the end of this task.

G. Fault Isolation Procedure B

NOTE: You must do the steps in the Initial Evaluation before you can do these steps.

- (1) Do this wiring check (WDM 27-31-37):
 - (a) Make sure that the FLT CONTROL A Switch is in the OFF position.
 - (b) Make sure that the FLT CONTROL B Switch is in the ON position.
 - (c) Disconnect connector D756 from the Elevator Feel Computer, M2641.
 - (d) Disconnect connector D11179 from the 30-second Delay Relay, R813.
 - (e) Do a wiring check as follows (WDM 27-31-37):

EFFECTIVITY
SIA ALL

27-31 TASK 815

D633A103-SIA

Page 224
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

EFC M2641

D756

pin 3	.....	pin 3
pin 1	.....	pin 3
pin 2	.....	pin 5
pin 4	.....	pin 5

Relay R813

D11179

- 1) Make sure that there is ground at pin 5 of D11179.
- 2) Make sure that there is 28V DC at pin 7 of D11179.
- (f) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-connect connector D756 to the Elevator Feel Computer, M2641.
 - 3) Re-connect connector D11179 to the 30-second Delay Relay, R813.
 - 4) Do the Repair Confirmation at the end of this task.
 - a) If the problem continues, then replace 30-second Delay Relay, R813 on junction box, J11.
- <1> Do the Repair Confirmation at the end of this task.
- (g) If you do not find a problem with the wiring, then do these steps:
 - 1) Do a check of the Differential Pressure Sensing Switch within the Elevator Feel Computer, M2641 as follows:
 - a) Disconnect connector D756 from the Elevator Feel Computer, M2641.
 - b) Make sure that there is continuity between pins 1 and 2 of the Elevator Feel Computer, M2641.
 - c) Make sure that there is no continuity between pins 3 and 4 of the Elevator Feel Computer, M2641.
 - 2) Re-connect connector D756 to the Elevator Feel Computer, M2641.
- (h) If the Differential Pressure Sensing Switch check is not satisfactory, replace the Elevator Feel Computer, M2641. These are the tasks:
 - Elevator Feel Computer - Removal, AMM TASK 27-31-37-000-801
 - Elevator Feel Computer - Installation, AMM TASK 27-31-37-400-801
 - 1) Do the Repair Confirmation at the end of this task.

H. Fault Isolation Procedure C

NOTE: You must do the steps in the Initial Evaluation before you can do these steps.

- (1) Do a check of the Elevator Pitot and Static Lines for leakage or contamination as follows:
 - (a) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
323FL	Vertical Fin, Access
 - (b) Make sure that the Pitot Probe passages and Drain Holes are open. Do this task:
Elevator Pitot Probe - Inspection, AMM TASK 27-31-17-200-802.

NOTE: You can use a flashlight or a scope to visually examine the Pitot Probe for unwanted material.

EFFECTIVITY
SIA ALL

27-31 TASK 815

D633A103-SIA

Page 225
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 1) If necessary, clean the Pitot Probe. This is the task: Pitot Probe Cleaning, AMM TASK 34-11-01-100-801.
- (c) If necessary, flush the Pitot-Static System to clear contamination or debris. This is the task: Elevator Pitot-Static System Flushing, AMM TASK 27-31-17-170-801.
- (d) Examine the two Visco Jet-Drains (restrictor valves) and lower metal tubing from the pitot probe. The two drains are located behind the following access panel, below the Elevator Feel Computer:

NOTE: The Visco Jet-Drains are referred to as "Restrictor Valves" in ELEVATOR PITOT-STATIC SYSTEM - MAINTENANCE PRACTICES, AMM 27-31-17/201.

- 1) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
311BL	Stabilizer Trim Access Door

- 2) If the drains (Restrictor Valves) are clogged, clean or replace them as necessary. Do this task: Elevator Pitot-Static System Drainage - Inspection, AMM TASK 27-31-17-200-801.

- 3) Examine the Elevator Pitot-Static System for leaks. This is the task: Elevator Pitot System Leak - Test, AMM TASK 27-31-17-790-801.

- (e) Examine the Elevator Feel Computer for leaks. This is the task: Elevator Feel Computer - Leakage Check, AMM TASK 27-31-37-200-802.
- (f) Make sure that the flexible hose between the Elevator Feel System Pitot Probes and associated rigid metal tubing loops upwards to avoid trapping water.

NOTE: If the flexible hose has water in it, the water can freeze during flight and cause the system to not work properly.

- (g) Make sure that the Pitot Probe 90 Degree Elbow is aligned 31.5 degrees above the center of the Pitot Probe or aligned to the alignment mark on the baseplate (Feel System Pitot Probe Installation, AMM TASK 27-31-94-400-801).
- (h) Make sure that the flexible hose has an Outside Diameter (O.D.) of approximately 0.7 in. (17.78 mm).
 - 1) If not, replace the hose.
- (i) Do the Repair Confirmation at the end of this task.
- (j) If there is no leakage or contamination, close the access panels and then continue.
- (k) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
311BL	Stabilizer Trim Access Door
323FL	Vertical Fin, Access

- (2) Do a check of the Return Filter Elements for the Hydraulic Systems A and B. Do this task: Inspection of the Differential Pressure Indicator of the A and B System Return Filter Modules, AMM TASK 29-11-61-210-801.
 - (a) Look at the Differential Pressure Indicators (Red) on the Hydraulic Systems A and B Return Filter Module. Do this task: Inspection of the Differential Pressure Indicator of the A and B System Return Filter Modules, AMM TASK 29-11-61-210-801.
 - 1) If the Red Differential Pressure Indicators are in view, then replace the applicable Return Filter Element. These are the tasks:

EFFECTIVITY
SIA ALL

27-31 TASK 815

D633A103-SIA

Page 226
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

- Return Filter Element Removal, AMM TASK 29-11-61-000-801
 - Return Filter Module Installation, AMM TASK 29-11-61-400-802
 - a) Do the Repair Confirmation at the end of this task.
- (3) Do a check for clogged Pressure Module Filter Elements for the Hydraulic Systems A and B, EMDP and EDP: These are the applicable tasks:
- (a) If you find a clogged filter, then replace it as necessary. These are the tasks:
 - Hydraulic Systems A and B Pressure Module Filter Element Removal, AMM TASK 29-11-71-000-802
 - Hydraulic Systems A and B Pressure Module Filter Element Installation, AMM TASK 29-11-71-400-802
 - 1) Do the Repair Confirmation at the end of this task.
- (4) Do a check for clogged Case Drain Filter Elements for the Hydraulic Systems A and B, EMDP and EDP.
- (a) If you find a clogged filter, then replace it as necessary. These are the applicable tasks:
 - EMDP Case Drain Filter Element Removal, AMM TASK 29-11-41-000-801
 - EMDP Case Drain Filter Element Installation, AMM TASK 29-11-41-400-801
 - EDP Case Drain Filter Element Removal, AMM TASK 29-11-51-000-801
 - EDP Case Drain Filter Element Installation, AMM TASK 29-11-51-400-801
 - 1) Do the Repair Confirmation at the end of this task.
- (5) Do a Resistance check of the Pitot Probe as follows:
- (a) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	1	C00523	HEATERS CAPT PITOT
C	2	C00238	HEATERS TEMP PROBE
C	3	C01072	HEATERS ALPHA VANE LEFT
C	4	C00236	HEATERS ELEV PITOT LEFT
D	3	C01071	HEATERS ALPHA VANE RIGHT
D	4	C00237	HEATERS ELEV PITOT RIGHT
D	5	C00525	HEATERS F/O PITOT
D	6	C00524	HEATERS AUX PITOT

- (b) On the Overhead Panel, P5, open the P5-9 Window and Pitot Heat Panel.
- (c) Remove the connector D644 from the P5-9 Window and Pitot Heat Panel.
- (d) Do a Resistance check of the Left Elevator Pitot Probe, A24 WDM 30-31-11:

NOTE: The Resistance Values specified below are with the Probe at Normal Ambient Temperature range of $68 \pm 18^{\circ}\text{F}$ ($20 \pm 10^{\circ}\text{C}$).

L ELEV PITOT PROBE, A24

D644

pin 40 Ground 48 ± 8 Ohms

- 1) If the Resistance is not between 40 to 56 Ohms, then replace the Left Elevator Pitot Probe, A24. These are the tasks:

EFFECTIVITY
SIA ALL

27-31 TASK 815

D633A103-SIA

Page 227
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

- Feel System Pitot Probe Removal, AMM TASK 27-31-94-000-801
- Feel System Pitot Probe Installation, AMM TASK 27-31-94-400-801
 - a) Measure the Resistance again.
 - <1> If the Resistance check is satisfactory, then you corrected the problem.
- 2) If the Resistance is between 40 to 56 Ohms then reconnect connector D644 to the P5-9 Window and Pitot Heat Panel and continue.
- (e) Remove the connector D638 from the P5-9 Window and Pitot Heat Panel.
- (f) Do a Resistance check of the Right Elevator Pitot Probe, A27 (WDM 30-31-12).

NOTE: The Resistance Values specified below are with the Probe at Normal Ambient Temperature of 68°F (20°C).

R ELEV PITOT PROBE, A27

D638

pin 40 Ground 48 ± 8 Ohms

- 1) If the Resistance is not between 40 to 56 Ohms then replace the Right Elevator Pitot Probe, A27. These are the tasks:
 - Feel System Pitot Probe Removal, AMM TASK 27-31-94-000-801
 - Feel System Pitot Probe Installation, AMM TASK 27-31-94-400-801
 - a) Measure the Resistance again.
 - <1> If the Resistance check is satisfactory, then you corrected the problem.
- 2) If the Resistance is between 40 to 56 Ohms then reconnect connector D638 to the P5-9 Window and Pitot Heat Panel and continue.
- (g) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	1	C00523	HEATERS CAPT PITOT
C	2	C00238	HEATERS TEMP PROBE
C	3	C01072	HEATERS ALPHA VANE LEFT
D	3	C01071	HEATERS ALPHA VANE RIGHT
D	5	C00525	HEATERS F/O PITOT
D	6	C00524	HEATERS AUX PITOT

- (6) Purge the Hydraulic System of entrapped air as follows:
 - (a) Move the Stabilizer to the maximum Leading Edge Up (APL NOSE DOWN) position (the mechanical limits).

NOTE: You can use the Control Wheel STAB TRIM Switches and then the Stabilizer Trim Control Wheel to do this.

 - 1) Make sure that the ball-nut is against the jackscrew UP stop.
 - (b) Use the regulator, SPL-1742 or air data model test set, COM-1914, connected at the Elevator Pitot Probes on the Vertical Stabilizer, to increase the Airspeed to 2.46 psig (300 Knots).

NOTE: When you apply or remove pressure to the Pitot System, the rate must not be more than 2.46 psig (300 knots) for each minute.

EFFECTIVITY
SIA ALL

27-31 TASK 815

D633A103-SIA

Page 228
Feb 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**



KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (c) Pressurize the Hydraulic Systems A and B, using one of these options:
- 1) If you will use a Portable Hydraulic Cart, do this task: Hydraulic System A or B Pressurization with a Portable Hydraulic Cart, AMM TASK 29-11-00-860-802.
 - 2) If you will not use a Portable Hydraulic Cart, do these tasks:
NOTE: Both the Engine Driven Pump (EDP) and the Electric Motor-Driven Pump (EMDP) should be operated at the same time.
 - Hydraulic System Pressurization with an Electric Motor-Driven Pump (EMDP), AMM TASK 29-11-00-860-803.
 - Hydraulic System A or B Pressurization with an Engine-Driven Pump (EDP), AMM TASK 29-11-00-860-804.
- (d) Do these steps to cycle the power between Hydraulic Systems A and B:
- 1) Set the Flight Control Hydraulic Power Switches as follows:
 - A ON, B OFF - Hold for 2 seconds.
 - B ON, A OFF - Hold for 2 seconds.
 - 2) Repeat the cycle 10 times.
- (e) Slowly, do Column Sweeps with Pitot Pressure applied.
- (f) Do these steps to cycle Pitot Pressure:
- Use the regulator, SPL-1742 or air data model test set, COM-1914, connected at the Elevator Pitot Probes on the Vertical Stabilizer, to lower the Airspeed to 0 psig (0 knots).
 - Use the regulator, SPL-1742 or air data model test set, COM-1914, connected at the Elevator Pitot Probes on the Vertical Stabilizer, to increase the Airspeed to 2.46 psig (300 knots).
 - Use the regulator, SPL-1742 or air data model test set, COM-1914, connected at the Elevator Pitot Probes on the Vertical Stabilizer, to lower the Airspeed to 0 psig (0 knots).
- (g) Move the Horizontal Stabilizer to the Neutral Stabilizer position (zero degrees or 4 units of trim).
NOTE: You can use the Control Wheel STAB TRIM Switches or the Stabilizer Trim Wheel to do this.
- (h) Remove the safety tags and close these circuit breakers:
- CAPT Electrical System Panel, P18-3**
- | <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|--------------------------|
| C | 4 | C00236 | HEATERS ELEV PITOT LEFT |
| D | 4 | C00237 | HEATERS ELEV PITOT RIGHT |
- (i) Do the Repair Confirmation at the end of this task.

EFFECTIVITY
SIA ALL

27-31 TASK 815

D633A103-SIA

Page 229
Feb 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (7) Replace the Elevator Feel Computer, M2641. These are the tasks:

NOTE: After you replace the Elevator Feel Computer, make sure that you bleed all of the air out of the system, as indicated in Elevator Feel Computer - Installation, AMM TASK 27-31-37-400-801.

If air is still in the system after you replace the Elevator Feel Computer, it can cause intermittent illumination of the FEEL DIFF PRESS Light.

It may be necessary to pressurize the Pitot System and exercise the Control Column several times to completely bleed the air from the Elevator Control System.

- Elevator Feel Computer - Removal, AMM TASK 27-31-37-000-801
- Elevator Feel Computer - Installation, AMM TASK 27-31-37-400-801

- (a) Do the Repair Confirmation at the end of this task.

I. Fault Isolation Procedure D

NOTE: You must do the steps in the Initial Evaluation before you can do these steps.

- (1) On the Overhead Panel, P5, open the Flight Controls Module, P5-3.
- (2) Disconnect connector D630 from the Flight Controls Module, P5-3.
- (3) Disconnect connector D11179 from the 30-Second Delay Relay, R813.
- (4) Do a wiring check between the J11 Panel and Flight Controls Module, P5-3 as follows (WDM 27-31-37):

J11 PNL	FLT CTRL MOD
D11179	D630
pin 2	pin 20

- (5) If you find a problem with the wiring, then do these steps:
 - (a) Repair the wiring.
 - (b) Re-connect connector D630.
 - (c) Re-connect connector D11179.
 - (d) Close the Flight Controls Module, P5-3.
- (6) Do the Repair Confirmation at the end of this task.
 - (a) If the Repair Confirmation is not satisfactory, then replace the 30-Second Delay Relay, R813 on Junction Box, J11.
 - 1) Do the Repair Confirmation at the end of this task.

J. Repair Confirmation

- (1) Do a test of the FEEL DIFF PRESS Light:
 - (a) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	4	C01662	SPOILER PCU SOV SYS A
A	5	C01663	SPOILER PCU SOV SYS B
B	8	C01464	FLIGHT CONTROL ELEV TAB VLV RIGHT

EFFECTIVITY
SIA ALL

27-31 TASK 815

D633A103-SIA

Page 230
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	16	C01356	LANDING GEAR AIR/GND SYS 1
D	15	C01401	LANDING GEAR AIR/GND RELAY



MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT

- (b) Do this task: Elevator Hydraulic System A and B - Pressurization, AMM TASK 27-31-00-800-801.
- (c) Put the FLT CONTROL B Switch on the P5 Pilots' Overhead Panel to the OFF position.
 - 1) Wait for 35 seconds.
- (d) Put the FLIGHT CONTROL A Switch on the P5 Pilots' Overhead Panel to the ON position.
 - 1) Make sure that the FEEL DIFF PRESS Light on the P5 Pilots' Overhead Panel comes ON after a minimum of 35 seconds.
NOTE: It may take up to 120 seconds for the light to come ON.
- (e) Put the FLT CONTROL A Switch to the OFF position.
 - 1) Make sure that the FEEL DIFF PRESS Light goes OFF.
- (f) On the Overhead Panel, P5, put the FLIGHT CONTROL B Switch to the ON position.
 - 1) Wait for a minimum of 35 seconds.
 - 2) Make sure that the FEEL DIFF PRESS Light comes ON.
NOTE: It can take up to 120 seconds for the light to come ON.
- (g) Put the FLT CONTROL A Switch to the ON position.
 - 1) Wait for a minimum of 35 seconds.
 - 2) Make sure that the FEEL DIFF PRESS Light goes OFF.
- (h) If all of the steps above are satisfactory, then you have corrected the problem.
- (i) Do this task: Put the Elevator Hydraulic systems A and B Back to the Condition Before the Pressurization, AMM TASK 27-31-00-840-801.

———— **END OF TASK** ————

817. Elevator Hard to Operate During Approach/ Flare after de-/anti-ice treatments or in heavy rain and moisture conditions - Fault Isolation

A. Description

- (1) Flight crews report heavy control column forces during approach or landing flare during flights after which de-/anti-ice operations were performed or during cold weather operation when rain was reported.

EFFECTIVITY
SIA ALL

27-31 TASKS 815-817

D633A103-SIA

Page 231
Jun 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (2) A blockage of one or both elevator pitot lines which occurs during high speed can result in high column forces since the EFC uses the higher of the two computed elevator system feel pressures. If one or both pitot lines are blocked and trap an erroneously high pitot pressure internal to the EFC, high column forces can result during landing.
- (3) The high column forces are reported with or without a corresponding elevator FEEL DIFF Light annunciation.

B. Possible Causes

- (1) Faulty wiring associated with the pitot probe heater
- (2) Blocked pitot and static lines to the Elevator Feel Computer
- (3) Flexible hoses trapping moisture and freezing
- (4) Visco Jet drain clogged by anti-ice fluid residue

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	1	C00523	HEATERS CAPT PITOT
C	2	C00238	HEATERS TEMP PROBE
C	3	C01072	HEATERS ALPHA VANE LEFT
C	4	C00236	HEATERS ELEV PITOT LEFT
D	3	C01071	HEATERS ALPHA VANE RIGHT
D	4	C00237	HEATERS ELEV PITOT RIGHT
D	5	C00525	HEATERS F/O PITOT
D	6	C00524	HEATERS AUX PITOT

D. Related Data

- (1) WDM 30-31-11
- (2) WDM 30-31-12
- (3) SSM 30-31-11
- (4) SSM 30-31-12

E. Fault Isolation Procedure



MAKE SURE THAT PERSONNEL AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT

- (1) Do a Resistance check of the Pitot Probe as follows:
 - (a) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	1	C00523	HEATERS CAPT PITOT
C	2	C00238	HEATERS TEMP PROBE

EFFECTIVITY
SIA ALL

27-31 TASK 817

D633A103-SIA

Page 232
Jun 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

(Continued)

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	3	C01072	HEATERS ALPHA VANE LEFT
C	4	C00236	HEATERS ELEV PITOT LEFT
D	3	C01071	HEATERS ALPHA VANE RIGHT
D	4	C00237	HEATERS ELEV PITOT RIGHT
D	5	C00525	HEATERS F/O PITOT
D	6	C00524	HEATERS AUX PITOT

- (b) On the Overhead Panel, P5, open the P5-9 Window and Pitot Heat Panel.
- (c) Disconnect the connector D644 from the P5-9 Window and Pitot Heat Panel.
- (d) Do a Resistance check of the Left Elevator Pitot Probe, A24 (WDM 30-31-11):

NOTE: The Resistance Values specified below are with the Probe at Normal Ambient Temperature range of 68 ±18°F (20 ±10°C).

**L ELEV PITOT
PROBE, A24**

D644

pin 40 Ground 48 ± 8 Ohms

- 1) If the Resistance is not between 40 to 56 Ohms, then replace the Left Elevator Pitot Probe, A24. These are the tasks:
 - Feel System Pitot Probe Removal, AMM TASK 27-31-94-000-801
 - Feel System Pitot Probe Installation, AMM TASK 27-31-94-400-801
 - a) Measure the Resistance again.
 - <1> If the Resistance check is satisfactory, then you corrected the problem.
 - 2) If the Resistance is between 40 to 56 Ohms then re-connect connector D644 to the P5-9 Window and Pitot Heat Panel and continue.
- (e) Disconnect the connector D638 from the P5-9 Window and Pitot Heat Panel.
 - (f) Do a Resistance check of the Right Elevator Pitot Probe, A27 (WDM 30-31-12):

NOTE: The Resistance Values specified below are with the Probe at Normal Ambient Temperature of 68°F (20°C).

**R ELEV PITOT
PROBE, A27**

D638

pin 40 Ground 48 ± 8 Ohms

- 1) If the Resistance is not between 40 to 56 Ohms then replace the Right Elevator Pitot Probe, A27. These are the tasks:
 - Feel System Pitot Probe Removal, AMM TASK 27-31-94-000-801
 - Feel System Pitot Probe Installation, AMM TASK 27-31-94-400-801
 - a) Measure the Resistance again.
 - <1> If the Resistance check is satisfactory, then you corrected the problem.

EFFECTIVITY
SIA ALL

27-31 TASK 817

D633A103-SIA

Page 233
Jun 15/2022



737-600/700/800/900 FAULT ISOLATION MANUAL

- 2) If the Resistance is between 40 to 56 Ohms then re-connect connector D638 to the P5-9 Window and Pitot Heat Panel and continue.
- (g) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	1	C00523	HEATERS CAPT PITOT
C	2	C00238	HEATERS TEMP PROBE
C	3	C01072	HEATERS ALPHA VANE LEFT
C	4	C00236	HEATERS ELEV PITOT LEFT
D	3	C01071	HEATERS ALPHA VANE RIGHT
D	4	C00237	HEATERS ELEV PITOT RIGHT
D	5	C00525	HEATERS F/O PITOT
D	6	C00524	HEATERS AUX PITOT

- (2) Do a check of the Elevator Pitot and Static Lines for leakage, moisture accumulation, anti-ice fluid contamination as follows:

- (a) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
323FL	Vertical Fin, Access

- (b) Make sure that the Pitot Probe passages and Drain Holes are open. Do this task: Elevator Pitot Probe - Inspection, AMM TASK 27-31-17-200-802.

NOTE: You can use a flashlight or a flexible scope to visually examine the Pitot Probe for unwanted material.

- (c) If necessary, flush the Pitot-Static System to clear contamination or debris. This is the task: Elevator Pitot-Static System Flushing, AMM TASK 27-31-17-170-801.
- (d) Examine the Elevator Feel Computer for leaks. This is the task: Elevator Feel Computer - Leakage Check, AMM TASK 27-31-37-200-802.
- (e) Do a check to make sure that the flexible hoses are correctly installed.

NOTE: If the flexible hose has water in it, the water can freeze during flight and cause the system to not work properly.

- 1) Make sure that the flexible hose between the Elevator Feel System Pitot Probes and associated rigid metal tubing loops upwards to avoid trapping water.
 - 2) Make sure that the Pitot Probe 90 Degree Elbow is aligned 31.5 degrees above the center of the Pitot Probe or aligned to the alignment mark on the baseplate. This is the task: Feel System Pitot Probe Installation, AMM TASK 27-31-94-400-801.
 - 3) Make sure that the flexible hose has an Outside Diameter (OD) of approximately 0.7 in. (17.78 mm).
 - a) If not, replace the hose.
- (f) Examine the two Visco Jet-Drains (Restrictor Valves) and lower metal tubing from the pitot probe. The two drains are located behind the following access panel, below the Elevator Feel Computer:

NOTE: The Visco Jet-Drains are referred to as "Restrictor Valves" in AMM PAGEBLOCK 27-31-17/201.

- 1) Do this task: Elevator Pitot-Static System Drainage - Inspection, AMM TASK 27-31-17-200-801.

EFFECTIVITY
SIA ALL

27-31 TASK 817

D633A103-SIA

Page 234
Jun 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- a) Remove the two Visco Jet-Drains.
 - b) Spray the two Visco Jet-Drains internally with hot water and check of any anti-ice fluid residue gel.
NOTE: The powder like residue will swell when hot water is applied.
 - c) If residue gel is found or the two Visco Jet-Drains are clogged, then clean or replace them as necessary. This is the task: Elevator Pitot-Static System Flushing, AMM TASK 27-31-17-170-801.
- 2) Examine the Elevator Pitot-Static System for leaks. This is the task: Elevator Pitot System Leak - Test, AMM TASK 27-31-17-790-801.
- (g) If there is no leakage or contamination, then continue.
- (3) Do this task: Feel Force System - Test, AMM TASK 27-31-00-700-812.
 - (a) If the test is not satisfied, do this step:
 - 1) Replace the Elevator Feel Computer. These are the tasks:
 - Elevator Feel Computer - Removal, AMM TASK 27-31-37-000-801
 - Elevator Feel Computer - Installation, AMM TASK 27-31-37-400-801.

———— **END OF TASK** ————

EFFECTIVITY
SIA ALL

27-31 TASK 817

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 235
Jun 15/2022



737-600/700/800/900 FAULT ISOLATION MANUAL

801. Stall Management Yaw Damper BITE Procedure

A. General

- (1) You do the stall management yaw damper (SMYD) BITE test at the front of the SMYD module. The SMYD is on the E3-2 shelf in the electronic equipment bay. These are the menu items in the SMYD BITE that you will use in this task:
 - (a) EXISTING FAULTS
 - (b) FAULT HISTORY
- (2) For EXISTING FAULTS, the SMYD does internal tests, discrete output checks, sensor interface checks, and checks of inputs to the SMYD. The faults that are found during the EXISTING FAULTS ARE ACTIVE. A maintenance message identifies a specific failure which is found by the SMYD. The maintenance messages have English text and a seven digit number.
- (3) The SMYD requires data from multiple airplane systems to operate. These systems included the IRU and the FMC. The IRU (AMM PAGEBLOCK 34-21-03/401) and FMC (AMM PAGEBLOCK 22-11-00/201) need valid setup data to provide good data to the SMYD. The FMC must have good weight data for the SMYD to pass some ground tests.
- (4) The SMYD keeps a record of faults in FAULT HISTORY. The faults (AMM PAGEBLOCK 22-11-00/201) are grouped by flight leg. Flight leg 0 (LEG 0) is the most recent flight and includes faults that occurred on the ground after the most recent flight.
- (5) The yaw damper can disengage to the OFF position during the stall warning test. If this occurs, no maintenance action is necessary. It does not affect flight and should not affect preflight. The damper can be re-engaged after the test.

B. BITE Procedure

- (1) Supply electrical power to the airplane. To do this, do this task: Supply External Power, AMM TASK 24-22-00-860-813.
- (2) Do this task: AMM TASK 34-21-00-820-802 or AMM TASK 34-21-00-820-801
- (3) Make sure the FMC is powered and has good weight data entered. To do this, do these tasks:

NOTE: Zero fuel weight (ZFW) is calculated by subtracting the total fuel weight from the combined total weight of the airplane and contents.

For the BITE test, any number between 70 and 150 (normal ZFW in thousands of pounds) will verify a check pass.

 - (a) Push the INIT REF button on the CDU..
 - (b) On the PERF INIT page, enter the following:
 - 1) 3L: ZFW prompt, enter 88.0 for lbs or 40 for kg.

NOTE: GW/CRZ CG in 1L will auto calculate after ZFW is entered.
 - 2) 4L: RES prompt, enter 4.0
 - 3) 5L: CI prompt, enter 30
- (4) Do the BITE procedure for both SMYDs (Figure 201).

NOTE: Prior to the BITE procedure, flaps should be UP with indicated airspeed less than 60 Knots. Engine N1 less than 15 percent, and engine N2 less than 50 percent.

 - (a) Push the ON/OFF switch.

NOTE: The display will show EXISTING FAULTS?.
 - (b) Push the YES switch.

NOTE: The display will show the fault message or NO FAULTS.

EFFECTIVITY
SIA ALL

27-32 TASK 801

D633A103-SIA

Page 201
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (c) If there are existing faults, then do these steps:
- 1) Push the down arrow switch.
NOTE: The display will show MORE DETAILS?.
 - 2) Push the YES switch to see the maintenance message number.
 - 3) Write the maintenance message.
 - 4) Push the MENU switch to go back to the fault message.
 - 5) Push the down arrow switch two times to see the next fault.
 - 6) Do the previous steps again as necessary to write the maintenance message numbers for all faults in the BITE memory.
 - 7) Push the down arrow switch.
NOTE: RESET LATCHES? will display.
 - 8) Push the YES switch to reset the latches.
NOTE: END OF LIST will display when done.
 - 9) Refer to the table at the end of this task to find the fault isolation task for the applicable maintenance message.
- (d) If the test shows NO FAULTS, then do these steps to look for faults in fault history:
- 1) Push the down arrow switch until the display shows FAULT HISTORY?.
 - 2) Push the YES switch.
NOTE: The display will show FLIGHT LEG 0?
 - 3) Push the YES switch.
 - 4) Push the down arrow switch.
NOTE: The display will show FAULT DETAILS?
 - 5) Push the YES switch to see the maintenance message number.
 - 6) Write the maintenance message.
 - 7) Push the MENU switch to go back to the fault message.
 - 8) Push the down arrow switch two times to see the next fault:
 - 9) Do the previous steps again as necessary to write the maintenance message numbers for all faults in the BITE memory.
NOTE: END OF LIST will display when done.
 - 10) Push the MENU switch.
NOTE: The display will go back to FLIGHT LEG 0?
 - 11) Push the down arrow switch to look for faults in other flight legs.
 - 12) Refer to the table at the end of this task to find the fault isolation task for the applicable maintenance message.

LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
SMYD - 1	22-21001 SMYD YD fault	22-23 TASK 801
SMYD - 1	22-21002 YD 28VAC no power	22-23 TASK 802
SMYD - 1	22-21003 YD 28VDC no power	22-23 TASK 803
SMYD - 1	22-21004 YD LVDT error	22-23 TASK 804

EFFECTIVITY
SIA ALL

27-32 TASK 801

D633A103-SIA

Page 202
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
SMYD - 1	22-21005 flap sig disagree	22-23 TASK 806
SMYD - 1	22-21006 YD servo loop	22-23 TASK 809
SMYD - 1	22-21007 no X-CH data	22-23 TASK 807
SMYD - 1	22-21008 X-CH invalid	22-23 TASK 801
SMYD - 1	22-21009 X-CH cmd disagree	22-23 TASK 808
SMYD - 1	27-31000 SMYD fault	27-32 TASK 832
SMYD - 1	27-31001 SMYD SW fault	27-32 TASK 832
SMYD - 1	27-31002 S/S no power	27-32 TASK 805
SMYD - 1	27-31003 SM 28VAC invalid	27-32 TASK 807
SMYD - 1	27-31005 FLAP sig error	27-32 TASK 811
SMYD - 1	27-31006 LE shows asymetry	27-32 TASK 813
SMYD - 1	27-31007 air/gnd in air	27-32 TASK 814
SMYD - 1	27-31009 SW tst sw short	27-32 TASK 815
SMYD - 1	27-31010 prgm pin error	27-32 TASK 816
SMYD - 1	27-31011 no AD data	27-32 TASK 803
SMYD - 1	27-31012 AD data invalid	27-32 TASK 817
SMYD - 1	27-31013 AD out of range	27-32 TASK 817
SMYD - 1	27-31014 no IR1 data	27-32 TASK 803
SMYD - 1	27-31015 IR1 data invalid	27-32 TASK 818
SMYD - 1	27-31016 IR1 out of range	27-32 TASK 818
SMYD - 1	27-31017 no IR2 data	27-32 TASK 803
SMYD - 1	27-31018 IR2 data invalid	27-32 TASK 818
SMYD - 1	27-31019 IR2 out of range	27-32 TASK 818
SMYD - 1	27-31020 no DEU data	27-32 TASK 819
SMYD - 1	27-31021 DEU data invalid	27-32 TASK 821
SMYD - 1	27-31022 DEU out of range	27-32 TASK 821
SMYD - 1	27-31023 no MCP data	27-32 TASK 825
SMYD - 1	27-31024 MCP data invalid	27-32 TASK 826
SMYD - 1	27-31025 no FMC data	27-32 TASK 822
SMYD - 1	27-31026 FMC data invalid	27-32 TASK 824
SMYD - 1	27-31027 FMC out of range	27-32 TASK 824
SMYD - 1	27-31028 AOA sig inactive	27-32 TASK 809
SMYD - 1	27-31029 FLAP sig inactive	27-32 TASK 811
SMYD - 1	27-31030 air/gnd inactive	27-32 TASK 830
SMYD - 1	27-31031 AOA vane bent	27-32 TASK 809

EFFECTIVITY
SIA ALL

27-32 TASK 801

D633A103-SIA

Page 203
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
SMYD - 1	27-31032 AOA sel invalid	27-32 TASK 809
SMYD - 1	27-31033 INVALID PART NUM	27-32 TASK 835
SMYD - 1	27-81001 SMYD A/S fault	27-32 TASK 832
SMYD - 1	27-81002 A/S no power	27-83 TASK 801
SMYD - 1	27-81003 A/S vlv ckt open	27-83 TASK 802
SMYD - 1	27-81004 A/S flt tst fail	27-83 TASK 803
SMYD - 2	22-22001 SMYD YD fault	22-23 TASK 801
SMYD - 2	22-22002 YD 28VAC no power	22-23 TASK 802
SMYD - 2	22-22003 YD 28VDC no power	22-23 TASK 803
SMYD - 2	22-22004 YD LVDT error	22-23 TASK 805
SMYD - 2	22-22005 flap sig disagree	22-23 TASK 806
SMYD - 2	22-22006 YD servo loop	22-23 TASK 810
SMYD - 2	22-22007 no X-CH data	22-23 TASK 807
SMYD - 2	22-22008 X-CH invalid	22-23 TASK 801
SMYD - 2	22-22009 X-CH cmd disagree	22-23 TASK 808
SMYD - 2	27-22001 whl sig error	31-31 TASK 806
SMYD - 2	27-32000 SMYD fault	27-32 TASK 802
SMYD - 2	27-32001 SMYD SW fault	27-32 TASK 802
SMYD - 2	27-32002 S/S no power	27-32 TASK 806
SMYD - 2	27-32003 SM 28VAC no power	27-32 TASK 808
SMYD - 2	27-32005 FLAP sig error	27-32 TASK 812
SMYD - 2	27-32006 LE shows asymetry	27-32 TASK 813
SMYD - 2	27-32007 air/gnd in air	27-32 TASK 814
SMYD - 2	27-32009 SW test sw short	27-32 TASK 815
SMYD - 2	27-32010 prgm pin error	27-32 TASK 816
SMYD - 2	27-32011 no AD data	27-32 TASK 804
SMYD - 2	27-32012 AD data invalid	27-32 TASK 817
SMYD - 2	27-32013 AD out of range	27-32 TASK 817
SMYD - 2	27-32014 no IR1 data	27-32 TASK 804
SMYD - 2	27-32015 IR1 data invalid	27-32 TASK 818
SMYD - 2	27-32016 IR1 out of range	27-32 TASK 818
SMYD - 2	27-32017 no IR2 data	27-32 TASK 804
SMYD - 2	27-32018 IR2 data invalid	27-32 TASK 818
SMYD - 2	27-32019 IR2 out of range	27-32 TASK 818
SMYD - 2	27-32020 no DEU data	27-32 TASK 820

EFFECTIVITY
SIA ALL

27-32 TASK 801

D633A103-SIA

Page 204
Jun 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
SMYD - 2	27-32021 DEU data invalid	27-32 TASK 821
SMYD - 2	27-32022 DEU out of range	27-32 TASK 821
SMYD - 2	27-32023 no MCP data	27-32 TASK 828
SMYD - 2	27-32024 MCP data invalid	27-32 TASK 826
SMYD - 2	27-32025 no FMC data	27-32 TASK 823
SMYD - 2	27-32026 FMC data invalid	27-32 TASK 824
SMYD - 2	27-32027 FMC out of range	27-32 TASK 824
SMYD - 2	27-32028 AOA sig error	27-32 TASK 810
SMYD - 2	27-32029 FLAP sig error	27-32 TASK 812
SMYD - 2	27-32030 air/gnd inactive	27-32 TASK 830
SMYD - 2	27-32031 AOA vane bent	27-32 TASK 810
SMYD - 2	27-32032 AOA sel invalid	27-32 TASK 810
SMYD - 2	27-32033 INVALID PART NUM	27-32 TASK 835
SMYD - 2	27-82001 SMYD A/S fault	27-32 TASK 802
SMYD - 2	27-82002 A/S no power	27-83 TASK 801
SMYD - 2	27-82003 A/S vlv ckt open	27-83 TASK 802
SMYD - 2	27-82004 A/S flt tst fail	27-83 TASK 803

———— **END OF TASK** ————

EFFECTIVITY
SIA ALL

27-32 TASK 801

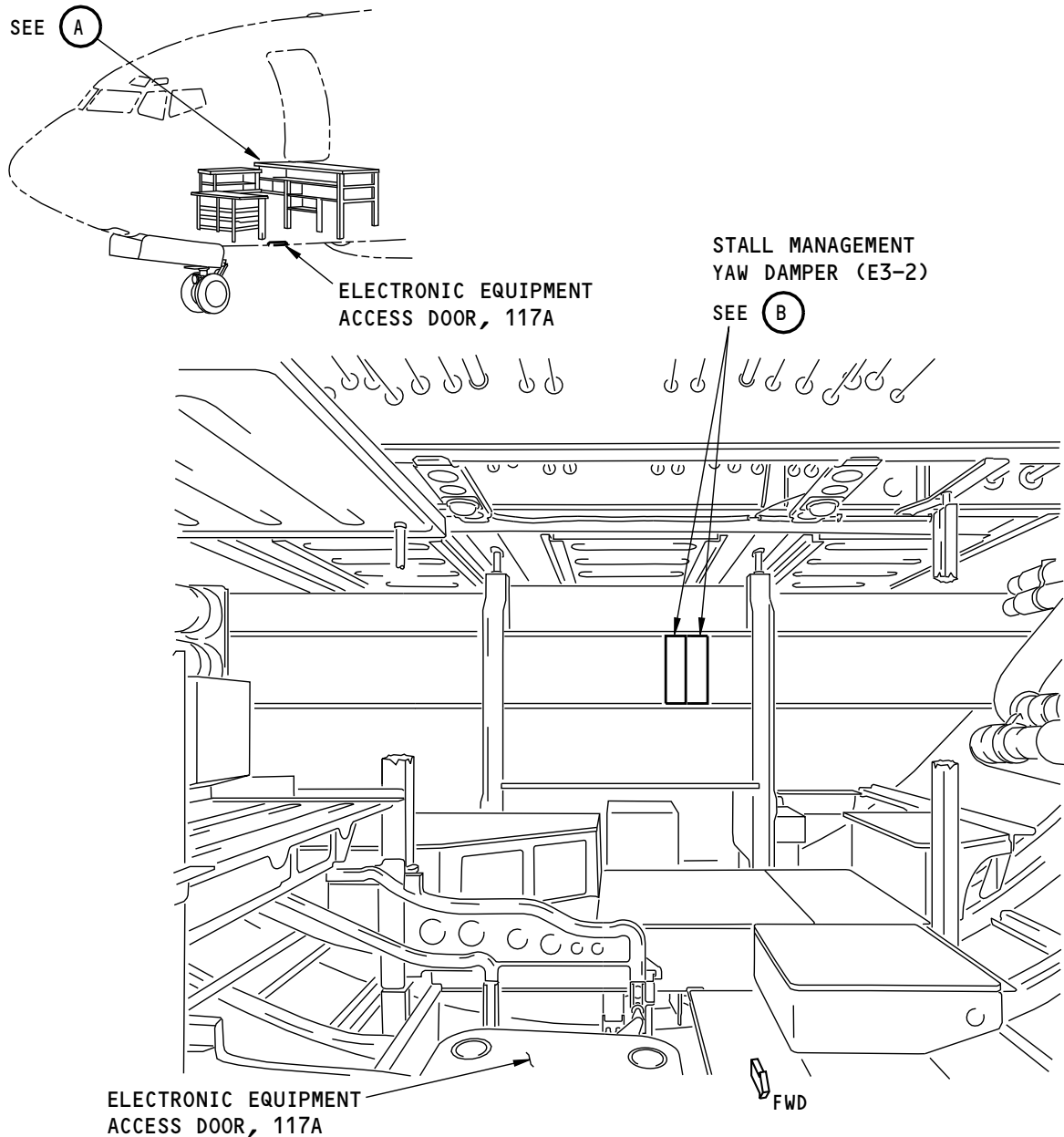
D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 205
Jun 15/2022

BOEING
737-600/700/800/900
FAULT ISOLATION MANUAL

ELECTRONIC EQUIPMENT
RACKS, E2, E3 AND E4



ELECTRONIC EQUIPMENT RACKS, E2, E3 AND E4

(A)

G58116 S0000146982_V1

Stall Management Yaw Damper BITE
Figure 201/27-32-00-990-802 (Sheet 1 of 2)

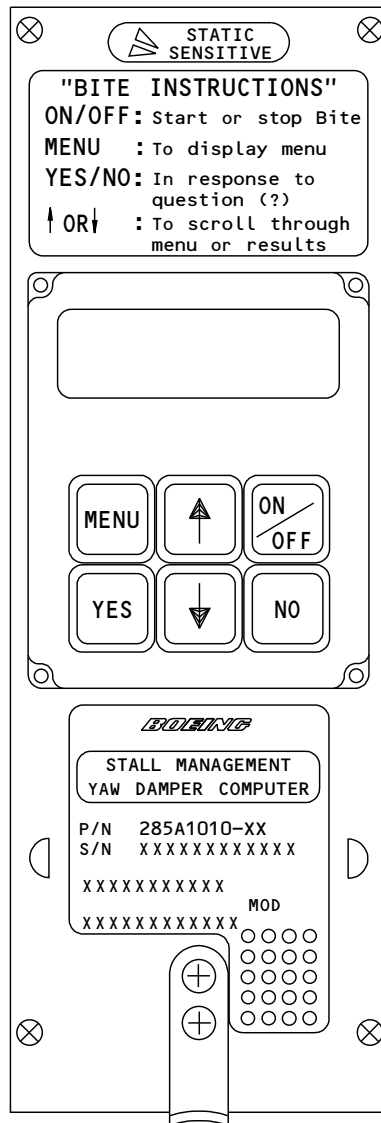
EFFECTIVITY
SIA ALL

27-32 TASK 801

D633A103-SIA

Page 206
Oct 15/2021

737-600/700/800/900
FAULT ISOLATION MANUAL



STALL MANAGEMENT YAW DAMPER
(EXAMPLE)

(B)

G58117 S0000146983_V1

Stall Management Yaw Damper BITE
Figure 201/27-32-00-990-802 (Sheet 2 of 2)

EFFECTIVITY
SIA ALL

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

27-32 TASK 801

Page 207
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

802. Stall Management Yaw Damper (SMYD) 2 Internal Fault - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 27-32000 SMYD FAULT
 - (b) 27-32001 SMYD SW FAULT
 - (c) 27-82001 SMYD A/S FAULT
- (2) There is a fault internal to the SMYD 2.
- (3) The Stall Management Yaw Damper (SMYD) cross-channel bus has a wiring/short problem.

B. Possible Causes

- (1) SMYD 2, M1748 (SMYD 2)
 - (a) If electrical power to the Yaw Damper is not turned on at the same time as electrical power to the SMYD this fault message may appear
- (2) Wiring

C. Related Data

- (1) WDM 22-23-12

D. Fault Isolation Procedure

- (1) Replace the SMYD 2, M1748. These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
 - (a) Do the post installation test in the SMYD installation procedure.
 - 1) If the test operates correctly, then you corrected the fault.
 - 2) If the test is not satisfactory, then continue.
- (2) Do this check of the wiring.
 - (a) Remove the SMYD 1, M1747 and SMYD 2, M1748. This is the task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801.
 - (b) Inspect the connectors and sockets.
 - (c) Do a continuity check between these pins (WDM 22-23-12):

SMYD 1, M1747		SMYD 2, M1748	
D3683A		D3685A	
54	.....	57	
53	.....	58	
57	.....	54	
58	.....	53	

SMYD 1, M1747		E1-1 Shelf	
D3683A		D10064	
54	.....	12	
53	.....	13	
57	.....	22	
58	.....	23	

EFFECTIVITY
SIA ALL

27-32 TASK 802

D633A103-SIA

Page 208
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

SMYD 2, M1748	E1-1 Shelf
D3685A	D10064
53	23
54	22
58	13
57	12

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install the SMYD 1, M1747 and SMYD 2, M1748. This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - c) Do the post installation test in the SMYD installation procedure.
 - d) If the maintenance message does not show on the SMYD 1, M1747 or SMYD 2, M1748, then you corrected the problem.

————— **END OF TASK** —————

803. No AD or IR Data Problem (SMYD 1) - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 27-31011 NO AD DATA
 - (b) 27-31014 NO IR1 DATA
 - (c) 27-31017 NO IR2 DATA
- (2) There is no data from the Air Data Bus or there is no data from the Inertial Reference Bus.
- (3) The Stall Warning Test failed.

B. Possible Causes

- (1) Left (Right) Air Data Inertial Reference Unit (ADIRU), M1749 (M1752)
- (2) Wiring
- (3) SMYD 1, M1747

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C01392	STICK SHAKER LEFT
E	5	C01204	SMYD-1 CMPTR DC
E	6	C01205	SMYD-1 SNSR EXC AC

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01207	SMYD-2 SNSR EXC AC
B	5	C01206	SMYD-2 CMPTR DC
B	6	C01393	STICK SHAKER RIGHT

EFFECTIVITY
SIA ALL

27-32 TASKS 802-803

D633A103-SIA

Page 209
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

D. Related Data

- (1) WDM 34-21-13
- (2) WDM 34-21-14
- (3) WDM 34-21-23
- (4) SSM 34-21-13
- (5) SSM 34-21-14
- (6) SSM 34-21-23

E. Initial Evaluation

- (1) For SMYD 1, M1747, do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - (a) If the maintenance message does not show in EXISTING FAULTS, then there was an intermittent fault.
 - (b) If the maintenance message shows in EXISTING FAULTS, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do these steps to make sure that the ADIRU operates correctly:
 - (a) Look at the Common Display System (CDS) to see if the ATT flag shows.
 - 1) If the ATT flag shows, then do the ADIRS BITE Procedure, 34-21 TASK 801/ EXISTING FAULTS on ADIRU 1, M1749.
 - 2) If the ATT flag does not show, then continue.
- (2) Do this exchange check of SMYD 1, M1747:
 - (a) Put a tag that reads "SUSPECT" on SMYD 1, M1747.
 - (b) Put a tag that reads "OK" on SMYD 2, M1748.
 - (c) Exchange the locations of SMYD 1 and SMYD 2. These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801

NOTE: Make sure that you do the Installation Test for each SMYD.

- 1) If the maintenance message still shows in EXISTING FAULTS during the Installation Test for the "SUSPECT" SMYD, then replace the SMYD tagged "SUSPECT". These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801

NOTE: If it is your airline's policy, return the SMYD tagged "OK" to its original location.

- a) If the maintenance message does not show in EXISTING FAULTS, then you corrected the problem. Remove the tags from the SMYDs.
- 2) If the maintenance message does not show in EXISTING FAULTS during the Installation Test for SMYD 1 or SMYD 2, then do these steps to complete the task:

NOTE: There was an intermittent fault in the connector at the SMYD 1, M1747 location or in the SMYD tagged "SUSPECT".

- a) If it is your airline's policy, return the SMYD to their original locations. These are the tasks:

EFFECTIVITY
SIA ALL

27-32 TASK 803

D633A103-SIA

Page 210
Oct 15/2023



737-600/700/800/900 FAULT ISOLATION MANUAL

- Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
- Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801

NOTE: The SMYD tagged "OK" goes in the SMYD 2, M1748 Rack location. The SMYD tagged "SUSPECT" goes in the SMYD 1, M1747 Rack location.

- b) Remove the tags from the SMYDs.
- 3) If the maintenance message shows in EXISTING FAULTS during the Installation Test, then continue.
- a) If it is your airline's policy, return the SMYDs to their original locations. These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801

NOTE: The SMYD tagged "OK" goes in the SMYD 2, M1748 Rack location. The SMYD tagged "SUSPECT" goes in the SMYD 1, M1747 Rack location.

- b) Remove the tags from the SMYDs.
- (3) Do this exchange check of the Left ADIRU, M1749:
- (a) Put a tag that reads "SUSPECT" on the Left ADIRU, M1749.
 - (b) Put a tag that reads "OK" on the Right ADIRU, M1752.
 - (c) Exchange the locations of the Left and Right ADIRUs. These are the tasks:
 - Air Data Inertial Reference Unit Removal, AMM TASK 34-21-01-000-801
 - Air Data Inertial Reference Unit - Installation, AMM TASK 34-21-01-400-801
- NOTE:** Make sure that you do the Installation Test for each ADIRU.
- (d) For each SMYD, do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
- 1) If the maintenance message still shows in EXISTING FAULTS during the Installation Test for the "SUSPECT" ADIRU then replace the ADIRU tagged "SUSPECT". These are the tasks:
 - Air Data Inertial Reference Unit Removal, AMM TASK 34-21-01-000-801
 - Air Data Inertial Reference Unit - Installation, AMM TASK 34-21-01-400-801
- NOTE:** If it is your airline's policy, return the ADIRU tagged "OK" to its original location.
- a) If the maintenance message does not show in EXISTING FAULTS, then you corrected the problem. Remove the tags from the ADIRUs.
- 2) If the maintenance message does not show in EXISTING FAULTS during the Installation Test for SMYD 1 or SMYD 2, then do these steps to complete the task:
- NOTE:** There was an intermittent fault in the connector at the Left ADIRU, M1749 location or in the ADIRU tagged "SUSPECT".
- a) If it is your airline's policy, return the ADIRUs to their original locations. These are the tasks:

EFFECTIVITY
SIA ALL

27-32 TASK 803

D633A103-SIA

Page 211
Oct 15/2023



737-600/700/800/900 FAULT ISOLATION MANUAL

- Air Data Inertial Reference Unit Removal, AMM TASK 34-21-01-000-801
- Air Data Inertial Reference Unit - Installation, AMM TASK 34-21-01-400-801

NOTE: The ADIRU tagged "OK" goes in the Right ADIRU, M1752 Rack location. The ADIRU tagged "SUSPECT" goes in the Left ADIRU 1, M1749 Rack location.

- Remove the tags from the ADIRUs.
- If the maintenance message shows in EXISTING FAULTS during the Installation Test, then continue.
 - If it is your airline's policy, return the ADIRUs to their original locations. These are the tasks:
 - Air Data Inertial Reference Unit Removal, AMM TASK 34-21-01-000-801
 - Air Data Inertial Reference Unit - Installation, AMM TASK 34-21-01-400-801

NOTE: The ADIRU tagged "OK" goes in the Right ADIRU, M1752 Rack location. The ADIRU tagged "SUSPECT" goes in the Left ADIRU 1, M1749 Rack location.
 - Remove the tags from the ADIRUs.
 - Do this check of the wiring (WDM 34-21-13, WDM 34-21-23, WDM 34-21-14):
 - Remove SMYD 1. This is the task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801.
 - Remove the applicable Left (Right) ADIRUs. This is the task: Air Data Inertial Reference Unit Removal, AMM TASK 34-21-01-000-801.
 - Examine the connector pins and sockets for damage and unwanted objects.
 - Repair as necessary.
 - For maintenance message 27-31011, examine the wiring between the SMYD 1 and Left ADIRU as follows (WDM 34-21-14):

MAINT MSG No. 27-31011

SMYD 1	L ADIRU
D3683B	D3687A
pin 93	pin A9
pin 106	pin B9

- For maintenance message 27-31014, examine the wiring between the SMYD 1 and Left ADIRU as follows (WDM 34-21-13):

MAINT MSG No. 27-31014

SMYD 1	L ADIRU
D3683B	D3687B
pin 104	pin E5
pin 91	pin E6

- For maintenance message 27-31017, examine the wiring between the SMYD 1 and Right ADIRU as follows (WDM 34-21-23):

EFFECTIVITY
SIA ALL

27-32 TASK 803

D633A103-SIA

Page 212
Oct 15/2023



737-600/700/800/900 FAULT ISOLATION MANUAL

MAINT MSG No. 27-31017

SMYD 1	R ADIRU
D3683A	D3693B
pin 55	pin C10
pin 68	pin C11

- (g) If you find a problem in the wiring, repair it as necessary.
- 1) Re-install SMYD 1, M1747. This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - 2) Re-install the applicable Left (Right) ADIRUs. This is the task: Air Data Inertial Reference Unit - Installation, AMM TASK 34-21-01-400-801.
 - 3) For SMYD 1, M1747, do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - a) If the maintenance message does not show in EXISTING FAULTS, then you corrected the problem.

————— **END OF TASK** —————

804. No AD or IR Data Problem (SMYD 2) - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 27-32011 NO AD DATA
 - (b) 27-32014 NO IR1 DATA
 - (c) 27-32017 NO IR2 DATA
- (2) There is no data from the Air Data Bus or there is no data from the Inertial Reference Bus.
- (3) The Stall Warning Test failed.

B. Possible Causes

- (1) Left (Right) ADIRU, M1749 (M1752)
- (2) Wiring
- (3) SMYD 2, M1748

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C01392	STICK SHAKER LEFT
E	5	C01204	SMYD-1 CMPTR DC
E	6	C01205	SMYD-1 SNSR EXC AC

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01207	SMYD-2 SNSR EXC AC
B	5	C01206	SMYD-2 CMPTR DC
B	6	C01393	STICK SHAKER RIGHT

EFFECTIVITY
SIA ALL

27-32 TASKS 803-804

D633A103-SIA

Page 213
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

D. Related Data

- (1) WDM 34-21-13
- (2) WDM 34-21-23
- (3) WDM 34-21-24
- (4) SSM 34-21-13
- (5) SSM 34-21-23
- (6) SSM 34-21-24

E. Initial Evaluation

- (1) For SMYD 2, M1748, do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - (a) If the maintenance message does not show in EXISTING FAULTS, then there was an intermittent fault.
 - (b) If the maintenance message shows in EXISTING FAULTS, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do these steps to make sure that the ADIRU operates correctly:
 - (a) Look at the CDS to see if the ATT flag shows.
 - 1) If the ATT flag shows, then do the ADIRS BITE Procedure, 34-21 TASK 801/ EXISTING FAULTS on ADIRU 1, M1752.
 - 2) If the ATT flag does not show, then continue.
- (2) Do this exchange check of SMYD 2, M1748:
 - (a) Put a tag that reads "SUSPECT" on SMYD 2, M1748.
 - (b) Put a tag that reads "OK" on SMYD 1, M1747.
 - (c) Exchange the locations of SMYD 1, M1747 and SMYD 2, M1748. These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801

NOTE: Make sure that you do the Installation Test for each SMYD.

- 1) If the maintenance message still shows in EXISTING FAULTS during the Installation Test for the "SUSPECT" SMYD, then replace the SMYD tagged "SUSPECT". These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801

NOTE: If it is your airline's policy, return the SMYD tagged "OK" to its original location.

- a) If the maintenance message does not show in EXISTING FAULTS, then you corrected the problem. Remove the tags from the SMYDs.
- 2) If the maintenance message does not show in EXISTING FAULTS during the Installation Test for SMYD 1 or SMYD 2, then do these steps to complete the task:

NOTE: There was an intermittent fault in the connector at the SMYD 2, M1748 location or in the SMYD tagged "SUSPECT".

- a) If it is your airline's policy, return the SMYD to their original locations. These are the tasks:

EFFECTIVITY
SIA ALL

27-32 TASK 804

D633A103-SIA

Page 214
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

- Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
- Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801

NOTE: The SMYD tagged "OK" goes in the SMYD 1, M1747 Rack location.
The SMYD tagged "SUSPECT" goes in the SMYD 2, M1748 Rack location.

b) Remove the tags from the SMYDs.

3) If the maintenance message shows in EXISTING FAULTS during the Installation Test, then continue.

a) If it is your airline's policy, return the SMYDs to their original locations. These are the tasks:

- Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
- Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801

NOTE: The SMYD tagged "OK" goes in the SMYD 1, M1747 Rack location.
The SMYD tagged "SUSPECT" goes in the SMYD 2, M1748 Rack location.

b) Remove the tags from the SMYDs.

(3) Do this exchange check of the Right ADIRU, M1752:

(a) Put a tag that reads "SUSPECT" on the Right ADIRU, M1752.

(b) Put a tag that reads "OK" on the Left ADIRU, M1749.

(c) Exchange the locations of the Left and Right ADIRUs. These are the tasks:

- Air Data Inertial Reference Unit Removal, AMM TASK 34-21-01-000-801
- Air Data Inertial Reference Unit - Installation, AMM TASK 34-21-01-400-801

NOTE: Make sure that you do the Installation Test for each ADIRU.

(d) For each SMYD, do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.

1) If the maintenance message still shows in EXISTING FAULTS during the Installation Test for the "SUSPECT" ADIRU then replace the ADIRU tagged "SUSPECT". These are the tasks:

- Air Data Inertial Reference Unit Removal, AMM TASK 34-21-01-000-801
- Air Data Inertial Reference Unit - Installation, AMM TASK 34-21-01-400-801

NOTE: If it is your airline's policy, return the ADIRU tagged "OK" to its original location.

a) If the maintenance message does not show in EXISTING FAULTS, then you corrected the problem. Remove the tags from the ADIRUs.

2) If the maintenance message does not show in EXISTING FAULTS during the Installation Test for SMYD 2 or SMYD 1, then do these steps to complete the task:

NOTE: There was an intermittent fault in the connector at the RIGHT ADIRU, M1752 location or in the ADIRU tagged "SUSPECT".

a) If it is your airline's policy, return the ADIRUs to their original locations. These are the tasks:

EFFECTIVITY
SIA ALL

27-32 TASK 804

D633A103-SIA

Page 215
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

- Air Data Inertial Reference Unit Removal, AMM TASK 34-21-01-000-801
- Air Data Inertial Reference Unit - Installation, AMM TASK 34-21-01-400-801

NOTE: The ADIRU tagged "OK" goes in the left ADIRU, M1749 Rack location.
The ADIRU tagged "SUSPECT" goes in the right ADIRU M1752 Rack location.

b) Remove the tags from the ADIRUs.

3) If the maintenance message shows in EXISTING FAULTS during the Installation Test, then continue.

a) If it is your airline's policy, return the ADIRUs to their original locations. These are the tasks:

- Air Data Inertial Reference Unit Removal, AMM TASK 34-21-01-000-801
- Air Data Inertial Reference Unit - Installation, AMM TASK 34-21-01-400-801

NOTE: The ADIRU tagged "OK" goes in the Right ADIRU, M1752 Rack location. The ADIRU tagged "SUSPECT" goes in the Left ADIRU 1, M1749 Rack location.

b) Remove the tags from the ADIRUs.

(4) Do this check of the wiring (WDM 34-21-13, WDM 34-21-23, WDM 34-21-24):

(a) Remove SMYD 1. This is the task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801.

(b) Remove the applicable Left (Right) ADIRUs. This is the task: Air Data Inertial Reference Unit Removal, AMM TASK 34-21-01-000-801.

(c) Examine the connector pins and sockets for damage and unwanted objects.

1) Repair as necessary.

(d) For maintenance message 27-32011, examine the wiring between the SMYD 2 and Right ADIRU as follows (WDM 34-21-24):

MAINT MSG No. 27-32011

SMYD 2	R ADIRU
D3685B	D3693A
pin 93	pin A9
pin 106	pin B9

(e) For maintenance message 27-32014, examine the wiring between the SMYD 2 and Left ADIRU as follows (WDM 34-21-13):

MAINT MSG No. 27-32014

SMYD 2	L ADIRU
D3685A	D3687B
pin 55	pin C10
pin 68	pin C11

(f) For maintenance message 27-32017, examine the wiring between the SMYD 2 and Right ADIRU as follows (WDM 34-21-23):

EFFECTIVITY
SIA ALL

27-32 TASK 804

D633A103-SIA

Page 216
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

MAINT MSG No. 27-32017

SMYD 2	R ADIRU
D3685B	D3693B
pin 104	pin E5
pin 91	pin E6

- (g) If you find a problem in the wiring, repair it as necessary.
- 1) Re-install SMYD 2, M1748. This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - 2) Re-install the applicable Left (Right) ADIRUs. This is the task: Air Data Inertial Reference Unit - Installation, AMM TASK 34-21-01-400-801.
 - 3) For SMYD 2, M1748, do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - a) If the maintenance message does not show in EXISTING FAULTS, then you corrected the problem.

END OF TASK

805. Captain's Stick Shaker Has No Power - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-31002 S/S NO PWR
- (2) The SMYD does not detect 28 VDC from the standby bus.
- (3) The stall warning test will fail if the fault is present.

B. Possible Causes

- (1) Circuit breaker
- (2) Wiring problem
- (3) SMYD-1, M1747

C. Circuit Breaker

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C01392	STICK SHAKER LEFT

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	6	C01393	STICK SHAKER RIGHT

D. Related Data

- (1) SSM 27-32-11
- (2) WDM 27-32-11

EFFECTIVITY
SIA ALL

27-32 TASKS 804-805

D633A103-SIA

Page 217
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

E. Initial Evaluation

- (1) Make sure that this circuit breaker is closed:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C01392	STICK SHAKER LEFT

- (2) For SMYD-1, M1747, do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
- (a) If the maintenance message does not show in EXISTING FAULTS, then there was an intermittent fault.
- (b) If the maintenance message shows in EXISTING FAULTS, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this check for power to the SMYD:
- (a) Remove the SMYD 1. This is the task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
- (b) Examine the connector and sockets for damage and unwanted material.
- (c) Measure the voltage between pin 10 on the SMYD connector D3683A and structure ground.
- 1) If you measure 28 VDC at the pin, then do these steps:
- a) Install a new SMYD-1, M1747. This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
- b) Do the Repair Confirmation at the end of this task.
- 2) If you do not measure 28 VDC at the pin, then continue.
- (2) Do these steps to repair the circuit breaker:
- (a) Replace this circuit breaker:
- 1) This is the circuit breaker:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C01392	STICK SHAKER LEFT

- 2) Do the Repair Confirmation at the end of this task.
- (3) Do this wiring check (WDM 27-32-11):
- (a) Remove the SMYD-1. This is the task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801

SMYD 1, M1747	C01392
D3683A	C01392
pin 10	=L

- (c) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
- 2) Re-install the SMYD. This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801

EFFECTIVITY
SIA ALL

27-32 TASK 805

D633A103-SIA

Page 218
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 3) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) For the SMYD-1, (M1747), do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
- (a) If the maintenance message does not show in EXISTING FAULTS, then you have corrected the fault.
- (b) If the maintenance message shows in EXISTING FAULTS, then continue the Fault Isolation at the subsequent step.

END OF TASK

806. First Officer's Stick Shaker Has No Power - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
- (a) 27-32002 S/S No PWR
- (2) The SMYD does not detect 28 VDC from the number 2 bus.
- (3) The stall warning test will fail if the problem is present.

B. Possible Causes

- (1) Circuit breaker
- (2) Wiring problem
- (3) SMYD-2, M1748

C. Circuit Breaker

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	6	C01393	STICK SHAKER RIGHT

D. Related Data

- (1) SSM 27-32-21
- (2) WDM 27-32-21

E. Initial Evaluation

- (1) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	6	C01393	STICK SHAKER RIGHT

- (2) For SMYD-2, M1748, do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
- (a) If the maintenance message does not show in EXISTING FAULTS, then there was an intermittent fault.
- (b) If the maintenance message shows in EXISTING FAULTS, then do the Fault Isolation Procedure below.

EFFECTIVITY
SIA ALL

27-32 TASKS 805-806



**737-600/700/800/900
FAULT ISOLATION MANUAL**

F. Fault Isolation Procedure

- (1) Do this check for power to the SMYD:
 - (a) Remove the SMYD-2. This is the task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - (b) Examine the connector and sockets for damage and unwanted material.
 - (c) Measure the voltage between pin 10 on the SMYD-2 connector D3685A and structure ground.
 - 1) If you measure 28 VDC at the pin, then do these steps:
 - a) Install a new SMYD-1, M1747. This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - b) Do the Repair Confirmation at the end of this task.
 - 2) If you do not measure 28 VDC at the pin, then continue.
- (2) Do these steps to repair the circuit breaker:
 - (a) Replace this circuit breaker:
 - 1) This is the circuit breaker:

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	6	C01393	STICK SHAKER RIGHT

- 2) Do the Repair Confirmation at the end of this task.
- (3) Do this wiring check (WDM 27-32-21):
 - (a) Remove the SMYD-2. This is the task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801

SMYD 2, M1748	C01393
D3685A	C01393
pin 10	=L

- (c) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the SMYD-2. This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
 - 3) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) For the SMYD-2, do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801
 - (a) If the maintenance message does not show in EXISTING FAULTS, then you have corrected the fault.
 - (b) If the maintenance message shows in EXISTING FAULTS, then continue the Fault Isolation at the subsequent step.

———— **END OF TASK** ————

EFFECTIVITY
SIA ALL

27-32 TASK 806

D633A103-SIA

Page 220
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

807. 28 VAC SNSR EXC Input Not Present to SMYD 1 - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-31003 SM 28VAC INVALID
- (2) There is no 28 VAC Power from the SNSR EXC circuit breaker.
- (3) The stall warning test failed.
- (4) The autoslat fail light came on.

B. Possible Causes

- (1) Circuit breaker
- (2) Wiring problem
- (3) SMYD-1, M1747

C. Circuit Breaker

- (1) This is the primary circuit breaker related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	6	C01205	SMYD-1 SNSR EXC AC

D. Related Data

- (1) SSM 27-32-11
- (2) WDM 27-32-11

E. Initial Evaluation

- (1) Make sure that this circuit breaker is closed:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	6	C01205	SMYD-1 SNSR EXC AC

- (2) For SMYD-1, M1747, do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - (a) If the maintenance message does not show in EXISTING FAULTS, then there was an intermittent fault.
 - (b) If the maintenance message shows in EXISTING FAULTS, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this check for power to the SMYD-1, M1747:
 - (a) Remove the SMYD-1, M1747, do this task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801.
 - (b) Examine the connector and sockets for damage and unwanted material.
 - (c) Measure the voltage between pins 55 and 56 on the SMYD-1, M1747, connector D3683B.
 - 1) If you measure 28 VAC at the pin, then do these steps:
 - a) Replace the SMYD-1, M1747. These are the tasks:

EFFECTIVITY
SIA ALL

27-32 TASK 807

D633A103-SIA

Page 221
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

- Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
- Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801

- b) Do the Repair Confirmation at the end of this task.
- 2) If you do not measure 28 VAC at the pin, then continue.
- (2) Do these steps to repair the circuit breaker:
 - (a) Replace this circuit breaker:
 - 1) This is the circuit breaker:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	6	C01205	SMYD-1 SNSR EXC AC

- 2) Do the Repair Confirmation at the end of this task.
- (3) Do this wiring check (WDM 27-32-11):
 - (a) Remove the SMYD-1. This is the task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801

SMYD-1, M1747	C01205
D3683B	C01205
55	=L

- (c) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the SMYD. This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
 - 3) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) For the SMYD-1, M1747, do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - (a) If the maintenance message does not show in EXISTING FAULTS, then you have corrected the fault.
 - (b) If the maintenance message shows in EXISTING FAULTS, then continue the Fault Isolation at the subsequent step.

———— **END OF TASK** ————

808. 28 VAC SNSR EXC Input Not Present to SMYD 2 - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-32003 SM 28VAC No PWR
- (2) There is no 28 VAC Power from SNSR EXC circuit breaker.
- (3) The stall warning test failed.
- (4) The autoslat fail light came on.

EFFECTIVITY
SIA ALL

27-32 TASKS 807-808

D633A103-SIA

Page 222
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

B. Possible Causes

- (1) Circuit breaker
- (2) Wiring problem
- (3) SMYD-2, M1748

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01207	SMYD-2 SNSR EXC AC

D. Related Data

- (1) SSM 27-32-21
- (2) WDM 27-32-21

E. Initial Evaluation

- (1) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01207	SMYD-2 SNSR EXC AC

- (2) For the SMYD-2, M1748, do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - (a) If the maintenance message does not show in EXISTING FAULTS, then there was an intermittent fault.
 - (b) If the maintenance message shows in EXISTING FAULTS, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this check for power to the SMYD-2, M1748:
 - (a) Remove the SMYD-2. This is the task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - (b) Examine the connector and sockets for damage and unwanted material.
 - (c) Measure the voltage between pins 55 and 56 on the SMYD connector D3685B.
 - 1) If you measure 28 VAC at the pin, then do these steps:
 - a) Install a new SMYD. This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - b) Do the Repair Confirmation at the end of this task.
 - 2) If you do not measure 28 VAC at the pin, then continue.
- (2) Do these steps to repair the circuit breaker:
 - (a) Replace this circuit breaker:

EFFECTIVITY
SIA ALL

27-32 TASK 808

D633A103-SIA

Page 223
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

- 1) This is the circuit breaker:

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01207	SMYD-2 SNSR EXC AC

- 2) Do the Repair Confirmation at the end of this task.
- (3) Do this wiring check (WDM 27-32-11):
 - (a) Remove the SMYD-2. This is the task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801.

SMYD 2, M1748	C01207
D3685B	C01207
pin 55	=L

- (c) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the SMYD. This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - 3) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) For the SMYD-2, M1748, do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - (a) If the maintenance message does not show in EXISTING FAULTS, then you have corrected the fault.
 - (b) If the maintenance message shows in EXISTING FAULTS, then continue the Fault Isolation at the subsequent step.

————— **END OF TASK** —————

809. Left Angle Of Attack Sensor Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 27-31028 AOA SIG INACTIVE
 - (b) 27-31031 AOA VANE BENT
 - (c) 27-31032 AOA SEL INVALID
- (2) There is an Angle of Attack (AOA) signal error.
- (3) The stall warning test failed.
- (4) The AUTOSLAT FAIL Light came on.
- (5) When the maintenance message 27-31031 is found in SMYD-1, M1747, the SMYD-1 detected an AOA vane position problem with the onside AOA (AOA-L).
- (6) When the maintenance message 27-31031 is found, the AOA vane position was not at an expected "Faired" position during takeoff roll or landing roll.

EFFECTIVITY
SIA ALL

27-32 TASKS 808-809

D633A103-SIA

Page 224
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

- (a) The SMYD has a software logic monitor for the on-ground AOA vane position during the takeoff and landing rolls. During this time, the SMYD monitors the AOA vane position and checks to see if the AOA vane is "faired", while the airplane's airspeed is between approximately 75-105 knots.
- 1) If the SMYD's onside AOA vane position input is between -6.00 to 0.00 degrees, the SMYD will consider the AOA vane "faired", it is normal condition.
 - 2) If the SMYD's onside AOA vane position input is less than -6.00 degrees or is greater than 0.00 degrees, the SMYD will consider the AOA vane is "not faired".
 - a) If this "not faired" condition lasts for at least two consecutive flight legs, then the SMYD will command AUTO SLAT FAIL Light to illuminate after the second landing and after the Master Caution recall procedure is performed.
- (7) If the maintenance message 27-31031 is found, it does not necessarily mean that the AOA vane is bent.
- (a) If the AOA vane is physically bent or deformed, this condition could affect the accuracy of the AOA vane position and cause the AUTO SLAT FAIL Light to illuminate.
- (8) Other possible conditions for the maintenance message 27-31031 (in addition to a physically bent AOA vane):
- AOA vane is providing inaccurate position data to the SMYD
 - AOA vane does not travel freely during mechanical rotation (possible internal Friction or Damping problems)
 - AOA vane is jammed or frozen stuck in a fixed position
 - AOA vane is subjected to atmospheric conditions (gusty cross winds, for example) during takeoff and landing roll, causing the AOA vane to move to an erroneous position

B. Possible Causes

- (1) Wiring
- (2) Left AOA Sensor, T433
- (3) SMYD-1, M1747

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	6	C01205	SMYD-1 SNSR EXC AC

D. Related Data

- (1) SSM 27-32-11
- (2) WDM 27-32-11

E. Initial Evaluation

- (1) For the SMYD-1, M1747, do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
- (a) If the maintenance message does not show in EXISTING FAULTS, then there was an intermittent problem.

NOTE: If the maintenance message shows in FAULT HISTORY, then it is recommended that you do the Fault Isolation Procedure below.

EFFECTIVITY
SIA ALL

27-32 TASK 809

D633A103-SIA

Page 225
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (b) If the maintenance message shows in EXISTING FAULTS, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this check of the wiring:
- (a) Remove the SMYD-1, M1747. This is the task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801.
 - (b) Remove the Left AOA Sensor, T433. This is the task: Angle of Attack Sensor Removal, AMM TASK 34-21-05-000-801.
 - (c) Examine the connector pins and sockets for damage and unwanted objects.
 - 1) Repair as necessary.
 - (d) Do a continuity check between these pins (WDM 27-32-11):

L AOA SENSOR		SMYD 1	
D365		D3683B	
pin 1	.....	pin 55	
pin 3	.....	pin 72	
pin 4	.....	pin 71	
pin 5	.....	pin 58	

D365	
pin 2	 GD3204-AC

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install the SMYD-1, M1747. This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - c) Re-install the Left AOA Sensor, T433. This is the task: Angle of Attack Sensor Installation, AMM TASK 34-21-05-400-801.
 - d) Do the Repair Confirmation at the end of this task.
 - 2) If you did not find a problem with the wiring, then do these steps and continue:
 - a) Re-install the SMYD-1, M1747. This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - b) Re-install the Left AOA Sensor, T433. This is the task: Angle of Attack Sensor Installation, AMM TASK 34-21-05-400-801.
- (2) Do a system test of the Left AOA Sensor. This is the task: Angle of Attack System Test, AMM TASK 34-21-05-730-801.
- (a) If the AOA system test is not satisfactory, then do these steps:
 - 1) Replace the Left AOA Sensor, T433. These are the tasks:
 - Angle of Attack Sensor Removal, AMM TASK 34-21-05-000-801
 - Angle of Attack Sensor Installation, AMM TASK 34-21-05-400-801
 - 2) Do the Repair Confirmation at the end of this task.
 - (b) If the AOA system test is satisfactory, then continue.
- (3) Do this check of the SMYD-1, M1747:
- (a) Put a tag that reads "SUSPECT" on the SMYD-1, M1747.

EFFECTIVITY
SIA ALL

27-32 TASK 809

D633A103-SIA

Page 226
Feb 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (b) Put a tag that reads "OK" on the SMYD-2, M1748.
- (c) Interchange the locations of the "SUSPECT" and "OK" SMYD. These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
- (d) Do the EXISTING FAULTS test on the "SUSPECT" SMYD BITE Display. Do this task: Stall Management Yaw Damper (SMYD) BITE Test - Existing Faults, AMM TASK 27-32-00-740-801.
- (e) If the maintenance message shows on the "SUSPECT" SMYD BITE Display, then do these steps:
 - 1) Do the EXISTING FAULTS test on the "OK" SMYD BITE Display. Do this task: Stall Management Yaw Damper (SMYD) BITE Test - Existing Faults, AMM TASK 27-32-00-740-801.
 - 2) If the maintenance message does not show on the "OK" SMYD BITE Display, then do these steps:
 - a) Replace the "SUSPECT" SMYD. These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801

NOTE: If it is your airline's policy, you must return the SMYD tagged "OK" to its original location.

 - b) Remove the tags from the SMYD.
- (f) If the maintenance message does not show on the "SUSPECT" SMYD BITE Display, then there was an intermittent problem. Do this step to complete the task:
 - 1) Remove the tags from the SMYD.

NOTE: If it is your airline's policy, you must return the SMYD tagged "OK" to its original location.

G. Repair Confirmation

- (1) Do the EXISTING FAULTS test on the SMYD 1 BITE Display. This is the task: Stall Management Yaw Damper (SMYD) BITE Test - Existing Faults, AMM TASK 27-32-00-740-801.
 - (a) If the maintenance message does not show, then you corrected the problem.
 - (b) If the maintenance message shows, then continue the Fault Isolation Procedure at the subsequent step.

———— **END OF TASK** ————

810. Right Angle Of Attack Sensor Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 27-32028 AOA SIG INACTIVE
 - (b) 27-32031 AOA VANE BENT
 - (c) 27-32032 AOA SEL INVALID
- (2) There is an AOA signal error.
- (3) The stall warning test failed.

EFFECTIVITY
SIA ALL

27-32 TASKS 809-810

D633A103-SIA

Page 227
Oct 15/2022



737-600/700/800/900 FAULT ISOLATION MANUAL

- (4) The AUTOSLAT FAIL Light came on.
- (5) When the maintenance message 27-32031 is found in SMYD-2, M1748, the SMYD-2 detected an AOA vane position problem with the onside AOA (AOA-R).
- (6) When the maintenance message 27-32031 is found, the AOA vane position was not at an expected "Faired" position during takeoff roll or landing roll.
 - (a) The SMYD has a software logic monitor for the on-ground AOA vane position during the takeoff and landing rolls. During this time, the SMYD monitors the AOA vane position and checks to see if the AOA vane is "faired", while the airplane's airspeed is between approximately 75-105 knots.
 - 1) If the SMYD's onside AOA vane position input is between -6.00 to 0.00 degrees, the SMYD will consider the AOA vane "faired", it is normal condition.
 - 2) If the SMYD's onside AOA vane position input is less than -6.00 degrees or is greater than 0.00 degrees, the SMYD will consider the AOA vane is "not faired".
 - a) If this "not faired" condition lasts for at least two consecutive flight legs, then the SMYD will command AUTO SLAT FAIL Light to illuminate after the second landing and after the Master Caution recall procedure is performed.
- (7) If the maintenance message 27-32031 is found, it does not necessarily mean that the AOA vane is bent.
 - (a) If the AOA vane is physically bent or deformed, this condition could affect the accuracy of the AOA vane position and cause the AUTO SLAT FAIL Light to illuminate.
- (8) Other possible conditions for the maintenance message 27-32031 (in addition to a physically bent AOA vane):
 - AOA vane is providing inaccurate position data to the SMYD
 - AOA vane does not travel freely during mechanical rotation (possible internal Friction or Damping problems)
 - AOA vane is jammed or frozen stuck in a fixed position
 - AOA vane is subjected to atmospheric conditions (gusty cross winds, for example) during takeoff and landing roll, causing the AOA vane to move to an erroneous position

B. Possible Causes

- (1) Wiring
- (2) Right AOA Sensor, T437
- (3) SMYD-2, M1748

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01207	SMYD-2 SNSR EXC AC

D. Related Data

- (1) SSM 27-32-21
- (2) WDM 27-32-21

EFFECTIVITY
SIA ALL

27-32 TASK 810

D633A103-SIA

Page 228
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

E. Initial Evaluation

- (1) For the SMYD-2, M1748, do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - (a) If the maintenance message does not show in EXISTING FAULTS, then there was an intermittent problem.

NOTE: If the maintenance message shows in FAULT HISTORY, then it is recommended that you do the Fault Isolation Procedure below.
 - (b) If the maintenance message shows in EXISTING FAULTS, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this check of the wiring:
 - (a) Remove the SMYD-2, M1748. This is the task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801.
 - (b) Remove the Right AOA Sensor, T437. This is the task: Angle of Attack Sensor Removal, AMM TASK 34-21-05-000-801.
 - (c) Examine the connector pins and sockets for damage and unwanted objects.
 - 1) Repair as necessary.
 - (d) Do a continuity check between these pins (WDM 27-32-21):

R AOA SENSOR		SMYD 2	
D287		D3685B	
pin 1	.....	pin 55	
pin 3	.....	pin 71	
pin 4	.....	pin 72	
pin 5	.....	pin 58	

D287	
pin 2	 GD3204-AC

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install the SMYD-2, M1748. This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - c) Re-install the Right AOA Sensor, T437. This is the task: Angle of Attack Sensor Installation, AMM TASK 34-21-05-400-801.
 - d) Do the Repair Confirmation at the end of this task.
 - 2) If you did not find a problem with the wiring, then do these steps and continue:
 - a) Re-install the SMYD-2, M1748. This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - b) Re-install the Right AOA Sensor, T437. This is the task: Angle of Attack Sensor Installation, AMM TASK 34-21-05-400-801.
- (2) Do a system test of the Right AOA Sensor. This is the task: Angle of Attack System Test, AMM TASK 34-21-05-730-801.
 - (a) If the AOA system test is not satisfactory, then do these steps:

EFFECTIVITY
SIA ALL

27-32 TASK 810

D633A103-SIA

Page 229
Feb 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 1) Replace the Right AOA Sensor, T437. These are the tasks:
 - Angle of Attack Sensor Removal, AMM TASK 34-21-05-000-801
 - Angle of Attack Sensor Installation, AMM TASK 34-21-05-400-801
- 2) Do the Repair Confirmation at the end of this task.
- (b) If the AOA system test is satisfactory, then continue.
- (3) Do this check of the SMYD-2, M1748:
 - (a) Put a tag that reads "SUSPECT" on the SMYD-2, M1748.
 - (b) Put a tag that reads "OK" on the SMYD-1, M1747.
 - (c) Interchange the locations of the "SUSPECT" and "OK" SMYD. These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
 - (d) Do the EXISTING FAULTS test on the "SUSPECT" SMYD BITE Display. Do this task: Stall Management Yaw Damper (SMYD) BITE Test - Existing Faults, AMM TASK 27-32-00-740-801.
 - (e) If the maintenance message shows on the "SUSPECT" SMYD BITE Display, then do these steps:
 - 1) Do the EXISTING FAULTS test on the "OK" SMYD BITE Display. Do this task: Stall Management Yaw Damper (SMYD) BITE Test - Existing Faults, AMM TASK 27-32-00-740-801.
 - 2) If the maintenance message does not show on the "OK" SMYD BITE Display, then do these steps:
 - a) Replace the "SUSPECT" SMYD. These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
 - (f) If the maintenance message does not show on the "SUSPECT" SMYD BITE Display, then there was an intermittent problem. Do this step to complete the task:
 - 1) Remove the tags from the SMYD.

NOTE: If it is your airline's policy, you must return the SMYD tagged "OK" to its original location.

G. Repair Confirmation

- (1) Do the EXISTING FAULTS test on the SMYD 2 BITE Display. This is the task: Stall Management Yaw Damper (SMYD) BITE Test - Existing Faults, AMM TASK 27-32-00-740-801.
 - (a) If the maintenance message does not show, then you corrected the problem.
 - (b) If the maintenance message shows, then continue the Fault Isolation Procedure at the subsequent step.

———— **END OF TASK** ————

EFFECTIVITY
SIA ALL

27-32 TASK 810

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 230
Feb 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

811. Right Flap Position Transmitter Signal Fault - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 27-31005 Flap sig error
 - (b) 27-31029 Flap sig inactive
- (2) There is a flap signal error.
- (3) The stall warning test failed.

B. Possible Causes

- (1) Flap position transmitter, T428
- (2) Wiring problem
- (3) SMYD-1, M1747

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	6	C01205	SMYD-1 SNSR EXC AC

D. Related Data

- (1) SSM 27-32-11
- (2) WDM 27-32-11

E. Initial Evaluation

- (1) For SMYD-1, M1747, do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - (a) If the maintenance message does not show in EXISTING FAULTS, then there was an intermittent fault.
 - (b) If the maintenance message shows in EXISTING FAULTS, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Replace the right flap position transmitter:
 - (a) These are the tasks:
 - Flap Position Transmitter Removal, AMM TASK 27-58-01-000-801
 - Flap Position Transmitter Installation, AMM TASK 27-58-01-400-801
 - (b) Do the Repair Confirmation at the end of this task.
- (2) Do a wiring check between the right flap position transmitter and the SMYD-1.
 - (a) Remove the SMYD-1. This is the task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801.
 - (b) Remove the connector from the right flap position transmitter. This is the task: Flap Position Transmitter Removal, AMM TASK 27-58-01-000-801.
 - (c) Examine the connector pins and sockets for damage and unwanted objects.
 - (d) Do a wiring check between these pins:

EFFECTIVITY
SIA ALL

27-32 TASK 811

D633A103-SIA

Page 231
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

SMYD 1 D3683B	RIGHT FLAP POSITION TRANSMITTER D229
pin 55	pin 4
pin 56	ground
ground	pin 5
pin 99	pin 6
pin 97	pin 7
pin 98	pin 8

- (e) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the SMYD-1. This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - 3) Re-install the flap position transmitter connector. This is the task: Flap Position Transmitter Installation, AMM TASK 27-58-01-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
- (f) If you did not find a problem with the wiring, then continue.
- (3) Install a new SMYD-1. This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) For the SMYD-1 (M1747) do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - (a) If the maintenance message does not show in EXISTING FAULTS, then you have corrected the fault.
 - (b) If the maintenance message shows in EXISTING FAULTS, then continue the Fault Isolation at the subsequent step.

————— **END OF TASK** —————

812. Left Flap Position Transmitter Signal Fault - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 27-32005 Flap signal error
 - (b) 27-32029 Flap signal inactive
- (2) There is a flap signal error.
- (3) The stall warning test failed.

B. Possible Causes

- (1) Flap position transmitter, T427
- (2) Wiring problem
- (3) SMYD-2, M1748

EFFECTIVITY
SIA ALL

27-32 TASKS 811-812

D633A103-SIA

Page 232
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01207	SMYD-2 SNSR EXC AC

D. Related Data

- (1) SSM 27-32-21
(2) WDM 27-32-21

E. Initial Evaluation

- (1) For SMYD-2, M1748, do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
- (a) If the maintenance message does not show in EXISTING FAULTS, then there was an intermittent fault.
- (b) If the maintenance message shows in EXISTING FAULTS, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Replace the left flap position transmitter:
- (a) These are the tasks:
- Flap Position Transmitter Removal, AMM TASK 27-58-01-000-801
 - Flap Position Transmitter Installation, AMM TASK 27-58-01-400-801
- (b) Do the Repair Confirmation at the end of this task.
- (2) Do this wiring check (WDM 27-32-21):
- (a) Remove the SMYD-2. This is the task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
- (b) Remove the connector from the left flap position transmitter. To remove the connector, do this task: Flap Position Transmitter Removal, AMM TASK 27-58-01-000-801

SMYD 2 D3685B	LEFT FLAP POSITION TRANSMITTER D275
pin 55	pin 4
ground	pin 5
pin 99	pin 6
pin 98	pin 8
pin 97	pin 7

- (c) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
- 2) Re-install the SMYD. This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
- 3) Re-install the flap position transmitter connector. This is the task: Flap Position Transmitter Installation, AMM TASK 27-58-01-400-801.

EFFECTIVITY
SIA ALL

27-32 TASK 812

D633A103-SIA

Page 233
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 4) Do the Repair Confirmation at the end of this task.
- (d) If you did not find a problem with the wiring, then continue.
- (3) Install a new SMYD-2, M1748. This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) For the SMYD-2, M1748, do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - (a) If the maintenance message does not show in EXISTING FAULTS, then you have corrected the fault.
 - (b) If the maintenance message shows in EXISTING FAULTS, then continue the Fault Isolation at the subsequent step.

— END OF TASK —

813. Leading Edge Asymmetry Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 27-31006 LE Shows Asymmetry - SMYD-1 detected a leading edge asymmetry condition.
 - (b) 27-32006 LE Shows Asymmetry - SMYD-2 detected a leading edge asymmetry condition.
- (2) Flap/Slat Electronics Unit (FSEU), M1746 senses that there is a Leading Edge (LE) or Trailing Edge (TE) position error. When a leading edge (LE) asymmetry condition is detected, it means that the LE surfaces are not in their commanded positions.
- (3) There is a nuisance fault when the flaps go from flaps UP to flaps 1. This fault message may appear but does not effect stall warning operation.

B. Possible Causes

- (1) FSEU, M1746
- (2) Leading Edge Flap Proximity Sensor, S168 (S169, S170, S171, S172, S173, S174, or S175)
- (3) Leading Edge Slat Proximity Sensor, S994 (S995, S996, S997, S998, S999, S1000, S1001, S1002, S1003, S1004, S1005, S1006, S1007, S1008, S1009, S1094, S1095, S1096, S1097, S1098, or S1099)
- (4) Trailing Edge Flap Position Sensor, T427 (T428)
- (5) Wiring problem
- (6) SMYD-1 (-2), M1747 (M1748)

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C01392	STICK SHAKER LEFT
E	5	C01204	SMYD-1 CMPTR DC
E	6	C01205	SMYD-1 SNSR EXC AC

EFFECTIVITY
SIA ALL

27-32 TASKS 812-813

D633A103-SIA

Page 234
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01207	SMYD-2 SNSR EXC AC
B	5	C01206	SMYD-2 CMPTR DC
B	6	C01393	STICK SHAKER RIGHT

D. Related Data

- (1) SSM 27-32-11
- (2) SSM 27-32-21
- (3) SSM 27-81-11
- (4) SSM 27-81-12
- (5) SSM 27-81-21
- (6) SSM 27-81-22
- (7) WDM 27-32-11
- (8) WDM 27-32-21
- (9) WDM 27-81-11
- (10) WDM 27-81-12
- (11) WDM 27-81-21
- (12) WDM 27-81-22

E. Initial Evaluation

- (1) For both SMYD-1 (-2), M1747 (M1748), do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - (a) If both maintenance messages do not show in EXISTING FAULTS, then there was an intermittent fault.
 - (b) If both maintenance messages show in EXISTING FAULTS, do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 1) Repair any problems that you find.
 - 2) If FSEU BITE has no messages, do this task: Flap Position Transmitter Adjustment and Test, AMM TASK 27-58-01-820-801.
 - (c) If only one maintenance message (27-31006 or 27-32006) shows in EXISTING FAULTS, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Replace the FSEU. These are the tasks:
 - Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801
 - Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801
 - (a) Do the Repair Confirmation at the end of this task.
- (2) Do this wiring check between the SMYD-1 (2), M1747 (M1748) and the FSEU, M1746:
 - (a) Remove the applicable SMYD. This is the task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801.
 - (b) Remove the FSEU. This is the task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
 - (c) Examine the connector pins and sockets for damage and unwanted objects.

EFFECTIVITY
SIA ALL

27-32 TASK 813

D633A103-SIA

Page 235
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (d) Do a wiring check between the pins (WDM 27-32-11, WDM 27-32-21):

SMYD-1	FSEU
D3683A	D728A
pin 79	pin D11

SMYD-2	FSEU
D3685A	D728A
pin 79	pin D11

- 1) Inspect terminal block TB3201 at the E3-2 shelf in this wire routing.
 - 2) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install the SMYD. This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - c) Re-install the FSEU. This is the task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - d) Do the Repair Confirmation at the end of this task.
 - 3) If you did not find a problem with the wiring, then continue.
- (3) Do a test of the LE Flap and LE Slat Proximity Sensors. Do one of these tasks:
- Leading Edge Flap and Slat Proximity Sensor Test, AMM TASK 27-88-11-700-801
 - Leading Edge Flap and Slat Proximity Sensor Test Using a LCR Meter, AMM TASK 27-88-11-760-801
 - Leading Edge Flap and Slat Proximity Sensor Test Using Breakout Box and LCR Meter, AMM TASK 27-88-11-720-801
- (a) During the test, monitor the status of each leading edge device and pay attention to any leading edge device that is moving slower than the others, or does not move correctly.
 - (b) If the Proximity Sensors test was not satisfactory, or if any leading edge device moves slower than others or does not move correctly, then replace the applicable Leading Edge Proximity Sensor. These are the tasks:
 - Leading Edge Slat Proximity Sensor Removal, AMM TASK 27-88-11-000-801
 - Leading Edge Flap Proximity Sensor Removal, AMM TASK 27-88-11-000-802
 - Leading Edge Slat Proximity Sensor Installation, AMM TASK 27-88-11-400-801
 - Leading Edge Flap Proximity Sensor Installation, AMM TASK 27-88-11-400-802
 - 1) Do the Repair Confirmation at the end of this task.
- (4) Do a test of the Trailing Edge Flap Position Transmitter, T428 (T427). This is the task: Flap Position Transmitter Adjustment and Test, AMM TASK 27-58-01-820-801.
- (a) If the TE Flap Position Transmitter test was not satisfactory, then replace the Flap Position Sensor, T428 (T427). These are the tasks:
 - Flap Position Transmitter Removal, AMM TASK 27-58-01-000-801
 - Flap Position Transmitter Installation, AMM TASK 27-58-01-400-801
 - 1) Do the Repair Confirmation at the end of this task.
- (5) Replace the SMYD-1 (2), M1747 (M1748). These are the tasks:

EFFECTIVITY
SIA ALL

27-32 TASK 813

D633A103-SIA

Page 236
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
- Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
- (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do the BITE procedure on the applicable SMYD. This is the task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - (a) If the maintenance message does not show in EXISTING FAULTS, then you have corrected the fault.
 - (b) If the maintenance message shows in EXISTING FAULTS, then continue the Fault Isolation at the subsequent step.

————— **END OF TASK** —————

814. Air/Ground in Air - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 27-31007 AIR/GND IN AIR (SMYD 1)
 - (b) 27-32007 AIR/GND IN AIR (SMYD 2)
- (2) Both main and nose air/ground signals indicate "In Air".

B. Possible Causes

- (1) Proximity Sensor Electronics Unit (PSEU), M2061
- (2) Wiring problem
- (3) SMYD 1 (2), M1747 (M1748)

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C01392	STICK SHAKER LEFT
E	5	C01204	SMYD-1 CMPTR DC
E	6	C01205	SMYD-1 SNSR EXC AC

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01207	SMYD-2 SNSR EXC AC
B	5	C01206	SMYD-2 CMPTR DC
B	6	C01393	STICK SHAKER RIGHT

D. Related Data

- (1) SSM 27-32-11
- (2) SSM 27-32-21
- (3) WDM 27-32-11
- (4) WDM 27-32-21

EFFECTIVITY
SIA ALL

27-32 TASKS 813-814

D633A103-SIA

Page 237
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

E. Initial Evaluation

- (1) Do the Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - (a) If the maintenance message does not show in EXISTING FAULTS, then there was an intermittent fault.
 - (b) If the maintenance message shows in EXISTING FAULTS, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do the EXISTING FAULTS test on the PSEU. This is the task: Proximity Switch Electronics Unit (PSEU) BITE Procedure, 32-09 TASK 801.
 - (a) Do the fault isolation tasks for the maintenance messages that you find.

————— **END OF TASK** —————

815. Stall Warning Test Switch Short - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 27-31009 SW TST SW SHORT (SMYD 1)
 - (b) 27-32009 SW TST SW SHORT (SMYD 2)
- (2) The stall warning (SW) test switch is shorted.

B. Possible Causes

- (1) Stall warning test switch, (P5-18)
- (2) Wiring problem
- (3) SMYD-1, M1747, or SMYD-2, M1748

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C01392	STICK SHAKER LEFT
E	5	C01204	SMYD-1 CMPTR DC
E	6	C01205	SMYD-1 SNSR EXC AC

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01207	SMYD-2 SNSR EXC AC
B	5	C01206	SMYD-2 CMPTR DC
B	6	C01393	STICK SHAKER RIGHT

D. Related Data

- (1) (SSM 27-32-11)
- (2) (SSM 27-32-21)
- (3) (WDM 27-32-11)
- (4) (WDM 27-32-21)

EFFECTIVITY
SIA ALL

27-32 TASKS 814-815

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 238
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

E. Initial Evaluation

- (1) Do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - (a) If the maintenance message does not show in EXISTING FAULTS, then there was an intermittent fault.
 - (b) If the maintenance message shows in EXISTING FAULTS, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this check of the stall warning module:
 - (a) Remove the stall warning test module. This is the task: Stall Warning Test Module Removal, AMM TASK 27-32-21-000-801.
 - (b) Examine the connector pins and sockets for damage and unwanted objects.
 - (c) For maintenance message 27-31009, measure for continuity between pins 4 and 5 on the stall warning module connector D2349.
 - (d) For maintenance message 27-32009, measure for continuity between pins 4 and 5 on the stall warning module connector D2351.
 - (e) If there is continuity, do these steps:
 - 1) Replace the stall warning module. This is the task: Stall Warning Test Module Installation, AMM TASK 27-32-21-400-801.
 - 2) For maintenance message 27-31009, do these steps to test the module:
 - 3) For maintenance message 27-31009, push and hold the STALL WARNING TEST NO. 1 switch on the stall warning test module.
 - 4) For maintenance message 27-32009, push and hold the STALL WARNING TEST NO. 2 switch on the stall warning test module.
 - 5) For maintenance message 27-31009, make sure the captain's control column shaker operates.
 - 6) For maintenance message 27-32009, make sure the first officer's control column shaker operates.
 - 7) Release the test switch.
 - 8) Make sure the shaker stops.
 - 9) If the stick shaker test operates correctly, then you corrected the fault.
 - (f) If there is no continuity, then continue.
- (2) Do this wiring check:
 - (a) Remove the applicable SMYD. This is the task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801.
 - (b) Examine the connector pins and sockets for damage and unwanted material.
 - (c) For maintenance message 27-31009, do a wiring check between pin 47 on the SMYD-1 connector D3683A and structure ground.
 - (d) For maintenance message 27-32009, do a wiring check between pin 47 on the SMYD-2 connector D3685A and structure ground.
 - (e) If the pin is not grounded, then do these steps:
 - 1) Replace the applicable SMYD. This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - 2) Do the Repair Confirmation at the end of this task.

EFFECTIVITY
SIA ALL

27-32 TASK 815

D633A103-SIA

Page 239
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (f) If the pin is grounded, then continue.
- (3) Do this wiring check between the SMYD and stall warning module:
- (a) For maintenance message 27–31009, do a wiring check between the pins:

	STALL WARNING MODULE
SMYD 1	D2349
D3683A	D2349
pin 47	pin 5

- (b) For maintenance message 27–32009, do a wiring check between the pins:

	STALL WARNING MODULE
SMYD 2	D2351
D3685A	D2351
pin 47	pin 5

- (c) If you find a problem with the wiring, do these steps:
- 1) Repair the wiring.
 - 2) Re-install the stall warning module. To install the module, do this task: Stall Warning Test Module Installation, AMM TASK 27-32-21-400-801.
 - 3) Re-install the SMYD. This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - 4) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) For the SMYD-1 (-2), M1747 (M1748) do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
- (a) If the maintenance message does not show in EXISTING FAULTS, then you have corrected the fault.
- (b) If the maintenance message shows in EXISTING FAULTS, then continue the Fault Isolation at the subsequent step.

———— **END OF TASK** ————

816. Program Pin Fault - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
- (a) 27-31010 PRGM PIN (SMYD 1)
- (b) 27-32010 PRGM PIN (SMYD 2)
- (2) There is a program pin fault.
- (a) A program pin on the SMYD is set high by grounding the pin.
- (b) The number of grounded program pins on a SMYD must be even.
- 1) The parity pin is grounded or left open to make sure that the number of grounded pins is even.
 - 2) A fault will display if the number of grounded pins is not even.

EFFECTIVITY
SIA ALL

27-32 TASKS 815-816

D633A103-SIA

Page 240
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

B. Possible Causes

- (1) Wiring problem
- (2) SMYD -1 (-2), M1747 (M1748)

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C01392	STICK SHAKER LEFT
E	5	C01204	SMYD-1 CMPTR DC
E	6	C01205	SMYD-1 SNSR EXC AC

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01207	SMYD-2 SNSR EXC AC
B	5	C01206	SMYD-2 CMPTR DC
B	6	C01393	STICK SHAKER RIGHT

D. Related Data

- (1) (SSM 27-32-11)
- (2) SSM 27-32-21
- (3) WDM 27-32-11
- (4) WDM 27-32-21

E. Initial Evaluation

- (1) For the applicable SMYD, do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - (a) If the maintenance message does not show in EXISTING FAULTS, then there was an intermittent fault.
 - (b) If the maintenance message shows in EXISTING FAULTS, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this exchange check of the SMYD:
 - (a) For maintenance message 27-31010, do these steps:
 - 1) Put a tag that reads "SUSPECT" on SMYD 1, M1747.
 - 2) Put a tag that reads "OK" on SMYD 2, M1748.
 - (b) For maintenance message 27-32010, do these steps:
 - 1) Put a tag that reads "SUSPECT" on SMYD 2, M1748.
 - 2) Put a tag that reads "OK" on SMYD 1, M1747.
 - (c) Exchange the locations of SMYD 1, M1747 and SMYD 2, M1748. These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
- NOTE: Make sure that you do the installation test for each SMYD.

EFFECTIVITY
SIA ALL

27-32 TASK 816

D633A103-SIA

Page 241
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

- (d) If the original maintenance message does not show in EXISTING FAULTS during the installation test and the related maintenance message for the other SMYD does show, then do these steps:
- 1) Replace the SMYD tagged "SUSPECT". These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801

NOTE: If it is your airline's policy, you must return the SMYD tagged "OK" to its original location.
 - 2) If the maintenance message does not show in EXISTING FAULTS during the installation test, then you corrected the fault. Remove the tags from the SMYDs.
- (e) If neither the original maintenance message nor the related maintenance message for the other SMYD shows, then do these steps to complete the task:
- NOTE:** There was an intermittent fault in the connector at the SMYD or in the SMYD tagged "SUSPECT".
- 1) If it is your airline's policy, return the SMYDs to their original locations. These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
 - 2) Remove the tags from the SMYDs.
- (f) If the maintenance message shows in EXISTING FAULTS during the installation test, then continue.
- 1) If it is your airline's policy, return the SMYDs to their original locations. These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
 - 2) Remove the tags from the SMYDs.
- (2) Do this wiring check:
- (a) For maintenance message 27-31010, remove the number 1 SMYD.
 - (b) For maintenance message 27-32010, remove the number 2 SMYD.
 - 1) To remove the SMYD, do this task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801.
 - (c) Examine the connector pins and sockets for damage and contamination.
 - (d) Compare these pins to (WDM 27-32-11) or (WDM 27-32-21):

Table 201

PROGRAM PIN	FAULT 27-31010	FAULT 27-32010
0	D3683B PIN 34	D3685B PIN 34
1	D3683B PIN 76	D3685B PIN 76
2	D3683B PIN 74	D3685B PIN 74
3	D3683B PIN 78	D3685B PIN 78

EFFECTIVITY
SIA ALL

27-32 TASK 816

D633A103-SIA

Page 242
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

Table 201 (Continued)

PROGRAM PIN	FAULT 27-31010	FAULT 27-32010
4	D3683A PIN 84	D3685A PIN 84
5	D3683A PIN 100	D3685A PIN 100
6	D3683B PIN 48	D3685B PIN 48
7	D3683B PIN 75	D3685B PIN 75
PARITY	D3683B PIN 49	D3685B PIN 49

- (e) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Re-install the SMYD. To install the SMYD, do this task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - 3) For maintenance message 27-31010, do the EXISTING FAULTS test on the SMYD 1 BITE display.
 - 4) For maintenance message 27-32010, do the EXISTING FAULTS test on the SMYD 2 BITE display:
 - a) To do the test, do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - b) If the maintenance message does not show, then you corrected the fault.

————— **END OF TASK** —————

817. Air Data Input Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 27-31012 AD DATA INVALID (SMYD 1)
 - (b) 27-31013 AD OUT OF RANGE (SMYD 1)
 - (c) 27-32012 AD DATA INVALID (SMYD 2)
 - (d) 27-32013 AD OUT OF RANGE (SMYD 2)
- (2) The air data inputs are in error.

B. Possible Causes

- (1) ADIRU 1 (2), M1749 (M1752)
- (2) SMYD 1 (2), M1747 (M1748)

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C01392	STICK SHAKER LEFT
E	5	C01204	SMYD-1 CMPTR DC
E	6	C01205	SMYD-1 SNSR EXC AC

EFFECTIVITY
SIA ALL

27-32 TASKS 816-817

D633A103-SIA

Page 243
Feb 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01207	SMYD-2 SNSR EXC AC
B	5	C01206	SMYD-2 CMPTR DC
B	6	C01393	STICK SHAKER RIGHT

D. Related Data

- (1) SSM 27-32-11
- (2) SSM 27-32-21
- (3) WDM 27-32-11
- (4) WDM 27-32-21

E. Initial Evaluation

- (1) Do the Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - (a) If the maintenance message does not show in EXISTING FAULTS, then there was an intermittent fault.
 - (b) If the maintenance message shows in EXISTING FAULTS, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do the ADIRS BITE Procedure, 34-21 TASK 801.
 - (a) Do the fault isolation tasks for the maintenance messages that you find.
 - (b) If you do not find any maintenance messages, then continue.
- (2) Do these steps to replace the applicable SMYD:
 - (a) For maintenance message 27-31012 or 27-31013, replace the SMYD 1.
 - (b) For maintenance message 27-32012 or 27-32013, replace the SMYD 2.
 - (c) To replace the SMYD, these are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
 - (d) Do the post installation test in the SMYD installation procedure.
 - (e) If the test operates correctly, then you corrected the fault.

————— **END OF TASK** —————

818. IRU Input Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 27-31015 IR1 DATA INVALID (SMYD-1)
 - (b) 27-31016 IR1 OUT OF RANGE (SMYD-1)
 - (c) 27-31018 IR2 DATA INVALID (SMYD-1)
 - (d) 27-31019 IR2 OUT OF RANGE (SMYD-1)
 - (e) 27-32015 IR1 DATA INVALID (SMYD-2)
 - (f) 27-32016 IR1 OUT OF RANGE (SMYD-2)
 - (g) 27-32018 IR2 DATA INVALID (SMYD-2)

EFFECTIVITY
SIA ALL

27-32 TASKS 817-818

D633A103-SIA

Page 244
Feb 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

(h) 27-32019 IR2 OUT OF RANGE (SMYD-2)

B. Possible Causes

- (1) ADIRU-1 (-2), M1749 (M1752)
- (2) The inertial reference unit inputs are in error.
- (3) SMYD-1 (-2), M1747 (M1748)

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C01392	STICK SHAKER LEFT
E	5	C01204	SMYD-1 CMPTR DC
E	6	C01205	SMYD-1 SNSR EXC AC

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01207	SMYD-2 SNSR EXC AC
B	5	C01206	SMYD-2 CMPTR DC
B	6	C01393	STICK SHAKER RIGHT

D. Related Data

- (1) SSM 27-32-11
- (2) SSM 27-32-21
- (3) WDM 27-32-11
- (4) WDM 27-32-21

E. Initial Evaluation

- (1) For SMYD-1 (-2), M1747 (M1748), do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - (a) If the maintenance message does not show in EXISTING FAULTS, then there was an intermittent fault.
 - (b) If the maintenance message shows in EXISTING FAULTS, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do the BITE procedure for the ADIRU. Do this task: ADIRS BITE Procedure, 34-21 TASK 801.
 - (a) Do the fault isolation tasks for the maintenance messages that you find.
 - (b) If you do not find any maintenance messages, then continue.
- (2) Do these steps to replace the applicable SMYD:
 - (a) For maintenance messages 27-31015, 27-31016, 27-31018 or 27-31019, replace the SMYD-1.
 - (b) For maintenance messages 27-32015, 27-32016, 27-32018 or 27-32019, replace the SMYD-2.
 - (c) To replace the SMYD-1 (-2), these are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801

EFFECTIVITY
SIA ALL

27-32 TASK 818

D633A103-SIA

Page 245
Feb 15/2022



737-600/700/800/900 FAULT ISOLATION MANUAL

- Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
- (d) Do the post installation test in the SMYD installation procedure.
- (e) If the test operates correctly, then you corrected the fault.

————— **END OF TASK** —————

819. No DEU Data to SMYD 1 - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-31020 NO DEU DATA
- (2) There is no data from the Display Electronic Unit (DEU) to the number 1 SMYD.
- (3) The stall warning test failed.

B. Possible Causes

- (1) DEU 1, M1808
- (2) Wiring problem
- (3) SMYD 1, M1747

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	5	C01204	SMYD-1 CMPTR DC
E	6	C01205	SMYD-1 SNSR EXC AC

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01207	SMYD-2 SNSR EXC AC
B	5	C01206	SMYD-2 CMPTR DC
B	6	C01393	STICK SHAKER RIGHT

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	7	C01391	ENGINE 2 ALTN PWR CHAN B

D. Related Data

- (1) SSM 27-32-12
- (2) WDM 27-32-12
- (3) WDM 31-62-15

E. Initial Evaluation

- (1) For SMYD-1, M1747, do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - (a) If the maintenance message does not show in EXISTING FAULTS, then there was an intermittent fault.
 - (b) If the maintenance message shows in EXISTING FAULTS, then do the Fault Isolation Procedure.

EFFECTIVITY
SIA ALL

27-32 TASKS 818-819

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 246
Feb 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

F. Fault Isolation Procedure

- (1) Do these steps to make sure that the DEU operates properly:
 - (a) Do this task: DEU Self-Test Procedure, 31-62 TASK 802.
 - (b) Repair any problems that you find.
 - (c) If you do not find any problems, then continue.
- (2) Do this wiring check:
 - (a) Remove the SMYD 1. This is the task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - (b) Remove the DEU 2. This is the task: Display Electronic Unit Removal, AMM TASK 31-62-21-000-801
 - (c) Examine the connector pins and sockets for damage and contamination.
 - (d) Do a wiring test between these pins:

SMYD 1, M1747	CDS DEU 1,
D3683B	M1808
	D3973D
pin 65	pin A15
pin 64	pin B15

- (e) Check wiring at terminal block TB3101 and make sure that wiring is connected properly.
 - (f) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the SMYD. This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - 3) Re-install the DEU. This is the task: Display Electronic Unit Installation, AMM TASK 31-62-21-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
 - (g) If you do not find a problem with the wiring, then continue.
 - (3) Do these steps to replace the DEU:
 - (a) These are the tasks:
 - Display Electronic Unit Removal, AMM TASK 31-62-21-000-801
 - Display Electronic Unit Installation, AMM TASK 31-62-21-400-801
 - (b) Do the Repair Confirmation at the end of this task.
 - (4) Do these steps to replace the SMYD-1:
 - (a) Replace the SMYD-1. These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
 - (b) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) For the SMYD-1, (M1747), do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - (a) If the maintenance message does not show in EXISTING FAULTS, then you have corrected the fault.

EFFECTIVITY
SIA ALL

27-32 TASK 819

D633A103-SIA

Page 247
Feb 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (b) If the maintenance message shows in EXISTING FAULTS, then continue the Fault Isolation at the subsequent step.

————— **END OF TASK** —————

820. No DEU Data to SMYD 2 - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
(a) 27-32020 NO DEU DATA
(2) There is no data from the DEU to the number 2 SMYD.
(3) The stall warning test failed.

B. Possible Causes

- (1) DEU 2, M1809
(2) Wiring problem
(3) SMYD 2, M1748

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C01392	STICK SHAKER LEFT
E	5	C01204	SMYD-1 CMPTR DC
E	6	C01205	SMYD-1 SNSR EXC AC

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01207	SMYD-2 SNSR EXC AC
B	5	C01206	SMYD-2 CMPTR DC
B	6	C01393	STICK SHAKER RIGHT

D. Related Data

- (1) SSM 27-32-22
(2) WDM 27-32-22
(3) WDM 31-62-25

E. Initial Evaluation

- (1) For SMYD 2, M1748, do the Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
(a) If the maintenance message does not show in EXISTING FAULTS, then there was an intermittent fault.
(b) If the maintenance message shows in EXISTING FAULTS, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do these steps to make sure that the DEU operates properly:
(a) Do the DEU Self-Test Procedure, 31-62 TASK 802.

EFFECTIVITY
SIA ALL

27-32 TASKS 819-820

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 248
Feb 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (b) Repair any problems that you find.
- (c) If you do not find any problems, then continue.
- (2) Do this wiring check (WDM 27-32-22, WDM 31-62-25):
 - (a) Remove the SMYD 2. This is the task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801.
 - (b) Remove the DEU 2. This is the task: Display Electronic Unit Removal, AMM TASK 31-62-21-000-801.
 - (c) Examine the connector pins and sockets for damage and contamination.
 - (d) Do a wiring test between these pins:

SMYD 2, M1748	CDS DEU 2,
D3685B	M1809
	D3975D
pin 65	pin A15
pin 64	pin B15

- (e) Check wiring at terminal block TB3101 and make sure that wiring is connected properly.
- (f) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the SMYD 2. This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - 3) Re-install the DEU 2. This is the task: Display Electronic Unit Installation, AMM TASK 31-62-21-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
- (g) If you do not find a problem with the wiring, then continue.
- (3) Do these steps to replace the DEU 2:
 - (a) Replace the DEU 2. These are the tasks:
 - Display Electronic Unit Removal, AMM TASK 31-62-21-000-801
 - Display Electronic Unit Installation, AMM TASK 31-62-21-400-801
 - (b) Do the Repair Confirmation at the end of this task.
- (4) Do these steps to replace the SMYD 2:
 - (a) Replace the SMYD 2. These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
 - (b) Do the SMYD post installation test. This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - (c) If the test operates correctly, then you corrected the fault.

G. Repair Confirmation

- (1) Do the EXISTING FAULTS test on the SMYD 2 BITE display. This is the task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - (a) If the maintenance message does not show, you corrected the fault.

EFFECTIVITY
SIA ALL

27-32 TASK 820

D633A103-SIA

Page 249
Feb 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (b) If the maintenance message shows, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

821. DEU Input Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
- (a) 27-31021 DEU DATA INVALID (SMYD 1)
 - (b) 27-31022 DEU OUT OF RANGE (SMYD 1)
 - (c) 27-32021 DEU DATA INVALID (SMYD 2)
 - (d) 27-32022 DEU OUT OF RANGE (SMYD 2)
- (2) The DEU inputs are in error.

B. Possible Causes

- (1) Wiring problem
- (2) N1 (N2) Speed Transmitter T421 (T422)
- (3) DEU 1 (2), M1808 (M1809)
- (4) SMYD 1 (2), M1747 (M1748)
- (5) Speedbrake handle position transmitter, M1439

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C01392	STICK SHAKER LEFT
E	5	C01204	SMYD-1 CMPTR DC
E	6	C01205	SMYD-1 SNSR EXC AC

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01207	SMYD-2 SNSR EXC AC
B	5	C01206	SMYD-2 CMPTR DC
B	6	C01393	STICK SHAKER RIGHT

D. Related Data

- (1) WDM 77-12-21
- (2) WDM 77-12-11
- (3) WDM 34-61-17
- (4) WDM 73-21-31
- (5) WDM 73-23-11

EFFECTIVITY
SIA ALL

27-32 TASKS 820-821

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 250
Oct 15/2023



737-600/700/800/900 FAULT ISOLATION MANUAL

E. Initial Evaluation

- (1) For SMYD 1 (2), M1747 (M1748), do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - (a) The DEU out of range problem most likely occurs when the Radio Altitude (RA) range in the original SMYD lists faults with RA signals above 2500 feet. This nuisance fault can be erased.
 - 1) The DEU OUT OF RANGE fault may also occur if the speedbrake lever position sensor is not properly adjusted. If the fault continues, do this task: Speed Brake Lever Position Sensor Adjustment, AMM TASK 27-62-37-400-803.
 - (b) If the maintenance message does not show in EXISTING FAULTS, then there was an intermittent fault.
 - (c) If the maintenance message shows in EXISTING FAULTS, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) At the SMYD Built-In-Test Equipment (BITE) Panel, do these steps:
 - (a) Turn ON the SMYD BITE panel.
 - (b) Press the down arrow and select "GROUND TESTS?".
 - (c) Press the down arrow and select "ARINC429 INPUTS?".
 - (d) Select "CDS DEU BUS?".
 - (e) Scroll down until "WORD 344?" is shown, then press YES.

NOTE: This is N2 engine sensor data label.
 - (f) Make sure that valid data is shown on the SMYD BITE panel.
 - 1) If "NO DATA", "DATA INVALID" or "OUT OF RANGE" is shown, then check the N2 Speed Transmitter and associated wiring:
 - a) Remove DEU 1 (M1808) and DEU 2 (M1809). This is the task: Display Electronic Unit Removal, AMM TASK 31-62-21-000-801.
 - b) Disconnect connector DP1201 from the Engine 1(2) N2 Speed Transmitter, T422.
 - c) Do a wiring check between these pins on the Engine 1(2) N2 Speed Transmitter, T422, DEU 1 (M1808) and DEU 2 (M1809) (WDM 77-12-21):

ENGINE 1

T422	M1808
DP1201	D3973B
pin 1	pin A10
pin 2	pin B10

ENGINE 1

T422	M1809
DP1201	D3975B
pin 1	pin A10
pin 2	pin B10

EFFECTIVITY
SIA ALL

27-32 TASK 821

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 251
Oct 15/2023



737-600/700/800/900 FAULT ISOLATION MANUAL

ENGINE 2

T422	M1808
DP1201	D3973E
pin 1	pin A10
pin 2	pin B10

ENGINE 2

T422	M1809
DP1201	D3975E
pin 1	pin A10
pin 2	pin B10

- <1> If you find a problem with the wiring, do these steps:
- <a> Repair the wiring.
 - Install DEU 1 (M1808) and DEU 2 (M1809). This is the task: Display Electronic Unit Installation, AMM TASK 31-62-21-400-801.
 - <c> Connect connector DP1201 to the Engine 1(2) N2 Speed Transmitter, T422.
 - <d> Do the repair confirmation at the end of this task.
- <2> If you do not find a problem with the wiring, do these steps:
- <a> Replace the Engine 1(2) N2 Speed Transmitter, T422. These are the tasks:
 - N2 Speed Sensor Removal, AMM TASK 77-11-02-000-801-F00
 - N2 Speed Sensor Installation, AMM TASK 77-11-02-400-801-F00
 - Install DEU 1 (M1808) and DEU 2 (M1809). This is the task: Display Electronic Unit Installation, AMM TASK 31-62-21-400-801.
 - <c> Connect connector DP1201 to the Engine 1(2) N2 Speed Transmitter, T422.
 - <d> Do the repair confirmation at the end of this task.
- 2) If valid data is shown on the SMYD BITE panel, then continue.
- (g) Scroll down until "WORD 346?" is shown, then press YES.
NOTE: This is the N1 engine sensor data label.
- (h) Make sure that valid data is shown on the SMYD BITE panel.
- 1) If "NO DATA", "DATA INVALID" or "OUT OF RANGE" is shown, then do a check of the N1 Speed Transmitter and associated wiring:
 - a) Remove DEU 1 (M1808) and DEU 2 (M1809). This is the task: Display Electronic Unit Removal, AMM TASK 31-62-21-000-801.
 - b) Disconnect connector DP0103 from the Engine 1(2) N1 Speed Transmitter, T421.

EFFECTIVITY
SIA ALL

27-32 TASK 821

D633A103-SIA

Page 252
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- c) Do a wiring check between these pins on the Engine 1(2) N1 Speed Transmitter T421, DEU 1 (M1808) and DEU 2 (M1809) (WDM 77-12-11):

ENGINE 1

T421	M1808
DP0103	D3973A
pin 1	pin A10
pin 2	pin B10

ENGINE 1

T421	M1809
DP0103	D3975A
pin 1	pin A10
pin 2	pin B10

ENGINE 2

T421	M1808
DP0103	D3973A
pin 1	pin A10
pin 2	pin B10

ENGINE 2

T421	M1809
DP0103	D3975A
pin 1	pin A10
pin 2	pin B10

<1> If you find a problem with the wiring, do these steps:

<a> Repair the wiring.

 Install DEU1 (M1808) and DEU 2 (M1809). This is the task:
Display Electronic Unit Installation, AMM
TASK 31-62-21-400-801.

<c> Connect connector DP0103 to the Engine 1(2) N1 Speed Transmitter, T421.

<d> Do the repair confirmation at the end of this task.

<2> If you do not find a problem with the wiring, do these steps:

<a> Replace the Engine 1(2) N1 Speed Transmitter, T421. These are the tasks:

- N1 Speed Sensor Removal, AMM TASK 77-11-01-000-801-F00
- N1 Speed Sensor Installation, AMM TASK 77-11-01-400-801-F00

 Do the repair confirmation at the end of this task.

2) If valid data is shown on the SMYD BITE panel, then continue.

- (i) Scroll down until "WORD 352?" is shown, then press YES.

NOTE: This is the anti-ice discrete data label.

EFFECTIVITY
SIA ALL

27-32 TASK 821

D633A103-SIA

Page 253
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (j) Make sure that valid data is shown on the SMYD BITE panel.
- 1) If "NO DATA", "DATA INVALID" or "OUT OF RANGE" is shown, then do a check of the anti-ice switch, the engine cowl anti-ice switches and associated wiring:
- a) Remove DEU 1 (M1808) and DEU 2 (M1809). This is the task: Display Electronic Unit Removal, AMM TASK 31-62-21-000-801.
 - b) Remove the P5-11 Engine and Wing Anti-Ice Panel. This is the task: Engine and Wing Anti-Ice Panel Removal, AMM TASK 30-11-41-000-801.
 - c) Do a wiring check between these pins on P5 Overhead Panel connector D462, DEU 1 (M1808) and DEU 2 (M1809) (WDM 34-61-17, WDM 73-21-31):

P5	M1808
D462	D3973B
pin 6	pin B08
pin 8	GND.

P5	M1809
D462	D3975B
pin 6	pin B08
pin 8	GND.

<1> If you find a problem with the wiring, do these steps:

<a> Repair the wiring.

 Install DEU 1 (M1808) and DEU 2 (M1809). This is the task: Display Electronic Unit Installation, AMM TASK 31-62-21-400-801.

<c> Install the P5-11 Engine and Wing Anti-Ice Panel. This is the task: Engine and Wing Anti-Ice Panel Installation, AMM TASK 30-11-41-400-801.

<d> Do the repair confirmation at the end of this task.

<2> If you do not find a problem with the wiring, then continue.

- d) Do a wiring check between these pins on P5 Overhead Panel connector D462, DEU 1 (M1808) and DEU 2 (M1809) (WDM 73-23-11):

P5	M1808
D462	D3973B
pin 16	pin A11
pin 19	GND.

P5	M1809
D462	D3975B
pin 16	pin A11
pin 19	GND.

<1> If you find a problem with the wiring, do these steps:

<a> Repair the wiring.

EFFECTIVITY
SIA ALL

27-32 TASK 821

D633A103-SIA

Page 254
Oct 15/2023



737-600/700/800/900 FAULT ISOLATION MANUAL

- Install DEU 1 (M1808) and DEU 2 (M1809). This is the task:
Display Electronic Unit Installation, AMM
TASK 31-62-21-400-801.
- <c> Install the P5-11 Engine and Wing Anti-Ice Panel. This is the
task:Engine and Wing Anti-Ice Panel Installation, AMM
TASK 30-11-41-400-801.
- <d> Do the repair confirmation at the end of this task.
- <2> If you do not find a problem with the wiring, then continue.
- e) Do a wiring check between these pins on P5 Overhead Panel connector D648,
DEU 1 (M1808) and DEU 2 (M1809) (WDM 73-23-11):

P5	M1808
D462	D3973E
pin 15	pin A11
pin 19	GND.

P5	M1809
D648	D3975E
pin 15	pin A11
pin 19	GND.

- <1> If you find a problem with the wiring, do these steps:
 - <a> Repair the wiring.
 - Install DEU 1 (M1808) and DEU 2 (M1809). This is the task:
Display Electronic Unit Installation, AMM
TASK 31-62-21-400-801.
 - <c> Install the P5-11 Engine and Wing Anti-Ice Panel. This is the
task:Engine and Wing Anti-Ice Panel Installation, AMM
TASK 30-11-41-400-801.
 - <d> Do the repair confirmation at the end of this task.
- <2> If you do not find a problem with the wiring, then do these steps:
 - <a> Replace the P5-11 Engine and Wing Anti-Ice Panel. These are
the tasks:
 - Engine and Wing Anti-Ice Panel Removal, AMM TASK 30-11-
41-000-801
 - Engine and Wing Anti-Ice Panel Installation, AMM TASK 30-11-
41-400-801
 - Do the repair confirmation at the end of the task.
- (k) Replace DEU 1 (2), M1808 (M1809). These are the tasks:
 - Display Electronic Unit Removal, AMM TASK 31-62-21-000-801
 - Display Electronic Unit Installation, AMM TASK 31-62-21-400-801
 - 1) Do the repair confirmation at the end of this task.

G. Repair Confirmation

- (1) Do the SMYD BITE Test. This is the task:
 - Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801

EFFECTIVITY
SIA ALL

27-32 TASK 821

D633A103-SIA

Page 255
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (a) If the maintenance message does not show, then you corrected the fault.
- (b) If the maintenance message shows in EXISTING FAULTS, then continue the Fault Isolation Procedure at the subsequent step.

———— **END OF TASK** ————

822. No FMC Data to SMYD 1 - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-31025 NO FMC DATA
- (2) There is no data from the Flight Management Computer (FMC) to the SMYD 1.
- (3) The stall warning test failed.
- (4) For software related issues, no change is required when the latest FMC Operational Software is in use. For earlier version FMC software, some software related faults may be resolved with update to the latest FMC software.
 - (a) If an FMC containing only this kind of fault is returned to GE Aviation, the FMC will pass all tests, and be returned to the customer as No Fault Found.

B. Possible Causes

- (1) Software
- (2) FMC 1 (2), M1175 (M1632)
- (3) Flight Management Computer System (FMCS) Transfer Relay, R475
- (4) Wiring problem
- (5) SMYD 1, M1747

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C01392	STICK SHAKER LEFT
E	5	C01204	SMYD-1 CMPTR DC
E	6	C01205	SMYD-1 SNSR EXC AC

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01207	SMYD-2 SNSR EXC AC
B	5	C01206	SMYD-2 CMPTR DC
B	6	C01393	STICK SHAKER RIGHT

D. Related Data

- (1) SSM 27-32-12
- (2) WDM 27-32-12

E. Initial Evaluation

- (1) Do these steps to get details on the fault:
 - (a) Put the FMC mode select switch to the NORMAL/BOTH ON L position.

EFFECTIVITY
SIA ALL

27-32 TASKS 821-822

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 256
Oct 15/2023



737-600/700/800/900 FAULT ISOLATION MANUAL

- 1) For SMYD 1, M1747, do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
- (b) Put the FMC mode select switch to the BOTH ON R position.
 - 1) For SMYD 1, M1747, do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
- (c) If the maintenance message shows at both switch positions, then the fault is one of the these:
 - 1) FMCS Transfer Relay
 - 2) Wiring between the FMCS Transfer Relay and SMYD 1
 - 3) SMYD 1
- (d) If the maintenance message shows when the select switch is in the NORMAL/BOTH ON L position, then do the Fault Isolation Procedure below. The problem is one of these:
 - 1) FMC 1
 - 2) FMCS Transfer Relay
 - 3) Wiring between the FMC 1 and FMCS Transfer Relay
- (e) If the maintenance message shows when the select switch is in the BOTH ON R position, then do the Fault Isolation Procedure below. The problem is one of these:
 - 1) FMC 2
 - 2) FMCS Transfer Relay
 - 3) Wiring between the FMC 2 and FMCS Transfer Relay
- (f) If the maintenance message does not show, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Verify the software configuration of the FMC. This is the task: FMC Software Configuration Check, AMM TASK 34-61-00-750-801.
 - (a) If you find a problem with the configuration, then do these steps:
 - 1) Load the correct software for the FMC. This is the task: FMC Software Installation with a Portable Data Loader, AMM TASK 34-61-00-470-805.
 - 2) Do the Repair Confirmation at the end of this task.
 - (b) If you do not find a problem with the configuration, then continue.
- (2) For the FMC, do this task: FMC Diagnostic Data Transfer, AMM TASK 34-61-00-810-801.
 - (a) Do the Repair Confirmation at the end of this task.
- (3) Do this test of the FMC:
 - (a) Do this task: Flight Management Computer System BITE Procedure, 34-61 TASK 801.
 - (b) Repair any problems that you find.
 - (c) If you do not find any problems, then continue.
- (4) Do this exchange check of the FMCS Transfer Relay:
 - (a) Put a tag that reads "SUSPECT" on the FMCS Transfer Relay 1, R475.
 - (b) Put a tag that reads "OK" on the FMCS Transfer Relay 2, R476.
 - (c) Exchange the locations of the two FMCS Transfer Relays.
 - (d) Do the EXISTING FAULTS test on both SMYD BITE panels. This is the task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801

EFFECTIVITY
SIA ALL

27-32 TASK 822

D633A103-SIA

Page 257
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (e) If the original maintenance message does not show in EXISTING FAULTS during the test and the related maintenance message for the other SMYD does show, then do these steps:
- 1) Replace the FMCS Transfer Relay tagged "SUSPECT".
NOTE: If it is your airline's policy, you must return the relay tagged "OK" to its original location.
 - 2) If the maintenance message does not show in EXISTING FAULTS during the test, then you corrected the problem.
 - a) Remove the tags from the relays.
 - (f) If neither the original maintenance message nor the related maintenance message for the other relay shows, then do these steps to complete the task:
NOTE: There was an intermittent fault in the connector at the relay or in the relay tagged "SUSPECT".
 - 1) If it is your airline's policy, return the relays to their original locations.
 - 2) Remove the tags from the relays.
 - (g) If the maintenance message shows in EXISTING FAULTS during the installation test, then continue.
 - 1) If it is your airline's policy, return the relays to their original locations.
 - 2) Remove the tags from the relays.
- (5) Do this wiring check between the FMCS Transfer Relay and SMYD 1:
- (a) Remove the SMYD 1. This is the task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801.
 - (b) Remove the FMCS Transfer Relay.
 - (c) Examine the connector pins and sockets for damage and unwanted material.
 - (d) Do a continuity test between these pins:

SMYD 1	FMCS XFR
D3683A	RELAY
	D3263
pin 29	pin E
pin 42	pin F

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install the SMYD. This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - c) Re-install the FMCS Transfer Relay.
 - d) Do the Repair Confirmation at the end of this task.
 - 2) If you do not find a problem with the wiring, then continue.
- (6) Do a wiring check between the FMCS Transfer Relay and FMCs:
- (a) Remove the FMC 1 and FMC 2. This is the task: FMCS Computer Removal, AMM TASK 34-61-02-000-801.
 - (b) Remove the FMCS Transfer Relay.
 - (c) Examine the connector pins and sockets for damage and unwanted material.

EFFECTIVITY
SIA ALL

27-32 TASK 822

D633A103-SIA

Page 258
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

(d) Do a wiring check as follows:

FMC 1	FMCS XFR
D2179A	RELAY
	D3267
pin G9	pin E
pin H9	pin F

FMC 2	FMCS XFR
D3261A	RELAY
	D3265
pin G9	pin E
pin H9	pin F

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install the FMC. This is the task: FMCS Computer Installation, AMM TASK 34-61-02-400-801.
 - c) Re-install the FMCS Transfer Relay.
 - d) Do the Repair Confirmation at the end of this task.
- 2) If you do not find a problem with the wiring, then continue.

(7) Do this exchange check of the SMYD:

- (a) Put a tag that reads "SUSPECT" on SMYD 1, M1747.
- (b) Put a tag that reads "OK" on SMYD 2, M1748.
- (c) Exchange the locations of SMYD 1, M1747 and SMYD 2, M1748. These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801

NOTE: Make sure that you do the installation test for each SMYD.

- (d) If the original maintenance message does not show in EXISTING FAULTS during the installation test and the related maintenance message for the other SMYD does show, then do these steps:
 - 1) Replace the SMYD tagged "SUSPECT". These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801**NOTE:** If it is your airline's policy, you must return the SMYD tagged "OK" to its original location.
 - 2) If the maintenance message does not show in EXISTING FAULTS during the installation test, then you corrected the problem.
 - a) Remove the tags from the SMYDs.
- (e) If neither the original maintenance message nor the related maintenance message for the other SMYD shows, then do these steps to complete the task:

NOTE: There was an intermittent fault in the connector at the SMYD or in the SMYD tagged "SUSPECT".

EFFECTIVITY
SIA ALL

27-32 TASK 822

D633A103-SIA

Page 259
Oct 15/2023



737-600/700/800/900 FAULT ISOLATION MANUAL

- 1) If it is your airline's policy, return the SMYDs to their original locations. These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
- 2) Remove the tags from the SMYDs.
- (f) If the maintenance message shows in EXISTING FAULTS during the installation test, then continue.
 - 1) If it is your airline's policy, return the SMYDs to their original locations. These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
 - 2) Remove the tags from the SMYDs.
- (8) Do these steps to replace the applicable FMC:

SIA ALL; AIRPLANES WITH DUAL FMC

- (a) If the maintenance message occurred with the FMC selector switch in the NORMAL/BOTH ON LEFT position, replace FMC 1.
- (b) If the maintenance message occurred with the FMC selector switch in the BOTH ON RIGHT position, replace FMC 2.

SIA ALL

- (c) Replace the applicable FMC. These are the tasks:
 - FMCS Computer Removal, AMM TASK 34-61-02-000-801
 - FMCS Computer Installation, AMM TASK 34-61-02-400-801
- (d) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do the EXISTING FAULTS test on the SMYD 1 BITE display. This is the task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - (a) If the maintenance message does not show, then you corrected the problem.
 - (b) If the maintenance message shows in EXISTING FAULTS, then continue the Fault Isolation Procedure at the subsequent step.

———— **END OF TASK** ————

823. No FMC Data to SMYD 2 - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-32025 NO FMC DATA
- (2) There is no data from the FMC to the SMYD 2.
- (3) The stall warning test failed.
- (4) For software related issues, no change is required when the latest FMC Operational Software is in use. For earlier version FMC software, some software related faults may be resolved with update to the latest FMC software.

EFFECTIVITY
SIA ALL

27-32 TASKS 822-823

D633A103-SIA

Page 260
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (a) If an FMC containing only this kind of fault is returned to GE Aviation, the FMC will pass all tests, and be returned to the customer as No Fault Found.

B. Possible Causes

- (1) Software
- (2) FMC 1 (2), M1175 (M1632)
- (3) FMCS Transfer Relay, R476
- (4) Wiring problem
- (5) SMYD 2, M1748

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C01392	STICK SHAKER LEFT
E	5	C01204	SMYD-1 CMPTR DC
E	6	C01205	SMYD-1 SNSR EXC AC

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01207	SMYD-2 SNSR EXC AC
B	5	C01206	SMYD-2 CMPTR DC
B	6	C01393	STICK SHAKER RIGHT

D. Related Data

- (1) SSM 27-32-22
- (2) WDM 27-32-22

E. Initial Evaluation

- (1) Do these steps to get details on the fault:
 - (a) Put the FMC mode select switch to the NORMAL/BOTH ON R position.
 - 1) For SMYD 2, M1748, do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - (b) Put the FMC mode select switch to the BOTH ON L position.
 - 1) For SMYD 2, M1748, do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - (c) If the maintenance message shows at both switch positions, then do the Fault Isolation Procedure below. The fault is one of the these:
 - 1) FMCS Transfer Relay
 - 2) Wiring between the FMCS Transfer Relay and SMYD 2
 - 3) SMYD 2
 - (d) If the maintenance message shows when the select switch is in the NORMAL/BOTH ON R position, then do the Fault Isolation Procedure below. The problem is one of these:
 - 1) FMC 2
 - 2) FMCS Transfer Relay

EFFECTIVITY
SIA ALL

27-32 TASK 823

D633A103-SIA

Page 261
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 3) Wiring between the FMC 2 and FMCS Transfer Relay
- (e) If the maintenance message shows when the select switch is in the BOTH ON L position, then do the Fault Isolation Procedure below. The fault is one of these:
 - 1) FMC 1
 - 2) FMCS Transfer Relay
 - 3) Wiring between the FMC 1 and FMCS Transfer Relay
- (f) If the maintenance message does not show, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Verify the software configuration of the FMC. This is the task: FMC Software Configuration Check, AMM TASK 34-61-00-750-801.
 - (a) If you find a problem with the configuration, then do these steps:
 - 1) Load the correct software for the FMC. This is the task: FMC Software Installation with a Portable Data Loader, AMM TASK 34-61-00-470-805.
 - 2) Do the Repair Confirmation at the end of this task.
 - (b) If you do not find a problem with the configuration, then continue.
- (2) For the FMC, do this task: FMC Diagnostic Data Transfer, AMM TASK 34-61-00-810-801.
 - (a) Do the Repair Confirmation at the end of this task.
- (3) Do this test of the FMC:
 - (a) Do this task: Flight Management Computer System BITE Procedure, 34-61 TASK 801.
 - (b) Repair any problems that you find.
 - (c) If do not find any problems, then continue.
- (4) Do this exchange check of the FMCS Transfer Relay:
 - (a) Put a tag that reads "OK" on the FMCS Transfer Relay 1, R475.
 - (b) Put a tag that reads "SUSPECT" on the FMCS Transfer Relay 2, R476.
 - (c) Exchange the locations of the two FMCS Transfer Relays.
 - (d) Do the EXISTING FAULTS test on both SMYD BITE panels. This is the task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - (e) If the original maintenance message does not show in EXISTING FAULTS during the test and the related maintenance message for the other SMYD does show, then do these steps:
 - 1) Replace the FMCS Transfer Relay tagged "SUSPECT".
NOTE: If it is your airline's policy, you must return the relay tagged "OK" to its original location.
 - 2) If the maintenance message does not show in EXISTING FAULTS during the test, then you corrected the problem.
 - a) Remove the tags from the relays.
 - (f) If neither the original maintenance message nor the related maintenance message for the other relay shows, then do these steps to complete the task:
NOTE: There was an intermittent fault in the connector at the relay or in the relay tagged "SUSPECT".
 - 1) If it is your airline's policy, return the relays to their original locations.
 - 2) Remove the tags from the relays.

EFFECTIVITY
SIA ALL

27-32 TASK 823

D633A103-SIA

Page 262
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (g) If the maintenance message shows in EXISTING FAULTS during the installation test, then continue.
 - 1) If it is your airline's policy, return the relays to their original locations.
 - 2) Remove the tags from the relays.
- (5) Do this wiring check between the FMCS Transfer Relay and SMYD 2:
 - (a) Remove the SMYD 2. This is the task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801.
 - (b) Remove the FMCS Transfer Relay.
 - (c) Examine the connector pins and sockets for damage and unwanted material.
 - (d) Do a continuity test between these pins:

SMYD 2	FMCS XFR
D3685A	RELAY
	D3423
pin 29	pin C
pin 42	pin D

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install the SMYD . This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - c) Re-install the FMCS Transfer Relay.
 - d) Do the Repair Confirmation at the end of this task.
 - 2) If you do not find a problem with the wiring, then continue.
- (6) Do a wiring check between the FMCS Transfer Relay and FMCs:
 - (a) Remove the FMC 1. This is the task: FMCS Computer Removal, AMM TASK 34-61-02-000-801.
 - (b) Remove the FMC 2. This is the task: FMCS Computer Removal, AMM TASK 34-61-02-000-801.
 - (c) Remove the FMCS Transfer Relay.
 - (d) Examine the connector pins and sockets for damage and unwanted material.
 - (e) Do a wiring check as follows:

FMC 1	FMCS XFR
D2179B	RELAY
	D3425
pin D7	pin C
pin E7	pin D

EFFECTIVITY
SIA ALL

27-32 TASK 823



737-600/700/800/900 FAULT ISOLATION MANUAL

SIA ALL; AIRPLANES WITH DUAL FMC

FMC 2	FMCS XFR
D3261B	RELAY
pin D7	pin C
pin E7	pin D

SIA ALL

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install the FMC. This is the task: FMCS Computer Installation, AMM TASK 34-61-02-400-801.
 - c) Re-install the FMCS Transfer Relay.
 - d) Do the Repair Confirmation at the end of this task.
 - 2) If you do not find a problem with the wiring, then continue.
- (7) Do this exchange check of the SMYD:
- (a) Put a tag that reads "OK" on SMYD 1, M1747.
 - (b) Put a tag that reads "SUSPECT" on SMYD 2, M1748.
 - (c) Exchange the locations of SMYD 1, M1747 and SMYD 2, M1748. These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801

NOTE: Make sure that you do the installation test for each SMYD.
 - (d) If the original maintenance message does not show in EXISTING FAULTS during the installation test and the related maintenance message for the other SMYD does show, then do these steps:
 - 1) Replace the SMYD tagged "SUSPECT". These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801

NOTE: If it is your airline's policy, you must return the SMYD tagged "OK" to its original location.
 - 2) If the maintenance message does not show in EXISTING FAULTS during the installation test, then you corrected the problem.
 - a) Remove the tags from the SMYDs.
 - (e) If neither the original maintenance message nor the related maintenance message for the other SMYD shows, then do these steps to complete the task:

NOTE: There was an intermittent fault in the connector at the SMYD or in the SMYD tagged "SUSPECT".

 - 1) If it is your airline's policy, return the SMYDs to their original locations. These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
 - 2) Remove the tags from the SMYDs.

EFFECTIVITY
SIA ALL

27-32 TASK 823

D633A103-SIA

Page 264
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (f) If the maintenance message shows in EXISTING FAULTS during the installation test, then continue.
 - 1) If it is your airline's policy, return the SMYDs to their original locations. These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
 - 2) Remove the tags from the SMYDs.

SIA ALL; AIRPLANES WITH DUAL FMC

- (8) Do these steps to replace the applicable FMC:
 - (a) If the maintenance message occurred with the FMC selector switch in the NORMAL/BOTH ON RIGHT position, replace FMC 2.
 - (b) If the maintenance message occurred with the FMC selector switch in the BOTH ON LEFT position, replace FMC 1.
 - (c) Replace the applicable FMC. These are the tasks:
 - FMCS Computer Removal, AMM TASK 34-61-02-000-801
 - FMCS Computer Installation, AMM TASK 34-61-02-400-801

SIA ALL

G. Repair Confirmation

- (1) Do the EXISTING FAULTS test on the SMYD 2 BITE display. This is the task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - (a) If the maintenance message does not show, then you corrected the problem.
 - (b) If the maintenance message shows in EXISTING FAULTS, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

824. FMC Input Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 27-31026 FMC DATA INVALID (SMYD 1)
 - (b) 27-31027 FMC OUT OF RANGE (SMYD 1)
 - (c) 27-32026 FMC DATA INVALID (SMYD 2)
 - (d) 27-32027 FMC OUT OF RANGE (SMYD 2)
- (2) The SMYD 1 or SMYD 2 detects invalid or out of range data from the FMC.
- (3) Make sure to check the FMC for valid data for the SMYD to work. Bad/Missing FMC data such as airplane gross weight or takeoff airspeeds, or the FMC in-flight restart may cause these fault messages to show.
- (4) For software related issues, no change is required when the latest FMC Operational Software is in use. For earlier version FMC software, some software related faults may be resolved with update to the latest FMC software.
 - (a) If an FMC containing only this kind of fault is returned to GE Aviation, the FMC will pass all tests, and be returned to the customer as No Fault Found.

EFFECTIVITY
SIA ALL

27-32 TASKS 823-824

D633A103-SIA

Page 265
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

B. Possible Causes

- (1) Software
- (2) FMC 1 (2), M1175 (M1632)
- (3) FMCS Transfer Relay 1 (2), R475 (R476)
- (4) SMYD 1 (2), M1747 (M1748)
- (5) Wiring

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C01392	STICK SHAKER LEFT
E	5	C01204	SMYD-1 CMPTR DC
E	6	C01205	SMYD-1 SNSR EXC AC

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01207	SMYD-2 SNSR EXC AC
B	5	C01206	SMYD-2 CMPTR DC
B	6	C01393	STICK SHAKER RIGHT

D. Related Data

- (1) SSM 27-32-12
- (2) SSM 27-32-22
- (3) SSM 34-61-14
- (4) WDM 34-61-14
- (5) WDM 27-32-12
- (6) WDM 27-32-22

E. Initial Evaluation

- (1) Check the FMC for valid data (airplane gross weight, takeoff airspeeds, or an FMC in-flight restart).
 - (a) If the FMC had invalid data, then these messages can be considered as nuisance messages. Do the SMYD BITE Procedure to make sure that all faults are cleared.
- (2) For SMYD 1, M1747 and SMYD 2, M1748, do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - (a) If the maintenance message does not show in EXISTING FAULTS, then there was an intermittent fault.
 - (b) If the maintenance message shows in EXISTING FAULTS, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Verify the software configuration of the FMC. This is the task: FMC Software Configuration Check, AMM TASK 34-61-00-750-801.
 - (a) If you find a problem with the configuration, then do these steps:

EFFECTIVITY
SIA ALL

27-32 TASK 824

D633A103-SIA

Page 266
Oct 15/2023



737-600/700/800/900 FAULT ISOLATION MANUAL

- 1) Load the correct software for the FMC. This is the task: FMC Software Installation with a Portable Data Loader, AMM TASK 34-61-00-470-805.
- 2) Do the Repair Confirmation at the end of this task.
- (b) If you do not find a problem with the configuration, then continue.
- (2) For the FMC, do this task: FMC Diagnostic Data Transfer, AMM TASK 34-61-00-810-801.
 - (a) Do the Repair Confirmation at the end of this task.
- (3) Do a SMYD swap test as follows:
 - (a) Swap SMYD 1 and SMYD 2. These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
 - (b) For SMYD 1, M1747 and SMYD 2, M1748, do this task: Stall Management Yaw Damper (SMYD) BITE Test - Existing Faults, AMM TASK 27-32-00-740-801.
 - 1) If the maintenance message does not show on the original SMYD and a similar maintenance message is now shown on the opposite SMYD, then the fault has followed the SMYD swap.
 - a) Replace the applicable SMYD 1 (2), M1747 (M1748). These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
 - b) Do this task: Stall Management Yaw Damper (SMYD) BITE Test - Existing Faults, AMM TASK 27-32-00-740-801.
 - <1> If the maintenance message does not show in EXISTING FAULTS after replacing the SMYD, then you corrected the problem.
 - <2> If the maintenance message still shows, then continue.
 - 2) If the maintenance message remains in the same SMYD channel after the SMYD exchange and BITE procedure has been performed, then restore SMYD 1 and SMYD 2 to their original locations and continue. These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
 - (4) Do a check of the FMC Aeronautical Radio Incorporated (ARINC)-429 input data to SMYD 1 and SMYD 2 as follows:
 - (a) Push the ON/OFF Button on the front panels of SMYD 1 and SMYD 2 to turn on their BITE Displays.
 - (b) Push the down arrow until GROUND TESTS? shows on both the SMYD BITE Displays.
 - (c) Push the YES Button to select GROUND TESTS? on both the SMYD BITE Displays.
 - (d) Push the down arrow until ARINC429 INPUTS? shows on both the SMYD BITE Displays.
 - (e) Push the YES Button to select ARINC429 INPUTS? on both the SMYD BITE Displays.
 - (f) Push the down arrow until FMC BUS? Shows on both the SMYD BITE Displays.
 - (g) Push the YES Button.

NOTE: This action will cause both SMYD 1 and SMYD 2 to display FMC ARINC-429 input data.

EFFECTIVITY
SIA ALL

27-32 TASK 824

D633A103-SIA

Page 267
Oct 15/2023



737-600/700/800/900 FAULT ISOLATION MANUAL

- 1) The following FMC data can be monitored thru the SMYD BITE Panel:
 - FMC Label (Word) 070: VREF Speed Data
 - FMC Label (Word) 075: Gross Weight Data
 - FMC Label (Word) 265: Min Buffet Airspeed (This data may not show if not programmed thru the Control Display Unit (CDU))
 - FMC Label (Word) 267: Max Buffet Airspeed (This data may not show if not programmed thru the CDU)
- (h) If "BUS INACTIVE", "NO DATA", "DATA INVALID" or "OUT OF RANGE" is shown on either SMYD 1 or SMYD 2 BITE display, then the SMYD has detected a problem with one or more data inputs from the FMC (FMC labels 070, 075, 265 or 267). Do these checks, as applicable:
 - 1) If "BUS INACTIVE", "NO DATA", "DATA INVALID" or "OUT OF RANGE" is shown on SMYD 1, then do these steps:
 - a) Replace the applicable FMCS Transfer Relay 1 (2), R475 (R476). These are the tasks:
 - FMCS Transfer Relay Removal, AMM TASK 34-61-04-000-801
 - FMCS Transfer Relay Installation, AMM TASK 34-61-04-400-801
 - b) Re-check the SMYD 1 BITE Panel.
 - <1> If "BUS INACTIVE", "NO DATA", "DATA INVALID" or "OUT OF RANGE" is not shown, then you corrected the problem.
 - <2> If "BUS INACTIVE", "NO DATA", "DATA INVALID" or "OUT OF RANGE" continues to show, then continue.
 - c) Replace the applicable FMC. These are the tasks:
 - FMCS Computer Removal, AMM TASK 34-61-02-000-801
 - FMCS Computer Installation, AMM TASK 34-61-02-400-801
 - <1> Make sure to enter valid airplane gross weight and takeoff speeds data before proceeding.
 - d) Re-check the SMYD 1 BITE Panel.
 - <1> If "BUS INACTIVE", "NO DATA", "DATA INVALID" or "OUT OF RANGE" does not show, then you corrected the problem.
 - <2> If "BUS INACTIVE", "NO DATA", "DATA INVALID" or "OUT OF RANGE" continues to show, then do this check of the wiring (WDM 34-61-14):
 - <a> Disconnect connector D3263 from the FMCS Transfer Relay 1, R475.
 - Remove the SMYD 1, M1747. This is the task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801.
 - <c> Do a wiring check as follows:

EFFECTIVITY
SIA ALL

27-32 TASK 824

D633A103-SIA

Page 268
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

FMCS

TRANSFER

RELAY 1, R475

D3263

pin E

pin F

SMYD 1, M1747

D3683A

pin 29

pin 42

- I. If you find a problem with the wiring, then do these steps:
 - Repair the wiring.
 - Re-connect connector D3263.
 - Re-install the SMYD 1, M1747. This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - Re-check the SMYD 1 BITE Panel for FMC data.
 - If "BUS INACTIVE", "NO DATA", "DATA INVALID" or "OUT OF RANGE" does not show, then you corrected the problem.
 - II. If you do not find a problem with the wiring, then continue.
- 2) If "BUS INACTIVE", "NO DATA", "DATA INVALID" or "OUT OF RANGE" is shown on SMYD 2, then do these steps:
- a) Replace the applicable FMCS Transfer Relay 1 (2), R475 (R476). These are the tasks:
 - FMCS Transfer Relay Removal, AMM TASK 34-61-04-000-801
 - FMCS Transfer Relay Installation, AMM TASK 34-61-04-400-801
 - b) Re-check the SMYD 2 BITE Panel.
 - <1> If "BUS INACTIVE", "NO DATA", "DATA INVALID" or "OUT OF RANGE" is not shown, then you corrected the problem.
 - <2> If "BUS INACTIVE", "NO DATA", "DATA INVALID" or "OUT OF RANGE" continues to show, then continue.
 - c) Replace the applicable FMC. These are the tasks:
 - FMCS Computer Removal, AMM TASK 34-61-02-000-801
 - FMCS Computer Installation, AMM TASK 34-61-02-400-801
 - <1> Make sure to enter valid airplane gross weight and takeoff speeds data before proceeding.
 - d) Re-check the SMYD 2 BITE Panel.
 - <1> If "BUS INACTIVE", "NO DATA", "DATA INVALID" or "OUT OF RANGE" does not show, then you corrected the problem.
 - <2> If "BUS INACTIVE", "NO DATA", "DATA INVALID" or "OUT OF RANGE" continues to show, then do this check of the wiring (WDM 34-61-14):
 - <a> Disconnect connector D3423 from the FMCS Transfer Relay 2, R476.
 - Remove the SMYD 2, M1748. This is the task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801.

EFFECTIVITY
SIA ALL

27-32 TASK 824

D633A103-SIA

Page 269
Oct 15/2023



737-600/700/800/900 FAULT ISOLATION MANUAL

<c> Do a wiring check as follows:

FMCS

TRANSFER

RELAY 2, R476

SMYD 2, M1748

D3423

D3685A

pin C pin 29

pin D pin 42

- I. If you find a problem with the wiring, then do these steps:
 - Repair the wiring.
 - Re-connect connector D3423.
 - Re-install the SMYD 2, M1748. This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - Re-check the SMYD 2 BITE Panel for FMC data.
 - If "BUS INACTIVE", "NO DATA", "DATA INVALID" or "OUT OF RANGE" does not show, then you corrected the problem.
- II. If you do not find a problem with the wiring, then continue.

G. Repair Confirmation

- (1) Do the EXISTING FAULTS test on the SMYD 1 (2) BITE display. This is the task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801
 - (a) If the maintenance message does not show, then you corrected the problem.
 - (b) If the maintenance message shows in EXISTING FAULTS, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

825. No MCP Data to SMYD 1 - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-31023 NO MCP DATA
- (2) There is no data from the Mode Control Panel (MCP) to the SMYD 1.

B. Possible Causes

- (1) MCP, M198
- (2) Wiring problem

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C01392	STICK SHAKER LEFT
E	5	C01204	SMYD-1 CMPTR DC
E	6	C01205	SMYD-1 SNSR EXC AC

EFFECTIVITY
SIA ALL

27-32 TASKS 824-825

D633A103-SIA

Page 270
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01207	SMYD-2 SNSR EXC AC
B	5	C01206	SMYD-2 CMPTR DC
B	6	C01393	STICK SHAKER RIGHT

D. Related Data

- (1) SSM 27-32-12
- (2) WDM 27-32-12

E. Initial Evaluation

- (1) For SMYD 1, M1747, do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - (a) If the maintenance message does not show in EXISTING FAULTS, then there was an intermittent fault.
 - (b) If the maintenance message shows in EXISTING FAULTS, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Make sure that the MCP operates properly.
 - (a) Do this task: Mode Control Panel Tests, 22-11 TASK 803.
 - (b) If you find any maintenance messages, then do the fault isolation tasks for the maintenance messages that you find.
 - (c) If you do not find any maintenance messages, then continue.
- (2) Do this wiring check between the MCP and the SMYD 1:
 - (a) Remove the SMYD 1. To remove the SMYD, do this task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801.
 - (b) Remove the MCP. To remove the MCP, do this task: DFCS Mode Control Panel Removal, AMM TASK 22-11-34-000-801.
 - (c) Examine the connector pins and sockets for damage and unwanted material.
 - (d) Do a continuity test between these pins:

SMYD 1	MCP
D3683B	D301
pin 66	pin 2
pin 79	pin 1

- (e) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the SMYD. To install the SMYD, do this task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - 3) Re-install the MCP. To install the MCP, do this task: DFCS Mode Control Panel Installation, AMM TASK 22-11-34-400-801.
 - 4) Do the EXISTING FAULTS test on the SMYD 1 BITE display. To do the test, do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - 5) If the maintenance message does not show, then you corrected the fault.

EFFECTIVITY
SIA ALL

27-32 TASK 825

D633A103-SIA

Page 271
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (f) If you do not find a problem with the wiring, then continue.
- (3) Do this exchange check of the SMYD:
- (a) Put a tag that reads "SUSPECT" on SMYD 1, M1747.
- (b) Put a tag that reads "OK" on SMYD 2, M1748.
- (c) Exchange the locations of SMYD 1, M1747 and SMYD 2, M1748. These are the tasks:
- Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
- NOTE: Make sure that you do the installation test for each SMYD.
- (d) If the original maintenance message does not show in EXISTING FAULTS during the installation test and the related maintenance message for the other SMYD does show, then do these steps:
- 1) Replace the SMYD tagged "SUSPECT". These are the tasks:
- Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
- NOTE: If it is your airline's policy, you must return the SMYD tagged "OK" to its original location.
- 2) If the maintenance message does not show in EXISTING FAULTS during the installation test, then you corrected the fault. Remove the tags from the SMYDs.
- (e) If neither the original maintenance message nor the related maintenance message for the other SMYD show, then do these steps to complete the task:
- NOTE: There was an intermittent fault in the connector at the SMYD or in the SMYD tagged "SUSPECT".
- 1) If it is your airline's policy, return the SMYDs to their original locations. These are the tasks:
- Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
- 2) Remove the tags from the SMYDs.
- (f) If the maintenance message shows in EXISTING FAULTS during the installation test, then continue.
- 1) If it is your airline's policy, return the SMYDs to their original locations. These are the tasks:
- Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
- 2) Remove the tags from the SMYDs.
- (4) Do these steps to replace the MCP:
- (a) To replace the MCP, these are the tasks:
- DFCS Mode Control Panel Removal, AMM TASK 22-11-34-000-801
 - DFCS Mode Control Panel Installation, AMM TASK 22-11-34-400-801
- (b) Do the EXISTING FAULTS test on the SMYD 1 BITE display. Do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.

EFFECTIVITY
SIA ALL

27-32 TASK 825

D633A103-SIA

Page 272
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (c) If the maintenance message does not show, then you corrected the fault.

————— **END OF TASK** —————

826. MCP Data Invalid - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 (a) 27-31024 MCP DATA INVALID (SMYD 1)
 (b) 27-32024 MCP DATA INVALID (SMYD 2)
(2) The MCP input is in error.

B. Possible Causes

- (1) MCP, M198
(2) SMYD1 (2), M1747 (M1748)

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C01392	STICK SHAKER LEFT
E	5	C01204	SMYD-1 CMPTR DC
E	6	C01205	SMYD-1 SNSR EXC AC

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01207	SMYD-2 SNSR EXC AC
B	5	C01206	SMYD-2 CMPTR DC
B	6	C01393	STICK SHAKER RIGHT

D. Related Data

- (1) SSM 27-32-12
(2) SSM 27-32-22
(3) WDM 27-32-12
(4) WDM 27-32-22

E. Initial Evaluation

- (1) ForSMYD 1 or (2), M1747 (M1748), do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 (a) If the maintenance message does not show in EXISTING FAULTS, then there was an intermittent fault.
 (b) If the maintenance message shows in EXISTING FAULTS, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do these steps to make sure that theMCP operates properly:
 (a) Do this task: Mode Control Panel Tests, 22-11 TASK 803.

EFFECTIVITY
SIA ALL

27-32 TASKS 825-826

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 273
Oct 15/2023



737-600/700/800/900 FAULT ISOLATION MANUAL

- (b) If you find any maintenance messages, then do the fault isolation tasks for the maintenance messages that you find.
- (c) If you do not find any maintenance messages, then continue.
- (2) Do these steps to replace the SMYD:
 - (a) For maintenance message 27-31024, replace the SMYD 1.
 - (b) For maintenance message 27-32024, replace the SMYD 2.
 - (c) To replace the SMYD, these are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
 - (d) Do the post installation test in the SMYD installation procedure.
 - (e) If the test operates correctly, then you corrected the fault.

————— **END OF TASK** —————

828. No MCP Data to SMYD 2 - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-32023 NO MCP DATA
- (2) There is no data from the Mode Control Panel (MCP) to the number 2 Stall Management Yaw Damper (SMYD).

B. Possible Causes

- (1) Mode Control Panel (MCP), M198
- (2) Wiring problem

C. Circuit Breaker

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C01392	STICK SHAKER LEFT
E	5	C01204	SMYD-1 CMPTR DC
E	6	C01205	SMYD-1 SNSR EXC AC

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01207	SMYD-2 SNSR EXC AC
B	5	C01206	SMYD-2 CMPTR DC
B	6	C01393	STICK SHAKER RIGHT

D. Related Data

- (1) (SSM 27-32-22)
- (2) (WDM 27-32-22)

EFFECTIVITY
SIA ALL

27-32 TASKS 826-828

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 274
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

E. Initial Evaluation

- (1) For SMYD 2, M1748, do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - (a) If the maintenance message does not show in EXISTING FAULTS, then there was an intermittent fault.
 - (b) If the maintenance message shows in EXISTING FAULTS, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Make sure that the MCP operates properly.
 - (a) Do this task: Mode Control Panel Tests, 22-11 TASK 803.
 - (b) If you find any maintenance messages, then do the fault isolation tasks for the maintenance messages that you find.
 - (c) If you do not find any maintenance messages, then continue.
- (2) Do this wiring check between the MCP and the number 2 SMYD:
 - (a) Remove the SMYD 2. To remove the SMYD, do this task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - (b) Remove the MCP. To remove the MCP, do this task: DFCS Mode Control Panel Removal, AMM TASK 22-11-34-000-801
 - (c) Examine the connector pins and sockets for damage and unwanted material.
 - (d) Do a continuity test between these pins:

SMYD 2	MCP
D3685B	D301
pin 66	pin 2
pin 79	pin 1

- (e) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the SMYD. To install the SMYD, do this task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - 3) Re-install the MCP. To install the MCP, do this task: DFCS Mode Control Panel Installation, AMM TASK 22-11-34-400-801.
 - 4) Do the EXISTING FAULTS test on the SMYD 2 BITE display. Do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - 5) If the maintenance message does not show, then you corrected the fault.
 - (f) If you do not find a problem with the wiring, then continue.
- (3) Do this exchange check of the SMYD:
 - (a) Put a tag that reads "OK" on SMYD 1, M1747.
 - (b) Put a tag that reads "SUSPECT" on SMYD 2, M1748.
 - (c) Exchange the locations of SMYD 1, M1747 and SMYD 2, M1748. These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801

NOTE: Make sure you do the installation test for each SMYD.

EFFECTIVITY
SIA ALL

27-32 TASK 828

D633A103-SIA

Page 275
Oct 15/2023



737-600/700/800/900 FAULT ISOLATION MANUAL

- (d) If the original maintenance message does not show in EXISTING FAULTS during the installation test and the related maintenance message for the other SMYD does show, then do these steps:
- 1) Replace the SMYD tagged "SUSPECT". These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801

NOTE: If it is your airline's policy, you must return the SMYD tagged "OK" to its original location.
 - 2) If the maintenance message does not show in EXISTING FAULTS during the installation test, then you corrected the fault. Remove the tags from the SMYDs.
- (e) If neither the original maintenance message nor the related maintenance message for the other SMYD shows, then do these steps to complete the task:
- NOTE: There was an intermittent fault in the connector at the SMYD or in the SMYD tagged "SUSPECT".
- 1) If it is your airline's policy, return the SMYDs to their original locations. These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
 - 2) Remove the tags from the SMYDs.
- (f) If the maintenance message shows in EXISTING FAULTS during the installation test, then continue.
- 1) If it is your airline's policy, return the SMYDs to their original locations. These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
 - 2) Remove the tags from the SMYDs.
- (4) Do these steps to replace the MCP:
- (a) To replace the MCP, these are the tasks:
 - DFCS Mode Control Panel Removal, AMM TASK 22-11-34-000-801
 - DFCS Mode Control Panel Installation, AMM TASK 22-11-34-400-801
 - (b) Do the EXISTING FAULTS test on the SMYD 2 BITE display. Do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - (c) If the maintenance message does not show, then you corrected the fault.

————— **END OF TASK** —————

830. Air/Ground Inactive - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 27-31030 AIR/GND INACTIVE (SMYD 1)
 - (b) 27-32030 AIR/GND INACTIVE (SMYD 2)
- (2) Both main and nose air/ground signals are inactive.

EFFECTIVITY
SIA ALL

27-32 TASKS 828-830

D633A103-SIA

Page 276
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

B. Possible Causes

- (1) Proximity Switch Electronic Unit (PSEU), M2061
- (2) Wiring problem
- (3) SMYD 1 (2), M1747 (M1748)

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C01392	STICK SHAKER LEFT
E	5	C01204	SMYD-1 CMPTR DC
E	6	C01205	SMYD-1 SNSR EXC AC

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01207	SMYD-2 SNSR EXC AC
B	5	C01206	SMYD-2 CMPTR DC
B	6	C01393	STICK SHAKER RIGHT

D. Related Data

- (1) SSM 27-32-11
- (2) SSM 27-32-21
- (3) WDM 27-32-11
- (4) WDM 27-32-21

E. Initial Evaluation

- (1) Do the Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - (a) If the maintenance message does not show in EXISTING FAULTS, then there was an intermittent fault.
 - (b) If the maintenance message shows in EXISTING FAULTS, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do the EXISTING FAULTS test on the PSEU. This is the task: Proximity Switch Electronics Unit (PSEU) BITE Procedure, 32-09 TASK 801.
 - (a) Do the fault isolation tasks for the maintenance messages that you find.

————— **END OF TASK** —————

831. SPD LIM Shows on the Captain's CDS - Fault Isolation

A. Description

- (1) The indication SPD LIM shows on the captain's CDS.
- (2) There is no data from the display electronics unit (DEU) to the number 1 stall management yaw damper (SMYD).

B. Possible Causes

- (1) Wiring problem
- (2) Stall management yaw damper (SMYD) 1, M1747

EFFECTIVITY
SIA ALL

27-32 TASKS 830-831

D633A103-SIA

Page 277
Oct 15/2023



737-600/700/800/900 FAULT ISOLATION MANUAL

- (3) Display electronics unit (DEU), M1808

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C01392	STICK SHAKER LEFT
E	5	C01204	SMYD-1 CMPTR DC
E	6	C01205	SMYD-1 SNSR EXC AC

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01207	SMYD-2 SNSR EXC AC
B	5	C01206	SMYD-2 CMPTR DC
B	6	C01393	STICK SHAKER RIGHT

D. Related Data

- (1) (SSM 27-32-12)
(2) (WDM 27-32-12)

E. Initial Evaluation

- (1) For SMYD 1, M1747, do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
- (a) If the maintenance message does not show in EXISTING FAULTS, then there was an intermittent fault.
 - (b) If the maintenance message shows in FAULT HISTORY, but was not accompanied by the operation of the stick shaker, then this can be considered a nuisance fault.
 - (c) If the maintenance message shows in FAULT HISTORY, and was accompanied by the operation of the stick shaker, do this task: AMM TASK 27-32-00-710-801.
- (2) For the captain's DEU, do this task: DEU Self-Test Procedure, 31-62 TASK 802.
- (a) If the maintenance message does not show in EXISTING FAULTS, then there was an intermittent fault.
 - (b) If the maintenance message shows in EXISTING FAULTS, then do the Fault Isolation Procedure.

F. Fault Isolation Procedure

- (1) Do this check for a related fault on the SMYD 1, M1747:
- (a) To do the test, do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - (b) If a DEU fault shows in EXISTING FAULTS, then do this wiring check:
 - 1) Remove the number 1 SMYD. To remove the SMYD, do this task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801.
 - 2) Remove the DEU. To remove the DEU, do this task: Display Electronic Unit Removal, AMM TASK 31-62-21-000-801.
 - 3) Examine the connector pins and sockets for damage and contamination.
 - 4) Do a wiring test between these pins:

EFFECTIVITY
SIA ALL

27-32 TASK 831

D633A103-SIA

Page 278
Oct 15/2023



737-600/700/800/900 FAULT ISOLATION MANUAL

SMYD 1 D3683B

pin 65
pin 64

CDS DEU D3973D

pin A15
pin B15

- 5) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install the SMYD. To install the SMYD, do this task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - c) Re-install the DEU. To install the DEU, do this task: Display Electronic Unit Installation, AMM TASK 31-62-21-400-801.
 - d) Do a test of the CDS. To do this, do this task: DEU Self-Test Procedure, 31-62 TASK 802.
 - e) If the test operates correctly, then you corrected the fault.
 - (c) If no DEU faults show in EXISTING FAULTS, then continue.
 - (2) If there are other maintenance messages in EXISTING FAULTS, then do these steps:
 - (a) Do the associated fault isolation procedure for the maintenance message.
 - (b) Do a test of the CDS. To do this, do this task: DEU Self-Test Procedure, 31-62 TASK 802.
 - (c) If the test operates correctly, then you corrected the fault.
 - (d) If the test does not operate correctly, then continue.
 - (3) Do this exchange check of the SMYD:
 - (a) Put a tag that reads "SUSPECT" on SMYD 1, M1747.
 - (b) Put a tag that reads "OK" on SMYD 2, M1748.
 - (c) Exchange the locations of SMYD 1, M1747 and SMYD 2, M1748. These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
 - (d) Do a test of each CDS. Do this task: DEU Self-Test Procedure, 31-62 TASK 802.
 - (e) If the test operates correctly on both CDS, then there was an intermittent fault. Do these steps to complete the task:
 - 1) If it is your airline's policy, return the SMYDs to their original locations. These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
 - 2) Remove the tags from the SMYDs.
 - (f) If the fault has moved to the other CDS, then do these steps:
 - 1) Replace the SMYD tagged "SUSPECT". These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
- NOTE:** If it is your airline's policy, you must return the SMYD tagged "OK" to its original location.

EFFECTIVITY
SIA ALL

D633A103-SIA

27-32 TASK 831

Page 279
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 2) Do a test of the CDS. Do this task: DEU Self-Test Procedure, 31-62 TASK 802.
- 3) If the test operates correctly, then you corrected the fault. Remove the tags from the SMYDs.
- (g) If the fault continues on the same CDS, then continue.
 - 1) If it is your airline's policy, return the SMYDs to their original locations. These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
 - 2) Remove the tags from the SMYDs.
- (4) Do these steps to replace the DEU:
 - (a) These are the tasks:
 - Display Electronic Unit Removal, AMM TASK 31-62-21-000-801
 - Display Electronic Unit Installation, AMM TASK 31-62-21-400-801
 - (b) Do a test of the CDS. Do this task: DEU Self-Test Procedure, 31-62 TASK 802.
 - (c) If the test operates correctly, then you corrected the fault.

————— **END OF TASK** —————

832. Stall Management Yaw Damper (SMYD) 1 Internal Fault - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 27-31000 SMYD FAULT
 - (b) 27-31001 SMYD SW FAULT
 - (c) 27-81001 SMYD A/S FAULT
- (2) There is a fault internal to the SMYD 1.
- (3) The SMYD cross-channel bus has a wiring/short problem.

B. Possible Causes

- (1) Stall management yaw damper, M1747 (SMYD 1)
 - (a) If electrical power to the Yaw Damper is not turned on at the same time as electrical power to the SMYD fault messages may appear.
 - (b) If electrical power to the Autoslat and FSEU is not turned on at the same time as electrical power to the SMYD fault messages may appear.
- (2) Wiring

C. Related Data

WDM 22-23-12

D. Fault Isolation Procedure

- (1) Replace the SMYD, M1747. These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
 - (a) Do the post installation test in the SMYD installation procedure.
 - (b) If the test operates correctly, then you corrected the fault.

EFFECTIVITY
SIA ALL

27-32 TASKS 831-832

D633A103-SIA

Page 280
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (c) If the test is not satisfactory, then continue.
- (2) Do this check of the wiring.
 - (a) Remove the SMYD 1, M1747 and SMYD 2, M1748. This is the task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801.
 - (b) Inspect the connectors and sockets.
 - (c) Do a continuity check between these pins (WDM 22-23-12):

SMYD 1, M1747		SMYD 2, M1748	
D3683A		D3685A	
54	.....	57	
53	.....	58	
57	.....	54	
58	.....	53	

SMYD 1, M1747		E1-1 Shelf	
D3683A		D10064	
54	.....	12	
53	.....	13	
57	.....	22	
58	.....	23	

SMYD 2, M1748		E1-1 Shelf	
D3685A		D10064	
53	.....	23	
54	.....	22	
58	.....	13	
57	.....	12	

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install the SMYD 1, M1747 and SMYD 2, M1748. This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - c) Do the post installation test in the SMYD installation procedure.
 - d) If the maintenance message does not show on the SMYD 1, M1747 or SMYD 2, M1748, then you corrected the problem.

———— **END OF TASK** ————

833. SPD LIM Shows on the First Officer's CDS - Fault Isolation

A. Description

- (1) The indication SPD LIM shows on the first officer's CDS.
- (2) There is no data from the display electronics unit (DEU) to the number 2 stall management yaw damper (SMYD).

EFFECTIVITY
SIA ALL

27-32 TASKS 832-833

D633A103-SIA

Page 281
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

B. Possible Causes

- (1) Wiring problem
- (2) Stall management yaw damper (SMYD) 2, M1748
- (3) Display electronics unit (DEU) 2, M1809

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C01392	STICK SHAKER LEFT
E	5	C01204	SMYD-1 CMPTR DC
E	6	C01205	SMYD-1 SNSR EXC AC

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01207	SMYD-2 SNSR EXC AC
B	5	C01206	SMYD-2 CMPTR DC
B	6	C01393	STICK SHAKER RIGHT

D. Related Data

- (1) SSM 27-32-22
- (2) WDM 27-32-22

E. Initial Evaluation

- (1) For SMYD 2, M1748, do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - (a) If the maintenance message does not show in EXISTING FAULTS, then there was an intermittent fault.
 - (b) If the maintenance message shows in FAULT HISTORY, but was not accompanied by the operation of the stick shaker, then this can be considered a nuisance fault.
 - (c) If the maintenance message shows in EXISTING FAULTS, then do the Fault Isolation Procedure below.
 - (d) If the maintenance message shows in FAULT HISTORY, and was accompanied by the operation of the stick shaker, do this task: AMM TASK 27-32-00-710-801.
- (2) For the first officer's DEU, do this task: DEU Self-Test Procedure, 31-62 TASK 802 DEU Self-Test Procedure, 31-62 TASK 802.
 - (a) If the maintenance message does not show in EXISTING FAULTS, then there was an intermittent fault.
 - (b) If the maintenance message shows in EXISTING FAULTS, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this check for a related fault on the SMYD 2, M1748:
 - (a) Do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - (b) If a DEU fault shows in EXISTING FAULTS, then do this wiring check:

EFFECTIVITY
SIA ALL

27-32 TASK 833

D633A103-SIA

Page 282
Oct 15/2023



737-600/700/800/900 FAULT ISOLATION MANUAL

- 1) Remove the number 2 SMYD. To remove the SMYD, do this task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801.
- 2) Remove the DEU. To remove the DEU, do this task: Display Electronic Unit Removal, AMM TASK 31-62-21-000-801.
- 3) Examine the connector pins and sockets for damage and contamination.
- 4) Do a wiring test between these pins:

SMYD 2	CDS DEU
D3685B	D3975D
pin 65	pin A15
pin 64	pin B15

- 5) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install the SMYD. To install the SMYD, do this task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - c) Re-install the DEU. To install the DEU, do this task: Display Electronic Unit Installation, AMM TASK 31-62-21-400-801.
 - d) Do a test of the CDS. Do this task: DEU Self-Test Procedure, 31-62 TASK 802.
 - e) If the test operates correctly, then you corrected the fault.
- (c) If no DEU faults show in EXISTING FAULTS, then continue.
- (2) If there are other maintenance messages in EXISTING FAULTS, then do these steps:
 - (a) Do the associated fault isolation procedure for the maintenance message.
 - (b) Do a test of the CDS. Do this task: DEU Self-Test Procedure, 31-62 TASK 802.
 - (c) If the test operates correctly, then you corrected the fault.
 - (d) If the test does not operate correctly, then continue.
- (3) Do this exchange check of the SMYD:
 - (a) Put a tag that reads "OK" on SMYD 1, M1747.
 - (b) Put a tag that reads "SUSPECT" on SMYD 2, M1748.
 - (c) Exchange the locations of SMYD 1, M1747 and SMYD 2, M1748. These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
 - (d) Do a test of each CDS. Do this task: DEU Self-Test Procedure, 31-62 TASK 802.
 - (e) If the test operates correctly on both CDS, then there was an intermittent fault. Do these steps to complete the task:
 - 1) If it is your airline's policy, return the SMYDs to their original locations. These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
 - 2) Remove the tags from the SMYDs.
 - (f) If the fault has moved to the other CDS, then do these steps:
 - 1) Replace the SMYD tagged "SUSPECT". These are the tasks:

EFFECTIVITY
SIA ALL

27-32 TASK 833

D633A103-SIA

Page 283
Oct 15/2023



737-600/700/800/900 FAULT ISOLATION MANUAL

- Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
- Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801

NOTE: If it is your airline's policy, you must return the SMYD tagged "OK" to its original location.

- 2) Do a test of the CDS. Do this task: DEU Self-Test Procedure, 31-62 TASK 802.
- 3) If the test operates correctly, then you corrected the fault. Remove the tags from the SMYDs.
- (g) If the fault continues on the same CDS, then do these steps and continue:
 - 1) If it is your airline's policy, return the SMYDs to their original locations. These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
 - 2) Remove the tags from the SMYDs.
- (4) Do these steps to replace the DEU:
 - (a) These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
 - (b) Do a test of the CDS (DEU Self-Test Procedure, 31-62 TASK 802).
 - (c) If the test operates correctly, then you corrected the fault.

————— **END OF TASK** —————

834. Control Column Shaker Operates Continuously - Fault Isolation

A. Description

- (1) Control Column Shaker Operates Continuously.
- (2) This observed fault can only occur during flight. When the airplane is on the ground, it is not possible to simulate the conditions which cause this observed fault.
- (3) Make sure that the circuit breakers C1392 and C1393 are closed before you do this task.

B. Related Data

- (1) SSM 27-32-11
- (2) SSM 27-32-12
- (3) SSM 34-21-22

C. Possible Causes

- (1) Angle of Attack Sensor(s)
- (2) SMYD System Problem(s)
- (3) SMYD Computer-1, M1747
- (4) SMYD Computer-1, M1748

EFFECTIVITY
SIA ALL

27-32 TASKS 833-834

D633A103-SIA

Page 284
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

D. Fault Isolation Procedure

- (1) Do an Angle of Attack Sensor System Test. This is the task: Angle of Attack System Test, AMM TASK 34-21-05-730-801.
 - (a) If the left or right angle of attack sensor does not operate as specified in the AMM task, then do these steps:
 - 1) Replace the left or right angle of attack sensor you found a problem.
 - 2) Do the Repair Confirmation at the end of this task.
 - (b) If the left and right angle of attack sensors operate as specified in the AMM task, then continue.
- (2) Do a SMYD Installation Test. This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - (a) If you find related maintenance messages, then do these steps:
 - 1) Do the fault isolation task for each related maintenance message.
 - 2) Do the Repair Confirmation at the end of this task.
 - (b) If no related maintenance messages show, then continue.
- (3) Do this task: Copy of the Data from the SSFDR with the use of a Hand Held Multi-Purpose Portable Interface (HHMPI) or Portable Interface, AMM TASK 31-31-00-970-806 or Copy the Data from the Solid State Flight Data Recorder (SSFDR) with the Hand Held Multi Purpose Interface (HHMPI), AMM TASK 31-31-00-970-808.
 - (a) The data can be analyzed at a different location by the applicable airline personnel or this service can be ordered through Flight Recorder Data Services found on MyBoeingFleet.

E. Repair Confirmation

- (1) Monitor the airplane during the next flight(s).
 - (a) If the observed fault symptom does not occur on the subsequent flight(s), then you corrected the problem.
 - (b) If the observed fault symptom occurs again on the next flight(s), then continue the Fault Isolation Procedure at the subsequent step.

———— **END OF TASK** ————

835. Stall Management Yaw Damper (SMYD) Invalid Part Number - Fault Isolation

A. Description

- (1) This task is for maintenance messages:
 - (a) 27-31033 INVALID PART NUM
 - (b) 27-32033 INVALID PART NUM
- (2) The software Part Number (P/N) of the offside SMYD is detected to be of earlier version.

B. Possible Causes

- (1) SMYD 1 (2), M1747 (M1748)

C. Fault Isolation Procedure

- (1) Replace the applicable SMYD. These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801

EFFECTIVITY
SIA ALL

27-32 TASKS 834-835

D633A103-SIA

Page 285
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (a) If the post installation test is passed and the maintenance message does not show, then you corrected the problem.

————— **END OF TASK** —————

836. Control Column Shaker Does Not Operate During Test - Fault Isolation

A. Description

- (1) The Captain's (First Officer (F/O)'s) control column shaker does not operate when the STALL WARNING TEST NO. 1 (2) switch in the Flight Compartment is pushed and held.

NOTE: Make sure that the stick shaker power circuit breakers C1392 and C1393 are closed before you do this task.

B. Possible Causes

- (1) Wiring
- (2) Circuit Breaker C01392 (C01393)
- (3) Captain (FO) Control Column Shaker, M232 (M424)
- (4) Stall Warning Panel, P5-18
- (5) SMYD 1 (2), M1747 (M1748).

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C01392	STICK SHAKER LEFT

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	6	C01393	STICK SHAKER RIGHT

D. Related Data

- (1) WDM 27-32-11
- (2) WDM 27-32-21

E. Initial Evaluation

- (1) Do the Stall Warning System - Operational Test, AMM TASK 27-32-00-710-801.
- (2) If the system does not operate as specified in the Aircraft Maintenance Manual (AMM) task, then do the Fault Isolation procedure below.

F. Fault Isolation Procedure

- (1) Do the Stall Management Yaw Damper (SMYD) BITE Test - Existing Faults, AMM TASK 27-32-00-740-801
 - (a) If you find any related maintenance messages, refer to the table at the end of the SMYD BITE procedure to find the applicable Fault Isolation Manual (FIM) tasks for the maintenance messages that show.
 - 1) Do the specified corrective actions.
 - 2) Do the Repair Confirmation at the end of this task.
 - (b) If you do not find any related maintenance messages, then continue.

EFFECTIVITY
SIA ALL

27-32 TASKS 835-836

D633A103-SIA

Page 286
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (2) Do this check of the wiring:
- (a) Remove SMYD 1 (2), M1747 (M1748). This is the task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801.
 - (b) Disconnect connector D2349 (D2351) from the Stall Warning Panel, P5-18.
 - (c) Do a wiring check between connector D2349 (D2351) at the Stall Warning Panel and connector D3683A (D3685A) at the E3-2 rack (WDM 27-32-11, WDM 27-32-21):

E3-2

D2349 (D2351)	D3683A (D3685A)
pin 5	pin 47
pin 4	GND.

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Install SMYD 1 (2), M1747 (M1748). This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - c) Connect connector D2349 (D2351) to the Stall Warning Panel, P5-18.
 - d) Do the repair confirmation at the end of this task.
 - 2) If you do not find a problem with the wiring, then continue.
 - a) Connect connector D2349 (D2351) to the Stall Warning Panel, P5-18.
- (3) Do this check of the wiring:
- (a) Remove SMYD 1 (2), M1747 (M1748). This is the task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801.
 - (b) Disconnect connector D281 (D367) from the Captain's (F/O's) control column shaker, M232 (M424).
 - (c) Do a wiring check between connector D281 (D367) at the Captain's (F/O's) control column shaker and connector D3683A (D3685A) at the E3-2 rack (WDM 27-32-11, WDM 27-32-21):

E3-2

D281 (D367)	D3683A (D3685A)
pin A	pin 7
pin B	GND.

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Install SMYD 1 (2), M1747 (M1748). This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - c) Connect connector D281 (D367) to the Captain's (F/O's) control column shaker, M232 (M424).
 - d) Do the repair confirmation at the end of this task.
- 2) If you do not find a problem with the wiring, then continue.
 - a) Connect connector D281 (D367) to the Captain's (F/O's) control column shaker, M232 (M424).

EFFECTIVITY
SIA ALL

27-32 TASK 836

D633A103-SIA

Page 287
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (4) Do a check of the voltage at SMYD 1 (2), M1747 (M1748):
- (a) Remove SMYD 1 (2) M1747 (M1748). This is the task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801.
 - (b) Close the applicable circuit breaker:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C01392	STICK SHAKER LEFT

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	6	C01393	STICK SHAKER RIGHT

- (c) Do a check for 28VDC between pin 10 of connector D3683A (D3685A) and airplane ground (WDM 27-32-11, WDM 27-32-21).

- 1) If you do not measure 28VDC at the pin, do a check of the wiring:
- a) Open the applicable circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C01392	STICK SHAKER LEFT

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	6	C01393	STICK SHAKER RIGHT

- b) Do a wiring check between connector D3683A (D3685A) at the E3-2 shelf and circuit breaker C01392 (C01393) on the P18-2 (P6-1) circuit breaker panel (WDM 27-32-11, WDM 27-32-21):

E3-2	P18-2 (P6-1)
D3683A	C01392
(D3685A)	(C01393)
pin 10	term L

- <1> If you find a problem with the wiring, then do these steps:
- <a> Repair the wiring.
 - Install SMYD 1 (2), M1747 (M1748). This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - <c> Remove the safety tag and close the applicable circuit breaker:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C01392	STICK SHAKER LEFT

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	6	C01393	STICK SHAKER RIGHT

EFFECTIVITY
SIA ALL

27-32 TASK 836

D633A103-SIA

Page 288
Oct 15/2023



737-600/700/800/900 FAULT ISOLATION MANUAL

- <d> Do the repair confirmation at the end of this task.
- <2> If you do not find a problem with the wiring, then do these steps:
 - <a> Replace the applicable circuit breaker:
 - C01392, STICK SHAKER LEFT
 - C01393, STICK SHAKER RIGHT
 - Install SMYD 1 (2), M1747 (M1748). This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - <c> Do the repair confirmation at the end of this task.

2) If the correct voltage is present, then continue.

- (d) Open the applicable circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C01392	STICK SHAKER LEFT

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	6	C01393	STICK SHAKER RIGHT

- (e) Install SMYD 1 (2), M1747 (M1748). This is the task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
- (5) Replace the Captain's (F/O's) control column shaker, M232 (M424). These are the tasks:
- Control Column Shaker Removal, AMM TASK 27-32-31-000-801
 - Control Column Shaker Installation, AMM TASK 27-32-31-400-801
- (a) Do the repair confirmation at the end of this task.
- (6) Replace the Stall Warning Panel, P5-18. These are the tasks:
- Stall Warning Test Module Removal, AMM TASK 27-32-21-000-801
 - Stall Warning Test Module Installation, AMM TASK 27-32-21-400-801
- (a) Do the repair confirmation at the end of this task.
- (7) Replace SMYD 1 (2), M1747 (M1748). These are the tasks:
- Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
- (a) Do the repair confirmation at the end of this task.

G. Repair Confirmation

- (1) Do the SMYD Operational Test. This is the task: Stall Warning System - Operational Test, AMM TASK 27-32-00-710-801.
- (a) If the system operate as specified in the AMM task, then you have corrected the fault.
- (b) If the system does not operate as specified in the AMM task, then continue the Fault Isolation procedure at the subsequent step.

————— END OF TASK —————

EFFECTIVITY
SIA ALL

27-32 TASK 836

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 289
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

801. Stabilizer Control Cable Tension Repeatedly Checks Low - Fault Isolation

A. Description

- (1) During the manual operation, the stabilizer control wheels drives the aft cable drum on the jackscrew gearbox through the cables to move the stabilizer. During the electrical operation, the jackscrew and gearbox assembly drives the forward control mechanism, through the cables, to provide the stabilizer position indication and rotate the trim wheels.

B. Possible Causes

- (1) Stabilizer control cables

C. Initial Evaluation

- (1) Do a tension check of the stabilizer control cables. Do this task: Stabilizer Control Cable and Chain - Adjustment, AMM TASK 27-41-00-820-801.
 - (a) If the tension of the stabilizer control cables is low, then do the Fault Isolation Procedure below.
 - (b) If the tension of the stabilizer control cables is OK, then there was an intermittent fault.

D. Fault Isolation Procedure

- (1) Do these steps to re-rig the stabilizer control cables:
 - (a) Re-stretch the stabilizer control cables. To stretch them, do this task: Stabilizer Control Cable and Chain - Adjustment, AMM TASK 27-41-00-820-801.
 - (b) Re-adjust the stabilizer control cables. To adjust them, do this task: Stabilizer Control Cable and Chain - Adjustment, AMM TASK 27-41-00-820-801.
 - (c) Operate the stabilizer system 25 times through full cycle.
 - (d) If the tension of the stabilizer control cables is OK, then you corrected the fault.
 - (e) If the tension of the stabilizer control cable remains low, then continue.
- (2) Do a check of the stabilizer control cables. Do this task: Control Cable Wire Rope - Inspection, AMM TASK 20-20-31-200-801.
 - (a) If you find a problem, then do these steps:
 - 1) Replace the stabilizer control cables that have a problem. To replace them, these are the tasks:
 - Control Cables Removal, AMM TASK 20-10-91-000-801
 - Control Cables Installation, AMM TASK 20-10-91-400-801
 - 2) Do a tension check of the stabilizer control cables. Do this task: Stabilizer Control Cable and Chain - Adjustment, AMM TASK 27-41-00-820-801.
 - 3) If the tension of the stabilizer control cables is OK, then you corrected the fault.

————— **END OF TASK** —————

802. Stabilizer Electrical Trim Does Not Operate Nose Down - Fault Isolation

A. Description

- (1) The pilots operate the two STAB TRIM switches on the control wheel for the electrical trim operation when the stab trim cutout switch is in the NORMAL position. This gives electric input to the stabilizer trim motor (STM). The motor operates and drives the gearbox and stabilizer jackscrew to move the stabilizer.
- (2) When the pilots operate the two STAB TRIM switches in the nose down position. This will move the stabilizer to a maximum of 3 degrees up.

EFFECTIVITY
SIA ALL

27-41 TASKS 801-802

D633A103-SIA

Page 201
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (3) Trailing edge (TE) flap position determines motor speed. It operates at low speed when the flaps are retracted. When the flaps are not up the speed change relay is energized to switch the STM to high speed.

B. Possible Causes

- (1) TE Flap Switch Connector, D14362 (applicable only for TE Flap Switch, S245)
- (2) Faulty internal logic of STM
- (3) Stab Trim Cutout Switch, S272
- (4) Stabilizer Electric Actuator Nose Down Limit Switch, S844
- (5) Stab Nose Down Limit Switch, S145
- (6) TE Flap Switch, S245
- (7) Stabilizer Trim Motor, M1659
- (8) Stab Trim Interlock Relay, R850
- (9) Stabilizer Trim Control Switch, S134
- (10) Stabilizer Trim Control Switch, S135
- (11) Wiring

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C00849	AFCS STABILIZER TRIM

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

D. Related Data

- (1) SSM 27-41-11
- (2) WDM 27-41-11
- (3) WDM 27-41-12

E. Initial Evaluation

- (1) Do this check of the stabilizer electrical trim system:
 - (a) Make sure that the Stab Trim Cutout Switch, S272, on the P8 panel, is in the NORMAL position.
 - (b) Make sure that the STAB TRIM switch, S1, on the stab trim and cabin door panel, P8-47, is in the NORMAL position.
 - (c) Make sure the flaps are in the retract position.
 - (d) Push and hold the STAB TRIM switches on the captain's or first officer's control wheel to the NOSE DOWN position.
 - (e) If the stabilizer leading edge does not move up, then do the Fault Isolation Procedure below.
 - (f) If the stabilizer leading edge moves up, then there was an intermittent problem.

EFFECTIVITY
SIA ALL

27-41 TASK 802

D633A103-SIA

Page 202
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

F. Fault Isolation Procedure

- (1) Reset the following circuit breaker:

NOTE: Resetting this circuit breaker will reset the internal STM logic.

- (a) Open this circuit breaker for at least 10 seconds.

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C00849	AFCS STABILIZER TRIM

Close this circuit breaker:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C00849	AFCS STABILIZER TRIM

- 1) Do the Repair Confirmation at the end of the task.
- (2) Check the TE Flap Switch, S245 connector for corrosion.
- (a) If corrosion is present, clean or replace the connector then do the steps for Repair Confirmation at the end of this task.
 - (b) If corrosion is not present then re-connect the connector and continue.
- (3) Do this check of the Stabilizer Trim Motor (STM), M1659:
- (a) Disconnect connector D700 from the STM, M1659.
NOTE: The STM is located in the area aft of the pressure bulkhead.
 - (b) Push and hold the captain's or first officer's STAB TRIM switches to the NOSE DOWN position.
 - (c) Do a check for 28v DC from pin 6 of connector D700 to structure ground (WDM 27-41-12).
 - (d) If there is 28v DC at pin 6 of connector D700, then do these steps:
 - 1) Release the captain's or first officer's STAB TRIM switches.
 - 2) Replace the STM, M1659. These are the tasks:
 - Stabilizer Trim Motor Removal, AMM TASK 27-41-71-000-801
 - Stabilizer Trim Motor Installation, AMM TASK 27-41-71-400-801
 - 3) Do the Repair Confirmation at the end of this task.
 - (e) If there is not 28v DC at pin 6 of connector D700, then continue.
 - 1) Release the captain's or first officer's STAB TRIM switches.
 - 2) Re-connect connector D700.
- (4) Do a check of the Stab Trim Interlock Relay, R850 as follows:
- (a) Disconnect the D700 connector from the STM, M1659.
 - (b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

EFFECTIVITY
SIA ALL

27-41 TASK 802

D633A103-SIA

Page 203
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**



WARNING

MAKE SURE THAT PERSONNEL AND EQUIPMENT STAY AWAY FROM THE LEADING EDGE SLATS, TRAILING EDGE FLAPS, AND DRIVE MECHANISMS. THE FLAPS, SLATS, AND DRIVE MECHANISMS MOVE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (c) Put the flaps in the FLAP 1, or more, position. This is the task: Extend the Trailing Edge Flaps, AMM TASK 27-51-00-860-803.



WARNING

DO NOT TOUCH THE OTHER PINS IN CONNECTOR D700 DURING VOLTAGE CHECKS. THE CONNECTOR D700 HAS 115VAC IN SOME OF THE PINS. IF YOU DO NOT OBEY, VOLTAGE CAN CAUSE INJURY TO PERSONNEL

- 1) Do a voltage check between pin 8 and pin 5 of connector D700.
- a) If there is 2V DC or more on connector D700 pin 8, then do the following:
- <1> Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

- <2> Do this wiring check and replace the Stab Trim Interlock Relay, R850, as necessary.

**STABILIZER
TRIM MOTOR,
M1659
D700**

**STAB TRIM
RELAY, R850
D13364**

pin 8 pin A1

- <3> Do the Repair Confirmation at the end of this task.

- (d) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

- (e) Push and hold the two Stabilizer Trim Control Switches on the Captain's control wheel to the NOSE UP position.
- (f) Disconnect the D700 connector from the STM, M1659.



WARNING

DO NOT TOUCH THE OTHER PINS IN CONNECTOR D700 DURING VOLTAGE CHECKS. THE CONNECTOR D700 HAS 115VAC IN SOME OF THE PINS. IF YOU DO NOT OBEY, VOLTAGE CAN CAUSE INJURY TO PERSONNEL

- 1) Do a voltage check between pin 7 of connector D700 and structure ground.
- a) If there is 2V DC or more on connector D700 pin 7, then do the following:

EFFECTIVITY
SIA ALL

27-41 TASK 802

D633A103-SIA

Page 204
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- <1> Release the two Stabilizer Trim Control Switches on the Captain's control wheel.
- <2> Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT

- <3> Do this wiring check and replace the Stab Trim Interlock Relay, R850, as necessary.

STABILIZER TRIM MOTOR, M1659 D700	STAB TRIM RELAY, R850 D13364
pin 7	C1

- <4> Do the Repair Confirmation at the end of this task.
- (g) Push and hold the two Stabilizer Trim Control Switches on the Captain's control wheel to the NOSE DOWN position.
- (h) Disconnect the D700 connector from the STM, M1659.



DO NOT TOUCH THE OTHER PINS IN CONNECTOR D700 DURING VOLTAGE CHECKS. THE CONNECTOR D700 HAS 115VAC IN SOME OF THE PINS. IF YOU DO NOT OBEY, VOLTAGE CAN CAUSE INJURY TO PERSONNEL

- 1) Do a voltage check between pin 6 of connector D700 and structure ground.
 - a) If there is 2V DC or more on connector D700 pin 6, then do the following:
 - <1> Release the two Stabilizer Trim Control Switches on the Captain's control wheel.
 - <2> Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT

- <3> Do this wiring check and replace the Stab Trim Interlock Relay, R850, as necessary.

STABILIZER TRIM MOTOR, M1659 D700	STAB TRIM RELAY, R850 D13364
pin 6	D1

- <4> Do the Repair Confirmation at the end of this task.
- <5> Make sure the two Stabilizer Trim Control Switches on the Captain's control wheel have been released.

EFFECTIVITY
SIA ALL

27-41 TASK 802



**737-600/700/800/900
FAULT ISOLATION MANUAL**

<6> Make sure that these circuit breakers are open:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C00849	AFCS STABILIZER TRIM

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT

<7> Connect connector D700 to the Stabilizer Trim Motor, M1659.

<8> Clear any potential faults:

<a> Open this circuit breaker:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C00849	AFCS STABILIZER TRIM

I. Wait for a minimum of three seconds.

 Close this circuit breaker:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C00849	AFCS STABILIZER TRIM

(5) Do this check of the Stabilizer Trim Cutout Switch, S272:

(a) Disconnect connector D46044J from connector D46044P.

NOTE: You can find the connector D46044 in the main wheel well.

(b) Push and hold the captain's or first officer's STAB TRIM switches to the NOSE DOWN position.

(c) Do a check for 28v DC from pin 6 of connector D46044J to structure ground (WDM 27-41-12).

(d) If there is not 28v DC at pin 6 of connector D46044J, then do these steps:

1) Release the captain's or first officer's STAB TRIM switches.

2) Remove the aft aisle stand panel, P8.

3) Disconnect connector D698 from connector D3524.

4) Push and hold the captain's or first officer's STAB TRIM switches to the NOSE DOWN position.

5) Do a check for 28v DC from pin 7 of connector D698 to structure ground (WDM 27-41-11).

6) If there is not 28v DC at pin 7 of connector D698, then do these steps:

a) Repair the wiring between these pins of terminal block TB803 at the STA 226 and connector D698 at panel P8 (WDM 27-41-11):

TB803	D698
term YB9	pin 7

b) Re-connect connector D698.

EFFECTIVITY
SIA ALL

27-41 TASK 802



737-600/700/800/900 FAULT ISOLATION MANUAL

- c) Install the aft aisle stand panel, P8.
 - d) Re-connect connector D46044J.
 - e) Do the Repair Confirmation at the end of this task.
- 7) If there is 28v DC at pin 7 of connector D698, then continue.
- a) Release the captain's and first officer's STAB TRIM switches.
- 8) Do this check of wiring between these pins of connector D698 at panel P8 and connector D46044J at main wheel well (WDM 27-41-11) (WDM 27-41-12):

D698	D46044J
pin 8	pin 6

- 9) If you find a problem with the wiring, then do these steps:
- a) Repair the wiring.
 - b) Re-connect connector D698.
 - c) Install the aft aisle stand panel, P8.
 - d) Re-connect connector D46044J.
 - e) Do the Repair Confirmation at the end of this task.
- 10) If you do not find a problem with the wiring, then do these steps:
- a) Replace the Stabilizer Trim Cutout Switch, S272. These are the tasks:
 - Stabilizer Trim Cutout Switch Removal, AMM TASK 27-41-91-000-801
 - Stabilizer Trim Cutout Switch Installation, AMM TASK 27-41-91-400-801
- (e) If there is 28v DC at pin 6 of connector D46044J, then continue.
- 1) Re-connect connector D46044J.
- (6) Replace the Stabilizer Electric Actuator Nose Down Limit Switch, S844. These are the tasks:
- Stabilizer Trim Limit Switch Removal, AMM TASK 27-41-94-000-801
 - Stabilizer Trim Limit Switch Installation, AMM TASK 27-41-94-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (7) Replace the Stabilizer Nose Down Limit Switch, S145. These are the tasks:
- Stabilizer Trim Limit Switch Removal, AMM TASK 27-41-94-000-801
 - Stabilizer Trim Limit Switch Installation, AMM TASK 27-41-94-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (8) Replace the TE Flap Switch, S245. These are the tasks:
- Flap Limit Switch Removal, AMM TASK 27-51-63-000-801
 - Flap Limit Switch Installation, AMM TASK 27-51-63-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (9) Do this wiring check:
- (a) Disconnect connector D700 from the STM, M1659.
 - (b) Disconnect connector D46044J from connector D46044P.
- NOTE:** You can find the connector D46044 in the main wheel well.
- (c) Push and hold the captain's or first officer's STAB TRIM switches to the NOSE UP or NOSE DOWN position.

EFFECTIVITY
SIA ALL

27-41 TASK 802

D633A103-SIA

Page 207
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

- 1) Do a wiring check between these pins of connector D700 at the STM, M1659 and connector D46044 in the main wheel well (WDM 27-41-12):

D700	D46044J
pin 6	pin 7

- (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-connect connector D700.
 - 3) Re-connect connector D46044J.
 - 4) Do the Repair Confirmation at the end of this task.
- (10) Replace the captain's Stabilizer Trim Control Switch, S134. These are the tasks:
 - Stabilizer Trim Control Switch Removal, AMM TASK 27-41-97-000-801
 - Stabilizer Trim Control Switch Installation, AMM TASK 27-41-97-400-801
 - (a) Do the Repair Confirmation at the end of this task.
- (11) Replace the captain's Stabilizer Trim Control Switch, S135. These are the tasks:
 - Stabilizer Trim Control Switch Removal, AMM TASK 27-41-97-000-801
 - Stabilizer Trim Control Switch Installation, AMM TASK 27-41-97-400-801
 - (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do this check of the stabilizer electrical trim system:
 - (a) Make sure that the Stab Trim Cutout Switch, S272, on the P8 panel, is in the NORMAL position.
 - (b) Make sure that the STAB TRIM switch, S1, on the stab trim and cabin door panel, P8-47, is in the NORMAL position.
 - (c) Make sure the flaps are in the retract position.
 - (d) Push and hold the STAB TRIM switches on the captain's or first officer's control wheel to the NOSE DOWN position.
 - (e) If the stabilizer leading edge moves down, then you corrected the problem.

————— END OF TASK —————

803. Stabilizer Electrical Trim Does Not Operate Nose Up - Fault Isolation

A. Description

- (1) The pilots operate the two STAB TRIM switches on the control wheel for electrical trim operation when the stab trim cutout switch is in the NORMAL position. This gives electric input to the stabilizer trim motor (STM). The motor operates and drives the gearbox and stabilizer jackscrew to move the stabilizer.
- (2) When the pilots operate the two STAB TRIM switches in the nose up position. This will move the stabilizer to a maximum of 14 degrees down.

B. Possible Causes

- (1) STM logic needs to be reset by cycling the circuit breaker to the STM.
- (2) Stab Trim Cutout Switch, S272
- (3) Stab Nose Up Limit Switch, S144

EFFECTIVITY
SIA ALL

27-41 TASKS 802-803

D633A103-SIA

Page 208
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (4) Stabilizer Trim Motor, M1659
- (5) Stab Trim Interlock Relay, R850
- (6) Stabilizer Trim Control Switch, S134
- (7) Stabilizer Trim Control Switch, S135
- (8) Wiring

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

D. Related Data

- (1) SSM 27-41-11
- (2) WDM 27-41-11
- (3) WDM 27-41-12

E. Initial Evaluation

- (1) Do this check of the stabilizer electrical trim system:
 - (a) Make sure that the Stab Trim Cutout Switch, S272, on the P8 panel, is in the NORMAL position.
 - (b) Make sure that the STAB TRIM switch, S1, on the stab trim and cabin door panel, P8-47, is in the NORMAL position.
 - (c) Make sure the flaps are in the retract position.
 - (d) Push and hold the STAB TRIM switches on the captain's or first officer's control wheel to the NOSE UP position.
 - (e) If the stabilizer leading edge move down, then there was an intermittent problem.
 - (f) If the stabilizer leading edge does not move down, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Reset the following circuit breaker.

NOTE: Resetting this circuit breaker will reset the internal STM logic.

- (a) Open circuit breaker for at least 10 seconds.

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C00849	AFCS STABILIZER TRIM

Close this circuit breaker:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C00849	AFCS STABILIZER TRIM

- 1) Do the Repair Confirmation at the end of the task.

EFFECTIVITY
SIA ALL

27-41 TASK 803

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 209
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (2) Do this check of the stabilizer trim motor (STM), M1659:
- (a) Disconnect connector D700 from the STM, M1659.
NOTE: The STM is located in the area aft of the pressure bulkhead.
 - (b) Push and hold the captain's or first officer's STAB TRIM switches to the NOSE UP position.
 - (c) Do a check for 28v DC from pin 7 of connector D700 to structure ground (WDM 27-41-12).
 - (d) If there is 28v DC at pin 7 of connector D700, then do these steps:
 - 1) Do a check for 28v DC at pin 6 of connector D700 to structure ground.
 - 2) Release the captain's or first officer's STAB TRIM switches.
 - 3) Replace the STM, M1659. These are the tasks:
 - Stabilizer Trim Motor Removal, AMM TASK 27-41-71-000-801
 - Stabilizer Trim Motor Installation, AMM TASK 27-41-71-400-801
 - 4) Do the Repair Confirmation at the end of this task.
 - (e) If there is not 28v DC at pin 7 of connector D700, then do these steps:
 - 1) Release the captain's or first officer's STAB TRIM switches.
 - 2) Re-connect connector D700.
- (3) Do a check of the Stab Trim Interlock Relay, R850 as follows:
- (a) Disconnect the D700 connector from the STM, M1659.
 - (b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR



MAKE SURE THAT PERSONNEL AND EQUIPMENT STAY AWAY FROM THE LEADING EDGE SLATS, TRAILING EDGE FLAPS, AND DRIVE MECHANISMS. THE FLAPS, SLATS, AND DRIVE MECHANISMS MOVE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (c) Put the flaps in the FLAP 1, or more, position. This is the task: Extend the Trailing Edge Flaps, AMM TASK 27-51-00-860-803.



DO NOT TOUCH THE OTHER PINS IN CONNECTOR D700 DURING VOLTAGE CHECKS. THE CONNECTOR D700 HAS 115VAC IN SOME OF THE PINS. IF YOU DO NOT OBEY, VOLTAGE CAN CAUSE INJURY TO PERSONNEL

- 1) Do a voltage check between pin 8 and pin 5 of connector D700.
 - a) If there is 2V DC or more on connector D700 pin 8, then do the following:

EFFECTIVITY
SIA ALL

27-41 TASK 803

D633A103-SIA

Page 210
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

<1> Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

<2> Do this wiring check and replace the Stab Trim Interlock Relay, R850, as necessary.

**STABILIZER
TRIM MOTOR,
M1659
D700**
pin 8

**STAB TRIM
RELAY, R850
D13364**
pin A1

<3> Do the Repair Confirmation at the end of this task.

(d) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

(e) Push and hold the two Stabilizer Trim Control Switches on the Captain's control wheel to the NOSE UP position.

(f) Disconnect the D700 connector from the STM, M1659.



DO NOT TOUCH THE OTHER PINS IN CONNECTOR D700 DURING VOLTAGE CHECKS. THE CONNECTOR D700 HAS 115VAC IN SOME OF THE PINS. IF YOU DO NOT OBEY, VOLTAGE CAN CAUSE INJURY TO PERSONNEL

- 1) Do a voltage check between pin 7 of connector D700 and structure ground.
a) If there is 2V DC or more on connector D700 pin 7, then do the following:

<1> Release the two Stabilizer Trim Control Switches on the Captain's control wheel.

<2> Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT

<3> Do this wiring check and replace the Stab Trim Interlock Relay, R850, as necessary.

**STABILIZER
TRIM MOTOR,
M1659
D700**
pin 7

**STAB TRIM
RELAY, R850
D13364**
pin C1

EFFECTIVITY
SIA ALL

27-41 TASK 803

D633A103-SIA

Page 211
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

- <4> Do the Repair Confirmation at the end of this task.
- (g) Push and hold the two Stabilizer Trim Control Switches on the Captain's control wheel to the NOSE DOWN position.
- (h) Disconnect the D700 connector from the STM, M1659.



DO NOT TOUCH THE OTHER PINS IN CONNECTOR D700 DURING VOLTAGE CHECKS. THE CONNECTOR D700 HAS 115VAC IN SOME OF THE PINS. IF YOU DO NOT OBEY, VOLTAGE CAN CAUSE INJURY TO PERSONNEL

- 1) Do a voltage check between pin 6 of connector D700 and structure ground.
- a) If there is 2V DC or more on connector D700 pin 6, then do the following:
- <1> Release the two Stabilizer Trim Control Switches on the Captain's control wheel.
- <2> Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT

- <3> Do this wiring check and replace the Stab Trim Interlock Relay, R850, as necessary.

**STABILIZER
TRIM MOTOR,
M1659
D700**
pin 6

**STAB TRIM
RELAY, R850
D13364**
pin D1

- <4> Do the Repair Confirmation at the end of this task.
- <5> Make sure the two Stabilizer Trim Control Switches on the Captain's control wheel have been released.
- <6> Make sure that these circuit breakers are open:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C00849	AFCS STABILIZER TRIM

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT

- <7> Connect connector D700 to the stabilizer trim motor, M1659.
- <8> Clear any potential faults:
- <a> Open this circuit breaker:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C00849	AFCS STABILIZER TRIM

EFFECTIVITY
SIA ALL

27-41 TASK 803

D633A103-SIA

Page 212
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

I. Wait for a minimum of three seconds.

 Close this circuit breaker:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C00849	AFCS STABILIZER TRIM

- (4) Do a check of the Stab Trim Cutout Switch, S272:
- Remove the aft aisle stand panel, P8.
 - Disconnect connector D698 from connector D3524.
 - Push and hold the captain's or first officer's STAB TRIM switches to the NOSE UP position.
 - Do a check for 28v DC from pin 6 of connector D698 to structure ground (WDM 27-41-11).
 - If there is not 28v DC at pin 6 of connector D698, then do these steps:
 - Repair the wiring between these pins of terminal block TB803 at the STA 226 and connector D698 at panel P8 (WDM 27-41-11):
- | | |
|---------------------|-------------|
| TB803 | D698 |
| term YA11 | pin 6 |
- Re-connect connector D698.
 - Install the aft aisle stand panel, P8.
 - Do the Repair Confirmation at the end of this task.
- (f) If there is 28v DC at pin 6 of connector D698, then continue.
- Release the captain's or first officer's STAB TRIM switches.
 - Re-connect connector D698.
 - Install the aft aisle stand panel, P8.
- (5) Replace the Stab Nose Up Limit Switch, S144. These are the tasks:
- Stabilizer Trim Limit Switch Removal, AMM TASK 27-41-94-000-801
 - Stabilizer Trim Limit Switch Installation, AMM TASK 27-41-94-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (6) Do this wiring check:
- Disconnect connector D700 from the STM, M1659.
 - Remove the aft aisle stand panel, P8.
 - Disconnect connector D698 from connector D3524.
 - Push and hold the captain's or first officer's STAB TRIM switches to the NOSE UP or NOSE DOWN position.
 - Do a wiring check between these pins of connector D700 at the STM, M1659 and connector D698 at panel P8 (WDM 27-41-11) (WDM 27-41-12):

D700	D698
pin 7	pin 1

- (e) If you find a problem with the wiring, then do these steps:

EFFECTIVITY
SIA ALL

27-41 TASK 803

D633A103-SIA

Page 213
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 1) Repair the wiring.
- 2) Re-connect connector D700.
- 3) Re-connect connector D698.
- 4) Install the aft aisle stand panel, P8.
- 5) Do the Repair Confirmation at the end of this task.
- (f) If you do not find a problem with the wiring, then continue.
 - 1) Re-connect connector D700.
 - 2) Re-connect connector D698.
 - 3) Install the aft aisle stand panel, P8.
- (7) Replace the Stabilizer Trim Cutout Switch, S272. These are the tasks:
 - Stabilizer Trim Cutout Switch Removal, AMM TASK 27-41-91-000-801
 - Stabilizer Trim Cutout Switch Installation, AMM TASK 27-41-91-400-801
 - (a) Do the Repair Confirmation at the end of this task.
- (8) Replace the captain's Stabilizer Trim Control Switch, S134. These are the tasks:
 - Stabilizer Trim Control Switch Removal, AMM TASK 27-41-97-000-801
 - Stabilizer Trim Control Switch Installation, AMM TASK 27-41-97-400-801
- (9) Replace the captain's Stabilizer Trim Control Switch, S135. These are the tasks:
 - Stabilizer Trim Control Switch Removal, AMM TASK 27-41-97-000-801
 - Stabilizer Trim Control Switch Installation, AMM TASK 27-41-97-400-801

G. Repair Confirmation

- (1) Do this check of the stabilizer electrical trim system:
 - (a) Make sure that the Stab Trim Cutout Switch, S272, on the P8 panel, is in the NORMAL position.
 - (b) Make sure that the STAB TRIM switch, S1, on the stab trim and cabin door panel, P8-47, is in the NORMAL position.
 - (c) Make sure the flaps are in the retract position.
 - (d) Push and hold the STAB TRIM switches on the captain's or first officer's control wheel to the NOSE DOWN position.
 - (e) Make sure the stabilizer leading edge moves up.
 - (f) Push and hold the captain's or first officer's STAB TRIM switches to the NOSE UP position.
 - 1) If the stabilizer leading edge moves down, then you corrected the problem.
 - (g) If necessary, close the following circuit breakers and remove the safety tags:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C00849	AFCS STABILIZER TRIM

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT

EFFECTIVITY
SIA ALL

27-41 TASK 803



**737-600/700/800/900
FAULT ISOLATION MANUAL**

END OF TASK

804. Stabilizer Electrical Trim Problem - Fault Isolation

A. Description

- (1) The Pilots operate the two STAB TRIM Switches on the Control Wheel for Electrical Trim Operation when the Stab Trim Cutout Switch is in the NORMAL position. This gives electric input to the Stabilizer Trim Motor (STM).
- (2) The motor operates and drives the Gearbox and Stabilizer Jackscrew to move the Stabilizer to a maximum of 3 degrees up and 14 degrees down.

B. Possible Causes

- (1) STM Internal Logic needs to be reset
- (2) Stab Trim Control Relay, R64
- (3) Wiring Problem
- (4) Radio Noise Suppressor, M110
- (5) Stab Trim Interlock Relay, R850
- (6) FLIGHT CONTROL STAB TRIM ACTUATOR Circuit Breaker, C840
- (7) Stab Trim Cutout Switch, S272
- (8) Stabilizer Trim Motor, M1659

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C00849	AFCS STABILIZER TRIM

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

D. Related Data

- (1) SSM 27-41-11
- (2) WDM 27-41-11
- (3) WDM 27-41-12

E. Initial Evaluation

- (1) Do this check of the Stabilizer Electrical Trim System:
 - (a) Make sure that the Main Cutout Switch, S272, on the P8 Panel, is in the NORMAL position.
 - (b) Make sure that the STAB TRIM Switch, S1, on the Stab Trim and Cabin Door Panel, P8-47, is in the NORMAL position.
 - (c) Make sure that the flaps are in the RETRACT position.
 - (d) Push and hold the STAB TRIM Switches on the Captain's or First Officer (F/O)'s Control Wheel to the NOSE DOWN position.

EFFECTIVITY
SIA ALL

27-41 TASKS 803-804

D633A103-SIA

Page 215
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 1) Make sure the Stabilizer edge moves up.
- (e) Push and hold the captain's or first officer's STAB TRIM Switches to the NOSE UP position.
 - 1) Make sure that the stabilizer edge moves down.
- (f) If the Stabilizer Leading Edge does not move up and down, then do the Fault Isolation Procedure below.
- (g) If the Stabilizer Leading Edge moves up and down, then there was an intermittent problem.

F. Fault Isolation Procedure

- (1) Open these circuit breakers, wait for at least 10 seconds, then close these circuit breakers to reset the Internal STM Logic..

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C00849	AFCS STABILIZER TRIM

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

- (2) Do this check of the Stab Trim Control Relay, R64 (WDM 27-41-12):

- (a) Disconnect connector D40610P from junction box, J4.

NOTE: You can find the junction box, J4 at STA 262.

- (b) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

- (c) Push and hold the Captain's or F/O's STAB TRIM Switches to the NOSE UP position.
- (d) Do a check for 28V DC between pin 7 of connector D40610P and structure ground.
 - 1) If you find 28V DC at pin 7 of connector D40610P, then do these steps:
 - a) Replace the Stab Trim Control Relay, R64.
 - b) Re-connect connector D40610P.
 - c) Do the Repair Confirmation at the end of this task.
 - 2) If you do not find 28V DC, at pin 7 of connector D40610P, then refer to the troubleshooting for the Stab Trim Cutout Switch, S272 below.
- (3) Do this check for power at the Stabilizer Trim Motor (STM), M1659 (WDM 27-41-12):
 - (a) Disconnect connector D700 from the STM, M1659.

NOTE: The STM is located in the area aft of the pressure bulkhead.
 - (b) Push and hold the Captain's or First Officer's STAB TRIM Switches to the NOSE UP position.
 - (c) Do a check for 115V AC as follows :

EFFECTIVITY
SIA ALL

27-41 TASK 804

D633A103-SIA

Page 216
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

D700	D700	Voltage
pin 1	pin 10	115V AC
pin 2	pin 10	115V AC
pin 3	pin 10	115V AC

(d) If you find 115V AC at pins 1, 2, and 3 of connector D700, then do these steps:

- 1) Release the Captain's or First Officer's STAB TRIM Switches.
- 2) Replace the STM, M1659. These are the tasks:
 - Stabilizer Trim Motor Removal, AMM TASK 27-41-71-000-801
 - Stabilizer Trim Motor Installation, AMM TASK 27-41-71-400-801
- 3) Do the Repair Confirmation at the end of this task.

(e) If you do not find 115V AC at any one (but not all three) of the three pins, then do these steps:

- 1) Release the Captain's or First Officer's STAB TRIM Switches.
- 2) Disconnect connector D40616P from the junction box, J4.

NOTE: You can find the junction box, J4 at STA 262.

- 3) Do a wiring check between these pins of connector D700 at STM, M1659 and connector D40616P at junction box, J4 (WDM 27-41-12):

NOTE: You only need to do the wiring check at the pin that does not have 115V AC.

D700	D40616P
pin 1	pin 1
pin 2	pin 2
pin 3	pin 3

a) If you find a problem with the wiring, then do these steps:

- <1> Repair the wiring.
- <2> Re-connect connector D40616P.
- <3> Re-connect connector D700.
- <4> Do the Repair Confirmation at the end of this task.

b) If you do not find a problem with the wiring, then do these steps:

- <1> Re-connect connector D700.
- <2> Disconnect connector D40602P from the junction box, J4.
- <3> Disconnect connector D40574P from the Right Load Control Center Panel, P6.
- <4> Do the wiring check between these pins of connector D40574P at P6 panel and connector D40602P at junction box, J4 (WDM 27-41-12):

D700	D40574P	D40602P
pin 1	pin 5	pin 5
pin 2	pin 6	pin 6
pin 3	pin 4	pin 4

<a> If you find a problem with the wiring, then do these steps:

EFFECTIVITY
SIA ALL

27-41 TASK 804

D633A103-SIA

Page 217
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- I. Repair the wiring.
 - II. Re-connect connector D40574P.
 - III. Re-connect connector D40602P.
 - IV. Do the Repair Confirmation at the end of this task.
- If you do not find a problem with the wiring, then do these steps:
 - I. Replace the Stab Trim Control Relay, R64 in junction box, J4.
 - II. Re-connect connector D40574P.
 - III. Re-connect connector D40602P.
 - IV. Do the Repair Confirmation at the end of this task.
- (f) If you do not find 115V AC at ALL three pins 1, 2 and 3 of connector D700, then do these steps and continue.
 - 1) Release the Captain's or First Officer's STAB TRIM Switches.
 - 2) Re-connect connector D700.
- (4) Do a visual inspection of the Radio Noise Suppressor, M110 in junction box J4 for discoloration (WDM 27-41-12).
 - (a) If the Radio Noise Suppressor appears black or discolored, replace the Radio Noise Suppressor, M110.
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If the Radio Noise Suppressor has no discoloration, then continue.
- (5) Do this check of the Stab Trim Interlock Relay, R850:
 - (a) Disconnect connector D13364 from the Stab Trim Interlock Relay, R850 (WDM 27-41-12).
 - (b) Push and hold the Captain's or First Officer's STAB TRIM Switches to the NOSE UP position.
 - (c) Do a check for 28V DC from pin X1 of connector D13364 to Structure Ground (WDM 27-41-12).
 - (d) If you find 28V DC at pin X1 of connector D13364, then do these steps:
 - 1) Replace the Stab Trim Interlock Relay, R850.
 - 2) Re-connect connector D13364.
 - 3) Do the Repair Confirmation at the end of this task.
 - (e) If you do not find 28V DC at pin 7 of connector D13364, then continue.
- (6) Do this check of the Stab Trim Cutout Switch, S272:
 - (a) Remove the Aft Aisle Stand Panel, P8.
 - (b) Disconnect connector D698 from connector D3524 (WDM 27-41-11).
 - (c) Push and hold the Captain's or F/O's STAB TRIM Switches to the NOSE UP position.
 - (d) Do a check of 28V DC from pin 5 of connector D698 to structure ground (WDM 27-41-11).
 - (e) If you find 28V DC at pin 5 of connector D698, then do these steps:
 - 1) Release the Captain's and F/O's STAB TRIM Switches.



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 2) Do a wiring check between these pins of connector D698 at the panel P8 and connector D40610P at junction box, J4 (WDM 27-41-11, WDM 27-41-12):

D698	D40610P
pin 2	pin 7

- 3) If you find a problem with the wiring, then do these step:
- Release the Captain's or F/O's STAB TRIM Switches.
 - Repair the wiring.
 - Re-connect connector D698.
 - Install the Aft Aisle Stand Panel, P8.
 - Re-connect connector D40610P.
 - Do the Repair Confirmation at the end of this task.
- 4) If you do not find a problem with the wiring, then do these steps:
- Release the Captain's or First Officer's STAB TRIM Switches.
 - Replace the Stab Trim Cutout Switch, S272. These are the tasks:
 - Stabilizer Trim Cutout Switch Removal, AMM TASK 27-41-91-000-801
 - Stabilizer Trim Cutout Switch Installation, AMM TASK 27-41-91-400-801
 - Re-connect connector D698.
 - Install the Aft Aisle Stand Panel, P8.
 - Re-connect connector D40610P.
 - Do the Repair Confirmation at the end of this task.
- (f) If you do not find 28V DC at pin 5 of connector D698, then continue.
- Release the Captain's or First Officer's STAB TRIM Switches.
 - Re-connect connector D40610P.
- (7) Do this check for power at the Stab Trim Cutout Switch, S272:
- Do a check of 28V DC between pin 12 of connector D698 to Structure Ground (WDM 27-41-11).
 - If you find 28V DC at pin 12 of connector D698, then do these steps:
 - Do a wiring check between these pins of terminal block TB803 at the STA 226 and connector D698 at panel P8 (WDM 27-41-11):

TB803	D698
term YA11	pin 5

- If you find a problem with the wiring, then do these steps:
 - Repair the wiring.
 - Re-connect connector D698.
 - Install the Aft Aisle Stand Panel, P8.
 - Do the Repair Confirmation at the end of this task.
- If you do not find 28V DC at pin 12 of connector D698, then continue.
 - Re-connect connector D698.
 - Install the Aft Aisle Stand Panel, P8.

EFFECTIVITY
SIA ALL

27-41 TASK 804

D633A103-SIA

Page 219
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (8) Do a check for 28V DC between the Load Terminal of this circuit breaker and structure ground:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT

(WDM 27-41-11)

- (a) If you do not find 28V DC, then do these steps:

- 1) Replace this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT

- 2) Do the Repair Confirmation at the end of this task.

- (b) If you find 28V DC, then do these steps:

- 1) Disconnect connector D40820P from the Right Load Control Center Panel, P6.
2) Do a wiring check between these pins of Terminal Block TB806 at the STA 226 and connector D40820P at panel P6 (WDM 27-41-11):

TB806	D40820P
term YA9	pin 16

- 3) If you find a problem with the wiring, then do these steps:

- a) Repair the wiring.
b) Re-connect connector D40820P.
c) Do the Repair Confirmation at the end of this task.

- (9) Do a check of 115V AC between pins A2, B2, and C2 of this circuit breaker and structure ground:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

(WDM 27-41-12)

- (a) If you do not find 115V AC at pins A2, B2, and C2, then do these steps (WDM 27-41-12):

- 1) Replace this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

- 2) Do the Repair Confirmation at the end of this task.

- (b) If you find 115V AC at A2, B2, and C2, then do these steps:

- 1) Disconnect connector D40574P from the Right Load Control Center Panel, P6.
2) Do a wiring check between these pins of connector D40574P and connector D40602P at junction box J4 STA 262 (WDM 27-41-12):

EFFECTIVITY
SIA ALL

27-41 TASK 804

D633A103-SIA

Page 220
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

D40574P

pin 5
pin 6
pin 4

D40602P

pin 5
pin 6
pin 4

- 3) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect connectors D40574P and D40602P.
 - c) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do this check of the Stabilizer Electrical Trim System:
 - (a) Make sure that the Main Cutout Switch, S272, on the P8 Panel, is in the NORMAL position.
 - (b) Make sure that the STAB TRIM Switch, S1, on the Stab Trim and Cabin Door Panel, P8-47, is in the NORMAL position.
 - (c) Make sure that the flaps are in the RETRACT position.
 - (d) Push and hold the STAB TRIM Switches on the Captain's or First Officer's Control Wheel to the NOSE DOWN position.
 - 1) Make sure the Stabilizer Leading Edge moves up.
 - (e) Push and hold the STAB TRIM Switches on the Captain's or First Officer's Control Wheel to the NOSE UP position.
 - 1) Make sure that the Stabilizer Leading Edge moves down.
 - 2) If the Stabilizer Leading Edge moves down, then you corrected the problem.
- (2) If the Stabilizer Leading Edge moves up and down, then you corrected the problem.
- (3) If the Stabilizer Leading Edge does not move up and down, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

805. Stabilizer Trim Does Not Move Freely - Fault Isolation

A. Description

- (1) The pilots operate the two STAB TRIM switches on the control wheel for electrical trim operation when the stab trim cutout switch is in the NORMAL position. This gives electric input to the stabilizer trim motor (STM). The motor operates and drives the gearbox and stabilizer jackscrew to move the stabilizer to a maximum of 3 degrees up and 14 degrees down.

B. Possible Causes

- (1) The internal logic of the STM needs to be reset.
- (2) Stabilizer trim motor, M1659
- (3) Stabilizer ball nut and jackscrew gearbox

EFFECTIVITY
SIA ALL

27-41 TASKS 804-805

D633A103-SIA

Page 221
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C00849	AFCS STABILIZER TRIM

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

D. Related Data

- (1) (SSM 27-41-11)
(2) (WDM 27-41-11)
(3) (WDM 27-41-12)

E. Initial Evaluation

- (1) Do this check of the stabilizer electrical trim system:
- Make sure that the main cutout switch, S272, on the P8 panel, is in the NORMAL position.
 - Make sure that the STAB TRIM switch, S1, on the stab trim and cabin door panel, P8-47, is in the NORMAL position.
 - Make sure the flaps are in the retract position.
 - Push the STAB TRIM switches on the captain's or first officer's control wheel to the NOSE DOWN position then to the NOSE UP position.
 - If the stabilizer does not move freely, then do the Fault Isolation Procedure below.
 - If the stabilize moves freely, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Reset the following circuit breaker:

NOTE: Resetting this circuit breaker will reset the internal STM logic.

- (a) Open this circuit breaker for at least 10 seconds.

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C00849	AFCS STABILIZER TRIM

Close this circuit breaker:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C00849	AFCS STABILIZER TRIM

- 1) Do the Repair Confirmation at the end of the task.
- (2) Replace the stabilizer trim motor (STM), M1659. These are the tasks:
- Stabilizer Trim Motor Removal, AMM TASK 27-41-71-000-801
 - Stabilizer Trim Motor Installation, AMM TASK 27-41-71-400-801

EFFECTIVITY
SIA ALL

27-41 TASK 805

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 222
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (a) Do the Repair Confirmation at the end of this task.
- (b) If the Repair Confirmation is OK, then you corrected the fault.
- (c) If the Repair Confirmation is not OK, then continue.
- (3) Replace the stabilizer ball nut and jackscrew gearbox. These are the tasks:
 - Stabilizer Ball Nut and Jackscrew Gearbox Removal, AMM TASK 27-41-81-000-801
 - Stabilizer Ball Nut and Jackscrew Gearbox Installation, AMM TASK 27-41-81-400-801
- (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do this check of the stabilizer electrical trim system:
 - (a) Make sure that the main cutout switch, S272, on the P8 panel, is in the NORMAL position.
 - (b) Make sure that the STAB TRIM switch, S1, on the stab trim and cabin door panel, P8-47, is in the NORMAL position.
 - (c) Make sure the flaps are in the retract position.
 - (d) Push the STAB TRIM switches on the captain's or first officer's control wheel to the NOSE DOWN position then to the NOSE UP position.
 - 1) If the stabilizer moves freely, then you corrected the fault.

END OF TASK

806. Captain's Stabilizer Trim Control Switches Do Not Operate Trim Up or Trim Down - Fault Isolation

A. Description

- (1) During the electrical operation, the pilots manually control the position of the stabilizer with the stabilizer trim control switches on the captain's or first officer's control wheels.

B. Possible Causes

- (1) Wiring problem
- (2) Stabilizer trim control switches, S134

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

D. Related Data

- (1) (SSM 27-41-11)
- (2) (WDM 27-41-11)
- (3) (WDM 27-41-12)

E. Initial Evaluation

- (1) Do this check of the stabilizer electrical trim system:
 - (a) Make sure that the main cutout switch, S272, on the P8 panel, is in the NORMAL position.

EFFECTIVITY
SIA ALL

27-41 TASKS 805-806

D633A103-SIA

Page 223
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (b) Make sure that the STAB TRIM switch, S1, on the stab trim and cabin door panel, P8-47, is in the NORMAL position.
- (c) Make sure the flaps are in the retract position.
- (d) Push and hold the STAB TRIM switches on the captain's control wheel to the NOSE DOWN position.
- (e) Make sure the stabilizer edge moves up.
- (f) Push and hold the captain's STAB TRIM switches to the NOSE UP position.
- (g) Make sure the stabilizer edge moves down.
- (h) If the stabilizer leading edge does not move up or down, then do the Fault Isolation Procedure below.
- (i) If the stabilize leading edge moves up and down, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Do this wiring check:
 - (a) Remove the medallion from the captain's control wheel.
 - (b) Remove the cover from the terminal block, T335 on the captain's control wheel.
 - (c) Do a wiring check between these pins of the terminal block T335 at the control wheel and of the terminal block TB806 at STA 227 (WDM 27-41-11):

T335	TB806
pin 4	term ZB17
pin 1	term ZB21
 - (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the cover on the terminal block T335.
 - 3) Re-install the medallion on the captain's control wheel.
 - 4) Do the Repair Confirmation at the end of this task.
 - (e) If you do not find a problem with the wiring, then continue.
- (2) Replace the captain's stabilizer trim control switches, S134. These are the tasks:
 - Stabilizer Trim Control Switch Removal, AMM TASK 27-41-97-000-801
 - Stabilizer Trim Control Switch Installation, AMM TASK 27-41-97-400-801
- (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do this check of the stabilizer electrical trim system:
 - (a) Make sure that the main cutout switch, S272, on the P8 panel, is in the NORMAL position.
 - (b) Make sure that the STAB TRIM switch, S1, on the stab trim and cabin door panel, P8-47, is in the NORMAL position.
 - (c) Make sure the flaps are in the retract position.
 - (d) Push and hold the STAB TRIM switches on the captain's control wheel to the NOSE DOWN position.
 - (e) Make sure the stabilizer leading edge moves up.

EFFECTIVITY
SIA ALL

27-41 TASK 806

D633A103-SIA

Page 224
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (f) Push and hold the captain's STAB TRIM switches to the NOSE UP position.
 - 1) If the stabilizer leading edge moves down, then you corrected the fault.

————— END OF TASK —————

807. Captain's Stabilizer Trim Control Switches Problems - Fault Isolation

A. Description

- (1) During the electrical operation, the pilots manually control the position of the stabilizer with the stabilizer trim control switches on the captain's or first officer's control wheels.

B. Possible Causes

- (1) Wiring problem
- (2) Stabilizer trim control switches, S134

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

D. Related Data

- (1) (SSM 27-41-11)
- (2) (WDM 27-41-11)
- (3) (WDM 27-41-12)

E. Initial Evaluation

- (1) Do this check of the stabilizer electrical trim system:
 - (a) Make sure that the main cutout switch, S272, on the P8 panel, is in the NORMAL position.
 - (b) Make sure that the STAB TRIM switch, S1, on the stab trim and cabin door panel, P8-47, is in the NORMAL position.
 - (c) Make sure the flaps are in the retract position.
 - (d) Push and hold the STAB TRIM switches on the captain's control wheel to the NOSE DOWN position.
 - (e) Make sure the stabilizer edge moves up.
 - (f) Push and hold the captain's STAB TRIM switches to the NOSE UP position.
 - (g) Make sure the stabilizer edge moves down.
 - (h) If the stabilizer leading edge does not move up and down, then do the Fault Isolation Procedure below.
 - (i) If the stabilize leading edge moves up and down, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Do this check for power of the stabilizer trim control switches, S134:
 - (a) Remove the medallion from the captain's control wheel.
 - (b) Remove the cover from the terminal block, T335 on the captain's control wheel.

EFFECTIVITY
SIA ALL

27-41 TASKS 806-807

D633A103-SIA

Page 225
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (c) Do a wiring check between these pins of the terminal block T335 at control wheel and of the terminal block TB806 at STA 226 (WDM 27-41-11):

T335	TB806
pin 3	term YA9

- (d) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Re-install the cover on the terminal block T335.
 - 3) Re-install the medallion on the captain's control wheel.
 - 4) Do the Repair Confirmation at the end of this task.
- (e) If you do not find a problem with the wiring, then continue.
- (2) Replace the captain's stabilizer trim control switches, S134. These are the tasks:
- Stabilizer Trim Control Switch Removal, AMM TASK 27-41-97-000-801
 - Stabilizer Trim Control Switch Installation, AMM TASK 27-41-97-400-801
- (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do this check of the stabilizer electrical trim system:
- (a) Make sure that the main cutout switch, S272, on the P8 panel, is in the NORMAL position.
 - (b) Make sure that the STAB TRIM switch, S1, on the stab trim and cabin door panel, P8-47, is in the NORMAL position.
 - (c) Make sure the flaps are in the retract position.
 - (d) Push and hold the STAB TRIM switches on the captain's control wheel to the NOSE DOWN position.
 - (e) Make sure the stabilizer leading edge moves up.
 - (f) Push and hold the captain's STAB TRIM switches to the NOSE UP position.
 - 1) If the stabilizer leading edge moves down, then you corrected the fault.

————— **END OF TASK** —————

808. First Officer's Stabilizer Trim Control Switches Do Not Operate Trim Up or Trim Down - Fault Isolation

A. Description

- (1) During the electrical operation, the pilots manually control the position of the stabilizer with the stabilizer trim control switches on the captain's or first officer's control wheels.

B. Possible Causes

- (1) Wiring problem
- (2) Stabilizer trim control switches, S135

EFFECTIVITY
SIA ALL

27-41 TASKS 807-808

D633A103-SIA

Page 226
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

D. Related Data

- (1) (SSM 27-41-11)
- (2) (WDM 27-41-11)
- (3) (WDM 27-41-12)

E. Initial Evaluation

- (1) Do this check of the stabilizer electrical trim system:
 - (a) Make sure that the main cutout switch, S272, on the P8 panel, is in the NORMAL position.
 - (b) Make sure that the STAB TRIM switch, S1, on the stab trim and cabin door panel, P8-47, is in the NORMAL position.
 - (c) Make sure the flaps are in the retract position.
 - (d) Push and hold the STAB TRIM switches on the first officer's control wheel to the NOSE DOWN position.
 - (e) Make sure the stabilizer edge moves up.
 - (f) Push and hold the first officer's STAB TRIM switches to the NOSE UP position.
 - (g) Make sure the stabilizer edge moves down.
 - (h) If the stabilizer trim control switches does not move up or down, the do the Fault Isolation Procedure below.
 - (i) If the stabilize leading edge moves up and down, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Do this wiring check:
 - (a) Remove the medallion from the first officer's control wheel.
 - (b) Remove the cover from the terminal block, T336 on the first officer's control wheel.
 - (c) Do a wiring check between these pins of the terminal block T365 at the control wheel and of the terminal block TB806 at STA 227 (WDM 27-41-11):

T336	TB806
pin 4	term ZB17
pin 1	term ZB21

- (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the cover on the terminal block T336.
 - 3) Re-install the medallion on the first officer's control wheel.
 - 4) Do the Repair Confirmation at the end of this task.
- (e) If you do not find a problem with the wiring, then continue.

EFFECTIVITY
SIA ALL

27-41 TASK 808

D633A103-SIA

Page 227
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (2) Replace the first officer's stabilizer trim control switches, S135. These are the tasks:
 - Stabilizer Trim Control Switch Removal, AMM TASK 27-41-97-000-801
 - Stabilizer Trim Control Switch Installation, AMM TASK 27-41-97-400-801
- (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do this check of the stabilizer electrical trim system:
 - (a) Make sure that the main cutout switch, S272, on the P8 panel, is in the NORMAL position.
 - (b) Make sure that the STAB TRIM switch, S1, on the stab trim and cabin door panel, P8-47, is in the NORMAL position.
 - (c) Make sure the flaps are in the retract position.
 - (d) Push and hold the STAB TRIM switches on the first officer's control wheel to the NOSE DOWN position.
 - (e) Make sure the stabilizer leading edge moves up.
 - (f) Push and hold the first officer's STAB TRIM switches to the NOSE UP position.
 - 1) If the stabilizer leading edge moves down, then you corrected the fault.

———— **END OF TASK** ————

809. First Officer's Stabilizer Trim Control Switches Problems - Fault Isolation

A. Description

- (1) During the electrical operation, the pilots manually control the position of the stabilizer with the stabilizer trim control switches on the captain's or first officer's control wheels.

B. Possible Causes

- (1) Wiring problem
- (2) Stabilizer trim control switches, S135

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

D. Related Data

- (1) (SSM 27-41-11)
- (2) (WDM 27-41-11)
- (3) (WDM 27-41-12)

E. Initial Evaluation

- (1) Do this check of the stabilizer electrical trim system:
 - (a) Make sure that the main cutout switch, S272, on the P8 panel, is in the NORMAL position.
 - (b) Make sure that the STAB TRIM switch, S1, on the stab trim and cabin door panel, P8-47, is in the NORMAL position.

EFFECTIVITY
SIA ALL

27-41 TASKS 808-809

D633A103-SIA

Page 228
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (c) Make sure the flaps are in the retract position.
- (d) Push and hold the STAB TRIM switches on the first officer's control wheel to the NOSE DOWN position.
- (e) Make sure the stabilizer edge moves up.
- (f) Push and hold the first officer's STAB TRIM switches to the NOSE UP position.
- (g) Make sure the stabilizer edge moves down.
- (h) If the stabilizer leading edge does not move up and down, then do the Fault Isolation Procedure below.
- (i) If the stabilize leading edge moves up and down, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Do this check for power of the stabilizer trim control switches, S135:
 - (a) Remove the medallion from the first officer's control wheel.
 - (b) Remove the cover from the terminal block, T336 on the first officer's control wheel.
 - (c) Do a wiring check between these pins of the terminal block T336 at the control wheel and of the terminal block TB806 at STA 226 (WDM 27-41-11):

T336	TB806
pin 3	term YA9

- (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the cover on the terminal block T336.
 - 3) Re-install the medallion on the first officer's control wheel.
 - 4) Do the Repair Confirmation at the end of this task.
- (e) If you do not find a problem with the wiring, then continue.
- (2) Replace the first officer's stabilizer trim control switches, S135. These are the tasks:
 - Stabilizer Trim Control Switch Removal, AMM TASK 27-41-97-000-801
 - Stabilizer Trim Control Switch Installation, AMM TASK 27-41-97-400-801
- (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do this check of the stabilizer electrical trim system:
 - (a) Make sure that the main cutout switch, S272, on the P8 panel, is in the NORMAL position.
 - (b) Make sure that the STAB TRIM switch, S1, on the stab trim and cabin door panel, P8-47, is in the NORMAL position.
 - (c) Make sure the flaps are in the retract position.
 - (d) Push and hold the STAB TRIM switches on the first officer's control wheel to the NOSE DOWN position.
 - (e) Make sure the stabilizer leading edge moves up.
 - (f) Push and hold the first officer's STAB TRIM switches to the NOSE UP position.
 - 1) If the stabilizer leading edge moves down, then you corrected the fault.

———— **END OF TASK** ————

EFFECTIVITY
SIA ALL

27-41 TASK 809

D633A103-SIA

Page 229
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

810. Stabilizer Trim Speed Problem - Fault Isolation

A. Description

- (1) The pilots operate the two STAB TRIM switches on the control wheel for electrical trim operation when the stab trim cutout switch is in the NORMAL position. This gives electric input to the stabilizer trim motor (STM). The motor operates and drives the gearbox and stabilizer jackscrew to move the stabilizer.
- (2) Trailing edge (TE) flap position determines motor speed. It operates at low speed when the flaps are retracted. When the flaps are not up the speed change relay is energized to switch the STM to high speed.

B. Possible Causes

- (1) TE Flap Switch Connector, D14362 (applicable only for TE flap switch, S245)
- (2) The internal logic of the STM needs to be reset
- (3) Wiring problem
- (4) TE flap switch, S245
- (5) Stabilizer trim motor, M1659

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C00849	AFCS STABILIZER TRIM

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	10	C00207	FLIGHT CONTROL STAB TRIM CONT
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

D. Related Data

- (1) (SSM 27-41-11)
- (2) (WDM 27-41-11)
- (3) (WDM 27-41-12)

E. Initial Evaluation

- (1) Do this check of the stabilizer electrical trim system:



WARNING

MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACE BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Pressurize the hydraulic system B. To pressurize it, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (b) Set the flaps to the 5-degree position.
- (c) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

EFFECTIVITY
SIA ALL

27-41 TASK 810

D633A103-SIA

Page 230
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

- (d) Make sure that the main cutout switch, S272, on the P8 panel, is in the NORMAL position.
- (e) Make sure that the STAB TRIM switch, S1, on the stab trim and cabin door panel, P8-47, is in the NORMAL position.
- (f) Push and hold the STAB TRIM switches on the captain's or first officer's control wheel to the NOSE UP position and then to the NOSE DOWN position.
- (g) Make sure the time for the stabilizer to move from its lower limit of travel to up limit of travel is 31-39 seconds.
- (h) If the travel time is more than 39 seconds, then do the Fault Isolation Procedure below.
- (i) If the travel time is 31-39 seconds, then there was an intermittent fault. Do these steps to complete the task:



MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACE BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- 1) Pressurize the hydraulic system B. To pressurize it, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- 2) Set the flaps to the retract position.
- 3) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

F. Fault Isolation Procedure

- (1) Set the flaps to the 5-degree position.
- (2) Reset the following circuit breaker:
NOTE: Resetting this circuit breaker will reset the internal STM logic.
- (a) Open this circuit breaker for at least 10 seconds.

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C00849	AFCS STABILIZER TRIM

Close this circuit breaker:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C00849	AFCS STABILIZER TRIM

- 1) Do the Repair Confirmation at the end of the task.
- (3) Check the TE flap switch, S245 connector for corrosion.
 - (a) If corrosion is present, clean or replace the connector then do the steps for Repair Confirmation at the end of this task.
 - (b) If corrosion is not present then re-connect the connector and continue.
- (4) Do this wiring check to the stabilizer trim motor (STM), M1659:

EFFECTIVITY
SIA ALL

27-41 TASK 810

D633A103-SIA

Page 231
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (a) Disconnect connector D700 from the STM, M1659.
NOTE: The STM is located in the area aft of the pressure bulkhead.
- (b) Push and hold the captain's or first officer's STAB TRIM switches to the NOSE DOWN position.
- (c) Do a check for 28v DC from pin 8 of connector D700 to structure ground (WDM 27-41-11).
- (d) If there is 28v DC at pin 8 of connector D700, then do these steps:
- 1) Release the captain's or first officer's STAB TRIM switches.
 - 2) Replace the STM, M1659. These are the tasks:
 - Stabilizer Trim Motor Removal, AMM TASK 27-41-71-000-801
 - Stabilizer Trim Motor Installation, AMM TASK 27-41-71-400-801
 - 3) Do the Repair Confirmation at the end of this task.
- (e) If there is not 28v DC at pin 8 of connector D700, then continue.
- 1) Release the captain's or first officer's STAB TRIM switches.
- (5) Do this wiring check between the TE flap switch and STM:
- (a) Disconnect connector D46044J from connector D46044P.
NOTE: You can find the connector D46044 in the main wheel well.
- (b) Push and hold the captain's or first officer's STAB TRIM switches to the NOSE UP or NOSE DOWN position.
- 1) Do a wiring check between these pins of connector D700 at the STM, M1659 and connector D46044J in the main wheel well (WDM 27-41-12):
- | | |
|-------------|----------------|
| D700 | D46044J |
| pin 8 | pin 9 |
| | |
- (c) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Re-connect connector D46044J.
 - 3) Re-connect connector D700.
 - 4) Do the Repair Confirmation at the end of this task.
- (d) If you do not find a problem with the wiring, then continue.
- 1) Re-connect connector D700.
- (6) Do this wiring check to the TE flap switch, S245:
- (a) Push and hold the captain's or first officer's STAB TRIM switches to the NOSE DOWN position.
- (b) Do a check for 28v DC from pin 10 of connector D46044P to structure ground (WDM 27-41-11).
- (c) If there is not 28v DC at pin 10 of connector D46044P, then do these steps:
- 1) Repair the wiring.
 - 2) Re-connect connector D46044J.
 - 3) Do the Repair Confirmation at the end of this task.
- (d) If there is 28v DC at pin 10 of connector D46044P, then continue.

EFFECTIVITY
SIA ALL

27-41 TASK 810

D633A103-SIA

Page 232
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 1) Re-connect connector D46044J.
- (7) Replace the TE flap switch, S245. These are the tasks:
 - Flap Limit Switch Removal, AMM TASK 27-51-63-000-801
 - Flap Limit Switch Installation, AMM TASK 27-51-63-400-801
- (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do this check of the stabilizer electrical trim system:
 - (a) Make sure the flaps is at the 5-degree position.
 - (b) If it is necessary, do these steps to set the flaps to the 5-degree position:



MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACE BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- 1) Pressurize the hydraulic system B. To pressurize it, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- 2) Set the flaps to the 5-unit position.
- 3) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
- (c) Make sure that the main cutout switch, S272, on the P8 panel, is in the NORMAL position.
- (d) Make sure that the STAB TRIM switch, S1, on the stab trim and cabin door panel, P8-47, is in the NORMAL position.
- (e) Push and hold the STAB TRIM switches on the captain's or first officer's control wheel to the NOSE UP position and then to the NOSE DOWN position.
- (f) Make sure the time for the stabilizer to move from its lower limit of travel to up limit of travel is 31-39 seconds.
- (g) If the travel time is 31-39 seconds, then you corrected the fault. Do these steps to complete the task:



MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACE BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SPOILERS, SLATS, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- 1) Pressurize the hydraulic system B. To pressurize it, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- 2) Set the flaps to the retract position.
- 3) Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

————— **END OF TASK** —————

EFFECTIVITY
SIA ALL

27-41 TASK 810

D633A103-SIA

Page 233
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

811. Stabilizer Trim Wheel Coast Problems - Fault Isolation

A. Description

- (1) During the electrical operation of the stabilizer, the jackscrew and gearbox assembly drives the forward control mechanism, through the cables, to provide stabilizer position indication and rotate the stabilizer trim wheels.
 - (a) When the STAB TRIM switches are released, the stabilizer trim wheels will stop or rotate not more than 2.5 turns with the flaps down.

B. Possible Causes

- (1) Internal logic of the STM needs to be reset.
- (2) Stabilizer trim motor, M1659

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C00849	AFCS STABILIZER TRIM

D. Fault Isolation Procedure

- (1) Reset the following circuit breaker:

NOTE: Resetting this circuit breaker will reset the internal STM logic.

- (a) Open this circuit breaker for at least 10 seconds.

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C00849	AFCS STABILIZER TRIM

Close this circuit breaker:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C00849	AFCS STABILIZER TRIM

- 1) Check to see if the stabilizer trim wheels will rotate more than 2.5 turns with the flaps down, when the STAB TRIM switches are pushed and then released.
 - a) If the stabilizer wheels do not rotate more than 2.5 turns with the flaps down, then the problem was fixed by resetting the internal logic of the STM.
 - b) If the stabilizer wheels rotate more than 2.5 turns with the flaps down, then continue with this fault isolation.
 - 2) Replace the stabilizer trim motor, M1659. These are the tasks:
 - Stabilizer Trim Motor Removal, AMM TASK 27-41-71-000-801
 - Stabilizer Trim Motor Installation, AMM TASK 27-41-71-400-801
 - (a) If the tests in the installation task for the stabilizer trim motor are OK, then you corrected the fault.

———— **END OF TASK** ————

EFFECTIVITY
SIA ALL

27-41 TASK 811

D633A103-SIA

Page 234
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

812. Stabilizer Trim Does Not Hold Position In Flight - Fault Isolation

A. Description

- (1) The pilots operate the two STAB TRIM switches on the control wheel for electrical trim operation when the stab trim cutout switch is in the NORMAL position. This gives electric input to the stabilizer trim motor (STM). The motor operates and drives the gearbox and stabilizer jackscrew to move the stabilizer.

B. Possible Causes

- (1) Stabilizer ball nut and jackscrew gearbox

C. Fault Isolation Procedure

- (1) Replace the stabilizer ball nut and jackscrew gearbox. These are the tasks:
 - Stabilizer Ball Nut and Jackscrew Gearbox Removal, AMM TASK 27-41-81-000-801
 - Stabilizer Ball Nut and Jackscrew Gearbox Installation, AMM TASK 27-41-81-400-801
- (a) If the tests in the installation task for the stabilizer ball nut and jackscrew gearbox are OK, then you corrected the fault.

————— **END OF TASK** —————

813. Stabilizer Surface Has Excessive Play - Fault Isolation

A. Description

- (1) The stabilizer controls the pitch trim of the airplane about the lateral axis. The stabilizer is on the aft section of the fuselage.

B. Possible Causes

- (1) Horizontal stabilizer center section hinge bearings
- (2) Horizontal stabilizer jackscrew
- (3) Horizontal stabilizer hinge bearings

C. Fault Isolation Procedure

- (1) Do an inspection check of the horizontal stabilizer. Do this task: AMM TASK 27-09-91-200-804.
 - (a) If there is a problem, then replace the applicable components that have excessive freeplay (AMM 27-09-91/601).

————— **END OF TASK** —————

EFFECTIVITY
SIA ALL

27-41 TASKS 812-813

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 235
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

801. Flap/Slat Electronics Unit (FSEU) BITE Procedure

A. General

- (1) You do the Flap/Slat Electronics Unit (FSEU) BITE test at the front of panel of the FSEU. The FSEU is on the E1-1 shelf in the electronic equipment bay. These are the menu items in the FSEU BITE that you will use in this task:
 - (a) EXISTING FAULTS
 - (b) FAULT HISTORY
- (2) For EXISTING FAULTS, the FSEU does internal tests, discrete output checks, sensor interface checks, and does a check of the flight compartment indication lights. The faults that are found during the EXISTING FAULTS test are active. A maintenance message identifies a specific fault which is found by the FSEU. The maintenance messages have English text and a seven digit number.
- (3) The FSEU will keep a record of faults in FAULT HISTORY. The faults are grouped by flight leg. Flight leg 0 (LEG 0) is the most recent flight and includes faults that occurred on the ground after the most recent flight.

B. Procedure



MAKE SURE THAT PERSONNEL AND EQUIPMENT STAY AWAY FROM THE LEADING EDGE SLATS, TRAILING EDGE FLAPS, AND DRIVE MECHANISMS. THE FLAPS, SLATS, AND DRIVE MECHANISMS MOVE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (1) Do the BITE procedure for the FSEU (Figure 201):
 - (a) Push the ON/OFF button.
NOTE: The display will show EXISTING FAULTS?
 - (b) Push the YES button to select the EXISTING FAULTS? test.
NOTE: The display will show TEST IN PROGRESS.
 - (c) Make sure these lights come on for 5 seconds while the display shows TEST IN PROGRESS:
 - 1) P2 Center Instrument Panel
 - a) LE FLAPS TRANSIT
 - b) LE FLAPS EXT
 - 2) P5 Aft Overhead Panel
 - a) Leading Edge Devices TRANSIT
 - b) Leading Edge Devices EXT
 - c) Leading Edge Devices FULL EXT
 - (d) If there are existing faults, then the display will show the first fault in the list. Do these steps:
 - 1) Write the maintenance message.
 - 2) Push the down arrow button.
NOTE: The display will show FAULT DETAILS?
 - 3) Push the YES button.
 - 4) Write the maintenance message number.

EFFECTIVITY
SIA ALL

D633A103-SIA

27-51 TASK 801

Page 201
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 5) Push the down arrow button.
- 6) Write the fault type data. These are the possible fault types:
 - a) LATCHED
 - b) HARD
 - c) INTERMTNT ACTIVE
 - d) INTERMTNT INACTIVE
 - e) LATCHED: GND TEST
- 7) Push the MENU button.

NOTE: This will return you to the first fault in the list of existing faults.
- 8) Push the down arrow button to look for more faults.
- 9) Refer to the table at the end of this task to find the fault isolation task for applicable maintenance message.
- (e) If the test show NO FAULTS, then do these steps to look for faults in fault history:

NOTE: This will not show current faults. This will show faults that have been stored in the memory of the FSEU.

 - 1) Push the MENU button.

NOTE: The display will show EXISTING FAULTS?
 - 2) Push the down arrow button until the display shows FAULT HISTORY?.
 - 3) Push the YES button.

NOTE: The display will show FLIGHT LEG 0?
 - 4) Push the YES button.
 - 5) Write the maintenance message.
 - 6) Push the down arrow button.

NOTE: The display will show FAULT DETAILS?
 - 7) Push the NO button.
 - 8) Write the maintenance message.
 - 9) Repeat these steps until the display shows END OF LIST.
 - 10) Push the up arrow button until the display shows FAULT DETAILS?.
 - 11) Push the YES button.
 - 12) Write the maintenance message.
 - 13) Push the down arrow button.
 - 14) Write the fault type data. These are the possible fault types:
 - a) LATCHED
 - b) HARD
 - c) INTERMTNT ACTIVE
 - d) INTERMTNT INACTIVE
 - e) LATCHED: GND TEST
 - 15) Push the MENU button.

NOTE: This will return you to the FLIGHT LEG 0? display.
 - 16) Push the down arrow button to look for faults in other flight legs.



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 17) Refer to the table at the end of this task to find the fault isolation task for the applicable maintenance message.

LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
FSEU	27-51101 FSEU FAILED	27-51 TASK 805
FSEU	27-51102 FSEU FAILED	27-51 TASK 806
FSEU	27-51103 FSEU FAILED	27-51 TASK 807
FSEU	27-51105 FSEU FAILED	27-88 TASK 801
FSEU	27-51106 FSEU FAILED	27-51 TASK 815
FSEU	27-51107 FSEU FAILED	27-51 TASK 816
FSEU	27-51108 FSEU FAILED	27-51 TASK 817
FSEU	27-51109 FSEU FAILED	27-51 TASK 818
FSEU	27-51110 FSEU FAILED	27-88 TASK 802
FSEU	27-51351 TE FLAP UCM	27-51 TASK 830
FSEU	27-51401 IN BYP REA UNKN	27-51 TASK 808
FSEU	27-51402 ALT MODE IS ARMED	27-51 TASK 847
FSEU	27-51403 ALT ARM SW DISAG	27-51 TASK 847
FSEU	27-51404 FLP LOAD RLF 40	27-51 TASK 809
FSEU	27-51405 FLP LOAD RLF 30	27-51 TASK 810
FSEU	27-51406 FLP LOAD RELIEF	27-51 TASK 831
FSEU	27-51407 TE FAIL TO DRIVE	27-51 TASK 848
FSEU	27-51417 FLAP LVR SENSOR	27-51 TASK 811
FSEU	27-51427 FLAP LEVER	27-51 TASK 819
FSEU	27-51429 BYP VLV SW DISAG	27-51 TASK 812
FSEU	27-51430 FLP LOAD RLF 10	27-51 TASK 850
FSEU	27-52259 TE FLAP SNSR L	27-51 TASK 813
FSEU	27-52260 TE FLAP SNSR R	27-51 TASK 820
FSEU	27-52261 TE FLAPS SNSR DIS	27-51 TASK 832
FSEU	27-52407 TE FLAP SNSR L C	27-51 TASK 814
FSEU	27-52408 TE FLAP SNSR R C	27-51 TASK 821
FSEU	27-52418 ECS	27-51 TASK 827
FSEU	27-53250 FLAP 1 SKEW	27-59 TASK 801
FSEU	27-53251 FLAP 2 SKEW	27-59 TASK 802
FSEU	27-53252 FLAP 3 SKEW	27-59 TASK 803
FSEU	27-53253 FLAP 4 SKEW	27-59 TASK 804
FSEU	27-53254 FLAP 5 SKEW	27-59 TASK 805
FSEU	27-53255 FLAP 6 SKEW	27-59 TASK 806
FSEU	27-53256 FLAP 7 SKEW	27-59 TASK 807

EFFECTIVITY
SIA ALL

27-51 TASK 801

D633A103-SIA

Page 203
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
FSEU	27-53257 FLAP 8 SKEW	27-59 TASK 808
FSEU	27-53258 FLAP SKEW	27-59 TASK 809
FSEU	27-53279 L 28VAC EXC INV	27-51 TASK 822
FSEU	27-53280 R 28VAC EXC INV	27-51 TASK 823
FSEU	27-53409 FLAP 1 SKEW CON	27-59 TASK 810
FSEU	27-53410 FLAP 2 SKEW CON	27-59 TASK 811
FSEU	27-53411 FLAP 3 SKEW CON	27-59 TASK 812
FSEU	27-53412 FLAP 4 SKEW CON	27-59 TASK 813
FSEU	27-53413 FLAP 5 SKEW CON	27-59 TASK 814
FSEU	27-53414 FLAP 6 SKEW CON	27-59 TASK 815
FSEU	27-53415 FLAP 7 SKEW CON	27-59 TASK 816
FSEU	27-53416 FLAP 8 SKEW CON	27-59 TASK 817
FSEU	27-53428 TE BYP VALVE	27-51 TASK 824
FSEU	27-54402 NO A/S DATA	27-51 TASK 825
FSEU	27-54403 A/S DATA INVALID	27-51 TASK 846
FSEU	27-54419 RUDDER LIMITER	27-51 TASK 828
FSEU	27-54423 FLR OUTPUT	27-51 TASK 829
FSEU	27-58335 FLAP LD RLF LT	27-51 TASK 833
FSEU	27-58400 TE FLAP INDICATN	27-51 TASK 826
FSEU	27-81200 SL1 PROX OUTBOARD	27-88 TASK 803
FSEU	27-81201 SL1 PROX INBOARD	27-88 TASK 804
FSEU	27-81202 SL2 PROX OUTBOARD	27-88 TASK 803
FSEU	27-81203 SL2 PROX INBOARD	27-88 TASK 804
FSEU	27-81204 SL3 PROX OUTBOARD	27-88 TASK 803
FSEU	27-81205 SL3 PROX INBOARD	27-88 TASK 804
FSEU	27-81206 SL4 PROX OUTBOARD	27-88 TASK 803
FSEU	27-81207 SL4 PROX INBOARD	27-88 TASK 804
FSEU	27-81208 SL5 PROX OUTBOARD	27-88 TASK 803
FSEU	27-81209 SL5 PROX INBOARD	27-88 TASK 804
FSEU	27-81210 SL6 PROX OUTBOARD	27-88 TASK 803
FSEU	27-81211 SL6 PROX INBOARD	27-88 TASK 804
FSEU	27-81212 SL7 PROX OUTBOARD	27-88 TASK 803
FSEU	27-81213 SL7 PROX INBOARD	27-88 TASK 804
FSEU	27-81214 SL8 PROX OUTBOARD	27-88 TASK 803
FSEU	27-81215 SL8 PROX INBOARD	27-88 TASK 804

EFFECTIVITY
SIA ALL

27-51 TASK 801

D633A103-SIA

Page 204
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
FSEU	27-81216 F1 PROX RETRACT	27-88 TASK 805
FSEU	27-81217 F1 PROX EXTEND	27-88 TASK 806
FSEU	27-81218 F2 PROX RETRACT	27-88 TASK 805
FSEU	27-81219 F2 PROX EXTEND	27-88 TASK 806
FSEU	27-81220 F3 PROX RETRACT	27-88 TASK 805
FSEU	27-81221 F3 PROX EXTEND	27-88 TASK 806
FSEU	27-81222 F4 PROX RETRACT	27-88 TASK 805
FSEU	27-81223 F4 PROX EXTEND	27-88 TASK 806
FSEU	27-81224 MULTIPLE PROX	27-88 TASK 807
FSEU	27-81225 SL2 PROX RETRACT	27-88 TASK 808
FSEU	27-81226 SL3 PROX RETRACT	27-88 TASK 808
FSEU	27-81227 SL4 PROX RETRACT	27-88 TASK 808
FSEU	27-81228 SL5 PROX RETRACT	27-88 TASK 808
FSEU	27-81229 SL6 PROX RETRACT	27-88 TASK 808
FSEU	27-81230 SL7 PROX RETRACT	27-88 TASK 808
FSEU	27-81231 SL2 PROX RET FAIL	27-88 TASK 809
FSEU	27-81232 SL3 PROX RET FAIL	27-88 TASK 809
FSEU	27-81233 SL4 PROX RET FAIL	27-88 TASK 809
FSEU	27-81234 SL5 PROX RET FAIL	27-88 TASK 809
FSEU	27-81235 SL6 PROX RET FAIL	27-88 TASK 809
FSEU	27-81236 SL7 PROX RET FAIL	27-88 TASK 809
FSEU	27-81237 LE RETR SENSORS	27-88 TASK 815
FSEU	27-81238 L RETR SENSORS	27-88 TASK 815
FSEU	27-81239 R RETR SENSORS	27-88 TASK 815
FSEU	27-81277 PROGRAM PINS	27-51 TASK 834
FSEU	27-81278 INV APL TYPE	27-51 TASK 834
FSEU	27-81281 AUTOSLAT INPUT 1	27-83 TASK 806
FSEU	27-81282 AUTOSLAT INPUT 2	27-83 TASK 806
FSEU	27-81283 ASYM ENABLED	27-88 TASK 819
FSEU	27-81301 SLAT 1 EXTEND	27-88 TASK 810
FSEU	27-81302 SLAT 1 FULL EXT	27-88 TASK 811
FSEU	27-81303 SLAT 1 IN TRANS	27-88 TASK 812
FSEU	27-81304 SLAT 2 EXTEND	27-88 TASK 810
FSEU	27-81305 SLAT 2 FULL EXT	27-88 TASK 811
FSEU	27-81306 SLAT 2 IN TRANS	27-88 TASK 812

EFFECTIVITY
SIA ALL

27-51 TASK 801

D633A103-SIA

Page 205
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
FSEU	27-81307 SLAT 3 EXTEND	27-88 TASK 810
FSEU	27-81308 SLAT 3 FULL EXT	27-88 TASK 811
FSEU	27-81309 SLAT 3 IN TRANS	27-88 TASK 812
FSEU	27-81310 SLAT 4 EXTEND	27-88 TASK 810
FSEU	27-81311 SLAT 4 FULL EXT	27-88 TASK 811
FSEU	27-81312 SLAT 4 IN TRANS	27-88 TASK 812
FSEU	27-81313 SLAT 5 EXTEND	27-88 TASK 810
FSEU	27-81314 SLAT 5 FULL EXT	27-88 TASK 811
FSEU	27-81315 SLAT 5 IN TRANS	27-88 TASK 812
FSEU	27-81316 SLAT 6 EXTEND	27-88 TASK 810
FSEU	27-81317 SLAT 6 FULL EXT	27-88 TASK 811
FSEU	27-81318 SLAT 6 IN TRANS	27-88 TASK 812
FSEU	27-81319 SLAT 7 EXTEND	27-88 TASK 810
FSEU	27-81320 SLAT 7 FULL EXT	27-88 TASK 811
FSEU	27-81321 SLAT 7 IN TRANS	27-88 TASK 812
FSEU	27-81322 SLAT 8 EXTEND	27-88 TASK 810
FSEU	27-81323 SLAT 8 FULL EXT	27-88 TASK 811
FSEU	27-81324 SLAT 8 IN TRANS	27-88 TASK 812
FSEU	27-81325 FLAP 1 EXTEND	27-88 TASK 813
FSEU	27-81326 FLAP 1 IN TRANS	27-88 TASK 814
FSEU	27-81327 FLAP 2 EXTEND	27-88 TASK 813
FSEU	27-81328 FLAP 2 IN TRANS	27-88 TASK 814
FSEU	27-81329 FLAP 3 EXTEND	27-88 TASK 813
FSEU	27-81330 FLAP 3 IN TRANS	27-88 TASK 814
FSEU	27-81331 FLAP 4 EXTEND	27-88 TASK 813
FSEU	27-81332 FLAP 4 IN TRANS	27-88 TASK 814
FSEU	27-81333 MASTER EXTEND	27-88 TASK 817
FSEU	27-81334 MASTER IN TRANS	27-88 TASK 818
FSEU	27-81352 L LE SL EXT UCM	27-81 TASK 806
FSEU	27-81353 R LE SL EXT UCM	27-81 TASK 806
FSEU	27-81354 LE SLAT EXT UCM	27-81 TASK 806
FSEU	27-81355 L LE SL FE UCM	27-81 TASK 806
FSEU	27-81356 R LE SL FE UCM	27-81 TASK 806
FSEU	27-81357 LE SLAT FE UCM	27-81 TASK 806
FSEU	27-81358 L LE FL EXT UCM	27-81 TASK 806

EFFECTIVITY
SIA ALL

27-51 TASK 801

D633A103-SIA

Page 206
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

LRU/SYSTEM	MAINTENANCE MESSAGE	GO TO FIM TASK
FSEU	27-81359 R LE FL EXT UCM	27-81 TASK 806
FSEU	27-81360 LE FLAP EXT UCM	27-81 TASK 806
FSEU	27-81420 LE INTRANS	27-81 TASK 809
FSEU	27-81421 TAKEOFF WARNING	27-81 TASK 811
FSEU	27-81424 LE UCM SOV	27-81 TASK 807
FSEU	27-81425 LE CRZ DEPRESS	27-81 TASK 808
FSEU	27-81426 LE UCM	27-81 TASK 810
FSEU	27-83350 AUTOSLAT	27-83 TASK 806

———— **END OF TASK** ————

EFFECTIVITY
SIA ALL

27-51 TASK 801

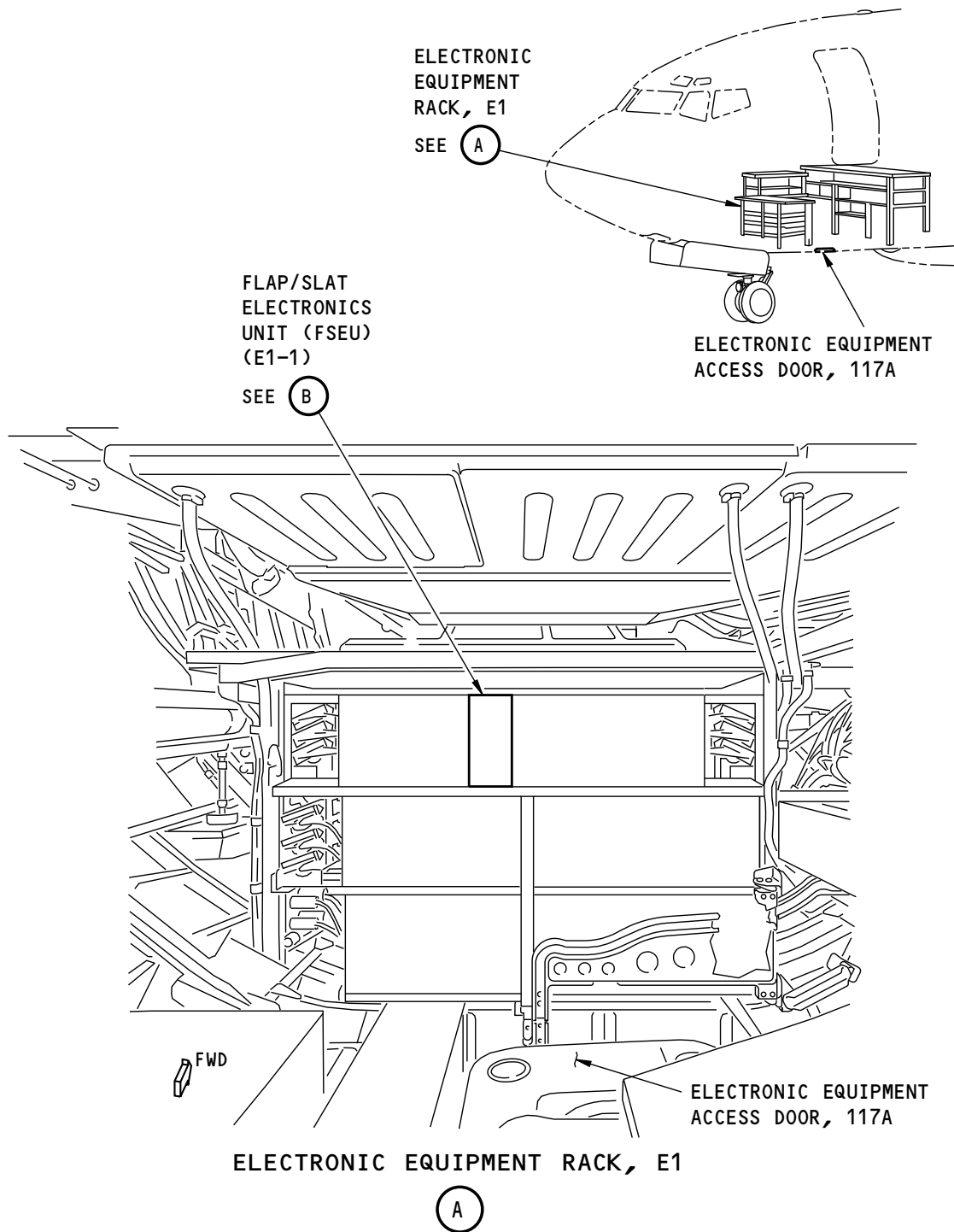
D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 207
Oct 15/2021



737-600/700/800/900
FAULT ISOLATION MANUAL



F89510 S0000146984_V1

Flap/Slat Electronics Unit
Figure 201/27-51-00-990-802 (Sheet 1 of 2)

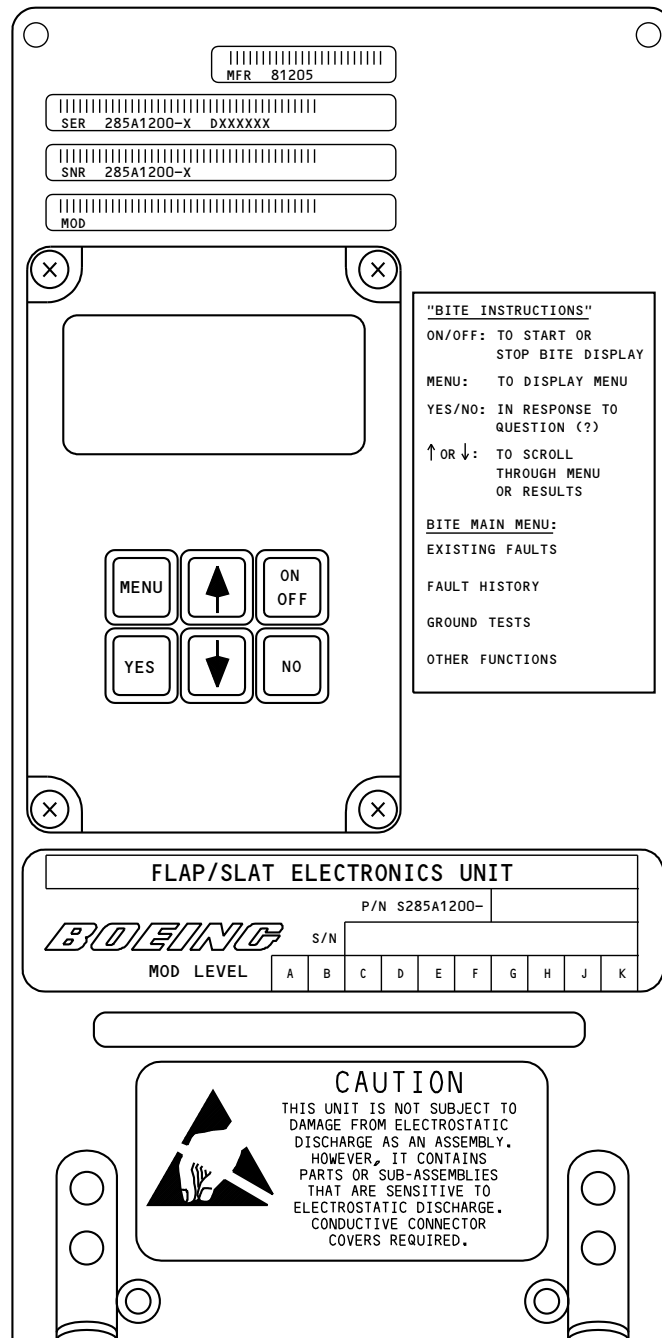
EFFECTIVITY
SIA ALL

27-51 TASK 801

D633A103-SIA

Page 208
Oct 15/2021

737-600/700/800/900
FAULT ISOLATION MANUAL



FLAP/SLAT ELECTRONICS UNIT (FSEU)

(B)

F89509 S0000146985_V1

Flap/Slat Electronics Unit
Figure 201/27-51-00-990-802 (Sheet 2 of 2)

EFFECTIVITY
 SIA ALL

27-51 TASK 801

D633A103-SIA

Page 209
 Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

802. Trailing Edge Asymmetry Skew Indication Ground Test

A. General

- (1) You do the Trailing Edge Asymmetry Skew Indication Ground Test at the front of panel of the FSEU. The FSEU is on the E1-1 shelf in the electronic equipment bay. These are the menu items in the FSEU BITE that you will use in this task:
 - (a) GROUND TESTS
- (2) For the Trailing Edge Asymmetry Skew Indication Ground Test, the FSEU does internal tests, discrete output checks and sensor interface checks. The faults that are found during the Trailing Edge Asymmetry Skew Indication Ground Test are active. A maintenance message identifies a specific fault which is found by the FSEU. The maintenance messages have English text and a seven digit number.

B. Procedure

- (1) Do the Trailing Edge Asymmetry Skew Indication Ground Test for the FSEU (Trailing Edge Asymmetry Skew Indication Ground Test, 27-51 TASK 802):
 - (a) Push the ON/OFF button on the front panel of the FSEU to turn on the display.
NOTE: The display will show EXISTING FAULTS?
 - (b) Push the down arrow until GROUND TESTS? shows on the display.
 - (c) Push the YES button to select GROUND TESTS? on the FSEU.
 - (d) Push the YES button to select TE ASYM-SKEW-IND? from the GROUND TESTS? menu on the FSEU.
 - (e) Follow the instructions on the FSEU display to complete the test.
NOTE: It will be necessary to watch the flap position indicator during this test.
 - (f) If there are faults, then the display will show the first fault detected. Do these steps:
 - 1) Write the maintenance message.
 - 2) Push the down arrow button.
NOTE: The display will show FAULT DETAILS?
 - 3) Push the YES button.
 - 4) Write the maintenance message number.
 - 5) Push the down arrow button.
 - 6) Write the fault type data. These are the possible fault types:
 - a) LATCHED
 - b) HARD
 - c) INTERMTNT ACTIVE
 - d) INTERMTNT INACTIVE
 - 7) Refer to the table at the beginning of this chapter to find the fault isolation task for applicable maintenance message.

————— **END OF TASK** —————

EFFECTIVITY
SIA ALL

27-51 TASK 802

D633A103-SIA

Page 210
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

803. Trailing Edge Flap Load Relief Ground Test

A. General

- (1) You do the Trailing Edge Flap Load Relief Ground Test at the front of panel of the FSEU. It is also necessary to operate the flap control lever and watch the flap position indicator. The FSEU is on the E1-1 shelf in the electronic equipment bay. These are the menu items in the FSEU BITE that you will use in this task:
 - (a) GROUND TESTS
- (2) For Trailing Edge Flap Load Relief Ground Test, the FSEU does internal tests, discrete output checks, sensor interface checks, and simulates a load relief condition. The faults that are found during the Trailing Edge Flap Load Relief Ground Test are active. A maintenance message identifies a specific fault which is found by the FSEU. The maintenance messages have English text and a seven digit number.
- (3) The FSEU will keep a record of faults in FAULT HISTORY. The faults are grouped by flight leg. Flight leg 0 (LEG 0) is the most recent flight and includes faults that occurred on the ground after the most recent flight.

B. Procedure



KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Supply system B hydraulic power, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (2) Do the Trailing Edge Flap Load Relief Ground Test for the FSEU (Trailing Edge Flap Load Relief Ground Test, 27-51 TASK 803):
 - (a) Push the ON/OFF button on the front panel of the FSEU to turn on the display.
NOTE: The display will show EXISTING FAULTS?
 - (b) Push the down arrow until GROUND TESTS? shows on the display.
 - (c) Push the YES button to select GROUND TESTS? on the FSEU.
 - (d) Push the down arrow until TE FLAP LD REL? shows on the display.
 - (e) Push the YES button to select TE FLAP LD REL? from the menu.
 - (f) Follow the instructions on the FSEU display to complete the test.
NOTE: It will be necessary to operate the trailing edge flaps during this test when the FSEU requests that they be in a different position.
 - (g) If faults are detected in the Load Relief Test, then the display will show the first fault detected. Do these steps:
 - 1) Write the maintenance message.
 - 2) Push the down arrow button.
NOTE: The display will show FAULT DETAILS?
 - 3) Push the YES button.
 - 4) Write the maintenance message number.
 - 5) Push the down arrow button.

EFFECTIVITY
SIA ALL

27-51 TASK 803

D633A103-SIA

Page 211
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 6) Write the fault type data. These are the possible fault types:
 - a) LATCHED
 - b) HARD
 - c) INTERMTNT ACTIVE
 - d) INTERMTNT INACTIVE
- 7) Refer to the table at the beginning of this chapter to find the fault isolation task for applicable maintenance message.

———— **END OF TASK** ————

804. FSEU Display Ground Test

A. General

- (1) You do the FSEU Display Ground Test at the front of panel of the FSEU. The FSEU is on the E1-1 shelf in the electronic equipment bay.
- (2) For the FSEU Display Ground Test, the FSEU does a test of the pixels in the FSEU BITE display. This test should be run to check if one or more pixels are not operational. You must visually verify that all of the pixels illuminate.

B. Procedure

- (1) Do the FSEU Display Ground Test for the FSEU (FSEU Display Ground Test, 27-51 TASK 804):
 - (a) Push the ON/OFF button on the front panel of the FSEU to turn on the display.
NOTE: The display will show EXISTING FAULTS?
 - (b) Push the down arrow until GROUND TESTS? shows on the display.
 - (c) Push the YES button to select GROUND TESTS? on the FSEU.
 - (d) Push the down arrow until DISPLAY TEST? shows on the display.
 - (e) Push the YES button to select DISPLAY TEST? on the FSEU.
 - (f) Follow the instructions on the FSEU display to complete the test.
NOTE: It will be necessary to watch the FSEU display during this test.
 - (g) If one or more pixels in the display do not come on during the test, then the FSEU did not operate correctly.
NOTE: The FSEU will turn on all of the pixels on the BITE display in four groups.
 - 1) Replace the FSEU. These are the tasks:
 - Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801
 - Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801

———— **END OF TASK** ————

805. FSEU RAM Fault - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-51101 FSEU FAILED
- (2) The RAM self test failed during an FSEU Power Up test.

EFFECTIVITY
SIA ALL

27-51 TASKS 803-805

D633A103-SIA

Page 212
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

B. Possible Causes

- (1) FSEU, M1746

C. Initial Evaluation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (2) If the maintenance message does not show, then there was an intermittent fault.
- (3) If the maintenance message shows, then do the Fault Isolation Procedure below.

D. Fault Isolation Procedure

- (1) Replace the FSEU, M1746. These are the tasks:
 - Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801
 - Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801
- (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 1) If the maintenance message does not show, then you corrected the fault.

————— **END OF TASK** —————

806. FSEU Watchdog Timer Fault - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-51102 FSEU FAILED
- (2) The Watchdog Timer self test failed during an FSEU Power Up test.

B. Possible Causes

- (1) FSEU, M1746

C. Initial Evaluation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (2) If the maintenance message does not show, then there was an intermittent fault.
- (3) If the maintenance message shows, then do the Fault Isolation Procedure below.

D. Fault Isolation Procedure

- (1) Replace the FSEU, M1746. These are the tasks:
 - Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801
 - Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801
- (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 1) If the maintenance message does not show, then you corrected the fault.

————— **END OF TASK** —————

807. FSEU Background Memory Check Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-51103 FSEU FAILED
- (2) The self test of the FSEU memory failed during a self test or during an existing faults test.

EFFECTIVITY
SIA ALL

27-51 TASKS 805-807

D633A103-SIA

Page 213
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

B. Possible Causes

- (1) FSEU, M1746

C. Initial Evaluation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (2) If the maintenance message does not show, then there was an intermittent fault.
- (3) If the maintenance message shows, then do the Fault Isolation Procedure below.

D. Fault Isolation Procedure

- (1) Replace the FSEU, M1746. These are the tasks:
 - Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801
 - Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801
- (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 1) If the maintenance message does not show, then you corrected the fault.

————— **END OF TASK** —————

808. Flap Bypass Valve In Bypass Position Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-51401 IN BYP REA UNKN
- (2) During a ground test the trailing edge flap bypass valve was in the bypass position with no command from the FSEU.

B. Possible Causes

- (1) Trailing edge flap bypass valve, V52
- (2) Trailing edge flap bypass valve motor
- (3) FSEU, M1746
- (4) Wiring problem

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

D. Related Data

- (1) (SSM 27-53-11)
- (2) (WDM 27-53-11)

E. Initial Evaluation

- (1) Make sure the lock, SPL-1676 is not installed on the trailing edge flap bypass valve.
- (2) Make sure the ALTERNATE FLAPS ARM switch is in OFF position.
- (3) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (4) If the maintenance message does not show, then there was an intermittent fault.
- (5) If the maintenance message shows, then do the Fault Isolation Procedure below.

EFFECTIVITY
SIA ALL

27-51 TASKS 807-808

D633A103-SIA

Page 214
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

F. Fault Isolation Procedure

- (1) Do this check of the trailing edge flap bypass valve, V52:
 - (a) Look at the manual override lever on the trailing edge flap bypass valve.
NOTE: The trailing edge flap bypass valve is in the aft side of the right main wheel well.
 - (b) If the manual override lever is in POSITION 2, then do these steps:
NOTE: POSITION 2 is the bypass position.
 - 1) Replace the trailing edge flap bypass valve, V52. These are the tasks:
 - Trailing Edge Flap Bypass Valve Assembly Removal, AMM TASK 27-51-02-000-801
 - Trailing Edge Flap Bypass Valve Assembly Installation, AMM TASK 27-51-02-400-801
 - 2) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 3) If the maintenance message does not show, then you corrected the fault.
 - (c) If the manual override lever is in POSITION 1, then continue.
- (2) Do this check of the trailing edge flap bypass valve:
 - (a) Disconnect the connector D1014 from the trailing edge flap bypass valve.
NOTE: The trailing edge flap bypass valve is in the aft side of the right main wheel well.
 - (b) Do a continuity check between pin 1 and pin 3 at the connector D1014 on the motor for the trailing edge bypass valve.
 - (c) If there is continuity between pin 1 and pin 3, then do these steps:
 - 1) Replace the trailing edge flap bypass valve motor. These are the tasks:
 - Trailing Edge Flap Bypass Valve Motor Removal, AMM TASK 27-51-02-000-803
 - Trailing Edge Flap Bypass Valve Motor Installation, AMM TASK 27-51-02-400-803
 - 2) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 3) If the maintenance message does not show, then you corrected the fault.
 - (d) If there is no continuity between pin 1 and pin 3, then continue.
- (3) Do this check of the wiring between the FSEU and the trailing edge flap bypass valve:
 - (a) Remove the FSEU, M1746. To remove it, do this task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
 - (b) Do a wiring check between these pins of connector D728B at the E1-1 shelf and connector D1014 at the trailing edge flap bypass valve, V52:

D728B	D1014
pin K1	pin 3
 - (c) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-connect connector D1014 to the trailing edge flap bypass valve, V52.
 - 3) Re-install the FSEU, M1746. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - 4) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 5) If the maintenance message does not show, then you corrected the fault.

EFFECTIVITY
SIA ALL

27-51 TASK 808

D633A103-SIA

Page 215
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (d) If you do not find a problem with the wiring, then continue:
 - 1) Re-connect the connector D1014 to the trailing edge flap bypass valve, V52.
- (4) Install a new FSEU. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (b) If the maintenance message does not show, then you corrected the fault.

END OF TASK

809. Flap Load Relief From 40-Units Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-51404 FLP LOAD RLF 40
- (2) During the load relief ground test the trailing edge flaps did not retract from the 40-unit position.
NOTE: Because of the sequence of the test, the flaps did extend to the 40-unit position during this test.

B. Possible Causes

- (1) Flap Load Limiter Solenoid Valve (FLLSV), V94
- (2) Flap Lever 10 to 40-unit Position Switch, S1039
- (3) Flap/Slat Electronics Unit (FSEU), M1746
- (4) Wiring

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00566	FLIGHT CONTROL FLAP LOAD RELIEF

D. Related Data

- (1) SSM 27-54-11
- (2) WDM 27-54-11

E. Initial Evaluation

- (1) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00566	FLIGHT CONTROL FLAP LOAD RELIEF

- (2) Make sure the Flight Control and Spoiler Switches on the P5 panel are off.
- (3) Do this task: Trailing Edge Flap Load Relief Ground Test, 27-51 TASK 803
NOTE: Use a hydraulic service cart, or use the engine driven pump to supply hydraulic power.
- (4) If the maintenance message does not show, then there was an intermittent fault.
- (5) If the maintenance message shows, then do the Fault Isolation Procedure below.

EFFECTIVITY
SIA ALL

27-51 TASKS 808-809

D633A103-SIA

Page 216
Feb 15/2023



737-600/700/800/900 FAULT ISOLATION MANUAL

F. Fault Isolation Procedure

- (1) Do this check of the electrical power to the Flap Load Limiter Solenoid Valve (FLLSV), V94:

- (a) Open this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00566	FLIGHT CONTROL FLAP LOAD RELIEF

- (b) Disconnect the connector D1582 from the Flap Load Limiter Solenoid Valve (FLLSV), V94.

NOTE: The flap load limiter solenoid valve is in the aft side of the right main wheel well on the flap control valve.

- (c) Close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00566	FLIGHT CONTROL FLAP LOAD RELIEF

- (d) Make sure the flap control lever is in the 40-unit position.

- (e) Do a check for 28 VDC between pin 1 on connector D1582 and structure ground.

- 1) If there is not 28 VDC between pin 1 on connector D1582 and structure ground, then do this check of the wiring:

- a) Disconnect the electrical connector D5150P for the flap lever 10 to 40-unit position switch.

NOTE: Access to this electrical connector is from below the right side of the control stand.

- b) Do a wiring check between these pins of connector D1582 at the Flap Load Limiter Solenoid Valve (FLLSV), V94 and connector D5150P for the Flap Lever 10-unit Position Switch, S1039:

D1582	D5150P
pin 1	pin 11

- c) If you find a problem with the wiring, then do these steps:

- <1> Repair the wiring.
- <2> Re-connect connector D1582 to the Flap Load Limiter Solenoid Valve (FLLSV), V94.
- <3> Re-connect connector D5180P for the Flap Lever 10-unit Position Switch, S1039.
- <4> Do the Repair Confirmation at the end of this task.

- d) If you do not find a problem with the wiring, then do these steps:

- <1> Replace the Flap Lever 10-unit Position Switch, S1039. These are the tasks:
 - Flap Lever Position Switch Removal, AMM TASK 27-51-08-000-801
 - Flap Lever Position Switch Installation, AMM TASK 27-51-08-400-801
- <2> Re-connect connector D1582 to the Flap Load Limiter Solenoid Valve (FLLSV), V94.

EFFECTIVITY
SIA ALL

27-51 TASK 809

D633A103-SIA

Page 217
Feb 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- <3> Do the Repair Confirmation at the end of this task.
- 2) If there is 28 VDC between pin 1 on connector D1582 and structure ground, then do these steps:
- a) Replace the Flap Load Limiter Solenoid Valve (FLLSV), V94. These are the tasks:
 - Flap Load Limiter Solenoid Valve Removal, AMM TASK 27-51-65-000-802
 - Flap Load Limiter Solenoid Valve Installation, AMM TASK 27-51-65-400-802
- <1> Do the Repair Confirmation at the end of this task.
- (2) Do this check of the wiring between the FSEU, M1746 and the Flap Load Limiter Solenoid Valve (FLLSV), V94:
- (a) Remove the FSEU, M1746. This is the task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
 - (b) Do a wiring check between these pins of connector D728A at the E1-1 shelf and connector D1582 at the Flap Load Limiter Solenoid Valve (FLLSV), V94:
- | | |
|-------------------|--------------|
| D728A | D1582 |
| pin A12 | pin 2 |
- (c) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-connect connector D1582 to the Flap Load Limiter Solenoid Valve (FLLSV), V94.
 - 3) Re-install the FSEU, M1746. This is the task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
 - (d) If you do not find a problem with the wiring, then continue:
 - 1) Re-connect the connector D1582 to the Flap Load Limiter Solenoid Valve (FLLSV), V94.
- (3) Install a new FSEU, M1746. This is the task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
- (a) Do the Repair Confirmation at the end of this task.
- (4) Do this task: Trailing Edge Flap Transmission Servicing, AMM TASK 12-22-51-610-803.
- (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do this task: Trailing Edge Flap Load Relief Ground Test, 27-51 TASK 803.
- (a) If the maintenance message does not show, then you corrected the problem.
 - (b) If the maintenance message shows, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

EFFECTIVITY
SIA ALL

27-51 TASK 809

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 218
Feb 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

810. Flap Load Relief From 30-Units Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-51405 FLP LOAD RLF 30
- (2) During the load relief ground test the trailing edge flaps did not retract from the 30-unit position.
NOTE: Because of the sequence of the test, the flaps did retract from the 40-unit position to the 30-unit position during this test.

B. Possible Causes

- (1) Flap lever position switch, S1039
- (2) Flap load limiter solenoid valve, V94
- (3) FSEU, M1746
- (4) Wiring problem
- (5) Flap Control Valve

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00566	FLIGHT CONTROL FLAP LOAD RELIEF

D. Related Data

- (1) (SSM 27-54-11)
- (2) (WDM 27-54-11)

E. Initial Evaluation

- (1) Do this task: Trailing Edge Flap Load Relief Ground Test, 27-51 TASK 803.
- (2) If the maintenance message does not show, then there was an intermittent fault.
- (3) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Adjust the flap lever position switch, S1039. To adjust it, do this task: Flap Lever Position Switch - Adjustment, AMM TASK 27-51-08-820-801.
 - (a) Do this task: Trailing Edge Flap Load Relief Ground Test, 27-51 TASK 803.
 - (b) If the maintenance message does not show, then you corrected the fault.
 - (c) If the maintenance message shows, then continue.
- (2) Replace the flap load limiter solenoid valve, V94. These are the tasks:
 - Flap Load Limiter Solenoid Valve Removal, AMM TASK 27-51-65-000-802
 - Flap Load Limiter Solenoid Valve Installation, AMM TASK 27-51-65-400-802
 - (a) Do this task: Trailing Edge Flap Load Relief Ground Test, 27-51 TASK 803.
 - (b) If the maintenance message does not show, then you corrected the fault.
 - (c) If the maintenance message shows, then continue.
- (3) Replace the FSEU. These are the tasks:
 - Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801

EFFECTIVITY
SIA ALL

27-51 TASK 810

D633A103-SIA

Page 219
Feb 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801
- (a) Do this task: Trailing Edge Flap Load Relief Ground Test, 27-51 TASK 803.
- (b) If the maintenance message does not show, then you corrected the fault.

———— **END OF TASK** ————

850. Flap Load Relief From 10-Units Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-51430 FLP LOAD RLF 10
- (2) During the load relief ground test the trailing edge flaps did not retract from the 10-unit position.
NOTE: Because of the sequence of the test, the flaps did retract from the 40-unit position to the 10-unit position during this test.

B. Possible Causes

- (1) Flap lever position switch, S1039
- (2) Flap load limiter solenoid valve, V94
- (3) FSEU, M1746
- (4) Wiring problem
- (5) Flap Control Valve

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00566	FLIGHT CONTROL FLAP LOAD RELIEF

D. Related Data

- (1) SSM 27-54-11
- (2) WDM 27-54-11

E. Initial Evaluation

- (1) Do this task: Trailing Edge Flap Load Relief Ground Test, 27-51 TASK 803
- (2) If the maintenance message does not show, then there was an intermittent fault.
- (3) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Adjust the flap lever position switch, S1039. To adjust it, do this task: Flap Lever Position Switch - Adjustment, AMM TASK 27-51-08-820-801.
 - (a) Do this task: Trailing Edge Flap Load Relief Ground Test, 27-51 TASK 803.
 - (b) If the maintenance message does not show, then you corrected the fault.
 - (c) If the maintenance message shows, then continue.
- (2) Replace the flap load limiter solenoid valve, V94. These are the tasks:
 - Flap Load Limiter Solenoid Valve Removal, AMM TASK 27-51-65-000-802
 - Flap Load Limiter Solenoid Valve Installation, AMM TASK 27-51-65-400-802

EFFECTIVITY
SIA ALL

27-51 TASKS 810-850

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 220
Feb 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (a) Do this task: Trailing Edge Flap Load Relief Ground Test, 27-51 TASK 803.
- (b) If the maintenance message does not show, then you corrected the fault.
- (c) If the maintenance message shows, then continue.
- (3) Replace the FSEU. These are the tasks:
 - Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801
 - Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801
- (a) Do this task: Trailing Edge Flap Load Relief Ground Test, 27-51 TASK 803.
- (b) If the maintenance message does not show, then you corrected the fault.

———— **END OF TASK** ————

811. Flap Control Lever Position Sensor Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-51417 FLAP LVR SENSOR
- (2) The FSEU did not receive a valid signal from the flap control lever position sensor, T538 during a ground test.

B. Possible Causes

- (1) Flap control lever position sensor, T538
- (2) FSEU, M1746
- (3) Wiring problem

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

D. Related Data

- (1) (SSM 27-51-11)
- (2) (WDM 27-51-11)

E. Initial Evaluation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (2) If the maintenance message 27-53279 L 28VAC EXC INV shows, then do the Fault Isolation Procedure for that fault, do this task: Left Flap Excitation Voltage Problem - Fault Isolation, 27-51 TASK 822.
- (3) If the maintenance message 27-51417 FLAP LVR SENSOR does not show, then there was an intermittent fault.
- (4) If the maintenance message 27-51417 FLAP LVR SENSOR shows, then do the Fault Isolation Procedure below.

EFFECTIVITY
SIA ALL

27-51 TASKS 850-811

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 221
Feb 15/2023



737-600/700/800/900 FAULT ISOLATION MANUAL

F. Fault Isolation Procedure

- (1) Replace the flap control lever position sensor, T538. These are the tasks:
 - Flap Control Lever Position Sensor Removal, AMM TASK 27-51-06-000-802
 - Flap Control Lever Position Sensor Installation, AMM TASK 27-51-06-400-802
- (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - 2) If the maintenance message shows, then continue.
- (2) Do this check of the wiring between the FSEU and the flap control lever position sensor, T538:
 - (a) Remove the FSEU, M1746. To remove it, do this task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
 - (b) Disconnect connector D10537 from the flap control lever position sensor.
 - (c) Do a wiring check between these pins of connector D728B at the E1-1 shelf and connector D10537 at the flap control lever position sensor, T538:

D728B	D10537
pin A10	pin 3
pin A11	pin 2
pin A12	pin 4
- (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-connect connector D10537 to the flap control lever position sensor, T538.
 - 3) Re-install the FSEU, M1746. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - 4) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 5) If the maintenance message does not show, then you corrected the fault.
- (e) If you do not find a problem with the wiring, then continue.
 - 1) Re-connect the connector D10537 to the flap control lever position sensor, T538.
- (3) Install a new FSEU. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (b) If the maintenance message does not show, then you corrected the fault.

————— **END OF TASK** —————

851. Flap Load Relief From 5-Units Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-51406 FLP LOAD RELIEF
- (2) During the load relief ground test the trailing edge flaps retracted from the 5-unit position.

NOTE: With the trailing edge flaps and the flap control lever in the 5-unit position, the trailing edge flaps should not automatically retract.

B. Possible Causes

- (1) Flap lever 10-unit position switch, S1039

EFFECTIVITY
SIA ALL

27-51 TASKS 811-851

D633A103-SIA

Page 222
Feb 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (2) Wiring Problems

C. Related Data

- (1) SSM 27-54-11
(2) WDM 27-54-11

D. Initial Evaluation

- (1) Do this task: Trailing Edge Flap Load Relief Ground Test, 27-51 TASK 803
(2) If the maintenance message does not show, then there was an intermittent fault.
(3) If the maintenance message shows, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

- (1) Do this test of the flap lever 10-unit position switch, S1039:
- (a) Disconnect the electrical connector D5150P from the flap lever 10-unit position switch, S1039.
- 1) The access to the electrical connector is from below the control stand. To get access, do the following:
- a) Open this access panel:
- | <u>Number</u> | <u>Name/Location</u> |
|---------------|----------------------|
| 112A | Forward Access Door |
- (b) Move the flap control lever to the UP position.
- (c) Do a continuity check between pins 9 and 11 on connector D5150P which is installed on the bottom of the control stand.
- 1) If there is continuity between pins 9 and 11, then replace the flap lever 10-unit position switch, S1039. These are the tasks:
- Flap Lever Position Switch Removal, AMM TASK 27-51-08-000-801
 - Flap Lever Position Switch Installation, AMM TASK 27-51-08-400-801
- a) Do this task: Trailing Edge Flap Load Relief Ground Test, 27-51 TASK 803.
b) If the maintenance message does not show, then you corrected the fault.
c) If the maintenance message shows, then continue.
- 2) If there is not continuity between pins 9 and 11, then continue.
- (d) Move the flap control lever to the 5-unit position.
- (e) Do a continuity check between pins 9 and 11 on connector D5150P with the flap control lever in the 5-unit position.
- 1) If there is continuity between pins 9 and 11, then adjust the flap lever 10-unit position switch, S1039. To adjust it, do this task: Flap Lever Position Switch - Adjustment, AMM TASK 27-51-08-820-801.
- a) Do this task: Trailing Edge Flap Load Relief Ground Test, 27-51 TASK 803.
b) If the maintenance message does not show, then you corrected the fault.
c) If the maintenance message shows, then continue.
- (f) If there is not continuity between pins 9 and 11, then continue.
- (2) Do this check of the wiring between the flap lever 10-unit position switch, S1039 and the flap load relief solenoid, V94:

EFFECTIVITY
SIA ALL

27-51 TASK 851

D633A103-SIA

Page 223
Feb 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (a) Disconnect connector D1582 from the flap load relief solenoid, V94.

NOTE: The flap load relief solenoid is installed on the trailing edge flap control valve in the main wheel well.

- (b) Do a wiring check between these pins of connector D5150P at the flap lever 10-unit position switch, S1039 and connector D1582 at the flap load relief solenoid, V94:

D5150P	D1582
pin 11	pin 1

- (c) If you find a problem with the wiring, then do these steps:

- 1) Repair the wiring.
- 2) Re-connect connector D5150P to the flap lever 10-unit position switch, S1039.
- 3) Re-connect connector D1582 to the flap load relief solenoid, V94.
- 4) Do this task: Trailing Edge Flap Load Relief Ground Test, 27-51 TASK 803.
- 5) If the maintenance message does not show, then you corrected the fault.

- (3) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
112A	Forward Access Door

————— **END OF TASK** —————

812. Flap Bypass Valve Failed to Move to Bypass Position - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
- (a) 27-51429 BYP VLV SW DISAG
- (2) During a ground test the trailing edge flap bypass valve did not move to the bypass position with a command from the FSEU.

B. Possible Causes

- (1) Trailing edge flap bypass valve motor
- (2) Trailing edge flap bypass valve, V52
- (3) FSEU, M1746
- (4) Wiring problem

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

D. Related Data

- (1) (SSM 27-53-11)
- (2) (WDM 27-53-11)

EFFECTIVITY
SIA ALL

27-51 TASKS 851-812



**737-600/700/800/900
FAULT ISOLATION MANUAL**

E. Initial Evaluation

- (1) Do this task: Trailing Edge Asymmetry Skew Indication Ground Test, 27-51 TASK 802.
- (2) If the maintenance message does not show, then there was an intermittent fault.
- (3) If the maintenance message shows, then look at the manual override lever on the trailing edge flap bypass valve.

NOTE: The trailing edge flap bypass valve is in the aft side of the right main wheel well.

- (a) If the manual override lever is in POSITION 1, then do the Fault Isolation Procedure - Manual Override Lever at POSITION 1 below.

NOTE: POSITION 1 is the normal position.

- (b) If the manual override lever is in POSITION 2, then do the Fault Isolation Procedure - Manual Override Lever at POSITION 2 below.

NOTE: POSITION 2 is the bypass position.

F. Fault Isolation Procedure - Manual Override Lever at POSITION 1

NOTE: You must do the steps in the Initial Evaluation before you can do these steps.

- (1) Do this test of the trailing edge flap bypass valve, V52 operation with alternate control:

- (a) Push the ALTERNATE FLAPS ARM switch on the P5 panel to arm the alternate control system.

NOTE: The trailing edge flap bypass valve should move to POSITION 2.

- (b) If the manual override lever does not move to POSITION 2, then do this check of electrical power to the trailing edge flap bypass valve:

- 1) Disconnect the electrical connector D1014 from the trailing edge flap bypass valve, V52.
- 2) Do a check for 28 VDC between pin 1 of connector D1014 and structure ground.
- 3) If there is not 28 VDC between pin 1 of connector D1014 and structure ground, then do these steps
 - a) Repair the wiring between pin 1 of connector D1014 and the ALTERNATE FLAPS ARM switch, S1 on the P5 panel.
 - b) Reconnect the electrical connector D1014 to the trailing edge flap bypass valve, V52.
 - c) Do this task: Trailing Edge Asymmetry Skew Indication Ground Test, 27-51 TASK 802.
 - d) If the maintenance message does not show, then you corrected the fault.

- 4) If there is 28 VDC between pin 1 of connector D1014 and structure ground, then continue.

- (c) If the manual override lever does not move to POSITION 2, then do this test of the trailing edge flap bypass valve and the valve motor:

- 1) Disconnect the electrical connector D1014 from the trailing edge flap bypass valve, V52.
- 2) Try to manually move the manual override lever to POSITION 2.
- 3) If you cannot move the manual override lever, then do these steps:
 - a) Replace the trailing edge flap bypass valve, V52. These are the tasks:
 - Trailing Edge Flap Bypass Valve Assembly Removal, AMM TASK 27-51-02-000-801

EFFECTIVITY
SIA ALL

27-51 TASK 812

D633A103-SIA

Page 225
Feb 15/2023



737-600/700/800/900 FAULT ISOLATION MANUAL

- Trailing Edge Flap Bypass Valve Assembly Installation, AMM TASK 27-51-02-400-801
- b) Do this task: Trailing Edge Asymmetry Skew Indication Ground Test, 27-51 TASK 802.
- c) If the maintenance message does not show, then you corrected the fault.
- 4) If the you can move the manual override lever to POSITION 2, then do these steps:
 - a) Replace the trailing edge flap bypass valve motor. These are the tasks:
 - Trailing Edge Flap Bypass Valve Motor Removal, AMM TASK 27-51-02-000-803
 - Trailing Edge Flap Bypass Valve Motor Installation, AMM TASK 27-51-02-400-803
 - b) Do this task: Trailing Edge Asymmetry Skew Indication Ground Test, 27-51 TASK 802.
 - c) If the maintenance message does not show, then you corrected the fault.
- (d) If the manual override lever moves to POSITION 2, or if the maintenance message shows, then continue.
 - 1) Push the ALTERNATE FLAPS ARM switch to disarm the alternate control system.
- (2) Do this check of the wiring between the FSEU and the trailing edge flap bypass valve, V52:
 - (a) Remove the FSEU, M1746. To remove it, do this task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
 - (b) Disconnect connector D1014 from the trailing edge flap bypass valve, V52.
 - (c) Do a wiring check between these pins of connector D728C at the E1-1 shelf and connector D1014 at the trailing edge flap bypass valve, V52:

D728C	D1014
pin 3	pin 1
- (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-connect connector D1014 to the trailing edge flap bypass valve, V52.
 - 3) Re-install the FSEU, M1746. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - 4) Do this task: Trailing Edge Asymmetry Skew Indication Ground Test, 27-51 TASK 802.
 - 5) If the maintenance message does not show, then you corrected the fault.
- (e) If you do not find a problem with the wiring, then continue:
 - 1) Reconnect the connector D1014 to the trailing edge flap bypass valve, V52.
- (3) Install a new FSEU. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - (a) Do this task: Trailing Edge Asymmetry Skew Indication Ground Test, 27-51 TASK 802.
 - (b) If the maintenance message does not show, then you corrected the fault.

G. Fault Isolation Procedure - Manual Override Lever at POSITION 2

NOTE: You must do the steps in the Initial Evaluation before you can do these steps.

EFFECTIVITY
SIA ALL

27-51 TASK 812

D633A103-SIA

Page 226
Feb 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (1) Do this check of the trailing edge flap bypass valve motor:
 - (a) Disconnect the connector D1014 from the trailing edge flap bypass valve, V52.
NOTE: The trailing edge flap bypass valve is in the aft side of the right main wheel well.
 - (b) Do a continuity check between pin 1 and pin 3 at the electrical connector on the trailing edge bypass valve motor.
 - (c) If there is not continuity between pin 1 and pin 3, then do these steps:
 - 1) Replace the trailing edge flap bypass valve motor. These are the tasks:
 - Trailing Edge Flap Bypass Valve Motor Removal, AMM TASK 27-51-02-000-803
 - Trailing Edge Flap Bypass Valve Motor Installation, AMM TASK 27-51-02-400-803
 - 2) Do this task: Trailing Edge Asymmetry Skew Indication Ground Test, 27-51 TASK 802.
 - 3) If the maintenance message does not show, then you corrected the fault.
 - (d) If there is continuity between pin 1 and pin 3, then continue.
- (2) Do this check of the wiring between the FSEU and the trailing edge flap bypass valve:
 - (a) Remove the FSEU, M1746. To remove it, do this task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
 - (b) Do a wiring check between these pins of connector D728B at the E1-1 shelf and connector D1014 at the trailing edge flap bypass valve, V52:

D728B	D1014
pin K1	pin 3
- (c) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-connect connector D1014 to the trailing edge flap bypass valve, V52.
 - 3) Re-install the FSEU, M1746. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - 4) Do this task: Trailing Edge Asymmetry Skew Indication Ground Test, 27-51 TASK 802.
 - 5) If the maintenance message does not show, then you corrected the fault.
- (d) If you did not find a problem with the wiring, then continue:
 - 1) Re-connect the connector D1014 to the trailing edge flap bypass valve, V52.
- (3) Install a new FSEU. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - (a) Do this task: Trailing Edge Asymmetry Skew Indication Ground Test, 27-51 TASK 802.
 - (b) If the maintenance message does not show, then you corrected the fault.

————— **END OF TASK** —————

813. Left Flap Position Transmitter Disagree Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-52259 TE FLAP SNSR L

EFFECTIVITY
SIA ALL

27-51 TASKS 812-813

D633A103-SIA

Page 227
Feb 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (2) The signal to the FSEU from the left flap position transmitter, T427 does not agree with the signals from the right flap position transmitter, T428 and the No. 1 flap skew sensor, T525.

B. Possible Causes

NOTE: These possible causes are listed in order of most probable to least probable.

- (1) Flap Position Indicator
- (2) Wiring between the Left Flap Position Transmitter and the FSEU
- (3) Left flap position transmitter, T427
- (4) FSEU, M1746
- (5) Wiring between Flap Position Indicator and FSEU

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	8	C00211	FLIGHT CONTROL FSEU DC 1
A	9	C01468	FLIGHT CONTROL FSEU DC 2
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

D. Related Data

- (1) (SSM 27-52-11)
- (2) (WDM 27-52-11)

E. Initial Evaluation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (2) If the maintenance message does not show, then there was an intermittent fault.

NOTE: Troubleshooting intermittent faults is not like other fault isolation tasks. It requires a more complete understanding of the components related to the fault, how they interact, and what each troubleshooting procedure is trying to accomplish. There is no strict order of troubleshooting. Operators should use their judgment, experience, and company internal procedures on which procedure or procedures to accomplish. Troubleshooting may occur over a period of several flights.

NOTE: Flap Position Transmitter Disagree faults are not usually reproducible on the ground. After performing the following fault isolation steps, and if no fault is identified, operators may choose to replace either the flap position indicator or flap position transmitter or both as the fault isolation corrective action.

NOTE: Operators may use Hydraulic System A or B Pressurization with an Engine-Driven Pump (EDP), AMM TASK 29-11-00-860-804 in lieu of Trailing Edge Flap System Operation With Primary Control, AMM TASK 27-51-00-860-801 while moving the flaps with normal operation. Using the EDP's will provide a higher flap extend/retract rate which may improve the chances of reproducing the Flap Position Transmitter Disagree fault.

- (3) If the maintenance message shows, perform a visual check of the Trailing Edge Flap System, AMM TASK 27-51-00-210-801
- (4) If the visual check passes, do the appropriate Fault Isolation Procedures below.

EFFECTIVITY
SIA ALL

27-51 TASK 813

D633A103-SIA

Page 228
Feb 15/2023



737-600/700/800/900 FAULT ISOLATION MANUAL

F. Fault Isolation Procedure I

- (1) Do this check.
 - (a) Press the ON/OFF switch on the FSEU's BITE panel.
 - 1) Make sure the display reads "EXISTING FAULTS?".
 - 2) Press the ON/OFF switch again to turn off the display.
 - (b) Disconnect connector D686 from the Flap Position Indicator N54 on the P2 center instrument panel.



KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.



MOVE ALL PERSONS AND EQUIPMENT AWAY FROM THE TRAILING EDGE FLAPS, AND THE LEADING EDGE FLAPS AND SLATS. THESE SURFACES WILL MOVE AND CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

- (c) Do this task: Trailing Edge Flap System Operation With Primary Control, AMM TASK 27-51-00-860-801.
 - 1) Move the flap control lever to the 40-unit position.
 - 2) Make sure the flaps move to the 40-unit position.
 - 3) Move the flap control handle to the UP position.
 - 4) Make sure the flaps move to their UP position.
- (d) If the flaps correctly respond to flap-lever commands, then re-connect connector D686 to the Flap Position Indicator and continue to Fault Isolation Procedure II.
- (e) If the flaps fail to respond to flap-lever commands or stop part way through the system travel, then the problem is not in the flap position indicator.
- (f) If the flaps fail to respond to flap lever commands or stop part way through the system travel, then the problem may be with the flap position transmitter or airplane wiring.
 - 1) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

- 2) Do these wiring checks between the FPI (N54) pins:
 - a) Measure the resistance between the following pairs of pins at connector D686:

D686		D686
pin 5	.....	pin 6
pin 12	.....	pin 13

- b) The resistance between each of these pin pairs should be within 10% of each other.

EFFECTIVITY
SIA ALL

27-51 TASK 813

D633A103-SIA

Page 229
Feb 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- c) Measure the resistance between the following pairs of pins at connector D686:

D686		D686
pin 5	.....	pin 9
pin 13	.....	pin 9

- d) The resistance between each of these pin pairs should be within 10% of each other.
- e) Measure the resistance between the following pairs of pins at connector D686:

D686		D686
pin 6	.....	pin 9
pin 12	.....	pin 9

- f) The resistance between each of these pin pairs should be within 10% of each other.
- g) Measure the resistance between the following pairs of pins at connector D686:

D686		D686
pin 8	.....	pin 9
pin 10	.....	pin 9

- h) The resistance between each of these pin pairs should be within 10% of each other.
- i) If you find a problem with the wiring, then do these steps:
- <1> Repair the wiring. First inspect the wiring external to the pressure vessel, between the MLG wheel well and the left flap position transmitter (T427). Visually inspect and clean connectors D40024 and D275.
- <2> Do the Repair Confirmation at the end of this task.

G. Fault Isolation Procedure II

- (1) Do this check.



KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.



MOVE ALL PERSONS AND EQUIPMENT AWAY FROM THE TRAILING EDGE FLAPS, AND THE LEADING EDGE FLAPS AND SLATS. THESE SURFACES WILL MOVE AND CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

- (a) Do this task: Trailing Edge Flap System Operation With Primary Control, AMM TASK 27-51-00-860-801.

EFFECTIVITY
SIA ALL

27-51 TASK 813

D633A103-SIA

Page 230
Feb 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (b) Open these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	8	C00211	FLIGHT CONTROL FSEU DC 1
A	9	C01468	FLIGHT CONTROL FSEU DC 2

- (c) Wait two seconds, then do the following:

- 1) Open this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

- (d) Do these steps to extend and retract the flaps while visually monitoring the flap position indicator:

- 1) Move the flap control lever to the 40-unit position.
- 2) Make sure the flaps move to the 40-unit position.
- 3) Move the flap control handle to the UP position.
- 4) Make sure the flaps move to their UP position.

- (e) If the left and right flap needles track each other during flap extension and retraction without hesitation, lagging, or sticking, then the fault is an intermittent fault.

- (f) If the left and right flap needles do not correctly track the flap position, or exhibit hesitation, lagging, or sticking, then the problem is likely with the flap position indicator. Replace the flap position indicator, N54.

- (g) Close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES
A	8	C00211	FLIGHT CONTROL FSEU DC 1
A	9	C01468	FLIGHT CONTROL FSEU DC 2

- (h) Remove system B hydraulic power, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805

- (i) Do the Repair Confirmation at the end of this task.

H. Fault Isolation Procedure III

- (1) Do this wiring check at the flap position transmitter and the FSEU.

- (a) Disconnect connector D275 from the left flap position transmitter, T427.

- 1) Do a check for 28 VAC between these pins.

D275	D275
pin 3	pin 11

- 2) If there is not 28 VAC between these pins then do this check of the wiring:

- a) Get access to the terminal block TB1105 in the E1-1 shelf.
- b) Do a continuity wiring check between the left flap position transmitter T427 and these terminals on terminal block TB1105:

EFFECTIVITY
SIA ALL

27-51 TASK 813

D633A103-SIA

Page 231
Feb 15/2023



737-600/700/800/900 FAULT ISOLATION MANUAL

TB1105	D275
ZA 13	pin 3
ZB 9	pin 11

- 3) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect connector D275 to the left flap position transmitter, T427.
 - c) Do the Repair Confirmation at the end of this task.
- (b) If there is 28 VAC between pin 3 and pin 11 of connector D275, then continue.

I. Fault Isolation Procedure IV

- (1) Do a continuity wiring check between these pins on the FSEU.
 - (a) Remove the FSEU, M1746. To remove it, do this task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
 - (b) Check for continuity between the following pins:

M1746 B	M1746 B
pin K7	pin K10
pin K8	pin K11
 - (c) If you find a problem with the FSEU, replace the FSEU.
 - (d) Do the Repair Confirmation at the end of this task.
 - (e) If you did not find a problem, then continue.
 - (f) If you do not find a problem with the wiring, then continue.
 - 1) Check for 28 VAC at the flap position indicator D686, between pin 8 (hot) and pin 9 (ground).
 - 2) If you find 28VAC, then continue.
 - (g) If no wiring problem is found, then continue.

J. Repair Confirmation

- (1) Do this check of the flap position and indication system.
 - (a) Press the ON/OFF switch on the FSEU's BITE panel.
 - (b) Make sure the display reads "EXISTING FAULTS?".
 - (c) Press the ON/OFF switch again to turn off the display.



WARNING

DO THE DEACTIVATION PROCEDURE FOR THE TRAILING EDGE FLAP BEFORE YOU DO WORK ON THE FLAP SYSTEM. THE FLAPS MOVE QUICKLY. THEY CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

- (d) Do this task: Trailing Edge Flap System Operation With Primary Control, AMM TASK 27-51-00-860-801.
- (e) Operate the flaps.
 - 1) Move the flap control lever to the 40-unit position.
 - 2) Make sure the flaps move to the 40-unit position.

EFFECTIVITY
SIA ALL

D633A103-SIA

27-51 TASK 813

Page 232
Feb 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 3) Move the flap control handle to the UP position.
- 4) Make sure the flaps move to their UP position.
- (f) Make sure the flaps position indicator followed the flap lever commands and the flap position.
- (g) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 1) Make sure the maintenance message does not show.
- (h) If the maintenance message does not show, you have corrected the problem.
- (i) Remove system B hydraulic power, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

———— **END OF TASK** ————

814. Left Flap Position Transmitter Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-52407 TE FLAP SNSR L C
- (2) The FSEU did not receive a valid signal from the left flap position transmitter, T427 during a ground test.

B. Possible Causes

- (1) Left flap position transmitter, T427
- (2) FSEU, M1746
- (3) Wiring problem

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

D. Related Data

- (1) (SSM 27-52-11)
- (2) (WDM 27-52-11)

E. Initial Evaluation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (2) If the maintenance message does not show, then there was an intermittent fault.
- (3) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Replace the left flap position transmitter, T427 on the no. 1 transmission. These are the tasks:
 - Flap Position Transmitter Removal, AMM TASK 27-58-01-000-801
 - Flap Position Transmitter Installation, AMM TASK 27-58-01-400-801
- (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - 2) If the maintenance message shows, then continue.

EFFECTIVITY
SIA ALL

27-51 TASKS 813-814

D633A103-SIA

Page 233
Feb 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (2) Do this check of the wiring between the FSEU and the left flap position transmitter:
- (a) Remove the FSEU, M1746. To remove it, do this task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
 - (b) Disconnect connector D275 from the left flap position transmitter, T427.
 - (c) Do a wiring check between these pins of connector D728B at the E1-1 shelf and connector D275 at the left flap position transmitter, T427:

D728B		D275
pin K7	.....	pin 1
pin K8	.....	pin 2

- (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-connect connector D275 to the left flap position transmitter, T427.
 - 3) Re-install the FSEU, M1746. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - 4) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 5) If the maintenance message does not show, then you corrected the fault.
- (e) If you do not find a problem with the wiring, then continue.
 - 1) Re-connect the connector D275 to the left flap position transmitter, T427.
- (3) Install a new FSEU, M1746. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (b) If the maintenance message does not show, then you corrected the fault.

———— **END OF TASK** ————

815. FSEU Indication Light Output Fault - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-51106 FSEU FAILED
- (2) The FSEU detected a failure of the output to the indication lights during the Existing Faults test.

B. Possible Causes

- (1) FSEU, M1746

C. Initial Evaluation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (2) If the maintenance message does not show, then there was an intermittent fault.
- (3) If the maintenance message shows, then do the Fault Isolation Procedure below.

D. Fault Isolation Procedure

- (1) Replace the FSEU, M1746. These are the tasks:
 - Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801
 - Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801

EFFECTIVITY
SIA ALL

27-51 TASKS 814-815

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 234
Feb 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- 1) If the maintenance message does not show, then you corrected the fault.

————— **END OF TASK** —————

816. FSEU Discrete Output Fault - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
- (a) 27-51107 FSEU FAILED
- (2) The FSEU detected a failure of one of the discrete outputs during the Existing Faults test.

B. Possible Causes

- (1) FSEU, M1746

C. Initial Evaluation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (2) If the maintenance message does not show, then there was an intermittent fault.
- (3) If the maintenance message shows, then do the Fault Isolation Procedure below.

D. Fault Isolation Procedure

- (1) Replace the FSEU, M1746. These are the tasks:
- Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801
 - Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801
- (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- 1) If the maintenance message does not show, then you corrected the fault.

————— **END OF TASK** —————

817. FSEU Internal ARINC 429 Fault - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
- (a) 27-51108 FSEU FAILED
- (2) The FSEU detected a failure of the ARINC 429 data during the Existing Faults test or TE Flap Load Relief Test.

B. Possible Causes

- (1) FSEU, M1746

C. Initial Evaluation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (2) If the maintenance message does not show, then there was an intermittent fault.
- (3) If the maintenance message shows, then do the Fault Isolation Procedure below.

D. Fault Isolation Procedure

- (1) Replace the FSEU, M1746. These are the tasks:
- Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801
 - Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801
- (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.

EFFECTIVITY
SIA ALL

27-51 TASKS 815-817

D633A103-SIA

Page 235
Feb 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 1) If the maintenance message does not show, then you corrected the fault.

————— **END OF TASK** —————

818. FSEU Analog to Digital Test Fault - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-51109 FSEU FAILED
- (2) The FSEU detected a failure during an internal analog to digital conversion test.

B. Possible Causes

- (1) FSEU, M1746

C. Initial Evaluation

- (1) Do this task: Trailing Edge Flap Load Relief Ground Test, 27-51 TASK 803.
- (2) If the maintenance message does not show, then there was an intermittent fault.
- (3) If the maintenance message shows, then do the Fault Isolation Procedure below.

D. Fault Isolation Procedure

- (1) Replace the FSEU, M1746. These are the tasks:
 - Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801
 - Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801
- (a) Do this task: Trailing Edge Flap Load Relief Ground Test, 27-51 TASK 803.
 - 1) If the maintenance message does not show, then you corrected the fault.

————— **END OF TASK** —————

819. Flap Control Lever Position Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-51427 FLAP LEVER
- (2) During the TE Flap Load Relief Test, the FSEU did not receive a correct signal from the flap control lever position sensor, T538.
- (3) During the TE Flap Load Relief Test the FSEU prompts the mechanic to move the flap control lever and push the YES button. This message indicates that the flap control lever position sensor did not give the correct indication to the FSEU.

B. Possible Causes

- (1) Flap control lever position sensor, T538
- (2) Flap lever position sensor mechanism
- (3) FSEU, M1746
- (4) Wiring problem

EFFECTIVITY
SIA ALL

27-51 TASKS 817-819

D633A103-SIA

Page 236
Feb 15/2023



737-600/700/800/900 FAULT ISOLATION MANUAL

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

D. Related Data

- (1) (SSM 27-51-11)
- (2) (WDM 27-51-11)

E. Initial Evaluation

- (1) Do this task: Trailing Edge Flap Load Relief Ground Test, 27-51 TASK 803.
NOTE: Make sure the flap control lever is in the correct positions when prompted by the FSEU.
- (2) If the maintenance message does not show, then there was an intermittent fault.
- (3) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Adjust the flap control lever position sensor, T538. To adjust it, do this task: Flap Control Lever Position Sensor Adjustment and Test, AMM TASK 27-51-06-820-802.
 - (a) Do this task: Trailing Edge Flap Load Relief Ground Test, 27-51 TASK 803.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - (b) If the maintenance message shows, or if you cannot do the adjustment, then continue.
 - (b) If the maintenance message shows, or if you cannot do the adjustment, then continue.
- (2) Replace the flap control lever position sensor, T538. These are the tasks:
 - Flap Control Lever Position Sensor Removal, AMM TASK 27-51-06-000-802
 - Flap Control Lever Position Sensor Installation, AMM TASK 27-51-06-400-802
 - (a) Do this task: Trailing Edge Flap Load Relief Ground Test, 27-51 TASK 803.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - 2) If the maintenance message shows, then continue.
- (3) Do this check of the wiring between the FSEU and the flap control lever position sensor, T538:
 - (a) Remove the FSEU, M1746. To remove it, do this task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
 - (b) Disconnect connector D10537 from the flap control lever position sensor.
 - (c) Do a wiring check between these pins of connector D728B at the E1-1 shelf and connector D10537 at the flap control lever position sensor, T538:

D728B	D10537
pin A10	pin 3
pin A11	pin 2
pin A12	pin 4

- (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-connect connector D10537 to the flap control lever position sensor, T538.

EFFECTIVITY
SIA ALL

27-51 TASK 819

D633A103-SIA

Page 237
Feb 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 3) Re-install the FSEU, M1746. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
- 4) Do this task: Trailing Edge Flap Load Relief Ground Test, 27-51 TASK 803.
- 5) If the maintenance message does not show, then you corrected the fault.
- (e) If you do not find a problem with the wiring, then continue.
 - 1) Re-connect the connector D10537 to the flap control lever position sensor, T538.
- (4) Install a new FSEU. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (b) If the maintenance message does not show, then you corrected the fault.

————— END OF TASK —————

820. Right Flap Position Transmitter Disagree Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-52260 TE FLAP SNSR R
- (2) The signal to the FSEU from the right flap position transmitter, T428 does not agree with the signals from the left flap position transmitter, T427 and the No. 8 flap skew sensor, T532.

B. Possible Causes

NOTE: These possible causes are listed in order of most probable to least probable.

- (1) Flap position indicator
- (2) Wiring between the Right Flap Position Transmitter and the FSEU
- (3) Right flap position transmitter, T428
- (4) FSEU, M1746
- (5) Wiring between the indicator and FSEU

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	8	C00211	FLIGHT CONTROL FSEU DC 1
A	9	C01468	FLIGHT CONTROL FSEU DC 2
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

D. Related Data

- (1) (SSM 27-52-11)
- (2) (WDM 27-52-11)

EFFECTIVITY
SIA ALL

27-51 TASKS 819-820

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 238
Feb 15/2023



737-600/700/800/900 FAULT ISOLATION MANUAL

E. Initial Evaluation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (2) If the maintenance message does not show, then there was an intermittent fault.

NOTE: Troubleshooting intermittent faults is not like other fault isolation tasks. It requires a more complete understanding of the components related to the fault, how they interact, and what each troubleshooting procedure is trying to accomplish. There is no strict order of troubleshooting. Operators should use their judgment, experience, and company internal procedures on which procedure or procedures to accomplish. Troubleshooting may occur over a period of several flights.

NOTE: Flap Position Transmitter Disagree faults are not usually reproducible on the ground. After performing the following fault isolation steps, and if no fault is identified, operators may choose to replace either the flap position indicator or flap position transmitter or both as the first fault isolation corrective action.

NOTE: Operators may use Hydraulic System A or B Pressurization with an Engine-Driven Pump (EDP), AMM TASK 29-11-00-860-804 in lieu of Trailing Edge Flap System Operation With Primary Control, AMM TASK 27-51-00-860-801 while moving the flaps with normal operation. Using the EDP's will provide a higher flap extend/retract rate which may improve the chances of reproducing the Flap Position Transmitter Disagree fault.

- (3) If the maintenance message shows, then perform a visual check of the Trailing Edge Flap System, AMM TASK 27-51-00-210-801
- (4) If the visual check passes, then do the appropriate Fault Isolation Procedures below.

F. Fault Isolation Procedure I

- (1) Do this check.
 - (a) Press the ON/OFF switch on the FSEU's BITE panel.
 - 1) Make sure the display reads "EXISTING FAULTS?".
 - 2) Press the ON/OFF switch again to turn off the display.
 - (b) Disconnect connector D686 from the Flap Position Indicator N54 on the P2 center instrument panel.



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MOVE ALL PERSONS AND EQUIPMENT AWAY FROM THE TRAILING EDGE FLAPS, AND THE LEADING EDGE FLAPS AND SLATS. THESE SURFACES WILL MOVE AND CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

- (c) Do this task: Trailing Edge Flap System Operation With Primary Control, AMM TASK 27-51-00-860-801.
 - 1) Move the flap control lever to the 40-unit position.
 - 2) Make sure the flaps move to the 40-unit position.
 - 3) Move the flap control handle to the UP position.

EFFECTIVITY
SIA ALL

27-51 TASK 820

D633A103-SIA

Page 239
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 4) Make sure the flaps move to their UP position.
- (d) If the flaps correctly respond to flap-lever commands, then re-connect connector D686 to the Flap Position Indicator and continue to Fault Isolation Procedure II.
- (e) If the flaps fail to respond to flap-lever commands or stop part way through the system travel, then the problem is not in the flap position indicator.
- (f) If the flaps fail to respond to flap lever commands or stop part way through the system travel, then the problem may be with the flap position transmitter or airplane wiring.
 - 1) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

- 2) Do these wiring checks between the FPI (N54) pins:
 - a) Measure the resistance between the following pairs of pins at connector D686:

D686		D686
pin 5	.....	pin 6
pin 12	.....	pin 13

- b) The resistance between each of these pin pairs should be within 10% of each other.
 - c) Measure the resistance between the following pairs of pins at connector D686:

D686		D686
pin 5	.....	pin 9
pin 13	.....	pin 9

- d) The resistance between each of these pin pairs should be within 10% of each other.
 - e) Measure the resistance between the following pairs of pins at connector D686:

D686		D686
pin 6	.....	pin 9
pin 12	.....	pin 9

- f) The resistance between each of these pin pairs should be within 10% of each other.
 - g) Measure the resistance between the following pairs of pins at connector D686:

D686		D686
pin 8	.....	pin 9
pin 10	.....	pin 9

- h) The resistance between each of these pin pairs should be within 10% of each other.
 - i) If you find a problem with the wiring, then do these steps:

EFFECTIVITY
SIA ALL

27-51 TASK 820

D633A103-SIA

Page 240
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- <1> Repair the wiring. First inspect the wiring external to the pressure vessel, between the MLG wheel well and the right flap position transmitter (T428). Visually inspect and clean connectors D40034 and D229.
- <2> Do the Repair Confirmation at the end of this task.

G. Fault Isolation Procedure II

- (1) Do this check.



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MOVE ALL PERSONS AND EQUIPMENT AWAY FROM THE TRAILING EDGE FLAPS, AND THE LEADING EDGE FLAPS AND SLATS. THESE SURFACES WILL MOVE AND CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

- (a) Do this task: Trailing Edge Flap System Operation With Primary Control, AMM TASK 27-51-00-860-801.

- (b) Open these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	8	C00211	FLIGHT CONTROL FSEU DC 1
A	9	C01468	FLIGHT CONTROL FSEU DC 2

- (c) Wait two seconds, then open the following circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

- (d) Do these steps to extend and retract the flaps while visually monitoring the flap position indicator:
 - 1) Move the flap control lever to the 40-unit position.
 - 2) Make sure the flaps move to the 40-unit position.
 - 3) Move the flap control handle to the UP position.
 - 4) Make sure the flaps move to their UP position.
- (e) If the left and right flap needles track each other during flap extension and retraction without hesitation, lagging, or sticking, then the fault is an intermittent fault.
- (f) If the left and right flap needles do not correctly track the flap position, or exhibit hesitation, lagging, or sticking, then the problem is likely with the flap position indicator. Replace the flap position indicator, N54.

EFFECTIVITY
SIA ALL

27-51 TASK 820

D633A103-SIA

Page 241
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (g) Close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES
A	8	C00211	FLIGHT CONTROL FSEU DC 1
A	9	C01468	FLIGHT CONTROL FSEU DC 2

- (h) Remove system B hydraulic power, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805
- (i) Do the Repair Confirmation at the end of this task.

H. Fault Isolation Procedure III

- (1) Do this wiring check at the flap position transmitter.

- (a) Disconnect connector D229 from the right flap position transmitter, T428.

- 1) Do a check for 28 VAC between these pins.

D229	D229
pin 3	pin 11

- 2) If there is not 28 VAC between these pins then do this check of the wiring:

- a) Get access to the terminal block TB1105 in the E1-1 shelf.
- b) Do a continuity wiring check between the right flap position transmitter T428 and these terminals on terminal block TB1105:

TB1105	D229
ZA 13	pin 3
ZA 9	pin 11

- 3) If you find a problem with the wiring, then do these steps:

- a) Repair the wiring.
- b) Re-connect connector D229 to the right flap position transmitter, T428.
- c) Do the Repair Confirmation at the end of this task.

- (b) If there is 28 VAC between pin 3 and pin 11 of connector D229, then continue.

I. Fault Isolation Procedure IV

- (1) Do a continuity wiring check between these pins on the FSEU.

- (a) Remove the FSEU, M1746. To remove it, do this task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.

M1746 B	M1746 B
pin J7	pin J10
pin J8	pin J11

- (b) If you find a problem with the FSEU, replace the FSEU.
- (c) Do the Repair Confirmation at the end of this task.
- (d) If you did not find a problem, then continue.
- (e) If you do not find a problem with the wiring, then continue.

EFFECTIVITY
SIA ALL

27-51 TASK 820

D633A103-SIA

Page 242
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 1) Check for 28 VAC at the flap position indicator D686, between pin 10 (hot) and pin 9 (ground).
- 2) If you find 28VAC, then continue.
- (f) If no wiring problem is found, then continue.

J. Repair Confirmation

- (1) Do this check of the flap position and flap position indication system.
 - (a) Press the ON/OFF switch on the FSEU's BITE panel.
 - (b) Make sure the display reads "EXISTING FAULTS?".
 - (c) Press the ON/OFF switch again to turn off the display.



WARNING

MOVE ALL PERSONS AND EQUIPMENT AWAY FROM THE TRAILING EDGE FLAPS, AND THE LEADING EDGE FLAPS AND SLATS. THESE SURFACES WILL MOVE AND CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

- (d) Do this task: Trailing Edge Flap System Operation With Primary Control, AMM TASK 27-51-00-860-801.
- (e) Operate the flaps.
 - 1) Move the flap control lever to the 40-unit position.
 - 2) Make sure the flaps move to the 40-unit position.
 - 3) Move the flap control handle to the UP position.
 - 4) Make sure the flaps move to their UP position.
- (f) Make sure the flaps position indicator followed the flap lever commands and the flap position.
- (g) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 1) Make sure the maintenance message does not show.
- (h) If the maintenance message does not show, you have corrected the problem.
- (i) Remove system B hydraulic power, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

————— **END OF TASK** —————

821. Right Flap Position Transmitter Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-52408 TE FLAP SNSR R C
- (2) The FSEU did not receive a valid signal from the right flap position transmitter, T428 during a ground test.

B. Possible Causes

- (1) Right flap position transmitter, T428
- (2) FSEU, M1746
- (3) Wiring problem

EFFECTIVITY
SIA ALL

27-51 TASKS 820-821

D633A103-SIA

Page 243
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT

D. Related Data

- (1) (SSM 27-52-11)
(2) (WDM 27-52-11)

E. Initial Evaluation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
(2) If the maintenance message does not show, then there was an intermittent fault.
(3) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Replace the right flap position transmitter, T428 on the no. 8 transmission. These are the tasks:
- Flap Position Transmitter Removal, AMM TASK 27-58-01-000-801
 - Flap Position Transmitter Installation, AMM TASK 27-58-01-400-801
- (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- 1) If the maintenance message does not show, then you corrected the fault.
 - 2) If the maintenance message shows, then continue.
- (2) Do this check of the wiring between the FSEU and the right flap position transmitter:
- (a) Remove the FSEU, M1746. To remove it, do this task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
 - (b) Disconnect connector D229 from the right flap position transmitter, T428.
 - (c) Do a wiring check between these pins of connector D728B at the E1-1 shelf and connector D229 at the right flap position transmitter, T428:

D728B	D229
pin J7	pin 1
pin J8	pin 2

- (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-connect connector D229 to the right flap position transmitter, T428.
 - 3) Re-install the FSEU, M1746. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - 4) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 5) If the maintenance message does not show, then you corrected the fault.
 - (e) If you do not find a problem with the wiring, then continue.
 - 1) Re-connect the connector D229 to the right flap position transmitter, T428.
- (3) Install a new FSEU, M1746. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.

EFFECTIVITY
SIA ALL

27-51 TASK 821

D633A103-SIA

Page 244
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (b) If the maintenance message does not show, then you corrected the fault.

END OF TASK

822. Left Flap Excitation Voltage Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-53279 L 28VAC EXC INV
- (2) The excitation voltage to the FSEU for the left flap sensors is too low or too high.

B. Possible Causes

- (1) FSEU, M1746
- (2) Wiring problem
- (3) Circuit Breaker, C213

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	14	C02043	AC BUS 28V AC XFR BUS 2 SECT 2

D. Related Data

- (1) WDM 24-53-11
- (2) SSM 27-52-11
- (3) WDM 27-52-11

E. Initial Evaluation

- (1) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	14	C02043	AC BUS 28V AC XFR BUS 2 SECT 2

- (2) If both maintenance messages 27-53279 and 27-53280 are in the FSEU fault history in the same flight leg, while troubleshooting airplane systems that are not affected by the loss of AC power, they can be treated as a nuisance fault.
- (3) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (a) If the maintenance message does not show, then there was an intermittent fault.
 - (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

EFFECTIVITY
SIA ALL

27-51 TASKS 821-822



**737-600/700/800/900
FAULT ISOLATION MANUAL**

F. Fault Isolation Procedure

- (1) Do this check of the voltage to the FSEU, M1746:
 - (a) Remove the FSEU, M1746. This is the task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
 - (b) Do a check for 20.0 to 32.0 VAC between these pins of connector D728B and connector D728A at the E1-1 shelf.

D728B	D728A
pin G11	pin F1

- (c) If there is 20.0 to 32.0 VAC between these pins, then do these steps:
 - 1) Install a new FSEU, M1746. This is the task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - 2) Do the Repair Confirmation at the end of this task.
 - (d) If there is not 20.0 to 32.0 VAC between the pins, then continue.
- (2) Do this check of the wiring between the FSEU, M1746 and the P6-2 Panel:
 - (a) Remove the FSEU, M1746. This is the task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
 - (b) Do a wiring check between this pin of connector D728B at the E1-1 shelf and connector D46061 at P6-2 shelf:

D728B	D46061
pin G11	pin 14

- (c) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the FSEU, M1746. This is the task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - 3) Do the Repair Confirmation at the end of this task.
 - (d) If you do not find a problem with the wiring, then continue.
 - 1) Re-install the FSEU, M1746. This is the task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
- (3) Replace this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

- (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (a) If the maintenance message does not show, then you corrected the fault.
 - (b) If the maintenance message shows, then continue the Fault Isolation at the subsequent step.

———— **END OF TASK** ————

EFFECTIVITY
SIA ALL

27-51 TASK 822

D633A103-SIA

Page 246
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

823. Right Flap Excitation Voltage Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-53280 R 28VAC EXC INV
- (2) The excitation voltage to the FSEU for the right flap sensors is too low or too high.

B. Possible Causes

- (1) FSEU, M1746
- (2) Wiring problem
- (3) Circuit Breaker, C1443

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	14	C02043	AC BUS 28V AC XFR BUS 2 SECT 2

D. Related Data

- (1) WDM 24-53-11
- (2) SSM 27-52-11
- (3) WDM 27-52-11

E. Initial Evaluation

- (1) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT

F/O Electrical System Panel, P6-4

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	14	C02043	AC BUS 28V AC XFR BUS 2 SECT 2

- (2) If both maintenance messages 27-53279 and 27-53280 are in the FSEU fault history in the same flight leg, while troubleshooting airplane systems that are not affected by the loss of AC power, they can be treated as a nuisance fault.
- (3) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (a) If the maintenance message does not show, then there was an intermittent fault.
 - (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

EFFECTIVITY
SIA ALL

27-51 TASK 823

D633A103-SIA

Page 247
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

F. Fault Isolation Procedure

- (1) Do this check of the voltage to the FSEU, M1746:
- (a) Remove the FSEU, M1746. This is the task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
 - (b) Do a check for 20.0 to 32.0 VAC between these pins of connector D728B and connector D728A at the E1-1 shelf.

D728B	D728A
pin E11	pin F1

- (c) If there is 20.0 to 32.0 VAC between these pins, then do these steps:
 - 1) Install a new FSEU, M1746. This is the task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - 2) Do the Repair Confirmation at the end of this task.
 - (d) If there is not 20.0 to 32.0 VAC between the pins, then continue.
- (2) Do this check of the wiring between the FSEU, M1746 and the P6-2 Panel:
- (a) Do a wiring check between this pin of connector D728B at the E1-1 shelf and connector D46061 at P6-2 shelf:

D728B	D46061
pin E11	pin 15

- (b) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the FSEU, M1746. This is the task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - 3) Do the Repair Confirmation at the end of this task.
 - (c) If you do not find a problem with the wiring, then continue.
 - 1) Re-install the FSEU, M1746. This is the task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
- (3) Replace this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT

- (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT

F/O Electrical System Panel, P6-4

Row	Col	Number	Name
D	14	C02043	AC BUS 28V AC XFR BUS 2 SECT 2

EFFECTIVITY
SIA ALL

27-51 TASK 823

D633A103-SIA

Page 248
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (2) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (a) If the maintenance message does not show, then you corrected the fault.
 - (b) If the maintenance message shows, then continue the Fault Isolation at the subsequent step.

————— **END OF TASK** —————

824. Flap Bypass Valve Excitation Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-53428 TE FLAPS BYPASS
- (2) During a ground test the FSEU detected a low excitation voltage for the flap bypass valve.

B. Possible Causes

- (1) Circuit Breaker, C210
- (2) FSEU, M1746
- (3) Wiring problem

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	12	C03052	DC BUS 1 SECT 2

D. Related Data

- (1) (SSM 27-53-11)
- (2) (WDM 27-53-11)

E. Initial Evaluation

- (1) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

Power Distribution Panel Number 1, P91

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	12	C03052	DC BUS 1 SECT 2

- (2) Make sure the ALTERNATE FLAPS ARM switch on the P5 panel is in the OFF position.
- (3) Do this task: Trailing Edge Asymmetry Skew Indication Ground Test, 27-51 TASK 802.
- (4) If the maintenance message does not show, then there was an intermittent fault.
- (5) If the maintenance message shows, then do the Fault Isolation Procedure below.

EFFECTIVITY
SIA ALL

27-51 TASKS 823-824

D633A103-SIA

Page 249
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

F. Fault Isolation Procedure

(1) Do this check of the bypass valve electrical power to the FSEU, M1746:

(a) Open this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

(b) Remove the FSEU, M1746. To remove it, do this task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.

(c) Close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

(d) Do a check for 28 VDC between pin 8 on connector D728C on the E1-1 shelf and structure ground.

(e) If there is 28 VDC between pin 8 on connector D728C and structure ground, then install a new FSEU. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.

1) Do this task: Trailing Edge Asymmetry Skew Indication Ground Test, 27-51 TASK 802.

2) If the maintenance message does not show, then you corrected the fault.

(f) If there is not 28 VDC between pin 8 on connector D728C and structure ground, then continue.

(2) Do this check of the wiring between the FSEU, M1746 and the P6-2 Panel:

(a) Do a wiring check between this pin of connector D728C at the E1-1 shelf and connector D40502P at P6-2 shelf:

D728C	D40502P
pin 8	pin 8

(b) If you find a problem with the wiring, then do these steps:

1) Repair the wiring.

2) Re-install the FSEU, M1746. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.

3) Do this task: Trailing Edge Asymmetry Skew Indication Ground Test, 27-51 TASK 802.

4) If the maintenance message does not show, then you corrected the fault.

(c) If you do not find a problem with the wiring, then continue.

1) Re-install the FSEU, M1746. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.

EFFECTIVITY
SIA ALL

27-51 TASK 824

D633A103-SIA

Page 250
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (3) Replace this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

- (a) Do this task: Trailing Edge Asymmetry Skew Indication Ground Test, 27-51 TASK 802.
(b) If the maintenance message does not show, then you corrected the fault.

———— **END OF TASK** ————

825. Airspeed Data Input to FSEU Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
(a) 27-54402 NO A/S DATA
(2) During the Existing Faults ground test, or the TE Flap Load Relief ground test, the FSEU did not receive airspeed data from the Left ADIRU over the ARINC 429 bus.

B. Possible Causes

- (1) Left ADIRU, M1749
(2) FSEU, M1746
(3) Wiring problem

C. Related Data

- (1) (SSM 27-54-11)
(2) (SSM 34-21-14)
(3) (WDM 27-54-11)
(4) (WDM 34-21-14)

D. Initial Evaluation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
(2) If the maintenance message does not show, then there was an intermittent fault.
(3) If the maintenance message shows, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

- (1) Do this task: ADIRS BITE Procedure, 34-21 TASK 801.
(a) If any maintenance messages for the ADIRU show, then do the fault isolation task for those procedures.
(b) If no maintenance messages for the ADIRU show, then continue.
(2) Do this check of the wiring between the FSEU and the Left ADIRU:
(a) Do a check for active faults on the Ground Prox Computer, M652, do this task: GPWS BITE Procedure, 34-46 TASK 801.
NOTE: You can use the Ground Prox Computer, M652 to isolate where a wiring problem can be.
(b) If the fault message 34-A0001 ADIRU AIR DATA INACTIVE shows, then do this wiring check between terminal block TB523 and terminal block TB1110:
NOTE: This message shows that there is a problem with the wiring common to the FSEU, M1746 and the Ground Prox Computer, M652.

EFFECTIVITY
SIA ALL

27-51 TASKS 824-825

D633A103-SIA

Page 251
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 1) Get access to terminal block TB523 on the E5-2 shelf.
- 2) Get access to terminal block TB1110 on the E1-1 shelf.
- 3) Do a wiring check between these pins of terminal block TB523 at the E5-2 shelf and terminal block TB1110 at the E1-1 shelf.

TB523	TB1110
ZA 21	YA 21
ZB 21	YB 21

- 4) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - c) If the maintenance message 27-54402 NO A/S DATA does not show, then you corrected the fault.
 - 5) If you do not find a problem with the wiring, then continue.
- (c) Do this wiring check between the FSEU, M1746 and terminal block TB1110 on the E1-1 shelf.
- 1) Remove the FSEU, M1746. To remove it, do this task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
 - 2) Do a wiring check between these pins of connector D728B at the E1-1 shelf and terminal block TB1110 at the E1-1 shelf.

D728B	TB1110
pin A4	YA 21
pin A5	YB 21

- 3) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install the FSEU, M1746. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - c) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - d) If the maintenance message 27-54402 NO A/S DATA does not show, then you corrected the fault.
 - (d) If you do not find a problem with the wiring, then continue.
- (3) Install a new FSEU. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
- (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (b) If the maintenance message does not show, then you corrected the fault.

———— **END OF TASK** ————

EFFECTIVITY
SIA ALL

27-51 TASK 825

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 252
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

826. Flap Position Indicator Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-58400 TE FLAP INDICATN
- (2) During the TE Flap Asymmetry Skew Indication Ground test, the indicator needles on the flap position indicator did not move as expected.
- (3) During the TE Flap Asymmetry Skew Indication Ground Test the FSEU asks the mechanic if the indicator needles moved in a specific way. The mechanic answered NO to one of the questions.

B. Possible Causes

- (1) Flap position indicator, N54
- (2) FSEU, M1746
- (3) Wiring problem

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

D. Related Data

- (1) (SSM 27-52-11)
- (2) (WDM 27-52-11)

E. Initial Evaluation

- (1) Do this task: Trailing Edge Asymmetry Skew Indication Ground Test, 27-51 TASK 802.
- (2) If the maintenance message does not show, then there was an intermittent fault.
- (3) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Replace the flap position indicator, N54. These are the tasks:
 - Flap Position Indicator Removal, AMM TASK 27-58-02-000-801
 - Flap Position Indicator Installation, AMM TASK 27-58-02-400-801
- (a) Do this task: Trailing Edge Asymmetry Skew Indication Ground Test, 27-51 TASK 802.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - 2) If the maintenance message shows, then continue.
- (2) Do this check of the wiring between the FSEU and the flap position indicator, N54:
 - (a) Remove the FSEU, M1746. To remove it, do this task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
 - (b) Disconnect connector D686 from the flap position indicator.
 - (c) Do a wiring check between these pins of connector D728B at the E1-1 shelf and connector D686 at the flap position indicator, N54.

EFFECTIVITY
SIA ALL

27-51 TASK 826

D633A103-SIA

Page 253
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

D728B	D686
pin J10	pin 12
pin J11	pin 13
pin K10	pin 6
pin K11	pin 5

- (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-connect connector D686 to the flap position indicator, N54.
 - 3) Re-install the FSEU, M1746. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - 4) Do this task: Trailing Edge Asymmetry Skew Indication Ground Test, 27-51 TASK 802.
 - 5) If the maintenance message does not show, then you corrected the fault.
- (e) If you do not find a problem with the wiring, then continue.
 - 1) Re-connect the connector D686 to the flap position indicator, N54.
- (3) Install a new FSEU. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - (a) Do this task: Trailing Edge Asymmetry Skew Indication Ground Test, 27-51 TASK 802.
 - (b) If the maintenance message does not show, then you corrected the fault.

END OF TASK

827. ECS Discrete Output Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-52418 ECS
- (2) An overcurrent condition was detected on the ECS ram air modulation circuit discrete output during an existing faults test.

B. Possible Causes

- (1) FSEU, M1746
- (2) Wiring problem

C. Related Data

- (1) (SSM 21-51-24)
- (2) (SSM 27-52-11)
- (3) (WDM 21-51-24)
- (4) (WDM 27-52-11)

D. Initial Evaluation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (2) If the maintenance message does not show, then there was an intermittent fault.
- (3) If the maintenance message shows, then do the Fault Isolation Procedure below.

EFFECTIVITY
SIA ALL

27-51 TASKS 826-827

D633A103-SIA

Page 254
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

E. Fault Isolation Procedure

- (1) Replace the FSEU, M1746. These are the tasks:
 - Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801
 - Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801
- (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - 2) If the maintenance message shows, then continue.
- (2) Do this check of the wiring between the FSEU, M1746 and the P6-4 Panel:
 - (a) Remove the FSEU, M1746. To remove it, do this task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
 - (b) Do a wiring check between this pin of connector D728A at the E1-1 shelf and connector D40386 at P6-4 shelf:

D728A	D40386
pin C11	pin 7
 - (c) Repair the wiring.
 - (d) Re-install the FSEU, M1746. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - (e) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (f) If the maintenance message does not show, then you corrected the fault.

————— **END OF TASK** —————

828. Rudder Load Limiter Discrete Output Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-54419 RUDDER LIMITER
- (2) An overcurrent condition was detected on the rudder load limiter solenoid valve discrete output during an existing faults test.

B. Possible Causes

- (1) Rudder Load Limiter Solenoid Valve, V158
- (2) FSEU, M1746
- (3) Wiring problem

C. Related Data

- (1) (SSM 27-25-11)
- (2) (SSM 27-54-11)
- (3) (WDM 27-25-11)
- (4) (WDM 27-54-11)

D. Initial Evaluation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (2) If the maintenance message does not show, then there was an intermittent fault.
- (3) If the maintenance message shows, then do the Fault Isolation Procedure below.

EFFECTIVITY
SIA ALL

27-51 TASKS 827-828

D633A103-SIA

Page 255
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

E. Fault Isolation Procedure

- (1) Do this check of the rudder load limiter solenoid valve, V158:

NOTE: The rudder load limiter solenoid valve is part of the rudder power control unit.

- (a) Disconnect connector D10197 from the rudder load limiter solenoid valve, V158.
- (b) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (c) If the maintenance message does not show, then do these steps:
 - 1) Replace the rudder load limiter solenoid valve, V158. These are the tasks:
 - Main Rudder PCU Load Limiter Solenoid Valve Removal, AMM TASK 27-21-91-000-806-002
 - Main Rudder PCU Load Limiter Solenoid Valve Installation, AMM TASK 27-21-91-400-806-002
 - 2) Reconnect connector D10197 to the rudder load limiter solenoid valve, V158.
 - 3) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 4) If the maintenance message does not show, then you corrected the fault.
- (d) If the maintenance message shows, then continue.
- (2) Replace the FSEU, M1746. These are the tasks:
 - Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801
 - Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801
- (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - 2) If the maintenance message shows, then continue.
- (3) Do this check of the wiring between the FSEU, M1746 and the rudder load limiter solenoid valve, V158:
 - (a) Disconnect connector D10197 from the rudder load limiter solenoid valve, V158.
 - (b) Remove the FSEU, M1746. To remove it, do this task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
 - (c) Do a wiring check between this pin of connector D728A at the E1-1 shelf and connector D10197 at the rudder load limiter solenoid valve, V158:

D728A	D10197
pin C12	pin 2

- (d) Repair the wiring.
- (e) Reconnect connector D10197 to the rudder load limiter solenoid valve, V158.
- (f) Re-install the FSEU, M1746. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
- (g) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (h) If the maintenance message does not show, then you corrected the fault.

———— **END OF TASK** ————

EFFECTIVITY
SIA ALL

27-51 TASK 828

D633A103-SIA

Page 256
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

829. Flap Load Relief Solenoid Discrete Output Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-54423 FLR OUTPUT
- (2) An overcurrent condition was detected on the flap load limiter solenoid valve during an existing faults test.

B. Possible Causes

- (1) Flap Load Limiter Solenoid Valve, V94
- (2) FSEU, M1746
- (3) Wiring problem

C. Related Data

- (1) (SSM 27-54-11)
- (2) (WDM 27-54-11)

D. Initial Evaluation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (2) If the maintenance message does not show, then there was an intermittent fault.
- (3) If the maintenance message shows, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

- (1) Do this check of the flap load limiter solenoid valve, V94:
 - (a) Disconnect connector D1582 from the flap load limiter solenoid valve, V94.
 - (b) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (c) If the maintenance message does not show, then do these steps:
 - 1) Replace the flap load limiter solenoid valve, V94. These are the tasks:
 - Flap Load Limiter Solenoid Valve Removal, AMM TASK 27-51-65-000-802
 - Flap Load Limiter Solenoid Valve Installation, AMM TASK 27-51-65-400-802
 - NOTE: The flap load limiter solenoid valve is installed on the trailing edge flap control valve.
 - 2) Reconnect connector D1582 to the flap load limiter solenoid valve, V94.
 - 3) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 4) If the maintenance message does not show, then you corrected the fault.
 - (d) If the maintenance message shows, then continue.
- (2) Replace the FSEU, M1746. These are the tasks:
 - Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801
 - Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801
- (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - 2) If the maintenance message shows, then continue.
- (3) Do this check of the wiring between the FSEU, M1746 and the flap load limiter solenoid valve, V94:

EFFECTIVITY
SIA ALL

27-51 TASK 829

D633A103-SIA

Page 257
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (a) Disconnect connector D1582 from the flap load limiter solenoid valve, V94.
- (b) Remove the FSEU, M1746. To remove it, do this task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
- (c) Do a wiring check between this pin of connector D728A at the E1-1 shelf and connector D15827 at the flap load limiter solenoid valve, V94:

D728A	D1582
pin A12	pin 2

- (d) Repair the wiring.
- (e) Reconnect connector D1582 to the flap load limiter solenoid valve, V94.
- (f) Re-install the FSEU, M1746. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
- (g) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (h) If the maintenance message does not show, then you corrected the fault.

———— **END OF TASK** ————

830. Trailing Edge Flap Uncommanded Motion Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-51351 TE FLAP UCM
- (2) Uncommanded motion of the Trailing Edge Flap System was detected by the FSEU. The FSEU uses inputs from the Flap Lever Position Sensor, the Flap Position Sensors and the No. 1 and No. 8 Flap Skew Sensors to determine an uncommanded motion.

B. Possible Causes

- (1) Flap Control Cables WFA / WFB
- (2) Flap Feedback Cables WFFA / WFFB
- (3) Flap Control Lever Position Sensor, T538
- (4) Flap Load Relief Solenoid, V94
- (5) Flap Control Unit
- (6) Trailing Edge Flap Control Valve
- (7) Leading Edge Flap and Slat Control Valve
- (8) FSEU, M1746

C. Related Data

- (1) WDM 27-54-11
- (2) SSM 27-54-11

D. Initial Evaluation

- (1) Make sure that the position of the Flap Control Lever agrees with the position of the flaps.
- (2) Make sure that the ALTERNATE FLAPS Control Switch, on the P5 overhead panel, is in the OFF position.

EFFECTIVITY
SIA ALL

27-51 TASKS 829-830

D633A103-SIA

Page 258
Feb 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (3) Move the ALTERNATE FLAPS ARM Switch to the ARM position to arm the Alternate Control System.

NOTE: This will make sure the Bypass Valve stays in the BYPASS position and the flaps do not move with Hydraulic Power.



KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (4) Supply System B Hydraulic Power. This is the task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (5) Open these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	8	C00211	FLIGHT CONTROL FSEU DC 1
A	9	C01468	FLIGHT CONTROL FSEU DC 2

NOTE: Opening and then closing these circuit breakers will reset the TE FLAP UCM message in the FSEU.

- (6) Close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	8	C00211	FLIGHT CONTROL FSEU DC 1
A	9	C01468	FLIGHT CONTROL FSEU DC 2



MOVE ALL PERSONS AND EQUIPMENT AWAY FROM THE TRAILING EDGE FLAPS. THE FLAPS WILL MOVE AND CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

- (7) Move the ALTERNATE FLAPS ARM Switch to the OFF position to disarm the Alternate Control System.

NOTE: If the flaps begin to move, use the ALTERNATE FLAPS ARM Switch to stop them. The FSEU will not stop the flaps automatically when motion is detected.

- (a) If the Trailing Edge (TE) Flaps move when you disarm the Alternate Control System, then do the Fault Isolation Procedure below.
- (b) If the TE Flaps do not move when you disarm the Alternate Control System, then continue.
- (8) Do this task: Trailing Edge Flap Load Relief Ground Test, 27-51 TASK 803.
- (a) If the BITE Test does not pass, then do the Fault Isolation Procedure below, or do the Fault Isolation Procedure for the new maintenance message that shows.
- (b) If the BITE Test passes, then continue.
- (9) Do this test of the Trailing Edge Flaps with Airspeed input to see if the FSEU detects an un-commanded motion fault again:

EFFECTIVITY
SIA ALL

27-51 TASK 830

D633A103-SIA

Page 259
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

- (a) Simulate an Airspeed of more than 60 knots. This is the task: Air Data Reference - System Test, AMM TASK 34-21-00-730-802.
NOTE: Without an airspeed input of more than 60 knots, the FSEU will not detect the uncommanded motion fault.
- (b) Use the Flap Control Lever to extend the Trailing Edge Flaps from the UP position to the 40-unit position. Stop at each detent and wait for the Flap Position Indicator Needles to stop.
- (c) Use the Flap Control Lever to retract the Trailing Edge Flaps from the 40-unit position to the UP position. Stop at each detent and wait for the Flap Position Indicator Needles to stop.
 - 1) If the Flap Position Indicators do not show the same position as the Flap Control Lever, or if you cannot move the flaps to all of the positions, then do the Fault Isolation Procedure below.
- (d) Remove the Airspeed Simulation.
- (e) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 1) If the maintenance message does not show, then there was an intermittent fault.
 - 2) If the maintenance message shows, then do the Fault Isolation Procedure below.
- (10) Remove System B Hydraulic Power, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

E. Fault Isolation Procedure

- (1) Do this check of the Flap Control Cables WFA and WFB:
NOTE: These cables connect the Flap Control Lever to the Flap Control Quadrant on the Flap Control Unit (FCU).
 - (a) Open the access panel on the upper right side of the Nose Wheel Well to get access to the cables WFA and WFB.
 - (b) Make sure that there is tension on the two cables WFA and WFB.
 - 1) If there is no tension on the cables WFA or WFB, then do a check of the cables, pulleys and quadrants.
 - a) If the cables are broken or damaged, then replace the cables. These are the tasks:
 - Control Cables Removal, AMM TASK 20-10-91-000-801
 - Control Cables Installation, AMM TASK 20-10-91-400-801
 - b) Do the Repair Confirmation at the end of this task.
 - 2) If there is tension on the cables WFA or WFB, then continue.
 - (c) Close the access panel in the Nose Wheel Well.
- (2) Do this check of the Flap Feedback Cables WFFA and WFFB:
NOTE: These cables connect the power drive unit to the flap control unit in the main wheel well.
 - (a) Make sure that there is tension on the two cables WFFA and WFFB.
 - 1) If there is no tension on the cables WFFA or WFFB, then do a check of the cables and cable drums.
 - a) If the cables are broken or damaged, then replace the cables. These are the tasks:

EFFECTIVITY
SIA ALL

27-51 TASK 830

D633A103-SIA

Page 260
Feb 15/2023



737-600/700/800/900 FAULT ISOLATION MANUAL

- Control Cables Removal, AMM TASK 20-10-91-000-801
- Control Cables Installation, AMM TASK 20-10-91-400-801
- b) Do the Repair Confirmation at the end of this task.
- c) If the Repair Confirmation is not satisfactory, then continue.
- 2) If there is tension on the cables WFA or WFB, then continue.
- (3) Do this check of the output of the Flap Control Lever Sensor, T538:
NOTE: The flap control lever position sensor is installed in the control stand.
 - (a) Move the Flap Control Lever to the UP position.
 - (b) Do the following to get access to the FSEU in the main equipment center:
 - 1) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door
 - (c) Push the ON/OFF button on the front panel of the FSEU to turn ON the display.
NOTE: The display will show EXISTING FAULTS?
 - (d) Do a check of the Flap Control Lever Sensor inputs to the FSEU:
 - 1) Select OTHER FUNCTNS? from the MAIN MENU on the FSEU.
 - 2) Select I/O MONITOR? from the OTHER FUNCTNS? menu.
 - 3) Select SYNCHRO INPUTS? from the I/O MONITOR? menu.
 - 4) Make sure that the inputs for the LVR POS are in the limit of -5.29 to 2.69.
 - 5) Move the flap control lever to the 10-unit position.
 - 6) Make sure that the inputs for the LVR POS are in the limit of 50.6 to 54.6.
 - 7) Move the flap control lever to the 40-unit position.
 - 8) Make sure that the inputs for the LVR POS are in the limit of 105.3 to 113.5.
 - 9) Move the flap control lever to the UP position.
 - 10) Make sure that the inputs for the LVR POS are in the limit of -5.29 to 2.69.
 - (e) If the inputs to the FSEU are not in the limits, then do these steps:
 - 1) Replace the Flap Control Lever Position Sensor, T538. These are the tasks:
 - Flap Control Lever Position Sensor Removal, AMM TASK 27-51-06-000-802
 - Flap Control Lever Position Sensor Installation, AMM TASK 27-51-06-400-802
 - 2) Do the Repair Confirmation at the end of this task.
 - 3) If the Repair Confirmation is not satisfactory, then continue.
 - (f) If the inputs to the FSEU are in the limits, then continue.
 - 1) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

to the main equipment center.
- (4) Do this check of the power supply to the Flap Load Relief Solenoid, V94:
NOTE: The flap load relief solenoid is installed on the flap control valve in the main wheel well.
 - (a) Disconnect the electrical connector D1582 from the Flap Load Relief Solenoid, V94.

EFFECTIVITY
SIA ALL

27-51 TASK 830

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 261
Feb 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (b) Do a check for continuity between pin 2 on connector D1582 and structure ground.
- 1) If there is continuity between pin 2 and structure ground, then do these steps:
 - a) Replace the FSEU. These are the tasks:
 - Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801
 - Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801
 - b) Do a continuity check between pin 2 on connector D1582 and structure ground again.
 - c) If there is continuity between pin 2 and structure ground, then repair the wiring between the FSEU, M1746 and the Flap Load Relief Solenoid, V94.
 - d) Reconnect the electrical connector D1582 for the Flap Load Relief Solenoid, V94.
 - e) Do the Repair Confirmation at the end of this task.
 - f) If the Repair Confirmation is not satisfactory, then continue.
 - 2) If there is no continuity between pin 2 and structure ground, then continue.
- (c) Make sure that the Flap Control Lever is in the UP position.
- (d) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00566	FLIGHT CONTROL FLAP LOAD RELIEF

- (e) Do a check for 28 VDC between pin 1 on connector D1582 and structure ground.
- 1) If there is 28 VDC between pin 1 and structure ground, then do these steps:
 - a) Replace the Flap Control Lever 30-unit Switch. These are the tasks:
 - Flap Control Lever Position Sensor Removal, AMM TASK 27-51-06-000-802
 - Flap Control Lever Position Sensor Installation, AMM TASK 27-51-06-400-802
 - b) Do a check for 28 VDC between pin 1 on connector D1582 and structure ground again.
 - c) If there is 28 VDC between pin 1 and structure ground, then repair the wiring between the flap control lever 30-unit switch and the flap load relief solenoid, V94.
 - d) Reconnect the electrical connector D1582 for the flap load relief solenoid, V94.
 - e) Do the Repair Confirmation at the end of this task.
 - f) If the Repair Confirmation is not satisfactory, then continue.
 - 2) If there is no 28 VDC between pin 1 and structure ground, then continue.
- (5) Do this check of the Flap Control Unit and the Flap Control Valves:
- (a) Remove the lower pan from the Flap Control Unit.
 - (b) Look at the linkages inside the Flap Control Unit while the Flap Control Lever is moved.
 - (c) If the linkages in the Flap Control Unit do not move properly when the Flap Control Lever moves, then do these steps:
 - 1) Disconnect the linkage for the Trailing Edge Flap Control Valve inside the Flap Control Unit.

EFFECTIVITY
SIA ALL

27-51 TASK 830

D633A103-SIA

Page 262
Feb 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 2) Move the Flap Control Lever.
- 3) If the linkages move properly, then replace the Trailing Edge Flap Control Valve. These are the tasks:
 - Trailing Edge Flap Control Valve Removal, AMM TASK 27-51-65-000-801
 - Trailing Edge Flap Control Valve Installation, AMM TASK 27-51-65-400-801
 - a) Do the Repair Confirmation at the end of this task.
 - b) If the Repair Confirmation is not satisfactory, then continue.
- 4) If the linkages do not move properly, then continue.
- 5) Reconnect the linkage for the Trailing Edge Flap Control Valve.
- 6) Disconnect the linkage for the Leading Edge Flap and Slat Control Valve inside the Flap Control Unit.
- 7) Move the flap control lever.
- 8) If the linkages move properly, then replace the Leading Edge Flap and Slat Control Valve. These are the tasks:
 - Leading Edge Flap and Slat Control Valve Removal, AMM TASK 27-81-81-000-801
 - Leading Edge Flap and Slat Control Valve Installation, AMM TASK 27-81-81-400-801
 - a) Do the Repair Confirmation at the end of this task.
 - b) If the Repair Confirmation is not satisfactory, then continue.
- 9) If the linkages do not move properly, then replace the Flap Control Unit. These are the tasks:
 - Flap Control Unit Removal, AMM TASK 27-51-61-000-801
 - Flap Control Unit Installation, AMM TASK 27-51-61-400-801
 - a) Do the Repair Confirmation at the end of this task.
 - b) If the Repair Confirmation is not satisfactory, then continue.
- (d) If the linkages in the Flap Control Unit move properly when the Flap Control Lever moves, then continue.
- (e) Install the lower pan on the Flap Control Unit.
- (6) Do this task: Trailing Edge Flap Control System Adjustment and Test, AMM TASK 27-51-00-820-801.
 - (a) Do the Repair Confirmation at the end of this task.

F. Repair Confirmation

- (1) Make sure that the position of the Flap Control Lever agrees with the position of the flaps.
- (2) Make sure that the ALTERNATE FLAPS Control Switch, on the P5 overhead panel, is in the OFF position.
- (3) Move the ALTERNATE FLAPS ARM Switch to the ARM position to arm the Alternate Control System.

NOTE: This will make sure that the Bypass Valve stays in the BYPASS position and the flaps do not move with Hydraulic Power.

EFFECTIVITY
SIA ALL

27-51 TASK 830

D633A103-SIA

Page 263
Feb 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**



KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (4) Supply System B Hydraulic Power. This is the task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (5) Open these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	8	C00211	FLIGHT CONTROL FSEU DC 1
A	9	C01468	FLIGHT CONTROL FSEU DC 2

NOTE: Opening and then closing these circuit breakers will reset the TE FLAP UCM message in the FSEU.

- (6) Close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	8	C00211	FLIGHT CONTROL FSEU DC 1
A	9	C01468	FLIGHT CONTROL FSEU DC 2



MOVE ALL PERSONS AND EQUIPMENT AWAY FROM THE TRAILING EDGE FLAPS. THE FLAPS WILL MOVE AND CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

- (7) Move the ALTERNATE FLAPS ARM Switch to the OFF position to disarm the Alternate Control System.

NOTE: If the flaps begin to move, use the ALTERNATE FLAPS ARM Switch to stop them. The FSEU will not stop the flaps automatically when motion is detected.

- (a) If the Trailing Edge Flaps move when you disarm the Alternate Control System, then the Repair Confirmation is not satisfactory.
 - (b) If the Trailing Edge Flaps do not move when you disarm the Alternate Control System, then continue.
- (8) Do this task: Trailing Edge Flap Load Relief Ground Test, 27-51 TASK 803.
 - (a) If the BITE Test does not pass, then the Repair Confirmation is not satisfactory.
 - (b) If the BITE Test is satisfactory, then continue.
- (9) Do this test of the Trailing Edge Flaps with Airspeed input to see if the FSEU detects an uncommanded motion fault again:
 - (a) Simulate an Airspeed of more than 60 knots. This is the task: Air Data Reference - System Test, AMM TASK 34-21-00-730-802.

NOTE: Without an Airspeed input of more than 60 knots, the FSEU will not detect the uncommanded motion fault.

EFFECTIVITY
SIA ALL

27-51 TASK 830

D633A103-SIA

Page 264
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (b) Use the Flap Control Lever to extend the Trailing Edge Flaps from the UP position to the 40-unit position. Stop at each detent and wait for the Flap Position Indicator Needles to stop.
 - (c) Use the Flap Control Lever to retract the trailing edge flaps from the 40-unit position to the UP position. Stop at each detent and wait for the Flap Position Indicator Needles to stop.
 - 1) If the Flap Position Indicators do not show the same position as the Flap Control Lever, or if you cannot move the flaps to all of the positions, then the Repair Confirmation is not satisfactory.
 - (d) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (e) If the maintenance message does not show, then you corrected the problem.
 - (f) If the maintenance message shows, then you continue the Fault Isolation Procedure at the subsequent step.
- (10) Remove the Airspeed Simulation.
- (11) Remove System B Hydraulic Power. This is task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

END OF TASK

831. Flap Load Relief From 25-Units Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-51406 FLP LOAD RELIEF
- (2) During the load relief ground test the trailing edge flaps retracted from the 25-unit position.
NOTE: With the trailing edge flaps and the flap control lever in the 25-unit position, the trailing edge flaps should not automatically retract.

B. Possible Causes

- (1) Flap lever 30-unit position switch, S1039
- (2) Wiring Problems

C. Related Data

- (1) (SSM 27-54-11)
- (2) (WDM 27-54-11)

D. Initial Evaluation

- (1) Do this task: Trailing Edge Flap Load Relief Ground Test, 27-51 TASK 803.
- (2) If the maintenance message does not show, then there was an intermittent fault.
- (3) If the maintenance message shows, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

- (1) Do this test of the flap lever 30-unit position switch, S1039:
 - (a) Disconnect the electrical connector D5150P from the flap lever 30-unit position switch, S1039.
 - 1) The access to the electrical connector is from below the control stand. To get access, do the following:

EFFECTIVITY
SIA ALL

27-51 TASKS 830-831

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 265
Feb 15/2023



737-600/700/800/900 FAULT ISOLATION MANUAL

- a) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
112A	Forward Access Door

- (b) Move the flap control lever to the UP position.
- (c) Do a continuity check between pins 9 and 11 on connector D5150P which is installed on the bottom of the control stand.
- 1) If there is continuity between pins 9 and 11, then replace the flap lever 30-unit position switch, S1039. These are the tasks:
 - Flap Lever Position Switch Removal, AMM TASK 27-51-08-000-801
 - Flap Lever Position Switch Installation, AMM TASK 27-51-08-400-801
 - a) Do this task: Trailing Edge Flap Load Relief Ground Test, 27-51 TASK 803.
 - b) If the maintenance message does not show, then you corrected the fault.
 - c) If the maintenance message shows, then continue.
 - 2) If there is not continuity between pins 9 and 11, then continue.
- (d) Move the flap control lever to the 25-unit position.
- (e) Do a continuity check between pins 9 and 11 on connector D5150P with the flap control lever in the 25-unit position.
- 1) If there is continuity between pins 9 and 11, then adjust the flap lever 30-unit position switch, S1039. To adjust it, do this task: Flap Lever Position Switch - Adjustment, AMM TASK 27-51-08-820-801.
 - a) Do this task: Trailing Edge Flap Load Relief Ground Test, 27-51 TASK 803.
 - b) If the maintenance message does not show, then you corrected the fault.
 - c) If the maintenance message shows, then continue.
 - (f) If there is not continuity between pins 9 and 11, then continue.
- (2) Do this check of the wiring between the flap lever 30-unit position switch, S1039 and the flap load relief solenoid, V94:
- (a) Disconnect connector D1582 from the flap load relief solenoid, V94.

NOTE: The flap load relief solenoid is installed on the trailing edge flap control valve in the main wheel well.

D5150P	D1582
pin 11	pin 1

- (c) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Re-connect connector D5150P to the flap lever 30-unit position switch, S1039.
 - 3) Re-connect connector D1582 to the flap load relief solenoid, V94.
 - 4) Do this task: Trailing Edge Flap Load Relief Ground Test, 27-51 TASK 803.
 - 5) If the maintenance message does not show, then you corrected the fault.

EFFECTIVITY
SIA ALL

27-51 TASK 831

D633A103-SIA

Page 266
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (3) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
112A	Forward Access Door

that was used to get access to the electrical connector.

END OF TASK

832. Flap Position Transmitter Disagree Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
- (a) 27-52261 TE FLAP SNSR DIS
- (2) The signals to the FSEU from the left and right flap position transmitters do not agree. It is likely that the flap drive system is broken or disconnected between the power drive unit and one of the flap position transmitters.

B. Possible Causes

- (1) Trailing edge flap drive system
- (a) Torque tubes
- (b) Torque tube support
- (c) Seal rib angle gearbox
- (d) Main landing gear beam angle gearbox
- (e) Tee angle gearbox
- (f) Transmissions
- (2) Left flap position transmitter, T427
- (3) Right flap position transmitter, T428

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

D. Related Data

- (1) (SSM 27-52-11)
- (2) (WDM 27-52-11)

E. Initial Evaluation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (2) If the maintenance message does not show, then there was an intermittent fault.
- (3) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Find which wing has a broken or disconnected drive system:
- (a) Use the FSEU to find the outputs from the left and right flap position transmitters:

EFFECTIVITY
SIA ALL

27-51 TASKS 831-832

D633A103-SIA

Page 267
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 1) Push the ON/OFF button on the front panel of the FSEU to turn on the display.

NOTE: The display will show EXISTING FAULTS?

- 2) Select OTHER FUNCTNS? from the MAIN MENU on the FSEU.
- 3) Select I/O MONITOR? from the OTHER FUNCTNS? menu.
- 4) Select SYNCHRO INPUTS? from the I/O MONITOR? menu.
- 5) Write down the values for L FL POS and R FL POS.

NOTE: Push the arrow keys to step through the sensor values.

- (b) Use the manual drive input on the flap power drive unit to extend or retract the flaps the number of turns shown in (Table 201). To manually move the flaps, do this task: Trailing Edge Flap System Manual Operation, AMM TASK 27-51-00-980-801.

NOTE: The number of turns is different for different flap positions because of cams inside the flap position transmitters.

Table 201

Flap Position	Manual Input Turns
UP to 1	5
1 to 25	3
25 to 40	11

- (c) Use the FSEU to find the outputs from the left and right flap position transmitters again.
- (d) If the L FL POS did not change by a minimum of 1 degree, then continue. The flap drive system is disconnected on the left wing.
- (e) If the R FL POS did not change by a minimum of 1 degree, then continue. The flap drive system is disconnected on the right wing.
- (f) If L FL POS and R FL POS each changed by a minimum of 1 degree, then do these steps:
 - 1) Do this task: Trailing Edge Flap Drive System Adjustment, AMM TASK 27-51-00-820-802.
 - 2) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 3) If the maintenance message does not show, then you corrected the fault.

- (2) Find where the flap drive system is broken or disconnected:

NOTE: Do these steps until you find where the flap drive system is broken or disconnected. These steps are applicable to the flap drive system on the left wing or the right wing.

- (a) Look for a broken or disconnected torque tube between the flap power drive unit and the tee angle gearbox in the main wheel well.
- (b) If the flaps are retracted, then remove the aft fairings for the flap supports on the applicable wing:
 - 1) Do this task: Inboard Flap Support Aft Fairing Removal, AMM TASK 27-51-18-000-802.
 - 2) Do this task: Outboard Flap Inboard Support Aft Fairing Removal, AMM TASK 27-51-28-000-804.
 - 3) Do this task: Outboard Flap Outboard Support Aft Fairing Removal, AMM TASK 27-51-28-000-802.

EFFECTIVITY
SIA ALL

27-51 TASK 832

D633A103-SIA

Page 268
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

- (c) Look at the torque tubes that attach to the transmissions to see if they are broken or disconnected.
- (d) If the flaps are retracted, remove these panels to get access to the torque tube support and the angle gearboxes:

- 1) On the left wing, open

<u>Number</u>	<u>Name/Location</u>
551FB	Lower Inboard Fixed Trailing Edge, Landing Gear Access Panel
561AB	Midspan Fixed Trailing Edge Access Panel - WBL 224
561CB	Midspan Fixed Trailing Edge Access Panel - WBL 388

- 2) On the right wing, open

<u>Number</u>	<u>Name/Location</u>
651FB	Lower Inboard Fixed Trailing Edge, Landing Gear Access Panel
661AB	Midspan Fixed Trailing Edge Access Panel - WBL 224
661CB	Midspan Fixed Trailing Edge Access Panel - WBL 388

- (e) Look at the torque tubes that attach to the torque tube support to see if they are broken or disconnected.
- (f) Look at the torque tubes that attach to the seal rib angle gearbox to see if they are broken or disconnected.
- (g) Look at the torque tubes that attach to the main landing gear beam angle gearbox to see if they are broken or disconnected.
- (h) Watch the torque tubes turn while you manually extend or retract the flaps with the manual drive input. To manually move the flaps, do this task: Trailing Edge Flap System Manual Operation, AMM TASK 27-51-00-980-801.

NOTE: The torque tubes should all turn at the same time, in the same direction. Turn the power drive unit the opposite direction that you turned it previously.

- 1) If the torque tubes on the inboard and outboard sides of a component do not turn together, then that component has an internal failure.
- (i) Replace the applicable component:
- 1) If it is necessary, replace an outboard torque tube. These are the tasks:
- Outboard Wing Flap Torque Tube Removal, AMM TASK 27-51-58-000-801
 - Outboard Wing Flap Torque Tube Installation, AMM TASK 27-51-58-400-801
- 2) If it is necessary, replace an inboard torque tube. These are the tasks:
- Inboard Wing Flap Torque Tube Removal, AMM TASK 27-51-58-000-802
 - Inboard Wing Flap Torque Tube Installation, AMM TASK 27-51-58-400-802
- 3) If it is necessary, replace torque tube in the wheel well. These are the tasks:
- Wheel Well Flap Torque Tube Removal, AMM TASK 27-51-58-000-803
 - Wheel Well Flap Torque Tube Installation, AMM TASK 27-51-58-400-803
- 4) If it is necessary, replace the torque tube support. These are the tasks:
- Flap Torque Tube Support Removal, AMM TASK 27-51-59-000-801
 - Flap Torque Tube Support Installation, AMM TASK 27-51-59-400-801
- 5) If it is necessary, replace the seal rib angle gearbox. These are the tasks:
- Seal Rib Angle Gearbox Removal, AMM TASK 27-51-57-000-801

EFFECTIVITY
SIA ALL

27-51 TASK 832

D633A103-SIA

Page 269
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

- Seal Rib Angle Gearbox Installation, AMM TASK 27-51-57-400-801
- 6) If it is necessary, replace the main landing gear beam angle gearbox. These are the tasks:
 - Main Landing Gear Beam Angle Gearbox Removal, AMM TASK 27-51-56-000-801
 - Main Landing Gear Beam Angle Gearbox Installation, AMM TASK 27-51-56-400-801
- 7) If it is necessary, replace the tee angle gearbox. These are the tasks:
 - Tee Angle Gearbox Removal, AMM TASK 27-51-55-000-801
 - Tee Angle Gearbox Installation, AMM TASK 27-51-55-400-801
- 8) If it is necessary, replace the inboard flap outboard transmission. These are the tasks:
 - Inboard Flap Outboard Transmission Removal, AMM TASK 27-51-31-000-801
 - Inboard Flap Outboard Transmission Installation, AMM TASK 27-51-31-400-801
- 9) If it is necessary, replace the outboard flap inboard transmission. These are the tasks:
 - Outboard Flap Inboard Transmission Removal, AMM TASK 27-51-41-000-802
 - Outboard Flap Inboard Transmission Installation, AMM TASK 27-51-41-400-802
- 10) If it is necessary, replace the outboard flap outboard transmission. These are the tasks:
 - Outboard Flap Outboard Transmission Removal, AMM TASK 27-51-41-000-801
 - Outboard Flap Outboard Transmission Installation, AMM TASK 27-51-41-400-801
- (j) Do this task: Trailing Edge Flap Drive System Adjustment, AMM TASK 27-51-00-820-802.
- (k) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - 2) If the maintenance message shows, then continue.
- (l) If they are removed, then install the aft fairings for the flap supports on the applicable wing:
 - 1) Do this task: Inboard Flap Support Aft Fairing Installation, AMM TASK 27-51-18-400-802.
 - 2) Do this task: Outboard Flap Inboard Support Aft Fairing Installation, AMM TASK 27-51-28-400-804.
 - 3) Do this task: Outboard Flap Outboard Support Aft Fairing Installation, AMM TASK 27-51-28-400-802.
- (m) If the panels are removed, then install these panels:
 - 1) On the left wing, close

<u>Number</u>	<u>Name/Location</u>
551FB	Lower Inboard Fixed Trailing Edge, Landing Gear Access Panel
561AB	Midspan Fixed Trailing Edge Access Panel - WBL 224
561CB	Midspan Fixed Trailing Edge Access Panel - WBL 388

EFFECTIVITY
SIA ALL

27-51 TASK 832

D633A103-SIA

Page 270
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 2) On the right wing, close

<u>Number</u>	<u>Name/Location</u>
651FB	Lower Inboard Fixed Trailing Edge, Landing Gear Access Panel
661AB	Midspan Fixed Trailing Edge Access Panel - WBL 224
661CB	Midspan Fixed Trailing Edge Access Panel - WBL 388

- (3) Replace the left flap position transmitter, T427 on the no. 1 transmission. These are the tasks:
- Flap Position Transmitter Removal, AMM TASK 27-58-01-000-801
 - Flap Position Transmitter Installation, AMM TASK 27-58-01-400-801
- (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- 1) If the maintenance message does not show, then you corrected the fault.
 - 2) If the maintenance message shows, then continue.
- (4) Replace the right flap position transmitter, T428 on the no. 8 transmission. These are the tasks:
- Flap Position Transmitter Removal, AMM TASK 27-58-01-000-801
 - Flap Position Transmitter Installation, AMM TASK 27-58-01-400-801
- (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- 1) If the maintenance message does not show, then you corrected the fault.

————— **END OF TASK** —————

833. TE Flap Load Relief Light Discrete Output Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
- (a) 27-58335 FLAP LD RLF LT
- (2) An overcurrent condition was detected on the trailing edge flap load relief light during an existing faults test.

B. Possible Causes

- (1) Flap Load Relief Light, L3
- (2) FSEU, M1746
- (3) Wiring problem

C. Related Data

- (1) (SSM 27-54-11)
- (2) (WDM 27-54-11)

D. Initial Evaluation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (2) If the maintenance message does not show, then there was an intermittent fault.
- (3) If the maintenance message shows, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

- (1) Do this check of the Flap Load Relief Light, L3:
 - (a) Disconnect connector D3991 from the flap load relief light, L3 in the P3 panel.
 - (b) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (c) If the maintenance message does not show, then do these steps:

EFFECTIVITY
SIA ALL

27-51 TASKS 832-833

D633A103-SIA

Page 271
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 1) Replace the Flap Load Relief Light, L3 on the P3 panel.
- 2) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- 3) If the maintenance message does not show, then you corrected the fault.
- (d) If the maintenance message shows, then continue.
- (2) Replace the FSEU, M1746. These are the tasks:
 - Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801
 - Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801
- (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - 2) If the maintenance message shows, then continue.
- (3) Do this check of the wiring between the FSEU, M1746 and the flap load relief light, L3:
 - (a) Remove the FSEU, M1746. To remove it, do this task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
 - (b) Disconnect connector D3991 from the flap load relief light, L3 in the P3 panel.
 - (c) Do a wiring check between this pin of connector D728A at the E1-1 shelf and connector D3991 at the flap load relief light, L3:

D728A	D3991
pin D9	pin 6
- (d) Repair the wiring.
- (e) Reconnect connector D13991 to the flap load relief light, L3.
- (f) Re-install the FSEU, M1746. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
- (g) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (h) If the maintenance message does not show, then you corrected the fault.

————— **END OF TASK** —————

834. FSEU Program Pin Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 27-81277 PROGRAM PINS
 - (b) 27-81278 INVALID APL TYPE
- (2) There is a problem with the program pins for the FSEU. Program pins that should be grounded are open, or program pins that should be open are grounded.

B. Possible Causes

- (1) Wiring problem
- (2) FSEU, M1746

C. Related Data

- (1) SSM 27-81-41
- (2) WDM 27-81-41

EFFECTIVITY
SIA ALL

27-51 TASKS 833-834

D633A103-SIA

Page 272
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

D. Initial Evaluation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (a) If the maintenance message does not show, then there was an intermittent fault.
 - (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

- (1) Do this check of the program pin connectors for the FSEU:
 - (a) Remove the FSEU, M1746. To remove it, do this task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
 - (b) Make sure that the pins D2, E2, H2, G2, and F2 of connector D728B are open or connected as specified (WDM 27-81-41).
 - (c) If the pins are not connected as specified, then do these steps:
 - 1) Connect the pins as specified in the WDM.
 - 2) Re-install the FSEU, M1746. This is the task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - 3) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 4) If the maintenance message does not show, then you corrected the fault.
 - (d) If the pins are in the condition specified, then continue.
- (2) Install a new FSEU. This is the task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (b) If the maintenance message does not show, then you corrected the fault.

————— **END OF TASK** —————

836. Trailing Edge Flap Primary Control Operation/Lockout Problem - Fault Isolation

A. Description

- (1) This task is for these Observed Faults:
 - (a) The Trailing Edge Flaps do not operate with the Primary Controls.
 - (b) The Trailing Edge Flaps Lock-out on Approach.
- (2) With Primary Controls, Hydraulic System B supplies power to the Trailing Edge Flaps.
- (3) Refer to SDS SUBJECT 27-51-00 for a detailed description of the Trailing Edge Flap System.

B. Possible Causes

- (1) Trailing Edge Flap Bypass Valve, V52
- (2) ALTERNATE FLAPS ARM Switch, S1
- (3) Flap Hydraulic Motor
- (4) Flap Priority Valve
- (5) FSEU, M1746
- (6) Trailing Edge Flap Drive System:
 - (a) Flap Power Drive Unit
 - (b) Transmissions
 - (c) Torque Tube Support

EFFECTIVITY
SIA ALL

27-51 TASKS 834-836

D633A103-SIA

Page 273
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (d) Seal Rib Angle Gearbox
- (e) Main Landing Gear Beam Angle Gearbox
- (f) Tee Angle Gearbox
- (7) Trailing Edge Flap Control System
 - (a) Flap Control Cables WFA / WFB
 - (b) Flap Control Unit
 - (c) Trailing Edge Flap Control Valve
- (8) Wiring

C. Related Data

- (1) WDM 27-53-11
- (2) SSM 27-50-01
- (3) SSM 27-53-11
- (4) SDS SUBJECT 27-51-00

D. Initial Evaluation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (a) If any of the messages that follow show, then go to the applicable FIM Task for the corrective action:
 - 1) 27-52259 TE FLAP SNSR L (Left Flap Position Transmitter Disagree Problem - Fault Isolation, 27-51 TASK 813)
 - 2) 27-52260 TE FLAP SNSR R (Right Flap Position Transmitter Disagree Problem - Fault Isolation, 27-51 TASK 820)
 - 3) 27-51351 TE FLAP UCM (Trailing Edge Flap Uncommanded Motion Problem - Fault Isolation, 27-51 TASK 830)
 - 4) 27-51401 IN BYP REA UNKN (Flap Bypass Valve In Bypass Position Problem - Fault Isolation, 27-51 TASK 808)
 - 5) 27-51407 TE FAIL TO DRIVE (Flap Failed to Extend During Test Problem - Fault Isolation, 27-51 TASK 848)
 - 6) 27-51417 FLAP LVR SENSOR (Flap Control Lever Position Sensor Problem - Fault Isolation, 27-51 TASK 811)
 - 7) 27-51427 FLAP LEVER (Flap Control Lever Position Problem - Fault Isolation, 27-51 TASK 819)
 - 8) 27-51429 BYP VLV SW DISAG (Flap Bypass Valve Failed to Move to Bypass Position - Fault Isolation, 27-51 TASK 812)
 - 9) 27-52261 TE FLAPS SNSR DIS (Flap Position Transmitter Disagree Problem - Fault Isolation, 27-51 TASK 832)
 - 10) 27-52407 TE FLAP SNSR L C (Left Flap Position Transmitter Problem - Fault Isolation, 27-51 TASK 814)
 - 11) 27-52408 TE FLAP SNSR R C (Right Flap Position Transmitter Problem - Fault Isolation, 27-51 TASK 821)
 - 12) 27-53250 FLAP 1 SKEW (TE Flap Support No. 1 Skew Problem - Fault Isolation, 27-59 TASK 801)

EFFECTIVITY
SIA ALL

27-51 TASK 836

D633A103-SIA

Page 274
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 13) 27-53251 FLAP 2 SKEW (TE Flap Support No. 2 Skew Problem - Fault Isolation, 27-59 TASK 802)
- 14) 27-53252 FLAP 3 SKEW (TE Flap Support No. 3 Skew Problem - Fault Isolation, 27-59 TASK 803)
- 15) 27-53253 FLAP 4 SKEW (TE Flap Support No. 4 Skew Problem - Fault Isolation, 27-59 TASK 804)
- 16) 27-53254 FLAP 5 SKEW (TE Flap Support No. 5 Skew Problem - Fault Isolation, 27-59 TASK 805)
- 17) 27-53255 FLAP 6 SKEW (TE Flap Support No. 6 Skew Problem - Fault Isolation, 27-59 TASK 806)
- 18) 27-53256 FLAP 7 SKEW (TE Flap Support No. 7 Skew Problem - Fault Isolation, 27-59 TASK 807)
- 19) 27-53257 FLAP 8 SKEW (TE Flap Support No. 8 Skew Problem - Fault Isolation, 27-59 TASK 808)
- 20) 27-53258 FLAP SKEW (TE Flap Skew Problem - Fault Isolation, 27-59 TASK 809)
- 21) 27-53409 FLAP 1 SKEW CON (TE Flap Support No. 1 Skew Sensor Problem - Fault Isolation, 27-59 TASK 810)
- 22) 27-53410 FLAP 2 SKEW CON (TE Flap Support No. 2 Skew Sensor Problem - Fault Isolation, 27-59 TASK 811)
- 23) 27-53411 FLAP 3 SKEW CON (TE Flap Support No. 3 Skew Sensor Problem - Fault Isolation, 27-59 TASK 812)
- 24) 27-53412 FLAP 4 SKEW CON (TE Flap Support No. 4 Skew Sensor Problem - Fault Isolation, 27-59 TASK 813)
- 25) 27-53413 FLAP 5 SKEW CON (TE Flap Support No. 5 Skew Sensor Problem - Fault Isolation, 27-59 TASK 814)
- 26) 27-53414 FLAP 6 SKEW CON (TE Flap Support No. 6 Skew Sensor Problem - Fault Isolation, 27-59 TASK 815)
- 27) 27-53415 FLAP 7 SKEW CON (TE Flap Support No. 7 Skew Sensor Problem - Fault Isolation, 27-59 TASK 816)
- 28) 27-53416 FLAP 8 SKEW CON (TE Flap Support No. 8 Skew Sensor Problem - Fault Isolation, 27-59 TASK 817)
- 29) 27-53428 TE BYP VALVE (Flap Bypass Valve Excitation Problem - Fault Isolation, 27-51 TASK 824)

(b) If none of the above messages show, then continue.

(2) Do this Operational Test of the Trailing Edge Flap System with Primary Control:



WARNING

KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (a) Supply System B Hydraulic Power. This is the task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (b) Use the Primary System to extend and retract the flaps. This is the task: Trailing Edge Flap System Operation With Primary Control, AMM TASK 27-51-00-860-801.

EFFECTIVITY
SIA ALL

27-51 TASK 836

D633A103-SIA

Page 275
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (c) Remove System B Hydraulic Power. This is the task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
 - (d) If the Trailing Edge Flaps extend and retract with the Primary System, then there was an intermittent problem.
 - (e) If the Trailing Edge Flaps do not extend and retract with the Primary System, then continue.
- (3) Do this Operational Test of the Trailing Edge Flap System with the Alternate Control System:



WARNING

MOVE ALL PERSONS AND EQUIPMENT AWAY FROM THE TRAILING EDGE FLAPS, AND THE LEADING EDGE FLAPS AND SLATS. THESE SURFACES WILL MOVE AND CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

- (a) Move the ALTERNATE FLAPS ARM Switch on the P5 Panel to the ARM position to arm the Alternate Control System.
NOTE: The Standby Hydraulic Pump will operate when you arm the Alternate Control System.
- (b) Move the ALTERNATE FLAPS Control Switch to the DOWN position to extend the Trailing Edge Flaps.
NOTE: The Leading Edge Flaps and Slats will extend when you extend the Trailing Edge Flaps.
- (c) Move the ALTERNATE FLAPS Control Switch to the UP position to retract the Trailing Edge Flaps.
NOTE: The Leading Edge Flaps and Slats will not retract with Alternate Control.
- (d) If the Trailing Edge Flaps extend and retract with the Alternate Control, then do the Fault Isolation Procedure - Drive System Operates below.
- (e) If the Trailing Edge Flaps do not extend and retract with the Alternate Control, then do the Fault Isolation Procedure - Drive System Does Not Operate below.

E. Fault Isolation Procedure - Drive System Operates

- (1) Do this check of the position of the Trailing Edge Flap Bypass Valve, V52:
 - (a) Make sure that the ALTERNATE FLAPS ARM Switch on the P5 panel is in the OFF position.
 - (b) Look at the position of the Manual Override Lever on the Trailing Edge Flap Bypass Valve, V52.
NOTE: The Trailing Edge Flap Bypass Valve should be in POSITION 1. The Trailing Edge Flap Bypass Valve is installed on the Aft bulkhead of the Main Wheel Well.
- (c) If the Manual Override Lever is in POSITION 2, then do these steps:
 - 1) Disconnect the electrical connector D1014 from the Trailing Edge Flap Bypass Valve, V52 (WDM 27-53-11).
 - 2) Do a voltage check as follows:



737-600/700/800/900 FAULT ISOLATION MANUAL

TRAILING EDGE FLAP BYPASS VLV

Connector

D1014

pin 1 GD332-DC

VOLTAGE

28 VDC

- a) If you do not find 28 VDC, then do these steps:
 - <1> Replace the Trailing Edge Flap Bypass Valve, V52. These are the tasks:
 - Trailing Edge Flap Bypass Valve Assembly Removal, AMM TASK 27-51-02-000-801
 - Trailing Edge Flap Bypass Valve Assembly Installation, AMM TASK 27-51-02-400-801
 - <2> Re-connect electrical connector D1014 to the Trailing Edge Flap Bypass Valve, V52.
 - <3> Do the Repair Confirmation at the end of this task.
- b) If you find 28 VDC, then do these steps:
 - <1> Replace the ALTERNATE FLAPS ARM Switch, S1.
 - <2> Re-connect electrical connector D1014 to the Trailing Edge Flap Bypass Valve, V52.
 - <3> Do the Repair Confirmation at the end of this task.
- (d) If the Manual Override Lever is in POSITION 1, then re-connect electrical connector D1014 to the Trailing Edge Flap Bypass Valve, V52 and continue.
- (2) Do this check of the Flap Control System:

NOTE: The Flap Control System includes the Flap Control Cables WFA / WFB, the Flap Control Unit, and the Trailing Edge Flap Control Valve.

 - (a) Remove the screws that attach the lower pan to the FCU.

NOTE: The FCU is installed in the Right Main Wheel Well.
 - (b) Look at the linkages inside the FCU while you move the Flap Control Lever.
 - 1) If the linkages do not move when you move the Flap Control Lever, then do these steps:
 - a) Get access to the WFA and WFB Flap Control Cables through the access panel on the UPR Right side of the Nose Wheel Well.
 - <1> If the WFA and WFB cables do not have tension, then do these steps:
 - <a> Adjust or replace the cables. This is the task: Trailing Edge Flap Control System Adjustment and Test, AMM TASK 27-51-00-820-801.
 - Do the Repair Confirmation at the end of this task.
 - <2> If the WFA and WFB cables have tension, then do these steps:
 - <a> Replace the FCU. These are the tasks:
 - Flap Control Unit Removal, AMM TASK 27-51-61-000-801
 - Flap Control Unit Installation, AMM TASK 27-51-61-400-801
 - Do the Repair Confirmation at the end of this task.

EFFECTIVITY
SIA ALL

27-51 TASK 836

D633A103-SIA

Page 277
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- b) Install the access panel on the UPR Right side of the Nose Wheel Well.
- 2) If the linkages in the flap control unit move when you move the flap control lever, then do these steps:
 - a) Replace the Trailing Edge Flap Control Valve. These are the tasks:
 - Trailing Edge Flap Control Valve Removal, AMM TASK 27-51-65-000-801
 - Trailing Edge Flap Control Valve Installation, AMM TASK 27-51-65-400-801
 - b) Do the Repair Confirmation at the end of this task.
 - (c) Install the lower pan on the FCU with the screws.
- (3) Replace the Flap Hydraulic Motor. These are the tasks:
 - Flap Hydraulic Motor Removal, AMM TASK 27-51-52-000-801
 - Flap Hydraulic Motor Installation, AMM TASK 27-51-52-400-801
- (a) Do the Repair Confirmation at the end of this task.

F. Fault Isolation Procedure - Drive System Does Not Operate

NOTE: There is probably a jam in one of the Gearboxes in the Trailing Edge Flap Drive System.

- (1) Do this check to find where the flap drive system is jammed:

NOTE: Do these steps until you find where the Flap Drive System is jammed. These steps are applicable to the Flap Drive System on the Left Wing and the Right Wing.

- (a) Do the check on these components of the Flap Drive System:
 - Flap Transmissions
 - Tee Angle Gearbox
 - Main Landing Gear Beam Angle Gearbox
 - Seal Rib Angle Gearbox
 - Torque Tube Support.
- 1) If the flaps are retracted, then remove the Flap Support Aft Fairings on the applicable wing to get access to the transmissions. These are the tasks:
 - Inboard Flap Support Aft Fairing Removal, AMM TASK 27-51-18-000-802
 - Outboard Flap Inboard Support Aft Fairing Removal, AMM TASK 27-51-28-000-804
 - Outboard Flap Outboard Support Aft Fairing Removal, AMM TASK 27-51-28-000-802
- 2) If the flaps are retracted, then remove these panels to get access to the Torque Tube Support and the Angle Gearboxes:

- a) On the left wing, open

<u>Number</u>	<u>Name/Location</u>

551FB	Lower Inboard Fixed Trailing Edge, Landing Gear Access Panel
561AB	Midspan Fixed Trailing Edge Access Panel - WBL 224
561CB	Midspan Fixed Trailing Edge Access Panel - WBL 388

- b) On the right wing, open

<u>Number</u>	<u>Name/Location</u>

651FB	Lower Inboard Fixed Trailing Edge, Landing Gear Access Panel
661AB	Midspan Fixed Trailing Edge Access Panel - WBL 224

EFFECTIVITY
SIA ALL

27-51 TASK 836

D633A103-SIA

Page 278
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

(Continued)

<u>Number</u>	<u>Name/Location</u>
661CB	Midspan Fixed Trailing Edge Access Panel - WBL 388

- 3) Disconnect the Torque Tubes from the applicable component.
- 4) Turn the Torque Tube Couplings to see if the component is jammed.
 - a) If necessary, replace the Inboard Flap Inboard Transmission. These are the tasks:
 - Inboard Flap Inboard Transmission Removal, AMM TASK 27-51-31-000-802
 - Inboard Flap Inboard Transmission Installation, AMM TASK 27-51-31-400-802
 - b) If necessary, replace the Inboard Flap Outboard Transmission. These are the tasks:
 - Inboard Flap Outboard Transmission Removal, AMM TASK 27-51-31-000-801
 - Inboard Flap Outboard Transmission Installation, AMM TASK 27-51-31-400-801
 - c) If necessary, replace the Outboard Flap Inboard Transmission. These are the tasks:
 - Outboard Flap Inboard Transmission Removal, AMM TASK 27-51-41-000-802
 - Outboard Flap Inboard Transmission Installation, AMM TASK 27-51-41-400-802
 - d) If necessary, replace the Outboard Flap Outboard Transmission. These are the tasks:
 - Outboard Flap Outboard Transmission Removal, AMM TASK 27-51-41-000-801
 - Outboard Flap Outboard Transmission Installation, AMM TASK 27-51-41-400-801
 - e) If necessary, replace the Torque Tube Support. These are the tasks:
 - Flap Torque Tube Support Removal, AMM TASK 27-51-59-000-801
 - Flap Torque Tube Support Installation, AMM TASK 27-51-59-400-801
 - f) If necessary, replace the Seal Rib Angle Gearbox. These are the tasks:
 - Seal Rib Angle Gearbox Removal, AMM TASK 27-51-57-000-801
 - Seal Rib Angle Gearbox Installation, AMM TASK 27-51-57-400-801
 - g) If necessary, replace the Main Landing Gear Beam Angle Gearbox. These are the tasks:
 - Main Landing Gear Beam Angle Gearbox Removal, AMM TASK 27-51-56-000-801
 - Main Landing Gear Beam Angle Gearbox Installation, AMM TASK 27-51-56-400-801
 - h) If necessary, replace the Tee Angle Gearbox. These are the tasks:
 - Tee Angle Gearbox Removal, AMM TASK 27-51-55-000-801

EFFECTIVITY
SIA ALL

27-51 TASK 836

D633A103-SIA

Page 279
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

- Tee Angle Gearbox Installation, AMM TASK 27-51-55-400-801
- (b) Do this task: Trailing Edge Flap Drive System Adjustment, AMM TASK 27-51-00-820-802.
NOTE: The adjustment procedure will include reconnecting the Torque Tubes.
 - 1) Do the Repair Confirmation at the end of this task.
- (c) After you correct the problem, put the airplane back to its normal configuration:
 - 1) Install the Flap Support Aft Fairings on the applicable wing. These are the tasks:
 - Inboard Flap Support Aft Fairing Installation, AMM TASK 27-51-18-400-802
 - Outboard Flap Inboard Support Aft Fairing Installation, AMM TASK 27-51-28-400-804
 - Outboard Flap Outboard Support Aft Fairing Installation, AMM TASK 27-51-28-400-802
 - 2) Install these panels:
 - a) On the left wing, close

<u>Number</u>	<u>Name/Location</u>
551FB	Lower Inboard Fixed Trailing Edge, Landing Gear Access Panel
561AB	Midspan Fixed Trailing Edge Access Panel - WBL 224
561CB	Midspan Fixed Trailing Edge Access Panel - WBL 388
 - b) On the right wing, close

<u>Number</u>	<u>Name/Location</u>
651FB	Lower Inboard Fixed Trailing Edge, Landing Gear Access Panel
661AB	Midspan Fixed Trailing Edge Access Panel - WBL 224
661CB	Midspan Fixed Trailing Edge Access Panel - WBL 388
- (2) Replace the Flap Power Drive Unit (PDU). These are the tasks:
 - Flap Power Drive Unit (PDU) Removal, AMM TASK 27-51-51-000-801
 - Flap Power Drive Unit (PDU) Installation, AMM TASK 27-51-51-400-801
- (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Use the Primary Control System to extend and retract the Trailing Edge Flaps. This is the task: Trailing Edge Flap System Operation With Primary Control, AMM TASK 27-51-00-860-801.
 - (a) If the Trailing Edge Flaps operate with Primary Control, you corrected the problem
 - (b) If the Trailing Edge Flaps do not operate with Primary Control, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

837. Alternate Trailing Edge Flaps Operation Problem - Fault Isolation

A. Description

- (1) The Trailing Edge Flaps do not operate with the Alternate Controls.
- (2) The Alternate Flap Controls use the ALTERNATE FLAPS ARM Switch and Control Switch to command movement of the Trailing Edge Flaps. The flaps are powered by the Electric Motor on the Flap Power Drive Unit.

EFFECTIVITY
SIA ALL

27-51 TASKS 836-837

D633A103-SIA

Page 280
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

B. Possible Causes

- (1) TE Flap Bypass Valve, V52
- (2) Flap Electric Motor, M339
- (3) ALTERNATE FLAPS ARM Switch, S1
- (4) Alternate TE Flap DOWN Relay, R57
- (5) Alternate TE Flap UP Relay, R58
- (6) Wiring

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES
D	13	C00841	FLIGHT CONTROL ALTN T.E. FLAP DRIVE

D. Related Data

- (1) WDM 27-53-11
- (2) WDM 27-53-12
- (3) SSM 27-53-11
- (4) SSM 27-53-12

E. Initial Evaluation



MOVE ALL PERSONS AND EQUIPMENT AWAY FROM THE TRAILING EDGE FLAPS, AND THE LEADING EDGE FLAPS AND SLATS. THESE SURFACES WILL MOVE AND CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

- (1) Do this Operational Test of the TE Flaps with the Alternate Control System:
 - (a) Move the ALTERNATE FLAPS ARM Switch on the P5 panel to the ARM position to arm the Alternate Control System.

NOTE: The Standby Hydraulic Pump will operate when you arm the Alternate Control System.
 - (b) Move the ALTERNATE FLAPS Control Switch to the DOWN position to extend the Trailing Edge Flaps.

NOTE: The Leading Edge Flaps and Slats will extend when you extend the Trailing Edge Flaps.
 - (c) Move the ALTERNATE FLAPS Control Switch to the UP position to retract the Trailing Edge Flaps.

NOTE: The Leading Edge Flaps and Slats will not retract with Alternate Control.
- (2) If the TE Flaps extend and retract with the Alternate Control, then there was an intermittent fault.
- (3) If the TE Flaps do not extend with Alternate Control, then do this task: Alternate Trailing Edge Flaps Extension Problem - Fault Isolation, 27-51 TASK 838.
- (4) If the TE Flaps do not retract with Alternate Control, then do this task: Alternate Trailing Edge Flaps Retraction Problem - Fault Isolation, 27-51 TASK 839.

EFFECTIVITY
SIA ALL

27-51 TASK 837

D633A103-SIA

Page 281
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (5) If the TE Flaps do not extend or retract with Alternate Control, then continue.
- (6) Do this Operational Test of the TE Flap System with the Primary Controls:



KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Supply System B Hydraulic Power. This is the task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (b) Use the Primary System to extend and retract the flaps. This is the task: Trailing Edge Flap System Operation With Primary Control, AMM TASK 27-51-00-860-801.
- (c) Remove System B Hydraulic Power. This is the task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
- (d) If the TE Flaps do not operate with the Primary System, then do this task: Trailing Edge Flap Primary Control Operation/Lockout Problem - Fault Isolation, 27-51 TASK 836.
- (e) If the TE Flaps operate with the Primary System, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Push the ALTERNATE FLAPS ARM Switch on the P5 Panel to arm the Alternate Control System.
- (2) Look at the position of the Manual Override Lever on the TE Flaps Bypass Valve, V52.

NOTE: The Trailing Edge Flaps Bypass Valve should move to POSITION 2. The Trailing Edge Flaps Bypass Valve is installed on the aft bulkhead of the Main Wheel Well.

- (a) If the Manual Override Lever on the Bypass Valve does not move to POSITION 2, then do these steps:
 - 1) Disconnect the electrical connector D1014 from the TE Flaps Bypass Valve, V52 (WDM 27-53-11).
 - 2) Do a check for 28 VDC between pin 1 of connector D1014 and structure ground.
 - a) If you do not find 28 VDC, then examine the wiring between the TE Flaps Bypass Valve and P5-3 Flight Control Panel as follows:

**TE FLPS
BYPASS VLV
D1014**
pin 1

**P5-3 FLT CTRL
PNL
D624**
pin 15

- <1> If you find a problem with the wiring, then do these steps:
 - <a> Repair the wiring.
 - Re-connect electrical connector D1014 to the TE Flap Bypass Valve, V52.
 - <c> Re-connect electrical connector D624 at the P5-3 Flight Control Panel.
 - <d> Do the Repair Confirmation at the end of this task.

EFFECTIVITY
SIA ALL

27-51 TASK 837



737-600/700/800/900 FAULT ISOLATION MANUAL

- <2> If you do not find a problem with the wiring, then replace the ALTERNATE FLAPS ARM Switch, S1.
- <a> Repair the wiring.
 - Re-connect electrical connector D1014 to the TE Flap Bypass Valve, V52.
 - <c> Re-connect electrical connector D624 at the P5-3 Flight Control Panel.
 - <d> Do the Repair Confirmation at the end of this task.
- b) If you find 28 VDC at pin 1 of connector D1014, do this test of the TE Flap Bypass Valve Flap Bypass Valve and the Valve Motor:
- <1> Try to manually move the Manual Override Lever to POSITION 2.
- <a> If you cannot move the Manual Override Lever, replace the TE Flap Bypass Valve, V52. These are the tasks:
 - Trailing Edge Flap Bypass Valve Assembly Removal, AMM TASK 27-51-02-000-801
 - Trailing Edge Flap Bypass Valve Assembly Installation, AMM TASK 27-51-02-400-801
 - I. Do the Repair Confirmation at the end of this task.
 - If you can move the Manual Override Lever, replace the TE Flap Bypass Valve Motor. These are the tasks:
 - Trailing Edge Flap Bypass Valve Motor Removal, AMM TASK 27-51-02-000-803
 - Trailing Edge Flap Bypass Valve Motor Installation, AMM TASK 27-51-02-400-803
 - I. Do the Repair Confirmation at the end of this task.
- (b) If the Manual Override Lever on the Bypass Valve moves to POSITION 2, then continue.
- (3) Do this check of the Electrical Power to the Flap Electric Motor, M339 (WDM 27-53-12):
- (a) Open this circuit breaker:
- F/O Electrical System Panel, P6-2**
- | <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------------------------------|
| D | 13 | C00841 | FLIGHT CONTROL ALTN T.E. FLAP DRIVE |
- (b) Disconnect connector D1012 from the Flap Electric Motor, M339.
- NOTE: The Flap Electric Motor is installed on the Flap Power Drive Unit in the Main Wheel Well.
- (c) Close this circuit breaker:
- F/O Electrical System Panel, P6-2**
- | <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------------------------------|
| D | 13 | C00841 | FLIGHT CONTROL ALTN T.E. FLAP DRIVE |
- (d) Make sure that the ALTERNATE FLAPS ARM Switch is in the ARM position.
- (e) Move and hold the ALTERNATE FLAPS Control Switch to the UP or DOWN position.
- (f) Do a check for 3-phase 115 VAC to the TE Alternate Flap Electric Motor as follows (WDM 27-53-12):

EFFECTIVITY
SIA ALL

27-51 TASK 837

D633A103-SIA

Page 283
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

TE ALTN FLAP ELEC MOTOR D1012		TE ALTN FLAP ELEC MOTOR D1012	VOLTAGE
pin 1	.....	pin 4 (Neutrtal)	115 VAC
pin 2	.....	pin 4 (Neutrtal)	115 VAC
pin 3	.....	pin 4 (Neutrtal)	115 VAC

- 1) If you find 115 VAC at all three pins, replace the Alternate Flap Electric Motor, M339. These are the tasks:
 - Flap Electric Motor Removal, AMM TASK 27-51-53-000-801
 - Flap Electric Motor Installation, AMM TASK 27-51-53-400-801
 - a) Do the Repair Confirmation at the end of this task.
- 2) If you do not find 115 VAC, do these steps:
 - a) Disconnect electrical connector D40602P from the J4 Junction Box.
NOTE: The J4 Junction Box is located above the Nose Wheel Well. The TE UP Relay and the TE DOWN Relay are installed in this Junction Box.
 - b) Move and hold the ALTERNATE FLAPS Control Switch to the UP or DOWN position.
 - c) Do a check for 3-phase 115 VAC to the Junction Box J4 as follows (WDM 27-53-12):

Junction Box J4 D40602P		Junction Box J4 D40602P	VOLTAGE
pin 1	.....	GND	115 VAC
pin 2	.....	GND	115 VAC
pin 3	.....	GND	115 VAC

- <1> If you find 115 VAC at all three pins, then do these steps:
 - <a> Repair the wiring between the J4 Junction Box and the Alternate Flap Electric Motor, M339 (WDM 27-53-12).
 - Do the Repair Confirmation at the end of this task.
 - <2> If you do not find 115 VAC at all three pins of connector D40602P, then examine and repair or replace the wiring between connector D40602P and the 3-phase circuit breaker C841. If the wiring is OK, then replace the circuit breaker C841 (WDM 27-53-12).
 - <a> Do the Repair Confirmation at the end of this task.
- (4) Do this check of the TE Flap UP and DOWN Relays in the J4 Junction Box as follows (WDM 27-53-12):
- NOTE:** Electrical EXTEND and RETRACT signals go through both relays.
- (a) Disconnect electrical connector D40610P from the J4 Junction Box.
 - (b) Do a check for continuity between these pins of the J-side of connector D40610P:
 - Pin 4 and pin 5 (Flap UP Relay)
 - Pin 3 and pin 14 (Flap DOWN Relay)

EFFECTIVITY
SIA ALL

27-51 TASK 837

D633A103-SIA

Page 284
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 1) If you do not find continuity, repair or replace the wiring or replace the applicable Relay(s).
 - a) Re-connect connector D40610P to the J4 Junction Box.
 - b) Do the Repair Confirmation at the end of this task.
- 2) If you find continuity, continue.
- (5) Replace the TE Flap DOWN Relay, R57.
 - (a) Do the Repair Confirmation at the end of this task.
- (6) Replace the TE Flap UP Relay, R58.
 - (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Use the Alternate Control System to extend and retract the Trailing Edge Flaps. This is the task: Trailing Edge Flap System Operation With Alternate Control, AMM TASK 27-51-00-860-802.
 - (a) If the Trailing Edge Flaps operate, then you corrected the problem.
 - (b) If the Trailing Edge Flaps do not operate, then you continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

838. Alternate Trailing Edge Flaps Extension Problem - Fault Isolation

A. Description

- (1) The trailing edge flaps did not extend with alternate control.
- (2) The alternate flap controls use the ALTERNATE FLAPS ARM switch and control switch to command movement of the trailing edge flaps. The flaps are powered by the electric motor on the flap power drive unit.

B. Possible Causes

- (1) TE flaps DOWN limit switch, S246
- (2) Flap electric motor, M339
- (3) ALTERNATE FLAPS control switch, S2
- (4) Alternate TE flap DOWN relay, R57
- (5) Alternate TE flap UP relay, R58
- (6) Wiring problem

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES
D	13	C00841	FLIGHT CONTROL ALTN T.E. FLAP DRIVE

D. Related Data

- (1) (SSM 27-53-11)
- (2) (SSM 27-53-12)
- (3) (WDM 27-53-11)

EFFECTIVITY
SIA ALL

27-51 TASKS 837-838

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 285
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

(4) (WDM 27-53-12)

E. Initial Evaluation

(1) Do this operational test of the trailing edge flaps with the alternate control system:



WARNING

MOVE ALL PERSONS AND EQUIPMENT AWAY FROM THE TRAILING EDGE FLAPS, AND THE LEADING EDGE FLAPS AND SLATS. THESE SURFACES WILL MOVE AND CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

(a) Move the ALTERNATE FLAPS ARM switch on the P5 panel to the ARM position to arm the alternate control system.

NOTE: The standby hydraulic pump will operate when you arm the alternate control system.

(b) Move the ALTERNATE FLAPS control switch to the DOWN position to extend the trailing edge flaps.

NOTE: The leading edge flaps and slats will extend when you move the switch to DOWN.

(c) Move the ALTERNATE FLAPS control switch to the UP position to retract the trailing edge flaps.

NOTE: The leading edge flaps and slats will not retract with alternate control.

(2) If the trailing edge flaps extend and retract with the alternate control, then there was an intermittent fault.

(3) If the trailing edge flaps do not extend or retract with alternate control, then, do this task: Alternate Trailing Edge Flaps Operation Problem - Fault Isolation, 27-51 TASK 837.

(4) If the trailing edge flaps extend, but do not retract with alternate control, then, do this task: Alternate Trailing Edge Flaps Retraction Problem - Fault Isolation, 27-51 TASK 839.

(5) If the trailing edge flaps do not extend with alternate control, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

(1) Make sure the trailing edge flaps are not in the fully extended position. If the trailing edge flaps are in the fully extended position, then do this task: Retract the Trailing Edge Flaps, AMM TASK 27-51-00-860-804.

(2) Do this check of the TE flap DOWN limit switch, S246:

NOTE: The TE flap DOWN limit switch is installed on the flap control unit in the main wheel well.

(a) Disconnect the electrical connector D46044P from the junction box in the main wheel well.

(b) Do a continuity check between pin 13 on connector D46044P and structure ground.

NOTE: With the flaps not fully extended, the limit switch should provide a ground.

(c) If there is not continuity between pin 13 and structure ground, then do these steps:

1) Replace the TE flap DOWN limit switch, S246. These are the tasks:

- Flap Limit Switch Removal, AMM TASK 27-51-63-000-801
- Flap Limit Switch Installation, AMM TASK 27-51-63-400-801

EFFECTIVITY
SIA ALL

27-51 TASK 838

D633A103-SIA

Page 286
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 2) Re-connect the electrical connector D46044P to the junction box in the main wheel well.
 - 3) Use the alternate control system to extend and retract the trailing edge flaps. To extend and retract the flaps, do this task: Trailing Edge Flap System Operation With Alternate Control, AMM TASK 27-51-00-860-802.
 - 4) If the trailing edge flaps operate with alternate control, then you corrected the fault.
 - 5) If the trailing edge flaps do not operate with alternate control, then continue.
- (d) If there is continuity between pin 13 and structure ground, then continue.
- 1) Re-connect the electrical connector D46044P to the junction box in the main wheel well.

- (3) Do this check of the ALTERNATE FLAPS control switch, S2:

- (a) Open this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

- (b) Disconnect the connector D624 for the P5-3 flight control panel.

NOTE: The ALTERNATE FLAPS control switch, S2 is installed on the P5-3 panel in the flight compartment.

- (c) Move the ALTERNATE FLAPS ARM switch to the ARM position.
- (d) Move and hold the ALTERNATE FLAPS control switch to the DOWN position.
- (e) Do a continuity check between pin 4 and pin 16 on connector D624.
- (f) If there is not continuity between pin 4 and pin 16, then do these steps:
- 1) Replace the ALTERNATE FLAPS control switch, S2 on the P5-3 panel.
 - 2) Re-connect connector D624 for the P5-3 flight control panel.
 - 3) Close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

- 4) Use the alternate control system to extend and retract the trailing edge flaps. To extend and retract the flaps, do this task: Trailing Edge Flap System Operation With Alternate Control, AMM TASK 27-51-00-860-802.
 - 5) If the trailing edge flaps operate with alternate control, then you corrected the fault.
- (g) If there is continuity between pin 4 and pin 16, then continue.
- 1) Re-connect connector D624 for the P5-3 flight control panel.
 - 2) Close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

- (4) Do this check of the trailing edge flaps UP and DOWN relays in the J4 junction box:

NOTE: Electrical extend and retract signals go through both relays.

EFFECTIVITY
SIA ALL

27-51 TASK 838

D633A103-SIA

Page 287
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (a) Disconnect electrical connector D40610P from the J4 Junction Box.
- (b) Do a wiring check between these pins of connector D40610P at the J4 junction box:
 - 1) Pin 4 and pin 5
 - 2) Pin 3 and pin 14
- (c) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-connect connector D40610P at the J4 junction box.
 - 3) Use the alternate control system to extend and retract the trailing edge flaps. To extend and retract the flaps, do this task: Trailing Edge Flap System Operation With Alternate Control, AMM TASK 27-51-00-860-802.
 - 4) If the trailing edge flaps operate with alternate control, then you corrected the fault.
 - 5) If the flaps do not operate with alternate control, then continue.
- (d) If you do not find a problem with the wiring, then continue.
- (5) Replace the trailing edge flaps DOWN relay, R57.
 - (a) Use the alternate control system to extend and retract the trailing edge flaps. To extend and retract the flaps, do this task: Trailing Edge Flap System Operation With Alternate Control, AMM TASK 27-51-00-860-802.
 - (b) If the trailing edge flaps operate with alternate control, then you corrected the fault.
 - (c) If the trailing edge flaps do not operate with alternate control, then continue.
- (6) Replace the trailing edge flaps UP relay, R58.
 - (a) Use the alternate control system to extend and retract the trailing edge flaps. To extend and retract the flaps, do this task: Trailing Edge Flap System Operation With Alternate Control, AMM TASK 27-51-00-860-802.
 - (b) If the trailing edge flaps operate with alternate control, then you corrected the fault.

————— **END OF TASK** —————

839. Alternate Trailing Edge Flaps Retraction Problem - Fault Isolation

A. Description

- (1) The trailing edge flaps did not retract with alternate control.
- (2) The alternate flap controls use the ALTERNATE FLAPS ARM switch and control switch to command movement of the trailing edge flaps. The flaps are powered by the electric motor on the flap power drive unit.

B. Possible Causes

- (1) TE flaps UP limit switch, S245
- (2) Flap electric motor, M339
- (3) ALTERNATE FLAPS control switch, S2
- (4) Alternate TE flap UP relay, R58
- (5) Alternate TE flap DOWN relay, R57
- (6) Wiring problem

EFFECTIVITY
SIA ALL

27-51 TASKS 838-839

D633A103-SIA

Page 288
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES
D	13	C00841	FLIGHT CONTROL ALTN T.E. FLAP DRIVE

D. Related Data

- (1) (SSM 27-53-11)
- (2) (SSM 27-53-12)
- (3) (WDM 27-53-11)
- (4) (WDM 27-53-12)

E. Initial Evaluation

- (1) Do this operational test of the trailing edge flaps with the alternate control system:



WARNING

MOVE ALL PERSONS AND EQUIPMENT AWAY FROM THE TRAILING EDGE FLAPS, AND THE LEADING EDGE FLAPS AND SLATS. THESE SURFACES WILL MOVE AND CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

- (a) Move the ALTERNATE FLAPS ARM switch on the P5 panel to the ARM position to arm the alternate control system.
NOTE: The standby hydraulic pump will operate when you arm the alternate control system.
 - (b) Move the ALTERNATE FLAPS control switch to the DOWN position to extend the trailing edge flaps.
NOTE: The leading edge flaps and slats will extend when you move the switch to DOWN.
 - (c) Move the ALTERNATE FLAPS control switch to the UP position to retract the trailing edge flaps.
NOTE: The leading edge flaps and slats will not retract with alternate control.
- (2) If the trailing edge flaps extend and retract with the alternate control, then there was an intermittent fault.
 - (3) If the trailing edge flaps do not extend or retract with alternate control, then do this task: Alternate Trailing Edge Flaps Operation Problem - Fault Isolation, 27-51 TASK 837.
 - (4) If the trailing edge flaps retract, but do not extend with alternate control, then, do this task: Alternate Trailing Edge Flaps Extension Problem - Fault Isolation, 27-51 TASK 838.
 - (5) If the trailing edge flaps do not retract with alternate control, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Make sure the trailing edge flaps are not in the fully retracted position. If the trailing edge flaps are in the fully retracted position, then, do this task: Extend the Trailing Edge Flaps, AMM TASK 27-51-00-860-803.

EFFECTIVITY
SIA ALL

27-51 TASK 839

D633A103-SIA

Page 289
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (2) Do this check of the TE flap UP limit switch, S245:

NOTE: The TE flap UP limit switch is installed on the flap control unit in the main wheel well.

- (a) Disconnect the electrical connector D46044P from the junction box in the main wheel well.

- (b) Do a continuity check between pin 12 on connector D46044P and structure ground.

NOTE: With the flaps not fully retracted, the limit switch should provide a ground.

- (c) If there is not continuity between pin 12 and structure ground, then do these steps:

- 1) Replace the TE flap UP limit switch, S245. These are the tasks:

- Flap Limit Switch Removal, AMM TASK 27-51-63-000-801
- Flap Limit Switch Installation, AMM TASK 27-51-63-400-801

- 2) Re-connect the electrical connector D46044P to the junction box in the main wheel well.

- 3) Use the alternate control system to extend and retract the trailing edge flaps. To extend and retract the flaps, do this task: Trailing Edge Flap System Operation With Alternate Control, AMM TASK 27-51-00-860-802.

- 4) If the trailing edge flaps operate with alternate control, then you corrected the fault.

- 5) If the trailing edge flaps do not operate with alternate control, then continue.

- (d) If there is continuity between pin 12 and structure ground, then continue.

- 1) Re-connect the electrical connector D46044P to the junction box in the main wheel well.

- (3) Do this check of the ALTERNATE FLAPS control switch, S2:

- (a) Open this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

- (b) Disconnect the connector D624 for the P5-3 flight control panel.

NOTE: The ALTERNATE FLAPS control switch, S2 is installed on the P5-3 panel in the flight compartment.

- (c) Move the ALTERNATE FLAPS ARM switch to the ARM position.

- (d) Move and hold the ALTERNATE FLAPS control switch to the UP position.

- (e) Do a continuity check between pin 4 and pin 6 on connector D624.

- (f) If there is not continuity between pin 4 and pin 6, then do these steps:

- 1) Replace the ALTERNATE FLAPS control switch, S2 on the P5-3 panel.

- 2) Re-connect connector D624 for the P5-3 flight control panel.

- 3) Close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

- 4) Use the alternate control system to extend and retract the trailing edge flaps. To extend and retract the flaps, do this task: Trailing Edge Flap System Operation With Alternate Control, AMM TASK 27-51-00-860-802.

EFFECTIVITY
SIA ALL

27-51 TASK 839

D633A103-SIA

Page 290
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 5) If the trailing edge flaps operate with alternate control, then you corrected the fault.
- (g) If there is continuity between pin 4 and pin 6, then continue.
 - 1) Re-connect connector D624 for the P5-3 flight control panel.
 - 2) Close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

- (4) Do this check of the trailing edge flaps UP and DOWN relays in the J4 junction box:
NOTE: Electrical extend and retract signals go through both relays.
 - (a) Disconnect electrical connector D40610P from the J4 Junction Box.
 - (b) Do a wiring check between these pins of connector D40610P at the J4 junction box:
 - 1) Pin 4 and pin 5
 - 2) Pin 3 and pin 14
 - (c) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-connect connector D40610P at the J4 junction box.
 - 3) Use the alternate control system to extend and retract the trailing edge flaps. To extend and retract the flaps, do this task: Trailing Edge Flap System Operation With Alternate Control, AMM TASK 27-51-00-860-802.
 - 4) If the trailing edge flaps operate with alternate control, then you corrected the fault.
 - 5) If the flaps do not operate with alternate control, then continue.
 - (d) If you do not find a problem with the wiring, then continue.
- (5) Replace the trailing edge flaps UP relay, R58.
 - (a) Use the alternate control system to extend and retract the trailing edge flaps. To extend and retract the flaps, do this task: Trailing Edge Flap System Operation With Alternate Control, AMM TASK 27-51-00-860-802.
 - (b) If the trailing edge flaps operate with alternate control, then you corrected the fault.
 - (c) If the trailing edge flaps do not operate with alternate control, then continue.
- (6) Replace the trailing edge flaps DOWN relay, R57.
 - (a) Use the alternate control system to extend and retract the trailing edge flaps. To extend and retract the flaps, do this task: Trailing Edge Flap System Operation With Alternate Control, AMM TASK 27-51-00-860-802.
 - (b) If the trailing edge flaps operate with alternate control, then you corrected the fault.

———— **END OF TASK** ————

840. Flap Position Indicator - Needle Split Problem - Fault Isolation

A. Description

- (1) The flap position indicator shows the positions of the trailing edge flaps on the left and right wings.
- (2) The flap position indicator gets inputs from the flap position transmitters and the FSEU.

EFFECTIVITY
SIA ALL

27-51 TASKS 839-840

D633A103-SIA

Page 291
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (3) If there is an asymmetry between the flap drive on the left and right wings, then the indicator needles will be split, which shows the actual flap positions on the left and right wings. If the FSEU detects a skew in the flap drive system, then it will cause the indicator needles to show a split.
 - (a) A flap asymmetry or skew will cause the flap position indicator to split 10 to 20 degrees.
- (4) If there is a wiring problem in the power supply to one side of the flap position transmitter, then the indicator will show a split of approximately 180 degrees.

B. Possible Causes

- (1) Trailing edge flap drive system
- (2) Trailing edge flap skew sensors
- (3) FSEU, M1746
- (4) TE flap position indicator, N54
- (5) Wiring problem

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

D. Related Data

- (1) (SSM 27-52-11)
- (2) (SSM 27-53-21)
- (3) (WDM 27-52-11)
- (4) (WDM 27-53-21)

E. Initial Evaluation

- (1) If the needles on the flap position indicator are split less than 20 degrees, then do these steps:
 - (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 1) If the FSEU shows a FLAP SKEW, FLAP SKEW CON, or TE FLAP SNSR maintenance messages, then go to the FIM task for the applicable maintenance message.
 - 2) If the FSEU does not show a FLAP SKEW, FLAP SKEW CON, or TE FLAP SNSR maintenance messages, then continue.
 - (b) Do this task: Trailing Edge Asymmetry Skew Indication Ground Test, 27-51 TASK 802.
 - 1) If the FSEU shows the TE FLAP INDICATN maintenance message, then, do this task: Flap Position Indicator Problem - Fault Isolation, 27-51 TASK 826.
 - 2) If the FSEU does not show the TE FLAP INDICATN maintenance message, then there was an intermittent fault.
- (2) If the needles on the flap position indicator are split approximately 180 degrees, then do these steps:
 - (a) Do this task: Trailing Edge Asymmetry Skew Indication Ground Test, 27-51 TASK 802.
 - 1) If the FSEU shows L or R 28VAC EXC INV, TE FLAP SNSR maintenance messages, then go to the FIM task for the applicable maintenance message.

EFFECTIVITY
SIA ALL

27-51 TASK 840

D633A103-SIA

Page 292
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 2) If the FSEU does not show L or R 28VAC EXC INV, TE FLAP SNSR maintenance messages, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this check of the power supply to the left needle on the flap position indicator, T54:

- (a) Open this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

- (b) Disconnect connector D686 from the flap position indicator, N54 in the P2 panel.

- (c) Close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

- (d) Do a check for 28 VAC between pin 8 and pin 9 (neutral) of connector D686.

- (e) If there is not 28 VAC between pin 8 and pin 9 of connector D686, then do this check of the wiring:

- 1) Get access to the terminal block, TB1105 in the E1-1 shelf.
- 2) Do a wiring check between the flap position indicator, N54 and this terminal on terminal block, TB1105:

TB1105	D686
ZB 9	pin 8

- 3) If you find a problem with the wiring, then do these steps:

- a) Repair the wiring.
- b) Re-connect connector D686 to the flap position indicator, N54.
- c) Close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

- d) Do this task: Trailing Edge Asymmetry Skew Indication Ground Test, 27-51 TASK 802.

- e) If the BITE test passes, then you corrected the fault.

- (f) If there is 28 VAC between pin 8 and pin 9 of connector D686, then continue.

- (2) Do this check of the power supply to the right needle on the flap position indicator, T54:

- (a) Close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT

- (b) Do a check for 28 VAC between pin 10 and pin 9 (neutral) of connector D686.

EFFECTIVITY
SIA ALL

27-51 TASK 840

D633A103-SIA

Page 293
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (c) If there is not 28 VAC between pin 10 and pin 9 of connector D686, then do this check of the wiring:

- 1) Get access to the terminal block, TB1105 in the E1-1 shelf.
- 2) Do a wiring check between the flap position indicator, N54 and this terminal on terminal block, TB1105:

TB1105	D686
ZA 9	pin 10

- 3) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

- c) Re-connect connector D686 to the flap position indicator, N54.
- d) Do this task: Trailing Edge Asymmetry Skew Indication Ground Test, 27-51 TASK 802.
- e) If the BITE test passes, then you corrected the fault.

- (d) If there is 28 VAC between pin 10 and pin 9 of connector D686, then continue.

- (3) Replace the flap position indicator, N54. These are the tasks:

- Flap Position Indicator Removal, AMM TASK 27-58-02-000-801
- Flap Position Indicator Installation, AMM TASK 27-58-02-400-801

- (a) Do this task: Trailing Edge Asymmetry Skew Indication Ground Test, 27-51 TASK 802.
- (b) If the BITE test passes, then you corrected the fault.

———— **END OF TASK** ————

841. Flap Position Indicator - Needles Do Not Operate Problem - Fault Isolation

A. Description

- (1) The flap position indicator shows the positions of the trailing edge flaps on the left and right wings.
- (2) The flap position indicator gets inputs from the flap position transmitters and the FSEU.

B. Possible Causes

- (1) TE flap position indicator, N54
- (2) Wiring problem

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

EFFECTIVITY
SIA ALL

27-51 TASKS 840-841

D633A103-SIA

Page 294
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

D. Related Data

- (1) (SSM 27-52-11)
- (2) (WDM 27-52-11)

E. Initial Evaluation

- (1) Do this task: Trailing Edge Flap System Operational Test, AMM TASK 27-51-00-710-801.
- (2) If the needles on the flap position indicator do not operate during the operational test, then do the Fault Isolation Procedure below.
- (3) If the needles on the flap position indicator do operate during the operational test, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

- (2) Replace the flap position indicator, N54. These are the tasks:
 - Flap Position Indicator Removal, AMM TASK 27-58-02-000-801
 - Flap Position Indicator Installation, AMM TASK 27-58-02-400-801
 - (a) Do this task: Trailing Edge Flap System Operational Test, AMM TASK 27-51-00-710-801.
 - (b) If the needles on the flap position indicator operate, then you corrected the fault.
 - (c) If the needles on the flap position indicator do not operate, then continue.
- (3) Do this check of the wiring between the FSEU and the flap position indicator, N54:
 - (a) Open these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

- (b) Remove the FSEU, M1746. To remove it, do this task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
- (c) Disconnect connector D686 from the flap position indicator.
- (d) Do a wiring check between these pins of connector D728B at the E1-1 shelf and connector D686 at the flap position indicator, N54.

D728B	D686
pin J10	pin 12
pin J11	pin 13
pin K10	pin 6
pin K11	pin 5

- (e) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-connect connector D686 to the flap position indicator, N54.

EFFECTIVITY
SIA ALL

27-51 TASK 841

D633A103-SIA

Page 295
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 3) Re-install the FSEU, M1746. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
- 4) Close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

- 5) Do this task: Trailing Edge Flap System Operational Test, AMM TASK 27-51-00-710-801.
 - 6) If the needles on the flap position indicator operate, then you corrected the fault.
- (f) If you do not find a problem with the wiring, then continue.
- 1) Re-connect the connector D686 to the flap position indicator, N54.
 - 2) Close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

- (4) Install a new FSEU. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
- (a) Do this task: Trailing Edge Flap System Operational Test, AMM TASK 27-51-00-710-801.
- (b) If the needles on the flap position indicator operate, then you corrected the fault.

———— **END OF TASK** ————

842. Flap Position Indicator - Needles Stick Problem - Fault Isolation

A. Description

- (1) The flap position indicator shows the positions of the trailing edge flaps on the left and right wings.
- (2) The flap position indicator gets inputs from the flap position transmitters and the FSEU.

B. Possible Causes

- (1) TE flap position indicator, N54

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

D. Related Data

- (1) (SSM 27-52-11)
- (2) (WDM 27-52-11)

EFFECTIVITY
SIA ALL

27-51 TASKS 841-842

D633A103-SIA

Page 296
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

E. Initial Evaluation

- (1) Do this task: Trailing Edge Flap System Operational Test, AMM TASK 27-51-00-710-801.
- (2) If the needles on the flap position indicator do not move smoothly during the operational test, then do the Fault Isolation Procedure below.
- (3) If the needles on the flap position indicator do operate smoothly during the operational test, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Replace the flap position indicator, N54. These are the tasks:
 - Flap Position Indicator Removal, AMM TASK 27-58-02-000-801
 - Flap Position Indicator Installation, AMM TASK 27-58-02-400-801
- (a) Do this task: Trailing Edge Flap System Operational Test, AMM TASK 27-51-00-710-801.
- (b) If the flap position indicator operates smoothly, then you corrected the fault.

————— **END OF TASK** —————

843. Flap Control Lever Does Not Operate Freely - Fault Isolation

A. Description

- (1) The flap control lever commands the flap operation with cables that go to the flap control unit.
- (2) The position of the flap control lever is also monitored by the flap control lever position sensor through a mechanism assembly.

B. Possible Causes

- (1) Flap control lever sticks or binds.
- (2) Flap control cables WFA/WFB
- (3) Flap control unit

C. Related Data

- (1) (SSM 27-50-01)

D. Initial Evaluation

- (1) Do this task: Flap Control Lever Force Test, AMM TASK 27-51-00-720-802.
- (2) If the force necessary to move the flap control lever is not in the limit of the test, then do the Fault Isolation Procedure below.

NOTE: The maximum permitted force necessary to move the flap control lever is 5 pounds.

- (3) If the force necessary to move the flap control lever is in the limit of the test, then there was an intermittent fault.

E. Fault Isolation Procedure

- (1) Lubricate the flap control lever.
 - (a) Mask off the area around the flap control lever to protect from overspray.
 - (b) Generously apply MIL-L-23398, Type II or BAC5811, Type 7 lubricant to the part of the flap control lever that slides. Use an extension straw to allow spray in hard to reach areas and to concentrate spray in localized areas.

NOTE: Allow to air dry if possible. The lubricant will dry within minutes; however, the coating will not be cured for several hours depending on the ambient temperature. The lubricant will cure within 6 hours at 77 +/- 3 degrees F (25 +/- 2 degrees C). 24 hours gives the best wear and corrosion protection.

EFFECTIVITY
SIA ALL

27-51 TASKS 842-843

D633A103-SIA

Page 297
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (2) If the flap control lever no longer sticks or binds, then you corrected the fault.
- (3) Do a check of the tension in the flap control cables WFA and WFB. To do a check, do this task: Trailing Edge Flap Control System Adjustment and Test, AMM TASK 27-51-00-820-801.
 - (a) If the tension in the flap control cables was not in the limit, do this task: Flap Control Lever Force Test, AMM TASK 27-51-00-720-802.
 - 1) If the force necessary to move the flap control lever is in the limit of the test, then you corrected the fault.
 - (b) If the tension was in the limit or if the force necessary to move the flap control lever is not in the limit of the test, then continue.
- (4) Do a check of the mechanism for the flap control lever position sensor:
 - (a) Get access to the control lever mechanism in the right side of the control stand.
 - (b) Disconnect the link from the flap lever position sensor assembly.
 - (c) If the lever and the link for the flap lever position sensor assembly do not move freely, then do these steps:
 - 1) Replace the flap lever position sensor assembly. These are the tasks:
 - Flap Control Lever Position Sensor Removal, AMM TASK 27-51-06-000-802
 - Flap Control Lever Position Sensor Installation, AMM TASK 27-51-06-400-802
 - 2) Do this task: Flap Control Lever Force Test, AMM TASK 27-51-00-720-802.
 - 3) If the force necessary to move the flap control lever is in the limit of the test, then you corrected the fault.
 - (d) If the lever and the link for the flap lever position sensor assembly move freely, then continue.
- (5) Replace the flap control unit. These are the tasks:
 - Flap Control Unit Removal, AMM TASK 27-51-61-000-801
 - Flap Control Unit Installation, AMM TASK 27-51-61-400-801
 - (a) Do this task: Flap Control Lever Force Test, AMM TASK 27-51-00-720-802.
 - (b) If the force necessary to move the flap control lever is in the limit of the test, then you corrected the fault.

————— **END OF TASK** —————

844. Trailing Edge Flaps Operate Fast - Fault Isolation

A. Description

- (1) The trailing edge flaps use hydraulic power for normal operation.
- (2) There is a flow limiter downstream of the flap priority valve that restricts the hydraulic flow to the flap hydraulic motor.

B. Possible Causes

- (1) Flap flow limiter

C. Related Data

- (1) (SSM 27-50-01)

EFFECTIVITY
SIA ALL

27-51 TASKS 843-844

D633A103-SIA

Page 298
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

D. Initial Evaluation



KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Supply system B hydraulic power, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.



MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE LE AND TE FLAPS AND FLAP DRIVE MECHANISMS. THE FLAPS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (2) Move the flap control lever to the UP position to make sure the flaps are retracted.
NOTE: Wait for the flaps to get to the UP position.
- (3) Measure the time necessary to extend and retract the flaps:
 - (a) Move the flap control lever to the 1-unit position to extend the flaps.
NOTE: Measure the time it takes for the flaps to move from the UP to the 1-unit position.
 - (b) Move the flap control lever to the UP position to retract the flaps.
NOTE: Measure the time it takes for the flaps to move from the 1-unit to the UP position.
- (4) If the time necessary to extend and retract the flaps between the UP and 1-unit position is less than 11 seconds, then do the Fault Isolation Procedure below.
- (5) If the time necessary to extend and retract the flaps between the UP and 1-unit position is more than 11 seconds, then there was an intermittent fault.
- (6) Remove system B hydraulic power, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

E. Fault Isolation Procedure

- (1) Replace the flap flow limiter.
NOTE: The flap flow limiter is installed in the right main wheel well, next to the flap priority valve.
 - (a) Measure the time necessary to extend and retract the flaps.
 - (b) If the time necessary to extend and retract the flaps between the UP and 1-unit position is more than 11 seconds, then you corrected the problem.

———— **END OF TASK** ————

845. Trailing Edge Flaps Operate Slow - Fault Isolation

A. Description

- (1) The trailing edge flaps use hydraulic power for primary operation and electrical power for alternate operation.
- (2) Hydraulic power to the flap hydraulic motor is controlled by the flap control valve, flap priority valve and the flap bypass valve.

B. Possible Causes

- (1) Hydraulic Flow inadequate

EFFECTIVITY
SIA ALL

27-51 TASKS 844-845

D633A103-SIA

Page 298.1
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (2) Flap Hydraulic Motor
- (3) Flap Priority Valve
- (4) TE Flap Control Valve
- (5) Flap Bypass Valve, V52
- (6) Flap Electric Motor, M339
- (7) Trailing Edge Flap Drive System
- (8) Inboard Aft Flap Actuating Mechanism

C. Related Data

- (1) SSM 27-50-01
- (2) WDM 27-53-12

D. Initial Evaluation



KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Use a hydraulic cart or the Engine Driven Pump (EDP) to supply system B hydraulic power, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.

NOTE: Make sure the hydraulic system supplies full power. The trailing edge flap system needs approximately 14 GPM to operate at the normal speed. The Electric Motor Driven Pump (EMDP) will not supply sufficient hydraulic power for the test.



MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF THE LE AND TE FLAPS AND FLAP DRIVE MECHANISMS. THE FLAPS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (2) Move the flap control lever to the UP position to make sure the flaps are retracted.
NOTE: Wait for the flaps to get to the UP position.
- (3) Measure the time necessary to extend and retract the flaps with hydraulic power:
NOTE: If the time necessary to extend and retract the flaps between the UP and 1-unit position is 14 seconds or less, then it is in the limit for primary hydraulic operation.
 - (a) Move the flap control lever to the 1-unit position to extend the flaps.
NOTE: Measure the time it takes for the flaps to move from the UP to the 1-unit position.
 - (b) Move the flap control lever to the UP position to retract the flaps.
NOTE: Measure the time it takes for the flaps to move from the 1-unit to the UP position.
- (4) Measure the time necessary to retract the flaps with electrical power:
NOTE: If the time necessary to retract the flaps from the 1-unit position to the UP position is 58 seconds or less, then it is in the limit for alternate electric operation.
 - (a) Move the flap control lever to the 1-unit position to extend the flaps.
 - (b) Push the ALTERNATE FLAPS ARM switch to arm the alternate control system.

EFFECTIVITY
SIA ALL

27-51 TASK 845

D633A103-SIA

Page 298.2
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (c) Move the flap control lever to the UP position.
NOTE: This will decrease the load on the flap electric motor.
- (d) Turn ALTERNATE FLAPS control switch to the UP position and hold it until the flaps stop.
NOTE: Measure the time it takes for the flaps to move from the 1-unit to the UP position.
- (5) If the time necessary to extend and retract the flaps is in the limit for hydraulic and electric operation, then there was an intermittent fault.
- (6) If the time necessary to extend and retract the flaps is not in the limit for hydraulic and electric operation, then do the Fault Isolation Procedure - Flap Drive System below.
- (7) If the time necessary to extend and retract the flaps is not in the limit for hydraulic operation, but it is in the limit for electric operation, then do the Fault Isolation Procedure - Hydraulic Operation below.
- (8) If the time necessary to extend and retract the flaps is not in the limit for electric operation, but it is in the limit for hydraulic operation, then do the Fault Isolation Procedure - Electric Operation below.
- (9) Remove system B hydraulic power, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

E. Fault Isolation Procedure - Hydraulic Operation

- (1) If you used an Engine Driven Pump (EDP) to supply hydraulic power, then do this check of the hydraulic flow rate:
 - (a) Use the Engine Driven Pump (EDP) and the Electric Motor Driven Pump (EMDP) to supply system B hydraulic power, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801
 - (b) Do the check to measure the time necessary to extend and retract the flaps with the two hydraulic power sources.
 - (c) If the time necessary to extend and retract the flaps is significantly less than it was with only the Engine Driven Pump (EDP), then, do this task: System B Hydraulic Pressure Below 2800 psi Problem - Fault Isolation, 29-10 TASK 811.
 - (d) If the time necessary to extend and retract the flaps is not significantly different, then continue.
 - (e) Remove system B hydraulic power, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
- (2) Do this check of the trailing edge Flap Bypass Valve, V52:
 - (a) Make sure the ALTERNATE FLAPS ARM switch is OFF.
 - (b) Look at the manual override lever on the trailing edge Flap Bypass Valve, V52.
NOTE: The trailing edge Flap Bypass Valve, V52 is in the aft side of the right main wheel well.
 - (c) If the manual override lever is not fully in POSITION 1, then do these steps:
NOTE: POSITION 1 is the normal position.
 - 1) Replace the trailing edge Flap Bypass Valve, V52. These are the tasks:
 - Trailing Edge Flap Bypass Valve Assembly Removal, AMM TASK 27-51-02-000-801
 - Trailing Edge Flap Bypass Valve Assembly Installation, AMM TASK 27-51-02-400-801
 - 2) Do the Repair Confirmation at the end of this task.

EFFECTIVITY
SIA ALL

27-51 TASK 845

D633A103-SIA

Page 298.3
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

- (d) If the manual override lever is in POSITION 1, then continue.
- (3) Replace the Flap Priority Valve. These are the tasks:
 - Flap Priority Valve Removal, AMM TASK 27-51-04-000-801
 - Flap Priority Valve Installation, AMM TASK 27-51-04-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (4) Replace the Flap Hydraulic Motor. These are the tasks:
 - Flap Hydraulic Motor Removal, AMM TASK 27-51-52-000-801
 - Flap Hydraulic Motor Installation, AMM TASK 27-51-52-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (5) Replace the Flap Control Valve. These are the tasks:
 - Trailing Edge Flap Control Valve Removal, AMM TASK 27-51-65-000-801
 - Trailing Edge Flap Control Valve Installation, AMM TASK 27-51-65-400-801
- (a) Do the Repair Confirmation at the end of this task.

F. Fault Isolation Procedure - Electric Operation

- (1) Replace the Flap Electric Motor, M339. These are the tasks:
 - Flap Electric Motor Removal AMM TASK 27-51-53-000-801
 - Flap Electric Motor Installation AMM TASK 27-51-53-400-801
- (a) Do the check to measure the time necessary to extend and retract the flaps with electric power.
- (b) If the time necessary to extend and retract the flaps is in the limit, then you corrected the fault.

G. Fault Isolation Procedure - Flap Drive System Operation

NOTE: There are likely bearings or rollers that are not operational or a jam in one of the gearboxes in the trailing edge flap drive system.

- (1) Do a check of the Main Track Rollers for the inboard and outboard flaps:
 - (a) Extend the trailing edge flaps to get access to the flap drive system. This is the task: Extend the Trailing Edge Flaps, AMM TASK 27-51-00-860-803.
 - (b) Manually turn the Main Track Rollers to make sure they turn freely.
NOTE: Manually move the applicable flap to get the Main Track Rollers off the flap tracks.
 - (c) Look at the surface of the flap tracks to see if the Main Track Rollers have been sliding across the surface.
 - (d) If it is necessary, replace the applicable component.
 - 1) Do the Repair Confirmation at the end of this task.
- (2) Do a check of the Inboard Aft Flap Actuating Mechanism:
 - (a) Disconnect the crankshaft from the aft flap drive rod.
 - (b) Manually move the crankshaft to make sure the aft flap moves freely.
NOTE: Move the aft flap through its full travel.
 - (c) If the aft flap does not move freely, then replace the applicable component in the Inboard Aft Flap Actuating Mechanism. These are the tasks:
 - Inboard Aft Flap Actuating Mechanism Removal, AMM TASK 27-51-14-000-801

EFFECTIVITY
SIA ALL

27-51 TASK 845

D633A103-SIA

Page 298.4
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

- Inboard Aft Flap Actuating Mechanism Installation, AMM TASK 27-51-14-400-801
- 1) Do the Repair Confirmation at the end of this task.
- (d) Reconnect the crankshaft to the aft flap drive rod.
- (3) Do this check to find where the flap drive system is jammed:
NOTE: Do these steps until you find where the flap drive system is jammed. These steps are applicable to the flap drive system on the left wing and the right wing.
- (a) Do the check on these components on the flap drive system:
 - The flap transmissions
 - The tee angle gearbox
 - The main landing gear beam angle gearbox
 - The seal rib angle gearbox
 - The torque tube support
- (b) Disconnect the torque tubes from the applicable component.
- (c) Turn the torque tube couplings to see if the component is jammed.
- (d) Replace the applicable component:
 - 1) If it is necessary, replace the inboard flap inboard transmission. These are the tasks:
 - Inboard Flap Inboard Transmission Removal, AMM TASK 27-51-31-000-802
 - Inboard Flap Inboard Transmission Installation, AMM TASK 27-51-31-400-802
 - 2) If it is necessary, replace the inboard flap outboard transmission. These are the tasks:
 - Inboard Flap Outboard Transmission Removal, AMM TASK 27-51-31-000-801
 - Inboard Flap Outboard Transmission Installation, AMM TASK 27-51-31-400-801
 - 3) If it is necessary, replace the outboard flap inboard transmission. These are the tasks:
 - Outboard Flap Inboard Transmission Removal, AMM TASK 27-51-41-000-802
 - Outboard Flap Inboard Transmission Installation, AMM TASK 27-51-41-400-802
 - 4) If it is necessary, replace the outboard flap outboard transmission. These are the tasks:
 - Outboard Flap Outboard Transmission Removal, AMM TASK 27-51-41-000-801
 - Outboard Flap Outboard Transmission Installation, AMM TASK 27-51-41-400-801
 - 5) If it is necessary, replace the torque tube support. These are the tasks:
 - Flap Torque Tube Support Removal, AMM TASK 27-51-59-000-801
 - Flap Torque Tube Support Installation, AMM TASK 27-51-59-400-801
 - 6) If it is necessary, replace the seal rib angle gearbox. These are the tasks:
 - Seal Rib Angle Gearbox Removal, AMM TASK 27-51-57-000-801
 - Seal Rib Angle Gearbox Installation, AMM TASK 27-51-57-400-801
 - 7) If it is necessary, replace the main landing gear beam angle gearbox. These are the tasks:
 - Main Landing Gear Beam Angle Gearbox Removal, AMM TASK 27-51-56-000-801

EFFECTIVITY
SIA ALL

27-51 TASK 845

D633A103-SIA

Page 298.5
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

- Main Landing Gear Beam Angle Gearbox Installation, AMM TASK 27-51-56-400-801
- 8) If it is necessary, replace the tee angle gearbox. These are the tasks:
 - Tee Angle Gearbox Removal, AMM TASK 27-51-55-000-801
 - Tee Angle Gearbox Installation, AMM TASK 27-51-55-400-801
- (e) Do this task: Trailing Edge Flap Drive System Adjustment, AMM TASK 27-51-00-820-802.
NOTE: The adjustment procedure will include reconnecting the torque tubes.
- (f) Do the Repair Confirmation at the end of this task.

H. Repair Confirmation

- (1) Do the check to measure the time necessary to extend and retract the flaps with hydraulic power.
- (2) If the time necessary to extend and retract the flaps is in the limit, then you corrected the fault.
- (3) If the time necessary to extend and retract the flaps is not in the limit, then continue the applicable Fault Isolation Procedure at the subsequent step.

— END OF TASK —

846. Invalid Airspeed Data Input to FSEU Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-54403 A/S DATA INVALID
- (2) During the Existing Faults ground test, or the TE Flap Load Relief ground test, the FSEU did not receive valid airspeed data from the Left ADIRU over the ARINC 429 bus.

B. Possible Causes

- (1) Left ADIRU, M1749
- (2) FSEU, M1746

C. Related Data

- (1) (SSM 27-54-11)
- (2) (SSM 34-21-14)
- (3) (WDM 27-54-11)
- (4) (WDM 34-21-14)

D. Initial Evaluation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (2) If the maintenance message does not show, then there was an intermittent fault.
- (3) If the maintenance message shows, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

- (1) Do this task: ADIRS BITE Procedure, 34-21 TASK 801.
 - (a) If any maintenance messages for the ADIRU show, then do the fault isolation task for those procedures.
 - (b) If no maintenance messages for the ADIRU show, then continue.
- (2) Replace the FSEU, M1746. These are the tasks:

EFFECTIVITY
SIA ALL

27-51 TASKS 845-846

D633A103-SIA

Page 298.6
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801
- Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801
- (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (b) If the maintenance message does not show, then you corrected the fault.

———— **END OF TASK** ————

847. Alternate Arm Switch Position Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 27-51402 ALT MODE IS ARMED
 - (b) 27-51403 ALT ARM SW DISAG
- (2) During a ground test the inputs to the FSEU from the ALTERNATE FLAPS ARM switch were not correct. There are two inputs from the ALTERNATE FLAPS ARM switch to the FSEU.

B. Possible Causes

- (1) Alternate flaps arm switch, S1
- (2) FSEU, M1746
- (3) Wiring problem

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

D. Related Data

- (1) (SSM 27-53-11)
- (2) (WDM 27-53-11)

E. Initial Evaluation

- (1) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

- (2) Make sure the ALTERNATE FLAPS ARM switch is in OFF position.
- (3) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (4) If the maintenance message does not show, then there was an intermittent fault.
- (5) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this check of the ALTERNATE FLAPS ARM switch, S1:

NOTE: The ALTERANTE FLAPS ARM switch is installed in the P5-3 panel.

EFFECTIVITY
SIA ALL

27-51 TASKS 846-847

D633A103-SIA

Page 298.7
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (a) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

- (b) Disconnect the connector D624 on the P5-3 panel.
- (c) Do a continuity check between pin 4 and these other pins of connector D624.
- 1) Pin 5 should have continuity
 - 2) Pin 33 should be open
- (d) If the continuity between the pins is not in the condition specified, then do these steps:
- 1) Replace the ALTERNATE FLAPS ARM switch, S1.
 - 2) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

- 3) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 4) If the maintenance message does not show, then you corrected the fault.
 - 5) If the maintenance message shows, then continue.
- (e) If the continuity between the pins is in the condition specified, then continue.
- (2) Do this check of the wiring between the FSEU and the ALTERNATE FLAPS ARM switch:
- (a) Remove the FSEU, M1746. To remove it, do this task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
- (b) Do a wiring check between these pins of connector D728B at the E1-1 shelf and connector D624 at the P5-3 panel:

D728B	D624
pin B1	pin 33

- (c) Do a wiring check between these pins of connector D728C at the E1-1 shelf and connector D624 at the P5-3 panel:

D728C	D624
pin 8	pin 5

- (d) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Re-connect connector D624 at the P5-3 panel.
 - 3) Re-install the FSEU, M1746. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - 4) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 5) If the maintenance message does not show, then you corrected the fault.
- (e) If you do not find a problem with the wiring, then continue:
- 1) Re-connect the connector D624 at the P5-3 panel.

EFFECTIVITY
SIA ALL

27-51 TASK 847

D633A103-SIA

Page 298.8
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (3) Install a new FSEU. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (b) If the maintenance message does not show, then you corrected the fault.

———— **END OF TASK** ————

848. Flap Failed to Extend During Test Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-51407 TE FAIL TO DRIVE
- (2) During the load relief ground test, the trailing edge flaps did not extend to the 40-unit position. The FSEU uses inputs from the flap position sensors to find if the flaps moved to the 40-unit position.

B. Possible Causes

- (1) Flap drive system
- (2) Left flap position transmitter, T427
- (3) Right flap position transmitter, T428
- (4) FSEU, M1746
- (5) Wiring problem

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

D. Related Data

- (1) (SSM 27-52-11)
- (2) (WDM 27-52-11)

E. Initial Evaluation

- (1) Do this task: Trailing Edge Flap Load Relief Ground Test, 27-51 TASK 803.

NOTE: Use a hydraulic service cart, or use the engine driven pump to supply hydraulic power.
- (2) If the maintenance message does not show, then there was an intermittent fault.
- (3) If the maintenance message shows, then continue.
- (4) Do this operational test of the trailing edge flap system with primary control:

EFFECTIVITY
SIA ALL

27-51 TASKS 847-848

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 298.9
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**



KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Supply system B hydraulic power, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (b) Use the primary system to fully extend and retract the flaps. To extend and retract the flaps, do this task: Trailing Edge Flap System Operation With Primary Control, AMM TASK 27-51-00-860-801.
- (c) Remove system B hydraulic power. To remove it, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
- (d) If the trailing edge flaps do not operate with the primary system, then do this task: Trailing Edge Flap Primary Control Operation/Lockout Problem - Fault Isolation, 27-51 TASK 836.
- (e) If the trailing edge flaps operate with the primary system, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this check of the flap position transmitters:
 - (a) Use the alternate system to move the trailing edge flaps to see if the flap position indicator needles follow the flap position. To move the flaps with the alternate system, do this task: Trailing Edge Flap System Operation With Alternate Control, AMM TASK 27-51-00-860-802.
- (2) If the left and right flap position indicator needles follow the position of the flaps, then do these steps:
 - (a) Replace the FSEU, M1746. These are the tasks:
 - Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801
 - Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801
 - (b) Do this task: Trailing Edge Flap Load Relief Ground Test, 27-51 TASK 803.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - (c) If the maintenance message shows, then continue.
- (3) If the left flap position indicator needle does not follow the position of the flaps, then do these steps:
 - (a) Replace the left flap position transmitter, T427 on the No. 1 transmission. These are the tasks:
 - Flap Position Transmitter Removal, AMM TASK 27-58-01-000-801
 - Flap Position Transmitter Installation, AMM TASK 27-58-01-400-801

NOTE: Make sure the flap position transmitter is adjusted correctly when you install it.
 - (b) Do this task: Trailing Edge Flap Load Relief Ground Test, 27-51 TASK 803.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - (c) If the left flap position indicator needle follows the position of the flap, or if maintenance message shows, then continue.
- (4) If the right flap position indicator needle does not follow the position of the flaps, then do these steps:

EFFECTIVITY
SIA ALL

27-51 TASK 848

D633A103-SIA

Page 298.10
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (a) Replace the right flap position transmitter, T428 on the No. 8 transmission. These are the tasks:
- Flap Position Transmitter Removal, AMM TASK 27-58-01-000-801
 - Flap Position Transmitter Installation, AMM TASK 27-58-01-400-801
- NOTE: Make sure the flap position transmitter is adjusted correctly when you install it.
- (b) Do this task: Trailing Edge Flap Load Relief Ground Test, 27-51 TASK 803.
- 1) If the maintenance message does not show, then you corrected the fault.
- (c) If the right flap position indicator needle follows the position of the flap, or if maintenance message shows, then continue.
- (5) Do this check of the wiring between the FSEU and the left flap position transmitter, T427:
- (a) Remove the FSEU, M1746. To remove it, do this task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
- (b) Disconnect connector D275 from the left flap position transmitter, T427.
- (c) Do a wiring check between these pins of connector D728B at the E1-1 shelf and connector D275 at the left flap position transmitter, T427:

D728B	D275
pin K7	pin 1
pin K8	pin 2

- (d) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
- 2) Re-connect connector D275 to the left flap position transmitter, T427.
- 3) Re-install the FSEU, M1746. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
- 4) Do this task: Trailing Edge Flap Load Relief Ground Test, 27-51 TASK 803.
- 5) If the maintenance message does not show, then you corrected the fault.
- (e) If you do not find a problem with the wiring, then continue.
- 1) Re-connect the connector D275 to the left flap position transmitter, T427.
- (6) Do this check of the wiring between the FSEU and the right flap position transmitter, T428:
- (a) Disconnect connector D229 from the right flap position transmitter, T428.
- (b) Do a wiring check between these pins of connector D728B at the E1-1 shelf and connector D229 at the right flap position transmitter, T428:

D728B	D229
pin J7	pin 1
pin J8	pin 2

- (c) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
- 2) Re-connect connector D229 to the right flap position transmitter, T428.
- 3) Re-install the FSEU, M1746. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
- 4) Do this task: Trailing Edge Flap Load Relief Ground Test, 27-51 TASK 803.

EFFECTIVITY
SIA ALL

27-51 TASK 848

D633A103-SIA

Page 298.11
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 5) If the maintenance message does not show, then you corrected the fault. Do these steps to complete this task:
 - a) Re-connect the connector D229 to the right flap position transmitter, T428.
 - b) Re-install the FSEU, M1746. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.

———— **END OF TASK** ————

849. Trailing Edge Flaps Transmission Torque Trip Indicator Extended - Fault Isolation

A. Description

- (1) There are torque trip indicators installed on the forward side of the trailing edge flap transmissions.
- (2) The torque trip indicators extend when the torque through the transmission is too high. This can occur if a flap drive system is jammed, during rigging, or intermittently during normal operation.
- (3) The trailing edge flaps can operate normally with the torque trip indicators extended.

B. Possible Causes

- (1) Trailing edge flap drive system

C. Initial Evaluation

- (1) Do this operational test of the trailing edge flap system with primary control:



WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Supply system B hydraulic power, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
 - (b) Use the primary system to fully extend and retract the flaps. To extend and retract the flaps, do this task: Trailing Edge Flap System Operation With Primary Control, AMM TASK 27-51-00-860-801.
 - (c) Remove system B hydraulic power. To remove it, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
 - (d) If the trailing edge flaps operate with the primary system, then there is no fault. Do the Reset the Torque Trip Indicators Procedure below.
 - (e) If the trailing edge flaps do not operate with the primary system, then continue.
- (2) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (a) If the FSEU shows a maintenance message, then go to the FIM task for the applicable maintenance message.
 - (b) If the FSEU does not show a maintenance message, then do the fault isolation task for trailing edge flaps primary operation problem. To isolate the fault, do this task: Trailing Edge Flap Primary Control Operation/Lockout Problem - Fault Isolation, 27-51 TASK 836.

D. Reset the Torque Trip Indicators Procedure

NOTE: There was likely an intermittent high torque situation on the transmission with the extended torque trip indicator. You can reset the torque trip indicator.

EFFECTIVITY
SIA ALL

27-51 TASKS 848-849

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 298.12
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (1) If it is necessary to get access to the torque trip indicator, extend the trailing edge flaps. To extend them, do this task: Extend the Trailing Edge Flaps, AMM TASK 27-51-00-860-803.
- (2) Push the plunger on the torque trip indicator to reset it.
- (3) If it is necessary, retract the flaps. To retract the flaps, do this task: Trailing Edge Flap System Operation With Primary Control, AMM TASK 27-51-00-860-801.

———— **END OF TASK** ————

EFFECTIVITY
SIA ALL

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

27-51 TASK 849

Page 298.13
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

801. TE Flap Support No. 1 Skew Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-53250 FLAP 1 SKEW
- (2) The signal to the Flap/Slat Electronics Unit (FSEU) from the No. 1 flap skew sensor does not agree with the signals from the left flap position transmitter and the No. 8 flap skew sensor.

B. Possible Causes

- (1) No. 1 flap skew mechanism
- (2) No. 1 flap skew sensor, T525
- (3) No. 1 flap support
- (4) FSEU, M1746
- (5) Wiring problem

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

D. Related Data

- (1) SSM 27-53-21
- (2) WDM 27-53-21

E. Initial Evaluation

- (1) Do the Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801:
 - (a) If the maintenance message 27-53409 FLAP 1 SKEW CON shows, then do the Fault Isolation Procedure for that fault, do this task: TE Flap Support No. 1 Skew Sensor Problem - Fault Isolation, 27-59 TASK 810.
 - (b) If the maintenance message 27-53250 FLAP 1 SKEW shows, then continue.
- (2) Do this check of the No. 1 and No. 8 flap drives to find if there is a skew:
 - (a) If the flaps are retracted, remove the aft fairings on flap supports No. 1 and 8. To remove the aft fairings, do this task: Outboard Flap Outboard Support Aft Fairing Removal, AMM TASK 27-51-28-000-802.
 - (b) Measure and record the distance from the ballscrew nut to the yoke on transmissions No. 1 and No. 8.
 - (c) If the distances from the ballscrew nuts to the yokes are the same ± 0.3 in. (7.6 mm), then do the Fault Isolation Procedure - Flap Not Skewed below.
NOTE: If the distances are in the limit, then the flap is not skewed.
 - (d) If the distances from the ballscrew nuts to the yokes are not the same ± 0.3 in. (7.6 mm), then do the Fault Isolation Procedure - Flap Skewed below.
NOTE: If the distances are not in the limit, then the flap is skewed.

EFFECTIVITY
SIA ALL

27-59 TASK 801

D633A103-SIA

Page 201
Feb 15/2022



737-600/700/800/900 FAULT ISOLATION MANUAL

F. Fault Isolation Procedure - Flap Skewed

- (1) Visually examine these components on flap support No. 1 and replace those that have damage:
 - (a) The ballscrew and gimbal. These are the tasks:
 - Outboard Flap Outboard Ballscrew and Gimbal Removal, AMM TASK 27-51-42-000-801
 - Outboard Flap Outboard Ballscrew and Gimbal Installation, AMM TASK 27-51-42-400-801
 - (b) The transmission. These are the tasks:
 - Outboard Flap Outboard Transmission Removal, AMM TASK 27-51-41-000-801
 - Outboard Flap Outboard Transmission Installation, AMM TASK 27-51-41-400-801
 - (c) The carriage and rollers. These are the tasks:
 - Outboard Flap Outboard Carriage Removal, AMM TASK 27-51-23-000-801
 - Outboard Flap Outboard Carriage Installation, AMM TASK 27-51-23-400-801
 - (d) The flap track. These are the tasks:
 - Outboard Flap Outboard Track Removal, AMM TASK 27-51-25-000-801
 - Outboard Flap Outboard Track Installation, AMM TASK 27-51-25-400-801
 - (e) If you replaced one of the components above, then do these steps:
 - 1) Do this task: Trailing Edge Flap Drive System Adjustment, AMM TASK 27-51-00-820-802.
 - 2) Do the Repair Confirmation at the end of this task.
 - (f) If there was no visible damage, then continue.
- (2) Do this check of the operation of the No. 1 flap drive system:
 - (a) Disconnect the torque tube from the transmission. To disconnect the torque tube, do this task: Outboard Wing Flap Torque Tube Removal, AMM TASK 27-51-58-000-801.
 - (b) Turn the torque tube coupling on the transmission to see if the No. 1 flap drive system moves.
 - (c) If you cannot move the flap drive system, then do these steps:
 - 1) Replace the applicable parts.
 - 2) Do this task: Trailing Edge Flap Drive System Adjustment, AMM TASK 27-51-00-820-802.
 - 3) Do the Repair Confirmation at the end of this task.
 - (d) If you can move the flap drive system, then continue.
- (3) Do this task: Trailing Edge Flap Drive System Adjustment, AMM TASK 27-51-00-820-802.
NOTE: This task will include steps to connect the torque tube to the transmission.
 - (a) Do the Repair Confirmation at the end of this task.

G. Fault Isolation Procedure - Flap Not Skewed

- (1) Adjust the outboard flap outboard skew sensor mechanism. To adjust the skew sensor mechanism, do this task: Flap Skew Detection System Adjustment, AMM TASK 27-59-00-820-801.
 - (a) Do the Repair Confirmation at the end of this task.

EFFECTIVITY
SIA ALL

27-59 TASK 801

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 202
Feb 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (2) Replace the flap skew sensor, T525 on flap support No. 1. These are the tasks:
- Outboard Flap Outboard Skew Sensor Removal, AMM TASK 27-59-01-000-801
 - Outboard Flap Outboard Skew Sensor Installation, AMM TASK 27-59-01-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (3) Do this check of the wiring between the FSEU and the flap skew sensor on flap support No. 1 (WDM 27-53-21):
- (a) Remove the FSEU, M1746. To remove it, do this task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
- (b) Measure the resistance between these pairs of pins of connector D728B at the E1-1 shelf:

D728B		D728B	
H13	.....	H14	5-10 ohms
H14	.....	H15	5-10 ohms
H15	.....	H13	5-10 ohms

- (c) If the resistances are not in the range of 5-10 ohms, then do these steps:
- 1) Disconnect connector D11814 from the flap skew sensor, T525.
 - 2) Do a wiring check between these pins of connector D728B at the E1-1 shelf and connector D11814 at the flap skew sensor, T525:

D728B		D11814	
pin H13	.....	pin 4	
pin H14	.....	pin 5	
pin H15	.....	pin 3	

- 3) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Connect the connector D11814 to the flap skew sensor, T525.
 - c) Install the FSEU, M1746. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - d) Do the Repair Confirmation at the end of this task.
- 4) If you did not find a problem with the wiring, then continue.
- (d) If the resistances are in the range of 5-10 ohms, then continue.
- (4) Do this check of the power supply to the flap skew sensor on flap support No. 1:
 - (a) Open this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

- (b) Disconnect connector D11814 from the flap skew sensor, T525.

EFFECTIVITY
SIA ALL

27-59 TASK 801

D633A103-SIA

Page 203
Feb 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (c) Close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

- (d) Do a check for 28 Alternating Current Volts (VAC) between pin 1 and pin 2 of connector D11814.
- (e) If there is not 28 VAC between pin 1 and pin 2 of connector D11814, then do this check of the wiring (WDM 27-53-21):
- 1) Disconnect connector D11816 from the flap skew sensor, T526 at flap support No. 2.
 - 2) Do a wiring check between these pins of the flap skew sensor, T525 and flap skew sensor, T526:

D11814		D11816
pin 1	.....	pin 7
pin 2	.....	pin 6

- 3) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Connect the connector D11814 to the flap skew sensor, T525.
 - c) Connect the connector D11816 to the flap skew sensor, T526.
 - d) Do the Repair Confirmation at the end of this task.
- (f) If there is 28 VAC between pin 1 and pin 2 of connector D11814, then continue.
 - 1) Connect the connector D11814 to the flap skew sensor, T525.
- (5) Install a new FSEU. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - (a) Do the Repair Confirmation at the end of this task.

H. Repair Confirmation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (a) If the maintenance message does not show, then you corrected the fault.
 - (b) If the maintenance message shows, then continue the Fault Isolation Procedure at the subsequent step.

———— **END OF TASK** ————

802. TE Flap Support No. 2 Skew Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-53251 FLAP 2 SKEW
- (2) The signal to the FSEU from the No. 2 flap skew sensor does not agree with the signals from the left flap position transmitter and the No. 7 flap skew sensor.

EFFECTIVITY
SIA ALL

27-59 TASKS 801-802

D633A103-SIA

Page 204
Feb 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

B. Possible Causes

- (1) No. 2 flap skew mechanism
- (2) No. 2 flap skew sensor, T526
- (3) No. 2 flap support
- (4) FSEU, M1746
- (5) Wiring problem

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

D. Related Data

- (1) (SSM 27-53-21)
- (2) (WDM 27-53-21)

E. Initial Evaluation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (2) If the maintenance message 27-53410 FLAP 2 SKEW CON shows, then do the Fault Isolation Procedure for that fault, do this task: TE Flap Support No. 2 Skew Sensor Problem - Fault Isolation, 27-59 TASK 811.
- (3) If the maintenance message 27-53251 FLAP 2 SKEW does not show, then there was an intermittent fault.
- (4) If the maintenance message 27-53251 FLAP 2 SKEW shows, then continue.
- (5) Do this check of the No. 2 and No. 7 flap drives to find if there is a skew:
 - (a) If the flaps are retracted, remove the aft fairings on flap supports No. 2 and 7. To remove the aft fairings, do this task: Outboard Flap Inboard Support Aft Fairing Removal, AMM TASK 27-51-28-000-804.
 - (b) Measure and record the distance from the ballscrew nut to the yoke on transmissions No. 2 and No. 7.
 - (c) If the distances from the ballscrew nuts to the yokes are the same ± 0.5 inch, then do the Fault Isolation Procedure - Flap Not Skewed below.
NOTE: If the distances are in the limit, then the flap is not skewed.
 - (d) If the distances from the ballscrew nuts to the yokes are not the same ± 0.5 inch, then do the Fault Isolation Procedure - Flap Skewed below.
NOTE: If the distances are not in the limit, then the flap is skewed.

F. Fault Isolation Procedure - Flap Skewed

- (1) Visually examine these components on flap support No. 2 and replace those that have damage:
 - (a) The ballscrew and gimbal. These are the tasks:
 - Outboard Flap Inboard Ballscrew and Gimbal Removal, AMM TASK 27-51-42-000-802
 - Outboard Flap Inboard Ballscrew and Gimbal Installation, AMM TASK 27-51-42-400-802

EFFECTIVITY
SIA ALL

27-59 TASK 802

D633A103-SIA

Page 205
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (b) The transmission. These are the tasks:
 - Outboard Flap Inboard Transmission Removal, AMM TASK 27-51-41-000-802
 - Outboard Flap Inboard Transmission Installation, AMM TASK 27-51-41-400-802
- (c) The carriage and rollers. These are the tasks:
 - Outboard Flap Inboard Carriage Removal, AMM TASK 27-51-23-000-802
 - Outboard Flap Inboard Carriage Installation, AMM TASK 27-51-23-400-802
- (d) The flap track. These are the tasks:
 - Outboard Flap Inboard Track Removal, AMM TASK 27-51-25-000-802
 - Outboard Flap Inboard Track Installation, AMM TASK 27-51-25-400-802
- (e) If you replaced one of the components above, then do these steps:
 - 1) Do this task: Trailing Edge Flap Drive System Adjustment, AMM TASK 27-51-00-820-802.
 - 2) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 3) If the maintenance message does not show, then you corrected the fault.
 - 4) If the maintenance message shows, then continue.
- (f) If there was no visible damage, then continue.
- (2) Do this check of the operation of the No. 2 flap drive system:
 - (a) Disconnect the torque tubes from the transmission. To disconnect the torque tubes, do this task: Outboard Wing Flap Torque Tube Removal, AMM TASK 27-51-58-000-801.
 - (b) Turn the torque tube coupling on the transmission to see if the No. 2 flap drive system moves.
 - (c) If you cannot move the flap drive system, then do these steps:
 - 1) Replace the applicable parts.
 - 2) Do this task: Trailing Edge Flap Drive System Adjustment, AMM TASK 27-51-00-820-802.
 - 3) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 4) If the maintenance message does not show, then you corrected the fault.
 - 5) If the maintenance message shows, then continue.
 - (d) If you can move the flap drive system, then continue.
- (3) Do this task: Trailing Edge Flap Drive System Adjustment, AMM TASK 27-51-00-820-802.
NOTE: This task will include steps to connect the torque tube to the transmission.
 - (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (b) If the maintenance message does not show, then you corrected the fault.

G. Fault Isolation Procedure - Flap Not Skewed

- (1) Adjust the outboard flap inboard skew sensor mechanism. To adjust the skew sensor mechanism, do this task: Flap Skew Detection System Adjustment, AMM TASK 27-59-00-820-801.
 - (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - 2) If the maintenance message shows, then continue.
- (2) Replace the flap skew sensor, T526 on flap support No. 2. These are the tasks:

EFFECTIVITY
SIA ALL

27-59 TASK 802

D633A103-SIA

Page 206
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

- Outboard Flap Inboard Skew Sensor Removal, AMM TASK 27-59-01-000-802
 - Outboard Flap Inboard Skew Sensor Installation, AMM TASK 27-59-01-400-802
- (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- 1) If the maintenance message does not show, then you corrected the fault.
 - 2) If the maintenance message shows, then continue.
- (3) Do this check of the wiring between the FSEU and the flap skew sensor on flap support No. 2:
- (a) Remove the FSEU, M1746. To remove it, do this task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
- (b) Measure the resistance between these pairs of pins of connector D728B at the E1-1 shelf:
- 1) Pin G13 and pin G14
 - 2) Pin G14 and pin G15
 - 3) Pin G15 and pin G13.
- (c) If the resistances are not in the range of 5-10 ohms, then do these steps:
- 1) Disconnect connector D11816 from the flap skew sensor, T526.
 - 2) Do a wiring check between these pins of connector D728B at the E1-1 shelf and connector D11816 at the flap skew sensor, T526:
- | D728B | D11816 |
|---------------|---------------|
| pin G13 | pin 4 |
| pin G14 | pin 5 |
| pin G15 | pin 3 |
- 3) If you find a problem with the wiring, then do these steps:
- a) Repair the wiring.
 - b) Re-connect connector D11816 to the flap skew sensor, T526.
 - c) Re-install the FSEU, M1746. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - d) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - e) If the maintenance message does not show, then you corrected the fault.
- 4) If you did not find a problem with the wiring, then continue.
- a) Re-connect the connector D11816 to the flap skew sensor, T526.
- (d) If the resistances are in the range of 5-10 ohms, then continue.
- (4) Install a new FSEU. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
- (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (b) If the maintenance message does not show, then you corrected the fault.

————— **END OF TASK** —————

EFFECTIVITY
SIA ALL

27-59 TASK 802

D633A103-SIA

Page 207
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

803. TE Flap Support No. 3 Skew Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-53252 FLAP 3 SKEW
- (2) The signal to the FSEU from the No. 3 flap skew sensor does not agree with the signals from the left flap position transmitter and the No. 6 flap skew sensor.

B. Possible Causes

- (1) No. 3 flap skew mechanism
- (2) No. 3 flap skew sensor, T527
- (3) No. 3 flap support
- (4) FSEU, M1746
- (5) Wiring problem

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

D. Related Data

- (1) (SSM 27-53-21)
- (2) (WDM 27-53-21)

E. Initial Evaluation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (2) If the maintenance message 27-53411 FLAP 3 SKEW CON shows, then do the Fault Isolation Procedure for that fault. This is the task: TE Flap Support No. 3 Skew Sensor Problem - Fault Isolation, 27-59 TASK 812.
- (3) If the maintenance message 27-53252 FLAP 3 SKEW does not show, then there was an intermittent fault.
- (4) If the maintenance message 27-53252 FLAP 3 SKEW shows, then continue.
- (5) Do this check of the No. 3 and No. 6 flap drives to find if there is a skew:
 - (a) If the flaps are retracted, remove the aft fairings on flap supports No. 3 and 6. This is the task: Inboard Flap Support Aft Fairing Removal, AMM TASK 27-51-18-000-802.
 - (b) Measure and record the distance from the ballscrew nut to the yoke on transmissions No. 3 and No. 6.
 - (c) If the distances from the ballscrew nuts to the yokes are the same ± 0.3 inch, then do the Fault Isolation Procedure - Flap Not Skewed below.
NOTE: If the distances are in the limit, then the flap is not skewed.
 - (d) If the distances from the ballscrew nuts to the yokes are not the same ± 0.3 inch, then do the Fault Isolation Procedure - Flap Skewed below.
NOTE: If the distances are not in the limit, then the flap is skewed.



**737-600/700/800/900
FAULT ISOLATION MANUAL**

F. Fault Isolation Procedure - Flap Skewed

- (1) Visually examine these components on flap support No. 3 and replace those that have damage:
 - (a) The ballscrew and gimbal. These are the tasks:
 - Inboard Flap Outboard Ballscrew and Gimbal Removal, AMM TASK 27-51-32-000-801
 - Inboard Flap Outboard Ballscrew and Gimbal Installation, AMM TASK 27-51-32-400-801
 - (b) The transmission. These are the tasks:
 - Inboard Flap Outboard Transmission Removal, AMM TASK 27-51-31-000-801
 - Inboard Flap Outboard Transmission Installation, AMM TASK 27-51-31-400-801
 - (c) The carriage and rollers. These are the tasks:
 - Inboard Flap Outboard Carriage Removal, AMM TASK 27-51-13-000-801
 - Inboard Flap Outboard Carriage Installation, AMM TASK 27-51-13-400-801
 - (d) The flap track. These are the tasks:
 - Inboard Flap Outboard Track Removal, AMM TASK 27-51-15-000-801
 - Inboard Flap Outboard Track Installation, AMM TASK 27-51-15-400-801
 - (e) If you replaced one of the components above, then do these steps:
 - 1) Do this task: Trailing Edge Flap Drive System Adjustment, AMM TASK 27-51-00-820-802.
 - 2) Do the Repair Confirmation at the end of this task.
 - (f) If there was no visible damage, then continue.
- (2) Do this check of the operation of the No. 3 flap drive system:
 - (a) Disconnect the torque tubes from the transmission. To disconnect the torque tubes, do this task: Inboard Wing Flap Torque Tube Removal, AMM TASK 27-51-58-000-802.
 - (b) Turn the torque tube coupling on the transmission to see if the No. 3 flap drive system moves.
 - (c) If you cannot move the flap drive system, then do these steps:
 - 1) Replace the applicable parts.
 - 2) Do this task: Trailing Edge Flap Drive System Adjustment, AMM TASK 27-51-00-820-802.
 - 3) Do the Repair Confirmation at the end of this task.
 - (d) If you can move the flap drive system, then continue.
- (3) Do this task: Trailing Edge Flap Drive System Adjustment, AMM TASK 27-51-00-820-802.
NOTE: This task will include steps to connect the torque tube to the transmission.
 - (a) Do the Repair Confirmation at the end of this task.

G. Fault Isolation Procedure - Flap Not Skewed

- (1) Adjust the inboard flap outboard skew sensor mechanism. To adjust the skew sensor mechanism, do this task: Flap Skew Detection System Adjustment, AMM TASK 27-59-00-820-801.
 - (a) Do the Repair Confirmation at the end of this task.
- (2) Replace the flap skew sensor, T527 on flap support No. 3. These are the tasks:

EFFECTIVITY
SIA ALL

27-59 TASK 803

D633A103-SIA

Page 209
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

- Inboard Flap Outboard Skew Sensor Removal, AMM TASK 27-59-01-000-803
 - Inboard Flap Outboard Skew Sensor Installation, AMM TASK 27-59-01-400-803
- (a) Do the Repair Confirmation at the end of this task.
- (3) Do this check of the wiring between the FSEU and the flap skew sensor on flap support No. 3:
- (a) Remove the FSEU, M1746. This is the task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
- (b) Measure the resistance between these pairs of pins of connector D728B at the E1-1 shelf:
- 1) Pin F13 and pin F14
 - 2) Pin F14 and pin F15
 - 3) Pin F15 and pin F13.
- (c) If the resistances are not in the range of 5-10 ohms, then do these steps:
- 1) Disconnect connector D11818 from the flap skew sensor, T527.
 - 2) Do a wiring check between these pins of connector D728B at the E1-1 shelf and connector D11818 at the flap skew sensor, T527:
- | D728B | D11818 |
|-------------------|---------------|
| pin F13 | pin 4 |
| pin F14 | pin 5 |
| pin F15 | pin 3 |
- 3) If you find a problem with the wiring, then do these steps:
- a) Repair the wiring.
 - b) Re-connect connector D11818 to the flap skew sensor, T527.
 - c) Re-install the FSEU, M1746. This is the task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - d) Do the Repair Confirmation at the end of this task.
- 4) If you did not find a problem with the wiring, then continue.
- a) Re-connect the connector D11818 to the flap skew sensor, T527.
- (d) If the resistances are in the range of 5-10 ohms, then continue.
- (4) Install a new FSEU. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
- (a) Do the Repair Confirmation at the end of this task.

H. Repair Confirmation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (a) If the maintenance message does not show, then you corrected the fault.
- (b) If the maintenance message shows, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

EFFECTIVITY
SIA ALL

27-59 TASK 803

D633A103-SIA

Page 210
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

804. TE Flap Support No. 4 Skew Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-53253 FLAP 4 SKEW
- (2) The signal to the FSEU from the No. 4 flap skew sensor does not agree with the signals from the left flap position transmitter and the No. 5 flap skew sensor.

B. Possible Causes

- (1) No. 4 flap skew mechanism
- (2) No. 4 flap skew sensor, T528
- (3) No. 4 flap support
- (4) FSEU, M1746
- (5) Wiring problem

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

D. Related Data

- (1) (SSM 27-53-21)
- (2) (WDM 27-53-21)

E. Initial Evaluation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (2) If the maintenance message 27-53412 FLAP 4 SKEW CON shows, then do the Fault Isolation Procedure for that fault, do this task: TE Flap Support No. 4 Skew Sensor Problem - Fault Isolation, 27-59 TASK 813.
- (3) If the maintenance message 27-53253 FLAP 4 SKEW does not show, then there was an intermittent fault.
- (4) If the maintenance message 27-53253 FLAP 4 SKEW shows, then continue.
- (5) Do this check of the No. 4 and No. 5 flap drives to find if there is a skew:
 - (a) Measure and record the distance from the ballscrew nut to the yoke on transmissions No. 4 and No. 5.
 - (b) If the distances from the ballscrew nuts to the yokes are the same ± 0.2 inch, then do the Fault Isolation Procedure - Flap Not Skewed below.
NOTE: If the distances are in the limit, then the flap is not skewed.
 - (c) If the distances from the ballscrew nuts to the yokes are not the same ± 0.2 inch, then do the Fault Isolation Procedure - Flap Skewed below.
NOTE: If the distances are not in the limit, then the flap is skewed.

EFFECTIVITY
SIA ALL

27-59 TASK 804

D633A103-SIA

Page 211
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

F. Fault Isolation Procedure - Flap Skewed

- (1) Visually examine these components on flap support No. 4 and replace those that have damage:
 - (a) The ballscrew and gimbal. These are the tasks:
 - Inboard Flap Inboard Ballscrew and Gimbal Removal, AMM TASK 27-51-32-000-802
 - Inboard Flap Inboard Ballscrew and Gimbal Installation, AMM TASK 27-51-32-400-802
 - (b) The transmission. These are the tasks:
 - Inboard Flap Inboard Transmission Removal, AMM TASK 27-51-31-000-802
 - Inboard Flap Inboard Transmission Installation, AMM TASK 27-51-31-400-802
 - (c) The carriage and rollers. These are the tasks:
 - Inboard Flap Inboard Carriage Removal, AMM TASK 27-51-13-000-802
 - Inboard Flap Inboard Carriage Installation, AMM TASK 27-51-13-400-802
 - (d) The flap track. These are the tasks:
 - Inboard Flap Inboard Track Removal, AMM TASK 27-51-15-000-802
 - Inboard Flap Inboard Track Installation, AMM TASK 27-51-15-400-802
 - (e) If you replaced one of the components above, then do these steps:
 - 1) Do this task: Trailing Edge Flap Drive System Adjustment, AMM TASK 27-51-00-820-802.
 - 2) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 3) If the maintenance message does not show, then you corrected the fault.
 - 4) If the maintenance message shows, then continue.
 - (f) If there was no visible damage, then continue.
- (2) Do this check of the operation of the No. 4 flap drive system:
 - (a) Disconnect the torque tubes from the transmission. To disconnect the torque tubes, do this task: Wheel Well Flap Torque Tube Removal, AMM TASK 27-51-58-000-803.
 - (b) Turn the torque tube coupling on the transmission to see if the No. 4 flap drive system moves.
 - (c) If you cannot move the flap drive system, then do these steps:
 - 1) Replace the applicable parts.
 - 2) Do this task: Trailing Edge Flap Drive System Adjustment, AMM TASK 27-51-00-820-802.
 - 3) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 4) If the maintenance message does not show, then you corrected the fault.
 - 5) If the maintenance message shows, then continue.
 - (d) If you can move the flap drive system, then continue.
- (3) Do this task: Trailing Edge Flap Drive System Adjustment, AMM TASK 27-51-00-820-802.

NOTE: This task will include steps to connect the torque tube to the transmission.

 - (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (b) If the maintenance message does not show, then you corrected the fault.



737-600/700/800/900 FAULT ISOLATION MANUAL

G. Fault Isolation Procedure - Flap Not Skewed

- (1) Adjust the inboard flap inboard skew sensor mechanism. To adjust the skew sensor mechanism, do this task: Flap Skew Detection System Adjustment, AMM TASK 27-59-00-820-801.
 - (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - 2) If the maintenance message shows, then continue.
 - (2) Replace the flap skew sensor, T528 on flap support No. 4. These are the tasks:
 - Inboard Flap Inboard Skew Sensor Removal, AMM TASK 27-59-01-000-804
 - Inboard Flap Inboard Skew Sensor Installation, AMM TASK 27-59-01-400-804
 - (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - 2) If the maintenance message shows, then continue.
 - (3) Do this check of the wiring between the FSEU and the flap skew sensor on flap support No. 4:
 - (a) Remove the FSEU, M1746. To remove it, do this task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
 - (b) Measure the resistance between these pairs of pins of connector D728B at the E1-1 shelf:
 - 1) Pin E13 and pin E14
 - 2) Pin E14 and pin E15
 - 3) Pin E15 and pin E13.
 - (c) If the resistances are not in the range of 5-10 ohms, then do these steps:
 - 1) Disconnect connector D11820 from the flap skew sensor, T528.
 - 2) Do a wiring check between these pins of connector D728B at the E1-1 shelf and connector D11820 at the flap skew sensor, T528:

D728B	D11820
pin E13	pin 4
pin E14	pin 5
pin E15	pin 3
- (d) If the resistances are in the range of 5-10 ohms, then continue.
 - a) Re-connect the connector D11820 to the flap skew sensor, T528.

EFFECTIVITY
SIA ALL

27-59 TASK 804

D633A103-SIA

Page 213
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (4) Install a new FSEU. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (b) If the maintenance message does not show, then you corrected the fault.

———— **END OF TASK** ————

805. TE Flap Support No. 5 Skew Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-53254 FLAP 5 SKEW
- (2) The signal to the FSEU from the No. 5 flap skew sensor does not agree with the signals from the right flap position transmitter and the No. 4 flap skew sensor.

B. Possible Causes

- (1) No. 5 flap skew mechanism
- (2) No. 5 flap skew sensor, T529
- (3) No. 5 flap support
- (4) FSEU, M1746
- (5) Wiring problem

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT

D. Related Data

- (1) (SSM 27-53-21)
- (2) (WDM 27-53-21)

E. Initial Evaluation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (2) If the maintenance message 27-53413 FLAP 5 SKEW CON shows, then do the Fault Isolation Procedure for that fault, do this task: TE Flap Support No. 5 Skew Sensor Problem - Fault Isolation, 27-59 TASK 814.
- (3) If the maintenance message 27-53254 FLAP 5 SKEW does not show, then there was an intermittent fault.
- (4) If the maintenance message 27-53254 FLAP 5 SKEW shows, then continue.
- (5) Do this check of the No. 4 and No. 5 flap drives to find if there is a skew:
 - (a) Measure and record the distance from the ballscrew nut to the yoke on transmissions No. 4 and No. 5.
 - (b) If the distances from the ballscrew nuts to the yokes are the same ± 0.2 inch, then do the Fault Isolation Procedure - Flap Not Skewed below.

NOTE: If the distances are in the limit, then the flap is not skewed.

EFFECTIVITY
SIA ALL

27-59 TASKS 804-805

D633A103-SIA

Page 214
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (c) If the distances from the ballscrew nuts to the yokes are not the same ± 0.2 inch, then do the Fault Isolation Procedure - Flap Skewed below.

NOTE: If the distances are not in the limit, then the flap is skewed.

F. Fault Isolation Procedure - Flap Skewed

- (1) Visually examine these components on flap support No. 5 and replace those that have damage:
- (a) The ballscrew and gimbal. These are the tasks:
 - Inboard Flap Inboard Ballscrew and Gimbal Removal, AMM TASK 27-51-32-000-802
 - Inboard Flap Inboard Ballscrew and Gimbal Installation, AMM TASK 27-51-32-400-802
 - (b) The transmission. These are the tasks:
 - Inboard Flap Inboard Transmission Removal, AMM TASK 27-51-31-000-802
 - Inboard Flap Inboard Transmission Installation, AMM TASK 27-51-31-400-802
 - (c) The carriage and rollers. These are the tasks:
 - Inboard Flap Inboard Carriage Removal, AMM TASK 27-51-13-000-802
 - Inboard Flap Inboard Carriage Installation, AMM TASK 27-51-13-400-802
 - (d) The flap track. These are the tasks:
 - Inboard Flap Inboard Track Removal, AMM TASK 27-51-15-000-802
 - Inboard Flap Inboard Track Installation, AMM TASK 27-51-15-400-802
 - (e) If you replaced one of the components above, then do these steps:
 - 1) Do this task: Trailing Edge Flap Drive System Adjustment, AMM TASK 27-51-00-820-802.
 - 2) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 3) If the maintenance message does not show, then you corrected the fault.
 - 4) If the maintenance message shows, then continue.
 - (f) If there was no visible damage, then continue.
- (2) Do this check of the operation of the No. 5 flap drive system:
- (a) Disconnect the torque tubes from the transmission. To disconnect the torque tubes, do this task: Wheel Well Flap Torque Tube Removal, AMM TASK 27-51-58-000-803.
 - (b) Turn the torque tube coupling on the transmission to see if the No. 5 flap drive system moves.
 - (c) If you cannot move the flap drive system, then do these steps:
 - 1) Replace the applicable parts.
 - 2) Do this task: Trailing Edge Flap Drive System Adjustment, AMM TASK 27-51-00-820-802.
 - 3) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 4) If the maintenance message does not show, then you corrected the fault.
 - 5) If the maintenance message shows, then continue.
 - (d) If you can move the flap drive system, then continue.
- (3) Do this task: Trailing Edge Flap Drive System Adjustment, AMM TASK 27-51-00-820-802.
- NOTE: This task will include steps to connect the torque tube to the transmission.
- (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.

EFFECTIVITY
SIA ALL

27-59 TASK 805

D633A103-SIA

Page 215
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

- (b) If the maintenance message does not show, then you corrected the fault.

G. Fault Isolation Procedure - Flap Not Skewed

- (1) Adjust the inboard flap inboard skew sensor mechanism. To adjust the skew sensor mechanism, do this task: Flap Skew Detection System Adjustment, AMM TASK 27-59-00-820-801.
- (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- 1) If the maintenance message does not show, then you corrected the fault.
 - 2) If the maintenance message shows, then continue.
- (2) Replace the flap skew sensor, T529 on flap support No. 5. These are the tasks:
- Inboard Flap Inboard Skew Sensor Removal, AMM TASK 27-59-01-000-804
 - Inboard Flap Inboard Skew Sensor Installation, AMM TASK 27-59-01-400-804
- (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- 1) If the maintenance message does not show, then you corrected the fault.
 - 2) If the maintenance message shows, then continue.
- (3) Do this check of the wiring between the FSEU and the flap skew sensor on flap support No. 5:
- (a) Remove the FSEU, M1746. To remove it, do this task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
- (b) Measure the resistance between these pairs of pins of connector D728B at the E1-1 shelf:
- 1) Pin D13 and pin D14
 - 2) Pin D14 and pin D15
 - 3) Pin D15 and pin D13.
- (c) If the resistances are not in the range of 5-10 ohms, then do these steps:
- 1) Do a wiring check between these pins of connector D728B at the E1-1 shelf and connector D11822 at the flap skew sensor, T529:
- | D728B | D11820 |
|-------------------|---------------|
| pin D13 | pin 4 |
| pin D14 | pin 5 |
| pin D15 | pin 3 |
- 2) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect connector D11822 to the flap skew sensor, T529.
 - c) Re-install the FSEU, M1746. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - d) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - e) If the maintenance message does not show, then you corrected the fault.
 - 3) If you did not find a problem with the wiring, then continue.
 - a) Re-connect the connector D11822 to the flap skew sensor, T529.
- (d) If the resistances are in the range of 5-10 ohms, then continue.

EFFECTIVITY
SIA ALL

27-59 TASK 805

D633A103-SIA

Page 216
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (4) Install a new FSEU. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (b) If the maintenance message does not show, then you corrected the fault.

———— **END OF TASK** ————

806. TE Flap Support No. 6 Skew Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-53255 FLAP 6 SKEW
- (2) The signal to the FSEU from the No. 6 flap skew sensor does not agree with the signals from the right flap position transmitter and the No. 3 flap skew sensor.

B. Possible Causes

- (1) No. 6 flap skew mechanism
- (2) No. 6 flap skew sensor, T530
- (3) No. 6 flap support
- (4) FSEU, M1746
- (5) Wiring problem

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT

D. Related Data

- (1) (SSM 27-53-21)
- (2) (WDM 27-53-21)

E. Initial Evaluation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (2) If the maintenance message 27-53414 FLAP 6 SKEW CON shows, then do the Fault Isolation Procedure for that fault, do this task: TE Flap Support No. 6 Skew Sensor Problem - Fault Isolation, 27-59 TASK 815.
- (3) If the maintenance message 27-53255 FLAP 6 SKEW does not show, then there was an intermittent fault.
- (4) If the maintenance message 27-53255 FLAP 6 SKEW shows, then continue.
- (5) Do this check of the No. 3 and No. 6 flap drives to find if there is a skew:
 - (a) If the flaps are retracted, remove the aft fairings on flap supports No. 3 and 6. To remove the aft fairings, do this task: Inboard Flap Support Aft Fairing Removal, AMM TASK 27-51-18-000-802.
 - (b) Measure and record the distance from the ballscrew nut to the yoke on transmissions No. 3 and No. 6.

EFFECTIVITY
SIA ALL

27-59 TASKS 805-806

D633A103-SIA

Page 217
Oct 15/2021



737-600/700/800/900
FAULT ISOLATION MANUAL

- (c) If the distances from the ballscrew nuts to the yokes are the same ± 0.3 inch, then do the Fault Isolation Procedure - Flap Not Skewed below.

NOTE: If the distances are in the limit, then the flap is not skewed.

- (d) If the distances from the ballscrew nuts to the yokes are not the same ± 0.3 inch, then do the Fault Isolation Procedure - Flap Skewed below.

NOTE: If the distances are not in the limit, then the flap is skewed.

F. Fault Isolation Procedure - Flap Skewed

- (1) Visually examine these components on flap support No. 6 and replace those that have damage:
- (a) The ballscrew and gimbal. These are the tasks:
 - Inboard Flap Outboard Ballscrew and Gimbal Removal, AMM TASK 27-51-32-000-801
 - Inboard Flap Outboard Ballscrew and Gimbal Installation, AMM TASK 27-51-32-400-801
 - (b) The transmission. These are the tasks:
 - Inboard Flap Outboard Transmission Removal, AMM TASK 27-51-31-000-801
 - Inboard Flap Outboard Transmission Installation, AMM TASK 27-51-31-400-801
 - (c) The carriage and rollers. These are the tasks:
 - Inboard Flap Outboard Carriage Removal, AMM TASK 27-51-13-000-801
 - Inboard Flap Outboard Carriage Installation, AMM TASK 27-51-13-400-801
 - (d) The flap track. These are the tasks:
 - Inboard Flap Outboard Track Removal, AMM TASK 27-51-15-000-801
 - Inboard Flap Outboard Track Installation, AMM TASK 27-51-15-400-801
 - (e) If you replaced one of the components above, then do these steps:
 - 1) Do this task: Trailing Edge Flap Drive System Adjustment, AMM TASK 27-51-00-820-802.
 - 2) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 3) If the maintenance message does not show, then you corrected the fault.
 - 4) If the maintenance message shows, then continue.
 - (f) If there was no visible damage, then continue.
- (2) Do this check of the operation of the No. 6 flap drive system:
- (a) Disconnect the torque tubes from the transmission. To disconnect the torque tubes, do this task: Inboard Wing Flap Torque Tube Removal, AMM TASK 27-51-58-000-802.
 - (b) Turn the torque tube coupling on the transmission to see if the No. 6 flap drive system moves.
 - (c) If you cannot move the flap drive system, then do these steps:
 - 1) Replace the applicable parts.
 - 2) Do this task: Trailing Edge Flap Drive System Adjustment, AMM TASK 27-51-00-820-802.
 - 3) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 4) If the maintenance message does not show, then you corrected the fault.
 - 5) If the maintenance message shows, then continue.



737-600/700/800/900 FAULT ISOLATION MANUAL

- (d) If you can move the flap drive system, then continue.
- (3) Do this task: Trailing Edge Flap Drive System Adjustment, AMM TASK 27-51-00-820-802.
- NOTE: This task will include steps to connect the torque tube to the transmission.
- (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (b) If the maintenance message does not show, then you corrected the fault.

G. Fault Isolation Procedure - Flap Not Skewed

- (1) Adjust the inboard flap outboard skew sensor mechanism. To adjust the skew sensor mechanism, do this task: Flap Skew Detection System Adjustment, AMM TASK 27-59-00-820-801.
- (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- 1) If the maintenance message does not show, then you corrected the fault.
- 2) If the maintenance message shows, then continue.
- (2) Replace the flap skew sensor, T530 on flap support No. 6. These are the tasks:
- Inboard Flap Outboard Skew Sensor Removal, AMM TASK 27-59-01-000-803
 - Inboard Flap Outboard Skew Sensor Installation, AMM TASK 27-59-01-400-803
- (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- 1) If the maintenance message does not show, then you corrected the fault.
- 2) If the maintenance message shows, then continue.
- (3) Do this check of the wiring between the FSEU and the flap skew sensor on flap support No. 6:
- (a) Remove the FSEU, M1746. To remove it, do this task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
- (b) Measure the resistance between these pairs of pins of connector D728B at the E1-1 shelf:
- 1) Pin C13 and pin C14
- 2) Pin C14 and pin C15
- 3) Pin C15 and pin C13.
- (c) If the resistances are not in the range of 5-10 ohms, then do these steps:
- 1) Disconnect connector D11824 from the flap skew sensor, T530.
- 2) Do a wiring check between these pins of connector D728B at the E1-1 shelf and connector D11824 at the flap skew sensor, T530:

D728B		D11824
pin C13	.....	pin 4
pin C14	.....	pin 5
pin C15	.....	pin 3

- 3) If you find a problem with the wiring, then do these steps:
- a) Repair the wiring.
- b) Re-connect connector D11824 to the flap skew sensor, T530.
- c) Re-install the FSEU, M1746. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
- d) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.

EFFECTIVITY
SIA ALL

27-59 TASK 806

D633A103-SIA

Page 219
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- e) If the maintenance message does not show, then you corrected the fault.
- 4) If you did not find a problem with the wiring, then continue.
 - a) Re-connect the connector D11824 to the flap skew sensor, T530.
- (d) If the resistances are in the range of 5-10 ohms, then continue.
- (4) Install a new FSEU. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (b) If the maintenance message does not show, then you corrected the fault.

———— **END OF TASK** ————

807. TE Flap Support No. 7 Skew Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-53256 FLAP 7 SKEW
- (2) The signal to the FSEU from the No. 7 flap skew sensor does not agree with the signals from the right flap position transmitter and the No. 2 flap skew sensor.

B. Possible Causes

- (1) No. 7 flap skew mechanism
- (2) No. 7 flap skew sensor, T531
- (3) No. 7 flap support
- (4) FSEU, M1746
- (5) Wiring problem

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT

D. Related Data

- (1) (SSM 27-53-21)
- (2) (WDM 27-53-21)

E. Initial Evaluation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (2) If the maintenance message 27-53415 FLAP 7 SKEW CON shows, then do the Fault Isolation Procedure for that fault, do this task: TE Flap Support No. 7 Skew Sensor Problem - Fault Isolation, 27-59 TASK 816.
- (3) If the maintenance message 27-53256 FLAP 7 SKEW does not show, then there was an intermittent fault.
- (4) If the maintenance message 27-53256 FLAP 7 SKEW shows, then continue.
- (5) Do this check of the No. 2 and No. 7 flap drives to find if there is a skew:

EFFECTIVITY
SIA ALL

27-59 TASKS 806-807

D633A103-SIA

Page 220
Oct 15/2021



737-600/700/800/900
FAULT ISOLATION MANUAL

- (a) If the flaps are retracted, remove the aft fairings on flap supports No. 2 and 7. To remove the aft fairings, do this task: Outboard Flap Inboard Support Aft Fairing Removal, AMM TASK 27-51-28-000-804.
- (b) Measure and record the distance from the ballscrew nut to the yoke on transmissions No. 2 and No. 7.
- (c) If the distances from the ballscrew nuts to the yokes are the same ± 0.5 inch, then do the Fault Isolation Procedure - Flap Not Skewed below.
NOTE: If the distances are in the limit, then the flap is not skewed.
- (d) If the distances from the ballscrew nuts to the yokes are not the same ± 0.5 inch, then do the Fault Isolation Procedure - Flap Skewed below.
NOTE: If the distances are not in the limit, then the flap is skewed.

F. Fault Isolation Procedure - Flap Skewed

- (1) Visually examine these components on flap support No. 7 and replace those that have damage:
 - (a) The ballscrew and gimbal. These are the tasks:
 - Outboard Flap Inboard Ballscrew and Gimbal Removal, AMM TASK 27-51-42-000-802
 - Outboard Flap Inboard Ballscrew and Gimbal Installation, AMM TASK 27-51-42-400-802
 - (b) The transmission. These are the tasks:
 - Outboard Flap Inboard Transmission Removal, AMM TASK 27-51-41-000-802
 - Outboard Flap Inboard Transmission Installation, AMM TASK 27-51-41-400-802
 - (c) The carriage and rollers. These are the tasks:
 - Outboard Flap Inboard Carriage Removal, AMM TASK 27-51-23-000-802
 - Outboard Flap Inboard Carriage Installation, AMM TASK 27-51-23-400-802
 - (d) The flap track. These are the tasks:
 - Outboard Flap Inboard Track Removal, AMM TASK 27-51-25-000-802
 - Outboard Flap Inboard Track Installation, AMM TASK 27-51-25-400-802
 - (e) If you replaced one of the components above, then do these steps:
 - 1) Do this task: Trailing Edge Flap Drive System Adjustment, AMM TASK 27-51-00-820-802.
 - 2) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 3) If the maintenance message does not show, then you corrected the fault.
 - 4) If the maintenance message shows, then continue.
 - (f) If there was no visible damage, then continue.
- (2) Do this check of the operation of the No. 7 flap drive system:
 - (a) Disconnect the torque tubes from the transmission. To disconnect the torque tubes, do this task: Outboard Wing Flap Torque Tube Removal, AMM TASK 27-51-58-000-801.
 - (b) Turn the torque tube coupling on the transmission to see if the No. 7 flap drive system moves.
 - (c) If you cannot move the flap drive system, then do these steps:
 - 1) Replace the applicable parts.

EFFECTIVITY
SIA ALL

27-59 TASK 807

D633A103-SIA

Page 221
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 2) Do this task: Trailing Edge Flap Drive System Adjustment, AMM TASK 27-51-00-820-802.
- 3) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- 4) If the maintenance message does not show, then you corrected the fault.
- 5) If the maintenance message shows, then continue.
- (d) If you can move the flap drive system, then continue.
- (3) Do this task: Trailing Edge Flap Drive System Adjustment, AMM TASK 27-51-00-820-802.
NOTE: This task will include steps to connect the torque tube to the transmission.
 - (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (b) If the maintenance message does not show, then you corrected the fault.

G. Fault Isolation Procedure - Flap Not Skewed

- (1) Adjust the outboard flap inboard skew sensor mechanism. To adjust the skew sensor mechanism, do this task: Flap Skew Detection System Adjustment, AMM TASK 27-59-00-820-801.
 - (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - 2) If the maintenance message shows, then continue.
- (2) Replace the flap skew sensor, T531 on flap support No. 7. These are the tasks:
 - Outboard Flap Inboard Skew Sensor Removal, AMM TASK 27-59-01-000-802
 - Outboard Flap Inboard Skew Sensor Installation, AMM TASK 27-59-01-400-802
 - (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - 2) If the maintenance message shows, then continue.
- (3) Do this check of the wiring between the FSEU and the flap skew sensor on flap support No. 7:
 - (a) Remove the FSEU, M1746. To remove it, do this task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
 - (b) Measure the resistance between these pairs of pins of connector D728B at the E1-1 shelf:
 - 1) Pin B13 and pin B14
 - 2) Pin B14 and pin B15
 - 3) Pin B15 and pin B13.
 - (c) If the resistances are not in the range of 5-10 ohms, then do these steps:
 - 1) Disconnect connector D11826 from the flap skew sensor, T531.
 - 2) Do a wiring check between these pins of connector D728B at the E1-1 shelf and connector D11826 at the flap skew sensor, T531:

D728B		D11826
pin B13	.....	pin 4
pin B14	.....	pin 5
pin B15	.....	pin 3

- 3) If you find a problem with the wiring, then do these steps:

EFFECTIVITY
SIA ALL

27-59 TASK 807

D633A103-SIA

Page 222
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- a) Repair the wiring.
 - b) Re-connect connector D11826 to the flap skew sensor, T531.
 - c) Re-install the FSEU, M1746. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - d) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - e) If the maintenance message does not show, then you corrected the fault.
- 4) If you did not find a problem with the wiring, then continue.
- a) Re-connect the connector D11826 to the flap skew sensor, T531.
 - (d) If the resistances are in the range of 5-10 ohms, then continue.
- (4) Install a new FSEU. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
- (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (b) If the maintenance message does not show, then you corrected the fault.

END OF TASK

808. TE Flap Support No. 8 Skew Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-53257 FLAP 8 SKEW
- (2) The signal to the FSEU from the No. 8 flap skew sensor does not agree with the signals from the right flap position transmitter and the No. 1 flap skew sensor.

B. Possible Causes

- (1) No. 8 flap skew mechanism
- (2) No. 8 flap skew sensor, T532
- (3) No. 8 flap support
- (4) FSEU, M1746
- (5) Wiring problem

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT

D. Related Data

- (1) (SSM 27-53-21)
- (2) (WDM 27-53-21)

E. Initial Evaluation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (2) If the maintenance message 27-53416 FLAP 8 SKEW CON shows, then do the Fault Isolation Procedure for that fault, do this task: TE Flap Support No. 8 Skew Sensor Problem - Fault Isolation, 27-59 TASK 817.

EFFECTIVITY
SIA ALL

27-59 TASKS 807-808

D633A103-SIA

Page 223
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (3) If the maintenance message 27-53257 FLAP 8 SKEW does not show, then there was an intermittent fault.
- (4) If the maintenance message 27-53257 FLAP 8 SKEW shows, then continue.
- (5) Do this check of the No. 1 and No. 8 flap drives to find if there is a skew:
 - (a) If the flaps are retracted, remove the aft fairings on flap supports No. 1 and 8. To remove the aft fairings, do this task: Outboard Flap Outboard Support Aft Fairing Removal, AMM TASK 27-51-28-000-802.
 - (b) Measure and record the distance from the ballscrew nut to the yoke on transmissions No. 1 and No. 8.
 - (c) If the distances from the ballscrew nuts to the yokes are the same ± 0.3 inch, then do the Fault Isolation Procedure - Flap Not Skewed below.

NOTE: If the distances are in the limit, then the flap is not skewed.
 - (d) If the distances from the ballscrew nuts to the yokes are not the same ± 0.3 inch, then do the Fault Isolation Procedure - Flap Skewed below.

NOTE: If the distances are not in the limit, then the flap is skewed.

F. Fault Isolation Procedure - Flap Skewed

- (1) Visually examine these components on flap support No. 8 and replace those that have damage:
 - (a) The ballscrew and gimbal. These are the tasks:
 - Outboard Flap Outboard Ballscrew and Gimbal Removal, AMM TASK 27-51-42-000-801
 - Outboard Flap Outboard Ballscrew and Gimbal Installation, AMM TASK 27-51-42-400-801
 - (b) The transmission. These are the tasks:
 - Outboard Flap Outboard Transmission Removal, AMM TASK 27-51-41-000-801
 - Outboard Flap Outboard Transmission Installation, AMM TASK 27-51-41-400-801
 - (c) The carriage and rollers. These are the tasks:
 - Outboard Flap Outboard Carriage Removal, AMM TASK 27-51-23-000-801
 - Outboard Flap Outboard Carriage Installation, AMM TASK 27-51-23-400-801
 - (d) The flap track. These are the tasks:
 - Outboard Flap Outboard Track Removal, AMM TASK 27-51-25-000-801
 - Outboard Flap Outboard Track Installation, AMM TASK 27-51-25-400-801
 - (e) If you replaced one of the components above, then do these steps:
 - 1) Do this task: Trailing Edge Flap Drive System Adjustment, AMM TASK 27-51-00-820-802.
 - 2) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 3) If the maintenance message does not show, then you corrected the fault.
 - 4) If the maintenance message shows, then continue.
 - (f) If there was no visible damage, then continue.
- (2) Do this check of the operation of the No. 8 flap drive system:
 - (a) Disconnect the torque tube from the transmission. To disconnect the torque tube, do this task: Outboard Wing Flap Torque Tube Removal, AMM TASK 27-51-58-000-801.

EFFECTIVITY
SIA ALL

27-59 TASK 808

D633A103-SIA

Page 224
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (b) Turn the torque tube coupling on the transmission to see if the No. 1 flap drive system moves.
- (c) If you cannot move the flap drive system, then do these steps:
 - 1) Replace the applicable parts.
 - 2) Do this task: Trailing Edge Flap Drive System Adjustment, AMM TASK 27-51-00-820-802.
 - 3) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 4) If the maintenance message does not show, then you corrected the fault.
 - 5) If the maintenance message shows, then continue.
- (d) If you can move the flap drive system, then continue.
- (3) Do this task: Trailing Edge Flap Drive System Adjustment, AMM TASK 27-51-00-820-802.
NOTE: This task will include steps to connect the torque tube to the transmission.
 - (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (b) If the maintenance message does not show, then you corrected the fault.

G. Fault Isolation Procedure - Flap Not Skewed

- (1) Adjust the outboard flap outboard skew sensor mechanism. To adjust the skew sensor mechanism, do this task: Flap Skew Detection System Adjustment, AMM TASK 27-59-00-820-801.
 - (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - 2) If the maintenance message shows, then continue.
- (2) Replace the flap skew sensor, T532 on flap support No. 8. These are the tasks:
 - Outboard Flap Outboard Skew Sensor Removal, AMM TASK 27-59-01-000-801
 - Outboard Flap Outboard Skew Sensor Installation, AMM TASK 27-59-01-400-801
 - (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - 2) If the maintenance message shows, then continue.
- (3) Do this check of the wiring between the FSEU and the flap skew sensor on flap support No. 8:
 - (a) Remove the FSEU, M1746. To remove it, do this task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
 - (b) Measure the resistance between these pairs of pins of connector D728B at the E1-1 shelf:
 - 1) Pin A13 and pin A14
 - 2) Pin A14 and pin A15
 - 3) Pin A15 and pin A13.
 - (c) If the resistances are not in the range of 5-10 ohms, then do these steps:
 - 1) Disconnect connector D11828 from the flap skew sensor, T532.
 - 2) Do a wiring check between these pins of connector D728B at the E1-1 shelf and connector D11828 at the flap skew sensor, T532:

EFFECTIVITY
SIA ALL

27-59 TASK 808

D633A103-SIA

Page 225
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

D728B

pin A13 pin 4
pin A14 pin 5
pin A15 pin 3

D11828

- (d) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Re-connect the connector D11828 to the flap skew sensor, T532.
 - a) Re-install the FSEU, M1746. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - b) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - c) If the maintenance message does not show, then you corrected the fault.
 - 3) If you did not find a problem with the wiring, then continue.
- (e) If the resistances are in the range of 5-10 ohms, then continue.
- (4) Do this check of the power supply to the flap skew sensor on flap support No. 8:

- (a) Open this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT

- (b) Disconnect connector D11828 from the flap skew sensor, T532.
- (c) Close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT

- (d) Do a check for 28 VAC between pin 1 and pin 2 of connector D11828.
- (e) If there is not 28 VAC between pin 1 and pin 2 of connector D11828, then do this check of the wiring:
- 1) Disconnect connector D11826 from the flap skew sensor, T531 at flap support No. 7.
 - 2) Do a wiring check between these pins of the flap skew sensor, T532 and flap skew sensor, T531:

D11828

pin 1 pin 7
pin 2 pin 6

D11826

- 3) If you find a problem with the wiring, then do these steps:
- a) Repair the wiring.
 - b) Re-connect connector D11828 to the flap skew sensor, T532.
 - c) Re-connect connector D11826 to the flap skew sensor, T531.

EFFECTIVITY
SIA ALL

27-59 TASK 808

D633A103-SIA

Page 226
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- d) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- e) If the maintenance message does not show, then you corrected the fault.
- (f) If there is 28 VAC between pin 1 and pin 2 of connector D11828, then continue.
 - 1) Re-connect the connector D11828 to the flap skew sensor, T532.
- (5) Install a new FSEU. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (b) If the maintenance message does not show, then you corrected the fault.

————— **END OF TASK** —————

809. TE Flap Skew Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-53258 FLAP SKEW
- (2) The signals to the FSEU from one or more pairs of flap skew sensors do not agree. The following flap skew sensors are pairs:
 - (a) Flap skew sensors No. 1 and No. 8
 - (b) Flap skew sensors No. 2 and No. 7
 - (c) Flap skew sensors No. 3 and No. 6
 - (d) Flap skew sensors No. 4 and No. 5.

B. Possible Causes

- (1) Flap supports
- (2) Flap skew mechanisms
- (3) Flap skew sensors
- (4) FSEU, M1746
- (5) Wiring problem

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT

D. Related Data

- (1) SSM 27-53-21
- (2) WDM 27-53-21

EFFECTIVITY
SIA ALL

27-59 TASKS 808-809

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 227
Feb 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

E. Initial Evaluation

- (1) Do the Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (a) If the maintenance message does not show, then there was an intermittent fault.
 - (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Use the FSEU to find which pairs of flap skew sensor outputs are not in the limits:
 - (a) Push the ON/OFF button on the front panel of the FSEU to turn ON the display.
NOTE: The display will show EXISTING FAULTS?
 - (b) Select OTHER FUNCTNS? from the MAIN MENU on the FSEU.
 - (c) Select I/O MONITOR? from the OTHER FUNCTNS? menu.
 - (d) Select SYNCHRO INPUTS? from the I/O MONITOR? menu.
 - (e) Write down the values for F1 SKEW, F2 SKEW, F3 SKEW, F4 SKEW, F5 SKEW, F6 SKEW, F7 SKEW and F8 SKEW.
NOTE: Push the arrow keys to step through the sensor values.
 - (f) If the value for a skew sensor is -88, then the FSEU did not receive a valid signal from that skew sensor.
 - (g) Add the following pairs of sensor values together:
 - 1) F1 SKEW and F8 SKEW
 - 2) F2 SKEW and F7 SKEW
 - 3) F3 SKEW and F6 SKEW
 - 4) F4 SKEW and F5 SKEW
 - (h) If there is a pair of sensor values that is not in the limit, then continue.
NOTE: The sensor values that do not add up to a value of 0 to 15, 345 to 375, or 705 to 720 are not in the limit.
- (2) Visually examine these components on the flap supports for the pairs of flap skew sensors that are not in the limit:
 - (a) For flap supports No. 1 and 8, examine these components and replace those that have damage:
 - 1) The ballscrew and gimbal. These are the tasks:
 - Outboard Flap Outboard Ballscrew and Gimbal Removal, AMM TASK 27-51-42-000-801
 - Outboard Flap Outboard Ballscrew and Gimbal Installation, AMM TASK 27-51-42-400-801
 - 2) The transmission. These are the tasks:
 - Outboard Flap Outboard Transmission Removal, AMM TASK 27-51-41-000-801
 - Outboard Flap Outboard Transmission Installation, AMM TASK 27-51-41-400-801
 - 3) The carriage and rollers. These are the tasks:
 - Outboard Flap Outboard Carriage Removal, AMM TASK 27-51-23-000-801
 - Outboard Flap Outboard Carriage Installation, AMM TASK 27-51-23-400-801
 - 4) The flap track. These are the tasks:
 - Outboard Flap Outboard Track Removal, AMM TASK 27-51-25-000-801

EFFECTIVITY
SIA ALL

27-59 TASK 809

D633A103-SIA

Page 228
Feb 15/2022



737-600/700/800/900 FAULT ISOLATION MANUAL

- Outboard Flap Outboard Track Installation, AMM TASK 27-51-25-400-801
- (b) For flap supports No. 2 and 7, examine these components and replace those that have damage:
 - 1) The ballscrew and gimbal. These are the tasks:
 - Outboard Flap Inboard Ballscrew and Gimbal Removal, AMM TASK 27-51-42-000-802
 - Outboard Flap Inboard Ballscrew and Gimbal Installation, AMM TASK 27-51-42-400-802
 - 2) The transmission. These are the tasks:
 - Outboard Flap Inboard Transmission Removal, AMM TASK 27-51-41-000-802
 - Outboard Flap Inboard Transmission Installation, AMM TASK 27-51-41-400-802
 - 3) The carriage and rollers. These are the tasks:
 - Outboard Flap Inboard Carriage Removal, AMM TASK 27-51-23-000-802
 - Outboard Flap Inboard Carriage Installation, AMM TASK 27-51-23-400-802
 - 4) The flap track. These are the tasks:
 - Outboard Flap Inboard Track Removal, AMM TASK 27-51-25-000-802
 - Outboard Flap Inboard Track Installation, AMM TASK 27-51-25-400-802
- (c) For flap supports No. 3 and 6, examine these components and replace those that have damage:
 - 1) The ballscrew and gimbal. These are the tasks:
 - Inboard Flap Outboard Ballscrew and Gimbal Removal, AMM TASK 27-51-32-000-801
 - Inboard Flap Outboard Ballscrew and Gimbal Installation, AMM TASK 27-51-32-400-801
 - 2) The transmission. These are the tasks:
 - Inboard Flap Outboard Transmission Removal, AMM TASK 27-51-31-000-801
 - Inboard Flap Outboard Transmission Installation, AMM TASK 27-51-31-400-801
 - 3) The carriage and rollers. These are the tasks:
 - Inboard Flap Outboard Carriage Removal, AMM TASK 27-51-13-000-801
 - Inboard Flap Outboard Carriage Installation, AMM TASK 27-51-13-400-801
 - 4) The flap track. These are the tasks:
 - Inboard Flap Outboard Track Removal, AMM TASK 27-51-15-000-801
 - Inboard Flap Outboard Track Installation, AMM TASK 27-51-15-400-801
- (d) For flap supports No. 4 and 5, examine these components and replace those that have damage:
 - 1) The ballscrew and gimbal. These are the tasks:
 - Inboard Flap Inboard Ballscrew and Gimbal Removal, AMM TASK 27-51-32-000-802
 - Inboard Flap Inboard Ballscrew and Gimbal Installation, AMM TASK 27-51-32-400-802
 - 2) The transmission. These are the tasks:

EFFECTIVITY
SIA ALL

27-59 TASK 809

D633A103-SIA

Page 229
Feb 15/2022



737-600/700/800/900 FAULT ISOLATION MANUAL

- Inboard Flap Inboard Transmission Removal, AMM TASK 27-51-31-000-802
- Inboard Flap Inboard Transmission Installation, AMM TASK 27-51-31-400-802
- 3) The carriage and rollers. These are the tasks:
 - Inboard Flap Inboard Carriage Removal, AMM TASK 27-51-13-000-802
 - Inboard Flap Inboard Carriage Installation, AMM TASK 27-51-13-400-802
- 4) The flap track. These are the tasks:
 - Inboard Flap Inboard Track Removal, AMM TASK 27-51-15-000-802
 - Inboard Flap Inboard Track Installation, AMM TASK 27-51-15-400-802
- (e) If you replaced one of the components above, then, do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - 2) If the maintenance message shows, then continue.
- (f) If there was no visible damage, then continue.
- (g) If you replaced one or more of the components above, then, do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - 2) If the maintenance message shows, then continue.
- (h) If there was no visible damage, then continue.
- (3) Adjust the applicable flap skew sensor mechanisms. To adjust the skew sensor mechanisms, do this task: Flap Skew Detection System Adjustment, AMM TASK 27-59-00-820-801.
 - (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - 2) If the maintenance message shows, then continue.
- (4) Do this check of the wiring between the FSEU and the applicable flap skew sensors:
 - (a) Remove the FSEU, M1746. To remove it, do this task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
 - (b) Disconnect the electrical connector from the applicable flap skew sensors:
 - 1) Disconnect connector D11814 from the flap skew sensor No. 1, T525.
 - 2) Disconnect connector D11816 from the flap skew sensor No. 2, T526.
 - 3) Disconnect connector D11818 from the flap skew sensor No. 3, T527.
 - 4) Disconnect connector D11820 from the flap skew sensor No. 4, T528.
 - 5) Disconnect connector D11822 from the flap skew sensor No. 5, T529.
 - 6) Disconnect connector D11824 from the flap skew sensor No. 6, T530.
 - 7) Disconnect connector D11826 from the flap skew sensor No. 7, T531.
 - 8) Disconnect connector D11828 from the flap skew sensor No. 8, T532.
 - (c) Do a wiring check between these pins of connector D728B at the E1-1 shelf and the electrical connector on the applicable flap skew sensor:
 - 1) Flap Skew Sensor No. 1, T525:

EFFECTIVITY
SIA ALL

27-59 TASK 809

D633A103-SIA

Page 230
Feb 15/2022



737-600/700/800/900 FAULT ISOLATION MANUAL

D728B	D11814
pin H13	pin 4
pin H14	pin 5
pin H15	pin 3

2) Flap Skew Sensor No. 2, T526:

D728B	D11816
pin G13	pin 4
pin G14	pin 5
pin G15	pin 3

3) Flap Skew Sensor No. 3, T527:

D728B	D11818
pin F13	pin 4
pin F14	pin 5
pin F15	pin 3

4) Flap Skew Sensor No. 4, T528:

D728B	D11820
pin E13	pin 4
pin E14	pin 5
pin E15	pin 3

5) Flap Skew Sensor No. 5, T529:

D728B	D11822
pin D13	pin 4
pin D14	pin 5
pin D15	pin 3

6) Flap Skew Sensor No. 6, T530:

D728B	D11824
pin C13	pin 4
pin C14	pin 5
pin C15	pin 3

7) Flap Skew Sensor No. 7, T531:

D728B	D11826
pin B13	pin 4
pin B14	pin 5
pin B15	pin 3

8) Flap Skew Sensor No. 8, T532:

EFFECTIVITY
SIA ALL

27-59 TASK 809

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 231
Feb 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

D728B

pin A13 pin 4
pin A14 pin 5
pin A15 pin 3

D11828

- (d) If you find a problem with the wiring, then do these steps:
- 1) Repair the wiring.
 - 2) Re-connect the connector to the applicable flap skew sensors.
 - 3) Re-install the FSEU, M1746. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - 4) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 5) If the maintenance message does not show, then you corrected the fault.
- (e) If you did not find a problem with the wiring, then continue.
- 1) Re-connect the connector to the applicable flap skew sensor.
- (5) Install a new FSEU. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
- (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (b) If the maintenance message does not show, then you corrected the fault.

END OF TASK

810. TE Flap Support No. 1 Skew Sensor Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-53409 FLAP 1 SKEW CON
- (2) The FSEU did not receive a valid signal from the No. 1 flap skew sensor.

B. Possible Causes

- (1) No. 1 flap skew sensor, T525
- (2) FSEU, M1746
- (3) Wiring problem

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

D. Related Data

- (1) (SSM 27-53-21)
- (2) (WDM 27-53-21)

E. Initial Evaluation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (2) If the maintenance message does not show, then there was an intermittent fault.

EFFECTIVITY
SIA ALL

27-59 TASKS 809-810

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 232
Feb 15/2022



737-600/700/800/900 FAULT ISOLATION MANUAL

- (3) If the maintenance message shows, then do the Fault Isolation Procedure below.
- (4) If more than one sensor maintenance message is shown in Fault History, do a check for 28VAC between pin 1 and pin 2 of the connector of the most inboard sensor that had a fault while shaking the connector wiring at the next inboard sensor.

F. Fault Isolation Procedure

- (1) Replace the flap skew sensor, T525 on flap support No. 1. These are the tasks:
 - Outboard Flap Outboard Skew Sensor Removal, AMM TASK 27-59-01-000-801
 - Outboard Flap Outboard Skew Sensor Installation, AMM TASK 27-59-01-400-801
- (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - 2) If the maintenance message shows, then continue.
- (2) If more than one sensor maintenance message is shown in Fault History, check the skew sensor that is inboard of the sensor(s) that had a maintenance message shown:
 - (a) Disconnect the sensor connector.
 - (b) Check continuity between pin 1 and pin 7 of the skew sensor.
 - 1) Replace skew sensor if there is no continuity.
 - (c) Check continuity between pin 2 and pin 6 of the skew sensor.
 - 1) Replace skew sensor if there is no continuity.
- (3) Do this check of the wiring between the FSEU and the flap skew sensor on flap support No. 1:
 - (a) Remove the FSEU, M1746. To remove it, do this task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
 - (b) Measure the resistance between these pairs of pins of connector D728B at the E1-1 shelf:
 - 1) Pin H13 and pin H14
 - 2) Pin H14 and pin H15
 - 3) Pin H15 and pin H13.
 - (c) If the resistances are not in the range of 5-10 ohms, then do these steps:
 - 1) Disconnect connector D11814 from the flap skew sensor, T525.
 - 2) Do a wiring check between these pins of connector D728B at the E1-1 shelf and connector D11814 at the flap skew sensor, T525:

D728B		D11814
pin H13	.....	pin 4
pin H14	.....	pin 5
pin H15	.....	pin 3

- 3) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect the connector D11814 to the flap skew sensor, T525.
 - c) Re-install the FSEU, M1746. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - d) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.

EFFECTIVITY
SIA ALL

27-59 TASK 810

D633A103-SIA

Page 233
Feb 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- e) If the maintenance message does not show, then you corrected the fault.
- 4) If you did not find a problem with the wiring, then continue.
- (d) If the resistances are in the range of 5-10 ohms, then continue.
- (4) Do this check of the power supply to the flap skew sensor on flap support No. 1:
 - (a) Open this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

- (b) Disconnect connector D11814 from the flap skew sensor, T525.
- (c) Close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

- (d) Do a check for 28 VAC between pin 1 and pin 2 of connector D11814.
 - (e) If there is not 28 VAC between pin 1 and pin 2 of connector D11814, then do this check of the wiring:
 - 1) Disconnect connector D11816 from the flap skew sensor, T526 at flap support No. 2.
 - 2) Do a wiring check between these pins of the flap skew sensor, T525 and flap skew sensor, T526:
- | | | |
|---------------|-------|---------------|
| D11814 | | D11816 |
| pin 1 | ..... | pin 7 |
| pin 2 | ..... | pin 6 |
- 3) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Reconnect connector D11814 to the flap skew sensor, T525.
 - c) Reconnect connector D11816 to the flap skew sensor, T526.
 - d) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - e) If the maintenance message does not show, then you corrected the fault.
 - (f) If there is 28 VAC between pin 1 and pin 2 of connector D11814, then continue.
 - 1) Re-connect the connector D11814 to the flap skew sensor, T525.
- (5) Install a new FSEU. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (b) If the maintenance message does not show, then you corrected the fault.

———— **END OF TASK** ————

EFFECTIVITY
SIA ALL

27-59 TASK 810

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 234
Feb 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

811. TE Flap Support No. 2 Skew Sensor Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-53410 FLAP 2 SKEW CON
- (2) The FSEU did not receive a valid signal from the No. 2 flap skew sensor.

B. Possible Causes

- (1) No. 2 flap skew sensor, T526
- (2) FSEU, M1746
- (3) Wiring problem

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

D. Related Data

- (1) (SSM 27-53-21)
- (2) (WDM 27-53-21)

E. Initial Evaluation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (2) If the maintenance message does not show, then there was an intermittent fault.
- (3) If the maintenance message shows, then do the Fault Isolation Procedure below.
- (4) If more than one sensor maintenance message is shown in Fault History, do a check for 28VAC between pin 1 and pin 2 of the connector of the most inboard sensor that had a fault while shaking the connector wiring at the next inboard sensor.

F. Fault Isolation Procedure

- (1) Replace the flap skew sensor, T526 on flap support No. 2. These are the tasks:
 - Outboard Flap Inboard Skew Sensor Removal, AMM TASK 27-59-01-000-802
 - Outboard Flap Inboard Skew Sensor Installation, AMM TASK 27-59-01-400-802
- (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - 2) If the maintenance message shows, then continue.
- (2) If more than one sensor maintenance message is shown in Fault History, check the skew sensor that is inboard of the sensor(s) that had a maintenance message shown:
 - (a) Disconnect the sensor connector.
 - (b) Check continuity between pin 1 and pin 7 of the skew sensor.
 - 1) Replace skew sensor if there is no continuity.
 - (c) Check continuity between pin 2 and pin 6 of the skew sensor.
 - 1) Replace skew sensor if there is no continuity.
- (3) Do this check of the wiring between the FSEU and the flap skew sensor on flap support No. 2:

EFFECTIVITY
SIA ALL

27-59 TASK 811

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 235
Feb 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (a) Remove the FSEU, M1746. To remove it, do this task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
- (b) Measure the resistance between these pairs of pins of connector D728B at the E1-1 shelf:
 - 1) Pin G13 and pin G14
 - 2) Pin G14 and pin G15
 - 3) Pin G15 and pin G13.
- (c) If the resistances are not in the range of 5-10 ohms, then do these steps:
 - 1) Disconnect connector D11816 from the flap skew sensor, T526.
 - 2) Do a wiring check between these pins of connector D728B at the E1-1 shelf and connector D11816 at the flap skew sensor, T526:

D728B	D11816
pin G13	pin 4
pin G14	pin 5
pin G15	pin 3

- 3) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect the connector D11816 to the flap skew sensor, T526.
 - c) Re-install the FSEU, M1746. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - d) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - e) If the maintenance message does not show, then you corrected the fault.
 - 4) If you did not find a problem with the wiring, then continue.
 - a) Re-connect the connector D11816 to the flap skew sensor, T526.
- (d) If the resistances are in the range of 5-10 ohms, then continue.
- (4) Do this check of the power supply to the flap skew sensor on flap support No. 2:
 - (a) Open this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

- (b) Disconnect connector D11816 from the flap skew sensor, T526.
 - (c) Close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

- (d) Do a check for 28 VAC between pin 1 and pin 2 of connector D11816.
 - (e) If there is not 28 VAC between pin 1 and pin 2 of connector D11816, then do this check of the wiring:

EFFECTIVITY
SIA ALL

27-59 TASK 811

D633A103-SIA

Page 236
Feb 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 1) Disconnect connector D11818 from the flap skew sensor, T527 at flap support No. 3.
- 2) Do a wiring check between these pins of the flap skew sensor, T526 and flap skew sensor, T527:

D11816	D11818
pin 1	pin 7
pin 2	pin 6

- 3) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Reconnect connector D11816 to the flap skew sensor, T526.
 - c) Reconnect connector D11818 to the flap skew sensor, T527.
 - d) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - e) If the maintenance message does not show, then you corrected the fault.
- (f) If there is 28 VAC between pin 1 and pin 2 of connector D11816, then continue.
 - 1) Re-connect the connector D11816 to the flap skew sensor, T526.
- (5) Install a new FSEU. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (b) If the maintenance message does not show, then you corrected the fault.

————— **END OF TASK** —————

812. TE Flap Support No. 3 Skew Sensor Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-53411 FLAP 3 SKEW CON
- (2) The FSEU did not receive a valid signal from the No. 3 flap skew sensor.

B. Possible Causes

- (1) No. 3 flap skew sensor, T527
- (2) FSEU, M1746
- (3) Wiring problem

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

D. Related Data

- (1) (SSM 27-53-21)
- (2) (WDM 27-53-21)

EFFECTIVITY
SIA ALL

27-59 TASKS 811-812



737-600/700/800/900 FAULT ISOLATION MANUAL

E. Initial Evaluation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (2) If the maintenance message does not show, then there was an intermittent fault.
- (3) If the maintenance message shows, then do the Fault Isolation Procedure below.
- (4) If more than one sensor maintenance message is shown in Fault History, do a check for 28VAC between pin 1 and pin 2 of the connector of the most inboard sensor that had a fault while shaking the connector wiring at the next inboard sensor.

F. Fault Isolation Procedure

- (1) Replace the flap skew sensor, T527 on flap support No. 3. These are the tasks:
 - Inboard Flap Outboard Skew Sensor Removal, AMM TASK 27-59-01-000-803
 - Inboard Flap Outboard Skew Sensor Installation, AMM TASK 27-59-01-400-803
- (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - 2) If the maintenance message shows, then continue.
- (2) If more than one sensor maintenance message is shown in Fault History, check the skew sensor that is inboard of the sensor(s) that had a maintenance message shown:
 - (a) Disconnect the sensor connector.
 - (b) Check continuity between pin 1 and pin 7 of the skew sensor.
 - 1) Replace skew sensor if there is no continuity.
 - (c) Check continuity between pin 2 and pin 6 of the skew sensor.
 - 1) Replace skew sensor if there is no continuity.
- (3) Do this check of the wiring between the FSEU and the flap skew sensor on flap support No. 3:
 - (a) Remove the FSEU, M1746. To remove it, do this task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
 - (b) Measure the resistance between these pairs of pins of connector D728B at the E1-1 shelf:
 - 1) Pin F13 and pin F14
 - 2) Pin F14 and pin F15
 - 3) Pin F15 and pin F13.
 - (c) If the resistances are not in the range of 5-10 ohms, then do these steps:
 - 1) Disconnect connector D11818 from the flap skew sensor, T527.
 - 2) Do a wiring check between these pins of connector D728B at the E1-1 shelf and connector D11818 at the flap skew sensor, T527:

D728B	D11818
pin F13	pin 4
pin F14	pin 5
pin F15	pin 3

- 3) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect the connector D11818 to the flap skew sensor, T527.

EFFECTIVITY
SIA ALL

27-59 TASK 812

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 238
Feb 15/2022



737-600/700/800/900 FAULT ISOLATION MANUAL

- c) Re-install the FSEU, M1746. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
- d) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- e) If the maintenance message does not show, then you corrected the fault.
- 4) If you did not find a problem with the wiring, then continue.
 - a) Re-connect the connector D11818 to the flap skew sensor, T527.
- (d) If the resistances are in the range of 5-10 ohms, then continue.
- (4) Do this check of the power supply to the flap skew sensor on flap support No. 3
 - (a) Open this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

- (b) Disconnect connector D11818 from the flap skew sensor, T527.
- (c) Close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

- (d) Do a check for 28 VAC between pin 1 and pin 2 of connector D11818.
- (e) If there is not 28 VAC between pin 1 and pin 2 of connector D11818, then do this check of the wiring:
 - 1) Disconnect connector D11820 from the flap skew sensor, T528 at flap support No. 4.
 - 2) Do a wiring check between these pins of the flap skew sensor, T527 and flap skew sensor, T528:

D11818		D11820
pin 1	.....	pin 7
pin 2	.....	pin 6
- 3) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Reconnect connector D11818 to the flap skew sensor, T527.
 - c) Reconnect connector D11820 to the flap skew sensor, T528.
 - d) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - e) If the maintenance message does not show, then you corrected the fault.
- (f) If there is 28 VAC between pin 1 and pin 2 of connector D11818, then continue.
 - 1) Re-connect the connector D11818 to the flap skew sensor, T527.
- (5) Install a new FSEU. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.

EFFECTIVITY
SIA ALL

27-59 TASK 812

D633A103-SIA

Page 239
Feb 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (b) If the maintenance message does not show, then you corrected the fault.

———— **END OF TASK** ————

813. TE Flap Support No. 4 Skew Sensor Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
(a) 27-53412 FLAP 4 SKEW CON
(2) The FSEU did not receive a valid signal from the No. 4 flap skew sensor.

B. Possible Causes

- (1) No. 4 flap skew sensor, T528
(2) FSEU, M1746
(3) Wiring problem

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

D. Related Data

- (1) (SSM 27-53-21)
(2) (WDM 27-53-21)

E. Initial Evaluation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
(2) If the maintenance message does not show, then there was an intermittent fault.
(3) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Replace the flap skew sensor, T528 on flap support No. 4. These are the tasks:
- Inboard Flap Inboard Skew Sensor Removal, AMM TASK 27-59-01-000-804
 - Inboard Flap Inboard Skew Sensor Installation, AMM TASK 27-59-01-400-804
- (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- 1) If the maintenance message does not show, then you corrected the fault.
2) If the maintenance message shows, then continue.
- (2) Do this check of the wiring between the FSEU and the flap skew sensor on flap support No. 4:
- (a) Remove the FSEU, M1746. To remove it, do this task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
- (b) Measure the resistance between these pairs of pins of connector D728B at the E1-1 shelf:
- 1) Pin E13 and pin E14
2) Pin E14 and pin E15
3) Pin E15 and pin E13.

EFFECTIVITY
SIA ALL

27-59 TASKS 812-813

D633A103-SIA

Page 240
Feb 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (c) If the resistances are not in the range of 5-10 ohms, then do these steps:
- 1) Disconnect connector D11820 from the flap skew sensor, T528.
 - 2) Do a wiring check between these pins of connector D728B at the E1-1 shelf and connector D11820 at the flap skew sensor, T528:

D728B		D11820
pin E13	.....	pin 4
pin E14	.....	pin 5
pin E15	.....	pin 3

- 3) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect the connector D11820 to the flap skew sensor, T528.
 - c) Re-install the FSEU, M1746. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - d) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - e) If the maintenance message does not show, then you corrected the fault.
 - 4) If you did not find a problem with the wiring, then continue.
 - a) Re-connect the connector D11820 to the flap skew sensor, T528.
- (d) If the resistances are in the range of 5-10 ohms, then continue.
- (3) Do this check of the power supply to the flap skew sensor on flap support No. 4
- (a) Open this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

- (b) Disconnect connector D11820 from the flap skew sensor, T528.
- (c) Close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	12	C00213	FC TE FLAP POS/SKEW SNSR & IND LEFT

- (d) Do a check for 28 VAC between pin 1 and pin 2 of connector D11820.
- (e) If there is not 28 VAC between pin 1 and pin 2 of connector D11820, then do this check of the wiring:
- 1) Do a check for 28 VAC between pin 1 on connector D11820 and structure ground.
 - 2) Do a check for 28 VAC between pin 2 on connector D11820 and the circuit breaker C00213, FLT CONT TE FLAP POS/SKEW SNSR & IND LEFT.
 - 3) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Reconnect connector D11820 to the flap skew sensor, T528.
 - c) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.

EFFECTIVITY
SIA ALL

27-59 TASK 813

D633A103-SIA

Page 241
Feb 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- d) If the maintenance message does not show, then you corrected the fault.
- (f) If there is 28 VAC between pin 1 and pin 2 of connector D11820, then continue.
 - 1) Re-connect the connector D11820 to the flap skew sensor, T528.
- (4) Install a new FSEU. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (b) If the maintenance message does not show, then you corrected the fault.

———— **END OF TASK** ————

814. TE Flap Support No. 5 Skew Sensor Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-53413 FLAP 5 SKEW CON
- (2) The FSEU did not receive a valid signal from the No. 5 flap skew sensor.

B. Possible Causes

- (1) No. 5 flap skew sensor, T529
- (2) FSEU, M1746
- (3) Wiring problem

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT

D. Related Data

- (1) (SSM 27-53-21)
- (2) (WDM 27-53-21)

E. Initial Evaluation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (2) If the maintenance message does not show, then there was an intermittent fault.
- (3) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Replace the flap skew sensor, T529 on flap support No. 5. These are the tasks:
 - Inboard Flap Inboard Skew Sensor Removal, AMM TASK 27-59-01-000-804
 - Inboard Flap Inboard Skew Sensor Installation, AMM TASK 27-59-01-400-804
- (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - 2) If the maintenance message shows, then continue.
- (2) Do this check of the wiring between the FSEU and the flap skew sensor on flap support No. 5:

EFFECTIVITY
SIA ALL

27-59 TASKS 813-814

D633A103-SIA

Page 242
Feb 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (a) Remove the FSEU, M1746. To remove it, do this task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
- (b) Disconnect connector D11822 from the flap skew sensor, T529.
- (c) Measure the resistance between these pairs of pins of connector D728B at the E1-1 shelf:
 - 1) Pin D13 and pin D14
 - 2) Pin D14 and pin D15
 - 3) Pin D15 and pin D13.
- (d) If the resistances are not in the range of 5-10 ohms, then do these steps:
 - 1) Do a wiring check between these pins of connector D728B at the E1-1 shelf and connector D11822 at the flap skew sensor, T529:

D728B	D11822
pin D13	pin 4
pin D14	pin 5
pin D15	pin 3

- 2) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect the connector D11822 to the flap skew sensor, T529.
 - c) Re-install the FSEU, M1746. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - d) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - e) If the maintenance message does not show, then you corrected the fault.
 - 3) If you did not find a problem with the wiring, then continue.
 - a) Re-connect the connector D11822 to the flap skew sensor, T529.
- (e) If the resistances are in the range of 5-10 ohms, then continue.
- (3) Do this check of the power supply to the flap skew sensor on flap support No. 8:
 - (a) Open this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT

- (b) Disconnect connector D11822 from the flap skew sensor, T529.
- (c) Close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT

- (d) Do a check for 28 VAC between pin 1 and pin 2 of connector D11822.
- (e) If there is not 28 VAC between pin 1 and pin 2 of connector D11822, then do this check of the wiring:
 - 1) Do a check for 28 VAC between pin 1 on connector D11822 and structure ground.

EFFECTIVITY
SIA ALL

27-59 TASK 814



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 2) Do a check for 28 VAC between pin 2 on connector D11822 and the circuit breaker C01443, FLT CONT TE FLAP POS/SKEW SNSR & IND RIGHT.
- 3) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect connector D11822 to the flap skew sensor, T529.
 - c) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - d) If the maintenance message does not show, then you corrected the fault.
- (f) If there is 28 VAC between pin 1 and pin 2 of connector D11822, then continue.
 - 1) Re-connect the connector D11822 to the flap skew sensor, T529.
- (4) Install a new FSEU. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (b) If the maintenance message does not show, then you corrected the fault.

————— END OF TASK —————

815. TE Flap Support No. 6 Skew Sensor Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-53414 FLAP 6 SKEW CON
- (2) The FSEU did not receive a valid signal from the No. 6 flap skew sensor.

B. Possible Causes

- (1) No. 6 flap skew sensor, T530
- (2) FSEU, M1746
- (3) Wiring problem

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT

D. Related Data

- (1) (SSM 27-53-21)
- (2) (WDM 27-53-21)

E. Initial Evaluation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (2) If the maintenance message does not show, then there was an intermittent fault.
- (3) If the maintenance message shows, then do the Fault Isolation Procedure below.
- (4) If more than one sensor maintenance message is shown in Fault History, do a check for 28VAC between pin 1 and pin 2 of the connector of the most inboard sensor that had a fault while shaking the connector wiring at the next inboard sensor.

EFFECTIVITY
SIA ALL

27-59 TASKS 814-815

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 244
Feb 15/2022



737-600/700/800/900 FAULT ISOLATION MANUAL

F. Fault Isolation Procedure

- (1) Replace the flap skew sensor, T530 on flap support No. 6. These are the tasks:
 - Inboard Flap Outboard Skew Sensor Removal, AMM TASK 27-59-01-000-803
 - Inboard Flap Outboard Skew Sensor Installation, AMM TASK 27-59-01-400-803
- (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - 2) If the maintenance message shows, then continue.
- (2) If more than one sensor maintenance message is shown in Fault History, check the skew sensor that is inboard of the sensor(s) that had a maintenance message shown:
 - (a) Disconnect the sensor connector.
 - (b) Check continuity between pin 1 and pin 7 of the skew sensor.
 - 1) Replace skew sensor if there is no continuity.
 - (c) Check continuity between pin 2 and pin 6 of the skew sensor.
 - 1) Replace skew sensor if there is no continuity.
- (3) Do this check of the wiring between the FSEU and the flap skew sensor on flap support No. 6:
 - (a) Remove the FSEU, M1746. To remove it, do this task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
 - (b) Measure the resistance between these pairs of pins of connector D728B at the E1-1 shelf:
 - 1) Pin C13 and pin C14
 - 2) Pin C14 and pin C15
 - 3) Pin C15 and pin C13.
 - (c) If the resistances are not in the range of 5-10 ohms, then do these steps:
 - 1) Disconnect connector D11824 from the flap skew sensor, T530.
 - 2) Do a wiring check between these pins of connector D728B at the E1-1 shelf and connector D11824 at the flap skew sensor, T530:

D728B	D11824
pin C13	pin 4
pin C14	pin 5
pin C15	pin 3
- 3) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect the connector D11824 to the flap skew sensor, T530.
 - c) Re-install the FSEU, M1746. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - d) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - e) If the maintenance message does not show, then you corrected the fault.
- 4) If you did not find a problem with the wiring, then continue.
 - a) Re-connect the connector D11824 to the flap skew sensor, T530.

EFFECTIVITY
SIA ALL

27-59 TASK 815

D633A103-SIA

Page 245
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (d) If the resistances are in the range of 5-10 ohms, then continue.
- (4) Do this check of the power supply to the flap skew sensor on flap support No. 6:
- (a) Open this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT

- (b) Disconnect connector D11824 from the flap skew sensor, T530.
- (c) Close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT

- (d) Do a check for 28 VAC between pin 1 and pin 2 of connector D11824.
- (e) If there is not 28 VAC between pin 1 and pin 2 of connector D11824, then do this check of the wiring:
- 1) Disconnect connector D11822 from the flap skew sensor, T529 at flap support No. 5.
 - 2) Do a wiring check between these pins of the flap skew sensor, T530 and flap skew sensor, T529:
- | | |
|-----------------|---------------|
| D11824 | D11822 |
| pin 1 | pin 7 |
| pin 2 | pin 6 |
- 3) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect connector D11824 to the flap skew sensor, T530.
 - c) Re-connect connector D11822 to the flap skew sensor, T529.
 - d) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - e) If the maintenance message does not show, then you corrected the fault.
 - (f) If there is 28 VAC between pin 1 and pin 2 of connector D11824, then continue.
 - 1) Re-connect the connector D11824 to the flap skew sensor, T530.
- (5) Install a new FSEU. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
- (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (b) If the maintenance message does not show, then you corrected the fault.

————— **END OF TASK** —————

816. TE Flap Support No. 7 Skew Sensor Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
- (a) 27-53415 FLAP 7 SKEW CON

EFFECTIVITY
SIA ALL

27-59 TASKS 815-816

D633A103-SIA

Page 246
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (2) The FSEU did not receive a valid signal from the No. 7 flap skew sensor.

B. Possible Causes

- (1) No. 7 flap skew sensor, T531
- (2) FSEU, M1746
- (3) Wiring problem

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT

D. Related Data

- (1) (SSM 27-53-21)
- (2) (WDM 27-53-21)

E. Initial Evaluation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (2) If the maintenance message does not show, then there was an intermittent fault.
- (3) If the maintenance message shows, then do the Fault Isolation Procedure below.
- (4) If more than one sensor maintenance message is shown in Fault History, do a check for 28VAC between pin 1 and pin 2 of the connector of the most inboard sensor that had a fault while shaking the connector wiring at the next inboard sensor.

F. Fault Isolation Procedure

- (1) Replace the flap skew sensor, T531 on flap support No. 7. These are the tasks:
 - Outboard Flap Inboard Skew Sensor Removal, AMM TASK 27-59-01-000-802
 - Outboard Flap Inboard Skew Sensor Installation, AMM TASK 27-59-01-400-802
- (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 1) If the maintenance message does not show, then you corrected the fault.
 - 2) If the maintenance message shows, then continue.
- (2) If more than one sensor maintenance message is shown in Fault History, check the skew sensor that is inboard of the sensor(s) that had a maintenance message shown:
 - (a) Disconnect the sensor connector.
 - (b) Check continuity between pin 1 and pin 7 of the skew sensor.
 - 1) Replace skew sensor if there is no continuity.
 - (c) Check continuity between pin 2 and pin 6 of the skew sensor.
 - 1) Replace skew sensor if there is no continuity.
- (3) Do this check of the wiring between the FSEU and the flap skew sensor on flap support No. 7:
 - (a) Remove the FSEU, M1746. To remove it, do this task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
 - (b) Measure the resistance between these pairs of pins of connector D728B at the E1-1 shelf:
 - 1) Pin B13 and pin B14

EFFECTIVITY
SIA ALL

27-59 TASK 816

D633A103-SIA

Page 247
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 2) Pin B14 and pin B15
 - 3) Pin B15 and pin B13.
 - (c) If the resistances are not in the range of 5-10 ohms, then do these steps:
 - 1) Disconnect connector D11826 from the flap skew sensor, T521.
 - 2) Do a wiring check between these pins of connector D728B at the E1-1 shelf and connector D11826 at the flap skew sensor, T531:
- | D728B | D11826 |
|-------------------|---------------|
| pin B13 | pin 4 |
| pin B14 | pin 5 |
| pin B15 | pin 3 |
- 3) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect the connector D11826 to the flap skew sensor, T531.
 - c) Re-install the FSEU, M1746. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - d) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - e) If the maintenance message does not show, then you corrected the fault.
 - 4) If you did not find a problem with the wiring, then continue.
 - a) Re-connect the connector D11826 to the flap skew sensor, T531.
 - (d) If the resistances are in the range of 5-10 ohms, then continue.
 - (4) Do this check of the power supply to the flap skew sensor on flap support No. 7:
 - (a) Open this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT

- (b) Disconnect connector D11826 from the flap skew sensor, T531.
- (c) Close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT

- (d) Do a check for 28 VAC between pin 1 and pin 2 of connector D11826.
- (e) If there is not 28 VAC between pin 1 and pin 2 of connector D11826, then do this check of the wiring:
 - 1) Disconnect connector D11824 from the flap skew sensor, T530 at flap support No. 6.
 - 2) Do a wiring check between these pins of the flap skew sensor, T531 and flap skew sensor, T530:

EFFECTIVITY
SIA ALL

27-59 TASK 816

D633A103-SIA

Page 248
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

D11826

pin 1 pin 7
pin 2 pin 6

D11824

- 3) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect connector D11826 to the flap skew sensor, T531.
 - c) Re-connect connector D11824 to the flap skew sensor, T530.
 - d) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - e) If the maintenance message does not show, then you corrected the fault.
- (f) If there is 28 VAC between pin 1 and pin 2 of connector D11826, then continue.
 - 1) Re-connect the connector D11826 to the flap skew sensor, T531.
- (5) Install a new FSEU. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (b) If the maintenance message does not show, then you corrected the fault.

END OF TASK

817. TE Flap Support No. 8 Skew Sensor Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-53416 FLAP 8 SKEW CON
- (2) The FSEU did not receive a valid signal from the No. 8 Flap Skew Sensor.

B. Possible Causes

- (1) Flap Skew Sensor No. 8, T532
- (2) Flap/Slat Electronics Unit (FSEU), M1746
- (3) Wiring problem

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT

D. Related Data

- (1) SSM 27-53-21
- (2) WDM 27-53-21

E. Initial Evaluation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (2) If the maintenance message does not show, then there was an intermittent fault.
- (3) If the maintenance message shows, then do the Fault Isolation Procedure below.

EFFECTIVITY
SIA ALL

27-59 TASKS 816-817

D633A103-SIA

Page 249
Feb 15/2022



737-600/700/800/900 FAULT ISOLATION MANUAL

- (4) If more than one sensor maintenance message is shown in Fault History, do a check for 28VAC between pin 1 and pin 2 of the connector of the most inboard sensor that had a fault while shaking the connector wiring at the next inboard sensor.

F. Fault Isolation Procedure

- (1) Replace the Flap Skew Sensor No. 8. These are the tasks:
- Outboard Flap Outboard Skew Sensor Removal, AMM TASK 27-59-01-000-801
 - Outboard Flap Outboard Skew Sensor Installation, AMM TASK 27-59-01-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (2) If more than one sensor maintenance message is shown in Fault History, check the skew sensor that is inboard of the sensor(s) that had a maintenance message shown:
- (a) Disconnect the sensor connector.
- (b) Check continuity between pin 1 and pin 7 of the skew sensor.
- 1) Replace skew sensor if there is no continuity.
- (c) Check continuity between pin 2 and pin 6 of the skew sensor.
- 1) Replace skew sensor if there is no continuity.
- (d) Do the Repair Confirmation at the end of this task.
- (3) Do this check of the wiring between the FSEU and the Flap Skew Sensor No. 8 (WDM 27-53-21):
- (a) Remove the FSEU. This is the task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
- (b) Measure the resistance between these pairs of pins of connector D728B at the E1-1 shelf:
- 1) Pin A13 and pin A14
- 2) Pin A14 and pin A15
- 3) Pin A15 and pin A13.
- (c) If the resistances are not in the range of 5-10 ohms, then do these steps:
- 1) Disconnect connector D11828 from the No. 8 Flap Skew Sensor, T532.
- 2) Do a wiring check between these pins of connector D728B at the E1-1 shelf and connector D11828 at the No. 8 Flap Skew Sensor, T532:
- | D728B | D11828 |
|-------------------|---------------|
| pin A13 | pin 4 |
| pin A14 | pin 5 |
| pin A15 | pin 3 |
- 3) If you find a problem with the wiring, then do these steps:
- a) Repair the wiring.
- b) Re-connect the connector D11828 to the Flap Skew Sensor No. 8.
- c) Re-install the FSEU. This is the task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
- d) Do the Repair Confirmation at the end of this task.
- 4) If you did not find a problem with the wiring, then continue.
- (d) If the resistances are in the range of 5-10 ohms, then continue.

EFFECTIVITY
SIA ALL

27-59 TASK 817

D633A103-SIA

Page 250
Feb 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

(4) Do this check of the power supply to the Flap Skew Sensor No. 8 (WDM 27-53-21):

(a) Open this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT

(b) Disconnect connector D11828 from the Flap Skew Sensor No. 8.

(c) Close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	11	C01443	FC TE FLAP POS/SKEW SNSR & IND RIGHT

(d) Do a check for 28 VAC between pin 1 and pin 2 of connector D11828.

(e) If there is not 28 VAC between pin 1 and pin 2 of connector D11828, then do this check of the wiring:

- 1) Disconnect connector D11826 from the Flap Skew Sensor No. 7.
- 2) Do a wiring check between these pins of the Flap Skew Sensor No. 8 and Flap Skew Sensor No. 7:

D11828		D11826
pin 1	.....	pin 7
pin 2	.....	pin 6

3) If you find a problem with the wiring, then do these steps:

- a) Repair the wiring.
- b) Re-connect connector D11828 to the Flap Skew Sensor No. 8.
- c) Re-connect connector D11826 to the Flap Skew Sensor No. 7.
- d) Do the Repair Confirmation at the end of this task.

(f) If there is 28 VAC between pin 1 and pin 2 of connector D11828, then continue.

- 1) Re-connect the connector D11828 to the Flap Skew Sensor No. 8.

(5) Install a new FSEU. This is the task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.

(a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (2) If the maintenance message does not show, then you corrected the fault.
- (3) If the maintenance message shows, then continue the Fault Isolation Procedure at the subsequent step.

———— **END OF TASK** ————

EFFECTIVITY
SIA ALL

27-59 TASK 817

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 251
Feb 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

801. Spoiler Panels Float - Fault Isolation

A. Description

- (1) The speed brake lever moves cables that control the spoilers control valve. The valve supplies pressure to the actuators to raise the spoilers.

B. Possible Causes

- (1) Flight spoiler actuator or inboard ground spoiler actuator or outboard ground spoiler actuator
- (2) Ground spoiler interlock valve
- (3) Spoiler ratio changer
- (4) Spoiler mixer
- (5) Spoiler control cables.

C. Initial Evaluation

- (1) Do a check of the applicable spoiler. This is the task: Spoiler Inspection, AMM TASK 27-09-91-200-805.
 - (a) If the check on the applicable spoiler is satisfactory, then there was an intermittent fault.
 - (b) If the check on the applicable spoiler is not satisfactory, then do the Fault Isolation Procedure below.

D. Fault Isolation Procedure

- (1) Do these steps to examine the spoiler components:
 - (a) Do an adjustment of the spoiler control cables. This is the task: Spoiler Control Cables Adjustment, AMM TASK 27-61-00-820-801.
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) Examine the applicable spoiler ratio changer. This is the task: Spoiler Ratio Changer Inspection, AMM TASK 27-61-31-200-801.
 - 1) If there is a problem with the Spoiler Ratio Changer, then repair or replace it. These are the tasks:
 - Spoiler Ratio Changer - Removal, AMM TASK 27-61-31-000-801
 - Spoiler Ratio Changer - Installation, AMM TASK 27-61-31-400-801
 - a) Do an adjustment of the spoiler ratio changer. To do it, do this task: Ratio Changer Input Rod Adjustment, AMM TASK 27-61-00-820-802.
 - b) Do the Repair Confirmation at the end of this task.
 - 2) If the check is satisfactory, then continue.
 - (c) Do an adjustment of the applicable spoiler mixer. This is the task: Spoiler Mixer Adjustment, AMM TASK 27-61-00-820-805.
 - 1) Do the Repair Confirmation at the end of this task.
 - (d) Replace the applicable spoiler mixer. These are the tasks:
 - Spoiler Mixer Removal, AMM TASK 27-61-21-000-801
 - Spoiler Mixer Installation, AMM TASK 27-61-21-400-801
 - 1) Do the Repair Confirmation at the end of this task.
- (2) If spoiler float is on spoilers No. 2, 3, 4, 5, 8, 9, 10 or 11 then do these steps:
 - (a) Examine the applicable spoiler actuator control rod for wear.
 - 1) Repair or replace the applicable spoiler actuator. These are the tasks:

EFFECTIVITY
SIA ALL

27-61 TASK 801

D633A103-SIA

Page 201
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

- Flight Spoiler Actuator and Solenoid Valve - Removal, AMM TASK 27-61-51-000-801
 - Flight Spoiler Actuator and Solenoid Valve - Installation, AMM TASK 27-61-51-400-801
- 2) Do the Repair Confirmation at the end of this task.
- (3) If spoiler float is on spoilers No. 1 or 12 then do these steps:
 - (a) Examine the applicable spoiler actuator control rod for wear.
 - 1) Repair or replace the applicable spoiler actuator. These are the tasks:
 - Outboard Ground Spoiler Actuator - Removal, AMM TASK 27-62-94-000-801
 - Outboard Ground Spoiler Actuator - Installation, AMM TASK 27-62-94-400-801
 - 2) Do a check of the Ground Spoiler Interlock Valve (Ground Spoiler Interlock Valve Functional Test - Jacking Method, AMM TASK 27-62-61-400-805).
 - a) Do the Repair Confirmation at the end of this task.
 - (4) If spoiler float is on spoilers No. 6 or 7 then do these steps:
 - (a) Examine the applicable spoiler actuator control rod for wear.
 - 1) Repair or replace the applicable spoiler actuator. These are the tasks:
 - Inboard Ground Spoiler Actuator Removal, AMM TASK 27-62-71-000-801
 - Inboard Ground Spoiler Actuator Installation, AMM TASK 27-62-71-400-801
 - 2) Do a check of the Ground Spoiler Interlock Valve (AMM TASK 27-62-61-400-805).
 - a) Do the Repair Confirmation at the end of this task.

E. Repair Confirmation

- (1) Do a check of the applicable spoiler. This is the task: Spoiler Inspection, AMM TASK 27-09-91-200-805.
 - (a) If the check on the applicable spoiler is satisfactory, then you have corrected the fault.
 - (b) If the check on the applicable spoiler is not satisfactory, then continue the Fault Isolation Procedure at the subsequent step.

————— END OF TASK —————

802. Flight spoilers do not operate - Fault Isolation

A. Description

- (1) The flight crew uses the speed brake lever to control the speed brake operation. The speed brake lever supplies mechanical inputs through the spoiler mixer and ratio changer to the flight spoiler actuators.

B. Possible Causes

- (1) Spoiler ratio changer
- (2) Spoiler mixer

EFFECTIVITY
SIA ALL

27-61 TASKS 801-802

D633A103-SIA

Page 202
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

C. Initial Evaluation

- (1) Do this check of the flight spoilers:



WARNING

MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Do this task: Speed Brake Hydraulic Systems A and B Pressurization, AMM TASK 27-62-00-800-801.
 - (b) Turn the captain's aileron control wheel fully clockwise.
 - 1) Make sure the No. 8, 9, 10, and 11 flight spoilers move to the up position.
 - (c) Turn the captain's aileron control wheel fully counterclockwise.
 - 1) Make sure the No. 2, 3, 4 and 5 flight spoilers move to the up position.
 - (d) Turn the captain's aileron control wheel to the neutral position.
 - 1) Make sure the flight spoilers move to the retracted position.
 - (e) Move the flap lever to the FLAPS 1 detent.
 - (f) Move the speed brake lever from the DOWN position to the UP position.
 - 1) Make sure the spoilers move to the UP position.
 - (g) Move the speed brake lever from the UP position to the DOWN position.
 - 1) Make sure the flight spoilers move to the retracted position.
 - (h) Do this task: Put the Spoiler Hydraulic systems A and B Back to the Condition Before the Pressurization, AMM TASK 27-61-00-840-801.
- (2) If the check was satisfactory, then there was an intermittent fault.
- (3) If the check was not satisfactory, then do the Fault Isolation Procedure below.

D. Fault Isolation Procedure

- (1) Do this check:
- (a) Do a test of the spoiler mixer no-back assembly. To do it, do this task: Spoiler Ratio Changer No-Back Assembly Test, AMM TASK 27-61-00-820-809.
 - (b) If the test is not satisfactory, then do this:
 - 1) Replace the spoiler ratio changer. These are the tasks:
 - Spoiler Ratio Changer - Removal, AMM TASK 27-61-31-000-801
 - Spoiler Ratio Changer - Installation, AMM TASK 27-61-31-400-801
 - 2) Do the Repair Confirmation at the end of this task.
 - (c) If the test is satisfactory, then do this:
 - 1) Replace the spoiler mixer. These are the tasks:
 - Spoiler Mixer Removal, AMM TASK 27-61-21-000-801
 - Spoiler Mixer Installation, AMM TASK 27-61-21-400-801
 - 2) Do the Repair Confirmation at the end of this task.

EFFECTIVITY
SIA ALL

27-61 TASK 802

D633A103-SIA

Page 203
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

E. Repair Confirmation

- (1) Do this check of the flight spoilers:



WARNING

MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Do this task: Speed Brake Hydraulic Systems A and B Pressurization, AMM TASK 27-62-00-800-801.
 - (b) Turn the captain's aileron control wheel fully clockwise.
 - 1) Make sure the No. 8, 9, 10, and 11 flight spoilers move to the up position.
 - (c) Turn the captain's aileron control wheel fully counterclockwise.
 - 1) Make sure the No. 2, 3, 4 and 5 flight spoilers move to the up position.
 - (d) Turn the captain's aileron control wheel to the neutral position.
 - 1) Make sure the flight spoilers move to the retracted position.
 - (e) Move the flap lever to the FLAPS 1 detent.
 - (f) Move the speed brake lever from the DOWN position to the UP position.
 - 1) Make sure the spoilers move to the UP position.
 - (g) Move the speed brake lever from the UP position to the DOWN position.
 - 1) Make sure the flight spoilers move to the retracted position.
 - (h) Do this task: Put the Spoiler Hydraulic systems A and B Back to the Condition Before the Pressurization, AMM TASK 27-61-00-840-801.
- (2) If the check was satisfactory, then you corrected the fault.

———— **END OF TASK** ————

803. Ground spoilers do not operate - Fault Isolation

A. Description

- (1) The pilot uses the speed brake lever to manually move the ground spoilers when the airplane is on the ground. The auto speed brake actuators automatically controls the ground spoilers.
- (2) The ground spoilers only move when the speed brake lever moves while the airplane is on the ground.

B. Possible Causes

- (1) Ground spoiler interlock valve cable
- (2) Ground spoiler interlock valve
- (3) Ground spoiler control valve

EFFECTIVITY
SIA ALL

27-61 TASKS 802-803

D633A103-SIA

Page 204
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

C. Initial Evaluation

- (1) Do this check of the ground spoilers:



WARNING

MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Do this task: Speed Brake Hydraulic Systems A and B Pressurization, AMM TASK 27-62-00-800-801.
- (b) Make sure the airplane is on its landing gear or compress the right main gear strut a minimum of 5 inches.
NOTE: This will open the ground spoiler interlock valve.
- (c) Move the flap lever to the FLAPS 1 detent.
- (d) Make sure the speed brake lever is in the DOWN position.
- (e) Make sure that the ground spoilers are in the full down position.
- (f) Slowly move the speed brake lever aft 29 +/- 2 degrees (2.66 +/- 0.20 inch).
- (2) If the ground spoilers extend, then there was an intermittent fault. Do these steps to complete the task:
- (a) Move the speed brake lever to the DOWN position.
- (b) Do this task: Put the Spoiler Hydraulic systems A and B Back to the Condition Before the Pressurization, AMM TASK 27-61-00-840-801.
- (3) If the ground spoilers do not move to the full up position, then do the Fault Isolation Procedure below.

D. Fault Isolation Procedure

- (1) Do this check the ground spoiler interlock valve cable:
- (a) Examine the ground spoiler interlock valve cable and lower slider for unwanted objects and damaged components.
- (b) If you find a problem with the spoiler interlock valve cable, then do these steps:
- 1) Repair or replace the spoiler interlock valve cable. These are the tasks:
 - Ground Spoiler Interlock Valve Cable Removal, AMM TASK 27-62-51-000-801
 - Ground Spoiler Interlock Valve Cable Installation, AMM TASK 27-62-51-400-801
 - 2) Do the Repair Confirmation at the end of this task.
- (c) If you find a problem with the spoiler interlock lower slider, then do these steps:
- 1) Repair or replace the spoiler interlock valve lower slider. These are the tasks:
 - Lower Slider Removal, AMM TASK 27-62-51-000-802
 - Lower Slider - Installation, AMM TASK 27-62-51-400-802
 - 2) Do the Repair Confirmation at the end of this task.
- (d) If you do not find a problem with the ground spoiler interlock valve cable and lower slider, then continue.
- (2) Do this check of the speed brake interlock valve:

EFFECTIVITY
SIA ALL

27-61 TASK 803

D633A103-SIA

Page 205
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

- (a) Do a test of the ground spoiler interlock valve. To do the test, do this task: Ground Spoiler Interlock Valve Functional Test - Jacking Method, AMM TASK 27-62-61-400-805.
- (b) If the test is not satisfactory, then do this:
 - 1) Replace the ground spoiler interlock valve. To replace it, these are the tasks:
 - Ground Spoiler Interlock Valve Removal, AMM TASK 27-62-61-000-801
 - Ground Spoiler Interlock Valve Installation, AMM TASK 27-62-61-400-801
 - 2) Do the Repair Confirmation at the end of this task.
- (c) If the test is satisfactory, then do this:
 - 1) Replace the ground spoiler control valve. To replace it, these are the tasks:
 - Ground Spoiler Control Valve - Removal, AMM TASK 27-62-41-000-801
 - Ground Spoiler Control Valve - Installation, AMM TASK 27-62-41-400-801
 - 2) Do the Repair Confirmation at the end of this task.

E. Repair Confirmation

- (1) Do this check of the ground spoilers:



MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Do this task: Speed Brake Hydraulic Systems A and B Pressurization, AMM TASK 27-62-00-800-801.
- (b) Make sure the airplane is on its landing gear or compress the right main gear strut a minimum of 5 inches.

NOTE: This will open the ground spoiler interlock valve.
- (c) Move the flap lever to the FLAPS 1 detent.
- (d) Make sure the speed brake lever is in the DOWN position.
- (e) Make sure that the ground spoilers are in the full down position.
- (f) Slowly move the speed brake lever aft 29 +/-2 degrees (2.66 +/-0.20 inch).
- (g) Make sure the ground spoilers extend.
- (h) If the ground spoilers extend, then you corrected the fault.
- (i) Move the speed brake lever to the DOWN position.
- (j) Do this task: Put the Spoiler Hydraulic systems A and B Back to the Condition Before the Pressurization, AMM TASK 27-61-00-840-801.

————— END OF TASK —————

804. Spoilers do not move in one direction - Fault Isolation

A. Description

- (1) The speed brake lever moves cables that control the spoiler control valve. The valve supplies pressure to the actuators to raise the spoilers.

EFFECTIVITY
SIA ALL

27-61 TASKS 803-804

D633A103-SIA

Page 206
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

B. Possible Causes

- (1) Control cables
- (2) Air pressure seals
- (3) Cable guard, pulleys, or brackets

C. Initial Evaluation

- (1) Do a test of the speed brake control system. To do the check, do this task: Speed Brake Control System Operational Test, AMM TASK 27-62-00-710-801.
- (2) If the test is not satisfactory, then do the Fault Isolation Procedure below.
- (3) If the test is satisfactory, then the fault was an intermittent fault.

D. Fault Isolation Procedure

- (1) Do a tension check of the speed brake control cables. To do the check, do this task: Speed Brake Control Cable Adjustment, AMM TASK 27-62-00-820-802.
 - (a) If you find a problem, then do these steps:
 - 1) Re-rig the speed brake control cables. To rig them, do this task: Speed Brake Control Cable Adjustment, AMM TASK 27-62-00-820-802.
 - 2) Do a test of the speed brake control system. To check, do this task: Speed Brake Control System Operational Test, AMM TASK 27-62-00-710-801.
 - 3) If the test is OK, then you corrected the fault.
 - (b) If you do not find a problem, then continue.
- (2) Do a check of the air pressure seals:
 - (a) Examine the air pressure seals for unwanted objects and damaged components. To examine the air pressure seals, do this task: Location of the Flight Control Cables Air Pressure Seals, AMM TASK 27-09-17-860-801.
 - (b) If you find a problem, then do these steps:
 - 1) Remove the unwanted objects or replace the air pressure seals. These are the tasks:
 - Control Cable Half Ball Pressure Seal Removal, AMM TASK 20-10-04-000-801
 - Control Cable Half Ball Pressure Seal Installation, AMM TASK 20-10-04-400-801
 - 2) Do a test of the speed brake control system. To do the check, do this task: Speed Brake Control System Operational Test, AMM TASK 27-62-00-710-801.
 - 3) If the test is satisfactory, then you corrected the fault.
 - (c) If you do not find a problem, then continue.
- (3) Do a check of the cable guards, control cable pulleys, and brackets on the control cable pulleys:
 - (a) Examine the cable guards, control cable pulleys, and brackets on the control cable pulleys. To examine the control cable pulleys, do this task: Inspection of Pulleys, AMM TASK 20-20-31-200-805.
 - (b) If you find a problem, then do these steps:
 - 1) Remove all unwanted objects or replace the control cable guards.
 - 2) Remove all unwanted objects or replace the control cable pulleys. These are the tasks:
 - Control Cable Pulleys Removal, AMM TASK 20-10-09-000-801

EFFECTIVITY
SIA ALL

27-61 TASK 804

D633A103-SIA

Page 207
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- Control Cable Pulleys Installation, AMM TASK 20-10-09-400-801
- 3) Remove all unwanted objects or replace the brackets on the control cable pulleys.
- 4) Do a test of the speed brake control system. Do this task: Speed Brake Control System Operational Test, AMM TASK 27-62-00-710-801.
- 5) If the test is satisfactory, then you corrected the fault.

————— **END OF TASK** —————

805. Aircraft rolls Left (Right) when Spoilers are deployed - Fault Isolation

A. Description

- (1) Aircraft rolls L(R) when Spoilers are deployed:
 - (a) Control wheel displaces approximately 2 units to the L(R)
 - (b) Aircraft banks about 4 degrees to the L(R)

B. Possible Causes

- (1) Ratio Changer Input Rod to the Ailerons is not in adjustment
- (2) Ground Spoiler Interlock Valve

C. Fault Isolation Procedure

- (1) Do the Ratio Changer Input Rod Adjustment, AMM TASK 27-61-00-820-802.
 - (a) If the Adjustment Test is not satisfactory, replace the Spoiler Ratio Changer Input Rod. These are the tasks:
 - Spoiler Ratio Changer - Removal, AMM TASK 27-61-31-000-801
 - Spoiler Ratio Changer - Installation, AMM TASK 27-61-31-400-801
 - (b) Do the Repair Confirmation at the end of the task.
- (2) Do the Ground Spoiler Interlock Valve Functional Test - Rigging Tool Method, AMM TASK 27-62-61-400-808.
 - (a) If the Functional Test is not satisfactory, replace the Ground Spoiler Interlock Valve. These are the tasks:
 - Ground Spoiler Interlock Valve Removal, AMM TASK 27-62-61-000-801
 - Ground Spoiler Interlock Valve Installation, AMM TASK 27-62-61-400-801
 - (b) Do the Repair Confirmation at the end of this task.

D. Repair Confirmation

- (1) Do the Spoiler Control System Operational Test, AMM TASK 27-61-00-710-801 to confirm the result.
 - (a) If the test is satisfactory, you corrected the problem.
 - (b) If the test is not satisfactory, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

EFFECTIVITY
SIA ALL

27-61 TASKS 804-805

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 208
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

801. Auto Speed Brake/Antiskid Interface Test

(Figure 201)

A. Description

- (1) The Auto Speedbrake Module (ASM), M980 is on the E4-2 shelf in the Electronic Equipment (EE) compartment.
- (2) The front of the ASM, M980 has these four blue lights:
 - (a) DS 1 RT OUTBD
 - (b) DS 3 L INBD
 - (c) DS 4 RT INBD
 - (d) DS 2 L OUTBD
- (3) The primary input to the electrical circuit in the ASM, that will power the Speedbrake Lever Actuator to raise the lever, is from the Anti-Skid System. A wheel speed above 60 knots signal is required from one wheel of each of these pairs; left inboard or right outboard and left outboard or right inboard. The blue lights on the ASM will illuminate when the wheel speed signal is above 60 knots.

B. Auto Speed Brake/Antiskid Interface Test

- (1) Do the Antiskid/Autobrake Control Unit (AACU) BITE Procedure, 32-42 TASK 801.
 - (a) If the BITE test fails, then do the fault isolation task for the applicable maintenance message.
 - (b) If the BITE test passes, then do the Auto Speed Brake/Antiskid Interface Test below.
- (2) Do the Auto Speedbrake/Antiskid interface test:
 - (a) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	9	C00440	FLIGHT CONTROL AUTO SPEED BRAKE

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	16	C00196	LANDING GEAR ANTISKID INBD
E	18	C00195	LANDING GEAR ANTISKID OUTBD

- (b) Set the Speed Brake Lever in the ARM position.
- (c) Do these steps to activate the Antiskid/Autobrake Control Unit (AACU), M162 to simulate high speed:
 - 1) Set the rotary switch on the AACU, M162 to OUTBD position.

NOTE: The Antiskid/Autobrake Control Unit, M162 is on E1-3 shelf in the electronic equipment (EE) compartment.
 - 2) Push and hold the ENABLE/VERIFY switch on the AACU, M162.
 - 3) Push and hold the toggle switch on the AACU, M162 to the PRESS/TEST position.
- (d) Look at the four blue lights on the front of the ASM, M980 (Figure 201).
- (e) Make sure that the DS 1 RT OUTBD and DS 2 L OUTBD lights come ON.
 - 1) If the DS 1 RT OUTBD and DS 2 L OUTBD lights do not come ON, then replace the ASM, M980. These are the tasks:

EFFECTIVITY
SIA ALL

27-62 TASK 801

D633A103-SIA

Page 201
Jun 15/2023



737-600/700/800/900 FAULT ISOLATION MANUAL

- Auto Speed Brake Module Removal, AMM TASK 27-62-35-000-801
 - Auto Speed Brake Module Installation, AMM TASK 27-62-35-400-801
- 2) If the DS 1 RT OUTBD light does not come ON, then do these steps:
- a) Release the ENABLE/VERIFY switch and toggle switch.
 - b) Put the rotary switch on the AACU, M162 to the NORM position.
 - c) Do a wiring check between these pins on the ASM, M980 and the AACU, M162 (WDM 27-62-11):

M980	M162
D2586B	D1040A
47	D13

<1> If you find a problem with the wiring, then do this step:

<a> Repair the wiring.

- 3) If the DS 2 L OUTBD light does not come ON, then do these steps:
- a) Release the ENABLE/VERIFY switch and toggle switch.
 - b) Put the rotary switch on the AACU, M162 to the NORM position.
 - c) Do a wiring check between these pins on the ASM, M980 and the AACU, M162 (WDM 27-62-11):

M980	M162
D2586B	D1040A
39	A11

<1> If you find a problem with the wiring, then do this step:

<a> Repair the wiring.

- 4) If the DS 1 RT OUTBD and DS 2 L OUTBD lights come ON, then continue.
- (f) Set the rotary switch on the AACU, M162 to the INBD position.
- 1) Push and hold the ENABLE/VERIFY switch on the AACU, M162.
 - 2) Push and hold the toggle switch on the AACU, M162 to the PRESS/TEST position.
- (g) Look at the four blue lights on the front of the ASM, M980.
- (h) Make sure that the DS 3 L INBD and DS 4 RT INBD lights come ON.
- 1) If the DS 3 L INBD and DS 4 RT INBD lights do not come ON, then replace the ASM, M980. These are the tasks:
 - Auto Speed Brake Module Removal, AMM TASK 27-62-35-000-801
 - Auto Speed Brake Module Installation, AMM TASK 27-62-35-400-801
 - 2) If the DS 3 L INBD light does not come ON, then do these steps:
 - a) Release the ENABLE/VERIFY switch and toggle switch.
 - b) Put the rotary switch on the AACU, M162 to the NORM position.
 - c) Do a wiring check between these pins on the ASM, M980 and the AACU, M162 (WDM 27-62-11):

EFFECTIVITY
SIA ALL

27-62 TASK 801

D633A103-SIA

Page 202
Jun 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

M980	M162
D2586B	D1040A
33	A9

<1> If you find a problem with the wiring, then do this step:

<2> Repair the wiring.

3) If the DS 4 RT INBD light does not come ON, then do these steps:

- a) Release the ENABLE/VERIFY switch and toggle switch.
- b) Put the rotary switch on the AACU, M162 to the NORM position.
- c) Do a wiring check between these pins on the ASM, M980 and the AACU, M162 (WDM 27-62-11):

M980	M162
D2586B	D1040A
31	D10

<1> If you find a problem with the wiring, then do this step:

<2> Repair the wiring.

- (i) Put the Speed Brake Lever to the DOWN position.

———— **END OF TASK** ————

EFFECTIVITY
SIA ALL

27-62 TASK 801

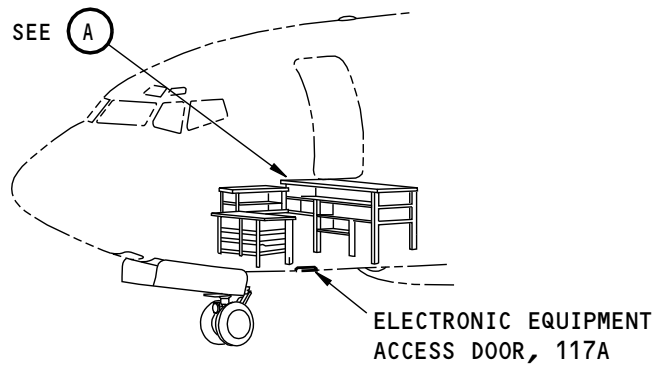
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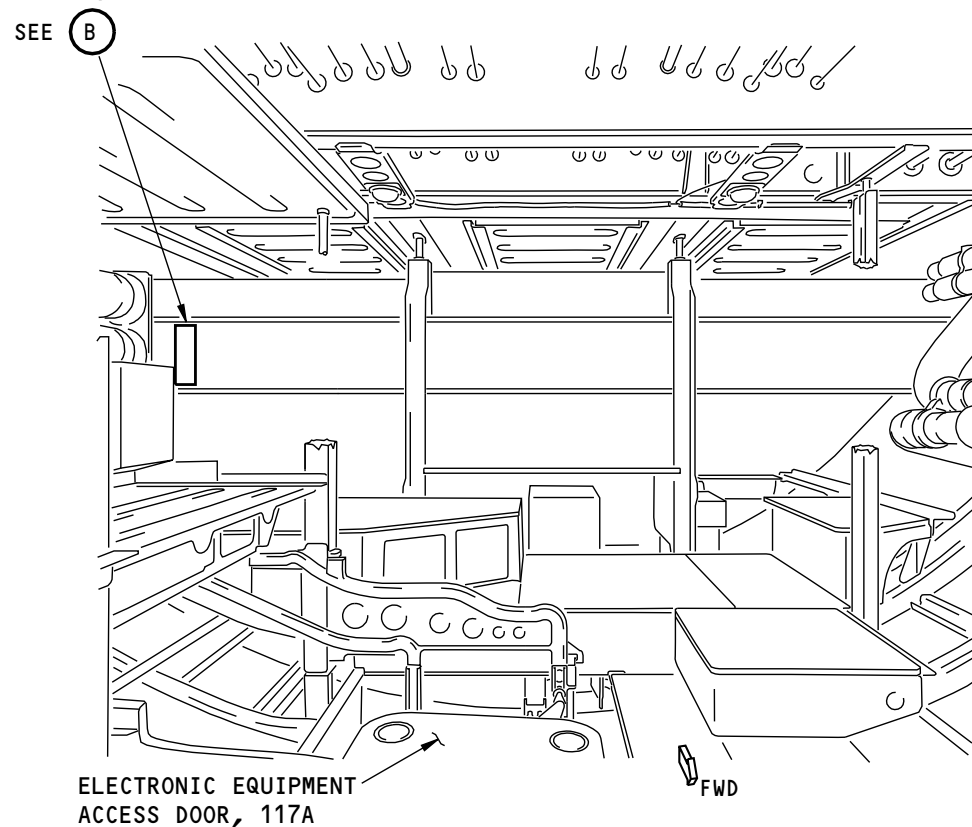
Page 203
Jun 15/2023

BOEING
737-600/700/800/900
FAULT ISOLATION MANUAL

ELECTRONIC EQUIPMENT
 RACKS E2, E3 AND E4



AUTO SPEEDBRAKE
 MODULE, M980 (E4-2)



ELECTRONIC EQUIPMENT RACKS E2, E3 AND E4

(A)

F99536 S0000146986_V1

Auto Speedbrake Module, M980
Figure 201/27-62-00-990-801 (Sheet 1 of 2)

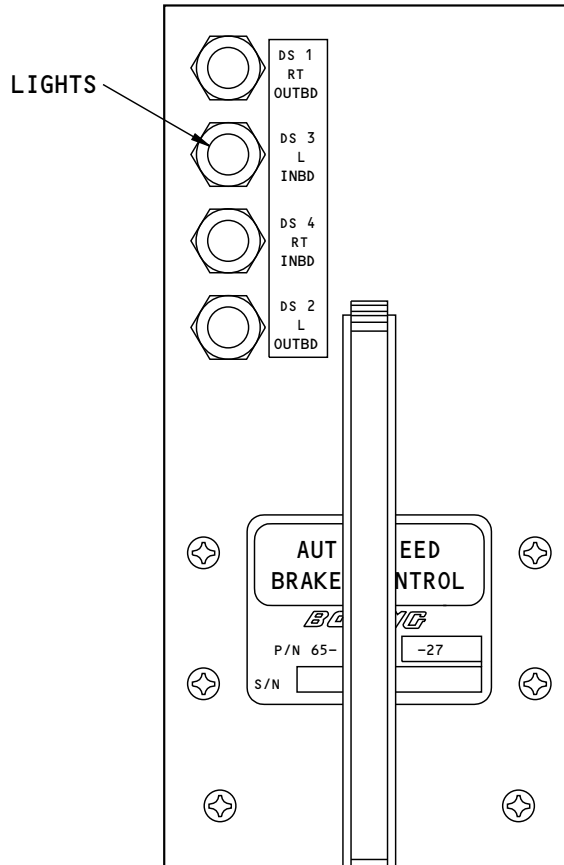
EFFECTIVITY
 SIA ALL

27-62 TASK 801

D633A103-SIA

Page 204
 Oct 15/2021

737-600/700/800/900
FAULT ISOLATION MANUAL



AUTO SPEEDBRAKE MODULE, M980 (E4-2)

(B)

F99543 S0000146987_V1

Auto Speedbrake Module, M980
Figure 201/27-62-00-990-801 (Sheet 2 of 2)

EFFECTIVITY
SIA ALL

27-62 TASK 801

D633A103-SIA

Page 205
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

802. SPEED BRAKE DO NOT ARM Light is ON - Fault Isolation

A. Description

- (1) The SPEED BRAKE DO NOT ARM Light comes ON when the Speed Brake Lever is moved to the ARMED position and at least one of these conditions occurs:

NOTE: During landing, if the Wheel Speed is less than 60 Knots and the Speedbrake Lever is not in the DOWN (stowed) position, the SPEED BRAKE DO NOT ARM Light will come ON. The light will stay ON until the Speedbrake Lever is stowed, either manually or using the Autostow feature. This is considered normal operation of the SPEED BRAKE DO NOT ARM Light and does not indicate a system problem.

- (a) Two Anti-skid Channels are OFF or inoperative.
 - (b) The Speed Brake Lever Actuator, M359 is not fully retracted to the Speed Brake Lower position.
 - (c) The Flight Control Computer (FCC)-B, M1876 does not operate correctly.
 - (d) The Low Range Radio Altimeter (LRRA) does not operate correctly.
 - (e) The Auto Speed Brake Module, M980 does not operate correctly.
 - (f) The Switches do not function correctly.
 - (g) The Relays do not function correctly.
 - (h) The Auto Speed Brake Actuator Rod ends are not adjusted correctly.
 - (i) SPOILER PCU SOV SYS A, C1662 or SPOILER PCU SOV SYS B Circuit Breaker has tripped.
- (2) The SPEED BRAKE DO NOT ARM Light comes ON when the Speed Brake Handle is manually stowed during a Landing Sequence and all of these conditions occur:
- (a) Speed Brake ARM is true or Reverse Thrust is true.
 - (b) Wheel Speed is more than 60 Knots.
 - (c) Aircraft is on the ground.
 - (d) Autothrottles are retracted.
- (3) The SPEED BRAKE DO NOT ARM Light comes ON during landing and remains ON after landing, with Speedbrake Lever in the DOWN or ARMED position and when at least one of these conditions occur:

NOTE: When the air/ground status of the S1131 switch disagrees with the airplane air/ground system for more than three (3) seconds, the SPEED BRAKE DO NOT ARM light will come ON and remain ON. The S1131 switch provides air/ground information to support the logic for the short field flight spoiler supplemental travel system. The SPEED BRK DO NOT ARM light is latched ON by relay R969.

NOTE: The SPEED BRAKE DO NOT ARM light will remain illuminated until circuit breaker C1663 is cycled to clear the latched fault.

- (a) The airplane bounces and results in the Auto Speedbrake system commanding the Speedbrake Lever to move to UP position while the airplane landing gear is not compressed.
- (b) The Speedbrake Lever is slow to deploy friction.
- (c) The Speed Brake Lever Actuator, M359, does not operate correctly.

EFFECTIVITY
SIA ALL

27-62 TASK 802

D633A103-SIA

Page 206
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

B. Possible Causes

- (1) AACU, M162
- (2) Auto Speed Brake Module, M980
- (3) Speed Brake Lever Actuator, M359
- (4) FCC-A, M1875
- (5) FCC-B, M1876
- (6) LRRA
- (7) Auto Speed Brake Actuator Rod
- (8) Relays: R712, R713, R714
- (9) Auto Speed Brake Time Delay Module, M2033
- (10) Switches: S918, S1131
- (11) Relays: R588, R964, R965, R966, R967, R968, R969, R970
- (12) Coil Resistance or Insulation Resistance is low on one of the Flight Spoiler Actuator Solenoids
- (13) Wiring

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C01662	SPOILER PCU SOV SYS A
A	5	C01663	SPOILER PCU SOV SYS B
B	9	C00440	FLIGHT CONTROL AUTO SPEED BRAKE

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	16	C00196	LANDING GEAR ANTISKID INBD
E	18	C00195	LANDING GEAR ANTISKID OUTBD

D. Related Data

- (1) SSM 27-62-11
- (2) WDM 27-62-11
- (3) WDM 22-11-12

E. Initial Evaluation

- (1) If the SPEED BRAKE DO NOT ARM Light comes ON during landing and remains ON after landing with the Speedbrake Lever in the DOWN or ARMED position, then do the "Fault Isolation Procedure - Light comes ON with Speedbrake Lever in the DOWN or ARMED position" below.
- (2) Do these steps to activate the Auto Speed Brake System:

EFFECTIVITY
SIA ALL

27-62 TASK 802

D633A103-SIA

Page 207
Jun 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**



MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Do this task: Speed Brake Hydraulic Systems A and B Pressurization, AMM TASK 27-62-00-800-801.
- (b) Move the Flap Lever to the FLAPS 1 Detent.
NOTE: When you move the Flap Lever to the FLAPS 1 Detent position, the Trailing Edge and Leading Edge Flaps and Slats extend and the Speed Brake Lever Lock is released.
- (c) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	14	C01070	FLIGHT CONTROL AUTOSLAT DC 2
C	14	C01068	FLIGHT CONTROL AUTOSLAT DC 1

- (d) Move the No. 1 and No. 2 Thrust Lever to the IDLE position.



MAKE SURE THAT YOU PREPARE FOR THE AIR MODE BEFORE YOU OPEN THE CIRCUIT BREAKER THAT FOLLOWS. AUTOMATIC OPERATION OF THE AIRPLANE SYSTEMS IN THE AIR MODE CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (e) Prepare for the air mode. Do this task: Prepare to Put the Airplane in the Air Mode, AMM TASK 32-09-00-840-801.
- (f) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	15	C01401	LANDING GEAR AIR/GND RELAY

- (g) Make sure that the Ground Spoilers are fully down.
- (h) Make sure that the Speed Brake Lever is in the DOWN position.



MAKE SURE THAT YOU OPEN THE CIRCUIT BREAKER FOR THE WEATHER RADAR SYSTEM. THE FORWARD MOVEMENT OF A THRUST LEVER CAN CAUSE THE AUTOMATIC OPERATION OF THE SYSTEM. THE OPERATION OF THIS SYSTEM CAN CAUSE SERIOUS INJURY TO PERSONS AND DAMAGE TO EQUIPMENT IN THE AREA OF THE NOSE RADOME.

- (i) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C00120	WEATHER RADAR RT

EFFECTIVITY
SIA ALL

27-62 TASK 802



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (j) Move one of the Thrust Levers to full forward position to retract the Speed Brake Actuator.
- (k) Move the Thrust Lever back to the IDLE position.
- (3) Move the Speed Brake Lever to the ARMED position.
- (4) Do these steps to activate the AACU, M162 to simulate High Speed:



WARNING

MAKE SURE THAT YOU INSTALL THE CHOCKS ON LANDING GEAR BEFORE THE RELEASE PARKING BRAKE. AIRCRAFT MOVEMENT CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT AROUND THE AIRCRAFT AND LANDING GEAR AREAS.

- (a) Make sure that the Parking Brake is released.
- (b) If necessary, align the Inertial Reference Unit (IRU) for AACU Operation.
- (c) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door
- (d) On the AACU, M162, put the BRAKE TEST Rotary Switch to INBD or OUTBD position.
NOTE: The AACU, M162 is on E1-3 Shelf in the EE Compartment.
- (e) Push and hold the ENABLE/VERIFY Switch on the AACU, M162.
- (f) Push and hold the Toggle Switch on the AACU, M162 to the PRESS/TEST position.
- (5) Wait 5 seconds.
NOTE: The circuit has a time delay.
- (a) Make sure that the Speed Brake Lever moves to the UP position.
- (b) Make sure that the Spoilers move to the UP position.
- (6) If the SPEED BRAKE DO NOT ARM Light does not come ON, then there was an intermittent problem. Do these steps to complete the task:
 - (a) Release the ENABLE/VERIFY Switch and the Toggle Switch.
 - (b) On the AACU, M162, put the BRAKE TEST Rotary Switch to the NORM position.
 - (c) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door
 - (d) Move the Speed Brake Lever to the DOWN position.
 - (e) Move the Flap Lever to the FLAPS UP position.
NOTE: When you move the Flap Lever to the FLAPS UP position, the Trailing Edge and Leading Edge Flaps and Slats will retract.
 - (f) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C00120	WEATHER RADAR RT

EFFECTIVITY
SIA ALL

27-62 TASK 802



737-600/700/800/900 FAULT ISOLATION MANUAL

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	14	C01070	FLIGHT CONTROL AUTOSLAT DC 2
C	14	C01068	FLIGHT CONTROL AUTOSLAT DC 1

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	15	C01401	LANDING GEAR AIR/GND RELAY

- (g) Do this task: Put the Speed Brake Hydraulic systems A and B Back to the Condition Before the Pressurization, AMM TASK 27-62-00-840-801.
- (7) If the SPEED BRAKE DO NOT ARM Light does not come ON, then do the "Fault Isolation Procedure- Light does not come ON" below.
- (8) If the SPEED BRAKE DO NOT ARM Light comes ON, then do the "Fault Isolation Procedure - Light comes ON" below.
- (a) Release the ENABLE/VERIFY Switch and the Toggle Switch.

F. Fault Isolation Procedure - Light comes ON

- (1) Do a check of the Flight Spoilers:
- (a) If all eight Flight Spoilers are extended to approximately 60 Degrees, do these steps:
- 1) Do a check for continuity between pins D1 and D2 of Relay R588:
 - a) If there is continuity between pins D1 and D2, then replace the relay R588 and do the Repair Confirmation at the end of this task.
 - b) If there is no continuity between pins D1 and D2, then continue.
 - 2) Open and close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C01663	SPOILER PCU SOV SYS B

- a) Wait 5 seconds.
- NOTE: The circuit has a time delay.
- b) If the SPEED BRAKE DO NOT ARM Light is ON, then continue.
 - c) If the SPEED BRAKE DO NOT ARM Light is OFF, then the light was set because the Speedbrake Handle was manually stowed during the landing before the Wheel Speed went below 60 knots (111 km/h), or there was an intermittent problem.

<1> Do the Repair Confirmation at the end of this task.
- 3) Do a check for continuity between pins A1 and A2 of Relay R969.
- a) If there is continuity between pins A1 and A2, then replace the Relay R969.

<1> Do the Repair Confirmation at the end of this task.
 - b) If there is no continuity between pins A1 and A2, then continue.
- 4) Do a wiring check between each of the following pairs of connector pins:

EFFECTIVITY
SIA ALL

27-62 TASK 802

D633A103-SIA

Page 210
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

D13950	D13948
pin X2	pin A3

D13948	D11010
pin C2	pin D1

D13950	D13952
pin X2	pin A1

D13952	D13946
pin A2	pin D3

D13950	D13946
pin X2	pin A1

D13946	D13944
pin A2	pin C3

- a) If you find a problem, then repair the wiring.
 <1> Do the Repair Confirmation at the end of this task.
- b) If you do not find a problem, then there was an intermittent problem.
 <1> Do the Repair Confirmation at the end of this task.
- (b) If only four of the Flight Spoilers are extended 60 Degrees, do these steps:
 - 1) Examine the Relay R964 (or R965), connected to the Flight Spoilers that are not extended 60 Degrees.
 NOTE: Relay R964 is connected to Spoilers No. 2, 4, 9 and 11. Relay R965 is connected to Spoilers No. 3, 5, 8, and 10.
 - 2) Do a check for loose wires and connections.
 - 3) Make sure that pin X2 is connected to Ground.
 - 4) If there is a problem with the wiring repair the problem.
 - 5) If there is not a problem with the wiring, replace the applicable Relay.
 - 6) Do the Repair Confirmation at the end of this task.
- (c) If none of the Flight Spoilers are extended 60 Degrees, continue.
- (2) Examine the wiring between the Speed Brake Lever Actuator, M359, and the Auto Speed Brake Module, M980 as follows (WDM 27-62-11):

**AUTO
SPEEDBRAKE
MODULE, M980
D2586A**
pin 26

**SPEEDBRAKE
LEVER
ACTUATOR,
M359
D1084**
pin 5

EFFECTIVITY
SIA ALL

27-62 TASK 802

D633A103-SIA

Page 211
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

AUTO SPEEDBRAKE MODULE, M980 D2586B	SPEEDBRAKE LEVER ACTUATOR, M359 D1084
pin 5	pin 3

- (a) If you find a problem with the wiring, do these steps:
 - 1) Repair the wiring.
 - 2) Do the Repair Confirmation at the end of this task.
- (b) If you do not find a problem with wiring, continue.
- (3) Do this continuity check for the Speedbrake Ground Proximity Switch, S1131 (WDM 27-62-11):
 - (a) Remove the Relay R968.
 - (b) Do a continuity check between this pin of connector at the Relay R968 and Ground as follows:

**RLY- SPD BK
GND PROX,
R968
D13948**

pin X2 GND
- (c) If there is no continuity between pin X2 of connector D13948 and Ground, then repair the wiring or replace the Switch S1131.
 - 1) Do the Repair Confirmation at the end of this task.
- (d) If there is continuity between pin X2 of connector D13948 and Ground, then continue.
- (4) Do a check for 28V DC between pins X1 and X2 at connector D13948 of Relay R968.
 - (a) If you do not find 28V DC, then examine the wiring for loose connections.
 - 1) Repair the wiring as needed.
 - 2) Do the Repair Confirmation at the end of this task.
 - (b) If you find 28V DC, then continue.
- (5) Do a check for 28V DC between pins X1 and B2 at connector D13948 of Relay R968 (WDM 27-62-11).
 - (a) If you do not find 28V DC between pins X1 and B2 of connector D13948, then do a check for 28V DC between pins X1 and X2 at connector D13946 of Relay R967.
 - 1) If you find 28V DC between pins X1 and X2 of connector D13946, then replace Relay R967.
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If you do not find 28V DC between pins X1 and X2 of connector D13946, then examine the wiring for loose wires and connections, and make sure that R967 is correctly connected to Ground.
 - a) If you find problems, repair the wiring as necessary.
 - <1> Do the Repair Confirmation at the end of this task.
 - (b) If you do not find a problem in the wiring, replace Switch S918.

EFFECTIVITY
SIA ALL

27-62 TASK 802

D633A103-SIA

Page 212
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- <1> Do the Repair Confirmation at the end of this task.
- (b) If you find 28V DC between pins X1 and B2 of connector D13948, then continue.
 - (6) Do a check for 28V DC between pins X1 and A2 at connector D13948 of Relay R968 (WDM 27-62-11).
 - (a) If you find 28V DC between pins X1 and A2, then replace Relay R968.
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If you do not find 28V DC between pins X1 and A2, then continue.
 - (7) Do a check for 28V DC between pins X1 and X2 at connector D13944 of Relay R966.
 - (a) If you find 28V DC between pins X1 and X2, then replace Relay R966.
 - 1) Do the Repair Confirmation at the end of this task.
 - (b) If you do not find 28V DC between pins X1 and X2, then examine the wiring for loose wires or connections.
 - 1) If you find a problem, repair the wiring.
 - a) Do the Repair Confirmation at the end of this task.
 - 2) If you do not find a problem, continue.
 - (8) If the SPOILER PCU SOV SYS A circuit breaker is tripped, do these steps:
 - (a) Do a check of the Coil Resistance for Flight Spoiler PCU Solenoids No. 2, 4, 9 and 11 (WDM 27-62-11).
 - 1) If the Solenoid Resistance is not between 74.64 Ohms to 78.64 Ohms at 78°F, then replace the applicable Solenoid. This is the task: Flight Spoiler Actuator and Solenoid Valve - Removal, AMM TASK 27-61-51-000-801.
 - 2) Do the Repair Confirmation at the end of this task.
 - (b) Do a check of the Solenoid Insulation Resistance for Flight Spoiler PCU No. 2, 4, 9 and 11.
 - 1) If the Insulation Resistance is less than 10 Megohms at 500 VDC, then replace the applicable Solenoid. This is the task: Flight Spoiler Actuator and Solenoid Valve - Removal, AMM TASK 27-61-51-000-801.
 - 2) Do the Repair Confirmation at the end of this task.
 - (9) If the SPOILER PCU SOV SYS B circuit breaker is tripped, do these steps:
 - (a) Do a check of the Coil Resistance for Flight Spoiler PCU Solenoids No. 3, 5, 8 and 10.
 - 1) If the Solenoid Resistance is not between 74.64 Ohms to 78.64 Ohms at 78°F, then replace the applicable Solenoid. This is the task: Flight Spoiler Actuator and Solenoid Valve - Removal, AMM TASK 27-61-51-000-801.
 - 2) Do the Repair Confirmation at the end of this task.
 - (b) Do a check of the Solenoid Insulation Resistance for Flight Spoiler PCU No. 3, 5, 8 and 10.
 - 1) If the Insulation Resistance is less than 10 Megohms at 500 VDC, then replace the applicable Solenoid. This is the task: Flight Spoiler Actuator and Solenoid Valve - Removal, AMM TASK 27-61-51-000-801.
 - 2) Do the Repair Confirmation at the end of this task.
 - (10) Do this check of the AACU, M162:
 - (a) Look at the four blue lights on the Auto Speed Brake Module, M980.

EFFECTIVITY
SIA ALL

27-62 TASK 802

D633A103-SIA

Page 213
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (b) Make sure that the BRAKE TEST Rotary Switch is in the INBD or OUTBD position.
 - (c) Push and hold the ENABLE/VERIFY Switch on the AACU, M162.
 - (d) Push and hold the Toggle Switch on the AACU, M162 to the PRESS/TEST position.
 - (e) If two of the four blue lights on the Auto Speed Brake Module, M980 are not ON, then do this task: Auto Speed Brake/Antiskid Interface Test, 27-62 TASK 801.
 - 1) If you find a problem, then do the corrective action in this task: Auto Speed Brake/Antiskid Interface Test, 27-62 TASK 801.
 - a) Do the Repair Confirmation at the end of this task.
 - (f) If two of the four lights on the Auto Speed Brake Module, M980 are ON, then continue.
- (11) Do this check of the Speed Brake Lever Actuator, M359:
- (a) Disconnect connector D1084 from the Speed Brake Lever Actuator, M359 (WDM 27-62-11).
 - (b) Do a continuity check between pins 7 and 1 of connector D1084.
 - (c) If there is no continuity between pins 7 and 1 of connector D1084, adjust the Speed Brake Lever Brake Backlash. This is the task: Speed Brake Lever Brake Backlash Adjustment, AMM TASK 27-62-00-000-802.
 - 1) Repeat the continuity check between pins 7 and 1 of connector D1084
 - 2) If there is still no continuity between pins 7 and 1, replace the Speed Brake Lever Actuator, M359. These are the tasks:
 - Auto Speed Brake Actuator Removal, AMM TASK 27-62-31-000-801
 - Auto Speed Brake Actuator Installation, AMM TASK 27-62-31-400-801
 - 3) Do the Repair Confirmation at the end of this task.
 - (d) If there is continuity between pins 7 and 1 of connector D1084, then continue.
- (12) Do this check on the FCC-B, M1876:
- (a) Do this step to re-initialize the FCC-B, M1876 (Right):
 - 1) Open and close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C01046	AFCS SYS B FCC DC

AUTO

SPEEDBRAKE

MODULE, M980

D2586A

pin 53

FCC-B, M1876

D10137A

pin J10

EFFECTIVITY
SIA ALL

27-62 TASK 802

D633A103-SIA

Page 214
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

AUTO

SPEEDBRAKE

MODULE, M980

FCC-B, M1876

D2586A

D10137B

pin 55 pin F3

- (e) If you find a problem with the wiring, do these steps:
- 1) Repair the wiring.
 - 2) Re-install the FCC-B, M1876. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.
 - 3) Do the Repair Confirmation at the end of this task.
- (f) If the problem continues, then continue.
- (g) Replace FCC-B, M1876. These are the tasks:
- Flight Control Computer Removal, AMM TASK 22-11-33-000-801
 - Flight Control Computer Installation, AMM TASK 22-11-33-400-801
- (h) Do the Repair Confirmation at the end of this task.
- (13) Do this check on the FCC-A, M1875:
- (a) Do this step to re-initialize the FCC-A, M1875.
- 1) Open and close this circuit breaker:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	5	C01044	AFCS MCP DC 1

- a) If the SPEED BRAKE DO NOT ARM Light is ON, then continue.
- (b) Remove FCC-A, M1875. This is the task: Flight Control Computer Removal, AMM TASK 22-11-33-000-801.
- (c) Examine the wiring between the Auto Speed Brake Module, M980 at the E4-2 Shelf and the FCC-A, M1875 at the E1-1 Shelf as follows (WDM 27-62-11):

AUTO

SPEEDBRAKE

MODULE, M980

FCC-A, M1875

D2586B

D10135B

pin 56 pin F3

AUTO

SPEEDBRAKE

MODULE, M980

FCC-A, M1875

D2586B

D10135A

pin 55 pin J10

- (d) If you find a problem with the wiring, do these steps:
- 1) Repair the wiring.
 - 2) Re-install the FCC-A, M1875. This is the task: Flight Control Computer Installation, AMM TASK 22-11-33-400-801.

EFFECTIVITY
SIA ALL

27-62 TASK 802

D633A103-SIA

Page 215
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 3) Do the Repair Confirmation at the end of this task.
- (e) Replace FCC-A, M1875. These are the tasks:
- Flight Control Computer Removal, AMM TASK 22-11-33-000-801
 - Flight Control Computer Installation, AMM TASK 22-11-33-400-801
- (f) Do the Repair Confirmation at the end of this task.
- (14) Do this check on the LRRA:
- (a) Make sure that these circuit breakers are closed:
- CAPT Electrical System Panel, P18-1**
- | <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------------------------|
| B | 4 | C01384 | RADIO NAVIGATION RADIO ALTM 1 |
- F/O Electrical System Panel, P6-1**
- | <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------------------------|
| A | 16 | C01385 | RADIO NAVIGATION RADIO ALTM 2 |
- (b) Do this step to re-initialize the FCC-A, M1875 (Left):
- 1) Open and close this circuit breaker:
- CAPT Electrical System Panel, P18-1**
- | <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------------|
| D | 2 | C01045 | AFCS SYS A FCC DC |
- (c) Do this step to re-initialize the FCC-B, M1876 (Right):
- 1) Open and close this circuit breaker:
- F/O Electrical System Panel, P6-2**
- | <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|-------------------|
| B | 3 | C01046 | AFCS SYS B FCC DC |
- (d) Do this task: Low Range Radio Altimeter (LRRA) System - Operational Test, AMM TASK 34-33-00-710-801.
- 1) If maintenance messages show, refer to the applicable CHAPTER-MAINT MSG INDEX to find the applicable Fault Isolation Manual (FIM) Tasks for the messages that show.
- a) Do the indicated Fault Isolation Procedure(s) to correct the problem.
- b) Do the Repair Confirmation at the end of this task.
- 2) If you do not find a problem, put the airplane back to the condition it was before the LRRA Check and continue.
- (15) Install a new Auto Speed Brake Module, M980. This is the task: Auto Speed Brake Module Installation, AMM TASK 27-62-35-400-801.
- (a) Reconnect connector D1084 to the Auto Speedbrake Lever Actuator, M359.
- (b) Do the Repair Confirmation at the end of this task.
- (16) Do a check of the of the Auto Speed Brake Actuator Rod adjustment.

EFFECTIVITY
SIA ALL

27-62 TASK 802

D633A103-SIA

Page 216
Oct 15/2023



737-600/700/800/900 FAULT ISOLATION MANUAL

- (a) If necessary, adjust the Auto Speed Brake Actuator Rod ends (Auto Speed Brake Actuator Installation, AMM TASK 27-62-31-400-801).

NOTE: If this adjustment is near the limits, the Auto Speed Brake Actuator will possibly not fully retract each time. This can cause the SPEED BRAKE DO NOT ARM Light to come ON. Also, this can cause the actuator to not engage the Retract Limit Switch. This will cause the motor to run and can damage the actuator or trip the C440 Auto Speedbrake circuit breaker.

- 1) Adjust the auto speed brake actuator rod ends .

NOTE: If this adjustment is near the limits, the auto speed brake actuator will possibly not fully retract each time. This can cause the SPEED BRAKE DO NOT ARM light to come on. Also, this can cause the actuator to not engage the Retract Limit Switch. This will cause the motor to run and can damage the actuator or trip the FLIGHT CONTROL AUTO SPEED BRAKE circuit breaker, C440.

- 2) Do the Repair Confirmation at the end of this task.

- (17) Replace the Auto Speed Brake Actuator, M359. These are the tasks:

- Auto Speed Brake Actuator Removal, AMM TASK 27-62-31-000-801
- Auto Speed Brake Actuator Installation, AMM TASK 27-62-31-400-801

- (a) Do the Repair Confirmation at the end of this task.

- (18) Do this wiring check:

- (a) Disconnect connector D10577 from the latch relay R712 on junction box J20.
(b) Disconnect connector D10579 from the 3 sec shutoff relay R713 on junction box J20.
(c) Disconnect connector D10581 from the 3 sec on relay R714 on junction box J20.
(d) Do a wiring check between these pins on connector D10577 at the latch relay R712 and connector D10581 on the 3 sec on relay R714:

D10577	D10581
pin X2	pin 5

- (e) Do a wiring check between these pins on connector D10579 at the 3 sec shutoff relay R713 and connector D10581 on the 3 sec on relay R714

D10579	D10581
pin 7	pin 12

- (f) If you find a problem with the wiring, then do these steps:

- 1) Repair the wiring.
- 2) Reconnect connector D10577 to the latch relay R712 on junction box J20.
- 3) Reconnect connector D10579 to the 3 sec shutoff relay R713 on junction box J20.
- 4) Reconnect connector D10581 to the 3 sec on relay R714 on junction box J20.
- 5) Do the Repair Confirmation at the end of this task.

- (g) If you do not find a problem with the wiring, then continue.

- (19) Do these steps:

- (a) Replace the ASB warn time delay relay M2033.
1) Do the Repair Confirmation at the end of this task.

EFFECTIVITY
SIA ALL

27-62 TASK 802

D633A103-SIA

Page 217
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (b) Replace the latch relay R712.
 - 1) Do the Repair Confirmation at the end of this task.
- (c) Replace the 3 sec shutoff relay R713.
 - 1) Do the Repair Confirmation at the end of this task.
- (d) Replace the 3 sec on relay R714.
 - 1) Do the Repair Confirmation at the end of this task.

G. Fault Isolation Procedure - Light does not come ON

- (1) Do these steps:
 - (a) Release the ENABLE/VERIFY Switch and the Toggle Switch.
 - (b) On the AACU, M162, put the BRAKE TEST Rotary Switch to the NORM position.
 - (c) Move the Speed Brake Lever to the DOWN position.
 - (d) Move one of the Thrust Levers to full forward.
 - (e) Move the Thrust Lever back to the IDLE position.
- (2) Put the Speed Brake Lever in the ARM position.
 - (a) Wait 5 seconds.

NOTE: The circuit has a Time Delay.
 - (b) If the SPEED BRAKE DO NOT ARM Light comes ON, then replace the Relay R970 and do the Repair Confirmation at the end of this task.
 - (c) If the SPEED BRAKE DO NOT ARM Light does not come ON, then continue.
- (3) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C01662	SPOILER PCU SOV SYS A

- (a) Wait 5 seconds.

NOTE: The circuit has a Time Delay.
- (4) If the SPEED BRAKE DO NOT ARM Light comes ON, then do these steps:
 - (a) Do a check for continuity between pins A1 and A2 of Relay R964 (WDM 27-62-11):
 - 1) If there is continuity between pins A1 and A2, then replace Relay R964 and do the Repair Confirmation at the end of this task.
 - 2) If there is no continuity between pins A1 and A2 of Relay R964, then continue.
 - (b) Do a check for continuity between pins A1 and A2 of Relay R965 (WDM 27-62-11):
 - 1) If there is continuity between pins A1 and A2, then replace Relay R965 and do the Repair Confirmation at the end of this task.
 - 2) If there is no continuity between pins A1 and A2 of Relay R965, then continue.
 - (c) Do a check for continuity between pins A1 and A2 of Relay R967 (WDM 27-62-11):
 - 1) If there is continuity between pins A1 and A2, then replace Relay R967 and do the Repair Confirmation at the end of this task.
 - 2) If there is no continuity between pins A1 and A2 of Relay R967, then continue.
 - (d) Do a check for continuity between pins A1 and A2 of Relay R966 (WDM 27-62-11):

EFFECTIVITY
SIA ALL

27-62 TASK 802

D633A103-SIA

Page 218
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 1) If there is continuity between pins A1 and A2, then replace the Relay R966 and do the Repair Confirmation at the end of this task.
 - 2) If there is no continuity between pins A1 and A2 of Relay R966, then continue.
- (5) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C01662	SPOILER PCU SOV SYS A

- (6) If the SPEED BRAKE DO NOT ARM Light does not come ON, then do these steps:
- (a) Do a check for continuity between pins A1 and A2 on Relay R968 (WDM 27-62-11).
 - 1) If there is no continuity between pins A1 and A2, then replace Relay R968 and do the Repair Confirmation at the end of this task.

H. Fault Isolation Procedure - Light comes ON with Speedbrake Lever in the DOWN or ARMED position.

- (1) If the Speedbrake Lever was in the DOWN or ARMED position, then make sure that the Speedbrake Lever operates correctly. Do this task:
 - Speed Brake Lever Friction Test, AMM TASK 27-62-00-800-803
- (2) Open and close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	5	C01663	SPOILER PCU SOV SYS B

- (a) Wait 5 seconds

NOTE: The circuit has a time delay.
- (b) If the SPEED BRAKE DO NOT ARM Light is OFF, then the light was set because the Speedbrake Handle was manually stowed during the landing before the wheel speed went below 60 knots (111 km/h), or there was an intermittent fault.
 - 1) Do the Repair Confirmation at the end of this task.

I. Repair Confirmation

- (1) Do these steps to activate the Auto Speed Brake System:



WARNING

MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Do this task: Speed Brake Hydraulic Systems A and B Pressurization, AMM TASK 27-62-00-800-801.
- (b) Move the Flap Lever to the FLAPS 1 Detent.

NOTE: When you move the Flap Lever to the FLAPS 1 Detent position, the Trailing Edge and Leading Edge Flaps and Slats will extend and the Speed Brake Lever Lock is released.

EFFECTIVITY
SIA ALL

27-62 TASK 802

D633A103-SIA

Page 219
Oct 15/2023



737-600/700/800/900 FAULT ISOLATION MANUAL

- (c) Make sure that these circuit breakers are open and have safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	14	C01070	FLIGHT CONTROL AUTOSLAT DC 2
C	14	C01068	FLIGHT CONTROL AUTOSLAT DC 1

- (d) Move the No. 1 and No. 2 Thrust Lever to the IDLE position.



WARNING

MAKE SURE THAT YOU PREPARE FOR THE AIR MODE BEFORE YOU OPEN THE CIRCUIT BREAKER THAT FOLLOWS. AUTOMATIC OPERATION OF THE AIRPLANE SYSTEMS IN THE AIR MODE CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (e) Prepare for the air mode. Do this task: Prepare to Put the Airplane in the Air Mode, AMM TASK 32-09-00-840-801.

- (f) Make sure that this circuit breaker is open and has safety tag:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	15	C01401	LANDING GEAR AIR/GND RELAY

- (g) Make sure that the Ground Spoilers are full down.

- (h) Make sure that the Speed Brake Lever is in the DOWN position.



WARNING

MAKE SURE THAT YOU OPEN THE CIRCUIT BREAKER FOR THE WEATHER RADAR SYSTEM. THE FORWARD MOVEMENT OF A THRUST LEVER CAN CAUSE THE AUTOMATIC OPERATION OF THE SYSTEM. THE OPERATION OF THIS SYSTEM CAN CAUSE SERIOUS INJURY TO PERSONS AND DAMAGE TO EQUIPMENT IN THE AREA OF THE NOSE RADOME.

- (i) Make sure that this circuit breaker is open and has safety tag:

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C00120	WEATHER RADAR RT

- (j) Move one of the Thrust Levers to full forward to retract the Speed Brake Actuator.

- (k) Move the Thrust Lever back to the IDLE position.

- (2) Move the Speed Brake Lever to the ARMED position.

- (3) Do these steps to activate the AACU, M162 to simulate high speed:



WARNING

MAKE SURE THAT YOU INSTALL THE CHOCKS ON LANDING GEAR BEFORE THE RELEASE PARKING BRAKE. AIRCRAFT MOVEMENT CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT AROUND THE AIRCRAFT AND LANDING GEAR AREAS.

- (a) Make sure that the Parking Brake is released.

- (b) If necessary, align the IRU for AACU operation.

EFFECTIVITY
SIA ALL

27-62 TASK 802

D633A103-SIA

Page 220
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (c) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

- (d) On the AACU, M162, put the BRAKE TEST Rotary Switch to INBD or OUTBD position.

NOTE: The AACU, M162 is on E1-3 Shelf in the EE Compartment.

- (e) Push and hold the ENABLE/VERIFY Switch on the AACU, M162.

- (f) Push and hold the Toggle Switch on the AACU, M162 to the PRESS/TEST position.

- (4) Make sure that the Speed Brake Lever moves to the UP position.

- (5) Make sure that the Spoilers move to the UP position.

- (6) If the SPEED BRAKE DO NOT ARM Light does not come ON, then you corrected the problem.
Do these steps to complete the task:

- (a) Release the ENABLE/VERIFY Switch and the Toggle Switch.

- (b) On the AACU, M162, put the BRAKE TEST Rotary Switch to the NORM position.

- (c) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

- (d) Move the Speed Brake Lever to the DOWN position.

- (e) Move the Flap Lever to the FLAPS UP position.

NOTE: This will retract the Trailing Edge and Leading Edge Flaps and Slats.

- (f) Move one of the Thrust Levers to full forward.

- (g) Move the Thrust Lever back to the IDLE position.

- (h) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C00120	WEATHER RADAR RT

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	14	C01070	FLIGHT CONTROL AUTOSLAT DC 2
C	14	C01068	FLIGHT CONTROL AUTOSLAT DC 1

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	15	C01401	LANDING GEAR AIR/GND RELAY

- (i) Do this task: Put the Speed Brake Hydraulic systems A and B Back to the Condition Before the Pressurization, AMM TASK 27-62-00-840-801.

- (7) If the SPEED BRAKE DO NOT ARM Light is still ON, then continue the Fault Isolation Procedure at the subsequent step.

———— **END OF TASK** ————

EFFECTIVITY
SIA ALL

27-62 TASK 802

D633A103-SIA

Page 221
Oct 15/2023



737-600/700/800/900
FAULT ISOLATION MANUAL

803. SPEED BRAKE ARMED Light Does Not Operate - Fault Isolation

A. Description

- (1) The SPEED BRAKE ARMED Light comes ON when the Speed Brake Lever is moved to the ARMED position and all of these conditions occur:
 - (a) Two Anti-skid Channels are in operation.
 - (b) The Speed brake Lever Actuator is fully retracted to the Speed Brake lower position.
 - (c) The Auto Speed Brake Module, M980 operates correctly.

B. Possible Causes

- (1) SPEED BRAKE ARMED Light, L2
- (2) Speed Brake Control Cable Adjustment
- (3) Speed Brake Auto Stow Actuator Rigging
- (4) Speed Brake Arm Switch, S276
- (5) AACU, M162
- (6) Auto Speed Brake Module, M980
- (7) Wiring

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	9	C00440	FLIGHT CONTROL AUTO SPEED BRAKE

D. Related Data

- (1) SSM 27-62-11
- (2) WDM 27-62-11

E. Initial Evaluation

- (1) Do these steps to activate the Auto Speed Brake System:



MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Do this task: Speed Brake Hydraulic Systems A and B Pressurization, AMM TASK 27-62-00-800-801.
- (b) Move the Flap Lever to the FLAPS 1 Detent.

NOTE: When you move the Flap Lever to the FLAPS 1 Detent position, the Trailing Edge and Leading Edge Flaps and Slats will extend and the Speed Brake Lever Lock is released.

EFFECTIVITY
SIA ALL

27-62 TASK 803

D633A103-SIA

Page 222
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (c) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	14	C01070	FLIGHT CONTROL AUTOSLAT DC 2
C	14	C01068	FLIGHT CONTROL AUTOSLAT DC 1

- (d) Move the two Thrust Levers to the IDLE position.



WARNING

MAKE SURE THAT YOU PREPARE FOR THE AIR MODE BEFORE YOU OPEN THE CIRCUIT BREAKER THAT FOLLOWS. AUTOMATIC OPERATION OF THE AIRPLANE SYSTEMS IN THE AIR MODE CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (e) Prepare for the air mode. Do this task: Prepare to Put the Airplane in the Air Mode, AMM TASK 32-09-00-840-801.

- (f) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	15	C01401	LANDING GEAR AIR/GND RELAY

- (g) Make sure that the Ground Spoilers are fully down.

- (h) Make sure that the Speed Brake Lever is in the DOWN position.



WARNING

MAKE SURE THAT YOU OPEN THE CIRCUIT BREAKER FOR THE WEATHER RADAR SYSTEM. THE FORWARD MOVEMENT OF A THRUST LEVER CAN CAUSE THE AUTOMATIC OPERATION OF THE SYSTEM. THE OPERATION OF THIS SYSTEM CAN CAUSE SERIOUS INJURY TO PERSONS AND DAMAGE TO EQUIPMENT IN THE AREA OF THE NOSE RADOME.

- (i) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C00120	WEATHER RADAR RT

- (j) Move one of the Thrust Levers to full forward to retract the speed brake actuator.

- (k) Move the Thrust Lever back to the IDLE position.

- (2) Move the Speed Brake Lever to the ARMED position.

- (3) Do these steps to activate the AACU, M162 to simulate High Speed:



WARNING

MAKE SURE THAT YOU INSTALL THE CHOCKS ON LANDING GEAR BEFORE THE RELEASE PARKING BRAKE. AIRCRAFT MOVEMENT CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT AROUND THE AIRCRAFT AND LANDING GEAR AREAS.

- (a) Make sure that the Parking Brake is released.

- (b) If necessary, align the IRU for AACU Operation.

EFFECTIVITY
SIA ALL

27-62 TASK 803

D633A103-SIA

Page 223
Oct 15/2023



737-600/700/800/900 FAULT ISOLATION MANUAL

- (c) Open this access panel:
- | <u>Number</u> | <u>Name/Location</u> |
|---------------|----------------------------------|
| 117A | Electronic Equipment Access Door |
- (d) On the AACU, M162, put the BRAKE TEST Rotary Switch to INBD or OUTBD position.
NOTE: The AACU, M162 is on E1-3 Shelf in the EE Compartment.
- (e) On the AACU, M162 push and hold the ENABLE/VERIFY Switch.
- (f) On the AACU, M162 push and hold the Toggle Switch to the PRESS/TEST position.
- (4) Make sure that the Speed Brake Lever moves to the UP position.
- (5) Make sure that the Spoilers move to the UP position.
- (6) If the SPEED BRAKE ARM Light comes ON, then there was an intermittent fault. Do these steps to complete the task:
- (a) Release the ENABLE/VERIFY Switch and the Toggle Switch.
- (b) On the AACU, M162 put the BRAKE TEST Rotary Switch to the NORM position.
- (c) Close this access panel:
- | <u>Number</u> | <u>Name/Location</u> |
|---------------|----------------------------------|
| 117A | Electronic Equipment Access Door |
- (d) Move the Speed Brake Lever to the DOWN position.
- (e) Move the Flap Lever to the FLAPS UP position.
NOTE: When you move the Flap Lever to the FLAPS UP position, the Trailing Edge and Leading Edge Flaps and Slats will retract.
- (f) Remove the safety tags and close these circuit breakers:
- F/O Electrical System Panel, P6-1**
- | <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|------------------|
| D | 13 | C00120 | WEATHER RADAR RT |
- F/O Electrical System Panel, P6-2**
- | <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|------------------------------|
| B | 14 | C01070 | FLIGHT CONTROL AUTOSLAT DC 2 |
| C | 14 | C01068 | FLIGHT CONTROL AUTOSLAT DC 1 |
- F/O Electrical System Panel, P6-3**
- | <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|----------------------------|
| D | 15 | C01401 | LANDING GEAR AIR/GND RELAY |
- (g) Do this task: Put the Speed Brake Hydraulic systems A and B Back to the Condition Before the Pressurization, AMM TASK 27-62-00-840-801.
- (7) If the SPEED BRAKE ARMED Light does not come ON, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this check of the SPEED BRAKE ARMED Light, L2:
- (a) At the Captain's Main Instrument Panel, P1, put the Master Dim and Test Lights Switch to TEST.

EFFECTIVITY
SIA ALL

27-62 TASK 803

D633A103-SIA

Page 224
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 1) If the SPEED BRAKE ARMED Light does not come ON, then do these steps:
 - a) Replace the SPEED BRAKE ARMED Light, L2.
 - b) Do the Repair Confirmation at the end of this task.
- 2) If the SPEED BRAKE ARMED Light comes ON, then continue.
- (2) Do the Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - (a) If you find SMYD maintenance messages, refer to the table at the end of the SMYD BITE Procedure to find the applicable FIM Tasks for the maintenance messages that show.
 - 1) Do the specified corrective actions.
 - 2) Do the Repair Confirmation at the end of this task.
 - (b) If you do not find SMYD maintenance message, continue.
- (3) Do the adjustment of the speed brake control cable. This is the task: Speed Brake Control Cable Adjustment, AMM TASK 27-62-00-820-802.
 - (a) Do the Repair Confirmation at the end of this task.
- (4) Do this Voltage Check at the Auto Speed Brake Module, M980:
 - (a) Move the Speed Brake Lever to the ARMED position.
 - (b) Remove the Auto Speed Brake Module, M980. This is the task: Auto Speed Brake Module Removal, AMM TASK 27-62-35-000-801.
 - (c) Do a check for 28V DC at pin 8 of connector D2586A (WDM 27-62-11).
 - 1) If you find 28V DC, then do these steps:
 - a) Remove the Captain's Instrument Panel, P1-3.
 - b) Disconnect connector D895 from the Captain's Instrument Panel, P1-3.
 - c) Examine the wiring between the Auto Speed Brake Module, M980 at the E4-2 Shelf and the Captain's Instrument Panel, P1-3 as follows (WDM 27-62-11):

AUTO SPEEDBRAKE MODULE, M980	
D2586A	P1-3 PNL D895
pin 40	pin 5

- <1> If you find a problem with the wiring, then do these steps:
 - <a> Repair the wiring.
 - Re-connect connector D895.
 - <c> Re-install the Captain's Instrument Panel, P1-3.
 - <d> Install a new Auto Speed Brake Module, M980. This is the task: Auto Speed Brake Module Installation, AMM TASK 27-62-35-400-801.
 - <e> Do the Repair Confirmation at the end of this task.
- <2> If you do not find a problem with the wiring, then do these steps:
 - <a> Re-connect connector D895.
 - Re-install the Captain's Instrument Panel, P1-3.

EFFECTIVITY
SIA ALL

27-62 TASK 803

D633A103-SIA

Page 225
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- <c> Re-install the Auto Speed Brake Module, M980. This is the task: Auto Speed Brake Module Installation, AMM TASK 27-62-35-400-801.
- <d> Do the Repair Confirmation at the end of this task.
- 2) If you do not find 28V DC at pin 8 of connector D2586A, then do this step and continue.
- a) Re-install the Auto Speed Brake Module, M980. This is the task: Auto Speed Brake Module Installation, AMM TASK 27-62-35-400-801.
- (5) Do this voltage check of the Speed Brake Arm Switch, S276 (WDM 27-62-11):
- (a) Disconnect connector D10199 from the Speed Brake Arm Switch, S276.
- (b) Do a check for 28V DC at pin 7 of connector D10199.
- 1) If you do not find 28V DC, then examine the wiring between the Load Control Center Right (LCC-R) and the Speed Brake Arm Switch, S276 as follows:
- | LCC-R | SPDBRK ARM |
|------------------|-------------------|
| D40820P | SW |
| | D10199 |
| pin 15 | pin 7 |
- a) Repair the problems that you find.
- b) Do the Repair Confirmation at the end of this task.
- 2) If you find 28V DC at pin 7 of the Speed Brake Arm Switch, S276 connector D10199, then continue.
- (6) Do this wiring check:
- (a) Remove the Auto Speed Brake Module, M980. This is the task Auto Speed Brake Module Removal, AMM TASK 27-62-35-000-801.
- (b) Examine the wiring between the Auto Speed Brake Module, M980 at the E4-2 Shelf and the Speed Brake Arm Switch, S276 as follows (WDM 27-62-11):
- | ASB MODULE | SPD BRK ARM |
|-------------------|--------------------|
| D2586A | SW |
| | D10199 |
| pin 8 | pin 5 |
- 1) If you find a problem with the wiring, then do these steps:
- a) Repair the wiring.
- b) Re-connect connector D10199.
- c) Re-install the Auto Speed Brake Module, M980. This is the task: Auto Speed Brake Module Installation, AMM TASK 27-62-35-400-801.
- d) Do the Repair Confirmation at the end of this task.
- 2) If you do not find a problem with the wiring, then do this step and continue.
- a) Re-install the Auto Speed Brake Module, M980. This is the task: Auto Speed Brake Module Installation, AMM TASK 27-62-35-400-801.
- (7) Replace the Speed Arm Switch, S276. These are the tasks:

EFFECTIVITY
SIA ALL

27-62 TASK 803

D633A103-SIA

Page 226
Oct 15/2023



737-600/700/800/900 FAULT ISOLATION MANUAL

- Speed Brake Armed Switch and Speed Brake Handle Position Switch Removal, AMM TASK 27-62-34-000-801
- Speed Brake Armed Switch and Speed Brake Handle Position Switch Installation, AMM TASK 27-62-34-400-801

(a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

(1) Do these steps to activate the Auto Speed Brake System:



MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(a) Do this task: Speed Brake Hydraulic Systems A and B Pressurization, AMM TASK 27-62-00-800-801.

(b) Move the Flap Lever to the FLAPS 1 Detent.

NOTE: When you move the Flap Lever to the FLAPS 1 Detent position, the Trailing Edge and Leading Edge Flaps and Slats will extend and the Speed Brake Lever lock is released.

(c) Make sure that these circuit breakers are open and have safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	14	C01070	FLIGHT CONTROL AUTOSLAT DC 2
C	14	C01068	FLIGHT CONTROL AUTOSLAT DC 1

(d) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	9	C00440	FLIGHT CONTROL AUTO SPEED BRAKE

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	16	C00196	LANDING GEAR ANTISKID INBD
E	18	C00195	LANDING GEAR ANTISKID OUTBD

(e) Move the two Thrust Levers to the IDLE position.



MAKE SURE THAT YOU PREPARE FOR THE AIR MODE BEFORE YOU OPEN THE CIRCUIT BREAKER THAT FOLLOWS. AUTOMATIC OPERATION OF THE AIRPLANE SYSTEMS IN THE AIR MODE CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

(f) Prepare for the air mode. Do this task: Prepare to Put the Airplane in the Air Mode, AMM TASK 32-09-00-840-801.

EFFECTIVITY
SIA ALL

27-62 TASK 803

D633A103-SIA

Page 227
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (g) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	15	C01401	LANDING GEAR AIR/GND RELAY

- (h) Make sure that the Ground Spoilers are fully down.
(i) Make sure that the Speed Brake Lever is in the DOWN position.



WARNING

MAKE SURE THAT YOU OPEN THE CIRCUIT BREAKER FOR THE WEATHER RADAR SYSTEM. THE FORWARD MOVEMENT OF A THRUST LEVER CAN CAUSE THE AUTOMATIC OPERATION OF THE SYSTEM. THE OPERATION OF THIS SYSTEM CAN CAUSE SERIOUS INJURY TO PERSONS AND DAMAGE TO EQUIPMENT IN THE AREA OF THE NOSE RADOME.

- (j) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C00120	WEATHER RADAR RT

- (k) Move one of the Thrust Levers to full forward to retract the Speed Brake Actuator.
(l) Move the Thrust Lever back to the IDLE position.
(2) Move the Speed Brake Lever to the ARMED position.
(3) Do these steps to activate the AACU, M162 to simulate High Speed:



WARNING

MAKE SURE THAT YOU INSTALL THE CHOCKS ON LANDING GEAR BEFORE THE RELEASE PARKING BRAKE. AIRCRAFT MOVEMENT CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT AROUND THE AIRCRAFT AND LANDING GEAR AREAS.

- (a) Make sure that the Parking Brake is released.
(b) If necessary, align the IRU for AACU Operation.
(c) Open this access panel:
- | <u>Number</u> | <u>Name/Location</u> |
|---------------|----------------------------------|
| 117A | Electronic Equipment Access Door |
- (d) On the AACU, M162, put the BRAKE TEST Rotary Switch to INBD or OUTBD position.
NOTE: The AACU, M162 is on E1-3 Shelf in the EE Compartment.
(e) On the AACU, M162 push and hold the ENABLE/VERIFY Switch.
(f) On the AACU, M162 push and hold the Toggle Switch to the PRESS/TEST position.
(4) Make sure that the Speed Brake Lever moves to the UP position.
(5) Make sure that the Spoilers move to the UP position.
(6) If the SPEED BRAKE ARM Light comes ON, then you corrected the problem. Do these steps to complete the task:
(a) Release the ENABLE/VERIFY Switch and the Toggle Switch.
(b) On the AACU, M162 put the BRAKE TEST Rotary Switch to the NORM position.

EFFECTIVITY
SIA ALL

27-62 TASK 803

D633A103-SIA

Page 228
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (c) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

- (d) Move the Speed Brake Lever to the DOWN position.

- (e) Move the Flap Lever to the FLAPS UP position.

NOTE: When you move the Flap Lever to the FLAPS UP position, the Trailing Edge and Leading Edge Flaps and Slats will retract.



MAKE SURE THAT YOU OPEN THE CIRCUIT BREAKER FOR THE WEATHER RADAR SYSTEM. THE FORWARD MOVEMENT OF A THRUST LEVER CAN CAUSE THE AUTOMATIC OPERATION OF THE SYSTEM. THE OPERATION OF THIS SYSTEM CAN CAUSE SERIOUS INJURY TO PERSONS AND DAMAGE TO EQUIPMENT IN THE AREA OF THE NOSE RADOME.

- (f) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C00120	WEATHER RADAR RT

- (g) Move one of the Thrust Levers to full forward position.

- (h) Move the Thrust Lever back to the IDLE position.

- (i) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C00120	WEATHER RADAR RT

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	14	C01070	FLIGHT CONTROL AUTOSLAT DC 2
C	14	C01068	FLIGHT CONTROL AUTOSLAT DC 1

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	15	C01401	LANDING GEAR AIR/GND RELAY

- (j) Do this task: Put the Speed Brake Hydraulic systems A and B Back to the Condition Before the Pressurization, AMM TASK 27-62-00-840-801.

- (7) If the SPEED BRAKE ARM Light does not come ON, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

EFFECTIVITY
SIA ALL

27-62 TASK 803

D633A103-SIA

Page 229
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

804. Speed Brake Auto Extend Does Not Operate - Fault Isolation

A. Description

- (1) The speed brakes auto extend operate whenever the speed brake lever is moved to the ARMED position and all of these conditions occur:
 - (a) The main landing gear is on the ground or the main landing gear wheels spin up.
 - (b) The left and right thrust levers are at IDLE.
 - (c) Aircraft altitude is less than 10 ft (3 m).

B. Possible Causes

- (1) AACU, M162
- (2) Speed brake lever actuator, M359
- (3) Wiring problem
- (4) Auto speed brake module, M980
- (5) Radio altitude < 10 FT A relay, R710
- (6) Radio altitude < 10 FT B relay, R709
- (7) Left Autothrottle switch pack, M1766
- (8) Right Autothrottle switch pack, M1767
- (9) SPDBRK actuator enable relay, R708
- (10) Air/Ground relay, R588
- (11) Air/Ground relay, R591
- (12) FCC-A, M1875
- (13) FCC-B, M1876

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	9	C00440	FLIGHT CONTROL AUTO SPEED BRAKE
B	14	C01070	FLIGHT CONTROL AUTOSLAT DC 2
C	14	C01068	FLIGHT CONTROL AUTOSLAT DC 1

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	15	C01401	LANDING GEAR AIR/GND RELAY
E	16	C00196	LANDING GEAR ANTISKID INBD
E	18	C00195	LANDING GEAR ANTISKID OUTBD

D. Related Data

- (1) SSM 27-62-11
- (2) WDM 27-62-11

EFFECTIVITY
SIA ALL

27-62 TASK 804

D633A103-SIA

Page 230
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

E. Initial Evaluation

- (1) Do these steps to activate the auto speed brake extend:



WARNING

MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Do this task: Speed Brake Hydraulic Systems A and B Pressurization, AMM TASK 27-62-00-800-801.
- (b) Move the flap lever to the FLAPS 1 detent.
- NOTE: When you move the flap lever to the FLAPS 1 detent position, the trailing edge and leading edge flaps and slats will extend and the speed brake lever lock is released.

- (c) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	14	C01070	FLIGHT CONTROL AUTOSLAT DC 2
C	14	C01068	FLIGHT CONTROL AUTOSLAT DC 1

- (d) Move the No. 1 and No. 2 thrust lever to the IDLE position.
- (e) Make sure that the airplane is on its landing gear or compress the right main gear strut a minimum of 5 in. (127 mm).



WARNING

MAKE SURE THAT YOU PREPARE FOR THE AIR MODE BEFORE YOU OPEN THE CIRCUIT BREAKER THAT FOLLOWS. AUTOMATIC OPERATION OF THE AIRPLANE SYSTEMS IN THE AIR MODE CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (f) Prepare for the air mode. Do this task: Prepare to Put the Airplane in the Air Mode, AMM TASK 32-09-00-840-801.
- (g) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	15	C01401	LANDING GEAR AIR/GND RELAY

- (h) Make sure the ground spoilers are full down.
- (i) Make sure the speed brake lever is in the DOWN position.

EFFECTIVITY
SIA ALL

27-62 TASK 804

D633A103-SIA

Page 231
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**



MAKE SURE THAT YOU OPEN THE CIRCUIT BREAKER FOR THE WEATHER RADAR SYSTEM. THE FORWARD MOVEMENT OF A THRUST LEVER CAN CAUSE THE AUTOMATIC OPERATION OF THE SYSTEM. THE OPERATION OF THIS SYSTEM CAN CAUSE SERIOUS INJURY TO PERSONS AND DAMAGE TO EQUIPMENT IN THE AREA OF THE NOSE RADOME.

- (j) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C00120	WEATHER RADAR RT

- (k) Move one of the thrust levers to full forward to retract the speed brake actuator.
- (l) Move the thrust lever back to the IDLE position.
- (2) Move the speed brake lever to the ARMED position.
- (3) Do these steps to activate the AACU, M162 to simulate high speed:



MAKE SURE THAT YOU INSTALL THE CHOCKS ON LANDING GEAR BEFORE THE RELEASE PARKING BRAKE. AIRCRAFT MOVEMENT CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT AROUND THE AIRCRAFT AND LANDING GEAR AREAS.

- (a) Make sure the parking brake is released.
- (b) If necessary, align the IRU for AACU operation.
- (c) Open this access panel:
- | <u>Number</u> | <u>Name/Location</u> |
|---------------|----------------------------------|
| 117A | Electronic Equipment Access Door |
- (d) Set the rotary switch on the AACU, M162 to INBD or OUTBD position.
- NOTE: The AACU, M162 is on E1-3 shelf in the EE compartment.
- (e) Push and hold the ENABLE/VERIFY switch on the AACU, M162.
- (f) Push and hold the toggle switch on the AACU, M162 to the PRESS/TEST position.
- (4) Make sure the speed brake lever moves to the full UP position.
- (5) Make sure the flight spoilers and ground spoilers move to the full up position.
- (6) If the speed brake lever moves to the full UP position, then there was an intermittent fault. Do these steps to complete the task:
- (a) Release the ENABLE/VERIFY switch and the toggle switch.
- (b) Set the rotary switch on the AACU, M162 to the NORM position.
- (c) Close this access panel:
- | <u>Number</u> | <u>Name/Location</u> |
|---------------|----------------------------------|
| 117A | Electronic Equipment Access Door |
- (d) Move the speed brake lever to the DOWN position.

EFFECTIVITY
SIA ALL

27-62 TASK 804

D633A103-SIA

Page 232
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (e) Move the flap lever to the FLAPS UP position.

NOTE: When you move the flap lever to the FLAPS UP position, the trailing edge and leading edge flaps and slats will retract.

- (f) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C00120	WEATHER RADAR RT

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	14	C01070	FLIGHT CONTROL AUTOSLAT DC 2
C	14	C01068	FLIGHT CONTROL AUTOSLAT DC 1

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	15	C01401	LANDING GEAR AIR/GND RELAY

- (g) Do this task: Put the Speed Brake Hydraulic systems A and B Back to the Condition Before the Pressurization, AMM TASK 27-62-00-840-801.
- (7) If the flight spoilers and ground spoilers do not move to the full up position, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this check of the AACU, M162:
- Set the speed brake lever to the ARM position.
 - Look at the four blue lights on the Auto Speed Brake Module, M980.
 - Make sure that the rotary switch is in the INBD or OUTB position.
 - Push and hold the ENABLE/VERIFY switch on the AACU, M162.
 - Push and hold the toggle switch on the AACU, M162 to the PRESS/TEST position.
 - If two of the four blue lights on the Auto Speed Brake Module, M980 are not on, then do this task: (Auto Speed Brake/Antiskid Interface Test, 27-62 TASK 801).
 - If you find a problem, then do the corrective action in the: Auto Speed Brake/Antiskid Interface Test.
 - Do the Repair Confirmation at the end of this task.
 - If you do not find a problem, then continue.
 - If two of the four lights on the Auto Speed Brake Module, M980 are on, then continue.
- (2) Do this check of the Auto Speed Brake Actuator, M359:
- Disconnect connector D1084 from the Auto Speed Brake Actuator, M359.
 - Do a continuity check between pins 7 and 1 of connector D1084 at the Auto Speed Brake Actuator, M359.
 - If there is no continuity between pins 7 and 1 of connector D1084, then do these steps:
 - Replace the Auto Speed Brake Actuator, M359. These are the tasks:
 - Auto Speed Brake Actuator Removal, AMM TASK 27-62-31-000-801
 - Auto Speed Brake Actuator Installation, AMM TASK 27-62-31-400-801

EFFECTIVITY
SIA ALL

27-62 TASK 804

D633A103-SIA

Page 233
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 2) Do the Repair Confirmation at the end of this task.
- (d) If there is continuity between pins 7 and 1 of connector D1084, then continue.
- (3) Do this wiring check:
 - (a) Disconnect connector D1084 from the Auto Speed Brake Actuator, M359.
 - (b) Remove the Auto Speed Brake Module, M980. To remove it, do this task: Auto Speed Brake Module Removal, AMM TASK 27-62-35-000-801.
 - (c) Do a wiring check between these pins on connectors D2586A and D2586B at the E4-2 shelf and connector D1084 at the Speed Brake Lever Actuator, M359:

AUTO SPEEDBRAKE MODULE, M980	SPEEDBRAKE LEVER ACTUATOR, M359
D2586A	D1084
pin 26	pin 5
D2586B	D1084
pin 12	pin 7

- (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-connect connector D1084 to the Auto Speed Brake Actuator, M359.
 - 3) Re-install the Auto Speed Brake Module, M980. To install it, do this task: Auto Speed Brake Module Installation, AMM TASK 27-62-35-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
- (e) If you do not find a problem with the wiring, then continue.
- (4) Do this wiring check:
 - (a) Do a wiring check between these pins on connector D2586A at the E4-2 shelf and terminal block TB664 in the J46 junction box:

AUTO SPEEDBRAKE MODULE, M980	
D2586A	TB664
pin 8	term YA5

- (b) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the Auto Speed Brake Module, M980. To install it, do this task: Auto Speed Brake Module Installation, AMM TASK 27-62-35-400-801.
 - 3) Do the Repair Confirmation at the end of this task.
- (c) If you do not find a problem with the wiring, then continue.
- (5) Install a new Auto Speed Brake Module, M980. To install it, do this task: Auto Speed Brake Module Installation, AMM TASK 27-62-35-400-801.
 - (a) Re-connect connector D1084 to the Auto Speed Brake Lever Actuator, M359.
 - (b) Do the Repair Confirmation at the end of this task.

EFFECTIVITY
SIA ALL

27-62 TASK 804



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (6) Do this wiring check:
- (a) Disconnect connector D10569 from the speed brake actuator enable relay R708 on junction box J20
 - (b) Disconnect connector D10571 from the RA < 10FT B relay R709 on junction box J22
 - (c) Disconnect connector D10573 from the RA < 10FT A relay R710 on junction box J20
 - (d) Do a wiring check between these pins on connector D10569 at the speed brake actuator enable relay R708 and connector D10571 on the RA < 10FT B relay R709

D10569	D10571
pin X2	pin A1
 - (e) Do a wiring check between these pins on connector D10569 at the speed brake actuator enable relay R708 and connector D10573 on the RA < 10FT A relay R710

D10569	D10573
pin X2	pin A1
 - (f) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring
 - 2) Reconnect connector D10573 to the RA < 10FT A relay R710 on the junction box J20
 - 3) Reconnect connector D10571 to the RA < 10FT B relay R709 on the junction box J22
 - 4) Reconnect connector D10569 to the speed brake actuator enable relay R708 on the junction box J20
 - 5) Do the Repair Confirmation at the end of this task.
 - (g) If you do not find a problem with the wiring, then continue.
- (7) Do these steps:
- (a) Replace the RA < 10 FT A relay R710
 - (b) Reconnect connector D10573 to the RA < 10FT A relay R710 on the junction box J20
 - (c) Reconnect connector D10571 to the RA < 10FT B relay R709 on the junction box J22
 - (d) Reconnect connector D10569 to the speed brake actuator enable relay R708 on the junction box J20
 - (e) Do the Repair Confirmation at the end of this task
 - 1) If the Repair Confirmation is not satisfactory, continue
 - (f) Replace the RA < 10 FT B relay R709
 - 1) Do the Repair Confirmation at the end of this task.
- (8) Do this task: Proximity Switch Electronics Unit (PSEU) BITE Procedure, 32-09 TASK 801.
- (a) Do the fault isolation tasks for the maintenance messages that you find.
 - (b) Do the Repair Confirmation at the end of this task.

EFFECTIVITY
SIA ALL

27-62 TASK 804

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 235
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

G. Repair Confirmation

- (1) Do these steps to activate the auto speed brake system:



WARNING

MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Do this task: Speed Brake Hydraulic Systems A and B Pressurization, AMM TASK 27-62-00-800-801.
- (b) Move the flap lever to the FLAPS 1 detent.
- NOTE: When you move the flap lever to the FLAPS 1 detent position, the trailing edge and leading edge flaps and slats will extend and the speed brake lever lock is released.

- (c) Make sure that these circuit breakers are open and have safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	14	C01070	FLIGHT CONTROL AUTOSLAT DC 2
C	14	C01068	FLIGHT CONTROL AUTOSLAT DC 1

- (d) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	9	C00440	FLIGHT CONTROL AUTO SPEED BRAKE

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	16	C00196	LANDING GEAR ANTISKID INBD
E	18	C00195	LANDING GEAR ANTISKID OUTBD

- (e) Move the No. 1 and No. 2 thrust lever to the IDLE position.



WARNING

MAKE SURE THAT YOU PREPARE FOR THE AIR MODE BEFORE YOU OPEN THE CIRCUIT BREAKER THAT FOLLOWS. AUTOMATIC OPERATION OF THE AIRPLANE SYSTEMS IN THE AIR MODE CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (f) Prepare for the air mode. Do this task: Prepare to Put the Airplane in the Air Mode, AMM TASK 32-09-00-840-801.
- (g) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	15	C01401	LANDING GEAR AIR/GND RELAY

- (h) Make sure the ground spoilers are full down.
- (i) Make sure the speed brake lever is in the DOWN position.

EFFECTIVITY
SIA ALL

27-62 TASK 804

D633A103-SIA

Page 236
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**



MAKE SURE THAT YOU OPEN THE CIRCUIT BREAKER FOR THE WEATHER RADAR SYSTEM. THE FORWARD MOVEMENT OF A THRUST LEVER CAN CAUSE THE AUTOMATIC OPERATION OF THE SYSTEM. THE OPERATION OF THIS SYSTEM CAN CAUSE SERIOUS INJURY TO PERSONS AND DAMAGE TO EQUIPMENT IN THE AREA OF THE NOSE RADOME.

- (j) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C00120	WEATHER RADAR RT

- (k) Move one of the thrust levers to full forward to retract the speed brake actuator.
- (l) Move the thrust lever back to the IDLE position.
- (2) Move the speed brake lever to the ARMED position.
- (3) Do these steps to activate the AACU, M162 to simulate high speed:



MAKE SURE THAT YOU INSTALL THE CHOCKS ON LANDING GEAR BEFORE THE RELEASE PARKING BRAKE. AIRCRAFT MOVEMENT CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT AROUND THE AIRCRAFT AND LANDING GEAR AREAS.

- (a) Make sure the parking brake is released.
- (b) If necessary, align the IRU for AACU operation.
- (c) Open this access panel:
- | <u>Number</u> | <u>Name/Location</u> |
|---------------|----------------------------------|
| 117A | Electronic Equipment Access Door |
- (d) Set the rotary switch on the AACU, M162 to INBD or OUTBD position.
- NOTE: The AACU, M162 is on E1-3 shelf in the EE compartment.
- (e) Push and hold the ENABLE/VERIFY switch on the AACU, M162.
- (f) Push and hold the toggle switch on the AACU, M162 to the PRESS/TEST position.
- (4) Make sure the speed brake lever moves to the full UP position.
- (5) Make sure the flight spoilers and ground spoilers move to the full up position.
- (6) If the flight spoilers and ground spoilers move to the full up position, then you corrected the fault. Do these steps to complete the task:
- (a) Release the ENABLE/VERIFY switch and the toggle switch.
- (b) Set the rotary switch on the AACU, M162 to the NORM position.
- (c) Close this access panel:
- | <u>Number</u> | <u>Name/Location</u> |
|---------------|----------------------------------|
| 117A | Electronic Equipment Access Door |
- (d) Move the speed brake lever to the DOWN position.

EFFECTIVITY
SIA ALL

27-62 TASK 804

D633A103-SIA

Page 237
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (e) Move the flap lever to the FLAPS UP position.

NOTE: When you move the flap lever to the FLAPS UP position, the trailing edge and leading edge flaps and slats will retract.



MAKE SURE THAT YOU OPEN THE CIRCUIT BREAKER FOR THE WEATHER RADAR SYSTEM. THE FORWARD MOVEMENT OF A THRUST LEVER CAN CAUSE THE AUTOMATIC OPERATION OF THE SYSTEM. THE OPERATION OF THIS SYSTEM CAN CAUSE SERIOUS INJURY TO PERSONS AND DAMAGE TO EQUIPMENT IN THE AREA OF THE NOSE RADOME.

- (f) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C00120	WEATHER RADAR RT

- (g) Move one of the thrust levers to full forward.
(h) Move the thrust lever back to the IDLE position.
(i) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C00120	WEATHER RADAR RT

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	14	C01070	FLIGHT CONTROL AUTOSLAT DC 2
C	14	C01068	FLIGHT CONTROL AUTOSLAT DC 1

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	15	C01401	LANDING GEAR AIR/GND RELAY

- (j) Do this task: Put the Speed Brake Hydraulic systems A and B Back to the Condition Before the Pressurization, AMM TASK 27-62-00-840-801.

———— **END OF TASK** ————

805. Speed Brake Auto Retract Does Not Operate - Fault Isolation

A. Description

- (1) The speed brakes auto retract operates when one of the thrust levers is more than the idle position.

B. Possible Causes

- (1) AACU, M162
(2) Speed Brake Lever Actuator, M359
(3) Auto Speed Brake Module, M980
(4) Wiring

EFFECTIVITY
SIA ALL

27-62 TASKS 804-805

D633A103-SIA

Page 238
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	9	C00440	FLIGHT CONTROL AUTO SPEED BRAKE
B	14	C01070	FLIGHT CONTROL AUTOSLAT DC 2
C	14	C01068	FLIGHT CONTROL AUTOSLAT DC 1

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	15	C01401	LANDING GEAR AIR/GND RELAY
E	16	C00196	LANDING GEAR ANTISKID INBD
E	18	C00195	LANDING GEAR ANTISKID OUTBD

D. Related Data

- (1) SSM 27-62-11
(2) WDM 27-62-11

E. Initial Evaluation

- (1) Do these steps to activate the auto speed brake retract:



WARNING

MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Do this task: Speed Brake Hydraulic Systems A and B Pressurization, AMM TASK 27-62-00-800-801.
- (b) Move the flap lever to the FLAPS 1 detent.
NOTE: When you move the flap lever to the FLAPS 1 detent position, the trailing edge and leading edge flaps and slats will extend and the speed brake lever lock is released.
- (c) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	14	C01070	FLIGHT CONTROL AUTOSLAT DC 2
C	14	C01068	FLIGHT CONTROL AUTOSLAT DC 1

- (d) Move the No. 1 and No. 2 thrust lever to the IDLE position.

EFFECTIVITY
SIA ALL

27-62 TASK 805

D633A103-SIA

Page 239
Oct 15/2023



737-600/700/800/900
FAULT ISOLATION MANUAL



WARNING

MAKE SURE THAT YOU PREPARE FOR THE AIR MODE BEFORE YOU OPEN THE CIRCUIT BREAKER THAT FOLLOWS. AUTOMATIC OPERATION OF THE AIRPLANE SYSTEMS IN THE AIR MODE CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (e) Prepare for the air mode. Do this task: Prepare to Put the Airplane in the Air Mode, AMM TASK 32-09-00-840-801.
- (f) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	15	C01401	LANDING GEAR AIR/GND RELAY

- (g) Make sure the ground spoilers are full down.
- (h) Make sure the speed brake lever is in the DOWN position.



WARNING

MAKE SURE THAT YOU OPEN THE CIRCUIT BREAKER FOR THE WEATHER RADAR SYSTEM. THE FORWARD MOVEMENT OF A THRUST LEVER CAN CAUSE THE AUTOMATIC OPERATION OF THE SYSTEM. THE OPERATION OF THIS SYSTEM CAN CAUSE SERIOUS INJURY TO PERSONS AND DAMAGE TO EQUIPMENT IN THE AREA OF THE NOSE RADOME.

- (i) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C00120	WEATHER RADAR RT

- (j) Move one of the thrust levers to full forward to retract the speed brake actuator.
 - (k) Move the thrust lever back to the IDLE position.
- (2) Move one of the reverse thrust levers to the REVERSE thrust position.
- (a) Make sure the ARMED light comes on.
- (3) Do these steps to activate the AACU, M162 to simulate high speed:



WARNING

MAKE SURE THAT YOU INSTALL THE CHOCKS ON LANDING GEAR BEFORE THE RELEASE PARKING BRAKE. AIRCRAFT MOVEMENT CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT AROUND THE AIRCRAFT AND LANDING GEAR AREAS.

- (a) Make sure the parking brake is released.
- (b) If necessary, align the IRU for AACU operation.
- (c) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

- (d) Set the rotary switch on the AACU, M162 to INBD or OUTBD position.

NOTE: The AACU, M162 is on E1-3 shelf in the EE compartment.

EFFECTIVITY
SIA ALL

27-62 TASK 805

D633A103-SIA

Page 240
Oct 15/2023



737-600/700/800/900 FAULT ISOLATION MANUAL

- (e) Push and hold the ENABLE/VERIFY switch on the AACU, M162.
- (f) Push and hold the toggle switch on the AACU, M162 to the PRESS/TEST position.
- (4) Make sure the speed brake lever moves to the full UP position.
- (5) Make sure the flight spoilers and ground spoilers move to the full up position.
- (6) Release the ENABLE/VERIFY switch and the toggle switch on the AACU, M162.
 - (a) Make sure that the ARMED light goes off and the DO NOT ARM light comes on.
- (7) Move the reverse thrust lever, that was at the REVERSE thrust position, to the down position.
- (8) Move one of the thrust levers forward.
- (9) If the speed brake lever moves to the DOWN position, then there was an intermittent fault. Do these steps to complete the task:
 - (a) Move the reverse thrust lever to the IDLE position.
 - (b) Set the rotary switch on the AACU, M162 to the NORM position.
 - (c) Close this access panel:

<u>Number</u>	<u>Name/Location</u>

117A	Electronic Equipment Access Door

- (d) Move the speed brake lever to the DOWN position.
- (e) Move the flap lever to the FLAPS UP position.

NOTE: When you move the flap lever to the FLAPS UP position, the trailing edge and leading edge flaps and slats will retract.
- (f) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	14	C01070	FLIGHT CONTROL AUTOSLAT DC 2
C	14	C01068	FLIGHT CONTROL AUTOSLAT DC 1

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	15	C01401	LANDING GEAR AIR/GND RELAY

- (g) Do this task: Put the Speed Brake Hydraulic systems A and B Back to the Condition Before the Pressurization, AMM TASK 27-62-00-840-801.
- (10) If the speed brake lever does not move to the DOWN position, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this check of the Speed Brake Lever Actuator, M359:
 - (a) Disconnect connector D1084 from the Speed Brake Lever Actuator, M359.
 - (b) Do a continuity check between pins 3 and 1 of connector D1084 at the Speed Brake Lever Actuator, M359.
 - (c) If there is no continuity between pins 3 and 1 of connector D1084, then do these steps:
 - 1) Replace the Speed Brake Lever Actuator, M359. These are the tasks:
 - Auto Speed Brake Actuator Removal, AMM TASK 27-62-31-000-801
 - Auto Speed Brake Actuator Installation, AMM TASK 27-62-31-400-801

EFFECTIVITY
SIA ALL

27-62 TASK 805

D633A103-SIA

Page 241
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 2) Do the Repair Confirmation at the end of this task.
- (d) If there is continuity between pins 3 and 1 of connector D1084, then continue.
- (2) Do this wiring check:
 - (a) Disconnect connector D1084 from the Speed Brake Lever Actuator, M359.
 - (b) Remove the Auto Speed Brake Module, M980. To remove it, do this task: Auto Speed Brake Module Removal, AMM TASK 27-62-35-000-801.
 - (c) Do a wiring check between these pins on connector D2586A and D2586B at the E4-2 shelf and connector D1084 at the Speed Brake Lever Actuator, M359:

AUTO SPEEDBRAKE MODULE, M980 D2586B	SPEEDBRAKE LEVER ACTUATOR, M359 D1084
pin 5	pin 3

AUTO SPEEDBRAKE MODULE, M980 D2586A	SPEEDBRAKE LEVER ACTUATOR, M359 D1084
pin 26	pin 5

- (d) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-connect connector D1084 to the Auto Speed Brake Lever Actuator, M359.
 - 3) Re-install the Auto Speed Brake Module, M980. To install it, do this task: Auto Speed Brake Module Installation, AMM TASK 27-62-35-400-801.
 - 4) Do the Repair Confirmation at the end of this task.
- (e) If you do not find a problem with the wiring, then continue.
 - 1) Re-connect connector D1084 to the Auto Speed Brake Lever Actuator, M359.
- (3) Do this wiring check:
 - (a) Do a wiring check between these pins on connector D2586A at the E4-2 shelf and terminal block TB664 at the STA 261:

AUTO SPEEDBRAKE MODULE, M980 D2586A	TB664
pin 24	term YB1

- (b) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the Auto Speed Brake Module, M980. To install it, do this task: Auto Speed Brake Module Installation, AMM TASK 27-62-35-400-801.
 - 3) Do the Repair Confirmation at the end of this task.

EFFECTIVITY
SIA ALL

27-62 TASK 805



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (c) If you do not find a problem with the wiring, then continue.
- (4) Install a new Auto Speed Brake Module, M980. To install it, do this task: Auto Speed Brake Module Installation, AMM TASK 27-62-35-400-801.
 - (a) Do the Repair Confirmation at the end of this task.
 - 1) If the Repair Confirmation is not OK, then continue.
- (5) Replace the Auto Speed Brake Lever Actuator, M359. These are the tasks:
 - Auto Speed Brake Actuator Removal, AMM TASK 27-62-31-000-801
 - Auto Speed Brake Actuator Installation, AMM TASK 27-62-31-400-801
 - (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do these steps to activate the auto speed brake system:



WARNING

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- (a) Do this task: Speed Brake Hydraulic Systems A and B Pressurization, AMM TASK 27-62-00-800-801.
- (b) Move the flap lever to the FLAPS 1 detent.

NOTE: When you move the flap lever to the FLAPS 1 detent position, the trailing edge and leading edge flaps and slats will extend and the speed brake lever lock is released.
- (c) Make sure that these circuit breakers are open and have safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	14	C01070	FLIGHT CONTROL AUTOSLAT DC 2
C	14	C01068	FLIGHT CONTROL AUTOSLAT DC 1

- (d) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	9	C00440	FLIGHT CONTROL AUTO SPEED BRAKE

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	16	C00196	LANDING GEAR ANTISKID INBD
E	18	C00195	LANDING GEAR ANTISKID OUTBD

- (e) Move the No. 1 and No. 2 thrust lever to the IDLE position.

EFFECTIVITY
SIA ALL

27-62 TASK 805

D633A103-SIA

Page 243
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**



WARNING

MAKE SURE THAT YOU PREPARE FOR THE AIR MODE BEFORE YOU OPEN THE CIRCUIT BREAKER THAT FOLLOWS. AUTOMATIC OPERATION OF THE AIRPLANE SYSTEMS IN THE AIR MODE CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (f) Prepare for the air mode. Do this task: Prepare to Put the Airplane in the Air Mode, AMM TASK 32-09-00-840-801.
- (g) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	15	C01401	LANDING GEAR AIR/GND RELAY

- (h) Make sure the ground spoilers are full down.
- (i) Make sure the speed brake lever is in the DOWN position.



WARNING

MAKE SURE THAT YOU OPEN THE CIRCUIT BREAKER FOR THE WEATHER RADAR SYSTEM. THE FORWARD MOVEMENT OF A THRUST LEVER CAN CAUSE THE AUTOMATIC OPERATION OF THE SYSTEM. THE OPERATION OF THIS SYSTEM CAN CAUSE SERIOUS INJURY TO PERSONS AND DAMAGE TO EQUIPMENT IN THE AREA OF THE NOSE RADOME.

- (j) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C00120	WEATHER RADAR RT

- (k) Move one of the thrust levers to full forward to retract the speed brake actuator.
 - (l) Move the thrust lever back to the IDLE position.
- (2) Move one of the reverse thrust lever to the REVERSE thrust position.
- (a) Make sure the ARMED light comes on.
- (3) Do these steps to activate the AACU, M162 to simulate high speed:



WARNING

MAKE SURE THAT YOU INSTALL THE CHOCKS ON LANDING GEAR BEFORE THE RELEASE PARKING BRAKE. AIRCRAFT MOVEMENT CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT AROUND THE AIRCRAFT AND LANDING GEAR AREAS.

- (a) Make sure the parking brake is released.
- (b) If necessary, align the IRU for AACU operation.
- (c) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

- (d) Set the rotary switch on the AACU, M162 to INBD or OUTBD position.

NOTE: The AACU, M162 is on E1-3 shelf in the EE compartment.

EFFECTIVITY
SIA ALL

27-62 TASK 805

D633A103-SIA

Page 244
Oct 15/2023



737-600/700/800/900 FAULT ISOLATION MANUAL

- (e) Push and hold the ENABLE/VERIFY switch on the AACU, M162.
- (f) Push and hold the toggle switch on the AACU, M162 to the PRESS/TEST position.
- (4) Make sure the speed brake lever moves to the full UP position.
- (5) Make sure the flight spoilers and ground spoilers move to the full up position.
- (6) Release the ENABLE/VERIFY switch and the toggle switch on the AACU, M162.
 - (a) Make sure that the ARMED light goes off and the DO NOT ARM light comes on.
- (7) Move the reverse thrust lever, that was at the REVERSE thrust position, to the down position.
- (8) Move one of the thrust levers forward.
- (9) If the speed brake lever moves to the DOWN position, then you corrected the fault. Do these steps to complete the task:
 - (a) Set the rotary switch on the AACU, M162 to the NORM position.
 - (b) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door
 - (c) Move the speed brake lever to the DOWN position.
 - (d) Move the flap lever to the FLAPS UP position.

NOTE: When you move the flap lever to the FLAPS UP position, the trailing edge and leading edge flaps and slats will retract.



MAKE SURE THAT YOU OPEN THE CIRCUIT BREAKER FOR THE WEATHER RADAR SYSTEM. THE FORWARD MOVEMENT OF A THRUST LEVER CAN CAUSE THE AUTOMATIC OPERATION OF THE SYSTEM. THE OPERATION OF THIS SYSTEM CAN CAUSE SERIOUS INJURY TO PERSONS AND DAMAGE TO EQUIPMENT IN THE AREA OF THE NOSE RADOME.

- (e) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-1			
<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C00120	WEATHER RADAR RT
- (f) Move one of the thrust levers to full forward.
- (g) Move the thrust lever back to the IDLE position.
- (h) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-1			
<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C00120	WEATHER RADAR RT

F/O Electrical System Panel, P6-2			
<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	14	C01070	FLIGHT CONTROL AUTOSLAT DC 2
C	14	C01068	FLIGHT CONTROL AUTOSLAT DC 1

EFFECTIVITY
SIA ALL

27-62 TASK 805

D633A103-SIA

Page 245
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	15	C01401	LANDING GEAR AIR/GND RELAY

- (i) Do this task: Put the Speed Brake Hydraulic systems A and B Back to the Condition Before the Pressurization, AMM TASK 27-62-00-840-801.

———— **END OF TASK** ————

806. Speed Brake Lever Chatters - Fault Isolation

A. Description

- (1) The pilots use the speed brake lever to move the spoilers.
- (2) The speed brake lever sends mechanical inputs to the spoiler ratio changer. The ratio changer sends the inputs to the spoiler mixer. When the speed brake lever moves 31 degrees, the spoiler mixer moves the ground spoiler control valve.

B. Possible Causes

- (1) Speed brake forward drum and lever brake

C. Initial Evaluation

- (1) Do this check of the speed brake lever:
 - (a) Move the speed brake lever 3 times through full travel.
 - (b) If the speed brake lever chatters, then do the Fault Isolation Procedure below.
 - (c) If the speed brake lever does not chatter, then there was an intermittent fault.

D. Fault Isolation Procedure

- (1) Do the speed brake actuator lever brake lubrication. To do it, do this task: Speed Brake Lever Brake Assembly Lubrication, AMM TASK 12-22-81-600-801.
 - (a) Move the speed brake lever 3 times through full travel.
 - (b) If the speed brake lever does not chatter, then you corrected the fault.
 - (c) If the speed brake lever chatters, then continue.
 - (d) Replace the speed brake forward drum and brake lever. These are the tasks:
 - Speed Brake Forward Drum and Lever Brake Removal, AMM TASK 27-62-21-000-801
 - Speed Brake Forward Drum and Lever Brake Installation, AMM TASK 27-62-21-400-801
 - (e) Move the speed brake lever 3 times through full travel.
 - (f) If the speed brake lever does not chatter, then you corrected the fault.

———— **END OF TASK** ————

807. Speed Brake Lever Does Not Move Freely - Fault Isolation

A. Description

- (1) The pilots use the speed brake lever to move the spoilers.
- (2) The speed brake lever sends mechanical inputs to the spoiler ratio changer. The ratio changer sends the inputs to the spoiler mixer. When the speed brake lever moves 31 degrees, the spoiler mixer moves the ground spoiler control valve.

EFFECTIVITY
SIA ALL

27-62 TASKS 805-807

D633A103-SIA

Page 246
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

B. Possible Causes

- (1) Speed brake lever sticks or binds.
- (2) Speed brake control cables
- (3) Speed brake forward drum and lever brake
- (4) Spoiler mixer
- (5) Spoiler ratio changer
- (6) Ground spoiler control valve

C. Initial Evaluation

- (1) Do this check of the speed brake lever:
 - (a) Move the speed brake lever 3 times through full travel.
 - (b) If the speed brake lever does not move freely, then do the Fault Isolation Procedure below.
 - (c) If the speed brake lever moves freely, then there was an intermittent fault.

D. Fault Isolation Procedure

- (1) Lubricate the speed brake control lever.
 - (a) To do it, do this task: AMM TASK 27-62-00-800-803.
 - (b) If the lever no longer sticks or binds, then you have corrected the fault.
- (2) Do a check of the speed brake control cables. To do it, do this task: Control Cable Wire Rope - Inspection, AMM TASK 20-20-31-200-801.
 - (a) If you find a problem with the speed brake control cables, then do these steps:
 - 1) Replace or repair the speed brake control cables. These are the tasks:
 - Control Cables Removal, AMM TASK 20-10-91-000-801
 - Control Cables Installation, AMM TASK 20-10-91-400-801
 - 2) Move the speed brake lever 3 times through full travel.
 - 3) If the speed brake lever moves freely, then you corrected the fault.
 - (b) If you do not find a problem with the speed brake control cables, then continue.
- (3) Do a check of the speed brake lever brake backlash adjustment.
 - (a) To do it, do this task: Speed Brake Lever Brake Backlash Adjustment, AMM TASK 27-62-00-000-802
 - (b) If you do not find a problem with the speed brake lever brake backlash adjustment, then continue.
- (4) Do a tension check of the speed brake control cables. To do it, do this task: Speed Brake Control Cable Adjustment, AMM TASK 27-62-00-820-802.
 - (a) If the tension of the speed brake control cables is low, then do these steps:
 - 1) Re-adjust the speed brake control cables (AMM TASK 27-62-00-820-802).
 - 2) Move the speed brake lever 3 times through full travel.
 - 3) If the speed brake lever moves freely, then you corrected the fault.
 - (b) If the tension of the speed brake control cables is satisfactory, then continue.
- (5) Examine the speed brake forward drum and lever brake for unwanted objects and damaged components.

EFFECTIVITY
SIA ALL

27-62 TASK 807

D633A103-SIA

Page 247
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (a) If you find a problem with the speed brake forward drum and lever brake, then do these steps:
 - 1) Repair or replace the speed brake forward drum and lever brake. These are the tasks:
 - Speed Brake Forward Drum and Lever Brake Removal, AMM TASK 27-62-21-000-801
 - Speed Brake Forward Drum and Lever Brake Installation, AMM TASK 27-62-21-400-801
 - 2) Move the speed brake lever 3 times through full travel.
 - 3) If the speed brake lever moves freely, then you corrected the fault.
 - (b) If you do not find a problem with the speed brake forward drum and lever brake, then continue.
- (6) Do this check of the spoiler ratio changer:
- (a) Do a test of the spoiler mixer no-back assembly. To do it, do this task: Spoiler Ratio Changer No-Back Assembly Test, AMM TASK 27-61-00-820-809.
 - (b) If the test is not satisfactory, then do these steps:
 - 1) Replace the spoiler ratio changer. These are the tasks:
 - Spoiler Ratio Changer - Removal, AMM TASK 27-61-31-000-801
 - Spoiler Ratio Changer - Installation, AMM TASK 27-61-31-400-801
 - 2) Move the speed brake lever 3 times through full travel.
 - 3) If the speed brake lever moves freely, then you corrected the fault.
 - (c) If the test is satisfactory, then continue.
- (7) Do this check of the spoiler control valve:
- (a) Disconnect the spoiler mixer control rod at the control valve input lever. To do it, do this task: Ground Spoiler Control Valve - Removal, AMM TASK 27-62-41-000-801.
 - (b) Move the speed brake lever 3 times through full travel.
 - (c) If the speed brake lever moves freely, then do these steps:
 - 1) Replace the ground spoiler control valve. These are the tasks:
 - Ground Spoiler Control Valve - Removal, AMM TASK 27-62-41-000-801
 - Ground Spoiler Control Valve - Installation, AMM TASK 27-62-41-400-801
 - 2) Move the speed brake lever 3 times through full travel.
 - 3) If the speed brake lever moves freely, then you corrected the fault.
 - (d) If the speed brake lever does not move freely, then do these:
 - 1) Replace the spoiler mixer. These are the tasks:
 - Spoiler Mixer Removal, AMM TASK 27-61-21-000-801
 - Spoiler Mixer Installation, AMM TASK 27-61-21-400-801
 - 2) Move the speed brake lever 3 times through full travel.
 - 3) If the speed brake lever moves freely, then you corrected the fault.

———— **END OF TASK** ————

EFFECTIVITY
SIA ALL

27-62 TASK 807

D633A103-SIA

Page 248
Oct 15/2023



737-600/700/800/900
FAULT ISOLATION MANUAL

808. Speed Brake Takeoff Warning Signal to PSEU Problems - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 27-62001 SPDBRK DN FAULT
 - (b) 27-62101 SPDBRK DN FAULT
 - (c) 27-65004 SPDBRK DOWN
 - (d) 31-55005 SPDBRK UP
 - (e) 31-53007 SPDBRK HDL UP
 - (f) 31-52010 SPDBRK UP FAULT
- (2) The proximity switch electronics unit (PSEU) has detected a fault from the speed brake takeoff warning signal.

B. Possible Causes

- (1) Wiring problem
- (2) Speed brake takeoff warning switch, S651
- (3) Proximity switch electronics unit (PSEU), M2061

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C01399	PSEU PRI
D	2	C01400	PSEU ALTN

D. Related Data

- (1) (SSM 27-62-21)
- (2) (WDM 27-62-21)

E. Initial Evaluation

- (1) Do this task: Proximity Switch Electronics Unit (PSEU) BITE Procedure, 32-09 TASK 801.
 - (a) If the maintenance message does not show, then there was an intermittent fault.
 - (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this wiring check:
 - (a) Disconnect connector D5148P from the speed brake takeoff warning switch, S651.
 - (b) Do a wiring check between these pins of connectors D10982 and D10984 at the PSEU and D10984 and connector D5148P at the speed brake takeoff warning switch, S651:

D10984	D5148P
pin 29	pin 12

D10982	D5148P
pin 29	pin 10

- (c) Do a check for ground at pin 11 of connector D5148P.

EFFECTIVITY
SIA ALL

27-62 TASK 808



737-600/700/800/900 FAULT ISOLATION MANUAL

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect connector D5148P.
 - c) Do this task: Proximity Switch Electronics Unit (PSEU) BITE Procedure, 32-09 TASK 801.
 - d) If the maintenance message does not show, then you corrected the fault.
- (d) If you do not find a problem with the wiring, then continue.
- (2) Replace the speed brake takeoff warning switch, S651. These are the tasks:
 - Speedbrake Takeoff Warning Switch - Removal, AMM TASK 31-51-03-000-801
 - Speedbrake Takeoff Warning Switch - Installation, AMM TASK 31-51-03-400-801
- (a) Re-install the PSEU, M2061. To install it, do this task: Proximity Switch Electronics Unit (PSEU) Installation, AMM TASK 32-09-10-400-801.
- (b) Do this task: Proximity Switch Electronics Unit (PSEU) BITE Procedure, 32-09 TASK 801.
- (c) If the maintenance message does not show, then you corrected the fault.
- (d) If the maintenance message shows, then continue.
- (3) Replace the PSEU, M2061. These are the tasks:
 - Proximity Switch Electronics Unit (PSEU) Removal, AMM TASK 32-09-10-000-801
 - Proximity Switch Electronics Unit (PSEU) Installation, AMM TASK 32-09-10-400-801
- (a) Do this task: Proximity Switch Electronics Unit (PSEU) BITE Procedure, 32-09 TASK 801.
- (b) If the maintenance message does not show, then you corrected the fault.

————— **END OF TASK** —————

809. Speed Brake Handle Position Signal to PSEU Problems - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 27-62002 SBRK GT ARMD FLT
 - (b) 27-62102 SBRK GT ARMD FLT
 - (c) 27-65003 SBRK GT ARMED
- (2) The proximity switch electronics unit (PSEU) has detected a fault from the speed brake handle position switch, S918.

B. Possible Causes

- (1) Wiring problem
- (2) Speed Brake Handle Position Switch, S918
- (3) Proximity switch electronics unit (PSEU), M2061

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C01399	PSEU PRI
D	2	C01400	PSEU ALTN

EFFECTIVITY
SIA ALL

27-62 TASKS 808-809

D633A103-SIA

Page 250
Oct 15/2023



737-600/700/800/900 FAULT ISOLATION MANUAL

D. Related Data

- (1) (SSM 27-62-21)
- (2) (WDM 27-62-21)

E. Initial Evaluation

- (1) Do this task: Proximity Switch Electronics Unit (PSEU) BITE Procedure, 32-09 TASK 801.
 - (a) If the maintenance message does not show, then there was an intermittent fault.
 - (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this wiring check:
 - (a) Remove the proximity switch electronics unit (PSEU), M2061. To remove it, do this task: Proximity Switch Electronics Unit (PSEU) Removal, AMM TASK 32-09-10-000-801.
 - (b) Disconnect connector D10199 from the speed brake handle position switch, S918.
 - (c) Do a wiring check between these pins of connector D10986 at the E11 ELEC GEAR AND DOOR SYS LRU and connector D10199 from the speed brake handle position switch, S918:

D10986	D10199
pin 3	pin 11

- (d) Do a check for ground at pin 10 of connector D10199.
 - 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect connector D10199.
 - c) Re-install the PSEU, M2061. To install it, do this task: Proximity Switch Electronics Unit (PSEU) Installation, AMM TASK 32-09-10-400-801.
 - d) Do this task: Proximity Switch Electronics Unit (PSEU) BITE Procedure, 32-09 TASK 801.
 - e) If the maintenance message does not show, then you corrected the fault.
 - (e) If you do not find a problem with the wiring, then continue.
- (2) Replace the speed brake handle position switch, S918. These are the tasks:
 - Speed Brake Armed Switch and Speed Brake Handle Position Switch Removal, AMM TASK 27-62-34-000-801
 - Speed Brake Armed Switch and Speed Brake Handle Position Switch Installation, AMM TASK 27-62-34-400-801
 - (a) Re-install the PSEU, M2061. To install it, do this task: Proximity Switch Electronics Unit (PSEU) Installation, AMM TASK 32-09-10-400-801.
 - (b) Do this task: Proximity Switch Electronics Unit (PSEU) BITE Procedure, 32-09 TASK 801.
 - (c) If the maintenance message does not show, then you corrected the fault.
 - (d) If the maintenance message shows, then continue.
- (3) Replace the PSEU, M2061. These are the tasks:
 - Proximity Switch Electronics Unit (PSEU) Removal, AMM TASK 32-09-10-000-801
 - Proximity Switch Electronics Unit (PSEU) Installation, AMM TASK 32-09-10-400-801

EFFECTIVITY
SIA ALL

27-62 TASK 809

D633A103-SIA

Page 251
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (a) Do this task: Proximity Switch Electronics Unit (PSEU) BITE Procedure, 32-09 TASK 801.
- (b) If the maintenance message does not show, then you corrected the fault.

———— **END OF TASK** ————

810. Spoiler Deployed Signal to PSEU Problems - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 27-66001 SPDBRK EXT FLT
- (2) The proximity switch electronics unit (PSEU) has detected a fault from the speed brake handle position switch, S918.

B. Possible Causes

- (1) SPOILERS DEPLOYED Light, L1
- (2) Wiring problem
- (3) Proximity switch electronics unit (PSEU), M2061

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	1	C01399	PSEU PRI
D	2	C01400	PSEU ALTN

D. Related Data

- (1) (SSM 27-62-21)
- (2) (WDM 27-62-21)

E. Initial Evaluation

- (1) Do this task: Proximity Switch Electronics Unit (PSEU) BITE Procedure, 32-09 TASK 801.
 - (a) If the maintenance message does not show, then there was an intermittent fault.
 - (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this check of the SPOILERS DEPLOYED light, L1:
 - (a) At the captain's main instrument panel, P1, set the switch for the master dim and test lights to TEST.
 - (b) If the SPOILERS DEPLOYED light does not come on, then do these steps:
 - 1) Replace the SPOILERS DEPLOYED light, L2.
 - 2) If the maintenance message does not show, then you corrected the fault.
 - (c) If the SPOILERS DEPLOYED light comes on, then continue.
- (2) Do this wiring check:
 - (a) Remove the P3-1 panel.
 - (b) Disconnect connector D3991 from the SPOILERS DEPLOYED light, L2.
 - (c) Do a wiring check between these pins of connector D10986 at the PSEU and connector D3991 from the SPOILERS DEPLOYED light, L2:

EFFECTIVITY
SIA ALL

27-62 TASKS 809-810

D633A103-SIA

Page 252
Oct 15/2023



737-600/700/800/900 FAULT ISOLATION MANUAL

D3991

pin 10

D10986

pin 49

- 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect connector D13991.
 - c) Re-install the P3-1 panel.
 - d) Re-install the PSEU, M2061. To install it, do this task: Proximity Switch Electronics Unit (PSEU) Installation, AMM TASK 32-09-10-400-801.
 - e) Do this task: Proximity Switch Electronics Unit (PSEU) BITE Procedure, 32-09 TASK 801.
 - f) If the maintenance message does not show, then you corrected the fault.
- (d) If you do not find a problem with the wiring, then continue.
- (3) Do this task: Proximity Switch Electronics Unit (PSEU) BITE Procedure, 32-09 TASK 801
 - (a) If the maintenance message does not show, then you corrected the fault.

———— **END OF TASK** ————

814. SPEEDBRAKES EXTENDED Light Is On (Airplane On Ground) - Fault Isolation

A. Description

- (1) The SPEEDBRAKES EXTENDED light shows on the ground when these conditions occur:
 - Ground spoiler interlock valve pressure switch measures more than 750 psi
 - Speedbrake lever in the down position
- (2) This is a failure condition.

B. Possible Causes

- (1) Proximity Switch Electronics Unit (PSEU), M2061
- (2) Speed Brake Takeoff Warning switch, S651
- (3) Ground Spoiler Up Pressure switch, S1049

C. Related Data

- (1) (SSM 27-62-21)
- (2) (WDM 27-62-21)

D. Initial Evaluation

- (1) Clear all PSEU faults. Do this task: Proximity Switch Electronics Unit (PSEU) BITE Procedure, 32-09 TASK 801.
- (2) Make sure the speedbrake lever is in the DOWN position.
- (3) Make sure the ground spoilers are down.
 - (a) If the ground spoilers are not down, do this task: Ground spoilers do not operate - Fault Isolation, 27-61 TASK 803.
 - (b) If the ground spoilers are down, and the light is on, continue with the fault isolation.

NOTE: One of the switches that controls the SPEEDBRAKES EXTENDED light has a 5-second delay. Wait at least 5 seconds between steps to make sure that the light is in the correct condition.

EFFECTIVITY
SIA ALL

27-62 TASKS 810-814

D633A103-SIA

Page 253
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (c) If the ground spoilers are down, and the light is off, there was an intermittent fault.

E. Fault Isolation Procedure

- (1) Move the speedbrake lever to the UP position.
 - (a) If the SPEEDBRAKES EXTENDED light stays on, adjust or replace the SPDBRK TAKEOFF WARN switch, S651. These are the tasks:
 - Speedbrake Takeoff Warning Switch - Removal, AMM TASK 31-51-03-000-801
 - Speedbrake Takeoff Warning Switch - Installation, AMM TASK 31-51-03-400-801
 - (b) If the SPEEDBRAKES EXTENDED light turns off, continue with the fault isolation.
- (2) Move the speedbrake lever to the DOWN position.
 - (a) If the SPEEDBRAKES EXTENDED light turns off, you corrected the fault.
 - (b) If the SPEEDBRAKES EXTENDED light turns on, do these steps:
 - 1) Make sure the ground spoiler interlock valve cable is correctly adjusted. These are the tasks:
 - Ground Spoiler Interlock Valve Adjustment, AMM TASK 27-62-00-820-803
 - Ground Spoiler Interlock Valve Adjustment (Alternate Method), AMM TASK 27-62-00-820-811.
 - 2) If the cable is correctly adjusted, replace the GND SPOILER INTERLOCK VALVE PRESSURE switch, S1049. These are the tasks:
 - Ground Spoiler Interlock Valve Pressure Switch Removal, AMM TASK 27-62-61-000-803
 - Ground Spoiler Interlock Valve Pressure Switch Installation, AMM TASK 27-62-61-400-804.

————— **END OF TASK** —————

815. SPEEDBRAKE ARMED Light is On but the Speedbrakes Do Not Operate - Fault Isolation

A. Description

- (1) The speedbrakes auto extend operate whenever the speedbrake lever is moved to the ARMED position and all of these conditions occur:
 - (a) The main landing gear is on the ground or the main landing gear wheels spin up.
 - (b) The left and right thrust levers are at IDLE.
 - (c) Aircraft altitude is less than 10 ft (3 m).

B. Possible Causes

- (1) Speedbrake Lever Control Rod
- (2) Speedbrake Lever Sticks or Binds
- (3) Speedbrake Lever Forward Brake Mechanism
- (4) AACU, M162
- (5) Ground Spoiler Control Valve Control Rod and Linkage
- (6) Spoiler Ratio Changer no-back Assembly and Spoiler Mixer
- (7) Speedbrake Lever Pivot Bearing are worn or bad.

EFFECTIVITY
SIA ALL

27-62 TASKS 814-815

D633A103-SIA

Page 254
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	9	C00440	FLIGHT CONTROL AUTO SPEED BRAKE
B	14	C01070	FLIGHT CONTROL AUTOSLAT DC 2
C	14	C01068	FLIGHT CONTROL AUTOSLAT DC 1

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	15	C01401	LANDING GEAR AIR/GND RELAY
E	16	C00196	LANDING GEAR ANTISKID INBD
E	18	C00195	LANDING GEAR ANTISKID OUTBD

D. Related Data

- (1) SSM 27-62-11
(2) WDM 27-62-11

E. Initial Evaluation

- (1) Do these steps to activate the auto speedbrake extend:



WARNING

MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Do this task: Speed Brake Hydraulic Systems A and B Pressurization, AMM TASK 27-62-00-800-801.
- (b) Move the flap lever to the FLAPS 1 detent.
NOTE: When you move the flap lever to the FLAPS 1 detent position, the trailing edge and leading edge flaps and slats will extend and the speedbrake lever lock is released.
- (c) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	14	C01070	FLIGHT CONTROL AUTOSLAT DC 2
C	14	C01068	FLIGHT CONTROL AUTOSLAT DC 1

- (d) Move the No. 1 and No. 2 thrust lever to the IDLE position.

EFFECTIVITY
SIA ALL

27-62 TASK 815

D633A103-SIA

Page 255
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**



MAKE SURE THAT ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE CONTROL SURFACES AND LANDING GEAR DOOR AREAS. THE CONTROL SURFACES, THE LANDING GEAR, AND THE LANDING GEAR DOORS CAN MOVE WHEN YOU DO THE AIR MODE SIMULATION. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (e) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	15	C01401	LANDING GEAR AIR/GND RELAY

- (f) Make sure the ground spoilers are full down.
(g) Make sure the speedbrake lever is in the DOWN position.



OPEN THE CIRCUIT BREAKER FOR THE WEATHER RADAR SYSTEM. WHEN YOU MOVE THE THRUST LEVER FORWARD, THE WEATHER RADAR SYSTEM COMES ON AUTOMATICALLY WHILE THE CIRCUIT BREAKER IS CLOSED. MAKE SURE THAT ALL PERSONNEL ARE MORE THAN 15 FT (5 M) FROM THE ANTENNA WHEN IT TRANSMITS RF ENERGY. RF ENERGY CAN KILL OR CAUSE INJURIES TO PERSONS, AND CAUSE DAMAGE TO EQUIPMENT.

- (h) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C00120	WEATHER RADAR RT

- (i) Move one of the thrust levers to full forward to retract the speedbrake actuator.
(j) Move the thrust lever back to the IDLE position.
(2) Move the speedbrake lever to the ARMED position.
(3) Do these steps to activate the AACU to simulate high speed:



MAKE SURE THAT YOU INSTALL THE CHOCKS ON LANDING GEAR BEFORE THE RELEASE PARKING BRAKE. AIRCRAFT MOVEMENT CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT AROUND THE AIRCRAFT AND LANDING GEAR AREAS.

- (a) Make sure the parking brake is released.
(b) If necessary, align the IRU for AACU operation.
(c) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

- (d) Set the rotary switch on the AACU, M162 to INBD or OUTBD position.
NOTE: The AACU, M162 is on E1-3 shelf in the EE compartment.
(e) Push and hold the ENABLE/VERIFY switch on the AACU, M162.
(f) Push and hold the toggle switch on the AACU, M162 to the PRESS/TEST position.

EFFECTIVITY
SIA ALL

27-62 TASK 815

D633A103-SIA

Page 256
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (4) Make sure the speedbrake lever moves to the full UP position.
- (5) Make sure the flight spoilers and ground spoilers move to the full up position.
- (6) If the flight spoilers and ground spoilers do not move to the full up position, then do the Fault Isolation Procedure below.
- (7) If the speedbrake lever moves to the full UP position, then there was an intermittent fault. Do these steps to complete the task:
 - (a) Release the ENABLE/VERIFY switch and the toggle switch.
 - (b) Set the rotary switch on the AACU, M162 to the NORM position.
 - (c) Close this access panel:

<u>Number</u>	<u>Name/Location</u>

117A	Electronic Equipment Access Door

- (d) Move the speedbrake lever to the DOWN position.
- (e) Move the flap lever to the FLAPS UP position.

NOTE: When you move the flap lever to the FLAPS UP position, the trailing edge and leading edge flaps and slats will retract.

- (f) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C00120	WEATHER RADAR RT

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	14	C01070	FLIGHT CONTROL AUTOSLAT DC 2
C	14	C01068	FLIGHT CONTROL AUTOSLAT DC 1

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	15	C01401	LANDING GEAR AIR/GND RELAY

- (g) Do this task: Put the Speed Brake Hydraulic systems A and B Back to the Condition Before the Pressurization, AMM TASK 27-62-00-840-801.

F. Fault Isolation Procedure

- (1) Make sure that the rig pin S/B-1 can be put freely in the speed brake forward drum when the speedbrake lever is in the down position (Speed Brake Control Lever Adjustment, AMM TASK 27-62-00-820-801).
 - (a) If the rig pin S/B-1 can not be put in the speedbrake forward drum, then adjust the speedbrake lever control rod (Speed Brake Control Lever Adjustment, AMM TASK 27-62-00-820-801).
 - 1) When the rig pin S/B-1 can be put freely in the speedbrake forward drum, then remove the rig pin S/B-1 and do the repair confirmation at the end of this task.
 - a) Have a maintenance personnel near the auto speedbrake actuator to make sure the actuator completes its full travel.
 - b) If the speedbrake lever moves to the UP position and the auto speedbrake deploys the problem is fixed or intermittent.

EFFECTIVITY
SIA ALL

27-62 TASK 815

D633A103-SIA

Page 257
Oct 15/2023



737-600/700/800/900 FAULT ISOLATION MANUAL

- c) If the auto speedbrake actuator does not extend, then do the Auto Speedbrake Actuator Check in this Fault Isolation Procedure.
 - d) If the auto speedbrake actuator extends, but speedbrake lever does not move to the UP position and the spoilers do not deploy, then do the Speedbrake Lever Check in this Fault Isolation Procedure.
- (2) Auto Speedbrake Actuator Check
- (a) If necessary, do the repair confirmation at the end of this task to check the speedbrake actuator.
 - 1) Have a maintenance personnel near the auto speedbrake actuator to make sure the actuator completes its full travel.
 - (b) Do these steps if the auto speedbrake actuator does not extend:
 - 1) If the motor for the auto speedbrake actuator is running but the actuator rod does not extend then, replace the auto speedbrake actuator (AMM PAGEBLOCK 27-62-31/401).
- NOTE:** When the motor for the auto speedbrake actuator is running but the actuator rod does not extend, this is an indication that there is slippage in the clutch.
- a) After the speedbrake actuator is replaced, then do the repair confirmation at the end of this task.
 - <1> If the speedbrake lever moves to the UP position and the spoilers deploy the problem is fixed.
 - <2> If the speedbrake actuator does not extend, then continue.
- 2) If the motor for the auto speedbrake actuator is not running and no sound can be heard, do these steps:
- a) Reset this circuit breaker:
Make sure that this circuit breaker is closed:
- F/O Electrical System Panel, P6-2**
- | <u>Row</u> | <u>Col</u> | <u>Number</u> | <u>Name</u> |
|------------|------------|---------------|---------------------------------|
| B | 9 | C00440 | FLIGHT CONTROL AUTO SPEED BRAKE |
- <1> Do the repair confirmation at the end of this task.
 - <2> If the speedbrake lever moves to the UP position and the spoilers deploy the problem is fixed.
 - <3> If the auto speedbrake actuator does not extend, and no sound can be heard, then do this task: Speed Brake Auto Extend Does Not Operate - Fault Isolation, 27-62 TASK 804.
 - <4> Do the repair confirmation at the end of this task.
- 3) If the motor for the auto speedbrake actuator is not running but a humming sound can be heard, do these steps:
- a) Do the speedbrake lever friction test and record the values (Speed Brake Lever Friction Test, AMM TASK 27-62-00-800-803).
 - b) If the forces necessary to move the speedbrake lever are not more than the force limits, do these steps:
 - <1> Replace the auto speedbrake actuator (AMM PAGEBLOCK 27-62-31/401).

EFFECTIVITY
SIA ALL

27-62 TASK 815

D633A103-SIA

Page 258
Oct 15/2023



737-600/700/800/900 FAULT ISOLATION MANUAL

- <a> After the speedbrake actuator is replaced, then do the repair confirmation at the end of this task.
- c) If the forces necessary to move the speedbrake lever are more than the force limits, do these steps:
- <1> Check for excessive friction in the following areas of the speedbrake control system:
- Speedbrake body cables and pulleys
 - Flight spoiler wing cables, pulleys and quadrants
 - Spoiler Mixer
 - Ground Spoiler Control Valve Linkage
 - Spoiler Ratio Changer and the Spoiler Ratio Changer No-Back Mechanism.
- NOTE: It has been reported that moisture within the bearings could freeze during flight but appear to operate normally at ground level ambient temperatures.
- <2> Check speedbrake Lever Brake Backlash Speed Brake Lever Brake Backlash Adjustment, AMM TASK 27-62-00-000-802.
- d) Do the speedbrake lever friction test and record the values (Speed Brake Lever Friction Test, AMM TASK 27-62-00-800-803).
- <1> If the forces necessary to move the speedbrake lever are more than the force limits, then do the troubleshooting again for the items above.
- <2> If the forces necessary to move the speedbrake lever are not more than the force limits, then do the repair confirmation at the end of this task.
- <3> If the speedbrake lever moves to the UP position and the spoilers deploy, then you have fixed the problem.
- <4> If the speedbrake lever does not move to the UP position or the spoilers deploy, then continue.
- (3) Speedbrake Lever Check
- (a) Do these steps if the speedbrake actuator extends but the speedbrake lever does not move to the UP position and the spoilers do not deploy:
- 1) Adjust the speedbrake lever brake backlash (Speed Brake Lever Brake Backlash Adjustment, AMM TASK 27-62-00-000-802).
 - 2) Do the repair confirmation at the end of this task.
 - 3) If the speedbrake actuator does not extend, then repeat the Auto Speedbrake Actuator Check in this Fault Isolation Procedure.
 - 4) If the speedbrake actuator extends, but the speedbrake lever does not move to the UP position and the spoilers do not deploy, then continue.
- (4) Do a check for excessive friction on the speedbrake lever:
- (a) Disconnect the speedbrake lever lower control rod (AMM 27-62-31/4 Figure 401(Sheet 3), item 14)
- (b) Do these steps to measure the force to move the speedbrake lever:
- 1) Install the force gauge, COM-1557, or equivalent on the end of the speedbrake lever.

EFFECTIVITY
SIA ALL

27-62 TASK 815

D633A103-SIA

Page 259
Oct 15/2023



737-600/700/800/900 FAULT ISOLATION MANUAL

- 2) Use the force gauge, COM-1557, or equivalent to measure the force necessary to move the speedbrake lever.
 - a) If the force is 0.2 lbf (0.9 N) or less and the lever moves smoothly, re-connect the speedbrake lever lower control rod and do the repair confirmation at the end of this task.
 - <1> If the speedbrake lever moves to the UP position and all the spoilers deploy you have fixed the problem.
 - <2> If the speedbrake actuator extends but the speedbrake lever does not move to the UP position and the spoilers do not deploy, then replace the speedbrake lever pivot bearings (AMM PAGEBLOCK 27-62-22/401).

NOTE: Problems with the speedbrake lever pivot bearings may not be found with the excessive friction check for the speedbrake lever.

NOTE: Replacing the speedbrake lever pivot bearings is a time consuming task. All other possibilities should be exhausted before the speedbrake lever pivot bearings are replaced.
 - <3> Do the repair confirmation at the end of this task.
 - b) If the force is greater than 0.2 lbf (0.9 N) or the lever does not moves smoothly, then continue.

(5) Speedbrake Lever Lubrication

- (a) To do it, do this task: AMM TASK 27-62-00-800-803.
 - 1) Make sure the speedbrake lever linkage bearings move smoothly and replace as necessary.
 - 2) Use the force gauge, COM-1557 or equivalent to measure the force necessary to move the speed brake lever.
 - a) If the force is 0.2 lbf (0.9 N) or less and the lever moves smoothly, connect the speedbrake lever control rod and do the repair confirmation at the end of this task.
 - <1> If the speedbrake lever moves to the UP position and all the spoilers deploy you have fixed the problem.
 - <2> If the speedbrake lever does not move to the UP position and the spoilers do not deploy, then replace the speedbrake lever pivot bearings (AMM PAGEBLOCK 27-62-22/401).

NOTE: Replacing the speedbrake lever pivot bearings is a time consuming task. All other possibilities should be exhausted before the speedbrake lever pivot bearings are replaced.
 - <3> Do the repair confirmation at the end of this task.

EFFECTIVITY
SIA ALL

27-62 TASK 815

D633A103-SIA

Page 260
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

G. Repair Confirmation

- (1) Do these steps to activate the auto speed brake system:



WARNING

MAKE SURE THAT PERSONS AND EQUIPMENT ARE CLEAR OF ALL CONTROL SURFACES BEFORE YOU SUPPLY HYDRAULIC POWER. AILERONS, RUDDERS, ELEVATORS, FLAPS, SLATS, SPOILERS, LANDING GEAR, AND THRUST REVERSERS CAN MOVE QUICKLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Do this task: Speed Brake Hydraulic Systems A and B Pressurization, AMM TASK 27-62-00-800-801.
- (b) Move the flap lever to the FLAPS 1 detent.
- NOTE: When you move the flap lever to the FLAPS 1 detent position, the trailing edge and leading edge flaps and slats will extend and the speedbrake lever lock is released.

- (c) Make sure that these circuit breakers are open and have safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	14	C01070	FLIGHT CONTROL AUTOSLAT DC 2
C	14	C01068	FLIGHT CONTROL AUTOSLAT DC 1

- (d) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	9	C00440	FLIGHT CONTROL AUTO SPEED BRAKE

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	16	C00196	LANDING GEAR ANTISKID INBD
E	18	C00195	LANDING GEAR ANTISKID OUTBD

- (e) Move the No. 1 and No. 2 thrust lever to the IDLE position.



WARNING

MAKE SURE THAT ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE CONTROL SURFACES AND LANDING GEAR DOOR AREAS. THE CONTROL SURFACES, THE LANDING GEAR, AND THE LANDING GEAR DOORS CAN MOVE WHEN YOU DO THE AIR MODE SIMULATION. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (f) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	15	C01401	LANDING GEAR AIR/GND RELAY

- (g) Make sure the ground spoilers are full down.
- (h) Make sure the speedbrake lever is in the DOWN position.

EFFECTIVITY
SIA ALL

27-62 TASK 815

D633A103-SIA

Page 261
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**



OPEN THE CIRCUIT BREAKER FOR THE WEATHER RADAR SYSTEM. WHEN YOU MOVE THE THRUST LEVER FORWARD, THE WEATHER RADAR SYSTEM COMES ON AUTOMATICALLY WHILE THE CIRCUIT BREAKER IS CLOSED. MAKE SURE THAT ALL PERSONNEL ARE MORE THAN 15 FT (5 M) FROM THE ANTENNA WHEN IT TRANSMITS RF ENERGY. RF ENERGY CAN KILL OR CAUSE INJURIES TO PERSONS, AND CAUSE DAMAGE TO EQUIPMENT.

- (i) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C00120	WEATHER RADAR RT

- (j) Move one of the thrust levers to full forward to retract the speedbrake actuator.
- (k) Move the thrust lever back to the IDLE position.
- (2) Move the speedbrake lever to the ARMED position.
- (3) Do these steps to activate the AACU, M162 to simulate high speed:



MAKE SURE THAT YOU INSTALL THE CHOCKS ON LANDING GEAR BEFORE THE RELEASE PARKING BRAKE. AIRCRAFT MOVEMENT CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT AROUND THE AIRCRAFT AND LANDING GEAR AREAS.

- (a) Make sure the parking brake is released.
- (b) If necessary, align the IRU for AACU operation.
- (c) Open this access panel:
- | <u>Number</u> | <u>Name/Location</u> |
|---------------|----------------------------------|
| 117A | Electronic Equipment Access Door |
- (d) Set the rotary switch on the AACU, M162 to INBD or OUTBD position.
- NOTE: The AACU, M162 is on E1-3 shelf in the EE compartment.
- (e) Push and hold the ENABLE/VERIFY switch on the AACU, M162.
- (f) Push and hold the toggle switch on the AACU, M162 to the PRESS/TEST position.
- (4) Make sure the speedbrake lever moves to the full UP position.
- (5) Make sure the flight spoilers and ground spoilers move to the full up position.
- (6) If the flight spoilers and ground spoilers move to the full up position, then you corrected the fault. Do these steps to complete the task:
- (a) Release the ENABLE/VERIFY switch and the toggle switch.
- (b) Set the rotary switch on the AACU, M162 to the NORM position.
- (c) Close this access panel:
- | <u>Number</u> | <u>Name/Location</u> |
|---------------|----------------------------------|
| 117A | Electronic Equipment Access Door |
- (d) Move the speedbrake lever to the DOWN position.

EFFECTIVITY
SIA ALL

27-62 TASK 815

D633A103-SIA

Page 262
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (e) Move the flap lever to the FLAPS UP position.

NOTE: When you move the flap lever to the FLAPS UP position, the trailing edge and leading edge flaps and slats will retract.



OPEN THE CIRCUIT BREAKER FOR THE WEATHER RADAR SYSTEM. WHEN YOU MOVE THE THRUST LEVER FORWARD, THE WEATHER RADAR SYSTEM COMES ON AUTOMATICALLY WHILE THE CIRCUIT BREAKER IS CLOSED. MAKE SURE THAT ALL PERSONNEL ARE MORE THAN 15 FT (5 M) FROM THE ANTENNA WHEN IT TRANSMITS RF ENERGY. RF ENERGY CAN KILL OR CAUSE INJURIES TO PERSONS, AND CAUSE DAMAGE TO EQUIPMENT.

- (f) Open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C00120	WEATHER RADAR RT

- (g) Move one of the thrust levers to full forward.
(h) Move the thrust lever back to the IDLE position.
(i) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C00120	WEATHER RADAR RT

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	14	C01070	FLIGHT CONTROL AUTOSLAT DC 2
C	14	C01068	FLIGHT CONTROL AUTOSLAT DC 1

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	15	C01401	LANDING GEAR AIR/GND RELAY

- (j) Do this task: Put the Speed Brake Hydraulic systems A and B Back to the Condition Before the Pressurization, AMM TASK 27-62-00-840-801.

————— **END OF TASK** —————

816. SPEED BRAKE ARMED Light and the SPEED BRAKE DO NOT ARM Light Do Not Operate - Fault Isolation

A. Description

- (1) The SPEED BRAKE ARMED light comes on whenever the speed brake lever is moved to the ARMED position and all of these conditions occur:
- (a) Two anti-skid channels are operative.
 - (b) The speed brake lever actuator is fully retracted to the speed brake lower position.
 - (c) The auto speed brake module, M980 operates correctly.

EFFECTIVITY
SIA ALL

27-62 TASKS 815-816

D633A103-SIA

Page 263
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (2) The SPEED BRAKE DO NOT ARM light comes on whenever the speed brake lever is moved to the ARMED position and at least one of these conditions occurs:

NOTE: On landing, if the wheel speed is less than 60 knots and the speedbrake lever is not in the DOWN (stowed) position, the Speedbrake Do Not Arm light will come on. The light will stay on until the speedbrake lever is stowed, either manually or using the autostow feature. This is considered normal operation of the SPEED BRAKE DO NOT ARM light and does not indicate a system fault.

- (a) Two anti-skid channels are off or inoperative.
 - (b) The speed brake lever actuator is not fully retracted to the speed brake lower position.
 - (c) The flight control computer, M1876 does not operate correctly.
 - (d) The low range radio altimeter (LRRA) does not operate correctly.
 - (e) The auto speed brake module, M980 does not operate correctly.
 - (f) The switches do not function properly
 - (g) The relays do not function properly.
 - (h) The auto speed brake actuator rod ends are not adjusted correctly.
- (3) The SPEED BRAKE DO NOT ARM light will come on whenever the speed brake handle is manually stowed during a landing sequence and all of these conditions occur:
- (a) Either speed brake ARM is true or reverse thrust is true
 - (b) Wheel speed is greater than 60 knots
 - (c) Aircraft on ground
 - (d) Autothrottles retracted

B. Possible Causes

- (1) Speed brake arm switch, S276
- (2) Dim Diode, M394

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	9	C00440	FLIGHT CONTROL AUTO SPEED BRAKE

D. Related Data

- (1) (SSM 27-62-11)
- (2) (WDM 27-62-11)
- (3) (SSM 33-18-21)
- (4) (WDM 33-18-21)

E. Initial Evaluation

- (1) Do this task: Speed Brake RTO Test, AMM TASK 27-62-00-820-809 .
 - (a) If the SPEED BRAKE ARMED Light and the SPEED BRAKE DO NOT ARM Light do not operate correctly, then do the Fault Isolation procedure below.
 - (b) If the SPEED BRAKE ARMED Light and the SPEED BRAKE DO NOT ARM Light operate correctly, there was an intermittent fault.

EFFECTIVITY
SIA ALL

27-62 TASK 816

D633A103-SIA

Page 264
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

F. Fault Isolation Procedure

- (1) Do the voltage check of the speed brake arm switch, S276:
 - (a) Disconnect connector D10199 from the speed brake arm switch, S276.
 - (b) Do a check for 28v DC from pin 7 of connector D10199 to structure ground.
 - (c) If there is not 28v DC at pin 7 of connector D10199, then do these steps:
 - 1) Do a check of 28v DC from the load terminal of this circuit breaker, C440, to structure ground:
 - a) This is the circuit breaker:
- (2) Do this check of wiring below:
 - (a) Open circuit breaker C440.
 - (b) Disconnect connector D1618 from the Aux Master Dim Relay, R87.
 - (c) Do a continuity check between these pins of the Aux Master Dim Relay, R87 connector D1618.

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	9	C00440	FLIGHT CONTROL AUTO SPEED BRAKE

- 2) If there is not 28v DC at circuit breaker, C440, then do these steps:
 - a) Replace the circuit breaker, C440.
 - b) Reconnect connector D10199.
 - c) Do the Repair Confirmation at the end of this task.
- 3) If there is 28v DC at circuit breaker, C440, then do these steps:
 - a) Repair the wiring between these pin 7 of connector D10199 at speed brake arm switch, S276 to the load terminal of circuit breaker C440.
 - b) Do the Repair Confirmation at the end of this task.

NOTE: Place positive lead of the meter on A3, and the negative lead on A2.

Aux Master Dim Relay, R87 D1618	Aux Master Dim Relay, R87 D1618
A3	A2

- (d) If there is no continuity, then do these steps:
 - 1) Repair the wiring or replace the M394 diode, as applicable.
 - 2) Reconnect connector D1618.
 - 3) Close circuit breaker C440.
 - 4) Do the repair confirmation at the end of this task.

G. Repair Confirmation

- (1) Do this task: Speed Brake RTO Test, AMM TASK 27-62-00-820-809.
 - (a) If the SPEED BRAKE ARMED Light and the SPEED BRAKE DO NOT ARM Light operate correctly, then you have corrected the fault.

EFFECTIVITY
SIA ALL

D633A103-SIA

27-62 TASK 816

Page 265
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (b) if the SPEED BRAKE ARMED Light and the SPEED BRAKE DO NOT ARM Light do not operate correctly, then continue the Fault Isolation Procedure at the subsequent step.

———— **END OF TASK** ————

817. Flight Spoiler Does not Fully Deploy During Ground Speedbrake Operation - Fault Isolation

A. Description

- (1) One of the Flight Spoilers does not extend to the fully UP position when Auto Speed Brakes are deployed.
 - (a) Flight Spoilers 2, 3, 4, 5, 8, 9, 10 and 11 should move to the fully UP position, approximately 60 degrees, similar to the Ground Spoilers.
- (2) If a Spoiler Actuator Solenoid Operated Valve (SOV) is not operational, the Flight Spoiler will only move to approximately 30 degrees, half of the specified movement of Ground Spoilers.
- (3) There is no failure indication for the majority of these failures.
 - (a) FCC maintenance message 22-11827 SPOIL-4 POS SEN, SPOIL-9 POS SEN is only set for a Spoiler 4 or Spoiler 9 SOV failure.

B. Possible Causes

- (1) Flight Spoiler 2, M2596
- (2) Flight Spoiler 3, M2597
- (3) Flight Spoiler 4, M2598
- (4) Flight Spoiler 5, M2599
- (5) Flight Spoiler 8, M2600
- (6) Flight Spoiler 9, M2601
- (7) Flight Spoiler 10, M2602
- (8) Flight Spoiler 11, M2603
- (9) Wiring

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	4	C01662	SPOILER PCU SOV SYS A
A	5	C01663	SPOILER PCU SOV SYS B

D. Related Data

- (1) WDM 27-62-11
- (2) SSM 27-62-11

E. Initial Evaluation

- (1) Do the Speed Brake Solenoid Operated Valve Test, AMM TASK 27-62-00-710-803.
- (2) Examine the position of the Flight Spoilers.
 - (a) If all of the Flight Spoilers move to the fully UP position (approximately 60 degrees) similar to the Ground Spoilers, there is no problem with the Spoiler Actuator SOVs. Return the airplane to its usual condition.

EFFECTIVITY
SIA ALL

27-62 TASKS 816-817

D633A103-SIA

Page 266
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (b) If a Flight Spoiler only deploys approximately 30 degrees (half of the movement of the Ground Spoilers), there is a problem with that Spoiler's SOV. Do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Replace the applicable Flight Spoiler Actuator that does not move to fully UP position: M2596 (M2597, M2598, M2599, M2600, M2601, M2602, M2603). These are the tasks:
- Flight Spoiler Actuator and Solenoid Valve - Removal, AMM TASK 27-61-51-000-801
 - Flight Spoiler Actuator and Solenoid Valve - Installation, AMM TASK 27-61-51-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (2) If the problem continues, disconnect the applicable Flight Spoiler Actuator connector and applicable SOV A (SOV B) Relay R964 (R965) connector and do a wiring check as follows (WDM 27-62-11):
- (a) If Flight Spoiler 2, M2596, does not move to the fully UP position examine these wires:

LEFT WING

SOV A RLY

D13940

pin A1 pin 1

FLT SPLR 2

D13954

FLT SPLR 2

D13954

pin 4 term ZA21

TERM BLK

TB3901

- (b) If Flight Spoiler 3, M2597, does not move to the fully UP position examine these wires:

LEFT WING

SOV B RLY

D13942

pin A1 pin 1

FLT SPLR 3

D13956

FLT SPLR 3

D13956

pin 4 term ZB13

TERM BLK

TB3901

- (c) If Flight Spoiler 4, M2598, does not move to the fully UP position examine these wires:

LEFT WING

SOV A RLY

D13940

pin B1 pin 1

FLT SPLR 4

D13958

FLT SPLR 4

D13958

pin 4 term ZA21

TERM BLK

TB3901

- (d) If Flight Spoiler 5, M2599, does not move to the fully UP position examine these wires:

EFFECTIVITY
SIA ALL

27-62 TASK 817

D633A103-SIA

Page 267
Oct 15/2023

737-600/700/800/900
FAULT ISOLATION MANUAL

LEFT WING

SOV B RLY D13942 pin B1	FLT SPLR 5 D14126 pin 1
FLT SPLR 5 D14126 pin 4	TERM BLK TB3901 term ZB13

- (e) If Flight Spoiler 8, M2600, does not move to the fully UP position examine these wires:

RIGHT WING

SOV B RLY D13942 pin A1	FLT SPLR 8 D14124 pin 1
FLT SPLR 8 D14124 pin 4	TERM BLK TB3901 term ZB13

- (f) If Flight Spoiler 9, M2601, does not move to the fully UP position examine these wires:

RIGHT WING

SOV A RLY D13940 pin A1	FLT SPLR 9 D13964 pin 1
FLT SPLR 9 D13964 pin 4	TERM BLK TB3901 term ZA21

- (g) If Flight Spoiler 10, M2602, does not move to the fully UP position examine these wires:

RIGHT WING

SOV B RLY D13942 pin B1	FLT SPLR 10 D13966 pin 1
FLT SPLR 10 D13966 pin 4	TERM BLK TB3901 term ZB13

- (h) If Flight Spoiler 11, M26039, does not move to the fully UP position examine these wires:

RIGHT WING

SOV A RLY D13940 pin B1	FLT SPLR 11 D13968 pin 1

EFFECTIVITY
SIA ALL

27-62 TASK 817

D633A103-SIA

Page 268
 Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

FLT SPLR 11

D13968

pin 4 term ZA21

TERM BLK

TB3901

- (3) If you find a problem with the wiring, do these steps:
 - (a) Repair the wiring as necessary.
 - (b) Connect the applicable connectors.
 - (c) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do the Speed Brake Solenoid Operated Valve Test, AMM TASK 27-62-00-710-803.
- (2) Examine the position of the Flight Spoilers.
 - (a) If all of the Flight Spoilers move to the fully UP position (approximately 60 degrees) similar to the Ground Spoilers, you corrected the problem.
 - (b) If a Flight Spoiler only deploys approximately 30 degrees (half of the movement of the Ground Spoilers), continue the Fault Isolation Procedure at the subsequent step.

———— **END OF TASK** ————

EFFECTIVITY
SIA ALL

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

27-62 TASK 817

Page 269
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

801. Leading Edge Flap Droops Too Much with Hydraulic Pressure Off - Fault Isolation

A. Description

- (1) With no hydraulic pressure, the Leading Edge (LE) flaps can droop due to leakage past the blocking valve.

B. Possible Causes

- (1) LE flap actuator

C. Initial Evaluation



WARNING

MAKE SURE THAT EQUIPMENT AND PERSONNEL ARE CLEAR OF THE FLIGHT CONTROLS SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (1) Pressurize the hydraulic system B. This is the task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (2) Move the flap control lever to the UP position to make sure that the LE flaps and slats are in the fully retracted position.
- (3) Depressurize the hydraulic system B. This is the task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
- (4) Wait one minute after hydraulic power removal and then immediately measure the clearance for the LE flap that droops.
- (5) Measure the clearance between the lower surface of the LE flap trailing edge and the lower surface of the adjacent wing skin.

NOTE: If you wait more than one minute after hydraulic power removal, the clearance can increase.

- (a) If the clearance is not more than 2 in. (50.8 mm) for a new or overhauled actuator and 4 in. (101.6 mm) for an in-service actuator, then there was an intermittent fault .
- (b) If the clearance is more than 2 in. (50.8 mm) for a new or overhauled actuator and 4 in. (101.6 mm) for an in-service actuator, then do the Fault Isolation Procedure below.

D. Fault Isolation Procedure

- (1) Replace the LE flap actuator. These are the tasks:
 - Leading Edge Flap Actuator Removal, AMM TASK 27-81-31-000-801
 - Leading Edge Flap Actuator Installation, AMM TASK 27-81-31-400-801



WARNING

MAKE SURE THAT EQUIPMENT AND PERSONNEL ARE CLEAR OF THE FLIGHT CONTROLS SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (a) Pressurize the hydraulic system B. This is the task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (b) Move the flap control lever to the UP position to make sure that the LE flaps and slats are in the fully retracted position.

EFFECTIVITY
SIA ALL

27-81 TASK 801

D633A103-SIA

Page 201
Oct 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (c) Depressurize the hydraulic system B. This is the task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
- (d) Wait one minute after you remove the hydraulic power and then immediately measure the clearance for the LE flap that droops.
- (e) Measure the clearance between the lower surface of the LE flap trailing edge and the lower surface of the adjacent wing skin.

NOTE: If you wait more than one minute after hydraulic power removal, the clearance can increase.

- 1) If the clearance is not more than 2 in. (50.8 mm) for a new or overhauled actuator and 4 in. (101.6 mm) for an in-service actuator, then you corrected the problem.

———— **END OF TASK** ————

802. Leading Edge Flaps and Slats Fail to Extend during Alternate System Operation - Fault Isolation

A. Description

- (1) The leading edge flaps and slats did not operate with alternate control.
- (2) The leading edge flaps and slats can extend but not retract with alternate control.
- (3) During the alternate operation, the leading edge standby shutoff valve supplies standby hydraulic system power.

B. Possible Causes

- (1) Leading edge standby shutoff valve, V51
- (2) Leading Edge Standby Hydraulic Fuse
- (3) Leading Edge Flap Flow Limiting Valve

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

D. Related Data

- (1) (SSM 27-53-11)
- (2) (SSM 27-80-01)
- (3) (WDM 27-53-11)

E. Initial Evaluation

- (1) Make sure the leading edge flaps and slats are in the retracted position.
- (2) Make sure there is no power to hydraulic system B. If it is necessary, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.



WARNING

MAKE SURE PERSONS AND EQUIPMENT ARE CLEAR OF THE LEADING EDGE FLAPS AND SLATS AND THE TRAILING EDGE FLAPS. THESE SURFACES WILL MOVE. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

EFFECTIVITY
SIA ALL

27-81 TASKS 801-802

D633A103-SIA

Page 202
Oct 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

(WARNING PRECEDES)



CAUTION

MAKE SURE THE ALTERNATE FLAP DRIVE UNIT IS KEPT TO A LIMIT OF 10 MINUTES OPERATION AND 25 MINUTES OFF. THIS WILL PREVENT THE ALTERNATE FLAP DRIVE UNIT FROM DAMAGE.

- (3) Move the ALTERNATE FLAPS ARM switch to the ARM position.
- (4) Make sure the standby hydraulic system operates and supplies hydraulic pressure to the leading edge standby shutoff valve:
NOTE: You should be able to hear the standby hydraulic pump operate when you arm the alternate system.
 - (a) Do a check of the STANDBY HYD LOW PRESSURE light, on the flight controls panel, P5.
 - (b) If the STANDBY HYD LOW PRESSURE light is on, then do this task: STANDBY HYD LOW PRESSURE Light On - Fault Isolation, 29-30 TASK 814.
 - 1) Do the Repair Confirmation at the end of this task.
 - (c) If the STANDBY HYD LOW PRESSURE light is not on, then continue.
- (5) Move the ALTERNATE FLAPS control switch to the DOWN position.
- (6) Make sure the trailing edge flaps extend.
 - (a) If the trailing edge flaps do not extend, then do this task: Alternate Trailing Edge Flaps Operation Problem - Fault Isolation, 27-51 TASK 837.
- (7) If the LE flaps and slats do not extend, then do the Fault Isolation Procedure below.
- (8) If the LE flaps and slats extend, then there was an intermittent fault.
 - (a) Move the ALTERNATE FLAPS ARM and control switches to the OFF position.



WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (b) Supply system B hydraulic power, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (c) Move the flap control lever to the UP position to retract the trailing edge flaps and the leading edge flaps and slats.
- (d) Remove system B hydraulic power, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

F. Fault Isolation Procedure

- (1) Move the ALTERNATE FLAPS ARM switch on the P5 panel to the ARM position to arm the alternate control system.
- (2) Move the ALTERNATE FLAPS control switch to the DOWN position.

EFFECTIVITY
SIA ALL

27-81 TASK 802

D633A103-SIA

Page 203
Oct 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (3) Look at the position of the manual override lever on the leading edge standby drive shutoff valve, V51.

NOTE: The leading edge standby drive shutoff valve should move to POSITION 2 (standby hydraulic power ON). The leading edge standby drive shutoff valve is installed on the left side of the aft bulkhead of the main wheel well.

- (4) If the leading edge standby drive shutoff valve, V51 does move to POSITION 2 (standby hydraulic power ON), then do these steps:
- (a) Reset the leading edge flap and slat standby system hydraulic fuse. To reset the fuse, do this task: Flap and Slat Hydraulic Fuse (Standby System) Reset, AMM TASK 27-81-61-860-802.
 - 1) Do the Repair Confirmation at the end of this task.
 - 2) If the Repair Confirmation test failed, then continue.
 - 3) Replace the leading edge flap flow limiting valve. These are the tasks:
 - Leading Edge Flap Flow Limiting Valve Removal, AMM TASK 27-81-71-000-801
 - Leading Edge Flap Flow Limiting Valve Installation, AMM TASK 27-81-71-400-801
 - 4) Do the Repair Confirmation at the end of this task.
- (5) If the leading edge standby drive shutoff valve does not move to POSITION 2 (standby hydraulic power ON), continue.
- (6) Do this check of the electrical power to the leading edge standby shutoff valve, V51:
- (a) Disconnect the connector D1010 from the leading edge standby shutoff valve, V51.
 - (b) Move the ALTERNATE FLAPS ARM switch on the flight controls panel, P5, to the ARM position.
 - (c) Move the ALTERNATE FLAPS control switch to the DOWN position.
 - (d) Do a check for 28 VDC between pins 1 and 2 on connector D1010.
 - (e) If there is not 28 VDC between pins 1 and 2 on connector D1010, then do this check of the wiring:
 - 1) Do a continuity check between pin 1 of connector D1010 and structure ground.
 - 2) If there is not continuity between pin 1 of connector D1010 and structure ground, then do these steps:
 - a) Repair the wiring.
 - b) Connect the connector D1010 to the leading edge standby shutoff valve, V51.
 - c) Do the Repair Confirmation at the end of this task.
 - 3) Remove the flight controls module, P5-3.
 - 4) Disconnect the connector D624 for the flight control module, P5-3.
 - 5) Do a wiring check between these pins of connector D1010 at the leading edge standby shutoff valve, V51 and connector D624 for the flight control module, P5-3.
- | | |
|-----------------|-------------|
| D1010 | D624 |
| pin 2 | pin 30 |
- 6) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect connector D1010 to the leading edge standby shutoff valve, V51.

EFFECTIVITY
SIA ALL

27-81 TASK 802



737-600/700/800/900 FAULT ISOLATION MANUAL

- c) Re-connect connector D624 for the flight control module, P5-3.
- d) Install the flight controls module, P5-3.
- e) Do the Repair Confirmation at the end of this task.
- 7) If you do not find a problem with the wiring, then do these steps:
 - a) Replace the LE standby shutoff valve relay, K3.
 - b) Install the flight controls module, P5-3.
 - c) Re-connect connector D1010 to the leading edge standby shutoff valve, V51.
 - d) Do the Repair Confirmation at the end of this task.
- (f) If there is 28 VDC between pins 1 and 2 on connector D1010, then continue.
- (7) Replace the leading edge standby shutoff valve, V51. These are the tasks:
 - Leading Edge Standby Shutoff Valve Removal, AMM TASK 27-81-91-000-801
 - Leading Edge Standby Shutoff Valve Installation, AMM TASK 27-81-91-400-801
- (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do this check of the operation of the leading edge flap and slat system:
 - (a) Make sure there is no power to hydraulic system B. If it is necessary, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.



WARNING

MAKE SURE PERSONS AND EQUIPMENT ARE CLEAR OF THE LEADING EDGE FLAPS AND SLATS AND THE TRAILING EDGE FLAPS. THESE SURFACES WILL MOVE. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.



CAUTION

MAKE SURE THE ALTERNATE FLAP DRIVE UNIT IS KEPT TO A LIMIT OF 10 MINUTES OPERATION AND 25 MINUTES OFF. THIS WILL PREVENT THE ALTERNATE FLAP DRIVE UNIT FROM DAMAGE.

- (b) Put the ALTERNATE FLAPS ARM switch in the ARM position.
- (c) Move the ALTERNATE FLAPS control switch to the DOWN position.
- (d) If the LE flaps and slats extend, then you corrected the fault.
 - 1) Move the ALTERNATE FLAPS control switch to the OFF position.
 - 2) Move the ALTERNATE FLAPS ARM switch to the OFF position.



WARNING

KEEP PERSONS AND EQUIPMENT CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- (2) Supply system B hydraulic power. Do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (3) Move the flap control lever to the UP position to retract the trailing edge flaps and the leading edge flaps and slats.

EFFECTIVITY
SIA ALL

27-81 TASK 802

D633A103-SIA

Page 205
Oct 15/2022



737-600/700/800/900
FAULT ISOLATION MANUAL

- (4) Remove system B hydraulic power. Do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

————— **END OF TASK** —————

803. Leading Edge Flaps and Slats Fail to Operate During Normal System Operation - Fault Isolation
(27-81 TASK SUPPORT Figure 301)

A. Description

- (1) Normal system operation uses the hydraulic system B to move the leading edge (LE) flaps and slats.
- (2) Hydraulic pressure goes through the LE cruise depressurization valve to the LE flap and slat control valve. The LE flap and slat control valve sends extend pressure to the LE flap and slat actuators. This causes the LE flaps and slats to move to the extend position. The hydraulic fluid goes through hydraulic fuses in the lines.

B. Possible Causes

- (1) LE slat actuator
- (2) LE flap actuator
- (3) Flap/Slat electronics unit (FSEU), M1746
- (4) LE extend hydraulic fuse
- (5) LE retract hydraulic fuse
- (6) LE UCM shutoff valve, V162
- (7) LE cruise depressurization valve, V163
- (8) Standby control module
- (9) LE standby flow regulator
- (10) Flap control unit
- (11) Autoslat module
- (12) LE flap and slat control valve
- (13) LE lockout in the mid-extend position due to slat actuator internal leakage
- (14) TE flap hydraulic motor

C. Initial Evaluation

NOTE: If hydraulic power is on, keep it on. If the hydraulic fuses are set, they can be reset if you remove hydraulic power. This can make it more difficult to find the problem. It is important to follow these initial evaluation steps in order.

- (1) Do a visual check of the position of the leading edge flaps and the leading edge slats.
 - (a) If the position of one surface is significantly different from the positions of the other surfaces, then do the Fault Isolation Procedure - Leading Edge Surface Does Not Align below.

NOTE: In-flight airload can cause misalignment between the slats and flaps.

- (b) If the positions of the surfaces align, then continue.
- (2) If the airplane has history (previous incidents) of the leading edge failing to retract from the mid-extend position, then do this task: Leading Edge Lockout Problem - Fault Isolation, 27-81 TASK 812.
- (3) If the airplane does not have history of the leading edge failing to retract from the mid-extend position, then continue.

EFFECTIVITY
SIA ALL

27-81 TASKS 802-803

D633A103-SIA

Page 206
Oct 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**



KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (4) If it is not powered, supply system B hydraulic power. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.



KEEP ALL PERSONNEL AND EQUIPMENT CLEAR OF THE LEADING EDGE FLAPS. THE LEADING EDGE FLAPS CAN MOVE QUICKLY. THE MOVEMENT OF THE LEADING EDGE FLAPS CAN CAUSE INJURIES TO PERSONNEL OR DAMAGE TO EQUIPMENT.

- (5) Move the flap control lever to operate the trailing edge flaps and the LE flaps and slats with primary control to a different position. To operate them, do this task: Leading Edge Flaps and Slats Extension, AMM TASK 27-81-00-860-803.
- (6) If the trailing edge flaps do not operate with the primary system, then do this task: Trailing Edge Flap Primary Control Operation/Lockout Problem - Fault Isolation, 27-51 TASK 836.
- (7) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (a) If the FSEU shows one or more of the LE UCM maintenance messages, then do this task: Leading Edge Extend UCM Problem - Fault Isolation, 27-81 TASK 806.
- (b) If the FSEU does not show LE UCM maintenance messages, then continue.
- (8) Open this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

NOTE: This evaluation will not work if the hydraulic fuses have been reset.

- (a) If the leading edge surfaces move to the commanded position when you open the circuit breaker, then do the Fault Isolation Procedure - Leading Edge Shutoff and Depressurization Valves below.
- (b) If the leading edge surfaces do not move when you open the circuit breaker, then continue.
- (9) Close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

- (10) Do a visual check of the position of the leading edge flap standby shutoff valve, V51.

NOTE: The valve is installed on the aft bulkhead of the main wheel well.

- (a) If the valve is not in position 1, then do the Fault Isolation Procedure - Leading Edge Flap Standby Drive Shutoff below.
- (b) If the valve is in position 1, then continue.

EFFECTIVITY
SIA ALL

27-81 TASK 803

D633A103-SIA

Page 207
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (11) Do this check of the operation of the flap control unit:

NOTE: In these steps, it is not necessary to measure the movement of the control valve precisely. You can make approximate measurements.

- (a) Move the flap control lever to the 30 unit position.
- (b) Measure and record the distance between the valve slide and the index surface of the leading edge flap and slat control valve for the 30 unit position.
- (c) Move the flap control lever to the 5 unit position.
- (d) Measure and record the distance between the valve slide and the index surface of the leading edge flap and slat control valve for the 5 unit position.
- (e) Move the flap control lever to the UP position.
- (f) Measure and record the distance between the valve slide and the index surface of the leading edge flap and slat control valve for the UP position.
- (g) The dimension should be shortest when the flap control lever is at UP, longer when at 5 units, and longest when it is at 30 units.

NOTE: The valve slide and the index surface should be approximately flush when the flap lever is UP, approximately 0.22 inch longer at 5 units, and 0.46 inch longer at 30 units.

- (h) If the control valve does not move correctly, then do the Fault Isolation Procedure - LE Control Valve Input below.
 - (i) If the control valve moves correctly, then continue.
- (12) Do this check to see if the system B hydraulic fuses were set:
- (a) Remove system B hydraulic power. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
 - (b) Reset the system B hydraulic fuses. To reset them, do this task: Flap and Slat Hydraulic Fuses (System B) Reset, AMM TASK 27-81-61-860-801.
 - (c) Supply system B hydraulic power. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
 - (d) Move the flap control lever to operate the leading edge flaps and slats.
 - (e) If the LE flaps and slats extend and retract, then do the Fault Isolation Procedure - Hydraulic Fuse Set below.
- (13) If the LE flaps and slats do not extend and retract, then do the Fault Isolation Procedure - Leading Edge Fails to Operate below.
- (14) Remove system B hydraulic power. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
- (15) If there has been a recurring problem, flush the system B hydraulic system. To flush the system, do this task: Hydraulic System A or B Flushing, AMM TASK 29-11-00-170-801.

D. Fault Isolation Procedure - Leading Edge Surface Does Not Align

- (1) Replace the leading edge flap or slat actuator for the surface that does not align:
- (a) If it is necessary, replace the applicable leading edge slat actuator. These are the tasks:
 - Leading Edge Slat Actuator - Removal, AMM TASK 27-81-41-000-801
 - Leading Edge Slat Actuator Installation, AMM TASK 27-81-41-400-801
 - (b) If it is necessary, replace the applicable leading edge flap actuator. These are the tasks:
 - Leading Edge Flap Actuator Removal, AMM TASK 27-81-31-000-801

EFFECTIVITY
SIA ALL

27-81 TASK 803

D633A103-SIA

Page 208
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

- Leading Edge Flap Actuator Installation, AMM TASK 27-81-31-400-801

(2) Do the Repair Confirmation at the end of this task.

E. Fault Isolation Procedure - Leading Edge Shutoff and Depressurization Valves (27-81 TASK SUPPORT Figure 301)

(1) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

(2) Supply system B hydraulic power. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.

(3) Do this test of the leading edge slat control with the FSEU, M1746 off:

(a) Open these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	8	C00211	FLIGHT CONTROL FSEU DC 1
A	9	C01468	FLIGHT CONTROL FSEU DC 2

(b) Move the flap control lever to a different position to operate the leading edge flaps and slats.

(c) If the leading edge flaps and slats move, then do these steps:

1) Replace the FSEU, M1746. These are the tasks:

- Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801
- Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801

2) Do the Repair Confirmation at the end of this task.

(d) If the leading edge flaps and slats do not move, then continue.

(e) Close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	8	C00211	FLIGHT CONTROL FSEU DC 1
A	9	C01468	FLIGHT CONTROL FSEU DC 2

(4) If the leading edge flaps and slats are in the retracted position, and they stay retracted when the trailing edge flaps extend, then do this check of the leading edge cruise depressurization valve:

(a) Move the flap control lever to the 30 unit position to extend the trailing edge flaps.

(b) Put the ALTERNATE FLAPS ARM switch in the ARM position.

(c) Move and hold the ALTERNATE FLAPS control switch to the DOWN position for approximately 5 seconds.

NOTE: The leading edge flaps and slats should move to the fully extended position.

(d) Put the ALTERNATE FLAPS ARM switch in the OFF position to disarm the alternate control.

(e) If the leading edge flaps and slats move to the retracted position, then do these steps:

EFFECTIVITY
SIA ALL

27-81 TASK 803

D633A103-SIA

Page 209
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

- 1) Replace the LE cruise depressurization valve, V163. These are the tasks:
 - LE Uncommanded Motion (UCM) or LE Cruise Depressurization Valve Removal, AMM TASK 27-81-52-000-801
 - LE Uncommanded Motion (UCM) or LE Cruise Depressurization Valve Installation, AMM TASK 27-81-52-400-801
- 2) Do the Repair Confirmation at the end of this task.
- (f) If the leading edge flaps and slats do not move to the retracted position, then continue.
- (5) If the leading edge flaps and slats did not retract, then do these steps:
 - (a) Replace the leading edge uncommanded motion (UCM) valve, (V162). These are the tasks:
 - LE Uncommanded Motion (UCM) or LE Cruise Depressurization Valve Removal, AMM TASK 27-81-52-000-801
 - LE Uncommanded Motion (UCM) or LE Cruise Depressurization Valve Installation, AMM TASK 27-81-52-400-801
 - (b) Do the Repair Confirmation at the end of this task.

F. Fault Isolation Procedure - Leading Edge Flap Standby Drive Shutoff

(27-81 TASK SUPPORT Figure 301)

- (1) Remove system B hydraulic power. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
- (2) Make sure the ALTERNATE FLAPS ARM switch and the control switch are in the OFF position.
- (3) Do this check of the power supply to the leading edge standby drive shutoff valve, V51:
 - (a) Disconnect the electrical connector, D1010 from the leading edge standby drive shutoff valve, V51.
 - (b) Do a check for 28 VDC between pins 3 and 1 on connector D1010.
 - (c) If there is 28 VDC between pins 3 and 1 on connector D1010, then do these steps:
 - 1) Replace the leading edge standby shutoff valve, V51. These are the tasks:
 - Leading Edge Standby Shutoff Valve Removal, AMM TASK 27-81-91-000-801
 - Leading Edge Standby Shutoff Valve Installation, AMM TASK 27-81-91-400-801
 - 2) Connect the connector D1010 to the leading edge standby shutoff valve, V51.
 - 3) Do the Repair Confirmation at the end of this task.
 - (d) If there is not 28 VDC between pins 3 and 1 on connector D1010, then do these steps:
 - 1) Do a continuity check between pin 1 of connector D1010 and structure ground.
 - 2) If there is not continuity between pin 1 of connector D1010 and structure ground, then do these steps:
 - a) Repair the wiring.
 - b) Connect the connector D1010 to the leading edge standby shutoff valve, V51.
 - c) Do the Repair Confirmation at the end of this task.
 - 3) Remove the flight controls module, P5-3.
 - 4) Disconnect the connector D624 for the flight control module, P5-3.
 - 5) Do a wiring check between these pins of connector D1010 at the leading edge standby drive shutoff valve, V51 and connector D624 for the flight control module, P5-3.

EFFECTIVITY
SIA ALL

27-81 TASK 803

D633A103-SIA

Page 210
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

D1010

pin 3

D624

pin 17

- 6) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect connector D1010 to the leading edge standby shutoff valve, V51.
 - c) Re-connect connector D624 for the flight control module, P5-3.
 - d) Install the flight controls module, P5-3.
 - e) Do the Repair Confirmation at the end of this task.
- 7) If you do not find a problem with the wiring, then do a check for continuity between pins 4 and 17 on connector D624 on the flight controls module, P5-3.
- 8) If there is not continuity between pins 4 and 17, then do these steps:
 - a) Replace the flight controls panel, P5-3. These are the tasks:
 - Flight Controls Panel Removal, AMM TASK 27-09-45-000-801
 - Flight Controls Panel Installation, AMM TASK 27-09-45-400-801
 - b) Re-connect connector D1010 to the leading edge standby shutoff valve, V51.
 - c) Do the Repair Confirmation at the end of this task.
- 9) If there is continuity between pins 4 and 17, then replace the following circuit breaker:
 - a) This is the circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

- 10) Re-connect connector D1010 to the leading edge standby shutoff valve, V51.
- 11) Re-connect connector D624 for the flight control module, P5-3.
- 12) Install the flight controls module, P5-3.
- 13) Do the Repair Confirmation at the end of this task.

G. Fault Isolation Procedure - LE Control Valve Input

(27-81 TASK SUPPORT Figure 301)

- (1) Do this check of the LE flap and slat control valve:
 - (a) Remove the screws and washers and remove the lower pan from the flap control unit.
 - (b) Supply system B hydraulic power. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
 - (c) Move the flap control lever between the UP and 30 unit position, and watch the input linkage for the LE flap and slat control valve.
 - (d) If the input linkage moves when the flaps move between the UP and 1 unit position, and between the 25 and 30 unit positions, then do these steps:
 - 1) Replace the LE flap and slat control valve. These are the tasks:
 - Leading Edge Flap and Slat Control Valve Removal, AMM TASK 27-81-81-000-801

EFFECTIVITY
SIA ALL

D633A103-SIA

27-81 TASK 803

Page 211
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

- Leading Edge Flap and Slat Control Valve Installation, AMM TASK 27-81-81-400-801
- 2) Do the Repair Confirmation at the end of this task.
- (e) If the input linkage does not move, then do these steps:
 - 1) Replace the flap control unit. These are the tasks:
 - Flap Control Unit Removal, AMM TASK 27-51-61-000-801
 - Flap Control Unit Installation, AMM TASK 27-51-61-400-801
 - 2) Do the Repair Confirmation at the end of this task.
- (f) Install the lower pan on the flap control unit with the screws and washers.

H. Fault Isolation Procedure - Hydraulic Fuse Set

(27-81 TASK SUPPORT Figure 301)

NOTE: This procedure will do a check for internal hydraulic leakage in the leading edge flap and slat system. The checks included are as follows:

- A check of the leading edge flap and slat actuators.
 - A check of the solenoids in the autoslat valve.
 - A check of the cruise depressurization valve.
 - A check of the complete leading edge system at the retracted position.
 - A check of the complete leading edge system at the extended position.
 - A check of the complete leading edge system at the full extend position.
- (1) Supply system B hydraulic power. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
 - (2) Do these checks of the leading edge flap and slat actuators:
 - (a) If the flaps and slats are not retracted, move the flap control lever to the UP position to retract them.
 - (b) If one leading edge flap or slat moves to the retracted position more than one second after the others, then do these steps:

NOTE: Slow retraction can be a sign of internal leakage in the actuator.

- 1) Replace the applicable leading edge flap or slat actuator.
 - a) If it is necessary, replace the applicable leading edge slat actuator. These are the tasks:
 - Leading Edge Slat Actuator - Removal, AMM TASK 27-81-41-000-801
 - Leading Edge Slat Actuator Installation, AMM TASK 27-81-41-400-801
 - b) If it is necessary, replace the applicable leading edge flap actuator. These are the tasks:
 - Leading Edge Flap Actuator Removal, AMM TASK 27-81-31-000-801
 - Leading Edge Flap Actuator Installation, AMM TASK 27-81-31-400-801
- 2) Do the Repair Confirmation at the end of this task.
- (c) Move the flap control lever to the 30-unit position to fully extend the leading edge flaps and slats.

EFFECTIVITY
SIA ALL

27-81 TASK 803

D633A103-SIA

Page 212
Jun 15/2022



737-600/700/800/900
FAULT ISOLATION MANUAL

- (d) If one leading edge flap or slat moves to the fully extended position more than one second after the others, then do these steps:

NOTE: Slow extension can be a sign of internal leakage in the actuator.

- 1) Replace the applicable leading edge flap or slat actuator.
- 2) Do the Repair Confirmation at the end of this task.

- (e) Move the flap control lever to the UP position to retract the leading edge flaps and slats.

- (f) If one leading edge flap or slat moves to the retracted position more than one second after the others, then do these steps:

NOTE: Slow retraction can be a sign of internal leakage in the actuator.

- 1) Replace the applicable leading edge flap or slat actuator.
- 2) Do the Repair Confirmation at the end of this task.

- (g) If the leading edge flaps and slats move at the same time, then continue.

- (3) Do a check for internal hydraulic leakage in the autoslat valve:

NOTE: It will be necessary to disconnect hydraulic lines and measure the fluid flow rate.

- (a) If the trailing edge flaps are extended past the 15 unit position, then do these steps:

 WARNING	KEEP PERSONS AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES. THE AILERONS, ELEVATORS, RUDDER, FLAPS, SLATS, SPOILERS, STABILIZER AND NOSE GEAR CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- 1) Supply system B hydraulic power. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- 2) Move the flap control lever to the 15 unit position to retract the trailing edge flaps.
- 3) Remove system B hydraulic power. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

- (b) Remove the pressure from the system B reservoir. To remove the pressure, do this task: Hydraulic Reservoirs Depressurization, AMM TASK 29-09-00-860-802.

NOTE: It is necessary to remove the pressure from the reservoir, because you will disconnect a hydraulic line below the level of the reservoir. All of the hydraulic fluid will drain out of the reservoir, if pressure is applied.

- (c) Put a measuring container, STD-6505 under the return line on the autoslat valve.

- (d) Disconnect the return line from the autoslat valve.

NOTE: The return line goes to a tee, with one line to the hydraulic reservoir, and one line to the leading edge UCM valve.

- (e) Install a cap or plug on the hydraulic line that goes to the tee.

- (f) Pressurize the system B hydraulic reservoir. To pressurize the reservoir, do this task: Hydraulic Reservoirs Pressurization, AMM TASK 29-09-00-860-801.

- (g) Supply system B hydraulic power. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.

- (h) Measure the leakage from the autoslat valve with the solenoids not energized:

- 1) Measure and record the leakage rate from the return port on the autoslat valve.

EFFECTIVITY
SIA ALL

27-81 TASK 803

D633A103-SIA

Page 213
Jun 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 2) If the leakage rate is more than 40 cc/minute, then replace the autoslat valve. To replace it, These are the tasks:
 - Autoslat Control Valve Removal, AMM TASK 27-83-21-000-801
 - Autoslat Control Valve Installation, AMM TASK 27-83-21-400-801
 - a) Do the Repair Confirmation at the end of this task.
- 3) If the leakage rate is not more than 40 cc/minute, then continue.
- (i) Measure the leakage from the autoslat valve after the solenoids have been cycled:
 - 1) Use the Proximity Switch Electronics Unit (PSEU) to simulate air mode. To simulate air mode, do this task: Put the Airplane in the Air Mode, AMM TASK 32-09-00-860-801.
 - 2) Move the flap control lever to the 30 unit position to extend the trailing edge flaps.

NOTE: A small amount of hydraulic fluid will leak from the autoslat valve when the autoslat valve solenoids are energized. The solenoids will be energized for approximately 1/2 second, when the trailing edge flaps are between the 15 and 25 unit positions.
 - 3) Measure and record the leakage rate from the return port on the autoslat valve again.
 - 4) If the leakage rate is more than 40 cc/minute, then replace the autoslat valve. To replace it, these are the tasks:
 - Autoslat Control Valve Removal, AMM TASK 27-83-21-000-801
 - Autoslat Control Valve Installation, AMM TASK 27-83-21-400-801
 - a) Do the Repair Confirmation at the end of this task.
 - 5) If the leakage rate is not more than 40 cc/minute, then continue.
- (j) Use the Proximity Switch Electronics Unit (PSEU) to return the airplane to ground mode. To return to ground mode, do this task: Return the Airplane to the Ground Mode, AMM TASK 32-09-00-860-802.
- (k) Move the flap control lever to the UP position to retract the leading and trailing edge flaps and slats.
- (l) Remove system B hydraulic power. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
- (m) Remove the pressure from the system B reservoir. To remove the pressure, do this task: Hydraulic Reservoirs Depressurization, AMM TASK 29-09-00-860-802.
- (n) Remove the cap or plug from the hydraulic line that goes to the hydraulic reservoir.
- (o) Connect the return line to the autoslat valve.
- (4) Do a check for internal hydraulic leakage in the leading edge cruise depressurization valve:

NOTE: It will be necessary to disconnect hydraulic lines and measure the fluid flow rate.

 - (a) If the trailing edge flaps are not in the retracted position, then do these steps:



**737-600/700/800/900
FAULT ISOLATION MANUAL**



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- 1) Supply system B hydraulic power. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- 2) Move the flap control lever to the UP position to retract the trailing edge flaps.
- 3) Remove system B hydraulic power. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
- (b) Remove the pressure from the system B reservoir. To remove the pressure, do this task: Hydraulic Reservoirs Depressurization, AMM TASK 29-09-00-860-802.
- (c) Put a measuring container, STD-6505 under the return line on the cruise depressurization valve.
- (d) Disconnect the return line from the cruise depressurization valve.

NOTE: The return line is the smaller of two hydraulic lines that go forward from the cruise depressurization valve.

- (e) Install a cap or plug on the hydraulic line that goes to the hydraulic reservoir.
- (f) Pressurize the system B hydraulic reservoir. To pressurize the reservoir, do this task: Hydraulic Reservoirs Pressurization, AMM TASK 29-09-00-860-801.
- (g) Supply system B hydraulic power. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (h) Measure the leakage from the cruise depressurization valve with the solenoids energized:
 - 1) Use the Proximity Switch Electronics Unit (PSEU) to simulate air mode. To simulate air mode, do this task: Put the Airplane in the Air Mode, AMM TASK 32-09-00-860-801.

NOTE: The solenoids on the cruise depressurization valve will be energized three seconds after the PSEU is in air mode. A small amount of hydraulic fluid can leak while the valve moves.

- 2) Measure and record the leakage rate from the return port on the cruise depressurization valve.
- 3) If the leakage rate is more than 100 cc/minute, then replace the cruise depressurization valve. To replace it, these are the tasks:
 - LE Uncommanded Motion (UCM) or LE Cruise Depressurization Valve Removal, AMM TASK 27-81-52-000-801
 - LE Uncommanded Motion (UCM) or LE Cruise Depressurization Valve Installation, AMM TASK 27-81-52-400-801
 - a) Do the Repair Confirmation at the end of this task.
- 4) If the leakage rate is not more than 100 cc/minute, then continue.

EFFECTIVITY
SIA ALL

27-81 TASK 803

D633A103-SIA

Page 215
Jun 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (i) Use the Proximity Switch Electronics Unit (PSEU) to return the airplane to ground mode. To return to ground mode, do this task: Return the Airplane to the Ground Mode, AMM TASK 32-09-00-860-802.

NOTE: The solenoids on the cruise depressurization valve will be de-energized three seconds after the PSEU is in ground mode. A small amount of hydraulic fluid can leak while the valve moves.

- (j) Measure the leakage from the cruise depressurization valve with the solenoids not energized:
- 1) Measure and record the leakage rate from the return port on the cruise depressurization valve again.
 - 2) If the leakage rate is more than 100 cc/minute, then replace the cruise depressurization valve. To replace it, these are the tasks:
 - LE Uncommanded Motion (UCM) or LE Cruise Depressurization Valve Removal, AMM TASK 27-81-52-000-801
 - LE Uncommanded Motion (UCM) or LE Cruise Depressurization Valve Installation, AMM TASK 27-81-52-400-801
 - a) Do the Repair Confirmation at the end of this task.
 - 3) If the leakage rate is not more than 100 cc/minute, then continue.
- (k) Remove system B hydraulic power. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
- (l) Remove the pressure from the system B reservoir. To remove the pressure, do this task: Hydraulic Reservoirs Depressurization, AMM TASK 29-09-00-860-802.
- (m) Remove the cap or plug from the hydraulic line that goes to the hydraulic reservoir.
- (n) Connect the return line to the cruise depressurization valve.
- (5) Do a check for internal hydraulic leakage in the complete leading edge system:
- NOTE: The leading edge flap and slat system connects to the hydraulic system return at these three locations:
- the leading edge standby line
 - the return line on the LE flap and slat control valve
 - the return line for the autoslat module and LE UCM shutoff valve.
- (a) Pressurize the system B hydraulic reservoir. To pressurize the reservoir, do this task: Hydraulic Reservoirs Pressurization, AMM TASK 29-09-00-860-801.
- (b) Supply system B hydraulic power. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (c) Move the flap control lever to the UP position.
- (d) Do these steps to measure the hydraulic fluid leakage with the leading edge retracted:
- NOTE: It will be necessary to disconnect hydraulic lines and measure the fluid flow rate.
- 1) Remove the pressure from the system B reservoir. To remove the pressure, do this task: Hydraulic Reservoirs Depressurization, AMM TASK 29-09-00-860-802.
 - 2) Measure the hydraulic fluid leakage from the LE flap and slat control valve:
 - a) Put a graduated container, STD-6338 under the LE flap and slat control valve.
 - b) Disconnect the return line from the LE flap and slat control valve.
 - c) Install a cap or plug on the hydraulic line that goes to the hydraulic reservoir.

EFFECTIVITY
SIA ALL

27-81 TASK 803

D633A103-SIA

Page 216
Jun 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- d) Pressurize the system B hydraulic reservoir. To pressurize the reservoir, do this task: Hydraulic Reservoirs Pressurization, AMM TASK 29-09-00-860-801.
 - e) Supply system B hydraulic power. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
 - f) Measure and make a record of the leakage rate of the hydraulic fluid from the LE flap and slat control valve.
 - g) Remove the pressure from the system B reservoir. To remove the pressure, do this task: Hydraulic Reservoirs Depressurization, AMM TASK 29-09-00-860-802.
 - h) Remove the cap or plug from the hydraulic line.
 - i) Reconnect the return line to the LE flap and slat control valve.
- 3) Measure the hydraulic fluid leakage from the leading edge standby shutoff valve:
- a) Put a graduated container, STD-6338 under the leading edge standby shutoff valve.
 - b) Disconnect the return line from the leading edge standby shutoff valve.
 - c) Install a cap or plug on the hydraulic line that goes to the hydraulic reservoir.
 - d) Pressurize the system B hydraulic reservoir. To pressurize the reservoir, do this task: Hydraulic Reservoirs Pressurization, AMM TASK 29-09-00-860-801.
 - e) Supply system B hydraulic power. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
 - f) Measure and make a record of the leakage rate of the hydraulic fluid from the leading edge standby shutoff valve.
 - g) Remove the pressure from the system B reservoir. To remove the pressure, do this task: Hydraulic Reservoirs Depressurization, AMM TASK 29-09-00-860-802.
 - h) Remove the cap or plug from the hydraulic line.
 - i) Reconnect the return line to the leading edge standby shutoff valve.
- 4) Measure the hydraulic fluid leakage from the LE UCM shutoff valve and the autoslat valve:
- NOTE:** The return lines for the LE UCM shutoff valve and the autoslat valve come together at a tee near the autoslat valve.
- a) Put a graduated container, STD-6338 under the tee for the return line on the LE UCM shutoff valve and the autoslat valve.
 - b) Disconnect the return line from the tee.
 - c) Install a cap or plug on the hydraulic line that goes to the hydraulic reservoir.
 - d) Pressurize the system B hydraulic reservoir. To pressurize the reservoir, do this task: Hydraulic Reservoirs Pressurization, AMM TASK 29-09-00-860-801.
 - e) Supply system B hydraulic power. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
 - f) Measure and make a record of the leakage rate of the hydraulic fluid from the tee.
 - g) Remove the pressure from the system B reservoir. To remove the pressure, do this task: Hydraulic Reservoirs Depressurization, AMM TASK 29-09-00-860-802.

EFFECTIVITY
SIA ALL

27-81 TASK 803

D633A103-SIA

Page 217
Jun 15/2022



737-600/700/800/900 FAULT ISOLATION MANUAL

- h) Remove the cap or plug from the hydraulic line.
 - i) Reconnect the return line to the tee.
- 5) Add the three leakage rates together to find the total leakage rate with the leading edge in the retracted position.
- 6) If the total leakage rate is more than 0.1 gallon per minute (GPM) then there is excessive leakage in the leading edge system.
NOTE: The hydraulic fuse will set when the leakage rate is more than 0.6 GPM. When the leakage rate is between 0.1 GPM and 0.6 GPM, the fuse might set.
- 7) If the total leakage rate is not more than 0.1 gallon per minute (GPM) then continue.
- (e) Move the flap control lever to the 30-unit position to extend the leading edge flaps and slats.
- (f) Do the steps above to measure the total hydraulic fluid leakage with the leading edge in the extended position:
 - 1) If the total leakage rate is more than 0.1 gallon per minute (GPM) then there is excessive leakage in the leading edge system.
NOTE: The hydraulic fuse will set when the leakage rate is more than 0.6 GPM. When the leakage rate is between 0.1 GPM and 0.6 GPM, the fuse might set.
 - 2) If the total leakage rate is not more than 0.1 gallon per minute (GPM) then continue.
- (g) Move the flap control lever to the 10-unit position to fully extend the leading edge slats.
- (h) Do the steps above to measure the total hydraulic fluid leakage with the leading edge in the fully extended position:
 - 1) If the total leakage rate is more than 0.1 gallon per minute (GPM) then there is excessive leakage in the leading edge system.
NOTE: The hydraulic fuse will set when the leakage rate is more than 0.6 GPM. When the leakage rate is between 0.1 GPM and 0.6 GPM, the fuse might set.
 - 2) If the total leakage rate is not more than 0.1 gallon per minute (GPM) then replace the leading edge retract fuse. These are the tasks:
 - Leading Edge Flap and Slat Hydraulic Fuse Removal (LE System B or Standby System Fuses), AMM TASK 27-81-61-000-801
 - Leading Edge Flap and Slat Hydraulic Fuse Installation (LE System B or Standby System Fuses), AMM TASK 27-81-61-400-801**NOTE:** The hydraulic fuse should never set when the leakage rate is less than 0.1 GPM. If the hydraulic fuse sets with the leakage rate less than 0.1 GPM, the fuse is defective.
 - 3) Do the Repair Confirmation at the end of this task.

I. Fault Isolation Procedure - Leading Edge Fails to Operate

- (1) Do this check of the LE cruise depressurization valve, V163:
 - (a) Do a check of the position of the manual override lever on the LE cruise depressurization valve.
NOTE: The LE cruise depressurization valve is installed in the main landing gear wheel well.

EFFECTIVITY
SIA ALL

D633A103-SIA

27-81 TASK 803

Page 218
Jun 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (b) If the manual override lever on the LE cruise depressurization valve is in the off position, then do these steps;
- NOTE:** There can be a rig pin installed in the manual override lever to hold it in the off position.
- 1) If it is installed, remove the rig pin from the manual override lever on the LE cruise depressurization valve.
 - 2) Move the manual override lever to the ON position.
 - 3) Do the Repair Confirmation at the end of this task.
- (c) If the manual override lever on the LE cruise depressurization valve is in the on position, then continue.
- (2) Replace the standby hydraulic fuse. These are the tasks:
- Leading Edge Flap and Slat Hydraulic Fuse Removal (LE System B or Standby System Fuses), AMM TASK 27-81-61-000-801
 - Leading Edge Flap and Slat Hydraulic Fuse Installation (LE System B or Standby System Fuses), AMM TASK 27-81-61-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (3) Replace the leading edge flap flow limiting valve. These are the tasks:
- Leading Edge Flap Flow Limiting Valve Removal, AMM TASK 27-81-71-000-801
 - Leading Edge Flap Flow Limiting Valve Installation, AMM TASK 27-81-71-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (4) Replace the leading edge standby shutoff valve. These are the tasks:
- Leading Edge Standby Shutoff Valve Removal, AMM TASK 27-81-91-000-801
 - Leading Edge Standby Shutoff Valve Installation, AMM TASK 27-81-91-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (5) Replace the autoslat control valve. These are the tasks:
- Autoslat Control Valve Removal, AMM TASK 27-83-21-000-801
 - Autoslat Control Valve Installation, AMM TASK 27-83-21-400-801
- (a) Do the Repair Confirmation at the end of this task.

J. Repair Confirmation



MAKE SURE THAT PERSONNEL AND EQUIPMENT STAY AWAY FROM THE LEADING EDGE SLATS, TRAILING EDGE FLAPS, AND DRIVE MECHANISMS. THE FLAPS, SLATS, AND DRIVE MECHANISMS MOVE QUICKLY. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (1) Extend and retract the leading edge (LE) flaps and slats with primary control. To extend and retract the LE flaps and slats, do this task: Leading Edge Flaps and Slats Extension, AMM TASK 27-81-00-860-803.
 - (a) If all the LE flaps and slats extend and retract, then you corrected the fault.
- (2) Do this task: Leading Edge Flaps and Slats Retraction, AMM TASK 27-81-00-860-804.
- (3) Remove system B hydraulic power. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

———— **END OF TASK** ————

EFFECTIVITY
SIA ALL

27-81 TASK 803

D633A103-SIA

Page 219
Jun 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

805. One or More Leading Edge Surfaces Operate Slowly - Fault Isolation

A. Description

- (1) Normal system operation uses the hydraulic system B to move the leading edge (LE) flaps and slats.
- (2) Hydraulic pressure goes through the LE cruise depressurization valve to the LE flap and slat control valve. The LE flap and slat control valve sends extend pressure to the LE flap and slat actuators. This causes the LE flaps and slats to move to the extend position.

B. Possible Causes

- (1) Leading edge flap or slat actuator
- (2) Leading edge flap and slat control valve

C. Initial Evaluation

- (1) Do this check of the LE flaps and slats extension and retraction time:
 - (a) Do this task: Leading Edge Flap and Slat Timing Test in Primary Mode, AMM TASK 27-81-00-700-802.
 - (b) If the LE flaps and slats extend and retract in the specified time limit, then there was an intermittent fault.
 - (c) If one LE flap did not extend and retract in the specified time limit, then do the Fault Isolation Procedure - One LE Flap Operates Slowly below.
 - (d) If one LE slat did not extend and retract in the specified time limit, then do the Fault Isolation Procedure - One LE Slat Operates Slowly below.
 - (e) If more than one LE flap or slat did not extend and retract in the specified time limit, then do the Fault Isolation Procedure - Multiple LE Flaps or Slats Operate Slowly below.

D. Fault Isolation Procedure - One LE Flap Operates Slowly

- (1) Replace the applicable LE flap actuator. These are the tasks:
 - Leading Edge Flap Actuator Removal, AMM TASK 27-81-31-000-801
 - Leading Edge Flap Actuator Installation, AMM TASK 27-81-31-400-801
 - (a) If the test in the installation task for the LE flap actuator is satisfactory, then you corrected the fault.

E. Fault Isolation Procedure - One LE Slat Operates Slowly

- (1) Replace the applicable LE slat actuator. These are the tasks:
 - Leading Edge Slat Actuator - Removal, AMM TASK 27-81-41-000-801
 - Leading Edge Slat Actuator Installation, AMM TASK 27-81-41-400-801
 - (a) If the test in the installation task for the LE slat actuator is satisfactory, then you corrected the fault.

F. Fault Isolation Procedure - Multiple LE Flaps or Slats Operate Slowly

- (1) Do this task: Leading Edge Flap and Slat Control Valve - Adjustment, AMM TASK 27-81-81-820-801.
 - (a) If the test that follows the adjustment of the leading edge flap and slat control valve is satisfactory, then you corrected the fault.

———— **END OF TASK** ————

EFFECTIVITY
SIA ALL

27-81 TASK 805

D633A103-SIA

Page 220
Jun 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

806. Leading Edge Extend UCM Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 27-81352 L LE SL EXT UCM
 - (b) 27-81353 R LE SL EXT UCM
 - (c) 27-81354 LE SL EXT UCM
 - (d) 27-81355 L LE SL FE UCM
 - (e) 27-81356 R LE SL FE UCM
 - (f) 27-81357 LE SLAT FE UCM
 - (g) 27-81358 L LE FL EXT UCM
 - (h) 27-81359 R LE FL EXT UCM
 - (i) 27-81360 LE FLAP EXT UCM
 - (j) 27-81224 MULTIPLE PROX Multiple Proximity Sensors Disagree Problem - Fault Isolation, 27-88 TASK 807
- (2) Uncommanded motion of the leading edge flaps or slats from the extend or full extend position was detected.
- (3) Three or more leading edge slats must drive away from the commanded position for a leading edge slat uncommanded motion fault to be detected. Two or more leading edge flaps must drive away from the commanded position for a leading edge slat uncommanded motion fault to be detected.
- (4) Uncommanded motion faults can only be detected by the Flap/Slat Electronics Unit (FSEU) when the airspeed is more than 60 knots, thus uncommanded motion faults are normally not detected on the ground unless the aircraft is put into AIR MODE during maintenance activities.

B. Possible Causes

- (1) Trailing Edge Flap Control System
- (2) Autoslat Control System
- (3) Wiring
- (4) LE Cruise Depressurization Valve, V163
- (5) Autoslat Control Valve, V132

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES
A	8	C00211	FLIGHT CONTROL FSEU DC 1
A	9	C01468	FLIGHT CONTROL FSEU DC 2

D. Related Data

- (1) SSM 27-80-01
- (2) SSM 27-81-11
- (3) SSM 27-81-12
- (4) SSM 27-81-21

EFFECTIVITY
SIA ALL

27-81 TASK 806



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (5) SSM 27-81-22
- (6) SSM 27-83-11
- (7) WDM 27-81-11
- (8) WDM 27-81-12
- (9) WDM 27-81-21
- (10) WDM 27-81-22
- (11) WDM 27-83-11

E. Initial Evaluation

- (1) Do the Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (a) If the maintenance message 27-51351 TE FLAP UCM shows, then do this task: Trailing Edge Flap Uncommanded Motion Problem - Fault Isolation, 27-51 TASK 830.
 - (b) If one of the LE SLAT FE UCM maintenance messages, 27-81355, 27-81356, or 27-81357 shows and AUTOSLAT INPUT 1 or 2 maintenance messages, 27-81281, 27-81282 shows, then do this task: FSEU Autoslat Fault - Fault Isolation, 27-83 TASK 806.
 - (c) If the none of the LE UCM maintenance message show, then there was an intermittent fault.
 - (d) If one or more of the maintenance messages show, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Open these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	8	C00211	FLIGHT CONTROL FSEU DC 1
A	9	C01468	FLIGHT CONTROL FSEU DC 2

NOTE: Opening and then closing these circuit breakers will reset the uncommanded motion fault in the FSEU.

- (2) Close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	8	C00211	FLIGHT CONTROL FSEU DC 1
A	9	C01468	FLIGHT CONTROL FSEU DC 2



KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (3) Supply system B hydraulic power. This is the task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (4) Move the flap control lever to the UP position to retract the trailing edge flaps and the leading edge flaps and slats.

EFFECTIVITY
SIA ALL

27-81 TASK 806

D633A103-SIA

Page 222
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (a) If the trailing edge flaps did not retract, then do this task: Trailing Edge Flap Primary Control Operation/Lockout Problem - Fault Isolation, 27-51 TASK 836.
 - (b) If the leading edge flaps and slats did not retract, then do this task: Leading Edge Flaps and Slats Fail to Operate During Normal System Operation - Fault Isolation, 27-81 TASK 803.
 - (c) If all of the leading and trailing edge surfaces move to the retracted position, then continue.
- (5) Do a check of the lights on the LE flap/slat annunciator panel on the Overhead Panel, P5-12:
- (a) If all of the FLAPS lights on the LE flap/slat annunciator panel are not OFF, then do this task: Flap Retract Proximity Sensor Disagree Problem - Fault Isolation, 27-88 TASK 805.
 - (b) If all of the SLATS lights on the LE flap/slat annunciator panel are not OFF, then do this task: Slat Retract Proximity Sensor Disagree Problem - Fault Isolation, 27-88 TASK 808.
 - (c) If all of the lights on the LE flap/slat annunciator panel are OFF, then continue.
- (6) Move the flap control lever to the 1 unit position to extend the trailing edge flaps and the leading edge flaps and slats.
- NOTE:** The leading edge flaps and slats should move to the extended position.
- (a) If the trailing edge flaps did not extend to the 1-unit position, then do this task: Trailing Edge Flap Primary Control Operation/Lockout Problem - Fault Isolation, 27-51 TASK 836.
 - (b) If the leading edge flaps and slats did not move to the extended position, then do this task: Leading Edge Flaps and Slats Fail to Operate During Normal System Operation - Fault Isolation, 27-81 TASK 803.
 - (c) If the leading edge slats move to the fully extended position, then replace the Autoslat Control Valve, V132. These are the tasks:
 - Autoslat Control Valve Removal, AMM TASK 27-83-21-000-801
 - Autoslat Control Valve Installation, AMM TASK 27-83-21-400-801
 - (d) If all of the leading and trailing edge surfaces move to the extended position, then continue.
- (7) Do a check of the EXT lights on the LE flap/slat annunciator panel on the Overhead Panel, P5-12:
- (a) If all of the FLAPS EXT lights on the LE flap/slat annunciator panel are not ON, then do this task: Flap Extend Proximity Sensor Disagree Problem - Fault Isolation, 27-88 TASK 806.
 - (b) If all of the SLATS EXT lights on the LE flap/slat annunciator panel are not ON, then do this task: Slat Inboard Proximity Sensor Disagree Problem - Fault Isolation, 27-88 TASK 804.
 - (c) If all of the EXT lights on the LE flap/slat annunciator panel are ON, then continue.
- (8) Move the flap control lever to the 30 unit position to extend the trailing edge flaps and the leading edge and slats.
- NOTE:** The leading edge slats should move to the fully extended position.
- (a) If the leading edge slats did not move to the fully extended position, then do this task: Leading Edge Flaps and Slats Fail to Operate During Normal System Operation - Fault Isolation, 27-81 TASK 803.
 - (b) If all of the leading edge slats move to the fully extended position, then continue.



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (9) Do a check of the FULL EXT lights on the LE flap/slat annunciator panel on the Overhead Panel, P5-12:
- (a) If all of the SLATS FULL EXT lights on the LE flap/slat annunciator panel are not ON, then do this task: Slat Outboard Proximity Sensor Disagree Problem - Fault Isolation, 27-88 TASK 803.
 - (b) If all of the SLATS FULL EXT lights on the LE flap/slat annunciator panel are ON, then continue.
- (10) Move the flap control lever to the UP position to retract the trailing edge flaps and the leading edge and slats.
- (a) If the leading edge flaps and slats did not retract, then do this task: Leading Edge Flaps and Slats Fail to Operate During Normal System Operation - Fault Isolation, 27-81 TASK 803.
 - (b) If all of the leading edge flaps and slats move to the retracted position, then continue.
- (11) Do a check of the inputs to the FSEU, M1746 from the Stall Management Yaw Damper Computers, M1747 and M1748:
- (a) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

to get access to the FSEU, M1746 in the main equipment center.
 - (b) Push the ON/OFF button on the front panel of the FSEU, M1746 to turn on the display.
NOTE: The display will show EXISTING FAULTS?.
 - (c) Push the NO button until OTHER FUNCTNS? shows on the display.
 - (d) Push the YES button to select OTHER FUNCTNS? on the FSEU, M1746.
 - (e) Push the NO button until I/O MONITOR? shows on the display.
 - (f) Push the YES button to select I/O MONITOR? on the FSEU, M1746.
 - (g) Push the NO button until DISCRETE INPUTS? shows on the display.
 - (h) Push the YES button to select DISCRETE INPUTS? on the FSEU, M1746.
 - (i) Push the NO button until AUTOSLT1 shows on the display.
NOTE: Line 2 on the display will show either COMMAND or NOT CMD.
 - (j) Push the down arrow to show AUTOSLT2 on the display.
NOTE: Line 2 on the display will show either COMMAND or NOT CMD.
 - (k) If AUTOSLT1 or AUTOSLT2 shows COMMAND on the second line, do this task: FSEU Autoslat Fault - Fault Isolation, 27-83 TASK 806.
 - (l) If AUTOSLT1 and AUTOSLT2 show NOT CMD on the second line, then continue.
 - (m) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
117A	Electronic Equipment Access Door

to the main equipment center.
- (12) Replace the LE Cruise Depressurization Valve, V163. These are the tasks:
- LE Uncommanded Motion (UCM) or LE Cruise Depressurization Valve Removal, AMM TASK 27-81-52-000-801

EFFECTIVITY
SIA ALL

27-81 TASK 806

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 224
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- LE Uncommanded Motion (UCM) or LE Cruise Depressurization Valve Installation, AMM TASK 27-81-52-400-801

————— **END OF TASK** —————

807. Leading Edge UCM Shutoff Valve Discrete Output Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-81424 LE UCM SOV
- (2) Overcurrent was detected on the leading edge uncommanded motion (UCM) shutoff valve discrete output during the Existing Faults test.

B. Possible Causes

- (1) LE UCM shutoff valve, V162
- (2) Wiring problem
- (3) FSEU, M1746

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

D. Related Data

- (1) (SSM 27-81-51)
- (2) (WDM 27-81-51)

E. Initial Evaluation

- (1) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

- (2) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (3) If the maintenance message does not show, then there was an intermittent fault.
- (4) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this check of the LE UCM shutoff valve, V162:
 - (a) Remove the connector D10533 from the LE UCM shutoff valve, V162.
 - (b) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 1) If the maintenance message does not show, replace the LE UCM shutoff valve.
These are the tasks:
 - LE Uncommanded Motion (UCM) or LE Cruise Depressurization Valve Removal, AMM TASK 27-81-52-000-801
 - LE Uncommanded Motion (UCM) or LE Cruise Depressurization Valve Installation, AMM TASK 27-81-52-400-801

EFFECTIVITY
SIA ALL

27-81 TASKS 806-807

D633A103-SIA

Page 225
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 2) If the maintenance message does show, then continue.
- (2) Do this check of the wiring between the LE UCM shutoff valve, V162 and the FSEU, M1746:
 - (a) Do a voltage check between pin D2 of connector D10533 at the LE UCM shutoff valve and structure ground.
 - (b) If there is AC or DC voltage between pin D2 and structure ground, then do these steps:
 - 1) Remove the FSEU, M1746. To remove it, do this task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
 - 2) Do a wiring check between these pins of connector D728A at the E1-1 shelf and connector D10533 at the LE UCM shutoff valve:

D728A	D10533
pin D12	pin 2
- 3) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect connector D10533 to the LE UCM shutoff valve, V162.
 - c) Re-install the FSEU, M1746. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - d) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - e) If the maintenance message does not show, then you corrected the fault.
- (c) If there was not voltage at the pin, or if you did not find a problem with the wiring, then continue.
- (3) Re-connect connector D10533 to the LE UCM shutoff valve, V162.
- (4) Install a new FSEU. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (b) If the maintenance message does not show, then you corrected the fault.

————— **END OF TASK** —————

808. Leading Edge Cruise Depressurization Valve Discrete Output Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-81425 LE CRZ DEPRESS
- (2) Overcurrent was detected on the leading edge (LE) cruise depressurization valve discrete output during the Existing Faults test.

B. Possible Causes

- (1) LE cruise depressurization valve, V163
- (2) Wiring problem
- (3) FSEU, M1746

EFFECTIVITY
SIA ALL

27-81 TASKS 807-808

D633A103-SIA

Page 226
Jun 15/2022



737-600/700/800/900 FAULT ISOLATION MANUAL

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

D. Related Data

- (1) (SSM 27-81-51)
(2) (WDM 27-81-51)

E. Initial Evaluation

- (1) Make sure that this circuit breaker is closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

- (2) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
(3) If the maintenance message does not show, then there was an intermittent fault.
(4) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this check of the LE cruise depressurization valve, V163:
- (a) Remove the connector D10535 from the LE cruise depressurization valve, V163.
 - (b) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (c) If the maintenance message does not show, replace the LE cruise depressurization valve. These are the tasks:
 - LE Uncommanded Motion (UCM) or LE Cruise Depressurization Valve Removal, AMM TASK 27-81-52-000-801
 - LE Uncommanded Motion (UCM) or LE Cruise Depressurization Valve Installation, AMM TASK 27-81-52-400-801
 - (d) If the maintenance message does show, then continue.
- (2) Do this check of the wiring between the LE cruise depressurization valve, V163 and the FSEU, M1746:
- (a) Do a voltage check between pin D2 of connector D10535 at the LE cruise depressurization valve and structure ground.
 - (b) If there is AC or DC voltage between the pin and structure ground, then do these steps:
 - 1) Remove the FSEU, M1746. To remove it, do this task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
 - 2) Do a wiring check between these pins of connector D728A at the E1-1 shelf and connector D10535 at the LE cruise depressurization valve:

D728A	D10535
pin A11	pin 2

- 3) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.

EFFECTIVITY
SIA ALL

27-81 TASK 808

D633A103-SIA

Page 227
Jun 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- b) Re-connect connector D10535 to the LE cruise depressurization valve, V163.
- c) Re-install the FSEU, M1746. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
- d) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- e) If the maintenance message does not show, then you corrected the fault.
- (c) If there was not voltage on the pin, or if you did not find a problem with the wiring, then continue.
- (3) Re-connect connector D10535 to the LE cruise depressurization valve, V163.
- (4) Install a new FSEU. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
- (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (b) If the maintenance message does not show, then you corrected the fault.

————— **END OF TASK** —————

809. Leading Edge Intransit Discrete Output Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-81420 LE INTRANS
- (2) Overcurrent was detected on the LE intransit discrete output during the Existing Faults test.

B. Possible Causes

- (1) SMYDC 1, M1747
- (2) SMYDC 2, M1748
- (3) Wiring problem
- (4) FSEU, M1746

C. Related Data

- (1) (SSM 27-32-11)
- (2) (SSM 27-32-21)
- (3) (SSM 27-81-31)
- (4) (WDM 27-32-11)
- (5) (WDM 27-32-21)
- (6) (WDM 27-81-31)

D. Initial Evaluation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (2) If the maintenance message does not show, then there was an intermittent fault.
- (3) If the maintenance message shows, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

- (1) Do this check of the SMYDC 1, M1747:
 - (a) Remove the SMYDC 1, M1747. To remove it, do this task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801.
 - (b) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.

EFFECTIVITY
SIA ALL

27-81 TASKS 808-809

D633A103-SIA

Page 228
Jun 15/2022



737-600/700/800/900 FAULT ISOLATION MANUAL

- 1) If the maintenance message does not show, replace the SMYDC 1. These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
 - 2) If the maintenance message does show, then continue.
- (2) Do this check of the SMYDC 2, M1748:
- (a) Remove the SMYDC 2, M1748. To remove it, do this task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801.
 - (b) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 1) If the maintenance message does not show, replace the SMYDC 2. These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
 - 2) If the maintenance message does show, then continue.
- (3) Do this check for DC voltage to the SMYDC 1, M1747:
- (a) Measure the DC voltage between pin 79 of connector D3683A at the SMYDC 1, M1747, and structure ground.
 - (b) If the DC voltage is not equal to zero volts, then do these steps:
 - 1) Remove the FSEU, M1746. To remove it, do this task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
 - 2) Do a wiring check between these pins of connector D728A at the E1-1 shelf and connector D3683A at the SMYDC 1, M1747:

D728A	D3683A
pin D11	pin 79
- 3) Do a wiring check between these pins of connector D728A at the E1-1 shelf and connector D3685A at the SMYDC 2, M1748:

D728A	D3685A
pin D11	pin 79
- 4) If you find a problem with the wiring, then do these steps:
- a) Repair the wiring.
 - b) Re-install the SMYDC 1 and SMYDC 2. To install them, do this task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - c) Re-install the FSEU, M1746. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - d) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - e) If the maintenance message does not show, then you corrected the fault.
- (c) If the DC voltage equals to zero volts, then continue.

EFFECTIVITY
SIA ALL

D633A103-SIA

27-81 TASK 809

Page 229
Jun 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (4) Do this check for AC voltage to the SMYDC 1, M1747:
- (a) Measure the AC voltage between pin 48 of connector D3683A at the SMYDC 1, M1747, and structure ground.
 - (b) If the AC voltage is not equal to zero volts, then do these steps:
 - 1) Remove the FSEU, M1746. To remove it, do this task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
 - 2) Do a wiring check between these pins of connector D728A at the E1-1 shelf and connector D3683A at the SMYDC 1, M1747:

D728A	D3683A
pin D11	pin 79
 - 3) Do a wiring check between these pins of connector D728A at the E1-1 shelf and connector D3685A at the SMYDC 2, M1748:

D728A	D3685A
pin D11	pin 79
- (c) If the AC voltage equals to zero volts, then continue.
- 1) Re-install the SMYDC 1 and SMYDC 2. To install them, do this task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - c) Re-install the FSEU, M1746. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - d) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - e) If the maintenance message does not show, then you corrected the fault.
- (5) Replace the FSEU. These are the tasks:
- Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801
 - Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801
- (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (b) If the maintenance message does not show, then you corrected the fault.

————— **END OF TASK** —————

810. Leading Edge UCM Discrete Output Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-81426 LE UCM
- (2) Overcurrent was detected on the LE UCM discrete output during the Existing Fault test.

EFFECTIVITY
SIA ALL

27-81 TASKS 809-810

D633A103-SIA

Page 230
Jun 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

B. Possible Causes

- (1) SMYDC 1, M1747
- (2) SMYDC 2, M1748
- (3) Wiring problem
- (4) FSEU, M1746

C. Related Data

- (1) (SSM 27-32-11)
- (2) (SSM 27-32-21)
- (3) (SSM 27-81-31)
- (4) (WDM 27-32-11)
- (5) (WDM 27-32-21)
- (6) (WDM 27-81-31)

D. Initial Evaluation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (2) If the maintenance message does not show, then there was an intermittent fault.
- (3) If the maintenance message shows, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

- (1) Do this check of the SMYDC 1, M1747:
 - (a) Remove the SMYDC 1, M1747. To remove it, do this task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801.
 - (b) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 1) If the maintenance message does not show, replace the SMYDC 1. These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
 - 2) If the maintenance message does show, then continue.
- (2) Do this check of the SMYDC 2, M1748:
 - (a) Remove the SMYDC 2, M1748. To remove it, do this task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801.
 - (b) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 1) If the maintenance message does not show, replace the SMYDC 2. These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
 - 2) If the maintenance message does show, then continue.
- (3) Do this check for DC voltage to the SMYDC 1, M1747:
 - (a) Measure the DC voltage between pin 48 of connector D3683A at the SMYDC 1, M1747, and structure ground.
 - (b) If the DC voltage is not equal to zero volts, then do these steps:

EFFECTIVITY
SIA ALL

27-81 TASK 810

D633A103-SIA

Page 231
Jun 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 1) Remove the FSEU, M1746. To remove it, do this task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
- 2) Do a wiring check between these pins of connector D728A at the E1-1 shelf and connector D3683A at the SMYDC 1, M1747:

D728A	D3683A
pin C10	pin 48

- 3) Do a wiring check between these pins of connector D728A at the E1-1 shelf and connector D3685A at the SMYDC 2, M1748:

D728A	D3685A
pin C10	pin 48

- 4) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install the SMYDC 1 and SMYDC 2. To install them, do this task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - c) Re-install the FSEU, M1746. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - d) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - e) If the maintenance message does not show, then you corrected the fault.
- (c) If the DC voltage equals to zero volts, then continue.
- (4) Do this check for AC voltage to the SMYDC 1, M1747:
 - (a) Measure the AC voltage between pin 48 of connector D3683A at the SMYDC 1, M1747, and structure ground.
 - (b) If the AC voltage is not equal to zero volts, then do these steps:
 - 1) Remove the FSEU, M1746. To remove it, do this task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
 - 2) Do a wiring check between these pins of connector D728A at the E1-1 shelf and connector D3683A at the SMYDC 1, M1747:

D728A	D3683A
pin C10	pin 48

- 3) Do a wiring check between these pins of connector D728A at the E1-1 shelf and connector D3685A at the SMYDC 2, M1748:

D728A	D3685A
pin C10	pin 48

- 4) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install the SMYDC 1 and SMYDC 2. To install them, do this task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.

EFFECTIVITY
SIA ALL

27-81 TASK 810

D633A103-SIA

Page 232
Jun 15/2022



737-600/700/800/900 FAULT ISOLATION MANUAL

- c) Re-install the FSEU, M1746. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - d) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - e) If the maintenance message does not show, then you corrected the fault.
- (c) If the AC voltage equals to zero volts, then continue.
- 1) Re-install the SMYDC 1 and SMYDC 2. To install them, do this task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
- (5) Replace the FSEU. These are the tasks:
- Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801
 - Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801
- (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (b) If the maintenance message does not show, then you corrected the fault.

————— **END OF TASK** —————

811. Takeoff Warning Fault - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-81421 TAKEOFF WARNING
- (2) An overcurrent condition was detected on the takeoff warning discrete output for the proximity switch electronics unit (PSEU) during an existing faults test.

B. Possible Causes

- (1) Proximity switch electronics unit (PSEU), M2061
- (2) FSEU, M1746
- (3) Wiring problem

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	7	C01208	STALL WARN ASYM MODE

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	8	C00211	FLIGHT CONTROL FSEU DC 1
A	9	C01468	FLIGHT CONTROL FSEU DC 2

D. Related Data

- (1) (SSM 27-81-11)
- (2) (SSM 31-53-11)
- (3) (WDM 27-81-11)
- (4) (WDM 31-53-11)

EFFECTIVITY
SIA ALL

27-81 TASKS 810-811

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 233
Jun 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

E. Initial Evaluation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (2) If the maintenance message does not show, then there was an intermittent fault.
- (3) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this check of the Proximity Switch Electronics Unit (PSEU), M2061:
 - (a) Remove the PSEU, M2061. To remove it, do this task: Proximity Switch Electronics Unit (PSEU) Removal, AMM TASK 32-09-10-000-801.
 - (b) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (c) If the maintenance message does not show, then do these steps:
 - 1) Install a new PSEU, M2061. To install it, do this task: Proximity Switch Electronics Unit (PSEU) Installation, AMM TASK 32-09-10-400-801.
 - 2) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 3) If the maintenance message does not show, then you corrected the fault.
 - (d) If the maintenance message shows, then continue.
 - (2) Do this check of the wiring between the FSEU, M1746 and the PSEU, M2061:
 - (a) Do a voltage check between the PSEU connector D10986, Pin 27 and structure ground.
 - (b) If there is AC or DC voltage between connector D10986, pin 27 and structure ground, then do this check of the wiring between the FSEU, M1746 and the PSEU, M1746:
 - 1) Remove the FSEU. To remove it, do this task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
 - 2) Do a wiring check between these pins of connector D728A at the FSEU and connector D10986 at the PSEU:

D728A		D10986
pin B12	.....	pin 27
pin B12	.....	pin 48
 - 3) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-install the PSEU, M2061. To install it, do this task: Proximity Switch Electronics Unit (PSEU) Installation, AMM TASK 32-09-10-400-801.
 - c) Re-install the FSEU. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - d) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - e) If the maintenance message does not show, then you corrected the fault.
 - (c) If there was not voltage on the pin, or if you did not find a problem with the wiring, then continue.
- (3) Re-install the PSEU, M2061. To install it, do this task: Proximity Switch Electronics Unit (PSEU) Installation, AMM TASK 32-09-10-400-801.
- (4) Install a new FSEU. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.

EFFECTIVITY
SIA ALL

27-81 TASK 811

D633A103-SIA

Page 234
Jun 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (b) If the maintenance message does not show, then you corrected the fault.

————— **END OF TASK** —————

812. Leading Edge Lockout Problem - Fault Isolation

(27-81 TASK SUPPORT Figure 301)

A. Description

- (1) This task is for this Observed Fault:
 - (a) The LE Flaps and Slats do not retract from the mid-extend position.
- (2) LE lockouts are usually caused by excessive internal leakage in the LE Slat Actuators that set the Hydraulic Fuses.

B. Possible Causes

- (1) Electrical Failure
- (2) Excessive Internal Leakage in the LE Slat Actuators

C. Related Data

- (1) WDM 27-81-31

D. Initial Evaluation

- (1) Make sure that the LE system is still locked out in the mid-extend position.

NOTE: The following troubleshooting steps will not work if the LE lockout has cleared itself.

- (a) If the LE has cleared itself, do the following steps to create the lockout condition:
 - 1) Supply system B hydraulic power. To supply hydraulic power, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
 - 2) Move the flap control lever to the 1-unit position to extend the leading edge flaps and slats.
 - 3) Wait for 20 to 30 minutes after the LE flaps and slats had stopped moving.
 - 4) Move the flap control lever to the UP position to retract the leading edge flaps and slats.
 - 5) If the LE flaps and slats retract, then you had not created the lockout condition. Do these steps:
 - a) Move the flap control lever to the 1-unit position to extend the leading edge flaps and slats.
 - b) Wait for 60 minutes after the LE flaps and slats had stopped moving.
 - c) Move the flap control lever to the UP position to retract the leading edge flaps and slats.
 - d) If the LE flaps and slats retract, then you can not create the lockout condition. Do the fault isolation procedure - Leading Edge Lockout below.
 - 6) If the LE flaps and slats do not move, then you had created the lockout condition. Continue with the next step.

EFFECTIVITY
SIA ALL

27-81 TASKS 811-812

D633A103-SIA

Page 235
Oct 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 7) Open this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

- 8) If the LE flaps and slats do not move, then the LE lockout was not caused by an electrical problem. Do the fault isolation procedure Leading Edge Lockout below.
- 9) If the flaps and slats retract, then the LE lockout was caused by an electrical problem.
- 10) Close this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	7	C00210	FLIGHT CONTROL FLAP SHUTOFF VALVES

E. Fault Isolation Procedure - Leading Edge Lockout

- (1) Reset the system B hydraulic fuses. To reset them, do this task: Flap and Slat Hydraulic Fuses (System B) Reset, AMM TASK 27-81-61-860-801.
- (2) Do the following steps to check for actuator internal leakage without breaking into the hydraulic system:

NOTE: Do this task, if you have the stethoscope, COM-1797 and Infrared Thermometer, COM-1572. If you do not have these tools, go to the next task.



KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (a) If hydraulic system B is not pressurized, pressurize hydraulic system B. To pressurize hydraulic system B, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (b) Move the flap control lever to the 1-unit position to extend the leading edge flaps and slats.
- 1) Make sure that the LE slats move to the mid-extend position.
- (c) Use the Infrared Thermometer, COM-1572 to measure the temperatures of all 8 LE slat actuators and 4 LE flap actuators.

NOTE: The larger part of the actuator barrel is the good location to measure the temperature. Measure the temperature at the same location on all of the actuators.

- 1) If the temperature of one actuator is more than 10 degrees F (5.6 degrees C) higher than other actuators, then there is internal leakage in the warmer actuator.

EFFECTIVITY
SIA ALL

27-81 TASK 812

D633A103-SIA

Page 236
Jun 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (d) If you do not have the Infrared Thermometer, COM-1572, use the stethoscope, COM-1797 to listen to the internal leakage of all 8 LE slat actuators and 4 LE flap actuators.

NOTE: This alternate procedure does not contain quantitative values, it may be subject to interpretation. If in doubt, remove the suspect actuator and replace it or perform Step (2).(c) above or Step (3) below to obtain a more accurate assessment of the condition of the actuator. Step (2).(c) above or Step (3) below provide quantitative values which give a more accurate assessment of internal leakage.

NOTE: The actuator manifold next to the "P" valve port is the good location to put the stethoscope. Listen to the internal leakage at the same location on all of the actuators.

- 1) Compare the noise you hear from each of the actuator. If the leaking noise from one actuator is significantly higher than other actuators, then there is internal leakage in that actuator.
- (e) If you are confident that there is one of more actuator that is leaking internally, replace the actuator:
- 1) For the leading edge flap, These are the tasks:
 - Leading Edge Flap Actuator Removal, AMM TASK 27-81-31-000-801
 - Leading Edge Flap Actuator Installation, AMM TASK 27-81-31-400-801
 - 2) For the leading edge slats. These are the tasks:
 - Leading Edge Slat Actuator - Removal, AMM TASK 27-81-41-000-801
 - Leading Edge Slat Actuator Installation, AMM TASK 27-81-41-400-801
- (f) If you are not confident that there is one actuator that is leaking internally, then continue with the next steps to measure the total leakage in the LE system or do the steps to measure the internal leakage in each actuator.
- (3) Do the following steps to measure the internal leakage in the leading edge system:

NOTE: The Leading Edge fuses will never set if the internal leakage (flow) is less than 0.1 gpm. The fuses will set if the internal leakage is more than 0.4 gpm. If the internal leakage is between 0.1 gpm and 0.4 gpm, it is difficult to say if the fuse will set or not. If the internal leakage is less than 0.1 gpm, you have a healthy leading edge system.



WARNING

KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (a) If hydraulic system B is not pressurized, pressurize hydraulic system B. To pressurize hydraulic system B, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (b) Move the flap control lever to the 1-unit position to extend the leading edge flaps and slats.
 - 1) Make sure that the LE slats move to the mid-extend position.
- (c) Remove system B hydraulic power, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

EFFECTIVITY
SIA ALL

27-81 TASK 812

D633A103-SIA

Page 237
Jun 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (d) Remove the pressure from the system B reservoir. To remove the pressure, do this task: Hydraulic Reservoirs Depressurization, AMM TASK 29-09-00-860-802.
- (e) Disconnect the hydraulic lines at the three locations listed below:
 - 1) Put a graduated (scaled) collector, STD-1223 under the tee [12] on the autoslat valve [13].
 - 2) Disconnect the return line [11] from the tee [12].
 - 3) Install a cap or plug on the return line [11].
 - 4) Connect a hose to the tee [12] and collect the fluid from the hose into the graduated (scaled) collector, STD-1223.
 - 5) Put a graduated (scaled) collector, STD-1223 under the return line [3] to the LE flap and slat control valve [2].
 - 6) Disconnect the return line [3] from the control valve [2].
 - 7) Install a cap or plug on the return line [3].
 - 8) Connect a hose to the port from the control valve [2] and collect the fluid from the hose into the graduated (scaled) collector, STD-1223.
 - 9) Put a graduated (scaled) collector, STD-1223 under the return line [8] to the LE standby shutoff valve [5].
 - 10) Disconnect the return line [8] from the LE standby shutoff valve [5].
 - 11) Install a cap or plug on the port of the LE standby shutoff valve [5].
 - 12) Connect a hose to the return line [8] and collect the fluid from the hose into the graduated (scaled) collector, STD-1223.



WARNING

KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (f) Pressurize hydraulic system B, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (g) Collect the fluid from the three hoses that you connect in the previous steps.
 - 1) Record the total leakage from the three hoses for a period of 1 minute.
 - 2) If the total leakage is more than 0.1 gpm, then do the steps to measure the internal leakage in each actuator.
 - 3) If the total leakage is less than 0.1 gpm, then continue.
- (4) Do the following steps to measure the internal leakage across the autoslat valve [13]:
 - (a) Remove system B hydraulic power, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
 - (b) Remove the cap or plug that you installed on the return line [3].
 - (c) Connect the return line [3] to the control valve [2].
 - (d) Remove the cap or plug that you installed on the port of the LE standby shutoff valve [5].
 - (e) Connect the return line [8] to the LE standby shutoff valve [5].
 - (f) Leave the return line [11] disconnected from the tee [12].

EFFECTIVITY
SIA ALL

27-81 TASK 812

D633A103-SIA

Page 238
Jun 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**



KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (g) Pressurize hydraulic system B using the EMDP, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
 - (h) Move the flap control lever to the 30-unit position to extend the leading edge flaps and slats.
 - 1) Make sure that the LE slats move to the fully extended position.
 - (i) Use the Proximity Switch Electronics Unit (PSEU) to simulate air mode. To simulate air mode, do this task: Put the Airplane in the Air Mode, AMM TASK 32-09-00-860-801.
 - (j) Move the flap control lever to the 40 unit position to extend the trailing edge flaps.

NOTE: A small amount of hydraulic fluid will leak from the autoslat valve when the autoslat valve solenoids are energized. The solenoids will be energized for approximately 1/2 second, when the trailing edge flaps are between the 30 and 40 unit positions.
 - (k) Measure and record the leakage rate from the port on the autoslat valve [13] again.
 - 1) If the leakage rate is more than 140 cc/minute, then replace the autoslat valve [13] or the LE UCM valve [10].
 - a) If the leakage rate is more than 40 cc/minute for the autoslat valve [13], then replace the autoslat valve [13]. To replace it, these are the tasks:
 - Autoslat Control Valve Removal, AMM TASK 27-83-21-000-801
 - Autoslat Control Valve Installation, AMM TASK 27-83-21-400-801
 - b) If the leakage rate is more than 100 cc/minute for the LE UCM valve [10], then replace the LE UCM valve [10]. To replace it, these are the tasks:
 - LE Uncommanded Motion (UCM) or LE Cruise Depressurization Valve Removal, AMM TASK 27-81-52-000-801
 - LE Uncommanded Motion (UCM) or LE Cruise Depressurization Valve Installation, AMM TASK 27-81-52-400-801
 - 2) If the leakage rate is not more than 140 cc/minute, then continue.
 - (l) Use the Proximity Switch Electronics Unit (PSEU) to return the airplane to ground mode. To return to ground mode, do this task: Return the Airplane to the Ground Mode, AMM TASK 32-09-00-860-802.
 - (m) Move the flap control lever to the UP position to retract the leading and trailing edge flaps and slats.
 - (n) Remove system B hydraulic power. To remove hydraulic power, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
 - (o) Remove the pressure from the system B reservoir. To remove the pressure, do this task: Hydraulic Reservoirs Depressurization, AMM TASK 29-09-00-860-802.
 - (p) Remove the cap or plug from the hydraulic return line [11].
 - (q) Connect the return line [11] to the tee [12].
- (5) Do the following steps to measure the internal leakage across the actuator:

EFFECTIVITY
SIA ALL

27-81 TASK 812

D633A103-SIA

Page 239
Jun 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**



KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (a) If hydraulic system B is not pressurized, pressurize hydraulic system B. To pressurize hydraulic system B, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (b) Move the flap control lever to the 1-unit position to extend the leading edge flaps and slats.
 - 1) Make sure that the LE slats move to the mid-extend position.
- (c) Remove system B hydraulic power, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.
- (d) Remove the pressure from the system B reservoir. To remove the pressure, do this task: Hydraulic Reservoirs Depressurization, AMM TASK 29-09-00-860-802.



DO NOT MOVE THE LEADING EDGE DEVICES WHILE YOU DO THIS ACTUATOR LEAKAGE CHECK. IF THE LEADING EDGE DEVICES MOVE WITH THE HOSES CONNECTED, THEN THE HOSES CAN DAMAGE THE LEADING EDGE STRUCTURE.

- (e) Disconnect the actuator's hydraulic lines at these two locations:
 - 1) The actuator's Standby line:
 - a) Disconnect the line anywhere between the actuator and the "T".
 - b) Put a cap or plug on the port that is closest to the "T".
 - c) Connect a hose to the port closest to the actuator and collect the fluid from the hose in the graduated (scaled) collector, STD-1223.
 - 2) The actuator's C2 line:
 - a) Disconnect the line anywhere between the actuator and the "T".
 - b) Put a cap or plug on the port that is closest to the "T".
 - c) Connect a hose to the port closest to the actuator and collect the fluid from the hose in the graduated (scaled) collector, STD-1223.



KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (f) Pressurize hydraulic system B, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (g) Measure and record the leakage rate from both of the hoses for the actuator for a period of one minute.
 - 1) If the combine leakage rate is not more than 15 cc/minute, then the actuator is good.
 - 2) If the combine leakage rate is more than 15 cc/minute, then replace the actuator.

EFFECTIVITY
SIA ALL

27-81 TASK 812

D633A103-SIA

Page 240
Jun 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

To replace the LE flap actuator, these are the tasks:

- Leading Edge Flap Actuator Removal, AMM TASK 27-81-31-000-801
- Leading Edge Flap Actuator Installation, AMM TASK 27-81-31-400-801

To replace the LE slat actuator, these are the tasks:

- Leading Edge Slat Actuator - Removal, AMM TASK 27-81-41-000-801
- Leading Edge Slat Actuator Installation, AMM TASK 27-81-41-400-801

a) Do the steps to flush the Leading Edge system.

(h) Remove the hoses and connect the hydraulic lines that you disconnected.

(6) Do the following steps to flush the Leading Edge system:

NOTE: Start flushing from inboard and working outboard.



KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

(a) If hydraulic system B is not pressurized, pressurize hydraulic system B. To pressurize hydraulic system B, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.

(b) Move the flap control lever to the 30-unit position to fully extend the leading edge flaps and slats.

1) Make sure that the LE slats move to the full-extend position.

(c) Remove system B hydraulic power, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

(d) Remove the pressure from the system B reservoir. To remove the pressure, do this task: Hydraulic Reservoirs Depressurization, AMM TASK 29-09-00-860-802.



DO NOT MOVE THE LEADING EDGE DEVICES WHILE YOU DO THIS ACTUATOR LEAKAGE CHECK. IF THE LEADING EDGE DEVICES MOVE WITH THE HOSES CONNECTED, THEN THE HOSES CAN DAMAGE THE LEADING EDGE STRUCTURE.

(e) For each of the eight actuators, do the following steps:

1) Disconnect the actuator's retract pressure line at the swivel.

a) Connect a hose to the port closest to the "T" and collect the fluid from the hose in the graduated (scaled) collector, STD-1223.

NOTE: Take caution to prevent hydraulic fluid from splattering.

b) Leave open the port that is closest to the actuator.

2) Disconnect the actuator's C1 line at the swivel.

a) Connect a hose to the port closest to the "T" and collect the fluid from the hose in the graduated (scaled) collector, STD-1223.

NOTE: Take caution to prevent hydraulic fluid from splattering.

b) Leave open the port that is closest to the actuator.

EFFECTIVITY
SIA ALL

27-81 TASK 812

D633A103-SIA

Page 241
Jun 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 3) Disconnect the actuator's C2 line at the swivel.

NOTE: Skip this step for the leading edge flap actuators. The LE flap actuators do not have a C2 line.

- a) Connect a hose to the port closest to the "T" and collect the fluid from the hose in the graduated (scaled) collector, STD-1223.

NOTE: Take caution to prevent hydraulic fluid from splattering.

- b) Leave open the port that is closest to the actuator.



KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- 4) Pressurize hydraulic system B using the EMDP, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.

- 5) Turn on the pump for 2 second then turn off using the HYP PUMPS switch on the P5 HYDRAULIC PANEL.

NOTE: The pump should be on long enough to flush out approximately 1/2 gallon of fluid. If the pump is on too long, then the LE system's fuses may set.

- 6) Remove the hoses and connect the hydraulic lines that you disconnected.
7) Add fluid to the B hydraulic system's reservoir if necessary.
8) Repeat these steps for the other actuators.

———— **END OF TASK** ————

EFFECTIVITY
SIA ALL

27-81 TASK 812

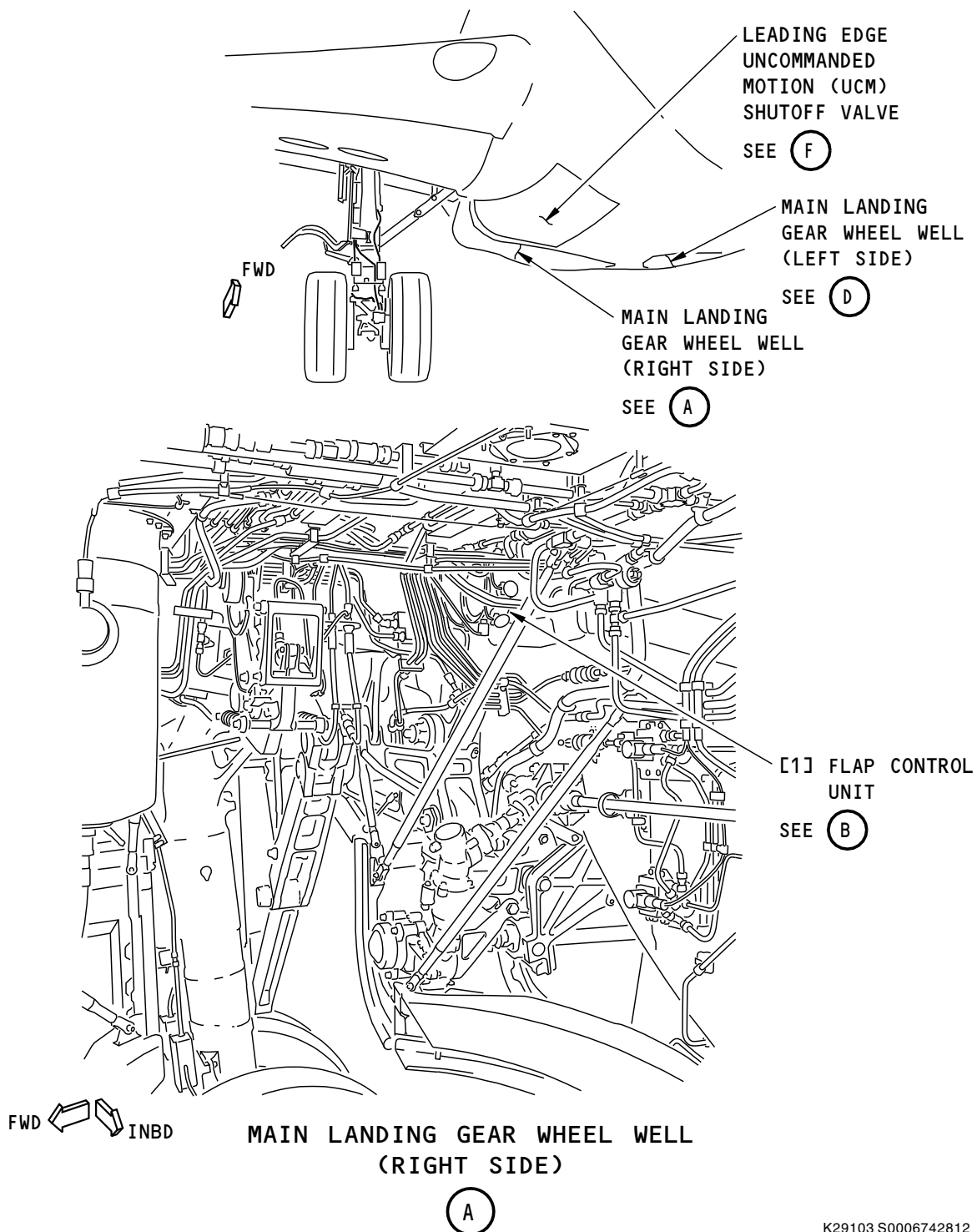
D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 242
Jun 15/2022



737-600/700/800/900
FAULT ISOLATION MANUAL



K29103 S0006742812_V1

Leading Edge Flap and Slat Control Valves
Figure 301/27-81-00-990-801 (Sheet 1 of 4)

EFFECTIVITY
SIA ALL

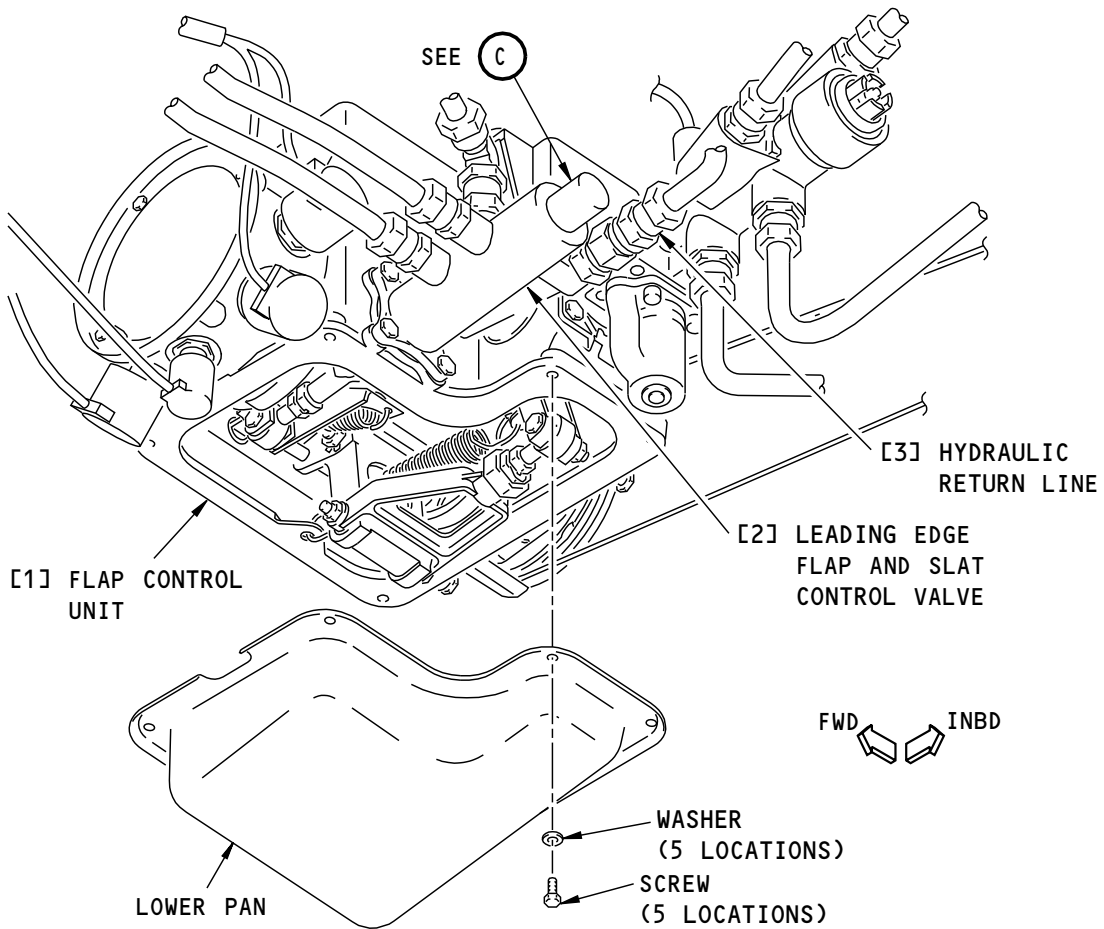
27-81 TASK SUPPORT

D633A103-SIA

Page 301
Oct 15/2021

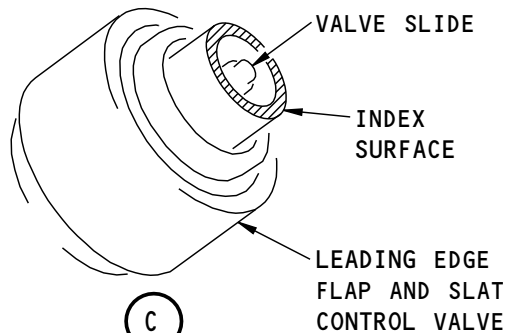


737-600/700/800/900
FAULT ISOLATION MANUAL



FLAP CONTROL UNIT

(B)



K29104 S0006742813_V1

Leading Edge Flap and Slat Control Valves
Figure 301/27-81-00-990-801 (Sheet 2 of 4)

EFFECTIVITY
SIA ALL

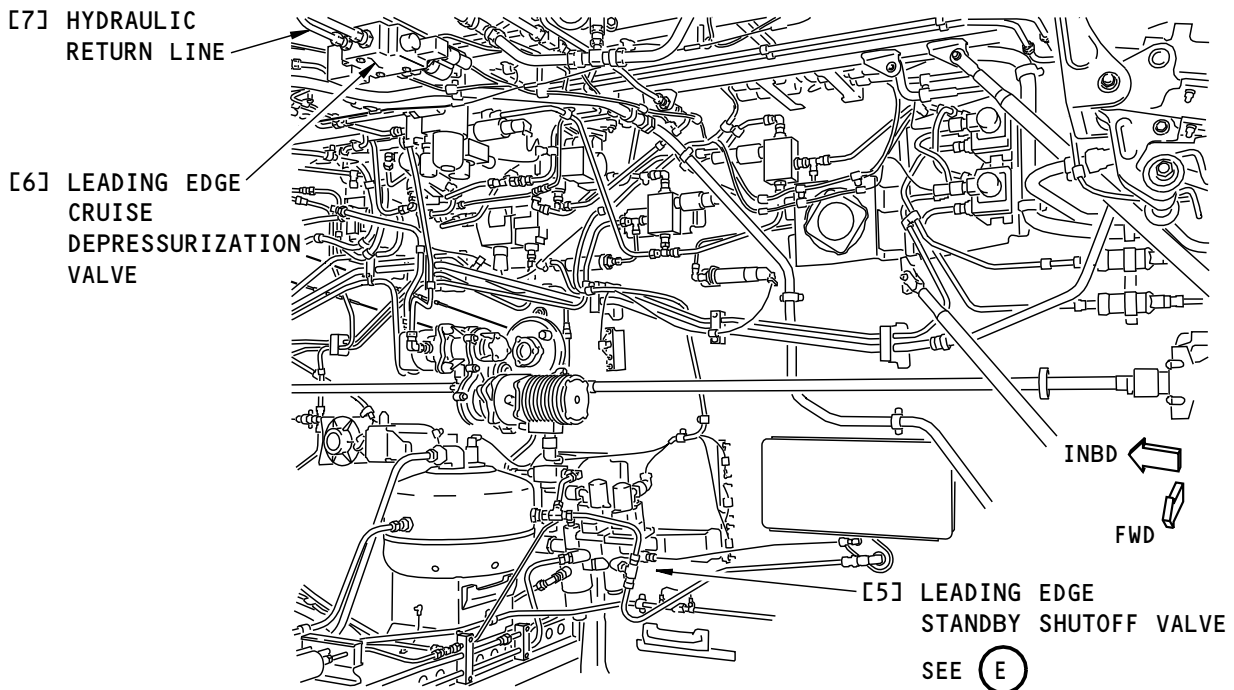
27-81 TASK SUPPORT

D633A103-SIA

Page 302
Oct 15/2021

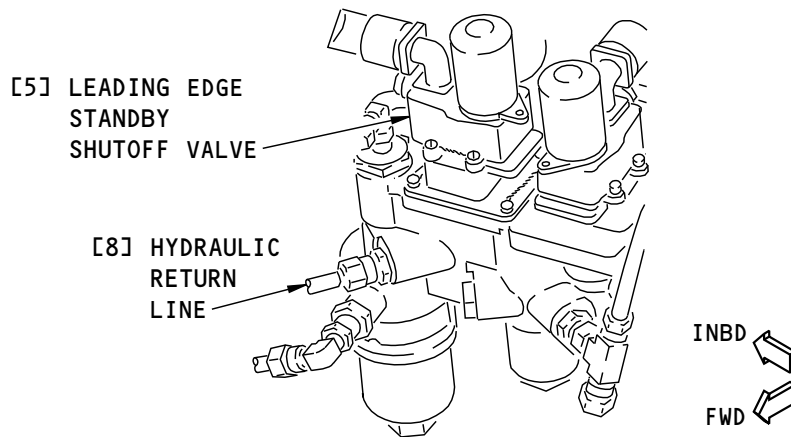


737-600/700/800/900
FAULT ISOLATION MANUAL



MAIN LANDING GEAR WHEEL WELL
(LEFT SIDE)

(D)



LEADING EDGE STANDBY
SHUTOFF VALVE

(E)

K29233 S0006742814_V1

Leading Edge Flap and Slat Control Valves
Figure 301/27-81-00-990-801 (Sheet 3 of 4)

EFFECTIVITY
SIA ALL

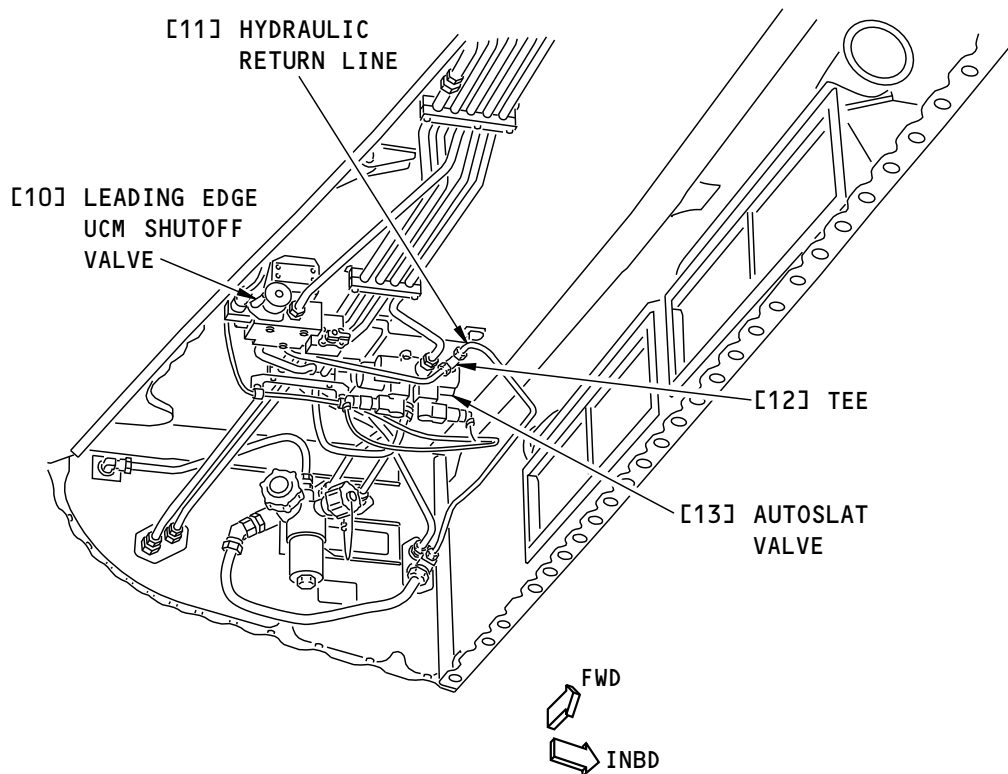
27-81 TASK SUPPORT

D633A103-SIA

Page 303
Oct 15/2021



737-600/700/800/900
FAULT ISOLATION MANUAL



LEADING EDGE UNCOMMANDED MOTION (UCM) SHUTOFF VALVE
(RIGHT CENTER SECTION WING BOX)
(UNDERWING PANEL IS REMOVED)

F

K29240 S0006742815_V1

Leading Edge Flap and Slat Control Valves
Figure 301/27-81-00-990-801 (Sheet 4 of 4)

EFFECTIVITY
SIA ALL

27-81 TASK SUPPORT

D633A103-SIA

Page 304
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

801. SMYD Autoslat No Power - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 27-81002 A/S NO POWER (SMYD 1)
 - (b) 27-82002 A/S NO POWER (SMYD 2)
- (2) The SMYD autoslat does not detect 28 VDC from the DC bus.
- (3) The stall warning test will fail if the fault is present.

B. Possible Causes

- (1) Wiring problem
- (2) Stall management yaw damper (SMYD), M1747 (SMYD 1) or M1748 (SMYD 2)

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	14	C01070	FLIGHT CONTROL AUTOSLAT DC 2
C	14	C01068	FLIGHT CONTROL AUTOSLAT DC 1

D. Related Data

- (1) (27-83 TASK SUPPORT Figure 301)
- (2) (SSM 27-83-11)
- (3) (SSM 27-83-21)
- (4) (WDM 27-83-11)
- (5) (WDM 27-83-21)

E. Initial Evaluation

- (1) Make sure that these circuit breakers are closed:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	14	C01070	FLIGHT CONTROL AUTOSLAT DC 2
C	14	C01068	FLIGHT CONTROL AUTOSLAT DC 1

- (2) Do the EXISTING FAULTS test for the SMYD. To do the test, do this task: Stall Management Yaw Damper (SMYD) BITE Test, AMM TASK 27-32-00-740-803
 - (a) If the maintenance message does not show, then there was an intermittent fault.
 - (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this check for power to the SMYD:
 - (a) Remove the applicable SMYD, M1747 (SMYD 1) or M1748 (SMYD 2). To remove the SMYD, do this task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801.
 - (b) Examine the connector and sockets for damage and unwanted material.
 - (c) If the SMYD 1 was removed, do this step:



737-600/700/800/900 FAULT ISOLATION MANUAL

Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C00285	YAW DAMPER AC
D	7	C00286	YAW DAMPER 1 DC

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C01392	STICK SHAKER LEFT
E	5	C01204	SMYD-1 CMPTR DC
E	6	C01205	SMYD-1 SNSR EXC AC

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	14	C01068	FLIGHT CONTROL AUTOSLAT DC 1

- (d) If the SMYD 2 was removed, do this step:

Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	6	C01354	YAW DAMPER 2 DC

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	8	C00544	FLIGHT RECORDER POSITION SENSOR

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C01207	SMYD-2 SNSR EXC AC
B	5	C01206	SMYD-2 CMPTR DC
B	6	C01393	STICK SHAKER RIGHT

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	14	C01070	FLIGHT CONTROL AUTOSLAT DC 2

- (e) For maintenance message 27-81002 (SMYD 1), do a check for 28 VDC between pin 3 of connector D3683A and structure ground.
- (f) For maintenance message 27-82002 (SMYD 2), do a check for 28 VDC between pin 3 of connector D3685A and structure ground.
- (g) If there is not 28 VDC at pin 3, then do these steps:
- 1) Install a new SMYD. To install the SMYD, do this task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - 2) Do the Repair Confirmation at the end of this task:
 - a) If the Repair Confirmation is not satisfactory, then continue.
- (2) Replace the applicable circuit breaker:

EFFECTIVITY
SIA ALL

27-83 TASK 801

D633A103-SIA

Page 202
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (a) For maintenance message 27-81002, replace this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	14	C01068	FLIGHT CONTROL AUTOSLAT DC 1

- (b) For maintenance message 27-82002, replace this circuit breaker:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	14	C01070	FLIGHT CONTROL AUTOSLAT DC 2

- (c) Do the Repair Confirmation at the end of this task:

- 1) If the Repair Confirmation is not satisfactory, then continue.

- (3) Do this check of the wiring:

- (a) Remove the applicable SMYD, M1747 (SMYD 1) or M1748 (SMYD 2). To remove the SMYD, do this task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801.
- (b) Do a wiring check between these connections on the applicable circuit breaker on the P6-2 panel and the SMYD connector:

Table 201

MAINTENANCE MESSAGE	CIRCUIT BREAKER		SMYD CONNECTOR
27-81002 (SMYD 1)	C1068 (C14)	--	D3683A pin 3
27-82002 (SMYD 2)	C1070 (B14)	--	D3685A pin 3

- (c) If you find a problem with the wiring, then do these steps:

- 1) Repair the wiring.
- 2) Re-install the SMYD. To install the SMYD, do this task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
- 3) Do the Repair Confirmation at the end of this task.
- 4) If the Repair Confirmation is satisfactory, then you corrected the fault.
- 5) If the Repair Confirmation is not satisfactory, then continue.

- (4) Replace the SMYD. These are the tasks:

- Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
- Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801

- (a) Do the Repair Confirmation at the end of this task.

- (b) If the Repair Confirmation is satisfactory, then you corrected the fault.

G. Repair Confirmation

- (1) Do this test of the stall warning systems:

- (a) Do these steps to test the number 1 stall warning system:

- 1) If it is necessary, do this task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
- 2) Push and hold the STALL WARNING TEST NO. 1 switch on the stall warning test module.

EFFECTIVITY
SIA ALL

27-83 TASK 801

D633A103-SIA

Page 203
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 3) Make sure the captain's control column shaker operates.
- 4) Release the test switch.
- 5) Make sure the shaker stops.
- (b) Do these steps to test the number 2 stall warning system:
 - 1) If it is necessary, do this task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
 - 2) Push and hold the STALL WARNING TEST NO. 2 switch on the stall warning test module.
 - 3) Make sure the first officer's control column shaker operates.
 - 4) Release the test switch.
 - 5) Make sure the shaker stops.
- (c) If the stick shaker tests passed, then you corrected the fault.

————— **END OF TASK** —————

802. Autoslat Valve Circuit Open - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 27-81003 A/S vlv ckt open (SMYD 1)
 - (b) 27-82003 A/S vlv ckt open (SMYD 2)
- (2) The autoslat valve circuit is open.
- (3) The stall warning test failed.
- (4) The AUTOSLAT FAIL light is on.

B. Possible Causes

- (1) Wiring problem
- (2) Autoslat valve, V132
- (3) Stall management yaw damper (SMYD), M1747 (SMYD 1) or M1748 (SMYD 2)

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	14	C01070	FLIGHT CONTROL AUTOSLAT DC 2
C	14	C01068	FLIGHT CONTROL AUTOSLAT DC 1

D. Related Data

- (1) (27-83 TASK SUPPORT Figure 301, 27-83 TASK SUPPORT Figure 302)
- (2) (SSM 27-83-11)
- (3) (SSM 27-83-21)
- (4) (WDM 27-83-11)
- (5) (WDM 27-83-21)

EFFECTIVITY
SIA ALL

27-83 TASKS 801-802

D633A103-SIA

Page 204
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

E. Initial Evaluation

- (1) Do the EXISTING FAULTS test for the SMYD, do this task: Stall Management Yaw Damper (SMYD) BITE Test, AMM TASK 27-32-00-740-803.
 - (a) If the maintenance message does not show, then there was an intermittent fault.
 - (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this check of the wiring inside the autoslat valve solenoid.
 - (a) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
192BR	ECS Ram Air Inlet Mixing Duct Panel - Forward
 - (b) Remove the electrical connector from the autoslat valve solenoid:
 - 1) For fault 27-81003, remove connector D3188.
 - 2) For fault 27-82003, remove connector D3190.
 - (c) Examine the connectors for damage and unwanted material.
 - (d) Make sure that the resistance between pins 1 and 2 of the solenoid is less than 100 ohms.
 - (e) If the resistance is greater than 100 ohms, then do these steps:
 - 1) Replace the autoslat control valve. These are the tasks:
 - Autoslat Control Valve Removal, AMM TASK 27-83-21-000-801
 - Autoslat Control Valve Installation, AMM TASK 27-83-21-400-801
 - 2) Do the EXISTING FAULTS test on the SMYD, do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - 3) If the maintenance message does not show, then you corrected the fault.
 - (f) If the resistance is less than 100 ohms, then continue.
- (2) Do this wiring check between the SMYD connector and the autoslat valve solenoid:
 - (a) Remove the SMYD, do this task: Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801.
 - (b) Examine the connector pins and sockets for damage and unwanted material.
 - (c) For maintenance message 27-81003 (SMYD 1), measure the resistance between pin 5 on the connector D3683A and structure ground.
 - (d) For maintenance message 27-82003 (SMYD 2), measure the resistance between pin 5 on the connector D3685A and structure ground.
 - (e) If the resistance is greater than 100 ohms, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the SMYD, do this task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - 3) Do the EXISTING FAULTS test on the SMYD, do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - 4) If the maintenance message does not show, then you corrected the fault.
 - (f) If the resistance is less than 100 ohms, then continue.
- (3) For fault 27-81003, replace the number 1 SMYD. These are the tasks:

EFFECTIVITY
SIA ALL

27-83 TASK 802

D633A103-SIA

Page 205
Oct 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
- Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
- (a) Make sure that you do the test at the end of the installation procedure.
- (b) If the test operates correctly, then you corrected the fault.
- (4) For fault 27-82003, replace the number 2 SMYD. These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
 - (a) Make sure that you do the test at the end of the installation procedure.
 - (b) If the test operates correctly, then you corrected the fault.

———— **END OF TASK** ————

803. SMYD Autoslat Fault - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 27-81004 A/S flt tst fail (SMYD 1)
 - (b) 27-82004 A/S flt tst fail (SMYD 2)
- (2) The AUTOSLAT light comes on.
- (3) The stall warning test will fail, if the fault is present.

B. Possible Causes

- (1) Stall management yaw damper (SMYD), M1747 (SMYD 1) or M1748 (SMYD 2)

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	4	C01392	STICK SHAKER LEFT

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	6	C01393	STICK SHAKER RIGHT

D. Related Data

- (1) (27-83 TASK SUPPORT Figure 301)
- (2) (SSM 27-32-21)
- (3) (SSM 27-32-11)
- (4) (WDM 27-32-11)
- (5) (WDM 27-32-21)

E. Initial Evaluation

- (1) Do the EXISTING FAULTS test on the SMYD. Do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - (a) If the maintenance message does not show, then there was an intermittent fault.
 - (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

EFFECTIVITY
SIA ALL

27-83 TASKS 802-803

D633A103-SIA

Page 206
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

F. Fault Isolation Procedure

- (1) For fault 27-81004, replace the number 1 SMYD. These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
 - (a) Make sure you do the test at the end of the installation procedure.
 - (b) If the test operates correctly, then you corrected the fault.
- (2) For fault 27-82004, replace the number 2 SMYD. These are the tasks:
 - Stall Management Yaw Damper (SMYD) Removal, AMM TASK 27-32-42-000-801
 - Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801
 - (a) Make sure you do the test at the end of the installation procedure.
 - (b) If the test operates correctly, then you corrected the fault.

————— END OF TASK —————

806. FSEU Autoslat Fault - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 27-81281 AUTOSLAT INPUT 1
 - (b) 27-81282 AUTOSLAT INPUT 2
 - (c) 27-83350 AUTOSLAT
- (2) Separate autoslat commands are received from each SMYD. These inputs are monitored to determine if there is an uncommanded autoslat signal.

B. Possible Causes

- (1) Stall management yaw damper (SMYD), M1747 (SMYD 1) or M1748 (SMYD 2)
- (2) Wiring

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	14	C01070	FLIGHT CONTROL AUTOSLAT DC 2
C	14	C01068	FLIGHT CONTROL AUTOSLAT DC 1

D. Related Data

- (1) (27-83 TASK SUPPORT Figure 301)
- (2) (SSM 27-81-31)
- (3) (SSM 27-83-11)
- (4) (WDM 27-81-31)
- (5) (WDM 27-83-11)

E. Initial Evaluation

- (1) Do the EXISTING FAULTS test on the FSEU. Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (a) If the maintenance message does not show, then there was an intermittent fault.

EFFECTIVITY
SIA ALL

27-83 TASKS 803-806

D633A103-SIA

Page 207
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

(b) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do the EXISTING FAULTS test on the SMYD. Do this task: Stall Management Yaw Damper BITE Procedure, 27-32 TASK 801.
 - (a) For maintenance message 27-81281, do the test on SMYD 1.
 - (b) For maintenance message 27-81282, do the test on SMYD 2.
 - (c) For maintenance message 27-83350, do the test on both SMYD.
 - (d) If any maintenance messages related to AUTOSLAT show, then do the fault isolation procedure associated with the maintenance message.
 - (e) If no maintenance messages related to AUTOSLAT show, then continue.
- (2) For maintenance message 27-81281 or 27-83350, do this wiring test between the SMYD 1 and the FSEU.
 - (a) Remove the FSEU. To remove the FSEU, do this task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
 - (b) Remove the SMYD 1. To the remove the SMYD, do this task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - (c) Examine the connector pins and sockets for damage and unwanted material.
 - (d) Do a wiring check between these pins of connector D728B at the FSEU and connector D3683A at SMYD 1:

FSEU	SMYD 1
D728B	D3683A
pin A1	pin 50

- (e) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the SMYD. To install the SMYD, do this task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - 3) Re-install the FSEU. To install the FSEU, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - 4) Do the EXISTING FAULTS test on the FSEU. Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 5) If the maintenance message does not show, then you corrected the fault.
 - (f) If you did not find any wiring problems, then consider replacing the SMYD 1.
- (3) For maintenance message 27-81282 or 27-83350, do this wiring test between the SMYD 2 and FSEU.
 - (a) Remove the FSEU. To remove the FSEU, do this task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
 - (b) Remove the SMYD 2. To the remove the SMYD, do this task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - (c) Examine the connector pins and sockets for damage and unwanted material.
 - (d) Do a wiring check between these pins of connector D728B at the FSEU and connector D3685A at SMYD 2:

EFFECTIVITY
SIA ALL

27-83 TASK 806



**737-600/700/800/900
FAULT ISOLATION MANUAL**

FSEU
D728B
pin F3

SMYD 2
D3685A
pin 50

- (e) If you find any wiring problems, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the SMYD. To install the SMYD, do this task: Stall Management Yaw Damper (SMYD) Installation, AMM TASK 27-32-42-400-801.
 - 3) Re-install the FSEU. To install the FSEU, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - 4) Do the EXISTING FAULTS test on the FSEU. Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 5) If the maintenance message does not show, then you corrected the fault.
- (f) If you did not find any wiring problems, then consider replacing the SMYD 2.

———— **END OF TASK** ————

EFFECTIVITY
SIA ALL

27-83 TASK 806

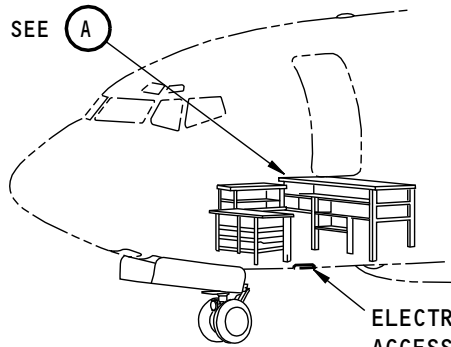
D633A103-SIA

Page 209
Oct 15/2021

BOEING
737-600/700/800/900
FAULT ISOLATION MANUAL

ELECTRONIC EQUIPMENT
 RACKS, E2, E3 AND E4

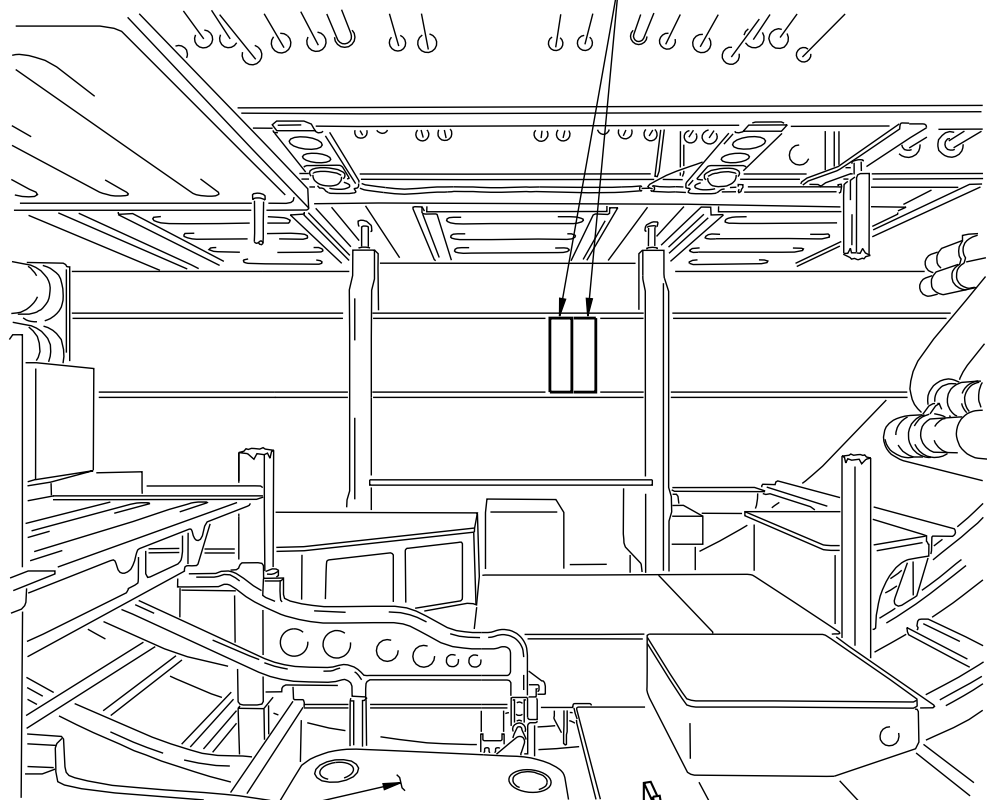
SEE (A)



ELECTRONIC EQUIPMENT
 ACCESS DOOR, 117A

STALL MANAGEMENT
 YAW DAMPER (E3-2)

SEE (B)



ELECTRONIC EQUIPMENT
 ACCESS DOOR, 117A

FWD

ELECTRONIC EQUIPMENT RACKS, E2, E3 AND E4

(A)

G58105 S0006742827_V1

Stall Management Yaw Damper (SMYD) Component Location
Figure 301/27-83-00-990-804 (Sheet 1 of 2)

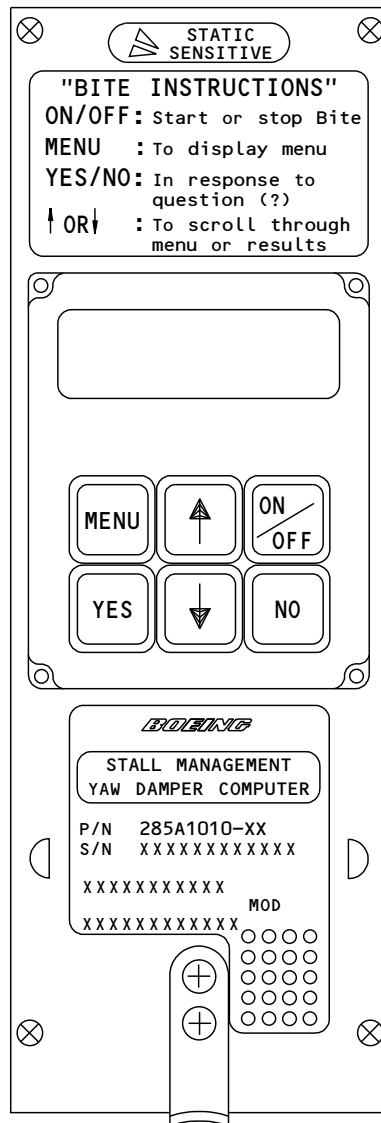
EFFECTIVITY
 SIA ALL

27-83 TASK SUPPORT

D633A103-SIA

Page 301
 Oct 15/2021

737-600/700/800/900
FAULT ISOLATION MANUAL



STALL MANAGEMENT YAW DAMPER
(EXAMPLE)

(B)

G58752 S0006742828_V1

Stall Management Yaw Damper (SMYD) Component Location
Figure 301/27-83-00-990-804 (Sheet 2 of 2)

	EFFECTIVITY
SIA ALL	

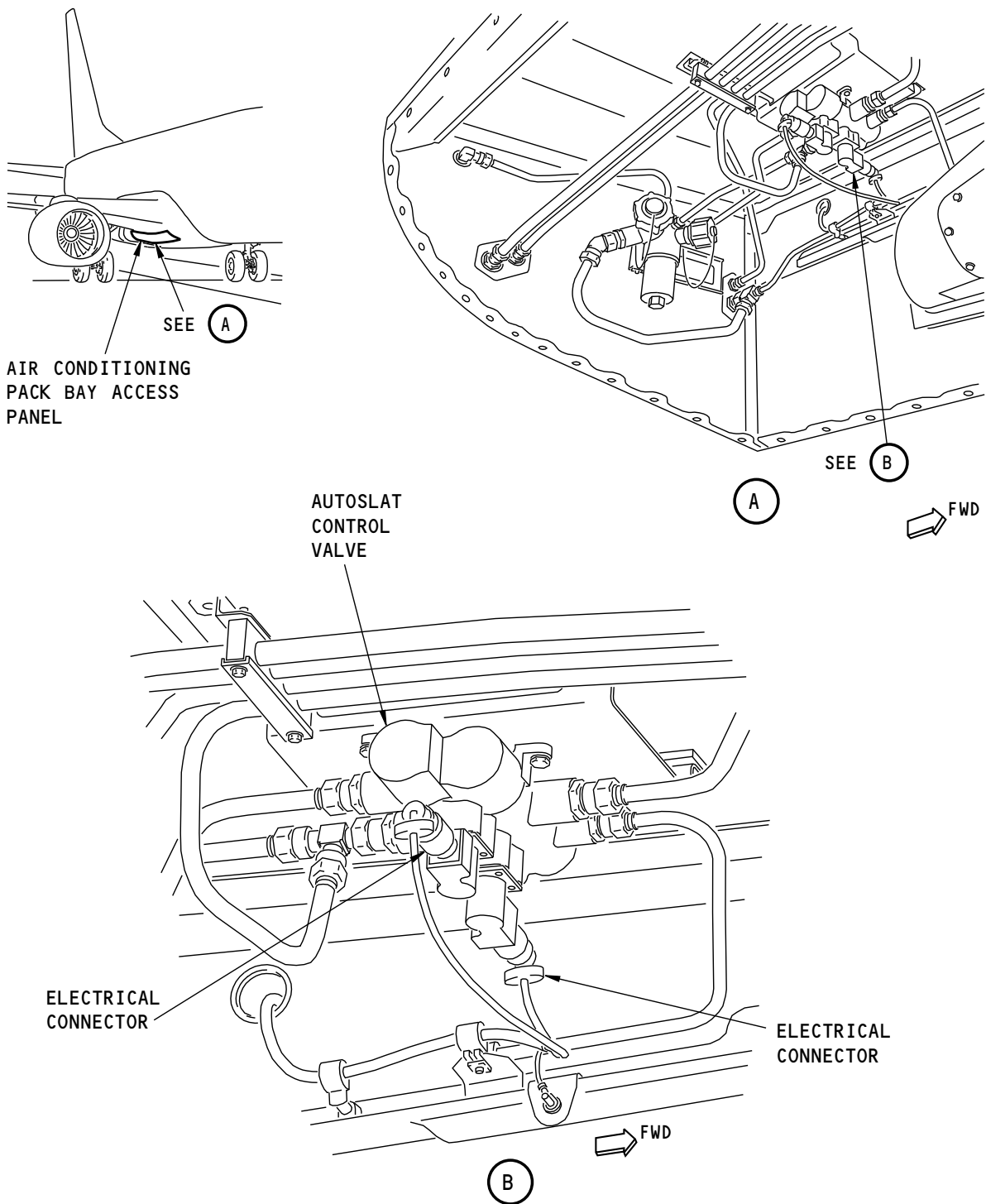
27-83 TASK SUPPORT

D633A103-SIA

Page 302
 Oct 15/2021



737-600/700/800/900
FAULT ISOLATION MANUAL



G58107 S0006742829_V1

Autoslat Control Valve Component Location
Figure 302/27-83-00-990-805

EFFECTIVITY
SIA ALL

27-83 TASK SUPPORT

D633A103-SIA

Page 303
Oct 15/2021



737-600/700/800/900 FAULT ISOLATION MANUAL

801. FSEU Proximity Sensor Fault - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-51105 FSEU FAILED
- (2) There is an internal FSEU fault in reading one or more of the leading edge proximity sensors.
- (3) When this maintenance message shows, there should be another message for a specific proximity sensor. This task should be performed before the fault isolation task for the other maintenance message.

B. Possible Causes

- (1) FSEU, M1746

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	8	C00211	FLIGHT CONTROL FSEU DC 1
A	9	C01468	FLIGHT CONTROL FSEU DC 2

D. Initial Evaluation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (2) If the maintenance message does not show, then there was an intermittent fault.
- (3) If the maintenance message shows, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

- (1) Replace the FSEU, M1746. These are the tasks:
 - Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801
 - Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801
- (2) Use the primary system to fully extend and retract the leading edge flaps and slats. To extend and retract them, do this task: Leading Edge Flap and Slat System Operation With Primary Control, AMM TASK 27-81-00-860-801.
- (3) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (a) If the maintenance message does not show, then you corrected the fault.

————— **END OF TASK** —————

802. FSEU Retract Sensor Fault - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-51110 FSEU FAILED
- (2) The Flap/Slat Electronics Unit (FSEU) Retract Sensor internal excitation source is invalid.

B. Possible Causes

- (1) FSEU, M1746

EFFECTIVITY
SIA ALL

27-88 TASKS 801-802

D633A103-SIA

Page 201
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

C. Initial Evaluation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (a) If the maintenance message does not show, then there was an intermittent fault.
 - (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

D. Fault Isolation Procedure

- (1) Replace the FSEU, M1746. These are the tasks:
 - Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801
 - Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801
- (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 1) If the maintenance message does not show, then you corrected the problem.

————— **END OF TASK** —————

803. Slat Outboard Proximity Sensor Disagree Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 27-81200 SL1 PROX OUTBOARD
 - (b) 27-81202 SL2 PROX OUTBOARD
 - (c) 27-81204 SL3 PROX OUTBOARD
 - (d) 27-81206 SL4 PROX OUTBOARD
 - (e) 27-81208 SL5 PROX OUTBOARD
 - (f) 27-81210 SL6 PROX OUTBOARD
 - (g) 27-81212 SL7 PROX OUTBOARD
 - (h) 27-81214 SL8 PROX OUTBOARD
 - (i) 27-81224 MULTIPLE PROX Multiple Proximity Sensors Disagree Problem - Fault Isolation, 27-88 TASK 807
- (2) The signal from one of the Leading Edge (LE) Outboard Slat Sensors disagrees with the signals from the other LE Outboard Slat Sensors.

B. Possible Causes

- (1) LE Outboard Slat Sensor, S994, S996, S998, S1000, S1002, S1004, S1006 or S1008
- (2) FSEU, M1746
- (3) Wiring

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	8	C00211	FLIGHT CONTROL FSEU DC 1
A	9	C01468	FLIGHT CONTROL FSEU DC 2

D. Related Data

- (1) WDM 27-81-12
- (2) WDM 27-81-22

EFFECTIVITY
SIA ALL

27-88 TASKS 802-803

D633A103-SIA

Page 202
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (3) SSM 27-81-12
- (4) SSM 27-81-22

E. Initial Evaluation

- (1) Do the Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (a) If the maintenance message 27-51105 FSEU FAILED shows, then first do this task: FSEU Proximity Sensor Fault - Fault Isolation, 27-88 TASK 801.
 - (b) If the maintenance message that brought you to this task does not show, then you corrected the problem. No other maintenance action is necessary.
 - (c) If the maintenance message that brought you to this task still shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this check of the inputs to the FSEU from the proximity sensors at different slat positions:
 - (a) Make sure the LE Flaps and Slats are in the retracted position.
 - (b) Use the FSEU to find the state of the applicable proximity sensors:

NOTE: The state of the proximity sensors will be GAP NEAR, GAP FAR, or MARGINAL.

 - 1) Push the ON/OFF button on the front panel of the FSEU to turn on the display.

NOTE: The display will show EXISTING FAULTS?.
 - 2) Push the NO button until OTHER FUNCTNS? shows on the display.
 - 3) Push the YES button to select OTHER FUNCTNS? on the FSEU.
 - 4) Push the NO button until I/O MONITOR? shows on the display.
 - 5) Push the YES button to select I/O MONITOR? on the FSEU.
 - 6) Push the YES button to select PROX SENSORS? on the FSEU.
 - 7) Push the down arrow to scroll through the PROX SENSORS on the display.

NOTE: Line 1 on the display shows the proximity sensor name. Line 2 on the display shows the state of the proximity sensor.
 - (c) Record the state of the applicable proximity sensor with the slats retracted.

NOTE: Sensors S1 OUTBD and S8 OUTBD should be GAP NEAR. Sensors S2 OUTBD through S7 OUTBD should be GAP FAR.
 - (d) Use the primary system to move the LE Slats to the extended position. This is the task: Leading Edge Flap and Slat System Operation With Primary Control, AMM TASK 27-81-00-860-801.
 - (e) Use the FSEU to find the state of the applicable proximity sensors again.
 - (f) Record the state of the applicable proximity sensor with the slats extended.

NOTE: Sensors S1 OUTBD through S8 OUTBD should be GAP FAR.
 - (g) Use the primary system to move the LE Slats to the fully extended position. This is the task: Leading Edge Flap and Slat System Operation With Primary Control, AMM TASK 27-81-00-860-801.
 - (h) Use the FSEU to find the state of the applicable proximity sensors again.
 - (i) Record the state of the applicable proximity sensor with the slats fully extended.

NOTE: Sensors S1 OUTBD through S8 OUTBD should be GAP NEAR.

EFFECTIVITY
SIA ALL

27-88 TASK 803

D633A103-SIA

Page 203
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (2) If the state of the proximity sensor was MARGINAL when it should have been GAP NEAR or GAP FAR, then adjust the clearance between the proximity sensor and the target. This is the task: Leading Edge Slat Proximity Sensor Installation, AMM TASK 27-88-11-400-801.
- (a) Do the Repair Confirmation at the end of this task.
- (3) If the state of the proximity sensor was GAP FAR when it should have been GAP NEAR, then do this check of the operation of the applicable proximity sensor:
- (a) Use the primary system to move the LE Slats to the extended position. This is the task: Leading Edge Flap and Slat System Operation With Primary Control, AMM TASK 27-81-00-860-801.
- (b) Deactivate the LE Slats. This is the task: Leading Edge Flaps and Slats Deactivation, AMM TASK 27-81-00-040-801.
- (c) Do a visual inspection of the proximity sensor and the target.
- 1) If there is any damage, or a sign of contact between the proximity sensor and target, then repair the damage.
- a) Do the Repair Confirmation at the end of this task.
- (d) Put a piece of steel near the proximity sensor to simulate a target.
- NOTE: You can use a steel ruler to simulate the target.
- (e) Use the FSEU to find the state of the proximity sensor.
- (f) If the state of the proximity sensor is GAP NEAR, then adjust the clearance between the proximity sensor and the target. This is the task: Leading Edge Slat Proximity Sensor Installation, AMM TASK 27-88-11-400-801.
- 1) Do the Repair Confirmation at the end of this task.
- (g) If the state of the proximity sensor is GAP FAR, then continue.
- (h) Remove the piece of steel from the sensor.
- (i) Use the primary system to retract the LE Slats to the fully retracted position. This is the task: Leading Edge Flap and Slat System Operation With Primary Control, AMM TASK 27-81-00-860-801.
- (4) Do this check of the proximity sensor and the wiring to the FSEU:
- NOTE: Alternately, you can do a test of the Proximity Sensors using the FSEU Breakout Box. This is the task:
- Leading Edge Flap and Slat Proximity Sensor Test Using Breakout Box and LCR Meter, AMM TASK 27-88-11-720-801
- (a) Remove the FSEU, M1746. This is the task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
- (b) Do these steps to measure the resistance between the pins of the FSEU connector D728A for the red terminal and Structure Ground (yellow) (Table 201):
- 1) Connect the LCR meter (Inductance, Capacitance, Resistance), COM-1741 to the red (white/red) and yellow (white/yellow) sensor leads.
- 2) Push the L/C/R mode switch to set the LCR meter (Inductance, Capacitance, Resistance), COM-1741 in R (resistance mode).
- 3) Push the 1 kHz/120 Hz button to select the 120 Hz excitation frequency.



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 4) Push and hold the L/C/R button on the LCR meter (Inductance, Capacitance, Resistance), COM-1741 until the meter changes to the series mode.

NOTE: "Ser" appears in the upper right corner of the display to indicate that the meter is in the series mode.

- 5) Read the resistance value on the LCR meter (Inductance, Capacitance, Resistance), COM-1741.

- 6) The nominal resistance reading at normal room temperature (Component Maintenance Manual (CMM) DC resistance, bench test condition) referred to as L1. L1 should be 27 to 33 ohms.

NOTE: The line and interface resistance can be considered and can add up to 2 ohms.

- 7) The permitted resistance reading for in-service sensors exposed to varying conditions is 24 to 38 ohms.

NOTE: On-wing resistance readings deviating from the CMM limits should consider the increased/lower resistance associated with a higher/lower temperature of the proximity sensor at the time of the measurement before a determination is made on the condition of the proximity sensor. Temperatures can deviate significantly from normal room temperature, which is always the case with airplanes with systems ON, or on airplanes that just have arrived from a flight, or when the airplane have been sitting out in the hot or cold weather. You need to know that the resistance values may be off and the proximity sensor could still be in good condition. The copper metal has a temperature coefficient of resistance which is approximately 0.40 ohm/degC. The deviation of the coil circuit (generally the yellow-red circuit) can be calculated at the rate of 0.40 ohm/degC from standard temperature (25degC).

- (c) Do these steps to measure the resistance between the pins of the FSEU connector D728A for the blue terminal and Structure Ground (yellow) (Table 201):

- 1) Connect the LCR meter (Inductance, Capacitance, Resistance), COM-1741 to the blue (white/blue) and yellow (white/yellow) sensor leads.
- 2) Push the L/C/R mode switch to set the LCR meter (Inductance, Capacitance, Resistance), COM-1741 in R (resistance mode).
- 3) Push the 1 kHz/120 Hz button to select the 120 Hz excitation frequency.
- 4) Push and hold the L/C/R button on the LCR meter (Inductance, Capacitance, Resistance), COM-1741 until the meter changes to the series mode.

NOTE: "Ser" appears in the upper right corner of the display to indicate that the meter is in the series mode.

- 5) Read the resistance value on the LCR meter (Inductance, Capacitance, Resistance), COM-1741.

- 6) The nominal resistance reading at normal room temperature (CMM DC resistance, bench test condition) referred to as R1. R1 should be 344.5 to 351.5 ohms.

NOTE: The line and interface resistance can be considered and can add up to 2 ohms.



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 7) The permitted resistance reading for in-service sensors exposed to varying conditions is 338 to 361 ohms.

NOTE: On-wing resistance readings deviating from the CMM limits should consider the increased/lower resistance associated with a higher/lower temperature of the proximity sensor at the time of the measurement before a determination is made on the condition of the proximity sensor. Temperatures can deviate significantly from normal room temperature, which is always the case with airplanes with systems ON, or on airplanes that just have arrived from a flight, or when the airplane have been sitting out in the hot or cold weather. You need to know that the resistance values may be off and the proximity sensor could still be in good condition. The copper metal has a temperature coefficient of resistance which is approximately 0.40 ohm/degC. The deviation of the coil circuit (generally the yellow-red circuit) can be calculated at the rate of 0.40 ohm/degC from standard temperature (25degC).

Table 201 PROXIMITY SENSOR RESISTANCE

PROXIMITY SENSOR	MAINTENANCE MESSAGE #	BLUE TERMINAL D728A	RED TERMINAL D728A
SLAT #1	27-81200	pin J4	pin K4
SLAT #2	27-81202	pin J6	pin K6
SLAT #3	27-81204	pin J8	pin K8
SLAT #4	27-81206	pin J10	pin K10
SLAT #5	27-81208	pin G10	pin H10
SLAT #6	27-81210	pin G8	pin H8
SLAT #7	27-81212	pin G6	pin H6
SLAT #8	27-81214	pin G4	pin H4

- (d) Reconnect the connector D728A to the FSEU.
- (e) If the resistance values are out of tolerance, then cut the wires at the sensor splices and recheck the resistance of the sensor.
- (f) If the resistance values for the sensors are out of tolerance, then do a check of the bonding resistance between the sensor ground and Structure Ground (Standard Wiring Practices Manual (SWPM) 20-20-00).
- 1) Make sure the resistance is less than 0.001 ohm.
 - 2) If the resistance is greater than 0.001 ohm, then inspect and repair the ground between the sensor connection and the Structure Ground.
 - 3) If you do not find a problem with the sensor ground, then continue.
- (g) If the resistance values are out of tolerance and there are no problems with the sensor ground, then replace the sensor. These are the tasks:
- Leading Edge Slat Proximity Sensor Removal, AMM TASK 27-88-11-000-801
 - Leading Edge Slat Proximity Sensor Installation, AMM TASK 27-88-11-400-801
- 1) Do the Repair Confirmation at the end of this task.

EFFECTIVITY
SIA ALL

27-88 TASK 803

D633A103-SIA

Page 206
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (h) If the resistance values for the sensor are in tolerance and there are no problems with the sensor ground, then you have determined that the wiring is faulty. Do the wiring check between the connections on the sensor wiring and the FSEU D728A connector using the Table 201. Repair the damaged wiring that you find.
- (i) Re-install the FSEU, M1746. This is the task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
- (j) Do the Repair Confirmation at the end of this task.
- (k) If none of the resistances agree, then do these steps:
 - 1) Replace the applicable proximity sensor. These are the tasks:
 - Leading Edge Slat Proximity Sensor Removal, AMM TASK 27-88-11-000-801
 - Leading Edge Slat Proximity Sensor Installation, AMM TASK 27-88-11-400-801
 - 2) Do the Repair Confirmation at the end of this task.
- (l) If all of the resistances agree, then do these steps:
 - 1) Install a new FSEU, M1746. This is the task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - 2) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Use the Primary System to fully extend and retract the LE Flaps and Slats. This is the task: Leading Edge Flap and Slat System Operation With Primary Control, AMM TASK 27-81-00-860-801.
- (2) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (a) If the maintenance message does not show, then you corrected the problem.
 - (b) If the maintenance message shows, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

804. Slat Inboard Proximity Sensor Disagree Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 27-81201 SL1 PROX INBOARD
 - (b) 27-81203 SL2 PROX INBOARD
 - (c) 27-81205 SL3 PROX INBOARD
 - (d) 27-81207 SL4 PROX INBOARD
 - (e) 27-81209 SL5 PROX INBOARD
 - (f) 27-81211 SL6 PROX INBOARD
 - (g) 27-81213 SL7 PROX INBOARD
 - (h) 27-81215 SL8 PROX INBOARD
 - (i) 27-81224 MULTIPLE PROX Multiple Proximity Sensors Disagree Problem - Fault Isolation, 27-88 TASK 807
- (2) The signal from one of the LE Inboard Slat Sensors disagrees with the signals from the other LE Inboard Slat Sensors.

EFFECTIVITY
SIA ALL

27-88 TASKS 803-804

D633A103-SIA

Page 207
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

B. Possible Causes

- (1) LE Inboard Slat Sensor, S995, S997, S999, S1001, S1003, S1005, S1007 or S1009
- (2) FSEU, M1746
- (3) Wiring

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	8	C00211	FLIGHT CONTROL FSEU DC 1
A	9	C01468	FLIGHT CONTROL FSEU DC 2

D. Related Data

- (1) WDM 27-81-12
- (2) WDM 27-81-22
- (3) SSM 27-81-12
- (4) SSM 27-81-22

E. Initial Evaluation

- (1) Do the Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (a) If the maintenance message 27-51105 FSEU FAILED shows, then first do this task:
FSEU Proximity Sensor Fault - Fault Isolation, 27-88 TASK 801.
 - (b) If the maintenance message that brought you to this task does not show, then you corrected the problem. No other maintenance action is necessary.
 - (c) If the maintenance message that brought you to this task still shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this check of the inputs to the FSEU from the proximity sensors at different slat positions:
 - (a) Make sure the LE Flaps and Slats are in the retracted position.
 - (b) Use the FSEU to find the state of the applicable proximity sensors:

NOTE: The state of the proximity sensors will be GAP NEAR, GAP FAR, or MARGINAL.

- 1) Push the ON/OFF button on the front panel of the FSEU to turn on the display.

NOTE: The display will show EXISTING FAULTS?.

- 2) Push the NO button until OTHER FUNCTNS? shows on the display.
- 3) Push the YES button to select OTHER FUNCTNS? on the FSEU.
- 4) Push the NO button until I/O MONITOR? shows on the display.
- 5) Push the YES button to select I/O MONITOR? on the FSEU.
- 6) Push the YES button to select PROX SENSORS? on the FSEU.
- 7) Push the down arrow to scroll through the PROX SENSORS on the display.

NOTE: Line 1 on the display shows the proximity sensor name. Line 2 on the display shows the state of the proximity sensor.

EFFECTIVITY
SIA ALL

27-88 TASK 804

D633A103-SIA

Page 208
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (c) Record the state of the applicable proximity sensor with the slats retracted.
NOTE: Sensors S1 INBD and S8 INBD should be GAP NEAR. Sensors S2 INBD through S7 INBD should be GAP FAR.
 - (d) Use the primary system to move the LE Slats to the extended position. This is the task: Leading Edge Flap and Slat System Operation With Primary Control, AMM TASK 27-81-00-860-801.
 - (e) Use the FSEU to find the state of the applicable proximity sensors again.
 - (f) Record the state of the applicable proximity sensor with the slats extended.
NOTE: Sensors S1 INBD through S8 INBD should be GAP NEAR.
 - (g) Use the primary system to move the LE Slats to the fully extended position. This is the task: Leading Edge Flap and Slat System Operation With Primary Control, AMM TASK 27-81-00-860-801.
 - (h) Use the FSEU to find the state of the applicable proximity sensors again.
 - (i) Record the state of the applicable proximity sensor with the slats fully extended.
NOTE: Sensors S1 INBD through S8 INBD should be GAP FAR.
- (2) If the state of the proximity sensor was MARGINAL when it should have been GAP NEAR or GAP FAR, then adjust the clearance between the proximity sensor and the target. This is the task: Leading Edge Slat Proximity Sensor Installation, AMM TASK 27-88-11-400-801.
- (a) Do the Repair Confirmation at the end of this task.
- (3) If the state of the proximity sensor was GAP FAR when it should have been GAP NEAR, then do this check of the operation of the applicable proximity sensor:
- (a) Use the primary system to move the LE Slats to the fully extended position. This is the task: Leading Edge Flap and Slat System Operation With Primary Control, AMM TASK 27-81-00-860-801.
 - (b) Deactivate the LE Slats. This is the task: Leading Edge Flaps and Slats Deactivation, AMM TASK 27-81-00-040-801.
 - (c) Do a visual inspection of the proximity sensor and the target.
 - 1) If there is any damage, or a sign of contact between the proximity sensor and target, then repair the damage.
 - a) Do the Repair Confirmation at the end of this task.
 - (d) Put a piece of steel near the proximity sensor to simulate a target.
NOTE: You can use a steel ruler to simulate the target.
 - (e) Use the FSEU to find the state of the proximity sensor.
 - (f) If the state of the proximity sensor is GAP NEAR, then adjust the clearance between the proximity sensor and the target. This is the task: Leading Edge Slat Proximity Sensor Installation, AMM TASK 27-88-11-400-801.
 - 1) Do the Repair Confirmation at the end of this task.
 - (g) If the state of the proximity sensor is GAP FAR, then continue.
 - (h) Remove the piece of steel from the sensor.
 - (i) Use the primary system to retract the LE Slats to the fully retracted position. This is the task: Leading Edge Flap and Slat System Operation With Primary Control, AMM TASK 27-81-00-860-801.



737-600/700/800/900 FAULT ISOLATION MANUAL

- (4) Do this check of the proximity sensor and the wiring to the FSEU:

NOTE: Alternately, you can do a test of the Proximity Sensors using the FSEU Breakout Box. This is the task:

- Leading Edge Flap and Slat Proximity Sensor Test Using Breakout Box and LCR Meter, AMM TASK 27-88-11-720-801
- (a) Remove the FSEU, M1746. This is the task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
- (b) Do these steps to measure the resistance between the pins of the FSEU connector D728A for the red terminal and Structure Ground (yellow) (Table 202):
- 1) Connect the LCR meter (Inductance, Capacitance, Resistance), COM-1741 to the red (white/red) and yellow (white/yellow) sensor leads.
 - 2) Push the L/C/R mode switch to set the LCR meter (Inductance, Capacitance, Resistance), COM-1741 in R (resistance mode).
 - 3) Push the 1 kHz/120 Hz button to select the 120 Hz excitation frequency.
 - 4) Push and hold the L/C/R button on the LCR meter (Inductance, Capacitance, Resistance), COM-1741 until the meter changes to the series mode.
NOTE: "Ser" appears in the upper right corner of the display to indicate that the meter is in the series mode.
 - 5) Read the resistance value on the LCR meter (Inductance, Capacitance, Resistance), COM-1741.
 - 6) The nominal resistance reading at normal room temperature (CMM DC resistance, bench test condition) referred to as L1. L1 should be 27 to 33 ohms.
NOTE: The line and interface resistance can be considered and can add up to 2 ohms.
 - 7) The permitted resistance reading for in-service sensors exposed to varying conditions is 24 to 38 ohms.
NOTE: On-wing resistance readings deviating from the CMM limits should consider the increased/lower resistance associated with a higher/lower temperature of the proximity sensor at the time of the measurement before a determination is made on the condition of the proximity sensor. Temperatures can deviate significantly from normal room temperature, which is always the case with airplanes with systems ON, or on airplanes that just have arrived from a flight, or when the airplane have been sitting out in the hot or cold weather. You need to know that the resistance values may be off and the proximity sensor could still be in good condition. The copper metal has a temperature coefficient of resistance which is approximately 0.40 ohm/degC. The deviation of the coil circuit (generally the yellow-red circuit) can be calculated at the rate of 0.40 ohm/degC from standard temperature (25degC).
- (c) Do these steps to measure the resistance between the pins of the FSEU connector D728A for the blue terminal and Structure Ground (yellow) (Table 202):
- 1) Connect the LCR meter (Inductance, Capacitance, Resistance), COM-1741 to the blue (white/blue) and yellow (white/yellow) sensor leads.
 - 2) Push the L/C/R mode switch to set the LCR meter (Inductance, Capacitance, Resistance), COM-1741 in R (resistance mode).
 - 3) Push the 1 kHz/120 Hz button to select the 120 Hz excitation frequency.

EFFECTIVITY
SIA ALL

27-88 TASK 804

D633A103-SIA

Page 210
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 4) Push and hold the L/C/R button on the LCR meter (Inductance, Capacitance, Resistance), COM-1741 until the meter changes to the series mode.

NOTE: "Ser" appears in the upper right corner of the display to indicate that the meter is in the series mode.

- 5) Read the resistance value on the LCR meter (Inductance, Capacitance, Resistance), COM-1741.
- 6) The nominal resistance reading at normal room temperature (CMM DC resistance, bench test condition) referred to as R1. R1 should be 344.5 to 351.5 ohms.

NOTE: The line and interface resistance can be considered and can add up to 2 ohms.

- 7) The permitted resistance reading for in-service sensors exposed to varying conditions is 338 to 361 ohms.

NOTE: On-wing resistance readings deviating from the CMM limits should consider the increased/lower resistance associated with a higher/lower temperature of the proximity sensor at the time of the measurement before a determination is made on the condition of the proximity sensor. Temperatures can deviate significantly from normal room temperature, which is always the case with airplanes with systems ON, or on airplanes that just have arrived from a flight, or when the airplane have been sitting out in the hot or cold weather. You need to know that the resistance values may be off and the proximity sensor could still be in good condition. The cooper metal has a temperature coefficient of resistance which is approximately 0.40 ohm/degC. The deviation of the coil circuit (generally the yellow-red circuit) can be calculated at the rate of 0.40 ohm/degC from standard temperature (25degC).

Table 202 PROXIMITY SENSOR RESISTANCE

PROXIMITY SENSOR	MAINTENANCE MESSAGE #	BLUE TERMINAL D728A	RED TERMINAL D728A
SLAT #1	27-81201	pin J5	pin K5
SLAT #2	27-81203	pin J7	pin K7
SLAT #3	27-81205	pin J9	pin K9
SLAT #4	27-81207	pin J11	pin K11
SLAT #5	27-81209	pin G11	pin H11
SLAT #6	27-81211	pin G9	pin H9
SLAT #7	27-81213	pin G7	pin H7
SLAT #8	27-81215	pin G5	pin H5

- (d) Re-connect the connector D728A to the FSEU.
- (e) If the resistance values are out of tolerance, then cut the wires at the sensor splices and recheck the resistance of the sensor.
- (f) If the resistance values for the sensors are out of tolerance, then do a check of the bonding resistance between the sensor ground and Structure Ground (SWPM 20-20-00).
 - 1) Make sure the resistance is less than 0.001 ohm.

EFFECTIVITY
SIA ALL

27-88 TASK 804

D633A103-SIA

Page 211
Oct 15/2023



737-600/700/800/900 FAULT ISOLATION MANUAL

- 2) If the resistance is greater than 0.001 ohm, then inspect and repair the ground between the sensor connection and the Structure Ground.
- 3) If you do not find a problem with the sensor ground, then continue.
- (g) If the resistance values are out of tolerance and there are no problems with the sensor ground, then replace the sensor. These are the tasks:
 - Leading Edge Slat Proximity Sensor Removal, AMM TASK 27-88-11-000-801
 - Leading Edge Slat Proximity Sensor Installation, AMM TASK 27-88-11-400-801
 - 1) Do the Repair Confirmation at the end of this task.
- (h) If the resistance values for the sensor are in tolerance and there are no problems with the sensor ground, then you have determined that the wiring is faulty. Do the wiring check between the connections on the sensor wiring and the FSEU D728A connector using the Table 202. Repair the damaged wiring that you find.
- (i) Re-install the FSEU, M1746. This is the task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
- (j) Do the Repair Confirmation at the end of this task.
- (k) If none of the resistances agree, then do these steps:
 - 1) Replace the applicable proximity sensor. These are the tasks:
 - Leading Edge Slat Proximity Sensor Removal, AMM TASK 27-88-11-000-801
 - Leading Edge Slat Proximity Sensor Installation, AMM TASK 27-88-11-400-801
 - 2) Do the Repair Confirmation at the end of this task.
- (l) If all of the resistances agree, then do these steps:
 - 1) Install a new FSEU, M1746. This is the task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - 2) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Use the primary system to fully extend and retract the LE Flaps and Slats. This is the task: Leading Edge Flap and Slat System Operation With Primary Control, AMM TASK 27-81-00-860-801.
- (2) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (a) If the maintenance message does not show, then you corrected the problem.
 - (b) If the maintenance message shows, then continue the Fault Isolation Procedure at the subsequent step.

————— END OF TASK —————

805. Flap Retract Proximity Sensor Disagree Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 27-81216 F1 PROX RETRACT
 - (b) 27-81218 F2 PROX RETRACT
 - (c) 27-81220 F3 PROX RETRACT
 - (d) 27-81222 F4 PROX RETRACT

EFFECTIVITY
SIA ALL

27-88 TASKS 804-805

D633A103-SIA

Page 212
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (2) The signal from one of the Leading Edge (LE) Flap Retract Proximity Sensors disagrees with the signals from the other LE Flap Retract Proximity Sensors.

B. Possible Causes

- (1) LE Flap Retract Sensor, S168, S170, S172 or S174
- (2) FSEU, M1746
- (3) Wiring

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	8	C00211	FLIGHT CONTROL FSEU DC 1
A	9	C01468	FLIGHT CONTROL FSEU DC 2

D. Related Data

- (1) SSM 27-81-11
- (2) SSM 27-81-21
- (3) WDM 27-81-11
- (4) WDM 27-81-21

E. Initial Evaluation

- (1) Do the: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (2) If the maintenance message 27-51105 FSEU FAILED shows, then do this task: FSEU Proximity Sensor Fault - Fault Isolation, 27-88 TASK 801.
- (3) If the maintenance message does not show, then there was an intermittent fault.
- (4) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this check of the inputs to the FSEU from the Proximity Sensors at different Leading Edge Flap positions:
 - (a) Make sure the Leading Edge Flaps and Slats are in the retracted position.
 - (b) Use the FSEU to find the state of the applicable Proximity Sensors:

NOTE: The state of the Proximity Sensors will be GAP NEAR, GAP FAR, or MARGINAL.

- 1) Push the ON/OFF button on the front panel of the FSEU to turn ON the display.

NOTE: The display will show EXISTING FAULTS?.

- 2) Push the NO button until OTHER FUNCTNS? shows on the display.
- 3) Push the YES button to select OTHER FUNCTNS? on the FSEU.
- 4) Push the NO button until I/O MONITOR? shows on the display.
- 5) Push the YES button to select I/O MONITOR? on the FSEU.
- 6) Push the YES button to select PROX SENSORS? on the FSEU.
- 7) Push the "down" arrow to scroll through the PROX SENSORS on the display.

NOTE: Line 1 on the display shows the Proximity Sensor name. Line 2 on the display shows the state of the Proximity Sensor.

EFFECTIVITY
SIA ALL

27-88 TASK 805

D633A103-SIA

Page 213
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (c) Record the state of the applicable Proximity Sensor with the slats retracted.
NOTE: Sensors F1 RETR through F4 RETR should be GAP NEAR.
 - (d) Use the primary system to move the Leading Edge Flaps to the extended position. This is the task: Leading Edge Flaps and Slats Extension, AMM TASK 27-81-00-860-803.
 - (e) Use the FSEU to find the state of the applicable Proximity Sensors again.
 - (f) Record the state of the applicable Proximity Sensor with the slats extended.
NOTE: Sensors F1 RETR through F4 RETR should be GAP FAR.
- (2) If the state of the Proximity Sensor was MARGINAL when it should have been GAP NEAR or GAP FAR, then adjust the clearance dimension between the extend Proximity Sensor and the target. This is the task: Leading Edge Flap Proximity Sensor Installation, AMM TASK 27-88-11-400-802.
- NOTE: The sensor-target clearance of the Extend Proximity Sensor [44A] is adjustable. The sensor-target clearance of the Retract Proximity Sensor [44B] is not adjustable.
- (a) Do the Repair Confirmation at the end of this task.
- (3) If the state of the Proximity Sensor was GAP FAR when it should have been GAP NEAR, then do this check of the applicable Proximity Sensor operation:
- (a) Use the primary system to move the Leading Edge Slats to the extended position. This is the task: Leading Edge Flap and Slat System Operation With Primary Control, AMM TASK 27-81-00-860-801.
 - (b) Deactivate the Leading Edge Slats. This is the task: Leading Edge Flaps and Slats Deactivation, AMM TASK 27-81-00-040-801.
 - (c) Do a visual inspection of the Proximity Sensor and the target.
 - 1) If there is any damage, or a sign of contact between the Proximity Sensor and target, then repair the damage.
 - a) Do the Repair Confirmation at the end of this task.
 - (d) Put a piece of steel near the Proximity Sensor to simulate a target.
NOTE: You can use a steel ruler to simulate the target.
 - (e) Use the FSEU to find the state of the Proximity Sensor.
 - (f) If the state of the Proximity Sensor is GAP NEAR, then adjust the clearance dimension between the Extend Proximity Sensor and the target. This is the task: Leading Edge Flap Proximity Sensor Installation, AMM TASK 27-88-11-400-802.
NOTE: The sensor-target clearance of the Extend Proximity Sensor [44A] is adjustable. The sensor-target clearance of the Retract Proximity Sensor [44B] is not adjustable.
 - 1) Do the Repair Confirmation at the end of this task.
 - (g) If the state of the Proximity Sensor is GAP FAR, then continue.
 - (h) Remove the piece of steel from the sensor.
 - (i) Use the primary system to retract the Leading Edge Slats to the fully retracted position. This is the task: Leading Edge Flap and Slat System Operation With Primary Control, AMM TASK 27-81-00-860-801.
- (4) Do this check of the Proximity Sensor and the wiring to the FSEU:
NOTE: Alternately, you can do a test of the Proximity Sensors using the FSEU Breakout Box. This is the task:

EFFECTIVITY
SIA ALL

27-88 TASK 805

D633A103-SIA

Page 214
Oct 15/2023



737-600/700/800/900 FAULT ISOLATION MANUAL

- Leading Edge Flap and Slat Proximity Sensor Test Using Breakout Box and LCR Meter, AMM TASK 27-88-11-720-801
- (a) Remove the FSEU, M1746. This is the task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
- (b) Do these steps to measure the Resistance between the FSEU connector D728A pins for the Red Terminal and Structure Ground (yellow) (Table 203).
 - 1) Connect the LCR meter (Inductance, Capacitance, Resistance), COM-1741 to the Red (white/red) and Yellow (white/yellow) sensor leads.
 - 2) Push the L/C/R mode switch to set the LCR meter (Inductance, Capacitance, Resistance), COM-1741 in R (Resistance mode).
 - 3) Push the 1 kHz/120 Hz button to select the 120 Hz Excitation Frequency.
 - 4) Push and hold the L/C/R button on the LCR meter (Inductance, Capacitance, Resistance), COM-1741 until the meter changes to the Series Mode.

NOTE: "Ser" appears in the upper right corner of the display to indicate that the meter is in the Series Mode.
 - 5) Push the L/C/R meter DATA HOLD button once.
 - 6) Read the Resistance value on the LCR meter (Inductance, Capacitance, Resistance), COM-1741.
 - 7) The nominal Resistance reading at normal room temperature (CMM DC Resistance, bench test condition) referred to as L1. L1 should be 27 to 33 ohms.

NOTE: The Line and Interface resistance can be considered and can add up to 2 ohms.
 - 8) The permitted Resistance reading for in-service sensors exposed to varying conditions is 24 to 38 ohms.

NOTE: On wing Resistance readings will vary with the temperature of the Proximity Sensor. The Resistance values can be outside the permitted limits and the Proximity Sensor can still be serviceable. The copper metal has a Temperature Coefficient of Resistance which is approximately 0.40 ohm/°C. The deviation of the coil circuit (generally the yellow-red circuit can be calculated at the rate of 0.40 ohm/°C from the Standard Temperature (25°C).
- (c) Do these steps to measure the Resistance between the FSEU connector D728A pins for the Blue Terminal and Structure Ground (yellow) (Table 203).
 - 1) Connect the LCR meter (Inductance, Capacitance, Resistance), COM-1741 to the Blue (white/blue) and Yellow (white/yellow) sensor leads.
 - 2) Push the L/C/R Mode Switch to set the LCR meter (Inductance, Capacitance, Resistance), COM-1741 in R (Resistance mode).
 - 3) Push the 1 kHz/120 Hz button to select the 120 Hz Excitation Frequency.
 - 4) Push and hold the L/C/R button on the LCR meter (Inductance, Capacitance, Resistance), COM-1741 until the meter changes to the series mode.

NOTE: "Ser" appears in the upper right corner of the display to indicate that the meter is in the series mode.
 - 5) Push the L/C/R meter DATA HOLD button once.
 - 6) Read the Resistance value on the LCR meter (Inductance, Capacitance, Resistance), COM-1741.



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 7) The Nominal Resistance reading at normal room temperature (CMM DC Resistance, bench test condition) referred to as R1. R1 should be 344.5 to 351.5 ohms.

NOTE: The Line and Interface Resistance can be considered and can add up to 2 ohms.

- 8) The permitted Resistance reading for in-service sensors exposed to varying conditions is 338 to 361 ohms.

NOTE: On wing Resistance readings will vary with the temperature of the Proximity Sensor. The Resistance values can be outside the permitted limits and the Proximity Sensor can still be serviceable. The copper metal has a Temperature Coefficient of Resistance which is approximately 0.40 ohm/°C. The deviation of the coil circuit (generally the yellow-red circuit can be calculated at the rate of 0.40 ohm/°C from the Standard Temperature (25°C).

Table 203 Proximity Sensor

PROXIMITY SENSOR	MAINTENANCE MESSAGE	BLUE TERMINAL D728A		RED TERMINAL D728A
FLAP #1	27-81216	pin J12	--	pin K12
FLAP #2	27-81218	pin J14	--	pin K14
FLAP #3	27-81220	pin G14	--	pin H14
FLAP #4	27-81222	pin G12	--	pin H12

- (d) Reconnect connector D728A to the FSEU.
- (e) If the Resistance values are out of tolerance, then cut the wires at the sensor splices and measure the Resistance of the sensors again.
- (f) If the Resistance values for the sensors are out of tolerance, then do a check of the Bonding Resistance between the Sensor Ground and the Airplane Structure (SWPM 20-20-00).
- 1) Make sure that the Resistance is less than 0.001 ohm.
 - 2) If the Resistance is greater than 0.001 ohm, then inspect and repair the ground between the sensor connection and the Structure Ground.
 - 3) If you do not find a problem with the Sensor Ground, then continue.
- (g) If the Resistance values are out of tolerance and there are no problems with the Sensor Ground, then replace the sensor. These are the tasks:
- Leading Edge Flap Proximity Sensor Removal, AMM TASK 27-88-11-000-802
 - Leading Edge Flap Proximity Sensor Installation, AMM TASK 27-88-11-400-802
- 1) Do the Repair Confirmation at the end of this task.
- (h) If the Resistance values for the sensor are in limits and there are no problems with the Sensor Ground, then there may be a wiring problem.
- 1) Using Table 203 do a wiring check between the connections on the sensor wiring and the FSEU D728A connector.
- (i) Re-install the FSEU, M1746. This is the task: AMM TASK 27-51-01-400-801
- (j) Do the Repair Confirmation at the end of this task.

EFFECTIVITY
SIA ALL

27-88 TASK 805

D633A103-SIA

Page 216
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (k) If none of the Resistances agree, then do these steps:
 - 1) Replace the applicable Proximity Sensor. These are the tasks:
 - Leading Edge Flap Proximity Sensor Removal, AMM TASK 27-88-11-000-802
 - Leading Edge Flap Proximity Sensor Installation, AMM TASK 27-88-11-400-802
 - 2) Do the Repair Confirmation at the end of this task.
- (l) If all of the Resistances agree, then do these steps:
 - 1) Install a new FSEU, M1746. This is the task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - 2) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Use the Primary System to fully extend and retract the Leading Edge Flaps and Slats. This is the task: Leading Edge Flap and Slat System Operation With Primary Control, AMM TASK 27-81-00-860-801.
- (2) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (a) If the maintenance message does not show, then you corrected the problem.
 - (b) If the maintenance message still shows, then continue Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

806. Flap Extend Proximity Sensor Disagree Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 27-81217 F1 PROX EXTEND
 - (b) 27-81219 F2 PROX EXTEND
 - (c) 27-81221 F3 PROX EXTEND
 - (d) 27-81223 F4 PROX EXTEND
- (2) The signal from one of the Leading Edge (LE) Flap Extend Proximity Sensors disagrees with the signals from the other LE Flap Extend Proximity Sensors.

B. Possible Causes

- (1) LE Flap Extend Sensors, S169, S171, S173 or S175
- (2) FSEU, M1746
- (3) Wiring

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	8	C00211	FLIGHT CONTROL FSEU DC 1
A	9	C01468	FLIGHT CONTROL FSEU DC 2

EFFECTIVITY
SIA ALL

27-88 TASKS 805-806

D633A103-SIA

Page 217
Oct 15/2023



**737-600/700/800/900
FAULT ISOLATION MANUAL**

D. Related Data

- (1) SSM 27-81-11
- (2) SSM 27-81-21
- (3) WDM 27-81-11
- (4) WDM 27-81-21

E. Initial Evaluation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (2) If the maintenance message 27-51105 FSEU FAILED shows, then do the: FSEU Proximity Sensor Fault - Fault Isolation, 27-88 TASK 801.
 - (a) If the FSEU BITE display shows INACTIVE for the Maintenance Message, then there was an intermittent problem.
 - (b) If the FSEU BITE display shows ACTIVE for the Maintenance Message, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this check of the inputs to the FSEU from the Proximity Sensors at different Leading Edge Flap positions:
 - (a) Make sure that the Leading Edge Flaps and Slats are in the retracted position.
 - (b) Use the FSEU to find the state of the applicable Proximity Sensors:

NOTE: The state of the Proximity Sensors will be GAP NEAR, GAP FAR, or MARGINAL.

 - 1) Push the ON/OFF button on the front panel of the FSEU to turn the display ON.

NOTE: The display will show EXISTING FAULTS?.
 - 2) Push the NO button until OTHER FUNCTNS? shows on the display.
 - 3) Push the YES button to select OTHER FUNCTNS? on the FSEU.
 - 4) Push the NO button until I/O MONITOR? shows on the display.
 - 5) Push the YES button to select I/O MONITOR? on the FSEU.
 - 6) Push the YES button to select PROX SENSORS? on the FSEU.
 - 7) Push the down arrow to scroll through the PROX SENSORS on the display.

NOTE: Line 1 on the display shows the Proximity Sensor name. Line 2 on the display shows the state of the Proximity Sensor.
 - (c) Record the state of the applicable Proximity Sensor with the slats retracted.

NOTE: Sensors F1 EXT through F4 EXT should be GAP FAR.
 - (d) Use the Primary System to move the Leading Edge Flaps to the extended position. This is the task: Leading Edge Flaps and Slats Extension, AMM TASK 27-81-00-860-803.
 - (e) Use the FSEU to find the state of the applicable Proximity Sensors again.
 - (f) Record the state of the applicable Proximity Sensor with the slats extended.

NOTE: Sensors F1 EXT through F4 EXT should be GAP NEAR.
- (2) If the state of the Proximity Sensor was MARGINAL when it should have been GAP NEAR or GAP FAR, then adjust the clearance dimension between the extend Proximity Sensor and the target. This is the task: Leading Edge Flap Proximity Sensor Installation, AMM TASK 27-88-11-400-802.

NOTE: The sensor-target clearance of the Extend Proximity Sensor [44A] is adjustable. The sensor-target clearance of the Retract Proximity Sensor [44B] is not adjustable.

EFFECTIVITY
SIA ALL

27-88 TASK 806

D633A103-SIA

Page 218
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (a) Do the Repair Confirmation at the end of this task.
- (3) If the state of the Proximity Sensor was GAP FAR when it should have been GAP NEAR, then do this check of the applicable Proximity Sensor operation:
 - (a) Use the primary system to move the Leading Edge Slats to the extended position. This is the task: Leading Edge Flap and Slat System Operation With Primary Control, AMM TASK 27-81-00-860-801.
 - (b) Deactivate the Leading Edge Slats. This is the task: Leading Edge Flaps and Slats Deactivation, AMM TASK 27-81-00-040-801.
 - (c) Do a visual inspection of the Proximity Sensor and the target.
 - 1) If there is damage, or a sign of contact between the Proximity Sensor and target, then repair the damage.
 - a) Do the Repair Confirmation at the end of this task.
 - (d) Put a piece of steel near the Proximity Sensor to simulate a target.

NOTE: You can use a steel ruler to simulate the target.
 - (e) Use the FSEU to find the state of the Proximity Sensor.
 - (f) If the state of the Proximity Sensor is GAP NEAR, then adjust the clearance dimension between the Extend Proximity Sensor and the target. This is the task: Leading Edge Flap Proximity Sensor Installation, AMM TASK 27-88-11-400-802.

NOTE: The sensor-target clearance of the Extend Proximity Sensor [44A] is adjustable. The sensor-target clearance of the Retract Proximity Sensor [44B] is not adjustable.

 - 1) Do the Repair Confirmation at the end of this task.
 - (g) If the state of the Proximity Sensor is GAP FAR, then continue.
 - (h) Remove the piece of steel from the sensor.
 - (i) Use the Primary System to retract the Leading Edge Slats to the fully retracted position. This is the task: Leading Edge Flap and Slat System Operation With Primary Control, AMM TASK 27-81-00-860-801.
- (4) Do this check of the Proximity Sensor and the wiring to the FSEU:

NOTE: Alternately, you can do a test of the Proximity Sensors using the FSEU Breakout Box. This is the task:

 - Leading Edge Flap and Slat Proximity Sensor Test Using Breakout Box and LCR Meter, AMM TASK 27-88-11-720-801
 - (a) Remove the FSEU, M1746. This is the task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
 - (b) Do these steps to measure the Resistance between the FSEU connector D728A pins for the Red Terminal and Structure Ground (yellow) (Table 204).
 - 1) Connect the LCR meter (Inductance, Capacitance, Resistance), COM-1741 to the Red (white/red) and Yellow (white/yellow) sensor leads.
 - 2) Push the L/C/R Mode Switch to set the LCR meter (Inductance, Capacitance, Resistance), COM-1741 in R (Resistance Mode).
 - 3) Push the 1 kHz/120 Hz button to select the 120 Hz Excitation Frequency.
 - 4) Push the L/C/R Meter DATA HOLD button once.

EFFECTIVITY
SIA ALL

27-88 TASK 806

D633A103-SIA

Page 219
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 5) Push and hold the L/C/R button on the LCR meter (Inductance, Capacitance, Resistance), COM-1741 until the meter changes to the Series Mode.

NOTE: "Ser" appears in the upper right corner of the display to indicate that the meter is in the series mode.

- 6) Read the Resistance value on the LCR meter (Inductance, Capacitance, Resistance), COM-1741.

- 7) The Nominal Resistance reading at normal room temperature (CMM DC resistance, bench test condition) referred to as L1. L1 should be 27 to 33 ohms.

NOTE: The Line and Interface Resistance can be considered and can add up to 2 ohms.

- 8) The permitted Resistance reading for in-service sensors exposed to varying conditions is 24 to 38 ohms.

NOTE: On wing Resistance readings will vary with the temperature of the Proximity Sensor. The Resistance values can be outside the permitted limits and the Proximity Sensor can still be serviceable. The copper metal has a Temperature Coefficient of Resistance which is approximately 0.40 ohm/°C. The deviation of the coil circuit (generally the yellow-red circuit can be calculated at the rate of 0.40 ohm/°C from the Standard Temperature (25°C).

- (c) Do these steps to measure the Resistance between the FSEU connector D728A pins for the Blue Terminal and Structure Ground (yellow) (Table 204).

- 1) Connect the LCR meter (Inductance, Capacitance, Resistance), COM-1741 to the Blue (white/blue) and Yellow (white/yellow) sensor leads.
- 2) Push the L/C/R Mode Switch to set the LCR meter (Inductance, Capacitance, Resistance), COM-1741 in R (Resistance Mode).
- 3) Push the 1 kHz/120 Hz button to select the 120 Hz Excitation Frequency.
- 4) Push the L/C/R meter DATA HOLD button once.
- 5) Push and hold the L/C/R button on the LCR meter (Inductance, Capacitance, Resistance), COM-1741 until the meter changes to the series mode.

NOTE: "Ser" appears in the upper right corner of the display to indicate that the meter is in the series mode.

- 6) Read the Resistance value on the LCR meter (Inductance, Capacitance, Resistance), COM-1741.

- 7) The nominal Resistance reading at normal room temperature (CMM DC resistance, bench test condition) referred to as R1. R1 should be 344.5 to 351.5 ohms.

NOTE: The line and interface Resistance can be considered and can add up to 2 ohms.

- 8) The permitted Resistance reading for in-service sensors exposed to varying conditions is 338 to 361 ohms.

NOTE: On wing Resistance readings will vary with the temperature of the Proximity Sensor. The Resistance values can be outside the permitted limits and the Proximity Sensor can still be serviceable. The copper metal has a Temperature Coefficient of Resistance which is approximately 0.40 ohm/°C. The deviation of the coil circuit (generally the yellow-red circuit can be calculated at the rate of 0.40 ohm/°C from the Standard Temperature (25°C).

EFFECTIVITY
SIA ALL

27-88 TASK 806

D633A103-SIA

Page 220
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

Table 204 PROXIMITY SENSOR MAINTENANCE MESSAGE

PROXIMITY SENSOR	MAINTENANCE MESSAGE	BLUE TERMINAL D728A		RED TERMINAL D728A
FLAP #1	27-81217	pin J13	--	pin K13
FLAP #2	27-81219	pin J15	--	pin K15
FLAP #3	27-81221	pin G15	--	pin H15
FLAP #4	27-81223	pin G13	--	pin H13

- (d) Reconnect connector D728A to the FSEU.
- (e) If the Resistance values are out of tolerance, then cut the wires at the sensor splices and measure the Resistance of the sensors again.
- (f) If the Resistance values for the sensors are out of tolerance, then do a check of the Bonding Resistance between the Sensor Ground and the Airplane Structure (SWPM 20-20-00).
 - 1) Make sure that the Resistance is less than 0.001 ohm.
 - 2) If the Resistance is greater than 0.001 ohm, then examine and repair the ground between the sensor connection and the Structure Ground.
 - 3) If you do not find a problem with the Sensor Ground, then continue.
- (g) If the Resistance values are out of tolerance and there are no problems with the Sensor Ground, then replace the sensor. These are the tasks:
 - Leading Edge Flap Proximity Sensor Removal, AMM TASK 27-88-11-000-802
 - Leading Edge Flap Proximity Sensor Installation, AMM TASK 27-88-11-400-802
 - 1) Do the Repair Confirmation at the end of this task.
- (h) If the Resistance values for the sensor are in limits and there are no problems with the Sensor Ground, then there may be a wiring problem.
 - 1) Using Table 204 do a wiring check between the connections on the sensor wiring and the FSEU D728A connector.
- (i) Re-install the FSEU, M1746. This is the task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801
- (j) Do the Repair Confirmation at the end of this task.
- (k) If none of the Resistances agree, then do these steps:
 - 1) Replace the applicable Proximity Sensor. These are the tasks:
 - Leading Edge Flap Proximity Sensor Removal, AMM TASK 27-88-11-000-802
 - Leading Edge Flap Proximity Sensor Installation, AMM TASK 27-88-11-400-802
 - 2) Do the Repair Confirmation at the end of this task.
- (l) If all of the Resistances agree, then do these steps:
 - 1) Install a new FSEU, M1746. This is the task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - 2) Do the Repair Confirmation at the end of this task.

EFFECTIVITY
SIA ALL

27-88 TASK 806

D633A103-SIA

Page 221
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

G. Repair Confirmation

- (1) Use the Primary System to fully extend and retract the Leading Edge Flaps and Slats. This is the task: Leading Edge Flap and Slat System Operation With Primary Control, AMM TASK 27-81-00-860-801.
- (2) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (a) If the FSEU BITE display shows INACTIVE for the Maintenance Message, then you corrected the problem.
 - (b) If the FSEU BITE display shows ACTIVE for the Maintenance Message, then continue troubleshooting at the subsequent step.

———— **END OF TASK** ————

807. Multiple Proximity Sensors Disagree Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-81224 MULTIPLE PROX
- (2) The signals from the leading edge proximity sensors disagree with each other.

B. Possible Causes

- (1) LE flap and slat proximity sensors
- (2) FSEU, M1746
- (3) Wiring problem

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	8	C00211	FLIGHT CONTROL FSEU DC 1
A	9	C01468	FLIGHT CONTROL FSEU DC 2

D. Related Data

- (1) SSM 27-81-11
- (2) SSM 27-81-12
- (3) SSM 27-81-21
- (4) SSM 27-81-22
- (5) WDM 27-81-11
- (6) WDM 27-81-12
- (7) WDM 27-81-21
- (8) WDM 27-81-22

E. Fault Isolation Procedure

- (1) Do a check of the Proximity Sensors. This is the task: Leading Edge Flap and Slat Proximity Sensor Test Using Breakout Box and LCR Meter, AMM TASK 27-88-11-720-801.
- (2) If the one or more of the LE UCM maintenance messages shows, then, do this task: Leading Edge Extend UCM Problem - Fault Isolation, 27-81 TASK 806.
- (3) If the maintenance message shows, then do these fault isolation procedures:

EFFECTIVITY
SIA ALL

27-88 TASKS 806-807

D633A103-SIA

Page 222
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (a) Do this task: Slat Outboard Proximity Sensor Disagree Problem - Fault Isolation, 27-88 TASK 803.
- (b) Do this task: Flap Retract Proximity Sensor Disagree Problem - Fault Isolation, 27-88 TASK 805.
- (4) If the maintenance message does not show, then continue.



MAKE SURE ALL PERSONS AND EQUIPMENT ARE CLEAR OF THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (5) To pressurize hydraulic system B, do this task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.



MAKE SURE PERSONS AND EQUIPMENT ARE CLEAR OF THE LEADING EDGE FLAPS AND SLATS AND THE TRAILING EDGE FLAPS. THE FLAPS AND SLATS WILL MOVE. THIS CAN CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.

- (6) Move the flap control lever to the 1-unit position to extend the leading edge flaps and slats.
- (7) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (8) If the maintenance message shows, then do these fault isolation procedures:
 - (a) Do this task: Slat Inboard Proximity Sensor Disagree Problem - Fault Isolation, 27-88 TASK 804.
 - (b) Do this task: Flap Extend Proximity Sensor Disagree Problem - Fault Isolation, 27-88 TASK 806.
- (9) If the maintenance message does not show, then continue.
- (10) Move the flap control lever to the 30-unit position to fully extend the leading edge slats.
- (11) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (12) If the maintenance message shows, then do this task: Slat Outboard Proximity Sensor Disagree Problem - Fault Isolation, 27-88 TASK 803.
- (13) Move the flap control lever to the UP position to retract the leading edge flaps and slats.
- (14) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (15) If the maintenance message shows, then do these fault isolation procedures:
 - (a) Do this task: Slat Outboard Proximity Sensor Disagree Problem - Fault Isolation, 27-88 TASK 803.
 - (b) Do this task: Flap Retract Proximity Sensor Disagree Problem - Fault Isolation, 27-88 TASK 805.
- (16) If the maintenance message does not show, then there was an intermittent fault.
- (17) Remove system B, hydraulic power. To remove it, do this task: Hydraulic System A or B Power Removal, AMM TASK 29-11-00-860-805.

————— **END OF TASK** —————

EFFECTIVITY
SIA ALL

27-88 TASK 807

D633A103-SIA

Page 223
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

808. Slat Retract Proximity Sensor Disagree Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 27-81225 SL2 PROX RETRACT
 - (b) 27-81226 SL3 PROX RETRACT
 - (c) 27-81227 SL4 PROX RETRACT
 - (d) 27-81228 SL5 PROX RETRACT
 - (e) 27-81229 SL6 PROX RETRACT
 - (f) 27-81230 SL7 PROX RETRACT
- (2) The signal from one of the LE Slat Retract Proximity Sensors disagrees with the signals from the other LE Slat Retract Proximity Sensors.

B. Possible Causes

- (1) LE Slat Retract Sensor, S1094 (S1095, S1096, S1097, S1098, S1099)
- (2) FSEU, M1746
- (3) LE Slat Retract Sensor Target
- (4) LE Slat Actuator Internal Leakage
- (5) LE Slat Actuator
- (6) Wiring

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	8	C00211	FLIGHT CONTROL FSEU DC 1
A	9	C01468	FLIGHT CONTROL FSEU DC 2

D. Related Data

- (1) WDM 27-81-12
- (2) WDM 27-81-22
- (3) SSM 27-81-12
- (4) SSM 27-81-22

E. Initial Evaluation

- (1) Do the Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (a) If one of the messages below shows, then do the Slat Retract Proximity Sensor Fail - Fault Isolation, 27-88 TASK 809.
 - 27-81231 SL2 PROX RET FAIL
 - 27-81232 SL3 PROX RET FAIL
 - 27-81233 SL4 PROX RET FAIL
 - 27-81234 SL5 PROX RET FAIL
 - 27-81235 SL6 PROX RET FAIL
 - 27-81236 SL7 PROX RET FAIL

EFFECTIVITY
SIA ALL

27-88 TASK 808

D633A103-SIA

Page 224
Oct 15/2021



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 1) Do the Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - a) If the SL PROX RETRACT maintenance message that brought you to this task does not show, then you corrected the problem. No other maintenance action is necessary.
 - b) If the SL PROX RETRACT maintenance message that brought you to this task still shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this wiring check (WDM 27-81-12, WDM 27-81-22):
 - (a) Remove the FSEU, M1746. This is the task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
 - (b) Measure the resistance between these pins of connector D728A at the E1-1 Shelf for the applicable Slat:

Table 205

SLAT	D728A		D728A
SLAT #2	pin A14	--	pin A15
SLAT #3	pin B14	--	pin B15
SLAT #4	pin C14	--	pin C15
SLAT #5	pin D14	--	pin D15
SLAT #6	pin E14	--	pin E15
SLAT #7	pin F14	--	pin F15

- (c) If the resistance measured is between 20 to 100 ohms, then do these steps:
 - 1) Install a new FSEU, M1746. This is the task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - 2) Do the Repair Confirmation at the end of this task.
 - (d) If the resistance measured is not in the limit of 20 to 100 ohms, then continue.
- (2) Do this check of the wiring between the FSEU and the LE Slat Retract Proximity Sensor:
 - (a) Find the connector and the pair of pins for the applicable LE Slat Retract Proximity Sensor:

Table 206

SENSOR EQUIPMENT NUMBER	SENSOR CONNECTOR		FSEU CONNECTOR
SLAT #2 S1094	D10589		D728A
	pin 1	--	pin A14
	pin 2	--	pin A15
SLAT #3 S1095	D10591		D728A
	pin 1	--	pin B14
	pin 2	--	pin B15

EFFECTIVITY
SIA ALL

27-88 TASK 808

D633A103-SIA

Page 225
Feb 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

Table 206 (Continued)

SENSOR EQUIPMENT NUMBER	SENSOR CONNECTOR		FSEU CONNECTOR
SLAT #4 S1096	D10593		D728A
	pin 1	--	pin C14
	pin 2	--	pin C15
SLAT #5 S1097	D10595		D728A
	pin 1	--	pin D14
	pin 2	--	pin D15
SLAT #6 S1098	D10597		D728A
	pin 1	--	pin E14
	pin 2	--	pin E15
SLAT #7 S1099	D10599		D728A
	pin 1	--	pin F14
	pin 2	--	pin F15

- (b) Disconnect the connector from the applicable LE Slat Retract Proximity Sensor.
- (c) Do a wiring check between the pins of connector D728A at the E1-1 Shelf and the connector at the applicable LE Slat Retract Proximity Sensor.
- 1) If you find a problem with the wiring, then do these steps:
- Repair the wiring.
 - Re-connect the connector to the applicable LE Slat Retract Proximity Sensor.
 - Re-install the FSEU, M1746. This is the task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - Do the Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
<1> If the maintenance message does not show, then you corrected the fault.
<2> If the maintenance message shows, then continue.
- 2) If you do not find a problem with the wiring, then do this step and continue:
- Re-install the FSEU, M1746. This is the task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
- (3) Replace the applicable LE Slat Retract Proximity Sensor. These are the tasks:
- Leading Edge Slat Proximity Sensor Removal, AMM TASK 27-88-11-000-801
 - Leading Edge Slat Proximity Sensor Installation, AMM TASK 27-88-11-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (4) Replace the FSEU, M1746. These are the tasks:
- Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801

EFFECTIVITY
SIA ALL

27-88 TASK 808

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 226
Feb 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801
- (a) Do the Repair Confirmation at the end of this task.
- (5) Replace the applicable LE Slat Retract Proximity Sensor Target.
 - (a) Do the Repair Confirmation at the end of this task.
- (6) Do a check for Actuator internal leakage without breaking into the Hydraulic System as follows:

NOTE: The following steps require the use stethoscope, COM-1797, or the Infrared Thermometer, COM-1572. If you do not have these tools, then go to the next step.



WARNING

KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (a) If the Hydraulic System B is not pressurized, pressurize Hydraulic System B. This is the task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
- (b) Move the Flap Control Lever to the 1-unit position to extend the LE Flaps and Slats.
 - 1) Make sure that the LE Slats move to the mid-extend position.
- (c) Use the Infrared Thermometer, COM-1572, to measure the temperatures of all 8 LE Slat Actuators.

NOTE: The larger part of the Actuator Barrel is the good location to measure the temperature. Measure the temperature at the same location on all of the Actuators.

 - 1) If the temperature of one Actuator is more than 10 °F (5.6 °C) higher than other Actuators, then there is internal leakage in the warmer Actuator.
- (d) If you do not have the Infrared Thermometer, COM-1572, use the stethoscope, COM-1797, to listen to the internal leakage of all 8 LE Slat Actuators.

NOTE: The Actuator Manifold next to the "P" Valve Port is the good location to put the stethoscope. Listen to the internal leakage at the same location on all of the Actuators.

 - 1) Compare the noise you hear from each of the Actuator. If the leaking noise from one Actuator is significantly higher than other Actuators, then there is internal leakage in that Actuator.
- (e) If you are sure that there is one of more Actuator that is leaking internally, then replace the Actuator. These are the tasks:
 - Leading Edge Slat Actuator - Removal, AMM TASK 27-81-41-000-801
 - Leading Edge Slat Actuator Installation, AMM TASK 27-81-41-400-801
 - 1) Do the Repair Confirmation at the end of this task.
- (f) If you are not sure that there is significant leaking noise from the one or more LE Slat Actuator, then continue.
- (7) Replace the LE Slat Actuator for the surface that does not align. These are the tasks:
 - Leading Edge Slat Actuator - Removal, AMM TASK 27-81-41-000-801
 - Leading Edge Slat Actuator Installation, AMM TASK 27-81-41-400-801
 - (a) Do the Repair Confirmation at the end of this task.

EFFECTIVITY
SIA ALL

27-88 TASK 808

D633A103-SIA

Page 227
Feb 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

G. Repair Confirmation

- (1) Use the Primary System to retract the LE Flaps and Slats. This is the task: Leading Edge Flap and Slat System Operation With Primary Control, AMM TASK 27-81-00-860-801.
- (2) Do the Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (a) If the maintenance message does not show, then use the Primary System to extend the LE Flaps and Slats. This is the task: Leading Edge Flap and Slat System Operation With Primary Control, AMM TASK 27-81-00-860-801.
 - 1) Do the Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - a) If the maintenance message does not show, then you corrected the problem.
 - b) If the maintenance message shows, then continue the Fault Isolation Procedure at the subsequent step.
 - (b) If the maintenance message shows, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

809. Slat Retract Proximity Sensor Fail - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 27-81231 SL2 PROX RET FAIL
 - (b) 27-81232 SL3 PROX RET FAIL
 - (c) 27-81233 SL4 PROX RET FAIL
 - (d) 27-81234 SL5 PROX RET FAIL
 - (e) 27-81235 SL6 PROX RET FAIL
 - (f) 27-81236 SL7 PROX RET FAIL
- (2) The FSEU has detected either an open or short circuit with the Slat 2, 3, 4, 5, 6 or 7 Retract Proximity Sensor.

B. Possible Causes

- (1) LE Slat Retract Sensor, S1094 (S1095, S1096, S1097, S1098, S1099)
- (2) FSEU, M1746
- (3) LE Slat Actuator internal leakage
- (4) LE Slat Actuator
- (5) Wiring

C. Circuit Breakers

- (1) These are the primary circuit breakers related to the fault:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	8	C00211	FLIGHT CONTROL FSEU DC 1
A	9	C01468	FLIGHT CONTROL FSEU DC 2

D. Related Data

- (1) SSM 27-81-12
- (2) SSM 27-81-22

EFFECTIVITY
SIA ALL

27-88 TASKS 808-809

D633A103-SIA

Page 228
Feb 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (3) WDM 27-81-12
- (4) WDM 27-81-22

E. Initial Evaluation

- (1) Do the Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (a) If the maintenance message does not show, then there was an intermittent fault.
 - (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this wiring check between the FSEU, M1746 and the Retract Sensor for the applicable Slat (WDM 27-81-12, WDM 27-81-22):

NOTE: Alternately, you can do a test of the Proximity Sensors with the FSEU Breakout Box. This is the task: Leading Edge Flap and Slat Proximity Sensor Test Using Breakout Box and LCR Meter, AMM TASK 27-88-11-720-801.

- (a) Remove the FSEU, M1746. This is the task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
- (b) Measure the resistance between these pins of connector D728A at the E1-1 Shelf for the applicable Slat as follows:

Table 207

SLAT	D728A		D728A
SLAT #2	pin A14	--	pin A15
SLAT #3	pin B14	--	pin B15
SLAT #4	pin C14	--	pin C15
SLAT #5	pin D14	--	pin D15
SLAT #6	pin E14	--	pin E15
SLAT #7	pin F14	--	pin F15

- 1) If the resistance measured is between 20 to 100 ohms, then do these steps:
 - a) Install a new FSEU, M1746. This is the task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - b) Do the Repair Confirmation at the end of this task.
 - 2) If the resistance measured is not in the limit of 20 to 100 ohms, then continue.
- (2) Do this check of the wiring between the FSEU and the LE Slat Retract Proximity Sensor:

NOTE: Alternately, you can do a test of the Proximity Sensors using the FSEU Breakout Box. This is the task: Leading Edge Flap and Slat Proximity Sensor Test Using Breakout Box and LCR Meter, AMM TASK 27-88-11-720-801.

 - (a) Find the connector and the pair of pins for the applicable LE Slat Retract Proximity Sensor:

Table 208

SENSOR EQUIPMENT NUMBER	SENSOR CONNECTOR	FSEU CONNECTOR
SLAT #2	D10589	D728A

EFFECTIVITY
SIA ALL

27-88 TASK 809

D633A103-SIA

Page 229
Feb 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

Table 208 (Continued)

SENSOR EQUIPMENT NUMBER	SENSOR CONNECTOR		FSEU CONNECTOR
S1094	pin 1	--	pin A14
	pin 2	--	pin A15
SLAT #3	D10591		D728A
S1095	pin 1	--	pin B14
	pin 2	--	pin B15
SLAT #4	D10593		D728A
S1096	pin 1	--	pin C14
	pin 2	--	pin C15
SLAT #5	D10595		D728A
S1097	pin 1	--	pin D14
	pin 2	--	pin D15
SLAT #6	D10597		D728A
S1098	pin 1	--	pin E14
	pin 2	--	pin E15
SLAT #7	D10599		D728A
S1099	pin 1	--	pin F14
	pin 2	--	pin F15

- (b) Disconnect the connector from the applicable LE Slat Retract Proximity Sensor.
- (c) Do a wiring check between the pins of connector D728A at the E1-1 Shelf and the connector at the applicable LE Slat Retract Proximity Sensor.
 - 1) If you find a problem with the wiring, then do these steps:
 - a) Repair the wiring.
 - b) Re-connect the connector to the applicable Proximity Sensor.
 - c) Re-install the FSEU, M1746. This is the task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - d) Do the Repair Confirmation at the end of this task.
 - 2) If you do not find a problem with the wiring, then do this step and continue:
 - a) Re-install the FSEU, M1746. This is the task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
- (3) Replace the applicable LE Slat Retract Proximity Sensor. These are the tasks:
 - Leading Edge Slat Proximity Sensor Removal, AMM TASK 27-88-11-000-801
 - Leading Edge Slat Proximity Sensor Installation, AMM TASK 27-88-11-400-801
 - (a) Do the Repair Confirmation at the end of this task.
- (4) Do a check for Actuator internal leakage without breaking into the Hydraulic System as follows:

NOTE: The following steps require the use stethoscope, COM-1797, or the Infrared Thermometer, COM-1572. If you do not have these tools, then go to the next step.

EFFECTIVITY
SIA ALL

27-88 TASK 809

D633A103-SIA

Page 230
Feb 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**



KEEP PERSONNEL AND EQUIPMENT AWAY FROM THE FLIGHT CONTROL SURFACES, THE THRUST REVERSERS, AND THE LANDING GEAR. THESE COMPONENTS CAN MOVE SUDDENLY WHEN YOU SUPPLY HYDRAULIC POWER. THIS CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT.

- (a) If the Hydraulic System B is not pressurized, pressurize Hydraulic System B. This is the task: Hydraulic System A or B Pressurization, AMM TASK 29-11-00-860-801.
 - (b) Move the Flap Control Lever to the 1-unit position to extend the LE Flaps and Slats.
 - 1) Make sure that the LE Slats move to the mid-extend position.
 - (c) Use the Infrared Thermometer, COM-1572, to measure the temperatures of all 8 LE Slat Actuators.

NOTE: The larger part of the Actuator Barrel is the good location to measure the temperature. Measure the temperature at the same location on all of the Actuators.

 - 1) If the temperature of one Actuator is more than 10 °F (5.6 °C) higher than other Actuators, then there is internal leakage in the warmer Actuator.
 - (d) If you do not have the Infrared Thermometer, COM-1572, use the stethoscope, COM-1797, to listen to the internal leakage of all 8 LE Slat Actuators.

NOTE: The Actuator Manifold next to the "P" Valve Port is the good location to put the stethoscope. Listen to the internal leakage at the same location on all of the Actuators.

 - 1) Compare the noise you hear from each of the Actuator. If the leaking noise from one Actuator is significantly higher than other Actuators, then there is internal leakage in that Actuator.
 - (e) If you are sure that there is one or more Actuator that is leaking internally, then replace the Actuator. These are the tasks:
 - Leading Edge Slat Actuator - Removal, AMM TASK 27-81-41-000-801
 - Leading Edge Slat Actuator Installation, AMM TASK 27-81-41-400-801
 - 1) Do the Repair Confirmation at the end of this task.
 - (f) If you are not sure that there is significant leaking noise from the one or more LE Slat Actuator, then continue.
- (5) Replace the LE Slat Actuator for the surface that does not align. These are the tasks:
- Leading Edge Slat Actuator - Removal, AMM TASK 27-81-41-000-801
 - Leading Edge Slat Actuator Installation, AMM TASK 27-81-41-400-801
- (a) Do the Repair Confirmation at the end of this task.

G. Repair Confirmation

- (1) Do the Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (a) If the maintenance message does not show, then you corrected the problem.
 - (b) If the maintenance message shows, then continue the Fault Isolation Procedure at the subsequent step.

————— **END OF TASK** —————

EFFECTIVITY
SIA ALL

27-88 TASK 809

D633A103-SIA

Page 231
Feb 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

810. Slat Extend Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 27-81301 SLAT 1 EXTEND
 - (b) 27-81304 SLAT 2 EXTEND
 - (c) 27-81307 SLAT 3 EXTEND
 - (d) 27-81310 SLAT 4 EXTEND
 - (e) 27-81313 SLAT 5 EXTEND
 - (f) 27-81316 SLAT 6 EXTEND
 - (g) 27-81319 SLAT 7 EXTEND
 - (h) 27-81322 SLAT 8 EXTEND
- (2) The FSEU detected an overcurrent on the LE slat 1, 2, 3, 4, 5, 6, 7 or 8 extend discrete output during the Existing Faults test.

B. Possible Causes

- (1) LE Flap/Slat Annunciator Panel, P5-12
- (2) Wiring problem
- (3) FSEU, M1746

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	12	C00318	INDICATOR MASTER DIM SECT 6

D. Related Data

- (1) SSM 27-81-12
- (2) SSM 27-81-22
- (3) WDM 27-81-12
- (4) WDM 27-81-22

E. Initial Evaluation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (a) If the maintenance message does not show, then there was an intermittent fault.
 - (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this test of the LE Flap/Slat Annunciator Panel, P5-12:
 - (a) Remove the LE flap/slat annunciator panel, P5-12.
 - (b) Disconnect connector D650 from the LE flap/slat annunciator panel, P5-12.
 - (c) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (d) If the maintenance message does not show, then install a new LE flap/slat annunciator panel, P5-12.
 - 1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.

EFFECTIVITY
SIA ALL

27-88 TASK 810

D633A103-SIA

Page 232
Feb 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 2) If the maintenance message does not show, then you corrected the fault.
- (e) If the maintenance message shows, then continue.
- (2) Do this check of the wiring between the FSEU and the LE flap/slat annunciator panel, P5-12:
 - (a) Measure the DC and AC voltage between the applicable pin on connector D650 at the LE flap/slat annunciator panel, P5-12 and structure ground:

Table 209

SLAT	D650		D728A
SLAT #1	pin 4	--	pin D1
SLAT #2	pin 7	--	pin C1
SLAT #3	pin 10	--	pin B1
SLAT #4	pin 13	--	pin A1
SLAT #5	pin 24	--	pin D6
SLAT #6	pin 27	--	pin C6
SLAT #7	pin 30	--	pin B6
SLAT #8	pin 33	--	pin A6

- (b) If the DC and AC voltage is not zero at the pin, then do these steps:
 - 1) Repair the wiring between the LE flap/slat position annunciator panel, P5-12 and the FSEU, M1746 connector D728A.
 - 2) Re-connect connector D650 to the LE flap/slat position annunciator panel, P5-12.
 - 3) Re-install the LE flap/slat position annunciator panel, P5-12.
 - 4) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 5) If the maintenance message does not show, then you corrected the fault.
- (c) If the voltages are zero, then continue.
 - 1) Re-connect the connector D650 to the LE flap/slat position annunciator panel, P5-12.
 - 2) Re-install the LE flap/slat position annunciator panel, P5-12.
- (3) Replace the FSEU. These are the tasks:
 - Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801
 - Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801
- (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (b) If the maintenance message does not show, then you corrected the fault.

———— **END OF TASK** ————

811. Slat Full Extend Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 27-81302 SLAT 1 FULL EXT
 - (b) 27-81305 SLAT 2 FULL EXT
 - (c) 27-81308 SLAT 3 FULL EXT

EFFECTIVITY
SIA ALL

27-88 TASKS 810-811

D633A103-SIA

Page 233
Feb 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (d) 27-81311 SLAT 4 FULL EXT
 - (e) 27-81314 SLAT 5 FULL EXT
 - (f) 27-81317 SLAT 6 FULL EXT
 - (g) 27-81320 SLAT 7 FULL EXT
 - (h) 27-81323 SLAT 8 FULL EXT
- (2) The FSEU detected an overcurrent on the LE slat 1, 2, 3, 4, 5, 6, 7 or 8 full extend discrete output during the Existing Faults test.

B. Possible Causes

- (1) LE Flap/Slat Annunciator Panel, P5-12
- (2) Wiring problem
- (3) FSEU, M1746

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	12	C00318	INDICATOR MASTER DIM SECT 6

D. Related Data

- (1) SSM 27-81-12
- (2) SSM 27-81-22
- (3) WDM 27-81-12
- (4) WDM 27-81-22

E. Initial Evaluation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (a) If the maintenance message does not show, then there was an intermittent fault.
 - (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this test of the LE Flap/Slat Annunciator Panel, P5-12:
 - (a) Remove the LE flap/slat annunciator panel, P5-12.
 - (b) Disconnect connector D650 from the LE flap/slat annunciator panel, P5-12.
 - (c) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (d) If the maintenance message does not show, then install a new LE flap/slat annunciator panel, P5-12.
 - 1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 2) If the maintenance message does not show, then you corrected the fault.
 - (e) If the maintenance message shows, then continue.
- (2) Do this check of the wiring between the FSEU and the LE flap/slat annunciator panel, P5-12:
 - (a) Measure the DC and AC voltage between the applicable pin on connector D650 at the LE flap/slat annunciator panel, P5-12 and structure ground:

EFFECTIVITY
SIA ALL

27-88 TASK 811

D633A103-SIA

Page 234
Feb 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

Table 210

SLAT	D650		D728A
SLAT #1	pin 5	--	pin D2
SLAT #2	pin 8	--	pin C2
SLAT #3	pin 11	--	pin B2
SLAT #4	pin 14	--	pin A2
SLAT #5	pin 25	--	pin D7
SLAT #6	pin 28	--	pin C7
SLAT #7	pin 31	--	pin B7
SLAT #8	pin 34	--	pin A7

- (b) If the DC and AC voltage is not zero at the pin, then do these steps:
- 1) Repair the wiring between the LE flap/slat position annunciator panel, P5-12 and the FSEU, M1746 connector D728A.
 - 2) Re-connect connector D650 to the LE flap/slat position annunciator panel, P5-12.
 - 3) Re-install the LE flap/slat position annunciator panel, P5-12.
 - 4) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 5) If the maintenance message does not show, then you corrected the fault.
- (c) If the voltages are zero, then continue.
- 1) Re-connect the connector D650 to the LE flap/slat position annunciator panel, P5-12.
 - 2) Re-install the LE flap/slat position annunciator panel, P5-12.
- (3) Replace the FSEU. These are the tasks:
- Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801
 - Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801
- (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (b) If the maintenance message does not show, then you corrected the fault.

END OF TASK

812. Slat In Transit Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
- (a) 27-81303 SLAT 1 IN TRANS
 - (b) 27-81306 SLAT 2 IN TRANS
 - (c) 27-81309 SLAT 3 IN TRANS
 - (d) 27-81312 SLAT 4 IN TRANS
 - (e) 27-81315 SLAT 5 IN TRANS
 - (f) 27-81318 SLAT 6 IN TRANS
 - (g) 27-81321 SLAT 7 IN TRANS
 - (h) 27-81324 SLAT 8 IN TRANS

EFFECTIVITY
SIA ALL

27-88 TASKS 811-812

D633A103-SIA

Page 235
Feb 15/2022



737-600/700/800/900 FAULT ISOLATION MANUAL

- (2) The FSEU detected an overcurrent on the LE slat 1, 2, 3, 4, 5, 6, 7 or 8 in transit discrete output during the Existing Faults test.

B. Possible Causes

- (1) LE Flap/Slat Annunciator Panel, P5-12
- (2) Wiring problem
- (3) FSEU, M1746

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	12	C00318	INDICATOR MASTER DIM SECT 6

D. Related Data

- (1) SSM 27-81-12
- (2) SSM 27-81-22
- (3) WDM 27-81-12
- (4) WDM 27-81-22

E. Initial Evaluation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (a) If the maintenance message does not show, then there was an intermittent fault.
 - (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this test of the LE Flap/Slat Annunciator Panel, P5-12:
 - (a) Remove the LE flap/slat annunciator panel, P5-12.
 - (b) Disconnect connector D650 from the LE flap/slat annunciator panel, P5-12.
 - (c) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (d) If the maintenance message does not show, then install a new LE flap/slat annunciator panel, P5-12.
 - 1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 2) If the maintenance message does not show, then you corrected the fault.
 - (e) If the maintenance message shows, then continue.
- (2) Do this check of the wiring between the FSEU and the LE flap/slat annunciator panel, P5-12:
 - (a) Measure the DC and AC voltage between the applicable pin on connector D650 at the LE flap/slat annunciator panel, P5-12 and structure ground:

Table 211

SLAT	D650		D728A
SLAT #1	pin 3	--	pin D3
SLAT #2	pin 6	--	pin C3
SLAT #3	pin 9	--	pin B3

EFFECTIVITY
SIA ALL

27-88 TASK 812

D633A103-SIA

Page 236
Feb 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

Table 211 (Continued)

SLAT	D650		D728A
SLAT #4	pin 12	--	pin A3
SLAT #5	pin 23	--	pin D8
SLAT #6	pin 26	--	pin C8
SLAT #7	pin 29	--	pin B8
SLAT #8	pin 32	--	pin A8

- (b) If the DC and AC voltage is not zero at the pin, then do these steps:
- 1) Repair the wiring between the LE flap/slat position annunciator panel, P5-12 and the FSEU, M1746 connector D728A.
 - 2) Re-connect connector D650 to the LE flap/slat position annunciator panel, P5-12.
 - 3) Re-install the LE flap/slat position annunciator panel, P5-12.
 - 4) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 5) If the maintenance message does not show, then you corrected the fault.
- (c) If the voltages are zero, then continue.
- 1) Re-connect the connector D650 to the LE flap/slat position annunciator panel, P5-12.
 - 2) Re-install the LE flap/slat position annunciator panel, P5-12.
- (3) Replace the FSEU. These are the tasks:
- Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801
 - Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801
- (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (b) If the maintenance message does not show, then you corrected the fault.

END OF TASK

813. Flap Extend Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
- (a) 27-81325 FLAP 1 EXTEND
 - (b) 27-81327 FLAP 2 EXTEND
 - (c) 27-81329 FLAP 3 EXTEND
 - (d) 27-81331 FLAP 4 EXTEND
- (2) The FSEU detected an overcurrent on the LE flap 1, 2, 3, or 4 extend discrete output during the Existing Faults test.

B. Possible Causes

- (1) LE Flap/Slat Annunciator Panel, P5-12
- (2) Wiring problem
- (3) FSEU, M1746

EFFECTIVITY
SIA ALL

27-88 TASKS 812-813

D633A103-SIA

Page 237
Feb 15/2022



737-600/700/800/900 FAULT ISOLATION MANUAL

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	12	C00318	INDICATOR MASTER DIM SECT 6

D. Related Data

- (1) SSM 27-81-11
- (2) SSM 27-81-21
- (3) WDM 27-81-11
- (4) WDM 27-81-21

E. Initial Evaluation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (a) If the maintenance message does not show, then there was an intermittent fault.
 - (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this test of the LE Flap/Slat Annunciator Panel, P5-12:
 - (a) Remove the LE flap/slat annunciator panel, P5-12.
 - (b) Disconnect connector D650 from the LE flap/slat annunciator panel, P5-12.
 - (c) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (d) If the maintenance message does not show, then install a new LE flap/slat annunciator panel, P5-12.
 - 1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 2) If the maintenance message does not show, then you corrected the fault.
 - (e) If the maintenance message shows, then continue.
- (2) Do this check of the wiring between the FSEU and the LE flap/slat annunciator panel, P5-12:
 - (a) Measure the DC and AC voltage between the applicable pin on connector D650 at the LE flap/slat annunciator panel, P5-12 and structure ground:

Table 212

FLAP	D650		D728A
FLAP #1	pin 16	--	pin D4
FLAP #2	pin 18	--	pin C4
FLAP #3	pin 20	--	pin B4
FLAP #4	pin 22	--	pin A4

- (b) If the DC and AC voltage is not zero at the pin, then do these steps:
 - 1) Repair the wiring between the LE flap/slat position annunciator panel, P5-12 and the FSEU, M1746 connector D728A.
 - 2) Re-connect connector D650 to the LE flap/slat position annunciator panel, P5-12.
 - 3) Re-install the LE flap/slat position annunciator panel, P5-12.

EFFECTIVITY
SIA ALL

27-88 TASK 813

D633A103-SIA

Page 238
Feb 15/2022



737-600/700/800/900 FAULT ISOLATION MANUAL

- 4) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- 5) If the maintenance message does not show, then you corrected the fault.
- (c) If the voltages are zero, then continue.
 - 1) Re-connect the connector D650 to the LE flap/slat position annunciator panel, P5-12.
 - 2) Re-install the LE flap/slat position annunciator panel, P5-12.
- (3) Replace the FSEU. These are the tasks:
 - Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801
 - Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801
- (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (b) If the maintenance message does not show, then you corrected the fault.

————— **END OF TASK** —————

814. Flap In Transit Problem - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:
 - (a) 27-81326 FLAP 1 IN TRANS
 - (b) 27-81328 FLAP 2 IN TRANS
 - (c) 27-81330 FLAP 3 IN TRANS
 - (d) 27-81332 FLAP 4 IN TRANS
- (2) The FSEU detected an overcurrent on the LE flap 1, 2, 3, or 4 in transit discrete output during the Existing Faults test.

B. Possible Causes

- (1) LE Flap/Slat Annunciator Panel, P5-12
- (2) Wiring problem
- (3) FSEU, M1746

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	12	C00318	INDICATOR MASTER DIM SECT 6

D. Related Data

- (1) (SSM 27-81-11)
- (2) (SSM 27-81-21)
- (3) (WDM 27-81-11)
- (4) (WDM 27-81-21)

E. Initial Evaluation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (2) If the maintenance message does not show, then there was an intermittent fault.
- (3) If the maintenance message shows, then do the Fault Isolation Procedure below.

EFFECTIVITY
SIA ALL

27-88 TASKS 813-814

D633A103-SIA

Page 239
Feb 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

F. Fault Isolation Procedure

- (1) Do this test of the LE Flap/Slat Annunciator Panel, P5-12:
 - (a) Remove the LE flap/slat annunciator panel, P5-12.
 - (b) Disconnect connector D650 from the LE flap/slat annunciator panel, P5-12.
 - (c) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (d) If the maintenance message does not show, then install a new LE flap/slat annunciator panel, P5-12.
 - 1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 2) If the maintenance message does not show, then you corrected the fault.
 - (e) If the maintenance message shows, then continue.
- (2) Do this check of the wiring between the FSEU and the LE flap/slat annunciator panel, P5-12:
 - (a) Measure the DC and AC voltage between the applicable pin on connector D650 at the LE flap/slat annunciator panel, P5-12 and structure ground:

Table 213

FLAP	D650		D728A
FLAP #1	pin 15	--	pin D5
FLAP #2	pin 17	--	pin C5
FLAP #3	pin 19	--	pin B5
FLAP #4	pin 21	--	pin A5

- (b) If the DC and AC voltage is not zero at the pin, then do these steps:
 - 1) Repair the wiring between the LE flap/slat position annunciator panel, P5-12 and the FSEU, M1746 connector D728A.
 - 2) Re-connect connector D650 to the LE flap/slat position annunciator panel, P5-12.
 - 3) Re-install the LE flap/slat position annunciator panel, P5-12.
 - 4) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 5) If the maintenance message does not show, then you corrected the fault.
 - (c) If the voltages are zero, then continue.
 - 1) Re-connect the connector D650 to the LE flap/slat position annunciator panel, P5-12.
 - 2) Re-install the LE flap/slat position annunciator panel, P5-12.
- (3) Replace the FSEU. These are the tasks:
 - Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801
 - Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801
 - (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (b) If the maintenance message does not show, then you corrected the fault.

END OF TASK

815. Multiple Slat Retract Proximity Sensors Fail - Fault Isolation

A. Description

- (1) This task is for these maintenance messages:

EFFECTIVITY
SIA ALL

D633A103-SIA

27-88 TASKS 814-815

Page 240
Feb 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (a) 27-81237 LE RETR SENSORS
- (b) 27-81238 L RETR SENSORS
- (c) 27-81239 R RETR SENSORS
- (2) The FSEU detected failure with all the slat retract sensors, the left retract sensors or the right retract sensors.
- (3) These faults are generated to help detect a disconnected electrical connector responsible for multiple sensor inputs to the FSEU.

B. Possible Causes

- (1) Wiring Problem
- (2) FSEU, M1746

C. Related Data

- (1) (SSM 27-81-12)
- (2) (SSM 27-81-22)
- (3) (WDM 27-81-12)
- (4) (WDM 27-81-22)

D. Initial Evaluation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (2) If the maintenance message does not show, then there was an intermittent fault.
- (3) If the maintenance message shows, then do the Fault Isolation Procedure below.

E. Fault Isolation Procedure

- (1) Do a check of the electrical connectors for the slat retract sensors:
 - (a) For the left retract sensors, do a check of these connectors:
 - 1) D40122P on the E1-1 shelf.
 - 2) D39901 and D39903 on the left wing to body pressure seal.
 - (b) For the right retract sensors, do a check of these connectors:
 - 1) D40948P on the E1-1 shelf.
 - 2) D39902 and D39904 on the right wing to body pressure seal.
 - (c) If you find a disconnected electrical connector, then do these steps:
 - 1) Connect the electrical connector.
 - 2) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 3) If the maintenance message does not show, then you corrected the fault.
 - (d) If you did not find a disconnected electrical connector, then continue.
- (2) Do this check of the connection between the connector D728A to the FSEU:
 - (a) Remove the FSEU, M1746. To remove it, do this task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
 - (b) Make sure there are no bent pins on connector D728A at the E1-1 shelf.
 - (c) If there are bent pins on connector D728A, then do these steps:
 - 1) Repair the bent pins.
 - 2) Re-install the FSEU, M1746. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.

EFFECTIVITY
SIA ALL

27-88 TASK 815

D633A103-SIA

Page 241
Feb 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 3) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- 4) If the maintenance message does not show, then you corrected the fault.
- (d) If there are no bent pins on connector D728A, then continue.
- (3) Install a new FSEU. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
- (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- 1) If the maintenance message does not show, then you corrected the fault.

———— **END OF TASK** ————

817. Master Extend Discrete Output Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-81333 MASTER EXTEND
- (2) The FSEU detected an overcurrent on the master extend discrete output during the Existing Faults test.

B. Possible Causes

- (1) LE FLAPS EXT light, L4
- (2) Wiring problem
- (3) FSEU, M1746

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	12	C00314	INDICATOR MASTER DIM SECT 2

D. Related Data

- (1) (SSM 27-81-31)
- (2) (WDM 27-81-31)

E. Initial Evaluation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (2) If the maintenance message does not show, then there was an intermittent fault.
- (3) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this check of the LE FLAPS EXT light, L4, on the center instrument panel, P2-2:
 - (a) Remove the bulb for the LE FLAPS EXT light, L4.
 - (b) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (c) If the maintenance message does not show, then install a new bulb for the LE FLAPS EXT light, L4.
 - 1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 2) If the maintenance message does not show, then you corrected the fault.
 - (d) If the maintenance message shows, then continue.

EFFECTIVITY
SIA ALL

27-88 TASKS 815-817

D633A103-SIA

Page 242
Feb 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- (2) Do this check of the wiring between the FSEU and the LE FLAPS EXT light, L4 on the center instrument panel, P2-2:
- (a) Remove the FSEU, M1746. To remove it, do this task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
 - (b) Measure the DC and AC voltage between pin A9 of connector D728A E1-1.
 - (c) If the DC and AC voltages are not zero at the pin, then do these steps:
 - 1) Repair the wiring between these pins at connector D728A at the E1-1 shelf and connector D339 at the center instrument panel, P2-2.
- | | |
|------------------|-------------|
| D728A | D339 |
| pin A9 | pin 15 |
- 2) Re-install the bulb for the LE FLAPS EXT light, L4.
 - 3) Re-install the FSEU, M1746. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - 4) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 5) If the maintenance message does not show, then you corrected the fault.
- (d) If you do not find a problem with the wiring, then continue.
- 1) Re-install the bulb for the LE FLAPS EXT light, L4.
- (3) Install a new FSEU. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
- (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (b) If the maintenance message does not show, then you corrected the fault.

————— **END OF TASK** —————

818. Master Intransit Discrete Output Problem - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-81334 MASTER IN TRANS
- (2) The FSEU detected an overcurrent on the master intransit discrete output during the Existing Faults test.

B. Possible Causes

- (1) LE FLAPS TRANSIT light, L3
- (2) Wiring problem
- (3) FSEU, M1746

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	12	C00314	INDICATOR MASTER DIM SECT 2

EFFECTIVITY
SIA ALL

27-88 TASKS 817-818



**737-600/700/800/900
FAULT ISOLATION MANUAL**

D. Related Data

- (1) (SSM 27-81-31)
- (2) (WDM 27-81-31)

E. Initial Evaluation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (2) If the maintenance message does not show, then there was an intermittent fault.
- (3) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Do this check of the LE FLAPS TRANSIT light, L3, on the center instrument panel, P2-2:
 - (a) Remove the bulb for the LE FLAPS TRANSIT light, L3.
 - (b) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (c) If the maintenance message does not show, then install a new bulb for the LE FLAPS TRANSIT light, L3.
 - 1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 2) If the maintenance message does not show, then you corrected the fault.
 - (d) If the maintenance message shows, then continue.
- (2) Do this check of the wiring between the FSEU and the LE FLAPS TRANSIT light, L3:
 - (a) Remove the FSEU, M1746. To remove it, do this task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
 - (b) Measure the DC and AC voltage between pin A10 of connector D728A E1-1.
 - (c) If the DC and AC voltages are not zero at the pin, then do these steps:
 - 1) Repair the wiring between these pins at connector D728A at the E1-1 shelf and connector D339 at the center instrument panel, P2-2.

D728A	D339
pin A10	pin 14
 - 2) Re-install the bulb for the LE FLAPS EXT light, L4.
 - 3) Re-install the FSEU, M1746. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - 4) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 5) If the maintenance message does not show, then you corrected the fault.
 - (d) If you do not find a problem with the wiring, then continue.
 - 1) Re-install the bulb for the LE FLAPS EXT light, L4.
- (3) Install a new FSEU. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (b) If the maintenance message does not show, then you corrected the fault.

———— **END OF TASK** ————

EFFECTIVITY
SIA ALL

27-88 TASK 818

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 244
Feb 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

819. Asymmetry Enabled Fault - Fault Isolation

A. Description

- (1) This task is for this maintenance message:
 - (a) 27-81283 ASYM ENABLED
- (2) The input to the FSEU from circuit breaker C1208 for the asymmetry enable signal is not correct.

B. Possible Causes

- (1) Circuit breaker C1208
- (2) Wiring Problem
- (3) FSEU, M1746

C. Circuit Breaker

- (1) This is the primary circuit breaker related to the fault:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	7	C01208	STALL WARN ASYM MODE

D. Related Data

- (1) SSM 27-32-11
- (2) SSM 27-81-11
- (3) WDM 27-32-11
- (4) WDM 27-81-11

E. Initial Evaluation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (a) If the maintenance message does not show, then there was an intermittent fault.
 - (b) If the maintenance message shows, then do the Fault Isolation Procedure below.

F. Fault Isolation Procedure

- (1) Make sure that this circuit breaker is closed:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	7	C01208	STALL WARN ASYM MODE

- (2) Use the SMYDC, M1747 to find the output of the circuit breaker:
 - (a) Get access to the SMYDC, M1747 on the E3-2 shelf.
 - (b) Push the ON/OFF button on the front panel of the SMYDC to turn on the display.
 - (c) Push the NO button until GROUND TESTS? shows on the display.
 - (d) Push the YES button to select GROUND TESTS?.
 - (e) Push the NO button until DISCRETE INPUTS? shows on the display.
 - (f) Push the YES button to select DISCRETE INPUTS?.
 - (g) Use the down arrow button to scroll through the outputs until ASYM EN shows on the display.
 - (h) If ASYM EN = OPEN shows on the display, then replace the following circuit breaker:

EFFECTIVITY
SIA ALL

27-88 TASK 819

D633A103-SIA

Page 245
Feb 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 1) This is the circuit breaker:
CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	7	C01208	STALL WARN ASYM MODE
- 2) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- 3) If the maintenance message does not show, then you corrected the fault.
 - (i) If ASYM EN = GND shows on the display, then continue.
 - 1) Push the ON/OFF button on the front panel of the SMYDC to turn off the display.
- (3) Do a check of the wiring between the FSEU, M1746 and SM69 on the E1-1 shelf:
 - (a) Remove the FSEU, M1746. This is the task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.
 - (b) Do a wiring check between pin G5 of connector D728B at the E1-1 shelf SM69 on the E1-1 shelf.
 - (c) If you find a problem with the wiring, then do these steps:
 - 1) Repair the wiring.
 - 2) Re-install the FSEU, M1746. This is the task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - 3) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - 4) If the maintenance message does not show, then you corrected the fault.
 - (d) If you do not find a problem with the wiring, then continue.
- (4) Install a new FSEU, M1746. This is the task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801.
 - (a) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
 - (b) If the maintenance message does not show, then you corrected the fault.

———— **END OF TASK** ————

820. Leading Edge Transit Light Illuminated Problem - Fault Isolation

A. Description

- (1) One or more of the leading edge TRANSIT lights on the P5 overhead panel illuminated when the leading edge surfaces were either extended or retracted.

B. Possible Causes

- (1) Wiring problem
- (2) FSEU, M1746
- (3) LE Flap/Slat Annunciator Panel, P5-12

C. Circuit Breakers

- (1) This is the primary circuit breaker related to the fault:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	12	C00318	INDICATOR MASTER DIM SECT 6

EFFECTIVITY
SIA ALL

27-88 TASKS 819-820

D633A103-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 246
Feb 15/2022

737-600/700/800/900
FAULT ISOLATION MANUAL

D. Related Data

- (1) (SSM 27-80-01)
- (2) (SSM 27-81-11)
- (3) (SSM 27-81-12)
- (4) (SSM 27-81-21)
- (5) (SSM 27-81-22)
- (6) (WDM 27-81-11)
- (7) (WDM 27-81-12)
- (8) (WDM 27-81-21)
- (9) (WDM 27-81-22)

E. Initial Evaluation

- (1) Do this task: Flap/Slat Electronics Unit (FSEU) BITE Procedure, 27-51 TASK 801.
- (2) If any SLAT IN TRANS, FLAP IN TRANS or PROX SNSR maintenance message show, then do the applicable fault isolation task.
- (3) If one or more of the amber TRANSIT lights on the P5-12 LE Flap/Slat Annunciator Panel are on, then do the Fault Isolation Procedure below.
- (4) If all of the amber TRANSIT lights are off, with the leading edge surfaces extended and retracted, then there was an intermittent fault.

F. Fault Isolation Procedure

- (1) Do this test of the wiring between the LE Flap/Slat Annunciator Panel, P5-12 and the FSEU, M1746:
 - (a) Remove the LE flap/slat annunciator panel, P5-12.
 - (b) Disconnect connector D650 from the LE flap/slat annunciator panel, P5-12.
 - (c) Do a continuity check between these pins of connector D650 and structure ground:

Connector D650	Annunciator
pin 15	Flap 1
pin 17	Flap 2
pin 19	Flap 3
pin 21	Flap 4
pin 3	Slat 1
pin 6	Slat 2
pin 9	Slat 3
pin 12	Slat 4
pin 23	Slat 5
pin 26	Slat 6
pin 29	Slat 7
pin 32	Slat 8

- (d) If there is continuity between one or more of these pins and structure ground, then do these steps:
 - 1) Remove the FSEU, M1746 from the E1-1 shelf. To remove the FSEU, do this task: Flap/Slat Electronics Unit Removal, AMM TASK 27-51-01-000-801.

EFFECTIVITY
SIA ALL

27-88 TASK 820

D633A103-SIA

Page 247
Feb 15/2022



**737-600/700/800/900
FAULT ISOLATION MANUAL**

- 2) Do a continuity check between the pins on connector D650 and structure ground again.
- 3) If there is still continuity between the one or more pins and ground, then do these steps:

NOTE: There is a wire shorted to ground between the connector D650 and the FSEU.

- a) Repair the wiring between the connector D650 and the FSEU, M1746.
 - b) Re-install the FSEU, M1746. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801
 - c) Re-install the LE flap/slat annunciator panel, P5-12.
 - d) Extend and retract the leading edge flaps and slats. To extend and retract the slats, do this task: Leading Edge Flap and Slat System Operation With Primary Control, AMM TASK 27-81-00-860-801.
 - e) If the TRANSIT lights operate normally, then you corrected the fault.
- 4) If there is no continuity between the pins and structure ground with the FSEU removed, then do these steps:
 - a) Install a new FSEU, M1746. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801
 - b) Re-install the LE flap/slat annunciator panel, P5-12.
 - c) Extend and retract the leading edge flaps and slats. To extend and retract the slats, do this task: Leading Edge Flap and Slat System Operation With Primary Control, AMM TASK 27-81-00-860-801.
 - d) If the TRANSIT lights operate normally, then you corrected the fault.
 - (e) If there is no continuity between the pins and structure ground, then continue.
- (2) Install a new LE flap/slat annunciator panel, P5-12:
 - (a) Re-install the FSEU, M1746. To install it, do this task: Flap/Slat Electronics Unit Installation, AMM TASK 27-51-01-400-801
 - (b) Extend and retract the leading edge flaps and slats. To extend and retract the slats, do this task: Leading Edge Flap and Slat System Operation With Primary Control, AMM TASK 27-81-00-860-801.
 - (c) If the TRANSIT lights operate normally, then you corrected the fault.

———— **END OF TASK** ————

EFFECTIVITY
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27-88 TASK 820

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Page 248
Feb 15/2022