

CHAPTER

79

ENGINE OIL

(LEAP-1B ENGINES)

737-7/8/8200/9/10 AIRCRAFT MAINTENANCE MANUAL

CHAPTER 79 ENGINE OIL

Subject/Page	Date	COC	Subject/Page	Date	COC	Subject/Page	Date	COC
79-EFFECTIVE PAGES			79-00-00 (cont)			79-00-00 (cont)		
1 thru 3	Sep 15/2023		R 629	Sep 15/2023		665	Jan 15/2023	
4	BLANK		R 630	Sep 15/2023		666	Sep 15/2022	
79-CONTENTS			631	Sep 15/2022		667	Sep 15/2022	
1	Sep 15/2022		632	Sep 15/2022		668	Sep 15/2022	
2	Sep 15/2022		633	Sep 15/2022		669	May 15/2023	
3	Sep 15/2021		634	Sep 15/2022		670	Sep 15/2022	
4	May 15/2023		R 635	Sep 15/2023		671	Sep 15/2022	
79-00-00			R 636	Sep 15/2023		672	Sep 15/2022	
601	Jan 15/2023		R 637	Sep 15/2023		673	Sep 15/2022	
602	Jan 15/2023		R 638	Sep 15/2023		674	Sep 15/2022	
603	Sep 15/2022		R 639	Sep 15/2023		R 675	Sep 15/2023	
604	Sep 15/2022		640	Sep 15/2022		676	Sep 15/2022	
605	Sep 15/2022		R 641	Sep 15/2023		R 677	Sep 15/2023	
606	Sep 15/2022		R 642	Sep 15/2023		R 678	Sep 15/2023	
607	Sep 15/2022		R 643	Sep 15/2023		R 679	Sep 15/2023	
608	Sep 15/2022		644	Sep 15/2022		680	Sep 15/2022	
609	Sep 15/2022		645	Sep 15/2022		681	Sep 15/2022	
610	Sep 15/2022		646	Sep 15/2022		682	Sep 15/2022	
611	Jan 15/2023		647	Sep 15/2022		683	Sep 15/2022	
612	Sep 15/2022		648	Sep 15/2022		684	BLANK	
613	Sep 15/2022		649	Sep 15/2022		79-00-00		
614	Sep 15/2022		650	Sep 15/2022		901	Sep 15/2021	
615	Sep 15/2022		651	Sep 15/2022		902	Sep 15/2021	
616	Sep 15/2022		652	Sep 15/2022		79-11-01		
617	Sep 15/2022		653	Sep 15/2022		401	Jan 15/2023	
618	Sep 15/2022		654	Sep 15/2022		402	Sep 15/2021	
619	Sep 15/2022		655	Sep 15/2022		403	Sep 15/2021	
620	Sep 15/2022		656	Sep 15/2022		404	Sep 15/2021	
621	Sep 15/2022		657	Sep 15/2022		405	Sep 15/2021	
622	Jan 15/2023		658	Sep 15/2022		406	Sep 15/2021	
623	Sep 15/2022		659	Sep 15/2022		407	Sep 15/2021	
624	Sep 15/2022		R 660	Sep 15/2023		408	Sep 15/2021	
625	Sep 15/2022		661	Sep 15/2022		409	Sep 15/2021	
626	Sep 15/2022		662	Sep 15/2022		410	Sep 15/2021	
627	Sep 15/2022		663	Sep 15/2022		411	May 15/2023	
R 628	Sep 15/2023		664	May 15/2023		412	Sep 15/2021	
						413	Sep 15/2021	

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79-EFFECTIVE PAGES

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

**CHAPTER 79
ENGINE OIL**

Subject/Page	Date	COC	Subject/Page	Date	COC	Subject/Page	Date	COC
79-11-01 (cont)			79-21-02 (cont)			79-21-03 (cont)		
414	Sep 15/2021		416	May 15/2023		411	Sep 15/2021	
79-11-03			417	May 15/2023		412	Sep 15/2021	
401	Jan 15/2023		418	May 15/2023		413	May 15/2023	
402	Sep 15/2021		419	Sep 15/2022		414	Sep 15/2021	
403	Sep 15/2021		420	Sep 15/2022		415	Sep 15/2021	
404	Sep 15/2021		421	Sep 15/2022		416	Sep 15/2021	
405	May 15/2023		422	Sep 15/2022		417	Sep 15/2021	
406	Sep 15/2021		423	Sep 15/2022		418	Sep 15/2021	
79-21-01			424	Sep 15/2022		419	Sep 15/2021	
401	Jan 15/2023		425	Sep 15/2022		420	BLANK	
402	Sep 15/2021		426	Sep 15/2022		79-21-04		
403	Sep 15/2021		427	May 15/2023		201	Jan 15/2023	
404	Sep 15/2021		428	Sep 15/2022		202	Sep 15/2021	
405	Sep 15/2021		429	Sep 15/2022		203	Sep 15/2021	
406	Sep 15/2021		430	Sep 15/2022		204	Sep 15/2021	
407	Sep 15/2021		79-21-02			205	Sep 15/2021	
408	May 15/2023		601	May 15/2022		206	Sep 15/2021	
409	Sep 15/2021		602	Jan 15/2023		207	Sep 15/2021	
410	Sep 15/2021		603	May 15/2022		208	Sep 15/2021	
411	Sep 15/2021		604	May 15/2022		209	Sep 15/2021	
412	BLANK		605	May 15/2022		210	Sep 15/2021	
79-21-02			606	May 15/2022		211	Sep 15/2021	
401	Jan 15/2023		607	May 15/2022		212	Sep 15/2021	
402	Jan 15/2023		608	May 15/2022		213	Sep 15/2021	
403	Sep 15/2022		609	May 15/2022		214	Sep 15/2021	
404	Sep 15/2022		610	BLANK		215	Sep 15/2022	
405	Sep 15/2022		79-21-03			216	Jan 15/2023	
406	Sep 15/2022		401	May 15/2023		217	May 15/2022	
407	Sep 15/2022		402	May 15/2023		218	May 15/2022	
408	Sep 15/2022		403	Sep 15/2021		219	May 15/2022	
409	Sep 15/2022		404	Sep 15/2021		220	May 15/2022	
410	Sep 15/2022		405	Sep 15/2021		221	Sep 15/2021	
411	Sep 15/2022		406	Sep 15/2021		222	Sep 15/2021	
412	May 15/2023		407	Sep 15/2021		223	Sep 15/2021	
413	Sep 15/2022		408	Sep 15/2021		224	Sep 15/2021	
414	Sep 15/2022		409	Sep 15/2021		225	Sep 15/2021	
415	Sep 15/2022		410	Sep 15/2021				

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

79-EFFECTIVE PAGES

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

**CHAPTER 79
ENGINE OIL**

Subject/Page	Date	COC	Subject/Page	Date	COC	Subject/Page	Date	COC
79-21-04 (cont)			79-21-17 (cont)			79-31-01		
226	Sep 15/2021		408	Jan 15/2023		401	Jan 15/2023	
227	Sep 15/2021		79-21-21			402	Jan 15/2023	
228	BLANK		R 401	Sep 15/2023		403	Sep 15/2021	
79-21-07			R 402	Sep 15/2023		404	Sep 15/2021	
401	May 15/2023		403	Sep 15/2021		405	Sep 15/2021	
402	May 15/2023		404	May 15/2023		406	May 15/2023	
403	May 15/2023		405	May 15/2023		407	Sep 15/2021	
404	May 15/2022		406	May 15/2023		408	Sep 15/2021	
405	May 15/2023		407	May 15/2023		79-32-01		
406	May 15/2023		408	May 15/2023		401	Jan 15/2023	
407	May 15/2023		R 409	Sep 15/2023		402	Sep 15/2021	
408	May 15/2023		R 410	Sep 15/2023		403	Sep 15/2021	
79-21-07			411	May 15/2023		404	Sep 15/2021	
601	Sep 15/2021		412	BLANK		405	Sep 15/2021	
602	Sep 15/2021		79-21-22			R 406	Sep 15/2023	
79-21-12			401	Jan 15/2023		O 407	Sep 15/2023	
401	Jan 15/2023		402	Sep 15/2021		O 408	Sep 15/2023	
402	Sep 15/2021		403	Sep 15/2021		79-35-01		
403	Sep 15/2021		404	Sep 15/2021		401	Jan 15/2023	
404	Sep 15/2021		405	Sep 15/2021		402	May 15/2023	
405	May 15/2023		406	May 15/2022		403	May 15/2023	
406	Sep 15/2021		407	Sep 15/2021		404	Sep 15/2021	
79-21-14			408	BLANK		405	Sep 15/2021	
401	Jan 15/2023		79-30-00			406	May 15/2023	
402	Sep 15/2021		601	Sep 15/2021		407	May 15/2023	
403	Sep 15/2021		602	Jan 15/2023		408	May 15/2023	
404	Sep 15/2021		603	Sep 15/2021				
405	May 15/2023		604	Sep 15/2021				
406	Sep 15/2021		605	Sep 15/2021				
79-21-17			606	Sep 15/2021				
401	Jan 15/2023		607	Sep 15/2021				
402	Jan 15/2023		608	Sep 15/2021				
403	Sep 15/2021		609	Sep 15/2021				
404	Sep 15/2021		610	Sep 15/2021				
405	Sep 15/2021		611	Sep 15/2021				
406	May 15/2023		612	Sep 15/2021				
407	Jan 15/2023							

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

79-EFFECTIVE PAGES

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

**CHAPTER 79
ENGINE OIL**

<u>SUBJECT</u>	<u>CHAPTER SECTION SUBJECT</u>	<u>CONF</u>	<u>PAGE</u>	<u>EFFECT</u>
<u>ENGINE OIL - INSPECTION/CHECK</u>	79-00-00		601	SIA ALL
Engine Oil System (External Surfaces Walk Around) Inspection TASK 79-00-00-210-801-G00			601	SIA ALL
Engine Oil System (Fan Cowl Panels and Thrust Reversers Open) Inspection TASK 79-00-00-210-802-G00			610	SIA ALL
Engine Oil System (Internal) Inspection TASK 79-00-00-210-803-G01			621	SIA ALL
Oil Debris Monitoring System Sensor Inspection TASK 79-00-00-210-804-G00			628	SIA ALL
Engine Oil System (Oil Debris Monitoring System Sensor (ODMS), Scavenge Screen Plugs, Starter Magnetic Plug, and Oil Filter) Detailed Dimensional Check TASK 79-00-00-220-801-G00			635	SIA ALL
Engine Oil System (Fluids (Fuel or Skydrol) and Solids Contamination) Detailed Inspection TASK 79-00-00-211-801-G00			664	SIA ALL
Engine Oil System (Wear Metal Contamination) Inspection TASK 79-00-00-200-802-G00			669	SIA ALL
ODMS Fault Check TASK 79-00-00-200-803-G00			675	SIA ALL
Drain Tubes Inspection and Cleaning TASK 79-00-00-200-804-G00			676	SIA ALL
<u>ENGINE OIL - DDG MAINTENANCE PROCEDURES</u>	79-00-00		901	SIA ALL
DDG 79-31-01 Oil Quantity Indicating Systems Inoperative - Preparation TASK 79-00-00-040-802-G00			901	SIA ALL
DDG 79-21-01 Engine Oil Debris Monitoring System Inoperative - Preparation TASK 79-00-00-040-804-G00			902	SIA ALL
<u>OIL TANK - REMOVAL/INSTALLATION</u>	79-11-01		401	SIA ALL
Oil Tank Removal TASK 79-11-01-000-801-G00			401	SIA ALL

79-CONTENTS

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

**CHAPTER 79
ENGINE OIL**

<u>SUBJECT</u>	<u>CHAPTER SECTION SUBJECT</u>	<u>CONF</u>	<u>PAGE</u>	<u>EFFECT</u>
Oil Tank Installation TASK 79-11-01-400-801-G00			411	SIA ALL
<u>OIL TANK FILLER CAP - REMOVAL/INSTALLATION</u>	79-11-03		401	SIA ALL
Oil Tank Filler Cap Removal TASK 79-11-03-000-801-G00			401	SIA ALL
Oil Tank Filler Cap Installation TASK 79-11-03-400-801-G00			405	SIA ALL
<u>MAIN FUEL/OIL HEAT EXCHANGER - REMOVAL/INSTALLATION</u>	79-21-01		401	SIA ALL
Main Fuel/Oil Heat Exchanger Removal TASK 79-21-01-000-801-G00			401	SIA ALL
Main Fuel/Oil Heat Exchanger Installation TASK 79-21-01-400-801-G00			408	SIA ALL
<u>ENGINE SURFACE AIR COOLING OIL COOLER - REMOVAL/INSTALLATION</u>	79-21-02		401	SIA ALL
Engine Surface Air Cooling Oil Cooler 1 Removal TASK 79-21-02-000-801-G00			401	SIA ALL
Engine Surface Air Cooling Oil Cooler 1 Installation TASK 79-21-02-400-801-G00			412	SIA ALL
Engine Surface Air Cooling Oil Cooler 2 Removal TASK 79-21-02-000-802-G00			415	SIA ALL
Engine Surface Air Cooling Oil Cooler 2 Installation TASK 79-21-02-400-802-G00			427	SIA ALL
<u>ENGINE SURFACE AIR COOLING OIL COOLER - INSPECTION/CHECK</u>	79-21-02		601	SIA ALL
Engine Surface Air Cooling Oil Cooler Inspection TASK 79-21-02-211-801-G00			601	SIA ALL
<u>LUBRICATION UNIT - REMOVAL/INSTALLATION</u>	79-21-03		401	SIA ALL
Lubrication Unit Removal TASK 79-21-03-000-801-G00			401	SIA ALL
Lubrication Unit Installation TASK 79-21-03-400-801-G00			413	SIA ALL

79-CONTENTS

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

CHAPTER 79
ENGINE OIL

<u>SUBJECT</u>	<u>CHAPTER SECTION SUBJECT</u>	<u>CONF</u>	<u>PAGE</u>	<u>EFFECT</u>
<u>SCAVENGE SCREEN PLUGS - MAINTENANCE PRACTICES</u>	79-21-04		201	SIA ALL
Scavenge Screen Plugs Removal TASK 79-21-04-000-801-G00			201	SIA ALL
Scavenge Screen Plugs Installation TASK 79-21-04-400-801-G00			211	SIA ALL
Scavenge Screen Plug Inspection TASK 79-21-04-211-801-G00			214	SIA ALL
<u>OIL FILTER CARTRIDGE ELEMENT - REMOVAL/INSTALLATION</u>	79-21-07		401	SIA ALL
Oil Filter Cartridge Element Removal TASK 79-21-07-000-801-G00			401	SIA ALL
Oil Filter Cartridge Element Installation TASK 79-21-07-400-801-G00			406	SIA ALL
<u>OIL FILTER CARTRIDGE ELEMENT- INSPECTION/CHECK</u>	79-21-07		601	SIA ALL
Oil Filter Cartridge Element Inspection TASK 79-21-07-200-801-G00			601	SIA ALL
<u>OIL DEBRIS MONITORING SYSTEM SENSOR - REMOVAL/INSTALLATION</u>	79-21-12		401	SIA ALL
Oil Debris Monitoring System Sensor Removal TASK 79-21-12-000-801-G00			401	SIA ALL
Oil Debris Monitoring System Sensor Installation TASK 79-21-12-400-801-G00			405	SIA ALL
<u>OIL DEBRIS MONITORING SYSTEM UNIT - REMOVAL/INSTALLATION</u>	79-21-14		401	SIA ALL
Oil Debris Monitoring System Unit Removal TASK 79-21-14-000-801-G00			401	SIA ALL
Oil Debris Monitoring System Unit Installation TASK 79-21-14-400-801-G00			405	SIA ALL
<u>OIL EDUCTOR VALVE - REMOVAL/INSTALLATION</u>	79-21-17		401	SIA ALL
Oil Eductor Valve Removal TASK 79-21-17-000-801-G00			401	SIA ALL
Oil Eductor Valve Installation TASK 79-21-17-400-801-G00			406	SIA ALL

79-CONTENTS

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

**CHAPTER 79
ENGINE OIL**

<u>SUBJECT</u>	<u>CHAPTER SECTION SUBJECT</u>	<u>CONF</u>	<u>PAGE</u>	<u>EFFECT</u>
<u>AIR OIL SEPARATOR - REMOVAL/INSTALLATION</u>	79-21-21		401	SIA ALL
Air Oil Separator Removal TASK 79-21-21-000-801-G00			401	SIA ALL
Air Oil Separator Installation TASK 79-21-21-400-801-G00			409	SIA ALL
<u>ANTI LEAK VALVE - REMOVAL/INSTALLATION</u>	79-21-22		401	SIA ALL
Anti Leak Valve Removal TASK 79-21-22-000-801-G00			401	SIA ALL
Anti Leak Valve Installation TASK 79-21-22-400-801-G00			405	SIA ALL
<u>OIL INDICATING SYSTEM - INSPECTION/CHECK</u>	79-30-00		601	SIA ALL
Oil Indicating System Inspection TASK 79-30-00-210-801-G00			601	SIA ALL
<u>OIL LEVEL SENSOR - REMOVAL/INSTALLATION</u>	79-31-01		401	SIA ALL
Oil Level Sensor Removal TASK 79-31-01-000-801-G00			401	SIA ALL
Oil Level Sensor Installation TASK 79-31-01-400-801-G00			406	SIA ALL
<u>OIL PRESSURE AND TEMPERATURE SENSOR - REMOVAL/INSTALLATION</u>	79-32-01		401	SIA ALL
Oil Pressure and Temperature Sensor Removal TASK 79-32-01-000-801-G00			401	SIA ALL
Oil Pressure and Temperature Sensor Installation TASK 79-32-01-400-801-G00			406	SIA ALL
<u>OIL FILTER DIFFERENTIAL PRESSURE SENSOR - REMOVAL/INSTALLATION</u>	79-35-01		401	SIA ALL
Oil Filter Differential Pressure Sensor Removal TASK 79-35-01-000-801-G00			401	SIA ALL
Oil Filter Differential Pressure Sensor Installation TASK 79-35-01-400-801-G00			406	SIA ALL

79-CONTENTS

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

ENGINE OIL - INSPECTION/CHECK

1. General

A. This procedure has these tasks:

- (1) An inspection of the engine oil system (external surfaces walk around)
- (2) An inspection of the engine oil system (fan cowl panels and thrust reversers open)
- (3) An inspection of the engine oil system (internal)
- (4) An inspection of the oil debris monitoring system sensor
- (5) A detailed dimensional check of the engine oil system (oil debris monitoring system sensor, scavenge screen plugs, starter magnetic plug, and oil filter)
- (6) A detailed inspection of the engine oil system (fluids and solids contamination)
- (7) An inspection of the engine oil system (wear metal contamination)
- (8) A check of the ODMS fault.
- (9) An inspection and cleaning of the drain tubes.

TASK 79-00-00-210-801-G00

2. Engine Oil System (External Surfaces Walk Around) Inspection

(Figure 601)

A. General

- (1) This task gives the instructions on how to examine the engine and nacelle for evidence of oil leakage.

B. References

Reference	Title
71-00-00-800-802-G00	Engine Operation Limits (P/B 201)
71-00-02-000-801-G00	Power Plant - Removal (P/B 401)
71-00-02-400-801-G00	Power Plant - Installation (P/B 401)
71-71-00-200-801-G00	Engine Vents and Drains Inspection (P/B 601)
72-22-01-200-801-G00	Front Spinner Cone Inspection (P/B 601)
72-60-00-200-801-G00	Accessory Drives Inspection (P/B 601)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Prepare for the Inspection

SUBTASK 79-00-00-860-001-G00

- (1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:
 - (a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

EFFECTIVITY
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79-00-00

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Page 601
Jan 15/2023

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

- (b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

F. Engine Oil System (External Surfaces Walk Around) Inspection**SUBTASK 79-00-00-210-001-G00**

- (1) Do the visual inspection of the fan blades [1], stage 1 booster vanes [2], and front spinner cone [3] as follows (Figure 601 (Sheet 1)):
 - (a) Examine the fan blades [1] and the inner side of the fan case for oil leakage.
 - (b) Do a visual inspection at the 6:00 o'clock position of the fan blades [1] and stage 1 booster vanes [2] behind the fan blades.
 - 1) If they are wet with oil, replace the engine (TASK 71-00-02-000-801-G00 and TASK 71-00-02-400-801-G00).
 - (c) Do the visual inspection of the front spinner cone [3].
 - 1) If it is wet with oil, look for indications of the source of the oil leakage (TASK 72-22-01-200-801-G00).

SUBTASK 79-00-00-210-002-G00

- (2) Do a visual inspection of the drain masts as follows (Figure 601 (Sheet 2)):
 - (a) Do a visual inspection of the fan drain mast [4].
 - (b) Do a visual inspection of the core drain mast [5].
 - (c) If there is oil leakage from the drain tubes on the drain masts, do this task: Engine Vents and Drains Inspection, TASK 71-71-00-200-801-G00.

SUBTASK 79-00-00-210-003-G00

- (3) Do a visual inspection of the bottom of left fan cowl panel [6] and the right fan cowl panel [7] (Figure 601 (Sheet 2), Figure 601 (Sheet 6), Figure 601 (Sheet 5)).
 - (a) If there is oil leakage, do this task: Accessory Drives Inspection, TASK 72-60-00-200-801-G00.

SUBTASK 79-00-00-210-005-G00

- (4) Do a visual inspection of these engine areas (Figure 601 (Sheet 6), Figure 601 (Sheet 5)):
NOTE: Oil puddling on the aft sump area cover, lower area of the forward plug, aft plug, and core primary nozzle is permitted if the oil consumption rate and leakage rate from the aft sump flooding drain are within the serviceable limits (TASK 71-00-00-800-802-G00).
 - (a) The aft sump area of the primary nozzle [10].
 - (b) The 6:00 o'clock areas of the forward plug [11] and aft plug [12].

SUBTASK 79-00-00-960-001-G00

- (5) If the oil consumption rate and oil leakage rate are more than the serviceable limits, replace the engine (TASK 71-00-02-000-801-G00 and TASK 71-00-02-400-801-G00).

G. Put the Airplane Back to Its Usual Condition**SUBTASK 79-00-00-860-002-G00**

- (1) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:
 - (a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

- (b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

———— **END OF TASK** ————

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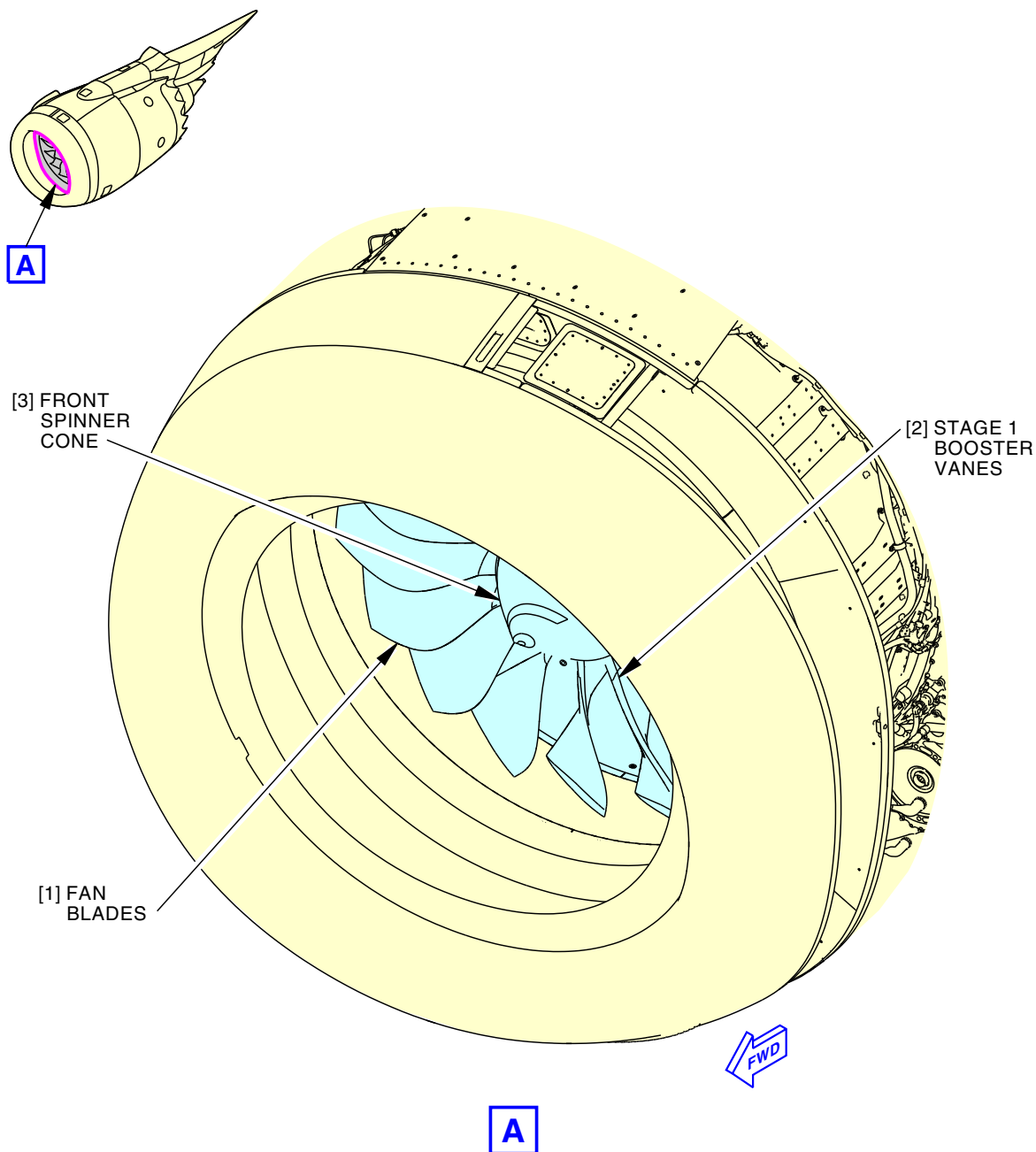
D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-00-00

Page 603
Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

**NOTE:**

STAGE 1 BOOSTER VANES ARE NOT VISIBLE IN THIS VIEW.

2465655 S0000574679_V1

Engine Oil System (External Surfaces Walk Around) Inspection
Figure 601/79-00-00-990-809-G00 (Sheet 1 of 6)

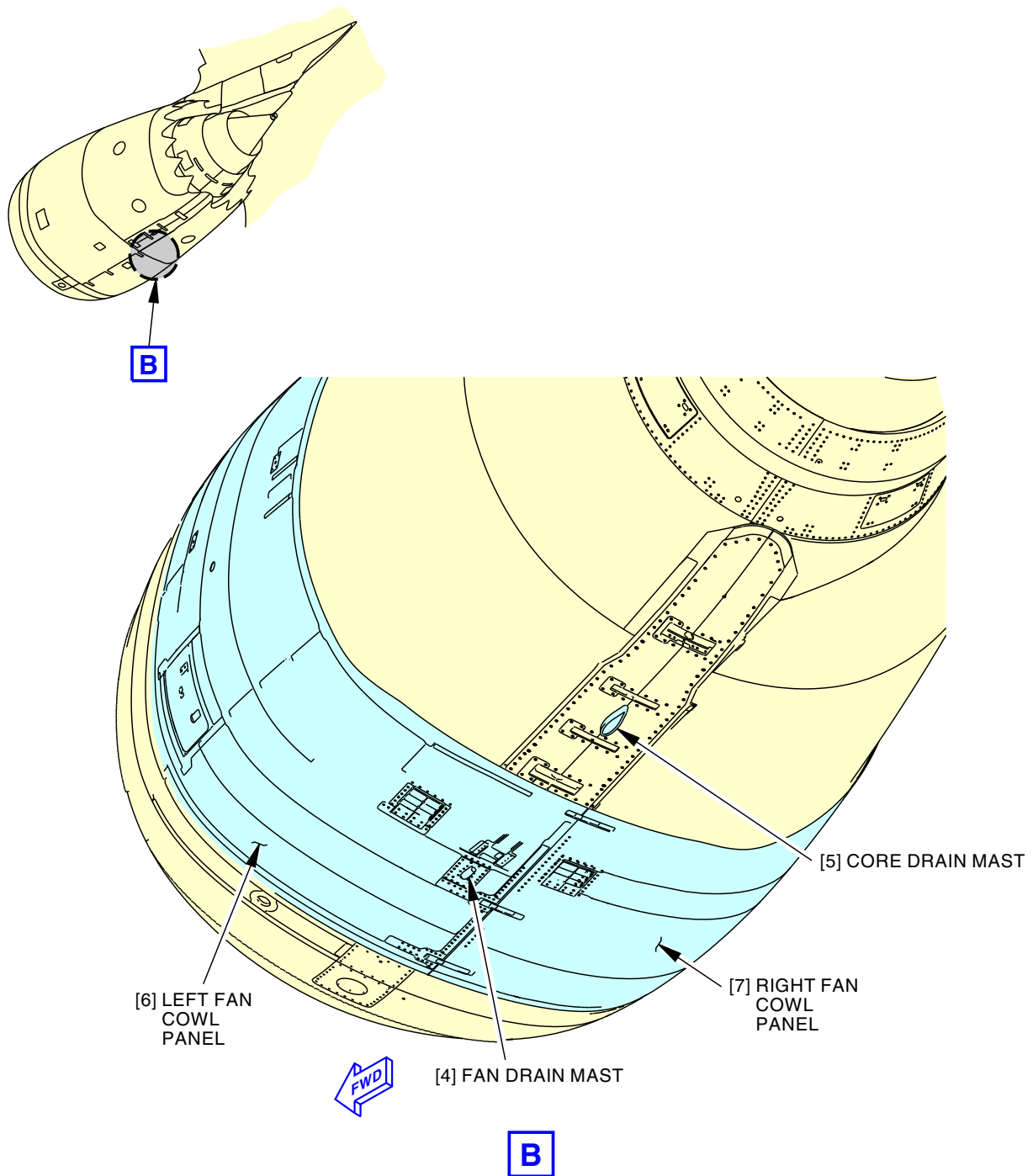
EFFECTIVITY
SIA ALL

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-00-00

Page 604
Sep 15/2022



2465653 S0000574680_V3

Engine Oil System (External Surfaces Walk Around) Inspection
 Figure 601/79-00-00-990-809-G00 (Sheet 2 of 6)

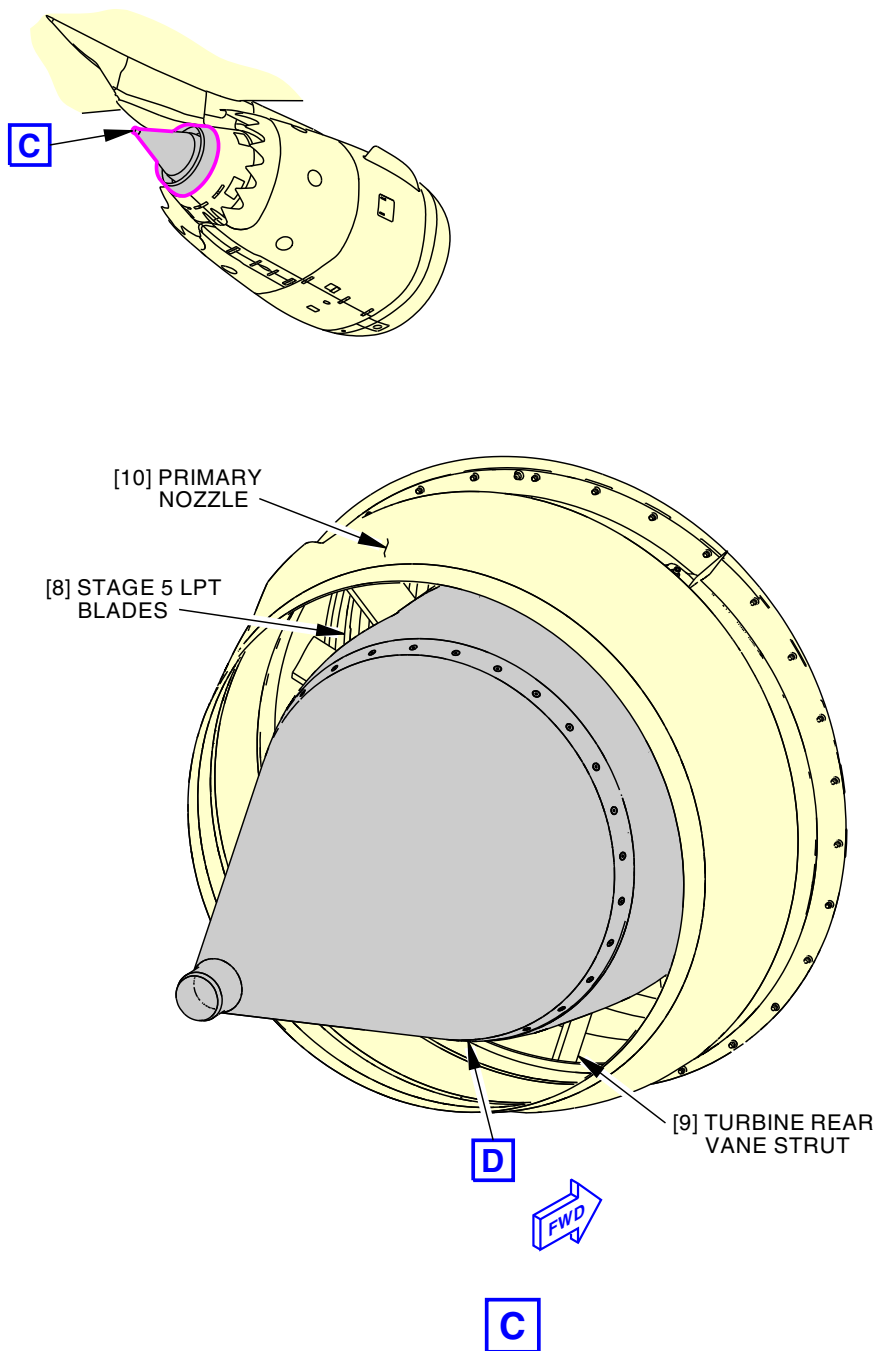
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 605
 Sep 15/2022



2465684 S0000574681_V2

Engine Oil System (External Surfaces Walk Around) Inspection
Figure 601/79-00-00-990-809-G00 (Sheet 3 of 6)

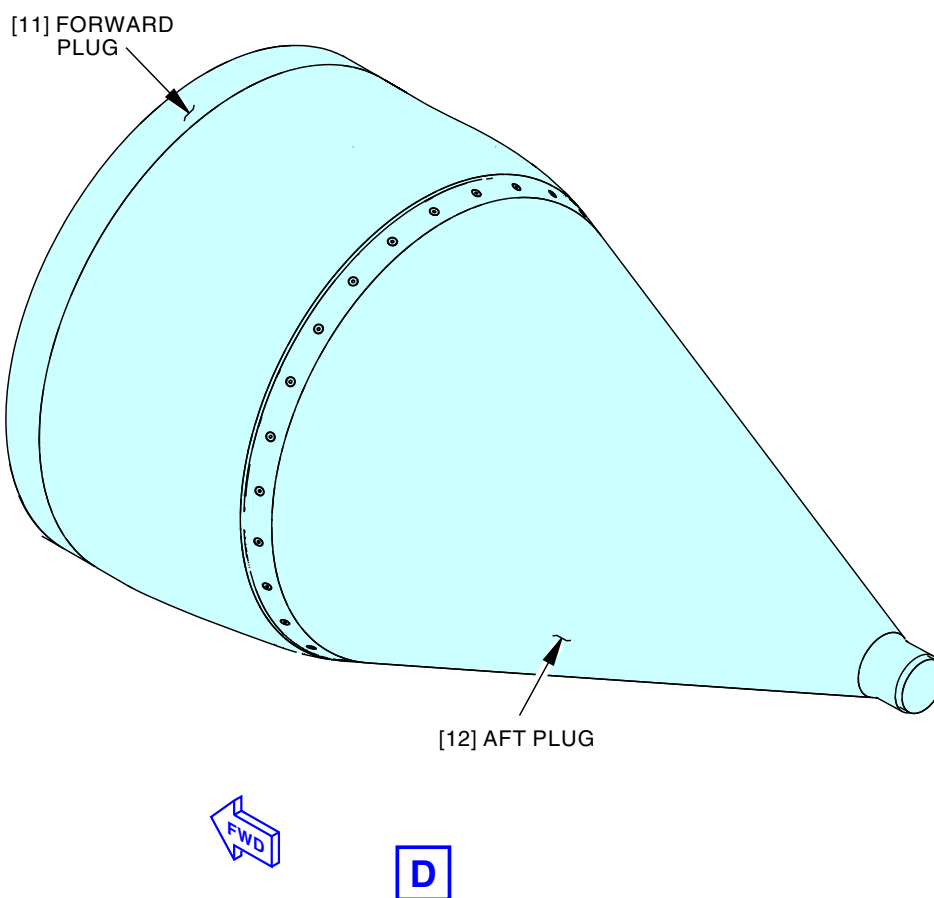
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-00-00

Page 606
Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

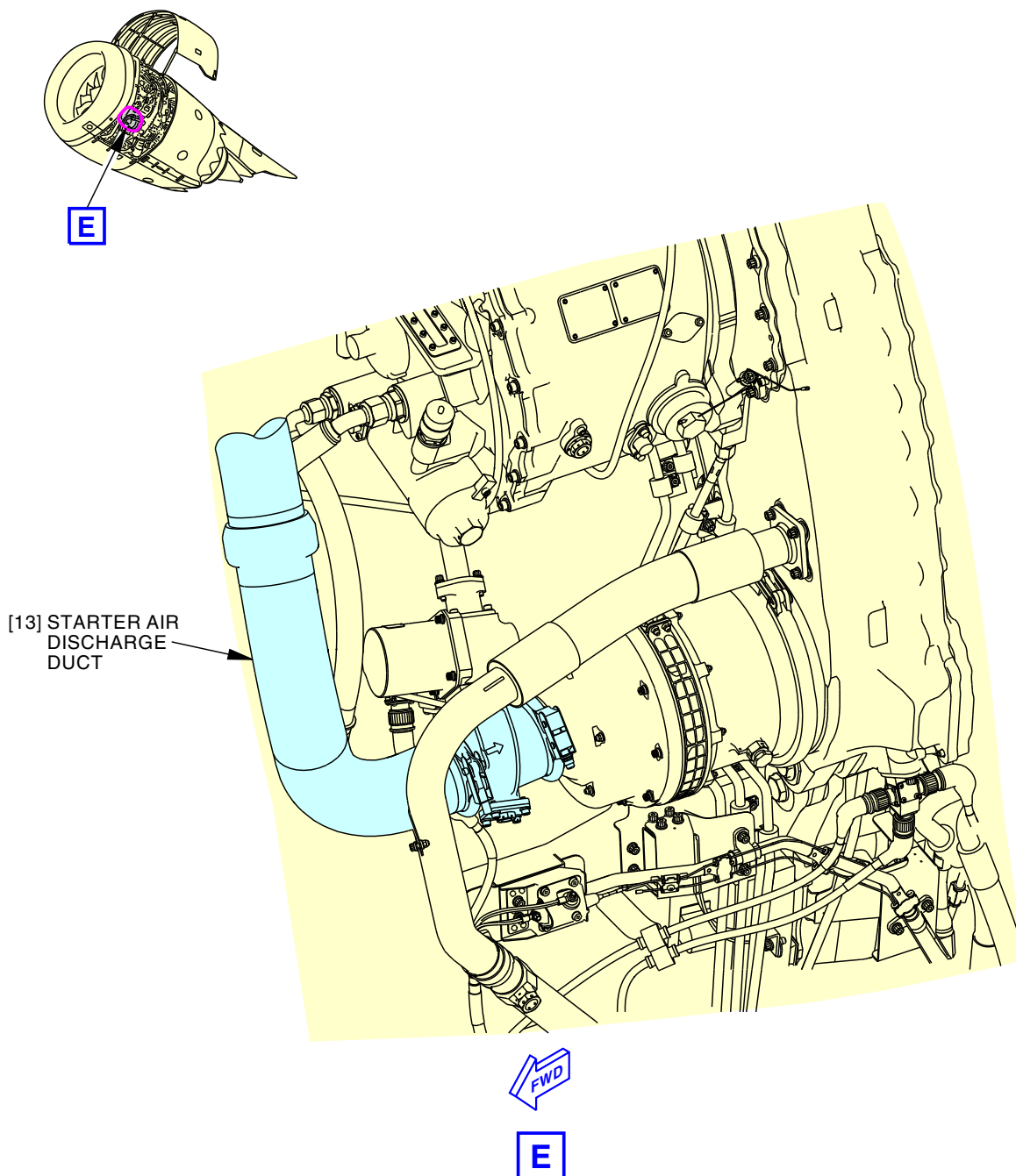
2465651 S0000574682_V1

Engine Oil System (External Surfaces Walk Around) Inspection
Figure 601/79-00-00-990-809-G00 (Sheet 4 of 6)EFFECTIVITY
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D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-00-00Page 607
Sep 15/2022



2523945 S0000595139_V1

Engine Oil System (External Surfaces Walk Around) Inspection
Figure 601/79-00-00-990-809-G00 (Sheet 5 of 6)

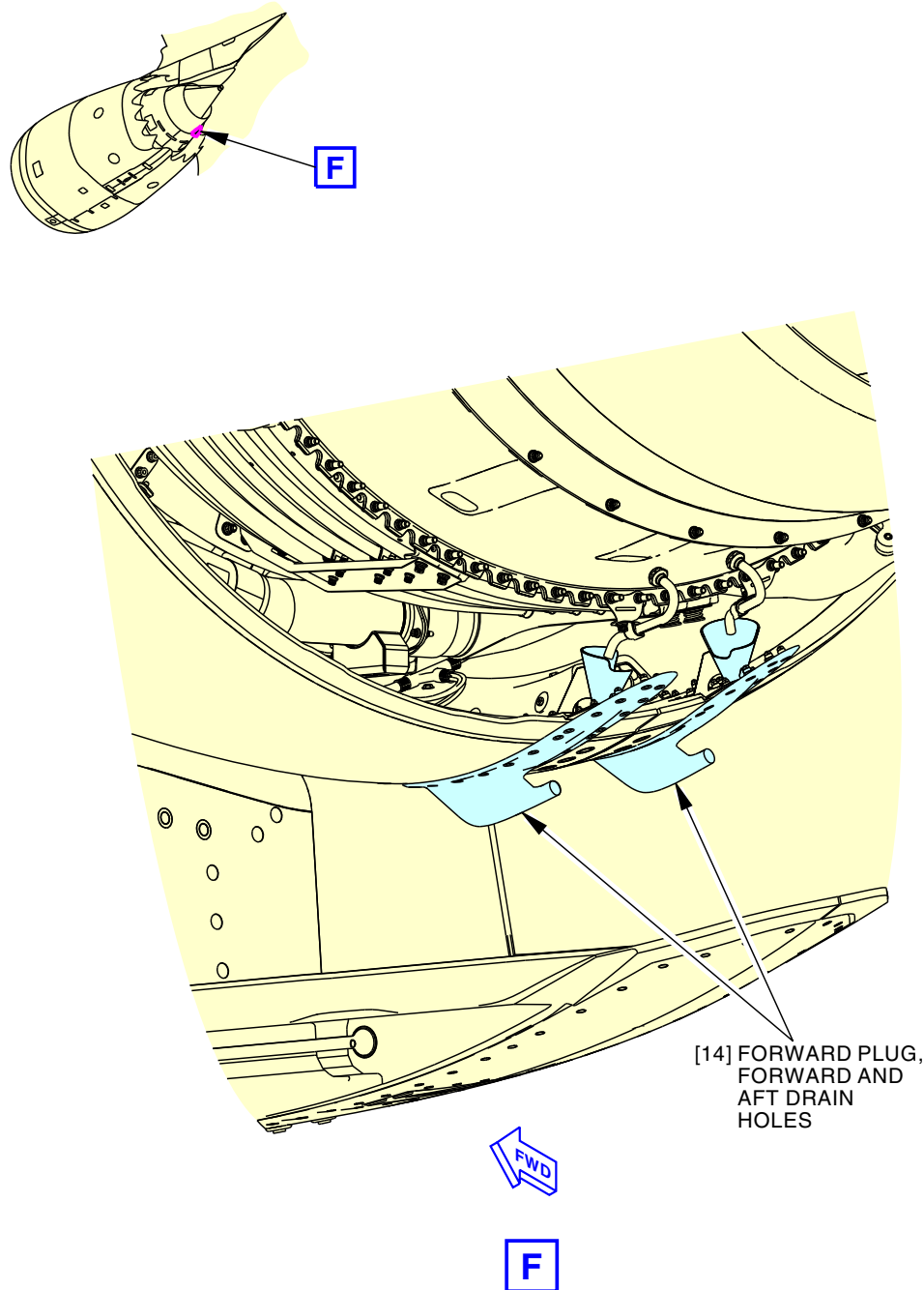
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79-00-00

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 608
Sep 15/2022



2523943 S0000595137_V1

Engine Oil System (External Surfaces Walk Around) Inspection
 Figure 601/79-00-00-990-809-G00 (Sheet 6 of 6)

EFFECTIVITY
 SIA ALL

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-00-00

Page 609
 Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

TASK 79-00-00-210-802-G00**3. Engine Oil System (Fan Cowl Panels and Thrust Reversers Open) Inspection**

(Figure 602)

A. General

- (1) This task gives the instructions to do a visual inspection of the of the engine for evidence of oil leakage.

B. References

Reference	Title
70-00-05-200-801-G00	Tube and Hose Inspection Criteria and Damage Limits (P/B 201)
71-00-00-910-803-G00	Start the Engine (Normal Start) (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
78-31-00-010-801-G00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-010-802-G00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-801-G00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)
78-31-00-440-801-G00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
B00682 [CP2011]	Solvent - Stoddard	MIL-PRF-680 Type I, II or III
B01058 [CP1039]	Solvent - Acetone, Reagent Grade	
B50290 [CP2559]	Solvent - degreasing, Ardrex 5503	
B50291 [CP2560]	Solvent - cleaning - BONDERITE C-SO IND 79 AERO (TURCO IND79)	
B50292 [CP2566]	Solvent - Degreasing - MAG-CHEM DIESTONE MTK	
B50293 [CP2584]	Solvent - Cleaning - Degreasol 99R	
B50294 [CP2656]	Solvent - Cleaning - MAGCHEM DIESTONE M-SK	
B50295 [CP2010]	Solvent - cleaning, White Spirit	

E. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

F. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1

EFFECTIVITY
SIA ALL

79-00-00

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 610
Sep 15/2022

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

(Continued)

Number	Name/Location
416	Right Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

G. Prepare for the Inspection

SUBTASK 79-00-00-860-003-G00

- (1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:
 - (a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.
 - (b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 79-00-00-860-004-G00

- (2) Do these tasks in sequence to safely open the left and right thrust reversers on the applicable engine:

**WARNING**

DO THE DEACTIVATION PROCEDURE FOR THE THRUST REVERSER TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

- (a) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-801-G00.
- (b) Open the applicable left or right fan cowl panels (TASK 71-11-04-010-801-G00).
 - 1) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

**WARNING**

OBEY THE INSTRUCTIONS IN THE PROCEDURE TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (c) Open the applicable left or right thrust reversers (TASK 78-31-00-010-801-G00).
 - 1) Open these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2

EFFECTIVITY
SIA ALL

79-00-00

D633AM101-SIA

Page 611
Jan 15/2023

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

(Continued)

<u>Number</u>	<u>Name/Location</u>
426	Right Thrust Reverser, Engine 2

H. Engine Oil System (Fan Cowl Panels and Thrust Reversers Open) Inspection**SUBTASK 79-00-00-212-001-G00**

(1) Do a visual inspection of these components for oil leakage:

- (a) Internal surface of the left fan cowl panel [1]
- (b) Internal surface of the right fan cowl panel [2]
- (c) Internal surface of the left thrust reverser [3]
- (d) Internal surface of the right thrust reverser [4]
- (e) Engine surface
- (f) Oil tank [5]
- (g) Non-return valve [6]
- (h) lubrication unit and scavenge pump [1]
- (i) Transfer gearbox assembly [8] and Fan frame [9] interfaces.

NOTE: Staining or wetting is permitted (e.g., Lubrication (petrolatum) used during seals, gaskets, and joints assembly).

SUBTASK 79-00-00-211-001-G00

(2) Do a visual inspection of tubes:

NOTE: Look for oil strips and drops to do this check.

- (a) Worn and cracked hoses [10] are not permitted.
- (b) Cracked tubes and tube coupling nuts [11] are not permitted.
- (c) Do this task: (Tube and Hose Inspection Criteria and Damage Limits, TASK 70-00-05-200-801-G00).
 - 1) Repair if necessary.
- (d) Leakage is not permitted.

NOTE: Staining or wetting is permitted (e.g., Lubrication (engine oil) used during tubes assembly to ensure proper seating and to minimize the risk of damage).

SUBTASK 79-00-00-212-002-G00

(3) If leakage is suspected, do these steps:

- (a) Clean the suspected area with the solvent, B00682 [CP2011] or the acetone solvent, B01058 [CP1039] or the Ardrex 5503, B50290 [CP2559] or the BONDERITE C-SO IND 79 AERO solvent, B50291 [CP2560] or the MAG-CHEM DIESTONE MTK solvent, B50292 [CP2566] or the Degreaser 99R solvent, B50293 [CP2584] or the MAGCHEM DIESTONE M-SK solvent, B50294 [CP2656] or the White Spirit, B50295 [CP2010].
- (b) Operate the engine at 70% of N1 or above to pressurize the oil system and to get accurate reading during leak test (TASK 71-00-00-910-803-G00).
- (c) Do a visual inspection of the suspected area.
- (d) If leakage is identified, tighten the nuts to the appropriate torque values and/or replace the defective components.
- (e) Repeat the engine operation and visual inspection.

EFFECTIVITY
SIA ALL

79-00-00

D633AM101-SIA

Page 612
Sep 15/2022

737-7/8/8200/9/10 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 79-00-00-212-004-G00

- (4) Do a visual inspection of the attachment parts of the oil tubes.
 - (a) Replace the broken or cracked brackets [12].
 - (b) Replace the worn clamps [13].
 - (c) Install the missing nuts and bolts [14].
 - (d) Tighten the loose nuts and bolts [14] to the appropriate torque values.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 79-00-00-860-005-G00



OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Do these tasks in sequence to safely close the applicable left or right thrust reversers:
 - (a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-010-802-G00.
 - 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2
 - (b) Do this task: Close the Fan Cowl Panels (Selection), TASK 71-11-04-410-801-G00.
 - 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2
 - (c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-801-G00.

SUBTASK 79-00-00-860-006-G00

- (2) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:
 - (a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.
 - (b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

————— END OF TASK —————

EFFECTIVITY
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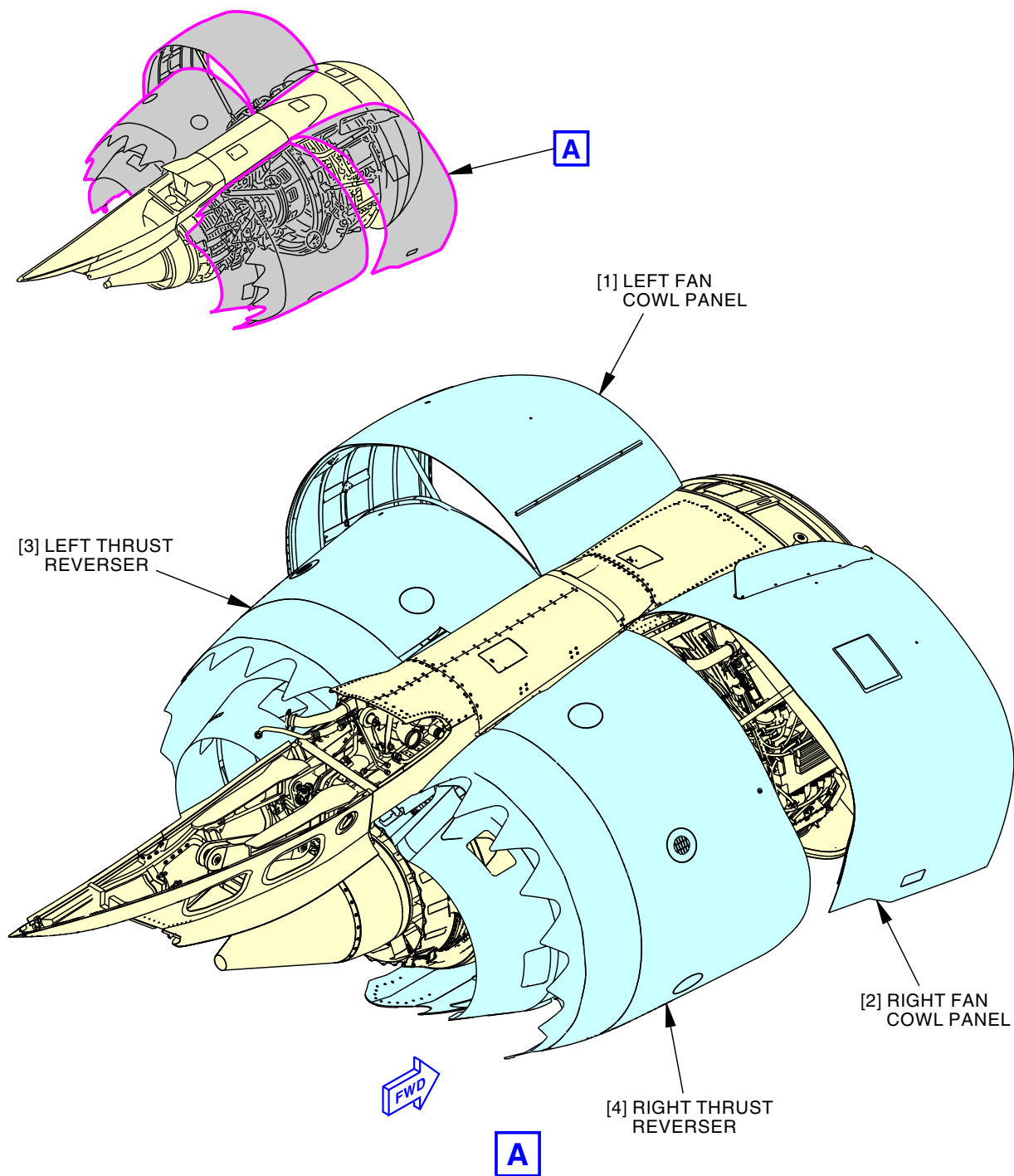
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Page 613
Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



2462861 S0000573784_V1

Engine Oil System (Fan Cowl Panels and Thrust Reversers Open) Inspection
Figure 602/79-00-00-990-808-G00 (Sheet 1 of 7)

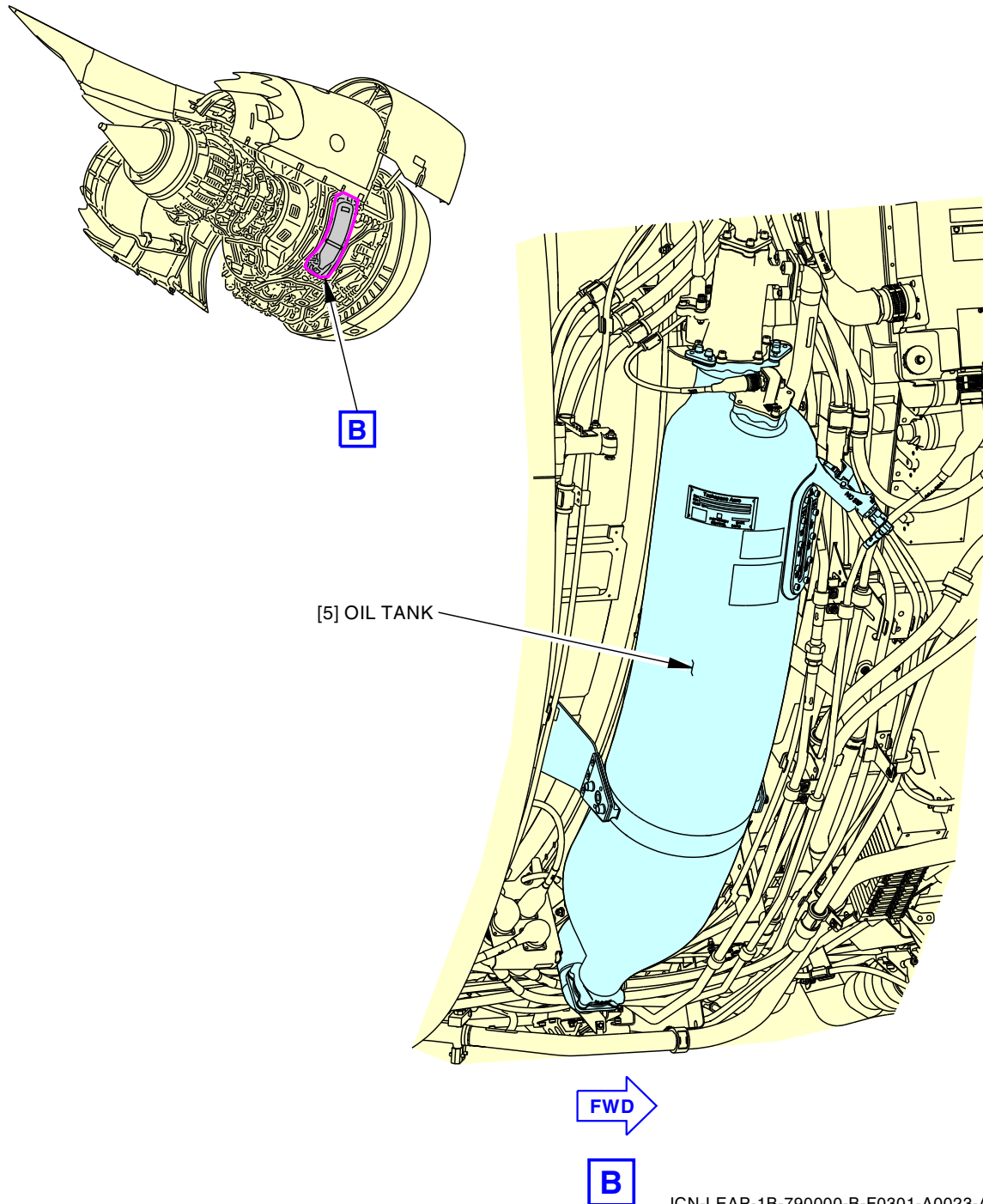
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Page 614
Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



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2578069 S0000613641_V2

Engine Oil System (Fan Cowl Panels and Thrust Reversers Open) Inspection
Figure 602/79-00-00-990-808-G00 (Sheet 2 of 7)

EFFECTIVITY
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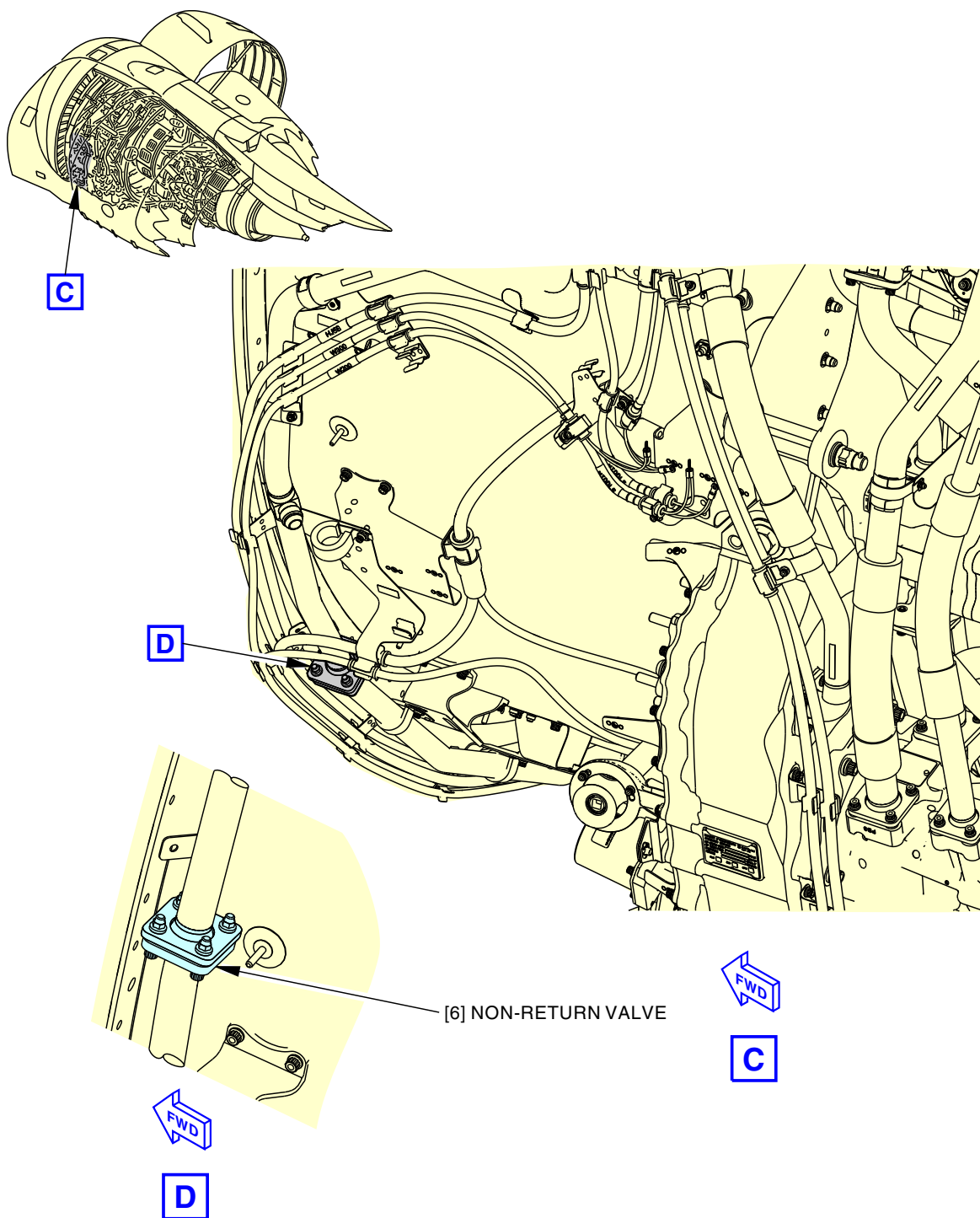
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79-00-00

Page 615
Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



2463199 S0000573786_V1

Engine Oil System (Fan Cowl Panels and Thrust Reversers Open) Inspection
Figure 602/79-00-00-990-808-G00 (Sheet 3 of 7)

EFFECTIVITY
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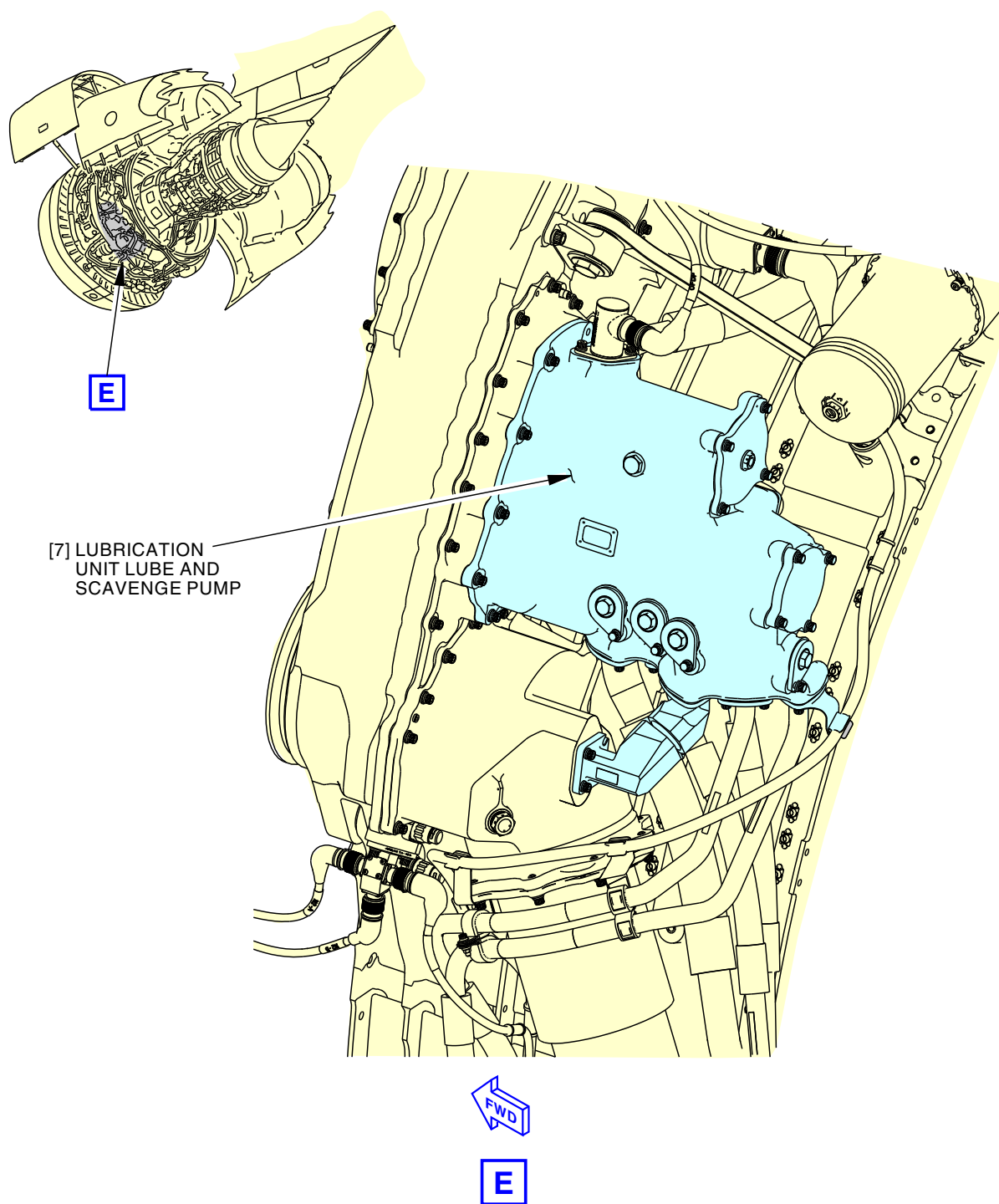
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79-00-00

Page 616
Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



2463200 S0000573787_V1

Engine Oil System (Fan Cowl Panels and Thrust Reversers Open) Inspection
Figure 602/79-00-00-990-808-G00 (Sheet 4 of 7)

EFFECTIVITY
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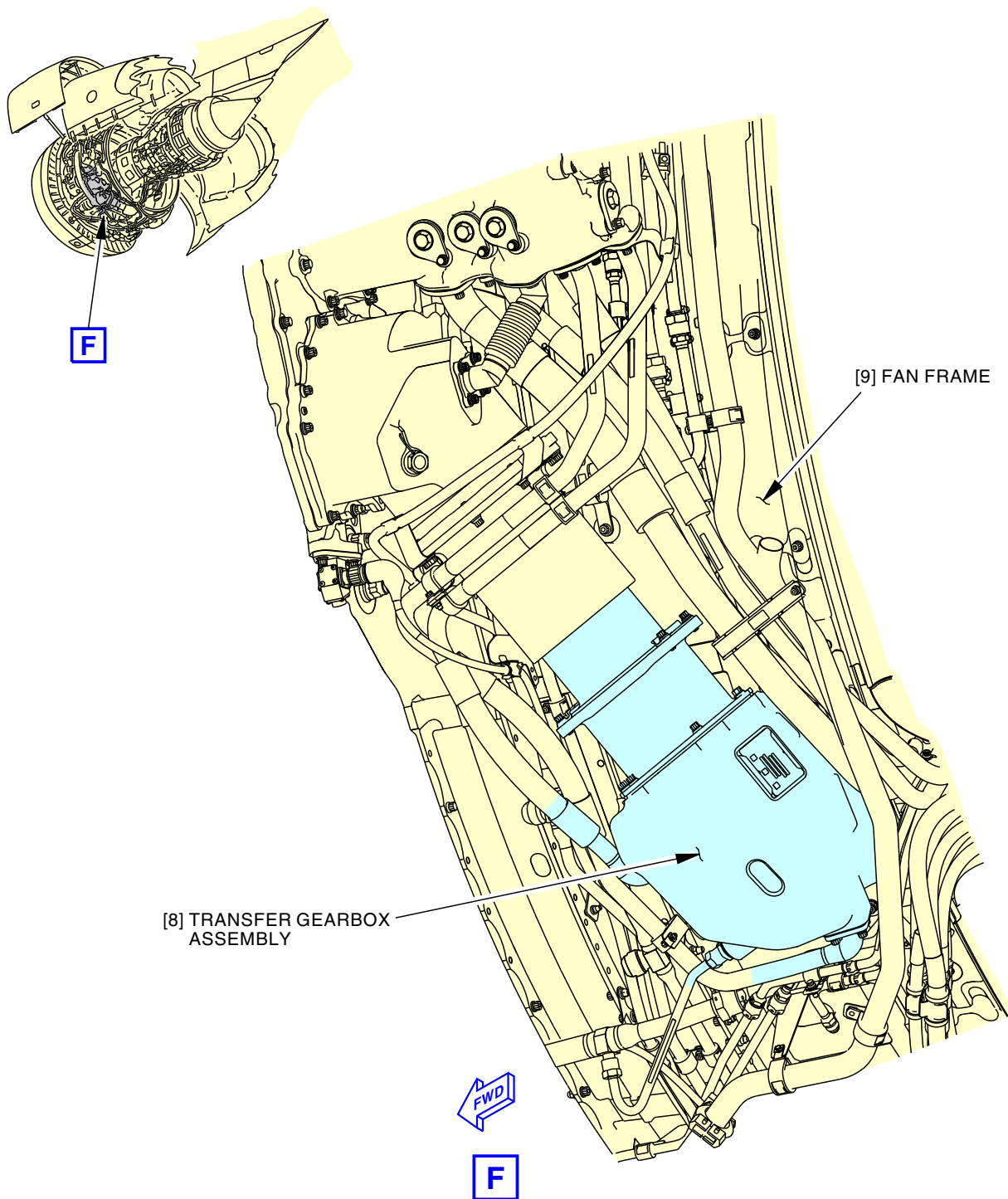
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 617
Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



2463207 S0000573788_V1

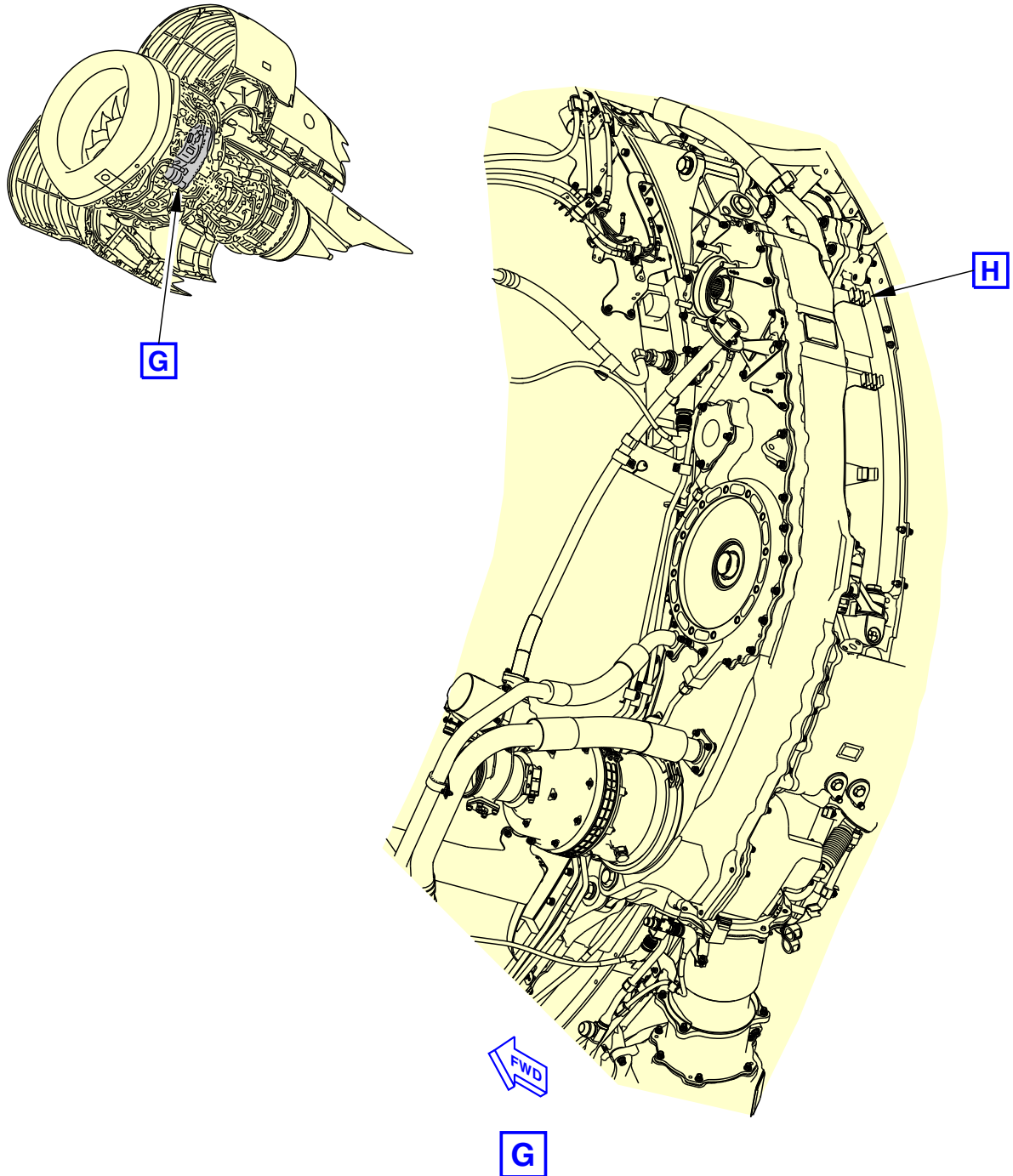
Engine Oil System (Fan Cowl Panels and Thrust Reversers Open) Inspection
Figure 602/79-00-00-990-808-G00 (Sheet 5 of 7)

EFFECTIVITY
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79-00-00

D633AM101-SIA

Page 618
Sep 15/2022



2463211 S0000573789_V1

Engine Oil System (Fan Cowl Panels and Thrust Reversers Open) Inspection
 Figure 602/79-00-00-990-808-G00 (Sheet 6 of 7)

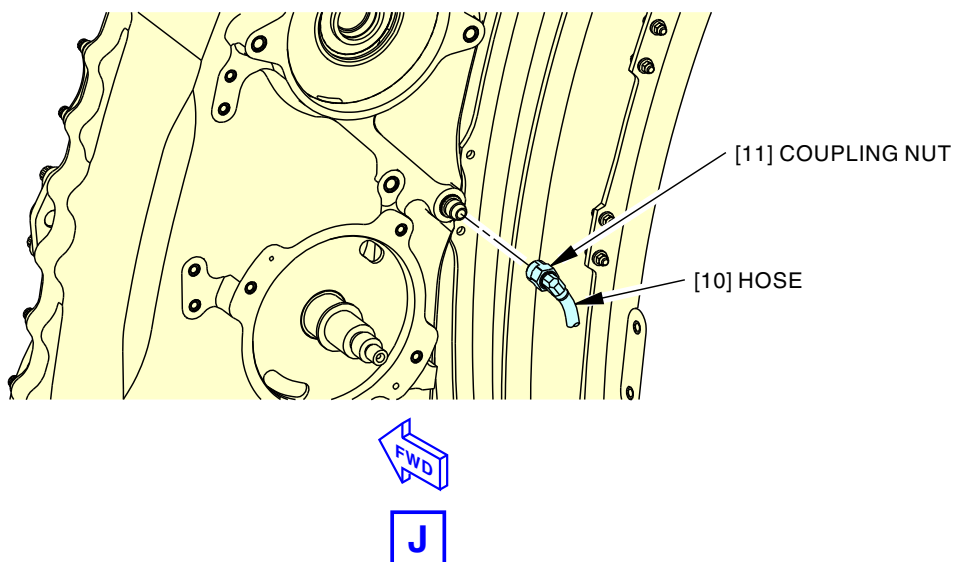
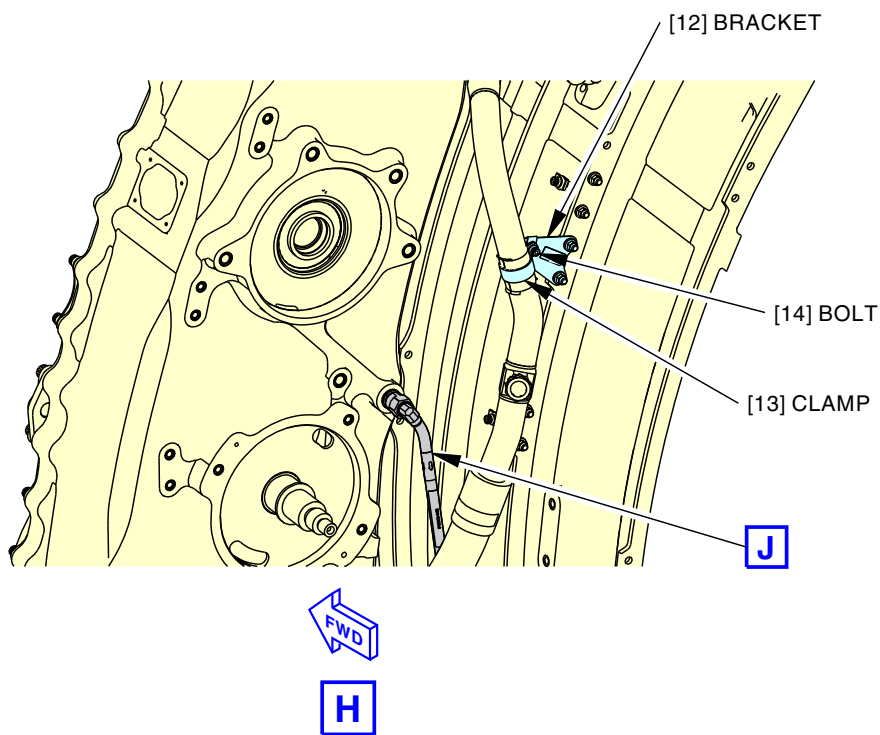
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D633AM101-SIA

Page 619
 Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



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2578075 S0000613642_V1

Engine Oil System (Fan Cowl Panels and Thrust Reversers Open) Inspection
Figure 602/79-00-00-990-808-G00 (Sheet 7 of 7)

EFFECTIVITY
SIA ALL

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-00-00

Page 620
Sep 15/2022

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

TASK 79-00-00-210-803-G01**4. Engine Oil System (Internal) Inspection**

(Figure 603)

A. General

- (1) This task provides the instructions on how to examine the internal areas of the engine for oil system leakage.
- (2) This task also provides the steps to do if you find wet oil in these areas:
 - (a) Inlet guide vanes and the first stage blades of the fan booster
 - (b) Exhaust area.

B. References

Reference	Title
71-00-00-790-803-G00	Test No. 3 - Wet Motor Leak Test (P/B 501)
71-00-02-000-801-G00	Power Plant - Removal (P/B 401)
71-00-02-400-801-G00	Power Plant - Installation (P/B 401)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
72-00-00-290-811-G00	Low Pressure Turbine (LPT) Section Borescope Inspection (P/B 601)
78-31-00-010-801-G00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-010-802-G00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-801-G00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)
78-31-00-440-801-G00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

EFFECTIVITY
SIA ALL

79-00-00

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 621
Sep 15/2022

737-7/8/8200/9/10 AIRCRAFT MAINTENANCE MANUAL

F. Prepare for the Inspection

SUBTASK 79-00-00-860-007-G00

- (1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:
 - (a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.
 - (b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 79-00-00-010-001-G00

- (2) Do these tasks in sequence to safely open the left and right thrust reversers on the applicable engine:



WARNING

DO THE DEACTIVATION PROCEDURE FOR THE THRUST REVERSER TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

- (a) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-801-G00.
- (b) Open the applicable left or right fan cowl panels (TASK 71-11-04-010-801-G00).
 - 1) Open these access panels:

<u>Number</u>	<u>Name/Location</u>
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2



WARNING

OBEY THE INSTRUCTIONS IN THE PROCEDURE TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (c) Open the applicable left or right thrust reversers (TASK 78-31-00-010-801-G00).
 - 1) Open these access panels:
- | <u>Number</u> | <u>Name/Location</u> |
|---------------|---------------------------------|
| 415 | Left Thrust Reverser, Engine 1 |
| 416 | Right Thrust Reverser, Engine 1 |
| 425 | Left Thrust Reverser, Engine 2 |
| 426 | Right Thrust Reverser, Engine 2 |

G. Engine Oil System (Internal) Inspection

SUBTASK 79-00-00-210-006-G00



WARNING

DO NOT TOUCH THE COMPONENTS OF THE OIL SYSTEM IF THE ENGINE IS HOT. THESE COMPONENTS STAY HOTTER THAN OTHER COMPONENTS. HOT COMPONENTS CAN BURN YOU.

EFFECTIVITY
SIA ALL

79-00-00

D633AM101-SIA

Page 622
Jan 15/2023

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

(WARNING PRECEDES)**WARNING**

DO NOT OPEN THE OIL SYSTEM UNTIL THE PRESSURE GOES TO ZERO. THE PRESSURE GOES TO ZERO APPROXIMATELY 5 MINUTES AFTER AN ENGINE STOPS. A PRESSURIZED OIL SYSTEM CAN RELEASE A SPRAY OF HOT OIL THAT CAN BURN YOU.

**WARNING**

DO NOT LET OIL STAY ON YOUR SKIN. THE SYNTHETIC OIL CONTAINS ADDITIVES THAT CAN BE POISONOUS IF THEY ARE ABSORBED THROUGH THE SKIN. CLEAN AWAY ALL OIL THAT GETS ON THE SKIN.

**CAUTION**

DO NOT LET OIL GET ON THE ENGINE OR OTHER COMPONENTS. IMMEDIATELY CLEAN THE OIL WHEN IT FALLS ON THEM. OIL CAN CAUSE DAMAGE TO EQUIPMENT.

- (1) Do the visual examination of the engine oil system (Internal) as follows:
 - (a) Examine the fan blades [1] or the inner side of the fan stator case for oil leakage.
 - (b) If the fan blades [1] or the inner side of the fan stator case are wet with oil, do these steps:
 - 1) Examine the inlet guide vanes [2] and the first stage blades of the fan booster for oil leakage.
 - 2) If the inlet guide vanes [2] and the first-stage blades of the fan booster are wet with oil, do this task: Test No. 3 - Wet Motor Leak Test, TASK 71-00-00-790-803-G00.
 - 3) If the leakage is not repairable, replace the engine (TASK 71-00-02-000-801-G00 and TASK 71-00-02-400-801-G00).
 - (c) Examine exhaust area for oil leakage.
 - (d) If the exhaust area is wet with oil, do these steps:
 - 1) Examine the primary nozzle [3] and exhaust plug [4] interfaces.
 - 2) If there is oil leakage, examine the internal area of the exhaust plug [4] for leakage at the oil tubes (Low Pressure Turbine (LPT) Section Borescope Inspection, TASK 72-00-00-290-811-G00).
 - 3) Examine the turbine rear frame struts [6] surfaces in the gaspath and the tubing interfaces on the outer side of the turbine rear frame [5].
 - 4) If you find oil leakage, examine the internal area of the exhaust plug [4] for leakage at the oil tubes (Low Pressure Turbine (LPT) Section Borescope Inspection, TASK 72-00-00-290-811-G00).
 - 5) If the leakage is not repairable, replace the engine (TASK 71-00-02-000-801-G00 and TASK 71-00-02-400-801-G00).

H. Put the Airplane Back to Its Usual Condition

SUBTASK 79-00-00-080-001-G00

- (1) Remove all tools used to do the inspection and clean the work area.

EFFECTIVITY
SIA ALL

79-00-00

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 623
Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

SUBTASK 79-00-00-410-001-G00



OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (2) Do these tasks in sequence to safely close the applicable left or right thrust reversers:
- (a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-010-802-G00.
 - 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2
 - (b) Do this task: Close the Fan Cowl Panels (Selection), TASK 71-11-04-410-801-G00.
 - 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2
 - (c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-801-G00.

SUBTASK 79-00-00-860-008-G00

- (3) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:
- (a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.
 - (b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

————— **END OF TASK** —————

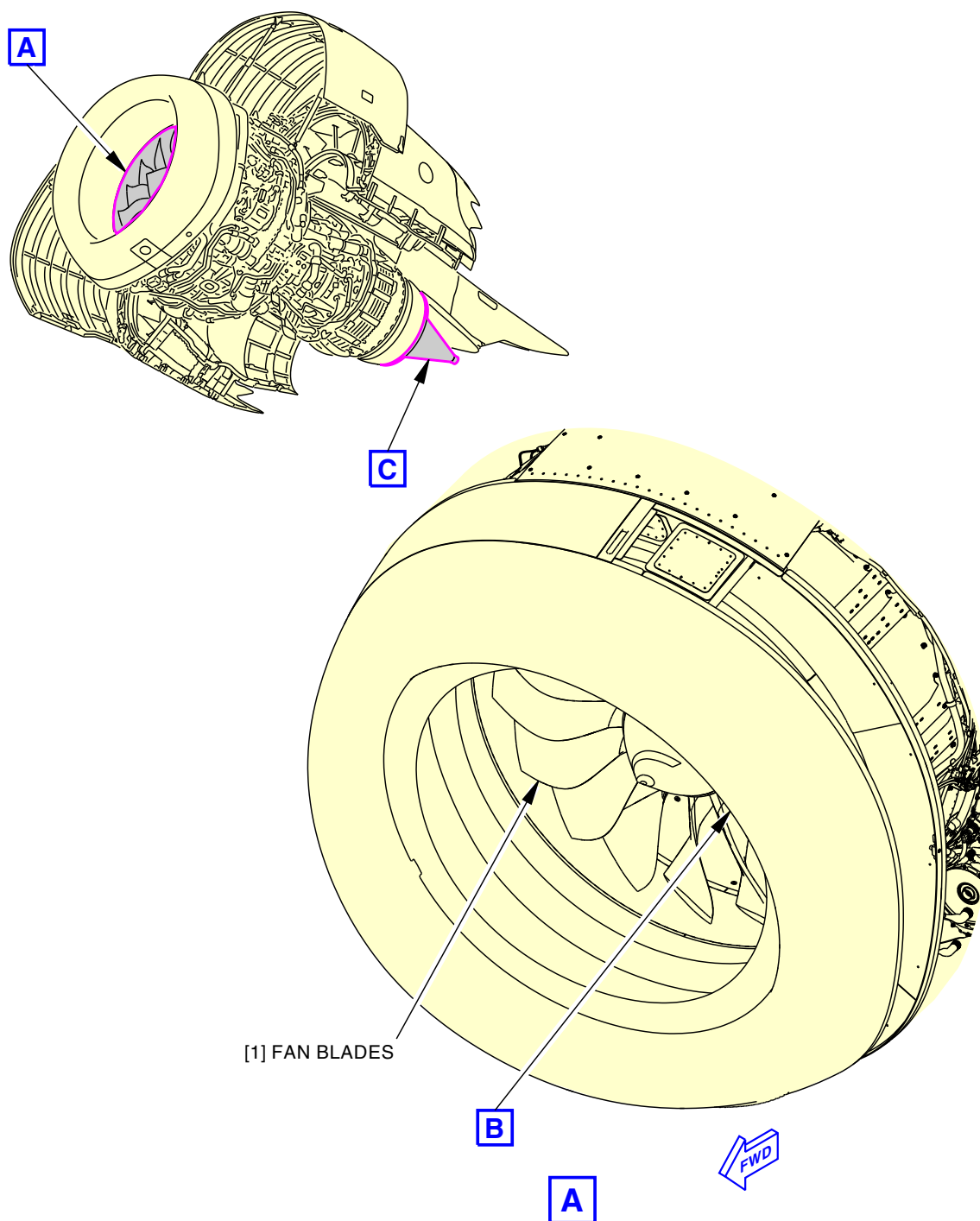
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Page 624
 Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



2456151 S0000571369_V1

Engine Oil System (Internal) Inspection
Figure 603/79-00-00-990-806-G00 (Sheet 1 of 3)

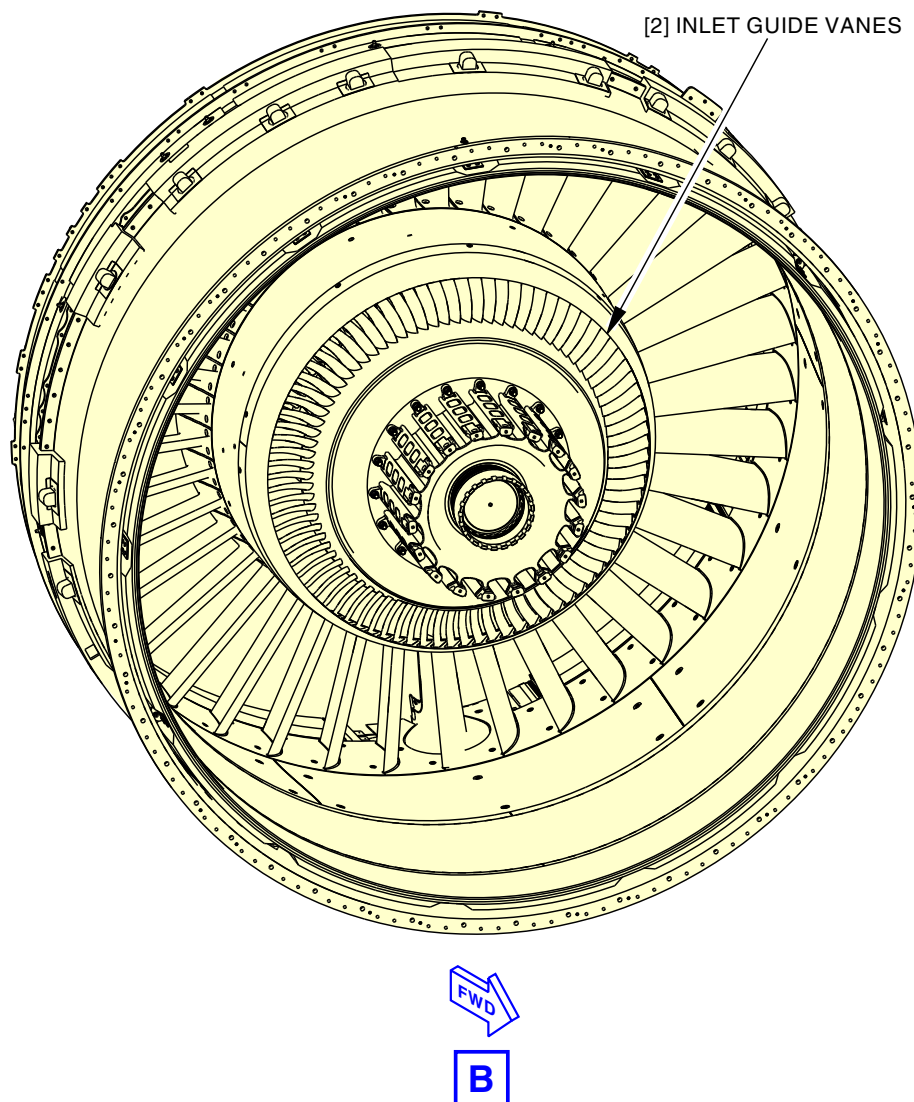
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-00-00

Page 625
Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

2456152 S0000571370_V1

Engine Oil System (Internal) Inspection
Figure 603/79-00-00-990-806-G00 (Sheet 2 of 3)

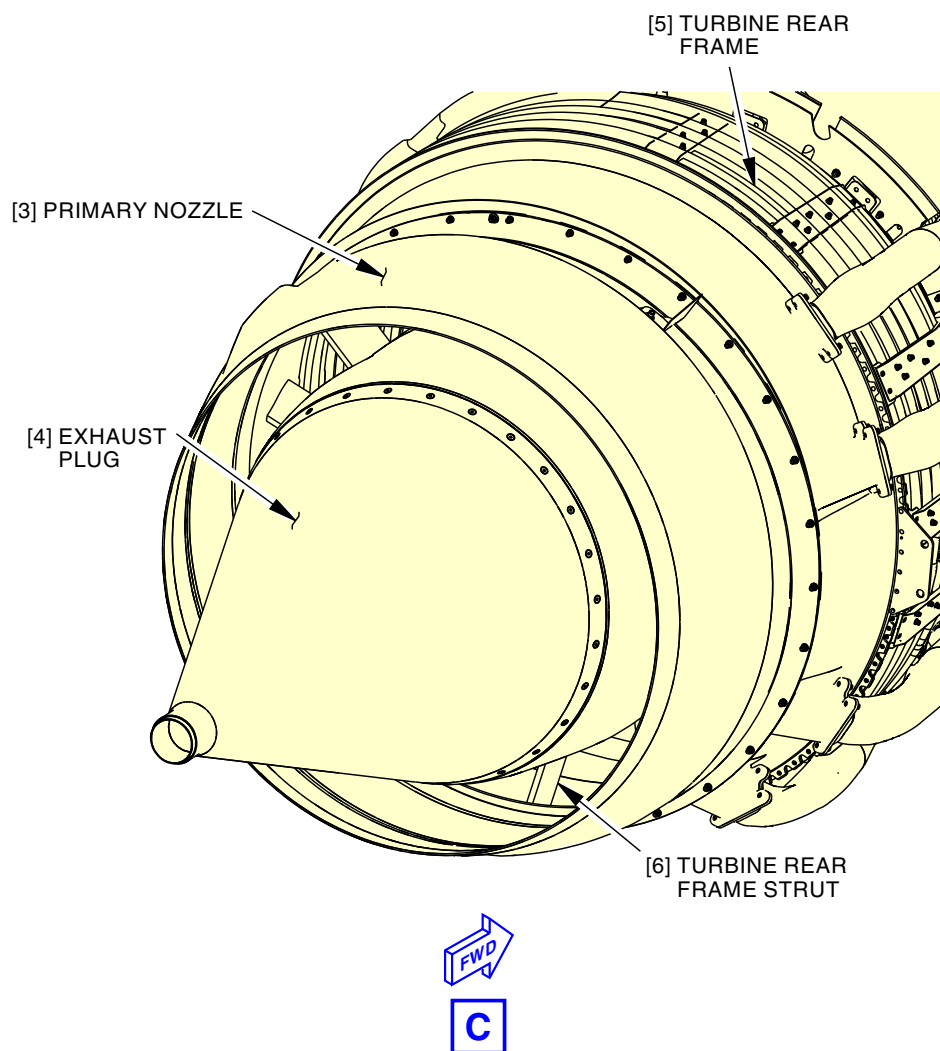
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-00-00

Page 626
Sep 15/2022



2456155 S0000571371_V1

Engine Oil System (Internal) Inspection
Figure 603/79-00-00-990-806-G00 (Sheet 3 of 3)

EFFECTIVITY
SIA ALL

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-00-00

Page 627
Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

TASK 79-00-00-210-804-G00**5. Oil Debris Monitoring System Sensor Inspection**

(Figure 604)

A. General

- (1) This task gives the instructions to examine the Oil Debris Monitoring System (ODMS) sensor.

B. References

Reference	Title
71-00-00-700-802-G00	Test No. 26 - Debris Monitoring System Channel B Special Functions Test (P/B 501)
79-21-04-211-801-G00	Scavenge Screen Plug Inspection (P/B 201)
79-21-12-000-801-G00	Oil Debris Monitoring System Sensor Removal (P/B 401)
79-21-12-400-801-G00	Oil Debris Monitoring System Sensor Installation (P/B 401)
80-11-09-200-801-G00	Engine Starter Magnetic Plug Inspection (P/B 201)

C. Tools/Equipment

Reference	Description
STD-1070	Lens - Magnifying, 10X, Hand Held
STD-1280	Source - Air, Regulated, Dry Filtered, 0-30 PSIG

D. Consumable Materials

Reference	Description	Specification
B00682 [CP2011]	Solvent - Stoddard	MIL-PRF-680 Type I, II or III
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CL A)

E. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

F. Prepare for the Inspection

SUBTASK 79-00-00-020-001-G00

- (1) Do this task: Oil Debris Monitoring System Sensor Removal, TASK 79-21-12-000-801-G00.

NOTE: It is recommended to perform this task only when requested by another Aircraft Maintenance Manual (AMM)/ Interactive Fault Isolation Manual (IFIM)/scheduled maintenance task or CFM International (CFMI) instructions.

NOTE: If the ODMS sensor is removed for inspection only, it is not necessary to disconnect the ODMS sensor connector from the ODMS Signal Conditioner Unit (SCU).

- (a) When a Customer Notification Request (CNR) is received, make sure to perform this task within CNR urgency requirements.

737-7/8/8200/9/10 AIRCRAFT MAINTENANCE MANUAL

G. Oil Debris Monitoring System Sensor Inspection

SUBTASK 79-00-00-200-004-G00



TAG THE REMOVED PARTICLES WITH THE ODMS SENSOR NAME TO PREVENT AN ERROR IN IDENTIFICATION OF THE SOURCE OF THE MATERIAL DURING VISUAL CHARACTERIZATION AND LABORATORY ANALYSIS. AN ERROR IN IDENTIFICATION OF THE SOURCE OF THE MATERIAL COULD LEAD TO AN INACCURATE INTERPRETATION OF SERVICEABLE CRITERIA AND DAMAGE CAN OCCUR.



CFM DOES NOT RECOMMEND THE USE OF ADHESIVE TAPE. HOWEVER, IF A PIECE OF ADHESIVE TAPE IS USED TO COLLECT THE PARTICLES, MAKE SURE THE ADHESIVE IS NOT TOO STRONG. IF THE ADHESIVE ON THE TAPE IS TOO STRONG, THE PARTICLES MAY BE DAMAGED WHEN THEY ARE REMOVED AND/OR IT WILL AFFECT THE LABORATORY ANALYSIS OF THE MATERIAL.

- (1) Inspect the ODMS sensor [1] for material presence on the magnetic tip [2] with a 10x hand held magnifying lens, STD-1070.
 - (a) If there are no findings on the magnetic tip [2] of the ODMS sensor [1], do these steps:
 - 1) Check the chip count value on the Debris Monitoring System (DMS) chip counter.
NOTE: Engine Propulsion Control System (EPCS) page 2 shows the engine DMS chip count for both Engine Electronic Controller (EEC) channel A and EEC channel B.
 - a) If chip count value = 0

<1> No further actions are required.
 - b) If chip count value > 0

<1> Refer to the IFIM and do the applicable procedure(s) (79-42852 or 79-42854).

<2> Reset chip count value, do this task: Test No. 26 - Debris Monitoring System Channel B Special Functions Test, TASK 71-00-00-700-802-G00.
 - 2) Do this task: Oil Debris Monitoring System Sensor Installation, TASK 79-21-12-400-801-G00.
 - (b) If you find material on the magnetic tip [2] of the ODMS sensor [1], do these steps:
 - 1) Take pictures of the particles on the magnetic tip [2] of the ODMS sensor [1], before you remove them.
 - 2) Carefully remove and keep the particles from the magnetic tip [2] of the ODMS sensor [1], with cotton wiper, G00034, on a thin sheet of paper.
 - 3) After you remove all the particles, clean the magnetic tip [2] of the ODMS sensor [1] with solvent, B00682 [CP2011].
 - 4) Dry the magnetic tip [2] of the ODMS sensor [1] with a 0-30 psig dry filtered regulated air source, STD-1280.
 - 5) Make sure that the chip detector is free of all particles.

NOTE: If you do not remove all the particles from the ODMS sensor, a difference between the collected particles and chips count value can occur at the next ODMS sensor inspection.

EFFECTIVITY
SIA ALL

D633AM101-SIA

79-00-00

Page 629
Sep 15/2023

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

- 6) Do this task: Oil Debris Monitoring System Sensor Installation,
TASK 79-21-12-400-801-G00.

SUBTASK 79-00-00-200-003-G00

- (2) Examine particle size with a 10x hand held magnifying lens, STD-1070, and use scale paper to take pictures (View D and View F, Figure 604).

NOTE: Normal fuzz ONLY (less than 0.004 in. (0.10 mm)) is not expected with ODMS fault raised or chip count shift.

- (a) If you find ONLY very fine particles like powder, less than 0.004 in. (0.10 mm) (Normal Fuzz) in any dimension on the magnetic tip [2] of the ODMS sensor [1], do these steps:
- 1) If chip count value = 0
 - a) No further actions are required.
 - 2) If chip count value > 0
 - a) Refer to the IFIM and do the applicable procedure(s) (79-42852 or 79-42854).
 - b) Reset chip count value, do this task: Test No. 26 - Debris Monitoring System Channel B Special Functions Test, TASK 71-00-00-700-802-G00.
 - 3) Continue the engine in service.
- (b) If you find particles that are larger than 0.004 in. (0.10 mm) (Abnormal Fuzz) in any dimension on the magnetic tip [2] of the ODMS sensor [1], do these steps:

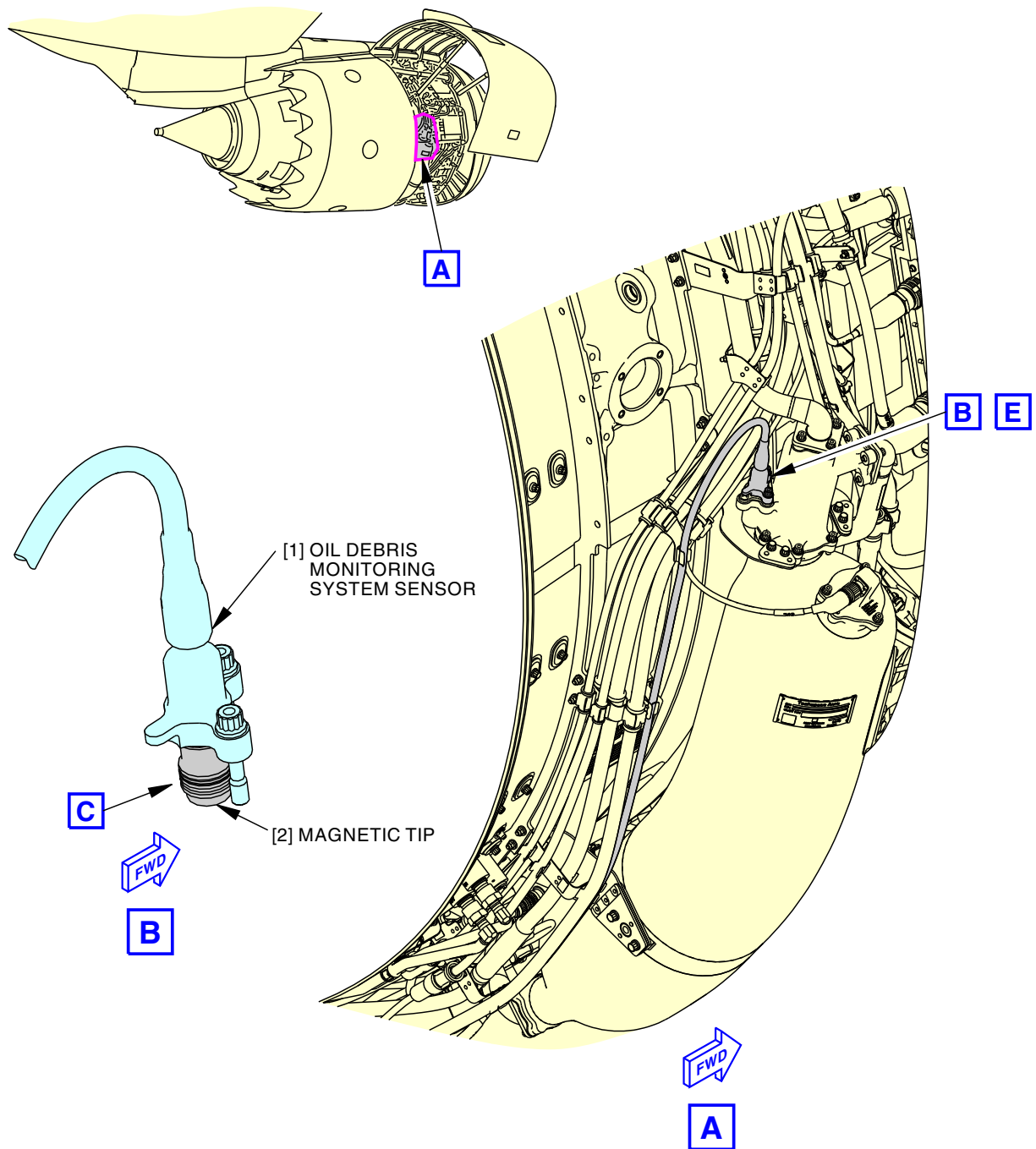


DO NOT APPLY TEST NO. 26 - DEBRIS MONITORING SYSTEM RESET CHANNEL B SPECIAL FUNCTIONS TEST, TASK 71-00-00-700-802-G00. IF YOU DO NOT OBEY, DAMAGE CAN OCCUR TO THE ENGINE.

- 1) Check the A, B, C sumps, Accessory Gear Box (AGB), and Transfer Gearbox (TGB) sumps scavenge screen plugs for further troubleshooting (TASK 79-21-04-211-801-G00).
- 2) Do this task: Engine Starter Magnetic Plug Inspection, TASK 80-11-09-200-801-G00.
- 3) Analyze particles, do this task: Engine Oil System (Oil Debris Monitoring System Sensor (ODMS), Scavenge Screen Plugs, Starter Magnetic Plug, and Oil Filter) Detailed Dimensional Check, TASK 79-00-00-220-801-G00.
- 4) If chip count value = 0
 - a) Refer to the IFIM and do the applicable procedure(s) (79-42852 or 79-42854).

———— **END OF TASK** ————

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



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Oil Debris Monitoring System (ODMS) Sensor Inspection
Figure 604/79-00-00-990-801-G00 (Sheet 1 of 4)

EFFECTIVITY
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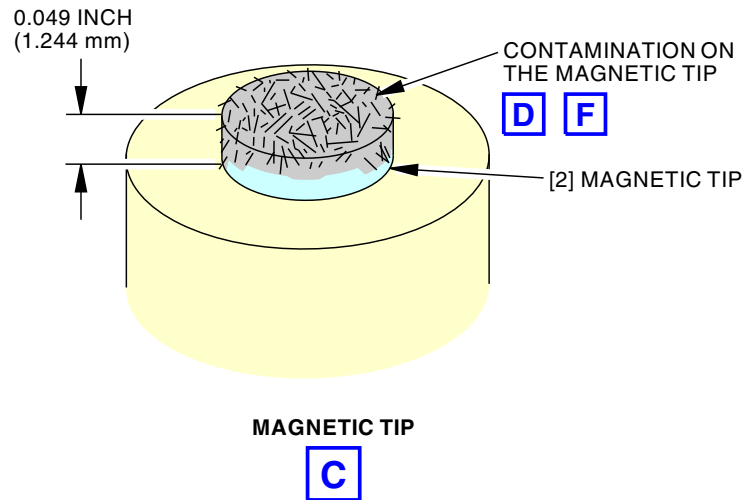
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-00-00

Page 631
Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



CONTAMINATION ON
THE MAGNETIC TIP

D

ICNLEAP1B790000D5882800018A00101
2355316 S00061516985_V5

Oil Debris Monitoring System (ODMS) Sensor Inspection
Figure 604/79-00-00-990-801-G00 (Sheet 2 of 4)

EFFECTIVITY
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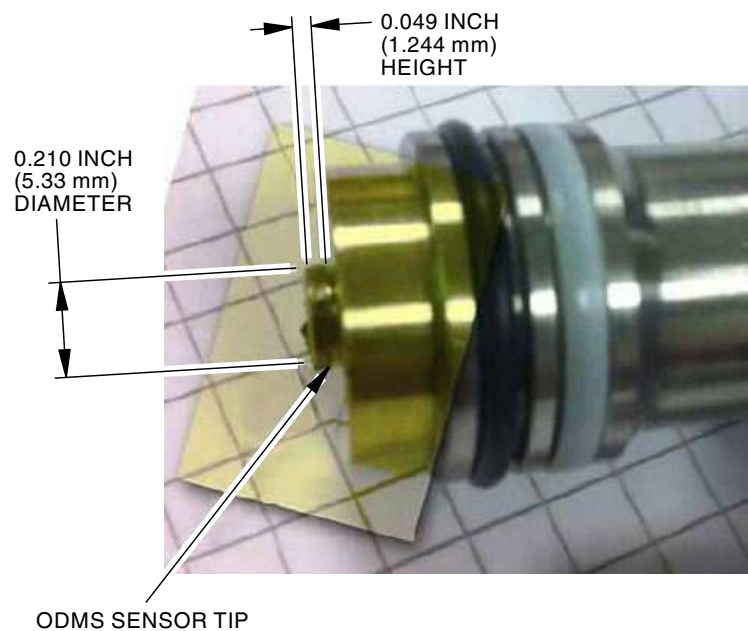
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79-00-00

Page 632
Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

ODMS SENSOR TIP

E

(ODMS SENSOR TIP DIMENSION)

EICNLEAP1B790000D5882800019A00101
2967680 S0000747143_V1Oil Debris Monitoring System (ODMS) Sensor Inspection
Figure 604/79-00-00-990-801-G00 (Sheet 3 of 4)EFFECTIVITY
SIA ALL

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-00-00Page 633
Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



0.0008 TO 0.004 INCH (0.02 TO 0.10 mm)
(NORMAL FUZZ SATISFACTORY CONDITION)

F



0.016 TO 0.035 INCH (0.4 TO 0.9 mm)
(ABNORMAL FUZZ UNSATISFACTORY CONDITION)

F



0.008 TO 0.003 INCH (0.2 TO 0.8 mm)
(ABNORMAL FUZZ UNSATISFACTORY CONDITION)

F

ICNLEAP1B790000D5882800020A00101
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Oil Debris Monitoring System (ODMS) Sensor Inspection
Figure 604/79-00-00-990-801-G00 (Sheet 4 of 4)

EFFECTIVITY
SIA ALL

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-00-00

Page 634
Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

TASK 79-00-00-220-801-G00

6. Engine Oil System (Oil Debris Monitoring System Sensor (ODMS), Scavenge Screen Plugs, Starter Magnetic Plug, and Oil Filter) Detailed Dimensional Check

(Figure 605, Figure 606)

A. General

- (1) This task gives the instructions to do an analysis of the unwanted material found on the Oil Debris Monitoring System (ODMS) sensor tip, scavenge screens plugs, starter magnetic plug and oil filter cartridge.

B. References

Reference	Title
71-00-00-710-801-G00	Test No. 5 - Part Power Leak Check (P/B 501)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
79-21-04-211-801-G00	Scavenge Screen Plug Inspection (P/B 201)
79-21-04-400-801-G00	Scavenge Screen Plugs Installation (P/B 201)
79-21-07-400-801-G00	Oil Filter Cartridge Element Installation (P/B 401)
79-21-12-400-801-G00	Oil Debris Monitoring System Sensor Installation (P/B 401)
80-11-09-200-801-G00	Engine Starter Magnetic Plug Inspection (P/B 201)

C. Tools/Equipment

Reference	Description
STD-562	Lens - Magnifying, 10x
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

F. Prepare for the Check

SUBTASK 79-00-00-860-011-G00

- (1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:
- (a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.
 - (b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

EFFECTIVITY
SIA ALL

79-00-00

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 635
Sep 15/2023

737-7/8/8200/9/10 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 79-00-00-860-012-G00

(2) Do this task: Open the Fan Cowl Panels (Selection), TASK 71-11-04-010-801-G00.

(a) On the applicable engine, open these access panels:

<u>Number</u>	<u>Name/Location</u>
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

G. Engine Oil System (Oil Debris Monitoring System Sensor (ODMS), Scavenge Screen Plugs, Starter Magnetic Plug, and Oil Filter) Detailed Dimensional Check

SUBTASK 79-00-00-211-008-G00



BE CAREFUL WHEN YOU DO WORK ON THE ENGINE PARTS AFTER THE ENGINE IS STOPPED. THE ENGINE PARTS CAN STAY HOT FOR ALMOST ONE HOUR. DO NOT TOUCH HOT PARTS WITHOUT APPLICABLE GLOVES. HOT PARTS CAN CAUSE INJURIES TO PERSONNEL.



DO NOT OPEN THE OIL SYSTEM UNTIL THE PRESSURE GOES TO ZERO. THE PRESSURE GOES TO ZERO APPROXIMATELY 5 MINUTES AFTER AN ENGINE STOPS. A PRESSURIZED OIL SYSTEM CAN RELEASE A SPRAY OF HOT OIL THAT CAN BURN YOU.



DO NOT LET HOT OIL GET ON YOU. PUT ON CLOTHES, GOGGLES, AND OTHER EQUIPMENT FOR PROTECTION, OR LET THE ENGINE BECOME COOL. HOT OIL CAN BURN YOU.



DO NOT LET THE OIL STAY ON YOUR SKIN. USE THE OIL IN AN AREA WITH GOOD AIRFLOW. THE OIL IS POISONOUS AND YOUR SKIN CAN ABSORB THE OIL. THE OIL FUMES CAN CAUSE INJURY.



DO NOT LET OIL GET ON THE ENGINE OR OTHER COMPONENTS. IMMEDIATELY CLEAN THE OIL WHEN IT FALLS ON THEM. OIL CAN CAUSE DAMAGE TO EQUIPMENT.



YOU MUST PUT A MARK OR LABEL ON THE PARTICLES WITH THE SOURCE OF THE MATERIAL YOU REMOVE. THE MARK PREVENTS AN INCORRECT VISUAL IDENTIFICATION AND LABORATORY ANALYSIS. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

(1) Do the visual inspection of the particles collected from the ODMS sensor, scavenge screen plugs/starter magnetic plug and oil filter cartridge to identify the physical properties of the material (shape, size, quantity, magnetic properties, color), do the following:

(a) Examine the particles with 10x magnifying lens, STD-562.

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

- (b) Any quantity of material that is less than or equal to 0.004 in. (0.10 mm) in all dimension (normal fuzz) is satisfactory with no need to send particles for analysis.

NOTE: Normal fuzz can be noticed on the new engines or engines after overhaul.

NOTE: Material that is larger than 0.004 in. (0.10 mm) in any dimension is not normal fuzz.

- (c) Refer to NDT manual Part 9 "LEAP-00-70-30-05-02A-371B-D" and Part 10 "LEAP-00-70-30-04-02A-370B-D" to identify possible source or refer to the Field Guide for Lubrication System Debris Tool Number GEK 131722 for examples of shapes that may be seen on the ODMS sensor, scavenge screen plugs/magnetic plug and oil filter cartridge.

SUBTASK 79-00-00-211-009-G00

- (2) Examine the particles to identify their potential source from within the engine and the recommendations (Figure 606).
- (a) To identify the particles, take into consideration the following:
- size
 - shape
 - quantity
 - color
 - nature (magnetic, non magnetic, non metallic)
 - origin (sump, filter, ODMS sensor).
- (b) If you found some magnetic material on the Accessory Gear Box (AGB) scavenge screen plug or on the ODMS sensor, make sure that you examine the starter magnetic plug for contamination (TASK 80-11-09-200-801-G00).

SUBTASK 79-00-00-211-010-G00



IF THERE IS AN INDICATION OF BEARING MATERIAL, DO NOT OPERATE THE ENGINE UNTIL YOU IDENTIFY THE MAGNETIC PARTICLES. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT AND THE ENGINE CAN OCCUR.

- (3) Identify the nature of particles greater than normal fuzz from all sources (ODMS and/or scavenge screen, starter magnetic plug, oil filter).
- (a) If material cannot be visually identified, send the particles to a laboratory for chemical analysis according to NDTM Part 10.
- (b) Once you have identified the debris, examine the particles (Figure 606).
- (c) If you find any other material, contact a CFM representative and provide maintenance history related to oil system (recent event, shop visit, part replacement).

SUBTASK 79-00-00-211-005-G00

- (4) If you find magnetic particles that you cannot identify, do these steps:



IF THERE IS AN INDICATION OF BEARING MATERIAL, DO NOT OPERATE THE ENGINE UNTIL YOU IDENTIFY THE MAGNETIC PARTICLES. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT AND THE ENGINE CAN OCCUR.

- (a) Engine can Continue-In-Service (CIS) for 72 hours straight after ODMS sensor inspection until particles are identified if the below conditions are satisfied:

EFFECTIVITY
SIA ALL

79-00-00

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

- Magnetic particles were found at the ODMS sensor only.

NOTE: Magnetic particle in scavenge screen plugs are not allowed.

- ODMS chips count is not reset.
 - Maintenance messages 79-4119X (cumulative chip count) or 79-4286X (single flight chip count) or 79-4288X (oil filter approaching bypass) were not set at inspection and until laboratory report is available.
- (b) If at least one of those conditions is not fulfilled, the 72 hours CIS after ODMS sensor inspection does not apply anymore.
- (c) After you get the analysis from the laboratory, do the applicable corrective action for the type of material that is found (Figure 606).
- 1) If you find any other material, contact a CFM representative and provide maintenance history related to oil system (recent event, shop visit, part replacement).
- (d) Satisfactory condition for continue the engine in service with no need to send particles for analysis:
- 1) Less than four particles, not more than 0.01 in. (0.25 mm) in any dimension.
- (e) Marginal condition:
- Four or more particles between 0.004 in. (0.10 mm) and 0.01 in. (0.25 mm) in any dimension.
 - Or less than four particles between 0.01 in. (0.25 mm) and 0.02 in. (0.5 mm) in any dimension.
- 1) Send the particles to the laboratory for analysis.
 - 2) Do the inspection of the oil debris and scavenge screen plugs for particles after each flight until you get the analysis from the laboratory.
 - 3) If you find magnetic particles during the post flight inspections that you cannot identify limit the engine operation to 5 cycles or 25 hours whichever comes first.
 - 4) After you get the analysis from the laboratory, then do the applicable corrective action for the type of material that you found as defined in step (3).
- (f) Unsatisfactory condition:
- Four or more particles between 0.01 in. (0.25 mm) and 0.02 in. (0.5 mm) in any dimension.
 - Or any quantity of particles that is more than 0.02 in. (0.5 mm) in any dimension.
- 1) Send the particles to the laboratory for analysis.
 - 2) Operate the engine at minimum of 70 percent N1 for 10 minutes (TASK 71-00-00-710-801-G00), then perform the oil debris monitoring system sensor inspection (TASK 79-00-00-210-804-G00), and scavenge screen plug inspection (TASK 79-21-04-211-801-G00).
 - a) If you find magnetic particles larger than 0.004 in. (0.10 mm) in any dimension during any oil debris monitoring system sensor and scavenge screen plugs inspection, do not operate the engine until the first sample of magnetic particles have been identified.
 - b) If you do not find magnetic particles, do these steps:
 - If you cannot get the analysis from the laboratory, do a check of the oil debris monitoring system sensor (TASK 79-00-00-210-804-G00) and

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

scavenge screen plugs inspection (TASK 79-21-04-211-801-G00) after each flight until you get the analysis from the laboratory.

- After performing the oil debris monitoring system sensor and scavenge screen plugs inspections in the previous step, if you find magnetic particles larger than 0.004 in. (0.10 mm) in any dimension, do not operate the engine until the first sample of magnetic particles have been identified.
- c) After you get the analysis from the laboratory, do the applicable corrective action for the type of material that you found as defined in step (3).

H. Put the Airplane Back to Its Usual Condition

SUBTASK 79-00-00-860-028-G00

- (1) If not already done, install the oil filter cartridge element (TASK 79-21-07-400-801-G00).

SUBTASK 79-00-00-860-030-G00

- (2) If not already done, install the single stage scavenge screen plugs and double stage scavenge screen plugs (TASK 79-21-04-400-801-G00).

SUBTASK 79-00-00-860-031-G00

- (3) If not already done, install the ODMS sensor (TASK 79-21-12-400-801-G00).

SUBTASK 79-00-00-860-013-G00

- (4) Do this task: Close the Fan Cowl Panels (Selection), TASK 71-11-04-410-801-G00.

- (a) On the applicable engine, close these access panels:

<u>Number</u>	<u>Name/Location</u>
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

SUBTASK 79-00-00-860-014-G00

- (5) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:
- (a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.
 - (b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

———— **END OF TASK** ————

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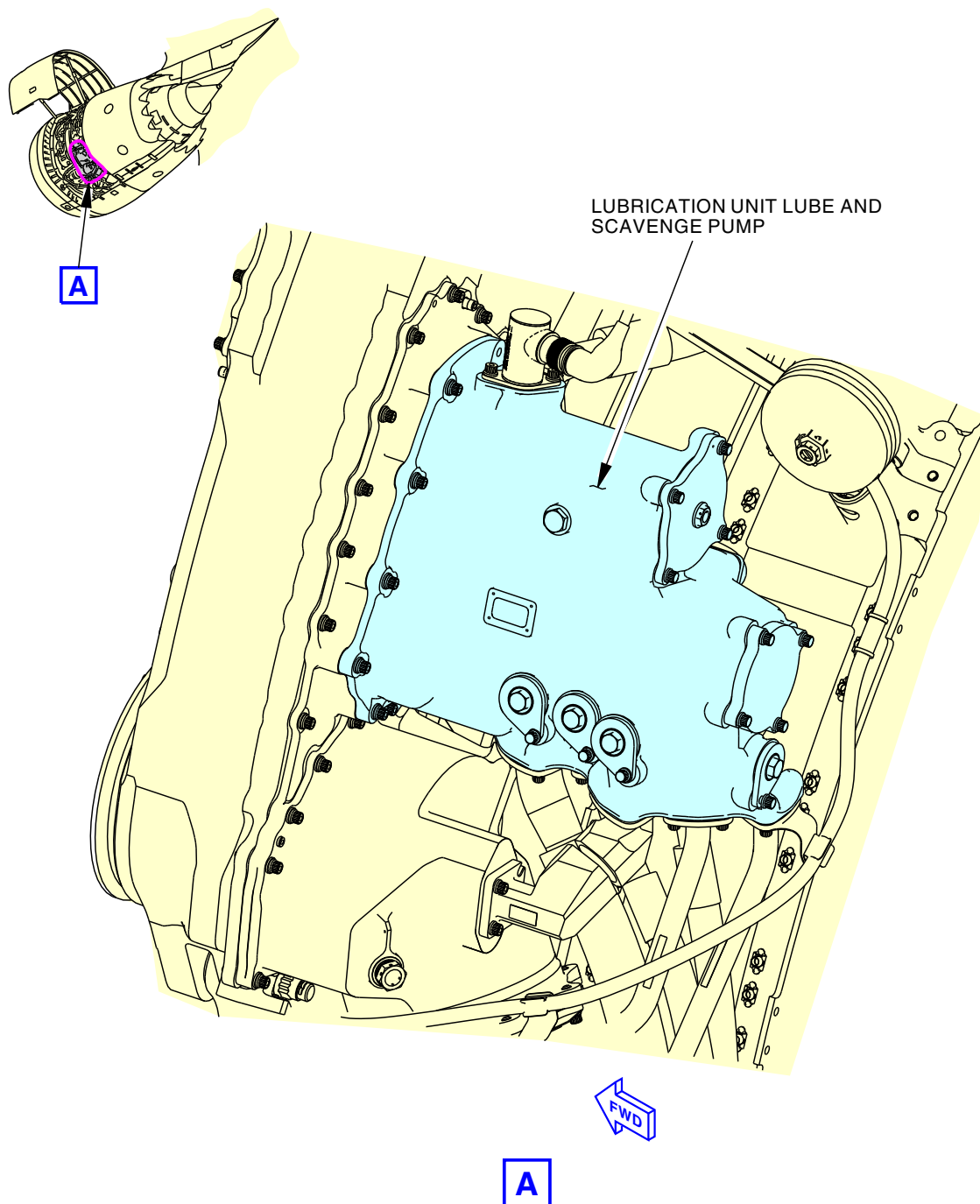
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 639
Sep 15/2023

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



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Engine Oil System (Oil Debris Monitoring System Sensor (ODMS), Scavenge Screen Plugs, Starter
Magnetic Plug and Oil Filter) Detailed Dimensional Check
Figure 605/79-00-00-990-807-G00

EFFECTIVITY
SIA ALL

79-00-00

D633AM101-SIA

Page 640
Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

MAGNETIC	ODMS	AGB	TGB	A	B	C	FILTER	STARTER	DESCRIPTION	QUANTITY	MATERIAL COMPOSITION FROM LAB ANALYSIS	POTENTIAL SOURCE	RECOMMENDATION
YES	X	X	X	X	X	X	X	X	<0.004 INCH (0.10 mm) IN LARGEST DIMENSION	ANY	N/A	N/A	SERVICEABLE
YES	X	X	X	X	X	X	X	X	<0.010 INCH (0.25 mm) IN LARGEST DIMENSION	3 OR FEWER PARTICLES	N/A	N/A	SERVICEABLE, RESET ODMs REF AMM TASK 71-00-00-700-802-G00
YES	X	X*	X*	X	X	X	X	X	MACHINED CHIPS OR SHINY CURLS OF METAL OR THAT HAVE PARALLEL MARKS FROM MACHINE TOOLS AT MAGNIFYING GLASS POWER 10X	ANY	N/A	ANY MACHINED OIL-WETTED SURFACE	SERVICEABLE, RESET ODMs REF AMM TASK 71-00-00-700-802-G00 * : CAUTION IN CASE OF 17-4PH MACHINED SHAPE CHIP, MAKE SURE THAT IS DOES NOT MATCH WITH KEY LOCK INSERT THREAD (REFER TO FIGURE 17-4PH) SEE DEDICATED RECOMMENDATION IN CASE OF 17-4PH MATERIAL
YES	X	X	X						FLAT PIECE WITH CASTELLATED PORTION REFER TO FIGURE 606 (SHEET 19)	ANY	17-4PH	AGB OR TGB KEY LOCK FROM INSERTS	SERVICEABLE, CONTINUE THE ENGINE IN SERVICE IF THERE IS NO OTHER METALLIC DEBRIS, RESET ODMs REF AMM TASK 71-00-00-700-802-G00
YES	X								SHAPE OTHER THAN THOSE DESCRIBES IN FIGURE 606 (SHEET 18)	ANY	17-4PH	ALL SUMPS	1) CONTINUE THE ENGINE IN SERVICE IF THE OIL PRESSURE AND CONSUMPTION ARE IN THE LIMITS. 2) DO A CHECK OF OIL PRESSURE AND CONSUMPTION IN 100 TO 200 HOURS. 3) DO A CHECK OF THE ODMs AND SCAVENGE SCREEN PLUGS IN 100-150 HOURS: - IF THERE IS NO ADDITIONAL PARTICLES IN SCAVENGE SCREEN PLUGS RETURN TO NORMAL OPERATION CONDITION, ENGINE IS IN SERVICEABLE CONDITION. RESET ODMs REF AMM TASK 71-00-00-700-802-G00 - IF THERE IS ADDITIONAL PARTICLES, FOLLOW AMM TASK 79-00-00-220-801-G00
YES	X								MACHINED CURLS, ELONGATED CURLS, SLIVER CHUNK REFER TO FIGURE 606 (SHEET 18)	ANY	17-4PH	AGB OR TGB KEY INSERTS THREAD	IF THIS IS THE 1ST TIME, PARTICLE IS FOUND IN ODMs, DO A CHECK OF THE ODMs AND SCAVENGE SCREEN PLUGS IN 50-75 HOURS FOR 3 CONSECUTIVE TIMES: - IF THERE IS NO ADDITIONAL PARTICLES IN ODMs AND SCAVENGE SCREEN PLUGS RETURN TO NORMAL OPERATION CONDITION. DO NOT RESET ODMs - IF THERE IS ADDITIONAL PARTICLES, FOLLOW AMM TASK 79-00-00-220-801-G00 IF SAME PARTICLE TYPE IS FOUND ONLY AT ODMs DURING A REPEAT INSPECTION: - REDUCE INSPECTION INTERVAL TO 25/50 HOURS UNTIL PARTICLES ARE FOUND IN AGB OR TGB SCREEN. DO NOT RESET ODMs
YES	X	X	X						MACHINED CURLS, ELONGATED CURLS, SLIVER CHUNK REFER TO FIGURE 606 (SHEET 18)	ANY	17-4PH	AGB OR TGB KEY INSERTS THREAD	REMOVE AND REPLACE AGB OR TGB, RESET ODMs REF AMM TASK 71-00-00-700-802-G00 DO OIL SYSTEM FLUSHING AMM TASK 12-13-11-100-801-G00
NO		X	X						MACHINED CURLS, ELONGATED CURLS, SLIVER CHUNK REFER TO FIGURE 606 (SHEET 20)	ANY	ALUMINIUM	AGB OR TGB HOUSING THREAD	REMOVE AND REPLACE AGB OR TGB DO OIL SYSTEM FLUSHING AMM TASK 12-13-11-100-801-G00

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Disposition and Identification for Magnetic and Non-Magnetic Material Findings
Figure 606/79-00-00-990-813-G00 (Sheet 1 of 23)

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79-00-00

D633AM101-SIA

Page 641
Sep 15/2023

737-7/8/8200/9/10

AIRCRAFT MAINTENANCE MANUAL

MAGNETIC	ODMS	AGB	TGB	A	B	C	FILTER	STARTER	DESCRIPTION	QUANTITY	MATERIAL COMPOSITION FROM LAB ANALYSIS	POTENTIAL SOURCE	RECOMMENDATION
YES	X								EVIDENCE OF BEARING DEGRADATION: THIN, SHINY, BRIGHT, LAMINATED MAGNETIC FLAKES.	4 OR LESS PARTICLES NONE GREATER THAN 0.03 INCH (0.76 mm) OR ANY SINGLE PARTICLE GREATER THAN 0.03 INCH (0.76 mm)	- M50/E-80DCV40 (RACE/BALL MATERIAL), - M50N1/E-13DCNV40 (RACE/BALL MATERIAL), - 32CDV13, - Z20WC10 (RBD MODIFIED) NOTE: THE MATERIAL 32CDV13 CAN BE CONFOUNDED WITH M50 OR 40CDV12 WITH SOME LAB ANALYSES	ENGINE BEARINGS	DO NOT RESET THE CHIP COUNT AND PUT THE ENGINE ON WATCH: 1-INSPECT THE ODMS SENSOR AND ALL THE SCAVENGE SCREEN PLUG AND STARTER MCD EVERY DAY OR BEFORE 5 FC MAX FOR 3 TIMES A-IF NO FINDINGS, INSPECT THE ODMS SENSOR AND ALL THE SCAVENGE SCREEN PLUGS AND STARTER MCD EVERY 75 FH FOR 3 TIMES I) IF NO FINDINGS, ENGINE IS CLEARED, RESET ODMS REF AMM TASK 71-00-00-700-802-G00 II) IF FINDINGS, FOLLOW AMM TASK 79-00-00-220-801-G00 B-IF FINDINGS, FOLLOW AMM TASK 79-00-00-220-801-G00
YES	X								EVIDENCE OF BEARING DEGRADATION: THIN, SHINY, BRIGHT, LAMINATED MAGNETIC FLAKES.	5 OR MORE PARTICLES NONE GREATER THAN 0.03 INCH (0.76 mm) OR ANY SINGLE PARTICLE GREATER THAN 0.03 INCH (0.76 mm)	- M50/E-80DCV40 (RACE/BALL MATERIAL), - M50N1/E-13DCNV40 (RACE/BALL MATERIAL), - 32CDV13, - Z20WC10 (RBD MODIFIED) NOTE: THE MATERIAL 32CDV13 CAN BE CONFOUNDED WITH M50 OR 40CDV12 WITH SOME LAB ANALYSES	ENGINE BEARINGS	DO NOT OPERATE THE ENGINE, CONTACT CFM SUPPORT AND PROVIDE MAINTENANCE HISTORY RELATED TO OIL SYSTEM (RECENT EVENT, SHOP VISIT, PART REPLACEMENT) DO NOT RESET ODMS BEFORE REMOVING THE ENGINE OR IN CASE OF ENGINE REMOVAL, FOR INVESTIGATION PURPOSE, DOWNLOAD: DIR 1 AND DIR 3 CHANNELS AND AND B. REFER TO AMM TASK 73-21-05-970-801-G00
YES	X								EVIDENCE OF BEARING DEGRADATION: THIN, SHINY, BRIGHT, LAMINATED MAGNETIC FLAKES.	4 OR MORE PARTICLES NONE GREATER THAN 0.010 INCH (0.25 mm) OR ANY SINGLE PARTICLE GREATER THAN 0.020 INCH (0.5 mm)	- AISI 4340 /E-40NCD7 (CAGE MATERIAL), NOTE: THE AISI 9315/16NCD13 (GEAR MATERIAL) CAN BE CONFOUNDED WITH AISI4340/E-40NCD7 (CAGE MATERIAL)	ENGINE BEARING CAGES	DO NOT OPERATE THE ENGINE, CONTACT CFM SUPPORT AND PROVIDE MAINTENANCE HISTORY RELATED TO OIL SYSTEM (RECENT EVENT, SHOP VISIT, PART REPLACEMENT) DO NOT RESET ODMS BEFORE REMOVING THE ENGINE OR IN CASE OF ENGINE REMOVAL, FOR INVESTIGATION PURPOSE, DOWNLOAD: DIR 1 AND DIR 3 CHANNELS AND AND B. REFER TO AMM TASK 73-21-05-970-801-G00

Disposition and Identification for Magnetic and Non-Magnetic Material Findings
Figure 606/79-00-00-990-813-G00 (Sheet 2 of 23)

EFFECTIVITY
SIA ALL

D633AM101-SIA

79-00-00

Page 642
Sep 15/2023

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

MAGNETIC	ODMS	AGB	TGB	A	B	C	FILTER	STARTER	DESCRIPTION	QUANTITY	MATERIAL COMPOSITION FROM LAB ANALYSIS	POTENTIAL SOURCE	RECOMMENDATION
YES				X	X	X			EVIDENCE OF BEARING DEGRADATION: THIN, SHINY, BRIGHT LAMINATED MAGNETIC FLAKES.	4 OR MORE PARTICLES, NONE GREATER THAN 0.010 INCH (0.25 mm) OR ANY SINGLE PARTICLE GREATER THAN 0.020 INCH (0.5 mm)	- M50/E-80DCV40 (RACE/BALL MATERIAL), - M50NILE-13DCNV40 (RACE/BALL MATERIAL), - AISI 4340/E-40NDC7 (CAGE MATERIAL), - 32CDV13, - Z20WC10 (RBD MODIFIED) NOTE: THE MATERIAL 32CDV13 CAN BE CONFOUNDED WITH M50 OR 40CDV12 WITH SOME LAB ANALYSES. NOTE: THE AISI 9315/16NCD13 (GEAR MATERIAL) CAN BE CONFOUNDED WITH AISI 4340/E-40NDC7 (CAGE MATERIAL)	ENGINE BEARINGS	DO NOT OPERATE THE ENGINE, CONTACT CFM SUPPORT AND PROVIDE MAINTENANCE HISTORY RELATED TO OIL SYSTEM (RECENT EVENT, SHOP VISIT, PART REPLACEMENT) DO NOT RESET ODMS BEFORE REMOVING THE ENGINE OR IN CASE OF ENGINE REMOVAL, FOR INVESTIGATION PURPOSE, DOWNLOAD: DIR 1 AND DIR 3 CHANNELS A AND B. REFER TO AMM TASK 73-21-05-970-801-G00.
YES		X							EVIDENCE OF BEARING DEGRADATION: THIN, SHINY, BRIGHT LAMINATED MAGNETIC FLAKES.	4 OR MORE PARTICLES, NONE GREATER THAN 0.010 INCH (0.25 mm) OR ANY SINGLE PARTICLE GREATER THAN 0.020 INCH (0.5 mm)	- M50/E-80DCV40 (RACE/BALL MATERIAL), - M50NILE-13DCNV40 (RACE/BALL MATERIAL), - AISI 4340/E-40NDC7 (CAGE MATERIAL), - 32CDV13, - Z20WC10 (RBD MODIFIED) NOTE: THE MATERIAL 32CDV13 CAN BE CONFOUNDED WITH M50 OR 40CDV12 WITH SOME LAB ANALYSES. NOTE: THE AISI 9315/16NCD13 (GEAR MATERIAL) CAN BE CONFOUNDED WITH AISI 4340/E-40NDC7 (CAGE MATERIAL)	AGB BEARINGS	REMOVE AND REPLACE THE AGB, RESET ODMS REF AMM TASK 71-00-00-700-802-G00 DO OIL SYSTEM FLUSHING AMM TASK 12-13-11-100-801-G00
YES			X						EVIDENCE OF BEARING DEGRADATION: THIN, SHINY, BRIGHT LAMINATED MAGNETIC FLAKES.	4 OR MORE PARTICLES, NONE GREATER THAN 0.010 INCH (0.25 mm) OR ANY SINGLE PARTICLE GREATER THAN 0.020 INCH (0.5 mm)	- M50/E-80DCV40 (RACE/BALL MATERIAL), - M50NILE-13DCNV40 (RACE/BALL MATERIAL), - AISI 4340/E-40NDC7 (CAGE MATERIAL), - 32CDV13, - Z20WC10 (RBD MODIFIED) NOTE: THE MATERIAL 32CDV13 CAN BE CONFOUNDED WITH M50 OR 40CDV12 WITH SOME LAB ANALYSES. NOTE: THE AISI 9315/16NCD13 (GEAR MATERIAL) CAN BE CONFOUNDED WITH AISI 4340/E-40NDC7 (CAGE MATERIAL)	TGB BEARINGS	REMOVE AND REPLACE THE TGB, RESET ODMS REF AMM TASK 71-00-00-700-802-G00 DO OIL SYSTEM FLUSHING AMM TASK 12-13-11-100-801-G00
YES							X		EVIDENCE OF BEARING DEGRADATION: THIN, SHINY, BRIGHT LAMINATED MAGNETIC FLAKES.	REF AMM TASK 80-11-09-200-801-G00	- M50/E-80DCV40 (RACE/BALL MATERIAL), - ALLOY STEEL 52100/100C6 (RACE/BALL MATERIAL) NOTE: THE MATERIAL 32CDV13 CAN BE CONFOUNDED WITH M50 OR 40CDV12 WITH SOME LAB ANALYSES.	STARTER BEARINGS	REFER TO AMM TASK 80-11-09-200-801-G00. IN CASE OF STARTER REPLACEMENT, DO OIL SYSTEM FLUSHING AMM TASK 12-13-11-100-801-G00

2967755 S0000747148_V3

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Disposition and Identification for Magnetic and Non-Magnetic Material Findings
Figure 606/79-00-00-990-813-G00 (Sheet 3 of 23)

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D633AM101-SIA

Page 643
Sep 15/2023

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

MAGNETIC	ODMS	AGB	TGB	A	B	C	STARTER	DESCRIPTION	QUANTITY	MATERIAL COMPOSITION FROM LAB ANALYSIS	POTENTIAL SOURCE	RECOMMENDATION
NO	X	X						CHUNKS, SILVER, PATELETS	ANY	SILVER	SILVER COATED PARTS	INSPECT THE AFFECTED SCAVENGE SCREEN IN 50-75 HOURS INTERVALS UNTIL 3 CONSECUTIVE TIMES WITHOUT ANY FINDINGS. IF OTHER MATERIAL THAN SILVER IS FOUND DURING THESE REPEATED INSPECTIONS, FOLLOW AMM TASK 79-00-00-220-801-G00
NO			X					CHUNKS, SILVER, PATELETS	ANY	SILVER	SILVER COATED PARTS	1. WITHIN 10 CYCLES OR 30 FLIGHT HOURS, WHICHEVER COMES FIRST, DO THE FOLLOWING 2. REVIEW MAINTENANCE RECORDS FOR RECENT MAINTENANCE ACTIONS OR OPERATIONAL EVENTS THAT COULD ACCOUNT FOR THE SHIFTS NOTED 3. PERFORM A GENERAL VISUAL INSPECTION OF THE ENGINE OIL LEVEL SENSOR AND/OR HARNESS 4. INSPECT THE A-SUMP SCAVENGE SCREEN (79-21-04-211-801-A) a) IF YOU FOUND SILVER PARTICLES, CLEAN THE A-SUMP SCAVENGE SCREEN FROM ALL SILVER PARTICLES AND THEN GO TO 5. b) IF THERE IS NO SILVER PARTICLES IN THE A-SUMP SCAVENGE SCREEN, GO TO 12 5. DO AN ENGINE GROUND RUN DURING 15 MIN (71-00-00-790-804-A) 6. INSPECT THE A-SUMP SCAVENGE SCREEN (79-21-04-211-801-A) AND CLEAN THE A-SUMP SCAVENGE SCREEN FROM ALL SILVER PARTICLES IF ANY 7. DRAIN THE OIL TANK (12-13-11-600-803-A) 8. REPLACE THE OIL FILTER (79-21-07-000/400-801-A) 9. REFILL THE OIL TANK (12-13-11-600-801-A) 10. DO A SECOND ENGINE GROUND RUN DURING 15 MIN (71-00-00-790-804-A) 11. INSPECT THE A-SUMP SCAVENGE SCREEN TO DETERMINE IF THERE IS LESS PARTICLES THAN DURING THE PREVIOUS INSPECTION (79-21-04-211-801-A) a) CLEAN THE A-SUMP SCAVENGE SCREEN FROM ALL SILVER PARTICLES IF ANY b) IF THERE IS MORE PARTICLES THAN DURING THE PREVIOUS INSPECTION, REPEAT STEPS 5 TO 11 c) IF THERE IS LESS PARTICLES THAN DURING THE PREVIOUS INSPECTION, RETURN INTO SERVICE AND PERFORM A REPETITIVE INSPECTION OF A-SUMP SCAVENGE SCREEN DETAILED BELOW: (1) RE-INSPECT A-SUMP SCAVENGE SCREEN AFTER 25/50(*) FH (2) REMOVE THE PARTICLES FROM THE SCREEN AND RETURN INTO SERVICE (3) RE-INSPECT A SUMP SCAVENGE SCREEN AFTER 25/50(*) FH AND STOP AFTER 3 TIMES WITHOUT FINDING (*) : 25FH FOR ENGINES WHICH EXPERIENCED A LOW OIL LEVEL INDICATION ON THE COCKPIT DURING LAST FLIGHT 50FH FOR ENGINES WHICH DID NOT EXPERIENCED A LOW OIL LEVEL INDICATION ON THE COCKPIT DURING LAST FLIGHT 12. DO THE TESTS THAT ARE GIVEN IN THE POWER PLANT TEST REFERENCE TABLE (71-00-00-800-804) REMOVE AND REPLACE THE OIL FILTER CARTRIDGE
NO						X		ELONGATED FRAGMENTS, THIN, BRITTLE, BROWN PARTICLES REFER TO FIGURE 606 (SHEET 22)	ANY	NON-METALLIC (ORGANIC) FRAGMENTS (WITH OR WITHOUT MINERAL GLASS FIBERS); RICH IN CARBON, OXYGEN, NITROGEN, SILICUM AND CHLORINE	GLUE FROM OIL FILTER CARTRIDGE	

ICNLEAP1B790000D588280043A00101 2967754 S0000747149_V2

Disposition and Identification for Magnetic and Non-Magnetic Material Findings
Figure 606/79-00-00-990-813-G00 (Sheet 4 of 23)

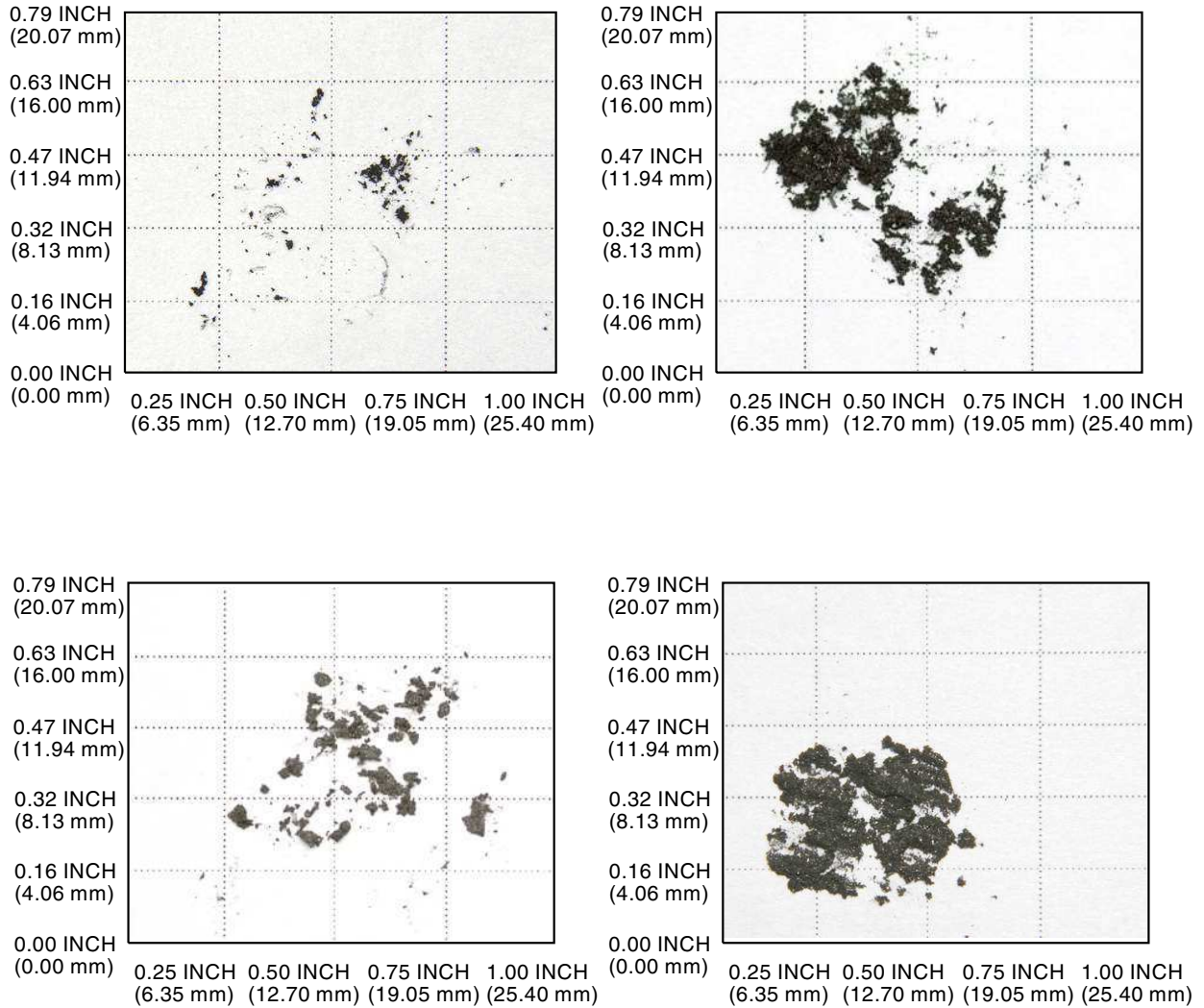
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**



**BEARING SHOULDER WEAR DISTRESS
(EXAMPLE)**

2900623 S0000692893_V1

**Disposition and Identification for Magnetic and Non-Magnetic Material Findings
Figure 606/79-00-00-990-813-G00 (Sheet 5 of 23)**

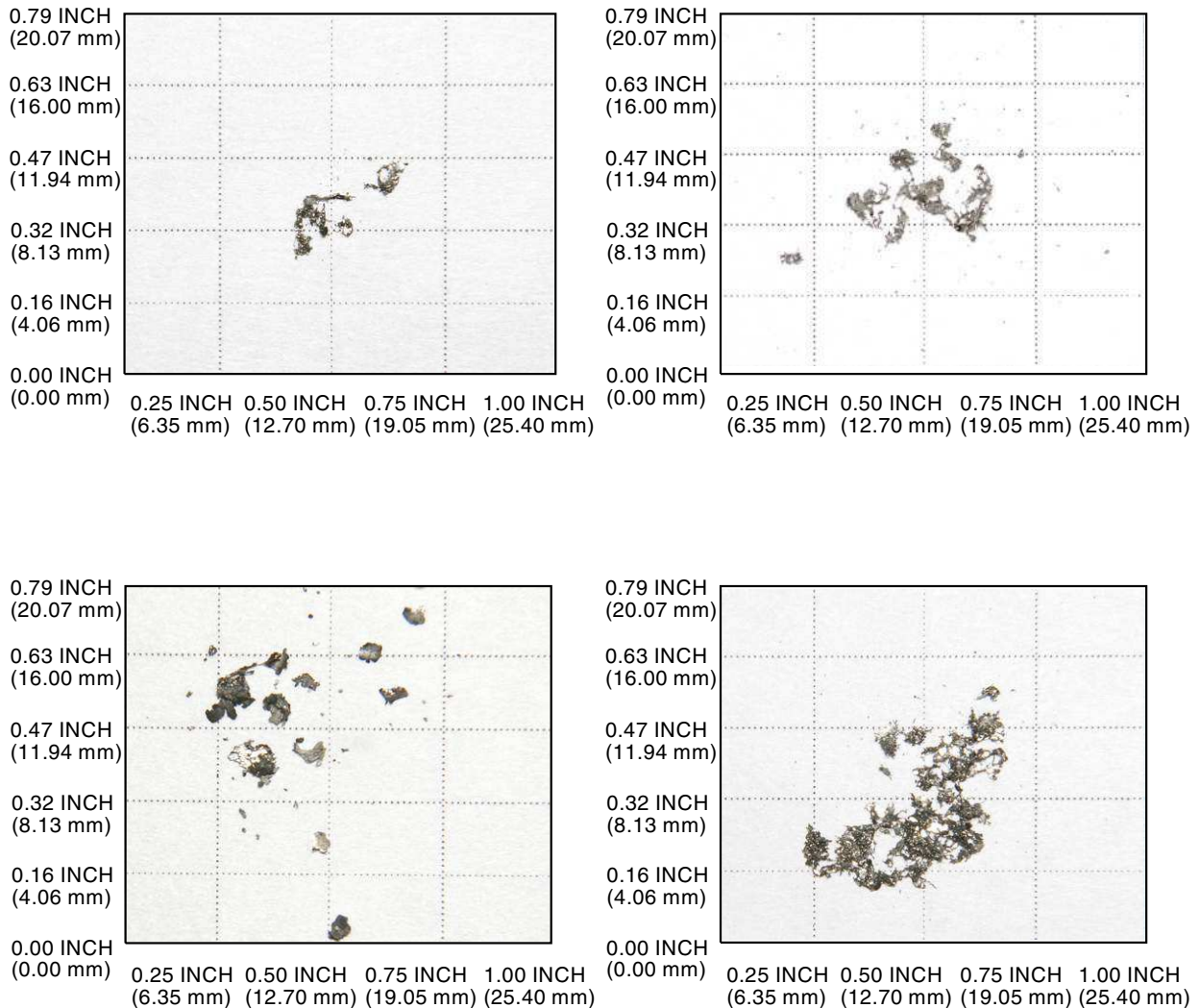
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SIA ALL

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D633AM101-SIA

Page 645
Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



**BEARING SPALL DISTRESS
(EXAMPLE)**

2900647 S0000692894_V1

Disposition and Identification for Magnetic and Non-Magnetic Material Findings
Figure 606/79-00-00-990-813-G00 (Sheet 6 of 23)

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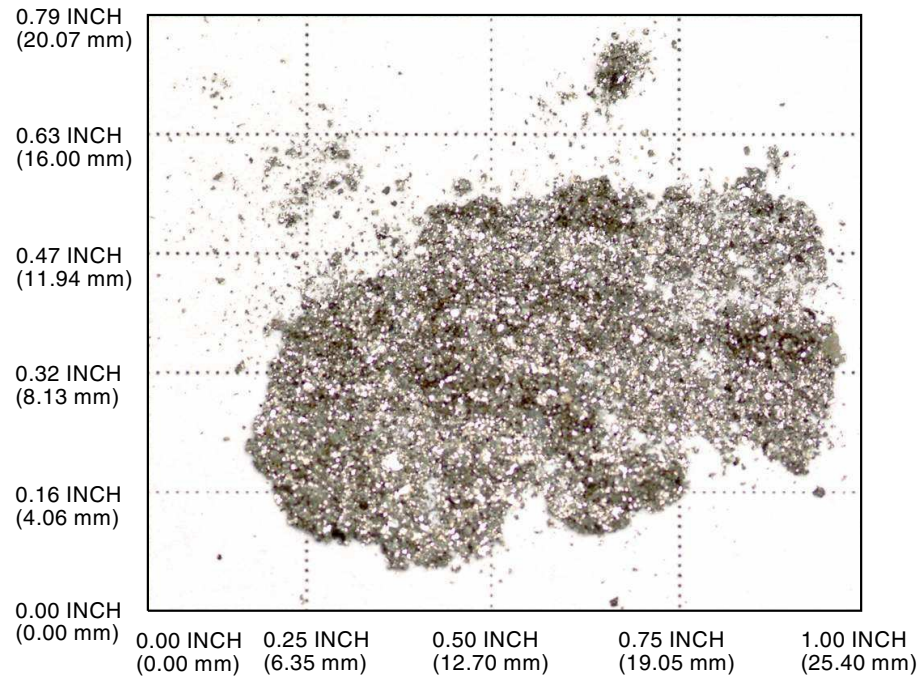
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D633AM101-SIA

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Page 646
Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



M50NiL 1

1 GENERAL CHARACTERISTICS

- MAGNETIC
- APPEARANCE
 - METALLIC – FLAKES
 - REFLECTIVE – POWDER

2900648 S0000692896_V2

Disposition and Identification for Magnetic and Non-Magnetic Material Findings
Figure 606/79-00-00-990-813-G00 (Sheet 7 of 23)

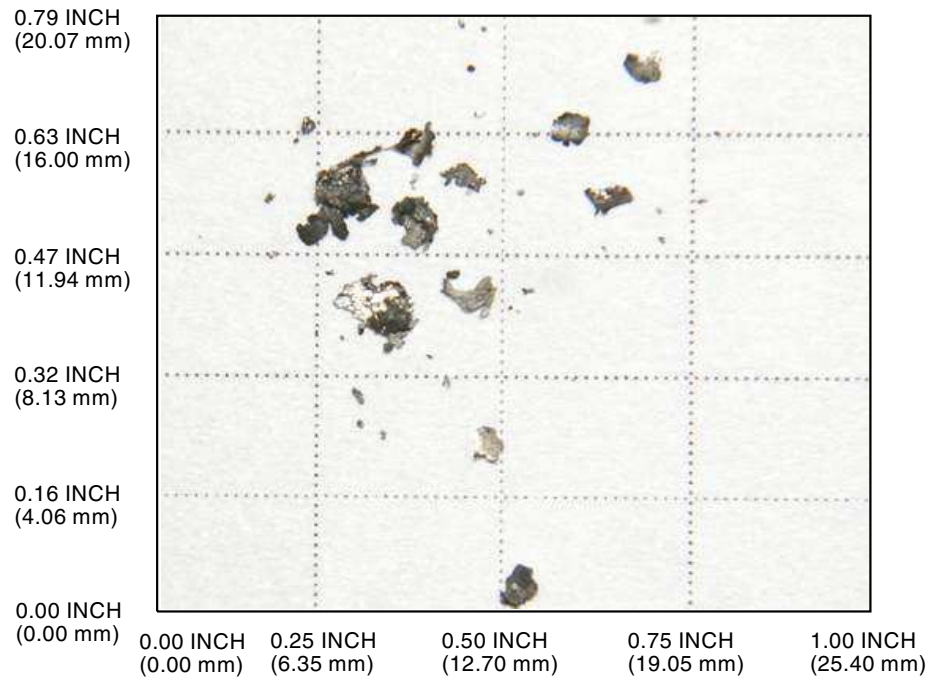
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D633AM101-SIA

79-00-00

Page 647
Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



M50 

 GENERAL CHARACTERISTICS

- MAGNETIC
- APPEARANCE
 - METALLIC – SMALL FLAKES AND / OR POWDER
 - DULL – DARK COLOR

2900658 S0000692899_V1

Disposition and Identification for Magnetic and Non-Magnetic Material Findings
Figure 606/79-00-00-990-813-G00 (Sheet 8 of 23)

EFFECTIVITY
SIA ALL

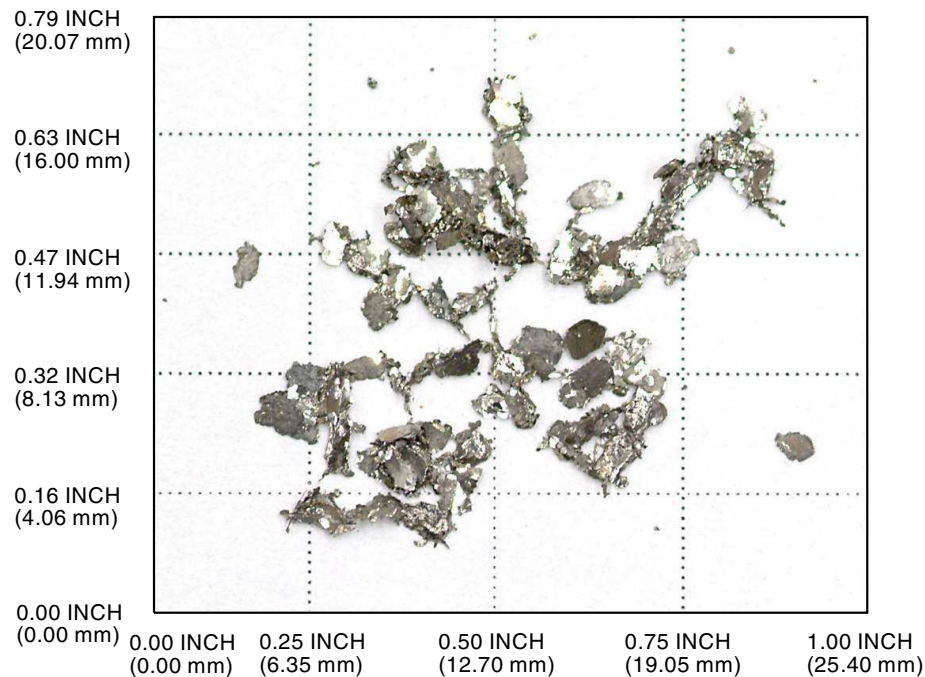
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79-00-00

Page 648
Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



BEARING SPELL CHIP 3

3 GENERAL CHARACTERISTICS

• MAGNETIC

• APPEARANCE

- | | | |
|----------------|----------|-----------------------|
| – METALLIC | – FLAKES | – SMOOTH / REFLECTIVE |
| – FLATTENED | – OVAL | ON ONE SIDE, DULL ON |
| – RAGGED EDGES | – COINED | THE OTHER |

2900678 S0000692900_V1

Disposition and Identification for Magnetic and Non-Magnetic Material Findings
Figure 606/79-00-00-990-813-G00 (Sheet 9 of 23)

EFFECTIVITY
SIA ALL

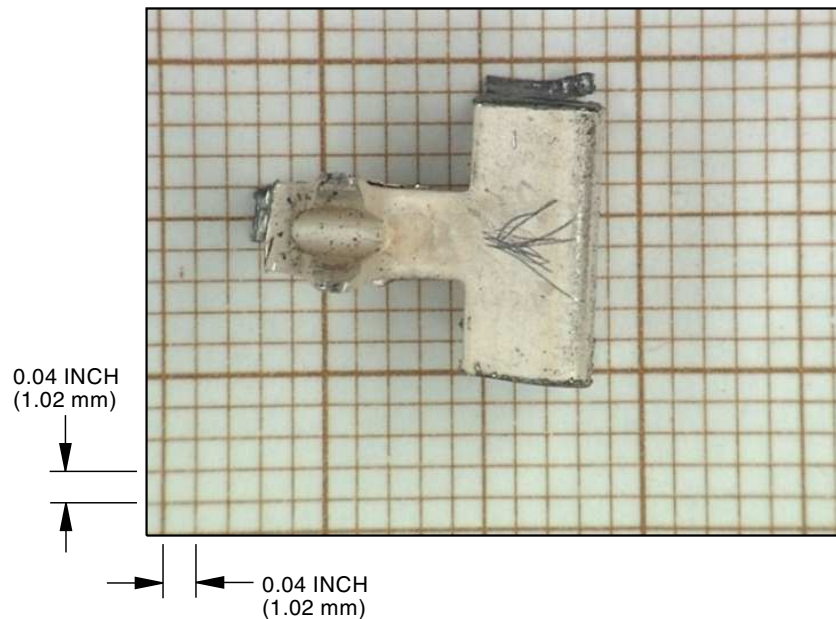
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 649
Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



BEARING CAGE 4

4 GENERAL CHARACTERISTICS

- MAGNETIC OR NON-MAGNETIC
- APPEARANCE
 - METALLIC
 - SHARP EDGES
 - SMOOTH
 - STRUCTURAL IN SHAPE
 - REFLECTIVE
 - SHINY OR DISCOLORED COATING

2900684 S0000692902_V1

Disposition and Identification for Magnetic and Non-Magnetic Material Findings
Figure 606/79-00-00-990-813-G00 (Sheet 10 of 23)

EFFECTIVITY
SIA ALL

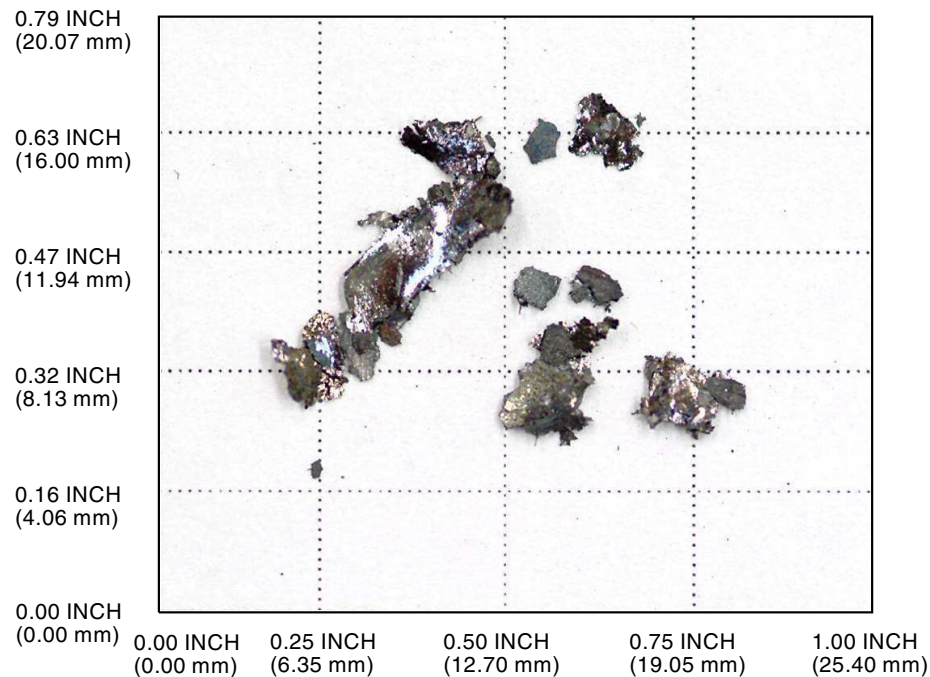
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79-00-00

Page 650
Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



GEARBOX DEBRIS 5

5 GENERAL CHARACTERISTICS

- MAGNETIC
- APPEARANCE
 - METALLIC – FLAKES – SHARP
 - REFLECTIVE – IRREGULAR

2900695 S0000692903_V1

Disposition and Identification for Magnetic and Non-Magnetic Material Findings
Figure 606/79-00-00-990-813-G00 (Sheet 11 of 23)

EFFECTIVITY
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D633AM101-SIA

79-00-00

Page 651
Sep 15/2022

0.04 INCH
(1.02 mm)**SHOTPEENING MEDIA** **GENERAL CHARACTERISTICS**

- MAGNETIC
- APPEARANCE
 - SPHERICAL STEEL SHOTPEEN BALLS

2900697 S0000692908_V1

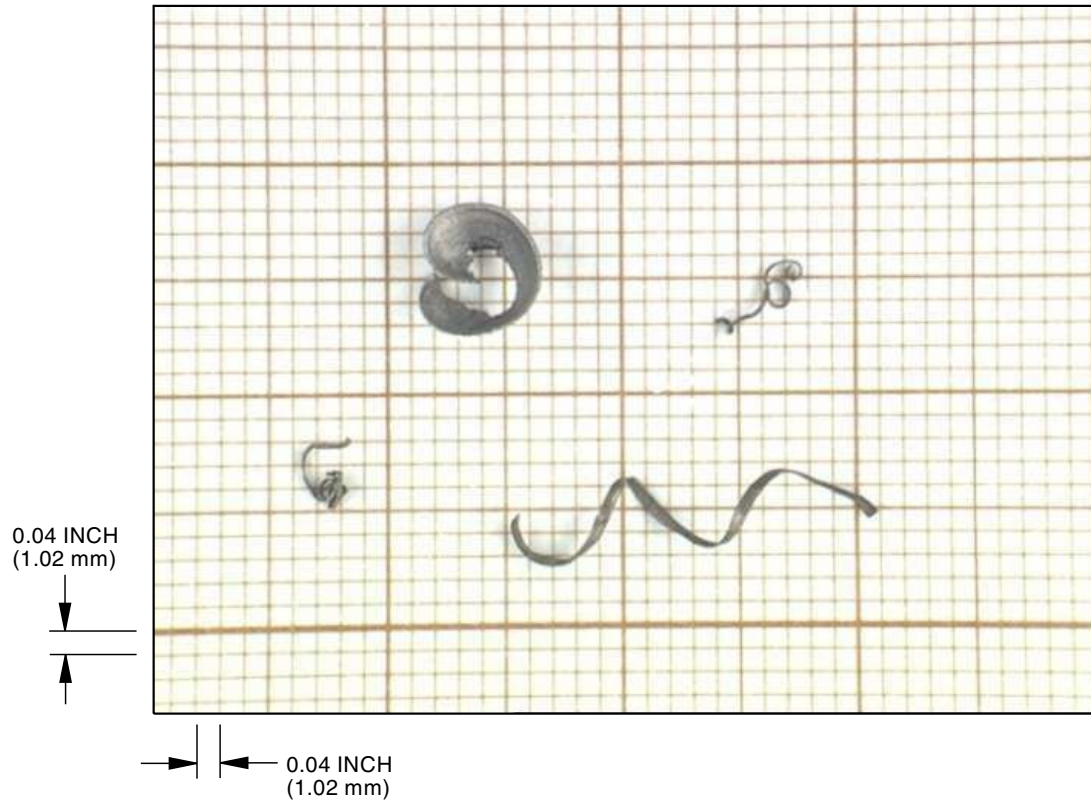
Disposition and Identification for Magnetic and Non-Magnetic Material Findings
Figure 606/79-00-00-990-813-G00 (Sheet 12 of 23)**EFFECTIVITY**
SIA ALL

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-00-00Page 652
Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



MACHINING DEBRIS 7

7 GENERAL CHARACTERISTICS

- MAGNETIC OR NON-MAGNETIC
- APPEARANCE
 - METALLIC
 - REFLECTIVE SOLID
 - IRREGULAR

2900699 S0000692905_V2

Disposition and Identification for Magnetic and Non-Magnetic Material Findings
Figure 606/79-00-00-990-813-G00 (Sheet 13 of 23)

EFFECTIVITY
SIA ALL

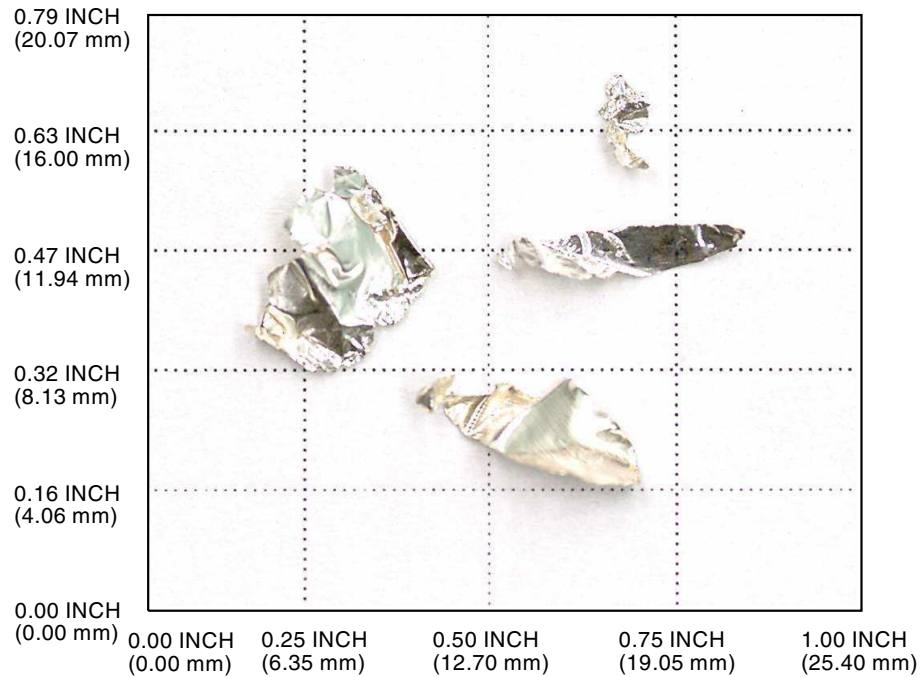
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79-00-00

Page 653
Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



SILVER PLATE 8

8 GENERAL CHARACTERISTICS

- NON-MAGNETIC
- APPEARANCE
 - METALLIC – FOIL – IRREGULAR
 - REFLECTIVE – MALLEABLE

2900705 S0000692907_V1

Disposition and Identification for Magnetic and Non-Magnetic Material Findings
Figure 606/79-00-00-990-813-G00 (Sheet 14 of 23)

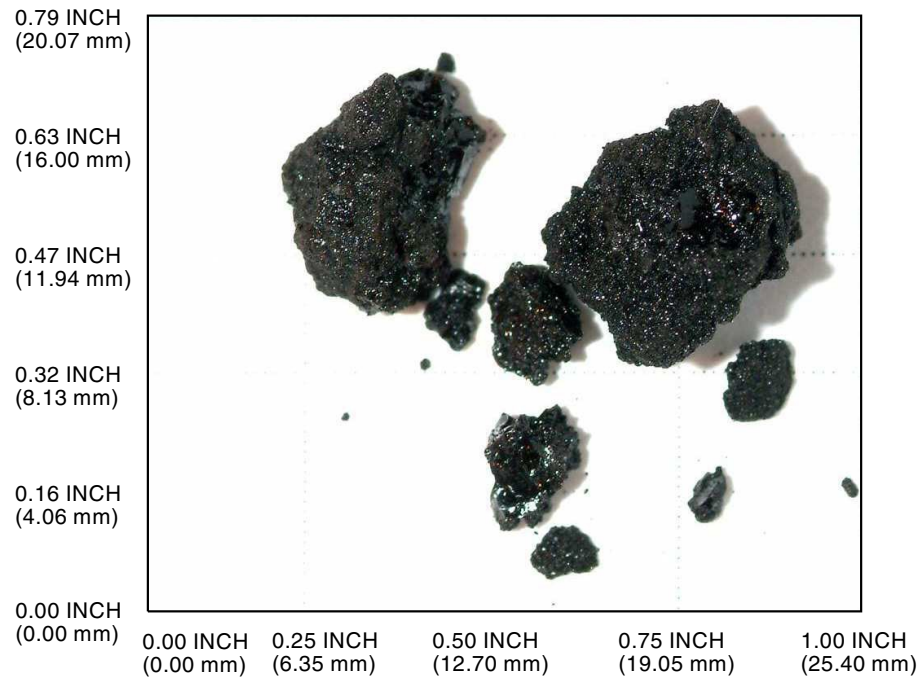
EFFECTIVITY
SIA ALL

D633AM101-SIA

79-00-00

Page 654
Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



CARBON 9
(COKE)

9 GENERAL CHARACTERISTICS

- NON-MAGNETIC
- APPEARANCE
 - NON-METALLIC – JAGGED EDGES – OILY SMELL
 - ROUND – USULLY BLACK
 - SOLID – BRITTLE TO HARD

2900708 S0000692904_V1

Disposition and Identification for Magnetic and Non-Magnetic Material Findings
Figure 606/79-00-00-990-813-G00 (Sheet 15 of 23)

EFFECTIVITY
SIA ALL

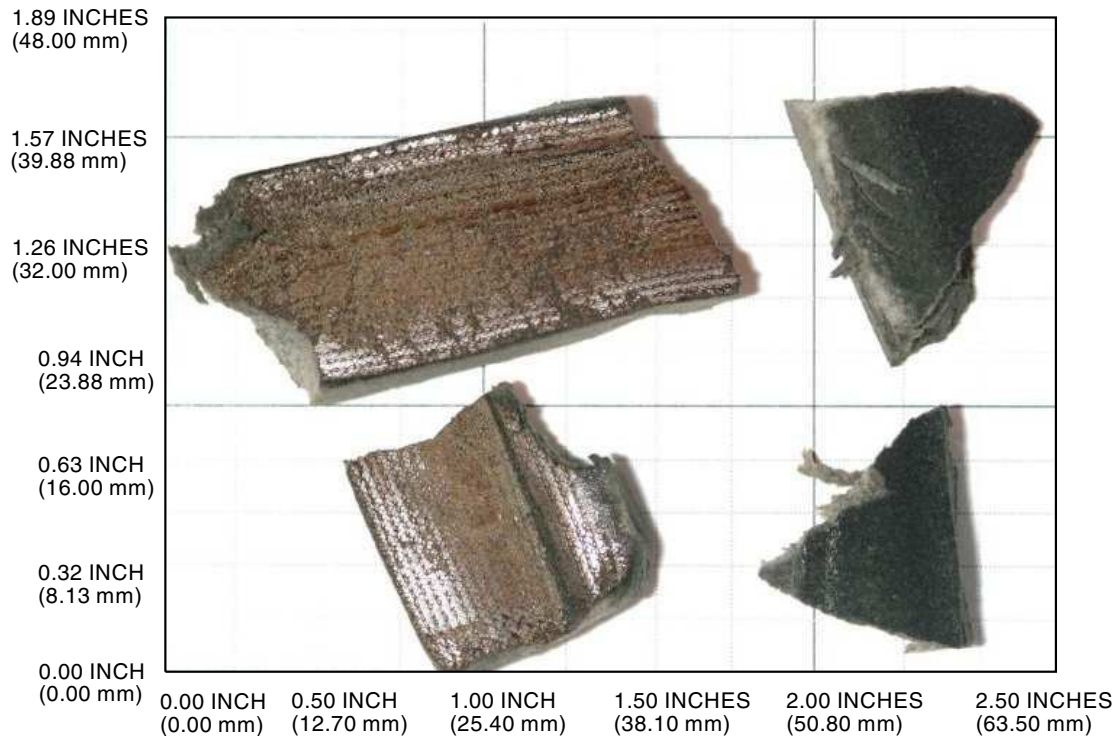
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-00-00

Page 655
Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



PTFE (TEFLON) SEAL 10

10 GENERAL CHARACTERISTICS

- NON-MAGNETIC
- APPEARANCE
 - NON-METALLIC
 - TAN TO BLACK IN COLOR
 - CHUNKS
 - LIGHTWEIGHT FOR SIZE

2900721 S0000692906_V1

Disposition and Identification for Magnetic and Non-Magnetic Material Findings
Figure 606/79-00-00-990-813-G00 (Sheet 16 of 23)

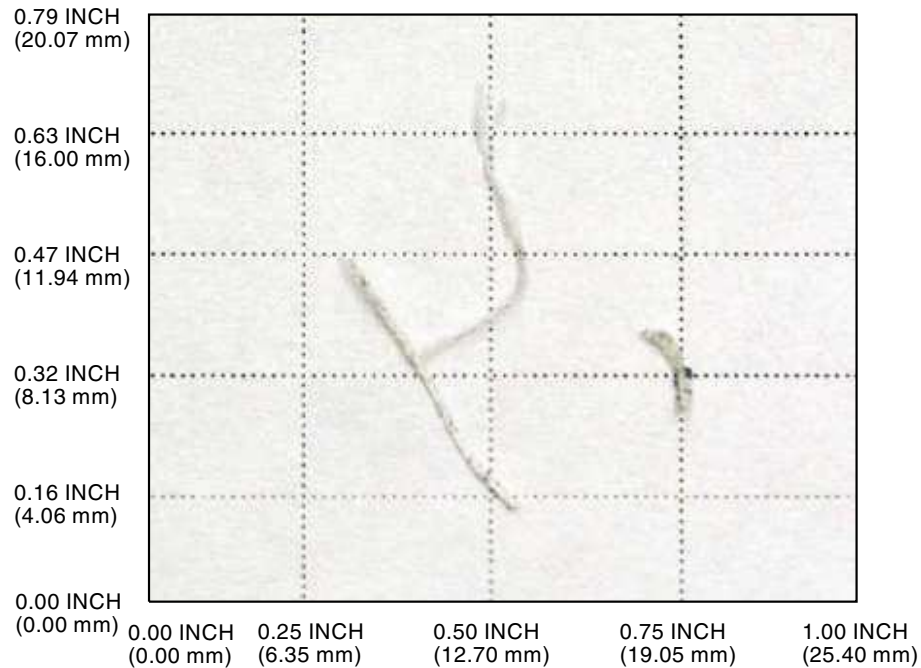
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D633AM101-SIA

79-00-00

Page 656
Sep 15/2022

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**



PTFE (TEFLON) SEAL 11

11 GENERAL CHARACTERISTICS

- NON-MAGNETIC
- APPEARANCE
 - NON-METALLIC – LIGHT-WEIGHT
 - LONG, THIN – STRIP
 - FLAT – CURLS

2900725 S0000692909_V1

**Disposition and Identification for Magnetic and Non-Magnetic Material Findings
Figure 606/79-00-00-990-813-G00 (Sheet 17 of 23)**

EFFECTIVITY
SIA ALL

D633AM101-SIA

79-00-00

Page 657
Sep 15/2022


KEY INSERT THREAD MATERIAL 12
12 **GENERAL CHARACTERISTICS**

- MAGNETIC
- APPEARANCE
 - METALLIC
 - SHARP EDGES
 - MACHINED CURLS
 - ELONGATED CURLS
 - SLIVER CHUNK

 ICNLEAP1B790000D5882800030A00101
 2967723 S0000747155_V1

Disposition and Identification for Magnetic and Non-Magnetic Material Findings
Figure 606/79-00-00-990-813-G00 (Sheet 18 of 23)

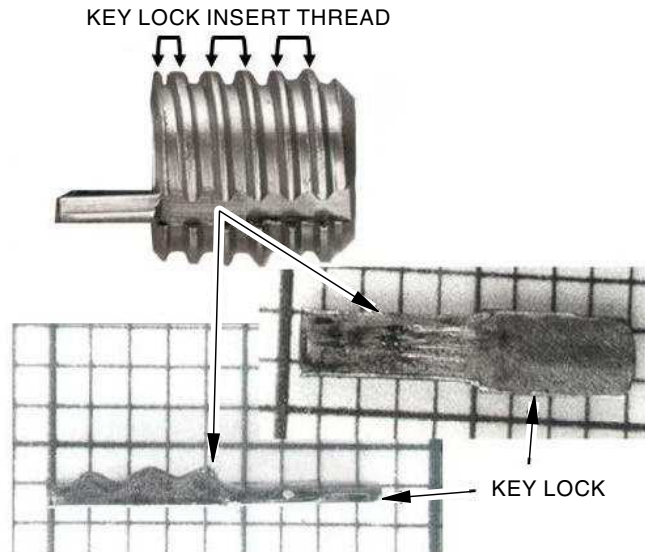
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D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-00-00
 Page 658
 Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



KEY LOCK INSERT MATERIAL 13

13 GENERAL CHARACTERISTICS

- MAGNETIC
- APPEARANCE
 - METALLIC
 - SHARP EDGES
 - FLAT PIECE WITH CASTELLATED PORTION

ICNLEAP1B790000D5882800031A00101

2967714 S0000747157_V1

Disposition and Identification for Magnetic and Non-Magnetic Material Findings
Figure 606/79-00-00-990-813-G00 (Sheet 19 of 23)

EFFECTIVITY
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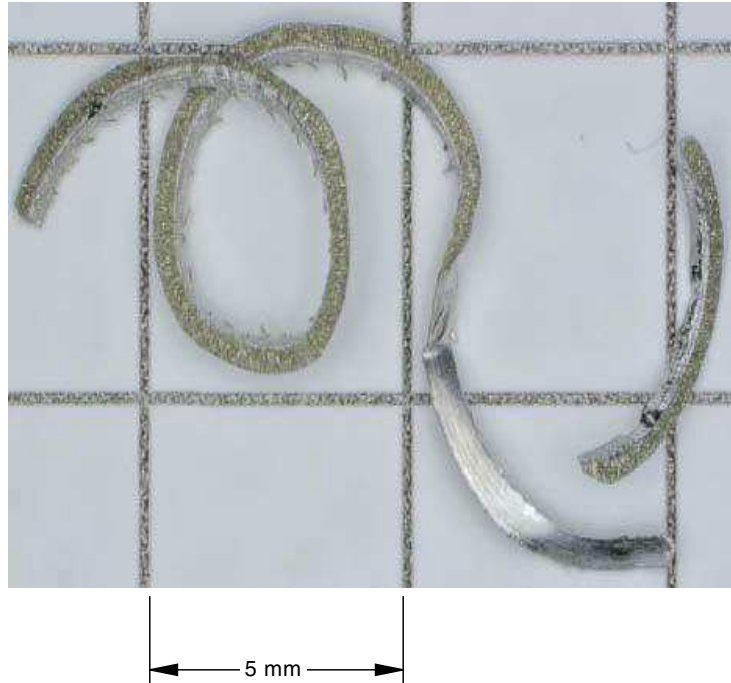
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-00-00

Page 659
Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



AGB OR TGB HOUSING THREAD 14

14 GENERAL CHARACTERISTICS

- NON MAGNETIC
- APPEARANCE:
 - METALLIC
 - SHARP EDGES
 - MACHINED CURLS
 - ELONGATED CURLS
 - SLIVER CHUNK

ICNLEAP1B790000D5882800032A00201

2967710 S0000747158_V2

Disposition and Identification for Magnetic and Non-Magnetic Material Findings
Figure 606/79-00-00-990-813-G00 (Sheet 20 of 23)

EFFECTIVITY
SIA ALL

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-00-00

Page 660
Sep 15/2023

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**O-RING** 1515 GENERAL CHARACTERISTICS

- NON-MAGNETIC
- APPEARANCE
 - NON-METALLIC
 - CHUNKS
 - DARK
 - BLACK
 - SOFT

ICNLEAP1B790000D5882800039A00101

2967708 S0000747159_V1

Disposition and Identification for Magnetic and Non-Magnetic Material Findings
Figure 606/79-00-00-990-813-G00 (Sheet 21 of 23)

EFFECTIVITY
SIA ALL

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-00-00

Page 661
Sep 15/2022



GLUE FROM OIL FILTER CARTRIDGE 16

16 GENERAL CHARACTERISTICS

- NON-MAGNETIC
- APPEARANCE
 - NON-METALLIC
 - ELONGATED FRAGMENTS
 - THIN
 - BRITTLE
 - BROWN PARTICLES

ICNLEAP1B790000D5882800040A00101

2967707 S0000747160_V1

Disposition and Identification for Magnetic and Non-Magnetic Material Findings
Figure 606/79-00-00-990-813-G00 (Sheet 22 of 23)

EFFECTIVITY
SIA ALL

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-00-00

Page 662
Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



LIGHT FUZZ



LIGHT-MODERATE FUZZ



MINOR METAL



MAJOR METAL

STARTER MAGNETIC CHIP DETECTOR FINDINGS 1717 GENERAL CHARACTERISTICS

- MAGNETIC
- APPEARANCE
 - METALLIC

ICNLEAP1B790000D5882800041A00101

2967702 S0000747161_V1

Disposition and Identification for Magnetic and Non-Magnetic Material Findings
Figure 606/79-00-00-990-813-G00 (Sheet 23 of 23)

EFFECTIVITY
SIA ALL

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-00-00

Page 663
Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

TASK 79-00-00-211-801-G00

7. Engine Oil System (Fluids (Fuel or Skydrol) and Solids Contamination) Detailed Inspection
 (Figure 607)

A. General

- (1) This task gives the instructions to examine the engine oil system for fluid (fuel or Skydrol) and solid contamination.

B. References

Reference	Title
12-13-11-170-801	Oil Tank Flushing (P/B 301)
12-13-11-600-801	Engine Servicing (Oil Replenishing) (P/B 301)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
79-21-01-000-801-G00	Main Fuel/Oil Heat Exchanger Removal (P/B 401)
79-21-01-400-801-G00	Main Fuel/Oil Heat Exchanger Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-193	Container
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
D00599 [CP2442]	Oil - Engine	
D00672 [CP5070]	Vaseline - Pure Mineral	V V-P-236
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CL A)
G02495 [CP8002]	Wire - Safety, 0.032 Inch (0.8 mm) Diameter	AMS5689

E. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

F. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

G. Prepare for the Inspection**SUBTASK 79-00-00-860-023-G00**

- (1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:
- (a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.
- 1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

EFFECTIVITY
 SIA ALL

79-00-00

D633AM101-SIA

Page 664
 May 15/2023

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

- (b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.
- 1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 79-00-00-010-003-G00

- (2) Do this task: Open the Fan Cowl Panels (Selection), TASK 71-11-04-010-801-G00.
- (a) On the applicable engine, open these access panels:

<u>Number</u>	<u>Name/Location</u>
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

H. Engine Oil System (Fluids (Fuel or Skydrol) and Solids Contamination) Detailed Inspection

SUBTASK 79-00-00-010-004-G00



BE CAREFUL WHEN YOU DO WORK ON THE ENGINE PARTS AFTER THE ENGINE IS STOPPED. THE ENGINE PARTS CAN STAY HOT FOR ALMOST ONE HOUR. DO NOT TOUCH HOT PARTS WITHOUT APPLICABLE GLOVES. HOT PARTS CAN CAUSE INJURIES TO PERSONNEL.



DO NOT OPEN THE OIL SYSTEM UNTIL THE PRESSURE GOES TO ZERO. THE PRESSURE GOES TO ZERO APPROXIMATELY 5 MINUTES AFTER AN ENGINE STOPS. A PRESSURIZED OIL SYSTEM CAN RELEASE A SPRAY OF HOT OIL THAT CAN BURN YOU.



DO NOT LET HOT OIL GET ON YOU. PUT ON CLOTHES, GOGGLES, AND OTHER EQUIPMENT FOR PROTECTION, OR LET THE ENGINE BECOME COOL. HOT OIL CAN BURN YOU.



DO NOT LET OIL STAY ON YOUR SKIN. YOU CAN ABSORB POISONOUS MATERIALS FROM THE OIL THROUGH YOUR SKIN.



DO NOT LET OIL GET ON THE ENGINE OR OTHER COMPONENTS. IMMEDIATELY CLEAN THE OIL WHEN IT FALLS ON THEM. OIL CAN CAUSE DAMAGE TO EQUIPMENT.

- (1) Drain a small quantity of oil from the oil tank [1]:
- Put a 1.32 gal (5.00 l) oil resistant container, STD-193 below the oil tank [1].
 - Cut the safety wire [5] from the drain plug [3].
 - Use a clean cotton wiper, G00034 to remove all contamination around the drain plug [3].
 - Remove the drain plug [3] from the oil tube [2].
 - Discard the preformed packing [4].
 - Drain a small quantity of oil into a clean sample bottle.
 - Put a protective cap to stop the drain.
 - Install the drain plug [3] on the oil tube [2]:

EFFECTIVITY
SIA ALL

D633AM101-SIA

79-00-00

Page 665
Jan 15/2023

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

- 1) Make sure that the mating faces are clean and clear of unwanted materials.
- 2) Lubricate the threads of the drain plug [3] with oil, D00599 [CP2442].
- 3) Lubricate the new preformed packing [4] with pure mineral vaseline, D00672 [CP5070].
- 4) Install the new preformed packing [4] in the groove on the drain plug [3].
- 5) Remove the protective cap from the oil tube [2].
- 6) Install the drain plug [3] on the oil tube [2].
- 7) Tighten the drain plug [3] to 177 in-lb (20 N·m) to 204 in-lb (23 N·m).
- 8) Install safety wire, G02495 [CP8002] on the drain plug [3].

SUBTASK 79-00-00-211-003-G00

- (2) Examine the oil sample for contamination.

SUBTASK 79-00-00-170-001-G00

- (3) If you find fluid (Skydrol) or solid contamination, do these steps:
 - (a) Flush the oil tank (TASK 12-13-11-170-801).
 - (b) Do the steps again to get the oil sample.
 - (c) If the sample is clear of contamination, return the engine to service.
 - (d) If the sample shows contamination, send the sample for contamination analysis.

SUBTASK 79-00-00-960-002-G00

- (4) If you find fuel in the engine oil, do these steps:
 - (a) Replace the main fuel/oil heat exchanger (TASK 79-21-01-000-801-G00 and TASK 79-21-01-400-801-G00).
 - (b) Flush the oil tank (TASK 12-13-11-170-801).
 - (c) Do the steps again to get the oil sample.
 - (d) If the sample shows contamination, flush the engine oil system again until the engine oil does not show contamination (TASK 12-13-11-170-801).

SUBTASK 79-00-00-610-002-G00

- (5) If you did not find any contamination, do this task: Engine Servicing (Oil Replenishing), TASK 12-13-11-600-801.

SUBTASK 79-00-00-100-001-G00

- (6) Clean the area and clear all tools and other items.

I. Put the Airplane Back to Its Usual Condition**SUBTASK 79-00-00-410-003-G00**

- (1) Do this task: Close the Fan Cowl Panels (Selection), TASK 71-11-04-410-801-G00.
 - (a) On the applicable engine, close these access panels:

<u>Number</u>	<u>Name/Location</u>
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

SUBTASK 79-00-00-860-024-G00

- (2) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

EFFECTIVITY
SIA ALL

79-00-00

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

- (a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.
- (b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

———— **END OF TASK** ————

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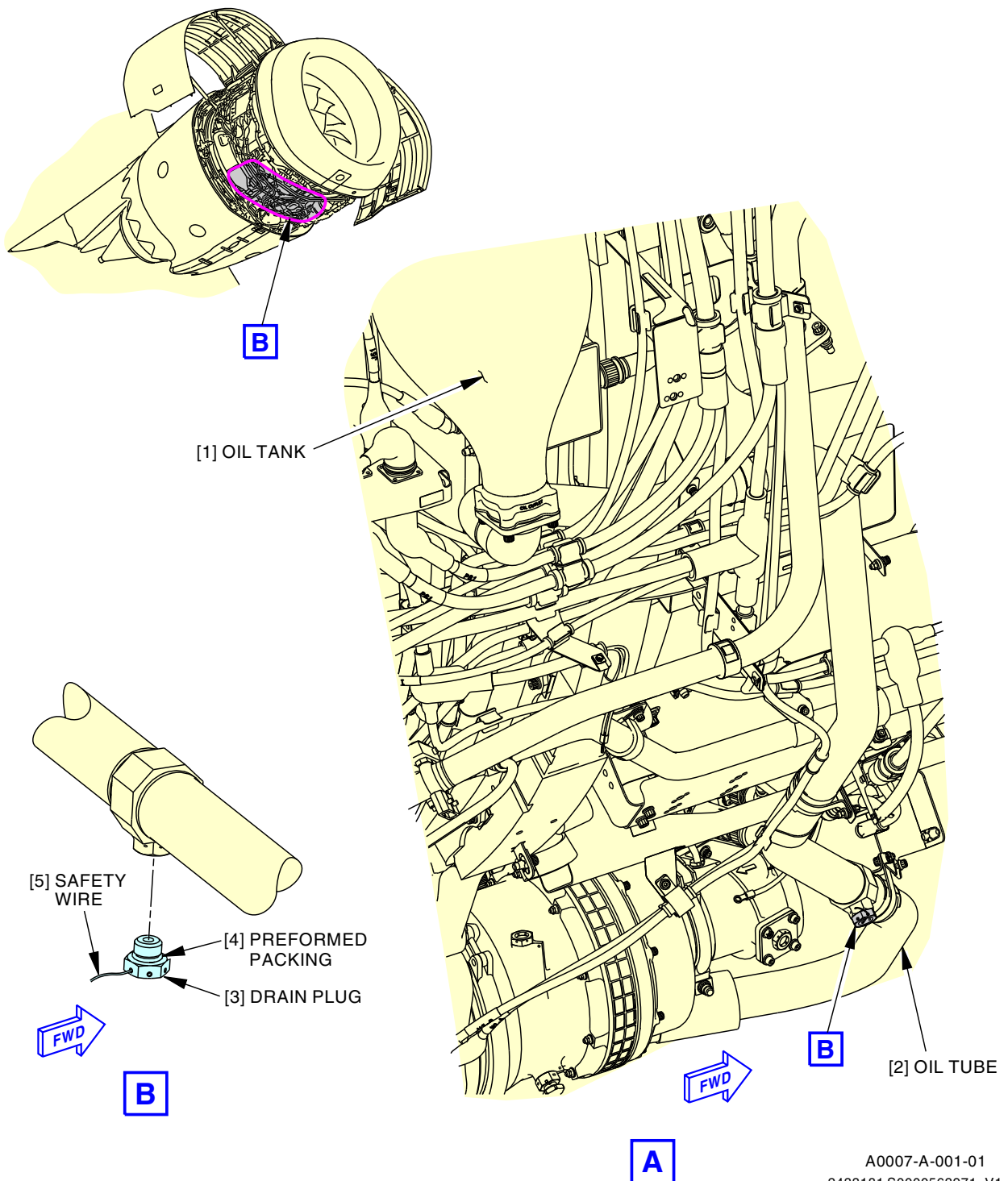
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-00-00

Page 667
Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



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Engine Oil System Fluids (Fuel or Skydrol) and Solids Contamination Detailed Inspection
Figure 607/79-00-00-990-803-G00

EFFECTIVITY
SIA ALL

79-00-00

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 668
Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

TASK 79-00-00-200-802-G00**8. Engine Oil System (Wear Metal Contamination) Inspection**

(Figure 608)

A. General

- (1) This task provides the instructions on how to remove engine oil for the oil system wear metal contamination inspection.

B. References

Reference	Title
12-13-11-600-801	Engine Servicing (Oil Replenishing) (P/B 301)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
D00599 [CP2442]	Oil - Engine	

E. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

F. Access Panels

Number	Name/Location
414AR	Oil Tank Access / Pressure Relief Door, Engine 1
424AR	Oil Tank Access / Pressure Relief Door, Engine 2

G. Prepare for the Inspection**SUBTASK 79-00-00-860-019-G00**

- (1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:
- (a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.
 - (b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 79-00-00-010-005-G00

- (2) Open the applicable access panels:

<u>Number</u>	<u>Name/Location</u>
414AR	Oil Tank Access / Pressure Relief Door, Engine 1
424AR	Oil Tank Access / Pressure Relief Door, Engine 2

EFFECTIVITY
 SIA ALL

D633AM101-SIA

79-00-00

Page 669
 May 15/2023

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

H. Engine Oil System (Wear Metal Contamination) Inspection

SUBTASK 79-00-00-010-006-G00



DO NOT TOUCH THE COMPONENTS OF THE OIL SYSTEM IF THE ENGINE IS HOT. THESE COMPONENTS STAY HOTTER THAN OTHER COMPONENTS. HOT COMPONENTS CAN BURN YOU.



DO NOT OPEN THE OIL SYSTEM UNTIL THE PRESSURE GOES TO ZERO. THE PRESSURE GOES TO ZERO APPROXIMATELY 5 MINUTES AFTER AN ENGINE STOPS. A PRESSURIZED OIL SYSTEM CAN RELEASE A SPRAY OF HOT OIL THAT CAN BURN YOU.



DO NOT LET THE OIL STAY ON YOUR SKIN. YOU CAN ABSORB POISONOUS MATERIALS FROM THE OIL THROUGH YOUR SKIN.



DO NOT LET OIL GET ON THE ENGINE OR OTHER COMPONENTS. IMMEDIATELY CLEAN THE OIL WHEN IT FALLS ON THEM. OIL CAN CAUSE DAMAGE TO EQUIPMENT.

- (1) Open the oil tank filler cap [2] as follows:
 - (a) Lift the oil tank filler cap handle [3] to the open position.
 - (b) Open the oil tank filler cap [2].

SUBTASK 79-00-00-280-001-G00

- (2) Use an oil sample kit to get an oil sample as follows:
 - (a) Push the siphon tube [5] down into the oil tank [1] until it touches the bottom of the oil strainer.

NOTE: Do not let the siphon tube stay against the bottom of the oil strainer. The siphon tube can become full with unwanted materials that are on the bottom of the oil strainer.
 - (b) Move the siphon tube [5] up slightly from the bottom of the strainer.
 - (c) Use a siphon procedure to remove a sample of the oil from the oil tank [1].
 - (d) Do these steps to get the oil sample with a siphon tube [5] and an attached plastic bottle [6] (Preferred Method):

NOTE: Oil sample kits come with a plastic bottle attached to a siphon tube or a siphon tube without the attached plastic bottle.

 - 1) Slowly compress the plastic bottle [6] with your hand to move the air out.
 - 2) Slowly release the hand pressure on the plastic bottle [6] to move oil up inside the siphon tube [5] and into plastic bottle [6].
 - 3) Remove the plastic bottle [6] and the siphon tube [5] from the oil tank [1].
 - 4) Put the end of the siphon tube [5] in the oil sample bottle.
 - 5) Slowly move the plastic bottle [6] until all the oil in the siphon tube [5] is in the oil sample bottle.
 - 6) Put a cap on the oil sample bottle and tighten the cap to seal the bottle.

EFFECTIVITY
SIA ALL

D633AM101-SIA

79-00-00

Page 670
Sep 15/2022

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

- 7) Discard the plastic bottle [6] and the siphon tube [5].

NOTE: Use a new plastic bottle and siphon tube with each oil sample. This will make sure that the oil sample shows the present condition of the oil.

- (e) Do these steps to get the oil sample with a siphon tube [5] without an attached plastic bottle [6] (Alternate Method):

NOTE: Oil sample kits come with a plastic bottle attached to a siphon tube or a siphon tube without the attached plastic bottle.

- 1) Put your thumb over the end of the siphon tube [5].
- 2) Remove the siphon tube [5] from the oil tank [1].
- 3) Put the end of the siphon tube [5] in the oil sample bottle.
- 4) Slowly remove your thumb from the end of the siphon tube [5] until all oil in the siphon tube [5] is in the oil sample bottle.
- 5) Put a cap on the oil sample bottle and tighten it to seal the bottle.
- 6) Discard the siphon tube [5].

NOTE: Use a new siphon tube with each oil sample. This will make sure that the oil sample shows the present condition of the oil.

SUBTASK 79-00-00-970-001-G00

- (3) Write the quantity of oil added for the oil consumption check on a oil consumption sheet.

SUBTASK 79-00-00-610-001-G00

- (4) If it is necessary, replenish engine oil (Engine Servicing (Oil Replenishing), TASK 12-13-11-600-801).

SUBTASK 79-00-00-970-002-G00

- (5) Make sure that you write the data that follows on the label for oil sample bottle:

NOTE: Make sure that you keep a copy of the label information before you send the sample to the laboratory.

- (a) The airplane registration number
- (b) The engine S/N
- (c) The engine position
- (d) The date of the sample
- (e) The (type and quantity) of oil that is added.

SUBTASK 79-00-00-910-002-G00

- (6) Send the sample to the laboratory as soon as possible to get good results.

SUBTASK 79-00-00-410-004-G00

- (7) Close the oil tank filler cap [2] as follows:

- (a) Examine the preformed packing [4] for damage.
- (b) If you find damage, replace the preformed packing [4] as follows:
 - 1) Remove the preformed packing [4] from the groove of the oil tank filler cap [2].
 - 2) Lubricate a new preformed packing [4] with engine oil, D00599 [CP2442].
 - 3) Install the new preformed packing [4] in the groove of the oil tank filler cap [2].
- (c) Push the oil tank filler cap handle [3] to the CLOSED position.
- (d) Make sure that the oil tank filler cap [2] is tightly closed and locked.

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

SUBTASK 79-00-00-160-002-G00

- (8) Clean the work area and remove the tools you use for the task.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 79-00-00-410-005-G00

- (1) Close the applicable access panels:

<u>Number</u>	<u>Name/Location</u>
414AR	Oil Tank Access / Pressure Relief Door, Engine 1
424AR	Oil Tank Access / Pressure Relief Door, Engine 2

- (a) Make sure the latches are fully closed.

- 1) Press the aft "PUSH CLOSE" button to fully close the latch.
- 2) If the latch appears to be jammed in the fully open position and does not close, press the forward "PUSH OPEN" button to reset the latch.

NOTE: Do not use a prying tool to force the latch closed.

- 3) Repeat the steps as necessary to fully close the latch.

NOTE: The latch may not close if the aft "PUSH CLOSE" button is released before the latch is fully closed.

SUBTASK 79-00-00-860-020-G00

- (2) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:
- (a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.
 - (b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

———— **END OF TASK** ————

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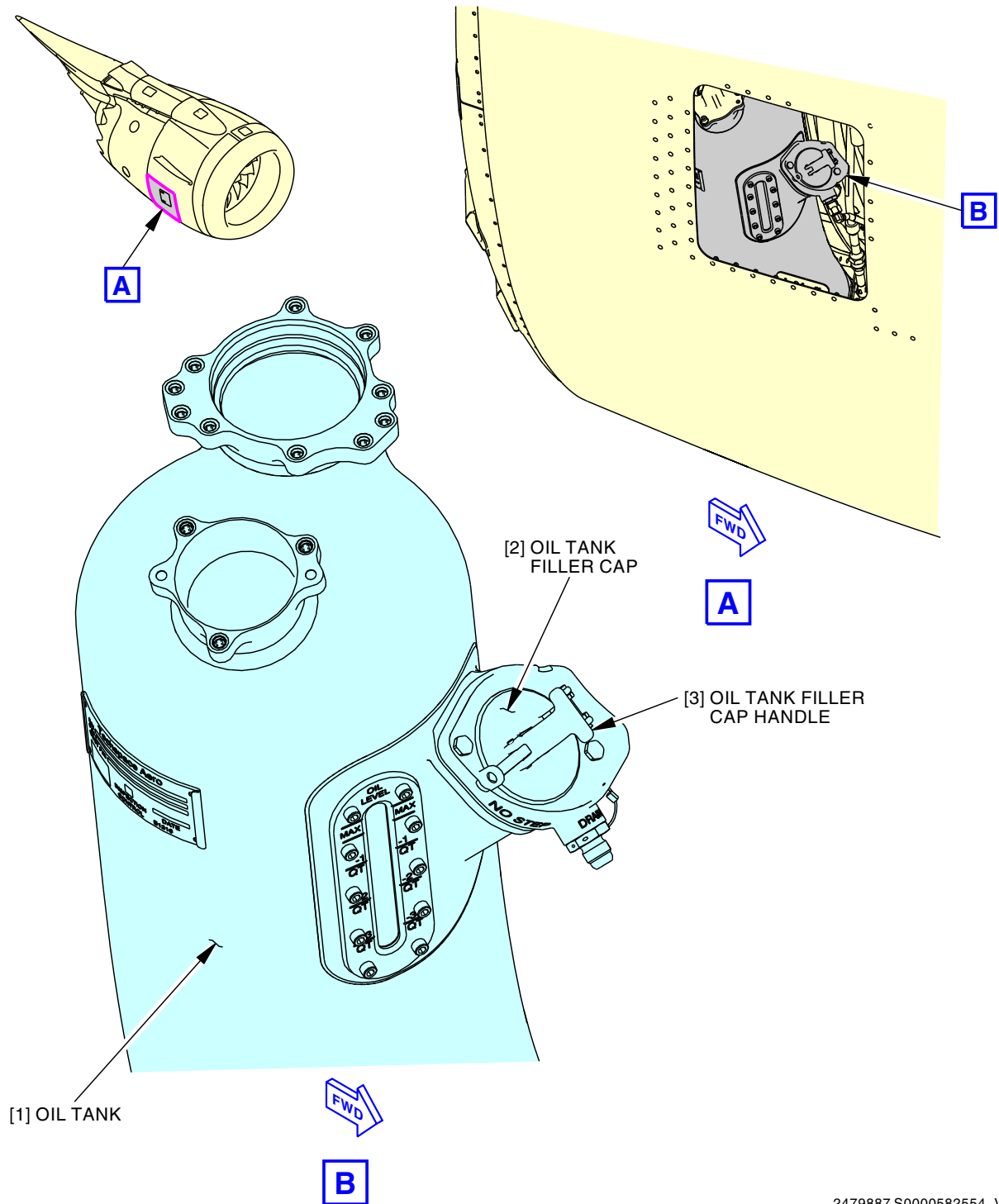
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 672
Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



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Engine Oil System (Wear Metal Contamination) Inspection
Figure 608/79-00-00-990-810-G00 (Sheet 1 of 2)

EFFECTIVITY
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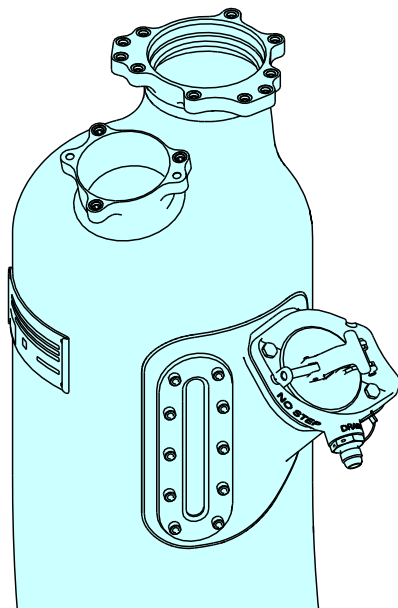
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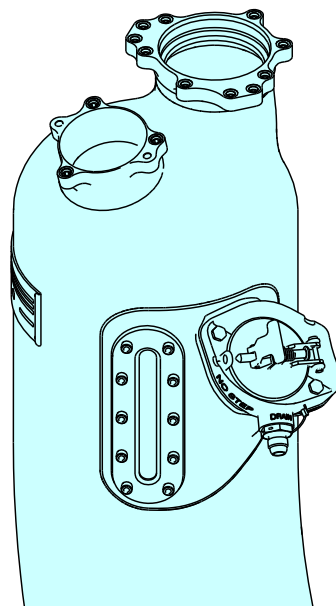
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Page 673
Sep 15/2022

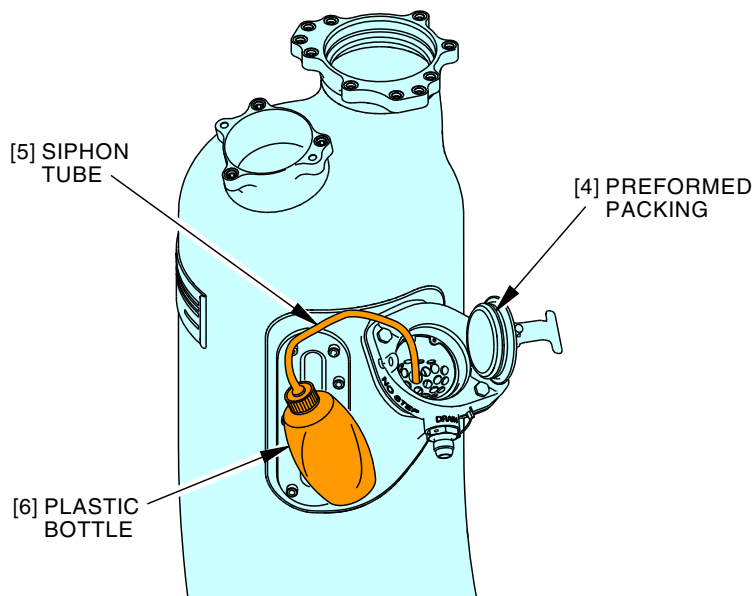
737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



**FILLER CAP HANDLE
(IN LOCKED POSITION)**



**FILLER CAP HANDLE
(IN UNLOCKED POSITION)**



**FILLER CAP
(OPEN)**

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Engine Oil System (Wear Metal Contamination) Inspection
Figure 608/79-00-00-990-810-G00 (Sheet 2 of 2)

EFFECTIVITY
SIA ALL

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-00-00

Page 674
Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

TASK 79-00-00-200-803-G00**9. ODMS Fault Check****A. General**

- (1) This task provides the instructions on how to do a message fault check of the Oil Debris Monitoring System (ODMS).

B. References

Reference	Title
46-13-00-480-801	Maintenance Laptop Connection (P/B 201)
46-13-02-700-806	Fault History Check (P/B 201)
73-21-00-800-801-G00	EEC Maintenance Power Selection (P/B 201)
IFIM and do the applicable procedure(s)	Interactive Fault Isolation Manual

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt.", which stands for Optional.

Reference	Description
SPL-11321	Device - Universal Maintenance (UMD) Part #: G45004-3 Supplier: 81205 Part #: G45004-31 Supplier: 81205 Opt Part #: G45003-3 Supplier: 81205 Opt Part #: G45004-1 Supplier: 81205

D. Location Zones

Zone	Area
211	Flight Compartment - Left

E. Prepare for the Check**SUBTASK 79-00-00-860-025-G00**

- (1) If you use the Multi-Function Display (MFD) to do the fault test, do these steps:
- Set the applicable EEC MAINT POWER switch on the MISC SYSTEM CTRLS page on the MFD to the TEST position (TASK 73-21-00-800-801-G00).
 - Select the L or C on the MAINTENANCE/BITE PANEL (P61).

SUBTASK 79-00-00-480-001-G00

- (2) If you do the test with a Portable Maintenance Device (PMD), do this task: Maintenance Laptop Connection, TASK 46-13-00-480-801.

F. ODMS Fault Check**SUBTASK 79-00-00-280-002-G00**

- (1) If you use the MAX Display System (MDS) display, do the fault check as follows:
- Use the tabber device on the maintenance/BITE panel (P61) and select the ONBD MAINT on the MAX display.
 - Select the FAULT HISTORY from the EXTENDED MAINT menu (TASK 46-13-02-700-806).
 - Do a check for one or more maintenance messages in chapter 71-80 left or right engine in the last three flight legs (LEG 0, LEG-1 and LEG-2).
 - If you see a fault message, do the IFIM and do the applicable procedure(s).

EFFECTIVITY
SIA ALL

79-00-00

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 675
Sep 15/2023

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

- (d) After the check, exit the maintenance menu on the MDS.

SUBTASK 79-00-00-280-003-G00

- (2) If you use a portable universal maintenance device, SPL-11321, do the fault check as follows (TASK 46-13-02-700-806):
- (a) Select the Onboard Maintenance Function (OMF).
 - (b) From the onboard maintenance menu, select EXTENDED MAINTENANCE.
 - (c) From the extended maintenance menu select FAULT HISTORY for chapter 71-80 left or right engine.
 - (d) Do a check for one or more maintenance messages in the last three flight legs (LEG 0, LEG-1 and LEG-2).
 - 1) If you see a fault message, do the IFIM and do the applicable procedure(s).
 - (e) After the check, exit the maintenance menu on the laptop.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 79-00-00-080-002-G00

- (1) If it is necessary, disconnect the Ethernet connection from the Onboard Network System (ONS).

SUBTASK 79-00-00-080-003-G00

- (2) If it is necessary, disconnect the portable universal maintenance device, SPL-11321.

— END OF TASK —

TASK 79-00-00-200-804-G00

10. Drain Tubes Inspection and Cleaning

(Figure 609, Figure 610, Figure 611)

A. General

- (1) This task gives instructions to examine the drain tubes for the coking condition.

B. References

Reference	Title
73-11-05-000-801-G00	Fuel Nozzle Removal (P/B 401)
73-11-05-400-801-G00	Fuel Nozzle Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Prepare for the Inspection

SUBTASK 79-00-00-210-014-G00

- (1) Do these steps to make sure that the ENGINE START switch and START LEVER switch are not operated:
- (a) On the P5 overhead panel, make sure the applicable ENGINE START switch is in the OFF position.

EFFECTIVITY
SIA ALL

79-00-00

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 676
Sep 15/2022

737-7/8/8200/9/10 AIRCRAFT MAINTENANCE MANUAL

- 1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.
- (b) On the P10 control stand, make sure that the applicable START LEVER switch is in the CUTOFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

F. Drain Tubes Inspection

SUBTASK 79-00-00-200-007-G00

- (1) Criteria for oil coke build-up:
 - (a) The oil coke build-up inside the drain tubes is not acceptable and must be cleaned if at least one section of any length of one tube:
 - 1) is covered 360° by oil coke build-up (brown surface varnish is accepted), or
 - 2) is not circular anymore because of one-sided heavy oil coke build-up.
 - (b) Refer to Figure 610 and Figure 611 for acceptable and non-acceptable conditions.

SUBTASK 79-00-00-211-011-G00

- (2) B-sump drain
 - (a) Find the B-sump drain port in the core drain mast [1] (View A, Figure 609).
 - (b) Put the BSI (Borescope Inspection) equipment into the engine through the B-Sump drain mast port.

NOTE: A 4-mm borescope tip is the recommended size to do the BSI procedure. A 6-mm borescope tip is the maximum size that can be used to do the BSI procedure.
 - (c) Do a BSI up the B-sump drain through the B-sump external main drain oil tube [2] and B-sump internal main drain oil tube [3] until reaching the B-sump cavity to examine for oil coke build-up, do the following steps (View C, Figure 609):
 - 1) If oil coke build-up is acceptable (defined in F.(1)) in the sections of the B-sump external main drain oil tube [2] and B-sump internal main drain oil tube [3] to the B-sump cavity, the inspection is complete and continued operation is permitted.

NOTE: Small oil traces on the Inside Diameter (ID) of the B-sump external main drain oil tube [2] and B-sump internal main drain oil tube [3] are permitted.

 - a) Do the steps in the Put the Airplane Back to Its Usual Condition paragraph.
 - 2) If oil coke build-up is not acceptable (defined in F.(1)) in the sections of the B-sump external main drain oil tube [2] and/or of the B-sump internal main drain oil tube [3] to the B-sump cavity, do the following steps:
 - a) Remove the B-sump external main drain oil tube [2] (TASK 73-11-05-000-801-G00).
 - b) Clean oil coke build-up in the ID of the removed B-sump external main drain oil tube [2] with a nylon tube brush.
 - c) Encase the steel wire elements of the nylon tube brush with rubber or plastic coating to prevent scratching.
 - d) Clean oil coke build-up in the ID of the B-sump internal main drain oil tube [3] with a nylon tube brush. If it is possible, try to remove oil coke build-up out of the B-sump internal main drain oil tube [3] and do not push it in the engine.
 - e) Do a BSI or a visual inspection to make sure that oil coke build-up in the B-sump internal main drain oil tube [3] is acceptable up to the B-sump cavity.

NOTE: Small oil traces on the ID of the B-sump internal main drain oil tube [3] are permitted.

EFFECTIVITY
SIA ALL

D633AM101-SIA

79-00-00

Page 677
Sep 15/2023

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

- f) If there is unwanted material found or if coke build-up is still not acceptable, do steps F(2).2).d and F(2).2).e again.
- g) Install the B-sump external main drain oil tube [2]
(TASK 73-11-05-400-801-G00).

SUBTASK 79-00-00-211-012-G00

(3) C-sump drain

- (a) Find the C-Sump drain port in the core drain mast [1] (View A, Figure 609).
- (b) Put the BSI equipment into the engine through the C-sump drain mast port.

NOTE: A 4-mm borescope tip is the recommended size to do the BSI procedure. A 6-mm borescope tip is the maximum size that can be used to do the BSI procedure.

- (c) Do a BSI up the C-sump drain through the C-sump external main drain oil tube [4] and C-sump internal main drain oil tube [5] until reaching the C-sump cavity to examine for oil coke build-up (View C, Figure 609).

- 1) If oil coke build-up is acceptable (defined in F.(1)) in the sections of the C-sump external main drain oil tube [4] and C-sump internal main drain oil tube [5] to the C-sump cavity, the inspection is complete and continued operation is permitted.

NOTE: Small oil traces on the ID of the C-sump external main drain oil tube [4] and C-sump internal main drain oil tube [5] are permitted.

- 2) If oil coke build-up is not acceptable (defined in F.(1)) in the sections of the C-sump external main drain oil tube [4] and/or of the C-sump internal main drain oil tube [5] to the C-sump cavity, do the following steps:

- a) Remove the C-sump external main drain oil tube [4]
(TASK 73-11-05-000-801-G00).

- b) Clean oil coke build-up in the ID of the removed C-sump external main drain oil tube [4] with a nylon tube brush.

<1> Encase the steel wire elements of the nylon tube brush with rubber or plastic coating to prevent scratching.

- c) Clean oil coke build-up in the ID of the C-sump internal main drain oil tube [5] with a nylon tube brush. If it is possible, try to remove oil coke build-up out of the C-sump internal main drain oil tube [5] and do not push it in the engine.

- d) Do a BSI or a visual inspection to make sure that oil coke build-up in the C-sump internal main drain oil tube [5] is acceptable up to the C-sump cavity.

NOTE: Small oil traces on the ID of the C-sump internal main drain oil tube [5] are permitted.

- e) If there is unwanted material found or if coke build-up is still not acceptable, do steps F(3).2).d and F(3).2).e again.

- f) Install the C-sump external main drain oil tube [4]
(TASK 73-11-05-400-801-G00).

SUBTASK 79-00-00-211-013-G00

(4) Auxiliary drain

- (a) Find the Auxiliary drain port in the core drain mast [1] (View A, Figure 609).
- (b) Put the BSI equipment into the engine through the Auxiliary drain mast port.

NOTE: A 4-mm borescope tip is the recommended size to do the BSI procedure. A 6-mm borescope tip is the maximum size that can be used to do the BSI procedure.

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

- (c) Do a BSI up the Auxiliary drain through the auxiliary external main drain oil tube [6] and auxiliary internal main drain oil tube [7] until reaching the Turbine Center Frame (TCF) cavity to examine for oil coke build-up, do the following steps (View C, Figure 609):
- 1) If oil coke build-up is acceptable (defined in F.(1)) in the sections of the auxiliary external main drain oil tube [6] and the auxiliary internal main drain oil tube [7] to the TCF cavity, the inspection is complete and continued operation is permitted.

NOTE: Small oil traces on the ID of the auxiliary external main drain oil tube [6] and auxiliary internal main drain oil tube [7] are permitted.
 - 2) If oil coke build-up is not acceptable (defined in F.(1)) in the sections of the auxiliary external main drain oil tube [6] and/or of the auxiliary internal main drain oil tube [7] to the TCF cavity, do the following steps:
 - a) Remove the auxiliary external main drain oil tube [6]
(TASK 73-11-05-000-801-G00).
 - b) Clean oil coke build-up in the ID of the removed auxiliary external main drain oil tube [6] with a nylon tube brush.

<1> Encase the steel wire elements of the nylon tube brush with rubber or plastic coating to prevent scratching.
 - c) Clean oil coke build-up in the ID of the auxiliary internal main drain oil tube [7] with a nylon tube brush. If it is possible, try to remove oil coke build-up out of the auxiliary internal main drain oil tube [7] and do not push it in the engine.
 - d) Do a BSI or a visual inspection to make sure that oil coke build-up in the auxiliary internal main drain oil tube [7] is acceptable up to the TCF cavity.

NOTE: Small oil traces on the ID of the auxiliary internal main drain oil tube [7] are permitted.
 - e) If there is unwanted material found or if coke build-up is still not acceptable, do steps F(4).2.d and F(4).2.e again.
 - f) Install the auxiliary external main drain oil tube [6]
(TASK 73-11-05-400-801-G00).

G. Put the Airplane Back to Its Usual Condition

SUBTASK 79-00-00-840-001-G00

- (1) Do these steps to remove the DO NOT OPERATE tag, from the applicable ENGINE START switch and START LEVER switch:
 - (a) On the P5 overhead panel, remove the DO NOT OPERATE tag, from the applicable ENGINE START switch.
 - (b) On the P10 control stand, remove the DO NOT OPERATE tag, from the applicable START LEVER switch.

————— **END OF TASK** —————

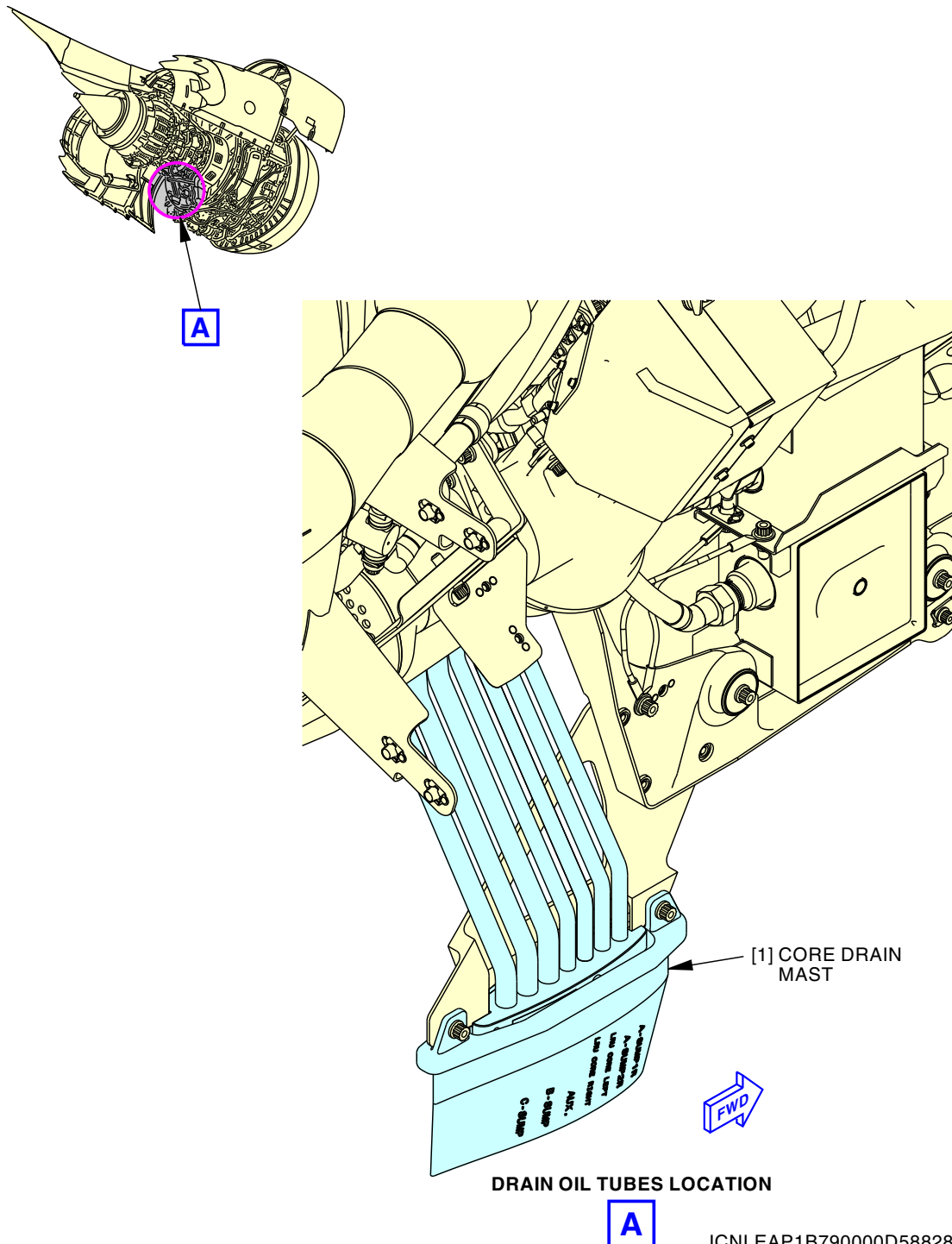
EFFECTIVITY
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D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-00-00

Page 679
Sep 15/2023


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 2978262 S0000756494_V1

Drain Oil Tubes Inspection
 Figure 609/79-00-00-990-814-G00 (Sheet 1 of 2)

 EFFECTIVITY
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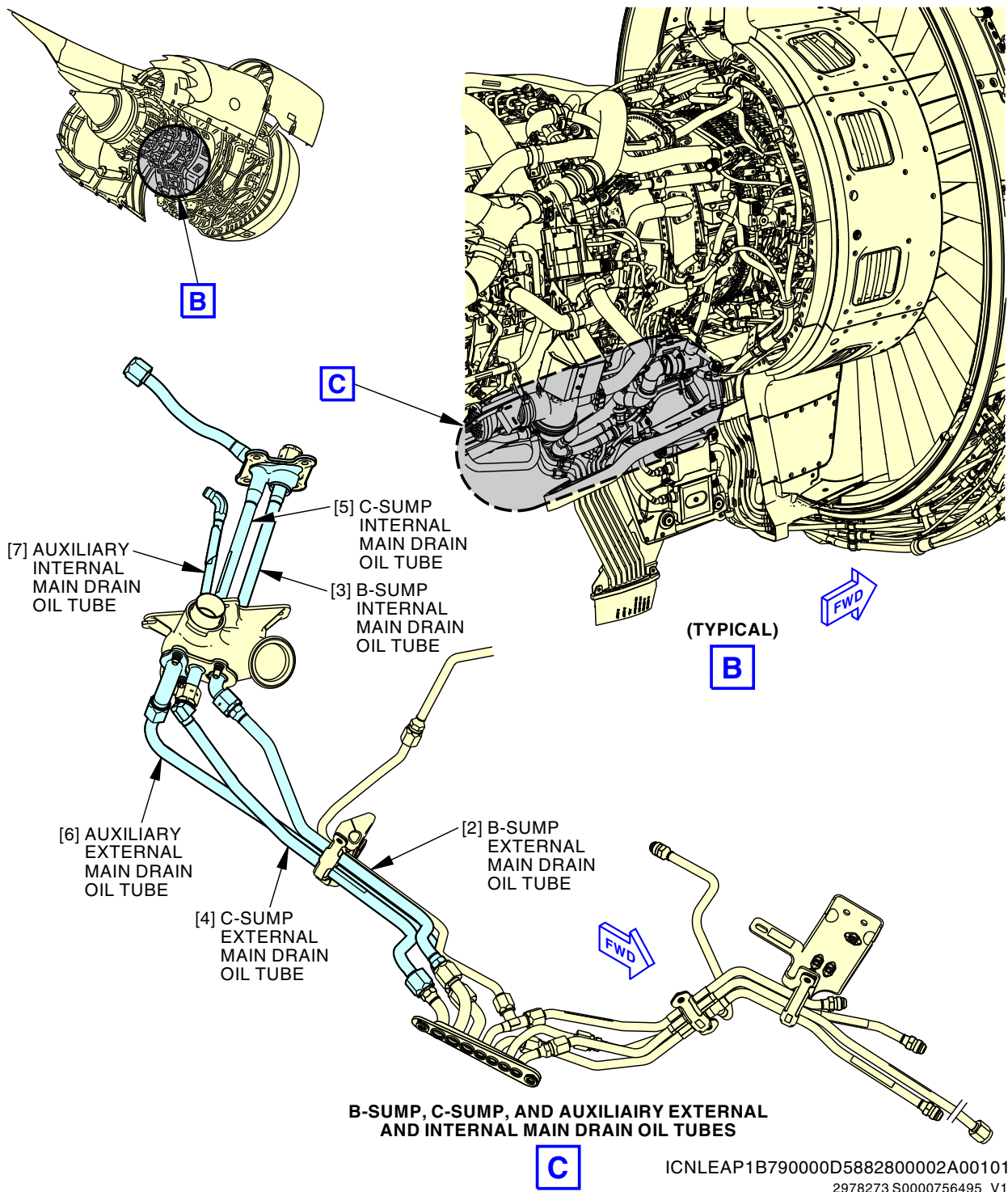
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D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

 Page 680
 Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



Drain Oil Tubes Inspection
Figure 609/79-00-00-990-814-G00 (Sheet 2 of 2)

EFFECTIVITY
SIA ALL

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-00-00

Page 681
Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

**BROWN SURFACE VARNISH EXAMPLE
(ACCEPTABLE CONDITION)**

2978275 S0000756503_V1

**Brown Surface Varnish Inspection
Figure 610/79-00-00-990-815-G00**

EFFECTIVITY
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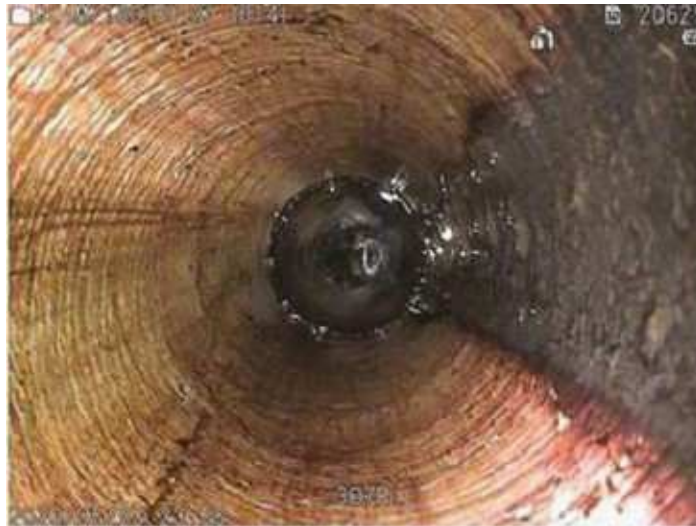
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-00-00

Page 682
Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



**ONE-SIDED COKE BUILD-UP EXAMPLE
(ACCEPTABLE CONDITION)**



**ONE-SIDED HEAVY COKE BUILD-UP EXAMPLES
(NON-ACCEPTABLE CONDITION)**

2978276 S0000756515_V1

**One-sided Build-up Inspection
Figure 611/79-00-00-990-816-G00**

EFFECTIVITY
SIA ALL

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-00-00

Page 683
Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

ENGINE OIL - DDG MAINTENANCE PROCEDURES

1. General

- A. This procedure has the maintenance tasks for the Master Minimum Equipment List (MMEL) maintenance requirements as shown in the Dispatch Deviations Guide (DDG). These tasks prepare the airplane for flight with components that are inoperative.
- B. This procedure also has the tasks that put the airplane back to its usual condition.
- C. This procedure has these tasks:
 - (1) DDG 79-21-01 Engine Oil Debris Monitoring System Inoperative - Preparation
 - (2) DDG 79-31-01 Oil Quantity Indicating Systems Inoperative - Preparation.

TASK 79-00-00-040-802-G00

2. DDG 79-31-01 Oil Quantity Indicating Systems Inoperative - Preparation

A. General

- (1) This task gives the maintenance steps which prepare the airplane for flight with the engine oil quantity indication systems inoperative.

B. References

Reference	Title
12-13-11-600-801	Engine Servicing (Oil Replenishing) (P/B 301)
71-00-00-800-802-G00	Engine Operation Limits (P/B 201)

C. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

D. Oil Quantity Indicating Systems Inoperative

SUBTASK 79-00-00-612-001-G00

- (1) Before each departure, do the steps that follows:
 - (a) Examine the oil level (TASK 71-00-00-800-802-G00).
 - (b) If necessary, fill the engine oil tank to the recommended capacity (TASK 12-13-11-600-801).
 - 1) Within 30 minutes of the engine shutdown, replenish the engine oil tank again if necessary (TASK 12-13-11-600-801).
 - (c) Visually examine the applicable engine area for the sign of oil leakage.
 - (d) Review engine records and verify that the oil usage is within the engine manufacturer's limits or operator's approved limits (if more restrictive).

SUBTASK 79-00-00-800-001-G00

- (2) Do a check of the aircraft flight log to make sure that no faults were recorded which relate to the oil pressure and oil temperature indications and that the indications were within limits shown in Engine Operation Limits, TASK 71-00-00-800-802-G00.

———— **END OF TASK** ————

EFFECTIVITY
SIA ALL

79-00-00

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 901
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

TASK 79-00-00-040-804-G00**3. DDG 79-21-01 Engine Oil Debris Monitoring System Inoperative - Preparation****A. General**

- (1) This task gives the maintenance steps which prepare the airplane for flight with the engine Oil Debris Monitoring System (ODMS) inoperative.

B. References

Reference	Title
31-65-00-750-801	Fault Interrogation for a Maintenance Message (P/B 201)
79-00-00-210-804-G00	Oil Debris Monitoring System Sensor Inspection (P/B 601)

C. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

D. Engine Oil Debris Monitoring System Inoperative**SUBTASK 79-00-00-200-002-G00**

- (1) Do the following task to make sure that the malfunction is in the applicable engine ODMS:
- (a) Oil Debris Monitoring System Sensor Inspection, TASK 79-00-00-210-804-G00.
- (2) If the engine oil system inspections show no contaminants, then the malfunction is in the ODMS.
- (3) If it is necessary, extinguish the MAINT light on the P5-1 panel. Do this task: Fault Interrogation for a Maintenance Message, TASK 31-65-00-750-801.

———— **END OF TASK** ————

EFFECTIVITY
 SIA ALL

79-00-00

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 902
 Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

OIL TANK - REMOVAL/INSTALLATION

1. General

A. This procedure has two tasks:

- (1) Oil tank removal
- (2) Oil tank installation.

TASK 79-11-01-000-801-G00

2. Oil Tank Removal

(Figure 401)

A. General

- (1) This task gives the instructions on how to remove the oil tank.

B. References

Reference	Title
12-13-11-600-803	Engine Oil Change Servicing (P/B 301)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
79-21-21-000-801-G00	Air Oil Separator Removal (P/B 401)
79-31-01-000-801-G00	Oil Level Sensor Removal (P/B 401)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE
STD-1055	Container - Oil Resistant, 5 Gallon (19 Liter)

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

F. Prepare for the Removal

SUBTASK 79-11-01-860-001-G00

- (1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:
 - (a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.
 - (b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 79-11-01-010-001-G00

- (2) On the applicable engine, open the right fan cowl panel (TASK 71-11-04-010-801-G00).

EFFECTIVITY
SIA ALL

79-11-01

D633AM101-SIA

Page 401
Jan 15/2023

737-7/8/8200/9/10 AIRCRAFT MAINTENANCE MANUAL

- (a) Open these access panels:

<u>Number</u>	<u>Name/Location</u>
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

G. Oil Tank Removal

SUBTASK 79-11-01-680-001-G00



WARNING

BE CAREFUL WHEN YOU DO WORK ON THE ENGINE PARTS AFTER THE ENGINE IS STOPPED. THE ENGINE PARTS CAN STAY HOT FOR ALMOST ONE HOUR. DO NOT TOUCH HOT PARTS WITHOUT APPLICABLE GLOVES. HOT PARTS CAN CAUSE INJURIES TO PERSONNEL.



WARNING

DO NOT OPEN THE OIL SYSTEM UNTIL THE PRESSURE GOES TO ZERO. THE PRESSURE GOES TO ZERO APPROXIMATELY 5 MINUTES AFTER AN ENGINE STOPS. A PRESSURIZED OIL SYSTEM CAN RELEASE A SPRAY OF HOT OIL THAT CAN BURN YOU.



WARNING

DO NOT LET HOT OIL GET ON YOU. PUT ON CLOTHES, GOGGLES, AND OTHER EQUIPMENT FOR PROTECTION, OR LET THE ENGINE BECOME COOL. HOT OIL CAN BURN YOU.



WARNING

DO NOT LET THE OIL STAY ON YOUR SKIN. YOU CAN ABSORB POISONOUS MATERIALS FROM THE OIL THROUGH YOUR SKIN.



CAUTION

DO NOT LET OIL GET ON THE ENGINE OR OTHER COMPONENTS. IMMEDIATELY CLEAN THE OIL WHEN IT FALLS ON THEM. OIL CAN CAUSE DAMAGE TO EQUIPMENT.

- (1) Drain the oil tank [1] as follows:
 - (a) Put the oil resistant container (5 gal)(19 Liter), STD-1055 below the oil tank [1].
 - (b) Drain the oil tank [1] (TASK 12-13-11-600-803).

SUBTASK 79-11-01-020-001-G00

- (2) Do this task: Air Oil Separator Removal, TASK 79-21-21-000-801-G00.

SUBTASK 79-11-01-010-002-G00

- (3) Do this task: Oil Level Sensor Removal, TASK 79-31-01-000-801-G00.

SUBTASK 79-11-01-020-002-G00

- (4) If necessary, disconnect the scupper drain tube [4] from the oil tank [1] as follows:
 - (a) Cut and remove the safety wire [6] from the coupling nut [5] of the scupper drain tube [4].
 - (b) Loosen the coupling nut [5] of the scupper drain tube [4].
 - (c) Disconnect the scupper drain tube [4] from the oil tank [1].
 - (d) Install the protective caps on the openings.

SUBTASK 79-11-01-020-003-G00

- (5) Disconnect the oil tube [8] from the oil tank [1] as follows:

NOTE: Be careful. There is approximately 0.13 gal (0.5 liter) of oil remain in the oil tank [1].

EFFECTIVITY
SIA ALL

79-11-01

D633AM101-SIA

Page 402
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

- (a) Remove the four bolts [9] from the oil tube [8].
- (b) Disconnect the oil tube [8] from the oil tank [1].
- (c) Remove and discard the gasket seal [10] from the oil tube [8].
- (d) Install the protective caps on the openings.

SUBTASK 79-11-01-020-004-G00

- (6) Disconnect the drain tube [11] from the oil tank [1] as follows:
 - (a) Loosen the coupling nut [12] of the drain tube [11].
 - (b) Remove the bolt [13] from the clamp [14] that attaches the drain tube [11] to the bracket [15].
 - (c) Remove the bolt [16] from the clamp [17] that attaches the drain tube [11] to the bracket [18].
 - (d) Remove the bolt [19] from the clamp [20] that attaches the drain tube [11] to the bracket [21].
 - (e) Install the protective caps on the openings.

SUBTASK 79-11-01-020-005-G00

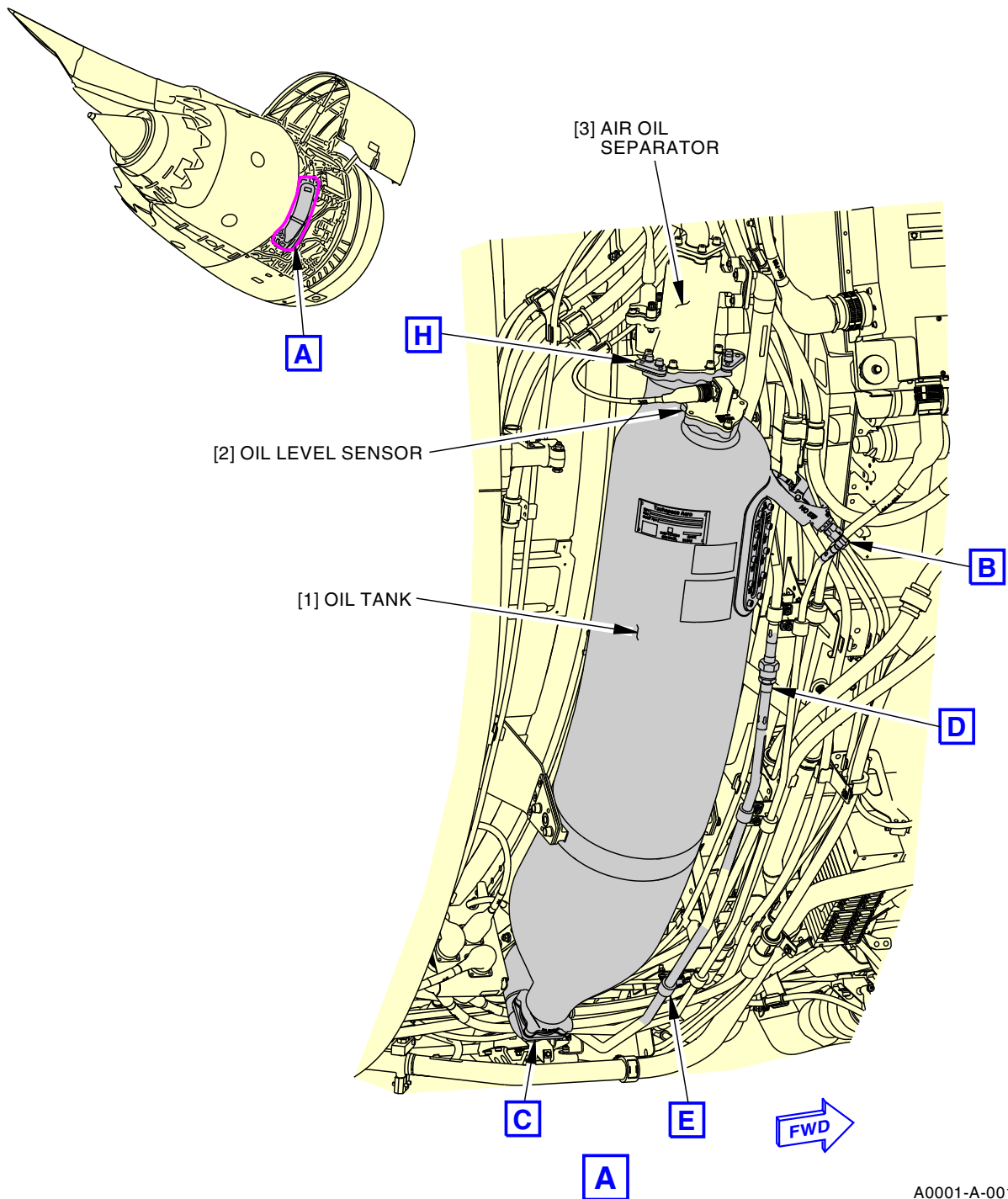
- (7) Remove the oil tank [1] from the mounting bracket [23], the mounting bracket [25], and the mounting bracket [27] as follows:

NOTE: It is necessary for two people to do this procedure.

- (a) Remove the two bolts [22] that attach the oil tank [1] to the mounting bracket [23].
- (b) Remove the two bolts [24] that attach the oil tank [1] to the mounting bracket [25].
- (c) Loosen, but do not remove the four bolts [28] that attach the mounting bracket [25] to the engine.
- (d) Remove the four bolts [26] that attach the oil tank [1] to the mounting bracket [27].
- (e) Remove the oil tank [1] from the engine.
- (f) Install the protective covers on the openings.

———— **END OF TASK** ————

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



A0001-A-001-01
2355319 S00061517005_V4

Oil Tank Installation
Figure 401/79-11-01-990-801-G00 (Sheet 1 of 7)

EFFECTIVITY
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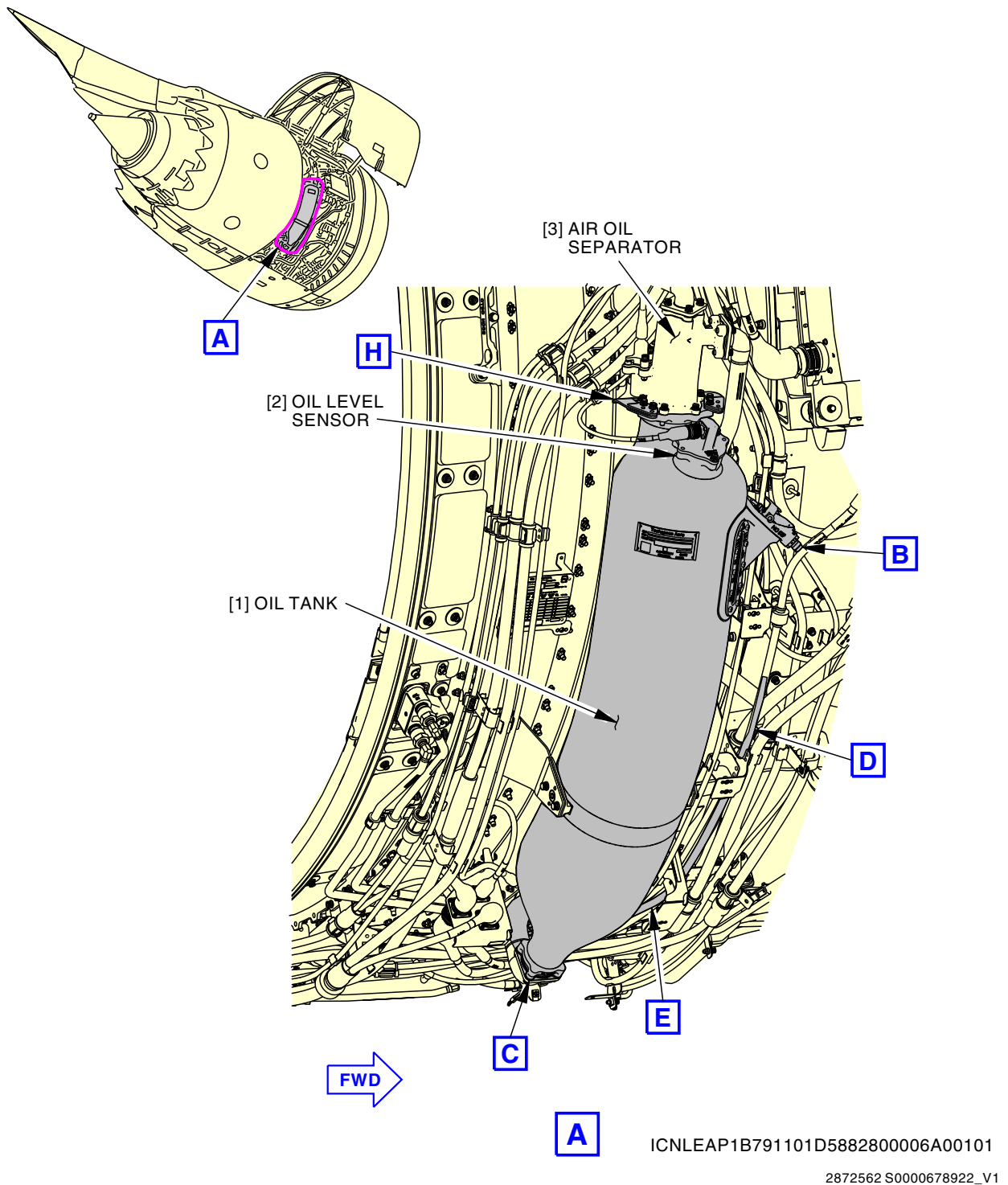
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-11-01

Page 404
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



Oil Tank Installation
Figure 401/79-11-01-990-801-G00 (Sheet 2 of 7)

EFFECTIVITY
SIA ALL; POST LEAP-1B SERVICE BULLETIN
72-0181

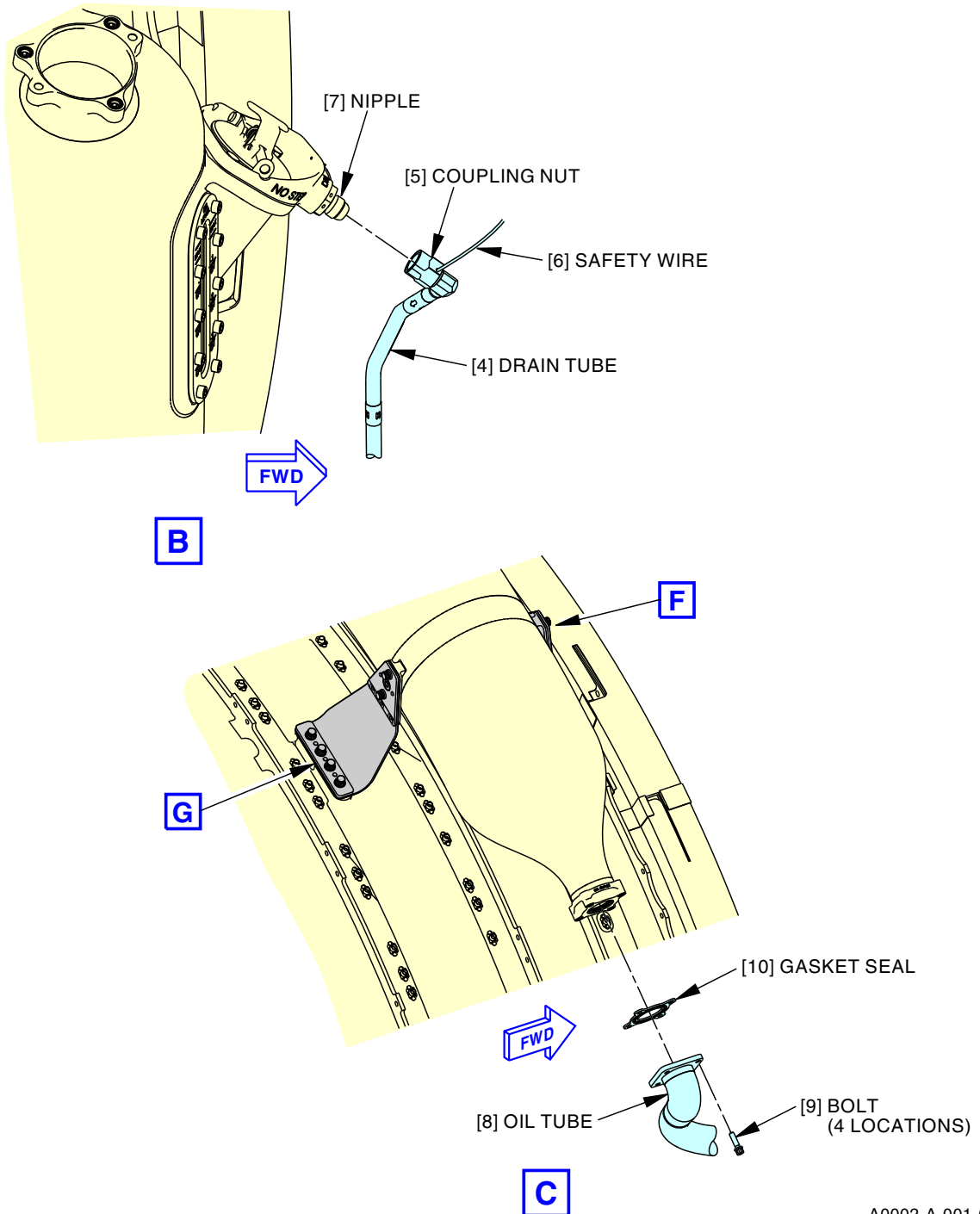
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-11-01

Page 405
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



A0002-A-001-01
2355320 S00061517006_V1

Oil Tank Installation
Figure 401/79-11-01-990-801-G00 (Sheet 3 of 7)

EFFECTIVITY
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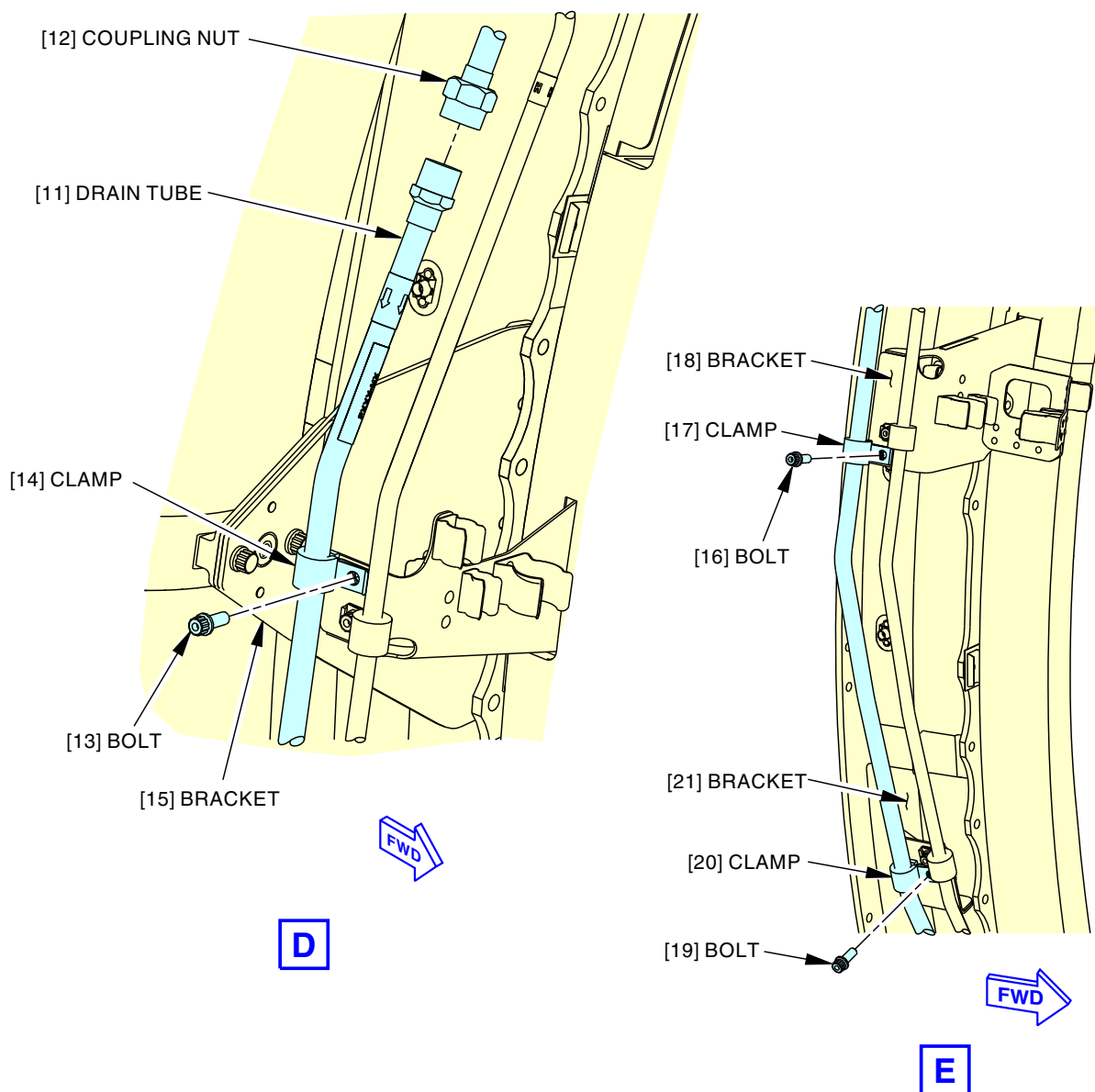
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-11-01

Page 406
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



A0003-A-001-01
2355321 S00061517007_V1

Oil Tank Installation
Figure 401/79-11-01-990-801-G00 (Sheet 4 of 7)

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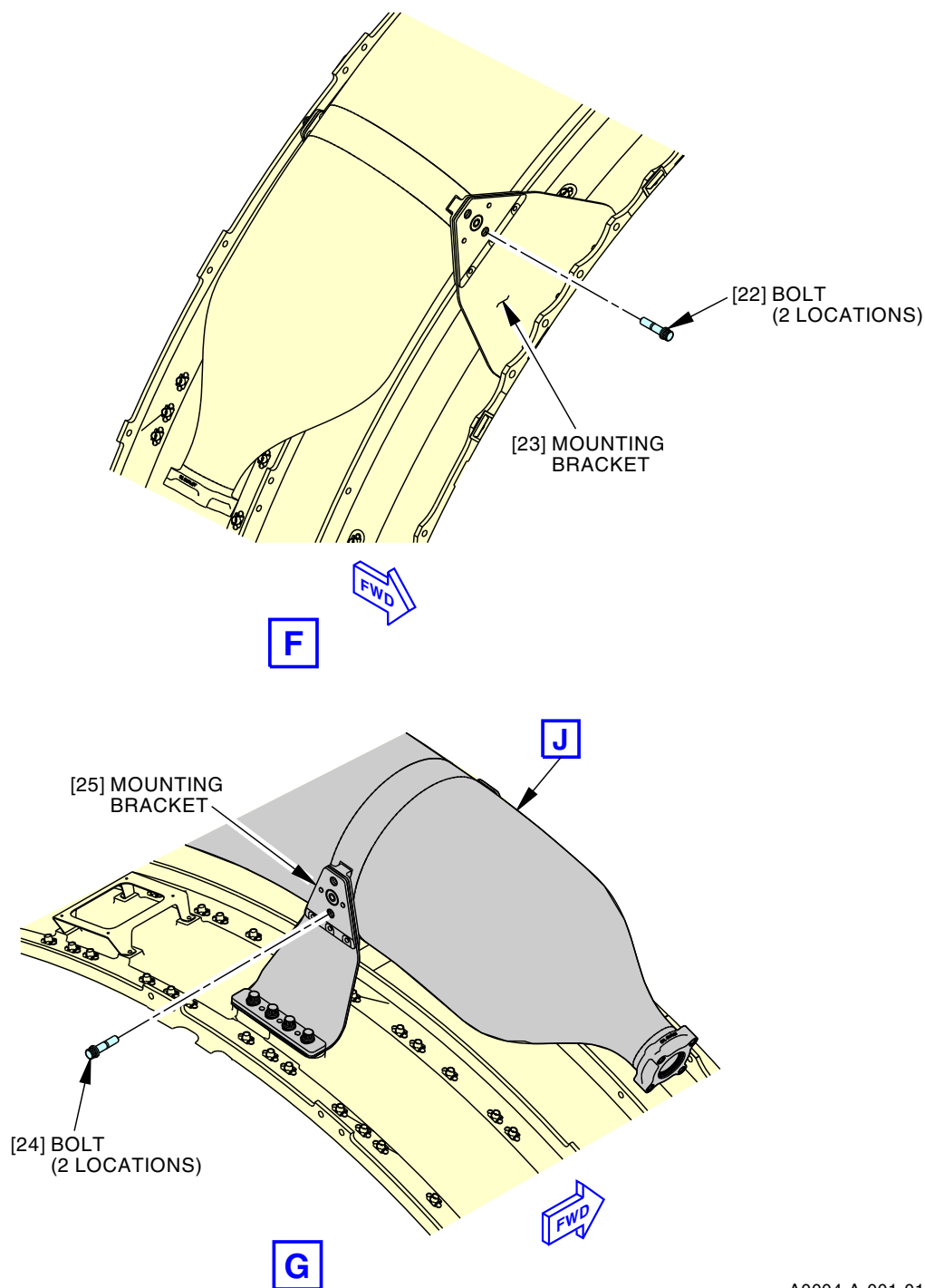
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79-11-01

Page 407
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



A0004-A-001-01
2355322 S00061517008_V1

Oil Tank Installation
Figure 401/79-11-01-990-801-G00 (Sheet 5 of 7)

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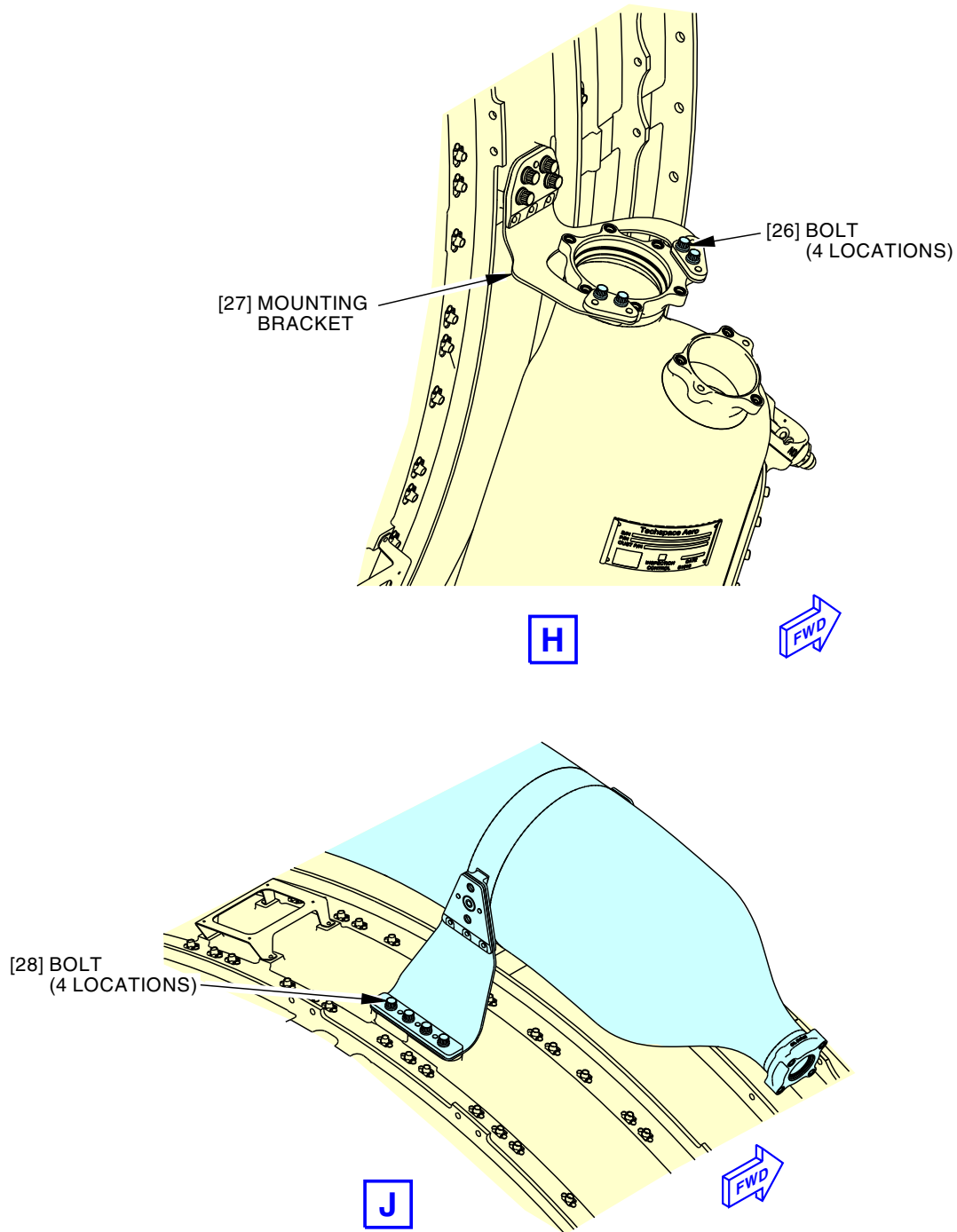
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79-11-01

Page 408
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



A0005-A-001-01
2355323 S00061517009_V2

Oil Tank Installation
Figure 401/79-11-01-990-801-G00 (Sheet 6 of 7)

EFFECTIVITY
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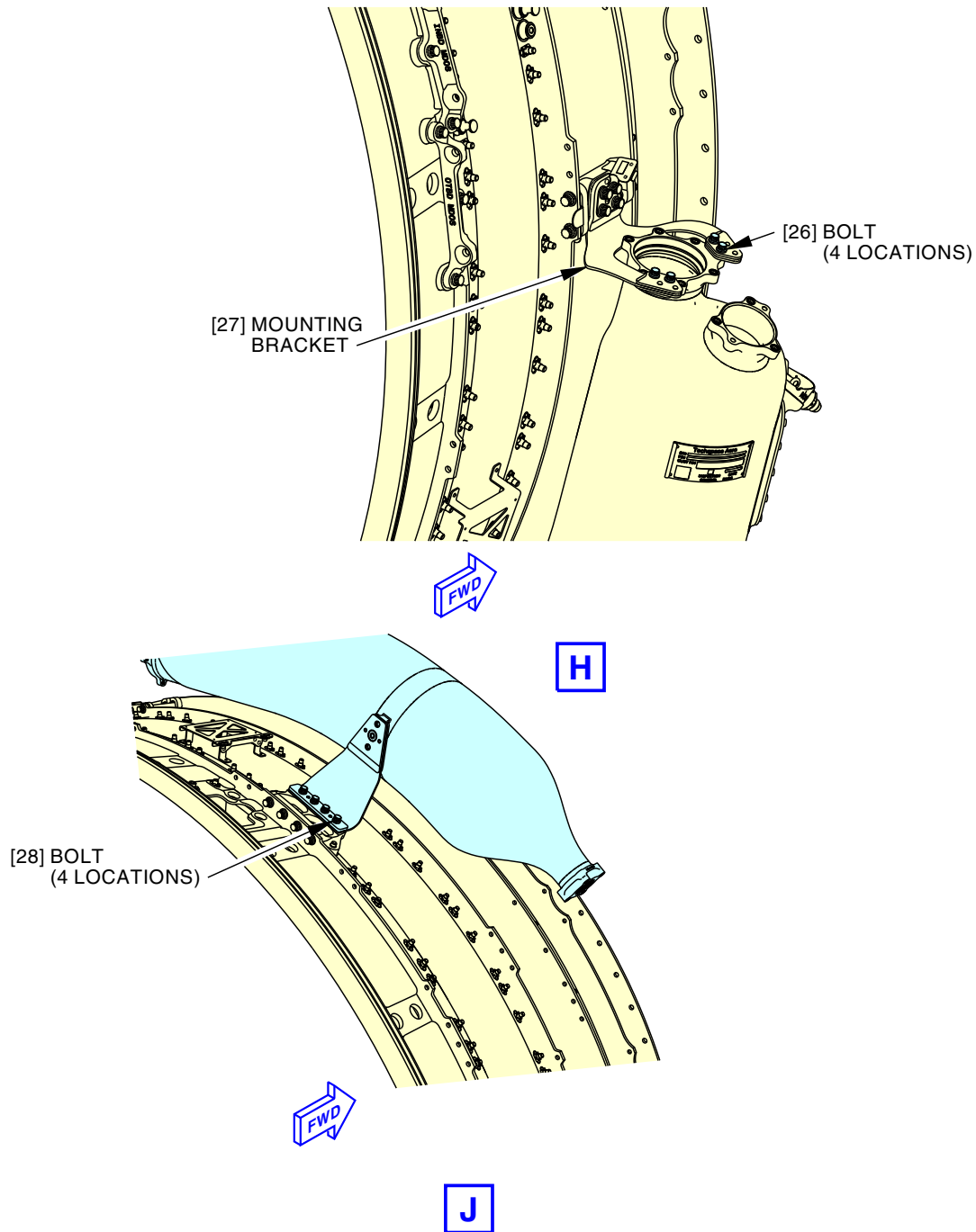
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-11-01

Page 409
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



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2872563 S0000678923_V1

Oil Tank Installation
Figure 401/79-11-01-990-801-G00 (Sheet 7 of 7)

EFFECTIVITY
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72-0181

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-11-01

Page 410
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

TASK 79-11-01-400-801-G00**3. Oil Tank Installation**

(Figure 401)

A. General

- (1) This task provides the instructions on how to install the oil tank.
- (2) You must do the tests that are listed in the power plant test reference table after you install the oil tank.

B. References

Reference	Title
12-13-11-600-801	Engine Servicing (Oil Replenishing) (P/B 301)
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
79-21-21-400-801-G00	Air Oil Separator Installation (P/B 401)
79-31-01-400-801-G00	Oil Level Sensor Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
D00599 [CP2442]	Oil - Engine	
D00601 [CP2101]	Vaseline - Graphite Mineral	
G01048	Lockwire - MS20995C32, Corrosion Resistant	NASM20995
	Steel - 0.032 Inch (0.8128 mm) Diameter	

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
10	Gasket seal	79-11-01-01-020	SIA ALL

F. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

G. Access Panels

Number	Name/Location
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

H. Oil Tank Installation

SUBTASK 79-11-01-420-001-G00

**WARNING**

BE CAREFUL WHEN YOU DO WORK ON THE ENGINE PARTS AFTER THE ENGINE IS STOPPED. THE ENGINE PARTS CAN STAY HOT FOR ALMOST ONE HOUR. DO NOT TOUCH HOT PARTS WITHOUT APPLICABLE GLOVES. HOT PARTS CAN CAUSE INJURIES TO PERSONNEL.

EFFECTIVITY
SIA ALL

79-11-01

D633AM101-SIA

Page 411
May 15/2023

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

(WARNING PRECEDES)



WARNING

DO NOT OPEN THE OIL SYSTEM UNTIL THE PRESSURE GOES TO ZERO. THE PRESSURE GOES TO ZERO APPROXIMATELY 5 MINUTES AFTER AN ENGINE STOPS. A PRESSURIZED OIL SYSTEM CAN RELEASE A SPRAY OF HOT OIL THAT CAN BURN YOU.



WARNING

DO NOT LET HOT OIL GET ON YOU. PUT ON CLOTHES, GOGGLES, AND OTHER EQUIPMENT FOR PROTECTION, OR LET THE ENGINE BECOME COOL. HOT OIL CAN BURN YOU.



WARNING

DO NOT LET THE OIL STAY ON YOUR SKIN. YOU CAN ABSORB POISONOUS MATERIALS FROM THE OIL THROUGH YOUR SKIN.



CAUTION

DO NOT LET OIL GET ON THE ENGINE OR OTHER COMPONENTS. IMMEDIATELY CLEAN THE OIL WHEN IT FALLS ON THEM. OIL CAN CAUSE DAMAGE TO EQUIPMENT.

- (1) Install the oil tank [1] on the mounting bracket [23], mounting bracket [25], and mounting bracket [27] as follows:

NOTE: It is necessary for two people to do this procedure.

- (a) Remove the protective covers from the openings.
- (b) Make sure that the mating faces are clean and clear of unwanted materials.
- (c) Lubricate the threads of the two bolts [22], the two bolts [24], the four bolts [26], and the four bolts [28] with graphite mineral vaseline, D00601 [CP2101].
- (d) Install the oil tank [1] in a correct position on the engine.
- (e) Install the four bolts [26] that attach the oil tank [1] to the mounting bracket [27].
- (f) Secure the four bolts [28] that attach the mounting bracket [25] to the engine.
- (g) Install the two bolts [24] that attach the oil tank [1] to the mounting bracket [25].
- (h) Install the two bolts [22] that attach the oil tank [1] to the mounting bracket [23].

SUBTASK 79-11-01-420-003-G00

- (2) Connect the oil tube [8] to the oil tank [1] as follows:

- (a) Remove the protective caps from the openings.
- (b) Make sure that the mating faces are clean and clear of unwanted materials.
- (c) Lubricate the threads of the four bolts [9] and new gasket seal [10] with graphite mineral vaseline, D00601 [CP2101].
- (d) Install the new gasket seal [10] and oil tube [8] on the oil tank [1].
- (e) Install the four bolts [9] that attach the oil tube [8] to the oil tank [1].
 - 1) Tighten the four bolts [9] to 109.31 in-lb (12.35 N·m) - 120.81 in-lb (13.65 N·m).

SUBTASK 79-11-01-010-003-G00

- (3) Do this task: Air Oil Separator Installation, TASK 79-21-21-400-801-G00.

SUBTASK 79-11-01-420-005-G00

- (4) Tighten the bolts [28] to 227 in-lb (25.65 N·m) - 251 in-lb (28.35 N·m).

EFFECTIVITY
SIA ALL

79-11-01

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 412
Sep 15/2021

737-7/8/8200/9/10 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 79-11-01-420-006-G00

- (5) Tighten the bolts [26] to 133 in-lb (15 N·m) - 186 in-lb (21 N·m).

SUBTASK 79-11-01-420-007-G00

- (6) Tighten the bolts [24] to 266 in-lb (30 N·m) - 327 in-lb (37 N·m).

SUBTASK 79-11-01-420-008-G00

- (7) Tighten the bolts [22] to 227 in-lb (25.65 N·m) - 251 in-lb (28.35 N·m).

SUBTASK 79-11-01-420-004-G00

- (8) Connect the scupper drain tube [4] to the oil tank [1] as follows:
- (a) Remove the protective caps from the openings.
 - (b) Lubricate the threads of the nipple [7] with oil, D00599 [CP2442].
 - (c) Engage and tighten the coupling nut [5] to the nipple [7].
 - (d) Tighten the coupling nut [5] to 257.0 in-lb (29.0 N·m) - 283.0 in-lb (32.0 N·m).
 - (e) Install MS20995C32 lockwire, G01048, on the coupling nut [5].

SUBTASK 79-11-01-010-004-G00

- (9) Do this task: Oil Level Sensor Installation, TASK 79-31-01-400-801-G00.

SUBTASK 79-11-01-420-002-G00

- (10) Connect the drain tube [11] as follows:
- (a) Remove the protective caps from the openings.
 - (b) Make sure that the mating faces are clean and clear of unwanted materials.
 - (c) Lubricate the threads of the coupling nut [12], bolt [13], bolt [16], and bolt [19] with graphite mineral vaseline, D00601 [CP2101].
 - (d) Engage and tighten the coupling nut [12].
 - (e) Install the bolt [19] and clamp [20] that attach the drain tube [11] to the bracket [21].
 - 1) Tighten the bolt [19] to 78.0 in-lb (8.8 N·m) - 82.0 in-lb (9.3 N·m).
 - (f) Install the bolt [16] and clamp [17] that attach the drain tube [11] to the bracket [18].
 - 1) Tighten the bolt [16] to 78.0 in-lb (8.8 N·m) - 82.0 in-lb (9.3 N·m).
 - (g) Install the bolt [13] and clamp [14] that attach the drain tube [11] to the bracket [15].
 - 1) Tighten the bolt [13] to 78.0 in-lb (8.8 N·m) - 82.0 in-lb (9.3 N·m).

SUBTASK 79-11-01-610-001-G00

- (11) Do this task: Engine Servicing (Oil Replenishing), TASK 12-13-11-600-801.

SUBTASK 79-11-01-280-001-G00

- (12) Clean the work area and clear the tools and other items.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 79-11-01-410-001-G00

- (1) On the applicable engine, close the right fan cowl panel (TASK 71-11-04-410-801-G00).
- (a) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL****SUBTASK 79-11-01-860-002-G00**

- (2) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:
- (a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.
 - (b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

J. Oil Tank Installation Test**SUBTASK 79-11-01-730-001-G00**

- (1) Do the test(s) that are given in the Power Plant Test Reference Table (TASK 71-00-00-800-804-G00).

———— **END OF TASK** ————

EFFECTIVITY
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-11-01

Page 414
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

OIL TANK FILLER CAP - REMOVAL/INSTALLATION

1. General

- A. This procedure has two tasks:
- (1) Oil Tank Filler Cap Removal
 - (2) Oil Tank Filler Cap Installation.

TASK 79-11-03-000-801-G00

2. Oil Tank Filler Cap Removal

(Figure 401)

A. General

- (1) This task gives the instructions to remove the oil tank filler cap.

B. References

Reference	Title
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

F. Prepare for the Removal

SUBTASK 79-11-03-860-001-G00

- (1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:
 - (a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.
 - (b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 79-11-03-860-002-G00

- (2) Do this task: Open the Fan Cowl Panels (Selection), TASK 71-11-04-010-801-G00.

EFFECTIVITY
SIA ALL

D633AM101-SIA

79-11-03

Page 401
Jan 15/2023

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

- (a) On the applicable engine, open these access panels:

<u>Number</u>	<u>Name/Location</u>
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

G. Oil Tank Filler Cap Removal

SUBTASK 79-11-03-020-001-G00



BE CAREFUL WHEN YOU DO WORK ON THE ENGINE PARTS AFTER THE ENGINE IS STOPPED. THE ENGINE PARTS CAN STAY HOT FOR ALMOST ONE HOUR. DO NOT TOUCH HOT PARTS WITHOUT APPLICABLE GLOVES. HOT PARTS CAN CAUSE INJURIES TO PERSONNEL.



DO NOT OPEN THE OIL SYSTEM UNTIL THE PRESSURE GOES TO ZERO. THE PRESSURE GOES TO ZERO APPROXIMATELY 5 MINUTES AFTER AN ENGINE STOPS. A PRESSURIZED OIL SYSTEM CAN RELEASE A SPRAY OF HOT OIL THAT CAN BURN YOU.



DO NOT LET HOT OIL GET ON YOU. PUT ON CLOTHES, GOGGLES, AND OTHER EQUIPMENT FOR PROTECTION, OR LET THE ENGINE BECOME COOL. HOT OIL CAN BURN YOU.



DO NOT LET THE OIL STAY ON YOUR SKIN. YOU CAN ABSORB POISONOUS MATERIALS FROM THE OIL THROUGH YOUR SKIN.



DO NOT LET OIL GET ON THE ENGINE OR OTHER COMPONENTS. IMMEDIATELY CLEAN THE OIL WHEN IT FALLS ON THEM. OIL CAN CAUSE DAMAGE TO EQUIPMENT.

- (1) Remove the oil tank filler cap [6]:
 - (a) Disconnect the drain tube [7] from the oil tank filler cap [6]:
 - 1) Loosen the coupling nut [8] of the drain tube [7].
 - 2) Disconnect the drain tube [7] from the oil tank filler cap [6].
 - (b) Remove the two bolts [10] that attach the oil tank filler cap [6] to the oil tank service panel [11].
 - (c) Remove the oil tank filler cap [6] from the oil tank service panel [11].
NOTE: Do not remove the adapter assembly.
 - (d) Remove and discard the O-ring [12] from the groove of the oil tank filler cap [6].
 - (e) Install the protective covers on the drain tube [7], nipple [9], and oil tank filler cap [6] port on the oil tank service panel [11].

———— **END OF TASK** ————

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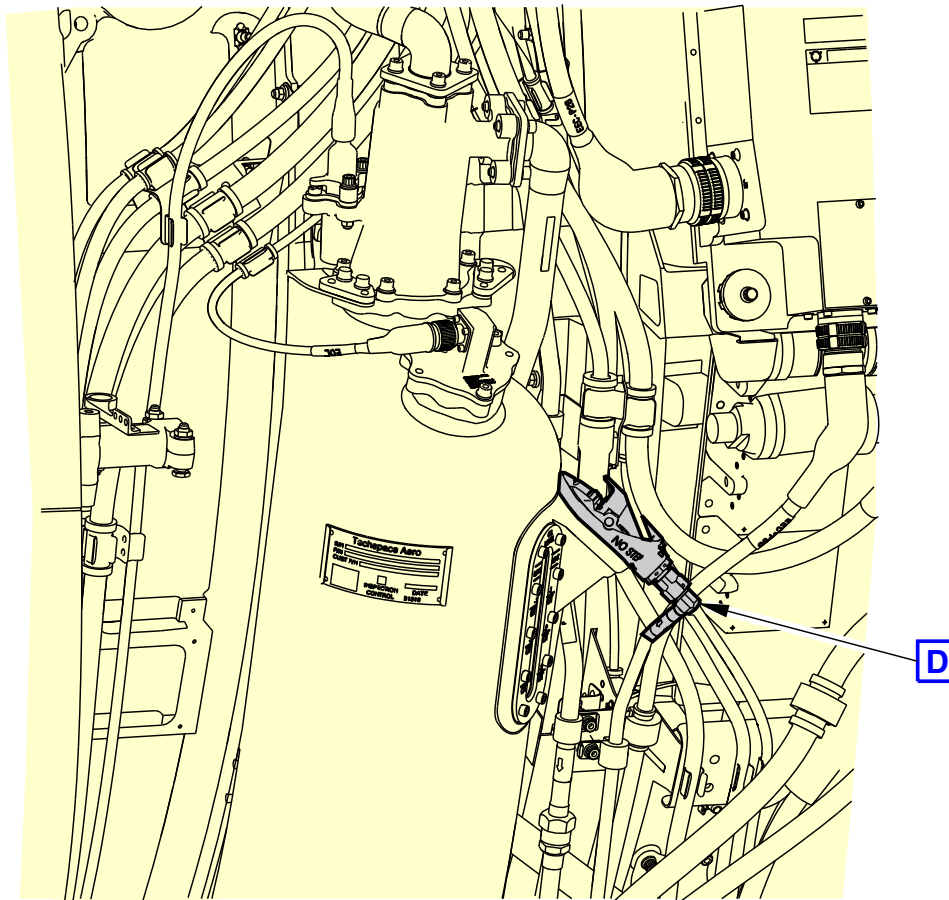
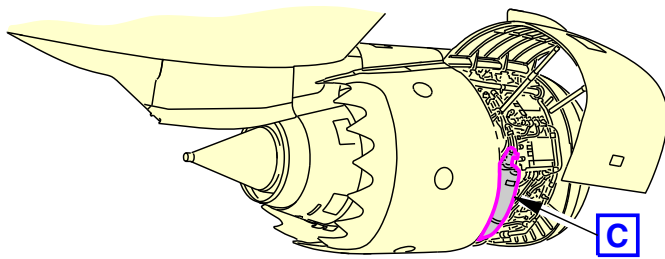
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D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 402
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



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Oil Tank Filler Cap Installation
Figure 401/79-11-03-990-801-G00 (Sheet 1 of 2)

EFFECTIVITY
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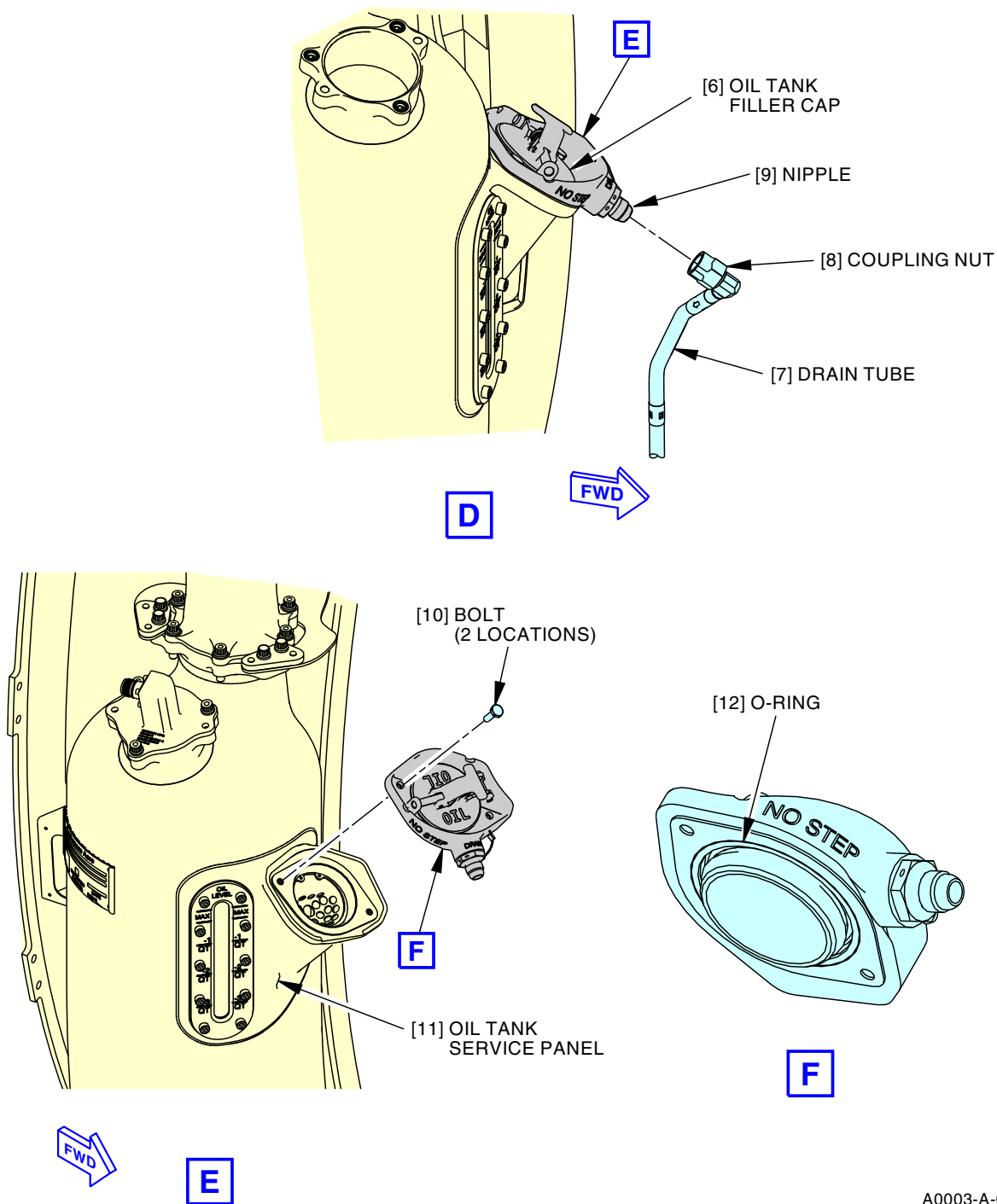
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D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 403
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



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Oil Tank Filler Cap Installation
Figure 401/79-11-03-990-801-G00 (Sheet 2 of 2)

EFFECTIVITY
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D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-11-03

Page 404
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

TASK 79-11-03-400-801-G00**3. Oil Tank Filler Cap Installation**

(Figure 401)

A. General

- (1) This task gives the instructions to install the oil tank filler cap.
- (2) You must do the tests that are listed in the power plant test reference table after you install the oil tank filler cap.

B. References

Reference	Title
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
D00599 [CP2442]	Oil - Engine	

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
12	O-ring	79-11-01-01-100	SIA ALL

F. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

G. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

H. Oil Tank Filler Cap Installation

SUBTASK 79-11-03-420-001-G00

- (1) Install the oil tank filler cap [6]:
 - (a) Make sure that the mating faces are clean and clear of unwanted materials.
 - (b) Remove the protective covers on the drain tube [7], nipple [9], and oil tank filler cap [6] port on the oil tank service panel [11].
 - (c) Lubricate the threads of the two bolts [10] with oil, D00599 [CP2442].
 - (d) Install the oil tank filler cap [6] in a correct position on the oil tank service panel [11].
 - (e) Install the two bolts [10] that attach the oil tank filler cap [6] to the oil tank service panel [11].
 - (f) Tighten the bolts [10] to 32.0 in-lb (3.6 N·m) to 35.0 in-lb (4.0 N·m).
 - (g) Connect the drain tube [7] to the oil tank filler cap [6]:

EFFECTIVITY
 SIA ALL

79-11-03

D633AM101-SIA

Page 405
 May 15/2023

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

- 1) Lubricate the threads of the nipple [9] with oil, D00599 [CP2442]
- 2) Engage the coupling nut [8] to the nipple [9].
- 3) Tighten the coupling nut [8] to 257.0 in-lb (29.0 N·m) to 283.0 in-lb (32.0 N·m).

SUBTASK 79-11-03-420-002-G00

- (2) Do these steps to install the new O-ring [12]:
 - (a) Lubricate the threads of the new O-ring [12] with oil, D00599 [CP2442].
 - (b) Install the new O-ring [12] onto the grooves of the oil tank filler cap [6].

SUBTASK 79-11-03-160-001-G00

- (3) Clean the work area and clear the tools and other items.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 79-11-03-860-003-G00

- (1) Do this task: Close the Fan Cowl Panels (Selection), TASK 71-11-04-410-801-G00.
 - (a) On the applicable engine, close these access panels:

<u>Number</u>	<u>Name/Location</u>
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

SUBTASK 79-11-03-860-004-G00

- (2) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:
 - (a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.
 - (b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

J. Oil Tank Filler Cap Installation Test

SUBTASK 79-11-03-710-001-G00

- (1) Do the test(s) that are given in the Power Plant Test Reference Table (TASK 71-00-00-800-804-G00).

————— **END OF TASK** —————

EFFECTIVITY
SIA ALL

79-11-03

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 406
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

MAIN FUEL/OIL HEAT EXCHANGER - REMOVAL/INSTALLATION

1. General

- A. This procedure provides two tasks:
- (1) Main fuel/oil heat exchanger removal
 - (2) Main fuel/oil heat exchanger installation.

TASK 79-21-01-000-801-G00

2. Main Fuel/Oil Heat Exchanger Removal

(Figure 401)

A. General

- (1) This task gives the instructions to remove the main fuel/oil heat exchanger.

B. References

Reference	Title
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
73-11-12-000-801-G00	Main Fuel/Oil Heat Exchanger Differential Pressure Sensor Removal (P/B 401)

C. Tools/Equipment

Reference	Description
STD-201	Container - Fuel Resistant, 5 U.S.-Gal (19 l)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

F. Prepare for the Removal

SUBTASK 79-21-01-860-001-G00

- (1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:
 - (a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.
 - (b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

EFFECTIVITY
SIA ALL

79-21-01

D633AM101-SIA

Page 401
Jan 15/2023

737-7/8/8200/9/10 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 79-21-01-860-002-G00

- (2) Open the applicable circuit breakers and install safety tags:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1

SUBTASK 79-21-01-860-003-G00

- (3) For the left engine, open these applicable circuit breakers and install safety tags:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	5	C01320	ENGINE FUEL ENGINE 1 HPSOV CONT
E	6	C01395	ENGINE FUEL ENGINE 1 HPSOV IND

SUBTASK 79-21-01-860-004-G00

- (4) For the right engine, open these applicable circuit breakers and install safety tags:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	3	C01321	ENGINE FUEL ENGINE 2 HPSOV CONT
E	4	C01396	ENGINE FUEL ENGINE 2 HPSOV IND

SUBTASK 79-21-01-010-001-G00

- (5) On the applicable engine, open the left fan cowl panel (TASK 71-11-04-010-801-G00).

- (a) Open these access panels:

<u>Number</u>	<u>Name/Location</u>
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

G. Main Fuel/Oil Heat Exchanger Removal

SUBTASK 79-21-01-030-001-G00



BE CAREFUL WHEN YOU DO WORK ON THE ENGINE PARTS AFTER THE ENGINE IS STOPPED. THE ENGINE PARTS CAN STAY HOT FOR ALMOST ONE HOUR. DO NOT TOUCH HOT PARTS WITHOUT APPLICABLE GLOVES. HOT PARTS CAN CAUSE INJURIES TO PERSONNEL.



DO NOT OPEN THE OIL SYSTEM UNTIL THE PRESSURE GOES TO ZERO. THE PRESSURE GOES TO ZERO APPROXIMATELY 5 MINUTES AFTER AN ENGINE STOPS. A PRESSURIZED OIL SYSTEM CAN RELEASE A SPRAY OF HOT OIL THAT CAN BURN YOU.



DO NOT LET HOT OIL GET ON YOU. PUT ON CLOTHES, GOGGLES, AND OTHER EQUIPMENT FOR PROTECTION, OR LET THE ENGINE BECOME COOL. HOT OIL CAN BURN YOU.



DO NOT LET THE OIL STAY ON YOUR SKIN. YOU CAN ABSORB POISONOUS MATERIALS FROM THE OIL THROUGH YOUR SKIN.

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79-21-01

D633AM101-SIA

Page 402
Sep 15/2021

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL****(WARNING PRECEDES)****CAUTION**

DO NOT LET OIL GET ON THE ENGINE OR OTHER COMPONENTS.
IMMEDIATELY CLEAN THE OIL WHEN IT FALLS ON THEM. OIL CAN CAUSE
DAMAGE TO EQUIPMENT.

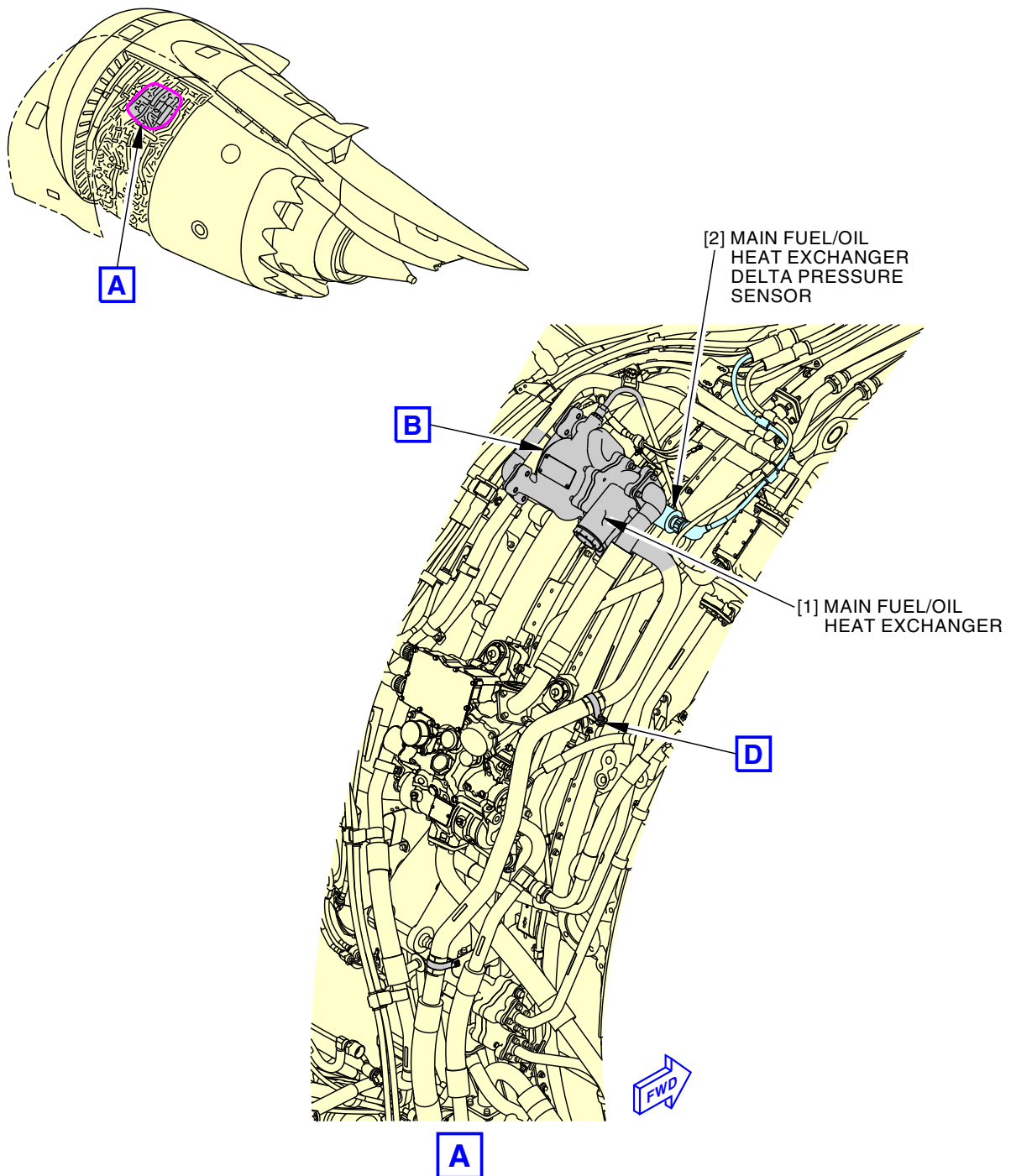
- (1) Remove the main fuel/oil heat exchanger [1]:
 - (a) Put a 5 U.S.-gal (19 l) fuel resistant container, STD-201 below the main fuel/oil heat exchanger [1].
 - (b) Remove the main fuel/oil heat exchanger DP sensor [2] from the main fuel/oil heat exchanger [1] (TASK 73-11-12-000-801-G00).
 - (c) Disconnect the oil tube [3] from the main fuel/oil heat exchanger [1]:
 - 1) Disconnect the fitting nut [4] from the oil tube [3].
 - 2) Install the protective covers on the openings.
 - (d) Disconnect the oil tube [6] from the main fuel/oil heat exchanger [1]:
 - 1) Remove the four bolts [7] from the oil tube [6].
 - 2) Disconnect the oil tube [6] from the main fuel/oil heat exchanger [1].
 - 3) Remove and discard the gasket [8].
 - 4) Install the protective covers on the openings.
 - (e) Disconnect the oil tube [9] from the main fuel/oil heat exchanger [1]:
 - 1) Remove the four bolts [10] from the oil tube [9].
 - 2) Disconnect the oil tube [9] from the main fuel/oil heat exchanger [1].
 - 3) Remove and discard the gasket [11].
 - 4) Install the protective covers on the openings.
 - (f) Disconnect the fuel tube [12] from the main fuel/oil heat exchanger [1]:
 - 1) Remove the four bolts [13] from the fuel tube [12].
 - 2) Disconnect the fuel tube [12] from the main fuel/oil heat exchanger [1].
 - 3) Remove and discard the gasket [14].
 - 4) Install the protective covers on the openings.
 - (g) Disconnect the fuel tube [15] from the main fuel/oil heat exchanger [1]:
 - 1) Remove the four bolts [16] from the fuel tube [15].
 - 2) Disconnect the fuel tube [15] from the main fuel/oil heat exchanger [1].
 - 3) Remove and discard the gasket [17].
 - 4) Install the protective covers on the openings.
 - 5) Remove the bolt [18] that attaches the clamp [19] to the fuel tube [15].
 - (h) Remove the main fuel/oil heat exchanger [1] from the three mounting brackets [24]:
 - 1) Remove the four bolts [22] and the four washers [23] that attach the main fuel/oil heat exchanger [1] to the three mounting brackets [24].
 - 2) Remove the main fuel/oil heat exchanger [1] from the three mounting brackets [24].
 - 3) Install the protective covers on the openings.

— END OF TASK —**EFFECTIVITY**
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-01Page 403
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



ICN-LEAP-1B-792101-B-F0301-A0001-A-001-01
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Main Fuel/Oil Heat Exchanger Installation
Figure 401/79-21-01-990-802-G00 (Sheet 1 of 4)

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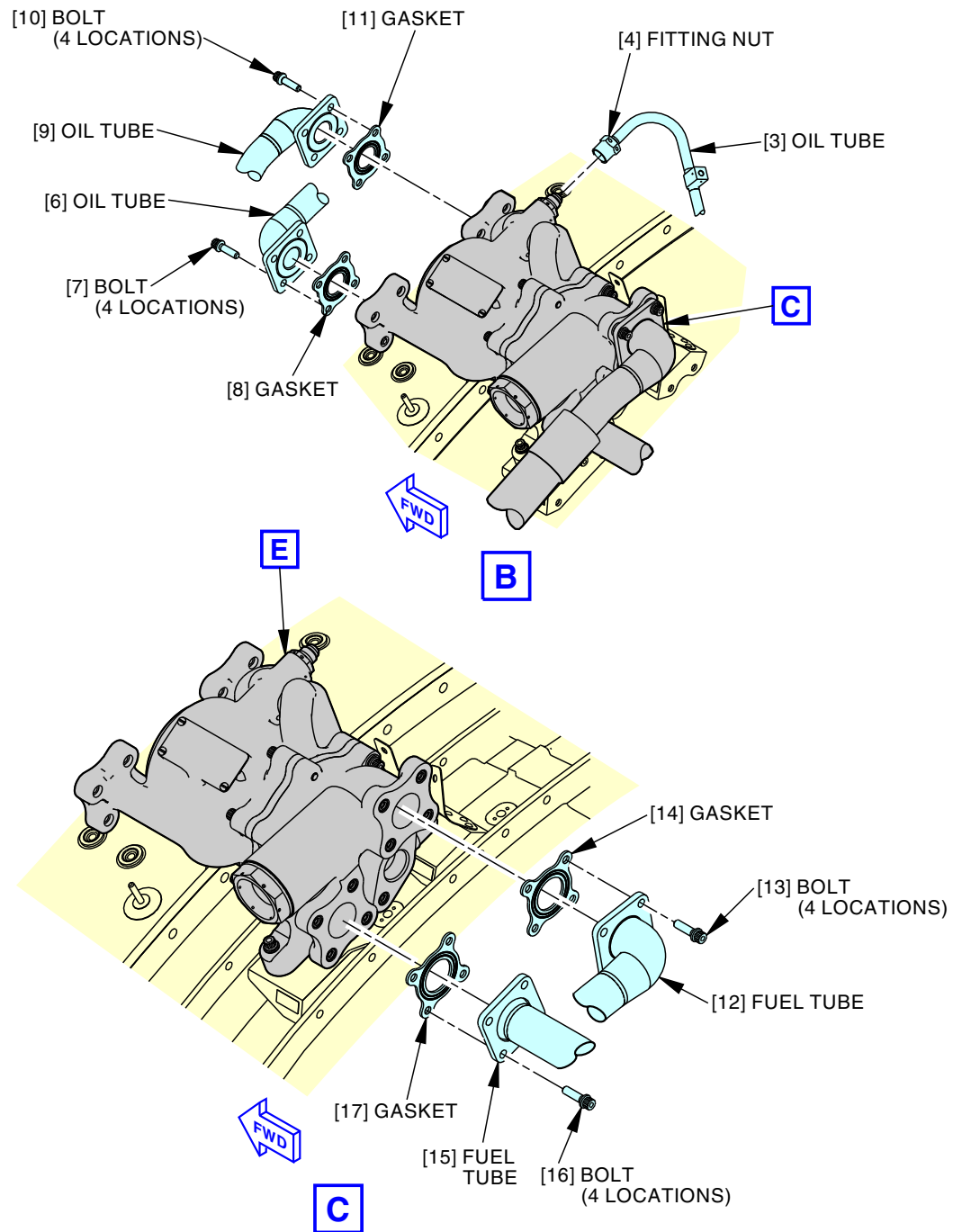
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79-21-01

Page 404
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



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Main Fuel/Oil Heat Exchanger Installation
Figure 401/79-21-01-990-802-G00 (Sheet 2 of 4)

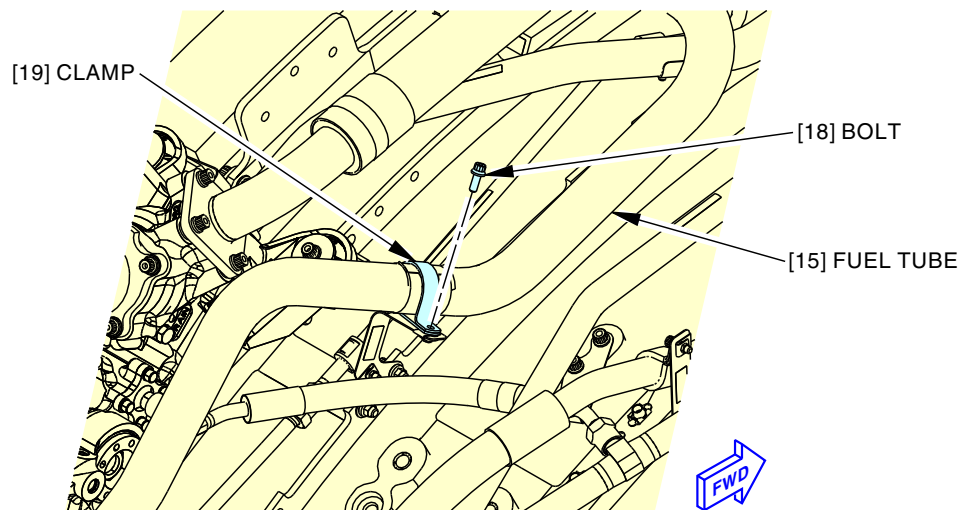
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79-21-01

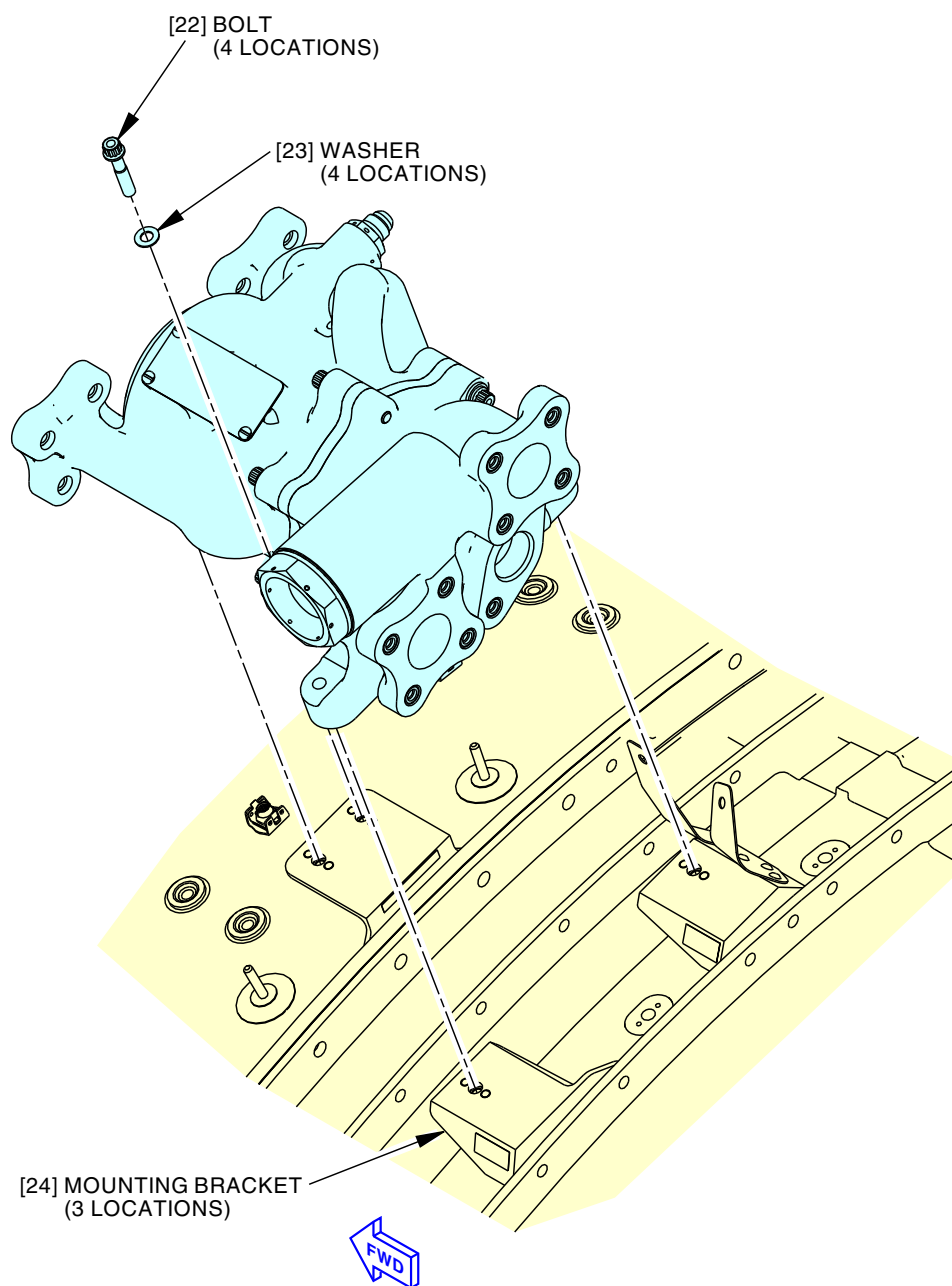
Page 405
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**D**ICN-LEAP-1B-792101-B-F0301-A0003-A-001-01
2402886 S000055519_V3**Main Fuel/Oil Heat Exchanger Installation**
Figure 401/79-21-01-990-802-G00 (Sheet 3 of 4)EFFECTIVITY
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D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-01Page 406
Sep 15/2021

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL****E**A0004-A-001-01
2403164 S000055520_V1**Main Fuel/Oil Heat Exchanger Installation
Figure 401/79-21-01-990-802-G00 (Sheet 4 of 4)**EFFECTIVITY
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D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-01Page 407
Sep 15/2021

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

TASK 79-21-01-400-801-G00**3. Main Fuel/Oil Heat Exchanger Installation**

(Figure 401)

A. General

(1) This task gives the instructions to install the main fuel/oil heat exchanger.

B. References

Reference	Title
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
73-11-12-400-801-G00	Main Fuel/Oil Heat Exchanger Differential Pressure Sensor Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
D00599 [CP2442]	Oil - Engine	
D00601 [CP2101]	Vaseline - Graphite Mineral	

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
8	Gasket	79-21-01-01-020	SIA ALL
11	Gasket	79-21-01-01-040	SIA ALL
14	Gasket	79-21-01-01-060	SIA ALL
17	Gasket	79-21-01-01-080	SIA ALL

F. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

G. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

H. Main Fuel/Oil Heat Exchanger Installation

SUBTASK 79-21-01-420-001-G00



DO NOT LET THE OIL STAY ON YOUR SKIN. YOU CAN ABSORB POISONOUS MATERIALS FROM THE OIL THROUGH YOUR SKIN.



DO NOT LET OIL GET ON THE ENGINE OR OTHER COMPONENTS. IMMEDIATELY CLEAN THE OIL WHEN IT FALLS ON THEM. OIL CAN CAUSE DAMAGE TO EQUIPMENT.

EFFECTIVITY
SIA ALL

79-21-01

D633AM101-SIA

Page 408
May 15/2023

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL****(CAUTION PRECEDES)**

DO NOT CAUSE DAMAGE TO THE PREFORMED PACKINGS WHEN YOU INSTALL THE HEAT EXCHANGER. A DAMAGED PACKING CAN CAUSE A LEAK IN THE ENGINE FUEL OR OIL SYSTEMS. THE LEAK CAN CAUSE AN ENGINE SHUTDOWN IN-FLIGHT.

- (1) Install the main fuel/oil heat exchanger [1]:
 - (a) Remove the protective covers from the openings.
 - (b) Make sure that the mating faces are clean and clear of unwanted materials.
 - (c) Install the main fuel/oil heat exchanger [1] on the three mounting brackets [24].
 - 1) Lubricate the threads of the four bolts [22] with engine oil, D00599 [CP2442].
 - 2) Install the four bolts [22] and the four washers [23] on the main fuel/oil heat exchanger [1].
 - 3) Tighten the bolts [22] to 67.45 in-lb (7.6 N·m) - 74.35 in-lb (8.4 N·m).
 - (d) Connect the fuel tube [15] to the main fuel/oil heat exchanger [1]:
 - 1) Lubricate the threads of the four bolts [16] with graphite mineral vaseline, D00601 [CP2101].
 - 2) Lubricate the new gasket [17] with engine oil, D00599 [CP2442].
 - 3) Install the gasket [17] and the fuel tube [15] on the main fuel/oil heat exchanger [1].
 - 4) Install the bolts [16] on the fuel tube [15].
 - 5) Tighten the four bolts [16] to 109.31 in-lb (12.35 N·m) - 120.81 in-lb (13.65 N·m).
 - 6) Install the bolt [18] and the clamp [19] that attach the fuel tube [15] to the engine bracket.
 - 7) Tighten the bolt [20] and bolt [18] to 42.04 in-lb (4.75 N·m) - 46.47 in-lb (5.25 N·m).
 - (e) Connect the fuel tube [12] to the main fuel/oil heat exchanger [1]:
 - 1) Lubricate the threads of the four bolts [13] with graphite mineral vaseline, D00601 [CP2101].
 - 2) Lubricate the new gasket [14] with engine oil, D00599 [CP2442].
 - 3) Install the gasket [14] and the fuel tube [12] on the main fuel/oil heat exchanger [1].
 - 4) Install the four bolts [13] on the fuel tube [12].
 - 5) Tighten the four bolts [13] to 109.31 in-lb (12.35 N·m) - 120.81 in-lb (13.65 N·m).
 - (f) Connect the oil tube [9] to the main fuel/oil heat exchanger [1]:
 - 1) Lubricate the threads of the four bolts [10] with graphite mineral vaseline, D00601 [CP2101].
 - 2) Lubricate the new gasket [11] with engine oil, D00599 [CP2442].
 - 3) Install the new gasket [11] and the oil tube [9] on the main fuel/oil heat exchanger [1].
 - 4) Install the four bolts [10] on the oil tube [9].
 - 5) Tighten the four bolts [10] to 109.31 in-lb (12.35 N·m) - 120.81 in-lb (13.65 N·m).
 - (g) Connect the oil tube [6] to the main fuel/oil heat exchanger [1]:
 - 1) Lubricate the threads of the four bolts [7] with graphite mineral vaseline, D00601 [CP2101].

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

- 2) Lubricate the new gasket [8] with engine oil, D00599 [CP2442].
- 3) Install the new gasket [8] and the oil tube [6] on the main fuel/oil heat exchanger [1].
- 4) Install the four bolts [7] on the oil tube [6].
- 5) Tighten the four bolts [7] to 109.31 in-lb (12.35 N·m) - 120.81 in-lb (13.65 N·m).
- (h) Connect the oil tube [3] to the main fuel/oil heat exchanger [1]:
 - 1) Lubricate the threads of the fitting nut [4] with engine oil, D00599 [CP2442].
 - 2) Install the fitting nut [4] on the bolt [7].
 - 3) Tighten the fitting nut [4] to 266 in-lb (30 N·m) - 310 in-lb (35 N·m).
- (i) Do this task: Main Fuel/Oil Heat Exchanger Differential Pressure Sensor Installation, TASK 73-11-12-400-801-G00.
- (j) Clean the work area and clear the tools you used to do the task.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 79-21-01-860-005-G00

- (1) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:
 - (a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.
 - (b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

SUBTASK 79-21-01-860-006-G00

- (2) Remove the safety tags and close the applicable circuit breakers:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1

SUBTASK 79-21-01-860-007-G00

- (3) For the left engine, remove the safety tags and close these applicable circuit breakers:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	5	C01320	ENGINE FUEL ENGINE 1 HPSOV CONT
E	6	C01395	ENGINE FUEL ENGINE 1 HPSOV IND

SUBTASK 79-21-01-860-008-G00

- (4) For the right engine, remove the safety tags and close these applicable circuit breakers:

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	3	C01321	ENGINE FUEL ENGINE 2 HPSOV CONT
E	4	C01396	ENGINE FUEL ENGINE 2 HPSOV IND

SUBTASK 79-21-01-410-001-G00

- (5) On the applicable engine, close the left fan cowl panel (TASK 71-11-04-410-801-G00).

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

- (a) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

J. Main Fuel/Oil Heat Exchanger Installation Test

SUBTASK 79-21-01-730-001-G00

- (1) Do the test(s) that are given in the Power Plant Test Reference Table (TASK 71-00-00-800-804-G00).

————— **END OF TASK** —————

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79-21-01

Page 411
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

ENGINE SURFACE AIR COOLING OIL COOLER - REMOVAL/INSTALLATION

1. General

A. This procedure has four tasks:

- (1) Engine Surface Air Cooling Oil Cooler 1 Removal
- (2) Engine Surface Air Cooling Oil Cooler 1 Installation
- (3) Engine Surface Air Cooling Oil Cooler 2 Removal
- (4) Engine Surface Air Cooling Oil Cooler 2 Installation.

TASK 79-21-02-000-801-G00

2. Engine Surface Air Cooling Oil Cooler 1 Removal

(Figure 401)

A. General

- (1) This task gives the instructions to remove the engine Surface Air Cooled Oil Cooler (SACOC) 1.

B. References

Reference	Title
12-13-11-600-803	Engine Oil Change Servicing (P/B 301)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
78-31-00-010-801-G00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-801-G00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2

F. Prepare for the Removal

SUBTASK 79-21-02-860-001-G00

- (1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:
 - (a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

- (b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.
- 1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 79-21-02-010-001-G00

- (2) Do these tasks in sequence to safely open the left thrust reverser on the applicable engine:



WARNING

DO THE DEACTIVATION PROCEDURE FOR THE THRUST REVERSER TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

- (a) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-801-G00.
- (b) Open the applicable left fan cowl panel (TASK 71-11-04-010-801-G00).
- 1) Open these access panels:

<u>Number</u>	<u>Name/Location</u>
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2



WARNING

OBEY THE INSTRUCTIONS IN THE PROCEDURE TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (c) Open the applicable left thrust reverser (TASK 78-31-00-010-801-G00).
- 1) Open these access panels:

<u>Number</u>	<u>Name/Location</u>
415	Left Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2

G. Engine Surface Air Cooling Oil Cooler 1 Removal

SUBTASK 79-21-02-030-001-G00



WARNING

DO NOT TOUCH THE COMPONENTS OF THE OIL SYSTEM IF THE ENGINE IS HOT. THESE COMPONENTS STAY HOTTER THAN OTHER COMPONENTS. HOT COMPONENTS CAN BURN YOU.



WARNING

DO NOT OPEN THE OIL SYSTEM UNTIL THE PRESSURE GOES TO ZERO. THE PRESSURE GOES TO ZERO APPROXIMATELY 5 MINUTES AFTER AN ENGINE STOPS. A PRESSURIZED OIL SYSTEM CAN RELEASE A SPRAY OF HOT OIL THAT CAN BURN YOU.



WARNING

DO NOT LET THE OIL STAY ON YOUR SKIN. YOU CAN ABSORB POISONOUS MATERIALS FROM THE OIL THROUGH YOUR SKIN.

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79-21-02

Page 402
Jan 15/2023

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

(WARNING PRECEDES)



DO NOT LET OIL GET ON THE ENGINE, OR OTHER COMPONENTS. IMMEDIATELY CLEAN THE AREAS THAT OIL FALLS ON. OIL CAN CAUSE DAMAGE TO PAINT AND RUBBER.

- (1) Drain the engine oil system (TASK 12-13-11-600-803).

SUBTASK 79-21-02-020-001-G00

- (2) Disconnect the oil tube [6] from the engine SACOC 1 [1] as follows:
- (a) Loosen the coupling nut [5] that attaches the oil tube [6] to the engine SACOC 1 [1].
 - (b) Disconnect the oil tube [6] from the engine SACOC 1 [1].

SUBTASK 79-21-02-020-002-G00

- (3) Disconnect the oil tube [7] from the engine SACOC 1 [1] as follows:
- (a) Loosen the coupling nut [8] that attaches the oil tube [7] to the engine SACOC 1 [1].
 - (b) Disconnect the oil tube [7] from the engine SACOC 1 [1].

SUBTASK 79-21-02-480-002-G00

- (4) Install protective covers on the oil tube [6], oil tube [7], and ports on the engine SACOC 1 [1].

SUBTASK 79-21-02-020-003-G00

- (5) Remove the engine SACOC 1 [1] as follows:

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- (a) Remove the 14 bolts with plates [9] that attach the engine SACOC 1 [1] to the engine.

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0181

- (b) Remove the 14 bolts with integrated washers [9] that attach the engine SACOC 1 [1] to the engine.

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- (c) Remove the two bolts with integrated washers [4] that attach the engine SACOC 1 [1] to the engine.
- (d) Remove the two screws [13] and attachment clamp [14] that attach the engine SACOC 1 [1] to the bracket [27].
- (e) Remove the two screws [12] and attachment clamp [11] that attach the engine SACOC 1 [1] to the bracket [10].
- (f) Remove the engine SACOC 1 [1] from the engine.

———— **END OF TASK** ————

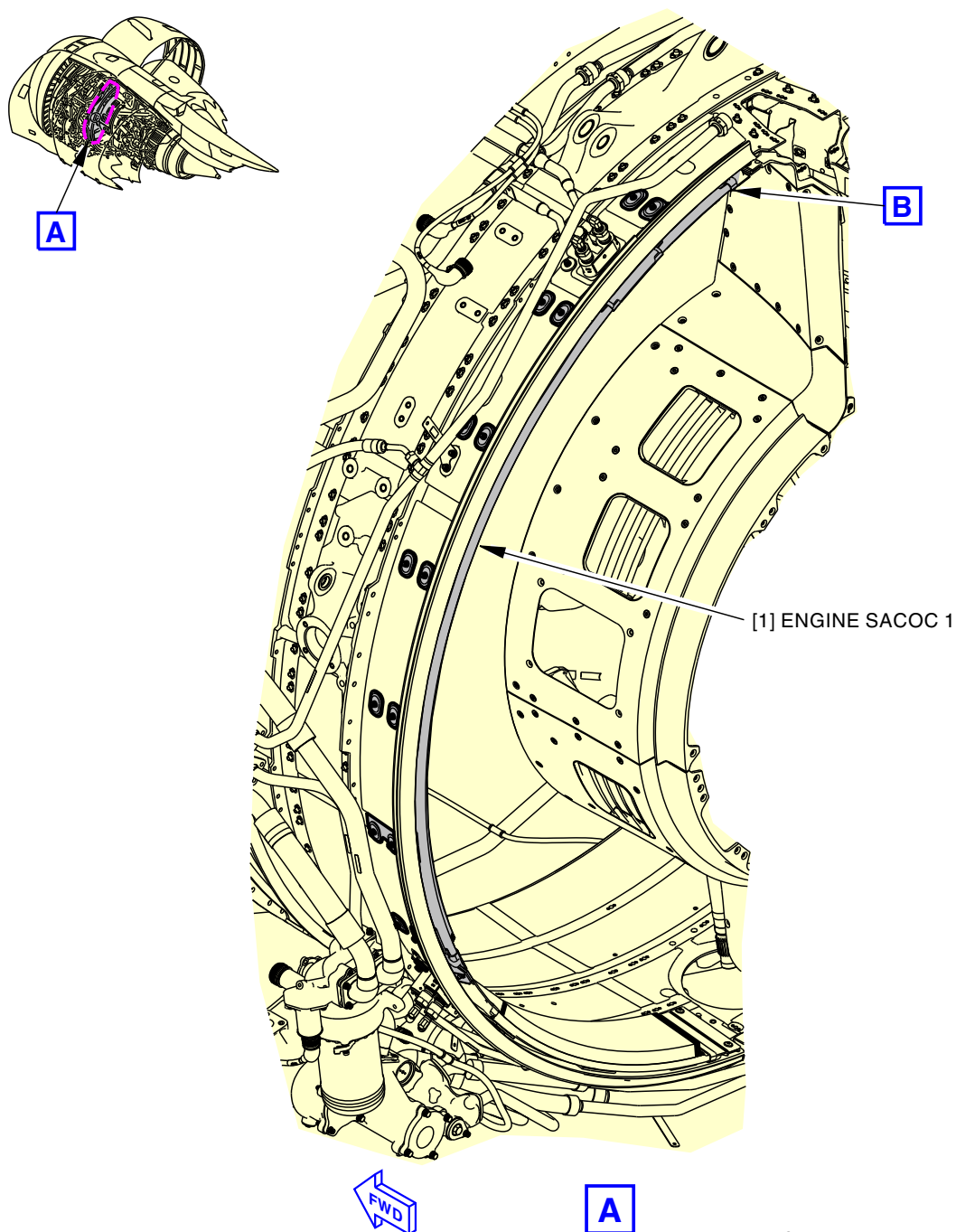
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Page 403
Sep 15/2022


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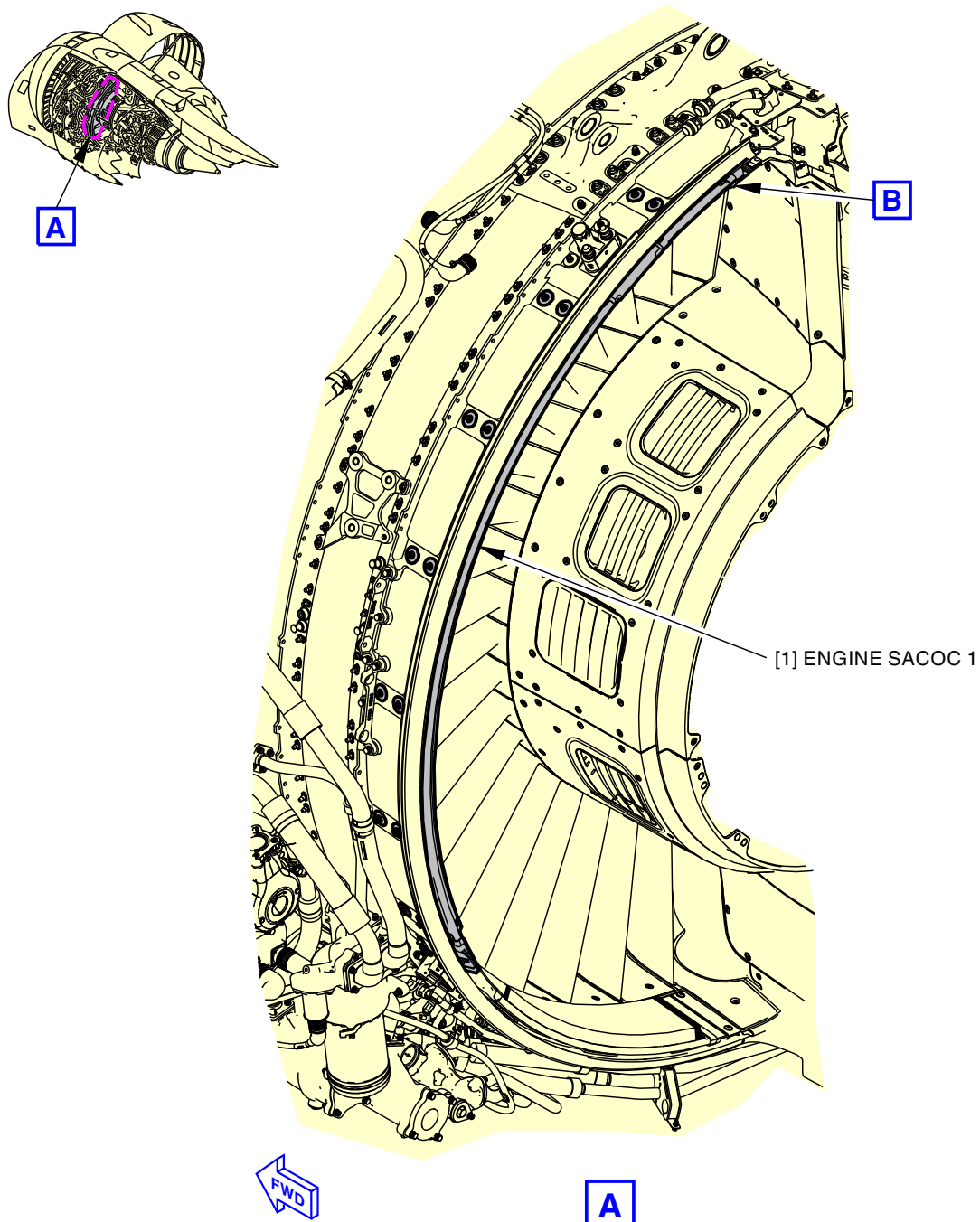
Engine Surface Air Cooling Oil Cooler 1 Installation
Figure 401/79-21-02-990-802-G00 (Sheet 1 of 5)

EFFECTIVITY
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-02
 Page 404
 Sep 15/2022


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Engine Surface Air Cooling Oil Cooler 1 Installation
Figure 401/79-21-02-990-802-G00 (Sheet 2 of 5)

EFFECTIVITY
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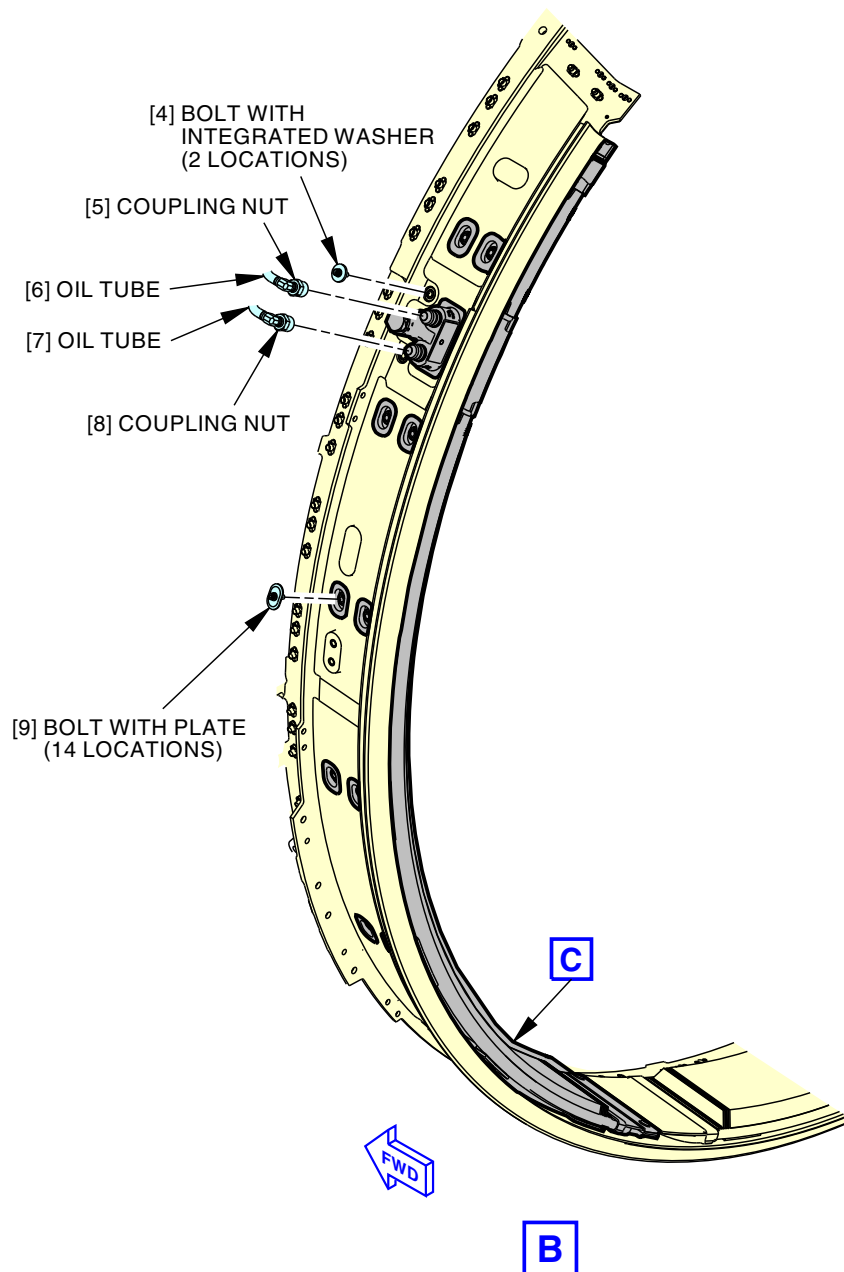
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79-21-02

 Page 405
 Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



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Engine Surface Air Cooling Oil Cooler 1 Installation
Figure 401/79-21-02-990-802-G00 (Sheet 3 of 5)

EFFECTIVITY
SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0181

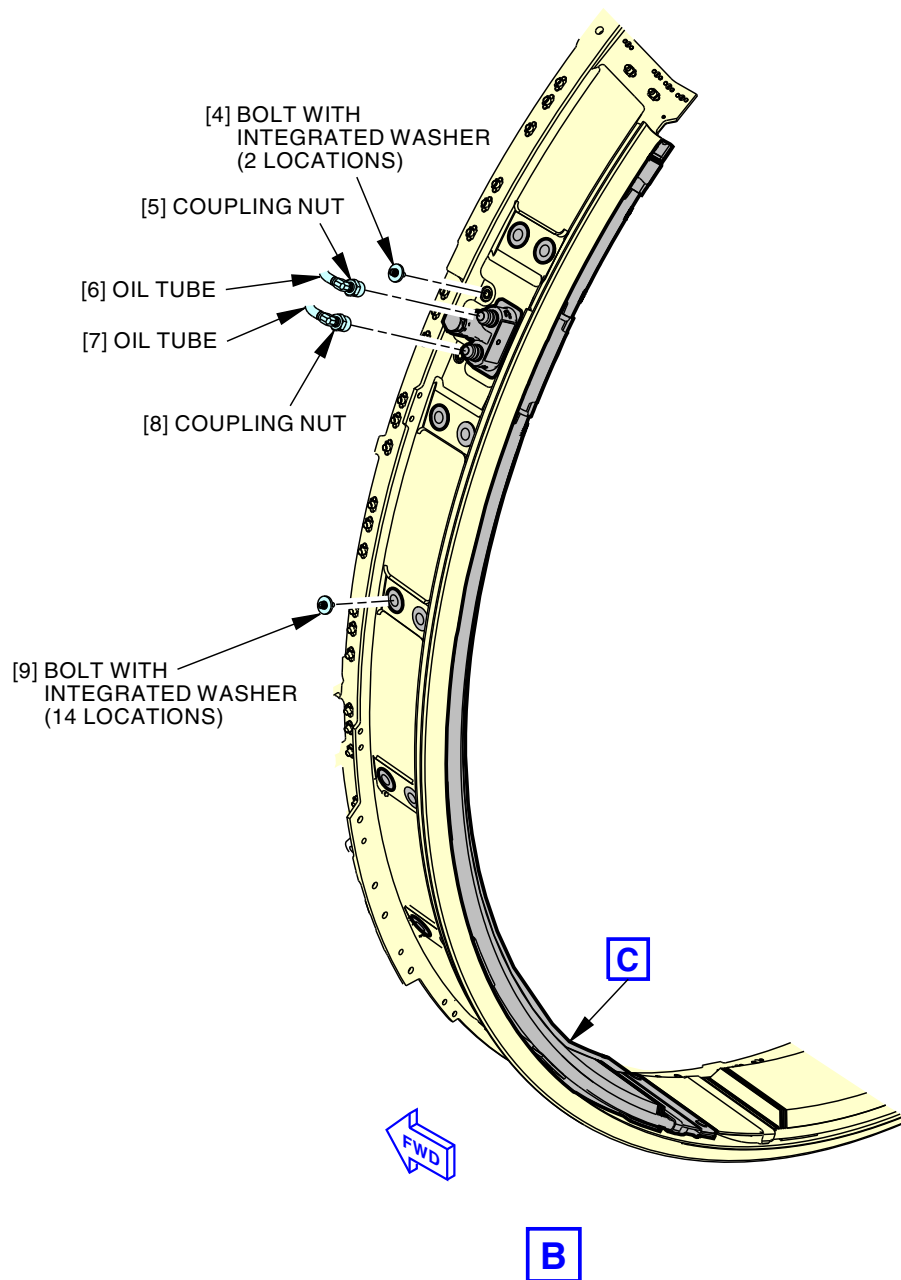
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79-21-02

Page 406
Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



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Engine Surface Air Cooling Oil Cooler 1 Installation
Figure 401/79-21-02-990-802-G00 (Sheet 4 of 5)

EFFECTIVITY
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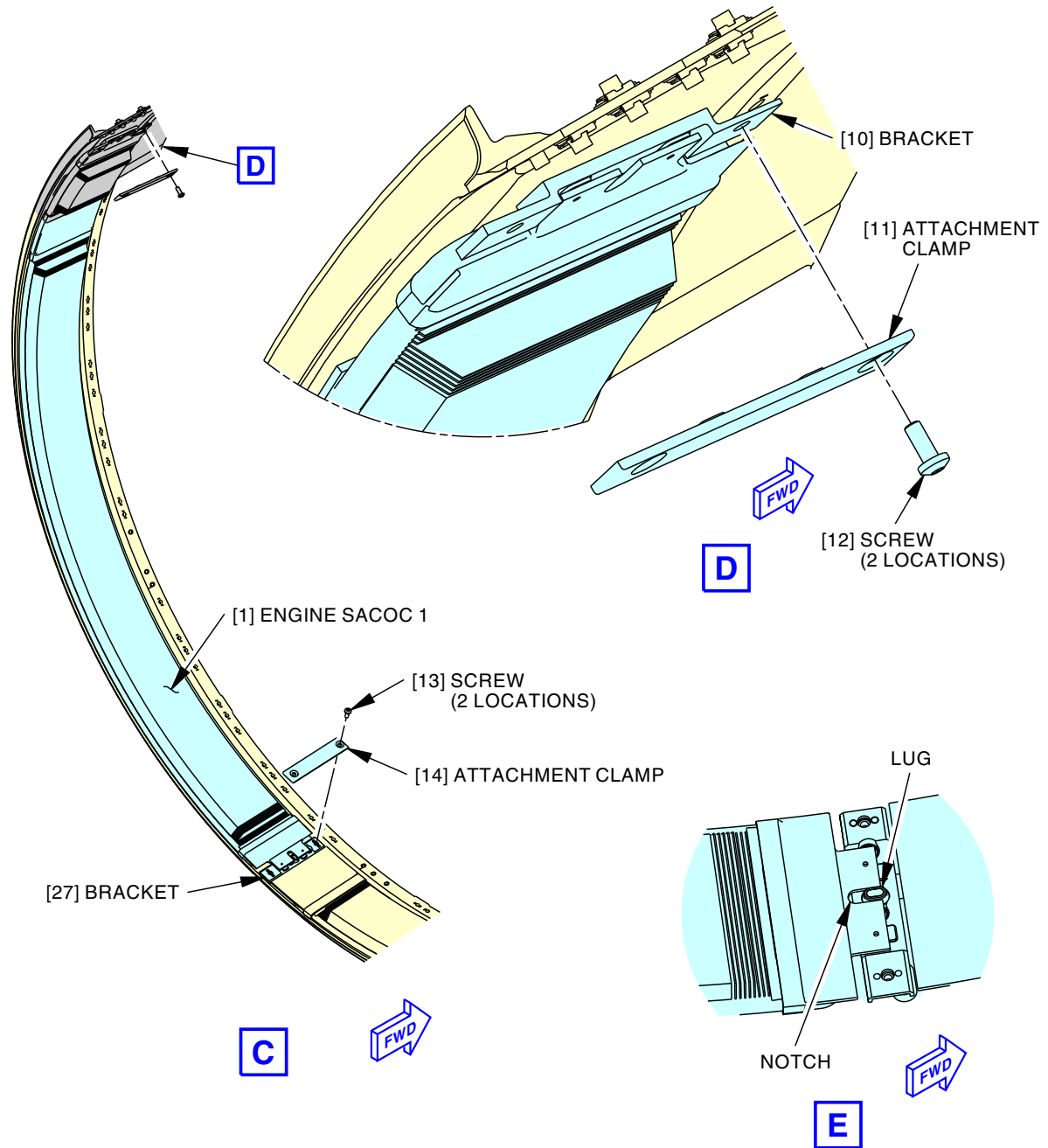
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79-21-02

Page 407
Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



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Engine Surface Air Cooling Oil Cooler 1 Installation
Figure 401/79-21-02-990-802-G00 (Sheet 5 of 5)

EFFECTIVITY
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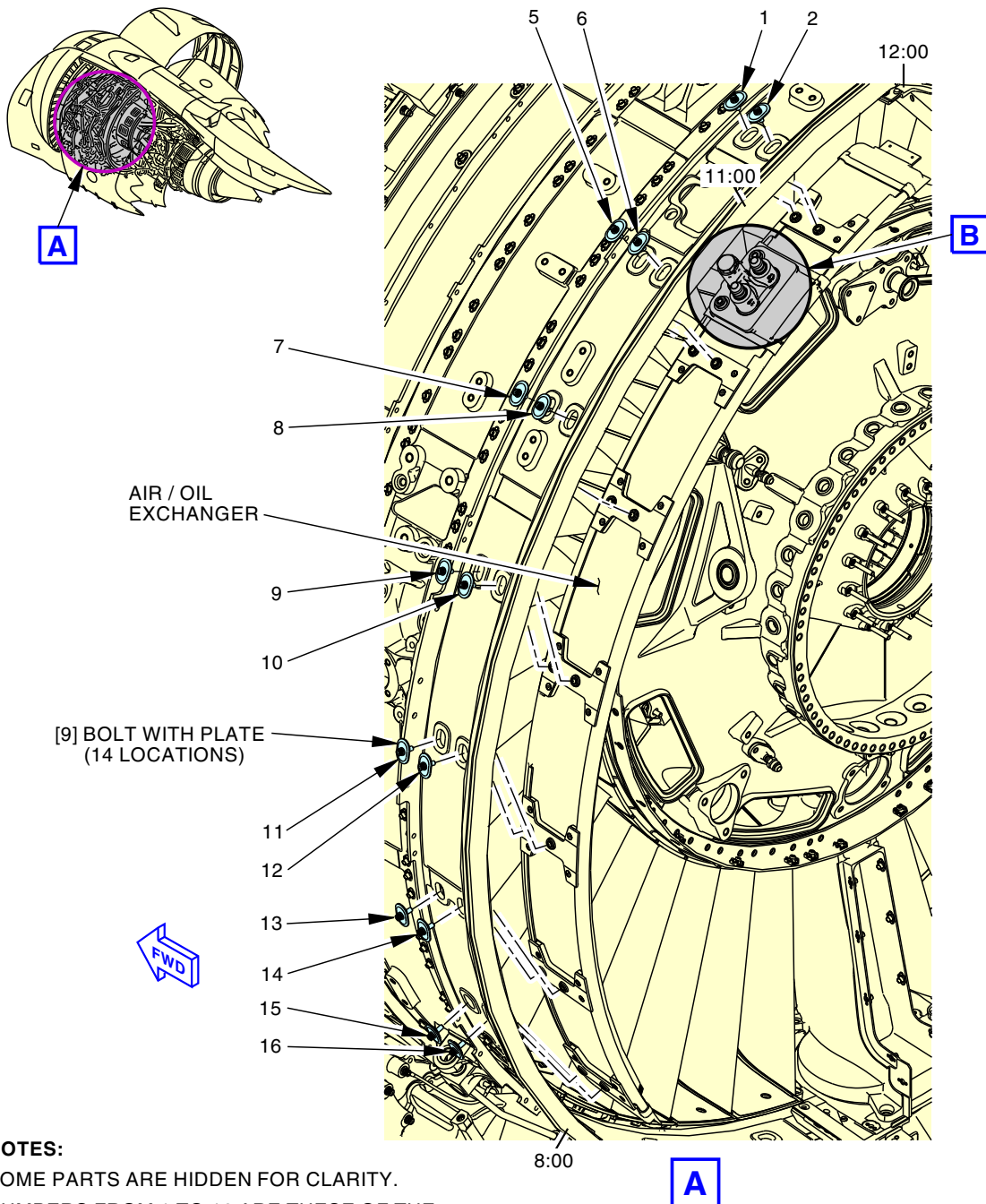
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79-21-02

Page 408
Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

**NOTES:**

SOME PARTS ARE HIDDEN FOR CLARITY.
NUMBERS FROM 1 TO 16 ARE THESE OF THE
TORQUING SEQUENCE.

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Bolt Tightening Sequence
Figure 402/79-21-02-990-806-G00 (Sheet 1 of 3)

EFFECTIVITY
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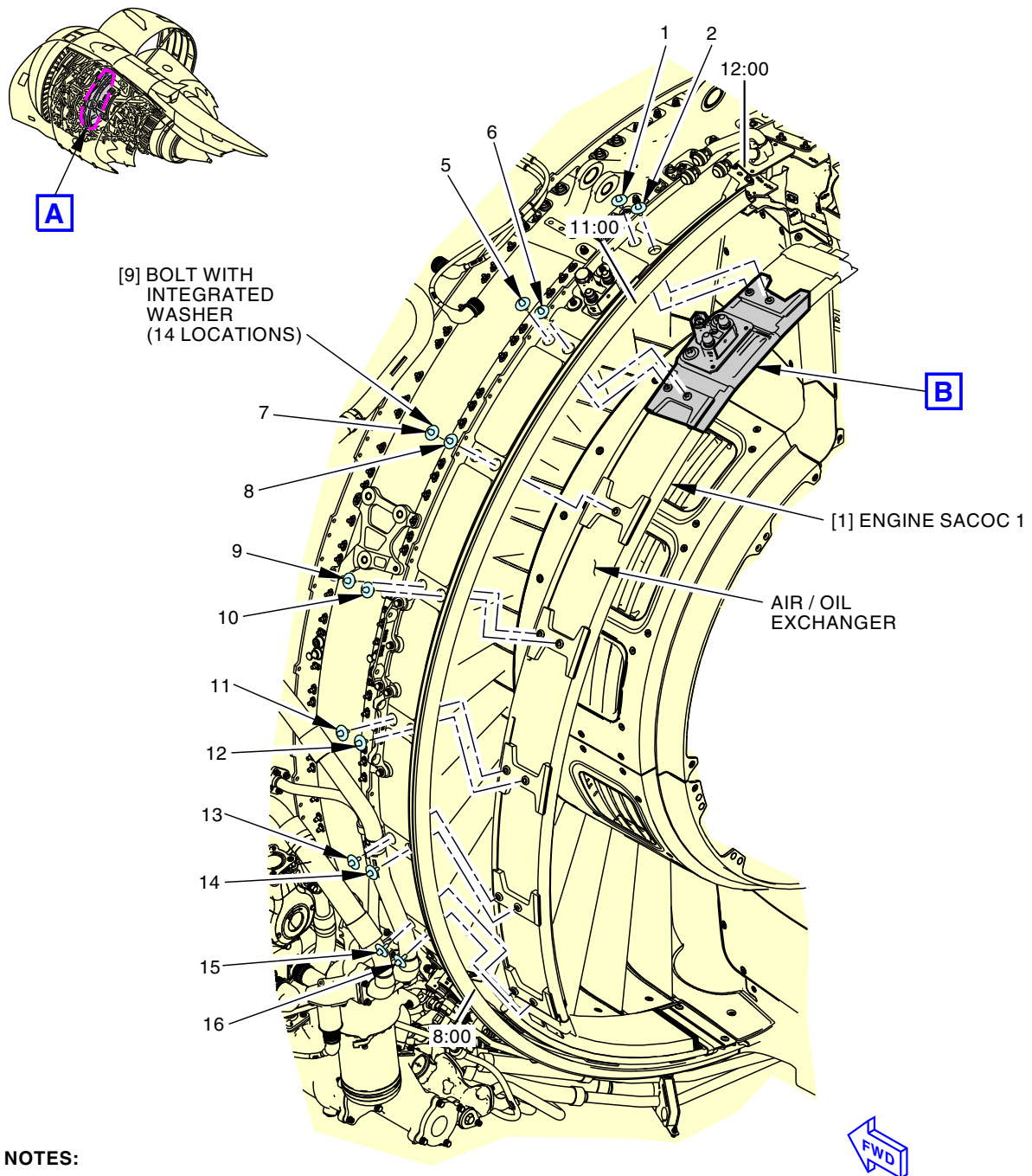
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 409
Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

**NOTES:**

SOME PARTS ARE HIDDEN FOR CLARITY.

NUMBERS FROM 1 TO 16 ARE THESE OF THE TORQUING SEQUENCE.

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Bolt Tightening Sequence
Figure 402/79-21-02-990-806-G00 (Sheet 2 of 3)

EFFECTIVITY
SIA ALL; POST LEAP-1B SERVICE BULLETIN
72-0181

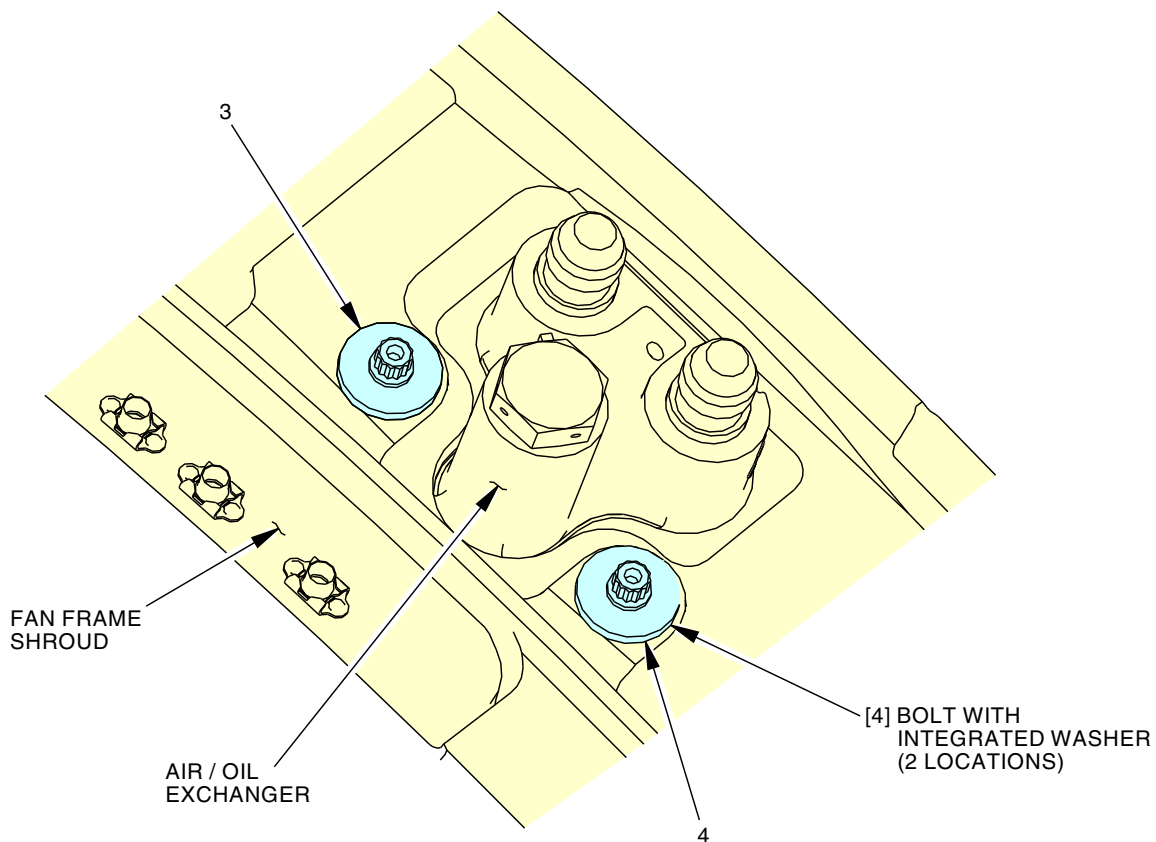
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-02

Page 410
Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

**NOTE:**

NUMBERS FROM 3 AND 4 ARE THESE OF THE TORQUING SEQUENCE.

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2946282 S0000723172_V1

Bolt Tightening Sequence
Figure 402/79-21-02-990-806-G00 (Sheet 3 of 3)

EFFECTIVITY
SIA ALL

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-02

Page 411
Sep 15/2022

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

TASK 79-21-02-400-801-G00**3. Engine Surface Air Cooling Oil Cooler 1 Installation**

(Figure 401 and Figure 402)

A. General

- (1) This task gives the instructions to install the engine Surface Air Cooled Oil Cooler (SACOC) 1.

B. References

Reference	Title
12-13-11-600-801	Engine Servicing (Oil Replenishing) (P/B 301)
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
78-31-00-010-802-G00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-801-G00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
A50474 [CP2256]	Locking Agent - Liquid	
D00599 [CP2442]	Oil - Engine	
D00601 [CP2101]	Vaseline - Graphite Mineral	

E. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

F. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2

G. Engine Surface Air Cooling Oil Cooler 1 Installation

SUBTASK 79-21-02-420-001-G00

**WARNING**

DO NOT LET THE OIL STAY ON YOUR SKIN. YOU CAN ABSORB POISONOUS MATERIALS FROM THE OIL THROUGH YOUR SKIN.

**CAUTION**

DO NOT LET OIL GET ON THE ENGINE, OR OTHER COMPONENTS. IMMEDIATELY CLEAN THE AREAS THAT OIL FALLS ON. OIL CAN CAUSE DAMAGE TO PAINT AND RUBBER.

- (1) Install the engine SACOC 1 [1]:

- (a) Make sure that the mating faces are clean and clear of unwanted materials.

EFFECTIVITY
SIA ALL

D633AM101-SIA

79-21-02

Page 412
May 15/2023

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

**CAUTION**

MAKE SURE THAT YOU CORRECTLY ALIGN THE LUG OF THE BRACKET WITH THE NOTCH OF THE ENGINE SURFACE AIR COOLED OIL COOLER (SACOC) 1. IF YOU DO NOT OBEY, DAMAGE TO THE ENGINE SACOC 1 CAN OCCUR.

- (b) Install the engine SACOC 1 [1] on the engine.
- (c) Remove the protective covers from the engine SACOC 1 [1], oil tube [6], and oil tube [7].

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0181

- (d) Lubricate the threads of the 14 bolts with plates [9] and two bolts with integrated washers [4] with graphite mineral vaseline, D00601 [CP2101].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0181

- (e) Lubricate the threads of the 14 bolts with integrated washers [9] and two bolts with integrated washers [4] with graphite mineral vaseline, D00601 [CP2101].

SIA ALL

- (f) Put the bracket [10] and engine SACOC 1 [1] in position at the same time.
 - 1) Slide the bracket [10] between the engine SACOC 1 [1] and fan case.
 - 2) Make sure that the assembly direction is correct.

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0181**CAUTION**

BE CAREFUL WHEN YOU INSTALL THE BOLTS ON THE AIR/OIL EX-CHANGER. IF YOU DO NOT OBEY, DAMAGE TO THE LIP SEAL OF THE AIR/OIL EX-CHANGER CAN OCCUR.

- (g) Install the 14 bolts with plates [9] and two bolts with integrated washers [4] that attach the engine SACOC 1 [1] to the engine.

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0181**CAUTION**

BE CAREFUL WHEN YOU INSTALL THE BOLTS ON THE AIR/OIL EX-CHANGER. IF YOU DO NOT OBEY, DAMAGE TO THE LIP SEAL OF THE AIR/OIL EX-CHANGER CAN OCCUR.

- (h) Install the 14 bolts with integrated washers [9] and two bolts with integrated washers [4] that attach the engine SACOC 1 [1] to the engine.

SIA ALL

- (i) Remove the covers.

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0181

- (j) Tighten the bolts with plates [9] from the top to the bottom, following the sequence 1 to 16 then re-tighten the bolts with plates [9] a second time following the same sequence order as follows (Figure 402):
 - 1) Tighten the two bolts with plates [9], following the specific sequence (start by 1 and finish by 2), to 110.6 in-lb (12.5 N·m) - 119.5 in-lb (13.5 N·m).
 - 2) Tighten the two bolts with integrated washers [4], following the specific sequence (start by 3 and finish by 4), to 110.6 in-lb (12.5 N·m) - 119.5 in-lb (13.5 N·m).

EFFECTIVITY
SIA ALL

79-21-02

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL****SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0181 (Continued)**

- 3) Tighten the 12 remaining bolts with plates [9], from the top to the bottom following the specific sequence (start by 5 until 16), to 110.6 in-lb (12.5 N·m) - 119.5 in-lb (13.5 N·m).
- 4) Tighten the bolts with plates [9] and bolts with integrated washers [4] again in accordance with the requested torque value, follow the sequence order from the top to the bottom.

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0181

- (k) Tighten the bolts with integrated washers [9] from the top to the bottom, following the sequence 1 to 16 then re-tighten the bolts with plates [9] a second time following the same sequence order as follows (Figure 402):
 - 1) Tighten the two bolts with integrated washers [9], following the specific sequence (start by 1 and finish by 2), to 110.6 in-lb (12.5 N·m) - 119.5 in-lb (13.5 N·m).
 - 2) Tighten the two bolts with integrated washers [4], following the specific sequence (start by 3 and finish by 4), to 110.6 in-lb (12.5 N·m) - 119.5 in-lb (13.5 N·m).
 - 3) Tighten the 12 remaining bolts with integrated washers [9], from the top to the bottom following the specific sequence (start by 5 until 16), to 110.6 in-lb (12.5 N·m) - 119.5 in-lb (13.5 N·m).
 - 4) Tighten the bolts with integrated washers [9] and bolts with integrated washers [4] again in accordance with the requested torque value, follow the sequence order from the top to the bottom.

SIA ALL

- (l) Install the attachment clamp [14] and attachment clamp [11] to secure the engine SACOC 1 [1] as follows:
 - 1) Apply Loctite 241, A50474 [CP2256], on the threads and under the head of the two screws [12].
 - 2) Lubricate the threads of the two screws [13] with graphite mineral vaseline, D00601 [CP2101].
 - 3) Install the attachment clamp [14] and two screws [13] that attach the engine SACOC 1 [1] to the bracket [27].
 - 4) Install the attachment clamp [11] and two screws [12] that attach the engine SACOC 1 [1] to the bracket [10].
 - 5) Tighten the two screws [12] to 84.1 in-lb (9.5 N·m) - 92.9 in-lb (10.5 N·m).
 - 6) Tighten the two screws [13] to 84.1 in-lb (9.5 N·m) - 92.9 in-lb (10.5 N·m).
- (m) Connect the oil tube [7] to the engine SACOC 1 [1] as follows:
 - 1) Lubricate the threads of the coupling nut [8] with oil, D00599 [CP2442].
 - 2) Connect the oil tube [7] with the coupling nut [8] to the engine SACOC 1 [1].
 - 3) Tighten the coupling nut [8] to 443 in-lb (50 N·m) - 531 in-lb (60 N·m).
- (n) Connect the oil tube [6] to the engine SACOC 1 [1] as follows:
 - 1) Lubricate the threads of the coupling nut [5] with oil, D00599 [CP2442].
 - 2) Connect the oil tube [6] with the coupling nut [5] to the engine SACOC 1 [1].
 - 3) Tighten the coupling nut [5] to 443 in-lb (50 N·m) - 531 in-lb (60 N·m).
- (o) Clean the work area and clear the tools used to do the procedure.

EFFECTIVITY
SIA ALL**79-21-02**

737-7/8/8200/9/10 AIRCRAFT MAINTENANCE MANUAL

H. Put the Airplane Back to Its Usual Condition

SUBTASK 79-21-02-600-001-G00

- (1) Do this task: Engine Servicing (Oil Replenishing), TASK 12-13-11-600-801.

SUBTASK 79-21-02-410-001-G00



OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (2) Do these tasks in sequence to safely close the left thrust reverser:
- (a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-010-802-G00.
 - 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
415	Left Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
 - (b) Close the applicable left Fan Cowl Panel (TASK 71-11-04-410-801-G00).
 - 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
 - (c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-801-G00.

SUBTASK 79-21-02-860-002-G00

- (3) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:
- (a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.
 - (b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

I. Engine Surface Air Cooling Oil Cooler 1 Installation Test

SUBTASK 79-21-02-730-001-G00

- (1) Do the test(s) that are given in the Power Plant Test Reference Table (TASK 71-00-00-800-804-G00).

————— END OF TASK —————

TASK 79-21-02-000-802-G00

4. Engine Surface Air Cooling Oil Cooler 2 Removal

(Figure 403)

A. General

- (1) This task gives the instructions to remove the engine Surface Air Cooled Oil Cooler (SACOC) 2.

B. References

Reference	Title
12-13-11-600-803	Engine Oil Change Servicing (P/B 301)

EFFECTIVITY
SIA ALL

79-21-02

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 415
Sep 15/2022

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

(Continued)

Reference	Title
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
78-31-00-010-801-G00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-801-G00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
416	Right Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2
426	Right Thrust Reverser, Engine 2

F. Prepare for the Removal**SUBTASK 79-21-02-860-003-G00**

- (1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:
 - (a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.
 - (b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 79-21-02-010-002-G00

- (2) Do these tasks in sequence to safely open the right thrust reverser on the applicable engine:

**WARNING**

DO THE DEACTIVATION PROCEDURE FOR THE THRUST REVERSER TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

- (a) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-801-G00.

EFFECTIVITY
SIA ALL

79-21-02

D633AM101-SIA

Page 416
May 15/2023

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

**CAUTION**

IF FAN COWLS ARE INSTALLED, MAKE SURE THAT LEFT AND RIGHT FAN COWLS ARE IN THE FULL OPEN POSITION. MAKE SURE THAT THE SPRING DOOR OPENING-SYSTEM (SDOS) AND HOLD OPEN RODS (HOR) ARE LOCKED IN THEIR POSITION. IF YOU DO NOT, STRUCTURAL DAMAGE TO THE FAN COWL AND THRUST REVERSER CAN OCCUR.

- (b) Open both fan cowl panels (TASK 71-11-04-010-801-G00).

NOTE: Because the center line of the thrust reversers is off 6:00 o'clock position, both fan cowl panels must be opened to prevent damaging the fan cowl panel if either thrust reverser needs to be opened.

- 1) Open these access panels:

<u>Number</u>	<u>Name/Location</u>
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

**WARNING**

OBEY THE INSTRUCTIONS IN THE PROCEDURE TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (c) Open the applicable right thrust reverser (TASK 78-31-00-010-801-G00).

- 1) Open these access panels:

<u>Number</u>	<u>Name/Location</u>
416	Right Thrust Reverser, Engine 1
426	Right Thrust Reverser, Engine 2

G. Engine Surface Air Cooling Oil Cooler 2 Removal

SUBTASK 79-21-02-680-001-G00

**WARNING**

DO NOT TOUCH THE COMPONENTS OF THE OIL SYSTEM IF THE ENGINE IS HOT. THESE COMPONENTS STAY HOTTER THAN OTHER COMPONENTS. HOT COMPONENTS CAN BURN YOU.

**WARNING**

DO NOT OPEN THE OIL SYSTEM UNTIL THE PRESSURE GOES TO ZERO. THE PRESSURE GOES TO ZERO APPROXIMATELY 5 MINUTES AFTER AN ENGINE STOPS. A PRESSURIZED OIL SYSTEM CAN RELEASE A SPRAY OF HOT OIL THAT CAN BURN YOU.

**WARNING**

DO NOT LET THE OIL STAY ON YOUR SKIN. YOU CAN ABSORB POISONOUS MATERIALS FROM THE OIL THROUGH YOUR SKIN.

EFFECTIVITY
SIA ALL

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-02

Page 417
May 15/2023

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL****(WARNING PRECEDES)**

DO NOT LET OIL GET ON THE ENGINE, OR OTHER COMPONENTS.
IMMEDIATELY CLEAN THE AREAS THAT OIL FALLS ON. OIL CAN CAUSE
DAMAGE TO PAINT AND RUBBER.

- (1) Drain the engine oil system (TASK 12-13-11-600-803).

SUBTASK 79-21-02-010-003-G00

- (2) Disconnect the oil tube [17] from the engine SACOC 2 [2] as follows:
- (a) Loosen the coupling nut [16] that attaches the oil tube [17] to the engine SACOC 2 [2].
 - (b) Disconnect the oil tube [17] from the engine SACOC 2 [2].

SUBTASK 79-21-02-010-004-G00

- (3) Disconnect the oil tube [18] from the engine SACOC 2 [2] as follows:
- (a) Loosen the coupling nut [19] that attaches the oil tube [18] to the engine SACOC 2 [2].
 - (b) Disconnect the oil tube [18] from the engine SACOC 2 [2].

SUBTASK 79-21-02-480-001-G00

- (4) Install the protective covers on the oil tube [17], oil tube [18], and engine SACOC 2 [2].

SUBTASK 79-21-02-020-004-G00

- (5) Remove the engine SACOC 2 [2] as follows:

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0181

- (a) Remove the 14 bolts with plates [20] that attach the engine SACOC 2 [2] to the engine.

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0181

- (b) Remove the 14 bolts with integrated washers [20] that attach the engine SACOC 2 [2] to the engine.

SIA ALL

- (c) Remove the two bolts with integrated washers [15] that attach the engine SACOC 2 [2] to the engine.
- (d) Remove the two screws [23] and attachment clamp [22] that attach the engine SACOC 2 [2] to the bracket [21].
- (e) Remove the two screws [24] and attachment clamp [25] that attach the engine SACOC 2 [2] to the bracket [26].
- (f) Remove the engine SACOC 2 [2] from the engine.

———— **END OF TASK** ————

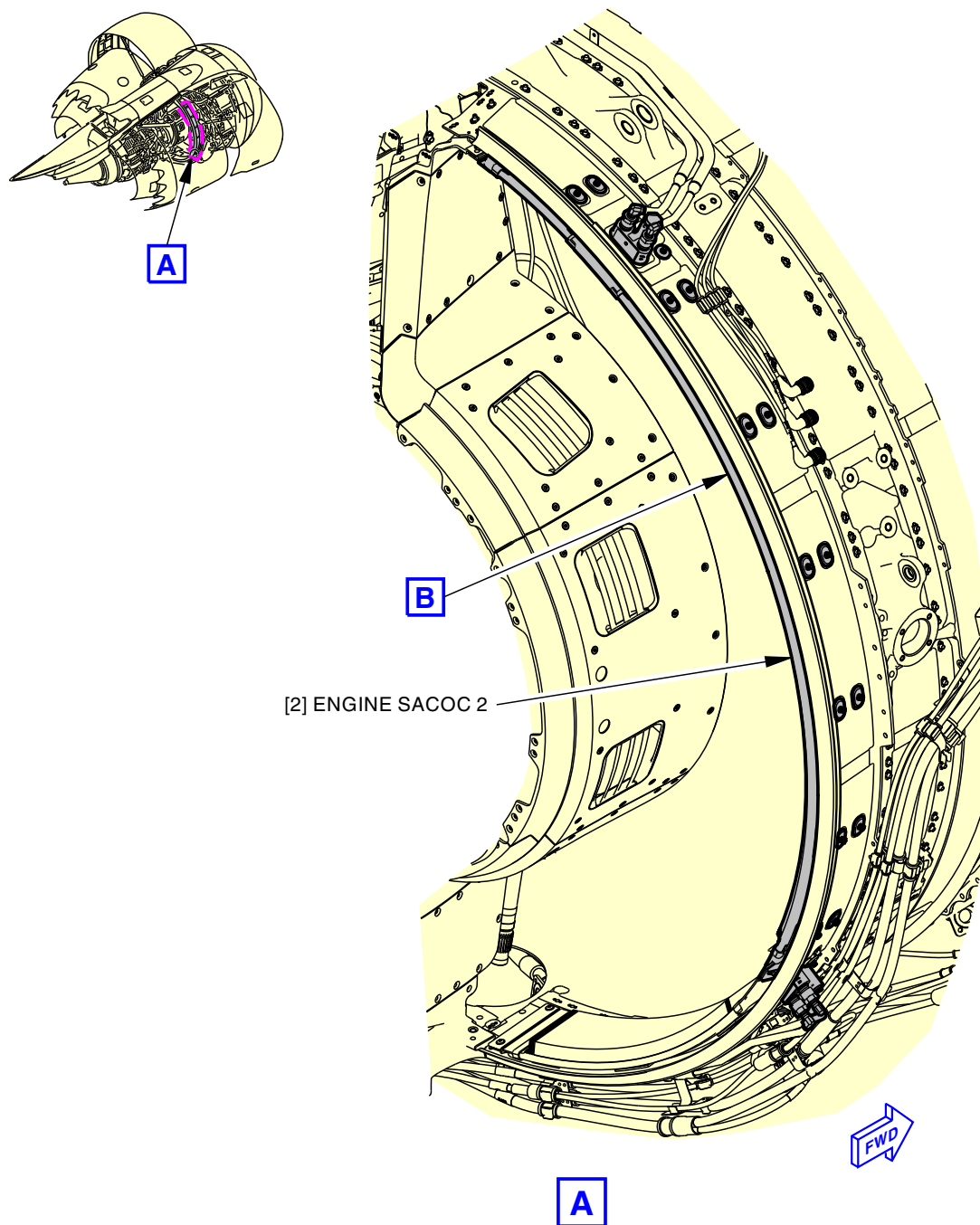
EFFECTIVITY
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79-21-02

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ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 418
May 15/2023


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Engine Surface Air Cooling Oil Cooler 2 Installation
Figure 403/79-21-02-990-804-G00 (Sheet 1 of 5)

EFFECTIVITY
 SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0181

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ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-02
 Page 419
 Sep 15/2022

Engine Surface Air Cooling Oil Cooler 2 Installation

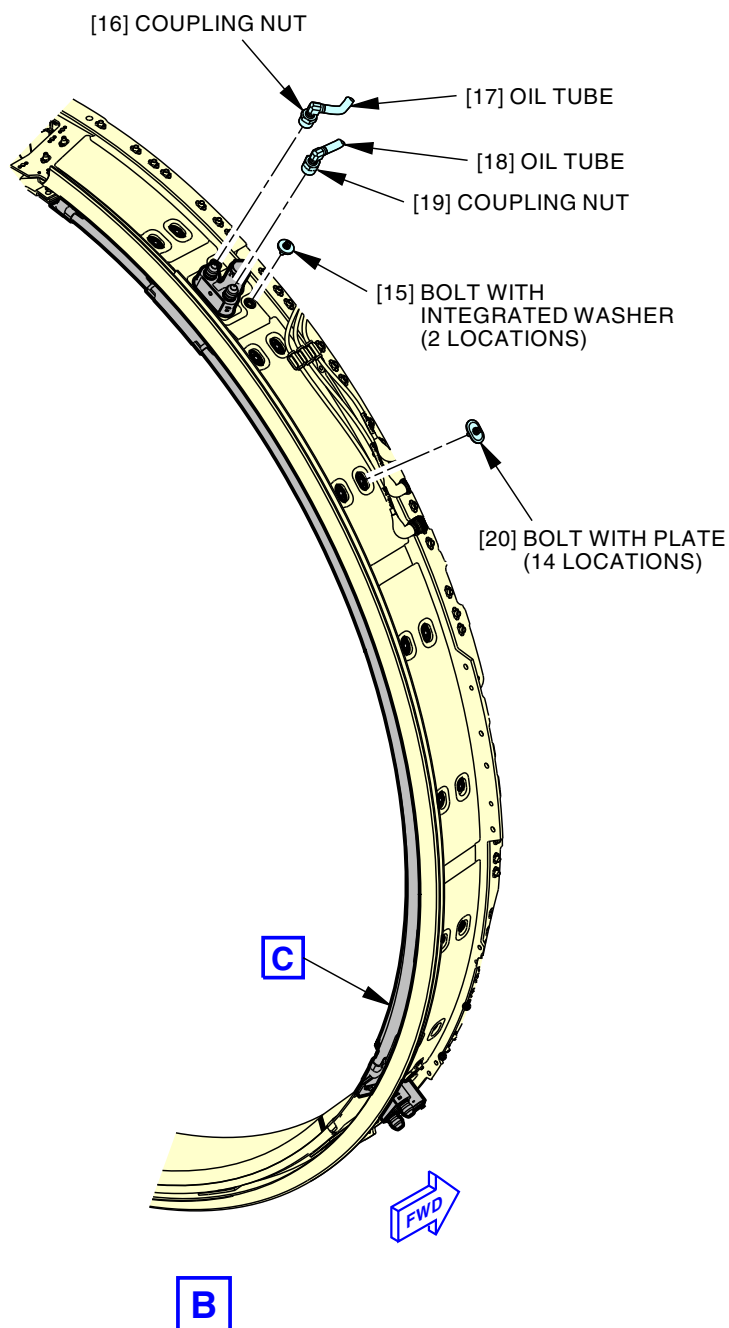
Figure 403/79-21-02-990-804-G00 (Sheet 2 of 5)

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-02

Page 420
Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



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Engine Surface Air Cooling Oil Cooler 2 Installation
Figure 403/79-21-02-990-804-G00 (Sheet 3 of 5)

EFFECTIVITY
SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0181

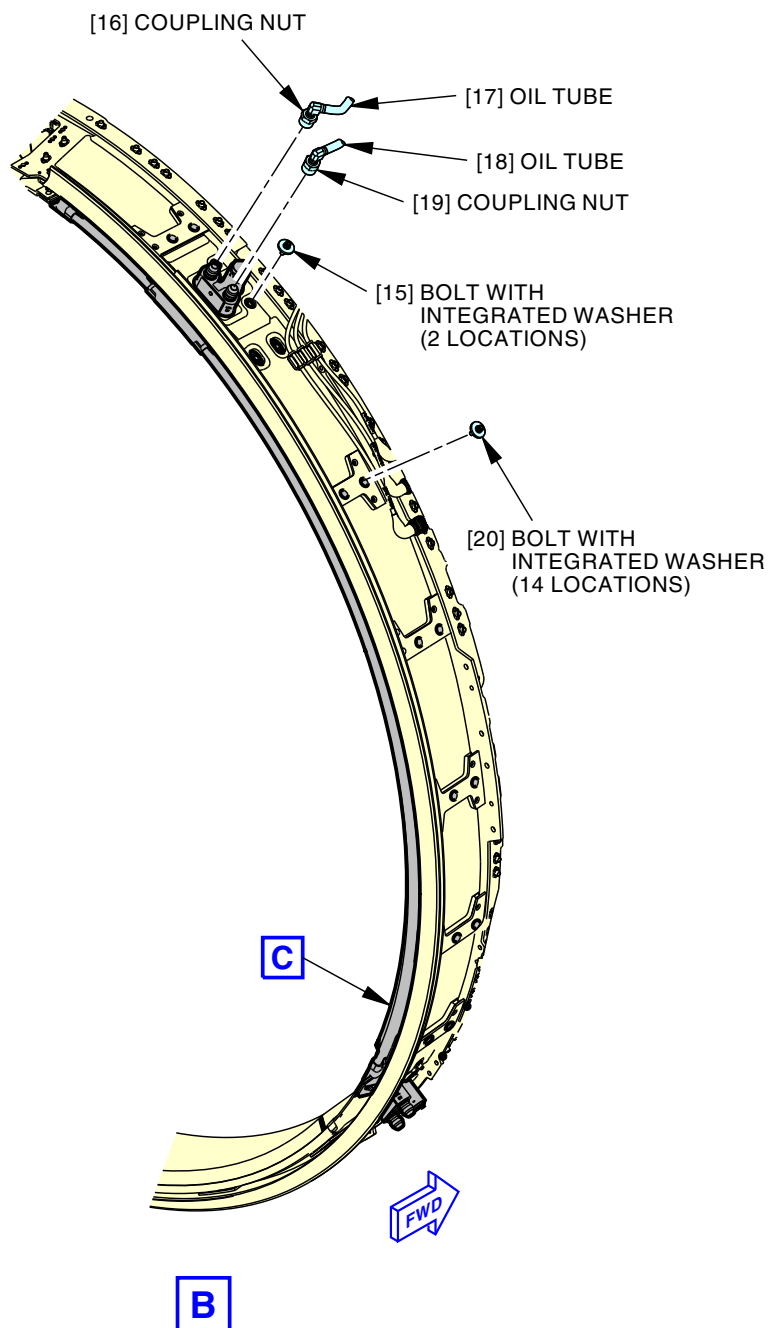
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-02

Page 421
Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



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Engine Surface Air Cooling Oil Cooler 2 Installation
Figure 403/79-21-02-990-804-G00 (Sheet 4 of 5)

EFFECTIVITY
SIA ALL; POST LEAP-1B SERVICE BULLETIN
72-0181

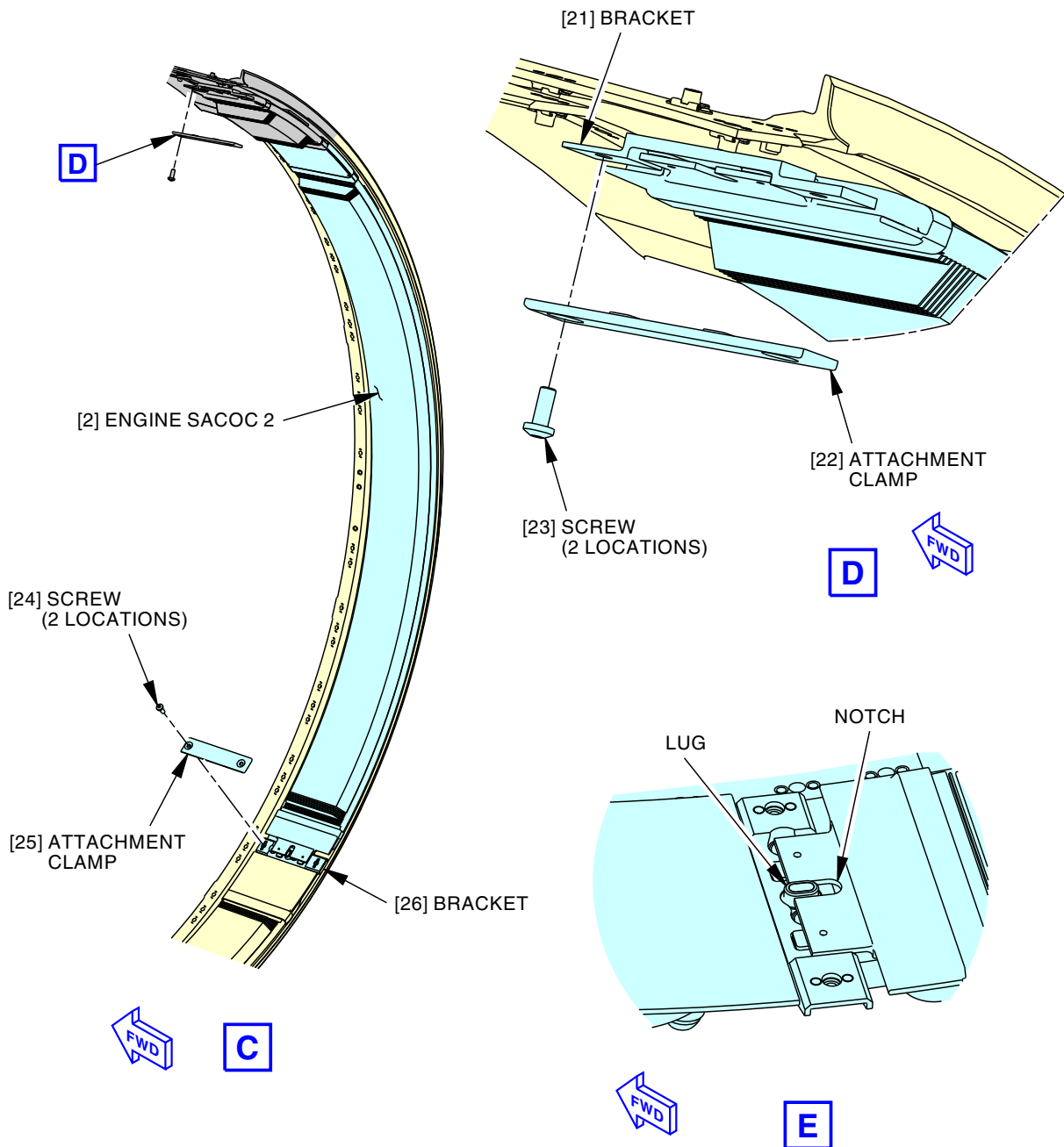
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-02

Page 422
Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



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2422391 S0000556952_V6

Engine Surface Air Cooling Oil Cooler 2 Installation
Figure 403/79-21-02-990-804-G00 (Sheet 5 of 5)

EFFECTIVITY
SIA ALL

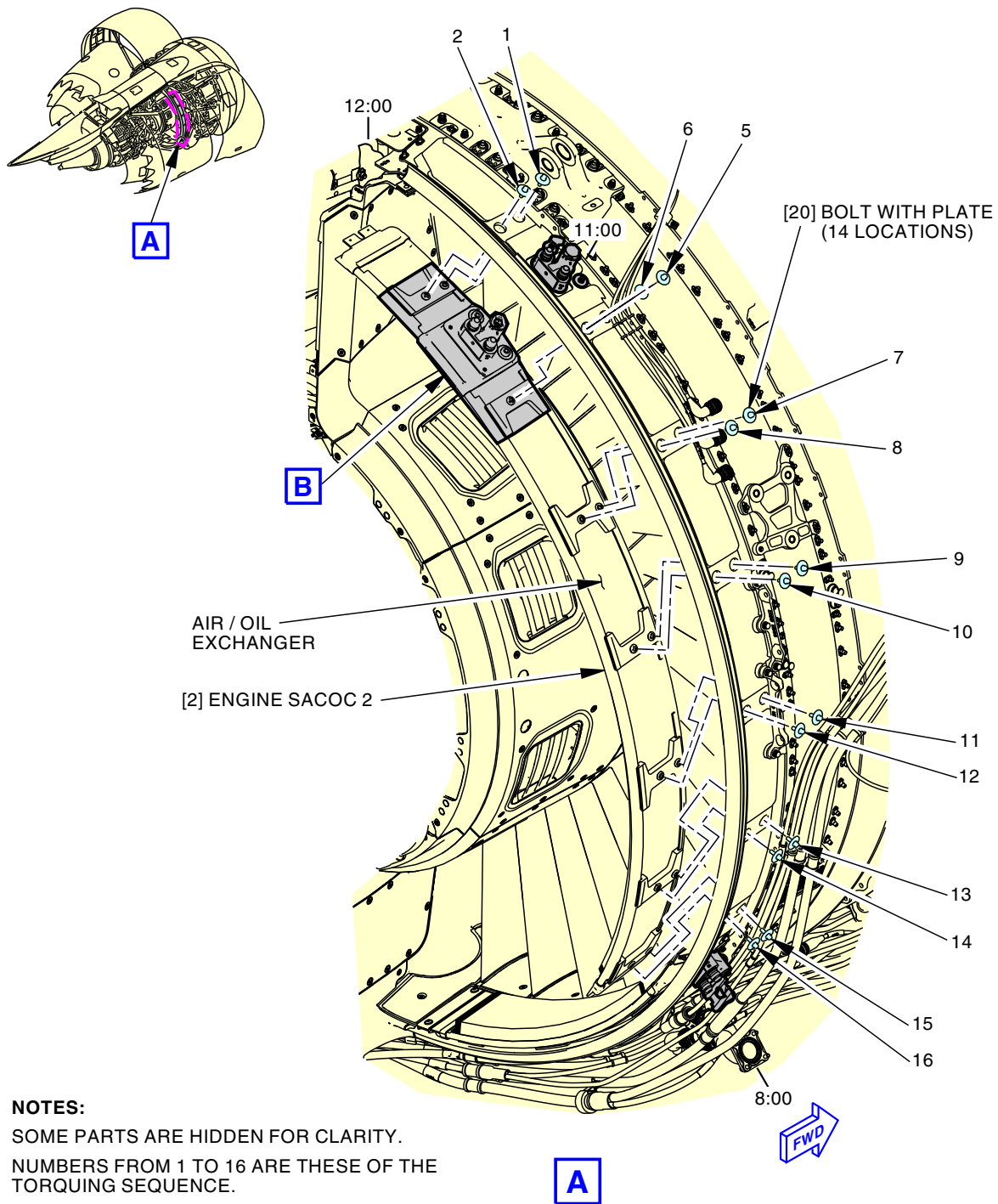
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-02

Page 423
Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

**NOTES:**

SOME PARTS ARE HIDDEN FOR CLARITY.

NUMBERS FROM 1 TO 16 ARE THESE OF THE TORQUING SEQUENCE.

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3012581 S0000786064_V1

Bolt Tightening Sequence
Figure 404/79-21-02-990-807-G00 (Sheet 1 of 3)

EFFECTIVITY
SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0181

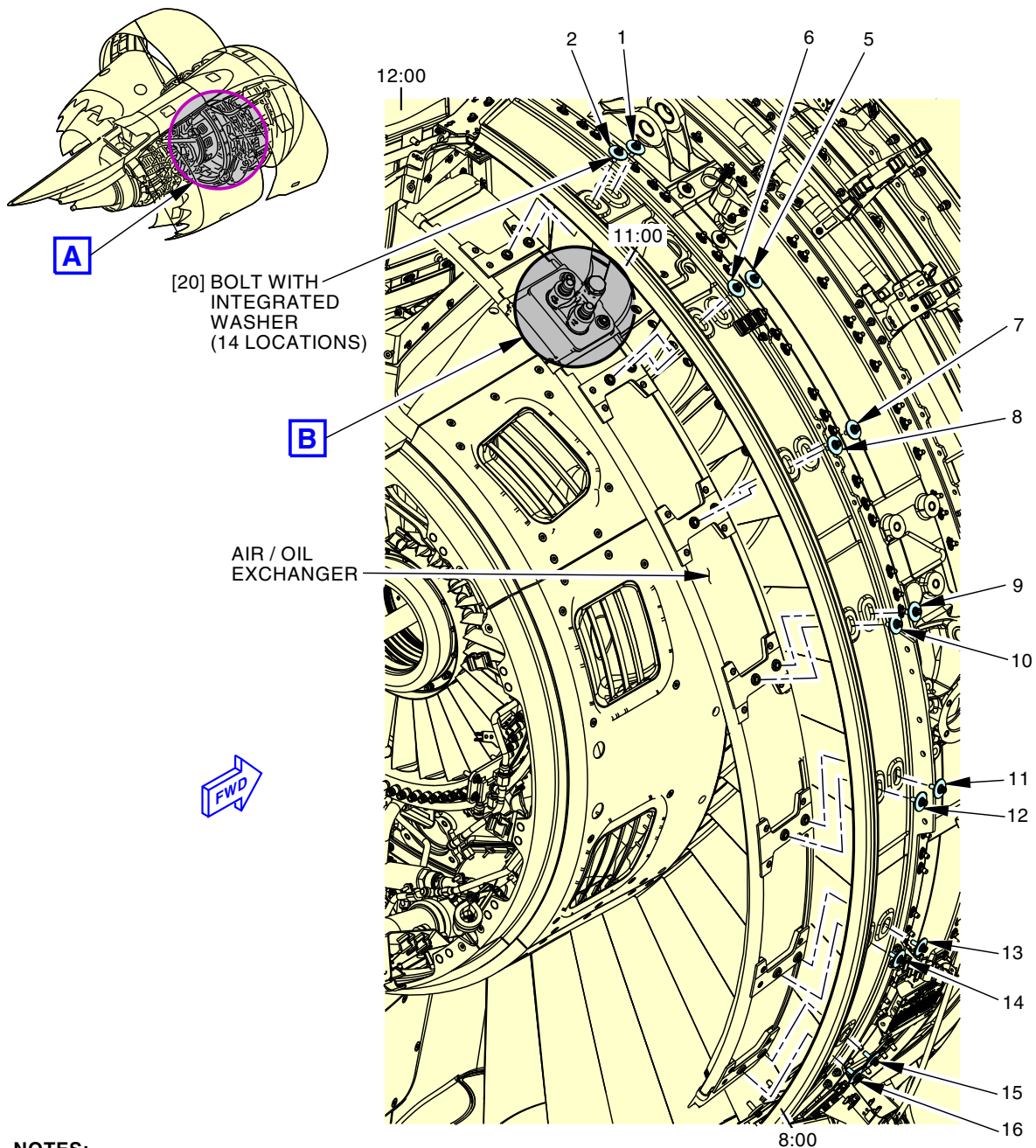
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79-21-02

Page 424
Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

**NOTES:**

SOME PARTS ARE HIDDEN FOR CLARITY.
NUMBERS FROM 1 TO 16 ARE THESE OF THE
TORQUING SEQUENCE.

ICNLEAP1B792102D5882800016A00101
2946454 S0000723173_V2

Bolt Tightening Sequence
Figure 404/79-21-02-990-807-G00 (Sheet 2 of 3)

EFFECTIVITY
SIA ALL; POST LEAP-1B SERVICE BULLETIN
72-0181

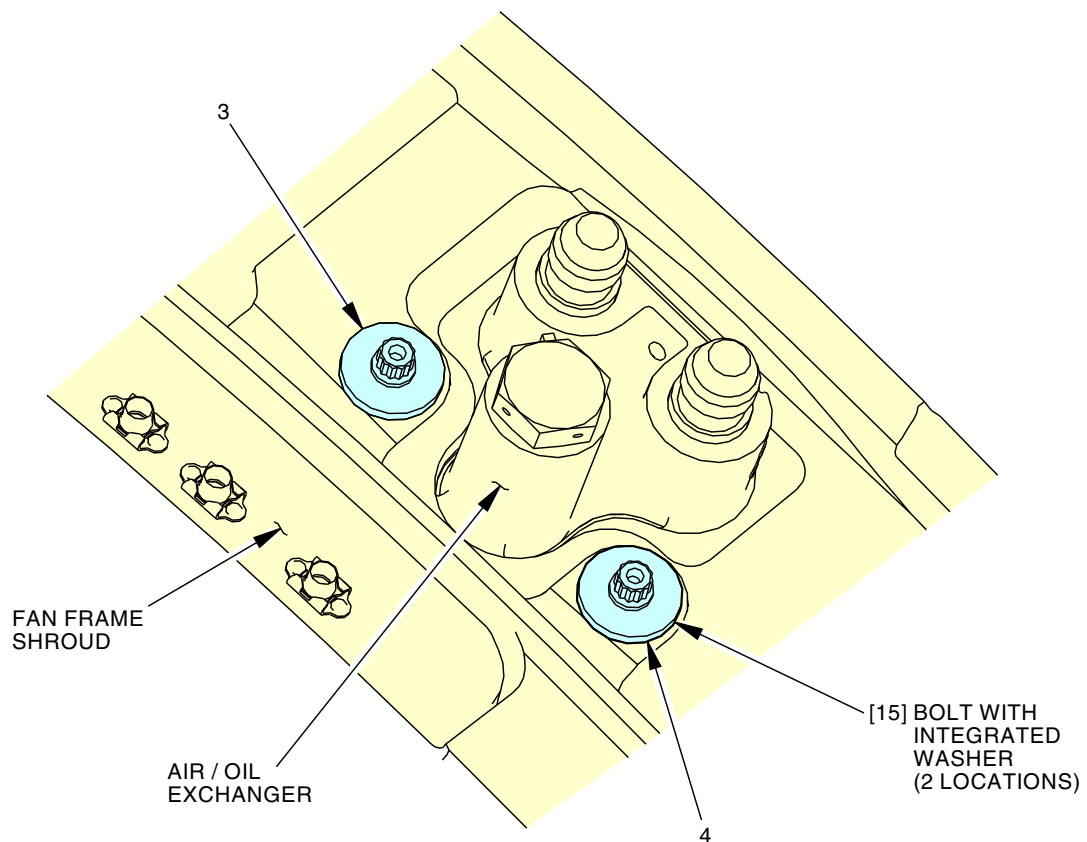
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-02

Page 425
Sep 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



B

NOTE:

NUMBERS FROM 3 AND 4 ARE THESE OF THE TORQUING SEQUENCE.

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2946456 S0000723174_V1

Bolt Tightening Sequence
Figure 404/79-21-02-990-807-G00 (Sheet 3 of 3)

EFFECTIVITY
SIA ALL

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-02

Page 426
Sep 15/2022

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

TASK 79-21-02-400-802-G00**5. Engine Surface Air Cooling Oil Cooler 2 Installation**

(Figure 403 and Figure 404)

A. General

- (1) This task gives the instructions to install the engine Surface Air Cooled Oil Cooler (SACOC) 2.

B. References

Reference	Title
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
78-31-00-010-802-G00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-801-G00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
A50474 [CP2256]	Locking Agent - Liquid	
D00599 [CP2442]	Oil - Engine	
D00601 [CP2101]	Vaseline - Graphite Mineral	

E. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

F. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
416	Right Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2
426	Right Thrust Reverser, Engine 2

G. Engine Surface Air Cooling Oil Cooler 2 Installation

SUBTASK 79-21-02-420-002-G00



DO NOT LET THE OIL STAY ON YOUR SKIN. YOU CAN ABSORB POISONOUS MATERIALS FROM THE OIL THROUGH YOUR SKIN.



DO NOT LET OIL GET ON THE ENGINE, OR OTHER COMPONENTS. IMMEDIATELY CLEAN THE AREAS THAT OIL FALLS ON. OIL CAN CAUSE DAMAGE TO PAINT AND RUBBER.

- (1) Install the engine SACOC 2 [2]:
- (a) Make sure that the mating faces are clean and clear of unwanted materials.

EFFECTIVITY
SIA ALL

D633AM101-SIA

79-21-02

Page 427
May 15/2023

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0181

- (b) Lubricate the threads of the 14 bolts with plates [20] and two bolts with integrated washers [15] with graphite mineral vaseline, D00601 [CP2101].

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0181

- (c) Lubricate the threads of the 14 bolts with integrated washers [20] and two bolts with integrated washers [15] with graphite mineral vaseline, D00601 [CP2101].

SIA ALL



CAUTION

MAKE SURE THAT YOU ALIGN THE LUG OF THE BRACKET CORRECTLY WITH THE NOTCH OF THE ENGINE SURFACE AIR COOLED OIL COOLER (SACOC) 2. IF YOU DO NOT OBEY, DAMAGE TO THE ENGINE SACOC 2 CAN OCCUR.

- (d) Install the engine SACOC 2 [2] on the engine.
- (e) Remove the protective covers from the engine SACOC 2 [2], oil tube [17], and oil tube [18].
- (f) Put the engine SACOC 2 [2] and bracket [21] in position at the same time.
- 1) Slide the bracket [21] between the engine SACOC 2 [2] and the fan case.
 - 2) Make sure that the assembly direction is correct.

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0181



CAUTION

BE CAREFUL WHEN YOU INSTALL THE BOLTS ON THE AIR/OIL EX-CHANGER. IF YOU DO NOT OBEY, DAMAGE TO THE LIP SEAL OF THE AIR/OIL EX-CHANGER CAN OCCUR.

- (g) Install the 14 bolts with plates [20] and two bolts with integrated washers [15] that attach the engine SACOC 2 [2] to the engine.

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0181



CAUTION

BE CAREFUL WHEN YOU INSTALL THE BOLTS ON THE AIR/OIL EX-CHANGER. IF YOU DO NOT OBEY, DAMAGE TO THE LIP SEAL OF THE AIR/OIL EX-CHANGER CAN OCCUR.

- (h) Install the 14 bolts with integrated washers [20] and two bolts with integrated washers [15] that attach the engine SACOC 2 [2] to the engine.

SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0181

- (i) Tighten the bolts with plates [20] from the top to the bottom, following the sequence 1 to 16 then re-tighten the bolts with plates [20] a second time following the same sequence order as follows (Figure 404):
- 1) Tighten the two bolts with plates [20], following the specific sequence (start by 1 and finish by 2), to 110.6 in-lb (12.5 N·m) - 119.5 in-lb (13.5 N·m).
 - 2) Tighten the two bolts with integrated washers [15], following the specific sequence (start by 3 and finish by 4), to 110.6 in-lb (12.5 N·m) - 119.5 in-lb (13.5 N·m).
 - 3) Tighten the 12 remaining bolts with plates [20], from the top to the bottom following the specific sequence (start by 5 until 16), to 110.6 in-lb (12.5 N·m) - 119.5 in-lb (13.5 N·m).

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL****SIA ALL; PRE LEAP-1B SERVICE BULLETIN 72-0181 (Continued)**

- 4) Tighten the bolts with plates [20] and two bolts with integrated washers [15] again in accordance with the requested torque value, follow the sequence order from the top to the bottom.

SIA ALL; POST LEAP-1B SERVICE BULLETIN 72-0181

- (j) Tighten the bolts with integrated washers [20] from the top to the bottom, following the sequence 1 to 16 then re-tighten the bolts with plates [20] a second time following the same sequence order as follows (Figure 404):
 - 1) Tighten the two bolts with integrated washers [20], following the specific sequence nj,nj(start by 1 and finish by 2), to 110.6 in-lb (12.5 N·m) - 119.5 in-lb (13.5 N·m).
 - 2) Tighten the two bolts with integrated washers [15], following the specific sequence (start by 3 and finish by 4), to 110.6 in-lb (12.5 N·m) - 119.5 in-lb (13.5 N·m).
 - 3) Tighten the 12 remaining bolts with integrated washers [20], from the top to the bottom following the specific sequence (start by 5 until 16), to 110.6 in-lb (12.5 N·m) - 119.5 in-lb (13.5 N·m).
 - 4) Tighten the bolts with integrated washers [20] and two bolts with integrated washers [15] again in accordance with the requested torque value, follow the sequence order from the top to the bottom.

SIA ALL

- (k) Install the attachment clamp [22] and attachment clamp [25] to secure the engine SACOC 2 [2] as follows:
 - 1) Apply Loctite 241, A50474 [CP2256], on the threads and under the head of the two screws [23].
 - 2) Lubricate the threads of the two screws [24] with graphite mineral vaseline, D00601 [CP2101].
 - 3) Install the attachment clamp [22] and two screws [23] that attach the engine SACOC 2 [2] to the bracket [21].
 - 4) Install the attachment clamp [25] and two screws [24] that attach the engine SACOC 2 [2] to the bracket [26].
 - 5) Tighten the two screws [23] to 84.1 in-lb (9.5 N·m) - 92.9 in-lb (10.5 N·m).
 - 6) Tighten the screws [24] to 84.1 in-lb (9.5 N·m) - 92.9 in-lb (10.5 N·m).
- (l) Connect the oil tube [18] to the engine SACOC 2 [2] as follows:
 - 1) Lubricate the threads of the coupling nut [19] with oil, D00599 [CP2442].
 - 2) Connect the oil tube [18] with the coupling nut [19] to the engine SACOC 2 [2].
 - 3) Tighten the coupling nut [19] to 442.5 in-lb (50 N·m) - 531 in-lb (60 N·m).
- (m) Connect the oil tube [17] to the engine SACOC 2 [2] as follows:
 - 1) Lubricate the threads of the coupling nut [16] with oil, D00599 [CP2442].
 - 2) Connect the oil tube [17] with the coupling nut [16] to the engine SACOC 2 [2].
 - 3) Tighten the coupling nut [16] to 442.5 in-lb (50 N·m) - 531 in-lb (60 N·m).
- (n) Clean the work area and clear the tools used to do the task.

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

H. Put the Airplane Back to its Usual Condition

SUBTASK 79-21-02-410-002-G00



OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Do these tasks in sequence to safely close the right thrust reverser:
 - (a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-010-802-G00.
 - 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
416	Right Thrust Reverser, Engine 1
426	Right Thrust Reverser, Engine 2
 - (b) Close the fan cowl panels (TASK 71-11-04-410-801-G00).
 - 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2
 - (c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-801-G00.

SUBTASK 79-21-02-860-004-G00

- (2) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:
 - (a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.
 - (b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

I. Engine Surface Air Cooling Oil Cooler 2 Installation Test

SUBTASK 79-21-02-730-002-G00

- (1) Do the test(s) that are given in the Power Plant Test Reference Table (TASK 71-00-00-800-804-G00).

————— **END OF TASK** —————

EFFECTIVITY
SIA ALL

79-21-02

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 430
Sep 15/2022

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

ENGINE SURFACE AIR COOLING OIL COOLER - INSPECTION/CHECK

1. General

A. This procedure has one task:

- (1) Engine Surface Air Cooling Oil Cooler Inspection.

TASK 79-21-02-211-801-G00

2. Engine Surface Air Cooling Oil Cooler Inspection

(Figure 601)

A. General

- (1) This task gives the instructions to do the inspection of the engine Surface Air Cooling Oil Cooler (SACOC).

B. References

Reference	Title
71-00-00-800-802-G00	Engine Operation Limits (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
78-31-00-010-801-G00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-010-802-G00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-801-G00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)
78-31-00-440-801-G00	Thrust Reverser Activation After Ground Maintenance (P/B 201)
79-21-02 P/B 401	ENGINE SURFACE AIR COOLING OIL COOLER - REMOVAL/INSTALLATION
79-21-02-000-801-G00	Engine Surface Air Cooling Oil Cooler 1 Removal (P/B 401)
79-21-02-000-802-G00	Engine Surface Air Cooling Oil Cooler 2 Removal (P/B 401)
79-21-02-400-801-G00	Engine Surface Air Cooling Oil Cooler 1 Installation (P/B 401)
79-21-02-400-802-G00	Engine Surface Air Cooling Oil Cooler 2 Installation (P/B 401)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
COM-21826	Fine India Oil Stone Part #: FF724 Supplier: 44197
STD-858	Tag - DO NOT OPERATE
STD-1081	Flashlight - Explosion Proof
STD-3907	Mirror - Dental
STD-21746	Set - Carbide Bur

D. Consumable Materials

Reference	Description	Specification
G51791	Cloth - Abrasive, Silicon Carbide, 500 Grit	

EFFECTIVITY
SIA ALL

D633AM101-SIA

79-21-02

Page 601
May 15/2022

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

E. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

F. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

G. Prepare for the Inspection**SUBTASK 79-21-02-860-005-G00**

- (1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:
 - (a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.
 - (b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 79-21-02-010-006-G00

- (2) Do these tasks in sequence to safely open the left and right thrust reversers on the applicable engine:

**WARNING**

DO THE DEACTIVATION PROCEDURE FOR THE THRUST REVERSER TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

- (a) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-801-G00.
- (b) Open the applicable left or right fan cowl panels (TASK 71-11-04-010-801-G00).
 - 1) Open these access panels:

<u>Number</u>	<u>Name/Location</u>
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

**WARNING**

OBEY THE INSTRUCTIONS IN THE PROCEDURE TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (c) Open the applicable left or right thrust reversers (TASK 78-31-00-010-801-G00).

- 1) Open these access panels:

<u>Number</u>	<u>Name/Location</u>
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

H. Engine Surface Air Cooling Oil Cooler Inspection

SUBTASK 79-21-02-211-003-G00

- (1) Use the explosion proof flashlight, STD-1081, to shine the light at the forward face of the heat exchanger, and look for these conditions:

- (a) Make sure that no bird debris is present before you continue (TASK 71-00-00-800-802-G00).
- (b) Debris in the heat exchanger fins.

NOTE: The most likely area of damage is the forward facing surface of the heat exchanger. You will need a small hand held dental mirror, STD-3907, to see the forward face of the heat exchanger.

- 1) If you find debris, clean to remove debris.

NOTE: If you see little to no light through the heat exchanger fins during the check with a flashlight, this indicates that airflow is significantly obstructed and the cooling capability could be diminished. You can do the cleaning procedure to remove debris and improve airflow.

- (c) Inspection of the fins.

- 1) Broken, teared or cracked fins are not permitted.

- a) If broken, teared or cracked fins are present, do the applicable tasks:

- Engine Surface Air Cooling Oil Cooler 1 Removal, TASK 79-21-02-000-801-G00 and Engine Surface Air Cooling Oil Cooler 1 Installation, TASK 79-21-02-400-801-G00
- Engine Surface Air Cooling Oil Cooler 2 Removal, TASK 79-21-02-000-802-G00 and Engine Surface Air Cooling Oil Cooler 2 Installation, TASK 79-21-02-400-802-G00.

- 2) Missing fins

- a) Not permitted.
- b) Not repairable.
- c) If it is necessary, replace or send to manufacturer.

- 3) Nick, scratch, gouge or dent on the fin.

- a) Permitted up to 0.01 in. (0.254 mm) in depth for the nick or scratch and gouge without loss of the protective layer.
- b) Permitted up to 0.1 in. (2.54 mm) in depth for dent or blending depth without loss of the protective layer.

EFFECTIVITY
SIA ALL

79-21-02

D633AM101-SIA

Page 603
May 15/2022

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

- c) Raised metal is not permitted.
- d) If raised metal is present, do these steps:

NOTE: Dents indication types on fins are considered as bent fins indication type, therefore the maximum number of cumulated finding to be considered on fins is 42 findings on both engine surface air cooling oil cooler.

<1> If 43 fins are found with findings, replace the engine surface air cooling oil coolers (PAGEBLOCK 79-21-02/401).

<2> Use a carbide bur set, STD-21746, and hand grind out findings to remove heavy burrs or raised metal.

<3> Use an India oil stone, COM-21826, to remove light burrs.

<4> Use a 500 grit abrasive cloth, G51791, to remove edges of repaired surfaces smoothly into adjacent surfaces.

<5> Do not remove more material than necessary.

NOTE: No high metal must remain. The transition with the non-blended area must be smooth.

NOTE: After blending, the maximum depth on the blended area must be not over than 0.1 in. (2.54 mm).

- 4) The first and last three rows of fins are removed. Any surface cooler found to have missing fins in any other area should be replaced with a new surface cooler assembly.

NOTE: The first and last three rows of fins are removed for manufacturing purposes and will not adversely affect the function of the coolers.

5) Bent fins

- a) A total of 42 bent fins, without loss of the protective layer, is acceptable on both air-oil exchanger. If cracks are visible, remove and replace the part.

- b) If there is more than 21 bent fins on 1 air-oil exchanger, proceed to the following repair steps.

<1> Insert a locally manufactured straightening tool between the bent fins and gently apply force to straighten the fins back to approximately 90 degrees to the cooler body.

NOTE: The fins should have a gap of 0.085 in. (2.159 mm) (reference) between them.

<a> If you damage any fins when you straight it, remove the surface cooler.

<2> You may use needle nose pliers or similar type tool to straighten small localized areas of fin deformation.

<3> Continue the same process to repair all the bent fins.

NOTE: Fins can become loose or dislodged from repeated or over bending. After straightening all fins, check to assure the fins are secure. You should not be able to move the individual fins with your fingers. If the fins move easily with just finger pressure, the surface cooler should be replaced.

- (d) Examine the sealing surfaces in zone A, B, and C.

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

- 1) Examine all the sealing surfaces of the cooler for evidence of scratches, raised metal, nicks, gouges, cracks, and dents.
- 2) The requirements of inspection criteria apply to all sealing surfaces.
 - a) Any number up to 0.001 in. (0.025 mm) is permitted.
 - b) Do a check for scratches, raised metal, nicks, gouges, and cracks.
 - <1> Permitted up to 0.010 in. (0.254 mm) in depth of scratches/gouges.
 - <2> Raised metal or cracks are not permitted.
 - <3> Not repairable.
 - <4> If it is necessary, replace or send to manufacturer.
 - c) Do a check for dents in zone A.
 - <1> Permitted up to 0.01 in. (0.254 mm) in depth without loss of the protective layer.
 - <2> Raised metal or cracks are not permitted.
 - <3> If raised metal is present, do these steps:
 - <a> Use a carbide bur set, STD-21746, and hand grind out findings to remove heavy burrs or raised metal.
 - Use an India oil stone, COM-21826, to remove light burrs.
 - <c> Use a 500 grit abrasive cloth, G51791, to remove edges of repaired surfaces smoothly into adjacent surfaces.
 - <d> Do not remove more material than necessary.

NOTE: No high metal must remain. The transition with the non-blended area must be smooth.

NOTE: After blending, the maximum depth on the blended area must be less than 0.032 in. (0.81 mm).
 - <4> If it is necessary, replace or send to manufacturer.
- (e) Oil stains or leakage.
 - 1) Oil stains or leakage are not permitted.
 - a) If you find them, do the applicable tasks:
 - Engine Surface Air Cooling Oil Cooler 1 Removal, TASK 79-21-02-000-801-G00 and Engine Surface Air Cooling Oil Cooler 1 Installation, TASK 79-21-02-400-801-G00
 - Engine Surface Air Cooling Oil Cooler 2 Removal, TASK 79-21-02-000-802-G00 and Engine Surface Air Cooling Oil Cooler 2 Installation, TASK 79-21-02-400-802-G00.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 79-21-02-410-004-G00



OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Do these tasks in sequence to safely close the applicable left or right thrust reversers:
 - (a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-010-802-G00.

EFFECTIVITY
SIA ALL

D633AM101-SIA

79-21-02

Page 605
May 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

- 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

- (b) Do this task: Close the Fan Cowl Panels (Selection), TASK 71-11-04-410-801-G00.

- 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

- (c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-801-G00.

SUBTASK 79-21-02-860-006-G00

- (2) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:
- (a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.
- (b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

————— **END OF TASK** —————

EFFECTIVITY
SIA ALL

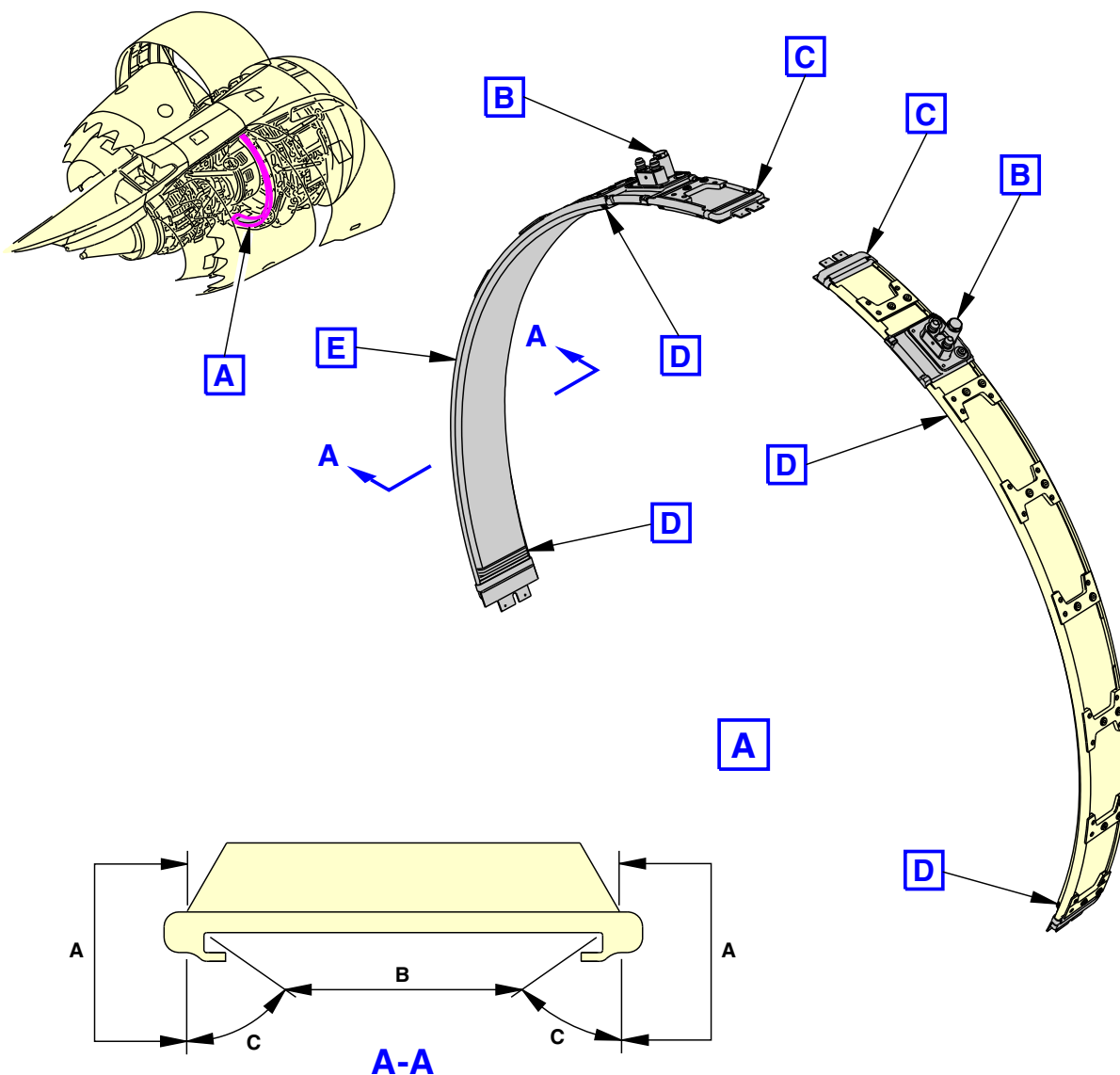
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-02

Page 606
May 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



ZONE ALLOWABLE SCRATCH/GOUGE:

ZONE A: 0.010 in (0.254 mm) SCRATCH/GOUGE DEPTH

ZONE B: 0.010 in (0.254 mm) SCRATCH/GOUGE DEPTH

ZONE C: 0.010 in (0.254 mm) SCRATCH/GOUGE DEPTH

NO HIGH METAL IN ZONES A, B, C

NO MISSING FIN ALLOWED 0.010 in (0.254 mm) SCRATCH/GOUGE DEPTH ALLOWABLE ON FIN

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Engine Surface Air Cooling Oil Cooler Inspection
Figure 601/79-21-02-990-805-G00 (Sheet 1 of 3)

EFFECTIVITY
SIA ALL

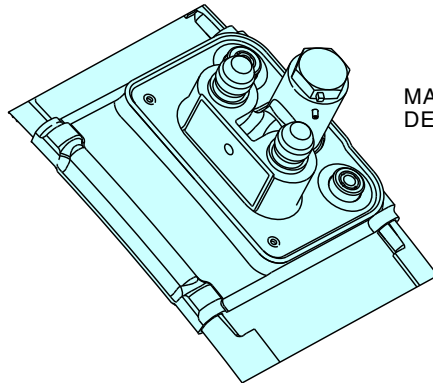
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-02

Page 607
May 15/2022

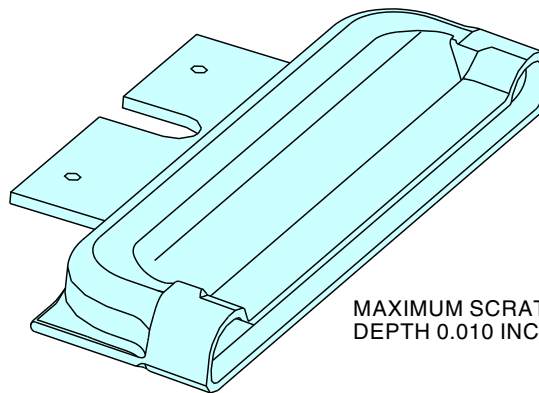
737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



MAXIMUM SCRATCH / GOUGE
DEPTH 0.010 INCH (0.254 mm)

ALLOWABLE SCRATCH / GOUGE DEPTH
ON THE INLET / OUTLET MANIFOLDS

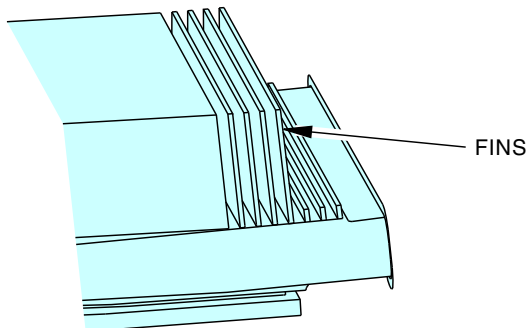
B



MAXIMUM SCRATCH / GOUGE
DEPTH 0.010 INCH (0.254 mm)

ALLOWABLE SCRATCH / GOUGE DEPTH
ON THE RETURN MANIFOLDS

C



FINS

FINS

D

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Engine Surface Air Cooling Oil Cooler Inspection
Figure 601/79-21-02-990-805-G00 (Sheet 2 of 3)

EFFECTIVITY
SIA ALL

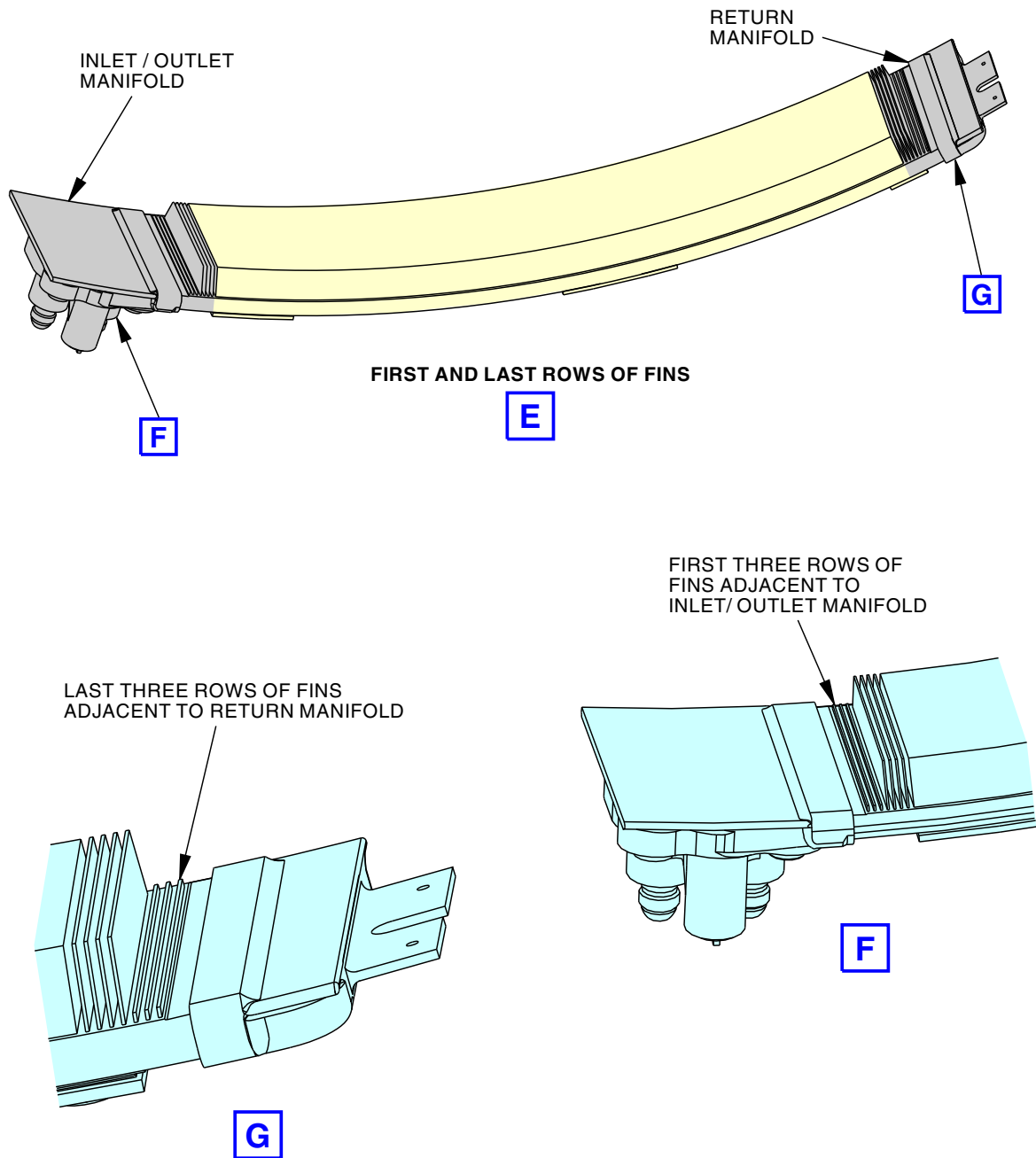
D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-02

Page 608
May 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



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Engine Surface Air Cooling Oil Cooler Inspection
Figure 601/79-21-02-990-805-G00 (Sheet 3 of 3)

EFFECTIVITY
SIA ALL

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-02

Page 609
May 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

LUBRICATION UNIT - REMOVAL/INSTALLATION

1. General

- A. This procedure has two tasks:
- (1) Lubrication Unit Removal
 - (2) Lubrication Unit Installation.

TASK 79-21-03-000-801-G00

2. Lubrication Unit Removal

(Figure 401)

A. General

- (1) This task gives the instructions to remove the lubrication unit.

B. References

Reference	Title
12-13-11-600-803	Engine Oil Change Servicing (P/B 301)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
78-31-00-010-801-G00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-801-G00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)
79-35-01-000-801-G00	Oil Filter Differential Pressure Sensor Removal (P/B 401)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt.", which stands for Optional.

Reference	Description
SPL-14893	Guide Pins - Installation, Lubrication Unit Part #: 956A8673G02 Supplier: 58828
STD-858	Tag - DO NOT OPERATE
STD-1055	Container - Oil Resistant, 5 Gallon (19 Liter)

D. Consumable Materials

Reference	Description	Specification
D00599 [CP2442]	Oil - Engine	
G02345 [CP8001]	Wire - Safety, 0.032 Inch (0.8 mm) Diameter	AMS 5687

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
4	Preformed packing	79-21-07-01-020	SIA ALL

F. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

G. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1

EFFECTIVITY
SIA ALL

79-21-03

D633AM101-SIA

Page 401
May 15/2023

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

(Continued)

Number	Name/Location
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415	Left Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2

H. Prepare for the Removal

SUBTASK 79-21-03-860-001-G00

- (1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:
 - (a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.
 - (b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 79-21-03-010-001-G00

- (2) Do these tasks in sequence to safely open the left thrust reverser on the applicable engine:



WARNING

DO THE DEACTIVATION PROCEDURE FOR THE THRUST REVERSER TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

- (a) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-801-G00.
- (b) Open the applicable left fan cowl panel (TASK 71-11-04-010-801-G00).
 - 1) Open these access panels:

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2



WARNING

OBEY THE INSTRUCTIONS IN THE PROCEDURE TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (c) Open the applicable left thrust reverser (TASK 78-31-00-010-801-G00).
 - 1) Open these access panels:

Number	Name/Location
415	Left Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2

EFFECTIVITY
SIA ALL

D633AM101-SIA

79-21-03

Page 402
May 15/2023

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

I. Lubrication Unit Removal

SUBTASK 79-21-03-680-001-G00

**WARNING**

BE CAREFUL WHEN YOU DO WORK ON THE ENGINE PARTS AFTER THE ENGINE IS STOPPED. THE ENGINE PARTS CAN STAY HOT FOR ALMOST ONE HOUR. DO NOT TOUCH HOT PARTS WITHOUT APPLICABLE GLOVES. HOT PARTS CAN CAUSE INJURIES TO PERSONNEL.

**WARNING**

DO NOT OPEN THE OIL SYSTEM UNTIL THE PRESSURE GOES TO ZERO. THE PRESSURE GOES TO ZERO APPROXIMATELY 5 MINUTES AFTER AN ENGINE STOPS. A PRESSURIZED OIL SYSTEM CAN RELEASE A SPRAY OF HOT OIL THAT CAN BURN YOU.

**WARNING**

DO NOT LET HOT OIL GET ON YOU. PUT ON CLOTHES, GOGGLES, AND OTHER EQUIPMENT FOR PROTECTION, OR LET THE ENGINE BECOME COOL. HOT OIL CAN BURN YOU.

**WARNING**

DO NOT LET THE OIL STAY ON YOUR SKIN. YOU CAN ABSORB POISONOUS MATERIALS FROM THE OIL THROUGH YOUR SKIN.

**CAUTION**

DO NOT LET OIL GET ON THE ENGINE OR OTHER COMPONENTS. IMMEDIATELY CLEAN THE OIL WHEN IT FALLS ON THEM. OIL CAN CAUSE DAMAGE TO EQUIPMENT.

- (1) Drain the oil from the lubrication unit [1]:

**CAUTION**

DO NOT SPILL THE OIL. USE A MINIMUM OF TWO CONTAINERS TO DRAIN THE OIL. A LARGE VOLUME OF OIL WILL DRAIN FROM THE LUBE PUMP.

- (a) Put the oil resistant container (5 gal)(19 Liter), STD-1055 below the lubrication unit [1].
- (b) Drain the oil tank (TASK 12-13-11-600-803).
- (c) Remove the drain plug [3] from the lubrication unit [1].
 - 1) Cut the safety wire [5] from the drain plug [3].
 - 2) Remove the drain plug [3] from the lubrication unit [1].
 - 3) Remove and discard the preformed packing [4] from the drain plug [3].
 - 4) Let the oil drain into the oil resistant container (5 gal)(19 Liter), STD-1055.
- (d) Install the drain plug [3] on the lubrication unit [1].
 - 1) Make sure that the mating faces are clean and clear of unwanted materials.
 - 2) Lubricate a new preformed packing [4] with the oil, D00599 [CP2442].
 - 3) Install the new preformed packing [4] on the drain plug [3].
 - 4) Install the drain plug [3] on the lubrication unit [1].
 - 5) Tighten the drain plug [3] to 67.45 in-lb (7.6 N·m) - 74.55 in-lb (8.4 N·m).
 - 6) Install a safety wire [5] (safety wire, G02345 [CP8001]) on the drain plug [3].

EFFECTIVITY
SIA ALL

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-03

Page 403
Sep 15/2021

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL****SUBTASK 79-21-03-020-001-G00**

- (2) Do this task: Oil Filter Differential Pressure Sensor Removal, TASK 79-35-01-000-801-G00.

SUBTASK 79-21-03-030-001-G00

- (3) Disconnect the oil tube [6] from the lubrication unit [1]:
- (a) Remove the four bolts [7] from the oil tube [6].
 - (b) Disconnect the oil tube [6] from the lubrication unit [1].
 - (c) Remove and discard the gasket seal [8] from the oil tube [6].
 - (d) Install the protective covers on the openings.

SUBTASK 79-21-03-030-002-G00

- (4) Disconnect the oil tube [9] from the lubrication unit [1]:
- (a) Remove the four bolts [10] from the oil tube [9].
 - (b) Disconnect the oil tube [9] from the lubrication unit [1].
 - (c) Remove and discard the gasket seal [11] from the oil tube [9].
 - (d) Install the protective covers on the openings.

SUBTASK 79-21-03-030-003-G00

- (5) Disconnect the oil tube [22] and oil tube [29]:
- (a) Remove the nut [12] and bolt [13] that attach the clamp [14] and clamp [15] to the bracket [16].
 - (b) Remove the clamp [14] and oil tube [22] from the bracket [16].
 - (c) Remove the clamp [15] and oil tube [29] from the bracket [16].

SUBTASK 79-21-03-010-002-G00

- (6) Disconnect the oil tube [22] and oil tube [29] from the bracket [21]:
- (a) Remove the nut [17] and bolt [18] that attach the clamp [19] and clamp [20] to the bracket [21].
 - (b) Remove the clamp [19] and oil tube [22] from the bracket [21].
 - (c) Remove the clamp [20] and oil tube [29] from the bracket [21].

SUBTASK 79-21-03-010-003-G00

- (7) Disconnect the oil tube [22] from the lubrication unit [1]:
- (a) Remove the electrical harness HJ3A [23] from the clip [24].
 - (b) Remove the two bolts [25] that attach the bracket [28] to the oil tube [22].
 - (c) Remove the bracket [28] from the oil tube [22].
 - (d) Remove the bolt [26] from the oil tube [22].
 - (e) Disconnect the oil tube [22] from the lubrication unit [1].
 - (f) Remove and discard the gasket seal [27] from the oil tube [22].
 - (g) Install the protective covers on the openings.

SUBTASK 79-21-03-010-004-G00

- (8) Disconnect the oil tube [29] from the lubrication unit [1]:
- (a) Remove the three bolts [30] from the oil tube [29].
 - (b) Disconnect the oil tube [29] from the lubrication unit [1].
 - (c) Remove and discard the gasket seal [31] from the oil tube [29].

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

- (d) Install the protective covers on the openings.

SUBTASK 79-21-03-010-005-G00

- (9) Disconnect the oil tube [32] from the AGB [35]:
- (a) Remove the four bolts [33] from the oil tube [32].
 - (b) Disconnect the oil tube [32] from the AGB [35].
 - (c) Remove and discard the gasket seal [34] from the AGB [35].
 - (d) Install the protective covers on the openings.

SUBTASK 79-21-03-010-006-G00

- (10) Disconnect the oil tube [32] from the lubrication unit [1]:
- (a) Remove the three bolts [37] from the oil tube [32].
 - (b) Disconnect the oil tube [32] from the lubrication unit [1].
 - (c) Remove and discard the gasket seal [38] from the oil tube [32].
 - (d) Install the protective covers on the openings.

SUBTASK 79-21-03-010-007-G00

- (11) Disconnect the oil tube [39] from the lubrication unit [1]:
- (a) Remove the three bolts [40] from the oil tube [39].
 - (b) Disconnect the oil tube [39] from the lubrication unit [1].
 - (c) Remove and discard the gasket seal [41] from the oil tube [39].
 - (d) Install the protective covers on the openings.

SUBTASK 79-21-03-010-008-G00

- (12) Disconnect the oil tube [42] from the lubrication unit [1]:
- (a) Remove the three bolts [43] from the oil tube [42].
 - (b) Disconnect the oil tube [42] from the lubrication unit [1].
 - (c) Remove and discard the gasket seal [44] from the oil tube [42].
 - (d) Install the protective covers on the openings.

SUBTASK 79-21-03-010-009-G00

- (13) Disconnect the oil tube [45] from the lubrication unit [1]:
- (a) Remove the three bolts [46] from the oil tube [45].
 - (b) Disconnect the oil tube [45] from the lubrication unit [1].
 - (c) Remove and discard the gasket seal [47] from the oil tube [45].
 - (d) Install the protective covers on the openings.

SUBTASK 79-21-03-020-002-G00

BE CAREFUL WHEN YOU MOVE THE COMPONENT. THE COMPONENT IS HEAVY. INJURIES TO PERSONS CAN OCCUR.

- (14) Remove the lubrication unit [1] from the Accessory Gearbox (AGB) input pad:

NOTE: The lubrication unit [1] weighs 28.7 lb (13.0 kg).

- (a) Remove any three bolts [48] and three washers [49] not adjacent to each other that attach the lubrication unit [1] to the AGB input pad.

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

- (b) Install the guide pins, SPL-14893 through the three bolt holes of the lubrication unit [1] to the AGB input pad.
- (c) Remove the remaining six bolts [48] and six washers [49] that attach the lubrication unit [1] to the AGB input pad.

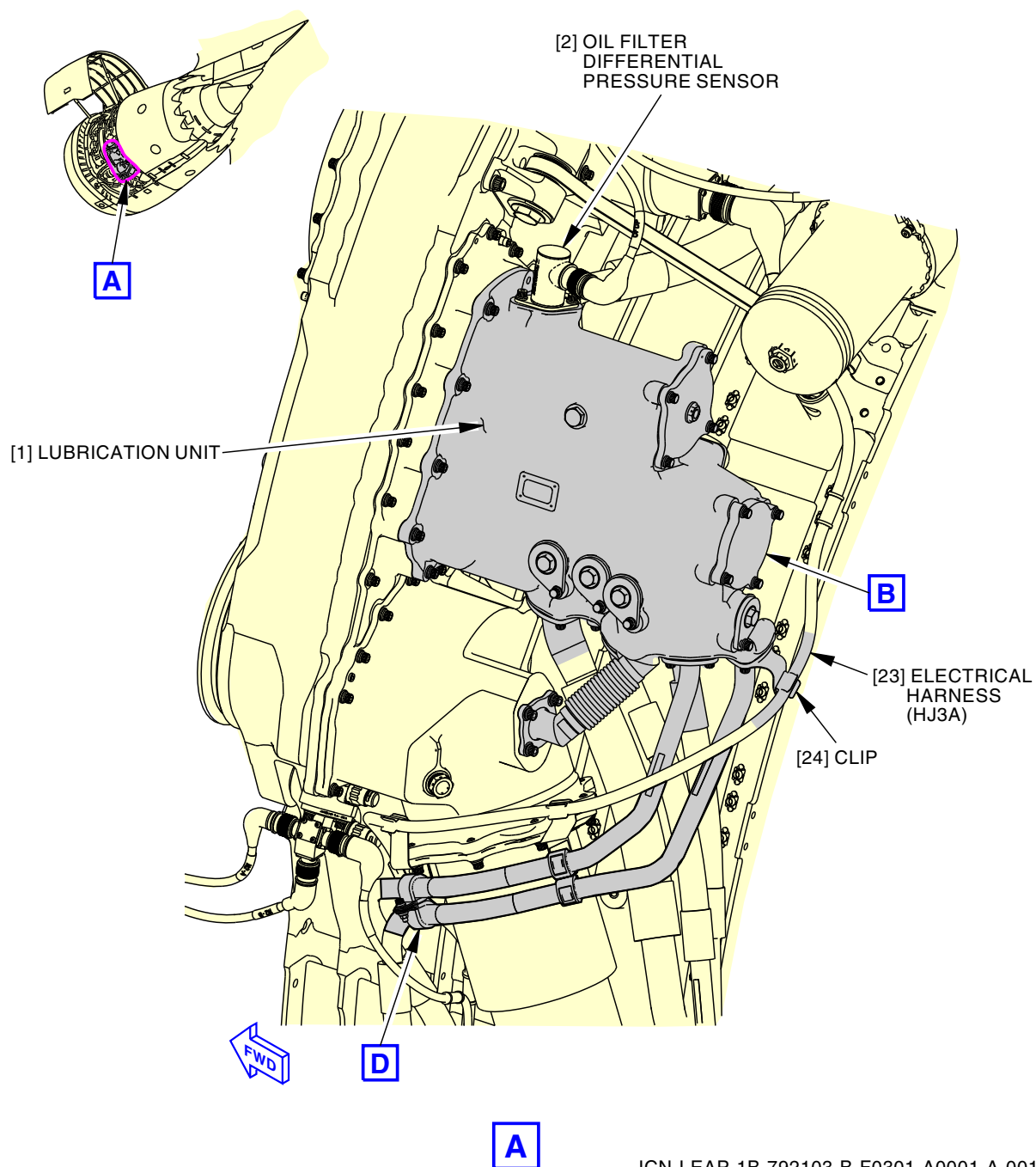


THE AGB SHAFT SLEEVE CAN STAY ATTACHED TO THE LUBE PUMP DRIVE-SHAFT WHEN YOU REMOVE THE LUBE PUMP FROM THE AGB. MAKE SURE THAT THE AGB SHAFT SLEEVE STAYS ON THE AGB. IF YOU DO NOT INSTALL THE AGB SHAFT SLEEVE, THE ENGINE WILL NOT HAVE SUFFICIENT LUBRICATION WHEN YOU OPERATE AND DAMAGE TO THE ENGINE CAN OCCUR.

- (d) Carefully pull the lubrication unit [1] rearward until the splines of the drive shaft [50] disengage from the AGB input pad.
- (e) Make sure that the AGB shaft sleeve remains installed in the AGB drive gear and that it is not pulled out together with the lubrication unit drive shaft.
- (f) Remove and discard the preformed packing [51] from the groove of the lubrication unit [1].
- (g) Remove and discard the preformed packing [52] from the groove of the drive shaft [50].
- (h) Remove and discard the preformed packing [53] from the groove of the lubrication unit [1].
- (i) Remove the guide pins.
- (j) Install the protective covers on the openings.

———— **END OF TASK** ————

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



ICN-LEAP-1B-792103-B-F0301-A0001-A-001-01
2566466 S0000613891_V2

Lubrication Unit Installation
Figure 401/79-21-03-990-802-G00 (Sheet 1 of 6)

EFFECTIVITY
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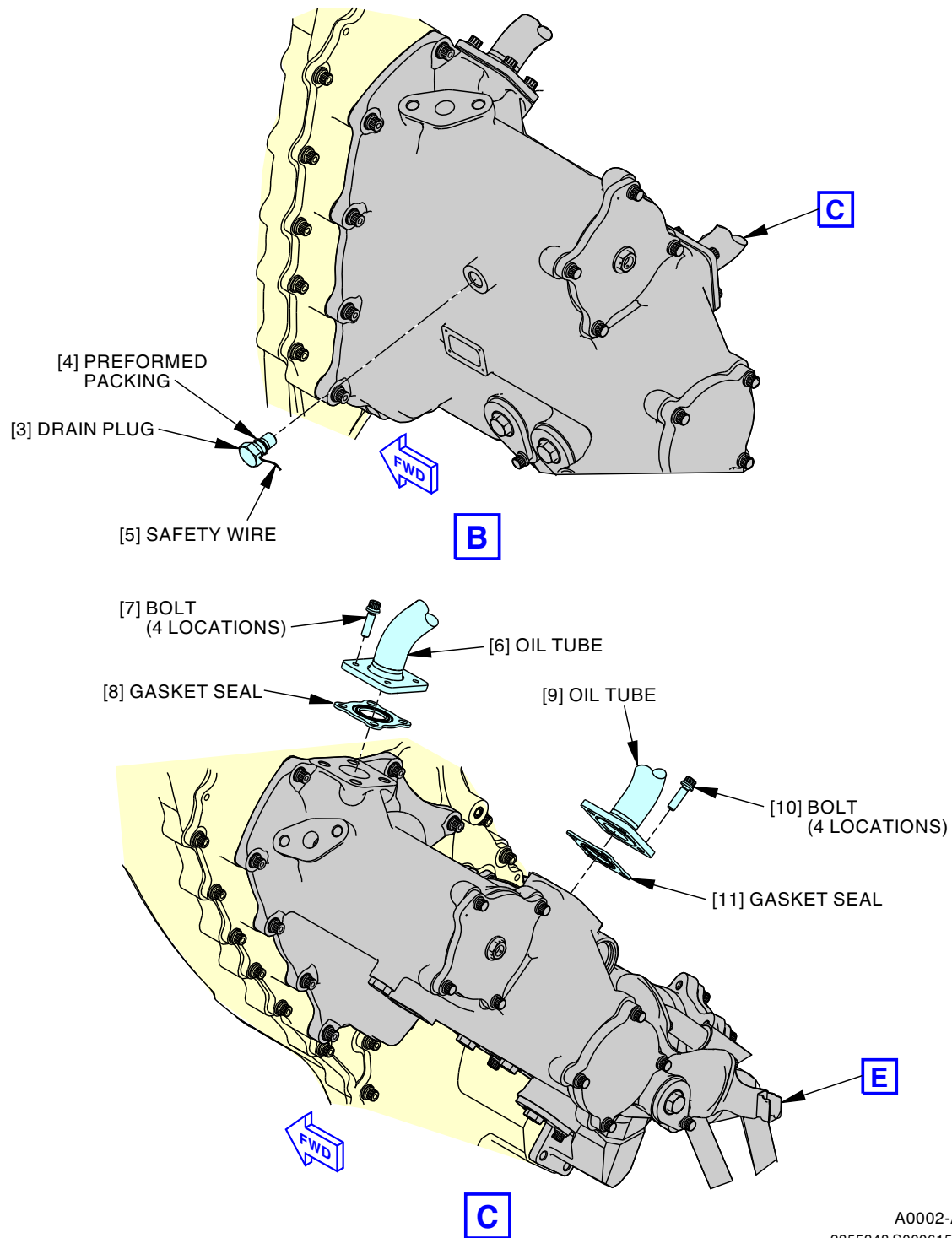
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-03

Page 407
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



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2355348 S00061517071_V2

Lubrication Unit Installation
Figure 401/79-21-03-990-802-G00 (Sheet 2 of 6)

EFFECTIVITY
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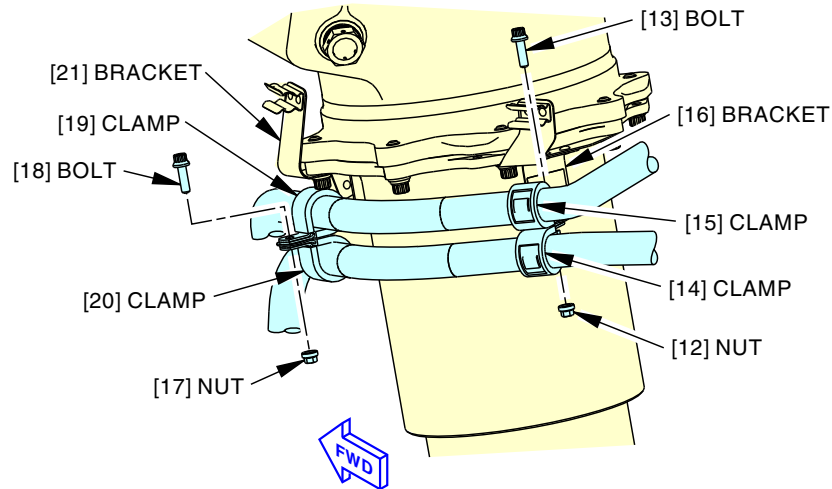
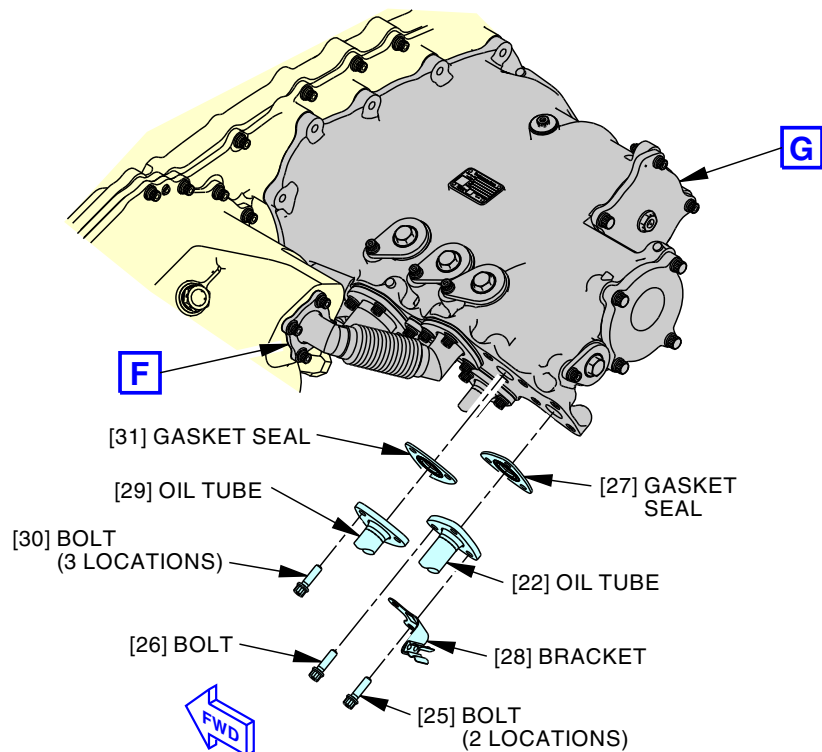
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-03

Page 408
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

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Lubrication Unit Installation
Figure 401/79-21-03-990-802-G00 (Sheet 3 of 6)

EFFECTIVITY
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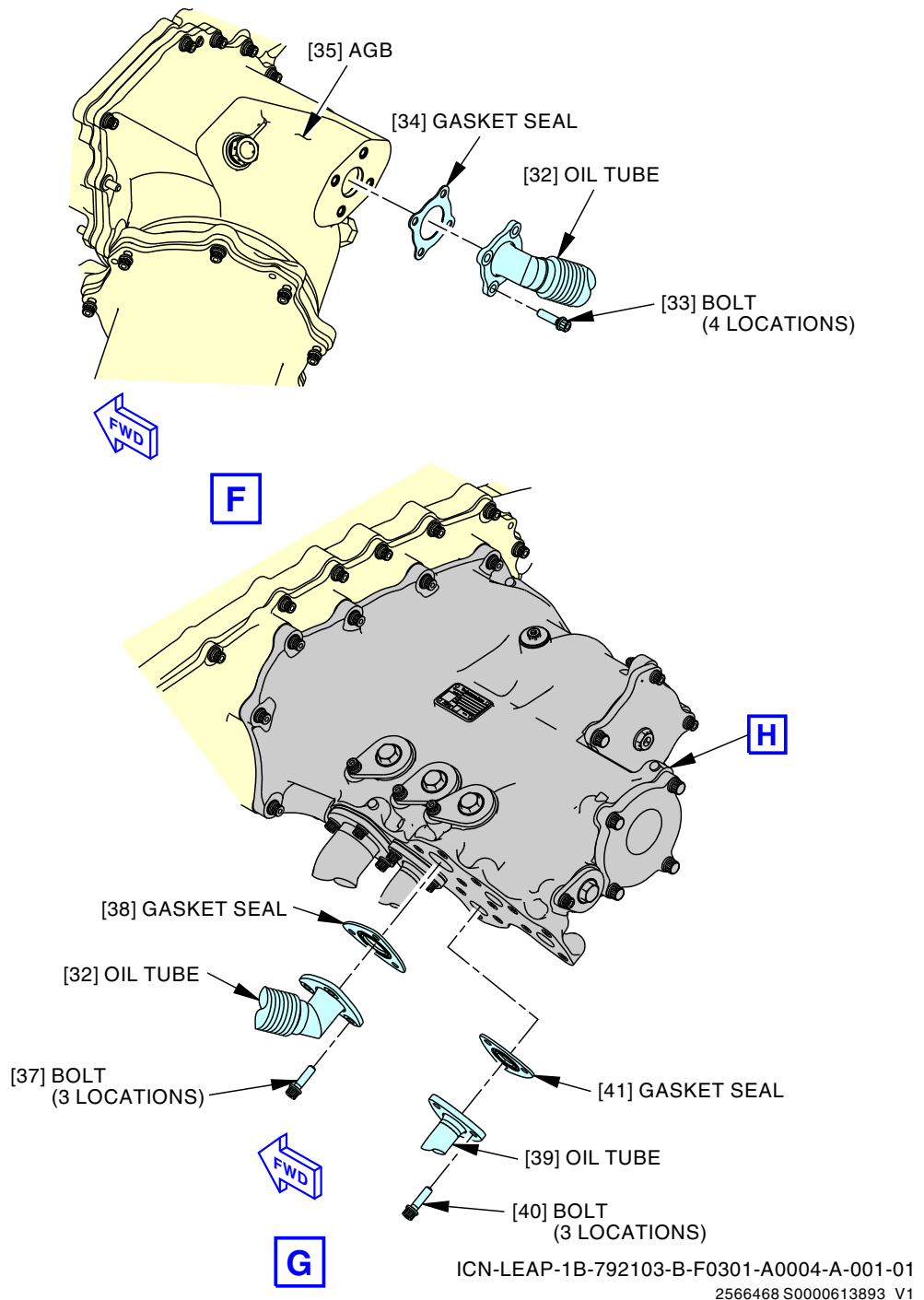
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-03

Page 409
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



Lubrication Unit Installation
Figure 401/79-21-03-990-802-G00 (Sheet 4 of 6)

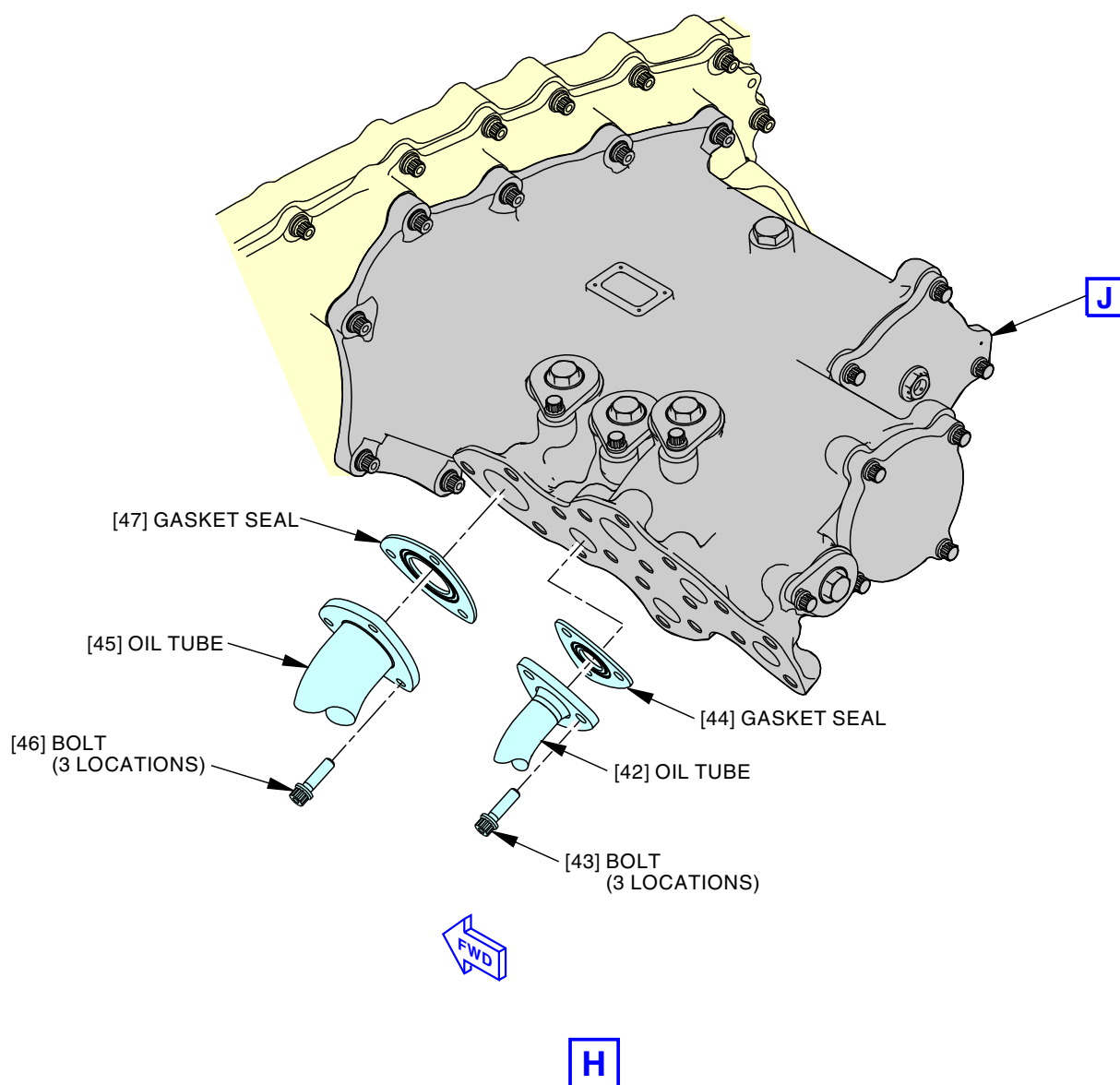
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79-21-03

Page 410
Sep 15/2021


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Lubrication Unit Installation
Figure 401/79-21-03-990-802-G00 (Sheet 5 of 6)

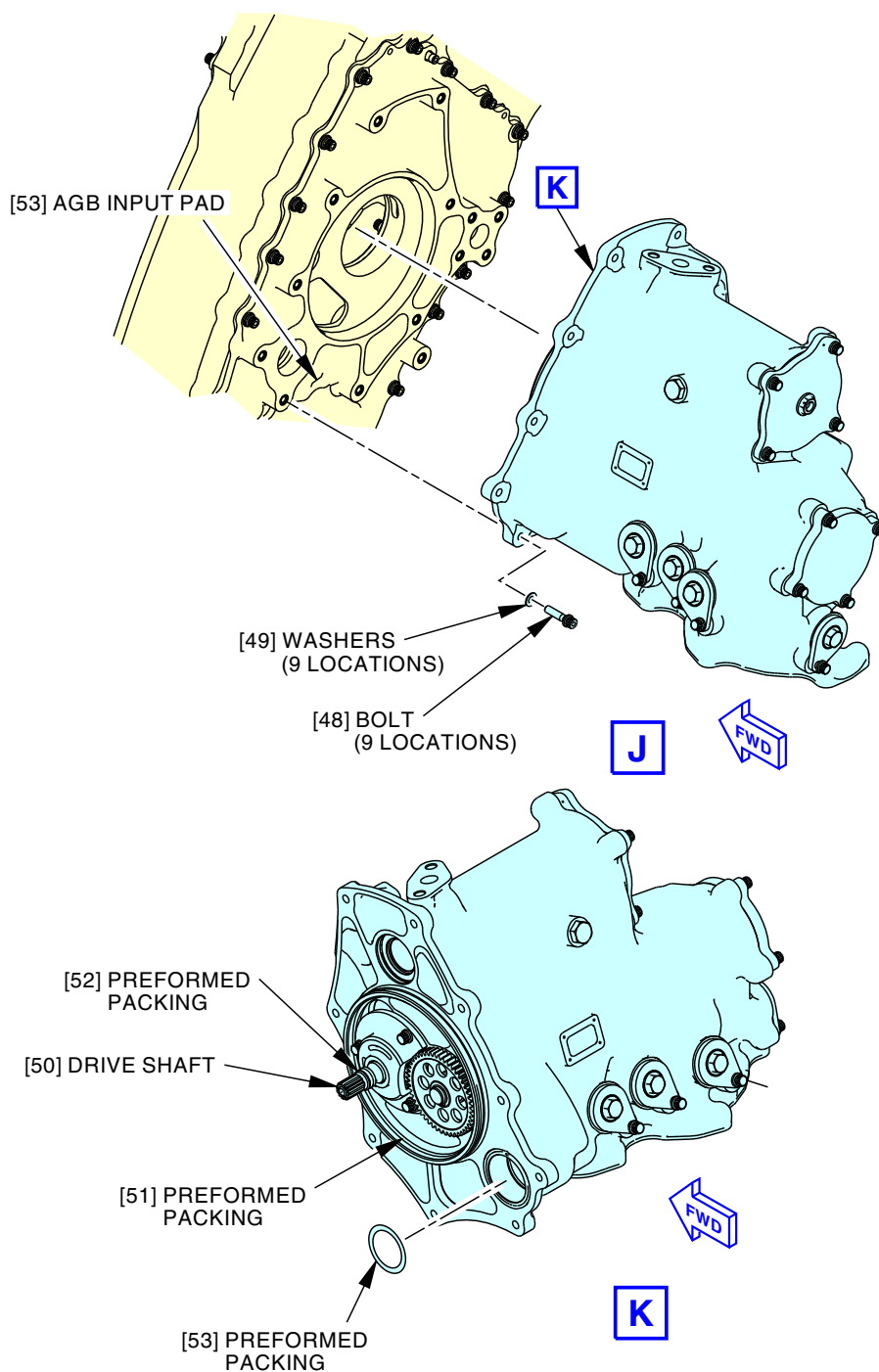
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79-21-03
 Page 411
 Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



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2403293 S0000555957_V3

Lubrication Unit Installation
Figure 401/79-21-03-990-802-G00 (Sheet 6 of 6)

EFFECTIVITY
SIA ALL

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-03

Page 412
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

TASK 79-21-03-400-801-G00**3. Lubrication Unit Installation**

(Figure 401)

A. General

(1) This task gives the instructions to install the lubrication unit.

B. References

Reference	Title
12-13-11-600-801	Engine Servicing (Oil Replenishing) (P/B 301)
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
72-00-00-910-801-G00	High Pressure Rotor (N2) Turning for Borescope (P/B 201)
72-63-01-610-802-G00	Accessory Gearbox Assembly Oil Replenishing (P/B 201)
72-63-04-400-801-G00	Accessory Gearbox Manual Control Cover Installation (P/B 401)
78-31-00-010-802-G00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-801-G00	Thrust Reverser Activation After Ground Maintenance (P/B 201)
79-35-01-400-801-G00	Oil Filter Differential Pressure Sensor Installation (P/B 401)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt.", which stands for Optional.

Reference	Description
SPL-14847	Kit, Installation - O-Ring, AGB Part #: 956A8610G01 Supplier: 58828
SPL-14893	Guide Pins - Installation, Lubrication Unit Part #: 956A8673G02 Supplier: 58828
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
D00599 [CP2442]	Oil - Engine	
D00601 [CP2101]	Vaseline - Graphite Mineral	
D00672 [CP5070]	Vaseline - Pure Mineral	V V-P-236

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
8	Gasket seal	79-21-03-01-040	SIA ALL
11	Gasket seal	79-21-03-01-020	SIA ALL
27	Gasket seal	79-21-03-01-080	SIA ALL
31	Gasket seal	79-21-03-01-100	SIA ALL
34	Gasket seal	72-00-00-12-200	SIA ALL
38	Gasket seal	79-21-03-01-140	SIA ALL
41	Gasket seal	79-21-03-01-120	SIA ALL
44	Gasket seal	79-21-03-01-160	SIA ALL
47	Gasket seal	79-21-03-01-180	SIA ALL
51	Preformed packing	79-21-03-01-230	SIA ALL

EFFECTIVITY
SIA ALL

79-21-03

D633AM101-SIA

Page 413
May 15/2023

737-7/8/8200/9/10 AIRCRAFT MAINTENANCE MANUAL

(Continued)

AMM Item	Description	AIPC Reference	AIPC Effectivity
52	Preformed packing	79-21-03-01-210	SIA ALL
53	Preformed packing	79-21-03-01-220	SIA ALL

F. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

G. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2

H. Lubrication Unit Installation

SUBTASK 79-21-03-490-001-G00



DO NOT LET THE OIL STAY ON YOUR SKIN. YOU CAN ABSORB POISONOUS MATERIALS FROM THE OIL THROUGH YOUR SKIN.



BE CAREFUL WHEN YOU MOVE THE COMPONENT. THE COMPONENT IS HEAVY. INJURIES TO PERSONS CAN OCCUR.



DO NOT LET OIL GET ON THE ENGINE OR OTHER COMPONENTS. IMMEDIATELY CLEAN THE OIL WHEN IT FALLS ON THEM. OIL CAN CAUSE DAMAGE TO EQUIPMENT.



THE AGB SHAFT SLEEVE CAN STAY ATTACHED TO THE LUBE PUMP DRIVE-SHAFT WHEN YOU REMOVE THE LUBE PUMP FROM THE AGB. MAKE SURE THAT THE AGB SHAFT SLEEVE STAYS ON THE AGB. IF YOU DO NOT INSTALL THE AGB SHAFT SLEEVE, THE ENGINE WILL NOT HAVE SUFFICIENT LUBRICATION WHEN YOU OPERATE AND DAMAGE TO THE ENGINE CAN OCCUR.

- (1) Install the lubrication unit [1].
 - (a) Make sure that the mating faces are clean and clear of unwanted materials.
 - (b) Remove the protective covers on the openings.
 - (c) Lubricate the splines of the drive shaft [50] with engine oil, D00599 [CP2442].
 - (d) Lubricate the nine bolts [48] with graphite mineral vaseline, D00601 [CP2101].
 - (e) Lubricate the new preformed packing [51], new preformed packing [52], and new preformed packing [53] with pure mineral vaseline, D00672 [CP5070].
 - (f) Use the O-ring installation kit, SPL-14847 to install the new preformed packing [53] into the groove of the lubrication unit [1].

EFFECTIVITY
SIA ALL

79-21-03

D633AM101-SIA

Page 414
Sep 15/2021

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

- (g) Install the new preformed packing [52] into the groove of the drive shaft [50].
- (h) Install the new preformed packing [51] into the groove of the lubrication unit [1].
- (i) Install the guide pins, SPL-14893, through the three bolt holes of the Accessory Gearbox (AGB) input pad.



MAKE SURE THAT YOU INSTALL THE AGB SHAFT SPLINED SLEEVE IN THE AGB DRIVE GEAR BEFORE YOU INSTALL THE LUBRICATION UNIT ON THE AGB. DAMAGE TO EQUIPMENT CAN OCCUR.

- (j) Align the drive shaft [50] of the lubrication unit [1] with the splines of the AGB input pad as follows:
 - 1) If it is necessary, turn the AGB shaft (TASK 72-00-00-910-801-G00).
- (k) Carefully align the lubrication unit [1] with the guide pins and push the drive shaft [50] of the lubrication unit [1] into the AGB input pad.
- (l) Make sure that the mating flange of the lubrication unit [1] is fully engaged with the AGB input pad.
- (m) Install the six bolts [48] and six washers [49] that attach the lubrication unit [1] to the AGB input pad.
- (n) Remove the guide pins.
- (o) Install the remaining three bolts [48] and three washers [49] that attach the lubrication unit [1] to the AGB input pad.
- (p) Tighten the bolts [48] to 109.31 in-lb (12.35 N·m) - 120.81 in-lb (13.65 N·m), in a criss-cross pattern.
- (q) If the AGB manual control cover has been removed, do this task: Accessory Gearbox Manual Control Cover Installation, TASK 72-63-04-400-801-G00.

SUBTASK 79-21-03-090-001-G00

- (2) Connect the oil tube [45] to the lubrication unit [1].
 - (a) Make sure that the mating faces are clean and clear of unwanted materials.
 - (b) Remove the protective covers on the openings.
 - (c) Lubricate the new gasket seal [47] with engine oil, D00599 [CP2442].
 - (d) Lubricate the three bolts [46] with graphite mineral vaseline, D00601 [CP2101].
 - (e) Install the new gasket seal [47] and oil tube [45] on the lubrication unit [1].
 - (f) Install the three bolts [46] that attach the oil tube [45] to the lubrication unit [1].
 - (g) Tighten the three bolts [46] to 109.31 in-lb (12.35 N·m) - 120.81 in-lb (13.65 N·m).

SUBTASK 79-21-03-410-001-G00

- (3) Connect the oil tube [42] to the lubrication unit [1].
 - (a) Make sure that the mating faces are clean and clear of unwanted materials.
 - (b) Remove the protective covers on the openings.
 - (c) Lubricate the new gasket seal [44] with engine oil, D00599 [CP2442].
 - (d) Lubricate the three bolts [43] with graphite mineral vaseline, D00601 [CP2101].
 - (e) Install the new gasket seal [44] and oil tube [42] on the lubrication unit [1].
 - (f) Install the three bolts [43] that attach the oil tube [42] to the lubrication unit [1].
 - (g) Tighten the bolts [43] to 109.31 in-lb (12.35 N·m) - 120.81 in-lb (13.65 N·m).

EFFECTIVITY
SIA ALL

D633AM101-SIA

79-21-03

Page 415
Sep 15/2021

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL****SUBTASK 79-21-03-410-002-G00**

- (4) Connect the oil tube [39] to the lubrication unit [1].
- (a) Make sure that the mating faces are clean and clear of unwanted materials.
 - (b) Remove the protective covers on the openings.
 - (c) Lubricate the new gasket seal [41] with engine oil, D00599 [CP2442].
 - (d) Lubricate the three bolts [40] with graphite mineral vaseline, D00601 [CP2101].
 - (e) Install the new gasket seal [41] and oil tube [39] on the lubrication unit [1].
 - (f) Install the three bolts [40] that attach the oil tube [39] to the lubrication unit [1].
 - (g) Tighten the bolts [40] to 109.31 in-lb (12.35 N·m) - 120.81 in-lb (13.65 N·m).

SUBTASK 79-21-03-410-003-G00

- (5) Connect the oil tube [32] to the lubrication unit [1].
- (a) Make sure that the mating faces are clean and clear of unwanted materials.
 - (b) Remove the protective covers on the openings.
 - (c) Lubricate the new gasket seal [38] with engine oil, D00599 [CP2442].
 - (d) Lubricate the three bolts [37] with graphite mineral vaseline, D00601 [CP2101].
 - (e) Install the new gasket seal [38] and oil tube [32] on the lubrication unit [1].
 - (f) Install the three bolts [37] that attach the oil tube [32] to the lubrication unit [1].
 - (g) Tighten the bolts [37] to 109.31 in-lb (12.35 N·m) - 120.81 in-lb (13.65 N·m).

SUBTASK 79-21-03-410-004-G00

- (6) Connect the oil tube [32] to the AGB [35].
- (a) Make sure that the mating faces are clean and clear of unwanted materials.
 - (b) Remove the protective covers on the openings.
 - (c) Lubricate the new gasket seal [34] with engine oil, D00599 [CP2442].
 - (d) Install the new gasket seal [34] and oil tube [32] in a correct position on the lubrication unit [1].
 - (e) Install the four bolts [33] that attach the oil tube [32] to the lubrication unit [1].
 - (f) Tighten the bolts [33] to 84.1 in-lb (9.5 N·m) - 92.9 in-lb (10.5 N·m).

SUBTASK 79-21-03-410-005-G00

- (7) Connect the oil tube [29] to the lubrication unit [1].
- (a) Make sure that the mating faces are clean and clear of unwanted materials.
 - (b) Remove the protective covers on the openings.
 - (c) Lubricate the new gasket seal [31] with engine oil, D00599 [CP2442].
 - (d) Lubricate the three bolts [30] with graphite mineral vaseline, D00601 [CP2101].
 - (e) Install the new gasket seal [31] and oil tube [29] on the lubrication unit [1].
 - (f) Install the three bolts [30] that attach the oil tube [29] to the lubrication unit [1].
 - (g) Tighten the bolts [30] to 109.31 in-lb (12.35 N·m) - 120.81 in-lb (13.65 N·m).

SUBTASK 79-21-03-410-006-G00

- (8) Connect the oil tube [22] to the lubrication unit [1].
- (a) Make sure that the mating faces are clean and clear of unwanted materials.
 - (b) Remove the protective covers on the openings.

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

- (c) Lubricate the new gasket seal [27] with engine oil, D00599 [CP2442].
- (d) Lubricate the two bolts [25] and bolt [26] with graphite mineral vaseline, D00601 [CP2101].
- (e) Install the new gasket seal [27] and oil tube [22] on the lubrication unit [1].
- (f) Install the bolt [26] that attach the oil tube [22] to the lubrication unit [1].
- (g) Tighten the bolt [26] to 109.31 in-lb (12.35 N·m) - 120.81 in-lb (13.65 N·m).
- (h) Install the bracket [28] on the oil tube [22].
- (i) Install the two bolts [25] that attach the bracket [28] to the oil tube [22].
- (j) Tighten the two bolts [25] to 109.31 in-lb (12.35 N·m) - 120.81 in-lb (13.65 N·m).

SUBTASK 79-21-03-410-007-G00

- (9) Install the electrical harness HJ3A [23] on the clip [24].

SUBTASK 79-21-03-410-008-G00

- (10) Connect the oil tube [22] and oil tube [29] to the bracket [21].
 - (a) Make sure that the mating faces are clean and clear of unwanted materials.
 - (b) Remove the protective covers on the openings.
 - (c) Install the clamp [20] and oil tube [29] on the bracket [21].
 - (d) Install the clamp [19] and oil tube [22] on the bracket [21].
 - (e) Install the nut [17] and bolt [18] that attach the clamp [19] and clamp [20] to the bracket [21].
 - (f) Tighten the nut [17] to 42.0 in-lb (4.75 N·m) - 46.5 in-lb (5.25 N·m).

SUBTASK 79-21-03-410-009-G00

- (11) Connect the oil tube [22] and oil tube [29] to the bracket [16].
 - (a) Make sure that the mating faces are clean and clear of unwanted materials.
 - (b) Remove the protective covers on the openings.
 - (c) Install the clamp [15] and oil tube [29] on the bracket [16].
 - (d) Install the clamp [14] and oil tube [22] on the bracket [16].
 - (e) Install the nut [12] and bolt [13] that attach the clamp [14] and the clamp [15] to the bracket [16].
 - (f) Tighten the nut [12] to 42.0 in-lb (4.75 N·m) - 46.5 in-lb (5.25 N·m).

SUBTASK 79-21-03-410-010-G00

- (12) Connect the oil tube [9] to the lubrication unit [1].
 - (a) Make sure that the mating faces are clean and clear of unwanted materials.
 - (b) Remove the protective covers on the openings.
 - (c) Lubricate the new gasket seal [11] with engine oil, D00599 [CP2442].
 - (d) Lubricate the four bolts [10] with graphite mineral vaseline, D00601 [CP2101].
 - (e) Install the new gasket seal [11] and oil tube [9] on the lubrication unit [1].
 - (f) Install the four bolts [10] that attach the oil tube [9] to the lubrication unit [1].
 - (g) Tighten the bolts [10] to 109.31 in-lb (12.35 N·m) - 120.81 in-lb (13.65 N·m).

SUBTASK 79-21-03-410-011-G00

- (13) Connect the oil tube [6] to the lubrication unit [1].

EFFECTIVITY
SIA ALL

D633AM101-SIA

79-21-03Page 417
Sep 15/2021

737-7/8/8200/9/10 AIRCRAFT MAINTENANCE MANUAL

- (a) Make sure that the mating faces are clean and clear of unwanted materials.
- (b) Remove the protective covers on the openings.
- (c) Lubricate the new gasket seal [8] with engine oil, D00599 [CP2442].
- (d) Lubricate the four bolts [7] with graphite mineral vaseline, D00601 [CP2101].
- (e) Install the new gasket seal [8] and oil tube [6] on the lubrication unit [1].
- (f) Install the four bolts [7] that attach the oil tube [6] to the lubrication unit [1].
- (g) Tighten the bolts [7] to 110 in-lb (12.4 N·m) - 120 in-lb (13.6 N·m).

SUBTASK 79-21-03-100-001-G00

- (14) Do this task: Oil Filter Differential Pressure Sensor Installation, TASK 79-35-01-400-801-G00.

SUBTASK 79-21-03-610-002-G00

- (15) Do this task: Accessory Gearbox Assembly Oil Replenishing, TASK 72-63-01-610-802-G00.

SUBTASK 79-21-03-610-001-G00

- (16) Do this task: Engine Servicing (Oil Replenishing), TASK 12-13-11-600-801.

SUBTASK 79-21-03-420-001-G00

- (17) Clean the work area and clear the tools and other items.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 79-21-03-410-012-G00



OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Do these tasks in sequence to safely close the left thrust reverser:
- (a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-010-802-G00.
 - 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
415	Left Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
 - (b) Close the applicable left Fan Cowl Panel (TASK 71-11-04-410-801-G00).
 - 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
 - (c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-801-G00.

SUBTASK 79-21-03-860-002-G00

- (2) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:
- (a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.
 - (b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

J. Lubrication Unit Installation Test

SUBTASK 79-21-03-730-001-G00

- (1) Do the test(s) that are given in the Power Plant Test Reference Table (TASK 71-00-00-800-804-G00).

———— **END OF TASK** ————

EFFECTIVITY
SIA ALL

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-03

Page 419
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

SCAVENGE SCREEN PLUGS - MAINTENANCE PRACTICES

1. General

- A. This procedure has these tasks:
- (1) A removal of the scavenge screen plugs
 - (2) An installation of the scavenge screen plugs
 - (3) An inspection of the scavenge screen plugs.

TASK 79-21-04-000-801-G00

2. Scavenge Screen Plugs Removal

(Figure 201 or Figure 202)

A. General

- (1) This task provides the instructions to remove the scavenge screen plugs.

B. References

Reference	Title
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

F. Prepare for the Removal

SUBTASK 79-21-04-860-001-G00

- (1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:
 - (a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.
 - (b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 79-21-04-860-013-G00

- (2) On the applicable engine, open the left fan cowl panel (TASK 71-11-04-010-801-G00).
 - (a) Open these access panels:

<u>Number</u>	<u>Name/Location</u>
413	Left Fan Cowl, Engine 1

EFFECTIVITY
SIA ALL

79-21-04

D633AM101-SIA

Page 201
Jan 15/2023

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

(Continued)

<u>Number</u>	<u>Name/Location</u>
423	Left Fan Cowl, Engine 2

G. Scavenge Screen Plugs Removal

BE CAREFUL WHEN YOU DO WORK ON THE ENGINE PARTS AFTER THE ENGINE IS STOPPED. THE ENGINE PARTS CAN STAY HOT FOR ALMOST ONE HOUR. DO NOT TOUCH HOT PARTS WITHOUT APPLICABLE GLOVES. HOT PARTS CAN CAUSE INJURIES TO PERSONNEL.



DO NOT OPEN THE OIL SYSTEM UNTIL THE PRESSURE GOES TO ZERO. THE PRESSURE GOES TO ZERO APPROXIMATELY 5 MINUTES AFTER AN ENGINE STOPS. A PRESSURIZED OIL SYSTEM CAN RELEASE A SPRAY OF HOT OIL THAT CAN BURN YOU.



DO NOT LET HOT OIL GET ON YOU. PUT ON CLOTHES, GOGGLES, AND OTHER EQUIPMENT FOR PROTECTION, OR LET THE ENGINE BECOME COOL. HOT OIL CAN BURN YOU.



DO NOT LET THE OIL STAY ON YOUR SKIN. YOU CAN ABSORB POISONOUS MATERIALS FROM THE OIL THROUGH YOUR SKIN.



DO NOT LET OIL GET ON THE ENGINE OR OTHER COMPONENTS. IMMEDIATELY CLEAN THE OIL WHEN IT FALLS ON THEM. OIL CAN CAUSE DAMAGE TO EQUIPMENT.

SIA ALL; PRE LEAP-1B SERVICE BULLETIN SB 79-0007

DO NOT REMOVE THE HEXAGONAL MAGNETIC CHIP PLUG FROM THE SCAVENGE SCREEN PLUG. IF YOU DO NOT OBEY, DAMAGE TO THE ENGINE CAN OCCUR.



DO NOT USE THE HEXAGONAL MAGNETIC CHIP PLUG TO REMOVE THE SCAVENGE SCREEN PLUGS. IF YOU DO NOT OBEY, AN OIL LEAK CAN OCCUR.

SIA ALL

SUBTASK 79-21-04-010-003-G00

(1) Remove the single stage scavenge screen plug [1] as follows:

SIA ALL; PRE LEAP-1B SERVICE BULLETIN SB 79-0007

(a) Do not remove the hexagonal magnetic chip plug [6] and magnetic bar for inspection.

NOTE: If you remove hexagonal magnetic chip plug and magnetic bar, then scavenge screen sleeve will catch the particles.

SIA ALL

EFFECTIVITY
SIA ALL

79-21-04

D633AM101-SIA

Page 202
Sep 15/2021

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

- (b) Remove the scavenge screen plug bolt [9] that attaches the single stage scavenge screen plug [1] to the lubrication unit [5].
- (c) Remove the single stage scavenge screen plug [1] from the lubrication unit [5].
- (d) Remove the O-ring [10] from the groove on the single stage scavenge screen plug [1].
- (e) Discard the O-ring [10].
- (f) Install the protective covers on the single stage scavenge screen plug [1] and lubrication unit [5] port.

SUBTASK 79-21-04-010-004-G00

- (2) Remove the single stage scavenge screen plug [2] as follows:

SIA ALL; PRE LEAP-1B SERVICE BULLETIN SB 79-0007

- (a) Do not remove the hexagonal magnetic chip plug [7] and magnetic bar for inspection.

NOTE: If you remove hexagonal magnetic chip plug and magnetic bar, then scavenge screen sleeve will catch the particles.

SIA ALL

- (b) Remove the scavenge screen plug bolt [11] that attaches the single stage scavenge screen plug [2] to the lubrication unit [5].
- (c) Remove the single stage scavenge screen plug [2] from the lubrication unit [5].
- (d) Remove the O-ring [12] from the groove on the single stage scavenge screen plug [2].
- (e) Discard the O-ring [12].
- (f) Install the protective covers on the single stage scavenge screen plug [2] and lubrication unit [5] port.

SUBTASK 79-21-04-010-005-G00

- (3) Remove the double stage scavenge screen plug [3] as follows:

SIA ALL; PRE LEAP-1B SERVICE BULLETIN SB 79-0007

- (a) Do not remove the hexagonal magnetic chip plug [19] and magnetic bar for inspection.

NOTE: If you remove hexagonal magnetic chip plug and magnetic bar, then scavenge screen sleeve will catch the particles.

SIA ALL

- (b) Remove the scavenge screen plug bolt [13] that attaches the double stage scavenge screen plug [3] to the lubrication unit [5].
- (c) Remove the double stage scavenge screen plug [3] from the lubrication unit [5].
- (d) Remove the O-ring [14] from the groove on the double stage scavenge screen plug [3].
- (e) Remove the O-ring [15] from the groove on the double stage scavenge screen plug [3].
- (f) Discard the O-ring [14] and O-ring [15].
- (g) Install the protective covers on the double stage scavenge screen plug [3] and lubrication unit [5] port.

SUBTASK 79-21-04-010-001-G00

- (4) Remove the double stage scavenge screen plug [4] as follows:

EFFECTIVITY
SIA ALL

79-21-04

D633AM101-SIA

Page 203
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

SIA ALL; PRE LEAP-1B SERVICE BULLETIN SB 79-0007

- (a) Do not remove the hexagonal magnetic chip plug [20] and magnetic bar for inspection.

NOTE: If you remove hexagonal magnetic chip plug and magnetic bar, then scavenge screen sleeve will catch the particles.

SIA ALL

- (b) Remove the scavenge screen plug bolt [16] that attaches the double stage scavenge screen plug [4] to the lubrication unit [5].
- (c) Remove the double stage scavenge screen plug [4] from the lubrication unit [5].
- (d) Remove the O-ring [17] from the groove on the double stage scavenge screen plug [4].
- (e) Remove the O-ring [18] from the groove on the double stage scavenge screen plug [4].
- (f) Discard the O-ring [17] and O-ring [18].
- (g) Install the protective covers on the double stage scavenge screen plug [4] and lubrication unit [5] port.

———— **END OF TASK** ————

EFFECTIVITY
SIA ALL

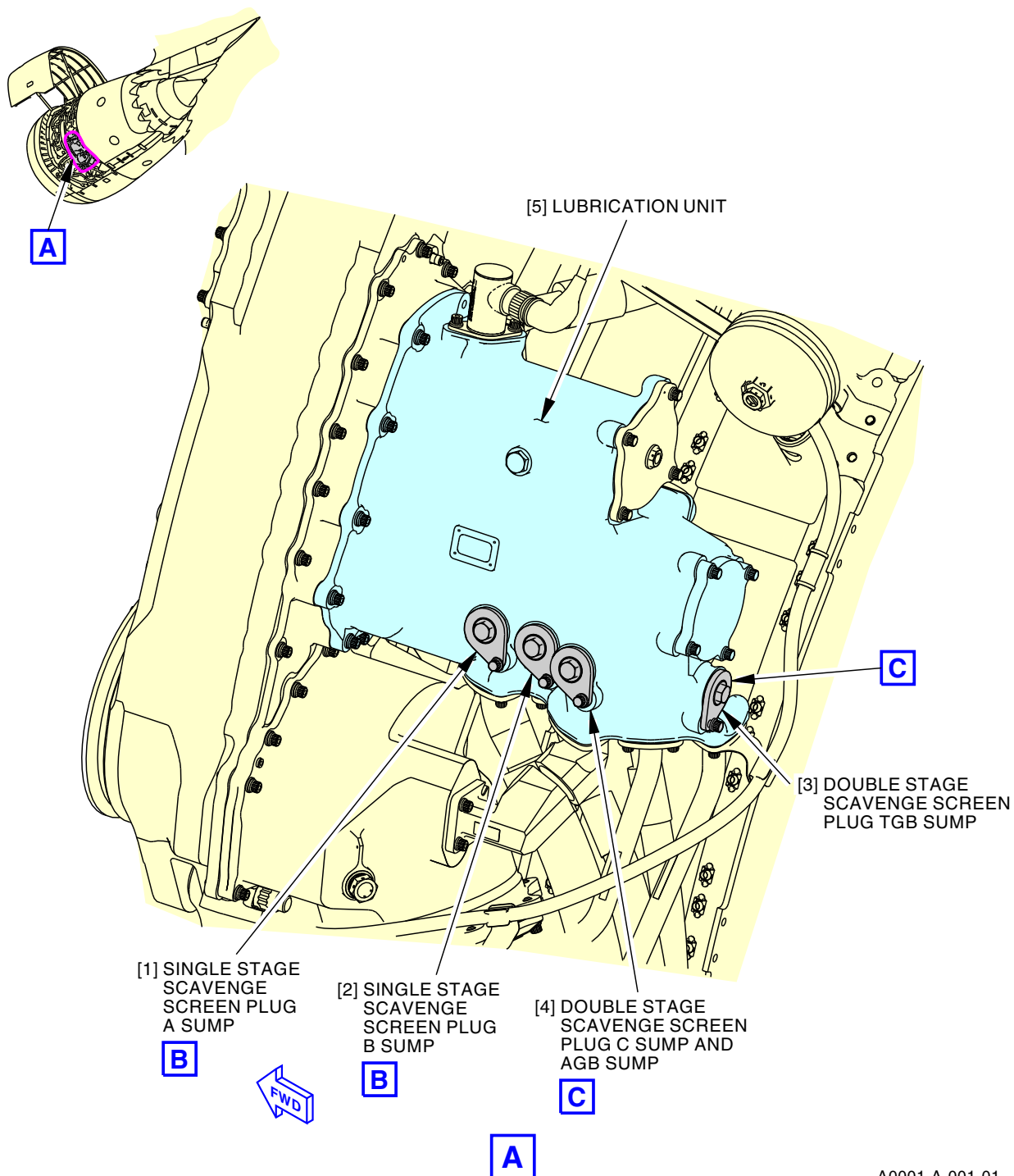
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-04

Page 204
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



A0001-A-001-01
2422178 S0000560082_V2

Scavenge Screen Plugs Installation
Figure 201/79-21-04-990-804-G00 (Sheet 1 of 3)

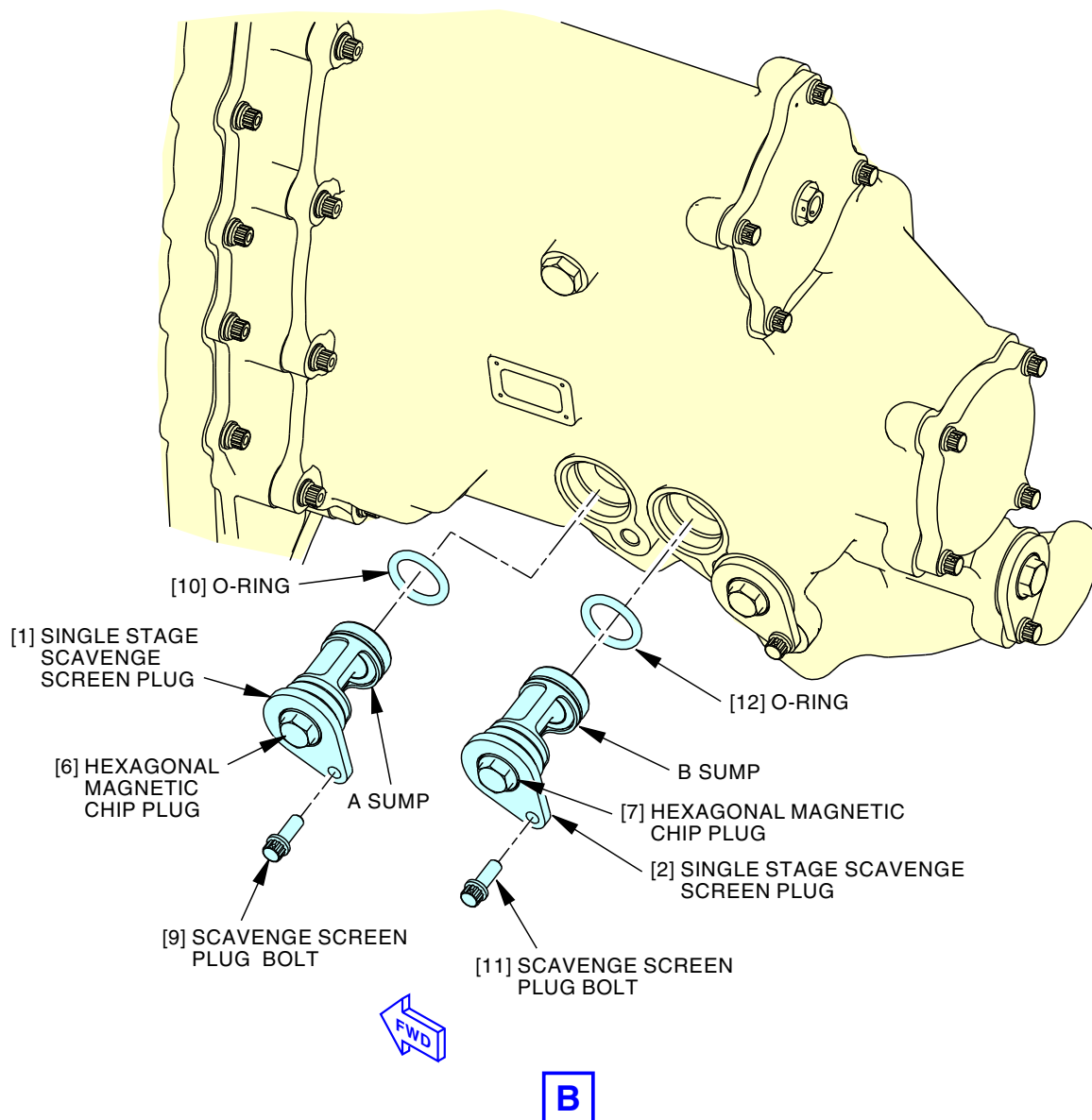
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D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-04

Page 205
Sep 15/2021



ICNLEAP1B792104D5882800002A00101

2422204 S0000560083_V4

Scavenge Screen Plugs Installation
Figure 201/79-21-04-990-804-G00 (Sheet 2 of 3)

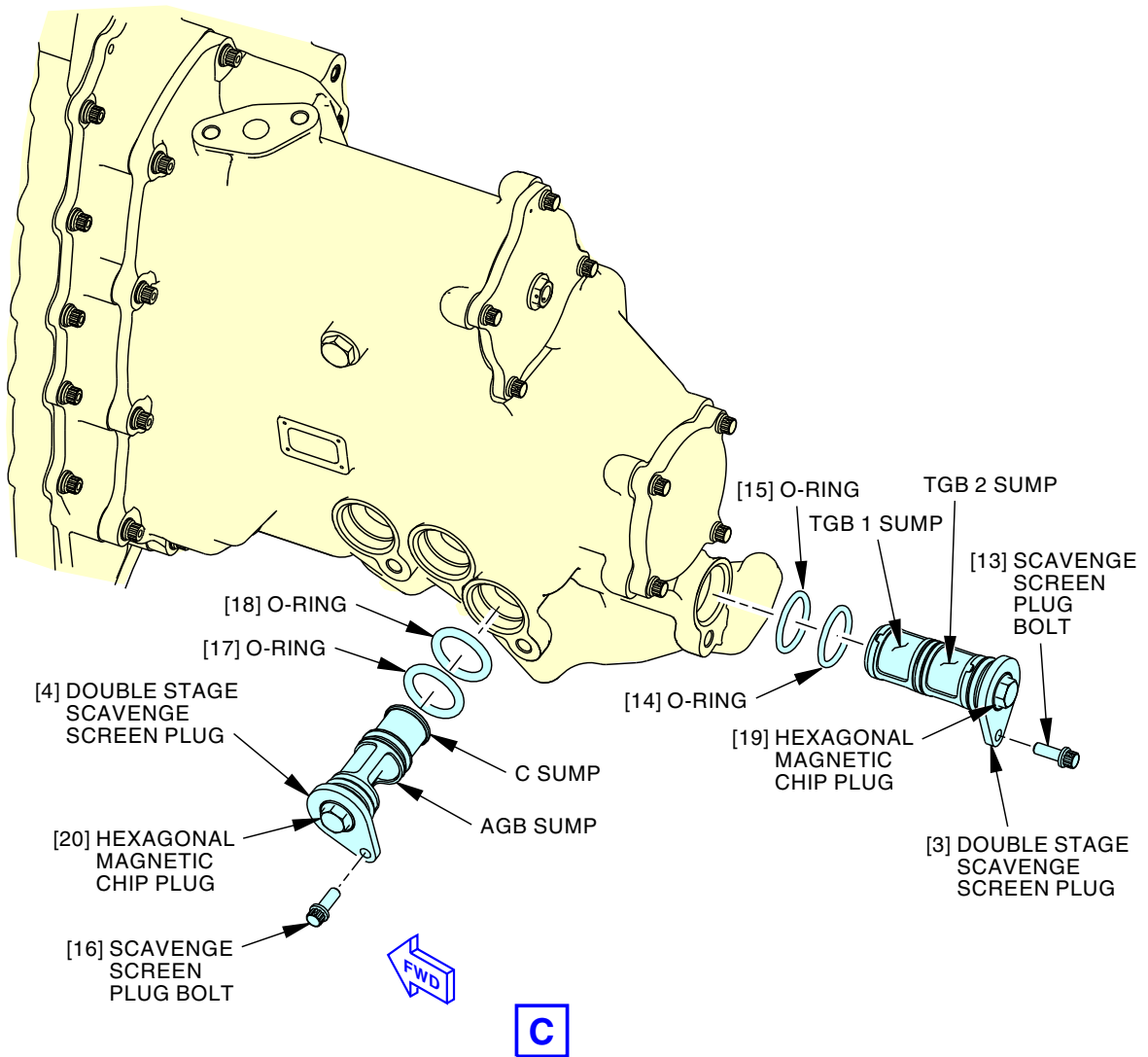
EFFECTIVITY
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 79-0007

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-04

Page 206
 Sep 15/2021



A0003-A-001-01

2422217 S0000560084_V3

Scavenge Screen Plugs Installation
Figure 201/79-21-04-990-804-G00 (Sheet 3 of 3)

EFFECTIVITY
 SIA ALL; PRE LEAP-1B SERVICE BULLETIN SB
 79-0007

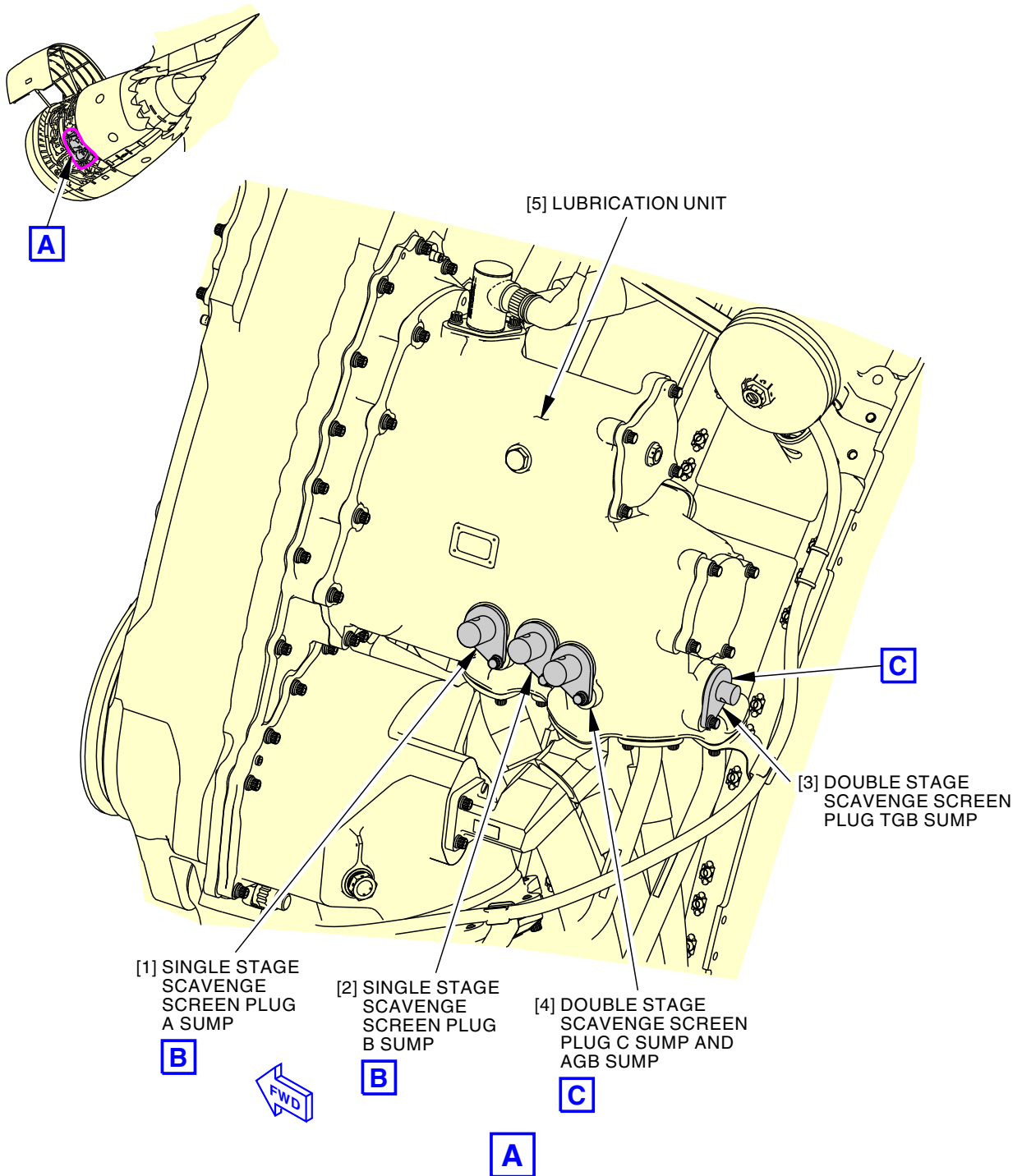
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79-21-04

Page 207
 Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



2979188 S0000757149_V1

Scavenge Screen Plugs Installation
Figure 202/79-21-04-990-806-G00 (Sheet 1 of 3)

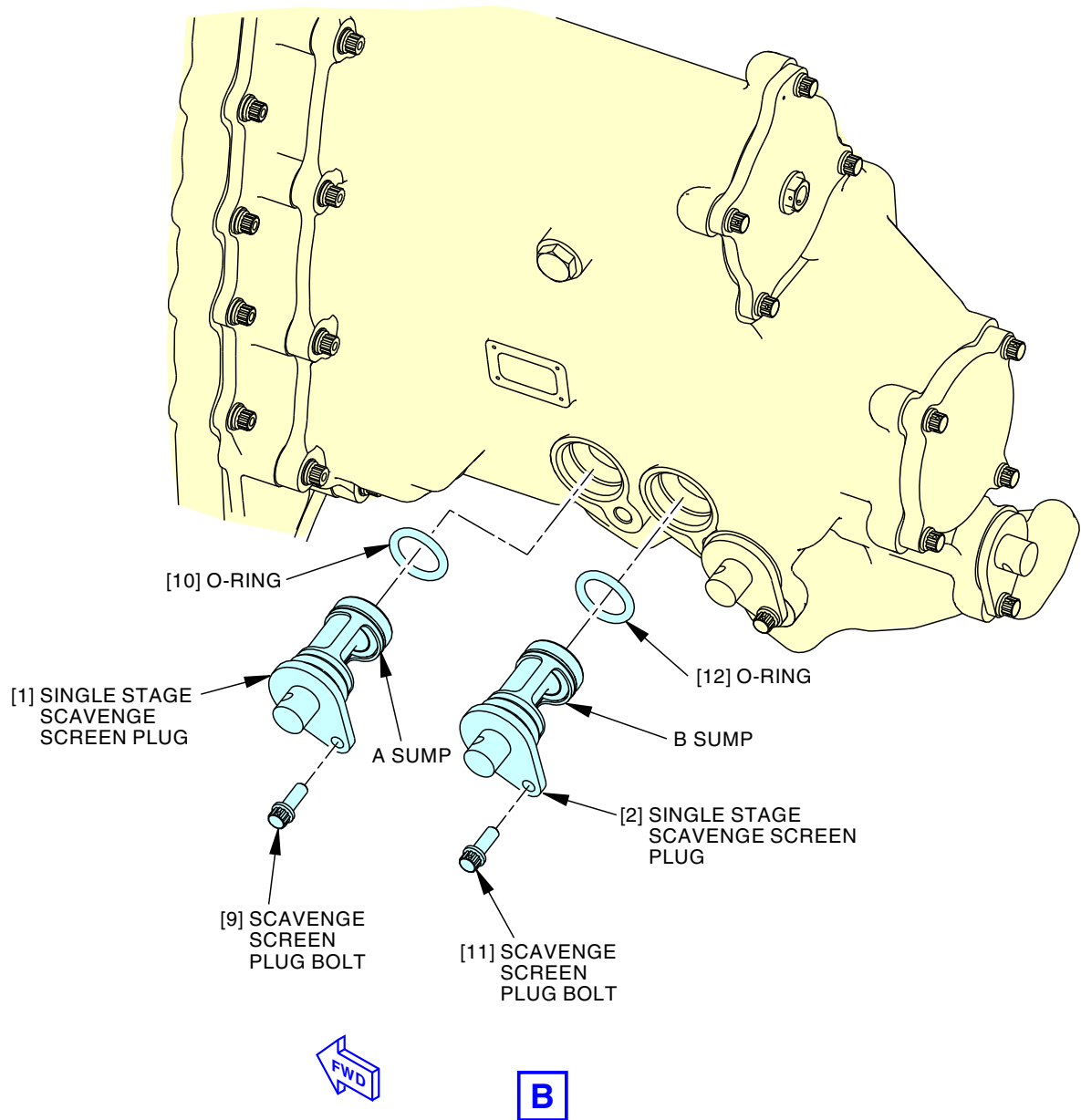
EFFECTIVITY
SIA ALL; AIRPLANES WITH POST LEAP-1B
SERVICE BULLETIN SB 79-0007

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79-21-04

Page 208
Sep 15/2021



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2979189 S0000757082_V1

Scavenge Screen Plugs Installation
Figure 202/79-21-04-990-806-G00 (Sheet 2 of 3)

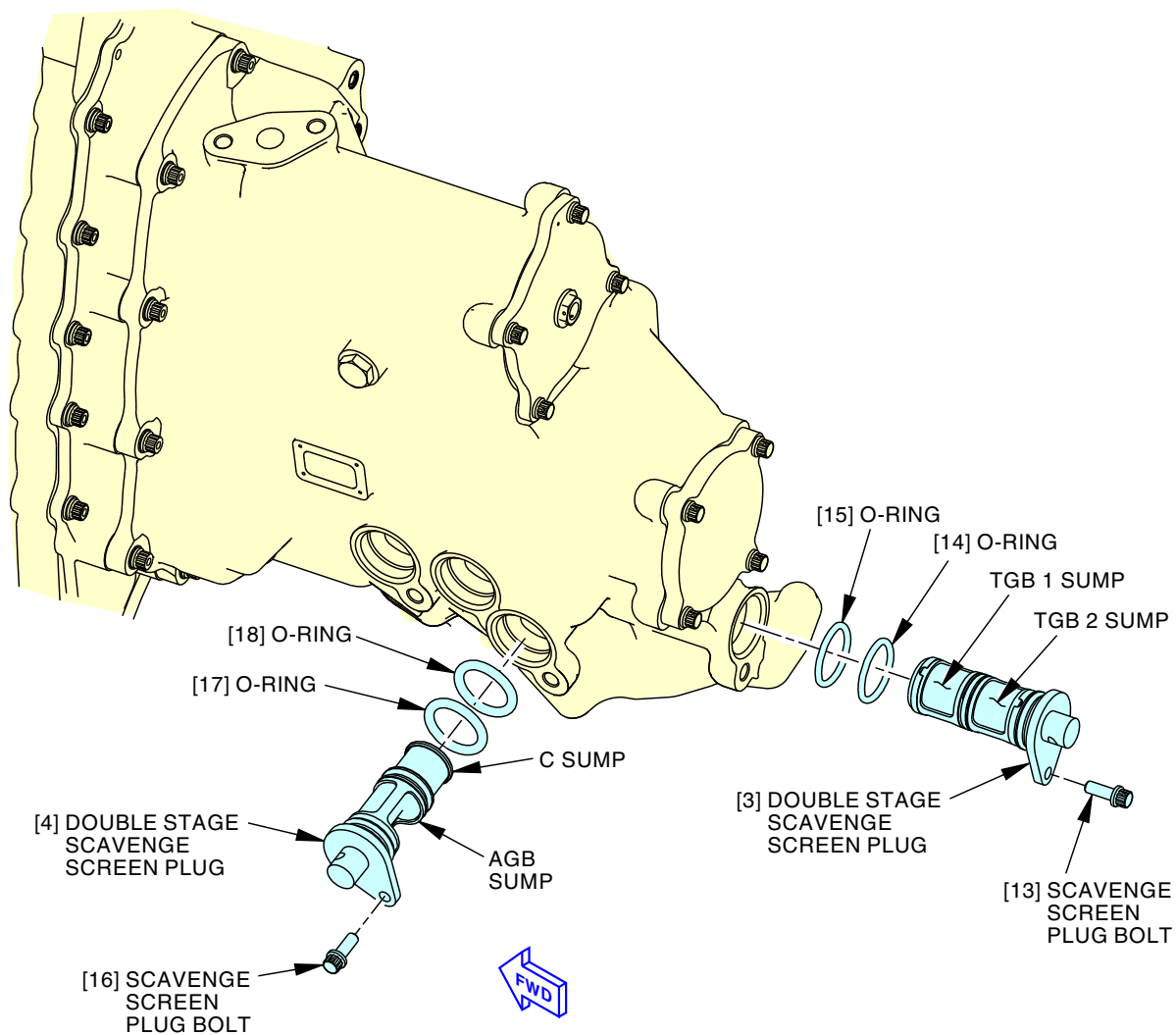
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 SERVICE BULLETIN SB 79-0007

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-04

Page 209
 Sep 15/2021


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Scavenge Screen Plugs Installation
Figure 202/79-21-04-990-806-G00 (Sheet 3 of 3)

EFFECTIVITY
 SIA ALL; AIRPLANES WITH POST LEAP-1B
 SERVICE BULLETIN SB 79-0007

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-04

 Page 210
 Sep 15/2021

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

TASK 79-21-04-400-801-G00**3. Scavenge Screen Plugs Installation**

(Figure 201 or Figure 202)

A. General

(1) This task provides the instructions to install the scavenge screen plugs.

B. References

Reference	Title
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
D00672 [CP5070]	Vaseline - Pure Mineral	V V-P-236

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
10	O-ring	79-21-04-01-035	SIA ALL
12	O-ring	79-21-04-01-035	SIA ALL
14	O-ring	79-21-04-01-225	SIA ALL
15	O-ring	79-21-04-01-222	SIA ALL
17	O-ring	79-21-04-01-125	SIA ALL
18	O-ring	79-21-04-01-122	SIA ALL

F. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

G. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

H. Scavenge Screen Plugs Installation

SUBTASK 79-21-04-010-002-G00



DO NOT LET THE OIL STAY ON YOUR SKIN. YOU CAN ABSORB
POISONOUS MATERIALS FROM THE OIL THROUGH YOUR SKIN.



DO NOT LET OIL GET ON THE ENGINE OR OTHER COMPONENTS.
IMMEDIATELY CLEAN THE OIL WHEN IT FALLS ON THEM. OIL CAN CAUSE
DAMAGE TO EQUIPMENT.

(1) Install the scavenge screen plugs as follows:

EFFECTIVITY
SIA ALL

79-21-04

D633AM101-SIA

Page 211
Sep 15/2021

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

- (a) Make sure that the mating faces are clean and clear of unwanted materials.

**CAUTION**

DO NOT REMOVE THE HEXAGONAL MAGNETIC CHIP PLUG FROM THE SCAVENGE SCREEN PLUG. IF YOU DO NOT OBEY, DAMAGE TO THE ENGINE CAN OCCUR.

**CAUTION**

DO NOT USE THE HEXAGONAL MAGNETIC CHIP PLUG TO REMOVE THE SCAVENGE SCREEN PLUGS. IF YOU DO NOT OBEY, AN OIL LEAK CAN OCCUR.

- (b) Install the double stage scavenge screen plug [4] as follows:
- 1) Remove the protective covers from the double stage scavenge screen plug [4] and lubrication unit [5] port.
 - 2) Lubricate the new O-ring [17] and new O-ring [18] with pure mineral vaseline, D00672 [CP5070].
 - 3) Install the new O-ring [17] on the groove on the double stage scavenge screen plug [4].

**CAUTION**

MAKE SURE THAT YOU USE THE CORRECT PART NUMBERS WHEN YOU REPLACE THE O-RING IN EACH SCAVENGE-SCREEN GROOVE LOCATION. THE PART NUMBERS OF THE DIFFERENT O-RINGS ARE ALMOST THE SAME NUMBER. IF YOU DO NOT USE THE CORRECT PART NUMBERS, DAMAGE CAN OCCUR.

- 4) Install the new O-ring [18] on the groove on the double stage scavenge screen plug [4].
- 5) Install the double stage scavenge screen plug [4] on the lubrication unit [5].
- 6) Install the scavenge screen plug bolt [16] that attaches the double stage scavenge screen plug [4] to the lubrication unit [5].
- 7) Tighten the scavenge screen plug bolt [16] to 67.45 in-lb (7.62 N·m) - 74.55 in-lb (8.42 N·m).

**CAUTION**

DO NOT REMOVE THE HEXAGONAL MAGNETIC CHIP PLUG FROM THE SCAVENGE SCREEN PLUG. IF YOU DO NOT OBEY, DAMAGE TO THE ENGINE CAN OCCUR.

**CAUTION**

DO NOT USE THE HEXAGONAL MAGNETIC CHIP PLUG TO REMOVE THE SCAVENGE SCREEN PLUGS. IF YOU DO NOT OBEY, AN OIL LEAK CAN OCCUR.

- (c) Install the double stage scavenge screen plug [3] as follows:
- 1) Remove the protective covers from the double stage scavenge screen plug [3] and lubrication unit [5] port.
 - 2) Lubricate the new O-ring [14] and new O-ring [15] with pure mineral vaseline, D00672 [CP5070].
 - 3) Install the new O-ring [14] on the groove on the double stage scavenge screen plug [3].

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

MAKE SURE THAT YOU USE THE CORRECT PART NUMBERS WHEN YOU REPLACE THE O-RING IN EACH SCAVENGE-SCREEN GROOVE LOCATION. THE PART NUMBERS OF THE DIFFERENT O-RINGS ARE ALMOST THE SAME NUMBER. IF YOU DO NOT USE THE CORRECT PART NUMBERS, DAMAGE CAN OCCUR.

- 4) Install the new O-ring [15] on the groove on the double stage scavenge screen plug [3].
- 5) Install the double stage scavenge screen plug [3] on the lubrication unit [5].
- 6) Install the scavenge screen plug bolt [13] that attaches the double stage scavenge screen plug [3] to the lubrication unit [5].
- 7) Tighten the scavenge screen plug bolt [13] to 67.45 in-lb (7.62 N·m) - 74.55 in-lb (8.42 N·m).



DO NOT REMOVE THE HEXAGONAL MAGNETIC CHIP PLUG FROM THE SCAVENGE SCREEN PLUG. IF YOU DO NOT OBEY, DAMAGE TO THE ENGINE CAN OCCUR.



DO NOT USE THE HEXAGONAL MAGNETIC CHIP PLUG TO REMOVE THE SCAVENGE SCREEN PLUGS. IF YOU DO NOT OBEY, AN OIL LEAK CAN OCCUR.

- (d) Install the single stage scavenge screen plug [2] as follows:
- 1) Remove the protective covers from the single stage scavenge screen plug [2] and lubrication unit [5] port.
 - 2) Lubricate the new O-ring [12] with pure mineral vaseline, D00672 [CP5070].
 - 3) Install the new O-ring [12] on the groove on the single stage scavenge screen plug [2].
 - 4) Install the single stage scavenge screen plug [2] on the lubrication unit [5].
 - 5) Install the scavenge screen plug bolt [11] that attaches the single stage scavenge screen plug [2] to the lubrication unit [5].
 - 6) Tighten the scavenge screen plug bolt [11] to 67.45 in-lb (7.62 N·m) - 74.55 in-lb (8.42 N·m).



DO NOT REMOVE THE HEXAGONAL MAGNETIC CHIP PLUG FROM THE SCAVENGE SCREEN PLUG. IF YOU DO NOT OBEY, DAMAGE TO THE ENGINE CAN OCCUR.



DO NOT USE THE HEXAGONAL MAGNETIC CHIP PLUG TO REMOVE THE SCAVENGE SCREEN PLUGS. IF YOU DO NOT OBEY, AN OIL LEAK CAN OCCUR.

- (e) Install the single stage scavenge screen plug [1] as follows:
- 1) Remove the protective covers from the single stage scavenge screen plug [1] and lubrication unit [5] port.
 - 2) Lubricate the new O-ring [10] with pure mineral vaseline, D00672 [CP5070].

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

- 3) Installs the new O-ring [10] on the groove on the single stage scavenge screen plug [1].
 - 4) Install the single stage scavenge screen plug [1] on the lubrication unit [5].
 - 5) Install the scavenge screen plug bolt [9] that attaches the single stage scavenge screen plug [1] to the lubrication unit [5].
 - 6) Tighten the scavenge screen plug bolt [9] to 67.45 in-lb (7.62 N·m) - 74.55 in-lb (8.42 N·m).
- (f) Clean the work area and clear the tools and other items.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 79-21-04-860-014-G00

- (1) On the applicable engine, close the left fan cowl panel (TASK 71-11-04-410-801-G00).
 - (a) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

SUBTASK 79-21-04-860-007-G00

- (2) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:
 - (a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.
 - (b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

J. Scavenge Screen Plugs Installation Test

SUBTASK 79-21-04-730-001-G00

- (1) Do the applicable tests given in the Power Plant Reference Table (TASK 71-00-00-800-804-G00).

————— END OF TASK —————

TASK 79-21-04-211-801-G00

4. Scavenge Screen Plug Inspection

(Figure 203 or Figure 204 or Figure 205)

A. General

- (1) This task includes steps to perform the inspection of the scavenge screen plug.

B. References

<u>Reference</u>	<u>Title</u>
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
79-00-00-220-801-G00	Engine Oil System (Oil Debris Monitoring System Sensor (ODMS), Scavenge Screen Plugs, Starter Magnetic Plug, and Oil Filter) Detailed Dimensional Check (P/B 601)
80-11-09-200-801-G00	Engine Starter Magnetic Plug Inspection (P/B 201)

EFFECTIVITY
SIA ALL

79-21-04

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 214
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE
STD-1280	Source - Air, Regulated, Dry Filtered, 0-30 PSIG

D. Consumable Materials

Reference	Description	Specification
B00682 [CP2011]	Solvent - Stoddard	MIL-PRF-680 Type I, II or III
B50295 [CP2010] G00034	Solvent - cleaning, White Spirit Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CL A)

E. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

F. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

G. Prepare for the Inspection

SOME OF THE SCAVENGE SCREENS PLUGS ARE DOUBLE STAGES. TAKE CARE TO DO NOT MIX PARTICLES DURING DOUBLE STAGES SCAVENGE SCREENS PLUGS MAINTENANCE. A MIX OF THE PARTICLES COULD LEAD TO AN INACCURATE INTERPRETATION OF SERVICEABLE CRITERIA, DAMAGE CAN OCCUR.



TAG THE REMOVED PARTICLES WITH THE RIGHT SUMP NAME TO PREVENT AN ERROR IN IDENTIFICATION OF THE SOURCE OF THE MATERIAL DURING VISUAL CHARACTERIZATION AND LABORATORY ANALYSIS. AN ERROR IN IDENTIFICATION OF THE SOURCE OF THE MATERIAL COULD LEAD TO AN INACCURATE INTERPRETATION OF SERVICEABLE CRITERIA AND DAMAGE CAN OCCUR.



CFM DOES NOT RECOMMEND THE USE OF ADHESIVE TAPE. IF YOU USE A PIECE OF ADHESIVE TAPE TO COLLECT THE PARTICLES, MAKE SURE THE ADHESIVE IS NOT TOO STRONG. IF THE ADHESIVE ON THE TAPE IS TOO STRONG, IT CAN CAUSE DAMAGE.



DO NOT USE A TOO STRONG POWER MAGNET TO REMOVE THE PARTICLES FROM THE SCAVENGE SCREENS PLUGS. IF YOU USE A TOO STRONG POWER MAGNET, IT CAN DECREASE THE MAGNETIC PERFORMANCE OF THE MAGNETIC CHIP DETECTOR. IF YOU DO NOT OBEY, DAMAGE CAN OCCUR.

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

(CAUTION PRECEDES)

NOTE: Remove and examine the scavenge screen plug one by one to be sure of the origin of the particles.

NOTE: Remove, tag and examine one scavenge screen plug at a time. This is to prevent errors in identification of the source of the particles on the scavenge screen plug.

NOTE: Characteristics of magnetic bar retriever without impact on scavenge screen plug magnetic field:

- BHmax = 5.5 MGOe (max. energy product of magnetic field strength and magnetic flux density)
- Br = 12.8 kG (remanence, residual magnetism left behind after an external magnetic field is removed)
- Hc = 640 Oe (coercivity, measure of ability to withstand an external magnetic field without becoming demagnetized).

SUBTASK 79-21-04-860-009-G00

- (1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:
 - (a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.
 - (b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 79-21-04-860-010-G00

- (2) On the applicable engine, open the left fan cowl panel (TASK 71-11-04-010-801-G00).
 - (a) Open these access panels:

<u>Number</u>	<u>Name/Location</u>
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

H. Scavenge Screen Plug Inspection

BE CAREFUL WHEN YOU DO WORK ON THE ENGINE PARTS AFTER THE ENGINE IS STOPPED. THE ENGINE PARTS CAN STAY HOT FOR ALMOST ONE HOUR. DO NOT TOUCH HOT PARTS WITHOUT APPLICABLE GLOVES. HOT PARTS CAN CAUSE INJURIES TO PERSONNEL.



DO NOT OPEN THE OIL SYSTEM UNTIL THE PRESSURE GOES TO ZERO. THE PRESSURE GOES TO ZERO APPROXIMATELY 5 MINUTES AFTER AN ENGINE STOPS. A PRESSURIZED OIL SYSTEM CAN RELEASE A SPRAY OF HOT OIL THAT CAN BURN YOU.



DO NOT LET HOT OIL GET ON YOU. PUT ON CLOTHES, GOGGLES, AND OTHER EQUIPMENT FOR PROTECTION, OR LET THE ENGINE BECOME COOL. HOT OIL CAN BURN YOU.

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

(WARNING PRECEDES)



WARNING

DO NOT LET THE OIL STAY ON YOUR SKIN. YOU CAN ABSORB POISONOUS MATERIALS FROM THE OIL THROUGH YOUR SKIN.



CAUTION

DO NOT LET OIL GET ON THE ENGINE OR OTHER COMPONENTS. IMMEDIATELY CLEAN THE OIL WHEN IT FALLS ON THEM. OIL CAN CAUSE DAMAGE TO EQUIPMENT.



CAUTION

TAG THE REMOVED PARTICLES WITH THE RIGHT SUMP NAME TO PREVENT AN ERROR IN IDENTIFICATION OF THE SOURCE OF THE MATERIAL DURING VISUAL CHARACTERIZATION AND LABORATORY ANALYSIS. AN ERROR IN IDENTIFICATION OF THE SOURCE OF THE MATERIAL COULD LEAD TO AN INACCURATE INTERPRETATION OF SERVICEABLE CRITERIA AND DAMAGE CAN OCCUR.

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CAUTION

DO NOT REMOVE THE HEXAGONAL MAGNETIC CHIP PLUG FROM THE SCAVENGE SCREEN PLUG. IF YOU DO NOT OBEY, DAMAGE TO THE ENGINE CAN OCCUR.



CAUTION

DO NOT USE THE HEXAGONAL MAGNETIC CHIP PLUG TO REMOVE THE SCAVENGE SCREEN PLUGS. IF YOU DO NOT OBEY, AN OIL LEAK CAN OCCUR.

SIA ALL

SUBTASK 79-21-04-200-002-G00

- (1) Examine the single stage scavenge screen plug [2], single stage scavenge screen plug [4], double stage scavenge screen plug [6], and double stage scavenge screen plug [9] for debris.

NOTE: Remove and inspect the scavenge screen plugs one by one to be sure of the origin of the particles.

SIA ALL; PRE LEAP-1B SERVICE BULLETIN SB 79-0007

- (a) Do not remove the hexagonal magnetic chip plug [12], hexagonal magnetic chip plug [13], hexagonal magnetic chip plug [16], hexagonal magnetic chip plug [17] and magnetic bars for inspection.

NOTE: If you remove hexagonal magnetic chip plugs and magnetic bars, then scavenge screen sleeve will catch the particles.

SIA ALL

- (b) Remove the single stage scavenge screen plug [2], single stage scavenge screen plug [4], double stage scavenge screen plug [6], and double stage scavenge screen plug [9], from the lubrication unit lube and scavenge pump [1], do this task: Scavenge Screen Plugs Removal, TASK 79-21-04-000-801-G00.
- (c) Visually inspect the O-ring [15] of each scavenge screen plug.

EFFECTIVITY
SIA ALL

79-21-04

D633AM101-SIA

Page 217
May 15/2022

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

- 1) If the O-ring [15] is partially cut, inspect the lubrication unit lube and scavenge pump [1] scavenge cavity to check that the cavity is free of any piece(s) of O-ring [15] (Figure 203 or Figure 204 or Figure 205).
 - a) If there is a piece of O-ring [15] in the lubrication unit lube and scavenge pump [1] scavenge cavity, remove and keep it.
 - b) Make sure that the piece of O-ring [15] aligns with the cut O-ring [18].
 - <1> If the piece of O-ring [15] aligns with the O-ring [18], discard O-ring [15].
 - <2> If the piece of O-ring [15] does not align with the O-ring [18], do these steps:
 - <a> Take pictures of the piece of the O-ring [15].
 - Record dimension of the O-ring [18] section and estimated radius.
 - <c> Do this task: Engine Oil System (Oil Debris Monitoring System Sensor (ODMS), Scavenge Screen Plugs, Starter Magnetic Plug, and Oil Filter) Detailed Dimensional Check, TASK 79-00-00-220-801-G00.

NOTE: If the piece of O-ring [15] is not removed during the inspection of the scavenge screen plug, there is a possibility to have a piece of O-ring [15] left in the lubrication unit lube and scavenge pump scavenge cavity. If this piece of O-ring [15] is not removed before scavenge screen plug installation, it will be trapped in the screen during the next engine operation. At the next scavenge screen plug inspection, this piece of O-ring [15] will be found and if the O-ring [15] is not cut during the visual inspection, this will cause confusion and potentially lead to unnecessary actions to troubleshoot the problem.

- (d) Visually inspect the single stage scavenge screen plug [2], single stage scavenge screen plug [4], double stage scavenge screen plug [6], and double stage scavenge screen plug [9] for debris.
- (e) If you find some magnetic material on the TGB1 sump [7], TGB2 sump [8], or AGB sump [11] scavenge screen plugs, examine the starter magnetic plug for contamination, do this task: Engine Starter Magnetic Plug Inspection, TASK 80-11-09-200-801-G00.
- (f) If the single stage scavenge screen plug [2], single stage scavenge screen plug [4], double stage scavenge screen plug [6], and double stage scavenge screen plug [9] are free from debris, do the following steps:



DO NOT GET THE SOLVENT IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE IN THE FUMES FROM THE SOLVENT. PUT ON PROTECTIVE SPLASH GOGGLES AND GLOVES WHEN YOU USE THE SOLVENT. KEEP THE SOLVENT AWAY FROM SPARKS, FLAME, AND HEAT. THE SOLVENT IS POISONOUS AND FLAMMABLE, WHICH CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- 1) Clean the single stage scavenge screen plug [2], single stage scavenge screen plug [4], double stage scavenge screen plug [6], and double stage scavenge screen plug [9] with solvent, B00682 [CP2011].
- 2) Dry the single stage scavenge screen plug [2], single stage scavenge screen plug [4], double stage scavenge screen plug [6], and double stage scavenge screen plug [9] with a 0-30 psig dry filtered regulated air source, STD-1280.

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

- 3) Make sure that the single stage scavenge screen plug [2], single stage scavenge screen plug [4], double stage scavenge screen plug [6], and double stage scavenge screen plug [9] are free of all particles.
- 4) Install the single stage scavenge screen plug [2], single stage scavenge screen plug [4], double stage scavenge screen plug [6], and double stage scavenge screen plug [9], do this task: Scavenge Screen Plugs Installation, TASK 79-21-04-400-801-G00.
- (g) If there are debris particles on single stage scavenge screen plug [2], single stage scavenge screen plug [4], double stage scavenge screen plug [6], or double stage scavenge screen plug [9], carefully remove them and keep the particles.
 - 1) If it is possible, take pictures of the particles on the concerned scavenge screen sump (either A sump [3], B sump [5], TGB1 sump [7], TGB2 sump [8], C sump [10], or AGB sump [11]).
 - a) Make sure that you identify each of the concerned scavenge screen sump before remove them.
 - 2) Carefully remove and keep the particles as follows:



DO NOT USE A TOO STRONG POWER MAGNET TO REMOVE THE PARTICLES FROM THE SCAVENGE SCREENS PLUGS. IF YOU USE A TOO STRONG POWER MAGNET, IT CAN DECREASE THE MAGNETIC PERFORMANCE OF THE MAGNETIC CHIP DETECTOR. IF YOU DO NOT OBEY, DAMAGE CAN OCCUR.

- a) Use cotton wiper, G00034, on a thin sheet of paper or/and a magnetic bar retriever.

NOTE: Characteristics of magnetic bar retriever without impact on scavenge screen plug magnetic field:

- BHmax = 5.5 MGOe (max. energy product of magnetic field strength and magnetic flux density)
- Br = 12.8 kG (remanence, residual magnetism left behind after an external magnetic field is removed)
- Hc = 640 Oe (coercivity, measure of ability to withstand an external magnetic field without becoming demagnetized).

- b) Use a magnet to separate the magnetic particles.



DO NOT GET THE SOLVENT IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE IN THE FUMES FROM THE SOLVENT. PUT ON PROTECTIVE SPLASH GOGGLES AND GLOVES WHEN YOU USE THE SOLVENT. KEEP THE SOLVENT AWAY FROM SPARKS, FLAME, AND HEAT. THE SOLVENT IS POISONOUS AND FLAMMABLE, WHICH CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- <1> Remove the oil from the collected particles with solvent, B00682 [CP2011], or White Spirit, B50295 [CP2010].

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

- <2> Keep the material collected from each scavenge screen separately with the following information attached: ESN, TSC/CSN, source of particles (sump), and removal date.
- 3) Clean the single stage scavenge screen plug [2], single stage scavenge screen plug [4], double stage scavenge screen plug [6], and double stage scavenge screen plug [9] with solvent, B00682 [CP2011].
 - 4) Make sure that single stage scavenge screen plug [2], single stage scavenge screen plug [4], double stage scavenge screen plug [6], and double stage scavenge screen plug [9] are free of all particles
 - 5) Dry the single stage scavenge screen plug [2], single stage scavenge screen plug [4], double stage scavenge screen plug [6], and double stage scavenge screen plug [9] with a 0-30 psig dry filtered regulated air source, STD-1280.
 - 6) Install the single stage scavenge screen plug [2], single stage scavenge screen plug [4], double stage scavenge screen plug [6], and double stage scavenge screen plug [9], do this task: Scavenge Screen Plugs Installation, TASK 79-21-04-400-801-G00.



DO NOT GET THE SOLVENT IN YOUR MOUTH, EYES, OR ON YOUR SKIN. DO NOT BREATHE IN THE FUMES FROM THE SOLVENT. PUT ON PROTECTIVE SPLASH GOGGLES AND GLOVES WHEN YOU USE THE SOLVENT. KEEP THE SOLVENT AWAY FROM SPARKS, FLAME, AND HEAT. THE SOLVENT IS POISONOUS AND FLAMMABLE, WHICH CAN CAUSE INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT.

- 7) Do the analysis of the particles, do this task: Engine Oil System (Oil Debris Monitoring System Sensor (ODMS), Scavenge Screen Plugs, Starter Magnetic Plug, and Oil Filter) Detailed Dimensional Check, TASK 79-00-00-220-801-G00.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 79-21-04-860-011-G00

- (1) On the applicable engine, close the left fan cowl panel (TASK 71-11-04-410-801-G00).
 - (a) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

SUBTASK 79-21-04-860-012-G00

- (2) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:
 - (a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.
 - (b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

J. Scavenge Screen Plug Test

SUBTASK 79-21-04-710-002-G00

- (1) Do the applicable tests given in the Power Plant Test Reference Table (TASK 71-00-00-800-804-G00).

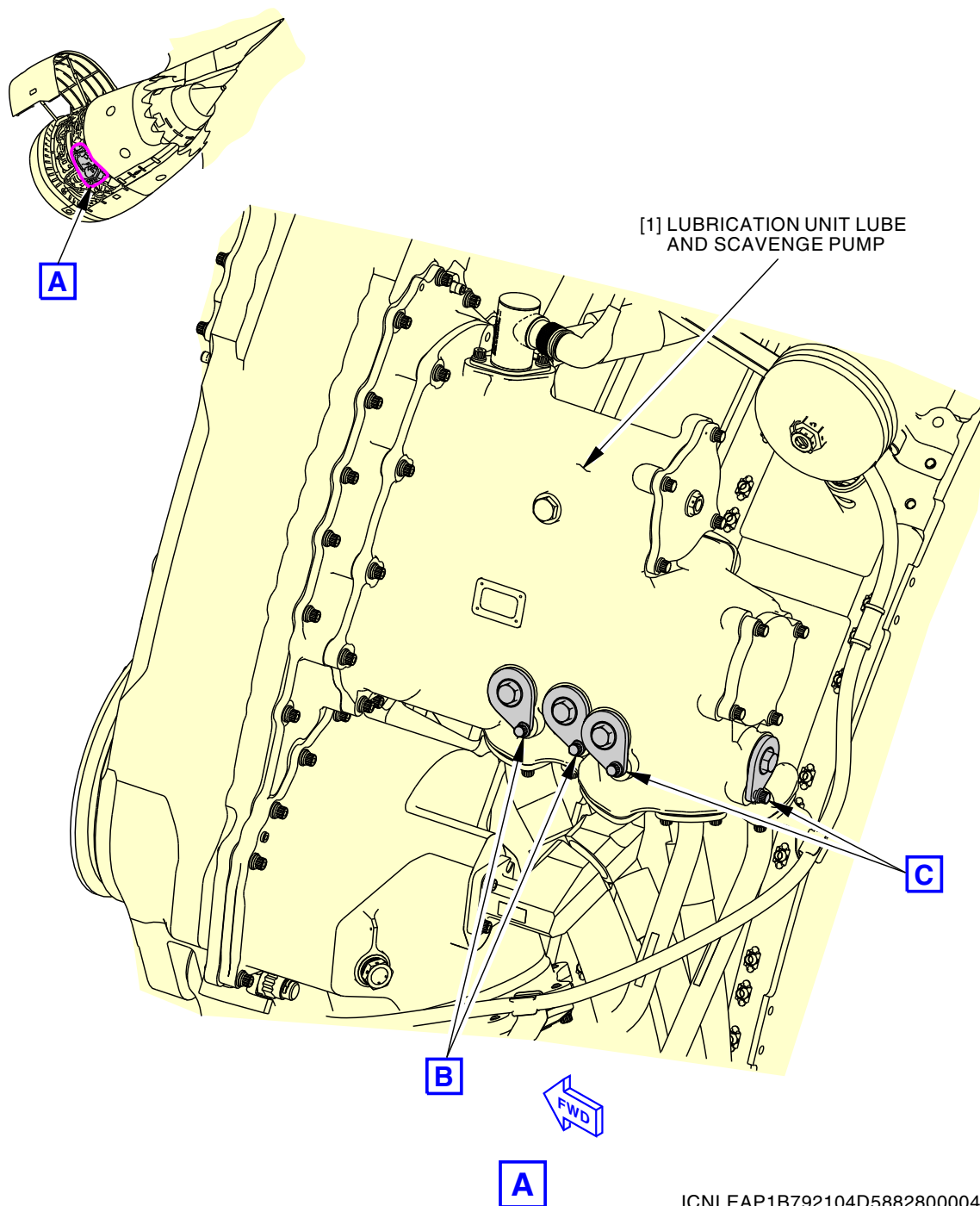
————— **END OF TASK** —————

EFFECTIVITY
SIA ALL

79-21-04

D633AM101-SIA

Page 220
May 15/2022



ICNLEAP1B792104D5882800004A00101
2355352 S00061517079 V2

Scavenge Screen Plug Inspection
Figure 203/79-21-04-990-802-G00 (Sheet 1 of 3)

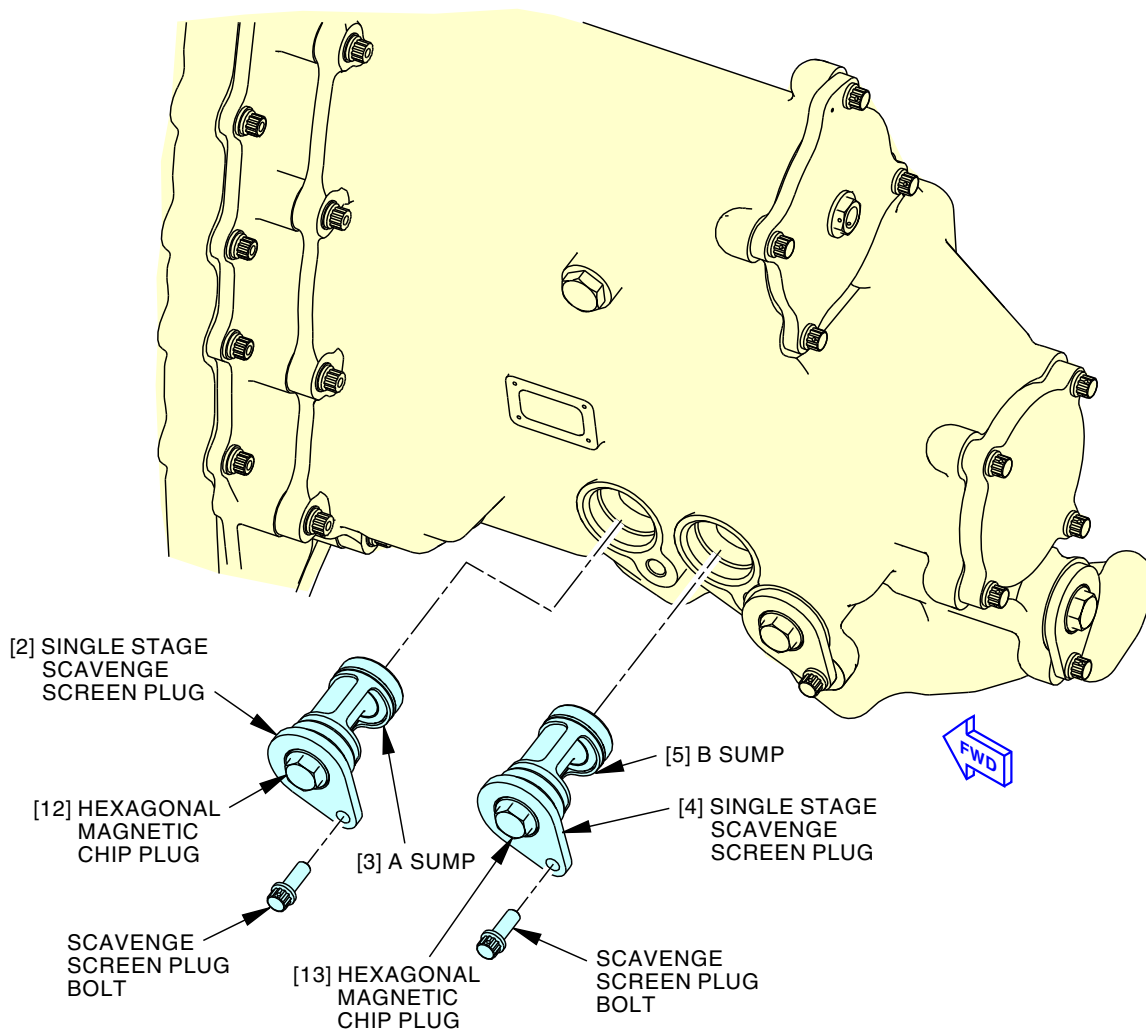
EFFECTIVITY
SIA ALL; PRE LEAP-1B SERVICE BULLETIN SB
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D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-04

Page 221
Sep 15/2021


B

 ICNLEAP1B792104D5882800005A00201
 2897778 S0000691373_V3

Scavenge Screen Plug Inspection
Figure 203/79-21-04-990-802-G00 (Sheet 2 of 3)

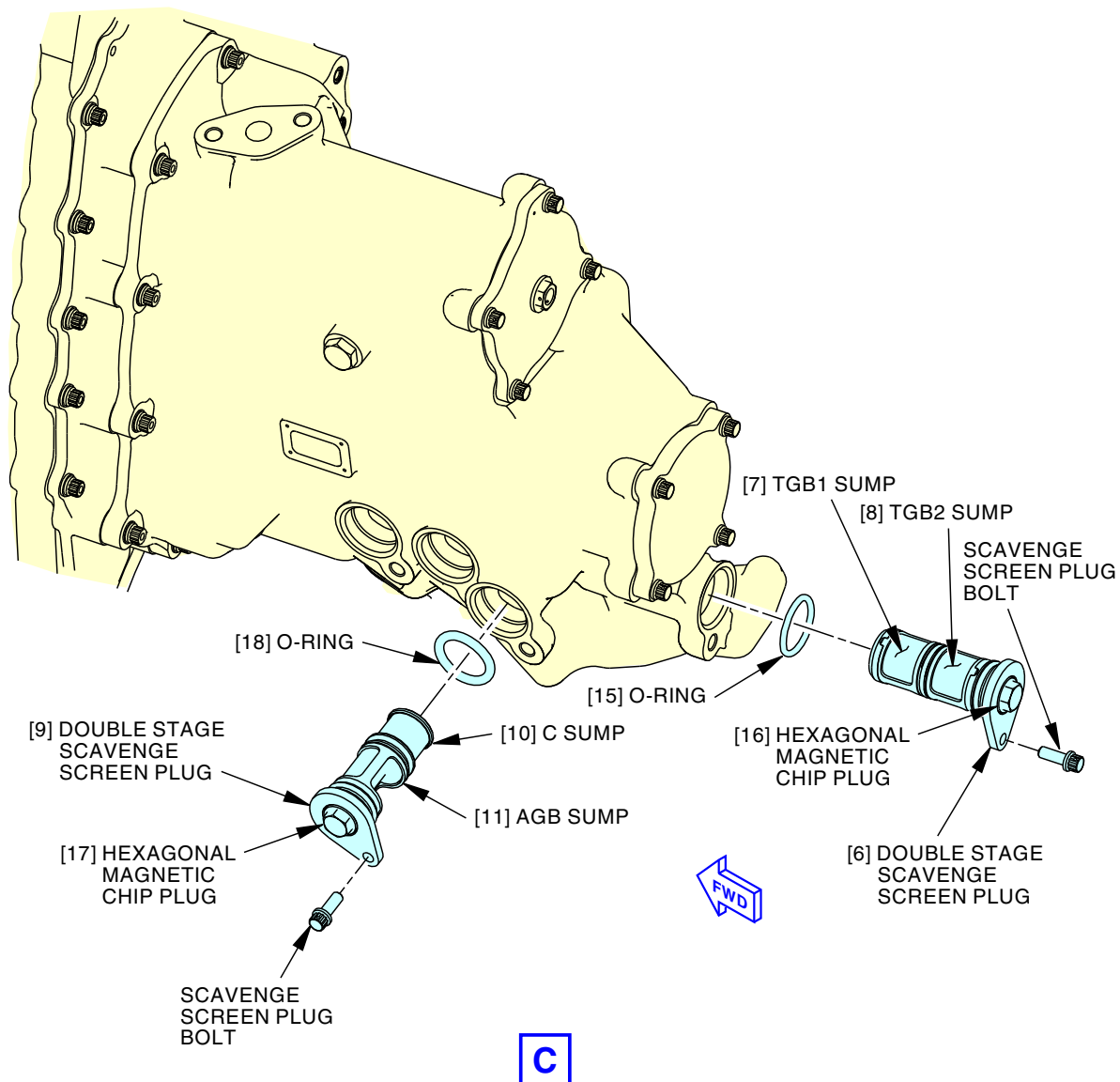
EFFECTIVITY
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 79-0007

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-04

 Page 222
 Sep 15/2021


 ICNLEAP1B792104D5882800006A00101
 2897779 S0000691374_V3

Scavenge Screen Plug Inspection
Figure 203/79-21-04-990-802-G00 (Sheet 3 of 3)

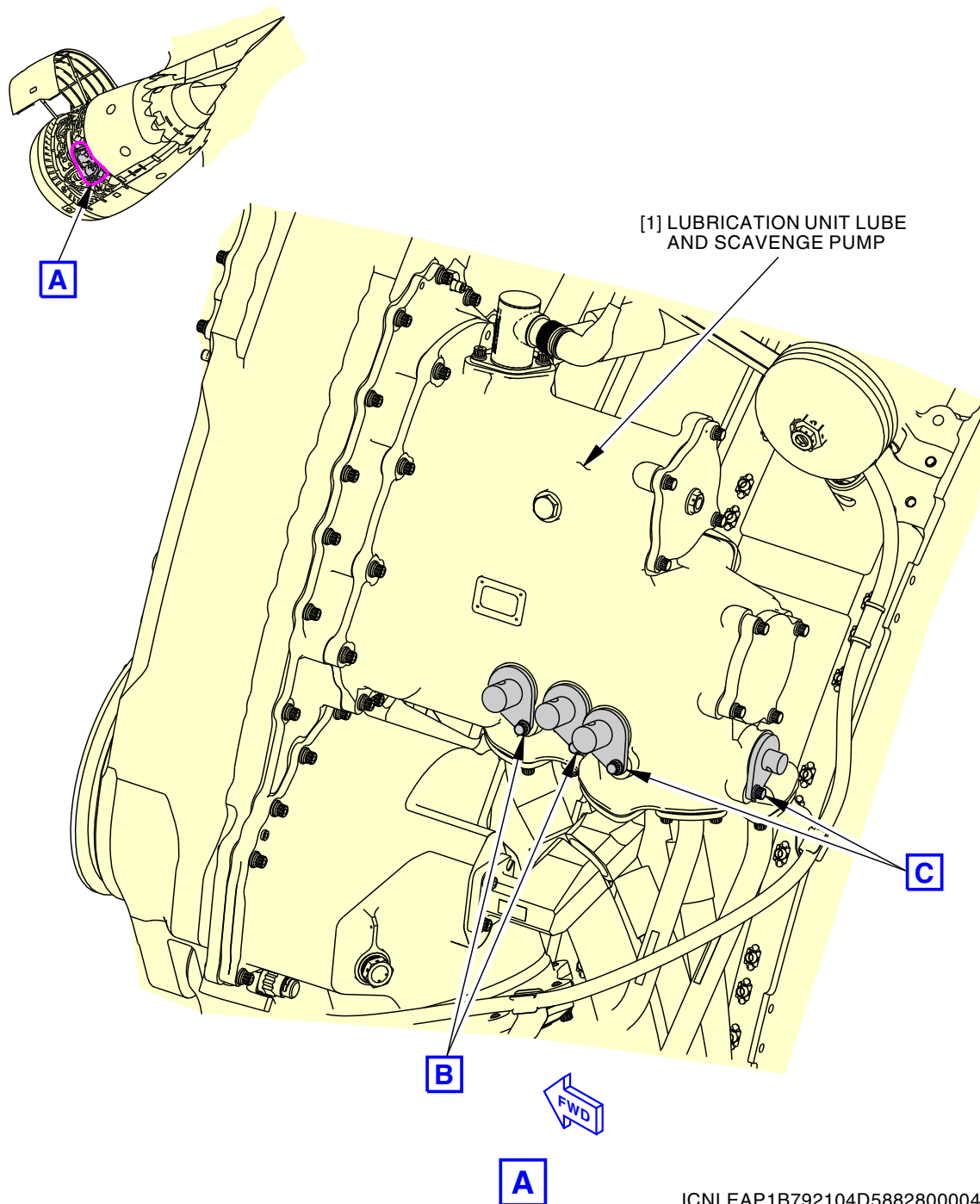
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 79-0007

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-04
 Page 223
 Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



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2979247 S0000757331_V1

Scavenge Screen Plug Inspection
Figure 204/79-21-04-990-807-G00 (Sheet 1 of 3)

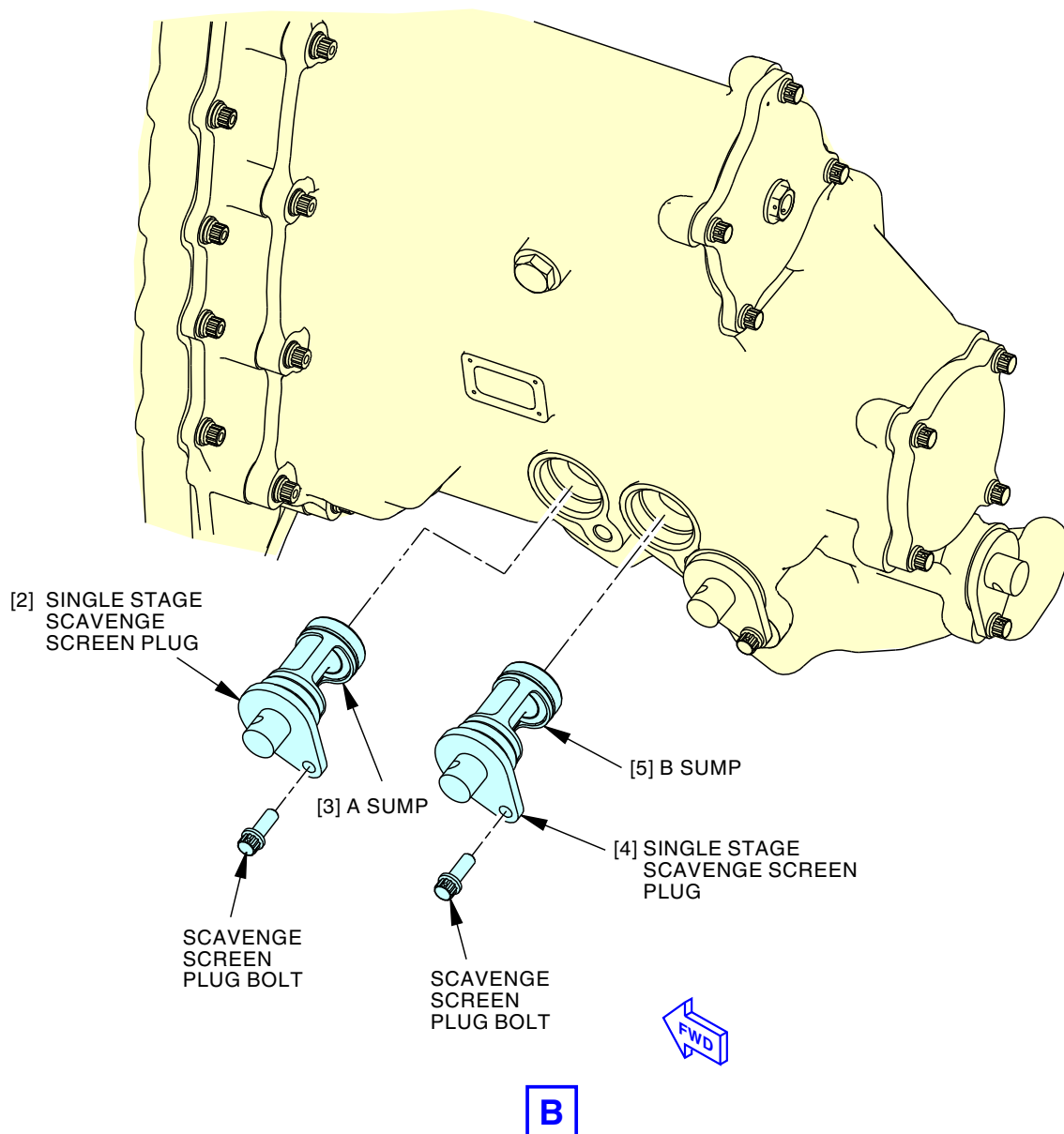
EFFECTIVITY
SIA ALL; AIRPLANES WITH POST LEAP-1B
SERVICE BULLETIN SB 79-0007

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-04

Page 224
Sep 15/2021



ICNLEAP1B792104D5882800010A00101

2979251 S0000757355_V1

Scavenge Screen Plug Inspection
Figure 204/79-21-04-990-807-G00 (Sheet 2 of 3)

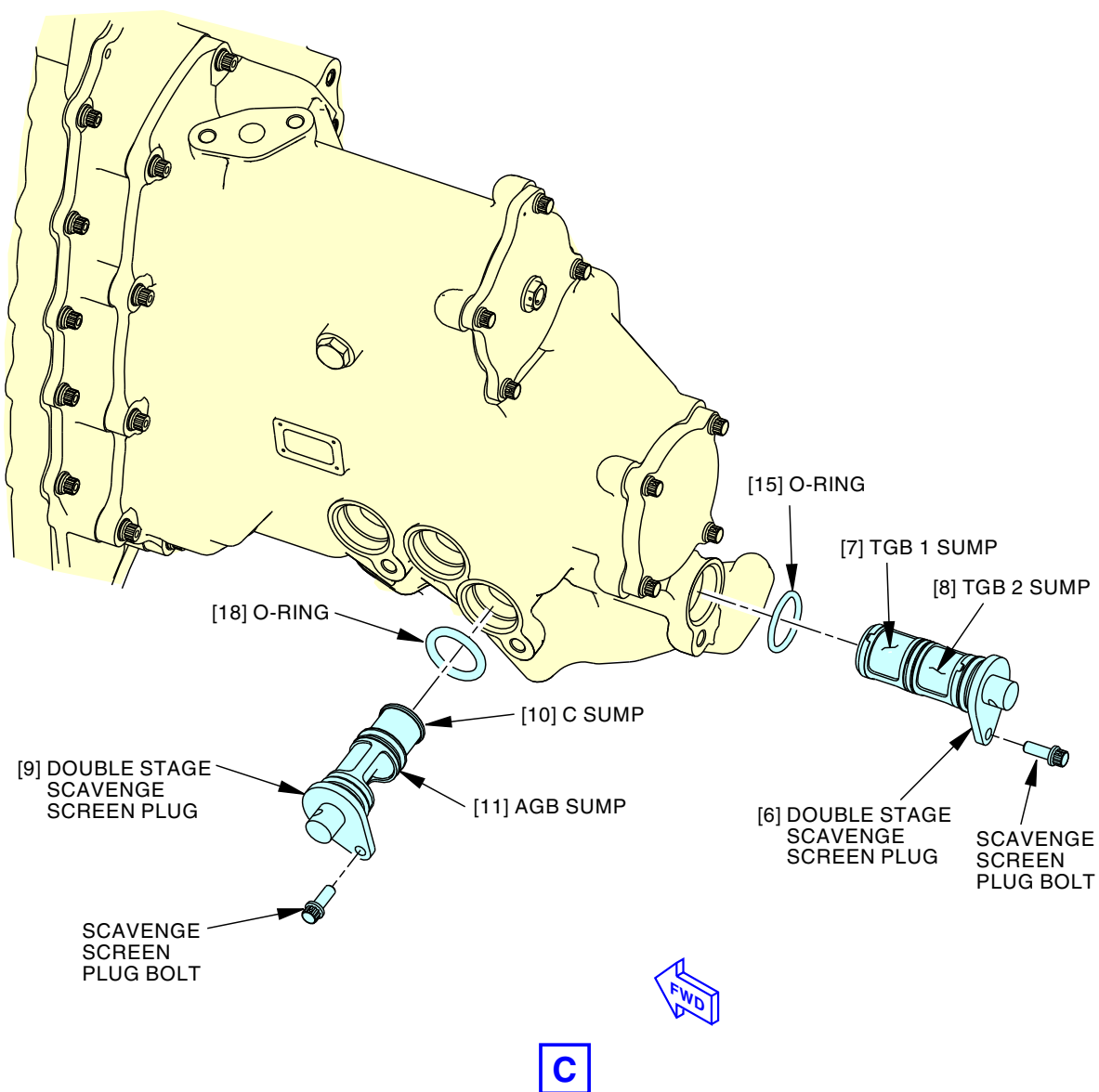
EFFECTIVITY
 SIA ALL; AIRPLANES WITH POST LEAP-1B
 SERVICE BULLETIN SB 79-0007

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-04

Page 225
 Sep 15/2021



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2979255 S0000757359_V1

Scavenge Screen Plug Inspection
Figure 204/79-21-04-990-807-G00 (Sheet 3 of 3)

EFFECTIVITY
 SIA ALL; AIRPLANES WITH POST LEAP-1B
 SERVICE BULLETIN SB 79-0007

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-04

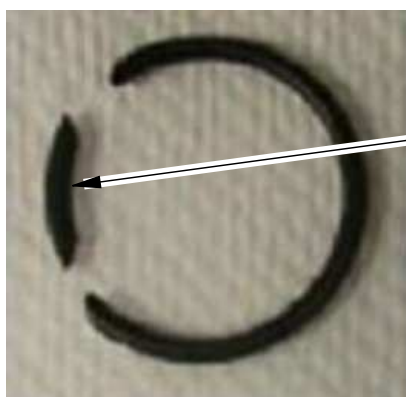
Page 226
 Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

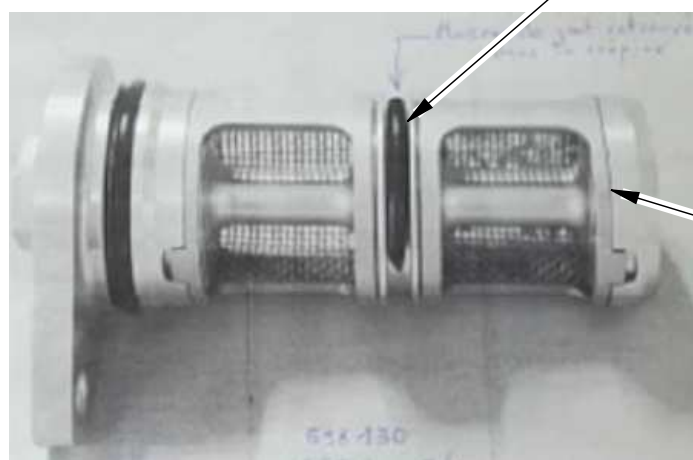


[9] DOUBLE STAGE
SCAVENGE
SCREEN PLUG

[18] O-RING



CUT PIECE OF
O-RING



[15] O-RING

[6] DOUBLE STAGE
SCAVENGE
SCREEN PLUG

DOUBLE STAGE SCAVENGE PLUGS
WITH CUT O-RING
(EXAMPLE GRAPHIC)

2898960 S0000691671_V2

Scavenge Screen Plug Inspection
Figure 205/79-21-04-990-808-G00

EFFECTIVITY
SIA ALL

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-04

Page 227
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

OIL FILTER CARTRIDGE ELEMENT - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
- (1) A removal of the oil filter cartridge element
 - (2) An installation of the oil filter cartridge element.

TASK 79-21-07-000-801-G00

2. Oil Filter Cartridge Element Removal

(Figure 401)

A. General

- (1) This task gives the instructions on how to remove the oil filter cartridge element.

B. References

Reference	Title
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
79-21-03-000-801-G00	Lubrication Unit Removal (P/B 401)
79-21-03-400-801-G00	Lubrication Unit Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-199	Container - 2 U.S. Gallon (7.6 l) (oil resistant)
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
D00599 [CP2442]	Oil - Engine	

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	Preformed packing	79-21-07-01-020	SIA ALL

F. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

G. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

H. Prepare for the Removal

SUBTASK 79-21-07-860-001-G00

- (1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:
- (a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

EFFECTIVITY
SIA ALL

79-21-07

D633AM101-SIA

Page 401
May 15/2023

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

- (b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 79-21-07-860-002-G00

- (2) On the applicable engine, open the left fan cowl panel (TASK 71-11-04-010-801-G00).
 - (a) Open these access panels:

<u>Number</u>	<u>Name/Location</u>
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

I. Oil Filter Cartridge Element Removal

SUBTASK 79-21-07-020-001-G00



BE CAREFUL WHEN YOU DO WORK ON THE ENGINE PARTS AFTER THE ENGINE IS STOPPED. THE ENGINE PARTS CAN STAY HOT FOR ALMOST ONE HOUR. DO NOT TOUCH HOT PARTS WITHOUT APPLICABLE GLOVES. HOT PARTS CAN CAUSE INJURIES TO PERSONNEL.



DO NOT OPEN THE OIL SYSTEM UNTIL THE PRESSURE GOES TO ZERO. THE PRESSURE GOES TO ZERO APPROXIMATELY 5 MINUTES AFTER AN ENGINE STOPS. A PRESSURIZED OIL SYSTEM CAN RELEASE A SPRAY OF HOT OIL THAT CAN BURN YOU.



DO NOT LET HOT OIL GET ON YOU. PUT ON CLOTHES, GOGGLES, AND OTHER EQUIPMENT FOR PROTECTION, OR LET THE ENGINE BECOME COOL. HOT OIL CAN BURN YOU.



DO NOT LET THE OIL STAY ON YOUR SKIN. YOU CAN ABSORB POISONOUS MATERIALS FROM THE OIL THROUGH YOUR SKIN.



DO NOT LET OIL GET ON THE ENGINE OR OTHER COMPONENTS. IMMEDIATELY CLEAN THE OIL WHEN IT FALLS ON THEM. OIL CAN CAUSE DAMAGE TO EQUIPMENT.

- (1) Remove the oil filter cartridge element [4] as follows:
 - (a) Put a container, STD-199, below the lubrication unit lube and scavenge pump [1].
 - (b) Drain the oil from the lubrication unit lube and scavenge pump [1] as follows:
 - 1) Cut the safety cable [11] from the drain plug [2].
 - 2) Remove the drain plug [2] from the lubrication unit lube and scavenge pump [1] as follows:
 - a) Remove the drain plug [2] from the lubrication unit lube and scavenge pump [1].
 - b) Remove and discard the preformed packing [3] from the groove of the drain plug [2].
 - c) Let the oil drain into the container, STD-199.

EFFECTIVITY
SIA ALL

79-21-07

D633AM101-SIA

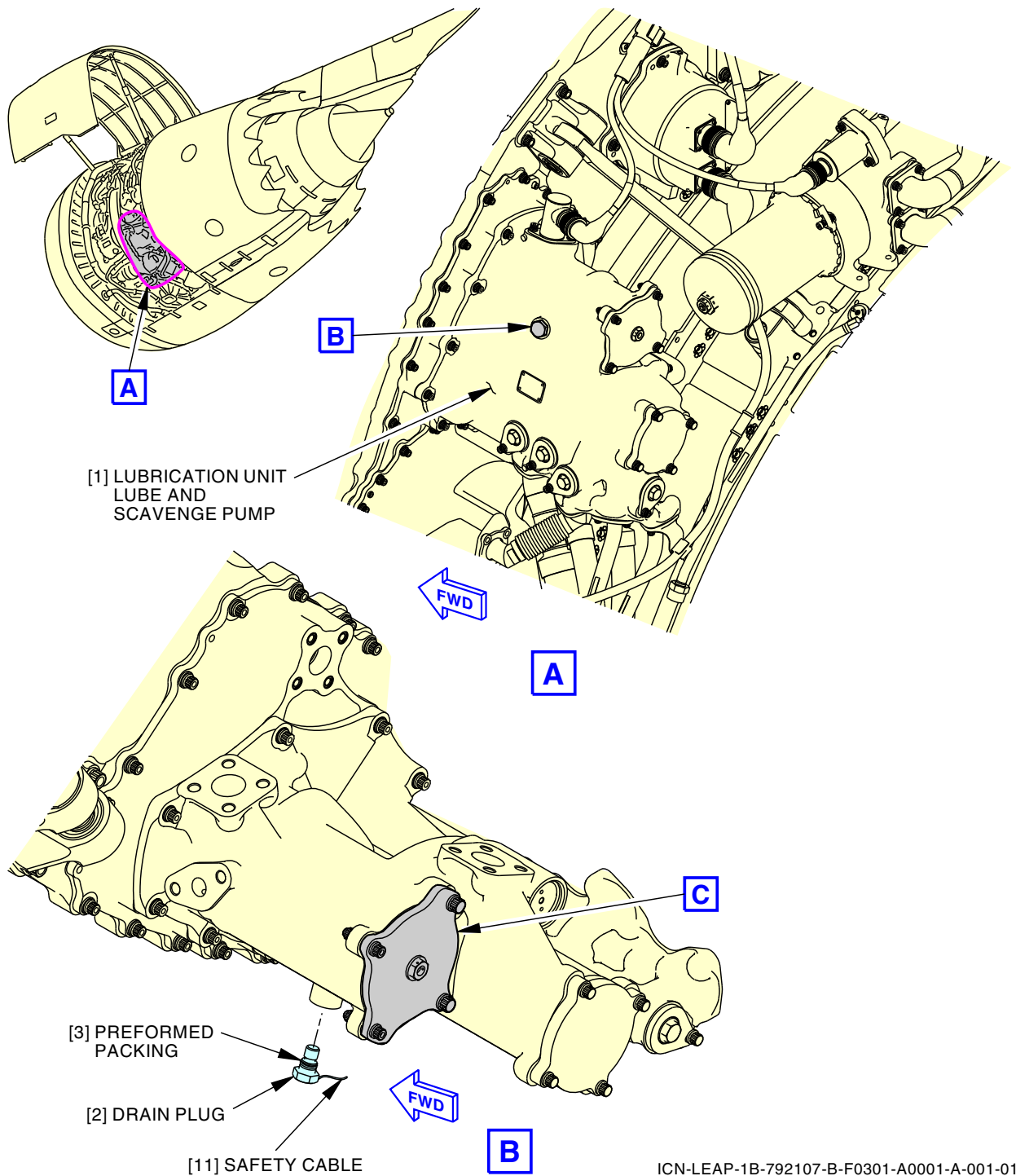
ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 402
May 15/2023

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

- (c) Install the drain plug [2] on the lubrication unit lube and scavenge pump [1] as follows:
- 1) Make sure that the mating faces are clean and clear of unwanted materials.
 - 2) Lubricate the threads of the drain plug [2] and the new preformed packing [3] with engine oil, D00599 [CP2442].
 - 3) Install the new preformed packing [3] onto the groove of the drain plug [2].
 - 4) Install the drain plug [2] in a correct position on the lubrication unit lube and scavenge pump [1].
 - 5) Tighten the drain plug [2] to 67.2 in-lb (7.6 N·m) - 74.3 in-lb (8.4 N·m).
- NOTE: Safety cable will be installed after the installation of the oil filter cartridge cover.
- (d) Cut the safety cable [6] from the filter drain plug [5].
- (e) Loosen the filter drain plug [5] from the oil filter cartridge cover [8].
- (f) Remove the two bolts [9], two bolts [13], and two nuts [14] that attach the oil filter cartridge cover [8] to the lubrication unit lube and scavenge pump [1].
- (g) Remove the oil filter cartridge cover [8] and oil filter cartridge element [4] from the lubrication unit lube and scavenge pump [1].
- (h) Remove the oil filter cartridge element [4] from the oil filter cartridge cover [8] as follows:
- 1) Remove the filter drain plug [5] from the oil filter cartridge cover [8].
 - 2) Remove and discard the preformed packing [7] from the groove of the filter drain plug [5].
 - 3) Remove and discard the oil filter cartridge element [4] from the oil filter cartridge cover [8].
- (i) Remove and discard the preformed packing [10] from the groove of the oil filter cartridge cover [8].
- (j) Inspect the two inserts on the housing at the oil filter cartridge cover [8] location for indications such as insert pulled out, insert movement, impacted thread insert.
- 1) If any, replace the lubrication unit lube and scavenge pump [1]:
 - Lubrication Unit Removal, TASK 79-21-03-000-801-G00
 - Lubrication Unit Installation, TASK 79-21-03-400-801-G00.
- (k) Inspect the oil filter cartridge cover [8] flange in contact with the lubrication unit lube and scavenge pump [1].
- 1) If there is any marks on the oil filter cartridge cover [8] at the location of the two inserts on the housing, replace the lubrication unit lube and scavenge pump [1] (Figure 401):
 - Lubrication Unit Removal, TASK 79-21-03-000-801-G00
 - Lubrication Unit Installation, TASK 79-21-03-400-801-G00.
- (l) Install the protective cover on the lubrication unit lube and scavenge pump [1].

———— **END OF TASK** ————


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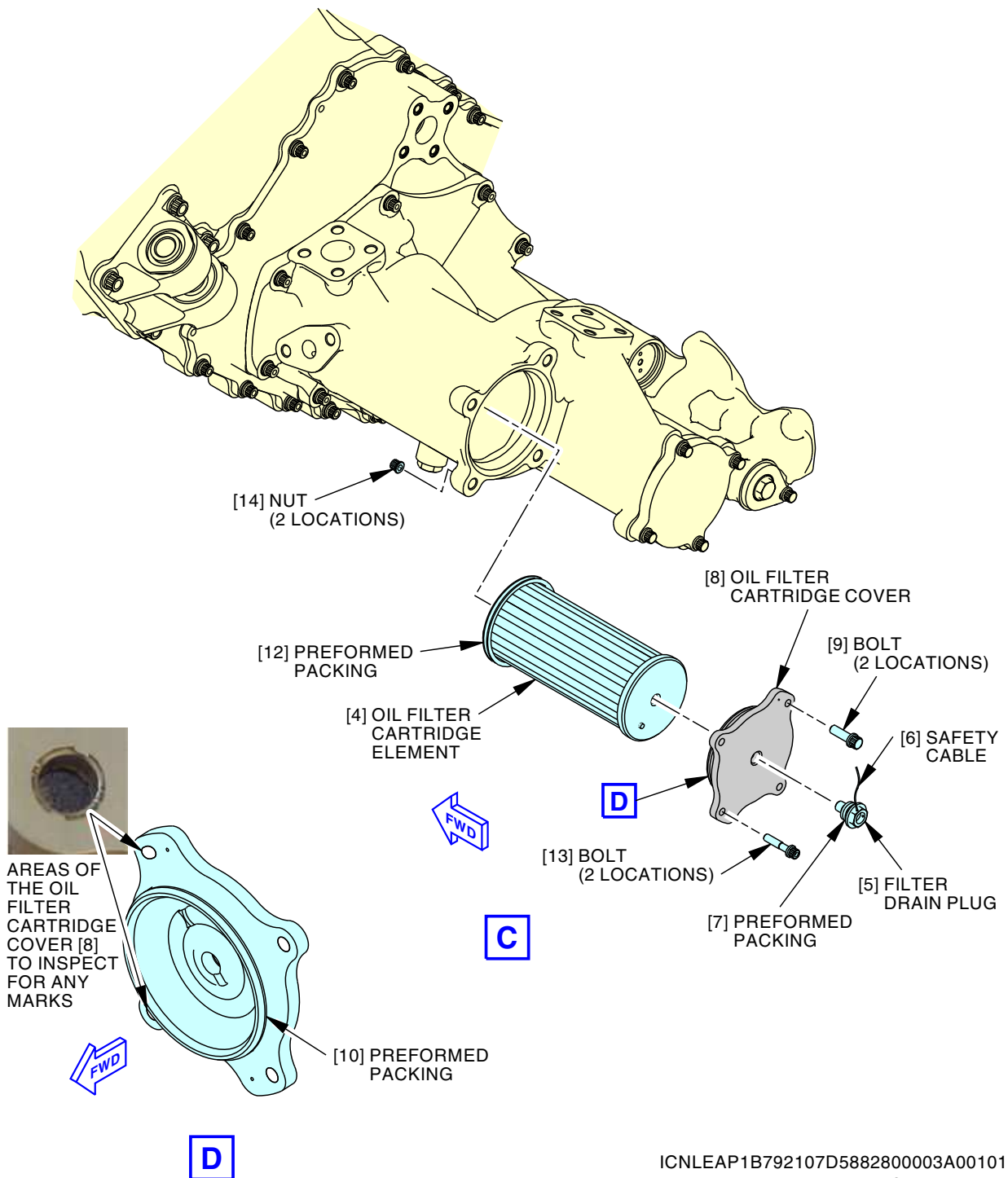
Oil Filter Cartridge Element Installation
Figure 401/79-21-07-990-801-G00 (Sheet 1 of 2)

 EFFECTIVITY
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D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-07
 Page 404
 May 15/2022



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Oil Filter Cartridge Element Installation
Figure 401/79-21-07-990-801-G00 (Sheet 2 of 2)

— EFFECTIVITY
SIA ALL

79-21-07

Page 405
May 15/2023

D633AM101-SIA

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

TASK 79-21-07-400-801-G00**3. Oil Filter Cartridge Element Installation**

(Figure 401)

A. General

(1) This task provides the instructions on how to install the oil filter cartridge element.

B. References

Reference	Title
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
D00601 [CP2101]	Vaseline - Graphite Mineral	
D00672 [CP5070]	Vaseline - Pure Mineral	V V-P-236
G50065 [CP8006]	Cable, Safety, Stainless Steel, 0.032 inch (0.8 mm) Diameter	M50 TF 9 CL-A
G50375	Kit - Safety Cable, 321 CRES - 0.032 Inch (0.81 mm) Diameter, (Contains both Cable and Ferrule)	BACC13AT3K, AMS 5689

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
4	Oil filter cartridge element	79-21-07-01-100	SIA ALL
7	Preformed packing	79-21-07-01-040	SIA ALL
10	Preformed packing	79-21-07-01-090	SIA ALL
12	Preformed packing	79-21-07-01-110	SIA ALL

F. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

G. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

H. Oil Filter Cartridge Element Installation

SUBTASK 79-21-07-420-001-G00

**WARNING**

DO NOT LET THE OIL STAY ON YOUR SKIN. YOU CAN ABSORB POISONOUS MATERIALS FROM THE OIL THROUGH YOUR SKIN.

EFFECTIVITY
SIA ALL**79-21-07**

D633AM101-SIA

Page 406
May 15/2023

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

(WARNING PRECEDES)



DO NOT LET OIL GET ON THE ENGINE OR OTHER COMPONENTS. IMMEDIATELY CLEAN THE OIL WHEN IT FALLS ON THEM. OIL CAN CAUSE DAMAGE TO EQUIPMENT.

- (1) Install the oil filter cartridge element [4] as follows:
 - (a) Make sure that the mating faces are clean and clear of unwanted materials.
 - (b) Remove the protective cover from the lubrication unit lube and scavenge pump [1].
 - (c) Lubricate the threads of the filter drain plug [5], bolts [9], bolts [13], and nuts [14] with graphite mineral vaseline, D00601 [CP2101].
 - (d) Lubricate the new preformed packing [7] and new preformed packing [10] with pure mineral vaseline, D00672 [CP5070].
 - (e) Install the preformed packing [10] into the groove of the oil filter cartridge cover [8].
 - (f) Install the new preformed packing [12] into the groove of the new oil filter cartridge element [4].
 - (g) Install the oil filter cartridge element [4] on the oil filter cartridge cover [8] as follows:
 - 1) Install the preformed packing [7] into the groove of the filter drain plug [5].
 - 2) Put the oil filter cartridge element [4] in position on the oil filter cartridge cover [8].
 - 3) Install the filter drain plug [5] on the oil filter cartridge cover [8].
 - 4) Tighten the filter drain plug [5] to 67.2 in-lb (7.6 N·m) - 74.3 in-lb (8.4 N·m) .
 - (h) Install the oil filter cartridge cover [8] and oil filter cartridge element [4] on the lubrication unit lube and scavenge pump [1].
 - (i) Install the bolts [9], bolts [13], and nuts [14] that attach the oil filter cartridge cover [8] to the lubrication unit lube and scavenge pump [1].



WARNING

YOU MUST APPLY THE TORQUE SPECIFIED FOR BOLTS AND NUTS. IF YOU DO NOT OBEY, AN OIL LEAK CAN OCCUR. THE LEAK CAN CAUSE AN IN-FLIGHT SHUT DOWN (IFSD).

- (j) Tighten the bolts [9] and nuts [14] to 67.2 in-lb (7.6 N·m) - 74.3 in-lb (8.4 N·m).
 - (k) Install a 0.032 in. (0.813 mm) safety cable [11] from safety cable kit, G50375, or cable, G50065 [CP8006], on the drain plug [2].
- NOTE:** The safety cable is anchored on the oil filter cartridge cover.
- (l) Install a 0.032 in. (0.813 mm) safety cable [6] from safety cable kit, G50375, or cable, G50065 [CP8006], on the filter drain plug [5].
 - (m) Clean the work area and clear the tools you used to do the task.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 79-21-07-860-003-G00

- (1) On the applicable engine, close the left fan cowl panel (TASK 71-11-04-410-801-G00).
 - (a) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

EFFECTIVITY
SIA ALL

79-21-07

D633AM101-SIA

Page 407
May 15/2023

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

SUBTASK 79-21-07-860-004-G00

- (2) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:
- (a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.
 - (b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

J. Oil Filter Cartridge Element Installation Test

SUBTASK 79-21-07-710-001-G00

- (1) Do the test(s) that are given in the Power Plant Test Reference Table (TASK 71-00-00-800-804-G00).

————— **END OF TASK** —————

EFFECTIVITY
SIA ALL

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-07

Page 408
May 15/2023

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

OIL FILTER CARTRIDGE ELEMENT- INSPECTION/CHECK

1. General

A. This procedure has this task:

- (1) Oil Filter Cartridge Element Inspection.

TASK 79-21-07-200-801-G00

2. Oil Filter Cartridge Element Inspection

A. General

- (1) This task gives the instructions to do the inspection of the oil filter cartridge element.

B. References

Reference	Title
79-21-04-211-801-G00	Scavenge Screen Plug Inspection (P/B 201)
79-21-07-000-801-G00	Oil Filter Cartridge Element Removal (P/B 401)
79-21-07-400-801-G00	Oil Filter Cartridge Element Installation (P/B 401)

C. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

D. Oil Filter Cartridge Element Inspection

SUBTASK 79-21-07-210-001-G00



BE CAREFUL WHEN YOU DO WORK ON THE ENGINE PARTS AFTER THE ENGINE IS STOPPED. THE ENGINE PARTS CAN STAY HOT FOR ALMOST ONE HOUR. DO NOT TOUCH HOT PARTS WITHOUT APPLICABLE GLOVES. HOT PARTS CAN CAUSE INJURIES TO PERSONNEL.



DO NOT OPEN THE OIL SYSTEM UNTIL THE PRESSURE GOES TO ZERO. THE PRESSURE GOES TO ZERO APPROXIMATELY 5 MINUTES AFTER AN ENGINE STOPS. A PRESSURIZED OIL SYSTEM CAN RELEASE A SPRAY OF HOT OIL THAT CAN BURN YOU.



DO NOT LET HOT OIL GET ON YOU. PUT ON CLOTHES, GOGGLES, AND OTHER EQUIPMENT FOR PROTECTION, OR LET THE ENGINE BECOME COOL. HOT OIL CAN BURN YOU.



DO NOT LET THE OIL STAY ON YOUR SKIN. YOU CAN ABSORB POISONOUS MATERIALS FROM THE OIL THROUGH YOUR SKIN.



DO NOT LET OIL GET ON THE ENGINE OR OTHER COMPONENTS. IMMEDIATELY CLEAN THE OIL WHEN IT FALLS ON THEM. OIL CAN CAUSE DAMAGE TO EQUIPMENT.

- (1) Do the inspection of oil filter cartridge element:

- (a) Do this task: Oil Filter Cartridge Element Removal, TASK 79-21-07-000-801-G00.

EFFECTIVITY
SIA ALL

79-21-07

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 601
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

- (b) Examine the lubrication unit inner wall of the oil filter housing for contaminants or debris.
 - 1) If you find any contaminants or debris, do a visual inspection of the scavenge screen plug for debris (TASK 79-21-04-211-801-G00).
- (c) Examine the removed oil filter element as follows:
 - 1) Take the filter element in both hands and put two pleats apart to show the contaminants at the bottom of these pleats. Do this at several locations around the cartridge.
 - 2) If you find any contaminants or debris, do a visual inspection of the scavenge screen plug for debris (TASK 79-21-04-211-801-G00).
- (d) If an oil filter impending or Actual By-Pass Faults is triggered on the engine, place oil filter on hold.
 - 1) Do not discard the oil filter.
NOTE: It could be requested for investigation by CFM.
- (e) Install a new oil filter cartridge element, do this task: Oil Filter Cartridge Element Installation, TASK 79-21-07-400-801-G00.

———— **END OF TASK** ————

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

OIL DEBRIS MONITORING SYSTEM SENSOR - REMOVAL/INSTALLATION

1. General

- A. This procedure has two tasks:
- (1) Oil debris monitoring system sensor removal
 - (2) Oil debris monitoring system sensor installation.

TASK 79-21-12-000-801-G00

2. Oil Debris Monitoring System Sensor Removal

(Figure 401)

A. General

- (1) This task gives the instructions to remove the Oil Debris Monitoring System (ODMS) sensor.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

F. Prepare for the Removal

SUBTASK 79-21-12-860-001-G00

- (1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:
 - (a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.
 - (b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 79-21-12-010-001-G00

- (2) On the applicable engine, open the right fan cowl panel (TASK 71-11-04-010-801-G00).

EFFECTIVITY
SIA ALL

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-12

Page 401
Jan 15/2023

737-7/8/8200/9/10 AIRCRAFT MAINTENANCE MANUAL

- (a) Open these access panels:

<u>Number</u>	<u>Name/Location</u>
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

G. Oil Debris Monitoring System Sensor Removal

SUBTASK 79-21-12-010-002-G00



DO NOT TOUCH THE COMPONENTS OF THE OIL SYSTEM IF THE ENGINE IS HOT. THESE COMPONENTS STAY HOTTER THAN OTHER COMPONENTS. HOT COMPONENTS CAN BURN YOU.



DO NOT OPEN THE OIL SYSTEM UNTIL THE PRESSURE GOES TO ZERO. THE PRESSURE GOES TO ZERO APPROXIMATELY 5 MINUTES AFTER AN ENGINE STOPS. A PRESSURIZED OIL SYSTEM CAN RELEASE A SPRAY OF HOT OIL THAT CAN BURN YOU.



DO NOT LET THE OIL STAY ON YOUR SKIN. YOU CAN ABSORB POISONOUS MATERIALS FROM THE OIL THROUGH YOUR SKIN.



DO NOT LET OIL GET ON THE ENGINE OR OTHER COMPONENTS. IMMEDIATELY CLEAN THE OIL WHEN IT FALLS ON THEM. OIL CAN CAUSE DAMAGE TO EQUIPMENT.

- (1) Remove the ODMS sensor [1] as follows:
- (a) Remove the two nuts [9] from the two bolts [6] that attach the ODMS sensor [1] to the air/oil separator [8].
NOTE: The bolts [6] are captive to the ODMS sensor.
 - (b) Remove the ODMS sensor [1] from the air/oil separator [8].



MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.



USE TEFLON-JAWED PLIERS TO LOOSEN ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

- (c) Use a teflon-jawed pliers, STD-664 to disconnect the electrical connector [4] from oil debris monitoring unit [3] (TASK 70-00-01-910-803-G00).
- (d) Remove and discard the preformed packing [7] from the ODMS sensor [1].
- (e) Remove the ODMS sensor [1] and the ODMS sensor harness [2] from the four clips [5].
- (f) Install protective covers on the ODMS sensor [1] and the air/oil separator [8].

————— END OF TASK —————

EFFECTIVITY
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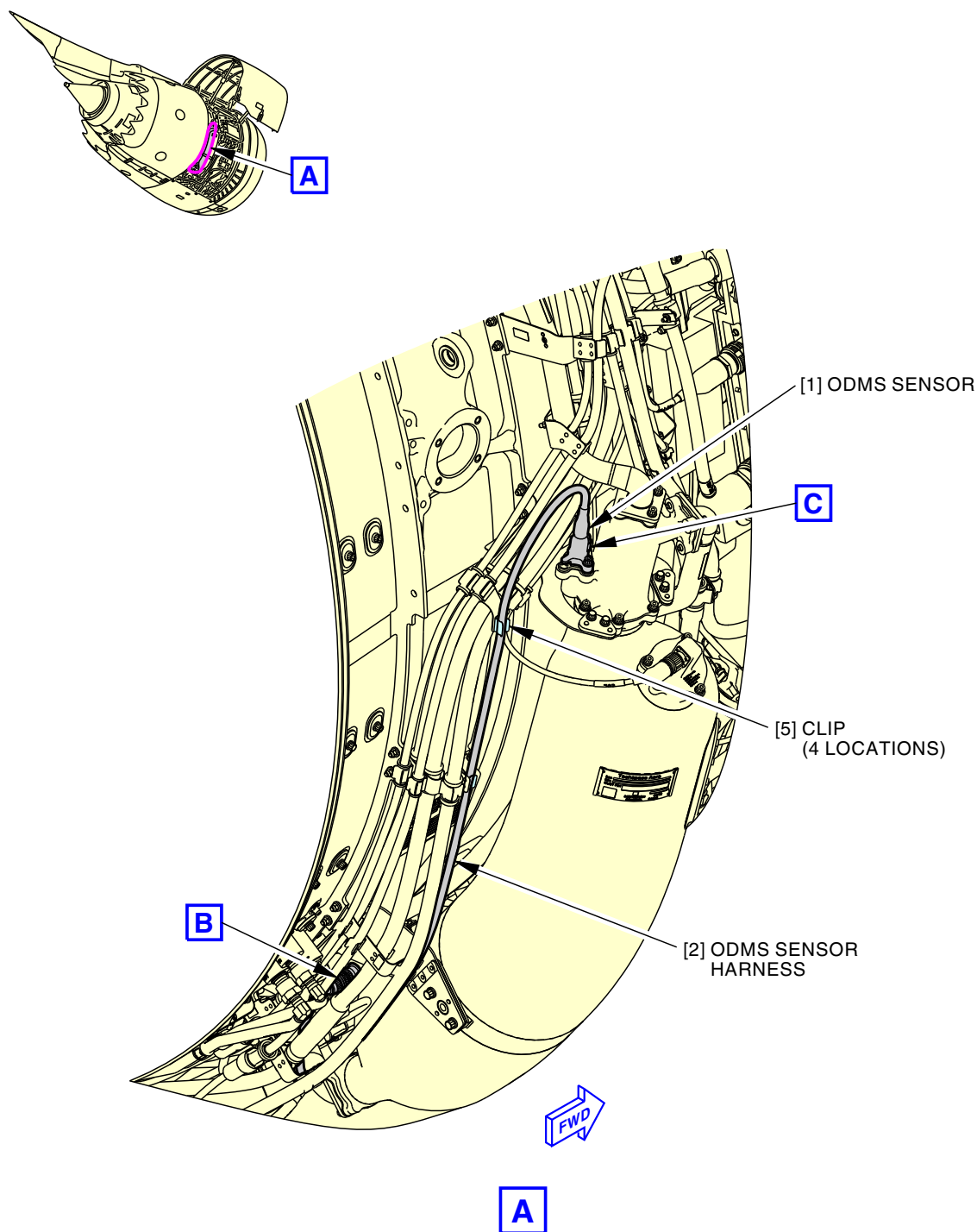
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D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 402
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



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Oil Debris Monitoring System (ODMS) Sensor Installation
Figure 401/79-21-12-990-801-G00 (Sheet 1 of 2)

EFFECTIVITY
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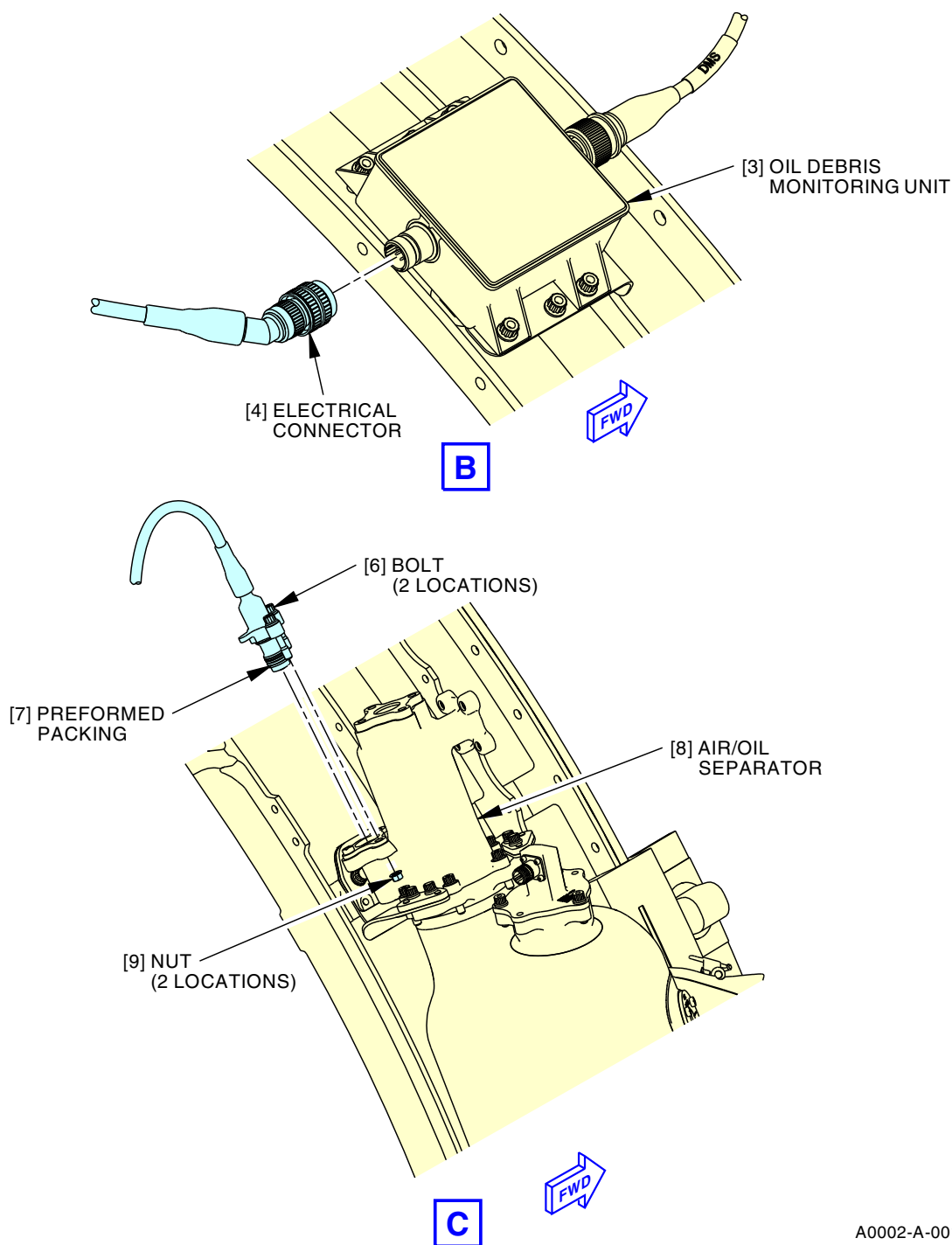
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-12

Page 403
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



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Oil Debris Monitoring System (ODMS) Sensor Installation
Figure 401/79-21-12-990-801-G00 (Sheet 2 of 2)

EFFECTIVITY
SIA ALL

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-12

Page 404
Sep 15/2021

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

TASK 79-21-12-400-801-G00**3. Oil Debris Monitoring System Sensor Installation**

(Figure 401)

A. General

(1) This task gives the instructions to install the Oil Debris Monitoring System (ODMS) sensor.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
D00599 [CP2442]	Oil - Engine	
D00672 [CP5070]	Vaseline - Pure Mineral	V V-P-236

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	ODMS sensor	79-21-12-01-030	SIA ALL
7	Preformed packing	79-21-12-01-020	SIA ALL

F. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

G. Access Panels

Number	Name/Location
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

H. Oil Debris Monitoring System Sensor Installation

SUBTASK 79-21-12-410-001-G00

**WARNING**

DO NOT LET THE OIL STAY ON YOUR SKIN. YOU CAN ABSORB POISONOUS MATERIALS FROM THE OIL THROUGH YOUR SKIN.

**CAUTION**

DO NOT LET OIL GET ON THE ENGINE OR OTHER COMPONENTS. IMMEDIATELY CLEAN THE OIL WHEN IT FALLS ON THEM. OIL CAN CAUSE DAMAGE TO EQUIPMENT.

(1) Install the ODMS sensor [1] as follows:

(a) Remove the protective covers from the ODMS sensor [1] and the air/oil separator [8].

EFFECTIVITY
SIA ALL

79-21-12

D633AM101-SIA

Page 405
May 15/2023

737-7/8/8200/9/10 AIRCRAFT MAINTENANCE MANUAL

- (b) Make sure that the mating surfaces are clean and clear of unwanted materials.
- (c) Lubricate the threads of the two nuts [9] with engine oil, D00599 [CP2442].
- (d) Lubricate the new preformed packing [7] with mineral vaseline, D00672 [CP5070].
- (e) Install the new preformed packing [7] on the ODMS sensor [1].
- (f) Install the ODMS sensor [1] on the air/oil separator [8] with the two bolts [6] and nuts [9].
- (g) Tighten the nuts [9] to 100.7 in-lb (11.4 N·m) - 111.3 in-lb (12.6 N·m).
- (h) Install the ODMS sensor harness [2] on the four clips [5].

**CAUTION**

MAKE SURE THAT THE ELECTRICAL CONNECTOR AND RECEPTACLE ARE CLEAN WHEN YOU CONNECT THEM. DIRTY CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.

**CAUTION**

DO NOT USE PLIERS THAT HAVE METAL JAWS TO TIGHTEN THE ELECTRICAL CONNECTOR. DAMAGE TO THE ELECTRICAL CONNECTOR CAN OCCUR.

- (i) Use a teflon-jawed pliers, STD-664 to connect the electrical connector [4] to the oil debris monitoring unit [3] (TASK 70-00-01-910-803-G00).

SUBTASK 79-21-12-160-001-G00

- (2) Clean the work area and clear the tools used to do the task.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 79-21-12-410-002-G00

- (1) On the applicable engine, close the right fan cowl panel (TASK 71-11-04-410-801-G00).
 - (a) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

SUBTASK 79-21-12-860-002-G00

- (2) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:
 - (a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.
 - (b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

J. Oil Debris Monitoring System Sensor Installation Test

SUBTASK 79-21-12-710-001-G00

- (1) Do the test(s) that are given in the Power Plant Test Reference Table (TASK 71-00-00-800-804-G00).

————— END OF TASK —————

EFFECTIVITY
SIA ALL

79-21-12

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 406
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

OIL DEBRIS MONITORING SYSTEM UNIT - REMOVAL/INSTALLATION

1. General

- A. This procedure has two tasks:
- (1) Oil debris monitoring system unit removal
 - (2) Oil debris monitoring system unit installation.

TASK 79-21-14-000-801-G00

2. Oil Debris Monitoring System Unit Removal

(Figure 401)

A. General

- (1) This task provides the instructions on how to remove the oil debris monitoring system unit.
- (2) The oil debris monitoring system unit is referred to as the ODMS unit.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

F. Prepare for the Removal

SUBTASK 79-21-14-860-001-G00

- (1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:
 - (a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.
 - (b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 79-21-14-860-002-G00

- (2) On the applicable engine, open the right fan cowl panel (TASK 71-11-04-010-801-G00).

EFFECTIVITY
SIA ALL

79-21-14

D633AM101-SIA

Page 401
Jan 15/2023

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

- (a) Open these access panels:

<u>Number</u>	<u>Name/Location</u>
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

G. Oil Debris Monitoring System Unit Removal

SUBTASK 79-21-14-020-001-G00

- (1) Remove the ODMS unit [1] as follows:



MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.



USE TEFLON-JAWED PLIERS TO LOOSEN ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

- (a) Use the teflon-jawed pliers, STD-664 to disconnect the electrical connector [2] and the electrical connector HJ6B [3] from the ODMS unit [1] as follows (TASK 70-00-01-910-803-G00):
- 1) Disconnect the oil debris monitoring system sensor electrical connector [2] from the ODMS unit [1].
 - 2) Disconnect the electrical connector HJ6B [3] from the ODMS unit [1].
 - 3) Install the protective covers on the electrical connector [2], the electrical connector HJ6B [3], and the electrical receptacles on the ODMS unit [1].
- (b) Remove the four bolts [4] from the ODMS unit [1].
- (c) Remove the ODMS unit [1] from the mounting bracket [5]

———— **END OF TASK** ————

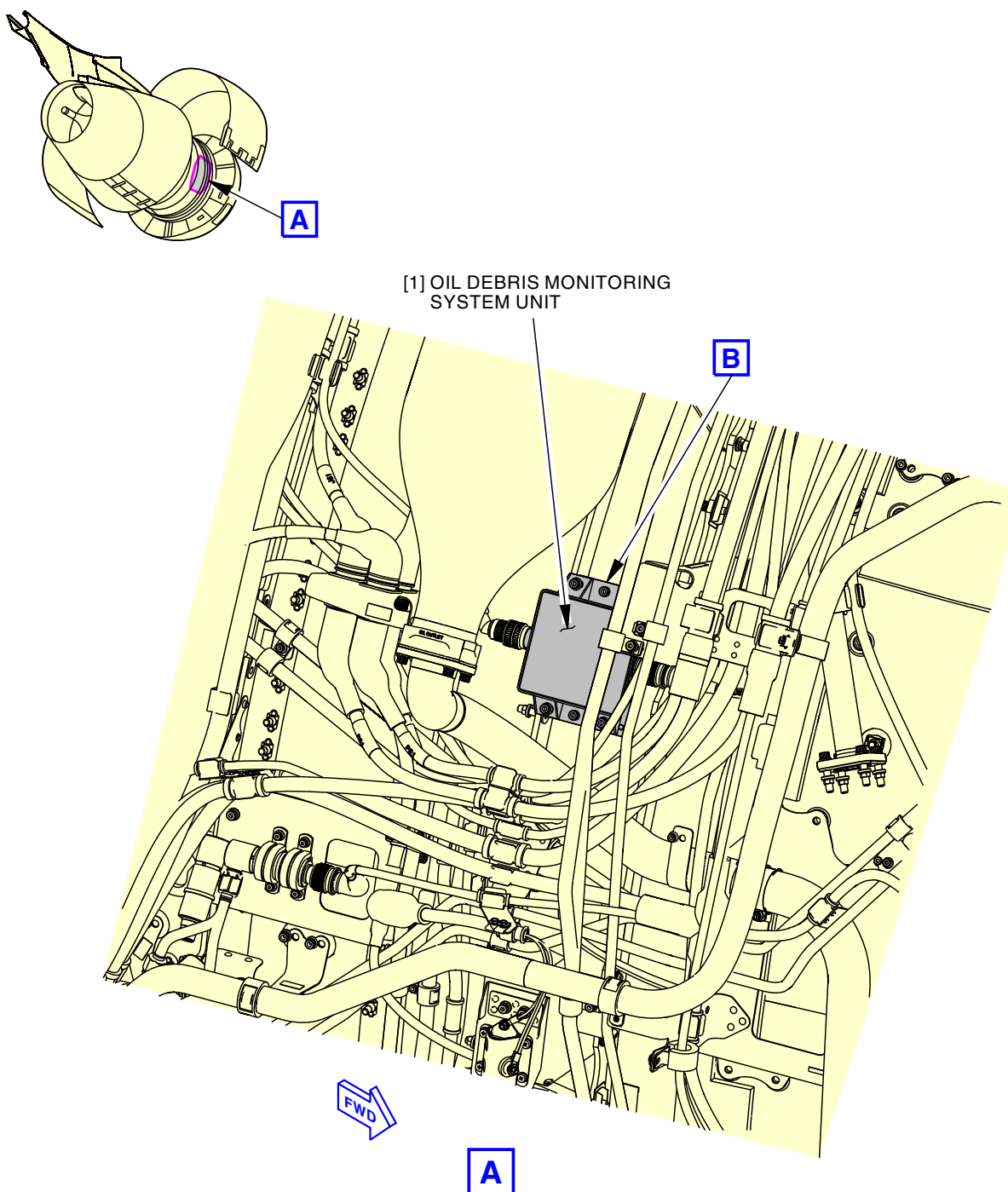
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D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-14

Page 402
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

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Oil Debris Monitoring System Unit Installation
Figure 401/79-21-14-990-801-G00 (Sheet 1 of 2)

EFFECTIVITY
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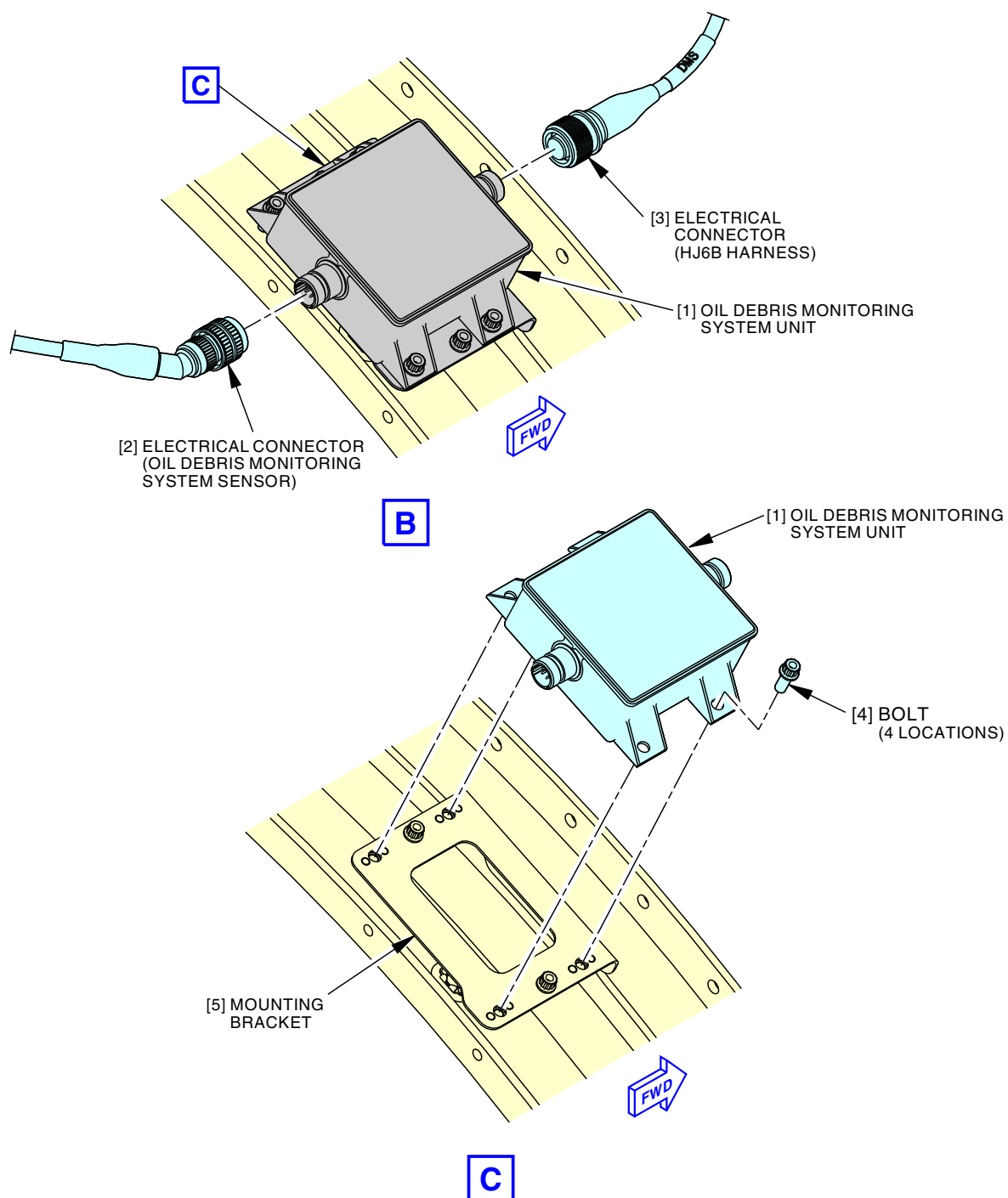
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-14

Page 403
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



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Oil Debris Monitoring System Unit Installation
Figure 401/79-21-14-990-801-G00 (Sheet 2 of 2)

EFFECTIVITY
SIA ALL

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-14

Page 404
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

TASK 79-21-14-400-801-G00**3. Oil Debris Monitoring System Unit Installation**

(Figure 401)

A. General

- (1) This task provides the instructions on how to install the oil debris monitoring system unit.
- (2) The oil debris monitoring system unit is referred to as the ODMS unit.
- (3) You must do the tests that are listed in the power plant test reference table after you install the ODMS unit.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
D00599 [CP2442]	Oil - Engine	

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	ODMS unit	79-21-14-01-020	SIA ALL

F. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

G. Access Panels

Number	Name/Location
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

H. Oil Debris Monitoring System Unit Installation

SUBTASK 79-21-14-420-001-G00

- (1) Install the ODMS unit [1] as follows:
 - (a) Make sure that the mating faces are clean and clear of unwanted materials.
 - (b) Lubricate the threads of the four bolts [4] with the engine oil, D00599 [CP2442].
 - (c) Install the ODMS unit [1] in a correct position on the mounting bracket [5].
 - (d) Install the four bolts [4] that attach the ODMS unit [1] on the mounting bracket [5].
 - (e) Tighten the bolts [4] to 67.45 in-lb (7.6 N·m) - 74.55 in-lb (8.4 N·m).

EFFECTIVITY
 SIA ALL

79-21-14

D633AM101-SIA

Page 405
 May 15/2023

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**



MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.



USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

- (f) Use the teflon-jawed pliers, STD-664 to connect the electrical connector [2] and the electrical connector HJ6B [3] to the ODMS unit [1] as follows (TASK 70-00-01-910-803-G00):
- 1) Remove the protective covers from the electrical connector [2], the electrical connector HJ6B [3], and the electrical receptacles on the ODMS unit [1].
 - 2) Connect the oil debris monitoring system sensor electrical connector [2] to the ODMS unit [1].
 - 3) Connect the electrical connector HJ6B [3] to the ODMS unit [1].
 - 4) Tighten the electrical connector [2] and the electrical connector HJ6B [3].
- (g) Clean the work area and clear the tools and other items.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 79-21-14-860-005-G00

- (1) On the applicable engine, close the right fan cowl panel (TASK 71-11-04-410-801-G00).
- (a) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

SUBTASK 79-21-14-860-004-G00

- (2) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:
- (a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.
 - (b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

J. Oil Debris Monitoring System Unit Installation Test

SUBTASK 79-21-14-710-001-G00

- (1) Do the test(s) that are given in the Power Plant Test Reference Table (TASK 71-00-00-800-804-G00).

————— **END OF TASK** —————

EFFECTIVITY
SIA ALL

79-21-14

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 406
Sep 15/2021

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

OIL EDUCTOR VALVE - REMOVAL/INSTALLATION

1. General

- A. This procedure has two tasks:
- (1) Oil eductor valve removal
 - (2) Oil eductor valve installation.

TASK 79-21-17-000-801-G00

2. Oil Eductor Valve Removal

(Figure 401 and Figure 402)

A. General

- (1) This task gives the instructions on how to remove the oil eductor valve.
- (2) The oil eductor valve is installed at the 7:00 o'clock position on the turbine center frame.
- (3) You must open the left thrust reverser to get access to the oil educator valve.

B. References

Reference	Title
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
78-31-00-010-801-G00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-801-G00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt:", which stands for Optional.

Reference	Description
SPL-14947	Protector - SACOC Part #: 956A8681G02 Supplier: 58828

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2

F. Prepare for the Removal

SUBTASK 79-21-17-010-001-G00

- (1) Do these tasks in sequence to safely open the left thrust reverser on the applicable engine:

EFFECTIVITY
SIA ALL

79-21-17

D633AM101-SIA

Page 401
Jan 15/2023

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

**WARNING**

DO THE DEACTIVATION PROCEDURE FOR THE THRUST REVERSER TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

- (a) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-801-G00.
- (b) Open the applicable left fan cowl panel (TASK 71-11-04-010-801-G00).
 - 1) Open these access panels:

<u>Number</u>	<u>Name/Location</u>
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

**WARNING**

OBEY THE INSTRUCTIONS IN THE PROCEDURE TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (c) Open the applicable left thrust reverser (TASK 78-31-00-010-801-G00).
 - 1) Open these access panels:

<u>Number</u>	<u>Name/Location</u>
415	Left Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2

SUBTASK 79-21-17-480-001-G00

- (2) Install the protector, SPL-14947 on the engine oil coolers.

G. Oil Eductor Valve Removal**WARNING**

BE CAREFUL WHEN YOU DO WORK ON THE ENGINE PARTS AFTER THE ENGINE IS STOPPED. THE ENGINE PARTS CAN STAY HOT FOR ALMOST ONE HOUR. DO NOT TOUCH HOT PARTS WITHOUT APPLICABLE GLOVES. HOT PARTS CAN CAUSE INJURIES TO PERSONNEL.

**WARNING**

DO NOT OPEN THE OIL SYSTEM UNTIL THE PRESSURE GOES TO ZERO. THE PRESSURE GOES TO ZERO APPROXIMATELY 5 MINUTES AFTER AN ENGINE STOPS. A PRESSURIZED OIL SYSTEM CAN RELEASE A SPRAY OF HOT OIL THAT CAN BURN YOU.

**WARNING**

DO NOT LET HOT OIL GET ON YOU. PUT ON CLOTHES, GOGGLES, AND OTHER EQUIPMENT FOR PROTECTION, OR LET THE ENGINE BECOME COOL. HOT OIL CAN BURN YOU.

**WARNING**

DO NOT LET THE OIL STAY ON YOUR SKIN. YOU CAN ABSORB POISONOUS MATERIALS FROM THE OIL THROUGH YOUR SKIN.

EFFECTIVITY
SIA ALL

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-17

Page 402
Jan 15/2023

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL****(WARNING PRECEDES)****CAUTION**

DO NOT LET OIL GET ON THE ENGINE OR OTHER COMPONENTS. IMMEDIATELY CLEAN THE OIL WHEN IT FALLS ON THEM. OIL CAN CAUSE DAMAGE TO EQUIPMENT.

**CAUTION**

MAKE SURE THAT YOU INSTALL THE SACOC PROTECTOR TO PREVENT DAMAGE TO THE OIL COOLER.

SUBTASK 79-21-17-020-001-G00

- (1) Disconnect the eductor air tube [3] B-nut from the oil eductor valve [5].

SUBTASK 79-21-17-020-002-G00

- (2) Disconnect the eductor air tube [1] B-nut from the oil eductor valve [5].

SUBTASK 79-21-17-020-003-G00

- (3) Remove the three bolts [4] that attach the oil eductor valve [5] to the eductor valve support bracket [2].

SUBTASK 79-21-17-020-004-G00

- (4) Remove the oil eductor valve [5] from the engine.

SUBTASK 79-21-17-020-005-G00

- (5) Install the protective covers on the eductor air tube [3], the eductor air tube [1], and the oil eductor valve [5].

———— **END OF TASK** ————

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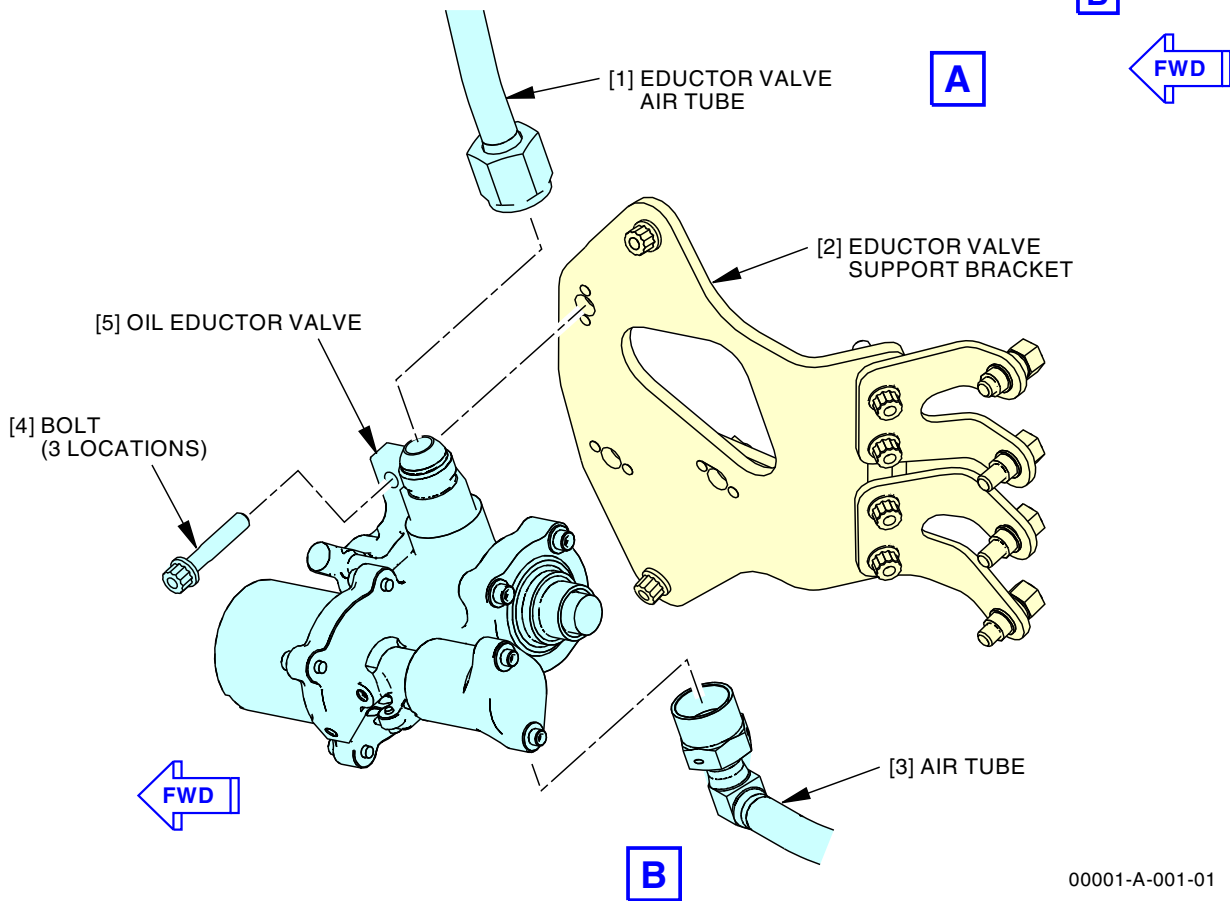
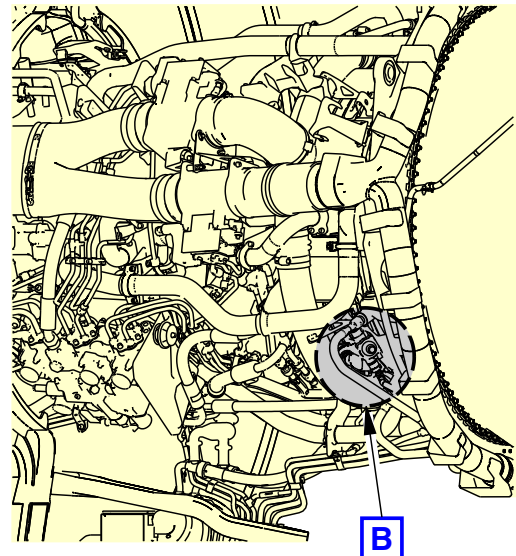
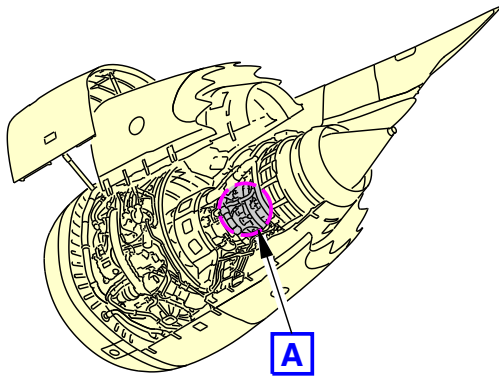
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79-21-17

Page 403
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



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Oil Eductor Valve Installation
Figure 401/79-21-17-990-801-G00

EFFECTIVITY
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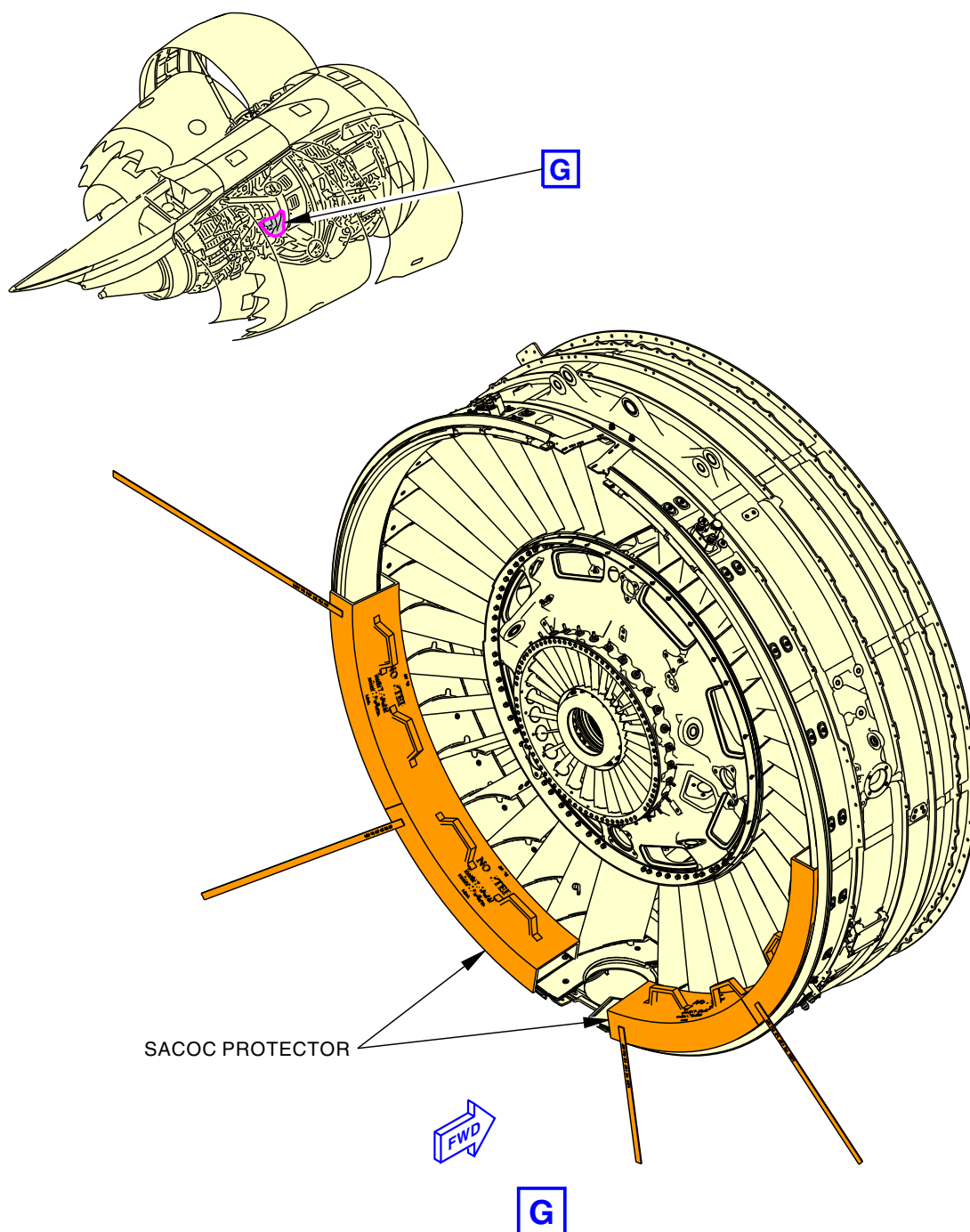
79-21-17

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 404
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



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SACOC Protector Installation
Figure 402/79-21-17-990-802-G00

EFFECTIVITY
SIA ALL

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-17

Page 405
Sep 15/2021

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

TASK 79-21-17-400-801-G00**3. Oil Eductor Valve Installation**

(Figure 401 and Figure 402)

A. General

- (1) This task provides the instructions on how to install the oil eductor valve.
- (2) You must do the tests that are listed in the power plant test reference table after you install the oil eductor valve.

B. References

Reference	Title
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
78-31-00-010-802-G00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-801-G00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt.", which stands for Optional.

Reference	Description
SPL-14947	Protector - SACOC Part #: 956A8681G02 Supplier: 58828

D. Consumable Materials

Reference	Description	Specification
D00599 [CP2442]	Oil - Engine	

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
5	Oil eductor valve	79-21-17-01-020	SIA ALL

F. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

G. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2

H. Oil Eductor Valve Installation

SUBTASK 79-21-17-420-001-G00



BE CAREFUL WHEN YOU DO WORK ON THE ENGINE PARTS AFTER THE ENGINE IS STOPPED. THE ENGINE PARTS CAN STAY HOT FOR ALMOST ONE HOUR. DO NOT TOUCH HOT PARTS WITHOUT APPLICABLE GLOVES. HOT PARTS CAN CAUSE INJURIES TO PERSONNEL.

EFFECTIVITY
SIA ALL

79-21-17

D633AM101-SIA

Page 406
May 15/2023

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

(WARNING PRECEDES)



WARNING

DO NOT OPEN THE OIL SYSTEM UNTIL THE PRESSURE GOES TO ZERO. THE PRESSURE GOES TO ZERO APPROXIMATELY 5 MINUTES AFTER AN ENGINE STOPS. A PRESSURIZED OIL SYSTEM CAN RELEASE A SPRAY OF HOT OIL THAT CAN BURN YOU.



WARNING

DO NOT LET HOT OIL GET ON YOU. PUT ON CLOTHES, GOGGLES, AND OTHER EQUIPMENT FOR PROTECTION, OR LET THE ENGINE BECOME COOL. HOT OIL CAN BURN YOU.



WARNING

DO NOT LET THE OIL STAY ON YOUR SKIN. YOU CAN ABSORB POISONOUS MATERIALS FROM THE OIL THROUGH YOUR SKIN.



CAUTION

DO NOT LET OIL GET ON THE ENGINE OR OTHER COMPONENTS. IMMEDIATELY CLEAN THE OIL WHEN IT FALLS ON THEM. OIL CAN CAUSE DAMAGE TO EQUIPMENT.

- (1) Remove the protective covers from the eductor air tube [3], the eductor air tube [1], and the oil eductor valve [5].

SUBTASK 79-21-17-420-002-G00

- (2) Put the oil eductor valve [5] in position on the eductor valve support bracket [2].

SUBTASK 79-21-17-410-001-G00

- (3) Put a light coat of the oil, D00599 [CP2442] on the threads of the three bolts [4].

SUBTASK 79-21-17-420-003-G00

- (4) Install the three bolts [4] that attach the oil eductor valve [5] to the eductor valve support bracket [2].

- (a) Tighten the three bolts [4] to 106 in-lb (12 N·m) - 124 in-lb (14 N·m).

SUBTASK 79-21-17-420-004-G00

- (5) Connect the eductor air tube [1] B-nut to the oil eductor valve [5].

- (a) Tighten the eductor air tube [1] B-nut to 460 in-lb (52 N·m) - 540 in-lb (61 N·m).

SUBTASK 79-21-17-420-005-G00

- (6) Connect the eductor air tube [3] B-nut to the oil eductor valve [5].

- (a) Tighten the eductor air tube [3] B-nut to 450 in-lb (51 N·m) - 550 in-lb (62 N·m).

I. Put the Airplane Back to Its Usual Condition

SUBTASK 79-21-17-080-001-G00

- (1) Remove the protector, SPL-14947 from the engine.

SUBTASK 79-21-17-410-002-G00



WARNING

OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (2) Do these tasks in sequence to safely close the left thrust reverser:

EFFECTIVITY
SIA ALL

79-21-17

D633AM101-SIA

Page 407
Jan 15/2023

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

(a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-010-802-G00.

1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
415	Left Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2

(b) Close the applicable left Fan Cowl Panel (TASK 71-11-04-410-801-G00).

1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

(c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-801-G00.

J. Oil Eductor Valve Installation Test

SUBTASK 79-21-17-730-001-G00

(1) Do the test(s) that are given in the Power Plant Test Reference Table (TASK 71-00-00-800-804-G00).

———— **END OF TASK** ————

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

AIR OIL SEPARATOR - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
- (1) A removal of the air oil separator
 - (2) An installation of the air oil separator.

TASK 79-21-21-000-801-G00

2. Air Oil Separator Removal

(Figure 401)

A. General

- (1) This task provides the instructions on how to remove the air oil separator.

B. References

Reference	Title
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
79-21-12-000-801-G00	Oil Debris Monitoring System Sensor Removal (P/B 401)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE
STD-1055	Container - Oil Resistant, 5 Gallon (19 Liter)

D. Access Panels

Number	Name/Location
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

E. Prepare for the Removal

SUBTASK 79-21-21-860-001-G00

- (1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:
 - (a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.
 - (b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 79-21-21-010-001-G00

- (2) On the applicable engine, open the right fan cowl panel (TASK 71-11-04-010-801-G00).
 - (a) Open these access panels:

Number	Name/Location
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

737-7/8/8200/9/10 AIRCRAFT MAINTENANCE MANUAL

F. Air Oil Separator Removal

SUBTASK 79-21-21-010-002-G00



BE CAREFUL WHEN YOU DO WORK ON THE ENGINE PARTS AFTER THE ENGINE IS STOPPED. THE ENGINE PARTS CAN STAY HOT FOR ALMOST ONE HOUR. DO NOT TOUCH HOT PARTS WITHOUT APPLICABLE GLOVES. HOT PARTS CAN CAUSE INJURIES TO PERSONNEL.



DO NOT OPEN THE OIL SYSTEM UNTIL THE PRESSURE GOES TO ZERO. THE PRESSURE GOES TO ZERO APPROXIMATELY 5 MINUTES AFTER AN ENGINE STOPS. A PRESSURIZED OIL SYSTEM CAN RELEASE A SPRAY OF HOT OIL THAT CAN BURN YOU.



DO NOT LET HOT OIL GET ON YOU. PUT ON CLOTHES, GOGGLES, AND OTHER EQUIPMENT FOR PROTECTION, OR LET THE ENGINE BECOME COOL. HOT OIL CAN BURN YOU.



DO NOT LET THE OIL STAY ON YOUR SKIN. YOU CAN ABSORB POISONOUS MATERIALS FROM THE OIL THROUGH YOUR SKIN.



DO NOT LET OIL GET ON THE ENGINE OR OTHER COMPONENTS. IMMEDIATELY CLEAN THE OIL WHEN IT FALLS ON THEM. OIL CAN CAUSE DAMAGE TO EQUIPMENT.

(1) Remove the air oil separator [1] as follows:

- (a) Put an oil resistant container (5 gal)(19 Liter), STD-1055, below all the tube openings and air oil separator [1].
- (b) Remove the oil debris monitoring system sensor [3] (TASK 79-21-12-000-801-G00).
- (c) Disconnect the oil tube [4] from the air oil separator [1] as follows:
 - 1) Remove the bolt [5] from the clamp [6] that attaches the oil tube [4] to the bracket [7].
 - 2) Remove the bolt [8] from the clamp [9] that attaches the oil tube [4] to the bracket [10].
 - 3) Remove the four bolts [11] from the oil tube [4].
 - a) Do not move the flange [16] of the check valve air oil separator [1].
 - 4) Disconnect the oil tube [4] from the air oil separator [1].
 - 5) Remove and discard the gasket seal [12] from the oil tube [4].
 - 6) Install the protective caps on the openings.
- (d) Disconnect the oil tube [13] from the air oil separator [1]:
 - 1) Remove the four bolts [14] from the oil tube [13].
 - 2) Disconnect the oil tube [13] from the air oil separator [1].
 - 3) Remove and discard the gasket seal [15] from the oil tube [13].
 - 4) Install the protective caps on the openings.
- (e) Remove the six bolts [17] from the air oil separator [1].

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D633AM101-SIA

79-21-21

Page 402
Sep 15/2023

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

- (f) Remove the air oil separator [1] from the oil tank [2].
- (g) Remove and discard the preformed packing [18] from the air oil separator [1].
- (h) Install the protective caps on the openings.

———— **END OF TASK** ————

EFFECTIVITY
SIA ALL

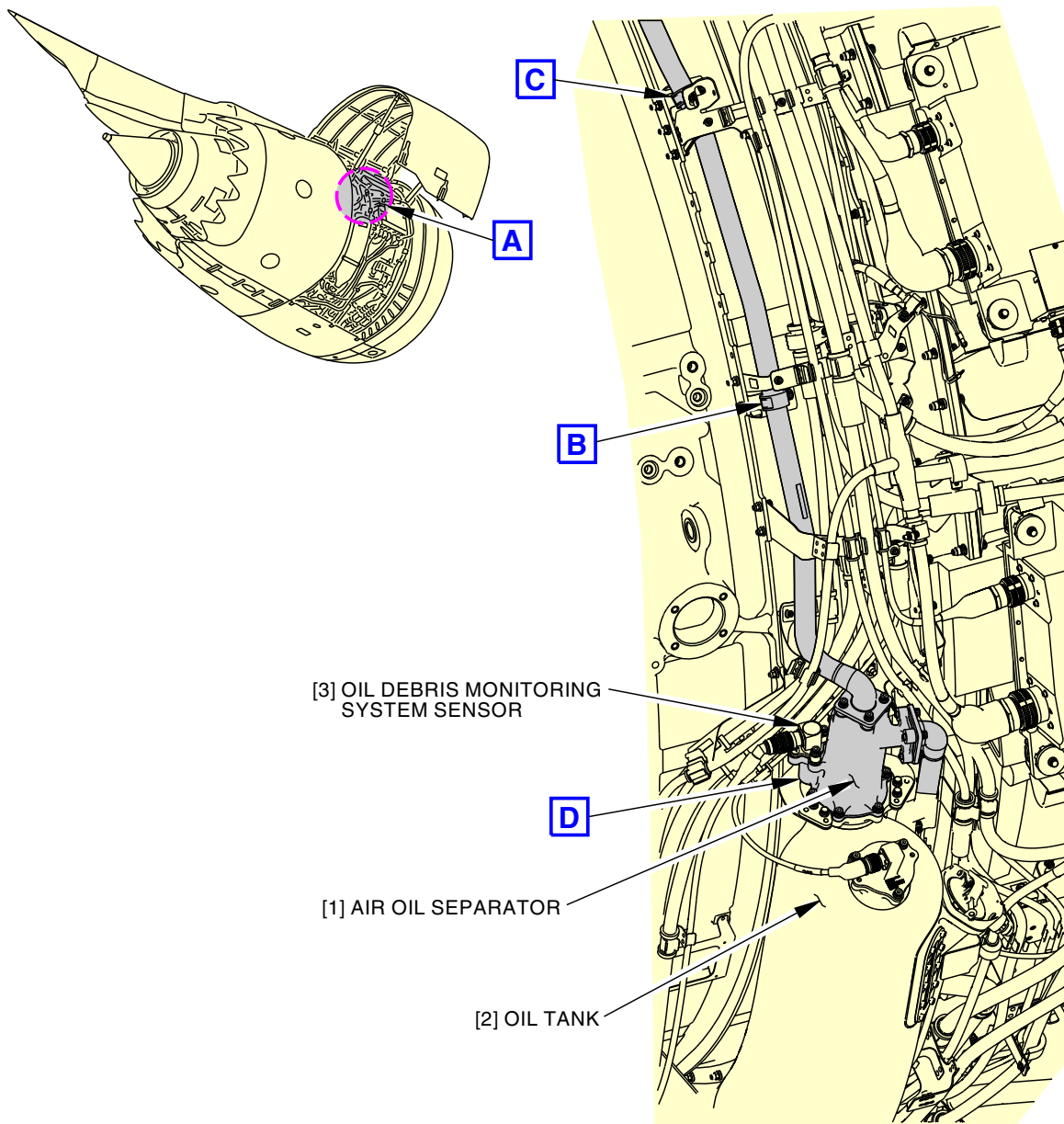
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-21

Page 403
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



[3] OIL DEBRIS MONITORING
SYSTEM SENSOR

[1] AIR OIL SEPARATOR

[2] OIL TANK

A



A0001-A-001-01
2403548 S0000555939_V1

Air Oil Separator Installation
Figure 401/79-21-21-990-801-G00 (Sheet 1 of 5)

EFFECTIVITY
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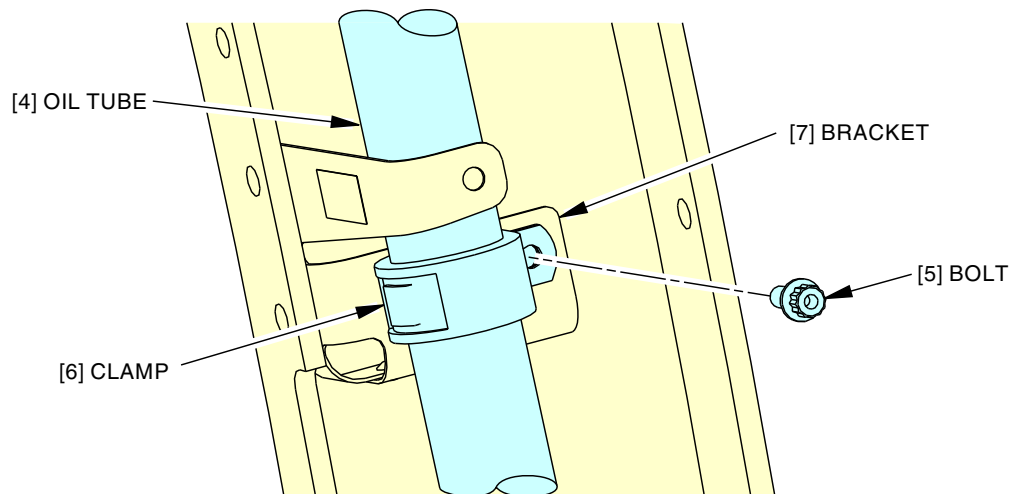
79-21-21

Page 404
May 15/2023

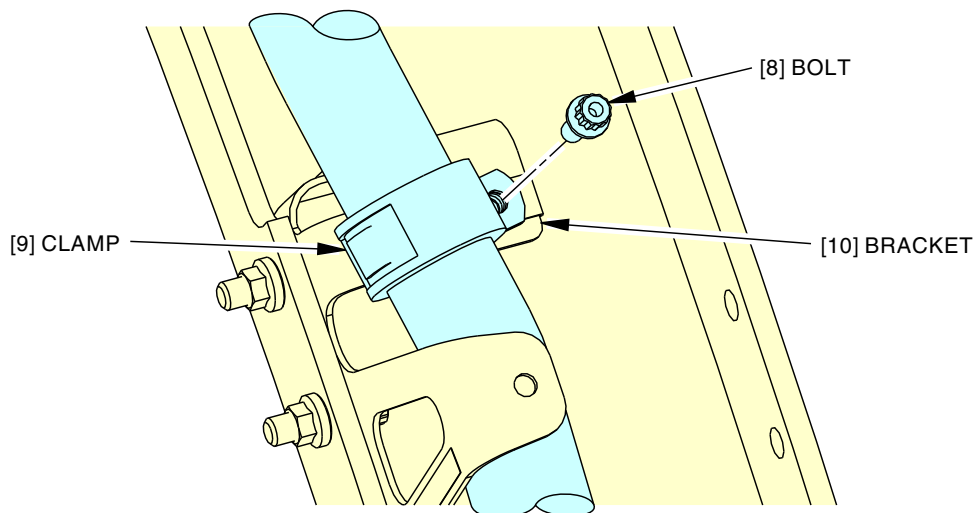
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



B



C



A0002-A-001-01
2403555 S0000555940_V1

Air Oil Separator Installation
Figure 401/79-21-21-990-801-G00 (Sheet 2 of 5)

EFFECTIVITY
SIA ALL

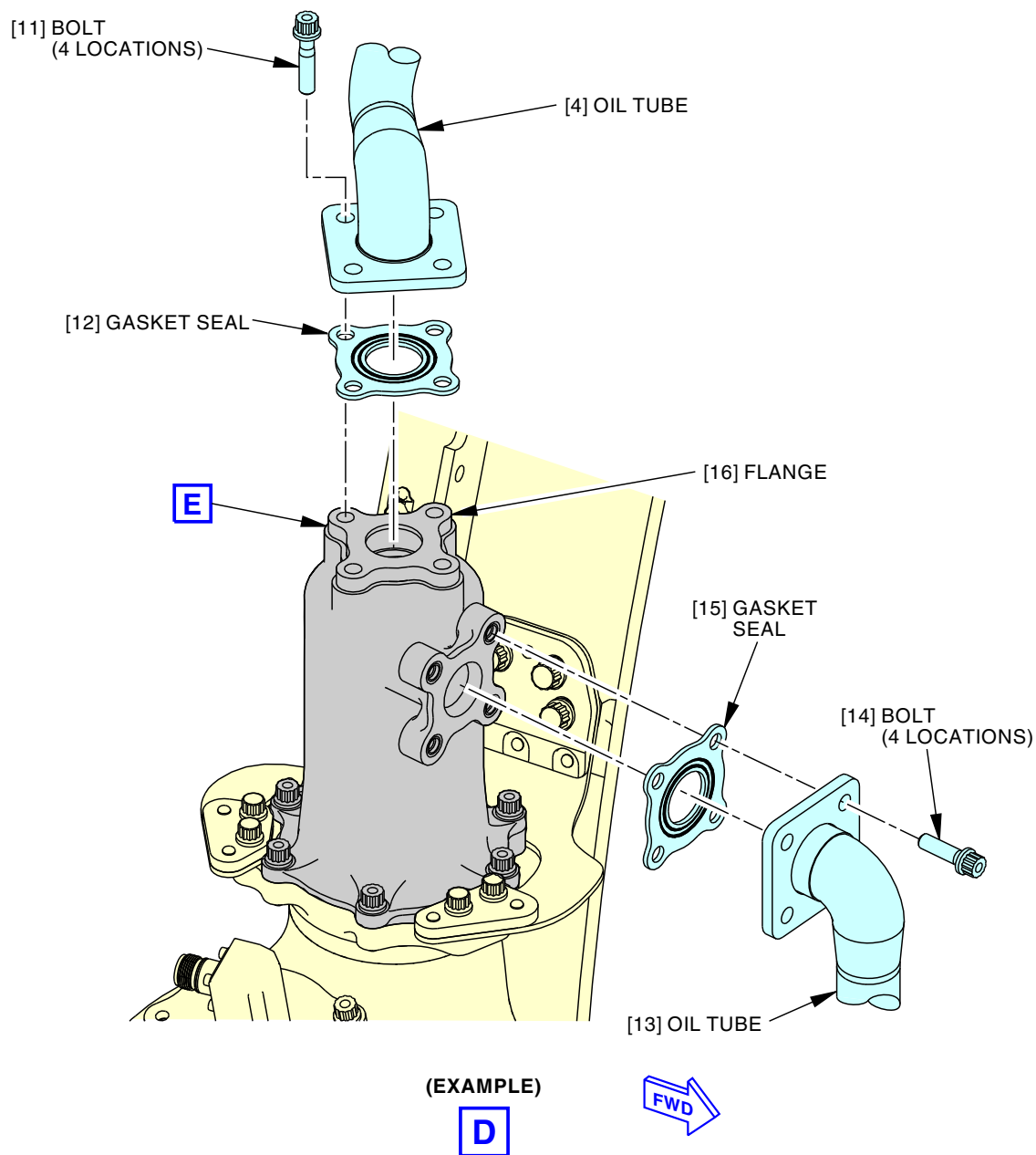
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-21

Page 405
May 15/2023

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



A0003-A-001-01
2403559 S0000555941_V3

Air Oil Separator Installation
Figure 401/79-21-21-990-801-G00 (Sheet 3 of 5)

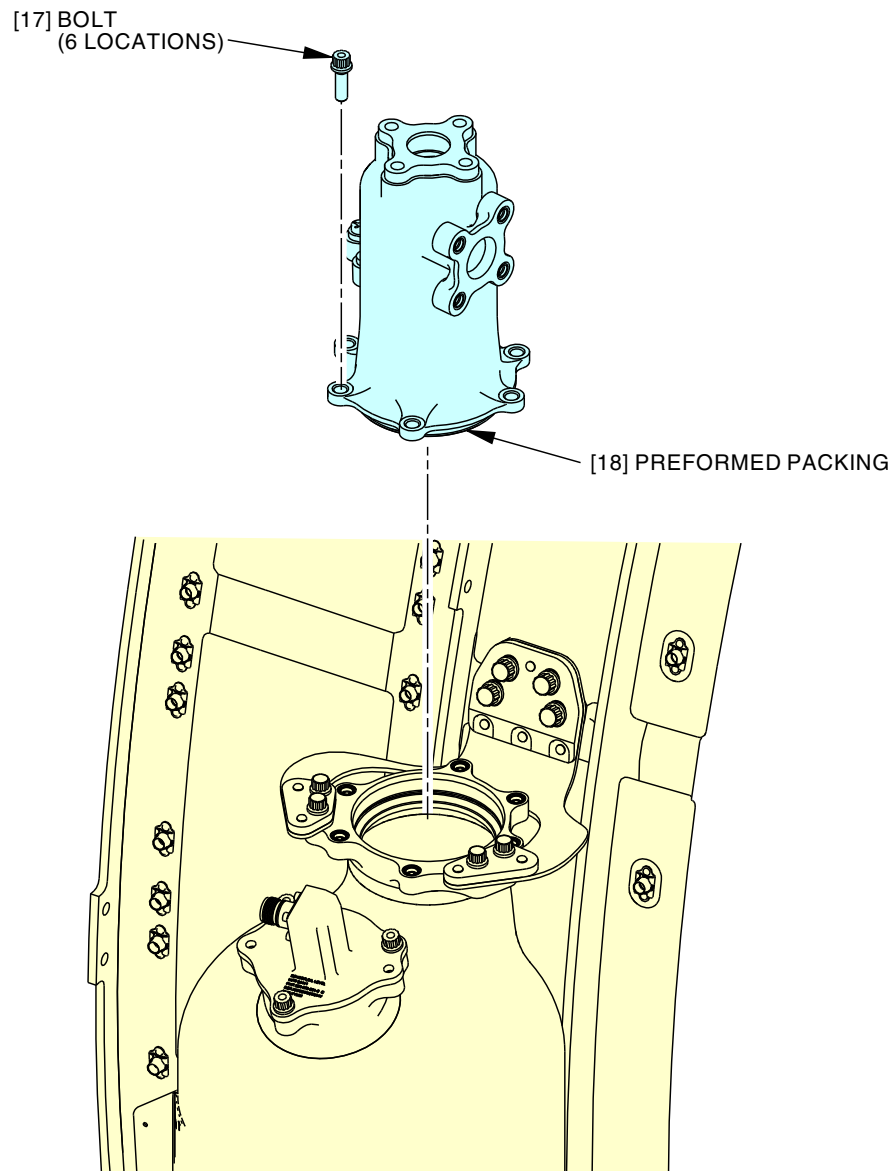
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D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-21

Page 406
May 15/2023

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL****E**

Air Oil Separator Installation
Figure 401/79-21-21-990-801-G00 (Sheet 4 of 5)

A0004-A-001-01
2403561 S0000555942_V2

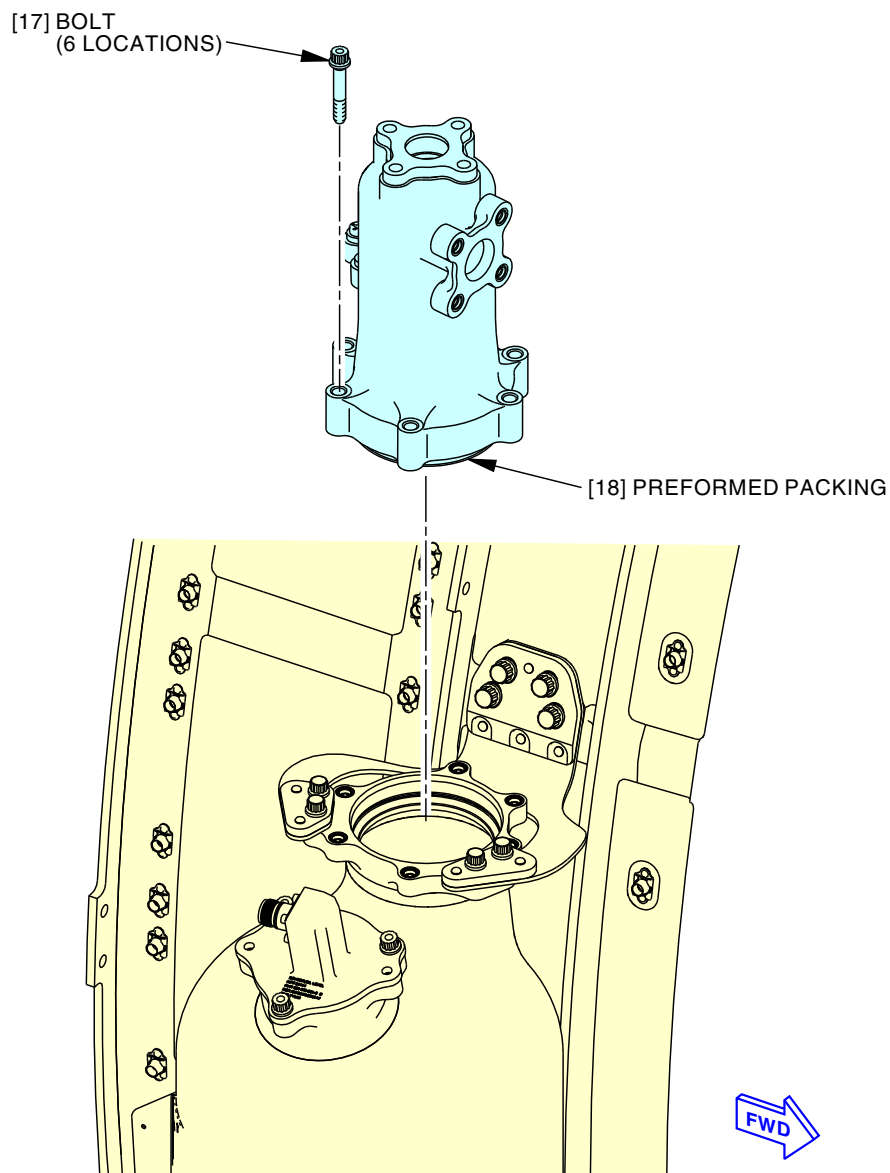
EFFECTIVITY
SIA ALL PRE SB 737-CFM-LEAP-1B-79-0012

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ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-21

Page 407
May 15/2023

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL****E**A0004-A-001-01
3023009 S0000795313_V1**Air Oil Separator Installation
Figure 401/79-21-21-990-801-G00 (Sheet 5 of 5)****EFFECTIVITY**
SIA ALL POST SB 737-CFM-LEAP-1B-79-0012

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-21Page 408
May 15/2023

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

TASK 79-21-21-400-801-G00**3. Air Oil Separator Installation**

(Figure 401)

A. General

(1) This task gives the instructions on how to install the air oil separator.

B. References

Reference	Title
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
79-21-12-400-801-G00	Oil Debris Monitoring System Sensor Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
D00601 [CP2101]	Vaseline - Graphite Mineral	
D00672 [CP5070]	Vaseline - Pure Mineral	V V-P-236

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Air oil separator	79-21-21-01-120	SIA ALL
12	Gasket seal	79-21-21-01-080	SIA ALL
15	Gasket seal	79-21-21-01-100	SIA ALL
18	Preformed packing	79-21-21-01-130	SIA ALL

F. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

G. Access Panels

Number	Name/Location
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

H. Air Oil Separator Installation

SUBTASK 79-21-21-410-001-G00



DO NOT LET THE OIL STAY ON YOUR SKIN. YOU CAN ABSORB
POISONOUS MATERIALS FROM THE OIL THROUGH YOUR SKIN.



DO NOT LET OIL GET ON THE ENGINE OR OTHER COMPONENTS.
IMMEDIATELY CLEAN THE OIL WHEN IT FALLS ON THEM. OIL CAN CAUSE
DAMAGE TO EQUIPMENT.

EFFECTIVITY
SIA ALL

79-21-21

D633AM101-SIA

Page 409
Sep 15/2023

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

(CAUTION PRECEDES)**CAUTION**

MAKE SURE THAT YOU INSTALL THE CORRECT BOLT LENGTH WHEN YOU INSTALL THE POST SB 737-CFM-LEAP-1B-79-0012 AIR OIL SEPARATOR. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Install the air oil separator [1]:
 - (a) Remove the protective covers from the openings.
 - (b) Make sure that the mating faces are clean and clear of unwanted materials.
 - (c) Lubricate the threads of the six bolts [17] with graphite mineral vaseline, D00601 [CP2101].
 - (d) Lubricate the new preformed packing [18] with the mineral vaseline, D00672 [CP5070].
 - (e) Install the preformed packing [18] on the groove of the air oil separator [1].
 - (f) Install the air oil separator [1] on the oil tank [2].
 - (g) Install the six bolts [17] on the air oil separator [1].
 - (h) Connect the oil tube [13] to the air oil separator [1]:
 - 1) Remove the protective covers from the openings.
 - 2) Make sure that the mating faces are clean and clear of unwanted materials.
 - 3) Lubricate the threads of the four bolts [14] with graphite mineral vaseline, D00601 [CP2101].
 - 4) Install the new gasket seal [15] and oil tube [13] on the air oil separator [1].
 - 5) Install the four bolts [14] that attach the oil tube [13] to the air oil separator [1].
 - (i) Connect the oil tube [4] to the air oil separator [1]:
 - 1) Do not move the flange [16] of the check valve air oil separator [1].
 - 2) Remove the protective covers from the openings.
 - 3) Make sure that the mating faces are clean and clear of unwanted materials.
 - 4) Lubricate the threads of the four bolts [11] with graphite mineral vaseline, D00601 [CP2101].
 - 5) Install the new gasket seal [12] and oil tube [4] in a correct position on the air oil separator [1].
 - 6) Install the four bolts [11] that attach the oil tube [4] to the air oil separator [1].
 - 7) Install the bolt [8] on the clamp [9] that attaches the oil tube [4] on the bracket [10].
 - 8) Install the bolt [5] on the clamp [6] that attaches the oil tube [4] on the bracket [7].
 - (j) Tighten the bolts [17] to 109.31 in-lb (12.35 N·m) - 120.81 in-lb (13.65 N·m).
 - (k) Tighten the bolts [14] to 109.31 in-lb (12.35 N·m) - 120.81 in-lb (13.65 N·m).
 - (l) Tighten the bolts [11] to 109.31 in-lb (12.35 N·m) - 120.81 in-lb (13.65 N·m).
 - (m) Tighten the bolt [8] to 42.0 in-lb (4.75 N·m) - 46.5 in-lb (5.25 N·m).
 - (n) Tighten the bolt [5] to 42.0 in-lb (4.75 N·m) - 46.5 in-lb (5.25 N·m).
 - (o) Install the oil debris monitoring system sensor [3] (TASK 79-21-12-400-801-G00).
 - (p) Clean the work area and clear the tools used to do the task.

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

I. Put the Airplane Back to Its Usual Condition

SUBTASK 79-21-21-860-002-G00

- (1) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:
 - (a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.
 - (b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

SUBTASK 79-21-21-410-002-G00

- (2) On the applicable engine, close the right fan cowl panel (TASK 71-11-04-410-801-G00).
 - (a) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

J. Air Oil Separator Installation Test

SUBTASK 79-21-21-730-001-G00

- (1) Do the test(s) that are given in the Power Plant Test Reference Table (TASK 71-00-00-800-804-G00).

————— **END OF TASK** —————

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

ANTI LEAK VALVE - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
- (1) A removal of the anti leak valve
 - (2) An installation of the anti leak valve.

TASK 79-21-22-000-801-G00

2. Anti Leak Valve Removal

(Figure 401)

A. General

- (1) This task gives the instructions to remove the anti leak valve.

B. References

Reference	Title
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
78-31-00-010-801-G00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-801-G00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)
79-21-03-000-801-G00	Lubrication Unit Removal (P/B 401)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2

F. Prepare for the Removal

SUBTASK 79-21-22-860-001-G00

- (1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:
 - (a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.
 - (b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

EFFECTIVITY
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79-21-22

Page 401
Jan 15/2023

737-7/8/8200/9/10 AIRCRAFT MAINTENANCE MANUAL

SUBTASK 79-21-22-010-001-G00

- (2) Do these tasks in sequence to safely open the left thrust reverser on the applicable engine:

**WARNING**

DO THE DEACTIVATION PROCEDURE FOR THE THRUST REVERSER TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

- (a) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-801-G00.
- (b) Open the applicable left fan cowl panel (TASK 71-11-04-010-801-G00).
- 1) Open these access panels:
- | <u>Number</u> | <u>Name/Location</u> |
|---------------|-------------------------|
| 413 | Left Fan Cowl, Engine 1 |
| 423 | Left Fan Cowl, Engine 2 |

**WARNING**

OBEY THE INSTRUCTIONS IN THE PROCEDURE TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (c) Open the applicable left thrust reverser (TASK 78-31-00-010-801-G00).
- 1) Open these access panels:
- | <u>Number</u> | <u>Name/Location</u> |
|---------------|--------------------------------|
| 415 | Left Thrust Reverser, Engine 1 |
| 425 | Left Thrust Reverser, Engine 2 |

G. Anti Leak Valve Removal

SUBTASK 79-21-22-020-001-G00

**WARNING**

BE CAREFUL WHEN YOU DO WORK ON THE ENGINE PARTS AFTER THE ENGINE IS STOPPED. THE ENGINE PARTS CAN STAY HOT FOR ALMOST ONE HOUR. DO NOT TOUCH HOT PARTS WITHOUT APPLICABLE GLOVES. HOT PARTS CAN CAUSE INJURIES TO PERSONNEL.

**WARNING**

DO NOT OPEN THE OIL SYSTEM UNTIL THE PRESSURE GOES TO ZERO. THE PRESSURE GOES TO ZERO APPROXIMATELY 5 MINUTES AFTER AN ENGINE IS STOPPED. A PRESSURIZED OIL SYSTEM CAN RELEASE A SPRAY OF HOT OIL THAT CAN BURN YOU.

**WARNING**

DO NOT LET HOT OIL GET ON YOU. PUT ON CLOTHES, GOGGLES, AND OTHER EQUIPMENT FOR PROTECTION, OR LET THE ENGINE BECOME COOL. HOT OIL CAN BURN YOU.

**WARNING**

DO NOT LET THE OIL STAY ON YOUR SKIN. YOU CAN ABSORB POISONOUS MATERIALS FROM THE OIL THROUGH YOUR SKIN.

EFFECTIVITY
SIA ALL

79-21-22

D633AM101-SIA

Page 402
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

(WARNING PRECEDES)



DO NOT LET OIL GET ON THE ENGINE OR OTHER COMPONENTS.
IMMEDIATELY CLEAN THE OIL WHEN IT FALLS ON THEM. OIL CAN CAUSE
DAMAGE TO PAINT AND RUBBER.

(1) Do this task: Lubrication Unit Removal, TASK 79-21-03-000-801-G00.

SUBTASK 79-21-22-020-002-G00

(2) Remove the anti leak valve [1] as follows:

- (a) Insert a screwdriver or a dental pick into the removal notch of the retaining ring [2].
- (b) Use the screwdriver or the dental pick to pull out the first end of the retaining ring [2].
- (c) Manually twist the retaining ring [2] around until it is released from the groove of the lubrication unit [3].
- (d) Discard the retaining ring [2].
- (e) Remove the anti leak valve [1] equipped with its O-ring from the lubrication unit [3].
- (f) Discard the anti leak valve [1] equipped with its O-ring.
- (g) Install the protective covers on the openings.

———— **END OF TASK** ————

EFFECTIVITY
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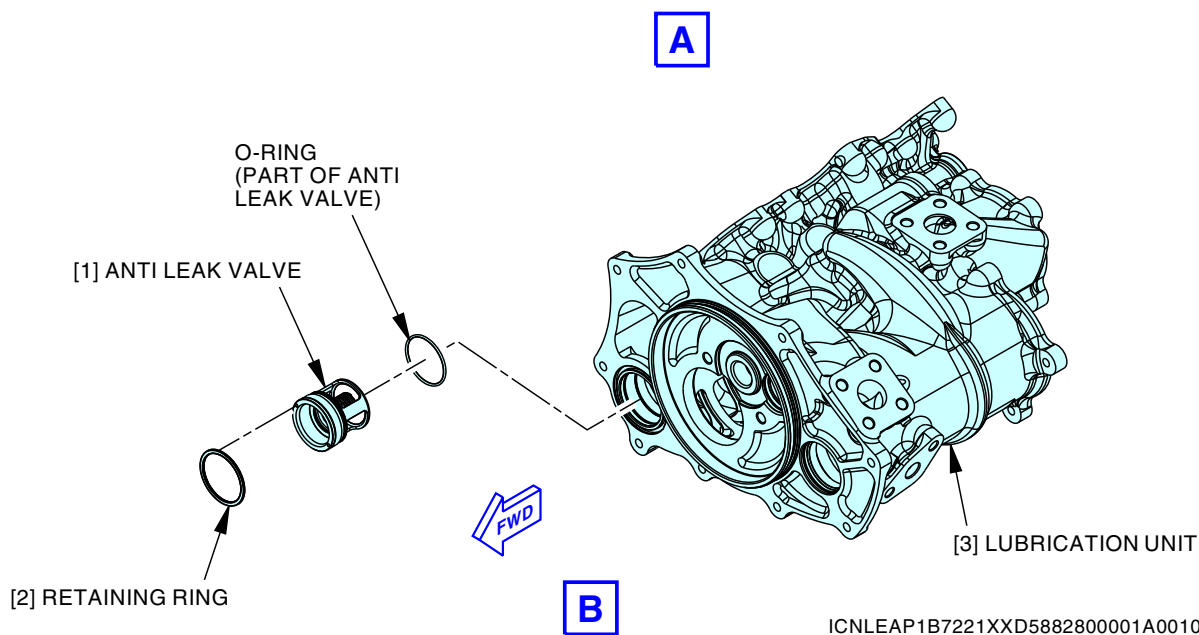
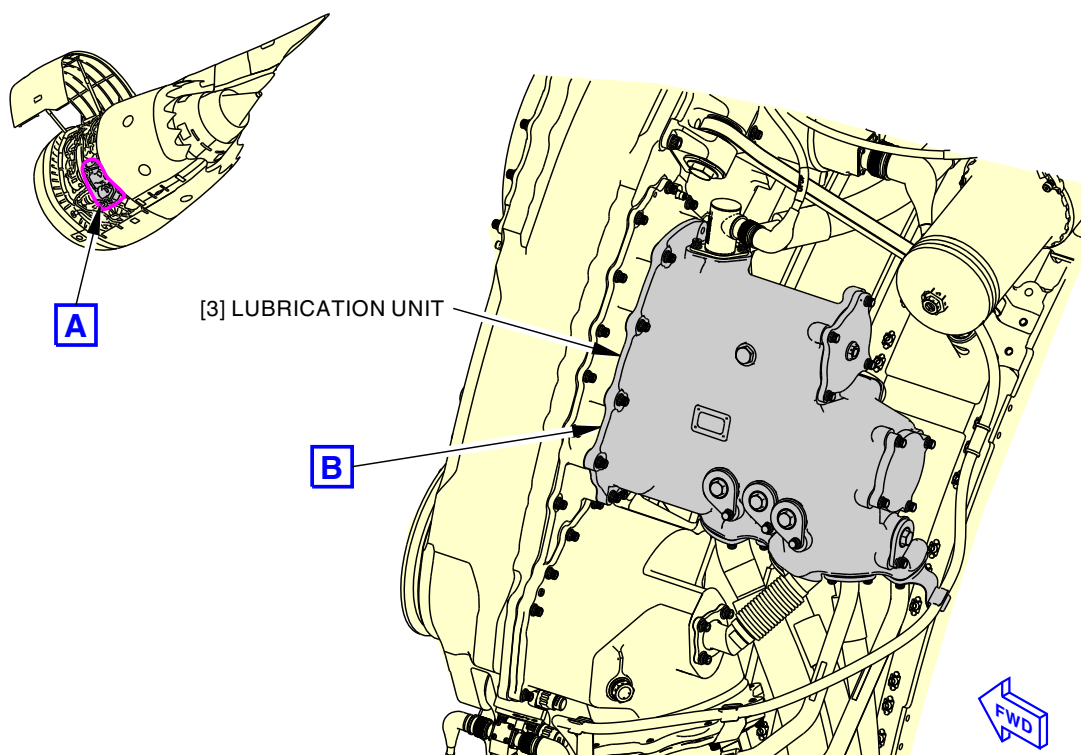
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-22

Page 403
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



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Anti Leak Valve Installation
Figure 401/79-21-22-990-801-G00

EFFECTIVITY
SIA ALL

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-22

Page 404
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

TASK 79-21-22-400-801-G00**3. Anti Leak Valve Installation**

(Figure 401)

A. General

(1) This task gives the instructions to install the anti leak valve.

B. References

Reference	Title
12-13-11-600-801	Engine Servicing (Oil Replenishing) (P/B 301)
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
72-63-01-610-802-G00	Accessory Gearbox Assembly Oil Replenishing (P/B 201)
78-31-00-010-802-G00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-440-801-G00	Thrust Reverser Activation After Ground Maintenance (P/B 201)
79-21-03-400-801-G00	Lubrication Unit Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
D00672 [CP5070]	Vaseline - Pure Mineral	V V-P-236

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Anti leak valve	79-21-03-01-370	SIA ALL
2	Retaining ring	79-21-03-01-365	SIA ALL

F. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

G. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
415	Left Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2

H. Anti Leak Valve Installation

SUBTASK 79-21-22-410-001-G00

**WARNING**

DO NOT LET THE OIL STAY ON YOUR SKIN. YOU CAN ABSORB
 POISONOUS MATERIALS FROM THE OIL THROUGH YOUR SKIN.

EFFECTIVITY
 SIA ALL

79-21-22

D633AM101-SIA

Page 405
 Sep 15/2021

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

(WARNING PRECEDES)



CAUTION

DO NOT LET OIL GET ON THE ENGINE OR OTHER COMPONENTS. IMMEDIATELY CLEAN THE OIL WHEN IT FALLS ON THEM. OIL CAN CAUSE DAMAGE TO PAINT AND RUBBER.

- (1) Install the anti leak valve [1] as follows:
 - (a) Make sure that the mating faces are clean and clear of unwanted materials.
 - (b) Remove the protective covers on the openings.



CAUTION

MAKE SURE THAT THE O-RING IS INSTALLED ON THE NEW ANTI LEAK VALVE. IF YOU DO NOT OBEY, DAMAGE TO THE ANTI LEAK VALVE CAN OCCUR.

- (c) Lubricate the O-ring of a new anti leak valve [1] with vaseline, D00672 [CP5070].
- (d) Install the anti leak valve [1] equipped with its O-ring to the lubrication unit [3].
- (e) Install the new retaining ring [2] on the groove of the lubrication unit [3].

SUBTASK 79-21-22-400-001-G00

- (2) Do this task: Lubrication Unit Installation, TASK 79-21-03-400-801-G00.

SUBTASK 79-21-22-610-001-G00

- (3) Do this task: Accessory Gearbox Assembly Oil Replenishing, TASK 72-63-01-610-802-G00.

SUBTASK 79-21-22-600-001-G00

- (4) Do this task: Engine Servicing (Oil Replenishing), TASK 12-13-11-600-801.

SUBTASK 79-21-22-420-001-G00

- (5) Clean the work area and clear the tools and other items.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 79-21-22-410-002-G00



WARNING

OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Do these tasks in sequence to safely close the left thrust reverser:
 - (a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-010-802-G00.
 - 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
415	Left Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
 - (b) Close the applicable left Fan Cowl Panel (TASK 71-11-04-410-801-G00).
 - 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
 - (c) Do this task: Thrust Reverser Activation After Ground Maintenance, TASK 78-31-00-440-801-G00.

EFFECTIVITY
SIA ALL

79-21-22

D633AM101-SIA

Page 406
May 15/2022

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL****SUBTASK 79-21-22-860-002-G00**

- (2) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:
- (a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.
 - (b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

J. Lubrication Unit Installation Test**SUBTASK 79-21-22-730-002-G00**

- (1) Do the applicable tests given in the Power Plant Test Reference Table (TASK 71-00-00-800-804-G00).

————— **END OF TASK** —————

EFFECTIVITY
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D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-21-22

Page 407
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

OIL INDICATING SYSTEM - INSPECTION/CHECK

1. General

- A. This procedure contains this task:
- (1) Oil indicating system inspection.

TASK 79-30-00-210-801-G00

2. Oil Indicating System Inspection

(Figure 601)

A. General

- (1) This task gives the instructions on how to examine the oil indicating system.
- (2) The oil indicating system inspection examines these components:
 - (a) Oil level sensor
 - (b) Oil pressure and temperature sensor
 - (c) Oil Filter Differential Pressure (OFDP) sensor.

B. References

Reference	Title
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
78-31-00-010-801-G00	Open the Thrust Reverser (Selection) (P/B 201)
78-31-00-010-802-G00	Close the Thrust Reverser (Selection) (P/B 201)
78-31-00-040-801-G00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)
78-31-00-440-801-G00	Thrust Reverser Activation After Ground Maintenance (P/B 201)
79-31-01-000-801-G00	Oil Level Sensor Removal (P/B 401)
79-31-01-400-801-G00	Oil Level Sensor Installation (P/B 401)
79-32-01-000-801-G00	Oil Pressure and Temperature Sensor Removal (P/B 401)
79-32-01-400-801-G00	Oil Pressure and Temperature Sensor Installation (P/B 401)
79-35-01-000-801-G00	Oil Filter Differential Pressure Sensor Removal (P/B 401)
79-35-01-400-801-G00	Oil Filter Differential Pressure Sensor Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-562	Lens - Magnifying, 10x
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1

EFFECTIVITY
SIA ALL

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-30-00

Page 601
Sep 15/2021

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

(Continued)

Number	Name/Location
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

F. Prepare for the Inspection

SUBTASK 79-30-00-860-001-G00

- (1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:
 - (a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.
 - (b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 79-30-00-010-001-G00

- (2) Do these tasks in sequence to safely open the left and right thrust reversers on the applicable engine:

**WARNING**

DO THE DEACTIVATION PROCEDURE FOR THE THRUST REVERSER TO PREVENT THE OPERATION OF THE THRUST REVERSER. ACCIDENTAL OPERATION OF THE THRUST REVERSER CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

- (a) Do this task: Thrust Reverser Deactivation For Ground Maintenance, TASK 78-31-00-040-801-G00.
- (b) Open the applicable left or right fan cowl panels (TASK 71-11-04-010-801-G00).
 - 1) Open these access panels:

<u>Number</u>	<u>Name/Location</u>
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

**WARNING**

OBEY THE INSTRUCTIONS IN THE PROCEDURE TO OPEN THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (c) Open the applicable left or right thrust reversers (TASK 78-31-00-010-801-G00).
 - 1) Open these access panels:
- | <u>Number</u> | <u>Name/Location</u> |
|----------------------|---------------------------------|
| 415 | Left Thrust Reverser, Engine 1 |
| 416 | Right Thrust Reverser, Engine 1 |

EFFECTIVITY
SIA ALL

79-30-00

D633AM101-SIA

Page 602
Jan 15/2023

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

(Continued)

<u>Number</u>	<u>Name/Location</u>
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2

SUBTASK 79-30-00-480-001-G00

- (3) Use good lighting and a 10x magnifying lens, STD-562 to help you see damage to the oil indicating system.

NOTE: Reject all parts that have wear or damage more than the applicable limits.

NOTE: Reject the parts that show wear or damage that is more than normal. Repair the minor damage to the applicable parts.

G. Oil Indicating System Inspection**SUBTASK 79-30-00-212-001-G00**

- (1) Do the general checks of the oil level sensor [1], oil pressure and temperature sensor [5] and oil filter differential pressure sensor [8] as follows:
- (a) Do a visual check to the parts for signs of wear, galled material, loose metal, cracks, nicks burrs, dents and other damage.
 - (b) Do a visual check to the treated parts for damage that shows bare metal.
 - (c) Do a visual check to the internal housing bores and machined surfaces for scores, wear, or damage.
 - (d) Do a check of the internal openings to be sure that they are clean and do not have blockages.
 - (e) Do a check of the threads for rough edges and defects.

NOTE: Make sure that the threads are satisfactory.

SUBTASK 79-30-00-010-002-G00

- (2) Do this task: Oil Level Sensor Removal, TASK 79-31-01-000-801-G00.

SUBTASK 79-30-00-212-002-G00

- (3) Do the inspection of the oil level sensor [1] zones A, B1, B2, C1, C2, D1, D2 and E for these conditions:
- (a) Scratches, nicks and dents
 - 1) Not permitted.
 - 2) Replace the oil level sensor [1].

SUBTASK 79-30-00-410-001-G00

- (4) Do this task: Oil Level Sensor Installation, TASK 79-31-01-400-801-G00.

SUBTASK 79-30-00-212-003-G00

- (5) Do the inspection of the oil pressure and temperature sensor [5] for these conditions:
- (a) Cracks, nicks, dents, scratches and deformations.
 - 1) Not permitted.
 - 2) Replace the oil pressure and temperature sensor [5] (TASK 79-32-01-000-801-G00 and TASK 79-32-01-400-801-G00).
 - (b) Visible voids and cracks at where the connector [6] and connector [7] are welded to the oil pressure and temperature sensor [5].
 - 1) Not permitted.

EFFECTIVITY
 SIA ALL

D633AM101-SIA

79-30-00

Page 603
 Sep 15/2021

737-7/8/8200/9/10 AIRCRAFT MAINTENANCE MANUAL

- 2) Replace the oil pressure and temperature sensor [5] (TASK 79-32-01-000-801-G00 and TASK 79-32-01-400-801-G00).
- (c) Dents, cracks and loose or bent pins on the connector [6] and the connector [7].
 - 1) Not permitted.
 - 2) Replace the oil pressure and temperature sensor [5] (TASK 79-32-01-000-801-G00 and TASK 79-32-01-400-801-G00).

SUBTASK 79-30-00-212-004-G00

- (6) Do the inspection of the oil filter differential pressure sensor [8] for these conditions:
 - (a) Cracks, nicks, dents, scratches and deformations.
 - 1) Not permitted if the oil filter differential pressure sensor [8] shows evidence of defects.
 - 2) Replace the oil filter differential pressure sensor [8] (TASK 79-35-01-000-801-G00 and TASK 79-35-01-400-801-G00).
 - (b) Voids and cracks where the connector [9] is welded to the oil filter differential pressure sensor [8].
 - 1) Not permitted.
 - 2) Replace the oil filter differential pressure sensor [8] (TASK 79-35-01-000-801-G00 and TASK 79-35-01-400-801-G00).
 - (c) Dents, cracks and loose or bent pins on connector [9].
 - 1) Not permitted.
 - 2) Replace the oil filter differential pressure sensor [8] (TASK 79-35-01-000-801-G00 and TASK 79-35-01-400-801-G00).

H. Put the Airplane Back to Its Usual Condition

SUBTASK 79-30-00-410-002-G00



OBEY THE INSTRUCTIONS IN THE PROCEDURE TO CLOSE THE THRUST REVERSERS. IF YOU DO NOT OBEY THE INSTRUCTIONS, INJURIES TO PERSONS AND DAMAGE TO EQUIPMENT CAN OCCUR.

- (1) Do these tasks in sequence to safely close the applicable left or right thrust reversers:
 - (a) Do this task: Close the Thrust Reverser (Selection), TASK 78-31-00-010-802-G00.
 - 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
415	Left Thrust Reverser, Engine 1
416	Right Thrust Reverser, Engine 1
425	Left Thrust Reverser, Engine 2
426	Right Thrust Reverser, Engine 2
 - (b) Do this task: Close the Fan Cowl Panels (Selection), TASK 71-11-04-410-801-G00.
 - 1) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
413	Left Fan Cowl, Engine 1
414	Right Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2
424	Right Fan Cowl, Engine 2

EFFECTIVITY
SIA ALL

79-30-00

D633AM101-SIA

Page 604
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

- (c) Do this task: Thrust Reverser Activation After Ground Maintenance,
TASK 78-31-00-440-801-G00.

SUBTASK 79-30-00-860-002-G00

- (2) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:
- (a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.
 - (b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

I. Oil Indicating System Tests

SUBTASK 79-30-00-700-001-G00

- (1) Do the test(s) that are given in the Power Plant Test Reference Table
(TASK 71-00-00-800-804-G00).

———— **END OF TASK** ————

EFFECTIVITY
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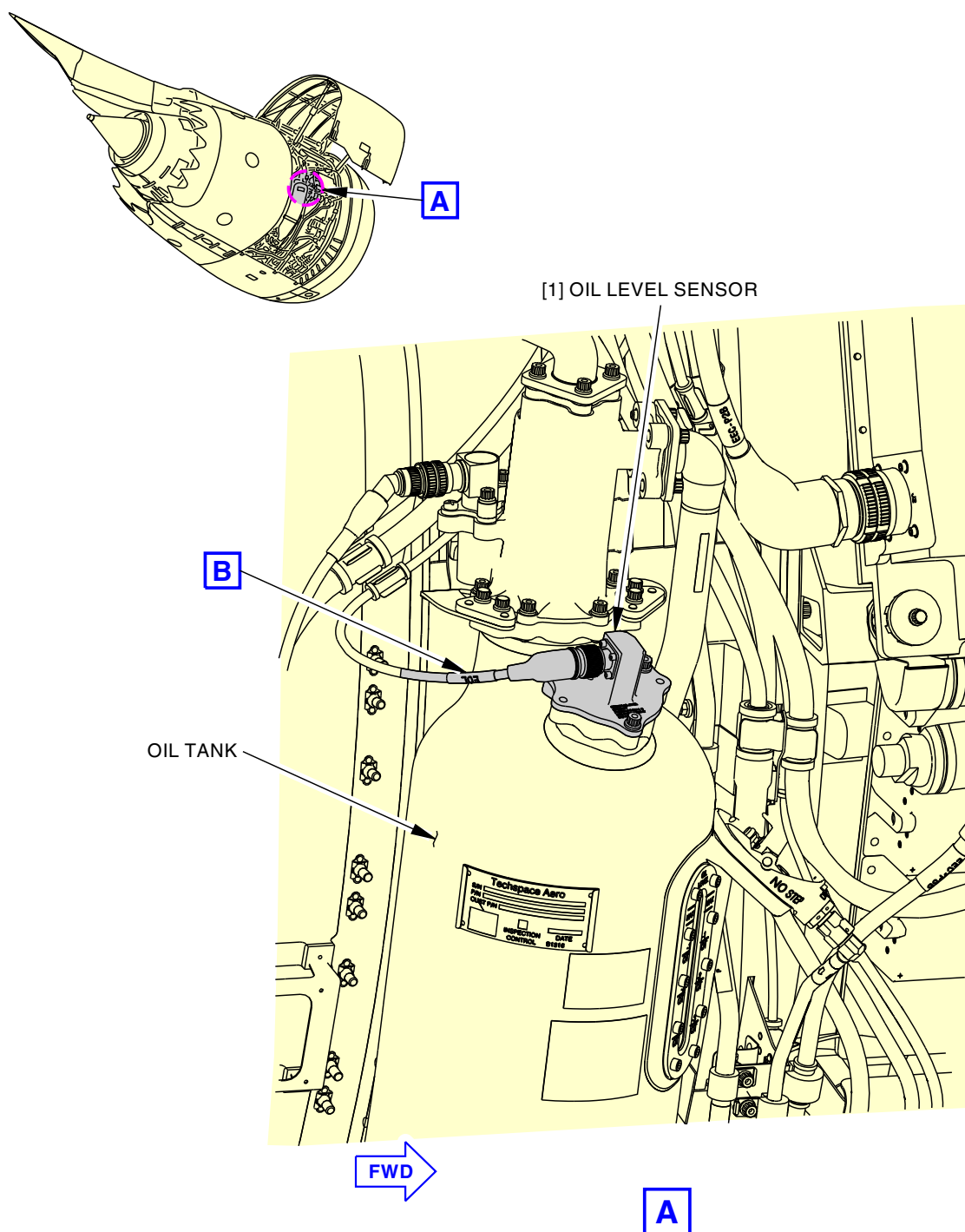
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-30-00

Page 605
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



2484318 S0000584153_V1

Oil Indicating System Inspection
Figure 601/79-30-00-990-801-G00 (Sheet 1 of 7)

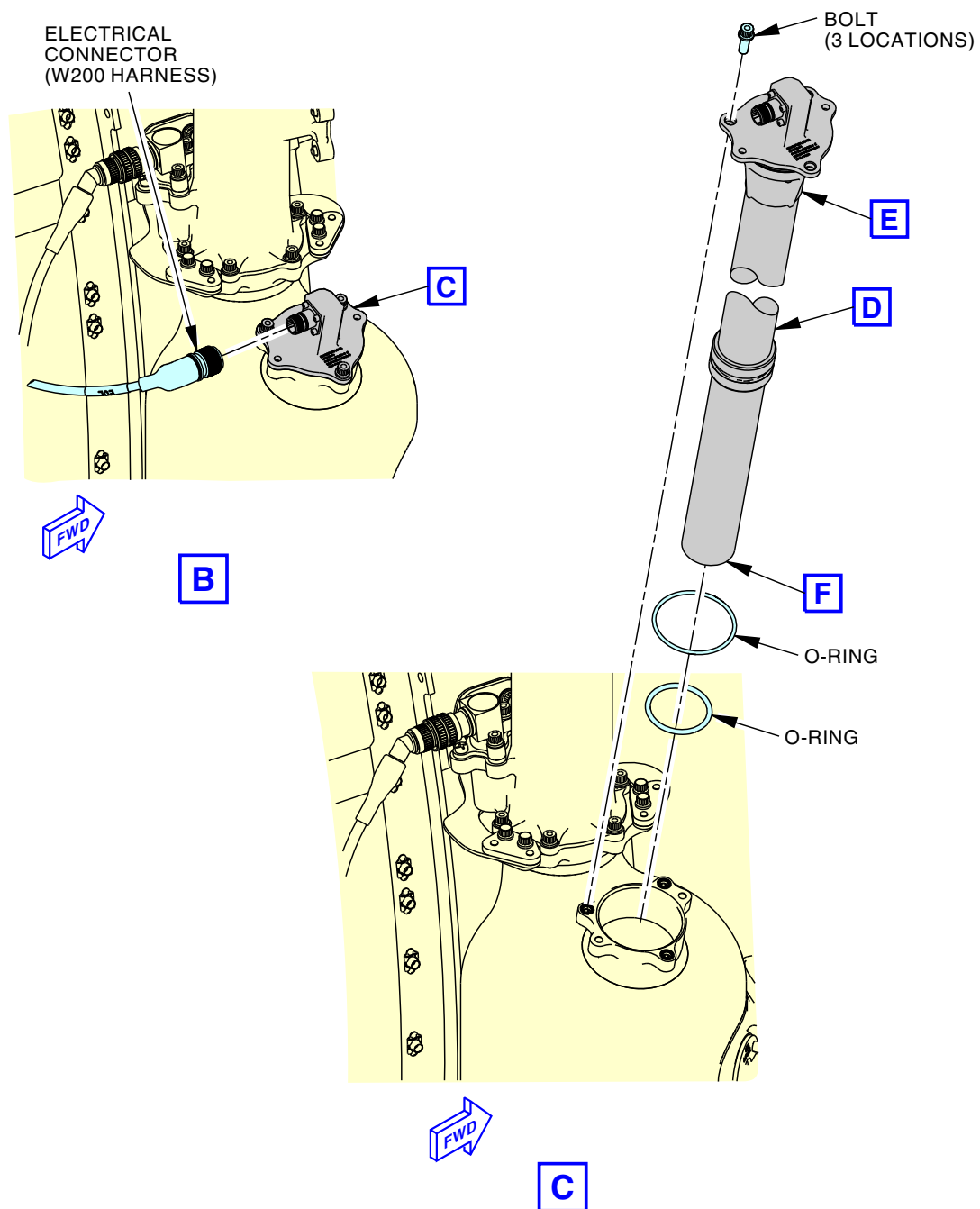
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79-30-00

D633AM101-SIA

Page 606
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



2485636 S0000584593_V1

Oil Indicating System Inspection
Figure 601/79-30-00-990-801-G00 (Sheet 2 of 7)

EFFECTIVITY
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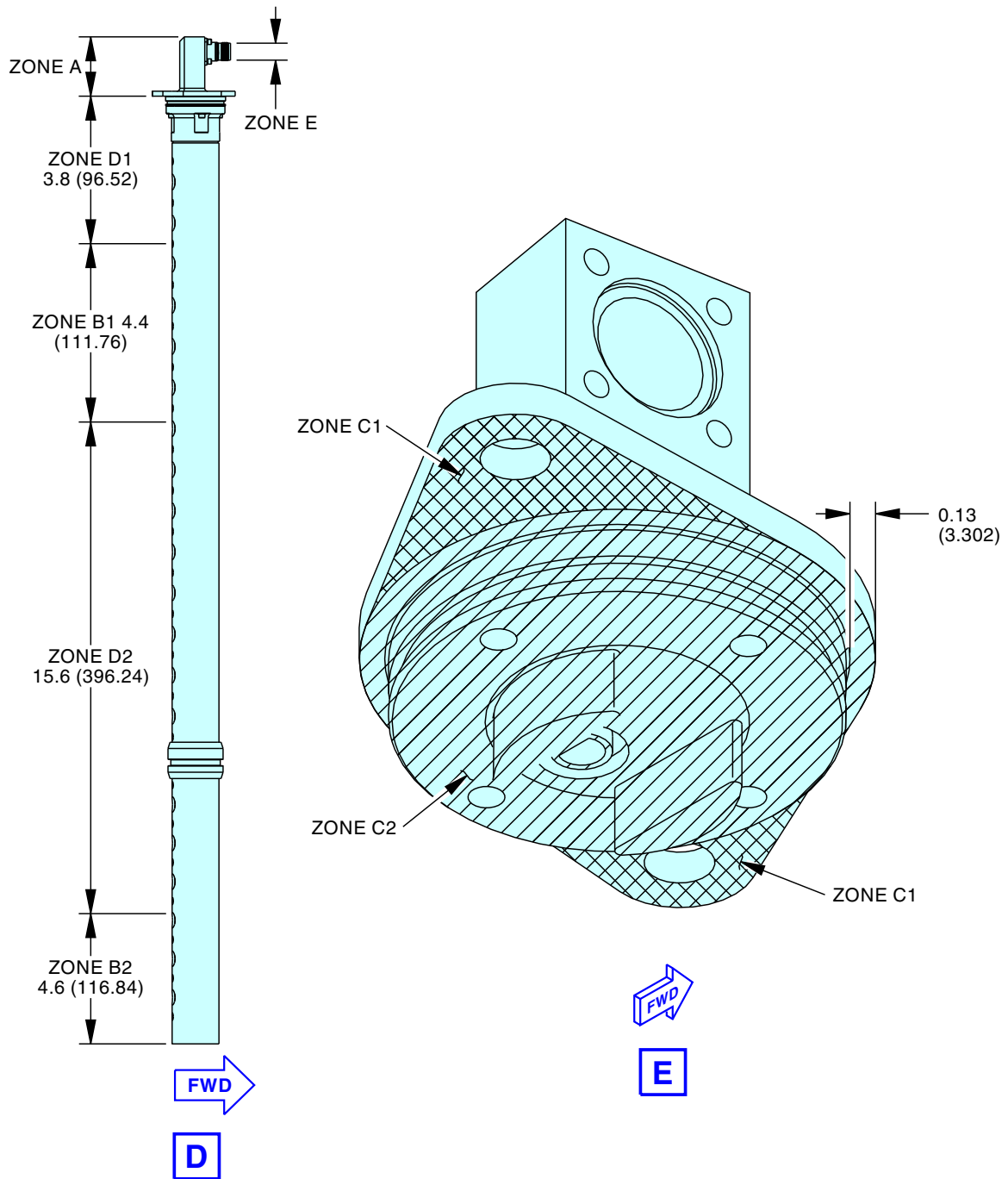
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-30-00

Page 607
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

**NOTE:**

ALL DIMENSIONS ARE IN INCHES (mm).

2485641 S0000584594_V1

Oil Indicating System Inspection
Figure 601/79-30-00-990-801-G00 (Sheet 3 of 7)

EFFECTIVITY
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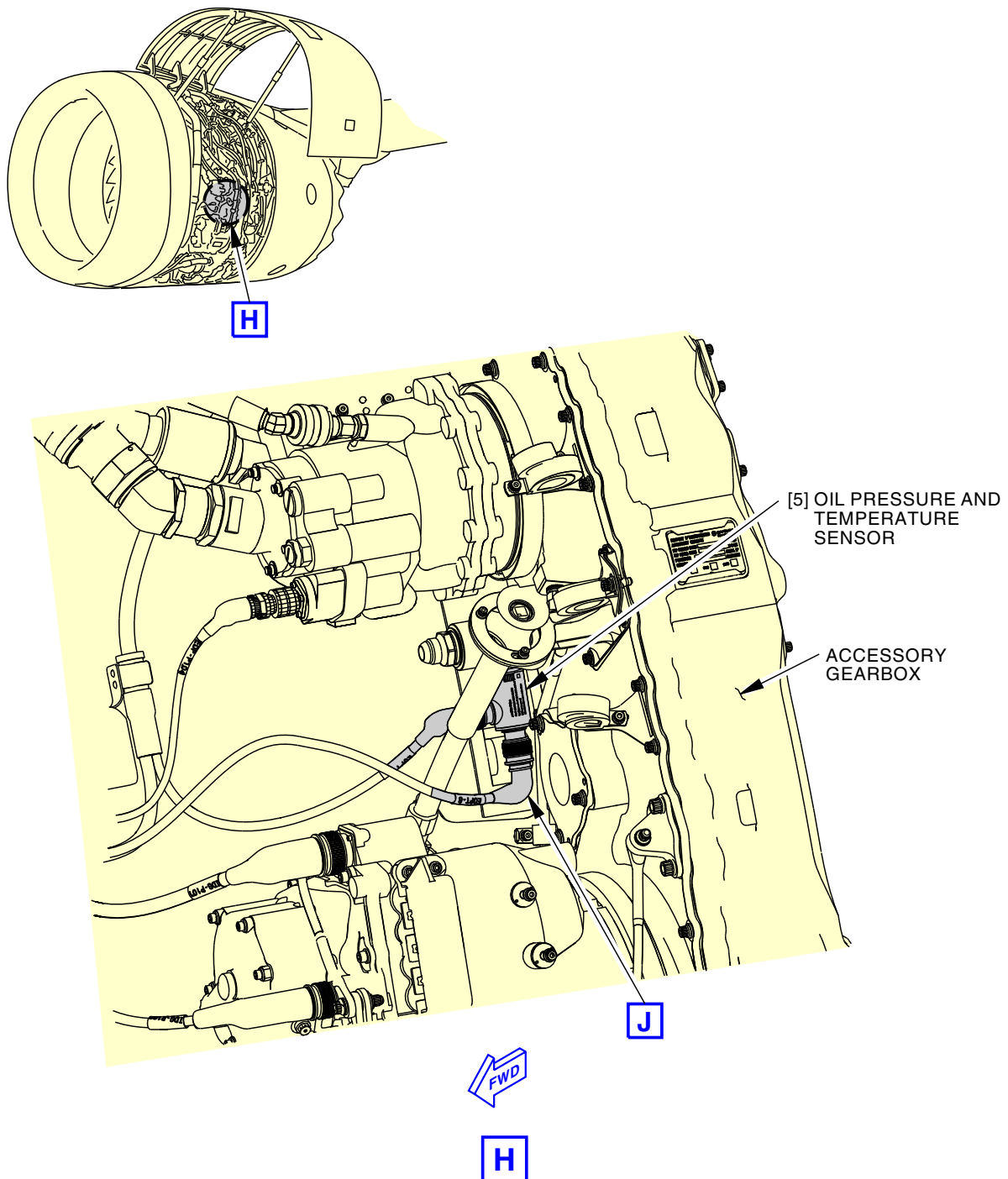
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79-30-00

Page 608
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



2485643 S0000584595_V1

Oil Indicating System Inspection
Figure 601/79-30-00-990-801-G00 (Sheet 4 of 7)

EFFECTIVITY
SIA ALL

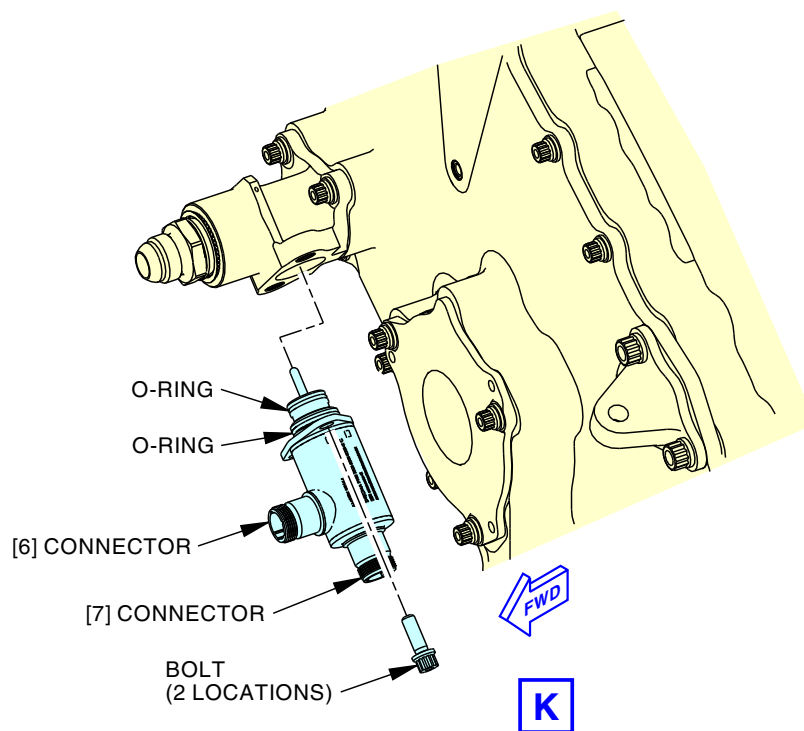
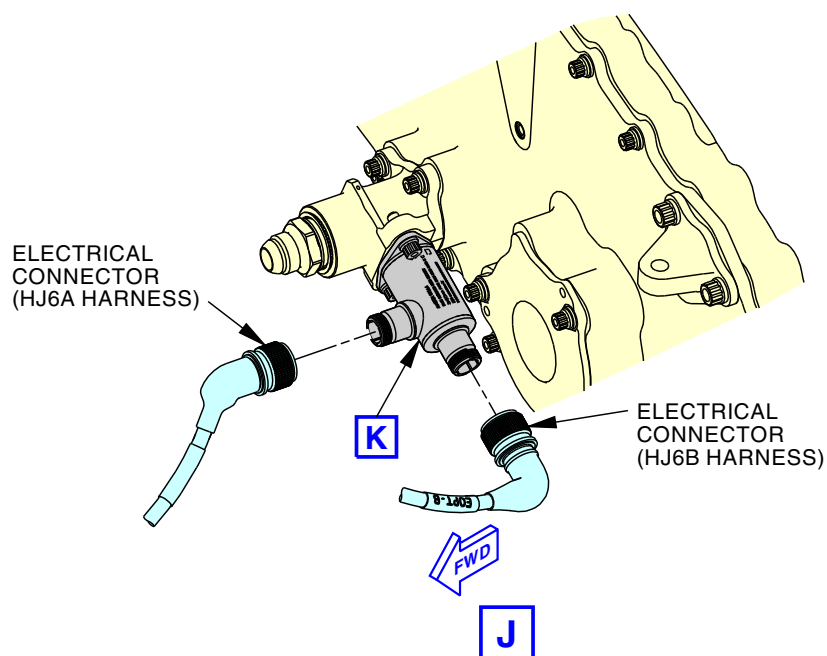
D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-30-00

Page 609
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



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Oil Indicating System Inspection
Figure 601/79-30-00-990-801-G00 (Sheet 5 of 7)

EFFECTIVITY
SIA ALL

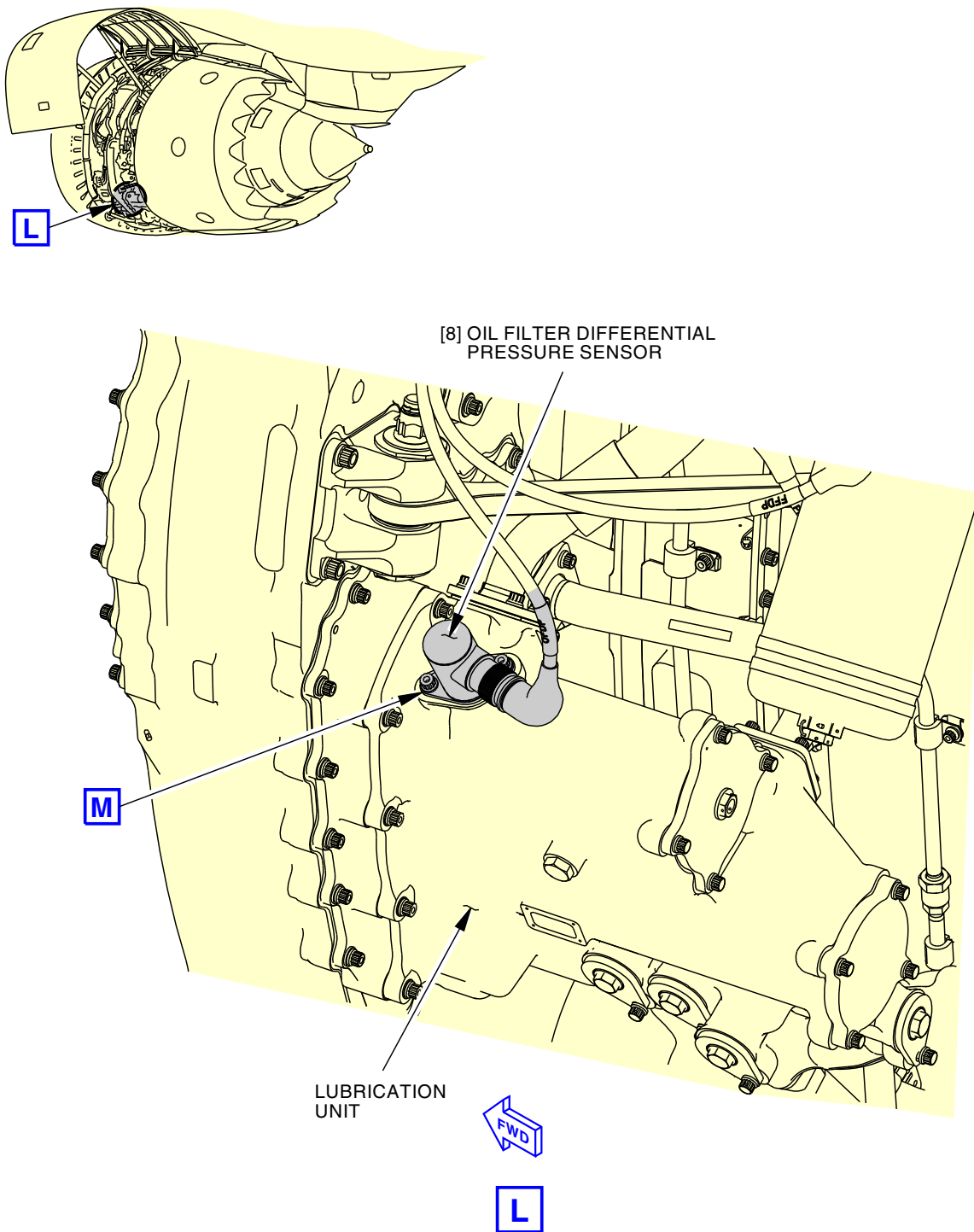
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-30-00

Page 610
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



2485664 S0000584597_V1

Oil Indicating System Inspection
Figure 601/79-30-00-990-801-G00 (Sheet 6 of 7)

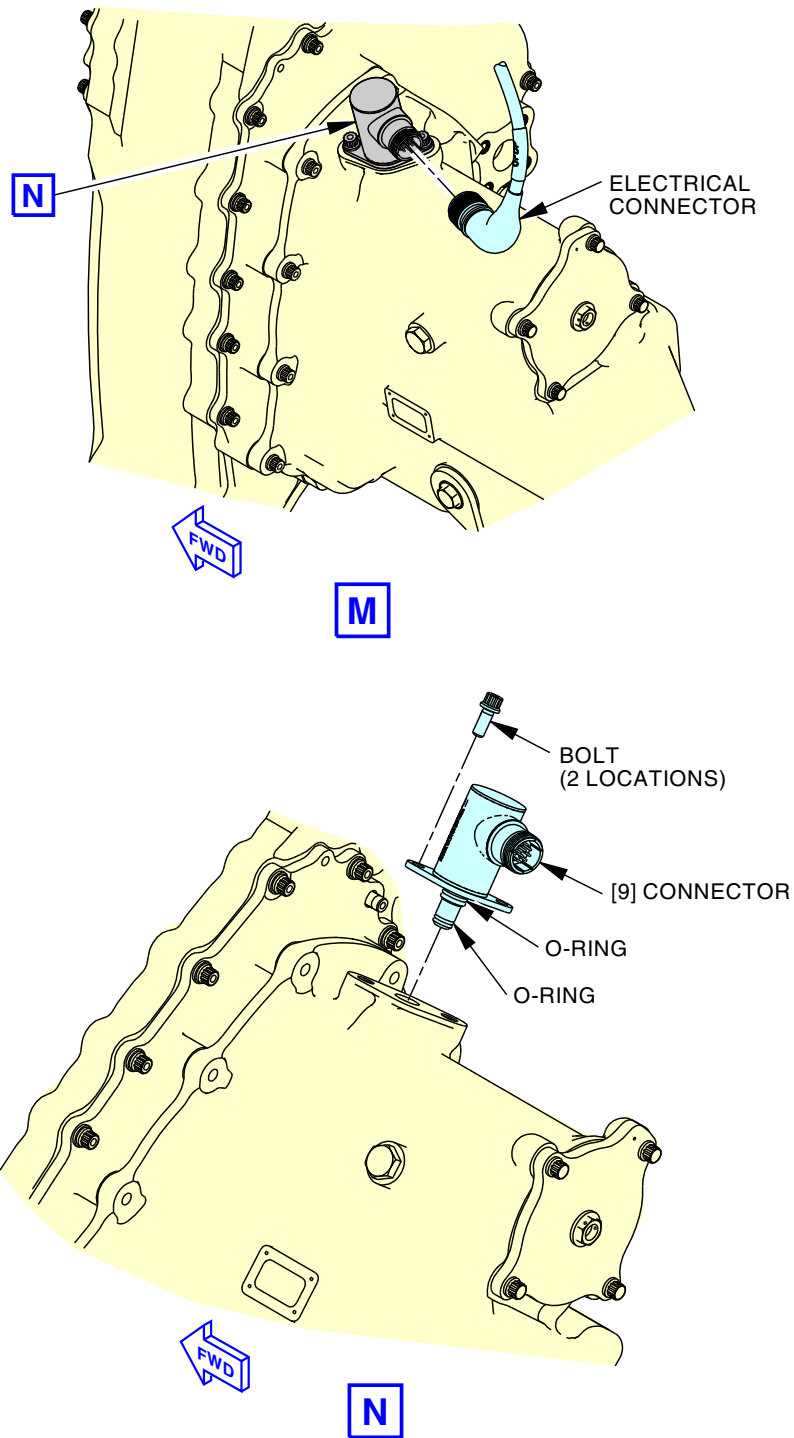
EFFECTIVITY
SIA ALL

79-30-00

D633AM101-SIA

Page 611
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



2485667 S0000584598_V1

Oil Indicating System Inspection
Figure 601/79-30-00-990-801-G00 (Sheet 7 of 7)

EFFECTIVITY
SIA ALL

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-30-00

Page 612
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

OIL LEVEL SENSOR - REMOVAL/INSTALLATION

1. General

A. This procedure contains two tasks:

- (1) Oil level sensor removal
- (2) Oil level sensor installation.

TASK 79-31-01-000-801-G00

2. Oil Level Sensor Removal

(Figure 401)

A. General

- (1) This task gives the instructions on how to remove the oil level sensor.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)

C. Tools/Equipment

NOTE: When more than one tool part number is listed under the same "Reference" number, the tools shown are alternates to each other within the same airplane series. Tool part numbers that are replaced or non-procurable are preceded by "Opt.", which stands for Optional.

Reference	Description
SPL-14904	Tool Set - Jackscrew Part #: 956A1609G01 Supplier: 58828
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE
STD-1055	Container - Oil Resistant, 5 Gallon (19 Liter)

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Oil level sensor	79-31-01-01-020	SIA ALL

E. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

F. Access Panels

Number	Name/Location
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

G. Prepare for the Removal

SUBTASK 79-31-01-860-001-G00

- (1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:
 - (a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

EFFECTIVITY
SIA ALL

79-31-01

D633AM101-SIA

Page 401
Jan 15/2023

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

- 1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.
- (b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 79-31-01-010-001-G00

- (2) On the applicable engine, open the right fan cowl panel (TASK 71-11-04-010-801-G00).
 - (a) Open these access panels:

<u>Number</u>	<u>Name/Location</u>
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

H. Oil Level Sensor Removal

SUBTASK 79-31-01-030-001-G00



BE CAREFUL WHEN YOU DO WORK ON THE ENGINE PARTS AFTER THE ENGINE IS STOPPED. THE ENGINE PARTS CAN STAY HOT FOR ALMOST ONE HOUR. DO NOT TOUCH HOT PARTS WITHOUT APPLICABLE GLOVES. HOT PARTS CAN CAUSE INJURIES TO PERSONNEL.



DO NOT OPEN THE OIL SYSTEM UNTIL THE PRESSURE GOES TO ZERO. THE PRESSURE GOES TO ZERO APPROXIMATELY 5 MINUTES AFTER AN ENGINE STOPS. A PRESSURIZED OIL SYSTEM CAN RELEASE A SPRAY OF HOT OIL THAT CAN BURN YOU.



DO NOT LET HOT OIL GET ON YOU. PUT ON CLOTHES, GOGGLES, AND OTHER EQUIPMENT FOR PROTECTION, OR LET THE ENGINE BECOME COOL. HOT OIL CAN BURN YOU.



DO NOT LET THE OIL STAY ON YOUR SKIN. YOU CAN ABSORB POISONOUS MATERIALS FROM THE OIL THROUGH YOUR SKIN.



DO NOT LET OIL GET ON THE ENGINE OR OTHER COMPONENTS. IMMEDIATELY CLEAN THE OIL WHEN IT FALLS ON THEM. OIL CAN CAUSE DAMAGE TO EQUIPMENT.

- (1) Remove the oil level sensor [1] as follows:
 - (a) Put the oil resistant container (5 gal)(19 Liter), STD-1055 below the oil tank [2].



MAKE SURE ELECTRICAL CONNECTORS ARE CLEAN WHEN YOU DISCONNECT THEM. CONTAMINATION OF ELECTRICAL CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

(CAUTION PRECEDES)



USE TEFLON-JAWED PLIERS TO LOOSEN ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

- (b) Use the teflon-jawed pliers, STD-664 to disconnect the electrical connector [3] from the oil level sensor [1]:
- 1) Disconnect the electrical connector [3] from the oil level sensor [1] (TASK 70-00-01-910-803-G00).
 - 2) Put the protective covers on the electrical connector [3] and the electrical receptacles on the oil level sensor [1].
- (c) Remove the three bolts [4] that attach the oil level sensor [1] on the oil tank [2].
- (d) Install the Tool Set, SPL-14904 jackscrews through the extraction bolt holes of the oil level sensor [1].
- NOTE: You can use the bolts [4] as an alternative to the Tool Set, SPL-14904 jackscrews.



BE CAREFUL WHEN YOU REMOVE THE OIL LEVEL SENSOR BECAUSE OF ITS LENGTH. DAMAGE TO THE OIL LEVEL SENSOR CAN OCCUR.

- (e) Remove the oil level sensor [1] from the oil tank [2].
- (f) Remove and discard the preformed packing [5] and the preformed packing [6] from the grooves of the oil level sensor [1].
- (g) Remove the two Tool Set, SPL-14904 jackscrews from the extraction bolt holes of the oil level sensor [1].
- (h) Install the protective cover on the open port on the oil tank [2].

———— **END OF TASK** ————

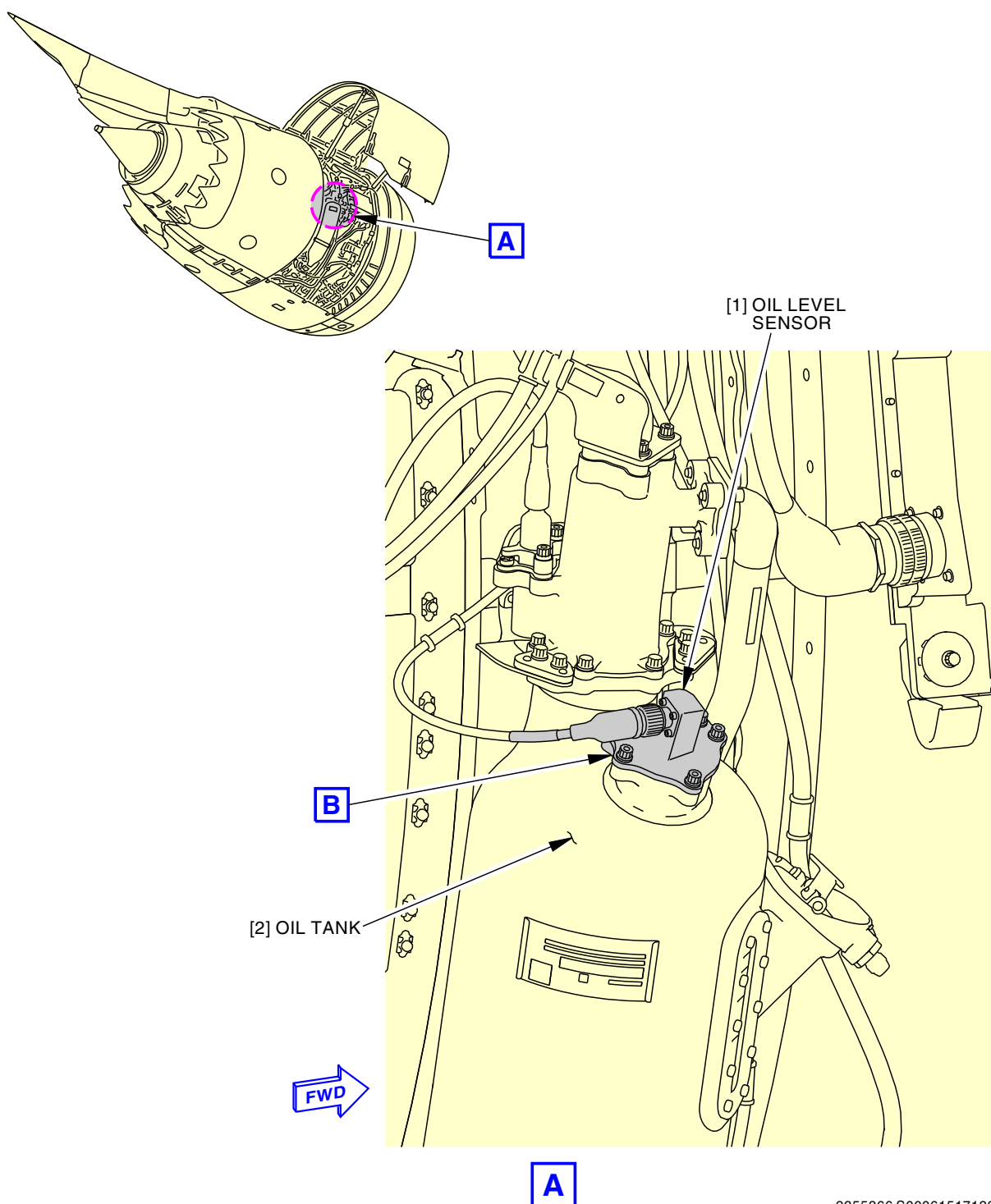
EFFECTIVITY
SIA ALL

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-31-01

Page 403
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

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Oil Level Sensor Installation
Figure 401/79-31-01-990-801-G00 (Sheet 1 of 2)

EFFECTIVITY
SIA ALL

79-31-01

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 404
Sep 15/2021

Oil Level Sensor Installation
Figure 401/79-31-01-990-801-G00 (Sheet 2 of 2)

79-31-01

D633AM101-SIA

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

TASK 79-31-01-400-801-G00**3. Oil Level Sensor Installation**

(Figure 401)

A. General

(1) This task provides the instructions on how to install the oil level sensor.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
D00601 [CP2101]	Vaseline - Graphite Mineral	
D00672 [CP5070]	Vaseline - Pure Mineral	V V-P-236

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Oil level sensor	79-31-01-01-020	SIA ALL
5	Preformed packing	79-31-01-01-040	SIA ALL
6	Preformed packing	79-31-01-01-030	SIA ALL

F. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

G. Access Panels

Number	Name/Location
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

H. Oil Level Sensor Installation

SUBTASK 79-31-01-420-001-G00



DO NOT LET THE OIL STAY ON YOUR SKIN. YOU CAN ABSORB
 POISONOUS MATERIALS FROM THE OIL THROUGH YOUR SKIN.



DO NOT LET OIL GET ON THE ENGINE OR OTHER COMPONENTS.
 IMMEDIATELY CLEAN THE OIL WHEN IT FALLS ON THEM. OIL CAN CAUSE
 DAMAGE TO EQUIPMENT.

(1) Install the oil level sensor [1] as follows:

EFFECTIVITY
 SIA ALL

79-31-01

D633AM101-SIA

Page 406
 May 15/2023

737-7/8/8200/9/10 AIRCRAFT MAINTENANCE MANUAL

- (a) Remove the protective cover from the open port on the oil tank [2].
- (b) Make sure that the mating faces are clean and clear of unwanted materials.
- (c) Lubricate the new preformed packing [5] and the new preformed packing [6] with pure mineral vaseline, D00672 [CP5070].
- (d) Install the new preformed packing [5], and the new preformed packing [6] in the grooves of the oil level sensor [1].
- (e) Lubricate the threads of the three bolts [4] with graphite mineral vaseline, D00601 [CP2101].
- (f) Install the oil level sensor [1] on the oil tank [2].

NOTE: If the oil level sensor is new, make sure to remove all protective covers before installation.

- (g) Install the three bolts [4] that attach the oil level sensor [1] to the oil tank [2].
 - 1) Tighten the three bolts [4] to 109.31 in-lb (12.35 N·m) - 120.81 in-lb (13.65 N·m).



MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.



USE PLIERS THAT HAVE TEFLON JAWS TO TIGHTEN THE ELECTRICAL CONNECTORS. DO NOT USE PLIERS THAT HAVE METAL JAWS. METAL JAWS CAN CAUSE DAMAGE TO THE ELECTRICAL CONNECTORS.

- (h) Use the teflon-jawed pliers, STD-664 to connect the electrical connector [3] to the oil level sensor [1]:
 - 1) Remove the protective covers from the electrical connector [3] and the electrical receptacles on the oil level sensor [1].
 - 2) Connect the electrical connector [3] to the oil level sensor [1] (TASK 70-00-01-910-803-G00).
- (i) Clean the work area and clear the tools used to do the task.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 79-31-01-410-001-G00

- (1) On the applicable engine, close the right fan cowl panel (TASK 71-11-04-410-801-G00).
 - (a) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
414	Right Fan Cowl, Engine 1
424	Right Fan Cowl, Engine 2

SUBTASK 79-31-01-860-002-G00

- (2) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:
 - (a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.
 - (b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

EFFECTIVITY
SIA ALL

79-31-01

D633AM101-SIA

Page 407
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

J. Oil Level Sensor Installation Test

SUBTASK 79-31-01-730-001-G00

- (1) Do the test(s) that are given in the Power Plant Test Reference Table (TASK 71-00-00-800-804-G00).

———— **END OF TASK** ————

EFFECTIVITY
SIA ALL

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-31-01

Page 408
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

OIL PRESSURE AND TEMPERATURE SENSOR - REMOVAL/INSTALLATION

1. General

- A. This procedure has two tasks:
- (1) Oil pressure and temperature sensor removal
 - (2) Oil pressure and temperature sensor installation.

TASK 79-32-01-000-801-G00

2. Oil Pressure and Temperature Sensor Removal

(Figure 401)

A. General

- (1) This task provides the instructions on how to remove the oil pressure and temperature sensor.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)

C. Tools/Equipment

Reference	Description
STD-203	Container - Oil Resistant, 1 U.S.-Gal (3.8 l)
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

F. Prepare for the Removal

SUBTASK 79-32-01-860-001-G00

- (1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:
 - (a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.
 - (b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 79-32-01-010-001-G00

- (2) On the applicable engine, open the left fan cowl panel (TASK 71-11-04-010-801-G00).

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79-32-01

D633AM101-SIA

Page 401
Jan 15/2023

737-7/8/8200/9/10 AIRCRAFT MAINTENANCE MANUAL

- (a) Open these access panels:

<u>Number</u>	<u>Name/Location</u>
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

G. Oil Pressure and Temperature Sensor Removal

SUBTASK 79-32-01-030-001-G00



MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.



USE TEFLON-JAWED PLIERS TO LOOSEN ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

- (1) Use the teflon-jawed pliers, STD-664 to disconnect the electrical connector HJ6A [3] and the electrical connector HJ6B [4] from the oil pressure and temperature sensor [1] as follows (TASK 70-00-01-910-803-G00):
 - (a) Disconnect the electrical connector HJ6A [3] and the electrical connector HJ6B [4] from the oil pressure and temperature sensor [1].
 - (b) Put the protective covers on the electrical connector HJ6A [3], the electrical connector HJ6B [4], and the electrical receptacles of the oil pressure and temperature sensor [1].

SUBTASK 79-32-01-020-001-G00



BE CAREFUL WHEN YOU DO WORK ON THE ENGINE PARTS AFTER THE ENGINE IS STOPPED. THE ENGINE PARTS CAN STAY HOT FOR ALMOST ONE HOUR. DO NOT TOUCH HOT PARTS WITHOUT APPLICABLE GLOVES. HOT PARTS CAN CAUSE INJURIES TO PERSONNEL.



DO NOT OPEN THE OIL SYSTEM UNTIL THE PRESSURE GOES TO ZERO. THE PRESSURE GOES TO ZERO APPROXIMATELY 5 MINUTES AFTER AN ENGINE STOPS. A PRESSURIZED OIL SYSTEM CAN RELEASE A SPRAY OF HOT OIL THAT CAN BURN YOU.



DO NOT LET HOT OIL GET ON YOU. PUT ON CLOTHES, GOGGLES, AND OTHER EQUIPMENT FOR PROTECTION, OR LET THE ENGINE BECOME COOL. HOT OIL CAN BURN YOU.



DO NOT LET THE OIL STAY ON YOUR SKIN. YOU CAN ABSORB POISONOUS MATERIALS FROM THE OIL THROUGH YOUR SKIN.

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

(WARNING PRECEDES)



CAUTION

DO NOT LET OIL GET ON THE ENGINE OR OTHER COMPONENTS.
IMMEDIATELY CLEAN THE OIL WHEN IT FALLS ON THEM. OIL CAN CAUSE
DAMAGE TO EQUIPMENT.

- (2) Remove the oil pressure and temperature sensor [1] from the accessory gearbox [2] as follows:
- (a) Put a 1 U.S.-gal (3.81 l) oil resistant container, STD-203 below the oil pressure and temperature sensor [1].
 - (b) Remove the two bolts [5] that attach the oil pressure and temperature sensor [1] to the accessory gearbox [2].
 - (c) Remove the oil pressure and temperature sensor [1] from the accessory gearbox [2].
 - (d) Remove and discard the preformed packing [6] and the preformed packing [7] from the oil pressure and temperature sensor [1].
 - (e) Install the protective covers on the open on the openings.

———— **END OF TASK** ————

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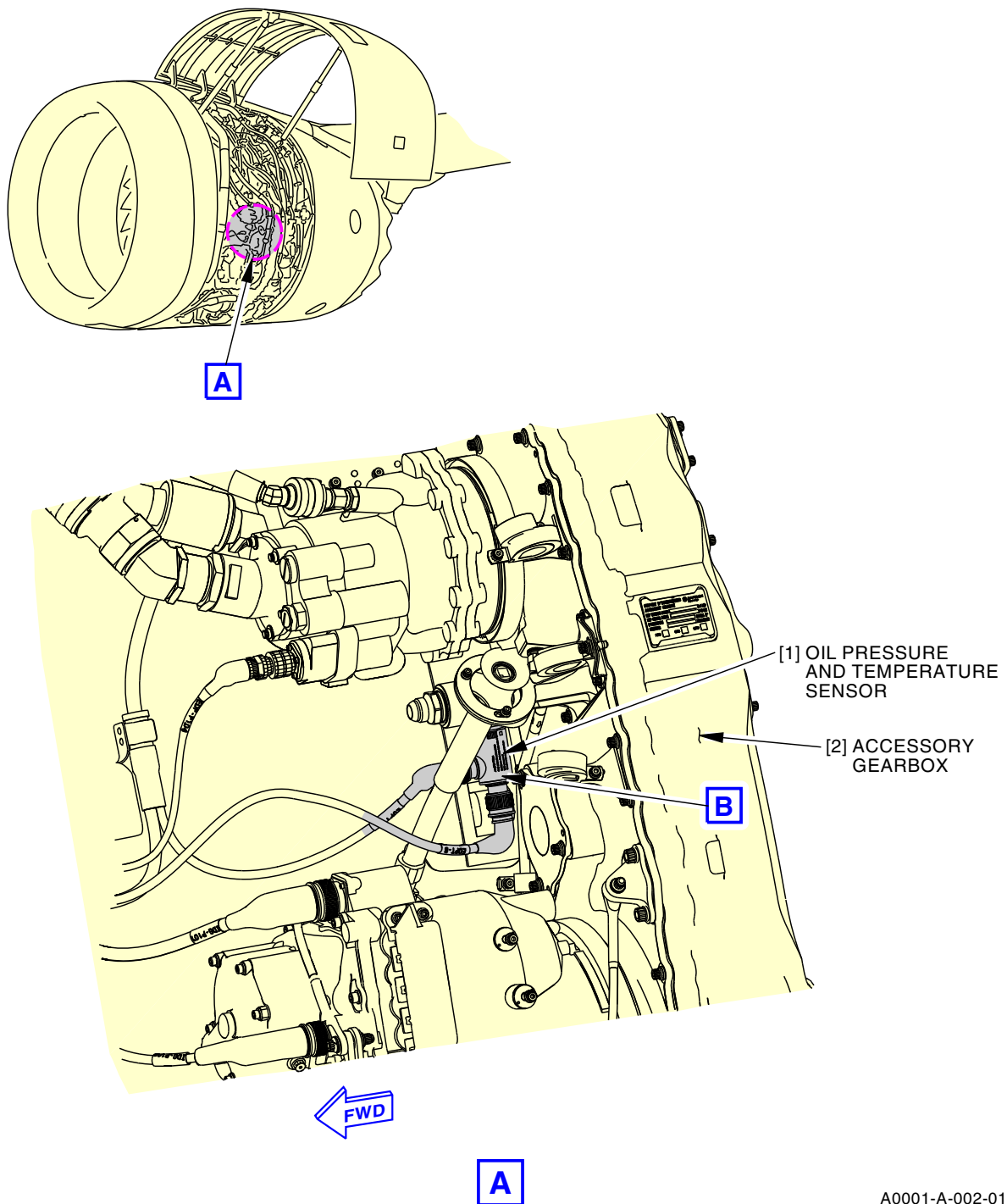
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79-32-01

Page 403
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



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Oil Pressure and Temperature Sensor Installation
Figure 401/79-32-01-990-801-G00 (Sheet 1 of 2)

EFFECTIVITY
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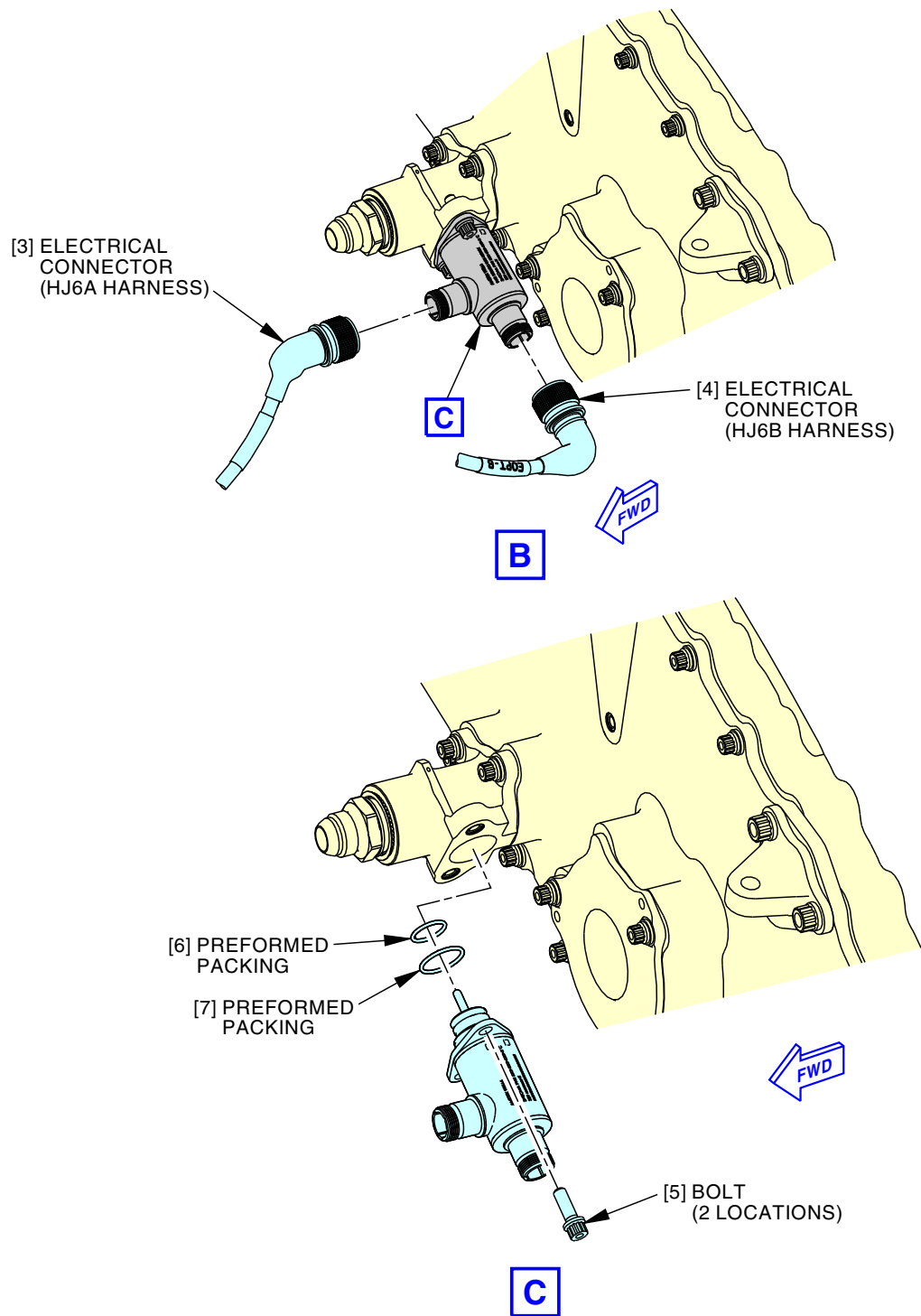
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-32-01

Page 404
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



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2403333 S0000555943_V1

Oil Pressure and Temperature Sensor Installation
Figure 401/79-32-01-990-801-G00 (Sheet 2 of 2)

EFFECTIVITY
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D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-32-01

Page 405
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

TASK 79-32-01-400-801-G00**3. Oil Pressure and Temperature Sensor Installation**

(Figure 401)

A. General

- (1) This task provides the instructions on how to install the oil pressure and temperature sensor.
- (2) You must do the tests that are listed in the power plant test reference table after you install the oil pressure and temperature sensor.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
D00601 [CP2101]	Vaseline - Graphite Mineral	
D00672 [CP5070]	Vaseline - Pure Mineral	V V-P-236

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Oil pressure and temperature sensor	79-32-01-01-020	SIA ALL
6	Preformed packing	79-32-01-01-040	SIA ALL
7	Preformed packing	79-32-01-01-030	SIA ALL

F. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

G. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

H. Oil Pressure and Temperature Sensor Installation

SUBTASK 79-32-01-420-001-G00



BE CAREFUL WHEN YOU DO WORK ON THE ENGINE PARTS AFTER THE ENGINE IS STOPPED. THE ENGINE PARTS CAN STAY HOT FOR ALMOST ONE HOUR. DO NOT TOUCH HOT PARTS WITHOUT APPLICABLE GLOVES. HOT PARTS CAN CAUSE INJURIES TO PERSONNEL.

EFFECTIVITY
SIA ALL

79-32-01

D633AM101-SIA

Page 406
Sep 15/2023

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL****(WARNING PRECEDES)****WARNING**

DO NOT OPEN THE OIL SYSTEM UNTIL THE PRESSURE GOES TO ZERO. THE PRESSURE GOES TO ZERO APPROXIMATELY 5 MINUTES AFTER AN ENGINE STOPS. A PRESSURIZED OIL SYSTEM CAN RELEASE A SPRAY OF HOT OIL THAT CAN BURN YOU.

**WARNING**

DO NOT LET HOT OIL GET ON YOU. PUT ON CLOTHES, GOGGLES, AND OTHER EQUIPMENT FOR PROTECTION, OR LET THE ENGINE BECOME COOL. HOT OIL CAN BURN YOU.

**WARNING**

DO NOT LET THE OIL STAY ON YOUR SKIN. YOU CAN ABSORB POISONOUS MATERIALS FROM THE OIL THROUGH YOUR SKIN.

**CAUTION**

DO NOT LET OIL GET ON THE ENGINE OR OTHER COMPONENTS. IMMEDIATELY CLEAN THE OIL WHEN IT FALLS ON THEM. OIL CAN CAUSE DAMAGE TO EQUIPMENT.

- (1) Install the oil pressure and temperature sensor [1] as follows:
 - (a) Remove the protective covers from the openings.
 - (b) Make sure that the mating faces are clean and clear of unwanted materials.
 - (c) Lubricate the new preformed packing [6] and the new preformed packing [7] with vaseline, D00672 [CP5070].
 - (d) Lubricate the threads of the two bolts [5] with graphite mineral vaseline, D00601 [CP2101].
 - (e) Install the new preformed packing [6] and the new preformed packing [7] onto the grooves of the oil pressure and temperature sensor [1].
 - (f) Install the oil pressure and temperature sensor [1] with the new preformed packing [6] and new preformed packing [7] on the accessory gearbox [2].
 - (g) Install the two bolts [5] that attach the oil pressure and temperature sensor [1] to the accessory gearbox [2].
 - 1) Tighten the bolts [5] to 109.31 in-lb (12.35 N·m) - 120.81 in-lb (13.65 N·m).

SUBTASK 79-32-01-430-001-G00

**CAUTION**

MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

EFFECTIVITY
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D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-32-01

Page 407
Sep 15/2023

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

(CAUTION PRECEDES)



CAUTION

DO NOT USE PLIERS THAT HAVE METAL JAWS TO TIGHTEN THE ELECTRICAL CONNECTOR. DAMAGE TO THE ELECTRICAL CONNECTOR CAN OCCUR.

- (2) Use the teflon-jawed pliers, STD-664 to connect the electrical connector HJ6A [3] and the electrical connector HJ6B [4] to the oil pressure and temperature sensor [1] as follows (TASK 70-00-01-910-803-G00).
 - (a) Remove the protective covers from the electrical connector HJ6A [3], the electrical connector HJ6B [4], and the electrical receptacles of the oil pressure and temperature sensor [1].
 - (b) Connect the electrical connector HJ6A [3] and the electrical connector HJ6B [4] to the oil pressure and temperature sensor [1].
 - (c) Tighten the electrical connector HJ6A [3] and the electrical connector HJ6B [4].

SUBTASK 79-32-01-860-002-G00

- (3) Clean the work area and clear the tools and other items.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 79-32-01-860-003-G00

- (1) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:
 - (a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.
 - (b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

SUBTASK 79-32-01-410-001-G00

- (2) On the applicable engine, close the left fan cowl panel (TASK 71-11-04-410-801-G00).
 - (a) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

J. Oil Pressure and Temperature Sensor Installation Test

SUBTASK 79-32-01-730-001-G00

- (1) Do the test(s) that are given in the Power Plant Test Reference Table (TASK 71-00-00-800-804-G00).

———— **END OF TASK** ————

EFFECTIVITY
SIA ALL

79-32-01

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

Page 408
Sep 15/2023

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

OIL FILTER DIFFERENTIAL PRESSURE SENSOR - REMOVAL/INSTALLATION

1. General

- A. This procedure has two tasks:
- (1) Oil filter differential pressure sensor removal
 - (2) Oil filter differential pressure sensor installation.

TASK 79-35-01-000-801-G00

2. Oil Filter Differential Pressure Sensor Removal

(Figure 401)

A. General

- (1) This task provides the instructions on how to remove the oil filter differential pressure sensor.
- (2) The oil filter differential pressure sensor is referred to as the oil filter DP sensor.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)

C. Tools/Equipment

Reference	Description
STD-203	Container - Oil Resistant, 1 U.S.-Gal (3.8 l)
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

E. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

F. Prepare for the Removal

SUBTASK 79-35-01-860-001-G00

- (1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:
 - (a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.
 - (b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.
 - 1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 79-35-01-010-001-G00

- (2) On the applicable engine, open the left fan cowl panel (TASK 71-11-04-010-801-G00).

EFFECTIVITY
SIA ALL

79-35-01

D633AM101-SIA

Page 401
Jan 15/2023

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

- (a) Open these access panels:

<u>Number</u>	<u>Name/Location</u>
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

G. Oil Filter Differential Pressure Sensor Removal

SUBTASK 79-35-01-030-001-G00



MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.



USE TEFLON-JAWED PLIERS TO LOOSEN ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

- (1) Use the teflon-jawed pliers, STD-664 to disconnect the electrical connector [3] from the oil filter DP sensor [1] (TASK 70-00-01-910-803-G00):
 - (a) Disconnect the electrical connector [3] from the oil filter DP sensor [1].
 - (b) Put the protective covers on the electrical connector [3] and the electrical receptacle of the oil filter DP sensor [1].

SUBTASK 79-35-01-020-001-G00



BE CAREFUL WHEN YOU DO WORK ON THE ENGINE PARTS AFTER THE ENGINE IS STOPPED. THE ENGINE PARTS CAN STAY HOT FOR ALMOST ONE HOUR. DO NOT TOUCH HOT PARTS WITHOUT APPLICABLE GLOVES. HOT PARTS CAN CAUSE INJURIES TO PERSONNEL.



DO NOT OPEN THE OIL SYSTEM UNTIL THE PRESSURE GOES TO ZERO. THE PRESSURE GOES TO ZERO APPROXIMATELY 5 MINUTES AFTER AN ENGINE STOPS. A PRESSURIZED OIL SYSTEM CAN RELEASE A SPRAY OF HOT OIL THAT CAN BURN YOU.



DO NOT LET HOT OIL GET ON YOU. PUT ON CLOTHES, GOGGLES, AND OTHER EQUIPMENT FOR PROTECTION, OR LET THE ENGINE BECOME COOL. HOT OIL CAN BURN YOU.



DO NOT LET THE OIL STAY ON YOUR SKIN. YOU CAN ABSORB POISONOUS MATERIALS FROM THE OIL THROUGH YOUR SKIN.



DO NOT LET OIL GET ON THE ENGINE OR OTHER COMPONENTS. IMMEDIATELY CLEAN THE OIL WHEN IT FALLS ON THEM. OIL CAN CAUSE DAMAGE TO EQUIPMENT.

- (2) Remove the oil filter DP sensor [1] as follows:

EFFECTIVITY
SIA ALL

D633AM101-SIA

79-35-01

Page 402
May 15/2023

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

- (a) Put a 1 U.S.-gal (3.81 l) oil resistant container, STD-203 below the oil filter DP sensor [1].
- (b) Remove the two bolts [4] that attach the oil filter DP sensor [1] to the lubrication unit [2].
- (c) Remove the oil filter DP sensor [1] from the lubrication unit [2].
- (d) Remove and discard the preformed packing [5] and the preformed packing [6] from the oil filter DP sensor [1].
- (e) Install the protective covers on the openings.

———— **END OF TASK** ————

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SIA ALL

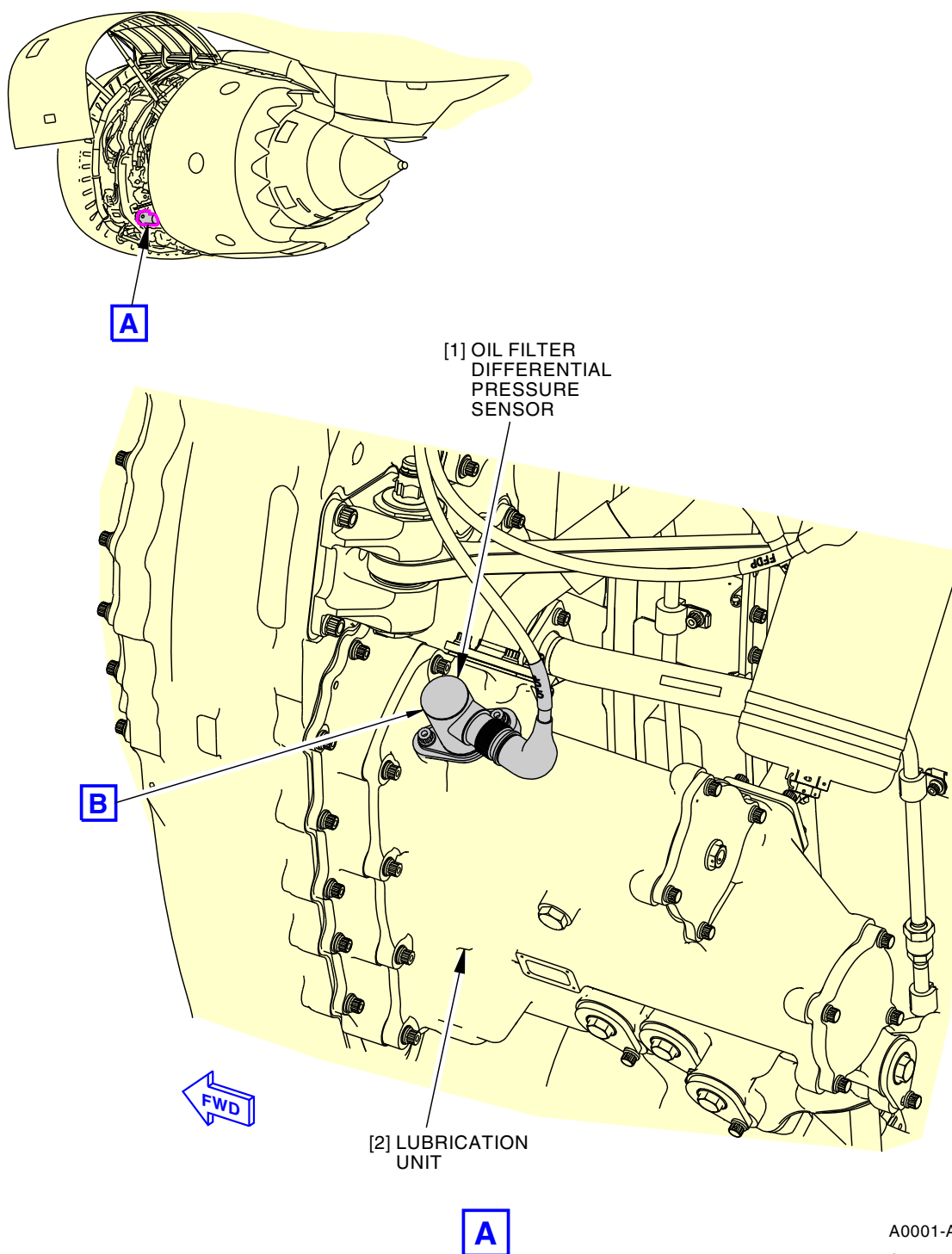
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79-35-01

Page 403
May 15/2023

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



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Oil Filter Differential Pressure Sensor Installation
Figure 401/79-35-01-990-801-G00 (Sheet 1 of 2)

EFFECTIVITY
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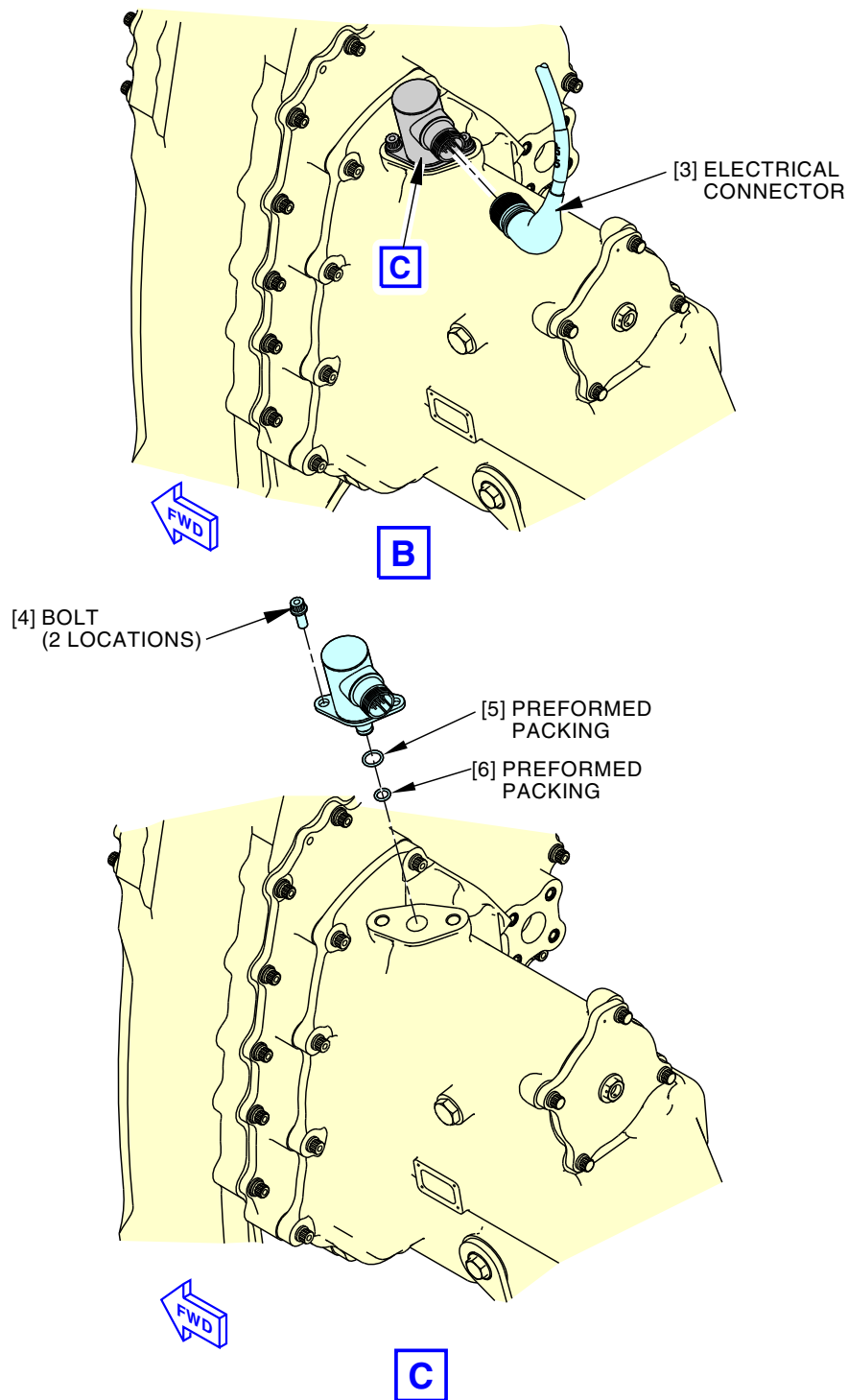
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-35-01

Page 404
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL



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Oil Filter Differential Pressure Sensor Installation
Figure 401/79-35-01-990-801-G00 (Sheet 2 of 2)

EFFECTIVITY
SIA ALL

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

79-35-01

Page 405
Sep 15/2021

737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL

TASK 79-35-01-400-801-G00**3. Oil Filter Differential Pressure Sensor Installation**

(Figure 401)

A. General

- (1) This task provides the instructions on how to install the oil filter differential pressure sensor.
- (2) The oil filter differential pressure sensor is referred to as the oil filter DP sensor [1].
- (3) You must do the tests that are listed in the power plant test reference table after you install the oil filter DP sensor [1].

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
D00601 [CP2101]	Vaseline - Graphite Mineral	
D00672 [CP5070]	Vaseline - Pure Mineral	V V-P-236

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Oil filter DP sensor	79-35-01-01-020	SIA ALL
5	Preformed packing	79-35-01-01-040	SIA ALL
6	Preformed packing	79-35-01-01-030	SIA ALL

F. Location Zones

Zone	Area
411	Engine 1 - Engine
421	Engine 2 - Engine

G. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

H. Oil Filter Differential Pressure Sensor Installation

SUBTASK 79-35-01-420-001-G00



BE CAREFUL WHEN YOU DO WORK ON THE ENGINE PARTS AFTER THE ENGINE IS STOPPED. THE ENGINE PARTS CAN STAY HOT FOR ALMOST ONE HOUR. DO NOT TOUCH HOT PARTS WITHOUT APPLICABLE GLOVES. HOT PARTS CAN CAUSE INJURIES TO PERSONNEL.

EFFECTIVITY
SIA ALL

79-35-01

D633AM101-SIA

Page 406
May 15/2023

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL****(WARNING PRECEDES)****WARNING**

DO NOT OPEN THE OIL SYSTEM UNTIL THE PRESSURE GOES TO ZERO. THE PRESSURE GOES TO ZERO APPROXIMATELY 5 MINUTES AFTER AN ENGINE STOPS. A PRESSURIZED OIL SYSTEM CAN RELEASE A SPRAY OF HOT OIL THAT CAN BURN YOU.

**WARNING**

DO NOT LET HOT OIL GET ON YOU. PUT ON CLOTHES, GOGGLES, AND OTHER EQUIPMENT FOR PROTECTION, OR LET THE ENGINE BECOME COOL. HOT OIL CAN BURN YOU.

**WARNING**

DO NOT LET THE OIL STAY ON YOUR SKIN. YOU CAN ABSORB POISONOUS MATERIALS FROM THE OIL THROUGH YOUR SKIN.

**CAUTION**

DO NOT LET OIL GET ON THE ENGINE OR OTHER COMPONENTS. IMMEDIATELY CLEAN THE OIL WHEN IT FALLS ON THEM. OIL CAN CAUSE DAMAGE TO EQUIPMENT.

- (1) Install the oil filter DP sensor [1] as follows:
 - (a) Remove the protective covers from the openings.
 - (b) Make sure that the mating faces are clean and clear of unwanted materials.
 - (c) Lubricate the new preformed packing [5] and the new preformed packing [6] with vaseline, D00672 [CP5070].
 - (d) Lubricate the threads of the two bolts [4] with graphite mineral vaseline, D00601 [CP2101].
 - (e) Install the new preformed packing [5] and the new preformed packing [6] in the grooves of the oil filter DP sensor [1].
 - (f) Install the oil filter DP sensor [1] on the lubrication unit [2].
 - (g) Install the two bolts [4] that attach the oil filter DP sensor [1] to the lubrication unit [2].
 - (h) Torque the two bolts [4] to 109.31 in-lb (12.35 N·m) - 120.81 in-lb (13.65 N·m).

SUBTASK 79-35-01-420-002-G00

**CAUTION**

MAKE SURE THAT THE ELECTRICAL CONNECTOR AND RECEPTACLE ARE CLEAN WHEN YOU CONNECT THEM. DIRTY CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.

**CAUTION**

DO NOT USE PLIERS THAT HAVE METAL JAWS TO TIGHTEN THE ELECTRICAL CONNECTOR. DAMAGE TO THE ELECTRICAL CONNECTOR CAN OCCUR.

- (2) Use the teflon-jawed pliers, STD-664 to connect the electrical connector [3] to the oil filter DP sensor [1] (TASK 70-00-01-910-803-G00):
 - (a) Remove the protective covers from the electrical connector [3] and the electrical receptacle of the oil filter DP sensor [1].
 - (b) Connect the electrical connector [3] to the oil filter DP sensor [1].

**EFFECTIVITY
SIA ALL****79-35-01**

D633AM101-SIA

Page 407
May 15/2023

**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL**

- (c) Tighten the electrical connector [3].

SUBTASK 79-35-01-860-002-G00

- (3) Clean the work area and clear the tools and other items.

I. Put the Airplane Back to Its Usual Condition

SUBTASK 79-35-01-860-003-G00

- (1) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:
- (a) On the P5 overhead panel, remove the DO NOT OPERATE tag, STD-858, from the applicable ENGINE START switch.
 - (b) On the P10 control stand, remove the DO NOT OPERATE tag, STD-858, from the applicable START LEVER switch.

SUBTASK 79-35-01-410-001-G00

- (2) On the applicable engine, close the left fan cowl panel (TASK 71-11-04-410-801-G00).
- (a) Close these access panels:

<u>Number</u>	<u>Name/Location</u>
413	Left Fan Cowl, Engine 1
423	Left Fan Cowl, Engine 2

J. Oil Filter Differential Pressure Sensor Installation Test

SUBTASK 79-35-01-730-001-G00

- (1) Do the test(s) that are given in the Power Plant Test Reference Table (TASK 71-00-00-800-804-G00).

————— **END OF TASK** —————

EFFECTIVITY
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79-35-01

D633AM101-SIA

Page 408
May 15/2023