

CHAPTER

76

**ENGINE
CONTROLS**

(LEAP-1B ENGINES)

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

CHAPTER 76 ENGINE CONTROLS

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THRUST LEVERS - REMOVAL/INSTALLATION

1. General

- A. This procedure has two tasks:
- (1) A removal of the thrust levers
 - (2) An installation of the thrust levers.

TASK 76-11-01-010-801-G00**2. Thrust Levers - Removal**

(Figure 401, Figure 402, Figure 403, Figure 404, Figure 405, Figure 406, Figure 407, and Figure 408)

A. General

- (1) This task gives the instructions to remove the thrust levers from the control stand assembly.

B. References

Reference	Title
25-11-01-000-801	Captain and First Officer Seat Removal (P/B 401)
27-41-00-820-801	Stabilizer Control Cable and Chain - Adjustment (P/B 501)
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
76-11-03-000-801-G00	Control Stand Lightplate - Removal (P/B 401)
76-11-03-000-802-G00	Control Stand Cover and Stop Removal (P/B 401)
76-11-03-400-801-G00	Control Stand Seal, Spacer and Retainer 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-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205
SPL-2409	Dowel Set - Thrust Lever, Control Stand Part #: F80195-1 Supplier: 81205
SPL-2411	Tool Set - Control Stand Disassembly Part #: C76002-26 Supplier: 81205
STD-858	Tag - DO NOT OPERATE
STD-6378	Protective Mat - Rubber, Manufacturers Association, Grade SC43, neoprene sponge, 1 inch thick, approximately 3 x 4 feet with warning streamer attached

D. Consumable Materials

Reference	Description	Specification
G50314	Tape - Masking	BAC5034-4 Type VII Class 2

E. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
211	Flight Compartment - Left
212	Flight Compartment - Right

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F. Prepare for the Removal

SUBTASK 76-11-01-040-001-G00

- (1) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 76-11-01-040-006-G00

- (2) On the P5 overhead panel, make sure that the left and right ENGINE START switches are in the AUTO position.
- (a) Put DO NOT OPERATE tags, STD-858, on the switches..

SUBTASK 76-11-01-860-010-G00

- (3) For engine 1, open these circuit breakers and install the safety tags:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	1	C01316	ENGINE 1 START LEVER CHAN A
B	2	C01317	ENGINE 1 START LEVER CHAN B
B	3	C01312	ENGINE 1 RUN/PWR
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK
B	8	C01103	ENGINE 1 START VALVE

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 76-11-01-860-011-G00

- (4) For engine 2, open these circuit breakers and install the safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	5	C01313	ENGINE 2 RUN/PWR
B	6	C01318	ENGINE 2 START LEVER CHAN A
B	7	C01319	ENGINE 2 START LEVER CHAN B
C	4	C00154	ENGINE 2 START VALVE
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

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

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F/O Electrical System Panel, P6-3

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

SUBTASK 76-11-01-860-003-G00

- (5) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	1	C00721	AUTOTHROTTLE DC 1

F/O Electrical System Panel, P6-2

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

SUBTASK 76-11-01-860-004-G00



MAKE SURE THAT YOU OPEN THE CIRCUIT BREAKERS FOR THE WEATHER RADAR SYSTEM. THE FORWARD MOVEMENT OF A THRUST LEVER CAN CAUSE THE AUTOMATIC OPERATION OF THE SYSTEM. THE OPERATION OF THIS SYSTEM CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

- (6) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C01678	WEATHER RADAR RT RIGHT

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C00120	WEATHER RADAR RT

SUBTASK 76-11-01-040-003-G00

- (7) Do these steps to deactivate the speed brakes and control lever:

- (a) Move the speed brake lever to the DOWN position.
- (b) Move to the forward bay below the flight compartment:
 - 1) Install the rig pin S/B-1 from the rigging pin kit, SPL-1585, into the forward drum of the speed brake mechanism.

SUBTASK 76-11-01-010-001-G00

- (8) Do this task: Captain and First Officer Seat Removal, TASK 25-11-01-000-801.

SUBTASK 76-11-01-010-002-G00

- (9) Put a protective mat, STD-6378, on the aft electronics panel P8.

NOTE: This will prevent damage to the switches and glass surfaces of the indicators and displays that you removed.

SUBTASK 76-11-01-010-003-G00

- (10) Remove these lightplates to get access to the thrust levers (TASK 76-11-03-000-801-G00).

- (a) The first officers stabilizer trim lightplate.
- (b) The flap indicator lever lightplate.

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AIRCRAFT MAINTENANCE MANUAL****SUBTASK 76-11-01-010-004-G00**

- (11) Remove these retainers and seals to get access to the thrust levers (TASK 76-11-03-400-801-G00).
- (a) The right seal retainer and the right seal
 - (b) The center seal retainer and the center seal
 - (c) The left seal retainer and the left seal.

SUBTASK 76-11-01-020-001-G00

- (12) Remove these covers and stops to get access to the thrust levers (TASK 76-11-03-000-802-G00).
- (a) The forward thrust stop and the aft thrust stop
 - (b) The right side cover assembly forward
 - (c) The center cover assembly.

SUBTASK 76-11-01-010-005-G00

- (13) Get access to the thrust levers in the control stand as follows:
- (a) Remove the bolt [8], washer [8A] and right stabilizer trim wheel [7].
NOTE: Keep the left stabilizer trim wheel attached at this time. This will permit you to turn the assembled levers during removal.
 - 1) Remove the spacer.
NOTE: The spacer is not installed with the countersunk head bolt.
 - (b) Remove five screws [2] and the left upper side panel [1].
 - (c) Remove six screws [2] and the left lower side panel [5].
 - (d) Remove five screws [2] and the right upper side panel [3].
 - (e) Remove six screws [2] and the right lower side panel [4].
 - (f) Remove the stabilizer trim switch panel [10] from the control stand as follows:
 - 1) Remove four screws [9].
 - 2) Apply masking tape, G50314, to prevent damage to the surface of the stabilizer trim switch panel [10].
 - 3) Move the stabilizer trim switch panel [10] on to the protective mat, STD-6378.

G. Thrust Levers Removal**SUBTASK 76-11-01-020-002-G00**

- (1) Disconnect the flap indicator assembly as follows:
- (a) Go to the right side of the control stand.
 - (b) Remove the nut [16], washer [14], and bolt [17] from the lower end of the link assembly [13].
 - (c) Safety the link assembly to the control stand.

SUBTASK 76-11-01-020-003-G00

- (2) Disconnect the flap lever position synchro assembly as follows (Figure 401 (Sheet 3)).
- (a) Remove the nut [18] and bolt [19] from the link assembly [12].
 - (b) Safety the link assembly to the control stand.

SUBTASK 76-11-01-020-004-G00

- (3) Disconnect the stabilizer trim controls as follows (Figure 402 (Sheet 1)).

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- (a) Turn the left trim wheel until you find the link in the trim chain.
NOTE: This will help if it becomes necessary to disconnect the chain during installation.
- (b) Safety the chain [39] to the stabilizer trim sprocket [40].
NOTE: Do not remove the chain from the sprocket.
- (c) Move to the forward bay below the flight compartment.
- (d) Release the tension from the stabilizer control chain (TASK 27-41-00-820-801).

SUBTASK 76-11-01-020-005-G00

- (4) Remove the control shaft components (Figure 401 (Sheet 2)).
 - (a) Remove the bolt [8], washer [8A] and left stabilizer trim wheel [11].
 - 1) Remove the spacer.
NOTE: The spacer is not installed with the countersunk head bolt.
 - (b) Carefully move the stabilizer trim shaft [31] to the left side of the control stand and do these steps at the same time (Figure 402 (Sheet 1)).
 - 1) Remove the bearing [34].
 - 2) Remove the clamp up bushing [33].
 - 3) Be prepared to catch and remove the bushing [35] as the shaft is moved to the left.
NOTE: The bushing is between the bearing and sprocket.
 - 4) Be prepared to catch and move the sprocket and chain.
 - 5) Move the stabilizer trim shaft [31] to the left side until the sprocket [40] clears of the shaft.
 - 6) Move the sprocket and chain to the bottom of the control stand.
 - (c) Reach inside the short shaft [42] from the left side and remove the inside bearing [41] (Figure 402 (Sheet 2)).
 - (d) Remove the stabilizer trim shaft [31] from the control stand.
 - 1) Remove the bearing [38].
 - 2) Remove the long bushing [37].
 - 3) Remove the clamp up bushing [36].

SUBTASK 76-11-01-020-006-G00

- (5) Remove the chain guard [67] as follows (Figure 403 (Sheet 1)).
 - (a) Find the stabilizer trim cutout for the stabilizer trim switch panel [10].
 - (b) Use the 90 degree screwdriver from tool set, SPL-2411, to hold the screw [66].
 - (c) Remove the nut [65], washer [63], and screw [66].
 - (d) Remove the two screws [100] and two washers [103] that attach the flap control switch [99].
 - (e) Remove the screw [101] and washer [103] that attaches the clamp [104].
 - (f) Remove the upper center screw [62] and washer [61].
 - (g) Remove the screw [102] and washer [103] that attaches the clamp [104].
 - (h) Remove the screw [100] and washer [103] that attaches the second flap control switch [99].
 - (i) Remove the forward screw [64] and washer [63].
 - (j) Remove the chain guard [67].

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- (6) Disconnect the electrical harness for Engine 1 thrust lever (Figure 404 (Sheet 1)).
- (a) Disconnect the electrical connector [85].
 - (b) Disconnect the electrical connector [86].
 - (c) Remove the clamp [81] and clamp [104].
 - (d) Disconnect the electrical connector [105].
 - (e) Remove the pins 1 and 2 with wires from the electrical connector [105].
 - (f) Move the wires and connectors through the wire guide.

SUBTASK 76-11-01-020-008-G00

- (7) Disconnect the electrical harness for the Engine 2 thrust lever (Figure 405 (Sheet 1)).
- (a) Disconnect the electrical connector [105].
 - (b) Disconnect the electrical connector [106].
 - (c) Remove the eight clamps [104].
 - (d) Disconnect the electrical connector [85].
 - (e) Remove the pins 11 and 12 and attached wires from the electrical connector [85].
 - (f) Move the wires and connectors thru the wire guide.

SUBTASK 76-11-01-020-009-G00

- (8) Disconnect the applicable thrust lever connecting rod [125] (Figure 406 (Sheet 1)).
- (a) Go into the lower forward access area under the flight compartment.
 - (b) Disconnect the applicable thrust lever connecting rod [125] from the thrust lever resolver.
 - 1) Remove and discard the cotter pin [124].
 - 2) Remove the nut [121], washer [122], and bolt [123].
 - 3) Move the thrust lever connecting rod [125] from the resolver.

SUBTASK 76-11-01-020-010-G00

- (9) Disconnect the thrust lever assemblies as follows (Figure 407 (Sheet 1)):
- (a) Find the bent tab on the lockwasher [143].
 - (b) Use the lockwasher removal tool from the tool set, SPL-2411, to bend the tab.
 - (c) Bend the tab out of the notch in the nut [144].
 - (d) Put one control shaft wrench from the tool set, SPL-2411, to the left side of the long control shaft [146] to hold it in position.
 - (e) Put one control shaft nut wrench from the tool set, SPL-2411, in position and remove the nut [144] from the long control shaft [146].
 - (f) Remove and discard the lockwasher [143].

SUBTASK 76-11-01-020-011-G00

- (10) For engine 1, remove the lever assembly [141] as follows (Figure 407):

**CAUTION**

BE CAREFUL WHEN YOU PUT IN THE DOWEL. IF THE WASHERS DO NOT STAY IN THEIR CORRECT POSITION, DAMAGE CAN OCCUR.

- (a) Put the dowel set, SPL-2409, against the right side end of the long control shaft [146].

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- (b) Hit lightly (carefully tap) on the dowel.

NOTE: This is to move the long control shaft off the control levers.

- 1) Move the dowel until the thrust lever assembly [141] is on the dowel.

NOTE: Do not move the long control shaft from the position it is now in. More movement will let the start lever falls.

- (c) Hold the thrust lever and move the dowel from the lever.

- 1) Stop the dowel movement when you can lift up the lever.

- 2) Make sure that the washers [145] are still held by the dowel.

- (d) Remove the thrust lever assembly [141] through the top of the control stand.

- (e) Remove the two washers [145] between the thrust levers if you will remove thrust lever assembly [142] for engine 2.

NOTE: Do not move the dowel from the position it is in unless you want to remove thrust lever assembly for engine 2.

- 1) Make sure that the washers do not fall into the control stand.

SUBTASK 76-11-01-020-012-G00

- (11) For engine 2, remove the thrust lever assembly [142] as follows (Figure 407):



BE CAREFUL WHEN YOU PUT IN THE DOWEL. IF THE WASHERS DO NOT STAY IN THEIR CORRECT POSITION, DAMAGE CAN OCCUR.

- (a) Put the dowel set, SPL-2409, against the right side end of the long control shaft [146].

- (b) Hit lightly (carefully tap) on the dowel.

NOTE: This is to move the long control shaft off the thrust lever.

- 1) Move the dowel until the thrust lever assembly [142] is on the dowel.

NOTE: Do not move the long control shaft from the position it is now in. More movement will let the thrust lever for engine 1 falls.

- (c) Hold the thrust lever assembly [142] and move the dowel from the lever.

- 1) Stop the dowel movement when you can lift up the lever.

- (d) Make sure that the washers [145] are still held on the long control shaft [146].

- (e) Remove the thrust lever assembly [142] through the top of the control stand.

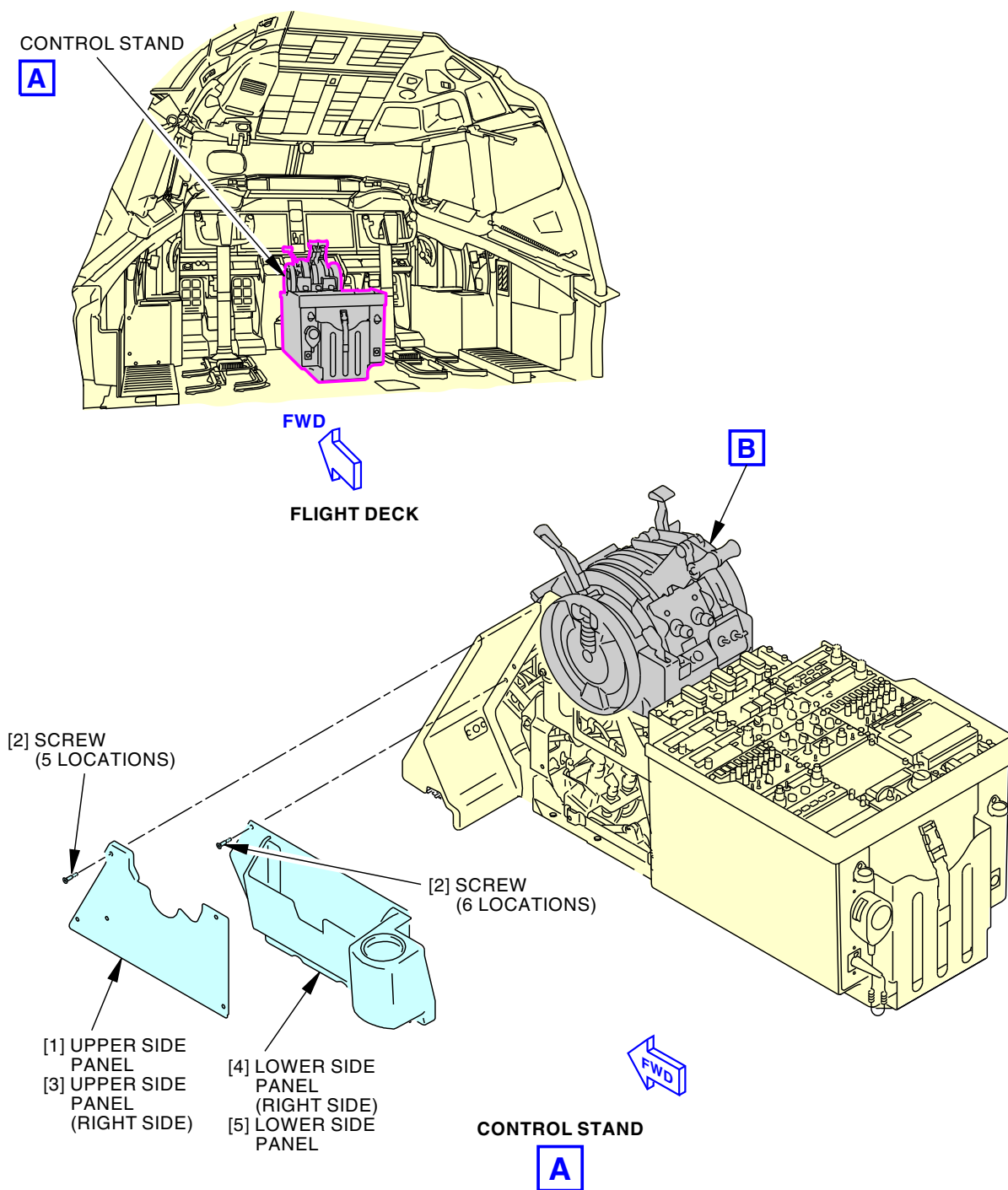
- (f) Remove the two washers [145] between the thrust levers.

NOTE: Do not move the dowel from the position it is in. More movement will let the start lever falls.

- 1) Make sure that the washers do not fall into the control stand.

————— **END OF TASK** —————

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2354988 S00061516343_V2

Control Stand Installation
Figure 401/76-11-01-990-801-G00 (Sheet 1 of 3)

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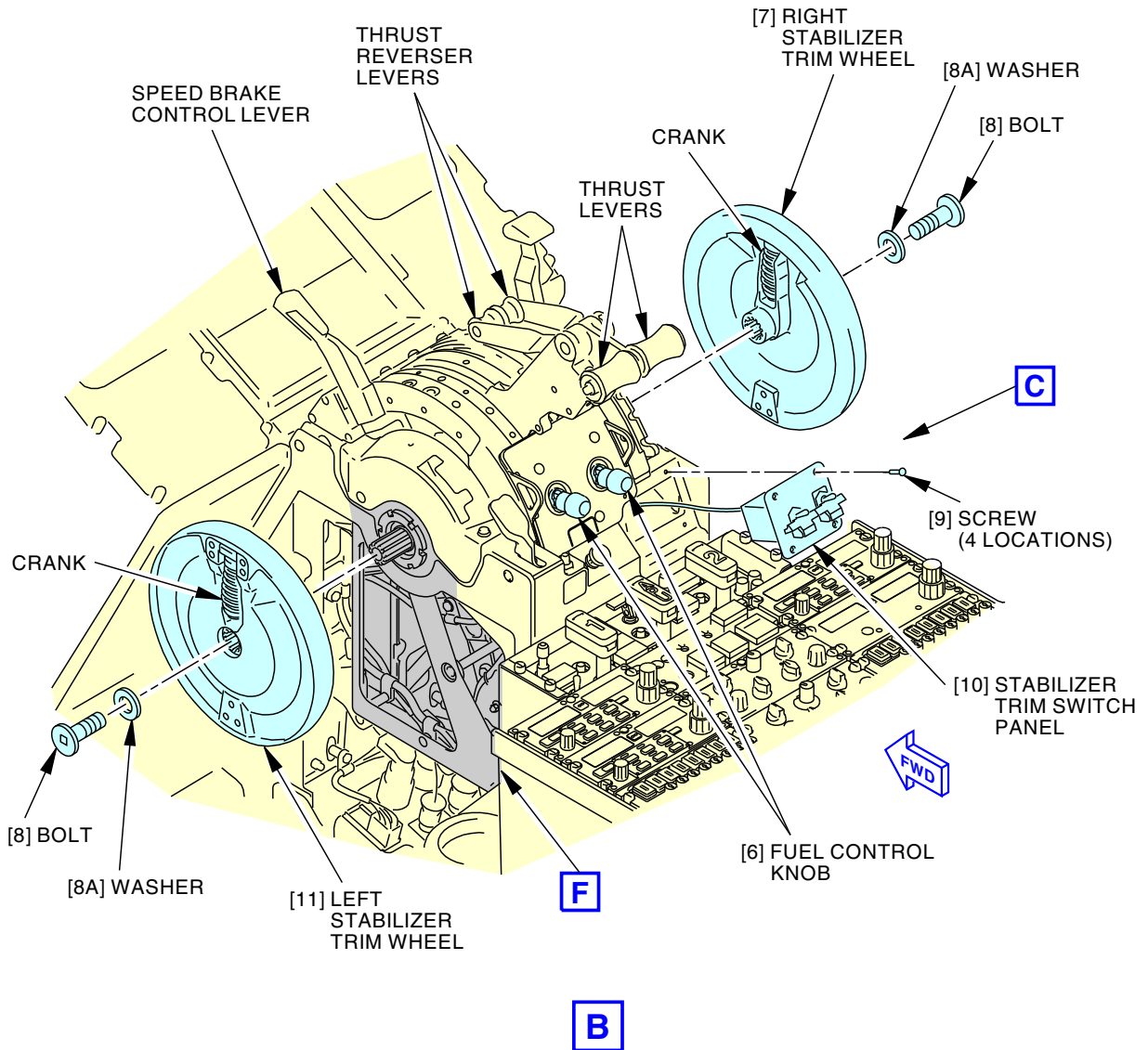
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

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2354989 S00061516344_V2

Control Stand Installation
Figure 401/76-11-01-990-801-G00 (Sheet 2 of 3)

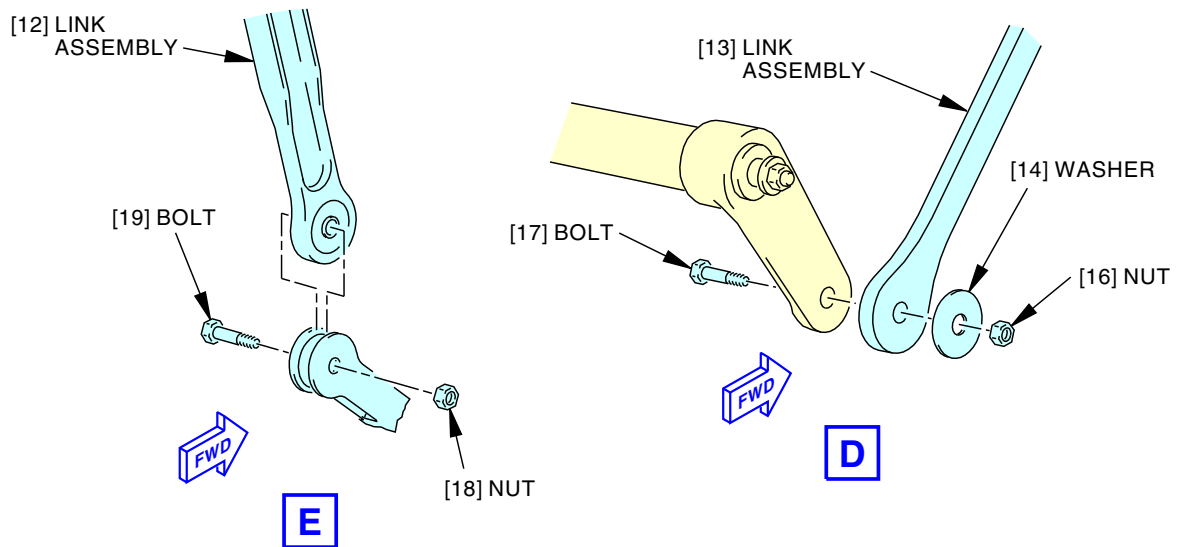
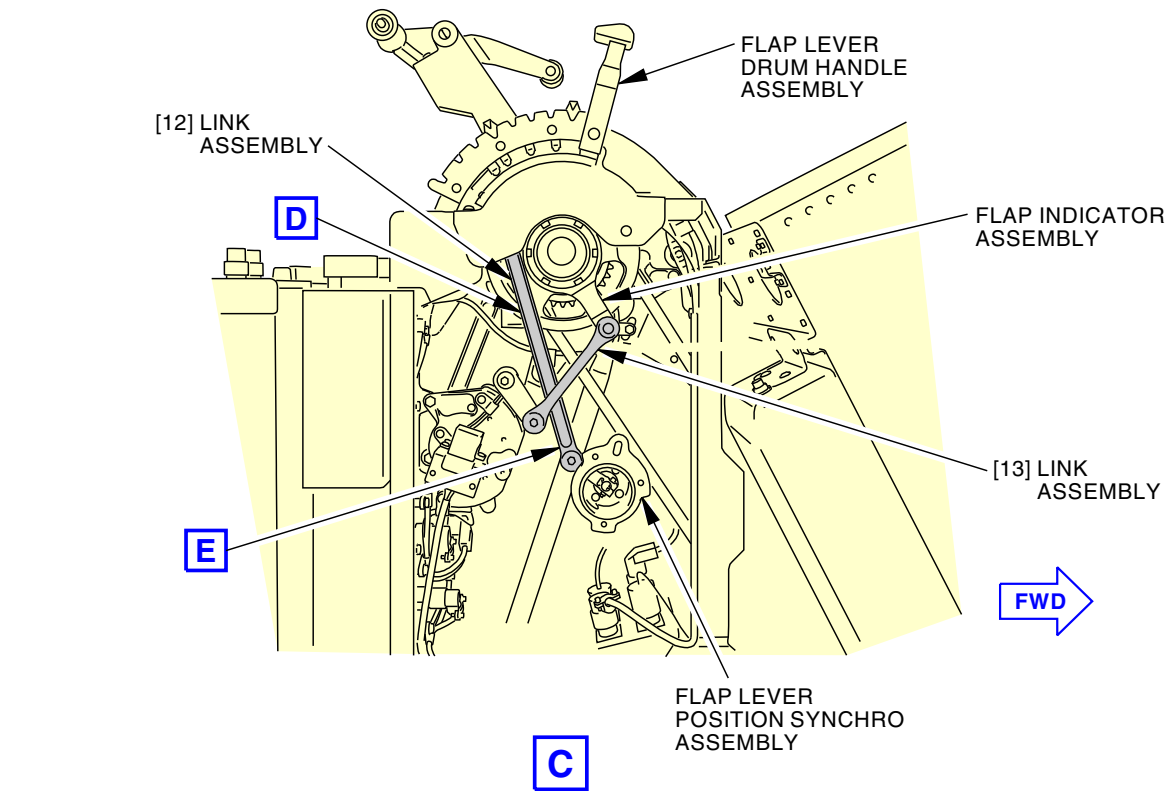
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2354990 S00061516345_V2

Control Stand Installation
Figure 401/76-11-01-990-801-G00 (Sheet 3 of 3)

EFFECTIVITY
SIA ALL

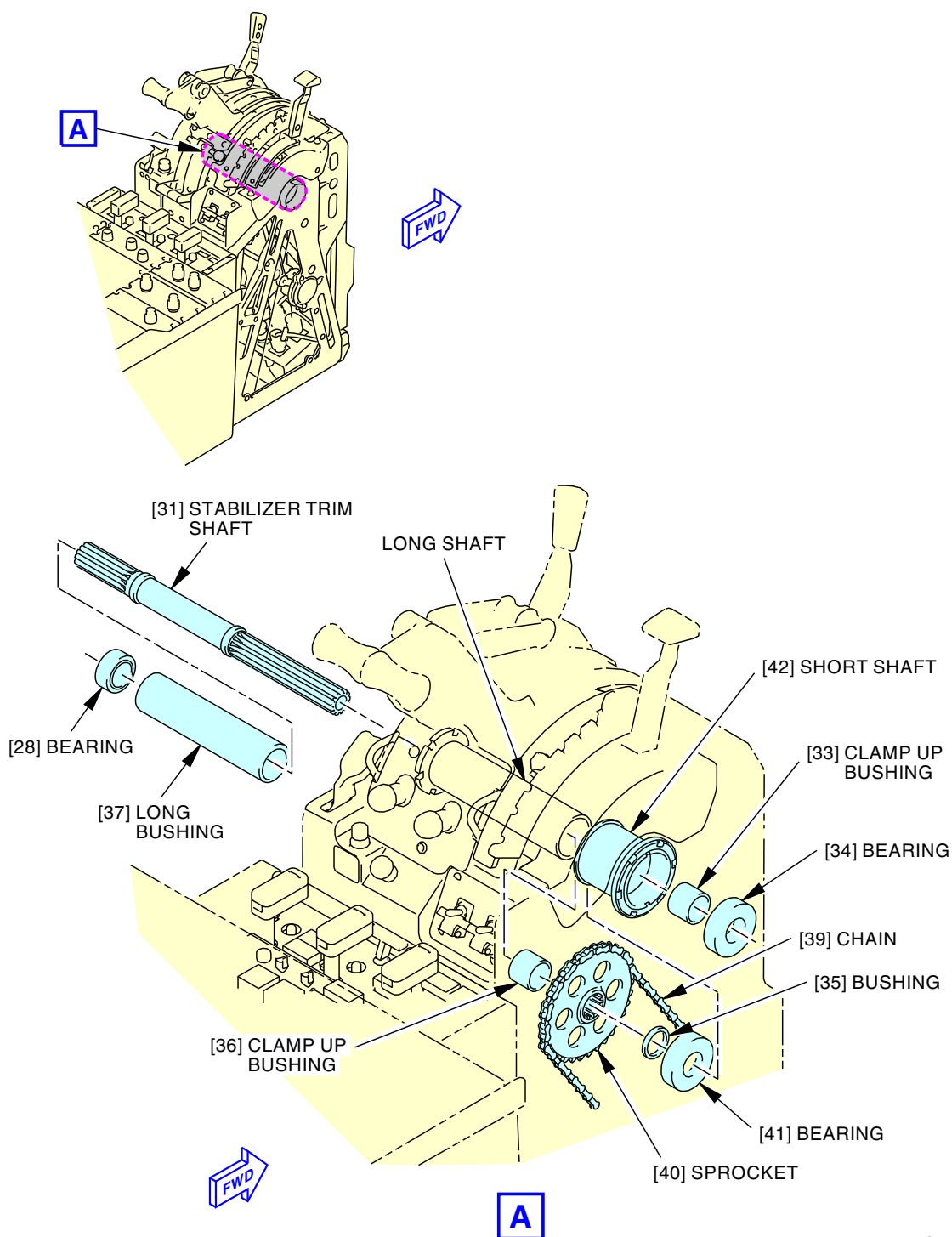
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2354991 S00061516346_V2

Control Shaft Components Installation
Figure 402/76-11-01-990-802-G00 (Sheet 1 of 2)

EFFECTIVITY
SIA ALL

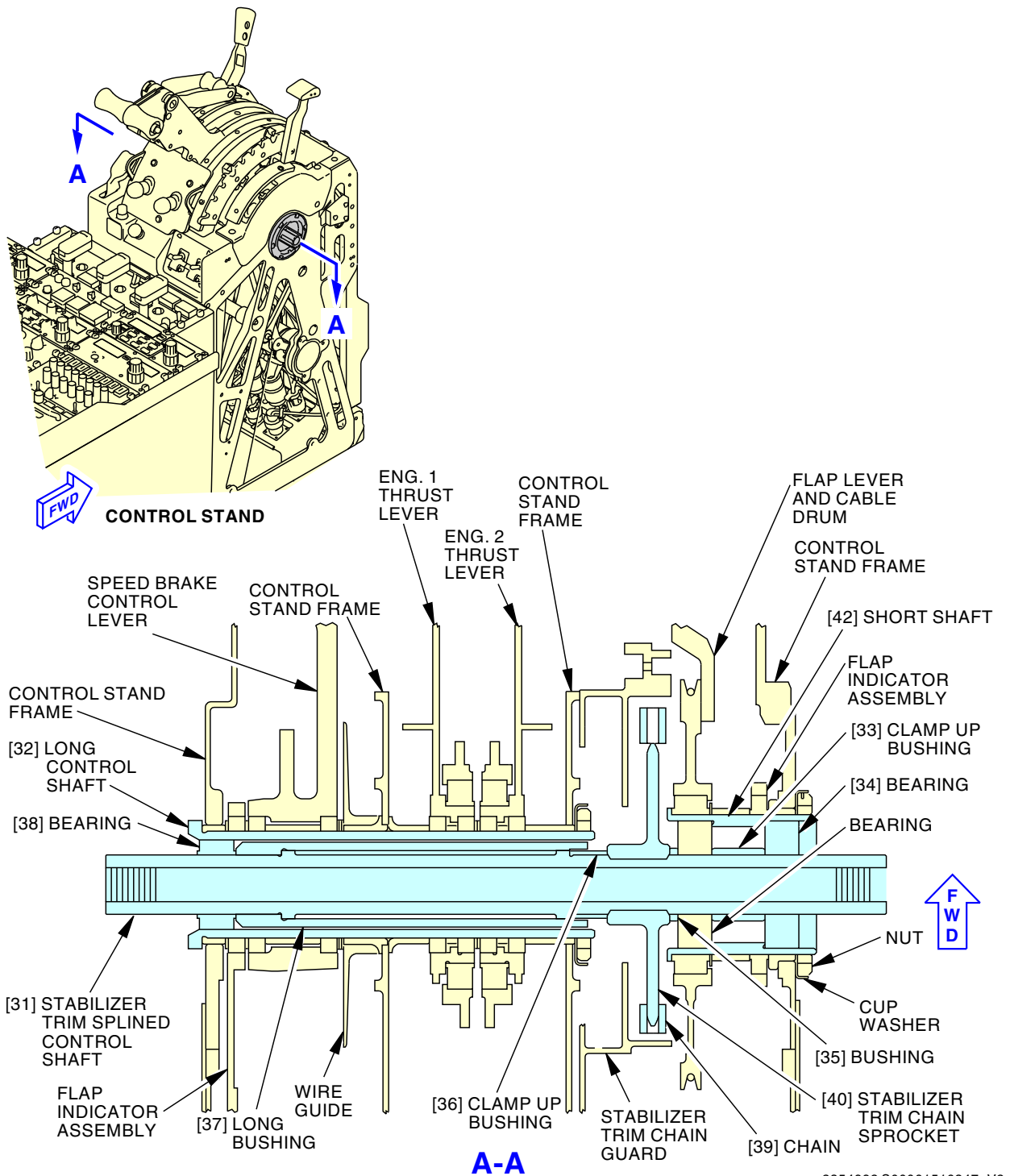
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Control Shaft Components Installation
Figure 402/76-11-01-990-802-G00 (Sheet 2 of 2)

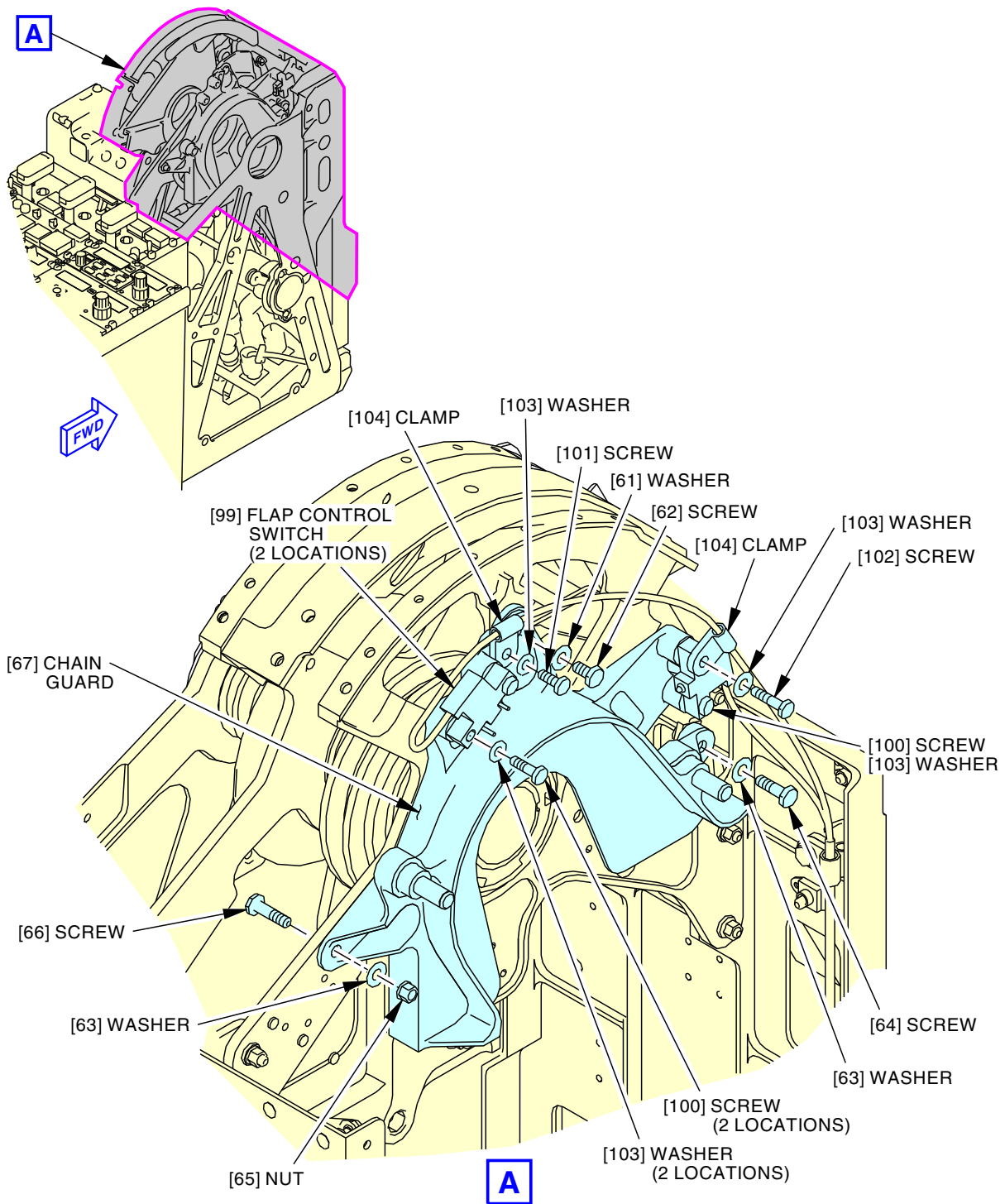
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2354993 S00061516348_V2

Chain Guard Assembly Installation
Figure 403/76-11-01-990-803-G00

EFFECTIVITY
SIA ALL

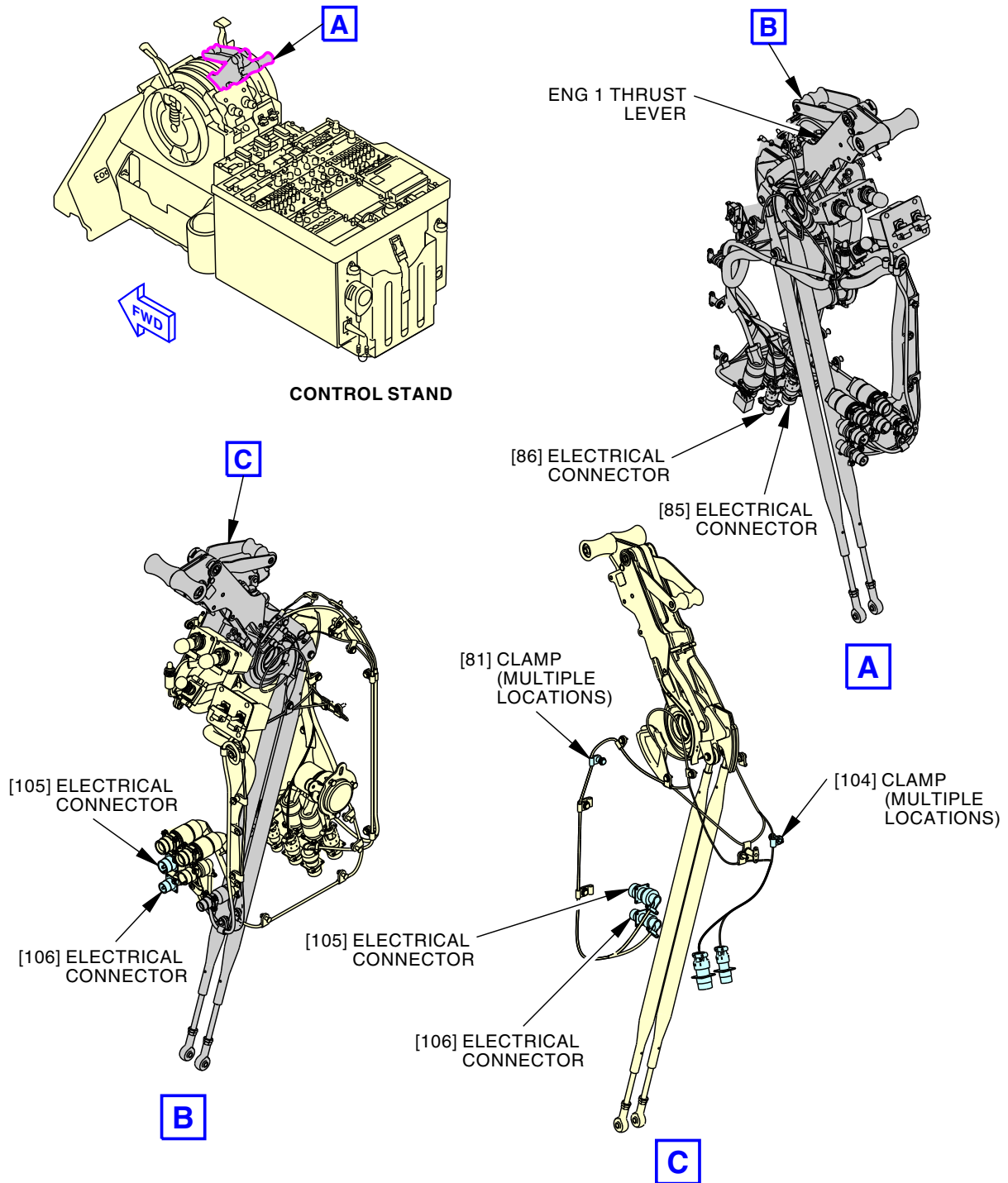
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2354994 S00061516349_V2

Engine 1 Thrust Lever Electrical Harness Installation
Figure 404/76-11-01-990-804-G00

EFFECTIVITY
SIA ALL

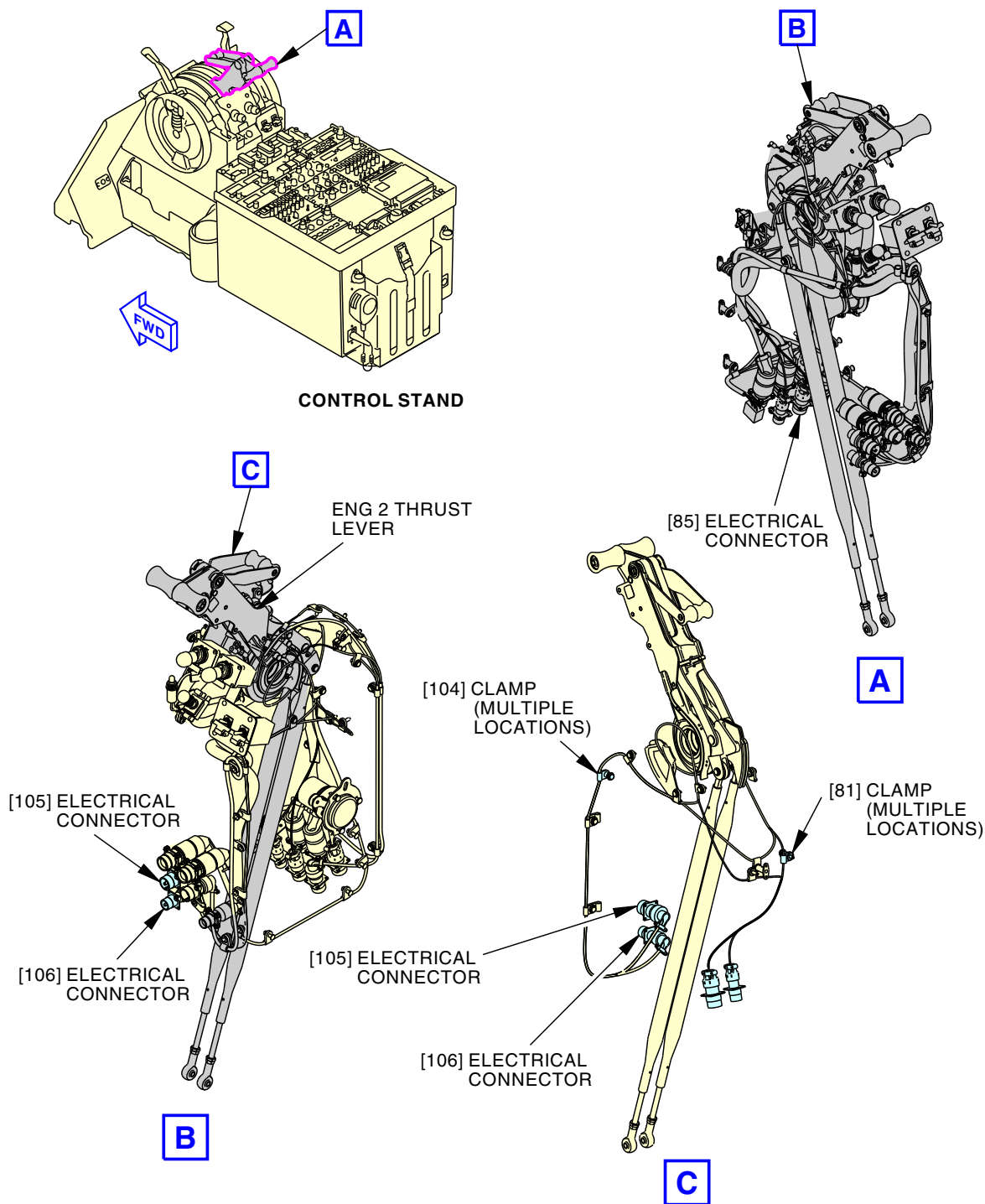
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2354995 S00061516350_V2

Engine 2 Thrust Lever Electrical Harness Installation
Figure 405/76-11-01-990-805-G00

EFFECTIVITY
SIA ALL

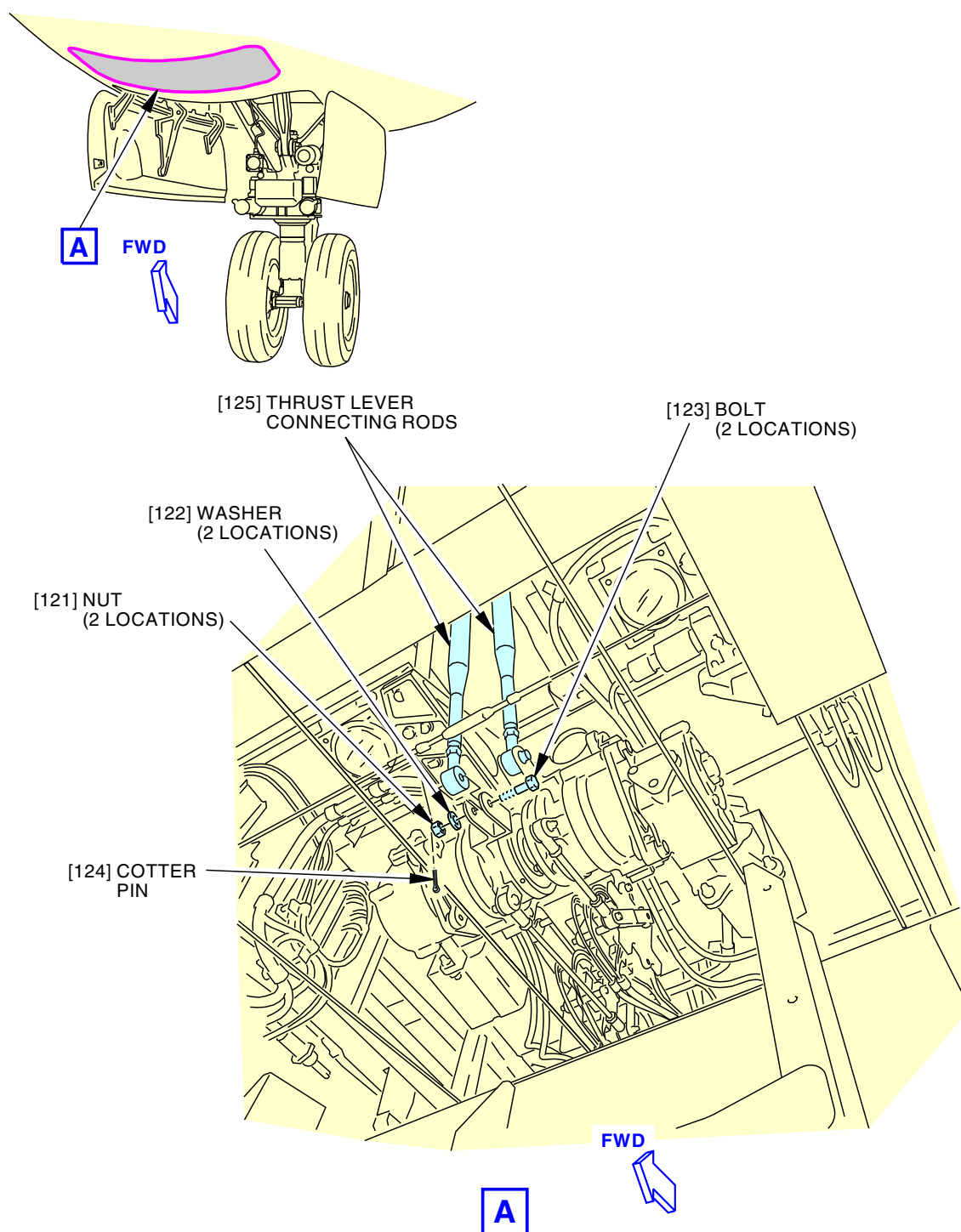
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2354996 S00061516351_V1

Thrust Lever Connecting Rod Installation
Figure 406/76-11-01-990-806-G00

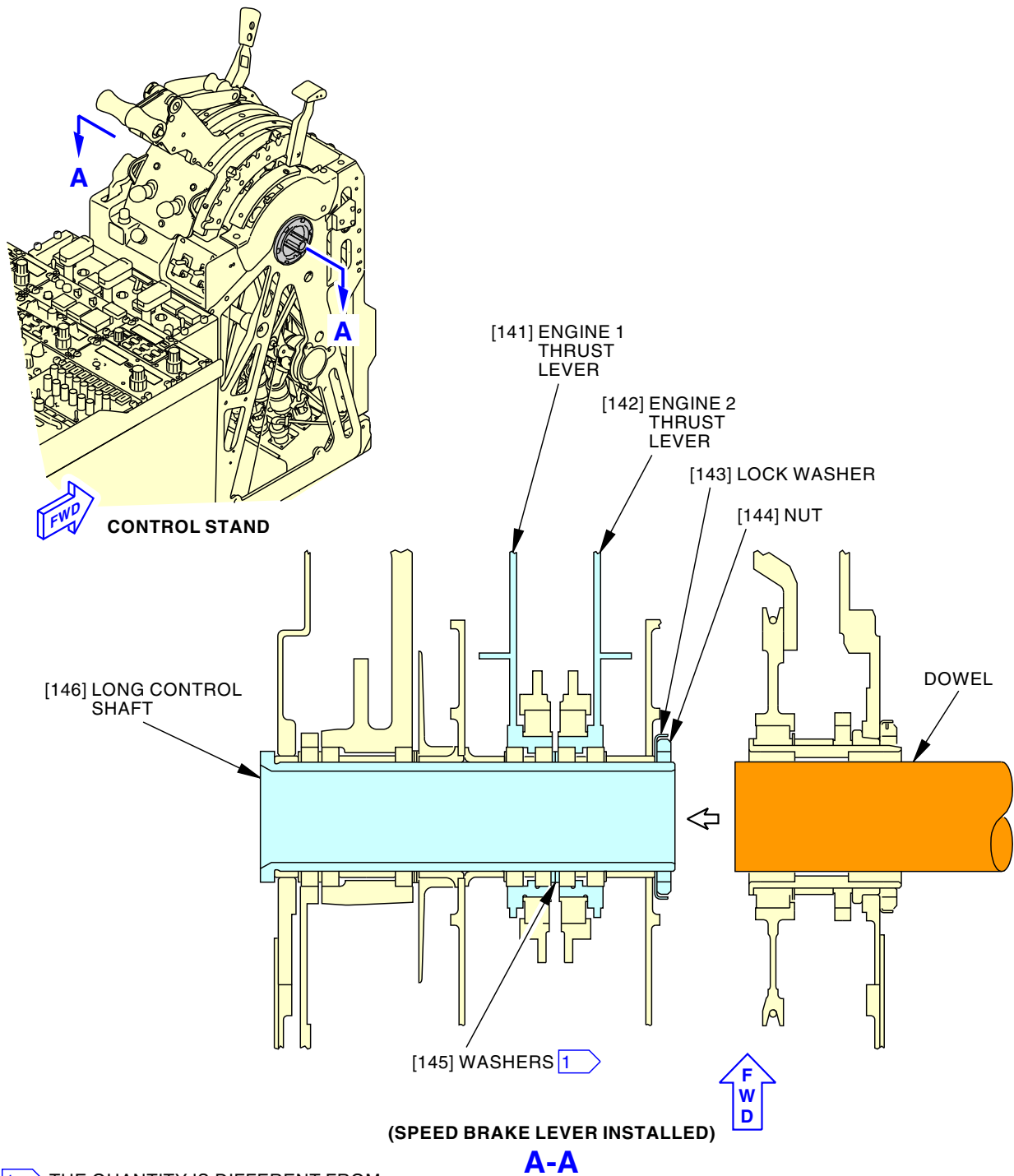
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1 THE QUANTITY IS DIFFERENT FROM
AIRPLANE TO AIRPLANE

2354997 S00061516352_V2

Thrust Lever Installation
Figure 407/76-11-01-990-807-G00 (Sheet 1 of 2)

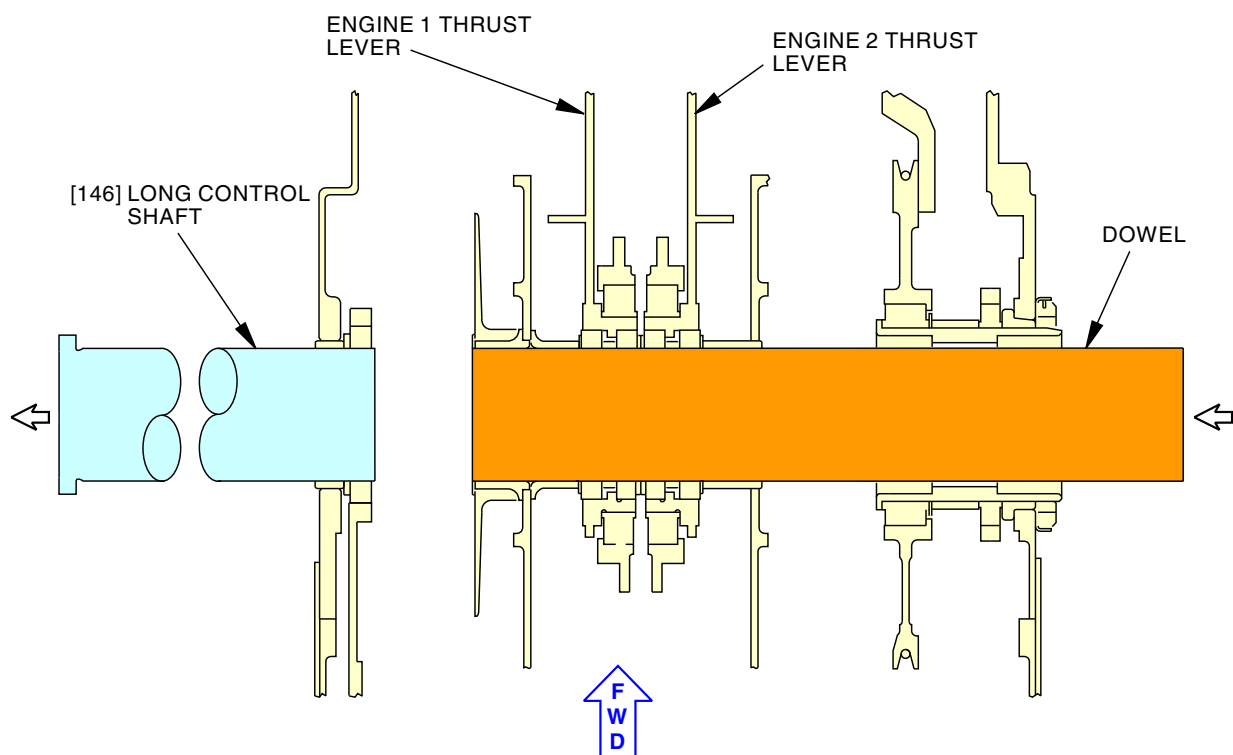
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(SPEED BRAKE LEVER REMOVED)

A-A

2354998 S00061516353_V2

Thrust Lever Installation
Figure 407/76-11-01-990-807-G00 (Sheet 2 of 2)

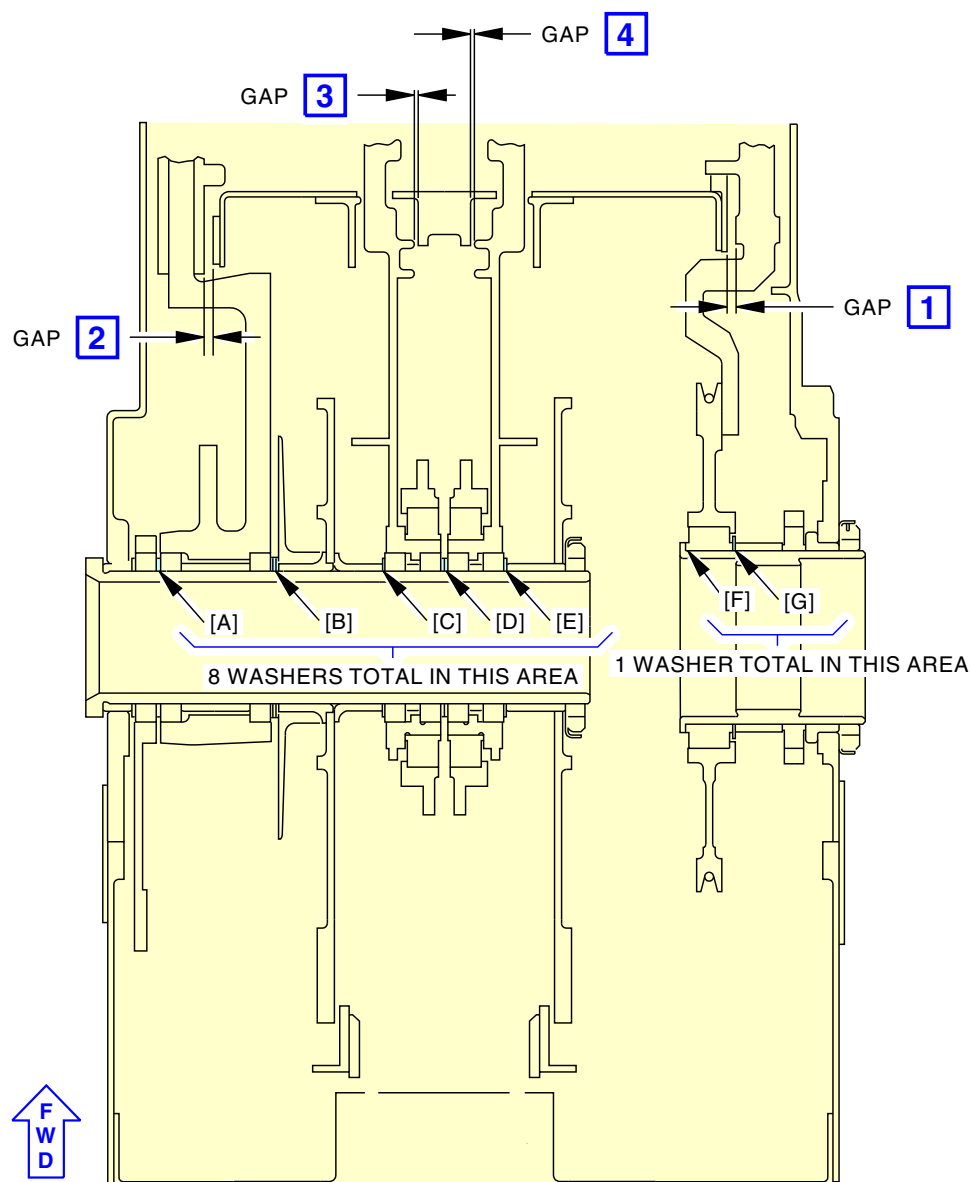
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2354999 S00061516354_V2

Control Shaft Washer (Shim) Limits
Figure 408/76-11-01-990-808-G00 (Sheet 1 of 3)

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GAP LOCATION	GAP LIMIT	ACTUAL MEASUREMENT	ADJUSTMENT NECESSARY TO GET GAP LIMIT (REFER TO TABLE B FOR SHIM QUANTITY)
1 FLAP LEVER	0.060 MIN	< 0.060	MOVE ONE WASHER FROM [G] TO [F]
2 SPEEDBRAKE LEVER	0.030-0.060	> 0.100	MOVE THREE WASHERS FROM [B] TO [A]
		0.080-0.100	MOVE TWO WASHERS FROM [B] TO [A]
		0.060-0.080	MOVE ONE WASHER FROM [B] TO [A]
		< 0.030	MOVE ONE WASHER FROM [A] TO [B]
3 THRUST LEVER ENGINE 1	0.025-0.054	> 0.054	MOVE ONE WASHER FROM [D] TO [C]
		< 0.025	MOVE ONE WASHER FROM [C] TO [D]
4 THRUST LEVER ENGINE 2	0.0325-0.0540	> 0.0540	MOVE ONE WASHER FROM [D] TO [E]
		< 0.0325	MOVE ONE WASHER FROM [E] TO [D]

**CONTROL SHAFT ADJUSTMENT GAP LIMITS
TABLE A**

2355000 S00061516355_V2

**Control Shaft Washer (Shim) Limits
Figure 408/76-11-01-990-808-G00 (Sheet 2 of 3)**

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LOCATION	QUANTITY OF WASHERS/SHIMS	
	MAX	MIN
[A]	4	0
[B]	4	0
[C]	2	0
[D]	4	1
[E]	2	0
[F]	1	0
[G]	1	0

**CONTROL SHAFT ADJUSTMENT WASHER/SHIM QUANTITY LIMITS
TABLE B**

2355001 S00061516356_V2

**Control Shaft Washer (Shim) Limits
Figure 408/76-11-01-990-808-G00 (Sheet 3 of 3)****EFFECTIVITY**
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TASK 76-11-01-420-801-G00**3. Thrust Levers - Installation**

(Figure 401, Figure 402, Figure 403, Figure 404, Figure 405, Figure 406, Figure 407 and Figure 408)

A. General

(1) This task gives the instructions to install the thrust levers into the control stand assembly.

B. References

Reference	Title
25-11-01-400-801	Captain and First Officer Seat Installation (P/B 401)
27-41-00-820-801	Stabilizer Control Cable and Chain - Adjustment (P/B 501)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-62-00-820-801	Speed Brake Control Lever Adjustment (P/B 501)
76-11-03-400-802-G00	Control Stand Seal, Spacer and Retainer Installation (P/B 401)
76-11-03-400-804-G00	Control Stand Cover and Stop Installation (P/B 401)
76-11-03-420-801-G00	Control Stand Lightplate - Installation (P/B 401)
76-11-05-820-801-G00	Thrust Lever Angle Resolver Adjustment (P/B 501)

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-1585	Kit - Rigging Pin Part #: F70207-151 Supplier: 81205
SPL-2409	Dowel Set - Thrust Lever, Control Stand Part #: F80195-1 Supplier: 81205
SPL-2411	Tool Set - Control Stand Disassembly Part #: C76002-26 Supplier: 81205
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
D00013	Grease - Aircraft And Instrument Grease	MIL-PRF-23827 (NATO G-354) (Supersedes MIL-G-23827)

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
124	Cotter pin	22-31-00-01-005	SIA ALL
143	Lockwasher	76-11-01-01-470	SIA ALL

F. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
211	Flight Compartment - Left
212	Flight Compartment - Right

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G. Thrust levers Installation

SUBTASK 76-11-01-420-001-G00

- (1) For engine 1, install the thrust lever assembly [141] as follows (Figure 407):
- (a) Apply grease, D00013, to the inside of the thrust lever.
 - (b) Put the lever assembly [141] into the control stand.
 - 1) Apply a thin coat of grease, D00013, to each side of the washer that you will install.
NOTE: The application of grease, D00013, will help to hold the washers to the thrust lever.
 - 2) Make sure that the washers [145] are in their position on the dowel between the thrust levers.
 - 3) Hold the thrust lever assembly [141] in the correct position.
 - 4) Move the long control shaft [146] through the thrust lever.
 - 5) Move the long control shaft [146] through the washers [145].
 - 6) Put the long control shaft [146] against the right side end of the dowel set, SPL-2409.
 - 7) Move the thrust lever forward and aft.
NOTE: The levers and washers must move freely when you move them from the dowel to the long control shaft.

**CAUTION**

BE CAREFUL WHEN YOU MOVE THE CONTROL SHAFT. IF THE WASHERS DO NOT STAY IN THEIR CORRECT POSITION, DAMAGE CAN OCCUR.

- (c) Move the long control shaft [146] and dowel to the right until all of the lever assemblies and washers [145] are on the long control shaft [146].
- (d) Remove the dowel.

SUBTASK 76-11-01-420-002-G00

- (2) For engine 2, install the thrust lever assembly [142] as follows (Figure 407):
- (a) Apply grease, D00013, to the inside of the thrust lever assembly [142].
 - 1) Apply a thin coat of grease, D00013, to each side of the washers [145] that you will install.
NOTE: The application of grease, D00013, will help to hold the washers to the thrust lever.
 - (b) Put the thrust lever assembly [142] into the control stand.
NOTE: Make sure that the connecting rod and the wire guide are in the correct install position.
 - 1) Make sure that the washers [145] are in their position on the long control shaft [146] between the two thrust levers.
NOTE: Two washers should be between the two thrust levers.
 - 2) Hold the thrust lever assembly [142] in the correct position.
 - 3) Move the long control shaft [146] through the thrust lever assembly [142].
 - 4) Put the long control shaft [146] against the right side end of the dowel set, SPL-2409.

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- 5) Move the thrust lever forward and aft.

NOTE: The levers and washers must move freely when you move them from the dowel to the long control shaft.



BE CAREFUL WHEN YOU MOVE THE CONTROL SHAFT. IF THE WASHERS DO NOT STAY IN THEIR CORRECT POSITION, DAMAGE CAN OCCUR.

- (c) Move the long control shaft and dowel to the right until all of the lever assemblies and the washers [145] are on the long control shaft [146].
- (d) Remove the dowel.

SUBTASK 76-11-01-420-003-G00

- (3) Lock the thrust levers as follows (Figure 407 (Sheet 1)):

- (a) Set the keyway on the long control shaft [146] at the top.
- (b) Install a new lockwasher [143].

NOTE: Align the key tab on the lockwasher with the keyway on the long shaft. Do not bend the tab at this time.

- (c) Put one control shaft wrench from tool set, SPL-2411, on the left side of the long control shaft [146] to hold it in position.
- (d) Install the nut [144].
- 1) Use one control shaft nut wrench from tool set, SPL-2411, to tighten the nut [144].
- 2) Tighten the nut [144] to 100 in-lb (11.3 N·m) – 150 in-lb (16.9 N·m).

SUBTASK 76-11-01-020-013-G00

- (4) Measure the gaps 3 and 4 after you installed the assembly (Figure 408):

- (a) If the gaps are not in the limits, follow the instructions in table A and B to get the correct limits:
- 1) Use the applicable steps in the removal and installation tasks to adjust the washers [145] on the long control shaft [146].

SUBTASK 76-11-01-420-004-G00

- (5) After you set the control levers assemblies correctly, lock the assemblies in their position as follows (Figure 407):

- (a) Make sure that the nut [144] is tighten to 100 in-lb (11.3 N·m) – 150 in-lb (16.9 N·m).
- (b) Bend the rim of the lockwasher [143] into one of the notches of the nut [144] as follows:
- 1) Use a chisel or lockwasher break tool from tool set, SPL-2411, to bend the rim of the lockwasher [143].
- 2) Make sure that the bend in the lockwasher is not more than 0.15 in. (3.81 mm) into the notch on the nut [144].
- (c) Move the thrust levers down against the idle stop.

SUBTASK 76-11-01-410-001-G00

- (6) Connect the thrust lever connecting rods [125] as follows (Figure 406):

- (a) Go into the lower forward access area below the flight compartment.
- (b) Put the rod for engine 1 in its position in the thrust lever resolver.
- (c) Install the bolt [123] with its head on the inboard side of the rod clevis.

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- (d) Install the nut [121] and the washer [122].
 - 1) Install a new cotter pin [124].
- (e) Set the thrust lever rod for engine 2 to the thrust lever resolver as follows:
 - 1) Install the bolt [123] with its head on the inboard side of the rod clevis.
 - 2) Install the nut [121] and the washer [122].
 - 3) Install a new cotter pin [124].

SUBTASK 76-11-01-420-005-G00

- (7) For the engine 2 thrust lever, connect the electrical harness (Figure 405).
 - (a) Install pin and wire (W0049-0003-22) into location 11 in the electrical connector [85].
 - (b) Install pin and wire (W0049-0004-22) into location 12 in the electrical connector [85].
 - (c) Connect the electrical connector [85].
 - (d) Install the clamps [81] and clamps [104].
 - (e) Connect the electrical connector [105].
 - (f) Connect the electrical connector [106]

SUBTASK 76-11-01-400-001-G00

- (8) For the engine 1 thrust lever, connect the electrical harness (Figure 404).
 - (a) Install pin and wire (W0051-0001-22) into location 1 in the electrical connector [105].
 - (b) Install pin and wire (W0051-0002-22) into location 2 in the electrical connector [105].
 - (c) Connect the electrical connector [105].
 - (d) Install the clamps [81] and clamps [104].
 - (e) Connect the electrical connector [85].
 - (f) Connect the electrical connector [86].

SUBTASK 76-11-01-020-014-G00

- (9) Install the chain guard as follows (Figure 403):
 - (a) Put the chain guard [67] in its position.
 - (b) Install the forward screw [64] and washer [63].
 - (c) Install the screw [100] and washer [103] that attaches the second flap control switch [99].
 - (d) Install the screw [102] and washer [103] that attaches the clamp [104].
 - (e) Install the screw [62] and washer [61].
 - (f) Install the screw [101] and washer [103] that attaches the clamp [104].
 - (g) Install the two screws [100] and two washers [103] that attach the flap control switch [99].
 - (h) Install the nut [65], washer [63], and screw [66].
 - (i) Use the 90 degree screwdriver from tool set, SPL-2411, and hold the screw [66].
 - (j) Install the nut [65] and washer [63].

SUBTASK 76-11-01-020-015-G00

- (10) Install the control shaft components as follows (Figure 402):
 - (a) Install the clamp up bushing [36] and long bushing [37] on the stabilizer trim shaft [31].
NOTE: It is necessary to put the clamp up bushing on the end with the longest splines.
 - (b) Put the bearing [41] into the inside end of the short shaft.

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- (c) Move the stabilizer trim shaft [31] into the control stand from the left side.
NOTE: It is necessary to put the end of the shaft with the longest splines in first.
- (d) Move the sprocket [40] and chain [39] up from the bottom of the control stand.
- (e) Put the sprocket [40] on the splined end of the stabilizer trim shaft [31].
 - 1) Move the control shaft through the chain sprocket.
- (f) Put the bushing [35] on the splined end of the stabilizer trim shaft [31].
 - 1) Move the shaft through the bushing [35].
- (g) Move the shaft through the bearing [41] until the end is moved out through the short shaft [42].
- (h) Install the bearing [38] on the left side of the stabilizer trim shaft [31].
- (i) Install the clamp up bushing [33] on the right side of the stabilizer trim shaft [31].
- (j) Install the bearing [34] on the right side of the stabilizer trim shaft [31].
- (k) Lightly tap the stabilizer trim shaft [31] from the left side.

NOTE: Do this task to make sure that the assembled parts are tight and in the correct position.

SUBTASK 76-11-01-420-006-G00

- (11) Activate and adjust the stabilizer trim assembly as follows:
 - (a) Remove the temporary wire tie from the chain [39] and the sprocket [40].
 - (b) Adjust the stabilizer control chain (TASK 27-41-00-820-801).

SUBTASK 76-11-01-410-002-G00

- (12) Connect the flap lever syncro assembly as follows (Figure 401):
 - (a) Put the link assembly [12] in the clevis for the flap lever position syncro assembly.
 - (b) Install the nut [18] and bolt [19].

SUBTASK 76-11-01-420-007-G00

- (13) Connect the stabilizer trim indicator as follows (Figure 401 (Sheet 3)):
 - (a) Put the link assembly [13] to the arm.
 - (b) Install the nut [16], washer [14], and bolt [17].

SUBTASK 76-11-01-040-004-G00

- (14) Activate the speed brake lever as follows:
 - (a) Go into the access area under the forward flight compartment floor.
 - (b) Remove the rig pin from the rigging pin kit, SPL-1585, from the forward drum of the speed break assembly.
 - (c) Do this task: Speed Brake Control Lever Adjustment, TASK 27-62-00-820-801.

SUBTASK 76-11-01-010-006-G00

- (15) Install the access covers on to the control stand as follows (Figure 401 (Sheet 1)):
 - (a) Install the left upper side panel [1] with the five screws [2].
 - (b) Install the left lower side panel [5] with the six screws [2].
 - (c) Install the right upper side panel [3].with the five screws [2].
 - (d) Install the right lower side panel [4] with the six screws [2].

SUBTASK 76-11-01-420-008-G00

- (16) Install the wheel assemblies for the stabilizer trim as follows:

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- (a) Install the right stabilizer trim wheel [7].
 - 1) Install the washer [8A] and right bolt [8].
 - 2) Tighten the bolt [8] to 150 in-lb (16.9 N·m) – 170 in-lb (19.2 N·m).
 - 3) Do a check of the run-on torque of the bolt [8].
 - 4) Tighten the bolt [8] to 150 in-lb (16.9 N·m) – 160 in-lb (18.1 N·m) more than the run-on torque.
- (b) Install the left stabilizer trim wheel [11] as follows:
 - 1) Put the left stabilizer trim wheel [11] in its position.
 - a) For the unlocked trim wheel and shaft, set the crank of the left trim wheel 75 to 105 degrees away from the setting of the crank on the right trim wheel.
 - NOTE:** This can be set in either direction.
 - 2) Install the left washer [8A] and bolt [8].
 - 3) Tighten the bolt to 150 in-lb (16.9 N·m) – 170 in-lb (19.2 N·m).
 - 4) Do a check of the run-on torque of the bolt [8].
 - 5) Tighten the bolt [8] to 150 in-lb (16.9 N·m) – 160 in-lb (18.1 N·m) more than the run-on torque.

SUBTASK 76-11-01-200-001-G00

- (17) Do a visual check of the assembly as follows:
 - (a) Move each control through its usual range.
 - (b) Make sure that the electrical bundles do not touch parts.

SUBTASK 76-11-01-410-003-G00

- (18) Install the stabilizer trim switch panel [10] as follows (Figure 401 (Sheet 2)):
 - (a) Put the stabilizer trim switch panel [10] on the control stand.
 - (b) Install the four screws [9].

SUBTASK 76-11-01-700-001-G00

- (19) Do this task: Thrust Lever Angle Resolver Adjustment, TASK 76-11-05-820-801-G00.

SUBTASK 76-11-01-410-004-G00

- (20) Install these covers and stops (TASK 76-11-03-400-804-G00).
 - (a) The right cover and the right side cover assembly
 - (b) The center cover
 - (c) The forward thrust stop and the aft thrust stop.

SUBTASK 76-11-01-410-006-G00

- (21) Install these seals and retainers (TASK 76-11-03-400-802-G00).
 - (a) The right seal retainer and the right seal
 - (b) The center seal retainer and the center seal
 - (c) The left seal retainer and the left seal.

SUBTASK 76-11-01-410-007-G00

- (22) Install these lightplates (TASK 76-11-03-420-801-G00).
 - (a) The first officers stabilizer trim lightplate
 - (b) The flap lever lightplate.

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SUBTASK 76-11-01-410-008-G00

(23) Do this task: Captain and First Officer Seat Installation, TASK 25-11-01-400-801.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 76-11-01-860-005-G00

(1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C01678	WEATHER RADAR RT RIGHT

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C00120	WEATHER RADAR RT

SUBTASK 76-11-01-860-012-G00

(2) For Engine 1, remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	1	C01316	ENGINE 1 START LEVER CHAN A
B	2	C01317	ENGINE 1 START LEVER CHAN B
B	3	C01312	ENGINE 1 RUN/PWR
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK
B	8	C01103	ENGINE 1 START VALVE

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 76-11-01-860-013-G00

(3) For Engine 2, remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	5	C01313	ENGINE 2 RUN/PWR
B	6	C01318	ENGINE 2 START LEVER CHAN A
B	7	C01319	ENGINE 2 START LEVER CHAN B
C	4	C00154	ENGINE 2 START VALVE
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT

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(Continued)

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

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 76-11-01-860-008-G00

- (4) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	1	C00721	AUTOTHROTTLE DC 1

F/O Electrical System Panel, P6-2

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

SUBTASK 76-11-01-040-005-G00

- (5) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

SUBTASK 76-11-01-860-009-G00

- (6) Remove the DO NOT OPERATE tags, STD-858, from the engine start panel.

———— **END OF TASK** ————

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START LEVER LAMPS - REMOVAL/INSTALLATION

1. General

A. This procedure contains two tasks:

- (1) The removal of the Start Lever Lamps.
- (2) The Installation of the Start Lever Lamps.

TASK 76-11-02-000-801-G00

2. Start Lever Lamps Removal

(Figure 201)

A. General

- (1) This task includes the steps to remove the Start Lever Lamps.
- (2) The lamps are installed in the Start Lever Caps.

B. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Prepare for the Removal

SUBTASK 76-11-02-020-024-G00

- (1) For engine 1, open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	1	C01316	ENGINE 1 START LEVER CHAN A
B	2	C01317	ENGINE 1 START LEVER CHAN B

- (2) For engine 2, open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	6	C01318	ENGINE 2 START LEVER CHAN A
B	7	C01319	ENGINE 2 START LEVER CHAN B

D. Lamp Removal

SUBTASK 76-11-02-020-025-G00



YOU MUST BE CAREFUL WHEN YOU REMOVE THE COMPONENTS FROM THE CONTROL STAND. DAMAGE TO THE SWITCHES, LIGHTS, LIGHTPLATES, NUTPLATES, WIRE BUNDLES AND THE PAINTED FINISH ON ALL THE PARTS CAN OCCUR.

- (1) Remove the lens cap [2] from the start lever [1] by turning it counterclockwise.
- (2) Remove the LED light [3] from the lens cap [2].

———— **END OF TASK** ————

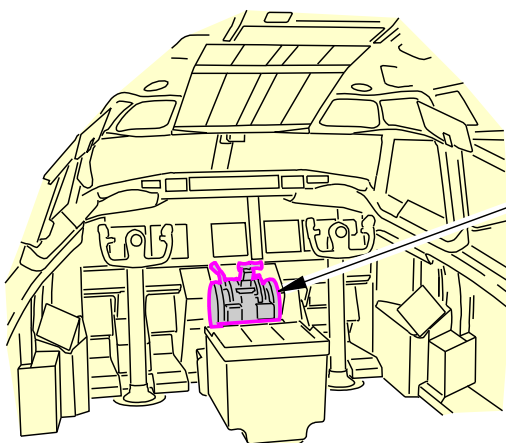
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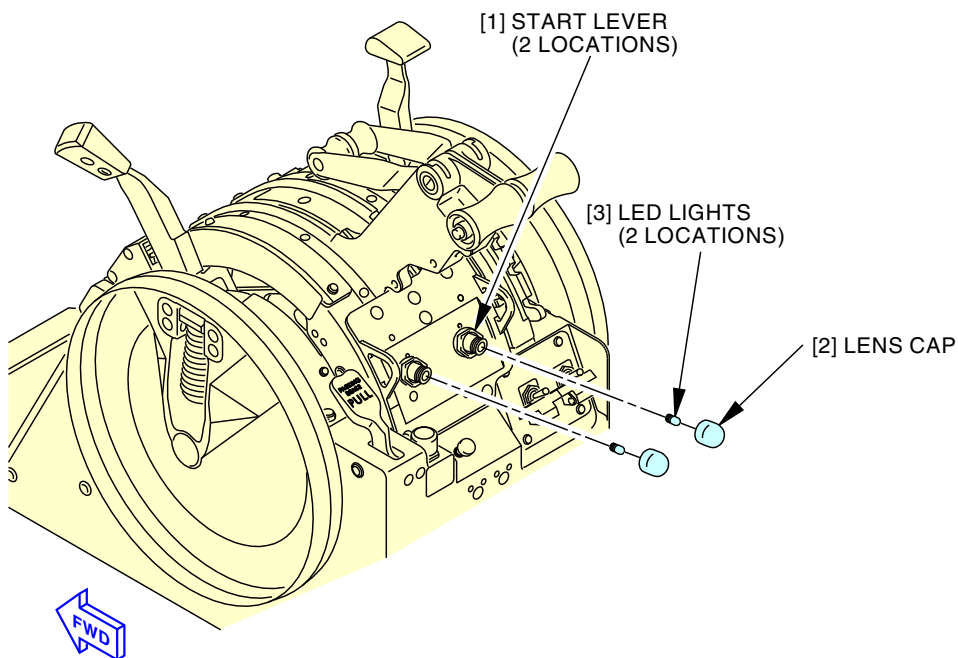
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FLIGHT STAND



CONTROL STAND

A

2793654 S0000636564_V1

 Start Lever Lamps Installation
 Figure 201/76-11-02-990-808-G00 (Sheet 1 of 2)

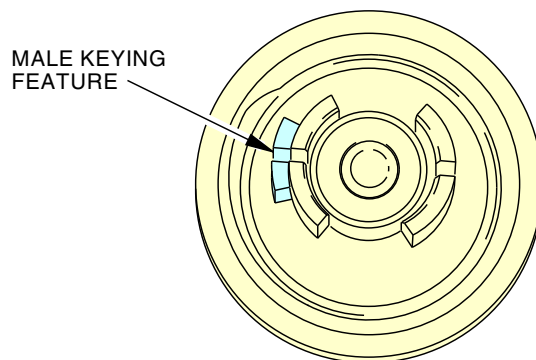
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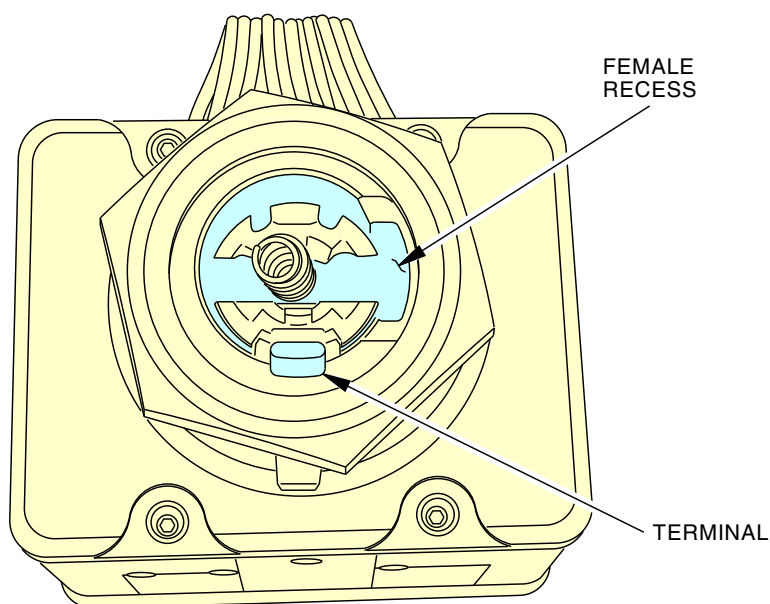
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MALE KEYING FEATURE LOCATION



SWITCH FEMALE RECESS LOCATION

2793655 S0000636565_V1

Start Lever Lamps Installation
Figure 201/76-11-02-990-808-G00 (Sheet 2 of 2)

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TASK 76-11-02-420-802-G00**3. Start Lever Lamps Installation**

(Figure 201)

A. General

- (1) This task includes steps to install the Engine Start Lever Lamps.
- (2) The lamps are installed in the Engine Start Lever Caps.

B. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Lamp Installation

SUBTASK 76-11-02-420-009-G00



YOU MUST BE CAREFUL WHEN YOU REMOVE THE COMPONENTS FROM THE CONTROL STAND. DAMAGE TO THE SWITCHES, LIGHTS, LIGHTPLATES, NUTPLATES, WIRE BUNDLES AND THE PAINTED FINISH ON ALL THE PARTS CAN OCCUR.

- (1) Install the LED light [3] into the lens cap [2].
- (2) Install the lens cap [2] onto the start lever [1]:



MAKE SURE THAT THE CAP IS CORRECTLY INSTALLED AND ALIGNED WITH THE SWITCH LEVER. IF THE CAP IS NOT CORRECTLY ALIGNED WITH THE SWITCH LEVER, DAMAGE TO THE SWITCH CAN OCCUR.

- (a) Align the lens cap [2] with the start lever [1].

NOTE: The lens cap contains a male keying feature and the start lever contains a female recess (Figure 201). To prevent damage to the switch (which can cause the fire indication light to not illuminate), the male keying feature must be aligned with the female recess before you thread the lens cap onto the start lever. Once the male keying feature is aligned with the female recess, the lens cap should easily thread onto the start lever and no excessive force or torque should be necessary. If excessive force or torque is required to thread the lens cap onto the start lever, that is an indication that the male keying feature and the female recess are not correctly aligned.

NOTE: If the terminal is too far forward and touches the bottom of the LED bulb, lightly push the terminal away from the center. Then the end cap can be easily installed.

- (b) Gently press the lens cap [2] onto the start lever [1] and turn clockwise to tighten lens cap [2].

NOTE: No tools are required to install cap, finger tighten only.

NOTE: If the cap does not thread easily, repeat step 2 above.

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D. Put the Airplane Back to Its Usual Condition

SUBTASK 76-11-02-860-019-G00

- (1) For engine 1, close these circuit breakers and remove safety tags:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	1	C01316	ENGINE 1 START LEVER CHAN A
B	2	C01317	ENGINE 1 START LEVER CHAN B

For engine 2, close these circuit breakers and remove safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	6	C01318	ENGINE 2 START LEVER CHAN A
B	7	C01319	ENGINE 2 START LEVER CHAN B

E. Do a Test of the Engine Start Lever Lamp

SUBTASK 76-11-02-710-006-G00

- (1) Move and hold the TEST switch on the Engine and APU Fire Control Panel to the OVHT/FIRE position.
- (2) Make sure the lights on the left and right start levers, on the P10 engine start lever panel, come on.

————— **END OF TASK** —————

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START LEVERS - REMOVAL/INSTALLATION

1. General

A. This procedure has two tasks:

- (1) Start levers removal
- (2) Start levers installation.

TASK 76-11-02-010-801-G00**2. Start Lever Removal**

(Figure 401)

A. General

- (1) This task gives the instructions to remove the start levers from the aisle control stand. The start levers are fuel control switches connected to the wire bundle assemblies.

B. References

Reference	Title
25-11-01-000-801	Captain and First Officer Seat Removal (P/B 401)
27-41-61-010-801	Stabilizer Trim Control Wheel Removal (P/B 401)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Prepare for the Removal

SUBTASK 76-11-02-860-013-G00

- (1) For engine 1, open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	1	C01316	ENGINE 1 START LEVER CHAN A
B	2	C01317	ENGINE 1 START LEVER CHAN B
B	3	C01312	ENGINE 1 RUN/PWR
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK
B	8	C01103	ENGINE 1 START VALVE

F/O Electrical System Panel, P6-3

Row	Col	Number	Name
B	4	C00359	FUEL SPAR VALVE ENG 1
B	5	C00540	FUEL SPAR VALVE IND
E	5	C01320	ENGINE FUEL ENGINE 1 HPSOV CONT
E	6	C01395	ENGINE FUEL ENGINE 1 HPSOV IND

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F/O Electrical System Panel, P6-5

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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SIA 001-005; SIA 006-999 POST SB 737-71-1891

D	2	C04049	ENGINE 1 EEC FAN BLOWERS
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SIA ALL

E	1	C04016	ENGINE 1 IGNITION PWR CONT
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This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-5

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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SIA 006-999 PRE SB 737-71-1891

D	2	C04049	ENGINE 1 EEC FAN BLOWERS (INOP)
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SIA ALL

SUBTASK 76-11-02-860-014-G00

(2) For engine 2, open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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B	5	C01313	ENGINE 2 RUN/PWR
B	6	C01318	ENGINE 2 START LEVER CHAN A
B	7	C01319	ENGINE 2 START LEVER CHAN B
C	4	C00154	ENGINE 2 START VALVE
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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B	3	C00360	FUEL SPAR VALVE ENG 2
E	3	C01321	ENGINE FUEL ENGINE 2 HPSOV CONT
E	4	C01396	ENGINE FUEL ENGINE 2 HPSOV IND

F/O Electrical System Panel, P6-5

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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SIA 001-005; SIA 006-999 POST SB 737-71-1891

D	5	C04050	ENGINE 2 EEC FAN BLOWERS
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SIA ALL

E	2	C04017	ENGINE 2 IGNITION PWR CONT
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This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-5

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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SIA 006-999 PRE SB 737-71-1891

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SIA 006-999 PRE SB 737-71-1891 (Continued)

(Continued)

F/O Electrical System Panel, P6-5

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	5	C04050	ENGINE 2 EEC FAN BLOWERS (INOP)

SIA ALL

SUBTASK 76-11-02-860-015-G00

- (3) For the control stand lighting, open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-3

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

SUBTASK 76-11-02-860-024-G00

- (4) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C01678	WEATHER RADAR RT RIGHT

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C00120	WEATHER RADAR RT

SUBTASK 76-11-02-010-010-G00

- (5) Do this task: Captain and First Officer Seat Removal, TASK 25-11-01-000-801.

SUBTASK 76-11-02-010-013-G00

- (6) If it is necessary, remove the stabilizer trim control wheel from the control stand (TASK 27-41-61-010-801).

SUBTASK 76-11-02-010-012-G00



MAKE SURE THAT YOU PUT THE MAT ON THE AFT ELECTRONICS PANEL. THIS WILL PREVENT DAMAGE TO THE SWITCHES AND SURFACES OF THE INDICATORS AND DISPLAYS. IF YOU DO NOT OBEY, DAMAGE TO EQUIPMENT CAN OCCUR.

- (7) Remove the covers from the control stand, do these steps:
- Remove the screws [22], screw [23], and screw [24] to remove the left upper cover [20] from the control stand.
 - Remove the screws [22] to remove the left lower cover [21] from the control stand.
 - Remove the screws [22] to remove the right upper cover [3] from the control stand.
 - Remove the screws [22] to remove the right lower cover [4] from the control stand.

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**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL****E. Start Lever Removal**

SUBTASK 76-11-02-020-016-G00



YOU MUST BE CAREFUL WHEN YOU REMOVE THE COMPONENTS FROM THE CONTROL STAND. DAMAGE TO THE SWITCHES, LIGHTS, LIGHTPLATES, NUTPLATES, WIRE BUNDLES AND THE PAINTED FINISH ON ALL THE PARTS CAN OCCUR.

- (1) Disconnect the electrical connector [5], electrical connector [6], electrical connector [7], and electrical connector [8] from the electrical connector panels.

SIA 001, 002

SUBTASK 76-11-02-020-017-G00

- (2) Remove the clamps [10] from wire bundle [2] and clamps [10] from wire bundle [9].
 - (a) Remove the bolt [11] and washers [12] from each clamp [10].

SIA 003-999

SUBTASK 76-11-02-020-026-G00

- (3) Remove the clamps [10] from wire bundle [2] and clamps [10] from wire bundle [9].
 - (a) Remove the bolt [11] and washers [12] from each clamp [10].

SIA ALL

SUBTASK 76-11-02-020-018-G00

- (4) Remove the lens caps [29] from the engine start levers [1].

SUBTASK 76-11-02-020-023-G00

- (5) Loosen the captive fasteners on the light plate [13].

SUBTASK 76-11-02-020-019-G00

- (6) Remove the engine control light plate [13].

SUBTASK 76-11-02-020-020-G00

- (7) Remove the screws [16] that hold the face plate [18] to the control stand and tilt the forward edge back approximately 90 degrees for service access.

SUBTASK 76-11-02-020-021-G00

- (8) Carefully remove the face plate [18] and engine start levers [1] with their wire bundles and electrical connectors out of the control stand.

NOTE: It is not necessary to remove the lightplate connector [28] from the face plate [18] to have service access to the engine start levers [1].

NOTE: Spacers from other wire bundles may need to be loosened to allow movement when removing the engine start lever wire bundle through the service access.

SUBTASK 76-11-02-020-022-G00

- (9) Remove the engine start levers [1], nuts [14], keying washers [17], and lockwashers [15] from the face plate [18].

————— **END OF TASK** —————

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SIA ALL

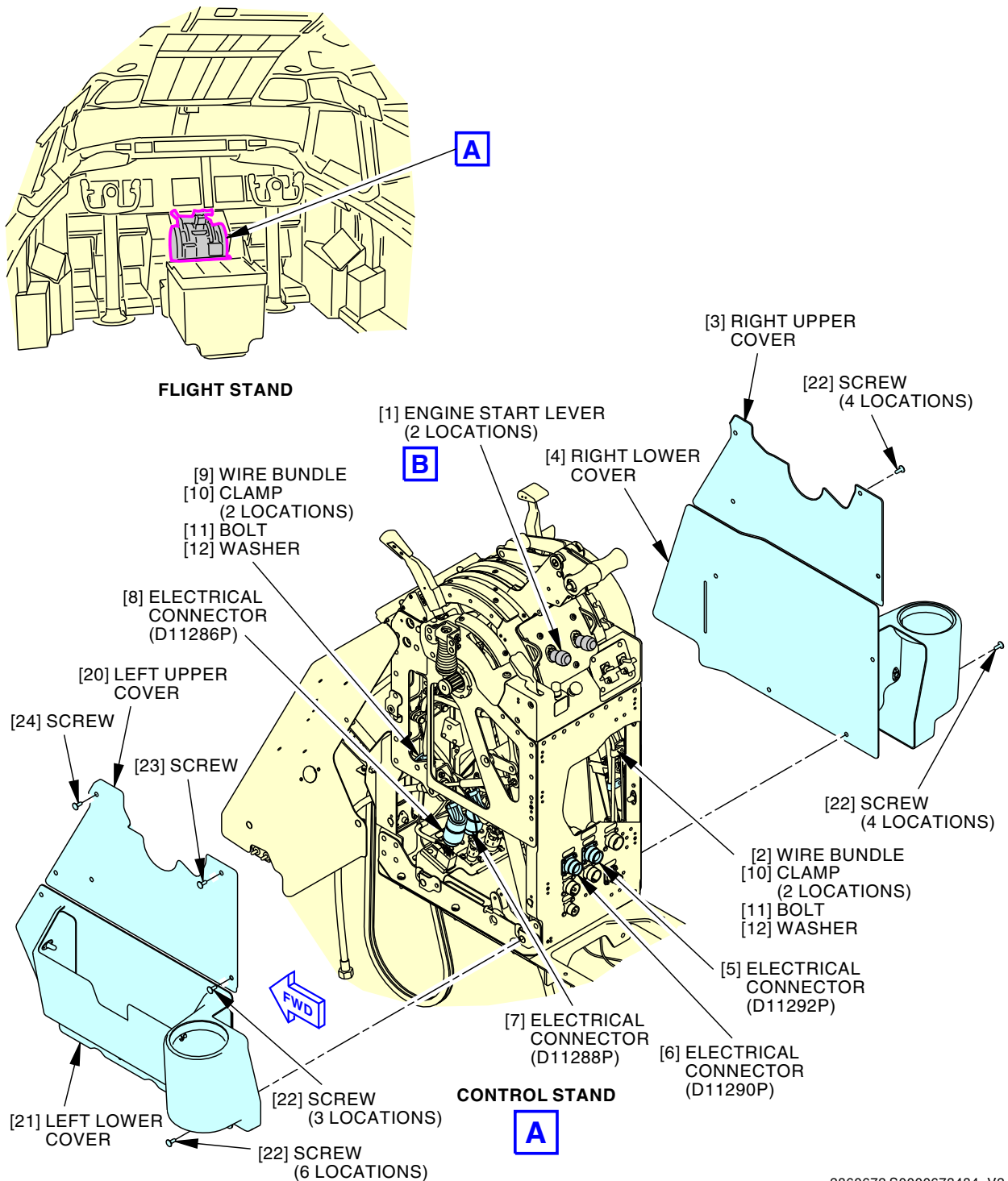
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2860672 S0000673484_V2

Engine Fuel Control Module Installation
Figure 401/76-11-02-990-807-G00 (Sheet 1 of 3)

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SIA 003-999

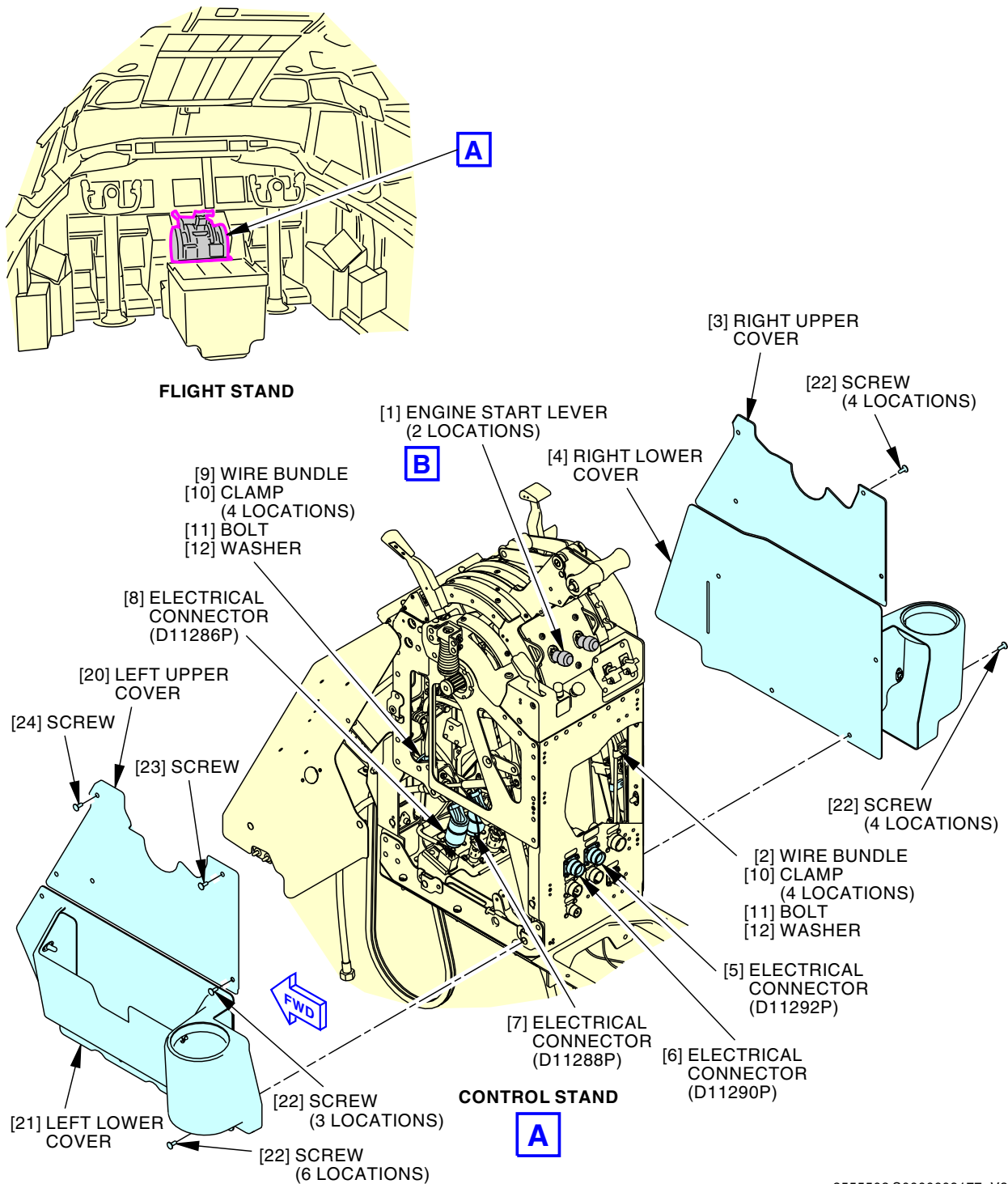
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2555502 S0000609177_V3

Engine Fuel Control Module Installation
Figure 401/76-11-02-990-807-G00 (Sheet 2 of 3)

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SIA 001, 002

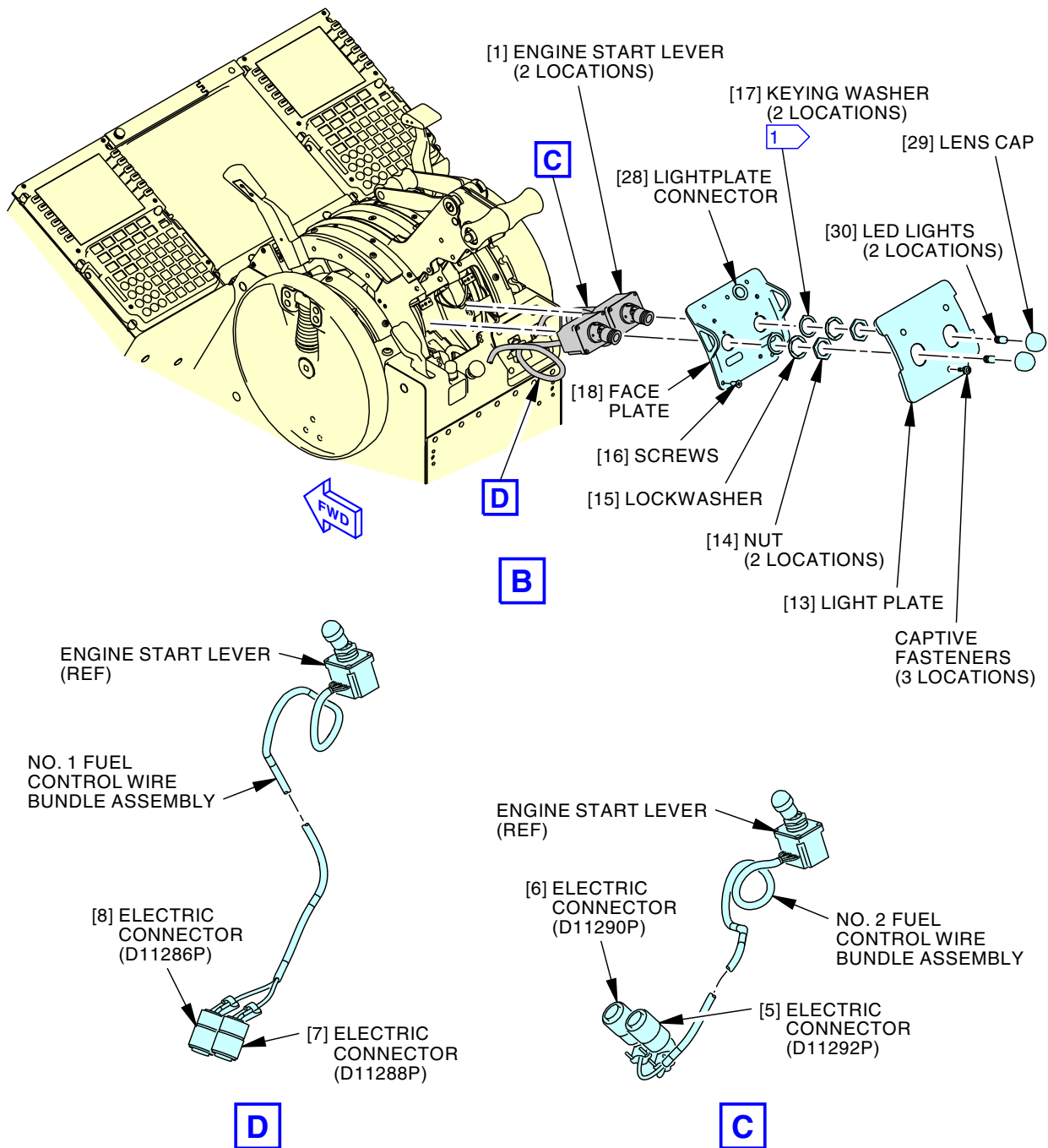
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1 IT IS ACCEPTABLE TO INSTALL THE KEYING WASHERS BELOW THE FACEPLATE

3012460 S0000786053_V1

Engine Fuel Control Module Installation
Figure 401/76-11-02-990-807-G00 (Sheet 3 of 3)

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TASK 76-11-02-420-801-G00**3. Start Lever Installation**

(Figure 401)

A. General

- (1) This task gives the instructions to install the wire bundle assemblies with its start levers in the aisle control stand.

B. References

Reference	Title
25-11-01-400-801	Captain and First Officer Seat Installation (P/B 401)
26-10-00-710-801	Fire and Overheat Detection System - Operational Test (P/B 501)
27-41-61-410-801	Stabilizer Trim Control Wheel Installation (P/B 401)
28-22-00-710-801	Engine Fuel Spar Valve - Electrical Control and Indication Test (P/B 501)
33-18-00-710-801	Master Dim and Test - Operational Test (P/B 201)
71-00-00-700-808-G00	Test No. 32 - Engine Idle System Test (P/B 501)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Start Lever Installation

SUBTASK 76-11-02-420-008-G00



YOU MUST BE CAREFUL WHEN YOU REMOVE THE COMPONENTS FROM THE CONTROL STAND. DAMAGE TO THE SWITCHES, LIGHTS, LIGHTPLATES, NUTPLATES, WIRE BUNDLES AND THE PAINTED FINISH ON ALL THE PARTS CAN OCCUR.

- (1) Install the engine start levers [1] with the wire bundle [2] and wire bundle [9].
- (a) Install the keying washers [17] on the engine start levers [1].
- NOTE:** It is acceptable to install the keying washers below the faceplate.
- (b) Install the face plate [18] over the engine start levers [1].
- 1) Make sure that the key on the keying washers [17] are engaged in the holes in the face plate [18].
- NOTE:** This will make sure that the engine start levers cannot move in the incorrect direction.
- (c) Install the nuts [14] and lockwashers [15] on the face plate [18].
- (d) Carefully install the electrical connector [5], electrical connector [6], electrical connector [7], electrical connector [8], wire bundle [2], and wire bundle [9] in the control stand.
- SIA 001, 002**
- (e) Install the clamps [10] on wire bundle [2] and clamps [10] on wire bundle [9] with one bolt [11] and washers [12] for each clamp.
- 1) Before you tighten the bolts [11], make sure that you can rotate the face plate [18] along the lower edge at least 90 degrees aft for serviceability.

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SIA 001, 002 (Continued)

- 2) Tighten other moved spacers if loosened during removal of the wiring bundles.

SIA 003-999

- (f) Install the clamps [10] on wire bundle [2] and clamps [10] on wire bundle [9] with one bolt [11] and washers [12] for each clamp.
- 1) Before you tighten the bolts [11], make sure that you can rotate the face plate [18] along the lower edge at least 90 degrees aft for serviceability.
- 2) Tighten other moved spacers if loosened during removal of the wiring bundles.

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- (g) Connect the electrical connector [5], electrical connector [6], electrical connector [7], and electrical connector [8] to the electrical connector panels.
- (h) Install the face plate [18] on the control stand.
- 1) Install the screws [16] to install the face plate [18] on the control stand.
- (i) Install the light plate [13] on the face plate [18].
- (j) Install the lens caps [29] on the engine start levers [1].

E. Put the Airplane Back to Its Usual Condition

SUBTASK 76-11-02-410-007-G00

- (1) Install the covers on the control stand, do these steps:
- (a) Install the screws [22] to attach the left lower cover [21] to the control stand.
- (b) Install the screws [22], screw [23], and screw [24] to attach the left upper cover [20] to the control stand.
- (c) Install the screws [22] to attach the right lower cover [4] to the control stand.
- (d) Install the screws [22] to attach the right upper cover [3] to the control stand.

SUBTASK 76-11-02-410-009-G00

- (2) If it was removed, install the stabilizer trim control wheel on the control stand (TASK 27-41-61-410-801).

SUBTASK 76-11-02-480-002-G00

- (3) Remove the protective mats from the aft electronics panel P8.

SUBTASK 76-11-02-410-008-G00

- (4) Do this task: Captain and First Officer Seat Installation, TASK 25-11-01-400-801.

SUBTASK 76-11-02-860-016-G00

- (5) For engine 1, remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	1	C01316	ENGINE 1 START LEVER CHAN A
B	2	C01317	ENGINE 1 START LEVER CHAN B
B	3	C01312	ENGINE 1 RUN/PWR

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(Continued)

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK
B	8	C01103	ENGINE 1 START VALVE

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	4	C00359	FUEL SPAR VALVE ENG 1
B	5	C00540	FUEL SPAR VALVE IND
E	5	C01320	ENGINE FUEL ENGINE 1 HPSOV CONT
E	6	C01395	ENGINE FUEL ENGINE 1 HPSOV IND

F/O Electrical System Panel, P6-5

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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SIA 001-005; SIA 006-999 POST SB 737-71-1891

D	2	C04049	ENGINE 1 EEC FAN BLOWERS
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SIA ALL

E	1	C04016	ENGINE 1 IGNITION PWR CONT
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This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-5

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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SIA 006-999 PRE SB 737-71-1891

D	2	C04049	ENGINE 1 EEC FAN BLOWERS (INOP)
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SIA ALL

SUBTASK 76-11-02-860-017-G00

- (6) For engine 2, Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	5	C01313	ENGINE 2 RUN/PWR
B	6	C01318	ENGINE 2 START LEVER CHAN A
B	7	C01319	ENGINE 2 START LEVER CHAN B
C	4	C00154	ENGINE 2 START VALVE
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

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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
E	3	C01321	ENGINE FUEL ENGINE 2 HPSOV CONT
E	4	C01396	ENGINE FUEL ENGINE 2 HPSOV IND

F/O Electrical System Panel, P6-5

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA 001-005; SIA 006-999 POST SB 737-71-1891			
D	5	C04050	ENGINE 2 EEC FAN BLOWERS
SIA ALL			
E	2	C04017	ENGINE 2 IGNITION PWR CONT

This circuit breaker is inoperative and should remain open:

F/O Electrical System Panel, P6-5

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
SIA 006-999 PRE SB 737-71-1891			
D	5	C04050	ENGINE 2 EEC FAN BLOWERS (INOP)

SIA ALL

SUBTASK 76-11-02-860-018-G00

- (7) For the control stand lighting, remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-3

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

F. Start Lever Test

SUBTASK 76-11-02-210-001-G00

- (1) Make sure that the lock tabs are engaged and locked when the lever is in the idle or cutoff position.

NOTE: The lock tabs on the barrel will be in the same plane as the detent tabs (keyway) and will not rotate freely.

SUBTASK 76-11-02-710-002-G00

- (2) Do this task: Master Dim and Test - Operational Test, TASK 33-18-00-710-801.

SUBTASK 76-11-02-710-003-G00

- (3) Do this task: Engine Fuel Spar Valve - Electrical Control and Indication Test, TASK 28-22-00-710-801.

SUBTASK 76-11-02-710-004-G00

- (4) Do this task: Fire and Overheat Detection System - Operational Test, TASK 26-10-00-710-801.

SUBTASK 76-11-02-710-005-G00

- (5) Do this task: Test No. 32 - Engine Idle System Test, TASK 71-00-00-700-808-G00.

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SUBTASK 76-11-02-860-025-G00

- (6) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C01678	WEATHER RADAR RT RIGHT

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C00120	WEATHER RADAR RT

————— **END OF TASK** —————

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START LEVERS - INSPECTION/CHECK

1. General

A. This procedure has this task:

- (1) Start Lever Detent Feature Operational Check.

TASK 76-11-02-710-801-G00

2. Start Lever Detent Feature Operational Check

NOTE: This procedure is a scheduled maintenance task.

A. General

- (1) This task is the operational test for the start lever detent.

B. Location Zones

<u>Zone</u>	<u>Area</u>
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Prepare for the Operational Check

SUBTASK 76-11-02-860-022-G00

- (1) Make sure that both start levers are in the CUTOFF detent position.

SUBTASK 76-11-02-860-020-G00

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

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT

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

F/O Electrical System Panel, P6-5

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	1	C04016	ENGINE 1 IGNITION PWR CONT
E	2	C04017	ENGINE 2 IGNITION PWR CONT

NOTE: The SPAR VALVE CLOSED will go on bright.

D. Start Lever Detent Feature Operational Check

SUBTASK 76-11-02-860-010-G00

- (1) Make sure that the START LEVER switch is locked in its position.

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- (a) The START LEVER must not move freely while in the IDLE or CUTOFF detent positions.

NOTE: The operation of the START LEVER switch should not permit a change of the position between the IDLE or CUTOFF detent positions without the START LEVER switch first being lifted out of the locked position.

SUBTASK 76-11-02-860-011-G00

- (2) Put the START LEVER switch in IDLE detent position.
- (a) Apply light pressure towards the CUTOFF position.
- (b) Make sure that the START LEVER switch stays in the IDLE detent position.

SUBTASK 76-11-02-860-012-G00

- (3) Put the START LEVER switch in the CUTOFF detent position.
- (a) Apply light pressure towards the IDLE position.
- (b) Make sure that the START LEVER switch stays in the CUTOFF detent position.

E. Put the Airplane Back to Its Usual Condition

SUBTASK 76-11-02-860-021-G00

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

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT

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

F/O Electrical System Panel, P6-5

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	1	C04016	ENGINE 1 IGNITION PWR CONT
E	2	C04017	ENGINE 2 IGNITION PWR CONT

SUBTASK 76-11-02-020-028-G00

- (2) Remove all status and maintenance messages related to the engine ignition systems that do not receive aircraft power.

NOTE: Status and maintenance messages related to engine ignition system not receiving aircraft power may have set during the start lever detent feature operational check.

SUBTASK 76-11-02-860-023-G00

- (3) Make sure that the SPAR VALVE CLOSED light is dim.

————— **END OF TASK** —————

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**CONTROL STAND LIGHTPLATES, SEALS, SPACERS AND RETAINERS, COVERS AND STOPS -
REMOVAL/INSTALLATION**

1. General

A. This procedure has these tasks:

- (1) A removal of the control stand lightplate
- (2) An installation of the control stand lightplate
- (3) A removal of the control stand seals, spacers and retainers
- (4) An installation of the control stand seals, spacers and retainers
- (5) A removal of the control stand covers and stops
- (6) An installation of the control stand covers and stops.

TASK 76-11-03-000-801-G00

2. Control Stand Lightplate - Removal

(Figure 401)

A. General

- (1) This task gives the instructions to remove a lightplate from the control stand.

B. References

Reference	Title
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

E. Prepare for the Removal

SUBTASK 76-11-03-860-001-G00



DO THE DEACTIVATION PROCEDURE FOR THE TRAILING EDGE FLAP BEFORE YOU DO WORK ON THE FLAP SYSTEM. THE FLAPS MOVE QUICKLY. THEY CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

- (1) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 76-11-03-860-012-G00

- (2) Make sure that the left and right engine start switches are in the AUTO position.
 - (a) Install DO NOT OPERATE tags, STD-858, on the switches.

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SUBTASK 76-11-03-860-013-G00

- (3) For engine 1, open these circuit breakers and install the safety tags:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	1	C01316	ENGINE 1 START LEVER CHAN A
B	2	C01317	ENGINE 1 START LEVER CHAN B
B	3	C01312	ENGINE 1 RUN/PWR
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK
B	8	C01103	ENGINE 1 START VALVE

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 76-11-03-860-014-G00

- (4) For engine 2, open these circuit breakers and install the safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	5	C01313	ENGINE 2 RUN/PWR
B	6	C01318	ENGINE 2 START LEVER CHAN A
B	7	C01319	ENGINE 2 START LEVER CHAN B
C	4	C00154	ENGINE 2 START VALVE
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

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

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SUBTASK 76-11-03-860-005-G00



MAKE SURE THAT YOU OPEN THE CIRCUIT BREAKERS FOR THE WEATHER RADAR SYSTEM. THE FORWARD MOVEMENT OF A THRUST LEVER CAN CAUSE THE AUTOMATIC OPERATION OF THE SYSTEM. THE OPERATION OF THIS SYSTEM CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

- (5) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C01678	WEATHER RADAR RT RIGHT

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C00120	WEATHER RADAR RT

SUBTASK 76-11-03-860-010-G00

- (6) Open these 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>
C	10	C00284	PANEL & INSTR ELEX PANEL

F/O Electrical System Panel, P6-5

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	2	C04045	ELEX PANEL LIGHTING, SECTION 2

F. Control Stand Lightplate Removal

SUBTASK 76-11-03-020-001-G00



BE CAREFUL WHEN YOU REMOVE OR INSTALL THE LIGHTPLATES, THRUST LEVERS, OR THE CONTROL MODULE. DAMAGE TO THE SWITCHES, LIGHTS, LIGHTPLATES, NUTPLATES, WIRE HARNESSSES AND THE PAINTED FINISH ON ALL THE PARTS COULD OCCUR.

- (1) Remove the applicable lightplate as follows:
- For the flap lever indicator lightplate [4], remove the screws [5].
 - For the first officer stabilizer trim lightplate [6], remove the screws [7].
 - For the speed brake lightplate [9], remove the screws [8].
 - For the captain stabilizer trim lightplate [1], remove the screws [10].
 - Lift the lightplates up to access the wire terminals.

SUBTASK 76-11-03-020-002-G00

- (2) Disconnect the wires from the applicable captain stabilizer trim lightplate [1], flap lever indicator lightplate [4], first officer stabilizer trim lightplate [6], or speed brake lightplate [9].
- Remove the nuts [24] and lockwashers [23].
 - Remove the terminal lugs from the studs on the lightplates.
 - Remove the washers [22].
 - Do not remove the nut and the washer that attach the two studs to the lightplate.

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- (d) Remove the applicable captain stabilizer trim lightplate [1], flap lever indicator lightplate [4], first officer stabilizer trim lightplate [6], or speed brake lightplate [9].

———— **END OF TASK** ————

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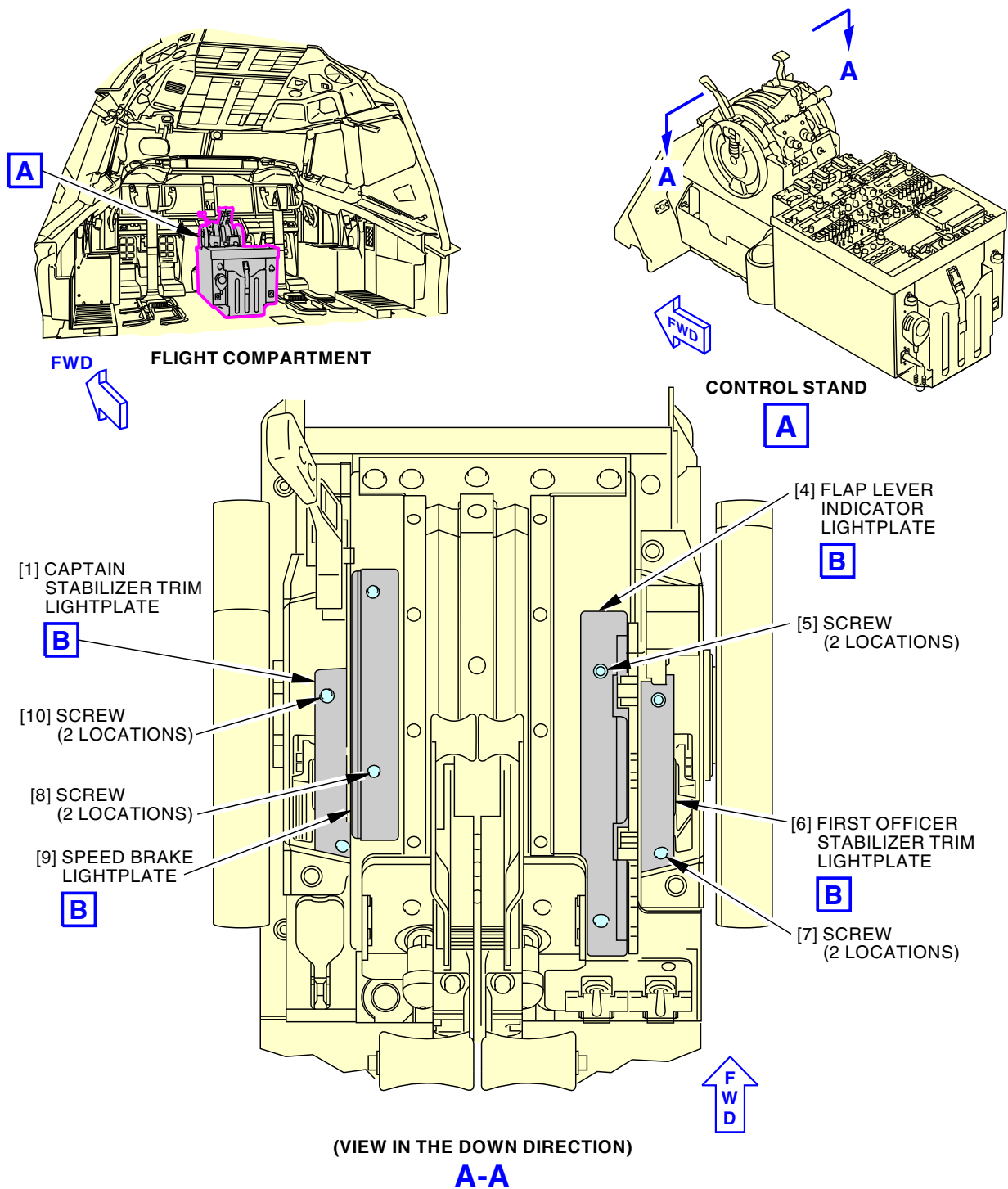
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2355015 S00061516378_V4

Control Stand Lightplate Installation
Figure 401/76-11-03-990-801-G00 (Sheet 1 of 2)

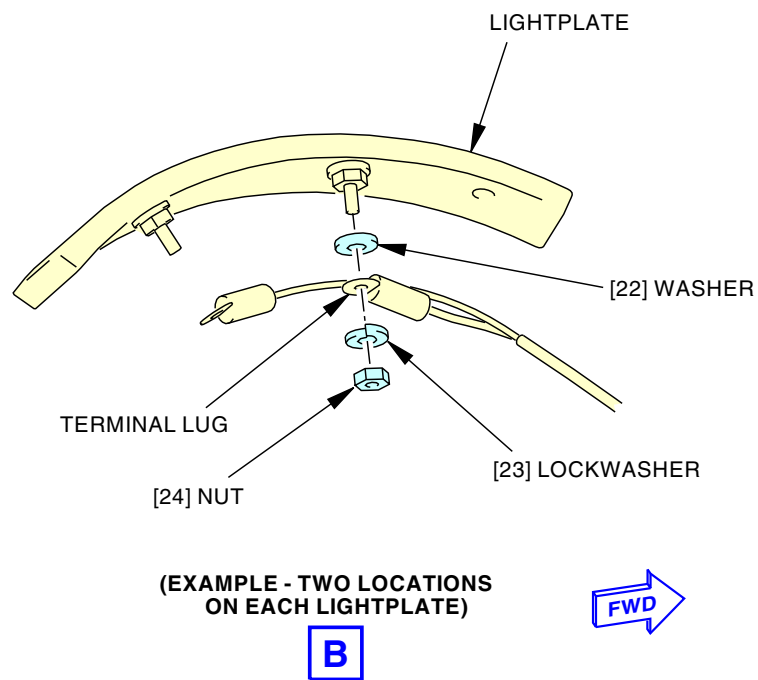
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2355016 S00061516379_V1

Control Stand Lightplate Installation
Figure 401/76-11-03-990-801-G00 (Sheet 2 of 2)

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TASK 76-11-03-420-801-G00**3. Control Stand Lightplate - Installation**

(Figure 401)

A. General

(1) This task gives the instructions to install a lightplate on the control stand.

B. References

Reference	Title
27-41-00-700-801	Stabilizer Manual Trim and Trim Indicator - Test (P/B 501)
27-51-00-820-802	Trailing Edge Flap Drive System Adjustment (P/B 501)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

E. Control Stand Lightplate Installation

SUBTASK 76-11-03-420-001-G00



BE CAREFUL WHEN YOU REMOVE OR INSTALL THE LIGHTPLATES, THRUST LEVERS, OR THE CONTROL MODULE. DAMAGE TO THE SWITCHES, LIGHTS, LIGHTPLATES, NUTPLATES, WIRE HARNESSSES AND THE PAINTED FINISH ON ALL THE PARTS COULD OCCUR.

- (1) Install the wires to the captain stabilizer trim lightplate [1], flap lever indicator lightplate [4], first officer stabilizer trim lightplate [6], or speed brake lightplate [9] as follows:
- (a) Install the washers [22].
 - (b) Put the terminal lugs on the lightplate studs.
 - (c) Install the lockwashers [23] and nuts [24].

SUBTASK 76-11-03-420-002-G00



MANUALLY TIGHTEN THE SCREWS ON THE LIGHTPLATES. DAMAGE TO THE LIGHTPLATES CAN OCCUR IF YOU TIGHTEN THE SCREWS WITH POWER SCREWDRIVERS.

- (2) Install the applicable the captain stabilizer trim lightplate [1], flap lever indicator lightplate [4], first officer stabilizer trim lightplate [6], or speed brake lightplate [9] on the cover assemblies as follows:
- (a) Install the captain stabilizer trim lightplate [1] as follows:
 - 1) Install the screws [10].
 - 2) Make sure that the captain stabilizer trim lightplate [1] operates correctly (TASK 27-41-00-700-801).
 - a) If it is necessary, adjust the position of the captain stabilizer trim lightplate [1].
 - (b) Install the flap lever indicator lightplate [4] as follows:
 - 1) Install the screws [5].

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- 2) Make sure that the flap lever indicator lightplate [4] operates correctly (TASK 27-51-00-820-802).
 - a) If it is necessary, adjust the position of the flap lever indicator lightplate [4].
- (c) Install the first officer stabilizer trim lightplate [6] as follows:
 - 1) Install the screws [7].
 - 2) Make sure that the first officer stabilizer trim lightplate [6] operates correctly (TASK 27-41-00-700-801).
 - a) If it is necessary, adjust the position of the first officer stabilizer trim lightplate [6].
- (d) Install the speed brake lightplate [9].
 - 1) Adjust the position of the lightplate as follows:
 - a) Move the speed brake lever to the aft stop.
 - b) Put the lightplate in its position.
 - c) Align the arrow on the aft face with the center of the "DOWN" bar.

<1> Set to plus or minus of one quarter of the "DOWN" bar width.
 - 2) Install the screws [8].

F. Put the Airplane Back to Its Usual Condition:

SUBTASK 76-11-03-860-015-G00

- (1) For Engine 1, remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C04008	ENGINE 1 ALTN PWR CHAN B
A	5	C04007	ENGINE 1 ALTN PWR CHAN A
B	1	C01316	ENGINE 1 START LEVER CHAN A
B	2	C01317	ENGINE 1 START LEVER CHAN B
B	3	C01312	ENGINE 1 RUN/PWR
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK
B	8	C01103	ENGINE 1 START VALVE

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 76-11-03-860-016-G00

- (2) For Engine 2, remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	5	C01313	ENGINE 2 RUN/PWR
B	6	C01318	ENGINE 2 START LEVER CHAN A

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(Continued)

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	7	C01319	ENGINE 2 START LEVER CHAN B
C	4	C00154	ENGINE 2 START VALVE
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C04010	ENGINE 2 ALTN PWR CHAN B
D	8	C04009	ENGINE 2 ALTN PWR CHAN A

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 76-11-03-860-008-G00

- (3) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C01678	WEATHER RADAR RT RIGHT

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C00120	WEATHER RADAR RT

SUBTASK 76-11-03-860-011-G00

- (4) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-3

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

F/O Electrical System Panel, P6-5

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
F	2	C04045	ELEX PANEL LIGHTING, SECTION 2

SUBTASK 76-11-03-860-009-G00

- (5) Remove the DO NOT OPERATE tags, STD-858, from the engine start panel.

————— **END OF TASK** —————

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TASK 76-11-03-400-801-G00**4. Control Stand Seal, Spacer and Retainer Removal**

(Figure 402)

A. General

- (1) This task gives the instructions on how to remove the control stand seals, spacers and retainers that are below the lightplates on the control stand.
- (2) The retainers hold the seals and spacers in their position on the control stand.

B. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Prepare for the Removal

SUBTASK 76-11-03-010-001-G00

- (1) Do this task: Control Stand Lightplate - Removal, TASK 76-11-03-000-801-G00.

D. Control Stand Seals, Spacer, and Retainer Removal

SUBTASK 76-11-03-020-003-G00

- (1) Remove the left seal [33], the spacer [25], and the seal retainer [31] as follow:
 - (a) Remove the four screws [32].
 - (b) Remove the seal retainer [31].
 - (c) Remove the left seal [33].
 - (d) Remove the spacer [25].

SUBTASK 76-11-03-020-004-G00

- (2) Remove the upper center seal [36], the spacer [26], and the seal retainer [34] as follow:
 - (a) Remove the three screws [35].
 - (b) Lift the seal retainer [34].
 - (c) Remove the seal retainer from between the thrust levers.
 - (d) Remove the upper center seal [36].
 - (e) Remove the spacer [26].

SUBTASK 76-11-03-020-006-G00

- (3) Remove the right seal [39], the spacer [27], and the seal retainer [37] as follow:
 - (a) Remove the four screws [38].
 - (b) Remove the seal retainer [37].
 - (c) Remove the right seal [39].
 - (d) Remove the spacer [27].

————— **END OF TASK** —————

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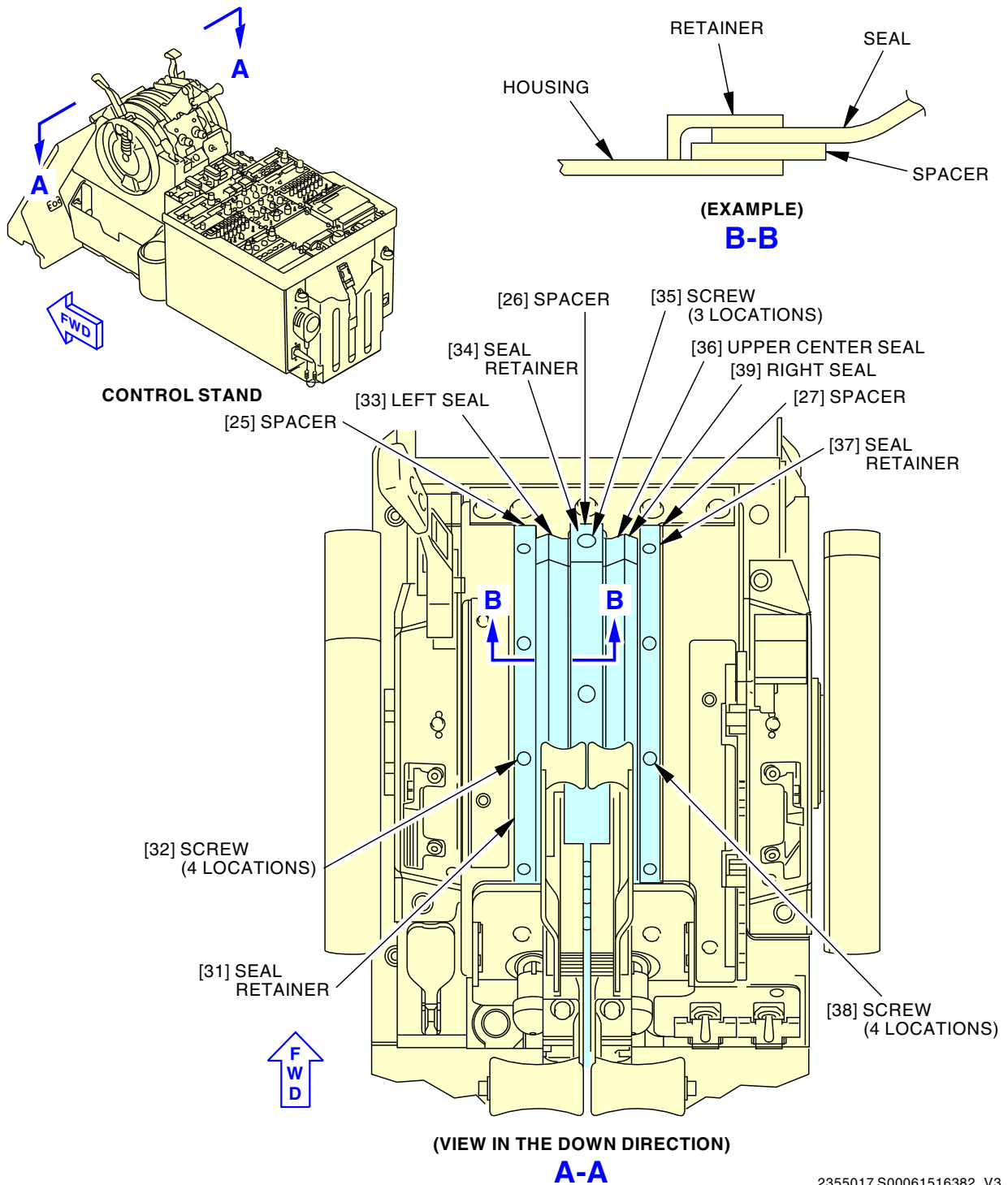
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Control Stand Seal, Spacer and Retainer Installation
Figure 402/76-11-03-990-802-G00

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TASK 76-11-03-400-802-G00**5. Control Stand Seal, Spacer and Retainer Installation**

(Figure 402)

A. General

- (1) This task gives the instructions on how to install the control stand seals, spacers and retainers in the control stand.

B. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

C. Control Stand Seal, Spacer, and Retainer Installation**SUBTASK 76-11-03-420-003-G00**

- (1) Install the right seal [39], the spacer [27], and the seal retainer [37] as follows:
- (a) Put the spacer [27] in its position.
 - (b) Install the right seal [39].
 - (c) Install the seal retainer [37] on the right seal [39].
 - (d) Install the four screws [38].

SUBTASK 76-11-03-420-004-G00

- (2) Install the upper center seal [36], the spacer [26], and the seal retainer [34] as follow:
- (a) Put the spacer [26] in its position.
 - (b) Put the upper center seal [36] in position between the thrust levers.
 - (c) Put the seal retainer [34] between the thrust levers.
 - (d) Install the seal retainer [34] on the seal.
 - (e) Install the three screws [35].

SUBTASK 76-11-03-420-005-G00

- (3) Install the left seal [33], the spacer [25], and the seal retainer [31] as follow:
- (a) Put the spacer [25] in its position.
 - (b) Install the left seal [33].
 - (c) Install the seal retainer [31] on the seal.
 - (d) Install the four screws [32].

D. Put the Airplane Back to Its Usual Condition**SUBTASK 76-11-03-410-001-G00**

- (1) Do this task: Control Stand Lightplate - Installation, TASK 76-11-03-420-801-G00.

————— **END OF TASK** —————

TASK 76-11-03-000-802-G00**6. Control Stand Cover and Stop Removal**

(Figure 403)

A. General

- (1) This task gives the instructions to remove the control stand cover and stop.

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B. References

Reference	Title
76-11-02-010-801-G00	Start Lever Removal (P/B 401)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Prepare for the Removal

SUBTASK 76-11-03-010-002-G00

- (1) For the applicable control stand lightplate, do this task: Control Stand Lightplate - Removal, TASK 76-11-03-000-801-G00.

SUBTASK 76-11-03-010-003-G00

- (2) For the applicable control stand seal, spacer, and retainer, do this task: Control Stand Seal, Spacer and Retainer Removal, TASK 76-11-03-400-801-G00.

SUBTASK 76-11-03-010-004-G00

- (3) Do this task: Start Lever Removal, TASK 76-11-02-010-801-G00.

E. Control Stand Cover and Stop Removal

SUBTASK 76-11-03-020-007-G00

- (1) Remove the forward thrust stop [41] as follows:
- (a) Remove the five screws [40].
 - (b) Remove the forward thrust stop [41].

SUBTASK 76-11-03-020-009-G00

- (2) Remove the right side cover assembly [44] as follows:
- (a) Remove the two screws [49], screw [47], screw [48], and three screws [45].
 - (b) Remove the right side cover assembly [44].

SUBTASK 76-11-03-020-010-G00

- (3) Remove the left side cover assembly [42] as follows:
- (a) Remove the two screws [46], three screws [43], and screw [50].
 - (b) Remove the left side cover assembly [42].

————— **END OF TASK** —————

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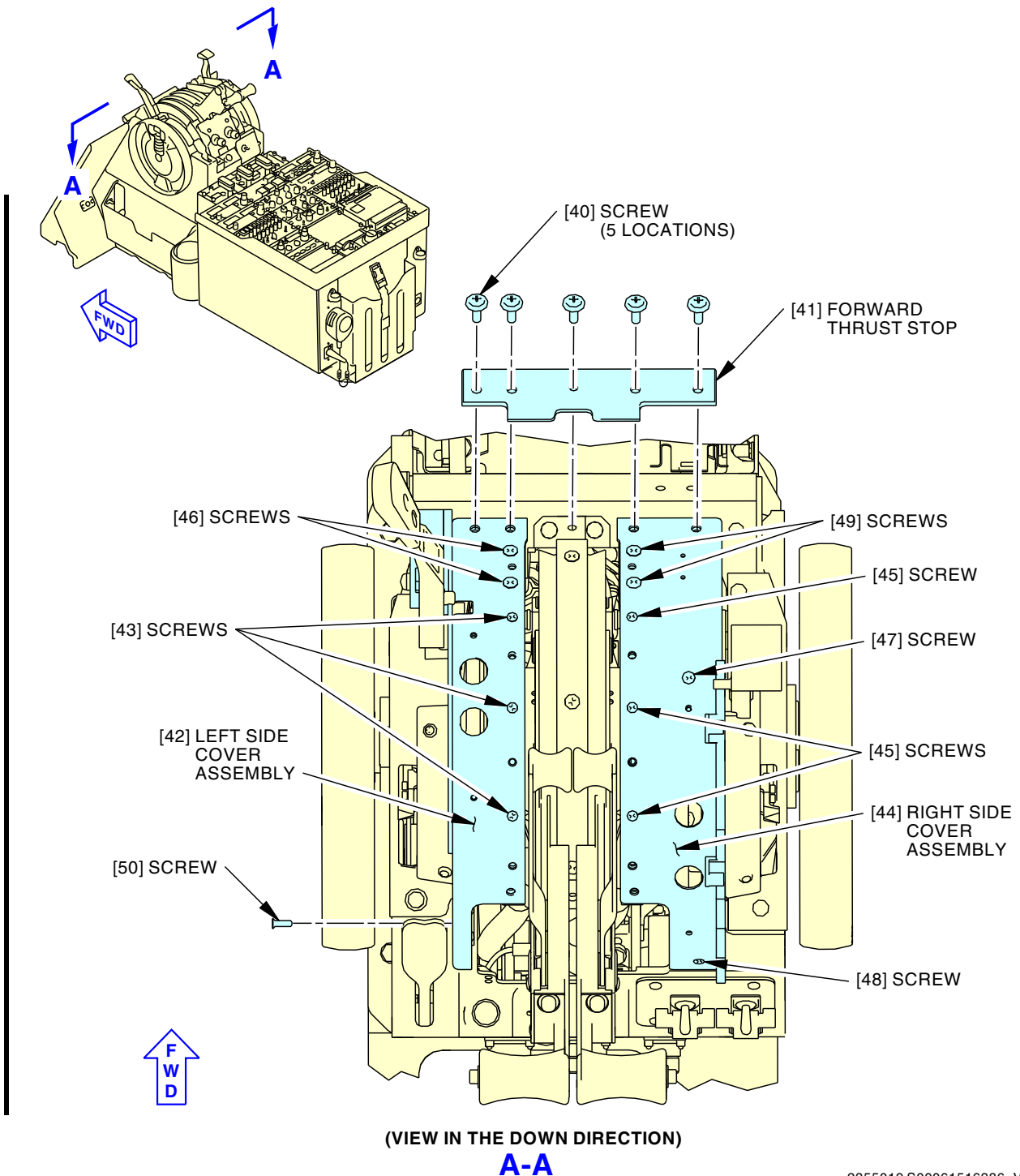
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Control Stand Cover and Stop Installation
Figure 403/76-11-03-990-803-G00

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TASK 76-11-03-400-804-G00**7. Control Stand Cover and Stop Installation**

(Figure 403)

A. General

- (1) This task gives the instructions to install the control stand cover and stop.

B. References

Reference	Title
76-11-02-420-801-G00	Start Lever Installation (P/B 401)

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Control Stand Cover and Stop Installation**SUBTASK 76-11-03-420-007-G00**

- (1) Install the right side cover assembly [44] as follows:
- (a) Put the right side cover assembly [44] in its position.
- 1) Install the two screws [49], screw [47], screw [48], and three screws [45].

SUBTASK 76-11-03-420-008-G00

- (2) Install the left side cover assembly [42] as follows:
- (a) Put the left side cover assembly [42] in its position.
- (b) Install the two screws [46], three screws [43], and screw [50].

SUBTASK 76-11-03-420-009-G00

- (3) Install the forward thrust stop [41] as follows:
- (a) Put the forward thrust stop [41] in its position.
- (b) Install the five screws [40].

E. Put the Airplane Back to Its Usual Condition**SUBTASK 76-11-03-410-004-G00**

- (1) Do this task: Start Lever Installation, TASK 76-11-02-420-801-G00.

SUBTASK 76-11-03-410-002-G00

- (2) Do this task: Control Stand Seal, Spacer and Retainer Installation, TASK 76-11-03-400-802-G00.

SUBTASK 76-11-03-410-003-G00

- (3) Do this task: Control Stand Lightplate - Installation, TASK 76-11-03-420-801-G00.

————— **END OF TASK** —————

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**THRUST LEVER ANGLE RESOLVER AND AUTOTHROTTLE BRAKE ASSEMBLY - REMOVAL/
INSTALLATION**

1. General

A. This procedure has two tasks:

- (1) Thrust Lever Angle Resolver and Autothrottle Brake Assembly Removal
- (2) Thrust Lever Angle Resolver and Autothrottle Brake Assembly Installation.

TASK 76-11-05-000-801-G00

2. Thrust Lever Angle Resolver and Autothrottle Brake Assembly Removal

(Figure 401, Figure 402, and Figure 403)

A. General

- (1) This task gives the instructions to remove the thrust lever angle resolver and autothrottle brake assembly.
- (2) The thrust lever angle resolver is referred to as the resolver.
- (3) The autothrottle brake assembly is referred to as the brake assembly.
- (4) The resolvers and brake assemblies can be found forward of the nose wheel well, below the flight compartment floor.
- (5) There is one resolver installed on each of the engine 1 and engine 2 autothrottle assemblies.
- (6) There is one brake assembly installed on each of the engine 1 and engine 2 autothrottle assemblies.

B. References

Reference	Title
22-31-91-020-801	Autothrottle Servo Motor and Gearbox 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-2414	Tool Set - Auto Throttle Servo Assembly Part #: J22001-1 Supplier: 81205

D. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
113	Area Above and Outboard of Nose Landing Gear Wheel Well - Left
114	Area Above and Outboard of Nose Landing Gear Wheel Well - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

E. Access Panels

Number	Name/Location
112A	Forward Access Door

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F. Prepare for the Removal

SUBTASK 76-11-05-860-001-G00



MAKE SURE THAT YOU OPEN THE CIRCUIT BREAKERS FOR THE WEATHER RADAR SYSTEM. THE FORWARD MOVEMENT OF A THRUST LEVER CAN CAUSE THE AUTOMATIC OPERATION OF THE SYSTEM. THE OPERATION OF THIS SYSTEM CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

- (1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C01678	WEATHER RADAR RT RIGHT

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C00120	WEATHER RADAR RT

SUBTASK 76-11-05-860-002-G00

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	1	C00721	AUTOTHROTTLE DC 1

F/O Electrical System Panel, P6-2

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

SUBTASK 76-11-05-010-001-G00

- (3) Open this access panel:

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

SUBTASK 76-11-05-860-003-G00

- (4) Attach the DO-NOT-OPERATE tags to the thrust levers.

SUBTASK 76-11-05-010-002-G00

- (5) Do this task: Autothrottle Servo Motor and Gearbox Removal, TASK 22-31-91-020-801.

G. Thrust Lever Angle Resolver and Brake Assembly Removal

SUBTASK 76-11-05-020-001-G00

- (1) Disconnect the applicable electrical connectors [11] as follows:
- For engine 1 resolver, disconnect the electrical connector [11] (D11158) and electrical connector [11] (D11160).
 - For engine 2 resolver, disconnect the electrical connector [11] (D11162) and electrical connector [11] (D11164).

SUBTASK 76-11-05-020-002-G00

- (2) Disconnect the applicable thrust lever connecting rod end [5] as follows::
- Remove and discard the cotter pin [1].
 - Remove the bolt [4], washer [3], and nut [2].

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AIRCRAFT MAINTENANCE MANUAL****SUBTASK 76-11-05-020-003-G00**

- (3) Disconnect the applicable control rod [6] as follows:
- (a) Remove the bolt [9], washer [8], and nut [7].

SUBTASK 76-11-05-020-004-G00

- (4) Disconnect the cable guard [51] as follows:
- (a) Remove the bolt [49] and washer [50] from the support bracket [31].

SUBTASK 76-11-05-020-005-G00

- (5) Disconnect the applicable resolver and brake assembly as follows:
- (a) Make sure that you support the autothrottle shaft [54] end of the assembly in its normal position.
 - (b) Remove the two bolts [26] and two washers [27].
 - (c) Remove the bolt [29] and washer [30].

SUBTASK 76-11-05-020-006-G00

- (6) Remove the support bracket [31] from the autothrottle frame housing as follows:
- (a) Remove the two bolts [22] and two washers [21].
 - (b) Remove the nut [25], two washers [24], and bolt [23].
 - (c) Remove the support bracket [31].

SUBTASK 76-11-05-020-007-G00

- (7) Move the resolver and brake assembly from the airplane as follows:
- (a) Carefully remove the resolver and brake assembly from the autothrottle frame housing.
NOTE: Handle the assembly with care, the resolver is a sensitive instrument.
 - (b) Move the resolver and brake assembly to a clean table to do the subsequent steps.

SUBTASK 76-11-05-020-008-G00

- (8) Remove the resolver as follows:
- (a) Put the nut wrench (J22001-2 BRG) on the nut [44] as follows:
NOTE: The nut wrench is part of auto throttle servo assembly tool set, SPL-2414.
 - (b) Use the shaft wrench (J22001-4) to hold the slotted autothrottle shaft [54] when you remove the nut [44].
NOTE: The shaft wrench is part of the auto throttle servo assembly tool set, SPL-2414.
 - (c) Remove the nut [44] and spacer [45].
 - (d) Remove the TLA resolver [32] from the autothrottle shaft [54].
 - (e) Remove the three screws [43] and three washers [48].
 - (f) Remove the plate [46].
 - (g) Remove the bearing [47].
 - (h) Remove the spacer [42] from the autothrottle shaft [54].

SUBTASK 76-11-05-020-009-G00

- (9) Remove the brake assembly [10] as follows:
- (a) Move the brake assembly [10] from the autothrottle shaft [54].

———— **END OF TASK** ————

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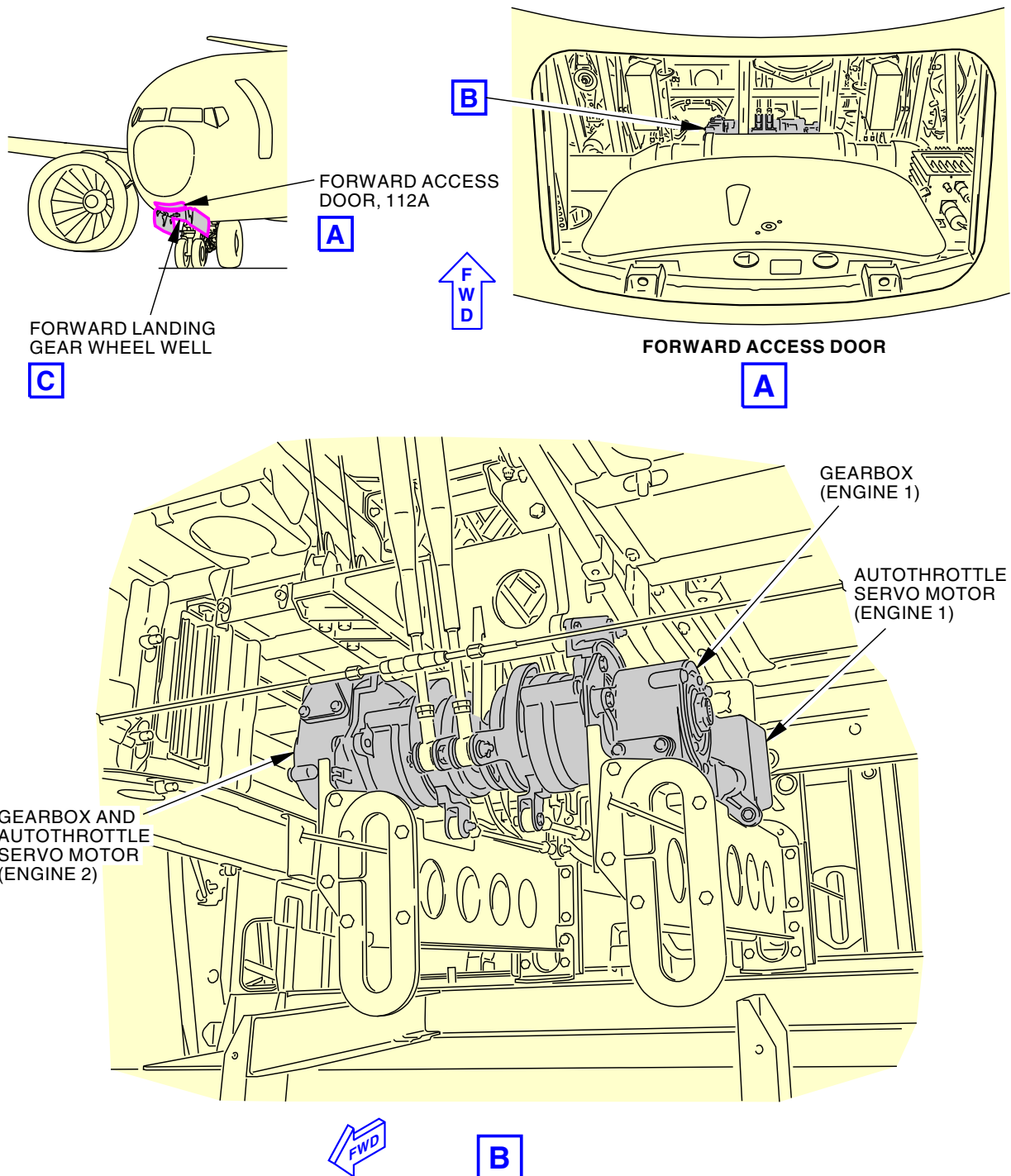
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Autothrottle Mechanism Installation
Figure 401/76-11-05-990-801-G00 (Sheet 1 of 2)

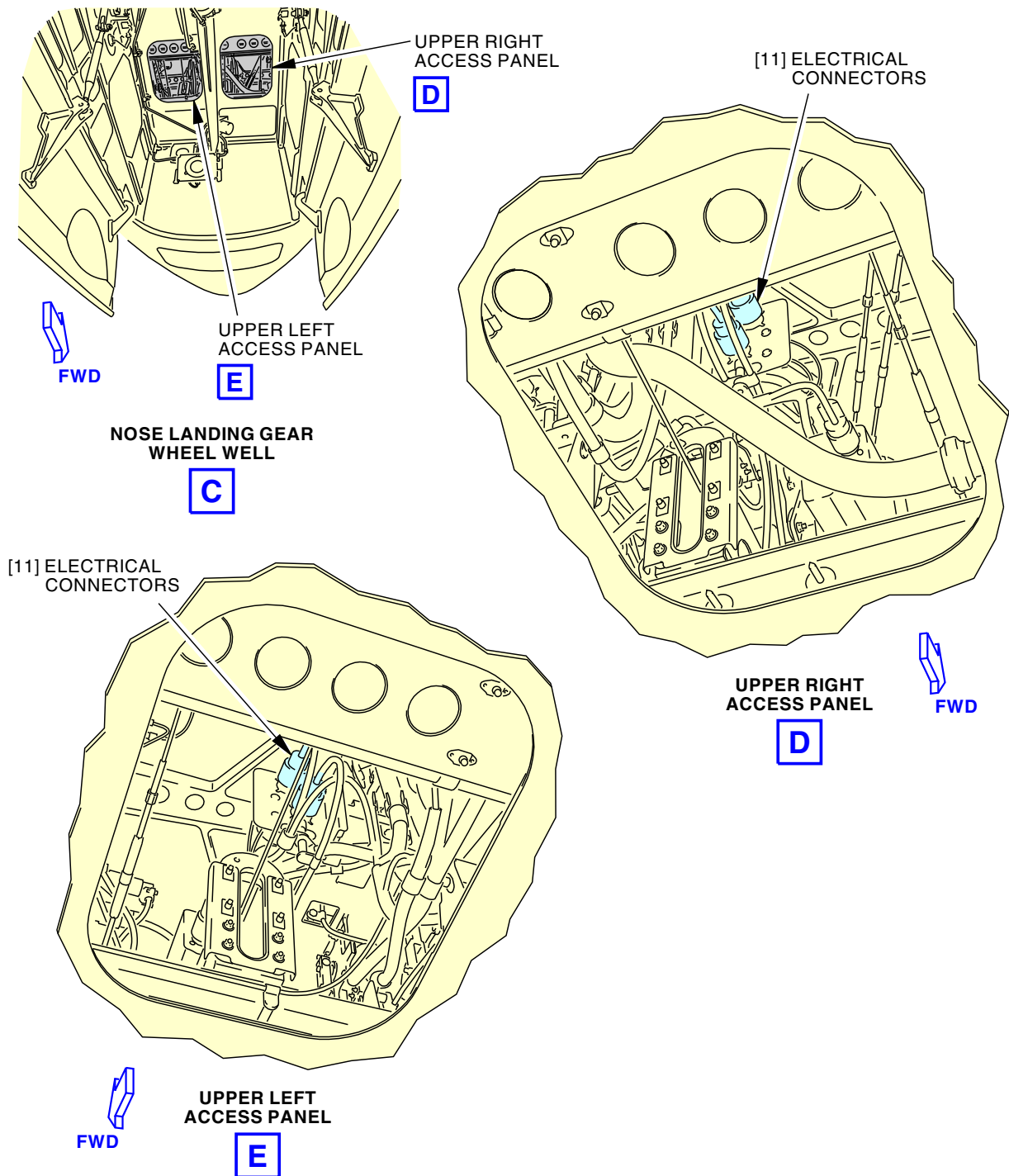
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2355021 S00061516392_V1

Autothrottle Mechanism Installation
Figure 401/76-11-05-990-801-G00 (Sheet 2 of 2)

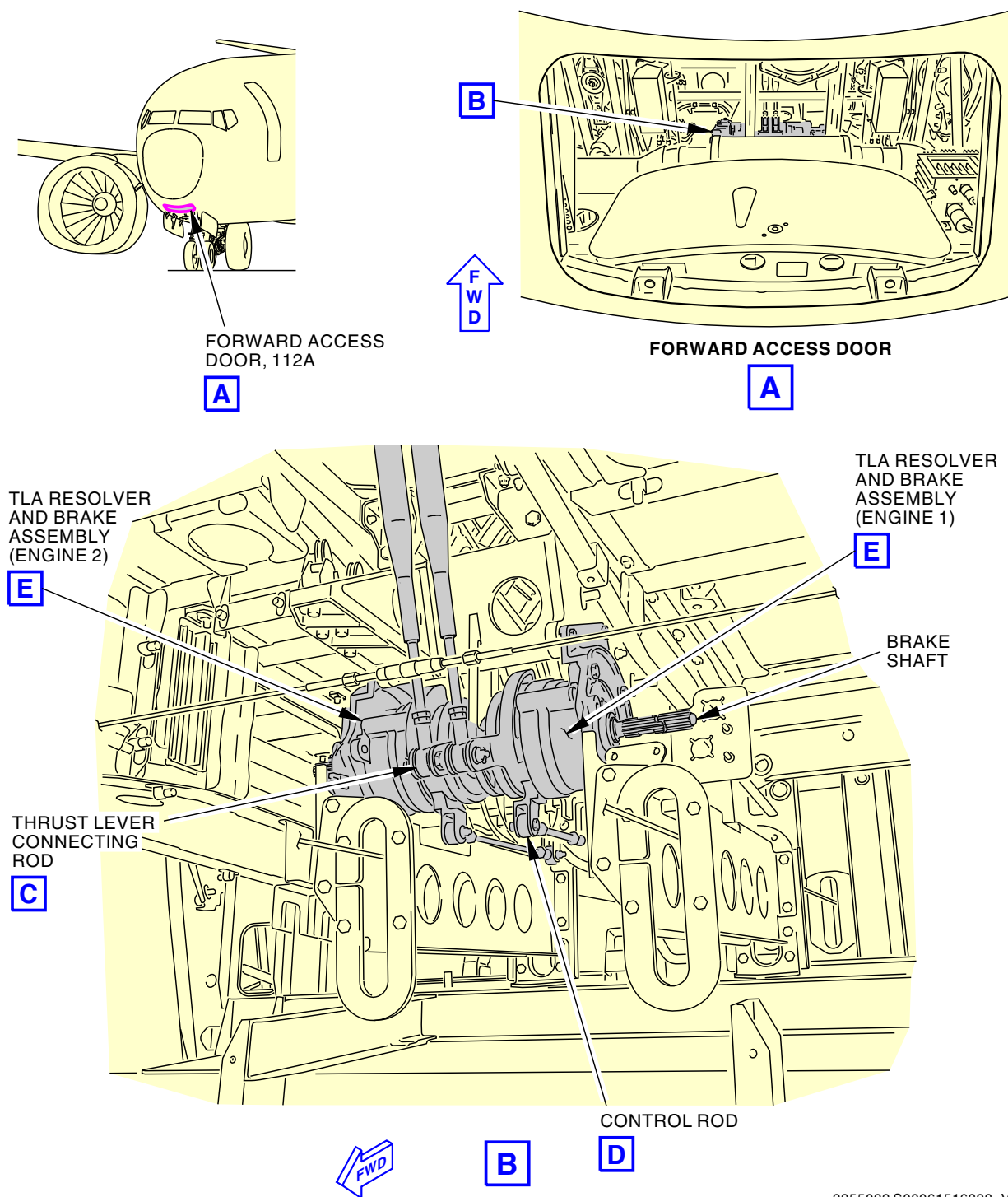
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2355022 S00061516393_V1

Thrust Lever Angle (TLA) Resolver and Autothrottle Brake Assembly Installation
Figure 402/76-11-05-990-802-G00 (Sheet 1 of 3)

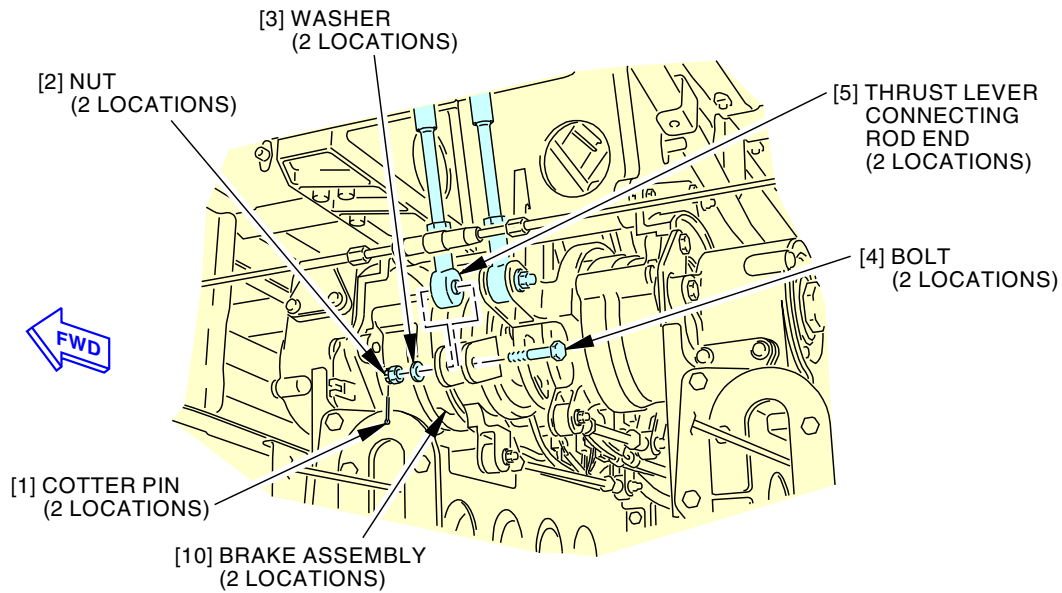
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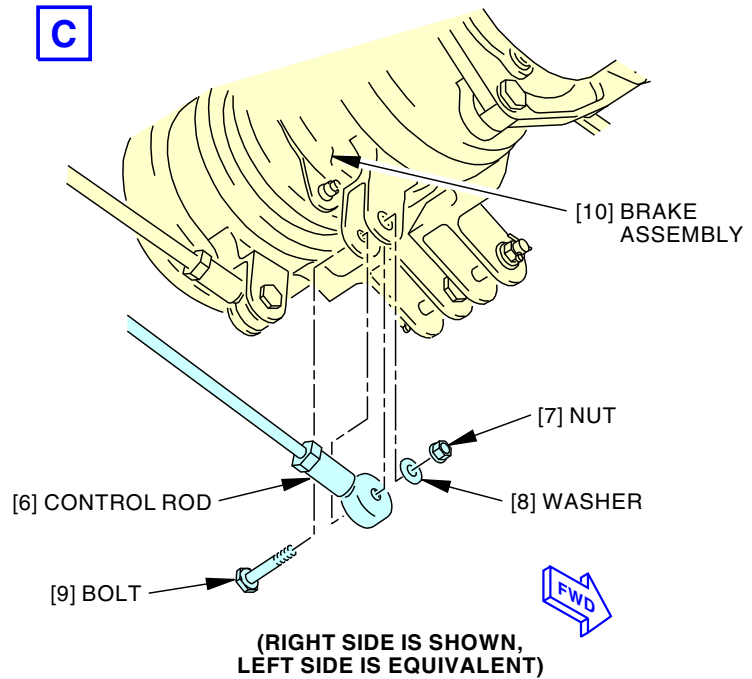
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C



D

2355023 S00061516394_V2

Thrust Lever Angle (TLA) Resolver and Autothrottle Brake Assembly Installation
Figure 402/76-11-05-990-802-G00 (Sheet 2 of 3)

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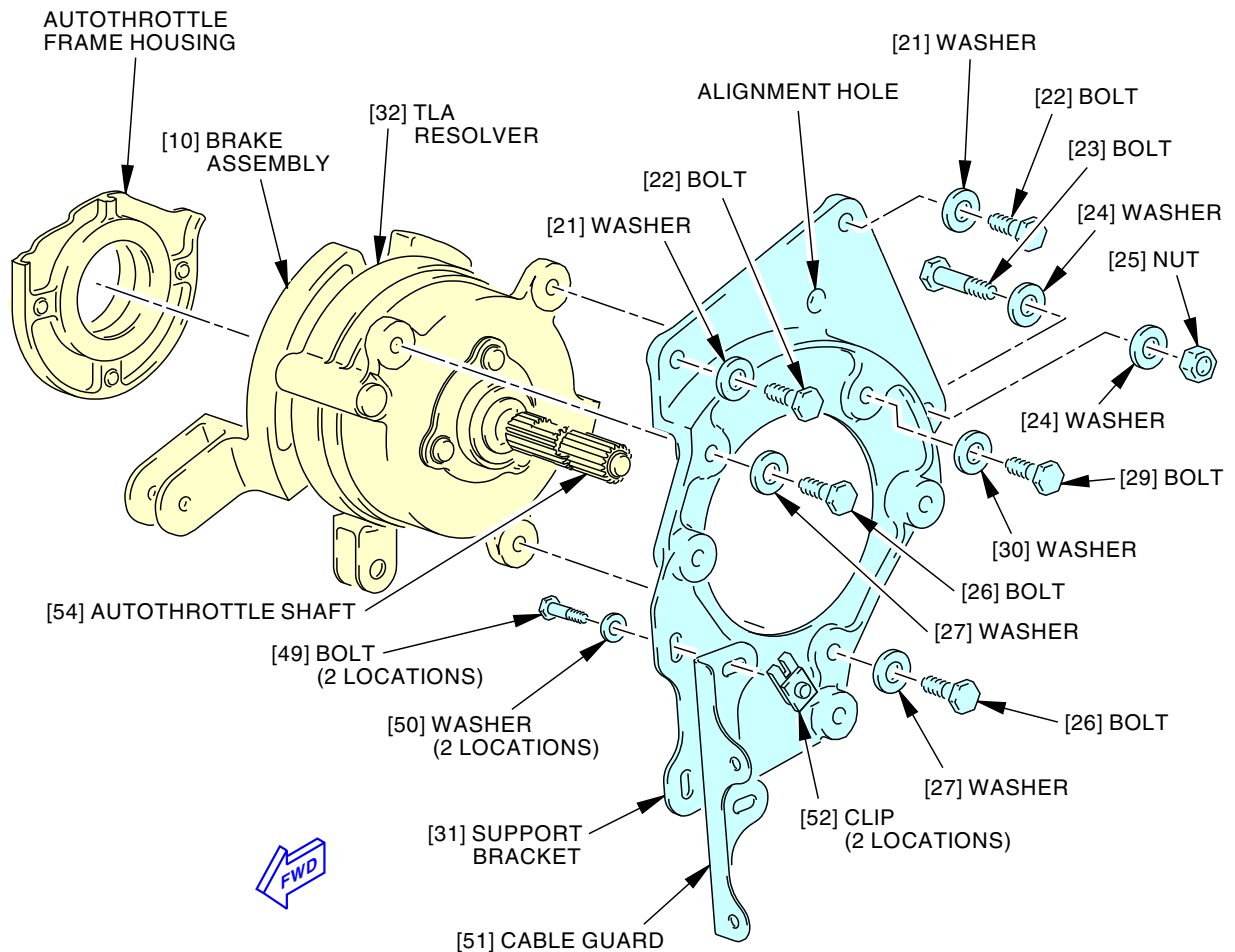
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**TLA RESOLVER AND BRAKE ASSEMBLY
(ENGINE 1 IS SHOWN, ENGINE 2 IS EQUIVALENT)**

E

2355024 S00061516395_V3

Thrust Lever Angle (TLA) Resolver and Autothrottle Brake Assembly Installation
Figure 402/76-11-05-990-802-G00 (Sheet 3 of 3)

EFFECTIVITY
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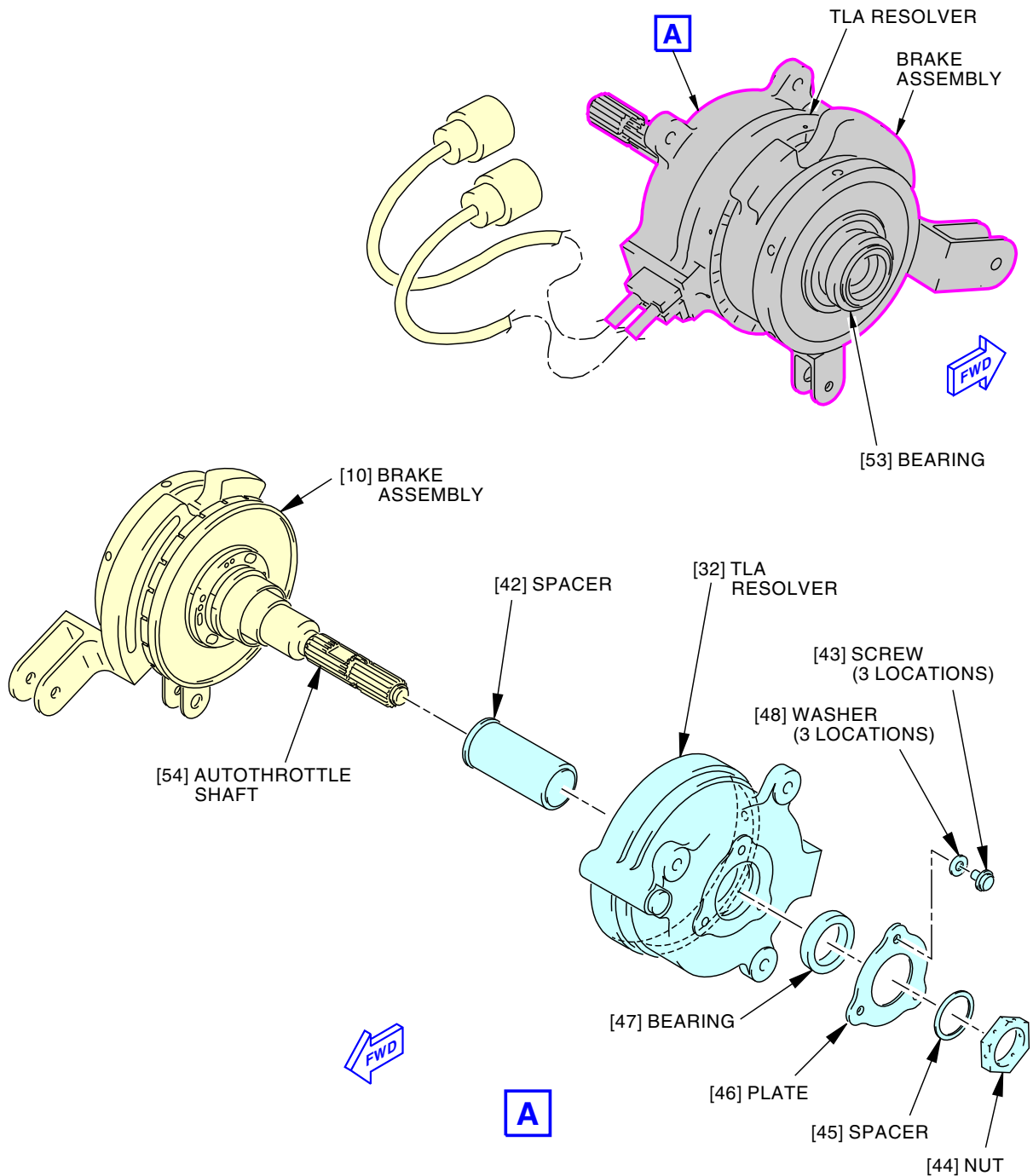
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Thrust Lever Angle (TLA) Resolver Assembly Installation
Figure 403/76-11-05-990-803-G00

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TASK 76-11-05-400-801-G00**3. Thrust Lever Angle Resolver and Autothrottle Brake Assembly Installation**

(Figure 401, Figure 402, and Figure 403)

A. General

- (1) This task gives the instructions to install the thrust lever angle resolver and autothrottle brake assembly.

B. References

Reference	Title
22-31-91-400-801	Autothrottle Servo Motor and Gearbox Installation (P/B 401)
76-11-05-820-801-G00	Thrust Lever Angle Resolver Adjustment (P/B 501)
76-11-05-820-802-G00	Autothrottle Brake Assembly Test (P/B 501)

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-2414	Tool Set - Auto Throttle Servo Assembly Part #: J22001-1 Supplier: 81205

D. Consumable Materials

Reference	Description	Specification
D00013	Grease - Aircraft And Instrument Grease	MIL-PRF-23827 (NATO G-354) (Supersedes MIL-G-23827)

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Cotter pin	22-31-00-01-005	SIA ALL

F. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
113	Area Above and Outboard of Nose Landing Gear Wheel Well - Left
114	Area Above and Outboard of Nose Landing Gear Wheel Well - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

G. Access Panels

Number	Name/Location
112A	Forward Access Door

H. Thrust Lever Angle Resolver and Autothrottle Brake Assembly Installation**SUBTASK 76-11-05-420-001-G00**

- (1) Install the brake assembly [10] as follows:
- (a) Apply grease, D00013 to the autothrottle shaft [54].
 - (b) Install the applicable brake assembly [10] on the autothrottle shaft [54].

SUBTASK 76-11-05-420-002-G00

- (2) Install the spacer [42] as follows:

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- (a) Apply a layer of grease, D00013 to the inner side surface of the spacer.
- (b) Install the spacer [42] on the autothrottle shaft [54].

SUBTASK 76-11-05-420-003-G00

- (3) Prepare the TLA resolver [32] for installation as follows:
 - (a) Install the bearing [47].
 - (b) Put the plate [46] in its position.
 - (c) Install the three washers [48] and three screws [43].

SUBTASK 76-11-05-420-004-G00

- (4) Install the TLA resolver [32] as follows:
 - (a) Apply a layer of grease, D00013 to the inner side surface of the bearing [47].
 - (b) Install the TLA resolver [32] on the autothrottle shaft [54] and the spacer [42].
 - (c) Apply a layer of grease, D00013 to the inboard and inside surface of the spacer [45].
 - (d) Install the spacer [45] on to the autothrottle shaft.
 - (e) Put the nut [44] and the nut wrench (J22001-2 BRG) onto the slotted shaft.
NOTE: The nut wrench is part of the auto throttle servo assembly tool set, SPL-2414.
 - (f) Use the shaft wrench (J22001-4) to hold the slotted shaft when you tighten the nut [44] onto the autothrottle shaft.
NOTE: The shaft wrench is part of the auto throttle servo assembly tool set, SPL-2414.
 - 1) Tighten the nut [44] to 200 in-lb (22.6 N·m) – 220 in-lb (24.9 N·m) more than the run-on torque.

SUBTASK 76-11-05-420-005-G00

- (5) Install the resolver and brake assembly as follows:
 - (a) Carefully position the bearing [53] in the autothrottle frame housing.
 - (b) Make sure that you support the autothrottle shaft [54] end of the assembly in its normal position.

SUBTASK 76-11-05-420-006-G00

- (6) Install the support bracket [31] to the autothrottle frame housing as follows:
 - (a) Put the support bracket [31] in its position on the autothrottle frame housing.
 - 1) Make sure that the alignment pin correctly engages the support bracket [31].
 - (b) Install the nut [25], two washers [24], and bolt [23].
 - (c) Install the two washers [21] and two bolts [22].

SUBTASK 76-11-05-420-007-G00

- (7) Connect the TLA resolver [32] to the support bracket [31] as follows:
 - (a) Align the TLA resolver [32] with the support bracket [31].
 - (b) Install the washer [30] and bolt [29].
 - (c) Install the two washers [27] and two bolts [26].

SUBTASK 76-11-05-420-008-G00

- (8) Install the cable guard [51] as follows:
 - (a) Put the cable guard [51] on the support bracket [31].
 - (b) Install the bolt [49] and washer [50].

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SUBTASK 76-11-05-420-009-G00

- (9) Attach the applicable control rod [6] as follows:
- (a) Put the control rod [6] to the brake assembly [10].
 - (b) Install the bolt [9], washer [8], and nut [7].

SUBTASK 76-11-05-420-010-G00

- (10) Attach the applicable thrust lever connecting rod end [5] as follows:
- (a) Put the thrust lever connecting rod end [5] to the brake assembly [10].
 - (b) Install the bolt [4] with its head on the inboard side of the thrust lever connecting rod end [5].
 - (c) Install the washer [3] and nut [2].
 - (d) Install the new cotter pin [1].

SUBTASK 76-11-05-020-010-G00

- (11) Connect the applicable wire harness electrical connectors [11] as follows:
- (a) For engine 1 resolver, connect the electrical connector [11] (D11158) and electrical connector [11] (D11160).
 - (b) For engine 2 resolver, connect the electrical connector [11] (D11162) and electrical connector [11] (D11164).

I. Put the Airplane Back to Its Usual Condition

SUBTASK 76-11-05-420-011-G00

- (1) Do this task: Autothrottle Servo Motor and Gearbox Installation, TASK 22-31-91-400-801.

SUBTASK 76-11-05-860-004-G00

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

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C01678	WEATHER RADAR RT RIGHT

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C00120	WEATHER RADAR RT

SUBTASK 76-11-05-860-005-G00

- (3) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
E	1	C00721	AUTOTHROTTLE DC 1

F/O Electrical System Panel, P6-2

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

SUBTASK 76-11-05-860-006-G00

- (4) Remove the DO-NOT-OPERATE tags from the thrust levers.

SUBTASK 76-11-05-700-001-G00

- (5) Do this task: Thrust Lever Angle Resolver Adjustment, TASK 76-11-05-820-801-G00.

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SUBTASK 76-11-05-410-001-G00

- (6) Close this access panel:

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

J. Thrust Lever Angle Resolver and Autothrottle Brake Assembly Test

SUBTASK 76-11-05-700-002-G00

- (1) If you replaced the autothrottle brake assembly, do the test for the autothrottle brake assembly (Autothrottle Brake Assembly Test, TASK 76-11-05-820-802-G00).

————— **END OF TASK** —————

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THRUST LEVER ANGLE RESOLVER AND AUTOTHROTTLE BRAKE ASSEMBLY - ADJUSTMENT/TEST

1. General

- A. This procedure has two tasks:
- (1) Thrust Lever Angle Resolver Adjustment
 - (2) Autothrottle Brake Assembly Test.

TASK 76-11-05-820-801-G00

2. Thrust Lever Angle Resolver Adjustment

(Figure 501 or Figure 502)

A. General

- (1) This task provides the instructions on how to adjust the thrust lever angle (TLA) resolver.
- (2) The thrust lever angle resolver is referred to as the resolver.
- (3) The adjustment procedure is the same for each resolver.

B. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

C. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
112A	Forward Access Door

E. Prepare for the Adjustment

SUBTASK 76-11-05-480-001-G00

- (1) Make sure that the Engine START LEVERS are in the CUTOFF position.

SUBTASK 76-11-05-860-019-G00

- (2) On the overhead panel, P5, make sure that the ENGINE START switches are in the AUTO position.
 - (a) Put DO NOT OPERATE tags, STD-858 on the switches.

SUBTASK 76-11-05-860-010-G00

- (3) Make sure that the engine thrust levers are in the IDLE position.

SUBTASK 76-11-05-860-011-G00

- (4) Make sure that the thrust reversers are in the retracted (stowed) position.

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SUBTASK 76-11-05-860-017-G00



MAKE SURE THAT YOU OPEN THE CIRCUIT BREAKERS FOR THE WEATHER RADAR SYSTEM. THE FORWARD MOVEMENT OF A THRUST LEVER CAN CAUSE THE AUTOMATIC OPERATION OF THE SYSTEM. THE OPERATION OF THIS SYSTEM CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

- (5) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C01678	WEATHER RADAR RT RIGHT

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C00120	WEATHER RADAR RT

SUBTASK 76-11-05-010-003-G00

- (6) Open this access panel:

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

SUBTASK 76-11-05-700-003-G00

- (7) Set up the MDS for the applicable Engine 1 or Engine 2 resolver adjustment as follows:

- (a) Get access to the MDS in the flight compartment.

SUBTASK 76-11-05-710-001-G00

- (8) Do these steps to find if the applicable Engine X resolver is in limits:

NOTE: Do not move the opposite thrust lever to a position that is greater than the initial thrust lever. If you do, you must move the opposite thrust lever to the idle stop and move it forward again. If you do not follow these instructions, the results of the test are not accurate.

- (a) Make sure that the applicable engine thrust lever is against the IDLE stop.
- (b) Use the SELECTOR on the Multi Function Panel to make the Selections:
- MAINT
 - MAINT DATA PGS
 - DISPLAY SELECTION
 - 71 EPCS, DISPLAY
- (c) On the EPCS Page, the TRA will show for ENGINE 1 CH A and B, ENGINE 2 CH A and B
- (d) Move the applicable thrust lever to the positions indicated in the table below. If the indications are not in the specified range, do the steps in the Thrust Lever Angle Resolver Adjustment section below for the applicable resolver. Then do this Subtask again to verify these indications.

TRA Position Range

Throttle Position	TRA (Deg)
Forward Mechanical Stop	84.0° ± 1.0°

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TRA Position Range (Continued)

Throttle Position	TRA (Deg)
Idle Stop	$36^{\circ} \pm 0.8^{\circ}$
Aft Mechanical Stop	$6.0 \pm 1.0^{\circ}$

SUBTASK 76-11-05-720-001-G00

- (9) Do these steps to set the alignment with the opposite thrust lever:
- (a) Move both thrust lever to the positions indicated in the table below. Make sure that the difference is $0.0^{\circ} \pm 1.0^{\circ}$.

TRA Position Range

Throttle Position	TRA (Deg)
Forward Mechanical Stop	$84.0^{\circ} \pm 1.0^{\circ}$
Idle Stop	$36^{\circ} \pm 0.8^{\circ}$
Aft Mechanical Stop	$6.0 \pm 1.0^{\circ}$

- (1) If the indications are not in the specified range, do the steps in the Thrust Lever Angle Resolver Adjustment section below for the initial or opposite thrust lever.
 - a) Use the Idle Stop position values.
 - b) Choose the resolver which you can adjust to be in the limits at Idle Stop and at the Forward Mechanical Stop.
 - c) Return to this step after the adjustment.
- (b) If the difference is in $0.0^{\circ} \pm 0.8^{\circ}$, the test is completed.
- (c) Move the two thrust levers to the idle stop.

F. Thrust Lever Angle Resolver Adjustment

SUBTASK 76-11-05-820-001-G00

- (1) Adjust the thrust control rod for the applicable resolver until you get the correct value as follows:
 - (a) Move the applicable thrust lever against the IDLE stop.
 - (b) Disconnect the thrust lever from the autothrottle brake assembly
 - 1) Remove the cotter pin [1], the nut [2], and the washer [3].
 - a) Discard the cotter pin [1].
 - 2) Remove the bolt [4].
 - (c) Move the rod end [5] from the autothrottle brake assembly clevis [7].
 - (d) Move the autothrottle brake assembly clevis [7] to get the correct TRA value on the MDS.
 - (e) Make sure that applicable engine are in these limits:
 - 1) TRA POSITION CH A indication reads $36.0^{\circ} \pm 0.8^{\circ}$.
 - 2) TRA POSITION CH B indication reads $36.0^{\circ} \pm 0.8^{\circ}$.
 - 3) The difference between the TRA POSITION CH A and the TRA POSITION CH B should be less than 0.8° .
 - (f) Loosen the jamnut [6] and turn the rod end to align it with the autothrottle brake assembly clevis [7].

NOTE: Use the bolt [4] to make sure that the parts are aligned.

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- 1) Insert the bolt [4] with the bolt head on the inboard side of the autothrottle brake assembly.
- 2) Install the washer [3], the nut [2], and a new cotter pin [1].
- 3) Tighten the jamnut [6] on the control rod between 95 in-lb (10.7 N·m) to 160 in-lb (18.1 N·m).
- (g) Make sure that the TRA POSITION CH A and TRA POSITION CH B indications on the MDS still read $36.0^\circ \pm 0.8^\circ$, and the difference is less than 0.8° .
 - 1) If the values are not in the specified range, adjust the thrust control rod until you get the correct values.

SUBTASK 76-11-05-820-002-G00

- (2) Do a check of the adjustment as follows:

NOTE: Do not move the opposite thrust lever to a position that is greater than the initial thrust lever. If you do, you must move the opposite thrust lever to the idle stop and move it forward again. If you do not follow these instructions, the results of the test are not accurate.

- (a) Carefully move the thrust lever to the full forward mechanical stop position.
 - 1) Stop for a minimum of 2 seconds.
 - 2) Make sure that the TRA POSITION CH A and TRA POSITION CH B indications on the MDS read $84.0^\circ \pm 1.0^\circ$.
 - 3) If the values are not in the specified range, adjust the thrust control rod again until you get the correct value.
- (b) Do a check of the alignment between the thrust levers.
 - 1) Move the thrust lever that you adjusted to IDLE and stop for a minimum of 2 seconds.
 - 2) Move the thrust lever forward to align with the knob on the other thrust lever, which should be still be set at $84.0^\circ \pm 1.0^\circ$.
 - 3) Make sure that the knob alignment difference is not more than $\pm 1/16$ inch with the other knob.
 - 4) Make sure that the difference in TRA POSITION CH A values is not more than $0.0^\circ \pm 0.8^\circ$.
 - 5) If the difference is not in the specified range, do the thrust lever adjustment again until you get the correct value.
 - 6) If the difference is in the specified range, the check is completed.
- (c) Move the thrust levers to the IDLE stop.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 76-11-05-000-001-G00

- (1) Remove the DO NOT OPERATE tags, STD-858 from the start switches.

SUBTASK 76-11-05-010-004-G00

- (2) Close this access panel:

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

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SUBTASK 76-11-05-860-018-G00

- (3) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C01678	WEATHER RADAR RT RIGHT

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C00120	WEATHER RADAR RT

———— **END OF TASK** ————

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SYS MENU		STATUS	MAINT DATA PGS	MAINT CTRL PGS	ONBD MAINT
DISPLAY SELECTION		PRINT SELECTION	DATALINK SELECTION	ERASE SELECTION	
ATA SYSTEM		REAL	MANUAL	AUTO	
21	AIR CONDITIONING	DISPLAY	SHOW LIST	SHOW LIST	
27	FLIGHT CONTROL	DISPLAY	SHOW LIST	SHOW LIST	
27	SMYO	DISPLAY	SHOW LIST	SHOW LIST	
31	MDS	DISPLAY			
32	PSEU	DISPLAY	SHOW LIST	SHOW LIST	
36	AIR SUPPLY	DISPLAY	SHOW LIST	SHOW LIST	
49	APU	DISPLAY	SHOW LIST	SHOW LIST	
71	PERFORMANCE	DISPLAY	SHOW LIST	SHOW LIST	
71	EPCS	DISPLAY	SHOW LIST	SHOW LIST	
71	ENGINE 1 EXCEEDANCE			DISPLAY	
71	ENGINE 2 EXCEEDANCE			DISPLAY	

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**ATA System Page
Figure 501/76-11-05-990-806-G00**

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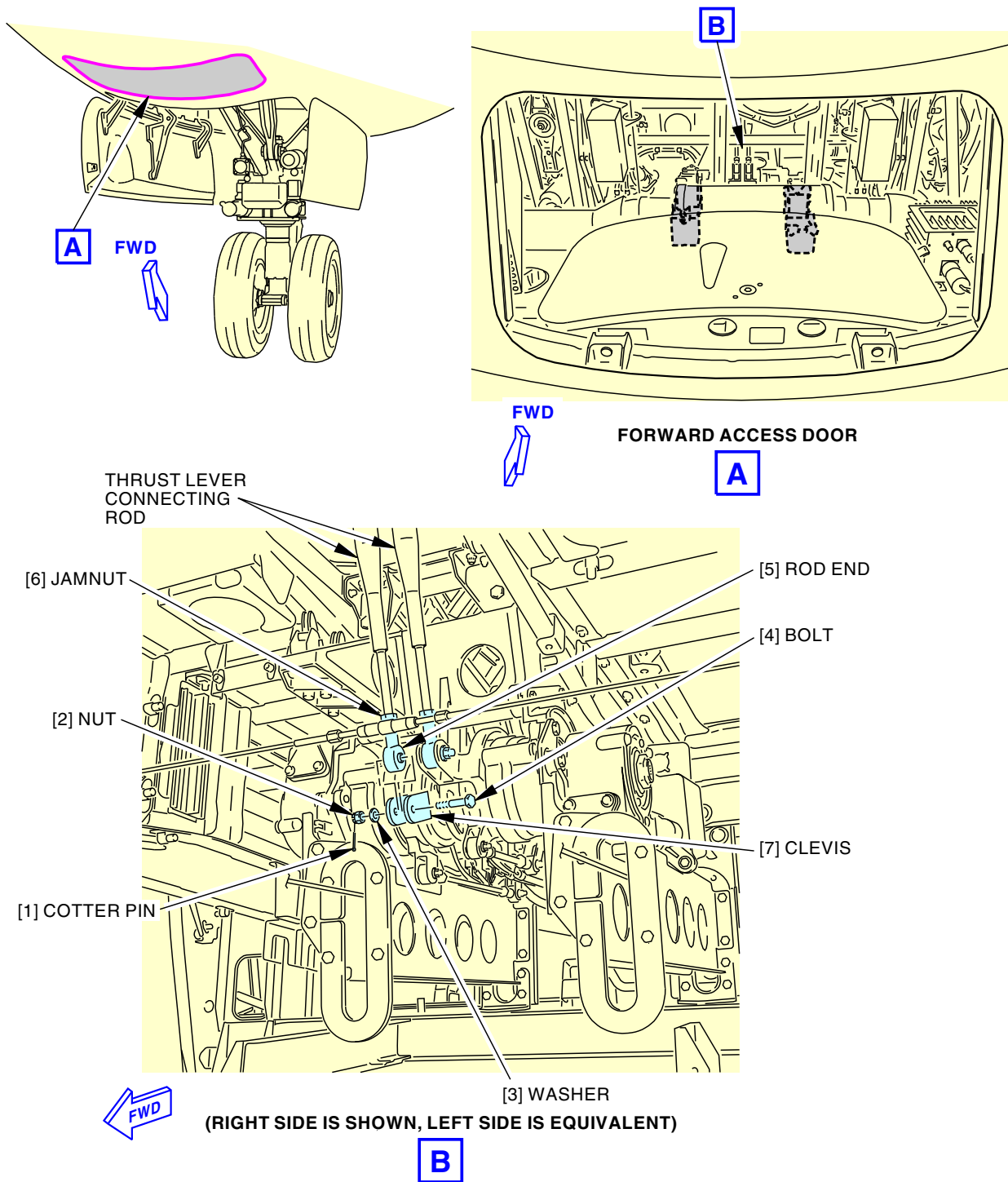
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Thrust Lever Angle (TLA) Resolver Adjustment
Figure 502/76-11-05-990-805-G00

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TASK 76-11-05-820-802-G00**3. Autothrottle Brake Assembly Test****A. General**

- (1) This task provides the instructions on how to test the autothrottle brake assembly test for the loads that are used to prevent the free movement of the thrust levers.

B. 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-1557	Gauge - Force
	Part #: DG-200 Supplier: 92456
	Part #: FDIX 100 Supplier: 0BFD9
	Part #: FDIX 50 Supplier: 0BFD9
	Part #: LG-050 Supplier: 92456
	Part #: LG-100 Supplier: 92456
	Opt Part #: DPP-500G Supplier: 92456
	Opt Part #: DPPH-150 Supplier: 92456
	Opt Part #: DPPH-200 Supplier: 92456
	Opt Part #: DPPH-50 Supplier: 92456
	Opt Part #: FDI 100 Supplier: 0BFD9
	Opt Part #: FDI 50 Supplier: 0BFD9
	Opt Part #: FDV 100 Supplier: 0BFD9
	Opt Part #: FDV 50 Supplier: 0BFD9

C. Location Zones

Zone	Area
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Prepare for the Test**SUBTASK 76-11-05-860-013-G00**

- (1) Make sure that the engine thrust levers are in the IDLE position.

SUBTASK 76-11-05-860-014-G00

- (2) Make sure that the reverse thrust levers are in the retracted (stowed) position.

SUBTASK 76-11-05-860-015-G00

MAKE SURE THAT YOU OPEN THE CIRCUIT BREAKERS FOR THE WEATHER RADAR SYSTEM. THE FORWARD MOVEMENT OF A THRUST LEVER CAN CAUSE THE AUTOMATIC OPERATION OF THE SYSTEM. THE OPERATION OF THIS SYSTEM CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

- (3) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	7	C01678	WEATHER RADAR RT RIGHT

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F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C00120	WEATHER RADAR RT

E. Autothrottle Brake Assembly Test

SUBTASK 76-11-05-820-003-G00

- (1) Measure the load that is necessary to operate the forward thrust levers as follows:
 - (a) Put the force gauge, COM-1557 at the aft side of the forward thrust lever.
NOTE: The spring scale must touch the knob of the forward thrust lever at the center.
 - (b) Hold the scale at 90 degrees to the line that connects the knob and the pivot axis of the lever.
 - (c) Use the scale to move the forward thrust lever through the full forward travel.
 - 1) Measure the force that is necessary to move the thrust lever.
 - 2) Record the force value.
 - (d) Make sure that the load is 2.0 lb (0.9 kg) to 6.0 lb (2.7 kg).
 - (e) Remove the force gauge, COM-1557 from the thrust lever.
 - (f) Move the spring scale to the forward side of the forward thrust lever you just tested.
NOTE: The spring scale must touch the knob of the forward thrust lever at the center.
 - (g) Hold the scale at 90 degrees to the line that connects the knob and the pivot axis of the lever.
 - (h) Do this check of the thrust lever free play:
 - 1) Apply a force of 1.0 lb (0.45 kg) to 1.5 lb (0.68 kg) in the decreasing thrust direction.
 - 2) Make sure the lever moves no more than 0.10 in. (2.5 mm) at the knob centerline.
 - (i) Remove the spring scale.
 - (j) Move the lever to the idle position.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 76-11-05-860-016-G00

- (1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C01678	WEATHER RADAR RT RIGHT

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C00120	WEATHER RADAR RT

————— **END OF TASK** —————

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REVERSE THRUST INTERLOCK SOLENOID - REMOVAL/INSTALLATION

1. General

- A. This procedure has two tasks:
- (1) Reverse thrust interlock solenoid removal
 - (2) Reverse thrust interlock solenoid installation.

TASK 76-11-06-000-801-G00

2. Reverse Thrust Interlock Solenoid Removal

(Figure 401 and Figure 402)

A. General

- (1) This task gives the instructions to remove the reverse thrust interlock solenoid from the autothrottle assembly.
- (2) There are two interlock solenoids installed in the autothrottle and they are not interchangeable.

B. References

Reference	Title
20-10-91-000-801	Control Cables Removal (P/B 401)
27-51-00-040-801	Trailing Edge Flap System Deactivation (P/B 201)
53-14-01-020-801	Nose Wheel Well Access Panels Removal (P/B 401)
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
112	Area Forward of Nose Landing Gear Wheel Well
113	Area Above and Outboard of Nose Landing Gear Wheel Well - Left
114	Area Above and Outboard of Nose Landing Gear Wheel Well - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

E. Access Panels

Number	Name/Location
112A	Forward Access Door
114AW	Forward Nose Wheel Well Panel

F. Prepare for the Removal

SUBTASK 76-11-06-860-001-G00



MOVE ALL PERSONS AND EQUIPMENT AWAY FROM THE TRAILING EDGE FLAPS, AND THE LEADING EDGE FLAPS AND SLATS. THESE SURFACES WILL MOVE AND CAN CAUSE INJURIES TO PERSONS OR DAMAGE TO EQUIPMENT.

- (1) Operate the stabilizer trim system to provide cable clearance for access of the autothrottle assembly.

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- (a) Set the stabilizer trim lever at 4.2 degrees or the NOSE UP stop.

SUBTASK 76-11-06-040-001-G00



DO THE TRAILING EDGE FLAP DEACTIVATION PROCEDURE BEFORE YOU DO WORK ON THE FLAP SYSTEM. WITH THE FLAPS ACTIVATED, THE FLAPS CAN MOVE AND CAUSE INJURY TO PERSONS OR DAMAGE TO EQUIPMENT.

- (2) Do this task: Trailing Edge Flap System Deactivation, TASK 27-51-00-040-801.

SUBTASK 76-11-06-040-002-G00

- (3) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK

SUBTASK 76-11-06-860-002-G00

- (4) On the overhead panel, P5, make sure that the left and right ENGINE START switches are in the AUTO position.

- (a) Put DO NOT OPERATE tags, STD-858 on the switches.

SUBTASK 76-11-06-010-001-G00



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.

- (5) Do the deactivation procedure for the thrust reverser for ground maintenance (TASK 78-31-00-040-801-G00).

SUBTASK 76-11-06-010-002-G00

- (6) Open this access panel:

<u>Number</u>	<u>Name/Location</u>
114AW	Forward Nose Wheel Well Panel

SUBTASK 76-11-06-010-003-G00

- (7) Remove the two access panels at the top of the wheel well, to get access to the autothrottle and flap control cables (TASK 53-14-01-020-801).

SUBTASK 76-11-06-410-001-G00

- (8) Open this access panel:

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

G. Reverse Thrust Interlock Solenoid Removal

SUBTASK 76-11-06-020-001-G00

- (1) Go into the lower forward access area under the flight compartment.

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**737-7/8/8200/9/10
AIRCRAFT MAINTENANCE MANUAL****SUBTASK 76-11-06-020-002-G00**

- (2) Disconnect the two thrust lever connecting rods [5] from the autothrottle clutch pack as follows:
- (a) Remove and discard the cotter pins [4].
 - (b) Remove the nuts [3], the washers [2], and the bolts [1].

SUBTASK 76-11-06-020-003-G00

- (3) Go into the nose wheel well, to get access the flap control cables.

SUBTASK 76-11-06-020-004-G00

- (4) Disconnect the WFA and WFB cables (TASK 20-10-91-000-801).

SUBTASK 76-11-06-020-005-G00

- (5) Disconnect each of the aft end of the two cable guards from the nose wheel well housing as follows:
- (a) Remove the four nuts [6] and the washers [7].
 - (b) Remove the four bolts [8] and the washers [15].

SUBTASK 76-11-06-020-006-G00

- (6) Loosen the aft autothrottle attachment bolt [9] and the bolt [10].

NOTE: Do not remove the bolts. You want the autothrottle to pivot from these bolts.

SUBTASK 76-11-06-010-004-G00

- (7) Lower the autothrottle assembly as follows:

NOTE: The forward part of the autothrottle will pivot down from the aft bolt attachments.

- (a) Put wood blocks on the blankets of the nose wheel well.

NOTE: Make sure that you have sufficient wood blocks to keep the autothrottle off the control cables.

- (b) Remove the right bolt [11] and the right washer [12].
- (c) Hold the autothrottle assembly in it position, while you remove the left bolt [13] and the left washer [14].
- (d) Carefully lower the autothrottle assembly until cable guards rest on the wood blocks.

SUBTASK 76-11-06-020-007-G00

- (8) Disconnect the applicable wire bundles as follows (Figure 402, View B) :

- (a) For the right interlock solenoid, do these steps:

- 1) Disconnect the connector V156.
- 2) Disconnect the three clamps.
- 3) Remove the wire bundle from the protective cover.
- 4) Add protective covers on the electrical connectors and receptacles.

- (b) For the left interlock solenoid, do these steps:

- 1) Disconnect the connector V155.
- 2) Disconnect the three clamps.
- 3) Remove the wire bundle from the protective cover.
- 4) Add protective covers on the electrical connectors and receptacles.

SUBTASK 76-11-06-020-008-G00

- (9) Remove the applicable rod assembly [20] from the interlock solenoid and latch assembly as follows (Figure 402, view C).

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- (a) Remove the nut [21] and the washer [22].
- (b) Remove the bolt [26] and the washer [27].
- (c) Remove the rod assembly.

SUBTASK 76-11-06-020-009-G00

- (10) Remove the applicable interlock solenoid as follows:
 - (a) Remove the two nuts [28] and the two washers [29].
 - (b) Remove the right interlock solenoid [31] or the left interlock solenoid [32].
 - (c) Remove the spacer [30].

———— **END OF TASK** ————

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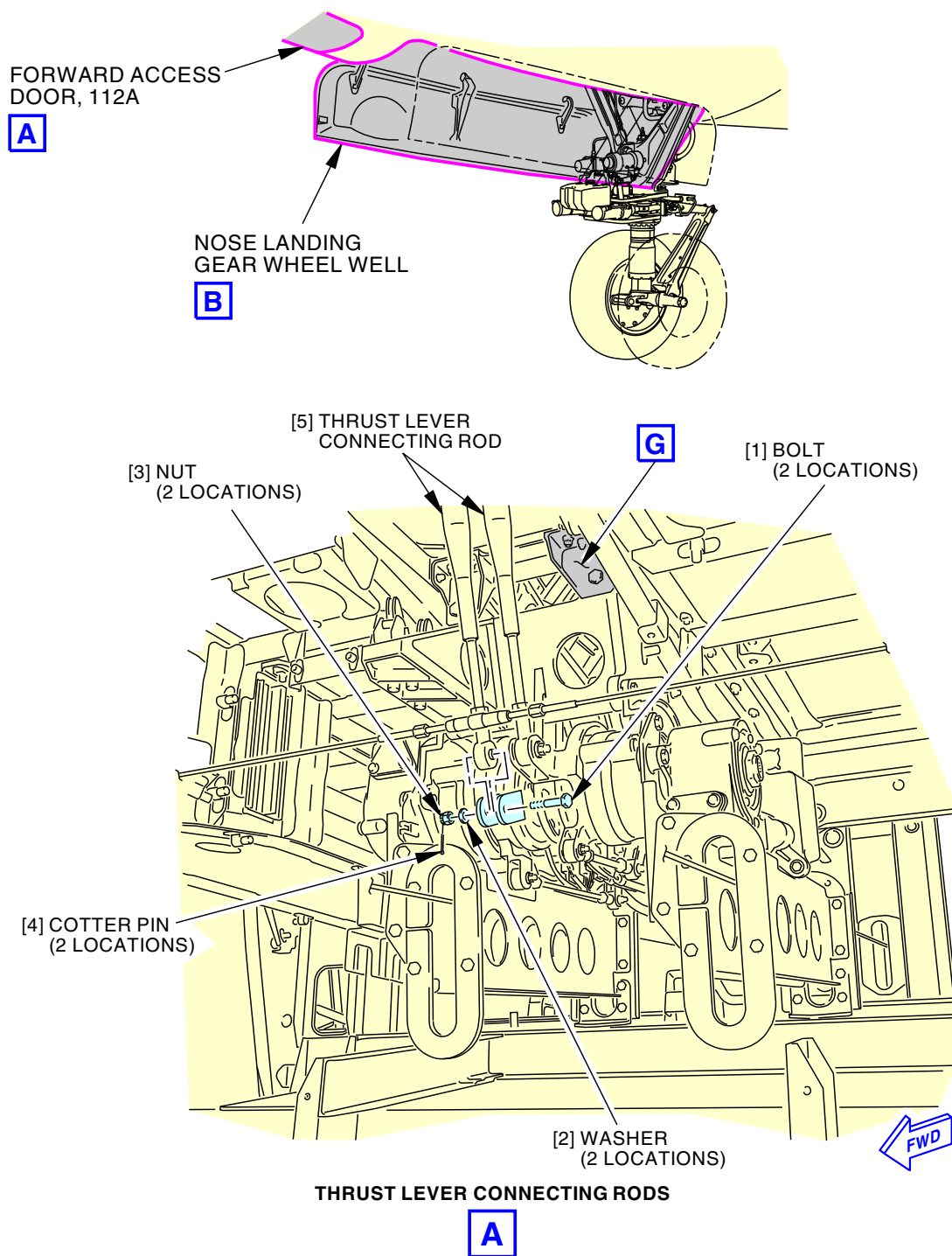
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2355028 S00061516406_V1

Autothrottle Installation
Figure 401/76-11-06-990-801-G00 (Sheet 1 of 4)

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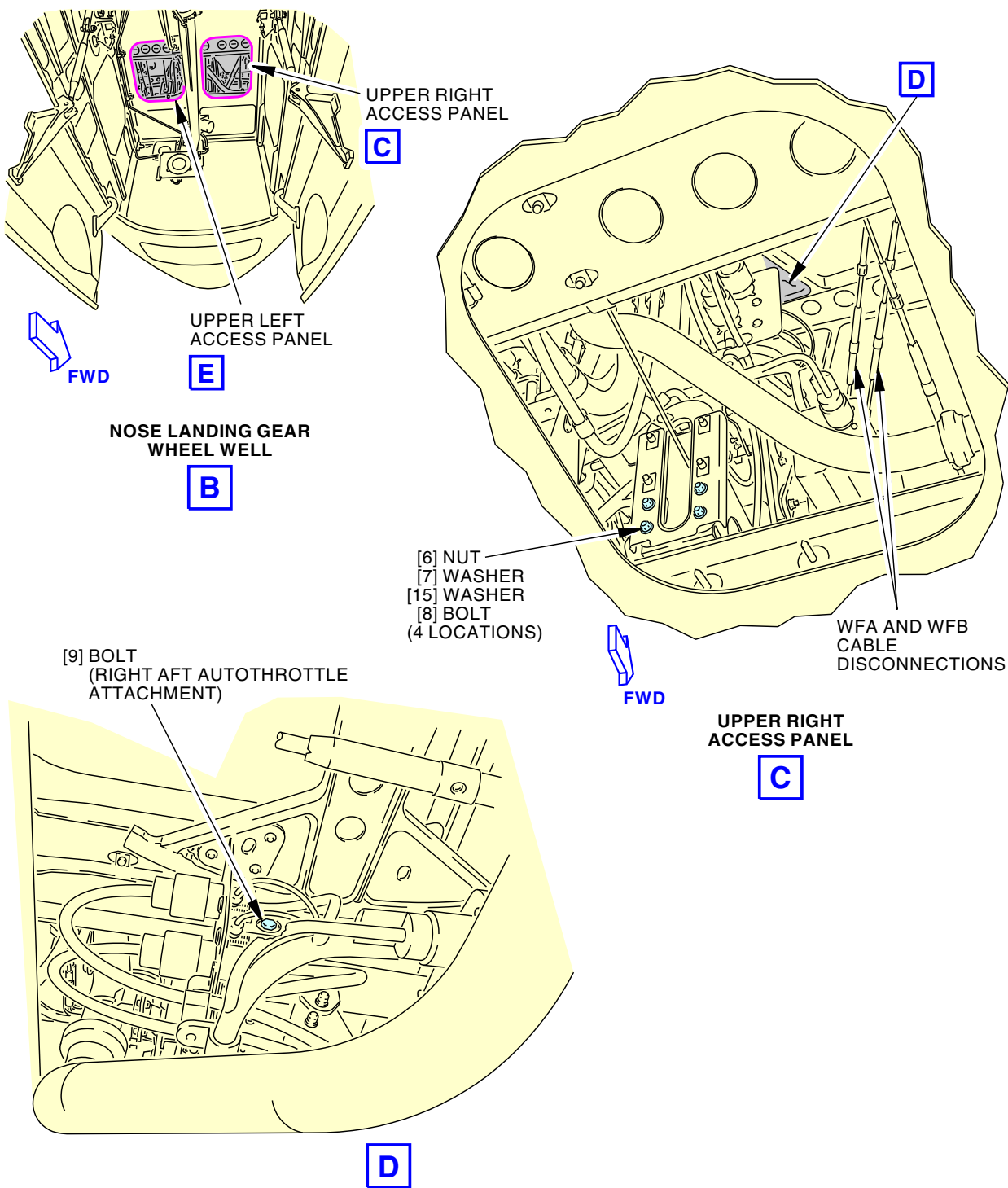
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2355029 S00061516407_V2

Autothrottle Installation
Figure 401/76-11-06-990-801-G00 (Sheet 2 of 4)

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SIA ALL

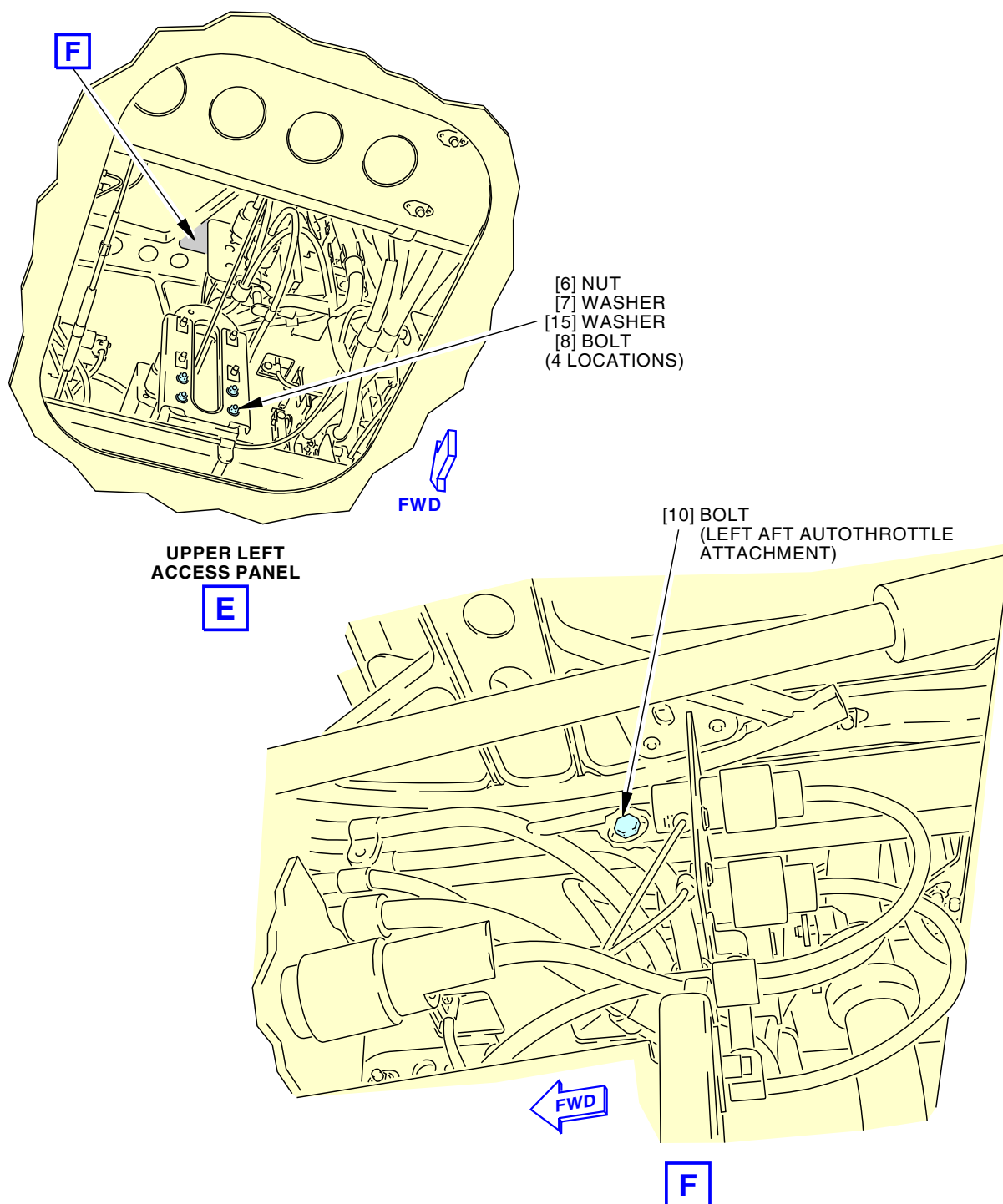
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2355030 S00061516408_V3

Autothrottle Installation
Figure 401/76-11-06-990-801-G00 (Sheet 3 of 4)

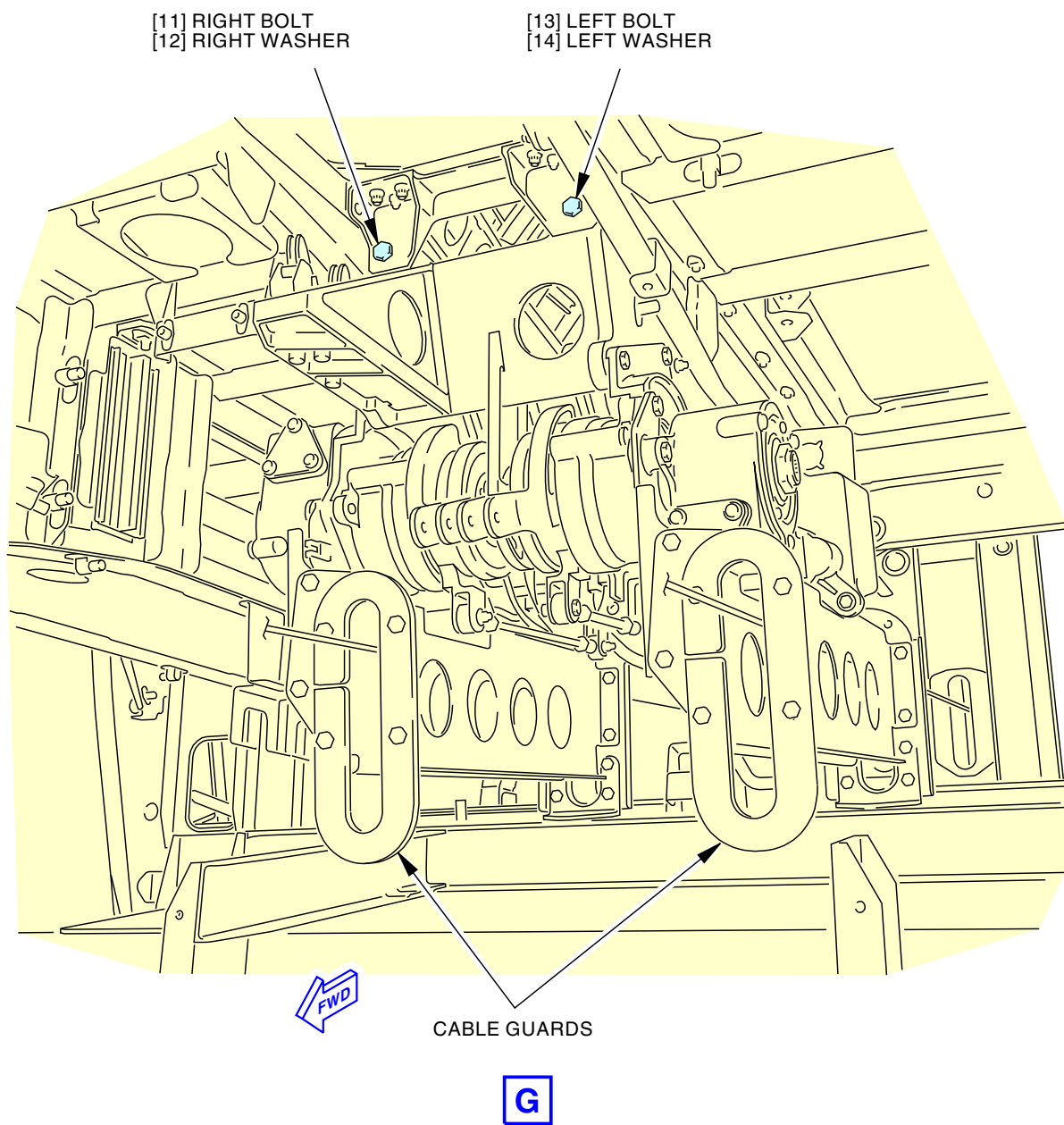
EFFECTIVITY
SIA ALL

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2355031 S00061516409_V1

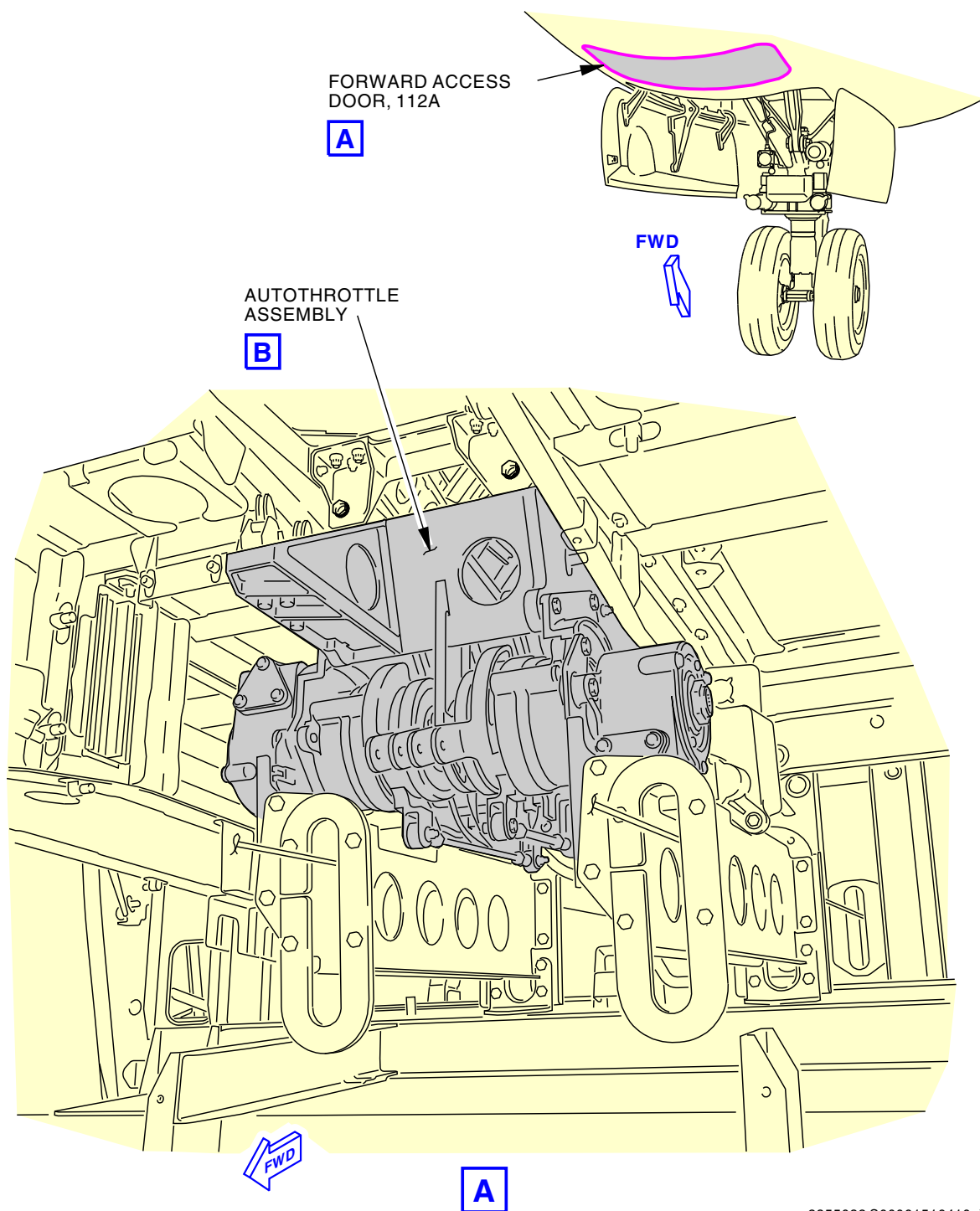
Autothrottle Installation
Figure 401/76-11-06-990-801-G00 (Sheet 4 of 4)

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2355032 S00061516410_V1

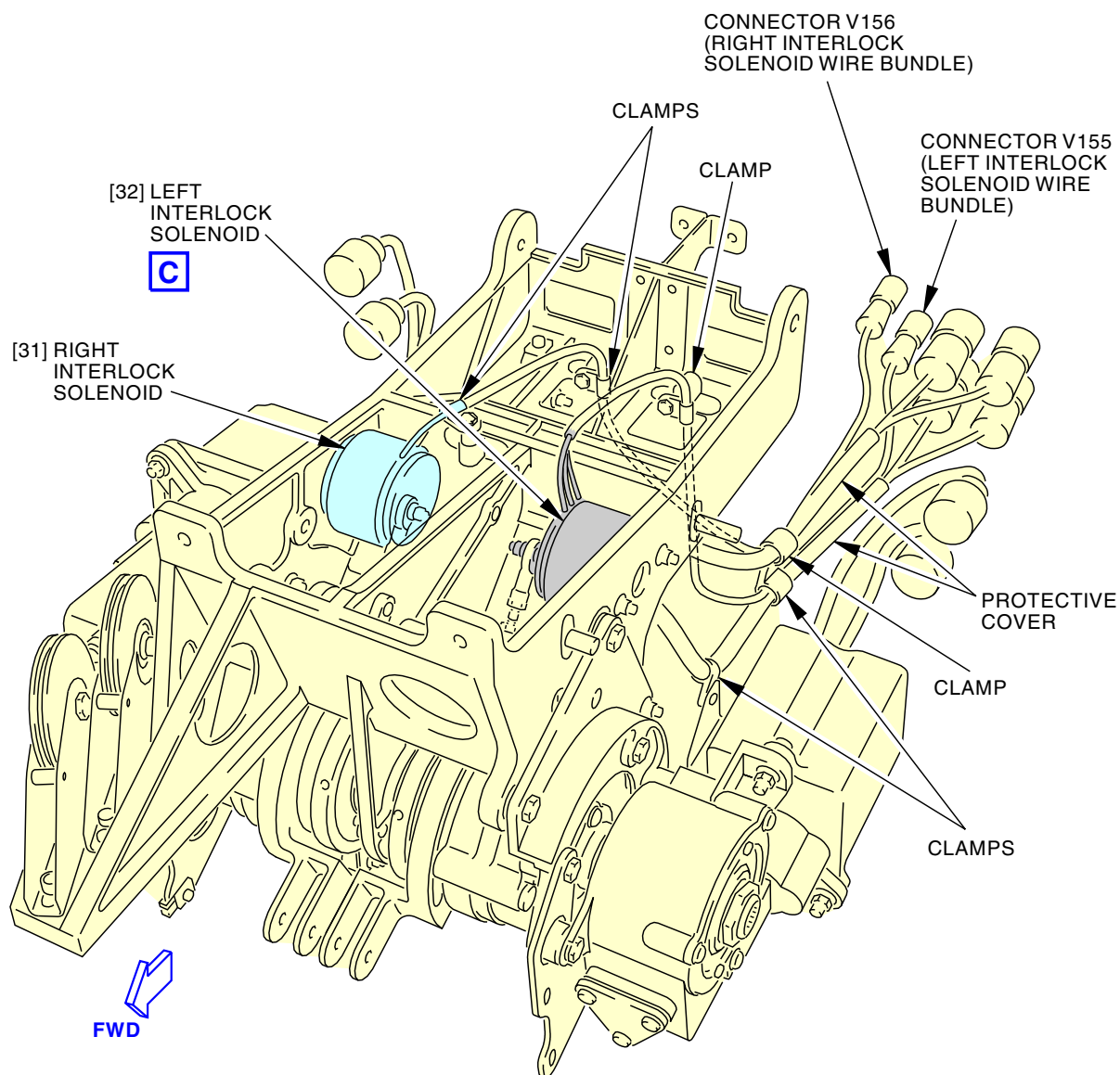
Reverse Thrust Interlock Solenoid Installation
Figure 402/76-11-06-990-802-G00 (Sheet 1 of 3)EFFECTIVITY
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AUTOTHROTTLE ASSEMBLY

B

2355033 S00061516411_V2

Reverse Thrust Interlock Solenoid Installation
Figure 402/76-11-06-990-802-G00 (Sheet 2 of 3)

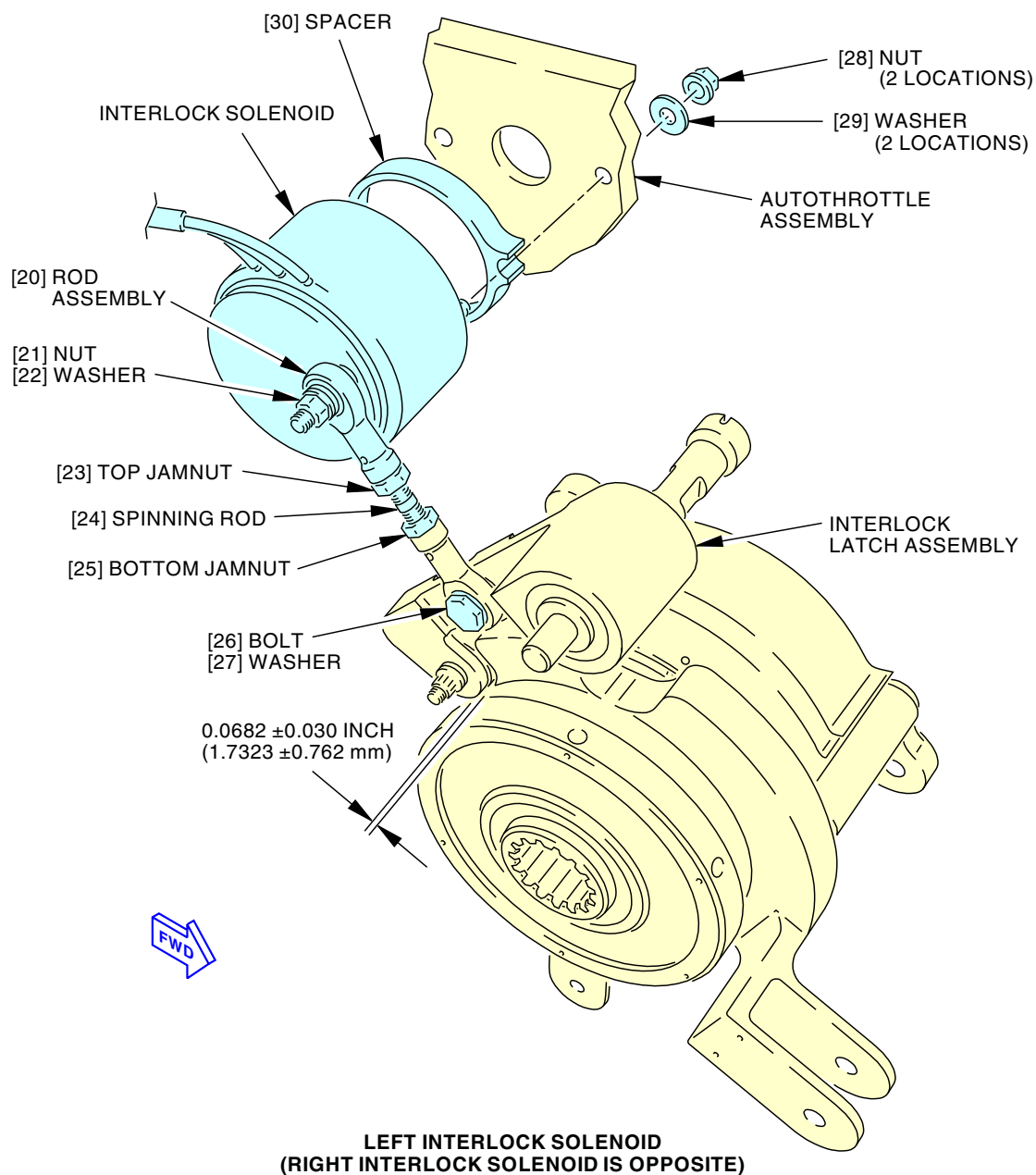
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C

2355034 S00061516412_V2

Reverse Thrust Interlock Solenoid Installation
Figure 402/76-11-06-990-802-G00 (Sheet 3 of 3)

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TASK 76-11-06-440-801-G00**3. Reverse Thrust Interlock Solenoid Installation**

(Figure 401 and Figure 402)

A. General

- (1) This task gives the instructions to install the interlock solenoid into the autothrottle assembly.
- (2) There are two interlock solenoids installed in the autothrottle and they are not interchangeable.

B. References

Reference	Title
20-10-91-400-801	Control Cables Installation (P/B 401)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
53-14-01-420-801	Nose Wheel Well Access Panels Installation (P/B 401)
70-51-00-800-801-G00	Instructions for Torque (Miscellaneous) (P/B 201)
71-00-00-710-804-G00	Test No. 12 - Thrust Reverser Interlock Operational Test (P/B 501)
76-11-05-820-801-G00	Thrust Lever Angle Resolver Adjustment (P/B 501)
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. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
4	Cotter pin	22-31-00-01-005	SIA ALL

E. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
113	Area Above and Outboard of Nose Landing Gear Wheel Well - Left
114	Area Above and Outboard of Nose Landing Gear Wheel Well - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

F. Access Panels

Number	Name/Location
112A	Forward Access Door
114AW	Forward Nose Wheel Well Panel

G. Reverse Thrust Interlock Solenoid Installation

SUBTASK 76-11-06-420-001-G00

- (1) Install the applicable interlock solenoid [32] or the interlock solenoid [31] as follows (Figure 402, view C):
 - (a) Install the spacer [30].
 - (b) Put the applicable interlock solenoid [32] or the interlock solenoid [31] in its position as follows:
 - 1) Install the interlock solenoid [32] on the left side.
 - 2) Install the interlock solenoid [31] on the right side.

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- (c) Install the two nuts [28] and the two washers [29].
 - 1) Tighten the nuts to 20 in-lb (2.26 N·m) – 25 in-lb (2.82 N·m).

SUBTASK 76-11-06-420-002-G00

- (2) Install the rod assembly [20] to the interlock solenoid [31] or the solenoid [32] and latch assembly:
 - (a) Put the rod assembly [20] on the interlock solenoid drive pin.
 - (b) Install the nut [21] and the washer [22].
 - 1) Tighten the nut to 20 in-lb (2.26 N·m) – 25 in-lb (2.82 N·m).
 - (c) Set the rod end in its position on the interlock latch assembly.
 - (d) Install the bolt [26] and the washer [27].

SUBTASK 76-11-06-420-003-G00

- (3) Connect the applicable wire bundles for the left interlock solenoid as follows:
 - (a) Make sure you route the bundle correctly.
 - 1) Route the bundle through the left aft lightening hole to prevent interference with the left reverse thrust lever assembly.
NOTE: The bundle for the right interlock solenoid routes through the right aft lightening hole.
 - (b) Connect the three clamps.
 - (c) Remove the protective covers from the electrical connectors and receptacles.
 - (d) Connect the connector V155.
 - (e) Put the wire bundle in the protective cover.

SUBTASK 76-11-06-420-004-G00

- (4) Connect the applicable wire bundles for the right interlock solenoid as follows:
 - (a) Make sure that you route the bundle correctly.
 - (b) Connect the four clamps.
 - (c) Remove the protective covers from the electrical connectors and receptacles.
 - (d) Connect the connector V156.
 - (e) Put the wire bundle in the protective cover.

SUBTASK 76-11-06-820-001-G00

- (5) Adjust the latch assembly as follows:
 - (a) Set the distance between the roller and the brake assembly:
 - 1) Loosen the top jamnut [23].
 - 2) Loosen the bottom jamnut [25].
 - 3) Turn the spinning rod [24] to set the distance between the roller and the brake assembly to 0.0682 ±0.0300 in. (1.7323 ±0.7620 mm).
 - 4) Tighten the top jamnut [23] and the bottom jamnut [25].
NOTE: Make sure that the spinning rod does not turn when you tighten the top jamnut and the bottom jamnut.

SUBTASK 76-11-06-420-005-G00

- (6) Attach the forward autothrottle assembly to the floor frame as follows (TASK 70-51-00-800-801-G00):

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- (a) Move the autothrottle assembly up into its location.
- (b) Install the right bolt [11] and the right washer [12].
- (c) Install the left bolt [13] and the left washer [14].
- (d) Remove all of the wood blocks.

SUBTASK 76-11-06-420-006-G00

- (7) Attach the aft autothrottle assembly to the floor frame as follows (TASK 70-51-00-800-801-G00):
 - (a) Tighten the right bolt [9].
 - (b) Tighten the left bolt [10].

SUBTASK 76-11-06-020-010-G00

- (8) Connect the aft end of the two cable guards to the nose wheel well housing as follow (TASK 70-51-00-800-801-G00):
 - (a) Install the four bolts [8] and the washers [15].
 - (b) Install the four nuts [6] and the washers [7].

SUBTASK 76-11-06-420-007-G00

- (9) Attach the flap control cables.
 - (a) Connect the WFA and WFB cables (TASK 20-10-91-400-801).

SUBTASK 76-11-06-420-008-G00

- (10) Connect the two thrust lever connecting rods [5] to the autothrottle clutch pack as follow:
 - (a) Set the applicable connecting rod to the autothrottle clutch pack.
 - (b) Install the nuts [3], the washers [2], and the bolts [1].

NOTE: Make sure you put the head of the bolt on the inboard side of the applicable clutch pack.
 - (c) Install new cotter pins [4].

H. Put the Airplane Back to its Usual Condition**SUBTASK 76-11-06-710-001-G00**

- (1) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK

SUBTASK 76-11-06-710-002-G00

- (2) Do this task: Thrust Lever Angle Resolver Adjustment, TASK 76-11-05-820-801-G00.

SUBTASK 76-11-06-010-005-G00

- (3) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
114AW	Forward Nose Wheel Well Panel

SUBTASK 76-11-06-010-006-G00

- (4) Install the two access panels at the top of the wheel well (TASK 53-14-01-420-801).

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SUBTASK 76-11-06-410-002-G00

- (5) Close this access panel:

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

SUBTASK 76-11-06-440-001-G00

- (6) Remove the DO NOT OPERATE tags, STD-858 from the ENGINE START switches.

SUBTASK 76-11-06-410-003-G00

- (7) Do the activation procedure for the thrust reverser (TASK 78-31-00-440-801-G00).

SUBTASK 76-11-06-440-002-G00

- (8) Do this task: Trailing Edge Flap System Reactivation, TASK 27-51-00-440-801.

I. Reverse Thrust Interlock Solenoid Test

SUBTASK 76-11-06-710-003-G00

- (1) Do this task: Test No. 12 - Thrust Reverser Interlock Operational Test, TASK 71-00-00-710-804-G00.

———— **END OF TASK** ————

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AUTOTHROTTLE SWITCHPACK ASSEMBLY - REMOVAL/INSTALLATION

1. General

A. This procedure has these tasks:

- (1) Autothrottle Switchpack Assembly Removal
- (2) Autothrottle Switchpack Assembly Installation.

TASK 76-11-07-020-801-G00

2. Autothrottle Switchpack Assembly Removal

(Figure 401)

A. General

- (1) This task is for the removal of the left or right autothrottle switchpack assembly.
- (2) The left autothrottle switchpack assembly, M1766 is for engine 1.
- (3) The right autothrottle switchpack assembly, M1767 is for engine 2.
- (4) You access the switchpack through the upper nose wheel well panels.
- (5) There are nine switches installed in each switchpack.

B. References

Reference	Title
53-14-01-020-801	Nose Wheel Well Access Panels Removal (P/B 401)

C. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
113	Area Above and Outboard of Nose Landing Gear Wheel Well - Left
114	Area Above and Outboard of Nose Landing Gear Wheel Well - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
112A	Forward Access Door

E. Prepare for the Removal

SUBTASK 76-11-07-860-001-G00



MAKE SURE THAT YOU OPEN THE CIRCUIT BREAKERS FOR THE WEATHER RADAR SYSTEM. THE FORWARD MOVEMENT OF A THRUST LEVER CAN CAUSE THE AUTOMATIC OPERATION OF THE SYSTEM. THE OPERATION OF THIS SYSTEM CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

- (1) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	7	C01678	WEATHER RADAR RT RIGHT

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F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C00120	WEATHER RADAR RT

SUBTASK 76-11-07-860-002-G00

- (2) For engine 1, open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT

SUBTASK 76-11-07-860-003-G00

- (3) For engine 2, open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT

SUBTASK 76-11-07-860-004-G00

- (4) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

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

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	16	C01345	LANDING GEAR AUTOBRAKE BITE CONT 2
A	18	C00583	LANDING GEAR AUTOBRAKE BITE CONT 1
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 76-11-07-860-005-G00

- (5) Attach the DO-NOT-OPERATE tags to the thrust levers.

SUBTASK 76-11-07-010-001-G00

- (6) Open this access panel:

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

(TASK 53-14-01-020-801)

F. Autothrottle Switchpack Assembly Removal

SUBTASK 76-11-07-020-002-G00

- (1) Remove the applicable switchpack [9] assembly as follows:

- (a) For the left switchpack [9] assembly, disconnect the electrical connector, D11128P.

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- I
- (b) For the right switchpack [9] assembly, disconnect the electrical connector, D11132P.
 - (c) Remove the bolt [4], the washer [7], and the nut [8].
 - (d) Move the rod [5] from the crank [6].
 - (e) Remove the two bolts [2], the washers [14], and the nut [13].
 - (f) Slide the switchpack [9] assembly off the bushing [1] and remove the switchpack [9] assembly.

NOTE: It is not necessary to remove the bushing in order to remove the switchpack.

———— **END OF TASK** ————

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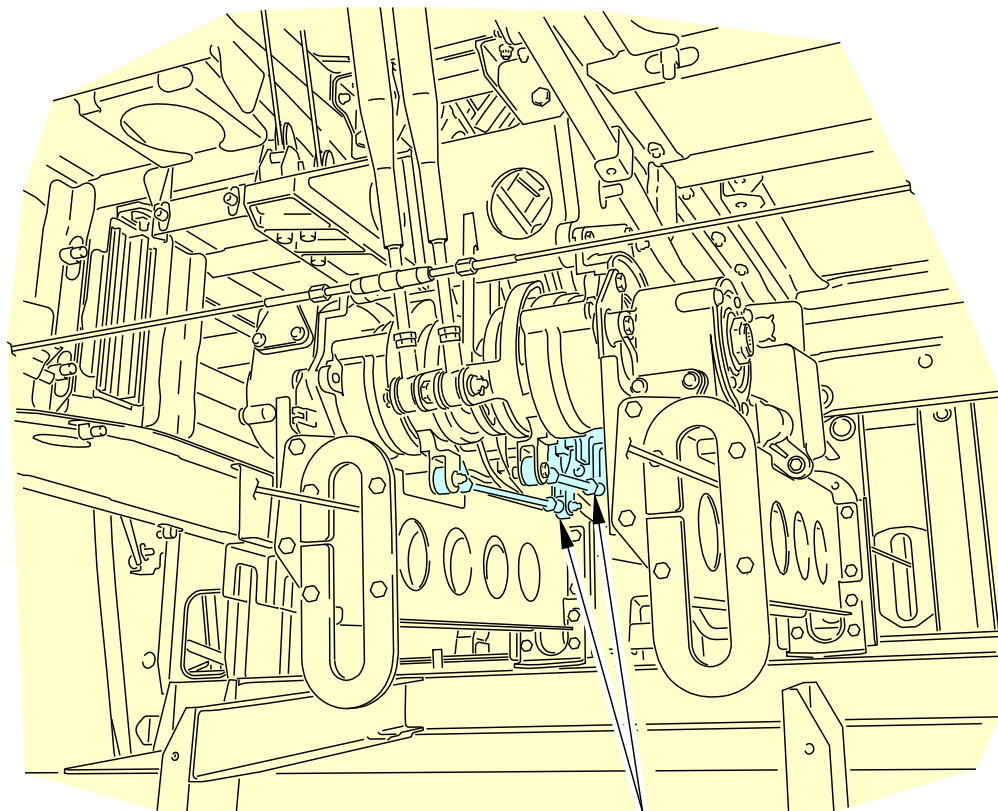
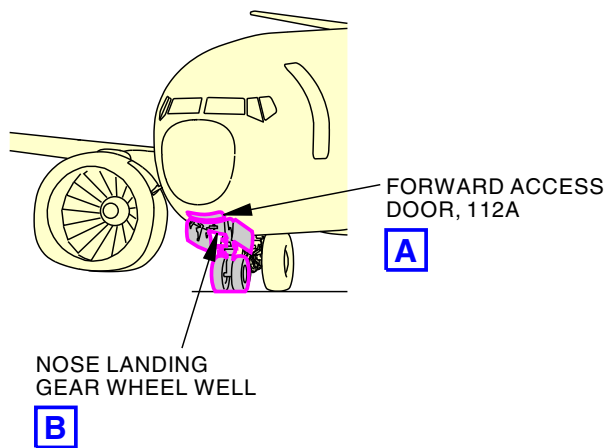
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AUTOTHROTTLE SWITCHPACKS



FORWARD ACCESS DOOR



2355035 S00061516417_V1

Autothrottle Switchpack Assembly Installation
Figure 401/76-11-07-990-801-G00 (Sheet 1 of 4)

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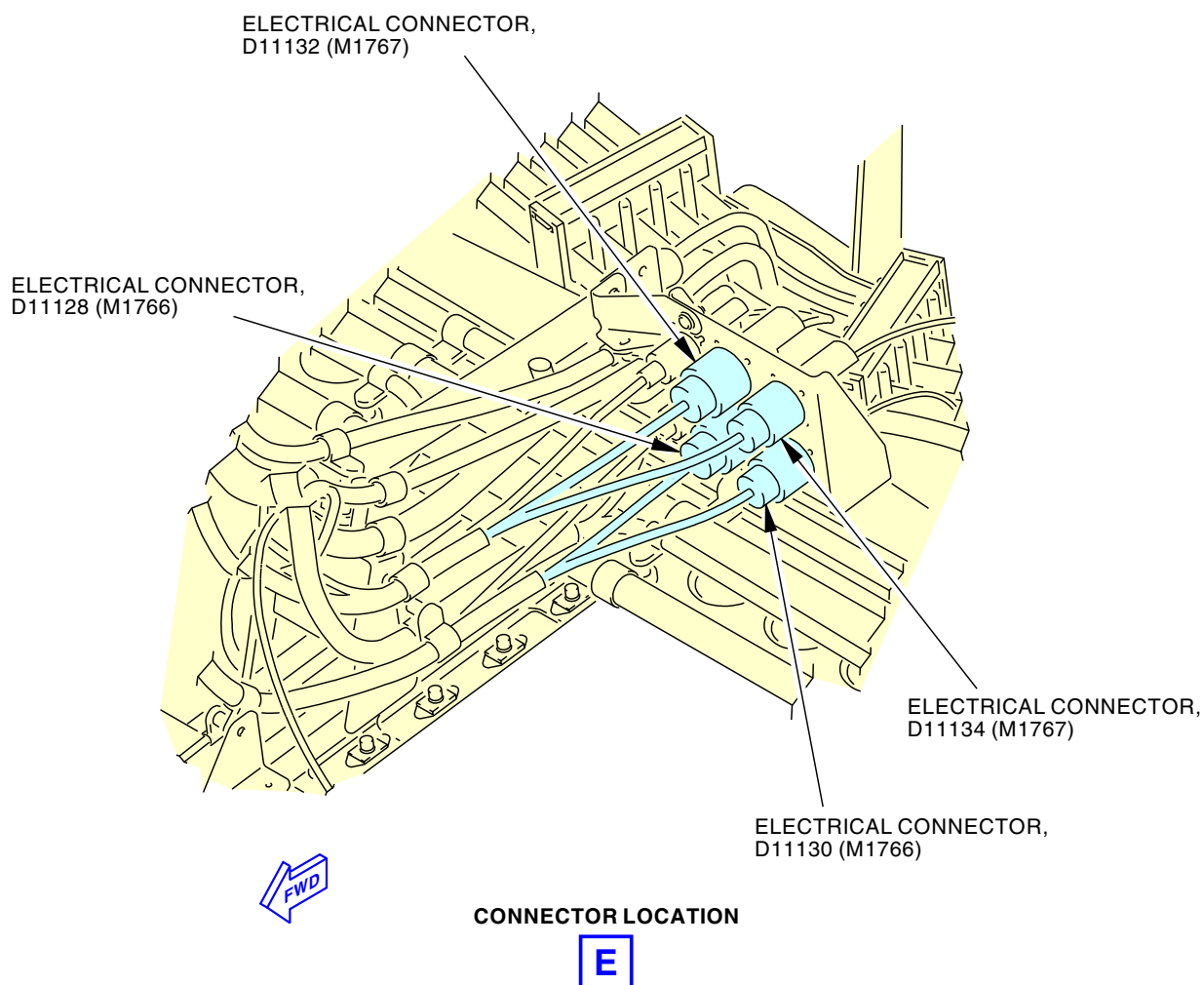
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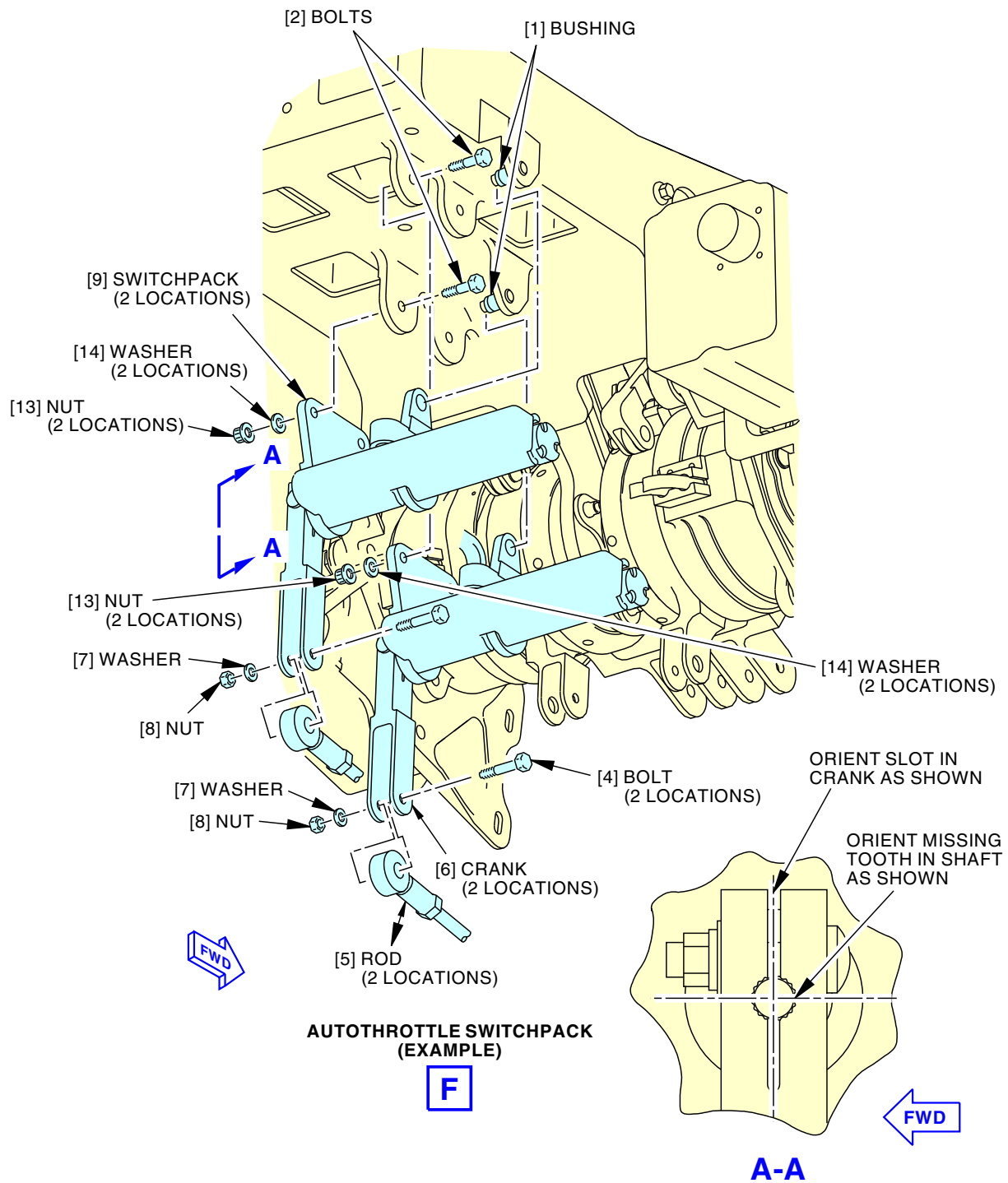
**Autothrottle Switchpack Assembly Installation
Figure 401/76-11-07-990-801-G00 (Sheet 3 of 4)****EFFECTIVITY**
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Autothrottle Switchpack Assembly Installation
Figure 401/76-11-07-990-801-G00 (Sheet 4 of 4)

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TASK 76-11-07-400-802-G00

3. Autothrottle Switchpack Assembly Installation

(Figure 401)

A. General

(1) This task gives the instructions on how to install the autothrottle switchpack assembly.

B. References

Reference	Title
30-11-00-710-801	Wing Thermal Anti-Ice - Operational Test (P/B 501)
31-51-00-741-801	Autothrottle Switchpack Test (P/B 501)
32-09-10-710-801	Proximity Switch Electronics Unit - LRU Replacement Test (P/B 501)
32-42-00-720-801	Antiskid/Autobrake Control Unit Operational Test (P/B 501)
34-41-00-710-801	Weather Radar (WXR) Operational Test (P/B 501)
53-14-01-420-801	Nose Wheel Well Access Panels Installation (P/B 401)
76-11-07-820-801-G00	Autothrottle Switchpack Assembly Check and Adjustment (P/B 501)
78-31-00-700-801-G00	Thrust Reverser Operational Test (Selection) (P/B 501)

C. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
113	Area Above and Outboard of Nose Landing Gear Wheel Well - Left
114	Area Above and Outboard of Nose Landing Gear Wheel Well - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

D. Access Panels

Number	Name/Location
112A	Forward Access Door

E. Autothrottle Switchpack Assembly Installation

SUBTASK 76-11-07-420-005-G00

(1) Interchangeability Cross-Matrix Table

ACCEPTABLE COMBINATIONS OF LH & RH AUTOTHROTTLE (A/T) SWITCHPACKS

		254A1150-() LH A/T SWITCHPACKS					
		-1	-7	-9	-11	-13	-15
254A1150-() RH A/T SWITCHPACKS	-2	X	X	X	*[1]	*[1]	*[1]
	-8	X	X	X	*[1]	*[1]	*[1]
	-10	X	X	X	*[1]	*[1]	*[1]
	-12	X	X	X	X	X	X
	-14	X	X	X	X	X	X
	-16	X	X	X	X	X	X

*[1] This combination of switchpacks has the potential for interference between the wires on the P/N 254A1150-2 or -8 or -10 switchpack and the body of the P/N 254A1150-11 or -13 or -15 switchpack. Assure there is no interference during installation. If required, protect wiring using the methods outlined in the Standard Wiring Practices Manual (SWPM).

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- (2) Install the applicable switchpack [9] assembly as follows:
- (a) Make sure that the switchpack [9] assembly is compatible via the Interchangeability Cross-Matrix Table.
 - (b) Put the switchpack [9] assembly on the bushing [1] of the autothrottle assembly.
 - (c) Make sure that the missing tooth in the switchpack cam is in the aft direction (Figure 401 (Sheet 4), View A-A)..
 - (d) Put the slot of the crank [6] in the up position.
NOTE: The slot in the crank must be 90 degrees to the missing tooth on the shaft.
 - (e) Install the two bolts [2], the washers [14], and the nuts [13].
 - (f) Tighten the bolts [2] and nuts [13] to 34 in-lb (4 N·m) - 36 in-lb (4 N·m).
 - (g) Move the rod [5] into its position on the crank [6].
 - (h) Install the bolt [4], the washer [7], and the nut [8].
 - (i) Tighten the bolt [4] and nut [8] to 34 in-lb (4 N·m) - 36 in-lb (4 N·m).
 - (j) Make sure that the switchpack assembly wire bundle is held in the applicable wire bundle sheath.
 - (k) If any switches are not in the specific limits and they are all out of limits in the same direction, do the following:
 - 1) Monitor the continuity of the S4 switch, pins 8 and 7, at the applicable electrical connector D11128 (left switchpack) or D11132 (right switchpack) to confirm the switch changes from OPEN to CLOSE at a TRA between 30 and 34 degrees.
 - 2) Loosen the two jamnuts and turn the rod coupling to get the S4 switch, pins 8 and 7, to change from CLOSE to OPEN at a TRA between 30 and 34 degrees so all other switches will also actuate in the specific limits.
 - 3) Tighten the two jamnuts to 25 in-lb (2.8 N·m)- 30 in-lb (3.4 N·m).
 - 4) Check to confirm that all switches operate in the specific limits.
 - (l) If the switchpack [9] assembly operation is not in the specified range, do these steps:
 - 1) Loosen the two jamnuts and turn the rod [5] coupling to get the correct TRA position values.
NOTE: There is approximately a 2-second delay between the adjustment and when the value shows on the MAX Display System (MDS).
 - a) If a larger adjustment is necessary, do these steps:
 - <1> Remove the rod end from the crank.
 - <2> Turn the rod end in 1/2 turns as necessary.
 - <3> Install the rod end to the crank.
 - 2) Tighten the jamnuts on the rod ends to 25 in-lb (2.8 N·m) - 30 in-lb (3.4 N·m).

SUBTASK 76-11-07-700-001-G00

- (3) Do a check of the applicable switch installation (TASK 76-11-07-820-801-G00).

SUBTASK 76-11-07-400-001-G00

- (4) Make sure that you install applicable switchpack connectors as follows:
- (a) For the T/R 1 control switch S4, connect the electrical connector, D11128.
 - (b) For the T/R 2 control switch S4, connect the electrical connector, D11132.

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SUBTASK 76-11-07-210-001-G00

- (5) Do a check of the routing of the applicable switchpack wire bundle:
- (a) Examine the wire bundle (yellow) near the linkage (crank and rod).
 - (b) Move the thrust lever from idle to full thrust.
 - (c) Make sure that the wire bundle does not touch the linkage.
 - 1) If it is necessary adjust the routing of the wire bundle.
 - (d) Do the check again with the reverse thrust lever.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 76-11-07-410-003-G00

- (1) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
112A	Forward Access Door
(TASK 53-14-01-420-801)	

SUBTASK 76-11-07-860-010-G00

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

F/O Electrical System Panel, P6-2

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

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	16	C01345	LANDING GEAR AUTOBRAKE BITE CONT 2
A	18	C00583	LANDING GEAR AUTOBRAKE BITE CONT 1
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 76-11-07-860-012-G00

- (3) For engine 1, remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT

SUBTASK 76-11-07-860-013-G00

- (4) For engine 2, remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT

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SUBTASK 76-11-07-860-014-G00

- (5) Remove the DO-NOT-OPERATE tags to the thrust levers.

G. Autothrottle Switchpack Assembly Test

SUBTASK 76-11-07-710-011-G00

- (1) If you replaced the complete autothrottle switchpack assembly, then do all of the tests that are listed below.

NOTE: If you re-install the original switchpack assembly after switch(es) replacement, do the listed test for the replaced switch(es).

SUBTASK 76-11-07-710-002-G00

- (2) If you replaced the S1 switch, do these task: Proximity Switch Electronics Unit - LRU Replacement Test, TASK 32-09-10-710-801.

SUBTASK 76-11-07-710-003-G00

- (3) If you replaced the S2 or S3 switch, do this task: Antiskid/Autobrake Control Unit Operational Test, TASK 32-42-00-720-801.

SUBTASK 76-11-07-710-004-G00

- (4) If you replaced the S4 switch, do this task: Thrust Reverser Operational Test (Selection), TASK 78-31-00-700-801-G00.

SUBTASK 76-11-07-710-005-G00

- (5) If you replaced the S7 switch, do this task: Wing Thermal Anti-Ice - Operational Test, TASK 30-11-00-710-801.

NOTE: It is not mandatory to perform steps to make sure that the wing anti-ice valves close when the left/right duct becomes too hot and to check the air mode transition in Wing Thermal Anti-Ice - Operational Test, TASK 30-11-00-710-801.

SUBTASK 76-11-07-710-006-G00

- (6) If you replaced the S8 switch, do these tasks: Autothrottle Switchpack Test, TASK 31-51-00-741-801 and Weather Radar (WXR) Operational Test, TASK 34-41-00-710-801.

SUBTASK 76-11-07-710-007-G00

- (7) If you replaced the S9 switch, do this task: Proximity Switch Electronics Unit - LRU Replacement Test, TASK 32-09-10-710-801.

SUBTASK 76-11-07-860-011-G00

- (8) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C01678	WEATHER RADAR RT RIGHT

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C00120	WEATHER RADAR RT

————— END OF TASK —————

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AUTOTHROTTLE SWITCHPACK ASSEMBLY - ADJUSTMENT/TEST

1. General

A. This procedure has these tasks:

- (1) An Autothrottle Switchpack Assembly Check and Adjustment.
- (2) A Switch Test and Cleaning.

TASK 76-11-07-820-801-G00

2. Autothrottle Switchpack Assembly Check and Adjustment

(Figure 501 or Figure 502)

A. General

- (1) This task gives the instructions on how to check and , if necessary, adjust the Auto throttle Switchpack (AS) assembly installation.

B. References

Reference	Title
53-14-01-020-801	Nose Wheel Well Access Panels Removal (P/B 401)
53-14-01-420-801	Nose Wheel Well Access Panels Installation (P/B 401)
73-21-00-800-801-G00	EEC Maintenance Power Selection (P/B 201)
76-11-07-020-801-G00	Autothrottle Switchpack Assembly Removal (P/B 401)
76-11-07-400-802-G00	Autothrottle Switchpack Assembly Installation (P/B 401)
78-31-00-010-802-G00	Close the Thrust Reverser (Selection) (P/B 201)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
113	Area Above and Outboard of Nose Landing Gear Wheel Well - Left
114	Area Above and Outboard of Nose Landing Gear Wheel Well - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

E. Access Panels

Number	Name/Location
112A	Forward Access Door

F. Prepare for the Check and Adjustment

SUBTASK 76-11-07-860-018-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.

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- 1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 76-11-07-860-016-G00



MAKE SURE THAT YOU OPEN THE CIRCUIT BREAKERS FOR THE WEATHER RADAR SYSTEM. THE FORWARD MOVEMENT OF A THRUST LEVER CAN CAUSE THE AUTOMATIC OPERATION OF THE SYSTEM. THE OPERATION OF THIS SYSTEM CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

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

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C01678	WEATHER RADAR RT RIGHT

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C00120	WEATHER RADAR RT

SUBTASK 76-11-07-860-015-G00

- (3) Open these circuit breakers:



MAKE SURE THAT YOU OPEN THE CIRCUIT BREAKERS FOR THE WEATHER RADAR SYSTEM. THE FORWARD MOVEMENT OF A THRUST LEVER CAN CAUSE THE AUTOMATIC OPERATION OF THE SYSTEM. THE OPERATION OF THIS SYSTEM CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

- (a) Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

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

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	16	C01345	LANDING GEAR AUTOBRAKE BITE CONT 2
A	18	C00583	LANDING GEAR AUTOBRAKE BITE CONT 1
D	18	C00451	LANDING GEAR AURAL WARN

- (b) For engine 1, do this step:

Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT

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- (c) For engine 2, do this step:

Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT

SUBTASK 76-11-07-860-019-G00

- (4) Make sure that the applicable thrust reverser is closed.

- (a) If it is necessary, do this task: Close the Thrust Reverser (Selection),
TASK 78-31-00-010-802-G00.

SUBTASK 76-11-07-860-020-G00

- (5) Set the GND TEST switch on the maintenance BITE panel, P61-4, to the ENABLE position.

SUBTASK 76-11-07-860-021-G00

- (6) Set the applicable EEC MAINT POWER switch on the MISC SYSTEM CTRLS page on the MFD to the TEST position; do this task: TASK 73-21-00-800-801-G00.

NOTE: The Electronic Engine Control (EEC) will do a self-test when you set the EEC MAINT POWER switch to the TEST position. Wait for a minimum of 30 seconds to let the EEC complete the test.

SUBTASK 76-11-07-860-023-G00

- (7) Make sure that the applicable thrust lever is in the idle position.

SUBTASK 76-11-07-860-024-G00

- (8) Make sure that the applicable reverse thrust lever is in the retract (stow) position.

- (a) Make sure that the thrust reverser is in the retracted (stowed) position.

SUBTASK 76-11-07-860-025-G00

- (9) Open this access panel:

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

(TASK 53-14-01-020-801)

SUBTASK 76-11-07-040-001-G00

- (10) Disconnect the applicable switchpack connectors:

- (a) For the left switchpack, disconnect the electrical connectors, D11128P and D11130P.
 (b) For the right switchpack, disconnect the electrical connectors, D11132P and D11134P.

G. Autothrottle Switchpack Assembly Check and Adjustment

SUBTASK 76-11-07-710-008-G00

- (1) Do these steps to show the TRA values for the Engine X thrust lever:

- (a) Use the SELECTOR on the Multi Function Display (MFD) to make these selections:
- MAINT
 - MAINT DATA PGS
 - DISPLAY SELECTION
 - 71 EPCS, DISPLAY

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- (b) On the EPCS Page, the TRA values will show for ENGINE 1 CH A and B, ENGINE 2 CH A and B.

SUBTASK 76-11-07-710-009-G00

- (2) Do these steps to do a check of the left or right AS assembly installation:

- (a) Use a bungee cord or tie wrap to temporarily hold the reverse thrust interlock solenoid latch up and clear off the autothrottle brake cam (Figure 502 (Sheet 5)).

NOTE: This will let the brake house turn and not be limited by the solenoid.

- (b) Move the applicable thrust lever and reverse thrust lever until the TRA value that shows on the EPCS page is in the range shown in the table below (Table 501):

NOTE: The forward mechanical stop (full forward thrust) is at 84 +/-1.8 degrees TRA, the idle stop is at 36 +/-0.8 degrees TRA, and the aft mechanical stop (full reverse thrust) is at 6 +/-1.0 degrees TRA.

- (c) Do a continuity check at the applicable switch connector.

Table 501/76-11-07-993-804-G00

SWITCH	CONNECTOR	PINS	TRA VALUE	CONDITION	TRANSITION
S1	D11128P/D11132P	1-2	8.00-42.00 46.00-82.00	Open Closed	44.00±2.0
		2-3	8.00-42.00 46.00-82.00	Closed Open	
S2	D11130P/D11134P	1-2	8.00-42.00 46.00-82.00	Open Closed	44.00±2.0
		2-3	8.00-42.00 46.00-82.00	Closed Open	
S3	D11130P/D11134P	4-5	8.00-42.00 46.00-82.00	Open Closed	44.00±2.0
		5-6	8.00-42.00 46.00-82.00	Closed Open	
S4	D11128P/D11132P	14-7	8.00-30.00 34.00-82.00	Closed Open	32.00±2.0
		7-8	8.00-30.00 34.00-82.00	Open Closed	
S5 ^{*[1]*[2]}	D11130P/D11134P	7-8	8.00-30.00 34.00-82.00	Closed Open	32.00±2.0
		8-9	8.00-30.00 34.00-82.00	Open Closed	
S6 ^{*[1]*[2]}	D11130P/D11134P	13-14	8.00-30.00 34.00-82.00	Closed Open	32.00±2.0
		14-15	8.00-30.00 34.00-82.00	Open Closed	

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Table 501/76-11-07-993-804-G00 (Continued)

SWITCH	CONNECTOR	PINS	TRA VALUE	CONDITION	TRANSITION
S7	D11128P/D11132P	10-11	8.00-58.00 62.00-82.00	Open Closed	60.00±2.0
		11-12	8.00-58.00 62.00-82.00	Closed Open	
S8	D11128P/D11132P	16-17	8.00-51.00 55.00-82.00	Open Closed	53.00±2.0
		17-18	8.00-51.00 55.00-82.00	Closed Open	
S9	D11128P/D11132P	22-23	8.00-62.00 66.00-82.00	Open Closed	64.00±2.0
		23-24	8.00-62.00 66.00-82.00	Closed Open	

*[1] Resistance fluctuations may occur at TRA value of 30.00–34.00

*[2] S5 and S6 are not used for 737MAX

- (d) Remove the bungee cord or tie wrap from the interlock solenoid.
- (e) If switches are not in the specified limits and they are all out of limits in the same direction, do these steps:
 - 1) Loosen the two jamnuts on the rod between the switchpack and the thrust resolver.
 - 2) Turn the rod coupling to get the S4 switch to change from CLOSE to OPEN at a TRA between 31.0 and 32.5 degrees.
 - 3) Monitor the continuity between pins 8 and 7, at the applicable electrical connector D11128 (left switchpack) or D11132 (right switchpack), to make sure that the S4 switch changes from CLOSE to OPEN at a TRA between 31.0 and 32.5 degrees.
 - 4) Tighten the two jamnuts to 24.0 in-lb (2.7 N·m) - 30.0 in-lb (3.4 N·m).
 - 5) Do a check to make sure that all switches operate in the specified limits.

SUBTASK 76-11-07-900-001-G00

- (3) If a switch is still not in the specified limits, replace the switchpack (TASK 76-11-07-020-801-G00 and TASK 76-11-07-400-802-G00).

SUBTASK 76-11-07-040-002-G00

- (4) Connect the applicable switchpack connectors:
 - (a) For the left switchpack, connect the electrical connectors, D11128P and D11130P.
 - (b) For the right switchpack, connect the electrical connectors, D11132P and D11134P.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 76-11-07-410-004-G00

- (1) Close this access panel:

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

 (TASK 53-14-01-420-801)

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SUBTASK 76-11-07-860-026-G00

- (2) Set the applicable EEC MAINT POWER switch on the MISC SYSTEM CTRLS page on the MFD to the NORM position (TASK 73-21-00-800-801-G00).

SUBTASK 76-11-07-860-027-G00

- (3) Set the GND TEST switch on the maintenance BITE panel, P61-4, to the NORM position.

SUBTASK 76-11-07-010-005-G00

- (4) Close these circuit breakers:
- (a) Install the applicable top panel in the nose wheel well panel.
 - (b) Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

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

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	16	C01345	LANDING GEAR AUTOBRAKE BITE CONT 2
A	18	C00583	LANDING GEAR AUTOBRAKE BITE CONT 1
D	18	C00451	LANDING GEAR AURAL WARN

- (c) For engine 1, do this step:
- Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT

- (d) For engine 2, do this step:
- Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT

SUBTASK 76-11-07-860-017-G00

- (5) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C01678	WEATHER RADAR RT RIGHT

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C00120	WEATHER RADAR RT

SUBTASK 76-11-07-860-029-G00

- (6) 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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SYS MENU		STATUS		MAINT DATA PGS		MAINT CTRL PGS		ONBD MAINT	
				EPCS		PG 1 OF 4			
ENGINE 1				ENGINE 2					
A		B				A		B	
XXX.X	XXX.X			N1	XXX.X	XXX.X			
XXX.X	XXX.X			N2	XXX.X	XXX.X			
XX.X	XX.X			TRA	XX.X	XX.X			
XXX.X	XXX.X			T/R SLEEVE L	XXX.X	XXX.X			
XXX.X	XXX.X			T/R SLEEVE R	XXX.X	XXX.X			
XX.X	XX.X			P0	XX.X	XX.X			
XXX.X	XXX.X			P53	XXX.X	XXX.X			
XXX.X	XXX.X			P38	XXX.X	XXX.X			
XXX.X	XXX.X			BLEED FLOW	XXX.X	XXX.X			
XXX.X	XXX.X			T12	XXX.X	XXX.X			
XXXX	XXXX			T25	XXXX	XXXX			
XXXX	XXXX			T3	XXXX	XXXX			
XXX.X	XXX.X			VBV	XXX.X	XXX.X			
XXX.X	XXX.X			VBV CHD	XXX.X	XXX.X			
XXX.X	XXX.X			N1K12	XXX.X	XXX.X			
XXX.X	XXX.X			VSV	XXX.X	XXX.X			
XXX.X	XXX.X			VSV CHD	XXX.X	XXX.X			
XXX.X	XXX.X			N2K25	XXX.X	XXX.X			
XXX.X	XXX.X			FUEL SRT DP	XXX.X	XXX.X			
XXX.X	XXX.X			FCOC DP	XXX.X	XXX.X			
XXX.X	XXX.X			FUEL FLT DP	XXX.X	XXX.X			
XXX.X	XXX.X			FMV	XXX.X	XXX.X			
XXX.X	XXX.X			FMV CHD	XXX.X	XXX.X			
XXXXX	XXXXX			FF (LBS/HR)	XXXXX	XXXXX			
XXX.X	XXX.X			PMV	XXX.X	XXX.X			
XXX.X	XXX.X			PMV CHD	XXX.X	XXX.X			
XXXX	XXXX			PF MN	XXXX	XXXX			
AUTO EVENT MESSAGE DATE XX XXX XX UTC XX:XX:XX									
PREV MENU		PRINT		SEND		RECORD		PREV PAGE	
								NEXT PAGE	

2354207 S00061514972_V2

EPCS Page 1 Status Display
Figure 501/76-11-07-990-803-G00EFFECTIVITY
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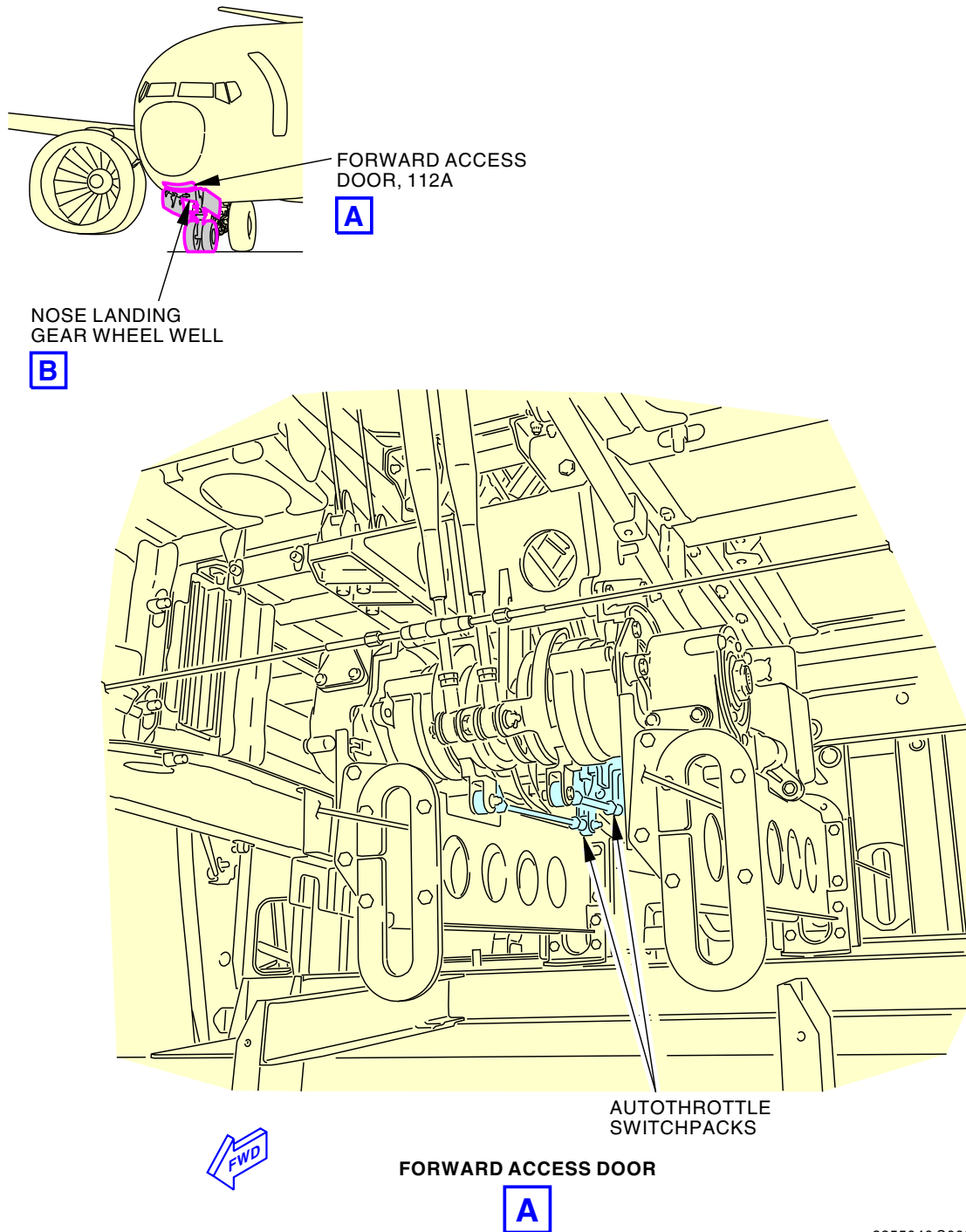
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2355040 S00061516427_V1

Autothrottle Switchpack Assembly Check and Adjustment
Figure 502/76-11-07-990-802-G00 (Sheet 1 of 5)

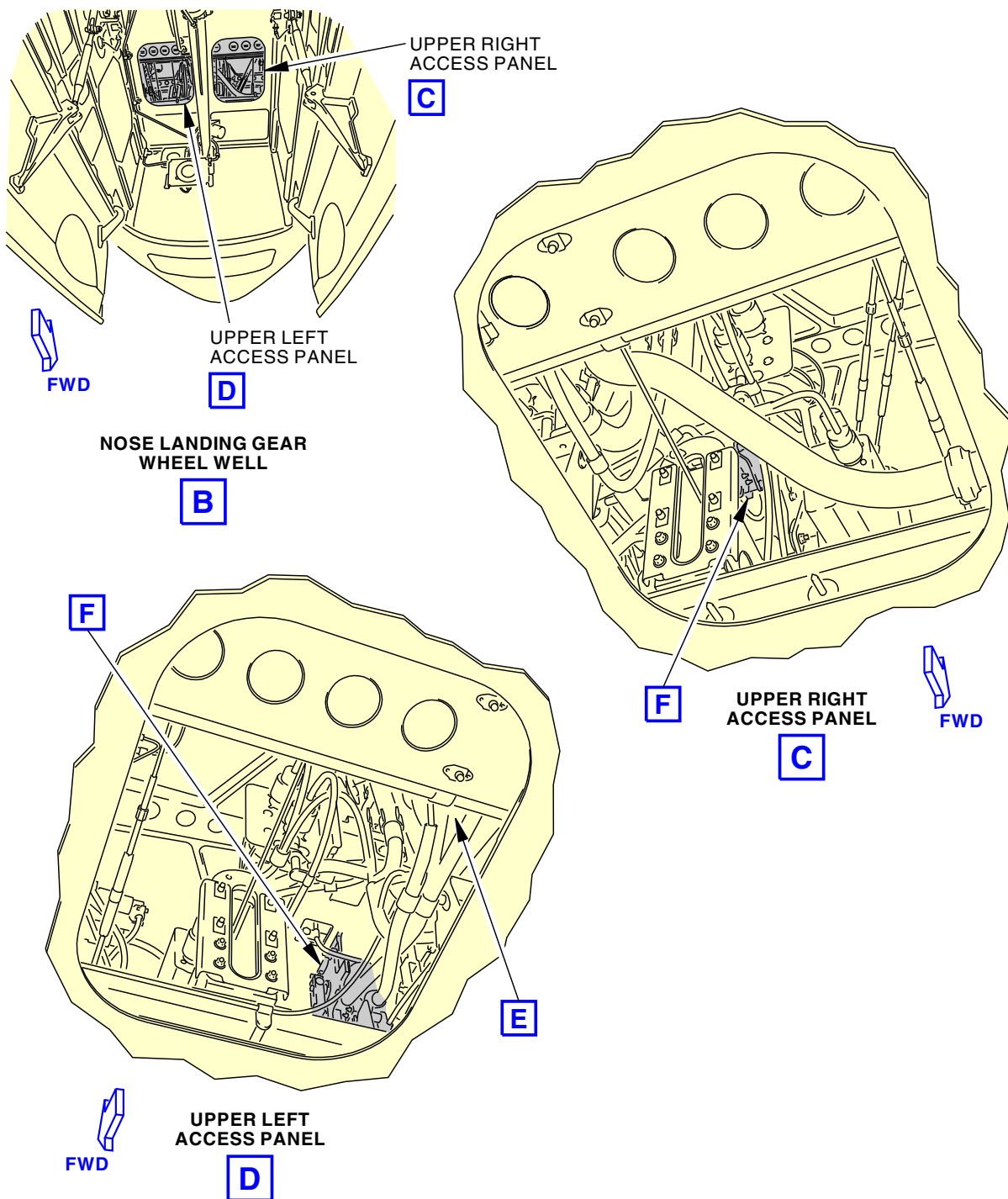
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2355041 S00061516428_V1

Autothrottle Switchpack Assembly Check and Adjustment
Figure 502/76-11-07-990-802-G00 (Sheet 2 of 5)

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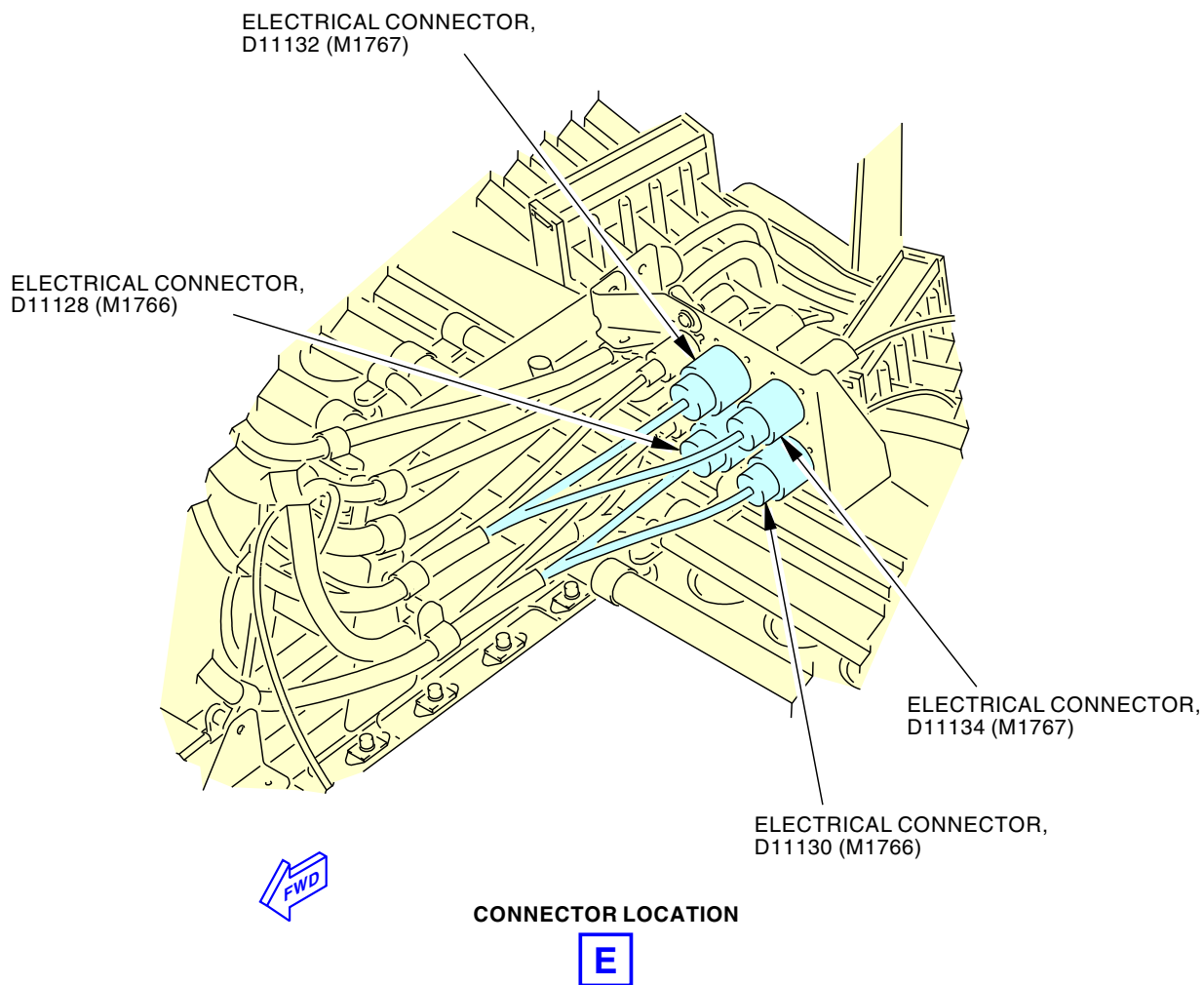
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2355042 S00061516429_V1

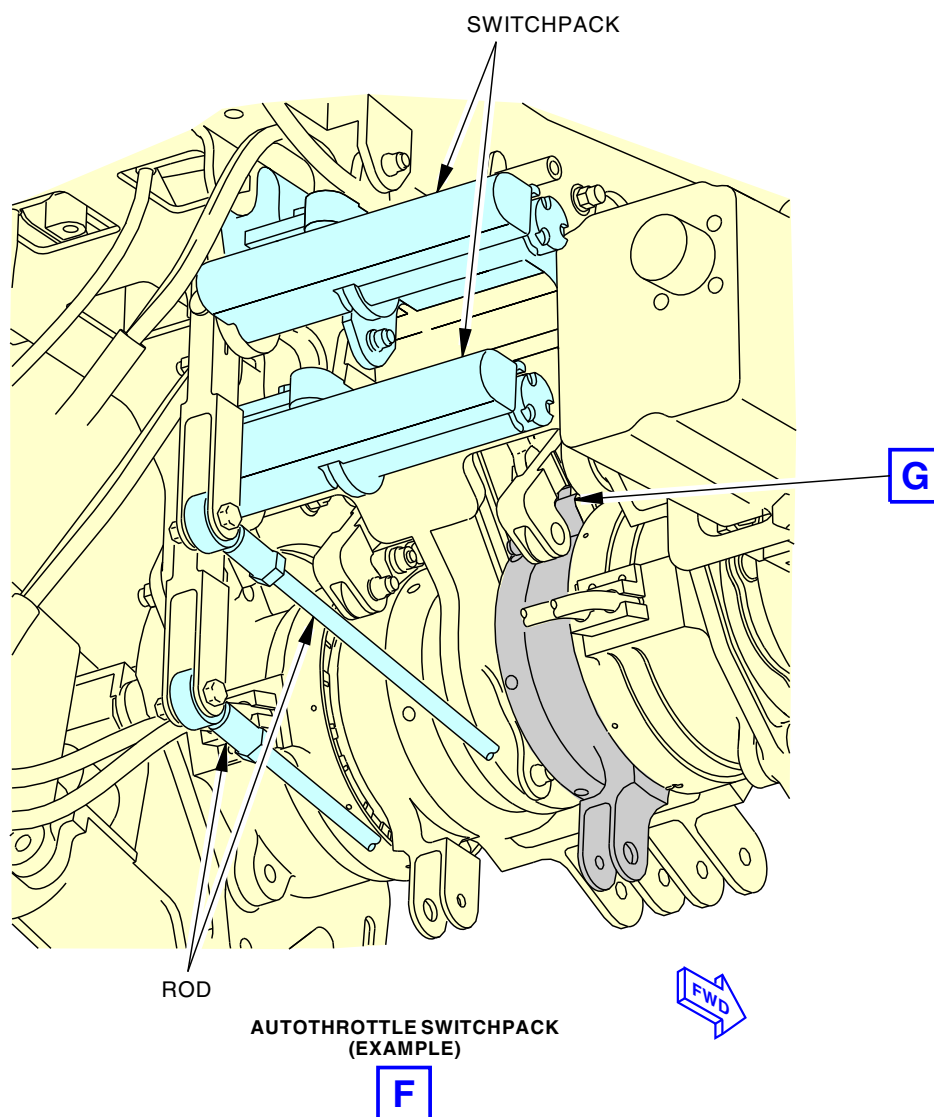
Autothrottle Switchpack Assembly Check and Adjustment
Figure 502/76-11-07-990-802-G00 (Sheet 3 of 5)

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2355044 S00061516431_V2

Autothrottle Switchpack Assembly Check and Adjustment
Figure 502/76-11-07-990-802-G00 (Sheet 4 of 5)

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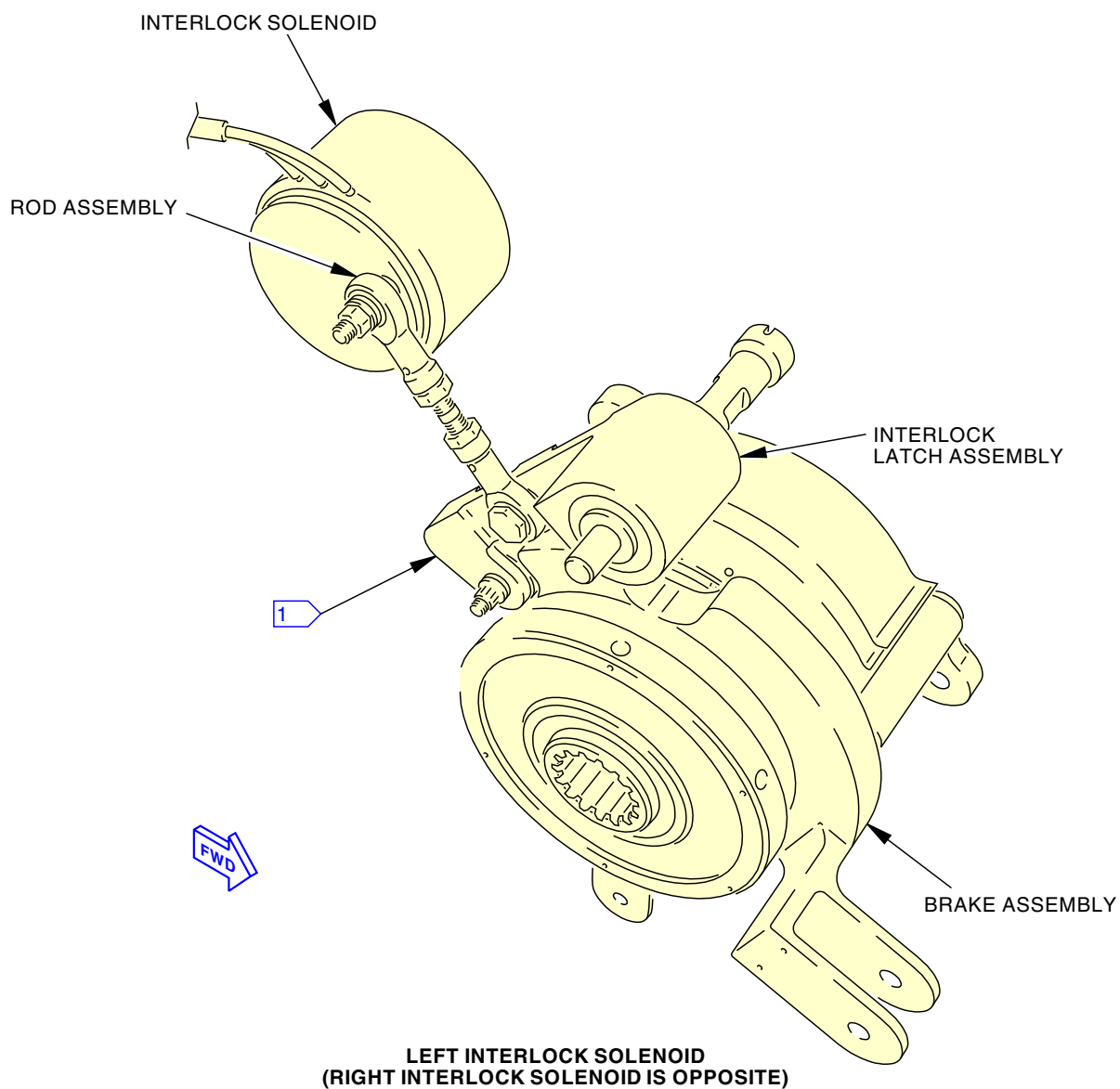
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G

- 1 USE A BUNGEE CORD OR TIE WRAP TO TEMPORARILY HOLD THIS END OF THE LATCH UP AND CLEAR OFF THE AUTOTHROTTLE BRAKE CAM.

2825576 S0000653876_V2

Autothrottle Switchpack Assembly Check and Adjustment
Figure 502/76-11-07-990-802-G00 (Sheet 5 of 5)

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TASK 76-11-07-200-801-G00**3. Switch Test and Cleaning**

(Figure 503)

A. General

- (1) This procedure is designed to detect an accumulation of debris and residue on low current electrical connections, which inhibit circuit conductivity and to help identify switches with mechanical repeatability issues.

B. References

Reference	Title
53-14-01-020-801	Nose Wheel Well Access Panels Removal (P/B 401)
53-14-01-420-801	Nose Wheel Well Access Panels 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-22886	Test Set - Auto Throttle Switchpack (ATSP) Part #: C76003-1 Supplier: 81205

D. Location Zones

Zone	Area
112	Area Forward of Nose Landing Gear Wheel Well
113	Area Above and Outboard of Nose Landing Gear Wheel Well - Left
114	Area Above and Outboard of Nose Landing Gear Wheel Well - Right
211	Flight Compartment - Left
212	Flight Compartment - Right

E. Access Panels

Number	Name/Location
112A	Forward Access Door

F. Prepare for the Test

SUBTASK 76-11-07-860-030-G00

- (1) If not already done, do these steps to prepare the airplane:



MAKE SURE THAT YOU OPEN THE CIRCUIT BREAKERS FOR THE WEATHER RADAR SYSTEM. THE FORWARD MOVEMENT OF A THRUST LEVER CAN CAUSE THE AUTOMATIC OPERATION OF THE SYSTEM. THE OPERATION OF THIS SYSTEM CAN CAUSE INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

- (a) Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-3

Row	Col	Number	Name
C	7	C01678	WEATHER RADAR RT RIGHT

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F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C00120	WEATHER RADAR RT

F/O Electrical System Panel, P6-2

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

F/O Electrical System Panel, P6-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	16	C01345	LANDING GEAR AUTOBRAKE BITE CONT 2
A	18	C00583	LANDING GEAR AUTOBRAKE BITE CONT 1
D	18	C00451	LANDING GEAR AURAL WARN

- (b) For engine 1, do this step:

Open these circuit breakers and install safety tags:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT

- (c) For engine 2, do this step:

Open these circuit breakers and install safety tags:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT

- (d) Make sure that the thrust levers and reverse thrust levers are at their idle stops.

- (e) To gain access to the forward parts of the left or right switchpack, open this access panel:

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

- (f) Remove the applicable top panel in the nose wheel well (TASK 53-14-01-020-801).

SUBTASK 76-11-07-010-006-G00

- (2) If not already done, do these steps to disconnect the applicable switchpack connectors:

- (a) For the left switchpack, disconnect the electrical connectors D11128P and D11130P.
(b) For the right switchpack, disconnect the electrical connectors D11132P and D11134P.

SUBTASK 76-11-07-480-001-G00

- (3) Connect the test set, SPL-22886.

- (a) Connect the applicable harness (Left Engine/Right Engine) to the test set.

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- (b) Connect the harness to switchpack connectors that were removed previously.

NOTE: Keep the test set in the flight deck and put the cable through the number 2 window for easier testing.

- (c) Connect the test set to a 115/120 VAC, 60/400 HZ power source.

G. Switch Repeatability Test

SUBTASK 76-11-07-860-031-G00

- (1) Do these steps to show engine test menu on the Flight Management Computer System (FMCS) Control Display Unit (CDU):

- (a) Make sure that the applicable engine thrust lever and reverse thrust lever is at the IDLE stop.
- (b) Get access to the FMCS CDU in the flight compartment.
- (c) Press the INIT REF key to show the PERF INIT screen on the FMCS CDU.
- (d) Push these Line Select Key (LSK)s on the FMCS CDU:

1) INDEX.

2) MAINT.

NOTE: This LSK causes the MAINT BITE INDEX screen to show.

3) ENGINE.

NOTE: This LSK causes the ENGINE/EXCEED BITE INDEX screen to show.

4) ENGINE X for the applicable resolver.

NOTE: This LSK causes the ENGINE X BITE TEST MAIN MENU to show. Also, the ENGINE X LSK automatically applies power to the EEC and causes the EEC to initialize. The CDU will show INITIALIZING EEC X, and EEC SORTING FAULT HISTORY DATA for a short time, just before the ENGINE X BITE TEST MAIN MENU shows.

SUBTASK 76-11-07-860-033-G00

- (2) Do these steps to show the Thrust Lever Resolver Angle (TRA) values for the Engine X thrust lever:

- (a) Push the INPUT MONITORING LSK.

NOTE: This will cause the CAUTION SCREEN OF INPUT MONITORING to show.

- (b) Push the CONTROL LOOPS LSK.

NOTE: This will cause screen 1 of the CONTROL LOOPS to show.

- (c) Push the NEXT PAGE key two times.

NOTE: This will cause screen 3 of the CONTROL LOOPS to show.

- (d) Push the TRA LSK on screen 3 of the CONTROL LOOPS.

NOTE: This causes the TRA for channels A and B, of Engine X, to show.

NOTE: The data for the channel that is in control will show first.

SUBTASK 76-11-07-470-001-G00

- (3) Do these steps for the switch repeatability test.

- (a) Move the applicable thrust lever and reverse thrust lever until the TRA value that shows on the CDU is in the range shown in Table 502.

- (b) Using the C76003 Test Set and Table 502, test each switch.

1) Turn the C76003 Test Set on with the POWER switch

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- 2) Place the LOAD SELECT switch in the "TEST" position
- (c) Record the VOLTMETER reading for each switch and each contact pair (NO/NC) in Table 502.

NOTE: The VOLTMETER will display volts DC in mV. The reading .003 is read as 3mV.

- 1) Observe the TRA and move the Throttle Lever close to the TRANSITION point switch you are testing.
- 2) Move the INDICATORS SELECT switch for the switch you are testing to the "LED" position.
- 3) Take note of which contact pair LED is illuminated.
- 4) Move the INDICATORS SELECT switch for the switch you are testing to the "METER" position.
- 5) Record the voltage observed on the voltmeter in Table 502 for that contact pair under "VALUE 1"
- 6) Move the INDICATORS SELECT switch for the switch you are testing to the "LED" position
- 7) Slowly move the throttle toward the TRANSITION point, until the other contact pair LED illuminates.
- 8) Move the INDICATORS SELECT switch for the switch you are testing to the "METER" position
- 9) Wait a minimum of 10 seconds
- 10) Record the voltage observed on the voltmeter in Table 502 under "VALUE 1"
- 11) Move the INDICATORS SELECT switch for the switch you are testing back to the "LED" position.
- 12) Slowly move the throttle lever the opposite way until the LED illuminates.
- 13) Move the INDICATORS SELECT switch for the switch you are testing to the "METER" position.
- 14) Wait a minimum of 10 seconds.
- 15) Record the voltage observed on the voltmeter in Table 502 under "VALUE 2".
- 16) Move the INDICATORS SELECT switch for the switch you are testing to the "LED" position.
- 17) Slowly move the throttle lever the opposite way until the LED illuminates.
- 18) Move the INDICATORS SELECT switch for the switch you are testing to the "METER" position.
- 19) Wait a minimum of 10 seconds.
- 20) Record the voltage observed on the voltmeter in Table 502 under "VALUE 2".
- 21) Calculate REL % for each contact pair tested with this formula: $(V2-V1)/V1 \times 100 = \text{REL \%}$
- 22) If there is more than a 1% difference between VALUE 1 and VALUE 2, or the meter indication did not stabilize in 10 seconds, perform the cleaning procedure.
- 23) Repeat the above steps for each switch you test.

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Table 502/76-11-07-993-806-G00 Switch Reliability Test

SWITCH SELECT	CONTACT PAIR	TRA	TRANSITION	VALUE 1 mV	VALUE 2 mV	Meter reading stable in 10 seconds?	REL %	SYSTEM
S1	NC	8.00-42.00	42.00-46.00					Automatic Ground Speedbrake
S1	NO	46.00-82.00	42.00-46.00					Autobrake
S2	NC	8.00-42.00	42.00-46.00					Autobrake
S2	NO	NOT USED						
S3	NC	8.00-42.00	42.00-46.00					Autobrake
S3	NO	NOT USED						
S4	NC	34.00-82.00	30.00-34.00					T/R Sync Lock
S4	NO	8.00-30.00	30.00-34.00					T/R Sync Lock
S5	NC	34.00-30.00	30.00-34.00					T/R Deploy
S5	NO	8.00-30.00	30.00-34.00					T/R Deploy
S6	NC	34.00-82.00	30.00-34.00					T/R Stow
S6	NO	NOT USED						
S7	NC	NOT USED						
S7	NO	62.00-82.00	58.00-62.00					Thermal Anti-Ice
S8	NC	8.00-51.00	51.00-55.00					Weather Radar
S8	NO	55.00-82.00	51.00-55.00					Weather Radar
S9	NC	8.00-62.00	62.00-66.00					Landing Gear Warn
S9	NO	NOT USED						

SUBTASK 76-11-07-750-001-G00

(4) Switch contact cleaning procedure using the test set, SPL-22886

(a) Prepare for cleaning.

- 1) Place the LOAD SELECT switch in the TEST position
- 2) Move the SWITCH SELECT to the switch you would like to clean.
- 3) Move the INDICATORS SELECT switch of your switch to the "LED" position.
- 4) Using the TRA values Table 502, move the throttle lever until the contact pair LED of the switch you cleaning illuminates.

(b) Contact cleaning procedure.

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- 1) Move the LOAD SELECT switch in the CLEAN position, the CLEAN LED should illuminate.
 - 2) Keep the LOAD SELECT switch in the CLEAN position for 10 seconds, then move it to OFF.
 - 3) Keep the LOAD SELECT switch in the OFF position for 10 seconds.
 - 4) Repeat steps above two more times.
- (c) Move the LOAD SELECT switch back to the TEST position.
- (d) Perform the Switch Repeatability Test on the switch(s) you cleaned.

SUBTASK 76-11-07-750-002-G00

- (5) Do this step for the switch evaluation.
- (a) If the switch does not pass the second repeatability test, there is a mechanical defect in the switch, and it should be replaced at the next convenient maintenance opportunity.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 76-11-07-080-001-G00

- (1) Remove the test set, SPL-22886.
- (a) Remove the applicable harness from the switchpack connectors.
- (b) Remove the applicable harness (Left Engine/Right Engine) from the test set.

SUBTASK 76-11-07-410-005-G00

- (2) If not already done, do these steps to connect the applicable switchpack connectors:
- (a) For the left switchpack, connect the electrical connectors D11128P and D11130P.
- (b) For the right switchpack, connect the electrical connectors D11132P and D11134P.

SUBTASK 76-11-07-410-006-G00

- (3) If not already done, do these steps:
- (a) Install the applicable top panel in the nose wheel well panel (TASK 53-14-01-420-801).
- (b) Close this access panel:

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

- (c) Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	7	C01678	WEATHER RADAR RT RIGHT

F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C00120	WEATHER RADAR RT

F/O Electrical System Panel, P6-2

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

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	16	C01345	LANDING GEAR AUTOBRAKE BITE CONT 2
A	18	C00583	LANDING GEAR AUTOBRAKE BITE CONT 1
D	18	C00451	LANDING GEAR AURAL WARN

(d) For Engine 1, do this step:

Remove the safety tags and close these circuit breakers:

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	5	C00276	ENGINE 1 THRUST REVERSER CONT
B	6	C01412	ENGINE 1 THRUST REVERSER INTLK
B	7	C01266	ENGINE 1 THRUST REVERSER SYNC LOCK

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT

(e) For Engine 2, do this step:

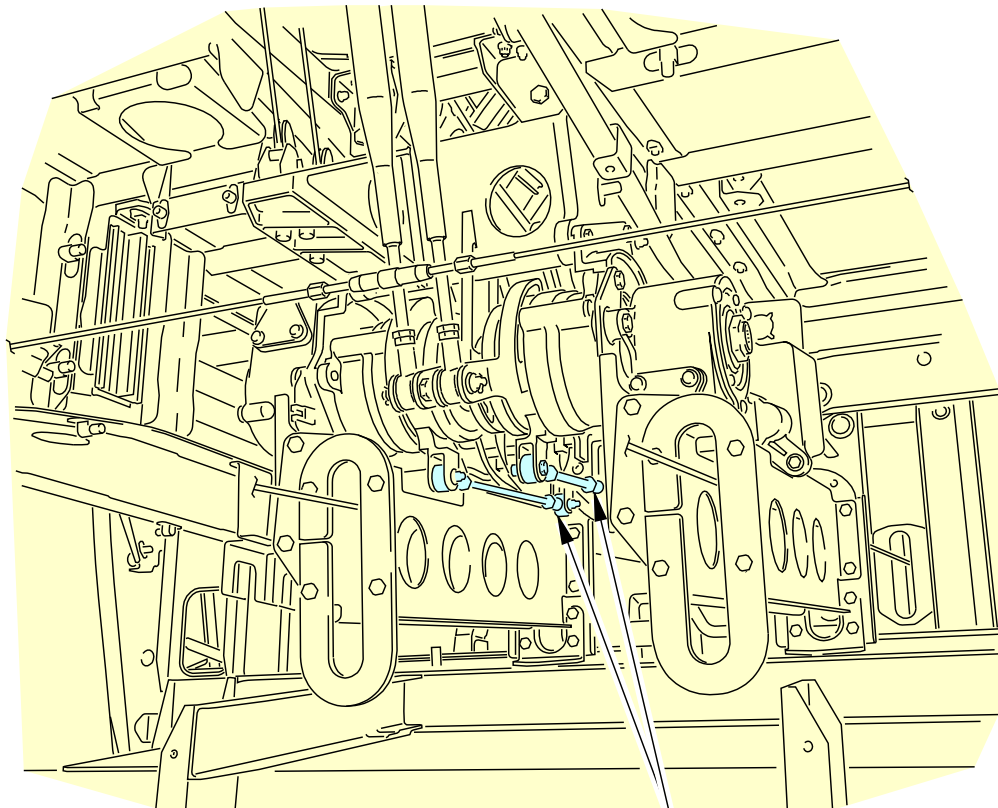
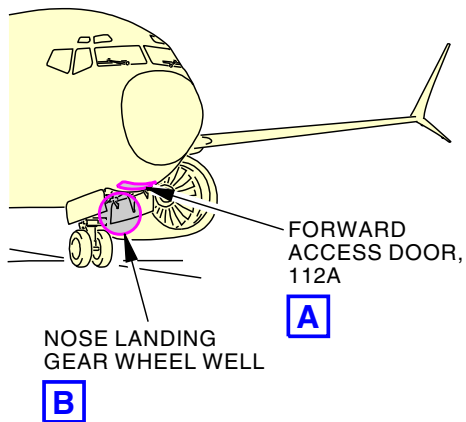
Remove the safety tags and close these circuit breakers:

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT

————— **END OF TASK** —————

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AUTOTHROTTLE
SWITCHPACKS

FORWARD ACCESS DOOR

A

3023860 S0000795660_V1

Switch Test and Cleaning
Figure 503/76-11-07-990-804-G00 (Sheet 1 of 7)

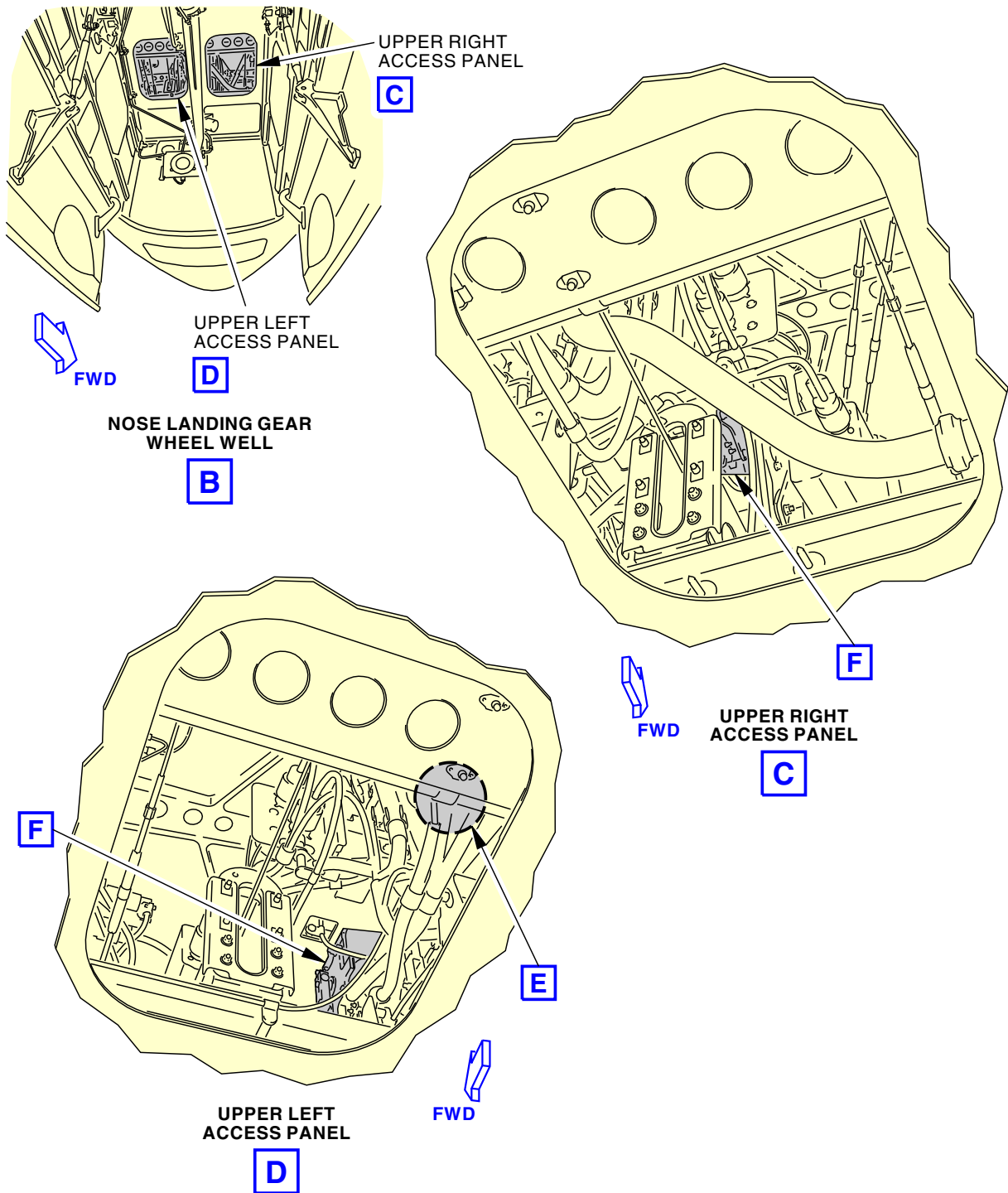
EFFECTIVITY
SIA ALL

76-11-07

D633AM101-SIA

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3023870 S0000795661_V1

Switch Test and Cleaning
Figure 503/76-11-07-990-804-G00 (Sheet 2 of 7)

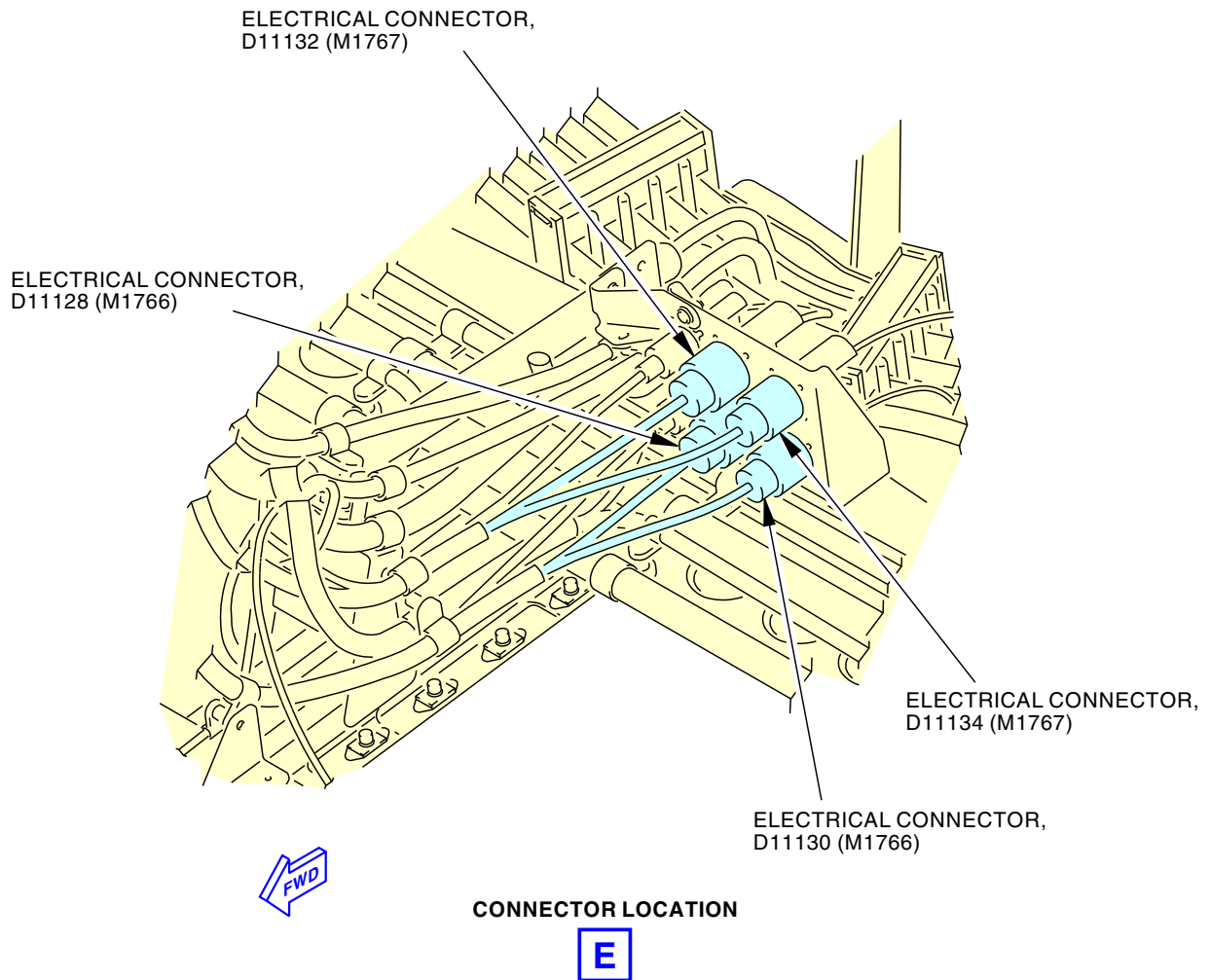
EFFECTIVITY
SIA ALL

D633AM101-SIA

76-11-07

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2355042 S00061516429_V1

Switch Test and Cleaning
Figure 503/76-11-07-990-804-G00 (Sheet 3 of 7)

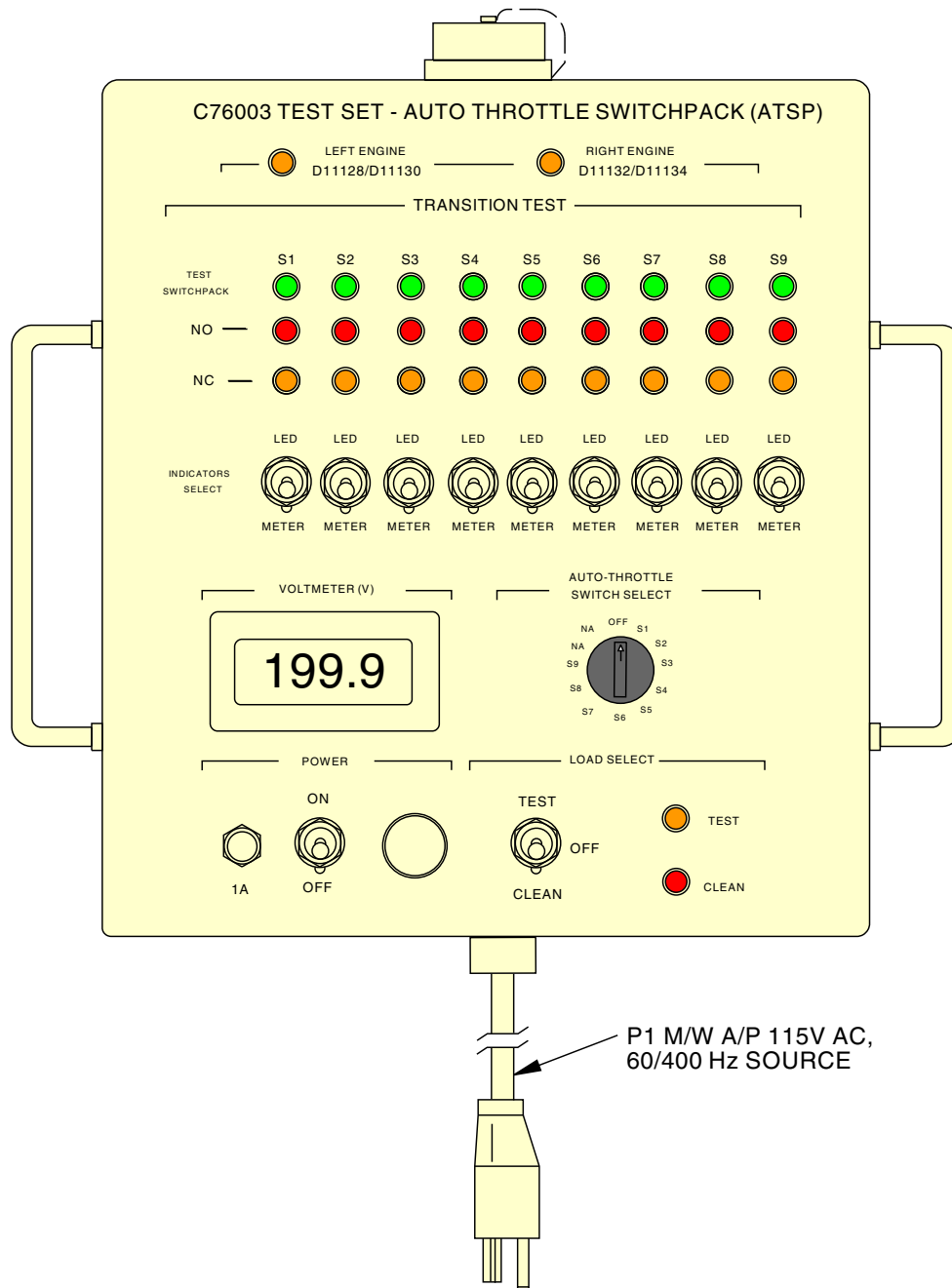
EFFECTIVITY
SIA ALL

D633AM101-SIA

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3023871 S0000795662_V1

Switch Test and Cleaning
Figure 503/76-11-07-990-804-G00 (Sheet 4 of 7)

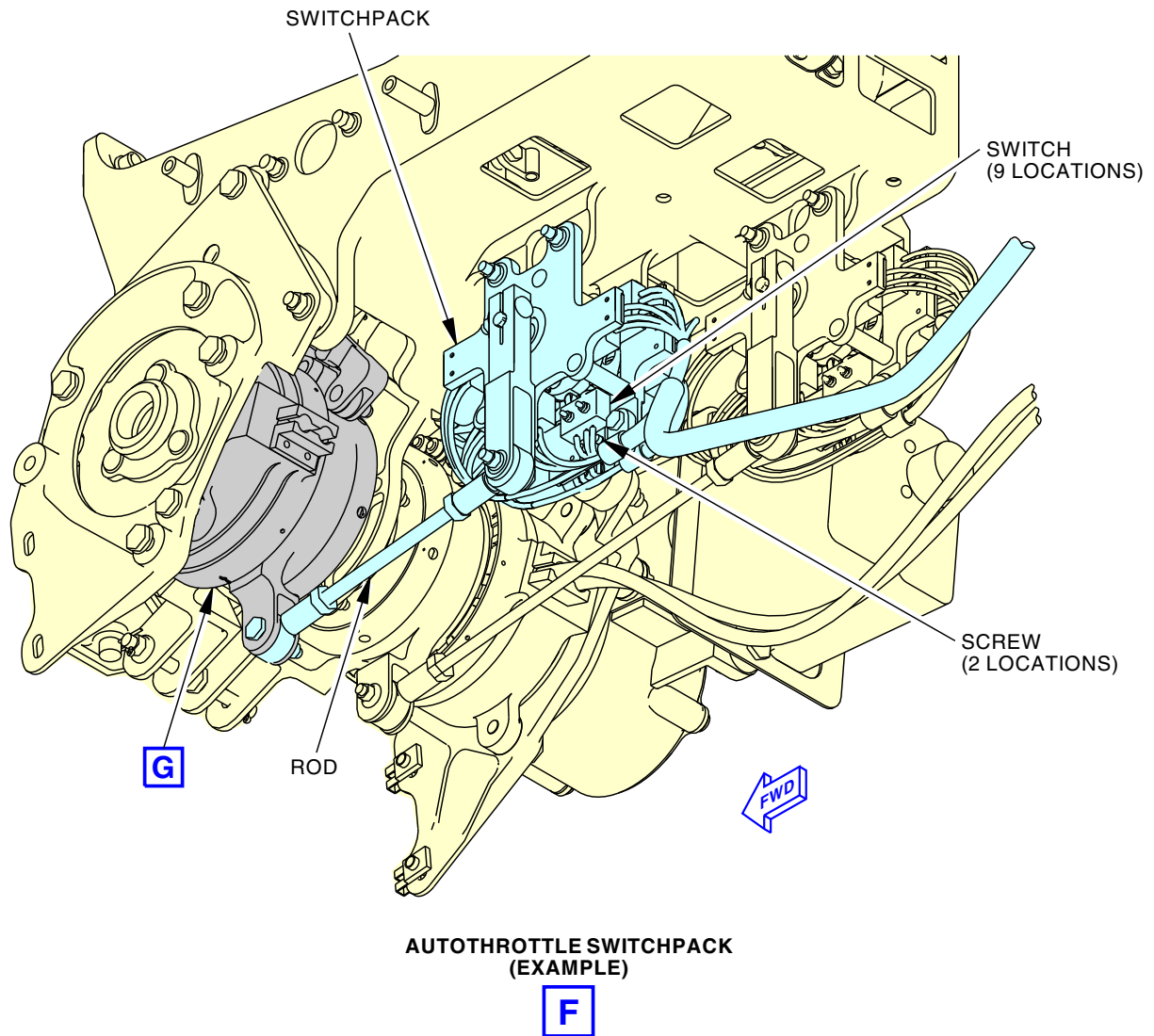
EFFECTIVITY
SIA ALL

D633AM101-SIA

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3023874 S0000795663_V1

Switch Test and Cleaning
Figure 503/76-11-07-990-804-G00 (Sheet 5 of 7)

EFFECTIVITY
SIA ALL

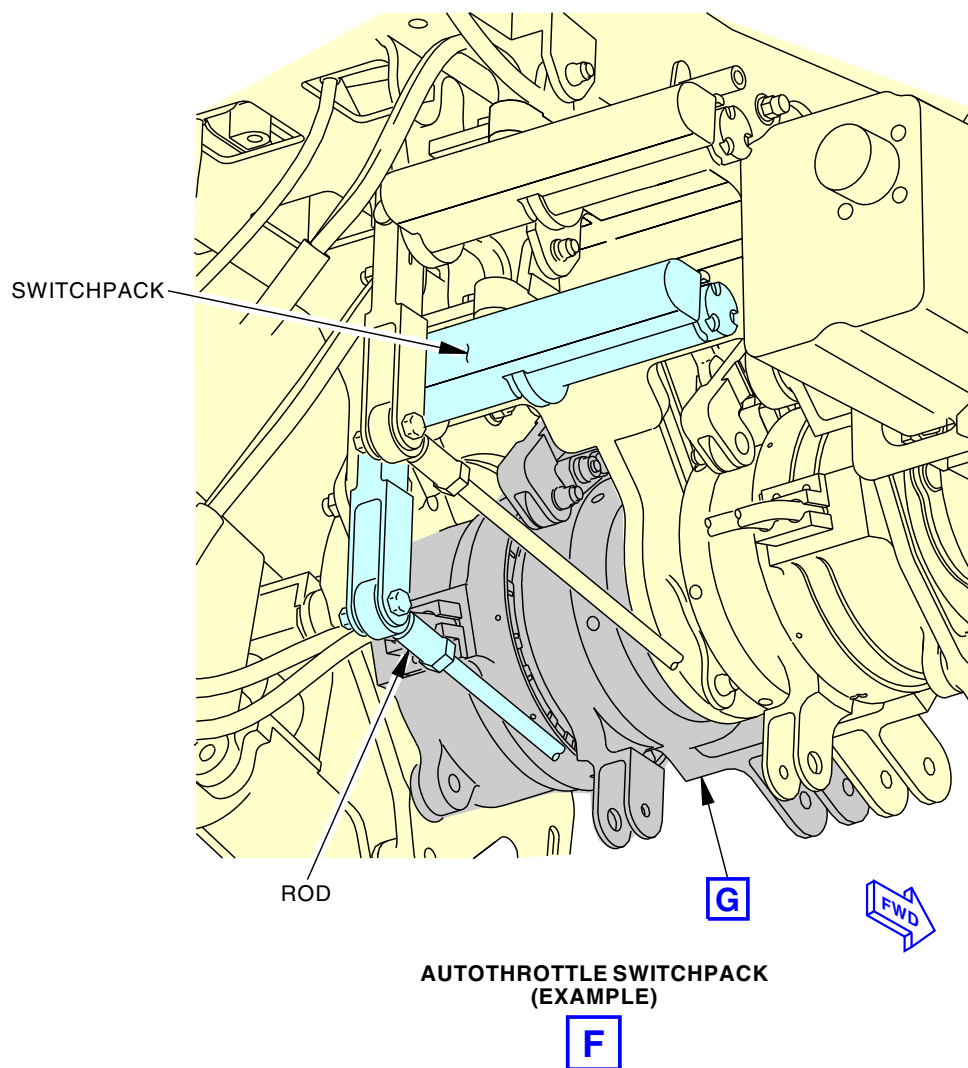
D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

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3023875 S0000795664_V1

Switch Test and Cleaning
Figure 503/76-11-07-990-804-G00 (Sheet 6 of 7)

EFFECTIVITY
SIA ALL

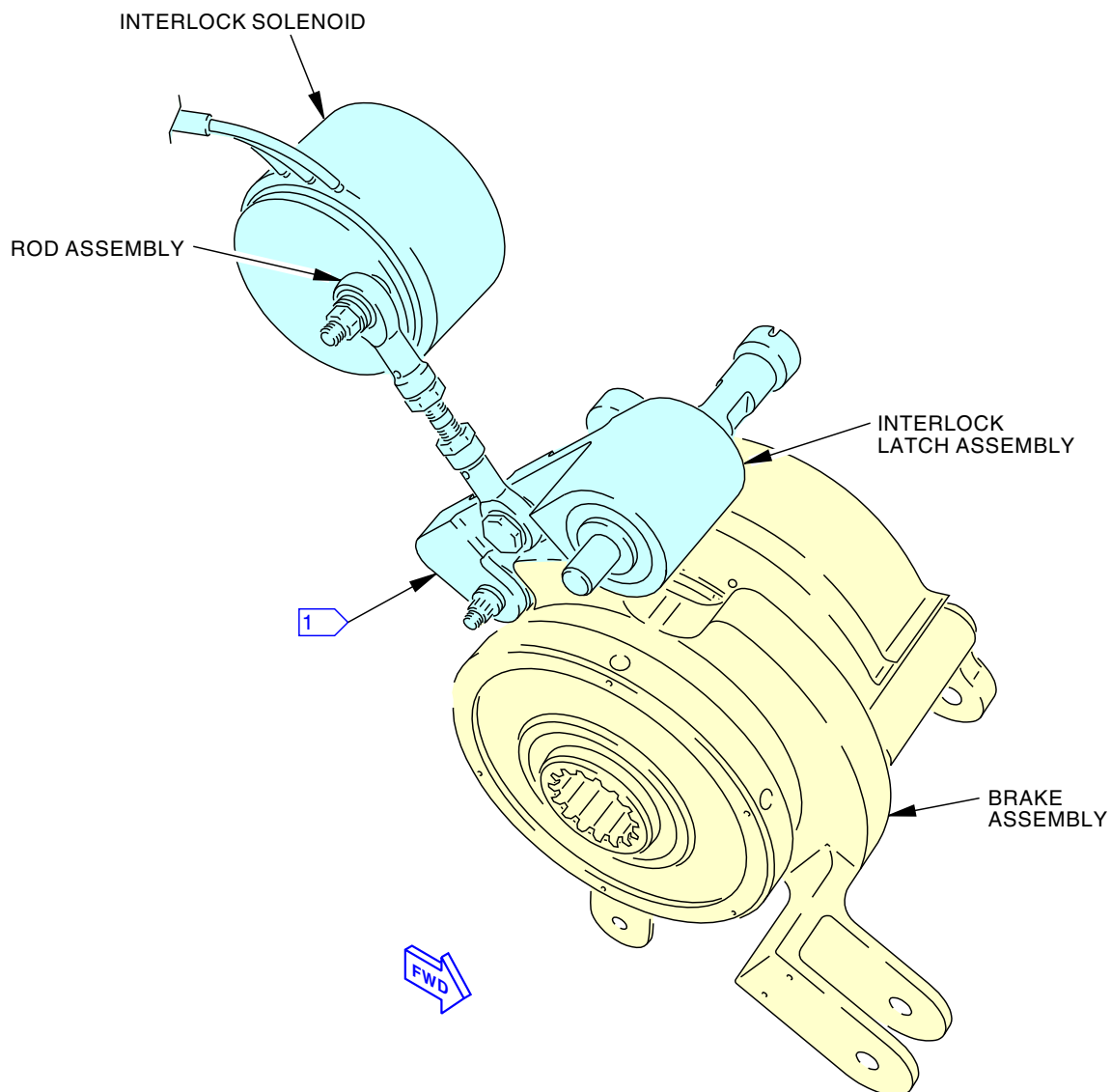
D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

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(LEFT INTERLOCK SOLENOID IS SHOWN,
RIGHT INTERLOCK SOLENOID IS OPPOSITE)

G

- 1** USE A BUNGEE CORD OR TIE WRAP TO TEMPORARILY HOLD THIS END OF THE LATCH UP AND CLEAR OFF THE AUTOTHROTTLE BRAKE CAM.

3023876 S0000795665_V1

Switch Test and Cleaning
Figure 503/76-11-07-990-804-G00 (Sheet 7 of 7)

EFFECTIVITY
SIA ALL

D633AM101-SIA

ECCN 9E991 BOEING PROPRIETARY - See title page for details

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