

CHAPTER

76

**ENGINE
CONTROLS**

(CFM56 ENGINES (CFM56-7))

737-600/700/800/900
AIRCRAFT MAINTENANCE MANUAL
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THRUST LEVERS - REMOVAL/INSTALLATION

1. General

- A. This procedure has two tasks:
 - (1) Thrust Levers Removal
 - (2) Thrust Levers Installation.

TASK 76-11-01-010-801-F00

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 you instructions on how to remove the thrust levers from the aisle control stand.

B. References

Reference	Title
25-11-01-000-801	Captain's and First Officer's 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)
27-62-00-820-801	Speed Brake Control Lever Adjustment (P/B 501)
76-11-03-000-801-F00	Control Stand Lightplate Removal (P/B 401)
76-11-03-400-801-F00	Control Stand Seal, Spacer, and Retainer Removal (P/B 401)
76-11-03-400-803-F00	Control Stand Cover and Stop 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 #: F70207-109 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

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

F. Prepare for the Removal

SUBTASK 76-11-01-040-001-F00

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

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SUBTASK 76-11-01-040-002-F00

- (2) Make sure that the left and right engine start switches are off and install a DO-NOT-OPERATE tag.

LOM 429-432; AIRPLANES WITH AUTO-IGNITION

- (a) This is the AUTO position.

LOM ALL

SUBTASK 76-11-01-860-008-F00

- (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	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	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	4	C01003	ENGINE 1 THRUST REVERSER IND
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 76-11-01-860-009-F00

- (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
C	8	C01004	ENGINE 2 THRUST REVERSER IND
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	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>
E	3	C01321	ENGINE FUEL ENGINE 2 HPSOV CONT
E	4	C01396	ENGINE FUEL ENGINE 2 HPSOV IND

SUBTASK 76-11-01-860-013-F00

- (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 76-11-01-860-006-F00

**WARNING**

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 this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-1

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

SUBTASK 76-11-01-040-006-F00

- (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 (Speed Brake Control Lever Adjustment, TASK 27-62-00-820-801).

SUBTASK 76-11-01-010-001-F00

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

SUBTASK 76-11-01-010-007-F00

- (9) Put a mat on the aft electronics panel P8.

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

SUBTASK 76-11-01-010-002-F00

- (10) Remove these lightplates to get access to the thrust levers (TASK 76-11-03-000-801-F00):
- (a) The first officers stabilizer trim lightplate.
 - (b) The flap indicator lever lightplate.

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SUBTASK 76-11-01-010-003-F00

- (11) Remove these retainers and seals to get access to the thrust levers (TASK 76-11-03-400-801-F00):
 - (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-F00

- (12) Remove these covers and stops to get access to the thrust levers (TASK 76-11-03-400-803-F00):
 - (a) The stabilizer trim horn cutout switch knob [6] for the stabilizer trim horn cutout switch.
 - (b) The forward thrust stop and the aft thrust stop.
 - (c) Move the right side cover assembly forward and carefully lay it on the front of the stand.
 - (d) The center cover assembly.

SUBTASK 76-11-01-010-005-F00

- (13) Get access to the thrust levers in the control stand as follows:
 - (a) Remove the bolt [8] and the 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 four screws [2] and the left upper side panel [1].
 - (c) Remove five screws [2] and the left lower side panel [5].
 - (d) Remove four screws [2] and the right upper side panel [3].
 - (e) Remove four screws [2] the right lower side panel [4].
 - (f) Move the stabilizer trim switch panel [10] from the control stand as follows:
 - 1) Remove the 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 mat.

G. Thrust Lever Removal

SUBTASK 76-11-01-020-002-F00

- (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 the 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-F00

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

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SUBTASK 76-11-01-020-004-F00

- (3) Disconnect the stabilizer trim controls as follows:

- (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-F00

- (4) Remove the control shaft components (Figure 402):

- (a) Remove the bolt [8] and the 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:

- 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 [35] is between the bearing [41] and the 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].

- (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-F00

- (5) Remove the chain guard [67] as follows:

- (a) Find the stabilizer trim switch panel [10] for the stabilizer trim cutout.

- (b) Use the 90 degree screwdriver from tool set, SPL-2411 to hold the screw [66].

- (c) Remove the nut [65], the washer [63], and the screw [66].

- (d) Remove the upper center screw [62] and the washer [61].

- (e) Remove the forward screw [64] and the washer [63].

- (f) Remove the chain guard [67].

SUBTASK 76-11-01-020-007-F00

- (6) Disconnect the electrical harness for Engine 1 thrust lever as follows:

- (a) Disconnect the electrical connector [85].

- (b) Disconnect the electrical connector [86].

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- (c) Remove the clamp [81] and the 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-F00

- (7) Disconnect the electrical harness for the Engine 2 thrust lever as follows:
 - (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-F00

- (8) Disconnect the applicable thrust lever connecting rod [125] as follows:
 - (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], the washer [122], and the bolt [123].
 - 3) Move the thrust lever connecting rod [125] from the resolver.

SUBTASK 76-11-01-020-010-F00

- (9) Disconnect the thrust lever assemblies as follows:
 - (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-F00

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



BE CAREFUL WHEN YOU INSERT THE DOWEL. IF THE NINE 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 control levers.

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

NOTE: Do not move the long control shaft [146] from the position it is now in. More movement will let the start lever falls.

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- (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: Make sure that the washers do not fall into the control stand.

NOTE: Do not move the dowel from the position it is in unless you want to remove thrust lever assembly [142] for engine 2.

SUBTASK 76-11-01-020-012-F00

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



BE CAREFUL WHEN YOU INSERT THE DOWEL. IF THE NINE 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 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.

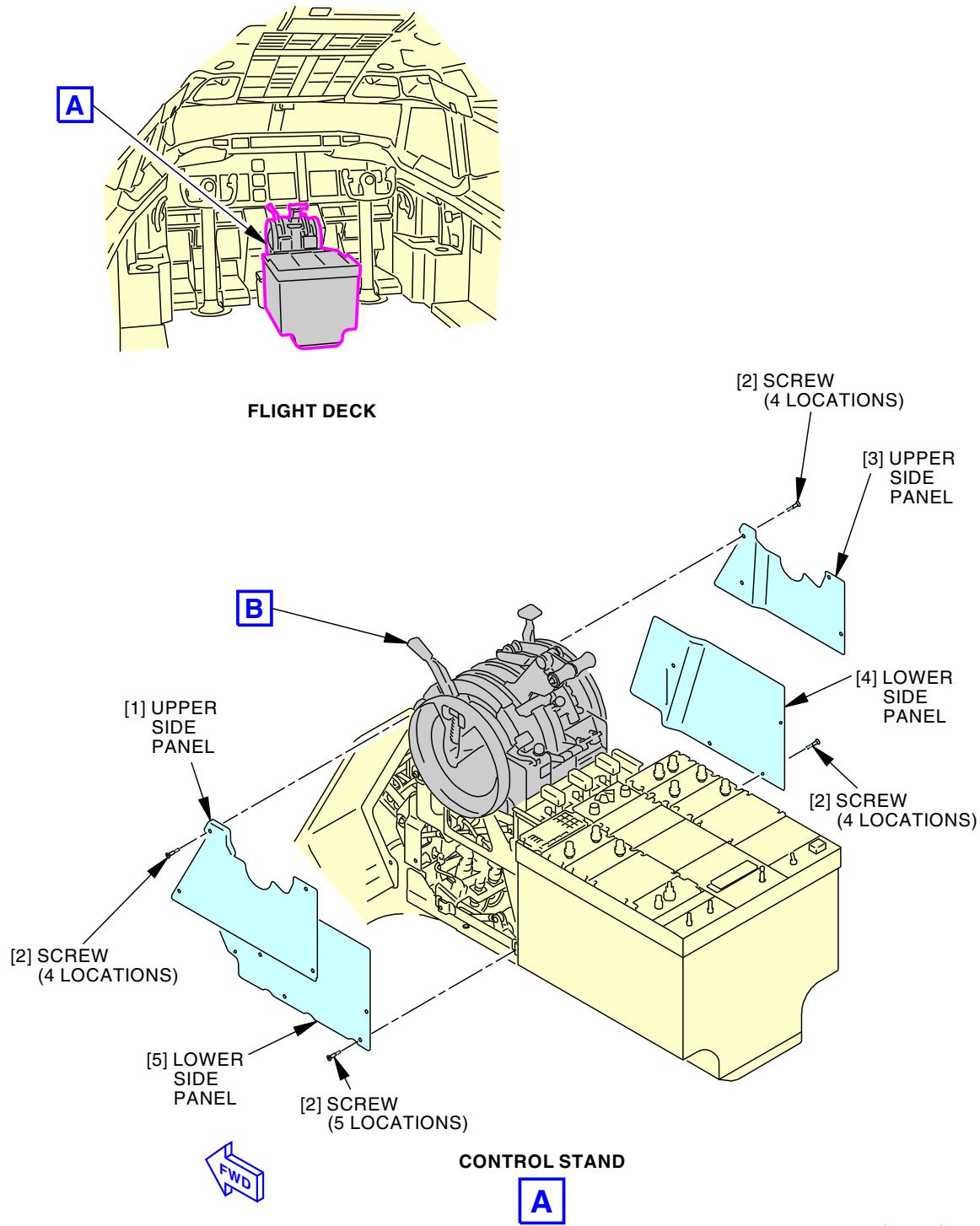
NOTE: Make sure that the washers do not fall into the control stand.

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

END OF TASK

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G02533 S0006583041_V2

Control Stand Installation
Figure 401/76-11-01-990-801-F00 (Sheet 1 of 3)

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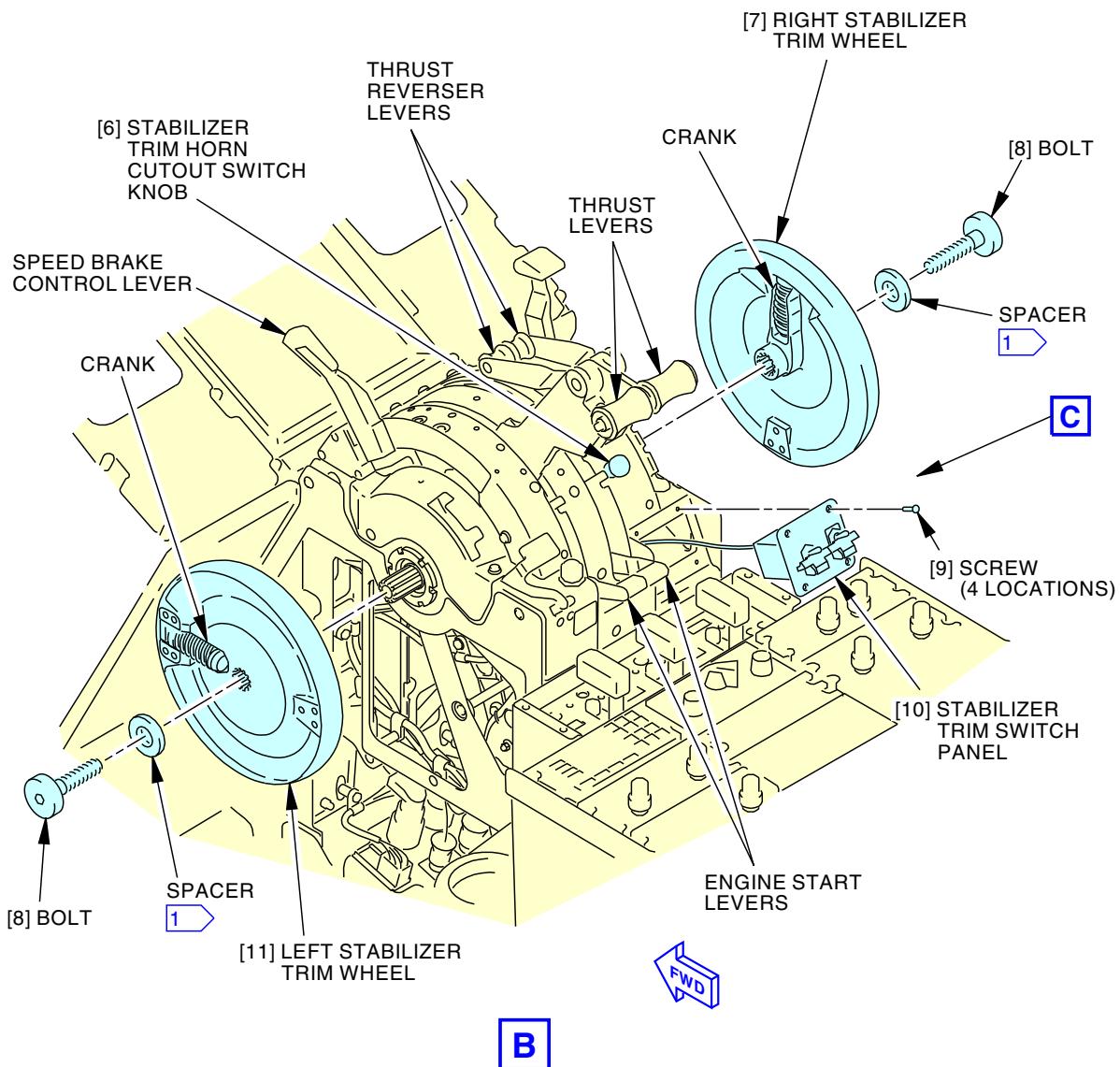
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

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 SPACER NOT INSTALLED WITH
COUNTERSUNK HEAD BOLT

G02561 S0006583042_V3

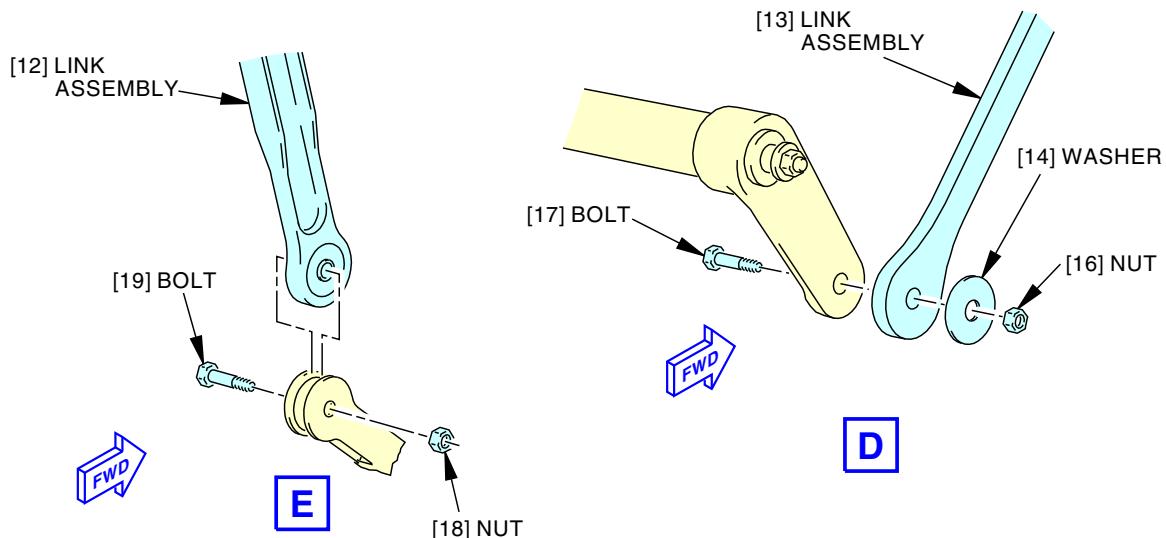
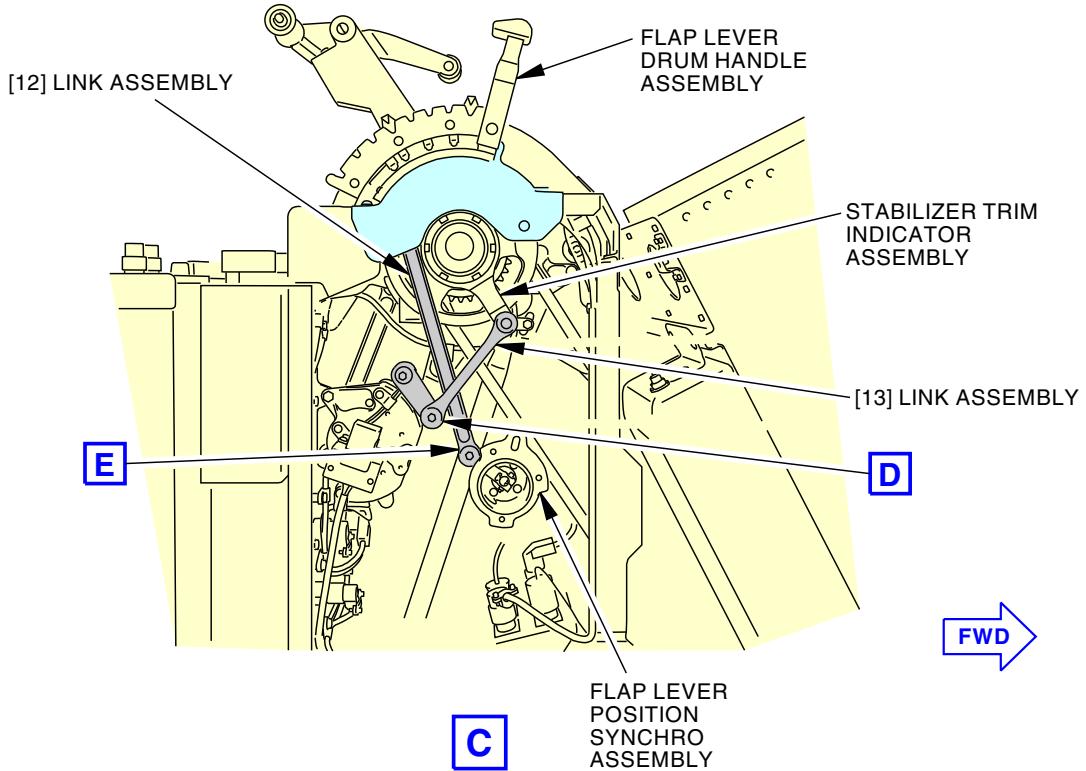
Control Stand Installation
Figure 401/76-11-01-990-801-F00 (Sheet 2 of 3)

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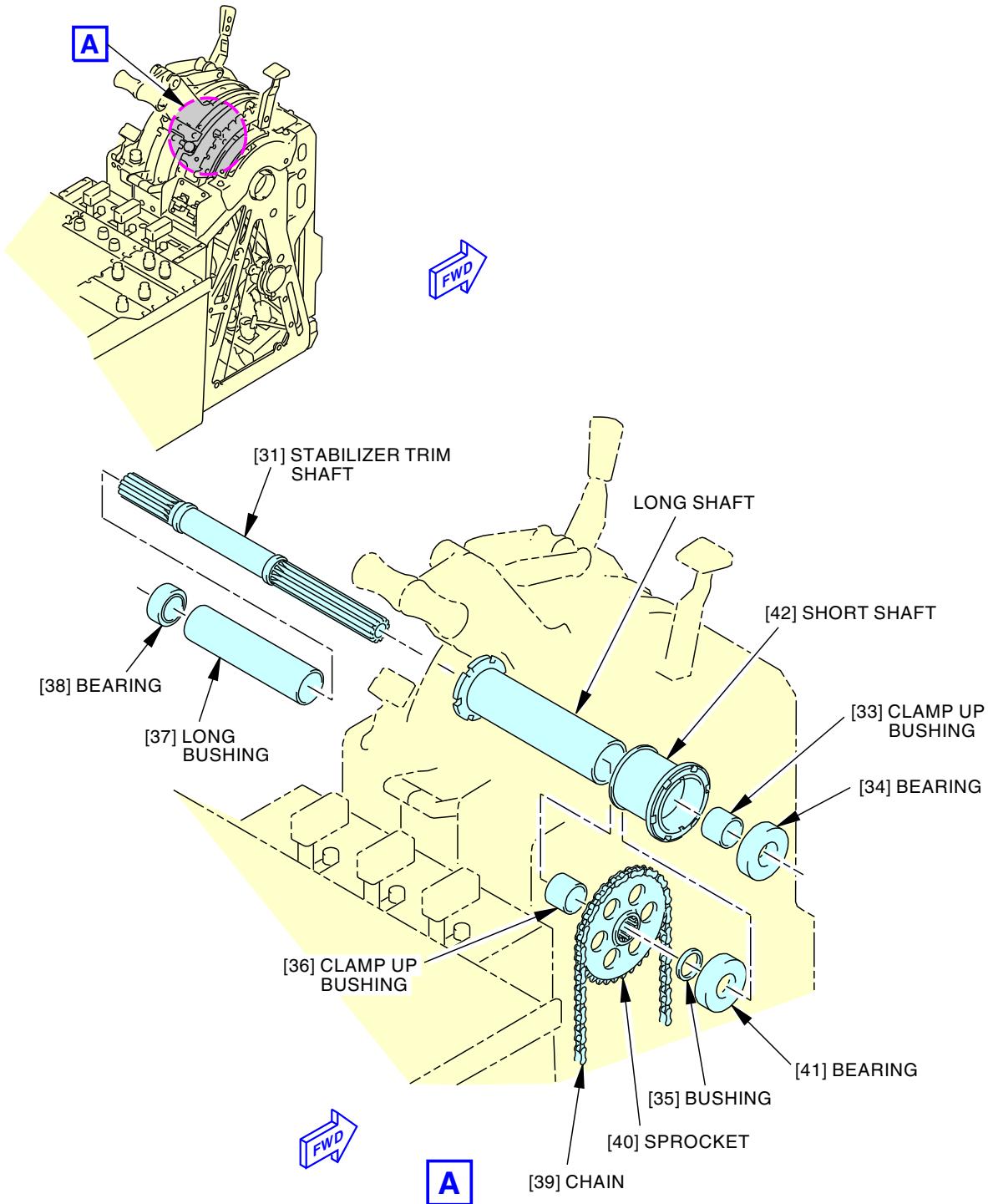
G02645 S0006583043_V4

Control Stand Installation
Figure 401/76-11-01-990-801-F00 (Sheet 3 of 3)

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G03605 S0006583044_V2

Control Shaft Components Installation
Figure 402/76-11-01-990-802-F00 (Sheet 1 of 2)

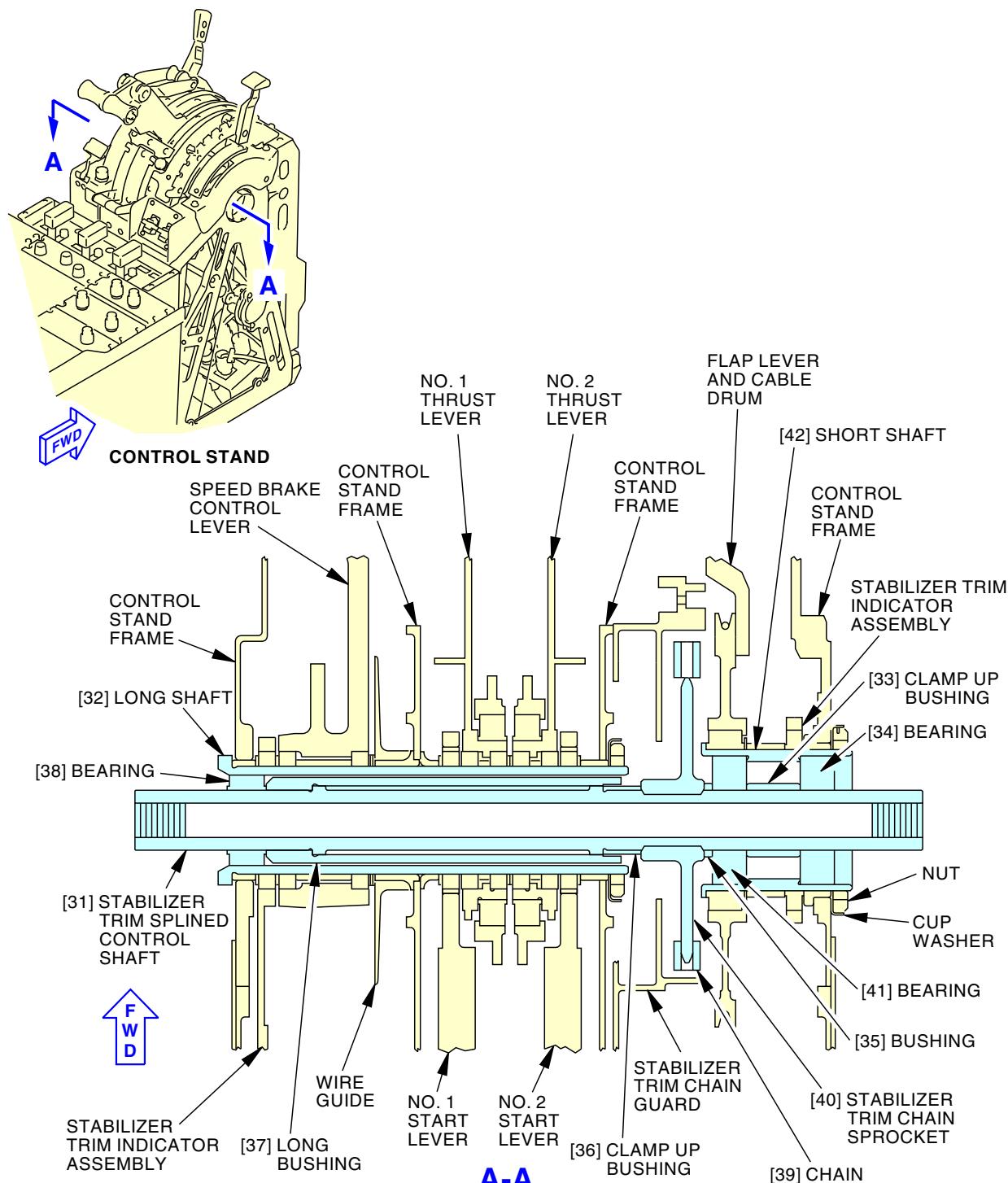
EFFECTIVITY
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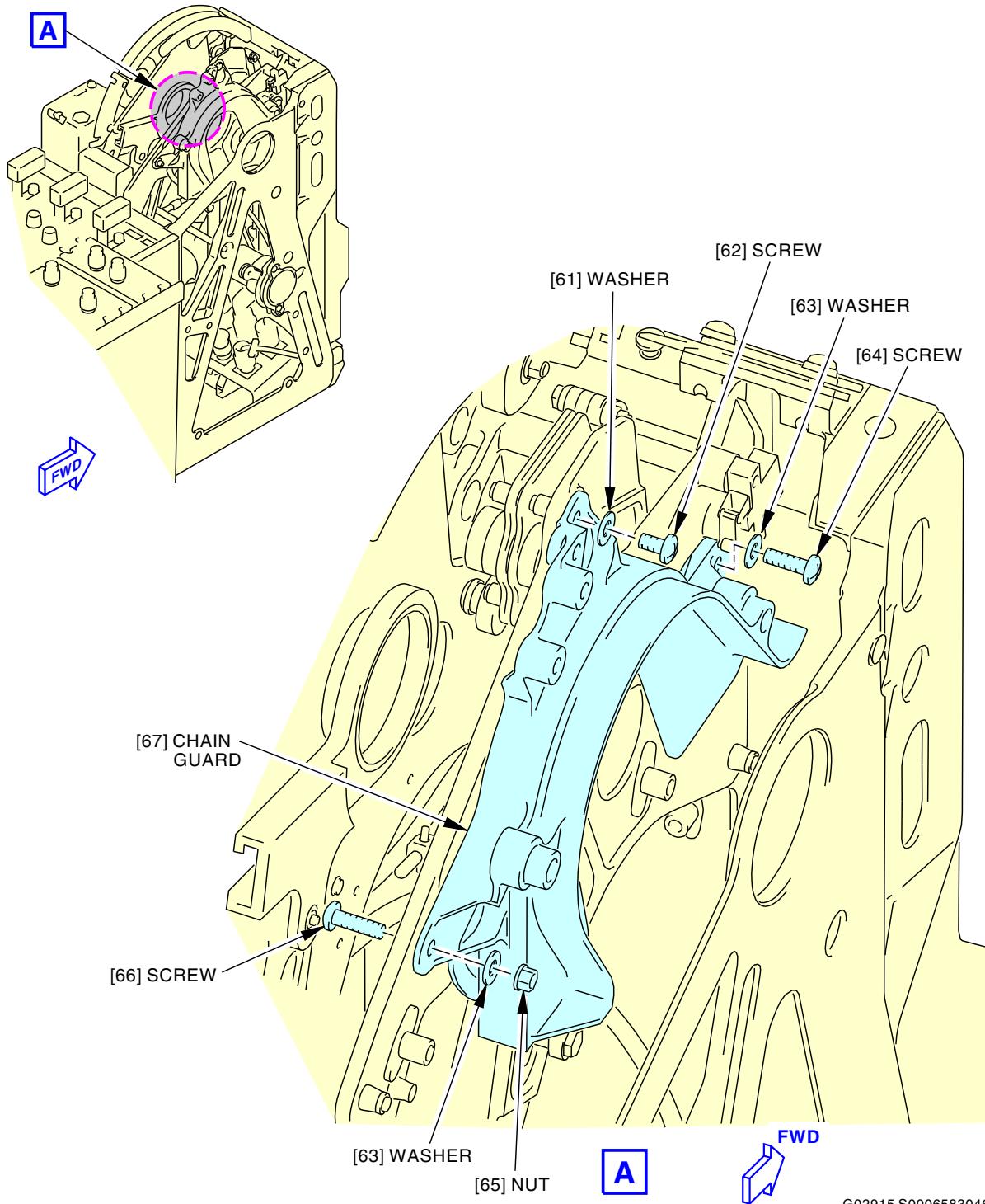
Control Shaft Components Installation
Figure 402/76-11-01-990-802-F00 (Sheet 2 of 2)

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G02915 S0006583046_V2

Chain Guard Assembly Installation
Figure 403/76-11-01-990-803-F00

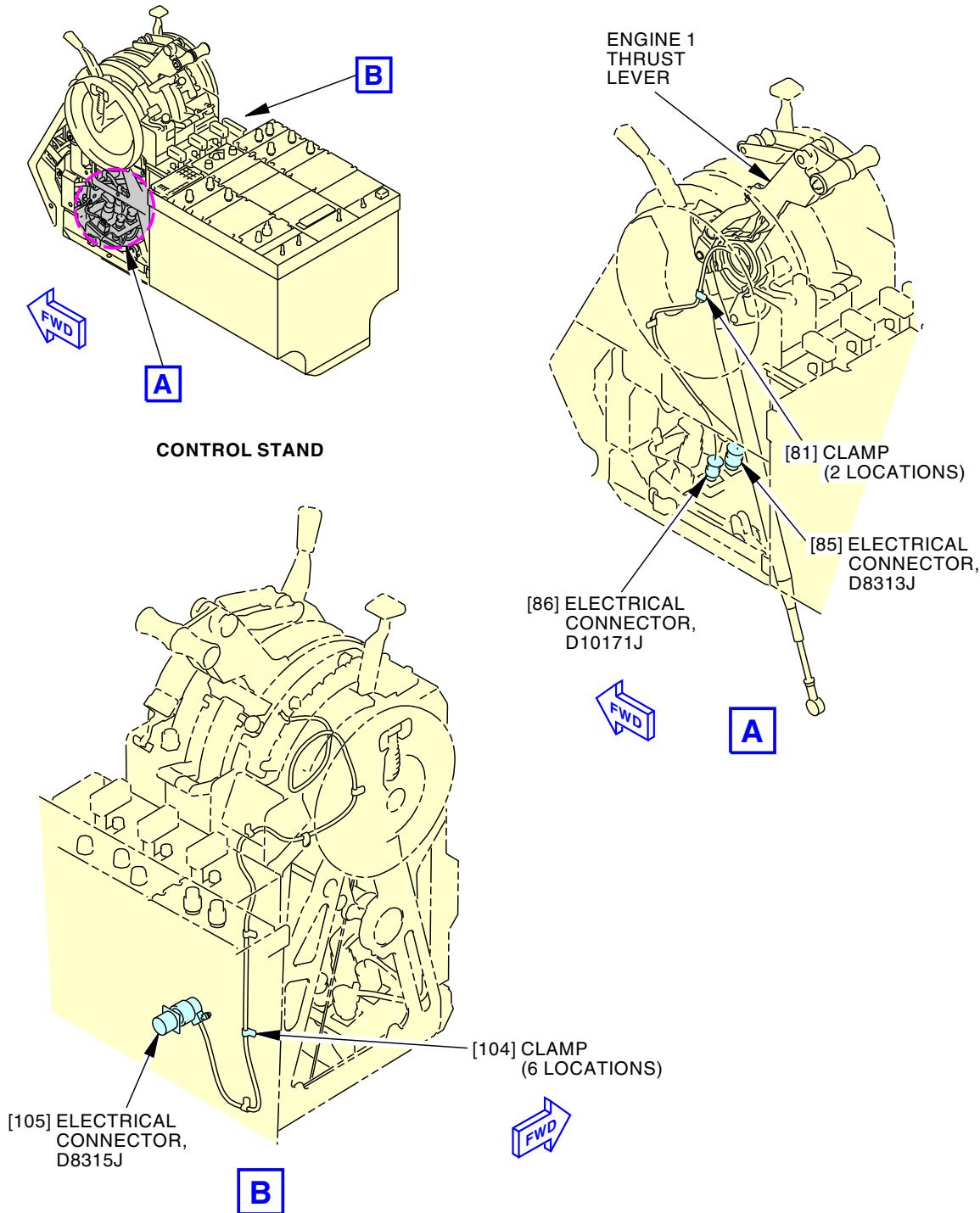
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G29366 S0006583047_V2

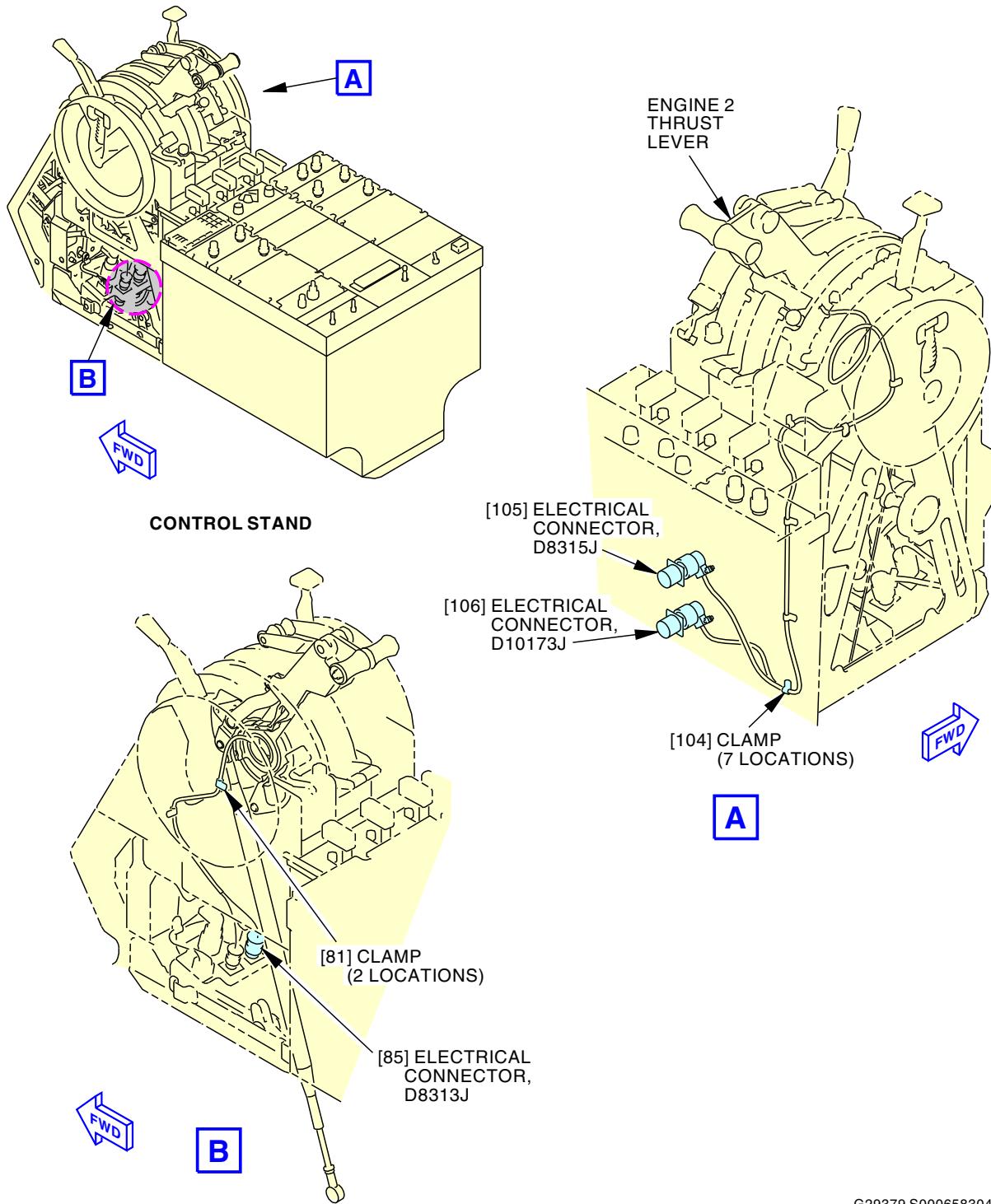
Engine 1 Thrust Lever Electrical Harness Installation
Figure 404/76-11-01-990-804-F00

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Engine 2 Thrust Lever Electrical Harness Installation

Figure 405/76-11-01-990-805-F00

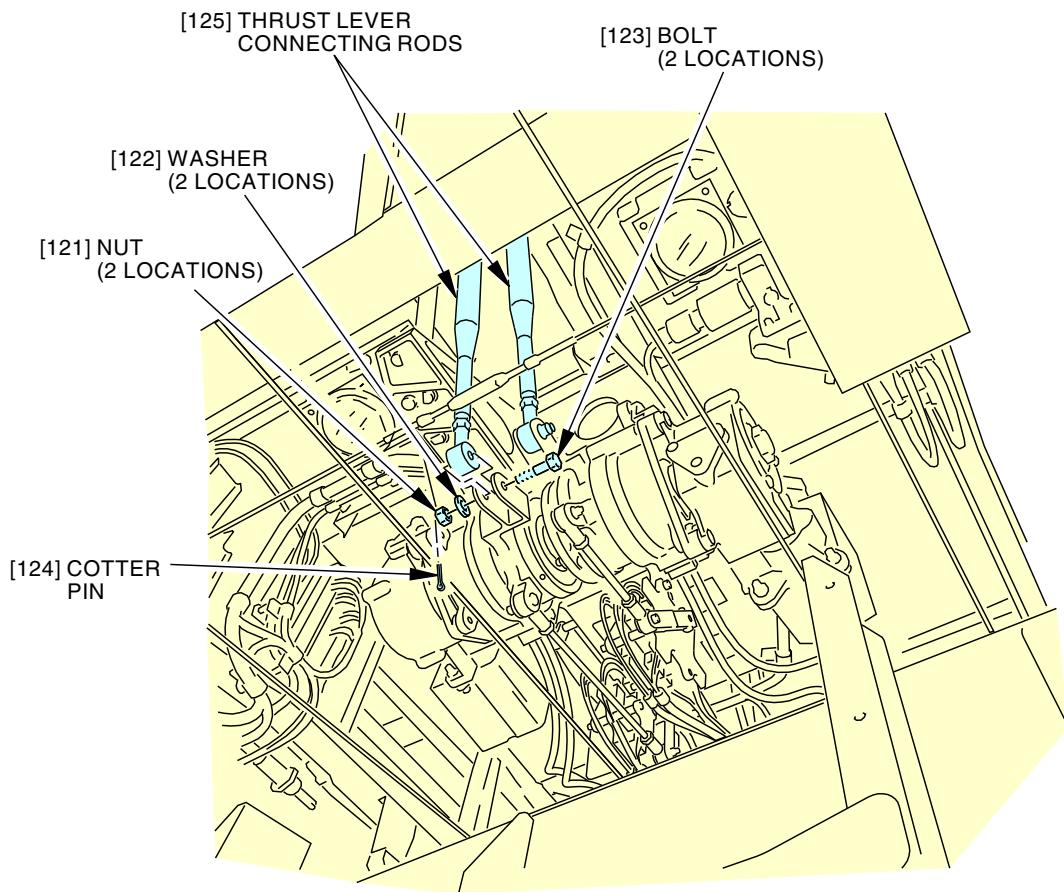
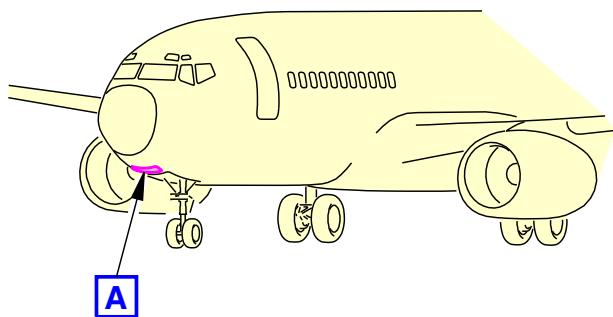
EFFECTIVITY
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G05438 S0006583049_V2

Thrust Lever Connecting Rod Installation
Figure 406/76-11-01-990-806-F00

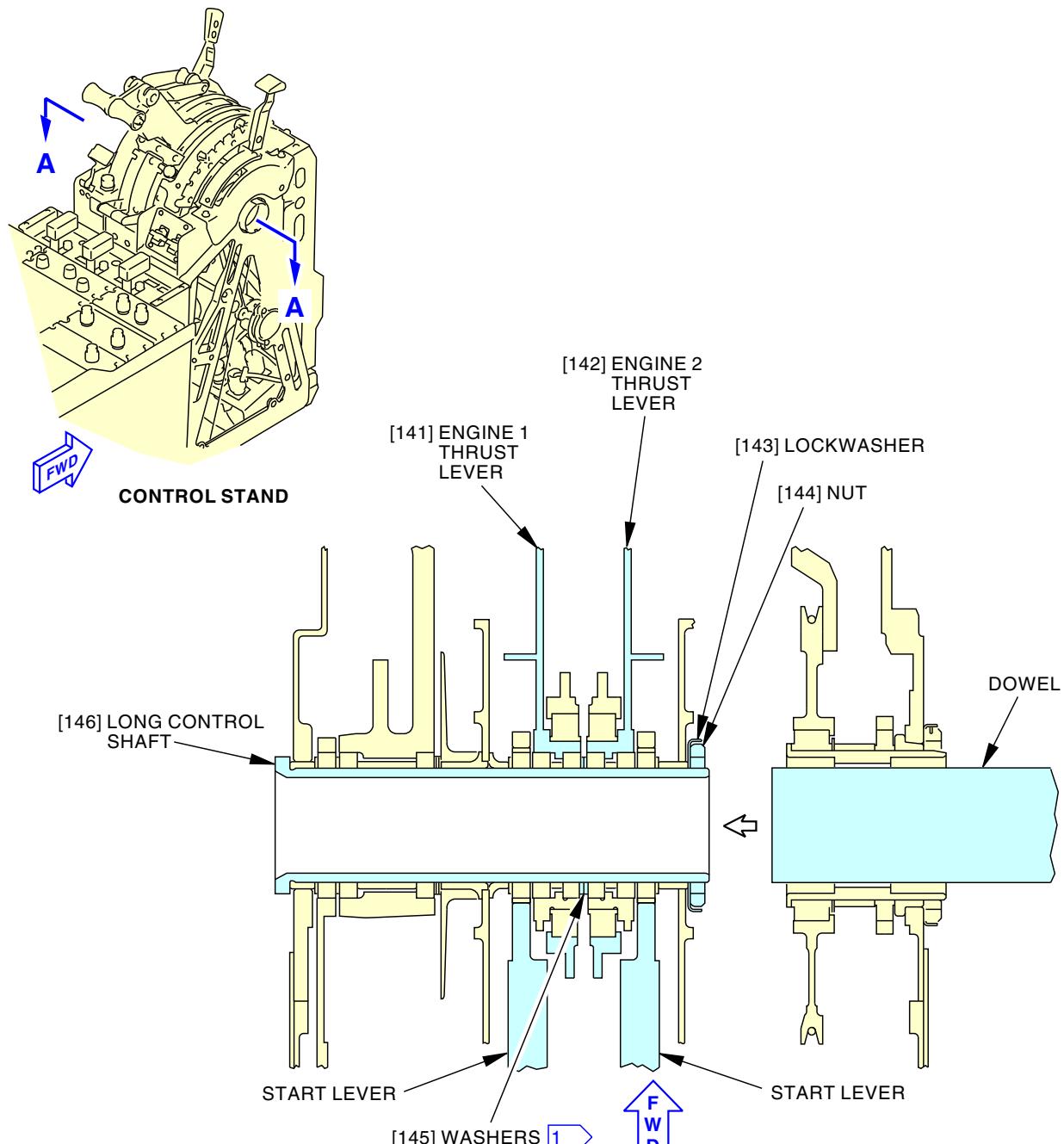
EFFECTIVITY
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1 THE QUANTITY IS DIFFERENT FROM AIRPLANE TO AIRPLANE

(THRUST LEVERS INSTALLED)

A-A

G05836 S0006583050_V2

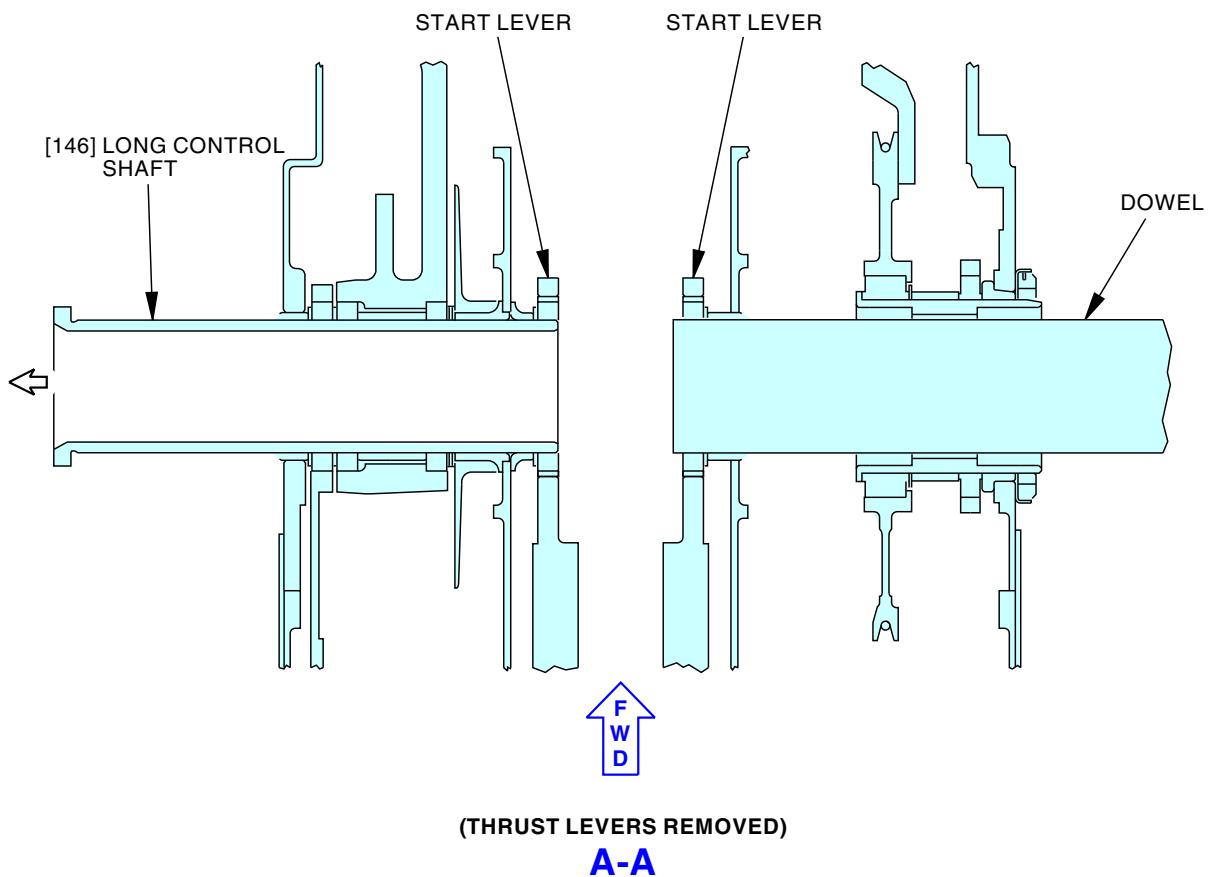
Thrust Lever Installation
Figure 407/76-11-01-990-807-F00 (Sheet 1 of 2)

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G05841 S0006583051_V2

Thrust Lever Installation
Figure 407/76-11-01-990-807-F00 (Sheet 2 of 2)

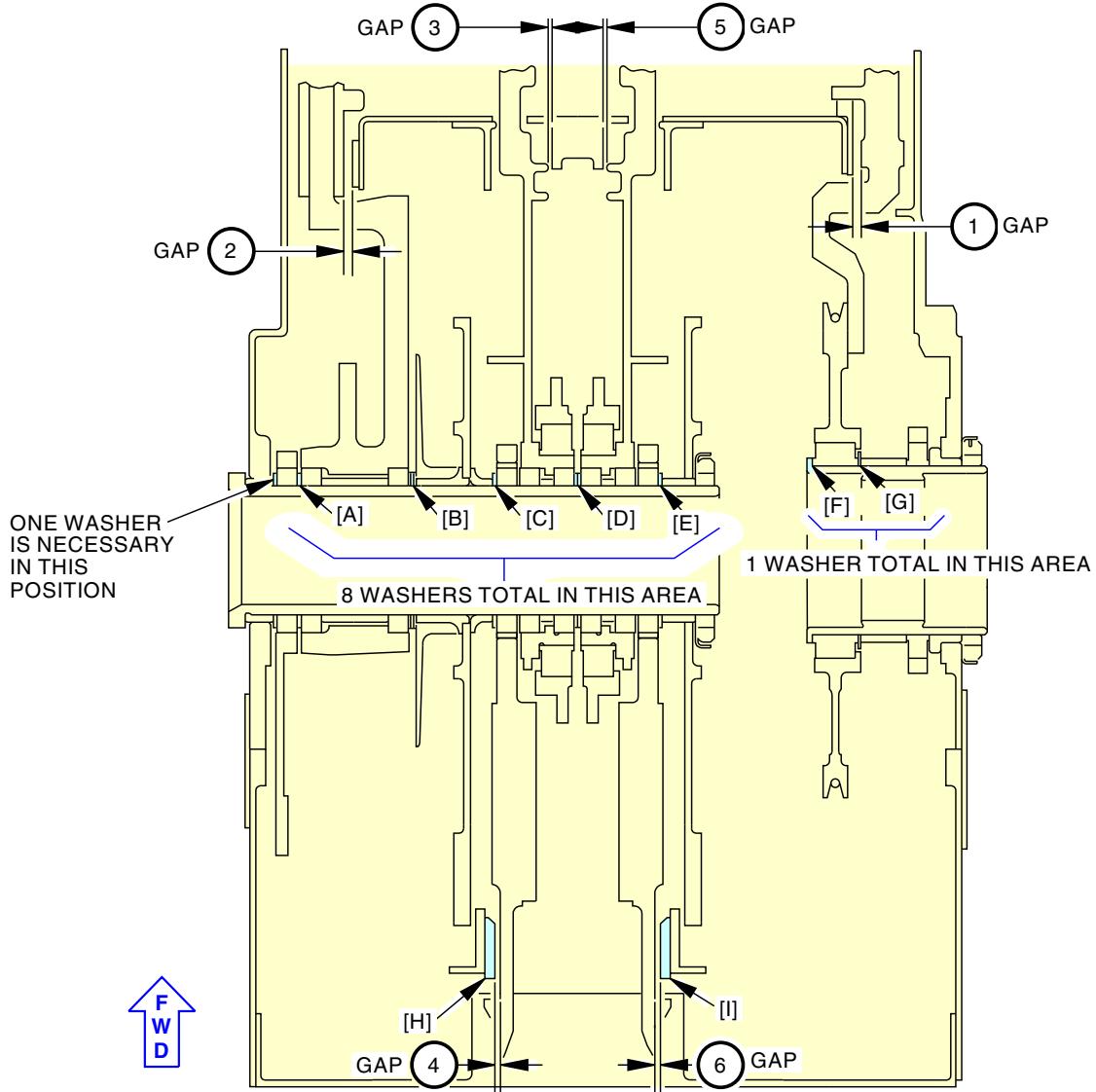
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G05878 S0006583053_V2

Control Shaft Washer (Shim) Limits
Figure 408/76-11-01-990-810-F00 (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 ENGINE START DETENT ENGINE 1	0.036-0.090	> 0.090	ADD TWO SHIMS MAX (AS NECESSARY) AT [H]
		< 0.036	REMOVE ONE SHIM AT [H]
5 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]
6 ENGINE START DETENT ENGINE 2	0.022-0.086	> 0.086	ADD THREE SHIMS MAX (AS NECESSARY) AT [I]
		< 0.022	REMOVE ONE SHIM AT [I]

**CONTROL SHAFT ADJUSTMENT GAP LIMITS
TABLE A**

G11814 S0006583054_V2

Control Shaft Washer (Shim) Limits
Figure 408/76-11-01-990-810-F00 (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
[H]	3	0
[I]	4	0

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

G27845 S0006583055_V2

**Control Shaft Washer (Shim) Limits
Figure 408/76-11-01-990-810-F00 (Sheet 3 of 3)**

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TASK 76-11-01-420-801-F00**3. Thrust levers Installation**

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

A. General

- (1) This task gives you instructions on how to install the thrust levers into the aisle control stand.

B. References

Reference	Title
22-11-39-400-801	TOGA Switch Installation (P/B 401)
22-31-51-400-801	Autothrottle Disengage Switch Installation (P/B 401)
25-11-01-400-801	Captain's and First Officer's Seat Installation (P/B 401)
27-41-00-820-801	Stabilizer Control Cable and Chain - Adjustment (P/B 501)
27-41-61-410-801	Stabilizer Trim Control Wheel Installation (P/B 401)
27-51-00-440-801	Trailing Edge Flap System Reactivation (P/B 201)
27-51-06-730-802	Flap Control Lever Position Sensor System Test (P/B 201)
27-62-00-820-801	Speed Brake Control Lever Adjustment (P/B 501)
76-11-03-400-802-F00	Control Stand Seal, Spacer and Retainer Installation (P/B 401)
76-11-03-400-804-F00	Control Stand Cover and Stop Installation (P/B 401)
76-11-03-420-801-F00	Control Stand Lightplate Installation (P/B 401)
76-11-05-820-801-F00	Thrust Lever Angle Resolver Adjustment (P/B 501)
78-31-00-700-801-F00	Thrust Reverser Normal Operation 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-1585	Kit - Rigging Pin Part #: F70207-109 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

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
141	Lever assembly	76-11-01-02-004	LOM 402, 404, 407, 411, 412, 415, 416, 420, 422-431
		76-11-01-02-008	LOM ALL
		76-11-01-02-365	LOM ALL

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(Continued)

AMM Item	Description	AIPC Reference	AIPC Effectivity
142	Lever assembly	76-11-01-02-005	LOM 402, 404, 406, 407, 411, 412, 415, 416, 420
		76-11-01-02-009	LOM ALL
		76-11-01-02-370	LOM ALL

F. Location Zones

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

G. Thrust levers Installation

SUBTASK 76-11-01-420-001-F00

- (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 left side end of the dowel set, SPL-2409.
 - 7) Move the thrust lever forward and aft.
NOTE: The levers and washers [145] 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 [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-F00

- (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.

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- (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 [145] 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 left side end of the dowel set, SPL-2409.

- 5) Move the thrust lever forward and aft.

NOTE: The levers and washers [145] 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 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-F00

- (3) Lock the thrust levers as follows:

- (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 [143] 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-F00

- (4) Measure the gap 3, 4, 5, and 6 after you installed the assembly (Figure 408):

- (a) If the gaps are in the limits, no change to the assembly will be necessary:

- (b) 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-F00

- (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 is tightened 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]:

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- 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 [143] is not more than 0.15 inch (2.5 mm) into the notch on the nut [144].
- (c) Move the thrust levers down against the idle stop.

SUBTASK 76-11-01-410-001-F00

- (6) Connect the thrust lever connecting rod [125] ends for the thrust levers as follow (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.
 - (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-F00

- (7) For the engine 2 thrust lever, connect the electrical harness as follows (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 clamp [81] and the clamp [104].
 - (e) Connect the electrical connector [105].
 - (f) Connect the electrical connector [106]

SUBTASK 76-11-01-400-001-F00

- (8) For the engine 1 thrust lever, connect the electrical harness as follows (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 clamp [81] and the clamp [104].
 - (e) Connect the electrical connector [85].
 - (f) Connect the electrical connector [86].

SUBTASK 76-11-01-480-001-F00

- (9) Test the thrust lever electrical connections as follows:
 - (a) Do the TOGA switch installation test (TOGA Switch Installation, TASK 22-11-39-400-801).
 - (b) Do the autothrottle disengage switch installation test (Autothrottle Disengage Switch Installation, TASK 22-31-51-400-801).
 - (c) Do this task (Thrust Reverser Normal Operation Test, TASK 78-31-00-700-801-F00).

NOTE: The thrust reverser normal operation test is done to check the thrust reverser control switch.

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SUBTASK 76-11-01-020-014-F00

- (10) Install the chain guard as follows (Figure 403):
- Put the chain guard [67] in its position.
 - Install the screw [62] and the washer [61].
 - Install the forward screw [64] and the washer [63].
 - Install the aft screw [66] through the thrust lever opening.
 - Use the 90 degree screwdriver from tool set, SPL-2411 hold the screw [66].
 - Install the nut [65] and the washer [63].

SUBTASK 76-11-01-020-015-F00

- (11) Install the control shaft components as follows (Figure 402):
- Install the clamp up bushing [36] and the long bushing [37] on the stabilizer trim shaft [31].
NOTE: Put the clamp up bushing [36] on the end with the longest splines.
 - Put the bearing [41] into the inside end of the short shaft.
 - Move the stabilizer trim shaft [31] into the control stand from the left side.
NOTE: Put the end of the shaft with the longest splines in first.
 - Move the sprocket [40] and the chain [39] up from the bottom of the control stand.
 - Put the sprocket [40] on the splined end of the stabilizer trim shaft [31].
 - Move the control shaft thru the chain sprocket.
 - Put the bushing [35] on the splined end of the stabilizer trim shaft [31].
 - Move the shaft through the bushing [35].
 - Move the shaft through the bearing [41] until the end is moved out through the short shaft [42].
 - Install the bearing [38] on the left side of the stabilizer trim shaft [31].
 - Install the clamp up bushing [33] on the right side of the stabilizer trim shaft [31].
 - Install the bearing [34] on the right side of the stabilizer trim shaft [31].
 - 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 76-11-01-420-007-F00

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

SUBTASK 76-11-01-420-006-F00

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

SUBTASK 76-11-01-410-002-F00

- (14) Connect the flap lever synchro assembly as follows (Figure 401):
- Put the link assembly [12] in the clevis for the flap lever position synchro assembly.

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- (b) Install the nut [18] and the bolt [19].
- (c) Test the flap control lever position sensor system (Flap Control Lever Position Sensor System Test, TASK 27-51-06-730-802).

SUBTASK 76-11-01-040-007-F00

- (15) 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 (Speed Brake Control Lever Adjustment, TASK 27-62-00-820-801).

SUBTASK 76-11-01-010-006-F00

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

SUBTASK 76-11-01-420-011-F00

- (17) Install the wheel assemblies for the stabilizer trim (TASK 27-41-61-410-801).

SUBTASK 76-11-01-200-001-F00

- (18) 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-F00

- (19) Install the stabilizer trim switch panel [10] for the trim stabilizer as follows:
 - (a) Put the stabilizer trim switch panel [10] on the control stand.
 - (b) Install the four screws [9].

SUBTASK 76-11-01-700-001-F00

- (20) Do this task: Thrust Lever Angle Resolver Adjustment, TASK 76-11-05-820-801-F00.

SUBTASK 76-11-01-410-004-F00

- (21) Install these covers and stops (TASK 76-11-03-400-804-F00):
 - (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 76-11-01-410-008-F00

- (22) Install the stabilizer trim horn cutout switch knob [6] for the stabilizer trim horn cutout switch.

SUBTASK 76-11-01-410-005-F00

- (23) Install these seals and retainers (TASK 76-11-03-400-802-F00):
 - (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 76-11-01-410-006-F00

- (24) Install these lightplates (TASK 76-11-03-420-801-F00):
 - (a) The first officers stabilizer trim lightplate.

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- (b) The flap lever lightplate.

SUBTASK 76-11-01-410-007-F00

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

H. Put the Airplane Back to Its Usual Condition

SUBTASK 76-11-01-860-007-F00

- (1) Remove the safety tag and close this circuit breaker:

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 76-11-01-860-010-F00

- (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	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	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	4	C01003	ENGINE 1 THRUST REVERSER IND
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-F00

- (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
C	8	C01004	ENGINE 2 THRUST REVERSER IND
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B



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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	8	C01315	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 76-11-01-860-014-F00

- (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 76-11-01-040-008-F00

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

SUBTASK 76-11-01-860-003-F00

- (6) Remove the DO-NOT-OPERATE tag from the engine start panel.

END OF TASK

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ENGINE START LEVER LAMPS - REMOVAL/INSTALLATION

1. General

- A. This procedure contains two tasks:
 - (1) The removal of the Engine Start Lever Lamps.
 - (2) The Installation of the Engine Start Lever Lamps.

TASK 76-11-02-000-801-F00

2. Engine Start Lever Lamps Removal

A. General

- (1) This task includes the steps to remove 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. Prepare for the Removal

SUBTASK 76-11-02-860-026-F00

- (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-F00



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.

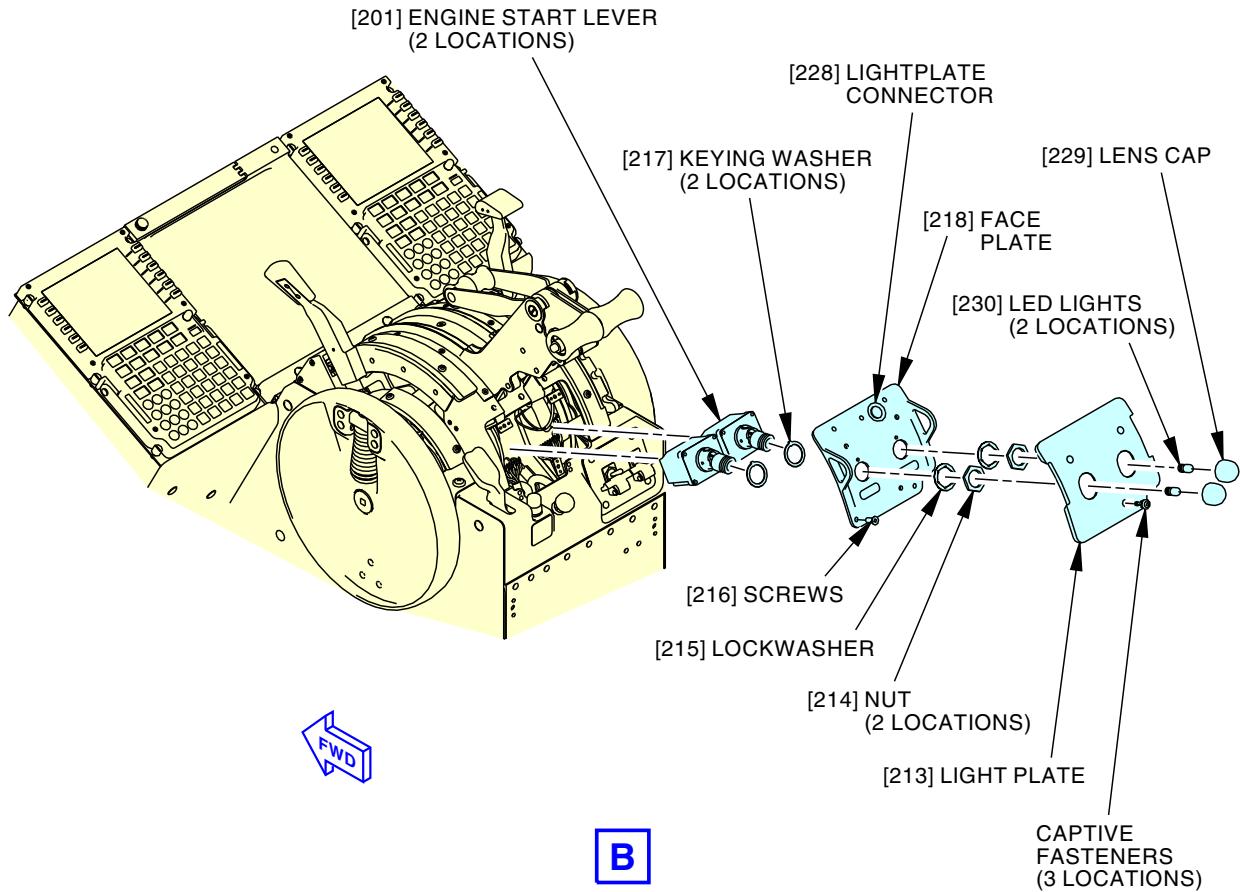
- (1) Remove the Lens Cap [229] from Engine Start Lever [201] by turning it counterclockwise.
- (2) Remove LED Light [230] from the Lens Cap [229].

— END OF TASK —

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2462232 S0000572999_V2

Engine Start Lever Lamps Removal
Figure 201/76-11-02-990-808-F00

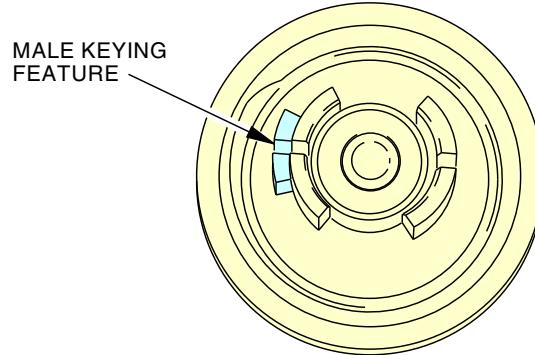
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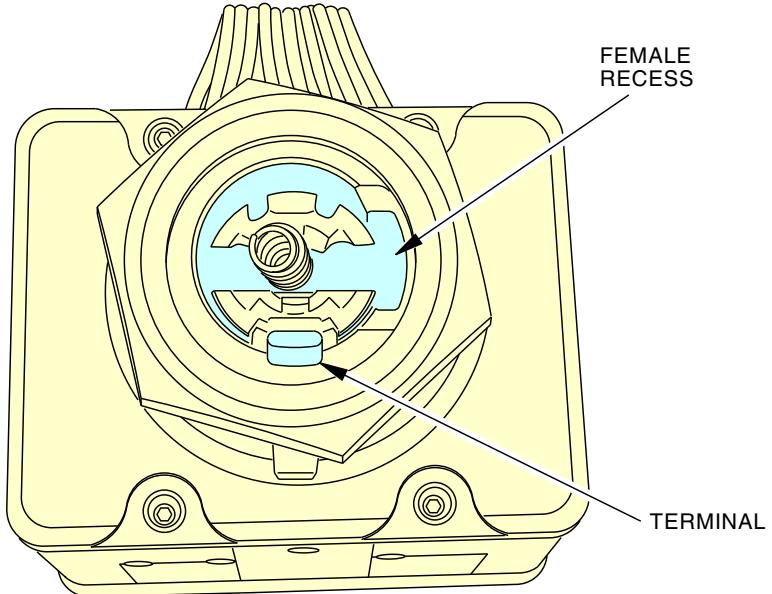
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MALE KEYING FEATURE LOCATION



SWITCH FEMALE RECESS LOCATION

2521107 S0000592992_V1

Lens Cap Keying Feature
Figure 202/76-11-02-990-810-F00

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TASK 76-11-02-400-802-F00**3. Engine Start Lever Lamps Installation**

Figure 201 or Figure 202

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-F00



CAUTION

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 LED Light [230] into the Lens Cap [229].
- (2) Install Lens Cap [229] onto Engine Start Lever [201].



CAUTION

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 Lens Cap [229] with Engine Start Lever [201].

NOTE: The Lens Cap contains a male keying feature and the Engine Start Lever contains a female recess (Figure 201 or Figure 202). 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 Engine Start Lever. Once the male keying feature is aligned with the female recess, the Lens Cap should easily thread onto the Engine 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 Engine 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 Lens Cap [229] onto Engine Start Lever [201] and turn clockwise to tighten cap.

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 76-11-02-860-027-F00

- (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 76-11-02-710-007-F00

- (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 Engine Start Levers, on the Engine Start Lever Panel, P10, come on.

———— END OF TASK ————

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ENGINE START LEVERS - REMOVAL/INSTALLATION
1. General

- A. This procedure has these tasks:
- (1) A removal of the engine start levers
 - (2) An installation of the engine start levers.

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TASK 76-11-02-010-801-F00
2. Start Lever Removal

(Figure 401, Figure 402, Figure 403, Figure 404 and Figure 405)

A. General

- (1) This task gives you instructions on how to remove the start levers from the aisle control stand.

B. References

Reference	Title
25-11-01-000-801	Captain's and First Officer's 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-F00	Control Stand Lightplate Removal (P/B 401)
76-11-03-400-801-F00	Control Stand Seal, Spacer, and Retainer Removal (P/B 401)
76-11-03-400-803-F00	Control Stand Cover and Stop 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 #: F70207-109 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

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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LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-461 (Continued)

F. Prepare for the Removal

SUBTASK 76-11-02-040-001-F00

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

SUBTASK 76-11-02-040-002-F00

- (2) Make sure that the left and right engine start switches are off and install a DO-NOT-OPERATE tag.

LOM 429-432; AIRPLANES WITH AUTO-IGNITION

- (a) This is the AUTO position.

LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-461

SUBTASK 76-11-02-860-009-F00

- (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	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	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	4	C01003	ENGINE 1 THRUST REVERSER IND
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 76-11-02-860-010-F00

- (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
C	8	C01004	ENGINE 2 THRUST REVERSER IND
D	4	C00459	ENGINE 2 IGNITION RIGHT



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LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-461 (Continued)

(Continued)

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	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 76-11-02-860-007-F00



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 this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-1

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

SUBTASK 76-11-02-860-028-F00

- (6) 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>
C	2	C00849	AFCS STABILIZER TRIM
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
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 76-11-02-040-006-F00

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

SUBTASK 76-11-02-010-001-F00

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

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LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-461 (Continued)

SUBTASK 76-11-02-010-002-F00

- (9) Put a mat on the aft electronics panel P8.

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

SUBTASK 76-11-02-020-015-F00

- (10) Do this task: Control Stand Cover and Stop Removal, TASK 76-11-03-400-803-F00.

G. Start Lever Removal

SUBTASK 76-11-02-010-008-F00

- (1) Remove the first officers stabilizer trim lightplate and the flap indicator lever lightplate (TASK 76-11-03-000-801-F00).

SUBTASK 76-11-02-010-009-F00

- (2) Remove these retainers and seals (TASK 76-11-03-400-801-F00):
 - (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 76-11-02-010-010-F00

- (3) Remove the stabilizer trim horn cutout switch knob [6].

SUBTASK 76-11-02-010-011-F00

- (4) Remove forward thrust stop and the aft thrust stop (TASK 76-11-03-400-803-F00):

SUBTASK 76-11-02-010-012-F00

- (5) Move the right side cover assembly forward and carefully lay it on the front of the stand.

SUBTASK 76-11-02-020-014-F00

- (6) Remove the center cover assembly(TASK 76-11-03-400-803-F00):

SUBTASK 76-11-02-010-005-F00

- (7) Get access to the start levers in the control stand as follows :

- (a) Remove the bolt [8] and right stabilizer trim wheel [7].

NOTE: Keep the left stabilizer trim wheel attached so you can turn the assembled levers during removal.

- (b) Remove the spacer.

NOTE: The spacer is not installed with the countersunk head bolt.

- (c) Remove the upper side panel [1] and lower side panel [5] from the control stand, do these steps:

- 1) Remove the screw [22], screw [23], and three screws [2] that hold the upper side panel [1] to the control stand.

- 2) Remove the four screws [2] that hold the pocket [20] to the lower side panel [5].

- 3) Remove the six screws [2] that hold the lower side panel [5] to the control stand.

- (d) Remove the upper side panel [3] and lower side panel [4] from the control stand, do these steps:

- 1) Remove the four screws [2] that hold the upper side panel [3] to the control stand.

- 2) Remove the four screws [2] that hold the pocket [21] to the lower side panel [4].

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LOM ALL

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LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-461 (Continued)

- 3) Remove the four screws [2] that hold the lower side panel [4] to the control stand.
- (e) Remove the four screws [9].
- (f) Apply masking tape, G50314, to prevent damage to the surface of the stabilizer trim switch panel [10].
- (g) Move the stabilizer trim switch panel [10] from the control stand to the mat.

SUBTASK 76-11-02-020-001-F00

- (8) Disconnect the flap indicator assembly on the right side of the control stand as follows:
 - (a) Remove the nut [16], washer [14], washer [15], and bolt [17] from the lower end of the link assembly [13].
 - (b) Use a temporary wire tie to safety the link assembly to the control stand.

SUBTASK 76-11-02-020-002-F00

- (9) Disconnect the flap lever position synchro assembly on the right side of the control stand as follows:
 - (a) Remove the nut [18] and bolt [19] from the lower end of the link assembly [12].
 - (b) Use a wire tie to temporarily safety the link assembly to the control stand.

SUBTASK 76-11-02-020-003-F00

- (10) Disconnect the stabilizer trim controls as follows:
 - (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) Temporarily safety the chain [39] to the stabilizer trim sprocket [40].
NOTE: Do not remove the chain from the sprocket.
 - (c) Find the forward bay below the flight compartment.
 - (d) Release the tension from the stabilizer control chain (TASK 27-41-00-820-801).

SUBTASK 76-11-02-020-004-F00

- (11) Remove the control shaft components as follows:
 - (a) Remove the bolt [8] and left stabilizer trim wheel [11].
 - (b) Remove the spacer.
NOTE: The spacer is not installed with the countersunk head bolt.
 - (c) Carefully move the stabilizer trim shaft [31] to the left of the control stand and do these steps at the same time on the right side:
 - 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 [35] is between the bearing [41] and sprocket [40].
 - 4) Be prepared to catch and move the sprocket and chain.
 - 5) Move the stabilizer trim shaft [31] to the left until the sprocket [40] clears the shaft.
 - 6) Move the sprocket and chain to the bottom of the control stand.
 - (d) Reach inside the short shaft [42] from the left side and remove the inside bearing [41].
 - (e) Remove the stabilizer trim shaft [31] from the control stand.

EFFECTIVITY
LOM ALL

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LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-461 (Continued)

- 1) Remove the bearing [38].
- 2) Remove the long bushing [37].
- 3) Remove the clamp up bushing [36].

SUBTASK 76-11-02-020-005-F00

(12) Remove the chain guard as follows:

- (a) Go to the opening 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 upper center screw [62] and washer [61].
- (e) Remove the forward screw [64] and washer [63].
- (f) Remove the chain guard [67].

SUBTASK 76-11-02-020-006-F00

(13) Remove the applicable start lever assembly from the engine start brake assembly as follows:

- (a) Move the start lever to where you can access the end of the control link.
- (b) Remove the nut [100], washer [101], washer [102], washer [103], and bolt [104].

SUBTASK 76-11-02-020-007-F00

(14) Release the start lever assemblies as follows:

- (a) Find the bent tab on the lockwasher [143].
- (b) Use the lockwasher removal tool from tool set, SPL-2411, to bend the tab out of the notch in the nut [144].
- (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) Put the control shaft nut wrench from tool set, SPL-2411, to remove the nut [144] from the long control shaft [146].
- (e) Remove the nut [144] from the long control shaft [146].
- (f) Remove and discard the lockwasher [143].

SUBTASK 76-11-02-020-008-F00

(15) For Engine 1, remove the start lever assembly [141] as follows:



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

CAUTION

- (a) Put the dowel set, SPL-2409, against the right side 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 control levers.

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

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

- (c) Hold the start lever assembly [141] and remove the dowel from the start lever.
- 1) Stop the dowel movement when you can lift the start lever.

EFFECTIVITY
LOM ALL

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LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-461 (Continued)

- (d) Remove the start lever assembly [141] through the top of the control stand.
- (e) Remove the washer [145] from between the start lever and the control stand frame.
 - 1) Make sure that the washer [145] does not fall into the control stand.
- (f) Install the start lever assembly [141] before you remove the start lever assembly [142] for engine 2.

SUBTASK 76-11-02-020-009-F00

- (16) For Engine 2, remove the start lever assembly [142] as follows:



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

- (a) Put the dowel set, SPL-2409, against the right 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 start lever.

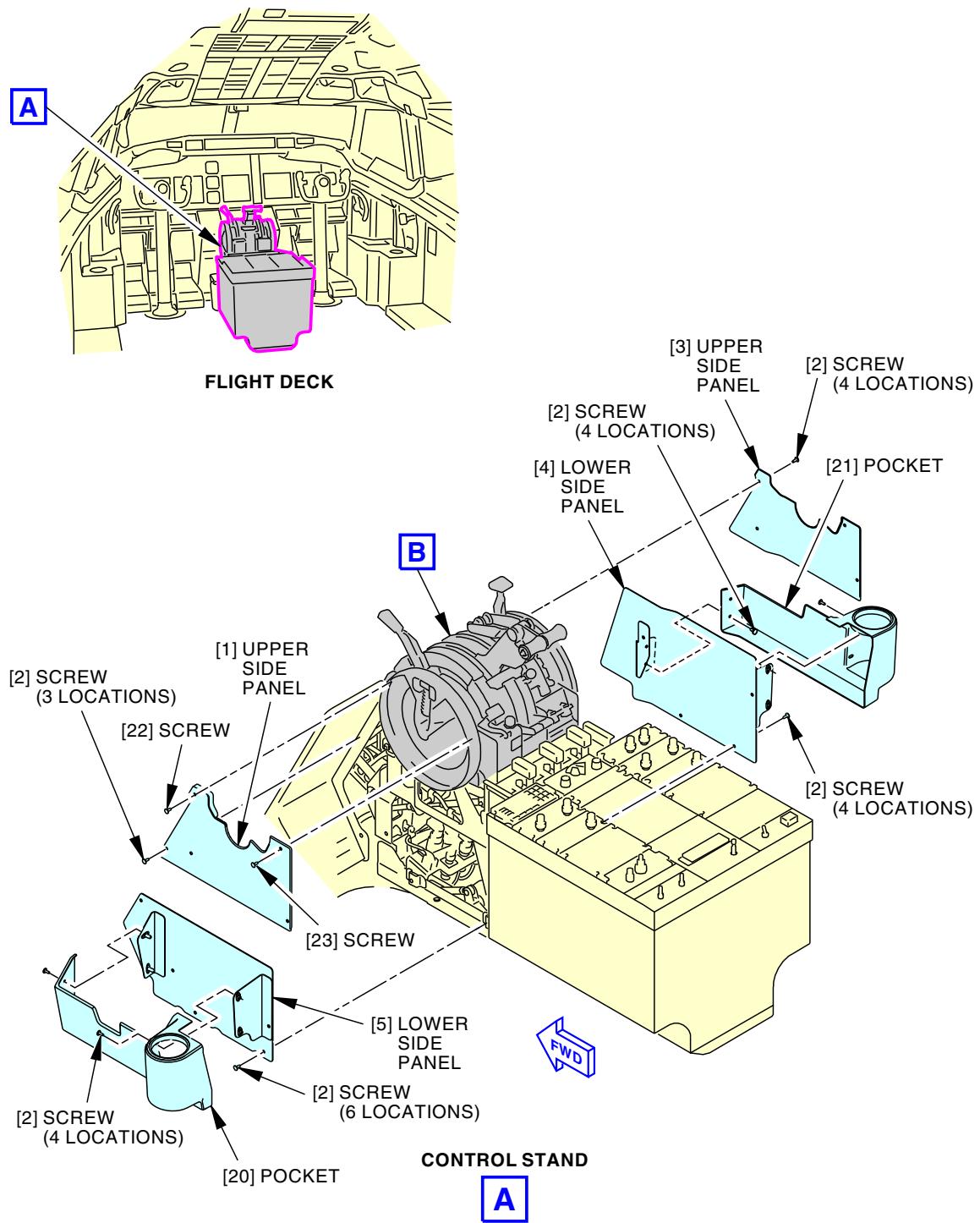
 - 1) Move the dowel until the start lever assembly [142] is on the dowel.

NOTE: Do not move the long control shaft from the position it is in. More movement will let the engine thrust levers or the engine 1 start lever fall.
- (c) Hold the start lever assembly [142] and remove the dowel from the start lever.
 - 1) Stop the dowel movement when you can lift the start lever.
- (d) Remove the start lever assembly [142] through the top of the control stand.
- (e) Remove the washer [145] that is between the start lever and the control stand frame.
 - 1) Make sure that the washer [145] does not fall into the control stand.
- (f) Install the engine 2 start lever assembly [142] before you do the removal of the engine 1 start lever.

END OF TASK

EFFECTIVITY
LOM ALL

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AIRCRAFT MAINTENANCE MANUAL


G29586 S0006583059_V3

Control Stand Installation
Figure 401/76-11-02-990-801-F00 (Sheet 1 of 3)

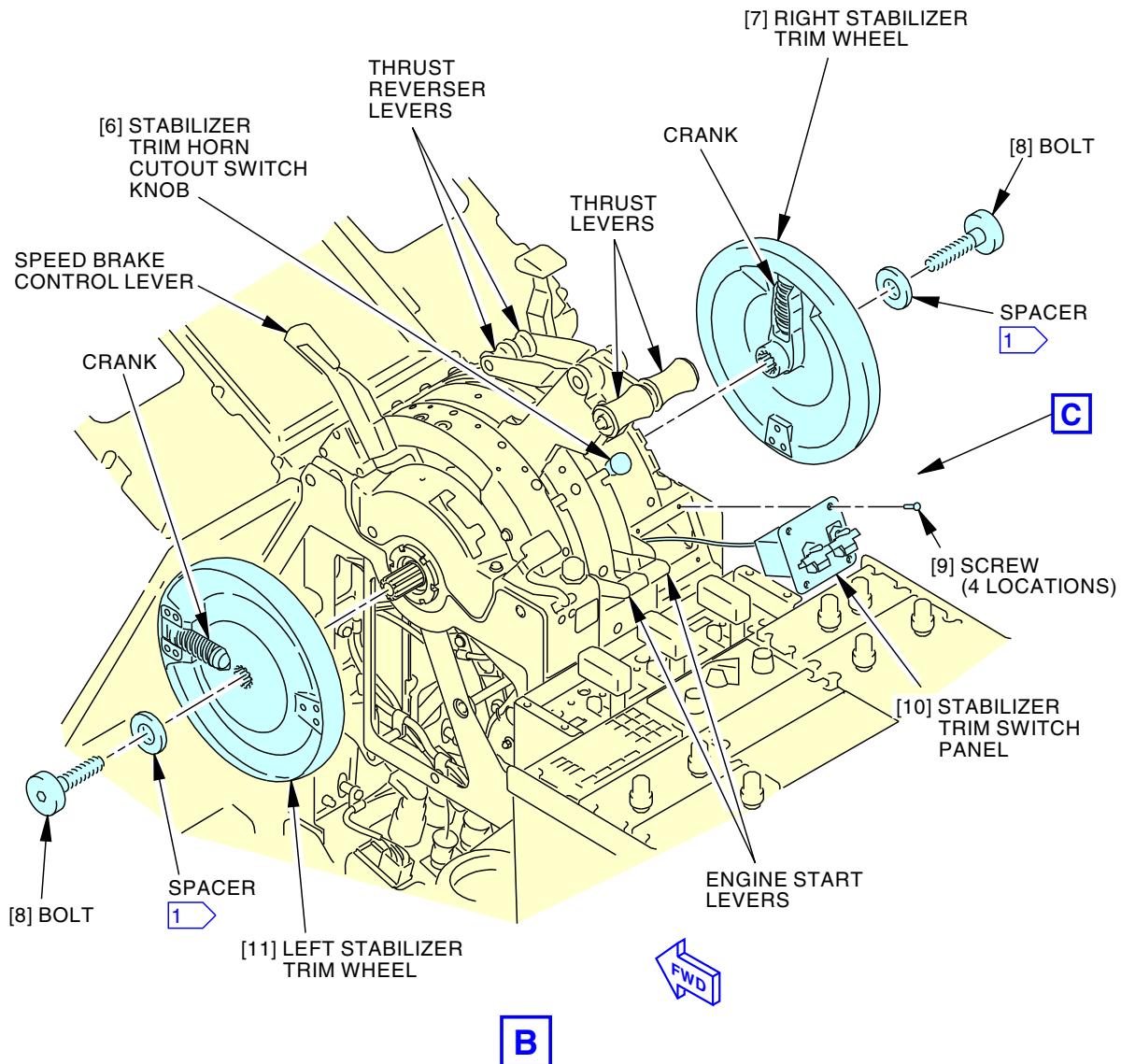
EFFECTIVITY
**LOM 402, 404, 406, 407, 411, 412, 415, 416, 420,
 422-434, 437-447, 450-461**

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[1] SPACER NOT INSTALLED WITH COUNTERSUNK HEAD BOLT

G29588 S0006583060_V3

Control Stand Installation
Figure 401/76-11-02-990-801-F00 (Sheet 2 of 3)

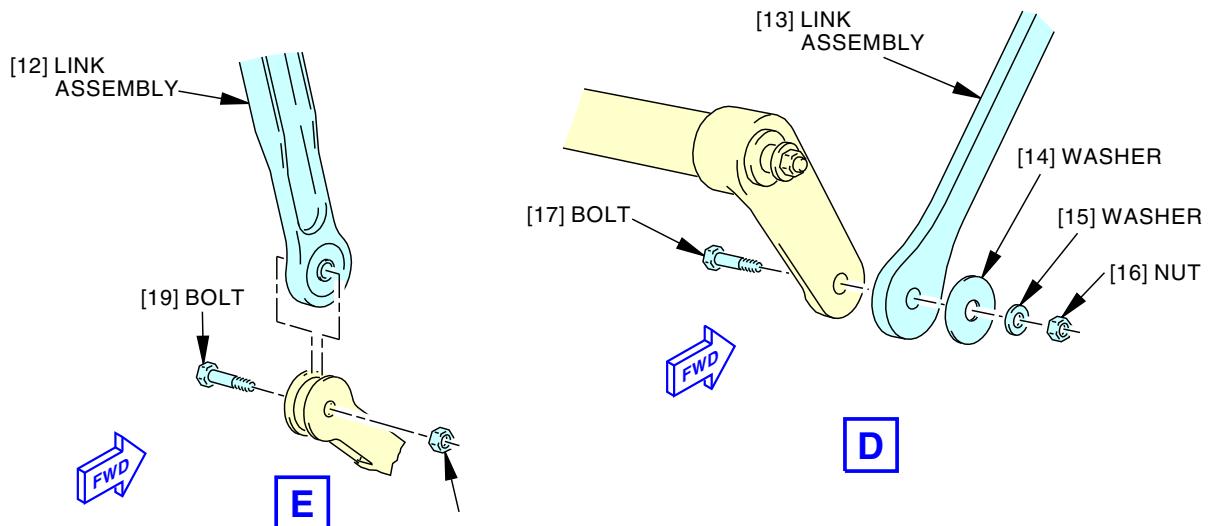
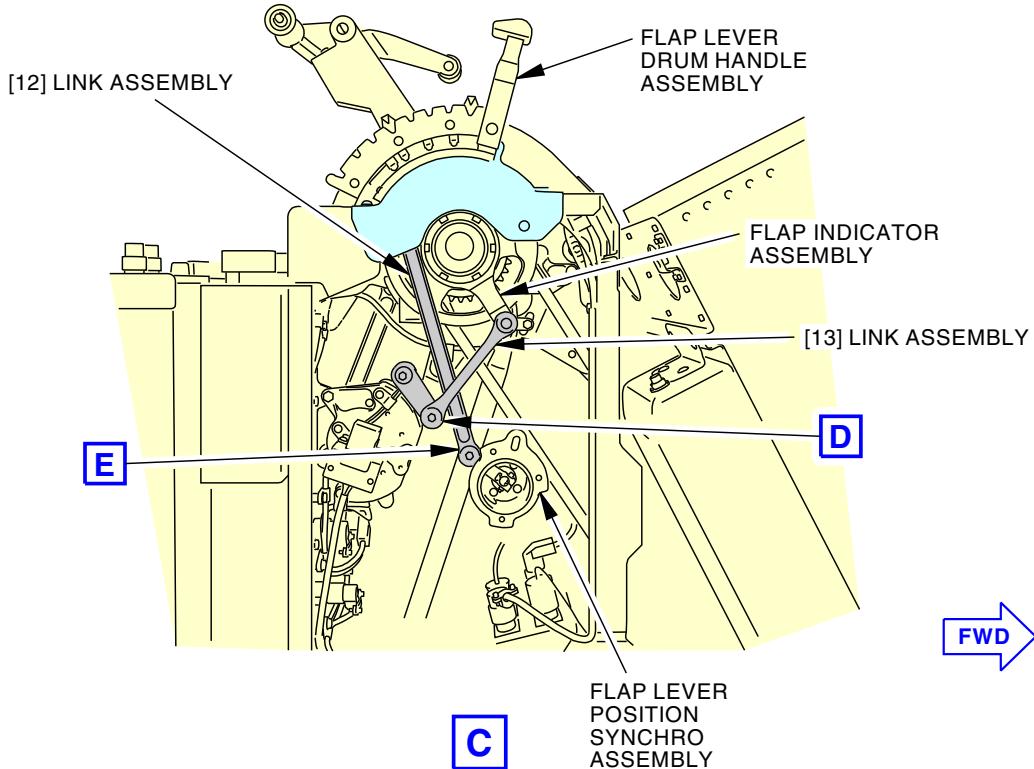
EFFECTIVITY
**LOM 402, 404, 406, 407, 411, 412, 415, 416, 420,
 422-434, 437-447, 450-461**

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G29589 S0006583061_V2

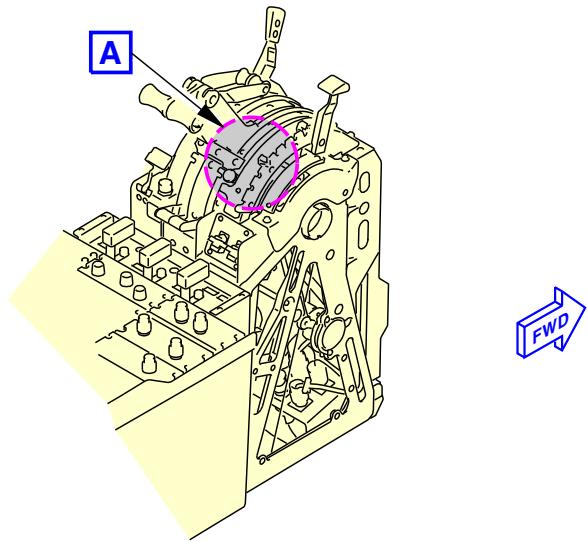
Control Stand Installation
Figure 401/76-11-02-990-801-F00 (Sheet 3 of 3)

EFFECTIVITY
LOM 402, 404, 406, 407, 411, 412, 415, 416, 420,
422-434, 437-447, 450-461

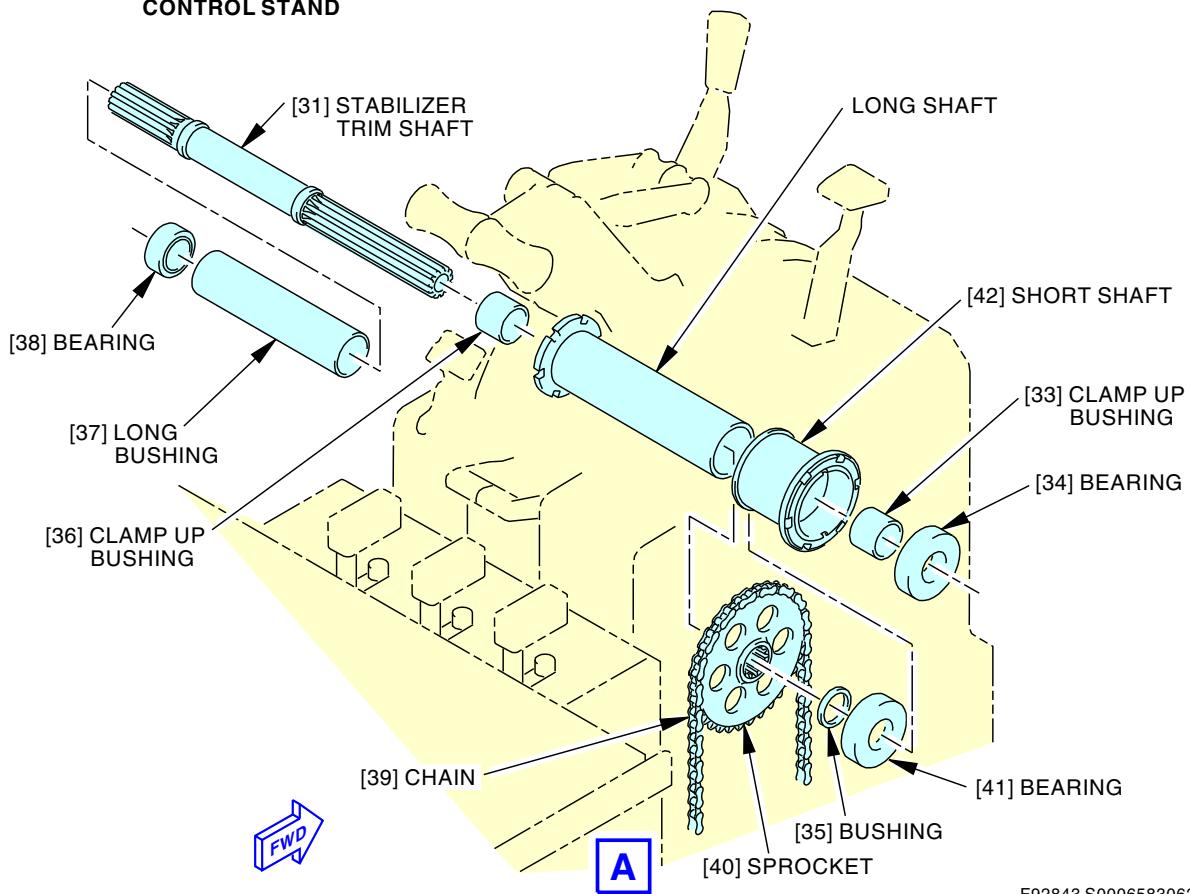
76-11-02

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CONTROL STAND



F92843 S0006583062_V2

Control Shaft Components Installation
Figure 402/76-11-02-990-802-F00 (Sheet 1 of 2)

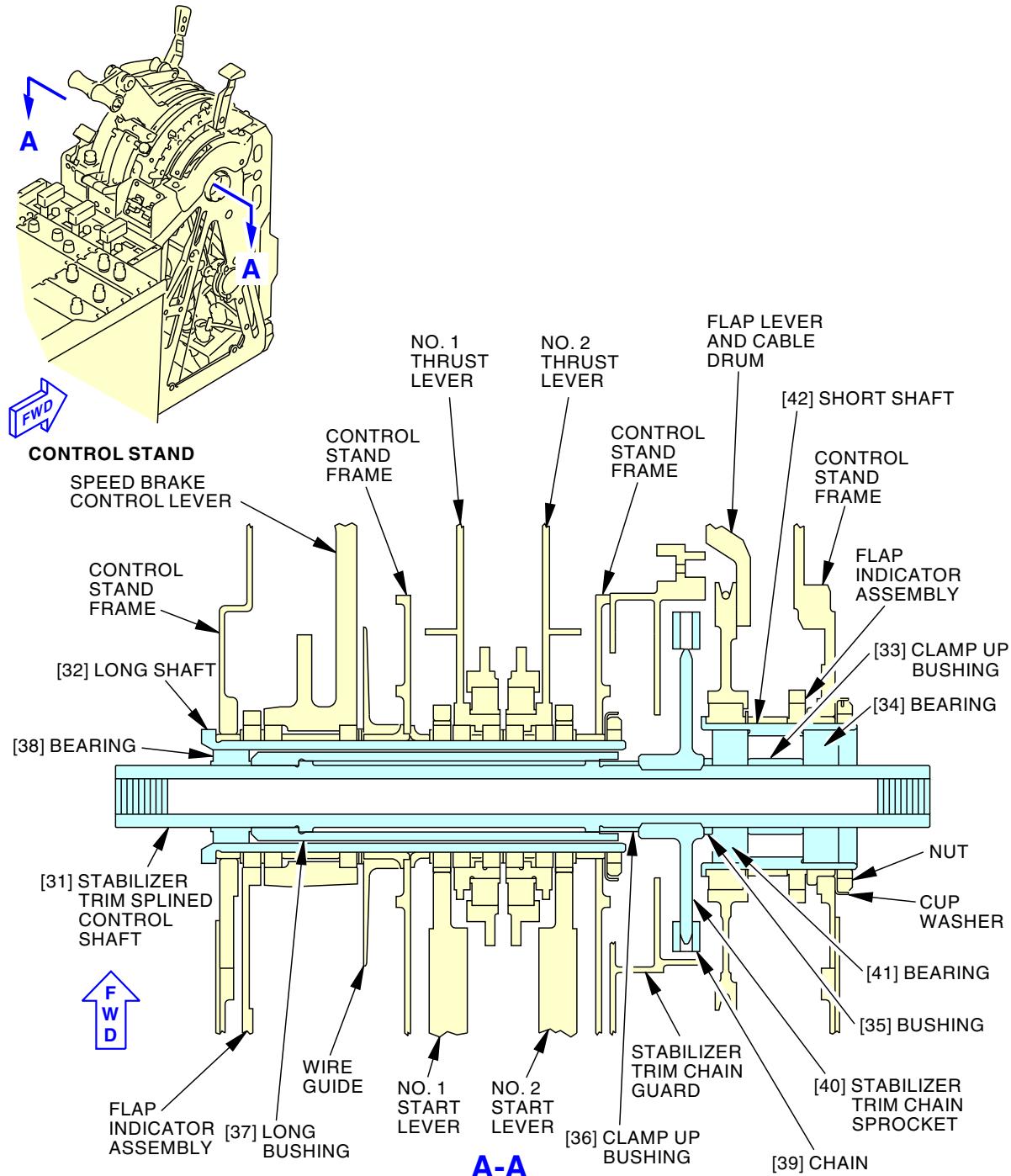
EFFECTIVITY
LOM 402, 404, 406, 407, 411, 412, 415, 416, 420,
422-434, 437-447, 450-461

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G29595 S0006583063_V2

Control Shaft Components Installation
Figure 402/76-11-02-990-802-F00 (Sheet 2 of 2)

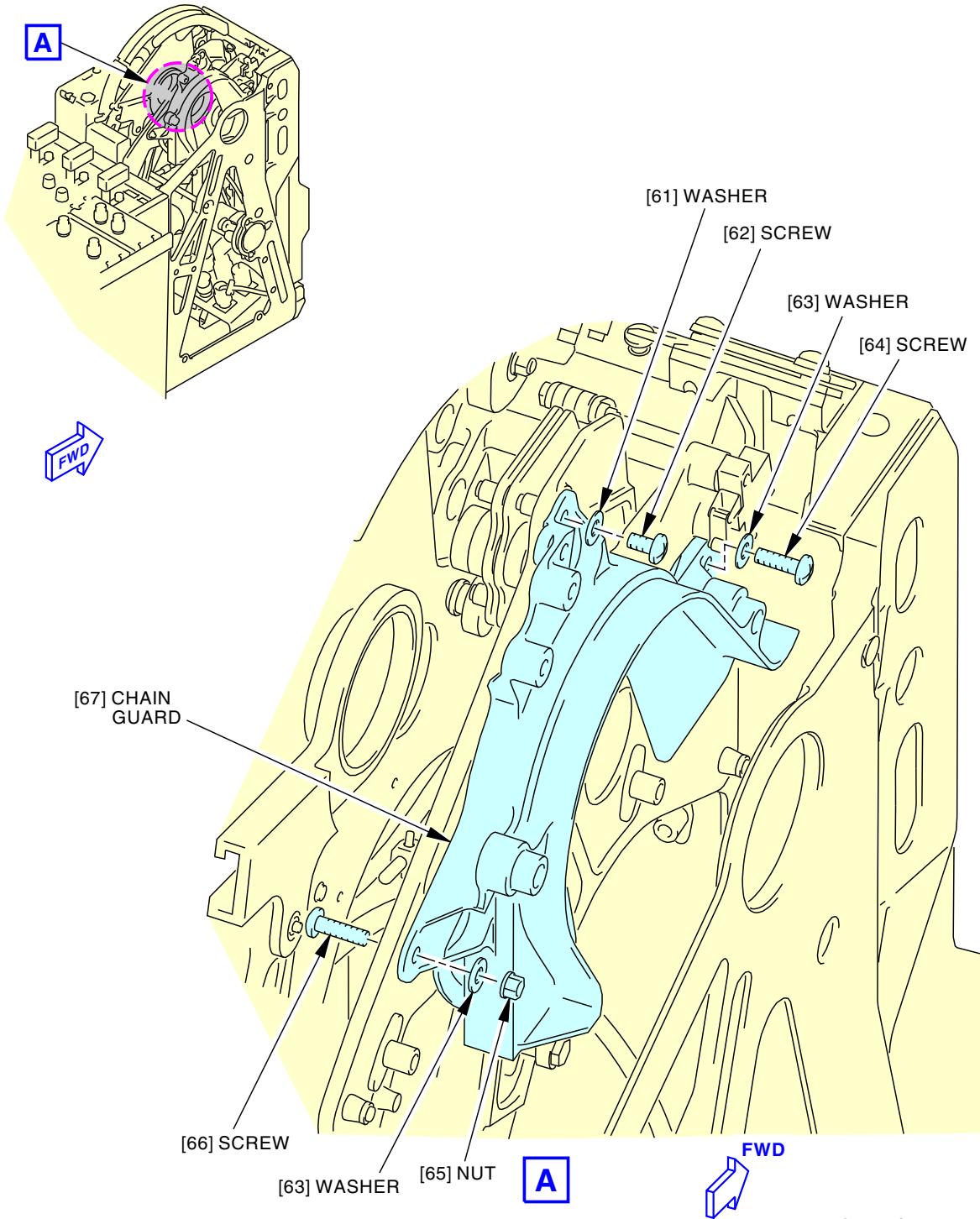
EFFECTIVITY
LOM 402, 404, 406, 407, 411, 412, 415, 416, 420,
422-434, 437-447, 450-461

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G04577 S0006583064_V2

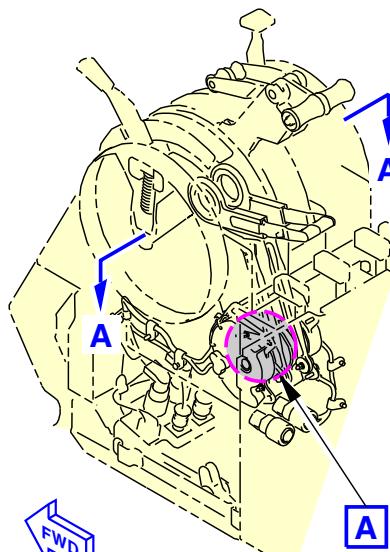
Chain Guard Assembly Installation
Figure 403/76-11-02-990-803-F00

EFFECTIVITY
LOM 402, 404, 406, 407, 411, 412, 415, 416, 420,
422-434, 437-447, 450-461

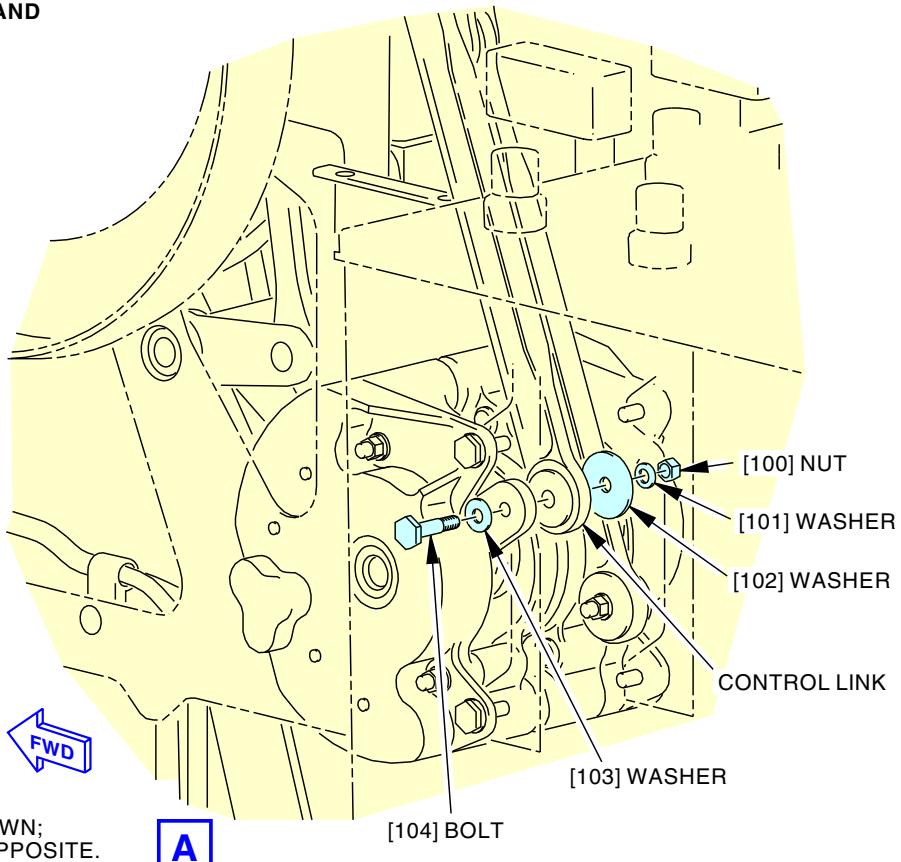
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ECCN 9E991 BOEING PROPRIETARY - See title page for details



CONTROL STAND



G37627 S0006583065_V2

Start Lever Installation
Figure 404/76-11-02-990-804-F00 (Sheet 1 of 4)

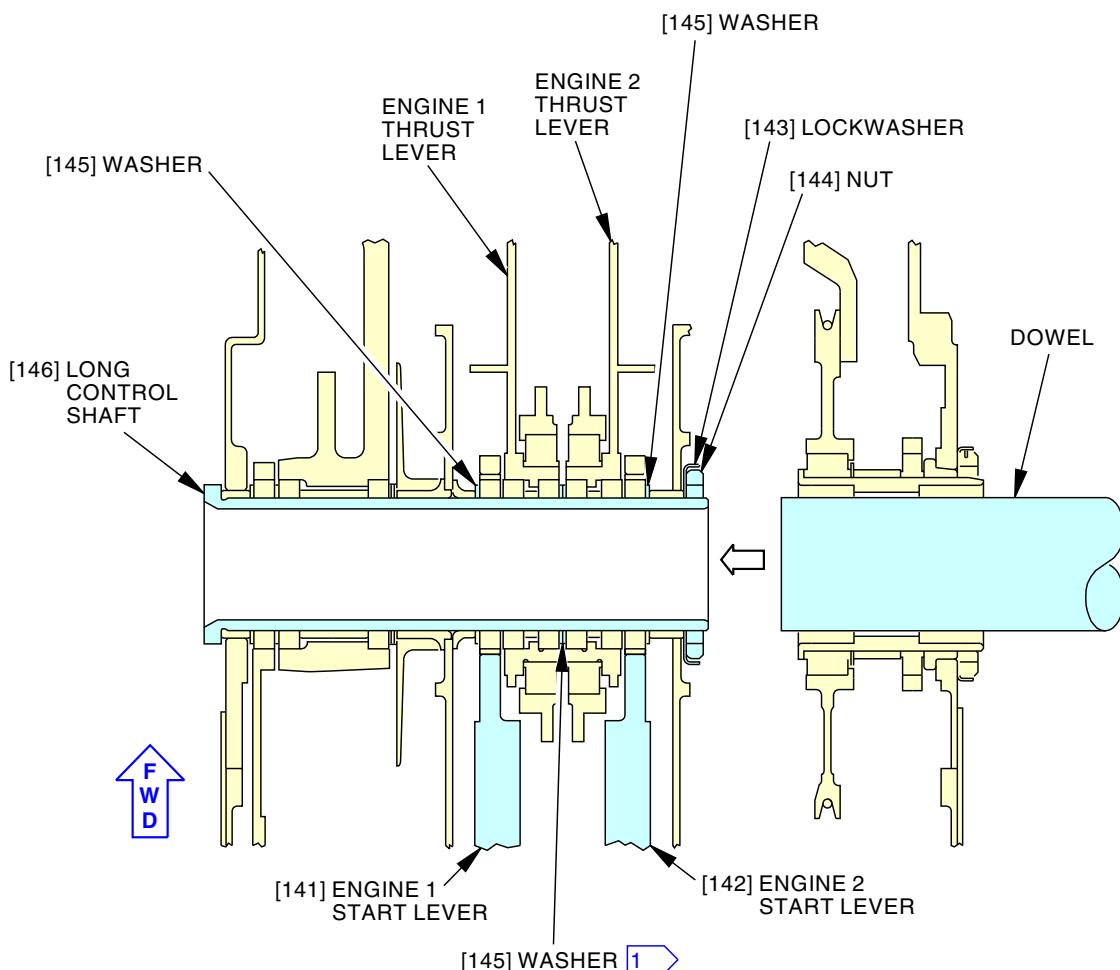
EFFECTIVITY
LOM 402, 404, 406, 407, 411, 412, 415, 416, 420,
422-434, 437-447, 450-461

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**START LEVERS INSTALLED****A-A**

 THE QUANTITY IS DIFFERENT FROM
AIRPLANE TO AIRPLANE

G29597 S0006583066_V2

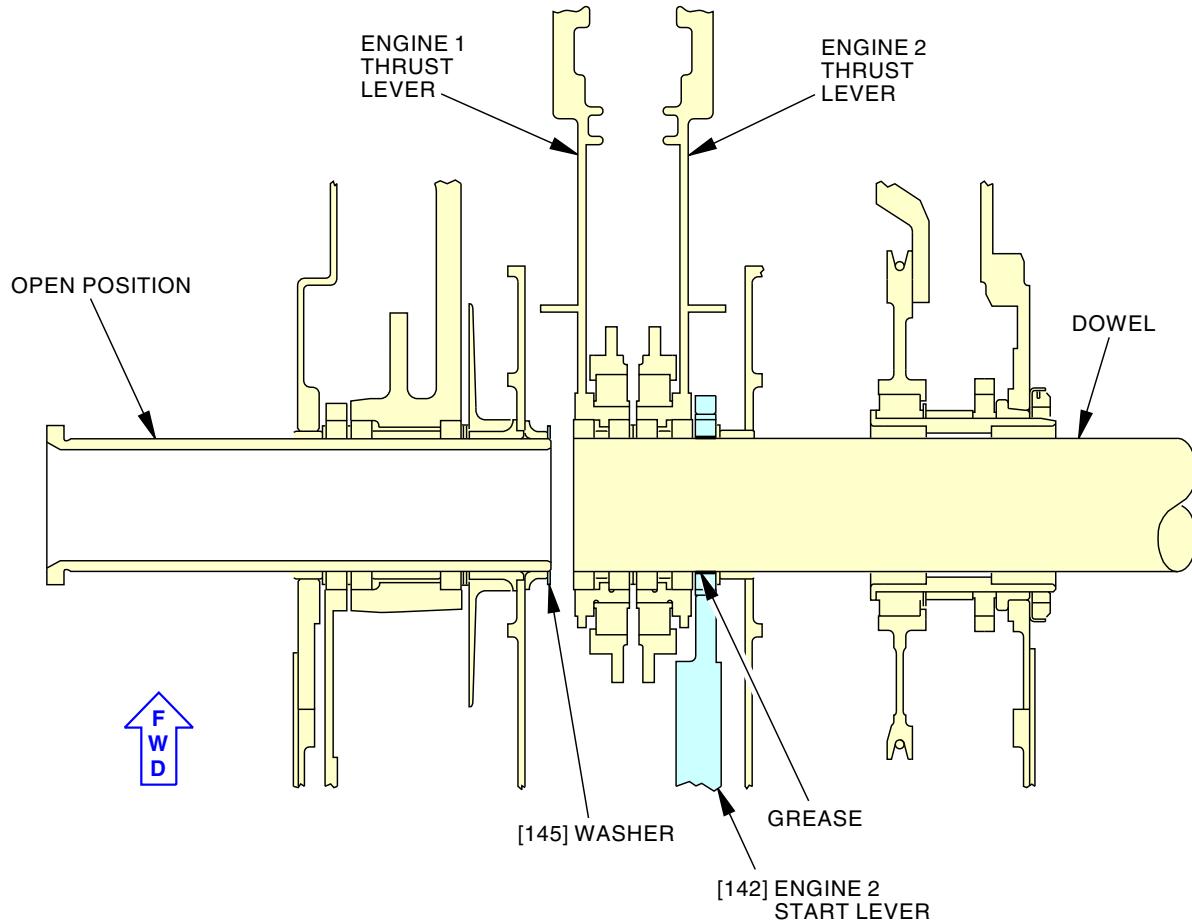
Start Lever Installation
Figure 404/76-11-02-990-804-F00 (Sheet 2 of 4)

EFFECTIVITY
 LOM 402, 404, 406, 407, 411, 412, 415, 416, 420,
 422-434, 437-447, 450-461

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ECCN 9E991 BOEING PROPRIETARY - See title page for details



ENGINE 1 START LEVER REMOVED

A-A

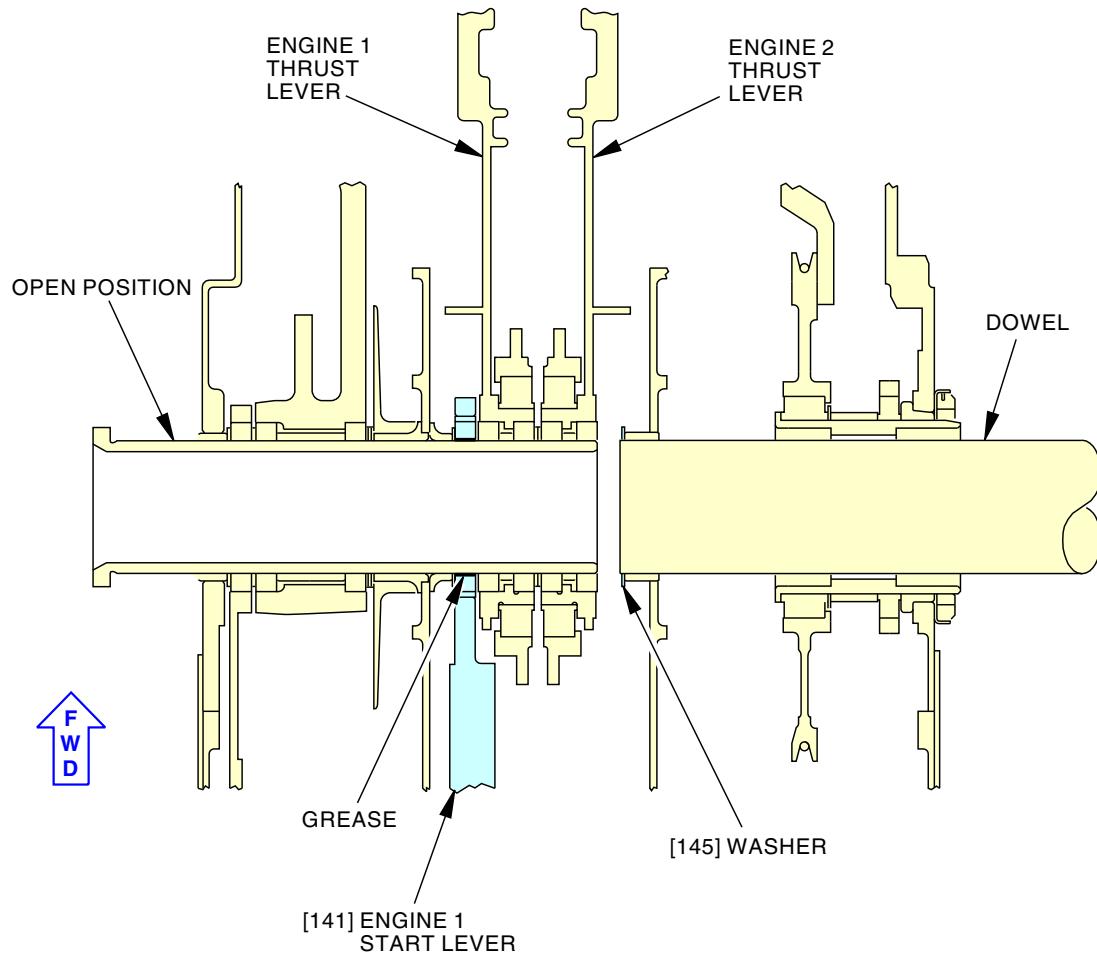
G29608 S0006583067_V3

Start Lever Installation
Figure 404/76-11-02-990-804-F00 (Sheet 3 of 4)

EFFECTIVITY
 LOM 402, 404, 406, 407, 411, 412, 415, 416, 420,
 422-434, 437-447, 450-461

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ENGINE 2 START LEVER REMOVED

A-A

G29614 S0006583068_V3

Start Lever Installation
Figure 404/76-11-02-990-804-F00 (Sheet 4 of 4)

EFFECTIVITY
LOM 402, 404, 406, 407, 411, 412, 415, 416, 420,
422-434, 437-447, 450-461

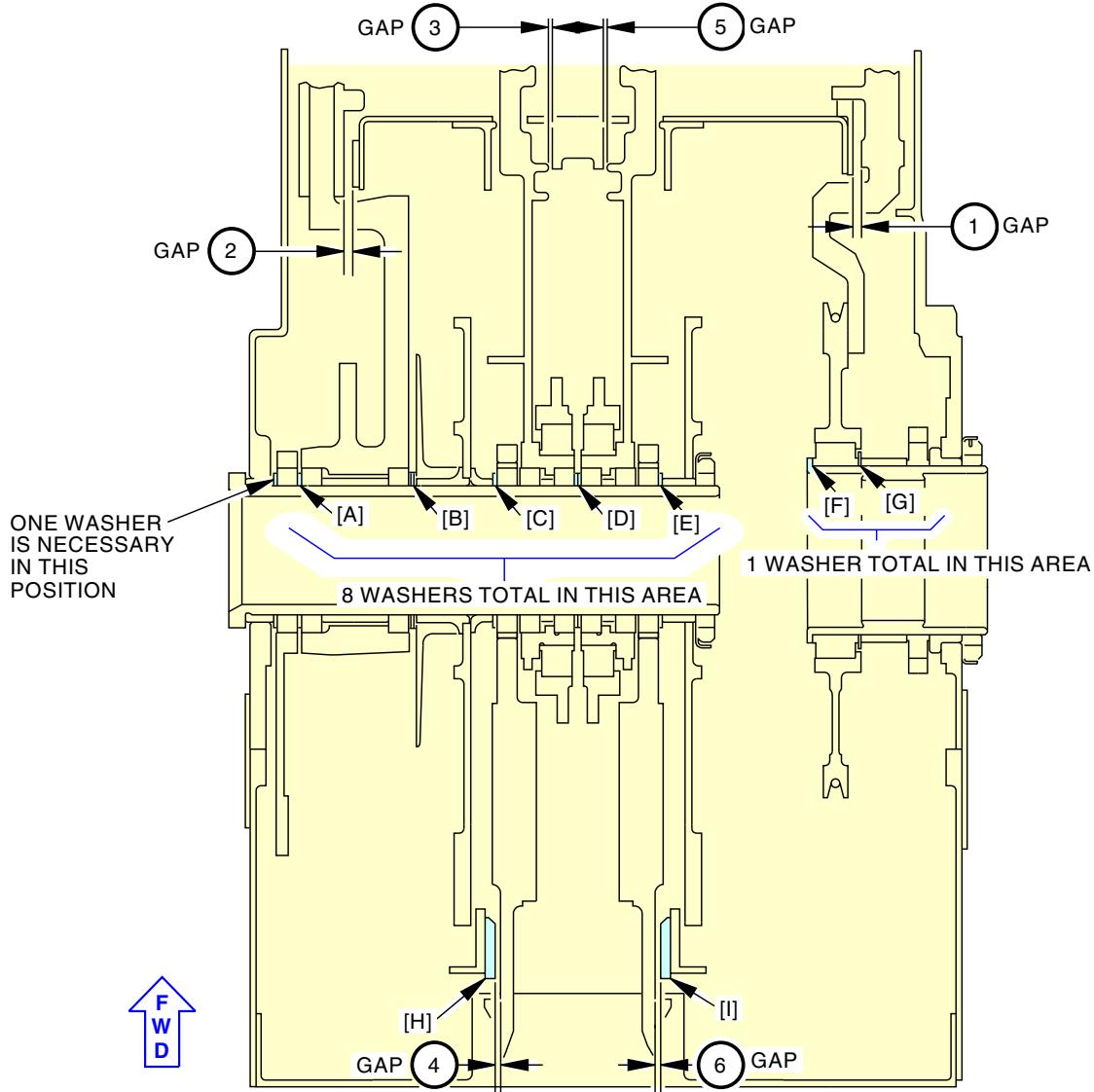
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AIRCRAFT MAINTENANCE MANUAL**



G29619 S0006583070_V2

Control Shaft Washer (Shim) Limits
Figure 405/76-11-02-990-806-F00 (Sheet 1 of 3)

EFFECTIVITY
**LOM 402, 404, 406, 407, 411, 412, 415, 416, 420,
 422-434, 437-447, 450-461**

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AIRCRAFT MAINTENANCE MANUAL**

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 ENGINE START DETENT ENGINE 1	0.036-0.090	> 0.090	ADD TWO SHIMS MAX (AS NECESSARY) AT [H]
		< 0.036	REMOVE ONE SHIM AT [H]
⑤ 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]
⑥ ENGINE START DETENT ENGINE 2	0.022-0.086	> 0.086	ADD THREE SHIMS MAX (AS NECESSARY) AT [I]
		< 0.022	REMOVE ONE SHIM AT [I]

**CONTROL SHAFT ADJUSTMENT GAP LIMITS
TABLE A**

G42261 S0006583071_V2

**Control Shaft Washer (Shim) Limits
Figure 405/76-11-02-990-806-F00 (Sheet 2 of 3)**

EFFECTIVITY
LOM 402, 404, 406, 407, 411, 412, 415, 416, 420,
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LOCATION	QUANTITY OF WASHER/SHIMS	
	MAX	MIN
[A]	4	0
[B]	4	0
[C]	2	0
[D]	4	1
[E]	2	0
[F]	1	0
[G]	1	0
[H]	3	0
[I]	4	0

CONTROL SHAFT ADJUSTMENT WASHER/SHIM QUANTITY LIMITS
TABLE B

G42264 S0006583072_V2

Control Shaft Washer (Shim) Limits
Figure 405/76-11-02-990-806-F00 (Sheet 3 of 3)

EFFECTIVITY
 LOM 402, 404, 406, 407, 411, 412, 415, 416, 420,
 422-434, 437-447, 450-461

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LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-461 (Continued)

TASK 76-11-02-420-801-F00

3. Start lever Installation

(Figure 401, Figure 402, Figure 403, Figure 404 and Figure 405)

A. General

- (1) This task gives you instructions on how to install the start levers into the aisle control stand.

B. References

Reference	Title
25-11-01-400-801	Captain's and First Officer's 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-F00	Control Stand Seal, Spacer and Retainer Installation (P/B 401)
76-11-03-400-804-F00	Control Stand Cover and Stop Installation (P/B 401)
76-11-03-420-801-F00	Control Stand Lightplate Installation (P/B 401)
76-11-10-420-801-F00	Engine Start Brake Assembly 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-1585	Kit - Rigging Pin Part #: F70207-109 Supplier: 81205
SPL-2411	Tool Set - Control Stand Disassembly Part #: C76002-26 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
141	Lever assembly	25-11-00-50-926	LOM 402, 404, 406, 407, 411, 412, 415, 416, 420
		25-11-00-54-620	LOM 422-434, 437-447, 450-461
142	Lever assembly	25-11-00-50-929	LOM 402, 404, 406, 407, 411, 412, 415, 416, 420
		25-11-00-54-625	LOM 422-434, 437-447, 450-461
143	Lockwasher	25-11-00-50-610	LOM 402, 404, 406, 407, 411, 412, 415, 416, 420

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LOM ALL

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**737-600/700/800/900
AIRCRAFT MAINTENANCE MANUAL**
LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-461 (Continued)

(Continued)

AMM Item	Description	AIPC Reference	AIPC Effectivity
143 (cont.)		25-11-00-54-180	LOM 422-434, 437-447, 450-461
		25-11-00-54-325	LOM 422-434, 437-447, 450-461
145	Washer	25-11-00-50-625	LOM 402, 404, 406, 407, 411, 412, 415, 416, 420
		25-11-00-54-340	LOM 422-434, 437-447, 450-461

F. Location Zones

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

G. Start lever Installation

SUBTASK 76-11-02-420-001-F00

- (1) For engine 1, install the start lever assembly [141] as follows:

- (a) Apply grease, D00013, to the inner side of the start lever.
- (b) Put the start lever assembly [141] into the control stand.
 - 1) Apply a thin coat of grease, D00013, to each side of the washer [145].
 - NOTE: The application of the grease will help hold the washer to the start lever.
 - 2) Put the washer [145] in its position on the start lever assembly [141].
 - 3) Put the start lever assembly [141] in its correct position.
 - 4) Move the long control shaft [146] through the washer [145] and start lever assembly [141].
 - 5) Put the long control shaft [146] against the dowel.



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 washers [145] are on the long control shaft [146].
- (d) Remove the dowel.
- (e) Move the start lever assembly [141] forward and aft.

NOTE: The start lever and washer must move freely.

SUBTASK 76-11-02-420-002-F00

- (2) For engine 2, install the start lever assembly [142] as follows:

- (a) Apply grease, D00013, to the inside of the lever assembly [142].
- (b) Put the start lever assembly [142] into the control stand.

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LOM ALL

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LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-461 (Continued)

- 1) Apply a thin coat of grease, D00013, to each side of the washer [145].
NOTE: The application of the grease will help hold the washer to the lever.
- 2) Put the washer [145] in its position on the dowel.
- 3) Put the start lever assembly [142] in its correct position.
- 4) Move the long control shaft [146] through the start lever assembly [142].
- 5) Put the long control shaft [146] against the dowel.
- 6) Move the long control shaft [146] through the washer [145].



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 washers [145] are on the control shaft.
- (d) Remove the dowel.
- (e) Move the start lever assembly [142] forward and aft.
NOTE: The start lever and washer must move freely.

SUBTASK 76-11-02-420-003-F00

- (3) Lock the start levers as follow:

- (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 76-11-02-020-010-F00

- (4) Measure the gaps 3, 4, 5, and 6 after you installed the assembly as follows:

- (a) If the gaps are in the limits, no change to the assembly is necessary.
- (b) 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 task to adjust the washers [145] on the long control shaft [146].
- (c) If the gaps 8 and 9 are not in the limits, follow the instructions in the table A and B to get the correct limits:
 - 1) Use the applicable steps in the removal and installation task to adjust the washers [145] on the long control shaft [146].

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SUBTASK 76-11-02-420-004-F00

- (5) After you set the control levers assemblies correctly, lock the assemblies in their position as follows:
 - (a) Make sure that you tighten the nut 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]:
 - 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. (3.8 mm) into the notch on the nut [144].
 - (c) Move the start levers down against the idle stop.

SUBTASK 76-11-02-020-011-F00

- (6) Install the chain guard [67] as follows:
 - (a) Put the chain guard [67] in its position.
 - (b) Install the upper screw [62] and washer [61].
 - (c) Install the forward screw [64] and washer [63].
 - (d) Install the aft screw [66] thru the thrust lever opening.
 - 1) Use the 90 degree screwdriver from tool set, SPL-2411, to hold the screw [66].
 - (e) Install the nut [65] and washer [63].

SUBTASK 76-11-02-020-012-F00

- (7) Install the control shaft components as follows:
 - (a) Install the clamp up bushing [36] and the long bushing [37] on the stabilizer trim shaft [31].

NOTE: Put the clamp up bushing on the end with the longest splines and the long bushing on the end with the short splines.
 - (b) Put bearing [41] into the inside end of the short shaft [42].
 - (c) Move the stabilizer trim shaft [31] into the control stand from the left side.

NOTE: Put the end of the shaft with the longest splines in first.
 - (d) Move the sprocket and chain into its position from the bottom of the control stand.
 - (e) Put the sprocket 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 it protrudes through the short shaft [42].
 - (h) Install the bearing [38] on the left end of the stabilizer trim shaft [31].
 - (i) Put the clamp up bushing [33] on the inside of the short shaft.
 - (j) Install the clamp up bushing [33] on the right side of the stabilizer trim shaft [31].
 - (k) Install the bearing [34] on the right end of the stabilizer trim shaft [31].
 - (l) Lightly tap the stabilizer trim shaft [31] from the left side.

NOTE: This step is necessary to make sure that the assembled parts are tight and in the correct position.

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SUBTASK 76-11-02-020-013-F00

- (8) Connect the applicable start lever assembly to the engine start brake assembly:
 - (a) Move the engine start brake assembly lever to the up position.
 - (b) Move the control link to align with the end of the start lever on the start brake assembly.
 - (c) Install the nut [100], washer [101], washer [102], washer [103], and bolt [104].

NOTE: The bolt head is installed on the outboard side of the control link.

SUBTASK 76-11-02-420-005-F00

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

SUBTASK 76-11-02-410-001-F00

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

SUBTASK 76-11-02-420-006-F00

- (11) Connect the stabilizer trim indicator as follows:
 - (a) Put the link assembly [13] on the arm.
 - (b) Install the nut [16], washer [15], washer [14], and bolt [17].

SUBTASK 76-11-02-040-007-F00

- (12) Activate the speed brake lever as follows.
 - (a) Go into the access area below the forward flight compartment floor.
 - 1) Remove the rig pin, part of rigging pin kit, SPL-1585, from the forward drum of the speed brake mechanism.
 - 2) Do this task: Speed Brake Control Lever Adjustment, TASK 27-62-00-820-801.

SUBTASK 76-11-02-420-007-F00

- (13) Install the wheel assemblies for the stabilizer trim as follows:
 - (a) Install the right stabilizer trim wheel [7].
 - 1) Install the right bolt [8] with the countersunk head.
 - 2) Tighten the bolt to 150 in-lb (16.9 N·m) - 170 in-lb (19.2 N·m).
 - 3) Install the right bolt [8] and spacer.
 - 4) Do a check of the run-on torque of the bolt.
 - 5) Tighten the bolt to 150 in-lb (16.9 N·m) - 160 in-lb (18.1 N·m) more than the run-on torque.
 - (b) Do these steps to install the left stabilizer trim wheel [11]:
 - 1) install the left stabilizer trim wheel [11].
 - a) FOR UNCLOCKED TRIM WHEEL AND SHAFT:
 Set the crank of the left trim wheel 75 to 105 degrees from the setting of the crank on the right trim wheel.
NOTE: This can be set in either direction.

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- 2) Install the left bolt [8] with countersunk head.
- 3) Tighten the bolt to 150 in-lb (16.9 N·m) - 170 in-lb (19.2 N·m).
- 4) Install the left bolt [8] and spacer.
- 5) Do a check of the run-on torque of the bolt.
- 6) Tighten the bolt to 150 in-lb (16.9 N·m) - 160 in-lb (18.1 N·m) more than the run-on torque.

SUBTASK 76-11-02-200-001-F00

- (14) 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 76-11-02-410-002-F00

- (15) Install the stabilizer trim switch panel [10] for the trim stabilizer as follows:
 - (a) Put the stabilizer trim switch panel [10] on the control stand.
 - (b) Install the four screws [9].

SUBTASK 76-11-02-410-007-F00

- (16) Install these seals and retainers (TASK 76-11-03-400-802-F00):
 - (a) The right seal retainer and right seal
 - (b) The center seal retainer and center seal
 - (c) The left seal retainer and left seal.

SUBTASK 76-11-02-410-008-F00

- (17) Install these covers and stops (TASK 76-11-03-400-804-F00):
 - (a) The right cover and the right side cover assembly
 - (b) The center cover
 - (c) The forward thrust stop and the aft thrust stop
 - (d) The stabilizer trim horn cutout switch knob [6] for the stabilizer trim horn cutout switch.

SUBTASK 76-11-02-410-009-F00

- (18) Install these lightplates (TASK 76-11-03-420-801-F00):
 - (a) The first officers stabilizer trim lightplate.
 - (b) The flap lever lightplate.

SUBTASK 76-11-02-410-013-F00

- (19) Install the upper side panel [1] and lower side panel [5] on the control stand, do these steps:
 - (a) Position the upper side panel [1] and lower side panel [5] on the control stand.
 - (b) Tighten the six screws [2] that hold the lower side panel [5] to the control stand.
 - (c) Tighten the four screws [2] that hold the pocket [20] to the lower side panel [5].
 - (d) Tighten the screw [22], screw [23], and three screws [2] that hold the upper side panel [1] to the control stand.

SUBTASK 76-11-02-410-014-F00

- (20) Install the upper side panel [3] and lower side panel [4] on the control stand, do these steps:
 - (a) Position the upper side panel [3] and lower side panel [4] on the control stand.

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- (b) Tighten the six screws [2] that hold the lower side panel [4] to the control stand.
- (c) Tighten the four screws [2] that hold the pocket [21] to the lower side panel [4].
- (d) Tighten the four screws [2] that hold the upper side panel [3] to the control stand.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 76-11-02-480-001-F00

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

SUBTASK 76-11-02-410-005-F00

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

SUBTASK 76-11-02-860-012-F00

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

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	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	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	4	C01003	ENGINE 1 THRUST REVERSER IND
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
E	5	C01320	ENGINE FUEL ENGINE 1 HPSOV CONT
E	6	C01395	ENGINE FUEL ENGINE 1 HPSOV IND

SUBTASK 76-11-02-860-013-F00

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

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
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
C	8	C01004	ENGINE 2 THRUST REVERSER IND
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	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	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 76-11-02-860-008-F00

- (5) Remove the safety tag and close this circuit breaker:

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 76-11-02-860-029-F00

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C00849	AFCS STABILIZER TRIM
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
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 76-11-02-040-008-F00

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

SUBTASK 76-11-02-860-004-F00

- (8) Remove the DO-NOT-OPERATE tag from the engine start panel.

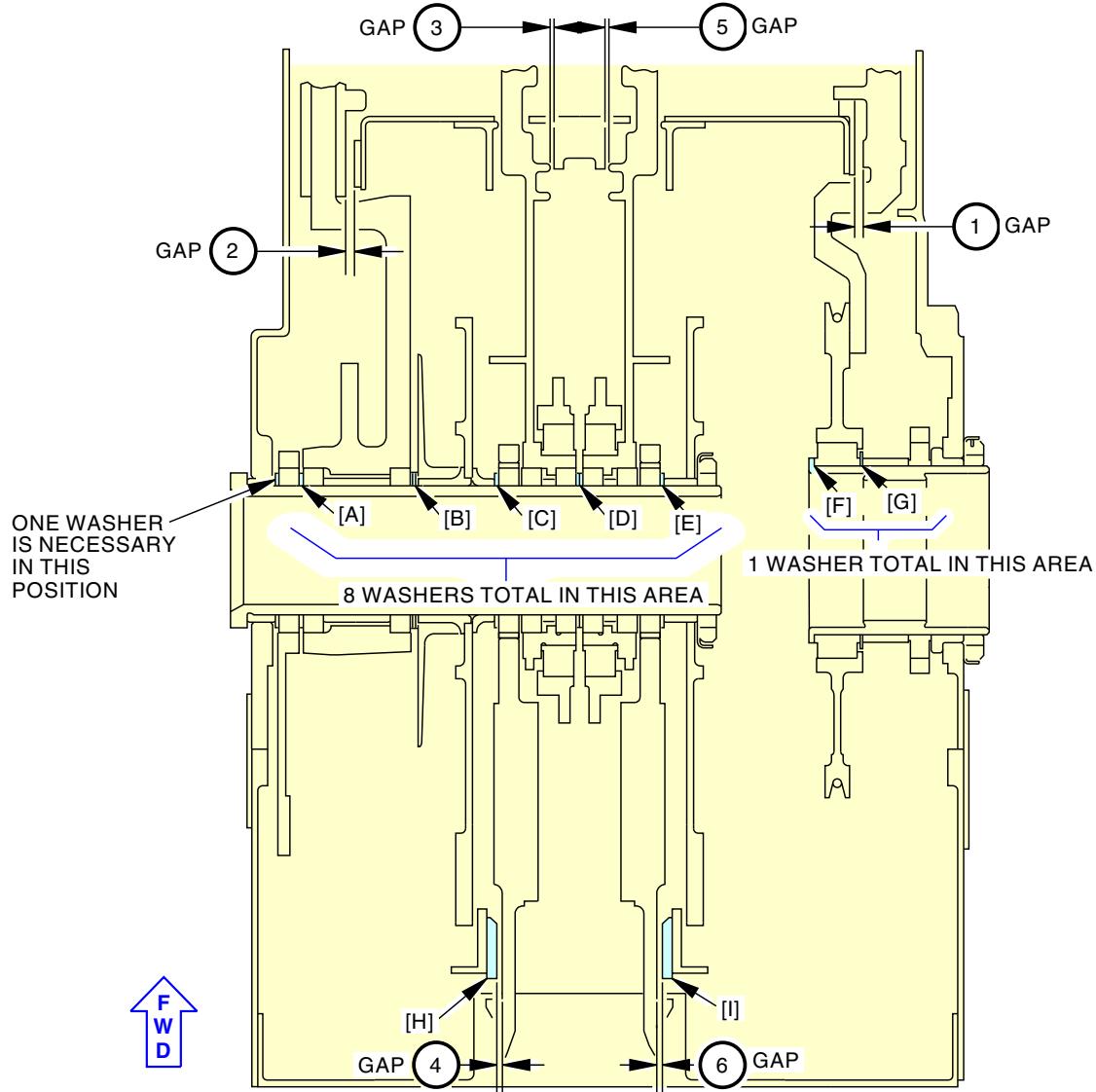
SUBTASK 76-11-02-710-001-F00

- (9) Do this task: Engine Start Brake Assembly Installation, TASK 76-11-10-420-801-F00.

— END OF TASK —

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AIRCRAFT MAINTENANCE MANUAL**NOTE:**

REFER TO TABLE A FOR CONTROL SHAFT ADJUSTMENT GAP LIMITS.

G29619 S0006583070_V2

Control Shaft Washer (Shim) Limits
Figure 406/76-11-02-990-805-F00 (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 ENGINE START DETENT ENGINE 1	0.036-0.090	> 0.090	ADD TWO SHIMS MAX (AS NECESSARY) AT [H]
		< 0.036	REMOVE ONE SHIM AT [H]
5 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]
6 ENGINE START DETENT ENGINE 2	0.022-0.086	> 0.086	ADD THREE SHIMS MAX (AS NECESSARY) AT [I]
		< 0.022	REMOVE ONE SHIM AT [I]

**CONTROL SHAFT ADJUSTMENT GAP LIMITS
TABLE A**

G42261 S0006583071_V2

**Control Shaft Washer (Shim) Limits
Figure 406/76-11-02-990-805-F00 (Sheet 2 of 3)**

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LOCATION	QUANTITY OF WASHER/SHIMS	
	MAX	MIN
[A]	4	0
[B]	4	0
[C]	2	0
[D]	4	1
[E]	2	0
[F]	1	0
[G]	1	0
[H]	3	0
[I]	4	0

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

G42264 S0006583072_V2

**Control Shaft Washer (Shim) Limits
Figure 406/76-11-02-990-805-F00 (Sheet 3 of 3)**

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LOM 462-999

TASK 76-11-02-010-802-F00

4. Start Lever Removal

(Figure 407)

A. General

- (1) The start levers are installed on the control stand.

B. References

Reference	Title
25-11-01-000-801	Captain's and First Officer's Seat Removal (P/B 401)

C. Location Zones

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

D. Prepare for the Removal

SUBTASK 76-11-02-860-020-F00

- (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	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	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	4	C01003	ENGINE 1 THRUST REVERSER IND
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

SUBTASK 76-11-02-860-021-F00

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

F/O Electrical System Panel, P6-2

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

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LOM 462-999 (Continued)

(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
C	8	C01004	ENGINE 2 THRUST REVERSER IND
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	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>
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

SUBTASK 76-11-02-860-024-F00

- (3) For the control stand lighting, open these circuit breakers and install safety tags:

Circuit Breaker Panel 5, P8

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
---	---	C00320	ELEX PANEL LIGHTS FWD

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 76-11-02-010-014-F00

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

SUBTASK 76-11-02-010-015-F00

- (5) Put the protective mats, on the P8 aft electronics panel.

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

SUBTASK 76-11-02-010-013-F00

- (6) Remove the upper side panel [201] and lower side panel [202] from the control stand, do these steps:

- Remove the four screws [204] that hold the upper side panel [201] to the control stand.
- Remove the four screws [204] that hold the pocket [203] to the lower side panel [202].
- Remove the four screws [204] that hold the lower side panel [202] to the control stand.

SUBTASK 76-11-02-010-016-F00

- (7) Remove the upper side panel [209] and lower side panel [210] from the control stand, do these steps:

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LOM 462-999 (Continued)

- (a) Remove the screw [212], screw [213], and three screws [204] that hold the upper side panel [209] to the control stand.
- (b) Remove the four screws [204] that hold the pocket [211] to the lower side panel [210].
- (c) Remove the six screws [204] that hold the lower side panel [210] to the control stand.

E. Start Lever Removal

SUBTASK 76-11-02-020-016-F00

**CAUTION**

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 [205], electrical connector [206], electrical connector [207], and electrical connector [208] from the electrical connector panels.

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SUBTASK 76-11-02-020-017-F00

- (2) Remove the four clamps [228] from wire bundle [225] and five clamps [228] from wire bundle [229].
 - (a) Remove the bolt [226] and two washers [227] from each clamp [228].

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SUBTASK 76-11-02-020-027-F00

- (3) Remove the two clamps [228] from wire bundle [225] and two clamps [228] from wire bundle [229].
 - (a) Remove the bolt [226] and washer [227] from clamp [228].
 - (b) Remove the bolt [226] and two washers [227] from clamp [228].
 - (c) Remove the bolt [236], two washers [227] from clamp [233] and clamp [228].
 - (d) Remove the bolt [237], two washers [227], and spacer [234] from two clamps [235] and clamp [228].

LOM 462-999

SUBTASK 76-11-02-020-018-F00

- (4) Remove the lens cap [224] from the two engine start levers [214].

SUBTASK 76-11-02-020-019-F00

- (5) Loosen the three captive fasteners [222] to remove the engine control lightplate [221].
 - (a) Remove the engine control lightplate [221].

SUBTASK 76-11-02-020-020-F00

- (6) Remove the two screws [217] and three screws [232] that hold the face plate [218] to the control stand and tilt the forward edge back approximately 90 degrees for service access.

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LOM 462-999 (Continued)

SUBTASK 76-11-02-020-022-F00

- (7) Carefully remove the engine start levers [214] from the face plate [218], wire bundle [225], wire bundle [229], electrical connector [205], electrical connector [206], electrical connector [207], and electrical connector [208] out of the control stand.

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

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 76-11-02-020-023-F00

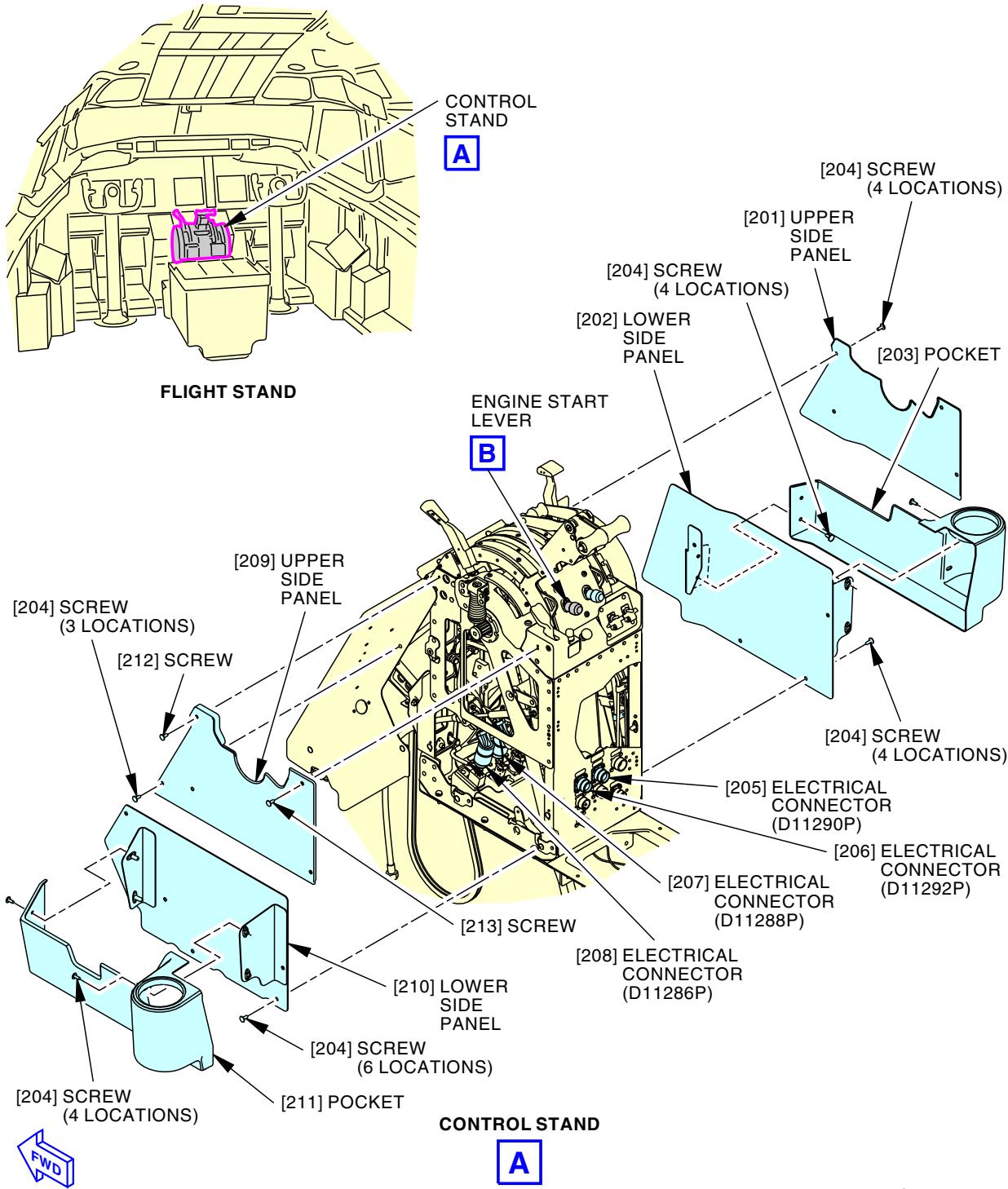
- (8) Remove the two engine start levers [214], two nuts [220], two keying washers [215], and two lockwashers [219] from the face plate [218].

———— END OF TASK ————

EFFECTIVITY
LOM ALL

76-11-02

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2462154 S0000572998_V4

Start Lever Installation
Figure 407/76-11-02-990-807-F00 (Sheet 1 of 4)

EFFECTIVITY
LOM 462-999

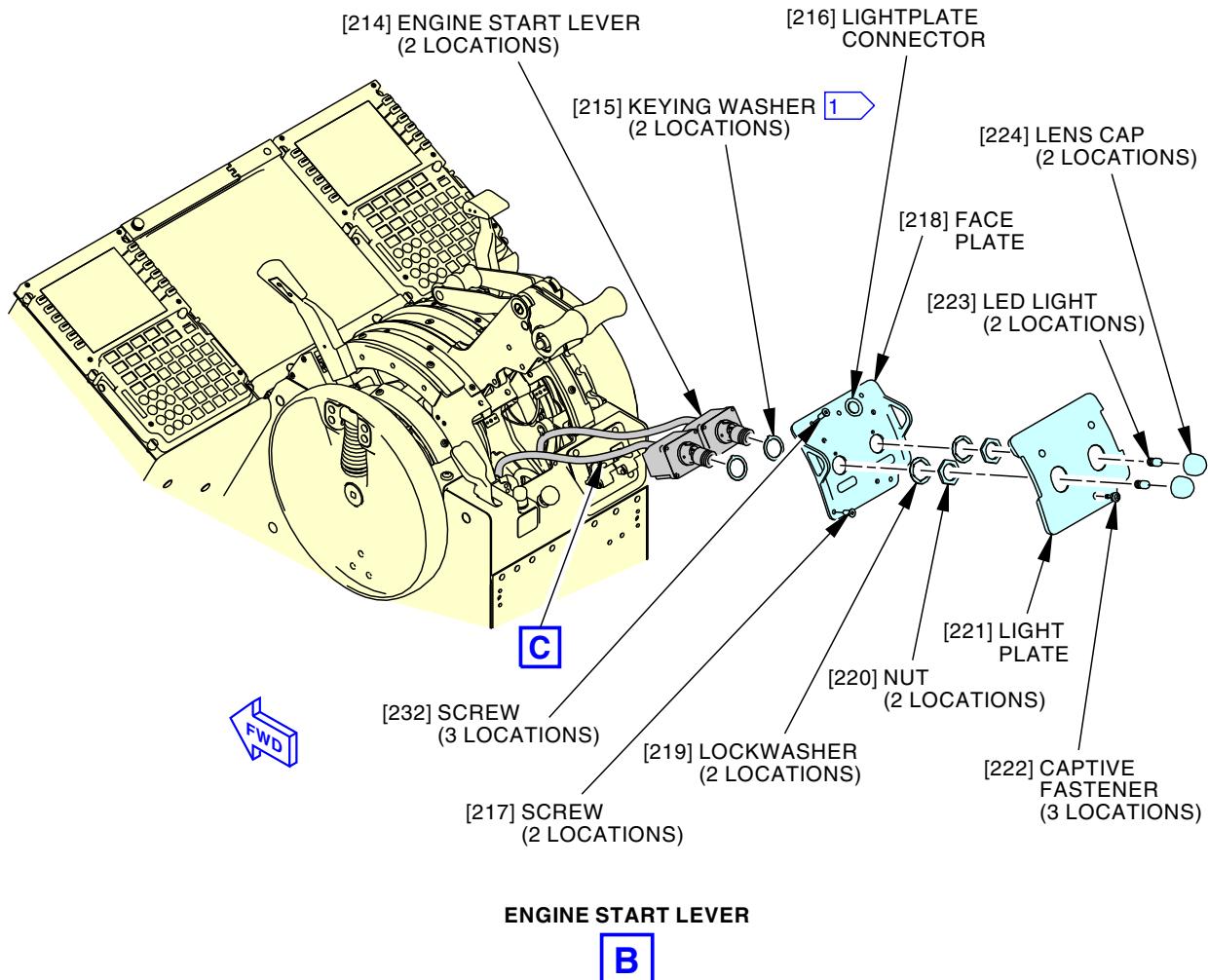
76-11-02

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ECCN 9E991 BOEING PROPRIETARY - See title page for details

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1 IT IS ALSO ACCEPTABLE TO INSTALL THE TWO KEYING WASHERS ON TOP OF THE FACE PLATE

2969471 S0000748698_V3

Start Lever Installation
Figure 407/76-11-02-990-807-F00 (Sheet 2 of 4)

EFFECTIVITY
LOM 462-999

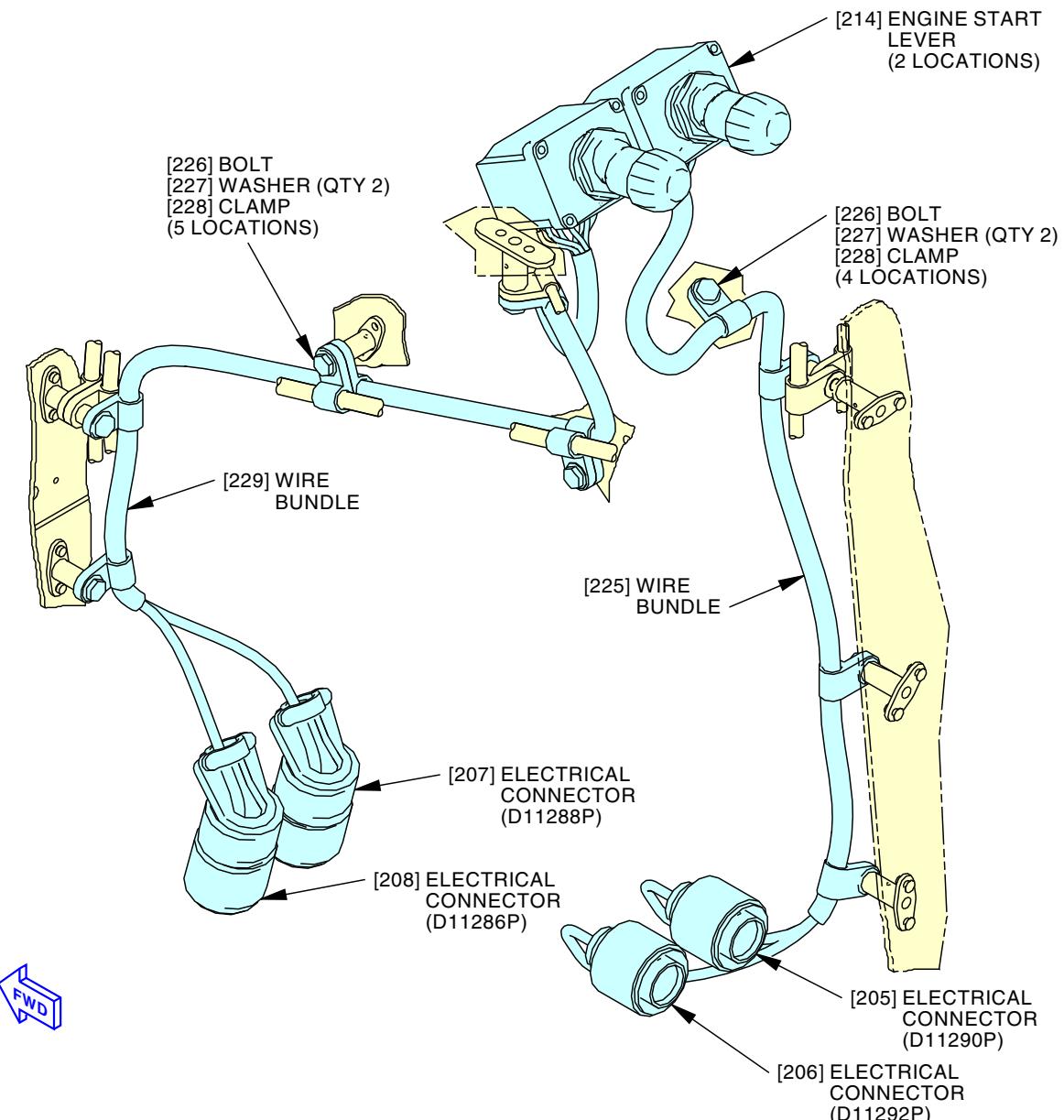
76-11-02

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(SOME CONTROL STAND ELEMENTS ARE NOT SHOWN)

C

2969755 S0000748566_V1

Start Lever Installation
Figure 407/76-11-02-990-807-F00 (Sheet 3 of 4)

EFFECTIVITY
 LOM 462-999; 737-678 AIRCRAFT WITH P/N
 254A1221-7/8

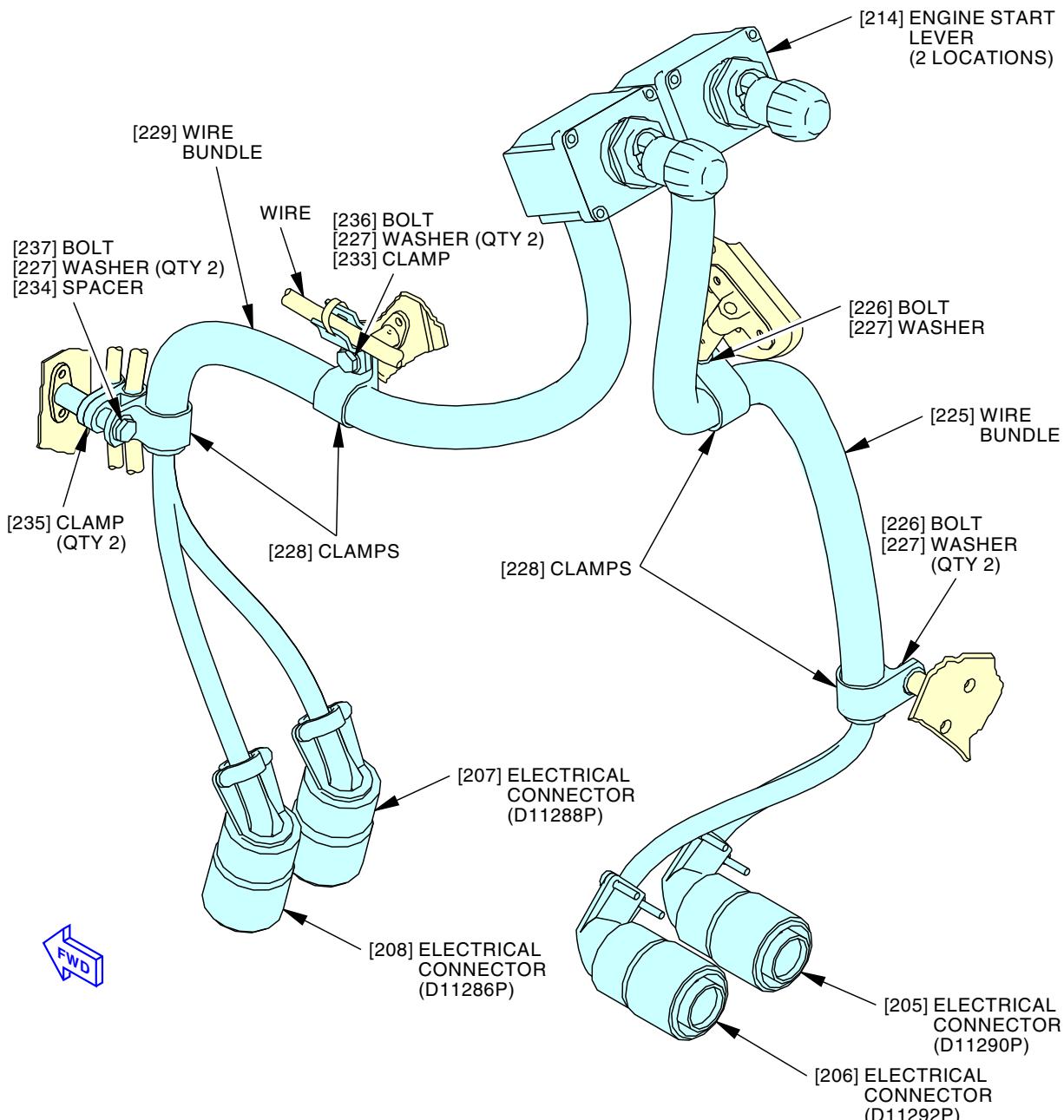
76-11-02

D633A101-LOM

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AIRCRAFT MAINTENANCE MANUAL



(SOME CONTROL STAND ELEMENTS ARE NOT SHOWN)

C

2969757 S0000748567_V3

Start Lever Installation
Figure 407/76-11-02-990-807-F00 (Sheet 4 of 4)

EFFECTIVITY
 LOM 462-999; 737-678 AIRCRAFT WITH P/N
 254A1221-13/14

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LOM 462-999 (Continued)

TASK 76-11-02-400-801-F00

5. Start Lever Installation

(Figure 407)

A. References

Reference	Title
25-11-01-400-801	Captain's and First Officer's Seat Installation (P/B 401)
26-10-00-710-801	Fire and Overheat Detection System - Operational Test (P/B 501)
28-22-00-710-801	Engine Fuel Spar Valve - Electrical Control and Indication Test (P/B 501)
33-18-00-710-802	Master Dim and Test - Operational Test (P/B 201)
71-00-00-700-808-F00	Test 13 - Engine Run - EEC BITE Check (P/B 501)

B. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
214	Engine start lever	76-11-02-05-053	LOM 462-464
		76-11-02-05-205	LOM 465-999

C. Location Zones

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

D. Start Lever Installation

SUBTASK 76-11-02-420-008-F00



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 two engine start levers [214].
 - (a) Install the two keying washers [215] on the two engine start levers [214].
NOTE: It is also acceptable to install the two keying washers [215] on top of the face plate [218].
 - (b) Install the face plate [218] over the two engine start levers [214].
 - 1) Make sure that the key on the two keying washers [215] are engaged in the holes in the face plate [218].
NOTE: This will make sure that the engine start levers cannot move in the incorrect direction.
 - 2) Install the two nuts [220] and two lockwashers [219] on the face plate [218].
 - (c) Carefully install the electrical connector [205], electrical connector [206], electrical connector [207], electrical connector [208], wire bundle [225], and wire bundle [229] in the control stand.

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LOM ALL

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LOM 462-999; 737-678 AIRCRAFT WITH P/N 254A1221-7/8

- (d) Install the four clamps [228] on wire bundle [225] and five clamps [228] on wire bundle [229] with bolt [226] and two washers [227] for each clamp [228].
 - 1) Before you tighten the bolts [226], make sure that you can rotate the face plate [218] along the lower edge at least 90 degrees aft for serviceability.

NOTE: Fasten other moved spacers if loosened during removal of the wiring bundles.

LOM 462-999; 737-678 AIRCRAFT WITH P/N 254A1221-13/14

- (e) Install the two clamps [228] on wire bundle [225] and two clamps [228] on wire bundle [229].
 - 1) Install the bolt [226] and washer [227] for clamp [228].
 - 2) Install the bolt [226] and two washers [227] for clamp [228].
 - 3) Install the bolt [236], two washers [227] for clamp [233] and clamp [228].
 - 4) Install the bolt [237], two washers [227], and spacer [234] for two clamps [235] and clamp [228].
 - 5) Before you tighten the bolts, make sure that you can rotate the face plate [218] along the lower edge at least 90 degrees aft for serviceability.

NOTE: Fasten other moved spacers if loosened during removal of the wiring bundles.

LOM 462-999

- (f) Connect the electrical connector [205], electrical connector [206], electrical connector [207], and electrical connector [208] to the electrical connector panels.
- (g) Install the face plate [218] on the control stand.
 - 1) Install the two screws [217] and three screws [232] to install the face plate [218] on the control stand.
- (h) Install the lightplate [221] on the face plate [218].
 - 1) Tighten the three captive fasteners [222].
- (i) Install the two lens caps [224] on the two engine start levers [214].

E. Put the Airplane Back to Its Usual Condition**SUBTASK 76-11-02-410-010-F00**

- (1) Install the upper side panel [201] and lower side panel [202] on the control stand, do these steps:
 - (a) Position the side panels on the control stand.
 - (b) Tighten the four screws [204] that hold the lower side panel [202] to the control stand.
 - (c) Tighten the four screws [204] that hold the pocket [203] to the lower side panel [202].
 - (d) Tighten the four screws [204] that hold the upper side panel [201] to the control stand.

SUBTASK 76-11-02-410-012-F00

- (2) Install the upper side panel [209] and lower side panel [210] on the control stand, do these steps:
 - (a) Tighten the screw [212], screw [213], and three screws [204] that hold the upper side panel [209] to the control stand.
 - (b) Tighten the four screws [204] that hold the pocket [211] to the lower side panel [210].

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LOM 462-999 (Continued)

- (c) Tighten the six screws [204] that hold the lower side panel [210] to the control stand.

SUBTASK 76-11-02-480-002-F00

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

SUBTASK 76-11-02-410-011-F00

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

SUBTASK 76-11-02-860-022-F00

- (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	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	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	4	C01003	ENGINE 1 THRUST REVERSER IND
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

SUBTASK 76-11-02-860-023-F00

- (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
C	8	C01004	ENGINE 2 THRUST REVERSER IND
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	ENGINE 2 ALTN PWR CHAN A

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LOM ALL

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LOM 462-999 (Continued)

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

SUBTASK 76-11-02-860-025-F00

- (7) For the control stand lighting, remove the safety tags and close these circuit breakers:

Circuit Breaker Panel 5, P8

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
---	---	C00320	ELEX PANEL LIGHTS FWD

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. Test of the Start Lever

SUBTASK 76-11-02-210-001-F00

- (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-F00

- (2) Do this task: Master Dim and Test - Operational Test, TASK 33-18-00-710-802.

SUBTASK 76-11-02-710-003-F00

- (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-F00

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

NOTE: APU fire alarm operational tests (steps 2.K. and 2.L.) are optional.

SUBTASK 76-11-02-710-005-F00

- (5) Do this task: Test 13 - Engine Run - EEC BITE Check, TASK 71-00-00-700-808-F00.

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) Control Stand Lightplate Removal
 - (2) Control Stand Lightplate Installation
 - (3) Control Stand Seals, Spacers and Retainers Removal
 - (4) Control Stand Seals, Spacers and Retainers Installation
 - (5) Control Stand Covers and Stops Removal
 - (6) Control Stand Covers and Stops Installation.

TASK 76-11-03-000-801-F00

2. Control Stand Lightplate Removal

(Figure 401)

A. General

- (1) This task provides the instructions on how 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. Location Zones

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

D. Prepare for the Removal

SUBTASK 76-11-03-860-001-F00



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 76-11-03-860-002-F00

- (2) Make sure that the left and right engine start switches are in off and install a DO-NOT-OPERATE tag.

LOM 429-432; AIRPLANES WITH AUTO-IGNITION

- (a) This is the AUTO position.

LOM ALL

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SUBTASK 76-11-03-860-015-F00

- (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	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	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	4	C01003	ENGINE 1 THRUST REVERSER IND
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-F00

- (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
C	8	C01004	ENGINE 2 THRUST REVERSER IND
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	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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LOM ALL

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SUBTASK 76-11-03-860-013-F00



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 this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-1

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

E. Control Stand Lightplate Removal

SUBTASK 76-11-03-020-001-F00



BE VERY CAREFUL WHEN YOU REMOVE AND MOVE THE LIGHTPLATES AND THE CONTROL STAND COMPONENTS. DAMAGE TO THE LIGHTPLATES, SWITCHES, NUTPLATES, WIRE BUNDLES AND THE FINISH ON THE PARTS CAN OCCUR.

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

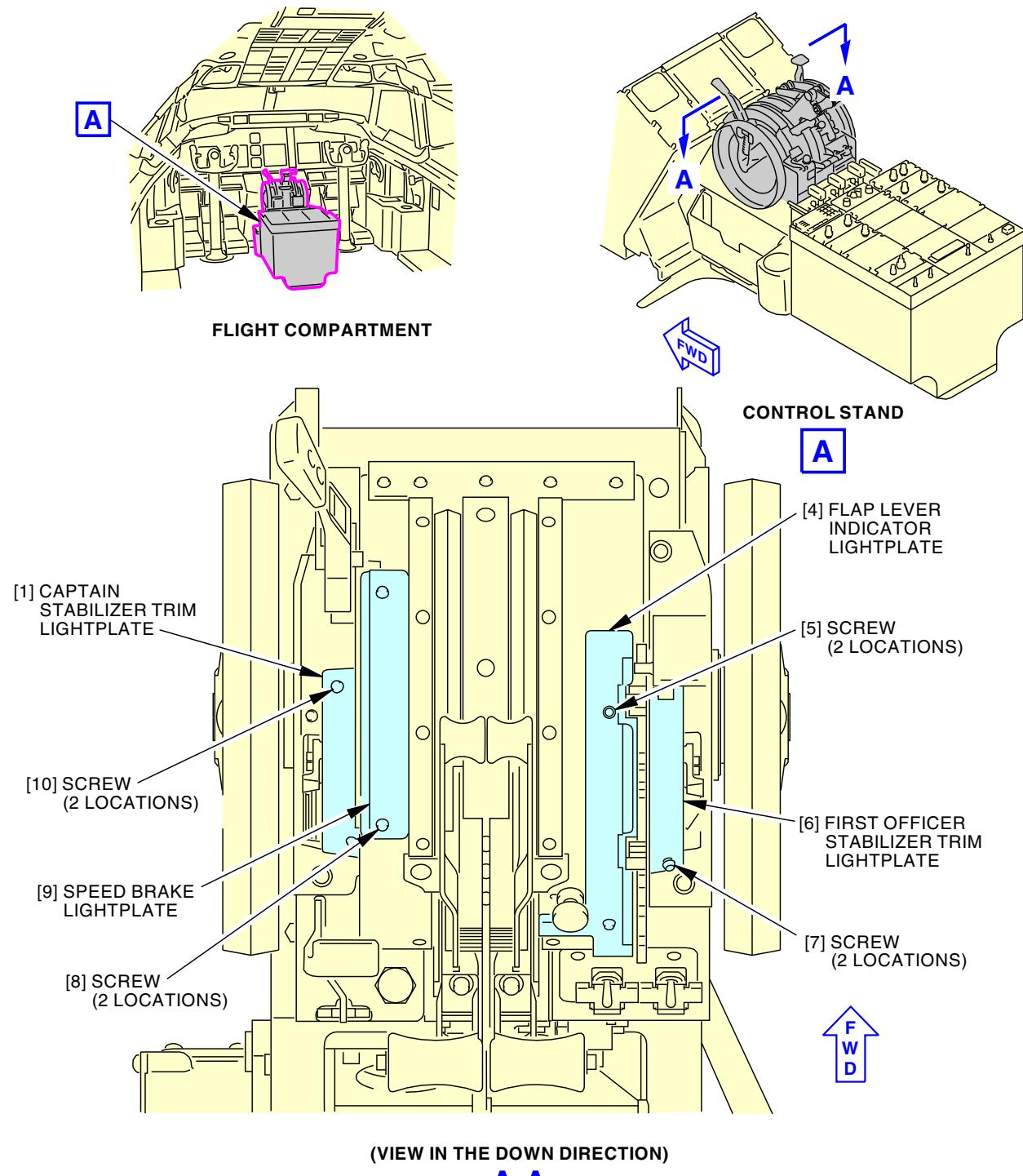
SUBTASK 76-11-03-020-002-F00

- (2) Disconnect the wires from the applicable lightplate [1], the lightplate [4], the lightplate [6], or the lightplate [9]:
- Remove the two nuts [24] and the two lockwashers [23].
 - Remove the terminal lugs from the studs on the lightplates.
 - Remove the two washers [22].
- NOTE: Do not remove the nut and the washer that attach the two studs to the lightplate.
- Remove the applicable lightplate [1], the lightplate [4], the lightplate [6], or the lightplate [9].

— END OF TASK —

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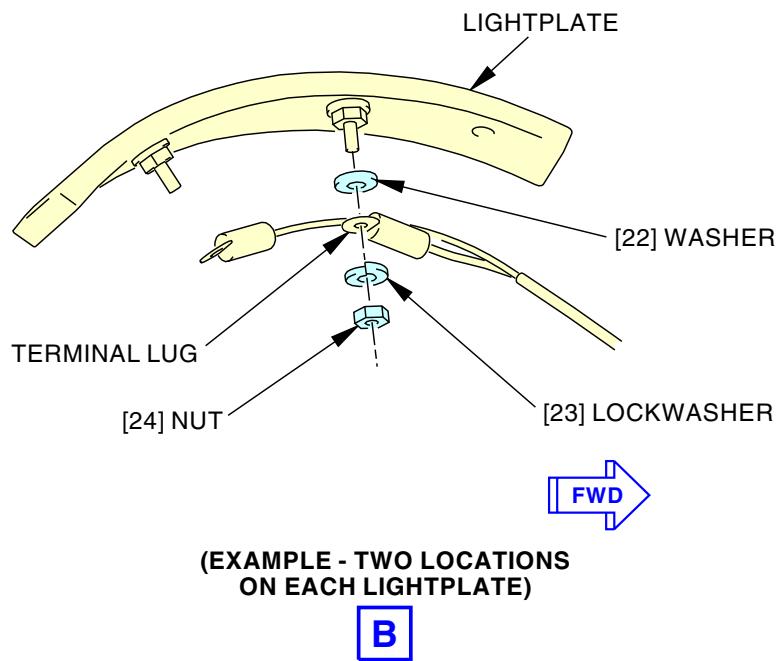
Control Stand Lightplate Installation
Figure 401/76-11-03-990-801-F00 (Sheet 1 of 2)

EFFECTIVITY
LOM ALL

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Control Stand Lightplate Installation
Figure 401/76-11-03-990-801-F00 (Sheet 2 of 2)

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TASK 76-11-03-420-801-F00**3. Control Stand Lightplate Installation**

(Figure 401)

A. General

- (1) This task provides the instructions on how 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. Location Zones

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

D. Control Stand Lightplate Installation

SUBTASK 76-11-03-420-001-F00

**CAUTION**

BE VERY CAREFUL WHEN YOU INSTALL THE LIGHTPLATES AND THE CONTROL STAND COMPONENTS. DAMAGE TO THE LIGHTPLATES, SWITCHES, NUTPLATES, WIRE BUNDLES AND THE FINISH ON THE PARTS CAN OCCUR.

- (1) Install the wires to the lightplate [1], the lightplate [4], the lightplate [6] or the lightplate [9] as follows:
 - (a) Install two washers [22].
 - (b) Put the two terminal lugs on the lightplate studs.
 - (c) Install the two lockwashers [23] and two nuts [24].

SUBTASK 76-11-03-420-002-F00

**CAUTION**

USE CARE WHEN YOU TIGHTEN THE SCREWS ON THE LIGHTPLATES. DAMAGE TO THE LIGHTPLATES CAN OCCUR IF YOU OVER TIGHTEN THE SCREWS.

- (2) Install the applicable the lightplate [1], the lightplate [4], the lightplate [6] or the lightplate [9] on the cover assemblies as follows:
 - (a) Install the stabilizer trim lightplate [1] for the Captain as follows:
 - 1) Install the two screws [10].
 - 2) Make sure that the stabilizer trim indicator operates correctly (TASK 27-41-00-700-801).
 - a) If it is necessary, adjust the position of the lightplate [1].
 - (b) Install the flap lever indicator lightplate [4] as follows:
 - 1) Install the two screws [5].
 - 2) Make sure that the flap lever indicator operates correctly (TASK 27-51-00-820-802).
 - a) If it is necessary, adjust the position of the lightplate [4].
 - (c) Install the stabilizer trim lightplate [6] for the First Officer as follows:

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LOM ALL**76-11-03**

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- 1) Install the two screws [7].
- 2) Make sure that the stabilizer trim indicator operates correctly (TASK 27-41-00-700-801).
 - a) If it is necessary, adjust the position of the 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.
NOTE: Set to plus or minus of one quarter of the "DOWN" bar width.
 - 2) Install the two screws [8].

E. Put the Airplane Back to Its Usual Condition:

SUBTASK 76-11-03-860-017-F00

- (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	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	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	4	C01003	ENGINE 1 THRUST REVERSER IND
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 76-11-03-860-018-F00

- (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
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

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(Continued)

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	8	C01004	ENGINE 2 THRUST REVERSER IND
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	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 76-11-03-860-014-F00

- (3) Remove the safety tag and close this circuit breaker:

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-F00

- (4) Remove the DO-NOT-OPERATE tag from the engine start panel.

END OF TASK

TASK 76-11-03-400-801-F00

4. Control Stand Seal, Spacer, and Retainer Removal

(Figure 402)

A. General

- (1) This task provides 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

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

C. Prepare for the Removal

SUBTASK 76-11-03-010-001-F00

- (1) Do this task: Control Stand Lightplate Removal, TASK 76-11-03-000-801-F00.

D. Control Stand Seals, Spacer, and Retainer Removal

SUBTASK 76-11-03-020-003-F00

- (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].

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SUBTASK 76-11-03-020-004-F00

- (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].

LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-461

SUBTASK 76-11-03-020-008-F00

- (3) Remove the lower center seal [30] and the seal retainer [28] as follow:
 - (a) Remove the two screws [35].
 - (b) Remove the seal retainer [28].
 - (c) Remove the lower center seal [30].

LOM ALL

SUBTASK 76-11-03-020-005-F00

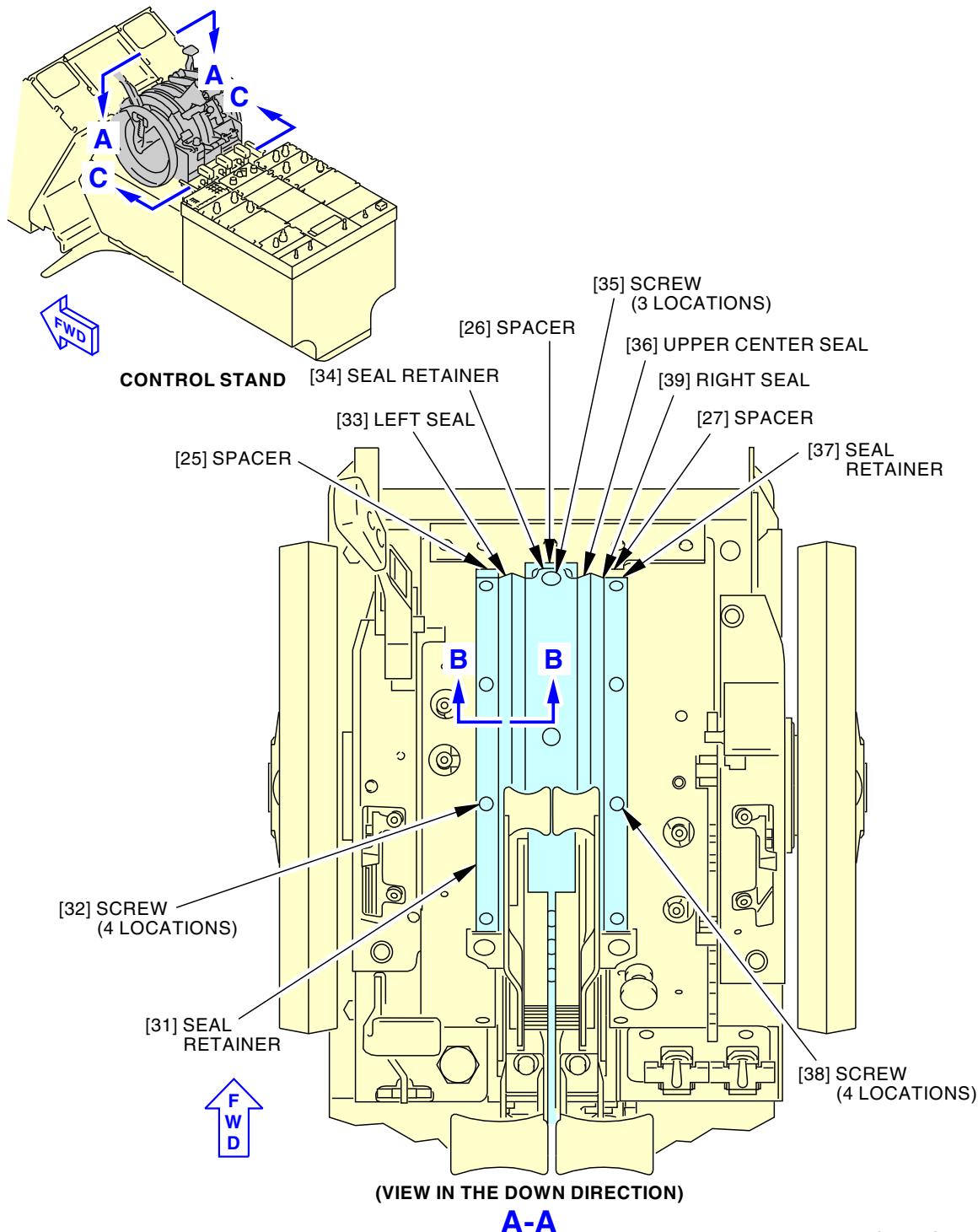
- (4) Remove the right seal [39], the spacer [27], and the seal retainer [37] as follow:
 - (a) Remove the four screws [38].
 - (b) Remove the seal retainer [37].
 - (c) Remove the right seal [39].
 - (d) Remove the spacer [27].

 END OF TASK

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Control Stand Seal, Spacer, and Retainer Installation
Figure 402/76-11-03-990-802-F00 (Sheet 1 of 3)

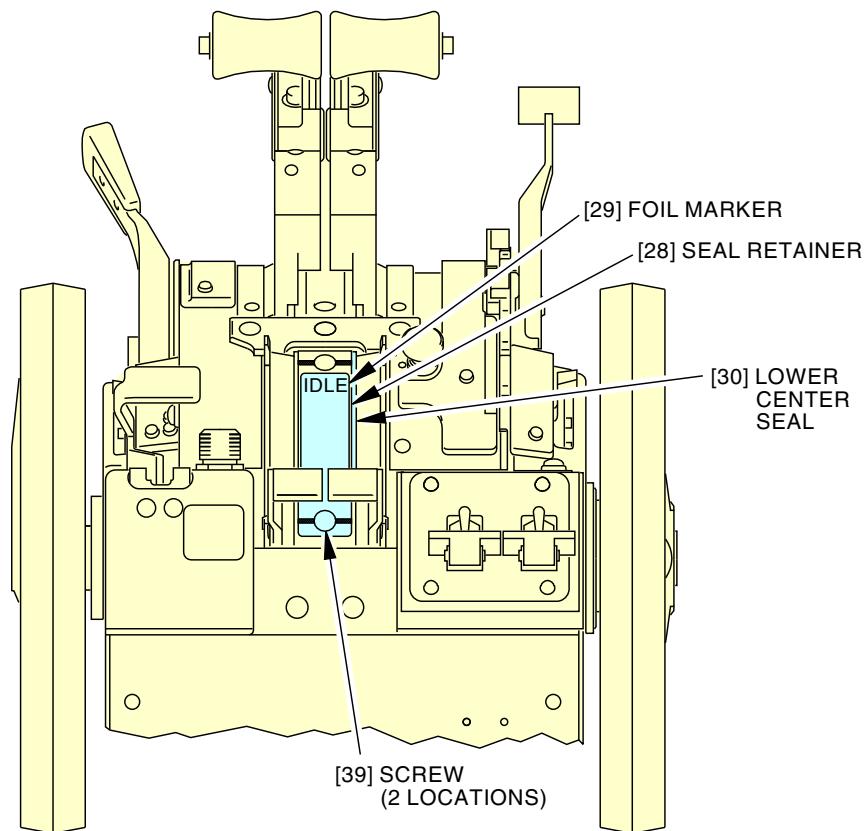
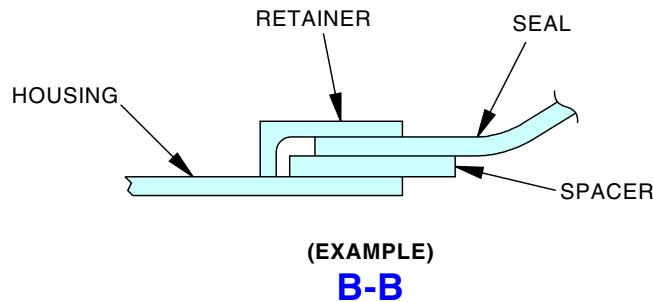
EFFECTIVITY
 LOM 402, 404, 406, 407, 411, 412, 415, 416, 420,
 422-434, 437-447, 450-461

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AIRCRAFT MAINTENANCE MANUAL



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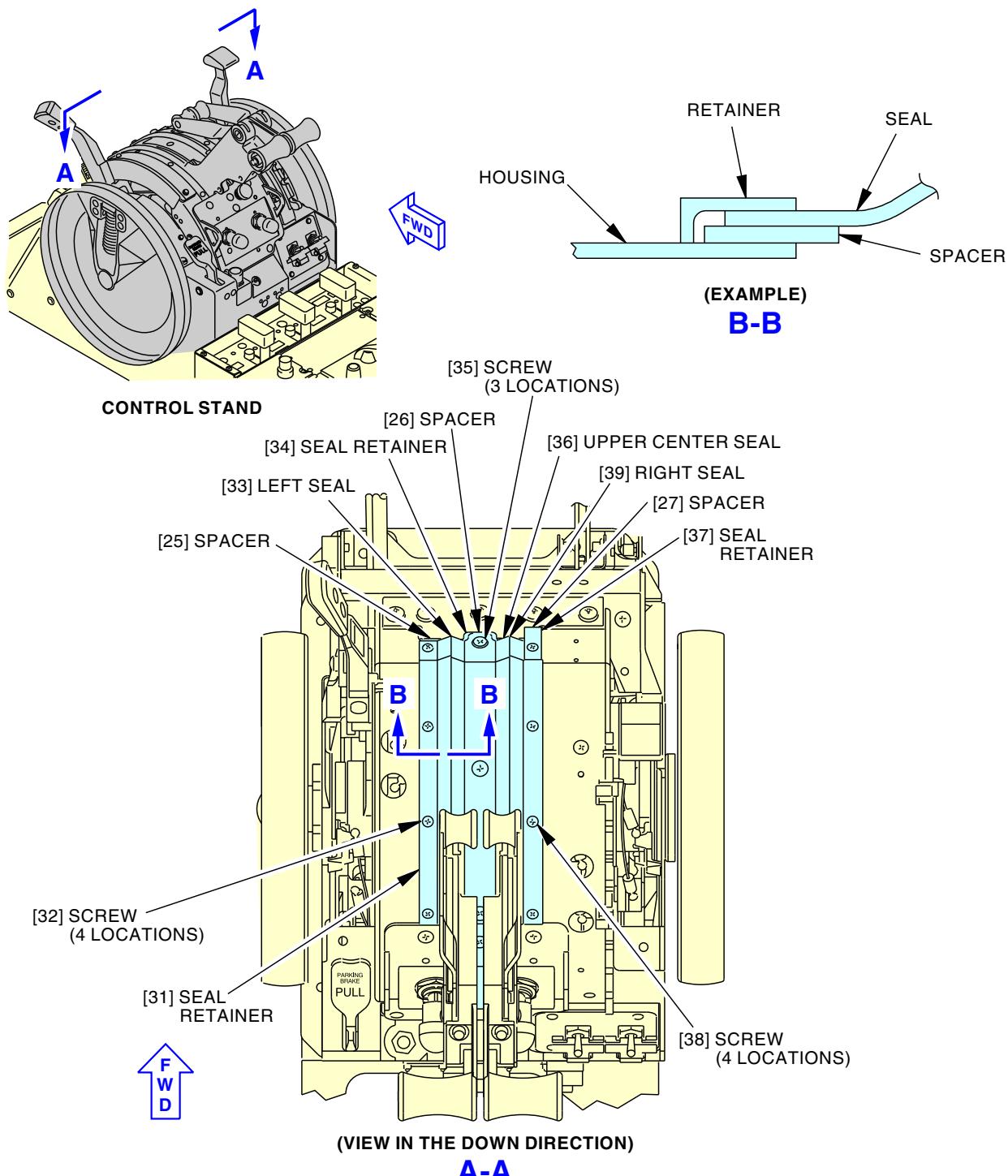
Control Stand Seal, Spacer, and Retainer Installation
Figure 402/76-11-03-990-802-F00 (Sheet 2 of 3)

EFFECTIVITY
**LOM 402, 404, 406, 407, 411, 412, 415, 416, 420,
422-434, 437-447, 450-461**

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Control Stand Seal, Spacer, and Retainer Installation
Figure 402/76-11-03-990-802-F00 (Sheet 3 of 3)

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LOM 462-999

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AIRCRAFT MAINTENANCE MANUAL

TASK 76-11-03-400-802-F00**5. Control Stand Seal, Spacer and Retainer Installation**

(Figure 402)

A. General

- (1) This task provides 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-F00

- (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-F00

- (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 76-11-03-420-008-F00

- (3) Install the lower center seal [30] and the seal retainer [28] as follow:
 - (a) Install the lower center seal [30].
 - (b) Install the seal retainer [28] on the seal.
 - (c) Install the two screws [39].

SUBTASK 76-11-03-420-005-F00

- (4) 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-F00

- (1) Do this task: Control Stand Lightplate Installation, TASK 76-11-03-420-801-F00.

———— END OF TASK ————

EFFECTIVITY
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TASK 76-11-03-400-803-F00**6. Control Stand Cover and Stop Removal**

(Figure 403)

A. General

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

B. Location Zones

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

C. Prepare for the Removal

SUBTASK 76-11-03-010-002-F00

- (1) For the applicable control stand lightplate, do this task: Control Stand Lightplate Removal, TASK 76-11-03-000-801-F00.

SUBTASK 76-11-03-010-003-F00

- (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-F00.

D. Control Stand Cover and Stop Removal

SUBTASK 76-11-03-020-006-F00

- (1) Remove the forward thrust stop [43] as follows:
 - (a) Remove the five screws [40].
 - (b) Remove the forward thrust stop [43].

SUBTASK 76-11-03-020-010-F00

- (2) Remove the aft thrust stop [44] as follows:
 - (a) Remove the three screws [45].
 - (b) Remove the aft thrust stop [44].

SUBTASK 76-11-03-020-007-F00

- (3) Remove the right side cover assembly [48] as follows:
 - (a) Remove the cutout switch knob [42] for the stabilizer trim horn.
 - (b) Remove the nut [41].
 - (c) Remove the six screws [49].
 - (d) Remove the right side cover assembly [48].

SUBTASK 76-11-03-020-009-F00

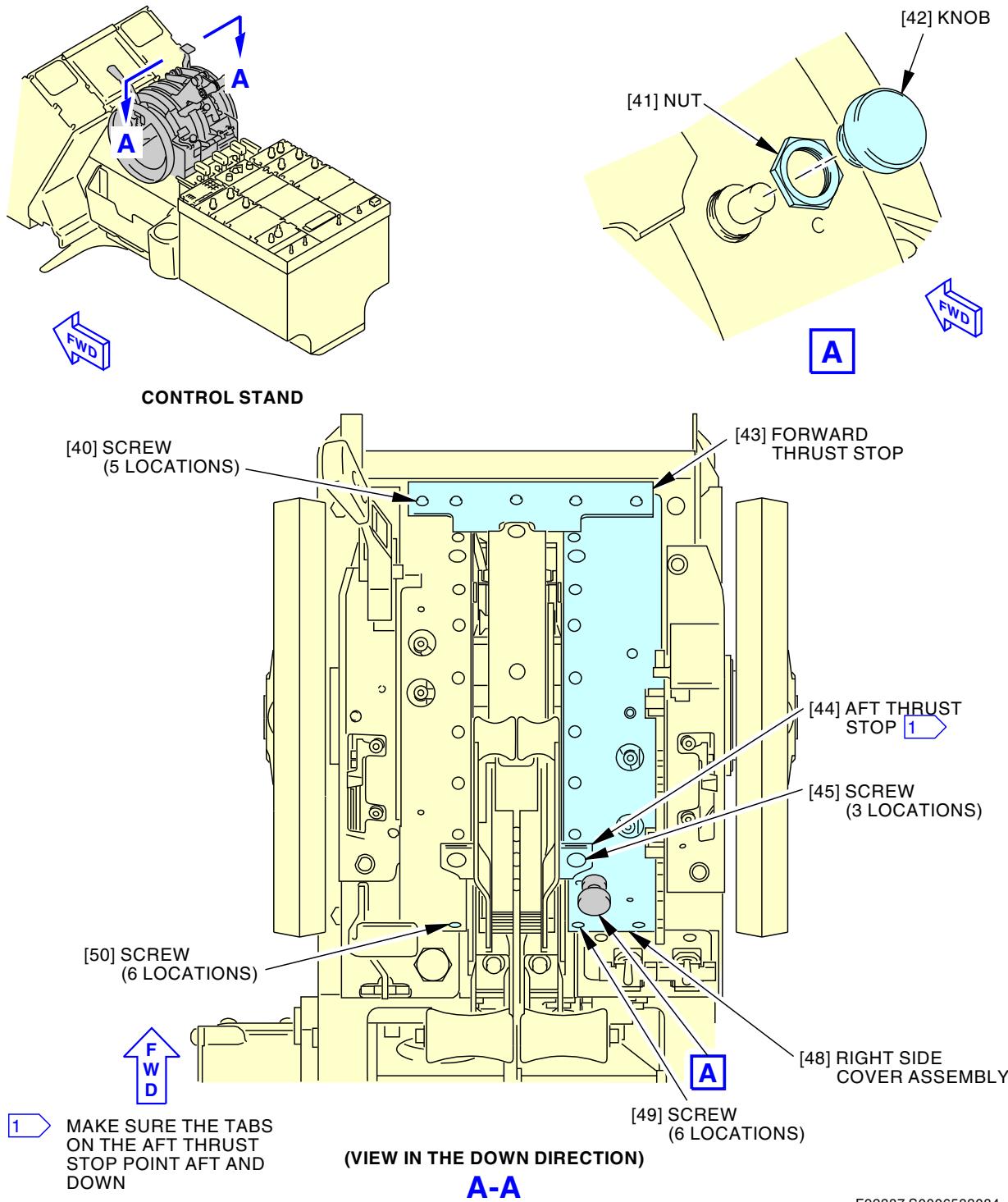
- (4) Remove the left side cover assembly as follows:
 - (a) Remove the six screws [50].
 - (b) Remove the left side cover assembly

———— END OF TASK ————

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LOM ALL

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Control Stand Cover and Stop Installation
Figure 403/76-11-03-990-803-F00

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TASK 76-11-03-400-804-F00**7. Control Stand Cover and Stop Installation**

(Figure 403)

A. General

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

B. Location Zones

Zone	Area
------	------

211	Flight Compartment - Left
212	Flight Compartment - Right

C. Control Stand Cover and Stop Installation**SUBTASK 76-11-03-420-006-F00**

- (1) Install the right side cover assembly [48] as follows:

- (a) Install the right side cover assembly [48].
 - 1) Install the six screws [49].
 - 2) Put the switch into the right side cover assembly [48].
 - 3) Install the nut [41].
 - 4) Install the cutout switch knob [42] for the stabilizer trim horn.

SUBTASK 76-11-03-420-009-F00

- (2) Install the left side cover assembly as follows:

- (a) Put the left side cover assembly in its position.
- (b) Install the six screws [50].

SUBTASK 76-11-03-420-007-F00

- (3) Install the forward thrust stop [43] as follows:

- (a) Put the forward thrust stop [43] in its position.
- (b) Install the five screws [40].

SUBTASK 76-11-03-420-010-F00

- (4) Install aft thrust stop [44] as follows:

- (a) Make sure that the aft thrust stop is in the correct position.
NOTE: If the aft thrust stop is turned 180 degrees, the thrust reverser will not operate.
- (b) Make sure that the tabs on the aft thrust stop [44] point aft and down.
- (c) Install the three screws [45].

D. Put the Airplane Back to Its Usual Condition**SUBTASK 76-11-03-410-002-F00**

- (1) Do this task: Control Stand Seal, Spacer and Retainer Installation, TASK 76-11-03-400-802-F00.

SUBTASK 76-11-03-410-003-F00

- (2) Do this task: Control Stand Lightplate Installation, TASK 76-11-03-420-801-F00.

———— END OF TASK ————

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THRUST LEVER ANGLE RESOLVER AND AUTOThROTTLE BRAKE ASSEMBLY - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
 - (1) A removal of the thrust lever angle resolver and autothrottle brake assembly
 - (2) An installation of the thrust lever angle resolver and autothrottle brake assembly.

TASK 76-11-05-000-801-F00

2. Thrust Lever Angle Resolver and Autothrottle Brake Assembly Removal

(Figure 401, Figure 402 and Figure 403)

A. General

- (1) This task provides the instructions on how 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 76-11-05-860-006-F00



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 this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-1

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

SUBTASK 76-11-05-860-019-F00

- (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-F00

- (3) Open this access panel:

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

SUBTASK 76-11-05-860-001-F00

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

SUBTASK 76-11-05-010-002-F00

- (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-F00

- (1) Disconnect the applicable electrical connectors [11] as follows:

- (a) For engine 1 resolver, disconnect electrical connector [11] (D11158) and the electrical connector [11] (D11160).
- (b) For engine 2 resolver, disconnect electrical connector [11] (D11162) and the electrical connector [11] (D11164).

SUBTASK 76-11-05-020-006-F00

- (2) Disconnect the applicable thrust lever connecting rod end [5] as follows:

- (a) Remove and discard the cotter pin [1].
- (b) Remove the bolt [4], the washer [3], and the nut [2].

SUBTASK 76-11-05-020-007-F00

- (3) Disconnect the applicable control rod [6] as follows:

- (a) Remove the bolt [9], the washer [8], and the nut [7].

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SUBTASK 76-11-05-020-008-F00

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

SUBTASK 76-11-05-020-002-F00

- (5) Disconnect the applicable resolver and brake assembly as follows:
 - (a) Make sure that you support the autothrottle shaft [49] end of the assembly in its normal position.
 - (b) Remove the two bolts [26] and the two washers [27].
 - (c) Remove the bolt [29] and the washer [30].

SUBTASK 76-11-05-020-003-F00

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

SUBTASK 76-11-05-020-009-F00

- (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 76-11-05-020-004-F00

- (8) Remove the resolver as follows:
 - (a) Put the nut wrench 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 to hold the slotted autothrottle shaft [49] 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 the spacer [45].
 - (d) Remove the TLA resolver [32] from the autothrottle shaft [49].
 - (e) Remove the three screws [43] and the three washers [48].
 - (f) Remove the plate [46].
 - (g) Remove the bearing [47].
 - (h) Remove the spacer [42] from the autothrottle shaft [49].
 - (i) If it is necessary, remove these parts from the resolver:
 - 1) Remove and discard the cotter pin [56].
 - 2) Remove the seal nut [54] with the seal nut wrench.
NOTE: The seal nut wrench is part of auto throttle servo assembly tool set, SPL-2414.
 - 3) Remove the scraper [55].

SUBTASK 76-11-05-020-010-F00

- (9) Remove the brake assembly [10] as follows:

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- (a) Move the brake assembly [10] from the autothrottle shaft [49].

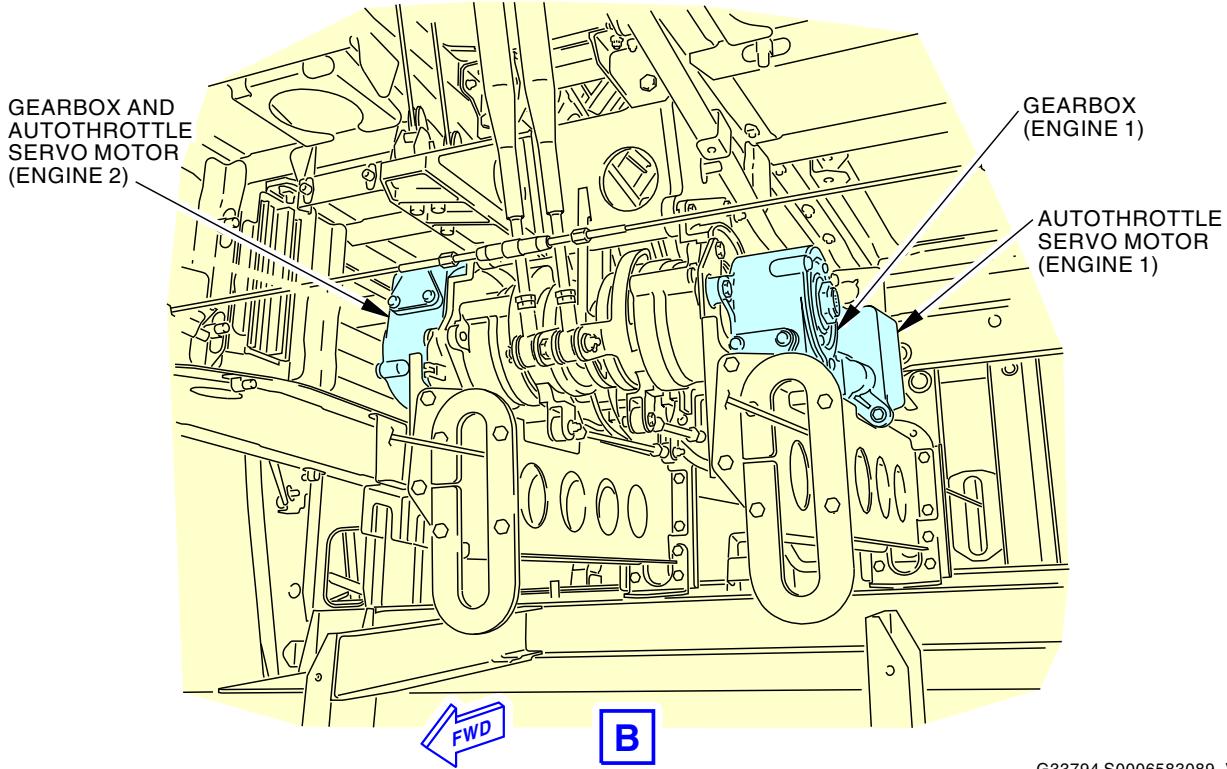
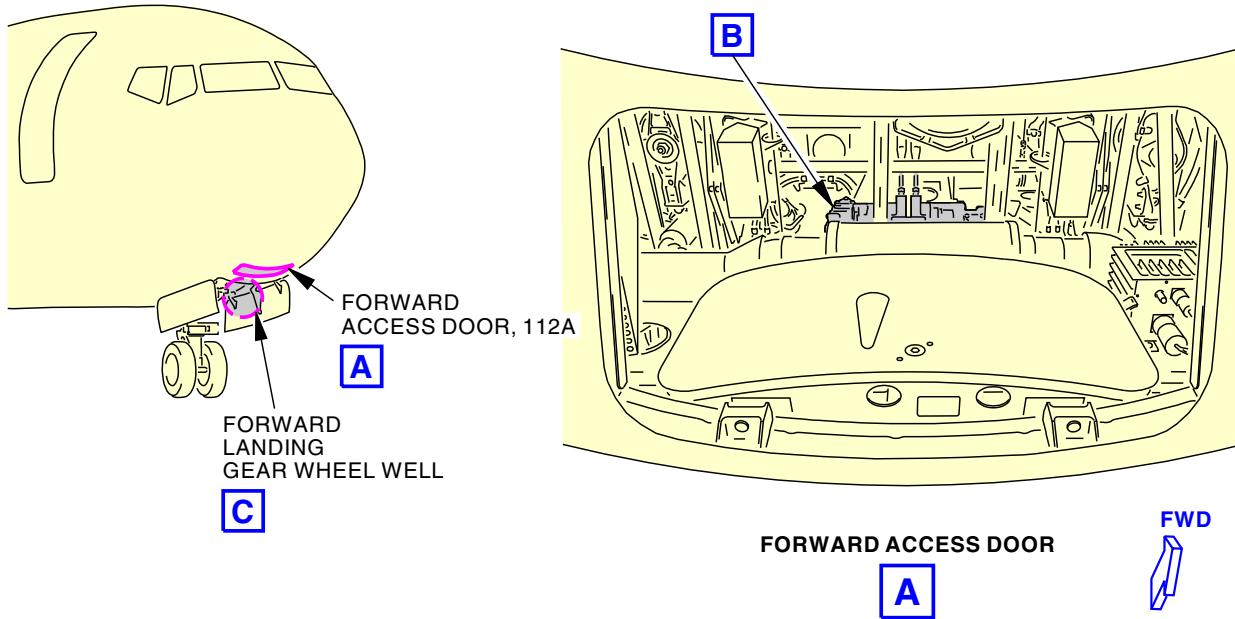
———— END OF TASK ——

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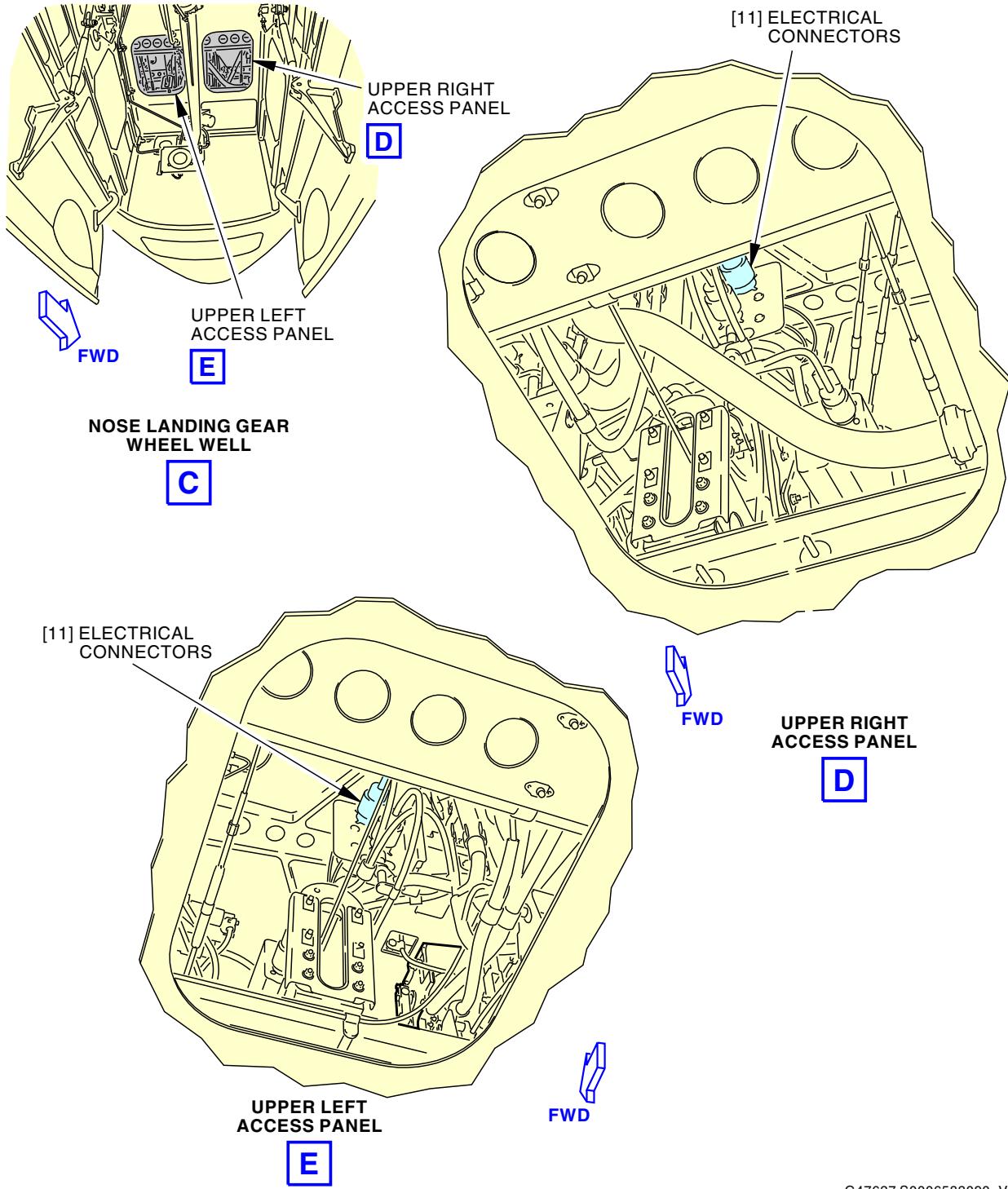
Autothrottle Mechanism Installation
Figure 401/76-11-05-990-801-F00 (Sheet 1 of 2)

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Autothrottle Mechanism Installation
Figure 401/76-11-05-990-801-F00 (Sheet 2 of 2)

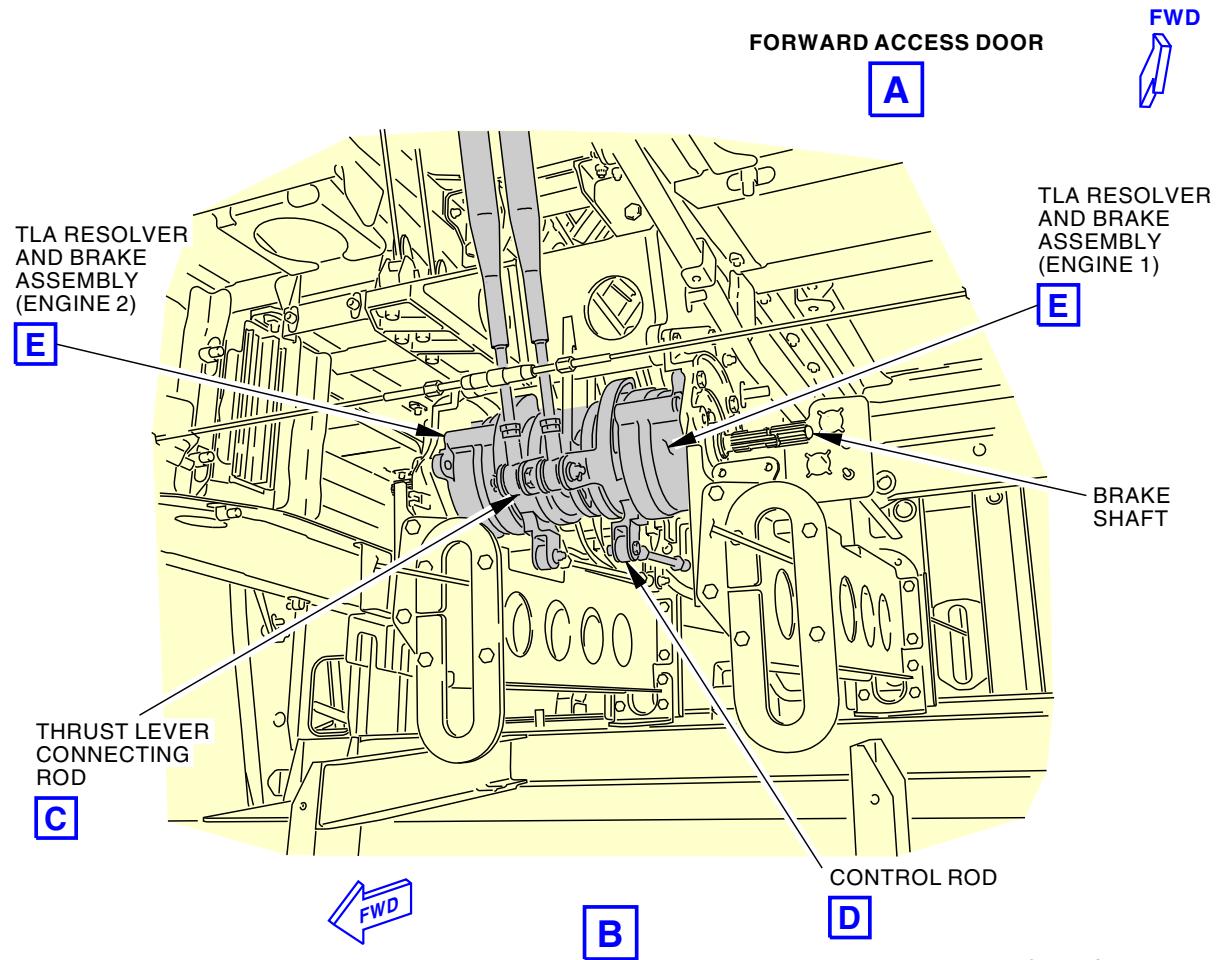
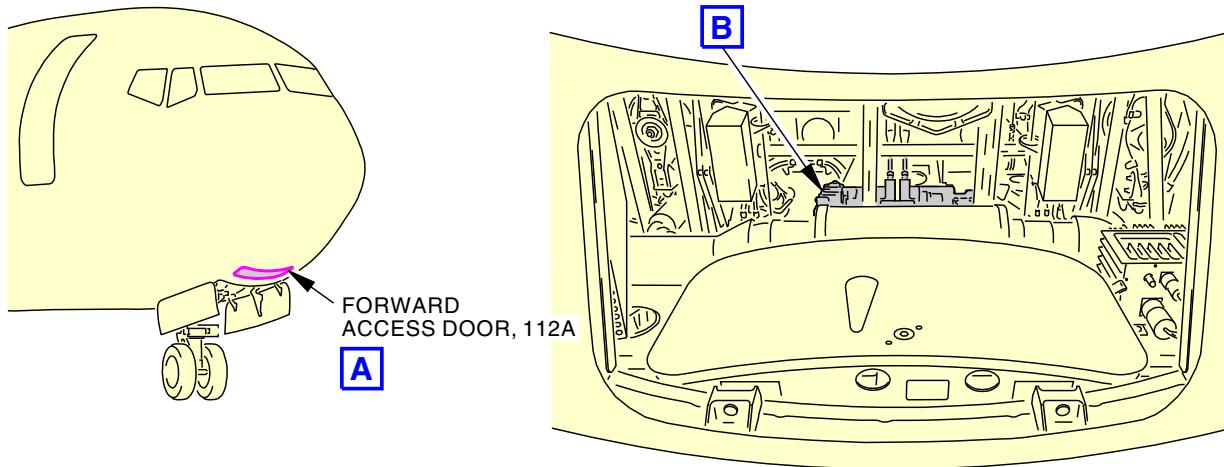
EFFECTIVITY
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AIRCRAFT MAINTENANCE MANUAL

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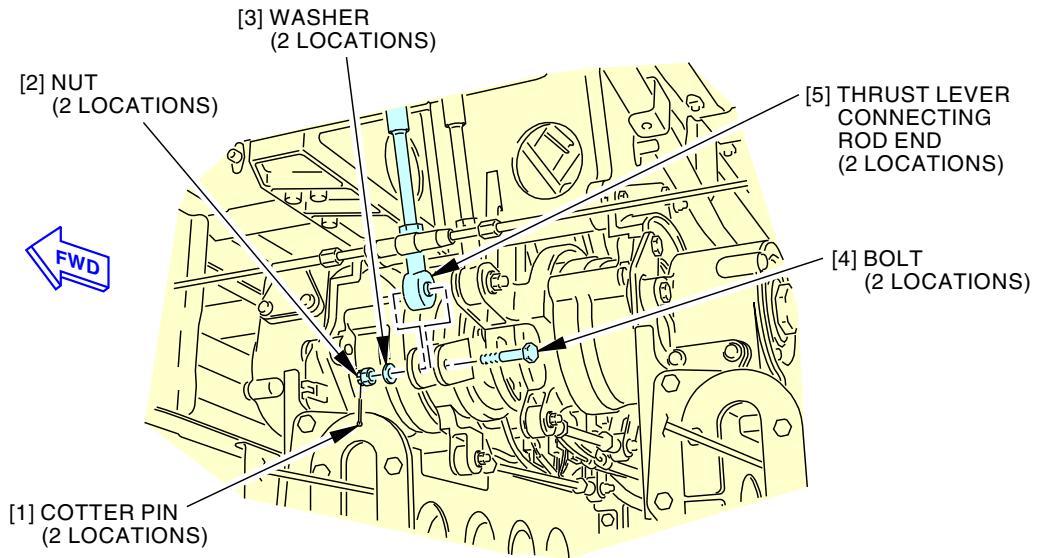
Thrust Lever Angle (TLA) Resolver and Autothrottle Brake Assembly Installation
Figure 402/76-11-05-990-802-F00 (Sheet 1 of 3)

EFFECTIVITY
LOM ALL**76-11-05**

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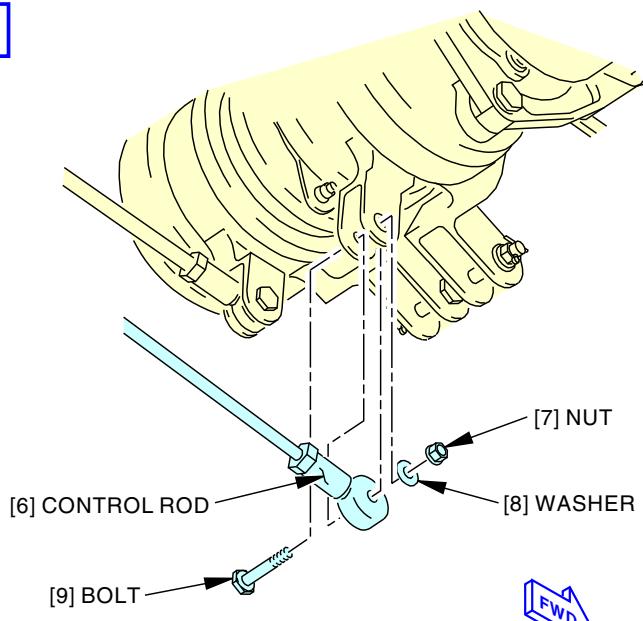
ECCN 9E991 BOEING PROPRIETARY - See title page for details

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AIRCRAFT MAINTENANCE MANUAL



(RIGHT SIDE IS SHOWN,
LEFT SIDE IS EQUIVALENT)

C



(RIGHT SIDE IS SHOWN,
LEFT SIDE IS EQUIVALENT)

D

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Thrust Lever Angle (TLA) Resolver and Autothrottle Brake Assembly Installation
Figure 402/76-11-05-990-802-F00 (Sheet 2 of 3)

EFFECTIVITY
LOM ALL

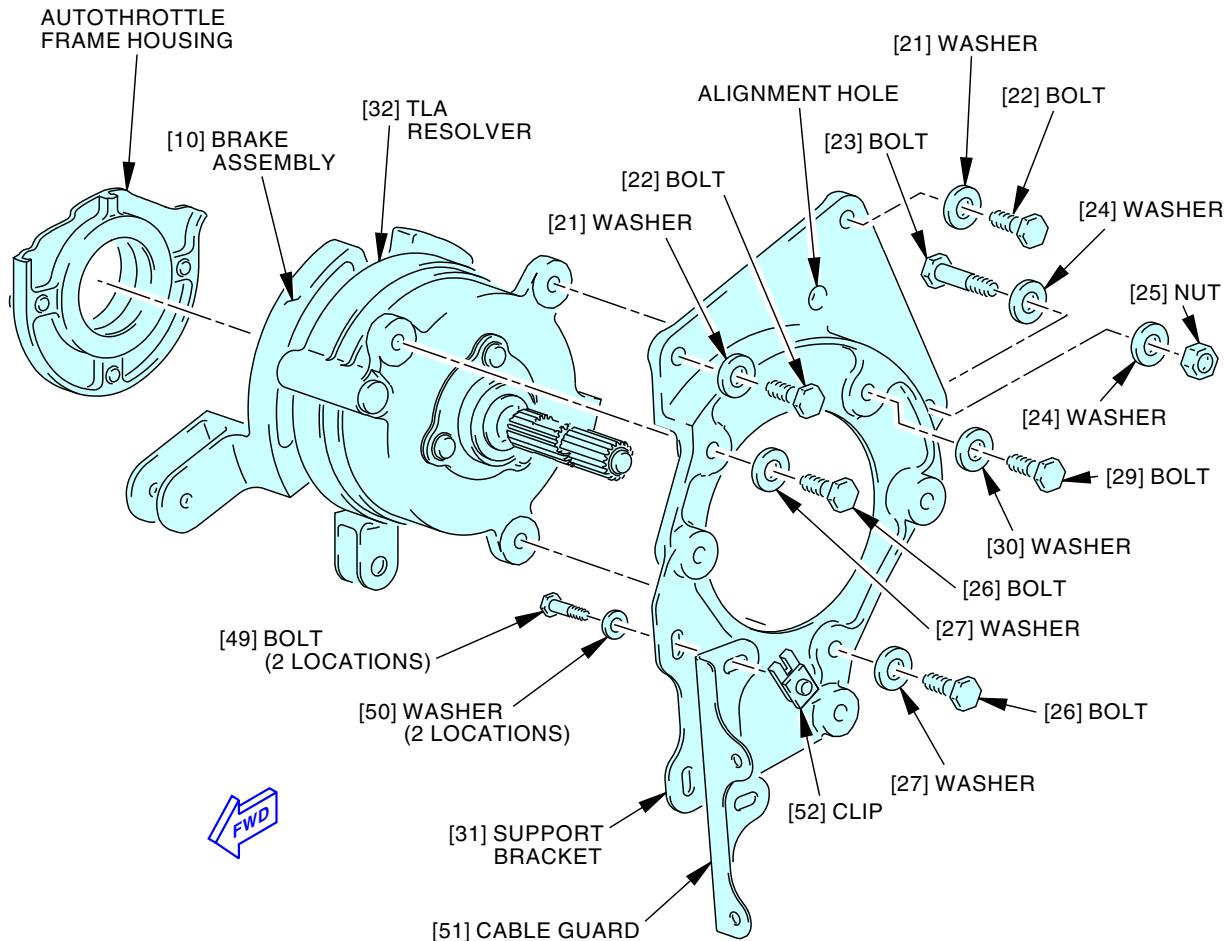
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**TLA RESOLVER AND BRAKE ASSEMBLY
 (ENGINE 1 IS SHOWN, ENGINE 2 IS EQUIVALENT)**

E

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Thrust Lever Angle (TLA) Resolver and Autothrottle Brake Assembly Installation
Figure 402/76-11-05-990-802-F00 (Sheet 3 of 3)

EFFECTIVITY
 LOM ALL

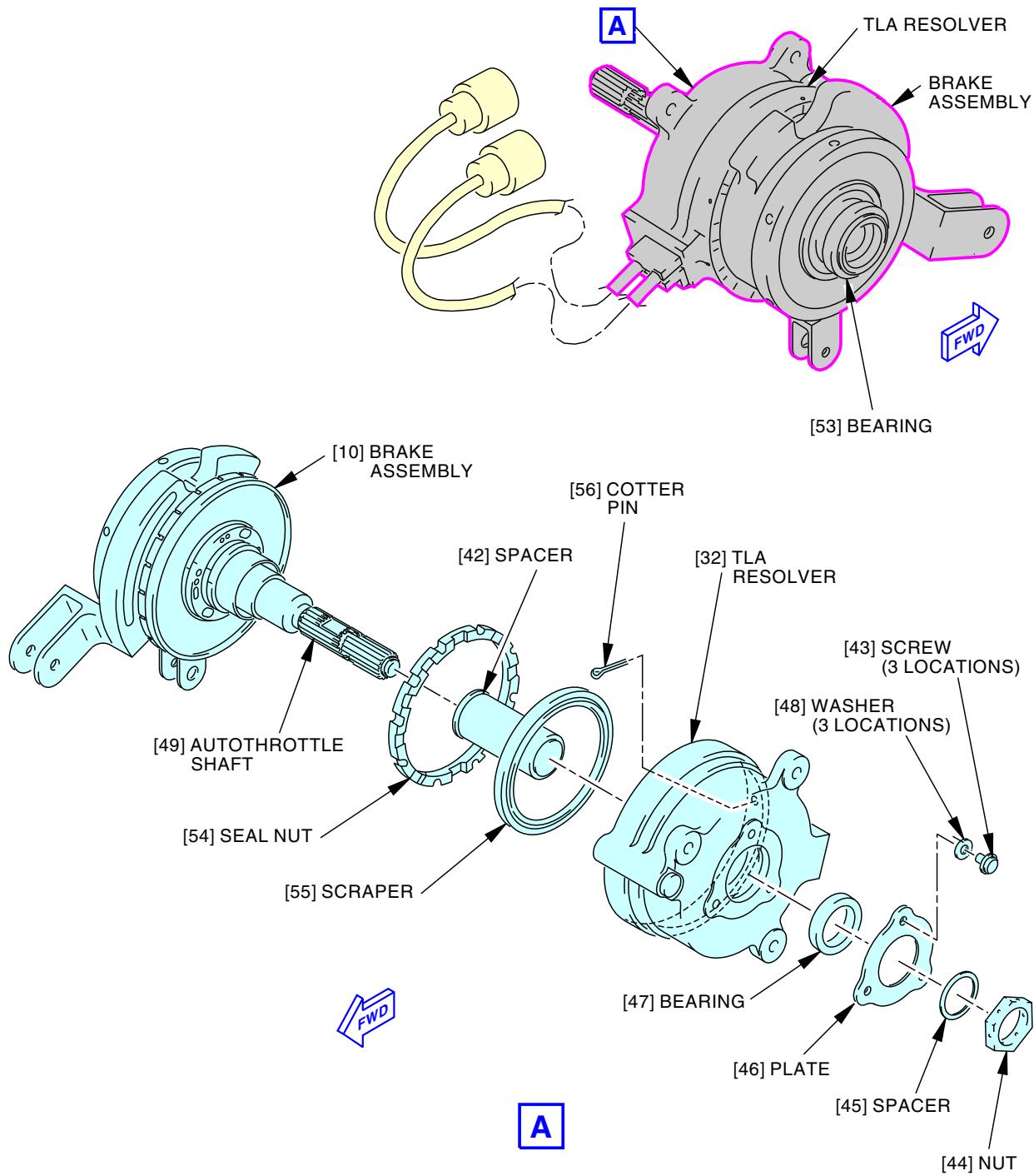
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Thrust Lever Angle (TLA) Resolver Assembly Installation
Figure 403/76-11-05-990-803-F00

EFFECTIVITY
LOM ALL

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TASK 76-11-05-400-801-F00**3. Thrust Lever Angle Resolver and Autothrottle Brake Assembly Installation**

(Figure 401, Figure 402, and Figure 403)

A. General

- (1) This task provides the instructions on how 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-F00	Thrust Lever Angle Resolver Adjustment (P/B 501)
76-11-05-820-802-F00	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
10	Brake assembly	22-31-81-01-105	LOM ALL
		22-31-81-02-105	LOM ALL
32	TLA resolver	22-31-81-01-080	LOM ALL
		22-31-81-02-080	LOM 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 76-11-05-420-007-F00

- (1) Install the brake assembly [10] as follows:
 - (a) Apply grease, D00013, to the autothrottle shaft [49].

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- (b) Install the applicable brake assembly [10] on the autothrottle shaft [49].

SUBTASK 76-11-05-420-001-F00

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

- (a) Apply a layer of grease, D00013, to the inner side surface of the spacer.
- (b) Install the spacer [42] on the autothrottle shaft [49].

SUBTASK 76-11-05-420-002-F00

- (3) Prepare the TLA resolver [32] for installation as follows:

- (a) If removed, install these parts on the resolver:
 - 1) Install the scraper [55].
 - 2) Install the seal nut [54].
 - a) Tighten the seal nut with the seal nut wrench to 0 in-lb (0 N·m) - 40 in-lb (4.5 N·m) more than the run-on torque.

NOTE: The seal nut wrench is part of auto throttle servo assembly tool set, SPL-2414.
 - b) Align the slot in the seal nut with the hole in the resolver for the cotter pin.
 - 3) Install the cotter pin [56].
- (b) Install the bearing [47].
- (c) Put the plate [46] in its position.
- (d) Install the three washers [48] and the three screws [43].

SUBTASK 76-11-05-420-003-F00

- (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 [49] 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 [49].
- (e) Put the nut [44] and the nut wrench 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 to hold the slotted shaft when you tighten the nut [44] onto the autothrottle shaft [49].

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 76-11-05-420-008-F00

- (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 [49] end of the assembly in its normal position.

SUBTASK 76-11-05-420-004-F00

- (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].

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- (b) Install the nut [25], two washers [24], and bolt [23].
- (c) Install the two washers [21] and two bolts [22].

SUBTASK 76-11-05-420-005-F00

- (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 76-11-05-420-009-F00

- (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].

SUBTASK 76-11-05-420-010-F00

- (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 76-11-05-420-011-F00

- (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 cotter pin [1].

SUBTASK 76-11-05-020-011-F00

- (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 76-11-05-420-006-F00

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

SUBTASK 76-11-05-860-008-F00

- (2) Remove the safety tag and close this circuit breaker:

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 76-11-05-860-020-F00

- (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

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<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
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B	9	C00440	FLIGHT CONTROL AUTO SPEED BRAKE
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SUBTASK 76-11-05-860-002-F00

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

SUBTASK 76-11-05-700-001-F00

- (5) Do this task: Thrust Lever Angle Resolver Adjustment, TASK 76-11-05-820-801-F00.

SUBTASK 76-11-05-410-001-F00

- (6) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
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112A	Forward Access Door
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J. Thrust Lever Angle Resolver and Autothrottle Brake Assembly Test

SUBTASK 76-11-05-700-004-F00

- (1) If you replaced the autothrottle brake assembly, do the test for the autothrottle brake assembly (TASK 76-11-05-820-802-F00).

———— 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-F00

2. Thrust Lever Angle Resolver Adjustment

(Figure 501 and Figure 502)

A. General

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

B. References

Reference	Title
24-22-00-860-811	Supply Electrical Power (P/B 201)
31-51-00-730-802	Landing Warning System Test (P/B 501)

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 76-11-05-910-001-F00

- (1) Do this task: Supply Electrical Power, TASK 24-22-00-860-811.

SUBTASK 76-11-05-860-011-F00

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
A	6	C01017	FMCS CMPTR 1

LOM 404, 426

A	7	C01018	FMCS CDU 1
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LOM ALL

D	2	C01372	DISPLAY CTR UPR
D	5	C01359	DISPLAY DEU 1 PRI

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F/O Electrical System Panel, P6-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	9	C01362	DISPLAY DEU 2 HOLDUP
D	10	C01361	DISPLAY DEU 1 HOLDUP
D	11	C01360	DISPLAY DEU 2 PRI
LOM 426; LOM 404 PRE SB 737-23-1484			
D	15	C01050	FMCS CDU 2

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
LOM ALL			
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	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>
F	13	C01179	INDICATOR MASTER DIM SECT 7

SUBTASK 76-11-05-860-016-F00

**WARNING**

MAKE SURE THAT ALL PERSONNEL STAY 15 FT (5 M) AWAY FROM THE WEATHER RADAR ANTENNA WHEN THE SYSTEM IS IN OPERATION. IF THE RADOME IS OPEN, THE ANTENNA CAN HIT OR CATCH PERSONNEL WHEN IT MOVES. THE ANTENNA TRANSMITS MICROWAVE ENERGY. THESE CONDITIONS CAN CAUSE INJURIES TO PERSONNEL.

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

F/O Electrical System Panel, P6-1

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

SUBTASK 76-11-05-480-001-F00

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

SUBTASK 76-11-05-860-012-F00

- (5) Make sure that the ENGINE START switches are in the off position and attach a DO-NOT-OPERATE tag.

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SUBTASK 76-11-05-860-013-F00

- (6) Make sure that the ENGINE START switches are in the AUTO position and attach a DO-NOT-OPERATE tag.

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SUBTASK 76-11-05-860-014-F00

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

SUBTASK 76-11-05-860-015-F00

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

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SUBTASK 76-11-05-010-003-F00

- (9) Open this access panel:

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

SUBTASK 76-11-05-700-002-F00

- (10) Set up the Flight Management Computer System (FMCS) Control Display Unit (CDU) for the applicable Engine 1 or Engine 2 resolver adjustment as follows:

- Get access to the FMCS CDU in the flight compartment.
- If the FMCS CDU is not active from other engine tests, do these steps:
 - Press the INIT REF key to show the PERF INIT screen on the FMCS CDU .
 - Push these line select keys on the FMCS CDU :

- a) INDEX
- b) MAINT

NOTE: This Line Select Key (LSK) causes the MAINT BITE INDEX screen to show.

- c) ENGINE

NOTE: This LSK causes the ENGINE/EXCEED BITE INDEX screen to show.

- d) 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 Electronic Engine Control (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.

- If the FMCS CDU is active from other EEC tests, do these steps:

- Push the INDEX LSK several times, until the MAINT BITE INDEX shows.
- Push the ENGINE LSK.

NOTE: This causes the ENGINE/EXCEED BITE INDEX screen to show.

- Push the ENGINE X LSK for the applicable resolver.

NOTE: This causes the ENGINE X BITE TEST MAIN MENU to show. Also, the ENGINE X1 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 76-11-05-710-001-F00

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

- Make sure that the applicable engine thrust lever against the IDLE stop.
- Push the INPUT MONITORING LSK.

NOTE: This will cause the CAUTION SCREEN of INPUT MONITORING to show.

- Push the CONTINUE LSK.
- Push the CONTROL LOOPS LSK.

NOTE: This will cause screen 1 of the CONTROL LOOPS to show.

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- (e) Push the NEXT PAGE key two times.
NOTE: This will cause screen 3 of the CONTROL LOOPS to show.
- (f) Push the TRA LSK on screen 3 of the CONTROL LOOPS.
NOTE: This causes the Thrust Lever Resolver Angle (TRA) for channels A and B, of Engine X, to show.
NOTE: The data for the channel that is in control will show first.
 - 1) The TRA POSITION CH A and TRA POSITION CH B indications on the CDU must read 36.0 ± 0.8 degrees.
 - 2) The difference between the TRA POSITION CH A and the TRA POSITION CH B should be less than 0.8 degrees.
- (g) If the indications are not in the specified range, do the resolver adjustment procedure below for the applicable resolver; and continue the procedure at the step that follows.



DO NOT LET THE SEL POSITION DISPLAY SHOW GREATER THAN 80.0 DEGREES, AS YOU DO THIS STEP. IF THE DISPLAY SHOWS MORE THAN 80.0 DEGREES, YOU MUST MOVE THE THRUST LEVER TO THE IDLE STOP AND START AGAIN. IF YOU DO NOT OBEY THESE INSTRUCTIONS, THE RESULTS OF THE TEST ARE NOT ACCURATE.

- (h) If the POSITION CH A and POSITION CH B indications are in the specified range, do these steps:
 - 1) Slowly move the thrust lever forward until the TRA POSITION reads:
 - a) The TRA POSITION CH A and TRA POSITION CH B indications on the CDU read 78.0 ± 2.0 degrees.
 - b) Stop for a minimum of 2 seconds.
 - (i) Make sure that the thrust lever does not move from this position.
 - (j) Record the value that shows in the POSITION CH A line to the nearest tenth of a degree.

SUBTASK 76-11-05-720-001-F00

- (12) Do these steps to set the alignment with the opposite thrust lever:
 - (a) Push the INDEX LSK four times, to get access to the MAINT BITE INDEX screen.
 - (b) Push the ENGINE LSK.
NOTE: This causes the ENGINE/EXCEED BITE INDEX screen to show.
 - (c) Push the opposite ENGINE X LSK.
NOTE: This 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.
 - (d) Push the INPUT MONITORING LSK.
NOTE: This will cause the INPUT MONITORING menu to show.
 - (e) Push the CONTROL LOOPS LSK.
NOTE: This will cause screen 1 of the CONTROL LOOPS to show.
 - (f) Push the NEXT PAGE key two times, to get access to screen 3 of the CONTROL LOOPS.

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- (g) 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.
- 1) The TRA POSITION CH A and TRA POSITION CH B indications on the CDU must read 36.0 ± 0.8 degree.
 - 2) If the indications are not in the specified range, do the applicable resolver adjustment below and continue the procedure at the step that follows.



MAKE SURE THAT YOU DO NOT MOVE THE INITIAL THRUST LEVER AS YOU DO THIS STEP. 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 OBEY THESE INSTRUCTIONS, THE RESULTS OF THE TEST ARE NOT ACCURATE.

- (h) Slowly move the opposite thrust lever forward until the knob aligns with the knob on the initial thrust lever, $\pm 1/16$ of a knob width.
 - (i) Record the value that shows in the POSITION CH A line to the nearest tenth of a degree.
 - (j) Calculate the difference between opposite POSITION CH A and initial POSITION CH A.
- NOTE: Opposite Engine POSITION CH A — Engine under test POSITION CH A = difference.
- (k) Make sure that the difference is 0.0 ± 1.0 degrees.
 - 1) If the indications are not in the specified range, do the resolver adjustment below for the initial or opposite thrust lever.
 - 2) Use the position values which you recorded at IDLE to find which resolver to adjust.
 - a) Choose the resolver which you can adjust to be in the limits at IDLE and at the 78 degree position.
 - 3) Continue the procedure at the step that follows.
 - (l) If the difference is in the specified range, the test is completed.
 - (m) Move the two thrust levers to the idle stop.
 - (n) If you wish to do other tests, push the INDEX LSK several times, until the correct menu shows.
 - (o) To end the test, push the INIT REF key.
- NOTE: This causes the test to stop and automatically removes electrical power from the EEC.

F. Thrust Lever Angle Resolver Adjustment

SUBTASK 76-11-05-820-001-F00

- (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].

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- 2) Remove the bolt [4].
 - (c) Move the rod end [5] from the autothrottle brake assembly clevis.
 - (d) Move the autothrottle brake assembly clevis to get the correct TRA value on the FMCS CDU.
 - (e) Make sure they are in these limits:
 - 1) POSITION CH A indication reads 36.0 ± 0.8 degrees.
 - 2) POSITION CH B indication reads 36.0 ± 0.8 degrees.
 - 3) The difference between the TRA POSITION CH A and the TRA POSITION CH B should be less than 0.8 degrees.
 - (f) Loosen the jamnut [6] and turn the rod end [5] to align it with the autothrottle brake assembly clevis.
- NOTE: Use the bolt [4] to make sure that the parts are aligned.
- 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 to 95 in-lb (10.7 N·m) – 160 in-lb (18.1 N·m).
- (g) Make sure that the POSITION CH A and POSITION CH B indications on the CDU still read 36.0 ± 0.8 degrees, and the difference between them is less than 0.8 degrees.
 - 1) If the values are not in the specified range, adjust the thrust control rod until you get the correct values.

SUBTASK 76-11-05-820-003-F00

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

- (a) Carefully move the thrust lever to the full forward thrust position.
 - 1) Stop for a minimum of 2 seconds.
 - 2) Make sure that the POSITION CH A and POSITION CH B indications on the FMCS CDU read 84.0 ± 1.8 degrees.
 - 3) If the values are not in the specified range, adjust the thrust control rod again until you get the correct value.



MAKE SURE THAT YOU DO NOT MOVE THE INITIAL THRUST LEVER AS YOU DO THIS STEP. 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 OBEY THESE INSTRUCTIONS, THE RESULTS OF THE TEST ARE NOT ACCURATE.

- (b) Do a check 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 78 degrees.
 - 3) Make sure that the knob alignment difference is not more than $\pm 1/16$ with the other knob.

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- 4) Make sure that the difference in POSITION CH A values is not more than 0.0 ± 1.0 degree.
- 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.
- (d) If you wish to do other tests, push the INDEX LSK several times, until the correct menu shows.
- (e) To end the test, push the INIT REF key.

NOTE: This causes the test to stop and automatically removes electrical power from the EEC.

G. Put the Airplane Back to Its Usual Condition

SUBTASK 76-11-05-700-007-F00

- (1) Do this task: Landing Warning System Test, TASK 31-51-00-730-802.

SUBTASK 76-11-05-000-001-F00

- (2) Remove the DO-NOT-OPERATE tag from the start switches.

SUBTASK 76-11-05-010-004-F00

- (3) Close this access panel:

<u>Number</u>	<u>Name/Location</u>
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112A	Forward Access Door
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SUBTASK 76-11-05-860-009-F00

- (4) Remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-1

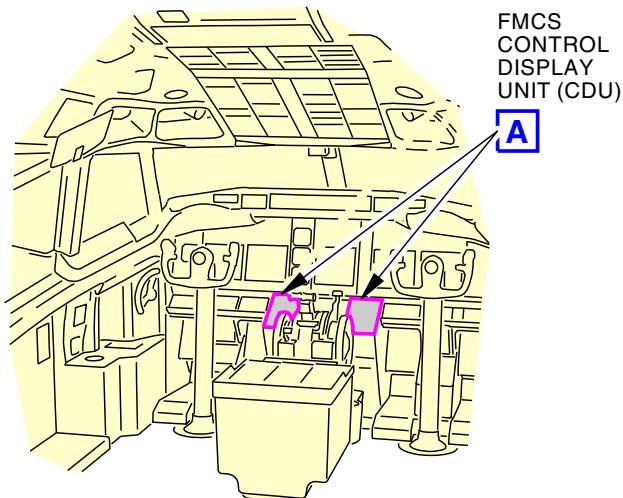
<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
D	13	C00120	WEATHER RADAR RT

———— END OF TASK ————

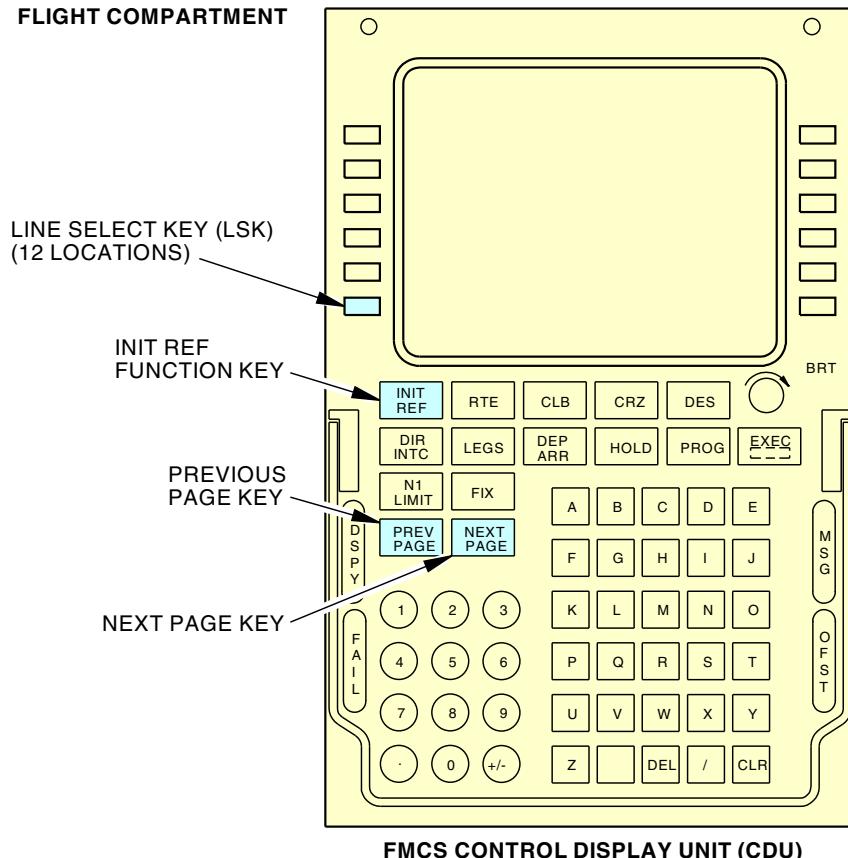
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FLIGHT COMPARTMENT



FMCS CONTROL DISPLAY UNIT (CDU)

A

K30366 S0006583098_V2

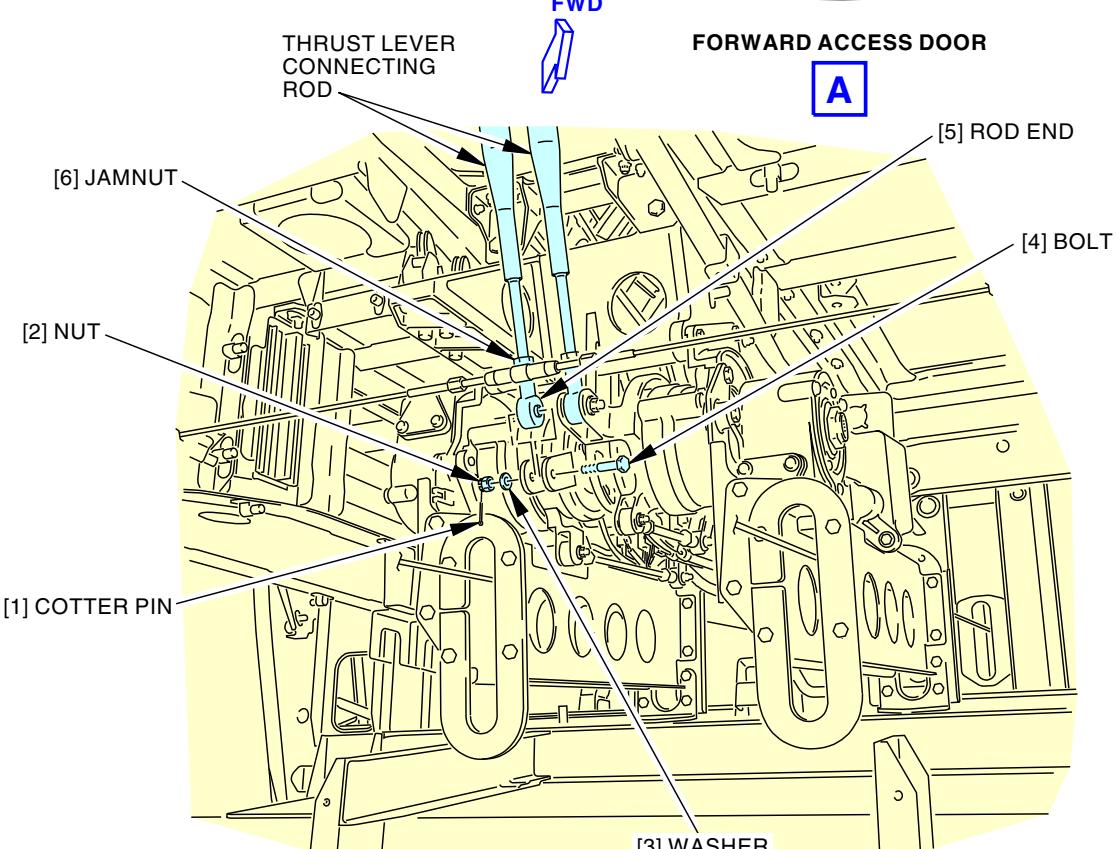
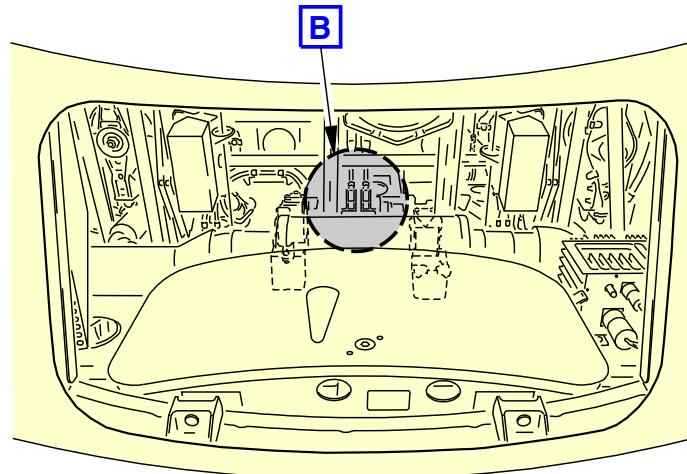
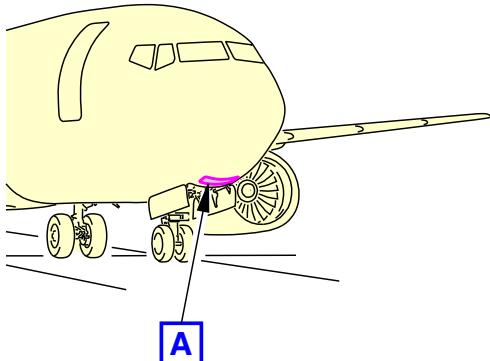
FMCS Control Display Unit Adjustment
Figure 501/76-11-05-990-804-F00

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Thrust Lever Angle (TLA) Resolver Adjustment
Figure 502/76-11-05-990-805-F00

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ECCN 9E991 BOEING PROPRIETARY - See title page for details

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TASK 76-11-05-820-802-F00**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 76-11-05-860-017-F00

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

SUBTASK 76-11-05-860-018-F00

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

SUBTASK 76-11-05-860-007-F00

**WARNING**

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 this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-1

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

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E. Autothrottle Brake Assembly Test

SUBTASK 76-11-05-820-004-F00

- (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 76-11-05-860-010-F00

- (1) Remove the safety tag and close this circuit breaker:

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-F00

2. Reverse Thrust Interlock Solenoid Removal

(Figure 401 and Figure 402)

A. General

- (1) This task provides the instructions on how 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)
78-31-00-040-802-F00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)

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
114AW	Forward Nose Wheel Well Panel

E. Prepare for the Removal

SUBTASK 76-11-06-860-001-F00



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

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SUBTASK 76-11-06-040-001-F00



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-F00

- (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 76-11-06-040-003-F00

- (4) Make sure the ENGINE START switches are set to off and install DO-NOT-OPERATE tags.

LOM 429-432; AIRPLANES WITH AUTO-IGNITION

SUBTASK 76-11-06-940-001-F00

- (5) Make sure the ENGINE START switches are set to AUTO and install DO-NOT-OPERATE tags.

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SUBTASK 76-11-06-010-007-F00



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.

- (6) Do the deactivation procedure for the thrust reverser for ground maintenance (TASK 78-31-00-040-802-F00).

SUBTASK 76-11-06-010-001-F00

- (7) Open this access panel:

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

SUBTASK 76-11-06-010-002-F00

- (8) Remove the two access panels at the top of the wheel well, to get access to the autothrottle and flap control cables.

SUBTASK 76-11-06-410-001-F00

- (9) Open this access panel:

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

F. Reverse Thrust Interlock Solenoid Removal

SUBTASK 76-11-06-020-001-F00

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

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SUBTASK 76-11-06-020-009-F00

- (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 76-11-06-020-002-F00

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

SUBTASK 76-11-06-020-010-F00

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

SUBTASK 76-11-06-020-003-F00

- (5) Disconnect each of the aft 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].

SUBTASK 76-11-06-020-004-F00

- (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 76-11-06-010-003-F00

- (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 76-11-06-020-005-F00

- (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 76-11-06-020-006-F00

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

- (a) Remove the nut [21] and the washer [22].

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

SUBTASK 76-11-06-020-007-F00

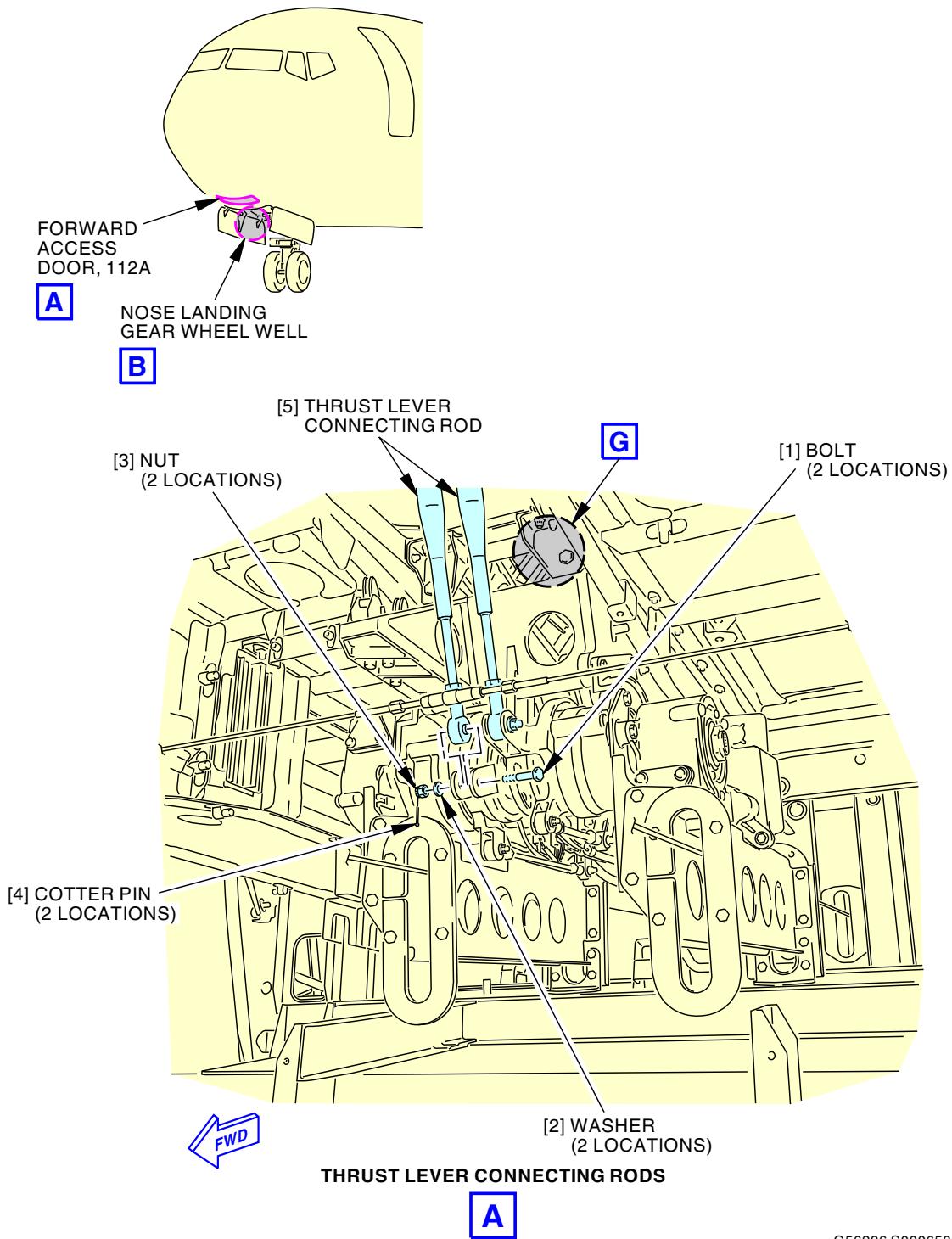
- (10) Remove the applicable interlock solenoid as follows:
 - (a) Remove the two nuts [28] and the two washers [29].
 - (b) Remove the right interlock solenoid [31] or the left interlock solenoid [32].
 - (c) Remove the spacer [30].

———— END OF TASK ————

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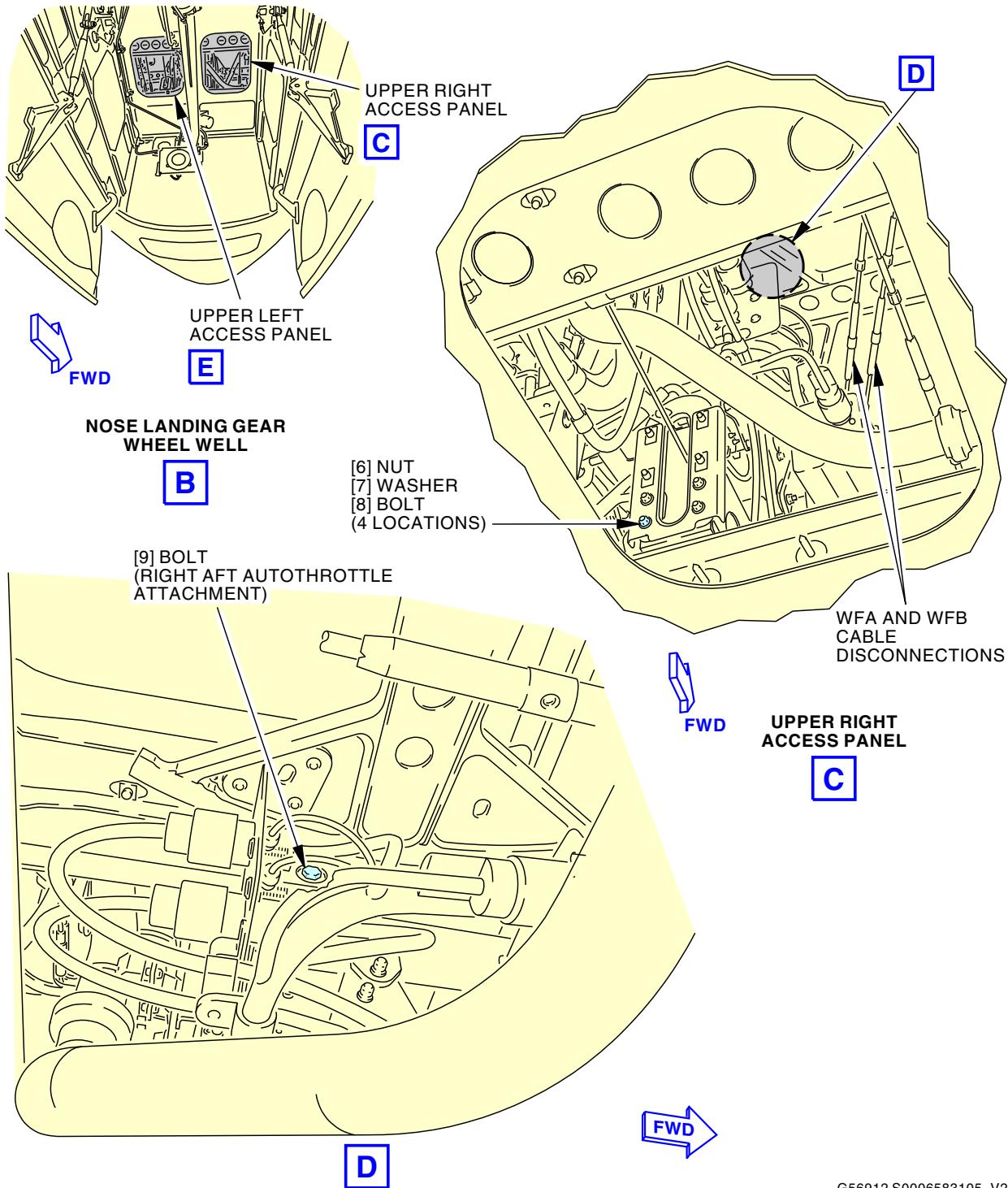
G56236 S0006583104_V2

Autothrottle Installation
Figure 401/76-11-06-990-801-F00 (Sheet 1 of 4)

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LOM ALL

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G56912 S0006583105_V2

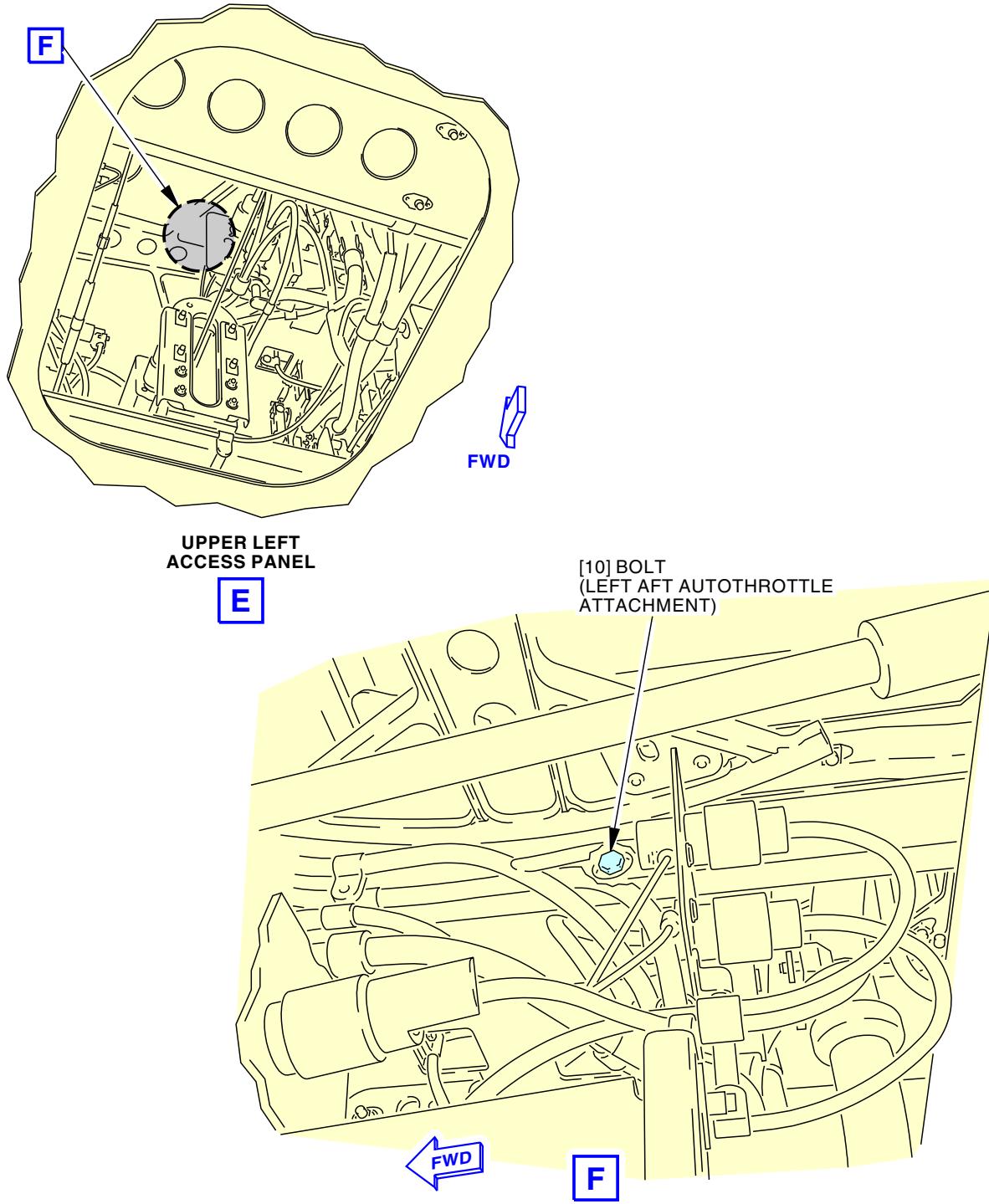
Autothrottle Installation
Figure 401/76-11-06-990-801-F00 (Sheet 2 of 4)

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LOM ALL

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ECCN 9E991 BOEING PROPRIETARY - See title page for details



G56911 S0006583106_V2

Autothrottle Installation
Figure 401/76-11-06-990-801-F00 (Sheet 3 of 4)

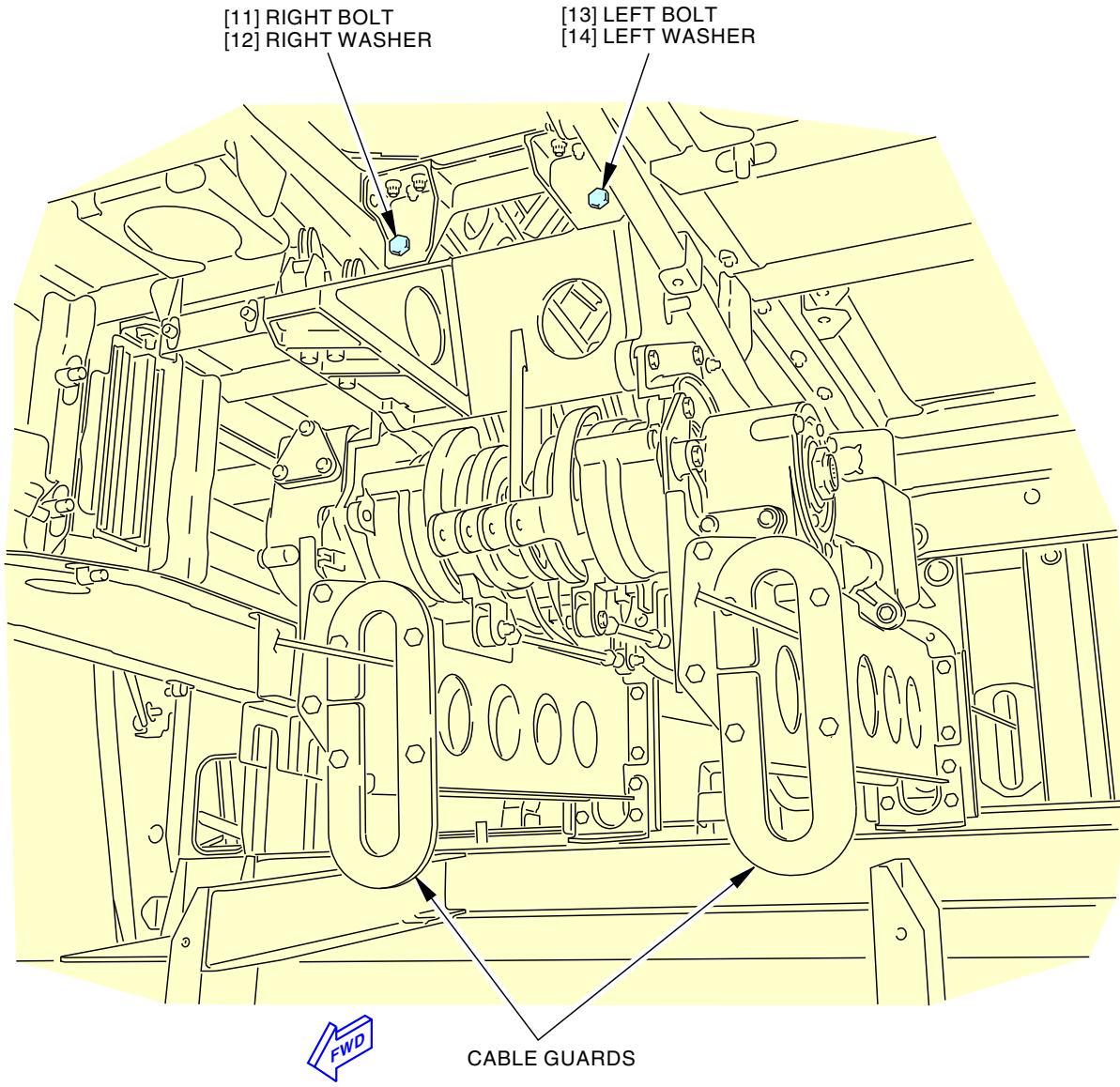
EFFECTIVITY
LOM ALL

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ECCN 9E991 BOEING PROPRIETARY - See title page for details

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G57425 S0006583107_V2

Autothrottle Installation
Figure 401/76-11-06-990-801-F00 (Sheet 4 of 4)

EFFECTIVITY
LOM ALL

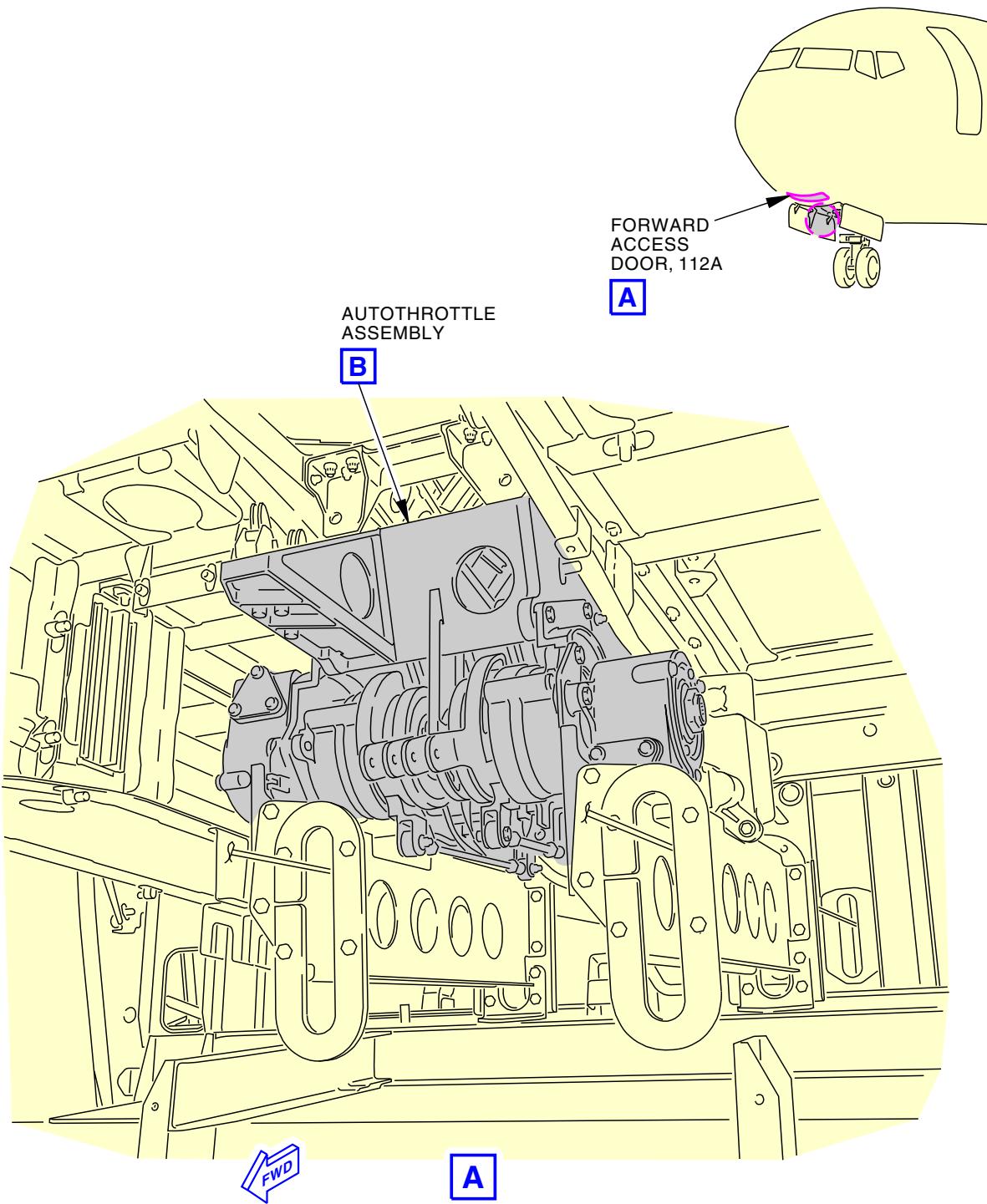
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

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G57436 S0006583108_V2

Reverse Thrust Interlock Solenoid Installation
Figure 402/76-11-06-990-802-F00 (Sheet 1 of 3)

EFFECTIVITY
LOM ALL

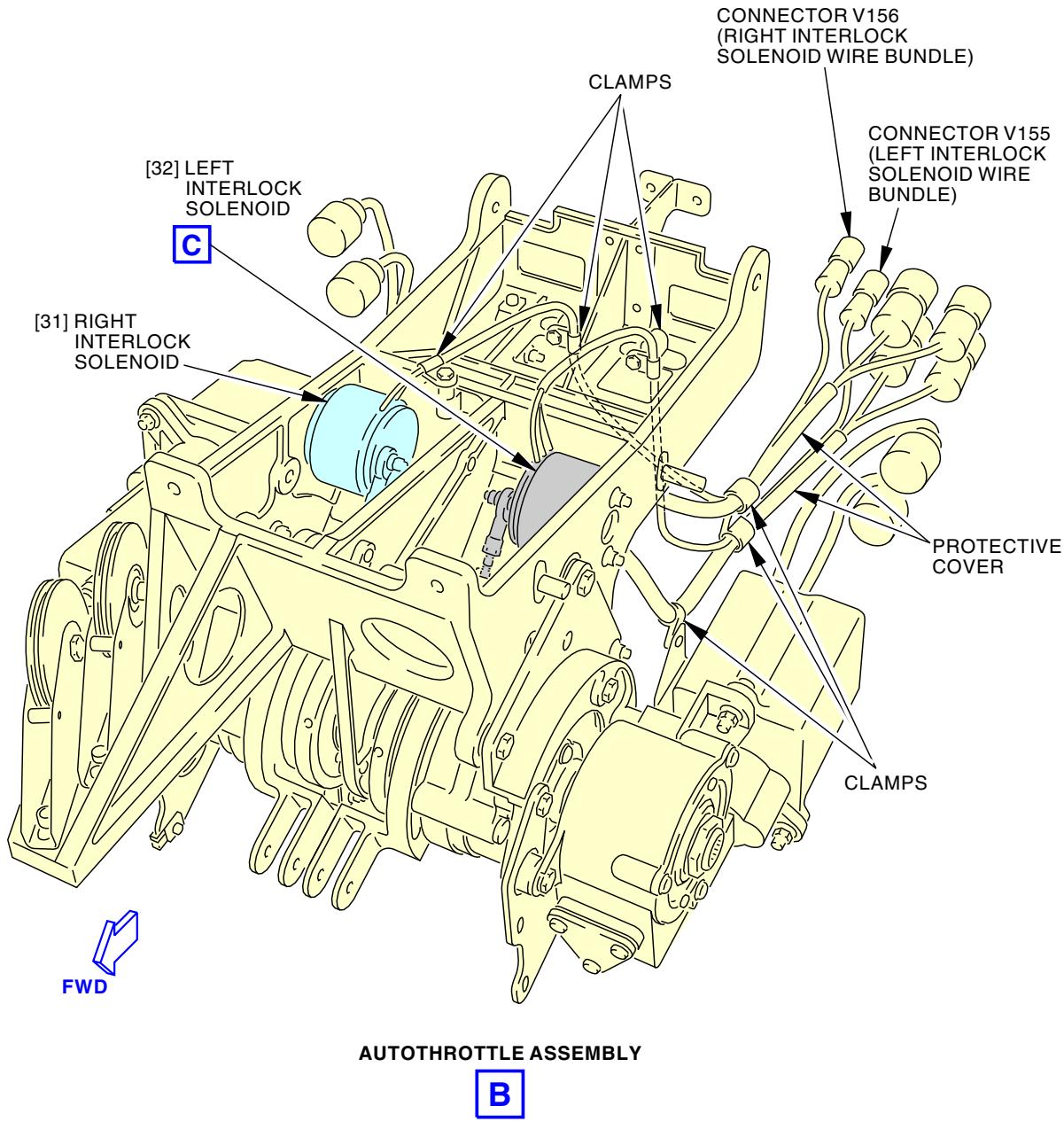
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G57452 S0006583109_V3

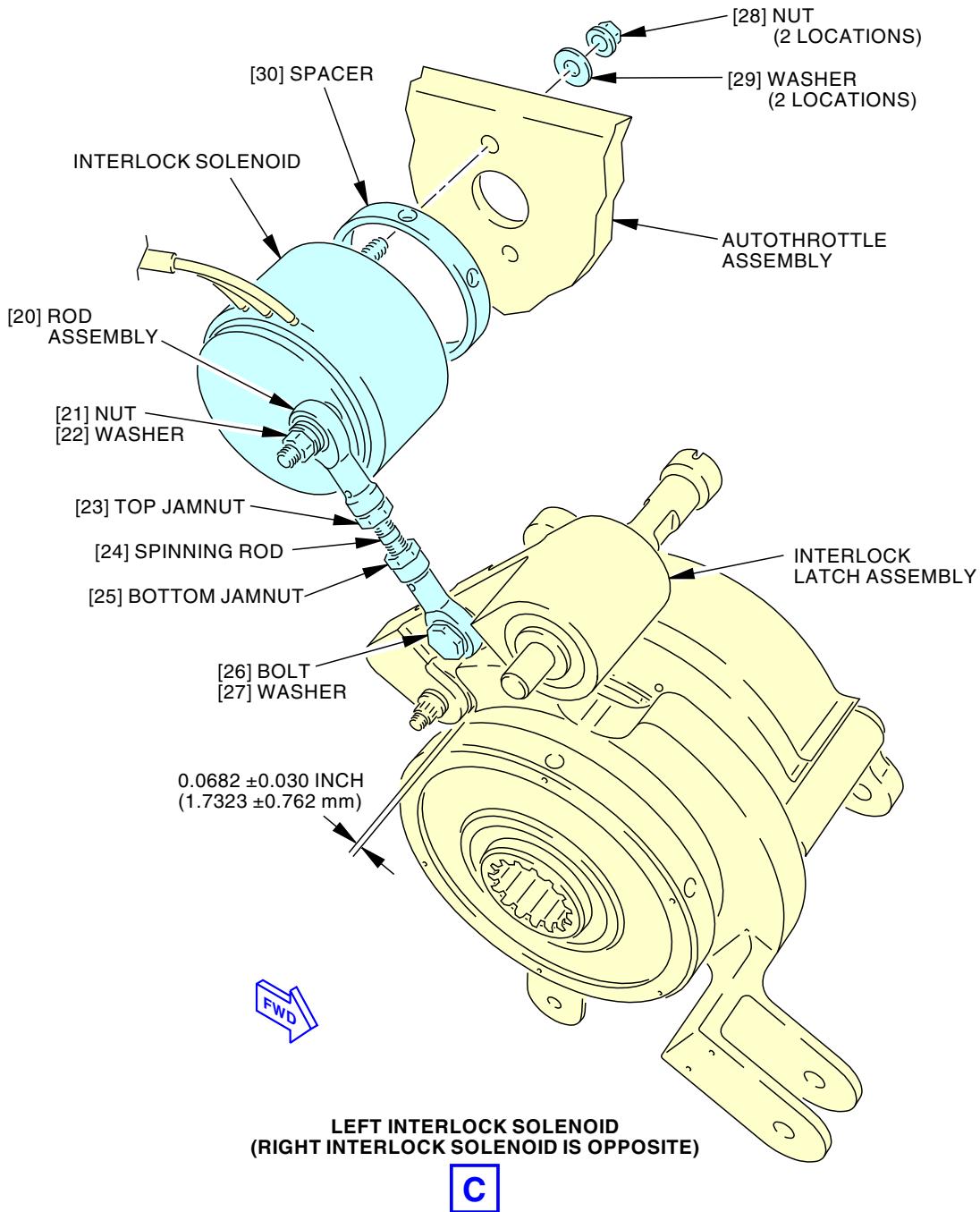
Reverse Thrust Interlock Solenoid Installation
Figure 402/76-11-06-990-802-F00 (Sheet 2 of 3)

EFFECTIVITY
 LOM ALL

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ECCN 9E991 BOEING PROPRIETARY - See title page for details

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G57466 S0006583110_V2

Reverse Thrust Interlock Solenoid Installation
Figure 402/76-11-06-990-802-F00 (Sheet 3 of 3)

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TASK 76-11-06-440-801-F00**3. Reverse Thrust Interlock Solenoid Installation**

(Figure 401 and Figure 402)

A. General

- (1) This task provides the instructions on how 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)
70-20-02-400-801-F00	Tightening Practices and Torque Values (P/B 201)
73-21-00-700-805-F00	T/R LEVER INTLK (Interlock) TEST (P/B 501)
76-11-05-820-801-F00	Thrust Lever Angle Resolver Adjustment (P/B 501)
78-31-00-440-803-F00	Thrust Reverser Activation After Ground Maintenance (P/B 201)

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
31	Solenoid	76-11-06-01-065	LOM ALL
32	Solenoid	76-11-06-01-070	LOM ALL

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. Reverse Thrust Interlock Solenoid Installation**SUBTASK 76-11-06-420-001-F00**

- (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.
 - (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).

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SUBTASK 76-11-06-420-008-F00

- (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 76-11-06-420-002-F00

- (3) Connect the applicable wire bundles for the left interlock solenoid as follows:
 - (a) Make sure you route the bundle correctly.
 - (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 76-11-06-420-009-F00

- (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-F00

- (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 76-11-06-420-004-F00

- (6) Attach the forward autothrottle assembly to the floor frame as follows
 (TASK 70-20-02-400-801-F00):
 - (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.

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SUBTASK 76-11-06-420-005-F00

- (7) Attach the aft autothrottle assembly to the floor frame as follows
 (TASK 70-20-02-400-801-F00):
 - (a) Tighten the right bolt [9].
 - (b) Tighten the left bolt [10].

SUBTASK 76-11-06-020-008-F00

- (8) Connect the aft two cable guards to the nose wheel well housing as follow
 (TASK 70-20-02-400-801-F00):
 - (a) Install the four bolts [8].
 - (b) Install the four nuts [6] and the washers [7].

SUBTASK 76-11-06-420-007-F00

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

SUBTASK 76-11-06-420-006-F00

- (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].

G. Put the Airplane Back to its Usual Condition

SUBTASK 76-11-06-710-003-F00

- (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 76-11-06-710-005-F00

- (2) Do this task: Thrust Lever Angle Resolver Adjustment, TASK 76-11-05-820-801-F00.

SUBTASK 76-11-06-010-005-F00

- (3) Close this access panel:

Number Name/Location

114AW	Forward Nose Wheel Well Panel
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SUBTASK 76-11-06-010-006-F00

- (4) Install the two access panels at the top of the wheel well.

SUBTASK 76-11-06-410-004-F00

- (5) Close this access panel:

Number Name/Location

112A	Forward Access Door
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SUBTASK 76-11-06-440-004-F00

- (6) Remove the DO-NOT-OPERATE tag from the ENGINE START switches.

SUBTASK 76-11-06-410-005-F00

- (7) Do the activation procedure for the thrust reverser (TASK 78-31-00-440-803-F00).

SUBTASK 76-11-06-440-005-F00

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

H. Reverse Thrust Interlock Solenoid Test

SUBTASK 76-11-06-710-004-F00

- (1) Do this task: T/R LEVER INTLK (Interlock) TEST, TASK 73-21-00-700-805-F00.

———— END OF TASK ————

— EFFECTIVITY —
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AUTO THROTTLE SWITCHPACK ASSEMBLY AND SWITCHES - REMOVAL/INSTALLATION

1. General

- A. This procedure has these tasks:
 - (1) Autothrottle Switchpack Assembly Removal

LOM ALL; AUTO THROTTLE SWITCHPACK WITH REPLACEABLE SWITCHES P/N 254A1150-1, -2, -7, -8, -9, -10

- (2) Autothrottle Switchpack Switch Removal
- (3) Autothrottle Switchpack Switch Installation

LOM ALL

- (4) Autothrottle Switchpack Assembly Installation.

TASK 76-11-07-020-802-F00

2. Autothrottle Switchpack Assembly - Removal

(Figure 401)

A. General

- (1) This task provides the instructions on how to remove the autothrottle switchpack assembly.
- (2) The autothrottle switchpack assembly for the left engine, M1766 and the autothrottle switchpack assembly for the right engine, M1767 (are referred to as the left and right switchpacks) are inside the forward access door.
- (3) You must get access to the switchpack through the upper nose wheel well panels.
- (4) 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. 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
113AC	Fwd Nose Wheel Well Upper Access Panel
114AC	Fwd Nose Wheel Well Upper Access Panel



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F. Prepare for the Removal

SUBTASK 76-11-07-860-022-F00



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 this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-1

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

SUBTASK 76-11-07-860-026-F00

- (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	4	C01003	ENGINE 1 THRUST REVERSER IND
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

SUBTASK 76-11-07-860-027-F00

- (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
C	8	C01004	ENGINE 2 THRUST REVERSER IND

SUBTASK 76-11-07-860-015-F00

- (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>
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT

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
C	18	C01398	LANDING GEAR TAKEOFF WARNING CUTOFF
D	18	C00451	LANDING GEAR AURAL WARN

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SUBTASK 76-11-07-860-016-F00

- (5) Attach the DO NOT OPERATE tags, STD-858, to the thrust levers.

SUBTASK 76-11-07-010-006-F00

- (6) Open this access panel:

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

SUBTASK 76-11-07-010-007-F00

- (7) Remove the applicable access panel(s):

<u>Number</u>	<u>Name/Location</u>
113AC	Fwd Nose Wheel Well Upper Access Panel
114AC	Fwd Nose Wheel Well Upper Access Panel

- (a) Do this task: Nose Wheel Well Access Panels - Removal, TASK 53-14-01-020-801.

G. Autothrottle Switchpack Assembly Removal

LOM ALL; AUTOTHROTTLE SWITCHPACK WITH REPLACEABLE SWITCHES P/N 254A1150-1, -2, -7, -8, -9, -10

SUBTASK 76-11-07-020-003-F00

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

- (a) For the left switchpack [9], disconnect the electrical connectors, D11128P and D11130P.
- (b) For the right switchpack [9], disconnect the electrical connectors, D11132P and D11134P.
- (c) Remove the bolt [4], washer [7], and nut [8].
- (d) Move the rod [5] from the crank [6].
- (e) Remove the bolts [2], washers [14], if installed washers [15], and nuts [13].
 - 1) Make note for the quantity and location of the washers removed as an aid for installation.
- (f) Slide the switchpack [9] off the bushing [1] and remove the switchpack [9].

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

LOM ALL; AUTOTHROTTLE SWITCHPACK WITH INTEGRATED SWITCHES P/N 254A1150-11, -12, -13, -14, -15, -16

SUBTASK 76-11-07-020-006-F00

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

- (a) For the left switchpack [9], disconnect the electrical connectors, D11128P and D11130P.
- (b) For the right switchpack [9], disconnect the electrical connectors, D11132P and D11134P.

LOM ALL; AUTOTHROTTLE SWITCHPACK WITH INTEGRATED SWITCHES P/N 254A1150-11, -12

- (c) Remove the bolt [4], washer [7], and nut [8].

LOM ALL; AUTOTHROTTLE SWITCHPACK WITH INTEGRATED SWITCHES P/N 254A1150-13, -14, -15, -16

- (d) Remove the bolt [4], washer [3], washer [7], and nut [8].

LOM ALL; AUTOTHROTTLE SWITCHPACK WITH INTEGRATED SWITCHES P/N 254A1150-11, -12, -13, -14, -15, -16

- (e) Move the rod [5] from the crank [6].

EFFECTIVITY
LOM ALL

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- (f) Remove the bolts [2], washers [14], if installed washers [15], and nuts [13].
 - 1) Make note for the quantity and location of the washers removed as an aid for installation.

LOM ALL; AUTOTHROTTLE SWITCHPACK WITH INTEGRATED SWITCHES P/N 254A1150-13, -14, -15, -16

- (g) Remove the bolts [2], washers [14], if installed washers [15], and nuts [13].
 - 1) Make note for the quantity and location of the washers removed as an aid for installation.

LOM ALL; AUTOTHROTTLE SWITCHPACK WITH INTEGRATED SWITCHES P/N 254A1150-11, -12, -13, -14, -15, -16

- (h) Slide the switchpack [9] off the bushing [1] and remove the switchpack [9].

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

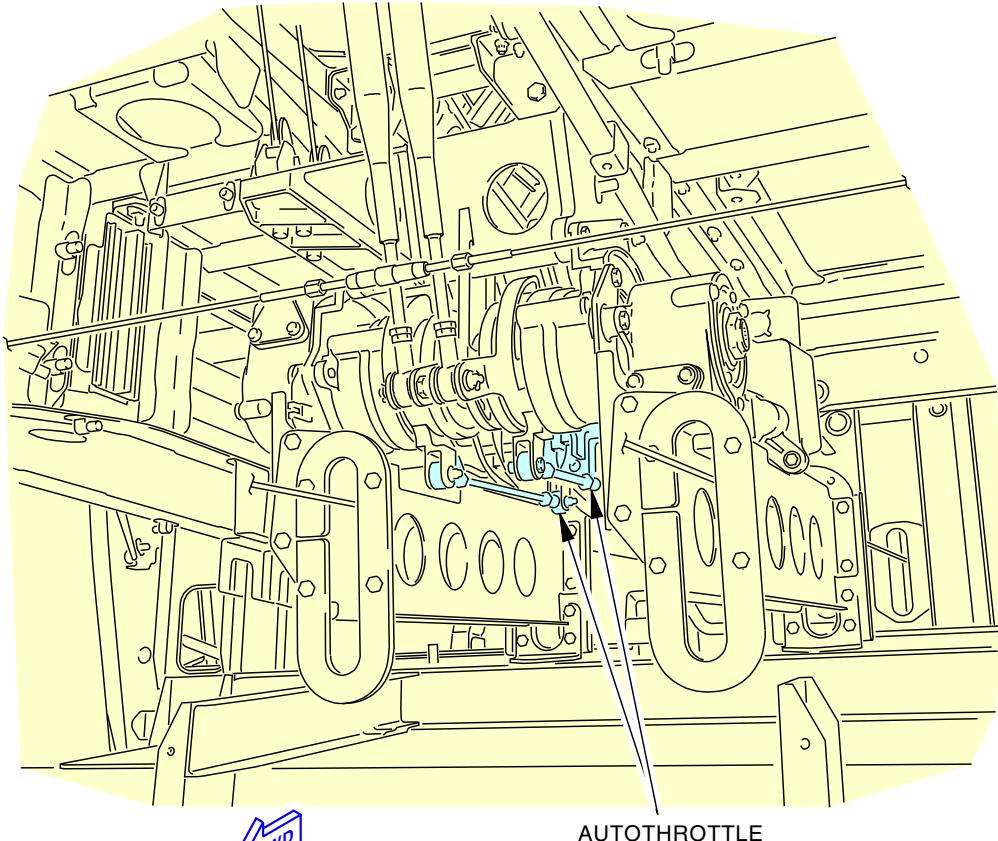
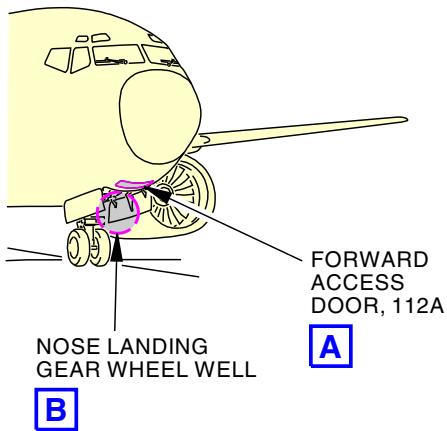
LOM ALL

END OF TASK

EFFECTIVITY

LOM ALL**76-11-07**

D633A101-LOM



G63420 S0006583115_V3

Autothrottle Switchpack Installation
Figure 401/76-11-07-990-801-F00 (Sheet 1 of 6)

EFFECTIVITY
LOM ALL

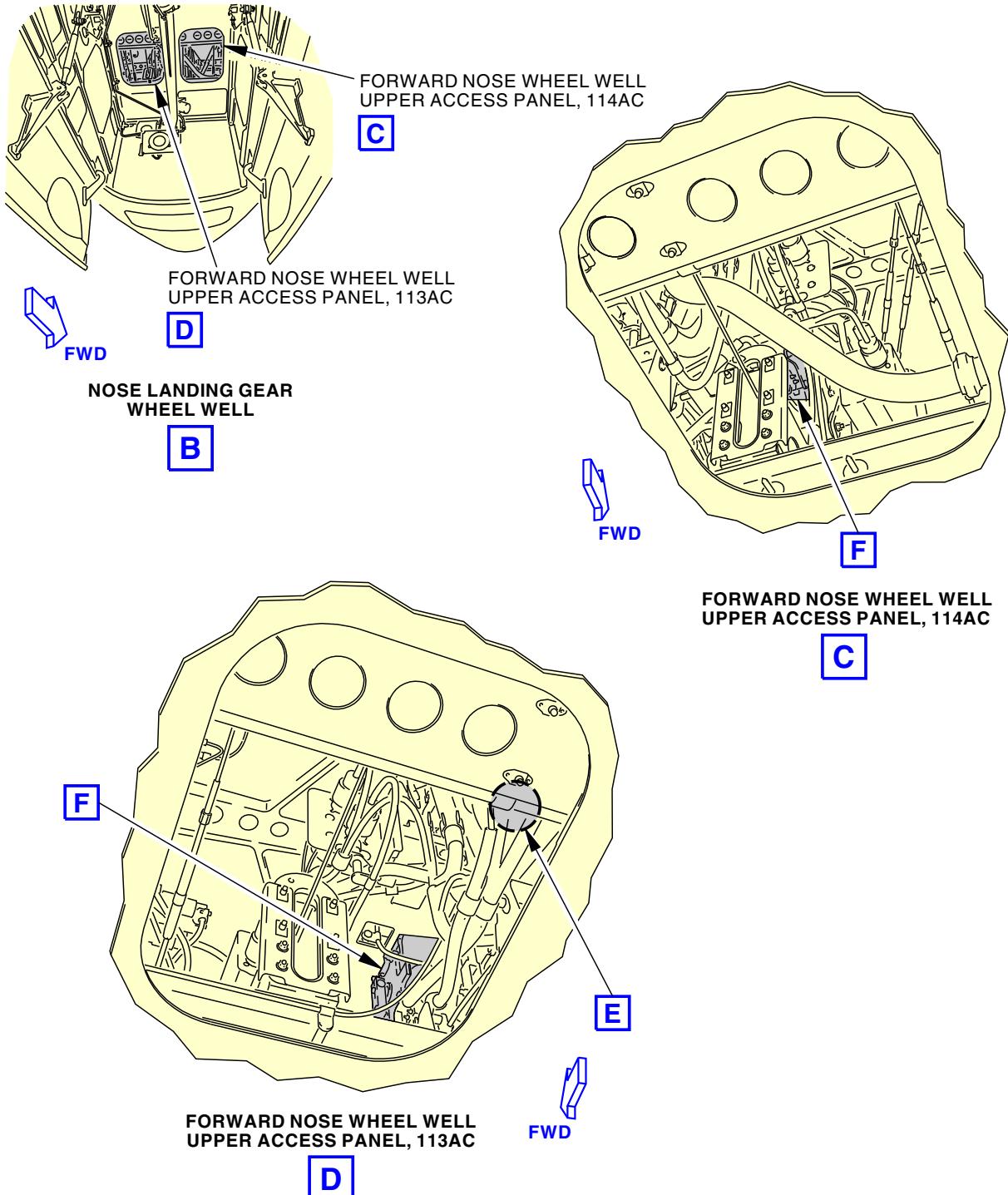
76-11-07

D633A101-LOM

ECCN 9E991 BOEING PROPRIETARY - See title page for details

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G72416 S0006583116_V3

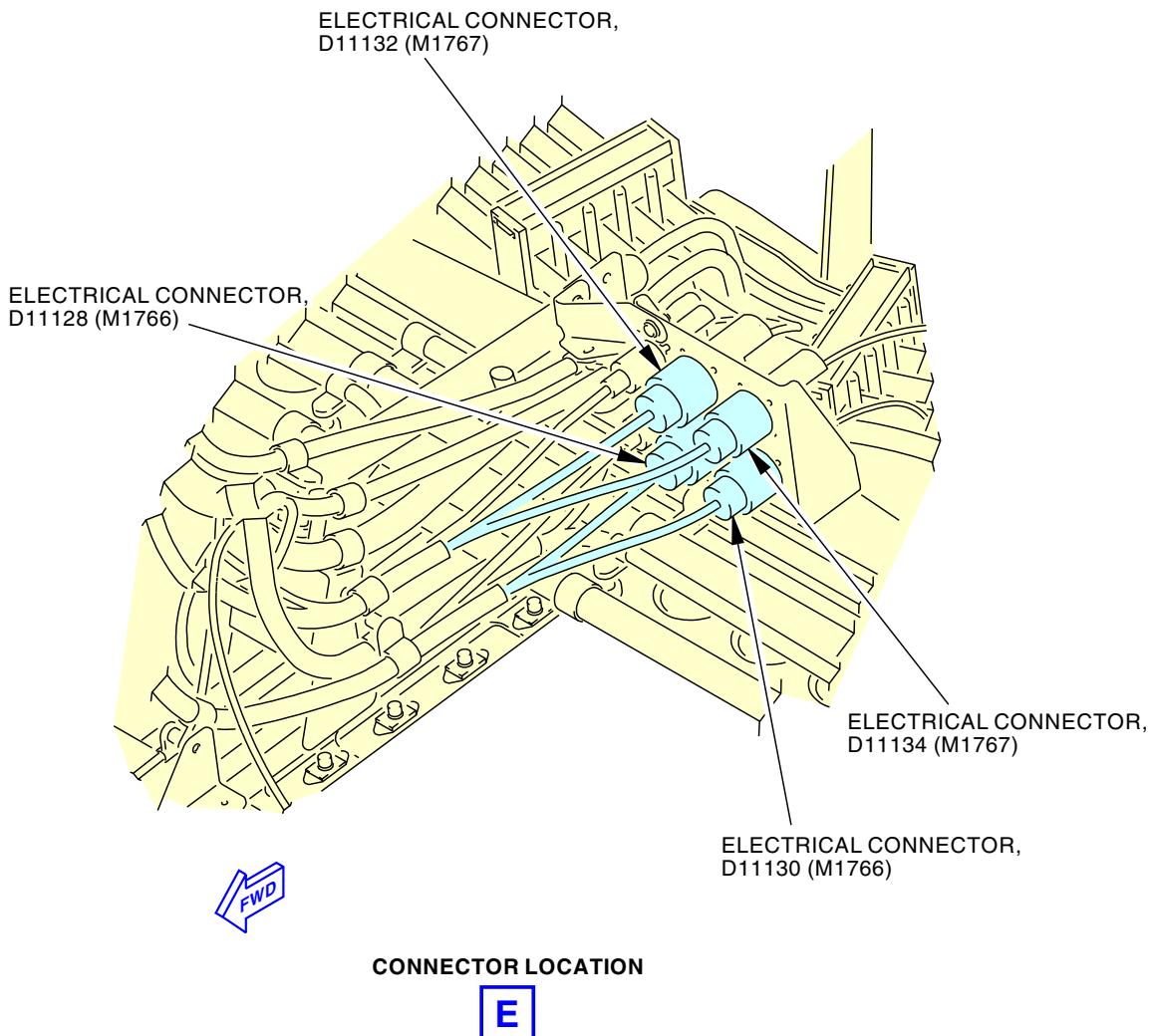
Autothrottle Switchpack Installation
Figure 401/76-11-07-990-801-F00 (Sheet 2 of 6)

EFFECTIVITY
LOM ALL

76-11-07

D633A101-LOM

ECCN 9E991 BOEING PROPRIETARY - See title page for details



H98087 S0006583117_V2

Autothrottle Switchpack Installation
Figure 401/76-11-07-990-801-F00 (Sheet 3 of 6)

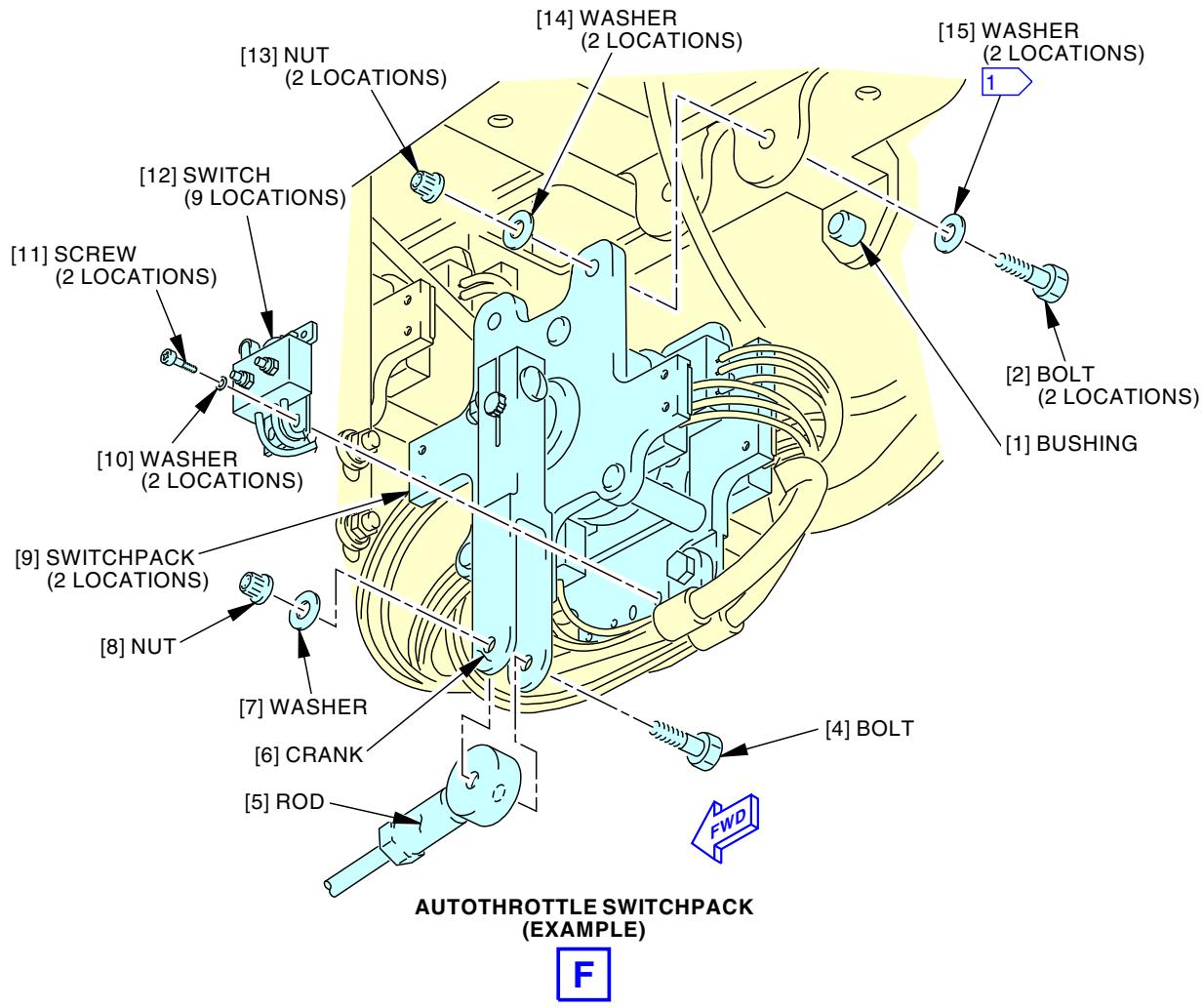
EFFECTIVITY
LOM ALL

76-11-07

D633A101-LOM

ECCN 9E991 BOEING PROPRIETARY - See title page for details

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1 IF INSTALLED.

G63421 S0006583118_V6

Autothrottle Switchpack Installation
Figure 401/76-11-07-990-801-F00 (Sheet 4 of 6)

EFFECTIVITY
LOM ALL; AUTOTHROTTLE SWITCHPACK WITH
REPLACEABLE SWITCHES P/N 254A1150-1, -2, -7,
-8, -9, -10

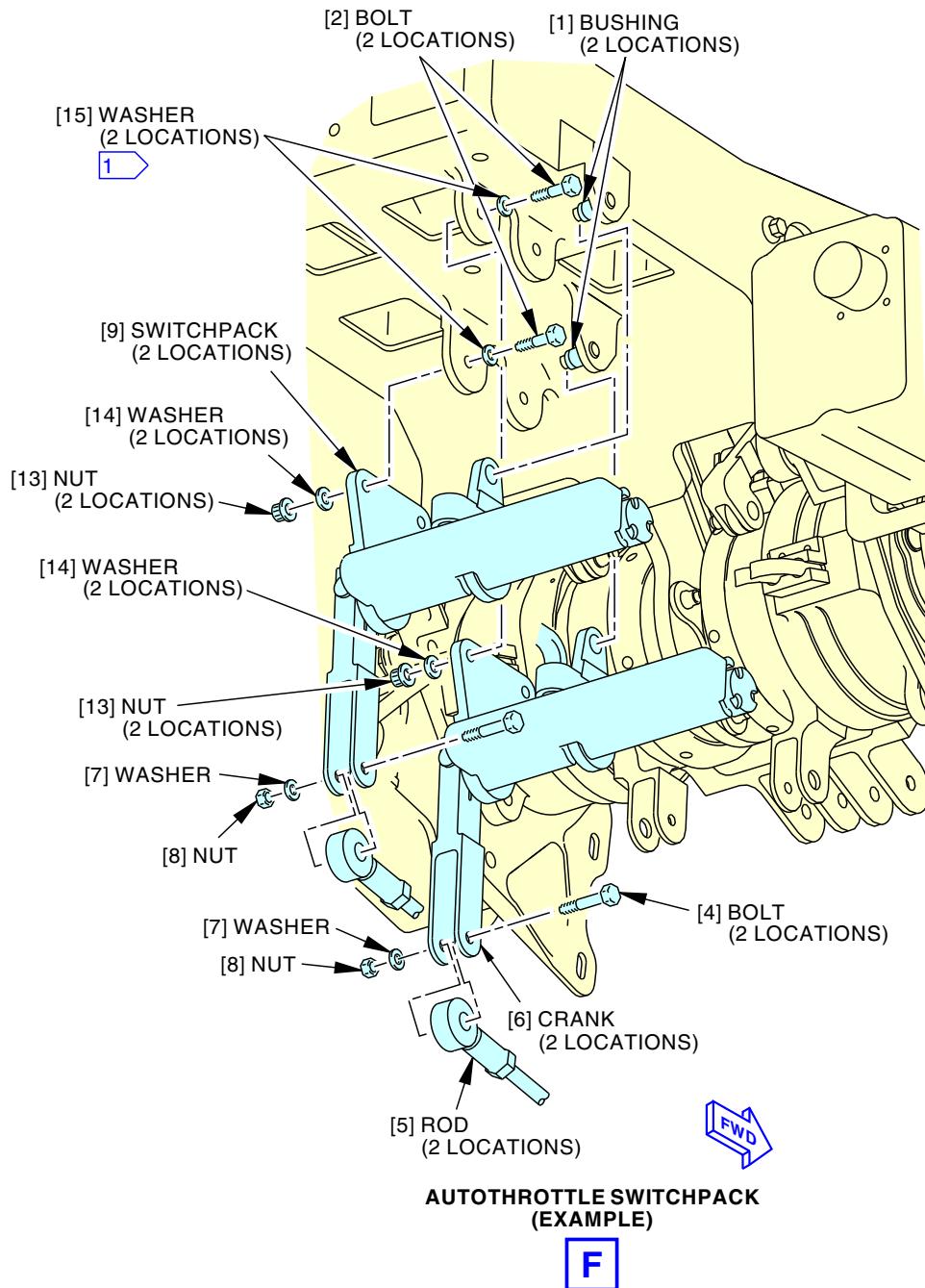
76-11-07

D633A101-LOM

ECCN 9E991 BOEING PROPRIETARY - See title page for details

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U40674 S0000195402_V7

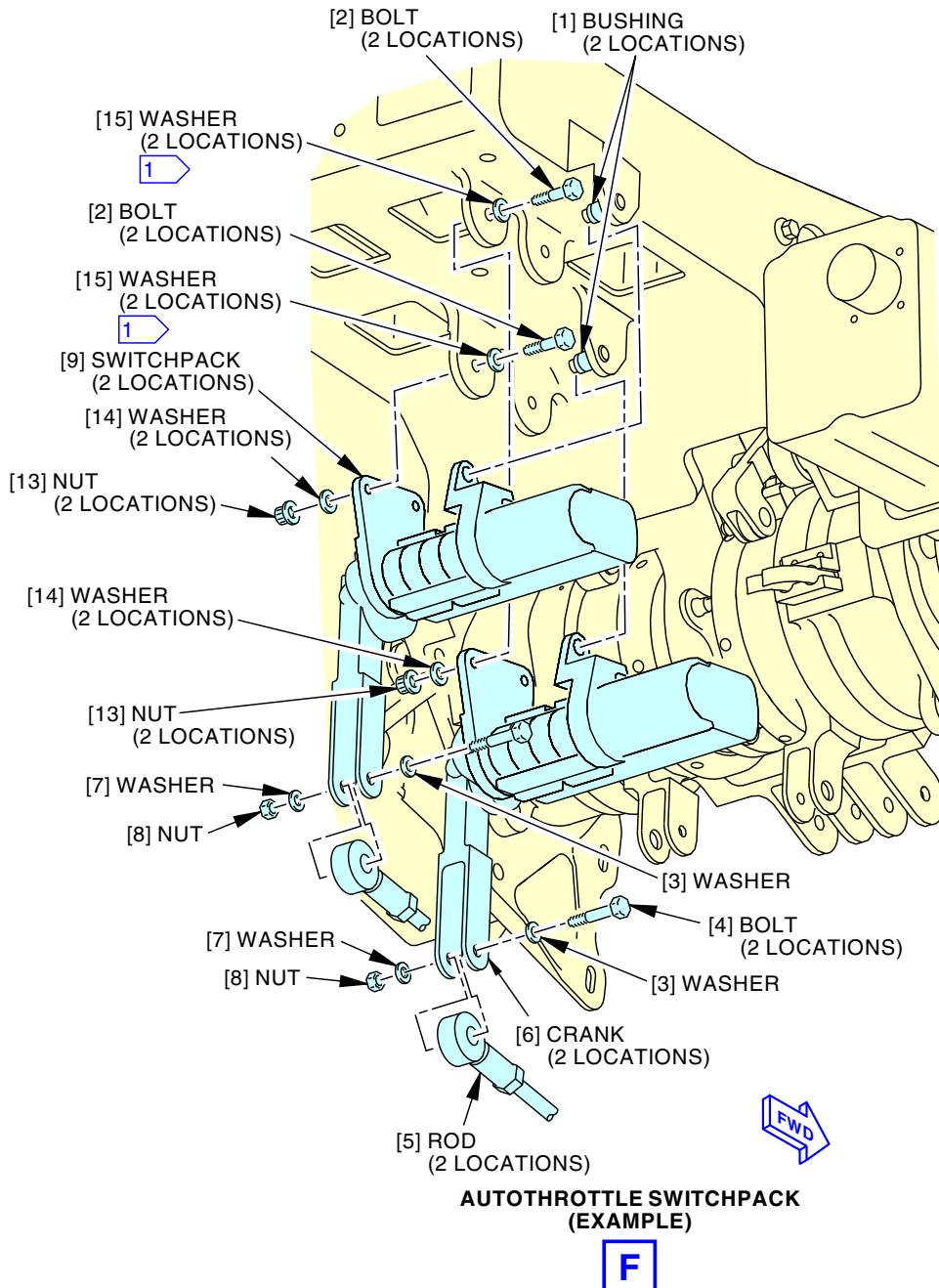
Autothrottle Switchpack Installation
Figure 401/76-11-07-990-801-F00 (Sheet 5 of 6)

EFFECTIVITY
**LOM ALL; AUTOTHROTTLE SWITCHPACK WITH
INTEGRATED SWITCHES P/N 254A1150-11, -12**

D633A101-LOM

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1 IF INSTALLED.

2861230 S0000673523_V3

Autothrottle Switchpack Installation
Figure 401/76-11-07-990-801-F00 (Sheet 6 of 6)

EFFECTIVITY
LOM ALL; AUTO THROTTLE SWITCHPACK WITH
INTEGRATED SWITCHES P/N 254A1150-13, -14, -15,
-16

D633A101-LOM

ECCN 9E991 BOEING PROPRIETARY - See title page for details

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LOM ALL; AUTOTHROTTLE SWITCHPACK WITH REPLACEABLE SWITCHES P/N 254A1150-1, -2, -7, -8, -9, -10

TASK 76-11-07-020-801-F00

3. Autothrottle Switchpack Switch Removal

(Figure 401)

A. General

- (1) This task provides the instructions on how to remove an autothrottle switchpack switch from the autothrottle switchpack assembly.
- (2) There are nine switches installed in each switchpack.
- (3) There are six switches that can be removed with the autothrottle switchpack assembly installed.
- (4) For switches S3, S4 and S7 (if the switchpack is still installed), you must remove the applicable switchpack to remove the switch.
- (5) This is a list of the switch number, subject and the System Schematic Manual (SSM) (Table 401).

Table 401/76-11-07-993-804-F00

SWITCH	SUBJECT	SSM
	ENGINE 1 SWITCHPACK	
S1	Auto Ground Speedbrake Control	27-62-11
S1	Landing Gear Warning	32-61-21
S2	Autobrake System	32-42-11
S3	Autobrake System	32-42-11
S4	ENG 1 T/R Synchronous Shaft Locks	78-32-51
S5	ENG 1 Thrust Reverser Control	78-34-11
S6	ENG 1 Thrust Reverser Control	78-34-11
S7	Wing Thermal Anti-Ice System	30-11-11
S8	Aural Warning - Takeoff Warning	31-53-11
S8	Weather Radar	34-41-11
S9	Landing Gear Warning	32-61-21
	ENGINE 2 SWITCHPACK	
S1	Auto Ground Speedbrake Control	27-62-11
S1	Landing Gear Warning	32-61-21
S2	Autobrake System	32-42-11
S3	Autobrake System	32-42-11
S4	ENG 2 T/R Synchronous Shaft Locks	78-32-61
S5	ENG 2 Thrust Reverser Control	78-34-21
S6	ENG 2 Thrust Reverser Control	78-34-21
S7	Wing Thermal Anti-Ice System	30-11-11
S8	Aural Warning - Takeoff Warning	31-53-11
S8	Weather Radar	34-41-11
S9	Landing Gear Warning	32-62-21

EFFECTIVITY
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LOM ALL; AUTOTHROTTLE SWITCHPACK WITH REPLACEABLE SWITCHES P/N 254A1150-1, -2, -7, -8, -9, -10
(Continued)

B. References

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

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
113AC	Fwd Nose Wheel Well Upper Access Panel
114AC	Fwd Nose Wheel Well Upper Access Panel

F. Prepare for the Removal

SUBTASK 76-11-07-020-005-F00

- (1) For switches S3, S4, and S7 (if the applicable autothrottle switchpack is still installed), do this task: Autothrottle Switchpack Assembly - Removal, TASK 76-11-07-020-802-F00.

SUBTASK 76-11-07-860-021-F00

- (2) If you will not remove the applicable autothrottle switchpack to access the remaining switches, do these steps:



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, P6-1

Row	Col	Number	Name
D	13	C00120	WEATHER RADAR RT

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
B	9	C00440	FLIGHT CONTROL AUTO SPEED BRAKE

EFFECTIVITY
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LOM ALL; AUTOTHROTTLE SWITCHPACK WITH REPLACEABLE SWITCHES P/N 254A1150-1, -2, -7, -8, -9, -10
(Continued)

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
C	18	C01398	LANDING GEAR TAKEOFF WARNING CUTOFF
D	18	C00451	LANDING GEAR AURAL WARN

- (b) 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	4	C01003	ENGINE 1 THRUST REVERSER IND
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, 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>
B	6	C00149	ANTI-ICE & RAIN ENGINE 2 CONTROL

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
C	8	C01004	ENGINE 2 THRUST REVERSER IND

- (d) Attach DO NOT OPERATE tags, STD-858, to the thrust levers.

- (e) Remove the applicable access panel(s):

Number Name/Location

113AC	Fwd Nose Wheel Well Upper Access Panel
114AC	Fwd Nose Wheel Well Upper Access Panel

- 1) Do this task: Nose Wheel Well Access Panels - Removal, TASK 53-14-01-020-801.

- (f) Open this access panel:

Number Name/Location

112A	Forward Access Door
------	---------------------

G. Autothrottle Switch Removal

SUBTASK 76-11-07-020-007-F00

- (1) Remove the connectors for the applicable switch from its switchpack as follows:

- (a) For the left switchpack [9], disconnect the electrical connectors, D11128P and D11130P.

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LOM ALL; AUTOThROTTLE SWITCHPACK WITH REPLACEABLE SWITCHES P/N 254A1150-1, -2, -7, -8, -9, -10
(Continued)

- (b) For the right switchpack [9], disconnect the electrical connectors, D11132P and D11134P.

SUBTASK 76-11-07-020-002-F00

- (2) Remove the applicable switch [12] from the switchpack [9] as follows:
- Remove the two screws [11] and the washers [10].
 - Remove the applicable switch [12].
 - Remove the three switch wires from its associated connector as shown below (Table 402):

Table 402/76-11-07-993-805-F00

Switchpack	Switch	Connector	Pins
Left	S1	D11128P	1, 2, 3
Left	S2	D11130P	1, 2, 3
Left	S3	D11130P	4, 5, 6
Left	S4	D11128P	14, 7, 8
Left	S5	D11130P	7, 8, 9
Left	S6	D11130P	13, 14, 15
Left	S7	D11128P	10, 11, 12
Left	S8	D11128P	16, 17, 18
Left	S9	D11128P	22, 23, 24
Right	S1	D11132P	1, 2, 3
Right	S2	D11134P	1, 2, 3
Right	S3	D11134P	4, 5, 6
Right	S4	D11132P	14, 7, 8
Right	S5	D11134P	7, 8, 9
Right	S6	D11134P	13, 14, 15
Right	S7	D11132P	10, 11, 12
Right	S8	D11132P	16, 17, 18
Right	S9	D11132P	22, 23, 24

— END OF TASK —

TASK 76-11-07-400-801-F00

4. Autothrottle Switchpack Switch Installation

(Figure 401)

A. General

- (1) This task provides the instructions on how to install an autothrottle switchpack switch on the autothrottle switchpack assembly.

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LOM ALL; AUTOTHROTTLE SWITCHPACK WITH REPLACEABLE SWITCHES P/N 254A1150-1, -2, -7, -8, -9, -10
(Continued)

B. References

Reference	Title
53-14-01-420-801	Nose Wheel Well Access Panels - Installation (P/B 401)
76-11-07-820-801-F00	Switch Check and Adjustment (P/B 501)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
G01148	Sleeve - Insulation, Electrical, Heat Shrinkable - RT-876	
G51210	Tubing - Highly Flame-Retardant, Low-Shrink Temperature, Polyolefin	AMS-DTL-23053/5 Class 1

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
12	Switch	30-11-51-01-035	LOM ALL
		31-51-51-01-040	LOM ALL
		31-51-51-01-045	LOM ALL
		32-43-51-01-040	LOM ALL
		32-61-11-01-035	LOM ALL
		78-34-04-01-035	LOM ALL
		78-34-05-02-037	LOM 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
113AC	Fwd Nose Wheel Well Upper Access Panel
114AC	Fwd Nose Wheel Well Upper Access Panel

H. Autothrottle Switchpack Switch Installation

SUBTASK 76-11-07-420-001-F00

- (1) Install the applicable switch [12] on the switchpack [9] as follows:
 - (a) Install a contact on each wire.
 - (b) Put a 1 in. (25.4 mm) long RT-876 sleeve, G01148 or Versafit heat shrink tubing, G51210 on each wire set from the switch housing.

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**LOM ALL; AUTOTHROTTLE SWITCHPACK WITH REPLACEABLE SWITCHES P/N 254A1150-1, -2, -7, -8, -9, -10
(Continued)**

- (c) Insert the three wires into the associated connector pins as shown below (Table 403):

NOTE: Each switch circuit (NO, C, or NC) is marked on each wire lead.

Table 403/76-11-07-993-806-F00

Switchpack	Switch	Connector	Pin (Lead ID)
Left	S1	D11128P	1 (NO), 2 (C), 3 (NC)
Left	S2	D11130P	1 (NO), 2 (C), 3 (NC)
Left	S3	D11130P	4 (NO), 5 (C), 6 (NC)
Left	S4	D11128P	14 (NO), 7 (C), 8 (NC)
Left	S5	D11130P	7 (NO), 8 (C), 9 (NC)
Left	S6	D11130P	13 (NO), 14 (C), 15 (NC)
Left	S7	D11128P	10 (NO), 11 (C), 12 (NC)
Left	S8	D11128P	16 (NO), 17 (C), 18 (NC)
Left	S9	D11128P	22 (NO), 23 (C), 24 (NC)
Right	S1	D11132P	1 (NO), 2 (C), 3 (NC)
Right	S2	D11134P	1 (NO), 2 (C), 3 (NC)
Right	S3	D11134P	4 (NO), 5 (C), 6 (NC)
Right	S4	D11132P	14 (NO), 7 (C), 8 (NC)
Right	S5	D11134P	7 (NO), 8 (C), 9 (NC)
Right	S6	D11134P	13 (NO), 14 (C), 15 (NC)
Right	S7	D11132P	10 (NO), 11 (C), 12 (NC)
Right	S8	D11132P	16 (NO), 17 (C), 18 (NC)
Right	S9	D11132P	22 (NO), 23 (C), 24 (NC)

- (d) Loosely install the applicable switch [12] on the switchpack [9].

- (e) Install two screws [11] and the two washers [10].

- (f) Make sure the replaced wiring is held in the applicable wire bundle sheath.

SUBTASK 76-11-07-820-004-F00

- (2) Adjust the switch [12] as follows:

- (a) Make sure that the applicable switch roller is set on the largest radius of the cam.
- (b) Push the switch [12] to the cam until switch actuation occurs.
- (c) Move the switch [12] 0.005 in. (0.127 mm) – 0.010 in. (0.254 mm) more on the cam and hold the position.
- (d) Tighten the screw [11].

SUBTASK 76-11-07-420-004-F00

- (3) If you did not remove the autothrottle switchpack assembly, do this task: Switch Check and Adjustment, TASK 76-11-07-820-801-F00.

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LOM ALL; AUTOTHROTTLE SWITCHPACK WITH REPLACEABLE SWITCHES P/N 254A1150-1, -2, -7, -8, -9, -10
(Continued)

SUBTASK 76-11-07-420-008-F00

- (4) If you removed the autothrottle switchpack assembly, do this task: Autothrottle Switchpack Assembly - Installation, TASK 76-11-07-400-802-F00.

I. Put the Airplane Back to its Usual Condition

SUBTASK 76-11-07-860-029-F00

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

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
C	18	C01398	LANDING GEAR TAKEOFF WARNING CUTOFF
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 76-11-07-860-030-F00

- (2) For engine 2, 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	4	C01003	ENGINE 1 THRUST REVERSER IND
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 76-11-07-860-028-F00

- (3) For engine 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>
B	6	C00149	ANTI-ICE & RAIN ENGINE 2 CONTROL

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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LOM ALL; AUTOTHROTTLE SWITCHPACK WITH REPLACEABLE SWITCHES P/N 254A1150-1, -2, -7, -8, -9, -10
(Continued)

(Continued)

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	8	C01004	ENGINE 2 THRUST REVERSER IND

SUBTASK 76-11-07-800-004-F00

- (4) Remove the DO NOT OPERATE tags, STD-858, from the thrust levers.

SUBTASK 76-11-07-410-003-F00

- (5) Close this access panel:

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

SUBTASK 76-11-07-410-004-F00

- (6) Install the applicable access panel(s):

<u>Number</u>	<u>Name/Location</u>
113AC	Fwd Nose Wheel Well Upper Access Panel
114AC	Fwd Nose Wheel Well Upper Access Panel

- (a) Do this task: Nose Wheel Well Access Panels - Installation, TASK 53-14-01-420-801.

LOM ALL

END OF TASK

TASK 76-11-07-400-802-F00

5. Autothrottle Switchpack Assembly - Installation

(Figure 401)

A. General

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

B. References

Reference	Title
27-62-00-720-801	Engine Throttle Switch (S1) - Functional Test (P/B 501)
30-11-00-710-801	Wing Anti-Ice - Operational Test (P/B 501)
31-51-00-741-804	Autothrottle - Switchpack Test (P/B 501)
32-09-10-710-801	Proximity Switch Electronics Unit (PSEU) - Operational Test (P/B 501)
32-42-00-720-801	Antiskid/Autobrake Control Unit Operational Test (P/B 501)
34-43-00-710-802-001	Weather Radar (WXR) System - Operational Test (P/B 501)
34-43-00-710-803-002	Weather Radar (WXR) System - Operational Test (P/B 501)
34-43-00-710-804-003	Weather Radar (WXR) System - Operational Test (P/B 501)
53-14-01-420-801	Nose Wheel Well Access Panels - Installation (P/B 401)
76-11-07-820-801-F00	Switch Check and Adjustment (P/B 501)
78-31-00-700-801-F00	Thrust Reverser Normal Operation Test (P/B 501)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

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D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
9	Switchpack	76-11-07-01-005	LOM ALL
		76-11-07-01-010	LOM ALL
		76-11-07-01-205	LOM ALL
		76-11-07-01-210	LOM ALL
		76-11-07-01-300	LOM ALL
		76-11-07-01-305	LOM 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
113AC	Fwd Nose Wheel Well Upper Access Panel
114AC	Fwd Nose Wheel Well Upper Access Panel

G. Autothrottle Switchpack Assembly Installation

SUBTASK 76-11-07-860-031-F00

(1) Interchangeability Cross-matrix Table:

**Table 404/76-11-07-993-816-F00 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).

**LOM ALL; AUTOTHROTTLE SWITCHPACK WITH REPLACEABLE SWITCHES P/N 254A1150-1, -2,
-7, -8, -9, -10**

SUBTASK 76-11-07-420-006-F00

(2) Install the switchpack [9] as follows:

- (a) Make sure that the switchpack assembly is compatible (Table 404).
- (b) Put the switchpack [9] on the bushing [1] of the autothrottle assembly.

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LOM ALL; AUTOTHROTTLE SWITCHPACK WITH REPLACEABLE SWITCHES P/N 254A1150-1, -2, -7, -8, -9, -10
(Continued)

- (c) Install the bolts [2], washers [14], washers [15] if removed, and nuts [13].
 - 1) Install the washers as noted during the removal.
- (d) Move the rod [5] into its position on the crank [6].
- (e) Install the bolt [4], washer [7], and nut [8].
- (f) Make sure that the switchpack wire bundle is held in the applicable wire bundle sheath.
- (g) Do the initial alignment of the switchpack as follows:
 - 1) Do the applicable steps in the switch installation test to show the TRA position values on the FMCS CDU (TASK 76-11-07-820-801-F00).
 - 2) Monitor the continuity of the S5 switch, pins 8 and 9, at the applicable electrical connector D11130P (left switchpack) or D11134P (right switchpack) as you slowly move the thrust lever in the reverse direction.

NOTE: There is approximately a 2-second delay between the movement of the reverse thrust lever and when the value shows on the FMCS CDU.
- (h) If the switchpack [9] operation is not in the specified range, do these steps:
 - 1) Loosen the two jammuts and turn the rod [5] coupling to get the correct TRA position values.

NOTE: If you increase the rod length, the S5 will operate later. If you decrease the rod length, the S5 will operate sooner.

NOTE: There is approximately a 2-second delay between the adjustment and when the value shows on the FMCS CDU.

 - 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 two jammuts to 25 in-lb (2.8 N·m) - 30 in-lb (3.4 N·m).

LOM ALL; AUTOTHROTTLE SWITCHPACK WITH INTEGRATED SWITCHES P/N 254A1150-11, -12, -13, -14, -15, -16

SUBTASK 76-11-07-420-007-F00

- (3) Install the applicable switchpack [9] assembly as follows:
 - (a) Make sure that the switchpack assembly is compatible (Table 404).
 - (b) Put the switchpack [9] assembly on the bushing [1] of the autothrottle assembly.

LOM ALL; AUTOTHROTTLE SWITCHPACK WITH INTEGRATED SWITCHES P/N 254A1150-11, -12

- (c) Install the bolts [2], washers [14], washers [15] if removed, and nuts [13].
 - 1) Install the washers as noted during the removal.

LOM ALL; AUTOTHROTTLE SWITCHPACK WITH INTEGRATED SWITCHES P/N 254A1150-13, -14, -15, -16

- (d) Install the bolts [2], washers [14], washers [15] if removed, and nuts [13].

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LOM ALL; AUTOTHROTTLE SWITCHPACK WITH INTEGRATED SWITCHES P/N 254A1150-13, -14, -15, -16
 (Continued)

- 1) Install the washers as noted during the removal.

LOM ALL; AUTOTHROTTLE SWITCHPACK WITH INTEGRATED SWITCHES P/N 254A1150-11, -12, -13, -14, -15, -16

- (e) Move the rod [5] into its position on the crank [6].

LOM ALL; AUTOTHROTTLE SWITCHPACK WITH INTEGRATED SWITCHES P/N 254A1150-11, -12

- (f) Install the bolt [4], washer [7], and nut [8].

LOM ALL; AUTOTHROTTLE SWITCHPACK WITH INTEGRATED SWITCHES P/N 254A1150-13, -14, -15, -16

- (g) Install the bolt [4], washer [3], washer [7], and nut [8].

LOM ALL; AUTOTHROTTLE SWITCHPACK WITH INTEGRATED SWITCHES P/N 254A1150-11, -12, -13, -14, -15, -16

- (h) Make sure that the switchpack assembly wire bundle is held in the applicable wire bundle sheath.

- (i) Do the initial alignment of the switchpack as follows:

- 1) Do the applicable steps in the switch installation test to show the TRA position values on the FMCS CDU (TASK 76-11-07-820-801-F00).

- 2) Monitor the continuity of the S5 switch, pins 8 and 9, at the applicable electrical connector D11130P (left switchpack) or D11134P (right switchpack) as you slowly move the thrust lever in the reverse direction.

NOTE: There is approximately a 2-second delay between the movement of the reverse thrust lever and when the value shows on the FMCS CDU.

- 3) The S5 switch should change from CLOSE to OPEN at a TRA between 31.5 degrees and 32.0 degrees.

- (j) If the switchpack [9] assembly operation is not in the specified range, do these steps:

- 1) Loosen the two jammuts and turn the rod [5] coupling to get the correct TRA position values.

NOTE: If you increase the rod length, the S5 will operate later. If you decrease the rod length, the S5 will operate sooner.

NOTE: There is approximately a 2-second delay between the adjustment and when the value shows on the FMCS CDU.

- 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 two jammuts to 25 in-lb (2.8 N·m) - 30 in-lb (3.4 N·m).

LOM ALL

SUBTASK 76-11-07-400-001-F00

- (4) Make sure that you install applicable switchpack connectors as follows:

- (a) For the left switchpack [9], connect the electrical connector, D11128P, and electrical connector, D11130P.

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- (b) For the right switchpack [9], connect the electrical connector, D11132P, and electrical connector, D11134P.

LOM ALL; AUTOTHROTTLE SWITCHPACK WITH INTEGRATED SWITCHES P/N 254A1150-11, -12, -13, -14, -15, -16

SUBTASK 76-11-07-210-001-F00

- (5) Do a check of the routing of the applicable switchpack wire bundle.
- Examine the wire bundle (yellow) near the linkage (crank and rod).
 - Move the thrust lever from idle to full thrust.
 - Make sure that the wire bundle does not touch the linkage.
 - If it is necessary, adjust the routing of the wire bundle.
 - Do the check again with the reverse thrust lever.

LOM ALL
H. Autothrottle Switchpack Assembly Test

NOTE: Only ATSP P/N 254A1150-1, -2, -7, -8, -9, and -10 have individual switches that can be adjusted.

NOTE: Newer ATSP P/N 254A1150-11, -12, -13, and -14, -15, -16 individual switches cannot be adjusted.

SUBTASK 76-11-07-860-041-F00

- (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>
A	6	C00148	ANTI-ICE & RAIN ENG 1 & WING CONT

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
C	18	C01398	LANDING GEAR TAKEOFF WARNING CUTOFF
D	18	C00451	LANDING GEAR AURAL WARN

SUBTASK 76-11-07-860-042-F00

- (2) Remove the safety tag and close this circuit breaker:

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 76-11-07-860-043-F00

- (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	4	C01003	ENGINE 1 THRUST REVERSER IND

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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

SUBTASK 76-11-07-860-044-F00

- (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
C	8	C01004	ENGINE 2 THRUST REVERSER IND

SUBTASK 76-11-07-710-024-F00

- (5) If you replaced the complete autothrottle switchpack assembly, do all of the tests that are listed below for the applicable switchpack.

NOTE: If you re-install the original switchpack assembly after switch(es) replacement, do the listed test for the replaced switch(es).

SUBTASK 76-11-07-710-025-F00

- (6) If you replaced the S1, S8, or S9 switch, do these tasks: Engine Throttle Switch (S1) - Functional Test, TASK 27-62-00-720-801 and Proximity Switch Electronics Unit (PSEU) - Operational Test, TASK 32-09-10-710-801.

SUBTASK 76-11-07-710-026-F00

- (7) Do this task: Antiskid/Autobrake Control Unit Operational Test, TASK 32-42-00-720-801.

SUBTASK 76-11-07-710-027-F00

- (8) If you replaced the S4, S5, or S6 switch, do this task: Thrust Reverser Normal Operation Test, TASK 78-31-00-700-801-F00.
 - (a) Make sure that the REVERSER light, on the P5 overhead panel, is extinguished, 30 seconds after the reverser is stowed at the end of the test.

SUBTASK 76-11-07-710-028-F00

- (9) Do this task: Wing Anti-Ice - Operational Test, TASK 30-11-00-710-801.

SUBTASK 76-11-07-710-029-F00

- (10) If you replaced the S8 switch, do these tasks: Autothrottle - Switchpack Test, TASK 31-51-00-741-804 and Weather Radar (WXR) System - Operational Test, TASK 34-43-00-710-802-001 or Weather Radar (WXR) System - Operational Test, TASK 34-43-00-710-803-002 or Weather Radar (WXR) System - Operational Test, TASK 34-43-00-710-804-003.
 - (a) Do the applicable weather radar test with throttle fully advanced then again with throttle fully retarded.
 - 1) Make sure that the audible PWS voice warning does not sound when throttle is advanced.

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I. Put the Airplane Back to Its Usual Condition

SUBTASK 76-11-07-860-020-F00

- (1) Remove the DO NOT OPERATE tags, STD-858, from the thrust levers.

SUBTASK 76-11-07-860-037-F00

- (2) Set the parking brake.

SUBTASK 76-11-07-860-038-F00

- (3) If it is necessary, turn off the ADIRU's.

SUBTASK 76-11-07-860-039-F00

- (4) If it is necessary, turn off the hydraulic pumps.

SUBTASK 76-11-07-860-040-F00

- (5) Make sure that the WING ANTI-ICE switch, on the P5-11 engine and wing anti-ice control panel, is in the OFF position.

SUBTASK 76-11-07-410-008-F00

- (6) Close this access panel:

Number Name/Location

112A Forward Access Door

SUBTASK 76-11-07-410-009-F00

- (7) Install the applicable access panel(s):

(TASK 53-14-01-420-801)

Number Name/Location

113AC Fwd Nose Wheel Well Upper Access Panel

114AC Fwd Nose Wheel Well Upper Access Panel

———— END OF TASK ————

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AUTOTHROTTLE SWITCHPACK ASSEMBLY AND SWITCHES - ADJUSTMENT/TEST

1. General

- A. This procedure has these tasks:
 - (1) A check and adjustment of the switches for the autothrottle switchpack assembly.
 - (2) A test and cleaning of the switches for the autothrottle switchpack assembly.

TASK 76-11-07-820-801-F00

2. Switch Check and Adjustment

(Figure 501)

A. General

- (1) This task gives the instructions to do a check of the adjustment of a switch on the autothrottle switchpack assembly (referred to as the switchpack). The switchpack must be installed to do this check.
- (2) This Predictive Maintenance & Enhanced Troubleshooting (PMET) procedure is optional and the results are for evaluation purposes only. No action is required as a result of this inspection if a flight deck effect or other observed fault does not exist. The recommendations are made to show Boeing's best practices to make sure that maximum aircraft reliability is reached. If a flight deck effect or other observed fault exists, it must be corrected with accepted procedures.
- (3) There are nine switches in each switchpack.

LOM ALL; AUTOTHROTTLE SWITCHPACK WITH REPLACEABLE SWITCHES P/N 254A1150-1, -2, -7, -8, -9, -10

- (4) Six switches can be adjusted with the switchpack installed. The other three switches can only be adjusted with the switchpack removed.

LOM ALL; AUTOTHROTTLE SWITCHPACK WITH INTEGRATED SWITCHES P/N 254A1150-11, -12, -13, -14, -15, -16

- (5) The individual switches cannot be adjusted.

LOM ALL

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)
76-11-07-020-802-F00	Autothrottle Switchpack Assembly - Removal (P/B 401)
76-11-07-400-802-F00	Autothrottle Switchpack Assembly - 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.

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Reference	Description
COM-1793	Multimeter - Digital/Analog (or equivalent meter meets task requirements) Part #: 117 Supplier: 89536 Part #: 260-8XPI Supplier: 55026 Part #: 287 Supplier: 89536 Part #: 289 Supplier: 89536 Part #: 87V Supplier: 89536 Part #: FLUKE 27 II Supplier: 89536 Part #: FLUKE-77-4 Supplier: 89536 Opt Part #: 187 Supplier: 89536 Opt Part #: 189 Supplier: 89536 Opt Part #: 21 Supplier: 89536 Opt Part #: 27 Supplier: 89536 Opt Part #: 77 SERIES III Supplier: 89536 Opt Part #: 87 Supplier: 89536 Opt Part #: FLUKE 27 Supplier: 89536 Opt Part #: MODEL 27 Supplier: 89536

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 76-11-07-420-003-F00

- (1) If the switchpack is not installed, do this task: Autothrottle Switchpack Assembly - Installation, TASK 76-11-07-400-802-F00.
 - (a) Do not do the post-installation tests at this time.
 - (b) Do the initial alignment of the switchpack to make sure that the S5 switch changes from CLOSE to OPEN at a TRA between 31.0 and 32.5 degrees.

SUBTASK 76-11-07-860-014-F00

- (2) 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:

F/O Electrical System Panel, P6-1

Row	Col	Number	Name
D	13	C00120	WEATHER RADAR RT

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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
C	18	C01398	LANDING GEAR TAKEOFF WARNING CUTOFF
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	4	C01003	ENGINE 1 THRUST REVERSER IND
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:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	6	C00149	ANTI-ICE & RAIN ENGINE 2 CONTROL

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
C	8	C01004	ENGINE 2 THRUST REVERSER IND

- (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:

Number Name/Location

112A Forward Access Door

- (f) Remove the applicable top panel in the nose wheel well (TASK 53-14-01-020-801).

SUBTASK 76-11-07-040-001-F00

- (3) 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.

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G. Switch Installation Test

SUBTASK 76-11-07-700-002-F00

- (1) Do these steps to show engine test menu on the Flight Management Computer System Control Display Unit (FMCS 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 Keys (LSK) 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 76-11-07-710-011-F00

- (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 76-11-07-710-012-F00

- (3) Do these steps to do a check of the applicable switch in the left switchpack:

- (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 (View G, Figure 501).

NOTE: This will let the brake housing turn and not be limited by the solenoid.

- (b) Move the left thrust lever and reverse thrust lever until the TRA value that shows on the CDU 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 +/-0.25 degrees TRA, and the aft mechanical stop (full reverse thrust) is at 6 +/-1.0 degrees TRA.

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- (c) Do a continuity check with the digital/analog multimeter, COM-1793, at the applicable switch connector.

Table 501/76-11-07-993-810-F00

SWITCH	CONNECTOR	PINS	TRA VALUE	CONDITION	TRANSITION
S1	D11128P	1-2	8.00-42.00 46.00-82.00	Open Closed	44.00±2.0
		2-3	8.00-42.00 46.00-82.08	Closed Open	
S2	D11130P	1-2	8.00-42.00 46.00-82.00	Not Used Closed Open	44.00±2.0
		2-3	8.00-42.00 46.00-82.00		
S3	D11130P	4-5	8.00-42.00 46.00-82.00	Not Used Closed Open	44.00±2.0
		5-6	8.00-42.00 46.00-82.00		
S4	D11128P	14-7	8.00-30.00 34.00-82.00	Closed Open Open Closed	32.00±2.0
		7-8	8.00-30.00 34.00-82.00		
S5	D11130P	7-8	8.00-30.00 34.00-82.00	Closed Open Open Closed	32.00±2.0
		8-9	8.00-30.00 34.00-82.00		
S6	D11130P	13-14	8.00-30.00 34.00-82.00	Not Used Open Closed	32.00±2.0
		14-15	8.00-30.00 34.00-82.00		
S7	D11128P	10-11	8.00-58.00 62.00-82.00	Open Closed Not Used	60.00±2.0
		11-12	8.00-58.00 62.00-82.00		
S8	D11128P	16-17	8.00-51.00 55.00-82.00	Open Closed Closed Open	53.00±2.0
		17-18	8.00-51.00 55.00-82.00		
S9	D11128P	22-23	8.00-62.00 66.00-82.00	Not Used Closed Open	64.00±2.0
		23-24	8.00-62.00 66.00-82.00		

- (d) Remove the bungee cord or tie wrap from the left interlock solenoid.

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- (e) If any switches are not in the specified limits and they are all out of limits in the same direction, do the following:
 - 1) Monitor the continuity of the S5 switch, pins 8 and 9, at the applicable electrical connector D11130P (left switchpack) or D11134P (right switchpack) to confirm the switch changes from OPEN to CLOSE at a TRA between 31.5 and 32.0 degrees.

NOTE: The S5 switch is adjusted to operate between 31.5 to 32.0 degrees TRA during switchpack installation (TASK 76-11-07-400-802-F00).
 - 2) Loosen the two jamnuts and turn the rod coupling to get the S5 switch, pins 8 and 9, to change from CLOSE to OPEN at a TRA between 31.0 and 32.5 degrees so all other switches will also actuate in the specified limits.
 - a) After rigging is completed, make sure that adjustable rod ends have the proper thread engagement.
 - b) Make sure that the end of the rod ends covers minimum 50% of the inspection hole.
 - 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 specified limits.
- (f) If the switches are in adjustment, do the section below to put the airplane back to its usual condition.

LOM ALL; AUTOTHROTTLE SWITCHPACK WITH INTEGRATED SWITCHES P/N 254A1150-11, -12, -13, -14, -15, -16

- (g) If any switches are still not in the specified limits, replace the switchpack, do these tasks: Autothrottle Switchpack Assembly - Removal, TASK 76-11-07-020-802-F00, Autothrottle Switchpack Assembly - Installation, TASK 76-11-07-400-802-F00.

LOM ALL; AUTOTHROTTLE SWITCHPACK WITH REPLACEABLE SWITCHES P/N 254A1150-1, -2, -7, -8, -9, -10

- (h) If any switches are still not in the specified limits, do the switch adjustment section below.

LOM ALL

SUBTASK 76-11-07-710-013-F00

- (4) Do these steps to check the applicable switch in the right switchpack:
 - (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 (View G, Figure 501).

NOTE: This will let the brake housing turn and not be limited by the solenoid.
 - (b) Move the right thrust lever and reverse thrust lever until the TRA value that shows on the CDU is in the range shown in the table below (Table 502).

NOTE: The forward mechanical stop (full forward thrust) is at 84 +/-1.8 degrees TRA, the idle stop is at 36 +/-0.25 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.

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Table 502/76-11-07-993-811-F00

SWITCH	CONNECTOR	PINS	TRA VALUE	CONDITION	TRANSITION
S1	D11132P	1-2	8.00-42.00 46.00-82.00	Open Closed	44.00 ± 2.0
		2-3	8.00-42.00 46.00-82.08	Closed Open	
S2	D11134P	1-2	8.00-42.00 46.00-82.00	Not Used	44.00 ± 2.0
		2-3	8.00-42.00 46.00-82.00	Closed Open	
S3	D11134P	4-5	8.00-42.00 46.00-82.00	Not Used	44.00 ± 2.0
		5-6	8.00-42.00 46.00-82.00	Closed Open	
S4	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	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	D11134P	13-14	8.00-30.00 34.00-82.00	Not Used	32.00 ± 2.0
		14-15	8.00-30.00 34.00-82.00	Open Closed	
S7	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	Not Used	
S8	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	D11132P	22-23	8.00-62.00 66.00-82.00	Not Used	64.00 ± 2.0
		23-24	8.00-62.00 66.00-82.00	Closed Open	

- (d) Remove the bungee cord or tie wrap from the right interlock solenoid.
- (e) If any switches are not in the specified limits and they are all out of limits in the same direction, do the following:

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- 1) Monitor the continuity of the S5 switch, pins 8 and 9, at the applicable electrical connector D11130P (left switchpack) or D11134P (right switchpack) to confirm the switch changes from OPEN to CLOSE at a TRA between 31.5 and 32.0 degrees.

NOTE: The S5 switch is adjusted to operate between 31.5 to 32.0 degrees TRA during switchpack installation (TASK 76-11-07-400-802-F00).
 - 2) Loosen the two jammuts and turn the rod coupling to get the S5 switch, pins 8 and 9, to change from CLOSE to OPEN at a TRA between 31.0 and 32.5 degrees so all other switches will also actuate in the specified limits.
 - a) After rigging is completed, make sure that adjustable rod ends have the proper thread engagement.
 - b) Make sure that the end of the rod ends covers minimum 50% of the inspection hole.
 - 3) Tighten the two jammuts 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 specified limits.
- (f) If the switches are in adjustment, do the section below to put the airplane back to its usual condition.

LOM ALL; AUTOTHROTTLE SWITCHPACK WITH REPLACEABLE SWITCHES P/N 254A1150-1, -2, -7, -8, -9, -10

- (g) If any switches are still not in the specified limits, do the switch adjustment section below.

LOM ALL; AUTOTHROTTLE SWITCHPACK WITH INTEGRATED SWITCHES P/N 254A1150-11, -12, -13, -14, -15, -16

- (h) If any switches are still not in the specified limits, replace the switchpack, do these tasks: Autothrottle Switchpack Assembly - Removal, TASK 76-11-07-020-802-F00, Autothrottle Switchpack Assembly - Installation, TASK 76-11-07-400-802-F00.

LOM ALL; AUTOTHROTTLE SWITCHPACK WITH REPLACEABLE SWITCHES P/N 254A1150-1, -2, -7, -8, -9, -10

H. Switch Adjustment

SUBTASK 76-11-07-010-004-F00

- (1) For switches S3, S4, and S7 (if the switchpack is still installed), do this task: Autothrottle Switchpack Assembly - Removal, TASK 76-11-07-020-802-F00.

SUBTASK 76-11-07-820-003-F00

- (2) Do these steps to adjust the switch:
 - (a) Make sure that the applicable switch roller is set on the largest radius of the cam.
 - (b) Loosen the screws that attach the switch.
 - (c) Adjust the switch to the cam as follows:
 - 1) To make the switch actuation open or close sooner, move the switch toward the cam.
 - 2) To make the switch actuation open or close later, move the switch away from the cam.
 - (d) Tighten the screws.
 - (e) For switches S3, S4, and S7 (if the switchpack was removed), do this task: Autothrottle Switchpack Assembly - Installation, TASK 76-11-07-400-802-F00.
 - (f) Move the applicable thrust lever or reverse thrust lever to make sure that the switch actuation occurs.

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LOM ALL; AUTOTHROTTLE SWITCHPACK WITH REPLACEABLE SWITCHES P/N 254A1150-1, -2, -7, -8, -9, -10
(Continued)

- (g) Do the above electrical check again for the applicable switch to make sure that the adjustment is correct.

LOM ALL

I. Put the Airplane Back to Its Usual Condition

SUBTASK 76-11-07-040-002-F00

- (1) 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 76-11-07-010-005-F00

- (2) 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:

Number Name/Location

112A Forward Access Door

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

F/O Electrical System Panel, P6-1

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

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	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
C	18	C01398	LANDING GEAR TAKEOFF WARNING CUTOFF
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	4	C01003	ENGINE 1 THRUST REVERSER IND
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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- (e) For Engine 2, do this step:

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>
B	6	C00149	ANTI-ICE & RAIN ENGINE 2 CONTROL

F/O Electrical System Panel, P6-2

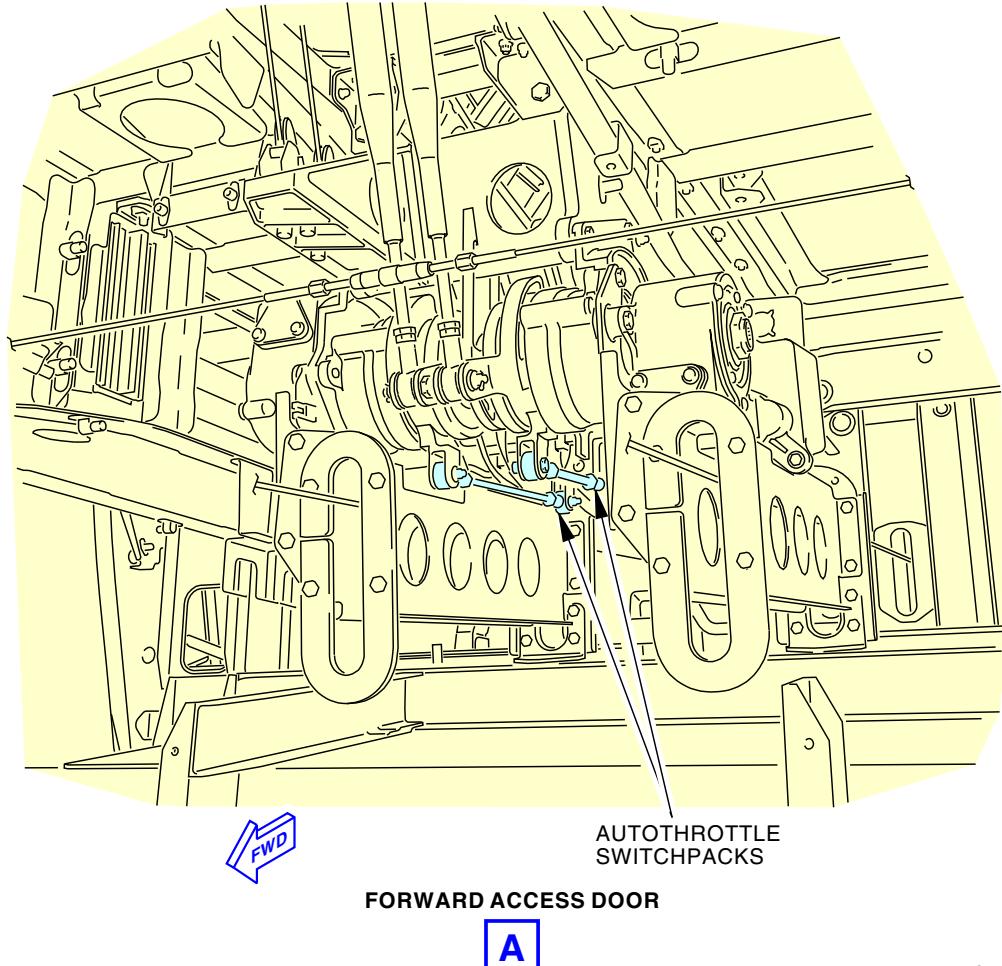
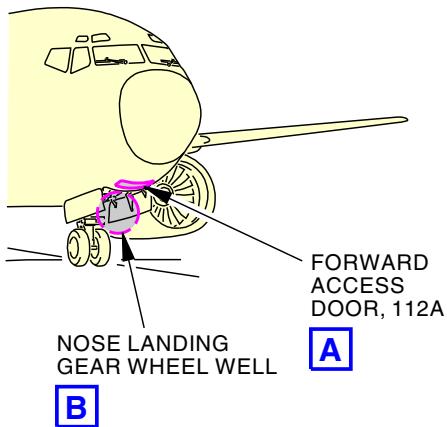
<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND

- (f) Do the applicable post-installation test (TASK 76-11-07-400-802-F00).

———— END OF TASK ————

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H98092 S0006583129_V2

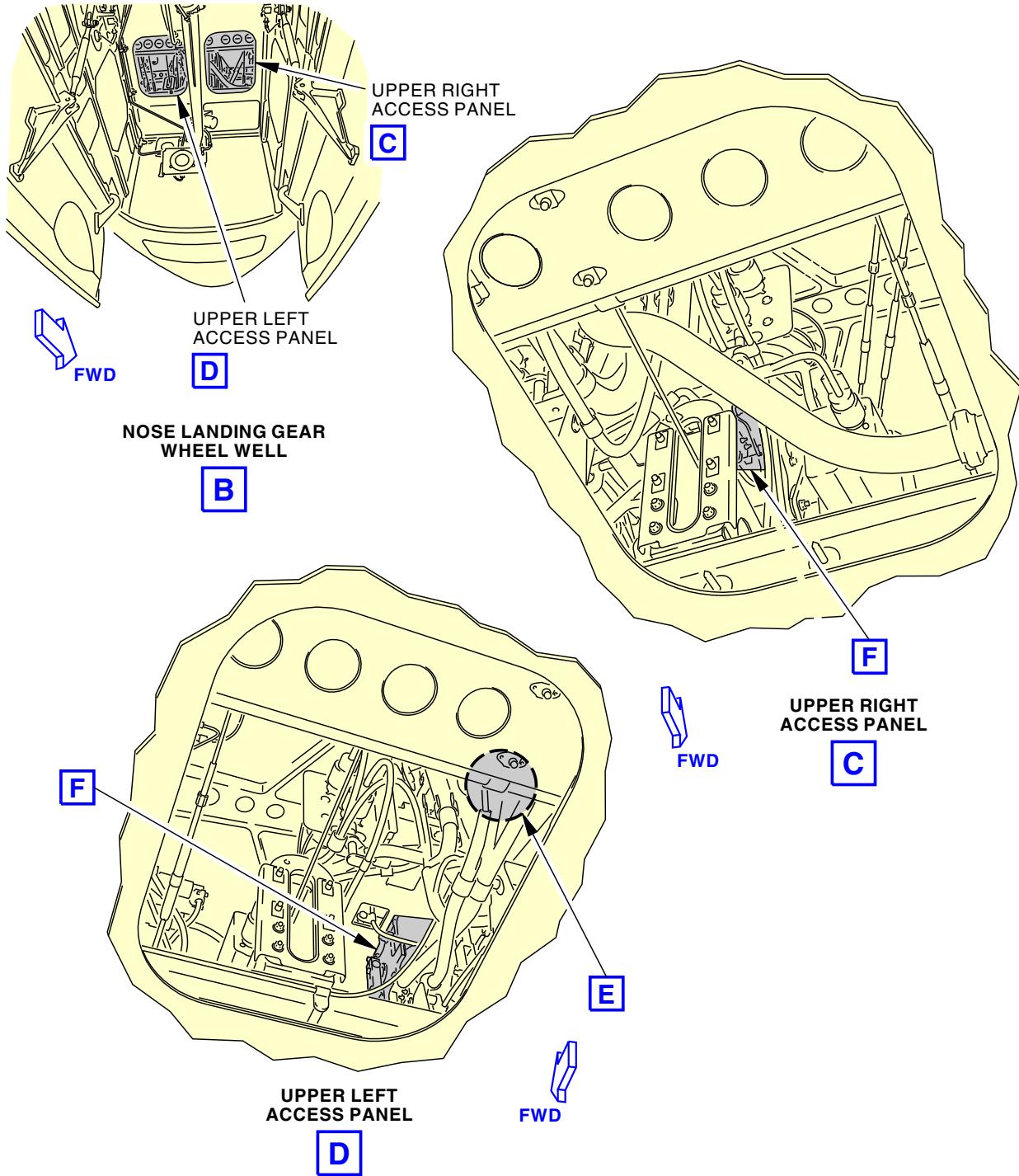
Autothrottle Switchpack Adjustment/Test
Figure 501/76-11-07-990-809-F00 (Sheet 1 of 6)

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H98095 S0006583130_V3

Autothrottle Switchpack Adjustment/Test
Figure 501/76-11-07-990-809-F00 (Sheet 2 of 6)

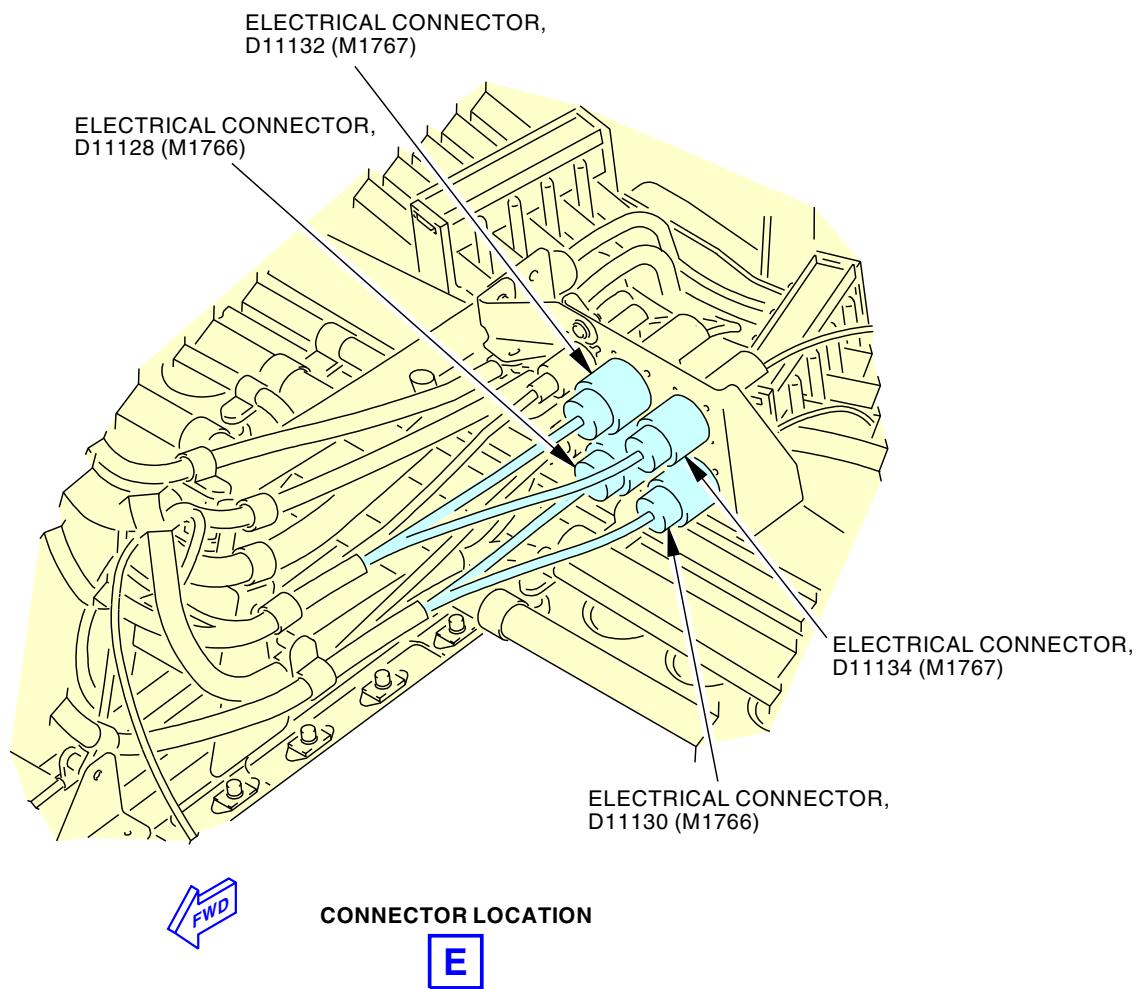
EFFECTIVITY
LOM ALL

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ECCN 9E991 BOEING PROPRIETARY - See title page for details

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H98444 S0006583131_V3

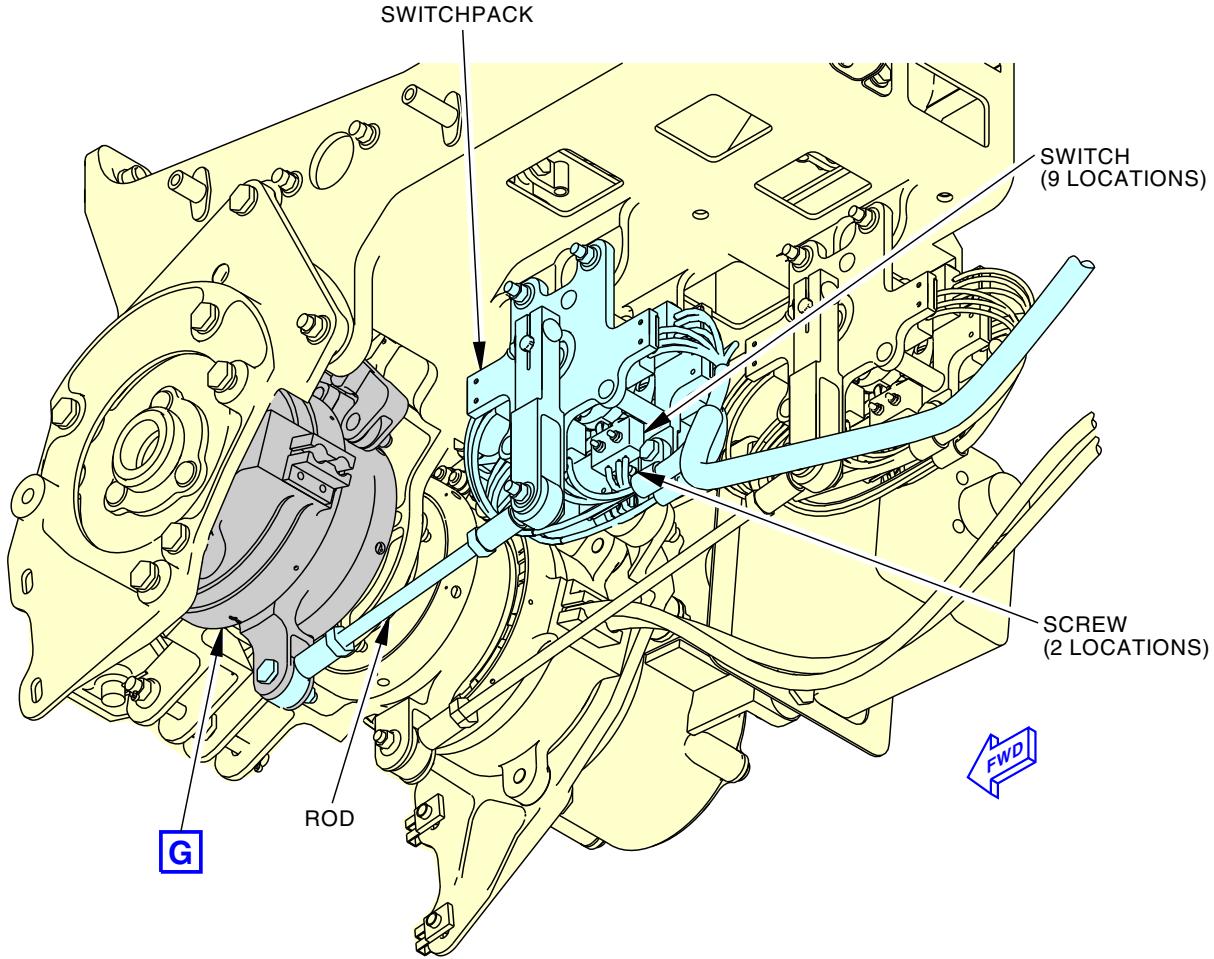
Autothrottle Switchpack Adjustment/Test
Figure 501/76-11-07-990-809-F00 (Sheet 3 of 6)

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ECCN 9E991 BOEING PROPRIETARY - See title page for details

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**AUTOTHROTTLE SWITCHPACK
(EXAMPLE)**

F

2064925 S0000427640_V3

**Autothrottle Switchpack Adjustment/Test
Figure 501/76-11-07-990-809-F00 (Sheet 4 of 6)**

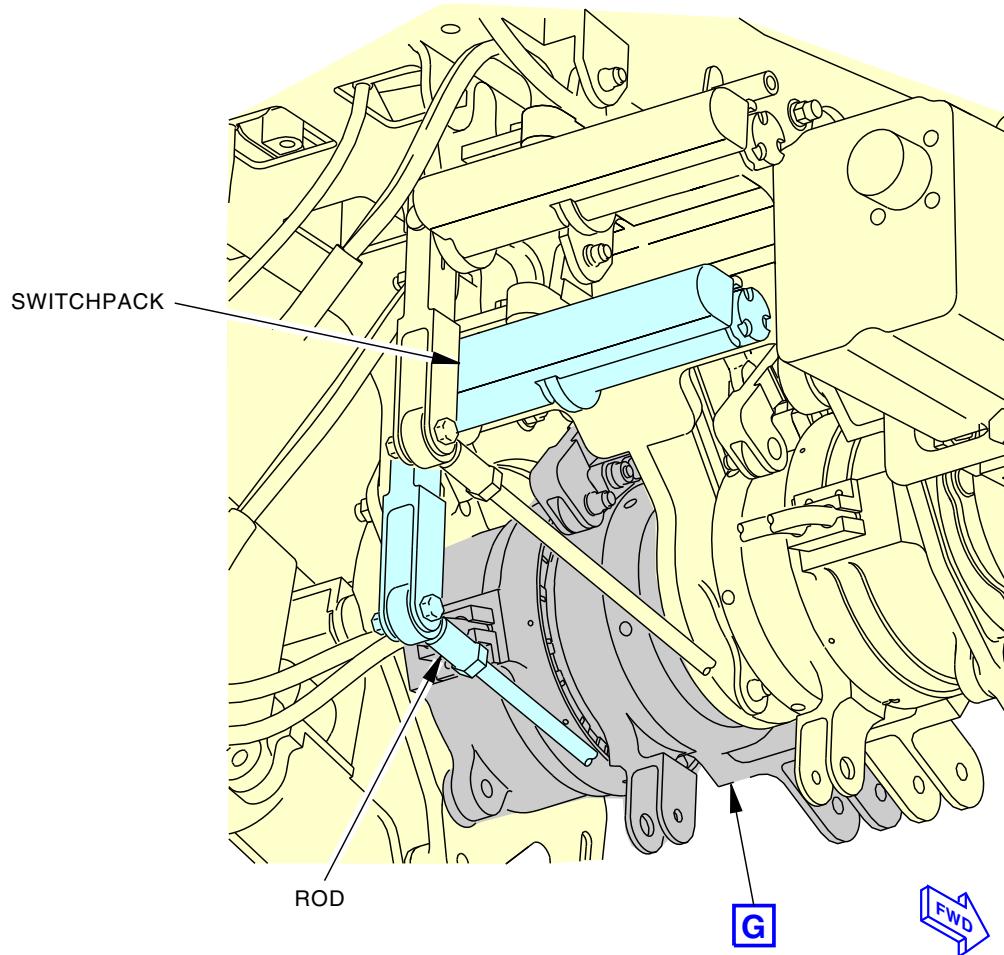
EFFECTIVITY
LOM ALL; AUTOThROTTLE SWITCHPACK WITH
REPLACEABLE SWITCHES P/N 254A1150-1, -2, -7,
-8, -9, -10

D633A101-LOM

ECCN 9E991 BOEING PROPRIETARY - See title page for details

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AUTOTHROTTLE SWITCHPACK
(EXAMPLE)**F**

2065001 S0000427642_V3

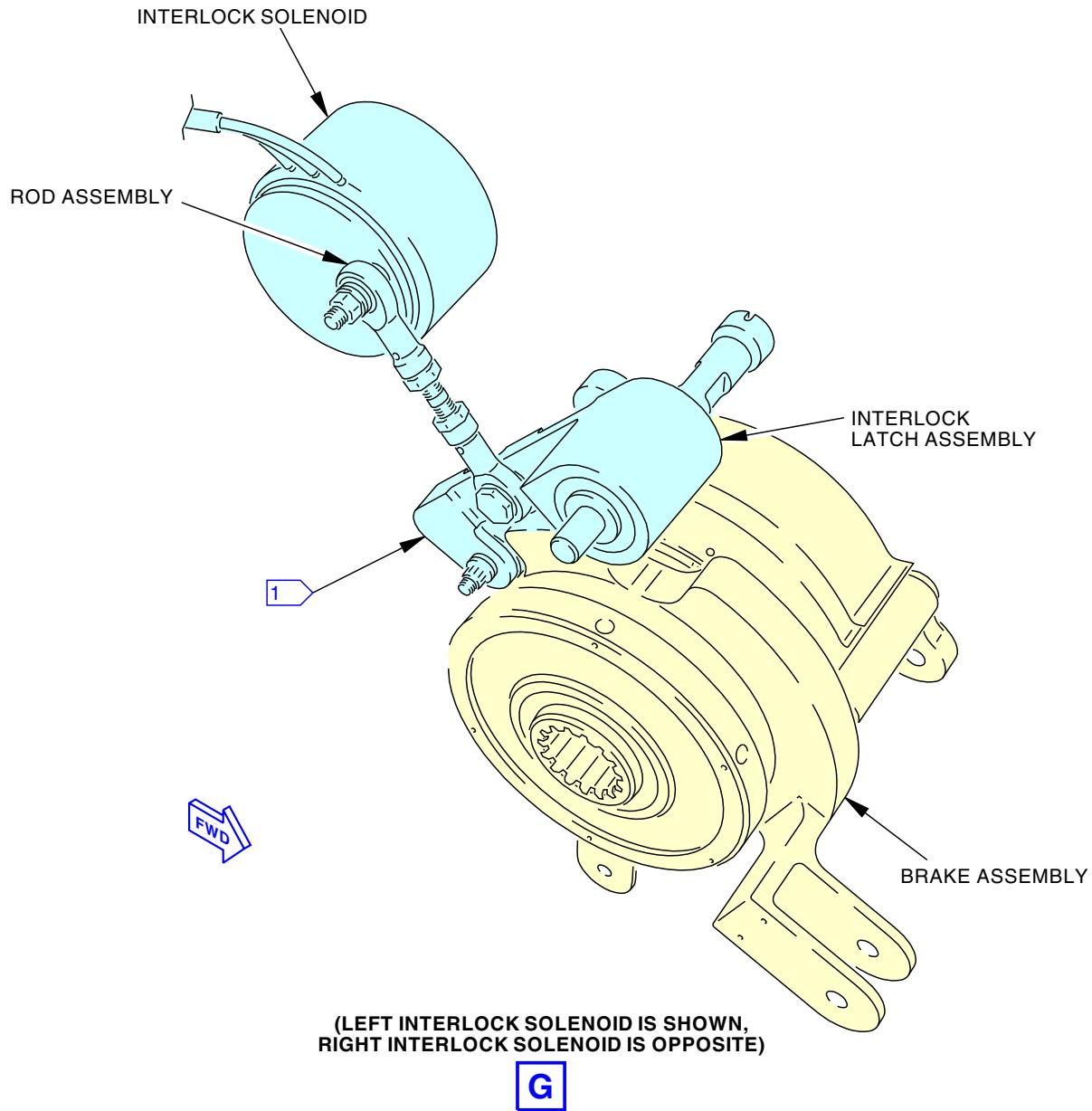
Autothrottle Switchpack Adjustment/Test
Figure 501/76-11-07-990-809-F00 (Sheet 5 of 6)

EFFECTIVITY
 LOM ALL; AUTOTHROTTLE SWITCHPACK WITH
 INTEGRATED SWITCHES P/N 254A1150-11, -12, -13,
 -14, -15, -16

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- 1** USE A BUNGEE CORD OR TIE WRAP TO TEMPORARILY HOLD THIS END OF THE LATCH UP AND CLEAR OFF THE AUTOTHROTTLE BRAKE CAM.

2977482 S0000755765_V1

Autothrottle Switchpack Adjustment/Test
Figure 501/76-11-07-990-809-F00 (Sheet 6 of 6)EFFECTIVITY
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TASK 76-11-07-820-802-F00**3. Switch Test and Cleaning**

(Figure 502)

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.
- (2) This Predictive Maintenance & Enhanced Troubleshooting (PMET) procedure is optional and the results are for evaluation purposes only. No action is required as a result of this inspection if a flight deck effect or other observed fault does not exist. The recommendations are made to show Boeing's best practices to make sure that maximum aircraft reliability is reached. If a flight deck effect or other observed fault exists, it must be corrected with accepted procedures.

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 76-11-07-860-032-F00

- (1) If not already done, do these steps to prepare the airplane:

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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, P6-1

<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
C	18	C01398	LANDING GEAR TAKEOFF WARNING CUTOFF
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	4	C01003	ENGINE 1 THRUST REVERSER IND
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:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	6	C00149	ANTI-ICE & RAIN ENGINE 2 CONTROL

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
C	8	C01004	ENGINE 2 THRUST REVERSER IND

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- (d) Make sure that the applicable thrust lever is at the IDLE stop and reverse thrust lever is stowed.
- (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 76-11-07-010-010-F00

- (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-F00

- (3) Connect the test set, SPL-22886.
 - (a) Connect the applicable harness (Engine 1/2) to the test set.
 - (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 76-11-07-860-033-F00

- (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 76-11-07-860-034-F00

- (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.

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- (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 76-11-07-750-001-F00

- (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 503.
 - (b) Using the test set, SPL-22886, and Table 503, test each switch.
 - 1) Turn the test set, SPL-22886, on with the POWER switch
 - 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 503.

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 503 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 503 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 503 under "VALUE 2".

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- 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 503 under "VALUE 2".
- 21) Calculate the delta between VALUE 1 and VALUE 2.
- 22) If there is a +/- 2 mV delta between VALUE 1 and VALUE 2, or the meter indication did not stabilize in 10 seconds, do the cleaning procedure.
- 23) Repeat the above steps for each switch you test.

Table 503/76-11-07-993-812-F00 Switch Reliability Test

SWITCH SELECT	CONTACT PAIR	TRA	TRANSITION	VALUE 1 mV	VALUE 2 mV	Delta of VALUE 1 and VALUE 2	SYSTEM
S1	NC	8.00-42.00	42.00-46.00				Landing Gear Warning
S1	NO	46.00-82.00	42.00-46.00				Automatic Ground Speedbrake
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 Arm
S5	NO	8.00-30.00	30.00-34.00				T/R Arm
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				LE Ground Wing Anti-Ice
S8	NC	8.00-51.00	51.00-55.00				Weather Radar
S8	NO	55.00-82.00	51.00-55.00				Takeoff Warning and Landing Gear Warning
S9	NC	8.00-62.00	62.00-66.00				Takeoff Warning
S9	NO	NOT USED					

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SUBTASK 76-11-07-750-002-F00

- (4) Switch contact cleaning procedure using the test set, SPL-22886.
 - (a) Prepare for the 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 503, move the throttle lever until the contact pair LED of the switch you cleaning illuminates.
 - (b) Contact cleaning procedure.
 - 1) Move the LOAD SELECT switch in the CLEAN position, the CLEAN LED should illuminate.
 - 2) With the LOAD SELECT switch in the CLEAN position, clean the switch as follows:
 - a) Observe the NO and NC LED's for the switch you are testing.
 - b) Slowly move the throttle lever until the opposite LED illuminates.
 <1> Hold the throttle lever at this position for 5 seconds.
 - c) Slowly move the throttle lever back in the other direction until the original LED illuminates.
 <1> Hold the throttle lever at this position for 5 seconds.
 - d) Repeat this process 3 more times.
 - 3) If there are other switches that fail the repeatability test during earlier testing, perform the cleaning procedure on those switches.
 - (c) Move the LOAD SELECT switch back to the TEST position.
 - (d) Perform the Switch Repeatability Test on the switch(s) you cleaned.

SUBTASK 76-11-07-750-003-F00

- (5) Do this step for the switch evaluation.
 - (a) The maximum voltage reading should not exceed 50 mV.
 - 1) If a 50mV reading is observed after the cleaning procedure, it is recommended to replace the switchpack assembly at the next convenient maintenance opportunity.
 - (b) 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-F00

- (1) Remove the test set, SPL-22886.
 - (a) Remove the applicable harness from the switchpack connectors.
 - (b) Remove the applicable harness (Engine 1/2) from the test set.

SUBTASK 76-11-07-410-006-F00

- (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 76-11-07-410-007-F00

- (3) If not already done, do these steps:

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- (a) Install the applicable top panel in the nose wheel well panel (TASK 53-14-01-420-801).
- (b) Close this access panel:

Number Name/Location

112A	Forward Access Door
------	---------------------

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

F/O Electrical System Panel, P6-1

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

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	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
C	18	C01398	LANDING GEAR TAKEOFF WARNING CUTOFF
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	4	C01003	ENGINE 1 THRUST REVERSER IND
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:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	6	C00149	ANTI-ICE & RAIN ENGINE 2 CONTROL

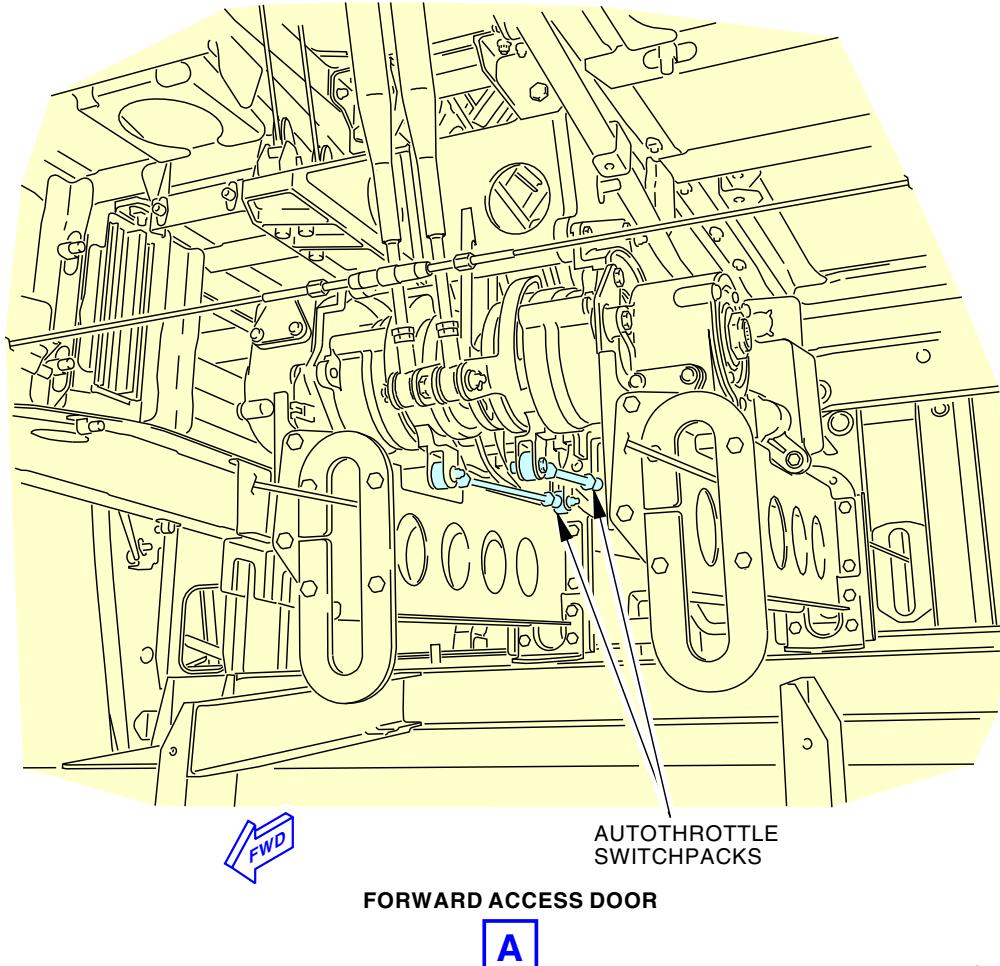
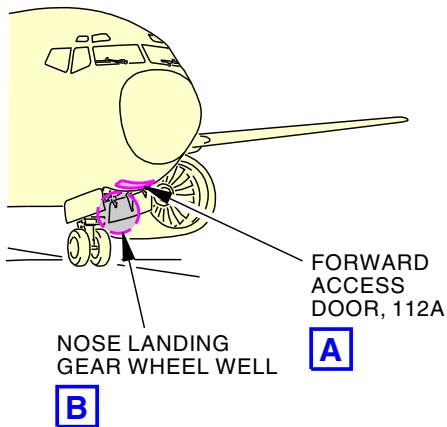
F/O Electrical System Panel, P6-2

<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
C	8	C01004	ENGINE 2 THRUST REVERSER IND

———— END OF TASK ————

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3023610 S0000795546_V1

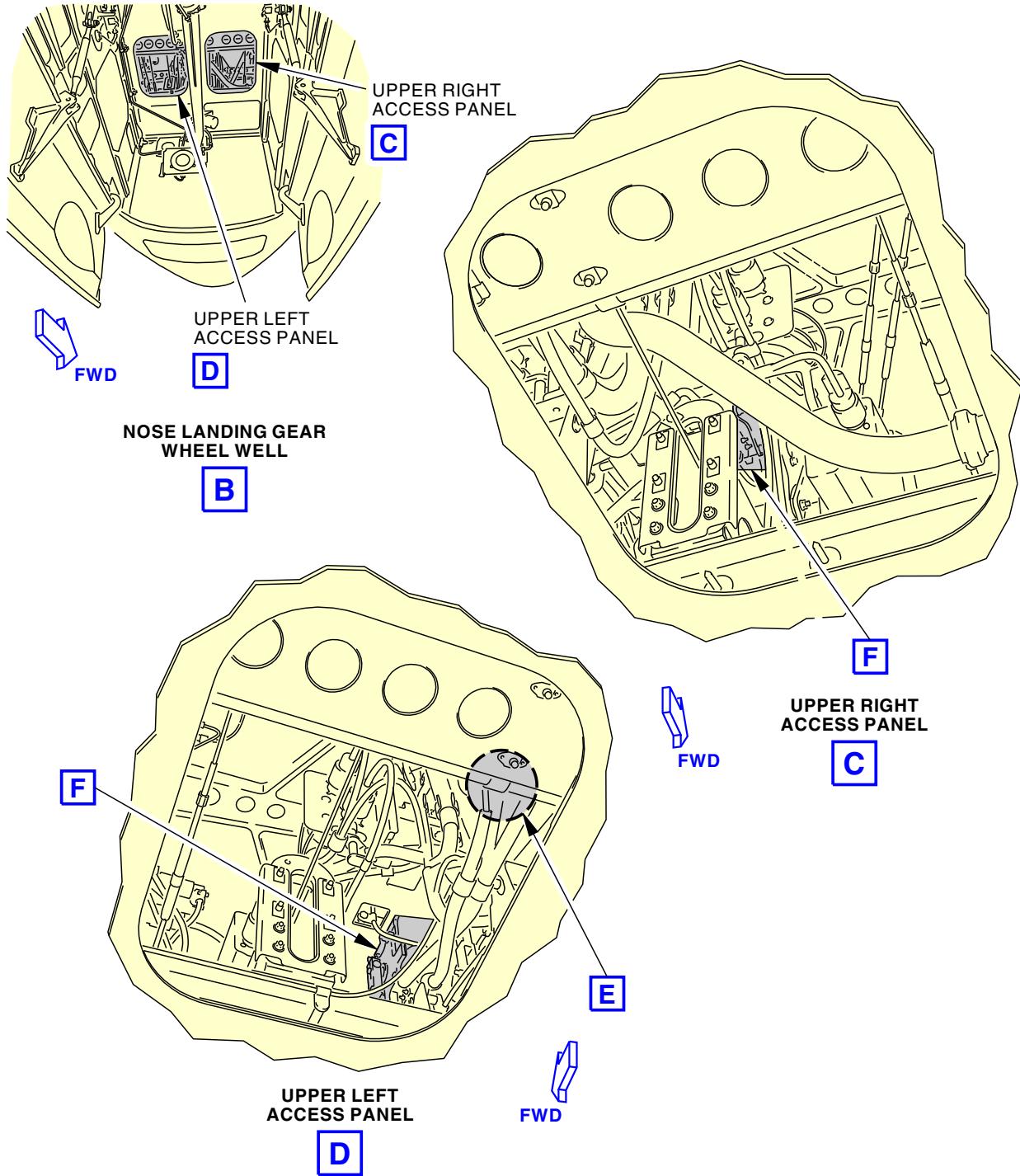
Switch Test and Cleaning
Figure 502/76-11-07-990-810-F00 (Sheet 1 of 7)

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3023611 S0000795547_V1

Switch Test and Cleaning
Figure 502/76-11-07-990-810-F00 (Sheet 2 of 7)

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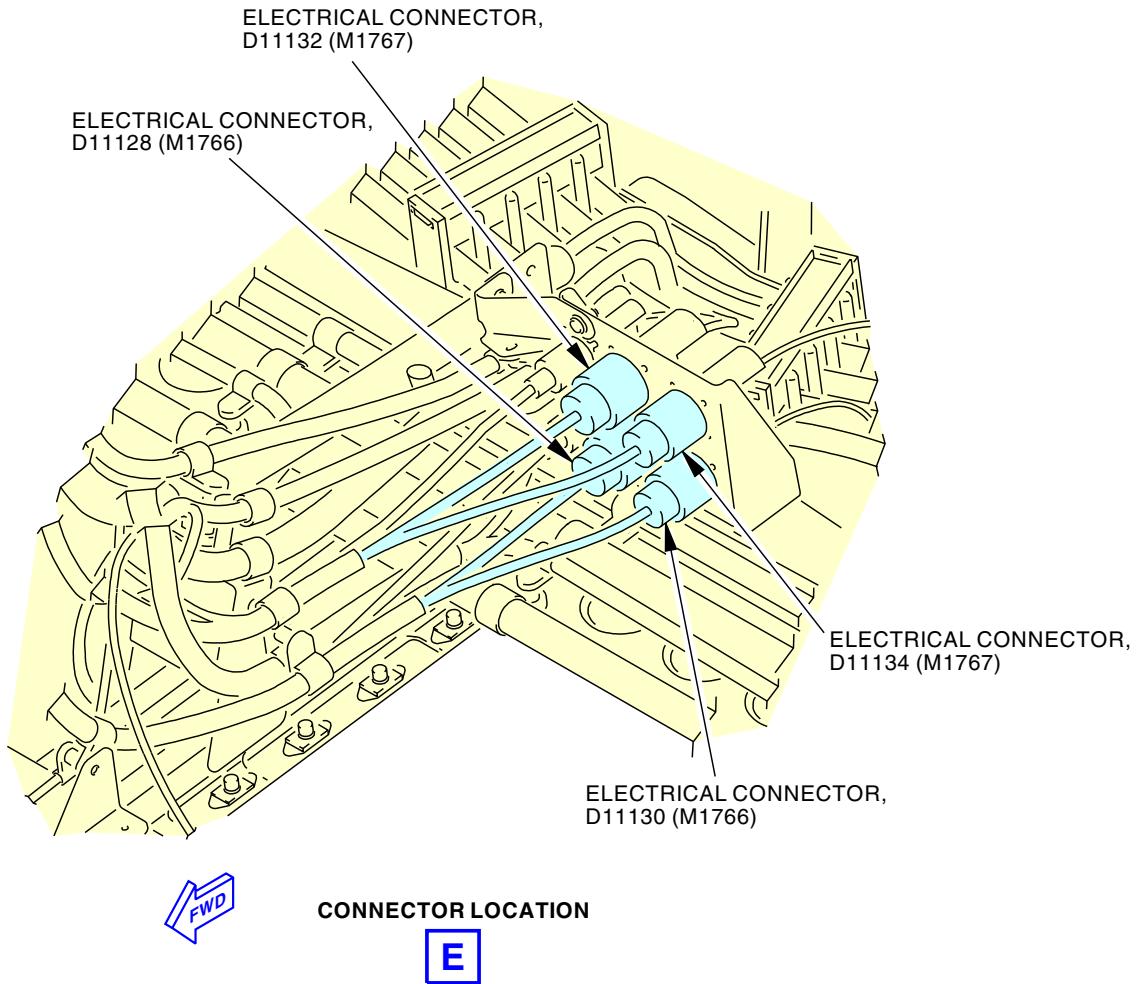
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ECCN 9E991 BOEING PROPRIETARY - See title page for details

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H98444 S0006583131_V3

Switch Test and Cleaning
Figure 502/76-11-07-990-810-F00 (Sheet 3 of 7)

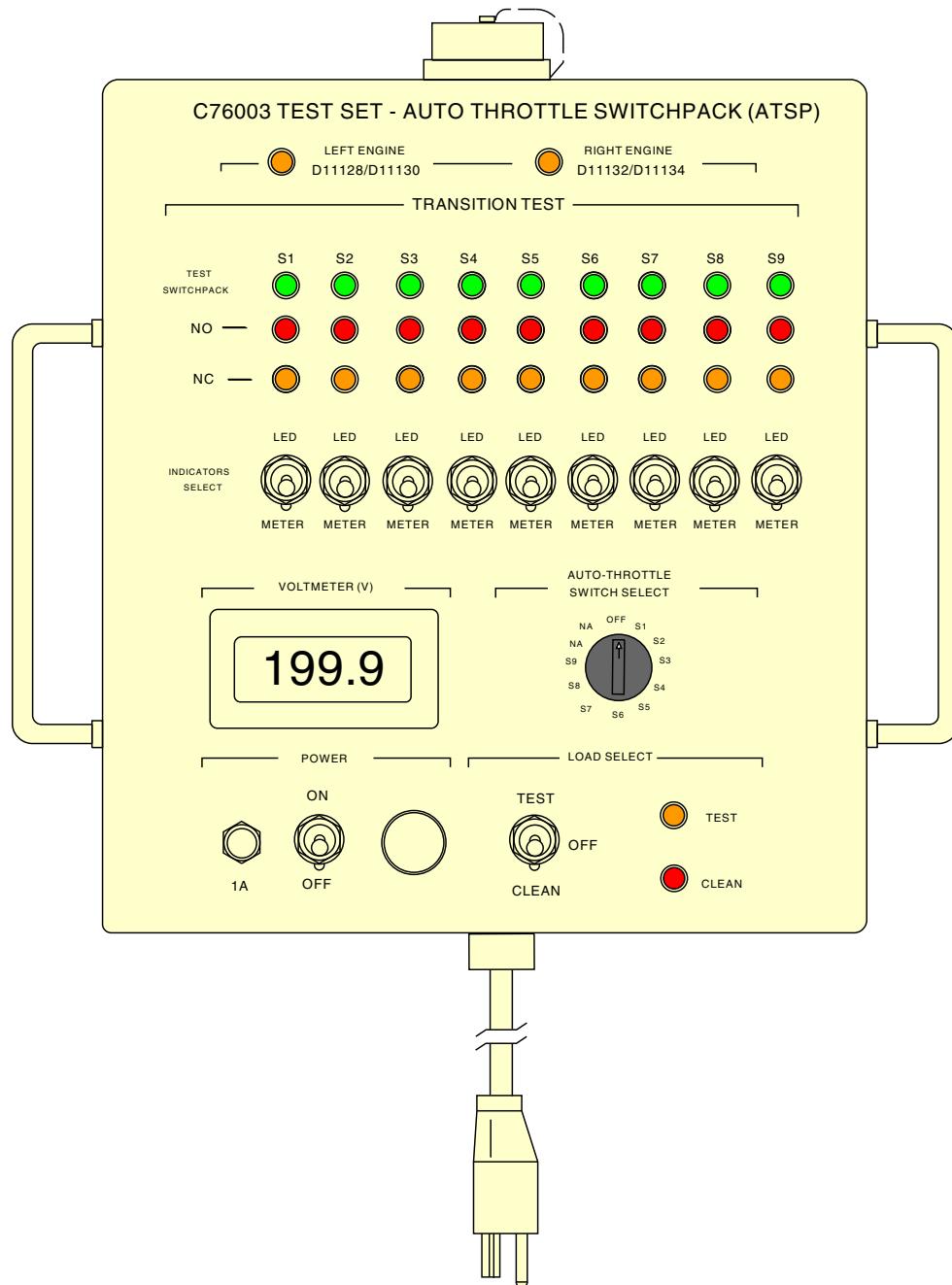
EFFECTIVITY
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3023613 S0000795548_V1

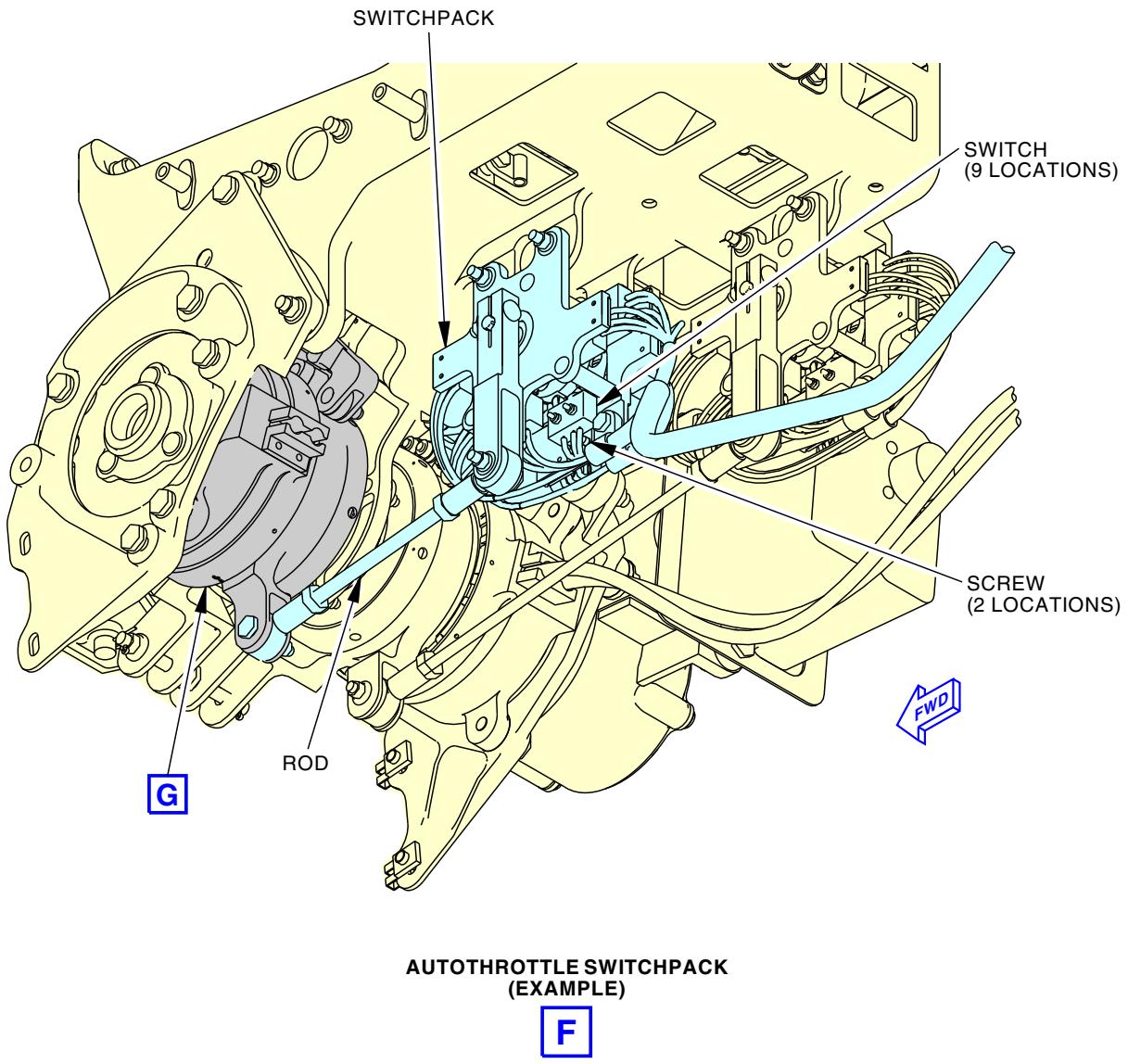
Switch Test and Cleaning
Figure 502/76-11-07-990-810-F00 (Sheet 4 of 7)

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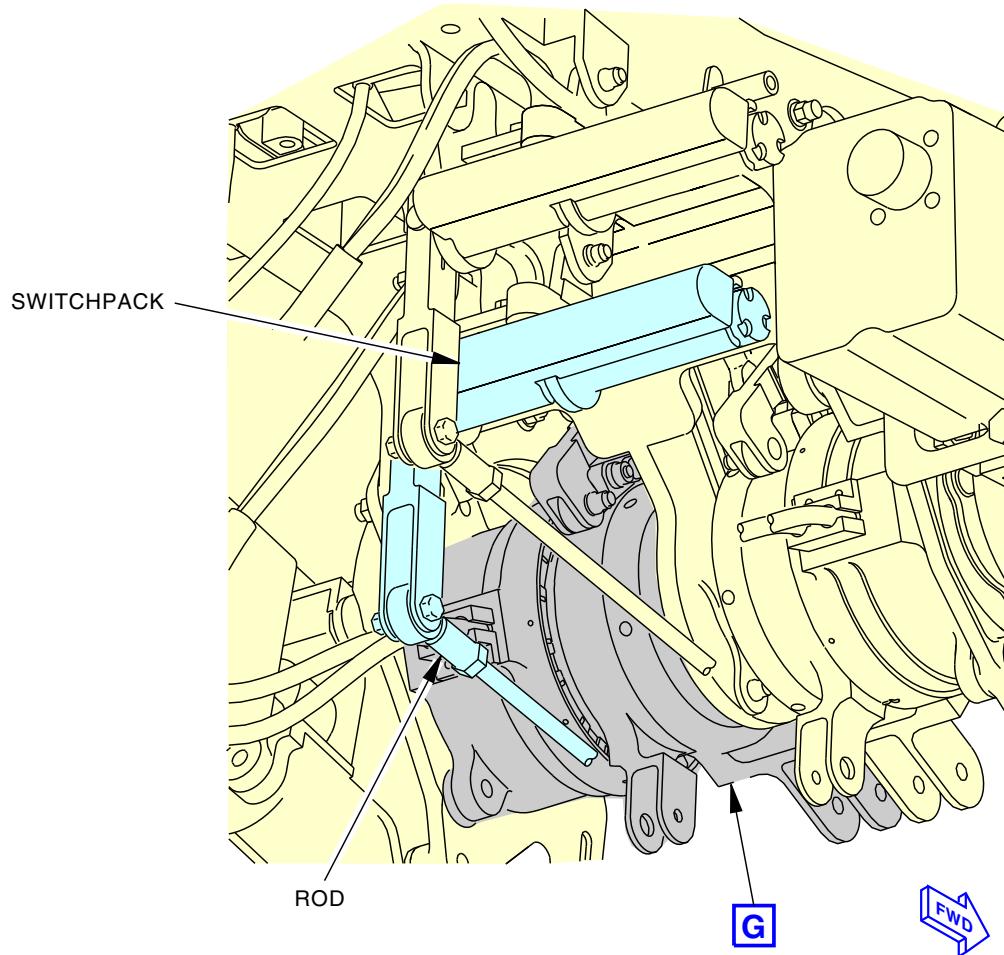
3023661 S0000795549_V1

Switch Test and Cleaning
Figure 502/76-11-07-990-810-F00 (Sheet 5 of 7)

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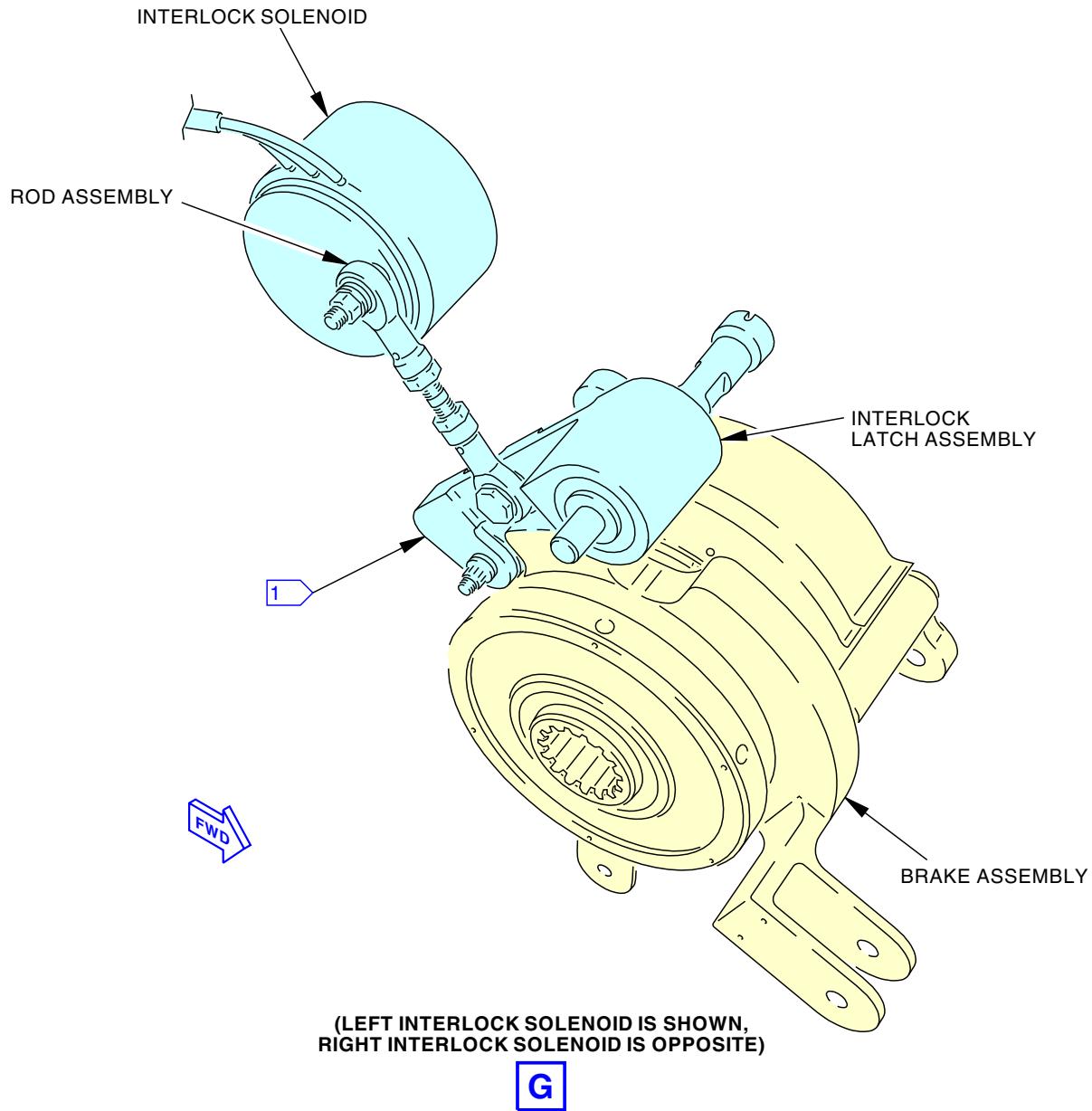
AUTOTHROTTLE SWITCHPACK
(EXAMPLE) F

3023662 S0000795550_V1

Switch Test and Cleaning
Figure 502/76-11-07-990-810-F00 (Sheet 6 of 7)EFFECTIVITY
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- 1** USE A BUNGEE CORD OR TIE WRAP TO TEMPORARILY HOLD THIS END OF THE LATCH UP AND CLEAR OFF THE AUTOTHROTTLE BRAKE CAM.

3023663 S0000795551_V1

Switch Test and Cleaning
Figure 502/76-11-07-990-810-F00 (Sheet 7 of 7)

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TASK 76-11-07-820-803-F00**4. Switch Check and Adjustment With SPL-22886**

(Figure 503)

A. General

- (1) This task gives the instructions to do a check of the adjustment of a switch on the autothrottle switchpack assembly (referred to as the switchpack). The switchpack must be installed to do this check.
- (2) If test set, SPL-22886 is not available, refer to Switch Check and Adjustment, TASK 76-11-07-820-801-F00.
- (3) There are nine switches in each switchpack.

LOM ALL; AUTOTHROTTLE SWITCHPACK WITH REPLACEABLE SWITCHES P/N 254A1150-1, -2, -7, -8, -9, -10

- (4) Six switches can be adjusted with the switchpack installed. The other three switches can only be adjusted with the switchpack removed.

LOM ALL; AUTOTHROTTLE SWITCHPACK WITH INTEGRATED SWITCHES P/N 254A1150-11, -12, -13, -14, -15, -16

- (5) The individual switches cannot be adjusted.

LOM ALL**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)
76-11-07-020-802-F00	Autothrottle Switchpack Assembly - Removal (P/B 401)
76-11-07-400-802-F00	Autothrottle Switchpack Assembly - 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.

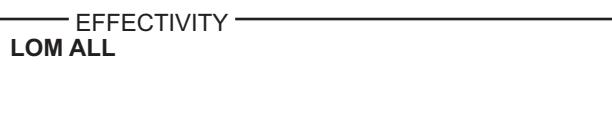
Reference	Description
SPL-22886	Test Set - Auto Throttle Switchpack (ATSP) Part #: C76003-1 Supplier: 81205

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

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F. Prepare for the Check and Adjustment

SUBTASK 76-11-07-420-009-F00

- (1) If the switchpack is not installed, do this task: Autothrottle Switchpack Assembly - Installation, TASK 76-11-07-400-802-F00.
 - (a) Do not do the post-installation tests at this time.

SUBTASK 76-11-07-860-036-F00

- (2) 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:

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
C	18	C01398	LANDING GEAR TAKEOFF WARNING CUTOFF
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	4	C01003	ENGINE 1 THRUST REVERSER IND
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:

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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>
B	6	C00149	ANTI-ICE & RAIN ENGINE 2 CONTROL

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
C	8	C01004	ENGINE 2 THRUST REVERSER IND

- (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 76-11-07-040-003-F00

- (3) 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 76-11-07-480-002-F00

- (4) Connect the test set, SPL-22886.
 - (a) Connect the applicable harness (Engine 1/2) to the test set, SPL-22886.
 - (b) Connect the harness to switchpack connectors that were previously removed.
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, SPL-22886, to a 115/120 VAC, 60/400Hz power source

G. Switch Installation Test

SUBTASK 76-11-07-700-007-F00

- (1) Do these steps to show engine test menu on the Flight Management Computer System Control Display Unit (FMCS 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 Keys (LSK) 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.

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- 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 76-11-07-710-021-F00

- (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 76-11-07-710-023-F00

- (3) Do these steps to do a check of the left or right autothrottle switchpack assembly installation:

- (a) Move the applicable thrust lever and reverse thrust lever slowly until the TRA value that shows on the CDU is in the range shown in the table below (Table 504).

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.

- (b) On the test set, SPL-22886, do the following:

- 1) Turn on the test set with the POWER switch.

- 2) Place the LOAD SELECT switch in the "TEST" position.

- 3) Move the INDICATORS SELECT switch for the switch you are testing back to the "LED" position.

- 4) Place the AUTO-THROTTLE SWITCH SELECT in the "OFF" position.

- 5) Using Table 504, move each switch to the TRA VALUE.

- 6) Observe the NO and NC LED lights on the test set, SPL-22886.

- 7) The corresponding lights for each switch must illuminate and extinguish within the TRA VALUE.

Table 504/76-11-07-993-815-F00

SWITCH	LED	TRA VALUE	LED CONDITION	TRANSITION
S1	NO	8.00-42.00 46.00-82.00	Off On	44.00±2.0
	NC	8.00-42.00 46.00-82.08	On Off	

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Table 504/76-11-07-993-815-F00 (Continued)

SWITCH	LED	TRA VALUE	LED CONDITION	TRANSITION
S2	NO	8.00-42.00 46.00-82.00	Off On	44.00±2.0
	NC	8.00-42.00 46.00-82.00	On Off	
S3	NO	8.00-42.00 46.00-82.00	Off On	44.00±2.0
	NC	8.00-42.00 46.00-82.00	On Off	
S4	NO	8.00-30.00 34.00-82.00	Off On	32.00±2.0
	NC	8.00-30.00 34.00-82.00	On Off	
S5	NO	8.00-30.00 34.00-82.00	Off On	32.00±2.0
	NC	8.00-30.00 34.00-82.00	On Off	
S6	NO	8.00-30.00 34.00-82.00	Off On	32.00±2.0
	NC	8.00-30.00 34.00-82.00	On Off	
S7	NO	8.00-58.00 62.00-82.00	Off On	60.00±2.0
	NC	8.00-58.00 62.00-82.00	On Off	
S8	NO	8.00-51.00 55.00-82.00	Off On	53.00±2.0
	NC	8.00-51.00 55.00-82.00	On Off	
S9	NO	8.00-62.00 66.00-82.00	Off On	64.00±2.0
	NC	8.00-62.00 66.00-82.00	On Off	

- 8) If any switches are not in the specified limits and they are all out of limits in the same direction, do the following:
- Loosen the two jammuts and turn the rod coupling to get the S5 NC LED to extinguish between 31.0 and 32.5 degrees.
 - Tighten the two jammuts to 25 in-lb (2.8 N·m) - 30 in-lb (3.4 N·m).
 - Check to confirm that all switches operate in the specified limits.
- 9) If the switches are in adjustment, do the section below to put the airplane back to its usual condition.

EFFECTIVITY
LOM ALL

76-11-07

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- 10) If any switches are still not in the specified limits, replace the switchpack, do these tasks: Autothrottle Switchpack Assembly - Removal, TASK 76-11-07-020-802-F00, Autothrottle Switchpack Assembly - Installation, TASK 76-11-07-400-802-F00.
- 11) If any switches are still not in the specified limits, do the switch adjustment section below.

LOM ALL; AUTOTHROTTLE SWITCHPACK WITH REPLACEABLE SWITCHES P/N 254A1150-1, -2, -7, -8, -9, -10

H. Switch Adjustment

SUBTASK 76-11-07-010-012-F00

- (1) For switches S3, S4, and S7 (if the switchpack is still installed), do this task: Autothrottle Switchpack Assembly - Removal, TASK 76-11-07-020-802-F00.

SUBTASK 76-11-07-820-005-F00

- (2) Do these steps to adjust the switch:
 - (a) Make sure that the applicable switch roller is set on the largest radius of the cam.
 - (b) Loosen the screws that attach the switch.
 - (c) Adjust the switch to the cam as follows:
 - 1) To make the switch actuation open or close sooner, move the switch toward the cam.
 - 2) To make the switch actuation open or close later, move the switch away from the cam.
 - (d) Tighten the screws.
 - (e) For switches S3, S4, and S7 (if the switchpack was removed), do this task: Autothrottle Switchpack Assembly - Installation, TASK 76-11-07-400-802-F00.
 - (f) Move the applicable thrust lever or reverse thrust lever to make sure that the switch actuation occurs.
 - (g) Do the above electrical check again for the applicable switch to make sure that the adjustment is correct.

LOM ALL

I. Put the Airplane Back to Its Usual Condition

SUBTASK 76-11-07-040-004-F00

- (1) 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 76-11-07-010-011-F00

- (2) 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:

Number Name/Location

112A Forward Access Door

EFFECTIVITY
LOM ALL

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

F/O Electrical System Panel, P6-1

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

F/O Electrical System Panel, P6-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	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
C	18	C01398	LANDING GEAR TAKEOFF WARNING CUTOFF
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	4	C01003	ENGINE 1 THRUST REVERSER IND
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:

CAPT Electrical System Panel, P18-3

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	6	C00149	ANTI-ICE & RAIN ENGINE 2 CONTROL

F/O Electrical System Panel, P6-2

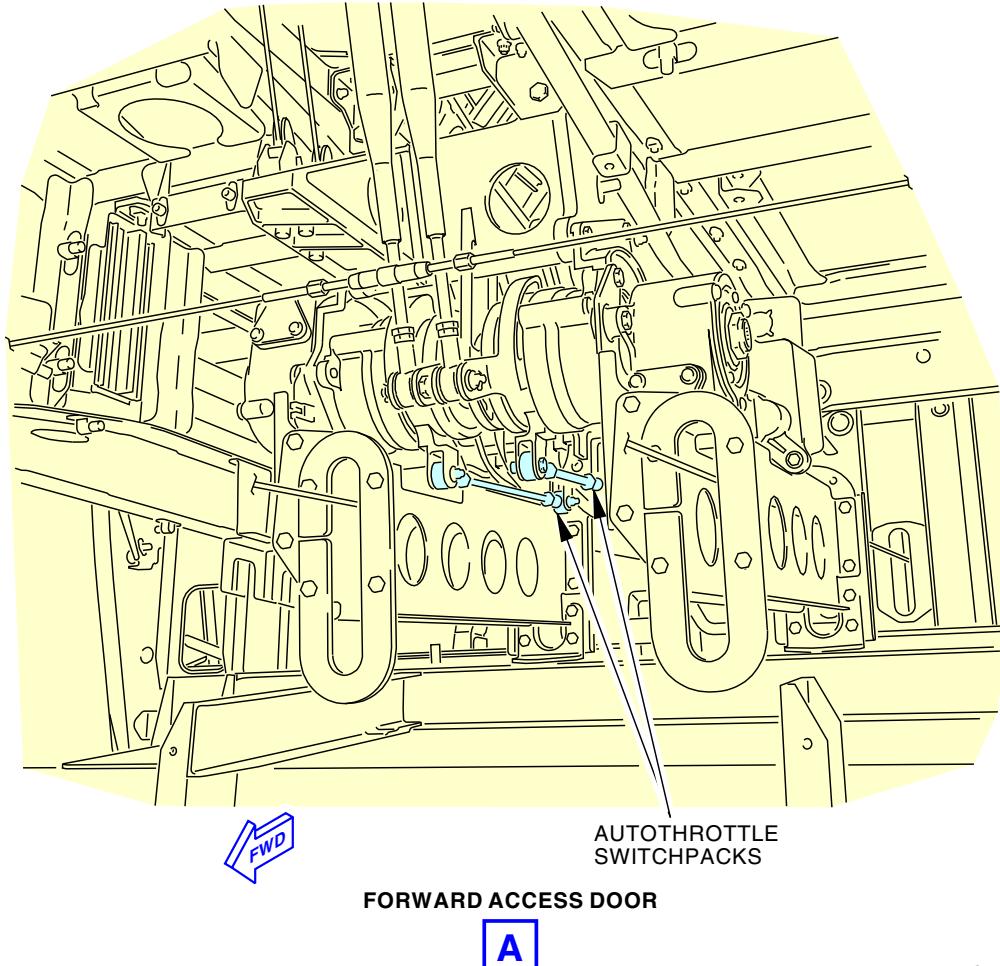
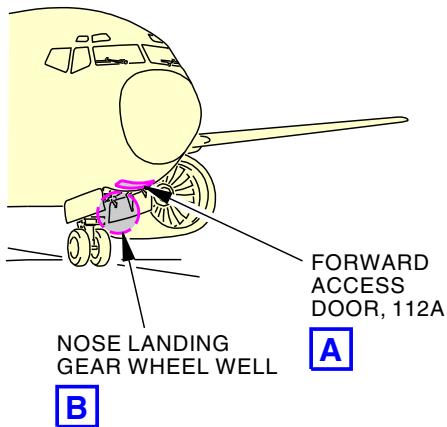
<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	5	C01267	ENGINE 2 THRUST REVERSER SYNC LOCK
C	6	C01413	ENGINE 2 THRUST REVERSER INTLK
C	7	C00277	ENGINE 2 THRUST REVERSER CONT
C	8	C01004	ENGINE 2 THRUST REVERSER IND

- (f) Do the applicable post-installation test (TASK 76-11-07-400-802-F00).

———— END OF TASK ————

EFFECTIVITY
LOM ALL

76-11-07



H98092 S0006583129_V2

Autothrottle Switchpack Adjustment/Test
Figure 503/76-11-07-990-811-F00 (Sheet 1 of 6)

EFFECTIVITY
LOM ALL

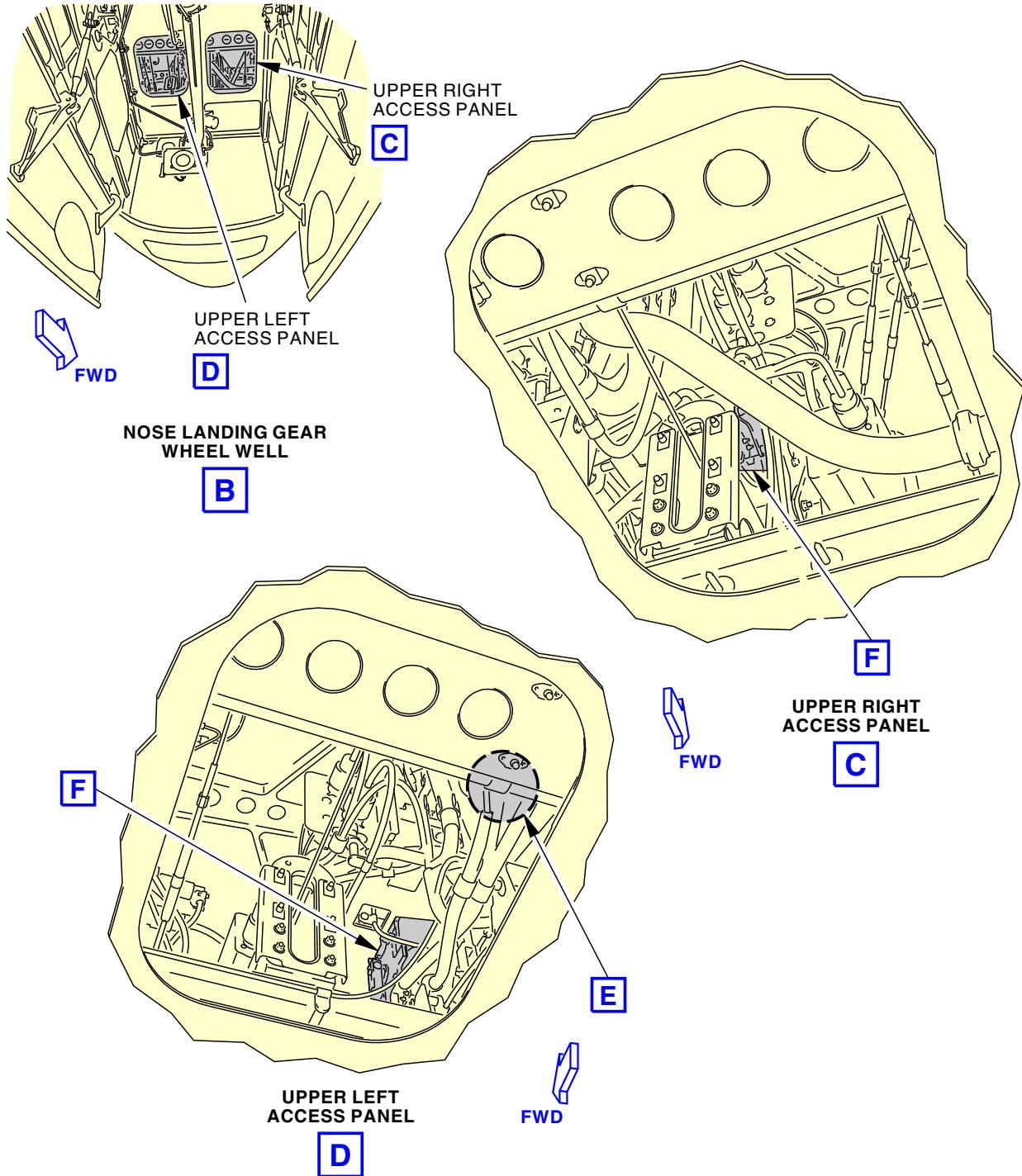
76-11-07

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ECCN 9E991 BOEING PROPRIETARY - See title page for details

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H98095 S0006583130_V3

Autothrottle Switchpack Adjustment/Test
Figure 503/76-11-07-990-811-F00 (Sheet 2 of 6)

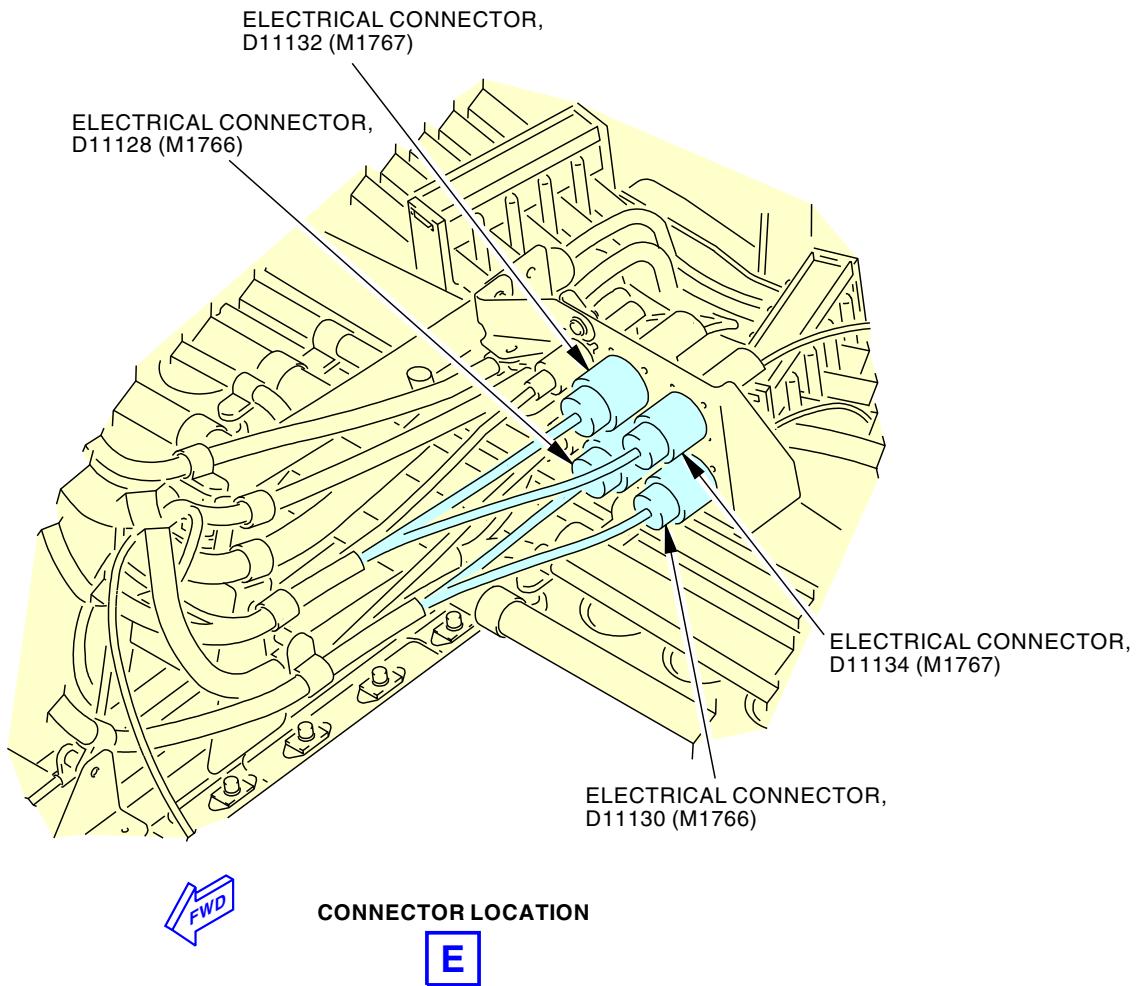
EFFECTIVITY
 LOM ALL

76-11-07

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H98444 S0006583131_V3

Autothrottle Switchpack Adjustment/Test
Figure 503/76-11-07-990-811-F00 (Sheet 3 of 6)

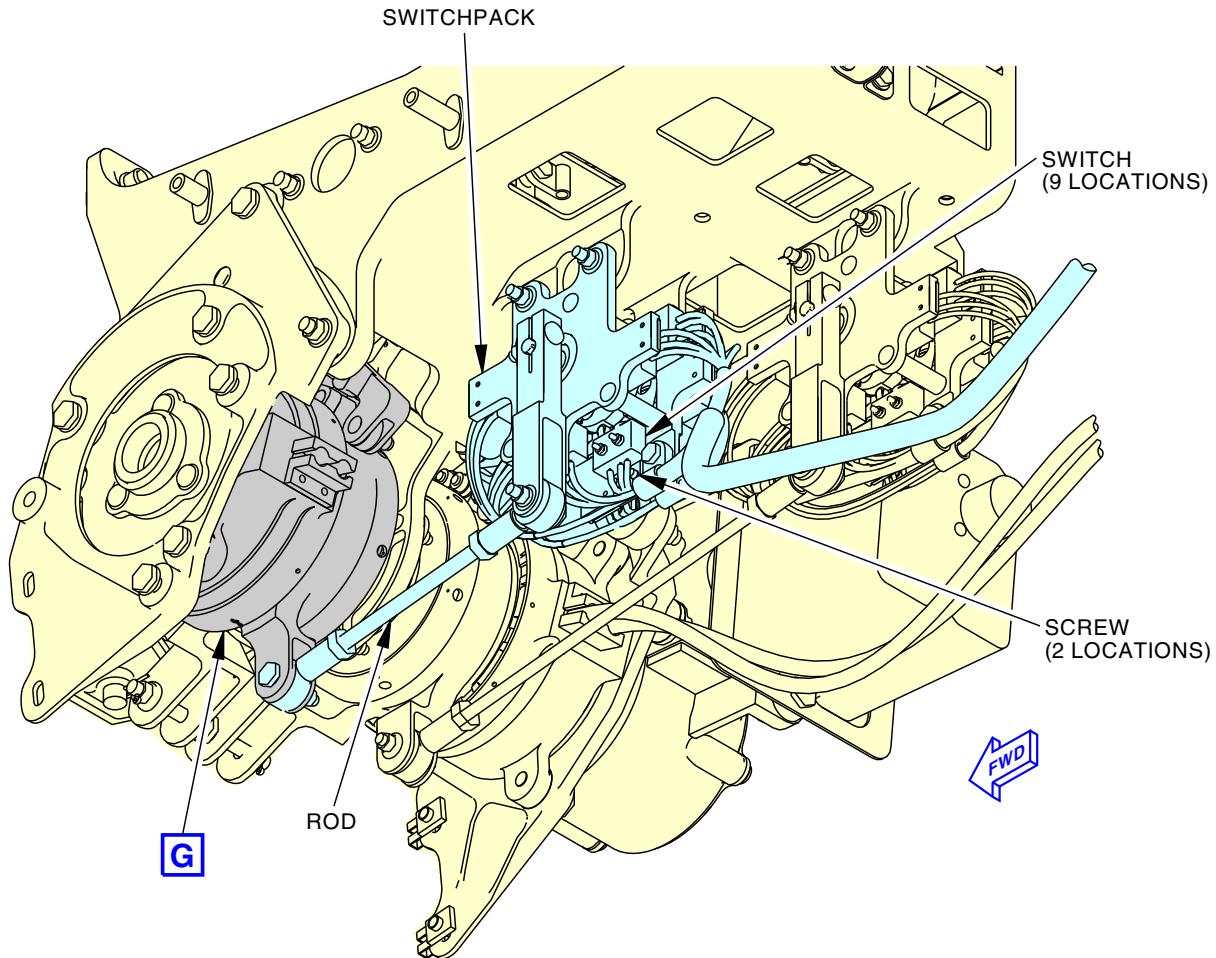
EFFECTIVITY
LOM ALL

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**AUTOTHROTTLE SWITCHPACK
(EXAMPLE)**

F

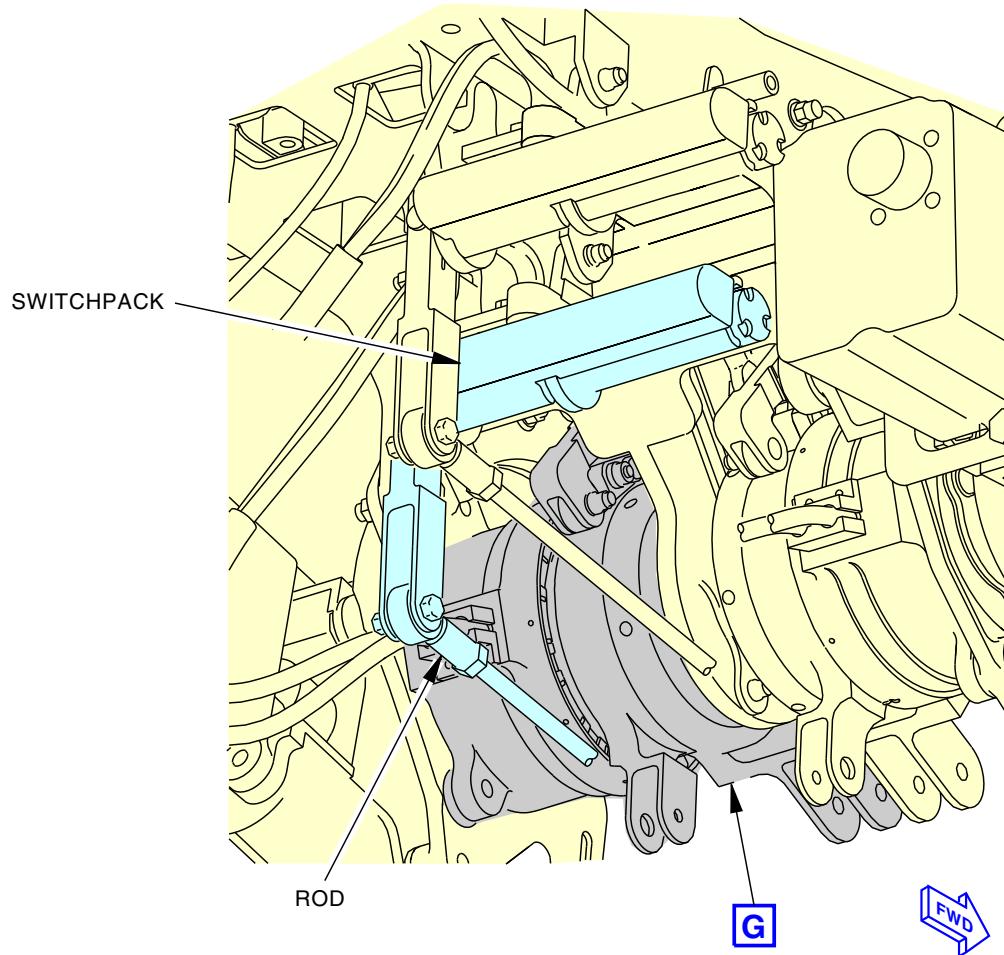
2064925 S0000427640_V3

Autothrottle Switchpack Adjustment/Test
Figure 503/76-11-07-990-811-F00 (Sheet 4 of 6)

EFFECTIVITY
LOM ALL

76-11-07

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AIRCRAFT MAINTENANCE MANUALAUTOTHROTTLE SWITCHPACK
(EXAMPLE) F

2065001 S0000427642_V3

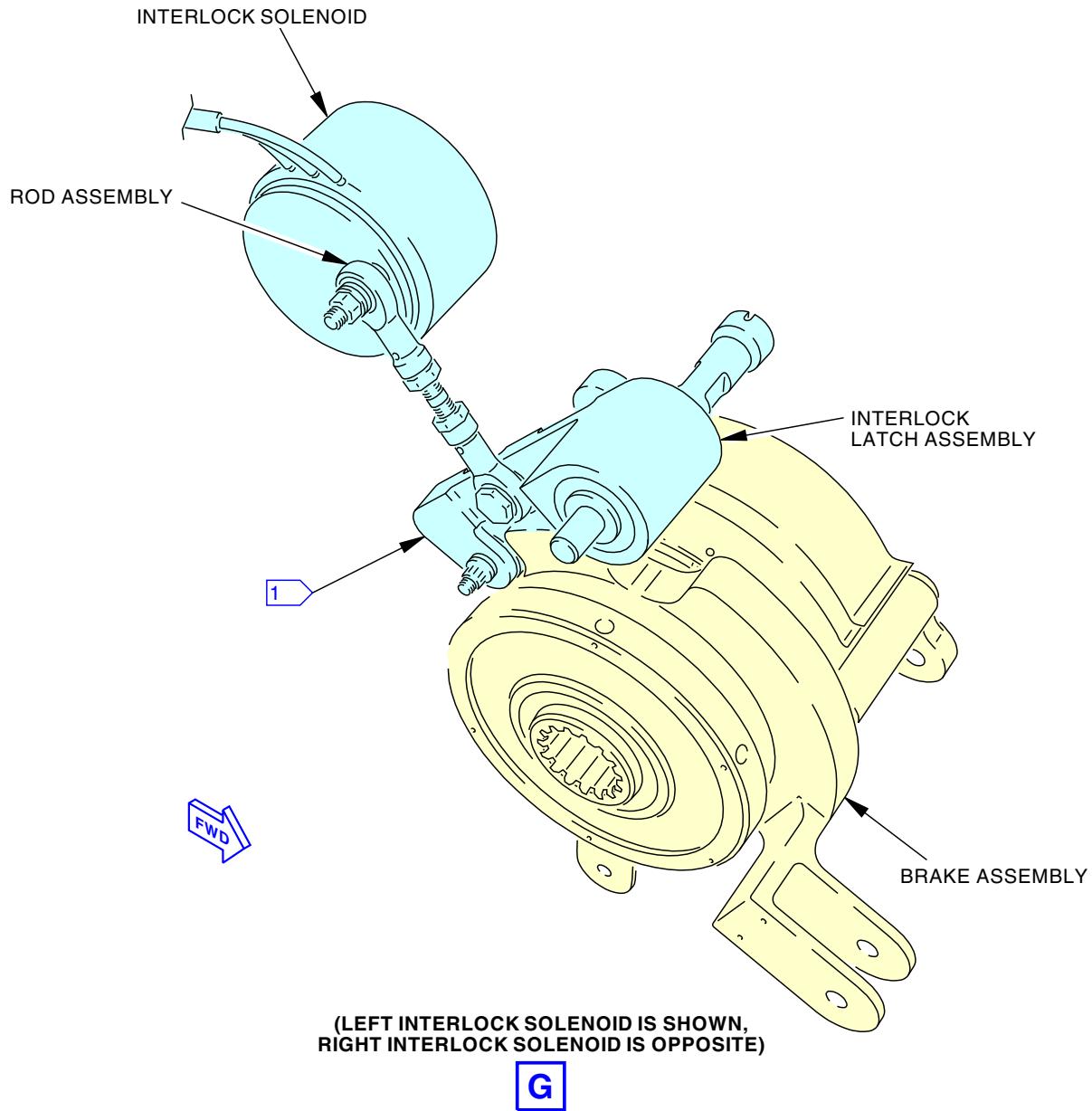
Autothrottle Switchpack Adjustment/Test
Figure 503/76-11-07-990-811-F00 (Sheet 5 of 6)

EFFECTIVITY
LOM ALL

76-11-07

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- 1** USE A BUNGEE CORD OR TIE WRAP TO TEMPORARILY HOLD THIS END OF THE LATCH UP AND CLEAR OFF THE AUTOTHROTTLE BRAKE CAM.

2977482 S0000755765_V1

Autothrottle Switchpack Adjustment/Test
Figure 503/76-11-07-990-811-F00 (Sheet 6 of 6)EFFECTIVITY
LOM ALL**76-11-07**

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ENGINE START BRAKE ASSEMBLY - REMOVAL/INSTALLATION

1. General

- A. This procedure has two tasks:
 - (1) Engine Start Brake Assembly Removal
 - (2) Engine Start Brake Assembly Installation.

TASK 76-11-10-010-801-F00

2. Engine Start Brake Assembly Removal

(Figure 401, Figure 402, Figure 403, and Figure 404)

A. General

- (1) This task gives the instructions to remove the engine start brake assembly from the aisle control stand.
- (2) The engine start brake assembly is referred to as the start brake assembly.

B. References

Reference	Title
25-11-01-000-801	Captain's and First Officer's Seat Removal (P/B 401)

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 76-11-10-040-001-F00

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

LOM 429-432; AIRPLANES WITH AUTO-IGNITION

SUBTASK 76-11-10-860-006-F00

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

LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-461

SUBTASK 76-11-10-860-007-F00

- (3) For engine 1, open these circuit breakers and install the 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	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	ENGINE 1 ALTN PWR CHAN A
B	1	C01316	ENGINE 1 START LEVER CHAN A

EFFECTIVITY
**LOM 402, 404, 406, 407, 411, 412, 415, 416, 420,
 422-434, 437-447, 450-461**

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AIRCRAFT MAINTENANCE MANUAL**

(Continued)

CAPT Electrical System Panel, P18-2

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
B	2	C01317	ENGINE 1 START LEVER CHAN B
B	3	C01312	ENGINE 1 RUN/PWR
B	4	C01003	ENGINE 1 THRUST REVERSER IND
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 76-11-10-860-008-F00

- (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
C	8	C01004	ENGINE 2 THRUST REVERSER IND
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	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 76-11-10-860-014-F00

- (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>
C	2	C00849	AFCS STABILIZER TRIM
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

EFFECTIVITY
 LOM 402, 404, 406, 407, 411, 412, 415, 416, 420,
 422-434, 437-447, 450-461

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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	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 76-11-10-040-004-F00

- (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>
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1
B	5	C00540	FUEL SPAR VALVE IND

SUBTASK 76-11-10-010-001-F00

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

F. Start Brake Assembly Removal

SUBTASK 76-11-10-010-002-F00



CAUTION

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.

- (1) Remove the covers from the control stand, do these steps:

- (a) Remove the screws [2], screw [3], and screw [4] that attach the left upper cover [1] to the control stand.
- (b) Remove the screws [2] that attach the left lower cover [5] to the control stand.
- (c) Remove the screws [2] that attach the right upper cover [6] to the control stand.
- (d) Remove the screws [2] that attach the right lower cover [7] to the control stand.

SUBTASK 76-11-10-020-001-F00

- (2) For the start brake assembly (engine 1) [71], disconnect the electrical harness as follows:
- (a) Remove the electrical connector [23] (D11286P).
 - (b) Remove the electrical connector [22] (D11288P).
 - (c) Disconnect the three clamps [21].

SUBTASK 76-11-10-020-002-F00

- (3) For the start brake assembly (engine 2) [72], disconnect the electrical harness as follows:
- (a) Remove the electrical connector [42] (D11292P).
 - (b) Remove the electrical connector [43] (D11290P).
 - (c) Disconnect the two clamps [41].

SUBTASK 76-11-10-020-003-F00

- (4) Disconnect the applicable start lever from the start brake assembly as follows:
- (a) Move the start lever to the IDLE position.
 - (b) Remove the nut [61], washer [62], washer [64], and bolt [65].

SUBTASK 76-11-10-020-004-F00

- (5) Remove the applicable start brake assembly as follows:

EFFECTIVITY
**LOM 402, 404, 406, 407, 411, 412, 415, 416, 420,
 422-434, 437-447, 450-461**

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- (a) Remove the bolt [73] and washer [74] from the upper aft position.
- (b) Remove the bolt [75] and washer [74] from the lower aft position.
- (c) Do these steps to remove the start brake assembly from the control stand:
NOTE: The start brake assembly can pivot from its usual position.
 - 1) Remove the nut [66] and washer [67] from the forward center position.
 - 2) Hold the start brake assembly in its position.
 - a) Remove the bolt [68], washer [69], and spacer [70].
 - 3) Remove the applicable start brake assembly down and out of the control stand.

———— END OF TASK ————

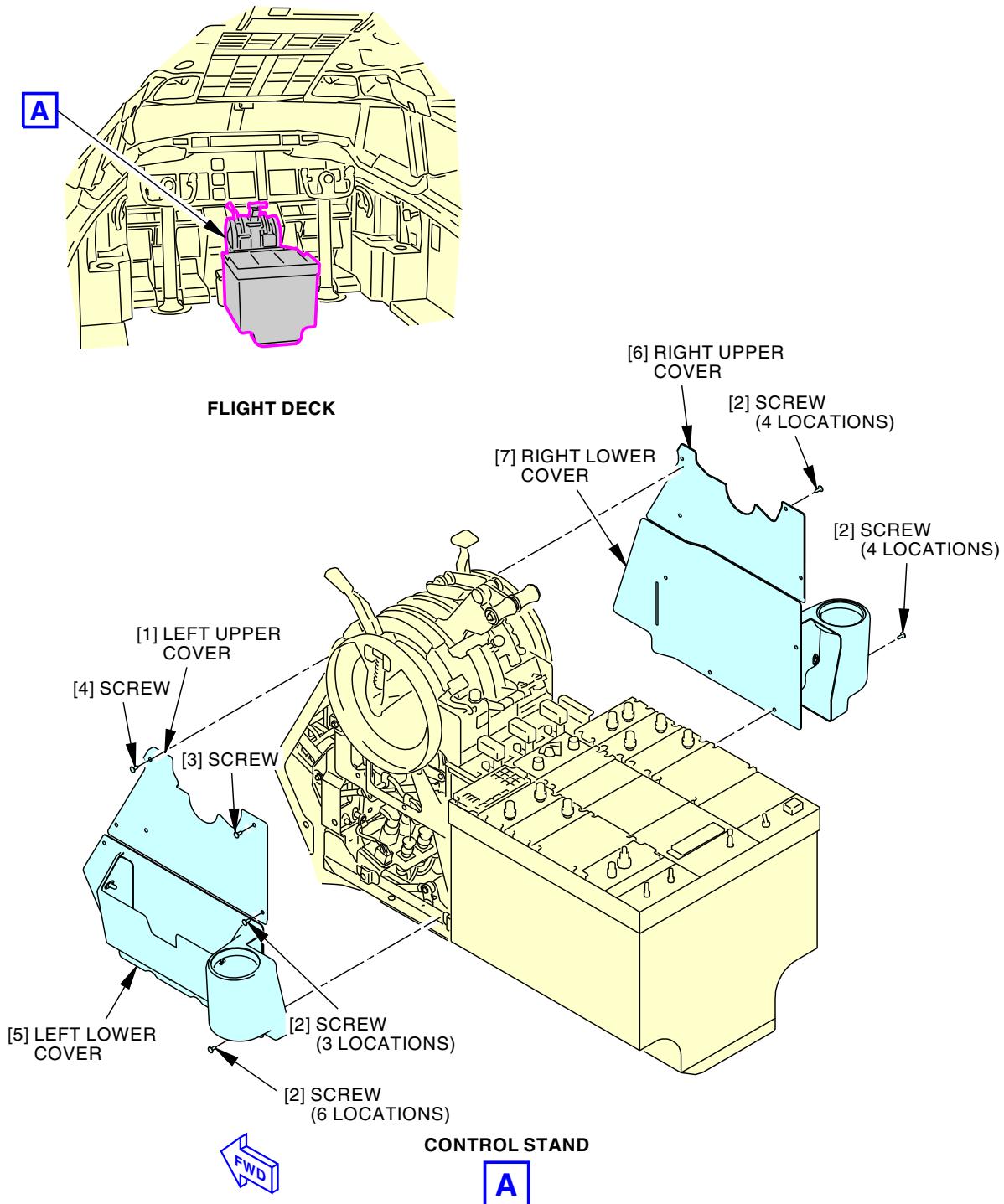
— EFFECTIVITY —
LOM 402, 404, 406, 407, 411, 412, 415, 416, 420,
422-434, 437-447, 450-461

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ECCN 9E991 BOEING PROPRIETARY - See title page for details

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G34569 S0006583135_V3

Control Stand Installation
Figure 401/76-11-10-990-801-F00

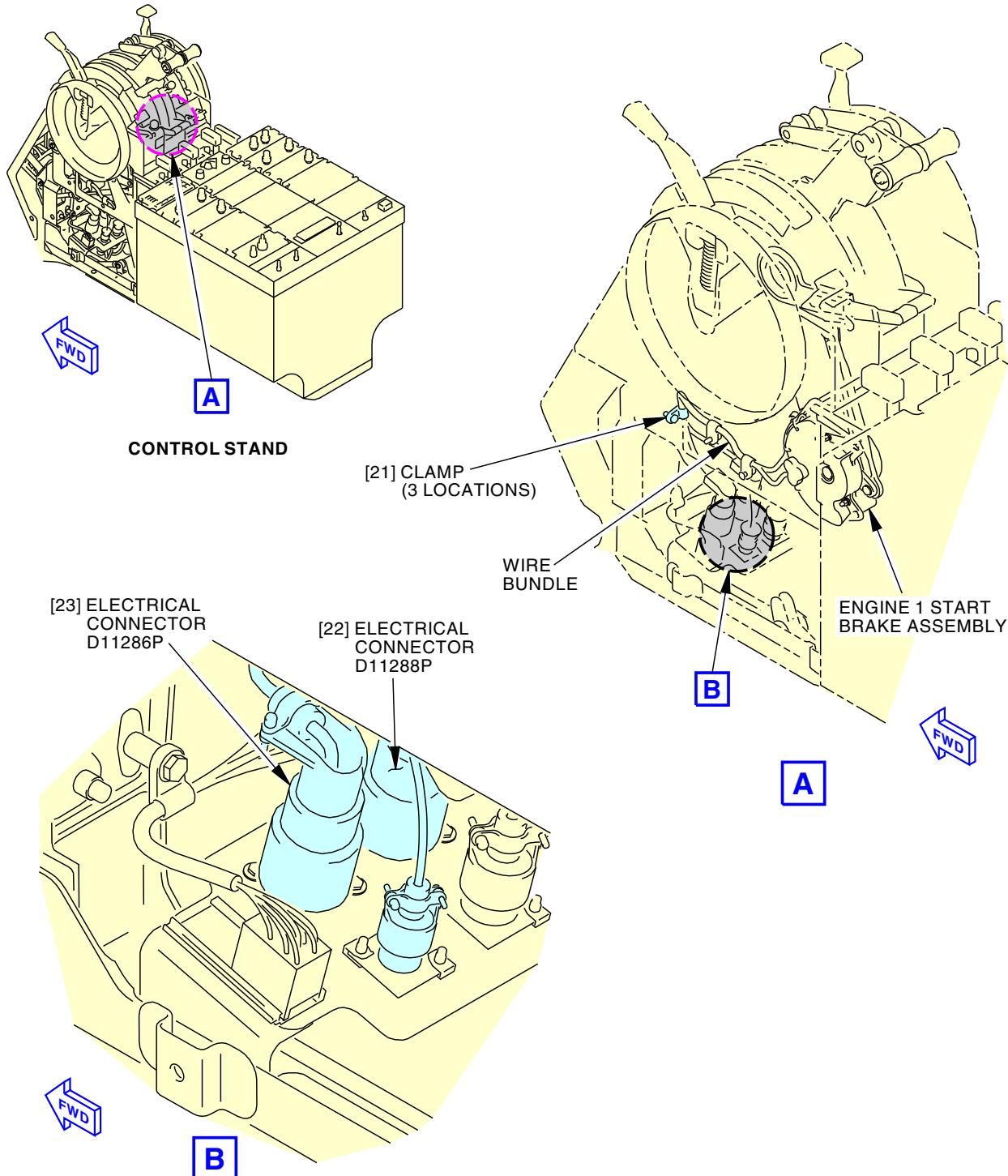
EFFECTIVITY
LOM 402, 404, 406, 407, 411, 412, 415, 416, 420,
422-434, 437-447, 450-461

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ECCN 9E991 BOEING PROPRIETARY - See title page for details

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G34581 S0006583136_V2

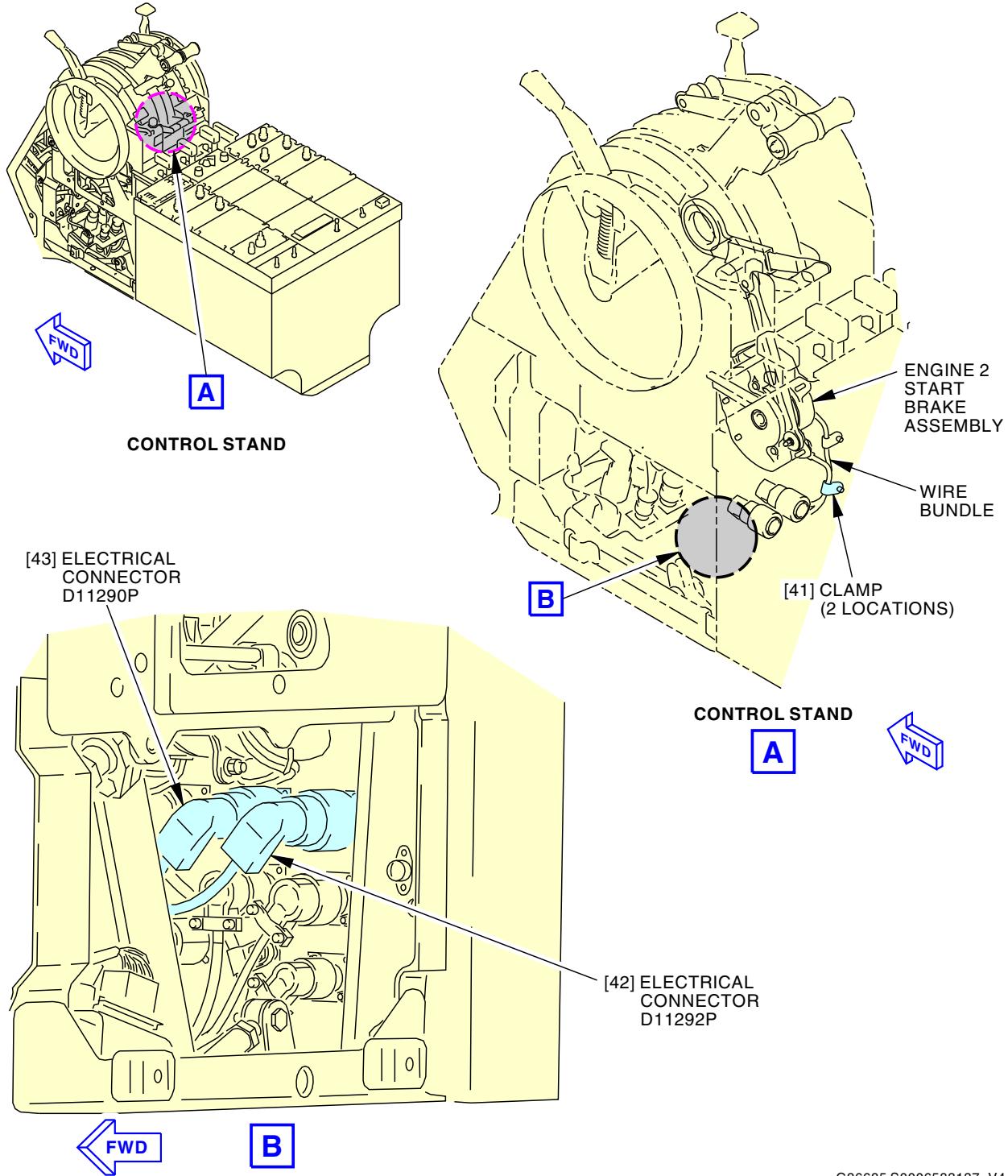
Start Brake (Engine 1) Electrical Harness Installation
Figure 402/76-11-10-990-802-F00

EFFECTIVITY
 LOM 402, 404, 406, 407, 411, 412, 415, 416, 420,
 422-434, 437-447, 450-461

76-11-10

D633A101-LOM

ECCN 9E991 BOEING PROPRIETARY - See title page for details



G36685 S0006583137_V4

Start Brake (Engine 2) Electrical Harness Installation
Figure 403/76-11-10-990-803-F00

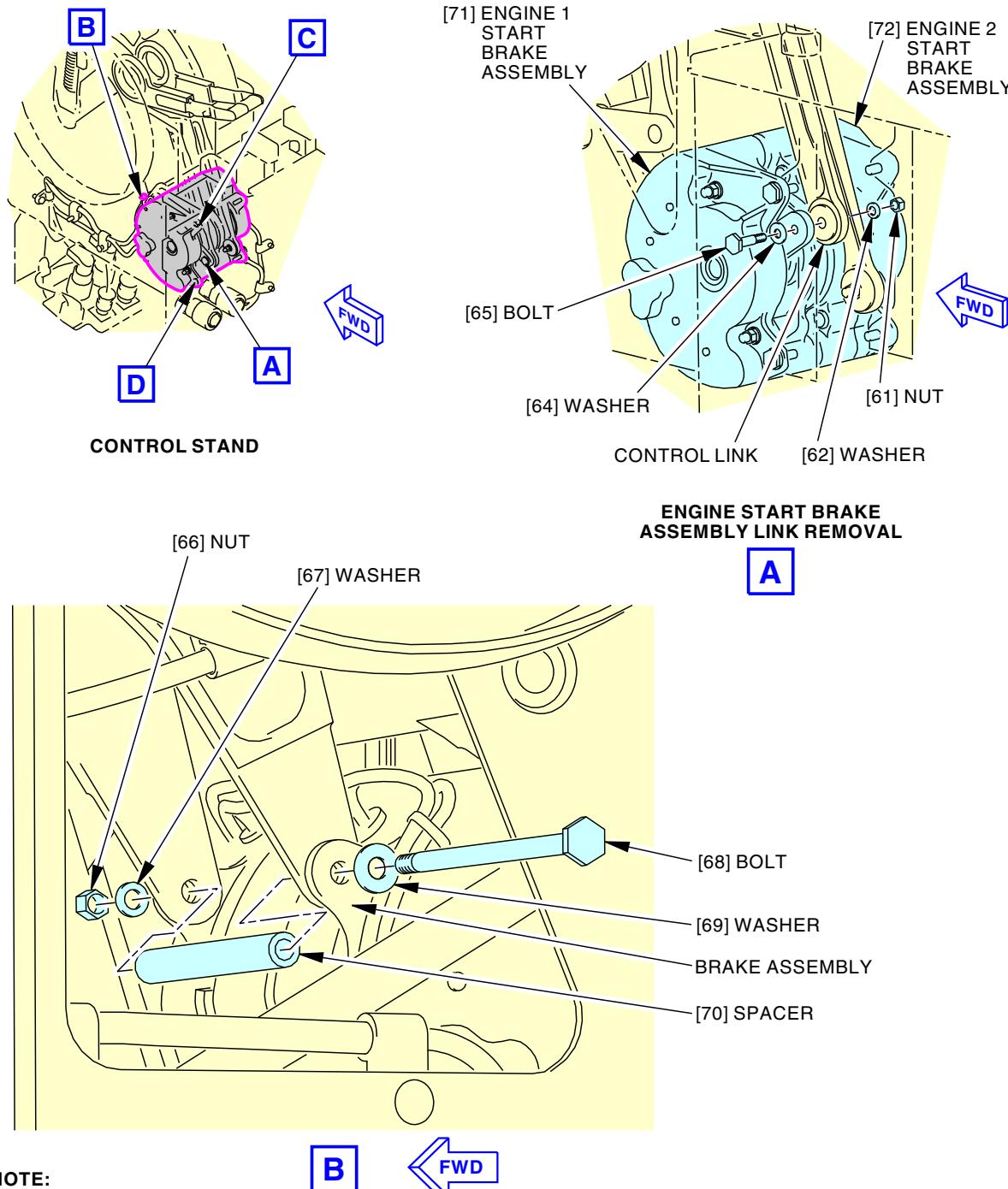
EFFECTIVITY
 LOM 402, 404, 406, 407, 411, 412, 415, 416, 420,
 422-434, 437-447, 450-461

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D633A101-LOM

ECCN 9E991 BOEING PROPRIETARY - See title page for details

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G34577 S0006583138_V2

Engine Start Brake Assembly Installation
Figure 404/76-11-10-990-804-F00 (Sheet 1 of 2)

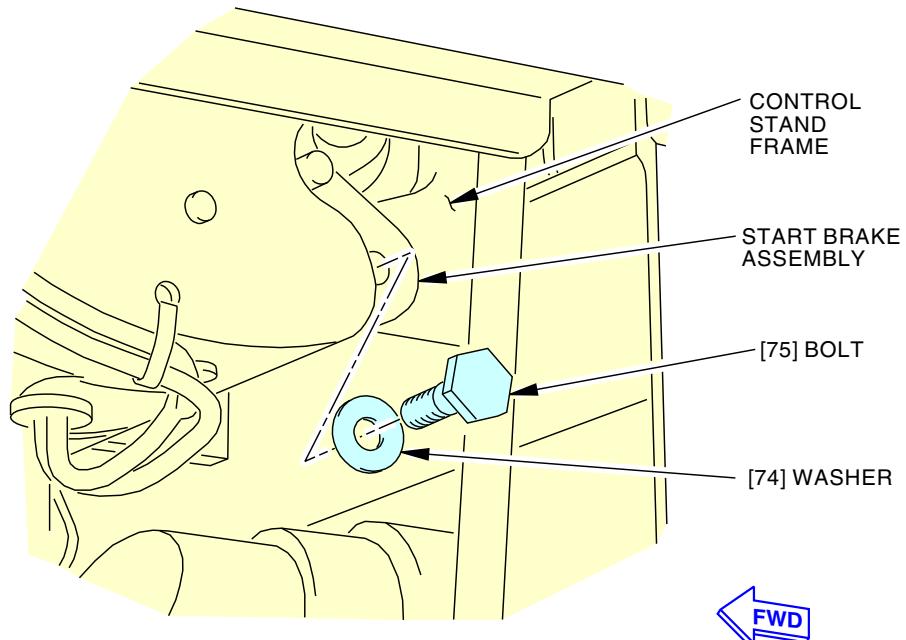
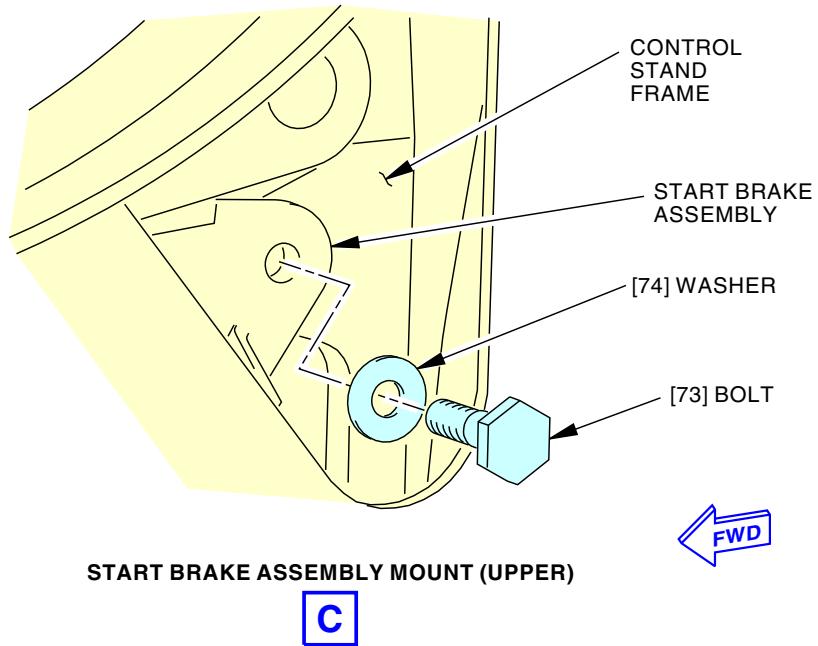
EFFECTIVITY
**LOM 402, 404, 406, 407, 411, 412, 415, 416, 420,
 422-434, 437-447, 450-461**

76-11-10

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ECCN 9E991 BOEING PROPRIETARY - See title page for details

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NOTE:

ENGINE 1 IS SHOWN;
ENGINE 2 IS OPPOSITE.

G34578 S0006583139_V3

Engine Start Brake Assembly Installation
Figure 404/76-11-10-990-804-F00 (Sheet 2 of 2)

EFFECTIVITY
LOM 402, 404, 406, 407, 411, 412, 415, 416, 420,
422-434, 437-447, 450-461

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TASK 76-11-10-420-801-F00**3. Engine Start Brake Assembly Installation**

(Figure 401, Figure 402, Figure 403, and Figure 404)

A. General

- (1) This task gives the instructions to install the engine start brake assemblies into the aisle control stand.

B. References

Reference	Title
25-11-01-400-801	Captain's and First Officer's Seat Installation (P/B 401)
28-22-00-710-801	Engine Fuel Spar Valve - Electrical Control and Indication Test (P/B 501)
71-00-00-700-808-F00	Test 13 - Engine Run - EEC BITE Check (P/B 501)
73-21-00-700-804-F00	EEC TEST (P/B 501)
73-21-00-700-809-F00	EEC Discretes Test (P/B 501)
74-00-00-750-801-F00	Ignition System Audible 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
COM-754	Scale - Spring, 0-150 Pounds, With Hook and Pad Adapter Kit Part #: DG-200 Supplier: 92456 Opt Part #: DPPH-150 Supplier: 92456
COM-1793	Multimeter - Digital/Analog (or equivalent meter meets task requirements) Part #: 117 Supplier: 89536 Part #: 260-8XPI Supplier: 55026 Part #: 287 Supplier: 89536 Part #: 289 Supplier: 89536 Part #: 87V Supplier: 89536 Part #: FLUKE 27 II Supplier: 89536 Part #: FLUKE-77-4 Supplier: 89536 Opt Part #: 187 Supplier: 89536 Opt Part #: 189 Supplier: 89536 Opt Part #: 21 Supplier: 89536 Opt Part #: 27 Supplier: 89536 Opt Part #: 77 SERIES III Supplier: 89536 Opt Part #: 87 Supplier: 89536 Opt Part #: FLUKE 27 Supplier: 89536 Opt Part #: MODEL 27 Supplier: 89536

D. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
71	Start brake assembly (engine 1)	76-11-10-02-005	LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-461

EFFECTIVITY
LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-461

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(Continued)

AMM Item	Description	AIPC Reference	AIPC Effectivity
72	Start brake assembly (engine 2)	76-11-10-02-010	LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-461

E. Location Zones

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

F. Engine Start Brake Assembly Installation

SUBTASK 76-11-10-020-005-F00

- (1) Install the applicable start brake assembly (engine 1) [71] or start brake assembly (engine 2) [72] as follows:
 - (a) Put the start brake assembly (engine 1) [71] or start brake assembly (engine 2) [72] into its position in the control stand.
NOTE: Put the start brake assembly in its position for the installation of the forward pivot parts.
 - (b) Install the washer [69] and bolt [68] only through the brake assembly and first frame of the control stand.
 - (c) Put the spacer [70] in its position.
 - (d) Move the bolt [68] and washer [69] through the spacer [70], second control stand frame, and brake assembly.
 - 1) Install the nut [66] and washer [67].
 - (e) Pivot the speed brake up to do these steps:
 - 1) Install the washer [74] and bolt [73] for the upper start brake assembly mount.
 - 2) Install the washer [74] and bolt [75] for the lower start brake assembly mount.

SUBTASK 76-11-10-020-006-F00

- (2) Install the applicable start lever to the start brake assembly as follows:
 - (a) Move the start lever to the IDLE position.
 - (b) Move the actuator arm of the start brake assembly to align with the control link.
 - (c) Install the bolt [65], washer [64], washer [62], and nut [61].

SUBTASK 76-11-10-820-001-F00

- (3) After you complete the installation of the applicable start brake assembly, do these checks:
 - (a) Move the start lever from the CUTOFF position to the IDLE position 2 or 3 times.
 - 1) The lever must move freely and smoothly.
NOTE: The lever must not touch or catch on parts in the control stand.
 - (b) Measure the resistance in the movement of the start lever from the CUTOFF to the IDLE position as follows:
 - 1) Attach the spring scale, COM-754, to the start lever knob.
 - 2) Make sure that the resistance is not more than 10 lbf (44.5 N).
 - (c) Measure the resistance to get the start lever from its detent position as follows:

EFFECTIVITY
**LOM 402, 404, 406, 407, 411, 412, 415, 416, 420,
 422-434, 437-447, 450-461**

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- 1) Attach the spring scale, COM-754, to the start lever knob.
- 2) Make sure that the resistance is not more than 5 lbf (22.24 N).

SUBTASK 76-11-10-700-001-F00

- (4) Do a check of the start brake assembly (engine 1) [71] as follows:

NOTE: Do the check only when you replace the Line Replaceable Unit (LRU).

- (a) Set the engine 1 start lever to the CUTOFF position.
- (b) Do a check of the circuit values of the start brake assembly at the CUTOFF position.
 - 1) Use a digital/analog multimeter, COM-1793, to measure the circuit values (Table 401).

Table 401/76-11-10-993-801-F00

CIRCUIT SETTINGS		
Connector (Switch)	Connector Pin Numbers	Circuit Condition (Switch Settings)
D11286P (S88)	11 and 12	More than 1 megohm
D11286P (S88)	11 and 13	Less than 1 ohm
D11286P (S1024)	15 and 5	More than 1 megohm
D11286P (S1024)	15 and 4	Less than 1 ohm
D11286P (S1026)	9 and 8	More than 1 megohm
D11286P (S1026)	9 and 7	Less than 1 ohm
D11288P (S89)	11 and 12	More than 1 megohm
D11288P (S89)	11 and 13	Less than 1 ohm
D11288P (S1025)	15 and 5	More than 1 megohm
D11288P (S1025)	15 and 4	Less than 1 ohm
D11288P (S595)	9 and 8	More than 1 megohm
D11288P (S595)	9 and 7	Less than 1 ohm

- (c) Set the engine 1 start lever to the IDLE position.
- (d) Do a check of the circuit values of the start brake assembly at the IDLE position.
 - 1) Use a digital/analog multimeter, COM-1793, to measure the circuit values (Table 402).

Table 402/76-11-10-993-802-F00

CIRCUIT SETTINGS		
Connector (Switch)	Connector Pin Numbers	Circuit Condition (Switch Settings)
D11286P (S88)	11 and 12	Less than 1 ohm
D11286P (S88)	11 and 13	More than 1 megohm
D11286P (S1024)	15 and 5	Less than 1 ohm
D11286P (S1024)	15 and 4	More than 1 megohm
D11286P (S1026)	9 and 8	Less than 1 ohm

EFFECTIVITY
**LOM 402, 404, 406, 407, 411, 412, 415, 416, 420,
 422-434, 437-447, 450-461**

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Table 402/76-11-10-993-802-F00 (Continued)

CIRCUIT SETTINGS		
Connector (Switch)	Connector Pin Numbers	Circuit Condition (Switch Settings)
D11286P (S1026)	9 and 7	More than 1 megohm
D11288P (S89)	11 and 12	Less than 1 ohm
D11288P (S89)	11 and 13	More than 1 megohm
D11288P (S1025)	15 and 5	Less than 1 ohm
D11288P (S1025)	15 and 4	More than 1 megohm
D11288P (S595)	9 and 8	Less than 1 ohm
D11288P (S595)	9 and 7	More than 1 megohm

(e) If the measured circuits are as shown, do the electrical connector installation steps.

SUBTASK 76-11-10-700-002-F00

- (5) Do a check of the start brake assembly (engine 2) [72] as follows

NOTE: Do the check only when you replace the LRU.

- (a) Set the engine 2 start lever to the CUTOFF position.
- (b) Do a check of the circuit values of the start brake assembly at the CUTOFF position.
 - 1) Use a digital/analog multimeter, COM-1793, to measure the circuit values (Table 403).

Table 403/76-11-10-993-803-F00

CIRCUIT SETTINGS		
Connector (Switch)	Connector Pin Numbers	Circuit Condition (Switch Settings)
D11290P (S90)	11 and 12	More than 1 megohm
D11290P (S90)	11 and 13	Less than 1 ohm
D11290P (S1027)	15 and 5	More than 1 megohm
D11290P (S1027)	15 and 4	Less than 1 ohm
D11290P (S1029)	9 and 8	More than 1 megohm
D11290P (S1029)	9 and 7	Less than 1 ohm
D11292P (S91)	11 and 12	More than 1 megohm
D11292P (S91)	11 and 13	Less than 1 ohm
D11292P (S1028)	15 and 5	More than 1 megohm
D11292P (S1028)	15 and 4	Less than 1 ohm
D11292P (S596)	9 and 8	More than 1 megohm
D11292P (S596)	9 and 7	Less than 1 ohm

(c) Set the engine 2 start lever to the IDLE position.

(d) Do a check of the circuit values of the start brake assembly at the IDLE position.

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- 1) Use a digital/analog multimeter, COM-1793, to measure the circuit values (Table 404).

Table 404/76-11-10-993-804-F00

CIRCUIT SETTINGS		
Connector (Switch)	Connector Pin Numbers	Circuit Condition (Switch Settings)
D11290P (S90)	11 and 12	Less than 1 ohm
D11290P (S90)	11 and 13	More than 1 megohm
D11290P (S1027)	15 and 5	Less than 1 ohm
D11290P (S1027)	15 and 4	More than 1 megohm
D11290P (S1029)	9 and 8	Less than 1 ohm
D11290P (S1029)	9 and 7	More than 1 megohm
D11292P (S91)	11 and 12	Less than 1 ohm
D11292P (S91)	11 and 13	More than 1 megohm
D11292P (S1028)	15 and 5	Less than 1 ohm
D11292P (S1028)	15 and 4	More than 1 megohm
D11292P (S596)	9 and 8	Less than 1 ohm
D11292P (S596)	9 and 7	More than 1 megohm

- (e) If the measured circuits are as shown, do the electrical connector installation steps.

SUBTASK 76-11-10-420-001-F00

- (6) Connect the electrical harness for the start brake assembly (engine 1) [71] as follows.
- Install the electrical connector [23] (D11286P).
 - Install the electrical connector [22] (D11288P).
 - Attach the three clamps [21].

SUBTASK 76-11-10-020-007-F00

- (7) Connect the electrical harness for the start brake assembly (engine 2) [72] as follows:
- Install the electrical connector [42] (D11292P).
 - Install the electrical connector [43] (D11290P).
 - Attach the two clamps [41].

SUBTASK 76-11-10-010-003-F00

- (8) Install the covers on the control stand, do these steps:
- Install the screws [2] that attach the left lower cover [5] to the control stand.
 - Install the screws [2], screw [3], and screw [4] that attach the left upper cover [1] to the control stand.
 - Install the screws [2] that attach the right lower cover [7] to the control stand.
 - Install the screws [2] that attach the right upper cover [6] to the control stand.

EFFECTIVITY
**LOM 402, 404, 406, 407, 411, 412, 415, 416, 420,
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G. Put the Airplane Back to Its Usual Condition

SUBTASK 76-11-10-860-015-F00

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C00849	AFCS STABILIZER TRIM
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
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 76-11-10-040-006-F00

- (2) 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>
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1
B	5	C00540	FUEL SPAR VALVE IND

SUBTASK 76-11-10-860-009-F00

- (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>
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	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	4	C01003	ENGINE 1 THRUST REVERSER IND
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

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SUBTASK 76-11-10-860-013-F00

- (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>
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
C	8	C01004	ENGINE 2 THRUST REVERSER IND
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	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 76-11-10-860-005-F00

- (5) Remove the DO NOT OPERATE tags from the engine start switches.

SUBTASK 76-11-10-410-002-F00

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

H. Engine Start Brake Assembly Test

SUBTASK 76-11-10-700-003-F00

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

SUBTASK 76-11-10-700-006-F00

- (2) Do this task: EEC TEST, TASK 73-21-00-700-804-F00.

SUBTASK 76-11-10-700-007-F00

- (3) Do this task: EEC Discretes Test, TASK 73-21-00-700-809-F00.

SUBTASK 76-11-10-700-004-F00

- (4) Do this task: Ignition System Audible Test, TASK 74-00-00-750-801-F00.

SUBTASK 76-11-10-710-002-F00

- (5) Do this task: Test 13 - Engine Run - EEC BITE Check, TASK 71-00-00-700-808-F00.

———— END OF TASK ————

— EFFECTIVITY —
**LOM 402, 404, 406, 407, 411, 412, 415, 416, 420,
 422-434, 437-447, 450-461**

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ENGINE START BRAKE ASSEMBLY SWITCH - REMOVAL/INSTALLATION

1. General

- A. This procedure has two tasks:
 - (1) Engine Start Brake Assembly Switch Removal
 - (2) Engine Start Brake Assembly Switch Installation.

TASK 76-11-11-010-801-F00

2. Engine Start Brake Assembly Switch Removal

(Figure 401, Figure 402 and Figure 403)

A. General

- (1) This task provides the instructions on how to remove the start brake assembly switch from the engine start brake assembly.
- (2) There are six switches that are installed in each engine start brake assembly.
- (3) For this procedure the engine start brake assembly will be referred to as the start brake assembly.

B. References

Reference	Title
76-11-10-010-801-F00	Engine Start Brake Assembly Removal (P/B 401)

C. Location Zones

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

D. Prepare for the Removal

SUBTASK 76-11-11-010-001-F00

- (1) For the applicable engine, do this task: Engine Start Brake Assembly Removal, TASK 76-11-10-010-801-F00.

E. Engine Start Brake Assembly Switch Removal

SUBTASK 76-11-11-020-003-F00

- (1) Remove the rotor assembly [8] as follows:
 - (a) Remove the two bolts [3], one screw [4], the six washers [2], and the three nuts [1].
 - (b) Separate the housing assembly [12].
 - (c) Remove the rotor assembly [8].
 - (d) Keep the three springs [13] and the discs [14] for each housing assembly [12].

SUBTASK 76-11-11-020-001-F00

- (2) Remove the applicable switch [5] for a two-switch installation from a housing assembly [12] as follows:
 - (a) Remove the two screws [7] and the two washers [6].
 - (b) Remove the two switches [5].
 - (c) Remove the switch wires at the applicable brake assembly connector.

SUBTASK 76-11-11-420-003-F00

- (3) Remove the applicable switch [5] for a one-switch installation from the housing assembly [12] as follows:

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- (a) Remove two bolt [11], the two washer [10] and the switch [5].
- (b) Remove the switch wires at the applicable brake assembly connector.

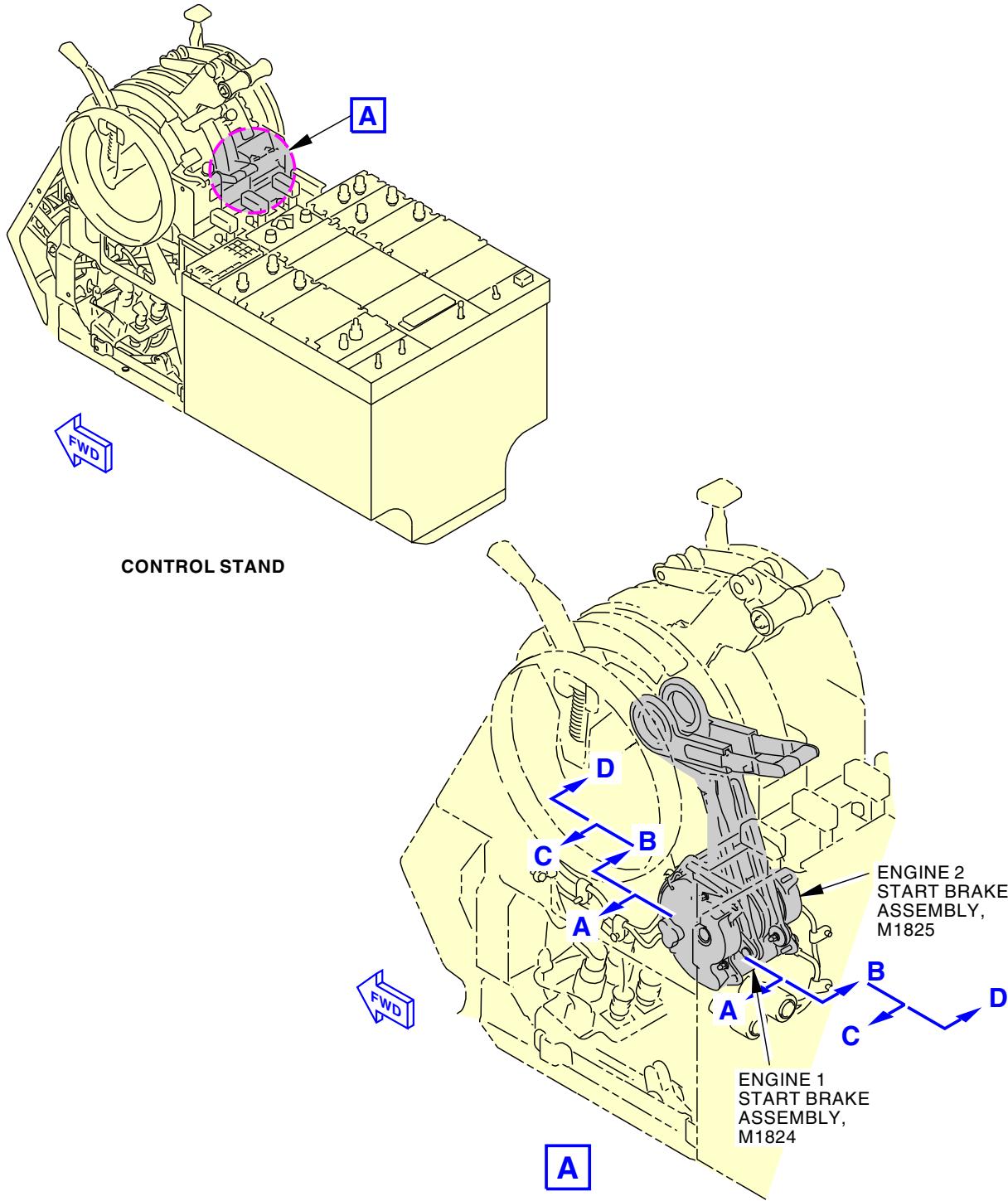
———— END OF TASK ————

———— EFFECTIVITY ————
**LOM 402, 404, 406, 407, 411, 412, 415, 416, 420,
422-434, 437-447, 450-461**

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L41170 S0006583148_V2

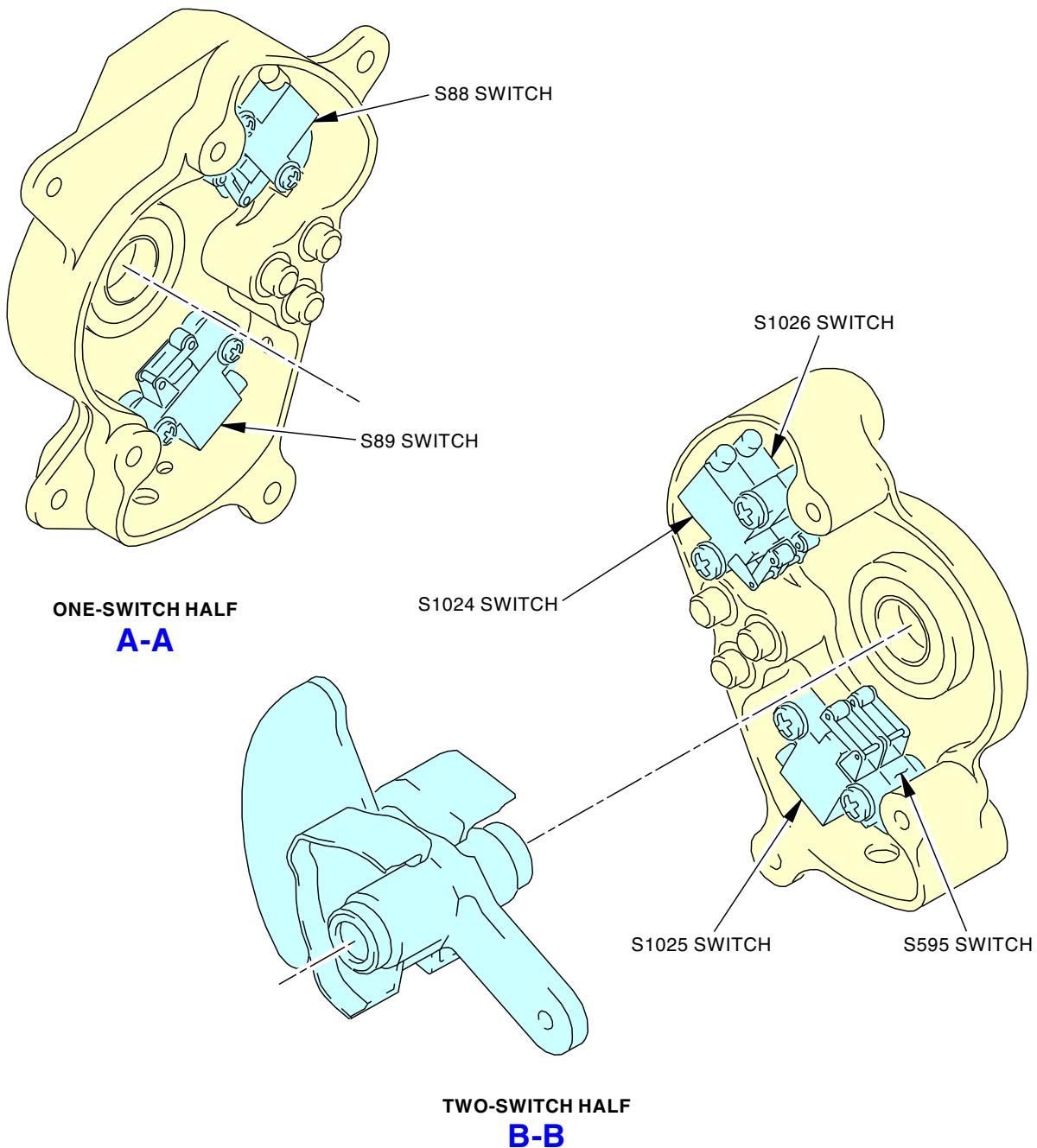
Engine Start Brake Assembly Switch Location
Figure 401/76-11-11-990-801-F00 (Sheet 1 of 3)

EFFECTIVITY
LOM 402, 404, 406, 407, 411, 412, 415, 416, 420,
422-434, 437-447, 450-461

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ENGINE 1 START BRAKE ASSEMBLY, M1824

L41195 S0006583149_V3

Engine Start Brake Assembly Switch Location
Figure 401/76-11-11-990-801-F00 (Sheet 2 of 3)

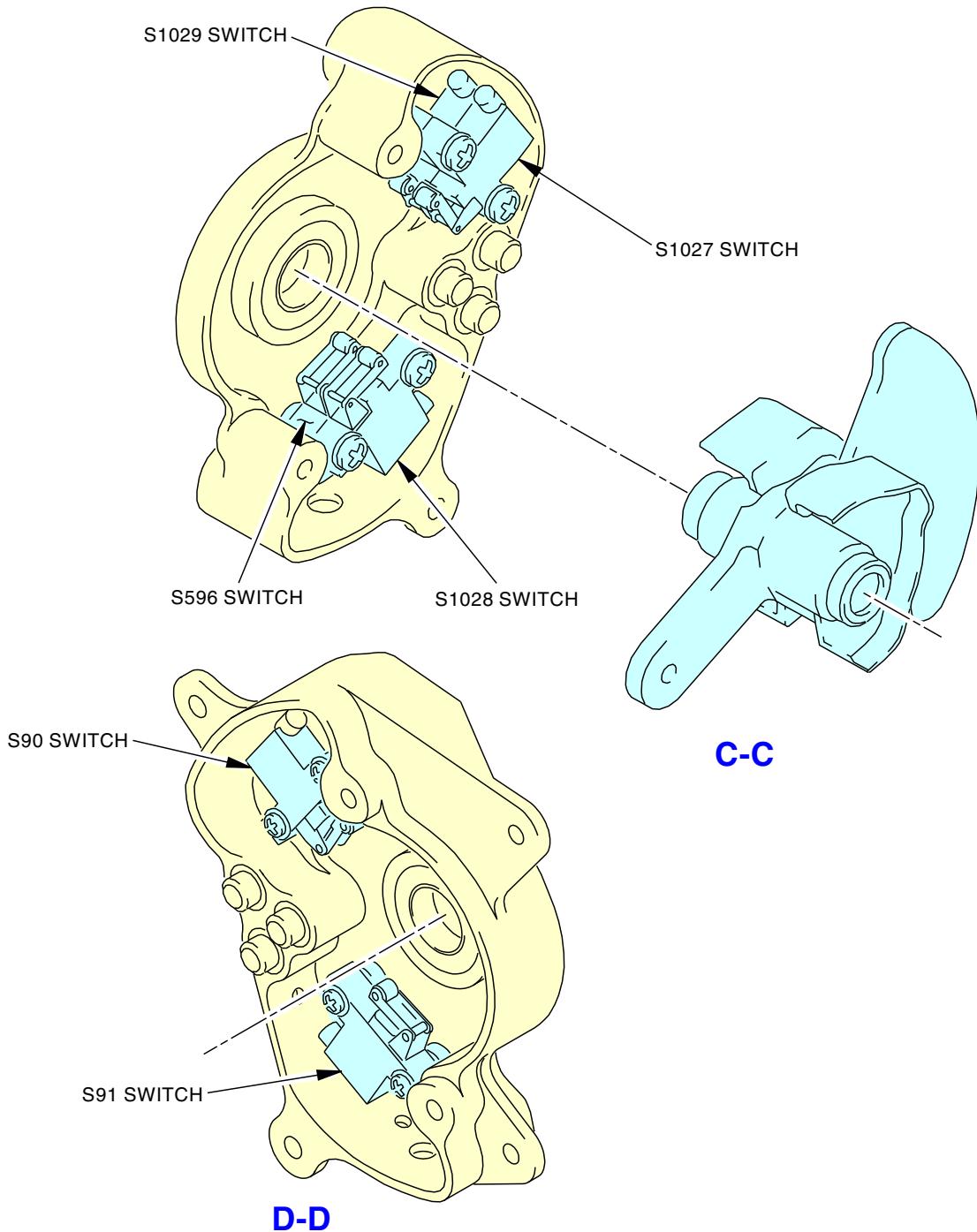
EFFECTIVITY
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**Engine Start Brake Assembly Switch Location
Figure 401/76-11-11-990-801-F00 (Sheet 3 of 3)**

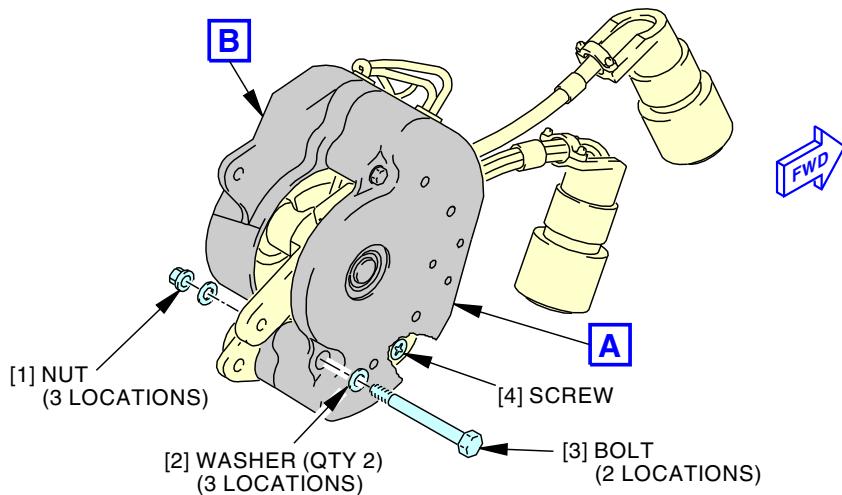
EFFECTIVITY
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422-434, 437-447, 450-461**

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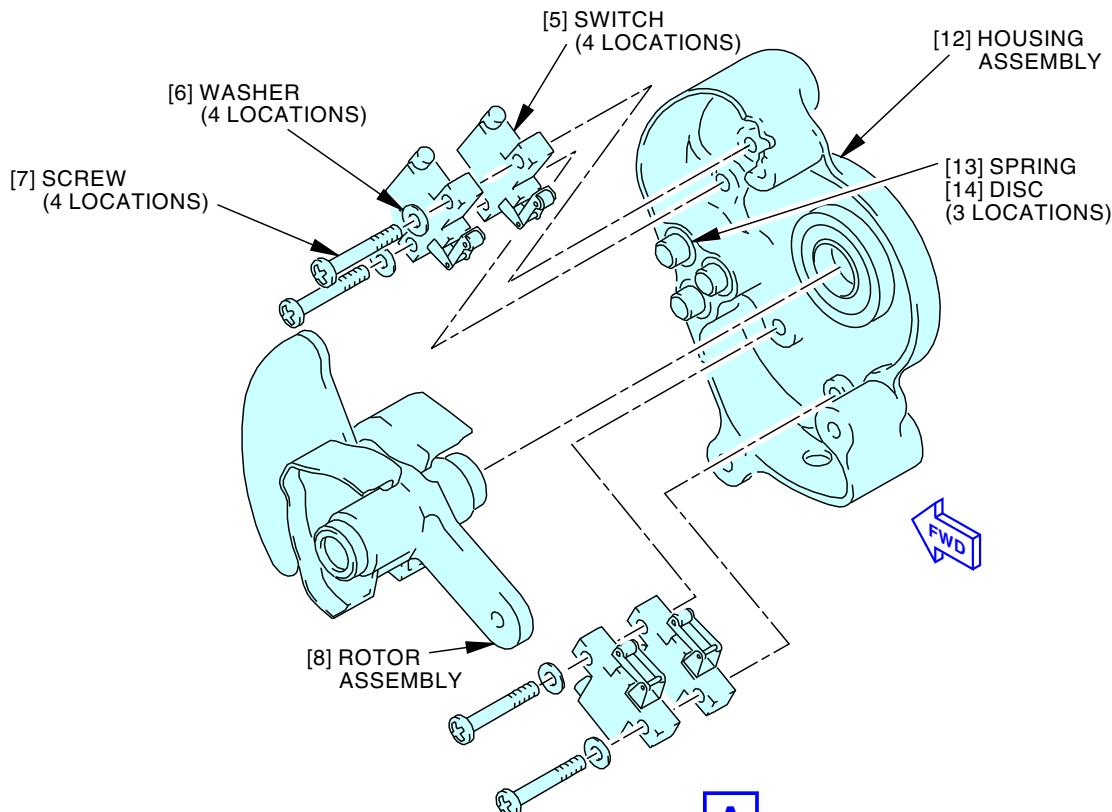
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ENGINE START BRAKE ASSEMBLY



NOTE:

ENGINE 1 START BRAKE ASSEMBLY IS SHOWN,
 ENGINE 2 START BRAKE ASSEMBLY IS OPPOSITE.

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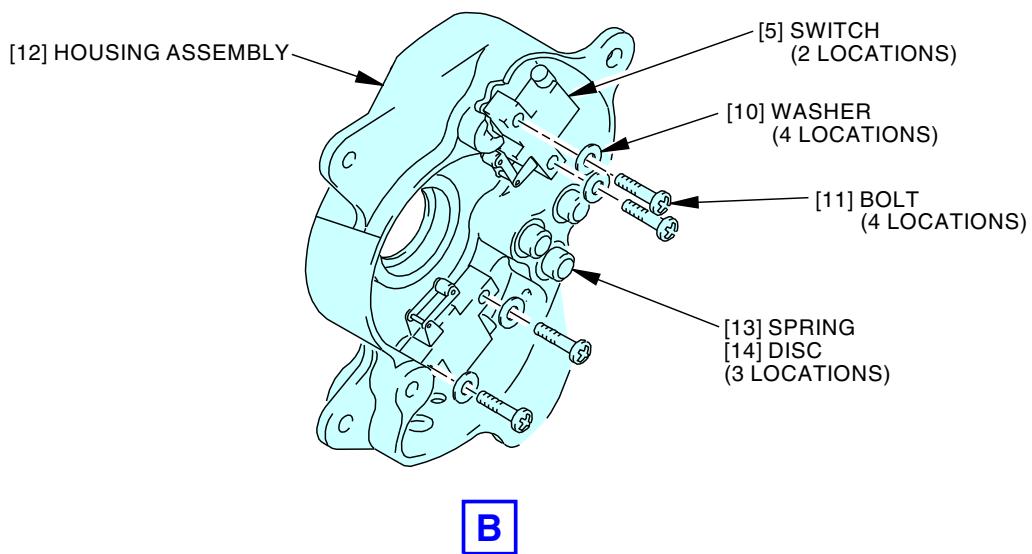
Engine Start Brake Assembly Switch Installation
Figure 402/76-11-11-990-802-F00 (Sheet 1 of 2)

EFFECTIVITY
 LOM 402, 404, 406, 407, 411, 412, 415, 416, 420,
 422-434, 437-447, 450-461

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AIRCRAFT MAINTENANCE MANUAL**NOTE:**

ENGINE 1 START BRAKE ASSEMBLY IS SHOWN,
ENGINE 2 START BRAKE ASSEMBLY IS OPPOSITE.

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Engine Start Brake Assembly Switch Installation
Figure 402/76-11-11-990-802-F00 (Sheet 2 of 2)

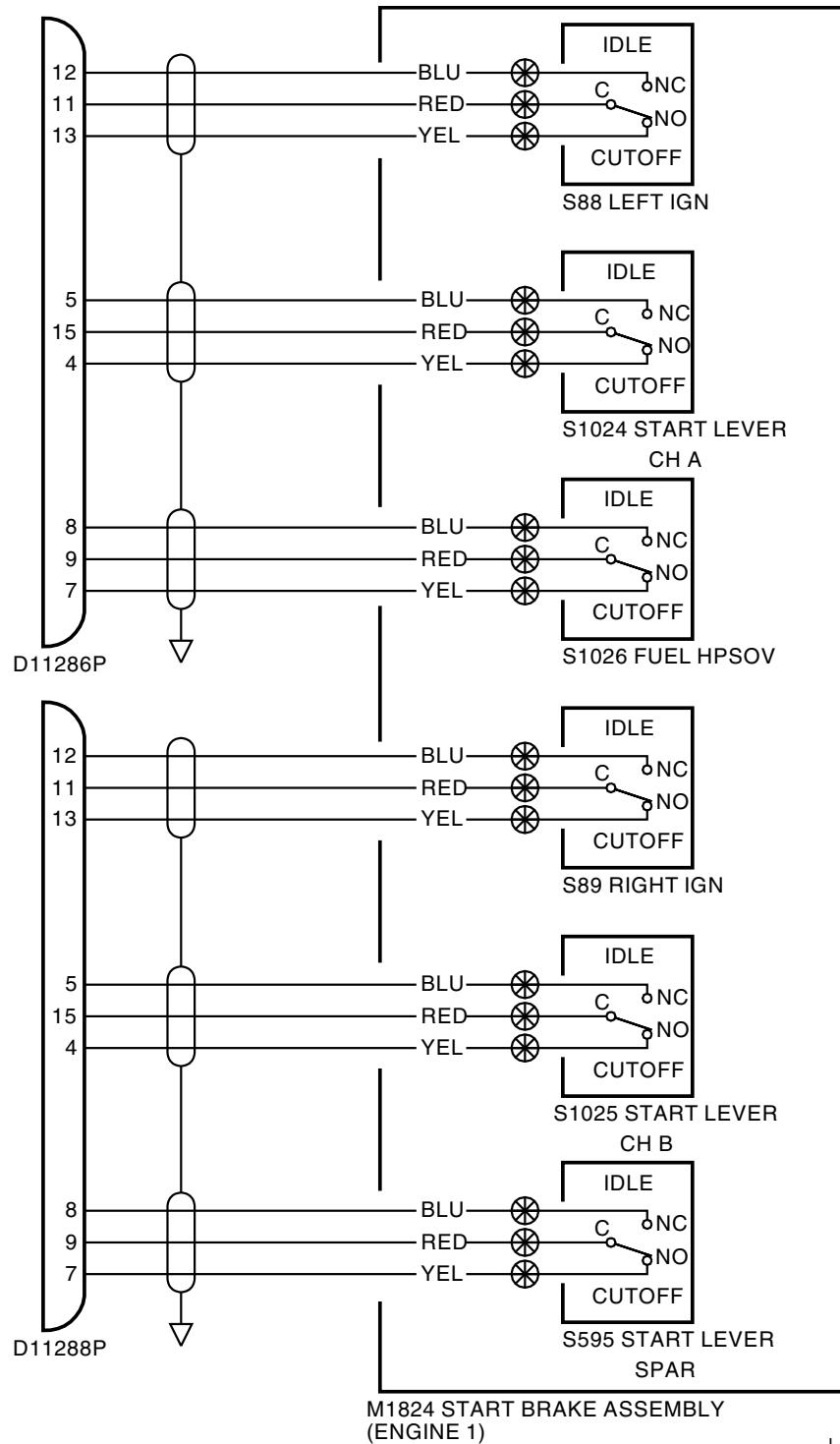
EFFECTIVITY
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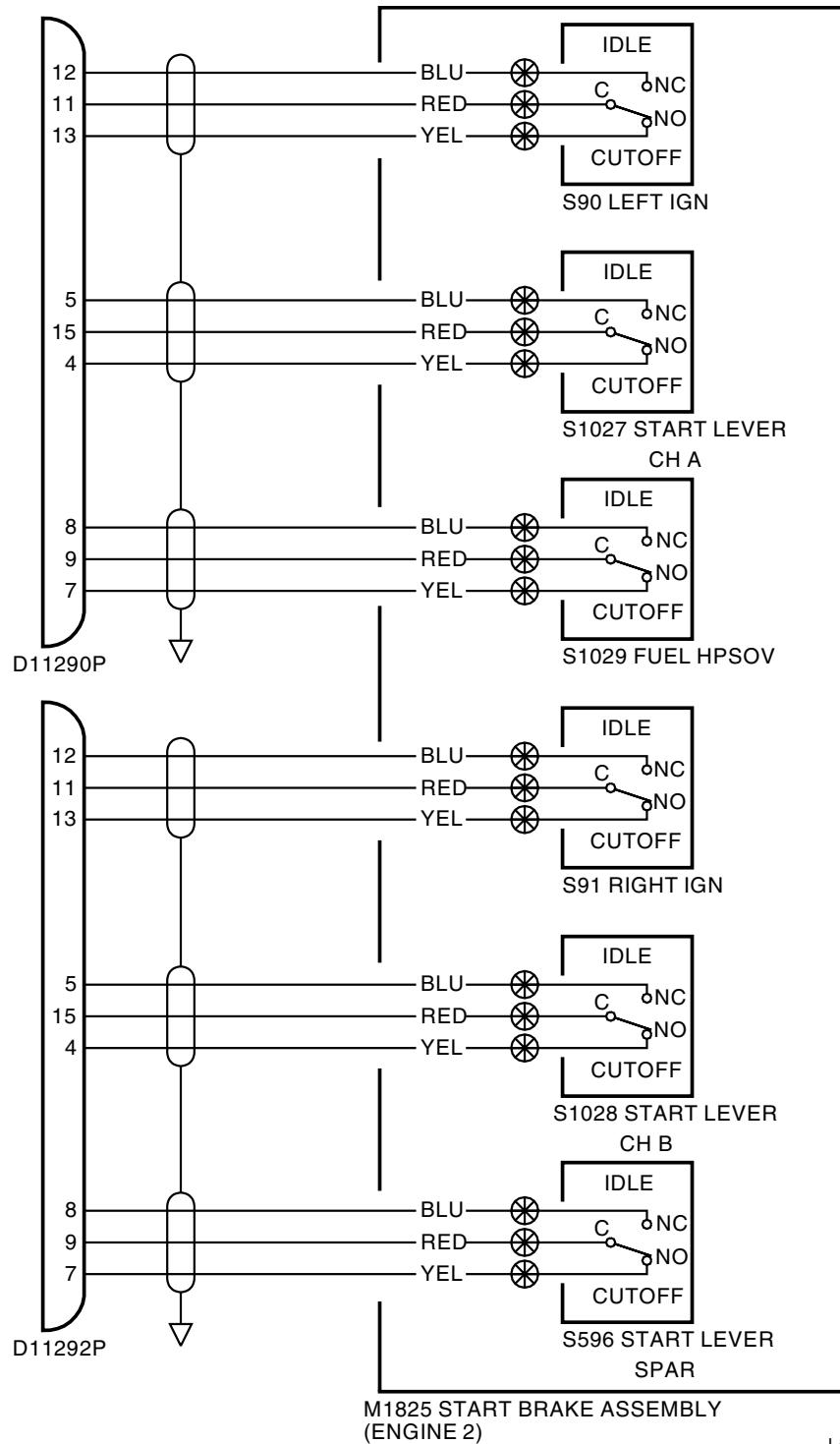
Start Brake Assembly Wiring Diagram
Figure 403/76-11-11-990-804-F00 (Sheet 1 of 2)

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**LOM 402, 404, 406, 407, 411, 412, 415, 416, 420,
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Start Brake Assembly Wiring Diagram
Figure 403/76-11-11-990-804-F00 (Sheet 2 of 2)

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TASK 76-11-11-420-801-F00**3. Engine Start Brake Assembly Switch Installation**

(Figure 401, Figure 402 and Figure 403)

A. General

- (1) This task provides the instructions on how to install the start brake assembly switch into the engine start brake assembly.

B. References

Reference	Title
76-11-10-420-801-F00	Engine Start Brake Assembly Installation (P/B 401)

C. Location Zones

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

D. Engine Start Brake Assembly Switch Installation**SUBTASK 76-11-11-020-002-F00**

- (1) Install the applicable switch [5] for a one-switch installation into the housing assembly [12] as follows:
 - (a) Put the switch wires through the housing assembly [12].
 - (b) Install the switch with the two bolts [11] and the two washers [10].

SUBTASK 76-11-11-420-001-F00

- (2) Install the applicable switches [5] for a two-switch installation into the housing assembly [12] as follow:
 - (a) Put the switch wires through the housing assembly [12].
 - (b) Put the two switches [5] into their positions.
 - (c) Install the switches [5] with the two screws [7], and the two washers [6].

SUBTASK 76-11-11-420-002-F00

- (3) Install the rotor assembly [8] as follows:
 - (a) Make sure that the surfaces of the rotor assembly [8] are clean before you install it into the housing assembly [12].
 - (b) Install the three springs [13] and the discs [14] in each housing assembly [12].
 - (c) Install the rotor assembly [8].
 - (d) Assemble the housing assemblies [12].
 - (e) Install the two bolts [3], one screw [4], the six washers [2], and the three nuts [1].
 - (f) Install the switch wires at the applicable brake assembly connector.

E. Put the Airplane back to Its Usual Condition**SUBTASK 76-11-11-010-002-F00**

- (1) Do this task: Engine Start Brake Assembly Installation, TASK 76-11-10-420-801-F00.

———— END OF TASK ————

— EFFECTIVITY —
**LOM 402, 404, 406, 407, 411, 412, 415, 416, 420,
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ENGINE START BRAKE ASSEMBLY SWITCH - TEST/CLEANING

1. General

- A. This procedure has this task:
- (1) A test and cleaning of the engine start brake assembly switch.

TASK 76-11-11-820-801-F00

2. Engine Start Brake Assembly Switch Test and Cleaning

A. General

- (1) This procedure is used to detect an accumulation of debris and residue on low current electrical connections, which inhibit circuit conductivity and help identify switches with mechanical repeatability problem.

B. References

Reference	Title
25-11-01-000-801	Captain's and First Officer's Seat Removal (P/B 401)
25-11-01-400-801	Captain's and First Officer's Seat Installation (P/B 401)
28-22-00-710-801	Engine Fuel Spar Valve - Electrical Control and Indication Test (P/B 501)
73-21-00-700-804-F00	EEC TEST (P/B 501)
73-21-00-700-809-F00	EEC Discretes Test (P/B 501)
74-00-00-750-801-F00	Ignition System Audible 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
COM-13811	Multimeter (Analog / Digital with Low/ High Z Impedance functions or equivalent) Part #: FLUKE 289 Supplier: 89536 Opt Part #: MODEL 8 MK7 Supplier: 00426
SPL-25094	Test Set - Engine Start Brake Assembly Part #: C76004-TBD Supplier: 81205
STD-858	Tag - DO NOT OPERATE

D. Location Zones

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

E. Prepare for the Testing and Cleaning

SUBTASK 76-11-11-860-001-F00

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

LOM 429-432

SUBTASK 76-11-11-860-002-F00

- (2) Make sure that the left and right engine start switches are in the AUTO position.

EFFECTIVITY
**LOM 402, 404, 406, 407, 411, 412, 415, 416, 420,
 422-434, 437-447, 450-461**

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LOM 429-432 (Continued)

- (a) Install DO NOT OPERATE tags, STD-858, on the left and right engine start switches.

LOM 402, 404, 406, 407, 411, 412, 415, 416, 420, 422-434, 437-447, 450-461

SUBTASK 76-11-11-860-003-F00

- (3) 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>
A	1	C00458	ENGINE 1 IGNITION RIGHT
A	3	C00153	ENGINE 1 IGNITION LEFT
A	4	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	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	4	C01003	ENGINE 1 THRUST REVERSER IND
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 76-11-11-860-004-F00

- (4) 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>
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
C	8	C01004	ENGINE 2 THRUST REVERSER IND
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	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

EFFECTIVITY
**LOM 402, 404, 406, 407, 411, 412, 415, 416, 420,
422-434, 437-447, 450-461**

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SUBTASK 76-11-11-860-005-F00

- (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>
C	2	C00849	AFCS STABILIZER TRIM
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
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 76-11-11-860-006-F00

- (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>
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1
B	5	C00540	FUEL SPAR VALVE IND

SUBTASK 76-11-11-010-003-F00

- (7) If it is necessary, do this task: Captain's and First Officer's Seat Removal, TASK 25-11-01-000-801.

SUBTASK 76-11-11-010-004-F00

- (8) Remove the upper cover [1] and lower cover [5] from the captain's side of the control stand (Figure 501).
- (a) Remove the screws [2], screw [3], and screw [4] that attach the upper cover [1] to the control stand.
 - (b) Remove the screws [2] that attach the lower cover [5] to the control stand.

SUBTASK 76-11-11-020-004-F00

- (9) For the engine 1 start brake assembly, disconnect the electrical harness (Figure 502).
- (a) Remove the electrical connector [6] (D11286P).
 - (b) Remove the electrical connector [7] (D11288P).

SUBTASK 76-11-11-020-005-F00

- (10) For the engine 2 start brake assembly, disconnect the electrical harness (Figure 503).
- (a) Remove the electrical connector [8] (D11292P).
 - (b) Remove the electrical connector [9] (D11290P).

SUBTASK 76-11-11-480-001-F00

- (11) Connect the test set, SPL-25094.
- (a) Connect the test harness to the applicable start brake assembly harnesses.
 - 1) Connect the J1 of the test set, SPL-25094, to the electrical connector [6] (D11286P) of the engine 1 start brake assembly.
 - 2) Connect the J2 of the test set, SPL-25094, to the electrical connector [7] (D11288P) of the engine 1 start brake assembly.

EFFECTIVITY
 LOM 402, 404, 406, 407, 411, 412, 415, 416, 420,
 422-434, 437-447, 450-461

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- 3) Connect the J3 of the test set, SPL-25094, to the electrical connector [8] (D11292P) of the engine 2 start brake assembly.
- 4) Connect the J4 of the test set, SPL-25094, to the electrical connector [9] (D11290P) of the engine 2 start brake assembly.
- (b) Connect the multimeter with Low/ High Z Impedance functions, COM-13811, to the test set, SPL-25094 (Figure 504).

F. Switch Repeatability Test

SUBTASK 76-11-11-700-001-F00

- (1) Test the engine start brake assemblies as follows:

- (a) Set up the multimeter with Low/ High Z Impedance functions, COM-13811, for the Low Ohm Relative Percent Test.

NOTE: To close the Start Lever switch contacts set the Start Lever switch to the same position as S4 on the test set, SPL-25094. To open the Start Lever switch contacts set the Start Lever switch to the opposite of S4 on the test set, SPL-25094 (Figure 504).

- 1) Turn on the multimeter with Low/ High Z Impedance functions, COM-13811.
- 2) Select LoΩ with the rotary switch.
- 3) Close the Start Lever switch contacts.
 - a) Set the Start Lever switch contacts to the same position as S4 from the applicable table for closing position.
- 4) Let reading to stabilize for a minimum of 10 seconds.
- 5) Push Menu, then REL % to set the reference measurement.
 - a) A relatively stable measurement of <1.00% must be set, along with a stable reference resistance measurement.
 - <1> If it is necessary, do the step above few times until value is stable.
 - b) If the value is unstable, make sure that there is a good lead and adapter connections between the test set, SPL-25094, and multimeter with Low/ High Z Impedance functions, COM-13811.
- 6) To get the relative percent data, cycle the Start Lever Switch contacts open then closed.
 - a) Wait a minimum of 10 seconds.
 - b) Record the REL % value.
- 7) Do the testing for the switch configurations in the Table 501, Table 502, Table 503, or Table 504 as applicable.
 - a) Record initial reference measurement.
 - b) Record three cycles of the switch open and closed, checking relative percent each time.

Table 501/76-11-11-993-806-F00 Engine 1 CUTOFF Switch

S3	S1	S2	S4	S5	REF	REL% 1	REL% 2	REL% 3
1	OFF	TEST	CUTOFF	SBA #1				
2	OFF	TEST	CUTOFF	SBA #1				
3	OFF	TEST	CUTOFF	SBA #1				

EFFECTIVITY
**LOM 402, 404, 406, 407, 411, 412, 415, 416, 420,
 422-434, 437-447, 450-461**

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Table 501/76-11-11-993-806-F00 Engine 1 CUTOFF Switch (Continued)

S3	S1	S2	S4	S5	REF	REL% 1	REL% 2	REL% 3
4	OFF	TEST	CUTOFF	SBA #1				
5	OFF	TEST	CUTOFF	SBA #1				
6	OFF	TEST	CUTOFF	SBA #1				

Table 502/76-11-11-993-807-F00 Engine 1 IDLE Switch

S3	S1	S2	S4	S5	REF	REL% 1	REL% 2	REL% 3
1	OFF	TEST	IDLE	SBA #1				
2	OFF	TEST	IDLE	SBA #1				
3	OFF	TEST	IDLE	SBA #1				
4	OFF	TEST	IDLE	SBA #1				
5	OFF	TEST	IDLE	SBA #1				
6	OFF	TEST	IDLE	SBA #1				

Table 503/76-11-11-993-808-F00 Engine 2 CUTOFF Switch

S3	S1	S2	S4	S5	REF	REL% 1	REL% 2	REL% 3
1	OFF	TEST	CUTOFF	SBA #2				
2	OFF	TEST	CUTOFF	SBA #2				
3	OFF	TEST	CUTOFF	SBA #2				
4	OFF	TEST	CUTOFF	SBA #2				
5	OFF	TEST	CUTOFF	SBA #2				
6	OFF	TEST	CUTOFF	SBA #2				

Table 504/76-11-11-993-809-F00 Engine 2 IDLE Switch

S3	S1	S2	S4	S5	REF	REL% 1	REL% 2	REL% 3
1	OFF	TEST	IDLE	SBA #2				
2	OFF	TEST	IDLE	SBA #2				
3	OFF	TEST	IDLE	SBA #2				
4	OFF	TEST	IDLE	SBA #2				
5	OFF	TEST	IDLE	SBA #2				
6	OFF	TEST	IDLE	SBA #2				

- 8) Before moving to the next switch, on the multimeter with Low/ High Z Impedance functions, COM-13811, push Menu, then REL % to remove the reference measurement.
- 9) If any REL % readings are >1% or are not consistent then record switch number for cleaning (Table 505).

EFFECTIVITY
 LOM 402, 404, 406, 407, 411, 412, 415, 416, 420,
 422-434, 437-447, 450-461

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Table 505/76-11-11-993-805-F00 Switch Position

S3 Position - S4 Position	S5 Positioned to SBA #1	S5 Positioned to SBA #2
1 - IDLE	S88 NC Contact LEFT IGN ENG 1	S90 NC Contact LEFT IGN ENG 2
1 - CUTOFF	S88 NO Contact LEFT IGN ENG 1	S90 NO Contact LEFT IGN ENG 2
2 - IDLE	S1024 NC Contact START LEVER ENG 1 CH A	S1027 NC Contact START LEVER ENG 2 CH A
2 - CUTOFF	S1024 NO Contact START LEVER ENG 1 CH A	S1027 NO Contact START LEVER ENG 2 CH A
3 - IDLE	S1026 NC Contact Fuel HPSOV ENG 1	S1029 NC Contact Fuel HPSOV ENG 2
3 - CUTOFF	S1026 NO Contact Fuel HPSOV ENG 1	S1029 NO Contact Fuel HPSOV ENG 2
4 - IDLE	S89 NC Contact RIGHT IGN ENG 1	S91 NC Contact RIGHT IGN ENG 2
4 - CUTOFF	S89 NO Contact RIGHT IGN ENG 1	S91 NO Contact RIGHT IGN ENG 2
5 - IDLE	S1025 NC START LEVER ENG 1 CH B	S1028 NC START LEVER ENG 2 CH B
5 - CUTOFF	S1025 NO START LEVER ENG 1 CH B	S1028 NO START LEVER ENG 2 CH B
6 - IDLE	S595 NC Contact START LEVER ENG 1 SPAR	S596 NC Contact START LEVER ENG 2 SPAR
6 - CUTOFF	S595 NO Contact START LEVER ENG 1 SPAR	S596 NO Contact START LEVER ENG 2 SPAR

- 10) If readings are <1% and consistent, switch contact is satisfactory and can stay in the service.

G. Switch Cleaning

SUBTASK 76-11-11-700-002-F00

- (1) On the test set, SPL-25094, make sure that the switches are as follows:
- The S1 switch is in the ON position.
 - The S2 switch is in the OFF position.

SUBTASK 76-11-11-700-003-F00

- (2) Position the S3, S4, and S5 to the appropriate position for the switch contact you want to clean (Table 501, Table 502, Table 503, or Table 504).

SUBTASK 76-11-11-700-004-F00

- (3) Move and hold the S2 switch in the CLEAN position for 10 seconds.

SUBTASK 76-11-11-700-005-F00

- (4) Move and hold the S2 switch in the OFF position for 10 seconds.

SUBTASK 76-11-11-700-006-F00

- (5) Repeat the cleaning and off cycle two more times.

SUBTASK 76-11-11-700-007-F00

- (6) Move the S2 switch to the TEST position.

SUBTASK 76-11-11-700-013-F00

- (7) Do the Switch Repeatability Test on the switch contact that was cleaned.

EFFECTIVITY
**LOM 402, 404, 406, 407, 411, 412, 415, 416, 420,
 422-434, 437-447, 450-461**

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- (a) If the switch does not pass the second Switch Repeatability Test, there is a mechanical defect in the switch and it must be replaced at the next convenient maintenance opportunity.
- (b) If the switch passes the second Switch Repeatability Test, the switch can stay in the service.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 76-11-11-700-008-F00

- (1) On the test set, SPL-25094, set the S1 switch to the OFF position.

SUBTASK 76-11-11-020-006-F00

- (2) Remove the test set, SPL-25094.
- (a) Disconnect the test harness from the start brake assemblies.

SUBTASK 76-11-11-420-004-F00

- (3) Connect the start brake assembly connectors.
 - (a) For the engine 1 start brake assembly, connect the electrical harness (Figure 502).
 - 1) Install the electrical connector [6] (D11286P).
 - 2) Install the electrical connector [7] (D11288P).
 - (b) For the Engine 2 Start Brake Assembly, connect the electrical harness (Figure 503).
 - 1) Install the electrical connector [8] (D11292P).
 - 2) Install the electrical connector [9] (D11290P).

SUBTASK 76-11-11-410-001-F00

- (4) Install the cover from the captain's side of the control stand (Figure 501).
 - (a) Install the screws [2], screw [3], and screw [4] to attach the upper cover [1] to the control stand.
 - (b) Install the screws [2] to attach the lower cover [5] to the control stand.

SUBTASK 76-11-11-410-002-F00

- (5) If the captain's seat was removed, do this task: Captain's and First Officer's Seat Installation, TASK 25-11-01-400-801.

SUBTASK 76-11-11-860-007-F00

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

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	C01390	ENGINE 1 ALTN PWR CHAN B
A	5	C01314	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	4	C01003	ENGINE 1 THRUST REVERSER IND
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

EFFECTIVITY
 LOM 402, 404, 406, 407, 411, 412, 415, 416, 420,
 422-434, 437-447, 450-461

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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 76-11-11-860-008-F00

- (7) 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
C	8	C01004	ENGINE 2 THRUST REVERSER IND
D	4	C00459	ENGINE 2 IGNITION RIGHT
D	6	C00151	ENGINE 2 IGNITION LEFT
D	7	C01391	ENGINE 2 ALTN PWR CHAN B
D	8	C01315	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 76-11-11-860-009-F00

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

CAPT Electrical System Panel, P18-1

<u>Row</u>	<u>Col</u>	<u>Number</u>	<u>Name</u>
C	2	C00849	AFCS STABILIZER TRIM
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
D	10	C00840	FLIGHT CONTROL STAB TRIM ACTUATOR

SUBTASK 76-11-11-860-010-F00

- (9) 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>
B	3	C00360	FUEL SPAR VALVE ENG 2
B	4	C00359	FUEL SPAR VALVE ENG 1
B	5	C00540	FUEL SPAR VALVE IND

SUBTASK 76-11-11-860-011-F00

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

EFFECTIVITY
 LOM 402, 404, 406, 407, 411, 412, 415, 416, 420,
 422-434, 437-447, 450-461

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I. Engine Start Brake Assembly Test

SUBTASK 76-11-11-700-009-F00

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

SUBTASK 76-11-11-700-010-F00

- (2) Do this task: EEC TEST, TASK 73-21-00-700-804-F00.

SUBTASK 76-11-11-700-011-F00

- (3) Do this task: EEC Discretes Test, TASK 73-21-00-700-809-F00.

SUBTASK 76-11-11-700-012-F00

- (4) Do this task: Ignition System Audible Test, TASK 74-00-00-750-801-F00.

———— END OF TASK ——

EFFECTIVITY
LOM 402, 404, 406, 407, 411, 412, 415, 416, 420,
422-434, 437-447, 450-461

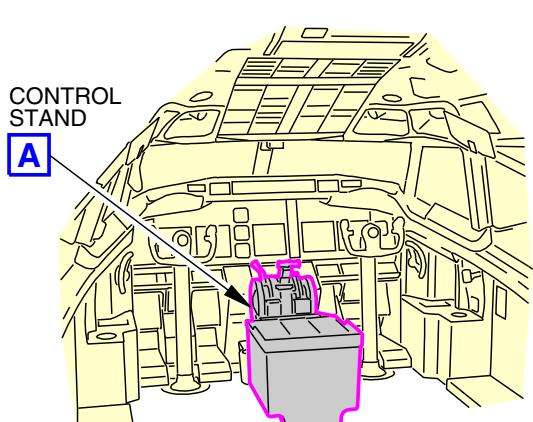
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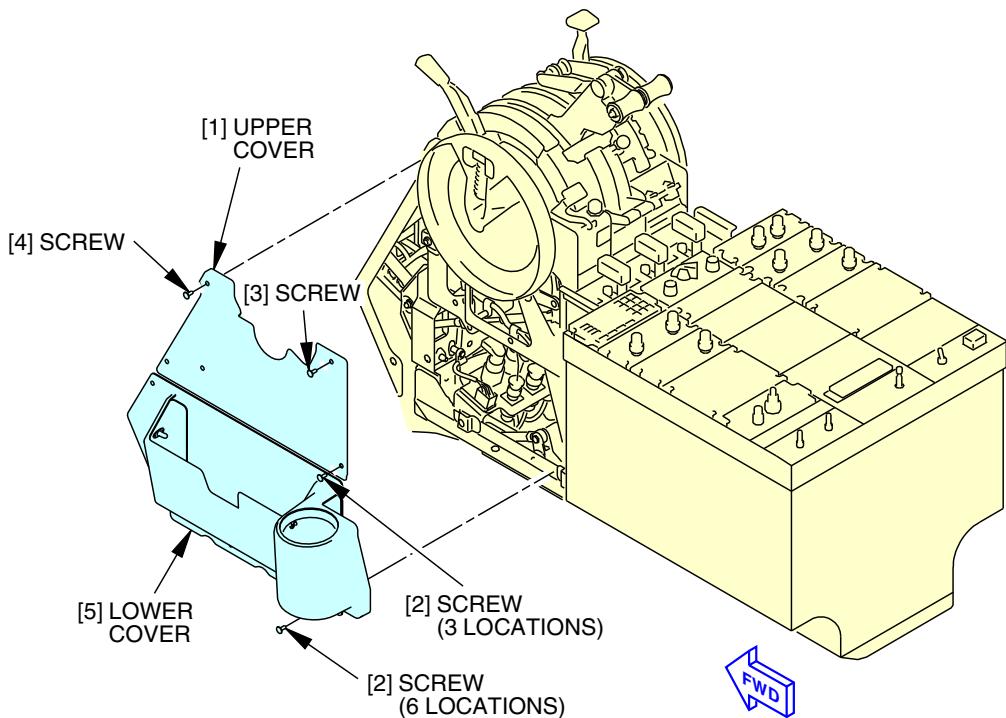
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FLIGHT DECK



CONTROL STAND

A

3082170 S0000837727_V1

**Cover Installation
Figure 501/76-11-11-990-805-F00**

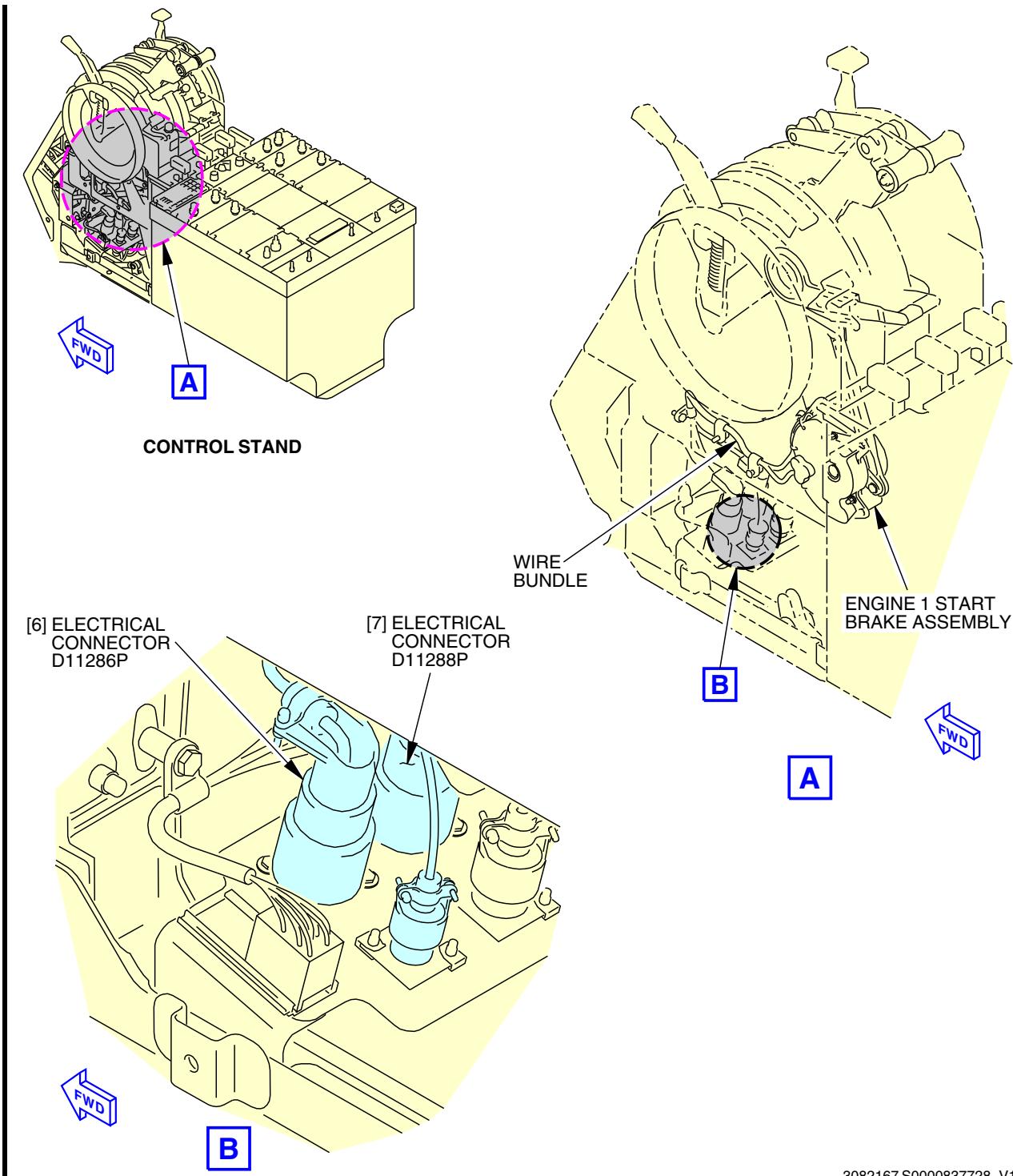
EFFECTIVITY
LOM 402, 404, 406, 407, 411, 412, 415, 416, 420,
422-434, 437-447, 450-461

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3082167 S0000837728_V1

Start Brake (Engine 1) Electrical Harness Installation Figure 502/76-11-11-990-806-F00

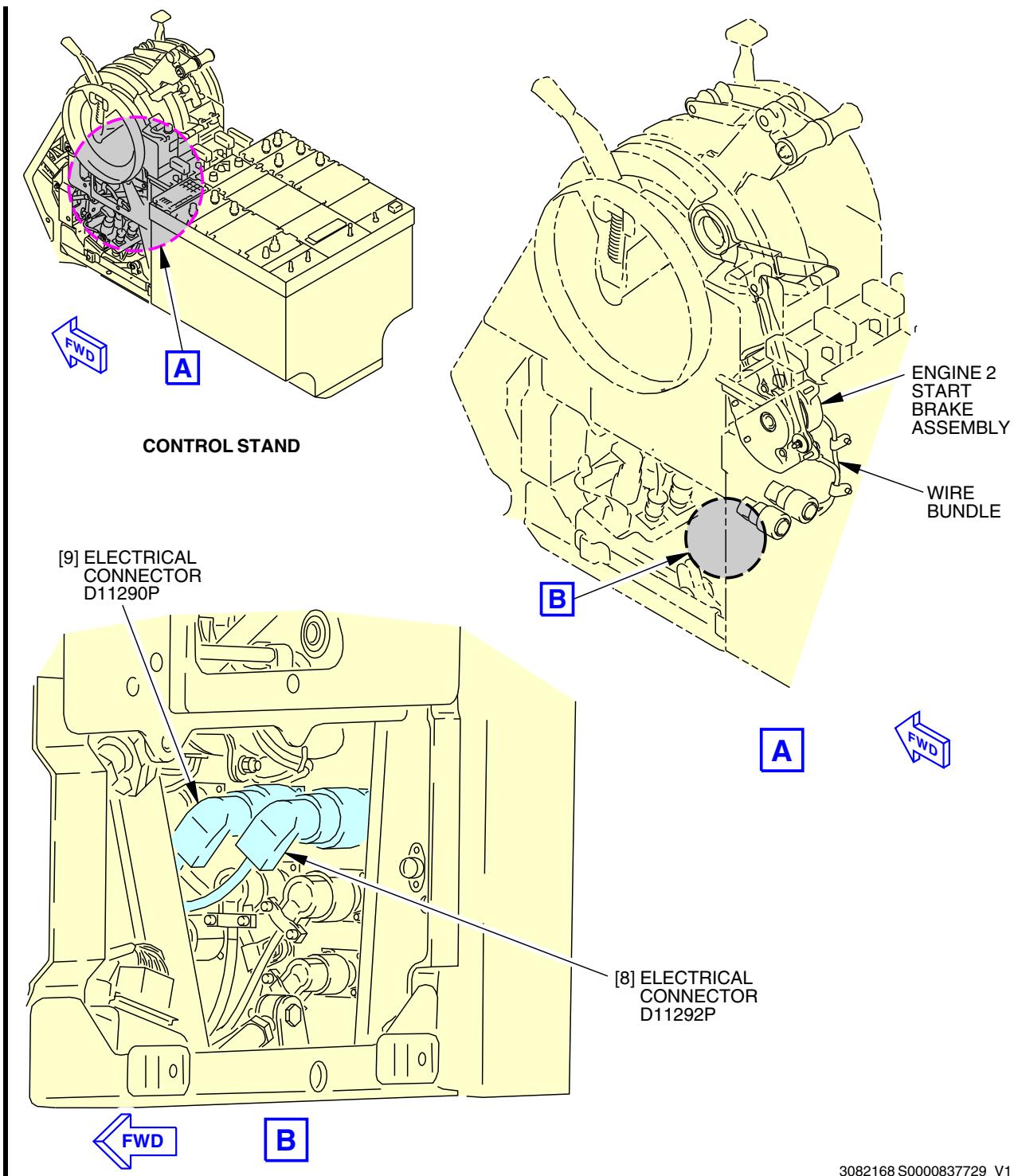
EFFECTIVITY
LOM 402, 404, 406, 407, 411, 412, 415, 416, 420,
422-434, 437-447, 450-461

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Start Brake (Engine 2) Electrical Harness Installation

Figure 503/76-11-11-990-807-F00

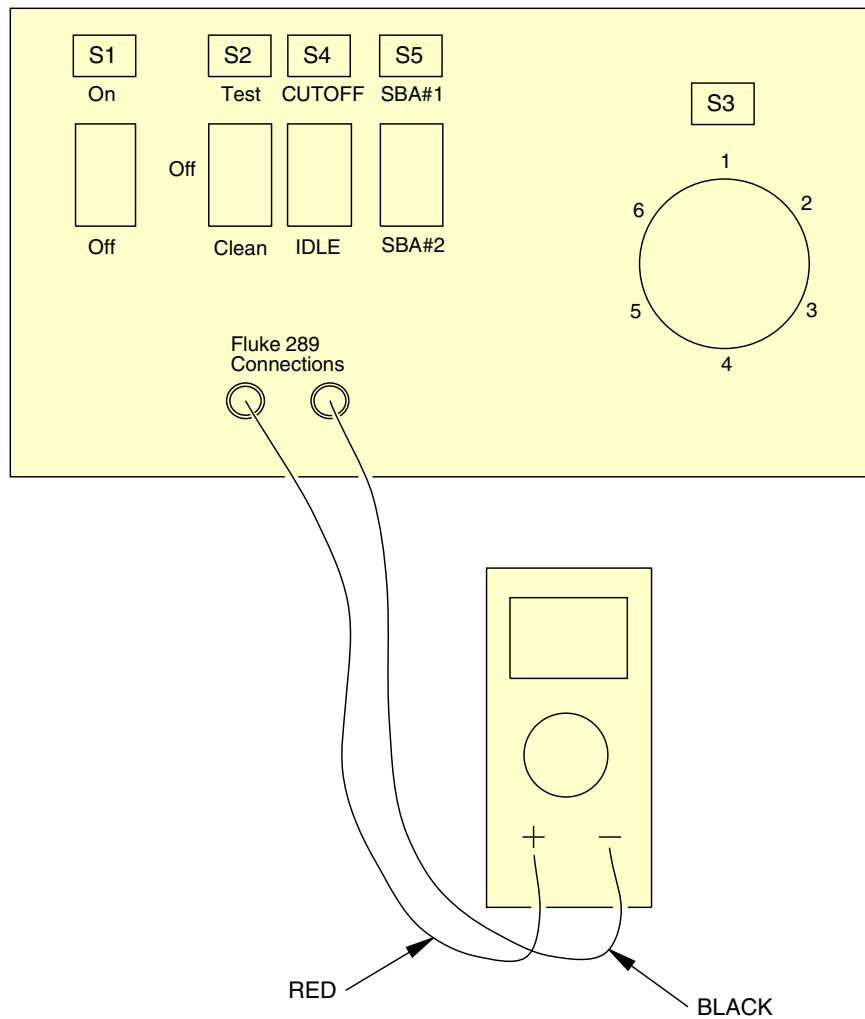
EFFECTIVITY
 LOM 402, 404, 406, 407, 411, 412, 415, 416, 420,
 422-434, 437-447, 450-461

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Multimeter Connection
Figure 504/76-11-11-990-808-F00

EFFECTIVITY
**LOM 402, 404, 406, 407, 411, 412, 415, 416, 420,
 422-434, 437-447, 450-461**

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