CHAPTER

80

STARTING

(LEAP-1B ENGINES)

BOEING

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

CHAPTER 80
STARTING

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

80-EFFECTIVE PAGES

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

CHAPTER 80
STARTING

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CHAPTER 80
STARTING

STARTING - DDG MAINTENANCE PROCEDURE

1. General

A. This procedure has a maintenance task for the Master Minimum Equipment List (MMEL) maintenance requirements as shown in the Dispatch Deviations Guide (DDG). This task is used to prepare the airplane for flight with certain systems/components inoperative.

B. This procedure has these tasks to dispatch the airplane with an engine starter air valve Inoperative:

(1) DDG 80-11-03 Engine Starter Air Valve Inoperative (APU Bleed Air) - Preparation

(2) DDG 80-11-03 Engine Starter Air Valve Inoperative (Ground Air Source or Engine Cross Bleed Start) - Preparation.

TASK 80-00-00-040-801-G00

2. DDG 80-11-03 Engine Starter Air Valve Inoperative (APU Bleed Air Start) - Preparation

A. General

(1) This task gives the maintenance steps which prepare the airplane for flight with the engine starter air valve inoperative and bleed air for the engine start supplied by the APU.

(2) Do this procedure in conjunction with the FCOM engine starting procedures Dispatch Deviation Guide (DDG) 80–11–03.

B. References

Reference	Title
71-00-00-800-802-G00	Engine Operation Limits (P/B 201)

C. Location Zones

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

D. Engine Starter Air Valve Inoperative (APU Bleed Air Start) - Preparation

SUBTASK 80-00-00-860-007-G00

WARNING POSITIVE COMMUNICATION BETWEEN THE PERSONS IN THE FLIGHT COMPARTMENT AND THE GROUND MAINTENANCE PERSONS IS MANDATORY. IF POSITIVE COMMUNICATION IS NOT AVAILABLE, INJURY TO PERSONS AND DAMAGE TO EQUIPMENT COULD OCCUR.

(1) Make sure that you have interphone communication between the persons on the ground and the persons in the flight compartment.

SUBTASK 80-00-00-860-008-G00

CAUTION DO NOT OPERATE THE ENGINE STARTER BEYOND ITS LIMITS. DAMAGE TO THE STARTER CAN OCCUR.

(2) Make sure that you obey the starter operation limits (TASK 71-00-00-800-802-G00).

SUBTASK 80-00-00-210-001-G00

(3) Make sure that the BLEED AIR ISOLATION VALVE switch on the overhead panel, P5, is in the AUTO position.

SUBTASK 80-00-00-210-002-G00

(4) Make sure that these switches on the overhead panel, P5, are in the OFF position.

(a) BLEED 1

(b) BLEED 2.

SUBTASK 80-00-00-860-009-G00

(5) Confirm that APU bleed air is to be used for the engine start.

SUBTASK 80-00-00-860-010-G00

(6) Put the ENGINE START switch for the applicable engine to the GRD position and release.

SUBTASK 80-00-00-820-003-G00

WARNING

OBEY THE HAZARD AREAS, ESPECIALLY THE ENTRY/EXIT CORRIDOR. MAKE SURE THAT YOUR BODY STAYS AFT OF THE FAN-COWL WARNING STRIPE. IT IS PERMITTED TO REACH FORWARD OF THE WARNING STRIPE WITH YOUR HAND, BUT ONLY TO MANUALLY OPEN THE STARTER AIR VALVE (SAV). ENTRY INTO THE HAZARD AREA COULD CAUSE SERIOUS INJURY TO PERSONS OR POSSIBLE LOSS OF LIFE.

WARNING

MAKE SURE THAT YOU WEAR GLOVES WHEN YOU OPEN THE START VALVE. BLEED AIR CAN BE HOT AND CAUSE INJURIES TO PERSONNEL.

(7) Manually open the start valve as follows:

(a) Push a 3/8-inch square drive extension through the guide port of the start valve manual override.

(b) Turn the valve approximately 75 degrees counterclockwise to the OPEN position.

CAUTION

DO NOT OVERTORQUE THE SAV MANUAL OVERRIDE. DAMAGE TO SAV OVERRIDE CABLE AND SAV COULD OCCUR.

(c) Hold the SAV open with approximately 80.0 in-lb (9.04 N·m) to 120.0 in-lb (13.56 N·m) of torque.

NOTE: The torque you will use to hold the valve open must not be more than 200.0 in-lb (22.6 N·m).

(d) Hold the SAV open until given the command to close it.

SUBTASK 80-00-00-210-003-G00

(8) Make sure that these conditions occur:

(a) On the MDS engine display, you see the indications for N1 and N2.

(b) The person on the ground sees that the N1 rotor start to turn in the counterclockwise direction.

SUBTASK 80-00-00-210-004-G00

CAUTION

DO NOT SET THE START LEVER SWITCH TO IDLE IF THE MAXIMUM MOTORING SPEED IS LESS THAN 20% N2. IF YOU DO, THE ENGINE CAN HAVE A HUNG OR HOT START. DAMAGE TO THE ENGINE CAN OCCUR.

(9) When the engine is at 25% N2 or the maximum motoring speed, and 'MOTORING' is no longer displayed on the N2 dial, move the start lever to the IDLE position.

NOTE: The maximum motoring speed is defined as the speed when the rate of increase in N2 is less than 1% during a 5 seconds time period. The minimum N2 for maximum motoring speed is 20%.

SUBTASK 80-00-00-820-004-G00

(10) When the N2 value is greater than 63%, tell the person on the ground to turn the start valve approximately 75 degrees clockwise to the CLOSED position.

SUBTASK 80-00-00-020-002-G00

(11) Remove the 3/8-inch square drive extension and torque wrench.

SUBTASK 80-00-00-210-005-G00

(12) Make sure that the START VALVE OPEN alert on the center display panel goes off.

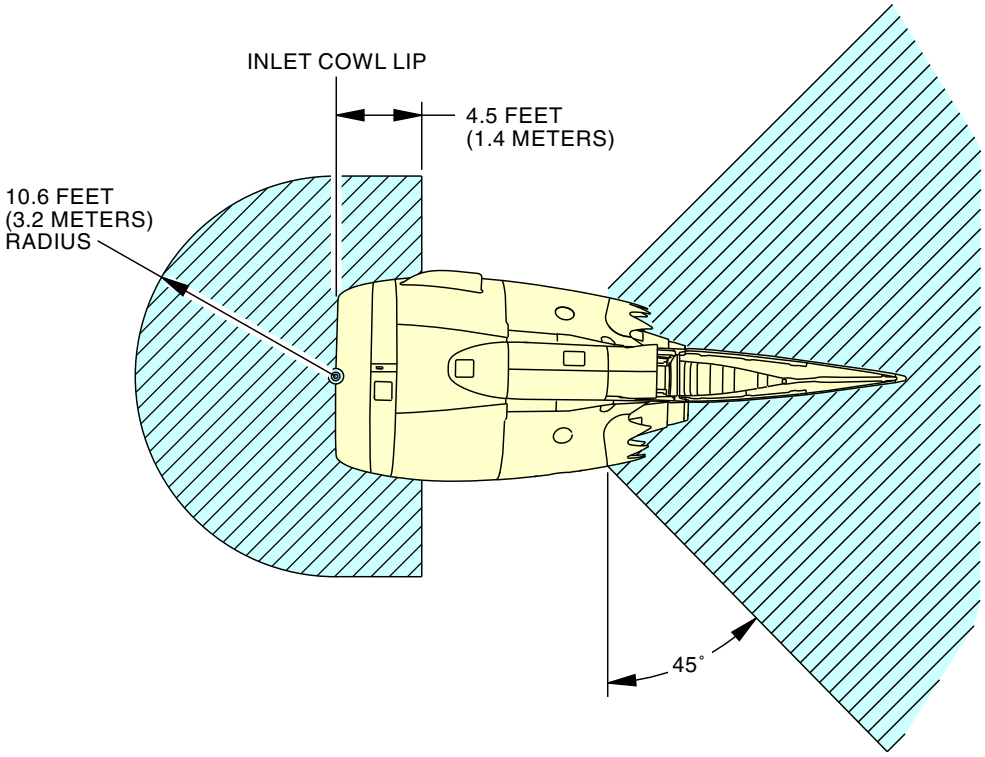
SUBTASK 80-00-00-210-006-G00

(13) Make sure that the EGT Start Limit Redline (tick mark) is no longer shown on the EGT indication.

NOTE: This indicates that the engine is stabilized at idle.

NOTE: Do not change the airplane BLEED valve configuration or select the PACKS, ENG 1/2 ANTI-ICE, or WING ANTI-ICE on until the EGT start limit redline is no longer shown. Changing the engine bleed configuration before the engine is stable at idle can lead to an engine no start or start stall.

END OF TASK



INLET HAZARD AREA

A

NOTE:

THE DANGEROUS AREA IS SHOWN FOR THE LEFT ENGINE ONLY. THE DANGEROUS AREA AROUND THE RIGHT ENGINE HAS THE SAME DIMENSIONS. WHEN YOU OPERATE TWO ENGINES, THE DANGEROUS AREA IS THE SUM OF THE LEFT AND RIGHT DANGEROUS AREAS.

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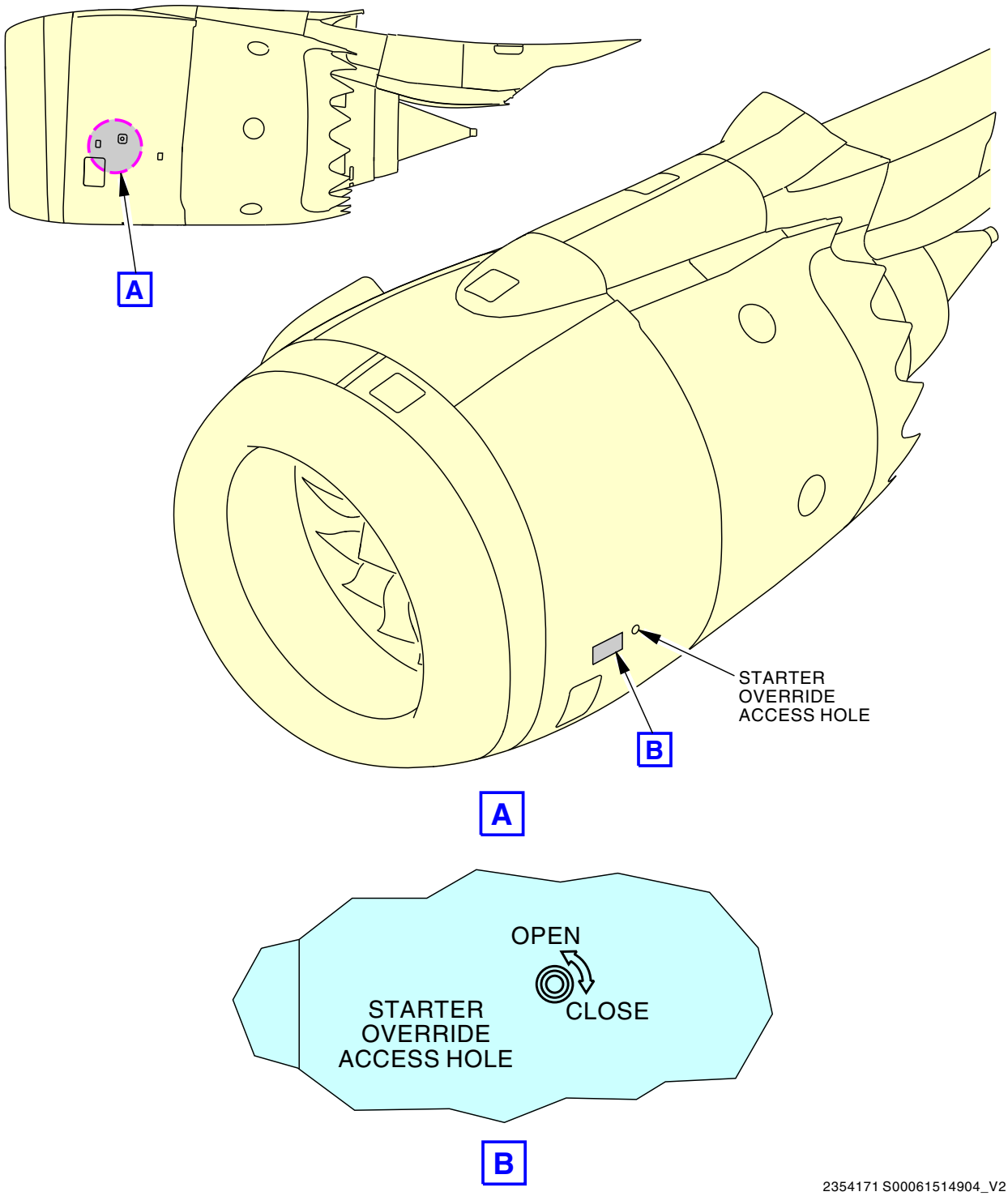
Minimum Idle - Power Hazard Area
Figure 901/80-00-00-990-805-G00



Start the Engine Procedure (Manual Override of Starter Air Valve)
Figure 902/80-00-00-990-804-G00

TASK 80-00-00-040-802-G00

3. DDG 80-11-03 Engine Starter Air Valve Inoperative (Ground Air Source or Engine Cross Bleed Start) - Preparation

A. General

(1) This task gives the maintenance steps that prepare the airplane for flight with the engine starter air valve inoperative and bleed air for the engine start supplied by these air sources:

(a) Ground air source

(b) Cross bleed air from the opposite engine.

(2) Do this procedure in conjunction with the FCOM engine starting procedures Dispatch Deviaton Guide (DDG) 80–11–03.

B. References

Reference	Title
71-00-00-800-802-G00	Engine Operation Limits (P/B 201)
71-00-00-910-814-G00	Pre-Start Motoring (P/B 201)

C. Location Zones

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

D. Engine Starter Air Valve Inoperative (Ground Air Source or Engine Cross Bleed Start) - Preparation

SUBTASK 80-00-00-940-002-G00

WARNING

POSITIVE COMMUNICATION BETWEEN THE PERSONS IN THE FLIGHT COMPARTMENT AND THE GROUND MAINTENANCE PERSONS IS MANDATORY. IF POSITIVE COMMUNICATION IS NOT AVAILABLE, INJURY TO PERSONS AND DAMAGE TO EQUIPMENT COULD OCCUR.

(1) Make sure that you have interphone communication between the persons on the ground and the persons in the flight compartment.

SUBTASK 80-00-00-910-002-G00

CAUTION

DO NOT OPERATE THE ENGINE STARTER BEYOND ITS LIMITS. DAMAGE TO THE STARTER CAN OCCUR.

(2) Make sure that you obey the starter operation limits (TASK 71-00-00-800-802-G00).

SUBTASK 80-00-00-210-007-G00

(3) Confirm that a ground air source or bleed air from the opposite engine will be used for the engine start.

SUBTASK 80-00-00-860-011-G00

WARNING

MAKE SURE THAT ALL PERSONNEL AND EQUIPMENT ARE CLEAR OF THE ENGINE DANGER AREAS. THE ENGINE INTAKE AND EXHAUST CAN CAUSE INJURIES TO PERSONNEL AND DAMAGE TO EQUIPMENT IN THE DANGER AREAS.

(4) If you will use bleed air from the opposite engine, move the thrust lever on that engine forward until the manifold duct pressure on the overhead panel shows a minimum of 30 PSI.

SUBTASK 80-00-00-980-001-G00

WARNING

OBEY THE HAZARD AREAS, ESPECIALLY THE ENTRY/EXIT CORRIDOR. MAKE SURE THAT YOUR BODY STAYS AFT OF THE FAN-COWL WARNING STRIPE. IT IS PERMITTED TO REACH FORWARD OF THE WARNING STRIPE WITH YOUR HAND, BUT ONLY TO MANUALLY OPEN THE STARTER AIR VALVE (SAV). ENTRY INTO THE HAZARD AREA COULD CAUSE SERIOUS INJURY TO PERSONS OR POSSIBLE LOSS OF LIFE.

WARNING

MAKE SURE THAT YOU WEAR GLOVES WHEN YOU OPEN THE START VALVE. BLEED AIR CAN BE HOT AND CAUSE INJURIES TO PERSONNEL.

(5) Do the pre-start motoring on the applicable engine as follows:

NOTE: As an option to these steps for pre-start motoring with EEC s/w v5.2 or later installed, you can accomplish the Pre-Start Motoring procedure using the Onboard Maintenance Function (OMF) EEC special function (TASK 71-00-00-910-814-G00)

(a) Put the applicable PACK switch on the overhead panel, P5, to the AUTO position.

(b) Put the ENGINE START switch for the applicable engine to the GRD position.

(c) Instruct the person on the ground to manually open the start valve as follows:

1) With a torque wrench (dial torque wrench preferred), push a 3/8-inch square drive extension through the guide port of the SAV manual override.

2) Turn the start valve approximately 75 degrees counterclockwise to the OPEN position.

3) Hold the SAV open with approximately 80.0 in-lb (9.04 N·m) to 120.0 in-lb (13.56 N·m).

NOTE: The torque you will use to hold the valve open must not be more than 200.0 in-lb (22.6 N·m).

(d) Tell the person on the ground when there is N2 indication.

(e) Monitor the N2 speed carefully during motoring to make sure that N2 does not increase over 25%.

NOTE: Be prepared to tell the person on the ground to immediately close the valve if the N2 indication increases over 25%.

(f) After 4 minutes of motoring, tell the person on the ground to turn the start valve approximately 75 degrees clockwise to the CLOSED position.

(g) Put both PACK switches on the overhead panel, P5, in the OFF positions.

(h) Wait 5 minutes to allow the engine starter to cool, then continue to start the engine.

NOTE: If you will not start the engine within 15 minutes after the pre-motoring, repeat the steps to do the engine pre-start motoring again.

SUBTASK 80-00-00-210-008-G00

CAUTION

MAKE SURE THAT YOU DO THE START LESS THAN 15 MINUTES AFTER THE MOTORING. IF YOU START AFTER 15 MINUTES, DAMAGE TO THE ENGINE CAN OCCUR.

(6) Make sure that the ENGINE START switch for the applicable engine is in the GRD position.

SUBTASK 80-00-00-010-001-G00

WARNING

OBEY THE HAZARD AREAS, ESPECIALLY THE ENTRY/EXIT CORRIDOR. MAKE SURE THAT YOUR BODY STAYS AFT OF THE FAN-COWL WARNING STRIPE. IT IS PERMITTED TO REACH FORWARD OF THE WARNING STRIPE WITH YOUR HAND, BUT ONLY TO MANUALLY OPEN THE STARTER AIR VALVE (SAV). ENTRY INTO THE HAZARD AREA COULD CAUSE SERIOUS INJURY TO PERSONS OR POSSIBLE LOSS OF LIFE.

WARNING

MAKE SURE THAT YOU WEAR GLOVES WHEN YOU OPEN THE START VALVE. BLEED AIR CAN BE HOT AND CAUSE INJURIES TO PERSONNEL.

(7) Instruct the person on the ground to manually open the start valve as follows:

(a) Push a 3/8-inch square drive extension through the guide port of the start valve manual override.

(b) Turn the valve approximately 75 degrees counterclockwise to the OPEN position.

CAUTION

DO NOT OVERTORQUE THE SAV MANUAL OVERRIDE. DAMAGE TO SAV OVERRIDE CABLE AND SAV COULD OCCUR.

(c) Hole the SAV open with approximately 80.0 in-lb (9.04 N·m) to 120.0 in-lb (13.56 N·m) of torque.

NOTE: The torque you will use to hold the valve open must not be more than 200.0 in-lb (22.6 N·m).

(d) Hold the SAV open until given the command to turn the start valve approximately 75 degrees clockwise to the CLOSED position.

SUBTASK 80-00-00-860-013-G00

(8) Make sure that these conditions occur:

(a) On the MDS engine display, you see the indications for N1 and N2.

NOTE: If you will start the engine with battery power, only N1 and N2 indications will be available. All other indications will be available after 12–15% N2.

(b) The person on the ground sees that the N1 rotor starts to turn in the counterclockwise direction.

(c) The ‘MOTORING’ indication does not display on the N2 dial when N2 increases above 18%.

SUBTASK 80-00-00-860-014-G00

CAUTION

DO NOT MOVE THE START LEVER FORWARD UNTIL THE ENGINE IS AT 25% N2 OR THE MAXIMUM MOTORING SPEED, BUT NOT LESS THAN 20%. IF YOU DO, THE ENGINE CAN HAVE A HOT OR HUNG START. THIS CAN CAUSE DAMAGE TO THE ENGINE.

(9) When the engine is at 25% N2 or the maximum motoring speed, move the start lever to the IDLE position.

NOTE: Maximum motoring speed is when the rate of N2 increase is less than 1% during a 5 seconds time period. The minimum N2 for maximum motoring speed is 20%.

SUBTASK 80-00-00-210-009-G00

(10) Monitor the EGT and N2 carefully as the engine starts for unusual conditions.

NOTE: Under normal conditions, the engine will start in 15 seconds (20 seconds for a cold day) after you move the start lever to the IDLE position. The time from engine start to a stable idle must not take more than 120 seconds.

SUBTASK 80-00-00-860-015-G00

(11) If the engine does not start in 20 seconds, do these steps:

NOTE: If the engine does not start after 20 seconds, the EEC will automatically turn the fuel off and stop the ignition.

(a) Move the start lever to the CUTOFF position.

(b) Continue to motor the engine for 60 seconds to remove all fuel from the engine.

NOTE: Make sure that you obey the starter operation limits. The air turbine starter duty cycle is permitted for 3 minutes of continuous operation for ground operation.

(c) Put the ENGINE START switch to the AUTO position.

(d) Tell the person on the ground to close the SAV and start the task again.

NOTE: The starter must be off a minimum of 10 seconds between start attempts for cooling.

SUBTASK 80-00-00-210-010-G00

(12) Monitor the EGT, fuel flow, N1, N2 and engine oil indications as the engine accelerates to idle.

NOTE: Make sure that the engine acceleration does not slow or stop before the idle speed.

SUBTASK 80-00-00-410-002-G00

(13) When the N2 value is greater than 63%, tell the person on the ground to turn the start valve approximately 75 degrees clockwise to the CLOSED position.

SUBTASK 80-00-00-080-001-G00

(14) Remove the 3/8-inch square drive extension.

SUBTASK 80-00-00-020-003-G00

(15) Make sure that the START VALVE OPEN alert on the center display panel goes off.

SUBTASK 80-00-00-210-011-G00

(16) Make sure that the EGT Start Limit Redline (tick mark) is no longer shown on the EGT indication.

NOTE: This indicates that the engine is stabilized at idle.

NOTE: Do not change the airplane BLEED valve configuration or select the PACKS, ENG 1/2 ANTI-ICE, or WING ANTI-ICE on until the EGT start limit redline is no longer shown. Changing the engine bleed configuration before the engine is stable at idle can lead to an engine no start or start stall.

END OF TASK

ENGINE STARTING SYSTEM - INSPECTION/CHECK

1. General

A. This procedure has one task:

(1) Engine Starting System Inspection.

TASK 80-11-00-200-801-G00

2. Engine Starting System Inspection

(Figure 601)

A. General

(1) This task provides the instructions on how to examine the engine starting system.

(2) The engine starting system inspection examines these components for damage:

(a) Engine starter

(b) Starter air valve

(c) Starter air pressure sensor

(d) Starter air duct.

B. References

Reference	Title
36-11-01-000-801	Engine Pneumatic Duct Removal (P/B 401)
36-11-01-400-801	Engine Pneumatic Duct Installation (P/B 401)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
80-11-01-211-801-G00	Engine Starter Oil Leaks Inspection (P/B 601)
80-11-02-000-801-G00	Starter Air Valve Removal (P/B 401)
80-11-02-400-801-G00	Starter Air Valve Installation (P/B 401)
80-11-09-200-801-G00	Engine Starter Magnetic Plug Inspection (P/B 201)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

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

E. Access Panels

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

F. Prepare for the Inspection

SUBTASK 80-11-00-860-001-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 80-11-00-860-002-G00

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	8	C01103	ENGINE 1 START VALVE

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	4	C00154	ENGINE 2 START VALVE

SUBTASK 80-11-00-010-002-G00

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

(a) Open these access panels:

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

G. Engine Starting System Inspection

SUBTASK 80-11-00-211-001-G00

(1) Examine the starter for these conditions:

(a) Signs of a loose starter

1) If the V-band clamp is loose, tighten it to 110.4 - 129.6 pound-inches (12.5 - 14.6 Newton-meters).

(b) Signs of oil leaks

1) If you find signs of oil leaks, do this task: Engine Starter Oil Leaks Inspection, TASK 80-11-01-211-801-G00.

(c) Cracks

1) Not permitted.

(d) Dents

1) Not permitted.

SUBTASK 80-11-00-211-002-G00

(2) Examine the starter magnetic plug on the oil drain plug as follows:

(a) Do this task: Engine Starter Magnetic Plug Inspection, TASK 80-11-09-200-801-G00.

SUBTASK 80-11-00-211-003-G00

(3) Examine the starter air valve for these conditions:

(a) Signs of a loose electrical connector

CAUTION DO NOT USE PLIERS THAT HAVE METAL JAWS TO TIGHTEN THE ELECTRICAL CONNECTOR. DAMAGE TO THE ELECTRICAL CONNECTOR CAN OCCUR.

1) If the electrical connector is loose, use a teflon-jawed pliers, STD-664 to tighten the electrical connector.

(b) Signs of a loose starter air valve

1) If it is necessary, tighten the nut on the V-band clamp to 87.4 - 102.6 pound-inches (9.9 - 11.6 Newton-meters).

(c) Signs of air leaks

1) If the starter air valve shows signs of air leaks, replace the E-seal (TASK 80-11-02-000-801-G00 and TASK 80-11-02-400-801-G00)

(d) Cracks

1) Not permitted.

SUBTASK 80-11-00-210-001-G00

(4) Examine the starter air duct between the ECS duct and the start air valve.

(a) Look for signs of air leaks.

1) Damage or holes in the starter air duct are not permitted.

NOTE: These conditions are acceptable and repair of them is not necessary:

- Small surface marks and pits. But it is recommended to repair corrosion pits based on their area or location.

- Smooth dents, if the bottom is rounded and without cuts, and if the dent is not deeper than 0.05 in. (1 mm) as measured from a straightedge put longitudinally along the duct. The inner surface of the bottom of the dent should not have cracks.

- Scratches and gouges, if their bottom is rounded and they are not deeper than 10 percent of the duct wall thickness.

2) If the starter air duct shows signs of air leaks at the ECS duct, replace the seal for the V-band clamp between the starter duct and the ECS duct (TASK 36-11-01-000-801 and TASK 36-11-01-400-801).

3) If the starter air duct shows signs of air leaks at the start air valve, replace the seal between the starter duct and the start air valve (TASK 36-11-01-000-801 and TASK 36-11-01-400-801).

4) If the starter air duct shows signs of air leaks at the starter air valve, replace the seal for the V-band clamp between the starter duct and the starter air valve (TASK 36-11-01-000-801 and TASK 36-11-01-400-801).

5) If the V-band clamps are loose, tighten the V-band clamps at the duct connections (TASK 36-11-01-400-801).

(b) Examine the attach links, brackets and fasteners for the starter air duct.

1) Make sure that there are no broken or loose links or brackets and missing fasteners.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 80-11-00-410-002-G00

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

(a) Close these access panels:

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

SUBTASK 80-11-00-860-003-G00

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	8	C01103	ENGINE 1 START VALVE

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	4	C00154	ENGINE 2 START VALVE

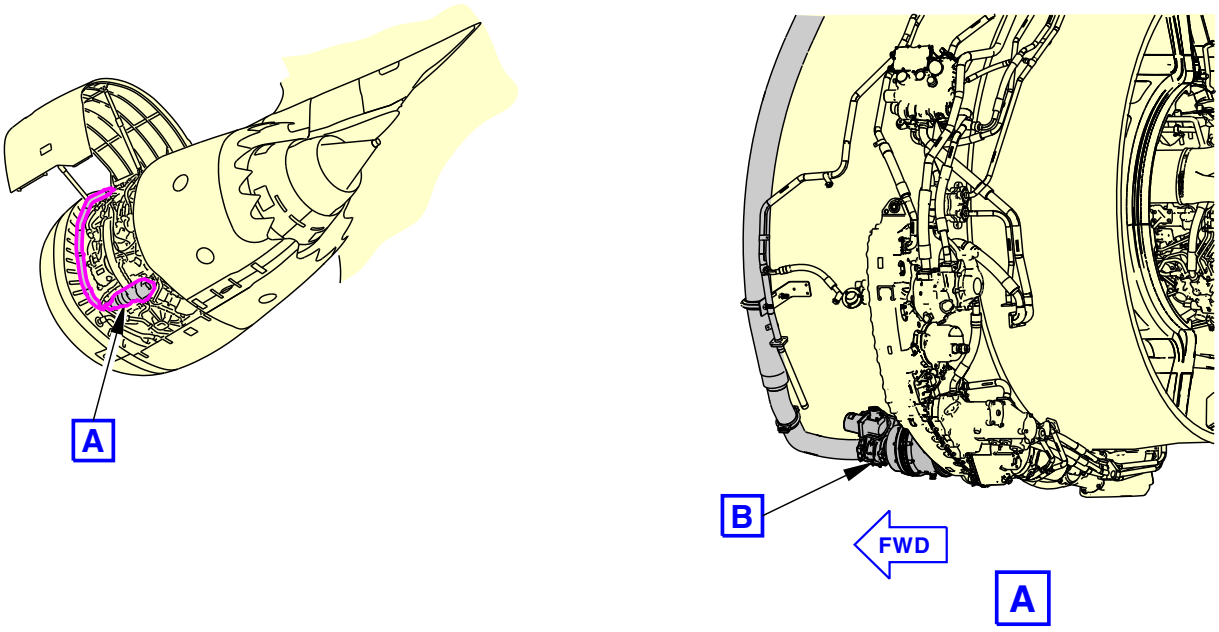
SUBTASK 80-11-00-860-004-G00

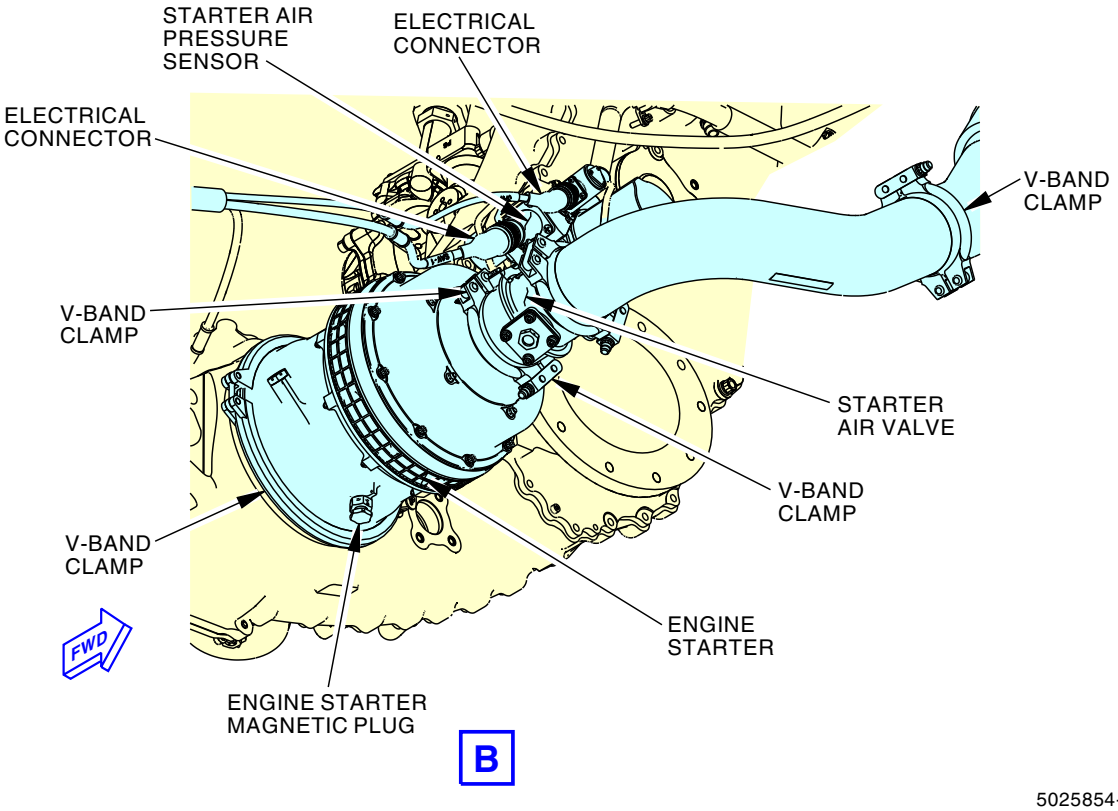
(3) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

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

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

——— END OF TASK ———





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Engine Starting System Inspection
Figure 601/80-11-00-990-801-G00

ENGINE STARTER - SERVICING

1. General

A. This procedure has two tasks:

(1) Engine starter servicing (oil drain)

(2) Engine starter servicing (oil fill).

TASK 80-11-01-610-801-G00

2. Engine Starter Servicing (Oil Drain)

(Figure 301)

A. General

(1) This task gives the instructions to drain the oil from the starter before you remove the starter.

(2) The starter is installed on the Accessory Gearbox (AGB).

B. References

Reference	Title
70-41-00-400-802-G00	Safety Cable Installation (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
80-11-09-200-801-G00	Engine Starter Magnetic Plug Inspection (P/B 201)

C. Tools/Equipment

Reference	Description
STD-203	Container - Oil Resistant, 1 U.S.-Gal (3.8 l)
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
D00599 [CP2442]	Oil - Engine	
G02345 [CP8001]	Wire - Safety, 0.032 Inch (0.8 mm) Diameter	AMS 5687
G50065 [CP8006]	Cable, Safety, Stainless Steel, 0.032 inch (0.8 mm) Diameter	M50 TF 9 CL-A

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	Preformed packing	80-11-09-01-005	SIA ALL
4	Preformed packing	80-11-00-02-090	SIA ALL

F. Location Zones

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

G. Access Panels

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

H. Prepare for the Servicing

SUBTASK 80-11-01-860-001-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 80-11-01-860-002-G00

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	8	C01103	ENGINE 1 START VALVE

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	4	C00154	ENGINE 2 START VALVE

SUBTASK 80-11-01-010-001-G00

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

(a) Open these access panels:

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

I. Engine Starter Servicing (Oil Drain)

SUBTASK 80-11-01-010-002-G00

WARNING BE CAREFUL WHEN YOU WORK ON THE ENGINE COMPONENTS IMMEDIATELY AFTER THE ENGINE IS SHUTDOWN. THE ENGINE COMPONENTS CAN STAY HOT FOR UP TO ONE HOUR AND CAN CAUSE INJURY.

(1) Remove the magnetic plug [2] from the magnetic plug housing (oil drain plug [1]) as follows:

NOTE: The magnetic plug is different part from the oil drain plug. The oil drain plug is the housing for the magnetic plug. The magnetic plug housing (oil drain plug) includes a check valve that prevents oil drain when the magnetic plug is removed.

(a) Push the magnetic plug [2] with your hand and turn it counterclockwise until it stops.

NOTE: The magnetic plug is a bayonet type.

(b) Pull the magnetic plug [2] from the magnetic plug housing (oil drain plug [1]).

SUBTASK 80-11-01-210-001-G00

(2) Examine the magnetic plug [2] for contamination (TASK 80-11-09-200-801-G00).

SUBTASK 80-11-01-680-001-G00

WARNING DO NOT GET OIL ON YOUR SKIN. REMOVE THE OIL FROM YOUR SKIN IMMEDIATELY. IF YOU LET THE OIL STAY ON YOUR SKIN, IT CAN CAUSE INJURIES TO YOUR SKIN.

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

(3) Drain the oil from the starter as follows:

(a) Put a 1 U.S.-gal (3.81 l) oil resistant container, STD-203 below the starter.

(b) Cut and remove the safety cable that secures the magnetic plug housing (oil drain plug [1]) to the starter.

(c) Remove the magnetic plug housing (oil drain plug [1]) from the starter.

(d) Let the oil drain into the 1 U.S.-gal (3.81 l) oil resistant container, STD-203.

SUBTASK 80-11-01-410-001-G00

(4) Install the magnetic plug housing (oil drain plug [1]) as follows:

(a) Remove and discard the preformed packing [4] from the oil drain plug [1].

(b) Apply engine oil, D00599 [CP2442] to the new preformed packing [4].

(c) Install the new preformed packing [4] on the magnetic plug housing (oil drain plug [1]).

(d) Install the magnetic plug housing (oil drain plug [1]) on the starter.

(e) Tighten the magnetic plug housing (oil drain plug [1]) to 20.0 in-lb (2.3 N·m) - 40.0 in-lb (4.5 N·m).

(f) Secure the magnetic plug housing (oil drain plug [1]) to the starter with a safety cable, G50065 [CP8006] or safety wire, G02345 [CP8001] (TASK 70-41-00-400-802-G00).

SUBTASK 80-11-01-410-002-G00

(5) Install the magnetic plug [2] as follows:

(a) Remove and discard the preformed packings [3] from the magnetic plug [2].

(b) Apply engine oil, D00599 [CP2442] to the two new preformed packings [3].

(c) Install the new preformed packings [3] on the magnetic plug [2].

(d) Put the magnetic plug [2] in the magnetic plug housing (oil drain plug [1]).

(e) Align the bayonet pins on the magnetic plug [2] with the slots on the magnetic plug housing (oil drain plug [1]).

(f) Push the magnetic plug [2] until the pins touch the bottom of the slots and turn the plug clockwise until it locks.

J. Put the Airplane Back to Its Usual Condition

SUBTASK 80-11-01-410-003-G00

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

(a) Close these access panels:

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

SUBTASK 80-11-01-860-003-G00

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	8	C01103	ENGINE 1 START VALVE

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	4	C00154	ENGINE 2 START VALVE

SUBTASK 80-11-01-860-004-G00

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

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

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

——— END OF TASK ———

TASK 80-11-01-610-802-G00

3. Engine Starter Servicing (Oil Fill)

(Figure 301)

A. General

(1) This task gives the instructions to fill the starter with oil.

(2) There are two methods that you can use to fill the starter with oil.

(a) The preferred method is to use a tool in the magnetic plug housing to fill oil to the starter.

1) This is the method to use after you install the starter on the engine.

(b) The alternate method removes the oil fill plug to fill oil to the starter.

1) This is the method to service the starter before installation on the engine. The fill plug is also accessible after the starter is installed on engine and the starter can be serviced through the oil fill plug with an oil source dispenser.

(3) Fill the starter with the same type of oil that is used in the engine oil tank.

(4) After you do this task, it is not necessary to fill the starter again unless you remove the starter or drain the oil. The starter is supplied engine oil from the accessory gearbox.

(5) The starter is installed on the Accessory Gear Box (AGB).

B. References

Reference	Title
70-41-00-400-802-G00	Safety Cable Installation (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)

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-2464	Adapter - Starter Drain, Engine Part #: DB75-108 Supplier: 97484
STD-858	Tag - DO NOT OPERATE
STD-4051	Dispenser - Pressurized Oil Source

D. Consumable Materials

Reference	Description	Specification
D00599 [CP2442]	Oil - Engine	
G02345 [CP8001]	Wire - Safety, 0.032 Inch (0.8 mm) Diameter	AMS 5687
G50065 [CP8006]	Cable, Safety, Stainless Steel, 0.032 inch (0.8 mm) Diameter	M50 TF 9 CL-A

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	Preformed packing	80-11-09-01-005	SIA ALL
6	Preformed packing	80-11-00-02-070	SIA ALL

F. Location Zones

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

G. Access Panels

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

H. Prepare for the Servicing

SUBTASK 80-11-01-860-005-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 80-11-01-860-006-G00

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	8	C01103	ENGINE 1 START VALVE

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	4	C00154	ENGINE 2 START VALVE

SUBTASK 80-11-01-010-003-G00

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

(a) Open these access panels:

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

I. Engine Starter Servicing (Oil Fill) (Preferred Method)

SUBTASK 80-11-01-010-004-G00

WARNING BE CAREFUL WHEN YOU WORK ON THE ENGINE COMPONENTS IMMEDIATELY AFTER THE ENGINE IS SHUTDOWN. THE ENGINE COMPONENTS CAN STAY HOT FOR UP TO ONE HOUR AND CAN CAUSE INJURY.

(1) Remove the magnetic plug [2] as follows:

NOTE: The preferred method uses an adapter and a pressurized oil source dispenser to service the starter.

NOTE: Do not remove the magnetic plug housing or the safety cable. The removal of the magnetic plug housing (oil drain plug) will drain the oil from the starter.

(a) Push the magnetic plug [2] with your hand and turn it counter-clockwise until it stops.

NOTE: The magnetic plug is a bayonet type.

(b) Pull the magnetic plug [2] from the magnetic plug housing (oil drain plug [1]).

SUBTASK 80-11-01-610-001-G00

WARNING DO NOT GET OIL ON YOUR SKIN. REMOVE THE OIL FROM YOUR SKIN IMMEDIATELY. IF YOU LET THE OIL STAY ON YOUR SKIN, IT CAN CAUSE INJURIES TO YOUR SKIN.

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

(2) Fill the starter with engine oil, D00599 [CP2442], as follows:

(a) Install the adapter, COM-2464, into the magnetic plug housing (oil drain plug [1]).

(b) Connect the hose of the adapter to the pressurized oil source dispenser, STD-4051.

(c) Fill the starter with 15.2 fl-oz (449.5 cc) - 18.6 fl-oz (550.1 cc) with engine oil, D00599 [CP2442].

NOTE: Use the same type of oil as in the AGB. The AGB supplies engine oil to the starter after it is installed.

NOTE: Make sure that you do not over service the starter. Oil fill over the specified quantity will flow into the engine oil tank.

(d) Remove the adapter, COM-2464, from the magnetic plug housing (oil drain plug [1]).

SUBTASK 80-11-01-410-004-G00

(3) Install the magnetic plug [2] as follows:

(a) Remove and discard the preformed packings [3] from the magnetic plug [2].

(b) Apply engine oil, D00599 [CP2442], to the two new preformed packings [3].

(c) Install the new preformed packings [3] on the magnetic plug [2].

(d) Put the magnetic plug [2] in the magnetic plug housing (oil drain plug [1]).

(e) Align the bayonet pins on the magnetic plug [2] with the slots on the magnetic plug housing (oil drain plug [1]).

(f) Push the magnetic plug [2] until the pins touch the bottom of the slots and turn the plug clockwise until it locks.

J. Engine Starter Servicing (Oil Fill) (Alternate Method)

SUBTASK 80-11-01-010-005-G00

(1) Remove the oil fill plug [5] as follows:

NOTE: Use the alternate fill method to service the starter before installation on the AGB.

(a) Move the starter until oil fill plug [5] position is up.

(b) Cut and remove the safety cable from the oil fill plug [5].

(c) Remove the oil fill plug [5] from the starter.

SUBTASK 80-11-01-610-002-G00

WARNING

DO NOT LET THE OIL STAY ON YOUR SKIN. USE THE OIL IN AN AREA WITH GOOD VENTILATION. THE OIL IS POISONOUS AND CAN BE ABSORBED THROUGH YOUR SKIN. THE OIL FUMES CAN IRRITATE YOUR RESPIRATORY TRACT.

(2) Gravity fill the starter with engine oil, D00599 [CP2442], as follows:

(a) Fill the starter with 15.2 fl-oz (449.5 cc) - 18.6 fl-oz (550.1 cc) with engine oil, D00599 [CP2442].

NOTE: Use the same type of oil as in the Accessory Gearbox (AGB). The AGB supplies engine oil to the starter after it is installed.

NOTE: Do not fill the starter more than the specified volume. If you do, the extra oil will flow into the oil tank.

(b) Apply engine oil, D00599 [CP2442], to the new preformed packing [6].

(c) Install the preformed packing [6] on the oil fill plug [5].

(d) Install the oil fill plug [5] in the fill port of the starter.

(e) Tighten the oil fill plug [5] to 20.0 in-lb (2.3 N·m) - 40.0 in-lb (4.5 N·m).

(f) Secure the oil fill plug [5] to the starter with a safety cable, G50065 [CP8006], or safety wire, G02345 [CP8001] (TASK 70-41-00-400-802-G00).

K. Put the Airplane Back to Its Usual Condition

SUBTASK 80-11-01-410-005-G00

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

(a) Close these access panels:

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

SUBTASK 80-11-01-860-007-G00

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	8	C01103	ENGINE 1 START VALVE

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	4	C00154	ENGINE 2 START VALVE

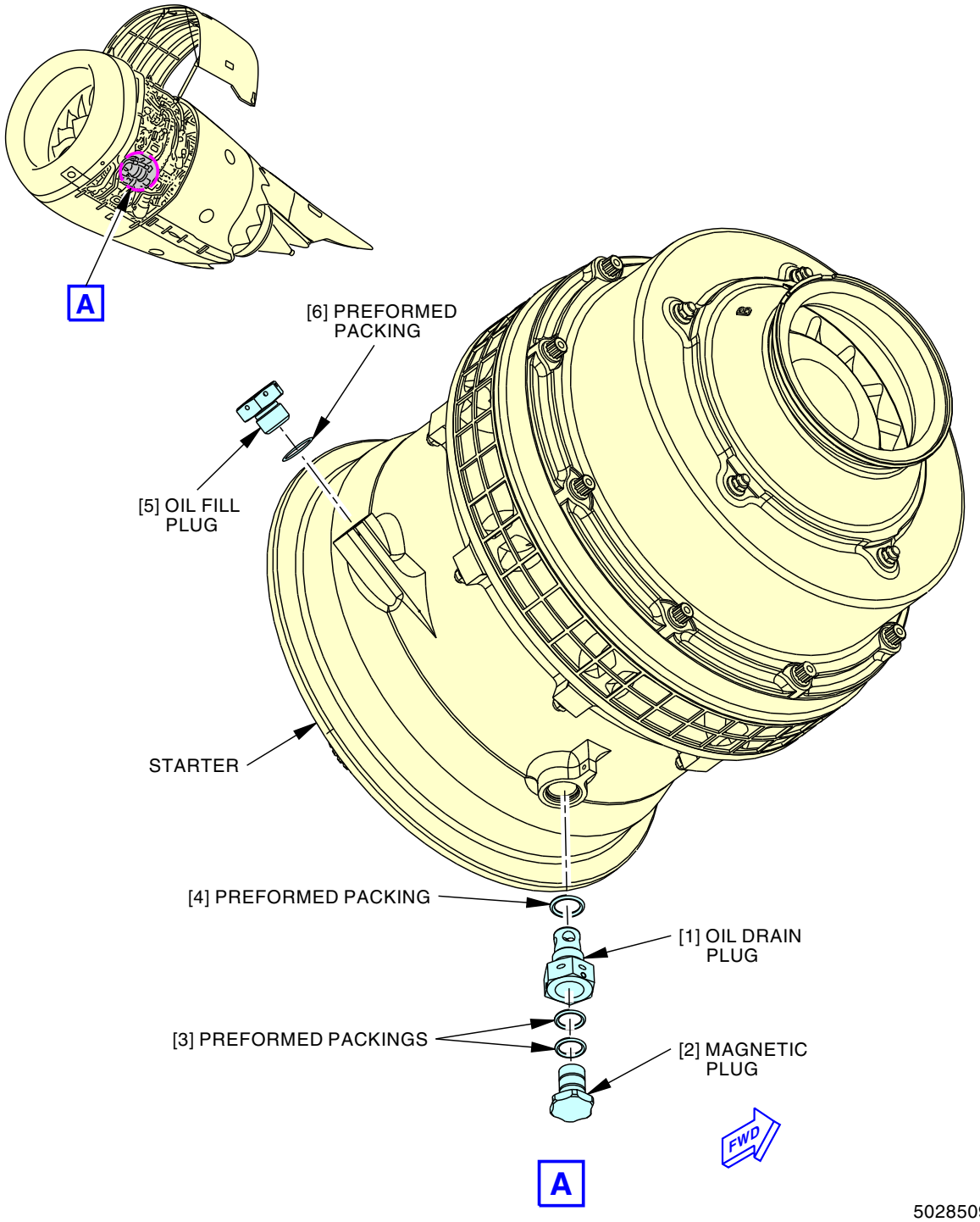
SUBTASK 80-11-01-860-008-G00

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

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

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

——— END OF TASK ———



Engine Starter Servicing
Figure 301/80-11-01-990-811-G00

ENGINE STARTER - REMOVAL/INSTALLATION

1. General

A. This procedure has two tasks:

(1) Engine starter removal

(2) Engine starter installation.

TASK 80-11-01-000-801-G00

2. Engine Starter Removal

(Figure 401)

A. General

(1) This task gives the instructions to remove the engine starter.

B. References

Reference	Title
80-11-02-000-801-G00	Starter Air Valve Removal (P/B 401)
80-11-09-200-801-G00	Engine Starter Magnetic Plug Inspection (P/B 201)

C. Tools/Equipment

Reference	Description
STD-203	Container - Oil Resistant, 1 U.S.-Gal (3.8 l)

D. Consumable Materials

Reference	Description	Specification
D00599 [CP2442]	Oil - Engine	
D50252	Lubricant - Molybdenum Disulphide Silicone	DOD-L-25681
G02345 [CP8001]	Wire - Safety, 0.032 Inch (0.8 mm) Diameter	AMS 5687
G50065 [CP8006]	Cable, Safety, Stainless Steel, 0.032 inch (0.8 mm) Diameter	M50 TF 9 CL-A

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
15	Preformed packing	80-11-00-02-070	SIA ALL

F. Location Zones

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

G. Prepare for the Removal

SUBTASK 80-11-01-020-001-G00

(1) Do this task: Starter Air Valve Removal, TASK 80-11-02-000-801-G00.

SUBTASK 80-11-01-200-002-G00

(2) Do this task: Engine Starter Magnetic Plug Inspection, TASK 80-11-09-200-801-G00.

H. Engine Starter Removal

SUBTASK 80-11-01-020-002-G00

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

WARNING DO NOT GET OIL ON YOUR SKIN. REMOVE THE OIL FROM YOUR SKIN IMMEDIATELY. IF YOU LET THE OIL STAY ON YOUR SKIN, IT CAN CAUSE INJURIES TO YOUR SKIN.

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

(1) Remove the engine starter [1]:

(a) Remove the engine starter magnetic plug (TASK 80-11-09-200-801-G00).

(b) Drain the oil from the engine starter [1]

1) Remove and discard the safety cable from the drain plug [14].

2) Remove the drain plug [14] from the engine starter [1].

3) Let the oil drain into a 1 U.S.-gal (3.81 l) oil resistant container, STD-203.

4) Make sure that the mating faces are clean and clear of unwanted materials.

(c) Loosen the nut [3] on the V-band clamp [4] that attaches the engine starter [1] to the AGB [11].

(d) Remove the V-band clamp [4] from the engine starter [1].

WARNING BE CAREFUL WHEN YOU MOVE THE COMPONENT. THE COMPONENT IS HEAVY. INJURIES TO PERSONS CAN OCCUR.

(e) Pull carefully the engine starter [1] forward until the engine starter shaft [5] disengages from AGB [11].

NOTE: The starter weighs 31 lb (14 kg) . It is recommended to use two mechanics to disengage the engine starter [1] from the AGB [11].

WARNING DO NOT TILT THE STARTER WHEN YOU DISENGAGE IT FROM THE AGB. IF YOU TILT THE STARTER, THE OIL WILL DRAIN FROM THE STARTER AND CAN CAUSE INJURIES TO YOUR SKIN.

(f) Remove the engine starter [1] from the engine.

(g) After you remove the starter, tilt the engine starter [1] shaft down and drain the oil that remains into the 1 U.S.-gal (3.81 l) oil resistant container, STD-203.

(h) Install the drain plug [14] as follows:

1) If you will reinstall the starter, remove and discard the preformed packing [15] from the drain plug [14].

2) If you will reinstall the starter, lubricate a new preformed packing [15] with engine oil, D00599 [CP2442].

3) Lubricate the threads of the drain plug [14] with molybdenum disulphide silicone lubricant, D50252.

4) Install the preformed packing [15] on the drain plug [14].

5) Install the drain plug [14] on the engine starter [1].

6) Tighten the drain plug [14] to 20.0 in-lb (2.3 N·m) - 40.0 in-lb (4.5 N·m).

7) Install the cable, G50065 [CP8006] or safety wire, G02345 [CP8001] on the drain plug [14].

(i) Remove and discard the preformed packing [6] from the engine starter [1] flange.

(j) Remove and discard the preformed packing [7] from the engine starter shaft [5].

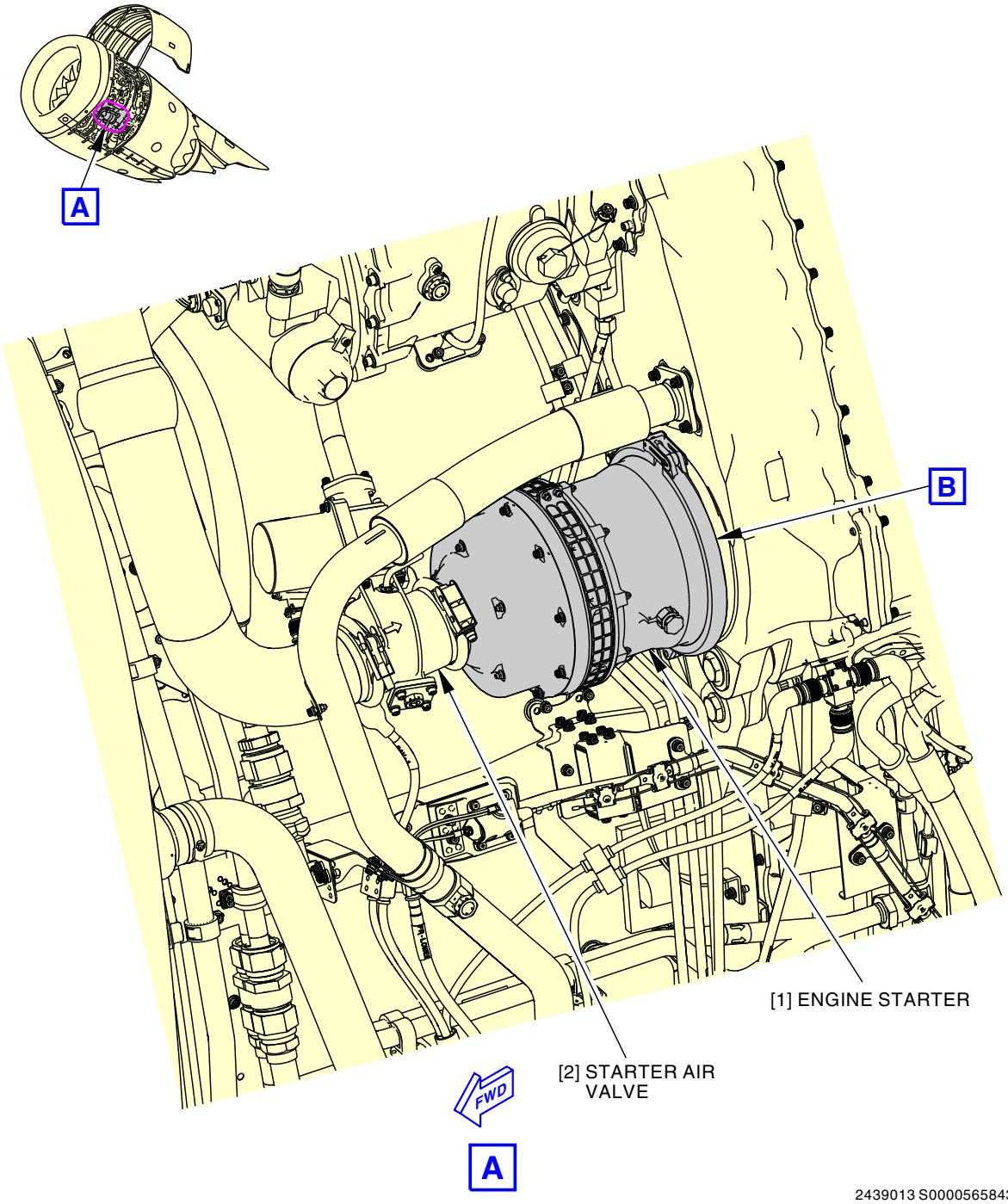
(k) Remove and discard the preformed packing [10] from the lubrication nozzle [9].

(l) Install the engine starter magnetic plug (TASK 80-11-09-200-801-G00).

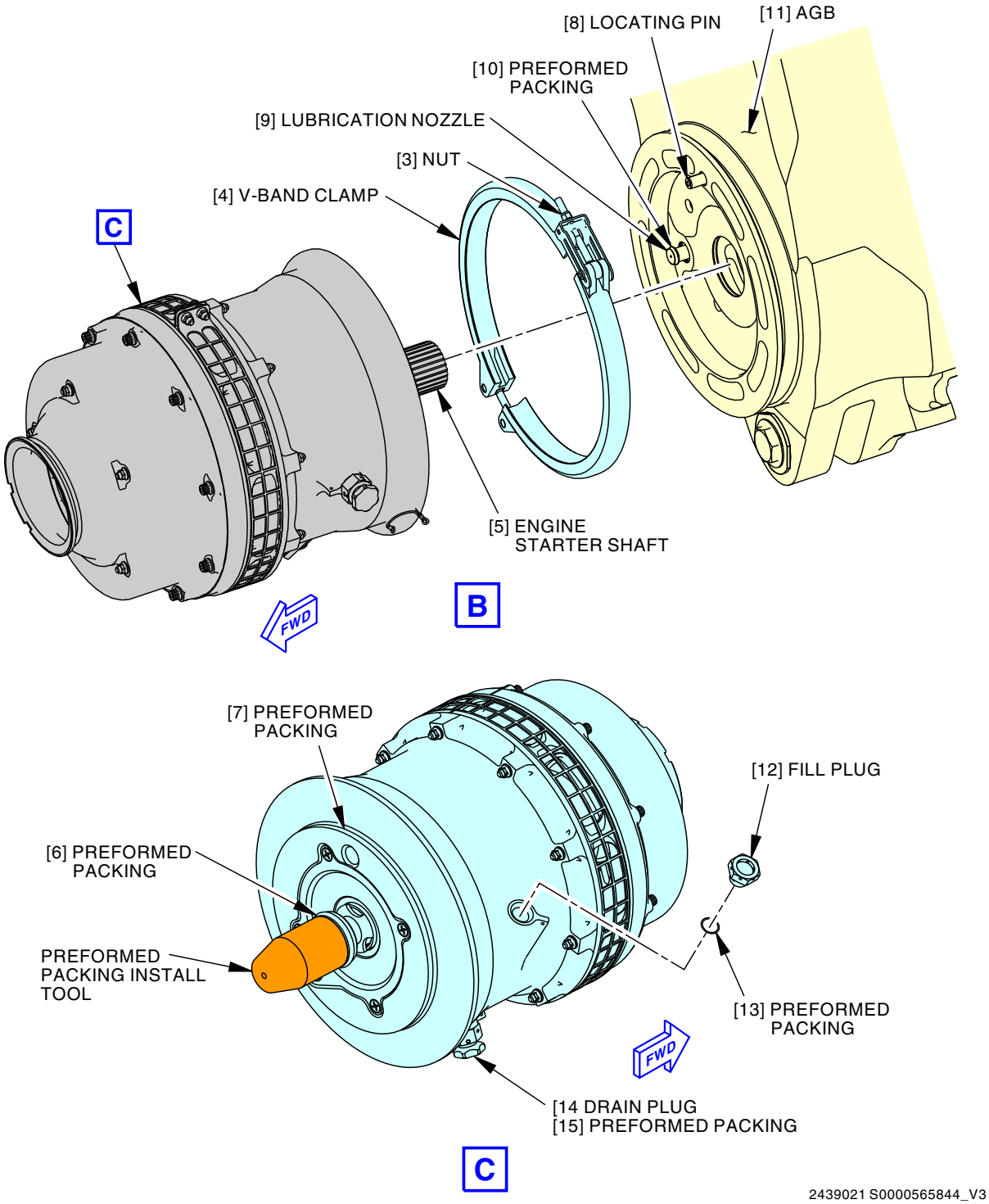
SUBTASK 80-11-01-480-001-G00

(2) Put the protective cover on all openings.

——— END OF TASK ———



Engine Starter Installation
Figure 401/80-11-01-990-806-G00 (Sheet 1 of 2)



Engine Starter Installation
Figure 401/80-11-01-990-806-G00 (Sheet 2 of 2)

TASK 80-11-01-400-801-G00

3. Engine Starter Installation

(Figure 401)

A. General

(1) This task gives the instructions to install the engine starter.

(2) Fill the starter with the same type of oil used in the engine oil tank.

(3) You must do the tests that are listed in the power plant test reference table after you install engine starter.

B. References

Reference	Title
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
80-11-01-610-802-G00	Engine Starter Servicing (Oil Fill) (P/B 301)
80-11-01-990-811-G00	Figure: Engine Starter Servicing (P/B 301)
80-11-02-400-801-G00	Starter Air Valve Installation (P/B 401)

C. Tools/Equipment

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

Reference	Description
SPL-14847	Kit, Installation - O-Ring, AGB Part #: 956A8610G01 Supplier: 58828

D. Consumable Materials

Reference	Description	Specification
D00599 [CP2442]	Oil - Engine	

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
6	Preformed packing	80-11-00-02-030	SIA ALL
7	Preformed packing	80-11-00-02-040	SIA ALL
10	Preformed packing	80-11-00-02-050	SIA ALL

F. Location Zones

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

G. Engine Starter Installation

SUBTASK 80-11-01-080-001-G00

(1) Remove the protective cover from the openings.

SUBTASK 80-11-01-420-001-G00

WARNING

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

(WARNING PRECEDES)

WARNING DO NOT GET OIL ON YOUR SKIN. REMOVE THE OIL FROM YOUR SKIN IMMEDIATELY. IF YOU LET THE OIL STAY ON YOUR SKIN, IT CAN CAUSE INJURIES TO YOUR SKIN.

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

(2) Install the engine starter [1]:

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

(b) Lubricate the threads of the nut [3], the V-band clamp [4], and splines of the engine starter shaft [5] with engine oil, D00599 [CP2442].

(c) Lubricate the new preformed packing [6], the new preformed packing [7], and the new preformed packing [10] with engine oil, D00599 [CP2442].

(d) Install the new preformed packing [10] in the groove on the lubrication nozzle [9].

(e) Install the new preformed packing [6] on the engine starter shaft [5] with the O-ring installation kit, SPL-14847.

(f) Install the new preformed packing [7] in the flange groove of the engine starter [1].

(g) Fill the engine starter [1]:

1) Do this task: Engine Starter Servicing (Oil Fill), TASK 80-11-01-610-802-G00 (Figure 80-11-01-990-811-G00).

WARNING BE CAREFUL WHEN YOU MOVE THE COMPONENT. THE COMPONENT IS HEAVY. INJURIES TO PERSONS CAN OCCUR.

(h) Install the starter on the AGB [11]:

NOTE: The starter weighs 31 lb (14 kg). It is recommended to use two mechanics to install the engine starter [1] to the AGB [11].

NOTE: Do not tilt the starter when you engage it to the AGB. If you tilt the starter, the oil will drain from the starter.

1) Align the engine starter shaft [5] with the splines on the AGB [11] starter pad.

2) Align the locating pin hole on the engine starter [1] with the locating pin [8] on the AGB [11].

3) Push the engine starter [1] aft until it seats on the AGB [11] and hold the starter in its position.

4) Install the V-band clamp [4] that attaches the engine starter [1] to the AGB [11].

5) Tighten the nut [3] to 115.1 in-lb (13.0 N·m) - 126.0 in-lb (14.2 N·m).

H. Put the Airplane Back to Its Usual Condition

SUBTASK 80-11-01-410-006-G00

(1) Do this task: Starter Air Valve Installation, TASK 80-11-02-400-801-G00.

I. Engine Starter Installation Test

SUBTASK 80-11-01-710-001-G00

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

——— END OF TASK ———

ENGINE STARTER - INSPECTION/CHECK

1. General

A. This procedure has these tasks:

(1) Engine starter inspection

(2) Engine starter oil leaks inspection

(3) Engine starter turbine wheel inspection.

TASK 80-11-01-200-801-G00

2. Engine Starter Inspection

(Figure 601)

A. General

(1) This task provides the instructions on how to examine the engine starter.

B. References

Reference	Title
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
78-31-00-040-801-G00	Thrust Reverser Deactivation For Ground Maintenance (P/B 201)
78-31-00-440-801-G00	Thrust Reverser Activation After Ground Maintenance (P/B 201)
80-11-09-200-801-G00	Engine Starter Magnetic Plug Inspection (P/B 201)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Location Zones

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

E. Access Panels

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

F. Prepare for the Inspection

SUBTASK 80-11-01-860-009-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 80-11-01-860-010-G00

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	8	C01103	ENGINE 1 START VALVE

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	4	C00154	ENGINE 2 START VALVE

SUBTASK 80-11-01-040-001-G00

WARNING

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

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

SUBTASK 80-11-01-010-006-G00

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

(a) Open these access panels:

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

G. Engine Starter Inspection

SUBTASK 80-11-01-211-001-G00

(1) Examine the engine starter as follows:

(a) Look for signs of a loose starter.

1) If it is necessary, tighten the nut on the V-band clamp to 110.4 in-lb (12.47 N·m) to 129.6 in-lb (14.64 N·m).

(b) Look for signs of oil leaks on the starter.

1) If you find signs of oil leaks, examine the engine starter for oil leaks (Engine Starter Oil Leaks Inspection, TASK 80-11-01-211-801-G00).

(c) Look for cracks.

1) Cracks are not permitted.

(d) Look for dents.

1) Dents are not permitted.

SUBTASK 80-11-01-200-001-G00

(2) Visually examine the magnetic chip detector part of the oil drain plug (Engine Starter Magnetic Plug Inspection, TASK 80-11-09-200-801-G00).

H. Put the Airplane Back to Its Usual Condition

SUBTASK 80-11-01-440-001-G00

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

SUBTASK 80-11-01-410-007-G00

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

(a) Close these access panels:

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

SUBTASK 80-11-01-860-011-G00

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	8	C01103	ENGINE 1 START VALVE

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	4	C00154	ENGINE 2 START VALVE

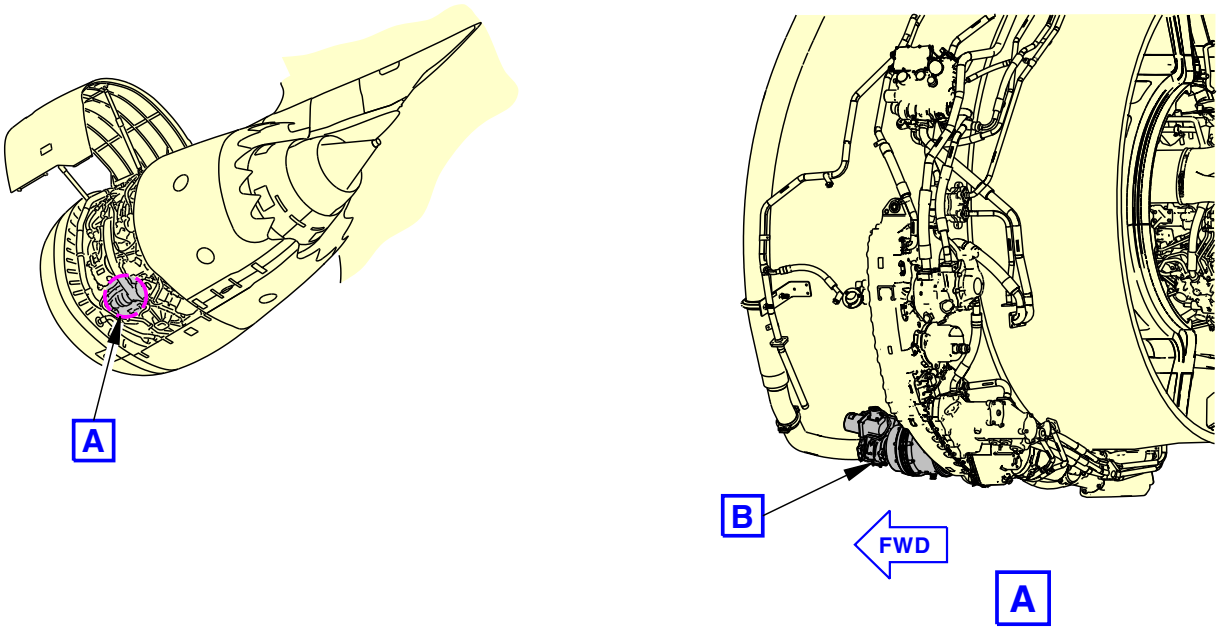
SUBTASK 80-11-01-860-012-G00

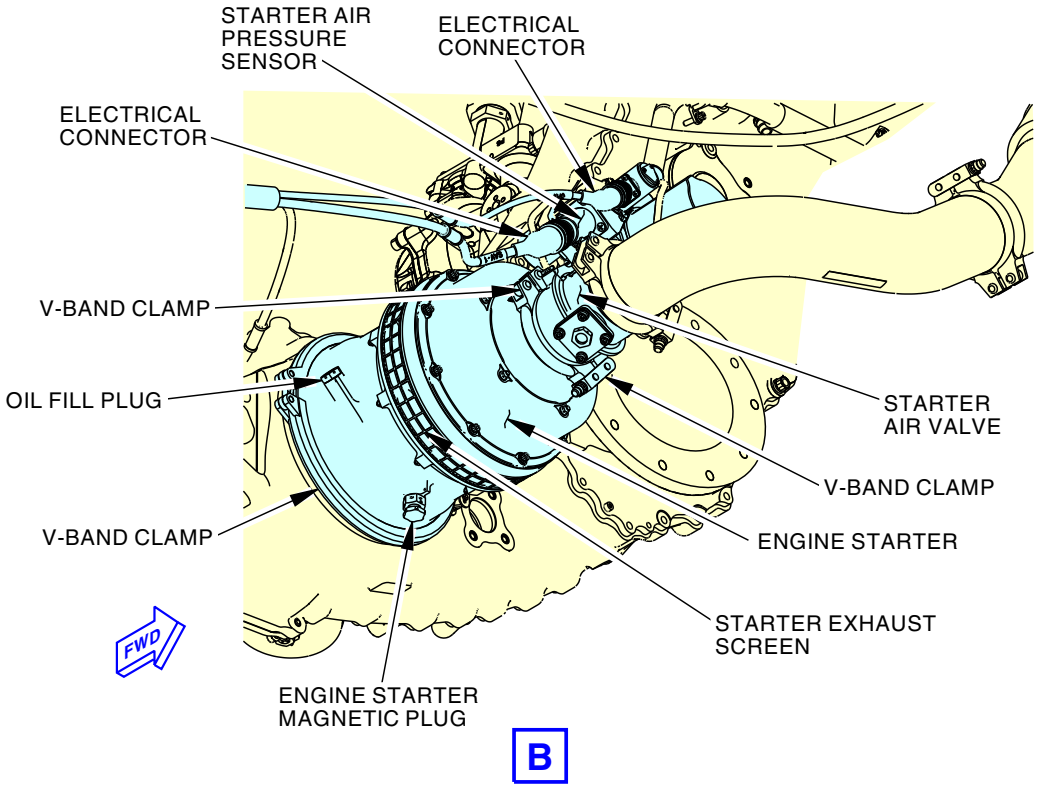
(4) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

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

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

——— END OF TASK ———





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Engine Starter Inspection
Figure 601/80-11-01-990-808-G00

TASK 80-11-01-211-801-G00

3. Engine Starter Oil Leaks Inspection

(Figure 602)

A. General

(1) This task provides the instructions on how to examine the engine starter for oil leaks.

B. References

Reference	Title
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
80-11-01-000-801-G00	Engine Starter Removal (P/B 401)
80-11-01-400-801-G00	Engine Starter Installation (P/B 401)
80-11-09-200-801-G00	Engine Starter Magnetic Plug Inspection (P/B 201)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Location Zones

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

E. Access Panels

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

F. Prepare for the Inspection

SUBTASK 80-11-01-860-013-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 80-11-01-865-001-G00

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	8	C01103	ENGINE 1 START VALVE

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	4	C00154	ENGINE 2 START VALVE

SUBTASK 80-11-01-010-007-G00

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

(a) Open these access panels:

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

G. Engine Starter Oil Leaks Inspection

SUBTASK 80-11-01-212-001-G00

(1) Look for signs of oil leaks.

(a) If you see signs of oil leaks on the starter mount, do this step:

1) Replace the preformed packing on the starter shaft, the flange groove and lubrication nozzle (Engine Starter Removal, TASK 80-11-01-000-801-G00 and Engine Starter Installation, TASK 80-11-01-400-801-G00).

(b) If you see signs of oil leaks at the starter magnetic plug, do these steps:

1) Remove the starter magnetic plug (Engine Starter Magnetic Plug Inspection, TASK 80-11-09-200-801-G00).

2) Replace the two preformed packings on the starter magnetic plug.

3) Install the starter magnetic plug (Engine Starter Magnetic Plug Inspection, TASK 80-11-09-200-801-G00).

(c) If you see signs of oil leaks at the starter drain plug, do these steps:

1) Remove the safety wire from the drain plug.

2) Remove the drain plug.

3) Replace the preformed packing on the drain plug.

4) Install the drain plug.

5) Tighten the drain plug to 20 in-lb (2.3 N·m) to 40 in-lb (4.5 N·m).

6) Install safety wire on the drain plug.

(d) If you see signs of oil leaks at the oil fill plug, do these steps:

1) Remove the safety wire from the oil fill plug.

2) Remove the oil fill plug.

3) Replace the preformed packing on the oil fill plug.

4) Install the oil fill plug.

5) Tighten the oil fill plug to 20 in-lb (2.3 N·m) to 40 in-lb (4.5 N·m).

6) Install safety wire on the oil fill plug.

(e) If you see signs of oil leaks at the starter exhaust screen, do this step:

1) Replace the engine starter (Engine Starter Removal, TASK 80-11-01-000-801-G00 and Engine Starter Installation, TASK 80-11-01-400-801-G00).

H. Put the Airplane Back to Its Usual Condition

SUBTASK 80-11-01-410-008-G00

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

(a) Close these access panels:

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

SUBTASK 80-11-01-865-002-G00

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	8	C01103	ENGINE 1 START VALVE

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	4	C00154	ENGINE 2 START VALVE

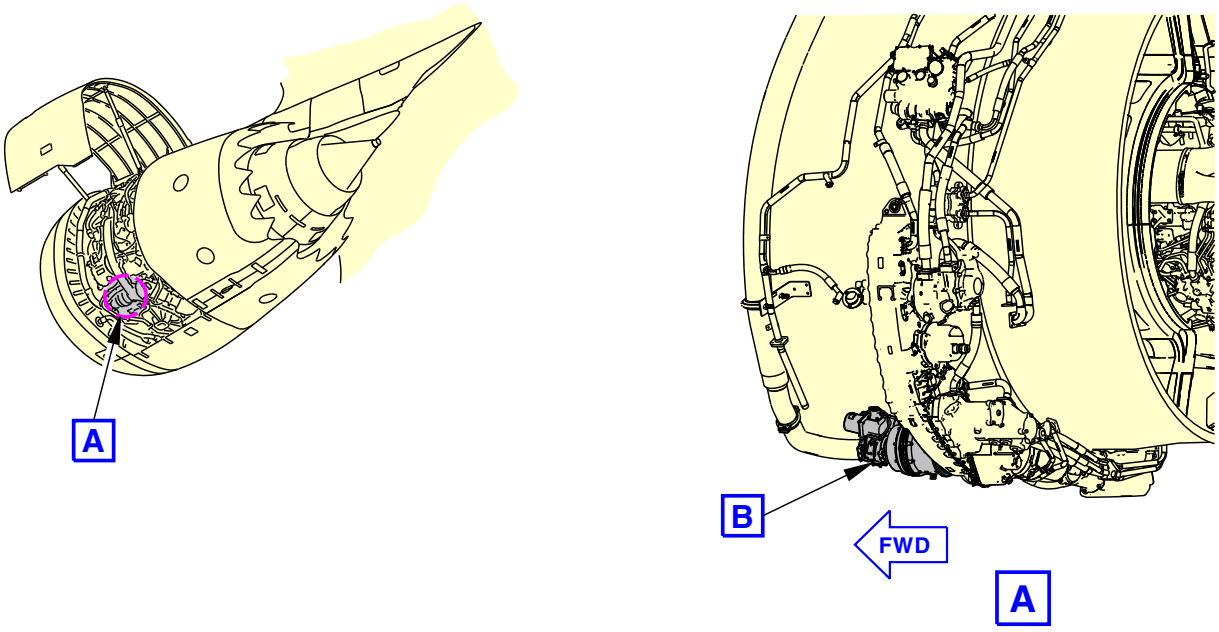
SUBTASK 80-11-01-860-014-G00

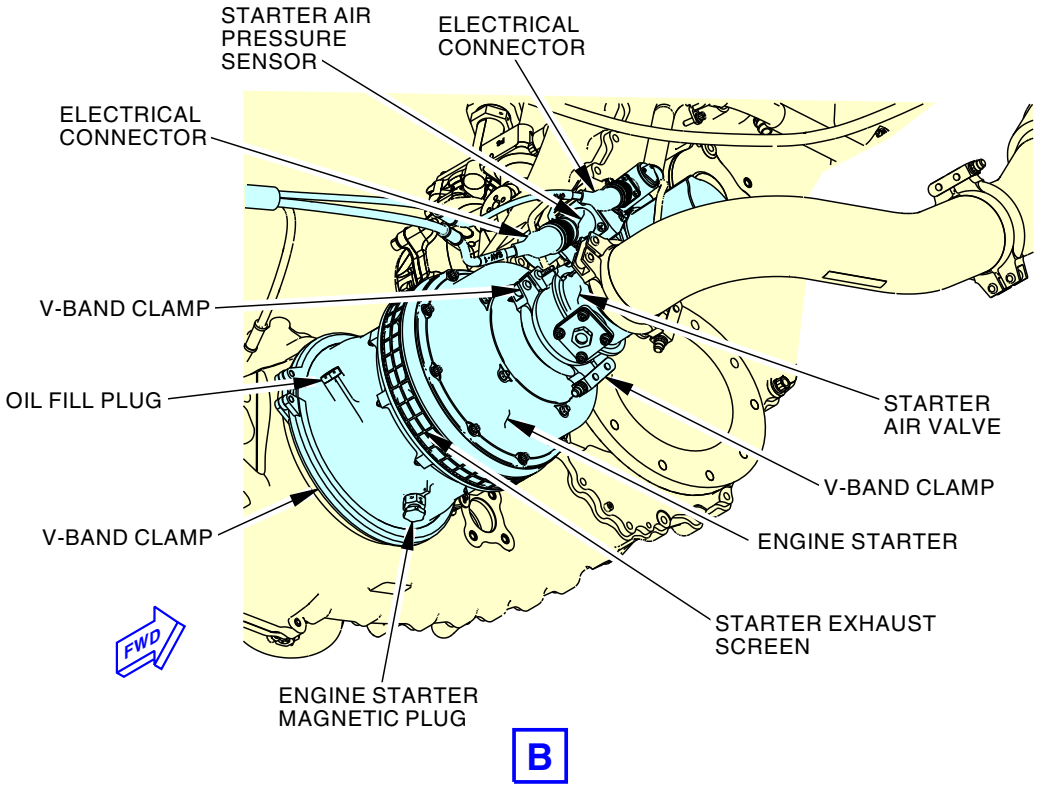
(3) Do these steps to remove the DO NOT OPERATE tags, STD-858, from the applicable ENGINE START switch and START LEVER switch:

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

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

——— END OF TASK ———





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Engine Starter Oil Leaks Inspection
Figure 602/80-11-01-990-809-G00

TASK 80-11-01-211-802-G00

4. Engine Starter Turbine Wheel Inspection

(Figure 603)

A. General

(1) This task provides the instructions on how to do the inspection of the engine starter turbine wheel.

B. References

Reference	Title
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE
STD-1432	Fiberscope - Flexible Borescope
STD-10717	Light Source - Borescope, (Meets General Electric or CFM Standard Practices Manual Specification)
STD-10718	Fiberscope (Meets General Electric or CFM Standard Practices Manual Specification)

D. Location Zones

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

E. Access Panels

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

F. Prepare for the Inspection

SUBTASK 80-11-01-860-015-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 80-11-01-865-003-G00

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	8	C01103	ENGINE 1 START VALVE

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	4	C00154	ENGINE 2 START VALVE

SUBTASK 80-11-01-010-008-G00

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

(a) Open these access panels:

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

G. Engine Starter Turbine Wheel Inspection

SUBTASK 80-11-01-212-002-G00

(1) Examine the engine starter turbine wheel as follows (Figure 603):

(a) Select four different angular locations that you can access around the starter exhaust screen to view the whole circumference.

(b) Turn the light source, STD-10717 on.

(c) Insert the fiberscope, STD-10718 or the fiberscope, STD-1432 between 2.5 in. (63.5 mm) to 3.0 in. (76.2 mm) through the starter exhaust screen.

(d) Bend the fiberscope, STD-10718 or the fiberscope, STD-1432 tip 85° - 99° backward.

(e) Examine the turbine wheels for cracks or missing tip corners at each angular location.

1) Cracked or missing material

a) Not permitted.

(f) When the inspection is complete, do these steps:

1) Remove the fiberscope, STD-10718 or the fiberscope, STD-1432.

2) Turn off the light source, STD-10717.

NOTE: Leave the blower on for cooling.

3) When the lamp and case is cool, turn off the blower.

H. Put the Airplane Back to Its Usual Condition

SUBTASK 80-11-01-410-009-G00

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

(a) Close these access panels:

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

SUBTASK 80-11-01-865-004-G00

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

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	8	C01103	ENGINE 1 START VALVE

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	4	C00154	ENGINE 2 START VALVE

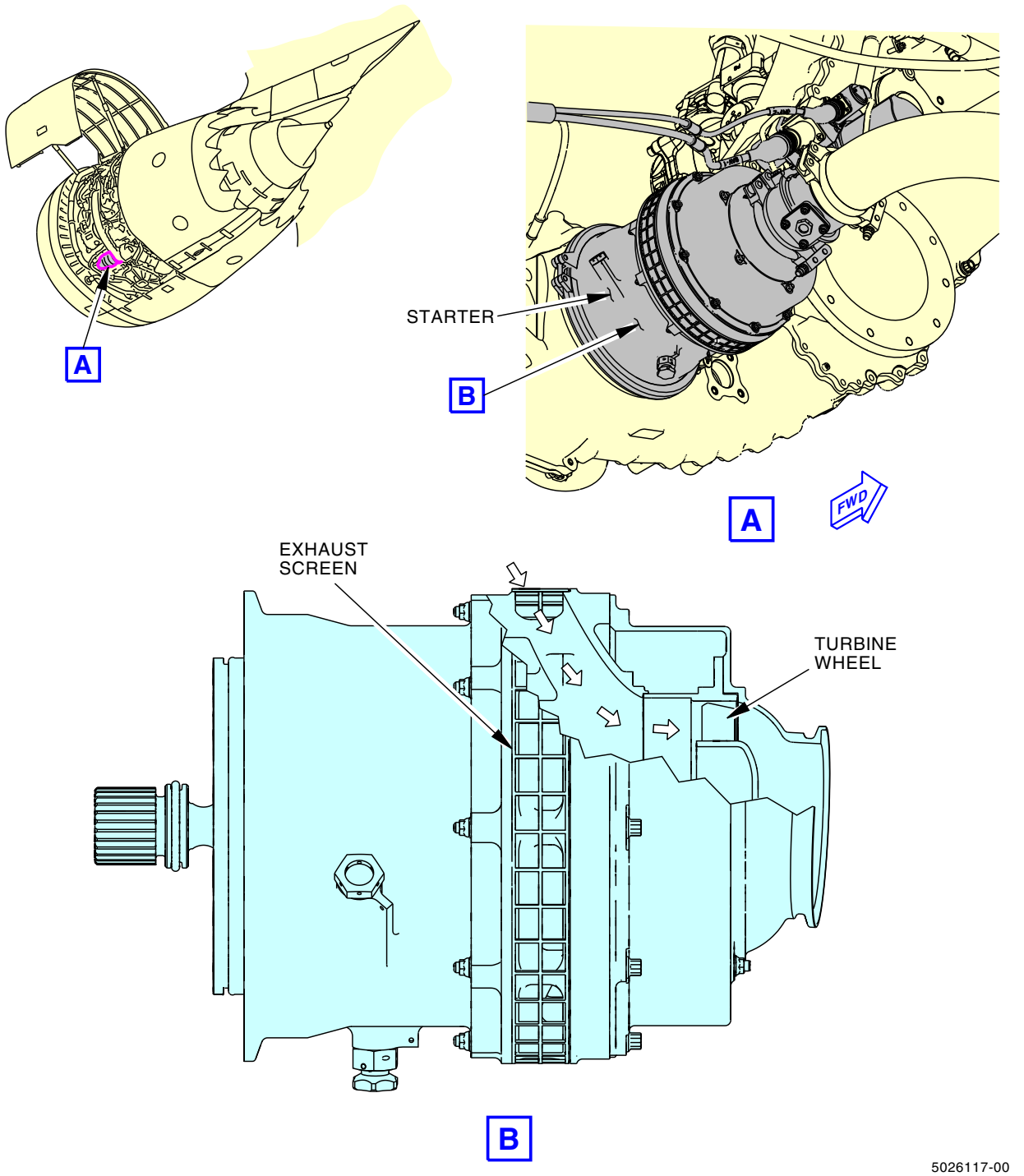
SUBTASK 80-11-01-860-016-G00

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

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

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

——— END OF TASK ———



Engine Starter Turbine Wheel Inspection
Figure 603/80-11-01-990-805-G00

STARTER AIR VALVE - REMOVAL/INSTALLATION

1. General

A. This procedure has two tasks:

(1) Starter air valve removal

(2) Starter air valve installation.

TASK 80-11-02-000-801-G00

2. Starter Air Valve Removal

(Figure 401)

A. General

(1) This task provides the instructions on how to remove the Starter Air Valve (SAV).

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
80-11-07-000-801-G00	Starter Air Valve Manual Control Removal (P/B 401)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Location Zones

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

E. Access Panels

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

F. Prepare for the Removal

SUBTASK 80-11-02-860-001-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 80-11-02-860-002-G00

(2) For the left engine, open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	8	C01103	ENGINE 1 START VALVE

SUBTASK 80-11-02-860-003-G00

(3) For the right engine, open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	4	C00154	ENGINE 2 START VALVE

SUBTASK 80-11-02-010-001-G00

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

(a) Open these access panels:

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

G. Starter Air Valve Removal

SUBTASK 80-11-02-000-001-G00

(1) Remove the starter air valve (SAV) [1] as follows:

(a) Disconnect the starter air valve manual control [3] (TASK 80-11-07-000-801-G00).

CAUTION MAKE SURE THAT THE ELECTRICAL CONNECTORS AND RECEPTACLES ARE CLEAN AND CLEAR OF UNWANTED MATERIALS BEFORE YOU DISCONNECT, OR CONNECT THEM. CONTAMINATION OF THE ELECTRICAL CONNECTORS AND RECEPTACLES CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION USE TEFLON-JAWED PLIERS TO LOOSEN ELECTRICAL CONNECTORS. DO NOT USE METAL-JAWED PLIERS. DAMAGE TO THE ELECTRICAL CONNECTORS COULD OCCUR.

(b) Use the teflon-jawed pliers, STD-664, to disconnect the starter air valve (SAV) [1] electrical connectors as follows (TASK 70-00-01-910-803-G00):

1) Disconnect the electrical connector (HJ6A) [5] from the starter air valve (SAV) [1].
2) Disconnect the electrical connector (HJ6A) [6] from the starter air valve (SAV) [1].
3) Install the protective covers on the electrical connector (HJ6A) [5], electrical connector (HJ6A) [6], and electrical receptacles.

(c) Disconnect the starter air valve manual control [3] from the starter air valve (SAV) [1] (TASK 80-11-07-000-801-G00).

(d) Disconnect the starter air duct [4] from the starter air valve (SAV) [1].

1) Loosen the nut [7] from the V-band clamp [8] that attaches the starter air duct [4] to the starter air valve (SAV) [1].
2) Remove the V-band clamp [8] from the starter air valve (SAV) [1].
3) Disconnect the starter air duct [4] from the starter air valve (SAV) [1].

4) Remove the E-seal [11] from the starter air duct [4].

(e) Loosen the nut [9] from the V-band clamp [10] that attaches the starter air valve (SAV) [1] to the pneumatic air engine starter [2].

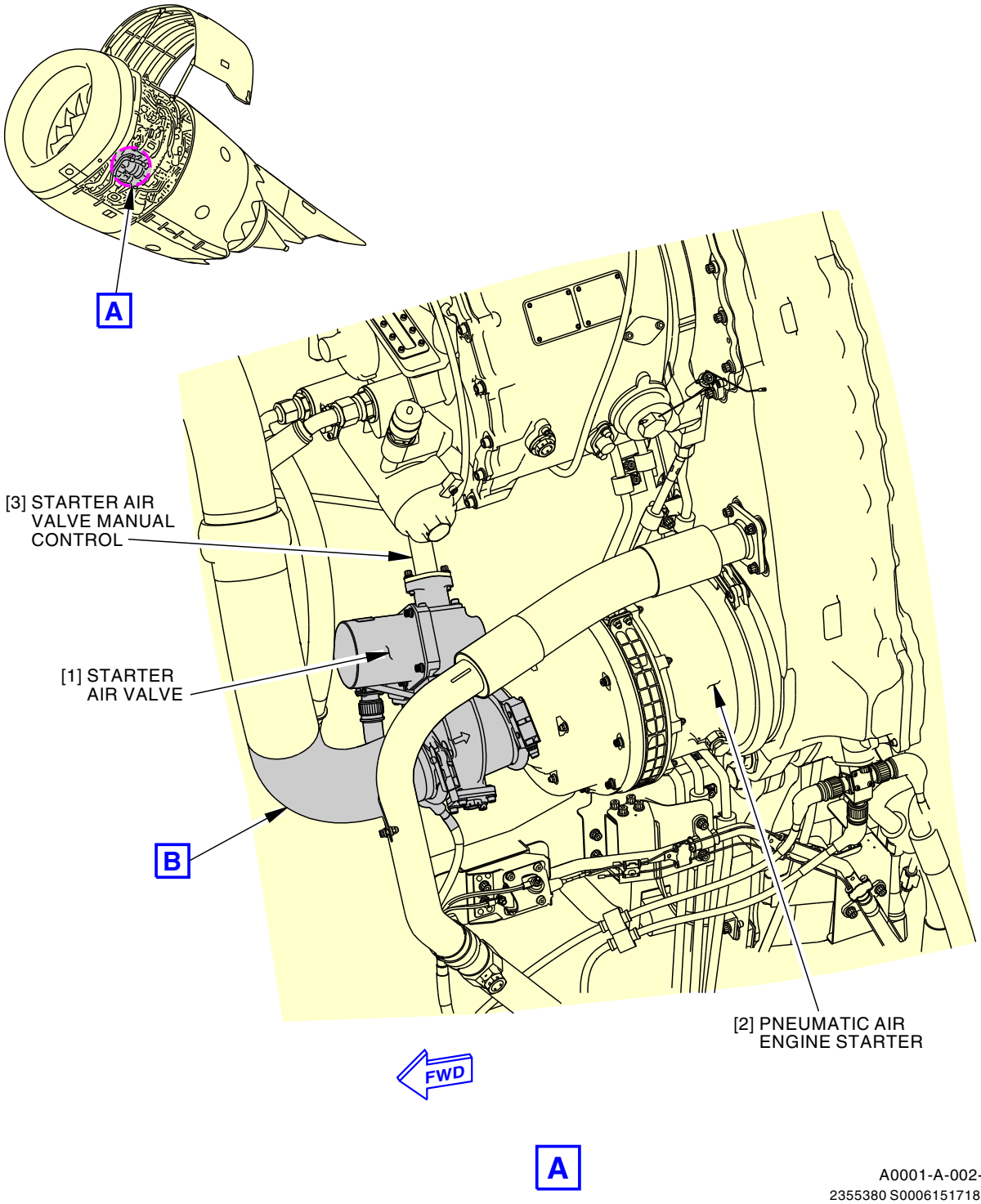
(f) Remove the V-band clamp [10] from the pneumatic air engine starter [2].

(g) Remove the starter air valve (SAV) [1] from the pneumatic air engine starter [2].

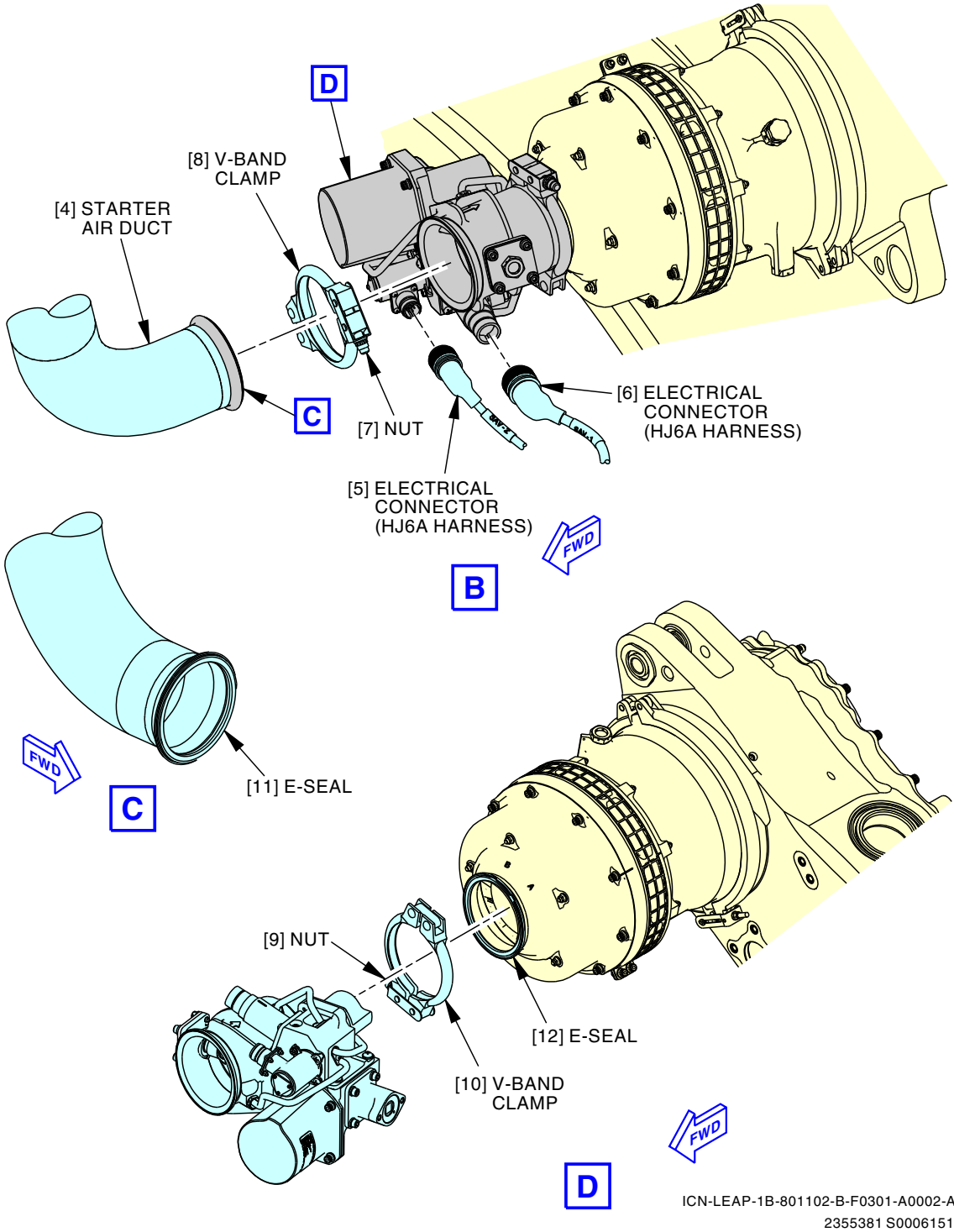
(h) Remove and discard the E-seal [12] from the starter air valve (SAV) [1].

(i) Install the protective covers on the openings.

END OF TASK



Starter Air Valve Installation
Figure 401/80-11-02-990-801-G00 (Sheet 1 of 2)



Starter Air Valve Installation
Figure 401/80-11-02-990-801-G00 (Sheet 2 of 2)

TASK 80-11-02-400-801-G00

3. Starter Air Valve Installation

(Figure 401)

A. General

(1) This task provides the instructions on how to install the Starter Air Valve (SAV).

(2) You must do the tests that are listed in the power plant test reference table after you install the SAV.

B. References

Reference	Title
70-00-01-910-803-G00	Electrical Connector Disconnection and Connection (P/B 201)
71-00-00-800-804-G00	Power Plant Test Reference Table (P/B 501)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
80-11-07-400-801-G00	Starter Air Valve Manual Control Installation (P/B 401)

C. Tools/Equipment

Reference	Description
STD-664	Pliers - Teflon-jawed (or Equivalent Soft-Jawed)
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
D00599 [CP2442]	Oil - Engine	
D00672 [CP5070]	Vaseline - Pure Mineral	V V-P-236

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
11	E-seal	80-11-51-01-135	SIA ALL
12	E-seal	80-11-02-01-020	SIA ALL

F. Location Zones

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

G. Access Panels

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

H. Starter Air Valve Installation

SUBTASK 80-11-02-400-001-G00

(1) Install the starter air valve (SAV) [1] as follows:

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

(b) Remove the protective covers from the openings.

(c) Lubricate the new E-seal [12] with vaseline, D00672 [CP5070].

(d) Install the new E-seal [12] on the starter air valve (SAV) [1]

(e) Install the starter air valve (SAV) [1] in a correct position on the pneumatic air engine starter [2].

NOTE: Align the sign with the B face of the starter air valve (SAV) [1].

(f) Connect the starter air valve manual control [3] on the starter air valve (SAV) [1] (TASK 80-11-07-400-801-G00).

(g) Lubricate the threads of the nut [9] with the oil, D00599 [CP2442].

(h) Install the V-band clamp [10] on the pneumatic air engine starter [2].

(i) Install the nut [9] on the V-band clamp [10] that attaches the starter air valve (SAV) [1] to the pneumatic air engine starter [2].

(j) Tighten the nut [9] to 90.3 in-lb (10.2 N·m) to 99.7 in-lb (11.3 N·m).

(k) Connect the starter air duct [4] to the starter air valve as follows:

1) Inspect the E-seal [11] and replace it only when damage is found.

a) Install the E-seal [11] on the starter air duct [4].

2) Connect the starter air duct [4] in the correct position on the starter air valve (SAV) [1].

3) Lubricate the threads of the nut [7] with the oil, D00599 [CP2442].

4) Install the V-band clamp [8] on the starter air valve (SAV) [1].

5) Install the nut [7] on the V-band clamp [8] that attaches the starter air duct [4] to the starter air valve (SAV) [1].

6) Tighten the nut [7] to 90.3 in-lb (10.2 N·m) to 99.7 in-lb (11.3 N·m).

CAUTION MAKE SURE THAT THE ELECTRICAL CONNECTOR AND RECEPTACLE ARE CLEAN WHEN YOU CONNECT THEM. DIRTY CONNECTORS CAN CAUSE DAMAGE TO EQUIPMENT.

CAUTION DO NOT USE PLIERS THAT HAVE METAL JAWS TO TIGHTEN THE ELECTRICAL CONNECTOR. DAMAGE TO THE ELECTRICAL CONNECTOR CAN OCCUR.

(l) Use the teflon-jawed pliers, STD-664 to connect the starter air valve (SAV) [1] to the electrical connectors as follows (TASK 70-00-01-910-803-G00):

1) Remove the protective covers from the openings.

2) Connect the electrical connector (HJ6A) [6] to the starter air valve (SAV) [1].

3) Connect the electrical connector (HJ6A) [5] to the starter air valve (SAV) [1].

(m) Install the starter air valve manual control [3] (TASK 80-11-07-400-801-G00).

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

I. Put the Airplane Back to Its Usual Condition

SUBTASK 80-11-02-860-004-G00

(1) For the left engine, remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	8	C01103	ENGINE 1 START VALVE

SUBTASK 80-11-02-860-005-G00

(2) For the right engine, remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	4	C00154	ENGINE 2 START VALVE

SUBTASK 80-11-02-860-006-G00

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

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

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

SUBTASK 80-11-02-410-001-G00

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

(a) Close these access panels:

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

J. Starter Air Valve Installation Test

SUBTASK 80-11-02-730-001-G00

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

——— END OF TASK ———

START SWITCH - REMOVAL/INSTALLATION

1. General

A. This procedure has two tasks:

(1) Start Switch Removal

(2) Start Switch Installation.

TASK 80-11-03-000-801-G00

2. Start Switch Removal

(Figure 401)

A. General

(1) The task gives the instructions on how to remove the start switch.

(2) The start switch is referred to as the switch and is located on the P5 overhead panel.

B. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

C. Location Zones

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

D. Prepare for the Removal

SUBTASK 80-11-03-040-001-G00

(1) For the left engine, open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	8	C01103	ENGINE 1 START VALVE

SUBTASK 80-11-03-040-002-G00

(2) For the right engine, open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	4	C00154	ENGINE 2 START VALVE

SUBTASK 80-11-03-040-003-G00

(3) Make sure that the start lever is in the CUTOFF position.

(a) Install a DO NOT OPERATE tag, STD-858, on the start lever.

SUBTASK 80-11-03-040-004-G00

(4) Make sure that the engine start switch is in the OFF position.

(a) Install a DO NOT OPERATE tag, STD-858, on the engine start switch.

E. Start Switch Removal

SUBTASK 80-11-03-020-001-G00

(1) Unlatch the P5 overhead panel and put it in the open position.

SUBTASK 80-11-03-020-002-G00

(2) Disconnect the applicable wire from the start switch [1].

(a) Remove each wire lug from the terminal.

SUBTASK 80-11-03-020-003-G00

(3) Remove the knob [7] from the start switch [1].

SUBTASK 80-11-03-010-001-G00

(4) Remove the lightplate [6]:

(a) Remove the screws [5].

(b) Remove the lightplate [6].

SUBTASK 80-11-03-020-004-G00

(5) If it is installed, remove the spacer [2].

SUBTASK 80-11-03-020-005-G00

(6) Remove the nut [3] and washer [4] from the start switch [1].

SUBTASK 80-11-03-020-006-G00

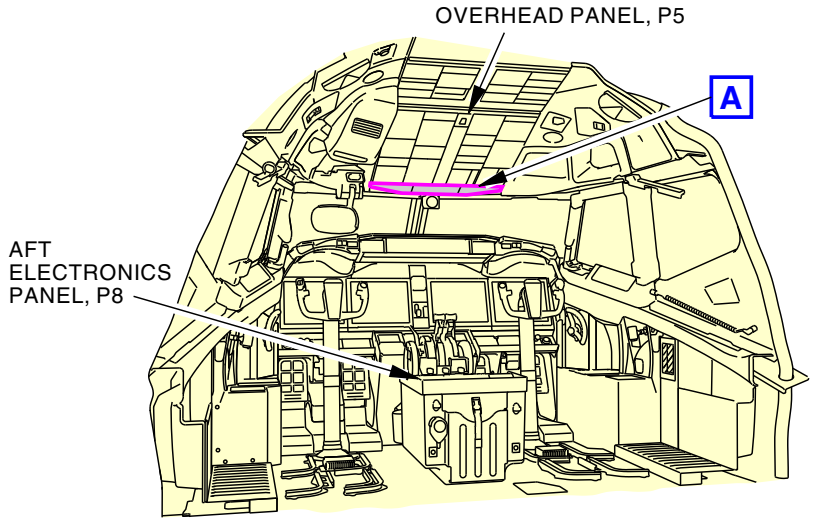
(7) Remove the start switch [1].

SUBTASK 80-11-03-020-007-G00

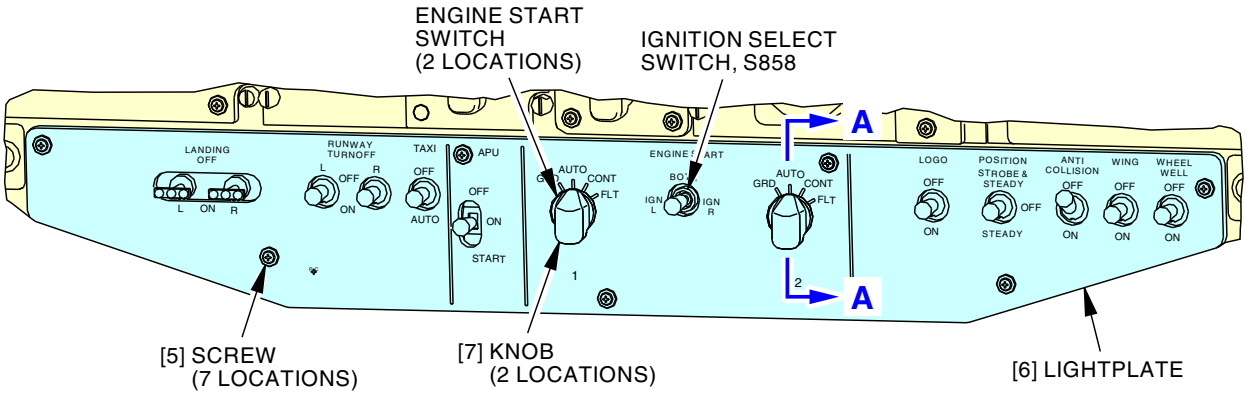
(8) If it is necessary, remove the diode from the X1 and X2 terminals of the switch.

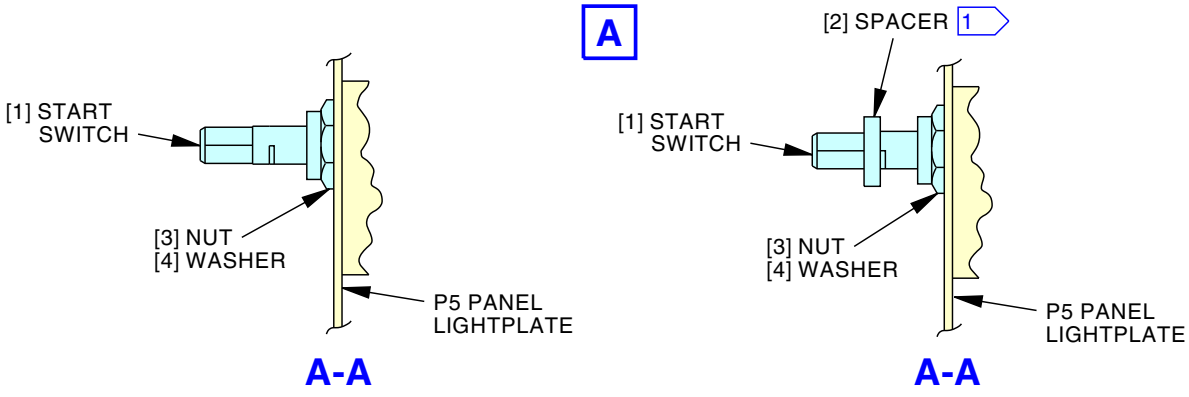
NOTE: Keep the diode for installation on the new starter switch.

——— END OF TASK ———



FLIGHT COMPARTMENT





1 SPACER INSTALLED ON START SWITCH WITH LONGER SHAFT

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Start Switch Installation
Figure 401/80-11-03-990-801-G00

TASK 80-11-03-400-801-G00

3. Start Switch Installation

(Figure 401)

A. General

(1) The task gives the instructions on how to install the start switch.

(2) The start switch is referred to as the switch and is located on the P5 overhead panel.

B. References

Reference	Title
80-11-03-720-801-G00	Start Switch Test (P/B 501)

C. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
1	Start switch	74-31-51-19-060	SIA ALL

D. Location Zones

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

E. Start Switch Installation

SUBTASK 80-11-03-400-001-G00

(1) Install the start switch [1] as follows:

(a) Put the start switch [1] in its position in the P5 overhead panel.

(b) Install the washer [4] and nut [3].

1) Tighten the nut [3].

(c) If it is necessary, install the spacer [2].

(d) Install the screws [5] to the lightplate [6].

1) Tighten the screws [5].

(e) Install the knob [7].

1) Tighten the screws on the knob [7].

(f) Connect the applicable wire back to the start switch [1].

1) Install each wire lug to its terminal.

(g) If the start switch does not have a diode installed at the X1 and X2 terminals, do these steps:

1) Use a new diode or the diode from the removed switch.

2) Install the cathode end of the diode to the X2 terminal.

3) Install the anode of the diode to the X1 terminal.

(h) Close and latch the P5 overhead panel.

F. Put the Airplane Back to Its Usual Condition

SUBTASK 80-11-03-440-001-G00

(1) For the left engine, remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	8	C01103	ENGINE 1 START VALVE

SUBTASK 80-11-03-440-002-G00

(2) For the right engine, open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	4	C00154	ENGINE 2 START VALVE

SUBTASK 80-11-03-440-003-G00

(3) Remove the DO-NOT-OPERATE tag from the applicable start lever.

SUBTASK 80-11-03-440-004-G00

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

G. Start Switch Installation Test

SUBTASK 80-11-03-720-004-G00

(1) Do this task: Start Switch Test, TASK 80-11-03-720-801-G00.

——— END OF TASK ———

START SWITCH - ADJUSTMENT/TEST

1. General

A. This procedure has one task: Start Switch Test.

TASK 80-11-03-720-801-G00

2. Start Switch Test

A. General

(1) This task provides the instructions on how to test the start switch.

(a) Use this test after you replace the engine start switch or to examine the operation of the switch.

(b) The engine start switch S266 (Engine 1) or S267 (Engine 2) is located on the P5 overhead panel.

B. References

Reference	Title
36-00-00-860-806	Remove Pressure from the Pneumatic System (P/B 201)
71-00-00-910-802-G00	Start the Engine (Selection) (P/B 201)
71-00-00-910-806-G00	Stop the Engine (Usual Engine Stop) (P/B 201)

C. Location Zones

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

D. Start Switch Test

SUBTASK 80-11-03-040-005-G00

(1) Do this task: Remove Pressure from the Pneumatic System, TASK 36-00-00-860-806.

SUBTASK 80-11-03-860-001-G00

(2) Move the applicable engine start switch to the GRD position and make sure the switch holds in this position.

(a) Move the switch back to the AUTO position.

SUBTASK 80-11-03-860-002-G00

(3) Select the left or right Multi Function Display (MFD).

(a) Push SYS button on the Multi-Function Display Panel, P9.

(b) Push SEL button to access the Onboard Maintenance Function (OMF).

(c) Make these selections on the MFD main function menu using the SELECTOR knob and the center SEL button:

1) MAINT DATA PGS

2) 31 MDS DISPLAY

SUBTASK 80-11-03-720-001-G00

(4) For left ENGINE START switch do the following steps:

(a) Select the MDS MAINT PAGE - DPC DISCRETE INPUTS page showing INSERT A, DPC - L and DPC - R PIN D07 and PIN E07.

NOTE: Selecting NEXT PAGE or PREV PAGE is used to go to though MDS maintenance pages until the desired page is displayed.

(b) Set left ENGINE START SWITCH to GRD.

1) Make sure that the STATE of PIN D07 for DPC - L and DPC - R is GND.

(c) Set left ENGINE START switch to CONT.

1) Make sure that the STATE of PIN D07 for DPC - L and DPC - R is GND.

(d) Set left ENGINE START switch to AUTO.

1) Make sure that the STATE of PIN D07 for DPC - L and DPC - R is OPEN.

(e) Set left ENGINE START switch to FLT.

1) Make sure that the STATE of PIN E07 for DPC - L and DPC - R is GND.

(f) Set left ENGINE START switch to AUTO.

1) Make sure that the STATE of PIN E07 for DPC - L and DPC - R is OPEN.

(g) Select the MDS MAINT PAGE - DPC DISCRETE INPUTS page showing INSERT B, DPC - L and DPC - R PIN H07.

(h) Set left ENGINE START SWITCH to GRD.

1) Make sure that the STATE of PIN H07 for DPC - L and DPC - R is VOLT.

(i) Set left ENGINE START SWITCH to AUTO.

1) Make sure that the STATE of PIN H07 for DPC - L and DPC - R is OPEN.

SUBTASK 80-11-03-720-002-G00

(5) For right ENGINE START switch do the following steps:

(a) Select the MDS MAINT PAGE - DPC DISCRETE INPUTS page showing INSERT E, DPC - L and DPC - R PIN J01.

NOTE: Selecting NEXT PAGE or PREV PAGE is used to go to though MDS maintenance pages until the desired page is displayed.

(b) Set right ENGINE START SWITCH to GRD.

1) Make sure that the STATE of PIN J01 for DPC - L and DPC - R is GND.

(c) Set right ENGINE START switch to CONT.

1) Make sure that the STATE of PIN J01 for DPC - L and DPC - R is GND.

(d) Set right ENGINE START switch to AUTO.

1) Make sure that the STATE of PIN J01 for DPC - L and DPC - R is OPEN.

(e) Select the MDS MAINT PAGE - DPC DISCRETE INPUTS page showing INSERT D, DPC - L and DPC - R PIN F01.

(f) Set right ENGINE START switch to FLT.

1) Make sure that the STATE of PIN F01 for DPC - L and DPC - R is GND.

(g) Set right ENGINE START switch to AUTO.

1) Make sure that the STATE of PIN F01 for DPC - L and DPC - R is OPEN.

(h) Select the MDS MAINT PAGE - DPC DISCRETE INPUTS page showing INSERT E, DPC - L and DPC - R PIN A02.

(i) Set right ENGINE START SWITCH to GRD.

1) Make sure that the STATE of PIN A02 for DPC - L and DPC - R is VOLT.

(j) Set right ENGINE START SWITCH to AUTO.

1) Make sure that the STATE of PIN A02 for DPC - L and DPC - R is OPEN.

SUBTASK 80-11-03-720-003-G00

(6) Start the appropriate engine (TASK 71-00-00-910-802-G00).

(a) Make sure that the appropriate ENGINE START switch moves from GRD to AUTO when engine N2 reaches before or at 63%.

(7) Shutdown Engine (TASK 71-00-00-910-806-G00).

——— END OF TASK ———

STARTER AIR VALVE MANUAL CONTROL - REMOVAL/INSTALLATION

1. General

A. This procedure has two tasks:

(1) Starter air valve manual control removal

(2) Starter air valve manual control installation.

TASK 80-11-07-000-801-G00

2. Starter Air Valve Manual Control Removal

(Figure 401)

A. General

(1) This task provides the instructions on how to remove the starter air valve manual control.

(2) The starter air valve manual control is referred to as the SAV manual control.

B. References

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

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Location Zones

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

E. Access Panels

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

F. Prepare for the Removal

SUBTASK 80-11-07-860-001-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 80-11-07-860-002-G00

(2) For the left engine, open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	8	C01103	ENGINE 1 START VALVE

SUBTASK 80-11-07-860-003-G00

(3) For the right engine, open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	4	C00154	ENGINE 2 START VALVE

SUBTASK 80-11-07-010-001-G00

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

(a) Open these access panels:

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

G. Starter Air Valve Manual Control Removal

SUBTASK 80-11-07-000-001-G00

(1) Remove the SAV manual control [1]:

(a) Remove the three bolts [3] that attach the SAV manual control [1] to the bracket [4].

(b) Remove the bolt [5] from the clamp [6] that attaches the SAV manual control [1] to the bracket [9].

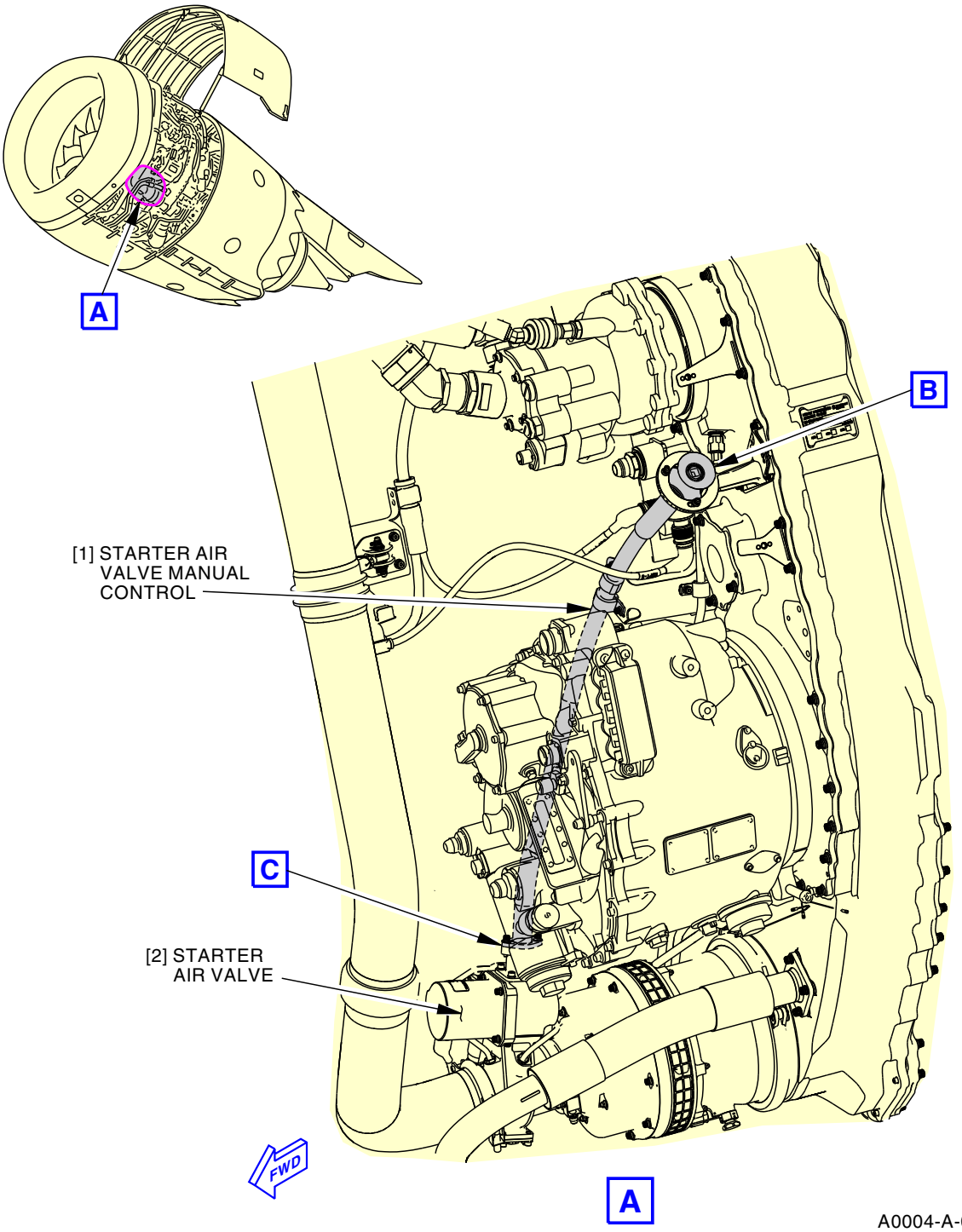
(c) Remove the bolt [7] from the clamp [8] that attaches the SAV manual control [1] to the bracket [9].

(d) Remove the two bolts [10] and the two washers [11] that attach the SAV manual control [1] to the starter air valve [2].

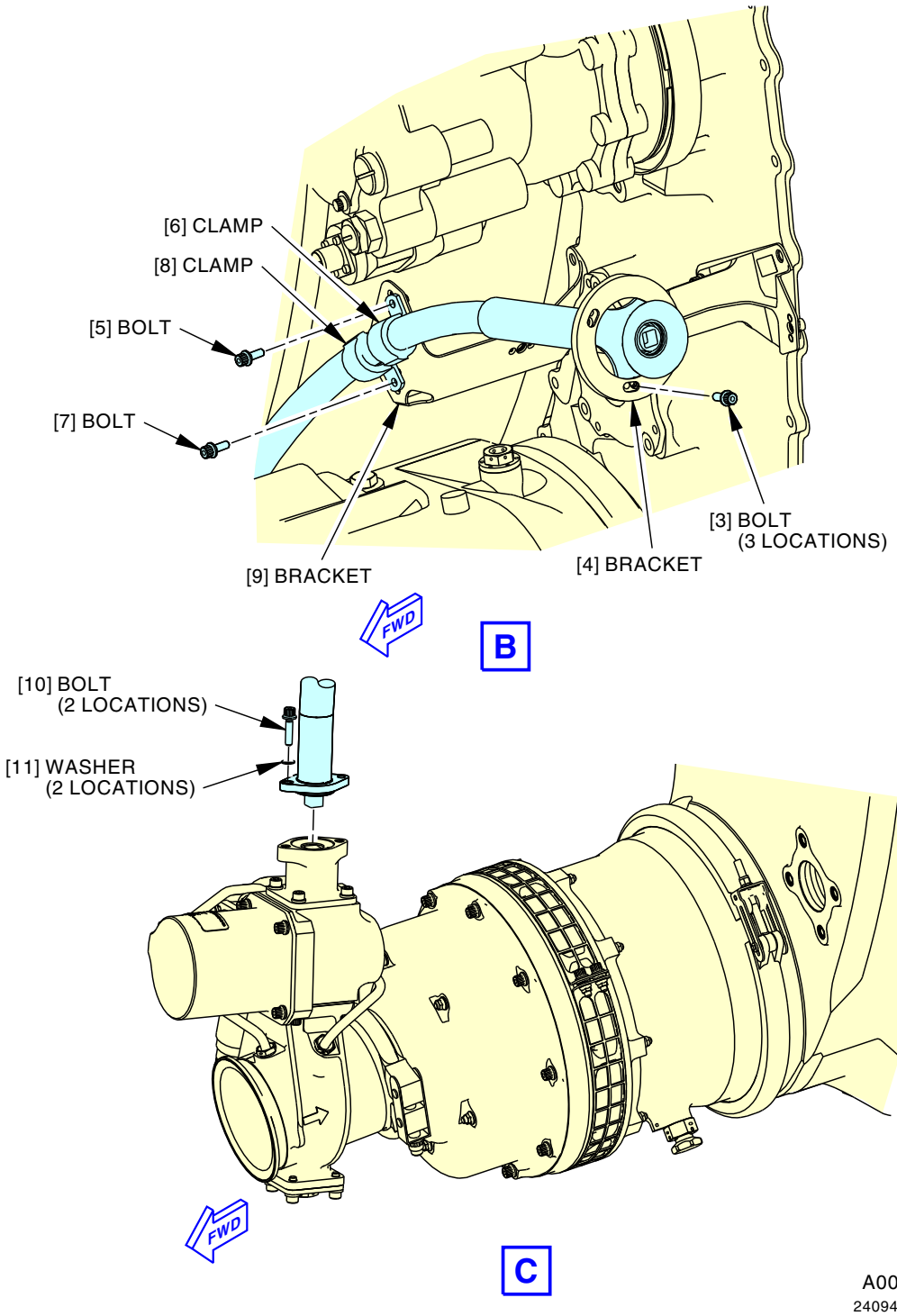
(e) Remove the SAV manual control [1] from the starter air valve [2].

(f) Install the protective covers on the openings.

——— END OF TASK ———



Starter Air Valve Manual Control Installation
Figure 401/80-11-07-990-801-G00 (Sheet 1 of 2)



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Starter Air Valve Manual Control Installation
Figure 401/80-11-07-990-801-G00 (Sheet 2 of 2)

TASK 80-11-07-400-801-G00

3. Starter Air Valve Manual Control Installation

(Figure 401)

A. General

(1) This task provides the instructions on how to install the starter air valve manual control.

(2) The starter air valve manual control is referred to as the SAV manual control.

(3) You must do the tests that are listed in the power plant test reference table after you install the SAV manual control.

B. References

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

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE

D. Consumable Materials

Reference	Description	Specification
D00599 [CP2442]	Oil - Engine	

E. Location Zones

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

F. Access Panels

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

G. Starter Air Valve Manual Control Installation

SUBTASK 80-11-07-400-001-G00

(1) Install the SAV manual control [1]:

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

(b) Remove the protective covers from the openings.

(c) Install the SAV manual control [1] in a correct position on the starter air valve [2].

(d) Lubricate the threads of the three bolts [3], the bolt [5], the bolt [7] and the two bolts [10] with the oil, D00599 [CP2442].

(e) Install the two bolts [10] and the two washers [11] that attach the SAV manual control [1] to the starter air valve [2].

(f) Tighten the bolts [10] to 33.25 in-lb (3.76 N·m) to 36.75 in-lb (4.15 N·m).

(g) Install the bolt [7] and the clamp [8] that attach the SAV manual control [1] to the bracket [9].

(h) Tighten the bolt [7] to 52.25 in-lb (5.90 N·m) to 57.75 in-lb (6.52 N·m).

(i) Install the bolt [5] and the clamp [6] that attach the SAV manual control [1] to the bracket [9].

(j) Tighten the bolt [5] to 52.25 in-lb (5.90 N·m) to 57.75 in-lb (6.52 N·m).

(k) Install the three bolts [3] that attach the SAV manual control [1] to the bracket [4].

(l) Tighten the bolts [3] to 109.25 in-lb (12.34 N·m) to 120.75 in-lb (13.64 N·m).

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

H. Put the Airplane Back to Its Usual Condition

SUBTASK 80-11-07-860-004-G00

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

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

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

SUBTASK 80-11-07-860-005-G00

(2) For the left engine, remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	8	C01103	ENGINE 1 START VALVE

SUBTASK 80-11-07-860-006-G00

(3) For the right engine, remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	4	C00154	ENGINE 2 START VALVE

SUBTASK 80-11-07-410-001-G00

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

(a) Close these access panels:

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

I. Starter Air Valve Installation Test

SUBTASK 80-11-07-710-001-G00

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

——— END OF TASK ———

ENGINE STARTER MAGNETIC PLUG - MAINTENANCE PRACTICES

1. General

A. This procedure has one task:

(1) Engine Starter Magnetic Plug Inspection.

TASK 80-11-09-200-801-G00

2. Engine Starter Magnetic Plug Inspection

(Figure 201)

NOTE: This procedure is a scheduled maintenance task.

A. General

(1) This task gives the instructions to examine and identify possible internal damage to the starter.

(2) The starter is installed on the forward side of the accessory gearbox.

B. References

Reference	Title
71-00-00-910-808-G00	Dry Motor Procedure (P/B 201)
71-11-04-010-801-G00	Open the Fan Cowl Panels (Selection) (P/B 201)
71-11-04-410-801-G00	Close the Fan Cowl Panels (Selection) (P/B 201)
80-11-01-000-801-G00	Engine Starter Removal (P/B 401)
80-11-01-400-801-G00	Engine Starter Installation (P/B 401)
80-11-01-610-801-G00	Engine Starter Servicing (Oil Drain) (P/B 301)
80-11-01-610-802-G00	Engine Starter Servicing (Oil Fill) (P/B 301)

C. Tools/Equipment

Reference	Description
STD-858	Tag - DO NOT OPERATE
STD-1070	Lens - Magnifying, 10X, Hand Held

D. Consumable Materials

Reference	Description	Specification
D00599 [CP2442]	Oil - Engine	
G00034	Cotton Wiper - Process Cleaning Absorbent Wiper (Cheesecloth, Gauze)	AMS3819 Class 1 Grade A or B Form 1 (Supersede BMS15-5 CL A)

E. Expendables/Parts

AMM Item	Description	AIPC Reference	AIPC Effectivity
3	Preformed packing	80-11-09-01-005	SIA ALL

F. Location Zones

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

G. Access Panels

Number	Name/Location
413	Left Fan Cowl, Engine 1

(Continued)

Number	Name/Location
423	Left Fan Cowl, Engine 2

H. Prepare for the Inspection

SUBTASK 80-11-09-860-001-G00

(1) Do these steps to make sure that the ENGINE START switch and the START LEVER switch are not operated:

(a) Make sure that the applicable ENGINE START switch, on the P5 overhead panel, is in the AUTO or OFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable ENGINE START switch.

(b) Make sure that the applicable START LEVER switch, on the P10 control stand, is in the CUTOFF position.

1) Put a DO NOT OPERATE tag, STD-858, on the applicable START LEVER switch.

SUBTASK 80-11-09-860-002-G00

(2) For the left engine, open this circuit breaker and install safety tag:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	8	C01103	ENGINE 1 START VALVE

SUBTASK 80-11-09-860-003-G00

(3) For the right engine, open this circuit breaker and install safety tag:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	4	C00154	ENGINE 2 START VALVE

SUBTASK 80-11-09-010-001-G00

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

(a) Open these access panels:

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

I. Engine Starter Magnetic Plug Inspection

SUBTASK 80-11-09-010-002-G00

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

(1) Remove the magnetic plug [2] from the oil drain plug [1] as follows:

NOTE: The magnetic plug is a separate component from the drain plug. A check valve is installed in the oil drain plug hole. Oil will not drain from the starter when you remove the magnetic plug.

(a) Push and turn counterclockwise to release the magnetic plug [2].

NOTE: Keep the magnetic plug away from metal objects to prevent additional contamination.

(b) Remove and discard the two preformed packings [3].

SUBTASK 80-11-09-210-001-G00

(2) Examine the magnetic plug [2] for type and quantity of contamination as follows:

(a) Clean the magnetic plug [2] with cotton wiper, G00034.

(b) Keep all particles that you remove.

(c) Use a 10x hand held magnifying lens, STD-1070 to examine the particles.

1) If there is a small (less than moderate) amount of magnetic particles smaller than 0.10 in. (2.54 mm), do this step:

NOTE: A small amount of magnetic particles smaller than 0.10 in. (2.54 mm) is permitted.

a) Examine the starter magnetic plug again at the next MPD interval.

2) If you see a larger accumulation of particles, or particles larger than 0.10 in. (2.54 mm), do these steps:

a) Drain the starter oil (TASK 80-11-01-610-801-G00).

b) Refill the starter oil (TASK 80-11-01-610-802-G00).

c) Complete two cycles of dry motor procedure (TASK 71-00-00-910-808-G00).

d) Examine the magnetic plug [2] again.

e) If you see a larger accumulation of particles or particles larger than 0.10 in. (2.54 mm), replace the starter (TASK 80-11-01-000-801-G00 and TASK 80-11-01-400-801-G00).

SUBTASK 80-11-09-410-001-G00

(3) If there is no damage to the starter, install the magnetic plug [2] as follows:

(a) Lubricate the two new preformed packings [3] with oil, D00599 [CP2442].

(b) Install the preformed packings [3] on the magnetic plug [2].

(c) Install the magnetic plug [2] into the oil drain plug [1].

(d) Push in and turn clockwise to engage locking device.

J. Put the Airplane Back to Its Usual Condition

SUBTASK 80-11-09-410-002-G00

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

(a) Close these access panels:

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

SUBTASK 80-11-09-860-004-G00

(2) For the left engine, remove the safety tag and close this circuit breaker:

CAPT Electrical System Panel, P18-2

Row	Col	Number	Name
B	8	C01103	ENGINE 1 START VALVE

SUBTASK 80-11-09-860-005-G00

(3) For the right engine, remove the safety tag and close this circuit breaker:

F/O Electrical System Panel, P6-2

Row	Col	Number	Name
C	4	C00154	ENGINE 2 START VALVE

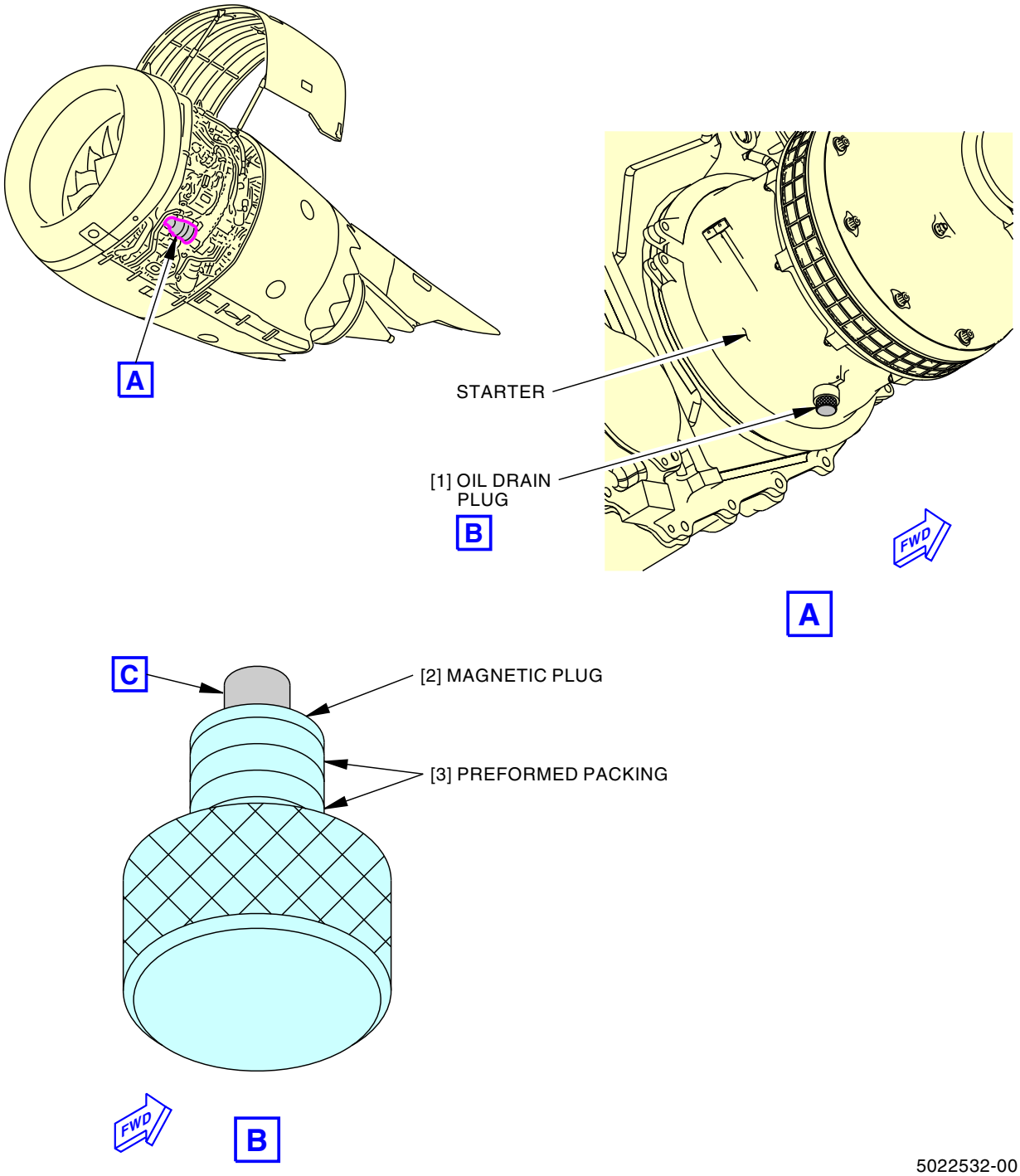
SUBTASK 80-11-09-860-006-G00

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

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

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

——— END OF TASK ———



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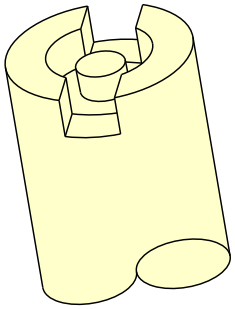
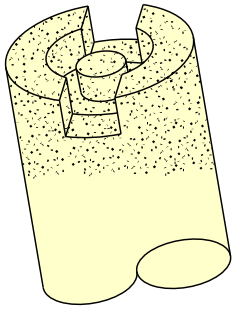
Engine Starter Magnetic Plug Inspection
Figure 201/80-11-09-990-801-G00 (Sheet 1 of 2)

CLEAN



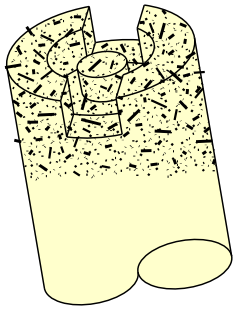
NORMAL FUZZ



NORMAL:

A SMALL ACCUMULATION OF FINE SLIVERS AND RELATIVELY FLAT FLAKES OF METAL SHOWS NORMAL WEAR

MAJOR METAL



ABNORMAL:

A LARGE ACCUMULATION OF PARTICLES, OR PARTICLES LARGER THAN 0.1 IN. (2.54 mm) IN ANY DIRECTION, SHOWS THERE IS SOME INTERNAL DAMAGE AND THAT A STARTER REPLACEMENT IS NECESSARY.

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Engine Starter Magnetic Plug Inspection
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