AIR TURBINE STARTER (ATS) - REMOVAL/INSTALLATION

EFFECTIVITY: ALL

1. General

   A. This section gives the procedures to remove/install the ATS (Air Turbine Starter).

   B. The procedures in this section are given in the sequence below. The tasks identified with (♦) are part of the Scheduled Maintenance Requirements Document (SMRD).

TASK NUMBER	*DESCRIPTION*	*EFFECTIVITY*
80-10-01-000-801-A	ATS - REMOVAL	ALL
80-10-01-400-801-A	ATS - INSTALLATION	ALL

TASK 80-10-01-000-801-A
EFFECTIVITY: ALL

2. ATS - REMOVAL

A. General

(1) This procedure is applicable to the LH and RH engines.

B. References

REFERENCE	*DESIGNATION*
AMM MPP 71-00-00/200	- MAINTENANCE PRACTICES
AMM TASK 71-12-01-000-801-A/400	ENGINE LOWER COWLING - OPENING

C. Zones and Accesses

ZONE	*PANEL/DOOR*	*LOCATION*
413	Lower cowling	LH engine
423	Lower cowling	RH engine

D. Tools and Equipment

Not Applicable

E. Auxiliary Items

ITEM	*DESCRIPTION*	*PURPOSE*	*QTY*
Commercially available	Workstand	To get access to the engine	1

F. Consumable Materials

Not Applicable

G. Expandable Parts

Not Applicable

H. Persons Recommended

QTY	*FUNCTION*	*PLACE*
1	Does the task	Engine

I. Preparation

SUBTASK 841-002-A

WARNING: BEFORE YOU DO THE TASK OBEY THE SAFETY PRECAUTIONS GIVEN IN AMM MPP 71-00-00/200 TO PREVENT INJURY TO PERSONS AND DAMAGE TO THE MATERIAL.

CAUTION: BEFORE YOU INSTALL AN ATS THAT WAS STORED DURING ONE YEAR OR MORE, MAKE SURE THAT THE STORAGE INSTRUCTIONS PROCEDURE OF HONEYWELL CMM 80-12-13 WAS DONE.

(1) On the circuit breaker panel, open the circuit breakers below and attach a DO-NOT-CLOSE tag to them:

- START 1/2.

(2) Put the workstand in the work area.

(3) Open the lower cowling (AMM TASK 71-12-01-000-801-A/400) to get access to the engine.

J. Removal (Figure 401)

SUBTASK 020-002-A

WARNING: HOLD THE ATS CORRECTLY BEFORE YOU REMOVE IT FROM THE GEARBOX. THE ATS WEIGHTS ABOUT 9.0 KILOGRAMS (20 POUNDS).

CAUTION: TO PREVENT TOO MANY LOADS ON THE INTERNAL PARTS, DO NOT LIFT THE ATS BY THE DRIVE SHAFT.

(1) Loosen the V-band clamps (5) which attach the ATS ducts (6).

(2) Remove the clamps (1) which attach the ATS (4) to the engine pad.

(3) Turn the ATS (C.W.) to let the shoulder bolt move out of the keyway slot.

(4) Remove the ATS (4) from the engine pad. Discard the O-rings (2) and (3).

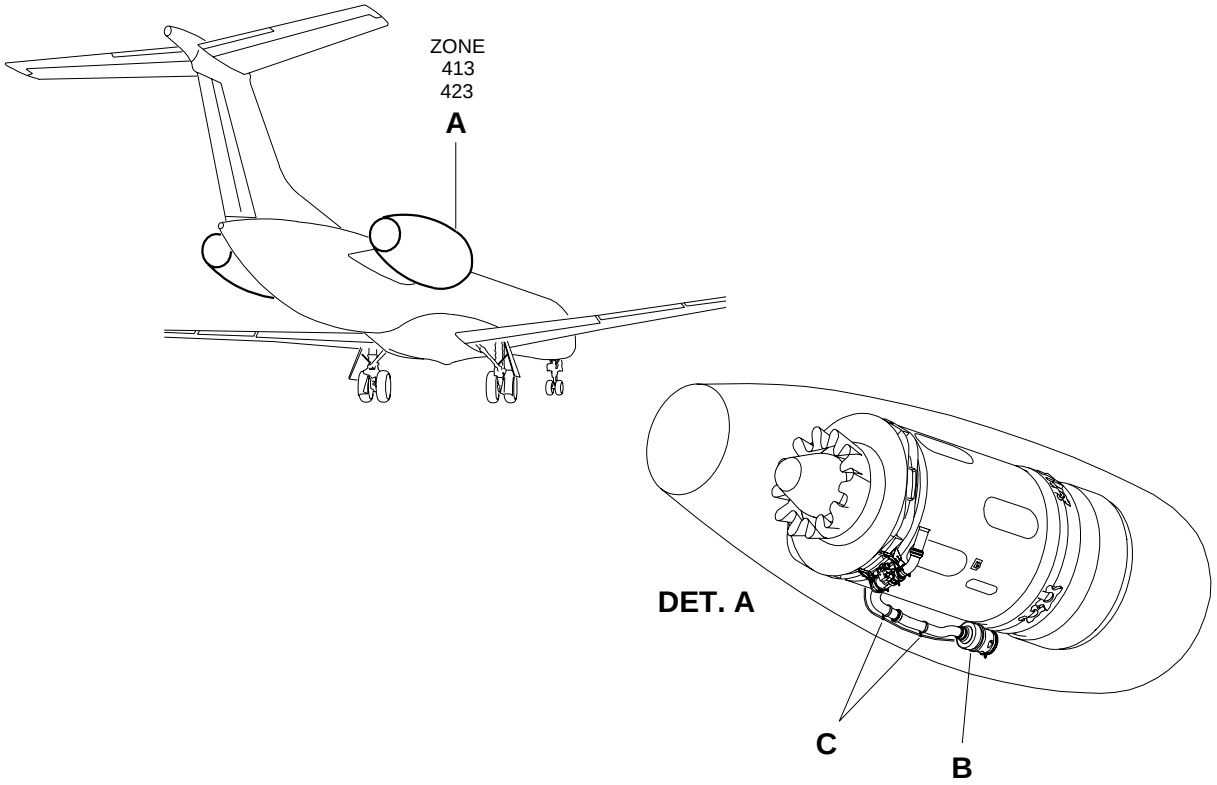
NOTE: Make sure that the ATS output shaft assembly is removed together with the ATS.

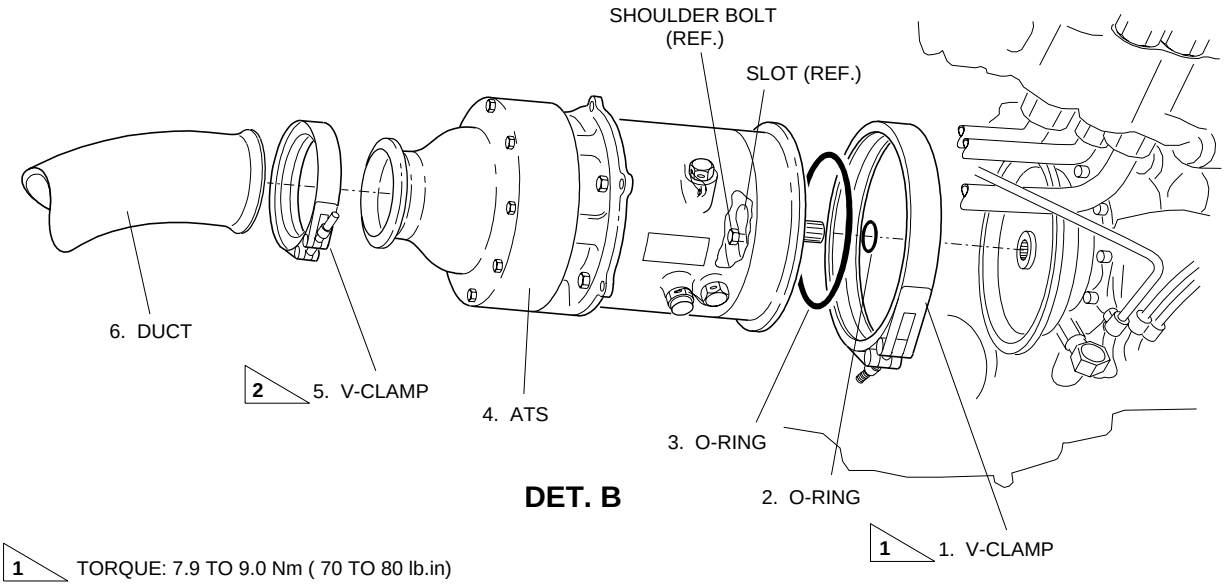
(5) Install the protection caps on the ATS air inlet and to the air supply duct.

(6) Install the protection caps on the ATS port, in the engine accessory gear-box.

EFFECTIVITY: ALL

Air Turbine Starter (ATS) - Removal/Installation
Figure 401





1 TORQUE: 7.9 TO 9.0 Nm (70 TO 80 lb.in)

2 TORQUE: 4.5 - 5.6 Nm (40 - 50 lb.in)
REFER TO TASK 20-10-10-910-801 A FOR CORRECT INSTALLATION OF V-CLAMP.

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TASK 80-10-01-400-801-A
EFFECTIVITY: ALL

3. ATS - INSTALLATION

A. General

(1) This procedure is applicable to the LH and RH engines.

B. References

REFERENCE	*DESIGNATION*
AMM MPP 71-00-00/200	- MAINTENANCE PRACTICES
AMM TASK 71-00-01-910-803-A/200	ENGINE DRY MOTORING PROCEDURE (START CYCLE WITHOUT FUEL/IGNITION)
AMM TASK 71-12-01-400-801-A/400	ENGINE LOWER COWLING - CLOSING
AMM TASK 80-10-01-600-801-A/300	AIR TURBINE STARTER - SERVICING
IPC 80-11-00	AIR TURBINE STARTER

C. Zones and Accesses

ZONE	*PANEL/DOOR*	*LOCATION*
413	Lower cowling	LH engine
423	Lower cowling	RH engine

D. Tools and Equipment

ITEM	*DESCRIPTION*	*PURPOSE*	*QTY*
Commercially available	Workstand	Access to the engine	
Commercially available	Torque wrench	To apply torque	

E. Auxiliary Items

Not Applicable

F. Consumable Materials

Not Applicable

G. Expendable Parts

ITEM	*IPC REFERENCE (VENDOR REFERENCE)*	*QTY*
O-ring	IPC 80-11-00	02/LRU

H. Persons Recommended

QTY	*FUNCTION*	*PLACE*
1	Does the task	Engine

I. Installation (Figure 401)

SUBTASK 420-002-A

WARNING:
- **BEFORE YOU DO THE TASK, OBEY THE SAFETY PRECAUTIONS GIVEN IN AMM MPP 71-00-00/200 TO PREVENT INJURY TO PERSONS AND DAMAGE TO THE MATERIAL.**
- **HOLD THE ATS CORRECTLY BEFORE YOU REMOVE IT FROM THE GEARBOX. THE ATS WEIGHTS ABOUT 9.0 KILOGRAMS (20 POUNDS).**

CAUTION:
- BEFORE YOU INSTALL AN ATS THAT WAS STORED DURING ONE YEAR OR MORE, MAKE SURE THAT THE STORAGE INSTRUCTIONS PROCEDURE OF HONEYWELL CMM 80-12-13 WAS DONE.
- DO NOT PUT THE WEIGHT OF THE ATS ON THE ATS OUTPUT SHAFT. DAMAGE TO THE SPLINES CAN OCCUR IF THE INSTALLATION IS NOT CAREFUL.
- MAKE SURE THAT THE BOLTS OF THE V-CLAMPS ARE NOT INSTALLED VERTICALLY TO PREVENT CHAFING, WHICH COULD CAUSE DAMAGE TO THE LOWER ENGINE COWLING.
- DO THE ATS OIL LEVEL CHECK AND FILL THE ATS ONLY AFTER THE ATS IS INSTALLED TO PREVENT INCORRECT QUANTITIES.

(1) Remove the protection pads from the ATS port, in the engine accessory gear-box, if applicable.

(2) Remove the protection caps from the ATS air inlet and from the air supply duct, if applicable.

(3) Lubricate the new O-rings (2) and (3) with oil (engine oil) and install them on the ATS drive shaft and pilot diameter of the ATS.

NOTE: Make sure that the O-ring on the ATS drive shaft is in correct groove, not in the spline relief groove.

(4) Install the ATS (4) on the engine gear-box. Make sure that the splines of the shaft engage the drive gear of the accessory gear-box.

(5) Turn the ATS (4) counterclockwise and lock the keyway slot on the shoulder bolt.

(6) Put the V-clamp (1) on the ATS and on the engine gear-box adapter flange and torque the V-clamp (1). Refer to Figure 401.

CAUTION: MAKE SURE THAT THE ENDS OF THE CLAMP DO NOT TOUCH EACH OTHER WHEN THE CORRECT ATTACHMENT TORQUE IS APPLIED.

(7) Install the V-clamp (5) to attach the duct (6) to the ATS and torque the clamp (5). Refer to Figure 401.

(8) Fill the ATS with the approved oil (AMM TASK 80-10-01-600-801-A/300).

J. Follow-on

SUBTASK 842-002-A

(1) Close the lower cowling (AMM TASK 71-12-01-400-801-A/400).

(2) Remove the workstand from the work area.

(3) On the circuit breaker panel, close the circuit breakers below and remove the DO-NOT-CLOSE tag from them:

- START 1/2.

(4) Do the test that follows:

(a) If you remove/install the ATS of both engines during the time the aircraft is stopped for maintenance until next flight, do the engine leak test for each engine (run at max. takeoff power for at least 3 minutes, but not for more than 5 minutes). Refer to the latest revision of Rolls-Royce (MM CSP 34022).

(b) If you remove/install the ATS of one engine only during the time the aircraft is stopped until next flight, do an ATS leak test (dry motor the engine). Refer to AMM TASK 71-00-01-910-803-A/200.