ENG 4 FWD THRUST REVERSER ADJUSTMENT

MAINT	RII/INSP

Execution / Start Date:	
End Date:	

ENG 4 FWD THRUST REVERSER ADJUSTMENT

Nr.	Hardtime	Task	Spec.	Related Documents	MAINT	RII/INSP
1.		F1 M1	MEC	AMM 78–5–1 PB 500 rev JUL 15/69 MMS–328 783003 A0204 rev 20.10.06 REF DFW EXP rev .		

Check: C

Zones: 454

Access:

NRC YES ❍ NO ❍ IF YES, NUMBER(S): . . . . . .

ENG 4 FWD THRUST REVERSER ADJUSTMENT: MEASURE GAPS & ADJUST FWD THRUST REVERSER INSTALLATION AS REQUIRED.

A. Adjust aligment of carriage assemblies & cowl ring.

1. Manually move cowl ring aft 7.5 (+0.00/–0.15) inches from FWD thrust position. Add shims as necessary between carriage flanges (4 places) & cowl ring so that carriage stop bolts on all 4 carriages engage simultaneously with bosses on carriage tracks (see view 2, fig 501).

NOTE: If tapered shim is required, fabricate as follows:
Material — 2024–T3 sheet per QQ–A–355
Thickness — 0.063 inch max
Length & width — same as laminated shims used
Taper — 0.010 inch per inch max
Finish — skydrol resistant finish 2.30

2. With cowl ring restrained in full reverse position per step1, clearance between the diaphragm & the sleeve at the dimple in the lower section of the sleeve shall be **0.02 to 0.08 inches** at closest point. (see detail C) When installing cowl ring, required gap can be obtained by shimming fan air exhaust diaphragm as described below:
   – remove antirotation clips (2 places) from exhaust diaphragm & from engine flange (see section D–D).
   – Add laminated shim between clip & exhaust diaphragm (2 places) & remove laminations as necessary to obtain required gap.
   – Be sure that clips are firmly secured at engine flange & diaphragm ring attachment when shimming is completed.

Clearance	.....

3. On airplanes with adjustable seal at cowl splitter area (detail F), perform following:
   – Adjust seal to obtain 0.002 to 0.062 inch gap between cowl ring & diaphragm with cowl ring in cruise position.
   – Move cowl ring to full reverse position & check that seal clears diaphragm by 0.002 inch minimum throughout travel.

4. Adjust cowl ring & carriage assemblies so that cowl ring moves aft freely by hand from fwd thrust position to full reverse thrust position.

ENG 4 FWD THRUST REVERSER ADJUSTMENT

	MAINT	RII/INSP

B. Adjust blocker door installation as follows:

1. Remove fan cowl panels. (see chapter 71).

2. Remove slot seal panels:
   – Remove nacelle fwd fairing (see chapter 12)
   – Remove 2 screws securing each slot seal panel.

3. Rotate blocker doors so that they will clear the door skids, then move cowl ring all the way fwd.
   – For installations using aluminium blocker doors, check that door installation permits full engagement of contact surfaces of slide blocks with tracks when door is in cruise position. Adjust, if necessary, by adding washers in equal increments, not to exceed 0.20 inch maximum total (0.10 inch maximum per side), between slide block & slide block retaining bolt bushing in door. After adjustment, tighten slide block retaining bolts to **20–28 pound–inches** torque.
   – To prevent bolt head from scoring track, do not exceed 0.016 inch washer thickness between bolt head & slide block (applicable to all installations).

4. Push the aft end of the door inward against the door skid & check that gap A, fig. 501, section A–A, is **0.03 inch minimum**. If filling is required, then gap A shall be held to 0.03 (+0.02/–0.00) inch.

Clearance	.....

5. With thrust reverser & controls in fwd thrust position apply 80 to 100 psig to fwd thrust lines of reverser pneumatic system. See 78–6–0, Test thrust reverser, for instructions on connection of ground air source.

6. Check at least one of the link assemblies for each door contacts the link fitting stop & that gap B of fig. 501 section A–A, is **0.15 (± 0.10) inch.**

Clearance	.....

   – If gap B is less than 0.05, trim fwd edge of blocker door per view 1 and/or shim the link fitting per section B–B of fig. 501.
   – If gap B is greater than 0.25 inch, file boss on link assembly as necessary to obtain 0.25 inch gap. This max dimension is to ensure that the blocker door will clear the fan cowl panel.

7. For installations using aluminum blocker doors, perform the following at upper 4 locations only:
   – With blocker door in cruise position, adjust each cam follower roller & bushing to maintain 0.02 to 0.04 inch clearance between short track & roller. (see detail E).
   Add washers, not to exceed 0.12 inch maximum adjustment, under cam follower roller & bushing to obtain specified clearance between track & roller.

C. With cowl ring against reverse stops, check for clearance between blocker doors & cowl ring (see detail D). On installations using magnesium blocker doors, minimum clearance is 0.02 inch. On installations using aliminum blocker doors, minimum clearance is 0.10 inch. If specified clearance is not present at locations shown, check actuators for proper extended length measured from rod end bearing centerline to aft face of bushing retaining plate (detail D). All doors shall clear leading edge of cowl ring by 0.05 inch minimum.

D. Adjust rod ends on both vane assembly actuators so that actuators do not bottom in either fwd or reverse thrust positions.

ENG 4 FWD THRUST REVERSER ADJUSTMENT

	MAINT	RII/INSP

E. Test FWD Thrust reverser installations.

1. Place fwd thrust reverser in reverse thrust position manually by sliding cowl ring aft until it stops. Check that cowl ring has moved aft to full reverse thrust position without binding.
2. Check that carriage stop bolts (4 places) engage with stop bosses on carriage tracks. (see view 2, figure 501).
3. Check that minimum gap of 0.02 inch exists at point of closest contact between inner cowl ring duct skin & diaphragm at lower vertical centerline as shown in detail C.
4. Place fwd thrust reverser in fwd thrust position manually by sliding cowl ring fwd till it stops.
5. Check cowl ring – engine flange alignment (see detail B).
   – Make this check with ground air source connected at ground service connection & regulated at 25 psig. See 78–6–0 for instructions on connection of ground air source.
   – Check that inner ring of seal ring housing of cowl ring meets inner diameter of engine flange within ± 0.06 inches max.

Clearance	.....

   – Check that gap of 0.02 (+0.03/–0.00) inch exists between face of inner ring of seal ring housing & face of engine flange.

Clearance	.....

   – Check for max gap of 0.030 inch between face of engine flange & face of outer ring of seal ring housing.

Clearance	.....

6. On airplanes with adjustable seal at cowl splitter area, check for 0.002 to 0.062 inch gap between cowl ring & diaphragm with cowl ring in cruise position & 0.002 inch minimum clearance throughout cowl ring ful travel (see detail F).

Clearance	.....

7. Check alignment of cowl ring & fan cowl panel as shown in detail A.
8. Check blocker door alignment.
   – Check that each blocker door moves freely by hand on the links & tracks.
   – On aluminum blocker door installations, check that contact surfaces of slide blocks fully engage tracks.
   – With fwd thrust reverser manually positioned aft to reverse thrust position, check that blocker door actuator rod end bearings mate with blocker door attachment bosses with no preload.
   – At upper four door locations on installations with cams & rollers installed, check for 0.02 to 0.04 inch clearance between short tracks & rollers (see section E–E).

Clearance	.....

   – With thrust reverser in fwd thrust position, check that a gap of 0.03 inch minimum exists between link & link support fitting (see section A–A).

Clearance	.....

ENG 4 FWD THRUST REVERSER ADJUSTMENT

MAINT	RII/INSP

9. Check actuator rigging.
   – Check that piston rods of blocker door actuators (12 places) bottom when cowl ring is manually positioned aft to reverse thrust position.
   – Check that piston rods of vane assembly actuators do not bottom in either reverse or fwd thrust position.

ENG 4 FWD THRUST REVERSER ADJUSTMENT

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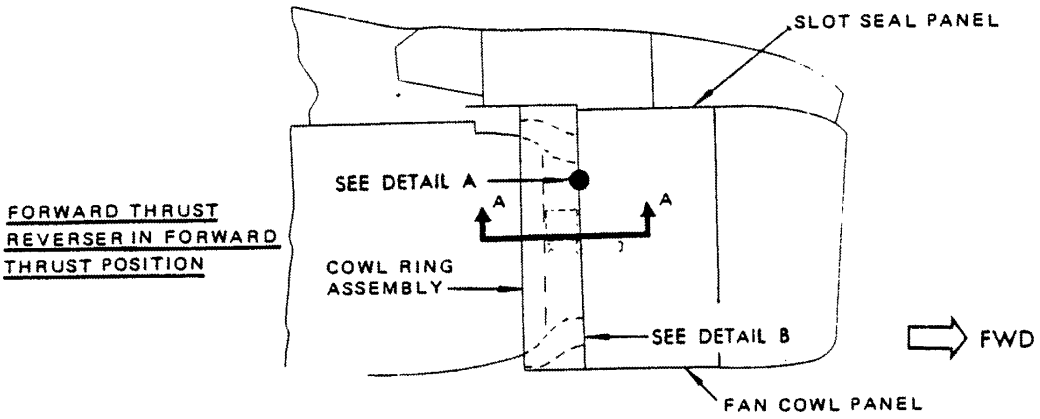
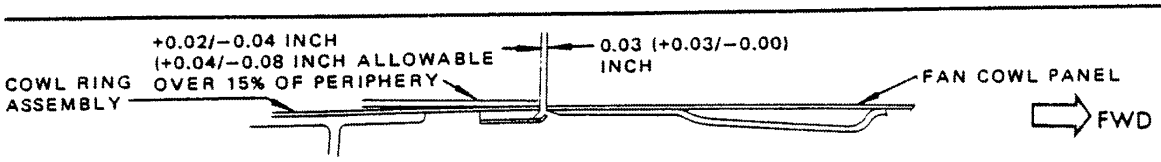
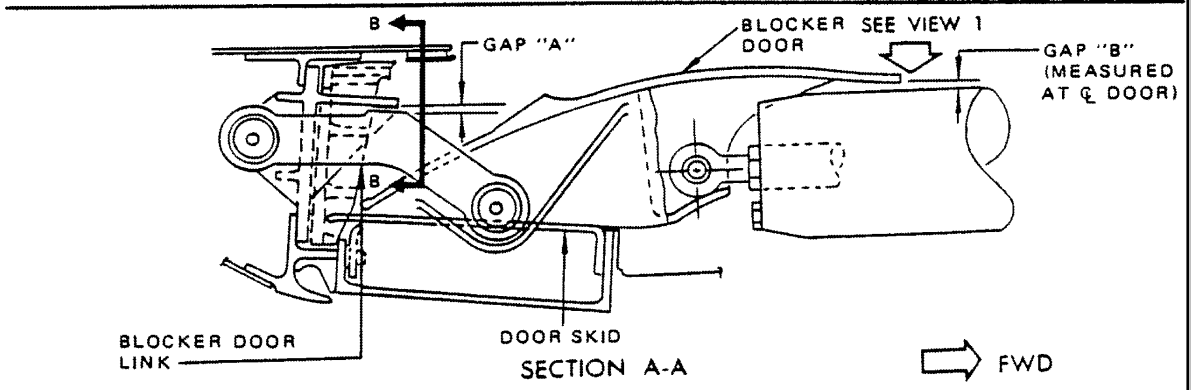
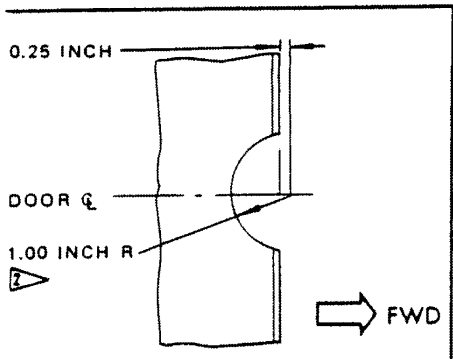
MAINTENANCE MANUAL



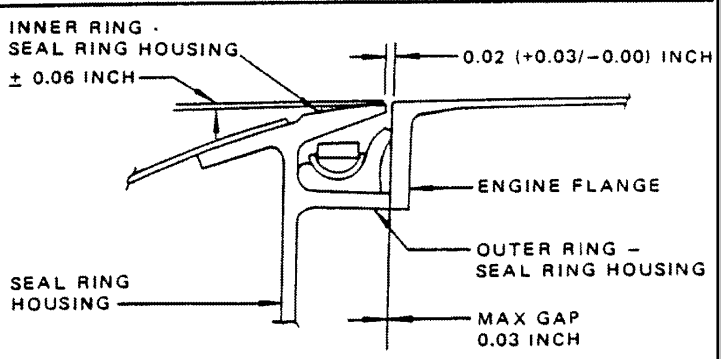


DETAIL A





BLOCKER DOOR TRIMMING
VIEW 1



DETAIL B

Forward Thrust Reverser Adjustment
Figure 501 (Sheet 1)

78-5-1
Page 502

2
Jul 15/68

ENG 4 FWD THRUST REVERSER ADJUSTMENT

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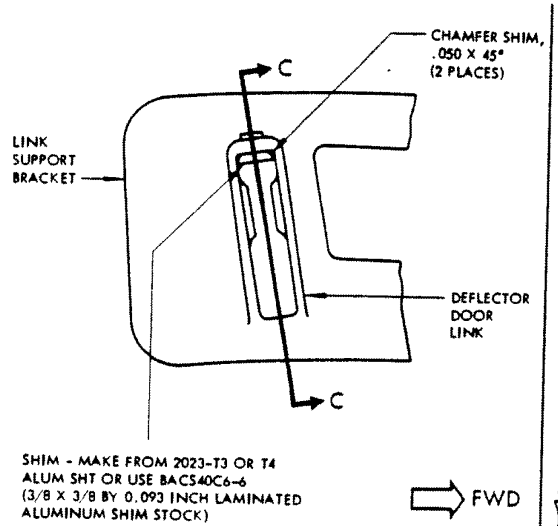
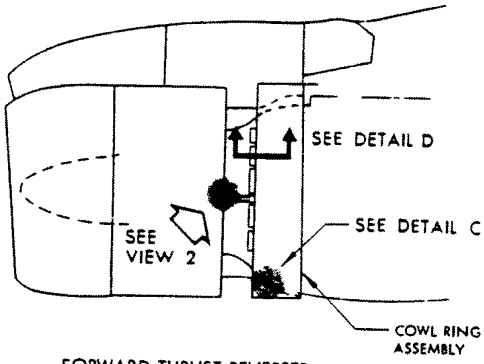
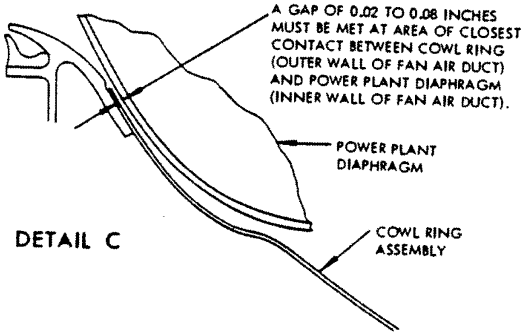


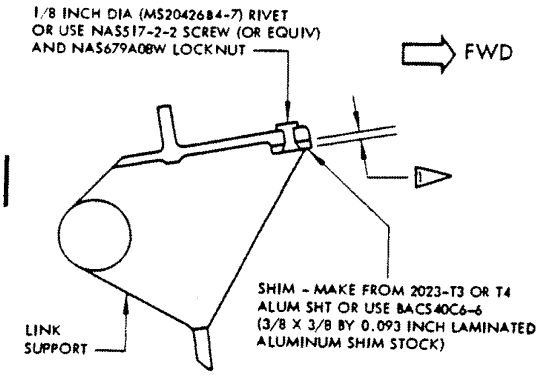
SECTION B-B



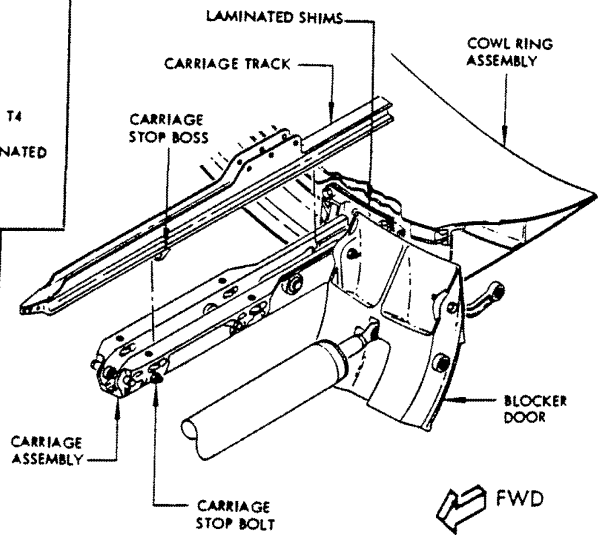
FORWARD THRUST REVERSER IN REVERSE THRUST POSITION



DETAIL C



SECTION C-C



VIEW 2

DETERMINE SHIM THICKNESS AS FOLLOWS: WITH SLEEVE IN THE FORWARD POSITION PUSH THE AFT END OF BLOCKER DOOR INWARD AGAINST THE DOOR AND MEASURE GAP "A" PER SECTION VIEW A-A REQUIRED SHIM THICKNESS EQUAL GAP "A" MINUS 0.03 INCH SHIMMING NEED BE DONE AT ONLY ONE LINK FITTING LOCATION PER DOOR.

2
Jul 15/69

Forward Thrust Reverser Adjustment
Figure 501 (Sheet 2)

78-5-1
Page 503

ENG 4 FWD THRUST REVERSER ADJUSTMENT

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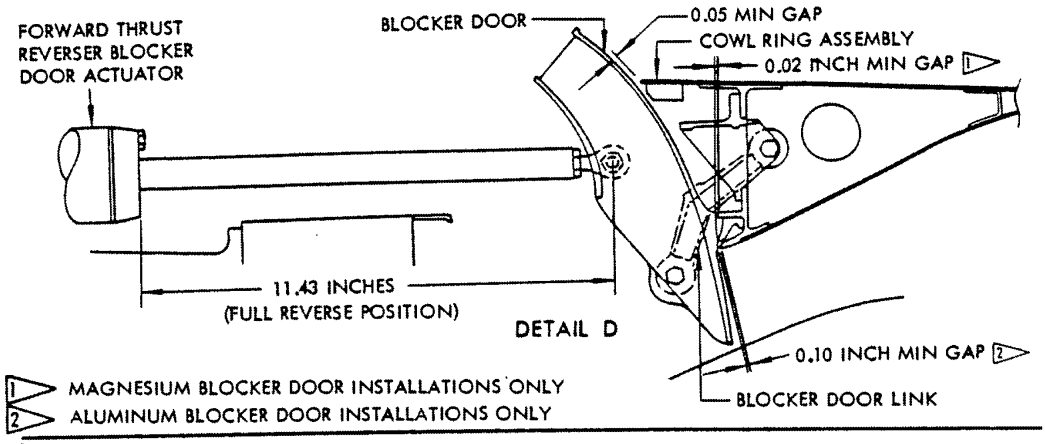

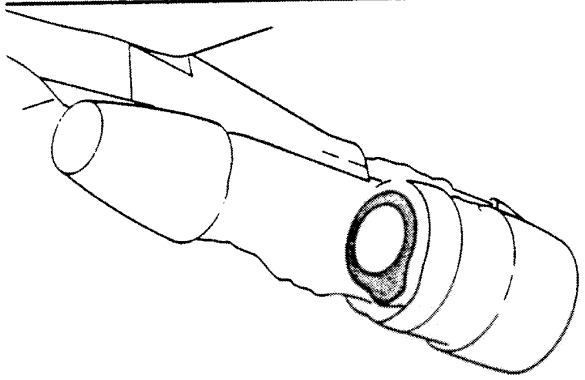

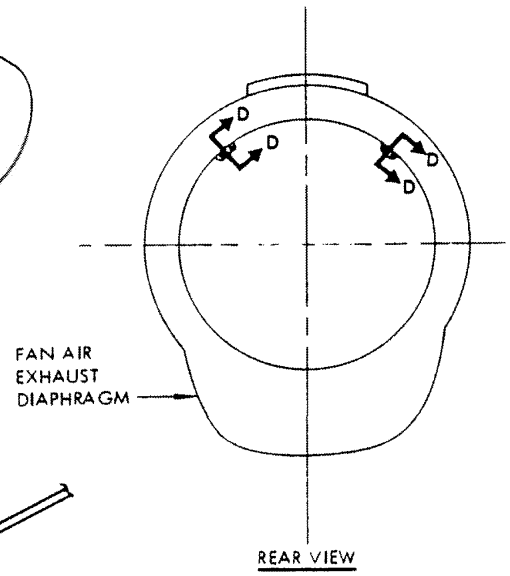

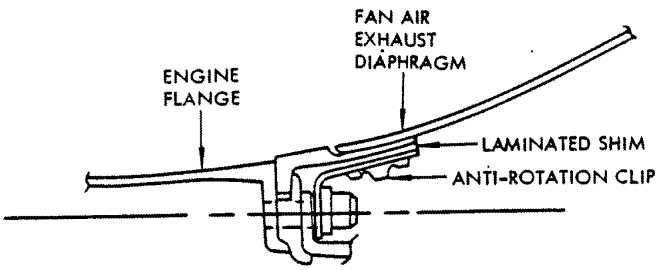

SECTION D-D

Forward Thrust Reverser Adjustment
Figure 501 (Sheet 3)

78-5-1
Page 504

24
Jul 15/69

ENG 4 FWD THRUST REVERSER ADJUSTMENT

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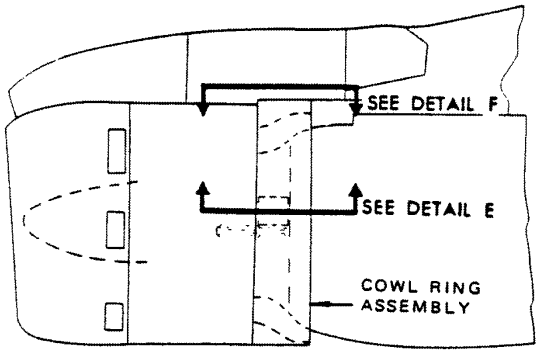
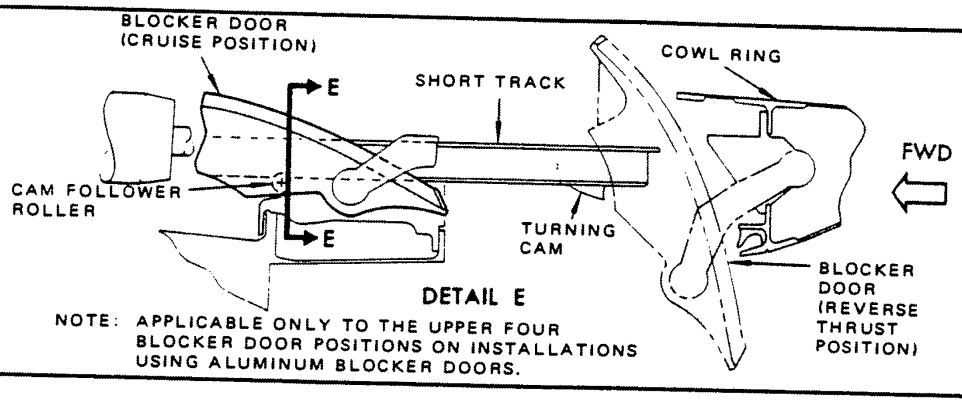
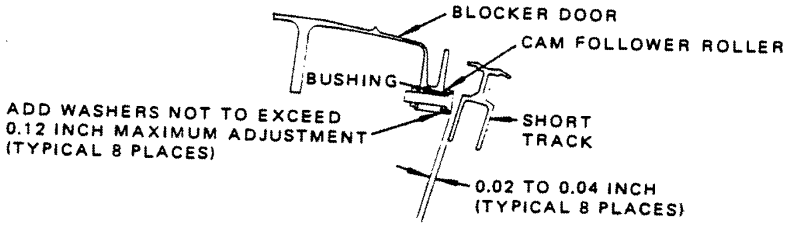
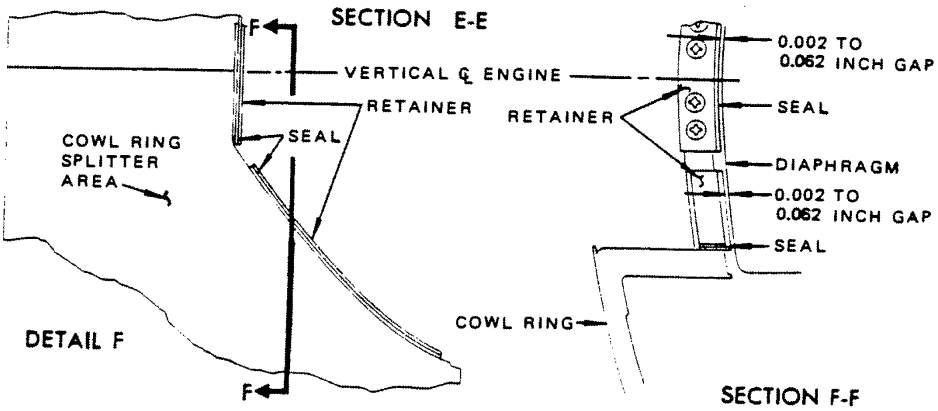


FORWARD THRUST REVERSER IN FORWARD THRUST POSITION



NOTE: APPLICABLE ONLY TO THE UPPER FOUR BLOCKER DOOR POSITIONS ON INSTALLATIONS USING ALUMINUM BLOCKER DOORS.





24
Jul 15/69

Forward Thrust Reverser Adjustment
Figure 501 (Sheet 4)

78-5-1
Page 505

ENG 4 FWD THRUST REVERSER ADJUSTMENT