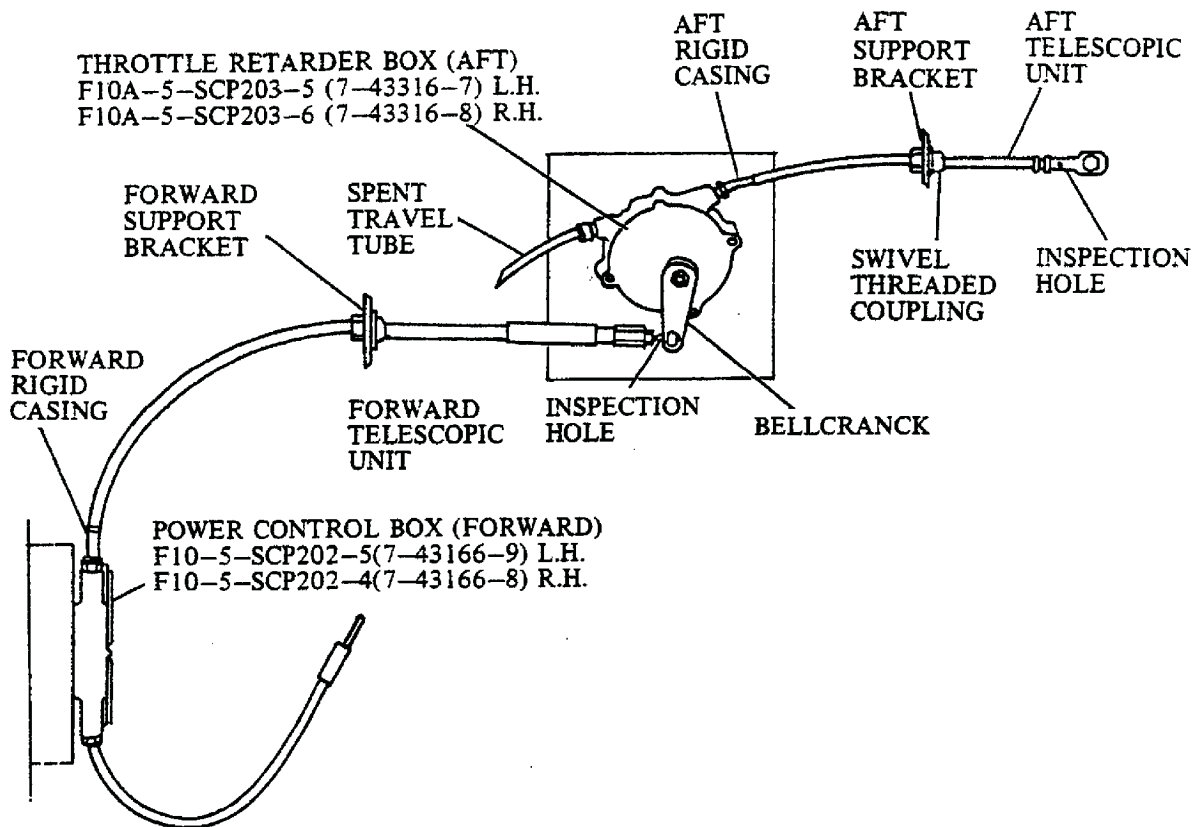


Throttle Retarder System Schematic
Figure 1

EFFECTIVITY: ALL



Control System Throttle Retarder
Figure 201

EFFECTIVITY: ALL

- (8) Insert combination cable and inner casing into aft telescopic outer casing, allowing bellcrank of single lead control box to rotate as required.
- (9) If removed from inner casing, reinstall jamnut and rod end assembly.

NOTE: Threaded end of cable must be visible through inspection hole of rod end assembly.
- (10) Connect rod end assembly to lower door with bolt, bushing, washer and nut. Secure with cotter pin.
- (11) Perform throttle retarder adjustment per Throttle Retarder System - Adjustment, Paragraph 2, Sections A and B.
- (12) With outer casing removed from forward telescopic unit, remove two hex nuts and washer from swivel threaded coupling, and insert swivel threaded coupling through forward support bracket and install two hex nuts and washer.
- (13) Insert forward rigid casing through hole in rear nacelles foremost bulkhead and screw coupling nut into inner thread of swivel threaded coupling. Tighten until rigid casing bottoms.
- (14) Install fairlead (two pieces matched) securing rigid casing to nacelle structure. Install screws securing fairlead.
- (15) Apply light coat of Dow Corning DC-33 light consistency grease to the entire length of forward cable.
- (16) Perform 40° idle FCU retardation and power lever feedback cable adjustment per Throttle Retarder System - Adjustment, Paragraph 2, Sections C thru G.

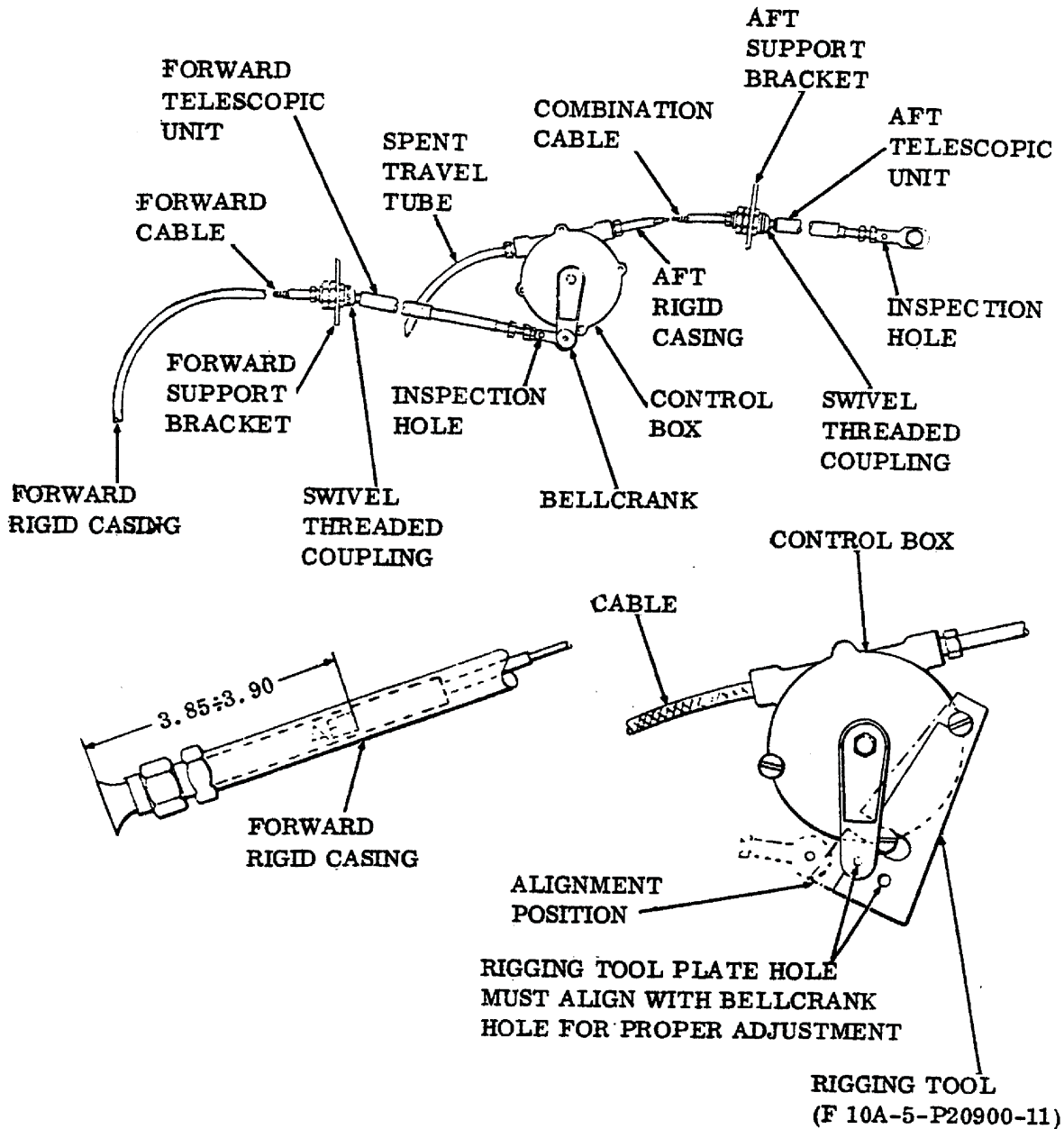
2. Throttle Retarder System - Adjustment (Figures 202, 203)

A. Adjustment Preparations

Special Tools

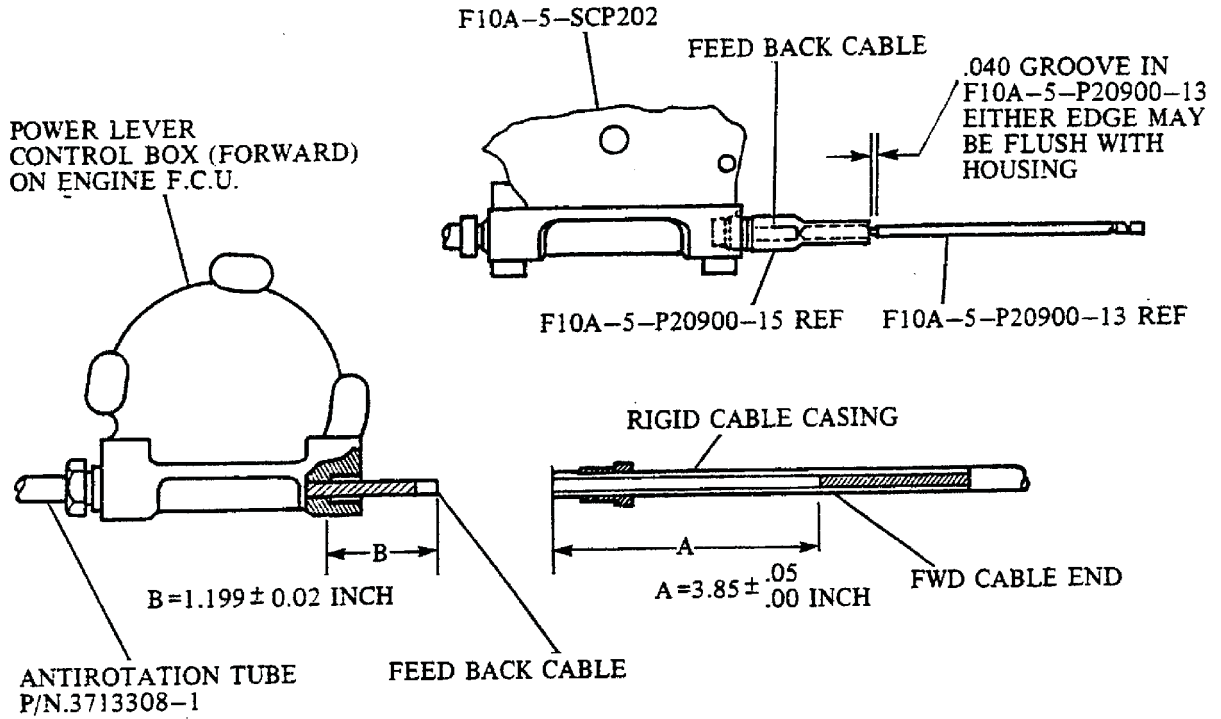
Gage, throttle retarder	F10A-5-P20900-11
Feed back cable motion and rigging	F10A-5-P20900-13
	F10A-5-P20900-15

NOTE: If special tools are not available use the dimensions given in the appropriate steps, to perform adjustment procedure.
Tool -11 must be available.



Throttle Retarder Feedback Control
 Assembly Rigging
 Figure 202 (1 of 3)

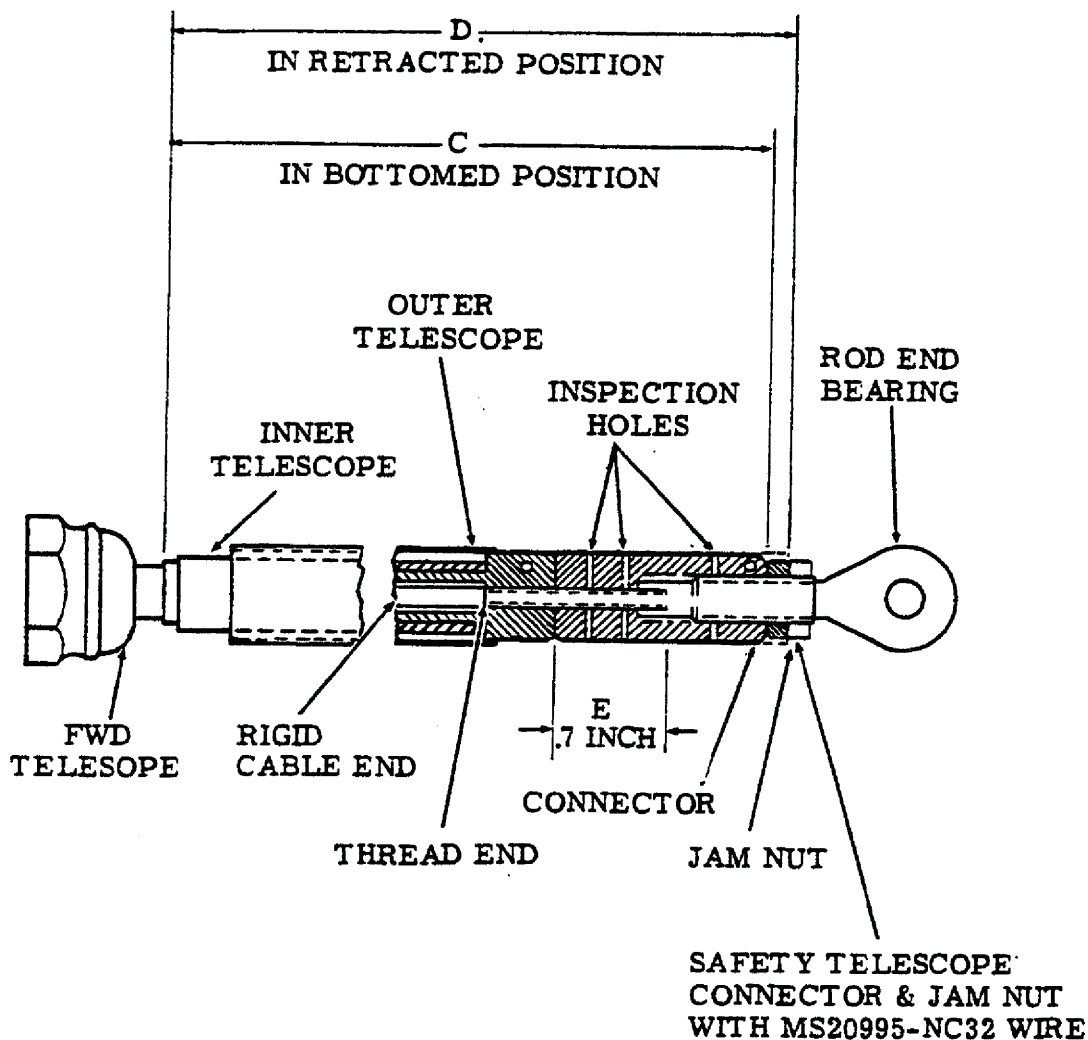
EFFECTIVITY: ALL



Power Control Box and Retarder Interface
 Figure 202 (2 of 3)

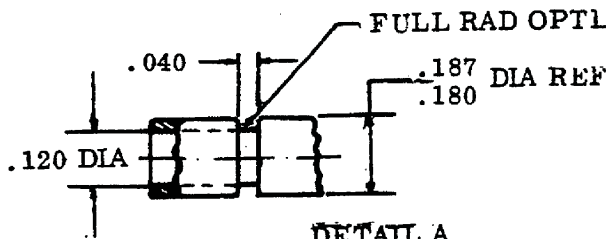
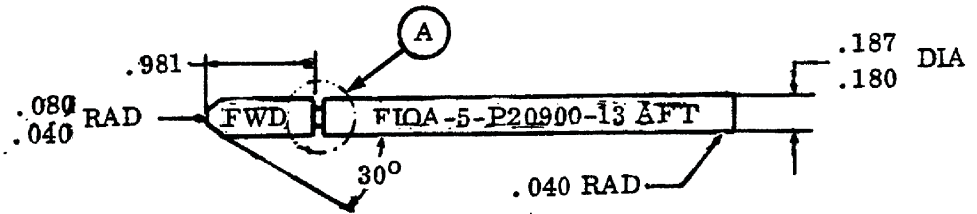
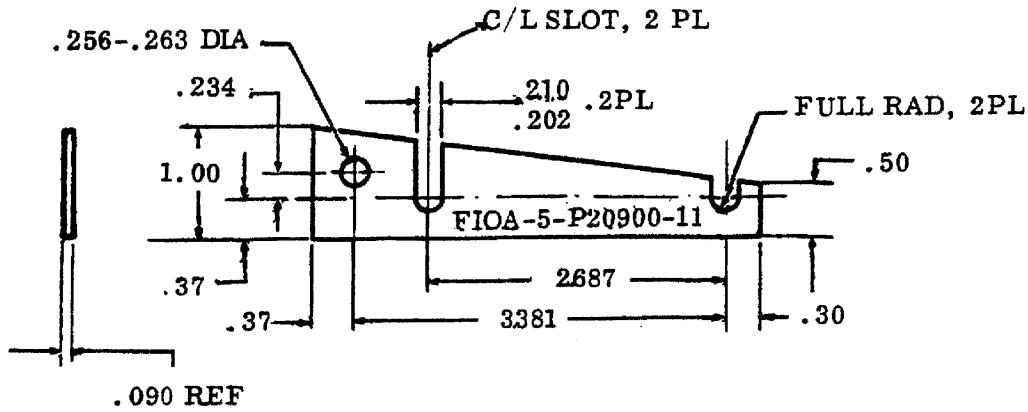
EFFECTIVITY: ALL

FWD TELESCOPE
(SHOWN BOTTOMED)

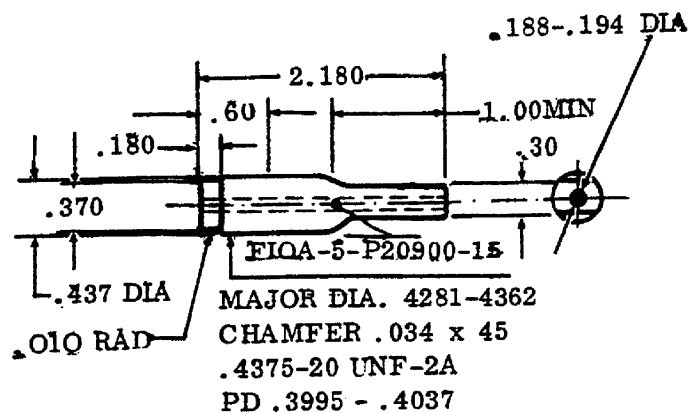


FWD Telescope Assay
Figure 202 (3 of 3)

EFFECTIVITY: ALL



DETAIL A
 SCALE: 4/1



Rigging Tools
 Figure 203

EFFECTIVITY: ALL

- (1) Remove inspection panels on outer side of rear nacelle, to gain access to throttle retarder system units.
- (2) Attach ground hydraulic power supply lines to corresponding thrust reverser stow and thrust reverser deploy quick disconnects on inboard side of nacelle.

NOTE: It is recommended that thrust reverser lower door be disconnected from its pushrod before installation of retarder units to prevent the need for hydraulic operation during adjustment.

B. Position check of aft control box bellcrank.

- (1) Remove hardware attaching forward telescope rod end bearing to control box bellcrank. (Retain hardware for reinstallation).
- (2) Install rigging tool (F10A-5-P20900-11) (Figures 202, 203) under heads of two aft screws of aft control box so that bottom of slots in tool are in contact with shank of screws. Tighten screws to hold tool firmly.
- (3) With lower door in stowed position, check that connecting hole in control box bellcrank aligns with hole in rigging tool. If not, for coarse adjustment remove bellcrank from control box splined shaft and reposition to improve alignment. Tighten nut and secure with cotter pin (MS24655-153).
- (4) For fine adjustment remove spent travel tube of aft control box.
- (5) Loosen jam nut at rod end bearing which connects aft telescope to lower door.
- (6) Rotate the inner part of aft telescope in required direction until correct alignment of holes is obtained on bellcrank and rigging tool.

NOTE: Threaded end of cable must be visible through inspection hole of rod end assembly.

- (7) Tighten rod end jam nut and safety.
- (8) Install spent travel tube, tighten to control box and safety.

- (9) After adjustment is complete, check that telescopic unit does not bottom in stowed position.

NOTE: Clearance between telescopic unit outer and inner casing should be not less than 0.125 inch. If this clearance is not obtained, move bellcrank one tooth on serration and repeat fine adjustment per Steps (4) thru (8).

- (10) Remove rigging tool and tighten control box cover screws.

C. Preparation for 40° idle FCU retardation adjustment.

- (1) Remove rod end bearing, jam nut and hexagon connector from forward telescopic unit (Figure 202).
- (2) Screw in the inner telescopic part on cable rigid end up to thread end. Cable rigid end thread shall protrude out of telescopic part approximately 0.70 inch (dimension E in Figure 202).
- (3) Install hexagon connector on cable thread and tighten against inner telescopic part, cable thread shall pass two inspection holes of the connector (Figure 202, Sheet 3 of 3).

CAUTION: WHEN INSTALLING THE HEXAGON CONNECTOR ON PROTRUDING CABLE END, DO NOT ROTATE THE CABLE INSIDE THE INNER TELESCOPE

- (4) Record dimension C for bottomed forward telescope (Figure 202, Sheet 3 of 3).
- (5) Loosely reinstall rod end bearing and jam nut (rod end bearing to pass inspection hole) and attach to control box bellcrank.

D. Coarse adjustment for 40° idle FCU retardation

- (1) Lock thrust reverser doors in STOW position
- (2) Disconnect rigid cable casing from forward (double lead) control box. Perform coarse adjustment of cable position inside the rigid casing by rotating the complete forward cable assembly with the hexagon connector relative to the rod end bearing, so as to obtain dimension 'A' of 3.85 to 3.90 inch (to be measured with a depth caliper). Refer to Figure 202.
- (3) Release thrust reverser doors locking latch and slowly open doors until forward telescope reaches minimum retracted lengths (doors about half open).

CAUTION: WHILE OPENING THRUST REVERSER DOORS MONITOR CONTINUOUSLY DIMENSION 'D' (FIGURE 202), IN ORDER THAT BOTTOMING DOES NOT OCCUR BEFORE REACHING THE TELESCOPE RETRACTED POSITION.

- (4) Record dimension 'D' (Figure 202, Sheet 3 of 3) in this position and compare with dimension 'C' recorded in Paragraph C (4). The difference 'D' minus 'C' (minimum clearance before bottoming) should be 0.125 inch minimum.
- (5) If 'D' minus 'C' is less than 0.125 inch repeat procedure from Paragraph C (1) and (2) and reduce dimension 'E' by the amount necessary to increase the clearance above 0.125 inch.
- (6) Return doors to STOW position and lock.

E. Power Lever Feedback Cable Adjustment

- (1) Set engine power lever to IDLE position to obtain 20° IDLE on FCU scale.
- (2) Remove plastic screw from rig pin hole on FCU and insert a 0.125 diameter rig pin to lock FCU input shaft at 20° (idle position).
- (3) To check dimension 'B' (Figure 202, Sheet 2 of 3) install rigging tool (F10A-5-P20900-15) on power lever control box located on FCU. Thread tool into retarder cable outer casing receptacle until tool bottoms.
- (4) Insert rigging tool F10A-5-P20900-13 into rigging tool F10A-5-P20900-15 with edge etched FWD. With tool -13 bottomed against retarder cable, groove must match with surface of tool -15. If tools are not available use depth caliper to check that control box retarder cable extends 1.199 ±0.02 inch from inner bottoming surface of retarder cable outer casing receptacle. Readjust, if necessary to obtain 'B' dimension by removing the anti-rotation tube from the power lever control box and rotating the feedback in 90° increments only, (so as not to change antirotation tube position when reassembled).
- (5) Reinstall anti-rotation tube with curvature in original position, tighten coupling nut and safety wire.
- (6) Remove rigging tools from power lever control box.
- (7) Remove pin from FCU and reinstall plastic screw.

- (8) Connect throttle retarder rigid cable casing to power lever control box, safety with wire.
 - (9) Stroke power lever from CUTOFF to MAX POWER and record the angles obtained on FCU scale when power lever control hits its two internal stops (max. power and cut-off).
- F. Fine adjustment for 40° idle FCU retardation
- (1) Set power lever to MAX POWER position.
 - (2) Release thrust reverser doors locking latch. Deploy doors slowly, record the angle to which the power control has been retarded from FCU scale.
 - (3) Perform fine rigging of thrust reverser feedback by rotating as necessary the complete forward cable assembly, with telescope and hexagon connector attached, relative to the fixed rod end bearing. Adjust and recheck per Steps (1) and (2) above, until retardation to 40° ±2° FCU idle is obtained.
 - (4) Check that rod end thread is still visible through hexagon connector inspection hole.
 - (5) Tighten rod end bearing jam nut and safety jam nut, hexagon connector and inner telescope.
 - (6) Recheck by repeating Steps (1) and (2).
- G. Final Operations
- (1) Lock thrust reverser doors in STOW position.
 - (2) Operate power lever through full range (CUT-OFF to MAX POWER) and check that angles on FCU scale coincide with the angles recorded in Paragraph E (9).
 - (3) Lock thrust reverser doors in DEPLOY position.
 - (4) Assure all connections, attachments, jam nuts and couplings are properly tightened and secured.
 - (5) If disconnected, reconnect lower thrust reverser door to its pushrod, secure with bolt, washer, bushing and nut. Secure nut with cotter pin.

- (6) Remove deploy ground lock.
- (7) Perform thrust reverser operational check per chapter 78-30-00, Maintenance Practices, Paragraph 2, Thrust Reverser - Operational Check.
- (8) Install access panels.