

## PT6A-114/-114A ENGINE RIGGING - ADJUSTMENT/TEST

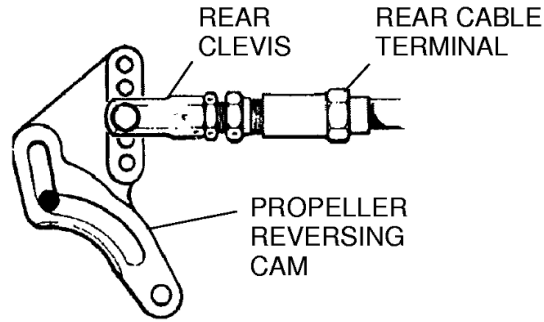
### 1. Rig Engine

**CAUTION:** The propeller reversing linkage will be damaged if the power lever is moved aft of the idle position with the engine not running and the propeller in feather.

#### A. Power Control Forward Linkage Rigging

- (1) Refer to Figure 501, disconnect the push-pull cable rear clevis from the propeller reversing cam.

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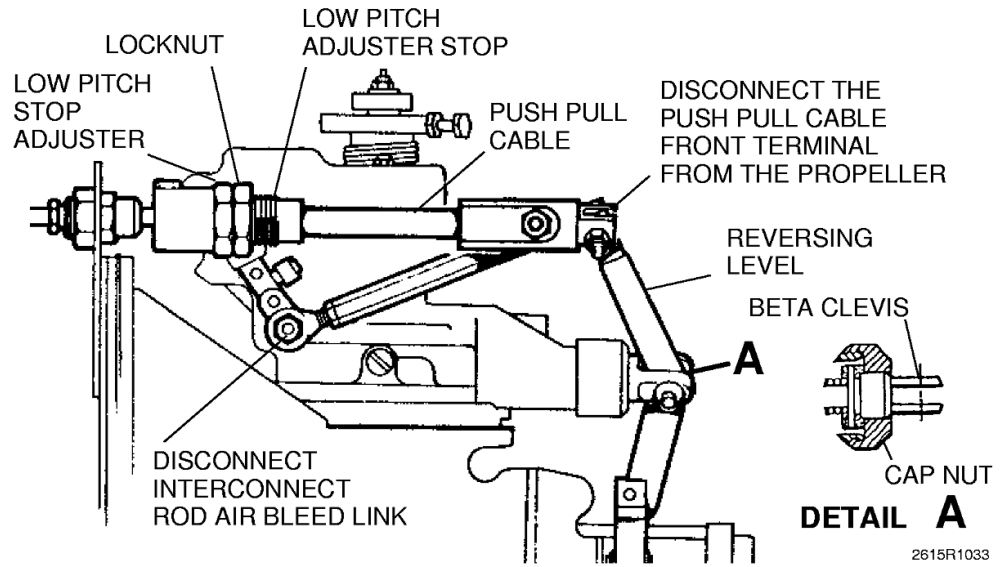
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***PUSH-PULL CABLE REAR CLEVIS***

***Figure 501***

- (2) Refer to Figure 502, disconnect the propeller governor interconnect rod from the governor air bleed link.

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**PROPELLER GOVERNOR INTERCONNECT ROD**

**Figure 502**

- (3) Refer to Figure 502, disconnect the push-pull cable front terminal from the propeller reversing lever.
- (4) Pull the propeller push-pull cable forward to insure that the push-pull control terminal is against the internal stop of the

low pitch adjuster stop. The collar should be visible through holes in the low pitch adjuster stop. Cable travel should be approximately 1.00 to 1.25 inches. Travel is measured by pushing the push-pull cable aft against the stop. Place a piece of masking tape on the push-pull cable at the low pitch adjuster stop. Pull the push-pull cable forward against the stop and measure the distance from the forward edge of the low pitch adjuster stop to the aft edge of the masking tape. To obtain the approximate 1.00 to 1.25 inches travel on the wire rope terminal, screw the locknut onto the adjuster stop and finger tighten only. Adjust at the low pitch adjuster stop (Refer to Figure 502) to obtain correct travel.

**NOTE:** The locknut must be tightened and fastened with lockwire after final adjustments.

**NOTE:** Adjustment is not routinely necessary.

- (5) Reconnect front terminal to reversing lever. Ensure small bushing is installed between terminal and lever.
- (6) The rear of the Beta Valve clevis slot end should be flush with the front face of the cap nut (Detail A of Figure 502).

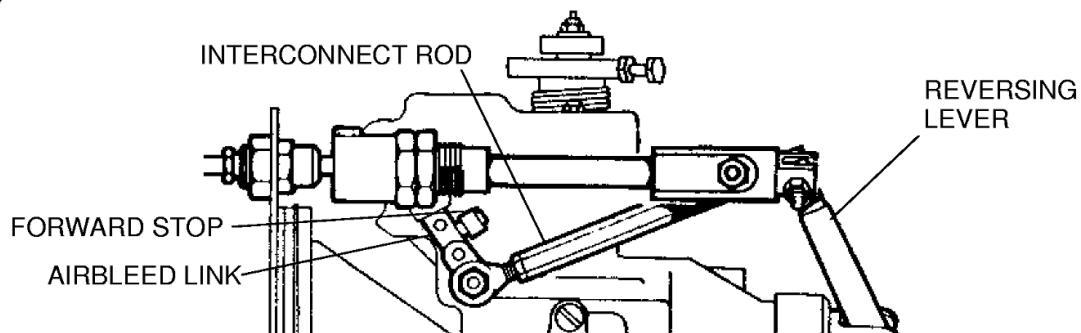
**NOTE:** If surging is encountered during flight test, adjust the slot end FORWARD approximately 1/32 inch. To adjust, proceed as follows:

- (a) To adjust the slot FORWARD, turn the low pitch stop adjuster CLOCKWISE as viewed from the front of the airplane. To adjust the slot AFT turn the low pitch stop adjuster COUNTERCLOCKWISE.

**NOTE:** The low pitch adjuster as an assembly, is completely free to rotate, thus by itself makes no adjustment to amount of travel of the cable.

- 1 With the safety wire cut.
  - 2 Loosen the locknut.
  - 3 Hold the low pitch adjuster stop.
- (b) Torque low pitch adjuster locknut 150 - 200 inch pounds and lockwire.
- (7) Pull the propeller reversing lever forward. Refer to Figure 503.

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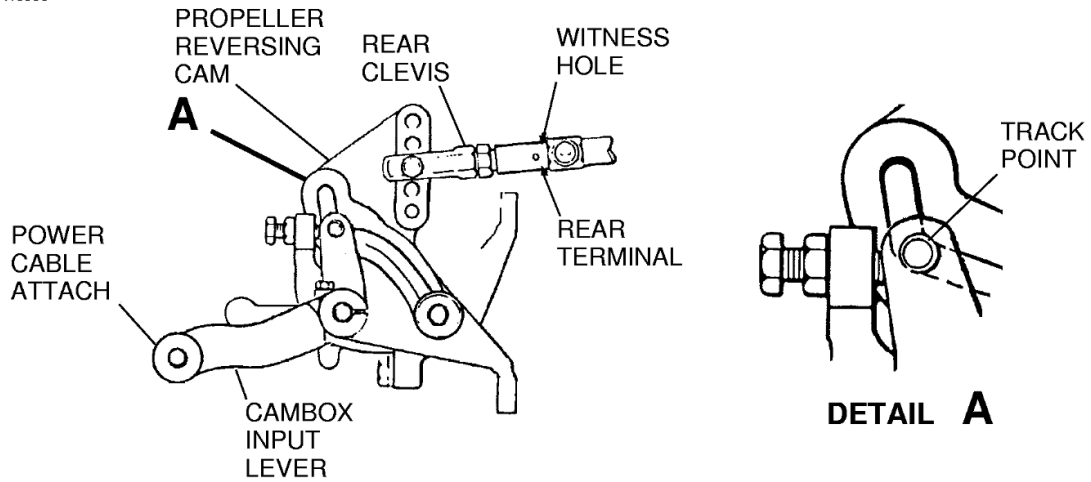
***PROPELLER REVERSING LEVER***

***Figure 503***

- (8) Hold the fuel governor air bleed link on the max forward stop.
- (9) Adjust the propeller governor interconnect rod until the retaining bolt aligns with the outer hole of the governor air bleed link.
- (10) Shorten the interconnect rod one-half turn and reconnect.

- (11) Torque locknut 32 to 36 inch pounds and lockwire.
  - (12) Move the cambox input lever into the forward power range.
  - (13) Pull the propeller reversing cam firmly aft.
  - (14) Maintaining forward pressure on the rear terminal to remove slack, adjust until hole in the rear clevis aligns with the middle hole in the propeller reversing cam.
  - (15) Lengthen clevis one-half turn and reconnect. Do not install washer and cotter pin. Check for thread engagement in witness hole.
  - (16) Move the power lever from IDLE to MAX POWER checking for free movement and cushion. Cushion should be one-eighth to one-quarter inch.
- B. Power Control Aft Linkage Rigging
- (1) Referring to Figure 504, disconnect the power cable rod end at the cambox input lever and push the propeller reversing cam forward firmly.

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**POWER CABLE ATTACH**

**Figure 504**

- (2) Move the cambox input lever COUNTERCLOCKWISE as far as possible without the reversing cam moving. This should allow the cam follower pin to rest in the track point of the reversing cam. ( Detail A)

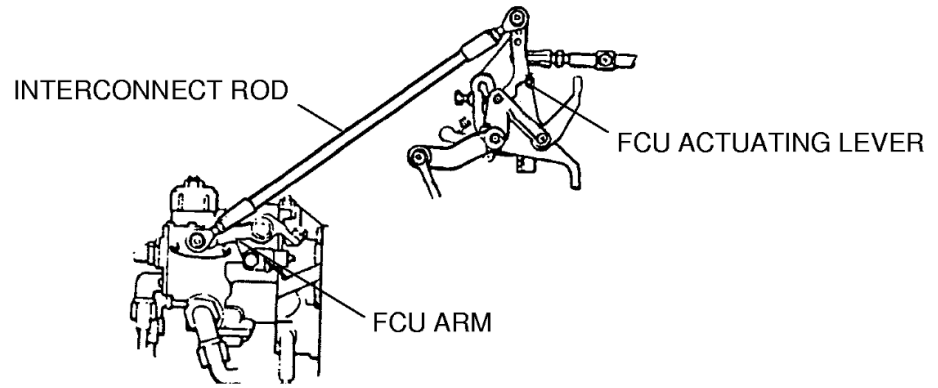
- (3) With the setting as in step 2, check that the cambox lever is approximately in the 8 o'clock position. Adjustments should be made by removing the input lever and relocating on the serrated shaft.

**NOTE: Adjustments are not routinely necessary.**

- (4) Keeping the power lever cable rod end disconnected from the input lever, move the pedestal lever from IDLE to MAX POWER to IDLE assuring that there is no binding.
- (5) Set the pedestal lever at IDLE and apply the friction lock.
- (6) Maintaining forward pressure on the propeller reversing cam, align the rod end with the outer hole in the cambox input lever and connect the rod end to the lever.
- (7) Release the friction lock and move the pedestal lever from IDLE to MAX POWER to IDLE making sure that the cam returns to track point.
- (8) Place the fuel condition lever in CUTOFF.



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***INTERCONNECT ROD***

***Figure 505***

- (9) Refer to Figure 505, assure that the forward end of the interconnect rod is installed in the top hole of the FCU actuating lever.

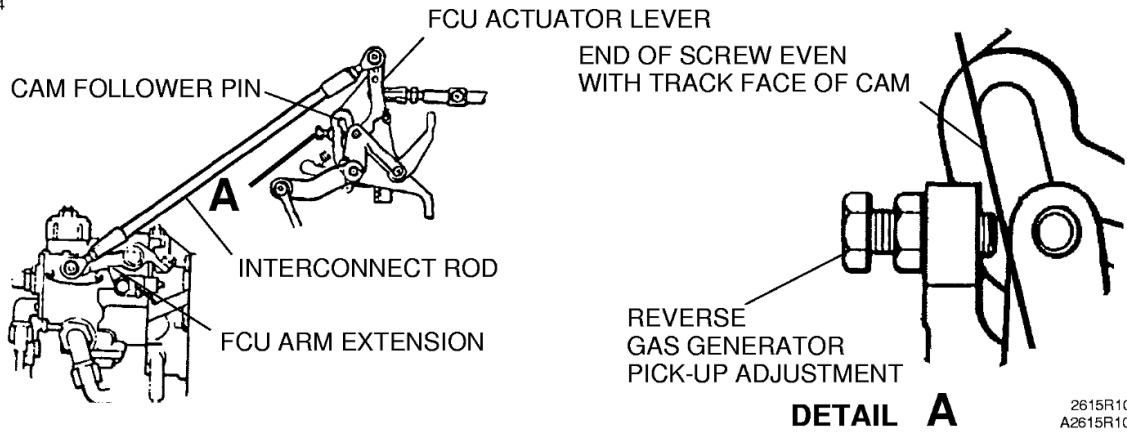
- (10) Disconnect the interconnect rod from the FCU arm.
- (11) Lift the FCU arm gently CLOCKWISE until the pickup point is felt. The FCU arm should be approximately 20 degrees below horizontal.

**NOTE:** To reset FCU arm position, mark the FCU arm and serrated spacer with a marker pen. Loosen the FCU arm extension and adjust the serrated spacer. There are 24 serrations on the inner face of the spacer and 25 on the outer face.

- (a) There should be approximately 0.030 inch clearance between the cam follower pin and the FCU actuating lever.
- (b) There should be 0.060 to 0.100 inch clearance between the flat on the interconnect rod and the FCU arm extension.
- (12) Refer to Figure 505, adjust the interconnect rod until the hole in the rod end aligns with the inner hole of the FCU arm.
- (13) Lengthen the interconnect rod an additional two turns and connect to the FCU arm.
- (14) Lift the FCU arm CLOCKWISE until the pick-up point is felt. Check the following:
- (a) There should be approximately 0.030 inch clearance between the cam follower pin and the FCU actuating lever.
- (b) There should be 0.060 to 0.100 inch clearance between the flat on the interconnect rod and the FCU arm extension.

**NOTE:** If necessary, rotate the rod until the flat surface is parallel with the FCU arm extension. Adjust the FCU arm per the NOTE SECTION of step 11 and repeat steps 12 through 14.

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***GAS GENERATOR PICKUP SCREW***

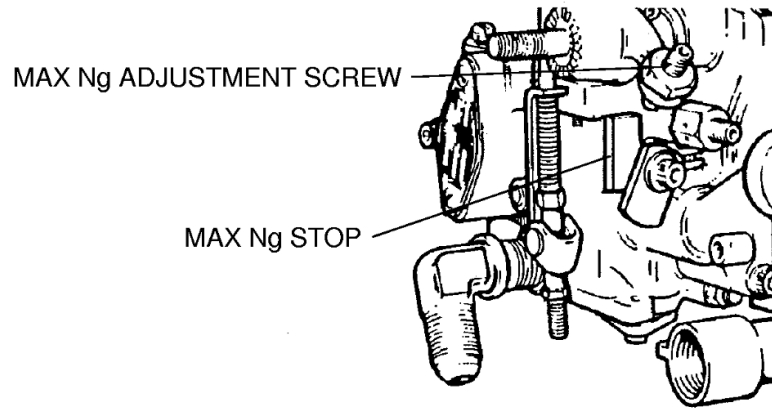
***Figure 506***

- (15) Adjust the reverse gas generator pick-up screw (Refer to Figure 506) until the end is flush with the FCU actuating lever.

(16) Move the pedestal power lever from IDLE to MAX POWER. Check the following:

- (a) No binding is present throughout travel.
- (b) Refer to Figure 507, check that the FCU max power stop is contacted with the power lever in MAX POWER.
- (c) The cam follower pin is not bottomed out in the slot of the propeller reversing cam.
- (d) One-eighth inch gap (cushion) at the pedestal slot.

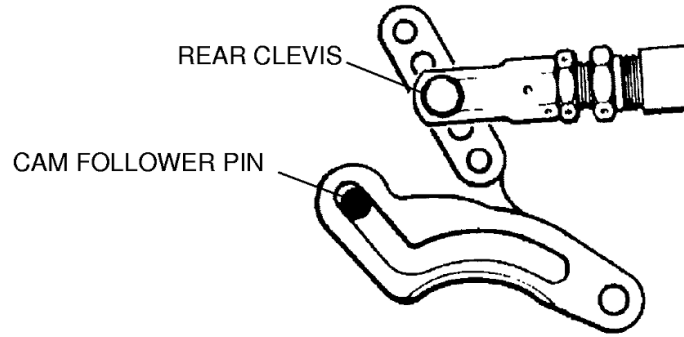
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***FCU MAX POWER STOP***  
***Figure 507***

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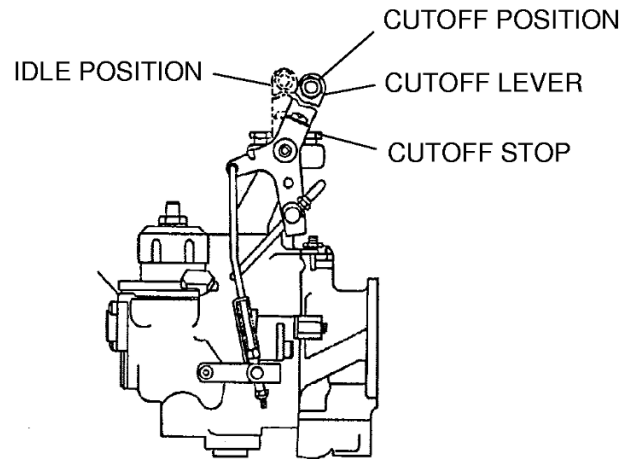
***REAR CLEVIS/CAMFOLLOWER PIN***

***Figure 508***

- (17) Refer to Figure 508, disconnect the rear clevis. Move the power lever from IDLE to MAX REVERSE and observe the following:

- (a) No binding is present throughout travel.
  - (b) The cam follower pin is not bottomed out in the slot of the propeller reversing cam.
  - (c) One-eighth inch gap (cushion) at the pedestal slot.
- (18) Return the power lever to the IDLE position; reconnect the clevis and safety.
- C. Fuel condition lever linkage rigging

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**FUEL CUTOFF LEVER**  
*Figure 509*



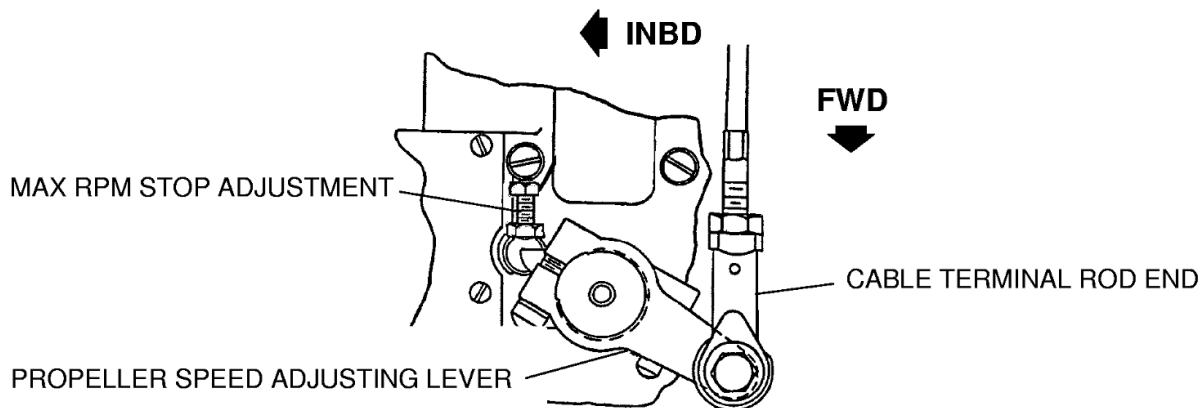
- (1) Refer to Figure 509, place the fuel cutoff lever in CUTOFF.
- (2) Set the cockpit fuel condition lever in CUTOFF. Allow one-eighth to one-quarter inch cushion.
- (3) With the cutoff lever in CUTOFF, align the cable terminal with the hole in the fuel cutoff lever and connect.
- (4) Move the cockpit fuel condition lever from CUTOFF to HIGH and back to CUTOFF to insure there is no binding.
- (5) Move the cockpit lever to LOW IDLE. The fuel cutoff lever should be approximately vertical as shown in Figure 509. Adjust the output terminal or engine bracket attach bulkhead fittings as required.

**NOTE:** Assure that the fuel cutoff lever is against the hard stop on the FCU when the cockpit control lever is in CUTOFF.

D. Propeller Speed Control Lever Linkage Rigging

- (1) Place the cockpit propeller speed control lever in the maximum forward position.

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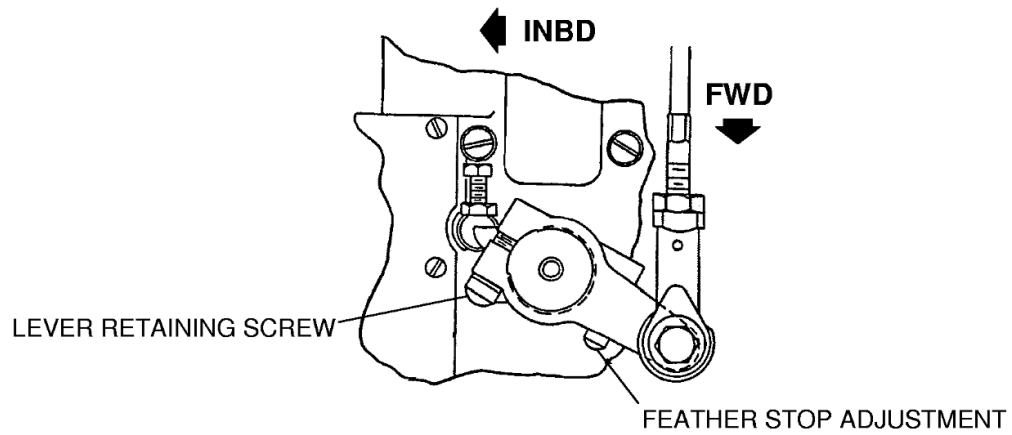
**MAXIMUM RPM STOP**

**Figure 510**

- (2) Refer to Figure 510, hold the propeller governor speed adjusting lever against the maximum RPM stop.
- (3) Align the propeller cable terminal rod end with the speed adjusting lever. Connect and safety.

- (4) Adjust cable mounting bracket fittings on the reduction gearbox flange to obtain one-eighth to one-quarter inch cushion at the cockpit propeller speed control lever maximum RPM position.
- (5) Move the propeller speed control lever through its full range of travel and check the following:
  - (a) Ensure the propeller governor speed adjusting lever contacts the feather stop and the maximum RPM stop.
  - (b) No binding is present.
- (6) If either or both stops are not contacted, proceed as follows:

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### ***FEATHER STOP ADJUSTMENT***

***Figure 511***

- (a) Refer to Figure 511, remove safety-wire from the lever retaining bolt.
- (b) Remove lever and keep the lower lever in hard contact with the feather stop.

- (c) Reinstall the speed adjusting lever on the serrated shaft so that it aligns with the boss on top of the governor body.
- (d) Repeat step 5. If satisfactory, reinstall the lever retaining screw and safety-wire.
- (e) If unsatisfactory, readjust position and repeat step 5.

**NOTE:** Serrations will relocate lever position in increments of 5 degrees.

**NOTE:** After completion of rigging of the engine, refer to Chapter 71, Powerplant - Adjustment/Test for engine run rig checks and additional adjustments.