

PRATT & WHITNEY CANADA
MAINTENANCE MANUAL
MANUAL PART NO. 3013242

LIST OF EFFECTIVE PAGES

| <u>CHAPTER SECTION</u> | <u>PAGE</u> | <u>DATE</u> |
|------------------------------|-------------|-------------|
| LEP | 1 | Aug 27/2004 |
| | 2 blank | Aug 27/2004 |
| Contents | 1 | Aug 27/2004 |
| | 2 blank | Aug 27/2004 |
| 76-10-00 | 1 | Feb 11/2000 |
| Description and Operation | 2 blank | Feb 11/2000 |
| 76-10-00 | 201 | Aug 27/2004 |
| Maintenance | 202 | Aug 27/2004 |
| Practices | 203 | Aug 27/2004 |
| | 204 | Aug 27/2004 |
| | 205 | Aug 27/2004 |
| | 206 | Aug 27/2004 |
| | 207 | Aug 27/2004 |
| | 208 | Aug 27/2004 |
| | 209 | Aug 27/2004 |
| | 210 | Aug 27/2004 |
| | 211 | Aug 27/2004 |
| | 212 | Aug 27/2004 |
| | 213 | Aug 27/2004 |
| | 214 | Aug 27/2004 |
| | 215 | Aug 27/2004 |
| | 216 | Aug 27/2004 |

PRATT & WHITNEY CANADA
MAINTENANCE MANUAL
MANUAL PART NO. 3013242

| <u>SUBJECT</u> | <u>TABLE OF CONTENTS</u> | <u>PAGE</u> |
|--|--------------------------|-----------------|
| PROPELLER REVERSING LINKAGE - DESCRIPTION AND OPERATION | | 76-10-00 |
| 1. Description and Operation | | 1 |
| PROPELLER REVERSING LINKAGE - MAINTENANCE PRACTICES | | 76-10-00 |
| 1. General | | 201 |
| 2. Consumable Materials | | 201 |
| 3. Special Tools | | 201 |
| 4. Fixtures, Equipment and Supplier Tools | | 201 |
| 5. Removal/Installation | | 201 |
| A. Removal | | 201 |
| B. Installation | | 208 |
| 6. Cleaning/Painting | | 215 |
| 7. Inspection/Check | | 215 |
| A. General | | 215 |
| B. Spring Inspection Requirements | | 216 |
| 8. Adjustment/Test | | 216 |
| A. Procedure | | 216 |

PRATT & WHITNEY CANADA
MAINTENANCE MANUAL
MANUAL PART NO. 3013242

PROPELLER REVERSING LINKAGE - DESCRIPTION AND OPERATION

1. Description and Operation

The propeller reversing linkage provides the mechanical link between the power control lever and the propeller reversing lever. The rear end of the push-pull wire rope linkage is secured to the propeller control cam (of the cam assembly at Flange G on the accessory gearbox) by the fork end of the rear casing terminal. The front end of the wire rope is secured to the propeller reversing lever by the fork end of the front casing terminal. Both casing terminals incorporate swivel joints to accommodate alignment. The push-pull wire rope is housed in a self-lubricated stainless steel casing assembly which passes through the engine front lifting bracket and center and rear fireseals. A removable plate is incorporated at the front lifting bracket to enable the front end of the linkage to be disconnected from the engine without disturbing any linkage adjustments during, for instance, engine power section removal.

PRATT & WHITNEY CANADA
MAINTENANCE MANUAL
MANUAL PART NO. 3013242

PROPELLER REVERSING LINKAGE - MAINTENANCE PRACTICES

1. General

- A. Maintenance personnel should make reference to the INTRODUCTION section and Chapter 70-00-00 STANDARD PRACTICES of this manual to familiarize themselves with general procedures.
- B. Install suitable protective caps/covers over all disconnected tubes/lines and component openings.
- C. Lockwire shall comply with specification AMS5687, heat and corrosion resistant steel wire MS9226-03, which is 0.025 inch diameter, and will not be specified in instructions.

2. Consumable Materials

The consumable materials listed below are used in the following procedures.

| <u>Item No.</u> | <u>Name</u> |
|-----------------|------------------------|
| PWC04-001 | Grease, Synthetic |
| PWC05-061 | Cloth, Abrasive Coated |
| PWC11-027 | Solvent, Petroleum |
| PWC11-031 | Cleaner, Engine |

3. Special Tools

Not Applicable

4. Fixtures, Equipment and Supplier Tools

Not Applicable

5. Removal/Installation

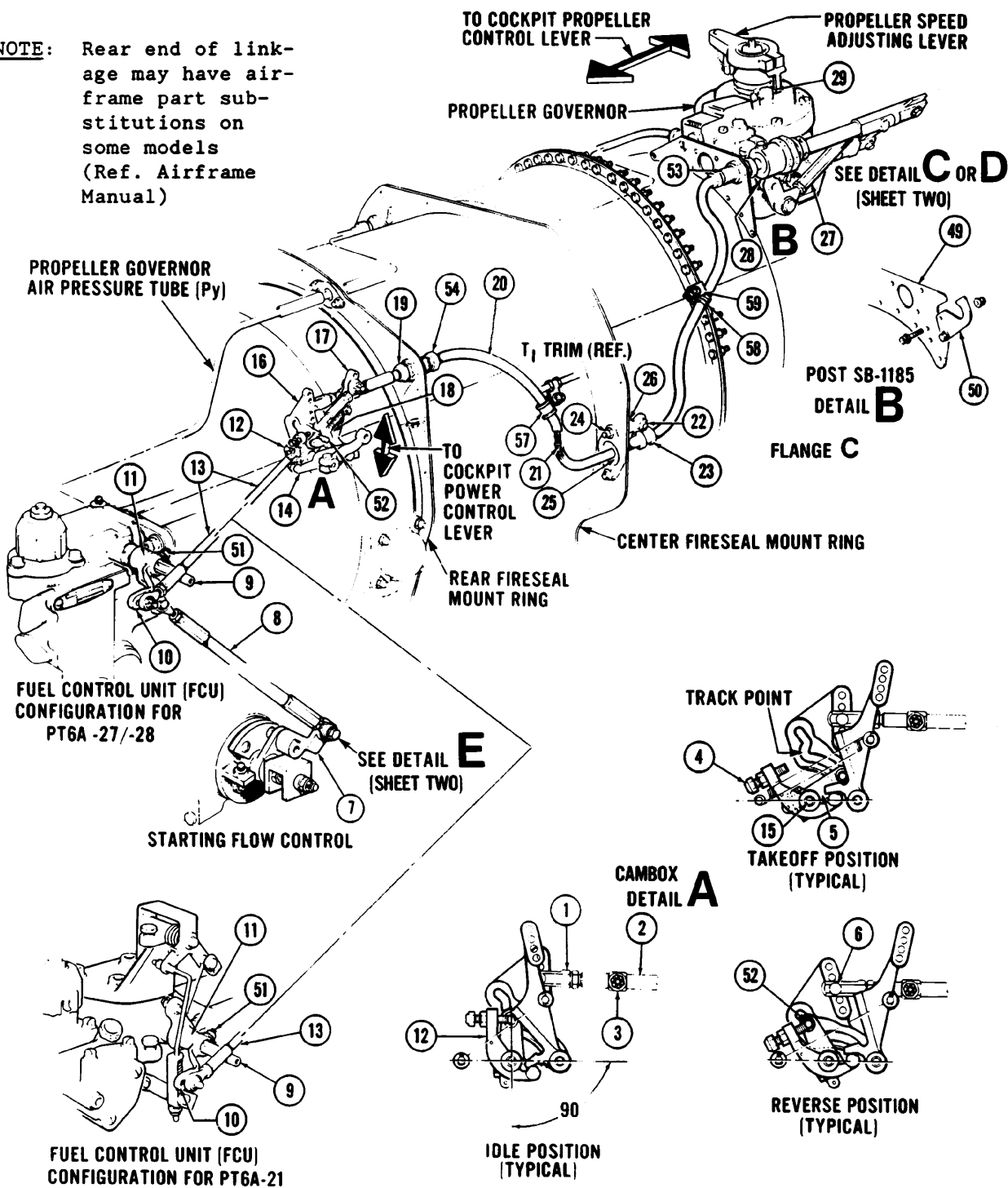
A. Removal (Ref. Fig. 201)

NOTE: For procedure associated with disconnecting propeller reversing linkage when removing the engine power section, refer to 72-00-00.

- (1) Disconnect airframe cockpit lever linkage from grooved pin (15) of cam box at flange G and propeller governor (Ref. Airframe Manufacturer's Manual.)
- (2) Remove rear linkage:
 - (a) Remove cotterpins, castellated nuts, washers and bolts that secure FCU control rod (13) to FCU arm (10) and FCU actuating lever (17). Remove FCU control rod.
 - (b) Remove cotterpin, washer and clevis pin (6) that secure rear rod end clevis (1) to propeller control cam (16).

**PRATT & WHITNEY CANADA
MAINTENANCE MANUAL
MANUAL PART NO. 3013242**

NOTE: Rear end of linkage may have airframe part substitutions on some models (Ref. Airframe Manual)



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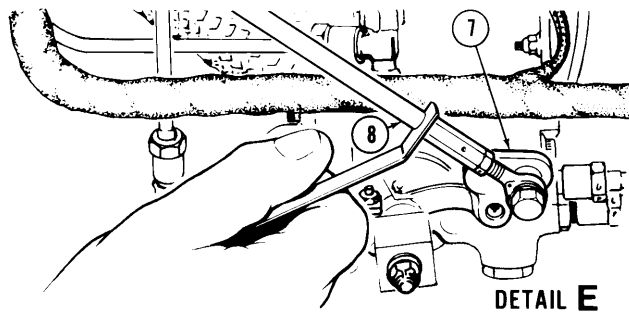
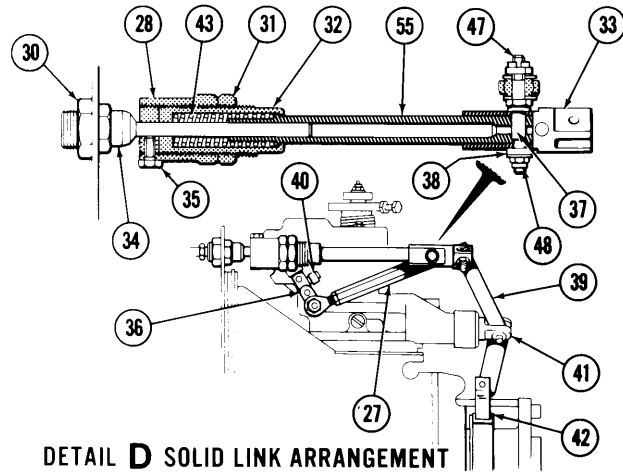
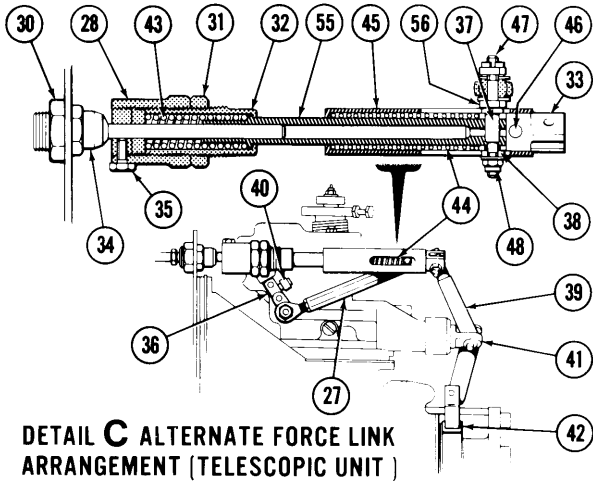
Removal/Installation of Propeller Reversing Linkage
Figure 201 (Sheet 1 of 3)

PRATT & WHITNEY CANADA
MAINTENANCE MANUAL
MANUAL PART NO. 3013242

Key to Figure 201

- | | |
|--|--|
| 1. Rod End Clevis (Rear) | 31. Locknut |
| 2. Wire Rope Terminal | 32. Low Pitch Adjuster Stop |
| 3. Clamping Bolt (Rear) | 33. Rod End Clevis (Front) |
| 4. Bolt - Idle Deadband | 34. Front Swivel Joint |
| 5. Reversing Control Follower Lever | 35. Lockbolt |
| 6. Clevis Pin | 36. Propeller Governor Reset Arm |
| 7. Starting Control Lever (PT6A-27/28 only) | 37. Clamping Bolt (Front) |
| 8. Starting Control Rods (PT6A-27/28 only) (Pre-SB1152) | 38. Spacer |
| 9. FCU Arm Extension | 39. Propeller Reversing Lever |
| 10. FCU Arm | 40. Airbleed Link Maximum Stop |
| 11. FCU Arm Serrated Spacer | 41. Beta Control Valve Clevis |
| 12. Actuating Lever | 42. Carbon Block |
| 13. FCU Control Rod | 43. Compression Spring (Pre-SB1129) |
| 14. Control Lever Mounting Bracket | 44. Compression Spring |
| 15. Grooved Pin | 45. Terminal Housing |
| 16. Propeller Control Cam | 46. Clevis Retaining Bolt |
| 17. FCU Actuating Lever | 47. Castellated Nut |
| 18. Extension Spring | 48. Self-Locking Nut |
| 19. Rear Swivel Joint | 49. Front Lifting Bracket |
| 20. Wire Rope Casing | 50. Retaining Plate |
| 21. Wire Rope | 51. Adjusting Screw |
| 22. Self-Locking Nut | 52. Cam Follower Pin |
| 23. Loop Clamp | 53. Coupling Nut |
| 24. Self-Locking Nut and Bolt | 54. Coupling Nut |
| 25. Retaining Plate and Seals | 55. Wire Rope Terminal |
| 26. Bracket | 56. Terminal Sleeve |
| 27. Propeller Governor Interconnect Rod | 57. Loop Clamp |
| 28. Low Pitch Stop Adjuster | 58. Loop Clamp |
| 29. Propeller Speed Adjusting Lever Maximum Stop | 59. Angle Bracket |
| 30. Locknut | 60. Guide Pin Bracket Assembly |
| | 61. Self-Locking Nut |

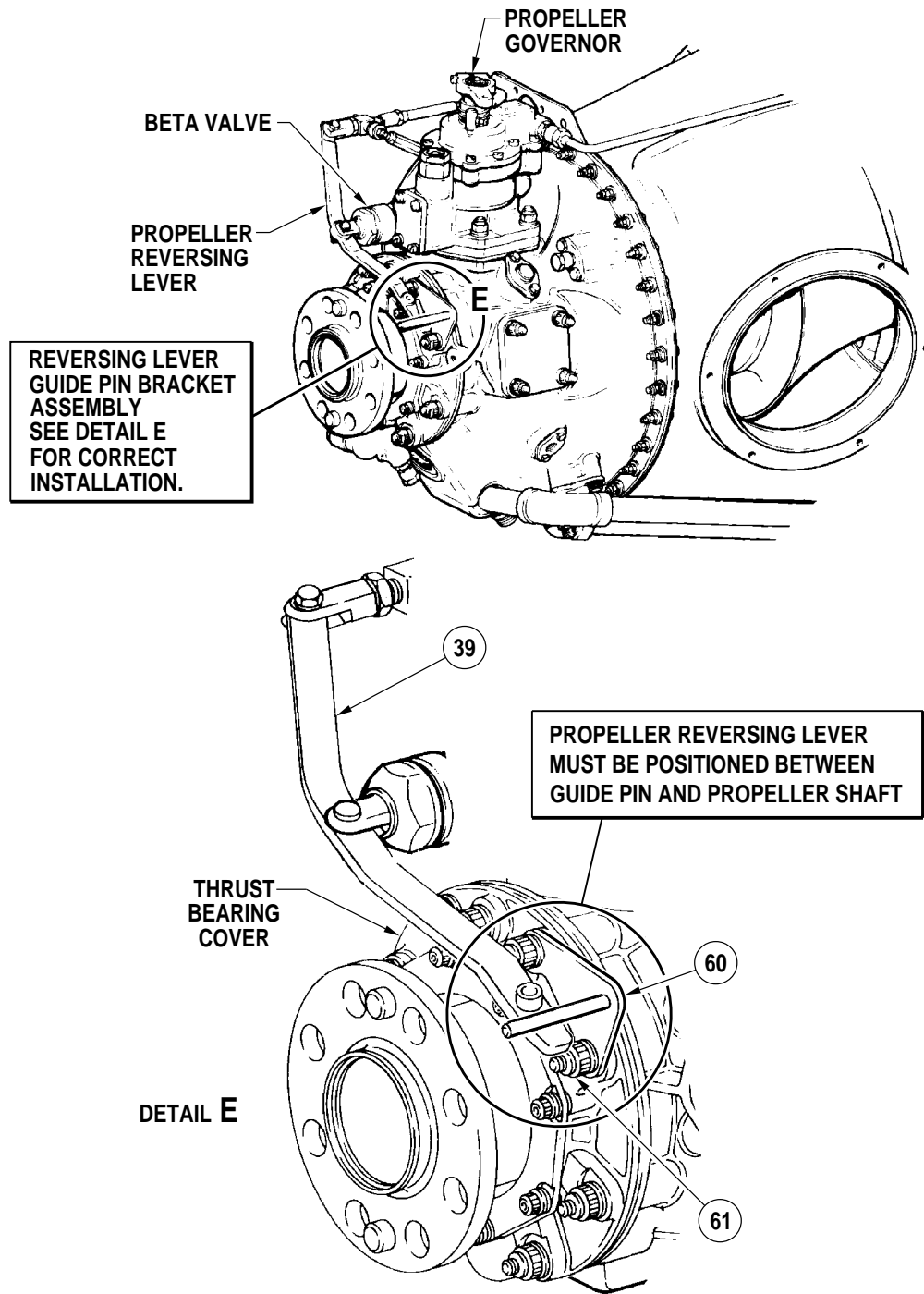
PRATT & WHITNEY CANADA
 MAINTENANCE MANUAL
 MANUAL PART NO. 3013242



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Removal/Installation of Propeller Reversing Linkage
 Figure 201 (Sheet 2)

PRATT & WHITNEY CANADA
 MAINTENANCE MANUAL
 MANUAL PART NO. 3013242



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Removal/Installation of Propeller Reversing Linkage
 Figure 201 (Sheet 3)

PRATT & WHITNEY CANADA
MAINTENANCE MANUAL
MANUAL PART NO. 3013242

- (c) Loosen self-locking nut on rear clamping bolt (3). Disengage terminal and rod end assembly (2) from wire rope (21) by turning counterclockwise to free rope from clamping bolt internal thread.
- (d) Remove cam box by removing two self-locking nuts at flange G, and bolt that secure assembly to angle bracket on accessory gearbox housing. Remove assembly.
- (e) Disassemble cam box:
 - 1 Remove cotterpins and washers that secure extension spring (18) to FCU actuating lever (17) and bracket.
 - 2 Remove cotterpin, washer and flat headed pin that secure propeller control cam (16) and FCU actuating lever (17) to bracket.
 - 3 Remove cotterpin, washer and cam follower pin (52) that secure propeller reversing control follower lever (5) to propeller control cam (16).
 - 4 Loosen bolt that secure reversing control follower lever to grooved pin (15). Withdraw grooved pin from bracket and remove follower lever and FCU actuating lever (12).
- (f) Remove front linkage:
 - 1 Loosen and unscrew coupling nut (53) at front end of wire rope casing (20) from front swivel joint (34).
 - 2 Remove cotterpin, castellated nut, spacer and bolt securing front rod end clevis (33) to propeller reversing lever (39).
 - 3 Remove cotterpin, washer and straight pin securing propeller reversing lever (39) to Beta control valve clevis (41). Remove reversing lever.
 - 4 Remove cotterpin, castellated nut, washer and bolt securing propeller governor interconnect rod (27) to reset arm (36) on propeller governor.
 - 5 Remove cotterpin, castellated nut (47) securing power end of interconnect rod (27) to front clamping bolt (37). Remove interconnect rod.
 - 6 For Pre-SB1185 Engines: Remove wire rope and front end of linkage:
 - a Remove locknut (30) securing front swivel joint (34) to front lifting bracket (49).
 - b Remove swivel joint (see Detail D or C as applicable) complete with wire rope terminal, low pitch stop adjuster (28), low pitch adjuster stop (32), compression spring (43) (if fitted) and wire rope (21).

NOTE: Spring (43) is omitted on some installations (Ref. IPC for usage.)
 - 7 For Post-SB1185 Engines: Remove wire rope and front end of linkage:

PRATT & WHITNEY CANADA
MAINTENANCE MANUAL
MANUAL PART NO. 3013242

- a At front lifting bracket (49, Detail B) remove self-locking nut and bolt nearest engine and loosen remaining nut securing retaining plate (50) to lifting bracket.
 - b Loosen locknut (30) securing front swivel joint to lifting bracket.
 - c Pivot retaining plate outwards and remove swivel joint and attached control linkage and wire rope.
- 8 Remove self-locking nut (22), washer and bolt securing wire rope loop clamp (23) to bracket (26) at center fireseal.
- 9 Remove self-locking nut, bolt and loop clamp from similar loop clamp on T1 trim harness probe.
- 10 Remove self-locking nut, bolt and loop clamp from bracket at flange C. Disconnect coupling nut (54) at rear end of wire rope casing, from rear swivel joint (19).
- 11 Remove two self-locking nuts (24) and bolts securing seals, seal retaining plates and seal retaining plate insulation (25) to center fireseal mount ring. Remove seal and retaining plates from rear end of wire rope casing.
- 12 Withdraw wire rope casing forward through center fireseal mount ring.
- 13 Remove locknut securing rear swivel joint to rear fireseal mount ring and support bracket. Remove swivel joint.
- 14 Disassemble push/pull control link arrangement (Ref. Detail D):
 - a Remove self-locking nut (48) and spacer (38) from front clamping bolt (37).
 - b Remove wire rope (21) from front linkage by rotating rope counterclockwise to disengage rope from internal thread on clamping bolt (37). Place wire rope in a plastic bag to prevent pick-up of dirt and other foreign matter.
 - c Remove clamping bolt (37) from wire rope terminal and rod end clevis (33).
 - d Remove locknut (31) securing low pitch adjuster stop (32) to low pitch stop adjuster (28).
 - e Unscrew adjuster stop from stop adjuster, and remove compression spring (43, if fitted, Pre-SB1129) and wire rope terminal (55).
 - f Remove lockbolt (35) securing low pitch stop adjuster to front swivel joint.
- 15 On engines incorporating force link arrangement (Telescopic Unit) disassemble (Ref. Detail C):

PRATT & WHITNEY CANADA
MAINTENANCE MANUAL
MANUAL PART NO. 3013242

- a Remove self-locking nut (48) and spacer (38) from front clamping bolt (37).
- b Remove wire rope (21) from front linkage by rotating rope counterclockwise to disengage rope from internal thread of clamping bolt. Place wire rope in plastic bag to prevent pick-up of dirt and other foreign matter.
- c Remove clamping bolt (37) and slide terminal housing (45) off wire rope terminal (55).
- d Remove cotterpin, castellated nut and bolt (46) securing rod end clevis (33) to terminal housing. Remove rod end clevis, terminal sleeve (56) and compression spring (44) from housing.
- e Remove locknut (31) securing low pitch adjuster stop (32) to low pitch stop adjuster (28).
- f Unscrew adjuster stop from stop adjuster and remove compression spring (43, Pre-SB1129) and wire rope terminal (55).
- g Remove lock bolt (35) securing low pitch stop adjuster to front swivel joint.

(3) Remove guide pin bracket assembly:

- (a) Remove two nuts (61).
- (b) Remove guide pin bracket assembly (60).

B. Installation (Ref. Fig. 201)

CAUTION: THE FOLLOWING ASSEMBLY INSTRUCTIONS ARE GIVEN PRIMARILY TO SATISFY SHIPPING REQUIREMENTS AND THE RESULTANT RIGGING MAY DIFFER QUITE CONSIDERABLY FROM WHAT IT SHOULD BE WHEN THE ENGINE IS INSTALLED IN THE AIRFRAME. AT ENGINE INSTALLATION BY THE AIRFRAME MANUFACTURER THE LINKAGE IS ADJUSTED TO SUIT A PARTICULAR AIRFRAME REQUIREMENT. THIS ADJUSTMENT MAY INCLUDE ALTERING ROD LENGTHS, MOVING CLEVIS PINS TO DIFFERENT HOLES AND, IF NECESSARY, SELECTING A DIFFERENT CAM TO PROVIDE THE REQUIRED POWER RESPONSE CHARACTERISTICS. THE FINAL RIGGING ARRANGEMENT IS PART OF THE AIRCRAFT CERTIFICATION REQUIREMENT AND IS DETAILED IN THE APPROPRIATE AIRCRAFT MAINTENANCE MANUAL. THEREFORE, WHEN AN ENGINE IS REINSTALLED IN AN AIRCRAFT AFTER OVERHAUL OR REPAIR, THE ENGINE SHOULD BE RIGGED IN ACCORDANCE WITH THE RELEVANT AIRCRAFT MAINTENANCE MANUAL AND NOT IN ACCORDANCE WITH THE APPLICABLE P&WC MAINTENANCE OR OVERHAUL MANUAL.

(1) Install guide pin bracket assembly:

- (a) Install guide pin bracket assembly (60).
- (b) Install nuts (61) and torque 145 to 165 lb.in.

PRATT & WHITNEY CANADA
MAINTENANCE MANUAL
MANUAL PART NO. 3013242

(2) Install and adjust front linkage:

(a) Install front swivel joint on front lifting bracket:

- 1 For Pre-SB1185 Engines: Pass threaded end of swivel joint (34) through hole in lifting bracket at flange A and secure with locknut (30). Tighten nut, torque to 95 to 105 lb.in., and lockwire.
- 2 For Post-SB1185 Engines: Install threaded end of swivel joint (34) in slotted hole of front lifting bracket (49). Pivot retaining plate (50) over slot and secure with bolt and self-locking nut. Tighten retaining plate nuts and torque to 36 to 40 lb.in. Install locknut (30) on swivel joint. Tighten nut, torque to 95 to 105 lb.in., and lockwire.

(b) Install low pitch stop adjuster (28) on swivel joint and secure with lockbolt (35). Tighten bolt, torque to 32 to 36 lb.in., and lockwire.

(c) Install compression spring (43) (if fitted) on front section of swivel joint.

NOTE: Spring (43) is omitted on some installations (Ref. IPC. for usage).

(d) Install low pitch adjuster stop (32) onto wire rope terminal (55). Slide wire rope terminal over swivel joint and screw low pitch adjuster stop into stop adjuster (28) to obtain between 1.00 and 1.25 inch travel on wire rope terminal. Screw locknut (31) onto adjuster stop and tighten fingertight only.

NOTE: Locknut must be torqued and lockwired after final adjustments (Ref. Step (h), following).

(e) Assemble push/pull control linkage arrangement (Ref. Detail D):

- 1 Assemble front rod end clevis (33) on wire rope terminal (55) and insert front clamping bolt (37) through holes in terminal and clevis. Ensure wire rope threaded hole in bolt is lined up correctly and screw wire rope into bolt thread. Check that wire rope is fully engaged by inserting wire in inspection hole in clevis (33).

NOTE: Installation of wire rope into terminal at this stage only applies when rear linkage and wire rope casing is already installed. If rear linkage and wire rope casing is not installed do not assemble wire rope.

- 2 Secure clamping bolt (37) with spacer (38) and self-locking nut (48). Tighten nut and torque to 10 to 15 lb.in.

(f) On engine incorporated force link arrangement (Telescopic Unit) (Ref. Detail C):

- 1 Slide terminal housing (45) over wire rope terminal (55).
- 2 Install compression spring (44) into housing, followed by terminal sleeve (56) and rod end clevis (33).

PRATT & WHITNEY CANADA
MAINTENANCE MANUAL
MANUAL PART NO. 3013242

- 3 Secure rod end clevis to terminal housing with bolt (46) and castellated nut. Tighten nut, torque 24 to 36 lb.in., and lock with cotterpin.
- 4 Install wire rope clamping bolt (37) through slotted hole in side of terminal housing and through hole in terminal sleeve (56).
- 5 Screw wire rope into clamping bolt internal thread and ensure end of rope is visible through inspection hole in housing. Install spacer (38) and self-locking nut (48). Tighten nut and torque 10 to 15 lb.in.

NOTE: Installation of wire rope into terminal at this stage only applies when rear linkage and wire rope casing is already installed. If rear linkage and wire rope casing is not installed do not assemble wire rope.

CAUTION: THE LOWER END OF THE PROPELLER REVERSING LEVER (39) IS MACHINED WITH A STEPPED NOTCH. MAKE SURE THE STEPPED NOTCH AT THE END OF THE PROPELLER REVERSING LEVER (39) IS UNDER THE PIN IN THE REVERSING LEVER GUIDE PIN BRACKET ASSEMBLY (60) (REF. FIG. 201, DETAIL E).

- (g) Install sleeve spacer in hole at upper end of propeller reversing lever (39) and fit lever into rod end clevis (33). Secure with bolt and castellated nut. Tighten nut, torque 24 to 36 lb.in., and lock with cotterpin.
- (h) Locate lever in clevis of Beta control valve (41). Secure lever with straight headed pin, washer and cotterpin.
- (i) With propeller feathered and carbon block (42) resting against rear face of propeller feedback ring adjust low pitch adjuster stop (32) so that, with linkage pulled fully forward, the Beta valve clevis slot end is flush with Beta valve cap nut. Tighten locknut (31), torque 150 to 250 lb.in., and lockwire to stop adjuster (28).
- (j) Lubricate ball end fittings of propeller interconnect rod (27) with grease (PWC04-001).
- (k) Install lower end of interconnect rod (27) to lower hole in reset arm (36) of propeller governor. Secure with bolt, washer and castellated nut. Do not torque nut at this stage.
- (l) Adjust length of interconnect rod (27) so that, with reversing linkage held fully forward against low pitch adjuster stop (32) and reset arm against maximum stop (40) the ball end fitting at upper end of rod aligns with wire rope clamping bolt (37).
- (m) Shorten overall length of rod by turning one rod end fitting of interconnect rod one-half turn in. Tighten locknuts, torque 32 to 36 lb.in., and lockwire. Check for sufficient engagement of rod end fittings in interconnect rod by inserting wire in inspection holes.

PRATT & WHITNEY CANADA
MAINTENANCE MANUAL
MANUAL PART NO. 3013242

- (n) Install washer and upper ball end fitting to wire rope clamping bolt (37). Secure with washer and castellated nut. Tighten nut, torque 12 to 18 lb.in., and lock with cotterpin.
 - (o) Tighten castellated nut at lower end of rod, torque 24 to 36 lb.in., and lock with cotterpin.
- (3) Install and adjust rear linkage:

NOTE: 1. Rigging of the rear linkage will vary considerably dependent on airframe installations and type of control cam (Quiet Taxi, Linear Beta, etc.) being used. Airframe part substitutions are made on some installations (Ref. Airframe Manufacturer's Manual).

NOTE: 2. Post-SB1486 and Post-SB1492 engines incorporate an FCU actuating lever featuring a positive return ramp that will drive towards idle in the event of rod end seizure of the control linkage.

- (a) Assemble FCU actuating lever (17) and propeller control cam (16) to control lever mounting bracket (14) and insert flat headed pin through front holes in bracket. Secure pin with washer and cotterpin.
- (b) Assemble actuating lever (12) and reversing control cam follower lever (5) to control lever mounting bracket (14). Install grooved pin (15) through rear holes of bracket and two levers. Tighten bolt on follower lever (5), torque 32 to 36 lb.in., and lockwire.
- (c) Install fork end of follower lever over propeller control cam (16) and insert cam follower pin (52) through holes in fork end of lever and through cam slot. Secure with washer and cotterpin.
- (d) Temporarily secure angle bracket to control lever bracket (14) with single bolt. Do not torque bolt at this stage.
- (e) Locate control lever mounting bracket assembly and bracket at flange G of accessory gearbox and secure to gearbox studs with two self-locking nuts and to gearbox boss with two bolts. Tighten nuts and bolts, torque to 36 to 40 lb.in., and lockwire bolts.
- (f) Install extension spring (18) between post on control lever mounting bracket (14) and post of FCU actuating lever (17) and secure with plain washers and cotterpins.
- (g) Install and adjust rear linkage:
 - 1 Rotate FCU arm (10) fully counterclockwise and then slowly clockwise until the FCU governor cam pick-up point is felt.

NOTE: Initial movement of the FCU arm from the fully counterclockwise position is free from resistance. The pick-up point is recognized when a slight resistive force is encountered.

PRATT & WHITNEY CANADA
MAINTENANCE MANUAL
MANUAL PART NO. 3013242

- 2 Slacken FCU arm extension (9) and adjust serrated spacer (11) until FCU arm (10) is approximately 16 degrees below horizontal as the pick-up point is reached. The serrations on the FCU arm together with unequal number of serrations on both sides of spacer (11) provide adjustment in increments of 0.6 degrees. Tighten FCU arm extension (9), torque to 25 to 35 lb.in., and lockwire.

NOTE: Angle of 16 degrees is typical nominal setting. Refer to rigging instructions for particular airframe type for actual setting angle requirements.

- 3 Install and adjust idle deadband bolt (4) in actuating lever (12) to suit specific airframe installation and propeller control cam (Ref. Airframe Manufacturer's Manual for rigging requirements.)
 - 4 Rotate power input lever (if fitted) or grooved pin (15) until cam follower pin (52) (headless shoulder pin) rests in track point of cam (16) (IDLE POSITION, Ref. Detail A).
 - 5 With FCU arm (10) set approximately two degrees counterclockwise from pick-up point and rear linkage in idle position (step (d), preceding), adjust length of FCU control rod (13) until holes at rod end connectors align with top hole of FCU actuating lever (17) and inner hole of FCU arm (10). Tighten rod end connector locknuts and install control rod. Temporarily secure with bolts, washers and castellated nuts.
 - 6 Rotate power input lever (if fitted) or grooved pin (15) fully clockwise, then fully counterclockwise and confirm that the FCU maximum stop is contacted by the adjusting screw in both positions. Adjust control rod (13) until the stop is contacted by the adjusting screw. Remove control rod.
 - 7 Tighten locknuts on control rod, ensuring that rod end connectors are aligned with each other, torque to 32 to 36 lb.in., and lockwire. Apply light film of grease (PWC04-001) to ball end fittings of control rod. Install control rod and secure with bolts, washers and castellated nuts. Tighten nuts, torque to 10 to 15 lb.in., and lock with cotterpins.
- (h) For PT6A-27 and PT6A-28 Engines, adjust length of starting flow control rod (8):
- 1 Set FCU arm (10) to approximately 16 degrees below horizontal (Ref. Subpara. (g)2, preceding). Set starting control lever (7) to the RUN position.

NOTE: Depending on installation, RUN position may be referred to as IDLE, LO-IDLE or GROUND IDLE.

PRATT & WHITNEY CANADA
MAINTENANCE MANUAL
MANUAL PART NO. 3013242

- 2 Adjust length of control rod to provide a minimum gap of 0.030 inch at lower end of rod when rod is connected between FCU arm and starting flow control lever (Ref. Detail E).

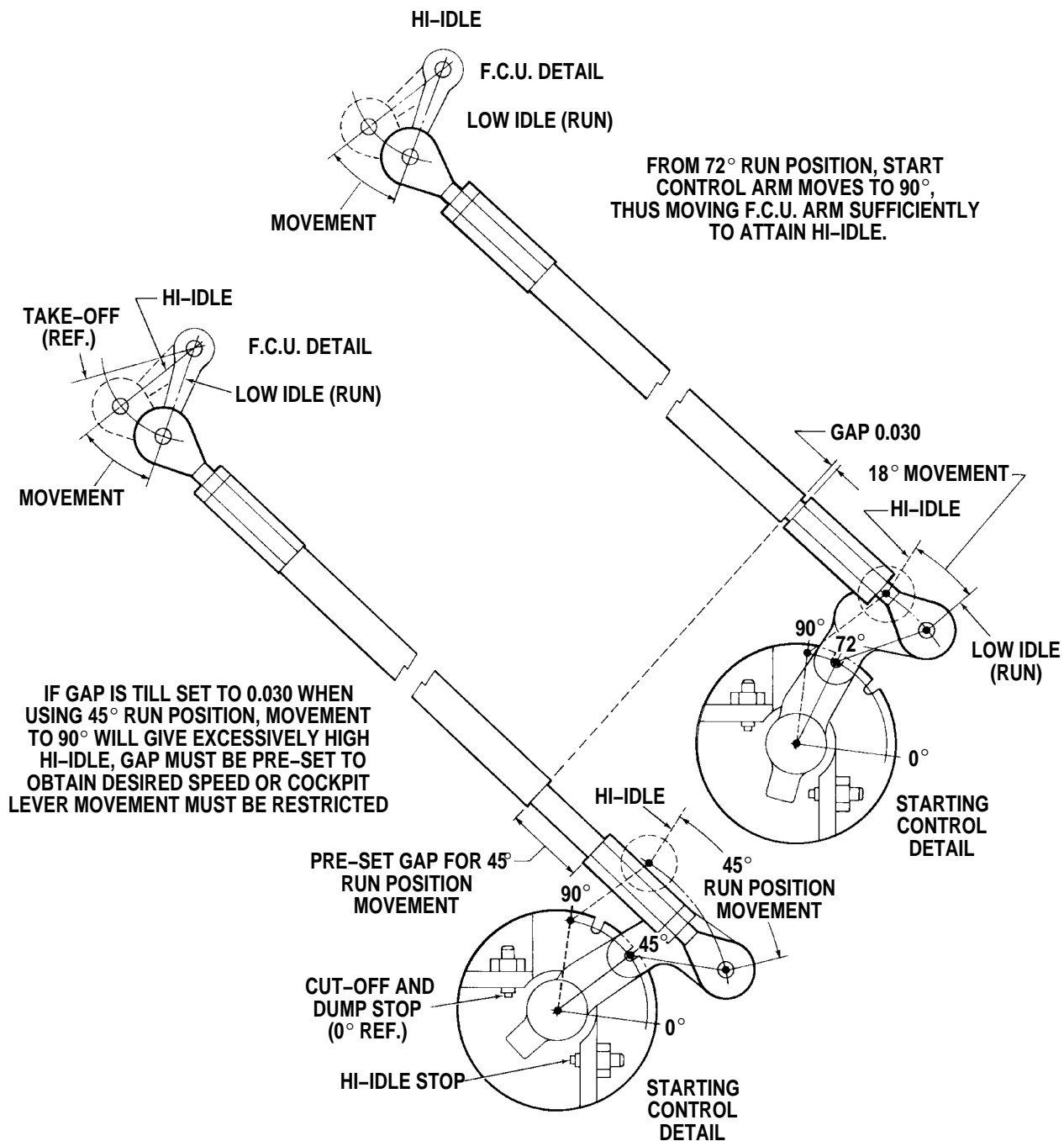
NOTE: The RUN position (Ref. Fig. 202) on the starting control may be at 45° or 72°, depending on the installation, and is defined by detents or rigging slots in the plate behind the lever. Movement from 45° to 90° has no effect on starting control operation and is provided only to actuate the FCU control arm via the telescopic rod (8) and introduce the hi-idle function. Most installations incorporating this function use the 72° RUN position. With the rod adjusted as above, movement of the start control lever from 72° to 90° will provide approximately the correct hi-idle speed, final adjustment being made by the starting control maximum stop. However for installations using the 45° run position, movement of the start control lever from 45° to 90° will provide a hi-idle speed considerably higher than required. This must be compensated for by increasing the gap at the lower end of the rod as required to obtain the desired rpm or, alternatively, limiting movement of the cockpit starting control lever when selecting FLIGHT-IDLE.

- 3 Tighten rod end connector locknuts, torque to 32 to 36 lb.in., and lockwire.
- 4 Apply light film of grease (PWC04-001) to ball end fittings of control rod, install control rod and secure with bolts, washers and castellated nuts. Tighten nuts, torque to 12 to 18 lb.in., and lock with cotterpins.

(4) Install wire rope casing:

- (a) Install rear swivel joint (19) on rear fireseal and temporarily secure with two locknuts.
- (b) Install seals, insulation and seal retaining plates (25) and bracket (26) on center fireseal, with bracket on front face of fireseal. Loosely secure with bolts and self-locking nuts. Bolt heads to be on air inlet side of fireseal.
- (c) Install wire rope casing (20) through center fireseal and connect coupling nuts (53) and (54) of casing to front and rear swivel joints. Adjust position of rear swivel joint to compensate for variations in casing length. Tighten coupling nuts of casing, torque to 40 to 60 lb.in., and lockwire.
- (d) Secure rear swivel joint to rear fireseal and support bracket. Tighten locknut, torque to 80 to 100 lb.in., and lockwire.
- (e) Tighten self-locking nuts, at center fireseal and tighten until firm contact is obtained, plus 180 degrees.
- (f) Install loop clamp (23) on front section of casing and secure to bracket (26) with bolt and self-locking nut. Tighten nut and torque to 36 to 40 lb.in.

PRATT & WHITNEY CANADA
MAINTENANCE MANUAL
MANUAL PART NO. 3013242



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Adjustment of Starting Control Telescopic Linkage
 Figure 202

PRATT & WHITNEY CANADA
MAINTENANCE MANUAL
MANUAL PART NO. 3013242

- (g) Install loop clamp on rear section of casing and secure to similar clamp on T5 trim harness with bolt and self-locking nut. Tighten nut and torque to 36 to 40 lb.in.
- (h) Insert wire rope (21) into rear swivel joint (19) and push forward through casing. Check clamping bolt (37) at front terminal is loose and screw wire rope clockwise to engage internal thread of clamping bolt. Continue turning wire rope until rope bottoms. Check by inserting wire in inspection hole of terminal.
- (i) Secure wire rope and clamping bolt with self-locking nut. Tighten nut and torque to 10 to 15 lb.in.
- (j) Install rear wire rope terminal (2), complete with rod end clevis (1) on wire rope (21) and rear swivel joint. Rotate terminal clockwise to engage wire rope and internal thread of clamping bolt (3). Check that wire rope is fully engaged by inserting wire in inspection hole of terminal. Tighten clamping bolt self-locking nut and torque 10 to 15 lb.in.

NOTE: Inspection hole is located adjacent to rod end clevis on some engines, or on hexagon section of terminal (Post-SB1170).

- (k) Release locknut securing rod end clevis (1) to terminal (2). Rotate clevis to align with center hole of propeller control cam (16). Lengthen wire rope assembly by rotating clevis one-half turn out to ensure positive movement of control linkage. Tighten locknut, torque 75 to 85 lb.in., and safety wire.
- (l) Locate rod end clevis on control cam and secure to center hole with straight headed pin (6), washer and cotterpin.

CAUTION: DO NOT SELECT CONTROLS INTO REVERSE CONDITION WITHOUT DISCONNECTING FRONT ROD END CLEVIS FROM PROPELLER REVERSING LEVER. FREEDOM OF MOVEMENT IN REVERSE CAN ONLY BE DONE WITH ENGINE RUNNING.

- (m) On completion of installation and rigging, operate controls and check linkage for freedom of movement and ensure all fittings are secure and locked.

6. Cleaning/Painting

Clean all parts with solvent (PWC11-027) or (PWC11-031) and dry with filtered compressed air and/or clean, lint-free cloths.

7. Inspection/Check

A. General

- (1) Visually inspect the actuating levers, control cam, and control lever mounting bracket for cracks. Cracks are not permitted.
- (2) Visually inspect the reversing lever guide pin bracket assembly on both faces of the fillet weld area around the guide pin for cracks. If cracks are found and/or fillet weld is on one face only, replace the bracket assembly (Ref. SB1416).

PRATT & WHITNEY CANADA
MAINTENANCE MANUAL
MANUAL PART NO. 3013242

- (3) Examine the parts for minor surface damage such as scores, nicks, scratches, and gouges. Minor surface defects may be cleaned up by local blending with a fine stone or crocus cloth (PWC05-061) making sure that all sharp edges and high spots are removed.
- (4) Inspect the pin and bolt holes in each part and the slot in the control cam, for burrs and/or chipped edges. Clean up minor damage with a suitable Swiss file or fine stone.
- (5) Examine the grooved pin for burrs, nicks, scores and similar defects on serrations which might interfere with the fit between mating parts. Clean up minor defects with a fine stone and check the fit of mating parts.
- (6) Inspect the flexible shaft (wire rope) casing for cuts, dents, cracks, kinks, and similar defects which might prevent free movement of the internal wire rope. Minor damage is acceptable, providing the wire rope will operate freely without binding.
- (7) Check the wire rope for breaks in the wires, twisting, kinking, and for separation of the reverse wound coils. Reject the wire rope if damaged. Repair is not permitted.

B. Spring Inspection Requirements

- (1) Check the extension spring (18, Fig. 201) for distortion and uniformity of the coil spacing. If the coils are unevenly separated in a free state, reject the spring. Minor, even separation of the coils is acceptable providing the requirements of Step (2) following, are satisfied.
- (2) Measure the extension loading on the spring. The load required to extend the spring to a length of 3.70 inches must not be less than 2.25 pounds.
- (3) Examine the spring to make sure that the surfaces are free of imperfections such as pits, nicks, and other defects which may be detrimental to fatigue resistance of the spring.

8. Adjustment/Test

A. Procedure

- (1) The adjustments detailed in Para. 5. B., (2) and (g) are designed to provide the correct power relationship at all ambient temperatures. It is assumed that all rigging is accomplished with the propeller installed and blades in full feather position.
- (2) As aircraft installations differ greatly, reference must be made to the applicable Aircraft Maintenance Manual for final adjustment and test.