

PRATT & WHITNEY CANADA
MAINTENANCE MANUAL
MANUAL PART NO. 3013242

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PROPELLER GOVERNOR - DESCRIPTION AND OPERATION

1. General

The propeller governor, installed at the 12 o'clock position on the front case of the reduction gearbox and driven by the propeller shaft through a bevel gear, controls the propeller speed and pitch settings as dictated by the cockpit control settings and flight conditions. Refer to Chapter 76-00-00 for further details of the propeller control system. Refer also to the Airframe Manufacturer's Maintenance Manual, Chapter 61.

2. Fault Isolation

For detailed fault isolation of the propeller governor, refer to Chapter 72-00-00, FAULT ISOLATION.

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PROPELLER GOVERNOR - 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 protective caps and plugs on disconnected tubes, component openings and electrical connectors.
- C. Lockwire used shall, unless otherwise specified, comply with specification AMS 5687, 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>
PWC03-001	Oil, Engine
PWC11-027	Solvent, Cleaning
PWC11-031	Solvent, Cleaning

3. Special Tools

The special tools listed below are used in the following procedures.

<u>Tool No.</u>	<u>Name</u>	<u>Application</u>
PWC30114-09	Wrench	Pre-SB1232
PWC30114-16	Wrench	Post-SB1232

4. Fixtures, Equipment and Supplier Tools

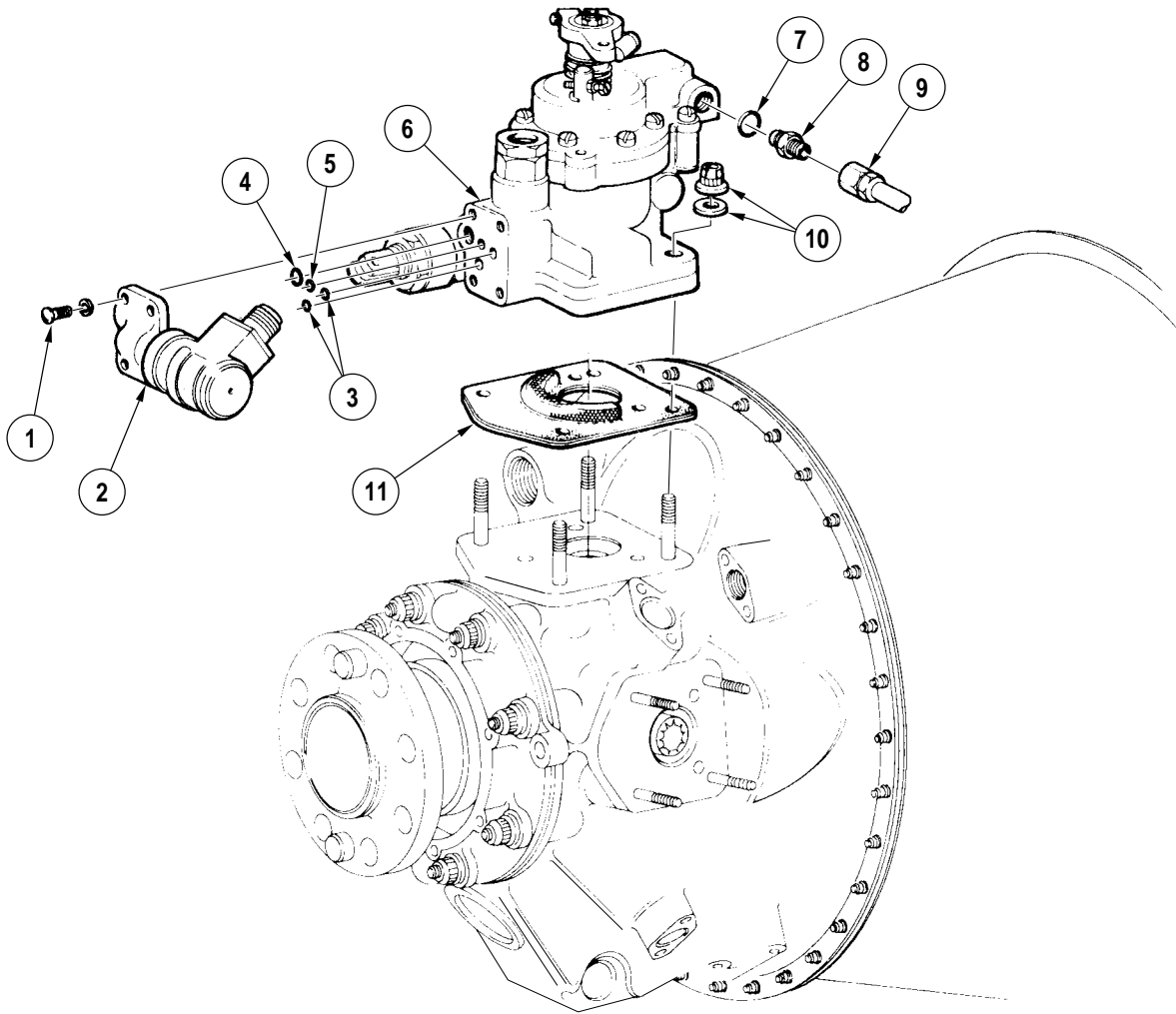
Not Applicable

5. Removal/Installation

A. Removal of Propeller Governor (Ref. Fig. 201)

- (1) Remove the electrical connectors from the governor and/or propeller speed synchronizer (Ref. Aircraft Maintenance Manual) (Ref. SB1335).
- (2) Remove the propeller reversing lever from the Beta control valve (Ref. 76-10-00).
- (3) Remove the propeller governor interconnect rod from the propeller governor airbled link (reset lever) (Ref. 76-10-00, Removal/Installation).
- (4) Remove the coupling nut of the pneumatic (Py) front tube (9) (Ref. 73-10-08) from the propeller governor straight nipple (8).

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Removal/Installation of Propeller Governor
Figure 201

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Key to Figure 201

1. Screw
2. Lock Pitch (Shutoff) Solenoid Valve (if fitted)
3. Preformed Packing (two)
4. Preformed Packing
5. Preformed Packing
6. Propeller Governor
7. Preformed Packing
8. Straight Nipple
9. Pneumatic Tube (Py)
10. Self-locking Nut and Washer
11. Gasket

- (5) Remove the airframe linkage from the propeller governor speed select lever.
- (6) Using the appropriate propeller governor retaining nut wrench (PWC30114-09), Pre-SB1232 or (PWC30114-16), Post-SB1232, remove the four self-locking nuts and plain washers (10) securing the propeller governor to the reduction gearbox. Withdraw the propeller governor (6) and the gasket (11) from the mounting pad.
- (7) If the propeller governor is to be replaced by a new or overhauled unit, remove the straight nipple (8) from the Py port on the governor (6) and discard the preformed packing (7); retain the nipple for reuse on the replacement unit.

B. Installation of Propeller Governor (Ref. Fig. 201)

CAUTION: MAKE SURE DRIVE SPLINES ARE CORRECTLY ENGAGED BY CHECKING THAT FLANGE OF GOVERNOR RESTS ON GASKET SQUARELY WITH NO GAP. ROTATE PROPELLER TO ASSIST ENGAGEMENT, IF NECESSARY.

CAUTION: MAKE SURE CORRECT PROPELLER GOVERNOR IS INSTALLED (IDENTIFIED BY UNIT PART NUMBER). REFER TO THE ILLUSTRATED PARTS CATALOG.

CAUTION: AFTER MAJOR TURBINE BLADE FRACTURE, THE PROPELLER GOVERNOR ON ENGINES WITH PROPELLER REVERSING MUST BE SENT TO AN APPROVED OVERHAUL FACILITY FOR INSPECTION PRIOR TO RETURNING THE UNIT TO SERVICE.

- (1) If a new or overhauled governor (6) is being installed, install the straight nipple (8):
 - (a) Lightly lubricate the new preformed packing (7) with engine oil (PWC03-001) (Ref. SB1001) and install on the nipple.
 - (b) Install the nipple in the Py port in the propeller governor. Tighten the nipple 65 to 75 lb.in.
- (2) Install a new gasket (11) over the studs of the propeller governor mounting pad, making sure the raised side of the gasket faces upward.

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CAUTION: DELETED

- (3) Install the governor over the studs onto the gasket. Rotate the propeller shaft slightly to engage the governor drive splines. Make sure the governor and the gasket are mounted flush.
- (4) Secure the governor with washers and self-locking nuts (10) using the retaining nut wrench (PWC30114-16). Tighten the nuts 125 to 135 lb.in.
- (5) Install the reversing lever to the Beta valve using the clevis pin, washer and the cotterpin (Ref. 76-10-00).
- (6) Install the propeller governor interconnect rod to the governor airbleed link (Ref. 76-10-00).
- (7) Connect the airframe linkage to the speed select lever on the propeller governor.
- (8) Install the Py air tube (9) to the nipple. Tighten the coupling nut 90 to 100 lb.in., and fasten with lockwire.
- (9) Install the electrical connector to the lock pitch solenoid valve (2) if fitted on the propeller governor, and also, if applicable, the propeller speed synchronizer (Ref. SB1335) .
- (10) Pressure test the pneumatic system (Ref. 73-10-07).

6. Inspection/Check

A. Propeller Governor

- (1) Examine the mounting flange and the body for cracks and other defects. Cracks are not acceptable.
- (2) Examine for broken or damaged lockwire. If broken, have the unit bench-checked for tightness of connections and re-lockwired before placing unit in service.
- (3) Examine the fluid ports for damage.
- (4) Use a megohmmeter capable of supplying 500 Vdc to inspect the insulation resistance of the coil assembly. If the insulation resistance of the coil assembly does not read 20 megaohms minimum, return the propeller governor to an approved overhaul facility for repair.
- (5) Check resistance of coil assembly:
 - (a) Connect one probe of an ohmmeter to one lead of coil assembly and the other probe to the other lead. If the resistance is not between 115 to 145 ohms, return the propeller governor to an approved overhaul facility for repair.

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- (b) Remove one probe from one lead. Connect or touch the metal case holding the coil assembly. The resistance should read infinite. If the reading is "0", return the propeller governor to an approved overhaul facility for repair.

B. Electrical Connectors and Leads

- (1) Examine the threads for damage. Chase the threads to remove minor damage. Replace the governor if threads are badly damaged or crossed.
- (2) Check the output terminal pins; replace the governor if pins are loose or bent.
- (3) Check the leads for damage to the outer covering.

C. Governor Gasket

- (1) Clean gasket with solvent (PWC11-027) or (PWC11-031).
- (2) Examine for tears in, and deterioration of the gasket material.
- (3) Examine for breakdown of the bond between the non-metallic material and the steel plate core.
- (4) Examine the mounting holes for elongation.
- (5) Examine the screen for damage and looseness.

7. Adjustment/Test

After the installation of a new or overhauled propeller governor, adjust and test as detailed in Chapter 71-00-00, ADJUSTMENT/TEST.

8. Approved Repairs

A. Replacement of Lock Pitch Solenoid Valve (if fitted)

- (1) Disconnect the electrical lead from the connector on the solenoid valve (2) (if fitted).
- (2) Remove the four screws (1) and washers securing the solenoid valve to the propeller governor (6) and remove the solenoid valve.
- (3) Remove and discard the preformed packings (3), (4) and (5) from the recesses in the valve mating flange.
- (4) Lightly lubricate the new preformed packings (3), (4) and (5) with engine oil (PWC03-001), and install the packings in the appropriate recesses on the mating flange of the solenoid valve (2).
- (5) Install the solenoid valve on the mating flange of the propeller governor (6) and secure with four washers and screws (1). Tighten the screws 9 to 11 lb.in., and fasten with lockwire.

