

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

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POWER SECTION - DESCRIPTION AND OPERATION

1. Description and Operation (Ref. Fig. 1)

The power section of the models described in this manual typically comprises a single-stage rotor and shaft assembly (Ref. 72-50-04) coupled to a two-stage reduction gearbox and output propeller shaft. The turbine shaft housing and shrouds enclosing the rotor and stator assemblies (Ref. 72-50-03) are contained within the twin-ported exhaust duct that is attached to the reduction gearbox housing. The reduction gearbox is described in greater detail in chapter 72-10-00.

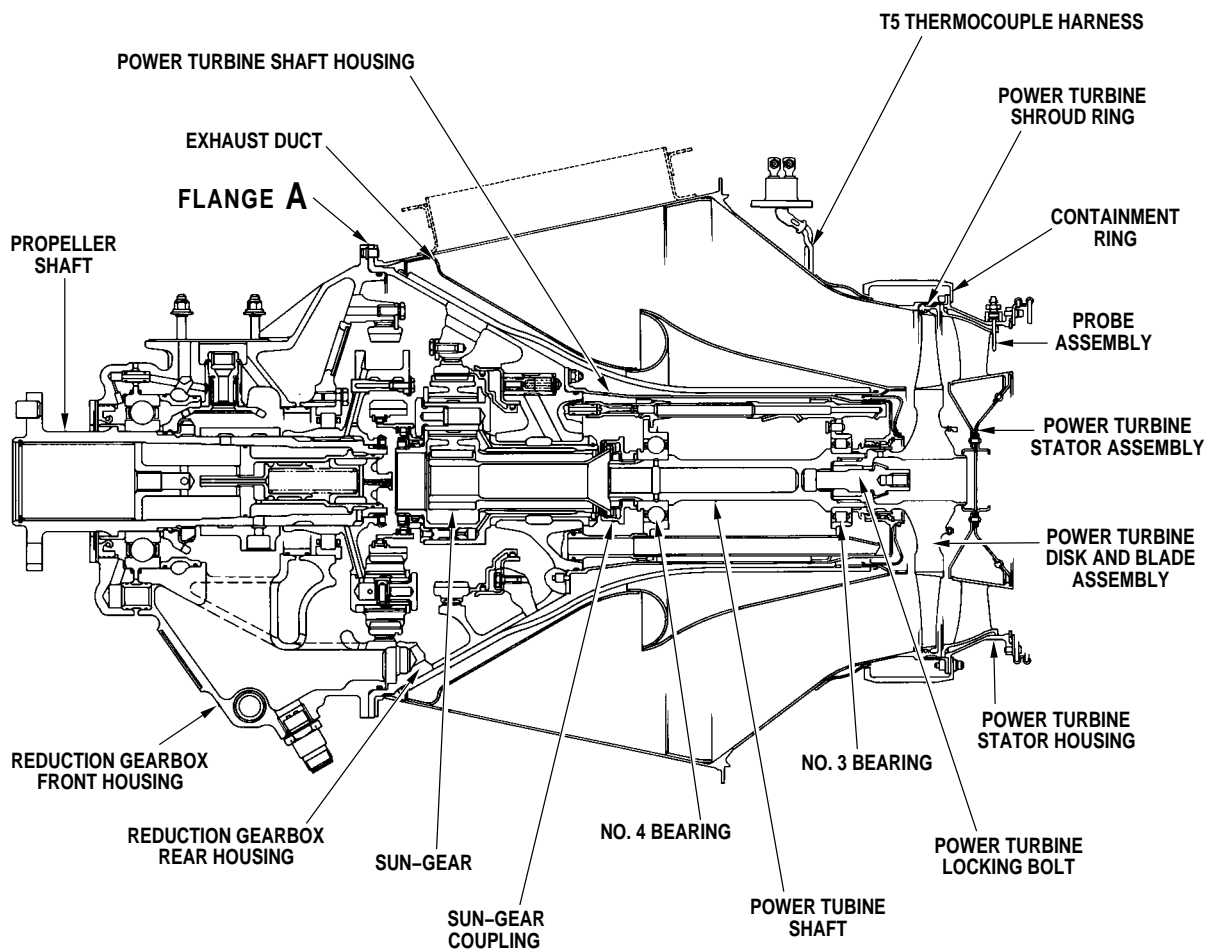
The turbine disk, splined to the rear end of the turbine shaft, is secured by a single, threaded, center-locking bolt and keywasher. The power turbine is supported at the front end by a ball bearing (No. 4) and at the rear end by roller bearing (No. 3). Both bearings are carried in the shaft housing attached to the rear half of the reduction gearbox casing. The sun gear coupling, splined to the forward end of the turbine shaft, is secured by cupwasher and spanner nut. The sun gear, splined into the coupling, is secured by two retaining rings, connecting forward end of the turbine shaft to the first-stage reduction gear-train.

The power turbine stator assembly (Ref. 72-50-03), situated between compressor and power turbines, is a composite assembly comprising power turbine vane ring, interstage baffle assembly and sealing plate. The stator assembly, shroud ring, stator housing and containment ring are secured to the rear flange of the exhaust duct. The stator housing supports the T5 thermocouple bus-bar and probes assembly (Ref. 77-20-01).

An insulating blanket, sandwiched between the inner side of the exhaust duct (Ref. 72-50-05) and the outer casing of the rear-half reduction gearbox and shaft housing, shields the shaft assembly and bearings from the high temperatures prevailing in the exhaust duct.

After driving the compressor turbine, the gas stream enters the power section, passes through power turbine stator, and impinges on the power turbine blades. Leaving the turbine, exhaust gas discharges to the atmosphere through twin ports of the exhaust duct. Driving power is transmitted from the turbine rotor through the shaft and sun gear coupling to a two-stage planetary reduction gear and propeller shaft.

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Power Section Assembly (Typical)
 Figure 1