

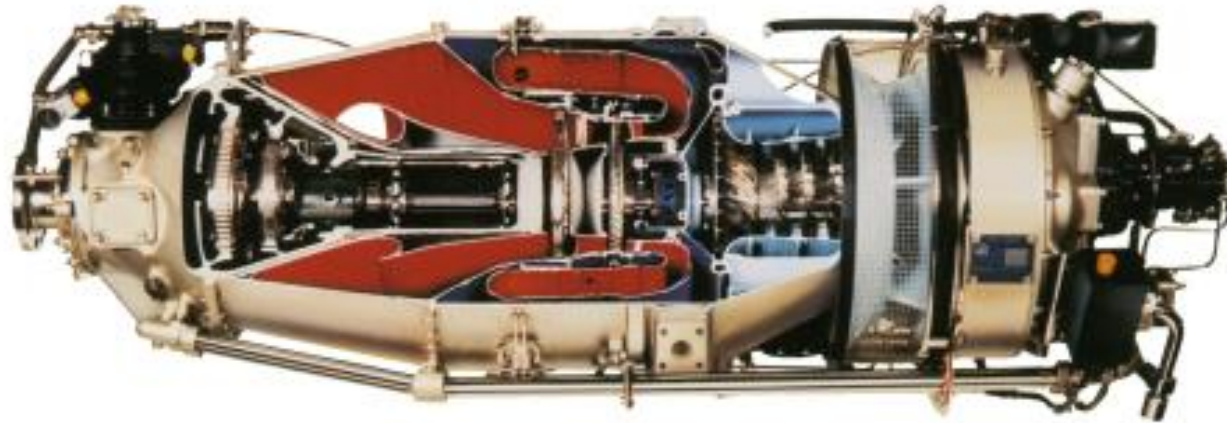
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admtechsaviation@gmail.com

TECHSAVIATION

Training Center

PT6A Série - Training Manual

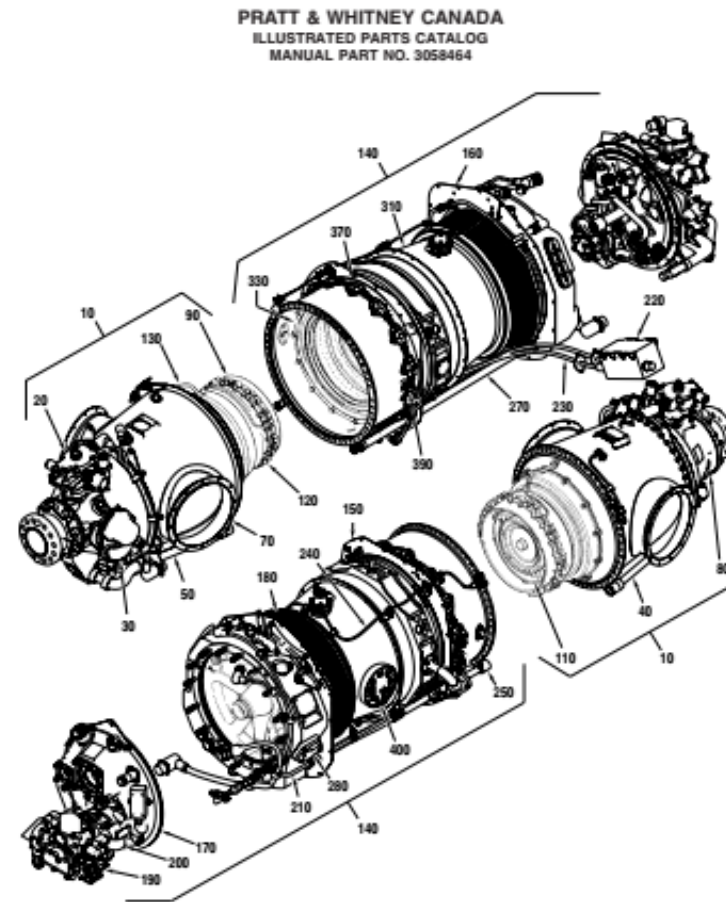
72-00-00- ENGINE TURBOPROP



Este material em hipótese alguma substituirá os manuais do fabricante para qualquer ação de manutenção. Consulte os manuais correspondentes. **EDUCATIONAL PURPOSE ONLY**

72-00-00- ENGINE TURBOPROP
ENGINE, TURBOPROP - DESCRIPTION AND OPERATION

Curso de Motor PT6A - Séries



Engine Assembly, Complete
Figure 1

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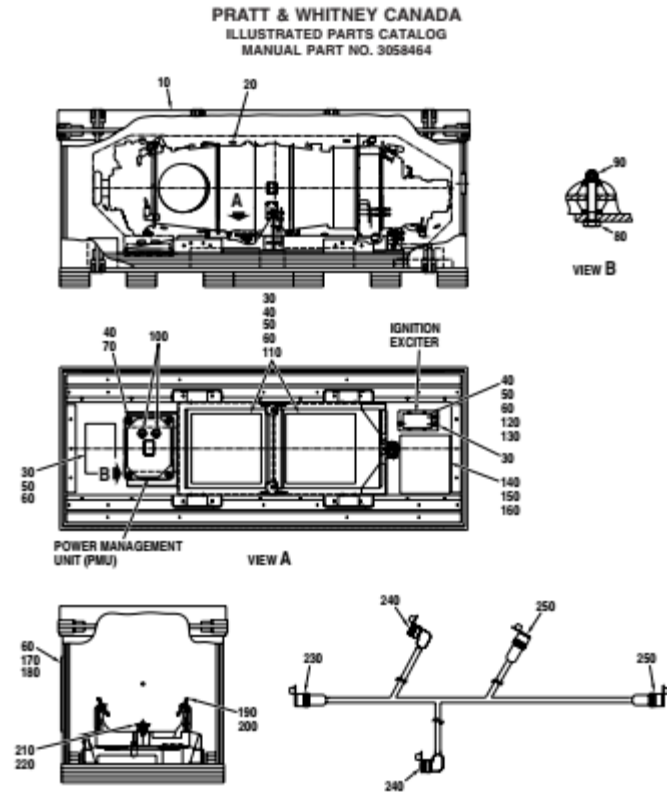
Figure 1

Page 2

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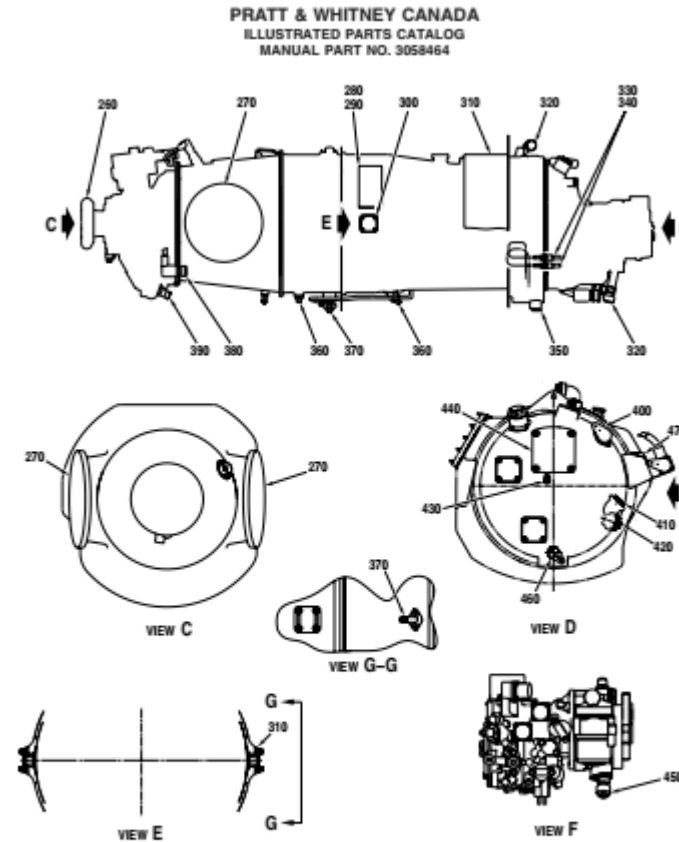
72-00-00- ENGINE TURBOPROP ENGINE, TURBOPROP - DESCRIPTION AND OPERATION

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Container Assembly, Complete, Engine Shipping
Figure 3 (Sheet 1 of 2)

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Figure 3
Page 2
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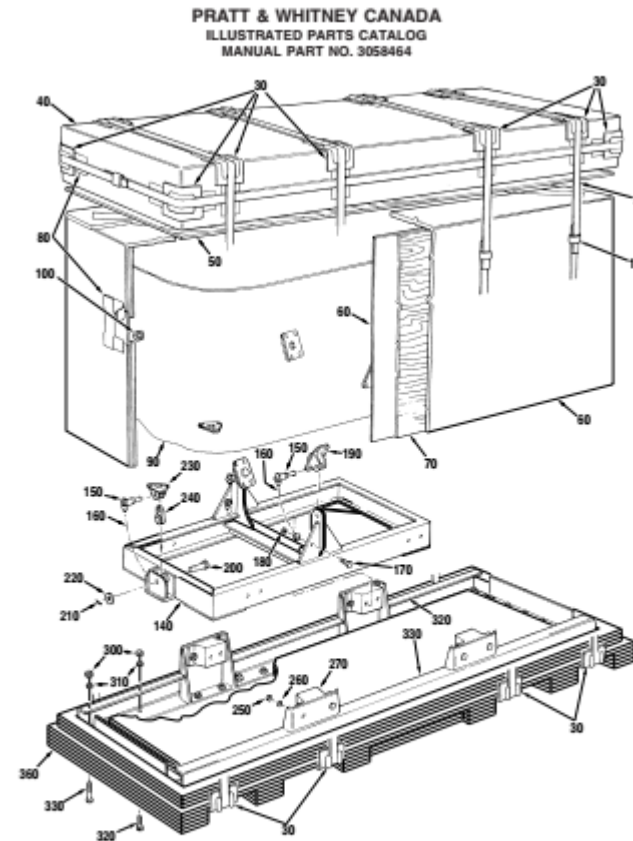


Container Assembly, Complete, Engine Shipping
Figure 3 (Sheet 2 of 2)

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Figure 3
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ENGINE, TURBOPROP - DESCRIPTION AND OPERATION

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Container Assembly, Engine Shipping
Figure 4

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Figure 4
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72-00-00- ENGINE TURBOPROP

ENGINE, TURBOPROP - DESCRIPTION AND OPERATION

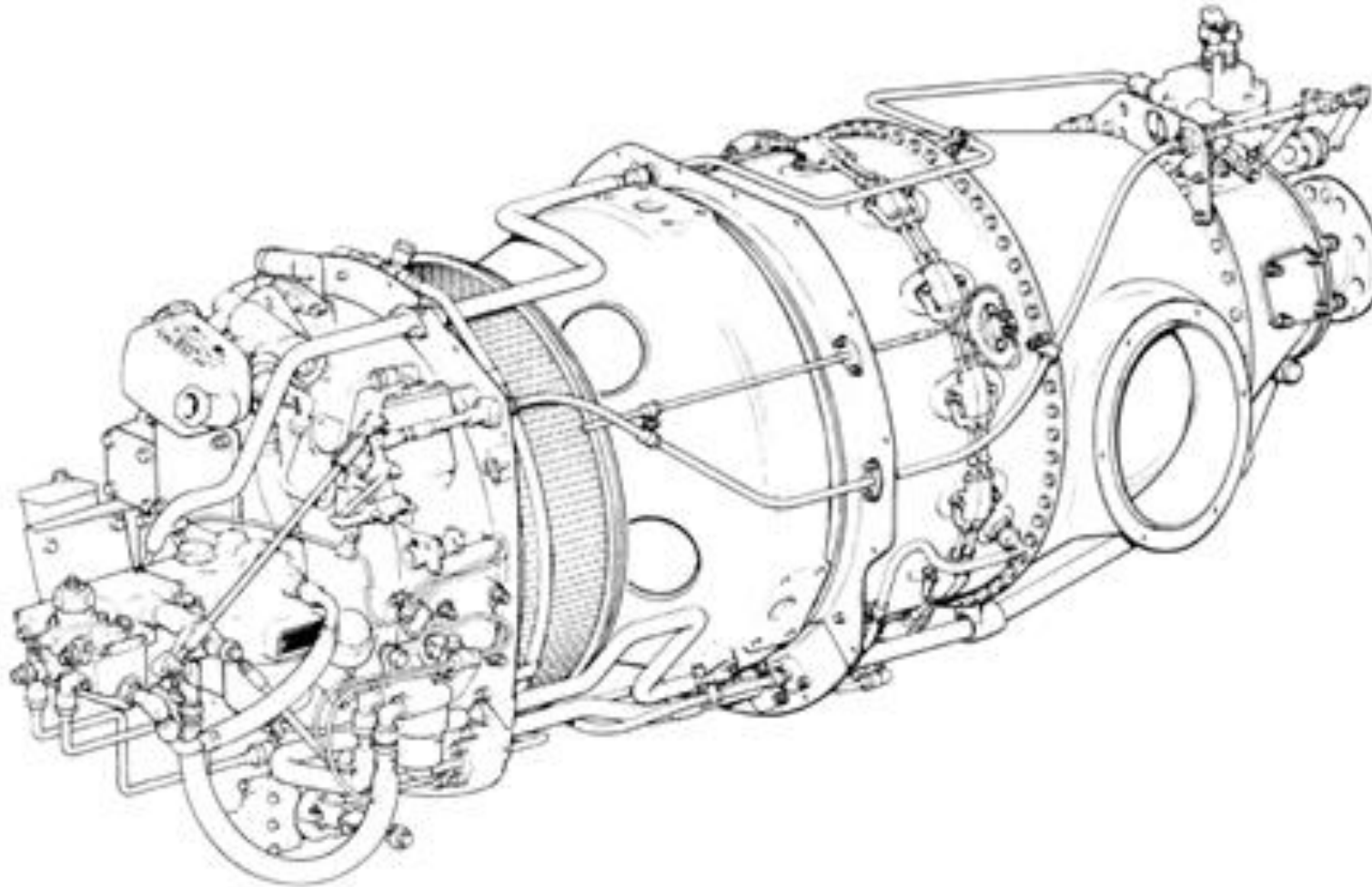
1. Description and Operation

The PT6A Series power plant is a lightweight free turbine engine. The engine utilizes two independent turbine sections: one driving the compressor in the gas generator section and the second driving the propeller shaft through a reduction gearbox. The engine is self-sufficient since its gas generator driven oil system provides lubrication for all areas of the engine, pressure for the torque meter and power for propeller pitch control.

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72-00-00- ENGINE TURBOPROP
ENGINE, TURBOPROP - DESCRIPTION AND OPERATION

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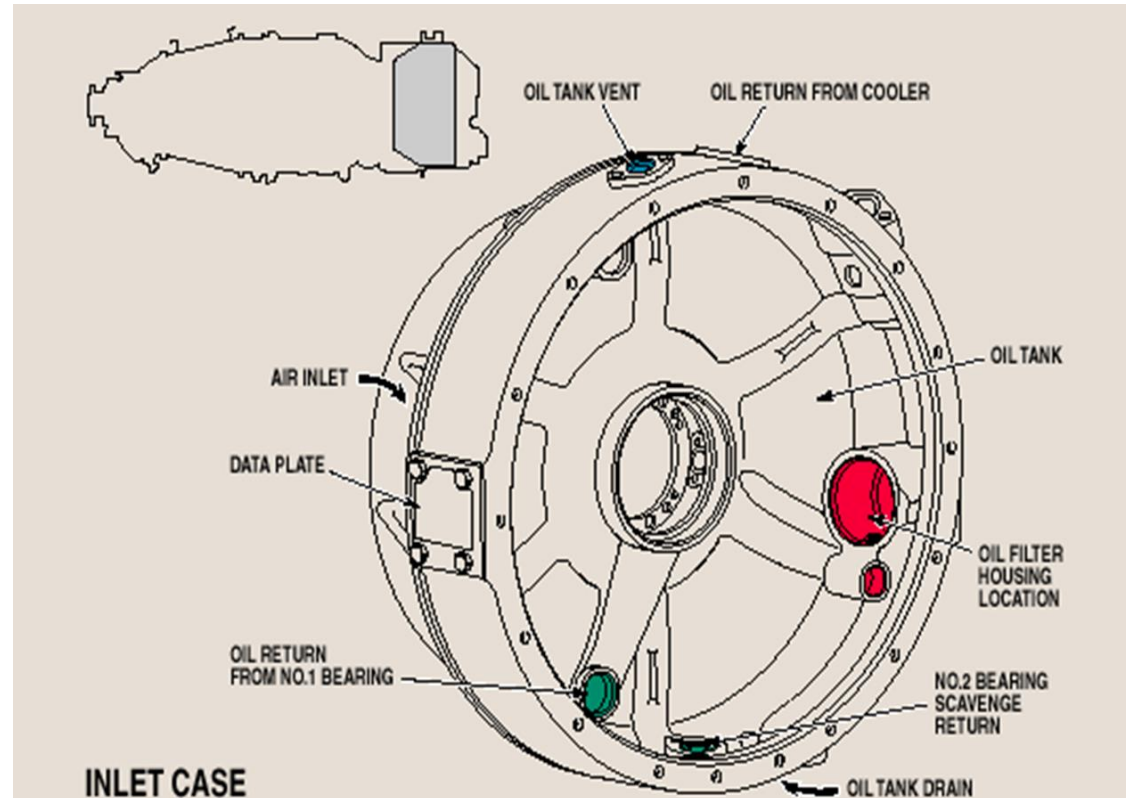


72-00-00- ENGINE TURBOPROP ENGINE, TURBOPROP - DESCRIPTION AND OPERATION

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1. Description and Operation

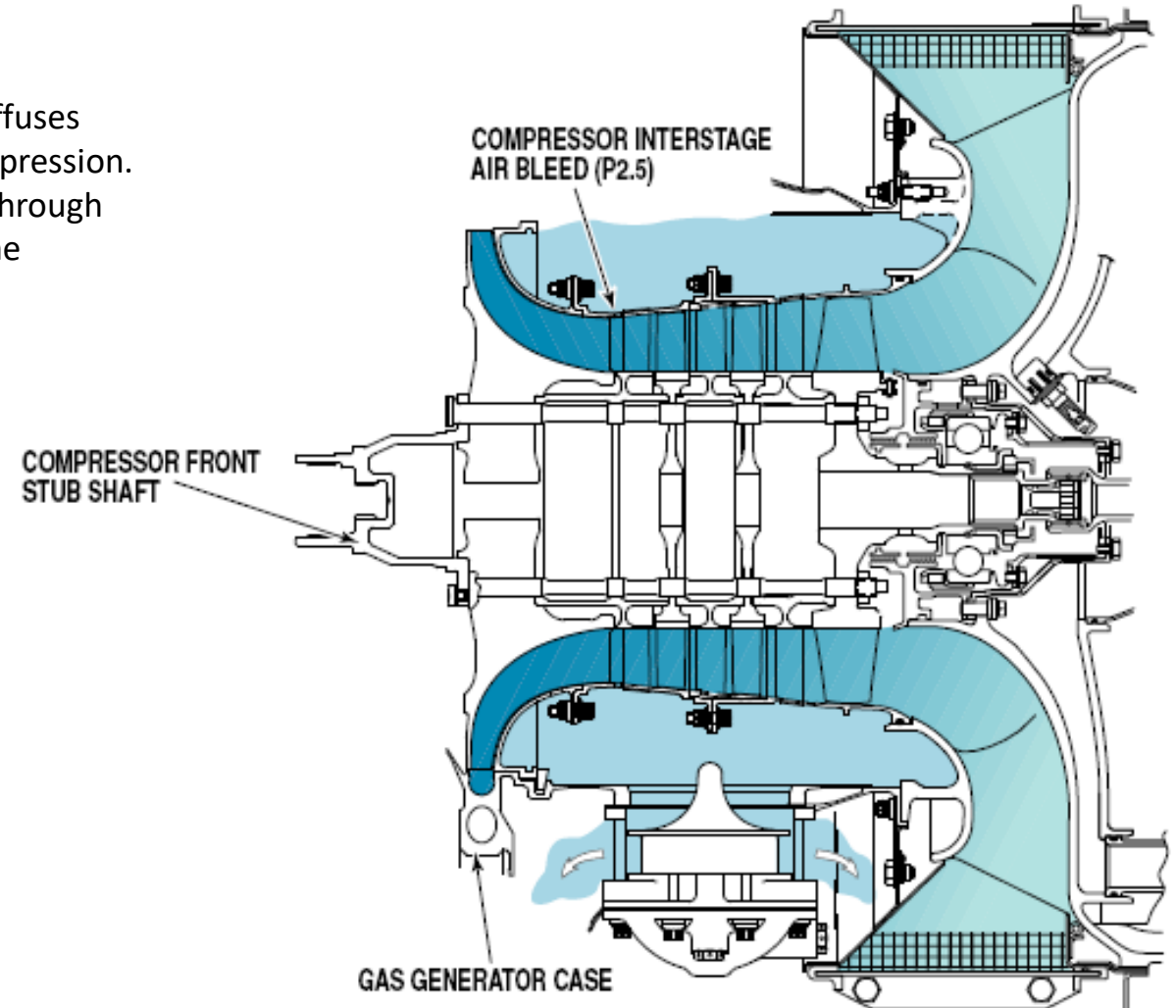
The inlet air enters the engine through an annular plenum chamber, formed by the compressor inlet case, where it is directed forward to the compressor. The compressor consists of three axial stages combined with a single centrifugal stage, assembled as an integral unit.



72-00-00- ENGINE TURBOPROP ENGINE, TURBOPROP - DESCRIPTION AND OPERATION

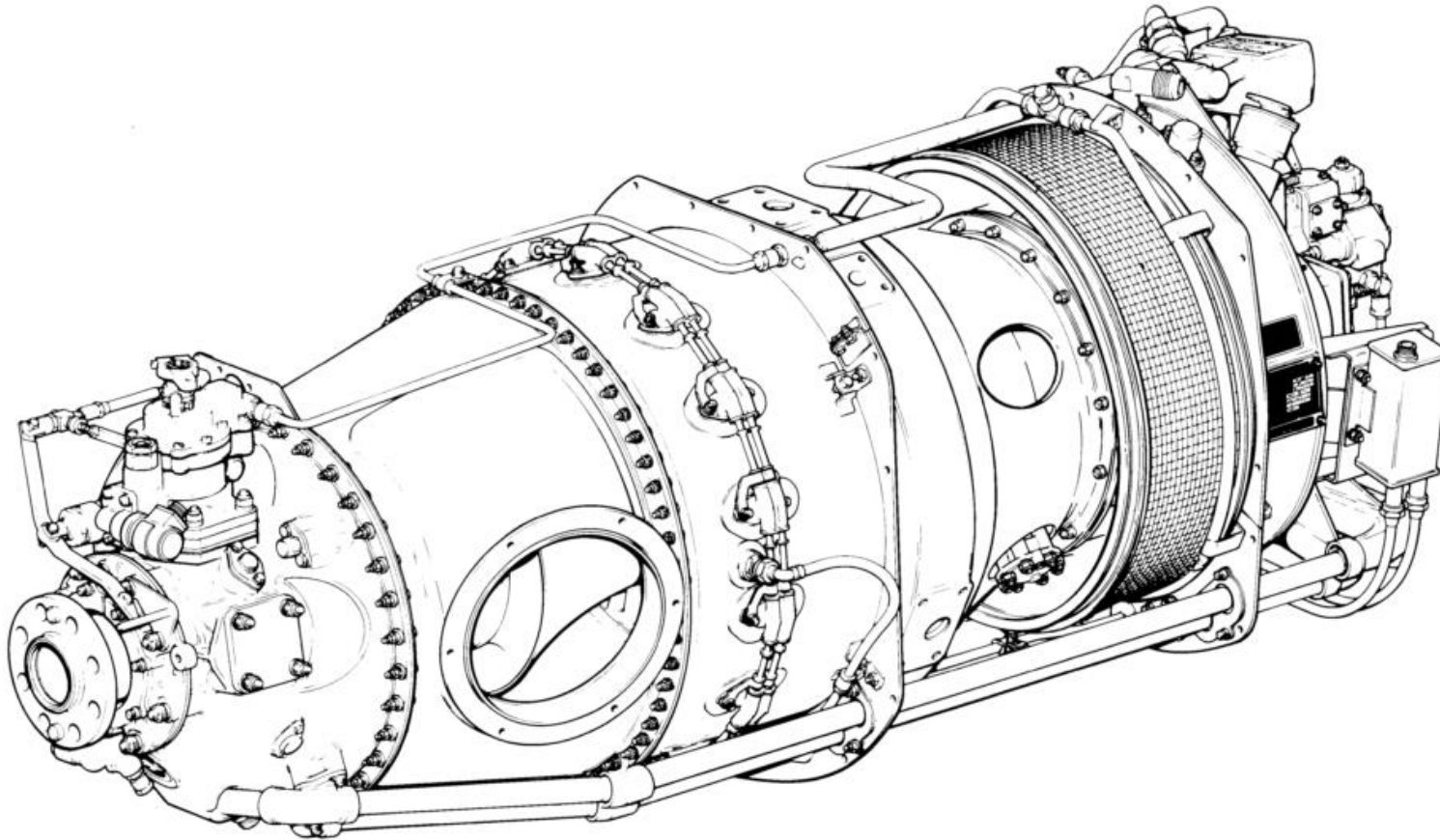
1. Description and Operation

A row of stator vanes, located between each stage of compression, diffuses the air, raises its static pressure and directs it to the next stage of compression. The compressed air passes through diffuser tubes which turn the air through ninety degrees in direction and converts velocity to static pressure. The diffused air then passes through straightening vanes to the annulus surrounding the combustion chamber liner.



72-00-00- ENGINE TURBOPROP
ENGINE, TURBOPROP - DESCRIPTION AND OPERATION

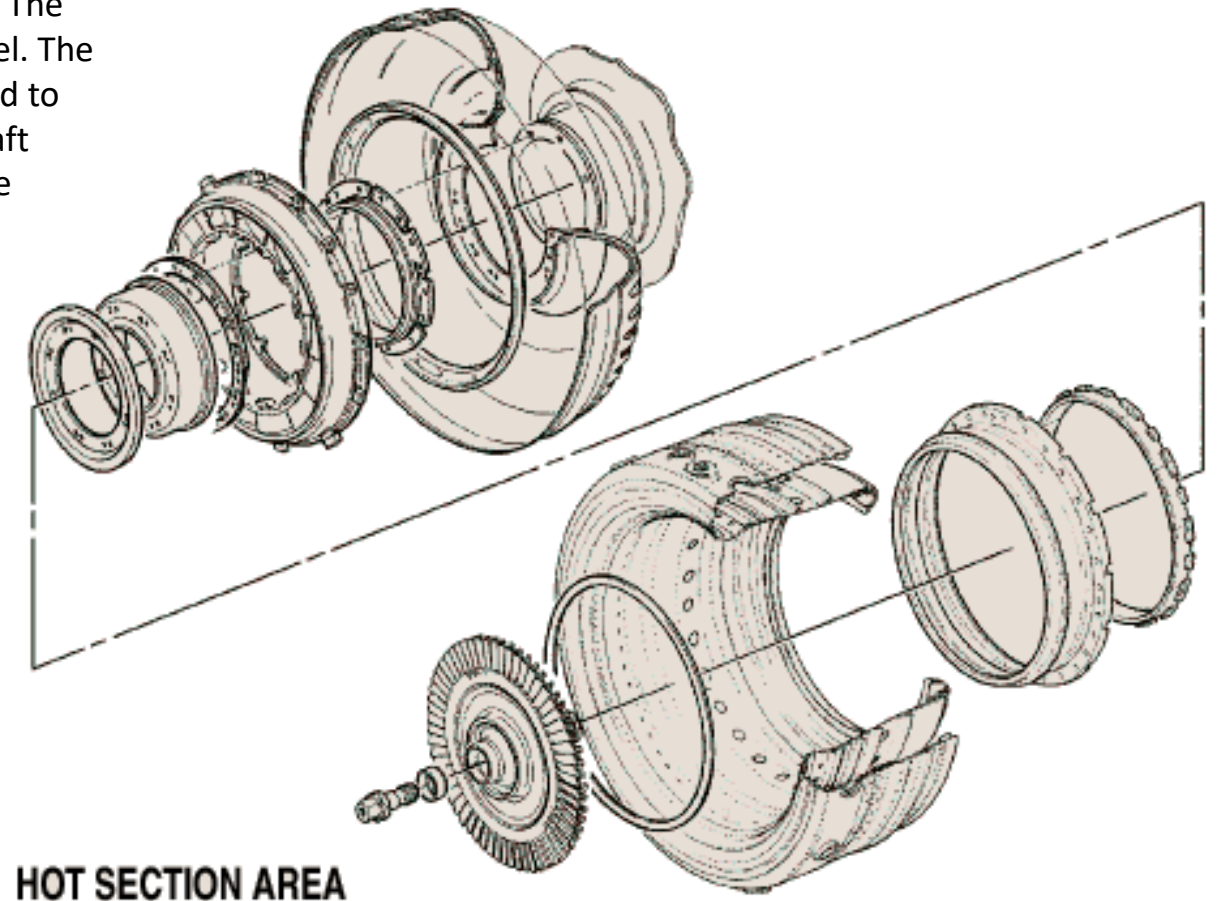
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72-00-00- ENGINE TURBOPROP

ENGINE, TURBOPROP - DESCRIPTION AND OPERATION

The combustion chamber liner consists of an annular weldment having perforations of various sizes that allow entry of compressor delivery air. The flow of air changes direction 180 degrees as it enters and mixes with fuel. The fuel/air mixture is ignited and the resultant expanding gases are directed to the turbines. The location of the liner eliminates the need for a long shaft between the compressor and the compressor turbine, thus reducing the overall length and weight of the engine.



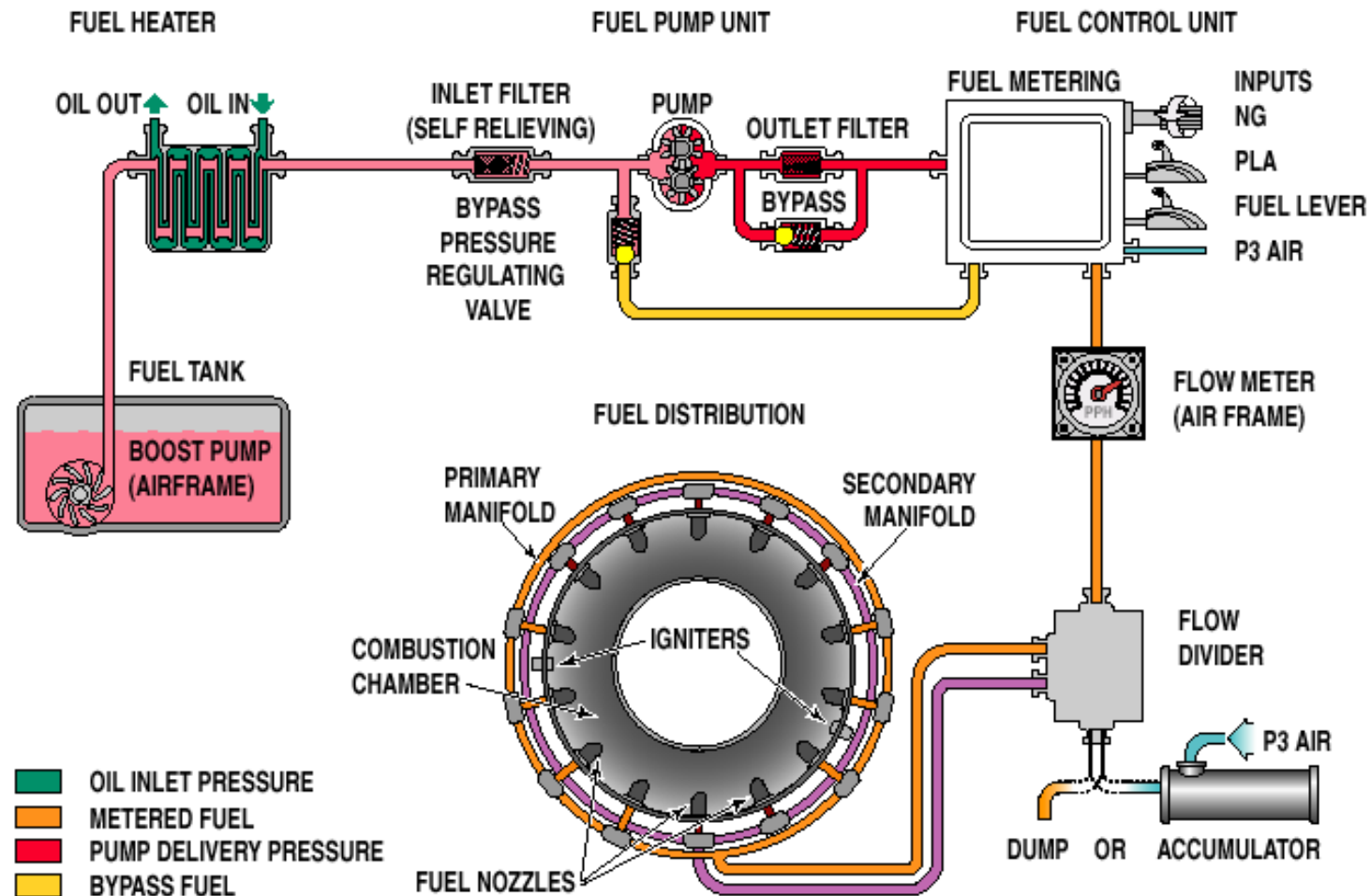
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ENGINE, TURBOPROP - DESCRIPTION AND OPERATION

Fuel is injected into the combustion chamber liner through 14 simplex nozzles arranged in two sets of seven for ease of starting. Fuel is supplied by a dual manifold consisting of primary and secondary transfer tubes and adapters. The fuel/air mixture is ignited by two glow plugs or spark igniters which protrude into the liner. The resultant gases expand from the liner, reverse direction in the exit duct zone and pass through the compressor turbine inlet guide vanes to the compressor turbine. The guide vanes ensure that the expanding gases impinge on the turbine blades at the correct angle, with minimum loss of energy. The still expanding gases are then directed forward to drive the power turbine.

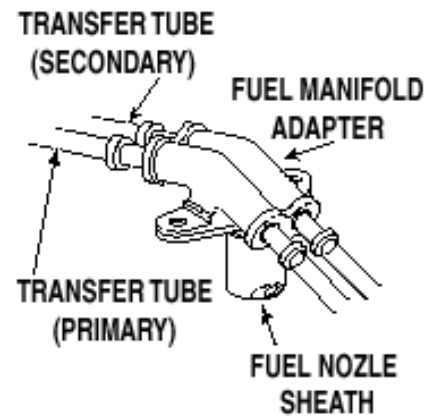
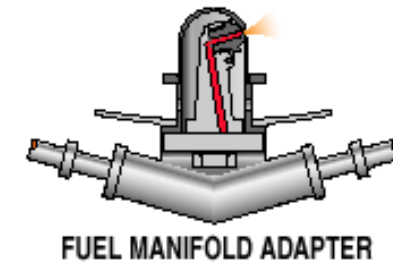
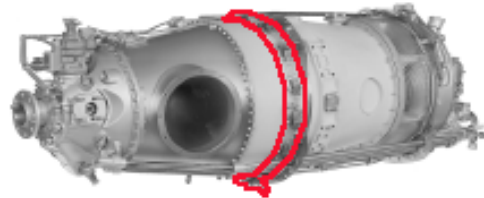
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ENGINE, TURBOPROP - DESCRIPTION AND OPERATION

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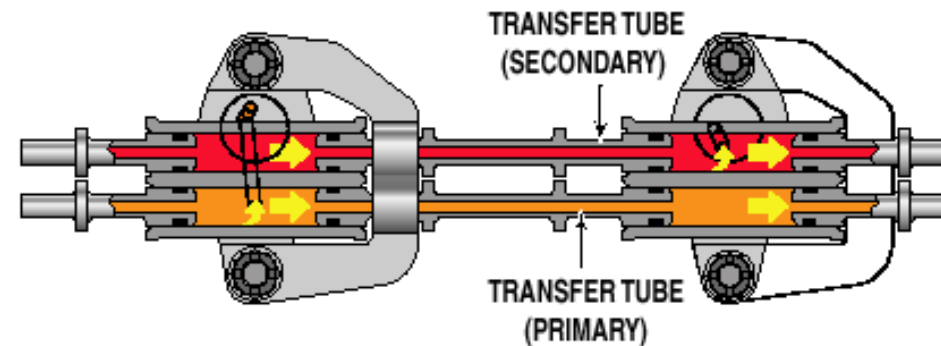


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ENGINE, TURBOPROP - DESCRIPTION AND OPERATION

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PRIMARY FUEL MANIFOLD
SECONDARY FUEL MANIFOLD



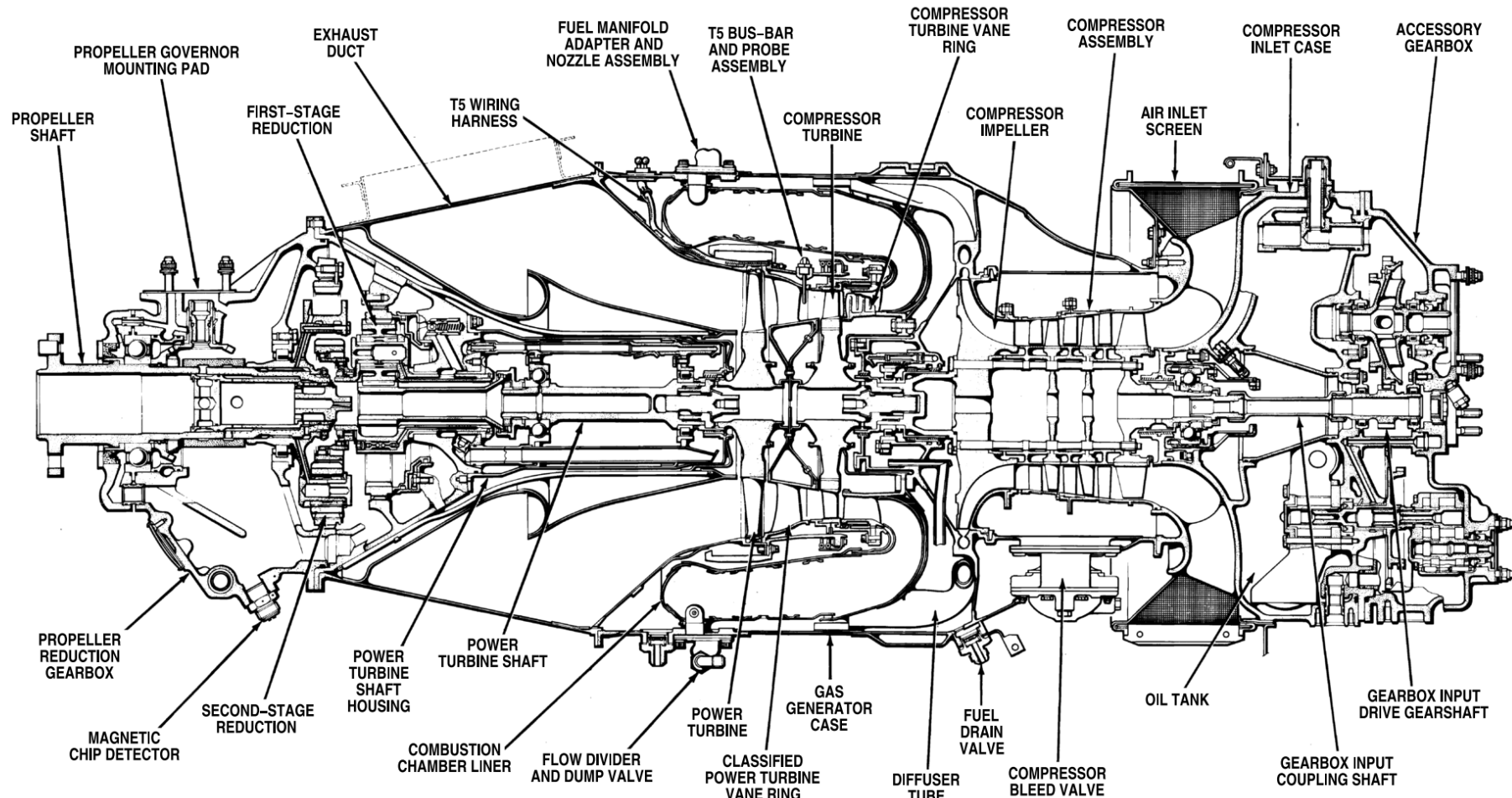
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ENGINE, TURBOPROP - DESCRIPTION AND OPERATION

The compressor and power turbines are located in the approximate center of the engine with their respective shafts extending in opposite directions. This feature provides for simplified installation and inspection procedures. The exhaust gas from the power turbine is directed through an annular exhaust plenum to atmosphere via twin opposed exhaust ports or single port (PT6A-114/114A Engines) provided in the exhaust duct.

72-00-00- ENGINE TURBOPROP
ENGINE, TURBOPROP - DESCRIPTION AND OPERATION

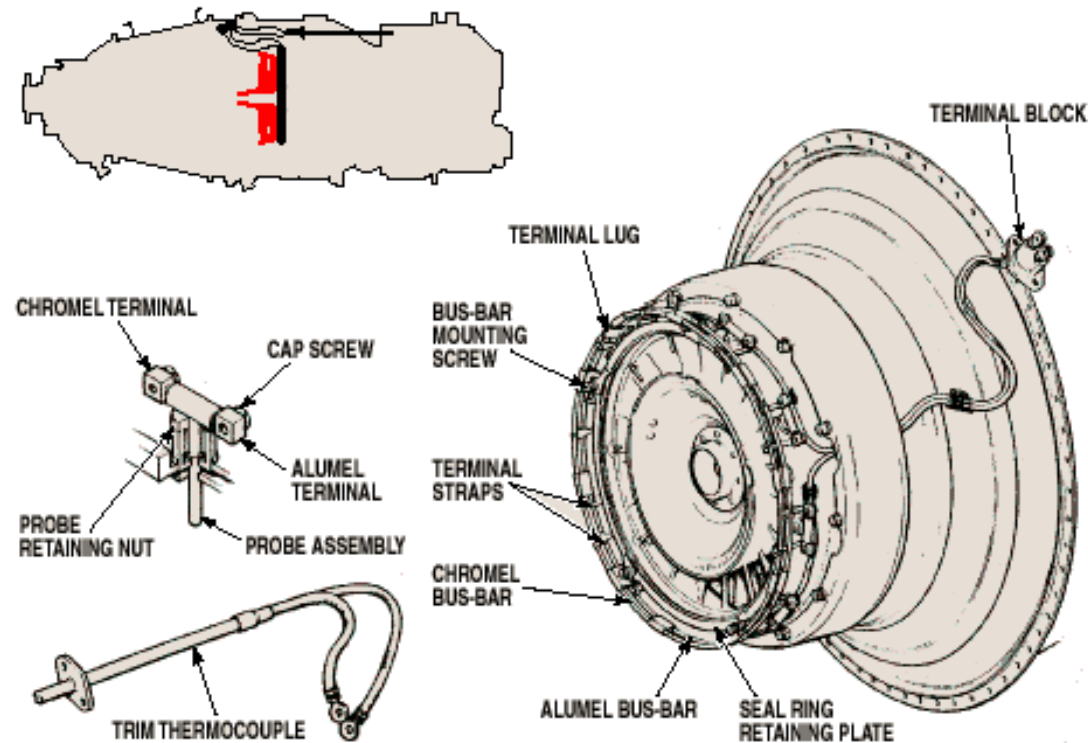
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72-00-00- ENGINE TURBOPROP

ENGINE, TURBOPROP - DESCRIPTION AND OPERATION

Interturbine temperature (T5) is monitored by a cold junction thermocouple system comprising a bus-bar, probes and harness assembly installed between the compressor and power turbines with the probes projecting into the gas path. A terminal block mounted in the gas generator case provides a connection point to cockpit instrumentation and to a T5 trim thermocouple mounted externally in the air inlet zone.



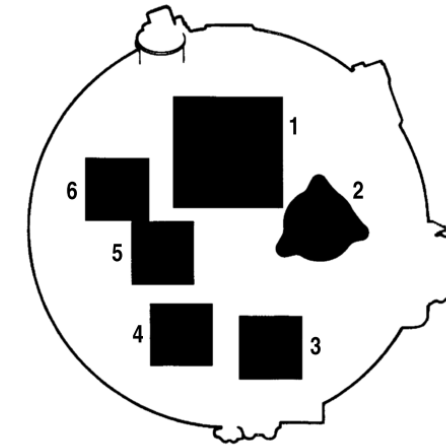
T5 INTERTURBINE TEMPERATURE THERMOCOUPLE ASSEMBLY

72-00-00- ENGINE TURBOPROP

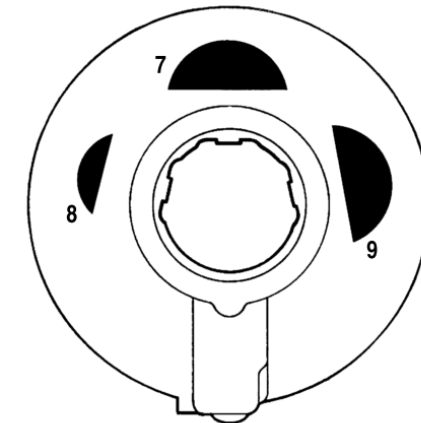
ENGINE, TURBOPROP - DESCRIPTION AND OPERATION

All engine-driven accessories, with the exception of the propeller governor, Nf overspeed governor and Nf tachometer-generator are mounted on the accessory gearbox at the rear of the engine. These components are driven by the compressor by means of a coupling shaft which extends the drive through a conical tube in the center section of the oil tank. The rear location of accessories provides for a clean engine and simplifies maintenance procedures.

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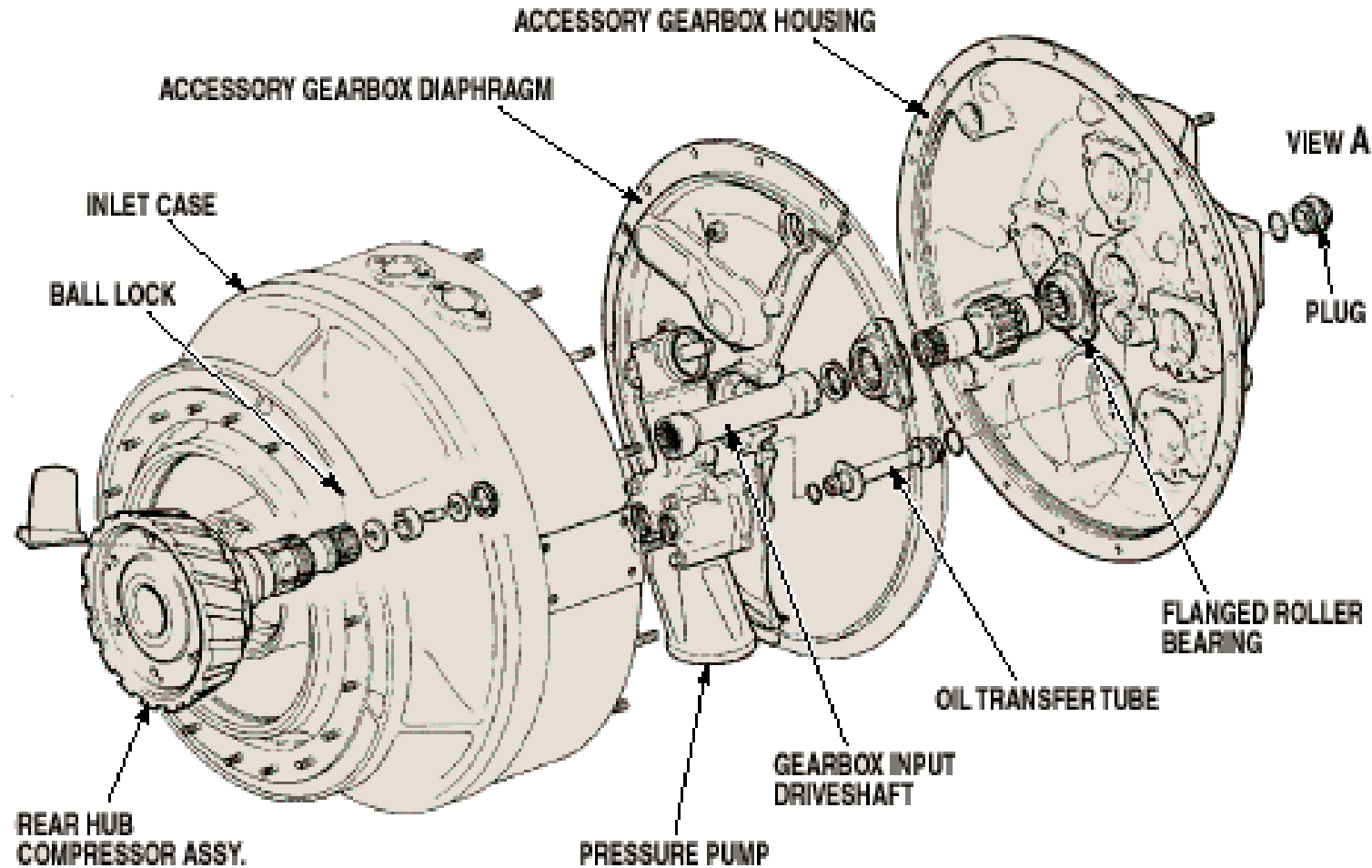
AS VIEWED FROM REAR



AS VIEWED FROM FRONT

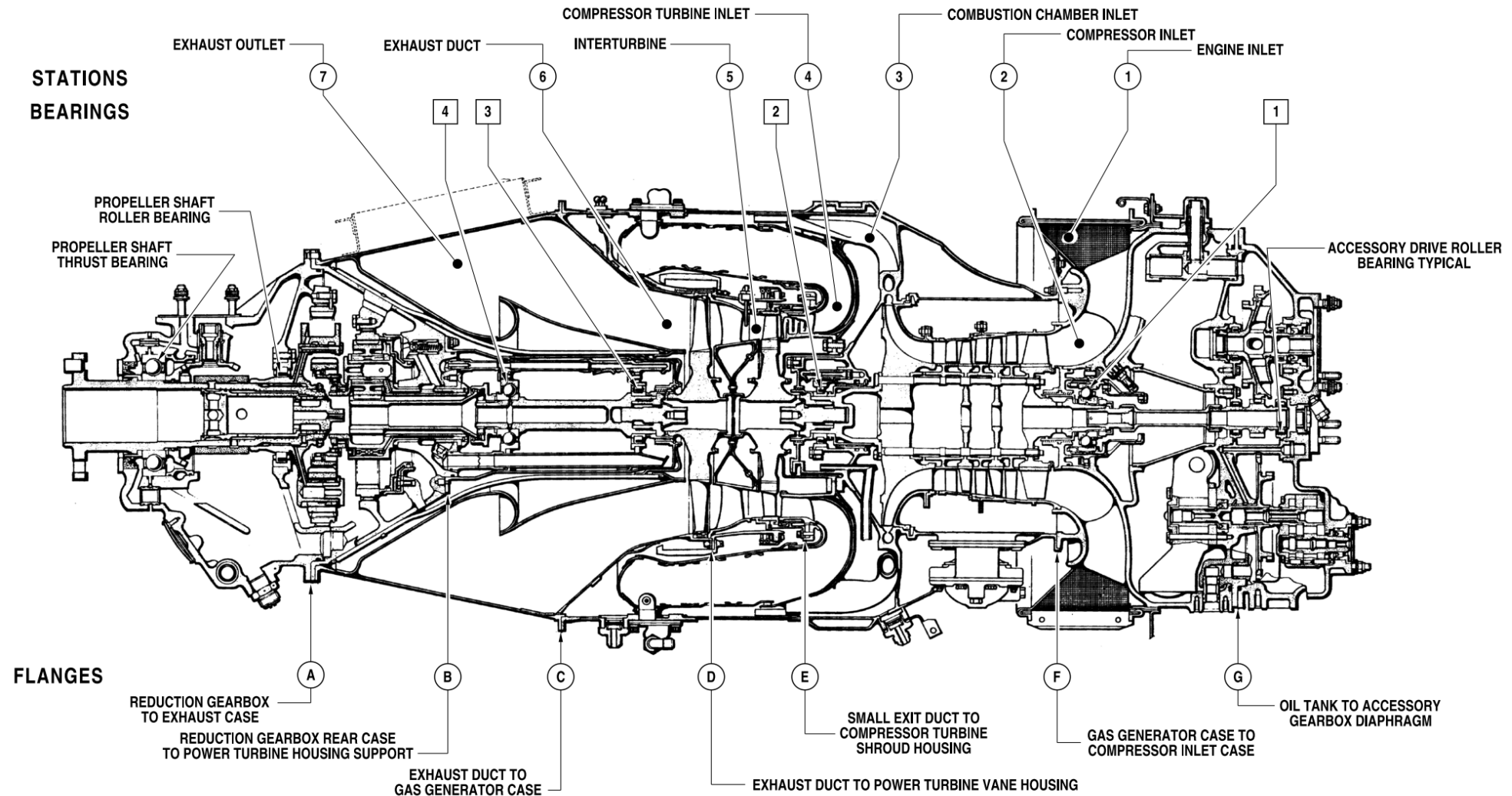
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ENGINE, TURBOPROP - DESCRIPTION AND OPERATION

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ENGINE, TURBOPROP - DESCRIPTION AND OPERATION

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BIBLIOGRAPHY

- PRATT WHITNEY. **Maintenance Manual:** PT6A-114/-114A/-116/-135/-135A. PN3043512.

Rev. 22, 03 de abril de 2009

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