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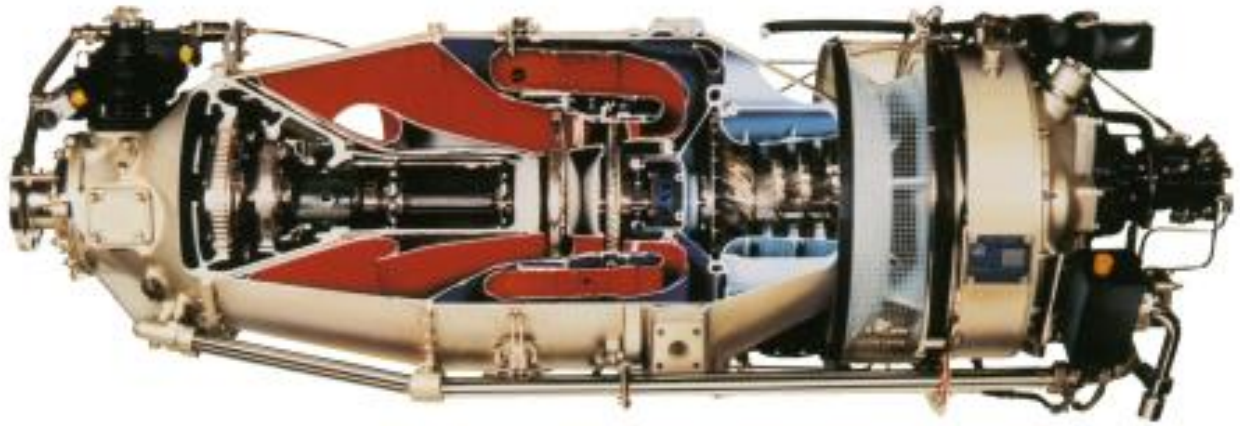
Training Center

PT6A Séries -Training Manual

72-30-00- GAS GENERATOR ASSEMBLY



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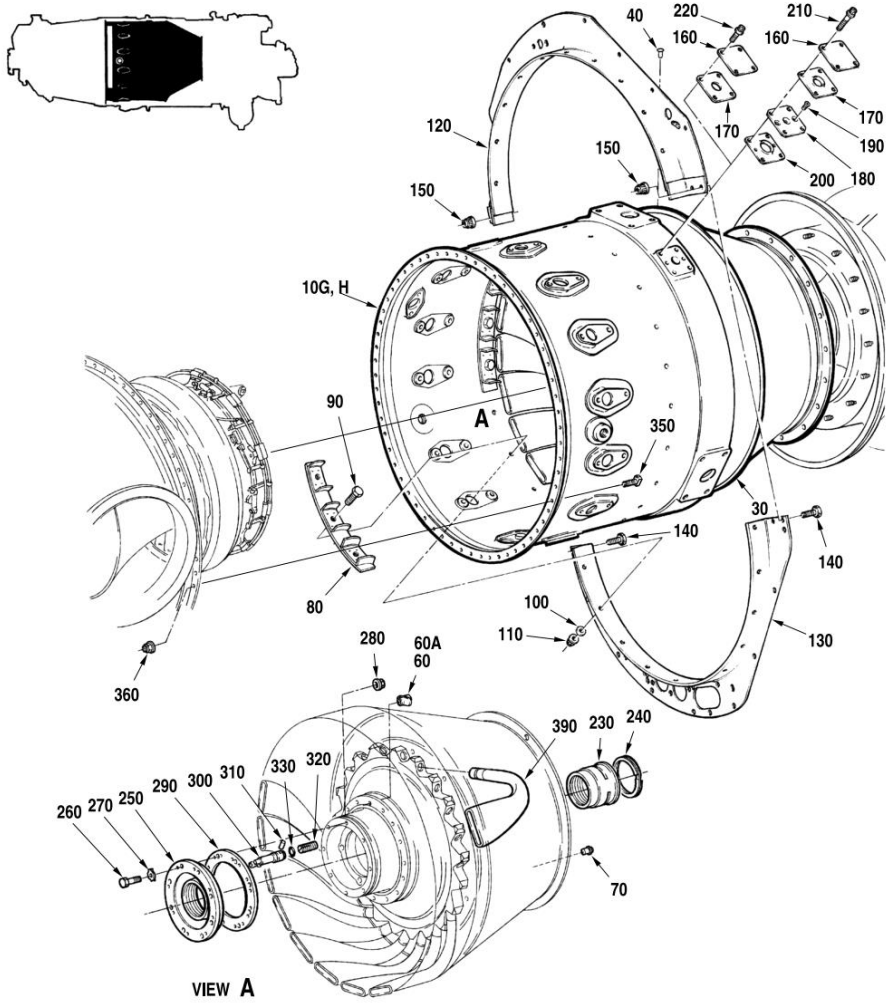
72-30-00- GAS GENERATOR ASSEMBLY
GAS GENERATOR ASSEMBLY - DESCRIPTION AND OPERATION

1. Description and Operation

The gas generator assembly consists of coupled turbine and compressor rotor assemblies mounted within two concentric cylindrical casings, that also contain a vane ring/shroud assembly, exit ducting, combustion chamber and plenum chamber. The gas generator assembly forms the main body of the engine, providing the external attachment points for installation in the airframe and assembly stand. A flange at the front end of the gas generator casing forms the attachment point for the power section and studs at the rear of the inlet case carry the accessory gearbox. On gas generator assemblies Post-SB1445 the center fireseal mount ring is bolted to the case and becomes an integral part.



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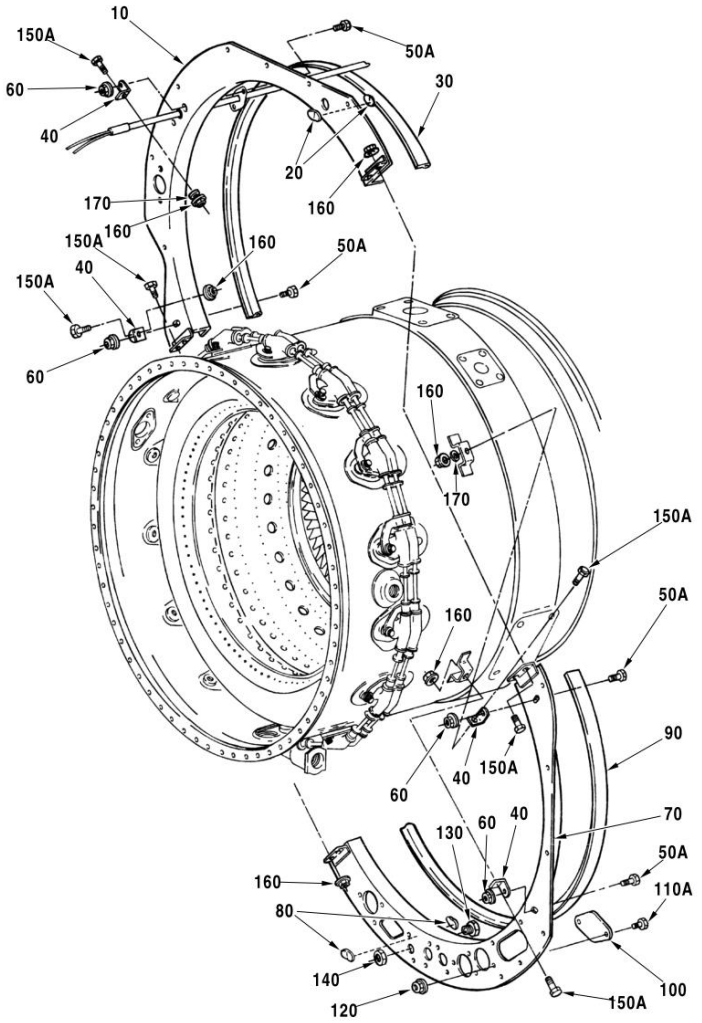
A combined single-stage turbine and multi-stage compressor rotor assembly is supported on two anti-friction bearings; a roller bearing (No. 2) is housed in the gas generator case, and a ball thrust bearing (No. 1) is contained in a flexible housing assembly attached to the air inlet case.



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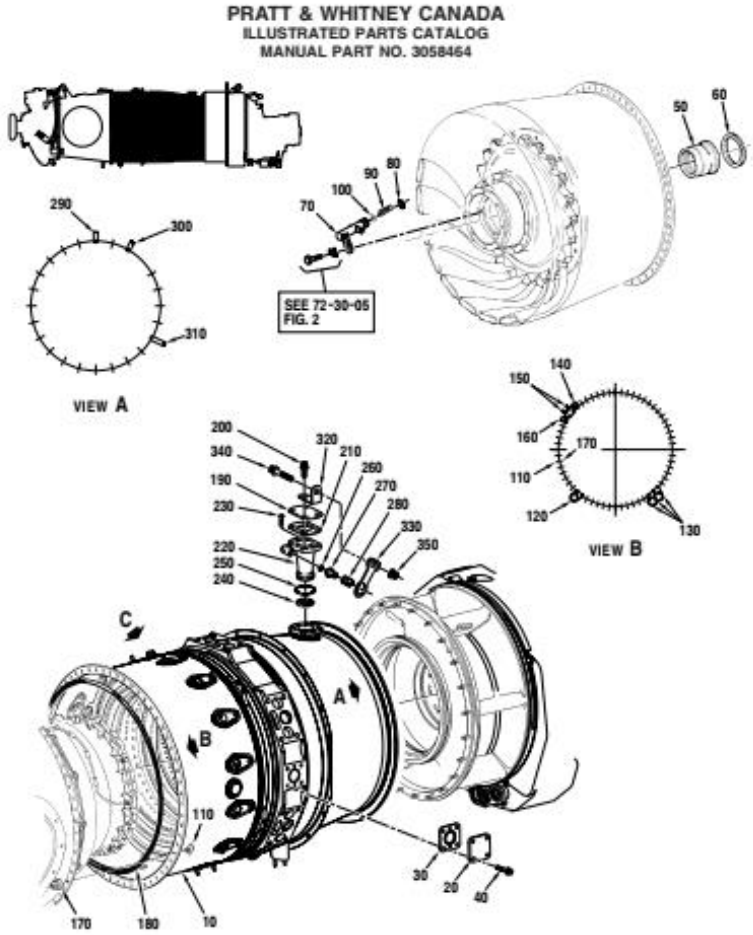
The external face at the forward end of the impeller housing is located in the inner casing of the gas generator case and is secured by a retaining ring. At the rear end of the compressor, a lip on the first-stage stator housing engages in an annular recess in the air inlet case.



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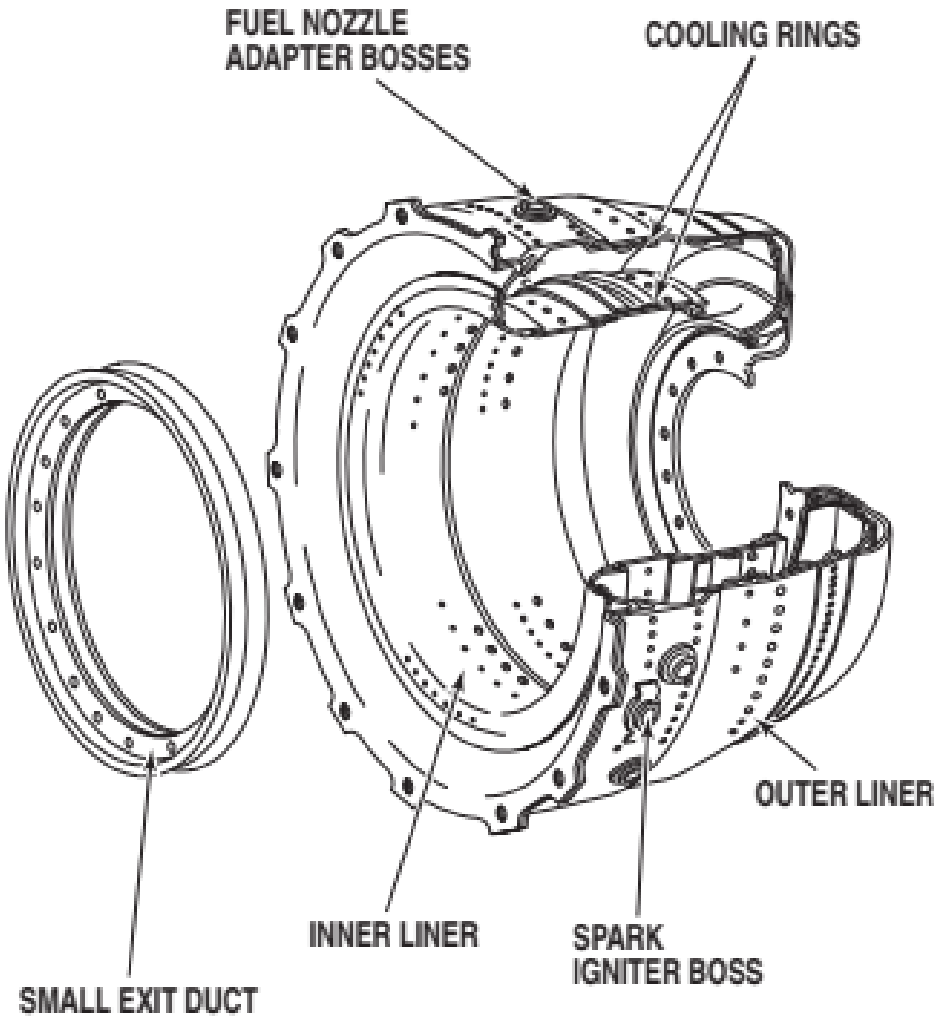
The combustion chamber assembly consists of an annular combustion chamber liner, and inner and outer exit ducts that are attached to the vane ring and gas generator case with bolts. The whole assembly encloses the compressor turbine, with the inner and outer exit ducts directing gas flow onto compressor turbine vane ring and turbine. Protuding into and supporting the domed end of the combustion chamber liner are two igniters and 14 fuel manifold nozzle adapter assemblies. A wire mesh screen around the annular plenum chamber of the air inlet case prevents entry of foreign objects and debris into the inlet zone of the engine.



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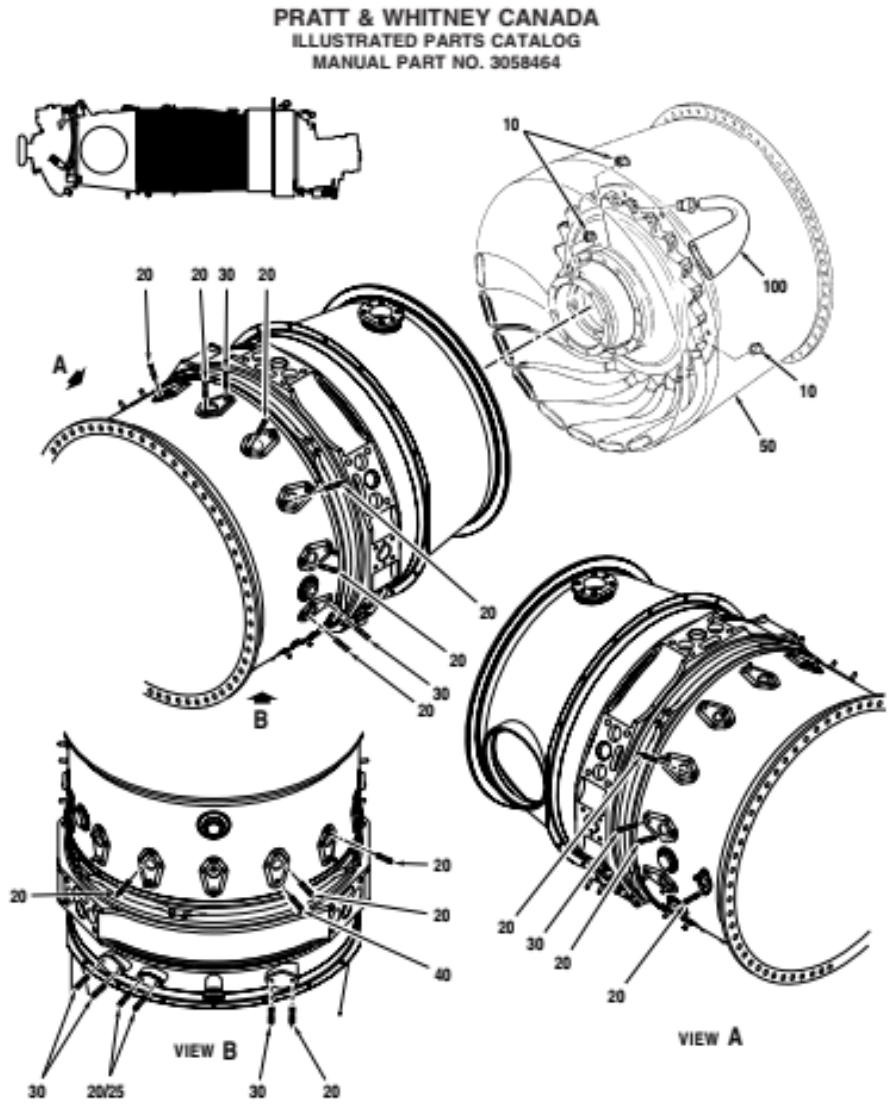
A ported mounting face at the 7 o'clock position of the gas generator case carries the compressor bleed valve assembly.

The fuel manifold assembly, which consists of 14 fuel nozzle adapters interconnected by paired transfer tubes, is attached around the exterior of the gas generator case in the combustion zone. A flow divider and dump valve installed on some engine models (Ref. IPC), attached to the base of the fuel manifold assembly, performs the dual function of dividing fuel flow between Nos. 1 and 2 manifolds during engine start and operation, and also dumps residual fuel remaining in the manifolds at engine shutdown. Interconnecting tubes from the starting flow control of other models direct fuel to Nos. 1 and 2 manifolds during engine start and operation. At engine shutdown, fuel is dumped from manifold via the starting flow control. Two spring-loaded drain valves, installed in the base of the gas generator case, allow residual fuel to drain after engine shutdown. P3 pressure acting against the spring-loaded valves keeps the valves closed when the engine is operating.



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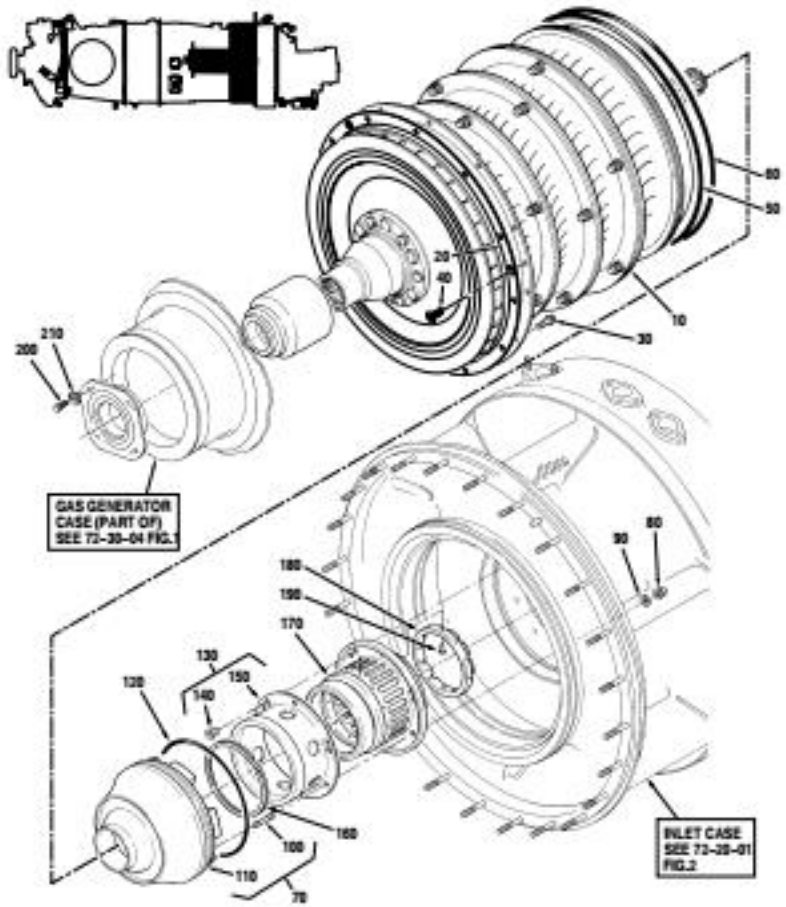

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Compressor Rotor Installation
Figure 1

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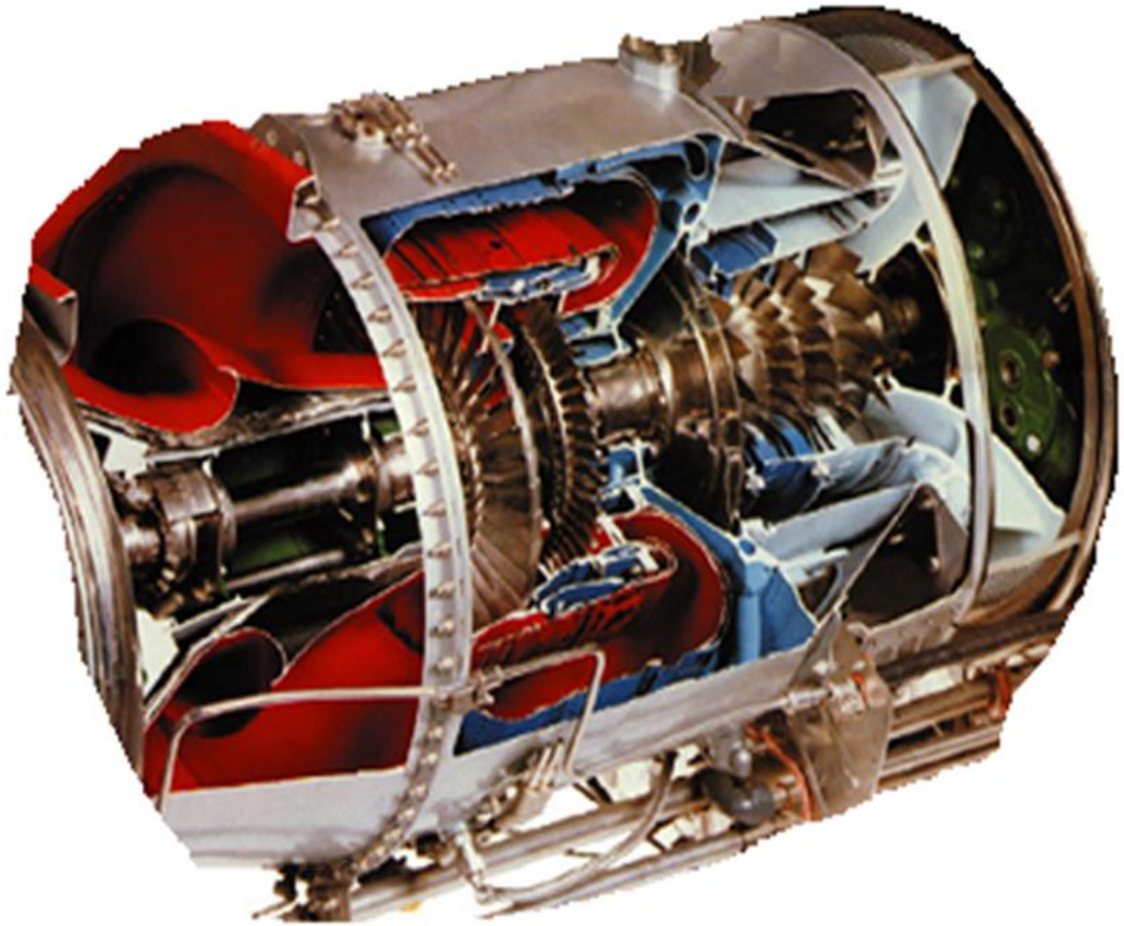

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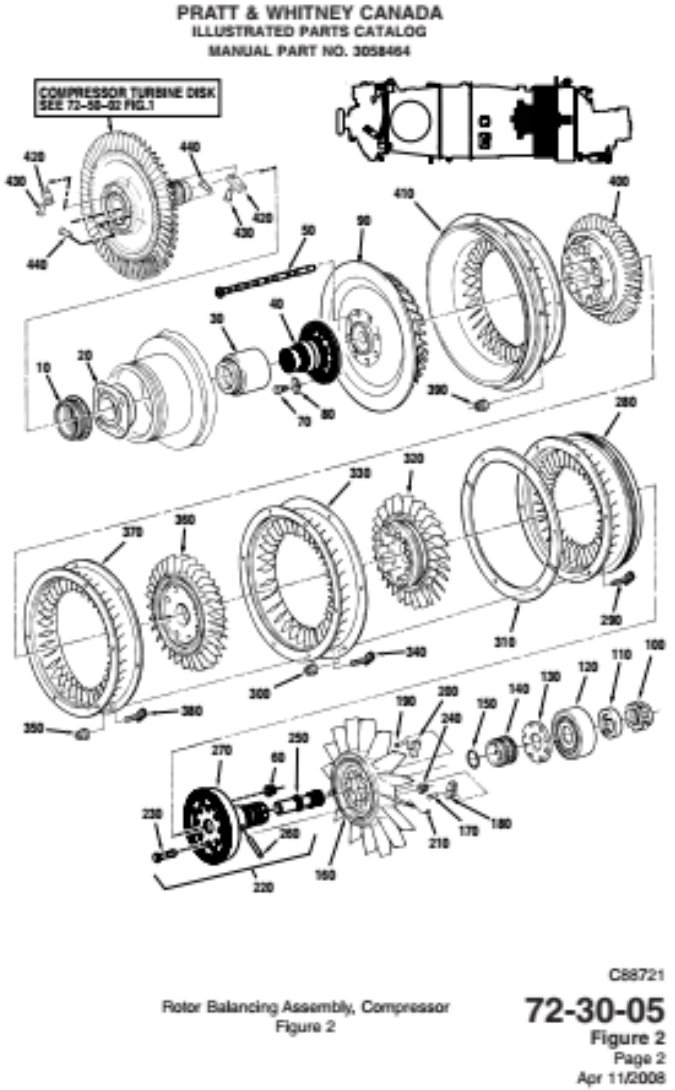

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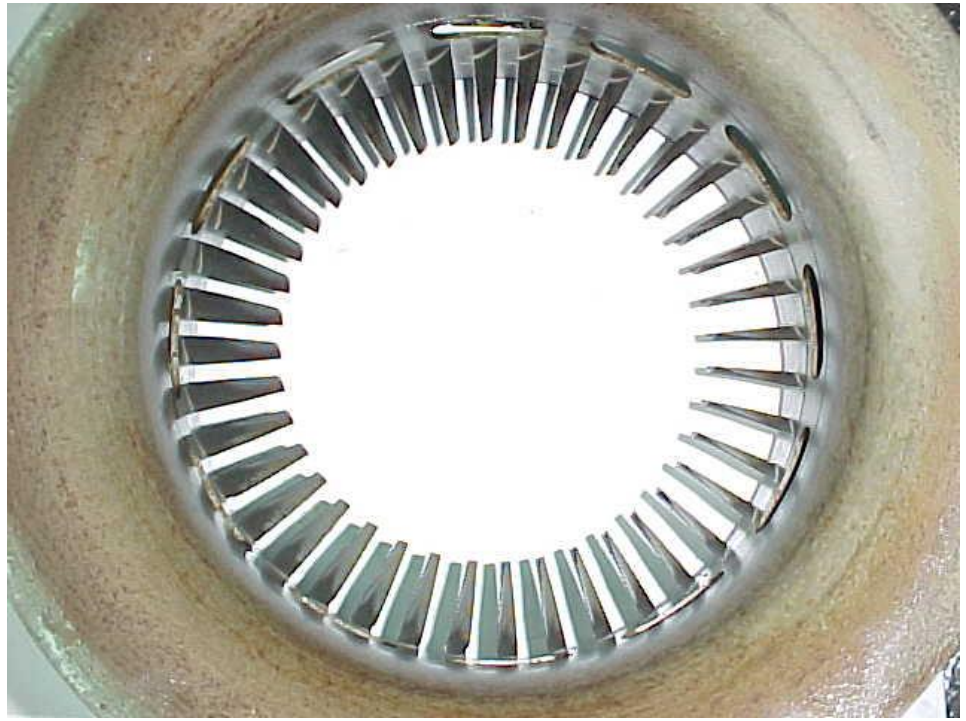

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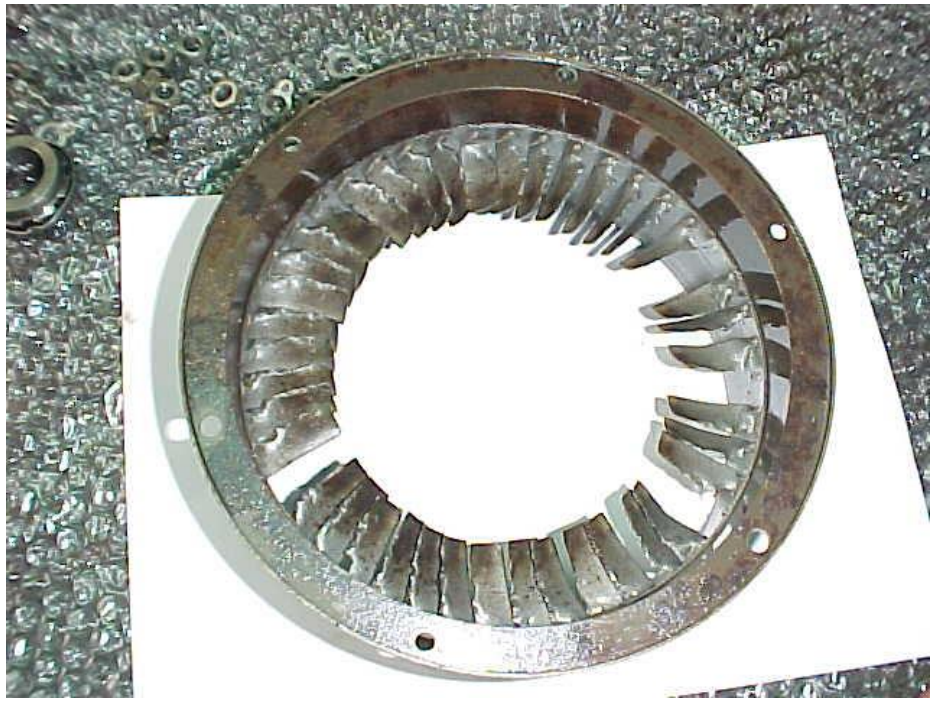

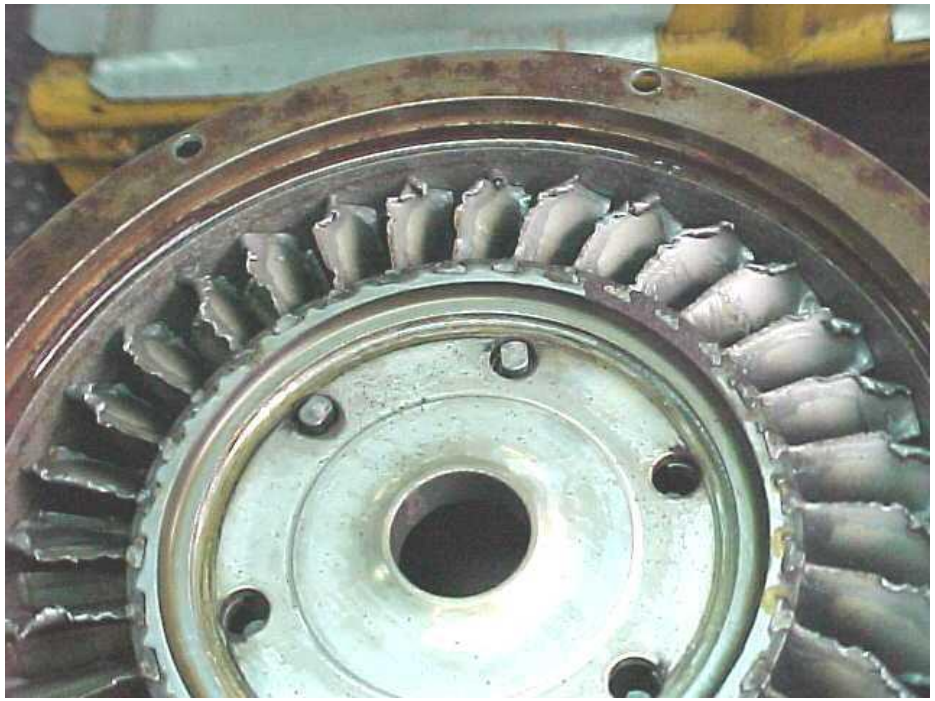

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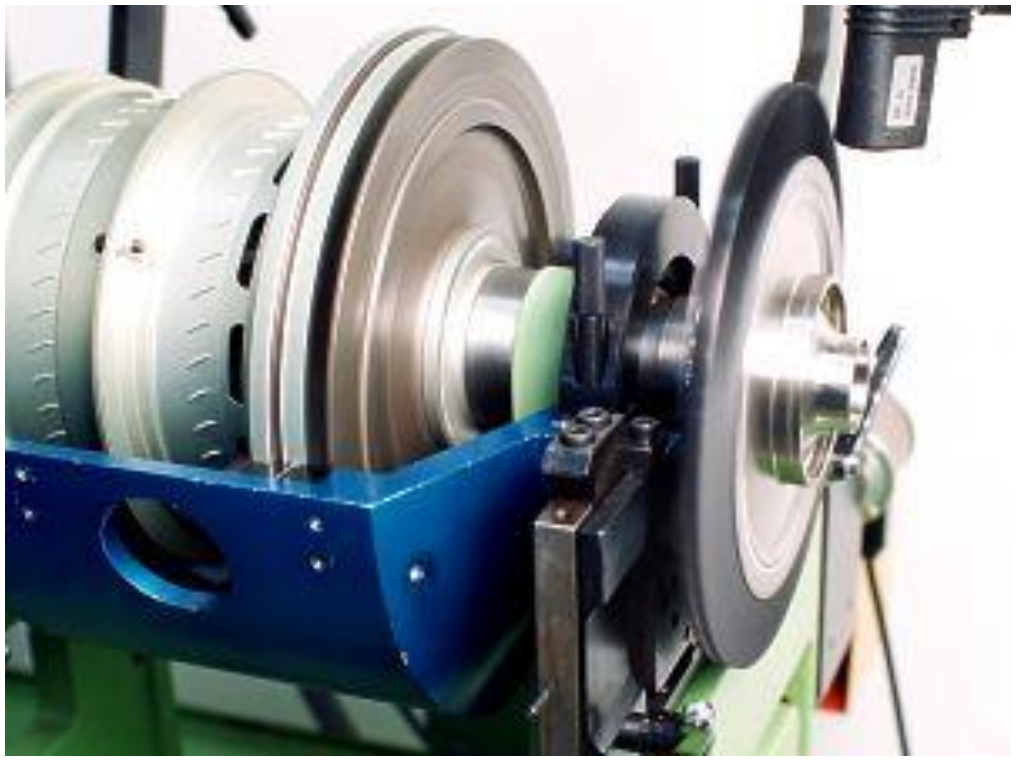

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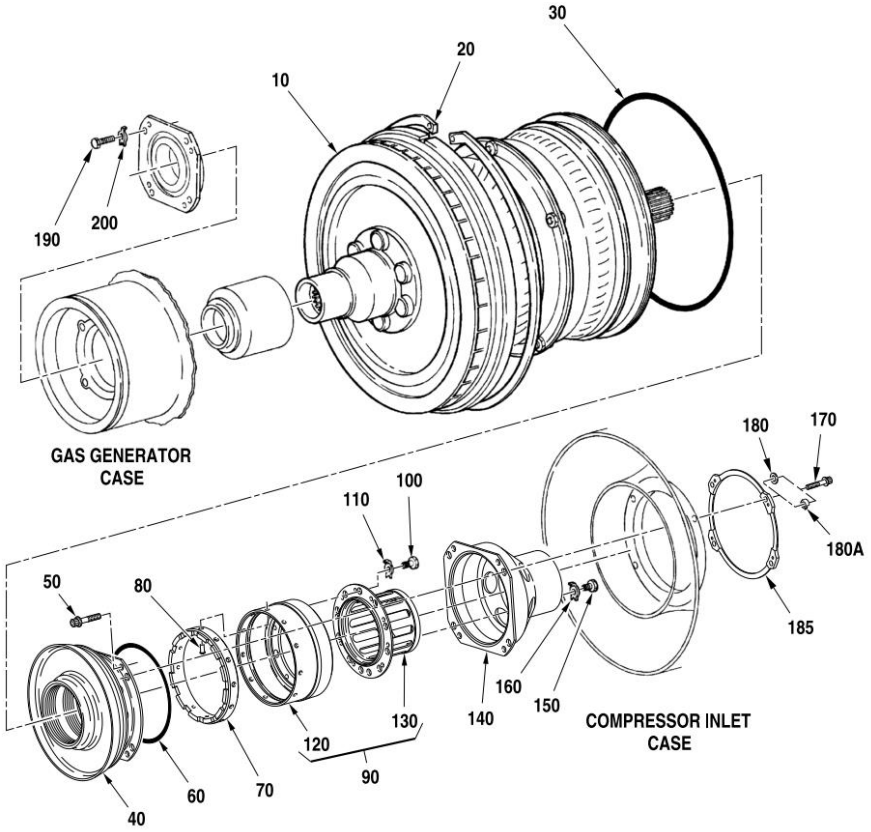

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