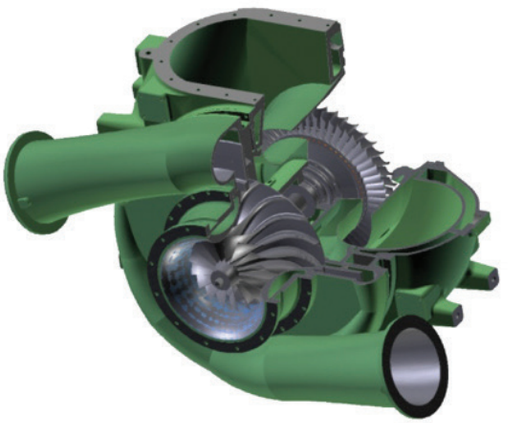
COOPER | MACHINERY SERVICES

ET24 UPGRADES

COOPER ET24 TURBOCHARGERS

The Cooper ET24 Turbocharger was originally designed for installation on large frame, high BHP, 2- and 4-cycle Cooper-Bessemer™ engines and integral compressors. These original ET24 configurations can be upgraded with new compressor stage components to improve reliability and efficiency.

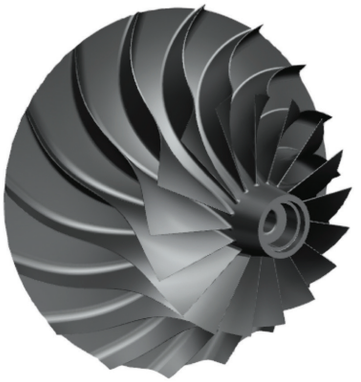


The ET24 turbocharger can be equipped with an air seal system to ensure adequate pressure is supplied to the labyrinth seals to eliminate the possibility of leakage. The system provides pressurized air from an external source at start-up and light load operation and then switches to the turbocharger to provide pressure at higher engine loads.

Equipping the ET24 turbocharger with thermocouple-equipped pad bearing provides an easy method of monitoring bearing health. The thermocouple allows for up-to-date and ongoing measurement of pad bearing temperatures that allow an accurate synopsis of the condition of the bearing based on trending data. This is superior to previous melt out eutectic devices that only alerted after bearing failure.

ET24 COMPRESSOR STAGE UPGRADES

Benefits



- Improved compressor efficiency, leading to increase in exhaust waste gate margin and increased run-time-between-overhaul
- Increased range to surge
- Can be done in conjunction with or separately of a turbine stage upgrade. For full optimization of the Cooper ET24 overall turbocharger efficiency, both compressor and turbine upgrades are available.
- Improved compressor efficiency can be utilized to reduce emissions or improve engine detonation margin

Upgrade summary

- New 5-axis milled forging impeller for increased strength and efficiency.
- New diffuser design for increased efficiency.
- New jet assist air start geometry to reduce stresses on the impeller, therefore improving life.
- Magnetic pick-up for the tachometer moved into the bearing case behind the impeller to remove the obstruction in front of the impeller, which decreased compressor efficiency.
- Thrust bearing wear detection changed from eutectic device to a proximity probe in the bearing case and/or a thermocouple embedded in the thrust bearing.

Interchangeability

- Upon completing the compressor stage upgrade the turbocharger is completely interchangeable with the existing turbocharger.

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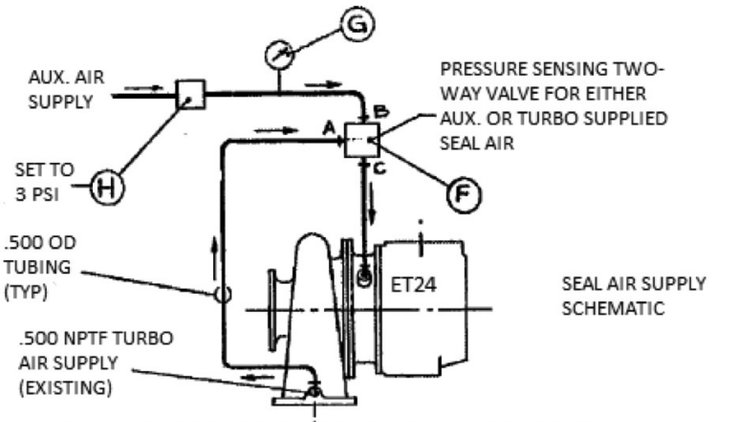
ET24 EXTERNAL/AUXILIARY SEAL AIR SYSTEM

Benefits

- Reduced fouling of the turbocharger, allowing optimal performance for extended periods.
- Can be installed in existing casings.
- Automatic pressure source switch. No need for external controls; a shuttle valve switches the pressure source when the turbocharger builds enough pressure to supply the sealing air.



SEAL AIR FOR TURBINE END LABYRINTH SEAL WILL BE SUPPLIED FROM AN EXTERNAL SOURCE DURING ENG. START-UP & UNDER LIGHT LOADS. AT HIGHER ENG. LOADS, THE TURBOCHARGER WILL SUPPLY THE SEAL AIR.

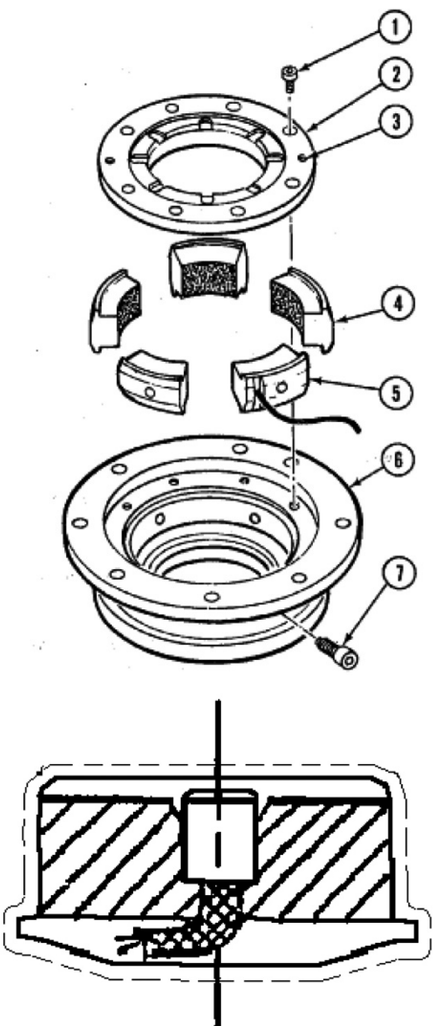
ET24 THERMOCOUPLE-EQUIPPED PAD BEARING FOR EQUIPMENT PROTECTION

Benefits

- Provides early warning detection of impending bearing failure
- Reduces overhaul costs by reducing probability of impeller impingement to the shroud.
- Easy to install with the same base pad bearing with the thermocouple wire exiting through the turbocharger oil drain.

Features

- Stainless steel braided cover
- Iron constantan type thermocouple



Bearing pad sectional view

LEGENDS DON'T STOP. WE MAKE SURE OF IT.™

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