

energy from the compact exhaust manifolds. The compact design of the system allows the catalysts to be located very close to the turbocharger outlet for improved emissions.

DESCRIPTION AND OPERATION > TURBOCHARGER - SYSTEM OPERATION AND COMPONENT DESCRIPTION > SYSTEM OPERATION

For System Operation, Refer to ENGINE CONTROLS - DESCRIPTION & OPERATION (EXCEPT DIESEL & HYBRID) .

DESCRIPTION AND OPERATION > TURBOCHARGER - SYSTEM OPERATION AND COMPONENT DESCRIPTION > COMPONENT DESCRIPTION

For Component Description, Refer to ENGINE CONTROLS - DESCRIPTION & OPERATION (EXCEPT DIESEL & HYBRID) .

DIAGNOSIS AND TESTING > TURBOCHARGER

GENERAL EQUIPMENT

Ford diagnostic equipment

DIAGNOSIS AND TESTING > TURBOCHARGER > PRINCIPLES OF OPERATION

Diagnostics in this service information assume a certain skill level and knowledge of Ford-specific diagnostic practices. For information about these, REFER to: Diagnostic Methods .

The turbocharger is an exhaust-driven centrifugal air compressor. Its purpose is to increase power output by supplying compressed air to the engine.

Expanding exhaust gases drive the turbine shaft assembly to speeds up to 200,000 rpm. Filtered air entering the compressor side of the turbocharger is compressed and delivered through a CAC. The very hot compressed air is cooled by the CAC, then continues on to fill the intake manifold at a higher pressure than atmospheric pressure. Because considerably more air is forced into the intake manifold, the results are increased power, fuel efficiency and the ability to maintain power at higher altitudes.

The turbocharger is governed by a wastegate actuator. The wastegate actuator redirects some of the exhaust gas past the turbine and therefore acts as a governor. The wastegate actuator is preset during manufacture and must not be tampered with. The wastegate actuator is controlled by the turbocharger wastegate regulating valve solenoid.

The intake air system is fitted with a turbocharger bypass valve. This vents the intake air system when the throttle is closed and recirculates the air back into the intake air system. It also releases pressure on the turbocharger which will reduce turbo lag and improve acceleration and increase engine performance.

The internal components are oil, coolant and air cooled. Engine oil and coolant are circulated through the