1982 Turbocharging Systems

RENAULT FUEGO

Fuego

DESCRIPTION

The turbocharging system used on Renault Fuego consists of an air filter, airflow meter, turbocharger, air intake manifold chamber, air-to-air intercooler, ductwork, motor fan, and intercooler-to-throttle plate hose. There is a pressure gauge placed on the instrument panel. The turbocharger is fitted with a calibrated pressure check valve (wastegate) set at 13 psi.

The air-to-air intercooler is cooled by a fan. A saftey valve calibrated at 4.4 psi controls the intercooler and is actuated by pressure from the aluminum ductwork. Pressure is delayed at the time of pressure increase and decrease by a pair of delay valves connected in series with the vacuum reservoir.

OPERATION

Air enters the air filter and proceeds through an air-flow meter. It is then compressed by an impeller and cooled by the heat exchanger before reaching the throttle body. Fuel is injected in each manifold runner and enters the air stream, just ahead of the intake valves.

The fuel-air mixture enters the cylinders through intake valves. Combustion gasses leave through exhaust valves and travel through exhaust manifold to turn the impellers of the turbocharger.

The wastegate diverts the exhaust gas from the turbine directly to the exhaust system when a maximim boost of 13 psi is reached. A knock sensor retards the ignition timing when the engine encounters spark knock.

TROUBLE SHOOTING

TURBO NOISE OR VIBRATION

Leaks in intake or exhaust system. Poor lubrication of turbocharger shaft. Turbocharger shaft out of balance, fins broken, penetration of foreign particles.

LACK OF ENGINE POWER

Clogged air filter. Leaks between turbocharger and cylinder head or between cylinder head and turbine. Exhaust system clogged. Pressure regulator not properly adjusted.

TURBOCHARGING PRESSURE TOO HIGH

Pressure regulator feed line disconnected. Pressure regulator diaphragm ruptured. Pressure regulator valve siezed in closed position. Pressure regulator valve not properly adjusted.

BLUE SMOKE IN EXHAUST

Poor oil return flow from turbocharger. Turbocharger oil seals damaged.

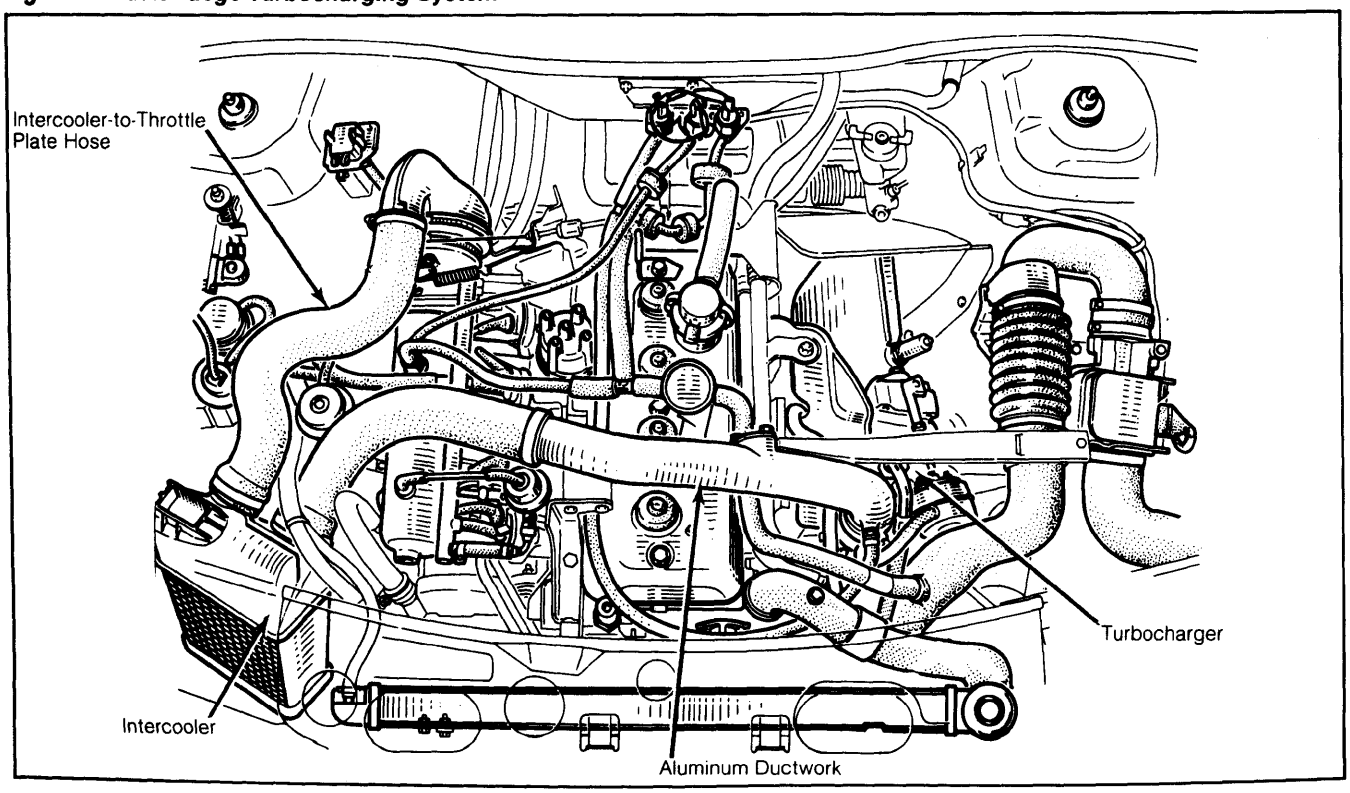
TESTING

ENRICHMENT VALVE

1) With engine stopped and throttle valve resting against idle stop, connect ohmmeter between terminals 9 and 10 of enrichment valve. Apply 4.4 psi air pressure to the enrichment valve.

2) If there is infinite resistance, replace safety valve. If resistance is zero, check electrical circuit. If okay, replace enrichment valve.

Fig. 1: Renault Fuego Turbocharging System

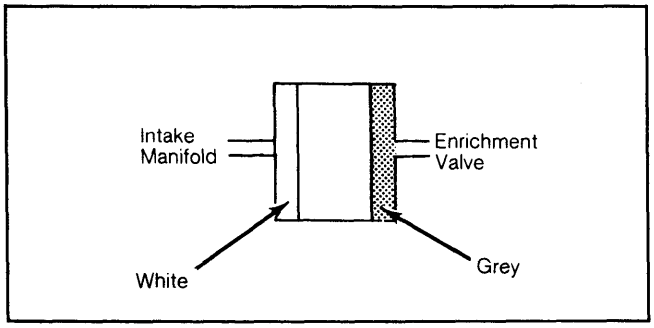


RENAULT FUEGO (Cont.)

DELAY VALVE

Visually inspect delay valve. It should be installed as shown in *Fig. 2.*

Fig. 2: Delay Valve Installation



ENGINE SAFTEY FEATURE

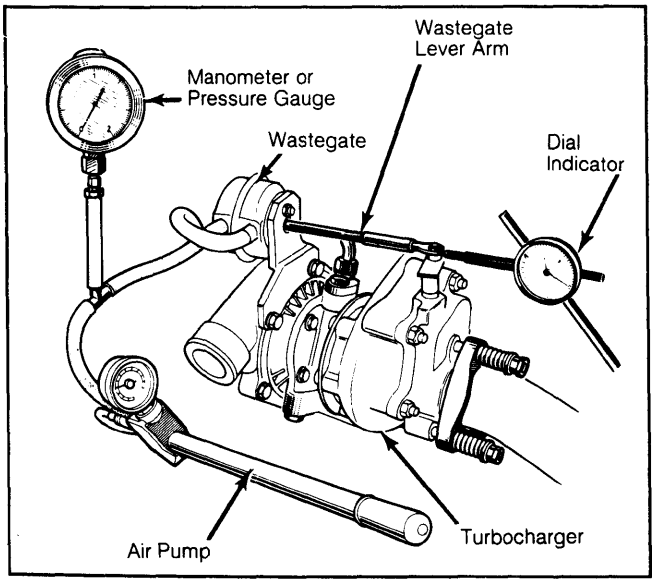
1) Visually inspect enrichment valve calibration on aluminum ductwork at turbo outlet. Calibration should be .012" (.30 mm) diameter. Apply 19 psi to enrichment valve. Accelerate engine.

2) Idle speed should drop to 2500 RPM or less. If this is not the case, apply 19 psi to enrichment valve and check resistance between enrichment valve terminals. If resistance is zero, replace enrichment valve. If resistance is infinite, check the electrical circuit for opens.

PRESSURE CHECK

1) Install a magnetically supported dial indicator on the upper portion of wastegate lever arm. Connect air pump (MS 554-03) at the pressure regulator inlet and insert a manometer (0-29 psi) or special pressure gauge (Mot. 867).

Fig. 3: Installation for Pressure Check



Dial indicator should read .015" (.38 mm) at 12.7 psi.

2) At standing position, set dial indicator at zero. Using air pump, force air into the pressure regulator until dial indicator reaches .015" (.38 mm). Manometer reading should then be 12.7 psi.

REMOVAL & INSTALLATION

TURBOCHARGER

Removal

1) Remove hose, aluminum ducts and heat shields from turbocharger. Free heating ducts and vacuum hose. Disconnect turbocharger from catalytic converter after removal of oxygen sensor.

2) Disconnect upper retainers from heat shield. Disconnect turbocharger oil inlet and outlet lines. Disconnect EGR hose and loosen retainers at front of the engine.

3) Disconnect turbocharger at the lower support bracket. Remove turbocharger and exhaust manifold as an assembly. Separate exhaust manifold from turbocharger.

NOTE: Never handle or grab turbocharger at wastegate linkage. This could damage capsule diaphragm.

Installation

1) Assemble exhaust manifold to turbocharger on the bench. Make sure all mating surfaces are clean and properly aligned. Use new self-locking screws if necessary. Replace oil inlet and outlet line gaskets.

2) Replace gasket between turbo-charger and catalytic converter. Lubricate EGR line nut (MIL-A-907 B specification). To complete installation, reverse removal procedure.

3) Before attaching oil inlet line, squirt one squirt of oil into oil inlet opening. Bleed air from oil line by rotating engine while ignition is disconnected. Attach oil line to turbocharger.

NOTE: Engine must never be cranked or allowed to run with air intake disconnected.

AIR-TO-AIR INTERCOOLER

Removal

Remove screw securing tab. Disconnect hoses at exchanger along with electrical connections between intercooler and motor fan. Pull out intercooler.

Installation

To install, reverse removal procedure.