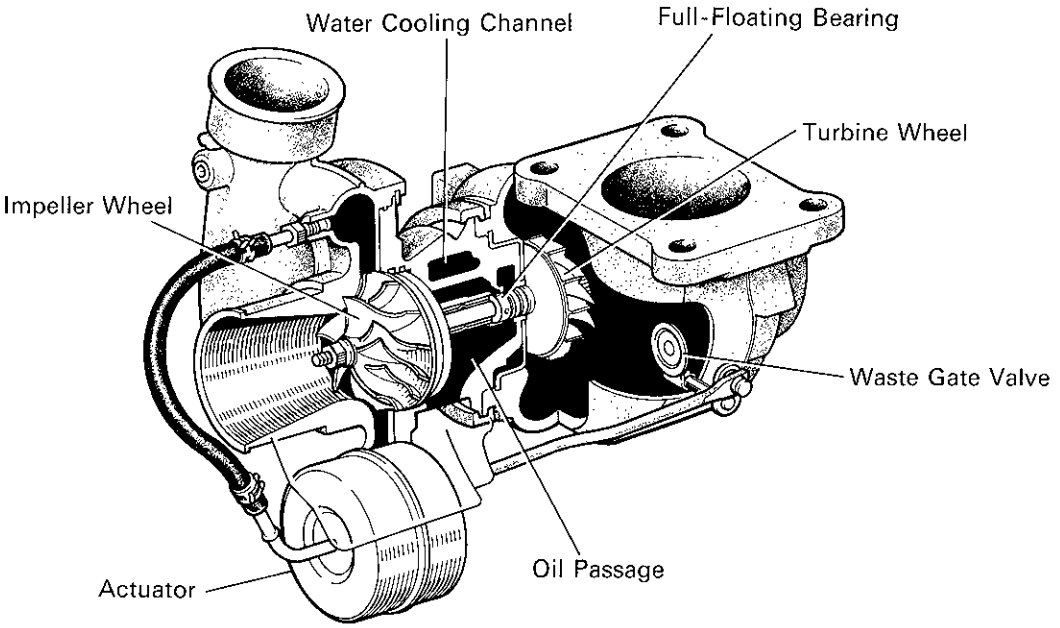
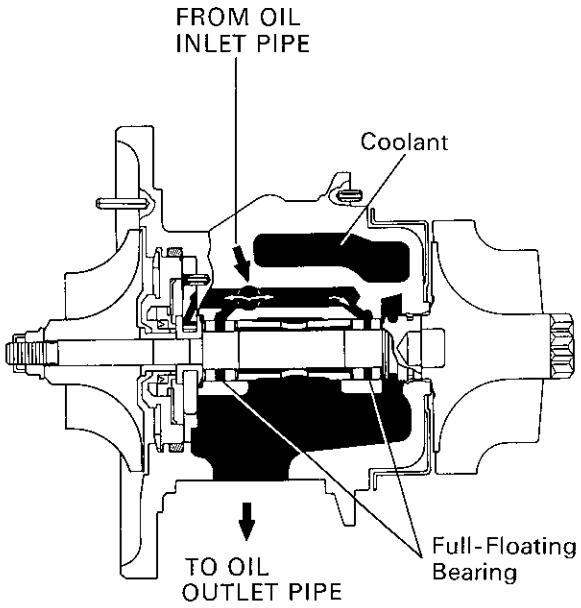
DESCRIPTION



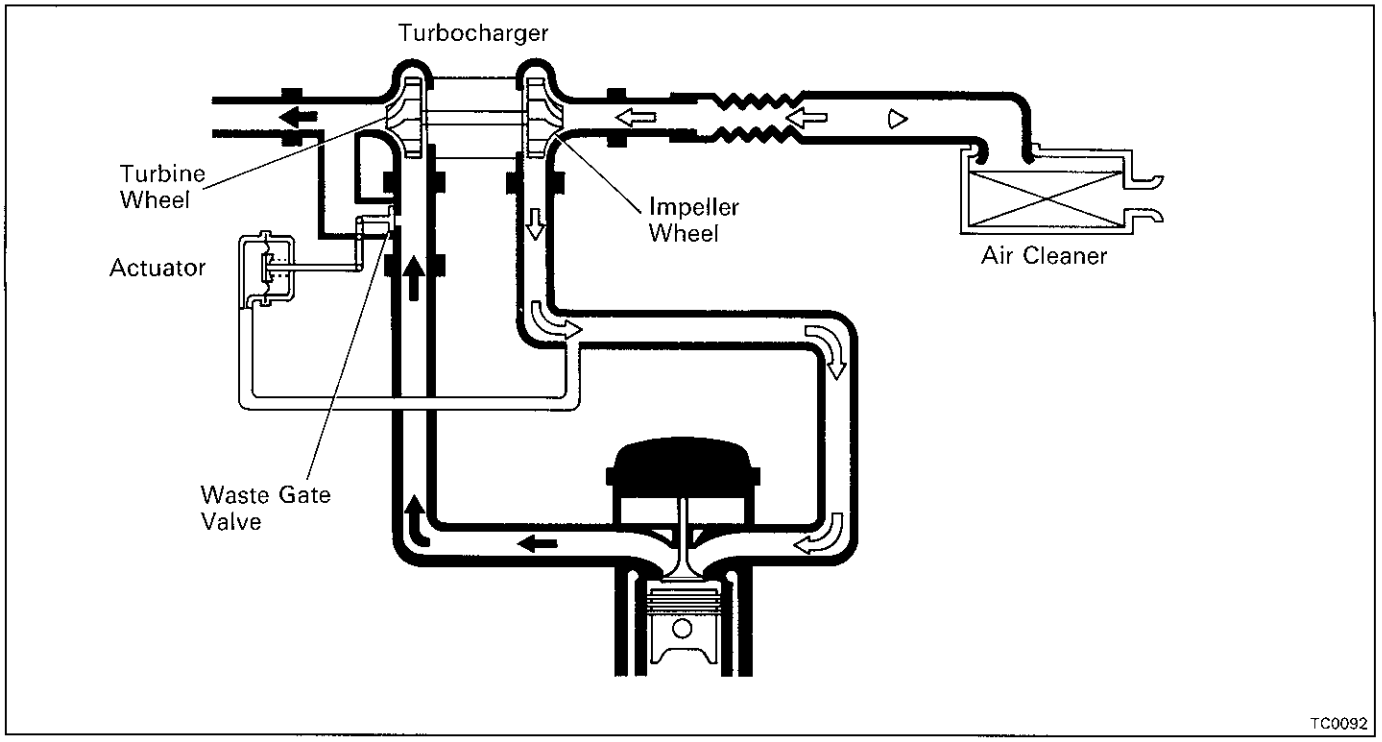


TC0101
TC0036

System which increase the amount of air sent to the engine are either turbocharger type (using exhaust gas to turn the turbine) or supercharger type (using the engine crankshaft, etc. to mechanically turn the pump, etc.). For LAND CRUISER and COASTER 1HD-T engine, the turbocharger type has been adopted.

The turbocharger is a device which increases engine output by introducing a greater amount of air to the engine. This allows a proportional increase in the fuel that can be burned and hence raises the potential power output.

In other words, by installing a special turbocharger and providing a higher air than usual, engine output can be increased by increasing the average combustion pressure without increasing the engine speed.



Operation of Turbocharger

Exhaust gas acts on the turbine wheel inside the turbine housing, causing it to revolve. When the turbine wheel revolves, the impeller wheel which is located on the same shaft also revolves, compressing the intake air which has passed through the air cleaner. When expelled from the compressor housing the compressed air is supplied to the cylinders. When the engine speed increases, the exhaust gas volume increases and the turbine wheel revolutions increasa (approx. 20,000 — 115,000 rpm), thus the turbocharged air pressure grows greater and engine output increases.

Waste Gate Valve

If the turbocharged air pressure exceeds the prescribed air pressure, the flow of exhaust gas by-passes the turbine, controlling turbine wheel revolutions and turbocharged air pressure. This by-pass valve which controls the quantity of exhaust gas flowing to the turbine is called the waste gate valve. When the charged air pressure exceeds the prescribed pressure, the actuator operates, the waste gate valve opens and part of the exhaust gas by-passes the turbine. This causes a drop in the turbine revolution rate and controls the charged air pressure within the prescribed limits.