

Fuel Injector Valves

Fully sequential fuel injection

A fully sequential fuel injection system is used for the M62TU, M73TU, S62 and S54 engine. Each fuel injector is activated by its own output stage.

Fully sequential fuel injection offers the following advantages:

- Improved mixture preparation for each individual cylinder
- Immediate adaptation of the injection timing to the current engine operating status
- Cylinder-selective injection correction under changing engine load
- Cylinder-selective cutout (e.g. in the event of defective cylinder coil)
- Diagnosis of each individual fuel injector

Activation of each individual fuel injector by means of a separate output stage ensures that the presupply of the fuel is the same for all cylinders thus ensuring uniform mixture preparation quality for all cylinders. The presupply time is variable depending on the engine load, engine speed, engine temperature and intake air temperature.

In view of the fact that fuel injection only takes place once for each revolution of the camshaft the scatter of the fuel supply rate is low due to the component tolerances. Added to this, the idle quality is also improved as the energization and deenergization times at the fuel injectors are reduced. Fuel consumption is also slightly lower.

The injection timing can be adapted individually per cylinder while driving as the result of sudden acceleration or after deceleration. This achieves improved response characteristics of the engine.

Another important improvement is that in the event of one output stage failing, the engine can still continue operation in emergency mode on the remaining cylinders.

Diagnosis

If faults occur at the fuel injectors, corresponding fault codes are stored in the fault code memory of the DME control unit.

For the purposes of troubleshooting or checking operation, the diagnostic program offers the option of either switching off each individual fuel injector with the engine running or activating them with 10 Hz for 10 seconds with the ignition switched on (engine off).