

**Service Training**

**Self-study programme 508**

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# Introduction

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## The 1.0 I 44/55 kW MPI Engine

The 1.0 I 44/55 kW MPI engine is a completely new design, and is the first in a new generation of engines. The engine mechanics are the same for both power variants. The differences in power are achieved by the software.

# Engine Mechanics



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## **Toothed belt drive with tri-oval camshaft gears**

A certain amount of force is required to open the valves of a cylinder. This force also acts on the toothed belt drive every time

## Cylinder block

The cylinder block consists of cast aluminium and has been designed as an open-deck version. Open deck means that it has no webs between the outer wall of the cylinder block and the cylinder tubes.

This has the advantage of:

- No air bubble

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## Crankshaft drive

The crankshaft drive was designed for low, moving masses and low friction. The weight of the conrods and the pistons has been so well designed that the balancer shaft, otherwise standard in three-cylinder engines, could be eliminated. Together with the small main bearings and conrod bearings, which have a diameter of 42 mm, the weight of the engine, and the drive gear friction, could be reduced even further. The cast crankshaft with four bearings features six counterweights which reduce the inner forces of the crankshaft and therefore the load on the main bearings.







## Camshaft housing

The camshaft housing is made of cast aluminium and, together with the two camshafts, forms an integral module. This means that the four-bearing ca



## Valve gear

The inlet valves are installed at an angle of  $21^\circ$ , and the exhaust valves at an angle of  $22.4^\circ$ , arranged overhead







## Intake system

The intake system comprises the intake manifold with a resonance chamber, the air filter, the throttle valve module, the intake manifold, and the inlet ports in the cylinder head.

The plastic inlet pipe, heat welded from four parts, has







## Fuel system

A non-return fuel system is used in the up! This means there is no fuel return line from the fuel rail to the fuel tank.

The fuel is pumped from the fuel delivery unit to the fuel rail and the injectors at a pressure of approximately 3 bar.

## Fuel system near the fuel tank







# Engine Management

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## Sensors

### Engine speed sender G28

The engine speed sender is integrated into the sealing flange on the gearbox side, with the flange being, in











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Name	Tool	Application
T10479		





