

Options

- Selection of fan positions
- Wide range of lubricating oil sums, induction manifolds, exhaust manifolds and other basic options
- Housings, flywheels, etc. for a large amount of the common applications
- Two positions for power take-off
- Large Selections of the accessories

Characteristics and advantages

The D3, 102 diesel engine gives reliable performance for all applications.

- Strong construction
- Engine in a small pack
- Gear driven timing
- Dry cylinder liners

Basic technical data

Bore	91,4 mm (3,6 in)
Stroke	127,0 mm (5,0 in)
Swept volume	2,0 liters (102,7 in ³)
Number of cylinders	3
Cylinder arrangement	Vertical, in-line
Cycle	4 stroke
Compression ratio	18,0:1
Combustion system	Direct injection
Firing order	1, 2, 3
Rotation	Clockwise, viewed from front
Basic thread form	Unified
Dry weight ¹	210 kg (463 lb)
Overall dimensions ² :	
Height	798,1 mm (31,43 in)
Length ...	616,9 mm (24,28 in)
Width	508,9 mm (20,04 in)

(¹) Approximate only

(²) Depending upon application

General specification

Engine core components

Cylinder head and valves

The cylinder head is of high duty cast iron which is fastened to the cylinder block by studs and setscrews. The joint is made by a gasket with a steel core.

Each cylinder has an inlet valve and exhaust valve which operate in cast iron valve guides in the cylinder head.

Each valve seats directly into the cylinder head.

The valves are of special steel and made hard by a special process.

Cylinder block and crankcase

The cylinder block and crankcase are made as one unit from high duty cast iron. The cylinder liners are machined from high duty cast iron with a flange at the top of each one. Cylinder liners are an interference fit in the cylinder bores. The water jacket is the full length between the cylinder bores.

Valve rocker assembly

The rocker lever assembly is fastened to the top of the cylinder head and is given protection by a steel cover.

The valves are operated by tappets in the cylinder head and rocker levers with separate bushes. Valve stem clearance adjustment is by a hard screw and locknut in the tappet. Lubricating oil passes through drilled holes and pipes from the camshaft centre bearing to the valve rocker assembly.

Piston and gudgeon pins

The pistons are made from a high silicon aluminum alloy. The gudgeon pins are fully floating and are kept in axial location by circlips.

Each piston has five piston ring grooves. The top ring is a cast iron chromium plated compression ring and the second compression ring is cast iron phosphated. The third groove has a four segment laminated compression ring. The fourth ring is a lubricating oil control ring and the bottom ring below the gudgeon pin is a scraper ring.

Connecting rods

The connecting rods are machined from 'H' section molybdenum steel forgings with the connecting rod cap divided at 90 degrees to the connecting rod axis. The cap is fastened by two bolts and nuts. The bolts are a fit in the cap. The small end bush has a steel back and a content of high tin, lead bronze.

Crankshaft

The crankshaft is machined from a heat treated chromium molybdenum steel forging with a large flange at the rear to support a flywheel. The big end journals and main bearing surfaces are fillet rolled and a thrust surface is machined at the rear of the crankshaft.

The axial movement and thrust is controlled by thrust washers with steel backs installed in the cylinder block and rear bearing cap. The crankshaft pulley is of cast iron or SG iron and fastened by a setscrew and washer.

The crankshaft palm is machined for the installation of a lip type 'Viton' rubber oil seal in an aluminum housing. The front lip seal is installed in the timing case cover.

The front of the crankshaft is serrated for the installation of the pulley for constant speed and material handling applications. It has a key, or is serrated, for agricultural, earthmoving and industrial applications. The crankshaft pulley is of cast iron or S.G. iron with a plain face and is secured by a setscrew and washer.

Main bearings

The four main bearings are of the thin wall replacement type. The bearing caps are of strong cast iron and each cap is fastened to the crankcase by two steel setscrews.

Timing drive gears

The camshaft and fuel injection pump are driven from the crankshaft through a gear arrangement. The timing gears are inside a timing case and cover. A small steel cover gives access to the fuel injection pump drive gear.

Camshaft

The camshaft is made from high duty cast iron and is high on the induction manifold side of the engine so that push rods are not needed.

The camshaft is supported in three bearings, the front one is bushed when a high Power take-off is needed. On some applications above 1V hp power take off, pressure lubrication to this bush is available.

Lubrication system

Lubricating oil is pumped at a pressure by a rotary type pump which is fastened to the front bearing cap and driven through gears from the crankshaft gear.

The delivery of lubricating oil is through a full flow filter to a passage which is the length of the cylinder block. A relief valve controls the maximum pressure and a gauge or switch can be connected at the left hand side of the cylinder block.

The lubricating oil filler tube can be installed on the rear of the cylinder head or on the front, top or side of the timing case. The position of the lubricating oil filter can be either vertical or horizontal.

Engine systems

Fuel system

A fuel lift pump is installed on the induction manifold side of the engine. It is operated by an eccentric on the camshaft and pumps fuel from the tank through a filter to a rotary type fuel injection pump installed on the exhaust manifold side of the engine. The fuel injection pump is driven by the timing gears.

Combustion system

Direct fuel injection into the toroidal combustion chamber in the top of the piston through an atomiser in the cylinder head.

Cooling system

The water circuit is through the cylinder block and head from a water pump installed on the cover of the timing case. The pump is belt driven from the crankshaft pulley.

There is a water passage in the left hand side of the cylinder block and water comes out of a connection on the front of the cylinder head. There is a thermostat directly below this connection. Water can come out of this connection in either a vertical or horizontal direction.

Crankcase breather system

The open breather pipe is connected to the rocker cover and is extended down the front R.H.S. of the timing case. A baffle plate inside the cover prevents oil mist being released.