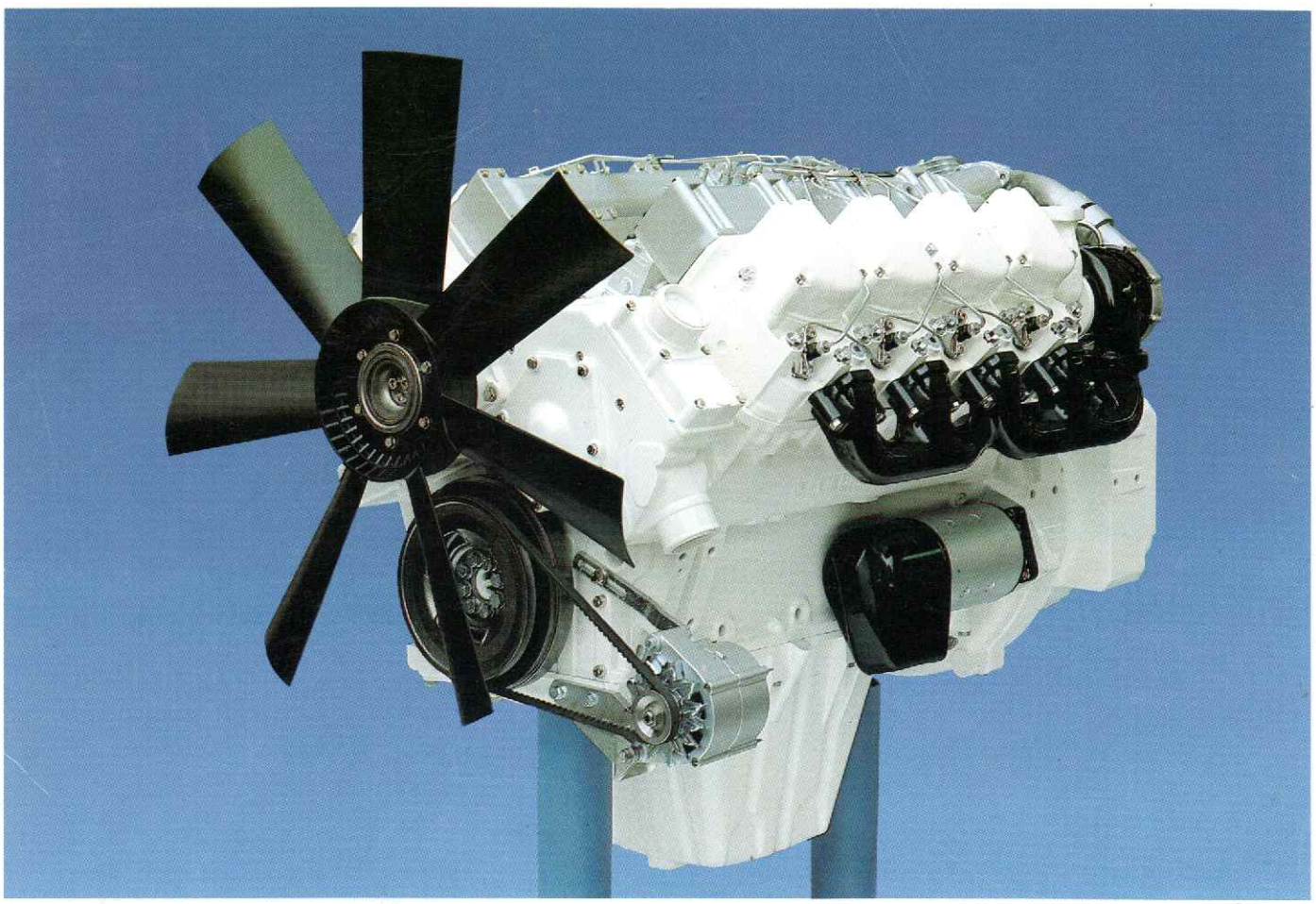
Product Information

DIESEL POWER

The Liebherr Diesel Engines Series D 900, D 910, D 9300



Heavy construction machines require engines that are specifically designed for their needs. – With varying output yet high power reserves. – With long life expectancy to correspond with the life of the machine. – And with high dependability to meet even the most severe demands of the construction industry. On top of that, easy serviceability and maintenance to allow the operator to concentrate on the job at hand and not be distracted by the engine.

The line of Liebherr diesel engines was specifically developed with that in mind, and has proven itself to full satisfaction.

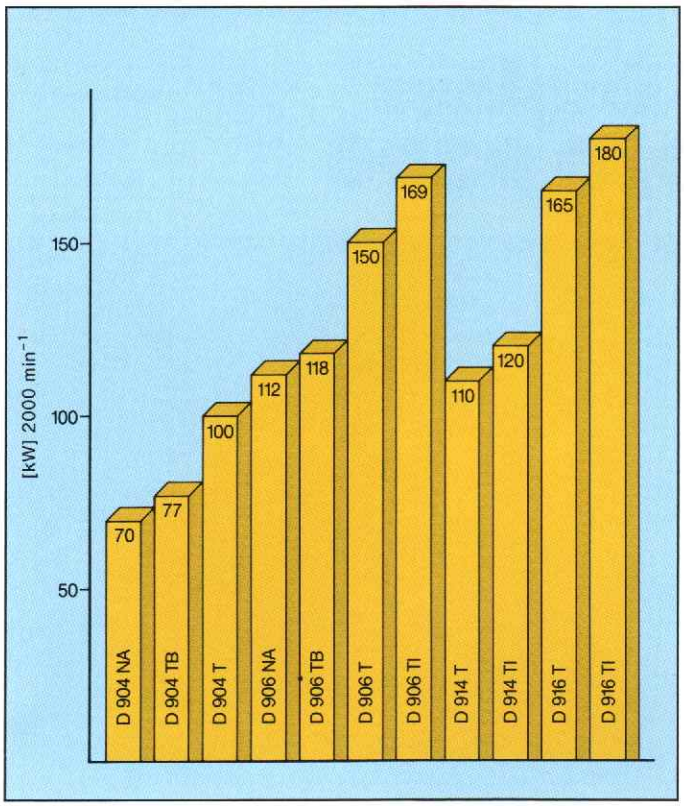
The basic idea of these engines is simple and rugged design and the use of oversized components. This results in longer engine life, better up-time and greater peace of mind over many years. Even in extreme applications. Ample power comes from large piston displacement, not from high engine speed. This is also the reason for powerful yet economic performance at low RPM ranges.

Design qualities, along with easy serviceability, make the Liebherr diesel the ideal engine for all kinds of construction and mining machines.

Liebherr diesel engines set new standards in efficiency, but then – setting new standards is nothing new at Liebherr.

LIEBHERR

The better Engines.



Series D 900 and D 910

Liebherr developed the new D 910 series engine based on the successful D 900 series Liebherr 4 and 6 cylinder construction machine diesel engines (models D 904 NA, D 904 TB, D 904 T, D 906 NA, D 906 TB, D 906 T and D 906 TI). For optimum efficiency, environmental and application considerations, the D 910 series will only be available with 4 or 6 cylinders, and only in turbo-charged or turbo-charged and after-cooled versions (models D 914 T, D 914 TI, D 916 T and D 916 TI).

Main features of the D 910 series engines:

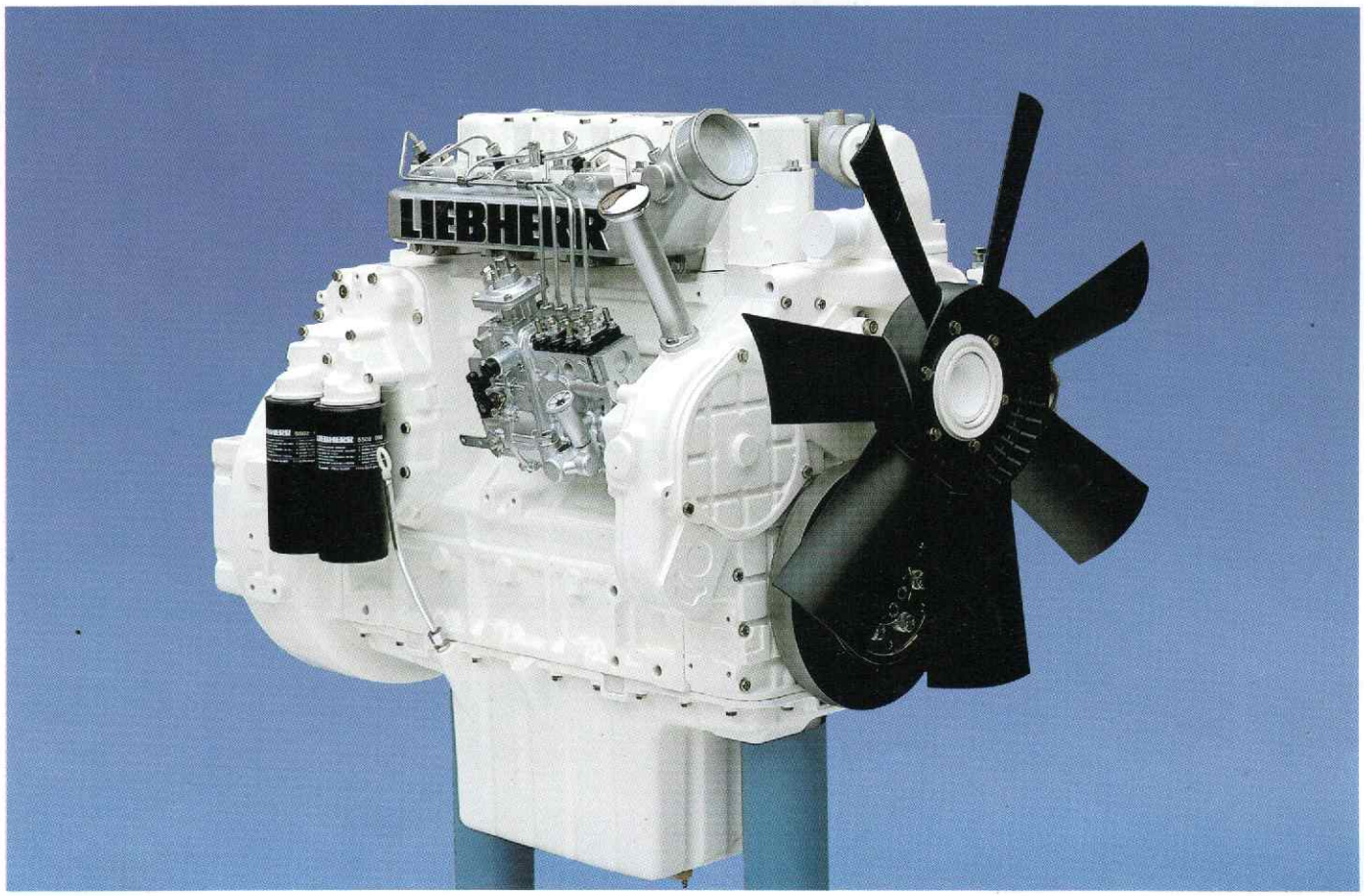
Cylinder bore:
4.72 in/120 mm (D 900 Series: 4.53 in/115 mm)
Displacement:
93 cu.in/1,53 l per cylinder (D 900 Series: 85 cu.in/1,4 l)

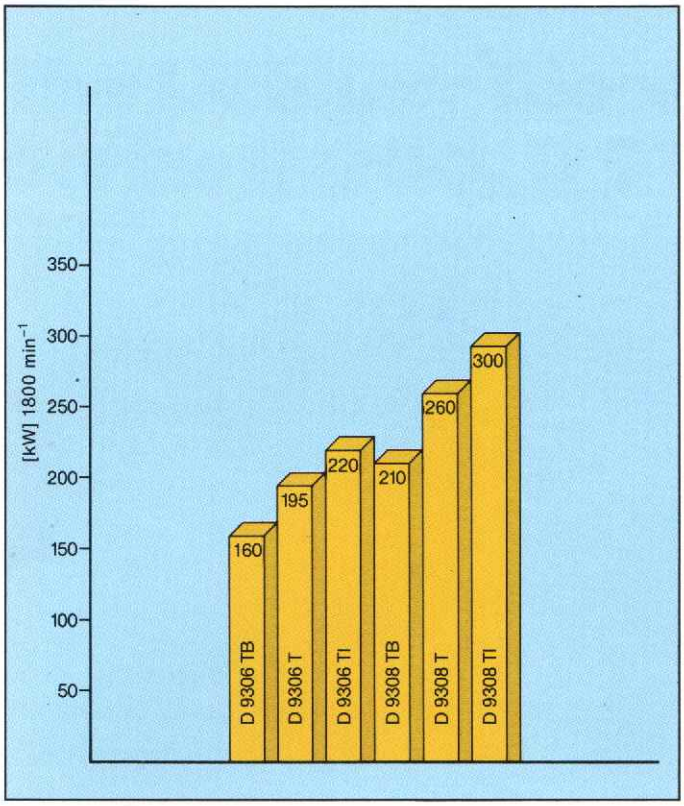
Direct fuel injection by a high pressure Bosch "MW" injection pump, rather than the Bosch "A" model, in conjunction with controlled combustion, results in excellent engine performance data, i.e., low fuel consumption and exhaust emissions, powerful torque characteristics, high torque rise at low engine speeds, etc.

All the proven design criteria of the D 900 series engine have been incorporated into the new D 910 series engines:

- **high dependability and long life expectancy through solid basic design,**
- **reduced number of components by integrating lubrication and coolant passages into the block,**
- **maintenance free gear drive for cooler fan, water pump, air compressor and auxiliary hydraulic pump drive,**
- **low engine speeds.**

Production for the D 914/D 916 engines will begin in 1989.





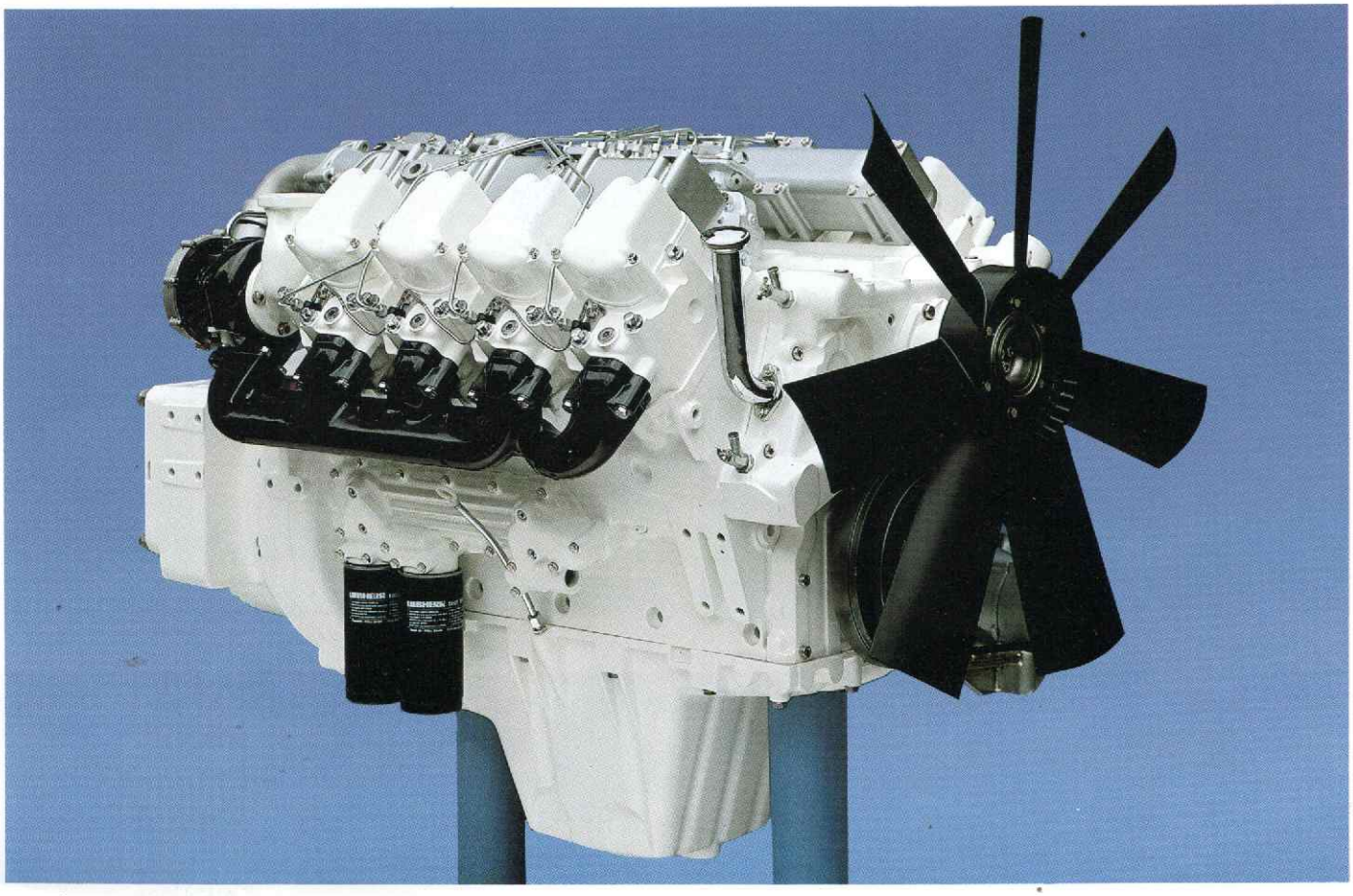
Series D 9300 (V 6 / V 8)

In order to power their larger construction and mining machines with Liebherr engines, and in upkeep with their philosophy to manufacture more and more of their own components, the series 9300 diesel engines were developed.

These engines are available in V 6 and V 8 versions and feature a bore/stroke ratio of 5.12"/5.9" or 130/150 mm.

Typical design features of the in-line series D 900 and D 910 Liebherr engines, have also been incorporated into the V engines, e.g. reduced number of components, gear driven cooler fan, water pump and air compressor, individual cylinder heads and wet cylinder liners, etc.

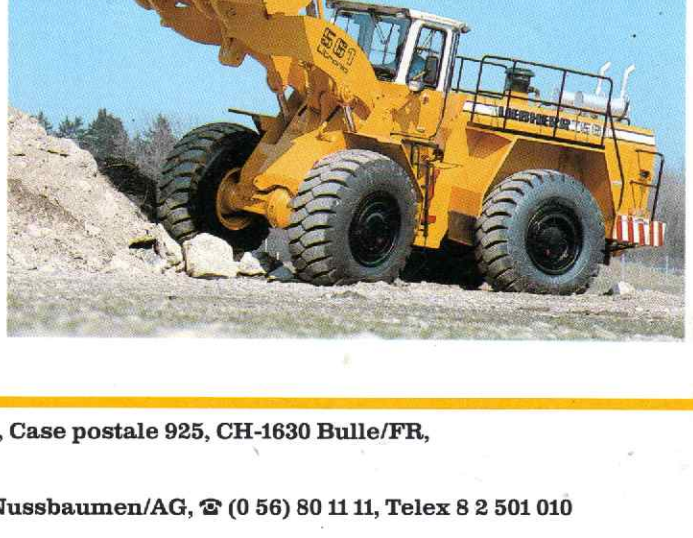
These characteristics make available yet another, low maintenance and efficient Liebherr engine series for the larger machine models. The new engine models D 9306 and D 9308, in turbo-charged and turbo-charged and after-cooled versions, are planned to go into production in early 1990.



Liebherr Diesel Engine Data

Technical Data	Series 900 In-line	Series 910 In-line	Series 9300 V
Injection	direct	direct	direct
Bore in/mm	4.53/115	4.72/120	5.12/130
Stroke in/mm	5.31/135	5.31/135	5.90/150
Displacement cu.in/l	4-cyl. = 342/5.6 6-cyl. = 512/8.4 84.5/1.4 per cyl.	4-cyl. = 372/6.1 6-cyl. = 558/9.15 93/1.52 per cyl.	6-cyl. = 732/12 8-cyl. = 976/16 122/2.0 per cyl.
Rated speed RPM	2000	2000	1800
Average piston speed fps/m/s	29.5/9.0 at 2000 RPM	29.5/9.0 at 2000 RPM	29.5/9.0 at 2000 RPM

Technical Data	Series 900 In-line	Series 910 In-line	Series 9300 V
Compression Ratio	D 904 NA D 906 NA D 904 TB = 17:1 D 906 TB D 904 T D 906 T = 15,5:1 D 906 TI	D 914 T D 914 TI = 15.9:1 D 916 T D 916 TI	D 9306 TB D 9308 TB = 17:1 D 9306 T D 9308 T D 9306 TI = 15.5:1 D 9308 TI
Firing order	4-cyl. = 1-3-4-2 6-cyl. = 1-5-3-6-2-4	4-cyl. = 1-3-4-2 6-cyl. = 1-5-3-6-2-4	6-cyl. = 1-6-3-5-2-4 8-cyl. = 1-7-4-2-7 3-6-5
Availability	Nov. 81	Late 89	Early 90



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