

# D9-MH

**9 litre, in-line 6 cylinder - Variable engine speed**

221, 261 and 313 kW

IMO NOx Tier II



**D9-MH is a reliable, powerful, fuel-efficient and clean marine diesel engine. It's based on Volvo Group's proven engine platform and is designed by Volvo Penta to power a wide range of marine auxiliary applications.**

This 9 litre turbocharged diesel engine has a robust and dependable design with an overhead camshaft, four valves per cylinder and precisely controlled electronic fuel injection. It features Volvo Group's proven combustion technology which creates an optimized fuel to air pressure ratio at any work load. Together with Volvo Group's Engine Management System it offers powerful response, fuel efficiency and excellent emission performance. The robust cylinder block is fitted with a ladder frame for smooth operation and low noise.

**Typical applications:**

- Pumps
- Cranes
- Hydraulic power packs
- Air compressors
- High-pressure water systems
- Fire-fighting equipment
- Nitrogen pumps
- Dry bulk handling

The compact and space saving design makes for easy installation and easily accessible service points.

- Proven design - built on Volvo Group technology
- Fuel-efficient and low emission levels
- High load acceptance
- Low weight, noise and vibrations
- Type-approved
- Classifiable by all major societies
- Compact installation and easy to service

The engine can be equipped with a wide range of optional equipment and is available with Heat Exchanger (HE) or Keel Cooled (KC) cooling system. One option for on-board electronic control: Open Can Interface. The engine and equipment can be covered with the Extended Coverage which prolongs the standard warranty up to five years - or the corresponding number of running hours.

# D9-MH

## Technical data

### General

Engine designation	D9-MH
Displacement, litre (in <sup>3</sup> )	9.4 (571)
Configuration and number of cylinders	in-line 6
Method of operation	4-stroke, direct-injected, turbocharged diesel engine with charge air cooler
Bore/stroke, mm (in.)	120/138 (4.72/5.43)
Compression ratio	20.2
Dry weight bobtail HE <sup>1)</sup> , kg (lb)	1150 (2535)
Dry weight bobtail KC <sup>2)</sup> , kg (lb)	1125 (2480)
Flywheel housing/SAE size	14"/SAE1

### Performance, fuel & emissions

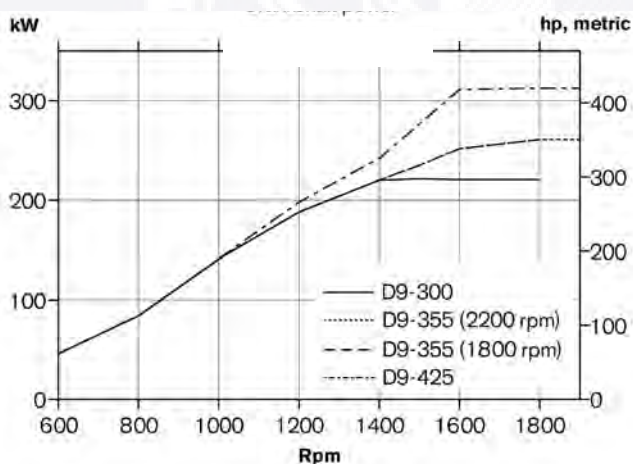
	D9-300	D9-355	D9-355	D9-425
Rating <sup>3)</sup>	Rating 1	Rating 1	Rating 1	Rating 2
Max engine speed	1800 rpm	1800 rpm	2200 rpm	2200 rpm
Crankshaft power, kW (hp)	221 (300)	261 (355)	261 (355)	313 (425)
Max. torque, Nm (lb.ft) @ 1400 rpm	1501 (1107)	1501 (1107)	1501 (1107)	1651 (1217)
Spec. fuel consumpt. at 100% load:				
g/kWh (lb/hph) @ 1200	206 (0.33)	206 (0.33)	204 (0.33)	204 (0.33)
g/kWh (lb/hph) @ 1600	200 (0.32)	200 (0.32)	200 (0.32)	200 (0.32)
g/kWh (lb/hph) @ 1800	205 (0.33)	205 (0.33)	204 (0.33)	209 (0.34)
g/kWh (lb/hph) @ 2000				213 (0.35)
Emission compliance	IMO NOx Tier II	IMO NOx Tier II	IMO NOx Tier II	IMO NOx Tier II
Recommended fuel to conform to	ASTM-D975 1-D and 2-D, EN 590 or JIS KK 2204			

Technical data according to ISO 3046 Fuel Stop Power and ISO 8665. Fuel with a lower calorific value of 42700 kJ/kg and density of 840 g/liter at 15 °C (60 °F). Merchant fuel may differ from this specification which will influence engine power output and fuel consumption.

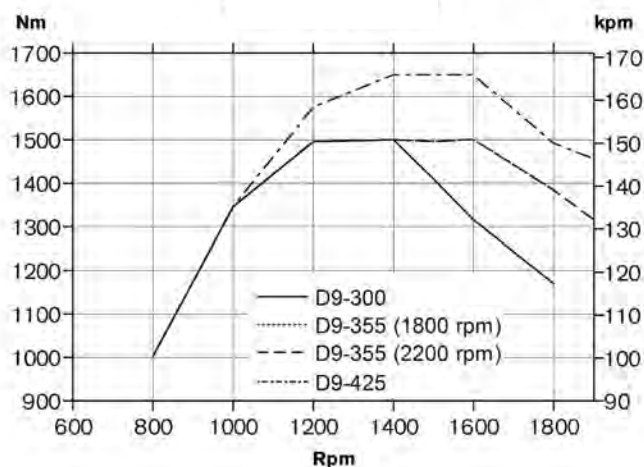
<sup>1)</sup> Heat Exchanger cooled system (HE), <sup>2)</sup> Keel Cooled system (KC)

<sup>3)</sup> Rating 1: Heavy Duty Commercial operation. Rating 2: Medium Duty Commercial operation.

### Power at crankshaft



### Torque at crankshaft



# D9-MH

## Technical description

### Engine and block

- Cylinder block and cylinder head made of cast-iron
- One-piece cast-iron cylinder head
- Ladder frame fitted to engine block
- Replaceable wet cylinder liners and valve seats/guides
- Drop forged crankshaft with induction hardened bearing surfaces and fillets with seven main bearings
- Four valve per cylinder layout with overhead camshaft
- Each cylinder features cross-flow inlet and exhaust ducts
- Gallery oil-cooled cast aluminum alloy pistons with three piston rings
- Senders for oil pressure (after filter), oil temp, oil pressure, oil level, fuel pressure, freshwater pressure, exhaust temp, crankcase pressure, speed crank and cam, boost pressure/temp, seawater pressure (not KC cool.), coolant level, coolant temp
- Rear-end transmission
- Closed crankcase ventilation

### Engine mounting

- Flexible engine mounting (option)

### Lubrication system

- Integrated oil cooler in cylinder block
- Symmetrically positioned twin full flow oil filter of spin-on type and by-pass filter

### Fuel system

- Electronic Unit Injectors, one per cylinder, vertically positioned at the center in between

the four valves

- 5-hole high pressure injector nozzles
- Gear-driven fuel pump, driven by timing gear
- Electronically controlled central processing system (EMS – Engine Management System)
- Electronically controlled injection timing
- Single fine fuel filter of spin-on type, with water separator and water alarm

### Air inlet and exhaust system

- Air filter with replaceable inserts
- Mid-positioned twin entry turbocharger with aftercooler

### Heat exchanger cooled system (HE)

- For seawater- and central-cooled engines
- Engine-mounted plate heat exchanger with expansion tank
- Belt-driven centrifugal freshwater pump
- Belt-driven rubber impeller raw water pump

### Keel cooled system (KC)

- 2-circuit cooling system
- Belt-driven centrifugal cooling water pump in HT circuit
- Engine mounted expansion tank in HT circuit
- Gear driven rubber impeller cooling water pump in CAC LT circuit

### Control system

- Open Can Interface, engine delivered without control system. Different options with or without shut down senders and switches.
- Meets classification requirements of separate shutdown and monitoring system

- Easy to interface with leading suppliers of ship control systems
- Possibility to connect relays for remote control functions (potential free contacts)
- Classifiable by all major classification societies

## Optional equipment

### Engine

- Twin engine-mounted fine fuel filter of spin-on type with change over valve
- Twin fuel pre-filters/water separator with change over valve
- Flexible exhaust compensator
- Cooling water connection bellows
- Raw water pressure indication (only in combination with raw water pump)
- Engine heater 2000W
- Dry exhaust silencer with or without spark arrestor
- 80A alternator with integrated charging sensor

### Miscellaneous

- Basic toolkit
- Spare parts according to classification recommendations

## Dimensions

Not for installation, mm (in.)

### Engine with HE & KC

