

# D13-MH

VOLVO PENTA **MARINE AUXILIARY DIESEL**

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

294, 331, 368, 404 and 441 kW

US EPA Tier 3 and CCNR Stage 2 (for IMO NOx Tier II see separate Product Leaflet)



**D13-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 12.78 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**
- **Powerful response**
- **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), Keel Cooled (KC) or Radiator Cooled (RC) cooling system. Two options for on-board electronic control: The type-approved MCC (Marine Commercial Control) or 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.

# D13-MH

## Technical data

### General

Engine designation	D13-MH
Displacement, litre (in <sup>3</sup> )	12.78 (779.7)
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.)	131/158 (5.16/6.22)
Compression ratio	18.5
Dry weight bobtail HE <sup>1)</sup> , kg (lb)	1520 (3351)
Dry weight bobtail KC <sup>2)</sup> , kg (lb)	1480 (3263)
Dry weight bobtail RC <sup>3)</sup> , kg (lb)	1500 (3307)
Flywheel housing/SAE size	14"/SAE1

### Performance, fuel & emissions

Rating <sup>4)</sup>	1	1	1	2	2
Rated speed	1800 rpm	1800 rpm	1800 rpm	1900 rpm	1900 rpm
Crankshaft power HE/KC, kW (hp)	294 (400)	331 (450)	368 (500)	404 (550)	441 (600)
Crankshaft power RC <sup>5)</sup> , kW (hp)	275 (374)	312 (424)	349 (474)	382 (519)	419 (570)
Max. torque, Nm (lb.ft) @ 1400 rpm <sup>6)</sup>	1756 (1295)	1975 (1457)	2164 (1596)	2363 (1743)	2399 (1769)
Spec. fuel consumpt. at 100% load:					
g/kWh (lb/hph) @ 1200 rpm	197 (0.32)	196 (0.32)	197 (0.32)	195 (0.32)	195 (0.32)
g/kWh (lb/hph) @ 1500 rpm	199 (0.32)	200 (0.32)	200 (0.32)	199 (0.32)	199 (0.32)
g/kWh (lb/hph) @ 1800 rpm	208 (0.34)	211 (0.34)	212 (0.34)	211 (0.34)	207 (0.34)
g/kWh (lb/hph) @ 1900 rpm				213 (0.35)	213 (0.34)
Emission compliance <sup>7)</sup>	US EPA Tier 3 CCNR Stage 2	US EPA Tier 3 CCNR Stage 2	US EPA Tier 3 CCNR Stage 2	US EPA Tier 3 CCNR Stage 2	US EPA Tier 3 CCNR Stage 2

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> Radiator Cooled system (KC)

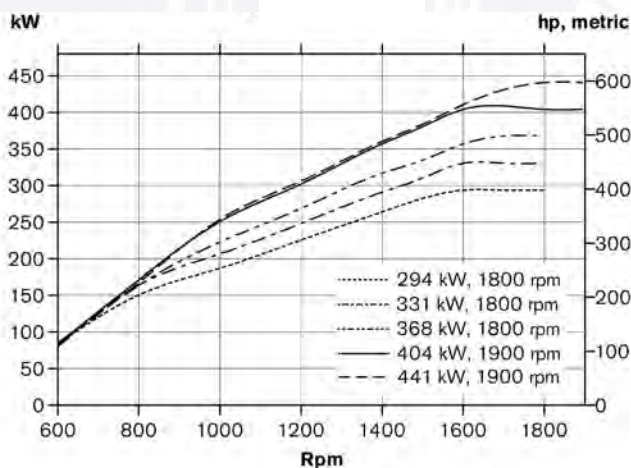
<sup>4)</sup> Rating 1: Heavy Duty Commercial operation. Rating 2: Medium Duty Commercial operation.

<sup>5)</sup> With fan.

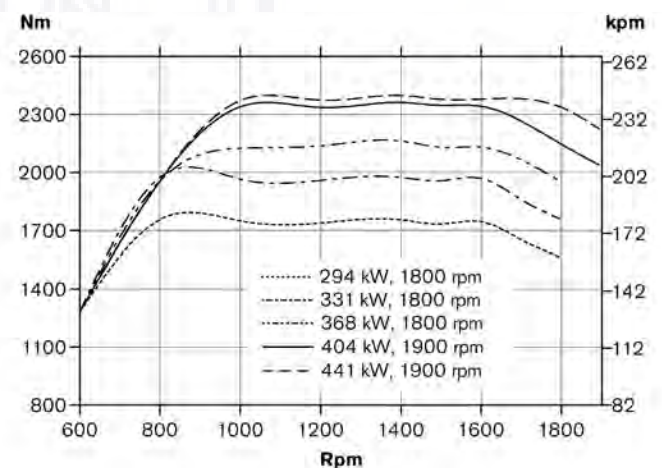
<sup>6)</sup> Measured at crankshaft.

<sup>7)</sup> For IMO NOx Tier II, see separate Product Leaflet.

### Power at crankshaft (HE/KC)



### Torque at crankshaft



# D13-MH

## Technical description

### Engine and block

- Cylinder block and cylinder head made of cast iron
- One piece cylinder head
- 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 forged aluminum pistons, three piston rings (keystone top ring)
- 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
- Exhaust temperature indication
- Closed crankcase ventilation

### Lubrication system

- Freshwater-cooled oil cooler integrated in cylinder block
- Twin full flow oil filter of spin-on type and single by-pass filter

### Fuel system

- Electronic Unit Injectors
- Gear-driven fuel pump, driven by timing gear
- Electronically controlled injection timing
- 5-hole high pressure injector nozzles

- Twin engine-mounted spin-on fine fuel filters with change over valve

### Turbocharger

- Dry twin entry turbocharger

### 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

### Radiator cooled system (RC)

- For aircooled engines
- Polygroove belt-driven radiator fan
- Belt-driven centrifugal cooling water pump
- Air to air CAC (Charge Air Cooler)

### Control system

- Two options available:
  1. MCC a flexible and expandable control and monitoring system for classified installations. Incl. separate safety shutdown system
  2. 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 fuel pre-filters/water separator with change over valve
- Flexible exhaust compensator
- Cooling water connection bellows
- Electrical and air starting systems available individually or in parallel.
- Raw water pressure indication (only in combination with raw water pump)
- Engine heater 2000W
- Dry exhaust silencer with or without spark arrestor
- 110A alternator with integrated charging sensor

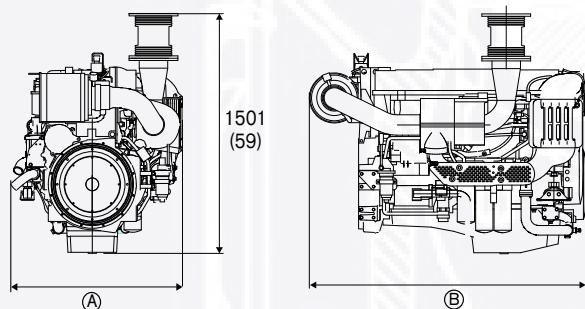
### Miscellaneous

- Spare parts according to classification recommendations
- Basic toolkit

## Dimensions

Not for installation, mm (in.)

### Engine with HE & KC



Ⓐ HE/CC 1072 (42), KC 1014 (40)

Ⓑ HE/CC 1728 (68), KC 1773 (70)

### Engine with RC

