VOLVO PENTA

VOLVO PENTA **MARINE AUXILIARY DIESEL**

D13-MH

12.78 liter, in-line 6 cylinder with Exhaust aftertreatment system - Variable engine speed
Emission compliance: IMO Tier III, US EPA Tier 3 and Stage V

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 liter diesel engine is developed from the latest design in modern diesel technology. The engine has a robust block with ladder frame, high pressure unit injector system, 4 valves per cylinder, “twin entry” waste gate turbo and after cooler.
Together with Volvo Group´s Engine Management System it offers powerful response, fuel efficiency and excellent emission performance. The SCR (Selective Catalytic Reduction) exhaust after treatment system is tailored for a perfect fit. The SCR unit, also a silencer, reduces noise by 35-40 dBA. 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

- **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: 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.

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

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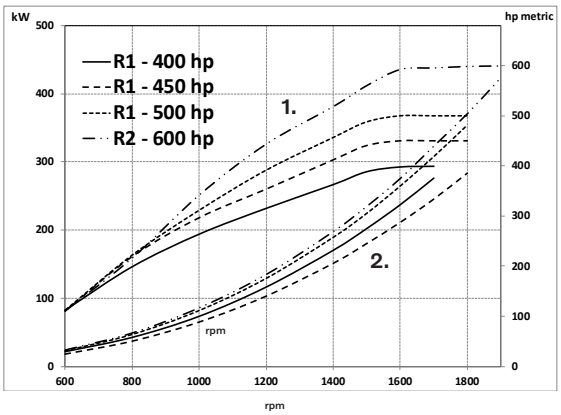
Technical data

Engine designation	D13 MH			
No. of cylinders and configuration	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)			
Displacement, l (in^3)	12.78 (779.7)			
Compression ratio	18.5			
Dry weight bobtail (KC), kg (lb)	1480 (3263)			
Dry weight bobtail (HE), kg (lb)	1520 (3351)			
Dry weight bobtail (RC), kg (lb)	1500 (3307)			
Rating	1	1	1	2
Rated speed	1800 rpm	1800 rpm	1800 rpm	1900 rpm
Crankshaft power HE/KC, kW(hp)	294 (400)	331 (450)	368 (500)	441 (600)
Crankshaft power RC, kW(hp)	275 (374)	312 (424)	349 (474)	419 (570)
Max. torque, Nm (lbf.ft) @ 1400 rpm	1821 (1343)	2064 (1522)	2292 (1690)	2601 (1918)
Emission compliance	IMO Tier III, US EPA Tier 3,	IMO Tier III, US EPA Tier 3,	IMO Tier III, US EPA Tier 3,	IMO Tier III, US EPA Tier 3,
	Stage V	-	-	-
Recommended fuel conform to	ASTM-D975 1-D & 2-D, EN 590, JIS KK 2204 or HVO. Max 1000PPM.			
Flywheel housing/SAE size	14”/SAE1			

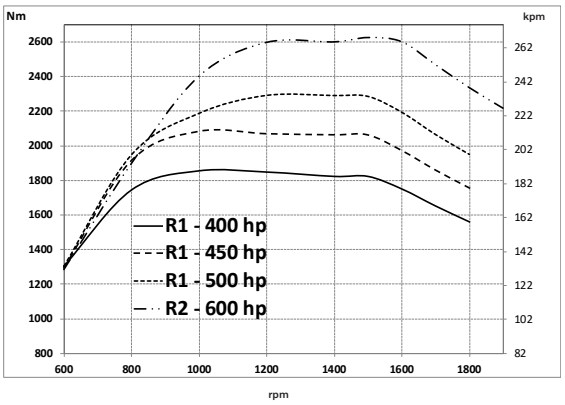
Technical data according to ISO 3046 Fuel Stop Power and ISO 8665. Fuel with a lower calorific value of 42700 kJ/kg and density of 840 g/liter at 15 °C (60 °F). Merchant fuel may differ from this specification which will influence engine power output and fuel consumption. Ratings R1 & R2, see explanation in Volvo Penta's Product Guide.

Power at crankshaft (HE/KC)



1. Crankshaft power
2. Propellershaft power at prop. load $x^{2,5}$

Torque at crankshaft



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12.78 liter, in-line 6 cylinder with Exhaust aftertreatment system - Variable engine speed
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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
- Rear-end transmission

Engine mounting
- Flexible engine mounting (option)

Lubrication system
- Integrated oil cooler in cylinder block
- Twin full flow oil filters and by-pass filters of spin-on type

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

Air inlet and exhaust system
- Air filter with replaceable inserts
- Mid-positioned twin entry turbocharger and charge air cooler

Cooling system
- Freshwater-cooled charge air cooler
- Seawater-cooled plate heat exchanger
- Coolant system prepared for hot water outlet
- Easily accessible seawater impeller pump in rear end

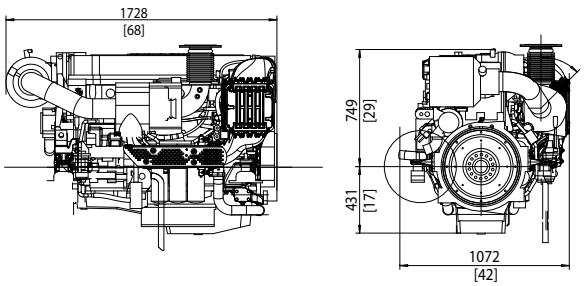
Electrical system
- 24V/110A alternator

Instruments/controls
- Three options for onboard electronic control:
  1. EVC (Electronic Vessel Control), a type-approved system with integrated controls and features. (HE+KC)
  2. MCC (Marine Commercial Control), an open system that is type-approved. Incl. separate safety shutdown system
  3. Open CAN Interface, engine delivered without control system. Different options with or without shut down senders and switches.

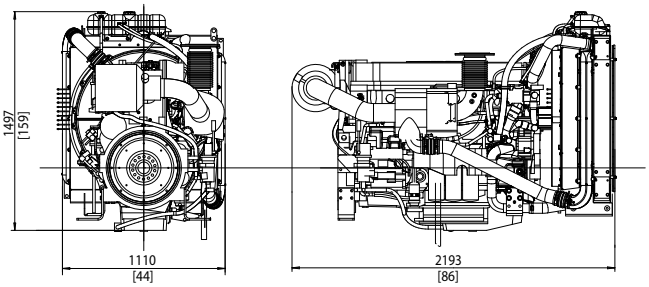
Exhaust aftertreatment system
- SCR (Selective Catalytic Reduction)
- Aqueous UREA solution 32% or 40%
- Complete system – developed, certified, and serviced by one company
- Fully integrated capabilities
- Prop-to-helm system (IPS)
- SCR unit reduces noice by up to 35 dBA
- Wide range of installation options available

Dimensions
Not for installation, mm (inches)

Engine with HE & KC



Engine with RC



Not all models, standard equipment and accessories are available in all countries. All specifications are subject to change without notice. The engine illustrated may not be entirely identical to production standard engines.

Contact your local Volvo Penta dealer for more information regarding Volvo Penta engines and optional equipment/ accessories or visit www.volvopenta.com

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