

## VOLVO PENTA MARINE VARIABLE SPEED GENSET

# D13-MH (VG)

12.78 liter, in-line 6 cylinder

257 — 385 kWe



### Technical Data

Engine designation	D13 MH (VG)		
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	131 / 158		
Displacement, l (in <sup>3</sup> )	12.78 (779.7)		
Compression ratio	18.5:1		
Engine	D13 MH 400	D13 MH 500	D13 MH 600
Crankshaft Power HE/KC Cooling, kWm	294	368	441
Rating	1	1	2
Electrical Power, kWe @ rpm	257 @ 1800	277 @ 1800	385 @ 1900
Emission compliance	IMO II, IMO III, China 2, EU NRMM Stage V	IMO II, IMO III, China 2	IMO II, IMO III, China 2
Electrical Power, kWe @ rpm	257 @ 1800	277 @ 1800	385 @ 1850
Emission compliance	US EPA Tier 3	US EPA Tier 3	US EPA Tier 3
Specific fuel consumption HE/KC, g/kWh at kWe & rpm (IMO III)			
Peak efficiency	191 (240 kWe / 1400 rpm)	191 (240 kWe / 1400 rpm)	191 (310 kWe / 1400 rpm)
50%	200 (128 kWe / 1300 rpm)	195 (138 kWe / 1300 rpm)	193 (192 kWe / 1300 rpm)
75%	192 (192 kWe / 1300 rpm)	191 (207 kWe / 1400 rpm)	191 (288 kWe / 1400 rpm)
Rated power / rated speed	199 (257 kWe / 1800 rpm)	198 (277 kWe / 1800 rpm)	198 (385 kWe / 1900 rpm)
Recommended fuel to conform to	ASTM-D975 1-D & 2-D, EN 590 or JIS KK 2204		

Fuel temperature 40°C (104°F). Technical data according to ISO 3046 Fuel Stop Power with a tolerance ±4%. 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. The engine is certified according to IMO Tier III for diesel electric propulsion.

# D13-MH (VG)

12.78 liter, in-line 6 cylinder

---

## Technical description

### Complete Variable speed Genset

- High system efficiency
- Possible to operate at multiple fix speeds or full variable speeds
- Light and compact Generator set
- Engine coupled to generator via flexible coupling
- Flexible mountings included
- Synchronization not needed
- Possibility to mix engine sizes
- Generator could be ordered with Marine classification according to DNV, LR, BV, RINA and ABS.

### Generator

- Permanent magnet generator technology
- Small, robust, light and efficient
- Water cooled
- Insulation Class H, Temperature rise Class F
- Double bearing
- IP65 as standard

#### *Standard EM-PMI540-T1500 and T2000*

- Foot mounting (+FM1)
- Low voltage connections done with connection box (with 3xM25 and 4xM16 cable glands) and terminal strip (+LVB1)
- Anti-condensation heater, 230 VAC/130 W (+HEAT1)
- PT100 in bearing (+BTMP1)
- Redundat temperature surveillance of windings, PT100 (+TEMP5)
- Insulated bearing in N-end (+BIN)
- Rotating sensor, in-built non contact resolver, 8-pole pair, needed for non Danfoss inverters (+RES1)

#### *Standard EM-PMI540-T2000*

- Double phase connections, extended connection boxes (with 2x M32 cable glands per phase) (+CE1)

### 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 crossflow inlet and exhaust ducts
- Gallery oil cooled forged aluminum pistons, three piston rings (keystone top ring)
- Rear-end transmission
- 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

### Air inlet and exhaust system

- Mid-positioned twin entry turbocharger with aftercooler
- Air filter with replaceable inserts
- Wet exhaust elbow (option)
- Loss of sea water alarm

### Cooling system

1. Heat Exchanger cooled system (HE)
  - For seawater- and central-cooled Gensets
  - Engine-mounted plate heat exchanger with expansion tank
  - Belt-driven centrifugal freshwater pump
  - Belt-driven rubber impeller raw water pump
2. 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

Two options available:

1. MCC (Marine Commercial Control) an open system that is type approved, including separate safety shutdown system.
2. Open CAN Interface, engine delivered without control system. Different options with or without shut down senders and switches.

### Optional equipment

#### Engine

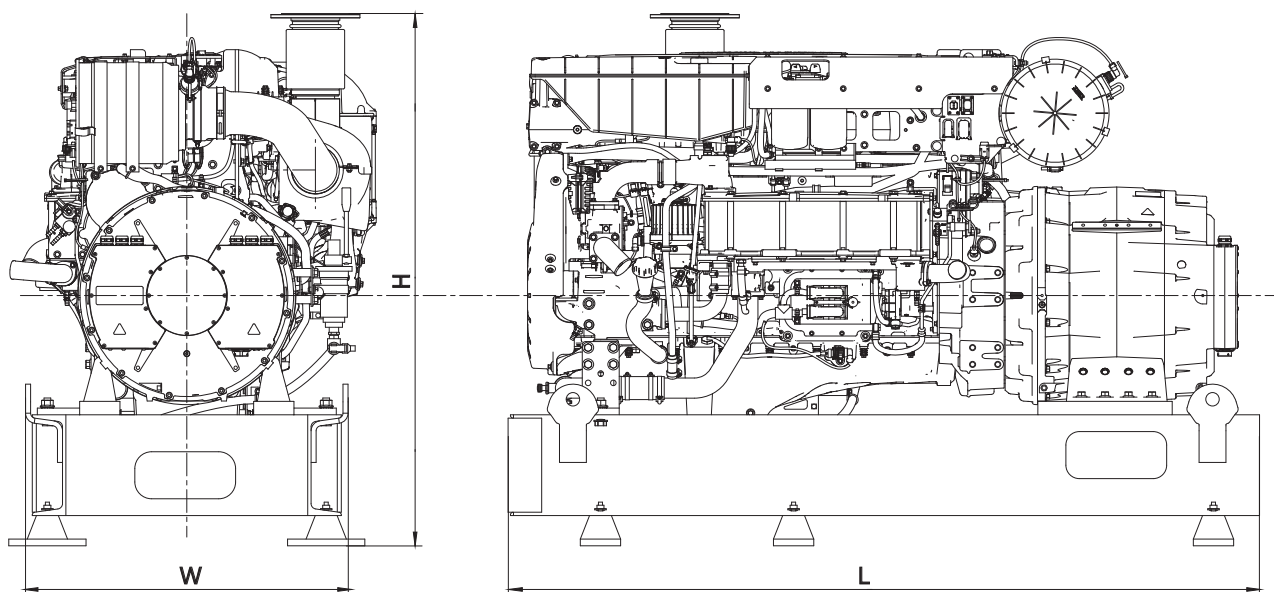
- Exhaust temperature indication
- Engine heater

#### Exhaust aftertreatment system

- SCR (Selective Catalytic Reduction)
- Aqueous UREA solution 32.5% or 40%
- Complete system – developed, certified, and serviced by one company.
- Fully integrated capabilities
- SCR unit reduces noise by up to 35 dBA
- Wide range of installation options available

# D13-MH (VG)

12.78 liter, in-line 6 cylinder



## Technical Data HE/KC Genset (Class F)

### Power output at 1800 rpm 466 V<sub>AC</sub>, kW<sub>e</sub>

D13 MH 400 / EM-PMI540 T1500-1800-DUAL ..... 257

### Power output at 1800 rpm 466 V<sub>AC</sub>, kW<sub>e</sub>

D13 MH 500 / EM-PMI540 T1500-1800-DUAL ..... 277

### Power output at 1900 rpm 469 V<sub>AC</sub>, kW<sub>e</sub> \*

D13 MH 600 / EM-PMI540-T2000-2100-DUAL ..... 385

### Power output at 1850 rpm 420 V<sub>AC</sub>, kW<sub>e</sub> \*\*

D13 MH 600 / EM-PMI540-T2000-2100-DUAL ..... 385

\* IMO II, IMO III, China 2

\*\* US EPA Tier 3

### Dimensions L x W x H<sub>1</sub> (mm), not for installation

D13 MH / EM-PMI540 T1500/T2000. . 2237 x 960 x 1581

### Weight HE, kg

D13 MH / EM-PMI540-T1500-1800-DUAL ..... 2387

D13 MH / EM-PMI540-T2000-2100-DUAL ..... 2487

### Weight KC, kg

D13 MH / EM-PMI540-T1500-1800-DUAL ..... 2347

D13 MH / EM-PMI540-T2000-2100-DUAL ..... 2447

H<sub>1</sub> = Height including exhaust compensator

## Inverter requirement

Nominal inverter switching frequency ..... 8 kHz

Minimal inverter switching frequency ..... 4 kHz

(with limited speed 1,4 times nominal speed)

Fuel temperature 40°C (104°F). 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.

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](http://www.volvopenta.com)



**AB Volvo Penta**

SE-405 08 Göteborg, Sweden  
[www.volvopenta.com](http://www.volvopenta.com)