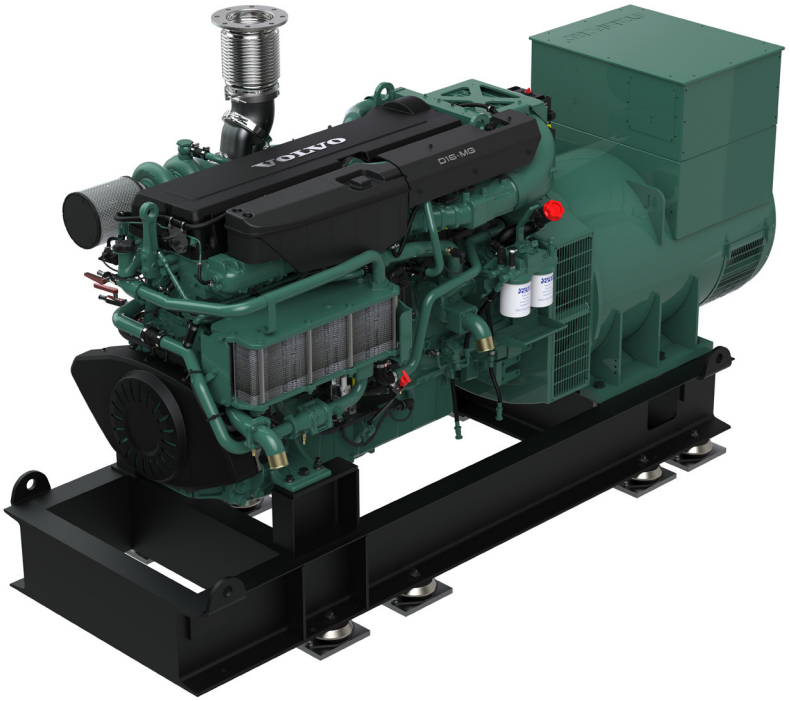
VOLVO PENTA

VOLVO PENTA **MARINE AUXILIARY DIESEL**

D16-MG

16.1 liter, in-line 6 cylinder - Constant engine speed
Emission compliance: IMO Tier II



D16-MG 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 16.1 liter diesel engine is developed from the latest design in modern diesel technology. The engine has a robust block, high pressure unit injector system, 4 valves per cylinder, twin parallel turbocharger with wastegate and charge air cooler.

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

- **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.

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

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Technical Data Engine

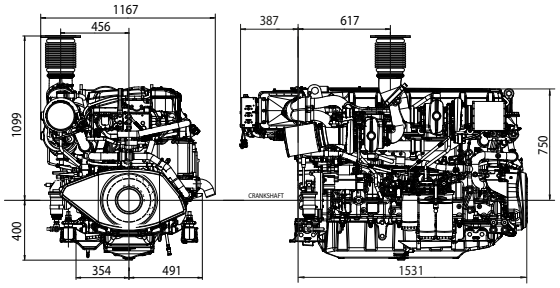
Engine designation	D16 MG	
No. of cylinders and configuration	in-line 6	
Method of operation	4-stroke, direct-injected, turbocharged diesel engine with charge air cooler	
Bore/stroke, mm	144/165	
Displacement, l	16.1	
Compression ratio	16.8:1	
	1500 rpm	**1800 rpm**
Crankshaft power HE/KC, kW	532	585
Emission compliance	IMO Tier II	IMO Tier II
Specific fuel consumption HE/KC, g/kWh		
50%	195	199
75%	194	197
100%	195	200
Recommended fuel conform to	ASTM-D975 1-D & 2-D, EN 590 or JIS KK 2204.	

T10% overload available acc. to class requirements. 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.

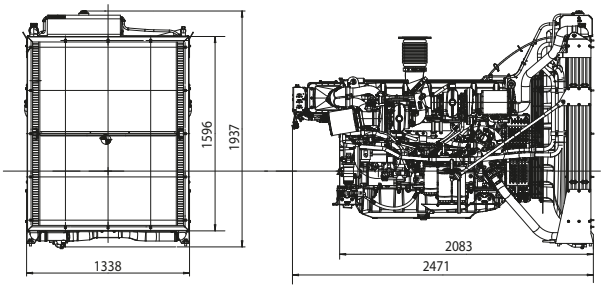
Dimensions

Not for installation, mm (inches)

Engine with HE & KC



Engine with RC



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Technical description

Complete Genset
- High system efficiency as a result of system optimization of the complete Genset
- All used components of highest quality from well reputed suppliers
- Reinforced set dimensioned for high output and low sound level
- Mono-block engine/generator rigidly mounted on a common bed frame
- Engine directly coupled to generator via a flexplate
- Flexible mountings including welding plates mounted under the frame

Engine and block
- Cylinder block and cylinder head made of cast iron
- One piece 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
- Rear-end transmission
- Closed crankcase ventilation
- Each cylinder features cross-flow inlet and exhaust ducts
- Gallery oil cooled forged steel pistons, 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 or RC cool.), coolant level, coolant temp
- Exhaust temperature indication

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
- 6-hole high pressure injector nozzles
- Twin engine-mounted spin-on fine fuel filters with change over valve

Turbocharger
- Twin parallell turbocharger with water-cooled turbine housing and wastegate

Heat Exchanger cooled system (HE)
- For seawater- and central-cooled Gensets
- Engine-mounted plate heat exchanger with expansion tank
- Electrically controlled two stage fresh water pump
- Rubber impeller raw water pump

Radiator cooled system (RC)
- For aircooled Gensets
- V-belt-driven radiator fan
- Belt-driven centrifugal cooling water pump
- Water-cooled CAC (Charge Air Cooler)

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

Generator
- 4-pole, brushless, AC marine generator
- Temperature rise class F
- Tropical insulation class H
- Stator winding as standard with short 2/3 pitch winding, ideal for non-linear load (thyristor load)
- Automatic Voltage Regulator (AVR) for accurate voltage regulation
- Permanent magnet mounted on generator for independent power supply to AVR
- Single bearing generator as standard
- Voltage available range up to 690V
- IP23 enclosure as standard
- Anti condensation heating

Control System
Two options for control systems
1. MCC (Marine Commercial Control), an open system that is type-approved. Incl. 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
- 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)
- Exhaust temperature indication
- Engine heater 2000W

Generator
- Air inlet filters according to IP23
- Air inlet louvres/filters according to IP44
- Parallel equipment mounted in generator
- Thermistors (1 or 2 per phase) mounted in generator for temperature measurement of windings in generator
- PT100 elements (1 or 2 per phase) mounted in generator for temperature measurement of windings in generator
- Double bearing generator (on request)
- PT100 elements mounted in generator bearings for temperature measurement

Miscellaneous
- Dry exhaust silencer with or without spark arrestor
- Alternator with integrated chargingsensor (Only available for HE/KC)
- Flexible mountings including welding-plates mounted under the frame
- Basic toolkit
- Spare parts according to classification recommendations

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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