

# VOLVO PENTA MARINE GENSET

# D7A T

88–135 kVA (70–108 kW) at 1500 rpm 50 Hz/400V, 110–143 kVA (88–114 kW) at 1800 rpm 60 Hz/440V

## Volvo Penta Genset System

The Volvo Penta Genset systems are the complete solution for a ship's onboard power requirements. From a company dedicated to the marine industry you not only get reliable marine diesels, well-matched generators and a monitoring system, but also a wide range of other products and services to optimize your investment.

Each Volvo Penta Genset is factory built fully adapted to the customer's requirements and comes complete with engine, generator and monitoring system, all tested and ready for installation onboard. A complete set of documentation will be delivered with the set according to Volvo's high quality publication standard.

## Reliable and powerful

The D7A T is a highly reliable marine Genset. The engine and generators are type approved by all major classification societies and the complete Genset can be delivered with complete classification certificates directly from factory. Well-matched components combined with an injection system and a turbo optimized for Genset applications provides fast response to load variations.

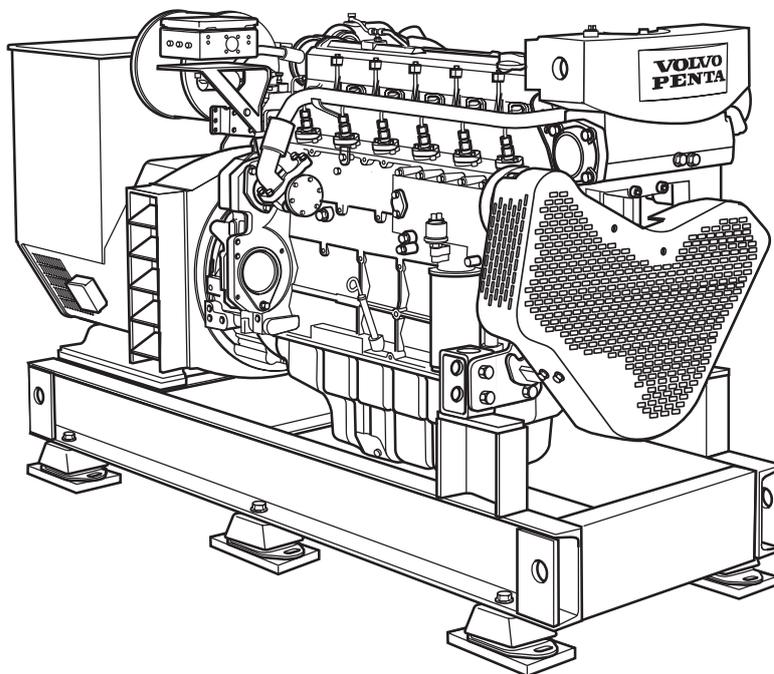
## Robust and silent

A rigid in-line cylinder block with generously dimensioned crankshaft bearings, together with water-cooled exhaust manifold and turbo, are just some of the design features making this silent running and sturdy engine. The owner of a D7A T not only benefits from many hours of trouble-free operation, but also enjoys improved onboard comfort.

## Economical and service friendly

Price is not the only concern when investing in a new Genset. As confirmed by marine professionals, it is the operational costs, such as cost for fuel, spare parts, service and maintenance, that make the real difference in economy.

The D7A T is equipped with unit pumps that control the fuel distribution for each cylinder. Six-hole high-pressure injection nozzles optimize the fuel-air mixture. This improved combustion results in high thermal efficiency, low fuel consumption and reduced exhaust emissions.



Easily accessible maintenance points and single side servicing contribute to the ease of servicing the engine. Liners of wet and replaceable type, inclined connecting rod caps and replaceable valve seats make even major maintenance possible to carry out on-board.

## Safely supported

Volvo Penta has a well-established, well-trained, network of authorized service dealers in more than 100 countries throughout the world. These service centers offer Genuine Volvo Penta Parts as well as skilled service personnel to help you protect your investment.

## Technical Data Engine

Engine designation	D7A T	
No. of cylinders and configuration	in-line 6	
Method of operation	4-stroke, direct-injected, turbocharged diesel engine	
Bore, mm	108	
Stroke, mm	130	
Displacement, l	7.15	
Compression ratio	17.5:1	
	1500 rpm	1800 rpm
Crankshaft Power HE Cooling, kW	116	122
Crankshaft Power RC Cooling, kW	112	115
Crankshaft Power KC Cooling, kW	116	122
Specific fuel consumption KC, g/kWh	215 (50%)	226 (50%)
	215 (75%)	216 (75%)
	219 (100%)	215 (100%)
Recommended fuel to conform to	MDO-DMX or MDO-DMA acc. to ISO 8217	

10% overload available acc. to class requirements. Fuel temperature 40°C (104°F). Technical data according to ISO 3046 Fuel Stop Power with a tolerance  $\pm 4\%$ . 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.

# VOLVO PENTA

# D7AT

## Technical description

### Complete Genset

- High system efficiency as a result of well-matched components
- Components of highest quality from well-reputed suppliers
- 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
- Total torsion compatibility confirmed by advanced calculations
- Full protection of rotating parts
- Set painted in Volvo Penta green

### Engine and block

- Cylinder block, head and flywheel housing made of cast iron
- Belt guard
- 11.5" flywheel with SAE 2 housing
- Nitrocarburized transmission gears
- Press-hardened crankshaft
- Forged aluminum pistons
- Cylinder liners of wet type
- Exhaust elbow, dry, with integrated flexible compensator

### Lubrication system

- Oil filler in valve cover
- Manual oil drain pump
- Lubrication oil pump of rotor type
- Freshwater-cooled oil cooler
- Full flow oil filters of spin-on type
- Closed crankcase ventilation system

### Fuel system

- Fuel feed pump
- Jacketed fuel pipes
- Fine fuel filter of spin-on type
- Unit pumps
- Six-hole injectors
- Mechanical governor with smoke delimiter
- Fuel stopping solenoid 24V

### Heat Exchanger cooled system (HE)

- For seawater-cooled Gensets
- V-belt-driven freshwater pump
- Gear-driven seawater pump
- Engine-mounted tubular heat exchanger with integrated expansion tank

### Radiator cooled cooling system (RC)

- For air-cooled Gensets
- Belt-driven freshwater pump
- V-belt-driven radiator fan

### Keel cooled system (KC)

- 1-circuit keel cooling system
- Belt-driven freshwater pump
- Engine-mounted expansion tank

### Generator

- Temperature rise class F
- Tropical insulation class H
- Generator equipped with spacious terminal box
- Stator winding as standard with short 2/3 pitch winding, ideal for non-linear load (thyristor load)
- 4-pole, brushless, AC marine generator
- Dynamically balanced rotor
- Automatic Voltage Regulator (AVR) for accurate voltage regulation
- Permanent magnet mounted on generator for independent power supply to AVR
- Permanent magnet system to obtain hard performance on motor start and to deliver stationary short circuit current
- Heavy damper cage for parallel operation and very low subtransient reactance values
- Single bearing generator as standard
- Windings are 12 wire reconnectable
- Voltage available range up to 690V
- IP23 enclosure as standard
- Anti condensation heating

### Optional equipment

#### Engine

- Twin oil filter with change over valve
- GAC electronic governor
- Single or twin fuel/water separating pre filter
- Twin fuel filters
- Silencer, dry, with or without spark arrester
- Electrical or air starting systems available
- Hydraulic starting system only on special request for RC

### Non classified control system

- 2-pole 24V system including:
  - Oil pressure shutdown (not for emergency sets)
  - Oil pressure gauge (optional)
  - Coolant temp shutdown (not for emergency sets)
  - Coolant temp gauge (optional)
  - Coolant level shutdown (not for emergency sets)
  - Overspeed shutdown
  - Battery charging alarm
  - Rpm gauge
  - Hour counter
  - Instrument panel for second control station
  - Extension cables in different lengths

### Classified control and monitoring system MCC

- Alarm and monitoring functions according to classification
- Optional functions on request
- Modbus
- Configurable inputs and outputs
- SDU, shutdown unit, includes all shutdown functions required by classification societies

### Generator

- Air inlet filters according to IP23
- Droop-kit
- Thermistors mounted in generator (1 or 2 per phase) for temperature measurement of windings in generator including relays for potential free contacts
- PT100 elements mounted in generator (1 or 2 per phase) for temperature measurement of windings in generator

### Miscellaneous

- Engine heater 230V/820W
- Batteries 14V/140A
- Battery charger
- Synchronization unit (for GAC system)
- Load sharing unit (for GAC system)
- 2-pole 28V/55A alternator
- Spare parts according to classification recommendations

Contact your local Volvo Penta dealer for further information.

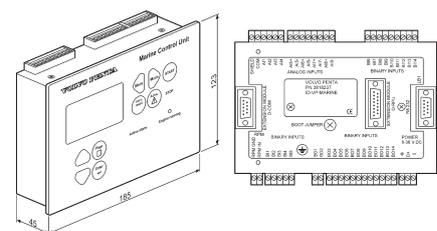
Not all models, standard equipment and accessories are available in all countries. All specifications are subject to change without notice.

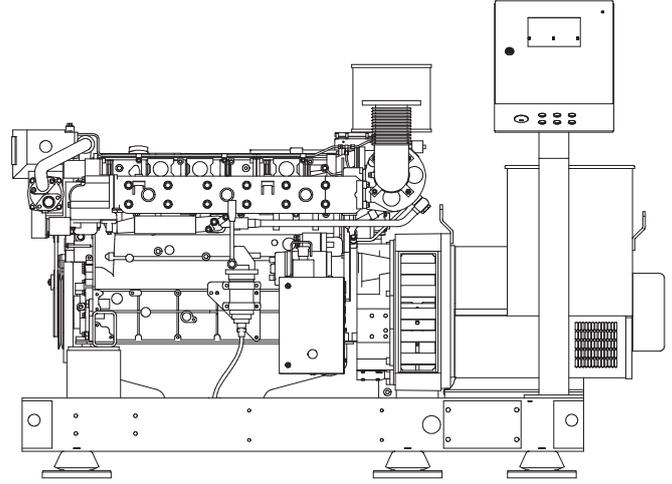
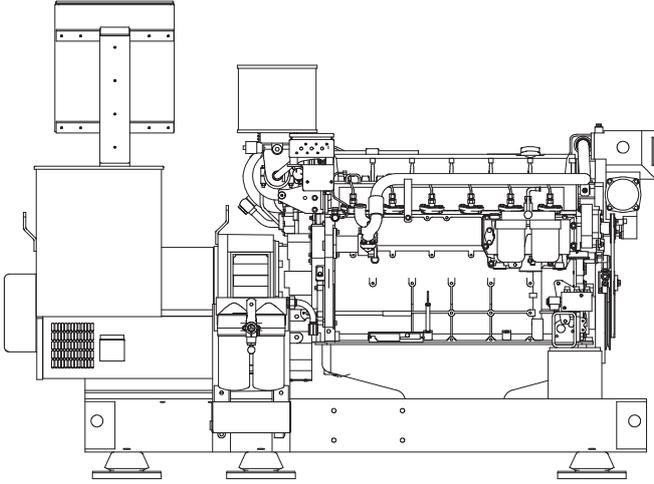
The engine illustrated may not be entirely identical to production standard engines.

## Control and monitoring system MCC

Volvo Penta MCC system is an engine control and monitoring system designed specially to meet the demanding needs of the marine commercial market for both electronically and mechanically controlled engines. The system is easily integrated into the ship's control system. All readings are displayed both as horizontal bars and as digital values on the MCU adjustable graphical LCD screen. The MCU interfaces with the ship's computer system either via

an RS232 port and a standard Modbus protocol or via any of the large number of potential free contacts. All actions are displayed with text messages, in any specified language, and logged according to running hours of occurrence in a non-erasable memory. The unit provides a highly flexible solution, featuring configurable inputs and outputs, allowing the controller to be customized to a particular application or requirement without complicated programming.





### Technical Data HE Genset

Power output at 1500 rpm 50Hz/400V, kVA (kWe)

D7A T / UCM274E-1 .....	113 (90)
D7A T / UCM274F-1 .....	135 (108)

Power output at 1800 rpm 60Hz/440V, kVA (kWe)

D7A T / UCM274E-1 .....	131 (105)
D7A T / UCM274F-1 .....	143 (114)

10% overload available according to class requirements.  
 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.

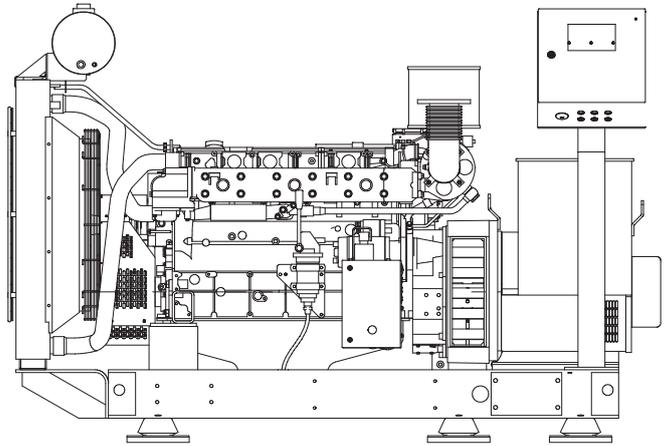
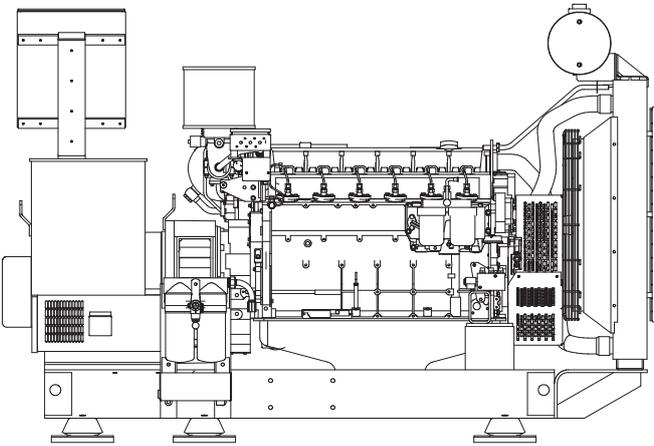
Dimensions L x W x H<sub>1</sub>/H<sub>2</sub> (mm), not for installation

D7A T / UCM274E-1 .....	2191 x 1157 x 1275/1614
D7A T / UCM274F-1 .....	2191 x 1157 x 1275/1614

Dry weight, kg

D7A T / UCM274E-1 .....	1485
D7A T / UCM274F-1 .....	1520

H<sub>1</sub> = Height including exhaust compensator  
 H<sub>2</sub> = Total genset height including control box



### Technical Data RC Genset

Power output at 1500 rpm 50Hz/400V, kVA (kWe)

D7A T / UCM274D-1 .....	88 (70)
D7A T / UCM274F-1 .....	130 (104)

Power output at 1800 rpm 60Hz/440V, kVA (kWe)

D7A T / UCM274D-1 .....	110 (88)
D7A T / UCM274F-1 .....	134 (107)

10% overload available according to class requirements.  
 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.

Dimensions L x W x H<sub>1</sub>/H<sub>2</sub> (mm), not for installation

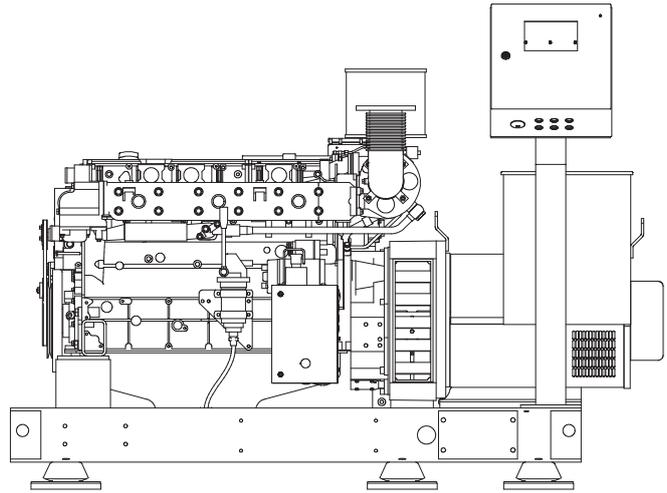
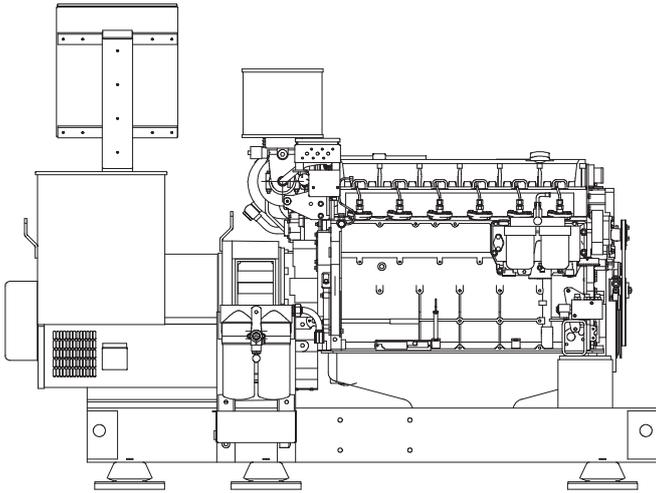
D7A T / UCM274D-1 .....	2410 x 1157 x 1275/1631
D7A T / UCM274F-1 .....	2525 x 1157 x 1275/1631

Dry weight, kg

D7A T / UCM274D-1 .....	1515
D7A T / UCM274F-1 .....	1620

H<sub>1</sub> = Height including exhaust compensator  
 H<sub>2</sub> = Total genset height including expansion tank

# D7A T



## Technical Data KC Genset

Power output at 1500 rpm 50Hz/400V, kVA (kWe)

D7A T / UCM274E-1	113 (90)
D7A T / UCM274F-1	135 (108)

Power output at 1800 rpm 60Hz/440V, kVA (kWe)

D7A T / UCM274E-1	131 (105)
D7A T / UCM274F-1	143 (114)

10% overload available according to class requirements.

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.

Dimensions L x W x H<sub>1</sub>/H<sub>2</sub> (mm), not for installation

D7A T / UCM274E-1	2154 x 1157 x 1275/1614
D7A T / UCM274F-1	2154 x 1157 x 1275/1614

Dry weight, kg

D7A T / UCM274E-1	1465
D7A T / UCM274F-1	1500

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

H<sub>2</sub> = Total genset height including control box

# VOLVO PENTA

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