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.

Additional benefit and security is offered through our Cost Control Program – a unique system of operator support from installation through to service life. It provides financial control and the ability to extend the standard warranty to a full three years, with no running hours limitation. A single, low cost premium is all that is needed plus the commitment to service the engine according to the recommended schedule.

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.

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**Technical Data Engine**

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

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 ±4%. Fuel with a lower calorific value of 42700 kJ/kg and density of 840 g/liter at 15°C (50°F). Merchant fuel may differ from this specification which will influence engine power output and fuel consumption.
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
- 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 high 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

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 high 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

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/400Vz, 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 8965. 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.

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 8965. 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 H₁/H₂ (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
H₁ = Height including exhaust compensator
H₂ = Total genset height including control box

H₁ = Height including exhaust compensator
H₂ = Total genset height including expansion tank
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 H1/H2 (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

H1 = Height including exhaust compensator
H2 = Total genset height including control box