SULZER 4-stroke ENGINES

CHARACTERISTICS
- Water-cooled 6-, and 8-cylinder in-line-engines.
- Four stroke, direct fuel injection.
- Turbocharger and charge air cooling.
- Cylinder heads with 4-valve technology.
- Power-take off on both ends of crankshaft.
- Engine driven pumps on free end of crankshaft.

BENEFITS
- High reliability of the engine.
- Low operational costs due to easy maintenance and long maintenance intervals.
- Low fuel and lubricating oil consumption.
- Clean combustion, even on part load.
**ENGINE DESCRIPTION**

**Crankcase**
Single-piece cast-iron crankcase with underslung crankshaft. Drillings in the block for water and oil distribution to reduce the pipe work.

**Crankshaft**
The crankshaft is of low alloy steel, forged in one piece and fully machined. Counterweights on all cranks. A torsional vibration damper can be fitted to the free end.

**Main bearings**
Thin-walled bearing shells fitted to both the main bearings and the big end bearings.

**Connecting rods**
Drop-forged from alloyed steel and fully machined. The big ends have a serrated joint.

**Big end bearings**
Identical to the main bearings.

**Pistons**
One part piston for operation on MDO, two part piston for HFO operation. With 3 chromium plated piston rings and 2 scraper rings. Fully floating piston pin.

**Cylinder heads**
The cylinder heads are made of special cast iron and are fitted with two inlet and two exhaust valves. Nimonic alloy valves with rotators for engines operating on HFO.

**Camshaft**
The camshaft consists of individual segments, one for each cylinder.

**Fuel injection pumps**
Individual helix-controlled fuel injection pump for each cylinder.

**Governor**
The governor is of Woodward UG8 / PGA12 type.

**Turbocharger**
The turbocharger is mounted on the front end. ABB VTR type or Napier.

**Pump drive**
The oil pump, cooling water pump and fuel booster pump are mounted on the front end. Provision is made for driving an extra cooling water pump.

**Fuel system**
The fuel system is pressurized by a built-on feed pump. Fuel circulates over the fuel day tank. Optionally, external fuel supply is possible.

**Lubricating oil system**
A built-on gear pump supplies oil flow and pressure. Oil flows through a cooler and filter before entering the engine. Optionally, a centrifugal filter is installed.

**Starting air system**
The engine is started by means of direct air starting. The system supplies starting air to the individual cylinder heads via the main starting valve. Control air derived from the starting air is used to control the individual starting valves.

**Cooling water system**
The cooling water system is divided in a high temperature and a low temperature system. High temperature cooling water is used for jacket cooling, low temperature is used for charge air cooling and lubricating oil cooling.

**Exhaust gas system**
Exhaust system is of pulse type.

**Classification**
Classification performed by engine manufacturer.

**Emission regulations**
Emission regulations are not applicable for these engines, because most engines were built before the IMO / EIAPP era (before 2000).
## TECHNICAL DATA

<table>
<thead>
<tr>
<th>Engine type</th>
<th>AL20</th>
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<tbody>
<tr>
<td>Model</td>
<td>6AL20</td>
</tr>
<tr>
<td>Number of cylinders</td>
<td>6</td>
</tr>
<tr>
<td>Bore / stroke mm</td>
<td>200 / 240</td>
</tr>
<tr>
<td>Displacement l</td>
<td>45</td>
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<tr>
<td>MEP bar</td>
<td>16.39 - 16.80</td>
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<td>Direction of rotation</td>
<td>Clockwise or counter-clockwise, non-reversible</td>
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### Power ratings

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<th></th>
<th>HFO</th>
<th>MDO</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>720 min&lt;sup&gt;-1&lt;/sup&gt;</td>
<td>720 min&lt;sup&gt;-1&lt;/sup&gt;</td>
</tr>
<tr>
<td>at 720 min&lt;sup&gt;-1&lt;/sup&gt;</td>
<td>kW</td>
<td>420</td>
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<tr>
<td>at 750 min&lt;sup&gt;-1&lt;/sup&gt;</td>
<td>kW</td>
<td>432</td>
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<tr>
<td>at 900 min&lt;sup&gt;-1&lt;/sup&gt;</td>
<td>kW</td>
<td>525</td>
</tr>
<tr>
<td>at 1000 min&lt;sup&gt;-1&lt;/sup&gt;</td>
<td>kW</td>
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### General data

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<tr>
<th>Specific fuel consumption</th>
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<th>1000 min&lt;sup&gt;-1&lt;/sup&gt;</th>
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<td>at 900 min&lt;sup&gt;-1&lt;/sup&gt;</td>
<td>g/kWh</td>
<td>213</td>
</tr>
<tr>
<td>at 1000 min&lt;sup&gt;-1&lt;/sup&gt;</td>
<td>g/kWh</td>
<td>213</td>
</tr>
</tbody>
</table>

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1) Up to 500 cST/50 °C viscosity in marine auxiliary applications and 380 cST/50 °C viscosity in marine propulsion and stationary applications.

2) For net caloric value 42 707 kJ/kg (10 200 kcal/kg) and ISO-standard reference condition.

Power declarations based on the following ISO standard reference conditions:
27 °C intake air temperature, 27 °C charge air coolant temperature, barometric pressure 1000 mbar, relative humidity 60%.

**Note:** The values given in this document are for information purposes only and not binding.
## PRINCIPAL ENGINE DIMENSIONS (mm) AND WEIGHTS (t)

<table>
<thead>
<tr>
<th>Engine type</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>Weight</th>
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<tbody>
<tr>
<td>6AL20</td>
<td>2780</td>
<td>1620</td>
<td>340</td>
<td>1190</td>
<td>792</td>
<td>1060</td>
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<td>8AL20</td>
<td>3530</td>
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