The MAN 49/60DF is future-proof in multiple ways. Its benchmark fuel efficiency guarantees competitive vessel operation. The very low level of methane emissions ensures long-term CO₂ emission compliance. A modern engine platform with next-generation engine automation system can harness the benefits of a digitized marine operation. For this platform MAN Energy Solutions plans upgrades to future fuels.

Benefits at a glance

- Benchmark efficiency
- Robust performance in gas mode based on next-generation combustion control ACC 2.0
- Next-generation engine automation ready for future tasks such as cybersecurity
- Compact design by increased power density
- Very low methane emissions
MAN V49/60DF

**Propulsion**

**Dimensions**

<table>
<thead>
<tr>
<th>Cyl. No.</th>
<th>12V</th>
<th>14V</th>
</tr>
</thead>
<tbody>
<tr>
<td>L (mm)</td>
<td>10,800</td>
<td>11,800</td>
</tr>
<tr>
<td>W (mm)</td>
<td>4,960</td>
<td>4,960</td>
</tr>
<tr>
<td>H (mm)</td>
<td>5,237</td>
<td>5,237</td>
</tr>
<tr>
<td>Dry mass* (t)</td>
<td>217</td>
<td>245</td>
</tr>
</tbody>
</table>

**Output**

<table>
<thead>
<tr>
<th>Speed rpm</th>
<th>600</th>
</tr>
</thead>
<tbody>
<tr>
<td>mep bar</td>
<td>23</td>
</tr>
<tr>
<td>MAN 12V49/60DF kW</td>
<td>15,600</td>
</tr>
<tr>
<td>MAN 14V49/60DF kW</td>
<td>18,200</td>
</tr>
</tbody>
</table>

* Drawing & dimensions without flywheel seating
Minimum centerline distance for twin-engine installation: 5,050 mm

Last updated July 2022

**General**

- Engine cycle: four-stroke
- No. of cylinders: 12V, 14V
- Bore: 490 mm – Stroke: 600 mm
- Swept volume per cyl: 113.14 dm³

**Fuel consumption at 85 % MCR***

- Liquid fuel mode: 171.0 g/kWh
- Gas mode: 6,990 kJ/kWh

**Cylinder output (MCR)**

- At 600 rpm: 1,300 kW
- Power-to-weight ratio: 13.5 – 13.9 kg/kW

**Compliance with emission regulations**

- Gas mode: IMO Tier III
- Liquid mode: IMO Tier II und IMO Tier III with MAN SCR-LP

**Main features**

**Turbocharging system**
- High efficiency MAN TCT and MAN TCX two-stage turbocharging system

**Engine automation and control**
- Next-generation in-house developed safety and control system MAN SaCoS 5000
- Next-generation combustion control

**Fuel system**
- Cylinder individual solenoid gas admission valves for gas injection into charge air
- Next-generation MAN Common Rail injection system for liquid main fuel or HFO, developed in-house
- Common rail pilot fuel oil system

**Cooling system**
- 2-string high and low temperature cooling water systems or alternatively a combined cooling water system

**Starting system**
- Starting air valves within cylinder heads

**Engine mounting**
- Resilient

**Optional equipment**

- Additional insulation for maximum surface temperature of 110 °C
- High levels of cybersecurity compliance
- Engine variant for methane numbers down to MN 60

MCR = Maximum continuous rating
SCR = Selective catalytic reduction
* According to IMO E2 test cycle

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