

Technical Data D2-60

General

4-stroke indirect injected, turbocharged and aftercooled diesel engine

| | | |
|--|---------------------------|----------------|
| Number of cylinders | | 4 |
| No of valves | | 4 |
| Displacement, total | litres in ³ | 2,216 135,2 |
| Firing order | | 1342 |
| Rotational direction, viewed from the front | | Clockwise |
| Bore | mm in | 84 3,31 |
| Stroke | mm in | 100 3,94 |
| Compression ratio | | 22,3:1 |
| Compression pressure at 250 rpm | MPa | 2,95 |
| Maximum continuous forward inclination: | ° | 10 |
| Max. continuous backward tilt while running: | ° | 35 |
| Max. continuous side tilt while running: | ° | 35 |
| Idling speed | rpm | 850 ± 25 |
| Rated speed | rpm | 3000 |
| Propeller selection range | rpm | 2700-3000 |

| Performance | r/min | 1200 | 1400 | 1600 | 2000 | 2400 | 2800 | 3000 |
|--|--------|--------|--------|-------|--------|-------|-------|-------|
| Crankshaft power 1), 5) | kW | 19,2 | 23,5 | 27,8 | 35,4 | 40,8 | 44,1 | 44,1 |
| | hp | 26,15 | 31,99 | 37,44 | 48,10 | 55,53 | 60,0 | 60,0 |
| Propellershaft power 1) (At full load) | kW | 18,5 | 22,6 | 26,6 | 34,0 | 39,2 | 42,4 | 42,3 |
| | hp | 25,10 | 30,71 | 36,23 | 46,18 | 53,31 | 57,61 | 57,56 |
| Propellershaft power at prop.load x ³ | kW | 2,7 | 4,3 | 6,4 | 12,5 | 21,7 | 34,4 | 42,3 |
| | hp | 3,68 | 5,85 | 8,73 | 17,05 | 29,47 | 46,80 | 57,56 |
| Torque at crankshaft 2) | Nm | 153,0 | 160,5 | 165,7 | 168,9 | 162,5 | 150,5 | 140,4 |
| | lbf ft | 112,85 | 118,38 | 122,2 | 124,58 | 119,9 | 111,0 | 103,6 |
| Mean piston speed | m/s | 4,0 | 4,7 | 5,3 | 6,7 | 8,0 | 9,3 | 10,0 |
| | ft/s | 13,12 | 15,42 | 17,38 | 21,98 | 26,24 | 30,50 | 32,8 |
| Effective mean pressure 2) | MPa | 0,87 | 0,91 | 0,94 | 0,96 | 0,92 | 0,85 | 0,80 |
| | psi | 126,2 | 132,0 | 136,3 | 139,2 | 133,4 | 123,3 | 116,0 |

Lubricating system

| Specific lubricating oil consumption. | | g/kWh |
|--|-----|-------------|
| Max oil volume excl. filters at following inclination: | 0 ° | litres 10,6 |
| Min oil volume excl. filters at following inclination: | 0 ° | litres 8,9 |
| Max oil volume excl. filters at following inclination: | ° | litres |
| Min oil volume excl. filters at following inclination: | ° | litres |
| Max oil volume excl. filters at following inclination: | ° | litres |
| Min oil volume excl. filters at following inclination: | ° | litres |

1) ISO 3046 fuel temp 40°C.

2) At power according to 1).

3) If reverse gear is used 4 % in heat rejection will be added for its oil cooler.

4) Acc. to ISO 3744

5) Acc. to ISO 3046

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| | r/min | 1200 | 1600 | 2000 | 2400 | 2800 | 3000 |
|---|----------|-------|-------|-------|-------|-------|-------|
| Specific fuel consumption 2) | g/kWh | 231,0 | 228,7 | 237,6 | 252,7 | 277,2 | 290,3 |
| Fuel consumption at prop. load x ³ | L/h | 0,8 | 1,09 | 3,8 | 7,0 | 12,1 | 15,1 |
| | US gal/h | 0,21 | 0,50 | 1,00 | 1,84 | 3,19 | 3,99 |
| Fuel consumption at full load | L/h | 5,4 | 7,8 | 10,3 | 12,6 | 14,9 | 15,1 |
| | US gal/h | 1,43 | 2,06 | 2,72 | 3,33 | 3,94 | 3,99 |

| Intake and exhaust system | r/min | 1200 | 1400 | 1600 | 2000 | 2400 | 2800 | 3000 |
|--|-------------------|------|------|------|------|------|------|--------------------|
| Exhaust temperature in exhaust pipe (-60 cm from engine). | °C | 394 | 397 | 398 | 407 | 456 | 496 | 492 |
| Permitted back pressure in the exhaust line at rated speed. (Installed back pressure) | kPa | | | | | | | 20 Max 15,0 Min |
| | psi | | | | | | | 2,9 Max 2,2 Min |
| Engine air consumption at 25°C / 77°F atmospheric pressure 100kPA and relative humidity 30%. | m ³ /h | 78 | 96 | 120 | 162 | 198 | 222 | 228 |
| Exhaust gas flow | m ³ /h | 174 | 222 | 270 | 360 | 438 | 504 | 510 |

| Cooling system | r/min | 1200 | 1400 | 1600 | 2000 | 2400 | 2800 | 3000 |
|--|-------------------|------|------|------|------|------|------|------|
| Radiated heat in percent of crankshaft power. | % | 19 | 19 | 19 | 20 | 21 | 23 | 24 |
| Cooling water heating effect in percent of crankshaft power. | % | 103 | 102 | 95 | 100 | 105 | 121 | 130 |
| Sea water pump flow. | m ³ /h | 1,6 | 1,8 | 2,1 | 2,6 | 3,1 | 3,6 | 3,8 |
| Cooling water circulation pump flow | m ³ /h | 3,4 | 3,8 | 4,4 | 5,5 | 6,3 | 7,3 | 7,7 |
| Coolant content engine | litres | 8,8 | | | | | | |
| Thermostat, start open at | °C | 82 | | | | | | |
| Thermostat, fully open at | °C | 95 | | | | | | |

| Emissions | r/min | 1400 | 1600 | 2000 | 2400 | 2800 | 3000 |
|------------------------------------|-------|------|------|------|------|------|------|
| Smoke at prop. load x ³ | FSN | 0,37 | 0,35 | 0,48 | 0,42 | 0,41 | 1,29 |

1) ISO 3046 fuel temp 40°C.

2) At power according to 1).

3) If reverse gear is used 5% in heat rejection will be added for its oil cooler.

4) Acc. to ISO 3744

5) According to ISO 15850