CHONGQING CUMMINS ENGINE CO., Ltd.

CHONGQING, P.R.CHINA, 400031

Marine Performance Curves

CERTIFIED: This diesel engine complies with or is certified to the following agencies requirements:
IMO Tier II (Two) NOx requirements of International Maritime Organization (IMO), MARPOL 73/78 Annex VI, Regulation 13

**Engine Configuration**

<table>
<thead>
<tr>
<th>Cylinder</th>
<th>Stroke</th>
<th>Displacement:</th>
<th>Rated Power:</th>
<th>Rated Speed:</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>152 mm</td>
<td>14.0 liter</td>
<td>261 kW</td>
<td>1800 rpm</td>
</tr>
</tbody>
</table>

**Fuel System**

CHONGQING CUMMINS ENGINE CO., Ltd.

Power

PT(VS/AFC)

**Cylinders**

Turbocharged / LTA

**Continuous Duty**

261 kw [350 bhp]

**Rated Conditions:** Ratings are based upon ISO 15550 reference conditions; air pressure of 100 kPa [29.612 in Hg], air temperature 25deg. C [77 deg. F] and 30% relative humidity. Member NMMA. Unless otherwise specified, tolerance on all values is +/-5%. Values from engine control modules and displayed on instrument panels are not absolute. Tolerance varies, but is generally less than +/-5% when operating within 30% of rated power.

Full Throttle curve represents power at the crankshaft for mature gross engine performance corrected in accordance with ISO 15550. Propeller Curve represents approximate power demand from a typical propeller. Propeller Shaft Power is approximately 3% less than rated crankshaft power after typical reverse/reduction gear losses and may vary depending on the type of gear or propulsion system used.

Fuel Consumption is based on fuel of 35 deg. API gravity at 16 deg C [60 deg. F] having LHV of 42,780 kj/kg [18390 Btu/lb] and weighing 838.9 g/liter [7.001 lb/U.S. gal].

Continuous Rating (CON): Intended for continuous use in applications requiring uninterrupted service at full power. This rating is an ISO 15550 standard power rating.

<table>
<thead>
<tr>
<th>RPM</th>
<th>Power (kw)</th>
<th>Torque (N·m)</th>
<th>RPM</th>
<th>Power (kw)</th>
<th>Torque (N·m)</th>
<th>Fuel Consumption (L/hr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1860</td>
<td>261</td>
<td>1341</td>
<td>1800</td>
<td>261</td>
<td>1385</td>
<td>68.9</td>
</tr>
<tr>
<td>1700</td>
<td>260</td>
<td>1458</td>
<td>1700</td>
<td>260</td>
<td>1493</td>
<td>59.4</td>
</tr>
<tr>
<td>1600</td>
<td>250</td>
<td>1537</td>
<td>1600</td>
<td>250</td>
<td>1515</td>
<td>48.8</td>
</tr>
<tr>
<td>1500</td>
<td>242</td>
<td>1515</td>
<td>1500</td>
<td>242</td>
<td>1515</td>
<td>40.5</td>
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<td>1400</td>
<td>221</td>
<td>1515</td>
<td>1400</td>
<td>221</td>
<td>1515</td>
<td>33.3</td>
</tr>
<tr>
<td>1300</td>
<td>199</td>
<td>1461</td>
<td>1300</td>
<td>199</td>
<td>1461</td>
<td>26.1</td>
</tr>
<tr>
<td>1200</td>
<td>160</td>
<td>1277</td>
<td>1200</td>
<td>160</td>
<td>1277</td>
<td>21.6</td>
</tr>
<tr>
<td>1100</td>
<td>104</td>
<td>902</td>
<td>1100</td>
<td>104</td>
<td>902</td>
<td>17.4</td>
</tr>
<tr>
<td>1000</td>
<td>85</td>
<td>812</td>
<td>1000</td>
<td>85</td>
<td>812</td>
<td>17.4</td>
</tr>
<tr>
<td>900</td>
<td>33</td>
<td>436</td>
<td>900</td>
<td>33</td>
<td>436</td>
<td>17.4</td>
</tr>
<tr>
<td>800</td>
<td>23</td>
<td>274</td>
<td>800</td>
<td>23</td>
<td>274</td>
<td>17.4</td>
</tr>
</tbody>
</table>

**Cummins Full Throttle Requirements:**
- Engine achieves or exceeds rated rpm at full throttle under any steady operating condition
- Engines in variable displacement boats (such as pushboats, tugboats, net draggers, etc.) achieve no less than 100 rpm below rated speed at full throttle
- Engine achieves or exceeds rated rpm when accelerating from idle to full throttle

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Propulsion Marine Engine Performance Data

General Engine Data

Engine Model: N855-M
Rating Type: Continuous Duty
Rated Engine Power: 261 [350] kW [hp]
Rated Engine Speed: 1800 rpm
Rated Power Production Tolerance: ±3%
Peak Engine Torque @ 1500 rpm: 1385 [1021] N·m [lb·ft]
Peak Engine Torque @ 1000 rpm: 1239 [180] kPa [psi]
Indicated Mean Effective Pressure: [N.A.]
Maximum Allowable Engine Speed: N.A.

Maximum Continuous Torque Capacity from Front of Crank Specifications

Maximum Torque Capacity from Front of Crank: N.A.
Compression Ratio: 14.5:1
Piston Speed: 9.1 [1795] m/sec [ft/min]
Firing Order: 1-5-3-6-2-4
Weight (Dry) - Engine Only - Average: 1302 [2870] kg [lb]
Weight (Dry) - Engine With Heat Exchanger System - Average: 1441 [3177] kg [lb]
Weight Tolerance (Dry) Engine Only: 3xStd Dev( ±%) 12.2

Governor Settings

Default Droop Value: 6%
Maximum Droop Allowed: 16%
High Speed Governor Break Point: 1860 rpm
Minimum Idle Speed Setting: 575 rpm
Normal Idle Speed Variation: 25 rpm
High Idle Speed Range: Minimum 1860 rpm

Noise and Vibration

Average Noise Level - Top (Idle): N.A.
Average Noise Level - Right Side (Rated): N.A.
Average Noise Level - Left Side (Rated): N.A.
Average Noise Level - Front (Rated): N.A.

Fuel System

Avg. Fuel Consumption - ISO 8178 E3 Standard Test Cycle: 47.7 [12.6] l/hr [gal/hr]
Fuel Consumption at Rated Speed: 68.9 [18.2] l/hr [gal/hr]
Approximate Fuel Flow to Pump: 204.4 [54.0] l/hr [gal/hr]
Approximate Fuel Flow Return to Tank: 60.0 [140] l/hr [gal/hr]
Approximate Fuel Flow Return to Tank Temperature: 135.4 [35.8] °C [°F]
Maximum Heat Rejection to Drain Fuel: 71.2 [160] °C [°F]
Maximum Allowable Fuel Supply to Pump Temperature: 2.2 [123] °C [°F]
Fuel Pressure - Pump Out/Rail: N.A.
Mechanical Gauge: N.A.
INSITE Reading: N.A.

TBD= To Be Determined
N/A = Not Available

N.855-M
4962
CQ170
7-Jul-11

[1] Unless otherwise specified, all data is at rated power conditions and can vary ±5%.
[2] No rear loads can be applied when the PTO is fully loaded. Max PTO torque is contingent on torsional analysis results for the specific drive system. Consult Installation Direction Booklet for Limitations.
[3] Heat rejection to coolant values are based on 50% water/50% ethylene glycol mix and do NOT include fouling factors. If sourcing your own cooler, a service fouling factor should be applied according to the cooler manufacturer's recommendation.
[5] May not be at rated load and speed. Maximum heat rejection may occur at other than rated conditions.

http://marine.cummins.com/
Propulsion Marine Engine Performance Data

<table>
<thead>
<tr>
<th>Curve No.</th>
<th>M-888</th>
</tr>
</thead>
<tbody>
<tr>
<td>DS :</td>
<td>4962</td>
</tr>
<tr>
<td>CPL :</td>
<td>CQ170</td>
</tr>
<tr>
<td>DATE:</td>
<td>7-Jul-11</td>
</tr>
</tbody>
</table>

**Air System**

Intake Manifold Pressure .............................................kPa [in Hg] 129 [38]
Intake Air Flow .................................................................l/sec [cfm] 432 [1515]
Heat Rejection to Ambient .................................................kW [Btu/min] 16 [911]

**Exhaust System**

Exhaust Gas Temperature (Turbin Out) .....................................°C [°F] 424 [795]
Exhaust Gas Temperature (Manifold) ........................................°C [°F] 520 [968]

Emissions (in accordance with ISO 8178 Cycle E3)

NOx (Oxides of Nitrogen) .................................................g/kw-hr [g/hp-hr] 6.72 [5.01]
HC (Hydrocarbons) ...........................................................g/kw-hr [g/hp-hr] N.A.
CO (Carbon Monoxide) ......................................................g/kw-hr [g/hp-hr] N.A.

Emissions (in accordance with ISO 8178 Cycle E2)

NOx (Oxides of Nitrogen) .................................................g/kw-hr [g/hp-hr] N.A.
HC (Hydrocarbons) ...........................................................g/kw-hr [g/hp-hr] N.A.
CO (Carbon Monoxide) ......................................................g/kw-hr [g/hp-hr] N.A.

**Cooling System**

Sea Water Pump Specifications ............................................MAB 0.08.17@07/16/2001
Pressure Cap Rating (With Heat Exchanger Option) ....................kPa [psi] 48 [7]

**Engines with Low Temperature Aftercooling (LTA )**

**Main Engine Circuit**

Coolant Flow to Main Cooler (with blocked open thermostat) ..........l/min [gal/min] 411 [109]
Standard Thermostat Operating Range Start to open .........................°C [°F] 77 [170]
Heat Rejection to Engine Coolant¹ ...........................................kW [Btu/min] N.A.

**Aftercooler (LTA) Circuit**

Coolant Flow to LTA Cooler (with blocked open thermostat) ..........l/min [gal/min] 70 [19]
LTA Thermostat Operating Range Full open ...............................°C [°F] 57 [135]
Heat Rejection to Engine Coolant¹ ...........................................kW [Btu/min] N.A.
Maximum Coolant Inlet Temperature from LTA Cooler ..................°C [°F] 63 [145]

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² No rear loads can be applied when the PTO is fully loaded. Max PTO torque is contingent on torsional analysis results for the specific drive system. Consult Installation Direction Booklet for Limitations.
³ Heat rejection to coolant values are based on 50% water/50% ethylene glycol mix and do NOT include fouling factors. If sourcing your own cooler, a service fouling factor should be applied according to the cooler manufacturer's recommendation.
⁴ Consult option notes for flow specifications of optional Cummins seawater pumps, if applicable.
⁵ May not be at rated load and speed. Maximum heat rejection may occur at other than rated conditions.

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All Data is Subject to Change Without Notice - Consult the following Cummins intranet site for most recent data: http://marine.cummins.com/