### CHONGQING CUMMINS ENGINE CO., Ltd.

CHONGQING, P.R.CHINA, 400031

**Marine Performance Curves**

| Displacement: | 14.0 liter [857 in³] |
| Bore:         | 140 mm [5.51 in]     |
| Stroke:       | 152 mm [5.98 in]     |
| Cylinders:    | 6                    |
| Fuel System:  | PT (CENTRY AND V.S.) |

**Rated Power:**
298 kw [400 bhp]

**Rated Speed:**
1800 rpm

**Rating Type:**
Continuous Duty

**Aspiration:**
Turbocharged / LTA

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

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**Engine Performance Curves**

**Engine Speed - rpm**

- **Full Throttle**
  - P (in kW) vs N (in rpm)
  - Propeller Demand vs N (in rpm)

<table>
<thead>
<tr>
<th>Speed (rpm)</th>
<th>Power (kw)</th>
<th>Torque (N.m)</th>
<th>Power (hp)</th>
<th>Torque (ft-lb)</th>
<th>Fuel Consumption (L/hr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1800</td>
<td>298 (400)</td>
<td>1533 (1168)</td>
<td>298 (400.0)</td>
<td>1584 (1168)</td>
<td>77.2 (20.4)</td>
</tr>
<tr>
<td>1700</td>
<td>298 (400)</td>
<td>1675 (1235)</td>
<td>251 (337.0)</td>
<td>1411 (1041)</td>
<td>64.4 (17)</td>
</tr>
<tr>
<td>1600</td>
<td>298 (400)</td>
<td>1780 (1313)</td>
<td>209 (280.9)</td>
<td>1250 (922)</td>
<td>53.8 (14.2)</td>
</tr>
<tr>
<td>1500</td>
<td>297 (398)</td>
<td>1888 (1393)</td>
<td>173 (231.5)</td>
<td>1098 (810)</td>
<td>45.4 (12)</td>
</tr>
<tr>
<td>1400</td>
<td>284 (381)</td>
<td>1939 (1430)</td>
<td>140 (188.2)</td>
<td>957 (706)</td>
<td>37.1 (9.6)</td>
</tr>
<tr>
<td>1300</td>
<td>262 (351)</td>
<td>1922 (1418)</td>
<td>112 (150.7)</td>
<td>826 (609)</td>
<td>29.9 (7.9)</td>
</tr>
<tr>
<td>1200</td>
<td>236 (317)</td>
<td>1879 (1386)</td>
<td>88 (118.5)</td>
<td>704 (519)</td>
<td>23.8 (6.3)</td>
</tr>
<tr>
<td>1100</td>
<td>209 (280)</td>
<td>1813 (1337)</td>
<td>68 (91.3)</td>
<td>591 (436)</td>
<td>17.8 (4.7)</td>
</tr>
<tr>
<td>1000</td>
<td>180 (242)</td>
<td>1720 (1269)</td>
<td>51 (68.6)</td>
<td>488 (360)</td>
<td>13.2 (3.5)</td>
</tr>
<tr>
<td>900</td>
<td>26 (35.1)</td>
<td>26 (35.1)</td>
<td>37 (50.0)</td>
<td>396 (292)</td>
<td>10.6 (2.8)</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 during a dead push or bollard pull
  - Engine achieves or exceeds rated rpm when accelerating from idle to full throttle

Rated Conditions: Ratings are based upon ISO 15550 reference conditions; air pressure of 100 kPa [29.621 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 Shaft Power 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.
Propulsion Marine Engine Performance Data

Curve No. M-889
DS : 4962
CPL : CQ167
DATE: 12-Jul-11

General Engine Data

Engine Model .......................................................... N855-M
Rating Type ......................................................... Continuous Duty
Rated Engine Power .................................................. kW [hp] 298 [400]
Rated Engine Speed .................................................. rpm 1800
Rated Power Production Tolerance ................................±% 3
Rated Engine Torque .................................................. N m [lb-ft] 1582 [1167]
Peak Engine Torque @ rpm ......................................... N m [lb-ft] [N.A.]
Brake Mean Effective Pressure ...................................kPa [psi] 1416 [205]
Indicated Mean Effective Pressure ................................kPa [psi] [N.A.]
Maximum Allowable Engine Speed ................................rpm N.A.

Maximum Continuous Torque Capacity from Front of Crank Specifications

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

Governor Settings

Default Droop Value .................................................. Refer to MAB 2.04.00-03/23/2006 for Droop explanation
Max Droop Allowed .................................................. 6%
High Speed Governor Break Point ........................................rpm 1860
Minimum Idle Speed Setting ............................................. rpm 575
Normal Idle Speed Variation ........................................... ±rpm 25
High Idle Speed Range Minimum .................................................... rpm 1860
Maximum ............................................................. rpm 1972

Noise and Vibration

Average Noise Level - Top (Idle). ...........................................dBA @ 1m N.A.
(Rated) .............................................................dBA @ 1m N.A.
Average Noise Level - Right Side (Idle). .....................................dBA @ 1m N.A.
(Rated) .............................................................dBA @ 1m N.A.
Average Noise Level - Left Side (Idle). .....................................dBA @ 1m N.A.
(Rated) .............................................................dBA @ 1m N.A.
Average Noise Level - Front (Idle). .......................................dBA @ 1m N.A.
(Rated) .............................................................dBA @ 1m N.A.

Fuel System

Fuel Consumption at Rated Speed ........................................... l/hr [gal/hr] 77.3 [20.4]
Approximate Fuel Flow to Pump ........................................... l/hr [gal/hr] 227.1 [60.0]
Maximum Allowable Fuel Supply to Pump Temperature ............................ °C [%F] 60.0 [140]
Approximate Fuel Flow Return to Tank ........................................... l/hr [gal/hr] 149.9 [39.6]
Approximate Fuel Return to Tank Temperature ........................................... °C [%F] 71.2 [160]
Maximum Heat Rejection to Drain Fuel ............................................ kW [Btu/min] 2.4 [136]
Fuel Pressure - Pump Out/Rail Mechanical Gauge ...........................................kPa [psi] 924 [134]
INSITE Reading .............................................................kPa [psi] N.A.

TBD= To Be Determined
N/A = Not Applicable
N.A. = Not Available

* Unless otherwise specified, all data is at rated power conditions and can vary ± 5%.
* No rear loads can be applied when the PPTO is fully loaded. Max PPTO torque is contingent on torsional analysis results for the specific drive system. Consult Installation Direction Booklet for Limitations.
* 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.
* Consult option notes for flow specifications of optional Cummins seawater pumps, if applicable.
* May not be at rated load and speed. Maximum heat rejection may occur at other than rated conditions.

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## Air System
- **Intake Manifold Pressure** ............................................................. kPa [in Hg] 173 [51]
- **Intake Air Flow** ................................................................. l/sec [cfm] 461 [976]
- **Heat Rejection to Ambient** ...................................................... kW [Btu/min] 16 [911]

## Exhaust System
- **Exhaust Gas Flow** ................................................................. l/sec [cfm] 1145 [2,427]
- **Exhaust Gas Temperature (Turbine Out)** .................................. °C [°F] 387 [728]
- **Exhaust Gas Temperature (Manifold)** ...................................... °C [°F] 509 [947]

## Emissions (in accordance with ISO 8178 Cycle E3)
- NOx (Oxides of Nitrogen) ......................................................... g/kw·hr [g/hp·hr] 6.98 [5.20]
- 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]
- **Max. Pressure Drop Across Any External Cooling System Circuit** ........ kPa [psi] 34 [5]

## 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** ........................................... °C [°F] 77 [170]
- **Heat Rejection to Engine Coolant** ............................................. 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** ............................................... °C [°F] 57 [135]
- **Heat Rejection to Engine Coolant** ............................................. kW [Btu/min] N.A.
- **Maximum Coolant Inlet Temperature from LTA Cooler** ...................... °C [°F] 63 [145]

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