



CUMMINS MERCURISER DIESEL
 Charleston, SC 29405
Marine Performance Curves

Basic Engine Model:
330B (SW)
 Engine Configuration:
D403041MX02

Curve Number:
M-90208
 CPL Code: **1975**
 Date: **17-Aug-04**

Displacement: **5.9 liter [359 in³]**
 Bore: **102 mm [4.02 in]**
 Stroke: **120 mm [4.72 in]**
 Fuel System: **Inline Bosch P7100**
 Cylinders: **6**

Advertised Power: **235 [315, 330] @ 2800** kW [bhp, mhp] @ rpm

Aspiration: **Turbocharged / Sea Water Aftercooled**
 Rating Type: **High Output**

CERTIFIED: This marine diesel engine conforms with the NOx requirements of the International Maritime Organization (IMO), MARPOL 73/78 Annex VI, Regulation 13 as applicable.

RATED POWER OUTPUT CURVE

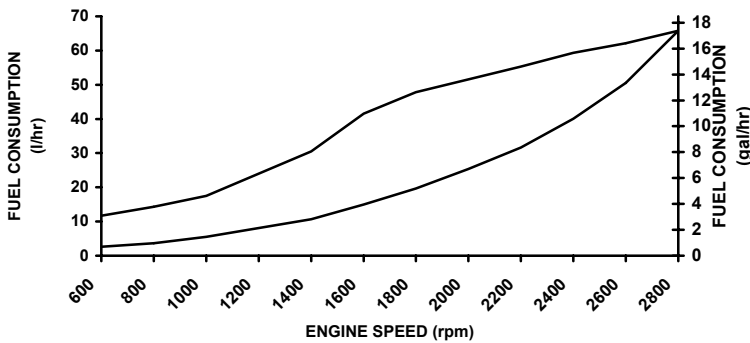
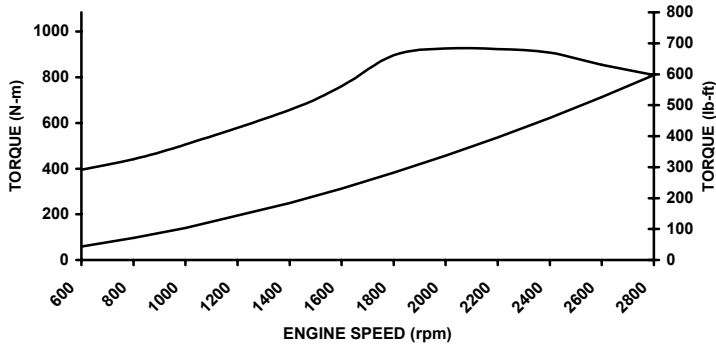
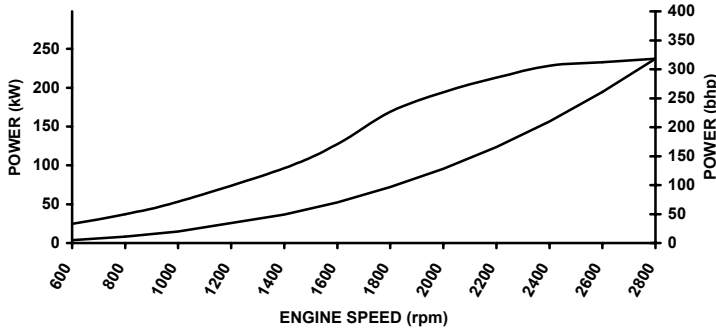
| rpm | kW | bhp |
|------|-----|-----|
| 2800 | 235 | 315 |
| 2600 | 233 | 312 |
| 2400 | 228 | 306 |
| 2200 | 213 | 285 |
| 2000 | 194 | 260 |
| 1800 | 169 | 227 |
| 1600 | 127 | 171 |
| 1400 | 96 | 129 |
| 1200 | 73 | 98 |
| 1000 | 53 | 71 |
| 800 | 37 | 50 |
| 600 | 25 | 33 |

FULL LOAD TORQUE CURVE

| rpm | N-m | lb-ft |
|------|-----|-------|
| 2800 | 801 | 591 |
| 2600 | 854 | 630 |
| 2400 | 908 | 670 |
| 2200 | 923 | 681 |
| 2000 | 926 | 683 |
| 1800 | 896 | 661 |
| 1600 | 761 | 561 |
| 1400 | 658 | 485 |
| 1200 | 582 | 429 |
| 1000 | 506 | 373 |
| 800 | 442 | 326 |
| 600 | 395 | 291 |

FUEL CONSUMPTION - PROP CURVE

| rpm | l/hr | gal/hr |
|------|------|--------|
| 2800 | 65.8 | 17.4 |
| 2600 | 50.6 | 13.4 |
| 2400 | 40.1 | 10.6 |
| 2200 | 31.6 | 8.4 |
| 2000 | 25.4 | 6.7 |
| 1800 | 19.7 | 5.2 |
| 1600 | 14.9 | 3.9 |
| 1400 | 10.7 | 2.8 |
| 1200 | 7.8 | 2.1 |
| 1000 | 5.5 | 1.5 |
| 800 | 3.7 | 1.0 |
| 600 | 2.6 | 0.7 |



Rated Conditions: Ratings are based upon ISO 8665 and SAE J1228 reference conditions; air pressure of 100 kPa [29.612 in Hg], air temperature 25 °C [77°F], and 30% relative humidity. Power is in accordance with IMCI procedure. Member NMMA.

Rated Curves (upper) represents rated power at the crankshaft for mature gross engine performance capabilities obtained and corrected in accordance with ISO 3046. Propeller Curve (lower) is based on a typical fixed propeller demand curve using a 2.7 exponent. 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° API gravity at 16°C [60°F] having LHV of 42,780 kJ/kg [18390 Btu/lb] and weighing 838.9 g/liter [7.001 lb/U.S. gal].

High Output Rating: Intended for use in variable load applications where full power is limited to one (1) hour out of every eight (8) hours of operation. Also, reduced power must be at or below 200 rpm of the maximum rated rpm. This power rating is for pleasure/non-revenue generating applications that operate 300 hours per year or less.

[Signature]
 CHIEF ENGINEER

Marine Engine Performance Data

Curve No. M-90208

DS-4960

DATE: 17Aug04

General Engine Data

| | |
|---|-------------|
| Engine Model..... | 330B (SW) |
| Rating Type..... | High Output |
| Rated Engine Power.....kW [bhp] | 235 [315] |
| Rated Engine Speed.....rpm | 2800 |
| Rated HP Production Tolerance.....±% | 5 |
| Rated Engine Torque.....N•m [ft•lb] | 801 [591] |
| Peak Engine Torque @ 2000 rpm.....N•m [ft•lb] | 926 [683] |
| Brake Mean Effective Pressure.....kPa [psi] | 1727 [250] |
| Indicated Mean Effective Pressure.....kPa [psi] | N.A. |
| Minimum Idle Speed Setting.....rpm | 600 |
| Normal Idle Speed Variation.....rpm | ± 50 |
| High Idle Speed Range Minimum.....rpm | 3100 |
| Maximum.....rpm | 3200 |
| Maximum Allowable Engine Speed.....rpm | N/A |
| Maximum Torque Capacity from Front of Crank ²N•m [ft•lb] | N/A |
| Compression Ratio..... | 15.3:1 |
| Piston Speed.....m/sec [ft/min] | 11.2 [2203] |
| Firing Order..... | 1-5-3-6-2-4 |
| Weight (Dry) Engine With Heat Exchanger System - Average.....kg [lb] | 581 [1280] |

Exhaust System¹

| | |
|---|------------|
| Exhaust Gas Flow.....l/sec [cfm] | 723 [1531] |
| Exhaust Gas Temperature (Turbine Out).....°C [°F] | 485 [905] |
| Exhaust Gas Temperature (Manifold).....°C [°F] | N.A. |

Fuel System¹

| | |
|---|-----------------|
| Fuel Consumption @ Rated Speed.....l/hr [gal/hr] | 65.8 [17.4] |
| Approximate Fuel Flow to Pump.....l/hr [gal/hr] | 258 [68] |
| Maximum Allowable Fuel Supply to Pump Temperature.....°C [°F] | 60 [140] |
| Approximate Fuel Flow Return to Tank.....l/hr [gal/hr] | N.A. |
| Approximate Fuel Return to Tank Temperature.....°C [°F] | N.A. |
| Maximum Heat Rejection to Drain Fuel ⁵kW [Btu/min] | N.A. |
| Fuel Transfer Pump Pressure RangekPa [psi] | 124-172 [18-25] |

Air System¹

| | |
|---|-----------|
| Intake Manifold PressurekPa [in Hg] | 190 [56] |
| Intake Air Flow.....l/sec [cfm] | 310 [657] |
| Heat Rejection to AmbientkW [Btu/min] | N.A. |

Emissions (in accordance with ISO 8178 Cycle E3)

| | |
|---|-------------|
| NOx (Oxides of Nitrogen)g/kw-hr [g/hp-hr] | 7.97 [5.94] |
| HC (Hydrocarbons).....g/kw-hr [g/hp-hr] | 0.30 [0.22] |
| CO (Carbon Monoxide).....g/kw-hr [g/hp-hr] | 1.73 [1.29] |
| PM (Particulate Matter).....g/kw-hr [g/hp-hr] | 0.21 [0.16] |

Cooling System¹

| | |
|--|----------|
| Sea Water Pump Specifications.....MAB 0.08.17-07/16/2001 | |
| Pressure Cap Rating (With Heat Exchanger Option).....kPa [psi] | 103 [15] |

Engines with Standard Aftercooling

| | |
|---|------------|
| Coolant Flow to Engine Heat Exchanger/Keel Cooler l/min [gal/min] | 189 [50] |
| Standard Thermostat Operating Range Start to Open.....°C [°F] | 83 [181] |
| Full Open°C [°F] | 95 [203] |
| Heat Rejection to Engine Coolant ³kW [Btu/min] | 149 [8500] |

TBD = To Be Decided

N/A = Not Applicable

N.A. = Not Available

¹All Data at Rated Conditions

²Consult Installation Direction Booklet for Limitations

³Heat rejection 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.

⁴Consult option notes for flow specifications of optional Cummins seawater pumps, if applicable.

⁵May not be at rated load and speed. Maximum heat rejection may occur at other than rated conditions.

CUMMINS ENGINE COMPANY, INC.
COLUMBUS, INDIANA

All Data is Subject to Change Without Notice - Consult the following Cummins intranet site for most recent data:

<http://www.cummins.com>