



**CUMMINS ENGINE COMPANY, INC**  
Columbus, Indiana 47201

**Marine Performance Curve**

Basic Engine Model:  
**6CTA8.3-M (SW)**

Curve Number:  
**M-90413**

Marine  
Pg. No.  
**6C  
61**

Engine Configuration:  
**D413030MX02**

CPL Code:  
**8089**

Date:  
**28Aug04**

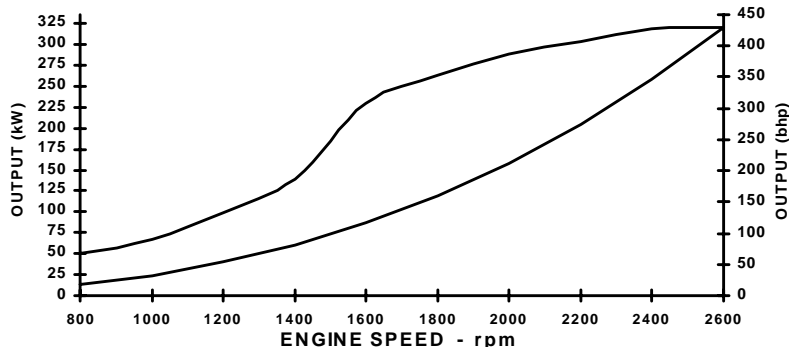
Displacement: **8.3 liters [504.5 in.<sup>3</sup>]**  
Bore: **114 mm [4.49 in.]**  
Stroke: **135 mm [5.32 in.]**  
Fuel System: **Inline Bosch P7100**  
Cylinders: **6**

Advertised Power: **kW [bhp] @ rpm**  
**321 (430) @ 2600**

Aspiration: **Turbocharged/Sea Water Aftercooled**  
Rating Type: **Intermittent**

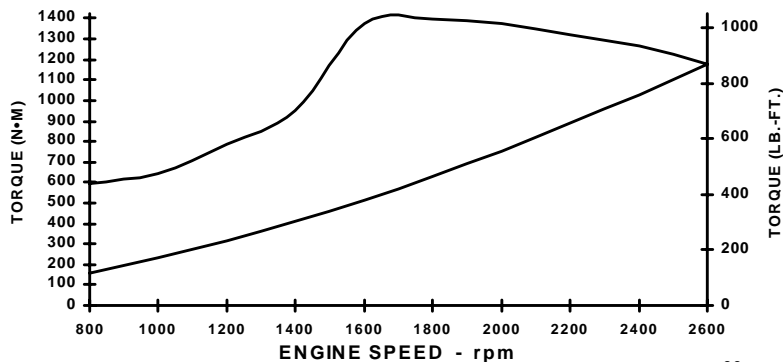
CERTIFIED: This marine diesel engine conforms with the NOx requirements of the International Maritime Organization (IMO), MARPOL 73/78 Annex VI, Regulation 13 as applicable.

**RATED POWER OUTPUT CURVE**



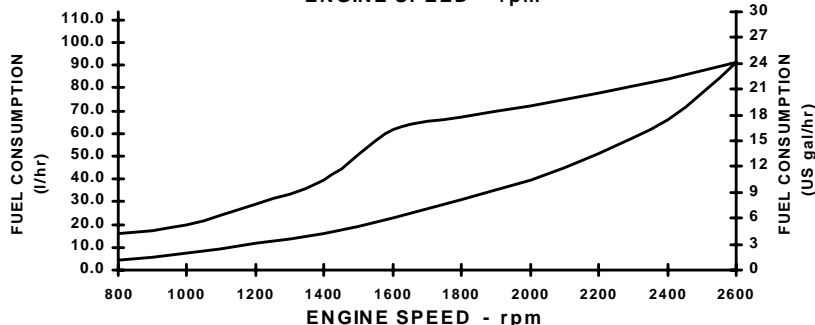
rpm	kW	bhp
2600	321	430
2400	318	427
2200	304	408
2000	288	386
1800	263	353
1600	230	309
1400	139	187
1200	99	133
1000	68	90
800	50	67

**FULL LOAD TORQUE CURVE**



rpm	Nm	lb.-ft.
2600	1182	869
2400	1267	934
2200	1321	974
2000	1374	1013
1800	1395	1029
1600	1374	1013
1400	949	700
1200	787	580
1000	644	475
800	595	439

**FUEL CONSUMPTION - PROP CURVE**



rpm	l/hr	gal/hr
2600	91.6	24.2
2400	66.3	17.5
2200	51.5	13.6
2000	39.3	10.4
1800	30.9	8.2
1600	23.1	6.1
1400	16.3	4.3
1200	11.5	3.0
1000	7.7	2.0
800	4.4	1.2

Rating 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 rated in accordance with IMCI procedures. Member NMMMA.

Rated Curves (upper) represent 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].

**Intermittent Rating:** This power rating is intended for Intermittent use in variable load application where full power is limited to two (2) hours out of every eight (8) hours of operation. Also, reduced power operation must be at or below 200 RPM of the maximum rated RPM. This rating is an ISO 3046 fuel stop power rating and is for applications that operate less than 1500 hours per year.

**CHIEF ENGINEER**

## Marine Engine Performance Data

Curve No. M-90413  
DS-4961  
CPL: 8089  
DATE: 28Aug04

### General Engine Data

Engine Model .....	6CTA8.3-M (SW)
Rating Type .....	Intermittent
Rated Engine Power ..... kW [HP]	321 [430]
Rated Engine Speed ..... rpm	2600
<b>Rated HP Production Tolerance</b> .....	<b>±5</b>
Rated Engine Torque..... Nm [ft/lb]	1178 [869]
<b>Peak Engine Torque @ 1800 RPM</b> .....	<b>1395 [1029]</b>
Brake Mean Effective Pressure..... kPa [PSI]	<b>1790 [260]</b>
Minimum Idle Speed Setting .....	600
<b>Normal Idle Speed Variation</b> .....	<b>±50</b>
High Idle Speed Range - Minimum .....	2920
High Idle Speed Range - Maximum .....	3020
Maximum Torque Capacity from Front of Crank <sup>2</sup> .....	<b>N.A.</b>
Compression Ratio.....	15.35:1
Piston Speed..... m/sec [ft/min]	11.7 [2305]
Firing Order .....	1-5-3-6-2-4
<b>Weight (Dry) Engine Only - Average</b> .....	<b>801 [1765]</b>
Weight (Dry) Engine With Heat Exchanger System - Average .....	<b>855 [1855]</b>

### Fuel System<sup>1</sup>

Approximate Fuel Flow to Pump ..... liter/hr [GPH]	259 [68]
<b>Maximum Allowable Fuel Supply to Pump Temperature</b> .....	<b>60 [140]</b>
Approximate Fuel Flow Return to Tank ..... liter/hr [GPH]	170 [45]
Approximate Fuel Return to Tank Temperature..... °C [°F]	N.A.
<b>Maximum Heat Rejection to Drain Fuel<sup>5</sup></b> .....	<b>N.A.</b>
Fuel Transfer Pump Pressure Range .....	124 - 172 [18-25]

### Air System<sup>1</sup>

Intake Manifold Pressure .....	mm Hg [in. Hg]	<b>1524 [60]</b>
Intake Air Flow .....	liter/sec [CFM]	434 [920]
Heat Rejection to Ambient .....	kW [BTU/min]	42 [2415]

### Exhaust System<sup>1</sup>

Exhaust Gas Flow .....	liter/sec [CFM]	<b>991 [2100]</b>
Exhaust Gas Temperature (Turbine Out) .....	°C [°F]	444 [830]
Exhaust Gas Temperature (Manifold) .....	°C [°F]	N.A.

### Emissions (in accordance with ISO8178 Cycle E3)

<b>NOx (Oxides of Nitrogen)</b> .....	<b>g/kw-hr [g/bhp-hr]</b>	<b>7.54 [5.62]</b>
<b>HC (Hydrocarbons)</b> .....	<b>g/kw-hr [g/bhp-hr]</b>	<b>0.30 [0.22]</b>
<b>CO (Carbon Monoxide)</b> .....	<b>g/kw-hr [g/bhp-hr]</b>	<b>0.50 [0.37]</b>
<b>PM (Particulate Matter)</b> .....	<b>g/kw-hr [g/bhp-hr]</b>	<b>0.17 [0.13]</b>

### Cooling System<sup>1</sup>

<b>Coolant Flow to Engine Heat Exchanger/Keel Cooler</b> .....	<b>liter/min [GPM]</b>	<b>322 [85]</b>
<b>Standard Thermostat Operating Range (Min.)</b> .....	<b>°C [°F]</b>	<b>71 [160]</b>
<b>Standard Thermostat Operating Range (Max.)</b> .....	<b>°C [°F]</b>	<b>83 [182]</b>
Heat Rejection to Engine Coolant <sup>3</sup> .....	kW [BTU/min]	277 [15,750]
<b>Sea Water Flow (With Heat Exchanger Option)<sup>4</sup></b> .....	<b>liter/min [GPM]</b>	<b>238 [63]</b>
Pressure Cap Rating (With Heat Exchanger Option) .....	kPa [PSI]	103 [15]

### INSTALLATION DRAWING

Engine Only .....	3170262
-------------------	---------

TBD = To Be Decided

N/A = Not Applicable

N.A. = Not Available

<sup>1</sup>All Data at Rated Conditions

<sup>2</sup>Consult Installation Direction Booklet for Limitations

<sup>3</sup>Heat 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.

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

<sup>5</sup>May 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>