



CUMMINS MERCURISER DIESEL
 Charleston, SC 29405
Marine Performance Curves

Basic Engine Model:
450C (SW)

Curve Number:
M-90215

Engine Configuration:
D413030MX02

CPL Code:
8089

Date:
17-Aug-04

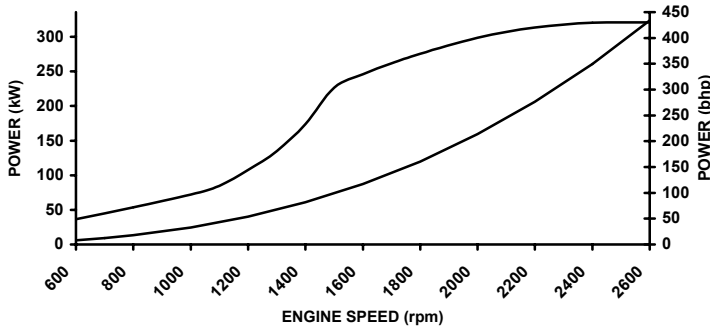
Displacement: **8.3 liter [504.5 in³]**
 Bore: **114 mm [4.49 in]**
 Stroke: **135 mm [5.32 in]**
 Fuel System: **Inline Bosch P7100**
 Cylinders: **6**

Advertised Power: **321 [430, 450] @ 2600** kW [bhp, mhp] @ rpm

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

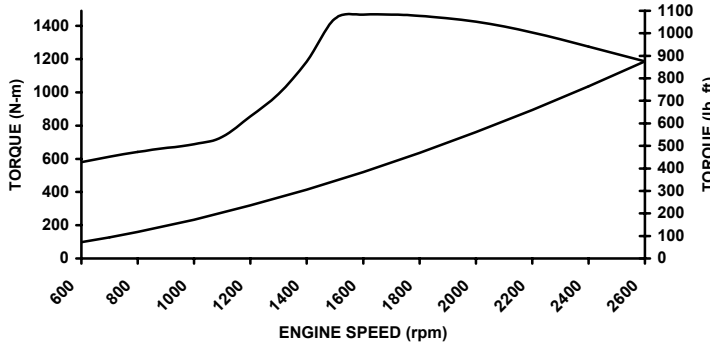
CERTIFIED: This marine diesel engine conforms with the NOx requirements of the International Maritime Organization (IMO), MARPOL 73/78 Annex VI, Regulation 13 as applicable.

RATED POWER OUTPUT CURVE



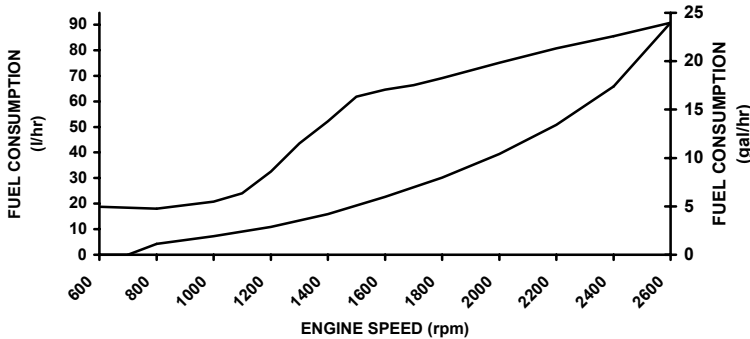
rpm	kW	bhp
2600	321	430
2400	321	430
2200	314	420
2000	299	400
1800	275	369
1600	246	330
1400	174	233
1200	108	144
1000	72	97
800	54	72
600	36	49

FULL LOAD TORQUE CURVE



rpm	N-m	lb-ft
2600	1188	876
2400	1275	940
2200	1360	1003
2000	1425	1051
1800	1461	1077
1600	1467	1082
1400	1185	874
1200	856	631
1000	687	507
800	641	473
600	580	428

FUEL CONSUMPTION - PROP CURVE



rpm	l/hr	gal/hr
2600	90.7	24.0
2400	65.9	17.4
2200	50.8	13.4
2000	39.5	10.4
1800	30.2	8.0
1600	22.7	6.0
1400	15.8	4.2
1200	10.9	2.9
1000	7.2	1.9
800	4.3	1.1
600	0.0	0.0

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-90215

DS-4961

DATE: 17Aug04

General Engine Data

Engine Model.....	450C (SW)
Rating Type.....	High Output
Rated Engine Power.....kW [bhp]	321 [430]
Rated Engine Speed.....rpm	2600
Rated HP Production Tolerance..... %	± 5
Rated Engine Torque.....N•m [ft•lb]	1188 [876]
Peak Engine Torque @ 1700 rpm.....N•m [ft•lb]	1468 [1083]
Brake Mean Effective Pressure.....kPa [psi]	1802 [261]
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	2920
Maximum.....rpm	3020
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]	11.7 [2305]
Firing Order.....	1-5-3-6-2-4
Weight (Dry) Engine With Heat Exchanger System - Average.....kg [lb]	841 [1855]

Exhaust System¹

Exhaust Gas Flow.....l/sec [cfm]	991 [2100]
Exhaust Gas Temperature (Turbine Out).....°C [°F]	444 [830]
Exhaust Gas Temperature (Manifold).....°C [°F]	N.A.

Fuel System¹

Average Fuel Consumption - ISO 8178 E3 Standard Test Cycle.....l/hr [gal/hr]	59 [16]
Fuel Consumption @ Rated Speed.....l/hr [gal/hr]	90.7 [24.0]
Approximate Fuel Flow to Pump.....l/hr [gal/hr]	259 [68]
Maximum Allowable Fuel Supply to Pump Temperature.....°C [°F]	60 [140]
Approximate Fuel Flow Return to Tank.....l/hr [gal/hr]	168 [44]
Approximate Fuel Return to Tank Temperature.....°C [°F]	41 [105]
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]	203 [60]
Intake Air Flow.....l/sec [cfm]	434 [920]
Heat Rejection to AmbientkW [Btu/min]	42 [2415]

Emissions (in accordance with ISO 8178 Cycle E3)

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

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]	322 [185]
Standard Thermostat Operating Range Start to Open.....°C [°F]	71 [160]
Full Open°C [°F]	83 [182]
Heat Rejection to Engine Coolant ³kW [Btu/min]	277 [15750]

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>