

**CUMMINS ENGINE COMPANY, INC**

Columbus, Indiana 47201

Marine Performance Curve

Basic Engine Model:

6BT5.9-M

Curve Number:

M-90762

Engine Configuration:

D402013MX02

CPL Code:

2891

Date:

28Aug04

Marine

Pg. No.

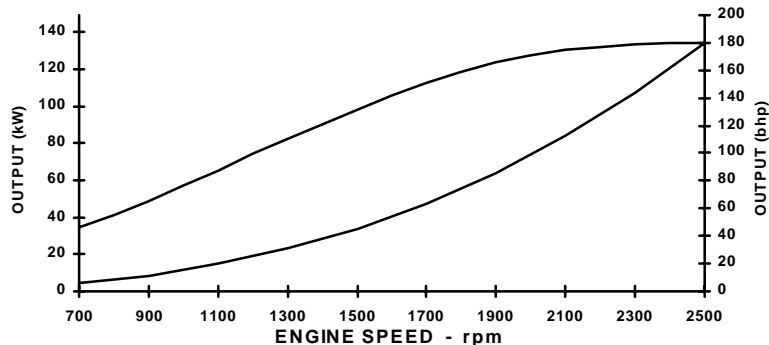
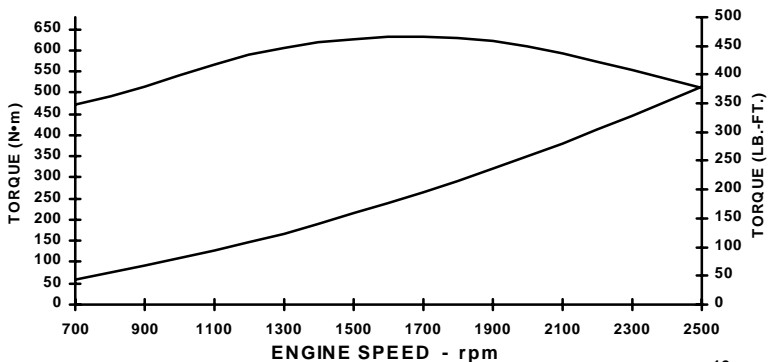
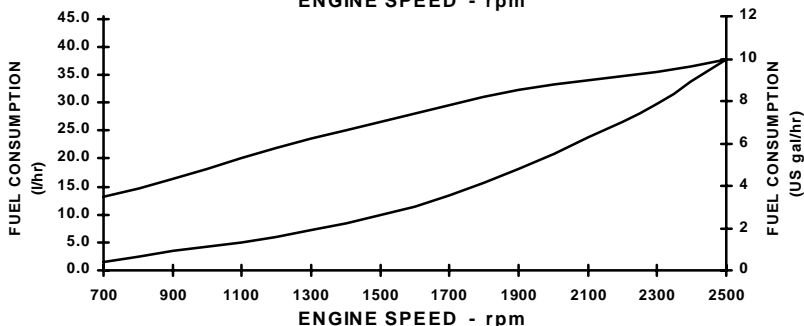
6B**29**

Displacement: **6 liters** [359 in.³]
Bore: **102 mm** [4.02 in.]
Stroke: **120 mm** [4.72 in.]
Fuel System: **Lucas CAV**
Cylinders: **6**

Advertised Power: kW [bhp] @ rpm
134 [180] @ 2500

Aspiration: **Turbocharged**
Rating Type: **Medium Continuous**

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**FULL LOAD TORQUE CURVE****FUEL CONSUMPTION - PROP CURVE**

rpm	l/hr	gal/hr
2500	37.8	10.0
2300	29.9	7.9
2100	23.9	6.3
1900	18.1	4.8
1700	13.4	3.5
1500	9.9	2.6
1300	7.2	1.9
1100	5.0	1.3
900	3.4	0.9
700	1.6	0.4

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 NMMA.

Rated Curves (upper) represent rated power at the crankshaft. 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].

Medium Continuous Rating: This power rating is intended for continuous use in variable load applications where full power is limited to six (6) hours out of every twelve (12) hours of operation. Also, reduced power operations must be at or below 200 RPM of the maximum rated RPM. This is an ISO 3046 Fuel Stop Power Rating and is for applications that operate 3,000 hours per year or less.

CHIEF ENGINEER

Marine Engine Performance Data

Curve No. M-90762

DS-4960

CPL: 2891

DATE: 28Aug04

General Engine Data

Engine Model.....	6BT5.9-M
Rating Type.....	Medium Continuous
Rated Engine Power kW [HP]	134 [180]
Rated Engine Speed..... rpm	2500
Rated HP Production Tolerance..... %	±5
Rated Engine Torque Nm [ft/lb]	513 [378]
Peak Engine Torque @ 1700 RPM..... Nm [ft/lb]	630 [465]
Brake Mean Effective Pressure kPa [PSI]	1095 [159]
Minimum Idle Speed Setting r p m	7 00
Normal Idle Speed Variation r p m	±50
High Idle Speed Range - Minimum..... .. rpm	2648
High Idle Speed Range - Maximum..... .. rpm	2752
Maximum Torque Capacity from Front of Crank ² Nm [ft/lb]	N.A.
Compression Ratio	16.5:1
Piston Speed..... m/sec [ft/min]	10.0 [1967]
Firing Order.....	1-5-3-6-2-4
Weight (Dry) Engine Only - Average..... kg [lb]	465 [1025]
Weight (Dry) Engine With Heat Exchanger System - Average..... kg [lb]	508 [1120]

Fuel System¹

Approximate Fuel Flow to Pump liter/hr [GPH]	45 [12]
Maximum Allowable Fuel Supply to Pump Temperature..... °C [°F]	60 [140]
Approximate Fuel Flow Return to Tank..... liter/hr [GPH]	11 [3]
Approximate Fuel Return to Tank Temperature °C [°F]	N.A.
Maximum Heat Rejection to Drain Fuel ⁵ kW [BTU/min]	N.A.
Fuel Transfer Pump Pressure..... kPa [PSI]	34 [5]

Air System¹

Intake Manifold Pressure mm Hg [in. Hg]	1092 [43]
Intake Air Flow liter/sec [CFM]	212 [450]
Heat Rejection to Ambient kW [BTU/min]	18 [1000]

Exhaust System¹

Exhaust Gas Flow..... liter/sec [CFM]	472 [1000]
Exhaust Gas Temperature (Turbine Out)..... °C [°F]	405 [760]
Exhaust Gas Temperature (Manifold)..... °C [°F]	127 [260]

Emissions (in accordance with ISO8178 Cycle E3)

NOx (Oxides of Nitrogen)..... g/kw-hr [g/bhp-hr]	6.71 [5.00]
HC (Hydrocarbons)..... g/kw-hr [g/bhp-hr]	0.89 [0.66]
CO (Carbon Monoxide)..... g/kw-hr [g/bhp-hr]	1.80 [1.34]
PM (Particulate Matter)..... g/kw-hr [g/bhp-hr]	0.35 [0.26]

Cooling System¹

Coolant Flow to Engine Heat Exchanger/Keel Cooler..... liter/min [GPM]	167 [44]
Standard Thermostat Operating Range (Min.)..... °C [°F]	83 [181]
Standard Thermostat Operating Range (Max.)..... °C [°F]	95 [203]
Heat Rejection to Engine Coolant ³ kW [BTU/min]	121 [6,900]
Sea Water Flow (With Heat Exchanger Option) ⁴ liter/min [GPM]	76 [20]
Pressure Cap Rating (With Heat Exchanger Option)..... kPa [PSI]	103 [15]

INSTALLATION DRAWINGS

With Twin Disc MG 502-1 Marine Gear	3884426-A
With Twin Disc MG 5011-A Marine Gear.....	3884826
With ZF IRM-220A Marine Gear	3884425-A

TBD = To Be Decided

N/A = Not Applicable

N.A. = Not Available

¹All Data at Rated Conditions²Consult Installation Direction Booklet for Limitations³Heat 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, INDIANAAll Data is Subject to Change Without Notice - consult the following Cummins intranet site for most recent data:
<http://www.cummins.com>