



CUMMINS ENGINE COMPANY, INC
Columbus, Indiana 47201

Marine Performance Curve

Basic Engine Model:
6BT5.9-M

Curve Number:
M-90762

Marine
Pg. No.
6B
29

Engine Configuration:
D402013MX02

CPL Code:
2891

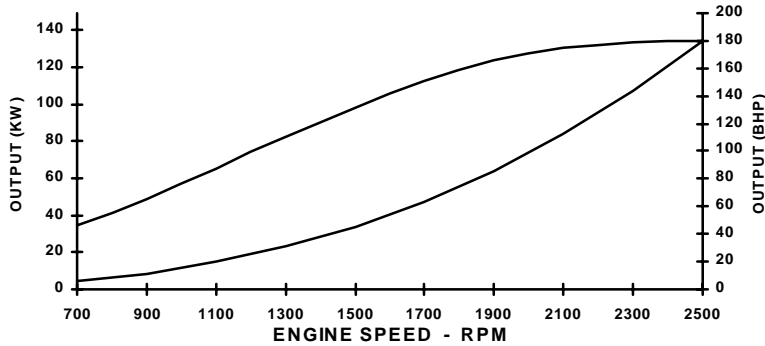
Date:
07Nov00

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

Advertised Power: **134 [180] @ 2500** kW [HP] @ RPM
Aspiration: **Turbocharged**
Rating Type: **Medium Continuous**

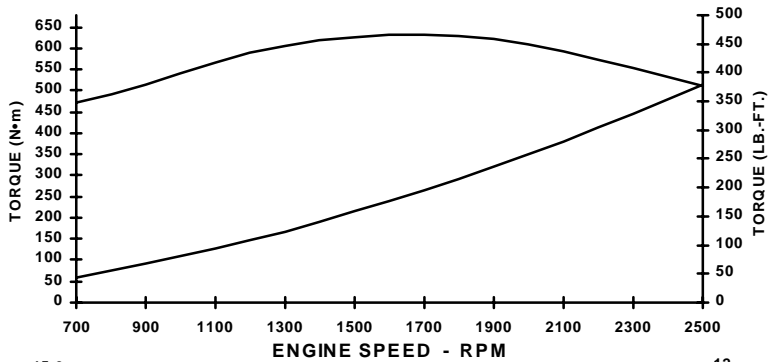
CERTIFIED: This marine diesel engine conforms with the NOx requirements of the International Maritime Organization (IMO), MARPOL 73/78 Annex VI, Regulation 13 as applicable.

RATED POWER OUTPUT CURVE



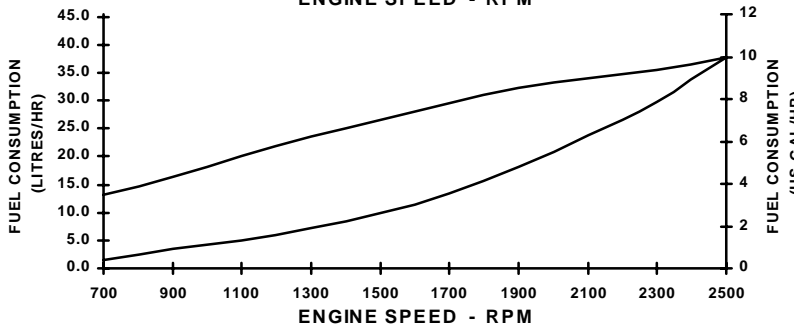
RPM	kW	BHP
2500	134	(180)
2300	134	(179)
2100	130	(175)
1900	124	(166)
1700	113	(151)
1500	98	(132)
1300	83	(111)
1100	65	(88)
900	49	(65)
700	35	(46)

FULL LOAD TORQUE CURVE



RPM	N·m	lb.-ft.
2500	525	(387)
2300	555	(409)
2100	593	(437)
1900	621	(458)
1700	632	(466)
1500	627	(462)
1300	608	(448)
1100	567	(418)
900	514	(379)
700	471	(347)

FUEL CONSUMPTION - PROP CURVE



RPM	Litres/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: 07Nov00

General Engine Data

Engine Model	6BT5.9-M
Rating Type	Medium Continuous
Rated Engine Power kW [HP]	134 [180]
Rated Engine Speed	2500 RPM
Rated HP Production Tolerance	±5 %
Rated Engine Torque N•m [ft/lb]	513 [378]
Peak Engine Torque @ 1700 RPM	630 [465]
Brake Mean Effective Pressure kPa [PSI]	1095 [159]
Minimum Idle Speed Setting	700 RPM
Normal Idle Speed Variation	±50 RPM
High Idle Speed Range - Minimum	2648 RPM
High Idle Speed Range - Maximum	2752 RPM
Maximum Torque Capacity from Front of Crank ²	N.A.
Compression Ratio	16.5:1
Piston Speed	10.0 [1967] m/sec [ft/min.]
Firing Order	1-5-3-6-2-4
Weight (Dry) Engine Only - Average	465 [1025] kg [lb]
Weight (Dry) Engine With Heat Exchanger System - Average	508 [1120] kg [lb]

Fuel System¹

Approximate Fuel Flow to Pump	litre/hr [GPH]	45 [12]
Maximum Allowable Fuel Supply to Pump Temperature	°C [°F]	60 [140]
Approximate Fuel Flow Return to Tank	litre/hr [GPH]	11 [3]
Approximate Fuel Return to Tank Temperature	°C [°F]	N.A.
Maximum Heat Rejection to Drain Fuel⁵	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	litre/sec [CFM]	212 [450]
Heat Rejection to Ambient	kW [BTU/min.]	18 [1000]

Exhaust System¹

Exhaust Gas Flow	litre/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	litre/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	litre/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 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>