



CUMMINS ENGINE COMPANY, INC
Columbus, Indiana 47201

Marine Performance Curve

Basic Engine Model:
6BTA5.9-M (SW)

Curve Number:
M-90209

Marine
Pg. No.
B
45

Engine Configuration:
D403041MX02

CPL Code:
1975

Date:
28Aug04

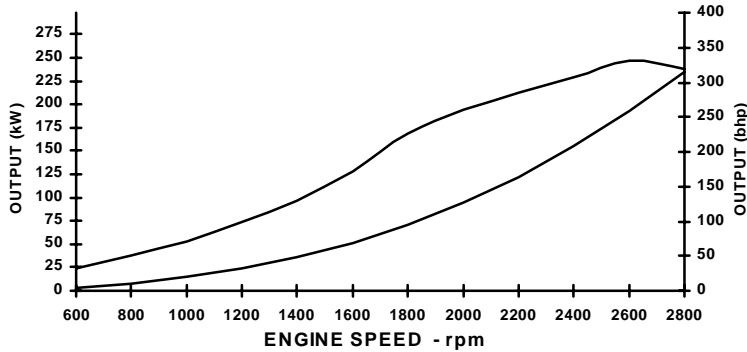
Displacement: **5.9 liters [359 in.³]**
Bore: **102 mm [4.02 in.]**
Stroke: **120 mm [4.72 in.]**
Fuel System: **Inline Bosch P7100**
Cylinders: **6**

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

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

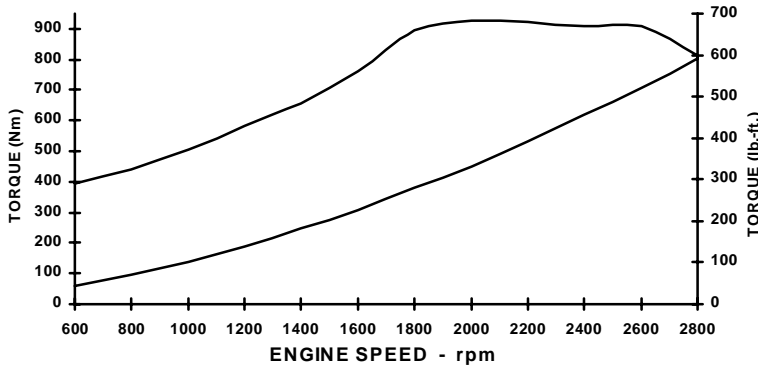
CERTIFIED: This marine diesel engine conforms with the NOx requirements of the International Maritime Organization (IMO), MARPOL 73/78 Annex VI, Regulation 13 as applicable.

RATED POWER OUTPUT CURVE



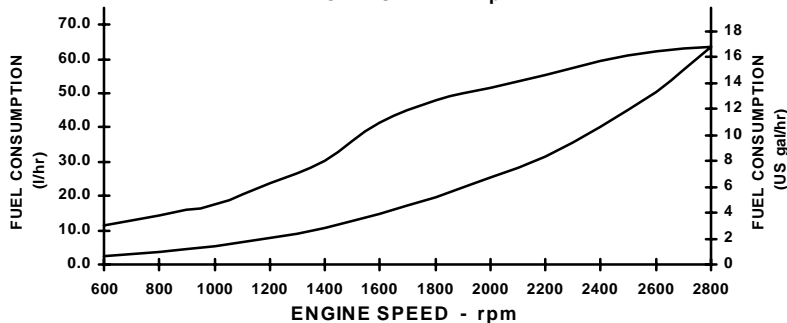
rpm	kW	bhp
2800	235	315
2600	247	332
2400	228	306
2200	213	285
2000	194	260
1800	169	227
1600	128	171
1400	96	129
1200	73	98
800	37	50
600	25	33

FULL LOAD TORQUE CURVE



rpm	Nm	lb.-ft.
2800	810	597
2600	909	670
2400	909	670
2200	923	681
2000	926	683
1800	896	661
1600	761	561
1400	658	485
1200	582	429
800	442	326
600	395	291

FUEL CONSUMPTION - PROP CURVE



rpm	l/hr	gal/hr
2800	63.7	16.8
2600	50.5	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
800	3.7	1.0
600	2.6	0.7

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 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-90209
DS-4960
CPL: 1975
DATE: 28Aug04

General Engine Data

Engine Model	6BTA5.9-M (SW)
Rating Type	Intermittent
Rated Engine Power kW [HP]	235 [315]
Rated Engine Speed rpm	2800
Rated HP Production Tolerance	±5
Rated Engine Torque..... Nm [ft/lb]	801 [591]
Peak Engine Torque @ 2000 RPM	926 [683]
Brake Mean Effective Pressure..... kPa [PSI]	1711 [248]
Minimum Idle Speed Setting	600
Normal Idle Speed Variation	±50
High Idle Speed Range - Minimum	3100
High Idle Speed Range - Maximum	3200
Maximum Torque Capacity from Front of Crank ²	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 Only - Average	538 [1185]
Weight (Dry) Engine With Heat Exchanger System - Average	581 [1280]

Fuel System¹

Approximate Fuel Flow to Pump liter/hr [GPH]	258 [68]
Maximum Allowable Fuel Supply to Pump Temperature	60 [140]
Approximate Fuel Flow Return to Tank	192 [51]
Approximate Fuel Return to Tank Temperature	N.A.
Maximum Heat Rejection to Drain Fuel⁵	N.A.
Fuel Transfer Pump Pressure Range	124-172 [18-25]

Air System¹

Intake Manifold Pressure	mm Hg [in. Hg]	1422 [56]
Intake Air Flow	liter/sec [CFM]	310 [657]
Heat Rejection to Ambient	kW [BTU/min]	N.A.

Exhaust System¹

Exhaust Gas Flow	liter/sec [CFM]	N.A.
Exhaust Gas Temperature (Turbine Out)	°C [°F]	480 [896]
Exhaust Gas Temperature (Manifold).....	°C [°F]	N.A.

Emissions (in accordance with ISO8178 Cycle E3)

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

Cooling System¹

Coolant Flow to Engine Heat Exchanger/Keel Cooler	liter/min [GPM]	189 [50]
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]	149 [8,500]
Sea Water Flow (With Heat Exchanger Option) ⁴	liter/min [GPM]	208 [55]
Pressure Cap Rating (With Heat Exchanger Option).....	kPa [PSI]	103 [15]

INSTALLATION DRAWING

Engine Only	3626425
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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>