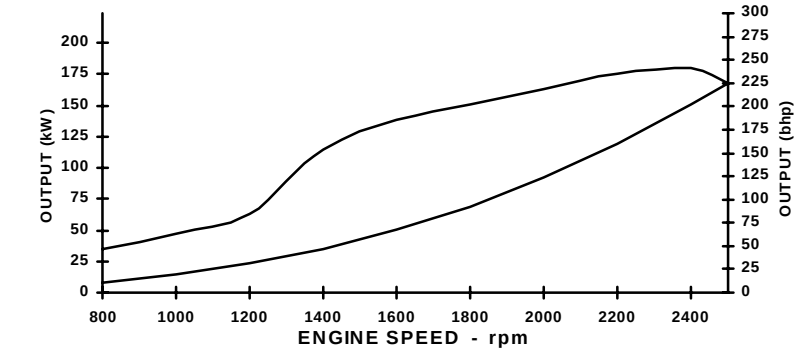
CUMMINS ENGINE COMPANY, INC Columbus, Indiana 47201 **Marine Performance Curve**	Basic Engine Model: **6BTA5.9-M (JW)**		Curve Number: **M-90815**	*Marine Pg. No.* **6B 1**
	Engine Configuration: **D403045MX02**	CPL Code: **2956**	Date: **28Aug04**	

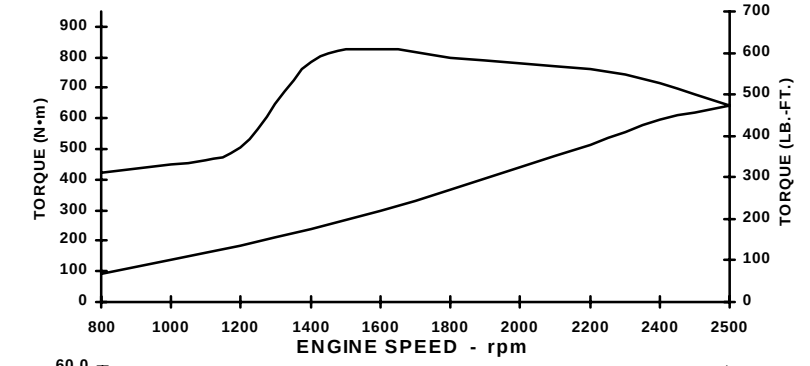
Displacement: **5.9 liters [359 in.^{3}]**
Bore: **102 mm [4.02 in.]**
Stroke: **120 mm [4.72 in.]**
Fuel System: **P7100 RQVK**
Cylinders: **6**

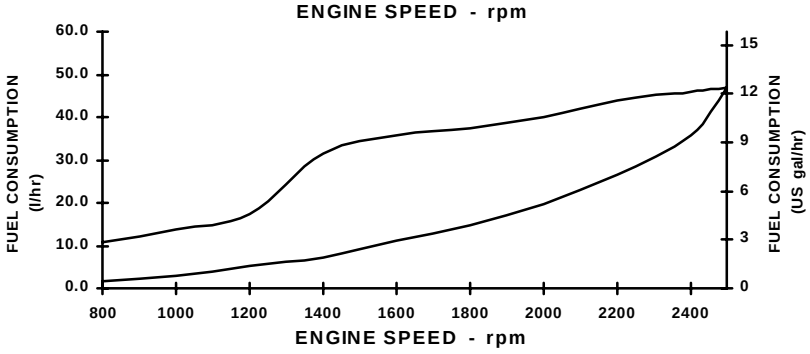
kW [bhp] @ rpm
Advertised Power: **168 (225) @ 2500**

Aspiration: **Turbocharged/Jacket Water Aftercooled**
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	168	225
2400	**179**	**240**
2200	**175**	**235**
2000	**163**	**219**
1800	**150**	**201**
1600	**139**	**186**
1400	**115**	**154**
1200	63	85
1000	47	63
800	**35**	**47**

FULL LOAD TORQUE CURVE

rpm	Nm	lb.-ft.
2500	641	473
2400	698	515
2200	761	561
2000	806	594
1800	796	587
1600	780	575
1400	787	580
1200	553	408
1000	502	370
800	422	311

FUEL CONSUMPTION - PROP CURVE

rpm	l/hr	gal/hr
2500	46.9	12.4
2400	35.9	9.5
2200	27.1	7.2
2000	20.9	5.5
1800	16.1	4.3
1600	12.2	3.2
1400	10.8	2.9
1200	6.4	1.7
1000	4.5	1.2
800	3.4	0.9

Rating Conditions: Ratings are based upon ISO 8665 and SAE J1228 reference conditions; air pressure of 100kPa [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].

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-90815
DS-4960
CPL: 2956
DATE: 28Aug04

General Engine Data

Engine Model		6BTA5.9-M (JW)
Rating Type		Medium Continuous
Rated Engine Power	kW [HP]	168 [225]
Rated Engine Speed	rpm	2500
Rated HP Production Tolerance	%	±**5**
Rated Engine Torque	Nm [ft/lb]	641 [473]
Peak Engine Torque @ **1500**	Nm [ft/lb]	**827 [610]**
Brake Mean Effective Pressure	kPa [PSI]	1369 [199]
Minimum Idle Speed Setting	rpm	600
Normal Idle Speed Variation	rpm	50
High Idle Speed Range - Minimum	rpm	**2825**
High Idle Speed Range - Maximum	rpm	**2875**
Maximum Torque Capacity from Front of Crank[2]	Nm [ft/lb]	N.A.
Compression Ratio		15.3:1
Piston Speed	m/sec [ft/min]	**9 [1675]**
Firing Order		1-5-3-6-2-4
Weight (Dry) Engine Only - Average	kg [lb]	469 [1035]
Weight (Dry) Engine With Heat Exchanger System - Average	kg [lb]	**517 [1140]**

Fuel System[1]

Fuel Consumption @ rated speed	**liter/hr [gal/hr]**	**47 [12]**
Approximate Fuel Flow to Pump	liter/hr [GPH]	231 [61]
Max. Allowable Fuel Inlet to Pump Temperature	°C [°F]	60 [140]
Approximate Fuel Flow Return to Tank	liter/hr [gal/hr]	185 [49]
Approximate Fuel Return to Tank Temperature **With Fuel Cooler**	°C [°F]	41 [105]
Maximum Heat Rejection to Drain Fuel[5]	kW [BTU/min]	**2 [100]**
Fuel Transfer Pump Pressure	kPa [PSI]	**193 [28]**

Air System[1]

Intake Manifold Pressure	mm Hg [in. Hg]	**1371 [54]**
Intake Air Flow	liter/sec [CFM]	**260 [550]**
Heat Rejection to Ambient	kW [BTU/min]	**18 [1050]**

Exhaust System[1]

Exhaust Gas Flow	liter/sec [CFM]	595 [1261]
Exhaust Gas Temperature (Turbine Out)	°C [°F]	**510 [950]**
Exhaust Gas Temperature (Manifold)	°C [°F]	**627 [1160]**

Emissions (in accordance with ISO8178 Cycle E3)

NOx (Oxides of Nitrogen)	g/kw-hr [g/bhp-hr]	8.94 [6.67]
HC (Hydrocarbons)	g/kw-hr [g/bhp-hr]	N.A.
CO (Carbon Monoxide)	g/kw-hr [g/bhp-hr]	N.A.
PM (Particulate Matter)	g/kw-hr [g/bhp-hr]	N.A.

Cooling System[1]

Coolant Flow to Engine Heat Exchanger/Keel Cooler	liter/min [GPM]	**144 [38]**
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]	**171 [9750]**
Sea Water Flow (With Heat Exchanger Option)[4]	liter/min [GPM]	185 [49]
Pressure Cap Rating (With Heat Exchanger Option)	kPa [PSI]	103 [15]

INSTALLATION DRAWING 3884673

TBD = To Be Decided **N/A = Not Applicable** **N.A. = Not Available**

[1]All Data at Rated Conditions

[2]Consult Installation Direction Booklet for Limitations

[3]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.

[4]Consult option notes for flow specifications of optional Cummins seawater pumps, if applicable.

[5]May not be at rated load and speed. Maximum heat rejection may occur at other than rated conditions.

CUMMINS ENGINE COMPANY, INC.
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