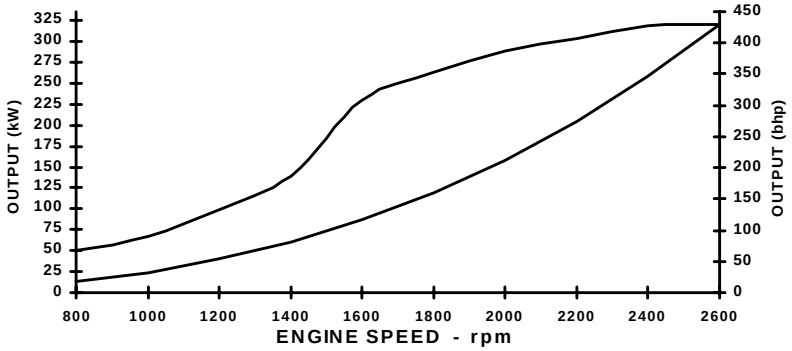
CUMMINS ENGINE COMPANY, INC Columbus, Indiana 47201 **Marine Performance Curve**	Basic Engine Model: **6CTA8.3-M (SW)**		Curve Number: **M-90413**	*Marine Pg. No.* **6C 61**
	Engine Configuration: **D413030MX02**	CPL Code: **8089**	Date: **28Aug04**	

Displacement: **8.3 liters [504.5 in.^{3}]**
Bore: **114 mm [4.49 in.]**
Stroke: **135 mm [5.32 in.]**
Fuel System: **Inline Bosch P7100**
Cylinders: **6**

kW [bhp] @ rpm
Advertised Power: **321 (430) @ 2600**

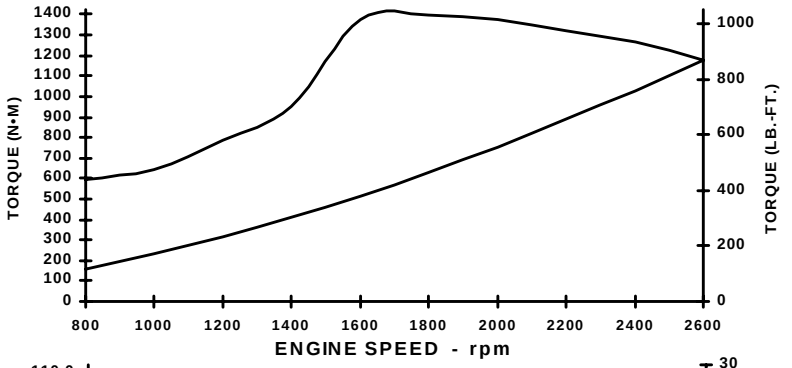
Aspiration: **Turbocharged/Sea Water Aftercooled**
Rating Type: **Intermittent**

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.



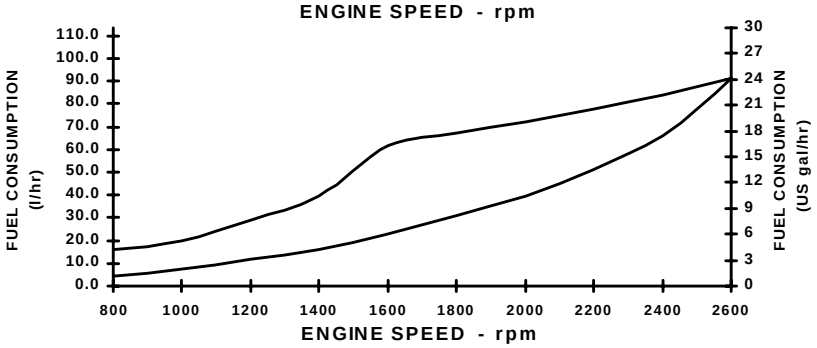
RATED POWER OUTPUT CURVE

rpm	kW	bhp
2600	321	430
2400	318	427
2200	304	408
2000	288	386
1800	263	353
1600	230	309
1400	139	187
1200	99	133
1000	68	90
800	50	67



FULL LOAD TORQUE CURVE

rpm	Nm	lb.-ft.
2600	1182	869
2400	1267	934
2200	1321	974
2000	1374	1013
1800	1395	1029
1600	1374	1013
1400	949	700
1200	787	580
1000	644	475
800	595	439



FUEL CONSUMPTION - PROP CURVE

rpm	l/hr	gal/hr
2600	**91.6**	**24.2**
2400	66.3	17.5
2200	51.5	13.6
2000	39.3	10.4
1800	30.9	8.2
1600	23.1	6.1
1400	16.3	4.3
1200	11.5	3.0
1000	7.7	2.0
800	4.4	1.2

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-90413
DS-4961
CPL: 8089
DATE: 28Aug04

General Engine Data

Engine Model		6CTA8.3-M (SW)
Rating Type		Intermittent
Rated Engine Power	kW [HP]	321 [430]
Rated Engine Speed	rpm	2600
Rated HP Production Tolerance	**%**	**±5**
Rated Engine Torque	Nm [ft/lb]	1178 [869]
Peak Engine Torque @ 1800 RPM	**Nm [ft/lb]**	**1395 [1029]**
Brake Mean Effective Pressure	kPa [PSI]	**1790 [260]**
Minimum Idle Speed Setting	rpm	600
Normal Idle Speed Variation	**rpm**	**±50**
High Idle Speed Range - Minimum	rpm	2920
High Idle Speed Range - Maximum	rpm	3020
Maximum Torque Capacity from Front of Crank[2]	**Nm [ft/lb]**	**N.A.**
Compression Ratio		15.35:1
Piston Speed	m/sec [ft/min]	11.7 [2305]
Firing Order		1-5-3-6-2-4
Weight (Dry) Engine Only - Average	**kg [lb]**	**801 [1765]**
Weight (Dry) Engine With Heat Exchanger System - Average	kg [lb]	**855 [1855]**

Fuel System[1]

Approximate Fuel Flow to Pump	liter/hr [GPH]	259 [68]
Maximum Allowable Fuel Supply to Pump Temperature	**°C [°F]**	**60 [140]**
Approximate Fuel Flow Return to Tank	**liter/hr [GPH]**	**170 [45]**
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 Range	kPa [PSI]	124 - 172 [18-25]

Air System[1]

Intake Manifold Pressure	mm Hg [in. Hg]	**1524 [60]**
Intake Air Flow	liter/sec [CFM]	434 [920]
Heat Rejection to Ambient	kW [BTU/min]	42 [2415]

Exhaust System[1]

Exhaust Gas Flow	liter/sec [CFM]	**991** [2100]
Exhaust Gas Temperature **(Turbine Out)**	°C [°F]	444 [830]
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]**	**7.54 [5.62]**
HC (Hydrocarbons)	**g/kw-hr [g/bhp-hr]**	**0.30 [0.22]**
CO (Carbon Monoxide)	**g/kw-hr [g/bhp-hr]**	**0.50 [0.37]**
PM (Particulate Matter)	**g/kw-hr [g/bhp-hr]**	**0.17 [0.13]**

Cooling System[1]

Coolant Flow to Engine Heat Exchanger/Keel Cooler	**liter/min [GPM]**	322 [85]
Standard Thermostat Operating Range (Min.)	**°C [°F]**	**71 [160]**
Standard Thermostat Operating Range (Max.)	**°C [°F]**	**83 [182]**
Heat Rejection to **Engine** Coolant[3]	kW [BTU/min]	277 [15,750]
Sea Water Flow **(With Heat Exchanger Option)[4]**	liter/min [GPM]	238 [63]
Pressure Cap Rating **(With Heat Exchanger Option)**	kPa [PSI]	103 [15]

INSTALLATION DRAWING

Engine Only	3170262

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.

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