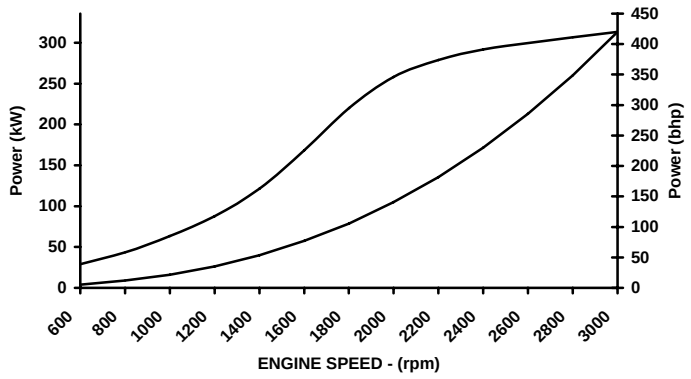
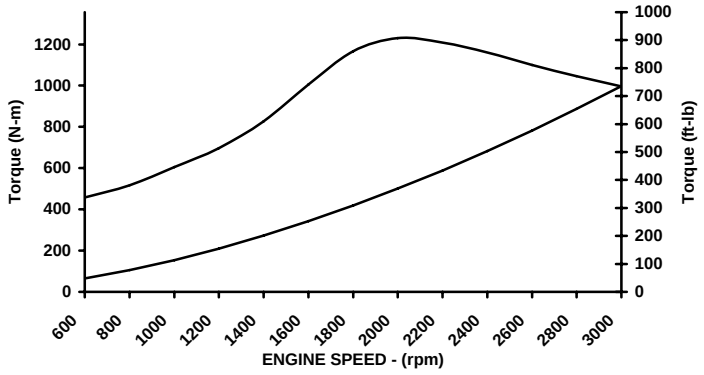
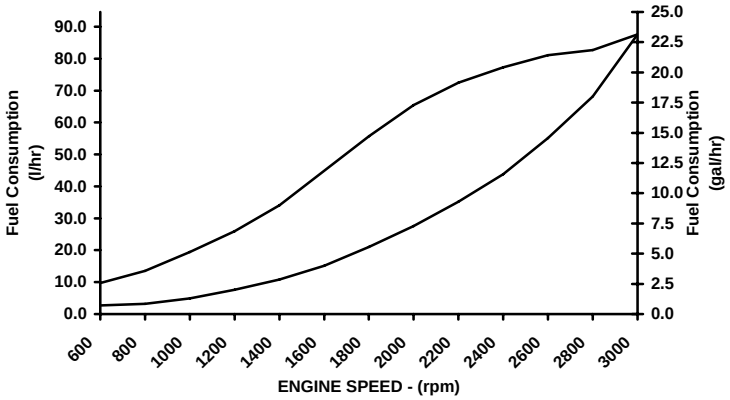
CUMMINS MERCRUISER DIESEL Charleston, SC 29405 Marine Performance Curves	Basic Engine Model: QSB5.9-425 HO	Curve Number: M-91632	
	Engine Configuration: D403075MX03	CPL Code 8732	Date: 12-Aug-08

Displacement:	**5.9 liter**	**[359 in^3]**	kW [bhp, mhp] @ rpm	
Bore:	**102 mm**	**[4.02 in]**	Advertised Power:	**313 [420, 425] @ 3000**
Stroke:	**120 mm**	**[4.72 in]**		
Fuel System:	**HPCR**		Aspiration:	**Turbocharged / Sea Water Aftercooled**
Cylinders:	**6**		Rating Type:	**High Output**

CERTIFIED: This marine diesel engine is certified to the model year requirements of EPA Marine Tier 2 per 40 CFR 94 and 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
3000	313	420
2800	307	411
2600	300	401
2400	292	391
2200	279	374
2000	258	346
1800	220	295
1600	169	226
1400	121	163
1200	88	117
1000	63	85
800	43	58
600	29	39

FULL LOAD TORQUE CURVE

rpm	N-m	ft-lb
3000	997	735
2800	1045	771
2600	1100	811
2400	1161	856
2200	1209	892
2000	1231	908
1800	1167	861
1600	1006	742
1400	827	610
1200	697	514
1000	605	446
800	517	381
600	458	338

FUEL CONSUMPTION - PROP CURVE

rpm	l/hr	gal/hr
3000	87.6	23.1
2800	68.1	18.0
2600	55.2	14.6
2400	43.8	11.6
2200	35.2	9.3
2000	27.6	7.3
1800	21.1	5.6
1600	15.1	4.0
1400	10.8	2.9
1200	7.6	2.0
1000	4.9	1.3
800	3.2	0.9
600	2.7	0.7

Rated Conditions: Ratings are based upon ISO 8665 and SAE J1228 reference conditions; air pressure of 100 kPa [29.612 in Hg], air temperature 25 deg. C [77 deg. F] and 30% relative humidity. Power is in accordance with IMCI procedure. Member NMMA.

Rated Curves (upper) represents 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 deg. API gravity at 16 deg. C [60 deg. F] having LHV of 42,780 kj/kg [18390 Btu/lb] and weighing 838.9 g/liter [7.001 lb/U.S. gal].

High Output Rating: This Rating is for use in variable load applications where full power is limited to one (1) hour out of every eight (8) hours of operation. Also, reduced power operations must be at or below 300 RPM of the maximum rated RPM. This rating is for pleasure/non-revenue generating applications operating less than 500 hours per year.

James D Kahlenberg

CHIEF ENGINEER

Marine Engine Performance Data

Curve No.: M-91632
DS-3075
DATE: 12Aug08

General Engine Data

Engine Model		QSB5.9-425 HO
Rating Type		High Output
Rated Engine Power	kW [bhp]	313 [420]
Rated Engine Speed	rpm	3000
Rated HP Production Tolerance	±%	5
Rated Engine Torque	N•m [ft•lb]	997 [735]
Peak Engine Torque @ 2000 rpm	N•m [ft•lb]	1231 [908]
Brake Mean Effective Pressure	kPa [psi]	2129 [309]
Indicated Mean Effective Pressure	kPa [psi]	N/A
Minimum Idle Speed Setting	rpm	600
Normal Idle Speed Variation	±rpm	10
High Idle Speed Range Minimum	rpm	3065
Maximum	rpm	3085
Maximum Allowable Engine Speed	rpm	3085
Maximum Torque Capacity from Front of Crank[2]	N•m [ft•lb]	0 [0]
Compression Ratio		16.7:1
Piston Speed	m/sec [ft/min]	12 [2360]
Firing Order		1-5-3-6-2-4
Weight (Dry) Engine only - Average	kg [lb]	N.A.
Weight (Dry) Engine With Heat Exchanger System - Average	kg [lb]	612 [1350]
Weight Tolerance (Dry) Engine only - Average	kg [lb]	N.A.

Noise and Vibration

Average Noise Level – Top	(Idle)	dBA @ 1m	76
	(Rated)	dBA @ 1m	99
Average Noise Level – Right Side	(Idle)	dBA @ 1m	76
	(Rated)	dBA @ 1m	101
Average Noise Level – Left Side	(Idle)	dBA @ 1m	77
	(Rated)	dBA @ 1m	107
Average Noise Level – Front	(Idle)	dBA @ 1m	76
	(Rated)	dBA @ 1m	100

Fuel System[1]

Average Fuel Consumption – ISO 8178 E3 Standard Test Cycle	l/hr [gal/hr]	56.4[14.9]
Fuel Consumption @ Rated Speed	l/hr [gal/hr]	87.6 [23.1]
Approximate Fuel Flow to Pump	l/hr [gal/hr]	189 [50]
Maximum Allowable Fuel Supply to Pump Temperature	°C [°F]	60 [140]
Approximate Fuel Flow Return to Tank	l/hr [gal/hr]	102 [27]
Approximate Fuel Return to Tank Temperature	°C [°F]	66 [150]
Maximum Heat Rejection to Drain Fuel[5]	kW [Btu/min]	1 [76]
Fuel Transfer Pump Pressure Range	kPa [psi]	76 [11]
Fuel Rail Pressure Gauge	kPa [psi]	N.A.
INSITE	kPa [psi]	150,000 [21,756]

Air System[1]

Intake Manifold Pressure	kPa [in Hg]	235 [69.5]
Intake Air Flow	l/sec [cfm]	378 [800]
Heat Rejection to Ambient	kW [Btu/min]	54 [3100]
Maximum Air Cleaner Inlet Temperature Rise Over Ambient	°C [°F]	17 [30]

Exhaust System[1]

Exhaust Gas Flow		l/sec [cfm]	861 [1825]
Exhaust Gas Temperature	Turbine Out	°C [°F]	499 [930]
	Manifold	°C [°F]	684 [1263]

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.
COLUMBUS, INDIANA

Marine Engine Performance Data

Curve No.: M-91632
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Emissions (in accordance with ISO 8178 Cycle E3)

NOx (Oxides of Nitrogen)	g/kw·hr [g/hp·hr]	5.168 [3.854]
HC (Hydrocarbons)	g/kw·hr [g/hp·hr]	0.158 [0.118]
CO (Carbon Monoxide)	g/kw·hr [g/hp·hr]	0.506 [0.377]
PM (Particulate Matter)	g/kw·hr [g/hp·hr]	0.066 [0.049]

Cooling System[1]

Sea Water Pump Specifications	MAB 0.08.17-07/16/2001	
Pressure Cap Rating (With Heat Exchanger Option)	kPa [psi]	103 [15]

Sea Water Aftercooled Engine (SWAC)

Coolant Flow to Engine Heat Exchanger	l/min [gal/min]	273 [72]
Standard Thermostat Operating Range Start to Open	°C [°F]	74 [165]
Full Open	°C [°F]	85 [185]
Heat Rejection to Engine Coolant[3]	kW [Btu/min]	258 [14700]

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