



CUMMINS MERCURISER DIESEL
Charleston, SC 29405
Marine Performance Curves

Basic Engine Model:
QSB5.9-425 HO
 Engine Configuration:
D403075MX03

Curve Number:
M-91632

CPL Code	Date:
8732	3-Feb-05

Displacement: **5.9 liter** [359 in³]
 Bore: **102 mm** [4.02 in]
 Stroke: **120 mm** [4.72 in]
 Fuel System: **HPCR**
 Cylinders: **6**

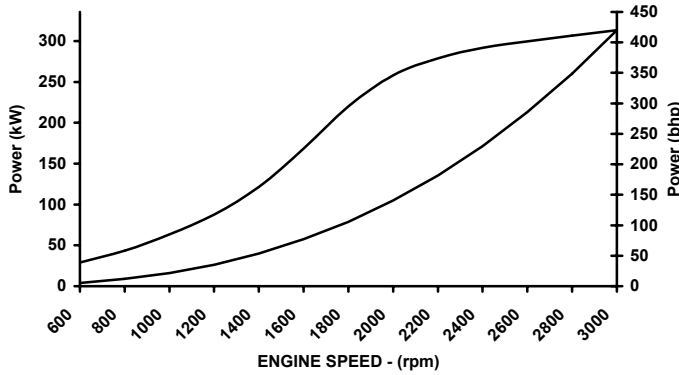
Advertised Power: **313 [420, 425] @ 3000**
 kW [bhp, mhp] @ rpm

Aspiration: **Turbocharged / Sea Water Aftercooled**
 Rating Type: **High Output**

PRELIMINARY

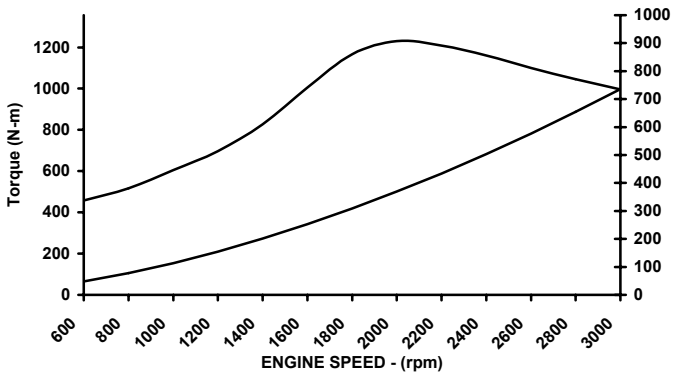
CERTIFIED: This marine diesel engine conforms with the NOx requirements of the International Maritime Organization (IMO), MARPOL 73/78 Annex VI, Regulation 13 as applicable.

RATED POWER OUTPUT CURVE



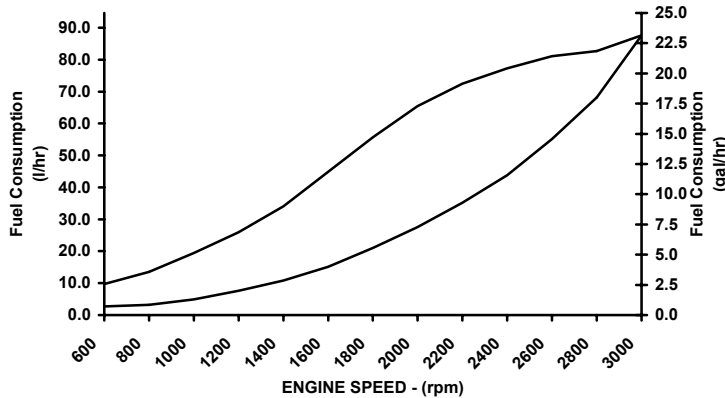
rpm	kW	bhp
3000	313	420
2800	307	411
2600	300	401
2400	292	391
2200	279	374
2000	258	346
1800	220	295
1600	169	226
1400	121	163
1200	88	117
1000	63	85
800	43	58
600	29	39

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 200 RPM of the maximum rated RPM. This rating is for pleasure/non-revenue generating applications that operate 300 hours per year.

Marine Engine Performance Data - PRELIMINARY

Curve No.: M-91632
DS-3075
DATE: 3Feb05

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	74
	(Rated).....	dBa @ 1m	N.A.
Average Noise Level – Right Side	(Idle).....	dBa @ 1m	74
	(Rated).....	dBa @ 1m	N.A.
Average Noise Level – Left Side	(Idle).....	dBa @ 1m	74
	(Rated).....	dBa @ 1m	N.A.
Average Noise Level – Front	(Idle).....	dBa @ 1m	74
	(Rated).....	dBa @ 1m	N.A.

Fuel System¹

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 System¹

Intake Manifold Pressure	kPa [in Hg]	251 [74.1]
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 System¹

Exhaust Gas Flow.....	l/sec [cfm]	971 [2058]
Exhaust Gas Temperature	Turbine Out.....	°C [°F] 494 [920]
	Manifold	°C [°F] 684 [1263]

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

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<http://www.cummins.com>

Marine Engine Performance Data - PRELIMINARY

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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 System¹

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.....	74 [165]
	Full Open	85 [185]
Heat Rejection to Engine Coolant ³	kW [Btu/min]	258 [14700]

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