



**CUMMINS MERCUISER DIESEL**  
 Charleston, SC 29405  
 Marine Performance Curves

Basic Engine Model:  
**QSB5.9-305 MCD**  
 Engine Configuration:  
**D403075MX03**

Curve Number:  
**M-91365**

CPL Code	Date:
<b>8464</b>	<b>15-Oct-04</b>

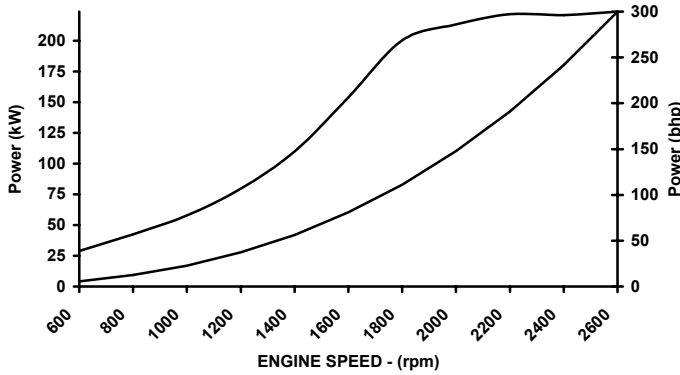
Displacement: **5.9 liter** [359 in<sup>3</sup>]  
 Bore: **102 mm** [4.02 in]  
 Stroke: **120 mm** [4.72 in]  
 Fuel System: **HPCR**  
 Cylinders: **6**

Advertised Power: **224 [300, 305] @ 2600**  
 kW [bhp, mhp] @ rpm

Aspiration: **Turbocharged / Sea Water Aftercooled**  
 Rating Type: **Medium Continuous Duty**

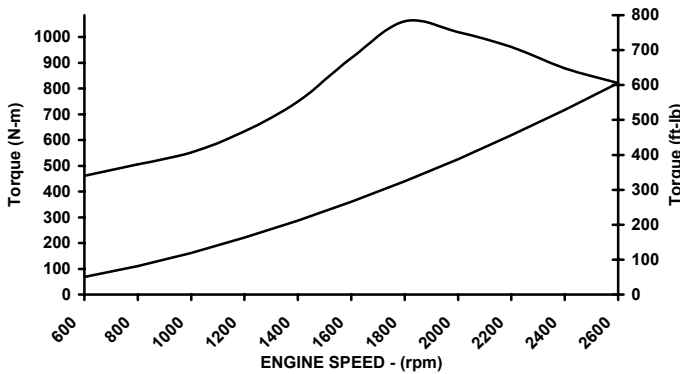
CERTIFIED: This marine diesel engine is certified to the model year requirements of EPA Marine Tier 2 per 40 CFR 94 and conforms with the NOx requirements of the International Maritime Organization (IMO), MARPOL 73/78 Annex VI, Regulation 13 as applicable.

**RATED POWER OUTPUT CURVE**



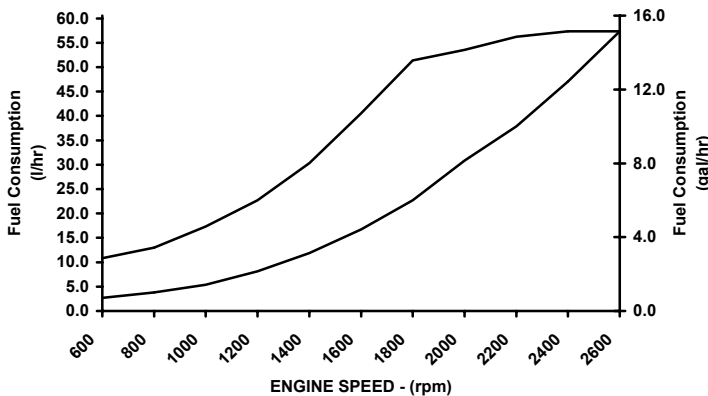
rpm	kW	bhp
2600	224	300
2400	221	296
2200	222	297
2000	213	286
1800	200	268
1600	154	206
1400	110	147
1200	80	107
1000	58	77
800	42	57
600	29	39

**FULL LOAD TORQUE CURVE**



rpm	N-m	ft-lb
2600	822	606
2400	879	648
2200	961	709
2000	1018	751
1800	1062	783
1600	918	677
1400	750	553
1200	633	467
1000	552	407
800	506	373
600	461	340

**FUEL CONSUMPTION - PROP CURVE**



rpm	l/hr	gal/hr
2600	57.3	15.1
2400	47.0	12.4
2200	37.9	10.0
2000	30.8	8.1
1800	22.7	6.0
1600	16.8	4.4
1400	11.9	3.1
1200	8.1	2.1
1000	5.4	1.4
800	3.8	1.0
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].

**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-91365**  
**DS-3075**  
**DATE: 15Oct04**

## General Engine Data

Engine Model.....		QSB5.9-305 MCD
Rating Type .....		Med. Cont. Duty
Rated Engine Power..... kW [bhp]		224 [300]
Rated Engine Speed..... rpm		2600
Rated HP Production Tolerance .....	±%	5
Rated Engine Torque..... N•m [ft•lb]		822 [606]
Peak Engine Torque @ 1800 rpm .....	N•m [ft•lb]	1062 [783]
Brake Mean Effective Pressure .....	kPa [psi]	1755 [255]
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 2665
	Maximum .....	rpm 2685
Maximum Allowable Engine Speed .....	rpm	2685
Maximum Torque Capacity from Front of Crank <sup>2</sup> .....	N•m [ft•lb]	468 [345]
Compression Ratio .....		17.2:1
Piston Speed .....	m/sec [ft/min]	10.4 [2045]
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	TBD
Average Noise Level – Right Side	(Idle).....	dBa @ 1m	74
	(Rated).....	dBa @ 1m	TBD
Average Noise Level – Left Side	(Idle).....	dBa @ 1m	74
	(Rated).....	dBa @ 1m	TBD
Average Noise Level – Front	(Idle).....	dBa @ 1m	74
	(Rated).....	dBa @ 1m	TBD

## Fuel System<sup>1</sup>

Average Fuel Consumption – ISO 8178 E3Standard Test Cycle.....	l/hr [gal/hr]	38.7 [10.2]
Fuel Consumption @ Rated Speed.....	l/hr [gal/hr]	57 [15]
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]	132 [35]
Approximate Fuel Return to Tank Temperature .....	°C [°F]	66 [150]
Maximum Heat Rejection to Drain Fuel <sup>5</sup> .....	kW [Btu/min]	2 [99]
Fuel Transfer Pump Pressure Range.....	kPa [psi]	76 [11]
Fuel Rail Pressure	Gauge.....	kPa [psi] N.A.
	INSITE.....	kPa [psi] 135,999 [19,725]

## Air System<sup>1</sup>

Intake Manifold Pressure .....	kPa [in Hg]	172 [51]
Intake Air Flow.....	l/sec [cfm]	278 [58]
Heat Rejection to Ambient .....	kW [Btu/min]	32 [1810]
Maximum Air Cleaner Inlet Temperature Rise Over Ambient.....	°C [°F]	17 [30]

## Exhaust System<sup>1</sup>

Exhaust Gas Flow.....	l/sec [cfm]	600 [1272]
Exhaust Gas Temperature	Turbine Out.....	°C [°F] 421 [789]
	Manifold .....	°C [°F] 559 [1038]

TBD = To Be Decided

N/A = Not Applicable

N.A. = Not Available

<sup>1</sup>All Data at Rated Conditions

<sup>2</sup>Consult Installation Direction Booklet for Limitations

<sup>3</sup>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.

<sup>4</sup>Consult option notes for flow specifications of optional Cummins seawater pumps, if applicable.

<sup>5</sup>May 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

**Curve No.: M-91365**  
**DS-3075**  
**DATE: 15Oct04**

**Emissions (in accordance with ISO 8178 Cycle E3)**

NOx (Oxides of Nitrogen) .....	g/kw-hr [g/hp-hr]	6.227 [4.644]
HC (Hydrocarbons).....	g/kw-hr [g/hp-hr]	0.104 [0.078]
CO (Carbon Monoxide).....	g/kw-hr [g/hp-hr]	0.208 [0.155]
PM (Particulate Matter).....	g/kw-hr [g/hp-hr]	0.103 [0.077]

**Cooling System<sup>1</sup>**

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

**Engines with Standard Aftercooling**

Coolant Flow to Engine Heat Exchanger/Keel Cooler .....	l/min [gal/min]	238 [63]
Standard Thermostat Operating Range	Start to Open.....	74 [165]
	Full Open .....	85 [185]
Heat Rejection to Engine Coolant <sup>3</sup> .....	kW [Btu/min]	166 [9470]

**Single Loop Low Temperature Aftercooling (if applicable)**

Coolant Flow to Engine Heat Exchanger/Keel Cooler .....	l/min [gal/min]	238 [63]
LTA Thermostat Operating Range	Start to Open.....	66 [150]
	Full Open .....	80 [175]
Heat Rejection to LTA Coolant <sup>3</sup> .....	kW [Btu/min]	183 [10420]

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

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