



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

Basic Engine Model  
**QSD2.0-170**

Curve Number:  
**BC9157**

Engine Configuration  
**D0D3003MX03**

CPL Code:

Date:

**12-Mar-08**

Displacement: **2.0 liter 122 in<sup>3</sup>**  
 Bore: **83 mm 3.27 in**  
 Stroke: **92 mm 3.62 in**  
 Fuel System: **Bosch Common Rail (CRS 2.0)**  
 Cylinders: **4**

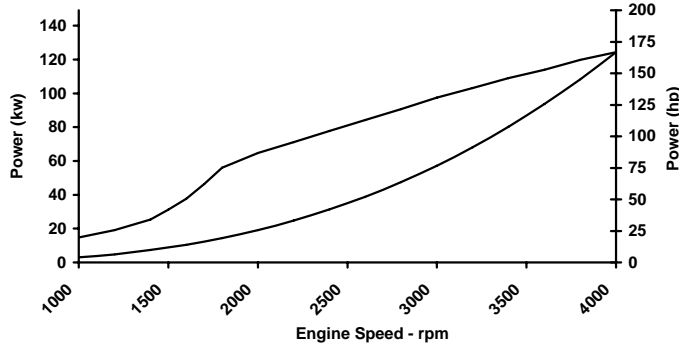
kW [bhp, mhp] @ rpm  
 Advertised Power: **124[167, 170] @ 4000**

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

CERTIFIED: This marine diesel engine complies with or is certified to the:

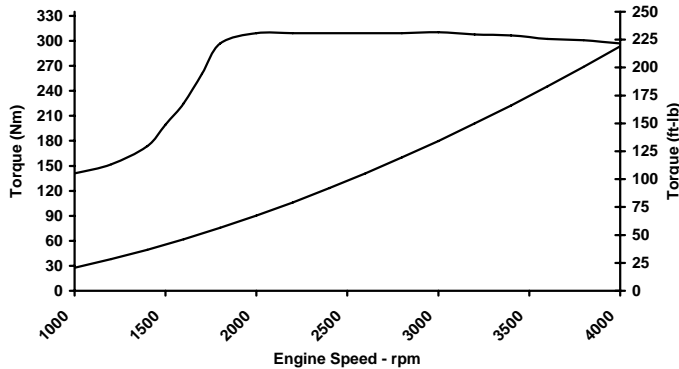
IMO - NOx requirements of the International Maritime Organization (IMO), MARPOL 73/78 Annex VI, Regulation 13  
 EPA Tier 2 - Model year requirements of the EPA marine regulation (40CFR94)

**RATED POWER OUTPUT CURVE**



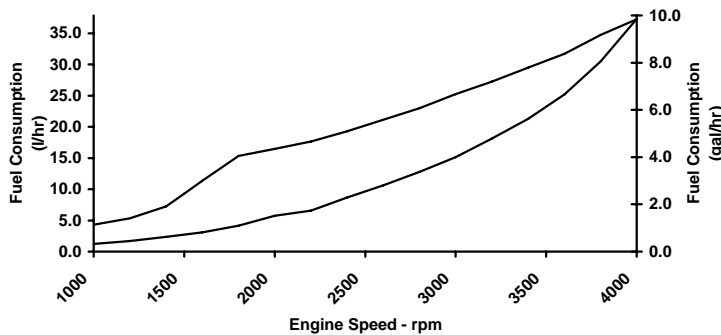
rpm	kw	bhp
4000	124	167
3800	120	161
3600	114	153
3400	109	146
3200	103	138
3000	98	131
2600	84	113
2400	78	104
2000	65	87
1600	38	51
1400	25	34
1000	15	20

**FULL LOAD TORQUE CURVE**



rpm	N-m	ft-lb
4000	297	219
3800	301	222
3600	302	223
3400	306	226
3200	308	227
3000	310	229
2600	309	228
2400	309	228
2000	309	228
1600	225	166
1400	174	128
1000	141	104

**FUEL CONSUMPTION - PROP CURVE**



rpm	l/hr	gal/hr
4000	37.3	9.9
3800	30.4	8.0
3600	25.2	6.7
3400	21.3	5.6
3200	18.1	4.8
3000	15.1	4.0
2600	10.6	2.8
2400	8.7	2.3
2000	5.7	1.5
1600	3.1	0.8
1400	2.4	0.6
1000	1.2	0.3

Rated Conditions: Ratings are based upon ISO 8665 and SAE J1228 reference conditions; air pressure of 100 kPa [29.612 in Hg], air temperature 25deg. 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 (HO)** Intended 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 must be at or below 200 rpm of the maximum rated rpm. This power rating is for pleasure/non-revenue generating applications that operate 500 hours per year or less.

*James D. Kelleher*  
 CHIEF ENGINEER

# Propulsion Marine Engine Performance Data

Curve No.   BC9157  
 DS :  
 CPL :  
 DATE:       12-Mar-08

## General Engine Data

Engine Model .....	QSD2.0-170
Rating Type .....	High Output
Rated Engine Power .....	124 [167]
Rated Engine Speed .....	4000
Rated Power Production Tolerance .....	5
Rated Engine Torque .....	297 [219]
Peak Engine Torque @ 3000 rpm .....	310 [229]
Brake Mean Effective Pressure .....	1874 [272]
Indicated Mean Effective Pressure .....	2681 [389]
Minimum Idle Speed Setting .....	700
Normal Idle Speed Variation .....	25
High Idle Speed Range   Minimum .....	4080
Maximum .....	4120
Maximum Allowable Engine Speed .....	4100
Compression Ratio .....	17.5:1
Piston Speed .....	12.3 [2415]
Firing Order .....	1-3-4-2
Weight (Dry) - Engine With Heat Exchanger System - Average .....	250 [551]

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

Avg. Fuel Consumption - ISO 8178 E3 Standard Test Cycle .....	23.3 [6]
Fuel Consumption at Rated Speed .....	37.3 [10]
Maximum Allowable Fuel Supply to Pump Temperature .....	60.0 [140]
Approximate Fuel Return to Tank Temperature   Without Cooler .....	78.4 [173]
With Cooler .....	41.1 [106]

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

Intake Air Flow .....	146 [309]
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TBD= To Be Determined

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 to coolant 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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**Exhaust System<sup>1</sup>**

Exhaust Gas Temperature (Turbine Out) .....	°C [°F]	599 [1110]
Exhaust Gas Temperature (Manifold) .....	°C [°F]	781 [1437]

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

NOx (Oxides of Nitrogen) .....	g/kw-hr [g/hp-hr]	6.10 [4.55]
HC (Hydrocarbons) .....	g/kw-hr [g/hp-hr]	0.21 [0.16]
CO (Carbon Monoxide) .....	g/kw-hr [g/hp-hr]	0.94 [0.70]
PM (Particulate Matter) .....	g/kw-hr [g/hp-hr]	[0] 0.00

**Emissions (ISO 8178 Cycle E5 - for Traditional Propulsion Applications)**

NOx (Oxides of Nitrogen) .....	g/kw-hr [g/hp-hr]	5.75 [4.29]
HC (Hydrocarbons) .....	g/kw-hr [g/hp-hr]	0.35 [0.26]
CO (Carbon Monoxide) .....	g/kw-hr [g/hp-hr]	0.99 [0.74]
PM (Particulate Matter) .....	g/kw-hr [g/hp-hr]	0.23 [0.17]

**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 without Low Temperature Aftercooling (LTA )**

**Sea Water Aftercooled Engine (SWAC)**

Standard Thermostat Operating Range (Start to Open) .....	°C [°F]	70 [158]
Standard Thermostat Operating Range (Full Open) .....	°C [°F]	90 [194]

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