



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

Basic Engine Model  
**MR504LH**

Curve Number:  
**BC9143**

Engine Configuration  
**D0D3003MX03**

CPL Code:

Date:  
**17-Oct-06**

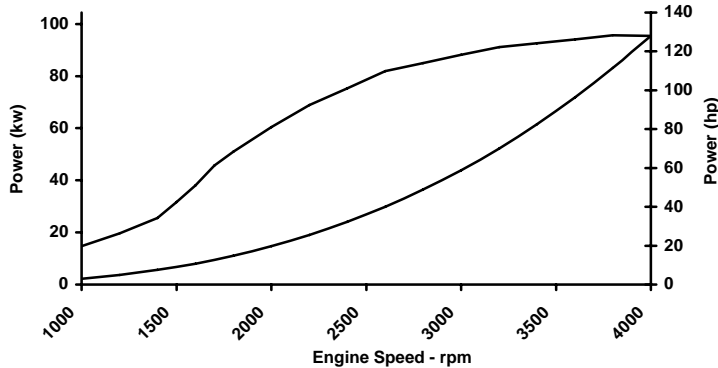
Displacement: **2.0 liter**      **122 in<sup>3</sup>**  
 Bore: **83 mm**                **3.27 in**  
 Stroke: **92 mm**                **3.62 in**  
 Fuel System: **Bosch Common Rail (CRS 2.0)**  
 Cylinders: **4**

kW [bhp, mhp] @ rpm  
 Advertised Power: **96[128, 130] @ 4000**

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

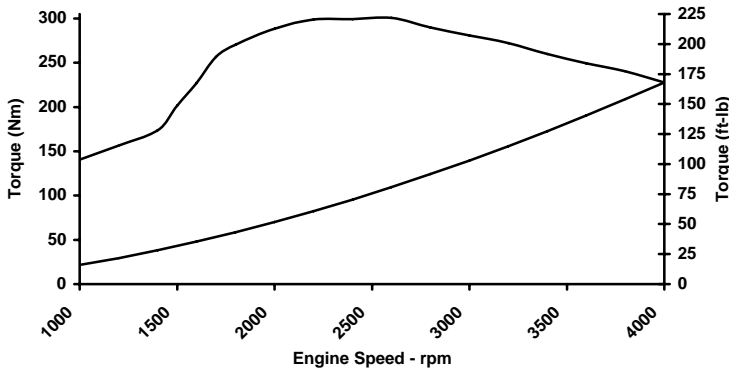
**PRELIMINARY**

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.



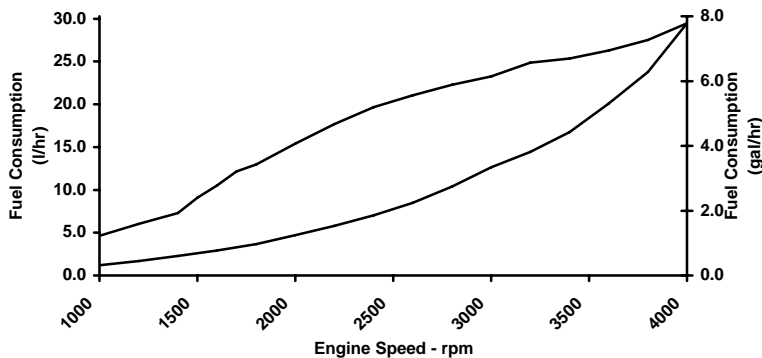
**RATED POWER OUTPUT CURVE**

rpm	kw	bhp
4000	95	128
3800	96	128
3600	94	126
3400	93	124
3000	88	118
2600	82	110
2200	69	92
1800	51	68
1600	38	51
1400	26	34
1200	20	26
1000	15	20



**FULL LOAD TORQUE CURVE**

rpm	N-m	ft-lb
4000	228	168
3800	240	177
3600	249	184
3400	260	192
3000	281	207
2600	301	222
2200	299	221
1800	270	199
1600	227	168
1400	174	128
1200	156	115
1000	141	104



**FUEL CONSUMPTION - PROP CURVE**

rpm	l/hr	gal/hr
4000	29.5	7.8
3800	23.8	6.3
3600	20.1	5.3
3400	16.8	4.4
3000	12.7	3.3
2600	8.5	2.2
2200	5.8	1.5
1800	3.7	1.0
1600	2.9	0.8
1400	2.3	0.6
1200	1.7	0.4
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.



# Propulsion Marine Engine Performance Data

Curve No. **BC9143**  
 DS :  
 CPL :  
 DATE: **17-Oct-06**

**PRELIMINARY**

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

Exhaust Gas Flow .....	l/sec [cfm]	[TBD]
Exhaust Gas Temperature (Turbine Out) .....	°C [°F]	557 [1033]
Exhaust Gas Temperature (Manifold) .....	°C [°F]	679 [1254]

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

NOx (Oxides of Nitrogen) .....	g/kw-hr [g/hp-hr]	5.28 [3.94]
HC (Hydrocarbons) .....	g/kw-hr [g/hp-hr]	0.22 [0.16]
CO (Carbon Monoxide) .....	g/kw-hr [g/hp-hr]	0.77 [0.58]
PM (Particulate Matter) .....	g/kw-hr [g/hp-hr]	[TBD]

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

NOx (Oxides of Nitrogen) .....	g/kw-hr [g/hp-hr]	5.09 [3.79]
HC (Hydrocarbons) .....	g/kw-hr [g/hp-hr]	0.36 [0.27]
CO (Carbon Monoxide) .....	g/kw-hr [g/hp-hr]	1.04 [0.78]
PM (Particulate Matter) .....	g/kw-hr [g/hp-hr]	0.16 [0.12]

## 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]

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

All Data is Subject to Change Without Notice - Consult the following Cummins intranet site for most recent data:

<http://www.cummins.com>