



**CUMMINS INC.**  
Columbus, IN 47201  
Marine Performance Curves

Basic Engine Model

**QSB5.9-425 INT**

Curve Number:

**M-93263**

Engine Configuration

**D403075MX03**

CPL Code:

**1860**

Date:

**12-May-10**

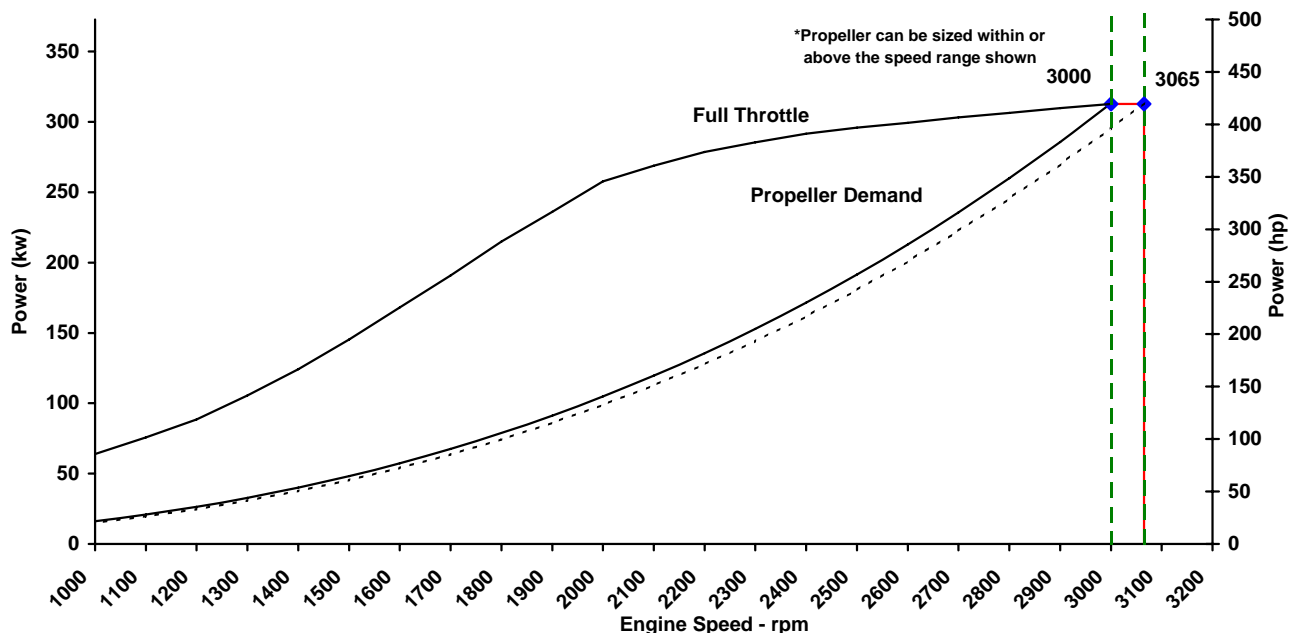
Displacement: **5.9 liter** [359 in<sup>3</sup>]      Rated Power: **313 kw** [420 bhp, 425 mhp]  
 Bore: **102 mm** [4.02 in]      Rated Speed: **3000 rpm**  
 Stroke: **120 mm** [4.72 in]      Rating Type: **Intermittent Duty**  
 Fuel System: **HPCR**      Aspiration: **Turbocharged / Sea Water Aftercooled**  
 Cylinders: **6**

**Preliminary**

CERTIFIED: This diesel engine complies with or is certified to the following agencies requirements:

IMO Tier I - Tier 1 (One) NOx requirements of International Maritime Organization (IMO), MARPOL 73/78 Annex VI, Regulation 13

EPA Tier 2 - Model year requirements of the EPA marine regulation (40CFR94)



Speed	Full Throttle- Power		Full Throttle- Torque		Fuel Cons.- Prop. Curve 2.7 Exp.	
	rpm	kw (hp)	N-m (ft-lb)	L/hr (gal/hr)		
3000	313	(420)	996	(735)	81.3	(21.5)
2800	307	(411)	1045	(771)	65.5	(17.3)
2600	299	(401)	1100	(811)	53.0	(14.0)
2400	292	(391)	1161	(856)	43.4	(11.5)
2200	279	(374)	1209	(892)	35.7	(9.4)
2000	258	(346)	1231	(908)	28.0	(7.4)
1800	215	(288)	1140	(841)	21.5	(5.7)
1600	168	(225)	1003	(740)	15.4	(4.1)
1400	124	(167)	847	(625)	10.7	(2.8)
1200	89	(119)	705	(520)	7.3	(1.9)
1000	64	(86)	610	(450)	4.7	(1.2)
800	43	(58)	515	(380)	2.9	(0.8)
600	28	(38)	447	(330)	2.2	(0.6)

\* Cummins Full Throttle Requirements:

- Engine achieves or exceeds rated rpm at full throttle under any steady operating condition
- Engines in variable displacement boats (such as pushboats, tugboats, net dragners, etc.) achieve no less than 100 rpm below rated speed at full throttle during a dead push or bollard pull
- Engine achieves or exceeds rated rpm when accelerating from idle to full throttle

Rated Conditions: Ratings are based upon ISO 15550 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. Unless otherwise specified, tolerance on all values is +/-5%.

Full Throttle curve represents power at the crankshaft for mature gross engine performance corrected in accordance with ISO 15550. Propeller Curve represents approximate power demand from a typical propeller. 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].

Intermittent Duty (INT): Intended for intermittent use in variable load applications where full power is limited to two hours out of every eight hours of operation. Also, reduced power operations must be at or below 300 rpm of the maximum rated rpm. This rating is an ISO 15550 fuel stop power rating and is for applications that operate less than 1,500 hours per year.

CHIEF ENGINEER



# Propulsion Marine Engine Performance Data

## Preliminary

Curve No. M-93263  
DS : 3075  
CPL : 1860  
DATE: 12-May-10

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

Intake Manifold Pressure .....	kPa [in Hg]	236 [70]
Intake Air Flow .....	l/sec [cfm]	374 [793]
Heat Rejection to Ambient .....	kW [Btu/min]	24 [1383]

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

Exhaust Gas Flow .....	l/sec [cfm]	939 [1990]
Exhaust Gas Temperature (Turbine Out) .....	°C [°F]	447 [837]
Exhaust Gas Temperature (Manifold) .....	°C [°F]	652 [1205]

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

NOx (Oxides of Nitrogen) .....	g/kw-hr [g/hp-hr]	5.01 [3.74]
HC (Hydrocarbons) .....	g/kw-hr [g/hp-hr]	0.16 [0.12]
CO (Carbon Monoxide) .....	g/kw-hr [g/hp-hr]	0.90 [0.67]
PM (Particulate Matter) .....	g/kw-hr [g/hp-hr]	0.11 [0.08]

### Cooling System<sup>1</sup>

#### Sea Water After Cooled Engine

Sea Water Pump Specifications .....	MAB 0.08.17-07/16/2001	
Pressure Cap Rating.....	kPa [psi]	103 [15]
Thermostat Operating Range (Start to Open).....	°C [°F]	74 [165]
Thermostat Operating Range(Full Open).....	°C [°F]	85 [185]
Coolant Flow to Engine Heat Exchanger.....	l/min [gal/min]	273 [72]

TBD= To Be Determined

N/A = Not Applicable

N.A. = Not Available

<sup>1</sup> Unless otherwise specified, all data is at rated power conditions and can vary ± 5%.

<sup>2</sup> No rear loads can be applied when the FPTO is fully loaded. Max PTO torque is contingent on torsional analysis results for the specific drive system. 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://cmdmarine.com/>