



**CUMMINS INC.**  
 Charleston, SC 29405  
 Marine Performance Curves  
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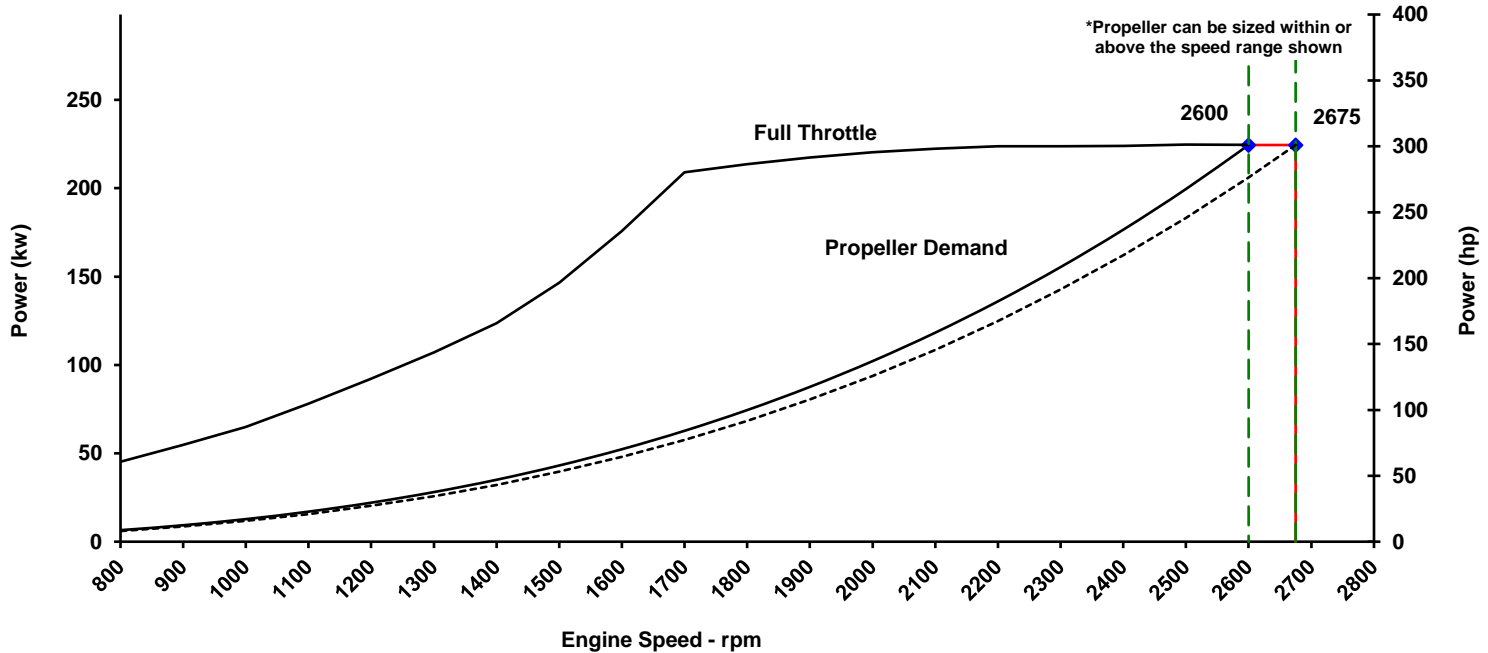
Basic Engine Model  
**QSB 6.7**  
 Engine Configuration  
**D313011MX03**

Curve Number:  
**M-93859**  
 CPL Code:  
**3887**  
 Date:  
**24-Apr-13**

Displacement: **6.7 liter [408 in³]**  
 Bore: **107 mm [4.21 in]**  
 Stroke: **124 mm [4.88 in]**  
 Fuel System: **HPCR Bosch CRIN 3.0**  
 Cylinders: **6**

Rated Power: **224 kw [301 bhp, 305 mhp]**  
 Rated Speed: **2600 rpm**  
 Rating Type: **High Output**  
 Aspiration: **Turbocharged / Sea Water Aftercooled**

CERTIFIED: This diesel engine complies with or is certified to the following agencies requirements:  
 EPA Tier 3 - Model year requirements of the EPA marine regulation (40CFR1042)  
 IMO Tier II (Two) NOx requirements of International Maritime Organization (IMO), MARPOL 73/78 Annex VI, Regulation 13  
 RCD - meets the requirements of the Recreational Craft Directive 94/25/EC as amended by 2003/44/EC in accordance with ISO 8178-1



Speed	Full Throttle				Propeller Demand						
	Power		Torque		Power		Torque		Fuel Consumption		
	rpm	kw	(hp)	N·m	(ft·lb)	kw	(hp)	N·m	(ft·lb)	L/hr	(gal/hr)
2675	224	(301)	801	(591)							
2600	224	(301)	824	(608)	224	(301.0)	824	(608.0)	55.7	(14.7)	
2500	225	(301)	858	(633)	202	(270.8)	771	(568.8)	51.2	(13.5)	
2400	224	(300)	891	(657)	181	(242.5)	719	(530.7)	45.8	(12.1)	
2200	224	(300)	971	(716)	143	(191.7)	621	(457.7)	35.6	(9.4)	
2000	220	(296)	1052	(776)	111	(148.2)	528	(389.2)	27.7	(7.3)	
1800	214	(287)	1133	(836)	83	(111.5)	441	(325.4)	20.6	(5.5)	
1600	176	(236)	1049	(774)	61	(81.1)	361	(266.4)	15.5	(4.1)	
1400	124	(166)	843	(622)	42	(56.6)	288	(212.3)	10.6	(2.8)	
1200	92	(124)	733	(541)	28	(37.3)	221	(163.3)	7.1	(1.9)	
1000	65	(87)	620	(457)	17	(22.8)	162	(119.8)	4.6	(1.2)	
800	45	(61)	541	(399)	9	(12.5)	111	(82.0)	2.8	(0.7)	
600	31	(42)	500	(369)	4	(5.7)	68	(50.3)	1.5	(0.4)	

**\* 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. Member NMMA. Unless otherwise specified, tolerance on all values is +/-5%. Values from engine control modules and displayed on instrument panels are not absolute. Tolerance varies, but is generally less than +/-5% when operating within 30% of rated power.

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].

High Output (HO): Intended for use in variable load applications where full power is limited to one hour out of every eight hours of operation. Also, reduced power must be at or below 300 rpm of the maximum rated rpm. This power rating is for pleasure/non-revenue generating applications that operate 500 hours per year or less.

*[Signature]*

# Propulsion Marine Engine Performance Data

**Curve No. M-93859**  
**DS: D31-MX-2**  
**CPL: 3887**  
**DATE: 24-Apr-13**

## General Engine Data

Engine Model .....	QSB 6.7
Rating Type .....	High Output
Rated Engine Power .....	224 [301]
Rated Engine Speed .....	2600
Rated Power Production Tolerance .....	±% 5
Rated Engine Torque .....	824 [608]
Peak Engine Torque @ 1700 rpm.....	1174 [866]
Brake Mean Effective Pressure .....	1548 [225]
Maximum Allowable Engine Speed .....	2675
Maximum Torque Capacity from Front of Crank <sup>2</sup> .....	824 [608]
Compression Ratio .....	16.5:1
Piston Speed .....	10.7 [2115]
Firing Order .....	1-5-3-6-2-4
Weight (Dry) - Engine With Heat Exchanger System - Average.....	662 [1460]

## Governor Settings

Default Droop Value.....	Refer to MAB 2.04.00-03/23/2006 for Droop explanation	0%
High Speed Governor Break Point.....	rpm	2675
Minimum Idle Speed Setting .....	rpm	550
Normal Idle Speed Variation .....	±rpm	10
High Idle Speed Range Minimum .....	rpm	2670
Maximum .....	rpm	2680

## Noise and Vibration

Average Noise Level - Top	(Idle).....	dBA @ 1m	75
	(Rated).....	dBA @ 1m	100
Average Noise Level - Right Side	(Idle).....	dBA @ 1m	75
	(Rated).....	dBA @ 1m	100
Average Noise Level - Left Side	(Idle).....	dBA @ 1m	76
	(Rated).....	dBA @ 1m	102
Average Noise Level - Front	(Idle).....	dBA @ 1m	76
	(Rated).....	dBA @ 1m	101

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

Avg. Fuel Consumption - ISO 8178 E3 Standard Test Cycle .....	l/hr [gal/hr]	39.2 [10.4]
Avg. Fuel Consumption - ISO 8178 E5 Standard Test Cycle .....	l/hr [gal/hr]	20.0 [5.3]
Fuel Consumption at Rated Speed .....	l/hr [gal/hr]	55.7 [14.7]
Approximate Fuel Flow to Pump .....	l/hr [gal/hr]	215.8 [57.0]
Maximum Allowable Fuel Supply to Pump Temperature .....	°C [°F]	60.0 [140]
Approximate Fuel Flow Return to Tank .....	l/hr [gal/hr]	168.8 [44.6]
Approximate Fuel Return to Tank Temperature .....	°C [°F]	65.6 [150]
Maximum Heat Rejection to Drain Fuel .....	kW [Btu/min]	2.2 [126]

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.

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 COLUMBUS, INDIANA

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# Propulsion Marine Engine Performance Data

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**CPL: 3887**  
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## Air System<sup>1</sup>

Intake Manifold Pressure .....	kPa [in Hg]	138 [41]
Intake Air Flow .....	l/sec [cfm]	284 [602]
Heat Rejection to Ambient .....	kW [Btu/min]	17 [946]

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

Exhaust Gas Flow .....	l/sec [cfm]	599 [1,269]
Exhaust Gas Temperature (Turbine Out) .....	°C [°F]	436 [817]
Exhaust Gas Temperature (Manifold) .....	°C [°F]	574 [1,065]

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

NO <sub>x</sub> (Oxides of Nitrogen) .....	g/kw-hr [g/hp-hr]	4.70 [3.50]
HC (Hydrocarbons) .....	g/kw-hr [g/hp-hr]	0.10 [0.07]
CO (Carbon Monoxide) .....	g/kw-hr [g/hp-hr]	0.48 [0.36]
PM (Particulate Matter) .....	g/kw-hr [g/hp-hr]	0.09 [0.07]
CO <sub>2</sub> (Carbon dioxide) .....	g/kw-hr [g/hp-hr]	687.00 [512.30]

## Emissions (in accordance with ISO 8178 Cycle E5)

NO <sub>x</sub> (Oxides of Nitrogen) .....	g/kw-hr [g/hp-hr]	4.80 [3.58]
HC (Hydrocarbons) .....	g/kw-hr [g/hp-hr]	0.20 [0.15]
CO (Carbon Monoxide) .....	g/kw-hr [g/hp-hr]	0.91 [0.68]
PM (Particulate Matter) .....	g/kw-hr [g/hp-hr]	0.08 [0.06]
CO <sub>2</sub> (Carbon dioxide) .....	g/kw-hr [g/hp-hr]	738.00 [550.33]

## 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]
Max. Coolant Outlet Pressure from the Engine.....	kPa [psi]	414 [60]

### Sea Water Aftercooled Engine (SWAC)

Standard Thermostat Operating Range (Start to Open) .....	°C [°F]	71 [160]
Standard Thermostat Operating Range (Full Open) .....	°C [°F]	83 [182]

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N/A = Not Applicable

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