



CUMMINS INC.
Columbus, IN 47201
Marine Performance Curves
marine.cummins.com

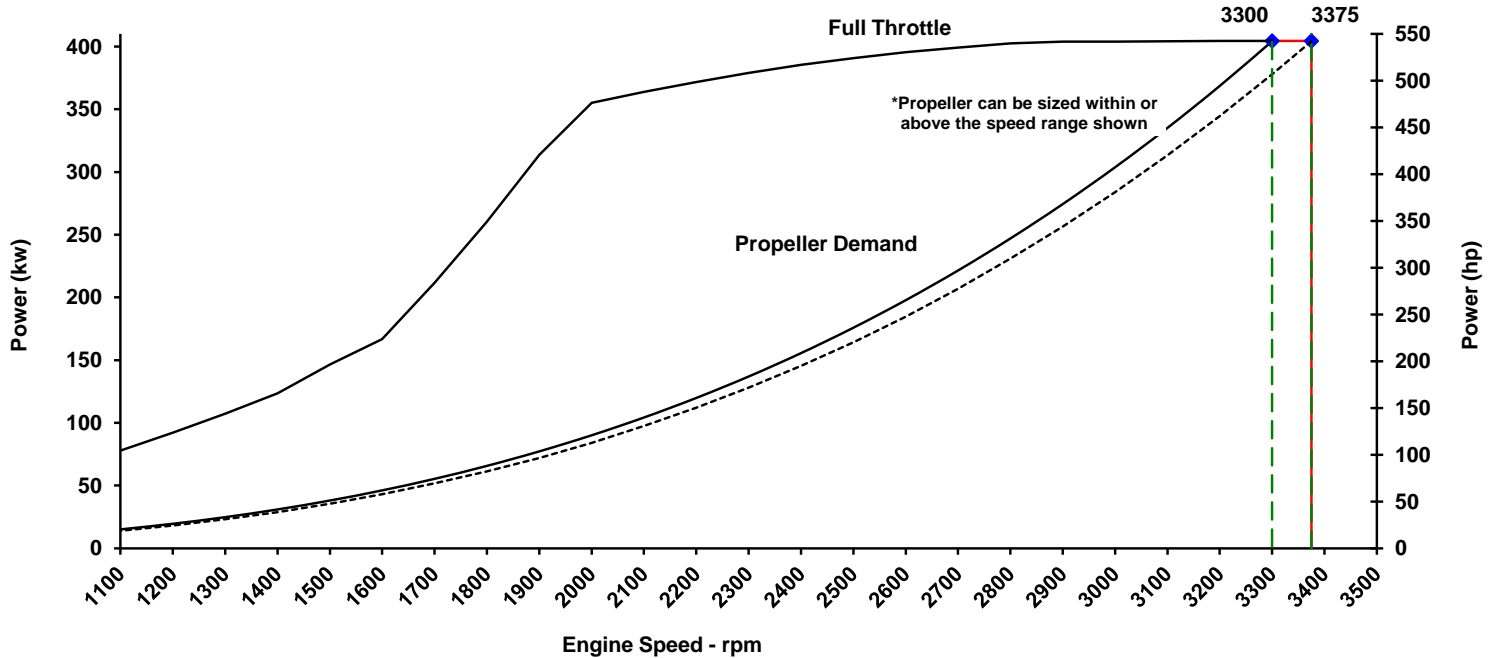
Basic Engine Model
QSB 6.7
Engine Configuration
D313011MX03

Curve Number:
M-94125
CPL Code: **4191** 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: **404 kw [542 bhp, 550 mhp]**
Rated Speed: **3300 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 rpm	Full Throttle				Propeller Demand				
	Power		Torque		Power		Torque		Fuel Consumption
	kw	(hp)	N·m	(ft·lb)	kw	(hp)	N·m	(ft·lb)	L/hr (gal/hr)
3375	404	(542)	1144	(844)	404	(542.0)	1170	(862.6)	110.3 (29.1)
3300	404	(542)	1170	(863)	404	(498.8)	1110	(818.6)	98.4 (26.0)
3200	404	(542)	1207	(890)	372	(457.8)	1052	(775.6)	89.8 (23.7)
3100	404	(542)	1245	(918)	341	(419.0)	995	(733.6)	80.6 (21.3)
3000	404	(542)	1285	(948)	285	(382.4)	939	(692.5)	71.9 (19.0)
2900	404	(542)	1330	(981)	259	(347.8)	885	(652.4)	65.4 (17.3)
2800	395	(530)	1452	(1071)	212	(284.7)	780	(575.2)	54.6 (14.4)
2400	385	(517)	1533	(1131)	171	(229.4)	681	(502.0)	43.8 (11.6)
2200	372	(498)	1613	(1190)	135	(181.4)	587	(433.0)	34.6 (9.1)
2000	355	(476)	1695	(1250)	105	(140.2)	499	(368.2)	27.4 (7.2)
1800	260	(349)	1382	(1019)	79	(105.5)	417	(307.8)	20.5 (5.4)
1600	167	(224)	995	(734)	57	(76.8)	342	(252.0)	15.1 (4.0)
1400	124	(166)	843	(622)	40	(53.5)	272	(200.8)	10.8 (2.9)
1200	92	(124)	733	(541)	26	(35.3)	209	(154.5)	7.6 (2.0)
1000	65	(87)	620	(457)	16	(21.6)	154	(113.3)	5.1 (1.3)
800	45	(61)	541	(399)	9	(11.8)	105	(77.6)	5.0 (1.3)
600	31	(42)	500	(369)	4	(5.4)	64	(47.6)	2.2 (0.6)

- * Cummins Full Throttle Requirements:**
- Engine achieves or exceeds rated rpm at full throttle under any steady operating condition
 - 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]
Chief Engineer

Propulsion Marine Engine Performance Data

Curve No. M-94125
 DS: D31-MX-2
 CPL: 4191
 DATE: 24-Apr-13

General Engine Data

Engine Model	QSB 6.7
Rating Type	High Output
Rated Engine Power	404 [542]
Rated Engine Speed	3300
Rated Power Production Tolerance	5
Rated Engine Torque	1170 [863]
Peak Engine Torque @ 2000 rpm.....	1695 [1250]
Brake Mean Effective Pressure	2197 [319]
Maximum Allowable Engine Speed	3375
Maximum Torque Capacity from Front of Crank ²	0 [0]
Compression Ratio	16.5:1
Piston Speed	13.6 [2685]
Firing Order	1-5-3-6-2-4
Weight (Dry) - Engine With Heat Exchanger System - Average.....	658 [1450]

Governor Settings

Default Droop Value.....	Refer to MAB 2.04.00-03/23/2006 for Droop explanation	0%
High Speed Governor Break Point.....		3375
Minimum Idle Speed Setting		550
Normal Idle Speed Variation		10
High Idle Speed Range Minimum		3370
High Idle Speed Range Maximum		3380

Noise and Vibration

Average Noise Level - Top	(Idle).....	75
	(Rated)	100
Average Noise Level - Right Side	(Idle).....	75
	(Rated)	102
Average Noise Level - Left Side	(Idle).....	76
	(Rated)	101
Average Noise Level - Front	(Idle).....	76
	(Rated)	103

Fuel System¹

Avg. Fuel Consumption - ISO 8178 E3 Standard Test Cycle	72.6 [19.2]
Avg. Fuel Consumption - ISO 8178 E5 Standard Test Cycle	36.4 [9.6]
Fuel Consumption at Rated Speed	110.2 [29.1]
Approximate Fuel Flow to Pump	215.8 [57.0]
Maximum Allowable Fuel Supply to Pump Temperature	60.0 [140]
Approximate Fuel Flow Return to Tank	105.6 [27.9]
Approximate Fuel Return to Tank Temperature	79.5 [175]
Maximum Heat Rejection to Drain Fuel	2.1 [122]

TBD= To Be Determined

N/A = Not Applicable

N.A. = Not Available

- ¹ Unless otherwise specified, all data is at rated power conditions and can vary ± 5%.
- ² 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.
- ³ 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.
- ⁴ Consult option notes for flow specifications of optional Cummins seawater pumps, if applicable.
- ⁵ May not be at rated load and speed. Maximum heat rejection may occur at other than rated conditions.

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Air System¹

Intake Manifold Pressure	kPa [in Hg]	251 [74]
Intake Air Flow	l/sec [cfm]	511 [1082]
Heat Rejection to Ambient	kW [Btu/min]	33 [1873]

Exhaust System¹

Exhaust Gas Flow	l/sec [cfm]	1156 [2,450]
Exhaust Gas Temperature (Turbine Out)	°C [°F]	522 [970]
Exhaust Gas Temperature (Manifold)	°C [°F]	699 [1,290]

Emissions (in accordance with ISO 8178 Cycle E3)

NOx (Oxides of Nitrogen)	g/kw-hr [g/hp-hr]	5.00 [3.73]
HC (Hydrocarbons)	g/kw-hr [g/hp-hr]	0.11 [0.08]
CO (Carbon Monoxide)	g/kw-hr [g/hp-hr]	0.45 [0.34]
PM (Particulate Matter)	g/kw-hr [g/hp-hr]	0.07 [0.06]
CO ₂ (Carbon dioxide)	g/kw-hr [g/hp-hr]	707.49 [527.58]

Emissions (in accordance with ISO 8178 Cycle E5)

NOx (Oxides of Nitrogen)	g/kw-hr [g/hp-hr]	4.88 [3.64]
HC (Hydrocarbons)	g/kw-hr [g/hp-hr]	0.15 [0.11]
CO (Carbon Monoxide)	g/kw-hr [g/hp-hr]	0.48 [0.36]
PM (Particulate Matter)	g/kw-hr [g/hp-hr]	0.06 [0.05]
CO ₂ (Carbon dioxide)	g/kw-hr [g/hp-hr]	700.52 [522.38]

Cooling System¹

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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