



CUMMINS MERCURISER DIESEL
 Charleston, SC 29405
 Marine Performance Curves

Basic Engine Model:
QSL9 - 285 HO
 Engine Configuration:
D563005MX03

Curve Number:
M-91398

CPL Code	Date:
8419	26-Mar-09

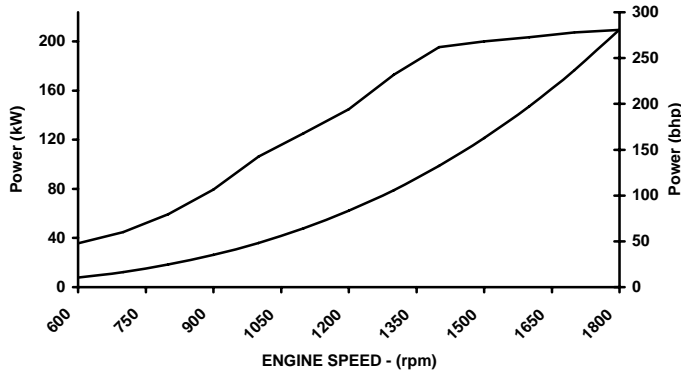
Displacement: **8.9 liter** [542 in³]
 Bore: **114 mm** [4.49 in]
 Stroke: **145 mm** [5.71 in]
 Fuel System: **HPCR**
 Cylinders: **6**

Advertised Power: **209 [281, 285] @ 1800**
 kW [bhp, mhp] @ rpm

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

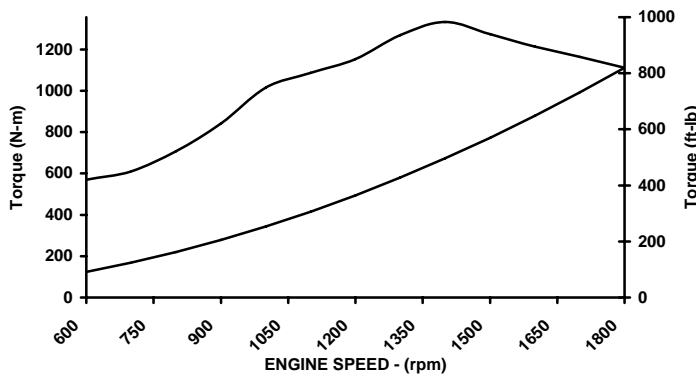
CERTIFIED: This marine diesel engine is certified to the model year requirements of EPA Marine Tier 2 per 40 CFR 94 and conforms with the NOx requirements of the International Maritime Organization (IMO), MARPOL 73/78 Annex VI, Regulation 13 as applicable.

RATED POWER OUTPUT CURVE



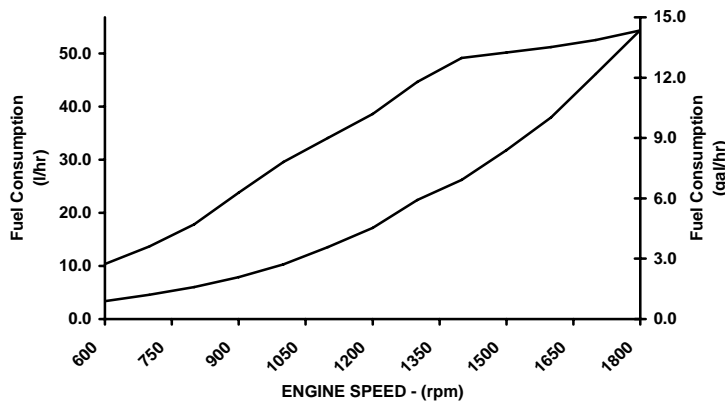
rpm	kW	bhp
1800	210	281
1700	207	278
1600	203	273
1500	200	268
1400	195	262
1300	173	232
1200	145	194
1100	125	168
1000	106	143
900	79	106
800	59	80
700	45	60
600	36	48

FULL LOAD TORQUE CURVE



rpm	N-m	ft-lb
1800	1111	820
1700	1164	858
1600	1213	895
1500	1274	940
1400	1332	983
1300	1270	937
1200	1153	850
1100	1087	802
1000	1015	749
900	842	621
800	708	522
700	610	450
600	569	420

FUEL CONSUMPTION - PROP CURVE



rpm	l/hr	gal/hr
1800	54.3	14.4
1700	46.1	12.2
1600	37.9	10.0
1500	31.8	8.4
1400	26.2	6.9
1300	22.4	5.9
1200	17.1	4.5
1100	13.5	3.6
1000	10.3	2.7
900	7.9	2.1
800	6.0	1.6
700	4.6	1.2
600	3.4	0.9

Rated Conditions: Ratings are based upon ISO 15550 reference conditions; air pressure of 100 kPa [29.612 in Hg], air temperature 25 deg. C [77 deg. F] and 30% relative humidity. Power is in accordance with IMCI procedure. Member NMMA. Unless otherwise specified, all data is at rated power conditions and can vary ± 5%.

Rated Curves (upper) represents rated power at the crankshaft for mature gross engine performance capabilities obtained and corrected in accordance with ISO 15550. Propeller Curve (lower) is based on a typical fixed propeller demand curve using a 3.0 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 Rating: This Rating is 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 operations must be at or below 200 RPM of the maximum rated RPM. This rating is for pleasure/non-revenue generating applications that operate 500 hours per year.

James D. Kahlert

CHIEF ENGINEER

Propulsion Marine Engine Performance Data

Curve No. M-91398
DS : 4960
CPL : 8419
DATE: 26-Mar-09

General Engine Data

Engine Model	QSL9-285 HO
Rating Type	High Output
Rated Engine Power	210 [281]
Rated Engine Speed	1800
Rated Power Production Tolerance	5
Rated Engine Torque	1112 [820]
Peak Engine Torque @ 1400 rpm	1333 [983]
Brake Mean Effective Pressure	1573 [228]
Indicated Mean Effective Pressure	1764 [256]
Minimum Idle Speed Setting	600
Normal Idle Speed Variation	10
High Idle Speed Range Minimum	1865
Maximum	1885
Maximum Allowable Engine Speed	1885
Maximum Torque Capacity from Front of Crank ²	705 [520]
Compression Ratio	16.6:1
Piston Speed	8.7 [1713]
Firing Order	1-5-3-6-2-4
Weight (Dry) - Engine Only - Average	N.A. [N.A.]
Weight (Dry) - Engine With Heat Exchanger System - Average	977 [2153]
Weight Tolerance (Dry) Engine Only	N.A.

Noise and Vibration

Average Noise Level - Top	(Idle)	84
	(Rated)	96
Average Noise Level - Right Side	(Idle)	84
	(Rated)	96
Average Noise Level - Left Side	(Idle)	84
	(Rated)	96
Average Noise Level - Front	(Idle)	84
	(Rated)	96

Fuel System¹

Avg. Fuel Consumption - ISO 8178 E3 Standard Test Cycle	36.9 [9.8]
Fuel Consumption at Rated Speed	54.3 [14.4]
Approximate Fuel Flow to Pump	92.4 [24.4]
Maximum Allowable Fuel Supply to Pump Temperature	60.0 [140]
Approximate Fuel Flow Return to Tank	38.0 [10.0]
Approximate Fuel Return to Tank Temperature	85.1 [185]
Maximum Heat Rejection to Drain Fuel	0.9 [50]
Fuel Transfer Pump Pressure Range	N/A [N/A]
Fuel Pressure - Pump Out/Rail . Mechanical Gauge	N/A [N/A]
INSITE Reading	119996 [17404]

Air System¹

Intake Manifold Pressure	144 [43]
Intake Air Flow	278 [588]
Heat Rejection to Ambient	54 [3050]

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.

CUMMINS ENGINE COMPANY, INC
COLUMBUS, INDIANA

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<http://www.cummins.com>

Propulsion Marine Engine Performance Data

Curve No. M-91398
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Exhaust System¹

Exhaust Gas Flow	l/sec [cfm]	570 [1208]
Exhaust Gas Temperature (Turbine Out)	°C [°F]	378 [712]
Exhaust Gas Temperature (Manifold)	°C [°F]	495 [922]

Emissions (in accordance with ISO 8178 Cycle E3)

NOx (Oxides of Nitrogen)	g/kw-hr [g/hp-hr]	6.36 [4.74]
HC (Hydrocarbons)	g/kw-hr [g/hp-hr]	0.08 [0.06]
CO (Carbon Monoxide)	g/kw-hr [g/hp-hr]	0.66 [0.49]
PM (Particulate Matter)	g/kw-hr [g/hp-hr]	0.10 [0.07]

Cooling System¹

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]	71 [160]
Thermostat Operating Range(Full Open).....	°C [°F]	81 [178]

Engines with Single Loop Keel Cooling

Coolant Flow to Keel Cooler (with blocked open thermostat).....	l/min [gal/min]	152 [40]
LTA Thermostat Operating Range (Start to Open)	°C [°F]	66 [150]
LTA Thermostat Operating Range (Full Open)	°C [°F]	80 [175]
Heat Rejection to Engine Coolant ³	kW [Btu/min]	183 [10397]
Maximum Coolant Inlet Temperature from LTA Cooler.....	°C [°F]	54 [130]

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