



CUMMINS MERCURISER DIESEL
 Charleston, SC 29405
 Marine Performance Curves

Basic Engine Model:
QSM11-610 INT
 Engine Configuration:
D353013MX03

Curve Number:
M-20105

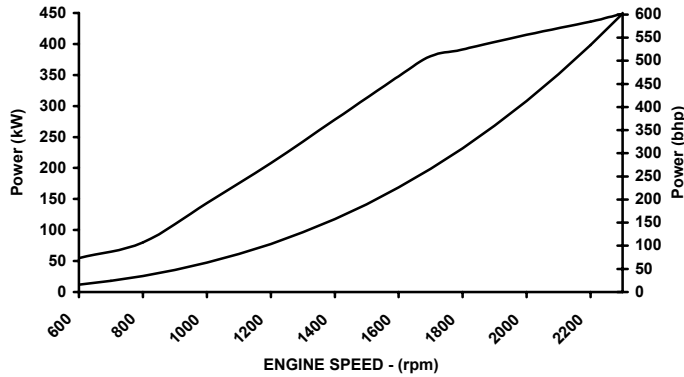
CPL Code	Date:
8753	15-Nov-05

Displacement: **10.8 liter [661 in³]**
 Bore: **125 mm [4.92 in]**
 Stroke: **147 mm [5.79 in]**
 Fuel System: **CELECT**
 Cylinders: **6**

Advertised Power: **449 [602, 610] @ 2300**
 kW [bhp, mhp] @ rpm

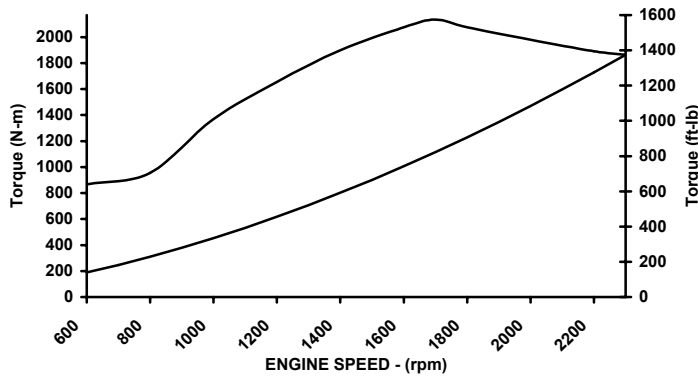
Aspiration: **Turbocharged / Sea Water Aftercooled**
 Rating Type: **Intermittent**

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



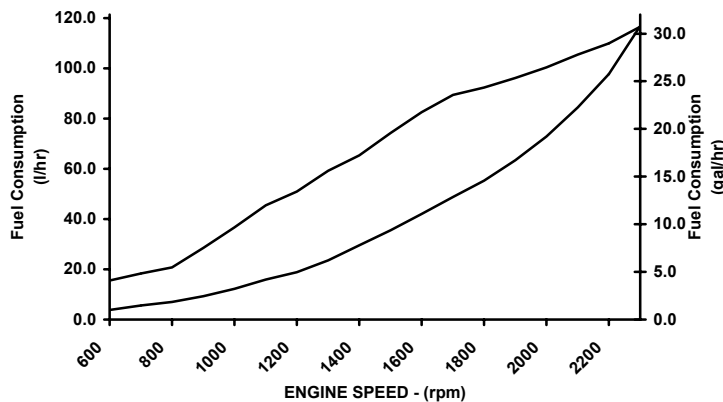
RATED POWER OUTPUT CURVE

rpm	kW	bhp
2300	449	600
2100	425	570
2000	415	556
1800	391	524
1700	380	510
1600	348	466
1400	278	373
1200	208	279
1000	143	192
800	80	107
600	55	73



FULL LOAD TORQUE CURVE

rpm	N-m	ft-lb
2300	1864	1375
2100	1932	1425
2000	1979	1460
1800	2074	1530
1700	2135	1575
1600	2074	1530
1400	1898	1400
1200	1654	1220
1000	1369	1010
800	956	705
600	868	640



FUEL CONSUMPTION - PROP CURVE

rpm	l/hr	gal/hr
2300	116.6	30.8
2100	84.3	22.3
2000	72.7	19.2
1800	55.1	14.6
1700	48.7	12.9
1600	41.9	11.1
1400	29.4	7.8
1200	18.8	5.0
1000	12.2	3.2
800	7.0	1.8
600	3.8	1.0

Rated Conditions: Ratings are based upon ISO 8665 and SAE J1228 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.

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].

Intermittent Duty Rating: This Rating is for use in variable load applications where full power is limited to two (2) hours 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 an ISO 3046 fuel stop power rating and is for applications that operate less than 1,500 hours per year.

James D. Kuhlman

CHIEF ENGINEER

Marine Engine Performance Data

Curve No.: M-20105
DS-3013
DATE: 15Nov05

General Engine Data

Engine Model.....		QSM11-610 INT
Rating Type		Intermittent
Rated Engine Power..... kW [bhp]		449 [602]
Rated Engine Speed..... rpm		2300
Rated HP Production Tolerance	±%	5
Rated Engine Torque..... N•m [ft•lb]		1864 [1375]
Peak Engine Torque @ 1700 rpm	N•m [ft•lb]	2135 [1575]
Brake Mean Effective Pressure	kPa [psi]	2164 [314]
Indicated Mean Effective Pressure	kPa [psi]	2406 [349]
Minimum Idle Speed Setting.....	rpm	600
Normal Idle Speed Variation.....	±rpm	10
High Idle Speed Range	Minimum	rpm 2340
	Maximum	rpm 2360
Maximum Allowable Engine Speed	rpm	2360
Maximum Torque Capacity from Front of Crank ²	N•m [ft•lb]	0 [0]
Compression Ratio		16.3:1
Piston Speed	m/sec [ft/min]	11.3 [2219]
Firing Order.....		1-5-3-6-2-4
Weight (Dry) Engine only - Average.....	kg [lb]	N.A.
Weight (Dry) Engine With Heat Exchanger System - Average.....	kg [lb]	1188 [2620]
Weight Tolerance (Dry) Engine only - Average.....	kg [lb]	N.A.

Noise and Vibration

Average Noise Level – Top	(Idle).....	dBa @ 1m	92
	(Rated).....	dBa @ 1m	112
Average Noise Level – Right Side	(Idle).....	dBa @ 1m	92
	(Rated).....	dBa @ 1m	111
Average Noise Level – Left Side	(Idle).....	dBa @ 1m	92
	(Rated).....	dBa @ 1m	112
Average Noise Level – Front	(Idle).....	dBa @ 1m	93
	(Rated).....	dBa @ 1m	111

Fuel System¹

Average Fuel Consumption – ISO 8178 E3 Standard Test Cycle.....	l/hr [gal/hr]	76 [20]
Fuel Consumption @ Rated Speed.....	l/hr [gal/hr]	117 [31]
Approximate Fuel Flow to Pump.....	l/hr [gal/hr]	280 [74]
Maximum Allowable Fuel Supply to Pump Temperature.....	°C [°F]	60 [140]
Approximate Fuel Flow Return to Tank.....	l/hr [gal/hr]	164 [43]
Fuel Transfer Pump Pressure Range.....	kPa [psi]	965-1241 [140-180]
Fuel Rail Pressure	Gauge.....	kPa [psi] 1151 [167]
	INSITE.....	kPa [psi] N/A

Air System¹

Intake Manifold Pressure	kPa [in Hg]	264 [78]
Intake Air Flow.....	l/sec [cfm]	640 [1356]
Heat Rejection to Ambient	kW [Btu/min]	37 [2089]

Exhaust System¹

Exhaust Gas Flow.....	l/sec [cfm]	1549 [3283]
Exhaust Gas Temperature	Turbine Out.....	°C [°F] 496 [924]
	Manifold	°C [°F] 661 [1220]

TBD = To Be Decided

N/A = Not Applicable

N.A. = Not Available

¹All Data at Rated Conditions

²Consult Installation Direction Booklet for Limitations

³Heat rejection 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.

⁴Consult option notes for flow specifications of optional Cummins seawater pumps, if applicable.

⁵May 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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Marine Engine Performance Data

Curve No.: M-20105
DS-3013
DATE: 15Nov05

Emissions (in accordance with ISO 8178 Cycle E3)

NOx (Oxides of Nitrogen)	g/kw-hr [g/hp-hr]	4.446 [3.315]
HC (Hydrocarbons).....	g/kw-hr [g/hp-hr]	.215 [.160]
CO (Carbon Monoxide).....	g/kw-hr [g/hp-hr]	.367 [.274]
PM (Particulate Matter).....	g/kw-hr [g/hp-hr]	.091 [.068]

Cooling System¹

Sea Water Pump Specifications	MAB 0.08.17-07/16/2001	
Pressure Cap Rating (With Heat Exchanger Option)	kPa [psi]	103 [15]

Sea Water Aftercooled Engine (SWAC)

Coolant Flow to Engine Heat Exchanger.....	l/min [gal/min]	N.A.
Standard Thermostat Operating Range	Start to Open.....	71 [160]
	Full Open	80 [175]
Heat Rejection to Engine Coolant ³	kW [Btu/min]	139 [7915]

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