	CUMMINS MERCRUISER DIESEL **Charleston, SC 29405** **Marine Performance Curves**	Basic Engine Model: **1.7L 120 MS**	Curve Number:	
		Engine Configuration: **D923001MX03**	**Sterndrive**	Date: **22-Oct-04**

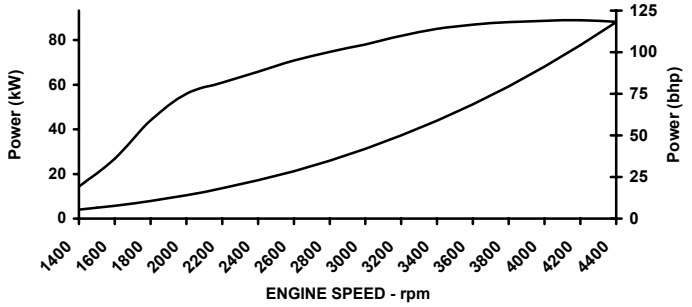
Displacement: **1.7 liter** **[103 in³]**
Bore: **79 mm** **[3.11 in]**
Stroke: **86 mm** **[3.39 in]**
Fuel System: **Direct Injection W/ Bosch VE Pump**
Cylinders: **4**

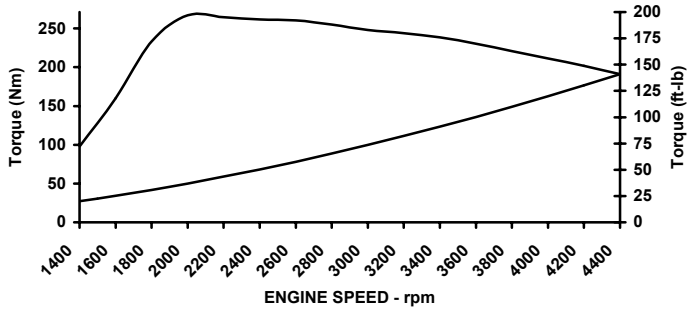
Advertised Power: kW [bhp, mhp] @ rpm **88 [118, 120] @ 4400**

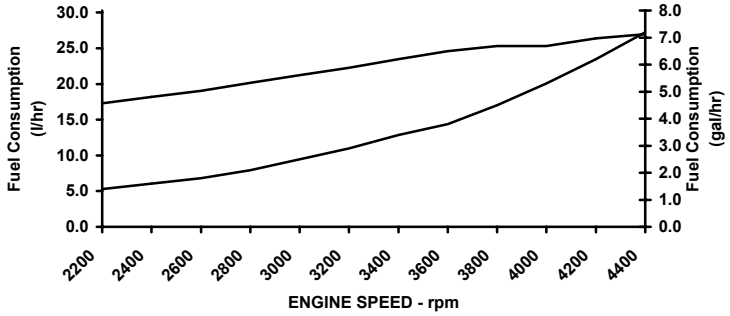
Aspiration: **Turbocharged / Sea Water Aftercooled**
Rating Type: **High Output**

CERTIFIED: This marine diesel engine conforms with the NOx requirements of the International Maritime Organization (IMO), MARPOL 73/78 Annex VI, Regulation 13 as applicable.

PRELIMINARY







RATED POWER OUTPUT CURVE

rpm	kw	bhp
4400	88	118
4200	89	119
3800	88	118
3600	87	117
3200	82	110
3000	78	105
2800	75	100
2400	66	88
2200	61	82
1800	44	59
1600	27	36
1400	14	19

FULL LOAD TORQUE CURVE

rpm	N-m	ft-lb
4400	191	141
4200	202	149
3800	221	163
3600	230	170
3200	244	180
3000	248	183
2800	255	188
2400	262	193
2200	264	195
1800	233	172
1600	160	118
1400	98	72

FUEL CONSUMPTION - PROP CURVE

rpm	l/hr	gal/hr
4400	27.3	7.2
4200	23.5	6.2
4000	20.1	5.3
3800	17.0	4.5
3600	14.4	3.8
3400	12.9	3.4
3000	9.5	2.5
2800	7.9	2.1
2600	6.8	1.8
2400	6.1	1.6
2200	5.3	1.4

Rated Conditions: Ratings are based upon ISO 8665 and Sae J1228 referebce conditions; air pressure of 100 kPa [29.612 in Hg], air temperature 25deg. C [77 deg. F] and 30% relative humidy. 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. F0 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 300 hours per year.

CHIEF ENGINEER

Marine Engine Performance Data

PRELIMINARY

Curve No.: 1.7MS120
DS-TBD
DATE: 22Oct04

General Engine Data		
Engine Model		1.7MS120
Rating Type		High Output
Rated Engine Power	kW [bhp]	88 [118]
Rated Engine Speed	rpm	4400
Rated HP Production Tolerance	±%	5
Rated Engine Torque	N•m [ft•lb]	194 [143]
Peak Engine Torque @ 2000 rpm	N•m [ft•lb]	266 [196]
Brake Mean Effective Pressure	kPa [psi]	1443 [209]
Indicated Mean Effective Pressure	kPa [psi]	N.A.
Minimum Idle Speed Setting	rpm	750
Normal Idle Speed Variation	±rpm	50
High Idle Speed Range Minimum	rpm	4900
Maximum	rpm	5030
Maximum Allowable Engine Speed	rpm	5030
Maximum Torque Capacity from Front of Crank2	N•m [ft•lb]	N/A
Compression Ratio		17.2:1
Piston Speed	m/sec [ft/min]	12.6 [2486]
Firing Order		1-3-4-2
Weight (Dry) Engine With Heat Exchanger System and Sterndrive - Average	kg [lb]	296 [653]
Exhaust System1		
Exhaust Gas Flow	l/sec [cfm]	N.A.
Exhaust Gas Temperature Turbine Out	°C [°F]	585 [1085]
Manifold	°C [°F] 538 [1000]	N.A.
Fuel System1		
Fuel Consumption @ Rated Speed	l/hr [gal/hr]	27.3 [7.2]
Approximate Fuel Flow to Pump	l/hr [gal/hr]	N.A.
Maximum Allowable Fuel Supply to Pump Temperature	°C [°F]	60 [140]
Approximate Fuel Flow Return to Tank	l/hr [gal/hr]	N.A.
Approximate Fuel Return to Tank Temperature	°C [°F]	52 [125]
Maximum Heat Rejection to Drain Fuel5	kW [Btu/min]	N.A.
Fuel Transfer Pump Pressure Range	kPa [psi]	N.A.
Air System1		
Intake Manifold Pressure	kPa [in Hg]	113 [34]
Intake Air Flow	l/sec [cfm]	112 [237]
Heat Rejection to Ambient	kW [Btu/min]	N.A.
Maximum Air Cleaner Inlet Temperature Rise Over Ambient	°C [°F]	17 [30]
Emissions (in accordance with ISO 8178 Cycle E3)		
NOx (Oxides of Nitrogen)	g/kw·hr [g/hp·hr]	N.A.
HC (Hydrocarbons)	g/kw·hr [g/hp·hr]	N.A.
CO (Carbon Monoxide)	g/kw·hr [g/hp·hr]	N.A.
PM (Particulate Matter)	g/kw·hr [g/hp·hr]	N.A.
Cooling System1		
Sea Water Pump Specifications		N/A
Pressure Cap Rating (With Heat Exchanger Option)	kPa [psi]	103 [15]
Maximum Coolant Temperature at Engine Outlet	°C [°F]	104 [219]
Minimum Block Coolant Temperature (Warm Engine)	°C [°F]	82 [180]
Engines with Standard Aftercooling		
Coolant Flow to Engine Heat Exchanger/Keel Cooler	l/min [gal/min]	79 [21]
Standard Thermostat Operating Range Start to Open	°C [°F]	82 [180]
Full Open	°C [°F]	95 [203]
Heat Rejection to Engine Coolant3	kW [Btu/min]	N.A.

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.

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COLUMBUS, INDIANA