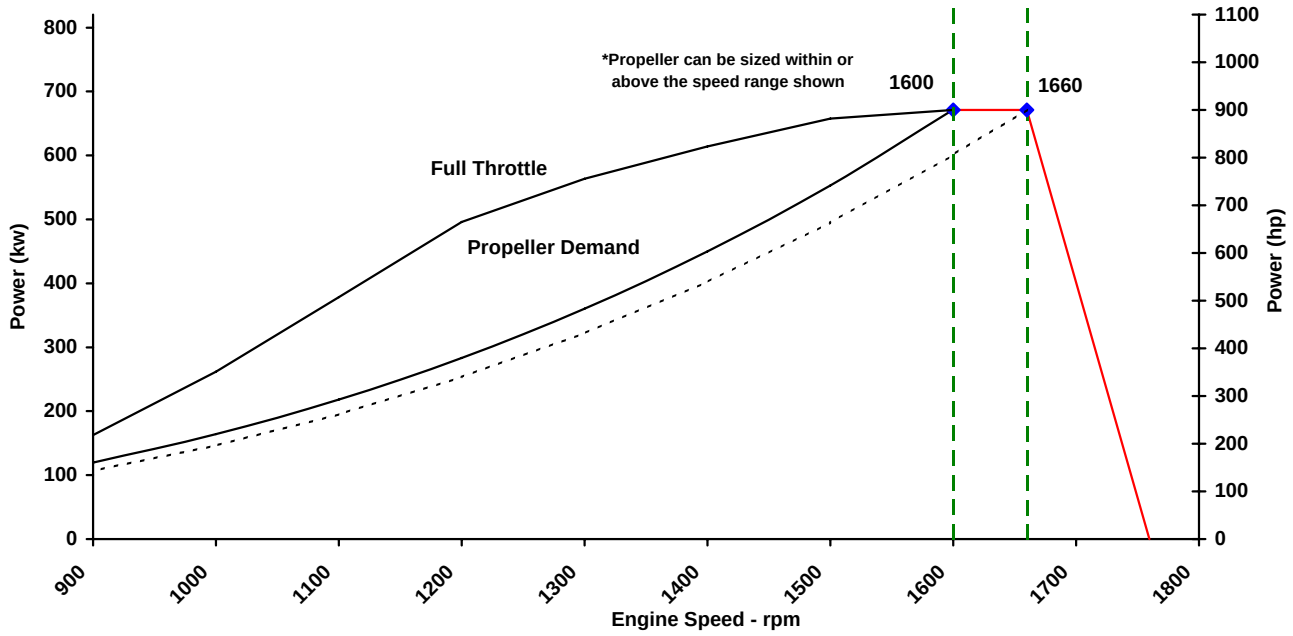
CUMMINS INC. Columbus, IN 47201 Marine Performance Curves	Basic Engine Model KTA38-M1	Curve Number: M-6218	
	Engine Configuration D233034MX02	CPL Code: 2915	Date: 21-Sep-09

Displacement:	**37.7 liter**	**[2301 in³]**	Rated Power:	**671 kw**	**[900 bhp]**
Bore:	**159 mm**	**[6.25 in]**	Rated Speed:	**1600 rpm**	
Stroke:	**159 mm**	**[6.25 in]**	Rating Type:	**Continuous Duty**	
Fuel System:	**PT**		Aspiration:	**Turbocharged / Jacket Water Aftercooled**	
Cylinders:	**12**				

CERTIFIED: This diesel engine complies with or is certified to the following agencies requirements:
IMO - NOx requirements of the International Maritime Organization (IMO), MARPOL 73/78 Annex VI, Regulation 13



Speed	Full Throttle- Power		Full Throttle- Torque		Fuel Cons.- Prop. Curve 3.0 Exp.	
rpm	kw	(hp)	N·m	(ft-lb)	L/hr	(gal/hr)
1660	671	(900)	3860	(2847)		
1600	671	(900)	4005	(2954)	169.6	(44.8)
1400	614	(823)	4187	(3089)	119.5	(31.6)
1200	496	(665)	3946	(2911)	76.8	(20.3)
1000	379	(508)	3615	(2667)	44.0	(11.6)
800	262	(351)	3126	(2306)	23.9	(6.3)

* 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 draggers, 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 humidy. Power is in accordance with IMCI procedure. Member NMMA. Unless otherwise specified, tolerance on all values is +/-5%.

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].

Continuous Rating (CON): Intended for continuous use in applications requiring uninterrupted service at full power. This rating is an ISO 15550 standard power rating.

CHIEF ENGINEER

Propulsion Marine Engine Performance Data

Curve No.	**M-6218**
DS :	**4983**
CPL :	**2915**
DATE:	**21-Sep-09**

General Engine Data

Engine Model		KTA38-M1
Rating Type		Continuous Duty
Rated Engine Power	kW [hp]	671 [900]
Rated Engine Speed	rpm	1600
Rated Power Production Tolerance	±%	3
Rated Engine Torque	N·m [lb·ft]	4005 [2954]
Peak Engine Torque @ 1400 rpm	N·m [lb·ft]	4188 [3089]
Brake Mean Effective Pressure	kPa [psi]	1335 [194]
Indicated Mean Effective Pressure	kPa [psi]	N.A. [N.A.]
Maximum Allowable Engine Speed	rpm	2375
Maximum Torque Capacity from Front of Crank[2]	N·m [lb·ft]	4341 [3202]
Compression Ratio		13.9:1
Piston Speed	m/sec [ft/min]	8.5 [1667]
Firing Order		1R-6L-5R-2L-3R-4L-6R-1L-2R-5L-4R-3L
Weight (Dry) - Engine Only - Average	kg [lb]	4218 [9300]
Weight (Dry) - Engine With Heat Exchanger System - Average	kg [lb]	4538 [10005]
Weight Tolerance (Dry) Engine Only	3xStd Dev(±%)	10.5

Governor Settings

Default Droop Value	Refer to MAB 2.04.00-03/23/2006 for Droop explanation	6%
Minimum Droop Allowed		N/A
Maximum Droop Allowed		N/A
High Speed Governor Break Point	rpm	1660
Minimum Idle Speed Setting	rpm	650
Normal Idle Speed Variation	±rpm	25
High Idle Speed Range Minimum	rpm	1660
Maximum	rpm	1792

Noise and Vibration

Average Noise Level - Top	(Idle)	dBA @ 1m	N.A.
	(Rated)	dBA @ 1m	N.A.
Average Noise Level - Right Side	(Idle)	dBA @ 1m	N.A.
	(Rated)	dBA @ 1m	N.A.
Average Noise Level - Left Side	(Idle)	dBA @ 1m	N.A.
	(Rated)	dBA @ 1m	N.A.
Average Noise Level - Front	(Idle)	dBA @ 1m	N.A.
	(Rated)	dBA @ 1m	N.A.

Fuel System[1]

Avg. Fuel Consumption - ISO 8178 E3 Standard Test Cycle	l/hr [gal/hr]	120.0 [31.7]
Fuel Consumption at Rated Speed	l/hr [gal/hr]	169.6 [44.8]
Approximate Fuel Flow to Pump	l/hr [gal/hr]	302.8 [80.0]
Maximum Allowable Fuel Supply to Pump Temperature	°C [°F]	60.0 [140]
Approximate Fuel Flow Return to Tank	l/hr [gal/hr]	133.3 [35.2]
Approximate Fuel Return to Tank Temperature	°C [°F]	68.4 [155]
Maximum Heat Rejection to Drain Fuel	kW [Btu/min]	1.9 [110]
Fuel Transfer Pump Pressure Range	kPa [psi]	N.A.
Fuel Pressure - Pump Out/Rail . Mechanical Gauge	kPa [psi]	1034 [150]
INSITE Reading	kPa [psi]	1062 [154]

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

Propulsion Marine Engine Performance Data

Curve No.	**M-6218**
DS :	**4983**
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Air System[1]		
Intake Manifold Pressure ..... kPa [in Hg]	108	[32]
Intake Air Flow ..... l/sec [cfm]	914	[1936]
Heat Rejection to Ambient ..... kW [Btu/min]	77	[4360]
Exhaust System[1]		
Exhaust Gas Flow ..... l/sec [cfm]	2232	[4730]
Exhaust Gas Temperature (Turbine Out) ..... °C [°F]	405	[760]
Exhaust Gas Temperature (Manifold) ..... °C [°F]	N.A.	
Emissions (in accordance with ISO 8178 Cycle E3)		
NOx (Oxides of Nitrogen) ..... g/kw·hr [g/hp·hr]	8.76	[6.53]
HC (Hydrocarbons) ..... g/kw·hr [g/hp·hr]	0.13	[0.10]
CO (Carbon Monoxide) ..... g/kw·hr [g/hp·hr]	8.10	[6.04]
PM (Particulate Matter) ..... g/kw·hr [g/hp·hr]	N.A.	
Cooling System[1]		
Sea Water Pump Specifications ..... MAB 0.08.17-07/16/2001		
Pressure Cap Rating (With Heat Exchanger Option) ..... kPa [psi]	103	[15]
Max. Pressure Drop Across Any External Cooling System Circuit ..... kPa [psi]	34	[5]
Engines without Low Temperature Aftercooling (LTA)		
Jacket Water Aftercooled Engine (JWAC)		
Coolant Flow to Engine Heat Exchanger ..... l/min [gal/min]	1128	[298]
Standard Thermostat Operating Range (Start to Open) ..... °C [°F]	82	[180]
Standard Thermostat Operating Range (Full Open) ..... °C [°F]	95	[202]
Heat Rejection to Engine Coolant[3] ..... kW [Btu/min]	415	[23610]

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