CUMMINS INC. Columbus, IN 47201 Marine Performance Curves	Basic Engine Model	Curve Number:	
	TDI3.0-225 HO	**BC9517, BC9518**	
	Engine Configuration	CPL Code:	Date:
	D0W3001MX03	**N/A**	**25-Jan-11**

Displacement:	**3.0 liter**	**[181 in³]**	Rated	**172 kw**	**[230 bhp, 233 mhp]**
Bore:	**83 mm**	**[3.27 in]**	Rated	**4200 rpm**	
Stroke:	**91 mm**	**[3.60 in]**	Rating Type:	**High Output**	
Fuel System:	**HPCR**		Aspiration:	**Turbocharged / Sea Water Aftercooled**	
Cylinders:	**6**				

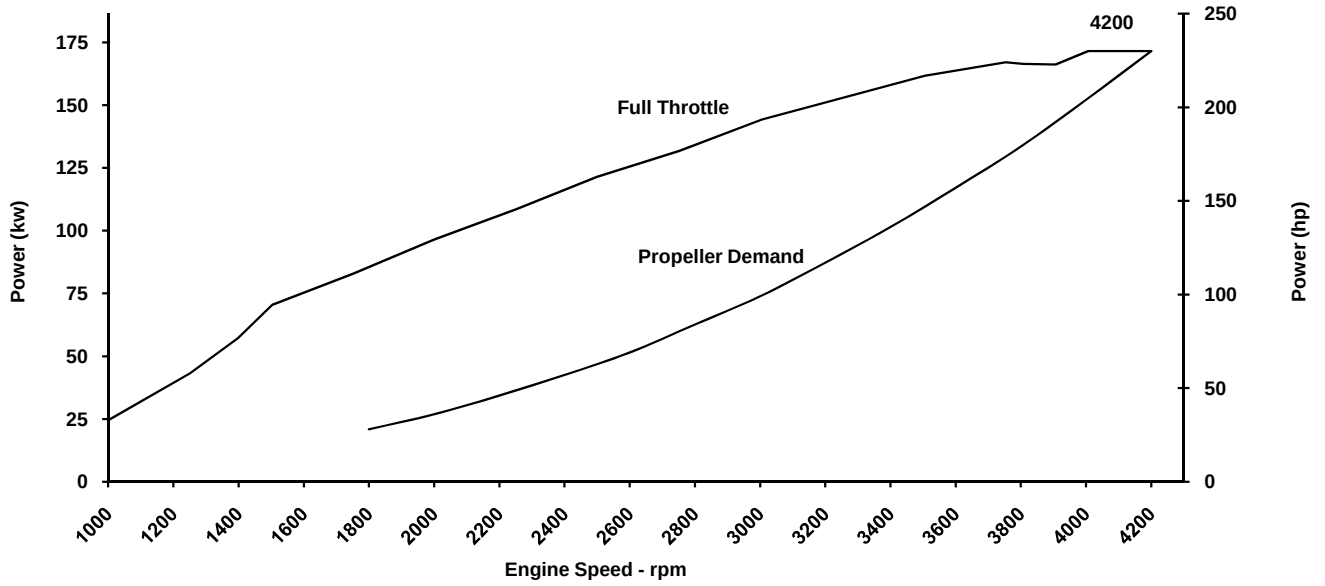
CERTIFIED: This diesel engine complies with or is certified to the following agencies requirements:

IMO Tier I (One) NOx requirements of International Maritime Organization (IMO), MARPOL 73/78 Annex VI, Regulation 13

EPA Tier 2 - Model year requirements of the EPA marine regulation (40CFR94)

RCD - meets the requirements of the Recreational Craft Directive 94/25/EC as amended by 2003/44/EC in accordance with ISO 8178-1

BSO-SAV II- Emissions requirements for vessels operating on Lake Constance (German: Bodensee) or Swiss Lakes (other than Lake Constance)



Full Throttle					Propeller Demand						
Speed	Power		Torque		Speed	Power		Torque		Fuel Consumption	
rpm	kw	(hp)	N·m	(ft-lb)	rpm	kw	(hp)	N·m	(ft-lb)	L/hr	(gal/hr)
4200	172	230	390	288	4200	172	230	390	288	N.A.	N.A.
4100	172	230	399	295	4000	152	204	362	267	N.A.	N.A.
4007	172	230	409	302	3800	133	179	336	248	N.A.	N.A.
3906	166	223	406	300	3600	117	157	309	228	N.A.	N.A.
3807	166	223	417	308	3400	101	136	285	210	N.A.	N.A.
3754	167	224	425	313	3200	87	117	259	191	N.A.	N.A.
3506	162	217	441	325	3000	74	99	236	174	N.A.	N.A.
3254	153	205	449	331	2800	63	84	213	157	N.A.	N.A.
3005	144	193	458	338	2600	51	69	190	140	N.A.	N.A.
2752	132	177	457	337	2400	43	57	168	124	N.A.	N.A.
2500	121	163	464	342	2200	34	46	148	109	N.A.	N.A.
2252	109	146	460	340	2000	27	36	129	95	N.A.	N.A.
2000	96	129	461	340	1800	21	28	110	81	N.A.	N.A.

*** 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. 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 200 rpm of the maximum rated rpm. This power rating is for pleasure/non-revenue generating applications that operate 500 hours per year or less.

CHIEF ENGINEER

Propulsion Marine Engine Performance Data

Curve No. BC9517, BC9518
DS : D0W-MX-1
CPL : N/A
DATE: 25-Jan-11

General Engine Data

Engine Model		TDI3.0-225 HO
Rating Type		High Output
Rated Engine Power	kW [hp]	172 [230]
Rated Engine Speed	rpm	4200
Rated Power Production Tolerance	±%	5
Rated Engine Torque	N·m [lb·ft]	390 [288]
Peak Engine Torque @ 2500 rpm	N·m [lb·ft]	464 [342]
Brake Mean Effective Pressure	kPa [psi]	1652 [240]
Indicated Mean Effective Pressure	kPa [psi]	N.A. [N.A.]
Maximum Allowable Engine Speed	rpm	4400
Compression Ratio		19
Piston Speed	m/sec [ft/min]	12.8 [2519]
Firing Order		3-6-1-4-2-5
Weight (Dry) - Engine Only - Average	kg [lb]	N.A. [N.A.]
Weight (Dry) - Engine With Heat Exchanger System - Average	kg [lb]	330 [728]
Weight Tolerance (Dry) Engine Only	3xStd Dev(±%)	N.A.

Governor Settings

Default Droop Value	Refer to MAB 2.04.00-03/23/2006 for Droop explanation	5%
Minimum Droop Allowed		0%
Maximum Droop Allowed		16%
High Speed Governor Break Point	rpm	4400
Minimum Idle Speed Setting	rpm	640
Normal Idle Speed Variation	±rpm	25
High Idle Speed Range Minimum	rpm	4400
Maximum	rpm	4602

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 E5 Standard Test Cycle	l/hr [gal/hr]	N.A.
Fuel Consumption at Rated Speed	l/hr [gal/hr]	48.7 [12.9]
Approximate Fuel Flow to Pump	l/hr [gal/hr]	N.A.
Maximum Allowable Fuel Supply to Pump Temperature	°C [°F]	60.0 [140]
Approximate Fuel Flow Return to Tank	l/hr [gal/hr]	N.A.
Approximate Fuel Return to Tank Temperature	°C [°F]	N.A.
Maximum Heat Rejection to Drain Fuel	kW [Btu/min]	N.A.
Fuel Transfer Pump Pressure Range	kPa [psi]	N.A.
Fuel Pressure - Pump Out/Rail . Mechanical Gauge	kPa [psi]	N.A.
INSITE Reading	kPa [psi]	N.A.

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. BC9517, BC9518
DS : D0W-MX-1
CPL : N/A
DATE: 25-Jan-11

Air System[1]	
Intake Manifold Pressure ……kPa [in Hg]	N.A.
Intake Air Flow ……l/sec [cfm]	N.A.
Heat Rejection to Ambient ……kW [Btu/min]	TBD [TBD]
Exhaust System[1]	
Exhaust Gas Flow ……l/sec [cfm]	N.A.
Exhaust Gas Temperature (Turbine Out) ……°C [°F]	N.A.
Exhaust Gas Temperature (Manifold) ……°C [°F]	N.A.
Emissions (in accordance with ISO 8178 Cycle E5)	
NOx (Oxides of Nitrogen) ……g/kw·hr [g/hp·hr]	TBD
HC (Hydrocarbons) ……g/kw·hr [g/hp·hr]	TBD
CO (Carbon Monoxide) ……g/kw·hr [g/hp·hr]	TBD
PM (Particulate Matter) ……g/kw·hr [g/hp·hr]	TBD
Cooling System[1]	
Sea Water Pump Specifications ……MAB 0.08.17-07/16/2001	
Pressure Cap Rating (With Heat Exchanger Option) ……kPa [psi]	152 [22]
Max. Coolant Outlet Pressure from the Engine……kPa [psi]	N.A.
Max. Pressure Drop Across Any External Cooling System Circuit ……kPa [psi]	34 [5]
Engines without Low Temperature Aftercooling (LTA)	
Sea Water Aftercooled Engine (SWAC)	
Coolant Flow to Engine Heat Exchanger ……l/min [gal/min]	TBD [TBD]
Standard Thermostat Operating Range (Start to Open) ……°C [°F]	70 [158]
Standard Thermostat Operating Range (Full Open) ……°C [°F]	TBD [TBD]
Heat Rejection to Engine Coolant[3] ……kW [Btu/min]	TBD [TBD]

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