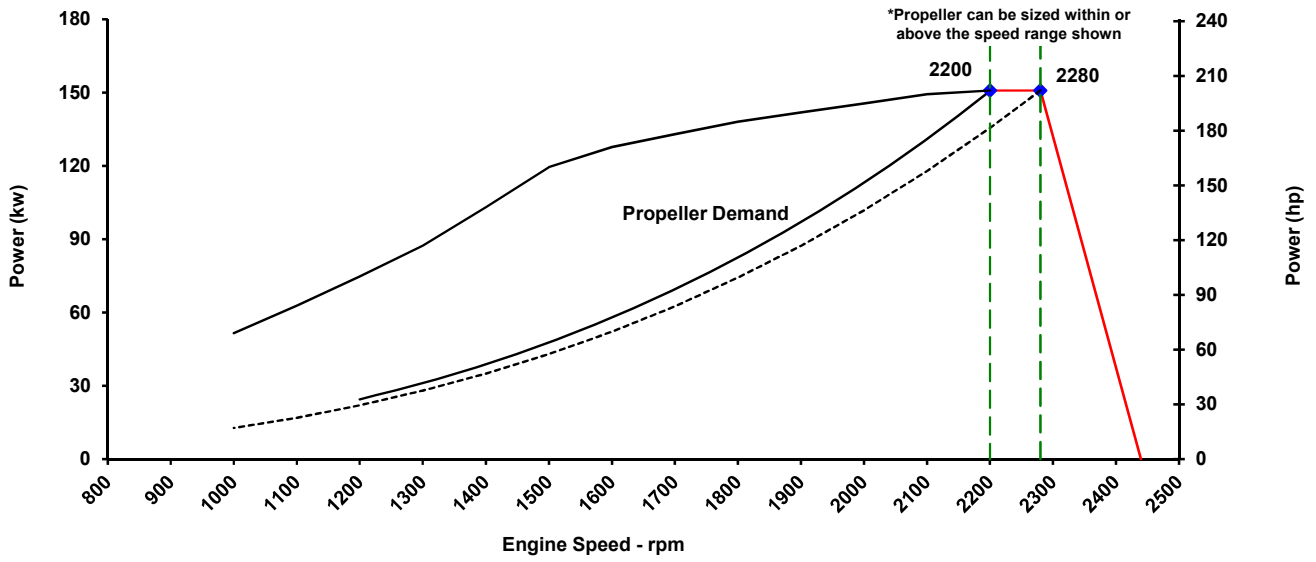
Shanghai Cummins Trade Co., Ltd. Shanghai, China, 200030 Marine Performance Curves	Basic Engine Model **B5.9CMII205**	Curve Number: **M-FR96899**	
	Engine Configuration **D403115MX03**	CPL Code: **5571**	Date: **15-Apr-19**

Displacement:	**5.9 liter**	**[359 in³]**	Rated Power:	**151 kw**	**[202 bhp]**
Bore:	**102 mm**	**[4.02 in]**	Rated Speed:	**2200 rpm**	
Stroke:	**120 mm**	**[4.72 in]**	Rating Type:	**Continuous Duty**	
Cylinders:	**6**		Aspiration:	**Turbocharged**	
Fuel System:	**HPCR**		110% Power:	**166 kw**	**[222 bhp]**

CERTIFIED: This diesel engine complies with or is certified to the following agencies requirements:
IMO Tier II (Two) NOx requirements of International Maritime Organization (IMO), MARPOL 73/78 Annex VI, Regulation 13
China Marine Emission Regulation Stage II GB15097-2016



Speed	100% Throttle				Propeller Demand					
	Power		Torque		Power		Torque		Fuel Consumption	
rpm	kw	(hp)	N·m	(ft-lb)	kw	(hp)	N·m	(ft-lb)	L/hr	(gal/hr)
2280	151	(202)	632	(465)						
2200	151	(202)	655	(483)	151	(202.0)	655	(483)	40.5	(10.7)
2100	149	(200)	676	(499)	131	(175.7)	595	(439)	35.8	(9.5)
2000	145	(195)	694	(512)	113	(151.8)	541	(399)	31.4	(8.3)
1900	142	(190)	712	(526)	97	(130.1)	488	(360)	25.7	(6.8)
1800	138	(185)	730	(539)	83	(110.6)	438	(323)	23.6	(6.2)
1700	133	(178)	745	(550)	70	(93.2)	390	(288)	19.3	(5.1)
1600	128	(171)	760	(561)	58	(77.7)	346	(255)	15.1	(4)
1500	119	(160)	760	(561)	48	(64.0)	304	(224)	12.3	(3.2)
1400	103	(138)	700	(517)	39	(52.1)	264	(195)	10.8	(2.9)
1300	87	(117)	640	(472)	31	(41.7)	228	(168)	8.5	(2.3)
1200	75	(100)	590	(436)	24	(32.8)	194	(143)	6.6	(1.7)
1100	63	(84)	540	(399)	19	(25.3)	164	(121)	5.2	(1.4)
1000	51	(69)	490	(362)	14	(19.0)	136	(100)	4.2	(1.1)

*** 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].

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

APPLICATION ENGINEER

Propulsion Marine Engine Performance Data

Curve No. **M-FR96899**

CPL : **5571**
DATE: **15-Apr-19**

General Engine Data

Engine Model		B5.9CMII205
Rating Type		Continuous Duty
Rated Engine Power	kW [hp]	151 [202]
Rated Engine Speed	rpm	2200
Rated Power Production Tolerance	±%	3
Rated Engine Torque	N·m [lb·ft]	655 [482]
Peak Engine Torque @ 1500 rpm	N·m [lb·ft]	761 [561]
Brake Mean Effective Pressure	kPa [psi]	1397 [203]
Indicated Mean Effective Pressure	kPa [psi]	1630 [236]
Maximum Allowable Engine Speed	rpm	2440
Maximum Continuous Torque Capacity from Front of Crank Specifications		
Maximum Torque Capacity from Front of Crank[2]	N·m [lb·ft]	[N.A.]
Compression Ratio		17.3:1
Piston Speed	m/sec [ft/min]	8.8 [1732]
Firing Order		1-5-3-6-2-4
Weight - Engine Only - Average	kg [lb]	543 [1197]
Weight - Engine With Heat Exchanger System - Average	kg [lb]	641 [1413]

Governor Settings

Default Droop Value	Refer to MAB 2.04.00-03/23/2006 for Droop explanation	7%
Maximum Droop Allowed		16%
High Speed Governor Break Point	rpm	2280
Minimum Idle Speed Setting	rpm	750
Normal Idle Speed Variation	±rpm	50
High Idle Speed Range Minimum	rpm	2280
Maximum	rpm	2400

Noise and Vibration

1 m sound pressure level - GB/T1859		< 93 dB

Lubrication System[1]

Max. Allowable Oil Temperature (Sump)	°C [°F]	124 [255]
Oil Pan Capacity (OP9314)		
Low/High	l/l	12.3 14.2
Min. Oil Pressure at idle speed	kPa [psi]	69 [10]
Maximum Operational Angularity of Oil Pan	degree	40

Fuel System[1]

Fuel Consumption at Rated Speed	l/hr [gal/hr]	40.5 [10.7]
Approximate Fuel Flow to Pump	l/hr [gal/hr]	90 [23.8]
Maximum Allowable Fuel Supply to Pump Temperature	°C [°F]	80 [176]
Approximate Fuel Flow Return to Tank	l/hr [gal/hr]	22.0 [5.8]
Maximum Allowable Restriction to Fuel Pump		
Clean Filter	kPa [psi]	16 [2.3]
Dirty Filter	kPa [psi]	30 [4.4]

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.**

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Air System[1]	
Intake Manifold Pressure ....kPa [in Hg]	162 [48]
Intake Air Flow ....l/sec [cfm]	183 [388]
Heat Rejection to Ambient[5] ....kW [Btu/min]	17 [980]
Exhaust System[1]	
Exhaust Gas Flow ....l/sec [cfm]	491 [1,040]
Exhaust Gas Temperature (Turbine Out) ....°C [°F]	559 [1,038]
Max. Exhaust Pressure ....kPa [in Hg]	10 [3]
Emissions (in accordance with ISO 8178 Cycle E3)	
NOx (Oxides of Nitrogen) ....g/kw·hr [g/hp·hr]	5.05 [3.77]
HC (Hydrocarbons) ....g/kw·hr [g/hp·hr]	0.25 [0.19]
CO (Carbon Monoxide) ....g/kw·hr [g/hp·hr]	1.50 [1.12]
PM (Particulate Matter) ....g/kw·hr [g/hp·hr]	0.12 [0.09]
Cooling System[1]	
Sea Water Pump flow[4] (Discharge Restriction Pressure 40 kPa)....m^3/hr	11.4
Pressure Cap Rating (With Heat Exchanger Option) ....kPa [psi]	48 [7]
Max. Pressure Drop Across Any External Cooling System Circuit ....kPa [psi]	34 [5]
Jacket Water Aftercooled Engine (JWAC)	
Coolant Flow to Engine Heat Exchanger ....l/min [gal/min]	164 [43.4]
Standard Thermostat Operating Range (Start to Open) ....°C [°F]	71 [160]
Standard Thermostat Operating Range (Full Open) ....°C [°F]	83 [182]
Heat Rejection to Engine Coolant[3] ....kW [Btu/min]	92 [5225]
Coolant Capacity	
Engine Only.... l [gal]	9 [2.4]
Electrical and Start System	
Voltage....V	24
Cold Soak at -18°C (0°F) -Cold Cranking Amperes Rating ....CCA	600
Maximum Allowable Resistance of Starting Circuit ....Ohms	2
Min. start temperature without cold starting aid ....°C [°F]	-12 [-10]

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