



CUMMINS INC.
Columbus, IN 47201
Marine Performance Curves

Basic Engine Model

KTA19-M3

Engine Configuration

D193080MX02

Curve Number:

M-4585

CPL Code:

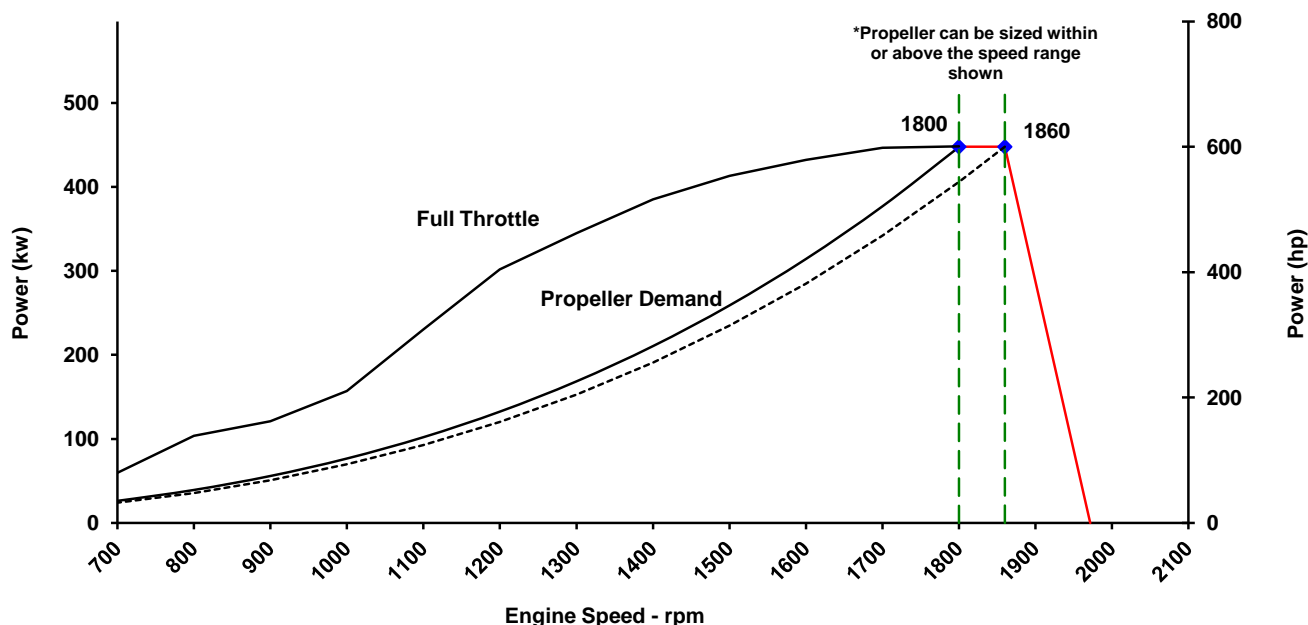
3849

Date:

6-Jun-12

Displacement: **18.9 liter [1154 in³]** Rated Power: **447 kw [600 bhp]**
 Bore: **159 mm [6.26 in]** Rated Speed: **1800 rpm**
 Stroke: **159 mm [6.25 in]** Rating Type: **Continuous Duty**
 Cylinders: **6** Aspiration: **Turbocharged / Jacket Water Aftercooled**
 Fuel System: **PT with Mechanical Governor**

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



Speed	Full 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)
1860	448	(600)	2298	(1695)							
1800	448	(600)	2375	(1752)	447	(600.0)	2374	(1,750.7)	116.9	(30.9)	
1700	446	(598)	2507	(1849)	377	(505.5)	2117	(1,561.6)	99.4	(26.3)	
1600	432	(579)	2576	(1900)	314	(421.4)	1875	(1,383.2)	84.6	(22.4)	
1500	413	(553)	2627	(1938)	259	(347.2)	1648	(1,215.7)	67.4	(17.8)	
1400	385	(516)	2624	(1936)	211	(282.3)	1436	(1,059.0)	56.4	(14.9)	
1300	345	(462)	2533	(1868)	169	(226.0)	1238	(913.2)	46.2	(12.2)	
1200	301	(404)	2399	(1770)	133	(177.8)	1055	(778.1)	37.7	(10.0)	
1100	230	(309)	1999	(1474)	102	(136.9)	886	(653.8)	30.3	(8.0)	
1000	157	(210)	1497	(1104)	77	(102.9)	733	(540.3)	23.5	(6.2)	
900	121	(162)	1283	(946)	56	(75.0)	593	(437.7)	17.9	(4.7)	
800	103	(139)	1234	(910)	39	(52.7)	469	(345.8)	13.2	(3.5)	
700	60	(80)	813	(600)	26	(35.3)	359	(264.8)	9.5	(2.5)	

*** 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 dragners, 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 humidity. 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.

Michael Hayden

TECHNICAL DATA DEPT.

CHIEF ENGINEER

Propulsion Marine Engine Performance Data

Curve No. M-4585
DS : DS-4964
CPL : 3849
DATE: 6-Jun-12

General Engine Data

Engine Model	KTA19-M3
Rating Type	Continuous Duty
Rated Engine PowerkW [hp]	447 [600]
Rated Engine Speedrpm	1800
Rated Power Production Tolerance±%	3
Rated Engine TorqueN·m [lb·ft]	2374 [1751]
Peak Engine Torque @ 1500 rpm.....N·m [lb·ft]	2627 [1938]
Brake Mean Effective PressurekPa [psi]	1577 [229]
Maximum Allowable Engine Speed	N.A.

Maximum Continuous Torque Capacity from Front of Crank Specifications

Maximum Torque Capacity from Front of Crank ²	2542 [1875]
Compression Ratio	14.5:1
Piston Speedm/sec [ft/min]	9.5 [1876]
Firing Order	1-5-3-6-2-4

Weight (Dry) - Engine Only - Average	2073 [4570]
Weight (Dry) - Engine With Heat Exchanger System - Average.....	2251 [4962]
Weight Tolerance (Dry) Engine Only	3xStd Dev(±%) 10.0

Governor Settings

Default Droop Value.....Refer to MAB 2.04.00-03/23/2006 for Droop explanation	6%
Maximum Droop Allowed.....	16%
High Speed Governor Break Point.....rpm	1860
Minimum Idle Speed Setting	650
Normal Idle Speed Variation	±rpm 25
High Idle Speed Range Minimum	1860
Maximum	1972

Fuel System¹

Avg. Fuel Consumption - ISO 8178 E3 Standard Test Cycle	82.6 [21.8]
Fuel Consumption at Rated Speed	116.9 [30.9]
Approximate Fuel Flow to Pump	237.7 [62.8]
Maximum Allowable Fuel Supply to Pump Temperature	60.0 [140]
Approximate Fuel Flow Return to Tank	120.9 [31.9]
Approximate Fuel Return to Tank Temperature	62.2 [144]
Maximum Heat Rejection to Drain Fuel	1.3 [72]
Fuel Pressure - Pump Out/Rail . Mechanical Gauge	1032 [150]

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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 COLUMBUS, INDIANA

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<http://marine.cummins.com>

Propulsion Marine Engine Performance Data

Curve No. M-4585
DS : DS-4964
CPL : 3849
DATE: 6-Jun-12

Air System¹

Intake Manifold Pressure	kPa [in Hg]	180 [53]
Intake Air Flow	l/sec [cfm]	614 [1301]
Heat Rejection to Ambient	kW [Btu/min]	15 [847.8]

Exhaust System¹

Exhaust Gas Flow	l/sec [cfm]	1410 [2,987]
Exhaust Gas Temperature (Turbine Out)	°C [°F]	421 [789]
Exhaust Gas Temperature (Manifold)	°C [°F]	581 [1,077]

Emissions (in accordance with ISO 8178 Cycle E3)

NOx (Oxides of Nitrogen)	g/kw-hr [g/hp-hr]	6.54 [4.88]
HC (Hydrocarbons)	g/kw-hr [g/hp-hr]	0.10 [0.07]
CO (Carbon Monoxide)	g/kw-hr [g/hp-hr]	1.18 [0.88]

Cooling System¹

Sea Water Pump Specifications	MAB 0.08.17-07/16/2001	
Pressure Cap Rating	kPa [psi]	103 [15]
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]	644 [170]
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]	365 [20788]

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