



**CUMMINS MARINE**  
Charleston, SC 29405  
Marine Performance Curves

Basic Engine Model:  
**KTA50-DM1**

Curve Number:  
**DM-6885**

Engine Configuration:  
**D283036MX02**

CPL Code:  
**3730**

Date:  
**14-Jun-12**

Displacement: **50.4 liter [3079 in<sup>3</sup>]**  
Bore: **159 mm [6.26 in]**  
Stroke: **159 mm [6.25 in]**  
Fuel System: **Direct Injection Cummins STC**  
Cylinders: **16**

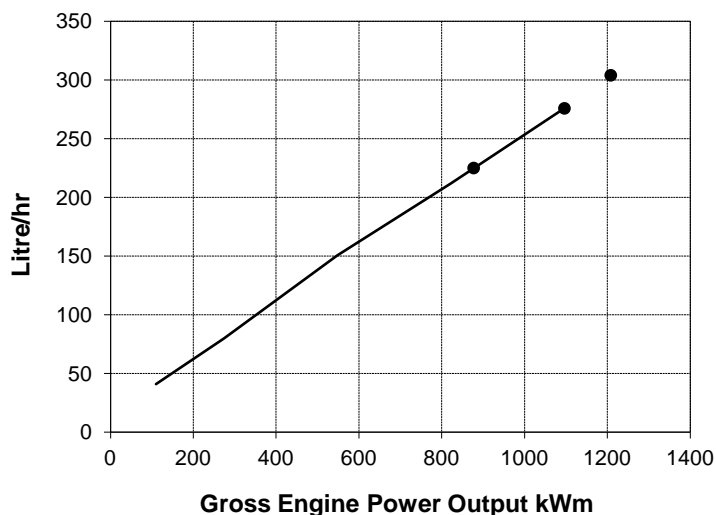
Advertised Power: **1096[1470]@1500** kW [hp] @ rpm  
Aspiration: **Turbocharged/Aftercooled**  
Exhaust Type: **Dry**

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

Engine Speed	Overload Capacity		Prime Power		Continuous Power	
	kWm	BHP	kWm	BHP	kWm	BHP
RPM						
1500	1208	1620	1096	1470	877	1176

### Engine Performance Data @ 1500 rpm

OUTPUT POWER			FUEL CONSUMPTION			
%	kWm	BHP	kg/kWh	Lb/ BHP h	Liter/ hour	U.S. Gal/ hour
<b>10% OVERLOAD CAPACITY</b>						
110%	1208	1620	0.214	0.352	304.1	80.3
<b>PRIME POWER</b>						
100%	1096	1470	0.214	0.352	275.9	72.9
75%	822	1103	0.219	0.360	211.9	56.0
50%	548	735	0.234	0.384	150.6	39.8
25%	274	368	0.247	0.407	79.8	21.1
10%	110	147	0.317	0.522	40.9	10.8
<b>CONTINUOUS POWER</b>						
80%	877	1176	0.218	0.359	225.1	59.5



**Rating Conditions:** Ratings are in accordance with ISO 15550 and ISO 8528-5 reference conditions; air pressure at 100 kPa (29.61 in Hg), air temperature 25°C (77°F), and 30% relative humidity. The fuel consumption data is based on No. 2 diesel fuel weight at 0.85 kg/liter (7.001 lb/U.S. gal).

Power output curves are based on the engine operating with fuel system, water pump, and lubricating oil pump; not included are battery charging alternator, fan, optional equipment, and driven components.

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.

Unless otherwise specified, tolerance on all values is +/-5%.

**Prime Power Rating** is applicable for supplying continual electrical power at varied load. The following are the Prime Rating parameters:

- \* Prime Power is available for an unlimited number of hours per year in a variable load application. Variable load should not exceed a 70% average of the Prime Power rating during any operating period of 250 hours.
- \* The total operating time at 100% Prime Power shall not exceed 500 hours per year.
- \* There is a 10% overload capability for a period of 1 hour within a 12 hour period of operation. Total operating time at 10% overload shall not exceed 25 hours per year.

TECHNICAL DATA DEPT.

*Michael Chapman*  
CHIEF ENGINEER

# Auxiliary Marine Engine Performance Data

Curve No.      **DM-6885**  
 DS :            **DS-4998**  
 CPL :          **3730**  
 DATE:         **14-Jun-12**

## General Engine Data

Engine Model .....	KTA50-DM1			
Rating Type .....	Prime Power		Overload	
Rated Engine Power .....	1096 [1470]		1208	[1620]
Governed Engine Speed .....			1500	
Rated HP Production Tolerance .....			5	
Rated Engine Torque .....	6978 [5147]		7690	[5672]
Low Idle Speed Range      Minimum .....			725	
Maximum .....			775	
Maximum Torque Capacity from Front of Crank <sup>2</sup> .....	4341 [3202]			
Brake Mean Effective Pressure .....	1738 [252]		1916	[278]
Compression Ratio .....			13.9:1	
Piston Speed .....	8 [1563]			
Firing Order .....	1R-1L-3R-3L-2R-2L-5R-4L-8R-8L-6R-6L-7R-7L-4R-5L			
Friction Power .....	116 [155]			
Weight Dry - Engine Only .....	4853 [10700]			

## Noise and Vibration

Average Noise Level - Top	(Idle).. .....	dBa @ 1m	TBD
	(Rated) .....	dBa @ 1m	TBD
Average Noise Level - Right Side	(Idle).. .....	dBa @ 1m	TBD
	(Rated) .....	dBa @ 1m	TBD
Average Noise Level - Left Side	(Idle).. .....	dBa @ 1m	TBD
	(Rated) .....	dBa @ 1m	TBD

## Fuel System<sup>1</sup>

Approximate Fuel Flow to Pump .....	l/hr [gal/hr]	609.5	[161.0]	609.5	[161.0]
Maximum Allowable Fuel Supply to Pump Temperature .....	°C [°F]	60	[140]	60	[140]
Approximate Fuel Flow Return to Tank .....	l/hr [gal/hr]	333.6	[88.1]	305.4	[80.7]
Approximate Fuel Return to Tank Temperature .....	°C [°F]	72	[161]	72	[161]
Fuel Rail Pressure .....	kPa [psi]	798	[116]	888	[129]
Average Fuel Consumption- Emissions ISO 8178 D2 Test Cycle.....	l/hr [gal/hr]	141.9	[37.5]		

## Air System<sup>1</sup>

Intake Manifold Pressure .....	mm Hg [in Hg]	158	[47]	176	[52]
Intake Air Flow .....	l/sec [cfm]	1329	[2817]	1394	[2954]
Heat Rejection to Ambient .....	kW [Btu/min]	107	[6102]	111	[6314]

## Exhaust System<sup>1</sup>

Exhaust Gas Flow .....	l/sec [cfm]	3421	[7249]	3500	[7416]
Exhaust Gas Temperature (Turbine Out) .....	°C [°F]	545	[1012]	557	[1033]
Exhaust Gas Temperature (Manifold) .....	°C [°F]	594	[1100]	605	[1121]
Heat Rejection to Exhaust .....	kW [Btu/min]	934	[53136]	1032	[58738]

TBD= To Be Determined

N/A = Not Applicable

N.A. = Not Available

- <sup>1</sup> Unless otherwise specified, all data is at rated power conditions and can vary ± 5%.
- <sup>2</sup> 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.
- <sup>3</sup> 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.
- <sup>4</sup> Consult option notes for flow specifications of optional Cummins seawater pumps, if applicable.

CUMMINS ENGINE COMPANY, INC  
 COLUMBUS, INDIANA

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<http://marine.cummins.com>

# Auxiliary Marine Engine Performance Data

Curve No.	DM-6885
DS :	DS-4998
CPL :	3730
DATE:	14-Jun-12

## Emissions (in accordance with ISO 8178 Cycle D2)

NOx (Oxides of Nitrogen) .....	g/kw-hr [g/bhp-hr]	6.496	[4.844]	
HC (Hydrocarbons) .....	g/kw-hr [g/bhp-hr]	0.262	[0.195]	
CO (Carbon Monoxide) .....	g/kw-hr [g/bhp-hr]	1.247	[0.930]	

## Emissions (in accordance with ISO 8178 Cycle E2)

NOx (Oxides of Nitrogen) .....	g/kw-hr [g/bhp-hr]	9.046	[6.746]	
HC (Hydrocarbons) .....	g/kw-hr [g/bhp-hr]	0.169	[0.126]	
CO (Carbon Monoxide) .....	g/kw-hr [g/bhp-hr]	1.377	[1.027]	

## Cooling System<sup>1</sup>

Sea Water Pump Specifications .....	MAB 0.08.17-07/16/2001			
Pressure Cap Rating (With Heat Exchanger Option) .....	kPa [psi]	103	[15]	

## Two Loop Low Temperature Aftercooling (LTA )

### Main Engine Circuit

Coolant Flow to Main Cooler (with open thermostat).....	l/min [gal/min]	973	[257]	
Standard Thermostat Operating Range	Start to open.....	82	[180]	
	Full open.....	95	[202]	
Heat Rejection to Engine Coolant <sup>3</sup> .....	kW [Btu/min]	417	[23751]	428 [24377]

### Aftercooler (LTA) Circuit

Coolant Flow to LTA Cooler (with open thermostat).....	l/min [gal/min]	189	[50]	
LTA Thermostat Operating Range	Start to open.....	66	[150]	
	Full open.....	80	[175]	
Heat Rejection to Engine Coolant <sup>3</sup> .....	kW [Btu/min]	150	[8557]	169 [9630]
Maximum Coolant Inlet Temperature from LTA Cooler				
For Keel Cooled.....	°C [°F]	71	[160]	

TBD= To Be Determined

N/A = Not Applicable

N.A. = Not Available

<sup>1</sup> Unless otherwise specified, all data is at rated power conditions and can vary ± 5%.

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