



Marine Performance Curves

Basic Engine Model
KTA50-M2

Curve Number:
M-6277b

Engine Configuration
D283033MX02

CPL Code:
8063

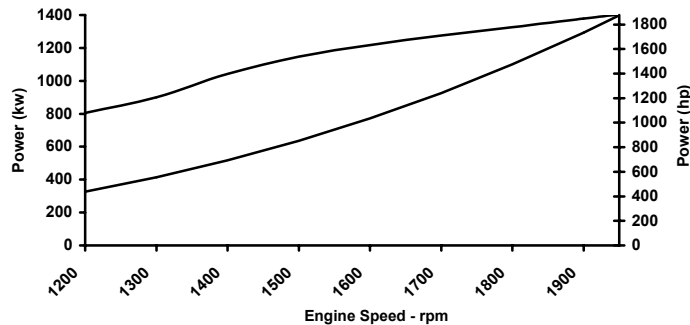
Date:
7-Mar-05

Displacement: **50 liters [3067 in³]**
 Bore: **159 mm [6.25 in]**
 Stroke: **159 mm [6.25 in]**
 Fuel System: **PT (CENTRY AND V.S.)**
 Cylinders: **16**

Advertised Power: **1398 [1875] @ 1950** kW [hp] @ rpm

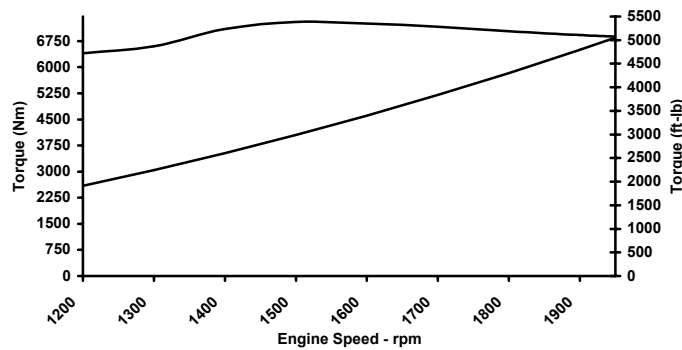
Aspiration: **Turbocharged/Aftercooled**
 Rating Type: **Medium Continuous**

CERTIFIED: This marine diesel engine is certified to the model year requirements of the EPA Marine Tier 1 per 40 CFR 94 and conforms with the NOx requirements of the International Maritime Organization (IMO), MARPOL 73/78 Annex VI, Regulation 13 as applicable.



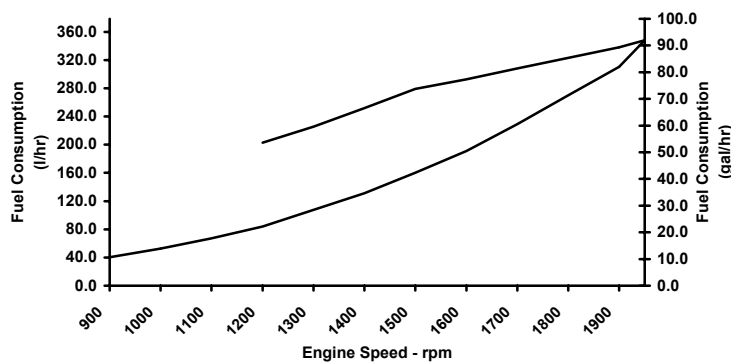
RATED POWER OUTPUT CURVE

rpm	kw	bhp
1950	1404	1882
1900	1378	1847
1800	1327	1779
1700	1275	1709
1600	1216	1631
1500	1148	1539
1400	1041	1396
1300	899	1206
1200	805	1079



FULL LOAD TORQUE CURVE

rpm	N-m	ft-lb
1950	6847	5070
1900	6551	5105
1800	5976	5190
1700	5422	5281
1600	4891	5353
1500	4383	5387
1400	3898	5237
1300	3437	4871
1200	2999	4723



FUEL CONSUMPTION - PROP CURVE

rpm	l/hr	gal/hr
1950	348.1	92.0
1900	310.3	82.0
1800	270.2	71.4
1700	229.1	60.5
1600	190.9	50.4
1500	160.2	42.3
1400	131.0	34.6
1300	107.6	28.4
1200	83.8	22.1
1100	67.1	17.7
1000	52.6	13.9
900	40.2	10.6

Rating Conditions: Ratings are based upon ISO 8665 and SAE J1228 reference conditions; air pressure of 100 kPa [29.612 in Hg], air temperature 25deg. C [77 deg. F] and 30% relative humidity. Power is in accordance with IMCI procedure. Member NIMMA.

Rated Curves (upper) represents rated power at the crankshaft for mature gross engine performance capabilities obtained and corrected in accordance with ISO 3046. Propeller Curve (lower) is based on a typical fixed propeller demand curve using a 3.0 exponent. 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].

Medium Continuous Rating: This power rating is intended for continuous use in variable load applications where full power is limited to six (6) hours out of every twelve (12) hours of operation. Reduced power operations must be at or below 200 rpm of the maximum rated RPM. This is an ISO 3046 Fuel Stop Power Rating and is for applications that operate 3,000 hours per year or less.

CHIEF ENGINEER



Propulsion Marine Engine Performance Data

Curve No. M-6277b
 DS : 4998
 CPL : 8063
 DATE: 7-Mar-05

General Engine Data

Engine Model	KTA50-M2
Rating Type	Medium Continuous
Rated Engine Power	kW [hp] 1398 [1875]
Rated Engine Speed	rpm 1950
Rated HP Production Tolerance	% ±3
Rated Engine Torque	N-m [lb-ft] 6847 [5050]
Peak Engine Torque @ 1500 rpm	N-m [lb-ft] 7334 [5409]
Brake Mean Effective Pressure	kPa [psi] 1712 [248]
Minimum Idle Speed Setting	rpm 650
Normal Idle Speed Variation	rpm 25
High Idle Speed Range	rpm 1965
Minimum	rpm 2184
Maximum	rpm 2375
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] 10.3 [2031.3]
Firing Order	1R-1L-3R-3L-2R-2L-5R-4L 8R-8L-6R-6L-7R-7L-4R-5L
Weight Dry - Engine Only	kg [lb] 5431 [11973]
Weight Dry - Engine With Heat Exchanger	kg [lb] 5751 [12678]
Weight Tolerance (Dry) Engine Only	3xStd Dev(±%) 10.0

Noise and Vibration

Average Noise Level - Top	(Idle).....	dBA @ 1m	100
	(Rated)	dBA @ 1m	110
Average Noise Level - Right Side	(Idle).....	dBA @ 1m	98
	(Rated)	dBA @ 1m	109
Average Noise Level - Left Side	(Idle).....	dBA @ 1m	99
	(Rated)	dBA @ 1m	108
Average Noise Level - Front	(Idle).....	dBA @ 1m	98
	(Rated)	dBA @ 1m	108

Fuel System¹

Avg. Fuel Consumption - ISO 8178 E3 Standard Test Cycle	l/hr [gal/hr]	247.0 [65.2]
Fuel Consumption at Rated Speed	l/hr [gal/hr]	348.0 [92.0]
Approximate Fuel Flow to Pump	l/hr [gal/hr]	632 [167]
Maximum Allowable Fuel Supply to Pump Temperature	°C [°F]	60.0 [140]
Approximate Fuel Flow Return to Tank	l/hr [gal/hr]	284 [75]
Approximate Fuel Return to Tank Temperature	°C [°F]	68.4 [155]
Maximum Heat Rejection to Drain Fuel	kW [Btu/min]	4 [235]
Fuel Transfer Pump Pressure	kPa [psi]	N/A
Fuel Rail Pressure	Mechanical Gauge	kPa [psi] 1034 [150]
	INSITE Reading	kPa [psi] 1062 [154]

Air System¹

Intake Manifold Pressure	mm Hg [in Hg]	1473 [58]
Intake Air Flow	l/sec [cfm]	2068 [4381]
Heat Rejection to Ambient	kW [Btu/min]	82 [4681]

TBD= To Be Determined

N/A = Not Applicable

N.A. = Not Available

- ¹ All Data at Rated Conditions.
- ² 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.

All Data is Subject to Change Without Notice - Consult the following Cummins intranet site for most recent data:



Propulsion Marine Engine Performance Data

Curve No. M-6277b
 DS : 4998
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Exhaust System¹

Exhaust Gas Flow	l/sec [cfm]	4445 [9418]
Exhaust Gas Temperature (Turbine Out)	°C [°F]	468 [874]
Exhaust Gas Temperature (Manifold)	°C [°F]	N.A.

Emissions (in accordance with ISO 8178 Cycle E3)

NOx (Oxides of Nitrogen)	g/kw-hr [g/bhp-hr]	9.62 [7.17]
HC (Hydrocarbons)	g/kw-hr [g/bhp-hr]	0.25 [0.19]
CO (Carbon Monoxide)	g/kw-hr [g/bhp-hr]	0.60 [0.45]
PM (Particulate Matter)	g/kw-hr [g/bhp-hr]	N.A.

Cooling System¹

Sea Water Flow (With Heat Exchanger Option) ⁴	l/min [gal/min]	613 [162]
Pressure Cap Rating (With Heat Exchanger Option)	kPa [psi]	103 [15]

Engines with Standard Aftercooling

Coolant Flow to Engine Heat Exchanger/Keel Cooler	l/min [gal/min]	N/A
Standard Thermostat Operating Range (Start to Open)	°C [°F]	N/A
Standard Thermostat Operating Range (Full Open)	°C [°F]	N/A
Heat Rejection to Engine Coolant ⁵	kW [Btu/min]	N/A

Engines with Low Temperature Aftercooling (if applicable)

Main Cooler

Coolant Flow to Engine Heat Exchanger/Keel Cooler	l/min [gal/min]	1211 [320]
LTA Thermostat Operating Range (Start to Open)	°C [°F]	82 [180]
LTA Thermostat Operating Range (Full Open)	°C [°F]	95 [202]
Heat Rejection to LTA Coolant ⁵	kW [Btu/min]	538 [30631]

LTA Cooler

Coolant Flow to LTA Heat Exchanger/Keel Cooler	l/min [gal/min]	310 [82]
LTA Thermostat Operating Range (Start to Open)	°C [°F]	66 [150]
LTA Thermostat Operating Range (Full Open)	°C [°F]	80 [175]
Heat Rejection to LTA Coolant ⁵	kW [Btu/min]	276 [15729]

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¹ All Data at Rated Conditions.

² 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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