

CHONGQING CUMMINS ENGINE PERFORMANCE CURVE

Engine Model Curve No.

KTA38-D(M) D(M)-645

Configuration CPL Code Date

D233037MX02 CQ607 11-Dec-08

Displacement: 38L [2300 in.³] kW [HP] @ r/min Bore: 159mm [6.25 in.] Prime Power: 664 [890] @1500

Stroke: 159mm [6.25 in.]

Fuel System: PT Aspiration: Turbocharged/Aftercooled

Cylinders: 12 Exhaust: Dry

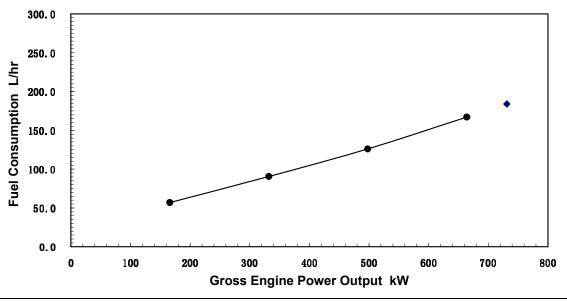
CERTIFIED: This marine diesel engine complies with or is certified to the:

IMO-NOx requirements of the International Maritime Organization (IMO), MARPOL 73/78 Annex VI, Regulation 13

| Engine Speed | Overload | Capacity | Prime Power | | |
|--------------|----------|----------|-------------|-----|--|
| r/min | kW | bhp | kW | bhp | |
| 1500 | 731 | 980 | 664 | 890 | |

Engine Performance Data @ 1500 r/min

| 2ngmo i onormanoo bata & 1000 mm | | | | | | | |
|----------------------------------|-----|------------------|---------|----------|-------|--------|--|
| OUTPUT POWER | | FUEL CONSUMPTION | | | | | |
| % | kW | bhp | kg/kW.h | lb/bhp.h | l/hr | gal/hr | |
| 10% Overload Capacity | | | | | | | |
| 110 | 731 | 980 | 0.214 | 0.355 | 184.0 | 49.0 | |
| Prime Power | | | | | | | |
| 100 | 664 | 890 | 0.214 | 0.352 | 167.0 | 44.1 | |
| 75 | 498 | 668 | 0.215 | 0.354 | 126.0 | 33.3 | |
| 50 | 332 | 445 | 0.232 | 0.382 | 90.6 | 23.9 | |
| 25 | 166 | 223 | 0.291 | 0.479 | 56.8 | 15.0 | |



Rating Conditions: Ratings are in accordance with ISO-3046 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 GB252 No.0 diesel fuel (No. 2 diesel fuel in U.S.) weight at 0.85 kg/litre (7.1 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.

Operation at Elevated Temperatures for sustained operation above 40°C (104°F), derate 2% per 11°C (1% per 10° **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.



Chongqing Cummins Engine Co. Ltd.

Auxiliary Marine Engine Performance Data

Curve No.:

DS:

D(M)-645

DS-4983

| | CPL: DATE: | CQ607 11-Dec-08 | |
|---|---------------|--------------------|--|
| General Engine Data ¹ | | | |
| Engine Model | . KTA38-D(M) | | |
| Rating Type | Prime Power | Overload | |
| Rated Engine Powerhp [kW] | 890 [664] | 980 [731] | |
| Governed Engine Speedrpm | 1500 | 1500 | |
| Rated HP Production Tolerance | ±2% | | |
| Rated Engine Torquelb.·ft. [N·m] | 3117 [4227] | 3432 [4654] | |
| Idle Speed Range rpm | 725-775 | | |
| Brake Mean Effective Pressurepsi [kPa] | 203 [1398] | 223 [1539] | |
| Compression Ratio | 14.5:1 | | |
| Piston Speed | 1565 [7.95] | | |
| Friction Powerhp [kW] | 115 [86] | | |
| Fuel System ¹ | | | |
| Fuel Consumptiongal/hr [l/hr] | 44.1 [167] | 49 [184] | |
| Approximate Fuel Flow to Pumpgal/hr [l/hr] | 80 [303] | 85 [322] | |
| Maximum Allowable Fuel Supply to Pump Temperature°F [°C] | 140 [60] | 140 [60] | |
| Approximate Fuel Flow Return to Tank gal/hr | 36 [136] | 36 [138] | |
| Fuel Rail Pressurepsi [kPa] | 76 [524] | 86 [593] | |
| Weight ¹ | | | |
| Dry - Engine Only | 8546 [3880] | | |
| Dry - Engine With Heatexchanger | | | |
| Installation Diagram No | | | |
| Hookup Diagram & Drawing, electrical circuit No | 4061349 | 4061350 | |
| Air System ¹ | | | |
| Intake Manifold Pressurein. Hg [kPa] | N.A. | N.A. | |
| Intake Air Flow | | 1949 [920] | |
| Heat Rejection to AmbientBTU/min [kW] | | 6318 [111] | |
| Exhaust System ¹ | | | |
| Exhaust Gas Flowcfm [l/sec] | 5077 [2397] | 5577 [2633] | |
| Exhaust Gas Temperature (Turbine Out)°F [°C] | | 1026 [552] | |
| Heat Rejection to ExhaustBTU/min [kW] | | 31648 [556] | |
| Cooling System ¹ | | | |
| Coolant Flow to Engine Heat Exchanger/Keel Cooler | | | |
| Jacket Water Aftercooled Engines (JWAC) | | | |
| Coolant Flow to Main Cooler (with open thermostat)l/min [gal/min] | 409 [108] | | |
| Standard Thermostat Operating Range (Min)°F [°C] | | | |
| Standard Thermostat Operating Range (Max)°F [°C] | | | |
| Heat Rejection to Engine Coolant ³ BTU/min [kW] | 23166 [407] | 25500 [448] | |
| Heat Rejection to LTA Coolant ³ | | | |
| Sea Water Flow @ 10 psi Pump Discharge Pressure//min [gal/min] | | | |
| Pressure Cap Rating (With Heat Exchanger Option)psi [kPa] | | | |
| , , , | | | |

TBD = To Be Determined

N/A = Not Applicable

N.A. = Not Avaliable

- 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).

CHONGQING CUMMINS ENGINE CO. LTD.

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All Data is Subject to Change Without Notice - contact CCEC for most recent data .