

## CHONGQING CUMMINS ENGINE PERFORMANCE CURVE

Engine Model Curve No.

KTA19-D(M) D(M)-461

Configuration CPL Code Date

D193097MX02 CQ412 21-Oct-08

Displacement: 19L [1150 in.³] kW [HP] @ r/min Bore: 159mm [6.25 in.] Prime Power: 463 [620] @1800

Stroke: **159mm** [6.25 in.]

Fuel System: PT Aspiration: Turbocharged/Aftercooled

Cylinders: 6 Exhaust: Dry

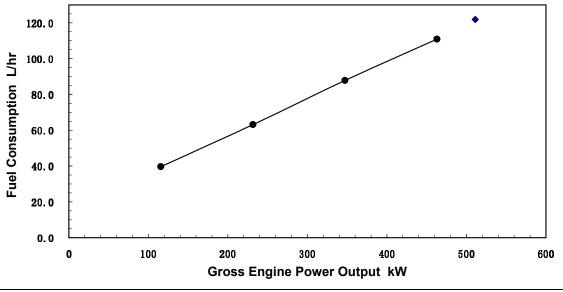
CERTIFIED: This marine diesel engine complies with or is certified to the:

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 |
| 1800         | 511      | 685      | 463         | 620 |

Engine Performance Data @ 1800 r/min

| Engine i enemanee Bata & 1000 imm |     |     |                  |          |       |        |  |  |
|-----------------------------------|-----|-----|------------------|----------|-------|--------|--|--|
| OUTPUT POWER                      |     |     | FUEL CONSUMPTION |          |       |        |  |  |
| %                                 | kW  | bhp | kg/kW.h          | lb/bhp.h | l/hr  | gal/hr |  |  |
| 10% Overload Capacity             |     |     |                  |          |       |        |  |  |
| 110                               | 511 | 685 | 0.203            | 0.332    | 121.9 | 32.0   |  |  |
| Prime Power                       |     |     |                  |          |       |        |  |  |
| 100                               | 463 | 620 | 0.204            | 0.336    | 110.9 | 29.3   |  |  |
| 75                                | 347 | 465 | 0.215            | 0.354    | 87.8  | 23.2   |  |  |
| 50                                | 232 | 310 | 0.232            | 0.382    | 63.2  | 16.7   |  |  |
| 25                                | 116 | 155 | 0.291            | 0.480    | 39.6  | 10.5   |  |  |



**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.:

D(M)-461

|   | DS:                 | DS-D193097          |  |
|---|---------------------|---------------------|--|
|   | CPL:                | CQ412               |  |
| A 15 1 5 1  | DATE:               | 21-Oct-08           |  |
| General Engine Data <sup>1</sup>                          | KTA19-D(M)          |                     |  |
| Engine Model  |                     | • ,                 |  |
| Rating Type   | Prime Power         | Overload            |  |
| Rated Engine Power  | 620 [ 463 ]<br>1800 | 685 [ 511 ]<br>1800 |  |
| Rated HP Production Tolerance                             |                     | 1000                |  |
| Rated Engine Torque                                       |                     | 1000 [ 2711 ]       |  |
| Idle Speed Range rpm                                      |                     | 1999 [ 2711 ]       |  |
| Brake Mean Effective Pressurepsi [kPa]                    |                     | 260 [ 1793 ]        |  |
| Compression Ratio   |                     | 200 [ 1795 ]        |  |
| Piston Speed. ft/min [m/sec]                              |                     |                     |  |
| Friction Power  | 84 [ 63 ]           |                     |  |
| Thought owon  | 0+[00]              |                     |  |
| Fuel System <sup>1</sup>                                  |                     |                     |  |
| Fuel Consumptiongal/hr [l/hr]                             | 29.3 [ 110.9 ]      | 32 [ 121.9 ]        |  |
| Approximate Fuel Flow to Pumpgal/hr [l/hr]                | 97 [ 367 ]          |                     |  |
| Maximum Allowable Fuel Supply to Pump Temperature°F [°C]  |                     |                     |  |
| Approximate Fuel Flow Return to Tank gal/hr               |                     | 65 [ 245.3 ]        |  |
| Fuel Rail Pressurepsi [kPa]                               | 135 [ 930 ]         | 165 [ 1137 ]        |  |
| Weight <sup>1</sup>                                       |                     |                     |  |
| Dry - Engine Onlylb. [kg]                                 | 3996 [ 1814 ]       |                     |  |
| Dry - Engine With Heatexchanger                           |                     |                     |  |
| Installation Diagram No.                                  |                     |                     |  |
| Hookup Diagram & Drawing, electrical circuit No           |                     | 4061350             |  |
|   |                     |                     |  |
| Air System <sup>1</sup>                                   |                     |                     |  |
| Intake Manifold Pressurein. Hg [kPa]                      |                     | 61 [ 207 ]          |  |
| Intake Air Flow   |                     | 1370 [ 647 ]        |  |
| Heat Rejection to AmbientBTU/min [kW]                     | 3814 [ 67 ]         | 4212 [ 74 ]         |  |
| Exhaust System <sup>1</sup>                               |                     |                     |  |
| Exhaust Gas Flow  | 3344 [ 1579 ]       | 3628 [ 1713 ]       |  |
| Exhaust Gas Temperature (Turbine Out)°F [°C]              |                     | 916 [ 491 ]         |  |
| Heat Rejection to Exhaust                                 | 17190 [ 302 ]       | 18670 [ 328 ]       |  |
|   |                     |                     |  |
| Cooling System <sup>1</sup>                               |                     |                     |  |
| Coolant Flow to Engine Heat Exchanger/Keel Cooler         |                     |                     |  |
| At 3 psi Friction Head External to Enginel/min [gal/min]  |                     |                     |  |
| At 10 psi Friction Head External to Engine                |                     |                     |  |
| Standard Thermostat Operating Range (Min)°F [°C]          |                     |                     |  |
| Standard Thermostat Operating Range (Max)°F [°C]          | 199 [ 93 ]          |                     |  |
| Heat Rejection to Engine Coolant                          | 16108 [ 283 ]       | 17816 [ 313 ]       |  |
| Heat Rejection to LTA Coolant <sup>3</sup>                | N.A.                |                     |  |
| Sea Water Flow @ 10 psi Pump Discharge Pressure           |                     |                     |  |
| Pressure Cap Rating (With Heat Exchanger Option)psi [kPa] | 7 [ 50 ]            |                     |  |

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.**

CHONGQING, P.R.CHINA, 400031

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