Marine Performance Curve

**Basic Engine Model:**
450C (SW)

**Curve Number:**
M-90215

**Engine Configuration:**
D413030MX02

**CPL Code:**
2172

**Date:**
07Dec00

**Marine Pg. No.**
6C

**Displacement:**
8.3 litre [504.5 in.³]

**Bore:**
114 mm [4.49 in.]

**Stroke:**
135 mm [5.32 in.]

**Fuel System:**
Inline Bosch P7100

**Cylinders:**
6

**Rated Curves (upper) represent rated power at the crankshaft for mature gross engine performance capabilities obtained and corrected in accordance with ISO 3046. 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° API gravity at 16°C [60°F] having LHV of 42,780 kj/kg [18390 Btu/lb] and weighing 838.9 g/liter [7.001 lb/U.S. gal].

**High Output Rating:** This Rating is for use in variable load applications where full power is limited to one (1) hour out of every eight (8) hours of operation. Also, reduced power operations must be at or below 200 RPM of the maximum rated RPM. This rating is for pleasure/non-revenue generating applications that operate 300 hours per year or less.

**Certified:** This marine diesel engine conforms with the NOx requirements of the International Maritime Organization (IMO), MARPOL 73/78 Annex VI, Regulation 13 as applicable.
General Engine Data

Engine Model: ................................................................. kW [HP, Metric] 450C (SW)
Rating Type: ................................................................. High Output
Rated Engine Power ........................................................ N·m [ft/lb] 321 [450]
Rated Engine Speed ...................................................... RPM 2600
Rated HP Production Tolerance ..................................... % ±5
Rated Engine Torque ..................................................... N·m [ft/lb] 1232 [909]
Peak Engine Torque @ 1800 RPM .................................... N·m [ft/lb] 1379 [1017]
Brake Mean Effective Pressure ......................................... kPa [PSI] 1873 [272]
Minimum Idle Speed Setting ........................................... RPM 600
Normal Idle Speed Variation ........................................... ±50
High Idle Speed Range - Minimum .................................. RPM 2920
High Idle Speed Range - Maximum .................................. RPM 3020
Maximum Torque Capacity from Front of Crank1 .................. N·m [ft/lb] N.A.
Compression Ratio ......................................................... 15.35:1
Firing Order ................................................................. 1-5-3-6-2-4

Fuel System1

Approximate Fuel Flow to Pump ..................................... litre/hr [GPH] 259 [68]
Maximum Allowable Fuel Supply to Pump Temperature .......... °C [°F] 60 [140]
Approximate Fuel Flow Return to Tank .............................. litre/hr [GPH] 171 [45]
Approximate Fuel Return to Tank Temperature ................... °C [°F] N.A.
Maximum Heat Rejection to Drain Fuel1 .......................... kW [BTU/min] N.A.
Fuel Transfer Pump Pressure Range .................................. kPa [PSI] 124 - 172 [18-25]

Air System1

Intake Manifold Pressure ................................................ mm Hg [in. Hg] 1524 [60]
Intake Air Flow ............................................................. litre/sec [CFM] 434 [920]
Heat Rejection to Ambient ............................................. kW [BTU/min] 42 [2415]

Exhaust System1

Exhaust Gas Flow .......................................................... litre/sec [CFM] 991 [2100]
Exhaust Gas Temperature (Turbine Out) ............................. °C [°F] 444 [830]
Exhaust Gas Temperature (Manifold) ................................ °C [°F] N.A.

Emissions (in accordance with ISO8178 Cycle E3)

NOx (Oxides of Nitrogen) ............................................... g/kw-hr [g/bhp-hr] 7.54 [5.62]
HC (Hydrocarbons) ......................................................... g/kw-hr [g/bhp-hr] 0.30 [0.22]
CO (Carbon Monoxide) .................................................. g/kw-hr [g/bhp-hr] 0.50 [0.37]
PM (Particulate Matter) .................................................. g/kw-hr [g/bhp-hr] 0.17 [0.13]

Cooling System1

Coolant Flow to Engine Heat Exchanger/Keel Cooler .......... litre/min. [GPM] 322 [85]
Standard Thermostat Operating Range (Min.) ........................ °C [°F] 71 [160]
Standard Thermostat Operating Range (Max.) ........................ °C [°F] 83 [182]
Heat Rejection to Engine Coolant1 .................................. kW [BTU/min] 277 [15,750]
Sea Water Flow (With Heat Exchanger Option)1 ................. litre/min. [GPM] 238 [63]
Pressure Cap Rating (With Heat Exchanger Option)1 ............. kPa [PSI] 103 [15]

Installation Drawing

Engine Only ............................................................... 3170262

TBD = To Be Decided
N/A = Not Applicable
N.A. = Not Available
1 All Data at Rated Conditions
2 Consult Installation Direction Booklet for Limitations
3 Heat rejection 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.

CUMMINS ENGINE COMPANY, INC.
COLUMBUS, INDIANA

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