



CUMMINS MARINE
 Charleston, SC 29405
 Marine Performance Curves
marine.cummins.com

Basic Engine Model:
QSM11-DM
 Engine Configuration:
D353021MX03

Curve Number:
DM-20550
 CPL Code: **4334** Date: **12-Dec-13**

Displacement: **10.8 liter [659 in³]**
 Bore: **125 mm [4.92 in]**
 Stroke: **147 mm [5.79 in]**
 Cylinders: **6**
 Fuel System: **CELECT**

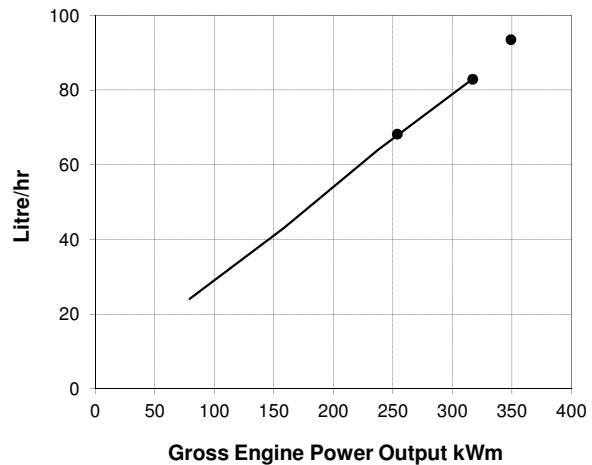
Advertised Power: **317[425] @ 1800** kW [hp] @ rpm
 Aspiration: **Turbocharged Aftercooled**
 Exhaust Type: **Wet**

CERTIFIED: This marine diesel engine complies with or is certified to the:
 EPA Tier 3 - Model year requirements of the EPA marine regulation (40CFR1042)

| Engine Speed | Overload Capacity | | Prime Power | | Continuous Power | |
|--------------|-------------------|-----|-------------|-----|------------------|-----|
| | kWm | BHP | kWm | BHP | kWm | BHP |
| 1800 | 349 | 468 | 317 | 425 | 254 | 340 |

Engine Performance Data @ 1800 rpm

| OUTPUT POWER | | | FUEL CONSUMPTION | | | |
|------------------------------|-----|-----|------------------|-----------|-------------|----------------|
| % | kWm | BHP | kg/kWh | Lb/ BHP h | Liter/ hour | U.S. Gal/ hour |
| 10% OVERLOAD CAPACITY | | | | | | |
| 110% | 349 | 468 | 0.228 | 0.370 | 93.5 | 24.7 |
| PRIME POWER | | | | | | |
| 100% | 317 | 425 | 0.222 | 0.361 | 82.9 | 21.9 |
| 75% | 238 | 319 | 0.229 | 0.371 | 64.0 | 16.9 |
| 50% | 158 | 213 | 0.231 | 0.375 | 43.1 | 11.4 |
| 25% | 79 | 106 | 0.258 | 0.419 | 24.1 | 6.4 |
| 10% | 32 | 43 | 0.364 | 0.591 | 13.6 | 3.6 |
| CONTINUOUS POWER | | | | | | |
| 80% | 254 | 340 | 0.229 | 0.371 | 68.2 | 18.0 |



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.

* 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 D. Hoffman
 CHIEF ENGINEER

Auxiliary Marine Engine Performance Data

Curve No. **DM-20550**
 DS : **DS-3021**
 CPL : **4334**
 DATE: **12-Dec-13**

General Engine Data

| | | | | |
|--|-------------|--|-------------|--|
| Engine Model | QSM11-DM | | | |
| Rating Type | Prime Power | | Overload | |
| Rated Engine Power | 317 [425] | | 349 [468] | |
| Governed Engine Speed | 1800 | | | |
| Rated HP Production Tolerance | ±% | | | |
| Rated Engine Torque | 1681 [1240] | | 1851 [1366] | |
| Default Idle Speed Setting | 800 | | | |
| Low Idle Speed Range Minimum | 700 | | | |
| Maximum | 900 | | | |
| Maximum Torque Capacity from Front of Crank ² | 813 [600] | | | |
| Brake Mean Effective Pressure | 1956 [284] | | 2154 [312] | |
| Compression Ratio | 15.9:1 | | | |
| Piston Speed | 9 [1736] | | | |
| Firing Order | 1-5-3-6-2-4 | | | |
| Motoring Power | 28 [38] | | | |
| Motoring Mean Effective Pressure (Includes Friction) | 50 [7] | | | |
| Weight (Dry) - Engine only - Average | 1118 [2464] | | | |
| Weight (Dry) - Engine With Heat Exchanger - Average | 1184 [2610] | | | |

Noise and Vibration

| | | | |
|----------------------------------|---------------|----|--|
| Average Noise Level - Top | (Idle) | 80 | |
| | (Rated) | 95 | |
| Average Noise Level - Right Side | (Idle) | 80 | |
| | (Rated) | 95 | |
| Average Noise Level - Left Side | (Idle) | 80 | |
| | (Rated) | 95 | |

Fuel System¹

| | | | |
|--|--------------|--------------|--|
| Approximate Fuel Flow to Pump | 219.6 [58.0] | 219.6 [58.0] | |
| Maximum Allowable Fuel Supply to Pump Temperature | 60 [140] | 60 [140] | |
| Approximate Fuel Flow Return to Tank | 136.6 [36.1] | 126.0 [33.3] | |
| Approximate Fuel Return to Tank Temperature | 71 [160] | 71 [160] | |
| Maximum Heat Rejection to Drain Fuel | 2 [123] | 2 [114] | |
| Fuel Rail Pressure | 1096 [159] | 1096 [159] | |
| Average Fuel Consumption- Emissions ISO 8178 D2 Test Cycle | 41.6 [11.0] | | |

Air System¹

| | | | |
|---------------------------------|-----------|-----------|--|
| Intake Manifold Pressure | 223 [66] | 240 [71] | |
| Intake Air Flow | 427 [905] | 445 [942] | |
| Heat Rejection to Ambient | 19 [1106] | 24 [1343] | |

Exhaust System¹

| | | | |
|---|-------------|-------------|--|
| Exhaust Gas Flow | 951 [2014] | 1028 [2179] | |
| Exhaust Gas Temperature (Turbine Out) | 398 [747] | 430 [806] | |
| Exhaust Gas Temperature (Manifold) | 614 [1136] | 666 [1229] | |
| Heat Rejection to Exhaust | 213 [12114] | 244 [13896] | |

TBD= To Be Determined

N/A = Not Applicable

N.A. = Not Available

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

² 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.

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.

CUMMINS INC.

COLUMBUS, INDIANA

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<http://marine.cummins.com>

Auxiliary Marine Engine Performance Data

Curve No. DM-20550
 DS : DS-3021
 CPL : 4334
 DATE: 12-Dec-13

Emissions (in accordance with ISO 8178 Cycle D2)

| | | | |
|--------------------------------|--------------------|-------|---------|
| NOx (Oxides of Nitrogen) | g/kw-hr [g/bhp-hr] | 4.852 | [3.618] |
| HC (Hydrocarbons) | g/kw-hr [g/bhp-hr] | 0.367 | [0.274] |
| CO (Carbon Monoxide) | g/kw-hr [g/bhp-hr] | 0.585 | [0.436] |
| PM (Particulate Matter) | g/kw-hr [g/bhp-hr] | 0.034 | [0.025] |
| CO2 (Carbon dioxide) | g/kw-hr [g/bhp-hr] | 736.8 | [549.4] |
| CH4 (Methane) | g/kw-hr [g/bhp-hr] | 0.007 | [0.005] |

Emissions (in accordance with ISO 8178 Cycle E2)

| | | | |
|--------------------------------|--------------------|-------|---------|
| NOx (Oxides of Nitrogen) | g/kw-hr [g/bhp-hr] | 4.849 | [3.616] |
| HC (Hydrocarbons) | g/kw-hr [g/bhp-hr] | 0.274 | [0.204] |
| CO (Carbon Monoxide) | g/kw-hr [g/bhp-hr] | 0.393 | [0.293] |
| PM (Particulate Matter) | g/kw-hr [g/bhp-hr] | 0.028 | [0.021] |
| CO2 (Carbon dioxide) | g/kw-hr [g/bhp-hr] | 713.7 | [532.2] |
| CH4 (Methane) | g/kw-hr [g/bhp-hr] | 0.005 | [0.004] |

Cooling System¹

| | |
|--|----------------------------|
| Sea Water Pump Specifications | MAB 0.08.17-07/16/2001 |
| Pressure Cap Rating (With Heat Exchanger Option) | kPa [psi] 103 [15] |
| Max. Coolant Outlet Pressure from the Engine | kPa [psi] 161 [23.4] |
| Max. Pressure Drop Across Any External Cooling System Circuit..... | kPa [psi] 34 [5] |

Singe Loop LTA

| | | | |
|---|--------------------|---------|------------------------|
| Coolant Flow to Main Cooler (with open thermostat)..... | l/min [gal/min] | 201 | [53] |
| Standard Thermostat Operating Range | Start to open..... | °C [°F] | 71 [160] |
| | Full open..... | °C [°F] | 81 [177] |
| Heat Rejection to Engine Coolant ³ | kW [Btu/min] | 262 | [14922] 301 [17111] |
| Maximum Coolant Inlet Temperature from LTA Cooler | | | |
| For Keel Cooled..... | °C [°F] | 49 | [120] |

Engines with Radiator Cooling

| | | | |
|---|--------------------|---------|------------------------|
| Coolant Flow to Radiator (Blocked open thermostat)..... | l/min [gal/min] | 175 | [46.2] |
| Standard Thermostat Operating Range | Start to open..... | °C [°F] | 71 [160] |
| | Full open..... | °C [°F] | 81 [177] |
| Heat Rejection to Engine Coolant ³ | kW [Btu/min] | 262 | [14922] 301 [17111] |
| Maximum Coolant Inlet Temperature from LTA Cooler | | | |
| For Radiator @ 35° C [95° F] Ambient Air..... | °C [°F] | 54 | [130] |
| For Radiator @ 50° C [122° F] Ambient Air..... | °C [°F] | 68 | [155] |

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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.
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