

Cummins Marine and Cummins MerCruiser Diesel

Marine Engine General Data Sheet

Engine Model: QSB5.9

Data Sheet: DS-3075

Date: 21 Apr 05

GENERAL ENGINE DATA

Metric [U.S. Customary]

| | | |
|--------------------|--------------------------|-----------------------------|
| Type | | 4 Cycle, Inline, 6 Cylinder |
| Bore | mm [in] | 102 [4.02] |
| Stroke | mm [in] | 120 [4.72] |
| Displacement | liter [in ³] | 5.9 [359] |

ENGINE MOUNTING & ACCESSORY DRIVES

| | | |
|---|-------------|-------------|
| Max. Allowable Bending Moment at Rear Face of Block | N·m [ft·lb] | 1356 [1000] |
| Max. Allowable Axial Thrust Load on Crankshaft | N [lb] | 1779 [400] |
| Max. Allowable Radial Load on Crankshaft | | |
| At 0° | N [lb] | 369 [83] |
| At 90° | N [lb] | 965 [217] |
| At 180° | N [lb] | 3336 [750] |
| At 270° | N [lb] | 405 [91] |

Installation/Operating Angles - Engine Installation Angles

In-Line drive: Installation: Static Installed Engine Pitch Angle

| | | |
|---------------------------------------|------|-----|
| Engine Front Up From Horizontal | Min. | 0° |
| Engine Front Up From Horizontal | Max. | 12° |

Vee Drive: Installation: Static Installed Engine Pitch

| | | |
|---------------------------------------|------|-----|
| Engine Front Up From Horizontal | Min. | 2° |
| Engine Front Up From Horizontal | Max. | 12° |

All Drives: Static Installed Engine Roll Angle

| | | |
|---|------------|-----|
| From vertical "Right/Left" Viewed from Flywheel End of Engine | Max. Right | N/A |
| From vertical "Right/Left" Viewed from Flywheel End of Engine | Max. Left | N/A |

Engine Angles - Vessel Operating

Steady-State Operation - Engine Pitch Angle

| | | |
|---------------------------------------|------|------|
| Engine Front Up From Horizontal | Min. | -15° |
| Engine Front Up From Horizontal | Max. | 25° |

All Drives: Intermittant Operation - Eng. Roll Angle

| | | |
|---|------------|-----|
| From Vertical "Right/Left" viewed from Flywheel End of Engine | Max. Right | 35° |
| From Vertical "Right/Left" viewed from Flywheel End of Engine | Max. Left | 35° |

All Drives: Intermittant Operation - Engine Pitch Angle

| | | |
|---------------------------------------|------|------|
| Engine Front Up From Horizontal | Min. | -30° |
| Engine Front Up From Horizontal | Max. | 45° |

FUEL SYSTEM

Maximum Allowable Restriction to Fuel Pump

| | | |
|--|-------------|-------------|
| Clean Filter | kPa [in Hg] | 8 [2.5] |
| Dirty Filter | kPa [in Hg] | 14 [4.0] |
| Maximum Allowable Return Line Pressure | kPa [in Hg] | 34 [10] |
| Maximum Static Pressure at Fuel Pump | kPa [in Hg] | 34 [10] |
| Maximum Height of Fuel In Tank Above Fuel Pump | m [ft] | 4.12 [13.5] |

EXHAUST SYSTEM

| | | |
|---|-------------|--------|
| Maximum Allowable Back Pressure | kPa [in Hg] | 10 [3] |
| Maximum Bending Moment at Turbine Outlet Mounting Flange | N·m [ft·lb] | 12 [9] |
| Maximum Incremental Direct Load at Turbine Outlet Mounting Flange | kg [lb] | 6 [13] |

AIR INDUCTION SYSTEM

Max. Allowable Intake Restriction - Turbocharged

| | | |
|---|---|----------|
| Clean Filter | mm H ₂ O [in H ₂ O] | 381 [15] |
| Dirty Filter | mm H ₂ O [in H ₂ O] | 635 [25] |
| Maximum Air Cleaner Inlet Temperature Rise Over Ambient | °C [°F] | 17 [30] |

TBD= To Be Determined

N/A = Not Applicable

N.A. = Available

CUMMINS ENGINE COMPANY, INC
COLUMBUS, INDIANA

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LUBRICATION SYSTEM

| | | |
|---|-------------|------------|
| Oil Consumption Rate (Volume Percent of Fuel Consumption Rate) | % | N.A. |
| Oil Pressure at Normal Operating Temperature | | |
| Idle Speed - Minimum in Filter Head Upstream of Filter | kPa [psi] | N/A |
| Idle Speed - Minimum in Main Oil Gallery | kPa [psi] | 55 [8] |
| Rated Speed - Measured in Filter Head Upstream of Filter (Low) | kPa [psi] | N/A |
| Rated Speed - Measured in Filter Head Upstream of Filter (High) | kPa [psi] | N/A |
| Rated Speed - Measured in Main Oil Gallery (Low) | kPa [psi] | 193 [28] |
| Rated Speed - Measured in Main Oil Gallery (High) | kPa [psi] | 427 [62] |
| Max. Allowable Oil Temperature (Sump) | °C [°F] | 127 [260] |
| Oil Pan Capacity (Shallow) OP 9464 | | |
| Low | liter [gal] | 12.3 [3.3] |
| High | liter [gal] | 14.2 [3.8] |
| Oil Pan Capacity (Deep) OP 9315 & OP 9316 | | |
| Low | liter [gal] | 12.3 [3.3] |
| High | liter [gal] | 14.2 [3.8] |
| Total System Capacity (Max. Sump + Filter) | liter [gal] | 15.1 [4.0] |
| By-Pass Oil Filter Capacity | liter [gal] | N/A |

COOLING SYSTEM

| | | |
|---|----------------------|------------|
| Coolant Capacity | | |
| Engine Only | liter [gal] | 10 [2.6] |
| Engine Including Heat Exchanger and Integral Expansion Tank..... | liter [gal] | 25 [6.6] |
| Engine Including Heat Exchanger and Integral Expansion Tank (QSB-425)... | liter [gal] | 27 [7.3] |
| Min. Coolant Makeup Capacity | liter [gal] | 1.5 [0.40] |
| Max. Pressure Drop Across Any External Cooling System Circuit | kPa [psi] | 34 [5] |
| Max. Allowable Block Coolant System Pressure | kPa [psi] | 345 [50] |
| Max. Coolant Head From Crankshaft Centerline With 15 psi Pressure Cap | m [ft] | 22 [72] |
| Max. Coolant Temperature at Engine Outlet | °C [°F] | 96 [205] |
| Min. Block Coolant Temperature (Warm Engine) | °C [°F] | 71 [160] |
| Min. Allowable Coolant Expansion Space | % of System Capacity | 5 |
| Maximum Sea Water Pressure | kPa [psi] | 172 [25] |
| Maximum Sea Water Pressure Drop Across Heat Exchanger | kPa [psi] | N.A. |
| Maximum Sea Water Inlet Restriction | kPa [in Hg] | -17 [-5] |

ELECTRICAL AND STARTER SYSTEM

| | | | |
|--|-------------|------------|------------|
| Electrical | | 12V | 24V |
| Min. Recommended Battery Capacity | | | |
| Cold Cranking Amperes Rating (CCA) | | 1100 | 550 |
| Marine Cranking Amperes Rating (MCA) | | 1375 | 688 |
| Reserve Capacity (Discharging 25 Amps @ 80°F) | minutes | 260 | 130 |
| Min. Allowable System Voltage (@ Battery While Running) | Volts | 12 | 24 |
| Min. Allowable System Voltage (@ Battery While Cranking) | Volts | 12 | 24 |
| Min. Allowable System Voltage (@ Battery While Running) | Volts | 15.5 | 31.0 |
| Max. Allowable Voltage Drop of Starting Circuit (While Cranking) | Volts | N.A. | N.A. |
| Min. Engine Cranking Torque | ft-lb | N.A. | N.A. |
| Min. Break-away Engine Cranking Torque | ft-lb | N.A. | N.A. |
| Min. Engine Cranking Speed | rpm | 150 | 150 |
| Max. Engine (Running) Current Draw | Amps | N.A. | N.A. |
| Min. Ambient Temperature for Cold Start (No Aids) | °C [°F] | 0 [32] | 0 [32] |
| Air Starter | | | |
| Regulated Pressure for Air Starter System | kPa [psi] | N/A | N/A |
| Min. Air-Flow for Air Starter System | l/sec [cfm] | N/A | N/A |
| Min. Recommended Tank Volume | liter [gal] | N/A | N/A |

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