Basic Engine Model: QSK19-M

CPL Code: 3455
Date: 6-Nov-14

Displacement: 18.9 liter [1150 in³]
Bore: 159 mm [6.25 in]
Stroke: 159 mm [6.25 in]
Cylinders: 6

Rated:
492 kw [660 bhp]
1800 rpm
Continuous Duty
Turbocharged / LTA

Fuel System:
Modular Common Rail (MCRS) with C3.0 Injectors

CERTIFIED: This diesel engine complies with or is certified to the following agencies requirements:
- EPA Tier 2 - Model year requirements of the EPA marine regulation (40CFR94)
- EU Stage IIIa - EC Nonroad Mobile Machinery Directive (2004/26/EC)
- IMO Tier II (Two) NOx requirements of International Maritime Organization (IMO), MARPOL 73/78 Annex VI, Regulation 13

* Cummins Full Throttle Requirements:
- Engine achieves or exceeds rated rpm at full throttle under any steady operating condition
- Engines in variable displacement boats (such as pushboats, tugboats, net draggers, etc.) achieve no less than 100 rpm below rated conditions during a dead push or bollard pull
- Engine achieves or exceeds rated rpm when accelerating from idle to full throttle

Rated Conditions: Ratings are based upon ISO 15550 reference conditions; air pressure of 100 kPa [29.612 in Hg], air temperature 25deg. C [77 deg. F] and 30% relative humidity. Power is in accordance with IMCI procedure. Member NMMA. Unless otherwise specified, tolerance on all values is +/-5%.

Fuel Consumption is based on fuel of 35 deg. API gravity at 16 deg C [60 deg. F] having LHV of 42,780 kj/kg [18390 Btu/lb] and weighing 838.9 g/liter [7.001 lb/U.S. gal].
Propulsion Marine Engine Performance Data

General Engine Data

Engine Model ................................................................. QSK19-M
Rating Type ............................................................... Continuous Duty
Rated Engine Power ..................................................... kW [hp] 492 [660]
Rated Engine Speed ..................................................... rpm 1800
Rated Power Production Tolerance .................................. ±% 3
Rated Engine Torque ..................................................... N·m [lb·ft] 2610 [1925]
Peak Engine Torque @ 1500 rpm ..................................... N·m [lb·ft] 2812 [2074]
Brake Mean Effective Pressure ........................................ kPa [psi] 1740 [252]
Indicated Mean Effective Pressure ................................... kPa [psi] 3477 [504]
Maximum Allowable Engine Speed .................................. rpm 2450
Maximum Torque Capacity from Front of Crank² ................. N·m [lb·ft] 2339 [1725]
Compression Ratio .......................................................... 15:1
Piston Speed .............................................................. m/sec [ft/min] 9.5 [1875]
Firing Order ................................................................. 1-5-3-6-2-4
Weight (Dry) - Engine Only - Average ............................... kg [lb] 2200 [4850]
Weight (Dry) - Engine With Heat Exchanger System - Average ................................................................. kg [lb] 2336 [5150]
Weight Tolerance (Dry) Engine Only ................................. ±% 10.0

Governor Settings

Default Droop Value .................................................... Refer to MAB 2.04.00-03/23/2006 for Droop explanation 16%
Minimum Droop Allowed ................................................ 0%
Maximum Droop Allowed ................................................. 16%
High Speed Governor Break Point ..................................... rpm 1900
Minimum Idle Speed Setting .......................................... rpm 550
Normal Idle Speed Variation .......................................... rpm 10
High Idle Speed Range Minimum ................................. rpm 1900
Maximum ................................................................. rpm 2204

Noise and Vibration

Average Noise Level - Top .............................................. dB(A) @ 1m 82
(Average) ................................................................ dB(A) @ 1m 93
Average Noise Level - Right Side ...................................... dB(A) @ 1m 85
(Average) ................................................................ dB(A) @ 1m 98
Average Noise Level - Left Side ......................................... dB(A) @ 1m 85
(Average) ................................................................ dB(A) @ 1m 98
Average Noise Level - Front .............................................. dB(A) @ 1m 87
(Rated) ................................................................ dB(A) @ 1m 100

Fuel System¹

Avg. Fuel Consumption - ISO 8178 E3 Standard Test Cycle .................................................. l/hr [gal/hr] 94.9 [25.1]
Fuel Consumption at Rated Speed .................................... l/hr [gal/hr] 126.0 [33.3]
Approximate Fuel Flow to Pump ....................................... l/hr [gal/hr] 366.8 [96.9]
Maximum Allowable Fuel Supply to Pump Temperature ................. °C [°F] 60.0 [140]
Approximate Fuel Flow Return to Tank ............................ l/hr [gal/hr] 240.8 [63.6]
Approximate Fuel Return to Tank Temperature ..................... °C [°F] 50.0 [122]
Maximum Heat Rejection to Drain Fuel .............................. kW [Btu/min] 1.2 [70]

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.
⁵ May not be at rated load and speed. Maximum heat rejection may occur at other than rated conditions.
Propulsion Marine Engine Performance Data

Curve No. M-4532
DS: D19-MX-1
CPL: 3455
DATE: 6-Nov-14

Air System¹
Intake Manifold Pressure ................................................................. kPa [in Hg] 201 [60]
Intake Air Flow ........................................................................... l/sec [cfm] 720 [1525]
Heat Rejection to Ambient ............................................................ kW [Btu/min] 44 [2521]

Exhaust System¹
Exhaust Gas Temperature (Turbine Out) ........................................ °C [°F] 425 [797]
Exhaust Gas Temperature (Manifold) ............................................ °C [°F] 568 [1,054]

Emissions (in accordance with ISO 8178 Cycle E3)
NOx (Oxides of Nitrogen) ................................................................. g/kw·hr [g/hp·hr] 6.38 [4.76]
HC (Hydrocarbons) ........................................................................ g/kw·hr [g/hp·hr] 0.09 [0.07]
CO (Carbon Monoxide) ................................................................. g/kw·hr [g/hp·hr] 1.51 [1.13]
PM (Particulate Matter) ................................................................. g/kw·hr [g/hp·hr] 0.06 [0.04]

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] 207 [30]

Engines with Low Temperature Aftercooling (LTA )
Single Loop Keel Cooling
Coolant Flow to Cooler (with blocked open thermostat) ...................... l/min [gal/min] 238 [63]
LTA Thermostat Operating Range (Start to Open) ................................°C [°F] 66 [150]
LTA Thermostat Operating Range (Full Open) ....................................°C [°F] 80 [175]
Heat Rejection to Engine Coolant³ .................................................. kW [Btu/min] 395 [22500]
Maximum Coolant Inlet Temperature from LTA Cooler ..................... °C [°F] 49 [120]

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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.
⁴ Consult option notes for flow specifications of optional Cummins seawater pumps, if applicable. May not be at rated load and speed. Maximum heat rejection may occur at other than rated conditions.

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COLUMBUS, INDIANA

All Data is Subject to Change Without Notice - Consult the following Cummins intranet site for most recent data: http://marine.cummins.com/