### Basic Engine Model
- **Engine Configuration:** QSK19-M
- **Engine Code:** C19-2200
- **Manufacturer:** Cummins
- **Date:** 22-Aug-16

### Technical Specifications
- **Displacement:** 18.9 liter [1150 l
- **Bore:** 159 mm [6.25 in]
- **Stroke:** 159 mm [6.25 in]
- **Cylinders:** 6
- **Fuel System:** Modular Common Rail (MCRS)
- **Aspiration:** Turbocharged / Low Temp. Aftercooled
- **Rated Power:** 596 kW [800 bhp]
- **Rated Speed:** 2100 rpm
- **Dead Push or Bollard Pull:**
  - Engines in variable displacement boats (such as pushboats, tugboats, net draggers, etc.) achieve no less than 100 rpm below rated speed at full throttle during a dead push or bollard pull.
- **Fuel Consumption:**
  - Marine Performance Curves (MPH) for.:
    - 1000 rpm:
      - Power: 596 kW [800 bhp]
      - Torque: 2712 N·m [2000 ft-lb]
    - 1000 rpm:
      - Power: 596 kW [800 bhp]
      - Torque: 2712 N·m [2000 ft-lb]
      - Fuel Consumption: 166.9 l/hr [44.1 gal/hr]

### Power and Torque Values

<table>
<thead>
<tr>
<th>Engine Speed (rpm)</th>
<th>Power (kW)</th>
<th>Torque (N·m)</th>
<th>Power (kW)</th>
<th>Torque (N·m)</th>
<th>Fuel Consumption (l/hr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2200</td>
<td>596</td>
<td>2589</td>
<td>596</td>
<td>2712</td>
<td>166.9</td>
</tr>
<tr>
<td>2100</td>
<td>596</td>
<td>2712</td>
<td>596</td>
<td>2712</td>
<td>166.9</td>
</tr>
<tr>
<td>2000</td>
<td>591</td>
<td>2821</td>
<td>515</td>
<td>2460</td>
<td>147.2</td>
</tr>
<tr>
<td>1900</td>
<td>575</td>
<td>2898</td>
<td>422</td>
<td>2220</td>
<td>124.2</td>
</tr>
<tr>
<td>1800</td>
<td>557</td>
<td>2958</td>
<td>376</td>
<td>1992</td>
<td>102.6</td>
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<td>1700</td>
<td>537</td>
<td>3017</td>
<td>316</td>
<td>1777</td>
<td>85.6</td>
</tr>
<tr>
<td>1600</td>
<td>510</td>
<td>3044</td>
<td>264</td>
<td>1574</td>
<td>70.4</td>
</tr>
<tr>
<td>1500</td>
<td>481</td>
<td>3064</td>
<td>217</td>
<td>1384</td>
<td>58.5</td>
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<tr>
<td>1400</td>
<td>449</td>
<td>3064</td>
<td>177</td>
<td>1205</td>
<td>48.4</td>
</tr>
<tr>
<td>1300</td>
<td>399</td>
<td>2930</td>
<td>141</td>
<td>1039</td>
<td>39.5</td>
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<tr>
<td>1200</td>
<td>339</td>
<td>2894</td>
<td>111</td>
<td>886</td>
<td>30.8</td>
</tr>
<tr>
<td>1100</td>
<td>279</td>
<td>2424</td>
<td>86</td>
<td>744</td>
<td>24.1</td>
</tr>
<tr>
<td>1000</td>
<td>222</td>
<td>2122</td>
<td>64</td>
<td>615</td>
<td>18.5</td>
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<tr>
<td>900</td>
<td>166</td>
<td>1763</td>
<td>47</td>
<td>498</td>
<td>13.9</td>
</tr>
<tr>
<td>800</td>
<td>119</td>
<td>1424</td>
<td>33</td>
<td>394</td>
<td>10.3</td>
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<td>600</td>
<td>64</td>
<td>1017</td>
<td>14</td>
<td>211</td>
<td>5.2</td>
</tr>
</tbody>
</table>

### Notations and References
- **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 speed at full throttle during a dead push or bollard pull.

- **Engine Configuration:**
  - Modular Common Rail (MCRS)
  - Turbocharged / Low Temp. Aftercooled

- **Fuel Consumption:**
  - 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].

- **Heavy Duty (HD):**
  - Intended for continuous use in variable load applications where full power is limited to eight (8) hours out of every ten (10) hours of operation. Also, reduced power operations must be at or below 200 rpm of the maximum rated rpm. This is an ISO 15550 fuel stop power rating and is for applications that operate 5,000 hours per year or less.

- **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. Member NMMA. Unless otherwise specified, tolerance on all values is +/-5%. 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.

- **Full Throttle curve:**
  - Represents power at the crankshaft for mature gross engine performance corrected in accordance with ISO 15550.
  - Propeller Curve represents approximate power demand from a typical propeller. 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 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].

- **Heavy Duty (HD):**
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### Technical Notes
- **Engine configuration:**
  - Engine configuration: QSK19-M
  - Engine code: C19-2200

### Certification
- **Certified:**
  - This diesel engine complies with or is certified to the following agencies requirements:
    - EPA Tier 3 - Model year requirements of the EPA marine regulation (40CFR1042)
    - IMO Tier II (Two) NOx requirements of International Maritime Organization (IMO), MARPOL 73/78 Annex VI, Regulation 13

### Table and Diagram
- **Power and Torque Table:**
  - Displays power and torque values across various engine speeds.
- **Diagram:**
  - Graphically represents power and propeller demand across different engine speeds.

### Further Information
- **Contact Information:**
  - CUMMINS INC.
  - Charleston, SC 29405
  - marine.cummins.com

### Chief Engineer
- **Signature:**
  - John D. O'Meara

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*Engine achieves or exceeds rated rpm at full throttle under any steady operating condition.*

*Engine achieves or exceeds rated rpm when accelerating from idle to full throttle.*
# Propulsion Marine Engine Performance Data

**Curve No. M-4513**  
**DS : D19-MX-1**  
**CPL : 3455**  
**CTR: 00062851**  
**DATE: 22-Aug-16**

## General Engine Data

- **Engine Model**: QSK19-M
- **Rating Type**: Heavy Duty
- **Rated Engine Power**: 596 [800] kW [hp]
- **Rated Engine Speed**: 2100 rpm
- **Rated Power Production Tolerance**: ± 3%
- **Rated Engine Torque**: 2712 [2000] N·m [lb·ft]
- **Peak Engine Torque @ 1500 rpm**: 3064 [2260] N·m [lb·ft]
- **Brake Mean Effective Pressure**: 1806 [262] kPa [psi]
- **Indicated Mean Effective Pressure**: 1917 [278] kPa [psi]
- **Maximum Allowable Engine Speed**: 2450 rpm
- **Maximum Continuous Torque Capacity from Front of Crank Specifications**
  - **Maximum Torque Capacity from Front of Crank**: 2074 [1530] N·m [lb·ft]
  - **Emergency Torque Capacity from Front of Crank**: On Request
- **Compression Ratio**: 15:1
- **Piston Speed**: 11.1 [2188] m/sec [ft/min]
- **Firing Order**: 1-5-3-6-2-4
- **Weight (Dry) - Engine Only - Average**: 2276 [5017] kg [lb]
- **Weight (Dry) - Engine With Heat Exchanger System - Average**: 2412 [5317] kg [lb]
- **Weight Tolerance (Dry) Engine Only**: ± 3xStd Dev (±%)

## Governor Settings

- **Default Droop Value**: Refer to MAB 2.04.00-03/23/2006 for Droop explanation
- **Maximum Droop Allowed**: 5%
- **High Speed Governor Break Point**: 2200 rpm
- **Minimum Idle Speed Setting**: 550 rpm
- **Normal Idle Speed Variation**: ± 10 rpm
- **High Idle Speed Range - Minimum**: 2100 rpm
- **High Idle Speed Range - Maximum**: 2274 rpm

## Noise

- **Average Noise Level - Top (Idle)**: 82 dBA @ 1m
- **Average Noise Level - Right Side (Idle)**: 85 dBA @ 1m
- **Average Noise Level - Left Side (Idle)**: 87 dBA @ 1m
- **Average Noise Level - Front (Idle)**: 88 dBA @ 1m
- **Average Noise Level - Top (Rated)**: 96 dBA @ 1m
- **Average Noise Level - Right Side (Rated)**: 95 dBA @ 1m
- **Average Noise Level - Left Side (Rated)**: 99 dBA @ 1m
- **Average Noise Level - Front (Rated)**: 101 dBA @ 1m

## Fuel System

- **Avg. Fuel Consumption - ISO 8178 E3 Standard Test Cycle**: 114.8 [30.3] l/hr [gal/hr]
- **Fuel Consumption at Rated Speed**: 166.9 [44.1] l/hr [gal/hr]
- **Approximate Fuel Flow to Pump**: 390.9 [103.3] l/hr [gal/hr]
- **Maximum Allowable Fuel Supply to Pump Temperature**: 60.0 [140] °C [°F]
- **Approximate Fuel Flow Return to Tank**: 224.0 [59.2] l/hr [gal/hr]
- **Approximate Fuel Return to Tank Temperature**: 52.2 [126] °C [°F]
- **Maximum Heat Rejection to Drain Fuel**: 1.1 [63] kW [Btu/min]

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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.
## Propulsion Marine Engine Performance Data

**Curve No. M-4513**  
DS : D19-MX-1  
CPL : 3455  
CTR: 00062851  
DATE: 22-Aug-16

### Air System<br>(Unless otherwise specified, all data is at rated power conditions and can vary ± 5%).

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value [Unit]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intake Manifold Pressure</td>
<td>[kPa [in Hg]]</td>
</tr>
<tr>
<td>Intake Air Flow</td>
<td>[l/sec [cfm]]</td>
</tr>
<tr>
<td>Heat Rejection to Ambient</td>
<td>[kW [Btu/min]]</td>
</tr>
</tbody>
</table>

### Exhaust System<br>(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.)

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value [Unit]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exhaust Gas Flow</td>
<td>[l/sec [cfm]]</td>
</tr>
<tr>
<td>Exhaust Gas Temperature (Turbine Out)</td>
<td>[°C [°F]]</td>
</tr>
<tr>
<td>Exhaust Gas Temperature (Manifold)</td>
<td>[°C [°F]]</td>
</tr>
</tbody>
</table>

### Emissions (in accordance with ISO 8178 Cycle E3)<br>(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.)

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value [Unit]</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOx (Oxides of Nitrogen)</td>
<td>[g/kW·hr [g/hp·hr]]</td>
</tr>
<tr>
<td>HC (Hydrocarbons)</td>
<td>[g/kW·hr [g/hp·hr]]</td>
</tr>
<tr>
<td>CO (Carbon Monoxide)</td>
<td>[g/kW·hr [g/hp·hr]]</td>
</tr>
<tr>
<td>PM (Particulate Matter)</td>
<td>[g/kW·hr [g/hp·hr]]</td>
</tr>
</tbody>
</table>

### Cooling System<br>(Consult option notes for flow specifications of optional Cummins seawater pumps, if applicable.)

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value [Unit]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sea Water Pump Specifications</td>
<td>MAB 08.17-07/16/2001</td>
</tr>
<tr>
<td>Pressure Cap Rating</td>
<td>[kPa [psi]]</td>
</tr>
<tr>
<td>Max. Coolant Outlet Pressure from the Engine</td>
<td>[kPa [psi]]</td>
</tr>
<tr>
<td>Max. Pressure Drop Across Any External Cooling System Circuit</td>
<td>[kPa [psi]]</td>
</tr>
</tbody>
</table>

### Engines with Low Temperature Aftercooling (LTA)<br>(Single Loop LTA)

<table>
<thead>
<tr>
<th>Metric</th>
<th>Value [Unit]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coolant Flow to Cooler with blocked open thermostat</td>
<td>[l/min [gal/min]]</td>
</tr>
<tr>
<td>LTA Thermostat Operating Range (Start to Open)</td>
<td>[°C [°F]]</td>
</tr>
<tr>
<td>LTA Thermostat Operating Range (Full Open)</td>
<td>[°C [°F]]</td>
</tr>
<tr>
<td>Heat Rejection to Engine Coolant²</td>
<td>[kW [Btu/min]]</td>
</tr>
<tr>
<td>Maximum Coolant Inlet Temperature from LTA Cooler</td>
<td>[°C [°F]]</td>
</tr>
</tbody>
</table>

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TBD= To Be Determined  
N/A = Not Applicable  
N.A. = Not Available

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CUMMINS INC.  
COLUMBUS, INDIANA

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