**PRELIMINARY**

<table>
<thead>
<tr>
<th>Engine Speed</th>
<th>Standby Power</th>
<th>Prime Power</th>
<th>Continuous Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>RPM</td>
<td>kWm</td>
<td>BHP</td>
<td>kWm</td>
</tr>
<tr>
<td>1500</td>
<td>1790</td>
<td>2399</td>
<td>1615</td>
</tr>
</tbody>
</table>

### Engine Performance Data @ 1500 RPM

**OUTPUT POWER**

<table>
<thead>
<tr>
<th></th>
<th>kWm</th>
<th>BHP</th>
</tr>
</thead>
<tbody>
<tr>
<td>STANDBY POWER</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>1790</td>
<td>2399</td>
</tr>
<tr>
<td>PRIME POWER</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>1615</td>
<td>2165</td>
</tr>
<tr>
<td>75</td>
<td>1211</td>
<td>1624</td>
</tr>
<tr>
<td>50</td>
<td>808</td>
<td>1082</td>
</tr>
<tr>
<td>25</td>
<td>404</td>
<td>541</td>
</tr>
<tr>
<td>CONTINUOUS POWER</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>1305</td>
<td>1749</td>
</tr>
</tbody>
</table>

**FUEL CONSUMPTION**

<table>
<thead>
<tr>
<th></th>
<th>kg/kWm-h</th>
<th>lb/HPm-h</th>
<th>liter/hour</th>
<th>U.S. Gal/hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>STANDBY POWER</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>0.191</td>
<td>0.314</td>
<td>402</td>
<td>106.1</td>
</tr>
<tr>
<td>PRIME POWER</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>0.190</td>
<td>0.312</td>
<td>360</td>
<td>95.1</td>
</tr>
<tr>
<td>75</td>
<td>0.188</td>
<td>0.310</td>
<td>269</td>
<td>70.9</td>
</tr>
<tr>
<td>50</td>
<td>0.195</td>
<td>0.321</td>
<td>185</td>
<td>48.9</td>
</tr>
<tr>
<td>25</td>
<td>0.224</td>
<td>0.368</td>
<td>106</td>
<td>28.1</td>
</tr>
<tr>
<td>CONTINUOUS POWER</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>0.188</td>
<td>0.310</td>
<td>289</td>
<td>76.4</td>
</tr>
</tbody>
</table>

**CONVERSIONS:**

- (liters = U.S. Gal x 3.785)
- (Engine kWm = BHP x 0.746)
- (U.S. Gal = liters x 0.2642)
- (Engine BHP = Engine kWm x 1.34)

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These guidelines have been formulated to ensure proper application of generator drive engines in A.C. generator set installations. Generator drive engines are not designed for and shall not be used in variable speed D.C. generator set applications.

**STANDBY POWER RATING**

Applicable for supplying emergency power for the duration of the utility power outage. No overload capability is available for this rating. Under no condition is an engine allowed to operate in parallel with the public utility at the Standby Power rating. This rating should be applied where reliable utility power is available. A Standby rated engine should be sized for a maximum of an 80% average load factor and 200 hours of operation per year. This includes less than 25 hours per year at the Standby Power rating. Standby ratings should never be applied except in true emergency power outages. Negotiated power outages contracted with a utility company are not considered an emergency.

**PRIME POWER RATING**

Applicable for supplying electric power in lieu of commercially purchased power. Prime Power applications must be in the form of one of the following two categories:

- **UNLIMITED TIME RUNNING PRIME POWER**
  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. The total operating time at 100% Prime Power shall not exceed 500 hours per year. A 10% overload capability is available for a period of 1 hour within a 12-hour period of operation. Total operating time at the 10% overload power shall not exceed 25 hours per year.

- **LIMITED TIME RUNNING PRIME POWER**
  Limited Time Prime Power is available for a limited number of hours in a non-variable load application. It is intended for use in situations where power outages are contracted, such as in utility power curtailment. Engines may be operated in parallel to the public utility up to 750 hours per year at power levels never to exceed the Prime Power rating. The customer should be aware, however, that the life of any engine will be reduced by this constant high load operation. Any operation exceeding 750 hours per year at the Prime Power rating should use the Continuous Power rating.

**CONTINUOUS POWER RATING**

Applicable for supplying utility power at a constant 100% load for an unlimited number of hours per year. No overload capability is available for this rating.

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Data shown above represent gross engine performance capabilities obtained and corrected in accordance with ISO-3046 conditions of 100 kPa (29.53 in Hg) barometric pressure [110 m (361 ft) altitude], 25 °C (77 °F) air inlet temperature, and relative humidity of 30% with No. 2 diesel or a fuel corresponding to ASTM D2. See reverse side for application rating guidelines.

The fuel consumption data is based on No. 2 diesel fuel weight at 0.85 kg/liter (7.1 lbs/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.

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TECHNICAL DATA DEPT. CERTIFIED WITHIN 5% CHIEF ENGINEER
Reference Standards:

BS-5514 and DIN-6271 standards are based on ISO-3046.

Operation At Elevated Altitude and Temperature:

For sustained operation above these conditions, derate by an additional 3.3% per 300 m (1000 ft), and 15% per 10°C (18°F).

Note: Derates shown are based on 15 in H₂O air intake restriction and 2 in Hg exhaust back pressure.
### PRELIMINARY

**Cummins Engine Company, Inc.**  
**Engine Data Sheet**

**ENGINE MODEL:** QSK60-G3  
**CONFIGURATION NUMBER:** D593002GX03  
**DATA SHEET:** DS-6283  
**DATE:** 1Feb01  
**PERFORMANCE CURVE:** FR-6283  
**CPL NUMBER:** 2824

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### GENERAL ENGINE DATA

<table>
<thead>
<tr>
<th>Type</th>
<th>Aspiration</th>
<th>4-Cycle; 60° Vee; 16-Cylinder Diesel Turbocharged and Low Temperature Aftercooled (2 Pump / 2 Loop)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bore x Stroke</td>
<td>mm x mm (in x in)</td>
<td>159 x 190 (6.25 x 7.48)</td>
</tr>
<tr>
<td>Displacement</td>
<td>liter (in³)</td>
<td>60.2 (3673)</td>
</tr>
<tr>
<td>Compression Ratio</td>
<td></td>
<td>14.5 : 1</td>
</tr>
</tbody>
</table>

**Dry Weight**  
- Fan to Flywheel Engine (with SAE 0 Flywheel and Flywheel Housing): kg (lb) 7185 (15835)  
- Wet Weight: kg (lb) 7540 (16620)

**Moment of Inertia of Rotating Components**  
- with FW 6043 Flywheel (SAE 0): kg • m² (lb_m • ft²) 15.77 (375.5)  
- with FW 6037 Flywheel (SAE 00): kg • m² (lb_m • ft²) 26.23 (622.4)

**Center of Gravity**  
- from Front Face of Block: mm (in) 1001 (39.4)  
- Above Crankshaft Centerline: mm (in) 219 (8.6)  
- Maximum Static Loading at Rear Main Bearing: kg (lb) TBD TBD

**ENGINE MOUNTING**  
- Maximum Bending Moment at Rear Face of Block: N • m (lb • ft) 10350 (7634)

**EXHAUST SYSTEM**  
- Maximum Back Pressure at 1500 RPM (Standby Power): mm Hg (in Hg) 51 (2)

**AIR INDUCTION SYSTEM**  
- Maximum Intake Air Restriction  
  - with Dirty Filter Element: kPa (in H₂O) 6.2 (25)  
  - with Clean Filter Element: kPa (in H₂O) 3.7 (15)

**COOLING SYSTEM (Separate Circuit Aftercooling Required)**  
- Coolant Capacity  
  - Engine: liter (US gal) 157 (42)  
  - Aftercoolers: liter (US gal) 34 (9)

**Coolant Friction Head**  
- External to Engine: kPa (psi) 69 (10)  
- Above Engine Crank Centerline: m (ft) 18.3 (60)

**Thermostat Modulating Range**  
- High Flow: °C (°F) 85 - 96 (185 - 205)  
- Low Flow: °C (°F) 46 - 57 (115 - 135)

**Minimum Pressure Cap (For Cooling Systems with less than 2 m [6 ft] Static Head)**  
- kPa (psi): 76 (11)  
- Maximum Top Tank Temperature for Standby / Prime Power: °C (°F) 104 / 100 (220 / 212)

**Aftercooler Circuit Requirements:**  
- Maximum Coolant Friction Head External to Engine: kPa (psi) 35 (5)  
- Maximum Inlet Water Temperature to Aftercooler @ 77°F Ambient: °C (°F) 49 (120)  
- Maximum Inlet Water Temperature to Aftercooler: °C (°F) 65 (150)

**LUBRICATION SYSTEM**  
- Oil Pressure @ Idle Speed: kPa (psi) 138 (20)  
- @ Governed Speed: kPa (psi) 345-483 (50-70)  
- Maximum Oil Temperature: °C (°F) 121 (250)

**Oil Capacity with OP6073 Oil Pan: Low-High**  
- liter (US gal): 231-261 (61-69)

**Total System Capacity (with Combo Filter)**  
- liter (US gal): 280 (74)
FUEL SYSTEM

Type Injection System ................................................................. Cummins HPI-PT
Maximum Restriction at PT Fuel Injection Pump — with Clean Fuel Filter — — mm Hg (in Hg) 120 (4.0)
— with Dirty Fuel Filter — — mm Hg (in Hg) 203 (8.0)
Maximum Allowable Head on Injector Return Line (Consisting of Friction Head and Static Head) — — mm Hg (in Hg) 229 (9.0)
Maximum Fuel Inlet Temperature — — °C (°F) 70 (160)
Maximum Fuel Flow to Injection Pump — — liter / hr (US gph) 1893 (500)
Maximum Drain Flow — — liter / hr (US gph) 1855 (490)

Intake Air Flow ............................................................................

Air to Fuel Ratio ...........................................................................

Heat Rejection to Exhaust ...........................................................

Heat Rejection to Engine Jacket Radiator ...............................

Engine Jacket Water Flow at Stated Friction Head External to Engine:

Engine Aftercooler Data

Heat Rejection to Aftercooler Radiator — — kWm (BTU / min) 420 (24000)
Aftercooler Water Flow at Stated Friction Head External to Engine:

* This is the maximum heat rejection to fuel, which is at low load

Electrical System

Cranking Motor (Heavy Duty, Positive Engagement) — — volt 24
Battery Charging System, Negative Ground — — ampere 40
Maximum Allowable Resistance of Cranking Circuit — — ohm 0.002

Minimum Recommended Battery Capacity

• Cold Soak @ -10 °C (50 °F) and Above — — 0°F CCA 1280
• Cold Soak @ 0 °C to 10 °C (32 °F to 50 °F) — — 0°F CCA 1800
• Cold Soak @ -18 °C to 0 °C (0 °F to 32 °F) — — 0°F CCA 1800

Cold Start Capability

Minimum Ambient Temperature for Cold Start with______ watt Coolant Heater to Rated Speed — — °C (°F) TBD (TBD)
Minimum Ambient Temperature for Unaided Cold Start to Idle Speed — — °C (°F) TBD (TBD)
Minimum Ambient Temperature for NFPA 110 Cold Start (90° F Minimum Coolant Temperature) — — °C (°F) 10 (50)

Performance Data

All data is based on:

• Engine operating with fuel system, water pump, lubricating oil pump, air cleaner and exhaust silencer; not included are battery charging alternator, fan, and optional driven components.
• Engine operating with fuel corresponding to grade No. 2-D per ASTM D975.
• ISO 3046, Part 1, Standard Reference Conditions of:

  - Barometric Pressure : 100 kPa (29.53 in Hg)
  - Altitude : 110 m (361 ft)
  - Relative Humidity : 30%
  - Air Temperature : 25 °C (77 °F)
  - Air Intake Restriction : 381 mm H2 O (15 in H2 O)
  - Exhaust Restriction : 51 mm Hg (2 in Hg)

Governing Engine Speed — — rpm
Engine Idle Speed — — rpm
Gross Engine Power Output — — kWm (BHP)
Brake Mean Effective Pressure — — kPa (psi)
Piston Speed — — m / s (ft / min)
Friction horsepower — — kWm (HP)
Engine Jacket Water Flow at Stated Friction Head External to Engine:

• 4 psi Friction Head — — liter / s (US gpm)
• Maximum Friction Head — — liter / s (US gpm)

Engine Data

Intake Air Flow — — liter / s (cfm)
Exhaust Gas Temperature — — °C (°F)
Exhaust Gas Flow — — liter / s (cfm)
Air to Fuel Ratio — — air : fuel
Radiated Heat to Ambient — — kWm (BTU / min)
Heat Rejection to Engine Jacket Radiator — — kWm (BTU / min)
Heat Rejection to Exhaust — — kWm (BTU / min)
Heat Rejection to Fuel — — kWm (BTU / min)

Engine Aftercooler Data

Heat Rejection to Aftercooler Radiator — — kWm (BTU / min)
Aftercooler Water Flow at Stated Friction Head External to Engine:

N.A. - Data is Not Available
N/A - Not Applicable to this Engine
TBD - To Be Determined

Cummins Engine Company, Inc. Columbus, Indiana 47202-3005

**PRELIMINARY**

Engine Model: QSK60-G3
Data Sheet: DS-6283
Date: 1Feb01
Curve No.: FR-6283