QSK23-G3



> Specification sheet



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Description

The QSK23 is an in-line 6 cylinder engine with a 23 litre displacement. This Quantum series utilizes sophisticated electronics and premium engineering to provide outstanding performance levels, reliability and versatility for Standby, Prime and Continuous Power applications.



This engine has been built to comply with CE certification.



This engine has been designed in facilities certified to ISO9001 and manufactured in facilities certified to ISO9001 or ISO9002.

Features

The QSK23 uses the Cummins High Pressure Injection (HPI) PT full authority electronic fuel system. The HPI PT fuel system is managed by a G-Drive Governor Control System (GCS) controller, which is provided for off-engine mounting in the genset control panel. The Quantum Control has a specific fuel system board to interface with the HPI-PT fuel system and provides an Engine Protection package giving greater customer flexibility and cost effective alternatives in the control design and the benefits of Full Authority electronic control

CTT (Cummins Turbo Technologies) HX82 turbo-charging utilizes exhaust energy with greater efficiency for improved emissions and fuel consumption.

Charge Air Cooling - QSK23 engine requires the use of an Airto-Air heat exchanger or Charge-Air-Cooler (CAC) to reduce intake manifold temperature and to meet the lower emissions requirements

CoolPac Integrated Design - Products are supplied complete with cooling package and air cleaner kit for a complete power package. Each component has been specifically developed and rigorously tested for G-Drive products, ensuring high performance, durability and reliability.

Service and Support - G-Drive products are backed by an uncompromising level of technical support and after sales service, delivered through a world class service network

1500 rpm (50 Hz Ratings)

| Gros | Gross Engine Output Net Engine Output | | | Typical Generator Set Output | | | | | | | | | |
|----------|---------------------------------------|---------|---------|------------------------------|---------|---------------|-----|---------------|-----|-------|-------|------|-------|
| Standby | Prime | Base | Standby | Prime | Base | Standby (ESP) | | Standby (ESP) | | Prime | (PRP) | Base | (COP) |
| | kWm/BHP | | kWm/BHP | | kWe | kVA | kWe | kVA | kWe | kVA | | | |
| 768/1030 | 701/940 | 537/720 | 739/991 | 682/915 | 517/693 | 720 | 900 | 648 | 810 | 491 | 614 | | |

1800 rpm (60 Hz Ratings)

| Gross Engine Output | | | Net Engine Output | | | Net Engine Output Typical Generator Set Output | | | utput | | | | |
|---------------------|----------|------------|-------------------|----------|---------|--|------|---------------|-------|-------|-------|------|-------|
| Standby | Prime | Base | Standby | Prime | Base | Standby (ESP) | | Standby (ESP) | | Prime | (PRP) | Base | (COP) |
| | kWm/BHP | HP kWm/BHP | | kWe | kVA | kWe | kVA | kWe | kVA | | | | |
| 895/1200 | 809/1085 | 652/875 | 857/1149 | 776/1041 | 621/833 | 800 | 1000 | 727 | 909 | 583 | 729 | | |

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General Engine Data

| Туре | 4 cycle, Turbocharged |
|-----------------------------|---|
| Bore mm | 170 |
| Stroke mm | 170 |
| Displacement Litre | 23.1 |
| Cylinder Block | Cast iron, 6 cylinder |
| Battery Charging Alternator | 35A |
| Starting Voltage | 24V |
| Fuel System | Direct injection Cummins HPI |
| Fuel Filter | Spin on fuel filters with water separator |
| Lube Oil Filter Type(s) | Spin on full flow filter |
| Lube Oil Capacity (I) | 103 |
| Flywheel Dimensions | SAE 0 |

Coolpac Performance Data

| Cooling System Design | Air-air charge cooled | | |
|---|--------------------------------|------------------------------|--|
| Coolant Ratio | 50% ethylene glycol; 50% water | | |
| Coolant Capacity (I) | 57 | | |
| Limiting Ambient Temp (℃)** | 46.0 (50Hz) | 50.5 (60Hz) | |
| Fan Power (kWm) | 17.3 (50Hz) | 26.1 (60Hz) | |
| Cooling System Air Flow (m ³ /s)** | 14.7 (50Hz) | 23.6 (60Hz) | |
| Air Cleaner Type | Dry replaceable elemen | t with restriction indicator | |
| ** @ 13 mm H ² 0 | | | |

Ratings Definitions

Emergency Standby Power (ESP):

Applicable for supplying power to varying electrical load for the duration of power interruption of a reliable utility source. Emergency Standby Power (ESP) is in accordance with ISO 8528. Fuel Stop power in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.

Limited-Time Running Power (LTP):

Applicable for supplying power to a constant electrical load for limited hours. Limited-Time Running Power (LTP) is in accordance with ISO 8528.

Prime Power (PRP):

Applicable for supplying power to varying electrical load for unlimited hours. Prime Power (PRP) is in accordance with ISO 8528. Ten percent overload capability is available in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.

Base Load (Continuous) Power (COP):

Applicable for supplying power continuously to a constant electrical load for unlimited hours. Continuous Power (COP) in accordance with ISO 8528, ISO 3046, AS 2789, DIN6271 and BS 5514.

Weight & Dimensions

| Length | Width | Height | Weight (dry) | | |
|--------|-------|--------|--------------|--|--|
| mm | mm | mm | kg | | |
| 2885 | 1656 | 2029 | 3185 | | |

Fuel Consumption 1500 (50 Hz)

| % | kWm | ВНР | L/ph | US gal/ph | | | | | |
|------------------|---------------|------|------|-----------|--|--|--|--|--|
| Standby Po | Standby Power | | | | | | | | |
| 100 | 768 | 1030 | 178 | 46.9 | | | | | |
| Prime Pow | er | | | | | | | | |
| 100 | 701 | 940 | 161 | 42.5 | | | | | |
| 75 | 526 | 705 | 121 | 32.0 | | | | | |
| 50 | 351 | 470 | 85 | 22.4 | | | | | |
| 25 | 175 | 235 | 46 | 12.2 | | | | | |
| Continuous Power | | | | | | | | | |
| 100 | 537 | 720 | 125 | 33.1 | | | | | |

Fuel Consumption 1800 (60 Hz)

| % | kWm | BHP | L/ph | US gal/ph | | | | | |
|------------|------------------|------|------|-----------|--|--|--|--|--|
| Standby Po | Standby Power | | | | | | | | |
| 100 | 895 | 1200 | 212 | 56.1 | | | | | |
| Prime Powe | er | | | | | | | | |
| 100 | 809 | 1085 | 189 | 49.8 | | | | | |
| 75 | 607 | 814 | 139 | 36.7 | | | | | |
| 50 | 405 | 543 | 97 | 25.7 | | | | | |
| 25 | 202 | 271 | 56 | 14.7 | | | | | |
| Continuous | Continuous Power | | | | | | | | |
| 100 | 653 | 875 | 149 | 39.4 | | | | | |

Cummins G-Drive Engines

Asia Pacific 10 Toh Guan Road #07-01 TT International Tradepark Singapore 608838 Phone 65 6417 2388 Fax 65 6417 2399 Europe, CIS, Middle East and Africa Manston Park Columbus Ave Manston Ramsgate Kent CT12 5BF. UK Phone 44 1843 255000 Fax 44 1843 255902

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Mexico Cummins S. de R.L. de C.V. Eje 122 No. 200 Zona Industrial San Luis Potosí, S.L.P. 78090 Mexico Phone 52 444 870 6700 Fax 52 444 870 6811 North America 1400 73rd Avenue N.E. Minneapolis, MN 55432 USA Phone 1 763 574 5000 USA Toll-free 1 877 769 7669 Fax 1 763 574 5298

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Cummins Inc.

Columbus, Indiana 47201

Engine Data Sheet

Basic Engine Model: **QSK23-G3**

CPL: 8352

Engine Critical Parts List:

Date: 16Jan06

Curve Number:

FR-50011

G-DRIVE QSK 1

Displacement : 23.15 litre (1413 in 3) Bore: 170 mm (6.69 in.) Stroke: 170 mm (6.69 in.)

No. of Cylinders: 6 Aspiration: Turbocharged and Air to Air Aftercooled

| Engine Speed | Standby Power | | Prime Power | | Continuous Power | |
|--------------|---------------|------|-------------|------|------------------|-----|
| RPM | kWm | ВНР | kWm | ВНР | kWm | ВНР |
| 1500 | 768 | 1030 | 701 | 940 | 537 | 720 |
| 1800 | 895 | 1200 | 809 | 1085 | 652 | 875 |

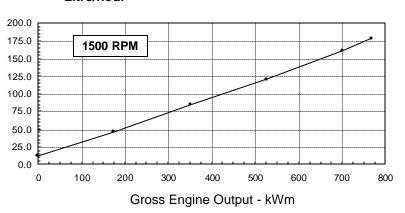
Emissions Certification (1800 RPM Only)

"For mobile applications in the U.S. and Canada, this rating may only be sold in accordance with the OEM TPEM provisions of 40 CFR 89.102. For stationary applications in the U.S. (except California), this rating may be sold through 2006 under the NSPS provisions of 40 CFR Part 60."

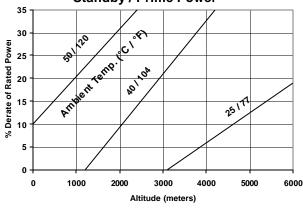
Engine Performance Data @ 1500 RPM

| OUTI | PUT PO | WER | FUEL CONSUMPTION | | | | |
|------------------|--------|------|------------------|--------------|----------------|-------------------|--|
| % | kWm | ВНР | kg/ kWm∙h | lb/ BHP∙h | litre/ hour | U.S. Gal/ hour | |
| STAN | DBY PO | WER | | | | | |
| 100 | 768 | 1030 | 0.197 | 0.323 | 178 | 46.9 | |
| PRIMI | POWE | R | | | | | |
| 100 | 701 | 940 | 0.195 | 0.321 | 161 | 42.5 | |
| 75 | 526 | 705 | 0.196 | 0.322 | 121 | 32.0 | |
| 50 | 351 | 470 | 0.206 | 0.338 | 85 | 22.4 | |
| 25 | 175 | 235 | 0.223 | 0.370 | 46 | 12.2 | |
| CONTINUOUS POWER | | | | | | | |
| 100 | 537 | 720 | 0.198 | 0.326 | 125 | 33.1 | |

Litre/hour



Power Derate Curves @ 1500 RPM Standby / Prime Power



Continuous Power 35 30 Derate of Rated Power 25 20 ŝ b 15 5 0 1000 2000 3000 4000 5000 6000 Altitude (meters)

Operation At Elevated Temperature And Altitude:

For sustained operation above these conditions, derate by an additional 3.4% per 300 m (1000 ft), and 20% per 10° C (18° F). Data Subject to Change Without Notice

CONVERSIONS: (litres = U.S. Gal x 3.785) (U.S.Gal = litres x 0.2642)

These guidelines have been formulated to ensure proper application of generator drive engines in A.C. generator set installations. STANDBY POWER RATINS: 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 and standby rated 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 POW Fower applications must be in the form of one of the following two categories: <u>SNLIMITED 11 MIR RUNNING PRIME POWE</u>.

ER: 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 availability in a variability is availability in a variable load application. It is intended for use in 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, 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 customers should be aware, however, that the life of any engine the reduced by this ceed 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.

Reference AEB 10.47 for determining Electrical Output

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. Derates shown are based on 15 in H₂0 air intake restriction and 2 in Hg exhaust back pressure

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

Data Status: Limited Production

Data Tolerance: ± 5%

Chief Engineer:

DK. Trueblood



Cummins Inc.

Columbus, Indiana 47201

Engine Data Sheet

Basic Engine Model: **QSK23-G3**

Curve Number: FR-50011

Date:

G-DRIVE **QSK**

Engine Critical Parts List: CPL: 8352

16Jan06

2

Displacement : 23.15 litre (1413 in 3) Bore: 170 mm (6.69 in.) Stroke: 170 mm (6.69 in.)

No. of Cylinders: 6 Aspiration: Turbocharged and Air to Air Aftercooled

| Engine Speed | Standby Power | | Prime | Prime Power | | Continuous Power | |
|--------------|---------------|------|-------|-------------|-----|------------------|--|
| RPM | kWm | ВНР | kWm | ВНР | kWm | ВНР | |
| 1500 | 768 | 1030 | 701 | 940 | 537 | 720 | |
| 1800 | 895 | 1200 | 809 | 1085 | 652 | 875 | |

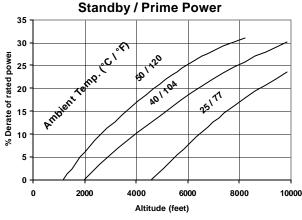
Emissions Certification (1800 RPM Only)

"For mobile applications in the U.S. and Canada, this rating may only be sold in accordance with the OEM TPEM provisions of 40 CFR 89.102. For stationary applications in the U.S. (except California), this rating may be sold through 2006 under the NSPS provisions of 40 CFR Part 60."

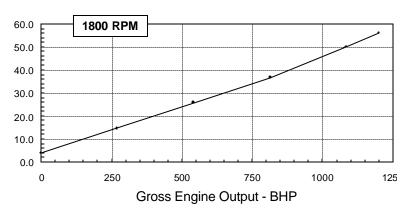
Engine Performance Data @ 1800 RPM

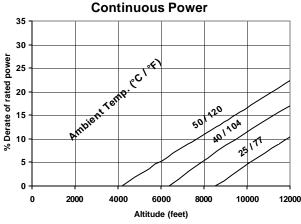
| OUT | PUT PO | WER | Fl | JEL CONS | NSUMPTION | | | |
|-------|------------------|------|--------------|--------------|----------------|-------------------|--|--|
| % | kWm | ВНР | kg/ kWm∙h | lb/ BHP∙h | litre/ hour | U.S. Gal/ hour | | |
| STAN | DBY PO | WER | | | | | | |
| 100 | 895 | 1200 | 0.201 | 0.332 | 212 | 56.1 | | |
| PRIMI | E POWE | R | | | | | | |
| 100 | 809 | 1085 | 0.199 | 0.326 | 189 | 49.8 | | |
| 75 | 607 | 814 | 0.195 | 0.320 | 139 | 36.7 | | |
| 50 | 405 | 543 | 0.204 | 0.336 | 97 | 25.7 | | |
| 25 | 202 | 271 | 0.236 | 0.385 | 56 | 14.7 | | |
| CONT | CONTINUOUS POWER | | | | | | | |
| 100 | 653 | 875 | 0.194 | 0.320 | 149 | 39.4 | | |

Power Derate Curves @ 1800 RPM



U.S. Gallons / hour





Operation At Elevated Temperature And Altitude:

For sustained operation above these conditions, derate by an additional 5.0% per 300 m (1000 ft), and 7% per 10° C (18° F).

CONVERSIONS: (litres = U.S. Gal x 3.785) (U.S.Gal = litres x 0.2642)

These guidelines have been formulated to ensure proper application of generator drive engines in A.C. generator set installations. STANDBY POWER RATINS: 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 and standby rated 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 emer gency. 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 POW. Fower applications must be in the form of one of the following two categories: <u>SNLIMITED 11 MIR RUNNING PRIME POWE</u>.

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Reference AEB 10.47 for determining Electrical Output

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. Derates shown are based on 15 in H₂0 air intake restriction and 2 in Hg exhaust back pressure

Data Subject to Change Without Notice

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

Data Status: Limited Production

Data Tolerance: ± 5%

Chief Engineer:

DK. Irueblood

Cummins Inc. Engine Data Sheet

DATA SHEET: LP-50011 ENGINE MODEL: QSK23-G3 DATE: 16Jan06
PERFORMANCE CURVE: FR-50011 **CONFIGURATION NUMBER:** D893001GX03

INSTALLATION DIAGRAM

CPL NUMBER • Fan to Flywheel : 3170553

• Engine Critical Parts List : 8352

| GENERAL ENGINE DATA | | |
|--|-------------------------------|------------------------|
| Type | Inline 6-Cylinder | Diesel |
| Aspiration | Turbocharged a Aftercooled | nd Low Temperature |
| Bore x Stroke— mm x mm (in x in) | 170 x 170 (6.69 | x 6.69) |
| Displacement — litre (in ³) | 23.15 (1413) | <i></i> |
| Compression Ratio | 16.0:1 | |
| Dry Weight | 10.0.1 | |
| Fan to Flywheel Engine — kg (lb) | 2755 | (6060) |
| Wet Weight | 2100 | (0000) |
| Fan to Flywheel Engine — kg (lb) | 2805 | (6170) |
| , , | 2005 | (0170) |
| Moment of Inertia of Rotating Components • with (SAE 0) — kg • m² (lb _m • ft²) | 11.6 | (270) |
| | 11.6 | (270) |
| Center of Gravity from Front Face of Block | 725 | (28.5) |
| Center of Gravity Above Crankshaft Centerline | 240 | (9.5) |
| Maximum Static Loading at Rear Main Bearing — kg (lb) | 990 | (2160) |
| ENGINE MOUNTING | | |
| Maximum Bending Moment at Rear Face of Block | 3205 | (2340) |
| EXHAUST SYSTEM | | |
| Maximum Back Pressure— mm Hg (in Hg) | 76.2 | (3) |
| AIR INDUCTION SYSTEM | | |
| Maximum Intake Air Restriction: | | |
| • with Dirty Filter Element | 635 | (25) |
| • with Clean Filter Element | 381 | (15) |
| COOLING SYSTEM | | |
| Coolant Capacity — Engine Only — litre (US gal) | 46.5 | (12.3) |
| Minimum Pressure Cap — kPa (psi) | 69 | (10) |
| Jacket Water Circuit Requirements | | |
| Maximum Static Head of Coolant Above Engine Crank Centerline | 18.3 | (60) |
| Standard Thermostat (Modulating) Range | 76.5-90 | (170 - 194) |
| Maximum Top Tank Temperature for Standby . Prime Power | 104 - 100 | (220 - 212) |
| Maximum Coolant Friction Head External to the Engine - 1800 RPM — kPa (psi) | 48 | (7) |
| -1500 RPM — kPa (psi) | 34 | (5) |
| Air-to-Air Core Requirements | | |
| Maximum Temp. Rise Between Engine Air Intake and Intake Manifold —1500 / 1800 rpm — °C (°F) | 33 | (60) |
| Maximum Air Press. Drop from Turbo Air Outlet to Intake Manifold — 1500 / 1800 rpm — mm Hg (in Hg) | 102 | (4) |
| LUBRICATION SYSTEM | | |
| Oil Pressure @ Idle Speed | 145 | (21) |
| @ Governed Speed | 345 - 448 | (50 - 65) |
| Maximum Oil Temperature | 120 | (248) |
| Oil Capacity with OP TBD Oil Pan : Low - High | 66 - 95 | (246) (17 - 25) |
| Total System Capacity (With Combo Filters) | 74 - 103 | (17 - 25) (19 - 27) |
| Total dystem dapacty (vviin dombo i liters) | 14-103 | (13-21) |

G-DRIVE

FUEL SYSTEM

| 1 OLL OT OT LIM | | | |
|---|-------|-----------|--|
| Type Injection System | Cummi | ns HPI-PT | |
| Maximum Restriction at 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) | 229 | (9.0) | |
| Maximum Inlet Temperature | 70 | (160) | |
| Maximum Fuel Flow to Injection Pump — litre / hr (US gph) | 684 | (181) | |
| Maximum Drain Flow — litre / hr (US gph) | 662 | (175) | |
| ELECTRICAL SYSTEM | | | |
| Cranking Motor (Heavy Duty, Positive Engagement) volt | | 24 | |
| Battery Charging System, Negative Ground— ampere | 35 | | |
| Maximum Allowable Resistance of Cranking Circuit | 0.002 | | |
| Minimum Recommended Battery Capacity | | | |
| • Cold Soak @ 10 °C (50 °F) and Above — 0°F CCA | 12 | 200 | |
| • Cold Soak @ 0 °C to 10 °C (32 °F to 50 °F) | 1280 | | |
| • Cold Soak @ -18 °C to 0 °C (0 °F to 32 °F) | 1800 | | |
| COLD START CAPABILITY | | | |
| Minimum Ambient Temperature for Cold Start with 1500 watt Coolant Heater to Rated Speed | -30 | (-22) | |
| Minimum Ambient Temperature for Unaided Cold Start to Idle Speed | 0 | (32) | |
| Minimum Ambient Temperature for NFPA 110 Cold Start (90° F Minimum Coolant Temperature) | 10 | (50) | |
| PERFORMANCE DATA | - | (/ | |
| All data is based on: • Engine operating with fuel system water pump, lubricating oil pump, air cleaner and exhaust | | | |

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) : 25 °C (77 °F) Air Temperature

Altitude : 110 m (361 ft) Relative Humidity : 30%

Air Intake Restriction : 381 mm H₂O (15 in H₂O) Exhaust Restriction: 51 mm Hg (2 in Hg)

STANDBY POWER

+/- 0.25 Estimated Free Field Sound Pressure Level of a Typical Generator Set; **TBD**

Exhaust Noise at 1 m Horizontally from Centerline of Exhaust Pipe Outlet Upwards at 45°...... — dBA

| | 0171112211011211 | | | | | <u> </u> | <u></u> | |
|--|------------------|---------|------|---------|------|---------------------|---------|---------|
| | 6 | i0 hz | 50 |) hz | (| 60 hz | 5 | 0 hz |
| Governed Engine Speed—rpm | 1800 | | 1500 | | 1800 | | 1500 | |
| Engine Idle Speedrpm | 750 | | 750 | | 750 | | 750 | |
| Gross Engine Power Output — kW _m (BHP) | 895 | (1200) | 768 | (1030) | 809 | (1085) | 701 | (94 |
| Brake Mean Effective Pressure HPa (psi) | 2600 | (377) | 2675 | (388) | 2350 | (341) | 2441 | (35 |
| Piston Speed — m / s (ft / min) | 10.3 | (2010) | 8.6 | (1675) | 10.3 | (2010) | 8.6 | (167 |
| Friction Horsepower — kW _m (HP) | 93 | (124) | 72 | (96) | 93 | (124) | 72 | (9 |
| Engine Jacket Water Flow at Stated Friction Head External to Engine: | | | | | | | | |
| • 3 psi Friction Head litre / s (US gpm) | 10.4 | (165) | 7.6 | (120) | 10.4 | (165) | 7.9 | (12 |
| Maximum Friction Head litre / s (US gpm) | 10.1 | (160) | 7.6 | (120) | 10.1 | (160) | 7.6 | (12 |
| Engine Data | | | | | | | | |
| Intake Air Flow — litre / s (cfm) | 1132 | (2398) | 888 | (1882) | 1094 | (2318) | 815 | (172 |
| Exhaust Gas Temperature — °C (°F) | 514 | (957) | 543 | (1010) | 467 | (872) | 532 | (99 |
| Exhaust Gas Flow litre / s (cfm) | 3056 | (6475) | 2463 | (5218) | 2773 | (5875) | 2259 | (478 |
| Air-to-Fuel Ratio— air : fuel | 25. | .5 : 1 | 23. | 8:1 | 27 | ⁷ .6 : 1 | 25 | 5.3 : 1 |
| Radiated Heat to Ambient — kW _m (BTU / min) | 85 | (4862) | 71 | (4058) | 76 | (4313) | 65 | (368) |
| Heat Rejection to Jacket Water Coolant kW _m (BTU / min) | 269 | (15305) | 222 | (12636) | 235 | (13358) | 215 | (1225 |
| Heat Rejection to Exhaust — kW _m (BTU / min) | 656 | (37334) | 570 | (32417) | 569 | (32392) | 507 | (2887 |
| Heat Rejection to Fuel* — kW _m (BTU / min) | 9.1 | (520) | 6.8 | (387) | 9.1 | (520) | 6.8 | (38) |
| Charge Air Cooler Heat Rejection | 223 | (12673) | 146 | (8329) | 198 | (11270) | 122 | (694 |
| Turbo Compressor Outlet Temperature — °C (°F) | 227 | (440) | 199 | (390) | 209 | (408) | 182 | (36 |
| Turbo Compressor Outlet Pressure — kPa (psi) | 283 | (41) | 248 | (36) | 269 | (39) | 214 | (3 |

^{*} This is the maximum heat rejection to fuel, which is at low load N.A. - Not Available

N/A - Not Applicable to this Engine

TBD - To Be Determined

ENGINE MODEL: QSK23-G3 DATA SHEET: DS-50011-LP DATE: 16Jan06 **CURVE NO.:** FR-50011

TBD

(940)(354)(1675)(96)

> (126)(120)

(1720)(990)(4786)

(3682)(12252)(28877)(387)(6944)(360)(31)

PRIME POWER