

QSK23-G3



> Specification sheet



Our energy working for you.™

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 Air-to-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)

Gross Engine Output			Net Engine Output			Typical Generator Set Output					
Standby	Prime	Base	Standby	Prime	Base	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			Typical Generator Set Output					
Standby	Prime	Base	Standby	Prime	Base	Standby (ESP)		Prime (PRP)		Base (COP)	
kWm/BHP			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

Type	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 (l)	103
Flywheel Dimensions	SAE 0

Coolpac Performance Data

Cooling System Design	Air-air charge cooled	
Coolant Ratio	50% ethylene glycol; 50% water	
Coolant Capacity (l)	57	
Limiting Ambient Temp (°C)**	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 element with restriction indicator	

** @ 13 mm H₂O

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	BHP	L/ph	US gal/ph
Standby Power				
100	768	1030	178	46.9
Prime Power				
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 Power				
100	895	1200	212	56.1
Prime Power				
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 Power				
100	653	875	149	39.4

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Cummins Inc.

Columbus, Indiana 47201

Engine Data Sheet

Basic Engine Model:
QSK23-G3

Engine Critical Parts List:
CPL: 8352

Curve Number:
FR-50011

Date:
16Jan06

G-DRIVE
QSK
1

Displacement : **23.15 litre (1413 in³)**

Bore : **170 mm (6.69 in.)** Stroke : **170 mm (6.69 in.)**

No. of Cylinders : **6**

Aspiration : **Turbocharged and Air to Air Aftercooled**

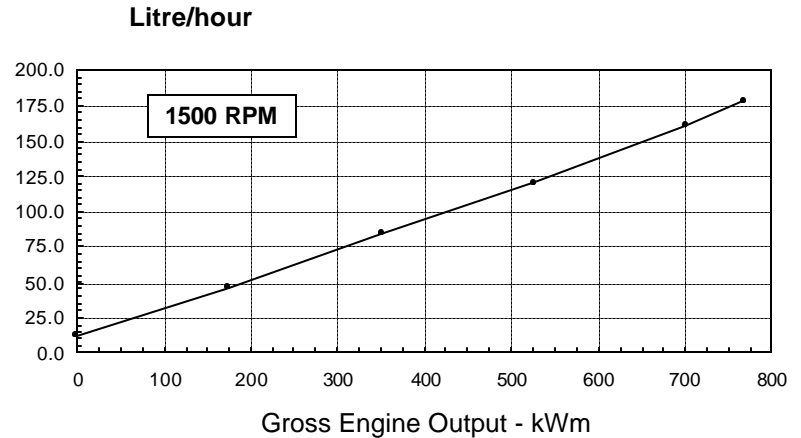
Engine Speed RPM	Standby Power		Prime Power		Continuous Power	
	kWm	BHP	kWm	BHP	kWm	BHP
1500	768	1030	701	940	537	720
1800	895	1200	809	1085	652	875

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."

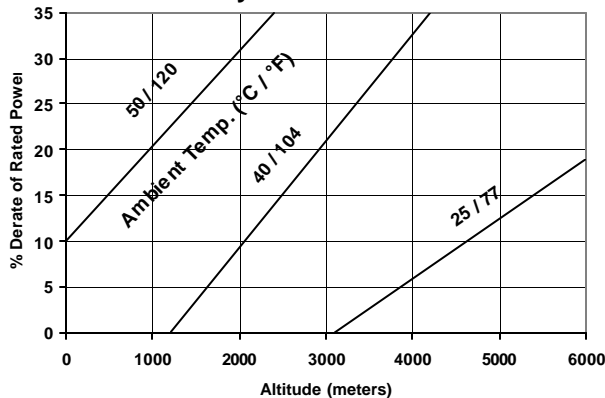
Engine Performance Data @ 1500 RPM

OUTPUT POWER			FUEL CONSUMPTION			
%	kWm	BHP	kg/ kWm-h	lb/ BHP-h	litre/ hour	U.S. Gal/ hour
STANDBY POWER						
100	768	1030	0.197	0.323	178	46.9
PRIME POWER						
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

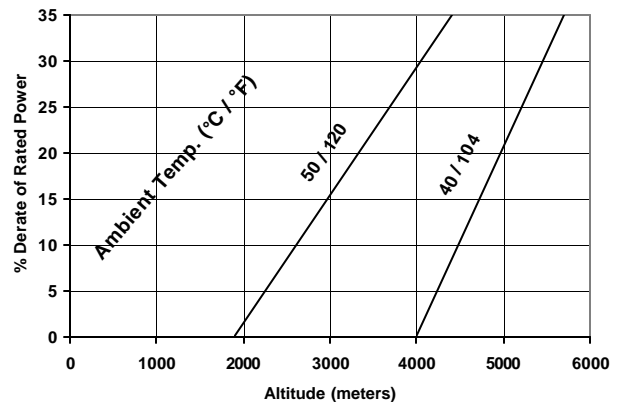


Power Derate Curves @ 1500 RPM

Standby / Prime Power



Continuous Power



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).

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

Data Subject to Change Without Notice

These guidelines have been formulated to ensure proper application of generator drive engines in A.C. generator set installations. **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.

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 H₂O 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:

D.K. Trueblood



Cummins Inc.

Columbus, Indiana 47201

Engine Data Sheet

Basic Engine Model:
QSK23-G3

Engine Critical Parts List:
CPL: 8352

Curve Number:
FR-50011

Date:
16Jan06

G-DRIVE
QSK
2

Displacement : **23.15 litre (1413 in³)**

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 RPM	Standby Power		Prime Power		Continuous Power	
	kWm	BHP	kWm	BHP	kWm	BHP
1500	768	1030	701	940	537	720
1800	895	1200	809	1085	652	875

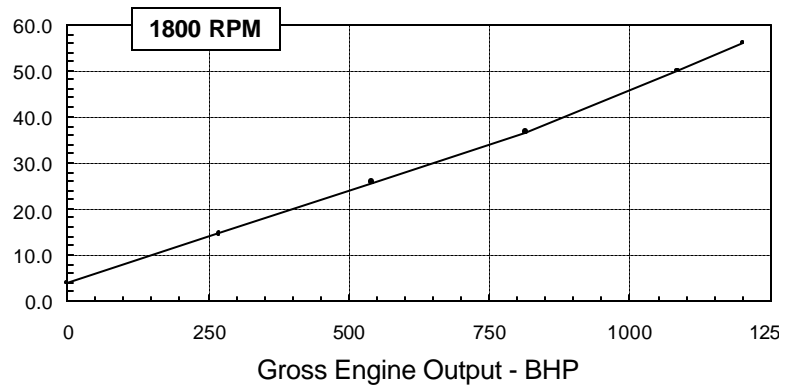
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Engine Performance Data @ 1800 RPM

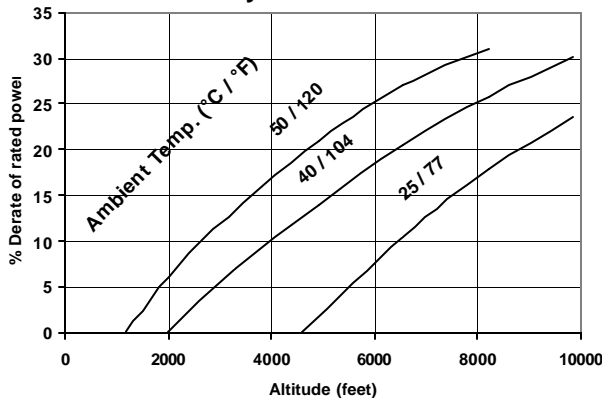
OUTPUT POWER			FUEL CONSUMPTION			
%	kWm	BHP	kg/ kWm-h	lb/ BHP-h	litre/ hour	U.S. Gal/ hour
STANDBY POWER						
100	895	1200	0.201	0.332	212	56.1
PRIME POWER						
100	809	1085	0.199	0.326	189	49.8
75	607	814	0.195	0.320	139	36.7
50	405	543	0.204	0.336	97	25.7
25	202	271	0.236	0.385	56	14.7
CONTINUOUS POWER						
100	653	875	0.194	0.320	149	39.4

U.S. Gallons / hour

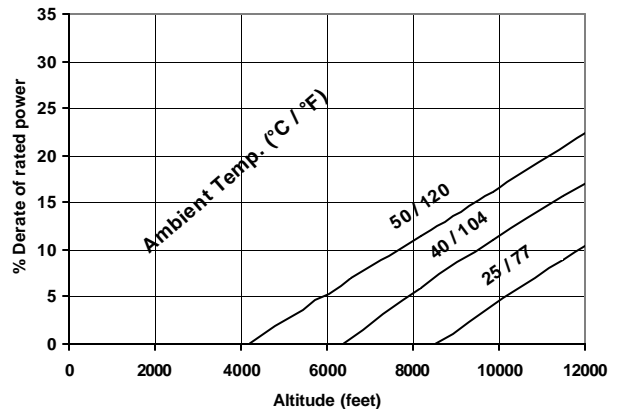


Power Derate Curves @ 1800 RPM

Standby / Prime Power



Continuous Power



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Data Status: Limited Production

Data Tolerance: ± 5%

Chief Engineer:

D.K. Trueblood

Cummins Inc.

Engine Data Sheet

ENGINE MODEL : **QSK23-G3**

CONFIGURATION NUMBER : D893001GX03

DATA SHEET : LP-50011

DATE : 16Jan06

PERFORMANCE CURVE : FR-50011

INSTALLATION DIAGRAM

• Fan to Flywheel : 3170553

CPL NUMBER

• Engine Critical Parts List : 8352

GENERAL ENGINE DATA

Type	Inline 6-Cylinder Diesel
Aspiration	Turbocharged and Low Temperature Aftercooled
Bore x Stroke	170 x 170 (6.69 x 6.69)
Displacement	23.15 (1413)
Compression Ratio	16.0:1
Dry Weight	
Fan to Flywheel Engine.....	2755 (6060)
Wet Weight	
Fan to Flywheel Engine.....	2805 (6170)
Moment of Inertia of Rotating Components	
• with (SAE 0)	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	990 (2160)

ENGINE MOUNTING

Maximum Bending Moment at Rear Face of Block	3205 (2340)
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EXHAUST SYSTEM

Maximum Back Pressure.....	76.2 (3)
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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	46.5 (12.3)
Minimum Pressure Cap	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.....	48 (7)
-1500 RPM.....	34 (5)

Air-to-Air Core Requirements

Maximum Temp. Rise Between Engine Air Intake and Intake Manifold —1500 / 1800 rpm ..	33 (60)
Maximum Air Press. Drop from Turbo Air Outlet to Intake Manifold — 1500 / 1800 rpm—	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 (17 - 25)
Total System Capacity (With Combo Filters)	74 - 103 (19 - 27)

