



QSK60-G8 Advantage Data Sheet

Cummins, Inc. Columbus, Indiana 47201

Curve Number: FR-6438	Engine Critical Parts List: CPL 8452	Date: 7 Aug 03
Displacement : 60.2 litre (3673 in³)	Bore : 159 mm (6.25 in.)	Stroke : 190 mm (7.48 in.)
No. of Cylinders : 16	Aspiration : Turbocharged and Aftercooled	

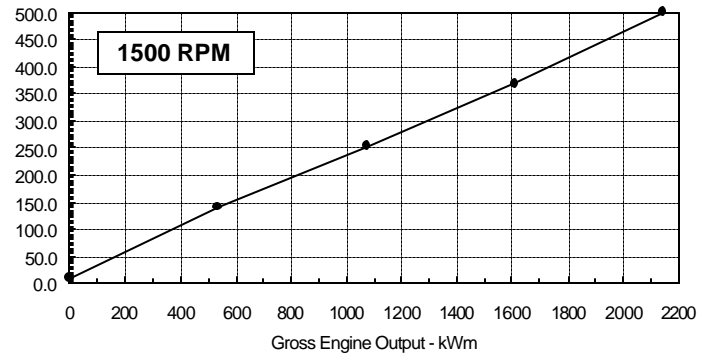
Emergency Standby Ratings for application in Corporate Generator Sets Only

Engine Speed RPM	Standby Power	
	kWm	BHP
1500	2145	2875

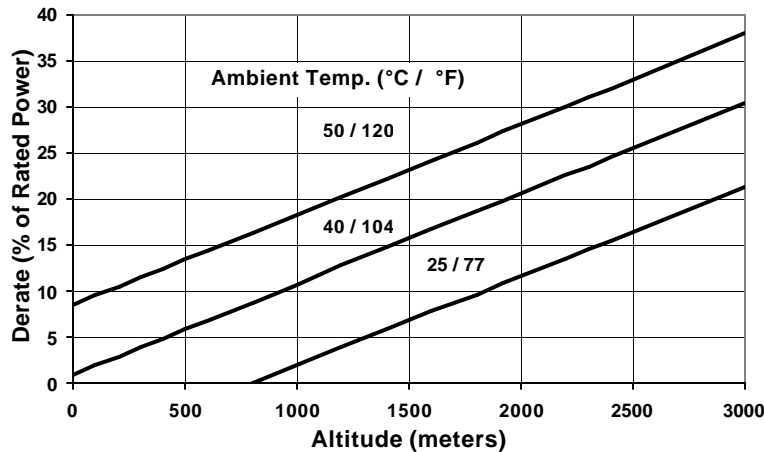
Engine Performance Data @ 1500 RPM

OUTPUT POWER			FUEL CONSUMPTION			
%	kWm	BHP	kg/ kWm-h	lb/ BHP-h	Litre/ hour	U.S. Gal/ hour
STANDBY POWER						
100	2145	2875	0.198	0.326	500	131.8
75	1609	2156	0.194	0.319	368	97.0
50	1072	1438	0.200	0.329	252	66.6
25	536	719	0.222	0.365	140	36.9

Liter/ hour



Power Derate Curve @ 1500 RPM



Operation At Elevated Temperature And Altitude:

For sustained operation above these conditions, derate by an additional 3% per 300 m (1000 ft), and 10.9% 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 70% average load factor and 200 hours of operation per year. This includes less than 5 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.

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:



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Cummins, Inc. Engine Data Sheet

ENGINE MODEL : QSK60-G8

CONFIGURATION NUMBER : D593002GX03

DATA SHEET : DS-6438-B

DATE : 7 Aug 03

PERFORMANCE CURVE : FR-6438

INSTALLATION DIAGRAM

• Fan to Flywheel : 3170455

CPL NUMBER

• Engine Critical Parts List : 8452

GENERAL ENGINE DATA

Type.....	4-Cycle; 60° Vee; 16-Cylinder Diesel	
Aspiration	Turbocharged and Low Temperature	
	Aftercooled (2 Pump / 2 Loop)	
Bore x Stroke.....	159 x 190 (6.25 x 7.48)	
Displacement.....	60.2 (3673)	
Compression Ratio.....	14.5 : 1	
Dry Weight		
Fan to Flywheel Engine (with SAE 0 Flywheel and Flywheel Housing).....	— kg (lb)	7185 (15835)
Wet Weight		
Fan to Flywheel Engine.....	— kg (lb)	7540 (16620)
Moment of Inertia of Rotating Components		
• with FW 6064 Flywheel (SAE 0) & DA 6149.....	— kg • m ² (lb _m • ft ²)	17.86 (424.3)
• with FW 6037 Flywheel (SAE 00) & DA 6149.....	— kg • m ² (lb _m • ft ²)	28.36 (673.6)
Center of Gravity from Front Face of Block.....	— mm (in)	1001 (39.4)
Center of Gravity Above Crankshaft Centerline.....	— mm (in)	219 (8.6)
Maximum Static Loading at Rear Main Bearing.....	— kg (lb)	1134 2500

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 H ₂ O)	6.2 (25)
• with Clean Filter Element.....	— kPa (in H ₂ O)	3.7 (15)

COOLING SYSTEM (Separate Circuit Aftercooling Required)

Coolant Capacity — Engine	— litre (US gal)	159 (42)
— Aftercoolers.....	— litre (US gal)	34 (9)
Minimum Pressure Cap (for Cooling Systems with less than 2m [6 ft.] Static Head).....	— kPa (psi)	76 (11)
Maximum Static Head of Coolant Above Engine Crank Centerline.....	— m (ft)	18.3 (60)

Jacket Water Circuit Requirements:

Maximum Coolant Friction Head External to Engine — 1500 rpm	— kPa (psi)	48 (7)
Maximum Top Tank Temperature for Standby / Prime Power.....	— °C (°F)	104 / 100 (220 / 212)
Thermostat (Modulating) Range.....	— °C (°F)	82 - 93 (180 - 200)

Aftercooler Circuit Requirements:

Maximum Coolant Friction Head External to Engine — 1500 rpm	— kPa (psi)	35 (5)
Maximum Inlet Water Temperature to Aftercoolers @ 25 °C (77 °F)	— °C (°F)	49 (120)
Maximum Inlet Water Temperature to Aftercoolers	— °C (°F)	71 (160)
Thermostat (Modulating) Range.....	— °C (°F)	46 - 57 (115 - 135)

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 OP6086 Oil Pan: Low - High.....	— litre (US gal)	146-176 (38.5-46.5)
Total System Capacity (with Combo Filter).....	— litre (US gal)	195 (51.5)

FUEL SYSTEM

		Cummins HPI-PT	
Type Injection System			
Maximum Restriction at PT Fuel Injection Pump — with Clean Fuel Filter.....	— mm Hg (in Hg)	102	(4.0)
— with Dirty Fuel Filter.....	— mm Hg (in Hg)	203	(8.0)
Maximum Restriction of Engine Fuel Filter Head and Clean Fuel Filter.....	— mm Hg (in Hg)	38	(1.5)
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.....	— litre / hr (US gph)	1515	(400)
Maximum Drain Flow.....	— litre / hr (US gph)	1460	(370)

ELECTRICAL SYSTEM

Cranking Motor (Heavy Duty, Positive Engagement).....	— volt	24
Maximum Allowable Resistance of Cranking Circuit.....	— ohm	.002
Minimum Recommended Battery Capacity		
• Cold Soak @ 10 °C (50 °F) and Above.....	— °F CCA	1800
• Cold Soak @ 0 °C to 10 °C (32 °F to 50 °F).....	— °F CCA	1800
• Cold Soak @ -18 °C to 0 °C (0 °F to 32 °F).....	— °F CCA	2200

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)	-12	(10)
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)	Air Temperature	: 25 °C (77 °F)
Altitude	: 110 m (361 ft)	Relative Humidity	: 30%

Steady State Stability Band at any Constant Load	— %	+/- 0.25
Estimated Free Field Sound Pressure Level of a Typical Generator Set; Excludes Exhaust Noise; at Rated Load and 7.5 m (24.6 ft); 1800 rpm	— dBA	93.4 (est.)
Exhaust Noise at 1 m Horizontally from Centerline of Exhaust Pipe Outlet Upwards at 45°.....	— dBA	108 (est.)

Governed Engine Speed.....	— rpm
Engine Idle Speed.....	— rpm
Gross Engine Power Output	— kW _m (BHP)
Brake Mean Effective Pressure	— kPa (psi)
Piston Speed.....	— m / s (ft / min)
Friction Horsepower.....	— kW _m (HP)
Engine Jacket Water Flow at Stated Friction Head External to Engine:	
• 4 psi Friction Head.....	— litre / s (US gpm)
• Maximum Friction Head.....	— litre / s (US gpm)

Engine Data

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

Engine Aftercooler Data

Heat Rejection to Coolant.....	— kW _m (BTU / min)
Aftercooler Water Flow at Stated Friction Head External to Engine:	
• 2 psi Friction Head	— litre / s (US gpm)
• Maximum Friction Head.....	— litre / s (US gpm)

STANDBY POWER		
	60 hz	50 hz
		1500
		700 - 900
		2145 (2875)
		2848 (413)
		9.5 (1869)
		146 (196)
Not Applicable for 1800 RPM Operation		26.5 (420)
		24.0 (380)
		2605 (5515)
		485 (905)
		6315 (13375)
		25.2:1
		205 (11460)
		620 (35215)
		1515 (86205)
		35 (2000)
		545 (30785)
		7.1 (112)
		6.9 (109)

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

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

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DATA SHEET : DS-6438-B
DATE : 7 Aug 03
CURVE NO. : FR-6438