

DATA SHEET

DIESEL GENERATOR 200KW

MODEL#FDK-CG250/H1

50HZ/1500RPM

CUMMINS MODEL: QSL9-G2



General Features:

- ♦ All qualified generator sets are subjected to a comprehensive performance test which includes 50% load, 70% load, 100% load, 110% load and to check, verify that all control systems, alarm and shut-down protection.
- ♦ Equipped with battery charger and 24V high performance maintenance-free lead-acid starting batteries and connecting cables.
- ♦ Stainless galvanized zinc plates with strong corrosion-proof.
- ♦ Vibration isolators between the engine/alternator and base frame.
- ♦ Equipped with industrial silencer and flexible exhaust hose.
- ♦ Designed to comply with ISO8528/GB2820.
- ♦ Powered by Cummins engine and coupled with Stamford alternator.
- ♦ Water jacket preheater, oil heater and double air cleaner, etc. are available.

FDK Diesel Generator Set Data

Genset Model	FDK-CG250/H1	Engine Make	Cummins
Prime Power	180KW/225KVA	Engine Model	QSL9-G2
Standby Power	200KW/250KVA	Alternator model	Stamford UCDI274J
Output Frequency / Rated speed	50Hz/1500rpm	Control System	DSE7320
Rated Voltage	230V/400V	Phase	Three

(1) **Prime power:** The rating is available for an unlimited of annual operating hours in variable load applications, in accordance with ISO8528-1.A 10% overload is available for a period of 1 hour within 12-hour period of operation, in accordance with ISO 3046-1.

(2) **Standby power:** The rating is applicable for supplying emergency power in variable load applications for up to 200 hours per year in accordance with ISO8528-1. Overload is not allowed.

(3) **Rated voltage:** available with customer requirement.

Engine Specifications (DETAILED in APPENDIX)

Engine Model	QSL9-G2	Aspiration	Turbo-charged
Engine Manufacturer	Cummins (USA)	Bore x Stroke (mm x mm)	114×145
Cylinder quantity	6	Displacement	8.8L
Cylinder Arrangement	In-line	Compression Ratio	17.8:1
Cycle	4	Prime power / Speed (KW/RPM)	204/1500



Standby power/ Speed (KW/RPM)	231/1500	Coolant Capacity (L)	11
Type Injection System	Bosch HPCR	Fuel Consumption at 100% load (L/H)	53 L at 1500rpm
Piston Speed	8.7m/s	Starter motor	DC24V
Friction Energy Output	35kw	Alternator	DC24V
Total Lubrication System Capacity (L)	26.5	Low idle	700-900rpm

Alternator Specifications

Alternator model	UCDI274J	Number of phase	3
Alternator manufacturer	STAMFORD	Rated voltage	400V (Available with custom requirements)
Exciter type	Single bearing, Brushless, Self-excited	Power factor	0.8
Rated output prime power	230KVA	Voltage regulation NL-FL	≤±1%
Rated speed	1500 rpm	Insulation grade	H
Rated frequency	50Hz	Protection grade	IP23

Alternator option: Leroy Somer, MECC, Marathon, Engga, Faraday

Control System DSE7320 (DETAILED in INSTRUCTION)

DSE7320 is an advanced control module based on micro-processor, containing all necessary functions for protection of the genset and the breaker control. It can monitor the mains supply, breaker control and automatically start the engine when the mains are abnormal. Accurately measure various operational parameters and display all values and alarms information on the LCD. In addition, the control module can automatically shut down the engine and indicate the engine failure.

FEATURES

- Microprocessor control, with high stability and credibility.
- Monitoring and measuring operational parameters of the mains supply and genset.
- Indicating operation status, fault conditions, all parameters and alarms.
- Multiple protections; multiple parameters display, like pressure, temp. etc.
- Manual, automatic and remote work mode selectable.
- Real time clock for time and date display, overall runtime display, 250 log entries.
- Overall power output display.
- Integral speed/frequency detecting, telling status of start, rated operation, overspeed etc.
- Communication with PC via RS485 OR RS232 interface, using MODBUS protocol.

Soundproof Enclosure Specification

FDK silent generator is designed by professional acoustic engineers based on years of experience. Now we can make the noise of the generator less than 80-85dB(A) at 1m, or 70-75dB(A) at 7m, 60-65dB(A) at 15m.

FEATURES

- Multi-way air intake and exhaust guarantee the power performance of the generator.
- Large-scale impedance combined type silencer effectively reduce noise of the generator.
- Internal high performance rubber damper and flexible materials reduce vibration.
- Base mounted fuel tank supports the generator running for 8 hours.



Optional

Generator set	Alternator	Low environment Temp	ATS
<input type="checkbox"/> Open generator set <input type="checkbox"/> Silent generator set <input type="checkbox"/> Trailer generator set <input type="checkbox"/> ABB MCCB circuit breaker	<input type="checkbox"/> Stamford <input type="checkbox"/> Marathon <input type="checkbox"/> Mecc Alte <input type="checkbox"/> Leroy Somer <input type="checkbox"/> Farady <input type="checkbox"/> Engga	<input type="checkbox"/> Water heater <input type="checkbox"/> Oil heater <input type="checkbox"/> Battery heater	<input type="checkbox"/> CHINT <input type="checkbox"/> SCHNEIDER <input type="checkbox"/> ABB
Fuel system	Control system	Voltage	Synchronized system
<input type="checkbox"/> 12hrs base tank <input type="checkbox"/> 24hrs base tank <input type="checkbox"/> Dual wall base fuel tank <input type="checkbox"/> Outside fuel tank	<input type="checkbox"/> AMF function <input type="checkbox"/> ATS control cabinet <input type="checkbox"/> DSE7320 <input type="checkbox"/> DSE7510 <input type="checkbox"/> GU620A	<input type="checkbox"/> 415/240V <input type="checkbox"/> 400/230V <input type="checkbox"/> 380/220V <input type="checkbox"/> 220/127V <input type="checkbox"/> 200/115V	<input type="checkbox"/> CHINT Cabinet <input type="checkbox"/> SCHNEIDER Cabinet <input type="checkbox"/> DSE8610 Module <input type="checkbox"/> COMAQ Module <input type="checkbox"/> DEIF Module

Dimension & Weight

Open

Overall Size: L×W×H (mm)	3135×1100×1928
Weight (kg)	2300

Soundproof Version

Overall Size: L×W×H (mm)	3200×1133×1766
Weight (kg)	3094

Sales Promises

- ◆ FDK provides a full line of brand new and high quality products. Each and every unit is strictly factory tested before shipment.
- ◆ Quality warranty is according to our standard conditions: 12 months from BL date or 1000 running hours, whichever comes first.
- ◆ Service and parts are available from FDK or distributors in your location.
- ◆ FDK guarantee use **BRAND NEW & GENUINE MACHINE.**





Cummins Inc.
Columbus, Indiana 47202-3005
Engine Data Sheet

Basic Engine Model:
QSL9-G2 NR3

Engine Critical Parts List:

CPL: 1754
CPL: 8695

Curve Number:
FR92067
FR91546

Date:
29 AUG 12

G-DRIVE
QSL
1

Displacement : **8.8 litre (543 in³)**

Bore : **114 mm (4.49 in.)** Stroke : **145 mm (5.69 in.)**

No. of Cylinders : **6**

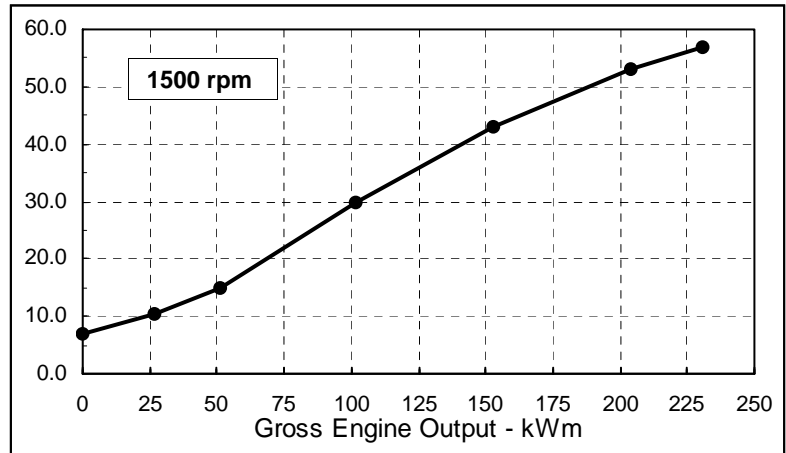
Aspiration : **Turbocharged and Charge Air Cooled**

Engine Speed rpm	Standby Power		Prime Power		Continuous Power	
	kWm	hp	kWm	hp	kWm	hp
1500	231	310	204	274	174	233
1800	272	364	239	320	203	272

Engine Performance Data @ 1500 rpm

OUTPUT POWER			FUEL CONSUMPTION			
%	kWm	hp	kg/ kWm-h	lb/ hp-h	litre/ hour	US gal/ hour
STANDBY POWER						
100	231	310	0.211	0.347	57	15.1
PRIME POWER						
100	204	274	0.221	0.364	53	14.0
75	153	205	0.238	0.392	43	11.3
50	102	137	0.251	0.413	30	8.0
25	51	68	0.249	0.410	15	3.9
CONTINUOUS POWER						
100	174	233	0.230	0.379	47	12.4

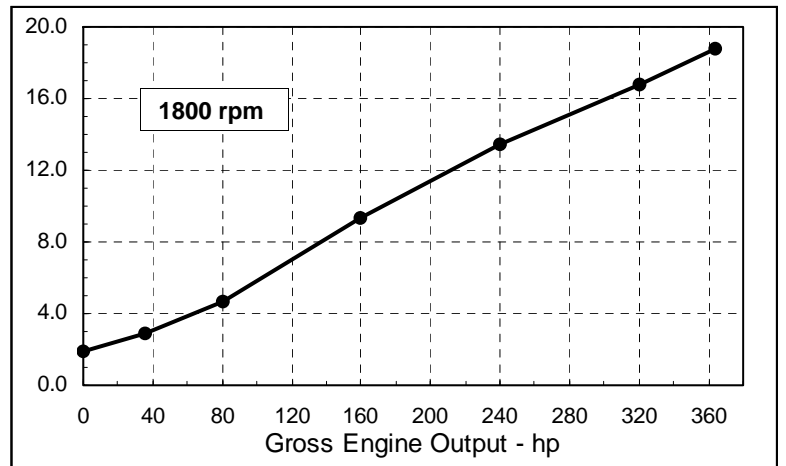
litre/hour



Engine Performance Data @ 1800 rpm

OUTPUT POWER			FUEL CONSUMPTION			
%	kWm	hp	kg/ kWm-h	lb/ hp-h	litre/ hour	US gal/ hour
STANDBY POWER						
100	272	364	0.223	0.366	71	18.8
PRIME POWER						
100	239	320	0.226	0.372	64	16.8
75	179	240	0.242	0.397	51	13.4
50	119	160	0.252	0.414	35	9.3
25	60	80	0.255	0.420	18	4.7
CONTINUOUS POWER						
100	203	272	0.234	0.385	56	14.8

US gallons/hour



CONVERSIONS: (litres = US Gal x 3.785) (US 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 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.

Data Subject to Change Without Notice

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 10 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/US 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.

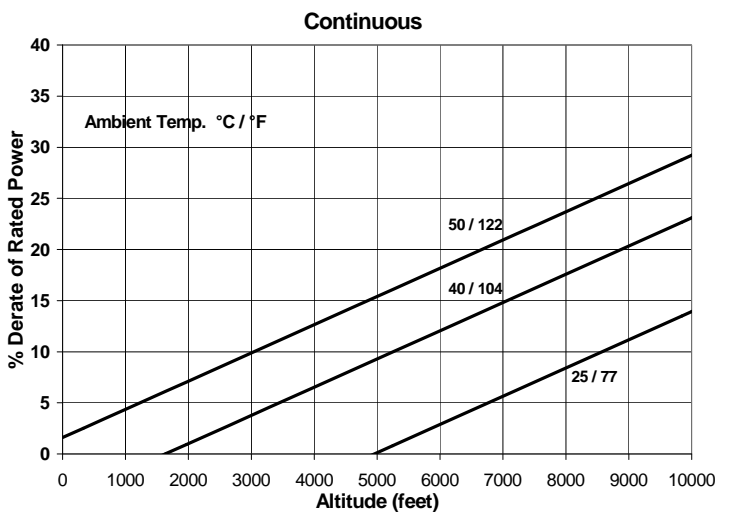
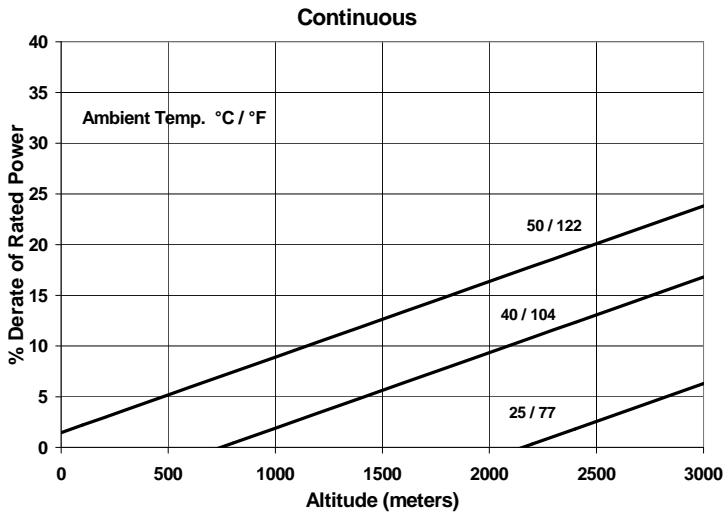
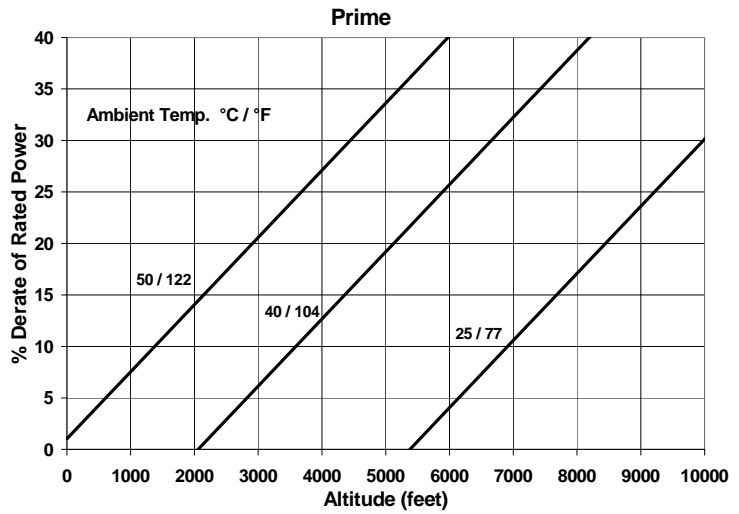
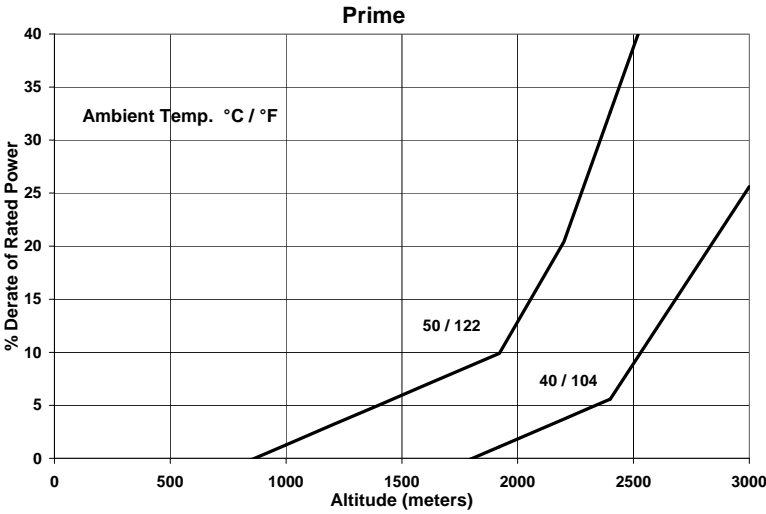
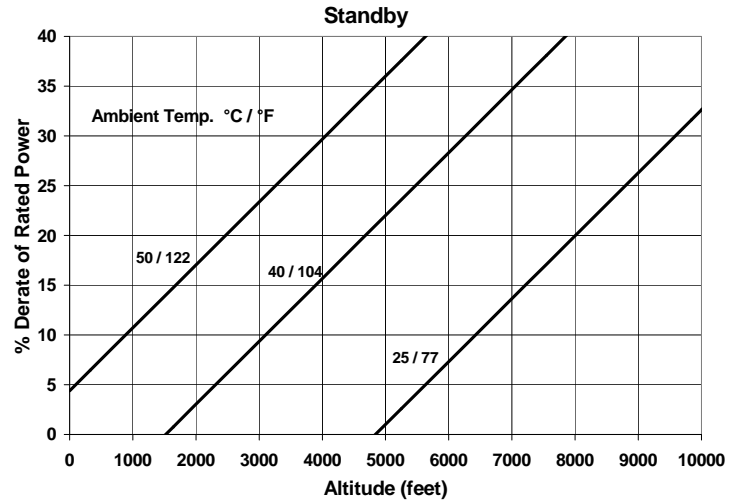
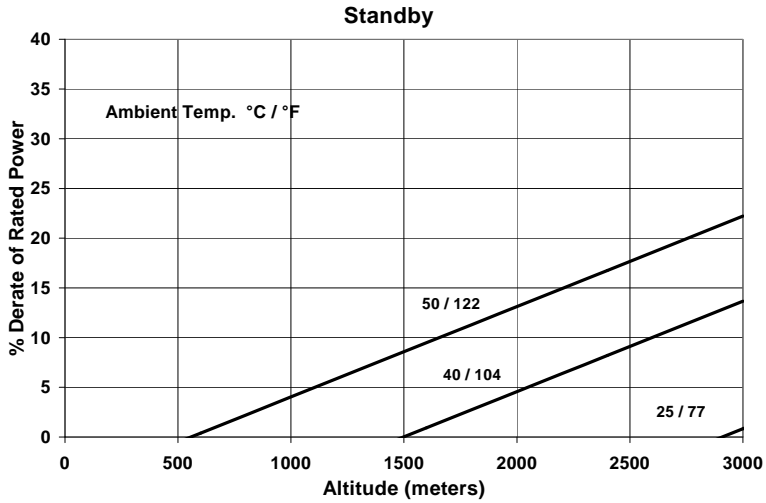
Data Status: --Limited Production--

Data Tolerance: ± 5%

Chief Engineer:

1500 rpm Derate Curves

1800 rpm Derate Curves



Operation At Elevated Temperature And Altitude:

For **Standby/Prime Operation** above these conditions, derate by an additional 3.0% per 300 m (1000 ft), and 10% per 10 °C (18 °F).
For **Continuous Operation** above these conditions, derate by an additional 3.0% per 300 m (1000 ft), and 8% per 10 °C (18 °F).

Operation At Elevated Temperature And Altitude:

For **Standby/Prime Operation** above these conditions, derate by an additional 6.0% per 300 m (1000 ft), and 15% per 10 °C (18 °F).
For **Continuous Operation** above these conditions, derate by an additional 3.0% per 300 m (1000 ft), and 7% per 10 °C (18 °F).

FUEL SYSTEM

Type Injection System	Bosch HPCR	
Maximum Restriction at Lift Pump	— in Hg (kPa)	6 (20.3)
Maximum Allowable Head on Injector Return Line (Consisting of Friction Head and Static Head).....	— in Hg (kPa)	10 (33.9)
Maximum Fuel Flow to Injector Pump	— US gph (litre/hr)	22 (83)
Maximum Return Fuel Flow	— US gph (litre/hr)	19 (72)
Maximum Fuel Inlet Temperature	— °F (°C)	160 (70)

ELECTRICAL SYSTEM

Cranking Motor (Heavy Duty, Positive Engagement).....	— volt	12	24
Battery Charging System, Negative Ground	— ampere	100	70
Maximum Allowable Resistance of Cranking Circuit	— ohm	0.001	0.002
Minimum Recommended Battery Capacity			
• Cold Soak @ 0 °F to 32 °F (-18 °C to 0 °C)	— 0°F CCA	1500	(750)

COLD START CAPABILITY

Minimum Ambient Temperature for NFPA 110 Cold Start (90 degree F Coolant Temperature)	— °F (°C)	40	(4)
Minimum Ambient Temperature for Unaided Cold Start.....	— °F (°C)	10	(-12)

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	118.8
Exhaust Noise at 1 m Horizontal from Centerline of Exhaust Pipe Outlet Upwards at 45 ° 1800 rpm.....	— dBA	119.5

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

	STANDBY		PRIME POWER	
	60 hz	50 hz	60 hz	50 hz
	1800	1500	1800	1500
	700 - 900	700 - 900	700 - 900	700 - 900
Governed Engine Speed	rpm	rpm	rpm	rpm
Engine Idle Speed.....	rpm	rpm	rpm	rpm
Gross Engine Power Output.....	hp (kW _m)	hp (kW _m)	hp (kW _m)	hp (kW _m)
Brake Mean Effective Pressure.....	psi (kPa)	psi (kPa)	psi (kPa)	psi (kPa)
Piston Speed	ft/min (m/s)	ft/min (m/s)	ft/min (m/s)	ft/min (m/s)
Friction Horsepower.....	HP (kW _m)	HP (kW _m)	HP (kW _m)	HP (kW _m)
Engine Water Flow at Stated Friction Head External to Engine:				
• 2.5 psi Friction Head.....	US gpm (litre/s)	US gpm (litre/s)	US gpm (litre/s)	US gpm (litre/s)
• Maximum Friction Head	US gpm (litre/s)	US gpm (litre/s)	US gpm (litre/s)	US gpm (litre/s)
Intake Air Flow	cfm (litre/s)	cfm (litre/s)	cfm (litre/s)	cfm (litre/s)
Exhaust Gas Temperature	°F (°C)	°F (°C)	°F (°C)	°F (°C)
Exhaust Gas Flow	cfm (litre/s)	cfm (litre/s)	cfm (litre/s)	cfm (litre/s)
Air to Fuel Ratio	air : fuel	air : fuel	air : fuel	air : fuel
Radiated Heat to Ambient	BTU/min (kW _m)	BTU/min (kW _m)	BTU/min (kW _m)	BTU/min (kW _m)
Heat Rejection to Jacket Coolant.....	BTU/min (kW _m)	BTU/min (kW _m)	BTU/min (kW _m)	BTU/min (kW _m)
Heat Rejection to Exhaust	BTU/min (kW _m)	BTU/min (kW _m)	BTU/min (kW _m)	BTU/min (kW _m)
Heat Rejected to Fuel	BTU/min (kW _m)	BTU/min (kW _m)	BTU/min (kW _m)	BTU/min (kW _m)
Heat Rejected to Aftercooler.....	BTU/min (kW _m)	BTU/min (kW _m)	BTU/min (kW _m)	BTU/min (kW _m)
Charge Air Flow.....	lb/min (kg / min)	lb/min (kg / min)	lb/min (kg / min)	lb/min (kg / min)
Turbocharger Compressor Outlet Pressure	in Hg (kPa)	in Hg (kPa)	in Hg (kPa)	in Hg (kPa)
Turbocharger Compressor Outlet Temperature.....	°F (°C)	°F (°C)	°F (°C)	°F (°C)

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

ENGINE MODEL : QSL9-G2 NR3
DATASHEET : FR92067
FR91546
DATE : 29 AUG 12