

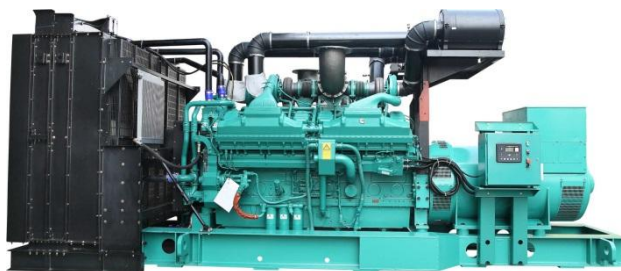
DATA SHEET

DIESEL GENERATOR 650KW

MODEL#FDK-CC815/H2

60HZ/1800RPM

CUMMINS MODEL: QSK19-G8



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-CC815/H2
Prime Power	545KW/680KVA
Standby Power	650KW/813KVA
Output Frequency / Rated speed	60Hz/1800rpm
Rated Voltage	230V/400V

Engine Make	Cummins CHINA
Engine Model	QSK19-G8
Alternator model	Stamford HCI544F
Control System	DSE7320
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	QSK19-G8
Engine Manufacturer	Cummins CHINA CCEC
Cylinder quantity	6
Cylinder Arrangement	In-line
Cycle	4

Aspiration	Turbo-charged
Bore x Stroke (mm x mm)	159×159
Displacement	18.9L
Compression Ratio	15.0:1
Prime power / Speed (KW/RPM)	608kw/1500
Standby power/ Speed (KW/RPM)	721kw/1500



Type Injection System	Cummins MCRS	Fuel Consumption at 100% load (L/H)	151 at 1800rpm
Piston Speed	9.5m/s	Starter motor	24V
Friction Energy Output	59kw	Low idle	700-900pm
Total Lubrication System Capacity (L)	84.4	Coolant Capacity (L)	41.6

Alternator Specifications

Alternator model	HCI544F	Number of phase	3
Alternator manufacturer	STAMFORD	Rated voltage	440V (Available with custom requirements)
Exciter type	Single bearing, Brushless, Self-excited	Power factor	0.8
Rated output prime power	825KVA	Voltage regulation NL-FL	≤±1%
Rated speed	1800 rpm	Insulation grade	H
Rated frequency	60Hz	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.



ISO9001:2008

FDK reserves the right to change the specifications and designs without notice.

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)	3450×1620×2120
Weight (kg)	5200


Soundproof Version

Overall Size: L×W×H (mm)	5000×1900×2250
Weight (kg)	7600

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.**



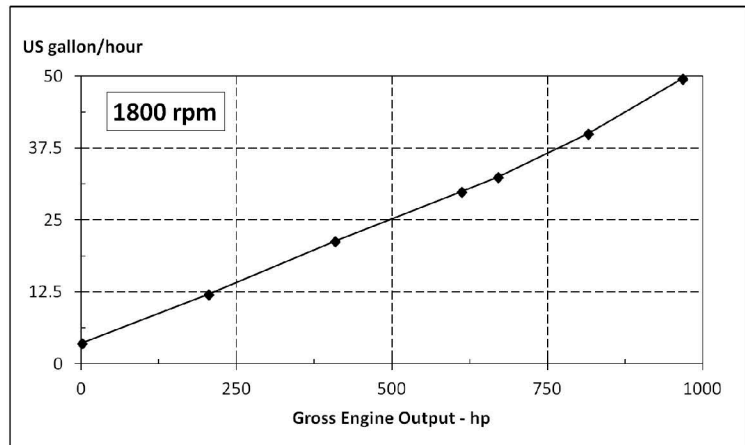
	Cummins Inc. Columbus, Indiana 47202-3005	Basic Engine Model: QSK19-G8	Curve Number: FR4582	<i>G-DRIVE</i> QSK 1
	ENGINE PERFORMANCE DATASHEET	Engine Critical Parts List: CPL : 3866	Date: 01 FEB 13	

Compression Ratio : 15.0 : 1	Displacement : 1,150 in³ (18.9 L)
Fuel System : Cummins MCRCs	Aspiration : Turbocharged and Charge Air Cooled
Emission Certification : U.S. EPA Tier 2	

Engine Speed	Standby Power		Prime Power		Continuous Power	
RPM	bhp	kWm	bhp	kWm	bhp	kWm
1800	967	721	815	608	670	500

Engine Performance Data @ 1800 rpm

OUTPUT POWER			FUEL CONSUMPTION			
%	bhp	kWm	lb/ hp·h	kg/ kWm·h	US gal/ hour	litre/ hour
STANDBY POWER						
100	967	721	0.364	0.221	49.5	188
PRIME POWER						
100	815	608	0.349	0.212	40.0	151
75	611	456	0.347	0.211	29.9	113
50	408	304	0.371	0.226	21.3	81
25	204	152	0.422	0.257	12.1	46
CONTINUOUS POWER						
100	670	500	0.344	0.209	32.4	123



CONVERSIONS:(litres = US Gal x 3.785) (US 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 2.0 in Hg exhaust back pressure.

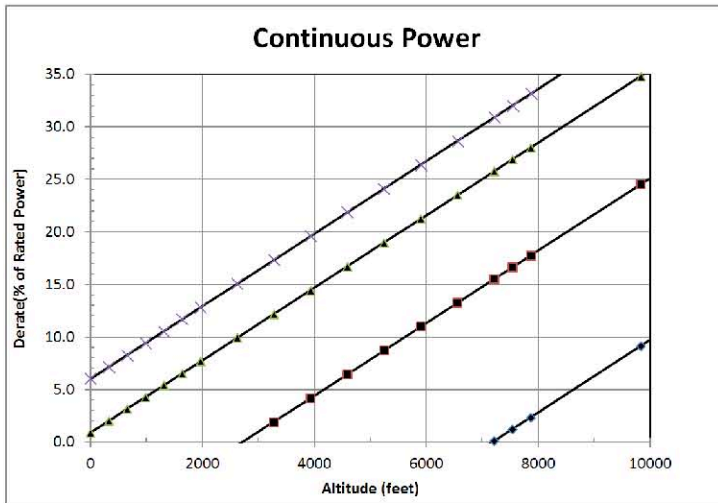
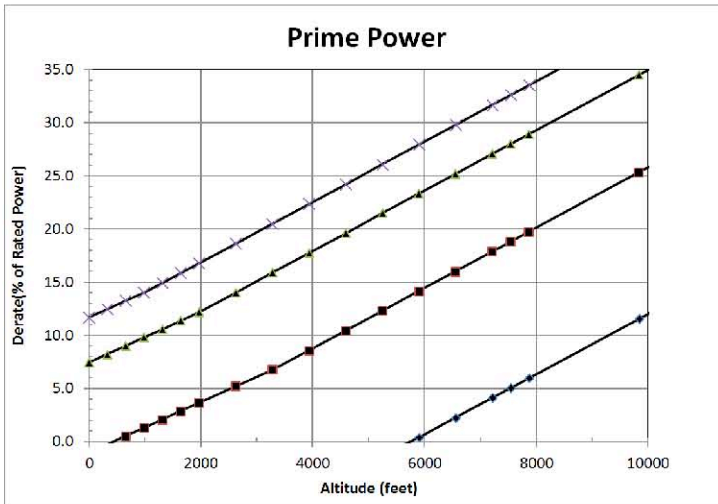
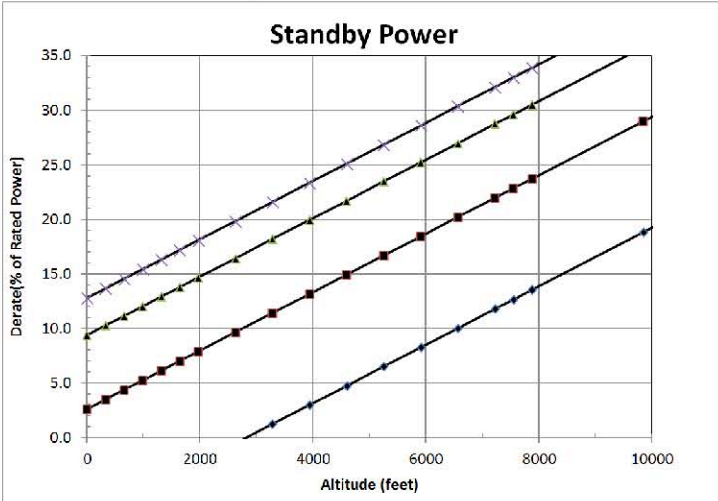
The fuel consumption data is based on No. 2 diesel fuel weight at 0.85 kg/litre (7.1 lbs/US gal). Power output curves are based on the engine operating with fuel system, water pump and lubricating oil pump; not included are battery charging alternator, fan, optional equipment and driven components.

Data Status: --Limited Production--

Data Tolerance: ± 5%

Chief Engineer: 

1800 rpm Derate Curves

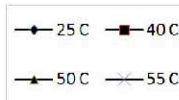


Operation at Elevated Temperature and Altitude:

For **Standby** operation above these conditions, derate by an additional 3% per 1000 ft (300 m), and 7% per 18 delta deg F (10 delta deg C)

For **Prime** operation above these conditions, derate by an additional 3% per 1000 ft (300 m), and 9% per 18 delta deg F (10 delta deg C)

For **Continuous** operation above these conditions, derate by an additional 3% per 1000 ft (300 m), and 10% per 18 delta deg F (10 delta deg C)



Cummins Inc.

Engine Data Sheet

ENGINE MODEL : QSK19-G8

CONFIGURATION NUMBER : D193103GX03

DATA SHEET: FR4582

DATE : 01 FEB 13

INSTALLATION DIAGRAM• Fan to Flywheel: *TBD***CPL NUMBER**

• Engine Critical Parts List: 3866

GENERAL ENGINE DATA

Type	Four Cycle; Inline; 6 Cylinder
Aspiration	Turbocharged and Charge Air Cooled
Bore x Stroke	6.25 x 6.25 159 x 159
Displacement	1150 18.9
Compression Ratio	15.0 : 1
Dry Weight (Approximate), Fan to Flywheel Engine	— lb (kg) 4190 1901
Wet Weight (Approximate), Fan to Flywheel Engine	— lb (kg) 4350 1973
Moment of Inertia of Rotating Components • with FW 4023 Flywheel	— lb _m • ft ² (kg • m ²) 194.6 8.2
Center of Gravity from Rear Face of Block	— in (mm) 23.55 598
Center of Gravity Above Crankshaft Centerline	— in (mm) 11.1 282
Maximum Static Loading at Rear Main Bearing	— lb (kg) 2000 907

ENGINE MOUNTING

Maximum Bending Moment at Rear Face of Block

— lb • ft (N • m)	1000	1356
-------------------	------	------

EXHAUST SYSTEM

Maximum Back Pressure @ 1800 RPM

— in Hg (kPa)	2	6.8
---------------	---	-----

AIR INDUCTION SYSTEM

Maximum Intake Air Restriction

• with Dirty Filter Element	— in H ₂ O (kPa)	25	6.2
• with Normal Duty Air Cleaner and Clean Filter Element @ 1800 RPM	— in H ₂ O (kPa)	15	3.7

COOLING SYSTEM

Coolant Capacity — Engine Only	— US gal (litre)	11	41.6
Minimum Pressure Cap	— psi (kPa)	15	103
Maximum Static Head of Coolant Above Engine Crank Centerline	— ft (m)	60	18.3
Maximum Coolant Temperature (Max Top Tank Temp) for Standby / Prime Power	— °F (°C)	220 / 212	104 / 100
Thermostat (Modulating) Range	— °F (°C)	181 - 203	83 - 95

Jacket Water Circuit Requirements

Maximum Coolant Friction Head External to Engine @ 1800 RPM	— psi (kPa)	5	34.5
---	-------------	---	------

Charge Air Cooler Requirements

Maximum Temp. Rise Between Engine Air Intake and Intake Manifold - 1800 rpm	— °F (°C)	53	29
Maximum Air Pressure Drop from Turbo Air Outlet to Intake Manifold - 1800 rpm	— in Hg (kPa)	4	13.5
Maximum Intake Manifold Temperature @ 77 °F (25 °C) Ambient - 1800 rpm	— °F (°C)	130	54
Maximum Intake Manifold Temperature for Engine Protection (Shut Down Threshold)	— °F (°C)	180	82

LUBRICATION SYSTEM

Oil Pressure @ Idle Speed	— psi (kPa)	20	138
@ Governed Speed	— psi (kPa)	40 - 60	275.8 - 413.7
Maximum Oil Temperature	— °F (°C)	250	121
Oil Capacity with OP 4084 Oil Pan : High - Low	— US gal (litre)	19 - 17	71.9 - 64.4
Total System Capacity (Including Filter)	— US gal (litre)	22.3	84.4

FUEL SYSTEM

Type Injection System	Cummins MCERS	4
Maximum Restriction at Lift Pump(clean/dirty filter)..... — in Hg (kPa)	5 / 9	16.9 / 30
Maximum Allowable Head on Injector Return Line (Consisting of Friction Head and Static Head) — in Hg (kPa)	10	34
Maximum Fuel Inlet Temperature	160	71
Maximum Supply Fuel Flow @ 1800 RPM..... — US gph (litre/hr)	130	492
Maximum Return Fuel Flow @ 1800 RPM..... — US gph (litre/hr)	78	295

ELECTRICAL SYSTEM

Cranking Motor (Heavy Duty, Positive Engagement)	— volt	24
Minimum Recommended Battery Capacity		
• Cold Soak @ 50 °F (10 °C) and above	— °F CCA	600
• Cold Soak @ 32 °F to 50 °F (0 °C to 10 °C)	— °F CCA	640
• Cold Soak @ 0 °F to 32 °F (-18 °C to 0 °C)	— °F CCA	900
Maximum Starting Circuit Resistance.....	— Ohm	0.002

COLD START CAPABILITY

Unaided Cold Start

Minimum Cranking Speed.....	— RPM	150
Minimum Ambient Temperature for Unaided Cold Start.....	— °F (°C)	10 -12.2

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		93.3
Exhaust Noise at 1 m Horizontal from Centerline of Exhaust Pipe Outlet Upwards at 45° @ 1800 RPM.....	— dBA		118.9

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

	STANDBY POWER		PRIME POWER	
	60 hz	50 hz	60 hz	50 hz
Governed Engine Speed	1,800	N/A	1,800	N/A
Engine Idle Speed	700 - 900	N/A	700 - 900	N/A
Gross Engine Power Output.....	967 (721)	N/A	815 (608)	N/A
Brake Mean Effective Pressure.....	370 (2,552)	N/A	312 (2,151)	N/A
Piston Speed	1,875 (9.5)	N/A	1,875 (9.5)	N/A
Friction Horsepower.....	79 (59)	N/A	79 (59)	N/A
Engine Water Flow at Stated Friction Head External to Engine:				
• 2.5 psi Friction Head.....	196 (742)	N/A	196 (742)	N/A
• Maximum Friction Head	175 (662)	N/A	175 (662)	N/A
Intake Air Flow	2,225 (1,050)	N/A	1,989 (939)	N/A
Exhaust Gas Temperature	989 (532)	N/A	906 (486)	N/A
Exhaust Gas Flow	5,815 (2,745)	N/A	4,901 (2,313)	N/A
Air to Fuel Ratio.....	27.1 : 1	N/A	29.9 : 1	N/A
Radiated Heat to Ambient	4,288 (76)	N/A	3,468 (61)	N/A
Heat Rejection to Jacket Coolant.....	14,734 (259)	N/A	10,535 (185)	N/A
Heat Rejection to Exhaust.....	33,713 (593)	N/A	29,407 (517)	N/A
Heat Rejected to *Fuel.....	252 (4.4)	N/A	252 (4.4)	N/A
Heat Rejected to Aftercooler.....	13,199 (232)	N/A	8,863 (156)	N/A
Charge Air Flow.....	159 (73)	N/A	142 (64)	N/A
Turbocharger Compressor Outlet Pressure.....	98 (332)	N/A	81 (274)	N/A
Turbocharger Compressor Outlet Temperature.....	465 (241)	N/A	406 (208)	N/A

Engine Data

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

ATA CAC

Heat Rejected to Aftercooler.....	BTU/min (kW)
Charge Air Flow.....	lb/min (kg/min)
Turbocharger Compressor Outlet Pressure.....	in Hg (kPa)
Turbocharger Compressor Outlet Temperature.....	°F (°C)

* This is the maximum heat rejection to fuel.

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

ENGINE MODEL : QSK19-G8
 DATA SHEET : FR4582
 DATE : 01 FEB 13