



# CHONGQING CUMMINS ENGINE COMPANY LTD. ENGINE PERFORMANCE CURVE

CONFIGURATION  
D193091DX02

ENGINE MODEL: KTA19-G8E

CURVE NUMBER: FR725

CPL No.: 427

DATE: 2022/12/16

Displacement: 19 L (1150) in<sup>3</sup>  
BoreXStroke: 159X159 mm (6.25X6.25 in.)  
Compress Ratio: 14.7:1

Aspiration: Turbocharged , Aftercooled  
Fuel System: Cummins PT

RATING

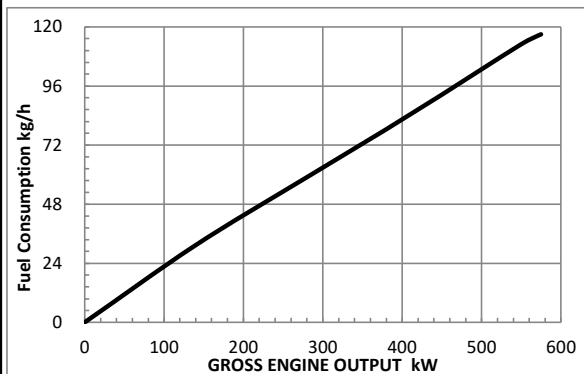
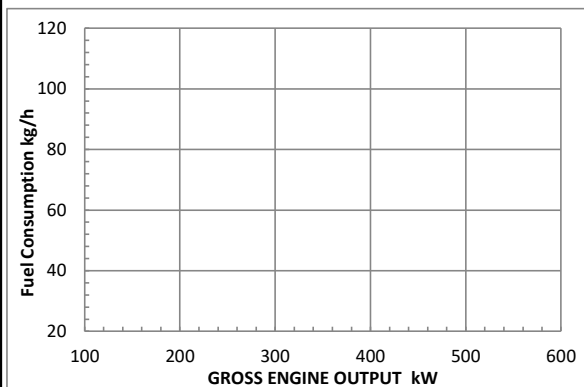
Standby: 561 kW(752 BHP)@1500 r/min  
Prime: 500 kW(670 BHP)@1500 r/min

All data is based on the engine operating with fuel system, water pump, and 20 in. H<sub>2</sub>O(4.98kPa) inlet air restriction with 5.8 in.(147mm) inner diameter, and with 2 in. Hg(7kPa) exhaust restriction with 8 in.(203mm) inner diameter; not included are alternator, fan, optional equipment and driven components. Coolant flows and heat rejection data based on coolant as 50% ethylene glycol/50% water. All data is subject to change without notice.

## GROSS ENGINE POWER OUTPUT

SPEED rpm	STANDBY POWER		PRIME POWER		CONTINUOUS POWER	
	BHP	kW	BHP	kW	BHP	kW
1500	752	561	670	500	590	440

## FUEL CONSUMPTION



OUTPUT POWER			CONSUMPTION		BFSC	
%	BHP	kW	Lb/h	kg/h	g/kW.h	Lb/BHP.h
1800RPM						
STANDBY						
100	752	561	256	116	207	0.340
PRIME						
100	670	500	228	103	207	0.340
75	503	375	174	79	211	0.347
50	335	250	122	56	222	0.365
25	168	125	73	33	263	0.433
CONTINUOUS						
100	590	440	200	90.5	206	0.338

Curves shown above represent gross engine performance capabilities obtained and corrected in accordance with SAE J1995 conditions of 29.61 in. Hg(100kPa) barometric pressure [300ft.(91m) altitude] 77deg F (25 deg C) inlet temperature, and 0.30 in. Hg(1kPa) water vapor pressure with No.2 diesel or a fuel corresponding to ASTM D2.

TECHNICAL DATA DEPT.

CERTIFIED WITHIN 5%

CHIEF ENGINEER 朱荣

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# POWER RATING APPLICATION GUIDELINES FOR GENERATOR DRIVE ENGINES

These guidelines have been formulated to ensure proper application of generator drive engines in A.C. generator set installations. Generator drive engines are not designed for and shall not be used in variable speed D.C. generator set applications.

**STANDBY POWER RATING** is 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.

**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.

**PRIME POWER RATING** is 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 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**

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 Prime Power rating should use the Continuous Power rating.

**Reference Standards:**

BS-5514 and DIN-6271 standards are based on ISO-3046.

**Operation At Elevated Temperature And Altitude:**

The engine may be operated at:

1800RPM up to 5,000 ft.(1500m) and 104°F (40°C) without power deration.

1500RPM up to 5,000 ft.(1500m) and 104°F (40°C) without power deration.

For sustained operation above these conditions, derate by 4% per 1,000ft. (300m), and 1% per 10°F (2% per 11°C).



# CHONGQING CUMMINS ENGINE COMPANY LTD. ENGINE DATA SHEET

ENGINE MODEL(S): KTA19-G8E

STAND\_BY: 561 kW(752 BHP)@1500 r/min

PRIME: 500 kW(670 BHP)@1500 r/min

CPL NUMBER: 427

REFERENCE INFORMATION:

CONFIGURATION..... D193091DX02

DATASHEET..... FR725

DATE..... 2022/12/16

## GENERAL ENGINE DATA

Type.....	4 Cycle , In-line , 6 Cylinder
Aspiration.....	Turbocharged , Aftercooled
Bore— $\text{in. (mm)} \times \text{stroke—in. (mm)}$ .....	6.25×6.25 (159×159)
Displacement— $\text{in}^3 (\text{L})$ .....	1150 (19)
Compression Ratio.....	14.7:1
Dry Weight	
Fan Hub to Flywheel Engine — $\text{lb (kg)}$ .....	4085 (1853)
Radiator Cooled Engine — $\text{lb (kg)}$ .....	4572 (2074)
Wet Weight	
Fan Hub to Flywheel Engine — $\text{lb (kg)}$ .....	4245 (1925)
Radiator Cooled Engine — $\text{lb (kg)}$ .....	4808 (2181)
Moment of Inertia of Rotating Components	
·With FW 4001 Flywheel — $\text{lbm.ft}^2 (\text{kg}\cdot\text{m}^2)$ .....	170 (7.2)
·With FW 4006 Flywheel — $\text{lbm.ft}^2 (\text{kg}\cdot\text{m}^2)$ .....	199 (8.4)
C.G. from Rear Face of Flywheel Housing— $\text{in (mm)}$ .....	28.4 (721)
C.G. Distance Above Crank Centerline— $\text{in (mm)}$ .....	9.0 (229)
Maximum Allowable Bending Moment at Rear Face of Block — $\text{N}\cdot\text{m (lb.ft)}$ .....	2000 (907)
Firing Order.....	1-5-3-6-2-4

## ENGINE MOUNTING

Maximum Bending Moment at Rear Face of Block — $\text{lb.ft (N}\cdot\text{m)}$ .....	1000 (1356)
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## EXHAUST SYSTEM

Maximum Allowable Back Pressure — $\text{in.Hg (kPa)}$ .....	1.48 (5)
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## AIR INDUCTION SYSTEM

Maximum Allowable Intake Air Restriction With Heavy Duty Air Cleaner

Dirty Element — $\text{in.H}_2\text{O (kPa)}$ .....	25 (6.23)
Clean Element — $\text{in.H}_2\text{O (kPa)}$ .....	15 (3.73)
Intake Air Alarm Temperature (1500/1800 rpm)— $^{\circ}\text{C} (^{\circ}\text{F})$ .....	82 (180)

## COOLING SYSTEM

Pressure Cap — $\text{PSI (kPa)}$ .....	15 (103)
Max. Pressure Drop Across Any External Cooling System Circuit — $\text{PSI (kPa)}$ .....	5.0 (34.5)
Engine Coolant Flow — $\text{US gpm (L/s)}$ .....	89.4 (5.6)

## Engines with Low Temperature Aftercooling (LTA)

### Main Engine Circuit

Standard Thermostat (modulating) Range — $^{\circ}\text{F} (^{\circ}\text{C})$ .....	180-202 (82-95)
Heat Rejection to Engine Coolant — $\text{Btu/min [kW]}$ .....	13535 (238)

### Aftercooler (LTA) Circuit

LTA Thermostat (modulating) Range, Start to Open — $^{\circ}\text{F} (^{\circ}\text{C})$ .....	154-159 (67.8-70.6)
Full Open — $^{\circ}\text{F} (^{\circ}\text{C})$ .....	172 (77.8)
Heat Rejection to Engine Coolant — $\text{Btu/min [kW]}$ .....	6085 (107)
Maximum Coolant Inlet Temperature from LTA Cooler — $^{\circ}\text{F} (^{\circ}\text{C})$ .....	131 (55)

## LUBRICATION SYSTEM

Oil Pressure

@ Idle — $\text{PSI (kPa)}$ .....	20 (138)
@ Rated Speed — $\text{PSI (kPa)}$ .....	50-70 (345-483)
Maximum Allowable Oil Temperature — $^{\circ}\text{F} (^{\circ}\text{C})$ .....	250 (121)
Oil Pan Capacity (Option OP4019)	
High — $\text{U.S. Gal (L)}$ .....	10 (38)
Low — $\text{U.S. Gal (L)}$ .....	8.5 (32)
Total System Capacity (Including By-Pass Filter) — $\text{U.S. Gal (L)}$ .....	13.2 (50)
Angularity of Standard Oil Pan ( Option OP4019)	



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## FUEL SYSTEM

Fuel Injection System..... Cummins PT

Maximum allowable Restriction to PT Fuel Pump

With Clean Fuel Filter —in.Hg(kPa)..... 4.0 (13.5)

With Dirty Fuel Filter —in.Hg(kPa)..... 8.0 (27.1)

Maximum Allowable Injector Return Line Restriction

With Check Valves —in.Hg(kPa)..... 6.5 (22.0)

Less Check Valves —in.Hg(kPa)..... 2.5 (8.5)

Maximum Fuel Flow to Injection Pump —US gph(L/h)..... 58 (220)

## ELECTRICAL SYSTEM

Starter (Heavy Duty, Positive Engagement)—Volt..... 24

Battery Recharge System,Negative ground—A..... 40

Maximum Allowable Resistance of Starting Circuit—Ω..... 0.002

Minimum Recommended Battery Capacity

·Cold Soak at 50°F(10℃) or Above—0°F CCA..... 600

·Cold Soak at 32~50°F(0~10℃) or Above—0°F CCA..... 640

·Cold Soak at 0~32°F(-18~0℃) or Above—0°F CCA..... 900

## COLD START CAPABILITY

### PERFORMANCE DATA

All data is based on the engine operating with fuel system, water pump, lubricating oil pump, air cleaner, and muffler, not included are alternator, compressor, fan, optional equipment and driven components. Data represents gross engine performance capabilities obtained and corrected in accordance with SAE J1349 conditions fo 29.61 in Hg(100 kPa) barometric pressure[300ft. (90 m) altitude], 77°F (25℃) inlet air temperature, and 0.30 in. Hg (1kPa) water vapor pressure with fuel corresponding to grade No. 2-D per ASTM D975. All data is subject to change without notice.

	STAND_BY		PRIME	
	60 Hz	50 Hz	60 Hz	50 Hz
Engine Speed r/min.....		1500		1500
Idle Speed r/min.....		675-775		675-775
Gross Power Output BHP(kW).....		752 (561)		670 (500)
Brake Mean Effective Pressure PSI(kPa).....		343 (2362)		305 (2105)
Piston Speed ft/min(m/s).....		1565 (8.0)		1565 (8.0)
Friction Horsepower BHP(kW).....		60 (45)		60 (45)
<b><u>Engine Data with Dry Type Exhaust Manifold</u></b>				
Intake Air Flow CFM( L/s).....		5816 (2745)		5185 (2447)
Exhaust Gas Temperature °F(°C).....		1022 (550)		914 (490)
Exhaust Gas Flow CFM( L/s).....		6062 (2861)		5403 (2550)
Air to Fuel Ratio A/F.....		24:1		25:1
Heat Rejection to Ambient BTU/min(kW).....		1592 (28)		1422 (25)
Heat Rejection to Coolant BTU/min(kW).....		19619 (345)		17458 (307)
Heat Rejection to Exhaust BTU/min(kW).....		26273 (462)		23430 (412)

Engine Model: KTA19-G8E

Datasheet: FR725

Date: 2022/12/16

CHONGQING CUMMINS ENGINE CO., LTD.

CHONGQING, CHINA, 400031