



CHONGQING CUMMINS ENGINE COMPANY LTD. ENGINE PERFORMANCE CURVE

CONFIGURATION
D193088DX02

ENGINE MODEL: KTA19-G3

CURVE NUMBER: FR-4129

CPL No.: 1457

DATE: 2013/6/25

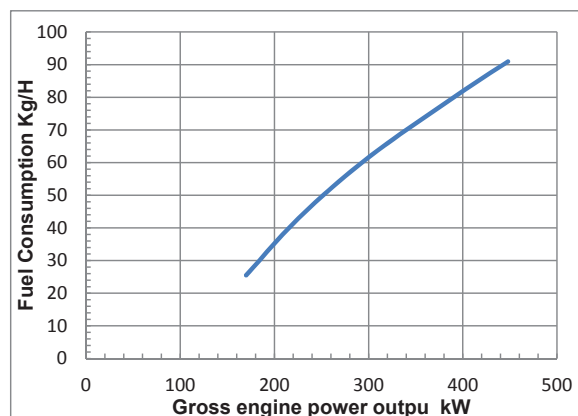
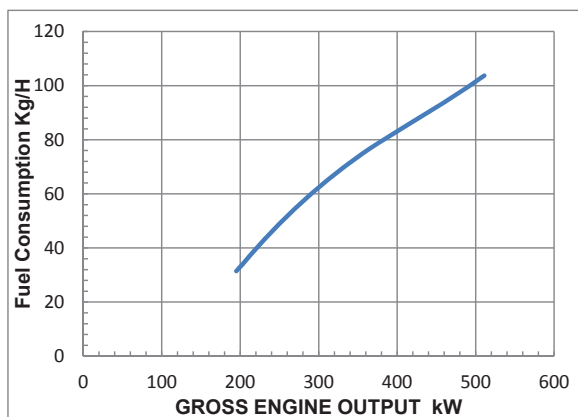
Displacement: 19L (1150) Aspiration: Turbocharged, Aftercooled **RATING**
 BoreXStroke: 159X159mm (6.25X6.25 in.) Fuel System: Cummins PT 511 kW(685 BHP)@1800r/min
 Compress Ratio: 13.9:1 No. of Cylinder: 6 448 kW(600 BHP)@1500r/min

All data is based on the engine operating with fuel system, water pump, and 20 in. H₂O(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
1800	685	511	620	463	520	388
1500	600	448	540	403	475	354

FUEL CONSUMPTION



	OUTPUT POWER		CONSUMPTION		BFSC		
	%	BHP	kW	Lb/h	Kg/h	g/kW.h	Lb/BHP.h
1800RPM							
STANDBY							
100	685	511	229	104	203	0.334	
PRIME							
100	620	463	208	94	204	0.335	
75	465	347	161	73	211	0.347	
50	349	260	114	52	199	0.328	
25	262	195	69	31	161	0.265	
1500RPM							
STANDBY							
100	600	448	201	91	203	0.334	
PRIME							
100	540	403	182	82	205	0.337	
75	405	302	137	62	205	0.338	
50	304	227	96	43	191	0.314	
25	228	170	56	26	150	0.247	

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 fuel.

TECHNICAL DATA DEPT.

CERTIFIED WITHIN 5%

CHIEF ENGINEER

Cummins Confidential



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

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

Maximum Raw Water Inlet Pressure @ Heat Exchanger HX 6076 —PSI(kPa).....	50	(344.7)
Maximum Allowable Top Tank Temperature (Stand_by/Prime) —°F(°C).....	220/212	(104/100)
Standard Thermostat (modulating) Range— °F(°C).....	180-200	(82-93)
Maximum Allowable Coolant Temperature —°F(°C).....	205	(96.1)
Minimum Coolant Makeup Capacity —U.S.Gal(L).....	1.6	(6.1)
Maximum Raw water Inlet Friction —PSI(kPa).....	10	(254.0)
Minimum Allowable Fill Rate —U.S.GPM(L/min).....	5	(18.9)
Maximum Allowable Initial Fill Time —min.....	5	
Minimum Allowable Coolant Expansion Space —% of System Capacity.....	5	
Maximum Allowable Inlet Coolant Temperature at Limited situation (Stand_by/Prime) —	160/150	(71/66)

LUBRICATION SYSTEM

Oil Pressure

@ Idle —PSI(kPa).....	20	(138)
@ Rated Speed —PSI(kPa).....	50-70	(345-483)
Oil Flow at Rated Speed —U.S.GPM(L/min).....	40	(151.4)
Maximum Allowable Oil Temperature —°F(°C).....	250	(121.0)

By-Pass Filter Capacity

Spin-on Cartridge Type —U.S.Gal(L).....	0.7	(2.6)
Replaceable Element Type —U.S.Gal(L)	2.9	(11.0)

Oil Pan Capacity (Option OP4019)

High —U.S.Gal(L).....	10.0	(37.9)
Total System Capacity (Excluding By-Pass Filter) —U.S.Gal(L).....	22.3	(84.4)
Total System Capacity (Excluding By-Pass Filter) —U.S.Gal(L).....	13.2	(50.0)

Angularity of Standard Oil Pan (Option OP

Front Down.....	30°	
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FUEL SYSTEM

Fuel Injection System..... Cummins PT

Maximum Fuel Consumption at Maximum Rated Output and Speed —lb/h(kg/h).....

Maximum allowable Restriction to PT Fuel Pump

With Clean Fuel Filter —in.Hg(kPa).....	4	(13.55)
With Dirty Fuel Filter —in.Hg(kPa).....	9	(30.48)

Maximum Fuel Supply at Rated Power and Speed —lb/h(kg/h).....

Maximum Allowable Injector Return Line Restriction

With Check Valves —in.Hg(kPa).....	7	(22)
Less Check Valves —in.Hg(kPa).....	3	(8)

Minimum Allowable Fuel Tank Vent Capability —ft³/h (L/h) 15 (425)

(With 2.5 in. Hg (63 mm Hg) or Less Back Pressure)

Starter (Heavy, Anode)—Volt..... 24

Battery Recharge System,Negative ground—A..... 35

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

Minimum Recommended Battery Capacity

·Cold Soak at 50°F(10°C) or Above—0°F CCA.....	600	
·Cold Soak at 32~50°F(0~10°C) or Above—0°F CCA.....	640	
·Cold Soak at 0~32°F(-18~0°C) or Above—0°F CCA.....	900	



CHONGQING CUMMINS ENGINE COMPANY LTD. ENGINE DATA SHEET

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 for 29.61 in Hg(100 kPa) barometric pressure[300ft. (90 m) altitude], 77°F (25 °C) inlet air temperature, and 0.30 in. Hg (1kPa) water vapor pressure with No. 2 diesel fuel or a fuel corresponding to ASTM D2. All data is subject to change without notice.

	STAND_BY		PRIME	
	60 Hz	50 Hz	60 Hz	50 Hz
Engine Speed r/min.....	1800	1500	1800	1500
Idle Speed r/min.....	675-775	675-775	675-775	675-775
Gross Power Output BHP(kW).....	685(511)	600(448)	620(463)	540(403)
Brake Mean Effective Pressure PSI(kPa).....	260(1795)	274(1889)	236(1627)	246(1699)
Piston Speed ft/min(m/s).....	1870(9.5)	1555(7.9)	1870(9.5)	1555(7.9)
Friction Horsepower BHP(kW).....	83(62)	54(40)	83(62)	54(40)
Intake Air Flow CFM(L/s).....	1370(647)	1130(533)	1295(611)	1030(486)
Exhaust Gas Flow CFM(L/s).....	3630(1713)	3155(1489)	3345(1579)	2850(1345)
Exhaust Gas Temperature °F(°C).....	915(491)	990(532)	880(471)	975(524)
Heat Rejection to Ambient BTU/min(kW).....	4185(74)	3665(64)	3805(0)	3315(58)
Heat Rejection to Coolant BTU/min(kW).....	17810(313)	15600(274)	16120(283)	14040(247)
Engine Water Flow L/s(U.S.GPM) @ 3psi.....	196(12.4)	162(10.2)	196(12.4)	162(10.2)

Change Log		
Date	Author	Change Description
2013/6/25	Jiang Li	Release