



CHONGQING CUMMINS ENGINE COMPANY LTD. ENGINE PERFORMANCE CURVE

CONFIGURATION
D233019DX02

ENGINE MODEL: KTA38-G1B

CURVE NUMBER: FR-

CPL No.: 0851

DATE: 2020/11/26

Displacement: 38L (2300 in3)
BoreXStroke: 159X159mm (6.25X6.25 in.)
Compress Ratio: 15.5:1

Aspiration: Turbocharged , Aftercooled
Fuel System: Cummins PT
No. of Cylinder: V-12

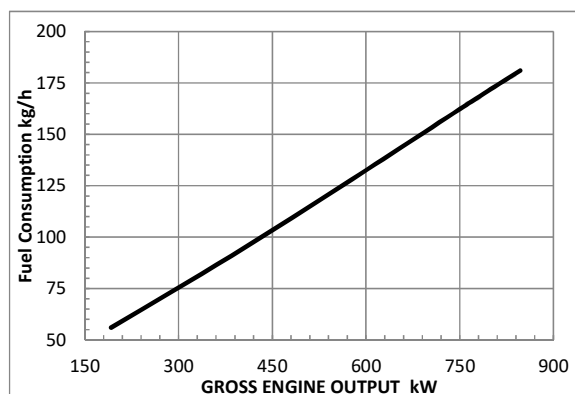
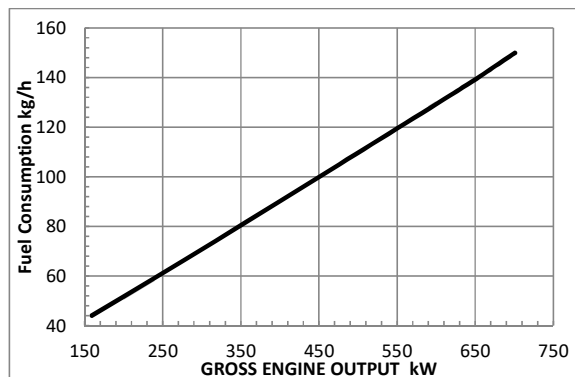
RATING
Prime: 634 kW(850 BHP)@1500 r/min
768 kW(1030 BHP)@1800 r/min

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
1500	940	701	850	634	810	604
1800	1135	847	1030	768	900	671

FUEL CONSUMPTION



OUTPUT POWER			CONSUMPTION		BFSC	
%	BHP	kW	Lb/h	Kg/h	g/kW.h	Lb/BHP.h
1500RPM						
STNADBY						
100	940	701	311	141	201	0.331
PRIME						
100	850	634	282	128	202	0.332
75	638	476	216	98	206	0.339
50	425	317	154	70	221	0.363
25	213	159	93	42	265	0.436
CONTINUOUS						
100	810	604	269	122	202	0.332
1800RPM						
STANDBY						
100	1135	847	377	171	202	0.332
PRIME						
100	1030	768	340	154	201	0.330
75	772	576	260	118	205	0.337
50	515	384	187	85	221	0.364
25	257	192	117	53	276	0.454
CONTINUOUS						
100	900	671	299	136	202	0.332

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%
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CHIEF ENGINEER



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. (1,500m) and 104°F (40°C) without power deration.

1500RPM up to 5,000 ft. (1,500m) 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): KTA38-G1B**REFERENCE INFORMATION:**

STAND_BY: 701 kW(940 BHP)@1500 r/min
847 kW(1135 BHP)@1800 r/min
PRIME: 634 kW(850 BHP)@1500 r/min
768 kW(1030 BHP)@1800 r/min

CONFIGURATION..... D233019DX02
CPL NUMBER 0851
DATASHEET FR-
DATE 2020/11/26

GENERAL ENGINE DATA

Type..... 4 Cycle , 60° Vee , 12 Cylinder
Aspiration..... Turbocharged , Aftercooled
Bore— $\text{in. (mm)} \times \text{stroke—in. (mm)}$ 6.25 $\times$ 6.25 (159 $\times$ 159)
Displacement— $\text{in}^3(\text{L})$ 2300 (38)
Compression Ratio..... 15.5:1
Dry Weight
Fan Hub to Flywheel Engine — lb (kg) 8555 (3880)
Wet Weight
Fan Hub to Flywheel Engine — lb (kg) 9065 (4112)
Moment of Inertia of Rotating Components (Excluding Flywheel) — $\text{lb}_m.\text{ft}^2(\text{kg}\cdot\text{m}^2)$ 94 (3.96)
·With FW 6001 Flywheel — $\text{lb}_m.\text{ft}^2(\text{kg}\cdot\text{m}^2)$ 248.0 (10.45)
·With FW 6011 Flywheel — $\text{lb}_m.\text{ft}^2(\text{kg}\cdot\text{m}^2)$ 493.0 (20.78)
C.G. Distance From Rear Face of Flywheel Housing (FH6024)— in (mm) 38.6 (980)
C.G. Distance Above Crank Centerline— in (mm) 11 (279)
Maximum Allowable Bending Moment at Rear Face of Block — $\text{N}\cdot\text{m (lb.ft)}$ 2000 (907)
Firing Order..... 1R-6L-5R-2L-3R-4L-6R-1L-2R-5L-4R-3L

ENGINE MOUNTING

Maximum Bending Moment at Rear Face of Block — $\text{lb.ft (N}\cdot\text{m)}$ 4500 (6101)

EXHAUST SYSTEM

Maximum Allowable Back Pressure — in.Hg (kPa) 3 (10)
Exhaust Pipe Size Normally Acceptable — in (mm) 6 (152)

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)

COOLING SYSTEM

Coolant Capacity

Engine Only — U.S.Gal (L) 31.2 (118.1)
Minimum Allowable Pressure Cap @ sea level— PSI (kPa) 10 (69)
Maximum Pressure Drop Across Any External Cooling System Circuit — PSI (kPa) 5.0 (34.5)
Maximum Allowable Top Tank Temperature (Stand_by/Prime) — $^{\circ}\text{F (}^{\circ}\text{C)}$ 220/212 (104/100)
Standard Thermostat (modulating) Range— $^{\circ}\text{F (}^{\circ}\text{C)}$ 180-200 (82-93)
Maximum Coolant Pressure (Exclusive of Pressure Cap) — PSI (kPa) 15 (103)
Minimum Allowable Fill Rate — U.S.GPM (L/min) 5 (18.9)
Minimum Allowable Coolant Expansion Space —% of System Capacity..... 5
Maximum Allowable Deaeration Time —min..... 25



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LUBRICATION SYSTEM

Oil Pressure

@ Idle —PSI(kPa).....	20	(138)
@ Rated Speed —PSI(kPa).....	45-65	(310-448)
Oil Flow at Rated Speed —U.S.GPM(L/min).....	124	(469)
Maximum Allowable Oil Temperature —°F(°C).....	250	(121)
By-Pass Filter Capacity		
Spin-on Cartridge Type —U.S.Gal(L).....	2 X 0.7	(2 X 2.6)
Oil Pan Capacity (Option OP6024)		
High —U.S.Gal(L).....	30.0	(114.0)
Low —U.S.Gal(L).....	23.0	(87.4)
Total System Capacity (Excluding By-Pass Filter) —U.S.Gal(L).....	35.7	(135.1)
Angularity of Standard Oil Pan (Option OP6024)		
Front Down.....	30°	
Front Up.....	30°	

FUEL SYSTEM

Fuel Injection System.....	Cummins PT	
Maximum allowable Restriction to PT Fuel Pump		
With Clean Fuel Filter —in.Hg(kPa).....	4	(13.55)
With Dirty Fuel Filter —in.Hg(kPa).....	8	(27.09)
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)
Minimum Allowable Fuel Tank Vent Capability —ft ³ /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.....	1200	
·Cold Soak at 32~50°F(0~10°C) or Above—0°F CCA.....	1280	
·Cold Soak at 0~32°F(-18~0°C) or Above—0°F CCA.....	1800	

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 to 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.



CHONGQING CUMMINS ENGINE COMPANY LTD. ENGINE DATA SHEET

	STAND_BY		PRIME	
	60 Hz	50 Hz	60 Hz	50 Hz
Engine Speed r/min.....	1800	1500	1800	1500
Idle Speed r/min.....	575 ~ 650	575 ~ 650	575 ~ 650	575 ~ 650
Gross Power Output BHP(kW).....	1135 (847)	940 (701)	1030 (768)	850 (634)
Brake Mean Effective Pressure PSI(kPa).....	217 (1496)	216 (1489)	223 (1538)	195 (1344)
Piston Speed ft/min(m/s).....	1870 (9.5)	1555 (7.9)	1870 (9.5)	1555 (7.9)
Friction Horsepower BHP(kW).....	170 (127)	115 (86)	170 (127)	115 (86)
Intake Air FlowCFM(L/s).....	2750 (1298)	1850 (873)	2551 (1204)	1699 (802)
Exhaust Gas Flow CFM(L/s).....	7287 (3439)	5255 (2480)	6655 (3141)	4780 (2256)
Exhaust Gas Temperature °F(°C).....	916 (491)	1015 (546)	894 (479)	1000 (538)
Heat Rejection to Ambient BTU/min(kW).....	7336 (129)	6028 (106)	6710 (118)	5516 (97)
Heat Rejection to Coolant BTU/min(kW).....	29458 (518)	24396 (429)	26785 (471)	22065 (388)

Engine Model: KTA38-G1B

Data Sheet: FR-

Date: 2020/11/26

CHONGQING CUMMINS ENGINE CO., LTD.

CHONGQING, CHINA, 400031