



CHONGQING CUMMINS ENGINE COMPANY LTD. ENGINE PERFORMANCE CURVE

CONFIGURATION
D233019DX02

ENGINE MODEL: KTA38-G1

CURVE NUMBER: FR6080

CPL No.: 0851

DATE: 2020/6/15

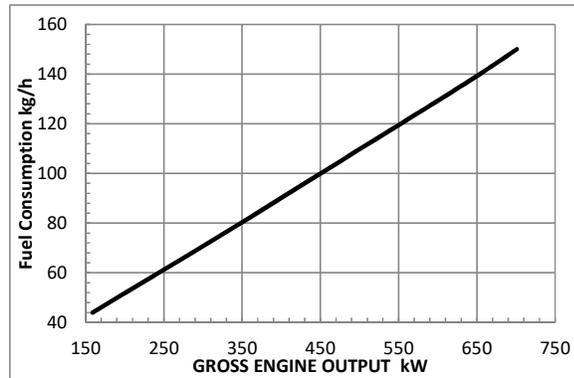
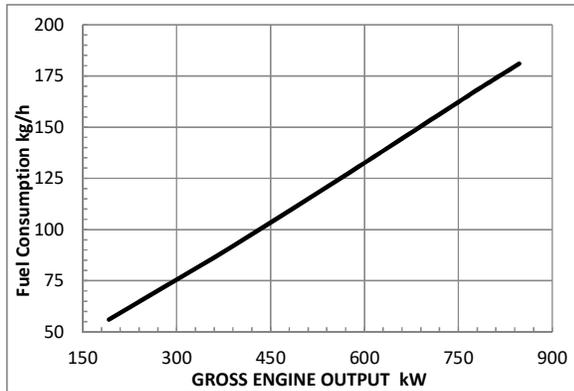
Displacement: 38L (2300 in3) Aspiration: Turbocharged , Aftercooled RATING
 BoreXStroke: 159X159mm (6.25X6.25 in.) Fuel System: Cummins PT Standby: 847 kW(1135 BHP)@1800 r/min
 Compress Ratio: 14.5:1 No. of Cylinder : V-12 701 kW(940 BHP)@1500 r/min

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
1800	1135	847	1030	769	900	672
1500	940	701	850	634	810	604

FUEL CONSUMPTION



	OUTPUT POWER		CONSUMPTION		BFSC		
	%	BHP	kW	Lb/h	Kg/h	g/kW.h	Lb/BHP.h
1800RPM							
STNADBY							
100	1135	847	399	181	214	0.352	
PRIME							
100	1030	769	365	166	216	0.355	
75	773	577	281	128	221	0.364	
50	515	385	201	91	237	0.389	
25	258	192	124	56	292	0.480	
CONTINUOUS							
100	900	672	324	147	219	0.360	
1500RPM							
STANDBY							
100	940	701	330	150	213	0.351	
PRIME							
100	850	634	300	136	215	0.353	
75	637	476	230	105	220	0.362	
50	425	317	163	74	233	0.384	
25	212	159	97	44	279	0.459	
CONTINUOUS							
100	810	604	289	131	217	0.357	

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 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-G1
REFERENCE INFORMATION:

STAND_BY: 847 kW(1135 BHP)@1800 r/min
 701 kW(940 BHP)@1500 r/min
 PRIME: 769 kW(1030 BHP)@1800 r/min
 634 kW(850 BHP)@1500 r/min

CONFIGURATION..... D233019DX02
 CPL NUMBER 0851
 DATASHEET FR6080
 DATE 2020/6/15

GENERAL ENGINE DATA

Type.....	4 Cycle , 60° Vee , 12 Cylinder
Aspiration.....	Turbocharged , Aftercooled
Bore—in.(mm)×stroke—in.(mm).....	6.25×6.25 (159×159)
Displacement—in ³ (L).....	2300 (38)
Compression Ratio.....	14.5:1
Dry Weight	
Fan Hub to Flywheel Engine —lb(kg).....	8200 (3719)
Radiator Cooled Engine —lb(kg).....	9625 (4366)
Wet Weight	
Fan Hub to Flywheel Engine —lb(kg).....	8700 (3946)
Radiator Cooled Engine —lb(kg).....	11030 (5003)
Moment of Inertia of Rotating Components (Excluding Flywheel) —lb _m .ft ² (kg•m ²).....	94 (3.96)
·With FW 6001 Flywheel —lb _m .ft ² (kg•m ²).....	248.0 (10.45)
·With FW 6011 Flywheel —lb _m .ft ² (kg•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 —N•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 —lb.ft(N•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 —in.H₂O(kPa)..... 25 (6.23)
 Clean Element —in.H₂O(kPa)..... 15 (3.73)

COOLING SYSTEM

Coolant Capacity
 Engine Only —U.S.Gal(L)..... 32.7 (123.8)
 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) —°F(°C)..... 220/212 (104/100)
 Standard Thermostat (modulating) Range— °F(°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).....	40.0	(151.4)
Low —U.S.Gal(L).....	32.0	(121.1)
Total System Capacity (Excluding By-Pass Filter) —U.S.Gal(L).....	35.7	(135.1)
Angularly 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 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.



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.....	725-775	725-775	725-775	725-775
Gross Power Output BHP(kW).....	1135(847)	940(701)	1030(769)	850(634)
Brake Mean Effective Pressure PSI(kPa).....	216(1488)	214(1478)	196(1351)	194(1336)
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)	2550(1204)	1700(802)
Exhaust Gas Flow CFM(L/s).....	7285(3439)	5255(2480)	6655(3141)	4780(2256)
Exhaust Gas Temperature °F(°C).....	915(491)	1015(546)	895(479)	1000(538)
Heat Rejection to Ambient BTU/min(kW).....	7330(129)	6055(106)	6690(118)	5495(97)
Heat Rejection to Coolant BTU/min(kW).....	29510(519)	24440(430)	26780(471)	22100(389)
Engine Water Flow L/s(U.S.GPM) @ 3psi.....	390(24.6)	310(19.6)	390(24.6)	310(19.6)

Change Log		
Date	Author	Change Description
2013/6/25	Jiang Li	Release
2020/6/15	Zhang Xw	Update the parameters of fuel consumption