



CHONGQING CUMMINS ENGINE COMPANY LTD. ENGINE PERFORMANCE CURVE

CONFIGURATION:
D233020DX02

ENGINE MODEL: KTA38-G2B

CURVE NUMBER: FR60193

CPL No.: 3660

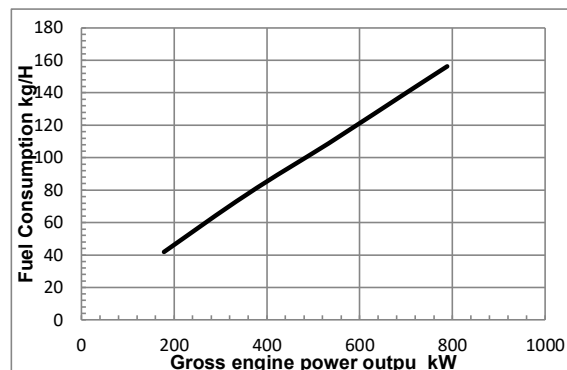
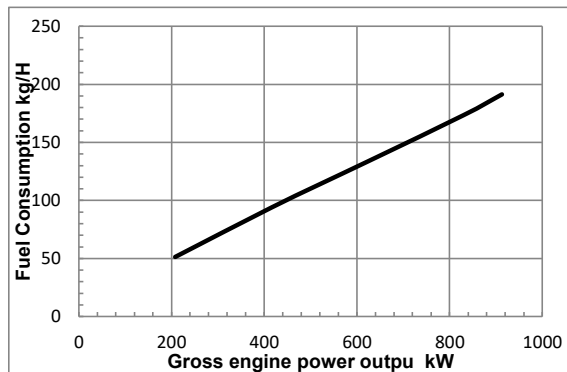
DATE: 2021/9/2

Displacement: 38 L (2300in.³) Aspiration: Turbocharged, Aftercooled Rating
BoreXStroke: 159X159mm (6.25X6.25 in.) Fuel System: Cummins PT 60Hz Stand by: 913 kW(1224 HP)@1800 RPM
Compress Ratio: 14.5:1 No. of Cylinder: 12 50Hz Stand by: 789 kW(1057 HP)@1500 RPM
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	1224	913	1113	830	-	-
1500	1057	789	953	711	-	-

FUEL CONSUMPTION



OUTPUT POWER			CONSUMPTION		BFSC	
%	BHP	kW	Lb/h	kg/h	g/kW.h	Lb/BHP.h
1800RPM						
STANDBY						
100	1224	913	422	191	209	0.344
PRIME						
100	1113	830	382	173	209	0.343
75	835	623	294	133	214	0.352
50	557	415	207	94	226	0.371
25	278	208	113	51	247	0.407
1500RPM						
STANDBY						
100	1057	789	345	156	198	0.326
PRIME						
100	953	711	313	142	200	0.328
75	715	533	240	109	204	0.335
50	477	356	170	77	217	0.357
25	238	178	92	42	235	0.387

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 or a fuel corresponding to ASTM D2.

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).



REFERENCE INFORMATION:

CONFIGURATION..... D233020DX02
CPL NUMBER 3660
PERFORMANCE CURVE NUMBER..... FR60193
DATE..... 2021/9/2

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)
Wet Weight		
Fan Hub to Flywheel Engine —lb(kg).....	8700	(3946)
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 (tkg•m ²).....	248	(10.45)
·With FW 6011 Flywheel —lb _m .ft ² (tkg•m ²).....	493	(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 Static Load for Back-end Main Bearing —lb(kg).....	2000	(907)
Firing Order.....	1R-6L-5R-2L-3R-4L-6R-1L-2R-5L-4R-3L	

Maximum Allowable Bending Moment at Rear Face of Block —lb.ft(N•m)..... 3000 (4067)

Maximum Allowable Back Pressure —in.Hg(kPa).....3 (10)

Maximum Allowable Intake Air Restriction With Heavy Duty Air Cleaner

Dirty Element —in. H ₂ O(kPa).....	25	(6.23)
Clean Element —in. H ₂ O(kPa).....	15	(3.73)

Coolant Capacity

Engine Only —U.S.Gal(L).....	32.7	(123.8)
Minimum Allowable Pressure Cap @ sea level— PSI(kPa).....	10	(69)
Maximum Coolant Friction Head External to Engine @1800 rpm —PSI(kPa).....	10	(68.9)
@1500 rpm —PSI(kPa).....	8	(55.2)
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 Coolant Makeup Capacity —U.S.Gal(L).....	6.3	(23.8)
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	

Oil Pressure

@ Low idle speed —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)



CHONGQING CUMMINS ENGINE COMPANY LTD. ENGINE DATA SHEET

Oil Pan Capacity (Option OP6023)		
High —U.S.Gal(L).....	30.1	(114.0)
Low —U.S.Gal(L).....	23.1	(87.4)
Total System Capacity (Including By-Pass Filter) —U.S.Gal(L).....	35.7	(135.1)
Angularity of Standard Oil Pan (Option OP6023)		
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 (8.4 kPa) or Less Back Pressure)		

ELECTRICAL SYSTEM AND START SYSTEM

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

Stability at Any Invariables Load —%..... ±0.25

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.

	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).....	1224 (913)	1057 (789)	1113 (830)	953 (711)
Brake Mean Effective Pressure PSI(kPa).....	234 (1616)	241 (1665)	211 (1458)	217 (1499)
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).....	2901 (1369)	1949 (920)	2651 (1251)	1801 (850)
Exhaust Gas Flow CFM(L/s).....	7795 (3679)	5581 (2634)	6971 (3290)	5081 (2398)
Exhaust Gas Temperature °F(°C).....	936 (502)	1026 (552)	905 (485)	1006 (541)
Heat Rejection to Ambient BTU/min(kW).....	7734 (136)	6312 (111)	6995 (123)	5744 (101)
Heat Rejection to Coolant BTU/min(kW).....	31221 (549)	25477 (448)	28207 (496)	23145 (407)
Engine Water Flow L/s(U.S.GPM) @ 4psi.....	390 (24.6)	311 (19.6)	390 (24.6)	311 (19.6)

Engine Model: KTA38-G2B

Data Sheet: FR60193

Date: 2021/9/2

CHONGQING CUMMINS ENGINE CO., LTD.

CHONGQING, CHINA, 400031