



CHONGQING CUMMINS ENGINE COMPANY LTD. ENGINE PERFORMANCE CURVE

CONFIGURATION
D233020DX02

ENGINE MODEL: KTA38-G2A

CURVE NUMBER: FR6925

CPL No.: 3660

DATE: 2021/9/1

Displacement: 38L (2300)
BoreXStroke: 159X159mm (6.25X6.25 in.)
Compress Ratio: 14.5:1

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

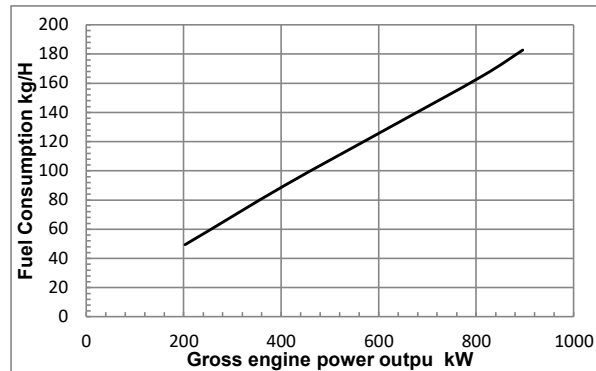
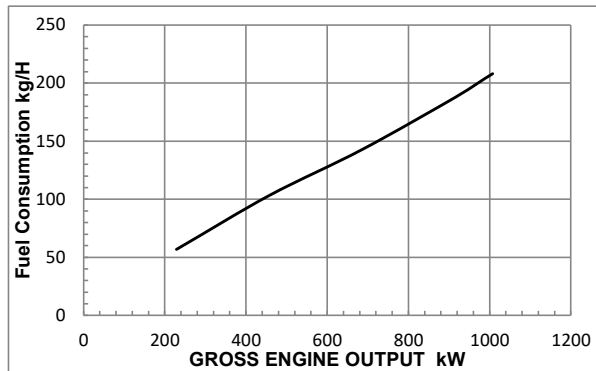
RATING
60Hz Stand by: 1007 kW(1350 BHP)@1800 r/min
50Hz Stand by: 896 kW(1200 BHP)@1500 r/min

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	1350	1007	1226	915	-	-
1500	1200	896	1090	813	-	-

FUEL CONSUMPTION



OUTPUT POWER			CONSUMPTION		BFSC	
%	BHP	kW	Lb/h	kg/h	g/kW.h	Lb/BHP.h
1800RPM						
STNADBY						
100	1350	1007	459	208	207	0.340
PRIME						
100	1226	915	414	188	205	0.338
75	920	686	315	143	208	0.342
50	613	458	228	104	226	0.372
25	307	229	125	57	248	0.408
1500RPM						
STANDBY						
100	1200	896	403	183	204	0.336
PRIME						
100	1090	813	364	165	203	0.334
75	817	610	281	128	209	0.344
50	545	407	198	90	221	0.364
25	272	203	109	49	243	0.400

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.

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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).



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ENGINE DATA SHEET

ENGINE MODEL(S): KTA38-G2A**STAND_BY:** 896 kW(1200 BHP)@1500 r/min

1007 kW(1350 BHP)@1800 r/min

PRIME: 813 kW(1090 BHP)@1500 r/min

915 kW(1226 BHP)@1800 r/min

REFERENCE INFORMATION:**CONFIGURATION**..... D233020DX02**CPL NUMBER** 3660**DATA SHEET**..... FR6925**DATE**..... 2021/9/1**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.....	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) — $\text{lb}_m.\text{ft}^2(\text{kg}\cdot\text{m}^2)$	94.0 (3.96)
·With FW 6001 Flywheel — $\text{lb}_m.\text{ft}^2(\text{kg}\cdot\text{m}^2)$	248.00 (10.5)
·With FW 6011 Flywheel — $\text{lb}_m.\text{ft}^2(\text{kg}\cdot\text{m}^2)$	493.00 (20.8)
C.G. Distance From Rear Face of Flywheel Housing (FH6024)— in (mm)	38.6 (980)
C.G. Distance Above Crank Centerline— in (mm)	11.0 (279)
Maximum Allowable Atatic Load of Rear Main Bearing — lb (kg)	2000 (907)
Firing Order.....	1R-6L-5R-2L-3R-4L-6R-1L-2R-5L-4R-3L

ENGINE MOUNTINGMaximum Allowable 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)**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) 32.7 (124)Minimum Allowable Pressure Cap @ sea level— PSI (kPa) 10 (69)Maximum Coolant Friction Heat External to Engine @1800 rpm — PSI (kPa) 10.0 (68.9) @1500 rpm — PSI (kPa) 7.0 (48.3)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 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

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 (469.4)Maximum Allowable Oil Temperature — $^{\circ}\text{F (}^{\circ}\text{C)}$ 250 (121.0)



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ENGINE DATA SHEET

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 (Including By-Pass Filter) —U.S.Gal(L).....	35.7	(135.1)
Angularity of Standard Oil Pan (Option OP)		
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

Stability at Any Invariablenes 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).....	1350(1007)	1200(896)	1226(915)	1090(813)
Brake Mean Effective Pressure PSI(kPa).....	257(1769)	274(1889)	233(1607)	249(1714)
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).....	2940(1388)	2260(1067)	2800(1322)	2120(1001)
Exhaust Gas Flow CFM(L/s).....	7645(3608)	6345(2995)	7115(3358)	5845(2759)
Exhaust Gas Temperature °F(°C).....	872(467)	970(521)	856(458)	945(507)
Heat Rejection to Ambient BTU/min(kW).....	8175(144)	7380(130)	7470(131)	6665(117)
Heat Rejection to Coolant BTU/min(kW).....	34840(613)	31200(549)	31720(558)	28080(494)
Engine Water Flow L/s(U.S.GPM) @ 4psi.....	390(24.6)	310(19.6)	390(24.6)	310(19.6)