CHONGQING CUMMINS ENGINE COMPANY LTD.
ENGINE PERFORMANCE CURVE

CONFIGURATION	ENGINE MODEL: KTA38-G5E	CURVE NUMBER: FR	CPL No.: TBD
D233031DX02			DATE: 2021/4/8

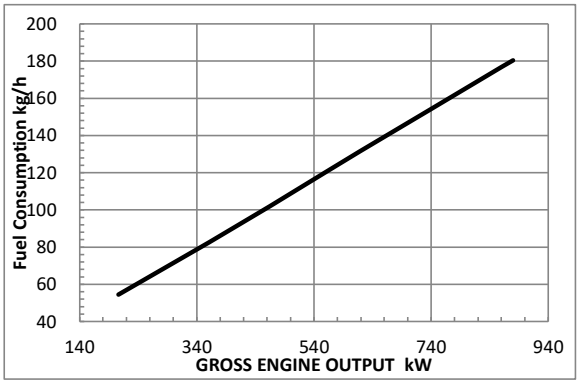
Displacement: 38L (2300 in3)	Aspiration: Turbocharged , Aftercooled		RATING
BoreXStroke: 159X159mm (6.25X6.25 in.)	Fuel System: Cummins PT	Stand by:	880 kW(1180 BHP)@1500 r/min
Compress Ratio: 14.7:1	No. of Cylinder: V-12	Prime:	825 kW(1106 BHP)@1500 r/min

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	STANDBY POWER		PRIME POWER		CONTINUOUS POWER	
rpm	BHP	kW	BHP	kW	BHP	kW
1500	1180	880	1106	825	959	715

FUEL CONSUMPTION



OUTPUT POWER			CONSUMPTION		BFSC	
%	BHP	kW	Lb/h	kg/h	g/kW.h	Lb/BHP.h
			1500RPM			
STNADBY						
100	1180	880	398	181	205	0.337
PRIME						
100	1106	825	375	170	206	0.339
75	830	619	290	132	213	0.350
50	553	413	203	92	223	0.367
25	277	206	120	55	265	0.435
CONTINUOUS						
100	959	715	330	150	209	0.344

Curves shown above represent gross engine performance capabilites 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**

POWER RATING APPLICATION GUIDELINES FOR GENERATOR DRIVE ENGINES

These guidelines have been foumulated 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 appliacations.

STANDBY POWER RATING is appliable 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 shouled 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 capablility is available for aperiod 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, theat 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 Temperatrue And Altitude:

The engine may be operated at:

1800RPM up to 5,000 ft.(1,500m) and 104°F (40℃) without power deration.

1500RPM up to 5,000 ft.1,500m) and 104°F (40℃) without power deration.

For sustained operation above these conditions, derate by 4% per 1,000ft. (300m), and 1% per 10°F (2% per 11℃).

CHONGQING CUMMINS ENGINE COMPANY LTD.
ENGINE DATA SHEET

ENGINE MODEL(S): KTA38-G5E
STAND_BY: 880 kW(1180 BHP)@1500 r/min
PRIME: 825 kW(1106 BHP)@1500 r/min
CONFIGURATION D233031DX02

REFERENCE INFORMATION:
CPL NUMBER ..... TBD
DATASHEET ..... FR
DATE 2021/4/8

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	14.7:1	
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) —$lb_m.ft^2(kg•m^2)$	94	(3.96)
·With FW 6001 Flywheel —$lbm.ft^2(kg•m^2)$	248.0	(10.45)
·With FW 6011 Flywheel —$lbm.ft^2(kg•m^2)$	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)	3000	(4067)

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 —in.H_2O(kPa)	25	(6.23)
Clean Element —in.H_2O(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) —°F(℃)	220/212	(104/100)
Standard Thermostat (modulating) Range— °F(℃)	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	

CHONGQING CUMMINS ENGINE COMPANY LTD.
ENGINE DATA SHEET

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(℃)	250	(121)
Maximum Oil Consumption — US qt/hr (litre/hr)	0.38	(0.36)
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)
Angularty 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	
Battary Recharge System,Negative ground—A	35	
Maximum Allowable Resistance of Starting Circuit—Ω	0.002	
Minimum Recommended Battary Capacity		
·Cold Soak at 50°F(10℃) or Above—0°F CCA	1200	
·Cold Soak at 32~50°F(0~10℃) or Above—0°F CCA	1280	
·Cold Soak at 0~32°F(-18~0℃) or Above—0°F CCA	1800	

PERFORMANCE DATA

Stability at Any Invariablenes Load —%	±0.25
Estimated Free Field Sound Pressure Level of Typical Generator Set;	
Noise limit under rated condition without exhaust noise — dBA	103

All data is based on the engine operating with fuel system, water pump, lubricating oil pump, air cleaner, and muffler, not included are altemator, compressor, fan, optional equipment and driven components. Data represents gross engine performance capabilities obtained and corrected in accordance with SAE J1349 conditions fo 29.61 in Hg(100 kPa) barometric pressure[300ft. (90 m) altitude], 77°F (25℃) 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		1500		1500
Idle Speed r/min		700～800		700～800
Gross Power Output BHP(kW)		1180 (880)		1106 (825)
Brake Mean Effective Pressure PSI(kPa)		269 (1853)		252 (1737)
Piston Speed ft/min(m/s)		1565 (8.0)		1565 (8.0)
Friction Horsepower BHP(kW)	N/A	115 (86)	N/A	115 (86)
Intake Air Flow lb/min(kg/h)		186 (5054)		179 (4877)
Exhaust Gas Flow lb/min(kg/h)		192 (5235)		185 (5047)
Exhaust Gas Temperature °F(℃)		877 (470)		863 (462)
Heat Rejection to Ambient BTU/min(kW)		2649 (47)		2550 (45)
Heat Rejection to Coolant BTU/min(kW)		20798 (366)		20070 (353)

Engine Model: KTA38-G5E
Data Sheet: FR
Date: 2021/4/8

CHONGQING CUMMINS ENGINE CO., LTD. CHONGQING, CHINA, 400031