FUJIAN EPOS ELECTRIC MACHINERY CO., LTD

EMEAN POWER

Cummins®

ENGINE MODEL： KTA50-G12A

CURVE & DATASHEET： FR 601

EMEAN POWER

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WHATSAPP WECHAT

CHONGQING CUMMINS ENGINE COMPANY LTD.
ENGINE PERFORMANCE CURVE

CONFIGURATION: D283021DX02	ENGINE MODEL: KTA50-G12A	DATA SHEET: FR 601	CPL No.: 0633
			DATE: 2019/12/4

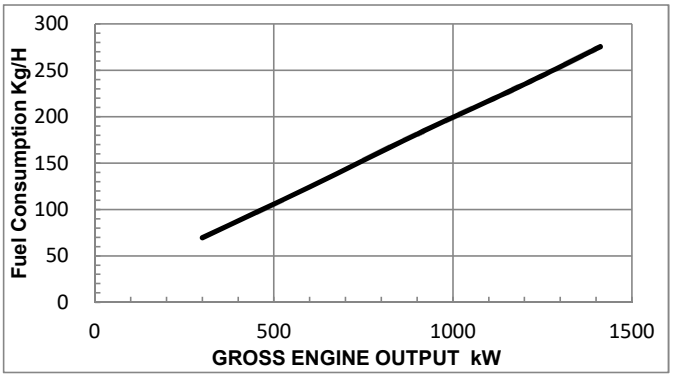
Displacement:	50.3L	(3067 in.^{3})	Aspiration:	Turbocharged , LTA	RATING
BoreXStroke:	159X159mm	(6.25X6.25 in.)	Fuel System:	Cummins PT	STAND_BY: 1412 kW(1892 HP) @ 1500 RPM
Compress Ratio:	13.9:1		Emission:	N.A.	1582 kW(2120 HP) @ 1800 RPM

All data is based on the engine operating with fuel system, water pump, lubricating oil pump, air cleaner, and muffler, and 20 in. H_2O(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.

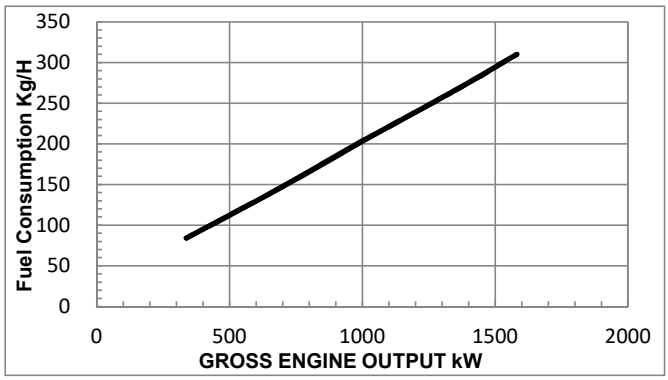
GROSS ENGINE POWER OUTPUT

SPEED	STANDBY POWER		PRIME POWER		CONTINUOUS POWER	
rpm	BHP	kW	BHP	kW	BHP	kW
1500	1892	1412	1608	1200	1474	1100
1800	2120	1582	1805	1347	1640	1224

FUEL CONSUMPTION



OUTPUT POWER			CONSUMPTION		BFSC	
%	BHP	kW	Lb/h	Kg/h	g/kW.h	Lb/BHP.h
			1500RPM			
STNADBY						
100	1892	1412	608	276	195	0.321
PRIME						
100	1608	1200	518	235	196	0.322
75	1206	900	400	181	201	0.331
50	804	600	274	124	207	0.341
25	402	300	153	70	232	0.381
CONTINUOUS						
100	1474	1100	475	216	196	0.322



OUTPUT POWER			CONSUMPTION		BFSC	
%	BHP	kW	Lb/h	Kg/h	g/kW.h	Lb/BHP.h
			1800RPM			
STNADBY						
100	2120	1582	684	310	196	0.322
PRIME						
100	1805	1347	585	265	197	0.324
75	1354	1010	452	205	203	0.334
50	902	674	315	143	212	0.349
25	451	337	186	84	250	0.411
CONTINUOUS						
100	1640	1224	534	242	198	0.326

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): **KTA50-G12A**

STAND_BY POWER: 1412 kW(1892 HP) @ 1500 RPM
1582 kW(2120 HP) @ 1800 RPM

PRIME POWER: 1200 kW(1608 HP) @ 1500 RPM
1347 kW(1805 HP) @ 1800 RPM

REFERENCE INFORMATION:

CONFIGURATION	D283021DX02
CPL NUMBER	0633
DATA SHEET	FR 601
DATE	2019/12/4

GENERAL ENGINE DATA

Type	4-Cycle, 60° Vee, 16 Cylinder Diesel	
Aspiration	Turbocharged , LTA	
Bore—in.(mm)×stroke—in.(mm)	6.25×6.25	(159×159)
Displacement—$in.^3$(L)	3067	(50)
Compression Ratio	13.9:1	
Dry Weight		
Fan Hub to Flywheel Engine —lb(kg)	11938	(5415)
Wet Weight		
Fan Hub to Flywheel Engine —lb(kg)	12604	(5717)
Moment of Inertia of Rotating Components		
·With FW 6009 Flywheel —$lb_m.ft^2$($kg•m^2$)	301	(12.7)
·With FW 6017 lywheel —$lb_m.ft^2$($kg•m^2$)	515	(21.7)
C.G. Distance From Rear Face of Block—in(mm)	47.5	(1207)
C.G. Distance Above Crank Centerline—in(mm)	11	(279)
Maximum Static Loading at Rear Main Bearing —lb_m (kg)	2000	(907)
Firing Order	1R-1L-3R-3L-2R-2L-5R-4L 8R-8L-6R-6L-7R-7L-4R-5L	

ENGINE MOUNTING

Maximum Allowable Bending Moment at Rear Face of Block —lb • ft (N • m)	4500	(6101)

EXHAUST SYSTEM

Maximum Allowable Back Pressure @Standby Power —in.Hg(kPa)	2	(6.8)
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.H_2O(kPa)	25	(6.23)
Clean Element —in.H_2O(kPa)	15	(3.73)
Minimum Allowable Dirt Holding Capacity With Heavy Duty Air Cleaner —gm/CFM(gm•L/s)	25	(53)

COOLING SYSTEM

Coolant Capacity		
Engine Only —U.S.Gal(L)	37	(140)
Minimum Allowable Pressure Cap @ sea level— PSI(kPa)	14	(97)
Maximum Static Head of Coolant Above Engine Crank Centerline —ft.(m)	60	(18.3)
Jacket Water Circuit Requirements		
Standard Thermostat (modulating) Range— °F(℃)	180-200	(82-93)
Maximum Allowable Top Tank Temperature (Stand_by/Prime) —°F(℃)	220/212	(104/100)
Maximum Coolant Friction Heat External to Engine @1800 rpm —PSI(kPa)	10	(68.9)
@1500 rpm —PSI(kPa)	7	(48.3)

CHONGQING CUMMINS ENGINE COMPANY LTD.
ENGINE DATA SHEET

Low Temperature Aftercooler (LTA) Circuit

Maximum Coolant Friction Heat External to Engine @1800 rpm —PSI(kPa)	7	(48.3)
@1500 rpm —PSI(kPa)	5	(34.5)
Maximum Coolant Temperature Into the Aftercooler @ 77 °F (25 °C) Ambient—°F(°C)	102	(39)
Maximum Coolant Temperature Into the Aftercooler @ Limiting Ambient Conditions		
Standby Power / Prime Power —°F(°C)	(160/150)	71/66
Thermostat Modulating Range — Low Flow (Aftercooler) — °F(°C)	(115-135)	46-57

LUBRICATION SYSTEM

Oil Pressure		
@ Minimum Low Idle —PSI(kPa)	20	(138)
@ Rated Speed —PSI(kPa)	50-70	(345-483)
Oil Flow at Rated Speed —U.S.GPM(L/min)	40	(151)
Maximum Allowable Oil Temperature —°F(℃)	250	(121)
Oil Pan Capacity (Option OP6024)		
High —U.S.Gal(L)	40	(151.4)
Low —U.S.Gal(L)	32	(121.1)
Total System Capacity (with Combo Filter) —U.S.Gal(L)	46.7	(176.8)
Angularty of Standard Oil Pan (Option OP6024		
Front Down	30°	
Front Up	30°	

FUEL SYSTEM

Fuel Injection System	Direct Injection Cummins PT	
Maximum allowable Restriction to PT Fuel Pump		
With Clean Fuel Filter Element(s) at Maximum Fuel Flow—in.Hg(kPa)	4	(13.55)
With Dirty Fuel Filter Element(s) at Maximum Fuel Flow—in.Hg(kPa)	8	(27.09)
Maximum Fuel Supply at Rated Power and Speed —US gph (litre/hr)	165	(625)
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)

ELECTRICAL SYSTEM

Cranking Motor (Heavy Duty, Positive Engagement) —Volts	24
Battary Recharge System,Negative ground—A	35
Maximum Allowable Resistance of Starting Circuit—Ω	0.002
Minimum Recommended Battary Capacity	
·Cold Soak @ 50°F(10°C) or Above—0°F CCA	1280
·Cold Soak @ 32~50°F(0~10°C) or Above—0°F CCA	1800
·Cold Soak @ 0~32°F(-18~0°C) or Above—0°F CCA	1800

COLD START CAPABILITY

Minimum Ambient Temperature for Aided (with Coolant Heater) Cold Start within 10 Seconds—°F(°C)	50	(10)
Minimum Ambient Temperature for Unaided Cold Start—°F(°C)	45	(7)

CHONGQING CUMMINS ENGINE COMPANY LTD.
ENGINE DATA SHEET

PERFORMANCE DATA

All data is based on:
- Engine operating with fuel system, water pump, lubricating oil pump, air cleaner and exhaust silencer; not included are battery charging alternator, fan, and optional driven components.
- Engine operating with fuel corresponding to grade No. 2-D per ASTM D975.
- ISO 3046, Part 1, Standard Reference Conditions of:

Barometric Pressure : 100 kPa (29.53 in Hg) Air Temperature : 25 °C (77 °F)
Altitude : 110 m (361 ft) Relative Humidity : 30%

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

Estimated Free Field Sound Pressure Level of a Typical Generator Set;

Excludes Exhaust Noise; at Rated Load and 7.5 m (24.6 ft); @1800 / 1500 rpm— dBA..... 94.6 / 92.4

Exhaust Noise at 1 m Horizontal from Centerline of Exhaust Pipe Outlet Upwards at 45°@1800/1500 rpm— 126 / 125

All data is subject to change without notice.

	STAND_BY		PRIME	
		50 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)	2120(1582)	1892(1412)	1805(1347)	1608(1200)
Brake Mean Effective Pressure PSI(kPa)	304(2097)	326(2246)	259(1785)	277(1909)
Piston Speed ft/min(m/s)	1875(9.5)	1562(7.9)	1875(9.5)	1562(7.9)
Friction Horsepower BHP(kW)	225(168)	155(116)	225(168)	155(116)
Engine Water Flow at Stated Friction Head External to Engine:				
• 4 psi Friction Head U.S.GPM(L/s)	536(34)	448(28)	536(34)	448(28)
• Maximum Friction Head U.S.GPM(L/s)	500(32)	416(26)	500(32)	416(26)
Engine Data				
Intake Air Flow CFM(L/s)	4670(2204)	3602(1700)	4133(1951)	3161(1492)
Exhaust Gas Temperature °F(℃)	880(471)	954(512)	849(454)	937(503)
Exhaust Gas Flow CFM(L/s)	10601(5003)	8969(4233)	9382(4429)	7871(3715)
Air to Fuel Ratio air : fuel	31.7:1	27.5:1	32.8:1	28.3:1
Heat Rejection to Ambient BTU/min(kW)	7255(128)	6801(120)	6405(113)	5951(105)
Heat Rejection to Jacket Coolant BTU/min(kW)	34686(612)	32363(571)	33043(583)	31286(552)
Heat Rejection to Exhaust BTU/min(kW)	54013(953)	51236(904)	49762(878)	48912(863)
Heat Rejection to Fuel BTU/min(kW)	208(3.7)	188(3.3)	192(3.4)	176(3.1)
2 Pump / 2 Loop				
Heat Rejection to Low Temperature Aftercooler BTU/min(kW)	17169(302)	12026(212)	13246(233)	8566(151)
Aftercooler Coolant Flow at Stated Friction:				
• 2 psi Friction Head U.S.GPM(L/s)	159(10)	123(8)	159(10)	123(8)
• Maximum Friction Head U.S.GPM(L/s)	142(9)	121(7.6)	142(9)	121(7.6)

Change Log

Date	Author	Change Description
2019/11/18	Zhang Xw	Compile
2019/12/4	Zhang Xw	Update fuel consumption of continuous power @ 1500rpm