FUJIAN EPOS ELECTRIC MACHINERY CO., LTD

EMEAN POWER

Cummins®

ENGINE MODEL： KTA38-G4

CURVE & DATASHEET： FR-6139

EMEAN POWER

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WHATSAPP

WECHAT

CHONGQING CUMMINS ENGINE COMPANY LTD.
ENGINE PERFORMANCE CURVE

CONFIGURATION	ENGINE MODEL: KTA38-G4	CURVE NUMBER: FR-6139	CPL No.: 1542
D233031DX02			DATE: 2013/6/26

Displacement: 38L (2300) Aspiration: Turbocharged , Aftercooled RATING

BoreXStroke: 159X159mm (6.25X6.25 in.) Fuel System: Cummins PT 1112 kW(1490 BHP)@1800r/min

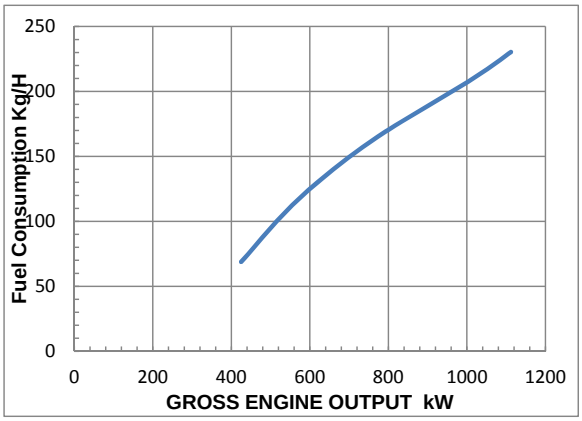
Compress Ratio: 13.9:1 No. of Cylinder: V-12

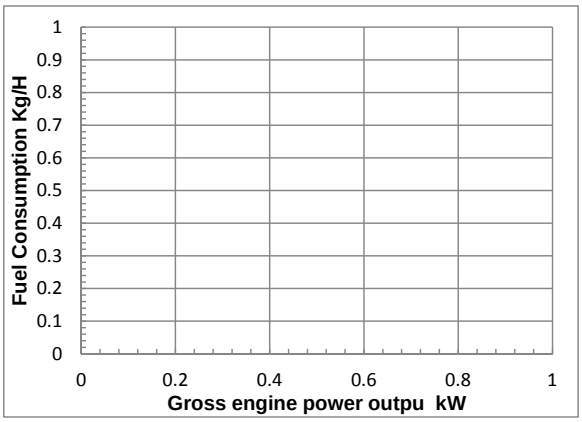
All data is based on the engine operating with fuel system, water pump, and 20 in. H2O(4.98kPa) inlet air restriction with 5.8 in.(147mm) inner diameter, and with 2 in. Hg(7kPa) exhaust restriction with 8 in.(203mm) inner diameter; not included are alternator, fan, optional equipment and driven components. 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
1800	1490	1112	1350	1007	1040	776
1500						

FUEL CONSUMPTION





OUTPUT POWER			CONSUMPTION		BFSC	
%	BHP	kW	Lb/h	Kg/h	g/kW.h	Lb/BHP.h
			1800RPM			
STNADBY						
100	1490	1112	508	230	207	0.341
PRIME						
100	1350	1007	459	208	207	0.340
75	1013	755	356	162	214	0.351
50	760	566	255	116	204	0.335
25	570	425	152	69	162	0.266
			1500RPM			

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

Cummins Engine Company, Inc.

Exhaust Emissions Data Sheet

Data Sheet: DS-4890 **G 199**
Date: Sept., 1992

Engine

Model:	KTA38-G4	**Application:**	A.C. Generator Drive
Type:	4 cycle, 60° Vee, 12 Cylinder Diesel	**Config. Number:**	D233031DX02
Aspiration:	Turbocharged and Aftercooled	**Bore:**	6.25 in. (159 mm)
Compression Ratio:	13.9:1	**Stroke:**	6.25 in. (159 mm)
Emissions Control Device:	Turbo, Aftercooling, and Variable Timing	**Displacement:**	2300 cu. in. (37.8 liters)

Performance Data	Standby	Prime
BHP @ 1800 RPM (60 Hz)	1490	1350
Fuel Consumption (gallons/hour)	71.5	64.6
Air to Fuel Ratio	26.4	27.7
Exhaust Gas Flow (CFM)	8405	7715
Exhaust Gas Temperature (°F)	975	930

Exhaust Emissions Data

(All values are grams/hp-hour)

Component		Standby	Prime
HC	(Total Unburned Hydrocarbons)	0.18	0.19
NOx	(Oxides of Nitrogen as NO_2)	8.99	8.32
CO	(Carbon Monoxide)	1.29	1.02
PM	(Particulate Matter)	0.50	0.50
SO_2	(Sulfur Dioxide)	0.62	0.61
CO_2	(Carbon Dioxide)	510	550
N_2	(Nitrogen)	3700	3400
O_2	(Oxygen)	600	550
H_2O	(Water Vapor)	180	200

Test Conditions

Data was recorded during steady-state rated engine speed (± 25 RPM) with full load (± 2%). Pressures, temperatures, and emission rates were stabilized.

Fuel Specification:	ASTM D975 No. 2-D diesel fuel with 0.2% sulfur content (by weight) and 42-50 cetane number.
Fuel Temperature:	99° F ± 9° (at fuel pump inlet)
Intake Air Temperature:	77° F ± 9°
Barometric Pressure:	29.6 in. Hg ± 1 in. Hg
Humidity:	NOx measurement corrected to 75 grains H_2O/lb. dry air

The HC, NOx, and CO emissions data tabulated here were taken from a single engine under the test conditions shown above. Data for the other components are estimates. This data is subject to instrumentation, measurement, and engine-to-engine variability. Engine operation with excessive air intake or exhaust restriction beyond published maximum limits, or with improper maintenance, may result in elevated emission levels.

Specifications May Change Without Notice

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.

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: **KTA38-G4**

STAND_BY:	**1490 BH @1800r/min**	**REFERENCE INFORMATION:**
	1112 kW	**CONFIGURATION..... D233031DX02**
PRIME:	**1350 BH @1800r/min**	**CPL NUMBER 1542**
	1007 kW	**PERFORMANCE CURVE NUMBER..... FR-6139**

GENERALENGINE DATA

Type	4 Cycle , 60° Vee , 12 Cylind	
Aspiration	Turbocharged , Aftercooled	
Bore—in.(mm)×stroke—in.(mm)	6.25×6.25	(159×159)
Displacement—in^3(L)	2300	(38)
Compression Ratio	13.9:1	
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 —$kg•m^2$($lb_m.ft^2$)	10.45	(248.0)
·With FW 6011 Flywheel —$kg•m^2$($lb_m.ft^2$)	20.78	(493.0)
C.G. Distance From Front Face of Block—in(mm)	31.5	(801)
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 MOUNTINC

Moment of Inertia About Roll Axis —$lb.ft^2$($kg•m^2$)

EXHAUST SYSTEM

Maximum Allowable Back Pressure (1500/1800 rpm) —in.Hg(kPa)	2.3/3	(7.8/10.2)
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		
Clean Element —in.H_2O(kPa)	15	(3.73)
Clean Element —in.H_2O(kPa)	15	(3.73)
Intake Air Alarm Temperature (1500/1800 rpm)—℃(°F)	82	(180)

COOLING SYSTEM

Coolant Capacity		
With heat exchanger HX 4073 (With out explantion tank) —U.S.Gal(L)	18	(66)
With explantion tank & LTA—U.S.Gal(L)	30	(112)
Maximum Coolant Friction Heat External to Engine @1500 rpm —PSI(kPa)	7	(48.3)
@1500 rpm —PSI(kPa)	10	(68.9)
Minimum Raw Water Flow @ 90°F(32℃) to Heat Exchanger With HX 4073—GPM(L/mir	54	(204.4)

CHONGQING CUMMINS ENGINE COMPANY LTD.
ENGINE DATA SHEET

Maximum Raw Water Inlet Pressure @ Heat Exchanger HX 4073—PSI(kPa)	50	(344.7)
Maximum Raw Water Inlet Pressure @ Heat Exchanger HX 6076 —PSI(kPa)	50	(344.7)
Maximum Allowable Top Tank Temperature (Stand_by/Prime) —°F(℃)	220/212	(104/100)
Standard Thermostat (modulating) Range— °F(℃)	180-200	(82-93)
Maximum Allowable Coolant Temperature —°F(℃)	205	(96.1)
Minimum Coolant Makeup Capacity —U.S.Gal(L)	6.3	(23.8)
Maximum Raw water Inlet Friction —PSI(kPa)	10	(254.0)
Minimum Allowable Fill Rate —U.S.GPM(L/min)	5	(18.9)
Maximum Allowable Initial Fill Time —min	5	
Minimum Allowable Coolant Expansion Space —% of System Capacity	5	
Maximum Allowable Inlet Coolant Temperature at Limited situation (Stand_by/Prime) —	160/150	(71/66)

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 —°F(℃)	250	(121.0)
By-Pass Filter Capacity		
Spin-on Cartridge Type —U.S.Gal(L)	2 X 0.7	(2 X 2.6)
Replaceable Element Type —U.S.Gal(L)	2 X 2.9	(2 X 11.0)
Oil Pan Capacity (Option OP6024)		
High —U.S.Gal(L)	40.0	(151.4)
Total System Capacity (Excluding By-Pass Filter) —U.S.Gal(L)	45.0	(170.3)
Total System Capacity (Excluding By-Pass Filter) —U.S.Gal(L)	35.7	(135.1)
Angularty of Standard Oil Pan (Option OP		
Front Down	30°	

FUEL SYSTEM

Fuel Injection System	Cummins PT	
Maximum Fuel Consumption at Maximum Rated Output and Speed —lb/h(kg/h)		
Maximum allowable Restriction to PT Fuel Pump		
With Clean Fuel Filter —in.Hg(kPa)	4	(13.55)
With Dirty Fuel Filter —in.Hg(kPa)	10	(33.86)
Maximum Fuel Supply at Rated Power and Speed —lb/h(kg/h)		
Maximum Allowable Injector Return Line Restriction		
With Check Valves —in.Hg(kPa)	7	(22)
Less Check Valves —in.Hg(kPa)	3	(8)
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

CHONGQING CUMMINS ENGINE COMPANY LTD.
ENGINE DATA SHEET

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 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

	STAND_BY		PRIME	
	60 Hz	50 Hz	60 Hz	50 Hz
Engine Speed r/min	1800		1800	
Idle Speed r/min	725-775		725-775	
Gross Power Output BHP(kW)	1490(1112)		1350(1007)	
Brake Mean Effective Pressure PSI(kPa)	283(1953)		257(1769)	
Piston Speed ft/min(m/s)	1870(9.5)		1870(9.5)	
Friction Horsepower BHP(kW)	170(127)		170(127)	
Intake Air FlowCFM(L/s)	3040(1435)		2880(1359)	
Exhaust Gas Flow CFM(L/s)	8405(3967)		7715(3641)	
Exhaust Gas Temperature °F(℃)	975(524)		930(499)	
Heat Rejection to Ambient BTU/min(kW)	9275(163)		8420(0)	
Heat Rejection to Coolant BTU/min(kW)	38740(681)		35100(617)	
Engine Water Flow L/s(U.S.GPM) @ 4psi	390(24.6)		390(24.6)	

Chanvge Log

Date	Author	Change Description
2013/6/25	Jiang Li	Release