

FUJIAN EPOS ELECTRIC MACHINERY CO., LTD

EMEAN
POWER



ENGINE MODEL: KTA38-G1
CURVE & DATASHEET: FR-6080

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WHATSAPP



WECHAT





CHONGQING CUMMINS ENGINE COMPANY LTD. ENGINE PERFORMANCE CURVE

CONFIGURATION
D233019DX02

ENGINE MODEL: KTA38-G1

CURVE NUMBER: FR-6080

CPL No.: 0851

DATE: 2013/6/25

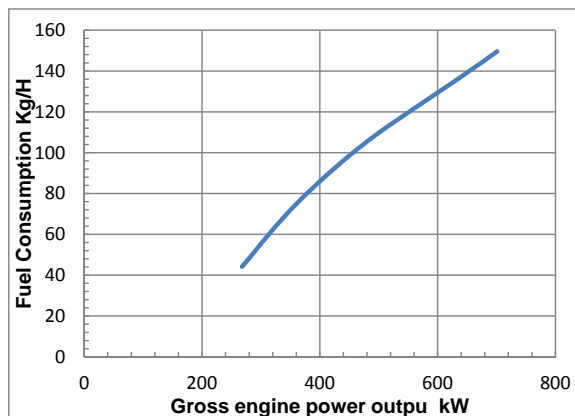
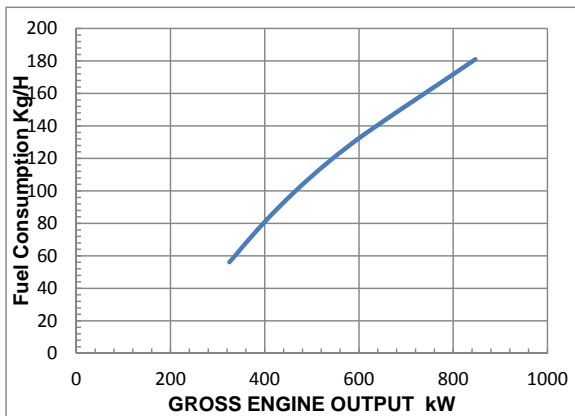
Displacement: 38L (2300) Aspiration: Turbocharged , Aftercooled **RATING**
 BoreXStroke: 159X159mm (6.25X6.25 in.) Fuel System: Cummins PT 847 kW(1135 BHP)@1800r/min
 Compress Ratio: 14.5:1 No. of Cylinder: V-12 701 kW(940 BHP)@1500r/min

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	1135	847	1030	769	900	672
1500	940	701	850	634	810	604

FUEL CONSUMPTION



	OUTPUT POWER		CONSUMPTION		BFSC		
	%	BHP	kW	Lb/h	Kg/h	g/kW.h	Lb/BHP.h
1800RPM							
STNADBY							
100	1135	847	399	181	214	0.352	
PRIME							
100	1030	769	365	166	216	0.355	
75	773	577	281	128	221	0.364	
50	580	433	201	91	210	0.346	
25	435	325	124	56	173	0.284	
CONTINUOUS							
100	900	672	0	0	0	0.000	
1500RPM							
STANDBY							
100	940	701	330	150	213	0.351	
PRIME							
100	850	634	300	136	215	0.353	
75	638	476	230	105	220	0.361	
50	479	357	163	74	207	0.340	
25	359	268	97	44	165	0.271	
CONTINUOUS							
100	810	604	0	0	0	0.000	

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.

TECHNICAL DATA DEPT.

CERTIFIED WITHIN 5%

CHIEF ENGINEER

Cummins Confidential

Engine

Model: KTA38-G1
Type: 4 cycle, 60° Vee, 12 Cylinder Diesel
Aspiration: Turbocharged and Aftercooled
Compression Ratio: 14.5:1
Emissions Control Device: Turbo, Aftercooling

Application: A.C. Generator Drive
Config. Number: D233019DX02
Bore: 6.25 in. (159 mm)
Stroke: 6.25 in. (159 mm)
Displacement: 2300 cu. in. (37.8 liters)

Performance Data

BHP @ 1800 RPM (60 Hz)
Fuel Consumption (gallons/hour)
Air to Fuel Ratio
Exhaust Gas Flow (CFM)
Exhaust Gas Temperature (°F)

	Standby	Prime
BHP @ 1800 RPM (60 Hz)	1135	1030
Fuel Consumption (gallons/hour)	56.4	51.5
Air to Fuel Ratio	30.6	31.3
Exhaust Gas Flow (CFM)	7285	6655
Exhaust Gas Temperature (°F)	915	895

Exhaust Emissions Data

(All values are grams/hp-hour)

Component

HC (Total Unburned Hydrocarbons)
NOx (Oxides of Nitrogen as NO₂)
CO (Carbon Monoxide)
PM (Particulate Matter)
SO₂ (Sulfur Dioxide)
CO₂ (Carbon Dioxide)
N₂ (Nitrogen)
O₂ (Oxygen)
H₂O (Water Vapor)

	Standby	Prime
HC (Total Unburned Hydrocarbons)	0.10	0.08
NOx (Oxides of Nitrogen as NO ₂)	11.60	10.46
CO (Carbon Monoxide)	1.18	0.82
PM (Particulate Matter)	0.12	0.13
SO ₂ (Sulfur Dioxide)	0.62	0.63
CO ₂ (Carbon Dioxide)	510	510
N ₂ (Nitrogen)	3700	3800
O ₂ (Oxygen)	590	610
H ₂ O (Water Vapor)	180	190

Test Conditions

Data was recorded during steady-state rated engine speed (± 25 RPM) with full load ($\pm 2\%$). 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 \pm 9° (at fuel pump inlet)
Intake Air Temperature: 77° F \pm 9°
Barometric Pressure: 29.6 in. Hg \pm 1 in. Hg
Humidity: NOx measurement corrected to 75 grains H₂O/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

Cummins Engine Company Box 3005 Columbus, Indiana 47202-3005 U.S.A.

Cummins Engine Company, Inc.
Exhaust Emissions Data Sheet

Data Sheet: DS-3642-G **G**
Date: Sept., 1992 **182**

Engine

Model:	KTA38-G1	Application:	A.C. Generator Drive
Type:	4 cycle, 60° Vee, 12 Cylinder Diesel	Config. Number:	D233019DX02
Aspiration:	Turbocharged and Aftercooled	Bore:	6.25 in. (159 mm)
Compression Ratio:	14.5:1	Stroke:	6.25 in. (159 mm)
Emissions Control Device:	Turbo, Aftercooling	Displacement:	2300 cu. in. (37.8 liters)

Performance Data

	Standby	Prime
BHP @ 1500 RPM (50 Hz)	940	850
Fuel Consumption (gallons/hour)	46.6	42.3
Air to Fuel Ratio	25.0	25.9
Exhaust Gas Flow (CFM)	5255	4780
Exhaust Gas Temperature (° F)	1015	1000

Exhaust Emissions Data

(All values are grams/hp-hour)

Component	Standby	Prime
HC (Total Unburned Hydrocarbons)	0.22	0.16
NO_x (Oxides of Nitrogen as NO ₂)	10.59	9.53
CO (Carbon Monoxide)	1.50	1.12
PM (Particulate Matter)	1.35	1.49
SO₂ (Sulfur Dioxide)	0.62	0.62
CO₂ (Carbon Dioxide)	510	490
N₂ (Nitrogen)	3000	3100
O₂ (Oxygen)	380	420
H₂O (Water Vapor)	180	180

Test Conditions

Data was recorded during steady-state rated engine speed (± 25 RPM) with full load ($\pm 2\%$). 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 \pm 9° (at fuel pump inlet)
Intake Air Temperature: 77° F \pm 9°
Barometric Pressure: 29.6 in. Hg \pm 1 in. Hg
Humidity: NO_x measurement corrected to 75 grains H₂O/lb. dry air

The HC, NO_x, 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

Cummins Engine Company Box 3005 Columbus, Indiana 47202-3005 U.S.A.



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).



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(°C).....	220/212	(104/100)
Standard Thermostat (modulating) Range— °F(°C).....	180-200	(82-93)
Maximum Allowable Coolant Temperature —°F(°C).....	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(°C).....	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)

Angularity of Standard Oil Pan (Option OP)

Front Down.....	30°	
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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 —ft³/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



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 alternator, compressor, fan, optional equipment and driven components. Data represents gross engine performance capabilities obtained and corrected in accordance with SAE J1349 conditions for 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).....	1135(847)	940(701)	1030(769)	850(634)
Brake Mean Effective Pressure PSI(kPa).....	216(1488)	214(1478)	196(1351)	194(1336)
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 Flow CFM(L/s).....	2750(1298)	1850(873)	2550(1204)	1700(802)
Exhaust Gas Flow CFM(L/s).....	7285(3439)	5255(2480)	6655(3141)	4780(2256)
Exhaust Gas Temperature °F(°C).....	915(491)	1015(546)	895(479)	1000(538)
Heat Rejection to Ambient BTU/min(kW).....	7330(129)	6055(106)	6690(0)	5495(97)
Heat Rejection to Coolant BTU/min(kW).....	29510(519)	24440(430)	26780(471)	22100(389)
Engine Water Flow L/s(U.S.GPM) @ 3psi.....	390(24.6)	310(19.6)	390(24.6)	310(19.6)

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