



**CUMMINS ENGINE COMPANY, INC**

Columbus, Indiana 47201

**ENGINE PERFORMANCE CURVE**

Basic Engine Model:  
**KTA38-G3**

Engine Critical Parts List:

**CPL: 1541**

Curve Number:  
**FR-6123**

Date:

**19May98**

Page  
No.

Displacement : **37.8 litre (2300 in<sup>3</sup>)**

Bore : **159 mm (6.25 in.)** Stroke : **159 mm (6.25 in.)**

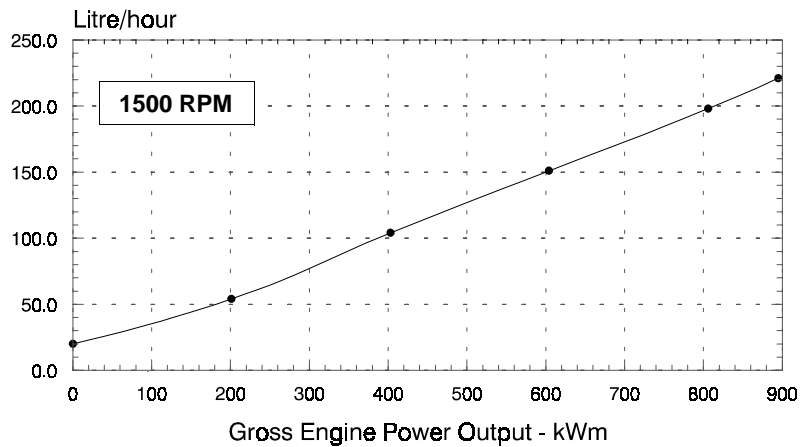
No. of Cylinders : **12**

Aspiration : **Turbocharged and Aftercooled**

Engine Speed RPM	Standby Power		Prime Power		Continuous Power	
	kWm	BHP	kWm	BHP	kWm	BHP
1500	895	1200	806	1080	656	880
1800	1000	1340	910	1220	776	1040

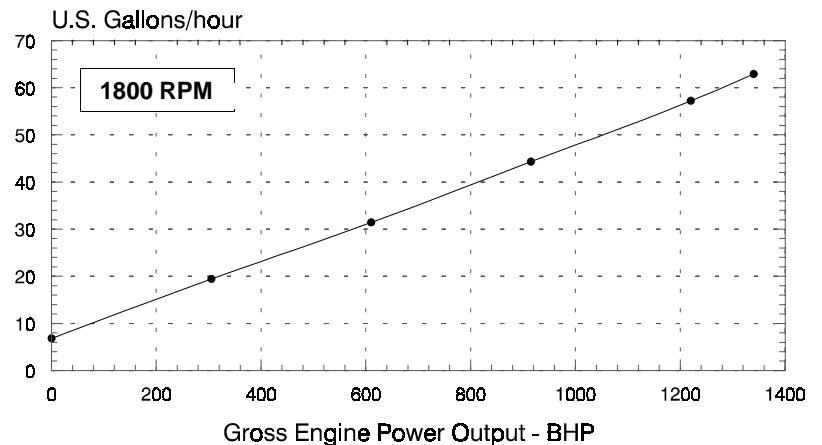
### Engine Performance Data @ 1500 RPM

OUTPUT POWER			FUEL CONSUMPTION			
%	kWm	BHP	kg/ kWm·h	lb/ BHP·h	litre/ hour	U.S. Gal/ hour
<b>STANDBY POWER</b>						
100	895	1200	0.210	0.345	221	58.3
<b>PRIME POWER</b>						
100	806	1080	0.209	0.344	198	52.3
75	604	810	0.213	0.350	151	39.9
50	403	540	0.219	0.360	104	27.3
25	201	270	0.230	0.378	54	14.3
<b>CONTINUOUS POWER</b>						
100	656	880	0.212	0.349	164	43.3



### Engine Performance Data @ 1800 RPM

OUTPUT POWER			FUEL CONSUMPTION			
%	kWm	BHP	kg/ kWm·h	lb/ BHP·h	litre/ hour	U.S. Gal/ hour
<b>STANDBY POWER</b>						
100	1000	1340	0.202	0.333	238	62.9
<b>PRIME POWER</b>						
100	910	1220	0.203	0.333	217	57.2
75	683	915	0.209	0.344	168	44.3
50	455	610	0.222	0.365	119	31.4
25	228	305	0.272	0.452	73	19.4
<b>CONTINUOUS POWER</b>						
100	776	1040	0.208	0.342	190	50.1



**CONVERSIONS:** (Litres = U.S. Gal x 3.785) (kWm = BHP x 0.746) (U.S. Gal = Litres x 0.2642) (BHP = Engine kWm x 1.34)

Data shown above represent gross engine performance capabilities obtained and corrected in accordance with ISO-3046 conditions of 100 kPa (29.53 in Hg) barometric pressure [110 m (361 ft) altitude], 25 °C (77 °F) air inlet temperature, and relative humidity of 30% with No. 2 diesel or a fuel corresponding to ASTM D2. See reverse side for application rating guidelines.

The fuel consumption data is based on No. 2 diesel fuel weight at 0.85 kg/litre (7.1 lbs/U.S. gal).

Power output curves are based on the engine operating with fuel system, water pump and lubricating oil pump; not included are battery charging alternator, fan, optional equipment and driven components.

*D.K. Trueblood*

**CHIEF ENGINEER**

**TECHNICAL DATA DEPT.**

**CERTIFIED WITHIN 5%**

## 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** is 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 the Prime Power rating during any operating 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 the 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:

1800 RPM up to 5,000 ft (1525 m) and 104° F (40° C) without power deration.

1500 RPM up to 5,000 ft (1525 m) and 104° F (40° C) without power deration.

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

# Cummins Engine Company, Inc.

## Engine Data Sheet

ENGINE MODEL : **KTA38-G3**

CONFIGURATION NUMBER : D233030DX02

DATA SHEET : DS-4574-B

DATE : 19May98

PERFORMANCE CURVE : FR-6123

**INSTALLATION DIAGRAM**

• Fan to Flywheel : 3383897

**CPL NUMBER**

• Engine Critical Parts List : 1541

### GENERAL ENGINE DATA

Type .....	4-Cycle; 60° Vee; 12-Cylinder Diesel
Aspiration .....	Turbocharged and Aftercooled
Bore x Stroke .....	6.25 x 6.25 (159 x 159)
Displacement .....	2300 (37.8)
Compression Ratio .....	13.9 : 1

**Dry Weight**

Fan to Flywheel Engine.....	— lb (kg)	9261	(4200)
Heat Exchanger Cooled Engine.....	— lb (kg)	9702	(4400)

**Wet Weight**

Fan to Flywheel Engine.....	— lb (kg)	9781	(4436)
Heat Exchanger Cooled Engine.....	— lb (kg)	10381	(4708)

**Moment of Inertia of Rotating Components**

• with FW 6001 Flywheel .....	— lb <sub>m</sub> • ft <sup>2</sup> (kg • m <sup>2</sup> )	248	(10.4)
• with FW 6011 Flywheel .....	— lb <sub>m</sub> • ft <sup>2</sup> (kg • m <sup>2</sup> )	493	(20.8)
Center of Gravity from Rear Face of Flywheel Housing (FH 6024) .....	— in (mm)	38.6	(980)
Center of Gravity above Crankshaft Centerline.....	— in (mm)	11.0	(279)
Maximum Static Loading at Rear Main Bearing.....	— lb (kg)	2000	(908)

### ENGINE MOUNTING

Maximum Bending Moment at Rear Face of Block .....	— lb • ft (N • m)	4500	(6100)
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### EXHAUST SYSTEM

Maximum Back Pressure at Standby Power — 1800 rpm .....	— in Hg (mm Hg)	3	(76)
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### AIR INDUCTION SYSTEM

Maximum Intake Air Restriction			
• with Dirty Filter Element.....	— in H <sub>2</sub> O (mm H <sub>2</sub> O)	25	(635)
• with Normal Duty Air Cleaner and Clean Filter Element.....	— in H <sub>2</sub> O (mm H <sub>2</sub> O)	10	(254)
• with Heavy Duty Air Cleaner and Clean Filter Element.....	— in H <sub>2</sub> O (mm H <sub>2</sub> O)	15	(381)

### COOLING SYSTEM

Coolant Capacity — Engine Only.....	— US gal (liter)	32.7	(124)
— with HX 6076 Heat Exchanger.....	— US gal (liter)	52.7	(199)

Maximum Coolant Friction Head External to Engine — 1800 rpm .....	— psi (kPa)	10	(69)
— 1500 rpm .....	— psi (kPa)	7	(48)

Maximum Static Head of Coolant Above Engine Crank Centerline.....	— ft (m)	60	(18.3)
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Standard Thermostat (Modulating) Range.....	— °F (°C)	180 - 200	(82 - 93)
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Minimum Pressure Cap .....	— psi (kPa)	10	(69)
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Maximum Top Tank Temperature for Standby / Prime Power .....	— °F (°C)	220 / 212	(104 / 100)
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Minimum Raw Water Flow @ 90°F to HX 6076 Heat Exchanger .....	— US gpm (liter / min)	108	(409)
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Maximum Raw Water Inlet Pressure at HX 6076 Heat Exchanger .....	— psi (kPa)	50	(345)
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### LUBRICATION SYSTEM

Oil Pressure @ Idle Speed.....	— psi (kPa)	20	(138)
@ Governed Speed .....	— psi (kPa)	45 - 65	(310 - 448)

Maximum Oil Temperature.....	— °F (°C)	250	(121)
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Oil Capacity with OP6023 Oil Pan : High - Low .....	— US gal (liter)	30 - 23	(114 - 87)
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Total System Capacity (Including Bypass Filter).....	— US gal (liter)	35.7	(135)
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Angularity of OP 6023 Oil Pan — Front Down .....		30°	
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— Front Up .....		30°	
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— Side to Side.....		30°	
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