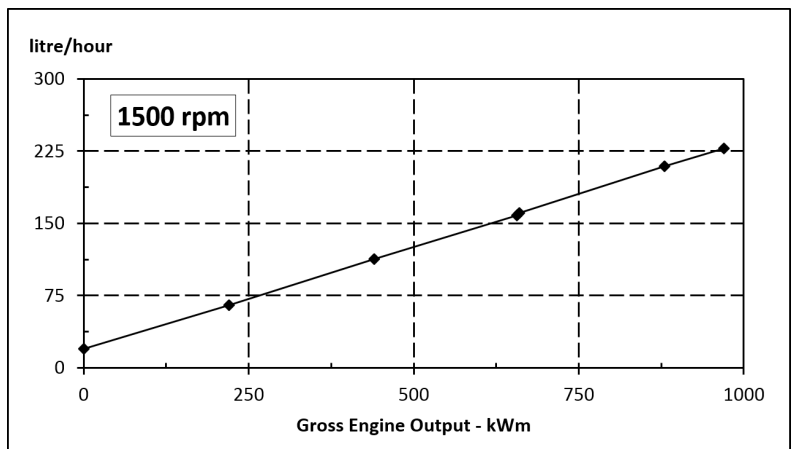
	Cummins Inc. Columbus, Indiana 47202-3005 ENGINE PERFORMANCE DATASHEET	Basic Engine Model: KTA38-G16	Curve Number: FR60206	G-DRIVE KTA 1
		Engine Critical Parts List: CPL : 4544	Date: 13 JUN 14	
Compression Ratio : 13.9 : 1		Displacement : 37.8 L (2,300 in³)		
Fuel System : Cummins PT		Aspiration : Turbocharged and Aftercooled		
Emission Certification : Non-Certified				

Engine Speed	Standby Power		Prime Power		Continuous Power	
RPM	bhp	kWm	bhp	kWm	bhp	kWm
1500	1300	970	1180	880	880	656
1800	1490	1112	1350	1007	1040	776

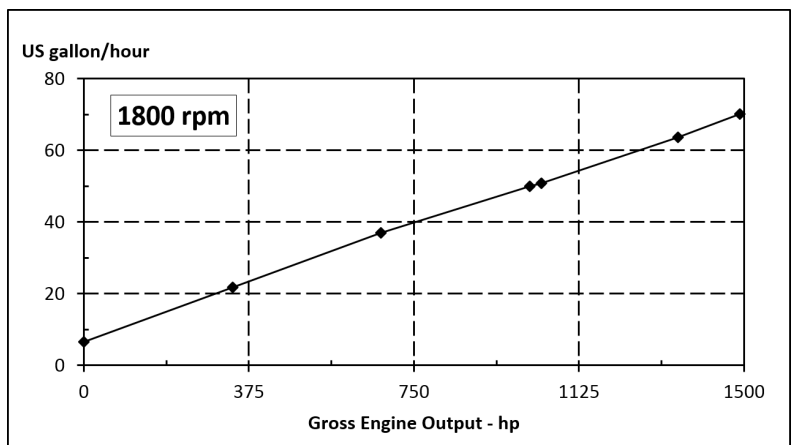
Engine Performance Data @ 1500 rpm

OUTPUT POWER			FUEL CONSUMPTION			
%	bhp	kWm	lb/ hp-h	kg/ kWm-h	US gal/ hour	litre/ hour
STANDBY POWER						
100	1300	970	0.329	0.200	60.3	228
PRIME POWER						
100	1180	880	0.332	0.202	55.1	209
75	885	660	0.341	0.207	42.5	161
50	590	440	0.360	0.218	29.9	113
25	295	220	0.416	0.251	17.3	65
CONTINUOUS POWER						
100	880	656	0.336	0.204	41.7	158



Engine Performance Data @ 1800 rpm

OUTPUT POWER			FUEL CONSUMPTION			
%	bhp	kWm	lb/ hp-h	kg/ kWm-h	US gal/ hour	litre/ hour
STANDBY POWER						
100	1490	1112	0.335	0.203	70.2	266
PRIME POWER						
100	1350	1007	0.335	0.204	63.7	242
75	1012	755	0.350	0.213	49.9	189
50	675	504	0.380	0.229	36.1	136
25	338	252	0.458	0.277	21.8	82
CONTINUOUS POWER						
100	1040	776	0.346	0.211	50.8	192



CONVERSIONS:(litres = US Gal x 3.785) (US Gal = litres x 0.2642)

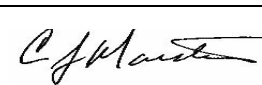
Data Subject to Change Without Notice

These guidelines have been formulated to ensure proper application of generator drive engines in A.C. generator set installations. **STANDBY POWER RATING:** 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. **PRIME POWER RATING:** 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:** Limited Time 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. **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.

Reference AEB 10.47 for determining Electrical Output.

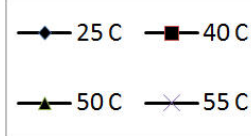
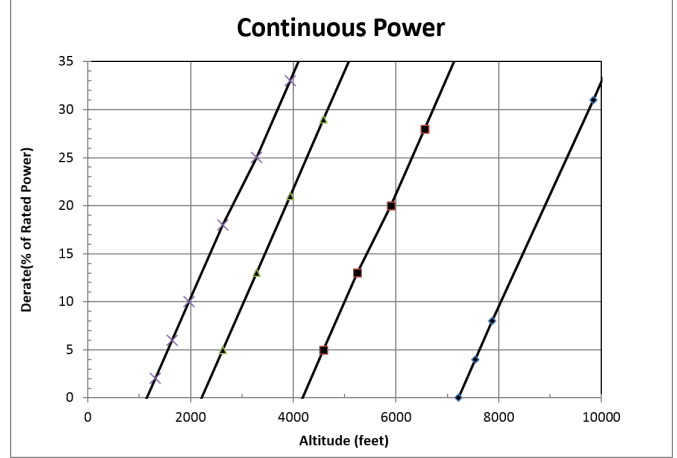
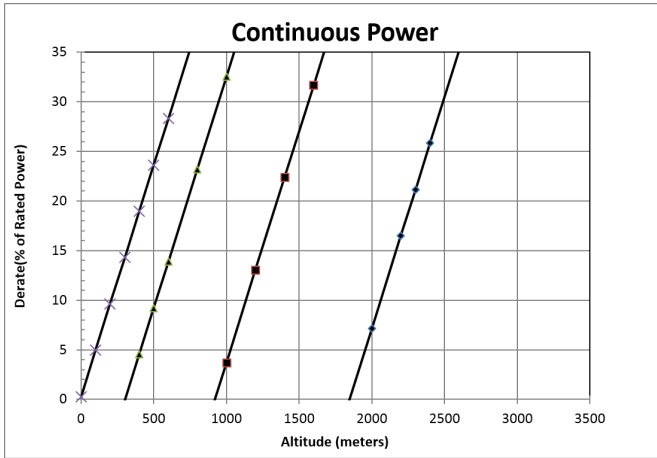
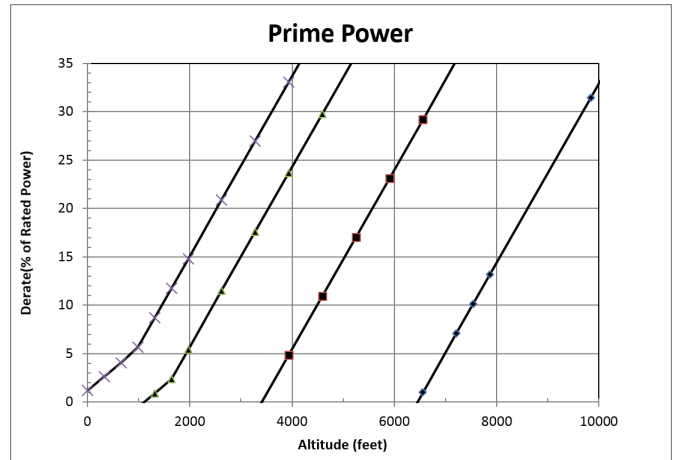
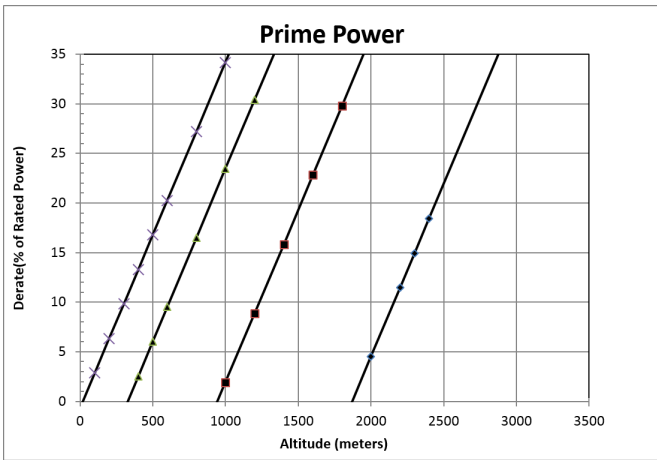
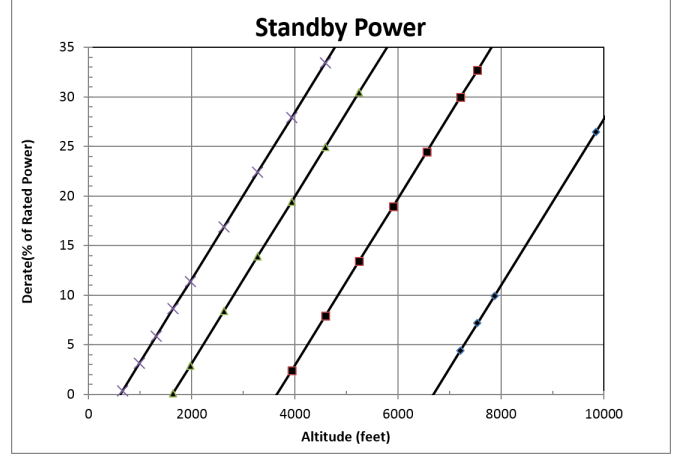
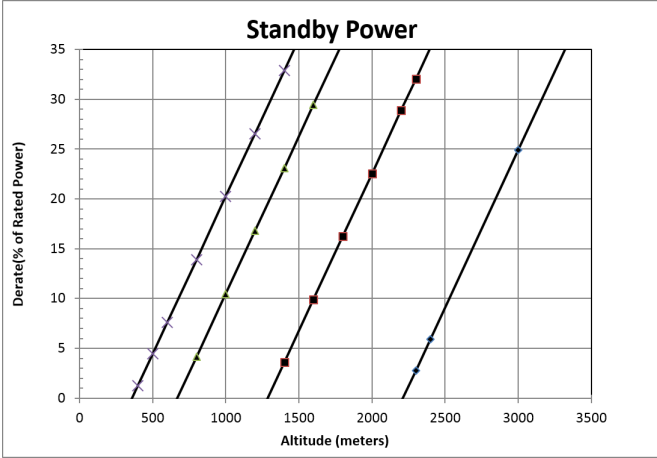
Data shown above represent gross engine performance capabilities obtained and corrected in accordance with ISO-3046 conditions of 100 kPa (29.53 in Hg) barometric pressure [110 m (361 ft) altitude], 25 °C (77 °F) air inlet temperature, and relative humidity of 30% with No. 2 diesel or a fuel corresponding to ASTM D2. Derates shown are based on 15 in H₂O air intake restriction and 3.0 in Hg exhaust back pressure @ 1500/1800 RPM.

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

Data Status: --Limited Production--
 Data Tolerance: ± 5%
 Chief Engineer: 

1500 rpm Derate Curves

1800 rpm Derate Curves



Operation at Elevated Temperature and Altitude:

For **Standby/Unlimited Time Prime** operation above these conditions, derate by an additional 10% per 1000 ft (300 m), and 20% per 18 delta deg F (10 delta deg C)

For **Limited Time Prime** operation above these conditions, derate by an additional 10% per 1000 ft (300 m), and 22% per 18 delta deg F (10 delta deg C)

For **Continuous** operation above these conditions, derate by an additional 14% per 1000 ft (300 m), and 58% per 18 delta deg F (10 delta deg C)

Operation at Elevated Temperature and Altitude:

For **Standby/Unlimited Time Prime** operation above these conditions, derate by an additional 8% per 1000 ft (300 m), and 17% per 18 delta deg F (10 delta deg C)

For **Limited Time Prime** operation above these conditions, derate by an additional 9% per 1000 ft (300 m), and 19% per 18 delta deg F (10 delta deg C)

For **Continuous** operation above these conditions, derate by an additional 12% per 1000 ft (300 m), and 24% per 18 delta deg F (10 delta deg C)

Cummins Inc.

Engine Data Sheet

ENGINE MODEL : KTA38-G16

CONFIGURATION NUMBER : D233031DX02

DATA SHEET: FR60206

DATE: 13 JUN 14

INSTALLATION DIAGRAM• Fan to Flywheel: **4953682****CPL NUMBER**

• Engine Critical Parts List: 4544

GENERAL ENGINE DATA

Type	Four 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 (Approximate), Fan to Flywheel Engine	9482	(4300)
Wet Weight (Approximate), Fan to Flywheel Engine	10002	(4536)
Moment of Inertia of Rotating Components		
• with FW 6001 Flywheel	248	(10.4)
• with FW 6011 Flywheel	493	(20.8)
Center of Gravity Above Crankshaft Centerline	11.0	(279)
Maximum Static Loading at Rear Main Bearing	2000	(908)

ENGINE MOUNTING

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

EXHAUST SYSTEM

Maximum Back Pressure @ 1500 / 1800 RPM — in Hg (mm Hg) 3 (76)

AIR INDUCTION SYSTEM

Maximum Intake Air Restriction

- with Dirty Filter Element — in H₂O (mm H₂O) 25 (635)
- with Normal Duty Air Cleaner and Clean Filter Element @ 1500 / 1800 RPM.. — in H₂O (mm H₂O) 10 (254)
- with Heavy Duty Air Cleaner and Clean Filter Element @ 1500 / 1800 RPM.... — in H₂O (mm H₂O) 15 (381)

COOLING SYSTEM

Coolant Capacity — Engine Only — US gal (litre) 32.7 (124)

Minimum Pressure Cap — psi (kPa) 10 (69)

Maximum Static Head of Coolant Above Engine Crank Centerline — ft (m) 60 (18.3)

Maximum Coolant Temperature (Max Top Tank Temp) for Standby / Prime Power — °F (°C) 220 / 212 (104 / 100)

Thermostat (Modulating) Range — °F (°C) 180 - 200 (82 - 93)

Jacket Water Circuit Requirements

Maximum Coolant Friction Head External to Engine @ 1500 / 1800 RPM — psi (kPa) 7 / 10 (48 / 69)

Charge Air Cooler Requirements

Maximum Temp. Rise Between Engine Air Intake and Intake Manifold - 1500/1800 rpm — °F (°C) N/A (N/A)

Maximum Air Pressure Drop from Turbo Air Outlet to Intake Manifold - 1500/1800 rpm — in Hg (kPa) N/A (N/A)

Maximum Intake Manifold Temperature @ 77 °F (25 °C) Ambient - 1500/1800 rpm — °F (°C) N/A (N/A)

Maximum Intake Manifold Temperature for Engine Protection (Shut Down Threshold) — °F (°C) N/A (N/A)

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)

Oil Capacity with OP **6023** Oil Pan : High - Low — US gal (litre) 30 - 23 (114 - 87)

Total System Capacity (Including Filter) — US gal (litre) 35.7 (135)

FUEL SYSTEM

Type Injection System	Direct Injection Cummins PT	4
Maximum Restriction at Lift Pump(clean/dirty filter)..... — in Hg (mm Hg)	4.0 / 8.0 (102 / 203)	
Maximum Allowable Head on Injector Return Line (Consisting of Friction Head and Static Head) — in Hg (mm Hg)	6.5 (165)	
Maximum Fuel Inlet Temperature	— °F (°C)	N/A (N/A)
Maximum Supply Fuel Flow @ 1500 / 1800 RPM..... — US gph (litre/hr)	113 / 134 (428 / 507)	
Maximum Return Fuel Flow @ 1500 / 1800 RPM	— US gph (litre/hr)	62 / 69 (235 / 261)

ELECTRICAL SYSTEM

Cranking Motor (Heavy Duty, Positive Engagement)	— volt	24
Minimum Recommended Battery Capacity		
• Cold Soak @ 50 °F (10 °C) and above	— °F CCA	1200
• Cold Soak @ 32 °F to 50 °F (0 °C to 10 °C)	— °F CCA	1280
• Cold Soak @ 0 °F to 32 °F (-18 °C to 0 °C)	— °F CCA	1800
Maximum Starting Circuit Resistance.....	— Ohm	0.002

COLD START CAPABILITY

Unaided Cold Start

Minimum Cranking Speed.....	— RPM	150
Minimum Ambient Temperature for Unaided Cold Start.....	— °F (°C)	45 (7)

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%

Steady State Stability Band at Any Constant 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); @ 1500 / 1800 RPM	— dBA		N.A.
Exhaust Noise at 1 m Horizontal from Centerline of Exhaust Pipe Outlet Upwards at 45° @ 1500 / 1800 RPM	— dBA		N.A.

Governed Engine Speed	rpm
Engine Idle Speed.....	rpm
Gross Engine Power Output.....	hp (kW)
Brake Mean Effective Pressure.....	psi (kPa)
Piston Speed	ft/min (m/s)
Friction Horsepower.....	hp (kW)
Engine Water Flow at Stated Friction Head External to Engine:	
• 2.5 psi Friction Head.....	US gpm (litre/s)
• Maximum Friction Head	US gpm (litre/s)

	STANDBY POWER		PRIME POWER	
	60 hz	50 hz	60 hz	50 hz
Governed Engine Speed	1,800	1,500	1,800	1,500
Engine Idle Speed.....	725 - 775	725 - 775	725 - 775	725 - 775
Gross Engine Power Output.....	1,490 (1,112)	1300 (970)	1350 (1,007)	1,180 (880)
Brake Mean Effective Pressure.....	285 (1,965)	298 (2,055)	258 (1,779)	271 (1,868)
Piston Speed	1,875 (9.5)	1,562 (7.9)	1,875 (9.5)	1,562 (7.9)
Friction Horsepower.....	170 (127)	115 (86)	170 (127)	115 (86)
Engine Water Flow at Stated Friction Head External to Engine:				
• 2.5 psi Friction Head.....	390 (24.6)	310 (19.6)	390 (24.6)	310 (19.6)
• Maximum Friction Head	340 (21.4)	280 (17.7)	340 (21.4)	280 (17.7)
Intake Air Flow	3,210 (1,514)	2,570 (1,213)	3,039 (1,434)	2,415 (1,140)
Exhaust Gas Temperature	907 (486)	955 (513)	866 (463)	930 (499)
Exhaust Gas Flow	8,446 (3,990)	7,005 (3,306)	7,760 (3,662)	6,465 (3,051)
Air to Fuel Ratio.....	28.4 : 1	26.5 : 1	29.6 : 1	26.1 : 1
Radiated Heat to Ambient	5,917 (104)	7,820 (137)	5,323 (94)	7,135 (125)
Heat Rejection to Jacket Coolant.....	34,774 (611)	33,800 (594)	30,543 (617)	30,680 (539)
Heat Rejection to Exhaust	43,676 (768)	33,575 (590)	39,636 (697)	30,990 (544)
Heat Rejected to *Fuel.....	231 (4.1)	184 (3.2)	217 (3.8)	173 (3.0)
Heat Rejected to Aftercooler.....	N/A (N/A)	N/A (N/A)	N/A (N/A)	N/A (N/A)
Charge Air Flow.....	N/A (N/A)	N/A (N/A)	N/A (N/A)	N/A (N/A)
Turbocharger Compressor Outlet Pressure	N/A (N/A)	N/A (N/A)	N/A (N/A)	N/A (N/A)
Turbocharger Compressor Outlet Temperature.....	N/A (N/A)	N/A (N/A)	N/A (N/A)	N/A (N/A)

Engine Data

Intake Air Flow	cfm (litre/s)
Exhaust Gas Temperature	°F (°C)
Exhaust Gas Flow	cfm (litre/s)
Air to Fuel Ratio.....	air : fuel
Radiated Heat to Ambient	BTU/min (kW)
Heat Rejection to Jacket Coolant.....	BTU/min (kW)
Heat Rejection to Exhaust	BTU/min (kW)
Heat Rejected to *Fuel.....	BTU/min (kW)
Heat Rejected to Aftercooler.....	BTU/min (kW)
Charge Air Flow.....	lb/min (kg/min)
Turbocharger Compressor Outlet Pressure	in Hg (kPa)
Turbocharger Compressor Outlet Temperature.....	°F (°C)

* This is the maximum heat rejection to fuel.

N.A. - Not Available
 N/A - Not Applicable to this Engine
 TBD - To Be Determined

ENGINE MODEL : KTA38-G16
DATA SHEET : FR60206
DATE : 13 JUN 14

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