

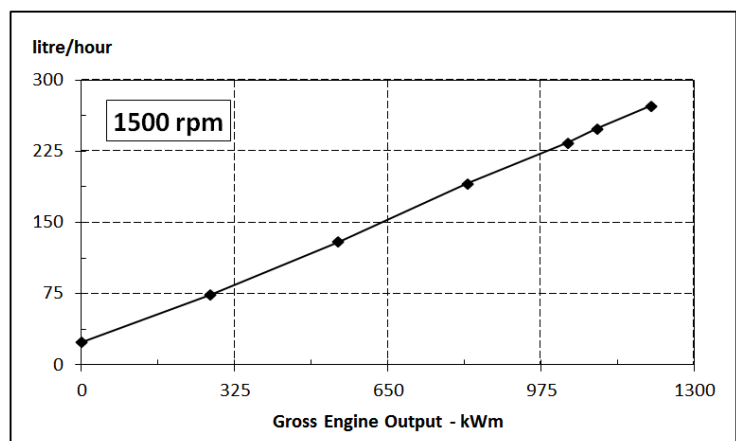
	Cummins Inc. Columbus, Indiana 47202-3005 EXHAUST EMISSIONS DATA SHEET	Basic Engine Model: KTA50-G12	Curve Number: FR6972	G-DRIVE KTA 1
		Engine Critical Parts List: CPL : 3947	Date: 12 NOV 14	

Displacement : 50.3 litre (3067 in³)	Bore : 159 mm (3.25 in.) Stroke : 159 mm (3.25 in.)
No. of Cylinders : 16	Aspiration : Turbocharged and Low Temperature Aftercooled (2P2L)
Emission Certification : Non-Certified	

Engine Speed	Standby Power		Prime Power				Continuous Power	
			Limited Time		Unlimited Time			
RPM	kWm	hp	kWm	hp	kWm	hp	kWm	hp
1500	1210	1622	1148	1539	1095	1468	1033	1385
1800	1306	1752	1256	1684	1178	1580	1146	1537

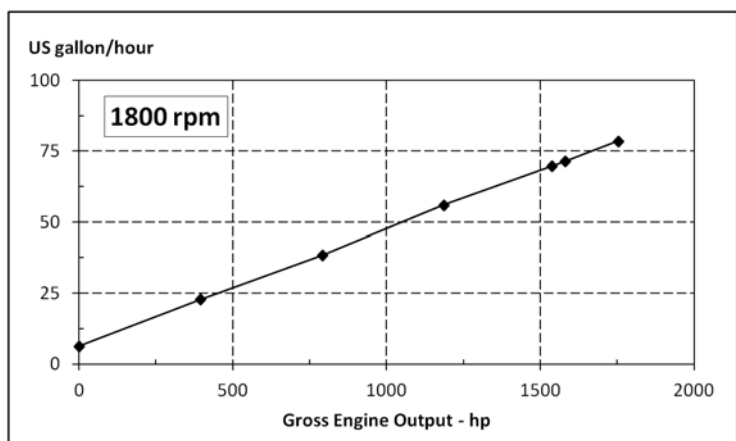
Engine Performance Data @ 1500 rpm

OUTPUT POWER			FUEL CONSUMPTION			
%	kWm	hp	kg/ kWm·h	lb/ hp·h	litre/ hour	US gal/ hour
STANDBY POWER						
100	1210	1622	0.192	0.315	273	72.1
PRIME POWER						
100	1095	1468	0.194	0.318	249	65.9
75	820	1100	0.198	0.326	191	50.5
50	546	732	0.203	0.334	130	34.4
25	273	366	0.232	0.381	74	19.7
CONTINUOUS POWER						
100	1033	1385	0.193	0.317	234	61.9



Engine Performance Data @ 1800 rpm

OUTPUT POWER			FUEL CONSUMPTION			
%	kWm	hp	kg/ kWm·h	lb/ hp·h	litre/ hour	US gal/ hour
STANDBY POWER						
100	1306	1752	0.193	0.318	297	78.5
PRIME POWER						
100	1178	1580	0.195	0.320	270	71.3
75	884	1185	0.204	0.335	212	55.9
50	590	791	0.209	0.344	145	38.4
25	294	395	0.249	0.409	86	22.8
CONTINUOUS POWER						
100	1146	1537	0.195	0.321	264	69.6

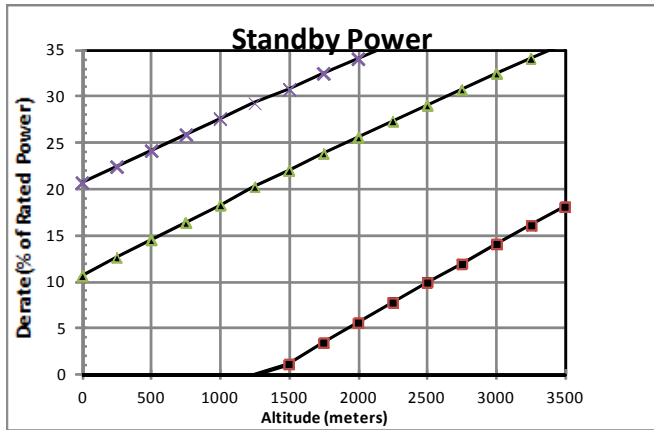


CONVERSIONS:(litres = US Gal x 3.785) (US Gal = litres x 0.2642)

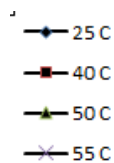
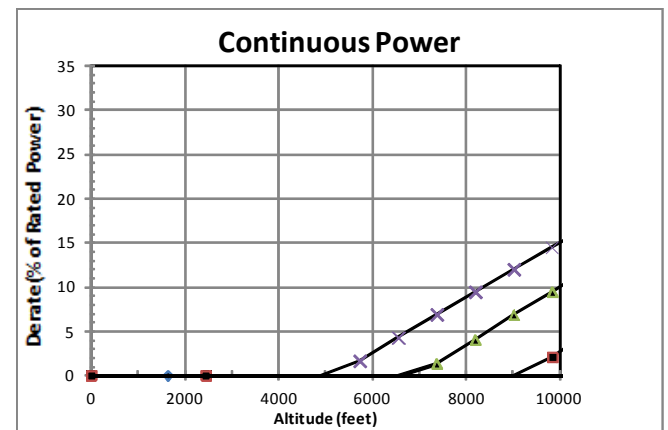
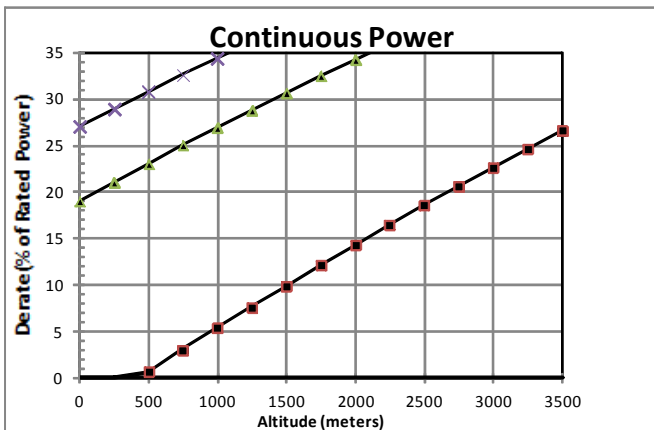
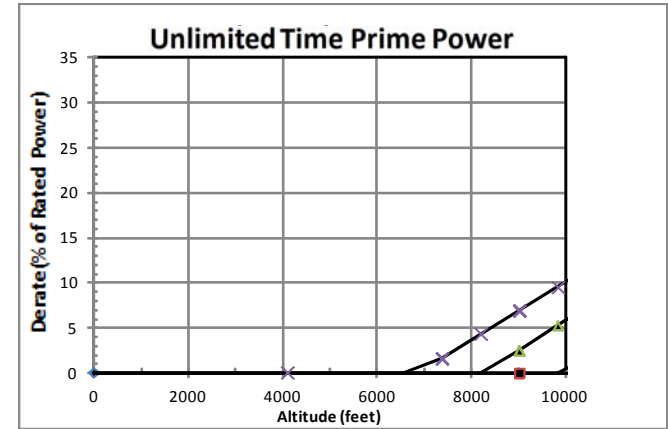
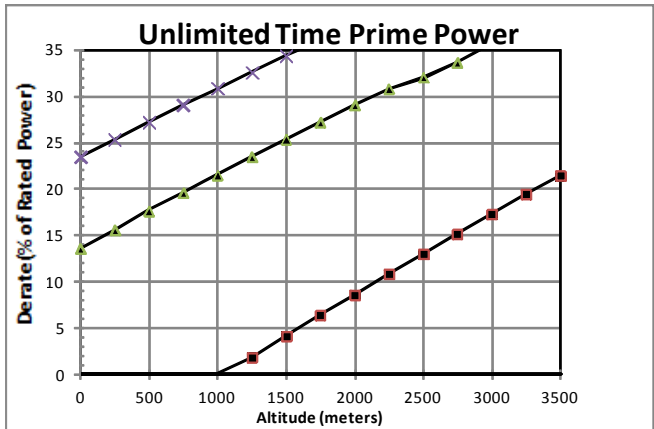
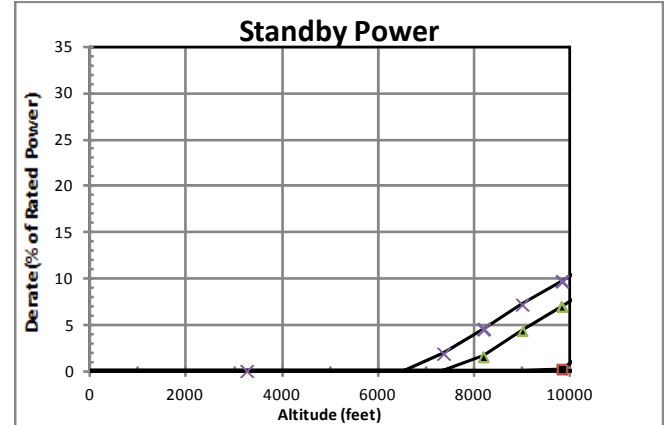
Data Subject to Change Without Notice

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 2 in Hg exhaust back pressure. 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 Operation** above these conditions, derate by an additional 2.5% per 300 m (1000 ft), and 19.7% per 10° C (18° F).

For **Unlimited Time Prime Operation** above these conditions, derate by an additional 2.4% per 300 m (1000 ft), and 19.4% per 10° C (18° F).

For **Continuous Operation** above these conditions, derate by an additional 2.3% per 300 m (1000 ft), and 15.8% per 10° C (18° F).

Operation At Elevated Temperature And Altitude:

For **Standby Operation** above these conditions, derate by an additional 3.2% per 300 m (1000 ft), and 6.2% per 10° C (18° F).

For **Unlimited Time Prime Operation** above these conditions, derate by an additional 3.4% per 300 m (1000 ft), and 8.9% per 10° C (18° F).

For **Continuous Operation** above these conditions, derate by an additional 3.4% per 300 m (1000 ft), and 11.2% per 10° C (18° F).

Cummins Inc.

Engine Data Sheet

G-DRIVE

KTA

ENGINE MODEL : KTA50-G12

CONFIGURATION NUMBER : D283021DX02

DATA SHEET : FR6972 3

DATE : 12 NOV 14

PERFORMANCE CURVE : FR6972

INSTALLATION DIAGRAM

• Fan to Flywheel: 4360926

CPL NUMBER

• Engine Critical Parts List: 3947

GENERAL ENGINE DATA

Type	4-Cycle, 60° Vee, 16 Cylinder Diesel
Aspiration	Turbocharged and Aftercooled
Bore x Stroke	6.25 x 6.25 (159 x 159)
Displacement	3076 (50.3)
Compression Ratio	13.9 : 1

Dry Weight		
Fan to Flywheel Engine	— lb (kg)	11938 (5415)
Wet Weight		
Fan 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 Flywheel	— lb _m • ft ² (kg • m ²)	515 (21.7)
Center of Gravity from Rear Face of Block	— in (mm)	47.5 (1206)
Center of Gravity Above Crankshaft Centerline	— in (mm)	11 (279)
Maximum Static Loading at Rear Main Bearing	— lbm (kg)	2000 (907)

ENGINE MOUNTING

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

Maximum Back Pressure at Standby Power	— in Hg (kPa)	2 (6.8)
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AIR INDUCTION SYSTEM

Maximum Intake Air Restriction		
• with Dirty Filter Element	— in H ₂ O (kPa)	25 (6.2)
• with Normal Duty Air Cleaner and Clean Filter Element	— in H ₂ O (kPa)	15 (3.7)

COOLING SYSTEM

Coolant Capacity - Engine Only	— US gal (litre)	37 (140.1)
Minimum Pressure Cap at Sea Level	— psi (kPa)	14 (96)
Maximum Static Head of Coolant Above Engine Crank Centerline	— ft (m)	60 (18.3)

Jacket Water Circuit Requirements

Thermostat (Modulating) Range	— °F (°C)	7 / 10 (48.3 / 68.9)
Maximum Top Tank Temperature for Standby / Prime Power	— °F (°C)	220 / 212 (104 / 100)
Maximum Coolant Friction Head External to Engine	— psi (kPa)	180 - 200 (82 - 93)

Aftercooler Requirements

Maximum Coolant Friction Head External to Engine - 1500 / 1800 RPM	— psi (kPa)	5 / 7 (34.5 / 48.3)
Maximum Coolant Temperature Into the Aftercooler @ 25C (77F) Ambient	— °F (°C)	120 (49)
Maximum Coolant Temperature Into the Aftercooler @ Limiting Ambient Conditions		
for Standby / Prime Power	— °F (°C)	160 / 150 (71 / 66)
Thermostat (Modulating) Range	— °F (°C)	115 - 135 (46 - 57)

LUBRICATION SYSTEM

Oil Pressure@ Minimum Low Idle	— psi (kPa)	20 (138)
@ Governed Speed	— psi (kPa)	50 - 70 (345 - 483)
Maximum Oil Temperature	— °F (°C)	250 (121)
Oil Capacity with OP 6024 Oil Pan : Low - High	— US gal (litre)	32 - 40 (121.1 - 151.4)
Total System Capacity (with Combo Filter)	— US gal (litre)	46.7 (167.8)

FUEL SYSTEM

Type Injection System	Direct Injection Cummins PT	
Maximum Fuel Supply Restriction at Fuel Pump Inlet		
with Clean Fuel Filter Element(s) at Maximum Fuel Flow.....	— in Hg (mm Hg)	4 (102)
with Dirty Fuel Filter Element(s) at Maximum Fuel Flow	— in Hg (mm Hg)	8 (203)
Maximum Allowable Head on Injector Return Line (Consisting of Friction Head and Static Head)	— in Hg (mm Hg)	6.5 (165)
Maximum Supply Fuel Flow	— US gph (litre/hr)	165 (625)

ELECTRICAL SYSTEM

Cranking Motor (Heavy Duty, Positive Engagement)	— volts	24
Battery Charging System, Negative Ground	— ampere	35
Maximum Allowable Resistance of Cranking Circuit	— ohm	0.002
Minimum Recommended Battery Capacity		
Cold Soak @ 50°F (10°C) and Above	— 0°F CCA	1280
Cold Soak @ 32 - 50°F (0 - 10°C)	— 0°F CCA	1800
Cold Soak @ 0 - 32°F (-18 - 0°C)	— 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)

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); @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..... — dBA 126 / 125

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	
• 4 psi Friction Head	US gpm (litre/s)
• Maximum Friction Head	US gpm (litre/s)

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)

2P/2L

Heat Rejected to Aftercooler	BTU/min (kW)
Aftercooler Water Flow at Stated Friction	
- 2 psi Friction Head	gpm (litre/s)
- Maximum Friction Head	gpm (litre/s)

* This is the maximum heat rejection to fuel.

STANDBY POWER				PRIME POWER			
60 hz		50 hz		60 hz		50 hz	
1800		1500		1800		1500	
725 - 775		725 - 775		725 - 775		725 - 775	
1725 (1306)		1622 (1210)		1580 (1178)		1468 (1095)	
250 (1723)		278 (1914)		225 (1554)		251 (1732)	
1875 (9.5)		1562 (7.9)		1875 (9.5)		1562 (7.9)	
225 (168)		115 (116)		225 (168)		155 (116)	
536 (34)		448 (28)		536 (34)		448 (28)	
500 (32)		416 (26)		500 (32)		416 (26)	
4093 (1932)		3305 (1560)		3780 (1784)		3097 (1462)	
760 (404)		875 (468)		744 (396)		873 (467)	
9302 (4390)		8221 (3880)		8480 (4002)		7692 (3630)	
31.4 : 1		27.3 : 1		32.3 : 1		27.7 : 1	
5441 (96)		5648 (99)		4989 (88)		4257 (75)	
28710 (504)		26482 (465)		27827 (489)		25618 (450)	
50525 (888)		47763 (839)		45504 (799)		44504 (782)	
208 (3.7)		188 (3.3)		192 (3.4)		176 (3.1)	
12507 (220)		8777 (154)		10360 (182)		7086 (125)	
159 (10)		123 (8)		159 (10)		123 (8)	
142 (9)		121 (7.6)		142 (9)		121 (7.6)	

N.A. - Not Available

N/A - Not Applicable to this Engine

TBD - To Be Determined

ENGINE MODEL : KTA50-G12

DATA SHEET : FR6972

DATE : 12 NOV 14