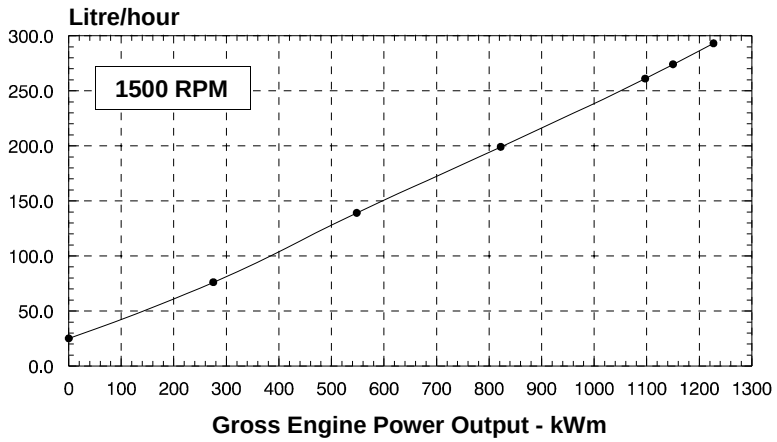
	CUMMINS ENGINE COMPANY, INC Columbus, Indiana 47201 ENGINE PERFORMANCE CURVE	Basic Engine Model: **KTA50-G3**	Curve Number: **FR-6250**	Page No.
		Engine Critical Parts List: **CPL: 2227**	Date: **12Jan01**	

Displacement : **50.3** litre (**3067** in^3)	Bore : **159** mm (**6.25** in.) Stroke : **159** mm (**6.25** in.)
No. of Cylinders : **16**	Aspiration : **Turbocharged and Aftercooled**

Engine Speed	Standby Power Rating		Prime Power Rating				Continuous Power Rating	
			Limited Time		Unlimited Time			
RPM	kWm	BHP	kWm	BHP	kWm	BHP	kWm	BHP
1500	1227	1645	1150	1541	1097	1470	900	1206
1800	1380	1850	1300	1742	1220	1635	1000	1340

Engine Performance Data @ 1500 RPM

OUTPUT POWER			FUEL CONSUMPTION			
%	kWm	BHP	kg/ kWm·h	lb/ BHP·h	litre/ hour	U.S. Gal/ hour
STANDBY POWER						
100	1227	1645	0.203	0.334	293	77.4
PRIME -- LIMITED TIME RUNNING POWER						
100	1150	1541	0.202	0.333	274	72.3
PRIME -- UNLIMITED TIME RUNNING POWER						
100	1097	1470	0.202	0.333	261	69.0
75	822	1102	0.206	0.338	199	52.5
50	548	735	0.216	0.355	139	36.6
25	275	368	0.234	0.385	76	20.0
CONTINUOUS POWER						
100	900	1206	0.204	0.336	216	57.1



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)

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
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 Limited Time 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.

Data shown above represent gross engine performance capabilities obtained and corrected in accordance with ISO-3046 conditions of 100 kPa (29.5 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

TECHNICAL DATA DEPT. **CERTIFIED WITHIN 5%** **CHIEF ENGINEER**

Cummins	**CUMMINS ENGINE COMPANY, INC** Columbus, Indiana 47201 **ENGINE PERFORMANCE CURVE**	Basic Engine Model: **KTA50-G3**	Curve Number: **FR-6250**	Page No.
		Engine Critical Parts List: **CPL: 2227**	Date: **12Jan01**	

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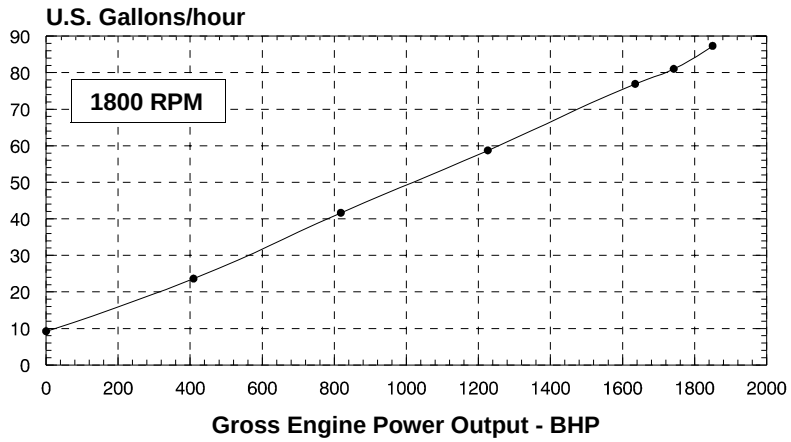
No. of Cylinders : **16**	Aspiration : **Turbocharged and Aftercooled**

Engine Speed	Standby Power Rating		Prime Power Rating				Continuous Power Rating	
			Limited Time		Unlimited Time			
RPM	kWm	BHP	kWm	BHP	kWm	BHP	kWm	BHP
1500	1227	1645	1150	1541	1097	1470	900	1206
1800	1380	1850	1300	1742	1220	1635	1000	1340

Engine Performance Data @ 1800 RPM

OUTPUT POWER			FUEL CONSUMPTION			
%	kWm	BHP	kg/ kWm·h	lb/ BHP·h	litre/ hour	U.S. Gal/ hour
STANDBY POWER						
100	1380	1850	0.204	0.335	330	87.3
PRIME -- LIMITED TIME RUNNING POWER						
100	1300	1742	0.203	0.334	310	81.0
PRIME -- UNLIMITED TIME RUNNING POWER						
100	1220	1635	0.203	0.334	291	76.9
75	915	1226	0.207	0.340	222	58.7
50	610	818	0.220	0.361	157	41.6
25	305	409	0.249	0.410	89	23.6
CONTINUOUS POWER						
100	1000	1340	0.206	0.338	242	63.8



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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.

Data shown above represent gross engine performance capabilities obtained and corrected in accordance with ISO-3046 conditions of 100 kPa (29.5 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.
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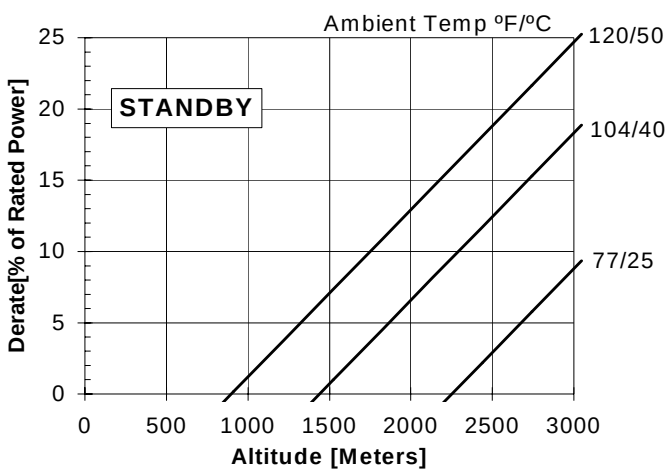
The fuel consumption data is based on No. 2 diesel fuel weight at 0.85 kg/litre (7.1 lbs/U.S. gal).
Power output curves are based on the engine operating with fuel system, water pump and lubricating oil pump; not included are battery charging alternator, fan, optional equipment and driven components.

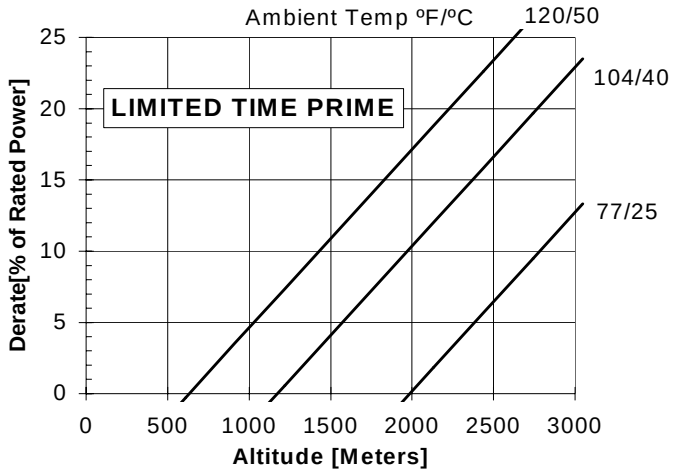
D K. Trueblood

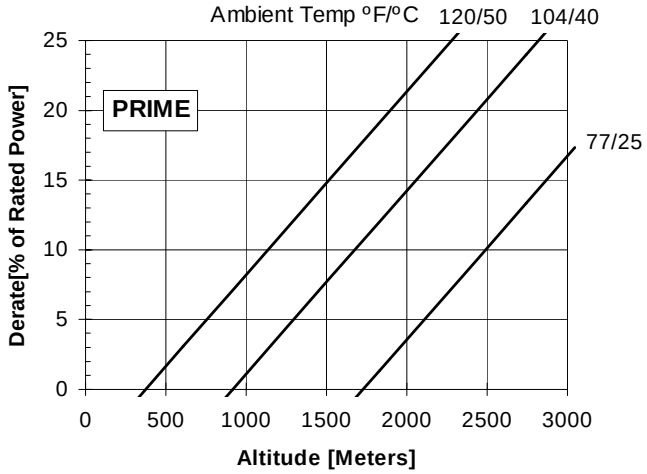
TECHNICAL DATA DEPT. **CERTIFIED WITHIN 5%** **CHIEF ENGINEER**

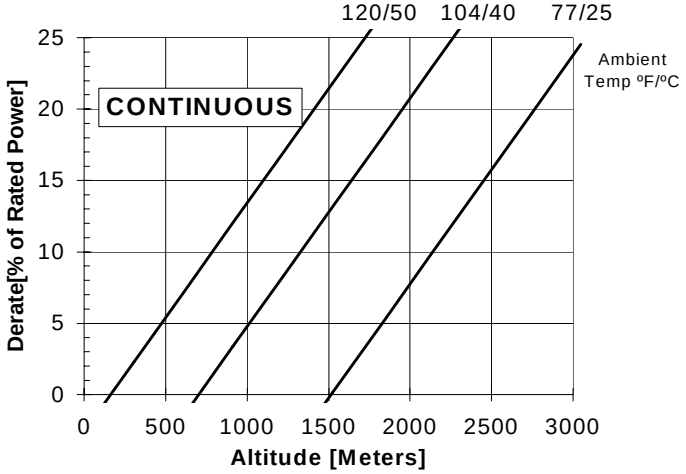
KTA50-G3 Derate Curves @ 1500 RPM

CURVE NO : FR-6250
DATE : 12Jan01









NOTE: Derates shown are based on 15 in H_20 air intake restriction and 2 in Hg exhaust back pressure.

For sustained operation above these conditions, derate by an additional 5% per 1000 ft (300 m) and 9% per 18° F (10° C).

Reference Standards:
BS-5514 and DIN-6271 standards are based on ISO-3046.

Cummins Engine Company, Inc.
Engine Data Sheet

ENGINE MODEL : **KTA50-G3** **CONFIGURATION NUMBER :** D283021DX02

DATA SHEET : DS-6250
DATE : 12Jan01
PERFORMANCE CURVE : FR-6250

INSTALLATION DIAGRAM
• Fan to Flywheel : 3626420

CPL NUMBER
• Engine Critical Parts List : 2227

GENERAL ENGINE DATA

Type		4-Cycle; 60° Vee; 16-Cylinder Diesel
Aspiration		Turbocharged and Aftercooled
Bore x Stroke	— in x in (mm x mm)	6.25 x 6.25 (159 x 159)
Displacement	— in^3 (liter)	3067 (50.3)
Compression Ratio		13.9 : 1
Dry Weight		
Fan to Flywheel Engine	— lb (kg)	11820 (5360)
Heat Exchanger Cooled Engine	— lb (kg)	12260 (5560)
Wet Weight		
Fan to Flywheel Engine	— lb (kg)	12485 (5662)
Heat Exchanger Cooled Engine	— lb (kg)	13085 (5934)
Moment of Inertia of Rotating Components		
• with FW 6009 Flywheel	— $lb_m \cdot ft^2$ (kg • m^2)	301 (12.7)
• with FW 6017 Flywheel	— $lb_m \cdot ft^2$ (kg • m^2)	515 (21.7)
Center of Gravity from Rear Face of Flywheel Housing (FH 6024)	— in (mm)	47.5 (1206)
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)

EXHAUST SYSTEM

Maximum Back Pressure @ Standby Power Rating	— in Hg (mm Hg)	2 (51)

AIR INDUCTION SYSTEM

Maximum Intake Air Restriction		
• with Dirty Filter Element @ Standby Power Rating	— in H_2O (mm H_2O)	25 (635)
• with Clean Filter Element @ Standby Power Rating	— in H_2O (mm H_2O)	15 (381)

COOLING SYSTEM

Coolant Capacity — Engine Only	— US gal (liter)	42.5 (161)
Maximum Coolant Friction Head External to Engine — 1800 rpm	— psi (kPa)	15 (103)
— 1500 rpm	— psi (kPa)	10 (69)
Maximum Static Head of Coolant Above Engine Crank Centerline	— ft (m)	60 (18.3)
Standard Thermostat (Modulating) Range	— °F (°C)	180 - 200 (82 - 93)
Minimum Pressure Cap (For Cooling Systems with less than 2 m [6 ft.] Static Head)	— psi (kPa)	14 (96)
Maximum Top Tank Temperature for Standby / Prime Power	— °F (°C)	220 / 212 (104 / 100)

LUBRICATION SYSTEM

Oil Pressure @ Idle Speed	— 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 : High - Low	— US gal (liter)	40 - 32 (151 - 121)
Total System Capacity (Including Bypass Filter)	— US gal (liter)	46.7 (177)
Angularity of OP 6024 Oil Pan — Front Down		30°
— Front Up		30°
— Side to Side		30°

FUEL SYSTEM

Type Injection System		Direct Injection Cummins PT
Maximum Restriction at PT Fuel Injection Pump — with Clean Fuel Filter	— in Hg (mm Hg)	4.0 (102)
— with Dirty Fuel Filter	— in Hg (mm Hg)	8.0 (203)
Maximum Allowable Head on Injector Return Line (Consisting of Friction Head and Static Head)	— in Hg (mm Hg)	6.5 (165)
Maximum Fuel Flow to Injection Pump	— US gph (liter / hr)	165 (625)

ELECTRICAL SYSTEM

Cranking Motor (Heavy Duty, Positive Engagement) — volt	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 °F to 50 °F (0 °C to 10 °C) — 0°F CCA	1800	
• Cold Soak @ 0 °F to 32 °F (-18 °C to 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 rpm / 1500 rpm — dBA	94.6 / 92.4
Exhaust Noise at 1 m Horizontally from Centerline of Exhaust Pipe Outlet Upwards at 45° — 1800 / 1500 rpm — dBA	126 / 125

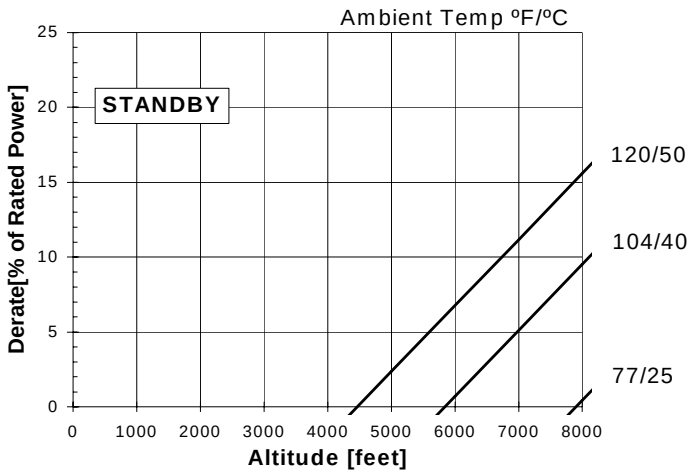
	STANDBY POWER				PRIME POWER UNLIMITED TIME			
	60 hz		*50 hz*		*60 hz*		*50 hz*	
Governed Engine Speed — rpm	1800		1500		1800		1500	
Engine Idle Speed — rpm	725 - 775		725 - 775		725 - 775		725 - 775	
Gross Engine Power Output — BHP (kW_m)	1850	(1380)	1645	(1227)	1635	(1220)	1470	(1097)
Brake Mean Effective Pressure — psi (kPa)	265	(1827)	283	(1951)	235	(1620)	253	(1744)
Piston Speed — ft / min (m / s)	1875	(9.5)	1562	(7.9)	1875	(9.5)	1562	(7.9)
Friction Horsepower — HP (kW_m)	225	(168)	155	(116)	225	(168)	155	(116)
Engine Water Flow at Stated Friction Head External to Engine:								
• 4 psi Friction Head — US gpm (liter / s)	535	(33.7)	440	(27.8)	535	(33.7)	440	(27.8)
• Maximum Friction Head — US gpm (liter / s)	470	(29.6)	400	(25.2)	470	(29.6)	400	(25.2)
Engine Data with Dry Type Exhaust Manifold								
Intake Air Flow — cfm (liter / s)	3900	(1840)	3700	(1746)	3700	(1746)	3400	(1605)
Exhaust Gas Temperature — °F (°C)	887	(475)	977	(525)	860	(460)	968	(520)
Exhaust Gas Flow — cfm (liter / s)	9100	(4295)	8500	(4011)	8400	(3964)	7900	(3728)
Air to Fuel Ratio — air : fuel	26.5 : 1		27.0 : 1		27.5 : 1		28.0 : 1	
Radiated Heat to Ambient — BTU / min (kW_m)	10000	(176)	8500	(150)	8500	(150)	7300	(130)
Heat Rejection to Coolant — BTU / min (kW_m)	51000	(900)	44000	(775)	44000	(775)	38500	(680)
Heat Rejection to Exhaust — BTU / min (kW_m)	53000	(935)	48000	(845)	47000	(830)	43000	(760)

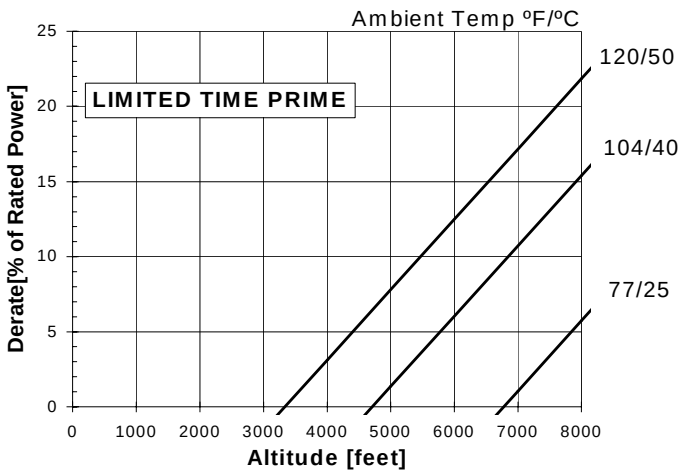
N.A. - Data is Not Available
N/A - Not Applicable to this Engine
TBD - To Be Determined

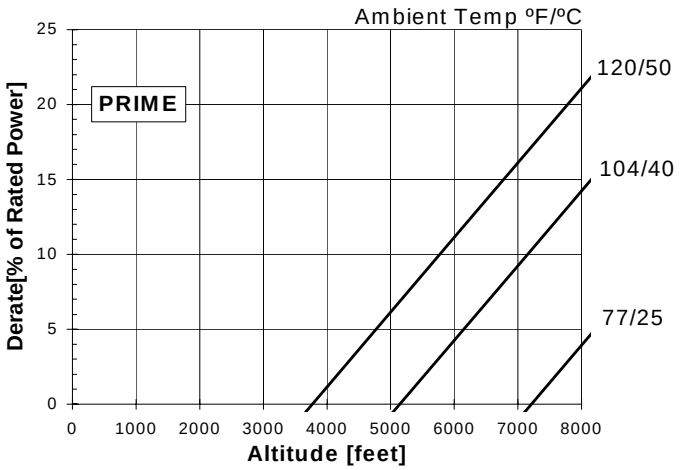
ENGINE MODEL : **KTA50-G3**
DATA SHEET : DS-6250
DATE : 12Jan01
CURVE NO. : FR-6250

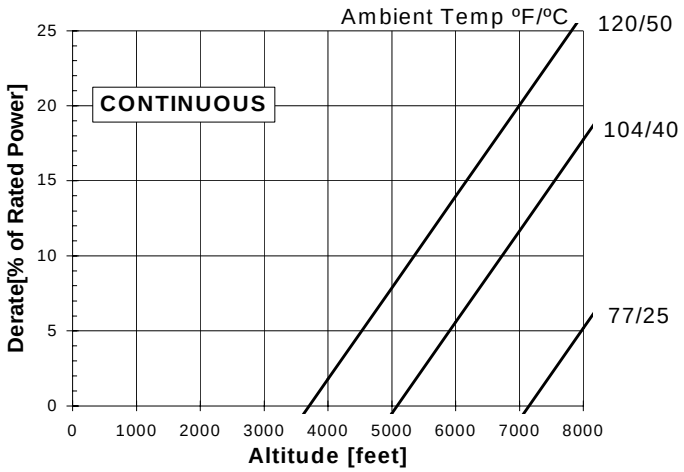
KTA50-G3 Derate Curves @ 1800 RPM

CURVE NO : FR-6250
DATE : 12Jan01









NOTE: Derates shown are based on 15 in H_20 air intake restriction and 2 in Hg exhaust back pressure.

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Reference Standards:
BS-5514 and DIN-6271 standards are based on ISO-3046.