KTA50-GS8 Advantage Data Sheet

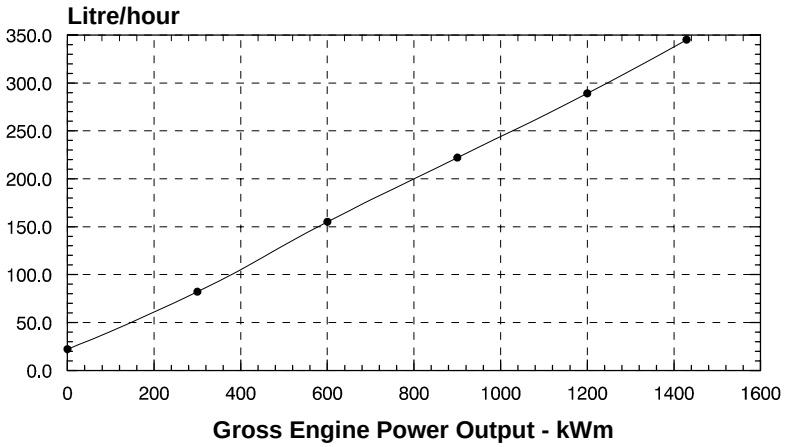
Cummins Inc. Columbus, Indiana 47201

Curve Number: **FR-6261**	Engine Critical Parts List: **2354 (1P/2L), 2859 (2P/2L)**	Date: **21Jan02**
Displacement : **50.3** litre (306**7** in^3)	Bore : **159** mm (**6.25** in.)	Stroke : **159** mm (**6.25** in.)
No. of Cylinders : **16**	Aspiration : **Turbocharged and Low Temperature Aftercooled**	

Engine Speed	Overload Power Rating		Prime Power Rating	
RPM	kWm	BHP	kWm	BHP
1500	1429	1915	1287	1725
1800	-----	-----	-----	-----

Engine Performance Data @ 1500 RPM

OUTPUT POWER			FUEL CONSUMPTION			
%	kWm	BHP	kg/ kWm·h	lb/ BHP·h	litre/ hour	U.S. Gal/ hour
OVERLOAD POWER						
100	1429	1915	0.206	0.338	345	91.2
PRIME POWER						
100	1287	1725	0.204	0.336	309	81.6
75	965	1294	0.210	0.345	238	62.8
50	644	863	0.221	0.363	167	44.1
25	322	431	0.232	0.383	88	23.3



Engine Performance Data @ 1800 RPM

Not Available at 1800 RPM

Not Available at 1800 RPM

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.

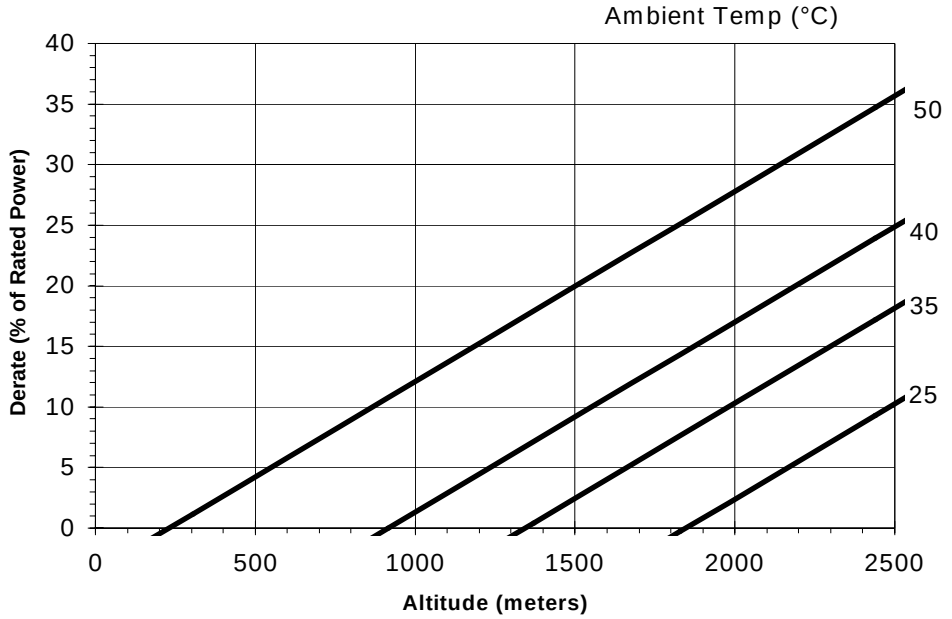
D K. Truebloood

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

POWER RATING APPLICATION GUIDELINES FOR EMERGENCY STANDBY ENGINES FOR APPLICATION IN CORPORATE GENERATOR SETS ONLY

These guidelines have been formulated to ensure proper application of generator drive engines in Cummins corporate generator set installations. Generator drive engines are not designed for and shall not be used in variable speed D.C. generator set applications.

Applicable for supplying emergency power for the duration of the utility power outage. No overload capability is available for this standby rating. Under no condition is an engine allowed to operate in parallel with the public utility at the Emergency Standby Power rating. This rating should be applied where reliable utility power is available. An emergency standby rated engine should be sized for a maximum of an **70%** typical load factor and **200 hours** of operation per year. This includes a maximum of **1 hour** in a **12 hour** period at the Emergency Standby Power rating. Emergency Standby rating should never be applied except in true emergency power outages. Negotiated power outages contracted with a utility company are not considered an emergency.



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

Operation At Elevated Temperature And Altitude:

For sustained operation above these conditions, derate by an additional 4.6% per 300m (1000ft) and 12% per 10°C (18°F)

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

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Cummins Inc. Columbus, Indiana 47201

ENGINE MODEL : **KTA50-GS8** **CONFIGURATION NUMBER :** D283022DX02

DATA SHEET : DS-6261
DATE : 21Jan02
PERFORMANCE CURVE : FR-6261

INSTALLATION DIAGRAM
- Fan to Flywheel (1P/2L) : 3170289
- Fan to Flywheel (2P/2L) : 3626419

CPL NUMBER
- Engine Critical Parts List (1P/2L) : 2354
- Engine Critical Parts List (2P/2L) : 2859

GENERAL ENGINE DATA

Type		4-Cycle; 60° Vee; 16-Cylinder Diesel	
Aspiration		Turbocharged & Low Temp. 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		14.9 : 1	
Dry Weight			
Fan to Flywheel Engine	— lb (kg)	11820	(5360)
Wet Weight			
Fan to Flywheel Engine	— lb (kg)	12485	(5662)
Moment of Inertia of Rotating Components			
• with FW 6009 Flywheel	— $lb_m \cdot ft^2$ ($kg \cdot m^2$)	271	(11.4)
• with FW 6017 Flywheel	— $lb_m \cdot ft^2$ ($kg \cdot m^2$)	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	— in Hg (mm Hg)	2	(51)

AIR INDUCTION SYSTEM

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

COOLING SYSTEM (Low Temperature Aftercooling)

Coolant Capacity — Engine Only	— US gal (liter)	43.5	(165)
Maximum Coolant Friction Head External to Engine — 1500 rpm [High Flow]	— psi (kPa)	10	(70)
— 1500 rpm [Low Flow]	— psi (kPa)	5	(35)
Maximum Static Head of Coolant Above Engine Crank Centerline	— ft (m)	60	(18.3)
Standard Thermostat Modulating Range — High Flow (Jacket)	— °F (°C)	180 - 200	(82 - 93)
— Low Flow (Aftercooler)	— °F (°C)	150 - 175	(66 - 79)
Minimum Pressure Cap (For Cooling Systems with less than 2 m [6 ft.] Static Head)	— psi (kPa)	14	(96)
Maximum Top Tank Temperature for Overload Power / Prime Power	— °F (°C)	220 / 212	(104 / 100)
Target Coolant Inlet Temperature to Aftercoolers @ 77 °F (25 °C) Ambient	— °F (°C)	130	(55)
Maximum Coolant Temperature to Aftercoolers — Overload Power / Prime Power	— °F (°C)	160 / 150	(71 / 66)

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 6027 Oil Pan : High - Low	— US gal (liter)	47 - 39	(178 - 148)
Total System Capacity (Including Bypass Filter)	— US gal (liter)	54	(204)

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)	151	(570)

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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); 1500 rpm — dBA	92.4
Exhaust Noise at 1 m Horizontally from Centerline of Exhaust Pipe Outlet Upwards at 45° — dBA	N.A.

	OVERLOAD POWER	PRIME POWER
Governed Engine Speed — rpm	1500	1500
Engine Idle Speed — rpm	725 - 775	725 - 775
Gross Engine Power Output — BHP (kW_m)	1915 (1429)	1725 (1286)
Brake Mean Effective Pressure — psi (kPa)	330 (2275)	299 (2062)
Piston Speed — ft / min (m / s)	1562 (7.9)	1562 (7.9)
Friction Horsepower — HP (kW_m)	155 (116)	155 (116)
Engine Data with Dry Type Exhaust Manifold		
Intake Air Flow — cfm (liter / s)	3500 (1655)	3350 (1581)
Exhaust Gas Temperature — °F (°C)	950 (510)	930 (499)
Exhaust Gas Flow — cfm (liter / s)	9210 (4350)	8555 (4038)
Air to Fuel Ratio — air : fuel	23.2 : 1	24.5 : 1
Radiated Heat to Ambient — BTU / min (kW_m)	12000 (210)	10700 (299)
Heat Rejection to Exhaust — BTU / min (kW_m)	54200 (954)	47500 (835)
Additional Engine Aftercooler Data (2 Pump / 2 Loop)		
Engine Jacket Coolant Flow at Stated Friction Head External to Engine:		
• 4 psi Friction Head — US gpm (liter / s)	440 (27.8)	440 (27.8)
• Maximum Friction Head — US gpm (liter / s)	400 (25.2)	400 (25.2)
Heat Rejection to Coolant (Aftercooler) — BTU / min (kW_m)	15600 (275)	12600 (221)
Heat Rejection to Coolant (Engine) — BTU / min (kW_m)	35000 (615)	32500 (571)
Aftercooler Coolant Flow at Stated Friction Head External to Engine:.		
• 2 psi Friction Head — US gpm (liter / s)	100 (6.3)	100 (6.3)
• Maximum Friction Head — US gpm (liter / s)	95 (6.0)	95 (6.0)
Additional Engine Aftercooler Data (1 Pump / 2 Loop)		
Engine Jacket Coolant Flow at Stated Friction Head External to Engine:		
• 4 psi Friction Head — US gpm (liter / s)	352 (22.2)	352 (22.2)
• Maximum Friction Head — US gpm (liter / s)	320 (20.2)	320 (20.2)
Heat to be Rejected by Low Temperature Radiator* — BTU / min (kW_m)	30400 (535)	32500 (571)
Heat to be Rejected by Jacket Water Radiator* — BTU / min (kW_m)	22030 (390)	12250 (215)
Aftercooler Coolant Flow at Stated Friction Head External to Engine:.		
• 2 psi Friction Head — US gpm (liter / s)	85 (5.4)	85 (5.4)
• Maximum Friction Head — US gpm (liter / s)	80 (5.0)	80 (5.0)

Not Available at 1800 RPM

Not Available at 1800 RPM

* See AEB 90.39 1 Pump / 2 Loop KTA50-G8/9 system.

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

Cummins Inc.
Columbus, Indiana 47202-3005

ENGINE MODEL : **KTA50-GS8**
DATA SHEET : DS-6261
DATE : 21Jan02
CURVE NO. : FR-6261