



ENGINE PERFORMANCE CURVE

Rating: Gross Power
 Application: Generator
 1500 RPM (50 Hz)

POWERTECH 4.5L Engine
 Model: **4045HF150**

96 hp (72 kW) Prime
107 hp (80 kW) Standby
 [Option 160B / 1611]*

Factory pump must be adjusted from 1800 RPM to 1500 RPM.*

Nominal Engine Power @ 1500 RPM			
Prime		Standby	
HP	kW	HP	kW
96	72	107	80

Generator Efficiency %	Fan Power		Power Factor	Prime Rating		Standby Rating ¹		4 sec Standby Block Load Capability
	hp	kW		kW	kVA	kW	kVA	
88-92	4	3	0.8	61-64	76-80	68-71	85-89	100%*

Note 1: Based on nominal engine power.*

Air Intake Restriction 12 in.H₂O (3 kPa)
 Exhaust Back Pressure 30 in.H₂O (7.5 kPa)

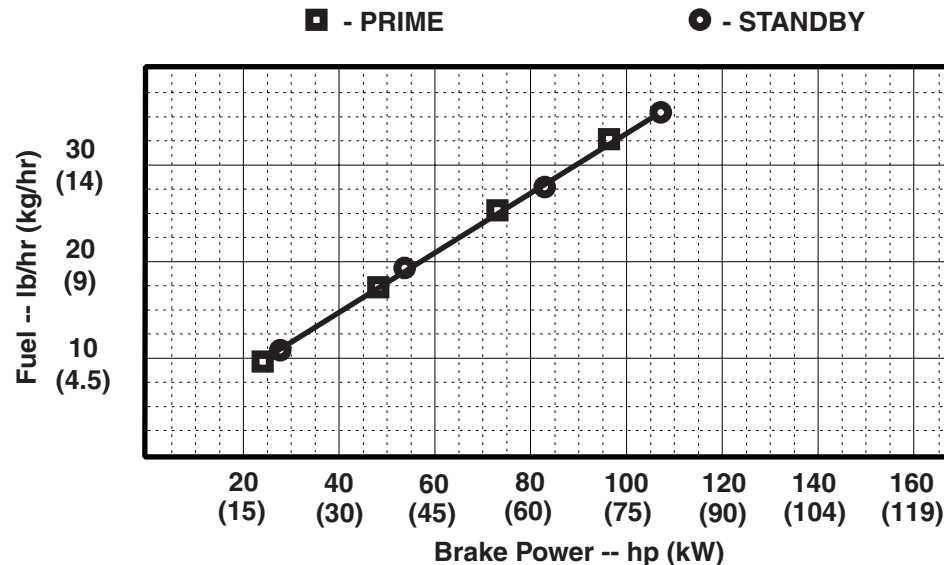
Gross power guaranteed within + or - 5% at SAE J1995 and ISO 3046 conditions:

- 77 °F (25 °C) air inlet temperature
- 29.31 in.Hg (99 kPa) barometer
- 104 °F (40 °C) fuel inlet temperature
- 0.853 fuel specific gravity @ 60 °F (15.5 °C)

Conversion factors:

- Power: kW = hp x 0.746
- Fuel: 1 gal = 7.1 lb, 1 L = 0.85 kg
- Torque: N*m = lb-ft x 1.356

All values are from currently available data and are subject to change without notice.



Notes:

All OEM Gen Set Engine Applications must be pre-screened for torsional vibration compatibility with the respective alternator end hardware.

*OEM Engine Application Engineering will perform this computer-based analysis work upon request. **

Emission Certifications:

Certified by:

NONE

Ref: Engine Emission Label

Kevin J Bailey
 31 MAY 1999

* Revised Data

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 June 1999

Engine Specification Data

General Data

Model 4045HF150
 Number of Cylinders 4
 Bore and Stroke--in. (mm)..... 4.19 x5 (106 x 127)
 Displacement--in.³ (L)276 (4.5)
 Compression Ratio 17.0:1
 Valves per Cylinder--Intake/Exhaust 1/1
 Firing Order 1-3-4-2
 Combustion System Direct Injection
 Engine Type In-line, 4-Cycle
 Aspiration Turbocharged
 Charge Air Cooling System..... Air-to-Air
 Engine Crankcase Vent System Open
 Maximum Crankcase Pressure--in.H₂O (kPa)2 (0.5)

Physical Data

Length--in.(mm)33.9 (861)
 Width--in.(mm)23.5 (598)
 Height--in.(mm)38.6 (980)
 Weight, dry--lb (kg).....872 (396)
 (Includes flywheel housing, flywheel & electrics)
 Center of Gravity Location
 From Rear Face of Block (X-axis)--in.(mm) ..10.6 (269)
 Right of Crankshaft (Y-axis)--in.(mm)..... -0.3 (-8)
 Above Crankshaft (Z-axis)--in.(mm).....5.9 (151)
 Max. Allow. Static Bending Moment at Rear
 Face of Flywhl Hsg w/ 5-G Load--lb-ft (N•m) ...600 (814)
 Thrust Bearing Load Limit (Forward)
 Continuous--lb (N).....500 (2224)
 Intermittent--lb (N).....900 (4003)

Electrical System

Recommended Battery Capacity (CCA)
 12 Volt System--amp..... 640
 24 Volt System--amp..... 570
 Maximum Allowable Starting Circuit Resistance
 12 Volt System--Ohm..... 0.0012
 24 Volt System--Ohm..... 0.002
 Starter Rolling Current--12 Volt System
 At 32 °F (0 °C)--amp 780
 At -22 °F (-30 °C)--amp..... 1000
 Starter Rolling Current--24 Volt System
 At 32 °F (0 °C)--amp 600
 At -22 °F (-30 °C)--amp..... 700

Air System

	<u>Prime</u>	<u>Standby</u>
Maximum Allowable Temp Rise-- Ambient Air to Engine Inlet--°F (°C) 15 (8) 15 (8)		
Maximum Air Intake Restriction Dirty Air Cleaner--in.H ₂ O (kPa) ... 25 (6.25) ... 25 (6.25)		
Clean Air Cleaner--in.H ₂ O (kPa) 12 (3) 12 (3)		
Engine Air Flow--ft ³ /min (m ³ /min).....162 (4.6) ... 173 (4.9)		
Intake Manifold Pressure--psi (kPa)8.1 (56) 9.7 (67)		
Rec'd. Intake Pipe Dia--in. (mm).....3 (76.2) 3 (76.2)		
Compressor Discharge Temp--°F (°C) 198 (92) ..223 (106)		
Max. Press. Drop Through Charge Air Cooler--in.H ₂ O (kPa).....52 (13) 52 (13)		
Max. Temp. Out of Charge Air Cooler @ 77°F (25°C) Ambient Air--°F (°C).140 (60) 140 (60)		

Exhaust System

	<u>Prime</u>	<u>Standby</u>
Exhaust Flow--ft ³ /min (m ³ /min)..... 438 (12.4) ..547(15.5)		
Exhaust Temperature--°F (°C) 1018 (548) . 1072(578)		
Max. Allowable Back Pressure-- in.H ₂ O (kPa) 30 (7.5)..... 30 (7.5)		
Rec'd. Exhaust Pipe Dia--in.(mm) 4(101.6).... 4(101.6)		

Cooling System

	<u>Prime</u>	<u>Standby</u>
Engine Heat Reject.--BTU/min (kW). 1933 (34) ..2161 (38)		
Air/Air Exchanger Heat Rejection-- BTU/min (kW) 158 (3)*241 (4)*		
Coolant Flow--gal/min (L/min)..... 32 (120) 32 (120)		
Thermostat Start to Open--°F (°C) 180 (82) 180 (82)		
Thermostat Fully Open--°F (°C)..... 202 (94) 202 (94)		
Max Water Pump Inlet Restriction--in.H ₂ O (kPa) 20 (5) 20 (5)		
Engine Coolant Capacity--qt (L) 9 (8.5) 9 (8.5)		
Rec'd. Pressure Cap--psi (kPa) 10 (69) 10 (69)		
Max. Top Tank Temp--°F (°C) 221 (105) .. 221 (105)		
Min. Coolant Fill Rate--gal/min (L/min) 3 (11) 3 (11)		
Min. Air-to-Boil Temperature--°F (°C) .. 117 (47) 117 (47)		

Fuel System

	<u>Prime</u>	<u>Standby</u>
Fuel Injection Pump Stanadyne... Stanadyne		
Governor Regulation..... 5 %..... 5 %		
Governor Type Mechanical.. Mechanical		
Fuel Consumption--lb/hr (kg/hr)33.0 (15.0)... 36.5 (16.6)		
Total Fuel Flow--lb/hr (kg/hr)205 (93) 205 (93)		
Maximum Fuel Transfer Pump Suction-- ft (m) fuel 3 (0.9)..... 3 (0.9)		
Fuel Filter Micron Size @ 98 % Efficiency ... 8..... 8		

Lubrication System

	<u>Prime</u>	<u>Standby</u>
Oil Pressure at Rated Speed--psi (kPa)50 (345) ... 50 (345)		
Oil Pressure at Low Idle--psi (kPa) 15 (105)..... 15 (105)		
In Pan Oil Temperature--°F (°C) 240 (115)... 240 (115))		
Oil Pan Capacity, High--qt (L) 17 (16) 17 (16)		
Oil Pan Capacity, Low--qt (L) 16 (15) 16 (15)		
Total Engine Oil Capacity With Filters--qt (L) 18 (17) 18 (17)		
Engine Angularity Limits (Continuous) Any Direction--degrees..... 20 20		

Performance Data

	<u>Prime</u>	<u>Standby</u>
Rated Power--hp (kW) 96 (72)..... 107 (80)		
Rated Speed--rpm 1500..... 1500		
Low Idle Speed--rpm 1400* 1400*		
BMEP--psi (kPa) 185(1273)... 205(1414)		
Friction Power @ Rated Speed--hp (kW) 13 (10)..... 13 (10)		
Altitude Capability--ft (m) ... 13,500 (4100) ... 11,000(3300)*		
Ratio--Air : Fuel..... 21:1 20:1		
Noise--dB(A) @ 1 m 91.0* 91.4*		
Fuel Consumption -- lb/hr (kg/h) Prime Standby		
25 % Power 9.9 (4.5)..... 10.8 (4.9)		
50 % Power 17.4 (7.9)..... 19.1 (8.7)		
75 % Power 25.1 (11.4)..... 27.5 (12.5)		
100 % Power 33.0 (15.0)..... 36.5 (16.6)		

All values at rated speed and power with standard options unless otherwise noted.

* Revised Data
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 June 1999