

ENGINE PERFORMANCE CURVE



JOHN DEERE

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

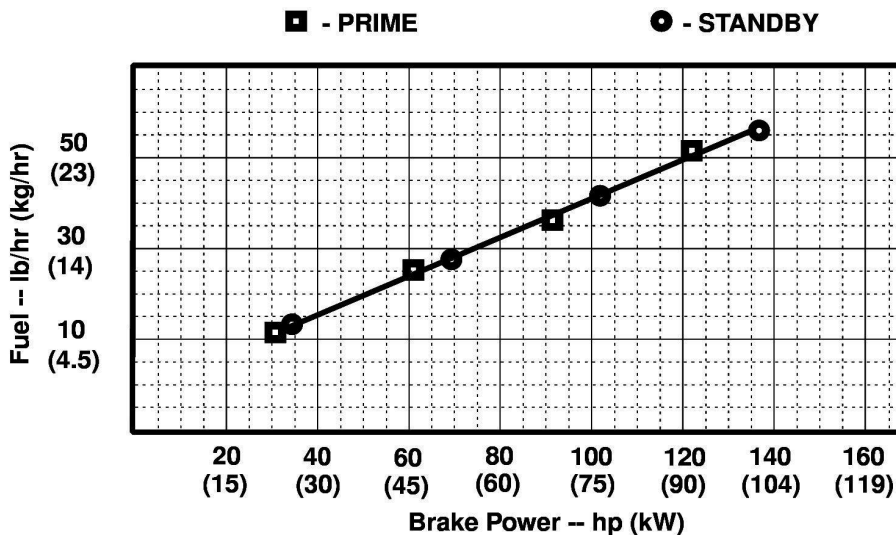
PowerTech™ 4.5L Engine
 Model: **4045HF120**

122 hp (91 kW) Prime
137 hp (102 kW) Standby

Nominal Engine Power @ 1500 RPM			
Prime		Standby	
HP	kW	HP	kW
122	91	137	102

Generator Efficiency %	Fan Power (6% of Standby)		Power Factor	Prime Rating		Standby Rating		4 sec Standby Block Load Capability
	hp	kW		kW	kVA	kW	kVA	
88-92	5.4	4.0	0.8	77-80	96-110	86-90	108-113	82%

Note 1: Based on nominal engine power. Derate 18% for 100% block load capability.



STANDARD CONDITIONS

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 = 0.85kg
- 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 prescreened 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:
<ul style="list-style-type: none"> • none Ref: Engine Emission Label	 14 Feb '00

* Revised Data
 Curve 4045HF120_A_S0_R0

Engine Installation Criteria

General Data

4	Cylinders
106 mm	Bore
127 mm	Stroke
4.5 L	Displacement
17.0:1	Compression Ratio
1/1	Valves per Cylinder
1-3-4-2	Firing Order
Direct Injection	Combustion System
In-line, 4-Cycle	Engine Type
Air-to-Air Aftercooled Aspiration	
Air-to-Air	Charge Air Cooling System
Open	Engine Crankcase Vent System

Physical Data

269 mm	X-axis, Center of Gravity Location
-8 mm	Y-axis, Center of Gravity Location
151 mm	Z-axis, Center of Gravity Location
980 mm	Height
861 mm	Length
	Continuous, Thrust Bearing Load Limit
2224 N	Forward
	Intermittent, Thrust Bearing Load Limit
4003 N	Forward
396 kg	Weight- with oil and no coolant
598 mm	Width
814 N·m	Max. Allowable Static Bending Moment

Electrical System

640 amps	Recommended Battery Capacity- 12V
570 amps	Recommended Battery Capacity- 24V
780 amps	At 0 °C - 12V, Starter Rolling Current
600 amps	At 0 °C - 24V, Starter Rolling Current
1000 amps	At -30 °C - 12V, Starter Rolling Current
700 amps	At -30 °C - 24V, Starter Rolling Current
0.0012 Ohm	Max. Allowable Start Circuit Resistance- 12V
0.002 Ohm	Max. Allowable Start Circuit Resistance- 24V

Charge Air Cooling System

116	Intake Manifold Pressure Prime
136	Intake Manifold Pressure Standby
	Compressor Discharge Temperature @ 77°F
134 °C	(25°C) Ambient Air Prime
	Compressor Discharge Temperature @ 77°F
151 °C	(25°C) Ambient Air Standby
13 kPa	Maximum Pressure Drop through CAC
	Maximum Temperature Out of Charge Air
60 °C	Cooler

Cooling System

8.5 Liter	Engine Coolant Capacity
94 °C	Thermostat Fully Open
82 °C	Thermostat Start to Open
105 °C	Max. Top Tank Temperature Prime
105 °C	Max. Top Tank Temperature Standby
11 L/min	Minimum Coolant Fill Rate
69 kPa	Min. Pressure Cap
144 L/min	Coolant Flow
38 kW/min	Engine Heat Rejection Prime
42 kW/min	Engine Heat Rejection Standby
47 °C	Min. Air-to-Boil Temperature Prime
47 °C	Min. Air-to-Boil Temperature Standby

Exhaust System

7.5 kPa	Maximum Allowable Exhaust Restriction
101.6 mm	Recommended Exhaust Pipe Diameter
17.0 m ³	Exhaust Flow Prime
18.7 m ³	Exhaust Flow Standby
545 °C	Exhaust Temperature Prime
565 °C	Exhaust Temperature Standby

Fuel System

5%	Governor Regulation
Mechanical	Governor Type
8	Fuel Filter @ 98% Efficiency
23.5 kg/hr	Fuel Consumption Prime
25.5 kg/hr	Fuel Consumption Standby
96 kg/hr	Total Fuel Flow Prime
96 kg/hr	Total Fuel Flow Standby
0.9 m	Max. Fuel Transfer pump Suction

Engine Installation Criteria

<u>Lubrication System</u>		<u>Performance Data</u>	
20 deg	Engine Angularity Limits Any Direction	25.3:1	Prime, Air:Fuel Ratio
16 Liter	Oil Pan Capacity- High	25.4:1	Standby, Air:Fuel Ratio
15 Liter	Oil Pan Capacity- Low	2300 m	Altitude Capability Prime
17 Liter	Total Engine Oil Capacity with Filters	1500 m	Altitude Capability Standby
0.5 kPa	Max. Crankcase Pressure	13 kW	Friction Power @ Rated Speed
115 °C	In-Pan Oil Temperature Prime	1150 rpm	Low Idle Speed
115 °C	In-Pan Oil Temperature Standby	NA	Noise @ 1 m Prime
105 kPa	Oil Pressure at Low Idle	NA	Noise @ 1 m Standby
345 kPa	Oil Pressure at Rated Speed	91 kW	Rated Power Prime
		102 kW	Rated Power- Standby
		1500 rpm	Rated Speed
		649.3 N-m	Rated Torque Standby
		579.3 N-m	Rated Torque Prime
		1815 kPa	Standby BMEP
		1620 kPa	Prime BMEP
		23.5 kg/hr	100%Power Prime
		25.5 kg/hr	100%Power Standby
		5.0 kg/hr	25%Power Prime
		6.0 kg/hr	25%Power Standby
		11.5 kg/hr	50%Power Prime
		12.5 kg/hr	50%Power Standby
		16.5 kg/hr	75%Power Prime
		19.0 kg/hr	75%Power Standby

Air Intake System

Maximum Allowable Temp Rise--Ambient Air to Engine Inlet

8 °C
6.4 m³
7.0 m³
76.2 mm
3 kPa
6.25 kPa

Engine Air Flow Prime
Engine Air Flow Standby
Recommended Intake Pipe Diameter
Clean Air Cleaner, Maximum Air Intake Restriction
Dirty Air Cleaner, Maximum Air Intake Restriction

25.3:1
25.4:1
2300 m
1500 m
13 kW
1150 rpm
NA
NA
91 kW
102 kW
1500 rpm
649.3 N-m
579.3 N-m
1815 kPa
1620 kPa
23.5 kg/hr
25.5 kg/hr
5.0 kg/hr
6.0 kg/hr
11.5 kg/hr
12.5 kg/hr
16.5 kg/hr
19.0 kg/hr

Prime, Air:Fuel Ratio
Standby, Air:Fuel Ratio
Altitude Capability Prime
Altitude Capability Standby
Friction Power @ Rated Speed
Low Idle Speed
Noise @ 1 m Prime
Noise @ 1 m Standby
Rated Power Prime
Rated Power- Standby
Rated Speed
Rated Torque Standby
Rated Torque Prime
Standby BMEP
Prime BMEP
100%Power Prime
100%Power Standby
25%Power Prime
25%Power Standby
50%Power Prime
50%Power Standby
75%Power Prime
75%Power Standby