



JOHN DEERE

**ENGINE PERFORMANCE CURVE**

Rating: Gross Power  
 Application: Generator (60 Hz)  
 Target: 125 kWe Standby Market

**PowerTech E™ 4.5L Engine**  
 Model: **4045HF285**

**179 hp (134 kW) Prime**  
**197 hp (147 kW) Standby**

[See Option Code Tables]

Nominal Engine Power @ 1800 RPM			
Prime		Standby	
HP	kW	HP	kW
179	134	197	147

Generator Efficiency %	Fan Power (6% of Standby)		Power Factor	Prime Rating <sup>2</sup>		Standby Rating <sub>1,2</sub>		ISO 8528 G2 Block Load Capability
	hp	kW		kWe	kVA	kWe	kVA	
88-92	8.7	6.5	0.8	112-117	140-146	124-129	155-161	___%

Note 1: Based on nominal engine power.  
 Note 2: kWe / kVA rating assumes 90% efficiency. "Generator Efficiency %" will vary.

**STANDARD CONDITIONS**

Air Intake Restriction ..... 12 in.H<sub>2</sub>O (3 kPa)  
 Exhaust Back Pressure ..... 30 in.H<sub>2</sub>O (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:

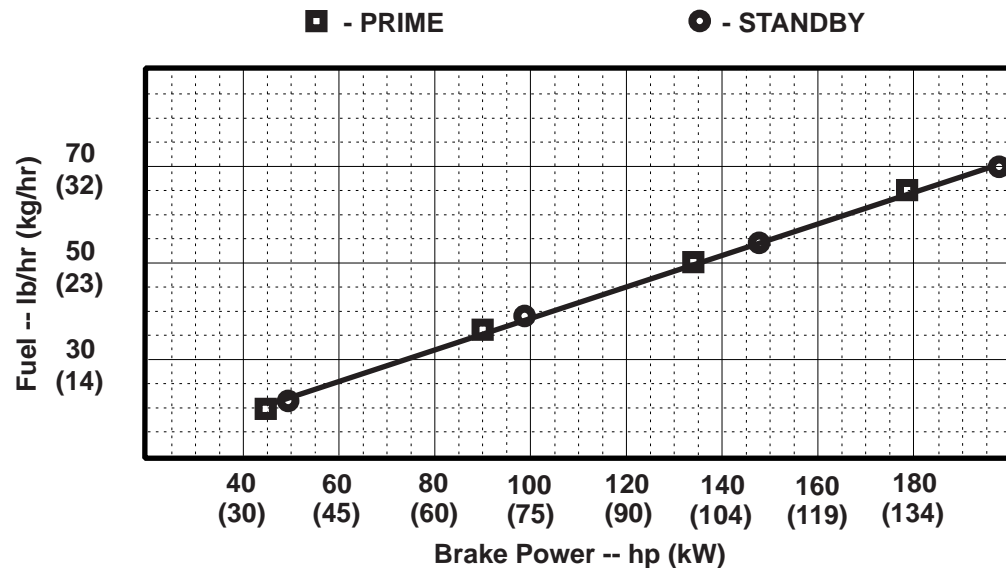
- Power: kW = hp x 0.746
- Fuel: 1 gal = 7.1 lb, 1 L = 0.85 kg
- Torque: N\*m = lb-ft x 1.356

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.*



Tier-3 Emission Certifications:	Certified by:
<b>CARB; EPA</b>	<i>Advance Information</i>
Ref: Engine Emission Label	

\* Revised Data  
 Curve 4045HF2851800197 ..... Sheet 1 of 2  
 July 2010

## Engine Installation Criteria

### General Data

Model .....	4045HF285
Number of Cylinders .....	4
Bore and Stroke--in. (mm).....	4.19 x 5.00 (106 x 127)
Displacement--in. <sup>3</sup> (L) .....	275 (4.5)
Compression Ratio .....	19.0:1
Valves per Cylinder--Intake/Exhaust .....	1 / 1
Firing Order .....	1-3-4-2
Combustion System.....	Unit Injection
Engine Type .....	In-line, 4-Cycle
Aspiration .....	Turbocharged
Charge Air Cooling System.....	Air-to-Air
Engine Crankcase Vent System .....	Open

### Physical Data

Length--in. (mm) .....	33.9 (860)
Width--in. (mm) .....	24.1 (612)
Height--in. (mm) .....	40.9 (1039)
Weight, with oil--lb (kg).....	1083 (491)
(Includes flywheel hsg., flywheel & electrics)	
Center of Gravity Location	
From Rear Face of Block (X-axis)--in. (mm) ...	9.8 (249)
Right of Crankshaft (Y-axis)--in. (mm) .....	2.17 (55)
Above Crankshaft (Z-axis)--in. (mm) .....	5.7 (145)
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 --lb (N) <u>Forward</u> <u>Rearward</u>	
Intermittent.....	899 (4000) .. 450 (2000)
Continuous .....	495 (2200) .. 225 (1000)
Max. Front of Crank. Torsional Vibration--DDA.....	0.25

### Electrical System

**12 Volt      24 Volt**

Min. Battery Capacity (CCA)--amp.....	800	570
Max. Allow. Start. Circ't Resist.--Ohm ..	0.0012	0.002
Starter Rolling Current:		
At 32 °F ( 0 °C)--amp .....	920	600
At -22 °F (-30 °C)--amp.....	1300	700
Min. Volts at ECU while Cranking--volts.....	6	10
Max. ECU Temperature--°F (°C) .....	221 (105)	
Max. Harness Temperature--°F (°C) .....	248 (120)	
Maximum Voltage From Engine Crankshaft/		
Generator Shaft to Ground--VAC .....	0.15	0.15

### Air System

**Prime      Standby**

Max. Allowable Temp Rise--Ambient Air to		
Engine Inlet--°F (°C).....	15 (8)	
Maximum Air Intake Restriction		
Dirty Air Cleaner--in.H <sub>2</sub> O (kPa).....	25 (6.25)	
Clean Air Cleaner--in.H <sub>2</sub> O (kPa).....	15 (3.75)	
Engine Air Flow--ft <sup>3</sup> /min (m <sup>3</sup> /min) .....	311(8.8) .. 341(9.65)	
Air Cleaner Efficiency--% .....	99.9	

### Charge Air Cooling System

**Prime      Standby**

Air/Air Exchanger Heat Rejection--		
BTU/min (kW) .....	1295(22.8) .. 1508 (26.5)	
Compress. Dischrg. Temp.(Rated)		
@ 77 °F (25°C) Amb. Air--°F (°C) .	334(168) .....	369(187)
Compress. Dischrg. Temp.(Max.)		
@ 47°C amb. and		
80 kPa bar.--°F (°C) .....	NA (NA) .....	NA (NA)
Press. Drop, thru CAC--in.H <sub>2</sub> O (kPa)		
Max. ....	52 (13)	
Min. ....	None	
Intake Manifold Pressure--psi (kPa) ....	21(147) .....	25(172)
CAC Out Temp @ 77°F (25°C) Amb.--°F (°C)		
Max. ....	113 (45)	
Min. ....	104 (40)	
CAC Out Temp @ any Ambient--°F (°C)		
Max. ....	190 (88)	

### Cooling System

**Prime      Standby**

Engine Heat Reject.--BTU/min (kW)....	3643(64) .....	4098(72)
Coolant Flow--gal/min (L/min).....	48(180)	
Thermostat Start to Open--°F (°C) .....	180 (82)	
Thermostat Fully Open--°F (°C).....	203 (95)	
Engine Coolant Capacity--qt (L) .....	9 (8.5)	
Min. Pressure Cap--psi (kPa) .....	14.5 (100)	
Max. Top Tank Temp--°F (°C) .....	230 (110)	
Min. Coolant Fill Rate--gal/min (L/min) .....	3 (11)	
Min. Air-to-Boil Temperature--°F (°C) .....	117 (47)	
Min. Pump Inlet Pressure--psi (kPa).....	4.4 (30)	

### Exhaust System

**Prime      Standby**

Exhaust Flow--ft <sup>3</sup> /min (m <sup>3</sup> /min).....	869 (24.6) .....	953(27.0)
Exhaust Temperature--°F (°C) .....	1062(572) ..	1076 (580)
Max. Exhaust Restriction---in. H <sub>2</sub> O (kPa).....	30 (7.5)	
Min. Exhaust Restriction---in. H <sub>2</sub> O (kPa).....	None	
Max. Bend. Moment, Turbo Out.--lb-ft (N•m) .....	5.2 (7.0)	
Max. Shear on Turbo Outlet--lb (kg) .....	24 (11)	

### Fuel System

**Prime      Standby**

ECU Description .....	L16 Controller	
Fuel Injection Pump .....	Denso HP3	
Governor Type .....	Electronic	
Total Fuel Flow--lb/hr (kg/hr).....	152 (68.9) .....	169 (76.6)
Fuel Consumption--lb/hr (kg/hr) .....	63 (29.0) .....	70 (31.9)
Max. Fuel Inlet Temp.--°F (°C).....	176 (80)	
Fuel Temp. Rise, Inlt to Retr--°F (°C)84.6(47) .....	88.2(49)	
Max. Fuel Inlet Restriction--in. H <sub>2</sub> O (kPa) .....	80 (20)	
Max. Fuel Inlet Pressure--in. H <sub>2</sub> O (kPa).....	NA (NA)	
Max. Fuel Return Pressure--in. H <sub>2</sub> O (kPa).....	80 (20)	

### Lubrication System

**Prime      Standby**

Oil Press. at Rated Speed--psi (kPa).....	46 (320)	
Min. Oil Pressure--psi (kPa).....	15 (105)	
Max. Oil Carryover in Blow-by--lb/hr (g/hr) .....	0.002 (1.0)	
Max. Airflow in Blow-by--gal/min (l/min).....	26 (100)	
Max. Crankcase Pressure--in. H <sub>2</sub> O (kPa).....	2 (0.5)	

### Performance Data

**Prime      Standby**

Rated Power--hp (kW) .....	179 (134).....	197 (147)
Rated Speed--rpm .....	1800.....	1800
Low Idle Speed--rpm .....	1150.....	1150
Rated Torque--lb-ft (N•m).....	961 (709)....	1057 (780)
BMEP--psi (kPa) .....	287 (1980)....	316 (2178)
Friction Power		
@ Rated Speed--hp (kW) .....	17 (13)	
Altitude Capability--ft (m) .....	10,000(3050) .....	7500(2286)
Ratio--Air : Fuel.....	22 : 1.....	21 : 1
Smoke @ Rated Speed--Bosch No. ....	0.44.....	1.25
Noise--dB(A) @ 1 m .....	90.0.....	90.3

### Fuel Consumption -- lb/hr (kg/h)

**Prime      Standby**

25 % Power .....	19.8 (9.0).....	21.4 (9.7)
50 % Power .....	36.4 (16.5).....	39.5 (17.9)
75 % Power .....	50.3 (22.8).....	54.2 (24.6)
100 % Power .....	65.0 (29.5).....	70.0 (31.9)

# Advance Information

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

\* Revised Data  
Curve 4045HF2851800197..... Sheet 2 of 2  
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