



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 ²		Standby Rating _{1,2}		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.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:

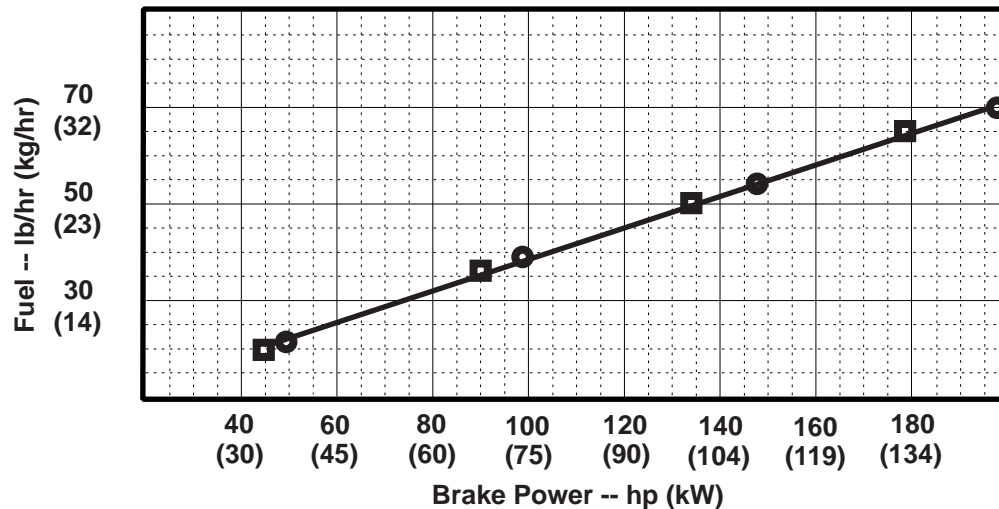
- 77 °F (25 °C) air inlet temperature
- 29.31 in.Hg (99 kPa) barometer
- 104 °F (40 °C) fuel inlet temperature
- 0.853 fuel specific gravity @ 60 °F (15.5 °C)

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.

■ - PRIME ● - STANDBY



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:

CARB; EPA

Ref: Engine Emission Label

Advance Information

* Revised Data

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 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. ³ (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 ₂ O (kPa).....	25	(6.25)
Clean Air Cleaner--in.H ₂ O (kPa).....	15	(3.75)
Engine Air Flow--ft ³ /min (m ³ /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 ₂ 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 ³ /min (m ³ /min).....	869 (24.6)	953(27.0)
Exhaust Temperature--°F (°C)	1062(572) ..	1076 (580)
Max. Exhaust Restriction---in. H ₂ O (kPa).....	30	(7.5)
Min. Exhaust Restriction---in. H ₂ 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 ₂ O (kPa)	80	(20)
Max. Fuel Inlet Pressure--in. H ₂ O (kPa).....	NA (NA)	
Max. Fuel Return Pressure--in. H ₂ 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 ₂ 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
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July 2010