



JOHN DEERE

ENGINE PERFORMANCE CURVE

Rating: Gross Power
 Application: Generator (60 Hz)
 Target: 100 kWe Standby Market

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

144 hp (107 kW) Prime
158 hp (118 kW) Standby

[See Option Code Tables]

Nominal Engine Power @ 1800 RPM			
Prime		Standby	
HP	kW	HP	kW
144	107	158	118

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	89-93	111-116	98-103	123-129	100%

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:

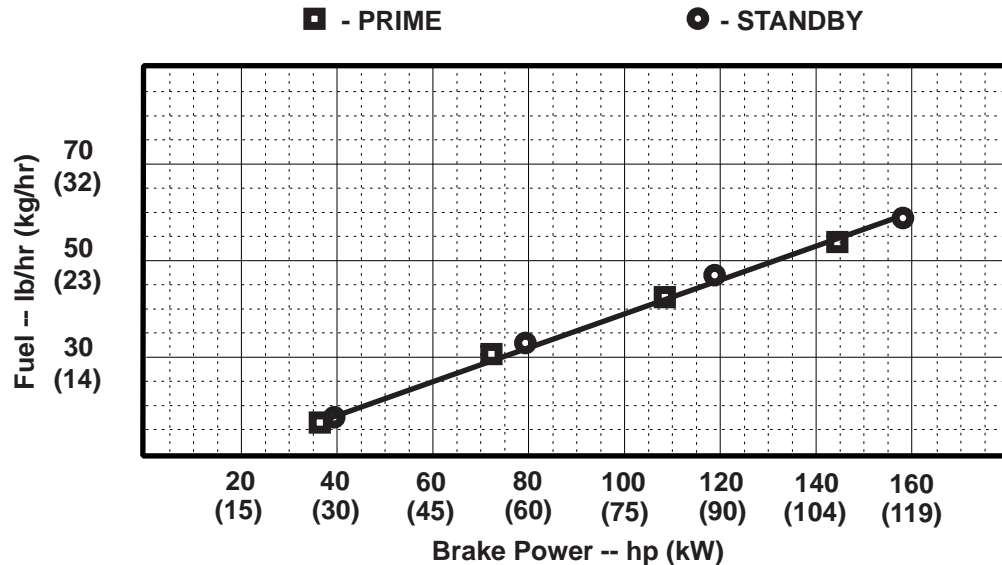
- Power: kW = hp x 0.746
- Fuel: 1 gal = 7.1 lb, 1 L = 0.85 kg
- Torque: N•m = lb-ft x 1.356

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

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	<i>Vincent...</i>
Ref: Engine Emission Label	22 June '07

* Revised Data
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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) Forward Rearward
 Intermittent.....899 (4000)450 (2000)
 Continuous495 (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.H₂O (kPa).....25 (6.25)
 Clean Air Cleaner--in.H₂O (kPa).....15 (3.75)
 Engine Air Flow--ft³/min (m³/min)273 (7.73) ..288 (8.16)
 Air Cleaner Efficiency--%99.9

Charge Air Cooling System

Prime Standby

Air/Air Exchanger Heat Rejection--
 BTU/min (kW) 1002(17.6) ...1127 (19.8)
 Compress. Dischrg. Temp.(Rated)
 @ 77 °F (25°C) Amb. Air--°F (°C)349(176.2) ... 373(189.6)
 Compress. Dischrg. Temp.(Max.)
 @ 47°C amb. and
 80 kPa bar.--°F (°C)NA (NA) NA (NA)
 Press. Drop, thru CAC--in.H₂O (kPa)
 Max.52 (13)
 Min.None*
 Intake Manifold Pressure--psi (kPa)22(149)24 (165)
 CAC Out Temp @ 77°F (25°C) Amb.--°F (°C)
 Max.140 (60)
 Min.118 (48)
 CAC Out Temp @ any Ambient--°F (°C)
 Max.190 (88)

Cooling System

Prime Standby

Engine Heat Reject.--BTU/min (kW)....NA(NA) 3544 (62)
 Coolant Flow--gal/min (L/min).....48(180) 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--ft³/min (m³/min).....750 (21.2) ... 805(22.8)
 Exhaust Temperature--°F (°C) 1040(560) .1076 (580)
 Max. Exhaust Restriction---in. H₂O (kPa)30 (7.5)
 Min. Exhaust Restriction---in. H₂O (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 DescriptionL16 Controller
 Fuel Injection PumpDenso HP3
 Governor Type Electronic
 Total Fuel Flow--lb/hr (kg/hr).....122(55.3) 140(63.5)
 Fuel Consumption--lb/hr (kg/hr)51(23.0) 58 (26.5)
 Max. Fuel Inlet Temp.--°F (°C).....176 (80)
 Fuel Temp. Rise, Inlt to Retrn--°F (°C)82.6(46) 87.3(49)
 Max. Fuel Inlet Restriction--in. H₂O (kPa) 80 (20)
 Max. Fuel Inlet Pressure--in. H₂O (kPa)NA (NA)
 Max. Fuel Return Pressure--in. H₂O (kPa)80 (20)

Lubrication System

Prime Standby

Oil Press. at Rated Speed--psi (kPa) .. 46(320) 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. H₂O (kPa).....2 (0.5)

Performance Data

Prime Standby

Rated Power--hp (kW) 144 (107) 158 (118)
 Rated Speed--rpm 1800 1800
 Low Idle Speed--rpm 11501150
 Rated Torque--lb-ft (N*m)..... 772 (569) 849 (626)
 BMEP--psi (kPa) 230 (1589).....254 (1748)
 Friction Power
 @ Rated Speed--hp (kW) 17 (13) 17 (13)
 Altitude Capability--ft (m) 10,000(3050)7500(2286)
 Ratio--Air : Fuel..... 22 : 1 21 : 1
 Smoke @ Rated Speed--Bosch No. 0.67 1.3
 Noise--dB(A) @ 1 m 86.7* 87*

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

Prime Standby

25 % Power 16.3 (7.4) 17.8 (8.1)
 50 % Power30.6 (13.9) 33.3 (15.1)
 75 % Power42.8 (19.4) 46.6 (21.1)
 100 % Power53.6 (24.3) 58.3 (26.5)

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

* Revised Data

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