JOHN DEERE

ENGINE PERFORMANCE CURVE

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

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

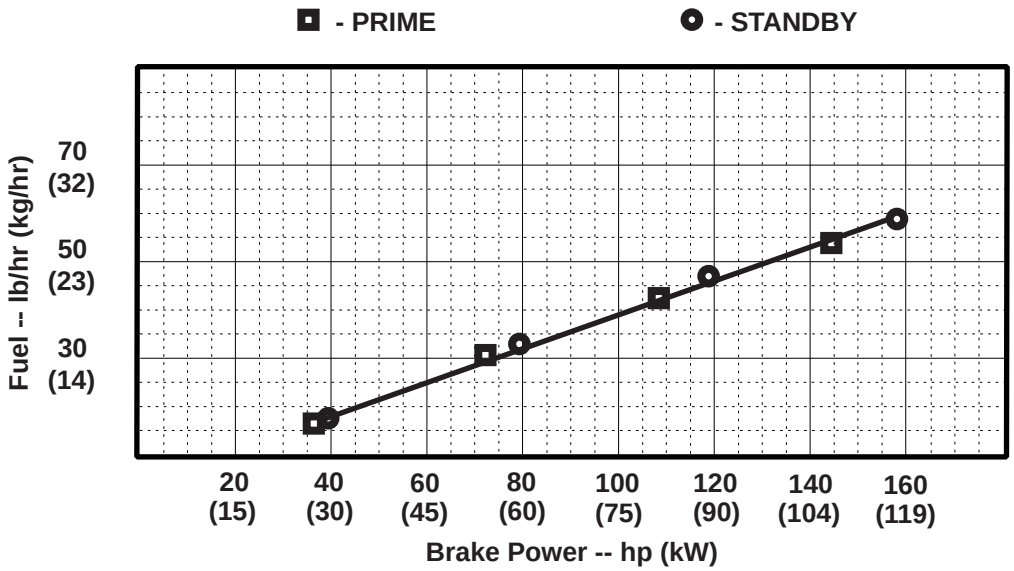
144 hp (107 kW) Prime
158 hp (118 kW) Standby

[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.H_2O (3 kPa)
Exhaust Back Pressure ..... 30 in.H_2O (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	22 June '07
Ref: Engine Emission Label	

* Revised Data
Curve 4045HF2851800158 ..... Sheet 1 of 2
June 2007

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)
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_2O (kPa)	25 (6.25)	
Clean Air Cleaner--in.H_2O (kPa)	15 (3.75)	
Engine Air Flow--ft^3/min (m^3/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.H_2O (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--ft^3/min (m^3/min)	750 (21.2)	805(22.8)
Exhaust Temperature--°F (°C)	1040(560)	1076 (580)
Max. Exhaust Restriction----in. H_2O (kPa)	30 (7.5)	
Min. Exhaust Restriction----in. H_2O (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)	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. H_2O (kPa)	80 (20)	
Max. Fuel Inlet Pressure--in. H_2O (kPa)	NA (NA)	
Max. Fuel Return Pressure--in. H_2O (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. H_2O (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	1150	1150
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 % Power	30.6 (13.9)	33.3 (15.1)
75 % Power	42.8 (19.4)	46.6 (21.1)
100 % Power	53.6 (24.3)	58.3 (26.5)

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

* Revised Data

Curve 4045HF2851800158 ..... Sheet 2 of 2

June 2007