



JOHN DEERE

ENGINE PERFORMANCE CURVE

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

PowerTech E™ 4.5L Engine
 Model: **4045TF285**

90 hp (67 kW) Prime
99 hp (74 kW) Standby

[See Option Code Tables]

Nominal Engine Power @ 1800 RPM			
Prime		Standby	
HP	kW	HP	kW
90	67	99	74

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	7.0	5.2	0.8	54-57	68-71	61-63	76-79	NA

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

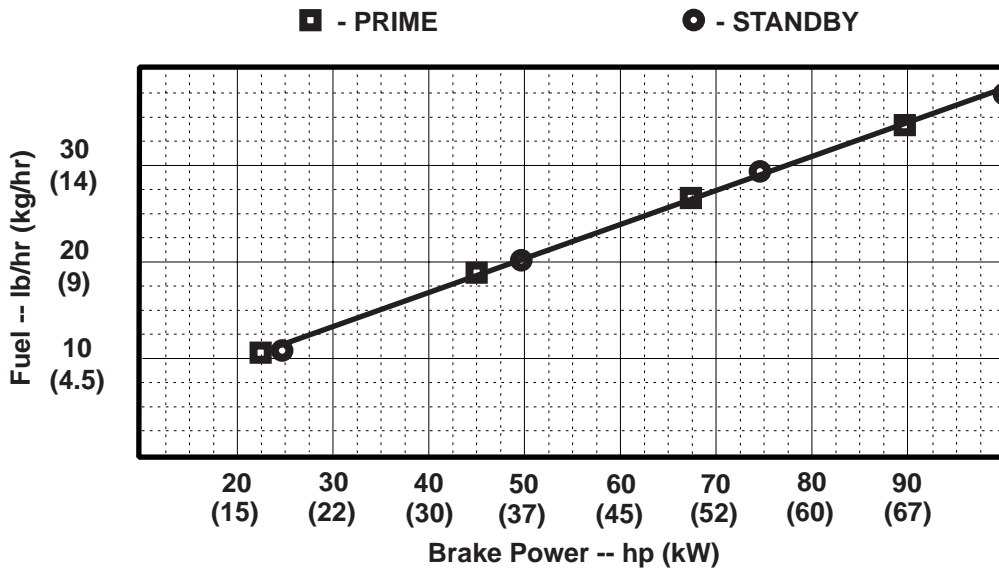
- Power: kW = hp x 0.746
- Fuel: 1 gal = 7.1 lb, 1 L = 0.85 kg
- Torque: N•m = lb-ft x 1.356

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 Penner</i>
Ref: Engine Emission Label	6 June '07

* Revised Data
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Engine Installation Criteria

General Data

Model	4045TF285
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.....	None
Engine Crankcase Vent System	Open

Physical Data (Estimated)

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 (Estimated based on Tier 2)	
From Rear Face of Block (X-axis)--in. (mm)	9.8 (249)
Right of Crankshaft (Y-axis)--in. (mm)	2.2 (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

Air System

	<u>Prime</u>	<u>Standby</u>
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)	167(4.72) ... 169(4.79)	
Intake Manifold Pressure--psi (kPa).....	7(49.6) 8(54.1)	
Air Cleaner Efficiency--%	99.9	

Cooling System

	<u>Prime</u>	<u>Standby</u>
Engine Heat Reject.--BTU/min (kW)....	2561(45)	2789 (49)
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)	13 (11.9)	
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)	

Electrical System

	<u>12 Volt</u>	<u>24 Volt</u>
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	6
Max. ECU Temperature--°F (°C)	221 (105)	
Max. Harness Temperature--°F (°C)	248 (120)	
Max. Voltage From Engine Crankshaft/ Generator Shaft to Ground--VAC	0.15	

Exhaust System

	<u>Prime</u>	<u>Standby</u>
Exhaust Flow--ft ³ /min (m ³ /min).....	479 (13.6)	500(14.2)
Exhaust Temperature--°F (°C)	1108(598) ..	1155(624)
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

	<u>Prime</u>	<u>Standby</u>
ECU Description	L16 Controller	
Fuel Injection Pump	Denso HP3	
Governor Type	Electronic	
Total Fuel Flow--lb/hr (kg/hr).....	84(38.0)	90(41.0)
Fuel Consumption--lb/hr (kg/hr).....	35(15.7)	37 (17.0)
Max. Fuel Inlet Temp--°F (°C)	176 (80)	
Fuel Temp. Rise, Inlt to Retr--°F (°C).....	51.7(29)	59.8(33)
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

	<u>Prime</u>	<u>Standby</u>
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

	<u>Prime</u>	<u>Standby</u>
Rated Power--hp (kW)	90 (67).....	99 (74)
Rated Speed--rpm	1800.....	1800
Low Idle Speed--rpm	1150.....	1150
Rated Torque--lb-ft (N•m).....	532 (392).....	532 (392)
BMEP--psi (kPa)	159 (1096)....	159 (1096)
Friction Power		
@ Rated Speed--hp (kW)	17 (13).....	17 (13)
Altitude Capability--ft (m)	10,000(3050) ..	10,000(3050)
Ratio--Air : Fuel.....	21 : 1.....	19 : 1
Smoke @ Rated Speed--Bosch No.	1.23.....	2.02
Noise--dB(A) @ 1 m	88.4.....	88.8

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

25 % Power	10.6 (4.8).....	11.7 (5.3)
50 % Power	18.5 (8.4).....	20.3 (9.2)
75 % Power	26.9 (12.2).....	29.5 (13.4)
100 % Power	34.2 (15.5).....	37.5 (17.0)

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

* Revised Data

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