



JOHN DEERE

**ENGINE PERFORMANCE CURVE**

Rating: Gross Power  
 Application: Generator (60 Hz)  
 Target: 50 kWe Standby Market

**PowerTech M™ 4.5L Engine**  
 Model: **4045TF280**

**68 hp (51 kW) Prime**  
**75 hp (56 kW) Standby**

[See Option Code Tables]

Nominal Engine Power @ 1800 RPM			
Prime		Standby	
HP	kW	HP	kW
68	51	75	56

Generator Efficiency %	Fan Power (3% 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	2.5	1.9	0.8	43-45	54-56	48-50	60-63	NA

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:

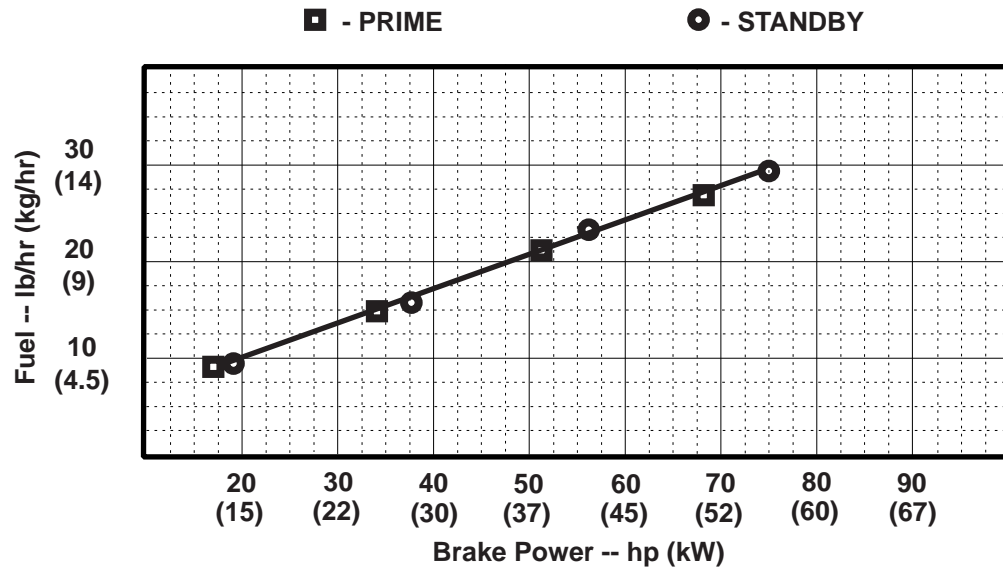
- Power: kW = hp x 0.746
- Fuel: 1 gal = 7.1 lb, 1 L = 0.85 kg
- Torque: N•m = lb-ft x 1.356

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:

**CARB; EPA**

Ref: Engine Emission Label

*Vincent...*  
 08-24-07

\* Revised Data

Curve 4045TF280180075..... Sheet 1 of 2  
 August 2007

## Engine Installation Criteria

### General Data

Model .....4045TF280  
 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 ..... Direct Injection  
 Engine Type ..... In-line, 4-Cycle  
 Aspiration ..... Turbocharged  
 Engine Crankcase Vent System ..... Open

### Physical Data

Length--in. (mm) .....33.9 (860)  
 Width--in. (mm) .....24.1 (612)  
 Height--in. (mm) .....39.1 (994)  
 Weight, with oil--lb (kg).....872 (396)  
 (Includes flywheel hsg., flywheel & electrics)  
 Center of Gravity Location (Estimated based on Tier 2)  
     From Rear Face of Block (X-axis)--in. (mm) .10.6 (269)  
     Right of Crankshaft (Y-axis)--in. (mm) ..... -0.3 (-8)  
     Above Crankshaft (Z-axis)--in. (mm) .....5.9 (151)  
 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.....900 (4003) .....450 (2000)  
     Continuous .....500 (2224) .....225 (1000)  
 Max. Front of Crank. Torsional Vibration--DDA..... 0.25

### 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)..... 12 (3)  
 Engine Air Flow--ft<sup>3</sup>/min (m<sup>3</sup>/min) ..... 173 (4.9) ..... 180 (5.1)  
 Intake Manifold Pressure--psi (kPa)..... 8 (55) .....9 (62)  
 Air Cleaner Efficiency--% .....99.9

### Cooling System

**Prime    Standby**

Engine Heat Reject.--BTU/min (kW) ..1707(30) ..... 1821(32)  
 Coolant Flow--gal/min (L/min)..... 38 (144)  
 Thermostat Start to Open--°F (°C) ..... 180 (82)  
 Thermostat Fully Open--°F (°C).....202 (94)  
 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)

### Electrical System

**12 Volt    24 Volt**

Min. Battery Capacity (CCA)--amp ..... 640 .....570  
 Max. Allow. Start. Circ't Resist.--Ohm.. 0.0012 .....0.002  
 Starter Rolling Current:  
     At 32 °F ( 0 °C)--amp ..... 780 .....600  
     At -22 °F (-30 °C)--amp ..... 1000 .....700  
 Maximum Voltage From Engine Crankshaft/  
     Generator Shaft to Ground--VAC\* .....0.15 ..... 0.15

### Exhaust System

**Prime    Standby**

Exhaust Flow--ft<sup>3</sup>/min (m<sup>3</sup>/min).....424(12.0) ... 448(12.7)  
 Exhaust Temperature--°F (°C) .....918(492) .... 945(507)  
 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**

Fuel Injection Pump ..... Stanadyne DB4  
 Governor Type ..... Mechanical  
 Total Fuel Flow--lb/hr (kg/hr).....212(96.0) .... 212(96.0)  
 Fuel Consumption--lb/hr (kg/hr).....27.0(12.3) ... 29.3 (13.3)  
 Max. Fuel Inlet Temp.--°F (°C) ..... 176 (80)  
 Max. Fuel Inlet Restriction--in. H<sub>2</sub>O (kPa) ..... 80 (20)  
 Max. Fuel Return Pressure--in. H<sub>2</sub>O (kPa) ..... 80 (20)

### Lubrication System

**Prime    Standby**

Oil Press. at Rated Speed--psi (kPa) .50 (345) ..... 50 (345)  
 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) ..... 68 (51) ..... 75 (56)  
 Rated Speed--rpm ..... 1800 ..... 1800  
 Low Idle Speed--rpm ..... 1150 .....1150  
 Rated Torque--lb-ft (N\*m)..... 367 (271) ..... 403 (297)  
 BMEP--psi (kPa) ..... 109 (751) ..... 120 (825)  
 Friction Power  
     @ Rated Speed--hp (kW) ..... 17 (13) ..... 17 (13)  
 Altitude Capability--ft (m) ..... 10,000(3050) .. 10,000(3050)  
 Ratio--Air : Fuel ..... 26.8 : 1 ..... 25.5 : 1  
 Smoke @ Rated Speed--Bosch No. .... 1.7 ..... 1.8  
 Noise--dB(A) @ 1 m ..... 86.0\* ..... 86.3\*

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

**Prime    Standby**

25 % Power .....9.0 (4.1) .....9.7 (4.4)  
 50 % Power ..... 15.0 (6.8) ..... 15.7 (7.1)  
 75 % Power .....21.2 (9.6) ..... 23.1 (10.5)  
 100 % Power .....27.1 (12.3) ..... 29.3 (13.3)

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

\* Revised Data  
 Curve 4045TF280180075 ..... Sheet 2 of 2  
 August 2007