



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 ²		Standby Rating ^{1,2}		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.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:

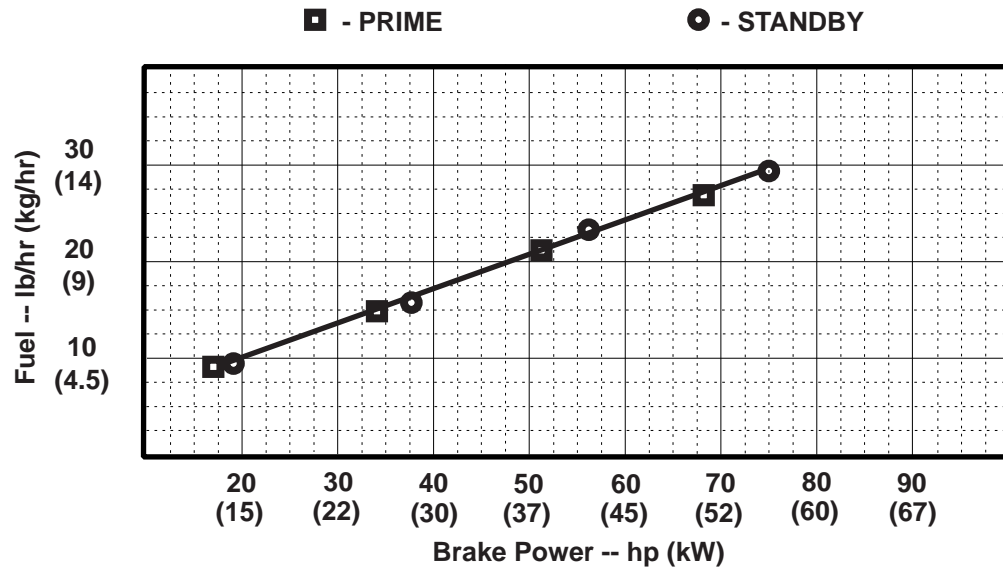
- Power: kW = hp x 0.746
- Fuel: 1 gal = 7.1 lb, 1 L = 0.85 kg
- Torque: N•m = lb-ft x 1.356

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

Ref: Engine Emission Label

Vincent...
 08-24-07

* Revised Data

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 August 2007

Engine Installation Criteria

General Data

Model4045TF280
 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 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)
 Continuous500 (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.H₂O (kPa).....25 (6.25)
 Clean Air Cleaner--in.H₂O (kPa)..... 12 (3)
 Engine Air Flow--ft³/min (m³/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 640570
 Max. Allow. Start. Circ't Resist.--Ohm.. 0.00120.002
 Starter Rolling Current:
 At 32 °F (0 °C)--amp 780600
 At -22 °F (-30 °C)--amp 1000700
 Maximum Voltage From Engine Crankshaft/
 Generator Shaft to Ground--VAC*0.15 0.15

Exhaust System

Prime Standby

Exhaust Flow--ft³/min (m³/min).....424(12.0) ... 448(12.7)
 Exhaust Temperature--°F (°C)918(492) 945(507)
 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

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. H₂O (kPa) 80 (20)
 Max. Fuel Return Pressure--in. H₂O (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. H₂O (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 11501150
 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 % Power9.0 (4.1)9.7 (4.4)
 50 % Power 15.0 (6.8) 15.7 (7.1)
 75 % Power21.2 (9.6) 23.1 (10.5)
 100 % Power27.1 (12.3) 29.3 (13.3)

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

* Revised Data

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