



JOHN DEERE

ENGINE PERFORMANCE

Rating: Gross Power

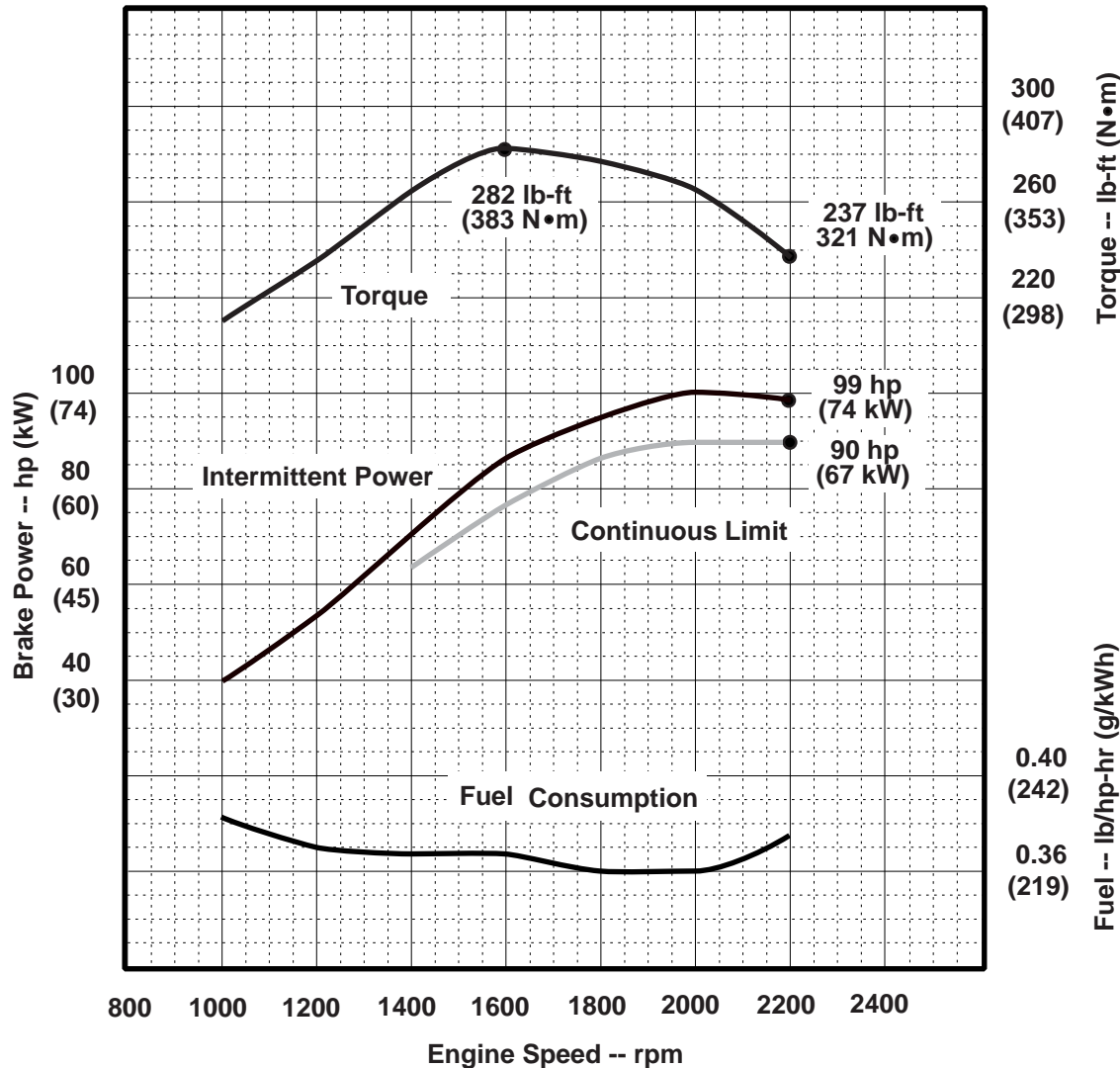
Application: Industrial
Intermittent / Continuous

PowerTech M™ 4.5 L Engine

Model: 4045HF280

99 hp @ 2200 rpm

74 kW @ 2200 rpm



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:

Tier-3 Emission Certifications:

Certified by:

CARB; EPA; EU
Ref: Engine Emission Label

Vincent...
08-24-07

* Revised Data

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August 2007

General Data

Model 4045HF280
 Number of Cylinders 4
 Bore and Stroke--in. (mm)..... 4.20 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
 Charge Air Cooling System..... Air-to-Air
 Engine Crankcase Vent System Open
 Maximum Crankcase Pressure--in. H₂O (kPa)2 (0.5)

Physical Data

Length--in. (mm)33.9 (860)
 Width--in. (mm)24.1 (612)
 Height--in. (mm)39.1 (994)
 Weight, dry--lb (kg)872 (396)
 (Includes flywheel housing, flywheel & electrics)
 Center of Gravity Location
 From Rear Face of Block (X-axis)--in. (mm) .10.5 (267)
 Right of Crankshaft (Y-axis)--in. (mm)0.5 (13)
 Above Crankshaft (Z-axis)--in. (mm).....4.3 (109)
 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 (Forward)--lb (N)900 (4003)

Electrical System

12 Volt 24 Volt

Min. Battery Capacity (CCA)--amp..... 640 570
 Max. Allow. Starting Circuit 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
 Min. Voltage at ECU during Cranking--volts..... 6 10
 Maximum ECU Temperature--°F (°C)221 (105)
 Maximum Harness Temperature--°F (°C)248 (120)

Air System

Maximum 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) [I].....226 (6.4)
 [C]215 (6.1)

Engine Installation Criteria

Charge Air Cooling System

Air/Air Heat Rejection--BTU/min (kW) [I]..... 296 (5.3)
 [C]..... 268 (4.8)
 Compressor Discharge Temp.(Rated)
 @ 77 °F (25°C) Ambient Air--°F (°C)..... 226 (108)
 Max. Pressure Drop, thru CAC--in.H₂O (kPa) 52* (13)
 Min. Pressure Drop, thru CAC--in.H₂O (kPa) None
 Intake Manifold Pressure--psi (kPa) [I] 10 (69)
 [C]..... 9 (61)
 Max CAC Out Temp @ 77°F (25°C) Amb.--°F (°C) 140(60)
 Max CAC Out Temp @ any Ambient--°F (°C) 190 (88)
 Min. CAC Out Temp--°F (°C)..... 118 (48)

Cooling System

Engine Heat Rejection--BTU/min (kW) [I].....2105 (37)
 [C]..... 1874 (33)
 Coolant Flow--gal/min (L/min) 47 (178)
 Thermostat Start to Open--°F (°C) 180 (82)
 Thermostat Fully Open--°F (°C)..... 201 (94)
 Engine Coolant Capacity--qt (L) 9 (8.5)
 Recommended Pressure Cap--psi (kPa)..... 10 (69)
 Maximum Top Tank Temp--°F (°C) 221 (105)
 Minimum Coolant Fill Rate--gal/min (L/min) 3 (11)
 Minimum Air-to-Boil Temperature--°F (°C)..... 117 (47)
 Min. Pump Inlet Pressure--psi (kPa)..... 4.4 (30)

Exhaust System

Exhaust Flow--ft³/min (m³/min) [I] 565 (16.0)
 [C]..... 558 (15.8)
 Exhaust Temperature--°F (°C) [I] 936 (502)
 [C]..... 907 (486)
 Max. Allowable Back Pressure--in. H₂O (kPa) 30 (7.5)
 Rec'd. Exhaust Pipe Diameter--in. (mm) 4.0 (101.6)

Fuel System

Fuel Injection Pump Stanadyne DB4
 Governor Regulation..... 7-10 %
 Governor Type Mechanical
 Total Fuel Flow--lb/hr (kg/hr) [I] 159 (72)
 Fuel Consumption--lb/hr (kg/hr) [I]..... 37 (16.8)
 [C] 34 (15.4)
 Maximum Fuel Transfer Pump Suction--ft (m) fuel... 3 (0.9)
 Maximum Fuel Inlet Temp.--°F (°C) 212 (100)
 Fuel Filter Micron Size @ 98% Efficiency..... 2

Lubrication System

Oil Pressure at Rated Speed--psi (kPa) 50 (345)
 Oil Pressure at Low Idle--psi (kPa) 15 (105)
 In Pan Oil Temperature--°F (°C) 234 (112)
 Engine Angularity Limits any direction--degrees
 Intermittent..... 45
 Continuous..... 20

Performance Data

Rated Power--hp (kW) [I]..... 99 (74)
 [C] 90 (67)
 Rated Speed--rpm 2200
 Peak Torque--lb-ft (N•m) [I]..... 282 (383)
 [C] 255 (345)
 Peak Torque Speed--rpm..... 1600
 Low Idle Speed--rpm 850
 BMEP--psi (kPa) [I] 129 (892)
 [C] 117 (808)
 Friction Power @ Rated Speed--hp (kW) 26 (19)
 Altitude Capability -- ft (m) 10,000 (3050)
 Ratio--Air : Fuel [I] 25.2 : 1
 [C] 26.6 : 1
 Smoke @ Rated Speed--Bosch No. [I]..... 1.2
 [C] 1.0
 Noise--dB(A) @ 1 m [I] 91.0*
 [C] 91.0*

Engine Speed rpm	Contin. Limit hp(kW)	Intermit. Power hp(kW)	Intermit. Torque lb-ft(N•m)	BSFC lb/hp-hr (g/kWh)
2200	90 (67)	99 (74)	237 (321)	0.375 (228)
2000	90 (67)	100 (75)	264 (358)	0.360 (219)
1800	86 (64)	95 (71)	278 (377)	0.360 (219)
1600	77 (58)	86 (64)	282 (383)	0.368 (224)
1400	64 (48)	70 (53)	265 (359)	0.368 (224)
1200	-----	54 (40)	235 (318)	0.370 (225)
1000	-----	40 (29)	210 (285)	0.382 (232)

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

* Revised Data
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