



JOHN DEERE

### ENGINE PERFORMANCE CURVE

Rating: Gross Power  
Application: Industrial - Intermittent  
Power Bulge - 4%  
Torque Rise - 22%

PowerTech Plus™ 4.5 L Engine

Model: 4045HF485

JD Electronic Control

149 hp @ 2000 rpm

111 kW @ 2000 rpm

[See Option Code Table]

#### 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)

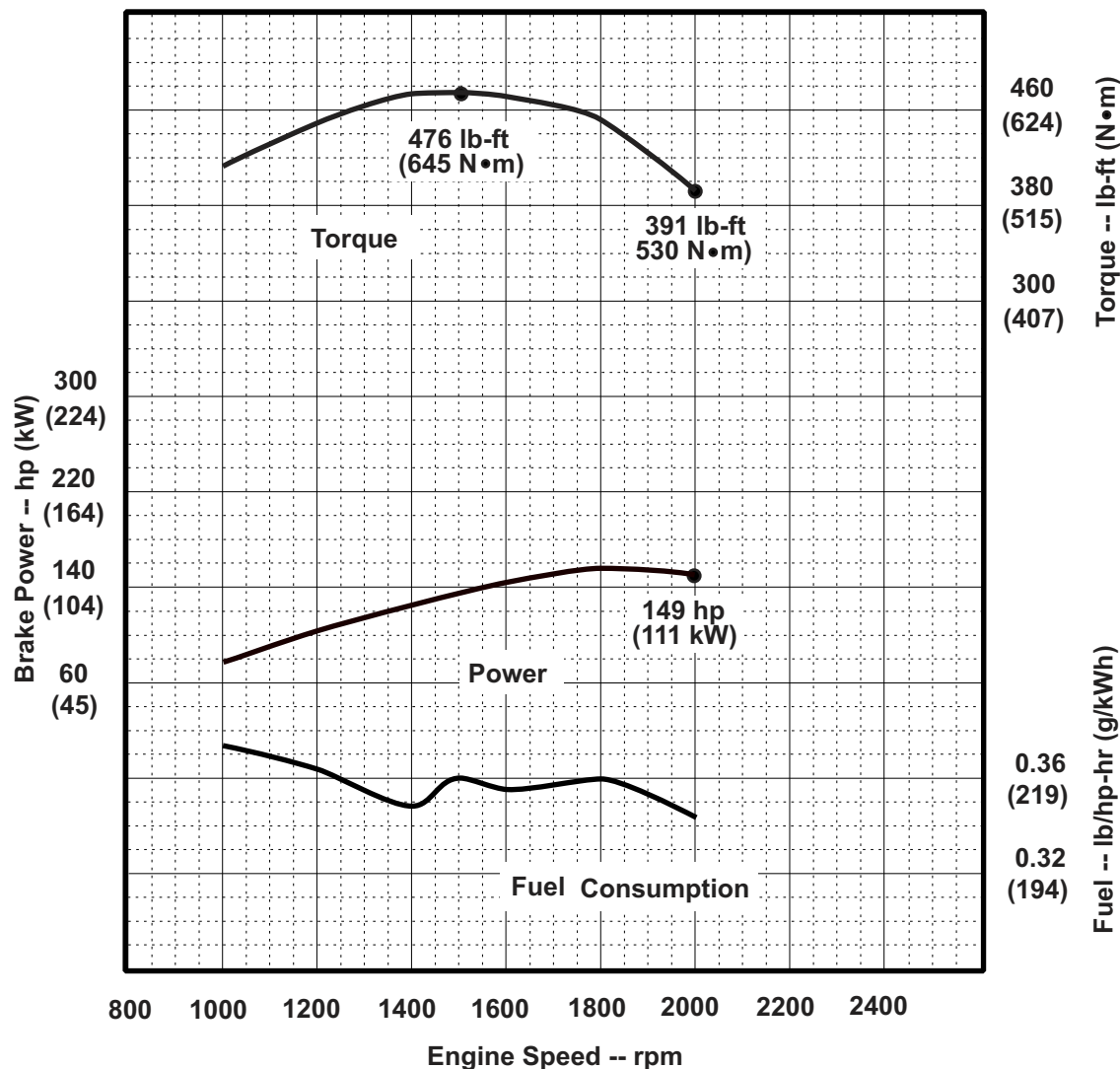
Conversion factors:

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:

Tier-3 Emission Certifications:

Certified by:

CARB; EPA; EU  
Ref: Engine Emission Label

*Brian L. Carlson*  
11 DEC 06

\* Revised Data

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December 2006

## Engine Installation Criteria

### General Data

Model ..... 4045HF485  
 Number of Cylinders ..... 4  
 Bore and Stroke--in. (mm)..... 4.19 (106) x 5.00 (127)  
 Displacement--in.<sup>3</sup> (L).....275 (4.5)  
 Compression Ratio ..... 17.0 : 1  
 Valves per Cylinder--Intake/Exhaust ..... 2 / 2  
 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) .....34.1 (867)  
 Width--in. (mm) .....26.8 (680)  
 Height--in. (mm) .....41.5 (1055)  
 Weight, dry--lb (kg) ..... 1083 (491)  
 (Includes flywheel housing, 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).....2.2 (55)  
     Above Crankshaft (Z-axis)--in. (mm) .....5.7 (145)  
 Maximum Allowable 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  
 Max. Continuous Damper Temp--°F (°C) ..... 180 (82)

### Electrical System

**12 Volt    24 Volt**

Min. Battery Capacity (CCA)--amp..... 800 ..... 570  
 Max. Allow. Starting Circuit 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. Voltage at ECU during Cranking--volts..... 6 ..... 10  
 Maximum ECU Temperature--°F (°C) .....221 (105)  
 Max. VTG Actuator Surface Temp.--°F (°C).....356 (180)  
 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. H<sub>2</sub>O (kPa).....25 (6.25)  
     Clean Air Cleaner--in. H<sub>2</sub>O (kPa)..... 15 (3.75)  
 Engine Air Flow--ft<sup>3</sup>/min (m<sup>3</sup>/min) .....302 (8.5)  
 Air Cleaner Efficiency--% ..... 99.9

### Charge Air Cooling System

Air/Air Exch'r. Heat Rej.--Btu/min(kW) ..... 1138 (20)  
 Compressor Discharge Temp.(Rated)  
     @ 77 °F (25°C) Ambient Air--°F (°C)..... 337 (169)  
 Compressor Discharge Temp.(Max.)  
     @ any Ambient--°F (°C) ..... 500 (260)\*  
 Max. Pressure Drop, thru CAC--in.H<sub>2</sub>O (kPa) ..... 52 (13)  
 Min. Pressure Drop, thru CAC--in.H<sub>2</sub>O (kPa) ..... 20 (5)  
 Intake Manifold Pressure--psi (kPa) ..... 23 (157)  
 Max CAC Out Temp @ 77°F (25°C) Amb.--°F (°C) 126(52)  
 Min CAC Out Temp @ 77°F (25°C) Amb.--°F (°C) 114 (46)  
 Max CAC Out Temp @ any Ambient--°F (°C) ..... 190 (88)

### Cooling System

Engine Heat Rejection--BTU/min (kW) ..... 3643 (64)  
 Coolant Flow--gal/min (L/min)..... 74 (280)  
 Thermostat Start to Open--°F (°C)..... 180 (82)  
 Thermostat Fully Open--°F (°C)..... 203 (95)  
 Engine Coolant Capacity--qt (L) ..... 9 (8.5)  
 Minimum Pressure Cap--psi (kPa)..... 14.5 (100)  
 Maximum Top Tank Temp--°F (°C) ..... 230 (110)  
 Minimum Coolant Fill Rate--gal/min (L/min) ..... 3 (11)  
 Minimum Air-to-Boil Temperature--°F (°C)..... 117 (47)  
 Minimum Pump Inlet Pressure--psi (kPa) ..... 4.4 (30)

### Exhaust System

Exhaust Flow--ft<sup>3</sup>/min (m<sup>3</sup>/min)..... 681 (19)  
 Exhaust Temperature--°F (°C)..... 799 (426)  
 Max. Exhaust Restriction--in. H<sub>2</sub>O (kPa) ..... 30 (7.5)  
 Min. Exhaust Restriction--in. H<sub>2</sub>O (kPa) ..... 12 (3)  
 Max. Bend. Moment on Turbo Out.--lb-ft (N•m)..... 5.2 (7)  
 Max. Shear on Turbo Outlet--lb (kg) ..... 24 (11)

### Fuel System

ECU Description ..... L14 Controller\*  
 Fuel Injection Pump ..... Denso HP3  
 Governor Type.....Electronic  
 Total Fuel Flow--lb/hr (kg/hr) ..... 123 (55.8)  
 Fuel Consumption--lb/hr (kg/hr)..... 51 (23)  
 Max. Fuel Inlet Temperature--°F (°C) ..... 176 (80)  
 Fuel Temp. Rise, Inlet to Return--°F (°C) ..... 85.3 (47)  
 Max. Fuel Inlet Restriction--in. H<sub>2</sub>O (kPa) ..... 80 (20)  
 Max. Fuel Inlet Pressure--in. H<sub>2</sub>O (kPa) ..... NA (NA)  
 Max. Fuel Return Pressure--in. H<sub>2</sub>O (kPa) ..... 80 (20)

### Lubrication System

Oil Pressure at Rated Speed--psi (kPa) ..... 52 (360)  
 Oil Pressure at Low Idle--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

Rated Power--hp (kW) ..... 149 (111)  
 Rated Speed--rpm ..... 2000  
 Breakaway Speed--rpm ..... 2070  
 Fast Idle Speed--rpm ..... 2200  
 Peak Torque--lb-ft (N•m)..... 476 (645)  
 Peak Torque Speed--rpm ..... 1500  
 Low Idle Speed--rpm ..... 800  
 BMEP--psi (kPa) ..... 215 (1481)  
 Friction Power @ Rated Speed--hp (kW) ..... 17 (13)  
 Altitude Capability--ft (m) ..... 10,000 (3050)  
 Ratio--Air : Fuel ..... 25 : 1  
 Smoke @ Rated Speed--Bosch No. .... <1  
 Noise--dB(A) @ 1 m ..... 90.3  
 Power Bulge--% ..... 4  
 Power Bulge Speed--rpm ..... 1800  
 Torque Rise--% ..... 22

Engine Speed rpm	Power hp (kW)	Torque lb-ft (N•m)	BSFC lb/hp-hr (g/kWh)
2000	149 (111)	391 (530)	0.343 (209)
1800	156 (116)	454 (616)	0.360 (219)
1600	143 (107)	470 (637)	0.356 (217)
1500	135 (101)	476 (645)	0.360 (219)
1400	127 (95)	476 (645)	0.349 (212)
1200	103 (77)	450 (611)	0.363 (221)
1000	79 (59)	413 (559)	0.373 (228)

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

\* Revised Data  
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 December 2006