



JOHN DEERE

### ENGINE PERFORMANCE CURVE

Rating: Gross Power

Application: Industrial  
Intermittent

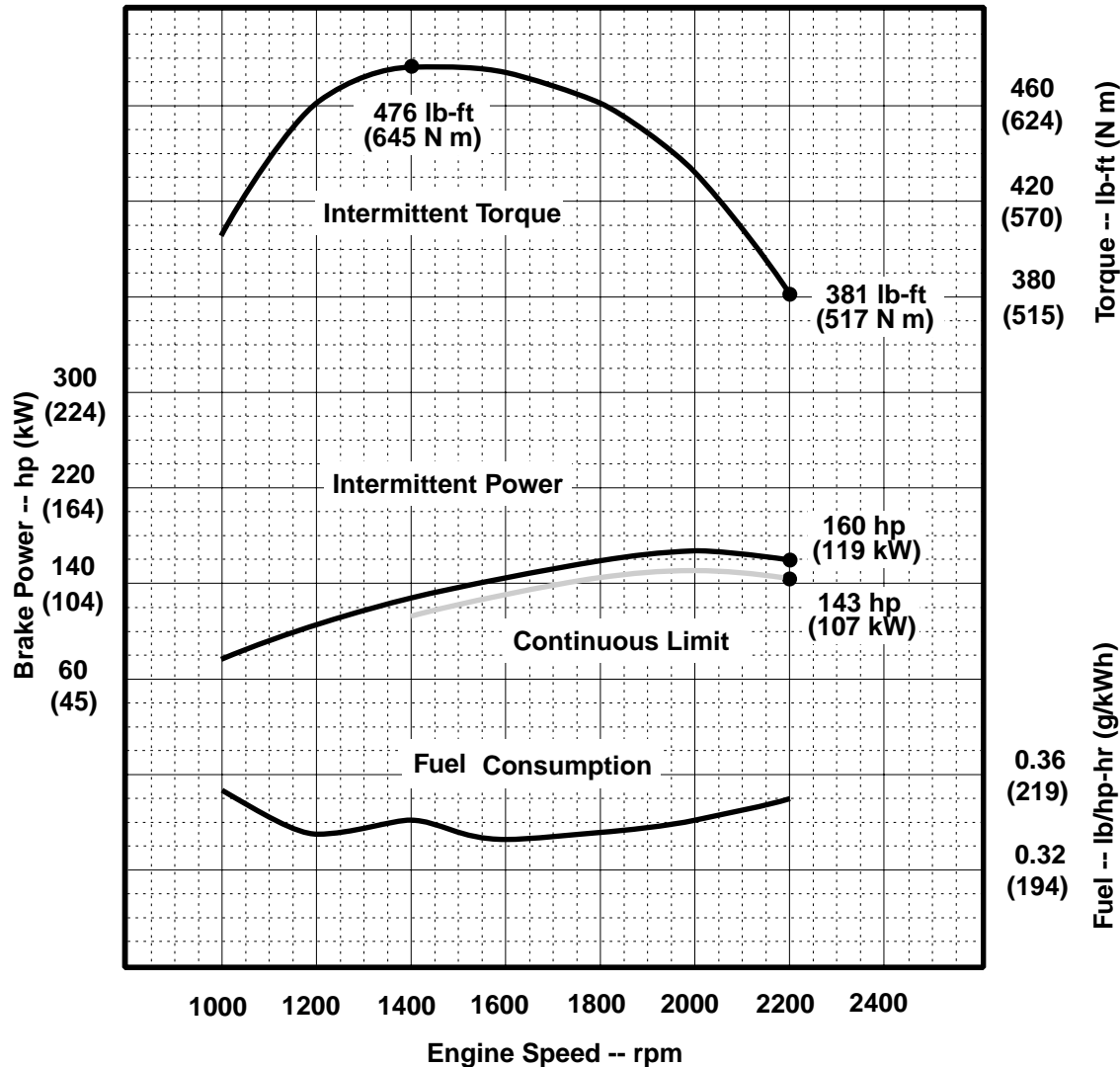
PowerTech 4.5L Engine

Model: 4045HF475

160 hp @ 2200 rpm

119 kW @ 2200 rpm

[See Option Code Tables]



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-2 Emission Certifications:

Certified by:

CARB; EPA; EU  
 Ref: Engine Emission Label

*Brian L. Carlson*  
 18 APRIL 2002

\* Revised Data

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## Common Specifications:

### General Data

Model .....	4045HF475
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 .....	17.0:1
Valves per Cylinder--Intake/Exhaust .....	2 / 2
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. H <sub>2</sub> O (kPa).....	2 (0.5)

### Physical Data

Length--in. (mm) .....	33.9 (862)*
Width--in. (mm) .....	23.8 (605)*
Height--in. (mm).....	40.3 (1025)*
Weight, dry--lb (kg).....	994.3 (451)
(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 (553)
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 Brng. Load Limit (Forward)--lb (N) [I].....	900 (4003)
[C].....	500 (2224)

[I] = Intermittent Data; [C] = Continuous Data

## Engine Specification Data

### 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 (6.3)
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) [I].....	370 (10.5)
[C].....	351 (9.9)
Intake Manifold Pressure--psi (kPa) [I] .....	21 (146)
[C].....	19 (131)
Recommended Intake Pipe Diameter--in. (mm) .....	3 (76.2)
Compressor Discharge Temp--°F (°C) [I] .....	322 (161)
[C].....	300 (149)
Max. Press. Drop Through	
Charge Air Cooler--in.H <sub>2</sub> O (kPa) .....	52 (13)
Max. Temp. Out of Charge Air Cooler	
@ 77°F (25°C) Ambient Air--°F (°C) .....	140 (60)

### Cooling System

Engine Heat Rejection--BTU/min (kW) [I].....	2880 (50.6)
[C] .....	2590 (45.5)
Air/Air Exch. Heat Rej.--BTU/min (kW) [I] .....	1184 (20.8)
[C] .....	1064 (18.7)
Coolant Flow--gal/min (L/min).....	87 (330)
Thermostat Start to Open--°F (°C) .....	180 (82)
Thermostat Fully Open--°F (°C).....	201 (94)
Engine Coolant Capacity--qt (L) .....	15 (14)
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)

### Exhaust System

Exhaust Flow--ft <sup>3</sup> /min (m <sup>3</sup> /min) [I].....	848 (24.0)
[C].....	791 (22.4)
Exhaust Temperature--°F (°C) [I].....	822 (439)
[C] .....	797 (425)
Max. Allowable Back Pressure--in. H <sub>2</sub> O (kPa) .....	30 (7.5)
Rec'd. Exhaust Pipe Diameter--in. (mm) .....	4.0 (101.6)

### Fuel System

Fuel Injection Pump .....	Denso HPCR
Governor Regulation.....	7-10 %
Governor Type .....	Electronic
Total Fuel Flow--lb/hr (kg/hr).....	135.4 (61.4)
Fuel Consumption--lb/hr (kg/hr) [I] .....	56.0 (25.4)
[C] .....	50.9 (23.1)
Maximum Fuel Transfer Pump Suction--ft (m) fuel ...	3 (0.9)
Max. Fuel Inlet Temperature---°F (°C).....	176 (80)
Fuel Filter Micron Size @ 98% Efficiency.....	2

### Lubrication System

Data based on engine with oil pan option code .....	1976
Oil Pressure at Rated Speed--psi (kPa) .....	52 (360)
Oil Pressure at Low Idle--psi (kPa) .....	30 (210)
In Pan Oil Temperature--°F (°C) .....	230 (110)
Oil Pan Capacity, High--qt (L) .....	22 (20.5)
Oil Pan Capacity, Low--qt (L) .....	21 (19.5)
Total Eng. Oil Capacity w/ Filters--qt (L) .....	23 (21.5)
Eng. Angularity Limits and direction--deg.	
Intermittent.....	45
Continuous .....	35

### Electrical System

#### 12 Volt    24 Volt

Rec'd 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

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

\* Revised Data

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## Engine Specification Data

### Electronic Engine Controls (JDEC) Options

Performance System Option Code Table		
Option Codes		System Voltage
Injection Pump	Performance Software	
161V	72AU	12V
165A*	72CM*	24V

ECU Feature Software Option Code (8300 Group) Table Industrial Applications -- 4-valve HPCR							
Option Code	Oil Pressure Sensor	Governing 8 % or Isochronous	Cruise Control	Engine Protection		Available Throttle Inputs	
				ECU Software	External Input	Analog	Digital
8356	No	Selectable	Yes	Derate	Derate & Shutdown	Two	2-State
8357	Yes	Selectable	Yes	Derate	Derate & Shutdown	Two	2-State
8358	Yes	Selectable	Yes	Derate w/shutdown	Derate & Shutdown	Two	2-State
8359	No	Selectable	No	Derate	Derate & Shutdown	Two	Adj. 3-State
8360	Yes	Selectable	No	Derate	Derate & Shutdown	Two	Adj. 3-State
8361	Yes	Selectable	No	Derate w/shutdown	Derate & Shutdown	Two	Adj. 3-State
8362	No	Selectable	Yes	Derate	Derate & Shutdown	Two	Ramp
8363	Yes	Selectable	Yes	Derate	Derate & Shutdown	Two	Ramp
8364	Yes	Selectable	Yes	Derate w/shutdown	Derate & Shutdown	Two	Ramp

### Performance Data

Rated Power--hp (kW) [I].....	160 (119)
[C].....	143 (107)
Rated Speed--rpm .....	2200
Peak Torque--lb-ft (N•m) [I].....	476 (645)
[C].....	428 (581)
Peak Torque Speed--rpm.....	1400
Low Idle Speed--rpm .....	800
BMEP--psi (kPa) [I].....	209 (1444)
[C].....	188 (1300)
Friction Power @ Rated Speed--hp (kW) .....	24 (17.8)
Altitude Capability -- ft (m) .....	10,000 (3050)
Ratio--Air : Fuel [I].....	27.6:1
[C].....	28.9:1
Smoke @ Rated Speed--Bosch No. [I] .....	< 1
[C].....	< 1
Noise--dB(A) @ 1 m [I] .....	90.5*
[C] .....	90.5*

Engine Speed rpm	Cont. Limit hp(kW)	Intermit. Power hp(kW)	Intermit. Torque lb-ft(N•m)	BSFC lb/hp-hr (g/kWh)
2200	143 (107)	160 (119)	381 (517)	0.350 (213)
2000	149 (111)	165 (123)	433 (587)	0.341 (208)
1800	142 (106)	158 (118)	461 (625)	0.336 (205)
1600	130 (97)	145 (108)	474 (642)	0.333 (203)
1400	115 (86)	127 (95)	476 (645)	0.341 (208)
1200	-----	106 (79)	461 (625)	0.333 (203)
1000	-----	78 (58)	406 (550)	0.353 (215)

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

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