



JOHN DEERE

**ENGINE PERFORMANCE CURVE**

Rating: Gross Power  
 Application: Industrial - Continuous  
 Power Bulge - 11%  
 Torque Rise - 50%

**PowerTech Plus™ 9.0 L Engine**

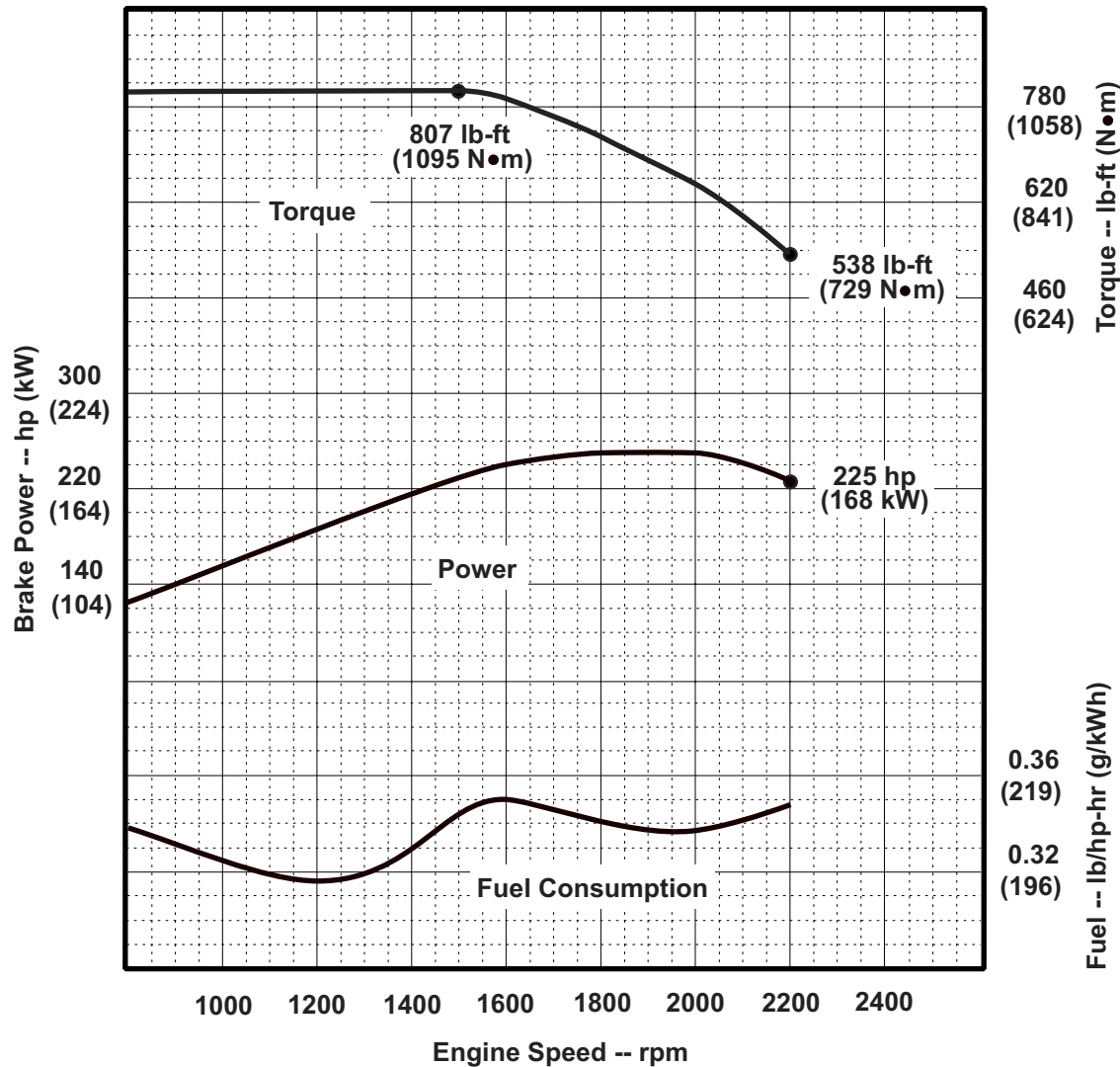
Model: **6090HF485**

**JD Electronic Control**

**225 hp @ 2200 rpm**

**168 kW @ 2200 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*  
 15 July 2005

\* Revised Data

Curve: 6090HF485225\_2200\_11\_50..... Sheet 1 of 2  
 July 2005

## Engine Installation Criteria

### General Data

Model .....	6090HF485
Number of Cylinders .....	6
Bore and Stroke--in. (mm).....	4.661 (118.4) x 5.354 (136.0)
Displacement--in. <sup>3</sup> (L).....	548 (9)
Compression Ratio .....	16.0 : 1
Valves per Cylinder--Intake/Exhaust.....	2 / 2
Firing Order.....	1-5-3-6-2-4
Combustion System.....	HPCR
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) .....	47.6 (1208)
Width--in. (mm) .....	24.8 (630)
Height--in. (mm).....	43.8 (1113)
Weight, dry--lb (kg) .....	1986 (901)
(Includes flywheel housing, flywheel & electrics)	
Center of Gravity Location	
From Rear Face of Block(X-axis)--in.(mm)	17.1 (434.4)
Right of Crankshaft (Y-axis)--in. (mm).....	0.1 (2.2)
Above Crankshaft (Z-axis)--in. (mm).....	7.9 (201.4)
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) <u>Forward</u> <u>Rearward</u>	
Intermittent.....	2923 (13,000) 1349 (6000)
Continuous .....	1933 (8600) 899 (4000)
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.....	1100	750
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) .....	257 (125)	

### 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) .....	574 (16.24)
Air Cleaner Efficiency--% .....	99.9

### Charge Air Cooling System

Air/Air Exch'r. Heat Rej.--Btu/min(kW) .....	1816 (31.9)
Compressor Discharge Temp.(Rated)	
@ 77 °F (25°C) Ambient Air--°F (°C).....	329 (165)
Compressor Discharge Temp.(Max.) @ Peak Torque,	
47°C ambient, 80 kPa barometer--°F (°C).....	473 (245)
Max. Pressure Drop, thru CAC--in.H <sub>2</sub> O (kPa) .....	64 (16)
Min. Pressure Drop, thru CAC--in.H <sub>2</sub> O (kPa) .....	32 (8)
Intake Manifold Pressure--psi (kPa) .....	22 (149.2)
Max CAC Out Temp @ 77°F (25°C) Amb.--°F (°C) .....	127(53)
Min CAC Out Temp @ 77°F (25°C) Amb.--°F (°C) .....	104(40)
Max CAC Out Temp @ any Ambient--°F (°C) .....	190(88)

### Cooling System

Engine Heat Rejection--BTU/min (kW) .....	5176 (90.93)
Coolant Flow--gal/min (L/min).....	103 (390)
Thermostat Start to Open--°F (°C).....	180 (82)
Thermostat Fully Open--°F (°C).....	201 (94)
Engine Coolant Capacity--qt (L) .....	17 (16)
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 (12 )
Minimum Air-to-Boil Temperature--°F (°C).....	117 (47)
Minimum Pump Inlet Pressure--psi (kPa) .....	4.4 (30)
Max. Radiator System Restriction--in. H <sub>2</sub> O (kPa)....	56 (14)

### Exhaust System

Exhaust Flow--ft <sup>3</sup> /min (m <sup>3</sup> /min).....	1170 (33)
Exhaust Temperature--°F (°C).....	685 (363)
Max. Allowable Back Pressure--in. H <sub>2</sub> O (kPa) .....	40 (10)
Minimum Exhaust Restriction---in. H <sub>2</sub> O (kPa).....	16 (4)
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 HP4
Governor Type.....	Electronic
Total Fuel Flow--lb/hr (kg/hr) .....	450 (204.0)
Fuel Consumption--lb/hr (kg/hr).....	79 (35.9)
Max. Fuel Inlet Temperature--°F (°C) .....	176 (80)
Fuel Temp. Rise, Inlet to Return--°F (°C) .....	84.96 (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).....	80 (20)
Max. Fuel Return Pressure--in. H <sub>2</sub> O (kPa).....	80 (20)

### Lubrication System

Oil Pressure at Rated Speed--psi (kPa) .....	42 (290)
Oil Pressure at Low Idle--psi (kPa) .....	25 (170)
Max. Oil Carryover in Blow-by--lb/hr (g/hr) .....	0.007 (3)
Max. Airflow in Blow-by--gal/min (l/min).....	34 (130)
Max. Crankcase Pressure--in. H <sub>2</sub> O (kPa).....	2 (0.5)

### Performance Data

Rated Power--hp (kW) .....	225 (168)
Rated Speed--rpm .....	2200
Breakaway Speed--rpm .....	2270
Fast Idle Speed--rpm .....	2420
Peak Torque--lb-ft (N•m).....	807 (1095)
Peak Torque Speed--rpm .....	1500
Low Idle Speed--rpm .....	800
BMEP--psi (kPa).....	148 (1018)
Friction Power @ Rated Speed--hp (kW) .....	50 (37)
Altitude Capability--ft (m) .....	10,000 (3000)*
Ratio--Air : Fuel .....	30.8 : 1
Smoke @ Rated Speed--Bosch No. ....	0.54
Noise--dB(A) @ 1 m .....	NA
Power Bulge--% .....	11
Power Bulge Speed--rpm .....	2000
Torque Rise--%.....	50

Engine Speed rpm	Power hp (kW)	Torque lb-ft (N•m)	BSFC lb/hp-hr (g/kWh)
2200	225 (168)	538 (729)	0.349 (213)
2000	251 (187)	658 (892)	0.337 (206)
1800	251 (187)	731 (992)	0.341 (208)
1600	240 (179)	789 (1070)	0.350 (213)
1500	231 (172)	807 (1095)	0.349 (213)
1400	214 (160)	804 (1091)	0.330 (201)
1200	184 (137)	804 (1091)	0.316 (192)
1000	153 (114)	804 (1091)	0.324 (197)
800	123 (91)	804 (1091)	0.339 (207)

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

\* Revised Data  
Curve: 6090HF485225\_2200\_11\_50 ..... Sheet 2 of 2  
July 2005