



JOHN DEERE

### ENGINE PERFORMANCE CURVE

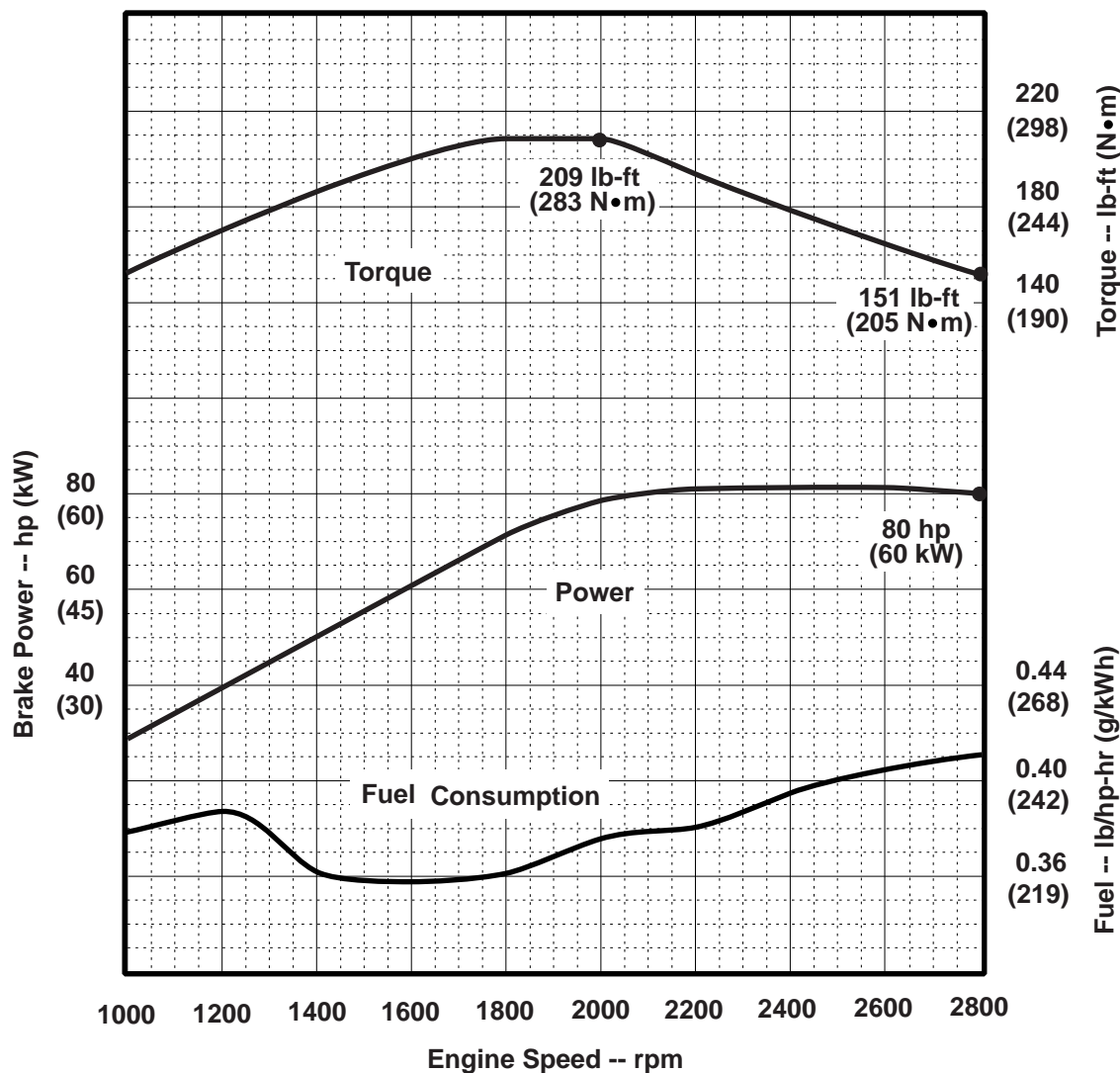
Rating: Gross Power  
Application: Industrial - Intermittent  
Power Bulge - 0%  
Torque Rise - 38%

### PowerTech E™ 2.4 L Engine

Model: 4024HF285

80 hp @ 2800 rpm

60 kW @ 2800 rpm



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

*Vincenzo Perduca*  
11-28-2007

\* Revised Data  
Curve: 4024HF28580\_2800\_0\_38 ..... Sheet 1 of 2  
November 2007

## Engine Installation Criteria

### General Data

Model .....	4024HF285
Number of Cylinders .....	4
Bore and Stroke--in. (mm).....	3.4 x 4.1 (86 x 105)*
Displacement--in. <sup>3</sup> (L) .....	149 (2.44)
Compression Ratio .....	18.2 : 1
Valves per Cylinder--Intake/Exhaust .....	1 / 1
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 (Estimated based on Tier 2)

Length--in. (mm) .....	26.1 (662)
Width--in. (mm) .....	22.3 (566)
Height--in. (mm) .....	30.4 (772)
Weight, dry--lb (kg) .....	553 (251)
(Includes flywheel housing, flywheel & electrics)	
Center of Gravity Location	
From Rear Face of Block (X-axis)--in. (mm)	7.6 (194)
Right of Crankshaft (Y-axis)--in. (mm)	0.6 (14)
Above Crankshaft (Z-axis)--in. (mm)	4.3 (108)
Maximum Allowable Static Bending Moment at Rear Face of Flywhl Hsg w/ 5-G Load--lb-ft (N•m) .....	369 (500)
Thrust Bearing Load Limit --lb (N) <u>Forward</u> <u>Rearward</u>	
Intermittent.....	1147 (5100).....337 (1500)
Continuous .....	629 (2800).....180 (800)
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.....	750	500
Max. Allow. Starting Circuit Resist.--Ohm 0.0012 .....	0.002	
Starter Rolling Current		
At 32 °F ( 0 °C)--amp .....	290	310
At -22 °F (-30 °C)--amp .....	370	340
Min. Voltage at ECU during Cranking--volts.....	6	10
Maximum ECU Temperature--°F (°C) .....	221 (105)	
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).....	12 (3.0)
Engine Air Flow--ft <sup>3</sup> /min (m <sup>3</sup> /min) .....	225 (6.37)
Air Cleaner Efficiency--% .....	99.9

### Charge Air Cooling System

Air/Air Exch'r. Heat Rej.--Btu/min(kW) .....	779 (13.7)
Compressor Discharge Temp.(Rated)	
@ 77 °F (25°C) Ambient Air--°F (°C).....	338 (170)
Compressor Discharge Temp.(Max.)	
@ any Ambient--°F (°C) .....	NA
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) .....	28 (7)
Intake Manifold Pressure--psi (kPa) .....	22 (150)
Max CAC Out Temp @ 77°F (25°C) Amb.--°F (°C)	140(60)
Min CAC Out Temp @ 77°F (25°C) Amb.--°F (°C).	118(48)
Max CAC Out Temp @ any Ambient--°F (°C) .....	190(88)

### Cooling System

Engine Heat Rejection--BTU/min (kW) .....	2124 (37.3)
Coolant Flow--gal/min (L/min).....	32 (120)
Thermostat Start to Open--°F (°C).....	192 (89)
Thermostat Fully Open--°F (°C).....	212 (100)
Engine Coolant Capacity--qt (L) .....	2.7 (2.6)
Minimum Pressure Cap--psi (kPa).....	14.9 (103)
Maximum Top Tank Temp--°F (°C) .....	230 (110)
Minimum Coolant Fill Rate--gal/min (L/min) .....	3.0 (9.5)
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).....	549 (16)
Exhaust Temperature--°F (°C).....	896 (480)
Max. Exhaust Restriction--in. H <sub>2</sub> O (kPa) .....	30 (7.5)
Min. Exhaust Restriction--in. H <sub>2</sub> O (kPa) .....	16 (4)
Max. Bend. Moment on Turbo Out.--lb-ft (N•m) .....	5.2 (27)
Max. Shear on Turbo Outlet--lb (kg) .....	24 (11)

### Fuel System

ECU Description .....	L18 Controller
Fuel Injection Pump .....	Delphi EUP
Governor Type.....	Electronic
Total Fuel Flow--lb/hr (kg/hr) .....	154 (70.0)
Fuel Consumption--lb/hr (kg/hr) .....	33 (15)
Max. Fuel Inlet Temperature--°F (°C) .....	185 (85)
Fuel Temp. Rise, Inlet to Return--°F (°C) .....	54 (30)
Max. Fuel Inlet Restriction--in. H <sub>2</sub> O (kPa) .....	120 (30)
Max. Fuel Inlet Pressure--in. H <sub>2</sub> O (kPa) .....	96 (24)
Max. Fuel Return Pressure--in. H <sub>2</sub> O (kPa) .....	140 (35)

### Lubrication System

Oil Pressure at Rated Speed--psi (kPa) .....	44 (300)
Oil Pressure at Low Idle--psi (kPa) .....	36 (250)
Max. Oil Carryover in Blow-by--lb/hr (g/hr) .....	0.002 (1.0)
Max. Airflow in Blow-by--gal/min (l/min).....	12 (45)
Max. Crankcase Pressure--in. H <sub>2</sub> O (kPa).....	2 (0.5)

### Performance Data

Rated Power--hp (kW) .....	80 (60)
Rated Speed--rpm .....	2800
Breakaway Speed--rpm .....	2870
Fast Idle Speed--rpm .....	3000
Peak Torque--lb-ft (N•m).....	209 (283)
Peak Torque Speed--rpm .....	2000
Low Idle Speed--rpm .....	900
BMEP--psi (kPa).....	153 (1054)*
Friction Power @ Rated Speed--hp (kW) .....	28 (21)
Altitude Capability--ft (m) .....	10,000 (3050)
Ratio--Air : Fuel .....	29 : 1
Smoke @ Rated Speed--Bosch No. ....	1.5
Noise--dB(A) @ 1 m .....	90.6*
Power Bulge--% .....	0
Power Bulge Speed--rpm .....	NA
Torque Rise--% .....	38

Engine Speed rpm	Power hp (kW)	Torque lb-ft (N•m)	BSFC lb/hp-hr (g/kWh)
2800	80 (60)	151 (205)	0.411 (250)
2600	81 (61)	164 (223)	0.404 (246)
2400	81 (61)	178 (242)	0.395 (241)
2200	81 (60)	193 (262)	0.380 (232)
2000	79 (59)	209 (283)	0.375 (228)
1800	71 (53)	209 (283)	0.361 (220)
1600	61 (46)	200 (272)	0.359 (219)
1400	50 (37)	187 (254)	0.361 (220)
1200	39 (29)	171 (232)	0.388 (236)
1000	29 (22)	151 (205)	0.379 (231)

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

\* Revised Data  
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