



JOHN DEERE

**ENGINE PERFORMANCE CURVE**

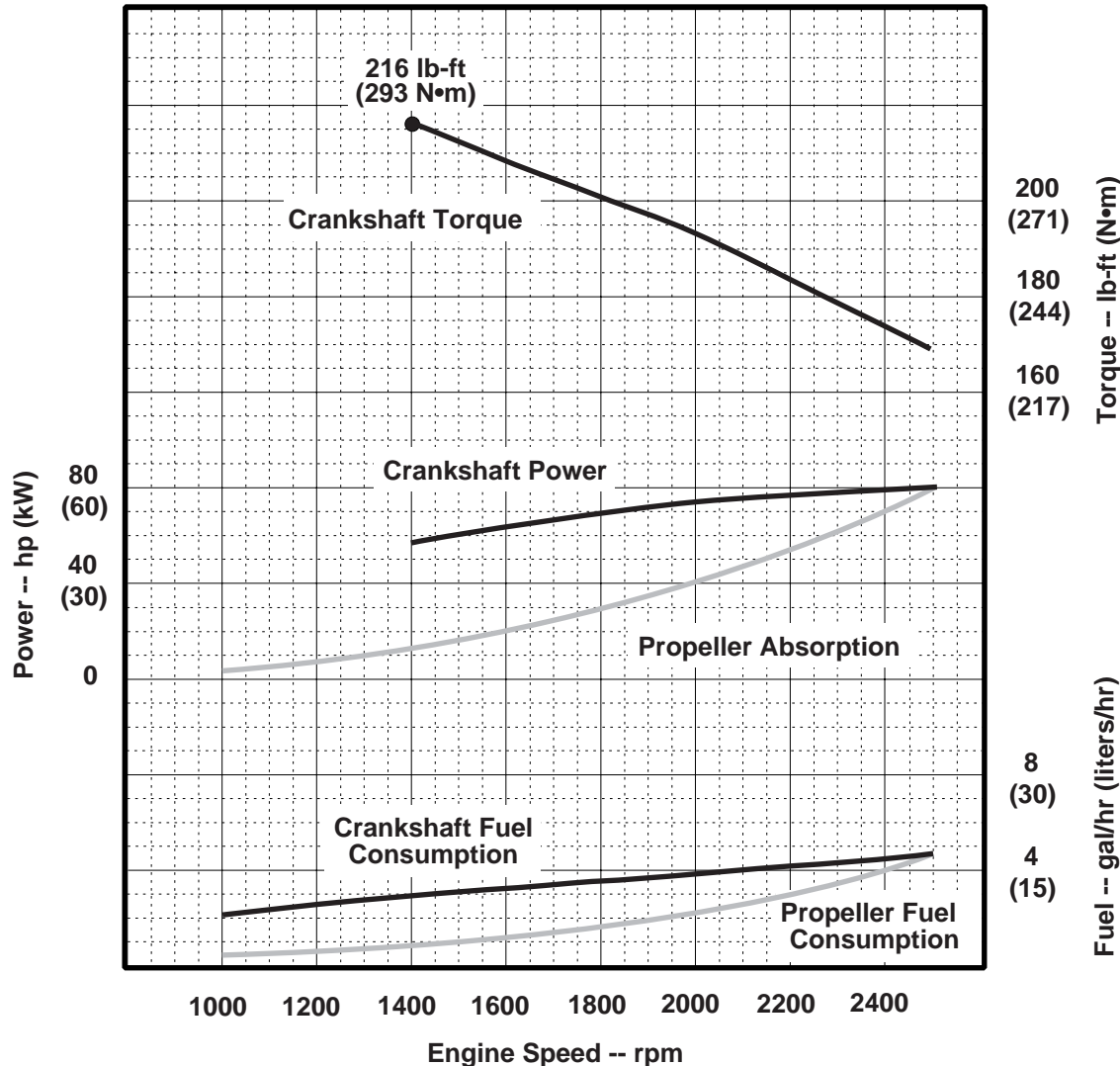
Rating: M2 - 80 hp (60 kW) @ 2500 rpm

Application: Marine

**PowerTech 4.5 L Engine**

Model: **4045DFM70**

(Propeller Power is approximately 97% of Crankshaft Power)



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 8665 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:

- EPA Commercial Marine
  - IMO Exempt
- Ref: Engine Emission Label

*NEAL LEEDER*  
*3 FEB 04*

\* Revised Data

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 February 2004

## Common Specifications:

### General Data

Model ..... 4045DFM70  
 Number of Cylinders ..... 4  
 Bore and Stroke--in.(mm)..... 4.2 x 5.0 (107 x 127)  
 Displacement--in<sup>3</sup> (L) .....275 (4.5)  
 Compression Ratio ..... 17.6:1  
 Valves per Cylinder -- Intake / Exhaust ..... 1 / 1  
 Firing Order ..... 1-3-4-2  
 Combustion System ..... Direct Injection  
 Engine Type ..... In-line, 4-Cycle  
 Aspiration ..... Natural  
 Engine Crankcase Vent System ..... Closed  
 Maximum Crankcase Pressure--in. H<sub>2</sub>O (kPa) .....2 (0.5)

### Physical Data

(Includes Engine, Flywheel Housing, Flywheel & Electrics)  
 Length--in.(mm) .....34.8 (885)  
 Width--in.(mm) .....28.1 (713)  
 Height--in.(mm) .....35.9 (912)  
 Weight, dry--lb (kg).....963 (437)  
 Center of Gravity Location  
     From Rear Face of Block (X-axis)--in.(mm) ....10.6 (270)  
     Right of Crankshaft (Y-axis)--in.(mm)..... 7.4 (189)  
     Above Crankshaft (Z-axis)--in.(mm).....16.9 (428)  
 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)  
 Maximum Installed Angle  
     Front Up--degrees.....12\*  
     Front Down--degrees ..... 0

### Air System

Minimum Ventilation Area--in<sup>2</sup> (m<sup>2</sup>).....47 (0.03)  
 Maximum Allowable Air Temperature Rise  
     Ambient to Engine Inlet--°F (°C) .....30 (17)  
 Engine Air Flow--ft<sup>3</sup>/min (m<sup>3</sup>/min) .....166 (4.7)  
 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 (3.0)

## Engine Specification Data

### Cooling System

Engine Heat Rejection--BTU/min (kW) ..... 3415 (60)  
 Engine Radiated Heat--BTU/min (kW).....507 (8.9)  
 Coolant Flow--gal/min (L/min).....46\* (178)  
 Minimum Coolant Fill Rate--gal/min (L/min) ..... 3.2 (12)  
 Thermostat Start to Open--°F (°C) ..... 180 (82)  
 Thermostat Fully Open--°F (°C).....203 (95)  
 Maximum Top Tank Temperature--°F (°C) ..... 212 (100)  
 Minimum Water-to-Boil Temperature--°F (°C)..... 90 (32)  
 Recommended Pressure Cap--psi (kPa)..... 10 (70)  
 Max. Water Pump Inlet Restriction--in. H<sub>2</sub>O (kPa).. 40 (10)  
 Max. Pressure Drop Across Keel Cooler--psi (kPa) .. 6 (40)  
 Engine Coolant Capacity--qt (L) ..... 13\* (12\*)

### Electrical System

**12 Volt 24 Volt**  
 Recommended Battery Capacity  
     Cold Cranking Amps @ 32 °F (0 °C)--amp..640 ..... 570  
 Max. Starting Circuit Resistance--Ohms.....0.0012 ... 0.002  
 Starter Rolling Current @ 32 °F (0 °C)--amp ...780 ..... 600

### Exhaust System

Exhaust Temperature--°F (°C) ..... 1139 (615)  
 Exhaust Gas Flow--ft<sup>3</sup>/min (m<sup>3</sup>/min) ..... 491 (14)  
 Maximum Back Pressure--in. H<sub>2</sub>O (kPa) ..... 30 (7.5)  
 Recommended Minimum Exhaust Outlet Size--in.(mm)  
     Dry .....2.5 (65)  
     Wet.....3.0 (75)

### Fuel System

Fuel Injection Pump ..... Stanadyne DB-2  
 Governor Type ..... Mechanical  
 Governor Regulation--percent ..... 7 to 10  
 Total Fuel Flow--lb/hr (kg/hr).....231 (105)  
 Total Fuel Flow--gal/hr (L/hr)..... 33 (124)  
 Fuel Consumption--lb/hr (kg/hr).....32.8 (14.9)  
 Fuel Consumption--gal/hr (L/hr)..... 4.6 (17.5)  
 Maximum Leak Off Line Pressure--psi (kPa) ..... 2 (14)  
 Max. Fuel Transfer Pump Suction Lift--ft (m) fuel ..... 3 (0.9)  
 Max. Fuel Height Above Transfer Pump--ft (m) ..... 5 (1.4)  
 Max. Fuel Inlet Temperature--°F (°C) ..... 212 (100)  
 Fuel Filter Size @98% Efficiency--Micron ..... 2

### Lubrication System

Oil Pressure @ Rated Speed--psi (kPa) ..... 50 (345)  
 Oil Pressure @ Low Idle--psi (kPa) ..... 15 (105)

### Sea Water System

Sea Water Pump Flow--gal/min (L/min)..... 31 (118)  
 Maximum Inlet Restriction--in. H<sub>2</sub>O (kPa) ..... 120 (30)  
 Maximum Outlet Pressure--psi (kPa)..... 10 (69)  
 Maximum Suction Lift--ft (m)..... 10 (3)

### Performance Data

Rated Power--hp (kW) ..... 80 (60)  
 Rated Power (Metric) Fuel @ 77 °F (25 °C)--PS ..... 81.6  
 Rated Speed--rpm ..... 2500  
 Rated Torque--lb-ft (N•m)..... 169 (229)  
 Peak Torque--lb-ft (N•m) ..... 218 (296)  
 Peak Torque Speed--rpm..... 1400  
 Torque Rise--percent ..... 29  
 Low Idle Speed--rpm ..... 750  
 BMEP--psi (kPa) ..... 92 (636)  
 Smoke @ Rated Speed--Bosch No. .... 1.5  
 Noise--dB(A) @ 1 m ..... NA

### Fuel Consumption for Typical Propeller Curve

Engine rpm	Crank. Power hp (kW)	Crank. Torque lb-ft (N•m)	Prop. Absorption hp (kW)	Prop. Fuel gal/hr(L/hr)
2500	80 (60.0)	169 (229)	80 (60.0)	4.6 (17.5)
2400	80 (59.3)	173 (235)	71 (53.1)	4.0 (15.2)
2200	77 (57.2)	182 (247)	55 (40.9)	3.0 (11.5)
2000	74 (55.0)	194 (263)	41 (30.7)	2.3 (8.7)
1800	68 (51.0)	200 (271)	30 (22.4)	1.7 (6.6)
1600	63 (47.0)	207 (281)	21 (15.7)	1.3 (4.9)
1400	58 (43.0)	216 (293)	14 (10.5)	0.9 (3.5)
1200	50 (37.0)	217 (294)	9 (6.6)	0.6 (2.4)
1000	40 (30.0)	211 (286)	5 (3.8)	0.4 (1.5)

Data based on keel-cooled engine.  
 All values at rated speed and power with standard options unless otherwise noted.

\* Revised Data  
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 February 2004