



JOHN DEERE

ENGINE PERFORMANCE CURVE

Rating: M4 - 150 hp (112 kW) @ 2600* rpm

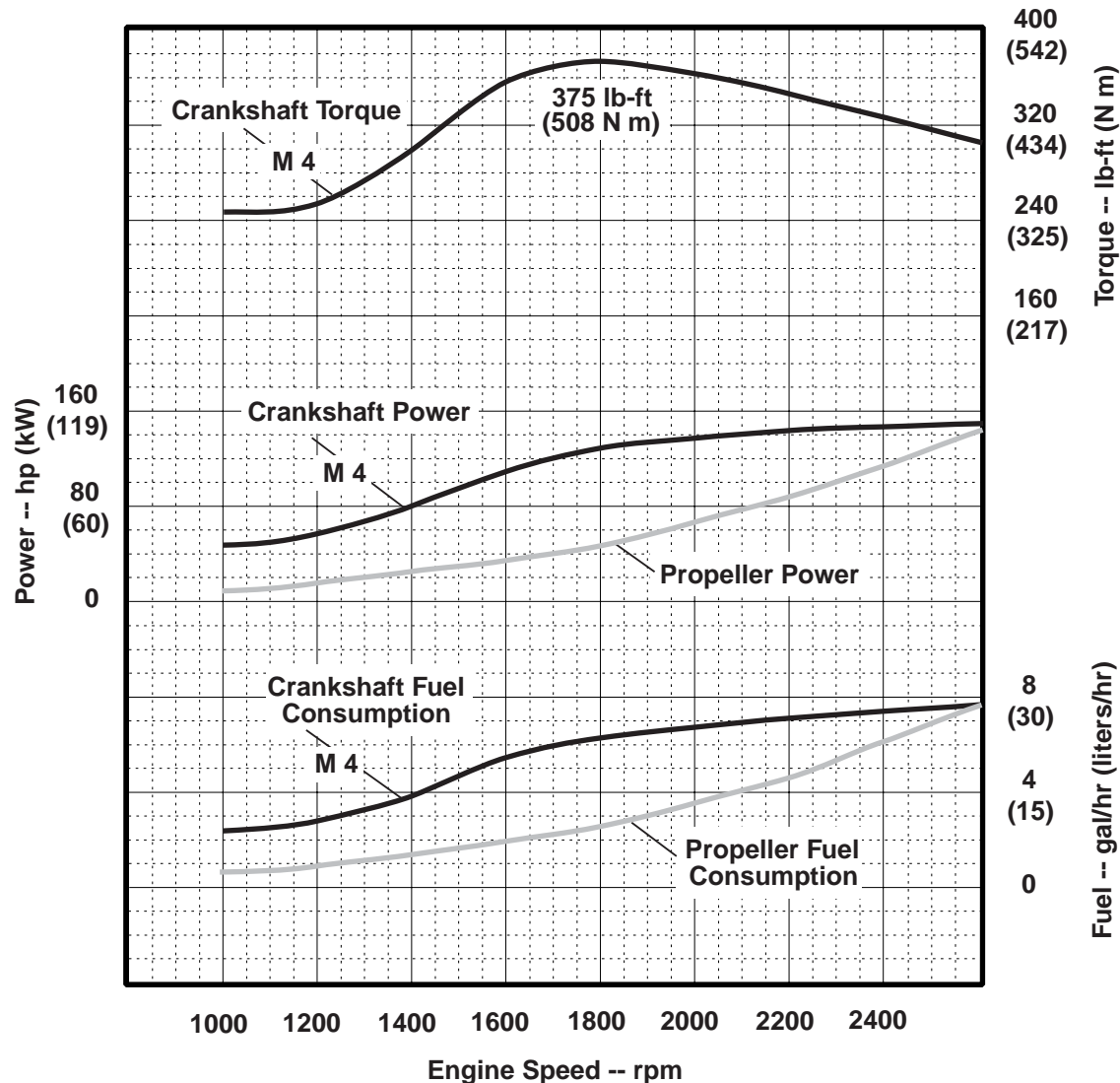
Application: Marine

POWERTECH 4.5 L Engine

Model: **4045TFM50**

[Option 16LK / 16LL]*

(Propeller Shaft Power Based on 97% Marine Gear Efficiency)



Air Intake Restriction 12 in.H₂O (3 kPa)
 Exhaust Back Pressure 30 in.H₂O (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-1 Emission Certifications:

Certified by:

NONE
 Ref: Engine Emission Label

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 23 JUNE 99

* Revised Data

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 June 1999

Common Specifications:

General Data

Model4045TFM50
 Number of Cylinders 4
 Bore and Stroke--in.(mm)..... 4.19 x 5.00 (106 x 127)
 Displacement--in³ (L)276 (4.5)
 Compression Ratio 17.2:1
 Valves per Cylinder -- Intake / Exhaust 1 / 1
 Firing Order..... 1-3-4-2*
 Combustion System..... Direct Injection
 Engine Type In-line, 4-Cycle
 Aspiration Turbocharged

Physical Data

(Includes Engine, Flywheel Housing, Flywheel & Electrics)
 Length--in.(mm) 34.8* (885)*
 Width--in.(mm) 28.0* (712)*
 Height--in.(mm) 35.9* (912)*
 Weight, dry--lb (kg)..... 1017 (462)
 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)..... 6.7* (170*)
 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

Fuel System

Fuel Injection Pump Stanadyne DB-4
 Governor Type Mechanical
 Governor Regulation--percent 7 to 10
 Fuel Consumption--gal/hr (L/hr).....7.8 (29.7)
 Total Fuel Flow--gal/hr (L/hr)33 (125)
 Maximum Leak Off Line Pressure--psi (kPa)2 (14)
 Max. Fuel Transfer Pump Suction Lift--ft (m) fuel3 (0.9)
 Max. Fuel Height Above Transfer Pump--ft (m) 4.5 (1.4)
 Fuel Filter Size @98% Efficiency--Micron..... 8

Engine Specification Data

Lubrication System

Oil Pressure @ Rated Speed--psi (kPa) 50 (345)
 Oil Pressure @ Low Idle--psi (kPa) 15 (105)
 Oil Temperature in Pan--jF (jC) 239 (115)
 Oil Pan Capacity, High--qt (L) 13.7 (13)
 Oil Pan Capacity, Low--qt (L) 12.7 (12)
 Total Oil Capacity with Filters--qt (L) 14.8 (14)
 Operational Angularity Limit - Any--degrees..... 30
 Maximum Crankshaft Pressure--in. H₂O (kPa)..... 2 (0.5)
 Engine Crankcase Vent System Open

Exhaust System

Exhaust Temperature--jF (jC)..... 783 (417)
 Exhaust Gas Flow--ft³/min (m³/min) 775 (21.9)
 Maximum Back Pressure--in. H₂O (kPa) 30 (7.5)
 Maximum Weight on Turbocharger--lb (kg) 55 (25)
 Recommended Minimum Exhaust Outlet Size--in.(mm)
 Dry 3.0 (75)
 Wet..... 3.25 (84)

Cooling System

Engine Heat Rejection--BTU/min (kW) 5575 (98)
 Coolant Flow--gal/min (L/min)..... 50 (189)
 Minimum Coolant Fill Rate--gal/min (L/min) 3 (11)
 Thermostat Start to Open--jF (jC) 176 (80)
 Thermostat Fully Open--jF (jC) 201 (94)
 Maximum Top Tank Temperature--jF (jC)..... 212 (100)
 Minimum Water-to-Boil Temperature--jF (jC) 86 (30)
 Recommended Pressure Cap--psi (kPa)..... 7 (48)
 Minimum Top Tank Pressure--in. H₂O (kPa)..... 24 (610)
 Max. Pressure Drop Across Keel Cooler--psi (kPa) .. 6 (41)
 Engine Coolant Capacity--qt (L) 15 (14)

Sea Water System

Sea Water Pump Flow--gal/min (L/min)..... 32 (122)
 Maximum Inlet Restriction--in. H₂O (kPa) 120 (30)
 Maximum Outlet Pressure--psi (kPa)..... 10 (69)
 Maximum Suction Lift--ft (m)..... 10 (3)

Air System

Minimum Ventilation Area--in² (m²) 88 (0.057)
 Maximum Allowable Air Temperature Rise
 Ambient to Engine Inlet--jF (jC) 31 (17)
 Engine Air Flow--ft³/min (m³/min) 325 (9.5)
 Intake Manifold Pressure--psi (kPa)..... 20 (136)
 Maximum Air Intake Restriction
 Dirty Air Cleaner--in. H₂O (kPa) 25 (6.3)
 Clean Air Cleaner--in. H₂O (kPa) 12 (3.0)

Electrical System

12 Volt 24 Volt

Recommended Battery Capacity
 Cold Cranking Amps @ 32 jF (0 jC)--amp ...640 570
 Max. Starting Circuit Resistance--Ohms0.0012 .. 0.002
 Starter Rolling Current @ 32 jF (0 jC)--amp.....920 600

Performance Data

Rated Power--hp (kW) 150 (112)
 Rated Power (Metric) Fuel @ 77 jF (25 jC)--PS 152
 Rated Speed--rpm 2600
 Rated Torque--lb-ft (N¥m) 304 (412)
 Peak Torque--lb-ft (N¥m) 374 (507)
 Peak Torque Speed--rpm..... 1800
 Torque Rise--percent 23
 Low Idle Speed--rpm 700
 BMEP--psi (kPa) 166 (1143)

Fuel Consumption for Typical Propeller Curve

Engine rpm	Crank Power hp (kW)	Crank Torque lb-ft (N¥m)	Prop Power hp (kW)	Prop Fuel gal/hr(L/hr)
2600	150 (112)	304 (412)	145 (108)	7.8 (29.7)
2500	149 (111)	314 (426)	129 (96)	6.9 (26.1)
2400	148 (110)	324 (439)	114 (86)	6.1 (23.0)
2200	144 (108)	345 (467)	88 (66)	4.6 (17.5)
2000	138 (103)	362 (491)	66 (49)	3.6 (13.5)
1800	128 (96)	374 (507)	48 (36)	2.6 (10.0)
1600	109 (81)	357 (484)	34 (25)	1.9 (7.2)
1400	80 (59)	299 (405)	23 (17)	1.3 (5.0)
1200	58 (43)	254 (345)	14 (11)	0.9 (3.3)
1000	47 (35)	249 (337)	8 (6)	0.6 (2.3)

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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 June 1999