

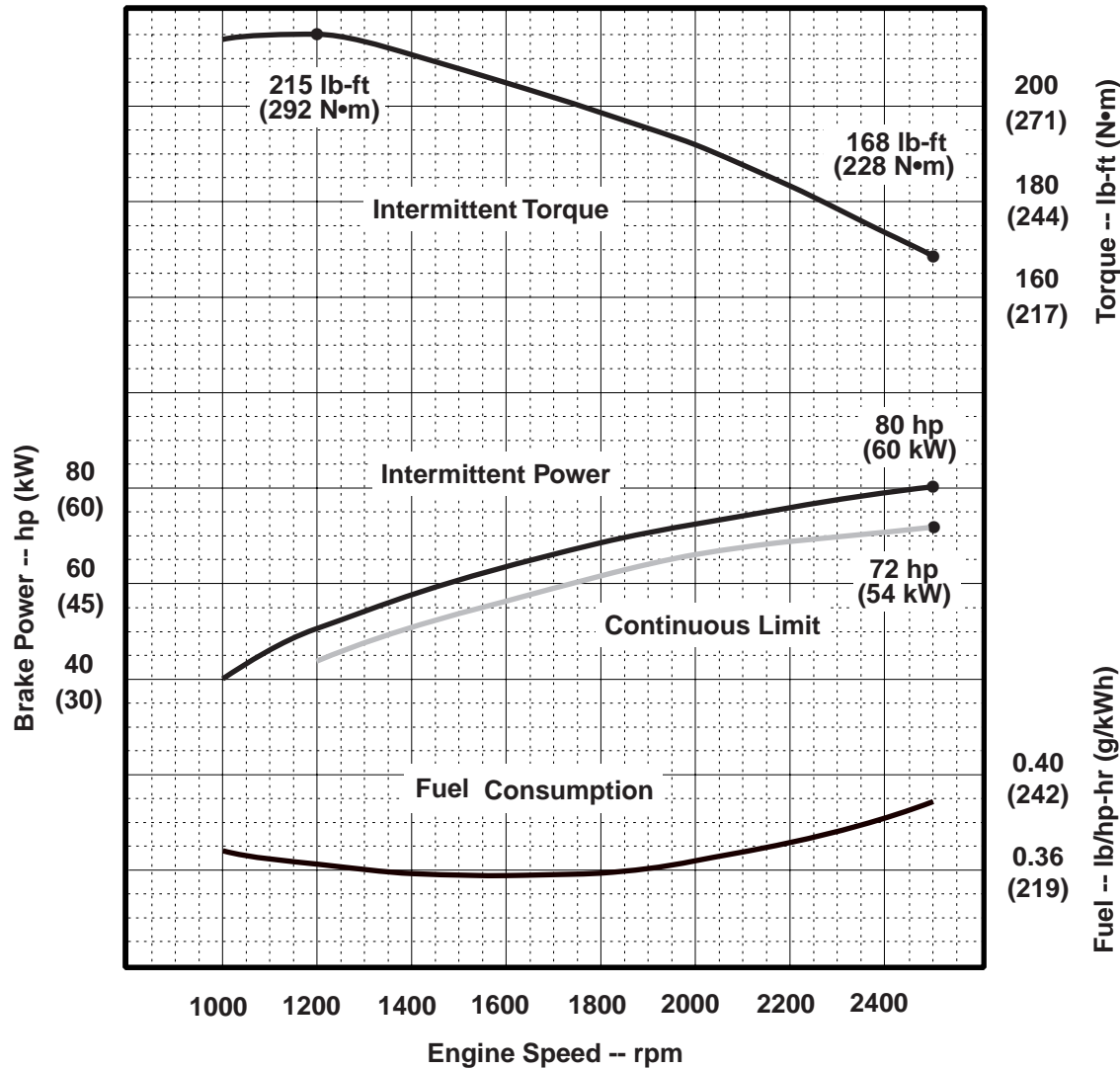


ENGINE PERFORMANCE CURVE

Rating: Gross Power
 Application: Industrial
 Intermittent / Continuous

POWERTECH 4.5L Engine
Model: 4045DF150

80 hp @ 2500 rpm
60 kW @ 2500 rpm
 [Option 16GB / 16GC / 1671 / 1691]



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:

CARB; EPA; EU*
 Ref: Engine Emission Label

Neal Lepper
 15 Dec 95

* Revised Data

Curve: 4045DF15080I Sheet 1 of 2
 December 1995

Common Specifications:

General Data

Model	4045DF150
Number of Cylinders	4
Bore and Stroke--in. (mm).....	4.19 x 5.00 (106 x 127)
Displacement--in. ³ (L).....	276 (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.....	Open
Maximum Crankcase Pressure--in. H ₂ O (kPa)	2 (0.5)

Physical Data

Length--in. (mm)	33.9 (860)*
Width--in. (mm)	24.1* (612)*
Height--in. (mm)	33.3* (846)*
Weight, dry--lb (kg)	851 (387)
(Includes flywheel housing, flywheel & electrics)	
Center of Gravity Location	
From Rear Face of Block (X-axis)--in. (mm) ..	9.3 (235)*
Right of Crankshaft (Y-axis)--in. (mm)	0.3 (7)*
Above Crankshaft (Z-axis)--in. (mm).....	5.7 (144)*
Max. Allow. 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)*

Fuel System

Fuel Injection Pump	Stanadyne
Governor Regulation	7-10 %
Governor Type.....	Mechanical
Fuel Consumption--lb/hr (kg/hr) [I].....	31.5 (14.3)
[C].....	28.6 (13)
Fuel Spill Rate--lb/hr (kg/hr) [I].....	185.5 (83.7)
[C].....	188.4 (85)
Total Fuel Flow--lb/hr (kg/hr)	217 (98)
Maximum Fuel Transfer Pump Suction--ft (m) fuel....	3 (0.9)
Fuel Filter Micron Size @ 98% Efficiency	8

Engine Specification Data

Lubrication System

Oil Pressure at Rated Speed--psi (kPa).....	50 (345)
Oil Pressure at Low Idle--psi (kPa)	15 (105)
In Pan Oil Temperature--°F (°C)	240 (115)
Oil Pan Capacity, High--qt (L)	8 (7.5)
Oil Pan Capacity, Low--qt (L)	7 (6.5)
Total Engine Oil Capacity with Filters--qt (L).....	9 (8.5)
Engine Angularity Limits, Any Direction--Degrees [I] .	30
[C] 20	

Air System

Maximum Allowable Temp Rise--Ambient Air to	
Engine Inlet--°F (°C)	15 (8)
Maximum Air Intake Restriction	
Dirty Air Cleaner--in. H ₂ O (kPa)	25 (6.25)
Clean Air Cleaner--in. H ₂ O (kPa).....	12 (3)
Engine Air Flow--ft ³ /min (m ³ /min) [I]	166 (4.7)
[C].....	166 (4.7)
Intake Manifold Pressure--psi (kPa).....	Ambient
Recommended Intake Pipe Diameter--in. (mm)	3 (76.2)

Cooling System

Engine Heat Rejection--BTU/min (kW) [I] ...	2189 (38.5)
[C].....	2047 (36)
Coolant Flow--gal/min (L/min).....	54 (204)
Thermostat Start to Open--°F (°C).....	180 (82)
Thermostat Fully Open--°F (°C).....	202 (94)
Max. Water Pump Inlet Restriction--in. H ₂ O (kPa)...	40 (10)
Engine Coolant Capacity--qt (L)	9 (8.5)
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 ³ /min (m ³ /min) [I].....	463 (13.1)
[C].....	438 (12.4)
Exhaust Temperature--°F (°C) [I].....	1080 (582)
[C].....	997 (536)
Max. Allowable Back Pressure--in. H ₂ O (kPa).....	30 (7.5)
Rec'd. Exhaust Pipe Diameter--in. (mm)	2.5 (63.5)

Electrical System

Recommended Battery Capacity (CCA)	
12 Volt System--amp	640
24 Volt System--amp	570
Maximum Allowable Starting Circuit Resistance	
12 Volt System--Ohm.....	0.0012
24 Volt System--Ohm.....	0.002
Starter Rolling Current--12 Volt System	
At 32 °F (0 °C)--amp.....	780
At -22 °F (-30 °C)--amp	1000
Starter Rolling Current--24 Volt System	
At 32 °F (0 °C)--amp.....	600
At -22 °F (-30 °C)--amp	700

Performance Data

Rated Power--hp (kW) [I].....	80 (60)
[C].....	72 (54)
Rated Speed--rpm	2500
Peak Torque--lb-ft (N•m) [I].....	215 (292)
[C].....	194 (263)
Peak Torque Speed--rpm.....	1200
Low Idle Speed--rpm (16GB, 16GC, 1671)*	850
(1691)*	1400*
BMEP--psi (kPa) [I].....	92 (636)
[C].....	83 (573)
Friction Power @ Rated Speed--hp (kW).....	29 (22)
Altitude Capability -- ft (m)	2000 (600)*
Ratio--Air : Fuel [I].....	22:1
[C].....	25:1
Smoke @ Rated Speed--Bosch No. [I].....	< 2
[C]	< 2
Noise--dB(A) @ 1 m [I].....	97.5*
[C].....	97.0*

Engine Speed rpm	Contin. Limit hp(kW)	Intermit. Power hp(kW)	Intermit. Torque lb-ft(N•m)	BSFC lb/hp-hr (g/kWh)
2500	72 (54)	80 (60)	168 (228)	0.389 (237)
2400	71 (53)	79 (59)	173 (235)	0.382 (233)
2200	68 (51)	76 (57)	183 (248)	0.372 (227)
2000	66 (49)	72 (54)	192 (260)	0.364 (222)
1800	62 (46)	68 (51)	199 (270)	0.359 (219)
1600	56 (42)	63 (47)	205 (278)	0.358 (218)
1400	51 (38)	56 (42)	211 (286)	0.359 (219)
1200	44 (33)	50 (37)	215 (292)	0.362 (221)
1000	---	40 (30)	214 (290)	0.369 (225)

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

[I] = Intermittent Data [C] = Continuous Data
Unless noted, all other values pertain to both.

* Revised Data
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December 1995