



Engine Performance Curve

Rating: Gross Power

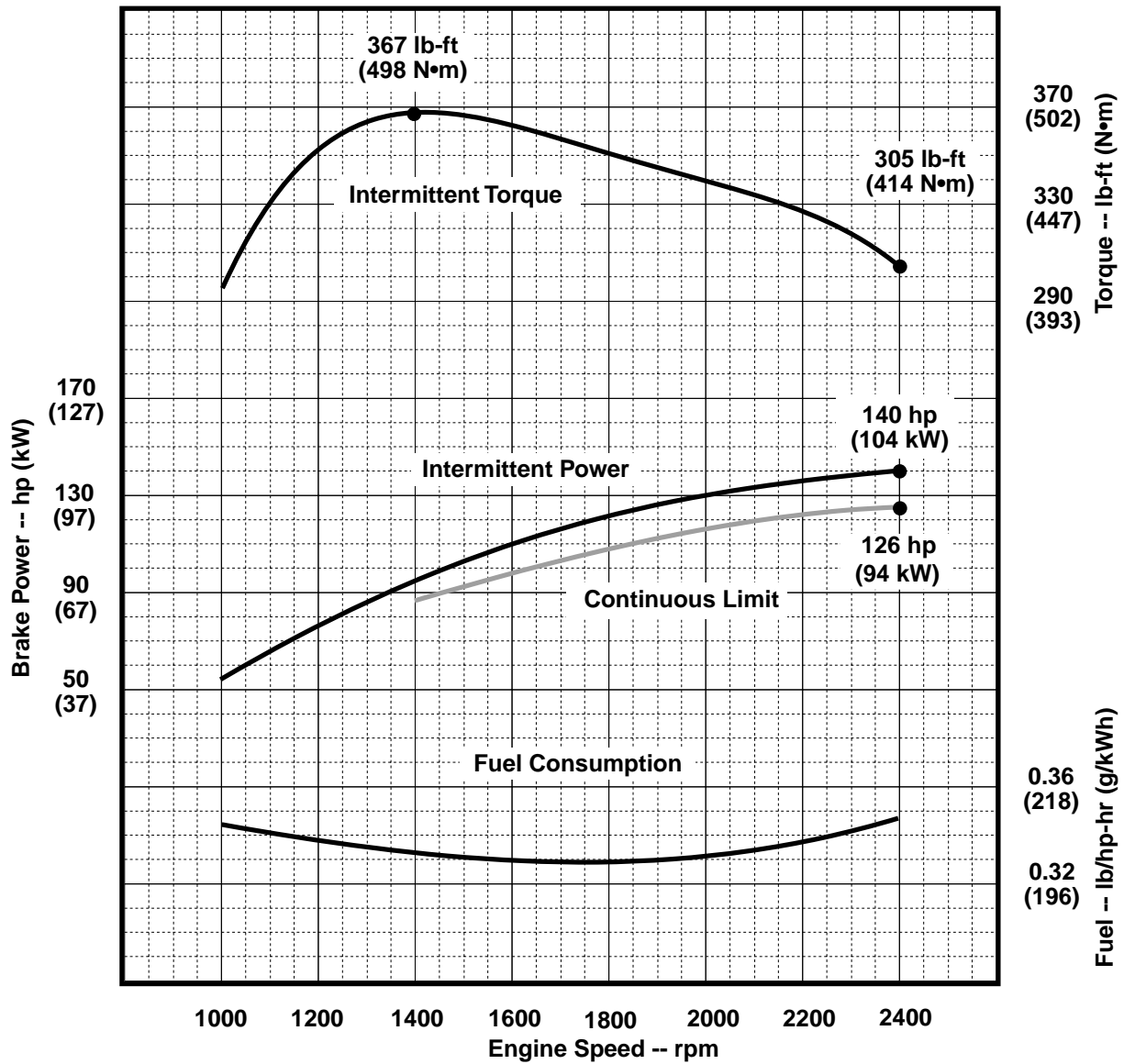
Application: Industrial
Intermittent / Continuous

POWERTECH 4.5L Engine

Model: **4045H**

140 hp @ 2400 rpm

104 kW @ 2400 rpm



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: Nm = lb-ft x 1.356

Emission Certifications:
 CARB; EEC; EPA
 Ref: Engine Emission Label

Certified by:
Neal Keiper
 9 Oct 96

Curve:
 4045HF150140I
 Source Factory:
 Dubuque/ Saran
 Date: 10-96
 Sheet 1 of 2
 * Revised Data

All values are from currently available data and are subject to change without notice.

Engine Specification Data

General Data

Model	4045HF150
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	17.0:1
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
Charge Air Cooling System	Air-to-Air
Engine Crankcase Vent System	Open
Maximum Crankcase Pressure--in. H ₂ O (kPa)	2 (0.5)

Physical Data

Length--in. (mm)	33.9 (861)
Width--in. (mm)	23.5 (598)
Height--in. (mm)	38.6 (980)
Weight, dry--lb (kg)	872 (396)
(Includes flywheel housing, flywheel & electrics)	
Center of Gravity Location	
From Rear Face of Block (X-axis)--in. (mm)	10.6 (269)
Right of Crankshaft (Y-axis)--in. (mm)	-0.3 (-8)
Above Crankshaft (Z-axis)--in. (mm)	5.9 (151)
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 (Forward)--lb (N) [I]	900 (4003)
[C]	500 (2224)

Fuel System

Fuel Injection Pump	Lucas
Governor Regulation	7-10 %
Governor Type	Mechanical
Fuel Consumption--lb/hr (kg/hr) [I]	47.9 (21.8)
[C]	44.0 (20.0)
Total Fuel Flow--lb/hr (kg/hr)	228 (104)*
Maximum Fuel Transfer Pump Suction--ft (m) fuel	3 (0.9)
Fuel Filter Micron Size @ 98% Efficiency	8

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)	17 (16)
Oil Pan Capacity, Low--qt (L)	16 (15)
Total Engine Oil Capacity with Filters--qt (L)	18 (17)
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]	335 (9.5)
[C]	318 (9.0)
Intake Manifold Pressure--psi (kPa) [I]	15.8 (109)
[C]	14.2 (98)
Recommended Intake Pipe Diameter--in. (mm)	3 (76.2)
Compressor Discharge Temp--°F (°C) [I]	275 (135)
[C]	261 (127)
Max. Press. Drop Thru Charge Air Cooler--in.H ₂ O (kPa)	52 (13)
Max. Temp. Out of Charge Air Cooler	
@ 77°F (25°C) Ambient Air--°F (°C)	140 (60)

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

Cooling System

Engine Heat Rejection--BTU/min (kW) [I]	2445 (43)
[C]	2332 (41)
Air/Air Exchanger Heat Rejection--BTU/min (kW)[I]	626 (11)
[C]	569 (10)
Coolant Flow--gal/min (L/min)	51 (192)
Thermostat Start to Open--°F (°C)	180 (82)
Thermostat Fully Open--°F (°C)	202 (94)
Maximum 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]	780 (22.1)
[C]	734 (20.8)
Exhaust Temperature--°F (°C) [I]	833 (445)
[C]	810 (432)
Maximum Allowable Back Pressure--in. H ₂ O (kPa)	30 (7.5)
Recommended Exhaust Pipe Diameter--in. (mm)	4.0 (102)

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]	140 (104)
[C]	125 (94)
Rated Speed--rpm	2400
Peak Torque--lb-ft (N•m) [I]	367 (498)
[C]	331 (448)
Peak Torque Speed--rpm	1400
Low Idle Speed--rpm	850
BMEP--psi (kPa) [I]	167 (1149)
[C]	151 (1039)
Friction Power @ Rated Speed--hp (kW)	28 (21)
Altitude Capability--ft (m)	7500 (2250)
Ratio--Air : Fuel [I]	29.6:1
[C]	30.3:1
Smoke @ Rated Speed--Bosch No. [I]	< 2
[C]	< 2
Noise--dB(A) @ 1 m [I]	98.0*
[C]	97.5*

Engine Speed rpm	Contin. Limit hp(kW)	Intermit. Power hp(kW)	Intermit. Torque lb-ft(N•m)	BSFC lb/hp-hr (g/kWh)
2400	126 (94)	140 (104)	305 (414)	0.347 (211)
2200	123 (92)	137 (102)	327 (443)	0.337 (205)
2000	117 (87)	130 (97)	342 (463)	0.332 (202)
1800	109 (81)	121 (90)	352 (477)	0.329 (200)
1600	99 (74)	110 (82)	361 (489)	0.330 (201)
1400	88 (66)	98 (73)	367 (498)	0.332 (202)
1200	---	75 (56)	329 (446)	0.339 (206)
1000	---	56 (42)	296 (401)	0.344 (209)