ENGINE PERFORMANCE CURVE

Rating: Marine

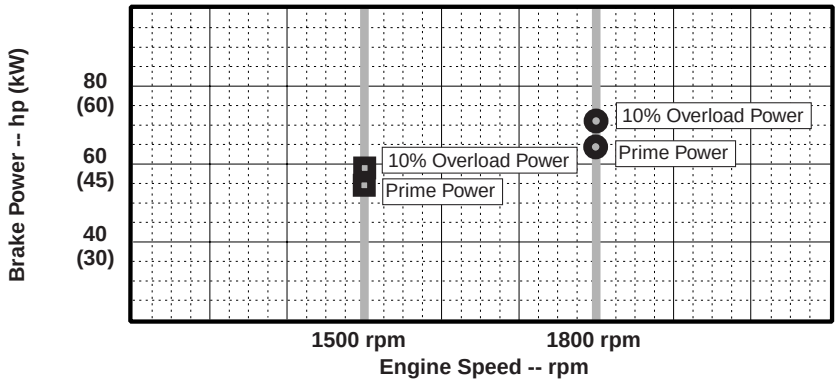
Application: Generator
Prime Power

POWERTECH 4.5 L Engine
Model: **4045DFM50**
[Option 16HT / 16HU]*

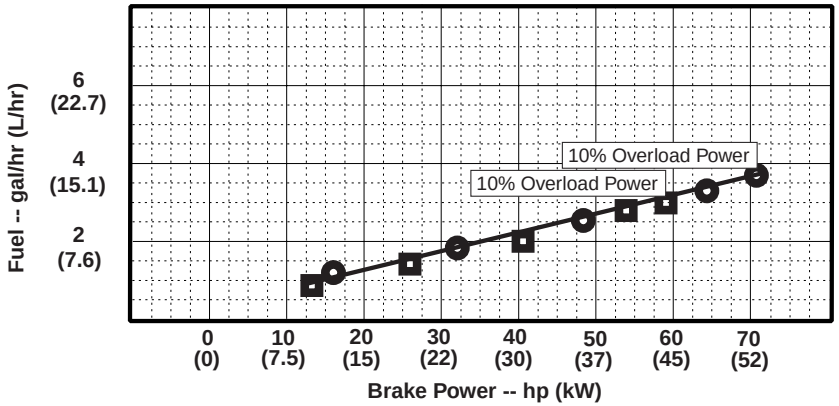
64 hp (48 kW) @ 1800 rpm
54 hp (40 kW) @ 1500 rpm

Factory pump must be adjusted from 1800 rpm to 1500 rpm.*

Speed rpm (Hz)	Generator Efficiency %	Keel Cooled (no fan)		Power Factor	Calculated Gen-Set Rating	
					kW	kVA
1500 (50)	88-92	- -	- -	0.8	35-37	44-46
1800 (60)	88-92	- -	- -	0.8	42-44	52-55



■ - 1500 rpm ● - 1800 rpm



Air Intake Restriction ..... 12 in.H_2O (3 kPa)
Exhaust Back Pressure ..... 30 in.H_2O (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:

Emission Certifications:	Certified by:
NONE Ref: Engine Emission Label	Neal Sapper 20 Apr 99

* Revised Data
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April 1999

Engine Specification Data

General Data

Model	4045DFM50
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	17.2:1
Valves per Cylinder--Intake/Exhaust	1/1
Firing Order	1-3-4-2*
Combustion System	Direct Injection
Engine Type	In-line, 4-Cycle
Aspiration	Natural

Physical Data

Length--in. (mm)	35* (885)*
Width--in. (mm)	28 (713)
Height--in. (mm)	36 (911)
Weight, dry--lb (kg)	961 (437)
(Includes flywheel housing, flywheel & electrics)	
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)	16.8 (428)
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)	900 (4003)
Maximum Installation Angle	
Front up--degrees	15
Front down--degrees	0

Fuel System

	1800 rpm	1500 rpm
Fuel Injection Pump--Stanadyne	DB-2	DB-2
Governor Type	Mech.	Mech.
Governor Regulation	5 %	5 %
'Prime' Fuel Cons.--gal/hr (L/hr)	3.3 (12.6)	2.7 (10.1)
Total Fuel Flow--gal/hr (L/hr)	25 (93)	25 (93)
Max Leak-off Line Press.--psi (kPa)	2 (14)	2 (14)
Maximum Fuel Transfer Pump Suction--ft (m) fuel	3 (0.9)	3 (0.9)
Max Fuel Height Above Inj.Pump--ft (m)	4.5 (1.4)	4.5 (1.4)
Fuel Filter @ 98% Efficiency--Microns	8	8

Lubrication System

	1800 rpm	1500 rpm
Oil Press. at Rated Speed--psi (kPa)	50 (345)	50 (345)
Oil Pressure at Low Idle--psi (kPa)	15 (105)	15 (105)
In Pan Oil Temperature--°F (°C)	239 (115)	239 (115)
Oil Pan Capacity, High--qt (L)	7.9 (7.5)	7.9 (7.5)
Oil Pan Capacity, Low--qt (L)	6.9 (6.5)	6.9 (6.5)
Total Eng. Oil Cap. w/filters--qt (L)	9.0 (8.5)	9.0 (8.5)
Op. Angularity Limit, Any Direction--deg	30	30
Max. Crankcase Press.--in. H_2O (kPa)	2 (0.5)	2 (0.5)
Engine Crankcase Vent System	open	open

Exhaust System

	1800 rpm	1500 rpm
Exhaust Temperature--°F (°C)	918 (492)	885 (474)
Exhaust Flow--ft^3/min (m^3/min)	300 (8.2)	225 (6.5)
Maximum Allowable Back Pressure--in. H_2O (kPa)	30 (7.5)	30 (7.5)
Maximum Weight on Turbo--lb (kg)	55 (25)	55 (25)
Rec'd. Min. Exhaust Outlet Diameter		
Dry--in. (mm)	2.0 (50)	2.0 (50)
Wet--in. (mm)	2.5 (63)	2.5 (63)

Cooling System

	1800 rpm	1500 rpm
Eng. Heat Reject.--BTU/min (kW)	2325 (41)	1775 (31)
Eng. Radiated Heat--BTU/min (kW)	360 (6.3)	290 (5.1)
Coolant Flow--gal/min (L/min)	33*(125)*	31*(116)*
Min. Coolant Fill Rate--gal/min (L/min)	3 (11)	3 (11)
Thermostat Start to Open--°F (°C)	176 (80)	176 (80)
Thermostat Fully Open--°F (°C)	201 (94)	201 (94)
Maximum Top Tank Temp--°F (°C)	212 (100)	212 (100)
Minimum Water-to-Boil--°F (°C)	86 (30)	86 (30)
Rec'd. Pressure Cap--psi (kPa)	7 (48)	7 (48)
Max. Water Pump Inlet Restricion.--in. H_2O (kPa)	40 (10)	40 (10)
Max. Pressure Drop Across Keel Cooler--psi (kPa)	6 (41)	6 (41)
Engine Coolant Capacity--qt (L)	30 (28)	30 (28)

Sea Water System

	1800 rpm	1500 rpm
Sea Water Pump Flow--gal/min (L/min)	22 (83)	18 (68)
Max. Inlet Restriction--in. H_2O (kPa)	120 (30)	120 (30)
Max. Outlet Press--psi (kPa)	10 (69)	10 (69)
Max. Suction Lift--ft (m)	10 (3)	10 (3)

Air System

	1800 rpm	1500 rpm
Min. Ventilation Area--in.^{2} (m^2)	34(0.022)	27(0.017)
Max. Allow. Temp Rise, Ambient Air to Engine Inlet--°F (°C)	31 (17)	31 (17)
Engine Air Flow--ft^3/min (m^3/min)	125 (3.4)	100 (2.7)
Intake Manifold Pressure--psi (kPa)	Ambient	Ambient
Maximum Air Intake Restriction		
Dirty Air Cleaner--in. H_2O (kPa)	25 (6.3)	25 (6.3)
Clean Air Cleaner--in. H_2O (kPa)	12 (3.0)	12 (3.0)

Electrical System

	12 Volts	24 Volts
Recommended Battery Capacity CCA @ 32 °F (0 °C)--amp	640	570
Max. Starting Circuit Resist.--Ohm	0.0012	0.002
Starter Rolling Current @ 32 °F (0 °C)--amp	780	600

Performance Data

	1800 rpm	1500 rpm
10% Overload Engine Power--hp (kW)	71 (53)	59 (44)
Prime Engine Power--hp (kW)	64 (48)	54 (40)
Rated Speed--rpm	1800	1500
Rated Torque--ft-lb (N•m)	207 (280)	207 (280)
Low Idle Speed--rpm	1000	1000
BMEP--psi (kPa)	103 (708)	103 (708)

Fuel Consumption

	1800 rpm	1500 rpm
Prime:		
25 % Power-- gal/hr (L/hr)	1.2 (4.7)	0.9 (3.4)
50 % Power-- gal/hr (L/hr)	1.8 (6.7)	1.4 (5.4)
75 % Power-- gal/hr (L/hr)	2.5 (9.4)	2.0 (7.7)
100 % Power-- gal/hr (L/hr)	3.3 (12.6)	2.7 (10.1)
10% Overload Power-- gal/hr (L/hr)	3.7 (13.8)	3.0 (11.3)

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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April 1999