ENGINE PERFORMANCE CURVE

Rating: Gross Power
Application: Generator
100 kVA Prime Market; Dual Frequency
1500 RPM (50 Hz)

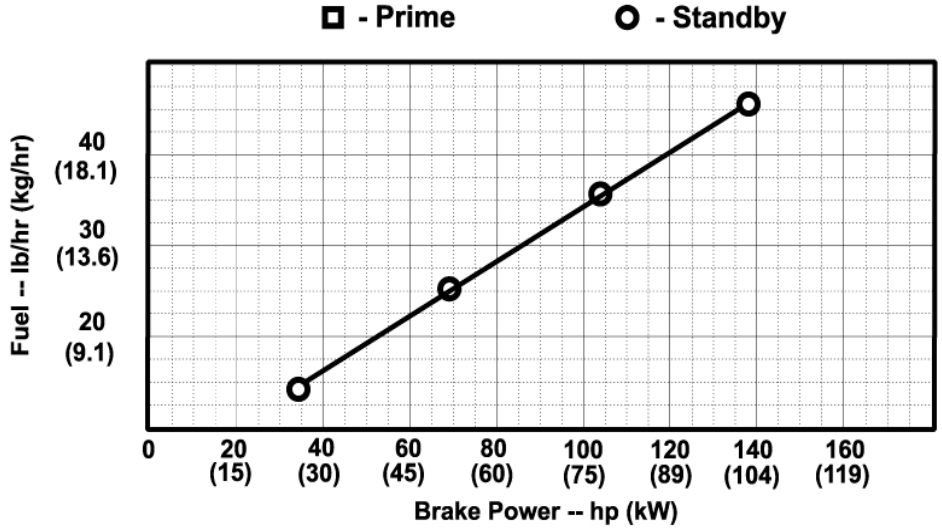
PowerTech™ E 4.5L Engine
Model: 4045HFG82

125 hp (93 kW) Prime
138 hp (103 kW) Standby

Nominal Engine Power @ 1500 RPM			
Prime		Standby	
HP	kW	HP	kW
125	93	138	103

Generator Efficiency %	Fan Power (% of Standby)		Power Factor	Prime Rating		Standby Rating	
	hp	kW		kWe	kVA	kWe	kVA
88-92	6.7	5.0	0.8	79-82	98-103	87-91	108-114

Note 1: Based on nominal engine power.
Note 2: kWe / kVA rating assumes 90% efficiency. Generator Efficiency % will vary.



STANDARD CONDITIONS

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 = 0.85kg
- Torque: N·m = lb-ft x 1.356

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

Notes:

Designed/Calibrated to meet:	Certified by:
• EU Stage III A Ref: Engine Emission Label	03-14-2011

Performance Curve: 4045HFG82_U82_B15

Engine Installation Criteria

General Data

Model			4045HFG82	
Number of Cylinders			4	
Bore	106	mm	4.2	in.
Stroke	127	mm	5.0	in.
Displacement	4.5	L	275	$in.^3$
Compression Ratio			19.0 : 1	
Valves per Cylinder, Intake/Exhaust			1 / 1	
Firing Order			1-3-4-2	
Combustion System			Unit injection	
Engine Type			In-line, 4-cycle	
Aspiration			Turbocharged and air-to-air aftercooled	
Engine Crankcase Vent System			Open	

Physical Data

Length	860	mm	33.9	in.
Width	612	mm	24.1	in.
Height	1039	mm	40.9	in.
Weight, with oil &no coolant (Includes engine, flywheel housing, flywheel &electrics)	491	kg	1082	lb
Center of Gravity Location, X-axis From Rear Face of Block	363	mm	14.3	in.
Center of Gravity Location, Y-axis Right of Crankshaft	45	mm	1.8	in.
Center of Gravity Location, Z-axis Above Crankshaft	138	mm	5.4	in.
Max. Allowable Static Bending Moment At Rear Face of Flywheel Housing with 5-G Load	814	N·m	600	lb-ft
Thrust Bearing Load Limit Forward, Intermittent	4000	N	899	lb
Thrust Bearing Load Limit Forward, Continuous	2200	N	495	lb
Thrust Bearing Load Limit Rearward, Intermittent	2000	N	450	lb
Thrust Bearing Load Limit Rearward, Continuous	1000	N	225	lb
Max. Continuous Damper Temp	82	°C	180	°F
Max. Torsional Vibration, Front of Crank			0.25	DDA

Electrical System

Recommended Battery Capacity, 12V @32 °F (0 °C)			640	amps
Recommended Battery Capacity, 24V @32 °F (0 °C)			570	amps
Starter Rolling Current, 12V @32 °F (0 °C)			920	amps
Starter Rolling Current, 24V @32 °F (0 °C)			600	amps
Starter Rolling Current, 12V @-22 °F (-30 °C)			1300	amps
Starter Rolling Current, 24V @-22 °F (-30 °C)			700	amps
Min. Voltage at ECU during Cranking, 12V			6	volts
Min. Voltage at ECU during Cranking, 24V			10	volts
Max. Allowable Start Circuit Resistance, 12V			0.0012	Ohm
Max. Allowable Start Circuit Resistance, 24V			0.002	Ohm
Max. Voltage From Engine to Crankshaft, 12V			0.15	volts
Max. Voltage From Engine to Crankshaft, 24V			0.15	volts
Max. ECU Temperature	105	°C	221	°F
Max. Harness Temperature	120	°C	248	°F
Max. Alternator Temperature	120	°C	248	°F
Max. Starter Temperature	120	°C	248	°F
Max. Temperature, All Other Electronics	125	°C	257	°F

Charge Air Cooling System

Air-to-Air Heat Rejection	18.5	kW	1053	BTU/min
Intake Manifold Pressure	159.1	kPa	23.1	psi
Compressor Discharge Temperature @77°F(25°C) Ambient Air	171.2	°C	340	°F
Max. Temperature Out of Charge Air Cooler @All Ambient Conditions	88	°C	190	°F
Intake Manifold Temperature at which Power De-rate Occurs	89.5	°C	193	°F
Intake Manifold Temperature at which Severe Power De-rate Occurs	91	°C	195.8	°F
Max. CAC System Volume	13.5	Liter	14	quart
Max. Pressure Drop through CAC	13	kPa	52.0	in. H_2O
Max. Temperature Out of Charge Air Cooler @77°F (25°C) Ambient Air	52	°C	126	°F

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Engine Installation Criteria

Cooling System

Engine Heat Rejection	53.7	kW	3057	BTU/min
Engine Radiated Heat	10	kW	569	BTU/min
Coolant Flow	144	L/min	38	gal/min
Thermostat Start to Open	82	°C	180	°F
Thermostat Fully Open	95	°C	203	°F
Engine Coolant Capacity	8.5	Liter	9.0	quart
Min. Coolant Fill Rate	11	L/min	2.9	gal/min
Min. Pressure Cap	100	kPa	15	psi
Min. Pump Inlet Pressure @203°F (95°C) Coolant	30	kPaa	4	psia
Max. External Coolant Restriction	20	kPa	3	psi
Max. Top Tank Temperature	110	°C	230	°F
Max. Top Tank Temperature 95% of Operating Hours	100	°C	212	°F
Min. Limiting Ambient Temperature	47	°C	117	°F

Exhaust System

Exhaust Flow	19.1	m³/min	675	ft.³/min
Exhaust Temperature	502	°C	936	°F
Max. Allowable Exhaust Restriction	7.5	kPa	30	in. H_2O
Max. Bending Moment on Turbo Outlet	7.0	N·m	5.2	lb-ft
Max. Shear on Turbine Outlet	11	kg	24	lb

Fuel System

ECU Description		L 16 Controller		
Fuel Injection Pump		Denso HP3		
Governor Type		Electronic		
Governor Regulation		3%		
Total Fuel Flow		kg/hr		
Fuel Consumption	22.8	kg/hr	50.3	lb/hr
Fuel Temperature Rise, Inlet to Return	40	Δ°C	72	Δ°F
Max. Fuel Inlet Restriction	20	kPa	80	in. H_2O
Min. Fuel Inlet Pressure	7.6	kPa	30	in. H_2O
Max. Fuel Inlet Pressure	20	kPa	80	in. H_2O
Max. Fuel Return Pressure	20	kPa	80	in. H_2O
Max. Fuel Inlet Temperature	80	°C	176	°F
Fuel Filter @98% Efficiency			2	mic

Lubrication System

Oil Pressure at Rated Speed	310.7	kPa	45	psi
Oil Pressure at Low Idle	105	kPa	15	psi
Max. Oil Carryover in Blow-By	1.0	g/hr	0.002	lb/hr
Max. Airflow in Blow-By	100	L/min	26.4	gal/min
Max. Crankcase Pressure	0.5	kPa	2	in. H_2O

Air Intake System

Engine Air Flow	7.6	m³/min	268	ft.³/min
Air Mass Flow	522	kg/hr	1151	lb/hr
Maximum Allowable Temperature Rise, Ambient Air to Engine Inlet	8	Δ°C	15	Δ°F
Max. Air Intake Restriction, Clean Air Cleaner	3.75	kPa	15.0	in. H_2O
Max. Air Intake Restriction, Dirty Air Cleaner	6.25	kPa	25.0	in. H_2O
Air Cleaner Efficiency			99.9	%

Performance Data

Rated Power, Prime	93	kW	125	HP
Rated Power, Standby	103	kW	138	HP
Rated Speed			1500	rpm
Rated Torque, Prime	592.0	N·m	437	lb-ft
Rated Torque, Standby	655.7	N·m	484	lb-ft
BMEP, Prime	7452.1	kPa	1081	psi
BMEP, Standby	8254.0	kPa	1197	psi
Altitude Capability	3000	m	9843	ft
Friction Power @Rated Speed	9.4	kW	13	HP
Air:Fuel Ratio			23.9 : 1	
Smoke @Rated Speed		Bosch No.		
Noise @1 m			95.4	dB(A)
0-100% Standby Load Acceptance		sec		
Load Acceptance, ISO 8528-5			G3	

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Engine Installation Criteria

Fuel Consumption	Prime		Standby	
	lb/hr	kg/h	lb/hr	kg/h
25 % Power	0.0	0.0	13.9	6.3
50 % Power	0.0	0.0	25.1	11.4
75 % Power	0.0	0.0	35.9	16.3
100 % Power	45.4	20.6	45.6	20.7

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