



JOHN DEERE

ENGINE PERFORMANCE CURVE

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

PowerTech™ E 4.5L Engine
Model: 4045HFG82

101 hp (75 kW) Prime
 111 hp (83 kW) Standby

Nominal Engine Power @ 1500 RPM			
Prime		Standby	
HP	kW	HP	kW
101	75	111	83

Generator Efficiency %	Fan Power (4.8% of Standby)		Power Factor	Prime Rating		Standby Rating	
	hp	kW		kWe	kVA	kWe	kVA
88-92	6.7	5.0	0.8	64-67	81-84	71-74	89-93

Note 1: Based on nominal engine power.

Note 2: kWe / kVA rating assumes 90% efficiency. Generator Efficiency % will vary.

STANDARD CONDITIONS

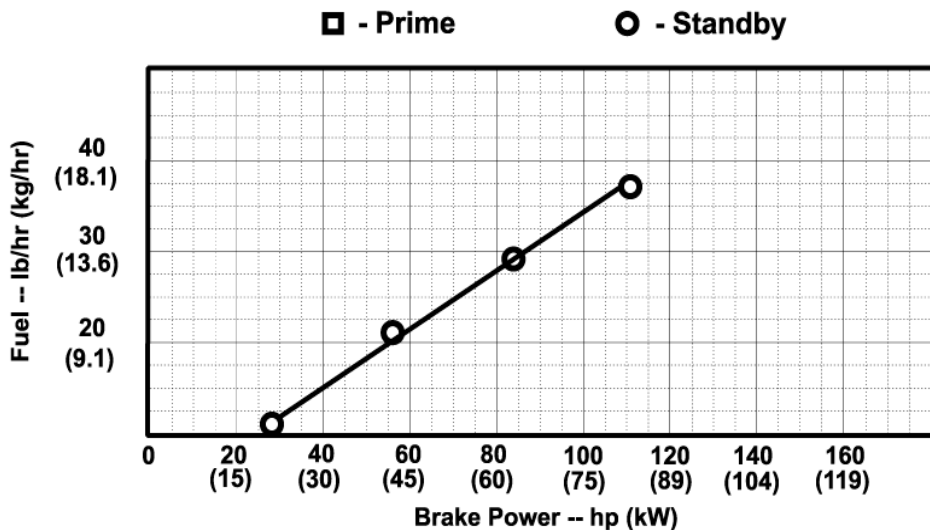
Air Intake Restriction.....12 in.H₂O (3 kPa)
 Exhaust Back Pressure.....30 in.H₂O (7.5 kPa)

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 = 0.85kg
 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:
<ul style="list-style-type: none"> EU Stage III A 	
Ref: Engine Emission Label	

Performance Curve: 4045HFG82_U82_A15

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	10.6 kW	603 BTU/min
Intake Manifold Pressure	104.9 kPa	15.2 psi
Compressor Discharge Temperature @77°F(25°C) Ambient Air	138.1 °C	281 °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 ₂ O
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	39.6 kW	2254 BTU/min
Engine Radiated Heat	8 kW	455 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 kPa	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	15.2 m ³ /min	537 ft. ³ /min
Exhaust Temperature	507 °C	945 °F
Max. Allowable Exhaust Restriction	7.5 kPa	30 in. H ₂ O
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	18.6 kg/hr	41.0 lb/hr
Fuel Temperature Rise, Inlet to Return	40 Δ°C	72 Δ°F
Max. Fuel Inlet Restriction	20 kPa	80 in. H ₂ O
Min. Fuel Inlet Pressure	7.6 kPa	30 in. H ₂ O
Max. Fuel Inlet Pressure	20 kPa	80 in. H ₂ O
Max. Fuel Return Pressure	20 kPa	80 in. H ₂ O
Max. Fuel Inlet Temperature	80 °C	176 °F
Fuel Filter @98% Efficiency	2 mic	

Lubrication System

Oil Pressure at Rated Speed	273.3 kPa	40 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 ₂ O

Air Intake System

Engine Air Flow	6.1 m ³ /min	215 ft. ³ /min
Air Mass Flow	414 kg/hr	913 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 ₂ O
Max. Air Intake Restriction, Dirty Air Cleaner	6.25 kPa	25.0 in. H ₂ O
Air Cleaner Efficiency	99.9 %	

Performance Data

Rated Power, Prime	75 kW	101 HP
Rated Power, Standby	83 kW	111 HP
Rated Speed	1500 rpm	
Rated Torque, Prime	477.4 N·m	352 lb-ft
Rated Torque, Standby	528.4 N·m	390 lb-ft
BMEP, Prime	1343 kPa	195 psi
BMEP, Standby	6651.5 kPa	965 psi
Altitude Capability	3000 m	9843 ft
Friction Power @Rated Speed	9.4 kW	13 HP
Air:Fuel Ratio	23.2 : 1	
Smoke @Rated Speed	Bosch No.	
Noise @1 m	94.5 dB(A)	
0-100% Standby Load Acceptance	sec	
Load Acceptance, ISO 8528-5	G3	

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Fuel Consumption	Prime		Standby	
	lb/hr	kg/h	lb/hr	kg/h
25 % Power	0.0	0.0	11.9	5.4
50 % Power	0.0	0.0	21.4	9.7
75 % Power	0.0	0.0	28.9	13.1
100 % Power	37.3	16.9	37.0	16.8

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