



JOHN DEERE

ENGINE PERFORMANCE CURVE

Rating: Gross Power
Application: Generator
60 kWe Standby Market
1800 RPM (60 Hz)

PowerTech™ PWX 4.5L Engine
Model: 4045HFG92

96 hp (72 kW) Prime
107 hp (80 kW) Standby

Nominal Engine Power @ 1800 RPM			
Prime		Standby	
HP	kW	HP	kW
96	72	107	80

Generator Efficiency %	Fan Power (% of Standby)		Power Factor	Prime Rating		Standby Rating	
	hp	kW		kWe	kVA	kWe	kVA
88-92	8.6	6.4	0.8	59-62	74-78	65-68	81-85

STANDARD CONDITIONS

Air Intake Restriction.....12 in.H₂O (3 kPa)
Exhaust Back Pressure.....60 in.H₂O (15 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:

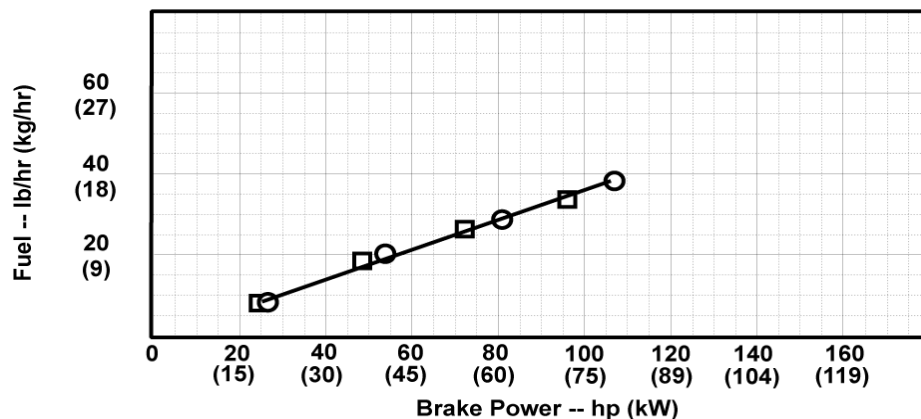
Power: kW = hp x 0.746

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.

□ - Prime ○ - Standby



Notes: 1) This Performance Curve provides installation requirements necessary for the engine to emit at its certified emission levels. For additional information necessary to meet applicable regulatory requirements, refer to the John Deere Emissions-related Installation Instructions (AG01):
<https://power.deere.com/wps/myportal/jdps/products/engines/appguidelines>.
2) A crankshaft Torsional Vibration Analysis is required on all Gen Set applications.

Designed/Calibrated to meet:

- CARB
- EPA Interim Tier 4

Ref: Engine Emission Label

Certified by:

[Signature]
2 Aug 2012

Performance Curve: 4045HFG92_B

Engine Installation Criteria

General Data

Model	4045HFG92	
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	16.1 : 1	
Valves per Cylinder, Intake/Exhaust	2 / 2	
Firing Order	1-3-4-2	
Combustion System	HPCR	
Engine Type	In-line, 4-cycle	
Aspiration	Turbocharged and air-to-air aftercooled	
Engine Crankcase Vent System	Open	

Physical Data

Length	867 mm	34.1 in.
Width	680 mm	26.8 in.
Height	1076 mm	42.4 in.
Weight, with oil & no coolant (Includes engine, flywheel housing, flywheel & electrics)	552 kg	1217 lb
Center of Gravity Location, X-axis From Rear Face of Block	265 mm	10.4 in.
Center of Gravity Location, Y-axis Right of Crankshaft	11 mm	0.4 in.
Center of Gravity Location, Z-axis Above Crankshaft	146 mm	5.7 in.
Max. Bending Moment about Main Bearings Front and Rear	480 N·m	354 lb-ft
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	NA	
Max. ECU Vibration, All Axis	9.00 gRMS	
Max. Torsional Vibration, Front of Crank	0.25 DDA	
Max. Engine Torsional Vibration in Overspeed	0.40 DDA	

Electrical System

Min. Instantaneous Cranking	50 rpm	
Min. Steady State Cranking	120 rpm	
Starter Rolling Current, 12V @32 °F (0 °C)	450 amps	
Starter Rolling Current, 24V @32 °F (0 °C)	250 amps	
Starter Rolling Current, 12V @-22 °F (-30 °C)	700 amps	
Starter Rolling Current, 24V @-22 °F (-30 °C)	400 amps	
Min. Voltage at ECU during Cranking, 12V	6 volts	
Min. Voltage at ECU during Cranking, 24V	10 volts	
Max. Voltage Drop, Battery to Starter	0.8 volts	
Max. Allowable Start Circuit Resistance, 12V	0.0012 Ohm	
Max. Allowable Start Circuit Resistance, 24V	0.002 Ohm	
Max. ECU Temperature	105 °C	221 °F
Max. VTG Actuator Surface Temp	125 °C	257 °F
Max. Air Throttle Electrical Actuator Temperature	125 °C	257 °F
Max. Harness Temperature	125 °C	257 °F
Max. Alternator Temperature	105 °C	221 °F
Max. Starter Temperature	120 °C	248 °F
Max. Temperature, All Other Electronics	125 °C	257 °F

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Engine Installation Criteria

Charge Air Cooling System

Air-to-Air Heat Rejection	8 kW	455 BTU/min
Intake Manifold Pressure	97 kPa	14.1 psi
Compressor Discharge Temperature @77°F(25°C) Ambient Air	106 °C	223 °F
Compressor Discharge Temperature @117°F(47°C) 80 kPa Barametric pressure	200 °C	392 °F
Max. Temperature Out of Charge Air Cooler @All Ambient Conditions	88 °C	190 °F
Intake Manifold Temperature at which Power De-rate Occurs	121.5 °C	251 °F
Intake Manifold Temperature at which Severe Power De-rate Occurs	123 °C	253.4 °F
Max. CAC System Volume	20 Liter	21 quart
Max. Pressure Drop through CAC	10 kPa	40.0 in. H ₂ O
Min. Pressure Drop through CAC	5 kPa	20.0 in. H ₂ O
Max. Temperature Out of Charge Air Cooler @77°F (25°C) Ambient Air	56 °C	133 °F
Min. Temperature Out of Charge Air Cooler @77°F (25°C) Ambient Air	44 °C	111 °F
Max. Bending Moment on Compressor Outlet	0.6 N·m	0 lb-ft
Max. Shear on Compressor Outlet	0.4 kg	1 lb

Cooling System

Engine Heat Rejection	52 kW	2960 BTU/min
Coolant Flow @10 kPa External Restriction	245 L/min	65 gal/min
Coolant Flow @40 kPa External Restriction	218 L/min	58 gal/min
Thermostat Start to Open	85 °C	185 °F
Thermostat Fully Open	97 °C	207 °F
Engine Coolant Capacity	8.5 Liter	9.0 quart
Min. Coolant Fill Rate	12 L/min	3.2 gal/min
Max. Water Pump Inlet Pressure	235 kPaa	34 psia
Min. Pump Inlet Pressure @203°F (95°C) Coolant	103 kPaa	15 psia
Min. Pump Inlet Pressure @Max. Top Tank Temperature	174 kPaa	25 psia
Max. External Coolant Restriction	40 kPa	6 psi
Max. Top Tank Temperature	113 °C	235 °F
Max. Top Tank Temperature 95% of Operating Hours	103 °C	217 °F
Min. Limiting Ambient Temperature	47 °C	117 °F

Exhaust System

Exhaust Flow	11.3 m³/min	399 ft.³/min
Exhaust Temperature	446 °C	835 °F
Max. Allowable Exhaust Restriction	17 kPa	68 in. H ₂ O
Max. Bending Moment on Turbo Outlet	7.4 N·m	5.5 lb-ft
Max. Shear on Turbine Outlet	2.5 kg	6 lb
Exhaust Filter Size		2
Exhaust Filter Pressure Drop (Clean)	4.5 kPa	18 in. H ₂ O
Min. Mixing Length, Outlet to Exhaust Filter		NA
Max. Bending Moment on Exhaust Filter Inlet	25 N·m	18 lb-ft
Max. Bending Moment on Exhaust Filter Outlet	25 N·m	18 lb-ft
Max. Exhaust Leakage Rate, Engine to Exhaust Filter @30kPa	5 L/min	1.3 gal/min
Max. Temperature Drop, Engine to Exhaust Filter	30 °C	86 °F

Fuel System

ECU Description	L23 Controller	
Fuel Injection Pump	Denso HP3	
Governor Type	Electronic	
Total Fuel Flow	96 kg/hr	212 lb/hr
Fuel Consumption, Prime	15.6 kg/hr	34 lb/hr
Fuel Consumption, Standby	17.2 kg/hr	38 lb/hr
Fuel Temperature Rise, Inlet to Return	43 Δ°C	77 Δ°F
Min. Fuel Inlet Pressure	-30 kPa	-120 in. H ₂ O
Max. Fuel Inlet Pressure		NA
Max. Fuel Return Pressure	20 kPa	80 in. H ₂ O
Min. Fuel Return Pressure	0 kPa	0 in. H ₂ O
Max. Fuel Inlet Temperature	75 °C	167 °F
Fuel Filter @98% Efficiency		2 mic

Lubrication System

Oil Pressure at Rated Speed	313 kPa	45 psi
Oil Pressure at Low Idle		NA
Max. In-Pan Oil Temperature	138 °C	280 °F
Max. Crankcase Pressure	2 kPa	8 in. H ₂ O

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Engine Installation Criteria

Air Intake System

Engine Air Flow	5.1 m ³ /min	180 ft. ³ /min
Air Mass Flow	358 kg/hr	789 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	96 HP	72 kW
Rated Power, Standby	107 HP	80 kW
Rated Speed	1800 rpm	
Rated Torque, Prime	381 N·m	281 lb-ft
Rated Torque, Standby	416 N·m	307 lb-ft
BMEP, Prime	1066 kPa	155 psi
BMEP, Standby	1162 kPa	169 psi
Altitude Capability, Prime	3048 m	10000 ft
Altitude Capability, Standby	3048 m	10000 ft
Friction Power @Rated Speed	21 kW	28 HP
Air:Fuel Ratio, Prime	22.7 : 1	
Air:Fuel Ratio, Standby	21.7 : 1	
Noise @1 m Prime	88.4 dB(A)	
Noise @1 m Standby	88.3 dB(A)	
0-100% Standby Load Acceptance	sec	
Load Acceptance, ISO 8528-5	G3	

Fuel Consumption	Prime		Standby	
	lb/hr	kg/h	lb/hr	kg/h
25 % Power	13.0	5.9	13.2	6.0
50 % Power	18.7	8.5	20.1	9.1
75 % Power	26.9	12.2	29.1	13.2
100 % Power	34.4	15.6	37.9	17.2

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