



JOHN DEERE

ENGINE PERFORMANCE CURVE

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

PowerTech™ PVX 9.0L Engine
Model: 6090HFG94
JD Electronic Control

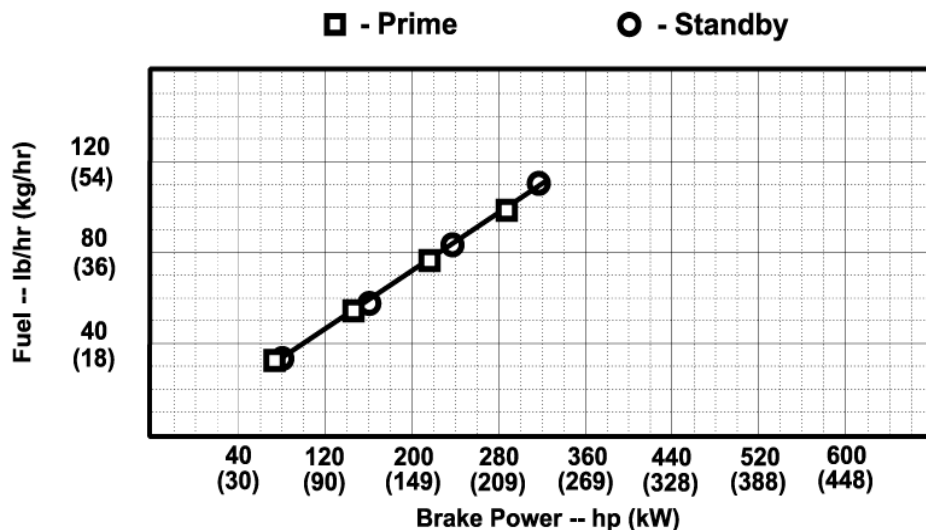
288 hp (215 kW) Prime
318 hp (237 kW) Standby

Nominal Engine Power @ 1800 RPM			
Prime		Standby	
HP	kW	HP	kW
288	215	318	237

Generator Efficiency %	Fan Power (% of Standby)		Power Factor	Prime Rating		Standby Rating	
	hp	kW		kWe	kVA	kWe	kVA
90-94	19.0	14.2	0.8	182-190	228-238	201-209	251-262

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.....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.

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:

- EPA Interim Tier 4

Ref: Engine Emission Label

Certified by:

John Deere
7 February 2011

Performance Curve: 6090HFG94_D

Engine Installation Criteria

General Data

Model	6090HFG94	
Number of Cylinders	6	
Bore	118.4 mm	4.7 in.
Stroke	136 mm	5.4 in.
Displacement	9.0 L	549 in. ³
Compression Ratio	16.0 : 1	
Valves per Cylinder, Intake/Exhaust	2 / 2	
Firing Order	1-5-3-6-2-4	
Combustion System	HPCR	
Engine Type	In-line, 4-cycle	
Aspiration	Turbocharged and air-to-air aftercooled	
Engine Crankcase Vent System	Open	

Physical Data

Length	1326.4 mm	52.2 in.
Width	817.6 mm	32.2 in.
Height	1376.1 mm	54.2 in.
Weight, with oil & no coolant (Includes engine, flywheel housing, flywheel & electrics)	1095.5 kg	2415 lb
Center of Gravity Location, X-axis From Rear Face of Block	446 mm	17.6 in.
Center of Gravity Location, Y-axis Right of Crankshaft	mm	
Center of Gravity Location, Z-axis Above Crankshaft	387.4 mm	15.3 in.
Max. Bending Moment about Main Bearings Front and Rear	550 N·m	406 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	2932 N	659 lb
Thrust Bearing Load Limit Forward, Continuous	1933 N	435 lb
Thrust Bearing Load Limit Rearward, Intermittent	139 N	31 lb
Thrust Bearing Load Limit Rearward, Continuous	899 N	202 lb
Max. Continuous Damper Temp	200 °C	392 °F
Max. ECU Vibration, All Axis	9.00 gRMS	
Max. Torsional Vibration, Front of Crank	0.25 DDA	

Electrical System

Min. Instantaneous Cranking	50 rpm	
Min. Steady State Cranking	120 rpm	
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. 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. 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. VTG Actuator Surface Temp	180 °C	356 °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	48 kW	2732 BTU/min
Intake Manifold Pressure	218 kPa	31.6 psi
Compressor Discharge Temperature @77°F(25°C) Ambient Air	200 °C	392 °F
Compressor Discharge Temperature @117°F(47°C) 80 kPa Barametric pressure	240 °C	464 °F
Max. Temperature Out of Charge Air Cooler @All Ambient Conditions	88 °C	190 °F
Intake Manifold Temperature at which Power De-rate Occurs	88 °C	190 °F
Intake Manifold Temperature at which Severe Power De-rate Occurs	89.5 °C	193.1 °F
Max. CAC System Volume	27 Liter	29 quart
Max. Pressure Drop through CAC	16 kPa	64.0 in. H ₂ O
Min. Pressure Drop through CAC	8 kPa	32.0 in. H ₂ O
Max. Temperature Out of Charge Air Cooler @77°F (25°C) Ambient Air	52 °C	126 °F
Min. Temperature Out of Charge Air Cooler @77°F (25°C) Ambient Air	48 °C	118 °F
Max. Bending Moment on Compressor Outlet	6 N·m	4 lb-ft
Max. Shear on Compressor Outlet	4 kg	9 lb

Cooling System

Engine Heat Rejection	146.7 kW	8350 BTU/min
Coolant Flow @10 kPa External Restriction	480 L/min	127 gal/min
Coolant Flow @40 kPa External Restriction	438 L/min	116 gal/min
Max. Auxiliary Coolant Flow	30 L/min	8 gal/min
Thermostat Start to Open	85 °C	185 °F
Thermostat Fully Open	95 °C	203 °F
Engine Coolant Capacity	17 Liter	18.0 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	118 kPaa	17 psia
Min. Pump Inlet Pressure @Max. Top Tank Temperature	172 kPaa	25 psia
Min. External Coolant Restriction	15 kPa	2 psi
Max. External Coolant Restriction	60 kPa	9 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	33.2 m³/min	1172 ft.³/min
Exhaust Temperature	405.5 °C	762 °F
Max. Allowable Exhaust Restriction	10.1 kPa	40 in. H ₂ O
Max. Bending Moment on Turbo Outlet	7 N·m	5.2 lb-ft
Max. Shear on Turbine Outlet	11 kg	24 lb
Exhaust Filter Size		6
Exhaust Filter Pressure Drop (Clean)	15 kPa	60 in. H ₂ O
Min. Mixing Length, Outlet to Exhaust Filter	1000 mm	39 in.
Max. Bending Moment on Exhaust Filter Inlet	180 N·m	133 lb-ft
Max. Bending Moment on Exhaust Filter Outlet	180 N·m	133 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

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Engine Installation Criteria

Fuel System

ECU Description	L21 Controller	
Fuel Injection Pump	Denso HP4	
Governor Type	Electronic	
Total Fuel Flow	210 kg/hr	463 lb/hr
Fuel Consumption, Prime	45.3 kg/hr	100 lb/hr
Fuel Consumption, Standby	49.9 kg/hr	110 lb/hr
Fuel Temperature Rise, Inlet to Return	40.2 Δ°C	72 Δ°F
Min. Fuel Inlet Pressure	-30 kPa	-120 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
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	300 kPa	44 psi
Oil Pressure at Low Idle	100 kPa	15 psi
Max. In-Pan Oil Temperature	138 °C	280 °F
Max. Crankcase Pressure	2 kPa	8 in. H ₂ O

Air Intake System

Engine Air Flow	16 m ³ /min	565 ft. ³ /min
Air Mass Flow	1107 kg/hr	2441 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	288 HP	215 kW
Rated Power, Standby	318 HP	237 kW
Rated Speed	1800 rpm	
Low Idle Speed	1800 rpm	
Rated Torque, Prime	1141 N·m	842 lb-ft
Rated Torque, Standby	1255 N·m	926 lb-ft
BMEP, Prime	1603 kPa	232 psi
BMEP, Standby	1764 kPa	256 psi
Altitude Capability, Prime	1676 m	5500 ft
Altitude Capability, Standby	1676 m	5500 ft
Friction Power @Rated Speed	21 kW	28 HP
Air:Fuel Ratio, Prime	22.7 : 1	
Air:Fuel Ratio, Standby	22.1 : 1	
Noise @1 m Prime	dB(A)	
Noise @1 m Standby	dB(A)	
4 second Standby Block Load Capability	%	
Block Load Capability, ISO 8528 G2	%	

Fuel Consumption	Prime		Standby	
	lb/hr	kg/h	lb/hr	kg/h
25 % Power	31.3	14.2	33.3	15.1
50 % Power	53.4	24.2	58.4	26.5
75 % Power	76.7	34.8	82.2	37.3
100 % Power	99.0	44.9	110.0	49.9

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