

ENGINE DATASHEET





JOHN DEERE

ENGINE PERFORMANCE CURVE

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

PowerTech™ PSL 9.0L Engine
Model: 6090HFG06

399 hp (298 kW) Prime
 437 hp (326 kW) Standby

Dual-frequency Partner, 6090HFG06_D

Nominal Engine Power @ 1800 RPM			
Prime		Standby	
HP	kW	HP	kW
399	298	437	326

Generator Efficiency %	Fan Power (% of Standby)		Power Factor	Prime Rating		Standby Rating	
	hp	kW		kWe	kVA	kWe	kVA
90-94	26.8	20.0	0.8	251-262	313-327	276-288	345-360

Note 1: Based on nominal engine power. Fan power is 6% of Standby.

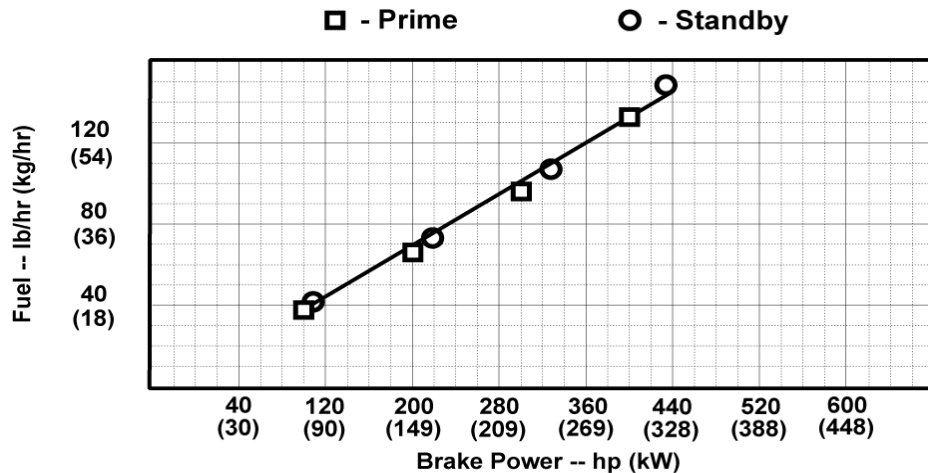
STANDARD CONDITIONS

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

Gross power guaranteed within + or - 5% at SAEJ1995 and ISO 3046 conditions:
 Air Inlet Temperature = 77 °F (25 °C)
 Barometer = 29.31 in.Hg (99 kPa)
 Fuel Inlet Temperature = 104 °F (40 °C)
 Fuel Specific Gravity @ 60 °F (15.5 °C) = 0.853

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/apguidelines>.
 2) A crankshaft Torsional Vibration Analysis is required on all Gen Set applications.

Designed/Calibrated to meet:	Certified by:
<ul style="list-style-type: none"> CARB EPA Tier 4 	 7 AUG 2017
Ref: Engine Emission Label	

Performance Curve: 6090HFG06_C

Engine Installation Criteria

General Data

Model	6090HFG06	
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 mm	52.2 in.
Width	879 mm	34.6 in.
Height	1266 mm	49.8 in.
Center of Gravity Location, X-axis From Rear Face of Block	501.7 mm	19.8 in.
Center of Gravity Location, Y-axis Right of Crankshaft	0 mm	0 in.
Center of Gravity Location, Z-axis Above Crankshaft	304.8 mm	12.0 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	620 N·m	457 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
Weight, with oil & no coolant (Includes engine, flywheel housing, flywheel & electrics)	1096.8 kg	2418 lb
Max. Continuous Damper Temp	200 °C	392 °F
Max. ECU Vibration, All Axis	6.00 gRMS	
Max. Torsional Vibration, Front of Crank	0.29 DDA	
Max. Engine Torsional Vibration in Overspeed	0.00 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	15 volts	
Max. Voltage From Engine to Crankshaft, 24V	30 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

Performance Curve: 6090HFG06_C

Engine Installation Criteria

Charge Air Cooling System

Air-to-Air Heat Rejection	79 kW	4497 BTU/min
Compressor Discharge Temperature @77°F(25°C) Ambient Air	237 °C	459 °F
Intake Manifold Pressure	288 kPa	41.8 psi
Compressor Discharge Temperature @117°F(47°C) 80 kPa Barametric pressure	°C	
Max. Temperature Out of Charge Air Cooler @All Ambient Conditions	88 °C	190 °F
Max. CAC System Volume		NA
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	184 kW	10473 BTU/min
Coolant Flow @10 kPa External Restriction	432 L/min	114 gal/min
Coolant Flow @40 kPa External Restriction	385 L/min	102 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

Exhaust System

Exhaust Flow	41 m ³ /min	1448 ft. ³ /min
Exhaust Temperature	444 °C	831 °F
Max. Allowable Exhaust Restriction	29 kPa	116 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	5 DOC / 5 SCR; Gen 1.5	
Exhaust Filter Pressure Drop (Clean)	22 kPa	88 in. H ₂ O
Min. Mixing Length, Outlet to Exhaust Filter	NA	
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 Δ°C	54 Δ°F

Fuel System

ECU Description	L33 Controller	
Fuel Injection Pump	Denso HP6	
Governor Type	Electronic	
Total Fuel Flow	137 kg/hr	302 lb/hr
Fuel Consumption, Prime	60.0 kg/hr	132 lb/hr
Fuel Consumption, Standby	67.0 kg/hr	148 lb/hr
Fuel Temperature Rise, Inlet to Return	19 Δ°C	34 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	320 kPa	46 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

Performance Curve: 6090HFG06_C

Engine Installation Criteria

Air Intake System

Engine Air Flow	21 m ³ /min	742 ft. ³ /min
Air Mass Flow	1426 kg/hr	3144 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	298 kW	399 HP
Rated Power, Standby	326 kW	437 HP
Rated Speed	1800 rpm	
Low Idle Speed	1200 rpm	
Rated Torque, Prime	1581 N·m	1166 lb-ft
Rated Torque, Standby	1730 N·m	1276 lb-ft
BMEP, Prime	2212 kPa	321 psi
BMEP, Standby	2422 kPa	351 psi
Altitude Capability, Prime	2438 m	8000 ft
Altitude Capability, Standby	1219 m	4000 ft
Friction Power @Rated Speed	23.7 kW	32 HP
Air:Fuel Ratio, Prime	20.9 : 1	
Air:Fuel Ratio, Standby	20.9 : 1	
Noise @1 m Prime	95.4 dB(A)	
Noise @1 m Standby	95.4 dB(A)	
0-100% Standby Load Acceptance	6.8 sec	
Load Acceptance, ISO 8528-5	G3	

DEF Data

Rating	Engine Speed	DEF Consumption*		Percent of Diesel Consumption**
		g/kWh	lb/hp-hr	
	RPM			%
Standby	1800	10	0.0165	3.7
Prime	1800	6.7	0.0110	2.8

*DEF conversion factor: 1.087 kg/l (9.071 lb/gal)

** Percent of diesel consumption by volume at 100% power

Fuel Consumption	Prime		Standby	
	lb/hr	kg/h	lb/hr	kg/h
25 % Power	39.7	18.0	41.9	19.0
50 % Power	66.1	30.0	72.8	33.0
75 % Power	97.0	44.0	105.8	48.0
100 % Power	132.3	60.0	147.7	67.0

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