ENGINE DATASHEET

TEKSAN

ENGINE PERFORMANCE CURVE

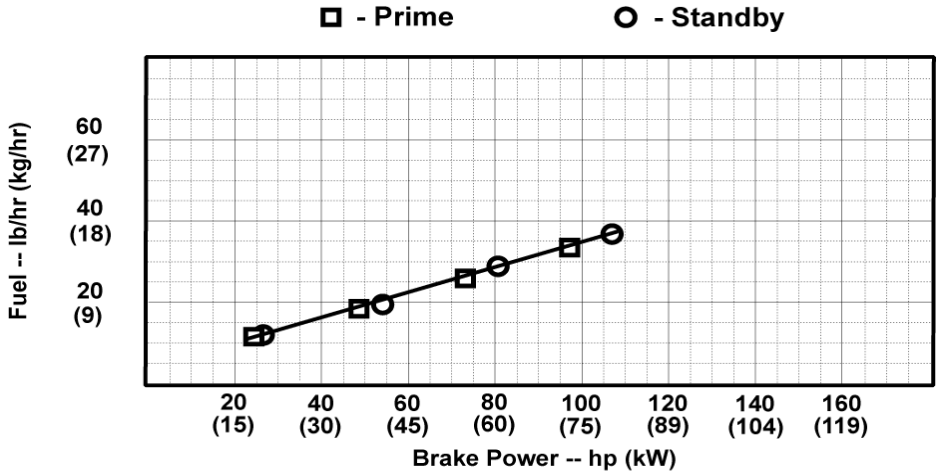
Rating: Gross Power
Application: Generator
1800 RPM (60 Hz)

PowerTech™ PWL 4.5L Engine
Model: 4045HFG04
JD Electronic Control
97 hp (73 kW) Prime
107 hp (80 kW) Standby

Nominal Engine Power @ 1800 RPM			
Prime		Standby	
HP	kW	HP	kW
97	73	107	80

Generator Efficiency %	Fan Power (% of Standby)		Power Factor	Prime Rating		Standby Rating	
	hp	kW		kWe	kVA	kWe	kVA
88-92	7.5	5.6	0.8	60-62	74-78	65-68	82-86

Note 1: Based on nominal engine power; Fan Power is 7% of Standby Power.



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:
• CARB • EPA Tier 4 Ref: Engine Emission Label	01 Oct 2014

Performance Curve: 4045HFG04_B

Engine Installation Criteria

General Data

Model			4045HFG04	
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			17.0 : 1	
Valves per Cylinder, Intake/Exhaust			2 / 2	
Firing Order			1-3-4-2	
Combustion System			Direct Injection	
Engine Type			In-line, 4-cycle	
Aspiration			Turbocharged and air-to-air aftercooled	
Engine Crankcase Vent System			Open	

Physical Data

Length	870	mm	34.3	in.
Width	650	mm	25.6	in.
Height	1050	mm	41.3	in.
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	10	mm	0.4	in.
Center of Gravity Location, Z-axis Above Crankshaft	140	mm	5.5	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
Weight, with oil &no coolant (Includes engine, flywheel housing, flywheel &electrics)	550	kg	1213	lb
Max. Continuous Damper Temp			NA	
Max. ECU Vibration, All Axis			6.00	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)			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. 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			NA	
Max. Air Throttle Electrical Actuator Temperature			NA	
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	11	kW	626	BTU/min
Compressor Discharge Temperature @77°F(25°C) Ambient Air	146	°C	295	°F
Intake Manifold Pressure	122	kPa	17.7	psi
Compressor Discharge Temperature @117°F(47°C) 80 kPa Barametric pressure	186	°C	367	°F
Max. Temperature Out of Charge Air Cooler @All Ambient Conditions	88	°C	190	°F
Max. CAC System Volume	25	Liter	26	quart
Max. Pressure Drop through CAC	10	kPa	40.0	in. H_2O
Min. Pressure Drop through CAC	5	kPa	20.0	in. H_2O
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	3.5	N·m	3	lb-ft
Max. Shear on Compressor Outlet	2.5	kg	6	lb

Cooling System

Engine Heat Rejection	51	kW	2903	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	165	kPaa	24	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

Exhaust System

Exhaust Flow	12.6	m³/min	445	ft.³/min
Exhaust Temperature	400	°C	752	°F
Max. Allowable Exhaust Restriction	11.5	kPa	46	in. H_2O
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 DOC \ 3 SCR; Gen 1.0			
Exhaust Filter Pressure Drop (Clean)	6.5	kPa	26	in. H_2O
Min. Mixing Length, Outlet to Exhaust Filter			NA	
Max. Bending Moment on Exhaust Filter Inlet	172	N·m	127	lb-ft
Max. Bending Moment on Exhaust Filter Outlet	85	N·m	63	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	L34 Controller			
Fuel Injection Pump	Denso HP3			
Governor Type	Electronic			
Total Fuel Flow	42	kg/hr	93	lb/hr
Fuel Consumption, Prime	15.3	kg/hr	34	lb/hr
Fuel Consumption, Standby	16.8	kg/hr	37	lb/hr
Fuel Temperature Rise, Inlet to Return	30	Δ°C	54	Δ°F
Min. Fuel Inlet Pressure	-30	kPa	-120	in. H_2O
Max. Fuel Return Pressure	20	kPa	80	in. H_2O
Min. Fuel Return Pressure	0	kPa	0	in. H_2O
Max. Fuel Inlet Temperature	75	°C	167	°F
Fuel Filter @98% Efficiency			2	mic

Lubrication System

Oil Pressure at Rated Speed	330	kPa	48	psi
Oil Pressure at Low Idle	275	kPa	40	psi
Max. In-Pan Oil Temperature	138	°C	280	°F
Max. Crankcase Pressure	1.0	kPa	4	in. H_2O

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Engine Installation Criteria

Air Intake System

Engine Air Flow	5.9	m^3/min	208	$ft.^3$/min
Air Mass Flow	403	kg/hr	888	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	73	kW	97	HP
Rated Power, Standby	80	kW	107	HP
Rated Speed			1800	rpm
Low Idle Speed			1200	rpm
Rated Torque, Prime	386	N·m	285	lb-ft
Rated Torque, Standby	425	N·m	313	lb-ft
BMEP, Prime	1070	kPa	155	psi
BMEP, Standby	1180	kPa	171	psi
Altitude Capability, Prime	3993	m	13100	ft
Altitude Capability, Standby	3292	m	10800	ft
Friction Power @Rated Speed	17	kW	23	HP
Air:Fuel Ratio, Prime			25.6 : 1	
Air:Fuel Ratio, Standby			24.3 : 1	
Noise @1 m Prime			89.2	dB(A)
Noise @1 m Standby			89.2	dB(A)
0-100% Standby Load Acceptance			1.9	sec
Load Acceptance, ISO 8528-5			G3	

Fuel Consumption	Prime		Standby	
	lb/hr	kg/h	lb/hr	kg/h
25 % Power	11.7	5.3	12.1	5.5
50 % Power	18.7	8.5	19.8	9.0
75 % Power	26.0	11.8	28.2	12.8
100 % Power	33.7	15.3	37.0	16.8

DEF Data

Rating	Engine Speed	DEF Consumption*		Percent of Diesel Consumption**
	RPM	g/kWh	lb/hp-hr	%
Standby	1800	11.8	0.01941	4.4
Prime	1800	11.7	0.01925	4.3

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

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

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