ENGINE PERFORMANCE CURVE

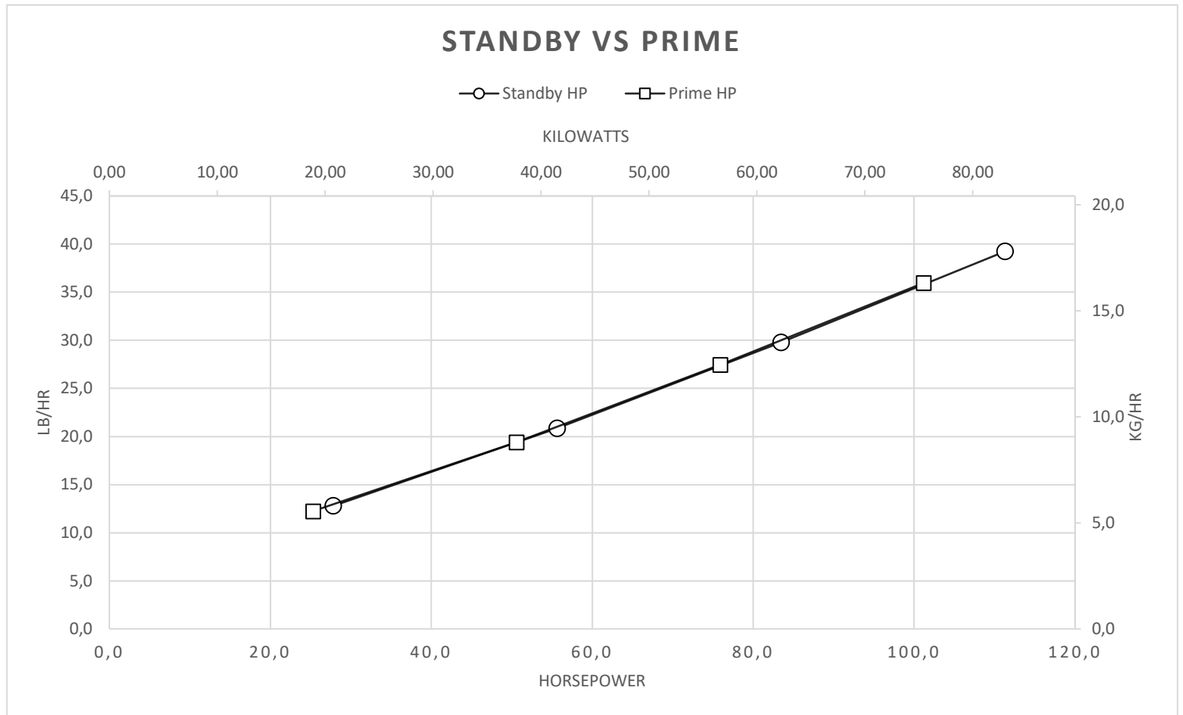
Rating: Gross power
Application: Generator
1500 RPM (50 Hz)

PowerTech™ EWS 4,5L Engine
Model: 4045HP551
101 hp 75 kW Prime
111 hp 83 kW Standby

Dual-frequency Partner, 4045HP551_D

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

Generator Efficiency %	Fan power (% of Standby)		Power Factor	Prime Rating		Standby Rating	
	hp	kW		kWe	kVA	kWe	kVA
89-93	7,8	5,8	0,8	62-65	78-82	69-72	86-90
Note 1: Based on nominal engine power; Fan Power is 4% of Standby Power.							



STANDARD CONDITIONS

Air Intake Restriction	12in.H2O (3kPa)
Exhaust Back Pressure	0

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 = 0.85 kg
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.

Designed/Calibrated to meet:	Certified By:
Stage V Ref: Engine Emission Label	11-mai-20

Performance Curve: 4045HP551_D

Engine Installation Criteria

Engine Model			4045HP551	
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			17.1:1	
Valves per Cylinder, Intake/Exhaust			1/1	
Firing Order			1-3-4-2	
Combustion System			Direct Injection	
Engine Type			In line, 4-Cycle	
Aspiration			Turbocharged & air-to-air aftercooled	
Engine Crankcase Vent System			Open	

Physical Data

Length	1209	mm	47,6	in.
Width	784	mm	30,9	in.
Height	1154	mm	45,4	in.
Weight, with oil&no coolant (Includes engine, flywheel housing, flywheel&electrics)	613	kg	1351,4	lb
Center of Gravity Location, X-axis From Rear Face of Block	378	mm	14,9	in.
Center of Gravity Location, Y-axis Right of Crankshaft	-21	mm	-0,8	in.
Center of Gravity Location, Z-axis Above Crankshaft	165	mm	6,5	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
Max. Continuous Damper Temp	#N/A	°C	#N/A	°F
Max. ECU Vibration, All Axis			6,00	gRMS
Max. Torsional Vibration, Front of Crank			0,25	DDA
Max. Engine Torsional Vibration in Overspeed			#N/A	DDA

Electrical System

Min. Instantaneous Cranking			50	rpm
Mn. 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			0,0020	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	#N/A	°C	#N/A	°F
Max. Air Throttle Electrical Actuator Temperature	#N/A	°C	#N/A	°F
Max. Harness Temperature	125	°C	257	°F
Max. Alternator Temperature		°C	32	°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	15,7 kW	893 BTU/min
Compressor Discharge Temperature @ 77°F(25°C) Ambient Air	161 °C	322 °F
Intake Manifold Pressure	153 kPa	22,2 psi
Compressor Discharge Temperature @ 117°F(47°C) 80 kPa Barometric pressure	#N/A °C	#N/A °F
Max. Temperature Out of Charge Air Cooler @ All Ambient Conditions	88 °C	190 °F
Max. CAC System Volume	20,0 L	21 Qt.
Max. Pressure Drop through CAC	10,0 kPa	40 in. H_2O
Min. Pressure Drop through CAC	5,0 kPa	20 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	48 °C	118 °F
Max. Bending Moment on Compressor Outlet	3,5 N·m	2,6 lb-ft
Max. Shear on Compressor Outlet	2,5 kg	5,5 lb

Cooling System

Engine Heat Rejection	41,0 kW	2331,7 BTU/min
Coolant Flow @ 10 kPa External Restriction	156 L/min	41 gal/min
Coolant Flow @ 40 kPa External Restriction	132 L/min	35 gal/min
Thermostat Start to Open	82 °C	180 °F
Thermostat Fully Open	94 °C	202 °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
Min. External Coolant Restriction	#N/A kPa	#N/A psi
Max. External Coolant Restriction	40 kPa	6 psi
Max. Top Tank Temperature	113 °C	235 °F
Max. Top Tank temperature 95% of Operating Hours	98 °C	208 °F
Min. Limiting Ambient Temperature	57 °C	135 °F

Exhaust System

Exhaust Flow	13,5 m^3/min	477 ft^3/min
Exhaust Temperature	434 ˚C	813 ˚F
Max. Allowable Exhaust Restriction	19 kPa	78 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	5,5 lb
Exhaust Filter Size	2 DOC/ 2 SCR	
Exhaust Filter Pressure Drop (Clean)	16 kPa	64 in. H_2O
Min. Mixing Length, Outlet to Exhaust Filter		#N/A
Max. Bending Moment on Exhaust Filter Inlet	100 N·m	74 lb-ft
Max. Bending Moment on Exhaust Filter Outlet	100 N·m	74 lb-ft
Max. Exhaust Leakage Rate, Engine to Exhaust Filter @30kPa	5,0 L/min	1,3 gal/min
Max. Temperature Drop, Engine to exhaust Filter	40 Δ°C	72 Δ°F

Fuel System

ECU Description	L34 Controller	
Fuel Injection Pump	Denso HP3	
Governor Type	Electronic	
Total Fuel Flow	52 kg/hr	115 lb/hr
Fuel Consumption, Prime	16 kg/hr	36 lb/hr
Fuel Consumption, Standby	18 kg/hr	39 lb/hr
Fuel Temperature Rise, Inlet to Return	19 Δ°C	34 Δ°F
Min. Fuel Inlet Pressure	-30 kPa	-121 in. H_2O
Max. Fuel Inlet Pressure	20 kPa	80 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	80 °C	176 °F
Fuel Filter @98% Efficiency		2,0 mic

Lubrication System

Oil Pressure at Rated Speed	kPa	0 psi
Oil Pressure at Low Idle	224 kPa	32 psi
Max. In-Pan Oil Temperature	138 °C	280 °F
Max. Crankcase Pressure	1 kPa	4 in. H_2O

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Engine Installation Criteria

Air Intake System

Engine Air Flow	6,8 m³/min	240 ft.³/min
Air Mass Flow	493 kg/hr	1087 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 in. H_2O
Max. Air Intake Restriction, Dirty Air Cleaner	6,25 kPa	25 in. H_2O
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
Low Idle Speed		1200 rpm
Rated Torque, Prime	480 N·m	354 lb-ft
Rated Torque, Standby	528 N·m	389 lb-ft
BMEP, Prime	1465 kPa	212 psi
BMEP, Standby	1466 kPa	213 psi
Altitude Capability, Prime	3048 m	10000 ft
Altitude Capability, Standby	3048 m	10000 ft
Friction Power @Rated Speed	24,0 kW	32 HP
Air: Fuel Ratio, Prime		25,7 : 1
Air: Fuel Ratio, Standby		28,4 : 1
Noise @1 m Prime		#N/A dB(A)
Noise @1 m Standby		#N/A dB(A)
0-100% Standby Load Acceptance		2,2 sec
Load Acceptance, ISO 8528-5		G3

Fuel Consumption	Prime		Standby	
	kg/h	lb/hr	kg/h	lb/hr
25 % Power	5,6	12,2	5,8	12,8
50 % Power	8,8	19,4	9,5	20,9
75 % Power	12,4	27,4	13,5	29,8
100 % Power	16,3	36,0	17,8	39,2

DEF Data

Rating	Engine Speed	DEF Consumption*		Percent of Diesel Consumption**
	RPM	g/kWh	lb/hp-hr	%
Standby	1500	0,0	0,0000	0,0
Prime	1500	0,0	0,0000	0,0

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

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

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