



**JOHN DEERE**

## ENGINE PERFORMANCE CURVE

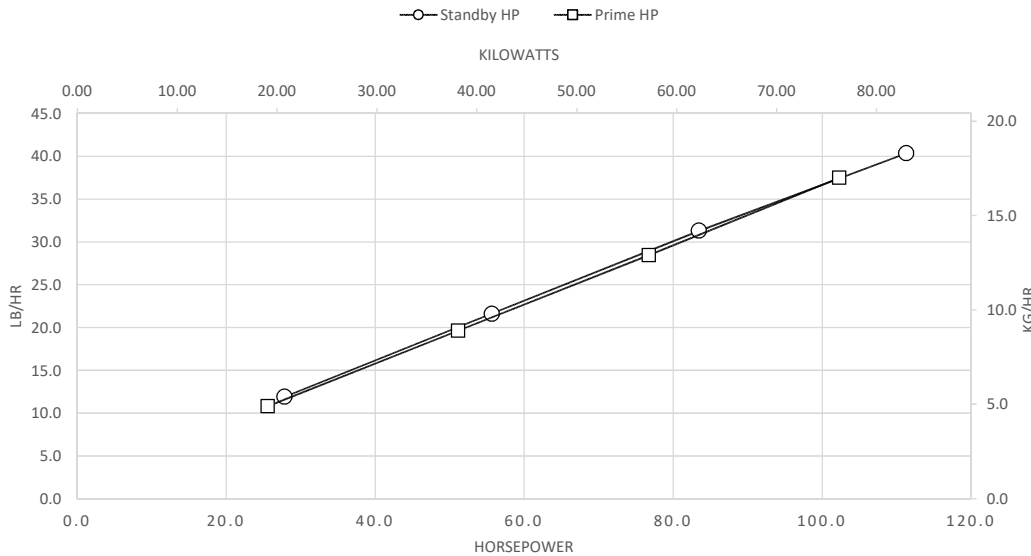
Rating: Gross power  
 Application: Generator  
 1500 RPM (50 Hz)

**PowerTech™ 4.5L Engine**  
**Model: 4045TSG20**  
 102 hp 76 kW Prime  
 111 hp 83 kW Standby

Nominal Engine Power @ RPM			
Prime		Standby	
HP	kW	HP	kW
102	76	111	83

Generator Efficiency %	Fan power (% of Standby)		Power Factor	Prime Rating		Standby Rating	
	hp	kW		kWe	kVA	kWe	kVA
#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
0							

### STANDBY VS PRIME



### STANDARD CONDITIONS

Air Intake Restriction = 3 kPa  
 Exhaust Back Pressure = 7.5 kPa  
**Gross Power Guaranteed within + or - 5% at SAEJ1995 and ISO 3046 conditions:**  
 Air Inlet Temperature = 25 °C  
 Barometer = 100 kPa  
 Fuel Inlet Temperature = 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:
#N/A	0
Ref: Engine Emission Label	20-May-19
Performance Curve: 4045TSG20_A15	

## Engine Installation Criteria

### General Data

Engine Model	4045TSG20	
Number of Cylinders	4	
Bore	106 mm	4.2 in.
Stroke	127 mm	5.0 in.
Displacement	4.5 L	275 in. <sup>3</sup>
Compression Ratio	17.0:1	
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	
Engine Crankcase Vent System	Open	

### Physical Data

	GSPU	
Length	1072 mm	42.2 in.
Width	714 mm	28.1 in.
Height	1032 mm	40.6 in.
Weight, with oil&no coolant (Includes engine, flywheel housing, flywheel&electrics)	#N/A kg	#N/A lb
Center of Gravity Location, X-axis From Rear Face of Block	#N/A mm	#N/A in.
Center of Gravity Location, Y-axis Right of Crankshaft	#N/A mm	#N/A in.
Center of Gravity Location, Z-axis Above Crankshaft	#N/A mm	#N/A in.
Max. Allowable Static Bending Moment at Rear Face of Flywheel Housing with 5-G Load	814 N·m	602.4 lb-ft
Thrust Bearing Load Limit Forward, Intermittent	4000 lb	
Thrust Bearing Load Limit Forward, Continuous	2200 lb	
Thrust Bearing Load Limit Rearward, Intermittent	2000 lb	
Thrust Bearing Load Limit Rearward, Continuous	1000 lb	
Max. Continuous Damper Temp	#N/A °F	
Max. Torisonal Vibration, Front of Crank	#N/A DDA	

### Electrical System

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. Allowable Start Circuit Resistance, 12V	#N/A Ohm
Max. Allowable Start Circuit Resistance, 24V	#N/A Ohm
Max. Voltage From Engine to Crankshaft, 12V	#N/A volts
Max. Voltage From Engine to Crankshaft, 24V	#N/A volts
Max. ECU Temperature	105 °F
Max. Alternator Temperature	#N/A °F
Max. Starter Temperature	#N/A °F
Max. Temperature, All Other Electronics	125 °F

### Charge Air Cooling System

Air-to-Air Heat Rejection	#N/A kW	#N/A BTU/min
Compressor Discharge Temperature @ 77°F(25°C) Ambient Air	130 °C	266 °F
Intake Manifold Pressure	120 kPa	17.4 psi
Max. Temperature Out of Charge Air Cooler @ All Ambient Conditions	#N/A °C	#N/A °F
Max. Pressure Drop through CAC	#N/A kPa	#N/A in. H <sub>2</sub> O
Max. Temperature Out of Charge Air Cooler 77°F (25°C) Ambient Air	#N/A °C	#N/A °F

### Cooling System

Engine Heat Rejection	44 kW	2496.6 BTU/min
Coolant Flow @ 10 kPa External Restriction	108 L/min	28.5 gal/min
Thermostat Start to Open	82 °C	179.6 °F
Thermostat Fully Open	94 °C	201.2 °F
Engine Coolant Capacity	9 Liter	9.0 quart
Min. Coolant Fill Rate	11 L/min	2.9 gal/min
Min. Pump Inlet Pressure @ 203°F (95°C) Coolant	30 kPaa	4.4 psia
Max. External Coolant Restriction	#N/A kPa	#N/A psi
Max. Top Tank Temperature	105 °C	221.0 °F
Max. Top Tank temperature 95% of Operating Hours	#N/A °C	#N/A °F

Performance Curve: 4045TSG20

## Engine Installation Criteria

### Exhaust System

Exhaust Flow	15.8 m <sup>3</sup> /min	558 ft <sup>3</sup> /min
Exhaust Temperature	590 °C	1094 °F
Max. Allowable Exhaust Restriction	7.5 kPa	30 in. H <sub>2</sub> O
Max. Bending Moment on Turbo Outlet	7.0 N·m	5.2 lb-ft
Max. Shear on Turbine Outlet	11.0 kg	24.3 lb

### Fuel System

ECU Description	N/A	
Fuel Injection Pump	Delphi DP100G	
Governor Type	Mechanical	
Total Fuel Flow	#N/A kg/hr	#N/A lb/hr
Fuel Consumption, Prime	17 kg/hr	37 lb/hr
Fuel Temperature Rise, Inlet to Return	12 Δ°C	22 Δ°F
Min. Fuel Inlet Pressure	-30 kPa	-121 in. H <sub>2</sub> O
Max. Fuel Inlet Pressure	69 kPa	277 in. H <sub>2</sub> O
Max. Fuel Return Pressure	10 kPa	40 in. H <sub>2</sub> O
Min. Fuel Return Pressure	kPa	0 in. H <sub>2</sub> O
Max. Fuel Inlet Temperature	85 °C	185 °F
Fuel Filter @98% Efficiency	#N/A mic	

### Lubrication System

Oil Pressure at Rated Speed	315 kPa	46 psi
Max. Crankcase Pressure	1 kPa	2 in. H <sub>2</sub> O

### Air Intake System

Engine Air Flow	5.5 m <sup>3</sup> /min	194 ft. <sup>3</sup> /min
Air Mass Flow	375 kg/hr	827 lb/hr
Maximum Allowable Temperature Rise, Ambient Air to Engine Inlet	8 Δ°C	15 Δ°F
Max. Air Intake Restriction, Clean Air Clearer	3.75 kPa	15 in. H <sub>2</sub> O
Max. Air Intake Restriction, Dirty Air Clearer	6.25 kPa	25 in. H <sub>2</sub> O
Air Cleaner Efficiency	99.9 %	

### Performance Data

Rated Power, Prime	76 kW	102 HP
Rated Power, Standby	83 kW	111 HP
Rated Speed	1500 rpm	
Low Idle Speed	#N/A rpm	
Rated Torque, Prime	486 N·m	360 lb-ft
Rated Torque, Standby	528 N·m	391 lb-ft
BMEP, Prime	1380 kPa	200 psi
BMEP, Standby	1510 kPa	219 psi
Altitude Capability, Prime	2300 m	7546 ft
Altitude Capability, Standby	1500 m	4921 ft
Friction Power @Rated Speed	13.0 kW	17 HP
Air: Fuel Ratio, Prime	20.4 : 1	
Air: Fuel Ratio, Standby	21.5 : 1	
Noise @1 m Prime	#N/A dB(A)	
Noise @1 m Standby	#N/A dB(A)	
0-100% Standby Load Acceptance	#N/A sec	
Load Acceptance, ISO 8528-5	#N/A	

Fuel Consumption	Prime		Standby	
	kg/h	lb/hr	kg/h	lb/hr
25 % Power	4.9	10.8	5.4	11.9
50 % Power	8.9	19.6	9.8	21.6
75 % Power	12.9	28.4	14.2	31.3
100 % Power	17.0	37.5	18.3	40.3

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