



JOHN DEERE

ENGINE PERFORMANCE CURVE

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

PowerTech™ E 4.5L Engine
Model: 4045HF285
 JD Electronic Control
 180 hp (134 kW) Prime
 197 hp (147 kW) Standby

Nominal Engine Power @ 1800 RPM			
Prime		Standby	
HP	kW	HP	kW
180	134	197	147

Generator Efficiency %	Fan Power (% of Standby)		Power Factor	Prime Rating		Standby Rating	
	hp	kW		kWe	kVA	kWe	kVA
88-92	8.716643	6.5	0.8	112-117	140-146	124-129	155-161

Note1: Based on nominal engine power.

Note2: kWe/kVA rating assumes 90% efficiency. "Generator Efficiency %" will vary.

STANDARD CONDITIONS

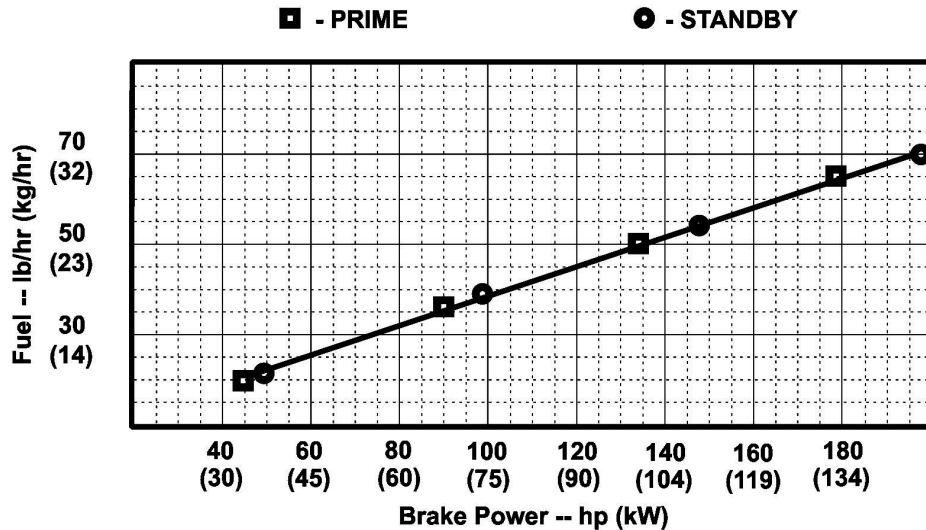
Air Intake Restriction.....12 in.H₂O (3 kPa)
 Exhaust Back Pressure.....30 in.H₂O (7.5 kPa)

Gross power guaranteed within + or - 5% at 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 L = 0.85kg , 1 gal = 7.1 lb
 Torque: N·m = lb·ft x 1.356

All values are from currently available data and are subject to change without notice.

Notes:



Designed/Calibrated to meet:

Certified by:

- CARB
- EPA Tier 3

Ryan J. Cantelero
 27 Jan 2016

Ref: Engine Emission Label

Performance Curve: 4045HF285_K_S0_R0

Engine Installation Criteria

General Data

Model	4045HF285	
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	19.0:1	
Valves per Cylinder, Intake/Exhaust	1/1	
Firing Order	1-3-4-2	
Combustion System	Unit injection	
Engine Type	In-line, 4-cycle	
Aspiration	Turbocharged and air-to-air aftercooled	
Charge Air Cooling System	Air-to-Air	
Engine Crankcase Vent System	Open	

Physical Data

Length	860 mm	33.9 in.
Width	612 mm	24.1 in.
Height	1039 mm	40.9 in.
Weight, with oil & no coolant (Includes engine, flywheel housing, flywheel & electrics)	491 kg	1082 lb
Center of Gravity Location, X-axis From Rear Face of Block	249 mm	9.8 in.
Center of Gravity Location, Y-axis Right of Crankshaft	55 mm	2.2 in.
Center of Gravity Location, Z-axis Above Crankshaft	145 mm	5.7 in.
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. Torsional Vibration, Front of Crank	0.25 DDA	

Electrical System

Recommended Battery Capacity, 12V @32 °F (0 °C)	800 amps	
Recommended Battery Capacity, 24V @32 °F (0 °C)	570 amps	
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, 24V	0.002 Ohm	
Max. Allowable Start Circuit Resistance, 12V	0.0012 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. Harness Temperature	120 °C	248 °F

Charge Air Cooling System

Air-to-Air Heat Rejection, Prime	22.8 kW	1298 BTU/min
Air-to-Air Heat Rejection, Standby	26.5 kW	1508 BTU/min
Intake Manifold Pressure, Prime	147 kPa	21.3 psi
Compressor Discharge Temperature @77°F(25°C) Ambient Air, Prime	168 °C	334 °F
Intake Manifold Pressure, Standby	172 kPa	24.9 psi
Compressor Discharge Temperature @77°F(25°C) Ambient Air, Standby	187 °C	369 °F
Compressor Discharge Temperature @117°F(47°C) 80 kPa Barametric pressure, Prime	NA	
Compressor Discharge Temperature @117°F(47°C) 80 kPa Barametric pressure, Standby	NA	
Intake Manifold Temperature at which Power De-rate Occurs	88 °C	190 °F
Max. Pressure Drop through CAC	13 kPa	52.0 in. H ₂ O
Min. Pressure Drop through CAC	0 kPa	0 in. H ₂ O
Max. Temperature Out of Charge Air Cooler @77°F (25°C) Ambient Air	45 °C	113 °F
Min. Temperature Out of Charge Air Cooler @77°F (25°C) Ambient Air	48 °C	118 °F

Performance Curve: 4045HF285_K_S0_R0

Engine Installation Criteria

Cooling System

Max. Water Pump Inlet Restriction	-30 kPa	-4.4 psi
Engine Heat Rejection, Prime	64 kW	3643 BTU/min
Engine Heat Rejection, Standby	72 kW	4098 BTU/min
Coolant Flow	180 L/min	48 gal/min
Thermostat Start to Open	82 °C	180 °F
Thermostat Fully Open	95 °C	203 °F
Engine Coolant Capacity	8.5 Liter	9.0 quart
Min. Pressure Cap	100 kPa	15 psi
Min. Pump Inlet Pressure	30 kPa	4.4 psi
Max. Top Tank Temperature	110 °C	230 °F
Min. Limiting Ambient Temperature, Standby	47 °C	116.6 °F
Min. Limiting Ambient Temperature, Prime	47 °C	116.6 °F
Min. Coolant Fill Rate	11 L/min	2.9 gal/min

Exhaust System

Exhaust Flow, Prime	24.6 m ³ /min	869 ft. ³ /min
Exhaust Flow, Standby	27.0 m ³ /min	953 ft. ³ /min
Exhaust Temperature, Prime	572 °C	1062 °F
Exhaust Temperature, Standby	580 °C	1076 °F
Max. Allowable Exhaust Restriction	7.5 kPa	30 in. H ₂ O
Min. Allowable Exhaust Restriction	0 kPa	0 in. H ₂ O
Max. Bending Moment on Turbo Outlet	7.0 N-m	5.2 lb-ft
Max. Shear on Turbine Outlet	11 kg	24 lb

Fuel System

ECU Description	L 16 Controller	
Fuel Injection Pump	Denso HP3	
Governor Type	Electronic	
Total Fuel Flow, Prime	68.9 kg/hr	152 lb/hr
Total Fuel Flow, Standby	76.6 kg/hr	169 lb/hr
Fuel Consumption, Prime	29.0 kg/hr	64 lb/hr
Fuel Consumption, Standby	31.9 kg/hr	70 lb/hr
Fuel Temperature Rise, Inlet to Return Prime	47 °C	117 °F
Fuel Temperature Rise, Inlet to Return Standby	49 °C	120 °F
Max. Fuel Inlet Restriction	20 kPa	80 in. H ₂ O
Max. Fuel Inlet Pressure	NA	
Max. Fuel Return Pressure	20 kPa	80 in. H ₂ O
Max. Fuel Inlet Temperature	80 °C	176 °F

Lubrication System

Oil Pressure at Rated Speed	320 kPa	46 psi
Oil Pressure at Low Idle	105 kPa	15 psi
Max. Oil Carryover in Blow-By	1.0 g/hr	0.002 lb/hr
Max. Airflow in Blow-By	100 L/min	26.4 gal/min
Max. Crankcase Pressure	0.5 kPa	2 in. H ₂ O

Air Intake System

Engine Air Flow, Prime	8.8 m ³ /min	311 ft. ³ /min
Engine Air Flow, Standby	9.65 m ³ /min	341 ft. ³ /min
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 Curve: 4045HF285_K_S0_R0

Engine Installation Criteria

Performance Data

Rated Power, Prime	134 kW	180 HP
Rated Power, Standby	147 kW	197 HP
Rated Speed		1800 rpm
Low Idle Speed		1150 rpm
Rated Torque, Prime	961 N·m	780 lb-ft
Rated Torque, Standby	1057 N·m	780 lb-ft
BMEP, Prime	1980 kPa	780 psi
BMEP, Standby	2178 kPa	780 psi
Altitude Capability, Prime	3048 m	10000 ft
Altitude Capability, Standby	2286 m	7500 ft
Friction Power @Rated Speed	13 kW	17 HP
Air:Fuel Ratio, Prime		22.1
Air:Fuel Ratio, Standby		21.1
Smoke @Rated Speed Prime	0.44	Bosch No.
Smoke @Rated Speed Standby	1.25	Bosch No.
Noise @1 m Prime		90.0 dB(A)
Noise @1 m Standby		90.3 dB(A)

Fuel Consumption	Prime		Standby	
	lb/hr	kg/h	lb/hr	kg/h
25 % Power	19.8	9.0	21.4	9.7
50 % Power	36.4	16.5	39.5	17.9
75 % Power	50.3	22.8	54.2	24.6
100 % Power	65.0	29.5	70.3	31.9

Performance Curve: 4045HF285_K_S0_R0