



JOHN DEERE

ENGINE PERFORMANCE CURVE

Rating: Gross Power
 Application: Generator (60 Hz)
 Target: 50 kWe Standby Market

PowerTech E™ 2.4L Engine

Model: **4024HF285**

74 hp (55 kW) Prime

80 hp (60 kW) Standby

Options: 72BA / 72BB*

Nominal Engine Power @ 1800 RPM			
Prime		Standby	
HP	kW	HP	kW
74	55	80	60

Generator Efficiency ¹ %	Fan Power		Power Factor	Prime Rating		Standby Rating ²		ISO 8528 G2 Block Load Capability ³
	hp	kW		kW	kVA	kW	kVA	
88-92	4.8	3.6	0.8	45-47	56-59	50-52	63-65	NA

Note 1: Est. min. generator efficiency, with 5% fan power loss, to achieve Prime kVA (1500 rpm) / Standby kWe (1800 rpm).
 Note 2: Based on nominal engine power.
 Note 3: Results may vary by alternator and voltage regulator selection.

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

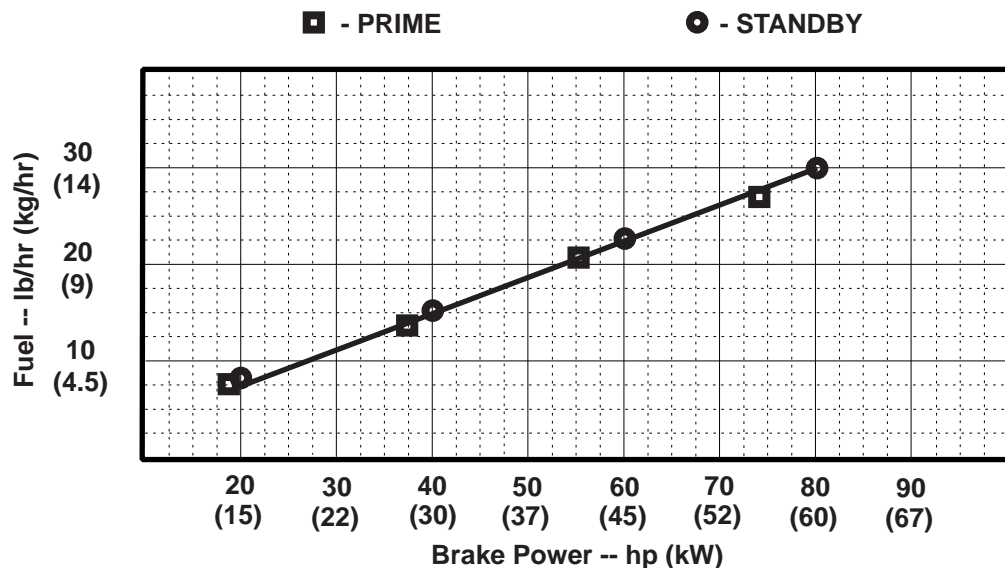
Gross power guaranteed within + or - 5% at SAE J1995 and ISO 3046 conditions:

- 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 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:

All OEM Gen Set Engine Applications must be pre-screened for torsional vibration compatibility with the respective alternator end hardware.

OEM Engine Application Engineering will perform this computer-based analysis work upon request.

Tier-3 Emission Certifications:

Certified by:

CARB; EPA

Ref: Engine Emission Label

Victorino P. Sanchez
 11-28-2007

* Revised Data

Curve 4024HF285180080 Sheet 1 of 2
 November 2007

Engine Installation Criteria

General Data

Model	4024HF285
Number of Cylinders	4
Bore and Stroke--in.(mm).....	3.4 x 4.1 (86 x 105)
Displacement--in. ³ (L).....	146 (2.4)
Compression Ratio	18.2 : 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
Charge Air Cooling System.....	Air-to-Air
Engine Crankcase Vent System	Open

Physical Data

Length--in.(mm)	26.1 (662)
Width--in.(mm)	22.3 (566)
Height--in.(mm).....	30.4 (772)
Weight, dry--lb (kg).....	553 (251)
(Includes flywheel housing, flywheel & electrics)	
Center of Gravity Location	
From Rear Face of Block (X-axis)--in.(mm)....	7.6 (194)
Right of Crankshaft (Y-axis)--in.(mm)	0.6 (14)
Above Crankshaft (Z-axis)--in.(mm)	4.3 (108)
Max. Allow. Static Bending Moment at Rear	
Face of Flywhl Hsg w/ 5-G Load--lb-ft (N•m)....	369 (500)
Thrust Bearing Load Limit --lb (N) <u>Forward</u> <u>Rearward</u>	
Intermittent.....	629 (2800) 180 (800)
Continuous	1147 (5100).....337 (1500)
Max. Front of Crank. Torsional Vibration--DDA.....	0.25
Max. Cont. Damper Temp--°F (°C)	180 (82)

Electrical System

12 Volt 24 Volt

Rec'md. Battery Capacity (CCA)--amp	750	500
Max. Allow. Starting Circuit Resist.--Ohm ..	0.0012	0.002
Starter Rolling Current		
At 32 °F (0 °C)--amp	290	310
At -22 °F (-30 °C)--amp.....	370	340
Min. Volts at ECU while Crankingt.--volts.....	6	10
Max. ECU Temp.--°F (°C)	221 (105)	
Max. Harness Temp.--°F (°C).....	257 (125)	

Air System

Prime Standby

Max. Allowable Temp Rise--Ambient Air to		
Engine Inlet--°F (°C).....	15 (8)	
Maximum Air Intake Restriction		
Dirty Air Cleaner--in.H ₂ O (kPa).....	25 (6.25)	
Clean Air Cleaner--in.H ₂ O (kPa).....	12 (3)	
Engine Air Flow--ft ³ /min (m ³ /min)	140 (4.0)	151 (4.3)
Air Cleaner Efficiency--%	99.9	

Charge Air Cooling System

Prime Standby

Air/Air Exchanger Heat Rejection--		
BTU/min (kW)	484 (8.5)	608 (10.7)
Compress. Dischrg. Temp.(Rated)		
@ 77°F (25°C) Amb. Air--°F (°C).....	322 (161)	349 (176)
Compress. Dischrg. Temp.(Max.)		
@ 47°C amb. and		
80 kPa bar.--°F (°C).....	NA (NA)	NA (NA)
Press. Drop, thru CAC--in.H ₂ O (kPa)		
Max.	44 (11)	
Min.	28 (7)	
Intake Manifold Pressure--psi (kPa)	18(124)	21(143)
CAC Out Temp @ 77°F (25°C) Amb.--°F (°C)		
Max.	126 (52)	
Min.	111 (44)	
CAC Out Temp @ any Ambient--°F (°C)		
Max.	190 (88)	

Cooling System

Prime Standby

Engine Heat Reject.--BTU/min (kW). 1560(27.4) ..	1988 (34.9)	
Coolant Flow--gal/min (L/min).....	26 (100)	
Thermostat Start to Open--°F (°C)	192 (89)	
Thermostat Fully Open--°F (°C).....	212 (100)	
Engine Coolant Capacity--qt (L)	2.7 (2.6)	
Min. Pressure Cap--psi (kPa)	14.9 (103)	
Max. Top Tank Temp--°F (°C)	230 (110)	
Min. Coolant Fill Rate--gal/min (L/min)	3 (9.5)	
Min. Air-to-Boil Temperature--°F (°C)	117 (47)	
Min. Pump Inlet Pressure--psi (kPa).....	4.4 (30)	

Exhaust System

Prime Standby

Exhaust Flow--ft ³ /min (m ³ /min).....	385(10.9) ..	419(11.9)
Exhaust Temperature--°F (°C)	1029(554) ..	1062(572)
Max. Exhaust Restrict.----in. H ₂ O (kPa).....	24 (6.0)	30 (7.5)
Min. Exhaust Restriction----in. H ₂ O (kPa).....	16 (4.0)	
Max. Bend. Moment, Turbo Out.--lb-ft (N•m)	5.2 (7.0)	
Max. Shear on Turbo Outlet--lb (kg)	24 (11)	

Fuel System

Prime Standby

ECU Description	L18 Controller	
Fuel Injection Pump	Electronic Unit Pump (EUP)	
Governor Type.....	Electronic	
Total Fuel Flow--lb/hr (kg/hr).....	154 (70.0)	
Fuel Consumption--lb/hr (kg/hr).....	27 (12)	30 (13.7)
Max. Fuel Inlet Temp.--°F (°C).....	185 (85)	
Fuel Temp. Rise, Inlt to Retr--°F (°C).....	54 (30)	
Max. Fuel Inlet Restriction--in. H ₂ O (kPa)	120 (30)	
Max. Fuel Inlet Pressure--in. H ₂ O (kPa)	96 (24)	
Max. Fuel Return Pressure--in. H ₂ O (kPa)	140 (35)	

Lubrication System

Prime Standby

Oil Press. at Rated Speed--psi (kPa).....	41(280)	
Min. Oil Pressure--psi (kPa).....	36 (250)	
Max. Oil Carryover in Blow-by--lb/hr (g/hr)	0.002 (1.0)	
Max. Airflow in Blow-by--gal/min (l/min).....	12 (45)	
Max. Crankcase Pressure--in. H ₂ O (kPa).....	2 (0.5)	

Performance Data

Prime Standby

Rated Power--hp (kW)	74 (55).....	80 (60)
Rated Speed--rpm	1800	
Low Idle Speed--rpm	1150	
BMEP--psi (kPa)	215 (1482)....	239 (1646)
Friction Power		
@ Rated Speed--hp (kW)	12 (9)	
Altitude Capability--ft (m)	10,000 (3050)	
Ratio--Air : Fuel.....	21.5 : 1.....	20.7 : 1
Smoke @ Rated Speed--Bosch No.	2.6.....	2.8
Noise--dB(A) @ 1 m	87.3.....	87.5

Fuel Consumption -- lb/hr (kg/h)

Prime Standby

25 % Power	7.5 (3.4).....	8.1 (3.7)
50 % Power	14.0 (6.3).....	15.5 (7.0)
75 % Power	20.6 (9.3)	22.8 (10.3)
100 % Power	26.1 (12.3)	30.2 (13.7)

All values at rated speed and power with standard options unless otherwise noted.

* Revised Data
Curve 4024HF285180080..... Sheet 2 of 2
November 2007