

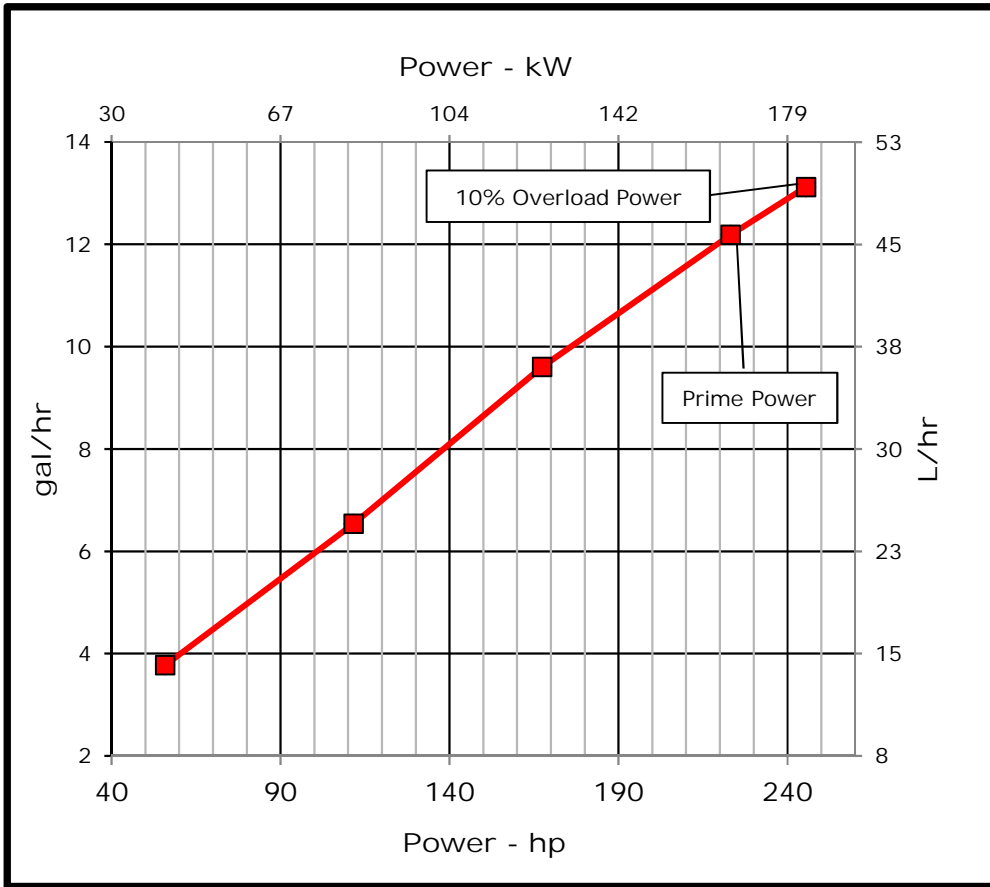


ENGINE PERFORMANCE CURVE

Rating: 60 Hz - 223hp (166kW) @ 1800 RPM
 Application: Marine

PowerTech™ 6.8L Engine
 Model: 6068AFM85

Generator Efficiency (%)	Power Factor	Calculated Gen-Set Rating		Prime Power	10% Overload Power
		kWe	kVA	hp (kW)	hp (kW)
88-92	0.8	146-153	183-191	223 (166)	245 (183)



REFERENCE CONDITIONS

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

Rated speed and power
 Gross power guaranteed within ±5% at ISO 8665/SAE J1228 and ISO 3046/SAE J1995
 Test conditions:

77 °F (25 °C) air inlet temperature
 29.31 in.Hg (99 kPa) barometric pressure
 104 °F (40 °C) fuel inlet temperature
 0.853 fuel specific gravity @ 60 °F (15.5 °C)

Ambient air temperature is defined to be the temperature of ambient air close to operating vessel that is not influenced in any manner by operating characteristics of the vessel (free field temp).

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 from currently available data. Subject to manufacturing and measurement variations and to change without notice.
 Actual performance is subject to application and operation conditions outside of John Deere control.

All pressures shown in gauge pressure

Notes:
Marine Generator: The Marine generator engine rating is the power available under normal varying electrical load factors for an unlimited number of hours per year in commercial applications. This rating incorporates a 10% overload capability, and conforms to ISO 8528 prime power. Average load over a 24-hour period shall not exceed 67% of the prime rating, of which no more than 2 hours are between 100% and 110% of the prime rating.

Constant speed engines are not certified for constant speed propulsion applications (i.e. variable pitch propeller, hybrid propulsion system).

Possible applications: This rating is used for applications that require constant speed operation in power generation or auxiliary applications such as generators and hydraulic pumps.

Designed/Calibrated to meet:

- EPA Marine Tier 3 Constant Speed Auxiliary (40 CFR 1042)
- IMO Tier II Compliant (MARPOL Annex VI)

Ref: Engine Emission Label

Certified by:

29-Oct-18

Performance Curve: 6068AFM85_E

All values at rated speed, power, and standard conditions, per SAE J1995 unless otherwise noted.

Engine Installation Criteria

General Data

Model	6068AFM85		
Number of Cylinders	6		
Bore	107 mm	4.21 in	
Stroke	127 mm	5.00 in	
Displacement	6.8 L	415 in ³	
Compression Ratio	16.7:1		
Valves per Cylinder, Intake/Exhaust	2/2		
Combustion System	Direct injection		
Firing Order	1-5-3-6-2-4		
Engine Type	In line, 4 Cycle		
Aspiration	Turbocharged and Aftercooled		
Aftercooling System	Engine coolant		
Engine Crankcase Vent System	Closed		

Cooling System*

Engine Coolant Heat Rejection**	184 kW	10473 BTU/min	
Max. Pressure Drop Across Keel Cooler	40 kPa	6 psi	
Coolant Flow	194 L/min	51.2 gal/min	
Min. Coolant Pump Inlet Pressure	30.3 kPa	4.4 psi	
Thermostat Start to Open	71 °C	160 °F	
Thermostat Fully Open	83 °C	182 °F	
Engine Coolant Capacity, HE	34 L	9.0 gal	
Engine Coolant Capacity, KC	33.5 L	8.8 gal	
Min. Coolant Fill Rate	12 L/min	3.2 gal/min	
Min. Pressure Cap	110.3 kPa	16 psi	
Max. External Coolant Restriction	40 kPa	5.8 psi	
Normal Operation Max Top Tank Temperature	100 °C	212 °F	
≤ 5% of Total Operating Time Top	100-110 °C	212-230 °F	
Tank Temperature			
Absolute Max Top Tank Temperature	110 °C	230 °F	
Recommended Fuel Cooler	2 kW	136 BTU/min	
Engine Radiated Heat	23 kW	1317 BTU/min	

* The cooling system should be capable of typical at ambient up to the maximum conditions in which the vessel will operate.

Typical operation is defined as the average load sustainable in the vessel over 10 min.

** Reference 32 °C Sea Water Temperature

Physical Data

Length to rear face of block	1034 mm	40.7 in
Length to rear face of flywheel housing (SAE #2)	1172 mm	46.1 in
Length maximum	1374 mm	54.1 in
Width maximum	862 mm	33.9 in
Height, crank centerline to top	644 mm	25.4 in
Height, crank centerline to bottom	291 mm	11.5 in
Weight, with oil, no coolant (includes engine, flywheel housing, flywheel, and electronics)	787 kg	1735 lb
Center of Gravity Location, X-axis From Rear Face of Block	390 mm	15.3 in
Center of Gravity Location, Y-axis Right of Crankshaft	-14 mm	-0.6 in
Center of Gravity Location, Z-axis Above Crankshaft	186 mm	7.32 in
Max. Allowable Static Bending Moment At Rear Face of Flywheel Housing (for installations up to 5-G)	814 Nm	600 lb-ft
Thrust Bearing Load Limit, Forward Continuous	2.2 kN	495 lbf
Thrust Bearing Load Limit, Forward Intermittent	4 kN	899 lbf
Thrust Bearing Load Limit, Rearward Continuous	1 kN	225 lbf
Thrust Bearing Load Limit, Rearward Intermittent	2 kN	450 lbf

Electrical System

Min. Recommended Battery Capacity, 12V @32 °F (0 °C)	925 amps
Min. Recommended Battery Capacity, 24V @32 °F (0 °C)	625 amps
Starter Rolling Current, 12V @32 °F (0 °C)	920 amps
Starter Rolling Current, 24V @32 °F (0 °C)	600 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	0.002 ohms
Max. Allowable Start Circuit Resistance, 24V	0.0012 ohms
Electrical Component Maximum Temperature Limit	125 °C 257 °F

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Engine Installation Criteria

Fuel System

ECU Description	L14		
Fuel Injection Pump	HPCR		
Governor Type	Electronic		
Volumetric Fuel Consumption, Prime	46.1 L/hr	12.2 gal/hr	
Mass Fuel Consumption, Prime	39.2 kg/hr	86 lb/hr	
Total Fuel Volumetric Flow	162 L/hr	42.8 gal/hr	
Total Fuel Mass Flow	138 kg/hr	304 lb/hr	
Max. Fuel Inlet Restriction*	20 kPa	80 in.H2O	
Max. Fuel Inlet Pressure	20 kPa	80 in.H2O	
Max Fuel Return Pressure	20 kPa	80 in.H2O	
Normal Operation Fuel Temperature	40 °C	104 °F	
Max. Fuel Inlet Temperature	100 °C	212 °F	
Min. Recommended Fuel Line Inside Diameter	6.85 mm	0.27 in	
Min. Recommended Fuel Line Size	5 (-) AN		
Primary Fuel Filter	10 mic		
Secondary Fuel Filter	2 mic		

Lubrication System

Oil Pressure at 1800 RPM**	299 kPa	43 psi	
Max. Crankcase Pressure	2 kPa	8 in.H2O	
Maximum Installed Angle, Front Down	0 deg		
Maximum Installed Angle, Front Up	12 deg		
Engine Angularity Limits Any Direction, Continuous***	25 deg		
Engine Angularity Limits Any Direction, Intermittent***	35 deg		

Seawater Pump System

Seawater Pump Flow	173 L/min	46 gal/min	
Max. Suction Lift	3 m	9.8 ft	
Max. Outlet Pressure	140 kPa	20 psi	
Max. Inlet Restriction	30 kPa	4 psi	

* With clean filters

** With John Deere Plus-50 II™ 15w-40, not applicable with break in oil.

*** With 19BP option

Air Intake System

Engine Air Flow	15.5 m ³ /min	547 ft ³ /min	
Intake Manifold Pressure	227 kPa	32.9 psi	
Manifold Air Temperature	92 °C	197 °F	
Maximum Manifold Air Temperature	130 °C	266 °F	
Max. Allowable Temperature Rise, Ambient Air to Engine Inlet	17 °C	30 °F	
Max. Air Intake Restriction, Clean Air Cleaner	3 kPa	12 in.H2O	
Max. Air Intake Restriction, Dirty Air Cleaner	6.25 kPa	25 in.H2O	
Min. Ventilation Area	0.095 m ²	148 in ²	

Performance Data

Prime Power	166 kW	223 hp	
10% Overload Power	183 kW	245 hp	
Rated Speed	1800 RPM		
Low Idle Speed	1800 RPM		
Prime Torque	883 Nm	651 lb-ft	
BMEP, Prime	1631 kPa	236 psi	
Rated Pferdestärke, Prime (metric hp)	226 ps		
Front Drive Capacity, Intermittent	907 Nm	669 lb-ft	
Front Drive Capacity, Continuous	907 Nm	669 lb-ft	
Software and Label Convertible to 50 Hz?	YES		
Friction Power @ Rated Speed	18.7 kW	25 hp	

Exhaust System

Exhaust Flow	32 m ³ /min	1123 ft ³ /min	
Exhaust Flow @ gas STP	14.72 m ³ /min	520 ft ³ /min	
Exhaust Temperature	373 °C	703.4 °F	
Max. Allowable Exhaust Restriction	7.5 kPa	30 in.H2O	
Max. Shear on Turbocharger Exhaust Outlet	11 kg	24.3 lb	
Max. Bending Moment on Turbocharger Exhaust Outlet	7 Nm	15.4 lb-ft	
Min. Exhaust Pipe Diameter, Dry	101.6 mm	4.0 in	
Min. Exhaust Pipe Diameter, Wet	127.0 mm	5.0 in	

Performance Curve: 6068AFM85_E

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Engine Installation Criteria

Engine Performance Data Table

Engine Power	Crank Power		Crank Torque		Fuel Consumption		BSFC
	kW	hp	Nm	lb-ft	L/hr	gal/hr	
25%	42	56	221	163	14.3	3.8	291
50%	83	112	441	326	24.7	6.5	253
75%	125	167	662	488	36.3	9.6	248
100%	166	223	883	651	46.1	12.2	236
110%	183	245	971	716	49.7	13.1	231

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