



JOHN DEERE

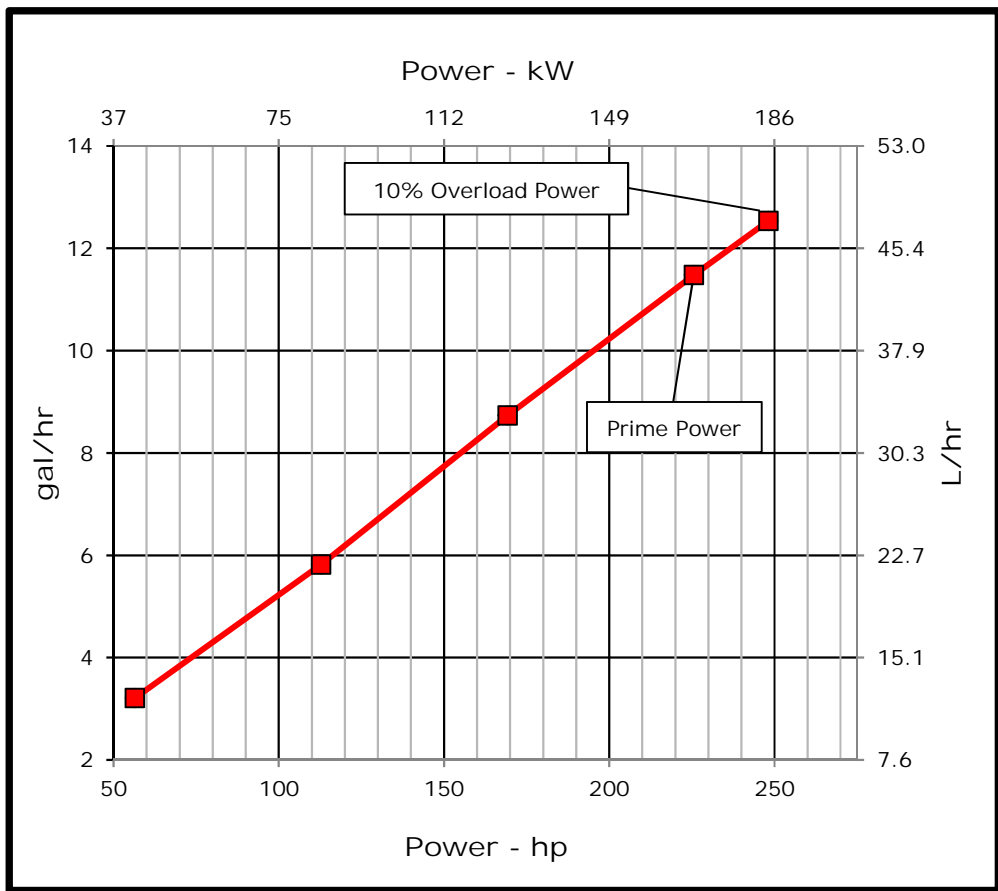
**ENGINE PERFORMANCE CURVE**

Rating: 50 Hz - 226 HP (168 kW) @ 1500 rpm  
 Application: Marine

PowerTech™ 6.8L Engine

Model: 6068SFM85

Generator Efficiency (%)	Power Factor	Calculated Gen-Set Rating		Prime Power	10% Overload Power
		kWe	kVA	hp (kW)	hp (kW)
88-92	0.8	148-155	185-194	225 (168)	248 (185)



**REFERENCE CONDITIONS**

Air Intake Restriction.....12 in.H<sub>2</sub>O (3 kPa)  
 Exhaust Back Pressure..... 30 in.H<sub>2</sub>O (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:

- IMO Tier II Compliant (MARPOL Annex VI)

Ref: Engine Emission Label

Certified by:

29-Oct-18

Performance Curve: 6068SFM85\_G

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

# Engine Installation Criteria

## General Data

Model	6068SFM85		
Number of Cylinders	6		
Bore	106 mm	4.17	in
Stroke	127 mm	5.00	in
Displacement	6.8 L	415	in <sup>3</sup>
Compression Ratio	16.3:1		
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	Seawater cooled		
Engine Crankcase Vent System	Closed		

## Cooling System\*

Jacket Water Heat Rejection**	152 kW	8652	BTU/min
Aftercooler Heat Rejection	36.5 kW	2078	BTU/min
Coolant Flow	216 L/min	57	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	31.5 L	8.3	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
Return Fuel Heat Rejection	3 kW	175	BTU/min
Engine Radiated Heat	22 kW	1243	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 #3)	1172 mm	46.1	in
Length maximum	1387 mm	54.6	in
Width maximum	872 mm	34.3	in
Height, crank centerline to top	711 mm	28	in
Height, crank centerline to bottom	291 mm	11.5	in
Weight, with oil, no coolant (includes engine, flywheel housing, flywheel, and electronics)	763 kg	1682	lb
Center of Gravity Location, X-axis From Rear Face of Block	407 mm	16	in
Center of Gravity Location, Y-axis Right of Crankshaft	-23 mm	-0.9	in
Center of Gravity Location, Z-axis Above Crankshaft	187 mm	7.38	in
Max. Allowable Static Bending Moment At Rear Face of Flywheel Housing with 5-G Load	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	ohms
Max. Allowable Start Circuit Resistance, 24V	0	ohms
Electrical Component Maximum Temperature Limit	125 °C	257 °F
Maximum ECU Temperature	105 °C	221 °F

Performance Curve: 6068SFM85\_G

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# Engine Installation Criteria

## Fuel System

ECU Description	L14		
Fuel Injection Pump	HPCR		
Governor Type	Electronic		
Volumetric Fuel Consumption, Prime	43.5 L/hr	11.5 gal/hr	
Mass Fuel Consumption, Prime	37 kg/hr	82 lb/hr	
Total Fuel Volumetric Flow	192 L/hr	50.7 gal/hr	
Total Fuel Mass Flow	163 kg/hr	360 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	7.46 mm	0.29 in	
Min. Recommended Fuel Line Size	5 (-) AN		
Primary Fuel Filter	10 mic		
Secondary Fuel Filter	2 mic		

## Lubrication System

Oil Pressure at 1500 RPM**	298 kPa	49 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	285 L/min	75 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	11.9 m <sup>3</sup> /min	419 ft <sup>3</sup> /min	
Intake Manifold Pressure	74 kPa	10.7 psi	
Manifold Air Temperature	36 °C	98 °F	
Maximum Manifold Air Temperature	67 °C	152.6 °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	0.073 m <sup>2</sup>	113 in <sup>2</sup>	

## Performance Data

Prime Power	168 kW	226 hp	
10% Overload Power	185 kW	248 hp	
Rated Speed	1500 RPM		
Low Idle Speed	1000 RPM		
Prime Torque	1071 Nm	790 lb-ft	
BMEP, Prime	1979 kPa	287 psi	
Rated Pferdestärke, Prime (metric hp)	229 ps		
Front Drive Capacity, Intermittent	907 Nm	669 lb-ft	
Front Drive Capacity, Continuous	907 Nm	669 lb-ft	
Software and Label Convertible to 60 Hz?	YES		
Friction Power @ Rated Speed	13.9 kW	18.6 hp	

## Exhaust System

Exhaust Flow	27.5 m <sup>3</sup> /min	971 ft <sup>3</sup> /min	
Exhaust Flow @ gas STP	13.2 m <sup>3</sup> /min	466 ft <sup>3</sup> /min	
Exhaust Temperature	399 °C	750.2 °F	
Max. Allowable Exhaust Restriction <sup>+</sup>	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	88.9 mm	3.5 in	
Min. Exhaust Pipe Diameter, Wet	101.6 mm	114.3 in	

<sup>+</sup> Exhaust system restriction should be limited to 7.5 kPa. When an exhaust aftertreatment system is installed, the maximum design restriction is 15 kPa. Restriction over 7.5 kPa will result in diminished performance. Restriction over 15 kPa may cause engine damage

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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	223	165	12.1	3.2	245
50%	84	113	446	329	22.0	5.8	222
75%	126	169	669	494	33.1	8.7	223
100%	168	226	892	658	43.5	11.5	220
110%	185	248	981	724	47.5	12.5	218

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