



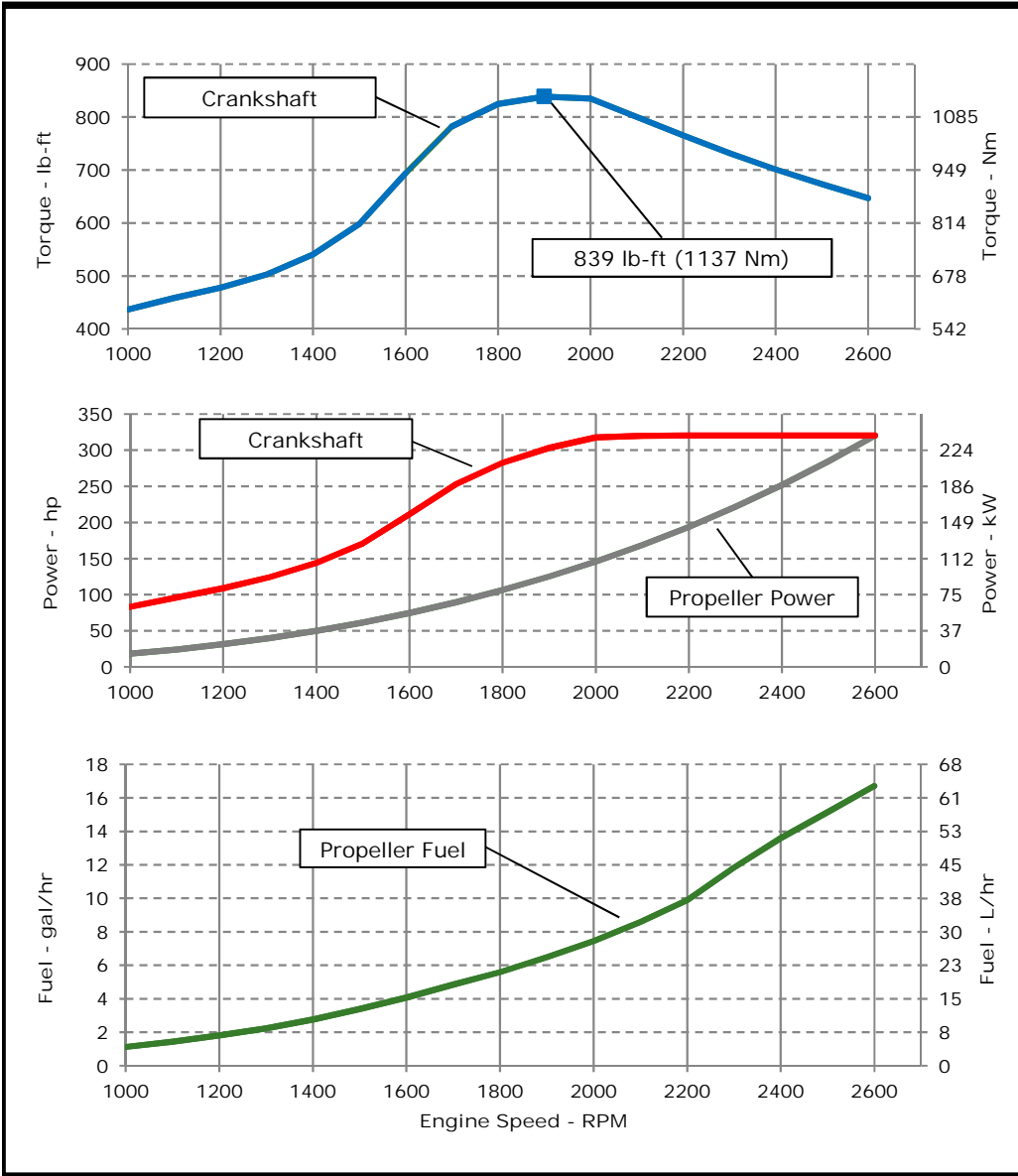
**JOHN DEERE**

**ENGINE PERFORMANCE CURVE**

Rating: M3 - 321 HP (239 kW) @ 2600 rpm  
 Application: Marine

PowerTech™ 6.8L Engine

Model: 6068SFM85



**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:*

**M3:** The M3 rating is for marine propulsion applications that typically operate between 2,000-4,000 hours per year and have load factors up to 50 percent. This rating is for applications that use full power for no more than 4 hours out of each 12 hours of operation. The remaining time of operation is at or below cruising speed.

**Possible applications:** Coastal fishing boats offshore crew boats, research boats. Short range ferryboats and dinner cruise boats.

Designed/Calibrated to meet:	Certified by:
<ul style="list-style-type: none"> <li>EPA Marine Tier 3 Commercial (40 CFR 1042)</li> <li>IMO Tier II Compliant (MARPOL Annex VI)</li> <li>EU Stage IIIa Inland Waterways (NRMM 97/68/EC, as amended)</li> <li>Recreational Craft Directive 2 (2013/53/EU)</li> </ul>	 29-Oct-18
Ref: Engine Emission Label	
Performance Curve: 6068SFM85_C	

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**	181.95	kW	10357	BTU/min
Aftercooler Heat Rejection	49.44	kW	2814	BTU/min
Coolant Flow	251	L/min	66	gal/min
Min. Coolant Pump Inlet Pressure	30.3	kPa	4.4	psi
Thermostat Start to Open	81	°C	178	°F
Thermostat Fully Open	95	°C	203	°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	151	BTU/min
Engine Radiated Heat	32	kW	1807	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	1489	mm	58.6	in
Width maximum	872	mm	34.3	in
Height, crank centerline to top	640	mm	25.2	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	16.0	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	7.4	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
Maximum ECU Temperature	105	°C	221	°F

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# Engine Installation Criteria

## Fuel System

ECU Description	L14		
Fuel Injection Pump	HPCR		
Governor Type	Electronic		
Volumetric Fuel Consumption	63.2 L/hr	16.7 gal/hr	
Mass Fuel Consumption	53.8 kg/hr	119 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 Rated Speed	415 kPa	60 psi	
Oil Pressure at Low Idle (800rpm)**	180 kPa	26 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	361 L/min	95 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	19 m <sup>3</sup> /min	671.0 ft <sup>3</sup> /min	
Intake Manifold Pressure	151.2 kPa	21.9 psi	
Manifold Air Temperature	35 °C	95 °F	
Maximum Manifold Air Temperature	67 °C	153 °F	
Max. Allowable Temperature Rise, Ambient	17 °C	30 °F	
Air to Engine Inlet			
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	0.117 m <sup>2</sup>	181 in <sup>2</sup>	

## Performance Data

Rated Power	239 kW	320 hp	
Rated Speed	2600 RPM		
Peak Torque Speed	1900 RPM		
Low Idle Speed	600 RPM		
Rated Torque	876 Nm	646 ft-lb	
Peak Torque	1137 Nm	839 ft-lb	
BMEP, Rated	1619 kPa	235 psi	
Rated Pferdestärke (metric hp)	324 ps		
Front Drive Capacity, Intermittent	907 Nm	669 lb-ft	
Front Drive Capacity, Continuous	907 Nm	669 lb-ft	

## Exhaust System

Exhaust Flow	46.36 m <sup>3</sup> /min	1637 ft <sup>3</sup> /min	
Exhaust Flow @ gas STP	19.97 m <sup>3</sup> /min	705 ft <sup>3</sup> /min	
Exhaust Temperature	439 °C	822 °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	127 mm	5.0 in	
Min. Exhaust Pipe Diameter, Wet	139.7 mm	5.5 in	

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## Engine Installation Criteria

Engine Performance Data Table

Engine Speed	Crank Power		Crank Torque		* Prop Power		* Prop Fuel		* Prop BSFC
	RPM	kW	hp	Nm	lb-ft	kW	hp	L/hr	gal/hr
2600	239	320	877	647	239	320	63	17	225
2500	239	320	913	673	212	285	57	15	230
2400	239	320	951	701	188	252	51	14	233
2300	239	321	992	732	165	222	45	12	230
2200	239	321	1038	765	145	194	37	10	220
2100	239	320	1085	800	126	169	32	9	219
2000	237	318	1132	835	109	146	28	7	220
1900	226	303	1137	839	93	125	25	6	224
1800	211	283	1118	825	79	106	21	6	227
1700	189	253	1060	782	67	90	18	5	234
1600	158	211	941	694	56	75	15	4	236
1500	127	171	811	598	46	61	13	3	237
1400	107	144	733	541	37	50	10	3	239
1300	93	124	682	503	30	40	8	2	240
1200	81	109	647	477	23	31	7	2	250
1100	72	96	622	459	18	24	5	1	257
1000	62	83	592	437	14	18	4	1	266

\* Theoretical 3.0 exponent propeller curve , measured at flywheel

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