



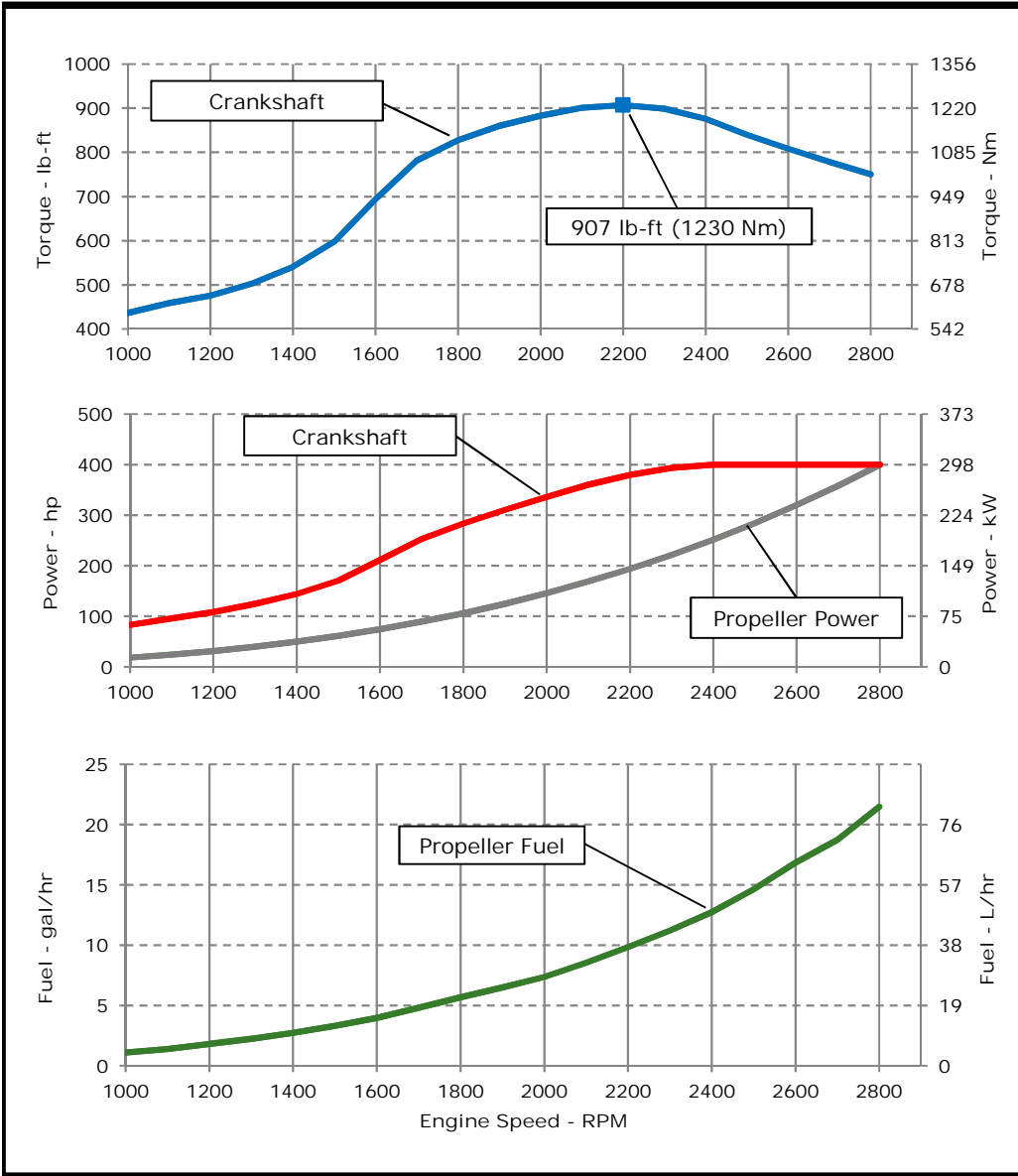
JOHN DEERE

ENGINE PERFORMANCE CURVE

Rating: M5 - 400 HP (298 kW) @ 2800 rpm
 Application: Marine

PowerTech™ 6.8L Engine

Model: 6068SFM85



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:

M5: The M5 rating is for marine propulsion applications that operate 1000 hours or less per year and have load factors below 35%. This rating is for applications that use full power for no more than 30 minutes out of each 8 hours and cruising speed the remainder of the 8 hours, and do not operate for the remaining 16 hours of the day.
Possible applications: Recreational boats in the U.S., tactical military vessels, and rescue boats outside the U.S.

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

Performance Curve: 6068SFM85_E

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 ³
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**	231.19	kW	13159	BTU/min
Aftercooler Heat Rejection	70.15	kW	3993	BTU/min
Coolant Flow	271	L/min	72	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	2	kW	130	BTU/min
Engine Radiated Heat	41	kW	2324	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	81.3 L/hr	21.5 gal/hr	
Mass Fuel Consumption	69.1 kg/hr	152 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	389 L/min	103 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	22.75 m ³ /min	803 ft ³ /min	
Intake Manifold Pressure	161.6 kPa	26.5 psi	
Manifold Air Temperature	36 °C	97 °F	
Maximum Manifold Air Temperature	67 °C	152.6 °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	0.14 m ²	217 in ²	

Performance Data

Rated Power	298 kW	400 hp	
Rated Speed	2800 RPM		
Peak Torque Speed	2200 RPM		
Low Idle Speed	600 RPM		
Rated Torque	1016 Nm	750 ft-lb	
Peak Torque	1230 Nm	907 ft-lb	
BMEP, Rated	1878 kPa	272 psi	
Rated Pferdestärke (metric hp)	405 ps		
Front Drive Capacity, Intermittent	907 Nm	669 lb-ft	
Front Drive Capacity, Continuous	907 Nm	669 lb-ft	

Exhaust System

Exhaust Flow	55.5 m ³ /min	1960 ft ³ /min	
Exhaust Flow @ gas STP	23.9 m ³ /min	844 ft ³ /min	
Exhaust Temperature	470 °C	878 °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	

Performance Curve: 6068SFM85_E

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

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
2800	298	400	1017	750	298	400	81	21	232
2700	298	400	1055	778	267	359	71	19	226
2600	298	400	1096	808	239	320	64	17	227
2500	298	400	1139	840	212	285	55	15	222
2400	298	400	1187	876	188	252	48	13	219
2300	293	394	1218	899	165	222	42	11	218
2200	283	380	1230	907	145	194	37	10	219
2100	269	360	1222	901	126	169	32	9	219
2000	251	336	1197	883	109	146	28	7	218
1900	232	311	1166	860	93	125	25	6	224
1800	212	284	1122	828	79	106	22	6	231
1700	189	253	1060	782	67	90	18	5	232
1600	158	211	941	694	56	75	15	4	230
1500	127	171	811	598	46	61	13	3	233
1400	108	144	733	541	37	50	10	3	236
1300	93	124	682	503	30	40	8	2	239
1200	81	109	645	475	23	31	7	2	247
1100	72	96	622	459	18	24	5	1	245
1000	62	83	592	437	14	18	4	1	259

* Theoretical 3.0 exponent propeller curve , measured at flywheel

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