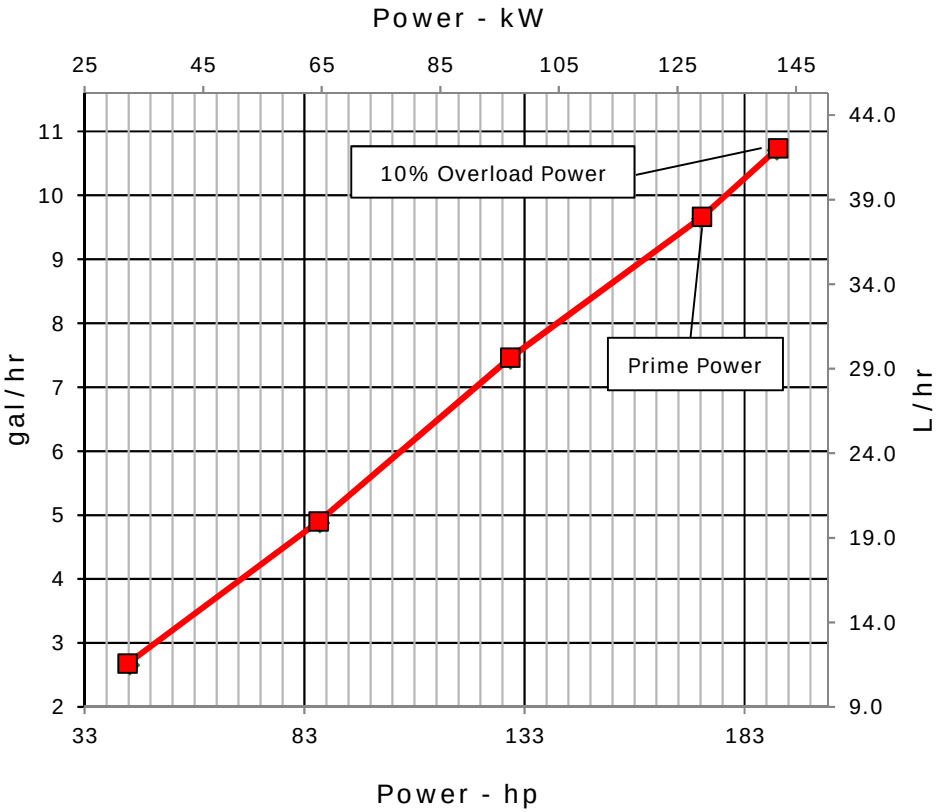
ENGINE PERFORMANCE CURVE

Rating: 60 Hz - 173hp (129kW) @ 1800 RPM
Application: Marine

PowerTech™ 6.8L Engine

Model: 6068AFM85

Generator Efficiency (%)	Power Factor	Calculated Gen-Set Rating		Prime Power	10% Overload Power
		kW	kVA	hp (kW)	hp (kW)
88-92	0.8	114-119	143-149	173(129)	190(142)



REFERENCE CONDITIONS

Air Intake Restriction.....12 in.H_2O (3 kPa)
Exhaust Back Pressure..... 30 in.H_2O (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 proppeller, hybrid porpulsion system).

Designed/Calibrated to meet:	Certified by:
• EPA Marine Tier 3 Constant Speed Auxiliary (40 CFR 1042) • IMO MARPOL Annex VI Exempt (<130 kW)	
Ref: Engine Emission Label	29-Oct-18

Performance Curve: 6068AFM85_I

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**	168	kW	9580	BTU/min
Max. Pressure Drop Across KC and Piping	40	kPa	6	psi
Coolant Flow	197	L/min	52.0	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
Min. Pump Inlet Pressure	30	kPa	4.4	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 Tank Temperature	100-110	°C	212-230	°F
Absolute Max Top Tank Temperature	110	°C	230	°F
Recommended Fuel Cooler	3	kW	146	BTU/min
Engine Radiated Heat	19	kW	1085	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	15.4	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
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, Prime	38	L/hr	10.0	gal/hr
Mass Fuel Consumption, Prime	32.3	kg/hr	71	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**	328	kPa	48	psi
Max. Crankcase Pressure	2	kPa	8	$in.H_2O$
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	192	L/min	51	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	14.4	m^3/min	510	ft^3/min
Intake Manifold Pressure	198	kPa	28.7	psi
Manifold Air Temperature	88	°C	191	°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	$in.H_2O$
Max. Air Intake Restriction, Dirty Air Cleaner	6.25	kPa	25	$in.H_2O$
Min. Ventilation Area	0.0888	m^2	138	in^2

Performance Data

Prime Power	129	kW	173	hp
10% Overload Power	142	kW	190	hp
Rated Speed		1800	RPM	
Low Idle Speed		1000	RPM	
Prime Torque	685	Nm	505	lb-ft
BMEP, Prime	1266	kPa	184	psi
Rated Pferdestärke, Prime (metric hp)		176	ps	
Front Drive Capacity, Intermittent	907	Nm	669	lb-ft
Front Drive Capacity, Continuous	907	Nm	669	lb-ft
Friction Power @ Rated Speed	18.7	kW	25.06	hp

Exhaust System

Exhaust Flow	29.3	m^3/min	1036	ft^3/min
Exhaust Flow @ gas STP	14.7	m^3/min	518	ft^3/min
Exhaust Temperature	368	°C	694	°F
Max. Allowable Exhaust Restriction	7.5	kPa	30	$in.H_2O$
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_I

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Engine Performance Data Table

Engine Power	Crank Power		Crank Torque		Fuel Consumption		BSFC
	kW	hp	Nm	lb-ft	L/hr	gal/hr	g/kW-hr
25%	32	43	171	126	11.6	3.1	305
50%	64	86	342	252	20.0	5.3	263
75%	97	130	514	379	29.6	7.8	260
100%	129	173	685	505	38.0	10.0	250
110%	142	190	753	555	42.0	11.1	252

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