JOHN DEERE

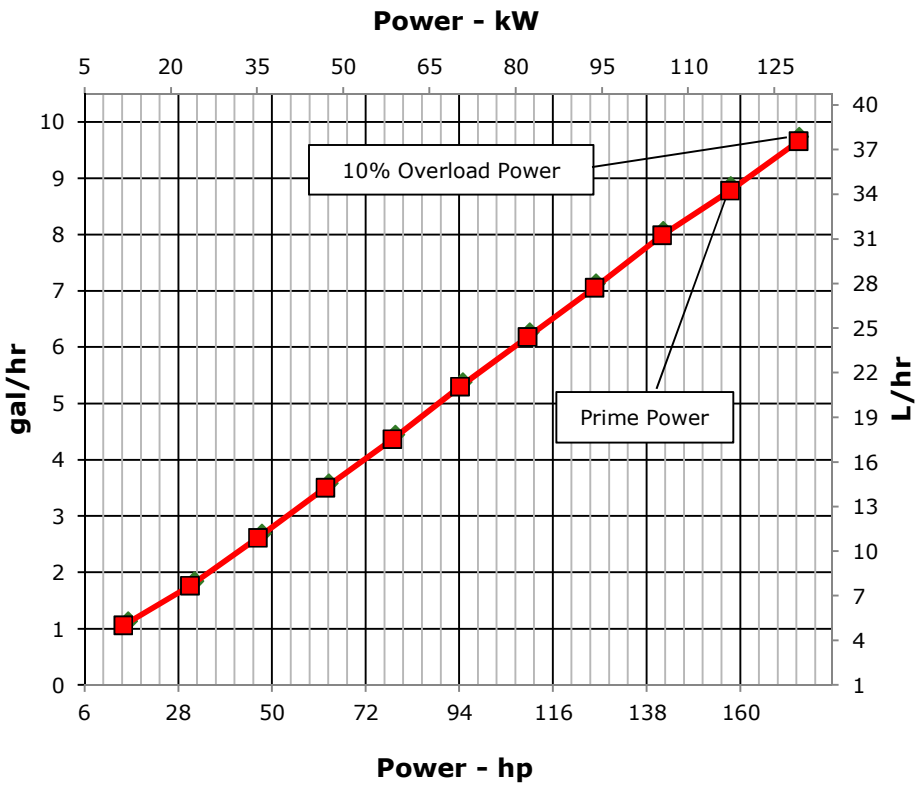
ENGINE PERFORMANCE CURVE

Rating: **50 Hz - 157hp (117 kW) @ 1500 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	103-108	129-135	157(117)	173(129)



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 ...a)
Gross power guaranteed within ±5% at ISO 8665/SAE J1228 and ISO 3046/SAE J1995 ...a)
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 @ 60°F (15.5°C)
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 in gage 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:	Certified by:
• EU Stage V Inland Waterways Constant Speed Auxiliary (2016/1628) • IMO MARPOL Annex VI Exempt (<130 kW) Ref: Engine Emission Label	Scott D. Ochsner 24-Jul-20

Performance Curve: 6068AFM85_J

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**	143	kW	8122	BTU/min
Max. Pressure Drop Across KC and Piping	40	kPa	6	psi
Coolant Flow	173	L/min	45.6	gal/min
Min. Coolant Pump Inlet Pressure	30	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	34	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	150	BTU/min
Engine Radiated Heat	9	kW	493	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	7.3	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	34.5	L/hr	9.1	gal/hr
Mass Fuel Consumption, Prime	29.3	kg/hr	65	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	7	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 1500 RPM**	314.983	kPa	46	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	162	L/min	43	gal/min
Max. Suction Lift	3	m	9.8	ft
Max. Outlet Pressure	140	kPa	20	psi
Max. Inlet Restriction	30	kPa	4	psi

Air Intake System

Engine Air Flow	10.3	m^3/min	364	ft^3/min
Intake Manifold Pressure	148	kPa	21.4	psi
Manifold Air Temperature	82	°C	180	°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	0.0635	m^2	98	in^2

Performance Data

Prime Power	117	kW	158	hp
10% Overload Power	129.24	kW	173	hp
Rated Speed		1500	RPM	
Low Idle Speed		1500	RPM	
Prime Torque	748	Nm	552	lb-ft
BMEP, Prime	1382	kPa	200	psi
Rated Pferdestärke, Prime (metric hp)		160	ps	
Front Drive Capacity, Intermittent	907	Nm	669	lb-ft
Front Drive Capacity, Continuous	907	Nm	669	lb-ft
Friction Power @ Rated Speed	12.8	kW	17.15	hp

Exhaust System

Exhaust Flow	23.6	m^3/min	832	ft^3/min
Exhaust Flow @ gas STP	10.6	m^3/min	374	ft^3/min
Exhaust Temperature	441	°C	826	°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	7.0	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

* With clean filters

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

*** With 19BP option

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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	g/kW-hr
10%	12	16	75	55	5.2	1.4	380
20%	23	31	149	110	7.9	2.1	288
30%	35	47	224	165	11.1	2.9	269
40%	47	63	299	220	14.5	3.8	263
50%	59	79	373	275	17.8	4.7	258
60%	70	94	448	330	21.3	5.6	258
70%	82	110	523	385	24.7	6.5	255
80%	94	126	597	440	28.0	7.4	254
90%	105	141	672	495	31.5	8.3	254
100%	117	157	747	551	34.5	9.1	250
110%	129	173	823	607	37.8	10.0	249

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