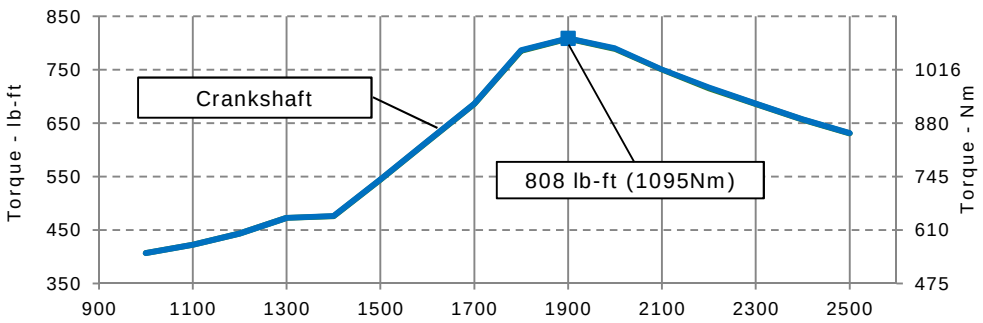
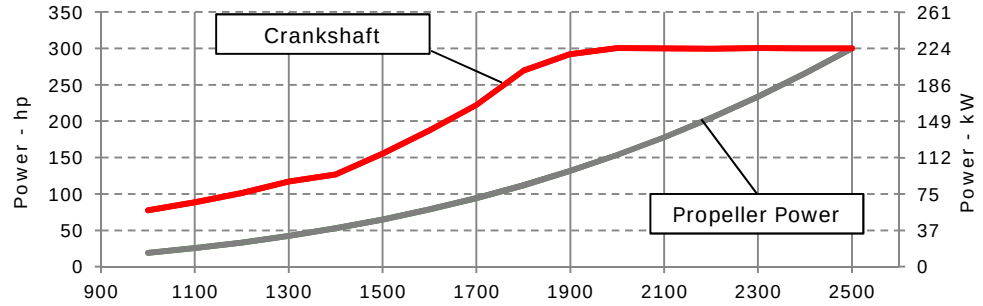
ENGINE PERFORMANCE CURVE

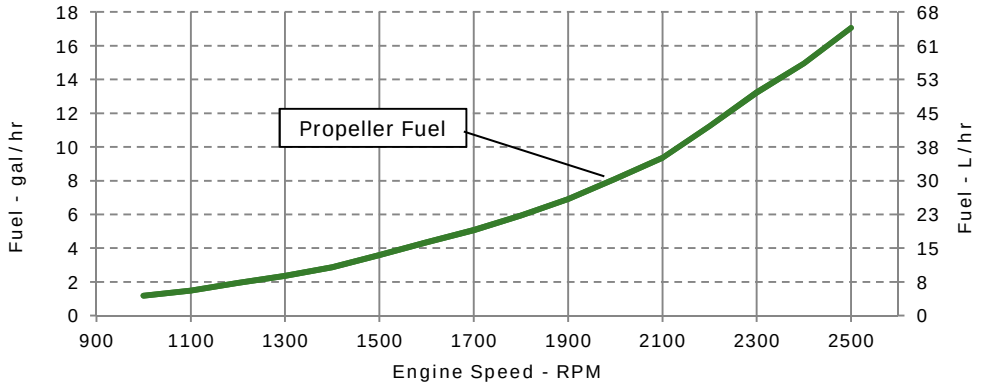
JOHN DEERE

Rating: M3 - 300hp (224kW) @ 2500 RPM
Application: Marine

PowerTech™ 6.8L Engine
Model: 6068AFM85







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 SAE J1995 and ISO 3046
J1995 and ISO 3046 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.

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:
• EPA Commercial Marine Tier 3 • IMO MARPOL Annex VI Compliant • NRMM (97/68/EC), as amended	Adam Powell
Ref: Engine Emission Label	25-Feb-13

Performance Curve: 6068AFM85_C

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**	243	kW	13854	BTU/min
Max. Pressure Drop Across Keel Cooler	40	kPa	5.8	psi
Coolant Flow	271	L/min	72	gal/min
Seawater Flow (heat exchanged)	255	L/min	67	gal/min
Thermostat Start to Open	81	°C	178	°F
Thermostat Fully Open	95	°C	203	°F
Engine Coolant Capacity, HE		L		gal
Engine Coolant Capacity, KC		L		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	9	kW	540	BTU/min
Engine Radiated Heat	32	kW	1844	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 maximum	1333	mm	52.5	in
Width maximum	854	mm	33.6	in
Height, crank centerline to top	646	mm	25.4	in
Height, crank centerline to bottom	290	mm	290	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	15.3	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 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	0.002	ohms
Max. Allowable Start Circuit Resistance, 24V	0.0012	ohms
Recommended Starter Cable, 12V 100"	#00	
Recommended Starter Cable, 24V 100"	#2	
Recommended Starter Cable, 12V 200"	#0000 or 2#00	
Recommended Starter Cable, 24V 200"	#0	
Electrical Component Maximum Temperature Limit	125 °C	257 °F

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Engine Installation Criteria

Fuel System

ECU Description			L14	
Fuel Injection Pump			HPCR	
Governor Type			Electronic	
Volumetric Fuel Consumption	64.6	L/hr	17.1	gal/hr
Mass Fuel Consumption	54.9	kg/hr	121	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
Max. Fuel Height Above Transfer Pump	2.4	m	7.9	ft
Max. Leak-off Return Height	2.4	m	7.9	ft
Max. Fuel Inlet Height Above Fuel Tank Supply	2.4	m	7.9	ft
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	310	kPa	45	psi
Oil Pressure at Low Idle (800rpm)**	150	kPa	22	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	

* 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^3/min	668	ft^3/min
Intake Manifold Pressure	197	kPa	28.6	psi
Manifold Air Temperature	102	°C	216	°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	0.116	m^2	180	in^2

Performance Data

Rated Power	224	kW	300	hp
Rated Speed		2500	RPM	
Peak Torque Speed		1900	RPM	
Low Idle Speed		600	RPM	
Rated Torque	856	Nm	631	ft-lb
Peak Torque	1095	Nm	808	ft-lb
BMEP, Rated	1581	kPa	229	psi
Rated Pferdestärke (metric hp)		305	ps	
Front Drive Capacity, Intermittent	907	Nm	669	lb-ft
Front Drive Capacity, Continuous	907	Nm	669	lb-ft

Exhaust System

Exhaust Flow	44	m^3/min	1565	ft^3/min
Exhaust Flow @ gas STP	18.3	m^3/min	647	ft^3/min
Exhaust Temperature	449	°C	840	°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	114.3	mm	4.5	in
Min. Exhaust Pipe Diameter, Wet	127	mm	5.0	in

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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	g/kW-hr
2500	224	300	855	631	224	300	65	17	245
2400	224	300	890	656	198	266	57	15	243
2300	224	300	930	686	174	234	50	13	244
2200	223	300	970	715	153	205	43	11	237
2100	224	300	1017	750	133	178	35	9	227
2000	224	300	1070	789	115	154	31	8	228
1900	218	292	1095	808	98	132	26	7	227
1800	201	269	1065	786	84	112	22	6	228
1700	166	222	930	686	70	94	19	5	232
1600	140	187	834	615	59	79	16	4	239
1500	116	155	738	544	48	65	14	4	239
1400	95	127	645	476	39	53	11	3	235
1300	87	117	641	472	31	42	9	2	241
1200	76	101	601	443	25	33	7	2	253
1100	66	88	572	422	19	26	6	1	250
1000	58	77	551	407	14	19	4	1	267

* Theoretical 3.0 exponent propeller curve , measured at flywheel

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