



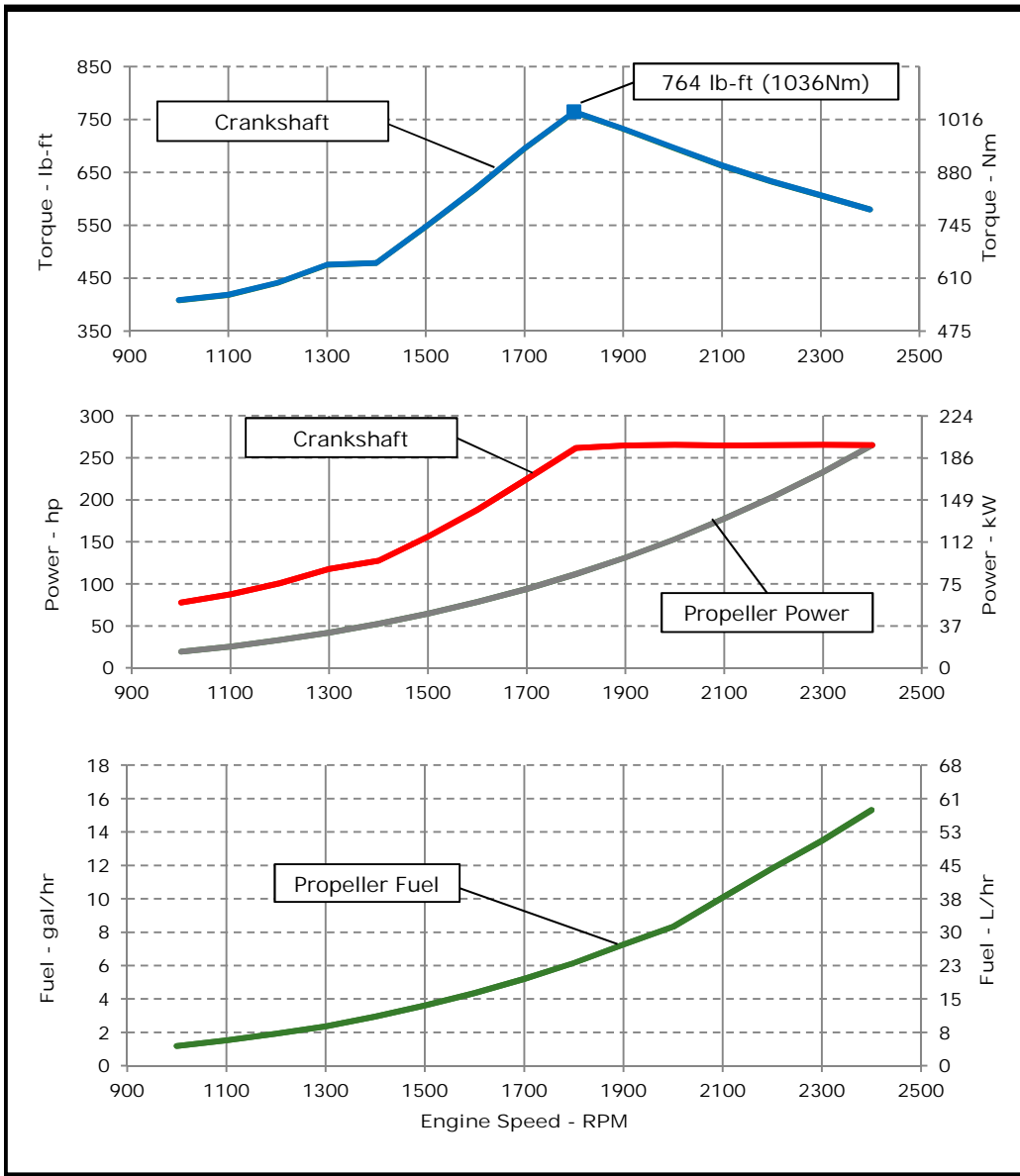
JOHN DEERE

ENGINE PERFORMANCE CURVE

Rating: M2 - 265hp (198kW) @ 2400 RPM
Application: Marine

PowerTech™ 6.8L Engine

Model: 6068AFM85



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 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:

M2: The M2 rating is for marine propulsion applications that typically operate between 3,000-5,000 hours per year and have load factors up to 65 percent. This rating is for applications that are in continuous use and use full power for no more than 16 hours of each 24 hours of operation. The remaining time of operation is at or below cruising speed.

Possible applications: Short-range tugs and towboats long-range ferryboats, large passenger vessels and offshore displacement hull fishing boats

Designed/Calibrated to meet:	Certified by:
<ul style="list-style-type: none"> EPA Commercial Marine Tier 3 IMO MARPOL Annex VI Compliant NRMM (97/68/EC), as amended 	
Ref: Engine Emission Label	25-Feb-13

Performance Curve: 6068AFM85_B

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**	208 kW	11862 BTU/min
Max. Pressure Drop Across Keel Cooler	40 kPa	5.8 psi
Coolant Flow	261 L/min	69 gal/min
Seawater Flow (heat exchanged)	246 L/min	65 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	10 kW	568 BTU/min
Engine Radiated Heat	29 kW	1655 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	57.9	L/hr	15.3	gal/hr
Mass Fuel Consumption	49.2	kg/hr	109	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	17.4	m ³ /min	616	ft ³ /min
Intake Manifold Pressure	181	kPa	26.3	psi
Manifold Air Temperature	91.2	°C	205	°F
Maximum Manifold Air Temperature	130	°C	266	°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	0.107	m ²	166	in ²

Performance Data

Rated Power	198	kW	265	hp
Rated Speed	2400 RPM			
Peak Torque Speed	1800 RPM			
Low Idle Speed	600 RPM			
Rated Torque	786	Nm	580	ft-lb
Peak Torque	1036	Nm	764	ft-lb
BMEP, Rated	1452	kPa	211	psi
Rated Pferdestärke (metric hp)	269 ps			
Front Drive Capacity, Intermittent	907	Nm	669	lb-ft
Front Drive Capacity, Continuous	907	Nm	669	lb-ft

Exhaust System

Exhaust Flow	39	m ³ /min	1377	ft ³ /min
Exhaust Flow @ gas STP	16.6	m ³ /min	587	ft ³ /min
Exhaust Temperature	440	°C	824	°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	101.6	mm	4.0	in
Min. Exhaust Pipe Diameter, Wet	127	mm	5.0	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	g/kW-hr
2400	198	265	786	580	198	265	58	15	249
2300	198	265	822	606	174	233	51	13	249
2200	198	265	858	633	152	204	45	12	250
2100	197	265	898	662	132	177	38	10	245
2000	198	265	945	697	114	153	31	8	234
1900	197	265	992	732	98	131	27	7	238
1800	195	262	1036	764	83	112	23	6	238
1700	168	225	942	695	70	94	20	5	239
1600	140	188	838	618	59	78	16	4	239
1500	117	156	742	547	48	65	14	4	241
1400	95	128	649	478	39	53	11	3	242
1300	88	118	644	475	31	42	9	2	242
1200	75	101	598	441	25	33	7	2	251
1100	65	88	567	418	19	26	6	2	257
1000	58	78	553	408	14	19	4	1	267

* Theoretical 3.0 exponent propeller curve , measured at flywheel

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