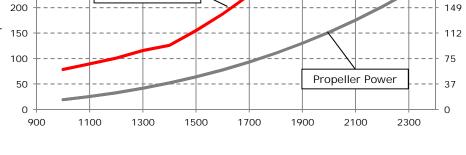
## ENGINE PERFORMANCE CURVE

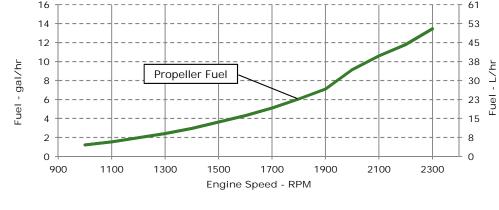
PowerTech<sup>TM</sup> 6.8L Engine

Model: 6068AFM85

Rating: M1 - 230hp (172kW) @ 2300 RPM

Application: Marine JOHN DEERE 750 1016 694 lb-ft (941Nm) 700 948 Crankshaft 650 lb-ft 813 600 550 745 Torque 500 678 450 610 400 542 350 475 900 1100 1300 1500 1700 1900 2100 2300 250 186 Crankshaft 200 149 Power Power 75 Propeller Power 37





### REFERENCE CONDITIONS

Air Intake Restriction... ......12 in.H<sub>2</sub>O (3 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:  $kW = hp \times 0.746$ Fuel: 1 gal = 7.1 lb, 1 L = 0.85 kg

Torque:  $N \cdot m = \text{lb-ft x } 1.356$ 

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:

M1: The M1 rating is for marine propulsion applications that may operate up to 24 hours per day at uninterrupted full power and have load factors greater than 65

Possible applications: Line hauls tugs and towboats, fish and shrimp trawlers/draggers, and displacement hull fishing boats.

Designed/Calibrated to meet:	Certified by

• EPA Commercial Marine Tier 3

Ref: Engine Emission Label

- IMO MARPOL Annex VI Tier II Compliant
- · NRMM (97/68/EC), as amended

Performance Curve: 6068AFM85 A

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

3-Oct-16

# Engine Installation Criteria

Number of Cylinders	General Data		1010	A EN 40 E	Physical Data		40.7				
Stroke   107 mm   4.21   in		6068AFM85				3					
Stroke   127   mm   5.00   in											
Height, crank centerline to top   6.44 mm   25.4 mm   25.4 mm   25.4 mm   25.4 mm   25.5 mm											
Campression Ratio   16.7-1   Valves per Cylinder, Intake/Exhaust   2/2   Valves per Cylinder, Intake/Exhaust											
Valves per Cylinder, Intake/Exhaust   1/2	·	6.8			in³						
Combustion System	•					<b>3</b>	291	mm	11.5	in	
Combustion System   Direct Injection   1-5-3-2-4   Center of Gravity Location, X-axis From Rear Face   390 mm   15-3 in Fining Order   In line, 4 Cycle   Center of Gravity Location, X-axis Right of Crankshaft   1-14 mm   -0.6 in Rear Face   Center of Gravity Location, Y-axis Right of Crankshaft   1-14 mm   -0.6 in Rear Face   Center of Gravity Location, Y-axis Right of Crankshaft   1-14 mm   -0.6 in Rear Face   Center of Gravity Location, Y-axis Right of Crankshaft   1-14 mm   -0.6 in Rear Face   Center of Gravity Location, Y-axis Right of Crankshaft   1-14 mm   -0.6 in Rear Face   Center of Gravity Location, Y-axis Right of Crankshaft   1-14 mm   -0.6 in Rear Face   Center of Gravity Location, Y-axis Right of Crankshaft   1-14 mm   -0.6 in Rear Face   Center of Gravity Location, Y-axis Right of Crankshaft   1-14 mm   -0.6 in Rear Face   Center of Gravity Location, Y-axis Right of Crankshaft   1-14 mm   -0.6 in Rear Face   Center of Gravity Location, Y-axis Right of Crankshaft   1-14 mm   -0.6 in Rear Face   Center of Gravity Location, Y-axis Right of Crankshaft   1-14 mm   -0.6 in Rear Face   Center of Gravity Location, Y-axis Right of Crankshaft   1-14 mm   -0.6 in Rear Face   Center of Gravity Location, Y-axis Right of Crankshaft   1-14 mm   -0.6 in Rear Face   Center of Gravity Location, Y-axis Right of Crankshaft   1-14 mm   -0.6 in Rear Face   Center of Gravity Location, Y-axis Right of Crankshaft   1-14 mm   -0.6 in Rear Face   Center of Gravity Location, Y-axis Right of Crankshaft   1-14 mm   -0.6 in Rear Face   Center of Gravity Location, Y-axis Right of Crankshaft   1-14 mm   -0.6 in Rear Face   Center of Gravity Location, Y-axis Right of Crankshaft   1-14 mm   -0.6 in Rear Face   Center of Gravity Location, Y-axis Right of Crankshaft   1-14 mm   -0.6 in Rear Face   Center of Gravity Location, Y-axis Right of Crankshaft   -1.4 mm   -0.6 in Rear Face   Center of Gravity Location, Y-axis Right of Crankshaft   -1.4 mm   -0.6 in Rear Face   Center of Gravity Location, Y-axis Right of Crankshaft   -1.4 m	· -						787	kg	1735	lb	
Engine Type	-			•							
Engine Coolant Aspiration    Turboc+arged   Turboc+arged   And After-coolend   Supplement   Sup							390	mm	15.3	in	
Cooling System* Engine Coolant Flow Coolant Flow Coolant Flow Coolant Flow Coolant Capacity, HE Engine Coolant Capacity, HE Engine Coolant Capacity, KC Min. Coolant Flow Coolant Capacity, HE Engine Coolant Capacity, KC Min. Coolant Flow Max Baser Cap Min. Coolant Capacity, KC Min. Coolant Flow Max Baser Cap Min. Coolant Capacity, KC Min. Coolant Flow Max Max Baser Cap Min. Coolant Flow Max	5 3.			9							
Engine Crankcase Vent System  Cooling System* Engine Coolant Heat Rejection**  184 kW 10462 BTU/min Max. Pressure Drop Across Keel Cooler 40 kPa 5.8 psi Coolant Flow 248 L/min 66 gal/min Min. Coolant Pump Inlet Pressure 30.3 kPa 4.4 psi Thermostat Start to Open 81 °C 203 °F Engine Coolant Capacity, HE 34 L 9.0 gal Engine Coolant Capacity, KC 33.5 L 8.8 gal Min. Pressure Cap 110.3 kPa 16 psi Min. Pressure Cap 110.3 kPa 16 psi Max. External Coolant Restriction 40 kPa 5.8 psi Min. Voltage at ECU during Cranking, 12V 60 coolant Restriction Max Top Tank Temperature 100 °C 212-230 °F Recommended Fuel Cooler 3 kW 166 BTU/min Engine Radiated Heat  * The cooling system should be capable of typical at ambient up to the maximum*  Max. Allowable Startic Bending Moment At Rear Face of Flywheel Housing (for installations up to 5-G) 814 km 400 lb of Flywheel Housing (for installations up to 5-G) 814 km 400 lb of Flywheel Housing (for installations up to 5-G) 814 km 405 lb of Flywheel Housing (for installations up to 5-G) 814 km 405 lb of Flywheel Housing (for installations up to 5-G) 814 km 405 lb of Flywheel Housing (for installations up to 5-G) 814 km 405 lb of Flywheel Housing (for installations up to 5-G) 815 km 405 lb of Flywheel Housing (for installations up to 5-G) 815 km 405 lb of Flywheel Housing (for installations up to 5-G) 815 km 405 lb of Flywheel Housing (for installations up to 5-G) 815 km 405 lb of Flywheel Housing (for installations up to 5-G) 815 km 405 lb of Flywheel Housing (for installations up to 5-G) 815 km 405 lb of Flywheel Housing (for installations up to 5-G) 815 km 405 lb of Flywheel Housing (for installations up to 5-G by 815 lb of Flywheel Housing (for installations up to 5-G by 815 lb of Flywheel Housing (for installations up to 5-G by 815 lb of Flywheel Housing (for installations up to 5-G by 815 lb of Flywheel Housing (for installations in the Second Limit, Rearward Intermittent 4 k kN 899 life in Thrust Bearing Load Limit, Forward Intermittent 4 kN 80 spi Intrust Bearing Load Limit, Rearward		Turbocl			cooled		mm				
Cooling System* Engine Coolant Pump Inlet Pressure 30.3 kPa 4.4 psi Thermostat Start to Open 81 °C 203 °F Engine Coolant Fully Open 95 °C 203 °F Engine Coolant Engline Coolant Engline Coolant Engline Coolant Restriction 40 kPa 3.5 gal Min. Coloant External Coolant External Coolant Restriction 40 kPa 5.8 psi Sink External Coolant Restriction 40 kPa 5.8 psi Min. Voltage at ECU during Cranking, 24V 32 °F (0 °C) 400 colons Start Component Max Top Tank Temperature 100 °C 212 230 °F Recommended Fuel Cooler 3 kW 166 BTU/min Engine Radiated Heat 26 kW 1455 BTU/min *Thrust Bearing Load Limit, Forward Intermittent 4 kN 899 lt Thrust Bearing Load Limit, Forward Intermittent 4 kN 899 lt Thrust Bearing Load Limit, Forward Intermittent 4 kN 899 lt Thrust Bearing Load Limit, Forward Intermittent 4 kN 899 lt Thrust Bearing Load Limit, Forward Continuous 1 kN 225 lt Thrust Bearing Load Limit, Forward Intermittent 4 kN 899 lt Thrust Bearing Load Limit, Forward Intermittent 4 kN 899 lt Thrust Bearing Load Limit, Forward Intermittent 4 kN 899 lt Thrust Bearing Load Limit, Forward Intermittent 4 kN 899 lt Thrust Bearing Load Limit, Forward Intermittent 4 kN 899 lt Thrust Bearing Load Limit, Forward Intermittent 4 kN 899 lt Thrust Bearing Load Limit, Forward Intermittent 4 kN 899 lt Thrust Bearing Load Limit, Forward Intermittent 4 kN 899 lt Thrust Bearing Load Limit, Forward Intermittent 4 kN 899 lt Thrust Bearing Load Limit, Forward Intermittent 4 kN 899 lt Thrust Bearing Load Limit, Rearward Intermittent 4 kN 80 899 lt Thrust Bearing Load Limit, Rearward Intermittent 4 kN 80 166 gal/min Thrust Bearing Load Limit, Rearward Intermittent 4 kN 80 166 gal/min Thrust Bearing Load Limit, Rearward Intermittent 4 kN 80 166 gal/min Thrust Bearing Load Limit, Rearward Intermittent 4 kN 80 166 gal/mi			J			Center of Gravity Location, Z-axis Above Crankshaft	186	mm	7.3	in	
Engine Coolant Heat Rejection** 184 kW 10462 BTU/min Max. Pressure Drop Across Keel Cooler 40 kPa 5.8 psi Coolant Flow 248 L/min 66 gal/min Min. Coolant Pump Inlet Pressure 30.3 kPa 4.4 psi Thermostat Start to Open 81 °C 178 °F Thermostat Start to Open 95 °C 203 °F Engine Coolant Capacity, HE 34 L 9.0 gal Engine Coolant Capacity, KC 33.5 L 8.8 gal Min. Pressure Cap 110.3 kPa 16 psi Min. Pressure Cap 110.3 kPa 16 psi Normal Operation Max Top Tank Temperature 100 °C 212 °F Recommended Fuel Cooler 3 kW 166 BTU/min Saladated Heat 26 kW 1455 BTU/min 15 BTU/min 15 BTU/min 15 BTU/min 15 BTU/min 16 BTU/min 17 BTU/min 16 BTU/min 17 BTU/min 16 BTU/min 17 BTU/min 16 BTU/min 17 BTU/min 18 Bearing Load Limit, Rearward Continuous 1 kN 2 kN 35 BTU/min 17 BEAR MAX ALL Bearing Load Limit, Rearward Continuous 1 kN 2 kN 450 lt Thrust Bearing Load Limit, Rearward Continuous 1 kN 2 kN 450 lt Thrust Bearing Load Limit, Rearward Continuous 1 kN 2 kN 450 lt Thrust Bearing Load Limit, Rearward Intermittent 4 kN 899 lt 16 Bql/min Hotologal Limit, Rearward Continuous 1 kN 4 kN 450 lt Thrust Bearing Load Limit, Rearward Continuous 2 kN 450 lt Thrust Bearing Load Limit, Rearward Continuous 2 kN 450 lt Thrust Bearing Load Limit, Rearward Intermittent 4 kN 899 lt 4 kN 450 lt	ngine Crankcase Vent System Closed					5	Nm	600	lb-f		
Max. Pressure Drop Across Keel Cooler         40         kPa         5.8         psi         Thrust Bearing Load Limit, Rearward Continuous         1         kN         225         It           Coolant Flow         248         L/min         66         gal/min         Thrust Bearing Load Limit, Rearward Intermittent         2         kN         450         It           Min. Coolant Pump Inlet Pressure         30.3         kPa         4.4         psi         F	Cooling System*					Thrust Bearing Load Limit, Forward Continuous	2.2	kN	495	lbi	
Coolant Flow         248 L/min         66 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         34 L         9.0 gal           Starter Rolling Corrent, 12V @32 °F (0 °C)         60 °C)           Min. 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           Max. External Coolant Restriction         40 kPa         5.8 psi           Normal Operation Max Top Tank Temperature         100 °C         212 °F           45% of Total Operating Time Top         100-110 °C         212-230 °F           Recommended Fuel Cooler         3 kW         166 BTU/min           Recommended Fuel Cooler         3 kW         146 BTU/min           *The cooling system should be capable of typical at ambient up to the maximum         1455 BTU/min    Thrust Bearing Load Limit, Rearward Intermittent  *The colonal Fill Rate  **In Recommended Battery Capacity, 12V @32 °F (0 °C)  **Starter Rolling Current, 12V @32 °F (0 °C)  **Starter Rolling Current, 12V @32 °F (0 °C)  **Starter Rolling Current, 12V @32 °F (0 °C)  **Min. Voltage at ECU during Cranking, 12V  **Max.	Engine Coolant Heat Rejection**	184	kW	10462	BTU/min	Thrust Bearing Load Limit, Forward Intermittent	4	kN	899	lb	
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 34 L 9.0 gal Engine Coolant Capacity, KC 33.5 L 8.8 gal Min. Recommended Battery Capacity, 24V @32 °F (0 °C) 925 amps Starter Rolling Current, 12V @32 °F (0 °C) 920 amps Min. Pressure Cap Min. Coolant Fill Rate 12 L/min 3.2 gal/min Min. Voltage at ECU during Cranking, 12V 6 volts Max. External Coolant Restriction Max Top Tank Temperature 100 °C 212 °F Recommended Fuel Cooler 3 kW 166 BTU/min Engine Radiated Heat  * The cooling system should be capable of typical at ambient up to the maximum  * The cooling system should be capable of typical at ambient up to the maximum	Max. Pressure Drop Across Keel Cooler	40	kPa	5.8	psi	Thrust Bearing Load Limit, Rearward Continuous	1	kN	225	lbt	
Thermostat Start to Open 81 °C 178 °F Thermostat Fully Open 95 °C 203 °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 Max. External Coolant Restriction 40 kPa 5.8 psi  S 5% of Total Operating Time Top 100-110 °C 212-230 °F Tank Temperature 100 °C 212-230 °F Recommended Fuel Cooler 3 kW 166 BTU/min Engine Radiated Heat 26 kW 1455 BTU/min  * The cooling system should be capable of typical at ambient up to the maximum  * The cooling system should be capable of typical at ambient up to the maximum  * The cooling system should be capable of typical at ambient up to the maximum  * The cooling system should be capable of typical at ambient up to the maximum  * The cooling system should be capable of typical at ambient up to the maximum  * The cooling system should be capable of typical at ambient up to the maximum  * The cooling system should be capable of typical at ambient up to the maximum  * The cooling system should be capable of typical at ambient up to the maximum  * The cooling system should be capable of typical at ambient up to the maximum  * The cooling system should be capable of typical at ambient up to the maximum  * The cooling system should be capable of typical at ambient up to the maximum  * Top Tank Temperature 25 c 203 c 203 c 204 c 204 c 205 c 20	Coolant Flow	248	L/min	66	gal/min	Thrust Bearing Load Limit, Rearward Intermittent	2	kN	450	lbi	
Thermostat Fully Open 95 °C 203 °F Engine Coolant Capacity, HE 34 L 9.0 gal Engine Coolant Capacity, HE 33.5 L 8.8 gal Engine Coolant Capacity, KC 33.5 L 8.8 gal Min. Recommended Battery Capacity, 24V @32 °F (0 °C) 625 amps Min. Coolant Fill Rate 12 L/min 3.2 gal/min Min. Recommended Battery Capacity, 24V @32 °F (0 °C) 625 amps Starter Rolling Current, 12V @32 °F (0 °C) 625 amps 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 Max. Allowable Start Circuit Resistance, 12V 0.002 ohms ≤ 5% of Total Operating Time Top 100-110 °C 212-230 °F Recommended Fuel Cooler 3 kW 166 BTU/min Engine Radiated Heat 26 kW 1455 BTU/min *The cooling system should be capable of typical at ambient up to the maximum*	Min. Coolant Pump Inlet Pressure	30.3	kPa	4.4	psi						
Engine Coolant Capacity, HE  34 L  9.0 gal Engine Coolant Capacity, KC  33.5 L  8.8 gal Min. Recommended Battery Capacity, 24V @32 °F (0 °C)  525 amps Starter Rolling Current, 12V @32 °F (0 °C)  920 amps Starter Rolling Current, 12V @32 °F (0 °C)  920 amps Starter Rolling Current, 12V @32 °F (0 °C)  920 amps Min. Pressure Cap Min. Voltage at ECU during Cranking, 12V  6 volts Min. Voltage at ECU during Cranking, 24V  10 volts Min. Voltage at ECU during Cranking, 24V  10 volts Min. Voltage at ECU during Cranking, 24V  10 volts Min. Voltage at ECU during Cranking, 24V  10 volts Max. Allowable Start Circuit Resistance, 12V  0.0002 ohms  100-110 °C  212-230 °F Max. Allowable Start Circuit Resistance, 24V  0.0012 ohms Electrical Component Maximum Temperature Limit  125 °C  257 °M Maximum ECU Temperature  105 °C  221 °F Maximum ECU Temperature  107 °C  221 °F Maximum ECU Temperature  108 °C  108 °C  108 °C  109 °C  109 omps  109 omps  109 ovolts  100 volts  100	Thermostat Start to Open	81	°C	178	°F	Electrical System					
Engine Coolant Capacity, KC  33.5 L 8.8 gal Starter Rolling Current, 12V @32 °F (0 °C) 920 amps  Min. Coolant Fill Rate 12 L/min 3.2 gal/min Starter Rolling Current, 12V @32 °F (0 °C) 600 amps  Min. Pressure Cap 110.3 KPa 16 psi Min. Voltage at ECU during Cranking, 12V 6 volts  Max. External Coolant Restriction 40 KPa 5.8 psi Min. Voltage at ECU during Cranking, 24V 10 volts  Normal Operation Max Top Tank Temperature 100 °C 212 °F Max. Allowable Start Circuit Resistance, 12V 0.002 ohms  ≤ 5% of Total Operating Time Top 100-110 °C 212-230 °F Max. Allowable Start Circuit Resistance, 24V 0.0012 ohms  Electrical Component Maximum Temperature Limit 125 °C 257  Maximum ECU Temperature 105 °C 221 ° Maximum ECU Temperature 105 °C 221 °C Maximum ECU Temperature 105 °C 105 °C Maximum ECU Temperature 105 °C Maximum ECU Temperature 105 °C Maximum ECU Temperature 105	Thermostat Fully Open	95	°C	203	°F	Min. Recommended Battery Capacity, 12V @32 °F (0 °C	C)	925	amps		
Min. Coolant Fill Rate  12 L/min 3.2 gal/min Min. Pressure Cap 110.3 kPa 16 psi Min. Voltage at ECU during Cranking, 12V 6 volts Max. External Coolant Restriction 40 kPa 5.8 psi Normal Operation Max Top Tank Temperature 100 °C 212 °F Max. Allowable Start Circuit Resistance, 12V 0.002 ohms ≤ 5% of Total Operating Time Top 100-110 °C 212-230 °F Max. Allowable Start Circuit Resistance, 24V 0.0012 ohms Electrical Component Maximum Temperature Limit 125 °C 257 ° Maximum ECU Temperature 100 °C 221 °F Maximum ECU Temperature 100 °C 221 °F Maximum ECU Temperature 100 °C 221 °C 105 °C 222 °C 105 °C 222 °C 105 °C 223 °C 105 °C 224 °C 105 °C 225 °C 227 °C 227 °C 227 °C 228 °C 228 °C 229 °C 229 °C 220 °C	Engine Coolant Capacity, HE	34	L	9.0	gal	Min. Recommended Battery Capacity, 24V @32 °F (0 °C	C)	625 amps			
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 Absolute Max Top Tank Temperature 110 °C 230 °F Recommended Fuel Cooler 3 kW 166 BTU/min  * The cooling system should be capable of typical at ambient up to the maximum  Min. Voltage at ECU during Cranking, 12V 6 volts Min. Voltage at ECU during Cranking, 12V 9 0.002 ohms Min. Voltage at ECU during Cranking, 12V 9 0.002 ohms Max. Allowable Start Circuit Resistance, 12V 9 0.0012 ohms Electrical Component Maximum Temperature Limit 125 °C 257 °Maximum ECU Temperature 105 °C 221 °F 10 volts Max. Allowable Start Circuit Resistance, 12V 9 0.002 ohms Electrical Component Maximum Temperature Limit 125 °C 257 °Maximum ECU Temperature 105 °C 221 °F 108 Max. Allowable Start Circuit Resistance, 24V 109 O.0012 ohms Electrical Component Maximum Temperature Limit 125 °C 257 °Maximum ECU Temperature 105 °C 221 °F 106 Volts 107 Volts 108 Min. Voltage at ECU during Cranking, 12V 109 Volts	Engine Coolant Capacity, KC	33.5	L	8.8	gal	Starter Rolling Current, 12V @32 °F (0 °C)		920 amps			
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 Recommended Fuel Cooler 3 kW 166 BTU/min Engine Radiated Heat 26 kW 1455 BTU/min  * The cooling system should be capable of typical at ambient up to the maximum  * The cooling system should be capable of typical at ambient up to the maximum  * Min. Voltage at ECU during Cranking, 24V 0.002 ohms  Max. Allowable Start Circuit Resistance, 12V 0.0012 ohms  Electrical Component Maximum Temperature Limit 125 °C 257 °Maximum ECU Temperature 105 °C 221 °Ma	Min. Coolant Fill Rate	12	L/min	3.2	gal/min	Starter Rolling Current, 24V @32 °F (0 °C)		600 amps			
Normal Operation Max Top Tank Temperature 100 °C 212 °F 5% of Total Operating Time Top 100-110 °C 212-230 °F Tank Temperature 110 °C 230 °F Absolute Max Top Tank Temperature 110 °C 230 °F Recommended Fuel Cooler 3 kW 166 BTU/min Engine Radiated Heat 26 kW 1455 BTU/min  * The cooling system should be capable of typical at ambient up to the maximum	Min. Pressure Cap	110.3	kPa	16	psi	Min. Voltage at ECU during Cranking, 12V					
≤ 5% of Total Operating Time Top 100-110 °C 212-230 °F  Tank Temperature  Absolute Max Top Tank Temperature 110 °C 230 °F  Recommended Fuel Cooler 3 kW 166 BTU/min  Engine Radiated Heat 26 kW 1455 BTU/min  * The cooling system should be capable of typical at ambient up to the maximum	Max. External Coolant Restriction	40	kPa	5.8	psi	Min. Voltage at ECU during Cranking, 24V	10 volts				
Tank Temperature  Absolute Max Top Tank Temperature  110 °C 230 °F  Recommended Fuel Cooler  3 kW 166 BTU/min  Engine Radiated Heat  26 kW 1455 BTU/min  * The cooling system should be capable of typical at ambient up to the maximum	Normal Operation Max Top Tank Temperature	100	°C	212	°F	Max. Allowable Start Circuit Resistance, 12V		0.002	ohms		
Absolute Max Top Tank Temperature 110 °C 230 °F Recommended Fuel Cooler 3 kW 166 BTU/min Engine Radiated Heat 26 kW 1455 BTU/min  * The cooling system should be capable of typical at ambient up to the maximum	≤ 5% of Total Operating Time Top	100-110	°C	212-230	°F	Max. Allowable Start Circuit Resistance, 24V	(	0.0012	ohms		
Recommended Fuel Cooler 3 kW 166 BTU/min Engine Radiated Heat 26 kW 1455 BTU/min  * The cooling system should be capable of typical at ambient up to the maximum	Tank Temperature					Electrical Component Maximum Temperature Limit	125	°C	257	°F	
Engine Radiated Heat 26 kW 1455 BTU/min  * The cooling system should be capable of typical at ambient up to the maximum	Absolute Max Top Tank Temperature	110	°C	230	°F	Maximum ECU Temperature	105	°C	221	°F	
* The cooling system should be capable of typical at ambient up to the maximum	Recommended Fuel Cooler	3	kW	166	BTU/min	·					
	Engine Radiated Heat	26	kW	1455	BTU/min						
conditions in which the vessel will operate.	* The cooling system should be capable of typical	al at ambie	nt up to	the maxin	num						
	conditions in which the vessel will operate.		•								
	ypical operation is defined as the average load					Performance Curve: 6068AFM8	2 A				

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

\*\* Reference 32 °C Sea Water Temperature

Engine Performance Curves 6068 - Marine Sheet 2 - October 2016

# Engine Installation Criteria

Fuel System					Air Intaka System				
ECU Description		1	14		Air Intake System  Engine Air Flow	15 0	m³/min	557	ft <sup>3</sup> /mir
Fuel Injection Pump					Intake Manifold Pressure	161	m /min kPa	23.4	psi psi
Governor Type		Electro			Manifold Air Temperature	91.2	°C	196	°F
Volumetric Fuel Consumption	50.9	L/hr	13.4	gal/hr	Maximum Manifold Air Temperature	130	°C	266	°F
Mass Fuel Consumption	43.3	kg/hr	95	lb/hr	Max. Allowable Temperature Rise, Ambient	130		200	
Total Fuel Volumetric Flow	192	L/hr		gal/hr	Air to Engine Inlet	17	°C	30	°F
Total Fuel Mass Flow	163	kg/hr	360	•	Max. Air Intake Restriction, Clean Air Cleaner	3	kPa	12	in.H <sub>2</sub> O
Max. Fuel Inlet Restriction*	20	kPa		in.H2O	Max. Air Intake Restriction, Dirty Air Cleaner	6.25	kPa	25	in.H <sub>2</sub> O
Max. Fuel Inlet Pressure	20	kPa		in.H2O	Min. Ventilation Area	0.097	m <sup>2</sup>	150	in <sup>2</sup>
Max Fuel Return Pressure	20	kPa		in.H2O	Will. Vertilation Area	0.077	111	130	11.1
Normal Operation Fuel Temperature	40	°C	104	°F	Performance Data				
Max. Fuel Inlet Temperature	100	°C	212		Rated Power	172	kW	230	hp
Min. Recommended Fuel Line Inside Diameter	7.46	mm	0.29	in	Rated Speed	.,_	2300	RPM	٠.١
Min. Recommended Fuel Line Size	71.10		(-) AN		Peak Torque Speed		1700	RPM	
Primary Fuel Filter		10	mic		Low Idle Speed		600	RPM	
Secondary Fuel Filter		2	mic		Rated Torque	712	Nm	525	ft-lb
3					Peak Torque	941	Nm	694	
<u>Lubrication System</u>					BMEP, Rated	1316	kPa	191	psi
Oil Pressure at Rated Speed	310	kPa	45	psi	Rated Pferdestärke (metric hp)		233	ps	•
Oil Pressure at Low Idle (800rpm)**	150	kPa	22	psi	Front Drive Capacity, Intermittent	907	Nm	669	lb-ft
Max. Crankcase Pressure	2	kPa	8	in.H2O	Front Drive Capacity, Continuous	907	Nm	669	lb-ft
Maximum Installed Angle, Front Down		0	deg						
Maximum Installed Angle, Front Up		12	deg		Exhaust System				
Engine Angularity Limits Any Direction, Continuo	ous***	25	deg		Exhaust Flow	36	m³/min	1271	ft <sup>3</sup> /min
Engine Angularity Limits Any Direction, Intermit	tent***	35	deg		Exhaust Flow @ gas STP	15.3	m³/min	540	ft <sup>3</sup> /min
					Exhaust Temperature	424	°C	795	°F
Seawater Pump System					Max. Allowable Exhaust Restriction	7.5	kPa	30	in.H <sub>2</sub> O
Seawater Pump Flow	238	L/min	63	gal/min	Max. Shear on Turbocharger Exhaust Outlet	11	kg	24.3	lb
Max. Suction Lift	3	m	9.8	ft	Max. Bending Moment on Turbocharger Exhaust	7	Nm	15.4	lb-ft
Max. Outlet Pressure	140	kPa	20	psi	Outlet	,	INITI	15.4	10-11
Max. Inlet Restriction	30	kPa	4	psi	Min. Exhaust Pipe Diameter, Dry	101.6	mm	4.0	in
					Min. Exhaust Pipe Diameter, Wet	127	mm	5.0	in

<sup>\*</sup> With clean filters

Performance Curve: 6068AFM85\_A

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

Engine Performance Curves 6068 - Marine Sheet 3 - October 2016

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

<sup>\*\*\*</sup> With 19BP option

# 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	
2300	172	230	713	526	172	230	50.9	13.4	252	
2200	171	230	743	548	150	202	44.6	11.8	252	
2100	172	230	780	575	131	175	40.1	10.6	261	
2000	172	230	820	605	113	151	34.6	9.1	260	
1900	172	230	862	636	97	130	26.9	7.1	236	
1800	172	230	911	672	82	110	22.9	6.0	236	
1700	167	225	941	694	69	93	19.3	5.1	236	
1600	140	187	833	614	58	78	16.3	4.3	239	
1500	115	155	735	542	48	64	13.7	3.6	244	
1400	94	126	640	472	39	52	11.1	2.9	245	
1300	86	116	633	467	31	42	9.1	2.4	250	
1200	75	101	597	441	24	33	7.5	2.0	260	
1100	67	89	579	427	19	25	5.8	1.5	261	
1000	59	78	559	412	14	19	4.6	1.2	275	

<sup>\*</sup> Theoretical 3.0 exponent propeller curve , measured at flywheel

Performance Curve: 6068AFM85\_A

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