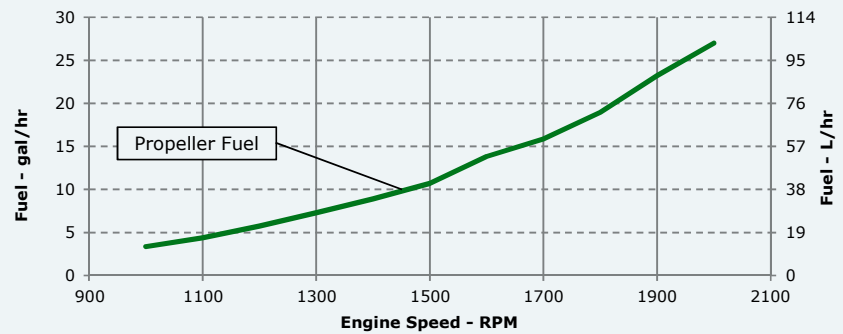
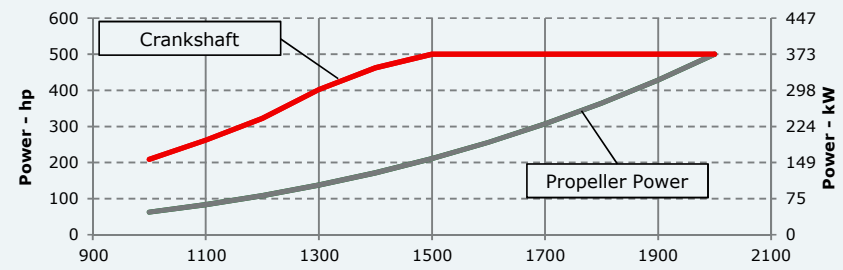
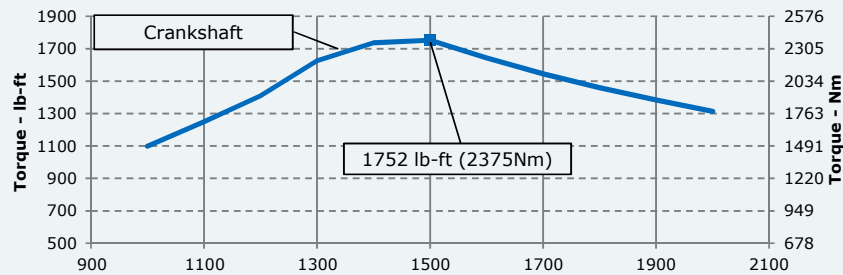


# JOHN DEERE POWERTECH™ 13.5L ENGINE

MODEL: 6135AFM85

# NOGVA

Rating: **M3 - 500hp (373kW) @ 2000 RPM**  
Application: **Marine**



**REFERENCE CONDITIONS**

Air Intake Restriction.....12 in.H<sub>2</sub>O (3 kPa)  
Exhaust Back Pressure..... 30 in.H<sub>2</sub>O (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:**

**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:
<ul style="list-style-type: none"> <li>EPA Marine Tier 3 Commercial (40 CFR 1042)</li> <li>IMO Tier II Compliant (MARPOL Annex VI)</li> <li>EU Stage IIIa Inland Waterways (NRRM 97/68/EC, as amended)</li> <li>Recreational Craft Directive 2 (2013/53/EU)</li> </ul>	 9-Jun-20
Ref: Engine Emission Label	
Performance Curve: 6135AFM85_C	

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

# MODEL: 6135AFM85

## General Data

Model	6135AFM85		
Number of Cylinders	6		
Bore	132 mm	5.20 in	
Stroke	165 mm	6.50 in	
Displacement	13.5 L	824 in <sup>3</sup>	
Compression Ratio	16.0:1		
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**	361 kW	20548 BTU/min	
Max. Pressure Drop Across Keel Cooler	40 kPa	5.8 psi	
Coolant Flow	354 L/min	93 gal/min	
Min. Coolant Pump Inlet Pressure	30.3 kPa	4.4 psi	
Thermostat Start to Open	72 °C	161 °F	
Thermostat Fully Open	82 °C	179 °F	
Engine Coolant Capacity, HE	44 L	11.6 gal	
Engine Coolant Capacity, KC	42 L	11.1 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	
≤ 5% of Total Operating Time Top Tank Temperature	100-105 °C	212-230 °F	
Absolute Max Top Tank Temperature	105 °C	221 °F	
Recommended Fuel Cooler	2 kW	100 BTU/min	
Engine Radiated Heat	26 kW	1460 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	1316 mm	51.8 in
Length to rear face of flywheel housing (SAE #1)	1425 mm	56.1 in
Length maximum	1800 mm	70.9 in
Width maximum	1062 mm	41.8 in
Height, crank centerline to top	818 mm	32.2 in
Height, crank centerline to bottom	364 mm	14.3 in
Weight, with oil, no coolant (includes engine, flywheel housing, flywheel, and electronics)	1410 kg	3108 lb
Center of Gravity Location, X-axis From Rear Face of Block	516 mm	20.3 in
Center of Gravity Location, Y-axis Right of Crankshaft	5 mm	0.2 in
Center of Gravity Location, Z-axis Above Crankshaft	239 mm	9.4 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	5.4 kN	1214 lbf
Thrust Bearing Load Limit, Forward Intermittent	8.1 kN	1821 lbf
Thrust Bearing Load Limit, Rearward Continuous	2.5 kN	562 lbf
Thrust Bearing Load Limit, Rearward Intermittent	4 kN	899 lbf

## Electrical System

Min. Recommended Battery Capacity, 12V @32 °F (0 °C)	1900 amps
Min. Recommended Battery Capacity, 24V @32 °F (0 °C)	925 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	0.0012 ohms
Max. Allowable Start Circuit Resistance, 24V	0.002 ohms
Electrical Component Maximum Temperature Limit	125 °C 257 °F
Maximum ECU Temperature	105 °C 221 °F

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# MODEL: 6135AFM85

## Fuel System

ECU Description	L15		
Fuel Injection Pump	Unit Injection		
Governor Type	Electronic		
Volumetric Fuel Consumption	102 L/hr	27.0 gal/hr	
Mass Fuel Consumption	86.9 kg/hr	192 lb/hr	
Total Fuel Volumetric Flow	187 L/hr	49.4 gal/hr	
Total Fuel Mass Flow	159 kg/hr	351 lb/hr	
Max. Fuel Inlet Restriction*	30 kPa	120 in.H2O	
Max. Fuel Inlet Pressure	24 kPa	96 in.H2O	
Max Fuel Return Pressure	35 kPa	141 in.H2O	
Normal Operation Fuel Temperature	40 °C	104 °F	
Max. Fuel Inlet Temperature	80 p	176 °F	
Min. Recommended Fuel Line Inside Diameter	6.79 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 Rated Speed	317 kPa	46 psi	
Oil Pressure at Low Idle (600rpm)**	157 kPa	23 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***	20 deg		
Engine Angularity Limits Any Direction, Intermittent***	30 deg		

## Seawater Pump System

Seawater Pump Flow	386 L/min	102 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 1904 option

## Air Intake System

Engine Air Flow	37 m <sup>3</sup> /min	1307 ft <sup>3</sup> /min	
Intake Manifold Pressure	253 kPa	36.7 psi	
Manifold Air Temperature	96 °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.H <sub>2</sub> O	
Max. Air Intake Restriction, Dirty Air Cleaner	6.25 kPa	25 in.H <sub>2</sub> O	
Min. Ventilation Area	0.228 m <sup>2</sup>	353 in <sup>2</sup>	

## Performance Data

Rated Power	373 kW	500 hp	
Rated Speed	2000 RPM		
Peak Torque Speed	1500 RPM		
Low Idle Speed	600 RPM		
Rated Torque	1781 Nm	1314 ft-lb	
Peak Torque	2375 Nm	1752 ft-lb	
BMEP, Rated	1658 kPa	240 psi	
Rated Pferdestärke (metric hp)	507 ps		
Front Drive Capacity, Intermittent	542 Nm	400 lb-ft	
Front Drive Capacity, Continuous	542 Nm	400 lb-ft	

## Exhaust System

Exhaust Flow	77 m <sup>3</sup> /min	2712 ft <sup>3</sup> /min	
Exhaust Flow @ gas STP	35.0 m <sup>3</sup> /min	1236 ft <sup>3</sup> /min	
Exhaust Temperature	382 °C	720 °F	
Max. Allowable Exhaust Restriction	7.5 kPa	30 in.H <sub>2</sub> O	
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	139.7 mm	5.5 in	
Min. Exhaust Pipe Diameter, Wet	152.4 mm	6.0 in	

Performance Curve: 6135AFM85\_C

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

# MODEL: 6135AFM85

**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
<b>2000</b>	373	500	1781	1314	373	500	102	27	233
<b>1900</b>	373	500	1875	1383	320	429	88	23	234
<b>1800</b>	373	500	1979	1460	272	365	72	19	224
<b>1700</b>	373	500	2095	1545	229	307	60	16	223
<b>1600</b>	373	500	2226	1642	191	256	52	14	233
<b>1500</b>	373	500	2375	1752	157	211	41	11	219
<b>1400</b>	345	463	2353	1735	128	172	34	9	224
<b>1300</b>	300	402	2204	1626	102	137	28	7	229
<b>1200</b>	240	322	1911	1409	81	108	22	6	230
<b>1100</b>	195	262	1695	1250	62	83	17	4	228
<b>1000</b>	156	209	1489	1098	47	63	13	3	232

\* Theoretical 3.0 exponent propeller curve , measured at flywheel

Performance Curve: 6135AFM85\_C

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