



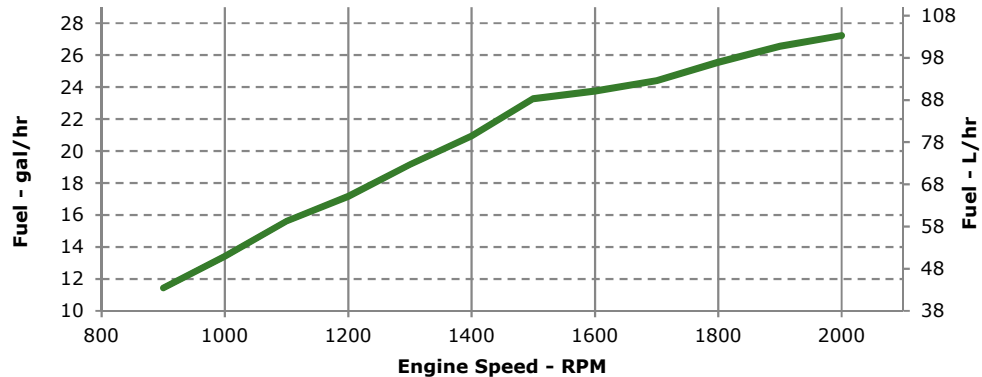
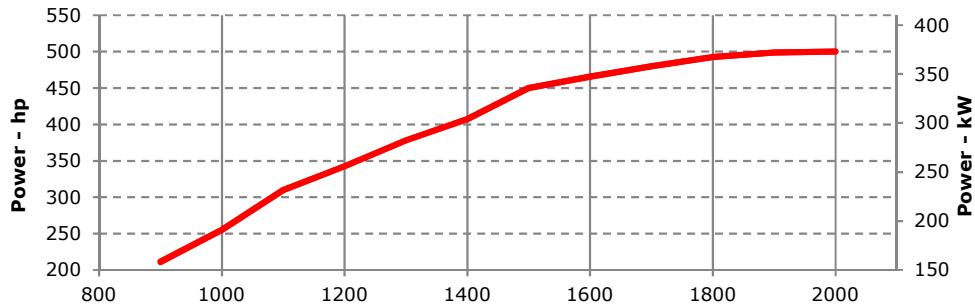
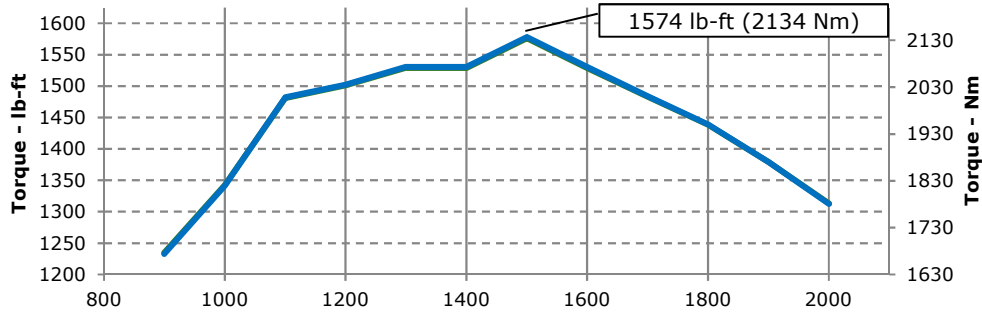
JOHN DEERE

ENGINE PERFORMANCE CURVE

Rating: **500 hp (373 kW) @ 2000 RPM**
Application: **Marine Auxiliary - Variable Speed**

PowerTech™ 13.5L Engine

Model: 6135HFM85



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 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.

Notes:

Variable Speed Auxiliary: The Variable Speed ABS Auxiliary engine has an application rating equating to the Industrial Intermittent Rating. This allows usage of an unlimited number of hours per year, with an average load factor of 70% or less.

Possible Applications: On-deck variable speed pumps

Designed/Calibrated to meet:

- EPA Marine Tier 3 Variable Speed Auxiliary (40 CFR 1042)
- IMO Tier II Compliant (MARPOL Annex VI)

Ref: Engine Emission Label

Certified by:

12-Mar-18

Performance Curve: 6135HFM85_A

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

Engine Installation Criteria

General Data

Model	6135HFM85		
Number of Cylinders	6		
Bore	132 mm	5.20	in
Stroke	165 mm	6.50	in
Displacement	13.5 L	824	in ³
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	Air-to-Air		
Engine Crankcase Vent System	Open/Closed (Option Based)		

Cooling System*

Engine Coolant Heat Rejection	246 kW	13979	BTU/min
Coolant Flow	506 L/min	134	gal/min
Min. Coolant Pump Inlet Pressure	30.3 kPa	4.4	psi
Thermostat Start to Open	82 °C	180	°F
Thermostat Fully Open	92 °C	198	°F
Engine Coolant Capacity	25 L	6.6	gal
Minimum Air-to-Boil Temperature	47 °C	117	°F
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	212-221	°F
Absolute Max Top Tank Temperature	110 °C	230	°F
Recommended Fuel Cooler	4 kW	200	BTU/min
Engine Radiated Heat	52 kW	2948	BTU/min

Physical Data

Length to rear face of block	1225 mm	48.2	in
Length to rear face of flywheel housing (SAE #1)	1358 mm	53.5	in
Length maximum	1709 mm	67.3	in
Width maximum	838 mm	33.0	in
Height, crank centerline to top	907 mm	35.7	in
Height, crank centerline to bottom	523 mm	20.6	in
Weight, with oil, no coolant (includes engine, flywheel housing, flywheel, and electronics)	1322 kg	2914	lb
Center of Gravity Location, X-axis From Rear Face of Block	507 mm	19.9	in
Center of Gravity Location, Y-axis Right of Crankshaft	15.8 mm	0.6	in
Center of Gravity Location, Z-axis Above Crankshaft	254 mm	10.0	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
Max. Continuous Damper Temperature	82 °C	180	°F

Electrical System

Min. Recommended Battery Capacity, 12V @32 °F (0 °C)	1100	amps
Min. Recommended Battery Capacity, 24V @32 °F (0 °C)	750	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	L15			
Fuel Injection Pump	Unit Injection			
Governor Type	Electronic			
Volumetric Fuel Consumption	103	L/hr	27.3	gal/hr
Mass Fuel Consumption	88	kg/hr	193	lb/hr
Total Fuel Volumetric Flow	273	L/hr	72.1	gal/hr
Total Fuel Mass Flow	232	kg/hr	512	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	100	°C	212	°F
Min. Recommended Fuel Line Inside Diameter	9	mm	0.35	in
Min. Recommended Fuel Line Size	6 (-) AN			
Primary Fuel Filter	10	mic		
Secondary Fuel Filter	2	mic		

Lubrication System

Oil Pressure at Rated Speed	292	kPa	42	psi
Oil Pressure at Low Idle **	102	kPa	15	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			

Charge Air Cooling System

Air-to-Air Exchanger Heat Rejection	121	kW	6887	BTU/min
Compressor Discharge Temp (Rated) @ 25°C Amb.	220	°C	428	°F
Compressor Discharge Temp @ Peak Torque, 25°C Ambient	195	°C	383	°F
Maximum Pressure Drop thru CAC	13	kPa	52.2	in. H ₂ O
Max CAC Outlet Temp @ 25°C (77°F) Ambient	60	°C	140	°F
Max CAC Outlet Temp @ any Ambient	88	°C	190	°F

* With clean filters

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

*** With 1914 option

Air Intake System

Engine Air Flow	38	m ³ /min	1359	ft ³ /min
Intake Manifold Pressure (gauge pressure)	237	kPa	34	psig
Manifold Air Temperature @ Rated (ECU reading)	60	°C	140	°F
Maximum Manifold Air Temperature	88	°C	190	°F
Max. Allowable Temperature Rise, Ambient	8	°C	30	°F
Air to Engine Inlet				
Max. Air Intake Restriction, Clean Air Cleaner	3	kPa	12	in.H ₂ O
Max. Air Intake Restriction, Dirty Air Cleaner	6.25	kPa	25	in.H ₂ O

Performance Data

Rated Power	373	kW	500	hp
Rated Speed	2000	RPM		
Peak Torque Speed	1500	RPM		
Low Idle Speed	900	RPM		
Breakaway Speed	2050	RPM		
Fast Idle Speed	2200	RPM		
Rated Torque	1781	Nm	1314	ft-lb
Peak Torque	2137	Nm	1576	ft-lb
BMEP, Rated	1658	kPa	240	psi
Rated Pferdestärke (metric hp)	507 ps			
Front Drive Capacity, Intermittent	955	Nm	704	lb-ft
Front Drive Capacity, Continuous	955	Nm	704	lb-ft
Friction Power @ Rated Speed	51	kW	68	hp

Exhaust System

Exhaust Flow	80	m ³ /min	2811	ft ³ /min
Exhaust Temperature	380	°C	716	°F
Max. Allowable Exhaust Restriction	7.5	kPa	30	in.H ₂ 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	114.3	mm	4.5	in

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Engine Installation Criteria

Engine Performance Data Table

Engine Speed	Crank Power		Crank Torque		Fuel Consumption		BSFC
	RPM	kW	hp	Nm	lb-ft	L/hr	
2000	373	500	1781	1314	103.2	27.3	235
1900	372	499	1870	1379	100.6	26.6	230
1800	368	493	1950	1438	96.8	25.6	224
1700	358	480	2011	1483	92.4	24.4	219
1600	347	466	2073	1529	90.0	23.8	220
1500	336	450	2137	1576	88.2	23.3	223
1400	304	408	2073	1529	79.3	21.0	222
1300	282	378	2073	1529	72.6	19.2	219
1200	256	343	2035	1501	65.1	17.2	216
1100	231	310	2008	1481	59.2	15.6	218
1000	191	256	1820	1342	50.9	13.4	227
900	158	212	1674	1235	43.4	11.5	233

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