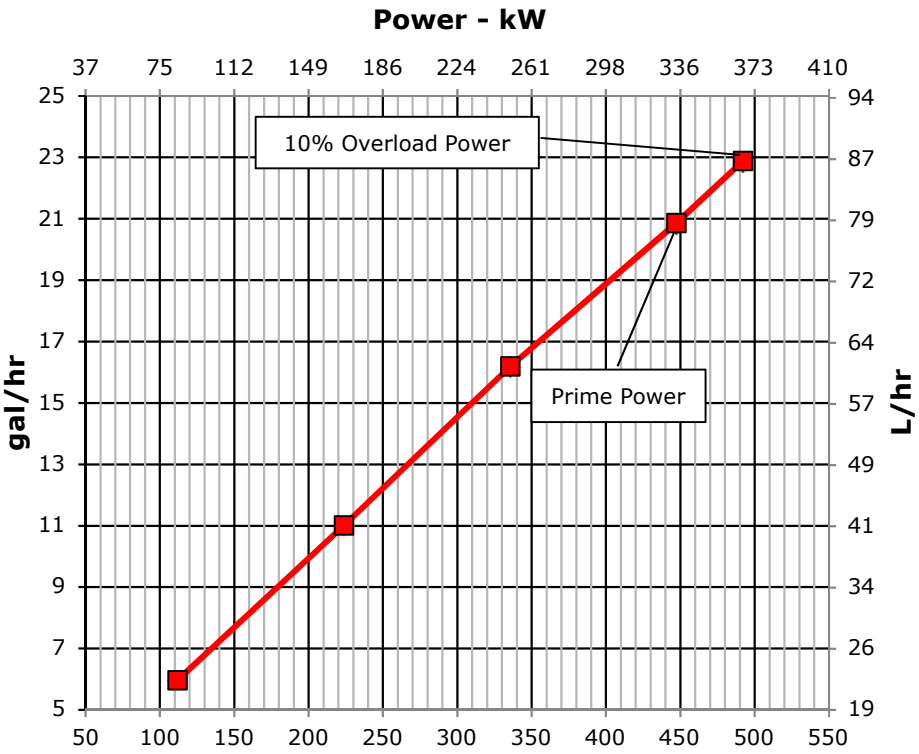
ENGINE PERFORMANCE CURVE

Rating: **50 Hz - 447hp (334kW) @ 1500 RPM**
Application: **Marine**

PowerTech™ 13.5L Engine
Model: 6135SFM85

Generator Efficiency (%)	Power Factor	Calculated Gen-Set Rating		Prime Power	10% Overload Power
		kWe	kVA	hp (kW)	hp (kW)
88-92	0.8	294-307	367-384	447 (334)	492 (367)



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 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:

Marine Generator: The Marine generator engine rating is the power available under normal varying electrical load factors for an unlimited number of hours per year in commercial applications. This rating incorporates a 10% overload capability, and conforms to ISO 8528 prime power. Average load over a 24-hour period shall not exceed 67% of the prime rating, of which no more than 2 hours are between 100% and 110% of the prime rating.

Constant speed engines are not certified for constant speed propulsion applications (i.e. variable pitch proppeller, hybrid porpulsion system).

Possible applications: This rating is used for applications that require constant speed operation in power generation or auxiliary applications such as generators and hydraulic pumps.

Designed/Calibrated to meet:	Certified by:
• IMO Tier II Compliant (MARPOL Annex VI)	Scott D. Ochsner
Ref: Engine Emission Label	9-Jun-20

Performance Curve: 6135SFM85_G

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

Engine Installation Criteria

General Data

Model	6135SFM85			
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	Seawater cooled			
Engine Crankcase Vent System	Closed			

Cooling System*

Jacket Water Heat Rejection**	209	kW	11896	BTU/min
Aftercooler Heat Rejection	75	kW	4269	BTU/min
Coolant Flow	220	L/min	58	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	197	°F
Engine Coolant Capacity, HE	38	L	10	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
Return Fuel Heat Rejection	1	kW	46	BTU/min
Engine Radiated Heat	20	kW	1125	BTU/min

Physical Data

Length to rear face of block	1335	mm	52.6	in
Length to rear face of flywheel housing (SAE #1)	1444	mm	56.8	in
Length maximum	1818	mm	71.6	in
Width maximum	1063	mm	41.9	in
Height, crank centerline to top	812	mm	32	in
Height, crank centerline to bottom	364	mm	14.3	in
Weight, with oil, no coolant (includes engine, flywheel housing, flywheel, and electronics)	1426	kg	3143	lb
Center of Gravity Location, X-axis From Rear Face of Block	476	mm	18.7	in
Center of Gravity Location, Y-axis Right of Crankshaft	-9	mm	-0.4	in
Center of Gravity Location, Z-axis Above Crankshaft	250	mm	9.84	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	0.002	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

* 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

Performance Curve: 6135SFM85_G

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Engine Installation Criteria

Fuel System

ECU Description			L15	
Fuel Injection Pump			EUI	
Governor Type			Electronic	
Volumetric Fuel Consumption, Prime	78.7	L/hr	20.8	gal/hr
Mass Fuel Consumption, Prime	66.9	kg/hr	148	lb/hr
Total Fuel Volumetric Flow	118	L/hr	31.2	gal/hr
Total Fuel Mass Flow	100	kg/hr	220	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	6.79	mm	0.27	in
Min. Recommended Fuel Line Size			4	(-) AN
Primary Fuel Filter			10	mic
Secondary Fuel Filter			2	mic

Lubrication System

Oil Pressure at 1500 RPM**	250	kPa	41	psi
Max. Crankcase Pressure	2	kPa	8	in.H_2O
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	339	L/min	90	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	28.1	m^3/min	992	ft^3/min
Intake Manifold Pressure	203	kPa	29.4	psi
Manifold Air Temperature	51	°C	124	°F
Maximum Manifold Air Temperature	87	°C	189	°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	0.173	m^2	268	in^2

Performance Data

Prime Power	334	kW	447	hp
10% Overload Power	367	kW	492	hp
Rated Speed		1500	RPM	
Low Idle Speed		1000	RPM	
Prime Torque	2124	Nm	1567	lb-ft
BMEP, Prime	1977	kPa	287	psi
Rated Pferdestärke, Prime (metric hp)		454	ps	
Front Drive Capacity, Intermittent	542	Nm	400	lb-ft
Front Drive Capacity, Continuous	542	Nm	400	lb-ft
Software and Label Convertible to 50 Hz?		YES		
Friction Power @ Rated Speed	28.9	kW	38.7	hp

Exhaust System

Exhaust Flow	64	m^3/min	2260	ft^3/min
Exhaust Flow @ gas STP	26.9	m^3/min	950	ft^3/min
Exhaust Temperature	440	°C	824	°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	127.0	mm	5.0	in
Min. Exhaust Pipe Diameter, Wet	139.7	mm	139.7	in

+ Exhaust system restriction should be limited to 7.5 kPa. When an exhaust aftertreatment system is installed, the maximum design restriction is 15 kPa. Restriction over 7.5 kPa will result in diminished performance. Restriction over 15 kPa may cause engine damage

Performance Curve: 6135SFM85_G

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Engine Performance Data Table

Engine Power	Crank Power		Crank Torque		Fuel Consumption		BSFC
	kW	hp	Nm	lb-ft	L/hr	gal/hr	g/kW-hr
25%	83	112	531	392	22.6	6.0	230
50%	167	224	1062	783	41.6	11.0	212
75%	250	336	1593	1175	61.1	16.1	208
100%	334	447	2124	1566	78.7	20.8	201
110%	367	492	2336	1723	86.4	22.8	200

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