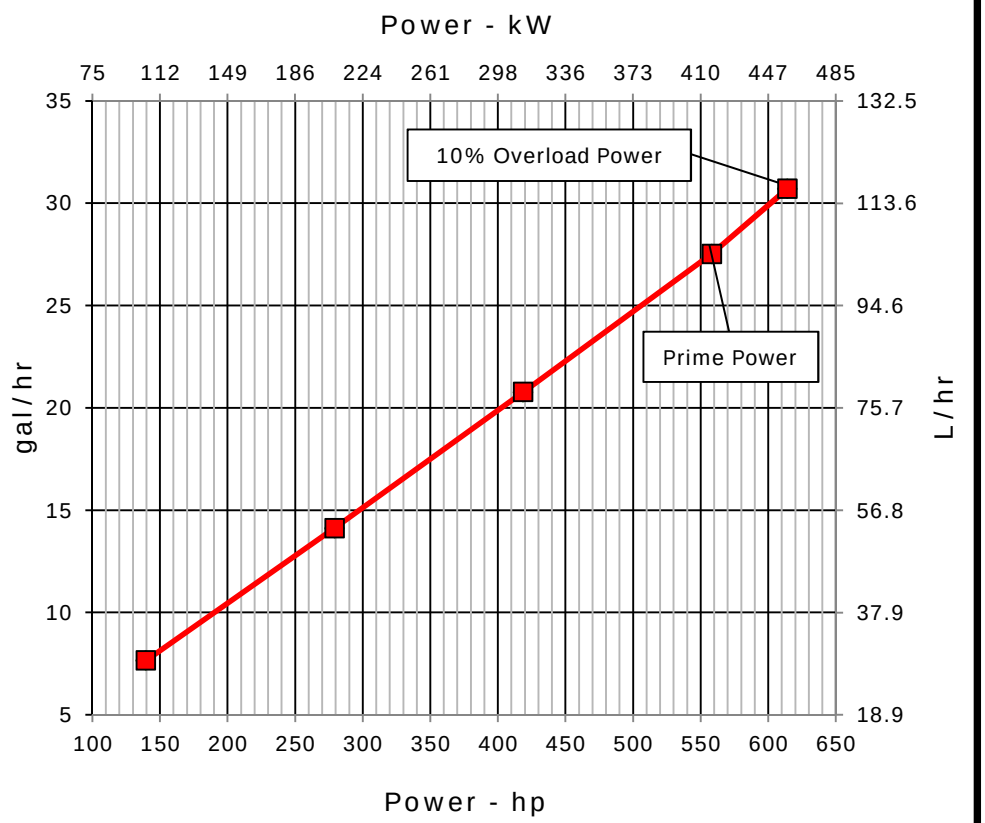
ENGINE PERFORMANCE CURVE

Rating: 60 Hz - 558hp (416kW) @ 1800 RPM
Application: Marine

PowerTech™ 13.5L Engine
Model: 6135SFM85

Generator Efficiency (%)	Power Factor	Calculated Gen-Set Rating kW	Calculated Gen-Set Rating kVA	Prime Power hp (kW)	10% Overload Power hp (kW)
88-92	0.8	366-383	457-479	558 (416)	614 (458)



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 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:

Constant Speed Auxiliary – 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 percent overload capability, and conforms to ISO 8528 prime power. Average load over a 24-hour period shall not exceed 67 percent of the prime rating, of which no more than two hours are between 100 percent and 110 percent of the prime rating.

Possible applications: This rating is use 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:
• EPA Commercial Marine Tier 3 • IMO MARPOL Annex VI Compliant	Adam Paull
Ref: Engine Emission Label	12-Mar-14

Performance Curve: 6135SFM85_F

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*

Total Engine to Seawater Heat Rejection**	275.8	kW	15698	BTU/min
Aftercooler Heat Rejection	132	kW	7513	BTU/min
Coolant Flow	238	L/min	63	gal/min
Thermostat Start to Open	82	°C	180	°F
Thermostat Fully Open	92	°C	197	°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	212-230	°F
Absolute Max Top Tank Temperature	105	°C	221	°F
Recommended Fuel Cooler	12	kW	702	BTU/min
Engine Radiated Heat	52	kW	2976	BTU/min

Physical Data

Length to rear face of block	1337	mm	52.6	in
Length maximum	1725	mm	67.9	in
Width maximum	975	mm	38.4	in
Height, crank centerline to top	780	mm	30.7	in
Height, crank centerline to bottom	363	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 with 5-G Load	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
Recommended Starter Cable, 12V 100"	#000	
Recommended Starter Cable, 24V 100"	#1	
Recommended Starter Cable, 12V 200"	2#000	
Recommended Starter Cable, 24V 200"	#000	
Electrical Component Maximum Temperature Limit	125 °C	257 °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_F

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Engine Installation Criteria

Fuel System

ECU Description			L15	
Fuel Injection Pump			EUI	
Governor Type			Electronic	
Volumetric Fuel Consumption, Prime	104	L/hr	27.5	gal/hr
Mass Fuel Consumption, Prime	88.5	kg/hr	195	lb/hr
Total Fuel Volumetric Flow	270	L/hr	71.3	gal/hr
Total Fuel Mass Flow	230	kg/hr	506	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	8.85	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 1800 RPM**	280	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	389	L/min	103	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 1932 option

Air Intake System

Engine Air Flow	38.0	m^3/min	1342	ft^3/min
Intake Manifold Pressure	263	kPa	38.1	psi
Manifold Air Temperature	58	°C	136	°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	0.234	m^2	362	in^2

Performance Data

Prime Power	416	kW	558	hp
10% Overload Power	458	kW	614	hp
Rated Speed		1800	RPM	
Low Idle Speed		1000	RPM	
Prime Torque	2209	Nm	1629	lb-ft
BMEP, Prime	2056	kPa	298	psi
Rated Pferdestärke, Prime (metric hp)		566	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		

Exhaust System

Exhaust Flow	83	m^3/min	2931	ft^3/min
Exhaust Flow @ gas STP	36.1	m^3/min	1275	ft^3/min
Exhaust Temperature	411	°C	771.8	°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	139.7	mm	5.5	in
Min. Exhaust Pipe Diameter, Wet	152.4	mm	6.0	in

Performance Curve: 6135SFM85_F

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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%	104	140	552	407	29.0	7.7	237
50%	208	279	1104	814	53.4	14.1	218
75%	312	419	1656	1221	78.6	20.8	214
100%	416	558	2208	1629	104.2	27.5	213
110%	458	614	2429	1792	116.2	30.7	216

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