

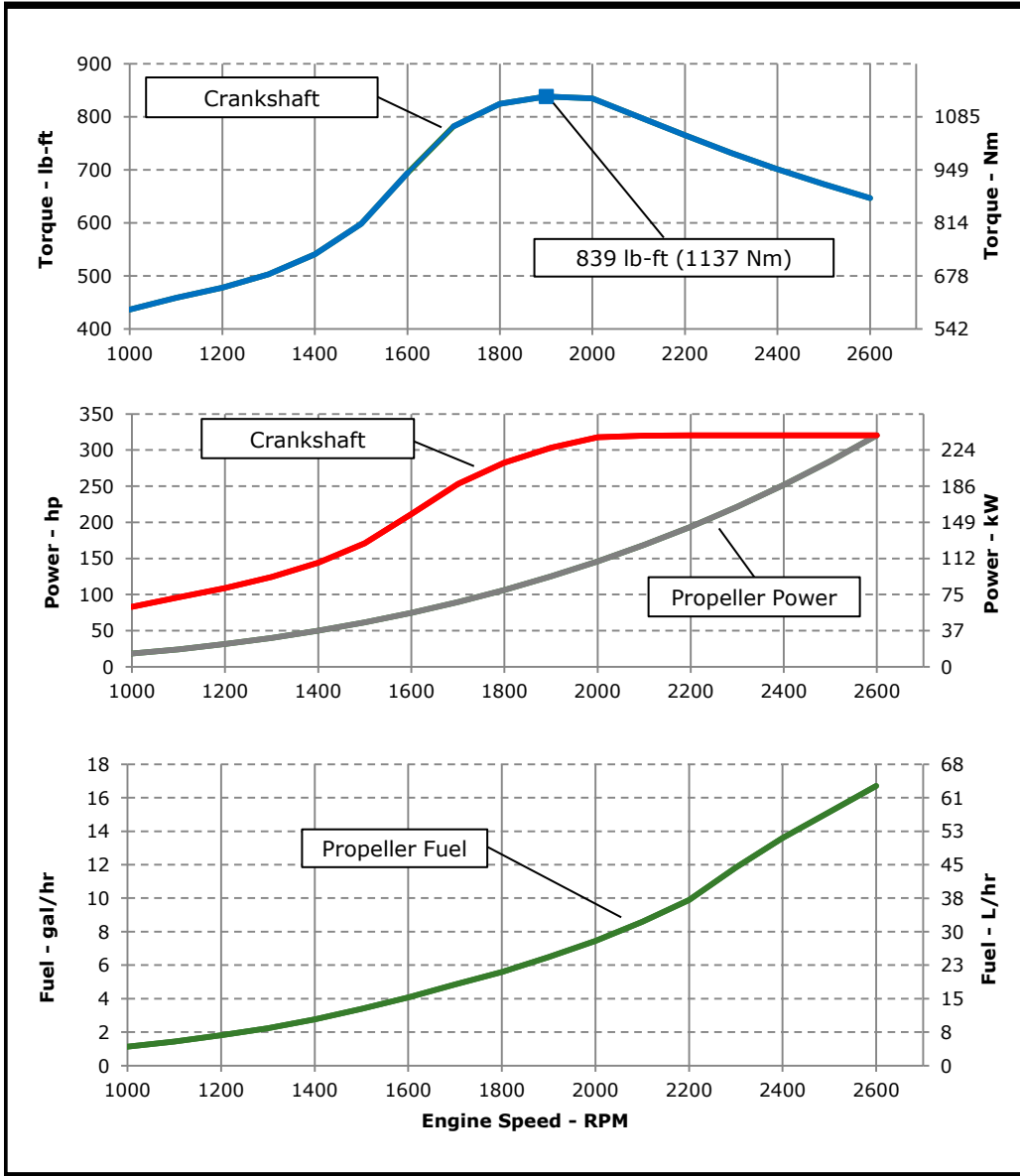


JOHN DEERE

ENGINE PERFORMANCE CURVE

Rating: **M3 - 321 HP (239 kW) @ 2600 rpm**
 Application: **Marine**

PowerTech™ 6.8L Engine
Model: 6068SFM85



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 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:

M3: The M3 rating is for marine propulsion applications that operate up to 2,000 hours per year and have load factors up to 50%. 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 must be at cruising speeds.

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"> EPA Commercial Marine Tier 3 IMO MARPOL Annex VI Compliant NRMM (97/68/EC), as amended Ref: Engine Emission Label | 15-Aug-12 |
| Performance Curve: 6068SFM85_C | |

Engine Installation Criteria

General Data

| | | | |
|-------------------------------------|------------------------------|------|-----------------|
| Model | 6068SFM85 | | |
| Number of Cylinders | 6 | | |
| Bore | 106 mm | 4.17 | in |
| Stroke | 127 mm | 5.00 | in |
| Displacement | 6.8 L | 415 | in ³ |
| Compression Ratio | 16.3:1 | | |
| 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** | 181.95 kW | 10357 BTU/min |
| Aftercooler Heat Rejection | 49.44 kW | 2814 BTU/min |
| Coolant Flow | 251 L/min | 66 gal/min |
| Thermostat Start to Open | 82 °C | 180 °F |
| Thermostat Fully Open | 95 °C | 203 °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 | 100-110 °C | 212-230 °F |
| Absolute Max Top Tank Temperature | 110 °C | 230 °F |
| Recommended Fuel Cooler | 10 kW | 545 BTU/min |
| Engine Radiated Heat | 32 kW | 1807 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 | 1027 mm | 40.4 in |
| Length maximum | 1317 mm | 51.9 in |
| Width maximum | 872 mm | 34.3 in |
| Height, crank centerline to top | 645 mm | 25.4 in |
| Height, crank centerline to bottom | 293 mm | 293 in |
| Weight, with oil, no coolant (includes engine, flywheel housing, flywheel, and electronics) | 0 kg | 0 lb |
| Center of Gravity Location, X-axis From Rear Face of Block | 0 mm | 0.0 in |
| Center of Gravity Location, Y-axis Right of Crankshaft | 0 mm | 0.0 in |
| Center of Gravity Location, Z-axis Above Crankshaft | 0 mm | 0.0 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 | 2.2 kN | 495 lbf |
| Thrust Bearing Load Limit, Forward Intermittent | 4 kN | 899 lbf |
| Thrust Bearing Load Limit, Rearward Continuous | 1 kN | 225 lbf |
| Thrust Bearing Load Limit, Rearward Intermittent | 2 kN | 450 lbf |

Electrical System

| | |
|--|----------------|
| Min. Recommended Battery Capacity, 12V @32 °F (0 °C) | 925 amps |
| Min. Recommended Battery Capacity, 24V @32 °F (0 °C) | 625 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" | #00 |
| Recommended Starter Cable, 24V 100" | #2 |
| Recommended Starter Cable, 12V 200" | #0000 or 2 #00 |
| Recommended Starter Cable, 24V 200" | #0 |
| Electrical Component Maximum Temperature Limit | 125 °C 257 °F |

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Engine Installation Criteria

Fuel System

| | | | | |
|---|------------|-------|------|--------|
| ECU Description | L14 | | | |
| Fuel Injection Pump | HPCR | | | |
| Governor Type | Electronic | | | |
| Volumetric Fuel Consumption | 63.2 | L/hr | 16.7 | gal/hr |
| Mass Fuel Consumption | 53.8 | kg/hr | 119 | lb/hr |
| Total Fuel Volumetric Flow | 192 | L/hr | 50.7 | gal/hr |
| Total Fuel Mass Flow | 163 | kg/hr | 360 | 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 | 7.46 | mm | 0.29 | 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 | 415 | kPa | 60 | psi |
| Oil Pressure at Low Idle (800rpm)** | 180 | kPa | 26 | 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*** | 25 deg | | | |
| Engine Angularity Limits Any Direction, Intermittent*** | 35 deg | | | |

Seawater Pump System

| | | | | |
|------------------------|-----|-------|-----|---------|
| Seawater Pump Flow | 242 | L/min | 64 | 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 19BP option

Air Intake System

| | | | | |
|--|-------|---------------------|-------|----------------------|
| Engine Air Flow | 19 | m ³ /min | 671.0 | ft ³ /min |
| Intake Manifold Pressure | 247 | kPa | 35.8 | psi |
| Manifold Air Temperature | 35 | °C | 95 | °F |
| Maximum Manifold Air Temperature | 67 | °C | 153 | °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.H2O |
| Max. Air Intake Restriction, Dirty Air Cleaner | 6.25 | kPa | 25 | in.H2O |
| Min. Ventilation Area | 0.117 | m ² | 181 | in ² |

Performance Data

| | | | | |
|------------------------------------|----------|-----|-----|-------|
| Rated Power | 239 | kW | 320 | hp |
| Rated Speed | 2600 RPM | | | |
| Peak Torque Speed | 1900 RPM | | | |
| Low Idle Speed | 600 RPM | | | |
| Rated Torque | 876 | Nm | 646 | ft-lb |
| Peak Torque | 1137 | Nm | 839 | ft-lb |
| BMEP, Rated | 1619 | kPa | 235 | psi |
| Rated Pferdestärke (metric hp) | 324 ps | | | |
| Front Drive Capacity, Intermittent | 907 | Nm | 669 | lb-ft |
| Front Drive Capacity, Continuous | 907 | Nm | 669 | lb-ft |

Exhaust System

| | | | | |
|--|-------|---------------------|------|----------------------|
| Exhaust Flow | 46.36 | m ³ /min | 1637 | ft ³ /min |
| Exhaust Flow @ gas STP | 19.97 | m ³ /min | 705 | ft ³ /min |
| Exhaust Temperature | 439 | °C | 822 | °F |
| Max. Allowable Exhaust Restriction | 7.5 | kPa | 30 | in.H2O |
| 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 | mm | 5.0 | in |
| Min. Exhaust Pipe Diameter, Wet | 139.7 | mm | 5.5 | in |

Performance Curve: 6068SFM85_C

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

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 |
| 2600 | 239 | 320 | 877 | 647 | 239 | 320 | 63 | 17 | 225 |
| 2500 | 239 | 320 | 913 | 673 | 212 | 285 | 57 | 15 | 230 |
| 2400 | 239 | 320 | 951 | 701 | 188 | 252 | 51 | 14 | 233 |
| 2300 | 239 | 321 | 992 | 732 | 165 | 222 | 45 | 12 | 230 |
| 2200 | 239 | 321 | 1038 | 765 | 145 | 194 | 37 | 10 | 220 |
| 2100 | 239 | 320 | 1085 | 800 | 126 | 169 | 32 | 9 | 219 |
| 2000 | 237 | 318 | 1132 | 835 | 109 | 146 | 28 | 7 | 220 |
| 1900 | 226 | 303 | 1137 | 839 | 93 | 125 | 25 | 6 | 224 |
| 1800 | 211 | 283 | 1118 | 825 | 79 | 106 | 21 | 6 | 227 |
| 1700 | 189 | 253 | 1060 | 782 | 67 | 90 | 18 | 5 | 234 |
| 1600 | 158 | 211 | 941 | 694 | 56 | 75 | 15 | 4 | 236 |
| 1500 | 127 | 171 | 811 | 598 | 46 | 61 | 13 | 3 | 237 |
| 1400 | 107 | 144 | 733 | 541 | 37 | 50 | 10 | 3 | 239 |
| 1300 | 93 | 124 | 682 | 503 | 30 | 40 | 8 | 2 | 240 |
| 1200 | 81 | 109 | 647 | 477 | 23 | 31 | 7 | 2 | 250 |
| 1100 | 72 | 96 | 622 | 459 | 18 | 24 | 5 | 1 | 257 |
| 1000 | 62 | 83 | 592 | 437 | 14 | 18 | 4 | 1 | 266 |

* Theoretical 3.0 exponent propeller curve , measured at flywheel

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