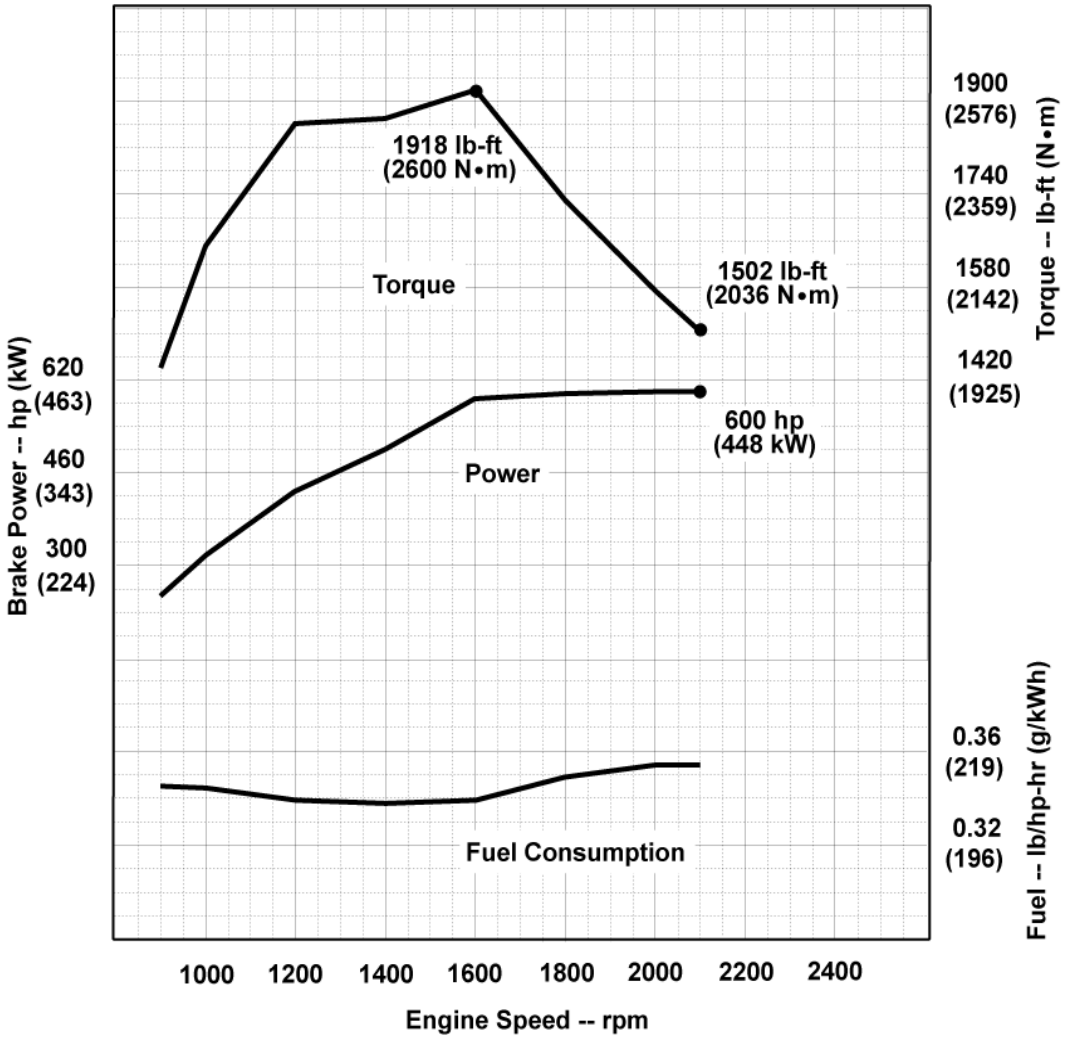
# ENGINE PERFORMANCE CURVE

Rating: Gross Power
Application: Intermittent
EPA Marine Tier 3
Power Bulge - 0%
Torque Rise - 28%

**PowerTech™ Plus 13.5L Engine**
**Model: 6135HF485**
JD Electronic Control
600 hp @ 2100 rpm
448 kW @ 2100 rpm




STANDARD CONDITIONS

Air Intake Restriction.....12 in.$H_2O$ (3 kPa)
Exhaust Back Pressure.....30 in.$H_2O$ (7.5 kPa)

Gross power guaranteed within + or - 5% at SAE J1995 and ISO 3046 conditions:
- 77 °F (25 °C) air inlet temperature
- 29.31 in.Hg (99 kPa) barometer
- 104 °F (40 °C) fuel inlet temperature
- 0.853 fuel specific gravity @ 60 °F (15.5 °C)

Conversion factors:
- Power: kW = hp x 0.746
- Fuel: 1 L = 0.85kg , 1 gal = 7.1 lb
- Torque: N·m = lb-ft x 1.356

All values are from currently available data and are subje ct to change without notice.

Notes: Industrial Based Auxiliary - The Marine Emissions Labeled Industrial Engine ratings are for applications that require variable speed and load operation and do not run on a propeller curve. Additionally, these engines are for applications that do not require marinized components (such as wet manifold\turbocharger, blue hose, etc.) or marine classification society approval. See John Deere Industrial Diesel Engine Documentation and Application Guidelines for further information. Possible applications: Barge pumps, deck winches, hydraulic power units.

| Designed/Calibrated to meet: | Certified by: |
|---|---|
| • US EPA Marine Tier 3 Compliant<br><br>Ref: Engine Emission Label | 02/10/16 |

Performance Curve: 6135HF485_W

# Engine Installation Criteria

## General Data

| | | | | |
|---|---|---|---|---|
| Model | | | 6135HF485 | |
| Number of Cylinders | | | 6 | |
| Bore | 132 | mm | 5.2 | in. |
| Stroke | 165 | mm | 6.5 | in. |
| Displacement | 13.5 | L | 824 | $in.^3$ |
| Compression Ratio | | | 16.0:1 | |
| Valves per Cylinder, Intake/Exhaust | | | 2/2 | |
| Firing Order | | | 1-5-3-6-2-4 | |
| Combustion System | | | Unit Injection | |
| Engine Type | | | In-line, 4-Cycle | |
| Aspiration | | | Turbocharged and air-to-air aftercooled | |
| Charge Air Cooling System | | | Air-to-Air | |
| Engine Crankcase Vent System | | | Open | |

## Physical Data

| | | | | |
|---|---|---|---|---|
| Length | 1334 | mm | 52.5 | in. |
| Width | 855 | mm | 33.7 | in. |
| Height | 1512 | mm | 59.5 | in. |
| Weight, with oil &no coolant (Includes engine, flywheel housing, flywheel &electrics) | 1493 | kg | 3291 | lb |
| Center of Gravity Location, X-axis From Rear Face of Block | 507 | mm | 20.0 | in. |
| Center of Gravity Location, Y-axis Right of Crankshaft | 2 | mm | 0.1 | in. |
| Center of Gravity Location, Z-axis Above Crankshaft | 206 | mm | 8.1 | in. |
| Max. Allowable Static Bending Moment At Rear Face of Flywheel Housing with 5-G Load | 814 | N·m | 600 | lb-ft |
| Thrust Bearing Load Limit Forward, Intermittent | 8100 | N | 1821 | lb |
| Thrust Bearing Load Limit Forward, Continuous | 5400 | N | 1214 | lb |
| Thrust Bearing Load Limit Rearward, Intermittent | 4000 | N | 899 | lb |
| Thrust Bearing Load Limit Rearward, Continuous | 2500 | N | 562 | lb |
| Max. Continuous Damper Temp | 82 | °C | 180 | °F |
| Max. Torsional Vibration, Front of Crank | | | 0.25 | DDA |

## Electrical System

| | | | | |
|---|---|---|---|---|
| Recommended Battery Capacity, 12V @32 °F (0 °C) | | | 1900 | amps |
| 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 |
| Starter Rolling Current, 12V @-22 °F (-30 °C) | | | 1300 | amps |
| Starter Rolling Current, 24V @-22 °F (-30 °C) | | | 700 | amps |
| Min. Voltage at ECU during Cranking, 12V | | | 6 | volts |
| Min. Voltage at ECU during Cranking, 24V | | | 10 | volts |
| Max. Allowable Start Circuit Resistance, 24V | | | 0.002 | Ohm |
| Max. Allowable Start Circuit Resistance, 12V | | | 0.0012 | Ohm |
| Max. ECU Temperature | 105 | °C | 221 | °F |
| Max. VTG Actuator Surface Temp | 180 | °C | 356 | °F |

## Charge Air Cooling System

| | | | | |
|---|---|---|---|---|
| Air-to-Air Heat Rejection | 106 | kW | 6033 | BTU/min |
| Intake Manifold Pressure | 235 | kPa | 34.1 | psi |
| Compressor Discharge Temperature @77°F(25°C) Ambient Air | 214 | °C | 417 | °F |
| Compressor Discharge Temperature @117°F(47°C) 80 kPa Barametric pressure | 254 | °C | 489 | °F |
| Intake Manifold Temperature at which Power De-rate Occurs | 88 | °C | 190 | °F |
| Max. Pressure Drop through CAC | 16 | kPa | 64.0 | in. $H_2O$ |
| Min. Pressure Drop through CAC | 8 | kPa | 32.0 | in. $H_2O$ |
| Max. Temperature Out of Charge Air Cooler @77°F (25°C) Ambient Air | 52 | °C | 126 | °F |
| Min. Temperature Out of Charge Air Cooler @77°F (25°C) Ambient Air | 48.5 | °C | 119 | °F |

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# Engine Installation Criteria

## Cooling System

| | | | | |
|---|---|---|---|---|
| Max. Water Pump Inlet Restriction | -30 | kPa | -4.4 | psi |
| Engine Heat Rejection | 229 | kW | 13035 | BTU/min |
| Coolant Flow | 552 | L/min | 146 | gal/min |
| Thermostat Start to Open | 82 | °C | 180 | °F |
| Thermostat Fully Open | 92 | °C | 198 | °F |
| Engine Coolant Capacity | 18 | Liter | 19.0 | quart |
| Min. Pressure Cap | 100 | kPa | 15 | psi |
| Min. Pump Inlet Pressure | 30 | kPa | 4.4 | psi |
| Max. Top Tank Temperature | 105 | °C | 221 | °F |
| Min. Limiting Ambient Temperature | 47 | °C | 117 | °F |
| Min. Coolant Fill Rate | 12 | L/min | 3.2 | gal/min |

## Exhaust System

| | | | | |
|---|---|---|---|---|
| Exhaust Flow | 81 | m³/min | 2860 | ft.³/min |
| Exhaust Temperature | 496 | °C | 925 | °F |
| Max. Allowable Exhaust Restriction | 10 | kPa | 40 | in. $H_2O$ |
| Min. Allowable Exhaust Restriction | 4 | kPa | 16 | in. $H_2O$ |
| Max. Bending Moment on Turbo Outlet | 7 | N·m | 5.2 | lb-ft |
| Max. Shear on Turbine Outlet | 11 | kg | 24 | lb |

## Fuel System

| | | | | |
|---|---|---|---|---|
| ECU Description | L15 Controller | | | |
| Fuel Injection Pump | Unit Injection | | | |
| Total Fuel Flow | 170 | kg/hr | 375 | lb/hr |
| Fuel Consumption | 97 | kg/hr | 213.8 | lb/hr |
| Fuel Temperature Rise, Inlet to Return | 62 | Δ°C | 112 | Δ°F |
| Max. Fuel Inlet Restriction | 10 | kPa | 40 | in. $H_2O$ |
| Max. Fuel Inlet Pressure | 24 | kPa | 96 | in. $H_2O$ |
| Max. Fuel Return Pressure | 35 | kPa | 140 | in. $H_2O$ |
| Max. Fuel Inlet Temperature | 100 | °C | 212 | °F |

## Lubrication System

| | | | | |
|---|---|---|---|---|
| Oil Pressure at Rated Speed | 310 | kPa | 45 | psi |
| Oil Pressure at Low Idle | 138 | kPa | 20 | psi |
| Max. Oil Carryover in Blow-By | 3 | g/hr | 0.007 | lb/hr |
| Max. Airflow in Blow-By | 300 | L/min | 79.3 | gal/min |
| Max. Crankcase Pressure | 0.5 | kPa | 2 | in. $H_2O$ |

## Air Intake System

| | | | | |
|---|---|---|---|---|
| Engine Air Flow | 33 | m³/min | 1165 | ft.³/min |
| Maximum Allowable Temperature Rise, Ambient Air to Engine Inlet | 8 | Δ°C | 15 | Δ°F |
| Max. Air Intake Restriction, Clean Air Cleaner | 3.75 | kPa | 15.0 | in. $H_2O$ |
| Max. Air Intake Restriction, Dirty Air Cleaner | 6.25 | kPa | 25.0 | in. $H_2O$ |
| Air Cleaner Efficiency | | | 99.9 | % |

## Performance Data

| | | | | |
|---|---|---|---|---|
| Rated Power | 448 | kW | 600 | HP |
| Rated Speed | | | 2100 | rpm |
| Max. Fast Idle Speed | | | 2300 | rpm |
| Breakaway Speed | | | 2150 | rpm |
| Power Bulge Speed | | | NA | |
| Peak Torque Speed | | | 1600 | rpm |
| Low Idle Speed | | | 900 | rpm |
| Rated Torque | 2036 | N·m | 1502 | lb-ft |
| Peak Torque | 2600 | N·m | 1918 | lb-ft |
| Torque Rise | | | 28 | % |
| BMEP, Rated | 25629.2 | kPa | 3717 | psi |
| BMEP, Peak Torque | 1895 | kPa | 275 | psi |
| Altitude Capability | 1067 | m | 3500 | ft |
| Friction Power @Rated Speed | 58 | kW | 78 | HP |
| Air:Fuel Ratio | | | 23:1 | |
| Smoke @Rated Speed | | | 0.28 | Bosch No. |
| Noise @1 m | | | 101 | dB(A) |
| Power Bulge | | | 0 | % |

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# Engine Installation Criteria

| Engine Speed | Power | | Torque | | BSFC | |
|---|---|---|---|---|---|---|
| rpm | kW | hp | N·M | lb-ft | g/kWh | lb/hp-hr |
| 2100 | 448 | 601 | 2036 | 1502 | 216 | 0.354 |
| 2000 | 448 | 601 | 2139 | 1578 | 216 | 0.354 |
| 1800 | 443 | 594 | 2350 | 1733 | 213 | 0.349 |
| 1600 | 436 | 585 | 2600 | 1918 | 207 | 0.339 |
| 1400 | 372 | 499 | 2534 | 1869 | 206 | 0.338 |
| 1200 | 317 | 425 | 2522 | 1860 | 207 | 0.339 |
| 1000 | 235 | 315 | 2240 | 1652 | 209 | 0.343 |
| 900 | 184 | 247 | 1952 | 1440 | 210 | 0.344 |

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