



**JOHN DEERE**

**ENGINE PERFORMANCE CURVE**

Rating: Gross Power  
 Application: Intermittent  
 FT4 (SIV)  
 Power Bulge - 3%  
 Torque Rise - 35%

**PowerTech™ PSS 13.5L Engine  
 Model: 6135HFC09**

600 hp @ 2100 rpm  
 448 kW @ 2100 rpm

STANDARD CONDITIONS

Air Intake Restriction.....12 in.H2O (3 kPa)  
 Exhaust Back Pressure.....30 in.H2O (7.5 kPa)

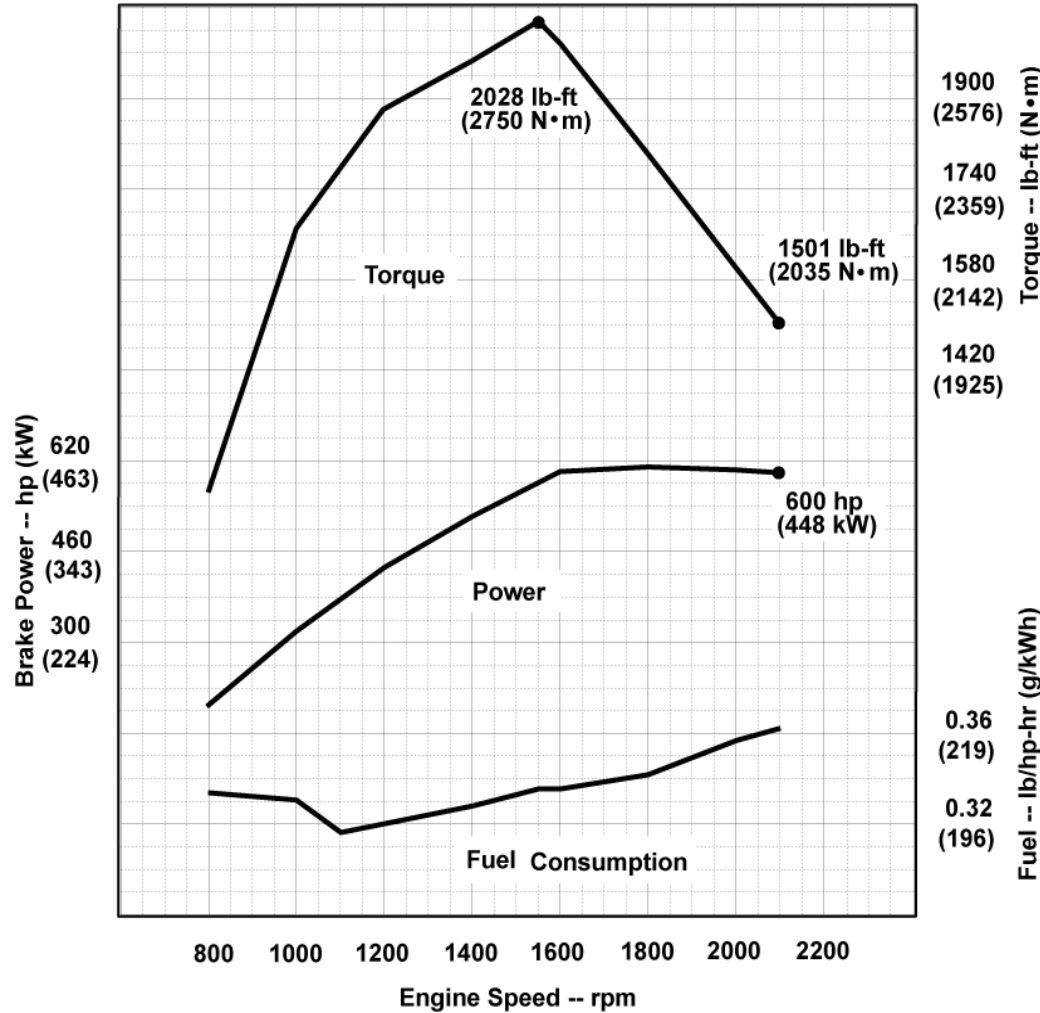
Gross power guaranteed within + or - 5%  
 at SAEJ1995 and ISO 3046 conditions:

Air Inlet Temperature = 77 °F (25 °C)  
 Barometer = 29.31 in.Hg (99 kPa)  
 Fuel Inlet Temperature = 104 °F (40 °C)  
 Fuel Specific Gravity @ 60 °F (15.5 °C) = 0.853

CONVERSION FACTORS:

Power: kW = HP x 0.746  
 Fuel: 1 Gal = 7.1 lb, 1 L = 0.85kg  
 Torque: N·m = lb-ft x 1.356

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



Notes: This Performance Curve provides installation requirements necessary for the engine to emit at its certified emission levels. For additional information necessary to meet applicable regulatory requirements, refer to the John Deere Emissions-related Installation Instructions (AG01): <https://power.deere.com/wps/myportal/jdps/products/engines/apguidelines>.

Designed/Calibrated to meet:	Certified by:
<ul style="list-style-type: none"> <li>• CARB</li> <li>• EPA Tier 4</li> <li>• EU Stage IV</li> </ul>	 11 March 2016
Ref: Engine Emission Label	

Performance Curve: 6135HFC09\_-A

## Engine Installation Criteria

### General Data

Model	6135HFC09	
Number of Cylinders	6	
Bore	132 mm	5.2 in.
Stroke	165 mm	6.5 in.
Displacement	13.5 L	824 in. <sup>3</sup>
Compression Ratio	15.3 : 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	
Engine Crankcase Vent System	Open	

### Physical Data

Length	1501 mm	59.1 in.
Width	955 mm	37.6 in.
Height	1551 mm	61.1 in.
Center of Gravity Location, X-axis From Rear Face of Block	501.7 mm	19.8 in.
Center of Gravity Location, Y-axis Right of Crankshaft	0 mm	0 in.
Center of Gravity Location, Z-axis Above Crankshaft	304.8 mm	12.0 in.
Max. Bending Moment about Main Bearings Front and Rear	620 N-m	457 lb-ft
Max. Allowable Static Bending Moment At Rear Face of Flywheel Housing with 5-G Load	620 N-m	457 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
Weight, with oil & no coolant (Includes engine, flywheel housing, flywheel & electrics)	1500 kg	3307 lb
Max. Continuous Damper Temp	110 °C	230 °F
Max. ECU Vibration, All Axis	6.00 gRMS	
Max. Torsional Vibration, Front of Crank	0.25 DDA	
Max. Engine Torsional Vibration in Overspeed	0.40 DDA	

### Electrical System

Min. Instantaneous Cranking	50 rpm	
Min. Steady State Cranking	120 rpm	
Starter Rolling Current, 12V @32 °F (0 °C)	700 amps	
Starter Rolling Current, 24V @32 °F (0 °C)	400 amps	
Starter Rolling Current, 12V @-22 °F (-30 °C)	1100 amps	
Starter Rolling Current, 24V @-22 °F (-30 °C)	550 amps	
Min. Voltage at ECU during Cranking, 12V	6 volts	
Min. Voltage at ECU during Cranking, 24V	10 volts	
Max. Voltage Drop, Battery to Starter	0.8 volts	
Max. Allowable Start Circuit Resistance, 12V	0.0012 Ohm	
Max. Allowable Start Circuit Resistance, 24V	0.002 Ohm	
Max. ECU Temperature	105 °C	221 °F
Max. VTG Actuator Surface Temp	130 °C	266 °F
Max. Air Throttle Electrical Actuator Temperature	130 °C	266 °F
Max. Harness Temperature	125 °C	257 °F
Max. Alternator Temperature	105 °C	221 °F
Max. Starter Temperature	120 °C	248 °F
Max. Temperature, All Other Electronics	125 °C	257 °F

### Charge Air Cooling System

Air-to-Air Heat Rejection	129 kW	7343 BTU/min
Compressor Discharge Temperature @77°F(25°C) Ambient Air	232 °C	450 °F
Intake Manifold Pressure	301 kPa	43.7 psi
Compressor Discharge Temperature @117°F(47°C) 80 kPa Barometric pressure	272 °C	522 °F
Max. Temperature Out of Charge Air Cooler @All Ambient Conditions	88 °C	190 °F
Max. CAC System Volume	NA	
Max. Pressure Drop through CAC	16 kPa	64.0 in. H <sub>2</sub> O
Min. Pressure Drop through CAC	8 kPa	32.0 in. H <sub>2</sub> O
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	47 °C	117 °F
Max. Bending Moment on Compressor Outlet	6 N-m	4 lb-ft
Max. Shear on Compressor Outlet	4 kg	9 lb

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### Cooling System

Engine Heat Rejection	306 kW	17417 BTU/min
Coolant Flow @10 kPa External Restriction	915 L/min	242 gal/min
Coolant Flow @40 kPa External Restriction	875 L/min	231 gal/min
Max. Auxiliary Coolant Flow	60 L/min	16 gal/min
Thermostat Start to Open	85 °C	185 °F
Thermostat Fully Open	97 °C	207 °F
Engine Coolant Capacity	25 Liter	26.4 quart
Min. Coolant Fill Rate	12 L/min	3.2 gal/min
Max. Water Pump Inlet Pressure	235 kPa	34 psia
Min. Pump Inlet Pressure @203°F (95°C) Coolant	110 kPa	16 psia
Min. Pump Inlet Pressure @Max. Top Tank Temperature	147 kPa	21 psia
Max. External Coolant Restriction	85 kPa	12 psi
Max. Top Tank Temperature	108 °C	226 °F
Max. Top Tank Temperature 95% of Operating Hours	103 °C	217 °F

### Exhaust System

Exhaust Flow	57.3 m <sup>3</sup> /min	2024 ft. <sup>3</sup> /min
Exhaust Temperature	383 °C	721 °F
Max. Allowable Exhaust Restriction	39.3 kPa	157 in. H <sub>2</sub> O
Max. Bending Moment on Turbo Outlet	8.8 N-m	6.5 lb-ft
Max. Shear on Turbine Outlet	6 kg	13 lb
Exhaust Filter Size	7; Gen 1.5	
Exhaust Filter Pressure Drop (Clean)	31.8 kPa	127 in. H <sub>2</sub> O
Min. Mixing Length, Outlet to Exhaust Filter	500 mm	20 in.
Max. Bending Moment on Exhaust Filter Inlet	180 N-m	133 lb-ft
Max. Bending Moment on Exhaust Filter Outlet	180 N-m	133 lb-ft
Max. Exhaust Leakage Rate, Engine to Exhaust Filter @30kPa	5 L/min	1.3 gal/min
Max. Temperature Drop, Engine to Exhaust Filter	30 Δ°C	54 Δ°F

### Fuel System

ECU Description	L32 Controller	
Fuel Injection Pump	Delphi 3.6 EU1	
Governor Type	Electronic	
Total Fuel Flow	245 kg/hr	540 lb/hr
Fuel Consumption	98 kg/hr	216.1 lb/hr
Fuel Temperature Rise, Inlet to Return	54 Δ°C	97 Δ°F
Min. Fuel Inlet Pressure	-30 kPa	-120 in. H <sub>2</sub> O
Max. Fuel Inlet Pressure	20 kPa	80 in. H <sub>2</sub> O
Max. Fuel Return Pressure	35 kPa	140 in. H <sub>2</sub> O
Min. Fuel Return Pressure	0 kPa	0 in. H <sub>2</sub> O
Max. Fuel Inlet Temperature	65 °C	149 °F
Fuel Filter @98% Efficiency	2 mic	

### Lubrication System

Oil Pressure at Rated Speed	480 kPa	70 psi
Oil Pressure at Low Idle	300 kPa	44 psi
Max. In-Pan Oil Temperature	138 °C	280 °F
Max. Crankcase Pressure	2 kPa	8 in. H <sub>2</sub> O

### Air Intake System

Engine Air Flow	35 m <sup>3</sup> /min	1236 ft. <sup>3</sup> /min
Air Mass Flow	2398 kg/hr	5287 lb/hr
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 <sub>2</sub> O
Max. Air Intake Restriction, Dirty Air Cleaner	6.25 kPa	25.0 in. H <sub>2</sub> O
Air Cleaner Efficiency	99.9 %	

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### 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		1900 rpm
Peak Torque Speed		1550 rpm
Low Idle Speed		800 rpm
Rated Torque	2035 N-m	1501 lb-ft
Peak Torque	2750 N-m	2028 lb-ft
Torque Rise		35 %
BMEP, Rated	1896 kPa	275 psi
BMEP, Peak Torque	2560 kPa	371 psi
Altitude Capability	1981 m	6500 ft
Friction Power @Rated Speed	68 kW	91 HP
Air:Fuel Ratio		23.2 : 1
Noise @1 m		102.6 dB(A)
Power Bulge		3 %

### DEF Data

Load Factor	Engine Speed	DEF Consumption*		Percent of Diesel Consumption**
		%	RPM	
100	2100	5.9	0.0097	2.1
Peak Torque	1550	5.9	0.0097	2.3

\*DEF conversion factor: 1.087 kg/l (9.071 lb/gal)

\*\* Percent of diesel consumption by volume at 100% load and peak torque

Engine Speed	Power		Torque		BSFC	
	rpm	kW	hp	N-M	lb-ft	g/kWh
2100	448	601	2035	1501	220	0.361
2000	455	610	2174	1603	218	0.358
1900	460	617	2311	1705	214	0.351
1800	460	617	2439	1799	208	0.341
1700	460	617	2585	1907	204	0.335
1600	452	606	2700	1991	205	0.336
1550	446	598	2750	2028	205	0.336
1500	427	573	2720	2006	203	0.333
1400	391	524	2670	1969	200	0.328
1300	357	479	2625	1936	196	0.321
1200	320	429	2550	1881	195	0.320
1100	282	378	2450	1807	194	0.318
1000	237	318	2260	1667	201	0.330
900	187	251	1980	1460	200	0.328
800	137	184	1630	1202	203	0.333

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