

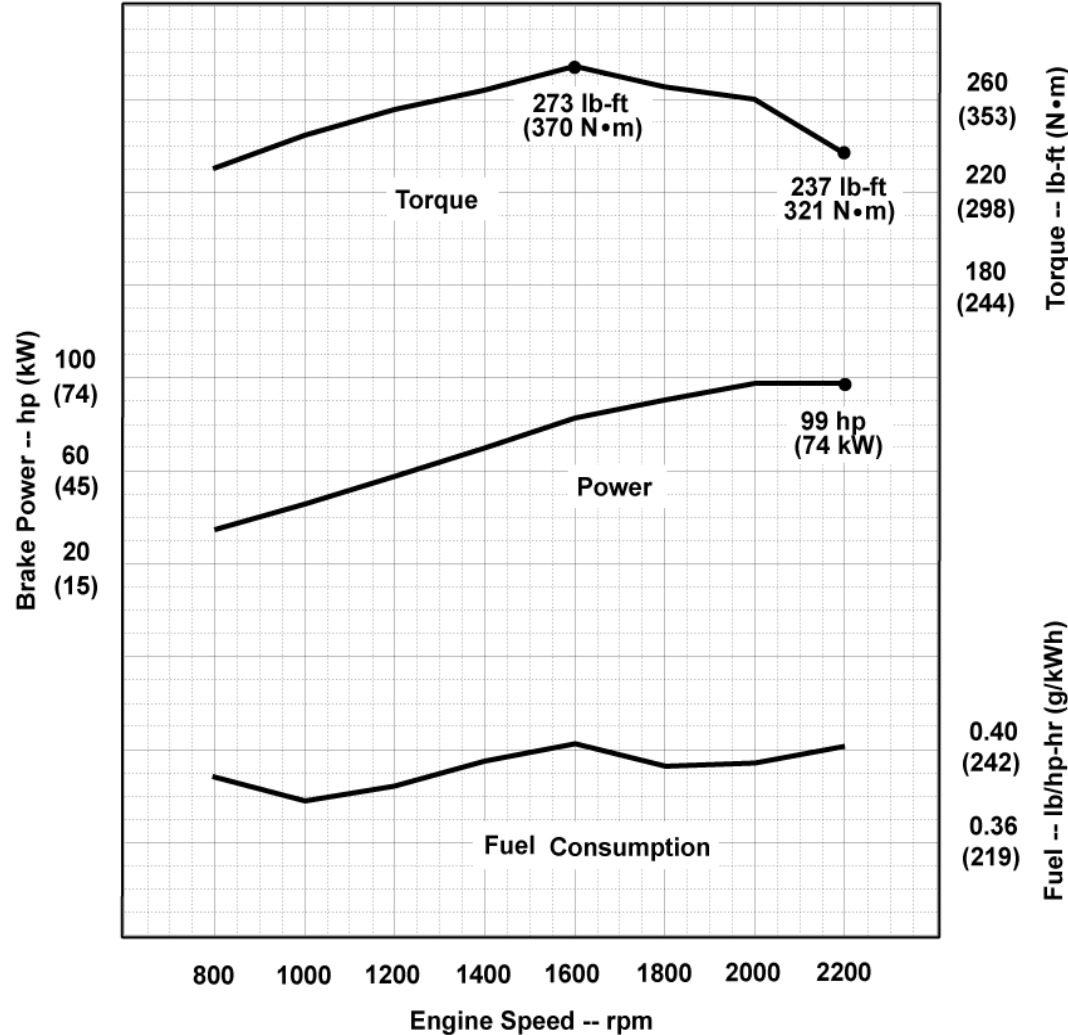


**JOHN DEERE**

**ENGINE PERFORMANCE CURVE**

Rating: Gross Power  
Application: Heavy Duty  
EPA Marine Tier 3  
Power Bulge - 0%  
Torque Rise - 15%

**PowerTech™ E 4.5L Engine**  
**Model: 4045TF285**  
JD Electronic Control  
99 hp @ 2200 rpm  
74 kW @ 2200 rpm



**STANDARD CONDITIONS**

Air Intake Restriction.....12 in.H<sub>2</sub>O (3 kPa)  
Exhaust Back Pressure.....30 in.H<sub>2</sub>O (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 subject 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

Ref: Engine Emission Label

*[Signature]*  
02/10/14

Performance Curve: 4045TF285\_H

## Engine Installation Criteria

### General Data

Model	4045TF285	
Number of Cylinders	4	
Bore	106 mm	4.2 in.
Stroke	127 mm	5.0 in.
Displacement	4.5 L	275 in. <sup>3</sup>
Compression Ratio	19.0:1	
Valves per Cylinder, Intake/Exhaust	1/1	
Firing Order	1-3-4-2	
Combustion System	Unit Injection	
Engine Type	In-line, 4-Cycle	
Aspiration	Turbocharged	
Charge Air Cooling System	None	
Engine Crankcase Vent System	Open	

### Physical Data

Length	867 mm	34.1 in.
Width	680 mm	26.8 in.
Height	1055 mm	41.5 in.
Weight, with oil & no coolant (Includes engine, flywheel housing, flywheel & electrics)	491 kg	1082 lb
Center of Gravity Location, X-axis From Rear Face of Block	249 mm	9.8 in.
Center of Gravity Location, Y-axis Right of Crankshaft	55 mm	2.2 in.
Center of Gravity Location, Z-axis Above Crankshaft	145 mm	5.7 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	4000 N	899 lb
Thrust Bearing Load Limit Forward, Continuous	2200 N	495 lb
Thrust Bearing Load Limit Rearward, Intermittent	2000 N	450 lb
Thrust Bearing Load Limit Rearward, Continuous	1000 N	225 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)	800 amps	
Recommended Battery Capacity, 24V @32 °F (0 °C)	570 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. Harness Temperature	120 °C	248 °F

### Cooling System

Engine Heat Rejection	54 kW	3074 BTU/min
Coolant Flow	222 L/min	59 gal/min
Thermostat Start to Open	82 °C	180 °F
Thermostat Fully Open	95 °C	203 °F
Engine Coolant Capacity	8.5 Liter	9.0 quart
Min. Pressure Cap	100 kPa	15 psi
Min. Pump Inlet Pressure	30 kPa	4.4 psi
Max. Top Tank Temperature	110 °C	230 °F
Min. Coolant Fill Rate	11 L/min	2.9 gal/min

### Exhaust System

Exhaust Flow	19 m <sup>3</sup> /min	671 ft. <sup>3</sup> /min
Exhaust Temperature	538 °C	1000 °F
Max. Allowable Exhaust Restriction	7.5 kPa	30 in. H <sub>2</sub> O
Min. Allowable Exhaust Restriction	0 kPa	0 in. H <sub>2</sub> O
Max. Bending Moment on Turbo Outlet	7 N-m	5.2 lb-ft
Max. Shear on Turbine Outlet	11 kg	24 lb

Performance Curve: 4045TF285\_H

## Engine Installation Criteria

### Fuel System

ECU Description	L16 Controller	
Fuel Injection Pump	Denso HP3	
Governor Type	Electronic	
Total Fuel Flow	45.0 kg/hr	99 lb/hr
Fuel Consumption	18.1 kg/hr	39.9 lb/hr
Fuel Temperature Rise, Inlet to Return	47 Δ°C	85 Δ°F
Max. Fuel Inlet Restriction	20 kPa	80 in. H <sub>2</sub> O
Max. Fuel Inlet Pressure	NA	
Max. Fuel Return Pressure	20 kPa	80 in. H <sub>2</sub> O
Max. Fuel Inlet Temperature	80 °C	176 °F

### Lubrication System

Oil Pressure at Rated Speed	400 kPa	58 psi
Oil Pressure at Low Idle	105 kPa	15 psi
Max. Oil Carryover in Blow-By	1.0 g/hr	0.002 lb/hr
Max. Airflow in Blow-By	100 L/min	26.4 gal/min
Max. Crankcase Pressure	0.5 kPa	2 in. H <sub>2</sub> O

### Air Intake System

Engine Air Flow	7.3 m <sup>3</sup> /min	258 ft. <sup>3</sup> /min
Intake Manifold Pressure	100 kPa	14.5 psi
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 %	

### Performance Data

Rated Power	74 kW	99 HP
Rated Speed	2200 rpm	
Max. Fast Idle Speed	2400 rpm	
Breakaway Speed	2270 rpm	
Power Bulge Speed	NA	
Peak Torque Speed	1600 rpm	
Low Idle Speed	800 rpm	
Rated Torque	321 N·m	237 lb-ft
Peak Torque	370 N·m	273 lb-ft
Torque Rise	15 %	
BMEP, Rated	896 kPa	130 psi
BMEP, Peak Torque	4657.6 kPa	676 psi
Altitude Capability	930 m	3050 ft
Friction Power @Rated Speed	13 kW	17 HP
Air:Fuel Ratio	27.1:1	
Smoke @Rated Speed	0.3 Bosch No.	
Noise @1 m	90.3 dB(A)	
Power Bulge	0 %	

Engine Speed	Power		Torque		BSFC	
	kW	hp	N-M	lb-ft	g/kWh	lb/hp-hr
2200	74	99	321	237	245	0.402
2000	74	99	353	260	240	0.394
1800	67	90	358	264	239	0.392
1600	62	83	370	273	245	0.402
1400	52	70	357	263	241	0.395
1200	44	59	348	257	234	0.384
1000	35	47	330	243	231	0.379
800	26	35	312	230	237	0.389

Performance Curve: 4045TF285\_H