

DETROIT DIESEL

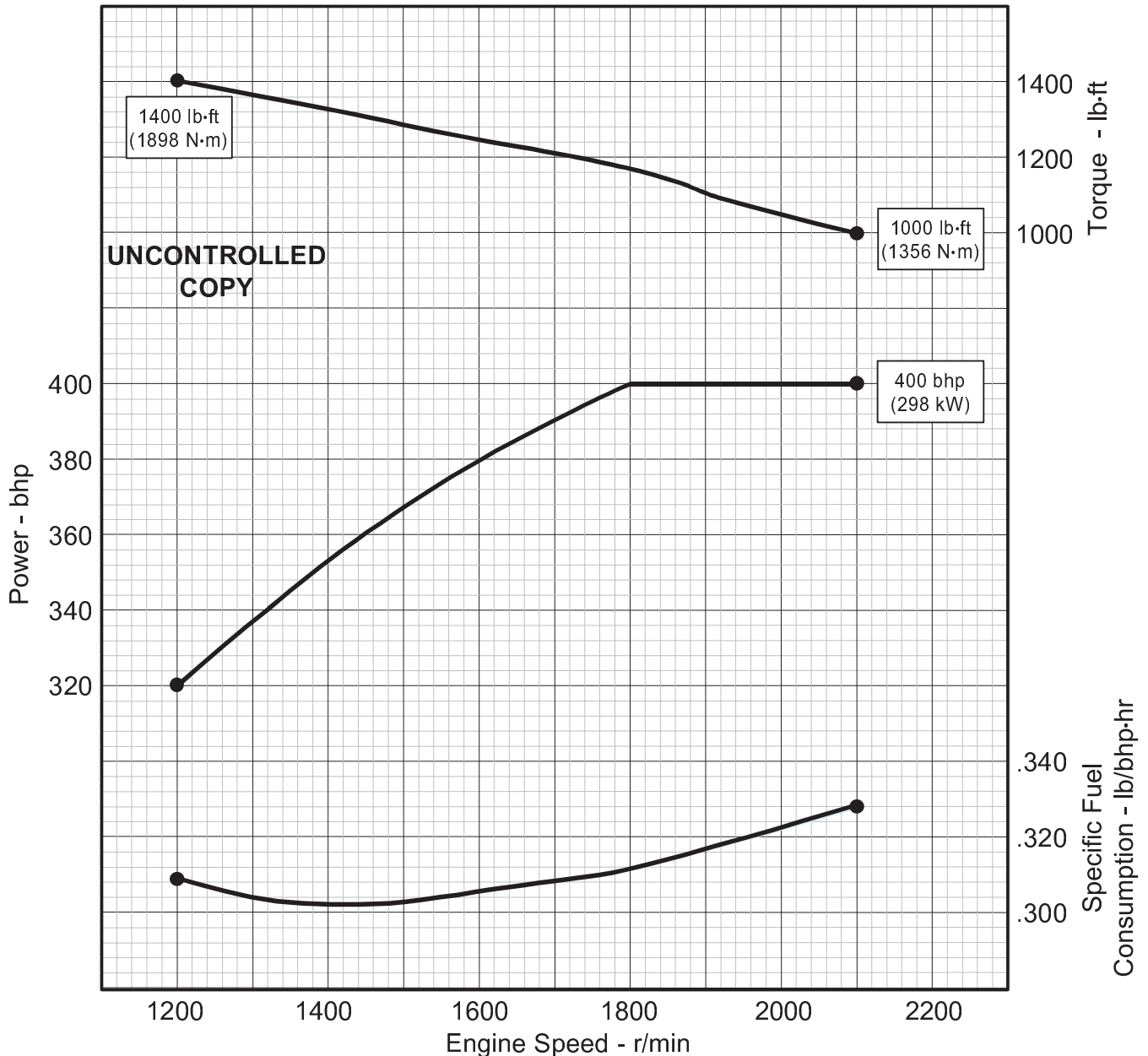
Industrial Power



Model: Series 60®

Rating: 400 bhp @ 2100 r/min
1400 lb-ft @ 1200 r/min

Certification:
1996-98 Nonroad



<p>Power output guaranteed within 5% at SAE J1995 conditions: 77°F (25°C) air inlet temperature; 29.31 in. Hg (99kPa) dry barometer; 100°F (38°F) fuel inlet temperature; .653 specific gravity at 60°F (15°C) Charge air cooler system pressure drop: 16 in. H₂O (4 kPa) Charge air cooler system temperature out: 97°F (36°C) Air intake restriction: 10 in. H₂O (2.5 kPa) Exhaust Back Pressure: 15 in. H₂O (3.7 kPa)</p>	<p><i>Conversion Factors:</i> Power: kW = bhp x 0.746 Fuel: kg/kW · hr = lb/bhp · hr x 0.608 Torque: N · m = lb · ft x 1.356</p>	<p>Turbo: TMF55 (1.34 A/R) Injector: 5235695</p>
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Certified by: Paul Ammon

Curve No. E4-6063-32-81
Rev. / Date: 2 / 7-20-98
Sheet No. 1 of 2

Performance Curve

CONSTRUCTION AND INDUSTRIAL SPECIFICATION SHEET

General Data

Model	6063-TK33
Number of Cylinders.....	6
Bore and Stroke – in. x in. (mm x mm).....	5.12 x 6.30 (130 x 160)
Displacement – in. ³ (L)	778 (12.7L)
Compression Ratio	15.0:1
Piston Speed – ft/min (m/min).....	2205 (672)
Intake Valves Per Cylinder.....	2
Exhaust Valves Per Cylinder.....	2
Combustion System	Direct Injection
Engine Type	Inline 4 Cycle
Aspiration.....	Turbocharged

Configuration

Injection Device	EUI
Turbocharger	TMF55 (1.34A/R)
Charge Air Cooling	Air to Air
Low Idle Speed – r/min.....	600
High Idle Speed – r/min.....	2225
Engine Crankcase Vent System	Open

Physical Data

Size:	
Length – in. (mm).....	57.2 (1453)
Width – in. (mm).....	35.0 (889)
Height – in. (mm)	54.2 (1377)
Weight, Dry – lb (kg)	2570 (1166)
Weight, Wet – lb (kg)	2692 (1221)
Center of Gravity Distance:	
From R.F.O.B. (x axis) – in. (mm)	22.3 (566)
Above Crankshaft (y axis) – in. (mm).....	8.6 (218)
Right of Crankshaft (z axis) – in. (mm).....	-1.4 (-35.6)
Installation Drawing	23515495 Ref.

Mechanical Data

Thrust Bearing Load Limit, Continuous – lb (N).....	900 (4000)
Thrust Bearing Load Limit, Intermittent – lb (N).....	1800 (8000)
Maximum Static Bending Moment at Rear	
Face of Block – lb-ft (N·m)	1000 (1356)
Additional Mechanical Data	E4-6060-32-1

Fuel System

Fuel Injector.....	5235695
Injection Timing Height – mm.....	78.8
Certification Code	5016
Fuel Consumption – lb/hr (kg/hr).....	131.2 (59.5)
Fuel Consumption – gal/hr (L/hr)	18.8 (71.2)
Fuel Spill – lb/hr (kg/hr).....	488 (221)
Fuel Spill – gal/hr (L/hr).....	69.8 (264)
Total Fuel Flow – lb/hr (kg/hr)	619 (281)
Total Fuel Flow – gal/hr (L/hr).....	88.6 (335)
Maximum Fuel Inlet Temperature – °F (°C).....	140 (60)
Maximum Fuel Pump Suction:	
Clean System – in. Hg (kPa)	6 (20.3)
Dirty System – in. Hg (kPa)	12 (41)
Fuel Filter Size, Primary – microns	25
Fuel Filter Size, Secondary – microns	8
Fuel Spill Restrictive Fitting – in. (mm).....	0.08 (2.03)

Lubrication System

Oil Pressure at Rated Speed – lb/in. ² (kPa).....	50 (345)
Oil Pressure at Low Idle – lb/in. ² (kPa)	12 (83)
In Pan Oil Temperature – °F (°C).....	235 (113)
Oil Flow – gal/min (L/min).....	36 (136)
Oil Pan Capacity, High Limit.....	32 (30)
Oil Pan Capacity, Low Limit	26 (25)
Total Engine Oil Capacity with Filters – qt (L).....	38 (36)
Oil Filter, Two Full Flow – microns	30
Engine Angularity Limits, Front Up – Degrees.....	27
Engine Angularity Limits, Front Down – Degrees.....	27
Engine Angularity Limits, Side Tilt – Degrees.....	21

Electrical System

Recommended Battery Capacity (CCA @ 0°F):	
12 Volt System.....	1875
24 Volt System.....	950
Maximum Resistance of Starting Circuit:	
12 Volt System – ohms.....	0.0012
24 Volt System – ohms.....	0.002

Cooling System

Engine Heat Rejection to Coolant:	
Rated Speed – Btu/min (kW).....	6080 (106.9)
Peak Torque Speed (1200 r/min) – Btu/min (kW)	5550 (97.6)
Charge Air Cooler Heat Rejection:	
Rated Speed – Btu/min (kW).....	3882 (68.2)
Peak Torque Speed (1200 r/min) – Btu/min (kW)	1830 (32.2)
Engine Radiated Heat:	
Rated Speed – Btu/min (kW).....	2450 (43.1)
Peak Torque Speed (1200 r/min) – Btu/min (kW)	1875 (33.0)
Coolant Flow:	
Rated Speed – gal/min (L/min).....	113 (428)
Peak Torque Speed (1200 r/min) – gal/min (L/min).....	63 (238)
Thermostat:	
Start to Open – °F (°C)	190 (86)
Fully Open – °F (°C)	205 (96)
Minimum Water Pump Inlet Pressure – lb/in. ² (kPa):	0 (0)
Engine Coolant Capacity – qt (L).....	24 (23)
Minimum Pressure Cap – lb/in. ² (kPa).....	7 (48.3)
Maximum Coolant Pressure	
(Exclusive of Pressure Cap) – lb/in. ² (kPa).....	17 (117)
Maximum Top Tank Temperature – °F (°C).....	210 (99)
Minimum Top Tank Temperature – °F (°C).....	160 (71)
Minimum Coolant Fill Rate – gal/min (L/min).....	3 (11.4)
Cooling Index (110 °F Ambient w/H ₂ O @ Sea Level):	
Max Air to Water Diff. @ Rated Speed – °F (°C).....	100 (56)
Max Air to Water Diff. @ 1200-1500 r/min – °F (°C).....	110 (61)
Deaeration, Air Injection Capacity – ft ³ /min (m ³ /min).....	0.6 (0.017)
Minimum Drawdown Requirement – qt (L).....	4 (3.8)

Air System

Maximum Ambient to Turbo Compressor Inlet	
Temperature Rise – °F (°C).....	30 (16.7)
Maximum Air Intake Restriction:	
Clean Air Cleaner – in. H ₂ O (kPa).....	12 (3)
Dirty Air Cleaner – in. H ₂ O (kPa).....	20 (5)
Engine Air Flow: Rated Speed – ft ³ /min (m ³ /min).....	1115 (30.9)
Peak Torque Speed – ft ³ /min (m ³ /min).....	580 (16.4)
Manifold Pressure – in. Hg (kPa).....	48.1 (163)
Recommended Intake Pipe Diameter – in. (mm).....	5 (127)
Maximum Charge Air Cooler System Total	
Pressure Drop – in. Hg (kPa)	47.6 (11.8)
Maximum Intake Manifold Temp. – °F (°C).....	150 (66)
Maximum Crankcase Pressure – in. H ₂ O (kPa).....	3.0 (0.75)

Exhaust System

Exhaust Flow: Rated Speed – ft ³ /min (m ³ /min).....	2450 (69.4)
Peak Torque Speed – ft ³ /min (m ³ /min).....	1580 (44.7)
Exhaust Temperature Rated Speed – °F (°C).....	715 (379)
Peak Torque Speed – °F (°C).....	945 (507)
Maximum Back Pressure – in. Hg (kPa).....	3.0 (10.1)
Recommended Exhaust Pipe Diameter:	
Single – in. (mm).....	5 (127)
Dual – in. (mm).....	4 (102)

Performance Data

BMEP – lb/in. ² (kPa).....	194 (1337)
Friction Power: Rated Speed – fhp (kW).....	77 (57)
Peak Torque Speed – fhp (kW).....	28 (21)
Altitude Capability – ft (m).....	12000 (3660)
Torque Available at 800 r/min – lb-ft (N·m).....	867 (1175)

Engine Speed r/min	Rated Power bhp (kW)	Rated Torque lb-ft (N·m)	Rated BSFC lb/bhp·hr (g/kW·hr)
2100	400 (298)	1000 (1356)	0.328 (200)
1950	400 (298)	1077 (1461)	0.319 (194)
1800	400 (298)	1167 (1582)	0.311 (189)
1650	385 (287)	1225 (1662)	0.306 (186)
1500	367 (274)	1285 (1742)	0.302 (284)
1350	345 (257)	1342 (1820)	0.302 (184)
1200	320 (239)	1400 (1898)	0.309 (188)

Emissions Data

Certification.....	1996-98 Nonroad
Smoke, Rated Speed – Bosch Number	0.8
Smoke, Peak Torque Speed – Bosch Number	1.4
Noise – dB(A) @ 1	103.1
Additional Noise Data	Not Available

	2100 r/min g/hr	8 Mode Cycle g/bhp·hr
NO _x	2090	6.48
CO	59	0.58
HC.....	25	0.10
Particulates.....	20	0.07

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