

DETROIT DIESEL

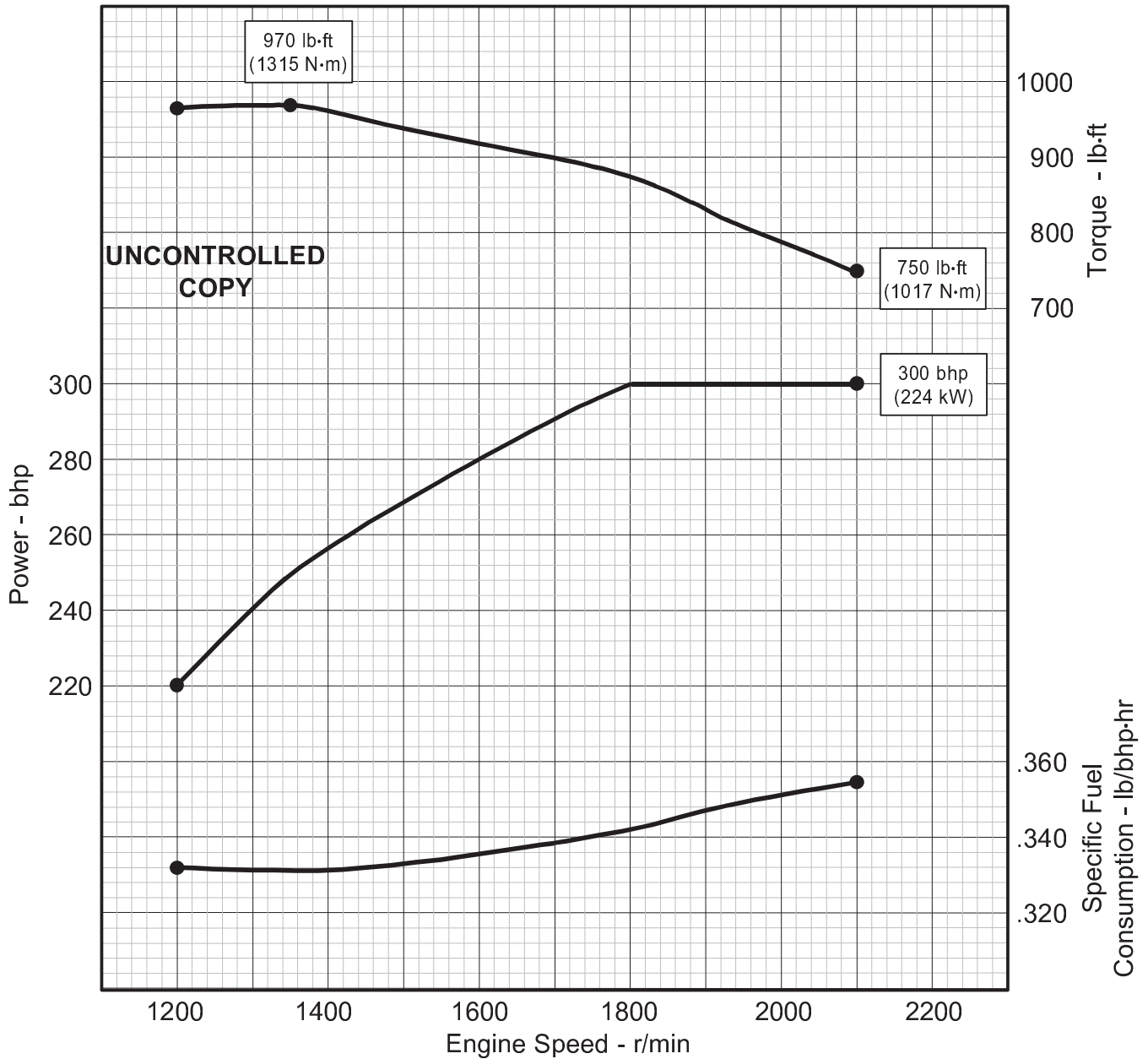
Industrial Power



Model: Series 50®

Rating: 300 bhp @ 2100 r/min
970 lb-ft @ 1350 r/min

Certification:
MSHA



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. H ₂ O (4 kPa) Charge air cooler system temperature out: 97°F (36°C) Air intake restriction: 10 in. H ₂ O (2.5 kPa) Exhaust Back Pressure: 15 in. H ₂ O (3.7 kPa)	Conversion Factors: Power: kW = bhp x 0.746 Fuel: kg/kW · hr = lb/bhp · hr x 0.608 Torque: N · m = lb · ft x 1.356	Turbo: TV4502 (1.05 A/R) Injector: 5235600
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Certified by: Paul Curran

Curve No. E4-6043-32-6
Rev. / Date: 3 / 7-22-98
Sheet No. 1 of 2

Performance Curve

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CONSTRUCTION AND INDUSTRIAL SPECIFICATION SHEET

General Data

Model	6043-TK32
Number of Cylinders	4
Bore and Stroke – in. x in. (mm x mm)	5.12 x 6.30 (130 x 160)
Displacement – in. ³ (L)	519 (8.5)
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	TV4502 (1.054A/R)
Charge Air Cooling	AIR TO AIR
Low Idle Speed – r/min	700
High Idle Speed – r/min	2225
Engine Crankcase Vent System	OPEN

Physical Data

Size:	
Length – in. (mm)	44.3 (1125)
Width – in. (mm)	35.3 (897)
Height – in. (mm)	52.8 (1341)
Weight, Dry – lb (kg)	2190 (993)
Weight, Wet – lb (kg)	2279 (1034)
Center of Gravity Distance:	
From R.F.O.B. (x axis) – in. (mm)	16.3 (415)
Above Crankshaft (y axis) – in. (mm)	6.9 (174)
Right of Crankshaft (z axis) – in. (mm)	-0.57 (-14.5)
Installation Drawing	23518208.

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	E4-6040-32-1

Fuel System

Fuel Injector	5235600
Injection Timing Height – mm	78.8
Fuel Consumption – lb/hr (kg/hr)	106.5 (48.3)
Fuel Consumption – gal/hr (L/hr)	15.2 (57.7)
Fuel Spill – lb/hr (kg/hr)	464 (210)
Fuel Spill – gal/hr (L/hr)	66.3 (251)
Total Fuel Flow – lb/hr (kg/hr)	570 (259)
Total Fuel Flow – gal/hr (L/hr)	81.5 (309)
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)	35 (133)
Oil Pan Capacity, High Limit	22 (21)
Oil Pan Capacity, Low Limit	19 (18)
Total Engine Oil Capacity with Filters – qt (L)	28 (26)
Oil Filter, Two Full Flow – Microns	28
Engine Angularity Limits, Front Up – Degrees	20
Engine Angularity Limits, Front Down – Degrees	15
Engine Angularity Limits, Side Tilt – Degrees	20

Electrical System

Recommended Battery Capacity (CCA @ 0°F):	
12 Volt System	1250
24 Volt System	625
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)	5000 (87.9)
Peak Torque Speed (1200 r/min) – Btu/min (kW)	4000 (70.3)
Charge Air Cooler Heat Rejection:	
Rated Speed – Btu/min (kW)	3162 (55.6)
Peak Torque Speed (1200 r/min) – Btu/min (kW)	1745 (30.7)
Engine Radiated Heat:	
Rated Speed – Btu/min (kW)	1226 (21.6)
Peak Torque Speed (1200 r/min) – Btu/min (kW)	1210 (21.3)
Coolant Flow:	
Rated Speed – gal/min (L/min)	87 (329)
Peak Torque Speed (1200 r/min) – gal/min (L/min)	51 (193)
Thermostat:	
Start to Open – °F (°C)	186 (86)
Fully Open – °F (°C)	207 (97)
Minimum Water Pump Inlet Pressure – lb/in. ² (kPa)	0 (0)
Engine Coolant Capacity – qt (L)	17 (16)
Minimum Pressure Cap – lb/in. ² (kPa)	9 (62.0)
Maximum Coolant Pressure	
(Exclusive of Pressure Cap) – lb/in. ² (kPa)	10 (69)
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)
Deaeration, Air Injection Capacity – ft ³ /min (m ³ /min)	0.4 (0.011)
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)	835 (23.6)
Peak Torque Speed – ft ³ /min (m ³ /min)	505 (14.3)
Manifold Pressure – in. Hg (kPa)	59.8 (202)
Recommended Intake Pipe Diameter – in. (mm)	4 (102)
Maximum Charge Air Cooler System Total	
Pressure Drop – in. Hg (kPa)	41.0 (10.2)
Maximum Ambient to 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)	1870 (53.0)
Peak Torque Speed – ft ³ /min (m ³ /min)	1250 (35.4)
Exhaust Temperature Rated Speed – °F (°C)	720 (382)
Peak Torque Speed – ft ³ /min (m ³ /min)	875 (468)
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)	217.9 (1503)
Friction Power: Rated Speed – fhp (kW)	55 (41)
Peak Torque Speed – fhp (kW)	20 (15)
Altitude Capability – ft (m)	12000 (3660)
Torque Available at 800 r/min – lb-ft (N-m)	578 (784)

Engine Speed r/min	Rated Power bhp (kW)	Rated Torque lb-ft (N-m)	Rated BSFC lb/bhp-hr (g/kW-hr)
2100	300 (224)	750 (1017)	0.355 (216)
1950	300 (224)	808 (1096)	0.349 (212)
1800	300 (224)	875 (1187)	0.342 (208)
1650	285 (213)	907 (1230)	0.337 (205)
1500	268 (200)	938 (1272)	0.333 (203)
1350	249 (186)	970 (1315)	0.331 (201)
1200	220 (164)	965 (1308)	0.332 (202)

Emissions Data

Smoke, Rated Speed – Bosch Number	0.4
Smoke, Peak Torque Speed – Bosch Number	1.1
Noise – dB(A) @ 1	103.9
Additional Noise Data	Not Available
Certification	MSHA*
MSHA Certificate Number	24/D148-0

* MSHA certified ventilation requirement under Part 32, Title 30 of the CFR for use in non-gassy, non-coal mines - 34,000ft³/min (cfm)

All values are at rated speed and power at SAE J1995 with standard engine hardware, unless otherwise noted.

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