

DETROIT DIESEL

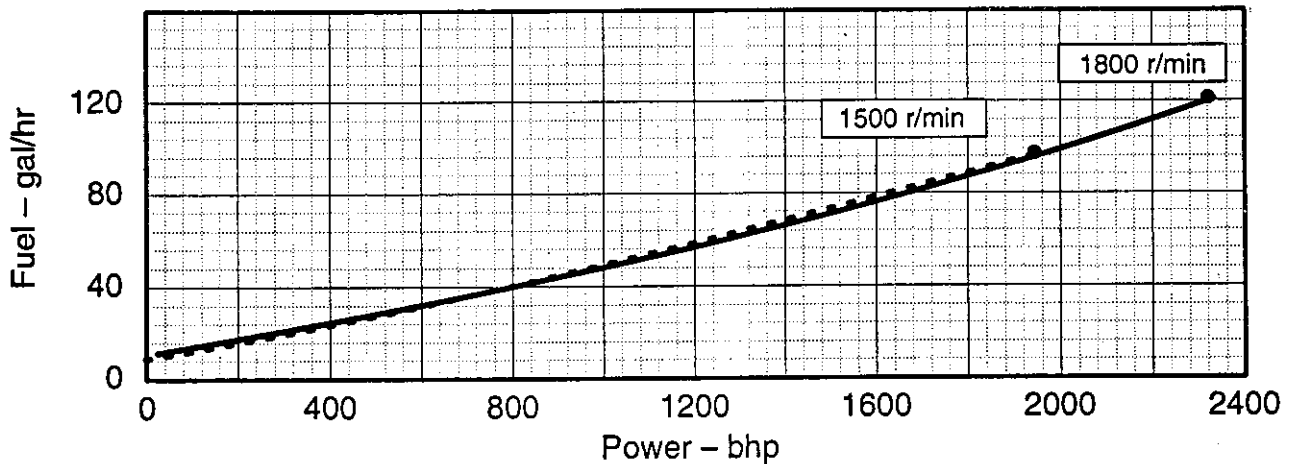
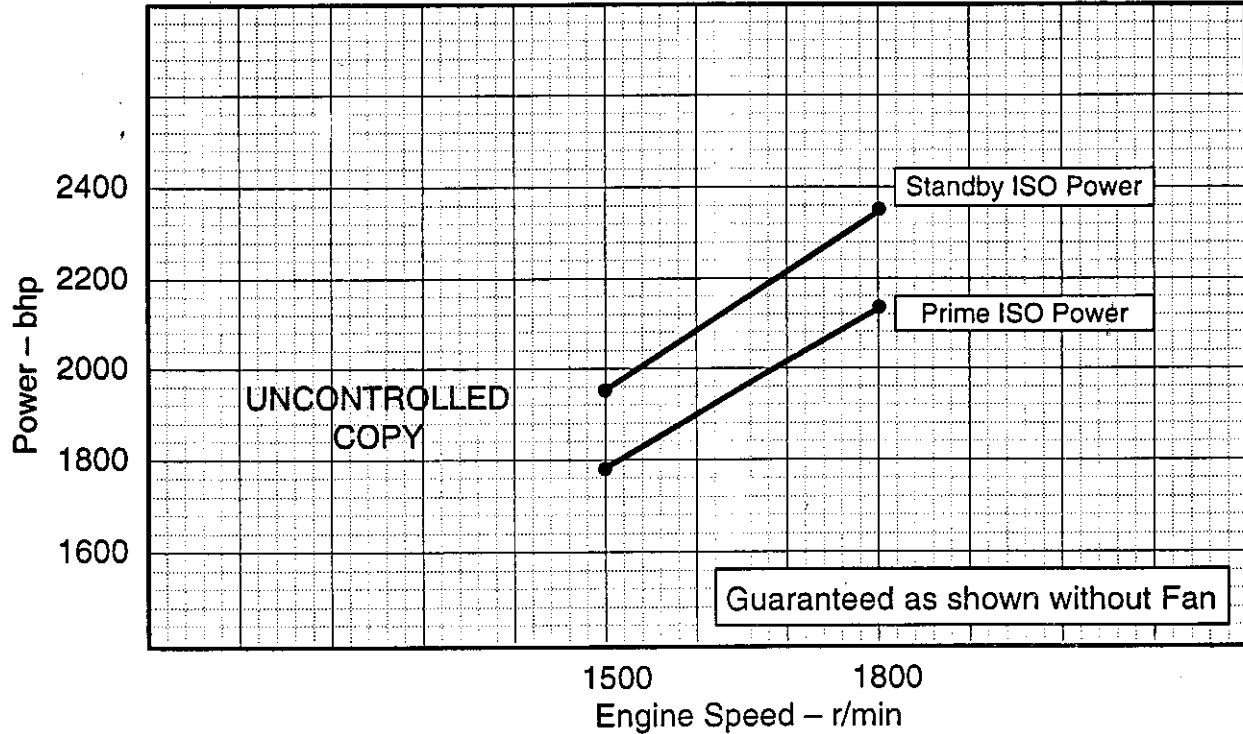


Generator Set Power

Model: 16V-149TI ILCC

Standby: 2340 bhp (1746 kW) @ 1800 r/min
 1950 bhp (1455 kW) @ 1500 r/min

Prime: 2127 bhp (1587 kW) @ 1800 r/min
 1773 bhp (1323 kW) @ 1500 r/min



Rated power output shown represents engine performance capabilities at ambient conditions equivalent to ISO 3046, BS 5514: 100 kPa total barometric pressure, 25°C air inlet, 30% relative humidity. Curves also represent capabilities at the following ambient conditions: DIN 6270: 738 torr barometric pressure, 20°C air inlet, 60% relative humidity JIS D1005-1976: 760 mm Hg barometric pressure, 20°C air inlet, 11.4 mm Hg vapor pressure. Fuel consumption data is based on diesel fuel no. 2 with a fuel weight of 7.11 lb/US gal (.85 kg/L). Fuel heating value is 18370 Btu/lb (1.02 kcal/g). Performance is based on minimum intake and exhaust restrictions.	Conversion Factors: Power: kW = bhp x 0.746 Fuel: L/hr = gal/hr x 3.785	Turbo: TV8403 (1.23 A/R) Injector: 6045

Certified by:

Curve No. E4-9165-32-44
 Rev./Date: 9 / 5-22-96
 Sheet No. 1 of 5

Performance Curve

GENERATOR SPECIFICATION SHEET

STANDBY ISO POWER – 1800 r/min

General Data

Model	9163-7416
Number of Cylinders	16
Bore and Stroke – in. x in. (mm x mm)	5.75 x 5.75 (146 x 146)
Displacement – in. ³ (L)	2389 (39.18)
Compression Ratio	15:1
Piston Speed – ft/min (m/min)	1725 (526)
Exhaust Valves Per Cylinder	4
Combustion System	DIRECT INJECTION
Engine Type	63.5 DEG VEE – 2 CYCLE
Aspiration	TURBOCHARGED

Configuration

Injection Device	MUI
Turbocharger	TV8403 (1.23 A/R)
Blower Type	Bypass
Blower Drive Ratio	2.26:1
Charge Air Cooling System	ILCC
Engine Crankcase Vent System	Open

Physical Data

Size:	
Length – in. (mm)	106 (2692)
Width – in. (mm)	64 (1626)
Height – in. (mm)	68 (1727)
Weight, dry – lb (kg)	11210 (5085)
Weight, wet – lb (kg)	11970 (5430)
Center of Gravity Distance:	
From R. F. O. B. (x axis) – in. (mm)	37.4 (950)
Above Crankshaft (y axis) – in. (mm)	14.5 (368)
Right of Crankshaft (z axis) – in. (mm)	0.9 (23)
Installation Drawing	23505386

Mechanical Data

Thrust Bearing Load Limit, Continuous – lb (N)	1100 (4893)
Thrust Bearing Load Limit, Intermittent – lb (N)	3300 (14679)
Maximum Static Bending Moment at Rear	
Face of Block – lb-ft (N-m)	†
Maximum Vertical Load at Rear Face	
of Crankshaft – lb (N)	2050 (9119)
Additional Mechanical Data	E4-9000-00-1

Fuel System

Fuel Injector – Part Number	6045
Injection Timing Height – in.	2.175
Fuel Consumption – lb/hr (kg/hr)	859.0 (389.6)
Fuel Consumption – gal/hr (L/hr)	121.0 (458.0)
Fuel Spill Rate – lb/hr (kg/hr)	1630 (739)
Fuel Spill Rate – gal/hr (L/hr)	229 (867)
Total Fuel Flow – lb/hr (kg/hr)	2489 (1129)
Total Fuel Flow – gal/hr (L/hr)	350 (1325)
Maximum Fuel Inlet Temperature – °F (°C)	140 (60)
Maximum Fuel Pump Suction:	
Clean System – in. Hg (kPa)	6 (20)
Dirty System – in. Hg (kPa)	12 (40)
Fuel Filter Size, Optional Primary – microns	30
Fuel Filter Size, Secondary – microns	8

Lubrication System

Oil Pressure at Rated Speed – lb/in. ² (kPa)	60–80 (414–551)
Oil Pressure at Low Idle – lb/in. ² (kPa)	10 (69)
Maximum In Pan Oil Temperature – °F (°C)	230 (110)
Oil Flow – gal/min (L/min)	150 (568)
Oil Pan Capacity:	
High Limit – qt (L)	160 (151)
Low Limit – qt (L)	114 (108)
Total Engine Oil Capacity With Filters – qt (L)	200 (289)
Engine Angularity Limits, Front Up – degrees	15
Engine Angularity Limits, Front Down – degrees	15

Electrical System

Recommended Battery Capacity (CCA @ 0°F):	
24 Volt System, Above 32°F	950 / Starter
24 Volt System, Below 32°F	1250 / Starter
Maximum Resistance of Starting Circuit:	
24 Volt System – ohms	0.002 / Starter

* Estimated

** Based on fuel having 0.1% sulfur

† Zero bending moment at mid point of flywheel housing with a maximum bending moment of 2200 lb-ft (2983 N-m) at rear face of block.

All values are at rated speed and power at ISO 3046 with standard engine hardware, unless otherwise noted.

Cooling System

Engine Heat Rejection to Coolant:	
Engine Circuit – Btu/min (kW)	45630 (802)
ILCC Intercooler Circuit – Btu/min (kW)	26900 (473)
Engine Radiated Heat – Btu/min (kW)	8500 (149)
Coolant Flow:	
Engine Circuit – gal/min (L/min)	473 (1790)
Engine Circuit External Restriction – lb/in. ² (kPa)	2.0 (14)
ILCC Intercooler Circuit – gal/min (L/min)	57 (216)
Intercooler Circuit External Restriction – lb/in. ² (kPa)	2.0 (14)
Total – gal/min (L/min)	530 (2006)
Minimum Coolant Flow:	
Engine Circuit – gal/min (L/min)	447 (1692)
ILCC Intercooler Circuit – gal/min (L/min)	54 (204)
Total – gal/min (L/min)	501 (1896)
Thermostat:	
Start to Open – °F (°C)	170 (77)
Fully Open – °F (°C)	185 (85)
Minimum Water Pump Inlet Pressure (Both Pumps):	
Rapid Warmup Radiator	Positive
Conventional Radiator – in. Hg (kPa)	–3 (–10)
Engine Coolant Capacity – qt (L)	187 (177)
Minimum Pressure Cap – lb/in. ² (kPa)	14 (97)
Remote Pressurization – lb/in. ² (kPa)	7–10 (48–69)
Maximum Water Pump Discharge Pressure	
Without Radiator Cap:	
Engine Circuit – lb/in. ² (kPa)	30 (207)
ILCC Intercooler Circuit – lb/in. ² (kPa)	35 (241)
Maximum Static Head – ft H ₂ O (kPa)	50 (149)
Maximum Engine Coolant Out Temperature – °F (°C)	200 (93)
Minimum Engine Coolant Temperature – °F (°C)	160 (71)
Maximum Intercooler Coolant Out Temperature – °F (°C)	185 (85)
Minimum Coolant Fill Rate – gal/min (L/min)	5 (18.9)
Deaeration, Air Injection Capacity – ft ³ /min (m ³ /min)	1.6 (0.045)
Minimum Drawdown Requirement – qt (L)	8% of system capacity
Deaeration Time – minutes	30

Air System

Maximum Temperature Rise (Ambient Air to	
Engine Inlet) – °F (°C)	30 (16.7)
Maximum Air Intake Restriction:	
Dirty Air Cleaner – in. H ₂ O (kPa)	20 (5)
Clean Air Cleaner – in. H ₂ O (kPa)	12 (3)
Engine Air Flow – ft ³ /min (m ³ /min)	6200 (176)
Engine Air Box/Manifold Pressure – in. Hg (kPa)	70 (237)
Recommended Intake Pipe Inner Diameter:	
Each Bank – in. (mm)	12 (303)
Each Turbo – in. (mm)	8 (203)
Maximum Crankcase Pressure – in. H ₂ O (kPa)	2.5 (0.62)

Exhaust System

Exhaust Flow – ft ³ /min (m ³ /min)	15425 (437)
Exhaust Temperature – °F (°C)	835 (446)
Maximum Back Pressure – in. Hg (kPa)	1.5 (5.1)
Recommended Exhaust Pipe Inner Diameter:	
Single – in. (mm)	14 (256)
Dual – in. (mm)	10 (254)

Performance Data

Rated Power – bhp (kW)	2340 (1746)
Rated Speed – r/min	1800
BMEP – lb/in. ² (kPa)	215 (1486)
Friction Power – fhp (kW)	350 (261)
Altitude Capability – ft (m)	10000 (3050)

Part Load Fuel Consumption

Fuel – gal/hr (L/hr) – 0% Power	11.8 (44.7)
25% Power	31.7 (120.0)
50% Power	56.6 (214.3)
75% Power	83.5 (316.1)
100% Power	121.0 (458.0)

Emissions Data

Noise – dB(A) @ 1m	106 *				
Smoke – Bosch Number	2.8				
Load					
0%	25%	50%	75%	100%	
NO _x –g/hr *	1920	6720	13600	19040	21760
CO–g/hr *	480	480	2400	7360	15360
HC–g/hr *	720	680	760	728	416
SO ₂ –g/hr **	76	204	365	539	780

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Rev./ Date: 9 / 5-22-96
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GENERATOR SPECIFICATION SHEET

PRIME ISO POWER – 1800 r/min

General Data

Model	9163-7416
Number of Cylinders	16
Bore and Stroke – in. x in. (mm x mm)	5.75 x 5.75 (146 x 146)
Displacement – in. ³ (L)	2389 (39.18)
Compression Ratio	15:1
Piston Speed – ft/min (m/min)	1725 (526)
Exhaust Valves Per Cylinder	4
Combustion System	DIRECT INJECTION
Engine Type	63.5 DEG VEE – 2 CYCLE
Aspiration	TURBOCHARGED

Configuration

Injection Device	MUI
Turbocharger	TV8403 (1.23 A/R)
Blower Type	Bypass
Blower Drive Ratio	2.26:1
Charge Air Cooling System	ILCC
Engine Crankcase Vent System	Open

Physical Data

Size:	
Length – in. (mm)	106 (2692)
Width – in. (mm)	64 (1626)
Height – in. (mm)	68 (1727)
Weight, dry – lb (kg)	11210 (5085)
Weight, wet – lb (kg)	11970 (5430)
Center of Gravity Distance:	
From R. F. O. B. (x axis) – in. (mm)	37.4 (950)
Above Crankshaft (y axis) – in. (mm)	14.5 (368)
Right of Crankshaft (z axis) – in. (mm)	0.9 (23)
Installation Drawing	23505386

Mechanical Data

Thrust Bearing Load Limit, Continuous – lb (N)	1100 (4893)
Thrust Bearing Load Limit, Intermittent – lb (N)	3300 (14679)
Maximum Static Bending Moment at Rear	
Face of Block – lb-ft (N-m)	†
Maximum Vertical Load at Rear Face	
of Crankshaft – lb (N)	2050 (9119)
Additional Mechanical Data	E4-9000-00-1

Fuel System

Fuel Injector – Part Number	6045
Injection Timing Height – in.	2.175
Fuel Consumption – lb/hr (kg/hr)	762.9 (346.1)
Fuel Consumption – gal/hr (L/hr)	107.3 (406.2)
Fuel Spill Rate – lb/hr (kg/hr)	1726 (783)
Fuel Spill Rate – gal/hr (L/hr)	243 (920)
Total Fuel Flow – lb/hr (kg/hr)	2489 (1129)
Total Fuel Flow – gal/hr (L/hr)	350 (1325)
Maximum Fuel Inlet Temperature – °F (°C)	140 (60)
Maximum Fuel Pump Suction:	
Clean System – in. Hg (kPa)	6 (20)
Dirty System – in. Hg (kPa)	12 (40)
Fuel Filter Size, Optional Primary – microns	30
Fuel Filter Size, Secondary – microns	8

Lubrication System

Oil Pressure at Rated Speed – lb/in. ² (kPa)	60–80 (414–551)
Oil Pressure at Low Idle – lb/in. ² (kPa)	10 (69)
Maximum In Pan Oil Temperature – °F (°C)	230 (110)
Oil Flow – gal/min (L/min)	150 (568)
Oil Pan Capacity:	
High Limit – qt (L)	160 (151)
Low Limit – qt (L)	114 (108)
Total Engine Oil Capacity With Filters – qt (L)	200 (289)
Engine Angularity Limits, Front Up – degrees	15
Engine Angularity Limits, Front Down – degrees	15

Electrical System

Recommended Battery Capacity (CCA @ 0°F):	
24 Volt System, Above 32°F	950 / Starter
24 Volt System, Below 32°F	1250 / Starter
Maximum Resistance of Starting Circuit:	
24 Volt System – ohms	0.002 / Starter

Cooling System

Engine Heat Rejection to Coolant:	
Engine Circuit – Btu/min (kW)	42000 (738)
ILCC Intercooler Circuit – Btu/min (kW)	24000 (422)
Engine Radiated Heat – Btu/min (kW)	7800 (137)
Coolant Flow:	
Engine Circuit – gal/min (L/min)	473 (1790)
Engine Circuit External Restriction – lb/in. ² (kPa)	2.0 (14)
ILCC Intercooler Circuit – gal/min (L/min)	57 (216)
Intercooler Circuit External Restriction – lb/in. ² (kPa)	2.0 (14)
Total – gal/min (L/min)	530 (2006)
Minimum Coolant Flow:	
Engine Circuit – gal/min (L/min)	447 (1692)
ILCC Intercooler Circuit – gal/min (L/min)	54 (204)
Total – gal/min (L/min)	501 (1896)
Thermostat:	
Start to Open – °F (°C)	170 (77)
Fully Open – °F (°C)	185 (85)
Minimum Water Pump Inlet Pressure (Both Pumps):	
Rapid Warmup Radiator	Positive
Conventional Radiator – in. Hg (kPa)	–3 (–10)
Engine Coolant Capacity – qt (L)	187 (177)
Minimum Pressure Cap – lb/in. ² (kPa)	14 (97)
Remote Pressurization – lb/in. ² (kPa)	7–10 (48–69)
Maximum Water Pump Discharge Pressure	
Without Radiator Cap:	
Engine Circuit – lb/in. ² (kPa)	30 (207)
ILCC Intercooler Circuit – lb/in. ² (kPa)	35 (241)
Maximum Static Head – ft H ₂ O (kPa)	50 (149)
Maximum Engine Coolant Out Temperature – °F (°C)	200 (93)
Minimum Engine Coolant Temperature – °F (°C)	160 (71)
Maximum Intercooler Coolant Out Temperature – °F (°C)	185 (85)
Minimum Coolant Fill Rate – gal/min (L/min)	5 (18.9)
Deaeration, Air Injection Capacity – ft ³ /min (m ³ /min)	1.8 (0.045)
Minimum Drawdown Requirement – qt (L)	8% of system capacity
Deaeration Time – minutes	30

Air System

Maximum Temperature Rise (Ambient Air to Engine Inlet) – °F (°C)		30 (16.7)
Maximum Air Intake Restriction:		
Dirty Air Cleaner – in. H ₂ O (kPa)	20 (5)	
Clean Air Cleaner – in. H ₂ O (kPa)	12 (3)	
Engine Air Flow – ft ³ /min (m ³ /min)	5870 (166)	
Engine Air Box/Manifold Pressure – in. Hg (kPa)	62.5 (212)	
Recommended Intake Pipe Inner Diameter:		
Each Bank – in. (mm)	12 (305)	
Each Turbo – in. (mm)	8 (203)	
Maximum Crankcase Pressure – in. H ₂ O (kPa)	2.5 (0.62)	

Exhaust System

Exhaust Flow – ft ³ /min (m ³ /min)	14295 (405)
Exhaust Temperature – °F (°C)	810 (432)
Maximum Back Pressure – in. Hg (kPa)	1.5 (5.1)
Recommended Exhaust Pipe Inner Diameter:	
Single – in. (mm)	14 (256)
Dual – in. (mm)	10 (254)

Performance Data

Rated Power – bhp (kW)	2127 (1587)
Rated Speed – r/min	1800
BMEP – lb/in. ² (kPa)	196 (1351)
Friction Power – fhp (kW)	350 (261)
Altitude Capability – ft (m)	13500 (4115)

Part Load Fuel Consumption

Fuel – gal/hr (L/hr) – 0% Power	11.8 (44.7)
25% Power	29.9 (113.2)
50% Power	52.1 (197.2)
75% Power	76.2 (288.4)
100% Power	107.3 (406.2)

Emissions Data

Noise – dB(A) @ 1m	105*				
Smoke – Bosch Number	2.4				
Load					
0%	25%	50%	75%	100%	
NO _x –g/hr*	1920	6080	12320	17760	21120
CO–g/hr*	480	640	1920	5600	12160
HC–g/hr*	720	672	744	760	576
SO ₂ –g/hr**	76	193	336	492	692

* Estimated

** Based on fuel having 0.1% sulfur

† Zero bending moment at mid point of flywheel housing with a maximum bending moment of 2200 lb-ft (2983 N-m) at rear face of block.

All values are at rated speed and power at ISO 3046 with standard engine hardware, unless otherwise noted.

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