

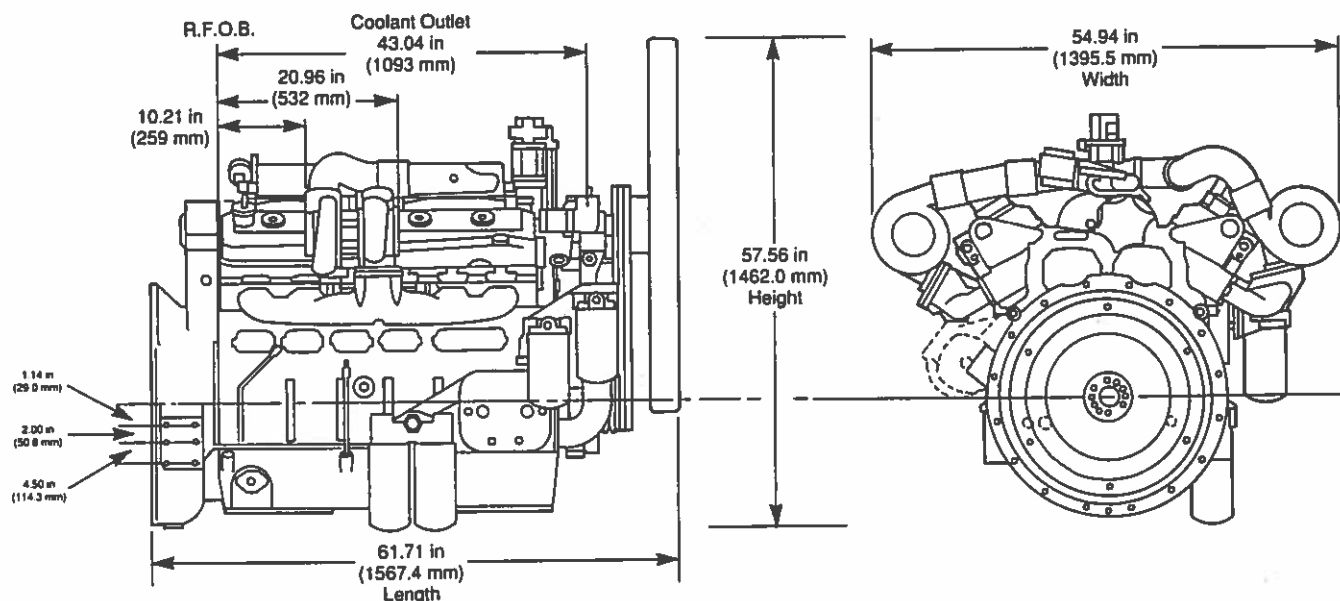
DETROIT DIESEL



7123-7406 12V-71TA Generator Engine

750 HP @ 1800 rpm

640 HP @ 1500 rpm



Basic Technical Data

Number of Cylinders: 12.

Cylinder Arrangement: Vee.

Cycle: 2 stroke.

Induction System: Turbocharged.

Combustion System: Direct Injection.

Bore: 4.25 in (108 mm).

Stroke: 5.0 in (127.0 mm).

Compression Ratio: 17.0:1.

Cubic Capacity: 852 in³ (13.97 liters).

Direction of Rotation: Clockwise viewed from the front.

Firing Order: 1L, 2R, 8L, 6R, 2L, 4R, 6L, 5R,

4L, 3R, 5L, 7R, 3L, 1R, 7L, 8R.

Total Weight (dry): 3550 lbs (1610 kg)

Total Weight (wet): 3734 lbs (1694 kg)

Overall Dimensions: Height 57.6 in (1462 mm);
Length 61.7 in (1567.4 mm); Width 54.9 in (1395.5 mm).

Moment of Inertia ($W r^2$): Engine 34.784 lb-in-s² (3.93 kg m²);
Flywheel 34.292 lb-in-s² (3.87 kg m²).

Speed Variation at Constant Load: $\pm 0.25\%$.

Engine Performance Curve, Standby Rating: E4-7125-32-17

Prime Rating: E4-7125-32-18

Engine Installation Drawing: 2SA225 (23502407)

Performance

Maximum Overspeed Limit: 2300 rpm.

Average Sound Pressure Level for Bare Engine (Without Inlet and Exhaust) at 1 meter: 1800 rpm, 100.5 dBA; 1500 rpm, 98.7 dBA.

Note: All data based on operation under ISO 3046, BS 5514 or SAE J1349.

Test Conditions: Rated prime power output shown represents engine performance capabilities at ambient conditions equivalent to ISO 3046, BS 5514: 77°F (25°C) air inlet temperature; 29.5 in. Hg (100 kPa) total barometric pressure; 30% relative humidity. Rated standby power shown represents engine performance capabilities at ambient conditions equivalent to SAE J1349: 77°F (25°C) air inlet temperature; 29.31 in. Hg (99 kPa) dry barometer.

Indicated performance is based on minimum intake and exhaust restrictions.

SAE ratings certified within $\pm 5\%$, ISO ratings are guaranteed.

If the engine is to operate in ambient conditions other than the test conditions, then suitable adjustments must be made for any change in inlet air temperature, barometric pressure or humidity. For details refer to Detroit Diesel.

Diesel Fuel: To conform to ASTM D975 66T Number 2D or BS 2869: 1983 Class A2.

Lubricating Oil: A monograde SAE 40 lubricating oil must be used which conforms with specification MIL-L-2104D or API-CD-II.

Technical Data

Item	Units	Type of operation and application			
		Prime ¹		Standby ^{2,5}	
		50 Hz	60 Hz	50 Hz	60 Hz
Engine speed	rpm	1500	1800	1500	1800
Rated engine power	bhp (kW)	553 (412)	648 (493)	640 (477)	750 (560)
Brake mean effective pressure	lb/in ² (kPa)	171.5 (1220)	167.5 (1155)	198.5 (1369)	193.9 (1337)
Piston speed	ft/min (m/min)	1250 (381)	1500 (457)	1250 (381)	1500 (457)
Engine coolant flow	Us gal/min (Liter/min)	180 (681)	220 (883)	180 (681)	220 (883)
Engine air flow	ft ³ /min (m ³ /min)	1600 (45.3)	1800 (51)	1800 (51)	2000 (56.6)
Exhaust gas flow	ft ³ /min (m ³ /min)	3620 (102.5)	4090 (115.8)	4190 (118.7)	4770 (135.1)
Exhaust gas temperature	°F (°C)	755 (402)	760 (404)	790 (421)	820 (438)
Fan Loss	bhp (kW)	15 (11.2)	27 (20.1)	15 (11.2)	27 (20.1)
Cooling fan airflow ³	ft ³ /min (m ³ /min)	22950 (647)	29755 (839)	22950 (647)	29755 (839)
Total heat from fuel ⁴	Btu/min (kW)	61693 (1084)	71551 (1258)	71643 (1259)	83185 (1462)
Heat to power	Btu/min (kW)	23447 (412)	27475 (483)	27136 (477)	31800 (559)
Heat to coolant	Btu/min (kW)	17500 (250)	20600 (362)	20500 (361)	24000 (422)
Heat to exhaust	Btu/min (kW)	18256 (321)	20926 (368)	21117 (371.3)	24415 (429.3)
Heat to radiation	Btu/min (kW)	2490 (43.8)	2550 (44.9)	2890 (50.9)	2970 (52.3)

¹ Equivalent to ISO-3046 Continuous Power

² Equivalent to ISO-3046 Fuel Stop Power

³ With standard option fan

⁴ Based on LHV of Fuel = 18370 BTU/lb

⁵ It is recommended that all ancillary engine systems be designed for maximum engine capability

Cooling System

Coolant:

Engine Coolant Capacity: 56.5 qts (53.5 Liters)

Maximum Top Tank Temperature: 210°F (99°C)

Minimum Temperature to Engine: 160°F (71°C)

Temperature Rise across Engine: 10°F (5.5°C)

Maximum Coolant Pressure: 20 psi (138 kPa)

Maximum Permissible External System Resistance: 5 psi (34 kPa)

Maximum Static Pressure Head at Pump:

50 ft H₂O (149 kPa)

Standard Option Fan:

Diameter: 44 in. (1118 mm)

Drive Ratio: 0.62:1

Number of Blades: 8

Thermostat:

Operation range: 170-187°F (75-86°C)

Electrical System

Battery Charging System:

Type: Negative ground

Alternator: Delco Remy, (optional equipment)

Starter motor: Delco Remy

Recommended Battery Capacity		
Temperature		SAE J537
°F	°C	Cold Cranking amperes 24V
Over 32	Over 0	950
Under 32	Under 0	1250

Mountings

Maximum Bending Moment at Rear Face of

Engine Block: 0 lbf-ft (0 Nm)

Position of Center of Gravity (dry engine):

Forward from rear face of block: 17.6 in (448 mm)

Above crankshaft center line: 9.2 in (233 mm)

Right of crankshaft center line: 1.23 in (31.2 mm)

Fuel System

Type of Injection System: Direct.

Fuel Injection Pump: Not Applicable.

Fuel Injector:

Type: Unit Injector.

Fuel Lift Pump:

Delivery/hour:

1800 rpm 146.2 gal (553.5 liters);

1500 rpm 140.9 gal (533.4 liters).

Pressure: 45 psi (310 kPa).

Maximum pump suction:

Clean System 6.0 in Hg (20 kPa),

Dirty System 12.0 in Hg (41 kPa)

Maximum static pressure head: 0 ft (0 m).

Governor Type: Barber Colman 8400 Electronic.

Induction System

Maximum Air Intake Restriction at Engine:

1800 rpm Clean filter 8.7 in H₂O (2.2 kPa);

Dirty filter 14.5 in H₂O (3.6 kPa).

1500 rpm Clean filter 6.2 in H₂O (1.5 kPa);

Dirty filter 10.5 in H₂O (2.6 kPa).

Recommended Inside Diameter of Intake Pipe:

6 in (152 mm)

Exhaust System

Maximum Back Pressure for Total System:

1800 rpm, 2.0 in Hg (6.8 kPa);

1500 rpm, 1.4 in Hg (4.7 kPa).

Inside Diameter of Engine Exhaust Outlet:

Single 6 in (152 mm) Dual 4 in (102 mm).

Lubrication System

Lubricating Oil Capacity: Total system

36 qt (34 liters); Sump only 34 qt (32 liters).

Normal Operation Angles: Front up 15°.

Front down 18°, Side to side N/A.

Lubricating Oil Pressure: At rated speed

56-60 psi (386-414 kPa).

Lubricating Oil Temperature:


At normal operation 200°F (93°C),

Maximum 250°F (121°C)

Lubricating Oil Consumption as a Percentage

of Fuel Consumption: 0.5% maximum.

Recommended SAE viscosity grades:

	SAE Viscosity Grade: 40
	API Classification: CD-II
	Military Spec.: MII-L-2104D
	Sulfated Ash: Less Than 1.0%

Certain engine operating conditions may require exceptions to this recommendation.

- For continuous high temperature operation (over 100°F ambient or 200°F Coolant Out) the use of an SAE grade 50 lubricant in all series, two-cycle DDC engines is recommended.
- At ambient temperatures below freezing where starting aids are not available or at very cold temperatures (0 to -25°F), the use of multiviscosity grade 15W-40 or monograde SAE 30 lubricants will improve startability. **Exception: Do not use these lubricants in two-cycle marine engines or DDC Series 149 engines under any circumstances.**

DETROIT DIESEL

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