

## Specifications

**Cylinders:** V16  
**Piston Displacement:** 9388 cu. in. (154 L)  
**Bore & Stroke:** 9.375" x 8.5" (238 x 216 mm)  
**Compression Ratio:** 8:1  
**Jacket Water System Capacity:** 148 gal. (560 L)  
**Lube Oil Capacity:** 165 gal. (625 L)  
**Starting System:** 125 - 150 psi air/gas 24V electric  
**Dry Weight:** 28,750 lb.(13,041 kg)

### Standard Equipment

**AIR CLEANER** – Engine mounted. Dry type, including pad type precleaner and service indicator. For sheltered installation and average dust environment.

**BARRING DEVICE** – Manual.

**BEARINGS** – Heavy duty, replaceable, precision type.

**BREATHER** – Ejector type, extractor, plumbed into exhaust stream.

**CONNECTING RODS** – Drop forged steel, rifle drilled.

**CONTROL SYSTEM** – Pneumatic. Includes pilot operated valves for air start and prelube. Engine mounted control panel with two push button valves. Pilot operated air start valves omitted when starter is not furnished by Waukesha.

**CRANKCASE** – Integral crankcase and cylinder frame. Main bearing caps drilled and tapped for temperature sensors. Does not include sensors.

**CRANKSHAFT** – Counterweighted, forged steel, ten main bearings, and dynamically balanced.

**CRANKSHAFT PULLEY, FRONT SEGMENT** – Ten inch (254 mm)

pitch diameter pulley, with six c-section drive grooves, front end drive assembly, and outboard bearing. Outboard bearing not mounted. Includes engine mounted stub shaft and coupling guard.

**CYLINDERS** – Removable wet type bainitic cast iron cylinder liners, chrome plated on outer diameter.

**CYLINDER HEADS** – Sixteen interchangeable. Two hard faced intake and two hard faced exhaust valves per cylinder. Hard faced intake and exhaust valve seat inserts. Roller valve lifters and hydraulic push rods.

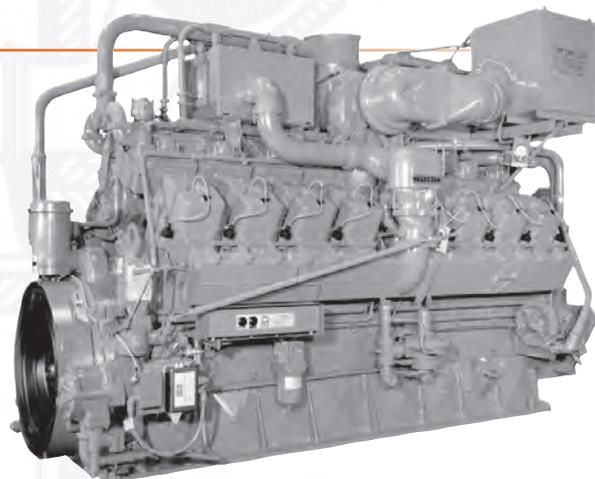
**ENGINE ROTATION** – Counterclockwise when facing flywheel.

**EXHAUST OUTLET** – Single vertical at center. Flexible stainless steel connection with 14" (356 mm) flanges.

**FLYWHEEL** – Approx.  $WR^2 = 155000 \text{ lb-in}^2$ ; with ring gear (208 teeth), machined to accept two drive adapters; 31.88" (810 mm) pilot bore, 30.25" (768 mm) bolt circle, (12) .75" – 10 tapped holes, or 28.88" (734 mm) pilot bore, 27.25" (692 mm) bolt circle, (12) 0.625" – 11 tapped holes and (12) 0.75" – 10 tapped holes.

**FLYWHEEL GUARD**

**FUEL SYSTEM** – Dual, natural gas, 4" (102 mm) duplex downdraft. Two mounted Fisher 99, 2" (51 mm) gas regulators, 30 - 60 psi (207 - 414 kPa) inlet pressure required.



**GOVERNOR** – Woodward UG-8LD hydraulic lever type, with friction type speed control. Mounted on right hand side.

**IGNITION** – Waukesha Custom Engine Control Ignition Module. Electronic digital ignition system. 24V DC power required.

**INSTRUMENT PANEL** – Engine mounted, includes jacket water temperature, lube oil pressure, lube oil temperature, intake manifold compound vacuum pressure, intake manifold temperature gauges, and digital electronic tachometer.

**INTERCOOLER** – Air-to-water.

**LEVELING BOLTS**

**LIFTING EYES**

**LUBRICATION** – Full pressure. Gear type pump. Full flow filter, 45 gallon (170 litres) capacity, not mounted. Includes lube oil strainer (mounted on engine) and flexible connections (shipped loose). Air/gas motor driven prelube pump. Requires final piping.

**MANIFOLDS** – Exhaust, (2) water cooled.

**OIL COOLER** – With thermostatic temperature controller and pressure regulating valve. Not mounted.

**OIL PAN** – Base type. 165 gallon (625 litres) capacity including filter and cooler.

**PAINT** – Oilfield orange primer.

**PISTONS** – Aluminum with floating pin. Oil cooled.

**SHIPPING SKID** – For domestic truck or rail.

**TURBOCHARGERS** – Two with water cooled bearing housings. Wastegate controlled.

**VIBRATION DAMPER** – Viscous type. Guard included with remote mounted radiator or no radiator.

**WATER CIRCULATING SYSTEM, AUXILIARY CIRCUIT** – Belt driven water circulating high capacity pump for intercooler and lube oil cooler. See S6535-14 performance curve for use with standard 10" diameter crankshaft pulley.

**WATER CIRCULATING SYSTEM, ENGINE JACKET** – Belt driven water circulating pump, 175 – 180° F (79 – 82° C) individual cylinder thermostats, full flow bypass. Flange connections and mating flanges for (2) 4.5" (114 mm) inlets and (1) 6" (152 mm) outlet.

# POWER RATINGS: P9390GSI VHP Series Gas Engines

Model	C.R.	Bore & Stroke in. (mm)	Displ. cu. in. (litres)	Brake Horsepower (kWb Output) 130°F (54°C) I.C. Water Temperature							
				1200 RPM		1000 RPM		900 RPM		800 RPM	
				C	I	C	I	C	I	C	I
P9390GSI	8:1	9.375" x 8.5" (238 x 216)	9388 (154)	1980 (1476)	2447 (1825)	1650 (1230)	2039 (1520)	1485 (1107)	1835 (1368)	1320 (984)	1631 (1216)

	1200 rpm		1000 rpm		
	C	I	C	I	
Power bhp (kWb)	1980 (1476)	2447 (1825)	1650 (1230)	2039 (1520)	
BSFC (LHV) Btu/bhp-hr (kJ/kWh)	7792 (11027)	7763 (10979)	7648 (10823)	7405 (10682)	
Fuel Consumption Btu/hr x 1000 (kW)	15428 (4521)	18997 (5566)	12619 (3698)	15099 (4510)	
Emissions	NOx g/bhp-hr (mg/nm <sup>3</sup> @ 5% O <sub>2</sub> )	13.00 (4815)	13.00 (4815)	13.00 (4815)	13.00 (4815)
	CO g/bhp-hr (mg/nm <sup>3</sup> @ 5% O <sub>2</sub> )	9.00 (3333)	9.00 (3333)	9.00 (3333)	9.00 (3333)
	THC g/bhp-hr (mg/nm <sup>3</sup> @ 5% O <sub>2</sub> )	2.00 (741)	2.00 (741)	2.00 (741)	2.00 (741)
	NMHC g/bhp-hr (mg/nm <sup>3</sup> @ 5% O <sub>2</sub> )	0.30 (111)	0.30 (111)	0.30 (111)	0.30 (111)
Heat Balance	Heat to Jacket Water Btu/hr x 1000 (kW)	4901 (1436)	5920 (1735)	4187 (1227)	4760 (1394)
	Heat to Lube Oil Btu/hr x 1000 (kW)	510 (150)	595 (174)	453 (133)	514 (151)
	Heat to Intercooler Btu/hr x 1000 (kW)	314 (92)	466 (136)	210 (61)	273 (80)
	Heat to Radiation Btu/hr x 1000 (kW)	715 (209)	846 (248)	638 (187)	777 (228)
	Total Exhaust Heat Btu/hr x 1000 (kW)	4527 (1327)	5665 (1661)	3404 (998)	4260 (1248)
Intake/Exhaust System	Induction Air Flow scfm (Nm <sup>3</sup> /hr)	3081 (4735)	3505 (5384)	2520 (3873)	2745 (4222)
	Exhaust Flow lb/hr (kg/hr)	13713 (6220)	16320 (7403)	11216 (5088)	12810 (5810)
	Exhaust Temperature °F (°C)	1177 (636)	1250 (677)	1109 (599)	1192 (644)

Typical heat data is shown, however no guarantee is expressed or implied. Consult your Dresser Waukesha Application Engineering Department for system application assistance.

All natural gas engine ratings are based on a fuel of 900 Btu/ft<sup>3</sup> (35.3 MJ/nm<sup>3</sup>) SLHV, with a 91 WKI®. For conditions or fuels other than standard, consult the Dresser Waukesha Application Engineering Department.

Data based on standard conditions of 77°F (25°C) ambient temperature, 29.53 inches Hg (100kPa) barometric pressure, 30% relative humidity (0.3 inches HG / 1 kPa water vapor pressure).

Fuel consumption based on ISO3046/1-1995 with a tolerance of +5% for commercial quality natural gas having a 900 BTU/ft<sup>3</sup> (35.3 MJ/nm<sup>3</sup>) SLHV.

Heat data based on fuel consumption +2%.

Heat rejection based on cooling exhaust temperature to 77°F (25°C).

Rating Standard: All models - Ratings are based on ISO 3046/1-1986 with mechanical efficiency of 90% and Tcra (clause 10.1) as specified above limited to ± 10° F (5° C). Ratings are also valid for SAE J1349, BS5514, DIN6271 and AP17B-11C standard atmospheric conditions.

**C = ISO Standard Power/Continuous Power Rating:** The highest load and speed which can be applied 24 hours per day, seven days per week, 365 days per year except for normal maintenance. It is permissible to operate the engine at up to 10% overload, or a maximum load indicated by the intermittent rating, whichever is lower, for two hours in every 24 hour period.

**I = Intermittent Service Rating:** The highest load and speed that can be applied in variable speed mechanical system application only. Operation at this rating is limited to a maximum of 3500 hours per year.

