

## BASE ENGINE

**CONNECTING RODS** – Drop forged alloy steel, angle split, serrated joint, oil jet piston pin lubrication.

**CRANKCASE** – Alloy cast iron, fully ribbed, integral with cylinder frame.

**CRANKSHAFT** – Drop forged alloy steel, dynamically balanced and fully counterweighted. Viscous vibration dampener.

**CYLINDERS** – Removable wet type liners of centrifugally cast alloy iron.

**CYLINDER HEADS** – Sixteen interchangeable, valve-in-head type, with two hard faced intake and two hard faced exhaust valves per cylinder. Replaceable intake and exhaust valve seats. Mechanical valve lifters with pivoted roller followers.

**FLYWHEEL** – With 165 tooth ring gear (for Delco electric and air/gas starters). Flywheel machined to accept SAE 620D-21, 21" (533 mm) diameter clutch, or SAE J927B-210 flywheel converter.

**FLYWHEEL HOUSING** – SAE #00, nodular iron housing. Provision for two magnetic pickups.

**PISTONS** – Aluminum alloy, three ring, with patented high turbulence combustion bowl. Oil jet cooled with full floating piston pin. 11:1 compression ratio pistons.

## STANDARD ACCESSORIES

**AIR CLEANER** – Dual, two stage, dry panel type with rain shield and service indicator. Engine mounted.

**BARRING DEVICE** – Manual.

**BREATHER** – Crankcase, closed type.

**CARBURETOR** – Two natural gas. Impco 600 Varifuel Downdraft.

**CONTROLS** – Local shutdown switch, engine mounted.

**COOLING SYSTEM** – Jacket water: gear driven jacket water pump, thermostatically controlled, full flow bypass type with nominal 180° F (82° C) outlet temperature. Auxiliary water: gear driven pump supplies water to intercooler and oil cooler circuit. 2" special companion flanges supplied.

**EXHAUST SYSTEM** – Water cooled exhaust manifolds. Single outlet flange for ANSI 10" 125# flange.

**GOVERNOR** – Woodward PSG hydraulic.

**IGNITION** – Waukesha Custom Engine Control™ electronic ignition system with coils, cables and spark plugs. Non-shielded. 24V DC power required.

**INTERCOOLER** – Two pass, fin and tube, air-to-water.

**LIFTING EYES** – For engine only.

**LUBRICATION SYSTEM** – Gear type pump, two replaceable element filters and base type oil pan (113 gal. cap.). Engine mounted shell and tube oil cooler, thermostatic valve for oil temperature control.

**MOUNTING** – Base type oil pan.

**PAINT** – Oilfield orange.

**TURBOCHARGER** – Two exhaust driven, dry type with wastegate. For 1400 – 1800 rpm applications.

**WAUKESHA CUSTOM ENGINE CONTROL DETONATION SENSING MODULE (DSM™)** – Includes engine mounted detonation sensors, DSM, filter and wiring. Operation of DSM requires Waukesha CEC™ Ignition Module (IM™), which is standard equipment. 24V DC power supply is required for IM and DSM. DSM meets CSA Class 1, Group D, Division 2, hazardous location requirements.

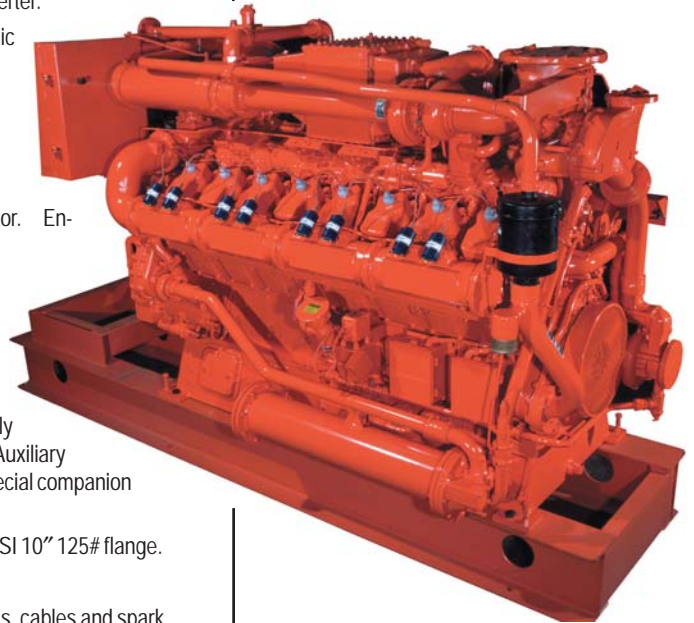


# Waukesha

POWERING PERFORMANCE

## P48GL

### VGf™ Series Gas Engine 665 - 1175 BHP



*Engine shown with options.*

**Model P48GL Turbocharged and Intercooled, Lean Combustion, Sixteen Cylinder, Four-Cycle Gas Engine**

## SPECIFICATIONS

<b>Cylinders</b> V 16	<b>Lube Oil Capacity</b> 113 gal. (428 L)
<b>Piston Displacement</b> 2924 cu. in. (48 L)	<b>Fuel Pressure Range</b> 25 - 50 psi (172 - 345 kPa)
<b>Bore &amp; Stroke</b> 5.98" x 6.5" (152 x 165 mm)	<b>Starting System</b> 150 psi max. air/gas 24V DC electric
<b>Compression Ratio</b> 11:1	<b>Dry Weight</b> 14, 900 lb. (6759 kg)
<b>Jacket Water System Capacity</b> 58 gal. (219 L)	
<b>Cooling Water Flow at 1500 rpm</b>	<b>1800 rpm</b>
Jacket Water gpm (l/m)	231 (875)   280 (1060)
Aux. Water gpm (l/m)	71 (269)   87 (329)



# POWER RATINGS: P48GL VGF SERIES GAS ENGINES

Model	I.C. Water Inlet Temp.	C.R.	Bore & Stroke in. (mm)	Displ. cu. in. (litres)	Brake Horsepower									
					1200 rpm <sup>1</sup>		1400 rpm <sup>1</sup>		1500 rpm	1600 rpm		1800 rpm		
					I	C	I	C	I	C	I	C	I	C
P48GL	130° F (54° C)	11:1	5.98 x 6.5 (152 x 165)	2924 (36)	785	710	910	830	975	885	1040	945	1175	1065
P48GL**	130° F (54° C)	11:1	5.98 x 6.5 (152 x 165)	2924 (36)	—	785	—	910	—	975	—	1040	—	1175

<sup>1</sup> Low speed turbocharger required for operation from 1100 - 1600 rpm.

\*These power ratings are for engines applied at elevated jacket water temperatures 210° - 265° F (99° - 129° C).

\*\*These power ratings require Price Book Code 1100, and are available continuously when applied per WKI™ power and timing curve S7090-14. It is permissible to operate at up to 5% overload for two hours in each 24 hour period.

**Rating Standard:** All models; Ratings are based on ISO 3046/1-1995 with mechanical efficiency of 90% and Tcra (clause 10.1) as specified limited ±10° F (±5° C). Ratings are also valid for SAE J1349, BS5514, DIN6271 and AP17B-11C standard atmospheric conditions.

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

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

**Standby Power Rating:** This rating applies to those systems used as a secondary source of electrical power. This rating is the output the system will produce continuously (no overload), 24 hours per day for the duration of the prime power source outage.

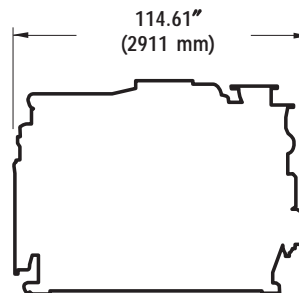
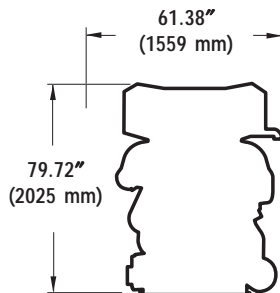
All natural gas engine ratings are based on a fuel of 900 Btu/ft<sup>3</sup> (35.3 MJ/nm<sup>3</sup>) SLHV value, with a 91 WKI. For conditions or fuels other than standard, consult the Waukesha Engine Division Sales Engineering Department.

# PERFORMANCE: P48GL VGF SERIES GAS ENGINES

		130° F (54° C) Intercooler Water Temp	
		1800 rpm	1500 rpm
Low Fuel Consumption Settings	BSFC (Btu/bhp-hr)	6985	6765
	NOx (grams/bhp-hr)	2.00	2.33
	CO (grams/bhp-hr)	1.75	1.52
	NMHC (grams/bhp-hr)	0.75	0.65

### NOTES:

- 1) Performance ratings are based on ISO 3046/1-1995 with mechanical efficiency of 90% and Tcra limited to ± 10° F.
- 2) Fuel consumptions based on ISO 3046/1-1995 with a +5% tolerance for commercial quality natural gas having a 900 Btu/ft<sup>3</sup> saturated low heat value.
- 3) 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).
- 4) Data will vary due to variations in site conditions. For conditions and/or fuels other than standard, consult the Waukesha Engine Division Sales Engineering Department.



**Waukesha**

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Consult your local Waukesha Distributor for system application assistance. The manufacturer reserves the right to change or modify without notice, the design or equipment specifications as herein set forth without incurring any obligation either with respect to equipment previously sold or in the process of construction except where otherwise specifically guaranteed by the manufacturer.