

## Specifications

**Cylinders:** V12  
**Piston Displacement:** 7040 cu. in. (115 L)  
**Bore & Stroke:** 9.375" x 8.5" (238 x 216 mm)  
**Compression Ratio:** 8:1  
**Jacket Water System Capacity:** 100 gal. (379 L)  
**Lube Oil Capacity:** 190 gal. (719 L)  
**Starting System:** 125 - 150 psi air/gas 24V electric  
**Dry Weight:** 21,000 lb. (9525 kg)

### Standard Equipment

**AIR CLEANER** – Two, 3" dry type fi lter with hinged rain shield and service indicator.

**AIR FUEL RATIO CONTROL (AFR)** – Integrated ESM® - AFR catalyst rich-burn control, main fuel gas regulator actuators, exhaust O2 sensor(s), and post turbocharger exhaust thermocouple. Factory mounted and tested. AFR maintains emissions through load and speed changes. The ESM AFR meets Canadian Standards Association Class 1, Division 2, Group A, B, C & D (Canada & US) hazardous location requirements. Note: For dual fuel applications, ESM AFR system will control the primary fuel source only.

**BARRING DEVICE** – Manual.

**BATTERY BOX** – Ship loose battery box designed to accommodate two Series 31 12 VDC batteries. Includes power disconnect switch and 20 foot (6.1 m) cable for connection to ESM® Power Distribution Box.

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

**BREATHER** – Self regulating, closed system.

**CONNECTING RODS** – Drop forged steel, rifl e drilled.

**CONTROL SYSTEM** – Waukesha Engine System Manager (ESM®) integrates spark timing control, speed governing, detonation detection, start-stop control, diagnostic tools, fault logging and engine safeties. Engine Control Unit (ECU) is central brain of the control system and main customer interface. Interface with ESM is through 25 foot (7.6 m) harness to local panel, through MODBUS RTU slave connection RS-485 multidrop hardware, and through the Electronic Service Program (ESP). Customer connections are only required to the local panel, fuel valve, and 24V DC power supply. Compatible with Woodward load sharing module. ESM meets Canadian Standards Association Class I, Division 2, Group A, B, C & D (Canada & US) hazardous location requirements.

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

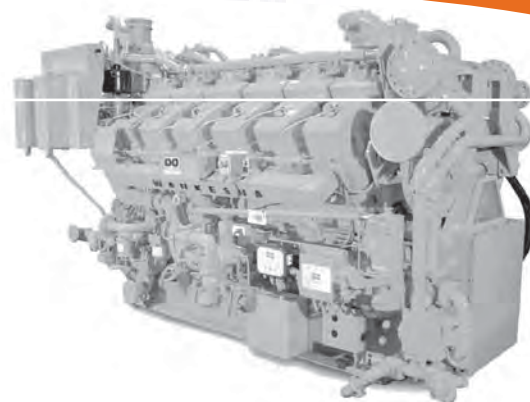
**CRANKSHAFT** – Counterweighted, forged steel, seven main bearings, and dynamically balanced.

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

**CYLINDER HEADS** – Twelve 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.

**ELECTRONIC SERVICE PROGRAM (ESP)** – Microsoft® Windows-based program provided on CD-ROM for programming and interface to ESM. Includes E-Help for troubleshooting any ESM faults. Serial harness is provided for connection of a customer supplied laptop to the ECU RS-232 port.

**ENGINE MONITORING DEVICES** – Factory mounted and wired sensors for lube oil pressure and temperature; intake manifold temperature and pressure; overspeed; and jacket water temperature; all accessible through ESM®. ESM continually monitors combustion performance through accelerometers to provide detonation protection. Dual magnetic pick-ups are used for accurate engine speed monitoring. ESM provides predictive spark plug diagnostics as well as advanced diagnostics of engine and all ESM sensors and logs any faults into non-volatile fl ash memory. Sensors meet Canadian Standards Association Class 1, Division 2, Group A, B, C, & D (Canada & US) hazardous location requirements.



**ENGINE ROTATION** – Counterclockwise when facing fl ywheel.

**EXHAUST OUTLET** – Single vertical at rear. Flexible stainless steel connection with 8" (203 mm) pipe fl ange.

**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) 0.75"-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 HOUSING** – No. 00 SAE.

**FUEL SYSTEM** – Single 3" ANSI fl ange fuel inlet connection. Two natural gas, 4" (102 mm) updraft carburetors and two mounted Fisher 99, 2" (51 mm) gas regulators, 30 – 60 psi (207 – 414 kPa) fuel inlet pressure required. 10 foot (3 m) harness provided for ESM control of customer supplied fuel shutoff valve.

**GOVERNOR** – Electric throttle actuator controlled by ESM with throttle position feedback. Governor tuning is performed using ESP. ESM includes option of a load-coming feature to improve engine response to step loads.

**IGNITION** – Ignition Power Module (IPM) controlled by ESM, with spark timing. Dual voltage energy levels automatically controlled by ESM to maximize spark plug life.

**INTERCOOLER** – Air-to-water.

**LEVELING BOLTS**

**LIFTING EYES** – Requires 9.5 ton Working Load Limit (W.L.L.) anchor shackles.

**LUBRICATION** – Full pressure, gear type pump. Engine mounted full fl ow lube oil micro-fi berglass fi lters with mounted differential pressure gauge. MICROSPIN® bypass fi lter, engine mounted. Air/gas motor driven prelube pump, requires fi nal piping.

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

**OIL COOLER** – Shell and tube type, with thermostatic temperature controller and pressure regulating valve. Factory mounted.

**OIL PAN** – Deep sump type. 190 gallon (719 L) capacity including fi lter and cooler.

**PAINT** – Oilfi eld orange primer.

**PISTONS** – Aluminum with fl oating pin. Oil cooled.

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

**TURBOCHARGERS** – Two dry type. 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 S6543-36 performance curve for use with standard 10" diameter crankshaft pulley.

**WATER CIRCULATING SYSTEM, ENGINE JACKET** – Belt driven water circulating pump, cluster type thermostatic temperature regulating valve, full fl ow bypass type. Flange connections and mating fl anges for (2) 4" (102 mm) inlets and (1) 5" (127 mm) outlet.

# POWER RATINGS: L7042GSI 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     |
| L7042GSI | 8:1  | 9.375" x 8.5" (238 x 216) | 7040 (115)              | 1480  | 1834   | 1233     | 1528   | 1110    | 1376   | 987     | 1223  |
|          |      |                           |                         | (1104)  | (1368) | (920)    | (1139) | (828)   | (1026) | (736)   | (912) |

|   | 1200 rpm     |              | 1000 rpm     |              |
|---|--------------|--------------|--------------|--------------|
|   | C            | I            | C            | I            |
| <b>Power</b>  |              |              |              |              |
| Power bhp (kWb)   | 1480 (1104)  | 1834 (1368)  | 1233 (919)   | 1528 (1139)  |
| BSFC (LHV) Btu/bhp-hr (kJ/kWh)                          | 7696 (10774) | 7457 (10550) | 7458 (10553) | 7225 (10222) |
| Fuel Consumption Btu/hr x 1000 (kW)                     | 11390 (3304) | 13677 (4009) | 9196 (2694)  | 11040 (3234) |
| <b>Emissions</b>  |              |              |              |              |
| 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)   |
| <b>Heat Balance</b>                                     |              |              |              |              |
| Heat to Jacket Water Btu/hr x 1000 (kW)                 | 3526 (1033)  | 4125 (1209)  | 2908 (852)   | 3380 (991)   |
| Heat to Lube Oil Btu/hr x 1000 (kW)                     | 352 (103)    | 382 (112)    | 310 (91)     | 338 (99)     |
| Heat to Intercooler Btu/hr x 1000 (kW)                  | 228 (67)     | 403 (118)    | 118 (35)     | 212 (62)     |
| Heat to Radiation Btu/hr x 1000 (kW)                    | 662 (194)    | 681 (200)    | 584 (171)    | 611 (179)    |
| Total Exhaust Heat Btu/hr x 1000 (kW)                   | 3281 (962)   | 3705 (1086)  | 2482 (728)   | 2880 (844)   |
| <b>Intake/Exhaust System</b>                            |              |              |              |              |
| Induction Air Flow scfm (Nm <sup>3</sup> /hr)           | 2275 (3496)  | 2650 (3993)  | 1836 (2822)  | 2140 (3224)  |
| Exhaust Flow lb/hr (kg/hr)                              | 10124 (4592) | 12070 (5475) | 8173 (3707)  | 9745 (4421)  |
| Exhaust Temperature °F (°C)                             | 1126 (608)   | 1145 (618)   | 1056 (569)   | 1096 (591)   |

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.

