

BASIC SPECIFICATIONS

AIR CLEANERS – Dry type with rain shield and service indicators.

BARRING DEVICE – Manual.

BEARINGS – Heavy duty, replaceable, precision type.

BREATHER – Closed system.

CONNECTING RODS – Forged steel, rifle drilled.

COOLING SYSTEM – Choice of mounted radiator with pusher fan, core guard and duct adaptor, heat exchanger with surge tank, or connection for remote radiator cooling.

CRANKCASE – Integral crankcase and cylinder frame.

CRANKSHAFT – Counterweighted, forged steel, dynamically balanced, with sealed viscous vibration damper.

CYLINDER HEADS – Twelve interchangeable. Four valves per cylinder with water cooled exhaust valve seat. Roller valve lifters and hydraulic push rods. Flange mounted ignition coils.

CYLINDERS – 9.375" (238 mm) bore x 8.5" (216 mm) stroke. Removable wet cylinder liners, chrome plated on outer diameter. Number of cylinders - twelve.

ENGINE BASE – Engine, generator and radiator or heat exchanger are mounted and aligned on a welded steel, wide flange base, designed for solid mounting on an inertia block, with standard through-base holes for lifting.

ENGINE PROTECTION SHUTDOWN CONTACTS – For high water temperature, low oil pressure, high intake manifold temperature (standard engine mounted thermocouples with two thermocouple relays – shipped loose), and overspeed (electronic speed switch – shipped loose). Also includes engine detonation sensing, alarm and shutdown as standard (see separate description of Detonation Sensing Module). Two on/off pushbuttons are supplied, one on each side of the engine. Use all of the above in conjunction with a DC control panel for unit shutdown (reference WPS Engomatic® controls).

Note: DC shutdown control panel is not supplied as standard.

EXHAUST SYSTEM – Water cooled exhaust manifold with single vertical exhaust at rear.

Flexible stainless steel exhaust connection 8" (203 mm) long with 8" outlet flange.

FUEL SYSTEM – Dual natural gas carburetors and Fisher gas regulators Model 99 for GSI, model 133L for GSID. 24V DC gas solenoid valve (shipped loose). 25 psi (1.7 bar) gas pressure recommended for GSI and 12" – 60 psi (304 mm – 4 bar) for GSID. Single fuel connection point for GSI and two connection points for GSID.

GENERATOR – Open, dripproof, direct connected, fan cooled, 2/3 pitch, A.C. revolving field type, single bearing generator with brushless exciter, short circuit sustain (PMI, AREP or PMG type maintains 270% of rated generator current for up to 10 seconds on 105° C temperature rise generators; maintains 250% of current on 130° C rise generators) and damper windings. TIF and Deviation Factor within NEMA MG-1.32. Voltage 480/277, 3 phase, 4 wire, Wye 60 Hz and 400/230, 3 phase, 4 wire, Wye 50 Hz. Other voltages are available, consult factory. Insulation material NEMA Class F. Temperature rise within NEMA (105° C) for continuous power duty, within NEMA (130° C) for standby duty. All generators are rated at 0.8 Power Factor, are mounted on the engine flywheel housing and have multiple steel disc flexible coupling drive. The 60 Hz continuous power gensets have 10% overload capability. The 50 Hz continuous power gensets have NO overload capability.

GOVERNOR – Woodward Model EG3P electric actuator (mounted) and magnetic pickup (mounted). Requires a separate electric governor control, Woodward Model 2301D or similar (not included).

IGNITION – Waukesha Custom Engine Control Ignition Module. Electronic digital ignition system.

INSTRUMENT CONNECTIONS – Type K thermocouples for jacket water temperature, lube oil temperature, intake manifold temperature. A single header block for lube oil pressure and intake manifold pressure is engine mounted. Recommend optional Model 4000 remote engine instrument panel, especially for continuous power installations.

INTERCOOLER – Air to water.

JUNCTION BOXES – Separate AC, DC, and instrument/thermocouple junction boxes for engine wiring and external connections.

LUBRICATION – Full pressure, positive displacement pump. Full flow oil filter (shipped loose) and flexible connections (shipped loose). Microspin® bypass oil filter factory mounted. 50 or 60 Hz, 230 volt AC, single phase electric motor driven intermittent prelube pump with motor starter (other voltages can be specified).

Note: External control logic required to start/stop prelube pump.

OIL COOLER – Shell and tube type (mounted).

OIL PAN – Cast alloy iron base type with removable doors.

PAINT – Oilfield Orange.

PISTONS – Aluminum with floating pin. Oil cooled. 8:1 compression ratio pistons.

STARTING EQUIPMENT – Two 24V DC electric starting motors, crank termination switch (shipped loose).

TURBOCHARGERS – Two with water-cooled bearing housing, wastegate controlled.

VOLTAGE REGULATOR – SCR static automatic type providing 1% regulation from no load to full load, single phase sensing and automatic subsynchronous speed protection. Includes voltage adjustment rheostat (shipped loose).

WATER CIRCULATING SYSTEM

Auxiliary Circuit – For oil cooler and intercooler. Pump is belt driven from crankshaft pulley.

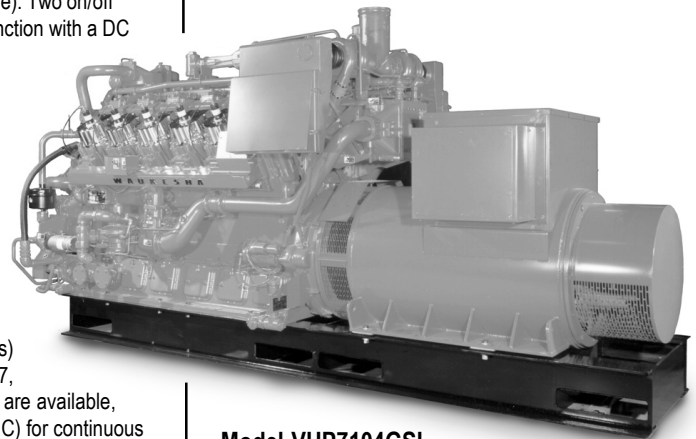
Engine Jacket – Belt driven water pump, 175 – 180° F (79 – 82° C) thermostatic temperature regulation full flow bypass. Single ANSI flange connections for inlet and outlet on water connect units.

WAUKESHA CUSTOM ENGINE CONTROL DETONATION SENSING MODULE (DSM) – Includes individual cylinder sensors, Detonation Sensing Module, and filter, all factory mounted. Device is compatible with Waukesha CEC Ignition Module only. 24V DC power is required. The DSM meets Canadian Standards Association Class 1, Division 2, Group D hazardous location requirements.



VHP7104GSI/GSID

VHP™ Series Four® Gas Engineator® Generating System 1050 - 1200 kW



Model VHP7104GSI
Turbocharged and Intercooled
Gas Fueled Engineator

SPECIFICATIONS

Waukesha Engine L7044GSI Four Cycle	Jacket Water Capacity 100 gal. (379 L)
Cylinders V 12	Starting System 24V Electric
Piston Displacement 7040 cu. in. (115 L)	Fuel LHV 900 Btu/ft ³ (33.5 J/cm ³)
Bore & Stroke 9.375" x 8.5" (238 x 216 mm)	Lube Oil Capacity 90 gal. (340 L)
Compression Ratio 8:1	



PERFORMANCE DATA: VHP7104GSI/GSID GAS ENGINATOR® GENERATING SYSTEM

HEAT EXCHANGER COOLING Heat Exchanger Water Supply: 85°F (29°C) I.C. Water: 130°F (54°C)	GSI Continuous Power*		GSID Continuous Power*	
	1200 rpm 60 Hz	1000 rpm 50 Hz	1200 rpm 60 Hz	1000 rpm 50 Hz
kW RATING	1200 kW	1100 kW	1200 kW	1100 kW
BSFC	7736 (10946)	7524 (10646)	7765 (10988)	7553 (10688)
Fuel Consumption x 1000 Btu/h (kW)	13248 (3883)	11796 (3457)	13299 (3898)	11796 (3457)
Jacket Water x 1000 Btu/h (kW)	3879 (1137)	3535 (1036)	3892 (1141)	3545 (1039)
Intercooler x 1000 Btu/h (kW)	206 (60)	169 (50)	232 (68)	190 (56)
Lube Oil x 1000 Btu/h (kW)	570 (167)	474 (139)	583 (171)	484 (142)
Heat Radiated x 1000 Btu/h (kW)	874 (256)	806 (236)	874 (256)	806 (236)
Exhaust Heat** x 1000 Btu/h (kW)	3860 (1131)	3268 (958)	3860 (1131)	3238 (949)
Exhaust Flow lb/h (kg/h)	11320 (5135)	10078 (4571)	11360 (5153)	10117 (4589)
Exhaust Temperature °F (°C)	1181 (638)	1136 (613)	1181 (638)	1136 (613)
Induction Air Flow scfm (m³/min)	2435 (62)	2168 (56)	2443 (63)	2176 (56)
WATER CONNECTION COOLING I.C. Water: 130°F (54°C)	1200 rpm 60 Hz	1000 rpm 50 Hz	1200 rpm 60 Hz	1000 rpm 50 Hz
kW RATING	1200 kW	1100 kW	1200 kW	1100 kW
BSFC	7736 (10946)	7524 (10646)	7765 (10988)	7553 (10688)
Fuel Consumption x 1000 Btu/h (kW)	13248 (3883)	11796 (3457)	13299 (3898)	11796 (3457)
Jacket Water x 1000 Btu/h (kW)	3879 (1137)	3535 (1036)	3892 (1141)	3545 (1039)
Intercooler x 1000 Btu/h (kW)	206 (60)	169 (50)	232 (68)	190 (56)
Lube Oil x 1000 Btu/h (kW)	570 (167)	474 (139)	583 (171)	484 (142)
Heat Radiated x 1000 Btu/h (kW)	874 (256)	806 (236)	874 (256)	806 (236)
Exhaust Heat** x 1000 Btu/h (kW)	3860 (1131)	3268 (958)	3860 (1131)	3238 (949)
Exhaust Flow lb/h (kg/h)	11320 (5135)	10078 (4571)	11360 (5153)	10117 (4589)
Exhaust Temperature °F (°C)	1181 (638)	1136 (613)	1181 (638)	1136 (613)
Induction Air Flow scfm (m³/min)	2435 (62)	2168 (56)	2443 (63)	2176 (56)
RADIATOR COOLING - MOUNTED I.C. Water: 130°F (54°C)	1200 rpm 60 Hz	1000 rpm 50 Hz	1200 rpm 60 Hz	1000 rpm 50 Hz
kW RATING	1150 kW	1050 kW	1150 kW	1050 kW
BSFC	7736 (10946)	7524 (10646)	7765 (10988)	7553 (10688)
Fuel Consumption x 1000 Btu/h (kW)	13248 (3883)	11796 (3457)	13299 (3898)	11796 (3457)
Jacket Water x 1000 Btu/h (kW)	3879 (1137)	3535 (1036)	3892 (1141)	3545 (1039)
Intercooler x 1000 Btu/h (kW)	206 (60)	169 (50)	232 (68)	190 (56)
Lube Oil x 1000 Btu/h (kW)	570 (167)	474 (139)	583 (171)	484 (142)
Heat Radiated x 1000 Btu/h (kW)	874 (256)	806 (236)	874 (256)	806 (236)
Exhaust Heat** x 1000 Btu/h (kW)	3860 (1131)	3268 (958)	3860 (1131)	3238 (949)
Exhaust Flow lb/h (kg/h)	11320 (5135)	10078 (4571)	11360 (5153)	10117 (4589)
Exhaust Temperature °F (°C)	1181 (638)	1136 (613)	1181 (638)	1136 (613)
Induction Air Flow scfm (m³/min)	2435 (62)	2168 (56)	2443 (63)	2176 (56)
Radiator Air Flow scfm (m³/min)	105000 (2974)	98000 (2775)	105000 (2974)	98000 (2775)

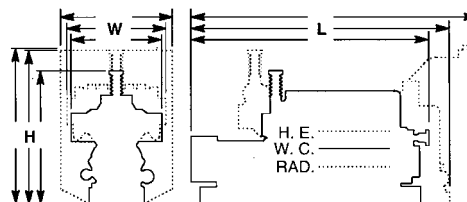
Typical heat balance data is shown. Consult factory for guaranteed data.

*Continuous Power Rating: The highest electrical power output of the Enginator available for an unlimited number of hours per year, less maintenance. It is permissible to operate the 60 Hz Enginator units with up to 10% overload for two hours in each 24 hour period. NO overload is allowed for the 50 Hz units.

Rating Standard: The Waukesha Enginator power rating descriptions are in accordance to ISO 8528, DIN6271 and BS5514. It is also valid for ISO 3046/1-1995 with an engine mechanical efficiency of 90% and auxiliary water temperature T_{ca} (clause 10.0) is limited to ±10° F (5° C).

**Heat rejection based on cooling exhaust gas to 85° F (29° C).

Cooling Equipment	L in (mm)	W in (mm)	H in (mm)	Avg. Wt. lb (kg)
Heat Exchanger	218 (5540)	80 (2030)	108 (2740)	36000 (16330)
Water Cooler	201 (5110)	80 (2030)	108 (2740)	34000 (15425)
Radiator	238 (6050)	114 (2900)	138 (3500)	39750 (18030)



Waukesha

**WAUKESHA POWER SYSTEMS
WAUKESHA ENGINE
DRESSER, INC.**

1000 West St. Paul Avenue
Waukesha, WI 53188-4999
Phone: (262) 547-3311 Fax: (262) 549-2795
waukeshaengine.dresser.com

Bulletin 8021 0102

**WAUKESHA ENGINE
DRESSER INDUSTRIAL PRODUCTS, B.V.**

Farmsumerweg 43, Postbus 330
9900 AH Appingedam, The Netherlands
Phone: (31) 596-652222 Fax: (31) 596-628111

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.