

STANDARD EQUIPMENT

AIR INLET AND EXHAUST SYSTEMS

- Air Inlet Connection** – Two 14.17" (360 mm) round.
- Exhaust Manifold** – Dry with protective insulation.
- Exhaust Outlet** – Two 14" B.C. (356 mm) ANSI horizontal outlet flanges.

BARRING DEVICE – Manual.

CAMSHAFT – Consists of individual segments, one per cylinder, bolted together.

CONNECTING RODS – Low alloy, forged, fully machined.

CRANKCASE – Single piece, stress relieved, gray iron casting. Main bearing caps are retained with vertical studs and lateral tie bolts.

CRANKCASE PRESSURE RELIEF DOORS – Eight mounted on side of crankcase.

CRANKCASE VENT CONNECTION – Single 3" (76.2 mm) round pipe.

CRANKSHAFT – Low alloy, forged, fully machined, counterweighted with nine main bearing journals. The crankshaft is flanged for full power transmission from each end. Bearings are heavy duty, replaceable, precision aluminum type.

CYLINDER HEAD – Sixteen interchangeable, bore-cooled with two hard faced intake and two hard faced exhaust valves per head. Includes stainless steel intake and exhaust valve seats and prechamber fuel control valves. No head gaskets are required.

CYLINDER LINER – Removable wet type with intermediate jacket water guide.

ENGINE MONITORING DEVICES – Thermocouples, K-type, for jacket water temperature, intake manifold temperature, lube oil temperature, individual cylinder exhaust temperatures and pre and post turbocharger temperatures are wired to a common junction box. Pressure taps piped to a common bulkhead for intake manifold pressure, lube oil pressure, prechamber fuel pressure, main chamber fuel pressure and jacket water pressure. Gauge monitored oil filter differential pressure.

ENGINE PROTECTION DEVICES – Engine emergency shutdown/starter lockout palm button (2) mounted, one wired on either side of the engine.

FLYWHEEL – With 291 tooth ring gear. Machined for direct connected, single bearing generator shaft. Mounted. Flywheel guard not included.

FUEL SYSTEM – Carburetor with precombustion circuit. Single fuel inlet connection, mounted main and prechamber gas supply regulators. Shipped loose 24V DC pilot operated main fuel valve. Mounted 24V DC pilot operated main fuel valve, shipped loose. 24V DC pilot operated prechamber fuel valve, mounted. Includes adjustable speed switch for control of solenoid valve during start cycle.

GOVERNOR – Woodward UG Actuator, mounted, with 701A speed control for constant torque engine or 2301D load sharing speed control for Constant Speed Engine, not mounted.

IGNITION SYSTEM – Crankshaft fired Waukesha Custom Engine Control Ignition Module with flange mounted coils. Ignition system meets Canadian Standards Association Class I, Division 2, Group D hazardous location requirements. Includes fuses for protection against reverse polarity. 24V DC power required.

INTERCOOLER – Air-to-water.

LUBRICATION SYSTEM – Gear driven, externally mounted gear type pump with pressure regulator and bypass circuit. Discharge side has flange for connection to remote oil cooler. Includes shell and tube type lube oil cooler, not mounted, sized for connection in series with intercooler. Includes full flow, 44 gallon (167 litre) capacity oil filter. Not mounted. Includes 175° F (79° C) lube oil temperature control valve. Not mounted. Includes full flow filter strainer, mounted. Requires single customer lube oil inlet connection.

PAINT – Oilfield orange.

PISTON – Single piece, aluminum alloy with integrally cast passages. Four piston rings with the top two compression rings housed in a Ni-resist ring carrier. 9:1 compression ratio.

STARTING SYSTEM – Two TDI 112 turbine pneumatic starters with 24VDC starting valve and strainer. Requires 150 psig (10.3 bar) air/gas supply.

TURBOCHARGER – Two, exhaust driven, with Turbocharger Control Module (TCM), electronic controlled wastegate and air bypass. 24V DC required. The TCM meets Canadian Standards Association Class 1, Division 2, Group D, hazardous location requirements.

VIBRATION DAMPER – Enclosed, viscous type.

WATER CIRCULATION SYSTEM

Auxiliary Circuit – Includes gear driven water pump with discharge piped to intercooler. Suction side has single flange for customer connection. Requires single customer outlet connection. Includes auxiliary water temperature control valve, not mounted.

Engine Jacket – Includes gear driven water pump with discharge to engine inlet. Suction side has single flange for customer connection. Requires single customer outlet connection. Includes 180° F (82° C) jacket water temperature control valve, not mounted.

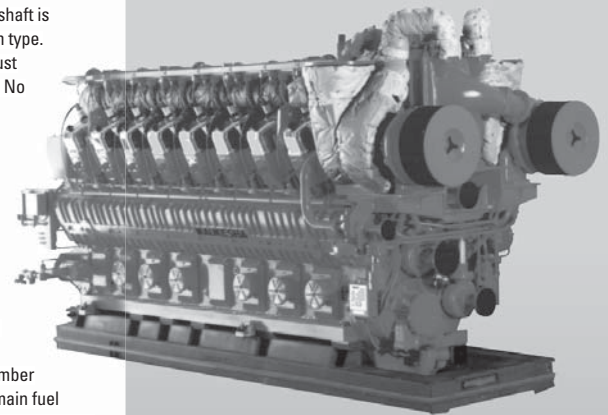
WAUKESHA CUSTOM ENGINE CONTROL DETONATION SENSING MODULE (DSM) – Includes individual cylinder sensors, Detonation Sensing Module, and filter. Device is compatible with Waukesha CEC Ignition Module only. Sensors are mounted and wired to DSM Filter. Detonation Sensing Module and filter are mounted. 24V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

WAUKESHA CUSTOM ENGINE CONTROL AIR FUEL MODULE (AFM) – Electronic air fuel ratio control. Includes air fuel module, main fuel gas regulator actuator, intake manifold pressure transducer, exhaust O2 sensor assembly, junction box, and wiring harness. AFM is shipped loose for customer installation. Wiring harness allows connection of all engine mounted components to junction box. The module must be mounted off engine. 24V DC power is required. The AFM meets Canadian Standards Association Class I, Division 2, Group D, hazardous location requirements.

ATGL® Series Gas Engine

Constant Torque

3600 - 4500 BHP
(2685 - 3355 kWb)



Engine shown with options.

Model 16V-AT27GL

Turbocharged and Intercooled, Sixteen Cylinder, Gas Engine

SPECIFICATIONS

Cylinders	Lube Oil Capacity
V-16	313 gal.
Piston Displacement	(1188 L)
17398 cu. in.	Starting System
(285 L)	150 psi
Bore & Stroke	(10.3 bar)
10.83" x 11.81"	
(275 x 300 mm)	
Compression Ratio	
9:1	
Jacket Water System Capacity	
130 gal.	
(492 L)	



POWER RATINGS: 16V-AT27GL GAS ENGINES - CONSTANT TORQUE

Continuous Duty					Brake Horsepower (kWb)		
Model	I.C. Water Inlet Temp.	C.R.	Bore & Stroke in. (mm)	Displ. cu. in. (litres)	1000 rpm	900 rpm	800 rpm
16V-AT27GL	90° F (32° C)	9:1	10.83 x 11.81 (275 x 300)	17398 (285)	4500 (3356)	4050 (3020)	3600 (2686)
16V-AT27GL	130° F (54° C)	9:1	10.83 x 11.81 (275 x 300)	17398 (285)	4500 (3356)	4050 (3020)	3600 (2686)

Intermittent Duty							
16V-AT27GL	90° F (32° C)	9:1	10.83 x 11.81 (275 x 300)	17398 (285)	4830 (3602)	4350 (3244)	— —
16V-AT27GL	130° F (54° C)	9:1	10.83 x 11.81 (275 x 300)	17398 (285)	4590 (3423)	4130 (3080)	— —

PERFORMANCE DATA: 16V-AT27GL GAS ENGINES

	Intercooler Water Temperature	130°F (54°C)		90°F (32°C)	
		1000 rpm	900 rpm	1000 rpm	900 rpm
		Power bhp (kWb)	4500 (3356)	4050 (3020)	4500 (3356)
Low NO _x Settings	BSFC Btu/bhp-hr (kJ/kWh)	6660 (9422)	6575 (9302)	6763 (9568)	6684 (9456)
	NO _x grams/bhp-hr (mg/Nm ³ @ 5% O ₂)	0.74 (314)	0.74 (314)	0.57 (242)	0.57 (242)
	CO grams/bhp-hr (mg/Nm ³ @ 5% O ₂)	1.94 (824)	1.87 (794)	1.83 (777)	1.77 (751)
	NMHC grams/bhp-hr (mg/Nm ³ @ 5% O ₂)	0.75 (318)	0.78 (331)	0.96 (408)	0.95 (403)
	Low Fuel Consumption Settings	BSFC Btu/bhp-hr (kJ/kWh)	6472 (9156)	6412 (9072)	6500 (9196)
NO _x grams/bhp-hr (mg/Nm ³ @ 5% O ₂)		1.84 (781)	1.84 (781)	1.29 (548)	1.29 (548)
CO grams/bhp-hr (mg/Nm ³ @ 5% O ₂)		1.52 (645)	1.46 (620)	1.42 (603)	1.35 (573)
NMHC grams/bhp-hr (mg/Nm ³ @ 5% O ₂)		0.64 (272)	0.63 (267)	0.70 (297)	0.69 (293)

Typical data is shown. Consult factory for guaranteed data.

NOTES:

- 1) Performance ratings are based on ISO 3046/1-1995 with mechanical efficiency of 90% and T_{cra} 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/ft³ 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 Dresser Waukesha Application Engineering Department.

** Charge air cooler and lube oil cooler plumbed in series.

All natural gas engine ratings are based on a fuel of 900 Btu/ft³ (35.3 MJ/nm³) SLHV, with a 91 WKI®. For conditions or fuels other than standard, consult the Dresser Waukesha Application Engineering Department.

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.