Industrial Generator Set - KG45

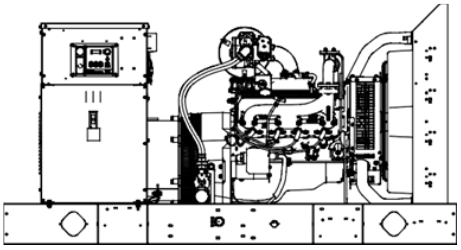
190-600 V Gas

EPA-Certified for 60 Hz Stationary Emergency Applications

EPA certification not applicable at 50 Hz

Ratings Range

		60 Hz	50 Hz
Standby:	**kW**	41-50	33-46
	kVA	41-56	33-46



Standard Features

- Rehlko provides one-source responsibility for the generating system and accessories.
- The generator set and its components are prototype-tested, factory-built, and production-tested.
- The 60 Hz generator set offers a cULus listing.
- The generator set accepts rated load in one step.
- The 60 Hz generator set meets NFPA 110, Level 1, when equipped with the necessary accessories and installed per NFPA standards.
- A one-year limited warranty covers all generator set systems and components. Two- and five-year extended limited warranties are also available.
- Alternator features:
  - The unique Fast-Response® X excitation system delivers excellent voltage response and short-circuit capability using a rare-earth, permanent magnet (PM)-excited alternator.
  - The brushless, rotating-field alternator has broadrange reconnectability.
- Automatic dual-fuel NG/LP system with reset box is available.

Generator Set Ratings

				Natural Gas 130°C Rise Standby Rating		LP Gas 130°C Rise Standby Rating	
Alternator	**Voltage**	**Ph**	**Hz**	**kW/kVA**	**Amps**	**kW/kVA**	**Amps**
4P7BX	120/208	3	60	45/56	156	45/56	156
	127/220	3	60	45/56	147	45/56	147
	120/240	3	60	45/56	135	45/56	135
	120/240	1	60	44/44	184	44/44	184
	139/240	3	60	45/56	135	45/56	135
	220/380	3	60	45/56	86	45/56	86
	277/480	3	60	45/56	68	45/56	68
	347/600	3	60	45/56	54	45/56	54
	110/190	3	50	37/46	140	37/46	140
	115/200	3	50	37/46	133	37/46	133
	120/208	3	50	37/46	128	37/46	128
	110/220	3	50	37/46	121	37/46	121
	110/220	1	50	37/37	169	37/37	169
	220/380	3	50	37/46	70	37/46	70
	230/400	3	50	37/46	67	37/46	67
	240/415	3	50	37/46	64	37/46	64
4P8X	120/208	3	60	45/56	156	45/56	156
	127/220	3	60	45/56	147	45/56	147
	120/240	3	60	45/56	135	45/56	135
	120/240	1	60	45/45	188	45/45	188
	139/240	3	60	45/56	135	45/56	135
	220/380	3	60	45/56	86	45/56	86
	277/480	3	60	45/56	68	45/56	68
	347/600	3	60	45/56	54	45/56	54
	110/190	3	50	37/46	140	37/46	140
	115/200	3	50	37/46	133	37/46	133
	120/208	3	50	37/46	128	37/46	128
	110/220	3	50	37/46	121	37/46	121
	110/220	1	50	37/37	169	37/37	169
	220/380	3	50	37/46	70	37/46	70
	230/400	3	50	37/46	67	37/46	67
	240/415	3	50	37/46	64	37/46	64
4Q7BX	120/240	1	60	41/41	171	45/45	188
	110/220	1	50	33/33	150	37/37	169
4Q10X	120/240	1	60	45/45	188	50/50	209
	110/220	1	50	37/37	169	40/40	182

RATINGS: All three-phase units are rated at 0.8 power factor. All single-phase units are rated at 1.0 power factor. Standby Ratings: The standby rating is applicable to varying loads for the duration of a power outage. There is no overload capability for this rating. Ratings are in accordance with ISO-8528-1 and ISO-3046-1. For limited running time and continuous ratings, consult the factory. Obtain technical information bulletin (TIB-101) for ratings guidelines, complete ratings definitions, and site condition derates. The generator set manufacturer reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever. For dual fuel engines, use the natural gas ratings for both the primary and secondary fuels.

Discovery Energy, LLC
200 Twin Oaks Road, Kohler, WI 53044 USA
For the nearest sales and service outlet in the US and Canada, phone 1-800-544-2444 - powersystems.rehlko.com

Alternator Specifications

Specifications	Alternator
Type	4-Pole, Rotating-Field
Exciter type	Brushless, Rare-Earth Permanent Magnet
Leads: quantity, type	
4P7BX, 4P8X	12, Reconnectable
4Q8X, 4Q10X	4, 110-120/220-240 V
Voltage regulator	Solid State, Volts/Hz
Insulation:	NEMA MG1
Material	Class H
Temperature rise	130°C, Standby
Bearing: quantity, type	1, Sealed
Coupling	Flexible Disc
Amortisseur windings	Full
Voltage regulation, no-load to full-load	Controller Dependent
One-step load acceptance	100% of Rating
Unbalanced load capability	100% of Rated Standby Current
Peak motor starting kVA:	(35% dip for voltages below)
480 V, 400 V 4P7BX (12 lead)	180 (60 Hz), 136 (50 Hz)
480 V, 400 V 4P8X (12 lead)	255 (60 Hz), 215 (50 Hz)
240 V, 220 V 4Q7BX (4 lead)	113 (60 Hz), 87 (50 Hz)
240 V, 220 V 4Q10X (4 lead)	144 (60 Hz), 121 (50 Hz)

- The unique Fast-Response® X excitation system delivers excellent voltage response and short-circuit capability using a rare-earth, permanent magnet (PM)-excited alternator.
- The brushless, rotating-field alternator has broadrange reconnectability.
- NEMA MG1, IEEE, and ANSI standards compliance for temperature rise and motor starting.
- Sustained short-circuit current of up to 300% of the rated current for up to 10 seconds.
- Sustained short-circuit current enabling downstream circuit breakers to trip without collapsing the alternator field.
- Self-ventilated and dripproof construction.

Application Data

Engine

Engine Specifications	60 Hz	50 Hz
Engine: model, type	KG6208 6.2 L Natural Aspiration	
Cylinder arrangement	V-8	
Displacement, L (cu. in.)	6.2 (378)	
Bore and stroke, mm (in.)	101.6 x 95.25 (4.00 x 3.75)	
Compression ratio	10.5:1	
Rated rpm	1800	1500
Max. power at rated rpm, kW (HP)	77.0 (103)	64.3 (86)
Cylinder head material	Cast Aluminum	
Piston type and material	High Silicon Aluminum	
Crankshaft material	Cast Iron	
Valve (exhaust) material	Forged Steel	
Governor type	Electronic	
Frequency regulation, no-load to full-load	Isochronous	
Frequency regulation, steady state	±1.0%	
Frequency	Fixed	
Air cleaner type, all models	Dry	

Exhaust

Exhaust System	60 Hz	50 Hz
Exhaust manifold type	Dry	
Exhaust flow at rated kW, m^3/min. (cfm)	10.8 (382)	9.0 (319)
Exhaust temperature at rated kW, dry exhaust, °C (°F)	671 (1240)	
Maximum allowable back pressure, kPa (in. Hg)	10.2 (3.0)	
Exhaust outlet size at engine hookup, mm (in.)	76 (3.0) OD	

Engine Electrical

Engine Electrical System	60 Hz	50 Hz
Ignition system	Electronic, Distributor	
Battery charging alternator:		
Ground (negative/positive)	Negative	
Volts (DC)	12	
Ampere rating	130	
Starter motor rated voltage (DC)	12	
Battery, recommended cold cranking amps (CCA):		
Qty., rating for - 18°C (0°F)	One, 630	
Battery voltage (DC)	12	

Fuel

Fuel System	60 Hz	50 Hz
Fuel type	Natural Gas, LP Gas, or Dual Fuel	
Fuel supply line inlet	1 NPTF	
Natural gas fuel supply pressure, kPa (in. H_2O)	1.24-2.74 (5-11)	
LPG vapor withdrawal fuel supply pressure, kPa (in. H_2O)	1.24-2.74 (5-11)	
Dual fuel engine, LPG vapor withdrawal fuel supply pressure, kPa (in. H_2O)	1.24 (5)	

Fuel Composition Limits *	Nat. Gas	LP Gas
Methane, % by volume	90 min.	—
Ethane, % by volume	4.0 max.	—
Propane, % by volume	1.0 max.	85 min.
Propene, % by volume	0.1 max.	5.0 max.
C_4 and higher, % by volume	0.3 max.	2.5 max.
Sulfur, ppm mass	25 max.	
Lower heating value, MJ/m^3 (Btu/ft^3), min.	33.2 (890)	84.2 (2260)

* Fuels with other compositions may be acceptable. If your fuel is outside the listed specifications, contact your local authorized distributor for further analysis and advice.

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Lubrication

Lubricating System	60 Hz	50 Hz
Type	Full Pressure	
Oil pan capacity, L (qt.) §	5.7 (6.0)	
Oil pan capacity with filter, L (qt.) §	7.1 (7.5)	
Oil filter: quantity, type §	1, Cartridge	

§ Rehlko recommends the use of Rehlko Genuine oil and filters.

Cooling

Radiator System	60 Hz	50 Hz
Ambient temperature, °C (°F)*	50 (122)	
Engine jacket water capacity, L (gal.)	7.3 (1.93)	
Radiator system capacity, including engine, L (gal.)	20.8 (5.5)	
Engine jacket water flow, Lpm (gpm)	129 (34.1)	108 (28.5)
Heat rejected to cooling water at rated kW, dry exhaust, kW (Btu/min.)	59.9 (3405)	52 (2960)
Water pump type	Centrifugal	
Fan diameter, including blades, mm (in.)	533 (21)	
Fan, kWm (HP)	1.7 (2.3)	1.0 (1.3)
Max. restriction of cooling air, intake and discharge side of radiator, kPa (in. H_2O)	0.125 (0.5)	

* Enclosure with internal silencer reduces ambient temperature capability by 5°C (9°F).

Operation Requirements

Air Requirements	60 Hz	50 Hz
Radiator-cooled cooling air, m^3/min. (scfm)†	120 (4250)	100 (3540)
Combustion air, m^3/min. (cfm)	4.1 (146)	3.5 (122)
Heat rejected to ambient air:		
Engine, kW (Btu/min.)	30.9 (1760)	26.5 (1510)
Alternator, kW (Btu/min.)	7.7 (440)	6.9 (390)

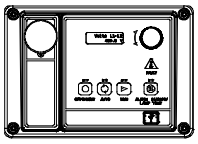
† Air density = 1.20 kg/m^3 (0.075 lbm/ft^3)

Fuel Consumption‡	60 Hz	50 Hz
Natural Gas, m^3/hr. (cfh) at % load	**Standby Ratings**	
100%	22.8 (805)	17.5 (617)
75%	17.1 (603)	12.3 (435)
50%	11.7 (413)	7.9 (278)
25%	7.0 (248)	5.2 (184)
LP Gas, m^3/hr. (cfh) at % load	**Standby Ratings**	
100%	10.0 (354)	6.4 (225)
75%	6.4 (225)	4.7 (165)
50%	4.5 (156)	3.4 (120)
25%	3.0 (105)	2.3 (83)

‡ Nominal fuel rating: Natural gas, 37 MJ/m^3 (1000 Btu/$ft.^3$)
LP vapor, 93 MJ/m^3 (2500 Btu/$ft.^3$)

LP vapor conversion factors:
8.58 $ft.^3$ = 1 lb.
0.535 m^3 = 1 kg.
36.39 $ft.^3$ = 1 gal.

Controllers



APM402 Controller

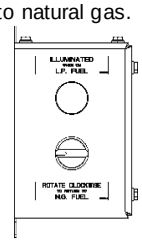
Provides advanced control, system monitoring, and system diagnostics for optimum performance and compatibility.

- Digital display and menu control provide easy local data access
- Measurements are selectable in metric or English units
- Remote communication thru a PC via network or serial configuration
- Controller supports Modbus® protocol
- Integrated hybrid voltage regulator with ±0.5% regulation
- Built-in alternator thermal overload protection
- NFPA 110 Level 1 capability

Refer to G6-161 for additional controller features and accessories.

Dual Fuel Model Features

- Natural gas is the primary fuel. Automatically transfers back to primary fuel when LPG fuel becomes low or generator stops and restarts.
- The patented reset box on the generator provides the ability to manually transfer back to natural gas.



Dual Fuel Reset Box

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190-600 V Gas

Standard Features
- Alternator Protection
- Battery Rack and Cables
- Electronic, Isochronous Governor
- Gas Fuel System (includes fuel mixer, electronic secondary gas regulator, gas solenoid valve, and flexible fuel line between the engine and the skid-mounted fuel system components)
- Integral Vibration Isolation
- Local Emergency Stop Switch
- Oil Drain Extension
- Operation and Installation Literature

Available Options

Approvals and Listings
- ❑ cULus (UL 2200 and CSA)
- ❑ Hurricane Rated Enclosure
- ❑ IBC Seismic Certification

Enclosed Unit
- ❑ Sound Enclosure (with enclosed critical silencer)
- ❑ Weather Enclosure (with enclosed critical silencer)

Open Unit
- ❑ Exhaust Silencer, Critical (kit: PA-352663)
- ❑ Flexible Exhaust Connector, Stainless Steel

Fuel System
- ❑ Dual Fuel NG/LPG (automatic changeover)
- ❑ Flexible Fuel Line
  (required when the generator set skid is spring mounted)
- ❑ Fuel Filter Kit

Controller
- ❑ Common Fault Relay
- ❑ Two Input/Five Output Module
- ❑ Remote Annunciator Panel
- ❑ Remote Emergency Stop
- ❑ Run Relay
- ❑ Manual Speed Adjust

Cooling System
- ❑ Block Heater, 1500 W, 110-120 V
  Required for ambient temperatures below 10°C (50°F)
- ❑ Radiator Duct Flange

Electrical System
- ❑ Alternator Strip Heater
- ❑ Battery
- ❑ Battery Charger
- ❑ Battery Charger Temperature Compensation
- ❑ Battery Heater
- ❑ Line Circuit Breaker (NEMA1 enclosure)
- ❑ Line Circuit Breaker with Shunt Trip (NEMA1 enclosure)

Miscellaneous
- ❑ Air Cleaner Restrictor Indicator
- ❑ Certified Test Report
- ❑ Engine Fluids (oil and coolant) Added
- ❑ Rated Power Factor Testing
- ❑ Rodent Guards
- ❑ Open Unit Accessory Kit
- ❑ (stone guards, radiator duct flange, flexible exhaust)

Literature
- ❑ General Maintenance
- ❑ NFPA 110
- ❑ Overhaul
- ❑ Production

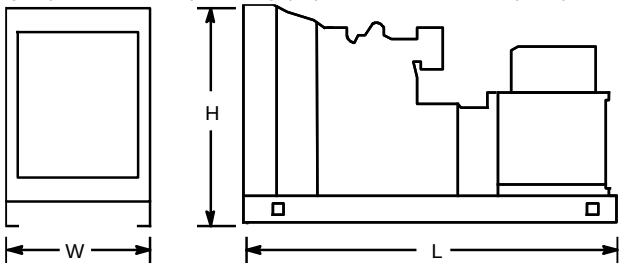
Warranty
- ❑ 2-Year Basic Limited Warranty
- ❑ 5-Year Basic Limited Warranty
- ❑ 5-Year Comprehensive Limited Warranty

Other Options
- ❑ _____
- ❑ _____
- ❑ _____
- ❑ _____
- ❑ _____

Dimensions and Weights

Overall Size, L x W x H, max., mm (in.):

Wide Skid	2200 x 1040 x 1170 (86.6 x 40.9 x 46.1)
Narrow Skid	2200 x 864 x 1170 (86.6 x 34.0 x 46.1)
Weight (radiator model), wet, kg (lb.):	862 (1900)



NOTE: This drawing is provided for reference only and should not be used for planning installation. Contact your local authorized distributor for more detailed information.

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