Industrial Generator Set - 40CCL
208-600 V Gas

EPA-Certified for Stationary Emergency Applications

Ratings Range

		60 Hz
Standby:	**kW**	34-40
	kVA	34-50

The Rehlko Advantage

- **High Quality Power**
  Rehlko generators provide advanced voltage and frequency regulation along with ultra-low levels of harmonic distortion for excellent generator power quality to protect your valuable electronics.
- **Extraordinary Reliability**
  Rehlko is known for extraordinary reliability and performance and backs that up with a five year or 2000 hour limited warranty.
- **All-Aluminum Sound Enclosure**
  Durable aluminum sound-attenuating enclosure.

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 generator set accepts rated load in one step.
- A five-year/2000 hour limited warranty covers all generator set systems and components. Five-year comprehensive and ten-year extended limited warranties are also available for purchase in some jurisdictions.
- Engine Features:
  - Powerful and reliable 2.2 L turbocharged liquid-cooled engine.
  - Electronic engine management system.
  - Simple field conversion between natural gas and LPG fuels while maintaining emission certification.
- Innovative Cooling System
  - Electronically controlled fan speeds minimize generator set sound signature.
- Alternator features:
  - Wound field excitation system with its unique PowerBoost™ design delivers great voltage response and short-circuit capability.
  - The brushless, rotating-field alternator has broadrange reconnectability.
- Rehlko designed controller for one-source system integration and remote communication. See Controller on page 3.
- Certifications
  - The generator set engine is certified by the Environmental Protection Agency (EPA) to conform to the New Source Performance Standard (NSPS) for stationary spark-ignited emissions.
  - cULus listing is available.
  - The generator set meets NFPA 110, Level 1, when equipped with the necessary accessories and installed per NFPA standards.
  - Accepted by the Massachusetts Board of Registration of Plumbers and Gas Fitters.
- Approved for stationary standby applications in locations served by a reliable utility source.

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**
4D8.3	120/208	3	60	40/50	139	40/50	139
	120/240	1	60	34/34	142	34/34	142
	120/240	3	60	40/50	121	40/50	121
	277/480	3	60	40/50	61	40/50	61
	347/600	3	60	40/50	49	40/50	49
4E8.3	120/240	1	60	40/40	167	40/40	167

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. 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.

Alternator Specifications

Specifications	Alternator
Manufacturer	Rehlko
Type	4-Pole, Rotating-Field
Exciter type	Brushless, Wound-Field
Leads: quantity, type	
4D	12, Reconnectable
4E	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 4D8.3 (12 lead)	120
240 V 4E8.3 (4 lead)	74

- NEMA MG1, IEEE, and ANSI standards compliance for temperature rise and motor starting.
- Sustained short-circuit current enabling downstream circuit breakers to trip without collapsing the alternator field.
- Self-ventilated and dripproof construction.
- Windings are vacuum-impregnated with epoxy varnish for dependability and long life.
- Superior voltage waveform from a two-thirds pitch stator and skewed rotor.

Application Data

Engine

Engine Specifications	
Manufacturer	Rehlko
Engine: Model type	2.2 L, 4-Cycle,
Turbocharged and Aftercooled	KG02L04T-6DXS
Turbocharged and Aftercooled with Catalyst	KG02L04T-6DGS
Cylinder arrangement	In-line 4
Displacement, L (cu. in.)	2.2 (134.25)
Bore and stroke, mm (in.)	91 x 86 (3.5 x 3.4)
Compression ratio	10.5:1
Piston speed, m/min. (ft./min.)	340 (1016)
Main bearings: quantity, type	5, plain alloy steel
Rated rpm	1800
Max power at rated RPM, kW (HP)	51.4 (68.9)
Cylinder head material	Cast Iron
Piston type and material	High Silicon Aluminum
Crankshaft material	Nodular 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

Engine Electrical

Engine Electrical System	
Ignition system	Coil Pack
Battery charging alternator:	
Ground (negative/positive)	Negative
Volts (DC)	12
Ampere rating	90
Starter motor rated voltage (DC)	12
Battery, recommended cold cranking amps (CCA):	
Qty., rating for -18°C (0°F)	One, 650
Battery voltage (DC)	12

Exhaust

Exhaust System	
Exhaust manifold type	Dry
Exhaust flow at rated Kw, m^3/min (cfm)	8.8 (310.8)
Exhaust temperature at rated kW, dry exhaust, °C (°F)	650 (1202)
Maximum allowable overall back pressure, kPa (in. Hg)	5 (1.48)
Max allowable back pressure after the silencer or catalyst, kPa (in. Hg)	2.8 (0.83)
Exhaust outlet size at engine hookup	See ADV Drawing

Fuel

Fuel System	
Fuel type	Natural Gas or LPG
Fuel supply line inlet	1 in. NPTF
Nat. gas/ LP gas fuel supply pressure, kPa (in. H_2O)	1.24-2.74 (5-11)

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.

Application Data

Lubrication

Lubricating System	
Type	Full Pressure
Oil pan capacity, L (qt.) §	4.2 (4.4)
Oil pan capacity with filter and cooler, L (qt.) §	4.75 (5.0)
Oil filter: quantity, type §	1, Cartridge

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

Cooling

Radiator System	Nat. Gas	LP Gas
Ambient temperature, °C (°F)*	50 (122)	
Engine jacket water capacity, L (gal.)	2.7 (0.71)	
Radiator system capacity, including engine, L (gal.)	13.2 (3.5)	
Engine jacket water flow, Lpm (gpm)	59.8 (15.8)	
Heat rejected to cooling water at rated kW, dry exhaust, kW (Btu/min.)	29.1 (1655)	30.5 (1735)
Heat rejected to charge cooling air at rated kW, dry exhaust, kW (Btu/min.)	2.58 (146.7)	3.2 (182.0)
Water pump type	Centrifugal	
Fan diameter, including blades, mm (in.)	qty. 3 @ 406 (16)	
Fan power requirements (powered by engine battery charging alternator)	12 VDC, 18 amps each	
Max. restriction of cooling air, intake and discharge side of radiator, kPa (in. H_2O)	See TIB-118	

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

Operation Requirements

Air Requirements	Nat. Gas	LP Gas
Radiator-cooled cooling air, m^3/min. (scfm) †	51 (1800)	
Combustion air, m^3/min. (cfm)	2.13 (75.2)	2.21 (78.0)
Heat rejected to ambient air, kW (Btu/min.)		
Engine	35.6 (2025)	37.9 (2155)
Alternator	5.20 (296)	

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

Fuel Consumption‡	
Natural Gas, m^3/hr. (cfh) at % load	**Standby Ratings**
100%	14.9 (526)
75%	9.9 (350)
50%	6.3 (222)
25%	4.5 (159)
0%	3.8 (134)
LP Gas, m^3/hr. (cfh) at % load	**Standby Ratings**
100%	5.5 (194)
75%	4.0 (141)
50%	2.6 (92)
25%	2.0 (71)
0%	1.5 (53)

‡ 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.

Controller

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.

Modbus® is a registered trademark of Schneider Electric.

Sound Enclosure

- Durable aluminum, sound-attenuating enclosure with quiet operation of 57 dB(A) log average @ 7 m (23 ft.) at no load.
- Internally mounted silencer.
- Fade-, scratch, and corrosion-resistant Power Armor™ automotive-grade textured finish.
- Acoustic insulation that meets UL 94 HF1 flammability classification and repels moisture absorption.

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Standard Features

- Alternator Protection
- Aluminum Sound Enclosure with Enclosed Silencer
- Battery Rack and Cables
- Flexible Fuel Line
- Gas Fuel System (includes fuel mixer, fuel control valve, gas solenoid valve, and flexible fuel line between the engine and the skid-mounted fuel system components)
- Integral Vibration Isolation
- Local Emergency Stop Switch
- Low Fuel Pressure Switch (with NFPA fuel module)
- Oil Drain Extension
- Operation and Installation Literature
- Standard 5-Year Limited Warranty

Available Options

Approvals and Listings

❑ cULus (UL 2200 and CSA)

Controller

❑ 15-Relay Dry Contact Board (NA with Input/Output Module)
❑ Communication Products
❑ Input/Output Module (2 inputs, 5 outputs)
❑ Lockable Emergency Stop (lockout/tagout)
❑ Manual Key Switch
❑ Manual Speed Adjust
❑ Remote Annunciator Panel
❑ Remote Emergency Stop
❑ Run Relay

Enclosure Accessories

❑ Aluminum Sound Enclosure, Wind-Load Rated (factory installed)
❑ Enclosure Doors for 291 kph (181 mph) Wind Load

Starting Aids*

❑ Block Heater, 500 W, 110-120 V

Oil Pan Heater*

❑ Oil Pan Heater, 150 W, 110-120 V

* One block heater or oil pan heater is required for ambient temperatures below 0°C (32°F). At temperatures below -18°C (0°F) installation of both heaters is required.

Electrical System

❑ Alternator Strip Heater
❑ Battery
❑ Battery Charger, 6 Amp
❑ Battery Charger, 10 Amp w/Alarms
❑ Battery Heater
❑ Temperature Compensation for 10 Amp Battery Charger

Miscellaneous

❑ Air Cleaner Restriction Indicator
❑ Engine Fluids Added
❑ Maintenance Kit (filters, spark plugs, oil)

Literature

❑ General Maintenance
❑ NFPA 110
❑ Overhaul
❑ Production

Warranty

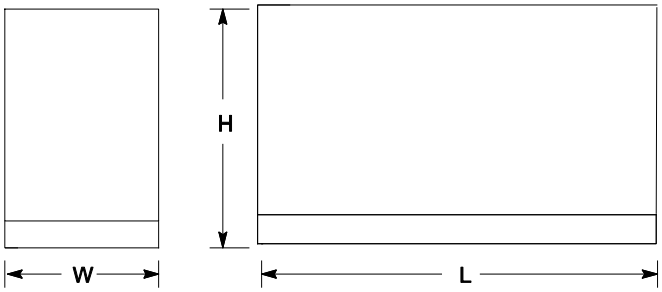
❑ 5-Year Comprehensive Limited Warranty
❑ 10-Year Extended Limited Warranty

Other Options

❑ _____
❑ _____
❑ _____
❑ _____
❑ _____
❑ _____
❑ _____
❑ _____

Dimensions and Weights

Overall Size, L x W x H, mm (in.):	2280 x 836 x 1182 (89.8 x 32.9 x 46.5)
Weight, with engine fluids, kg (lb.):	635 (1400)



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