



# Model 100 RNIL 100 kW Natural Gas\ LP Generator Set

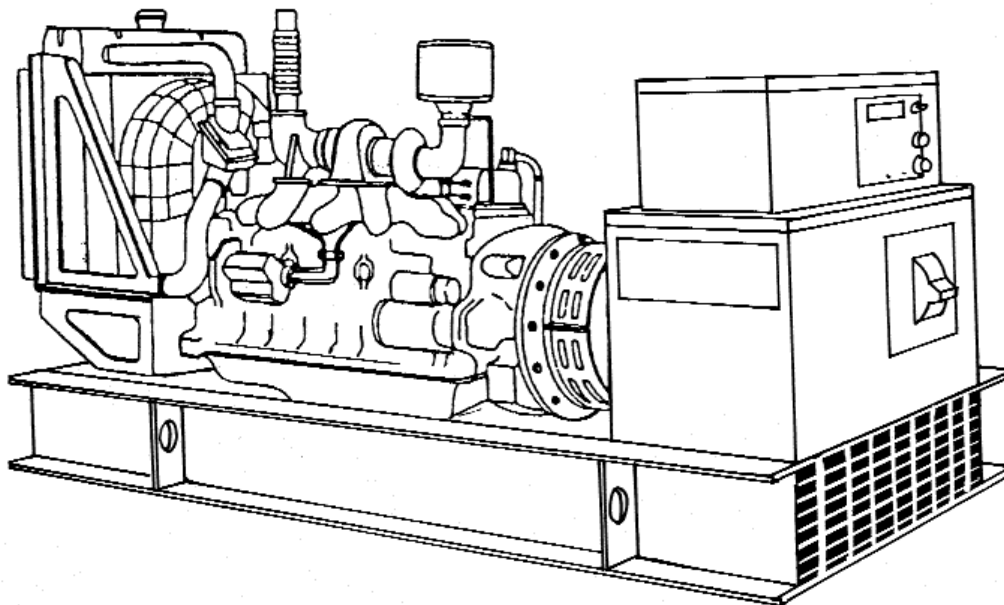
## Generator Set Rating

Three Phase	60 Hz	50 Hz
	kW/KVA	kW/KVA
Continuous		
Standby 150°C	100/125	90/112
Prime Power 105°C	90/112	81/101
Single Phase	60 Hz	50 Hz
	kW/KVA	kW/KVA
Continuous		
Standby 150°C	74/74	80/80
Prime Power 105°C	64/64	62/62

## Quality Power Producing Equipment

is our business at Elliott MagneTek Power Systems, Inc.. Our power systems offer solutions to requirements for reliable, quality electrical power.

- 100% full load tested.
- Performance supported by prototype testing.
- 12 lead re-connectable AC synchronous generators.
- Solid state automatic voltage regulator.
- 50 or 60 Hz operational.
- Standard Digital Control Panel meeting standards set by NFPA-110.



## Product Features

### System Reliability and Longevity

begin with design experience and integrity. EMPS was formed by two companies with over one hundred years experience producing state-of-the-art power generation equipment. This experience is designed into our generator sets.

### Single Source Responsibility:

Product service, support and parts available through EMPS network of distributors.

### Accessories and Flexibility

are designed into EMPS' generator sets at the factory level to meet specific application needs.

### Organizational Commitment

to innovative, leading edge technology and environmentally friendly electrical products and services.

# Generator Set Design Features

## Model 100 RN\ L 100 kW NG\ LP Generator Set

### Standard Equipment

- \* 4 Cycle engine.
- \* AC synchronous 12 lead re-connectable brushless alternator.
- \* Steel base with vibration isolators between engine, generator and base.
- \* Generator mounted terminal and meter /control box.
- \* Circuit breaker-mounting provisions.
- \* Connection area for main AC terminals and all control wiring
- \* 12 volt DC engine electrical system.
- \* 12 volt starter motor.
- \* Battery charging alternator.
- \* Battery rack and cables.
- \* Flexible fuel lines.
- \* All metallic parts incorporate our powder paint primer base coat with UV inhibitive enamel top coat.
- \* Single stage dry type air cleaner.
- \* Corrosion resistant hardware.
- \* Oil drain extension plumbed to base rail for convenient connection.
- \* Microprocessor based auto start meter/ control panel.
- \* Digital read out control system rated to operate from -30° C to 75° C with the following standard displays, shown continuously:
  - \*\* Generator AC voltage.
  - \*\* AC amperage:
    - Phase 1-2
    - Phase 2-3
    - Phase 3-1
  - \*\* Frequency
  - \*\* Oil Pressure
  - \*\* Engine Temperature
  - \*\* Battery Voltage
  - \*\* Fuel Level (Diesel Only)
- \* The following can be displayed using the scroll lock function:
  - \*\* Run time
  - \*\* Safety set point for over speed
  - \*\* Over crank
  - \*\* High water temperature
  - \*\* Low oil pressure
- \* Voltage adjust rheostat
- \* Auto/off /run switch

### Generator Specifications

**Manufacturer:** MagneTek

**Insulation:** The main stator, main rotor, exciter stator and exciter rotor are all insulated with Class H materials and rated Class F per NEMA MG1 -1.65 and 852757 definition. All materials are non-hygroscopic to prevent fungus growth. A polyester and epoxy combination offers maximum environmental protection.

**Main Stator:** 2/3 pitch and one slot skewing minimize voltage harmonics and meets telephone influence factor TIF) per NEMA MG1-22.43. Twelve lead re-connectable design. Coated with anti-abrasive sealer.

**Main Rotor:** Four pole single piece lamination with full amortisseur windings and coil supports. Winding is precision wet layer wound with epoxy resin and dynamically balanced to two mil in two planes. Production over speed tested at 125% for 15 minutes. All materials are non-hygroscopic to prevent fungus growth.

**Exciter:** Brushless, three phase, six-pole rotor, and production over speed tested at 125% operating speed.

**Rotating Diode:** Sealed full wave with metal oxide surge suppressor

**Bearing:** Double-sealed, permanently lubricated, 50,000 hour B-10 life including magnetic pull.

**Drive Coupling:** Positive alignment, flexible drive discs.

### Automatic Voltage Regulator Specifications

**Operation:** Volts per hertz, three phase sensing with overload and loss of sensing protection.

**Construction:** Solid state, modular: fully sealed and potted design provides component protection from corrosive environments and vibration.

**Voltage Regulation:** +/- 1% voltage regulation no load to full rated load: +/- 1/2% voltage regulation at steady state conditions.

**Radio Interference (RFI):** Integral filter provides suppression of conducted electromagnetic interference to levels meeting most commercial requirements.

### Voltage Selections and Full Load Amperages at Standby Rating

Three Phase

60 Hz Amperage	50 Hz Amperage
120/208 347	110/190 342
120/240 301	120/208 312
277/480 150	230/400 162
347/600 120	240/415 157

\*Single Phase

60 Hz Amperage	50 Hz Amperage
120/240 308	110/220 363

All voltages listed are available and/or re-connectable with the exception of the three phase, 60 Hz, 347/600 volt generator which is application specific. For other voltages, contact your EMPS distributor. All output amperage ratings listed above are at standby rating.

\*Single Phase amperage based on standard generator and unity power factor. For full single phase output use generator model MTG41.

### Application and Performance Data

MagneTek Alternator Model MTG35 is standard with this package. Larger generators may be required to meet certain application specific requirements such as Single Phase, Motor Starting and Non Linear Loads. The Maximum Generator rating available in this package is MTG44.

# Technical Specifications

## Model 100 RN\ L

### 100 kW NG\ LP Generator Set

#### Engine Specifications

Manufacturer	General Motors	
Model	7.4L(T)	
Aspiration	Turbo	
Cylinders	V-8	
Displacement	454 In <sup>3</sup> . (7.4L)	
Bore and Stroke,	4.25 in x 4 in.	
	(108 mm x 101.6 mm)	
Compression Ratio	8.9:1	
Minimum C.C.A. at 5°C	750	
RPM	<b>1800 rpm</b>	<b>1500 rpm</b>
BHP Minimum REQ"D		
at Rated kW	154	139
BMEP	149 psi	161 psi

#### Generator Set Deration Factors

Temperature:  
 1% for every 10° F above 120° F  
 1% for every 6°C above 49°C

Altitude  
 2% for every 1000 feet above  
 Sea Level  
 2% for every 305 meters above  
 Sea Level

#### Cooling System

High Ambient 105°F (41°C) System  
 Coolant Capacity with Radiator  
 8 US Gal. (30.3 L)

Maximum restriction on discharge side of radiator  
 .5 In wc (125 Pa)

	<b>1800 rpm</b>	<b>1500 rpm</b>
Coolant Flow		
	40 GPM	33 GPM
	(151 LPM)	(125 LPM)

Heat Rejection to Coolant at Rated		
Full Load	7590 Btu/min	6930 Btu/min
Nat. Gas	(800 MJ/min)	(731 MJ/min)

Heat Rejection to Coolant at Rated		
Full Load	7590 Btu/min	6930 Btu/min
Propane	(800 MJ/min)	(731 MJ/min)

Heat Rejection to Room at Rated		
Full Load	22,770 Btu/min	21,120 Btu/min
Nat. Gas	(2,402 MJ/min)	(2,228 MJ/min)

Heat Rejection to Room at Rated		
Full Load	22,770 Btu/min	21,120 Btu/min
Propane	(2402 MJ/min)	(2228 MJ/min)

#### Air System

Maximum	<b>1800 rpm</b>	<b>1500 rpm</b>
Air Intake Restriction	12 In wc (2.99 kPa)	12 In wc (2.99 kPa)
Radiator Cooling Air Flow	11,500 cfm (351 m <sup>3</sup> /min)	9,600 cfm (293 m <sup>3</sup> /min)
Combustion Air Flow	270 cfm (7.6 m <sup>3</sup> /min)	210 cfm (5.9 m <sup>3</sup> /min)
Generator Cooling Air Flow	2348 cfm (66.4 m <sup>3</sup> /min)	1957 cfm (55.4 m <sup>3</sup> /min)

#### Exhaust System

Exhaust Outlet Connection  
 Maximum Allowable Back Pressure  
 1.5 In Hg (5.08kPa)

Exhaust Gas Flow at Standby Rating	760 cfm (21.5 m <sup>3</sup> /min)	640 cfm (18.1 m <sup>3</sup> /min)
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Exhaust Temp at Standby Rating	1360°F (738°C)	1300°F (704°C)
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#### Fuel System

Consumption at Standby Rating:

<b>Load</b>	<b>1800 RPM</b>		
	Propane	Natural Gas	
	kW	lbs./hr.(kg./hr.)	CFH(m <sup>3</sup> /hr.)
1/4	25	33.5(6.9)	651(18.4)
1/2	50	54.6(24.8)	1060(29.9)
3/4	75	59.5(27)	1138(32.2)
Full	100	69.9(31.8)	1276(36.1)

<b>Load</b>	<b>1500 RPM</b>		
	Propane	Natural Ga	
	kW	lbs./hr.(kg./hr.)	CFH(m <sup>3</sup> /hr.)
1/4	22	15.2(6.9)	328(9.3)
1/2	45	28.1(12.8)	639(18.1)
3/4	67	42.8(19.5)	966(27.4)
Full	90	58.9(26.6)	1310(37.1)

**Governor Type** Isochronous  
**Governor Regulation:** +/- 5% Steady State

#### Generator

Manufacturer MagneTek  
 Model MTG35  
 Motor Starting KVA, 240/480 Volt WYE at 35% Voltage Dip,100% Voltage Recovery 288 SKVA

Maximum Motor Starting KVA,35% Voltage Dip Oversized Generator MTG41 346 SKVA

#### Reactances

	480 V	400 V
at 105°C rise	60Hz	50Hz
Synchronous Xd	3.09	2.75
Direct Axis		
Transient X'd	.233	.207
Direct Axis		
Subtransient X'd	.154	.137
Negative Sequence X <sub>2</sub>	.209	.208
Zero Sequence X <sub>0</sub>	.0026	.0023

#### Lubrication System

Engine Oil Capacity with Filters 8 qts. (7.6 L)  
 Oil Filter Type Spin On

# Model 100 RN\ L 100 kW NG\ LP Generator Set

## Options:

### Generator

- \* Upsized
- \* Tropical winding protection
- \* Space heater
- \* Series boost
- \* UL listed mainline circuit breaker

### Control

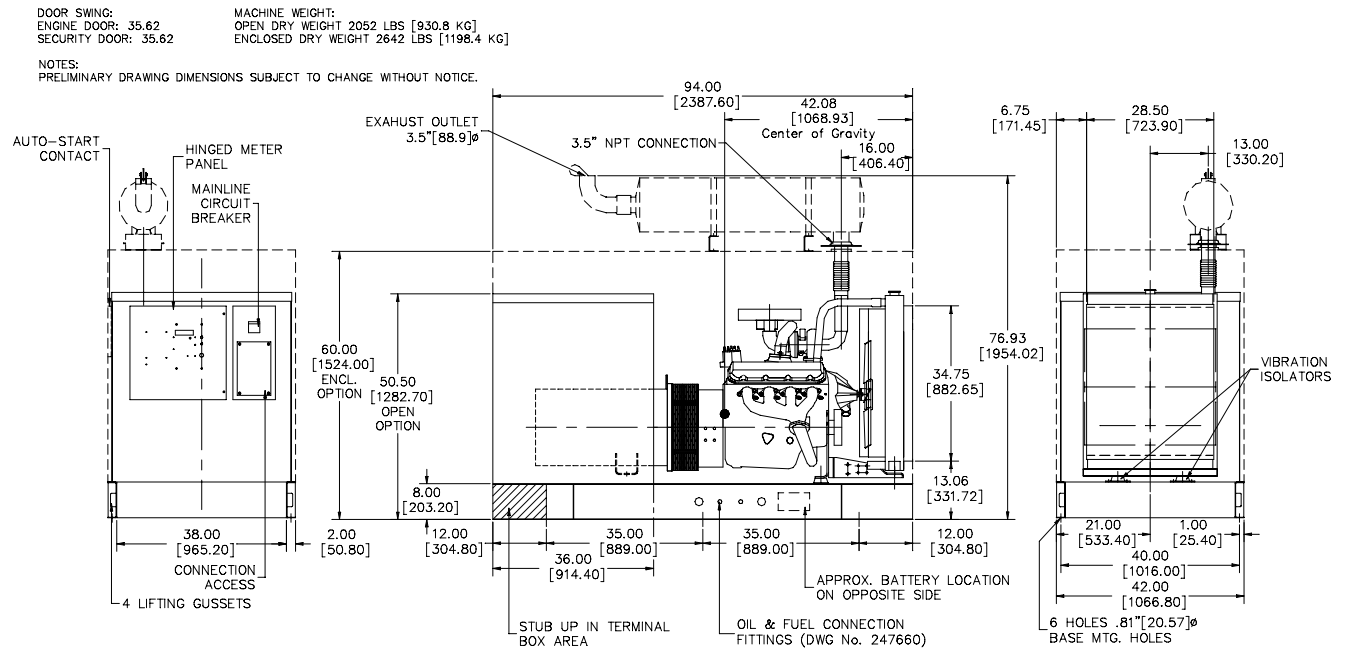
- \* Remote alarm annunciator
- \* Emergency stop
- \* Multi-point dry contact board.
- \* NFPA 110 Compliance
- \* Low Temperature Display Heater

### Engine

- \* Battery/Battery heater
- \* Battery charger
- \* Engine pre-heater
- \* Fuel/ water separator

### Generator Set

- \* EMPS automatic transfer switch
- \* Industrial silencer
- \* Residential silencer
- \* Critical silencer
- \* Weather protective enclosure
- \* Sound attenuation



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Distributed by:



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