### Model 40 RD
#### 40 kW Diesel Generator Set

<table>
<thead>
<tr>
<th>Generator Set Rating</th>
<th>Three Phase</th>
<th></th>
<th>60 Hz</th>
<th>50 Hz</th>
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<tbody>
<tr>
<td></td>
<td>kW/KVA</td>
<td>kW/KVA</td>
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<td>Continuous</td>
<td>40/50</td>
<td>36/45</td>
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<tr>
<td>Standby 150°C</td>
<td>36/45</td>
<td>32/40</td>
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<tr>
<td>Prime Power 105°C</td>
<td>36/45</td>
<td>32/40</td>
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<tr>
<td>Single Phase</td>
<td>60 Hz</td>
<td>50 Hz</td>
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<tr>
<td>Continuous</td>
<td>25/25</td>
<td>26/26</td>
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</tbody>
</table>

#### 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.

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### 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.

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### Single Source Responsibility:

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

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### Accessories and Flexibility

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

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### Organizational Commitment

to innovative, leading edge technology and environmentally friendly electrical products and services.
Generator Set Design Features

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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.
* Most 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 -30º C to 75º 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  139  110/190  137
120/240  120  120/208  125
277/480  60  230/400  65
347/600  48  240/415  63

*Single Phase
60 Hz Amperage  50 Hz Amperage
120/240  104  110/220  118

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 MTG32.

Application and Performance Data
MagneTek Alternator Model MTG24 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 MTG35.
Technical Specifications
Model 40 RD
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**Engine Specifications**
- **Manufacturer:** Isuzu
- **Model:** 4BGIPV
- **Type:** In line 4 Stroke
- **Aspiration:** Natural
- **Cylinders:** 4
- **Displacement:** 264 In^3. (4.3 L)
- **Bore and Stroke:** 4.13 in x 4.92 in. (105 mm x 125 mm)
- **Compression Ratio:** 17:1
- **Minimum C.C.A. at 5°C:** 750 RPM
- **BHP Minimum REQ'D at Rated kW:** 62 56
- **BMEP:** 103 psi 112 psi

**Generator Set Deration Factors**
- **Temperature:** 2.5% for every 5° F above 105° F
  
  2.5% for every 9°C above 41°C
- **Altitude:** 3% for every 1000 feet above
  
  600 feet
  
  3% for every 305 meters above
  
  183 meters

**Cooling System**
- **High Ambient 105°F (41°C) System**
- **Coolant Capacity with Radiator:** 14 qt. (13.2 L)
- **Maximum restriction on discharge side of radiator:** .5 In wc (125 Pa)

**Air System**
- **Maximum Air Intake Restriction:** 30 In wc (7.5 kPa)
- **Radiator Cooling Air Flow:** 4500 cfm (122.4 m^3/min) 4200 cfm (118.7 m^3/min)
- **Combustion Air Flow:** 117 cfm (3.6 m^3/min) 105 cfm (3.2 m^3/min)
- **Cooling Air Flow:** 1003 cfm (28.4 m^3/min) 860 cfm (24.3 m^3/min)

**Exhaust System**
- **Exhaust Manifold Outlet Size:** 1.9 in. dia. (4.8 cm)
- **Maximum Allowable Back Pressure:** 40.9 In wc (10.2 kPa)
- **Exhaust Gas Flow at Standby Rating:** 375 cfm (11.4 m^3/min) 338 cfm (10.3 m^3/min)
- **Exhaust Temp at Standby Rating:** 1103°F (585°C) 993°F (534°C)

**Fuel System**
- **Consumption at Standby Rating:**
  - 1800 RPM
    - 1/4: 10 kW 1.2 US gal/h 4.5 L/h
    - 1/2: 20 kW 2.6 US gal/h 10.6 L/h
    - 3/4: 30 kW 2.8 US gal/h 10.6 L/h
    - Full: 40 kW 3.5 US gal/h 13.2 L/h
  - 1500 RPM
    - 1/4: 9 kW .97 US gal/h 3.7 L/h
    - 1/2: 18 kW 1.62 US gal/h 6.1 L/h
    - 3/4: 27 kW 2.27 US gal/h 8.6 L/h
    - Full: 36 kW 2.84 US gal/h 10.8 L/h

**Governor Type:** Mechanical
**Governor Regulation:** +/-25% Steady State

**Generator**
- **Manufacturer:** MagneTek
- **Model:** MTG24
- **Motor Starting KVA:** 90 SKVA
- **Maximum Motor Starting KVA, 35% Voltage Dip Oversized Generator MTG35:** 288 SKVA

**Reactances**
- **at 105°C rise:** 480 V 60Hz 50Hz
- **Synchronous Xd:** 3.32 3.19
- **Direct Axis Transient X'd:** .233 .224
- **Direct Axis Subtransient X'd:** .173 .166
- **Zero Sequence Xo:** .0033 .0032

**Lubrication System**
- **Engine Oil Capacity with Filters:** 3 US gal. (11 L)
- **Oil Filter Type:** Spin On

**Engine Exhaust Emissions Certification Values**
- **Exhaust Emissions (g/bhp-hr.)*CARB 40RD**
  - HC: 1 .6
  - CO: 4.8 2.5
  - NOx: 6.9 5.3
  - PM: .63 .45

**Smoke Opacity (%)**
- Acceleration: 20 8
- Lugging: 15 6
- Peak: 50 13
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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
- Isochronous governor

Generator Set
- EMPS automatic transfer switch
- Industrial silencer
- Residential silencer
- Critical silencer
- Weather protective enclosure
- Sound attenuation
- Sub-base fuel tank

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