



## **PANCAKE GENERATORS**

### **TYPICAL SPECIFICATION**

The generator shall be manufactured by Marathon Electric Manufacturing Corporation and of the Pancake design. It shall meet all requirements of NEMA MG-1 Parts 32 and 33 in design, performance, and factory test procedures. The generator shall be C.S.A listed. The automatic voltage regulator shall be factory wired and tested with the generator unless otherwise specified by the purchase order.

#### ***CONSTRUCTION AND BEARINGS***

The unit enclosure shall be fully guarded per NEMA MG-1-1.25.4 - IP20 as a minimum. The frame shall be of cast aluminum for light weight and strength, and be designed to have the shortest possible length to permit installation in limited space applications.

Bearing brackets shall be of cast aluminum with cast iron inserts for the bearing bores. The opposite drive bearing bracket bearing bore shall be machined for an O-Ring to retard bearing outer race rotation.

Bearings shall be pre-lubricated, double sealed, ball type single row Conrad, C3 fit. Minimum B-10 life shall be 100,000 hours for single bearing units.

#### ***EXCITATION SYSTEM***

The generator shall be of the shunt excited, brushless design incorporating a rotating brushless exciter. The rotating brushless exciter shall use a three phase, full wave rectifier assembly with 6 hermetically sealed silicon diodes. The diodes shall be designed for safety factors of five times voltage, and three times current.

#### ***INSULATION SYSTEM***

The insulation system of both the rotor and stator shall be of NEMA Class F materials or better, and shall be synthetic and non-hygroscopic. The main stator, exciter stator, and exciter rotor shall be insulated with 100% solids polyester varnish by the dip and bake process. The main rotor shall be layer wound.

#### ***MAIN ROTOR***

The main revolving field construction shall consist of one piece, for pole laminations. Dovetails, cross bolts, and other pole to shaft connection means are not acceptable. All units shall incorporate a copper amortisseur winding to dampen rotor oscillations and improve single phase performance. The main rotor core shall be shrunk fit, and keyed to the shaft.

The rotating assembly shall be dynamically balanced to less than 2 mils peak to peak displacement, and shall be designed to have an over speed withstand of 125% of rated synchronous speed for 15 minutes when operating at full rated stable operating temperature.

### ***MAIN STATOR WINDING***

The main stator winding shall be single phase, four output load leads and of 2/3 pitch design. The winding shall incorporate a one slot skew to minimize slot harmonics. Windings shall be random wound, and lashed at the end turns to provide superior mechanical strength.

### ***TEMPERATURE RISE***

The temperature rise of both the rotor and stator windings shall be measured by the resistance method, and shall be in accordance with the applicable sections of NEMA MG-1 parts 32 and 33, BS-5000, or C.A.S C22.2 for the type of service intended.

### ***AUTOMATIC VOLTAGE REGULATOR (AVR)***

The SE350 automatic voltage regulator supplied for 240/120 volt, 60 Hertz operation shall have solid state voltage build-up. No voltage build-up relay or other relays are acceptable. The unit shall be encapsulated for humidity and abrasion protection. The voltage regulator shall include 1% regulation, volts per hertz operation with built in adjusting rheostats for voltage level, stability, and frequency roll-off accessible through holes drilled in the top mounted connection box. Provisions for an optional external remote mounted voltage adjust rheostat shall be provided.

### ***VENTILATION***

The generator shall be self ventilated and have a one-piece, cast aluminum alloy, multidirectional internal fan for high volume, low noise air delivery. Cooling air flow shall be from the opposite drive end through the generator to the drive end. The exciter shall be in the cooling air flow.

### ***CONDUIT BOX***

Load connections shall be in the top mounted connection box. The conduit box shall allow connection from the opposite drive end side, or the left side of the connection box when viewed from the opposite drive end of the generator. The conduit box shall be equipped with a 3 post terminal block to facilitate reconnection, and affixing of output

load leads. A generator frame grounding screw shall be installed within the connection box.

***VERIFICATION OF PERFORMANCE***

All certificated performance and temperature rise test data submitted by the generator manufacturer are to be the result of the actual testing of the same or duplicate generators. Temperature rise data shall be the result of loaded, rated kVA and power factor heat runs at rated frequency and voltage. All performance testing shall be conducted in accordance with MIL-STD-705, and/or IEEE Standard 115.