

LIMA[®] MAC GENERATORS

TYPICAL SPECIFICATIONS

General

The generator shall be manufactured by Marathon Electric Manufacturing Corporation, and shall be a brushless, synchronous, self excited, self voltage regulated alternator rated for continuous duty at 80° C temperature rise as measured by the resistance method over a maximum ambient temperature of 40° C. The alternator shall be of the type that provides superior three phase induction motor starting performance. It shall be capable of starting across the line 1 HP NEMA starting Code G squirrel cage induction motors per kW of its name plated rating.

CONSTRUCTION AND BEARINGS

Frames shall be either cast aluminum or steel weldment. Bearing brackets shall be of cast iron. The unit shall be either of the single bearing configuration with a flex disc type coupling rigidly bolted to the alternator shaft, or two bearing type with keyed shaft extension. Opposite drive end bearing brackets for single bearing units shall be machined to accommodate an O-ring in the bearing bore to retard bearing outer race radial creep, while affording clearance for axial float of the shaft bearings shall be conservatively sized single width, double sealed or shielded ball bearings lubricated for the life of the bearing. Bearings shall be so located as to permit field replacement without disturbing the exciter-rotor - rectifier assembly.

ENCLOSURE

The alternator shall be fully guarded and meet the requirements of NEMA and IEC protective classification IP22.

INSULATION SYSTEM

The insulation system of both stationary and rotating windings shall be of NEMA Class F or better, and shall be inorganic and non-hygroscopic. The stator winding shall be given multiple dips and bakes of unsaturated polyester varnish. The main rotor shall layer wound with thermosetting 100% solids epoxy between each layer.

MAIN ROTOR

The 4-pole main revolving field construction shall consist of one piece lamination. 360 and larger frame sizes incorporate full amortisseur windings. Main rotor cores keyed and pressed onto the generator shaft.

MAIN STATOR WINDING

The main stator shall random wound and lashed at the end turns to provide superior mechanical strength.

The stator core shall incorporate a one-slot skew to minimize slot harmonic, and a 2/3-pitch factor to eliminate the third and subsequent triplen harmonics from the phase voltage.

EXCITATION SYSTEM

Excitation shall be provided by an integral rotating-current-transformer induction frequency converter. The phase wound exciter stator shall be directly inter-connected with the main stator, and shall incorporate two separate windings: a shunt winding, and a series winding. No load excitation shall be provided by the shunt winding, while the series portion shall provide a load compounding characteristic. The output of the rotating exciter shall be directly connected to the 4 pole main revolving field via a full wave, three phase six element rectifier assembly securely fastened to a hub on the generator shaft. No brushes, slip-rings, or external transformers shall be used.

PERFORMANCE

Voltage regulation shall be 4% from no load to full rated load, rated operating temperature. The output voltage shall exhibit a "volts-per-hertz" characteristic throughout a minimum speed range of 60% to 125% of the unit's rated synchronous speed to assure the proper performance of induction motor loads. The generator shall exhibit electro-magnetic interference suppressed to commercial standards.

The load compounding characteristics of the three phase LIMA[®]MAC generator shall be capable of supporting fault current equivalent to 500% (5 PU) of its full load rated current for 10 seconds to assure clearance of a fault condition without the use of external current transformers or other vulnerable external circuitry.

VENTILATION

The generator shall be self-ventilated, and have a cast aluminum alloy, bi-directional internal fan designed for high volume, low noise air delivery.

CONDUIT BOX

280 Frame generators shall have a side mounted split "clam shell" type connection box rotatable through 360° at 90° increments to allow egress of leads to the top, bottom, right or left. 360 and larger frames shall have a top mounted saddle type connection box constructed to allow lead egress from the top or either side.

VERIFICATION OF PERFORMANCE

All certified performance and temperature rise test data submitted by the generator manufacturer are to be the result of actual testing of the same or duplicate units. Temperature rise data shall be the result of full load heat runs at rated voltage and frequency.