Functional Specification for M-Force Three-Phase Switches

1.0 Scope

1.1 This specification covers the electrical and mechanical characteristics of Eaton's Cooper Power series M-Force three-phase switches. Product is per catalog section CA008004EN.

2.0 Applicable Standards

2.1 All characteristics, definitions, and terminology, except as specifically covered in this specification, shall be in accordance with IEEE Std 1247™-2005 standard, AC High Voltage Interrupter Switches.

3.0 Construction

3.1 Contacts – Shall be reverse loop contacts which utilize high current magnetic forces for added reliability. The reverse loop design allows for high contact pressure to be maintained during fault conditions which prevents pitting and distorting of the switch blade and contacts even under severe momentary overload.

3.1.1 The stationary contact shall be silver-plated hard drawn copper in a reverse loop configuration

3.1.2 The reverse loop design shall ensure that pressure is applied to the blade when subjected to high fault currents.

3.1.3 The stationary contact shall not incorporate unreliable backup springs to apply necessary contact pressure.

3.2 Blade – The blade shall be a silver-plated hard drawn copper of solid blade buss design.

3.2.1 The blade shall not be a truss type design that requires backup springs to insure contact pressure.

3.2.2 The blade and contact design shall be self-wiping and capable of 20,000 mechanical operations without detrimental wear.

3.3 Interrupter – The load interrupter shall be of type "Reliabreak".

3.3.1 The internal mechanism of the interrupter shall be manufactured from non-ferrous components ensuring long term resistance to corrosion in all environments.

3.3.2 The interrupter mechanism shall be capable of 2500 successful mechanical operations.

3.3.3 The interrupter shall be capable of 10 successful 900 A interruptions at 38 kV and 50 successful 600 A interruptions at a rated 27 kV.

3.3.4 The body of the interrupter shall be manufactured from UV stabilized Lexan® 103 material and shall be easily replaced with a hotstick.

3.3.5 The interrupter operating arm shall be stainless steel (304) with UV stabilized Lexan® 103 insulation molded permanently onto the arm.

3.4 Phase Units

3.4.1 All current-carrying parts shall be manufactured from copper.

3.4.2 Terminal pads shall be NEMA® two-hole, silver or tin-plated.

3.4.3 The rotating insulator stack shall incorporate oil-impregnated bronze bearings to ensure maintenance free operation for life of the switch.

3.4.4 The spindle shall be manufactured from stainless steel and shall be supported by bushings spaced at four inches to eliminate rocking of the insulator and to ensure proper blade and contact alignment.

3.4.5 Each phase unit shall be secured to the crossarm with locking spacers to eliminate distortion of the phase unit base.

3.4.6 Dead-end brackets shall incorporate locking tabs that will eliminate movement under side forces present when conductor is dead-ended at an angle.

3.4.7 The switch shall be capable of opening or closing under a 3/8" ice layer without ice shields. The switch shall be capable of opening or closing under a 3/4" ice layer with ice shields.

3.5 Operating Mechanism – Switch shall utilize a torsional or reciprocating operating mechanism

3.6 Crossarms – Cross arms shall be steel or fiberglass with one or two point lift

4.0 Production Tests

4.1 Switches shall be tested by electrical resistance testing at time of production to determine the flow of electrical current and how much of that flow is impeded.

5.0 Mountings and Optional Features per Catalog CA008004EN

6.0 Approved Manufacturers

6.1 Eaton – Pewaukee, WI