

WATER SUPPLIES DEPARTMENT

STANDARD SPECIFICATION E-90-12

DRAWING FOR MOTORS OF 100 kW & ABOVE
AND GENERATORS OF 150 kVA & ABOVE

Revision Date : 29.12.2005

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1. **GENERAL**

This Specification is supplementary to WSD Standard Specification E-90-01 (Drawing for Electrical and Instrumentation Equipment). Drawings containing the following additional information shall be provided to form part of the manual:

- (a) Stator and rotor winding diagram;
- (b) Exterior layout;
- (c) Sectional details;
- (d) Thermal withstand characteristics curve; and
- (e) Cable box components arrangement.

It is not necessary to provide a separate set of the above final drawings and their reproductives to Water Supplies Department.

2. **STATOR AND ROTOR WINDING DIAGRAM**

Winding diagram shall show the following details:

- (a) Metallic material of conductors and number of turns per coil;
- (b) Insulation system of coils including inter-turn, main wall, overhang and slot wedges and spacers insulation details;
- (c) Dimensions of conductor, coil, core, slot and wedge;
- (d) Inter-coil and inter-winding connection details; and
- (e) Location of embedded temperature detectors, where fitted.

3. **EXTERIOR LAYOUT**

Drawing of exterior layout shall show the following details:

- (a) Front and side elevation of equipment fabrication details (e.g. weight, dimensions, material, paint finish, structural support, foundation and mounting details and lifting provision etc.); and
- (b) Installation arrangement (e.g. cable boxes, marshalling boxes, detectors, gauges, desiccator, ventilation air-duct, stool/sole plate, access ladder and lubricating & cooling pipework etc.).

4. SECTIONAL DETAILS

Drawing of sectional details shall show the following information:

- (a) Installation arrangement of sensors, insulated bearing assembly (if used), white metal bearing assembly (if used), air ventilation system, space heaters and air-gap between stator & rotor;
- (b) Assembly and fixing details of components; and
- (c) A tabulated component list with parts details.

5. THERMAL WITHSTAND CHARACTERISTICS CURVE

The maximum permissible motor current at fault versus time in seconds without permanent damage for machine at cold and hot states shall be provided.

6. CABLE BOX COMPONENTS ARRANGEMENT

Drawing of cable box shall show the following details:

- (a) Metallic material and dimension of cable boxes;
- (b) Insulation material of terminals, supports, insulators, connectors and cables;
- (c) Sectional and side elevation in showing installation arrangement of phase segregation, clearance and creepage between phases and earth, pressure relief arrangement, cable glands and lugs;
- (d) Compound sealing, filling level and drain (if used);
- (e) Assembly and fixing details of components; and
- (f) A tabulated component list with parts details.