

TCA Lane Cove Test Station

High Current Testing, Temperature
Rise Testing, IP Testing

A business of
energyAustralia

18 Mars Road
Lane Cove NSW 2066
Australia
Telephone +61 2 9410 5203
Facsimile +61 2 9428 2645

DRAWING REQUIREMENTS FOR INCLUSION IN TCA TEST REPORTS OR CERTIFICATES



**Testing &
Certification
Australia**

CHECKING OF DRAWINGS OF TEST ITEMS: CHECKLIST

FORMAT

The drawings will need to be sent to us via email in Adobe Acrobat format (PDF) or AUTOCAD format (DWG/DWF) or posted by regular mail for inclusion in your final report.

AUTOCAD format is preferred, however, save each drawing sheet as a separate DWG file before sending to TCA.

If drawings are sent in PDF format, ensure that all CAD layers are black, so that we don't get CAD layers being shown as actual colours or shades of grey when printed at TCA. We require the drawings in A4 or A3 size PDF files so we can print copies suitable for inclusion in the final document.

Each drawing must also have the following drawing declaration text on it and then signed by the appropriate person from your company:

I <insert person's name>, of <insert Company name> certify that this drawing is a true representation of the apparatus tested.

Signature

e.g. *I John Smith, of Switchboards United Pty Ltd certify that this drawing is a true representation of the apparatus tested.*

Note: This required signature may make emailing the new drawings impossible unless a drawing declaration sheet was filled out while you were here testing. Alternatively, a drawing declaration sheet can be emailed or faxed to you, then returned to us by fax.

GENERAL

Each drawing should have a proper TITLE BLOCK. It should include the following:

- a. title
- b. drawing number
- c. revision number
- d. issue date or date of last revision as appropriate

OVERALL SIZE

- a. If the assembly is made up of several cubicles or sections connected altogether, there should be at least one view of the entire assembly as tested.
- b. Overall height including plinths and protrusions such as chimneys and cable or busbar connecting chambers.

BUSBARS AND NEUTRAL BARS

- a. Busbar material
- b. Size of busbars
- c. Joining details (drilling patterns, bolt sizes and material)
- d. Positioning of busbars with respect to the sides, top or bottom of the frame
- e. Phase spacing of busbars
- f. Insulation on busbars
- g. If cable, stranding, insulation and lug details

SUPPORTS

- a. Support material (manufacturer and grade or type)
- b. Support shape and size
- c. Support fastenings
- d. Method of support attachment to frame
- e. Support position (with respect to the edge of the assembly and the other supports)

FUSES, SWITCHES, CIRCUIT-BREAKERS, CONTACTORS ETC.

- a. Manufacturers Type No. and rating
- b. Coil voltage (when different from the assembly rated voltage)
- c. Additional insulation, if used
- d. Size of connecting cables
- e. Terminal blocks
- f. All the components fitted in incoming or outgoing units should be grouped to show what comprises a given functional unit. This information can be presented on a separate schedule of equipment. If any equipment is shorted out by busbars, e.g. large circuit-breakers, details of bars and temporary supports if any must be shown
- g. Block diagrams of panel layouts (optional)
- h. Contact material and shape when the test item is a switching device (i.e. a switch, contactor, circuit-breaker etc. that is the principal test item)

SUPPLY AND SHORT-CIRCUIT CONDITIONS

- a. Supply positions labelled X for the main supply position then Y and Z.
- b. Short-circuit positions on busbars, including neutral labelled A, B
- c. If the neutral is not adjacent to phase busbars, the connecting point of the short should be given a letter label at the point of connection to the neutral and another letter to the point where the short connects to the phase busbar.

ELECTRICAL DETAILS

- a. Rated current (of the main busbar)
- b. Rated operational voltage
- c. Rated insulation voltage
- d. Single line diagram showing supply and short-circuit positions

ENCLOSURE DETAILS

These details are required to show the strength and degree of protection of the enclosure. The following are of a particular significance for arcing fault containment tests or units containing circuit breakers:

- a. Sheet metal thickness
- b. Door and cover construction, bracing, insulation
- c. Fastening details including hinges
- d. Details of vents and chimneys
- e. Barrier material, size and thickness

When a degree of protection greater than IP20 is claimed the following information shall be given:

- f. Measures taken to achieve the claimed IP Rating e.g. gauze over vent openings < 1 mm mesh, top covers sealed with silicone sealant.
- g. Drawings of rubber door seals, hinges, fasteners etc.

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OPERATING MEANS

- a. Where the principal test item is a switch, circuit-breaker etc. the operating means shall be shown.

SEGREGATION

- a. Degree of segregation claimed
- b. Position of segregation barriers
- c. Barrier material

COOLING

- a. Details of the methods used for cooling are of particular necessity when the assembly is tested for temperature-rise.
- b. Placement of fans, vents and barriers
- c. Vent details including size of mesh/gauze details
- d. Manufacturer and type of fans
- e. Outgoing cables or busbars
- f. Cooling ducts and radiator details where the cooling medium is oil.

HIGH VOLTAGE EQUIPMENT

Specific requirements for drawing checks are included for some high voltage equipment in the appropriate STL guide. A copy of these requirements will be provided if appropriate.