GLADSTONE REGIONAL COUNCIL	**ENGINEERING STANDARD**			
	Electrical Equipment Identification Labels			
	Document:	**GRC-ES008**	Revision:	**2**

REVISION HISTORY

Rev	*Date*	*Description*	*Prepared By*	*Approved By*
1	23/08/2011	First Issue	J. Hickey	C. Swanton
2	21/04/2017	Revised and Updated	B. James	C. Swanton

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1 PURPOSE

The purpose of this Engineering Standard is to define the requirements for engraved traffolyte labels used to identify electrical equipment at Gladstone Regional Council sites.

2 SCOPE

This Engineering Standard is applicable to all Gladstone Regional Council projects where it is necessary to provide electrical equipment identification labels.

This Engineering Standard does not define requirements for non-electrical signs, safety signs (e.g. hearing protection, hazardous chemicals), street signs, building identification signs etc.

3 RESPONSIBILITIES

All persons involved in the purchasing, specifying, design, fabrication and supply of electrical equipment for use on any GRC site shall comply with this Engineering Standard.

Any variations proposed that are contrary to the requirements of this Engineering Standard shall be specifically identified and referred to GRC, in writing, for approval.

4 DEFINITIONS

Term	*Definition*
Contractor	Person or company carrying out the electrical and instrumentation works.
Contractor's Representative	Person authorized to act on behalf of the Contractor.
Council	Gladstone Regional Council or its nominated representative or agent.
GRC	Gladstone Regional Council or its nominated representative or agent.
Specifier	Any individual specifying equipment for use in electrical installations on a GRC site.
Superintendent	Person authorised to act on behalf of GRC with respect to the Contract works.
Traffolyte	Traffolyte is a brand name that has become a generic term used to describe adhesive bonded, multi-layered, rigid plastic sheets suitable for engraving. Sheets are usually two coloured. Each layer has a different colour so letters or shapes engraved deep enough to penetrate the level below will be displayed as a different colour to the un-engraved portions.

5 REFERENCE DOCUMENTS

All equipment shall be designed, manufactured and tested in accordance with the latest edition of the following GRC Engineering Standards, Australian Standards, Acts and Regulations.

5.1 GRC Engineering Standards

Standard	*Title*
GRC-ES001	Electrical Work
GRC-ES002	Preferred Electrical Components
GRC-ES003	Prefabricated Electrical Switchrooms
GRC-ES004	Motor Control Centres
GRC-ES005	Light & Power Distribution Boards

5.2 Australian Standards

Standard	*Title*
AS 1319	Safety Signs for the Occupational Environment

5.3 Acts and Regulations

Title
Electricity Act 1994
Electricity Regulation 2006
Electrical Safety Act 2002
Electrical Safety Regulation 2002
Work Health and Safety Act 2001
Work Health and Safety Regulation 2011

6 GENERAL REQUIREMENTS

6.1 Context

a) Appropriate identification labels shall be fitted to all electrical equipment in order to clearly and uniquely identify equipment, facilitate the safe operation and maintenance of that equipment and avoid incorrect operation of equipment.

b) Adequate identification of equipment is a requirement of the Work Health and Safety Act and other statutory authorities. GRC has additional identification requirements that in some instances exceed the requirements of the statutory authorities. These requirements are included in this standard and shall be applied for all installations where appropriate.

c) The labelling material selected shall provide long-term durability of all labels in GRC sites where high UV (Ultra Violet) light, high temperatures, process spillages, heavy dust and salt laden environments exist.

d) The type and size of identification labels shall be selected to ensure clarity and good visibility under all weather conditions, lighting conditions and process conditions. Human factors such as the inability of people to see small or obscured text if they are visually impaired or are wearing mono-goggles shall be taken into account when determining text sizes.

e) Label and character dimensions stated are the minimum acceptable sizes. If characters required on a label do not fit, the label shall be made larger to fit the characters rather than reduced character height or abbreviations.

f) Note that while others may install large painted identification signs or profile-cut lettered signs adjacent to field equipment it is still a requirement to provide the field labels for electrical equipment as detailed in this Standard.

g) Temporary identification using “paint pens” or similar methods are not acceptable as permanent signs. No electrical equipment shall be defaced using this type of marking.

6.2 Label Requirements

a) Engraved traffolyte labels using a system of numerals and all upper case letters arranged in a logical manner shall identify all equipment and components as indicated on the drawings. The labels shall be based on the plant standard numbering system as indicated on the drawings and in the relevant standards.

b) The exposed edges of all labels shall have 45 degree bevelled edges so that no sharp edges or corners are exposed.

6.3 Equipment to be Labelled

a) Each item of electrical equipment and all internal and external components and accessories shall be clearly identified by an engraved label. Labels shall be marked with the equipment identification number and name of the equipment.

b) The number of the circuit assigned to each fuse or circuit breaker in all types of distribution boards shall be engraved on the label. Boards that supply lighting and general-purpose outlets, instrumentation and DC circuits are all included in this category.

c) Distribution boards shall be marked with the board number, the MCC, battery charger or power supply that supplies it and its location. The incoming supply isolator/s shall also be identified.

d) Labels identifying electric motor field controls shall be located immediately adjacent to the motor Local Control Station.

6.4 Label Wording Consistency

a) Label wording shall generally follow the details provided on the drawings.

b) Where equipment is described and labelled in a number of locations, for example at the MCC, at the field pushbutton and at the field isolator, the same equipment number, format and description shall be used at all locations to avoid confusion.

6.5 Use of Terms Normal, Alternate and Emergency Generator

The following defined terms are the only ones to be used:

Normal: The original designed reticulation of power from the designated Supply Authority through the allocated feeders to the plant equipment.

Emergency Generator: The supply is sourced at a diesel generator and power is being provided through a jumper cable to the plant distribution or control system.

6.6 Label Colours

a) General identification labels shall be engraved traffolyte material using a system of ***black*** characters on a ***white*** background. These labels may be referred to as W/B/W labels.

b) Danger and warning labels shall be engraved traffolyte material using a system of ***white*** characters on a ***red*** background. These labels may be referred to as R/W/R labels.

c) Caution or advisory labels shall be engraved traffolyte material using a system of ***black*** characters on a ***yellow*** background. These labels may be referred to as Y/B/Y labels.

6.7 Label Dimensions

a) All labels shall clearly identify the equipment and be of appropriate dimensions and size equivalent to suit the application.

b) The minimum height of label characters shall be 5mm. All label wording and dimensions shall be presented to GRC for approval before manufacture.

c) Label details may be presented in sketch form, or by using the attached Label Schedule.

d) When adding, modifying or replacing labels on existing equipment the Contractor shall ensure that all labels provided maintain the standard size, position on the equipment, format and colours of existing similar labels on the equipment.

6.8 Method of Fixing Labels

a) All labels shall be installed prior to energising of the equipment and shall be fixed in place with a minimum of two (2) stainless steel self-tapping screws or stainless steel screws, nuts and flat washers.

b) Double-sided adhesive tape, glue or silicone shall not be used to mount external labels or even hold them in place while screws are installed. This is because some of these methods are so effective they make later label removal difficult and time consuming often resulting in damage to adjacent painted surfaces.

c) Conversely, some are so poor that labels may fall off when they become wet or slip from position when surfaces become warm. However, these methods may be used to install small labels inside equipment where limited space is available for screw fixing.

6.9 Label Placement

a) Labels shall be located in close proximity to the equipment they are associated with and adequately supported and protected so that there can be no doubt as to their association and purpose.

b) Labels shall not be installed where they may become damaged or obscured by process spills, mechanical damage from cranes and vehicles, storage of other equipment etc.

c) Labels that identify components that are subject to replacement, components where the attachment of the label to the component may degrade the IP rating of the component or where the label is not fully supported due to the construction of the component shall not be mounted on the component.

d) These labels shall be mounted above, below or adjacent to the component on either a flat existing surface or a support or bracket specially installed to fully support the label. Examples of components that fall into this category are:

- Internal and external GPO's and switches
- Pushbutton stations
- Limit and proximity switches
- Solenoid valves, etc

6.10 Electrical Signs for Substation Yards

a) Each side of the fence perimeter and each access gate of all fenced electrical yards shall be fitted with external danger signs warning that the yard contains equipment operating at the highest voltage present in the yard.

b) The signs shall be attached centrally to the chain-wire fence sections at approximately 1.5 metres above ground level.

c) Signs shall be galvanised wire tied at each corner.

d) Long yards shall be fitted with a sign at least at every third fence panel.

e) Signs shall be spaced equal distances apart.

f) All signs shall meet the following requirements:

- Signs shall have reflective sheeting on a backing of aluminium.
- Minimum sign size shall be 300mm x 225mm with the first line to read 'DANGER' in white print on a red oval shaped background and the second line '11,000 VOLTS' (or the highest voltage present in the yard) in black print on a reflective white rectangular background.
- Signs shall be similar to the Seton Mining Site Sign Cat No S6712 and shall comply with AS 1319 requirements for this sign type.

6.11 Plastic Adhesive Backed Tape Labels

a) This refers to labels where the thermal transfer of characters onto thin, coloured, adhesive-backed plastic tapes creates the label. These products are sold by companies such as Dymo and Brother and are extensively used in indoor applications such as in offices.

b) The use of this type of labelling to identify electrical equipment on GRC sites is limited to indoor use to identify non-critical equipment that does not need to satisfy any statutory requirement. One example of this is switchgear panel numbering.

c) This labelling may also be used for temporary or emergency labelling in preference to hand-written labels.

7 TYPICAL LABEL DETAILS

The following section provides typical label details for different types of equipment. Labelling for equipment types not shown below shall be based on these typical requirements and developed to suit the specific application.

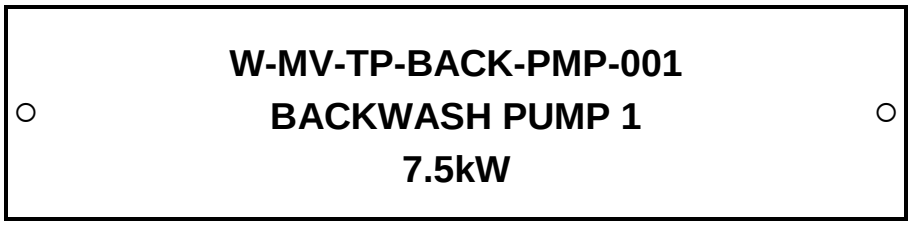
The following label details are not drawn to scale.

7.1 Typical MCC Labels

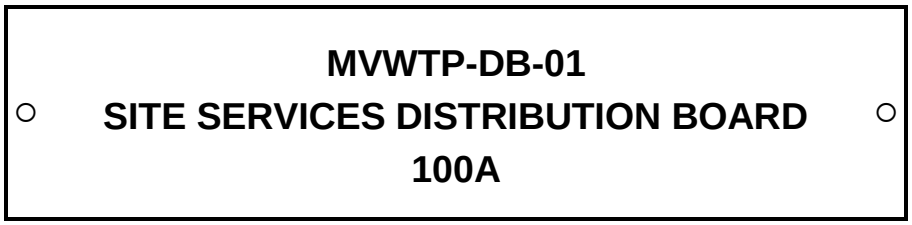
7.1.1 Module Identification Labels

- Dimensions: 170mm x 40mm
- Text: 6mm high bold black characters on white traffolyte
- Mounting: 2 x 3mm diameter mounting holes drilled as shown

a) Typical Motor Module

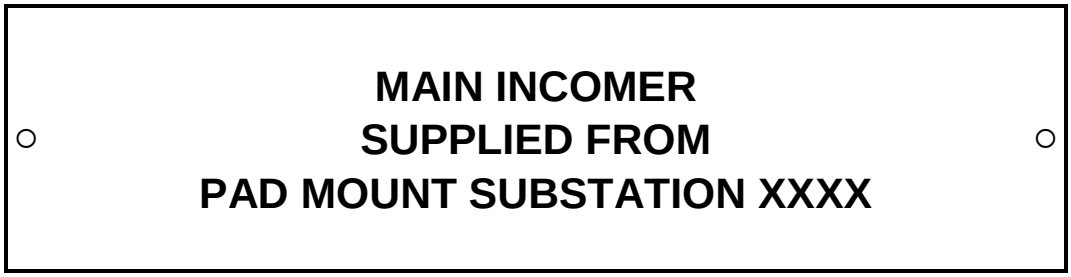


b) Typical Distribution Board Module



7.1.2 MCC Incomer Label

- Dimensions: 200mm x 50mm
- Text: 8mm high bold black characters on white traffolyte
- Mounting: 2 x 3mm diameter mounting holes drilled as shown



7.1.3 Typical MCC

- Dimensions: 200mm x 50mm
- Text: 25mm high bold black characters on white traffolyte
- Mounting: 2 x 3mm diameter mounting holes drilled as shown

MVWTP-MCC-01

7.1.4 Multiple Supply Label

- Dimensions: 120mm x 40mm.
- First Line: 8mm high bold white characters on red traffolyte for the first line.
- Other Lines: 5mm high white characters on red traffolyte for the other lines.
- Mounting: 2 x 3mm diameter mounting holes drilled as shown.

WARNING
CIRCUIT WIRING IN THIS MODULE IS SUPPLIED FROM MULTIPLE SOURCES

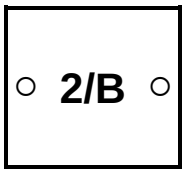
7.1.5 24 VDC Supply Module Warning Label

- Dimensions: 170mm x 60mm
- First Line: 8mm high bold black characters on yellow traffolyte for the first line
- Other Lines: 5mm high black characters on yellow traffolyte for lines 2, 3 and 4
- Mounting: 2 x 3mm diameter mounting holes drilled as shown

WARNING
TURNING OFF SUPPLY BREAKER BEHIND THIS PANEL WILL TRIP ALL MOTORS ON THIS MCC
ELECTRICIANS ONLY TO OPERATE

7.1.6 MCC Module Numbering Label

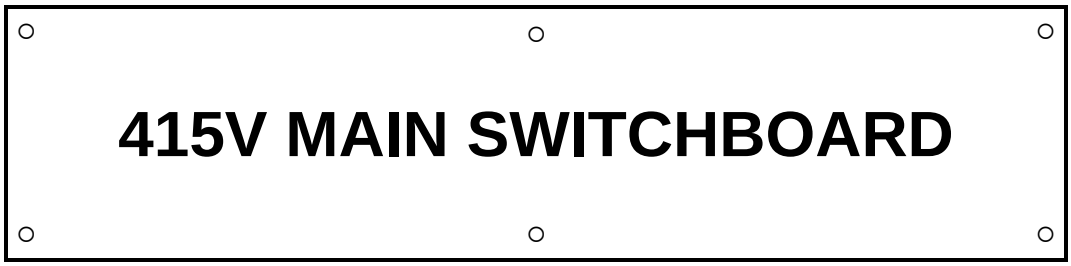
- Dimensions: 30mm x 30mm
- Text: 10mm high bold black characters on white traffolyte
- Mounting: 2 x 3mm diameter mounting holes drilled as shown
- Module Number: TIER/MODULE e.g. Tier 2 Module B = 2/B



7.2 Typical 415VAC Switchboard Labels

7.2.1 Main switchboard Label

- Dimensions: 400mm x 100mm
- Text: 60mm high bold black characters on white traffolyte
- Mounting: 6 x 3mm diameter mounting holes drilled as shown

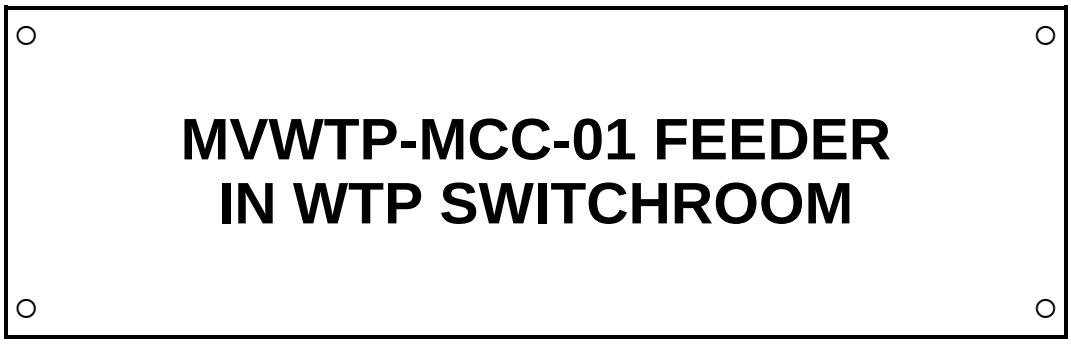


7.2.2 Main Incomer

- Dimensions: 250mm x 50mm
- Text: 25mm high bold black characters on yellow traffolyte
- Mounting: 4 x 3mm diameter mounting holes drilled as shown
- fixed to the front cubicle doors as well as the rear access doors or covers

7.2.3 MCC Outgoing Feeder

- Dimensions: 200mm x 60mm
- Text: 10mm high bold black characters on white traffolyte
- Mounting: 4 x 3mm diameter mounting holes drilled as shown
- fixed to the front cubicle doors as well as the rear access doors or covers

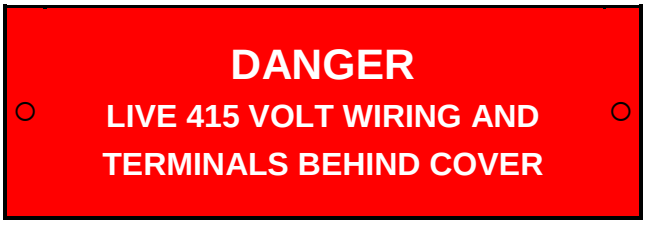


7.2.4 Busbar Danger Label

- Dimensions: 120mm x 40mm
- First Line: 8mm high bold white characters on red traffolyte for the first line
- Other Lines: 5mm high white characters on red traffolyte for the other lines
- Mounting: 2 x 3mm diameter mounting holes drilled as shown
- Fixed to the covers protecting the dangerous equipment

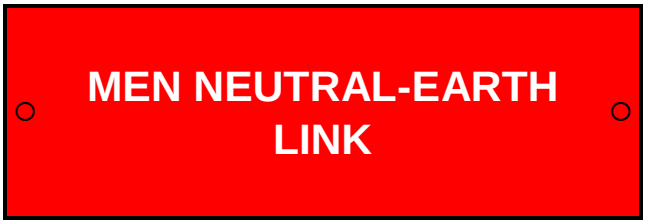
7.2.5 Terminals Wiring Danger Label

- Dimensions: 120mm x 40mm
- First Line: 8mm high bold white characters on red traffolyte for the first line
- Other Lines: 5mm high white characters on red traffolyte for the other lines
- Mounting: 2 x 3mm diameter mounting holes drilled as shown
- Fixed to the covers protecting the dangerous equipment



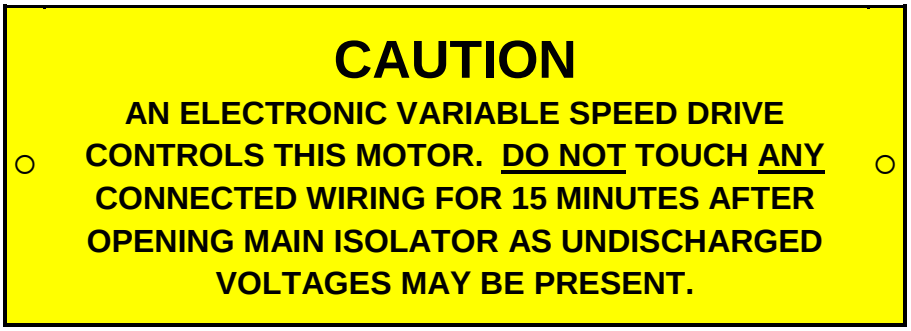
7.2.6 MEN Link Labels

- Dimensions: 120mm x 40mm
- First Line: 8mm high bold white characters on red traffolyte for the first line
- Other Lines: 5mm high white characters on red traffolyte for the other lines
- Mounting: 2 x 3mm diameter mounting holes drilled as shown
- Fixed to the covers protecting the dangerous equipment



7.2.7 VSD Caution Label

- Dimensions: 170mm x 60mm
- First Line: 10mm high bold black characters on yellow traffolyte for the first line
- Other Lines: 5mm high black characters on yellow traffolyte
- Mounting: 2 x 3mm diameter mounting holes drilled as shown



7.2.8 Typical Switchboard Transformer Full Load Current Label

- Dimensions: 100mm x 20mm
- Text: 6mm high bold black characters on white traffolyte
- Mounting: 2 x 3mm diameter mounting holes drilled as shown
- Fixed to each incomer front cubicle door below the main identification label. Amperage number shall be derived from supply transformer nameplate

TRANSFORMER FLC 102A

7.3 Typical Battery Charger Labels

- Dimensions: 220 x 50mm
- First Line: 8mm high bold black letters on white traffolyte
- Other Lines: 6mm high black letters on white traffolyte
- Mounting: 2 x 3mm diameter mounting holes drilled as shown
- Fixed to outer door of the battery charger cabinet

EQUIPMENT No. XXXXX

SUBSTATION XX TRIP SUPPLY BATTERY CHARGER

ISOLATE 240V SUPPLY AT DB-XXX CIRCUIT XX

7.4 Typical Distribution Board labels

7.4.1 Typical L&P Distribution Board Identification Label

- Dimensions: 200 x 40mm
- Text: 8mm high bold black letters on white traffolyte
- Bottom Line: 6mm high black letters on white traffolyte
- Mounting: 4 x 3mm diameter mounting holes drilled as shown
- Fixed to the front door of the distribution board

LIGHT & POWER DISTRIBUTION BOARD

DB-123

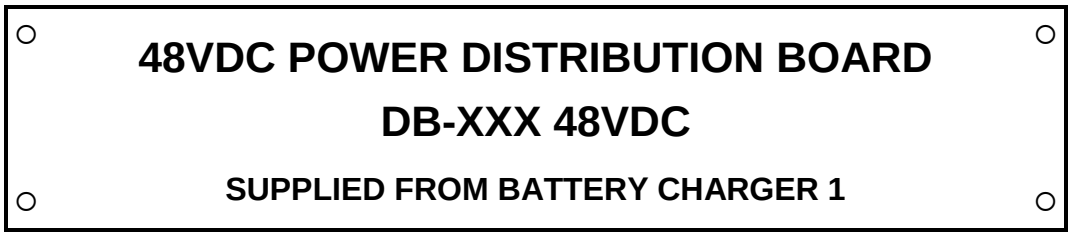
SUPPLIED FROM MVWTP-MCC-01 MODULE 2/B

7.4.2 Neutral and Earth Bar Labels

- Dimensions: 40 x 10mm
- Text: 6mm high bold black letters on white traffolyte
- Mounting: 2 x 3mm diameter mounting holes drilled as shown or mounted using adhesive
- Fixed to the distribution board equipment plate adjacent to neutral and earth bars

7.4.3 Typical DC Power Distribution Board Identification Label

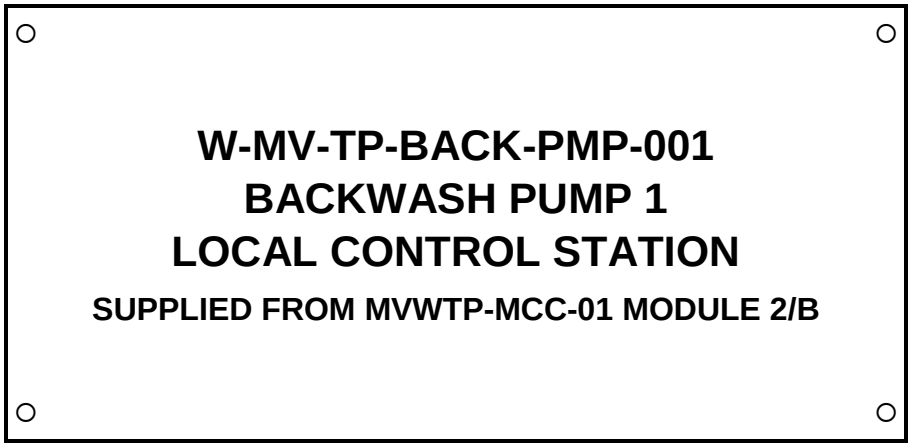
- Dimensions: 200 x 40mm
- Text: 8mm high bold black letters on white traffolyte
- Bottom Line: 6mm high black letters on white traffolyte
- Mounting: 4 x 3mm diameter mounting holes drilled as shown
- Fixed to the front door of the distribution board



7.5 Typical Labels for General Use

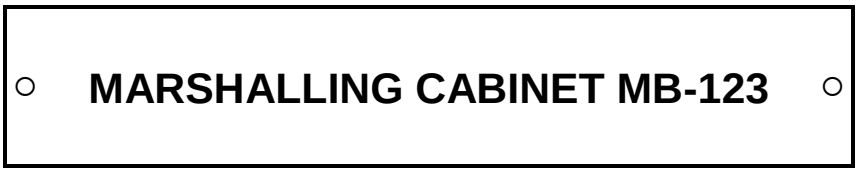
7.5.1 Typical Local Control Station Label

- Dimensions: 170 x 80mm
- Text: 8mm high bold black letters on white traffolyte
- Bottom Line: 6mm high black letters on white traffolyte
- Mounting: 4 x 3mm diameter mounting holes drilled as shown
- Fixed to the front door of the local control station



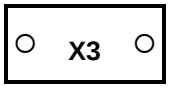
7.5.2 Typical Marshalling Cabinet Label

- Dimensions: 160 x 30mm
- Text: 8mm high bold black letters on white traffolyte
- Mounting: 2 x 3mm diameter mounting holes drilled as shown
- Fixed to the front door of the marshalling cabinet



7.5.3 Typical Device Identification Labels

- Dimensions: L x 10mm, where L = length of letters plus 5mm at each end
- Text: 5mm high bold black letters on white traffolyte
- Mounting: 2 x 3mm diameter mounting holes drilled as shown, or for internal installation only, mounted using high bond adhesive
- Fixed to the panel below or adjacent to the equipment they are identifying
- E.g. Relays, timers, circuit breakers, terminal strips etc



7.5.4 Typical Indoor GPO Identification Labels

- Dimensions: 100 x 40mm
- Text: 5mm high bold black letters on white traffolyte
- Mounting: 2 x 3mm diameter mounting holes drilled as shown
- Mounted adjacent to the GPO (not on the GPO)

GPO 56 REMOTE RCD
SUPPLIED FROM DB-123 CCT 12
LOCATED IN DOSING ROOM

7.5.5 Typical Indoor Lighting Identification Labels

- Dimensions: 100 x 40mm
- Text: 5mm high bold black letters on white traffolyte
- Mounting: Double sided tape
- Mounted eastern side of light fitting (not on the light fitting)

LIGHT 56 REMOTE RCD
SUPPLIED FROM DB-123 CCT 12
LOCATED IN DOSING ROOM

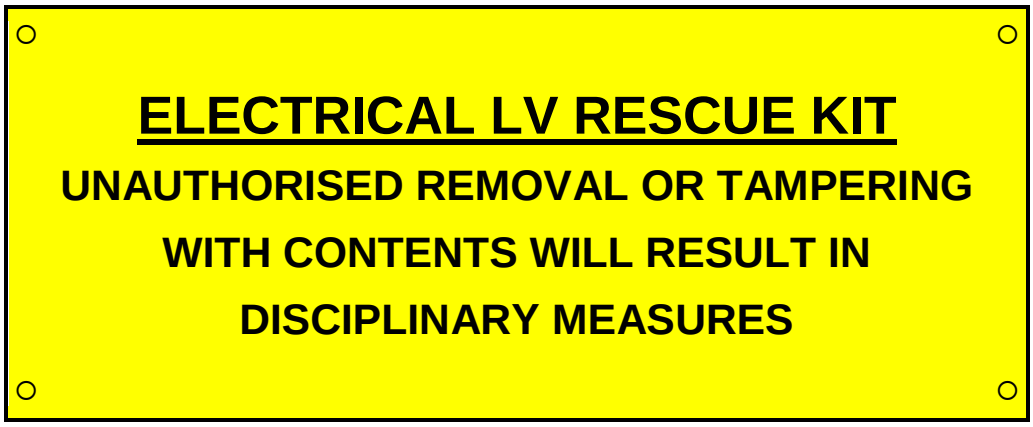
7.5.6 Typical Indoor Lighting Switch Identification Labels

- Dimensions: 100 x 40mm
- Text: 5mm high bold black letters on white traffolyte
- Mounting: 2 x 3mm diameter mounting holes drilled as shown
- Mounted above the light switch (not on the light switch)
- Note: Inside Mayors Office and Council Chambers, labels shall be stainless steel

LIGHT SWITCH 56 REMOTE RCD
SUPPLIED FROM DB-123 CCT 12
LOCATED IN DOSING ROOM

7.5.7 LV Rescue Enclosure Label

- Dimensions: 270 x 100mm
- First Line: 12mm high bold black letters on yellow traffolyte
- Other Lines: 10mm high black letters on yellow traffolyte
- Mounting: 4 x 3mm diameter mounting holes drilled as shown
- Fixed to centre of external door of LV kit enclosure



7.5.8 Fire Alarm Warning Label

- Dimensions: 160 x 120mm.
- First Line: 8mm high bold red letters on white traffolyte.
- Other Lines: 6mm high red letters on white traffolyte.
- Mounting: 4 x 3mm diameter mounting holes drilled as shown.
- Mounted centrally to external door of building/rooms protected by fire alarm system.

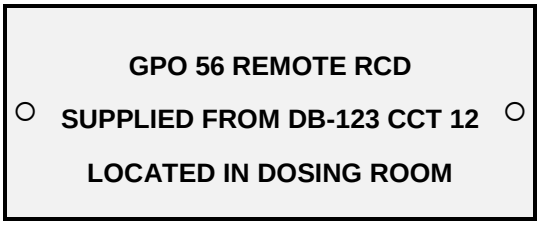
7.6 Typical Stainless Steel Engraved labels

7.6.1 Typical Transformer Identification Label

- Dimensions: 480 x 100mm
- Text: 50mm high letters engraved on polished 316 grade stainless steel with engraved text backfilled with black gloss enamel paint
- Mounting: 6 x 6mm diameter mounting holes drilled as shown

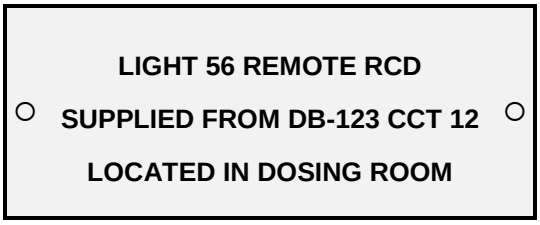
7.6.2 Typical Outdoor Stainless Steel GPO Identification Labels

- Dimensions: 100 x 40mm
- Text: 5mm high letters engraved on polished 316 grade stainless steel with engraved text backfilled with black gloss enamel paint
- Mounting: 2 x 3mm diameter mounting holes drilled as shown
- Mounted adjacent to the GPO (not on the GPO)



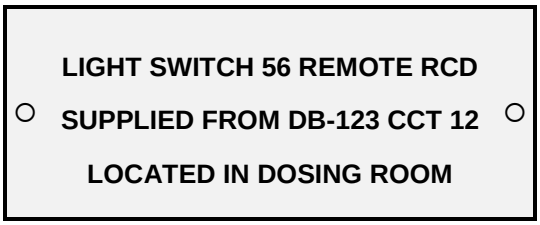
7.6.3 Typical Outdoor Lighting Identification Labels

- Dimensions: 100 x 40mm
- Text: 5mm high letters engraved on polished 316 grade stainless steel with engraved text backfilled with black gloss enamel paint
- Mounting: 2 x 3mm diameter mounting holes drilled as shown
- Mounted adjacent to both sides of the light fitting



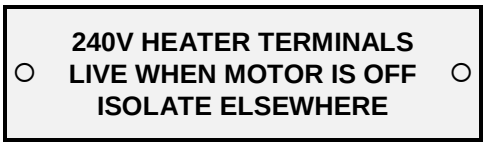
7.6.4 Typical Outdoor Lighting Switch Identification Labels (E.g. Substation)

- Dimensions: 100 x 40mm
- Text: 5mm high letters engraved on polished 316 grade stainless steel with engraved text backfilled with black gloss enamel paint
- Mounting: 2 x 3mm diameter mounting holes drilled as shown
- Mounted above the light switch (not on the light switch)



7.6.5 Motor Heater Label

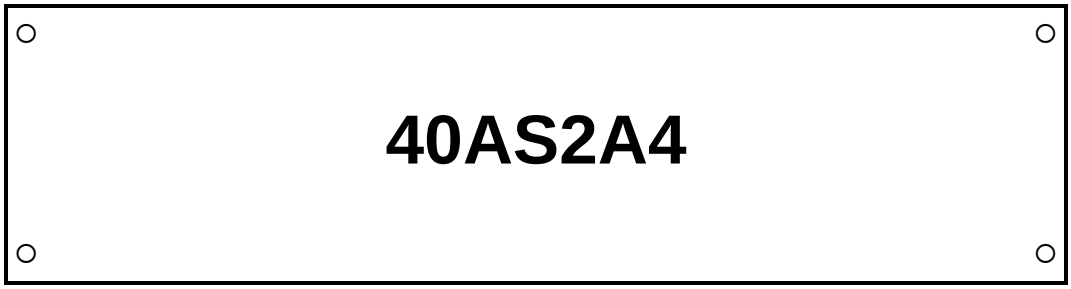
- Dimensions: 90 x 25mm
- Text: 5mm high letters engraved on polished 316 grade stainless steel with engraved text backfilled with black gloss enamel paint
- Mounting: 2 x 3mm diameter mounting holes drilled as shown



7.7 Typical Outdoor 11kV Switchgear Labels

7.7.1 Typical Cubicle Identification Label

- Dimensions: 200 x 50mm
- Text: 10mm high bold black letters on white traffolyte
- Mounting: 4 x 3mm diameter mounting holes drilled as shown
- Fixed to the front cubicle doors as well as the rear roof lip above the rear covers



7.7.2 Switch Identification Labels

- Dimensions: 150 x 25mm
- Text: 8mm high bold black letters on white traffolyte
- Mounting: 2 x 3mm diameter mounting holes drilled as shown
- Fixed to the front cubicle doors above respective switches

7.7.3 Switch Position Labels

- Dimensions: 100 x 25mm
- Text: 8mm high bold black letters on white traffolyte
- Mounting: 2 x 3mm diameter mounting holes drilled as shown
- Fixed to the front cubicle doors adjacent to respective switch positions

7.7.4 Cubicle Danger Label

- Dimensions: 200 x 50mm
- Text: 10mm high bold white letters on red traffolyte
- Mounting: 4 x 3mm diameter mounting holes drilled as shown
- Fixed to the front and rear cubicle doors and covers