Western Power's Asset Management System

Distribution Equipment Labelling Standard (DELS)

Content Owner/Custodian: Engineering & Design Function/Distribution Design and Standards

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Document control

Endorsement approvals

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Record of revisions

Revision #	Date	EDM version	Revised by	Description
9	March 2017	7	Chris Omodei	General update. Major changes but not limited to are • Safety signs reference to AS3000 removed, Section 5.1 • Clarified Underground Cable requirements, Section 5.4 • Clarified requirements for labelling on substations, Section 6.1.1 • Clarified requirements for Streetlight Columns, Section 6.1.15 • Clarified Pole label requirements, Section 8.1.1 • Clarified Isolator labelling, Section 8.1.13 • Added LV Fuse Disconnector (Overhead), Section 8.1.14 • Added LV Transpose Sign, Section 8.1.15 • Added Unserviceable Poles Sign, Section 8.1.16 • Added Reinforceable Poles Sign, Section 8.1.17 • Moved previous section 9 to Appendix A - Pictorial Illustrations of Labels on Pole Mounted Equipment for reference
10	July 2020	8	Chris Omodei	General update. Major changes but not limited to are • Clarified Pole Mounted Equipment Labels, Section 5.5 • Clarified Transformer Disconnector, Section 6.1.9 • Clarified LV Disconnector, Section 6.1.10 • Clarified LV Fuse Disconnector (Underground), Section 6.1.11 • Added Deep Earth labels Section, 6.1.17 • Updated Distribution Cable Identification, Section 7.1.5 • Clarified Pole labels, Section 8.1.1

Notification list (people to be notified when document is updated)

Position / Function / Section
Asset Management - Everyone
Asset Operations - Everyone

Review

This document will be formally reviewed and evaluated by the content owner at least once in every 3-year period considering the purpose of the document and any related outcomes from the compliance review.

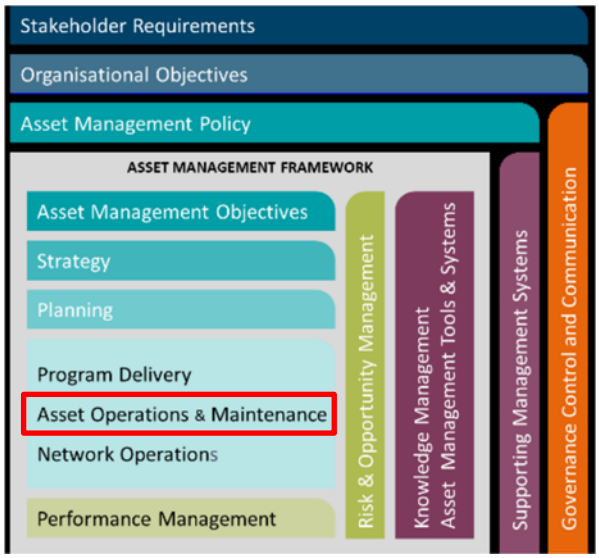
Contents

1. Purpose and Scope

The purpose of this document is to provide a standard for consistency in labelling of equipment for distribution equipment.

A key requirement of the Western Power Asset Management Policy is to develop and maintain an Asset Management System (AMS). This Distribution Equipment Labelling Standard is defined as an overarching / technical / governance document within the AMS document classification and structure and sits within the Asset Operations & maintenance component/s of the AMS.

The AMS and the interrelationships between the collection of documents, tools and systems that are used for asset management are described in the AMS document EDM# 40304923.



2. Application

This instruction covers all labelling to be secured to distribution equipment on Western Power's distribution network.

This standard represents the minimum requirements and is applicable to all labels applied to the distribution equipment.

3. Definitions

3.1 General

Label	An inscribed board, plaque or other delineated space on which a combination of words and/or symbols is used to identify a piece of equipment
Sign	An inscribed board, plaque or other delineated space on which a combination of legend and/or symbolic shape is used to convey a message
Pick Id	A unique identification number assigned to each item in SPIDAweb
Ground mount	Ground mounted distribution equipment
Pole mount	Pole mounted distribution equipment
High Voltage	shall mean a voltage greater than; • 1000 volts and less than 36kV AC • 1500 volts and less than 40kV DC
Low Voltage	shall mean a voltage greater than; • 32 volts and less than 1000 volts AC; or • 115 volts and less than 1500 volts DC.

3.2 Abbreviations and Acronyms

HV	High Voltage
LV	Low Voltage
SPIDAweb	Western Power's Geographic Information System
WAER	Western Australian Electrical Requirements
CAPB	Capacitor Bank
DISO	Disconnector Overhead
DISU	Disconnector Underground
DOF	Drop Out Fuse
DSTR	Distribution Transformer
EMTR	High Voltage Customer
FLTI	Fault Indicator
FSDU	Fuse Disconnector, Underground
FSSW	Fuse Switch
ISTX	Isolating Transformer
KISK	Kiosk

LVDF	Low Voltage Distribution Frame
PILL	Pillar
POLE	Pole
PTSD	Pole Top Switch
REAC	Reactor
RECL	Recloser
SLPO	Streetlight Pole (Column)
LBS	Load Break Switch
RMU	Ring Main Unit
RGTR	Regulating Transformer
SBST	Substation
SD	Surge Diverter
SECT	Sectionaliser
SLCB	Street Light Control Box
SWDC	Switch Disconnector

4. Responsibilities

The fixing of permanent labels and safety signs is the responsibility of the equipment installer. However, the commissioning officer must identify and confirm the presence and correctness of all labels and safety signs fitted to distribution equipment. No equipment shall be commissioned and placed into service without fixed permanent labels and safety signs installed.

The maintenance of labels and safety signs is the responsibility of the maintenance inspector; however, the switching operator must identify and confirm the presence and correctness of all labels and safety signs fitted to distribution equipment or structures at the time of switch operation.

5. General Requirements

Equipment labels are used to identify plant. Safety signs are used to identify hazards.

5.1 Safety Signs

Safety signs shall be applied to substations in accordance with AS 2067:2016. Safety signs should be maintained in a legible condition. The signs shall be in accordance with AS 1319:1994 and shall be provided in suitable positions as follows:

(a) *On the outside of a substation enclosure and at each means of access to the enclosure. Wording on signs at these locations shall consist of bold letters not less than 40 mm high and shall contain the words 'DANGER — HIGH VOLTAGE'*. Stock Code: CZ0223

(b) *On each cover or door, the removal or opening of which will provide access to high voltage parts. Wording on signs at these locations shall consist of letters not less than 12 mm high and shall contain the words '**DANGER — HIGH VOLTAGE**'.*

(c) *At each entrance to a substation. Wording on signs at these locations shall consist of bold letters not less than 40 mm high and shall contain the words '**AUTHORISED PERSONNEL ONLY**'. Stock Code: CZ5004*

5.2 General Equipment Label Specification

Distribution equipment shall be legibly and indelibly labelled to clearly identify the equipment, what it is connected to, and where applicable indicate the electrical installation that it controls.

Labelling shall be located on or adjacent to the equipment, in a position adjacent to the means of operation. Where access is provided to the equipment at the side or rear, such labelling shall also be located on a fixed portion at the alternate location.

The following represents the minimum specification for the material to be used for distribution equipment.

- Yellow vinyl adhesive-backed tape with a minimum of 10 years adhesiveness.
- Minimum outdoor life (UV resistant) of 10 years and remain legible.
- Minimum width of 5 centimetres (2 inch)
- Black text on yellow background.
- Three lines of text, Arial bold type, minimum text height see section 5.7.
- Length is dependent on entered text.

The label shall be capable of being adhered or fastened to any smooth, clean surface inclusive of metalwork.

5.3 Ground Mounted Equipment Labels

Labelling shall provide visibility of individual items or plant for ground mounted equipment for the purposes of identification. Therefore, all labelling shall be affixed directly to the equipment including RMUs, MPS transformers etc.

5.4 Underground Equipment Labels

Labelling shall provide visibility of individual items or plant for underground equipment identification. Therefore, all labelling shall be affixed directly to one of the individual components within the underground portion.

5.5 Pole Mounted Equipment Labels

Often more than one piece of equipment may be installed on a pole. The equipment is identified by the acronym used in SPIDAweb. This does not necessitate the labelling of all equipment, refer to Section 8.1.

The labels are affixed at approximately 1.5 to 1.8 m above ground level so they can be easily read by the operator.

The address is not labelled on the overhead network as they can be easily located via a Pick ID or the alphanumeric name.

Equipment labels shall face the road or point of access to allow for ease of visibility.

5.6 Equipment Label Format

Generally, line 1 displays the pick ID of the equipment.

Line 2 displays the equipment name or number used for operational purposes. This is to be in BOLD format. This is stored as the location name in SPIDAweb.

For underground equipment line 3 displays the address of the equipment or the address of the remote end of the cable connected to the equipment.

For overhead equipment line 3 displays the geographic location/address of the equipment.

In the country areas the pole number is most often used.

5.7 Label Types and Text Size

Two label types are defined to enable a consistent standard, understanding and implementation.

5.7.1 TYPE 1

The label shall be produced using a 50 mm wide roll.

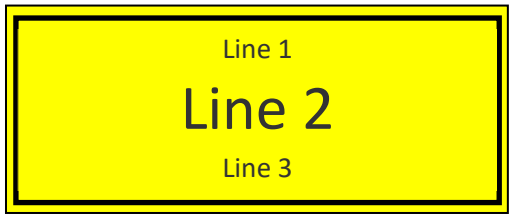
The font size shall be:

Line 1 - Text height nominally 7mm (allowable minimum 5mm, maximum 9mm)

Line 2 - Text height auto adjusted to achieve minimum 8mm, maximum 17mm - Aligned centrally

Line 3 - Text height auto adjusted to achieve minimum 3mm, maximum 9mm - Aligned centrally

The label shall have a thin frame (border).



5.7.2 TYPE 2

The label shall be produced using a 50 mm wide roll.

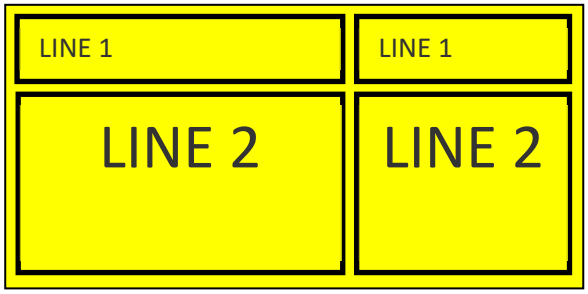
Line 1 - Text height 3mm Aligned left

Line 2 - (label Part 1 left side) - Text height auto adjusted to achieve minimum 3mm - Aligned centrally

Line 2 - All characters in upper case

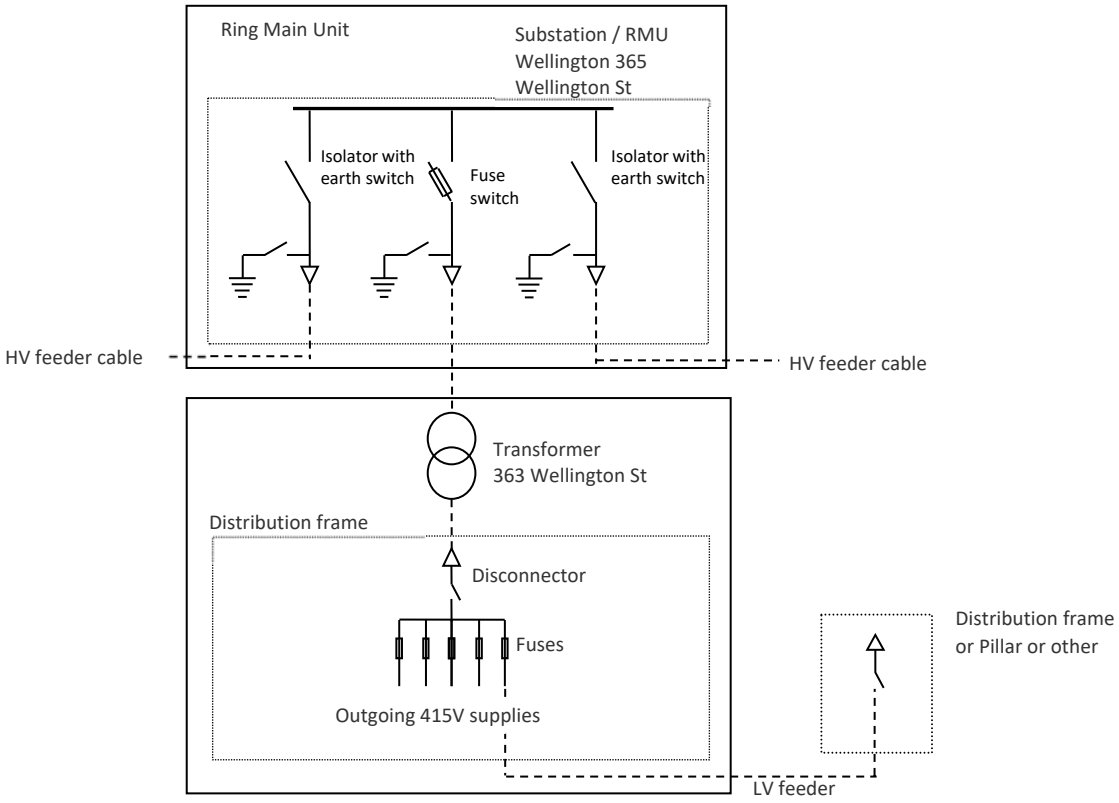
Line 2 - (label Part 2 right side) – Text height auto adjusted to achieve minimum 3mm - Aligned centrally (Auto populated from left hand side input)

The label shall have a thin frame (border).



6. Ground Mount Equipment

The label examples provided have been derived from the following schematic diagram of a typical underground network.



- Ground mount equipment includes the following:
- Distribution Substations
- Distribution Transformers
- Metering Transformers
- Regulators
- Fault Indicators
- Isolators or Switch Disconnectors
- Fuse switches
- LV Distribution frames
- Transformer disconnectors
- LV disconnectors
- Fuse disconnectors
- Universal Pillars
- Streetlights
- Streetlight control boxes

Labels shall be attached to the equipment as indicated in the following Sections.

6.1 Ground Mount Equipment Label Format

6.1.1 Substations

Distribution Substations are representative of a group of assets inclusive of a distribution transformer or high voltage switchgear. For the purposes of labelling, a substation label is only used where there is a physical enclosure to which it can be attached. In addition to this label the appropriate safety signs, as detailed in section 5.1, must be used.

Where the ring-main or high voltage switchgear is installed in a kiosk (RMU), for the purposes of labelling this can be considered a substation enclosure.

A substation is to be primarily identified with the acronym SBST, then the SPIDAweb Pick Id. In addition to this, a name attributed to the substation and its physical address is also included.

Line 1	SBST SPIDAweb Pick Id	Acronym used to match the label to the equipment followed by the unique identifier generated from the SPIDAweb.
Line 2	Name	Abbreviated alphanumeric name given to the substation. This is usually the street name with a suffix sequential number included if more than one substation is in the street. For multi zone substations, each substation will have separate pick ID numbers and will be named by zone, e.g. **365 WELLINGTON ZONE 1, 365 WELLINGTON ZONE 2**
Line 3	Address	This is the street or lot number and street name of the location of the substation.

A typical example of a substation label is shown below:

The label shall be Type 1 and may be saved with a filename: “SBST”.

In the past, the name of the substation was often given the business name of the occupant of the building in which the substation resided or to which the supply was provided. This is to be avoided because there is no assurance that this business will remain and hence the relationship between substation and location is lost.

6.1.1.1 Brick buildings

Where the substation enclosure has a door, the label shall be fitted at a height of approximately 1.5m above the finished floor level, on the inside of the door. An additional label shall be fitted at a height of approximately 1.5m above the finished floor level, on the outside of the door.

Where the doors are removable, the label shall be fitted inside the substation, adjacent to the doors and on the same face of the substation as the doors. Alternatively, the label may be placed inside the substation at a conspicuous location in full view of the operator.

6.1.1.2 Brick Compounds

Where the substation enclosure has a door, the label shall be fitted at a height of approximately 1.5m above the finished floor level, on the inside of the door. An additional label shall be fitted at a height of approximately 1.5m above the finished floor level, on the outside of the door.

Where the doors are removable, the label shall be fitted inside the substation, adjacent to the doors and on the same face of the substation as the doors. Alternatively, the label may be placed inside the substation at a conspicuous location in full view of the operator.

6.1.1.3 Non-brick enclosures

This may include cyclone or Colourbond perimeter fencing. Where the substation enclosure has a door, the label shall be fitted at a height of approximately 1.5m above the finished floor level on the door. The label may be fitted to a metal plate attached to the fence. An additional label shall be fitted inside the substation at a conspicuous location in full view of the operator.

6.1.1.4 Modular Packaged Substations

The label shall be placed on the inside of the door to the LV switchgear. The label shall be fitted at a height of approximately 1.5m above the finished floor level on the door.

6.1.1.5 Kiosks

Labels shall be fitted on the inside of the doors to both the HV and LV switchgear, if they exist. An additional label shall be fitted on the outside of the kiosk door, at a height of approximately 1.5m above the finished floor level of the door.

The acronym 'KISK' shall be used to identify kiosks.

The label shall be Type 1

6.1.2 Transformers

A ground mounted transformer is to be primarily identified with the acronym DSTR, then the SPIDAweb Pick Id. In addition to this, a name attributed to the transformer and its physical address is also included. In addition to this label the appropriate safety signs, as detailed in section 5.1, must be used.

Line 1	DSTR Pick Id	Acronym used to match the label to the equipment followed by the unique identifier generated from SPIDAweb
Line 2	Name	Abbreviated alphanumeric name given to the transformer. In suburban and commercial areas, the transformers will be named using the location street name and nearest address, e.g. **365 WELLINGTON ST**. In substations housing more than one transformer, the transformer name will have a suffix **T1, T2, etc.**

		365 WELLINGTON T1, 365 WELLINGTON T2. In outer, semi-rural, or rural areas the transformer name will be the lot number and street name, e.g. **L1065 MUNDIJONG RD**.
Line 3	Address	This is the street or lot number and street name of the remote end of the cable which feeds the transformer. For transformers with piggy-back connections the street or lot number of the remote end of the downstream cable is also mentioned.

A typical example of a transformer label is shown below:

In the past, the name of the transformer was sometimes given the business name of the occupant of the building in which the substation resided or to which the supply was provided. This is to be avoided because there is no assurance that this business will remain and hence the relationship between substation and location is lost.

The label shall be Type 1.

6.1.2.1 Brick buildings, Brick compounds, or Non-brick enclosures

Transformers located in brick buildings, brick compounds, or non-brick enclosures are free standing. There may be more than one transformer in any one substation. As such, the transformer label must be fitted to the transformer tank, adjacent to the transformer nameplate.

6.1.2.2 Pad Mount Transformers (IPS)

Access to the nameplate of pad mount transformers located inside kiosks is not readily available. Therefore, labels shall be fitted to the inside and outside of the doors to the HV and LV switchgear.

6.1.2.3 Modular Packaged Substations (MPS)

The label shall be fitted to the inside and outside of the door to the LV switchgear.

6.1.2.4 Non MPS Transformers

The label shall be fitted to the inside and outside of the door to the LV terminals.

6.1.2.5 Additional Requirements for Transformers with Piggy-Back Connections

Where transformers are configured with piggy-back HV connections, the label of the format in section 6.1.2, must be fixed on the inside of the door to the LV switchgear and/or terminals.

Additional labels must be fixed on the inside of the HV terminal compartment, adjacent to the HV bushings.

The first label must include the address of the remote end or upstream HV cable. This is included on the 3rd line of the label as in the following example. The label shall be placed on the transformer, adjacent to the upper HV bushings.

The second label must include the address of the remote end or downstream HV cable. This is included on the 3rd line of the label as in the following example. The label shall be placed on the transformer, adjacent to the lower HV bushings.

6.1.3 Metering Transformer

A ground mounted metering transformer is to be primarily identified with the acronym EMTR, then the SPIDAweb Pick Id. In addition to this, a name attributed to the metering transformer and its physical address is also included. In addition to this label, the appropriate safety signs, as detailed in section 5.1, must be used.

Line 1	EMTR SPIDAweb Pick Id	Acronym used to match the label to the equipment followed by the unique identifier generated from SPIDAweb.
Line 2	Name	Location address with Zone 1-2 etc. if required
Line 3	Address	

A typical example of a metering transformer label is shown below:

The label shall be placed on the front panel of the metering transformer unit, in full view of the operator.

The label shall be Type 1.

6.1.4 Regulator

A regulator is to be primarily identified with the acronym RGTR, then the SPIDAweb Pick Id. In addition to this, the switch number and SCADA name are also included. In addition to this label the appropriate safety signs, as detailed in section 5.1, must be used.

Line 1	RGTR SPIDAweb Pick Id	Acronym used to match the label to the equipment followed by the unique identifier generated from SPIDAweb.
Line 2	Name	Abbreviated alphanumeric name given to the regulator. This is usually the street name where the regulator is located.
Line 3	Name	

A typical example of a regulator label is shown below:

The labels shall be placed on the exterior surface of the regulator control panel door and the body of the tank (opposite the control panel but not on the cooling fins).

The label shall be Type 1.

6.1.5 Fault Indicator

A fault indicator is to be primarily identified with the acronym FLTI, then the SPIDAweb Pick Id. In addition to this, the fault indicator name and SCADA name are also included.

Line 1	FLTI SPIDAweb Pick Id	Acronym used to match the label to the equipment followed by the unique identifier generated from SPIDAweb.
Line 2	Name	Name of the Fault Indicator, usually a number. Where this number is the same as the SPIDAweb Pick Id, the SPIDAweb Pick Id shall be shown here.

A typical example of a fault indicator label is shown below:

The label shall be fixed to the fault indicator, or placed adjacent to the fault indicator, on the switchgear panel. The following examples in Figure 6-1, Figure 6-2 & Figure 6-3 illustrate the placement of labels for fault indicators.

The label shall be Type 2.

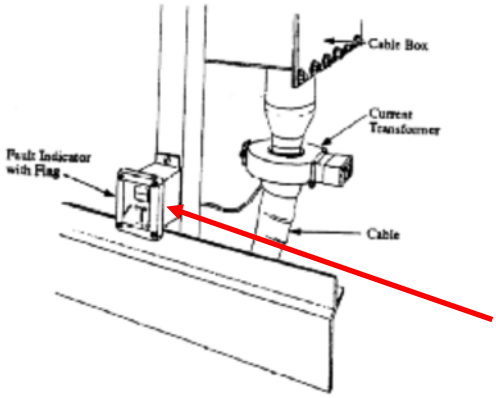


Figure 6-1 Relay & Flag Indicator

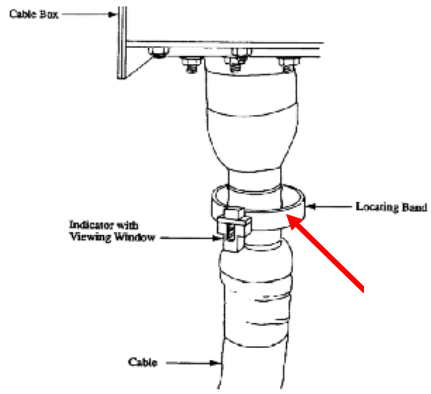


Figure 6-2 Spring/Oil Bath Indicator

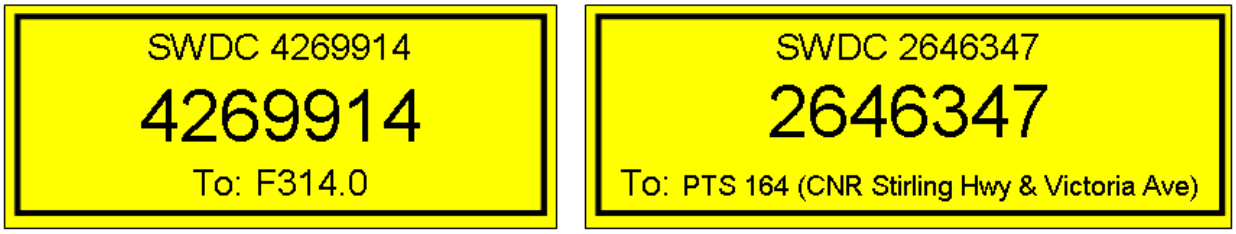
Figure 6-3 Alpha E Indicator

6.1.6 Isolators or Switch Disconnectors

A high voltage isolator or switch disconnector is to be primarily identified with the acronym SWDC, followed by the SPIDAweb Pick Id. In addition to this, the name of the isolator or switch, and physical address of the remote end of the cable are also included.

Line 1	SWDC SPIDAweb Pick Id	Acronym used to match the label to the equipment followed by the unique identifier generated from SPIDAweb
Line 2	Name	Name of the Switch or Isolator, this is usually a number which was previously generated from the pole-top switch register. Where this number is the same as the SPIDAweb Pick Id, the SPIDAweb Pick Id shall be shown here.
Line 3	Address	This is the street or lot number and street name of the location of the remote end of the cable to which the isolator or switch disconnector is connected, or physical address if in the overhead network.

Typical examples of switch disconnector labels are shown below:

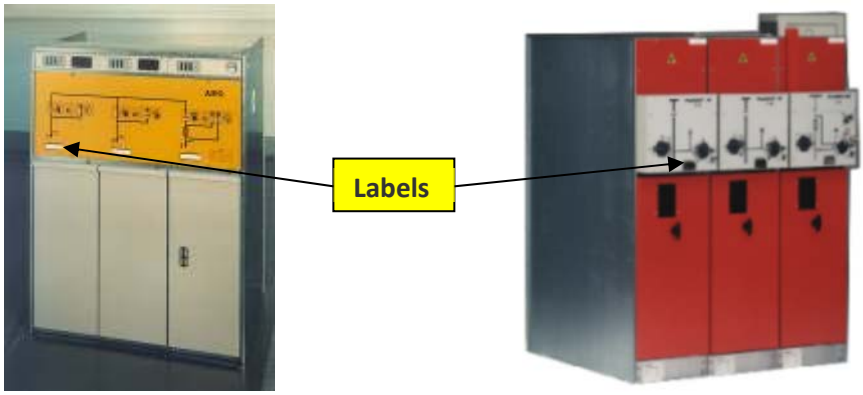


In most cases the label shall be placed on the label placard or front panel of the ring main switchgear unit. The following examples illustrate the placement of labels for switch disconnectors.

The label shall be Type 1.

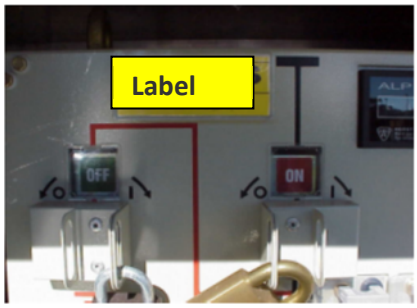
6.1.6.1 Alstom Ring Main Unit

The label shall be placed on the label placard on the front panel of the ring main unit.



6.1.6.2 F&G Ring Main Unit

The label shall be placed on the label placard of the ring main unit.

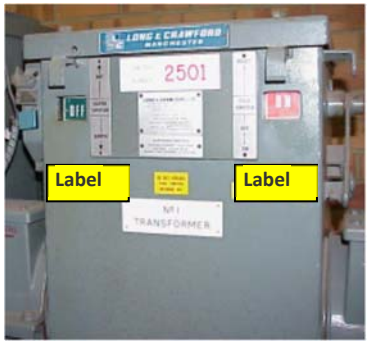


6.1.6.3 Merlin Gerin Ring Main Unit

The label shall be placed on the front panel of the ring main unit, adjacent to the operating mechanism.

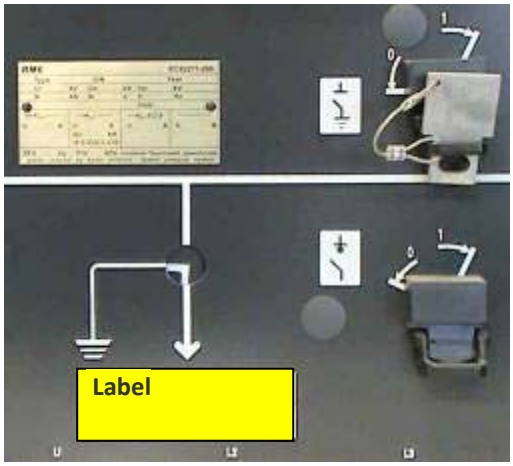
6.1.6.4 Long & Crawford Ring Main Unit

The label shall be placed on the front panel of the ring main unit, adjacent to the operating mechanism.



6.1.6.5 Schneider RM6

The label shall be placed on the front panel of the ring main unit, adjacent to the operating mechanism.

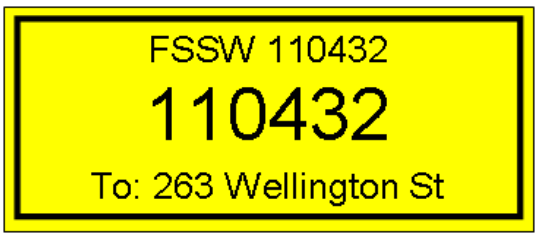


6.1.7 Fuse Switches

A high voltage fuse switch is to be primarily identified with the acronym FSSW, then the SPIDAweb Pick Id. In addition to this, the name of the fuse switch and the physical address of the transformer are also included.

Line 1	FSSW SPIDAweb Pick Id	Acronym used to match the label to the equipment followed by the unique identifier generated from SPIDAweb.
Line 2	Name	Name of the Fuse Switch, this is usually a number which was previously generated from the pole-top switch register. Where this number is the same as the SPIDAweb Pick Id, the SPIDAweb Pick Id shall be shown here.
Line 3	Transformer Name & Address	This is the name of the transformer, and street or lot number and street name of the location of the transformer at the remote end of the cable to which the fuse switch is connected. Where the cable feeds a local transformer, only the name of the transformer shall be mentioned.

A typical example of a fuse switch label is shown below:



In most cases the label shall be placed on the label placard, or front panel, of the ring main switchgear unit as per the examples in section 6.1.6.

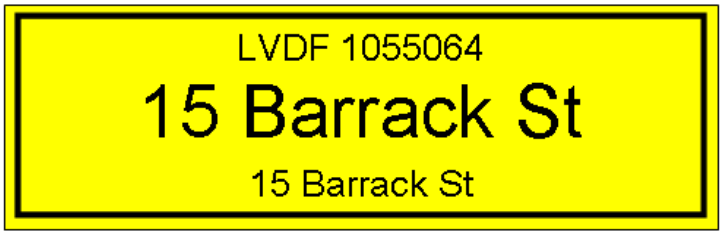
The label shall be Type 1.

6.1.8 LV Distribution Frame

A low voltage distribution frame is to be primarily identified with the acronym LVDF, then the SPIDAweb Pick Id. In addition to this, the name of the LV distribution frame, and physical address of the distribution frame are also included.

Line 1	LVDF SPIDAweb Pick Id	Acronym used to match the label to the equipment followed by the unique identifier generated from SPIDAweb
Line 2	Name	Abbreviated alphanumeric name of LV distribution frame. LV distribution frames will be named by the street address e.g. **15 BARRACK ST**
Line 3	Address	This is the street or lot number and street name of the location of the LV distribution frame.

A typical example of a LV distribution frame label is shown below:



The label shall be Type 1.

Where the distribution frame is in a kiosk or wall mounted, labels shall be placed on the inside and outside of the kiosk door. The labels shall be placed in the centre of the door.

Where the distribution frame is located in a substation and is freestanding, the label shall be fixed to the distribution frame. The label should also be placed on the inside of the substation door at a height of approximately 1.5m above the finished floor level and be located just below the substation label. If more than one frame exists in the substation then each label must be fixed to the appropriate distribution frame.

6.1.9 Transformer Disconnector

A transformer isolator or disconnector is to be primarily identified with the acronym DISU, then the SPIDAweb Pick Id. In addition to this, the name of the transformer to which it is connected, and the physical address of the transformer are also included.

Line 1	DISU SPIDAweb Pick Id	Acronym used to match the label to the equipment followed by the unique identifier generated from SPIDAweb.
Line 2	Name & Address	Abbreviated alphanumeric name of the transformer disconnector, followed by 'TX' & the street or lot number and street name of the location of the transformer to which the DISU is connected.
Line 3 & Line 4		Blank, can be used for the overflow of Line 2

A typical example of a transformer disconnector label is shown below:

The label shall be Type 2. The label is to be cut into two sections.

The left-hand side of the label is to be above the DISU or on the back of the door. The right-hand side of the label is to be attached to the DISU.

6.1.10 LV Disconnector

A low voltage isolator or disconnector is to be primarily identified with the acronym DISU, then the SPIDAweb Pick Id. In addition to this, the name of the disconnector and the physical address of the remote end of the cable are also included.

Line 1	DISU SPIDAweb Pick Id	Acronym used to match the label to the equipment followed by the unique identifier generated from SPIDAweb.
Line 2	Name & Address	This is the street or lot number and street name of the remote end of the cable to which the disconnector is connected
Line 3 & Line 4		Blank, can be used for the overflow of Line 2

A typical example of a LV disconnector label is shown below:

The label shall be Type 2. The label is to be cut into two sections.

The left-hand side of the label is to be above the DISU or on the back of the equipment door. The right-hand side of the label is to be attached to the DISU.

6.1.11 LV Fuse Disconnector (Underground)

A low voltage fuse disconnector is to be primarily identified with the acronym FSDU, then the SPIDAweb Pick Id. In addition to this, the name of the transformer to which it is connected and the physical address of the remote end of the cable are also included.

Line 1	FSDU SPIDAweb Pick Id	Acronym used to match the label to the equipment followed by the unique identifier generated from SPIDAweb.
Line 2	Name & Address	This is the street or lot number and street name of the remote end of the cable to which the disconnector is connected.
Line 3 & Line 4		Blank, can be used for the overflow of Line 2

A typical example of a disconnector label is shown below:

The label shall be Type 2 and it is to be cut into two sections.

The left-hand side of the label is to be above the FSDU or on the back of the equipment door. The right-hand side of the label is to be attached to the FSDU.

6.1.12 Universal Pillar

A universal pillar is to be primarily identified with the acronym PILL, then the SPIDAweb Pick Id. In addition to this, the physical addresses of the cables connected to the terminal bars are to be included. The lid of the universal pillar displays the words 'WESTERN POWER - DANGER ELECTRICAL CABLES' as per the technical specification for 'Low Voltage Underground Distribution Pillars'.

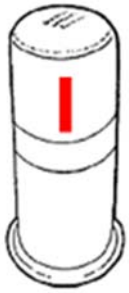
Line 1	PILL SPIDAweb Pick Id	Acronym used to match the label to the equipment followed by the unique identifier generated from SPIDAweb.
Line 2	Address	This is the street or lot number and street name of the location of the remote end of the cable to which the top bar of the disconnector is connected.
Line 3	Address	This is the street or lot number and street name of the location of the remote end of the cable to which the bottom bar of the disconnector is connected. Note that there may be two cables connected to this bar. A cable terminating to the left of the disconnector bar is denoted with a '(Left)' and a cable terminating to the right of the disconnector bar is denoted with a '(Right)'.

A typical example of a universal pillar label is shown below:

The label shall be Type 1 and may be saved with a filename: "PILL".

The label shall be placed on the top of the orange plastic covering, located inside the universal pillar.

In addition, universal pillars functioning as normally open points shall have a reflective red 'I' marked on the outer case of the pillar lid to indicate the open point status. As open points are changed the lid with the 'I' marking should move with the open point. The marking shall be placed on the roadside of the pillar. This marking is shown in the following diagram:



Where required, and where the universal pillar has a LV disconnector or LV fuse disconnector fitted, a label should be fitted for these items as per sections 6.1.10 and 6.1.11.

6.1.13 Mini Pillar

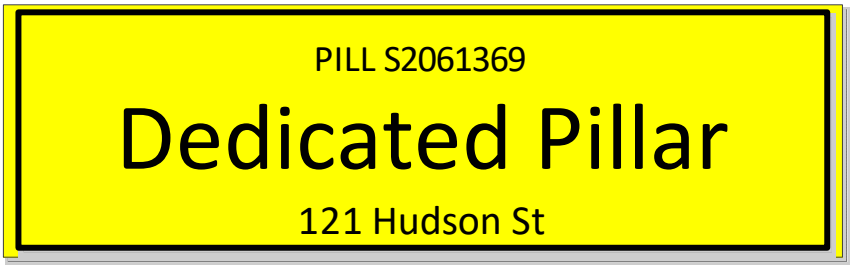
The lid of the mini pillar displays the words 'WESTERN POWER - DANGER ELECTRICAL CABLES' as per the technical specification for 'Low Voltage Underground Distribution Pillars'. No other labels are fixed to the mini pillar.

6.1.14 Dedicated Pillar

A dedicated pillar is to be primarily identified with the acronym PILL, then the Pick Id. In addition to this, the words "Dedicated Pillar" and the physical address of the pillar shall be included on the label.

The lid of the mini pillar shall display the words 'WESTERN POWER - DANGER ELECTRICAL CABLES' as per the technical specification for 'Low Voltage Underground Distribution Pillars'

Line 1	PILL SPIDAweb Pick Id	Acronym used to match the label to the equipment followed by the unique identifier generated from SPIDAweb
Line 2	Equipment Name	Identification of the pillar as a dedicated pillar installed to service only the address identified on the label.
Line 3	Address	This is the street or lot number and street name of the location on which the dedicated pillar is positioned.



The label shall be a Type 1 placed inside the pillar by a network operative on the reserve side of the terminal block panel or on the panel underneath the terminal blocks if no space is available.

6.1.15 Streetlight Pole (Lamp Pole)

A streetlight pole is to be primarily identified with the acronym LAPO (Lamp Pole as in SPIDAweb), then the SPIDAweb Pick Id of the streetlight pole. In addition to this, the address of the source shall be identified.

Line 1	LAPO	Acronym used to match the label to the equipment
Line 2	SPIDAweb Pick Id	The SPIDAweb Pick Id of the streetlight pole shall be shown here.
Line 3	Address	This is the abbreviated alphanumeric name and unique identifier generated from SPIDAweb of the supply to which the streetlight is connected.

A typical example of a streetlight label is shown below:

The label shall be Type 1.

The label is to be fixed to the steel pole, on the roadside, at a height of approximately 1.5m above ground.

6.1.16 Streetlight Control Box

A streetlight control box is to be primarily identified with the acronym SLCB, then the SPIDAweb Pick Id. In addition to this, the name of the streetlight control box and the physical address of streetlight control box are also included.

Line 1	SLCB SPIDAweb Pick Id	Acronym used to match the label to the equipment followed by the unique identifier generated from SPIDAweb.
Line 2	Name	Abbreviated alphanumeric name of the streetlight control box. Where this number is the same as the SPIDAweb Pick Id, the SPIDAweb Pick Id shall be shown here.
Line 3	Address	This is the street or lot number and street name of the location of the streetlight control box.

A typical example of a streetlight label is shown below:

The label shall be Type 1. The label shall be placed on the outside of the control box door.

6.1.17 Deep Earth

Where deep earths are installed in pillars a tag shall be applied to the earth cable

Tags shall be:

- Applied to the cable and not the terminal. Constructed from durable, non-conductive UV stabilised material
- Similar in construction to a swivel collar cattle ear tag
- Preferably white or yellow in colour with a minimum size of 76mm by 56mm
- Fixed in place by a nylon cable tie in a position that is visible to authorised personnel without the need for undue manipulation
- Clearly inscribed using an indelible black marker pen, stating ‘Deep Earth’.

7. Underground Equipment

This covers the following equipment

- Un-metered supply pit
- Underground supply pit
- Underground (basement) transformers
- Distribution Cable Identification Tags

7.1 Underground Equipment Label Format

7.1.1 Un-metered Supply Pit

Un-metered supply pits display the words 'WESTERN POWER - DANGER ELECTRICAL CABLES'. No other labels are fixed to LV un-metered supply pits. However, terminations are required to be labelled, refer to section 7.1.4.

7.1.2 Underground Supply Pit

Underground supply pits display the words 'WESTERN POWER - DANGER ELECTRICAL CABLES'.

An underground supply pit is to be primarily identified with the acronym PIT, then the SPIDAweb Pick Id. The neutral connector shall be identified. The remote ends of the connecting Western Power cables shall also be identified.

Line 1	PIT SPIDAweb Pick Id	Acronym used to match the label to the equipment followed by the unique identifier generated from SPIDAweb.
Line 2	NEUTRAL	Identification of the neutral connector or cable.
Line 3	Address	This is the street or lot number and street name of the remote end of the cable which feeds the pit. For pits with loop-in, loop-out connections the street or lot number of the remote end of the downstream cable is also included.

A typical example of a pit label is shown below:

The label shall be Type 1 and shall be placed on the neutral incoming cable, or neutral connector.

7.1.3 Underground (Basement) Transformer

An underground or submersible transformer is to be primarily identified with the acronym DSTR, then the SPIDAweb Pick Id. The name attributed to the transformer and its physical address is also included. In addition to this label the appropriate safety signs, as detailed in section 5.1, must be used.

Line 1	DSTR SPIDAweb Pick Id	Acronym used to match the label to the equipment followed by the unique identifier generated from SPIDAweb.
Line 2	Name	Abbreviated alphanumeric name given to the transformer. This is usually the street number and name.
Line 3	Address	This is the street or lot number and street name of the remote end of the cable which feeds the transformer. For transformers with piggy-back connections the street or lot number of the remote end of the downstream cable is also included.

A typical example of a transformer label is shown below:

The label shall be Type 1 and must be fitted to the transformer tank, adjacent to the transformer nameplate.

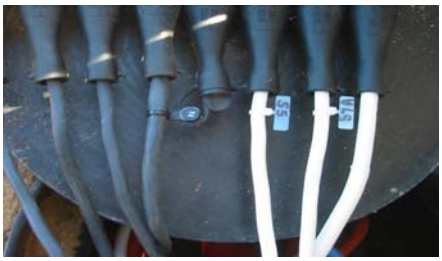
In the past, the name of the transformer was usually the business name of the occupant of the building in which the substation resided or to which the supply was provided. This is to be avoided because there is no assurance that this business will remain and hence the relationship between substation and location is lost.

7.1.4 Customer Service Cable ID Tag.

The tag will be used to identify customer services within underground pits and pillars.

Single phase services are tagged on the phase of the service cable with the corresponding house number clearly marked on the tag using a permanent marker pen.

Three phase services are tagged on the red phase of the service cable and similarly the house number is included on the tag.



7.1.5 Distribution Cable Identification

Tags or markers shall be applied at the time of installation.

7.1.5.1 LV Mains Cables Tags

These cables consist of LV mains street feeds, i.e. 240sqmm wave concentric cable.

Tags shall be:

- Applied to the cable and not the terminal. An additional label can be applied to the terminal, LV frame, pillar etc.
- Constructed from durable, non-conductive UV stabilised material
- Similar in construction to a swivel collar cattle ear tag
- Preferably white or yellow in colour with a minimum size of 76mm by 56mm
- Fixed in place by a nylon cable tie in a position that is visible to authorised personnel without the need for undue manipulation
- Clearly inscribed using an indelible black marker pen, nominating the Pick ID of the other end(s) of the cable.

7.1.5.2 LV Service Cable Tags

These cables consist of cables supplying connection points for the network, i.e. three phase pillar cables and streetlight cables. These tags are only required when the cable is terminated at both ends, i.e. they are not required with a tee joint.

For streetlight supply cables the unmetered supply tag (CZ0307) shall be applied.

Tags shall be:

- Applied to the cable and not the terminal.
- Fixed in place by a nylon cable tie in a position that is visible to authorised personnel without the need for undue manipulation
- Clearly inscribed using an indelible black marker pen, nominating the Pick ID of the other end(s) of the cable.

7.1.5.3 Below Ground Cable Identification

Under certain conditions underground cable will be identified via a marker post, refer to the Underground Cable Installation Manual, EDM# 34011711. This label will identify that a cable is in the vicinity and is not required to have a name or a SPIDAweb Pick Id.

8. Overhead Equipment

This covers the following equipment

- Distribution poles
- HV and LV switching points
- Primary pole mounted equipment

8.1 Pole Mounted Equipment Label Format

8.1.1 Poles

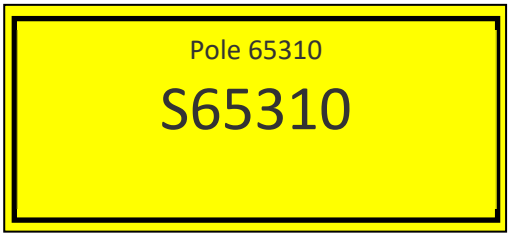
All Western Power distribution poles require the fitting of a Danger Sign at a height of approximately 1.8m above ground.

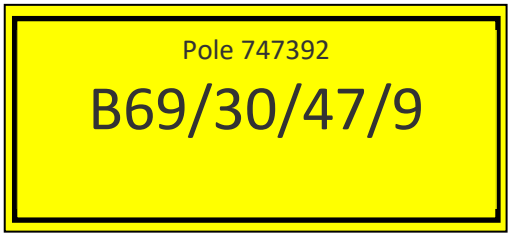
The pole Danger Sign shall be fixed using Western Power standard fixings, refer to the Distribution Construction Standards Handbook R17. Wood screws are to be used as fixings for wood poles and bandit straps are to be used for concrete and steel poles.

All poles are to be primarily identified with the acronym POLE, then the SPIDAweb Pick Id. Note: such poles may include steel streetlight columns, refer to section 6.1.15.

Line 1	POLE SPIDAweb Pick Id	Acronym used to match the label to the equipment, followed by the unique identifier generated from SPIDAweb.
Line 2	Name	Alphanumeric name of the pole. In rural areas this is commonly a sequential alphanumeric number beginning with the feeder name, tee-offs denoted with a '/' (slash).
Line 3	Blank	

A typical example of a pole label is shown below:





The label shall be Type 1.

Other labels may be fitted to poles for maintenance purposes. These include identification discs, unserviceable markers, reinforceable markers, and chemical treatment markers.

8.1.2 Pole-top switch

A pole top switch is to be primarily identified with the acronym PTSD, then the SPIDAweb Pick Id. In addition to the switch number is also included.

Line 1	PTSD SPIDAweb Pick Id	Acronym used to match the label to the equipment, followed by the unique identifier generated from SPIDAweb.
Line 2	Name	Name of the Switch, this is usually a number which was previously generated from the pole-top switch register. Where this number is the same as the SPIDAweb Pick Id, the SPIDAweb Pick Id shall be shown here.
Line 3	Address	The address location or pole number (country).

Typical examples of a pole-top switch label are shown below:

Metro Metro Country

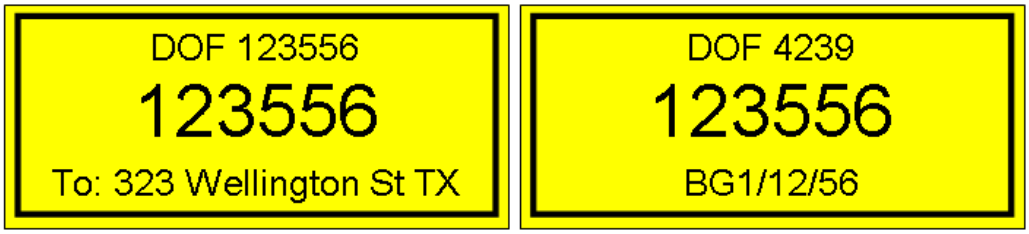
The label shall be Type 1.

8.1.3 Drop Out Fuse

A drop out fuse is to be primarily identified with the acronym DOF, then the SPIDAweb Pick Id. In addition to this, the switch number is also included.

Line 1	DOF SPIDAweb Pick Id	Acronym used to match the label to the equipment, followed by the unique identifier generated from SPIDAweb.
Line 2	Name	Name of the DOF, this is usually a number which was previously generated from the pole-top switch register. Where this number is the same as the SPIDAweb Pick Id, the SPIDAweb Pick Id shall be shown here.
Line 3	Address	Street address of equipment if installed or pole number(country).

Typical examples of a drop out fuse labels are shown below:



Metro Country

The label shall be Type 1.

8.1.4 Distribution Transformer

A transformer is to be primarily identified with the acronym DSTR, then a SPIDAweb Pick Id. In addition to this, a name attributed to the transformer and its physical address is also included.

Line 1	DSTR SPIDAweb Pick Id	Acronym used to match the label to the equipment, followed by the unique identifier generated from SPIDAweb.
Line 2	Name	Abbreviated alphanumeric name given to the transformer. In suburban and commercial areas, the transformers will be named using the location street name and nearest address, e.g. **20 WELLINGTON St**. In substations housing more than one transformer, the transformer name will have a suffix **T1, T2, ..,** e.g. **20 WELLINGTON St T1, 20 WELLINGTON St T2**. In outer, semi-rural, or rural areas the transformer name can either be the country rural pole number or the address location
Line 3	Address	This is the street or lot number and street name of the remote end of the cable which feeds the transformer.

Typical examples of a transformer label are shown below:

Metro

Country

The label shall be Type 1.

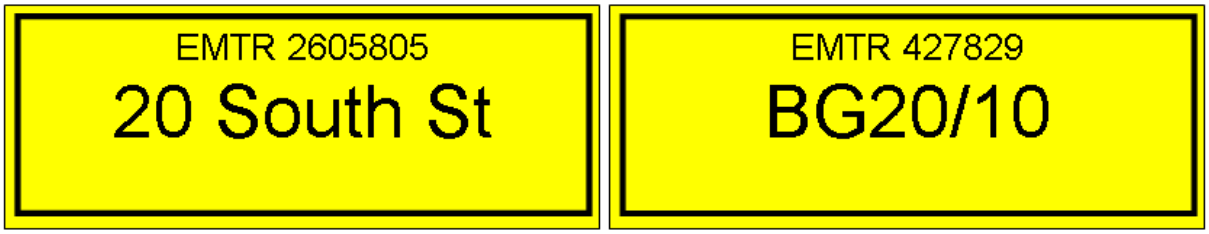
In the past, the name of the transformer was usually the business name of the occupant of the building to which the supply was provided. This is to be avoided because there is no assurance that this business will remain and hence the relationship between transformer and location is lost.

8.1.5 Metering Transformer

A metering transformer is to be primarily identified with the acronym EMTR, then the SPIDAweb Pick Id. In addition to this, the name attributed to the metering transformer is also included.

Line 1	EMTR SPIDAweb Pick Id	Acronym used to match the label to the equipment, followed by the unique identifier generated from SPIDAweb.
Line 2	Name	This is usually the street name with a sequential number included if more than one metering transformer is located at the same address. i.e. Z1 or Z2 In country areas the metering transformer name can either be the pole number or the address location.
Line 3	Blank	

Typical examples of metering transformer labels are shown below:



Metro Country

The label shall be Type 1.

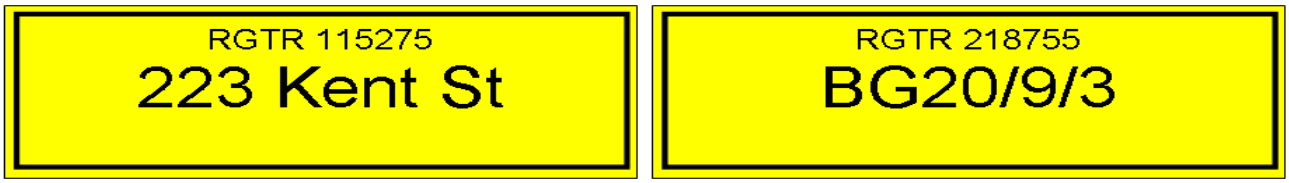
An additional label for the metering transformer shall be placed on the inside of the meter kiosk door.

8.1.6 Regulator

A regulator is to be primarily identified with the acronym RGTR, then the SPIDAweb Pick Id. In addition to this the regulator name is also included.

Line 1	RGTR SPIDAweb Pick Id	Acronym used to match the label to the equipment followed by the unique identifier generated from SPIDAweb.
Line 2	Name	Abbreviated alphanumeric name given to the regulator. This is usually the street address or pole number in country areas.
Line 3	Name	

Typical examples of regulator labels are shown below:



Metro Country

The label shall be Type 1.

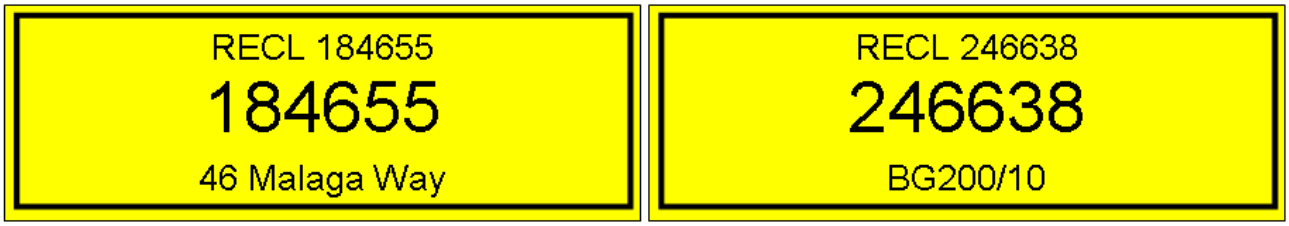
An additional label for the voltage regulator shall be placed on the inside of the regulator control box.

8.1.7 Recloser

A recloser is to be primarily identified with the acronym RECL, then the SPIDAweb Pick Id. In addition to this, the switch number and address are also included.

Line 1	RECL SPIDAweb Pick Id	Acronym used to match the label to the equipment, followed by the unique identifier generated from SPIDAweb.
Line 2	Name	Name of the Recloser, this is usually a number which was previously generated from the pole-top switch register. Where this number is the same as the SPIDAweb Pick Id, the SPIDAweb Pick Id shall be shown here.
Line 3	Name	The name is the address location or pole number.

Typical examples of recloser labels are shown below:



Metro Country

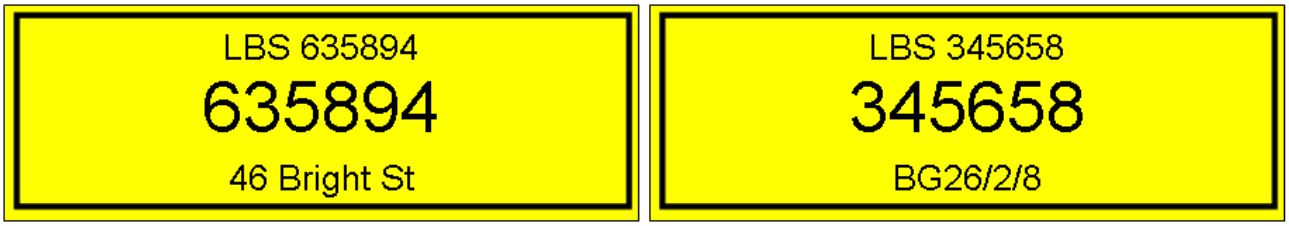
The label shall be Type 1.

8.1.8 Load Break Switch

A load break switch is to be primarily identified with the acronym LBS, then the SPIDAweb Pick Id. In addition to this, the switch number and address are also included.

Line 1	LBS SPIDAweb Pick Id	Acronym used to match the label to the equipment, followed by the unique identifier generated from SPIDAweb.
Line 2	Name	Name of the load break switch, this is usually a number which was previously generated from the pole-top switch register. Where this number is the same as the SPIDAweb Pick Id, the SPIDAweb Pick Id shall be shown here.
Line 3	Name	The name is the address location or pole number.

Typical examples of load break switch labels are shown below:



Metro Country

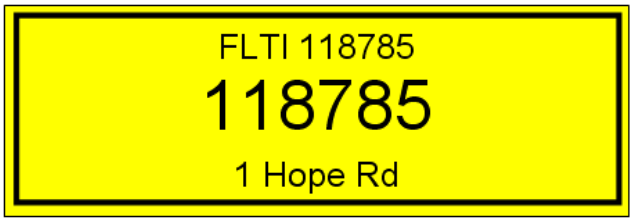
The label shall be Type 1.

8.1.9 Fault Indicator

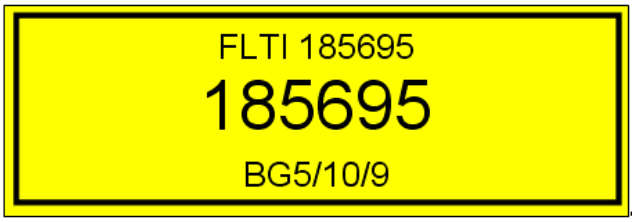
A fault indicator is to be primarily identified with the acronym FLTI, then the SPIDAweb Pick Id. In addition to this the Fault Indicator number and address or pole number in the country is also included.

Line 1	FLTI SPIDAweb Pick Id	Acronym used to match the label to the equipment, followed by the unique identifier generated from SPIDAweb.
Line 2	Name	Where this number is the same as the SPIDAweb Pick Id, the SPIDAweb Pick Id shall be shown here.
Line 3	Name	The name is the address location or pole number.

Typical examples of fault indicator labels are shown below:



Metro



Country

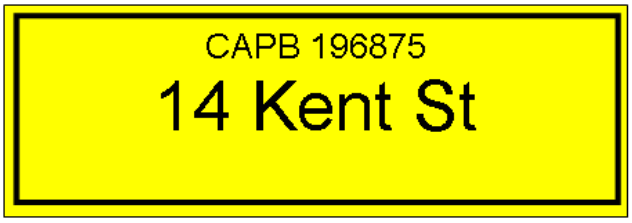
The label shall be Type 1.

8.1.10 Capacitor

A capacitor is to be primarily identified with the acronym CAPB, then the SPIDAweb Pick Id. In addition to this the capacitor address location or pole number is included.

Line 1	CAPB SPIDAweb Pick Id	Acronym used to match the label to the equipment, followed by the unique identifier generated from SPIDAweb.
Line 2	Name	This is usually the street name or pole number.
Line 3	Blank	

Typical examples of a capacitor bank labels are shown below:



Metro

Country

The label shall be Type 1.

8.1.11 Reactor

A reactor is to be primarily identified with the acronym REAC, then the SPIDAweb Pick Id. In addition to this the reactor address location or pole number is included.

Line 1	REAC SPIDAweb Pick Id	Acronym used to match the label to the equipment, followed by the unique identifier generated from SPIDAweb.
Line 2	Name	Abbreviated alphanumeric name given to the reactor. This is usually the street location.
Line 3	Blank	

Typical examples of reactor labels are shown below:

Metro Country

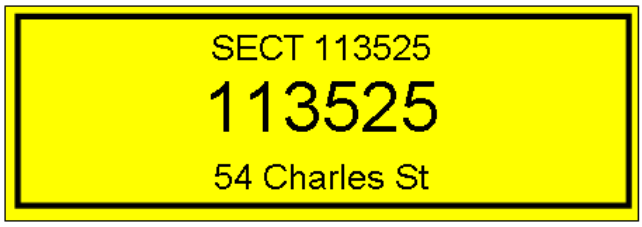
The label shall be Type 1.

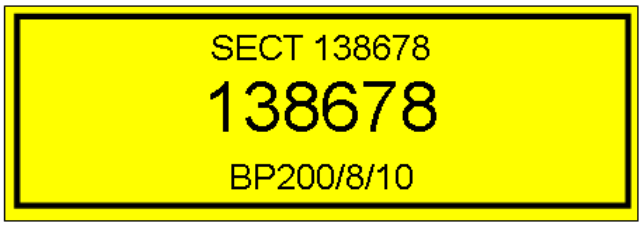
8.1.12 Sectionaliser

A sectionaliser is to be primarily identified with the acronym SECT, then the SPIDAweb Pick Id. In addition to this, the switch number pole location is included.

Line 1	SECT SPIDAweb Pick Id	Acronym used to match the label to the equipment, followed by the unique identifier generated from SPIDAweb.
Line 2	Name	Name of the sectionaliser, this is usually a number which was previously generated from the pole-top switch register. Where this number is the same as the SPIDAweb Pick Id, the SPIDAweb Pick Id shall be shown here.
Line 3	Name	The name is the pole location. In Metro areas the street name is used, and in the Country areas the pole number denotes the location.

Typical examples of sectionaliser labels are shown below:





Metro Country

The label shall be Type 1.

8.1.13 Isolator

An isolator is to be primarily identified with the acronym DISO, then the SPIDAweb Pick Id. This label applies to HV and LV isolators (and are commonly known as an MV isolator, LV blade or LV fuse disconnector with a link).

Line 1	DISO SPIDAweb Pick Id	Acronym used to match the label to the equipment, followed by the unique identifier generated from SPIDAweb (HV and LV)
Line 2	Name	The SPIDAweb Pick Id shall be shown here.
Line 3	Name	

The label shall be Type 1. A typical example of an isolator label is shown below:

8.1.14 LV Fuse Disconnector (Overhead)

An overhead LV fuse disconnector is to be primarily identified with the acronym FSDO and the SPIDAweb Pick Id.

Line 1	FSDO SPIDAweb Pick Id	Acronym used to match the label to the equipment, followed by the unique identifier generated from SPIDAweb (HV and LV)
Line 2	Name	The SPIDAweb Pick Id shall be shown here.
Line 3	Name	

The label shall be Type 1. A typical example of an isolator label is shown below:

8.1.15 LV Transpose Sign

Some poles that have a construction where the LV conductors are transposed (phase sequence configuration is opposite to standard, i.e. the neutral is on the customer side of the pole are labelled to alert personnel of the non-standard phasing arrangement. This is to be indicated by a LV Transposition Sign.

The LV Transposition Sign is black on white with red lettering. See the image shown below. The sign should be positioned below the low voltage crossarm. The sign is to be placed on the roadside, to be easily seen.

8.1.16 Unserviceable Pole Sign

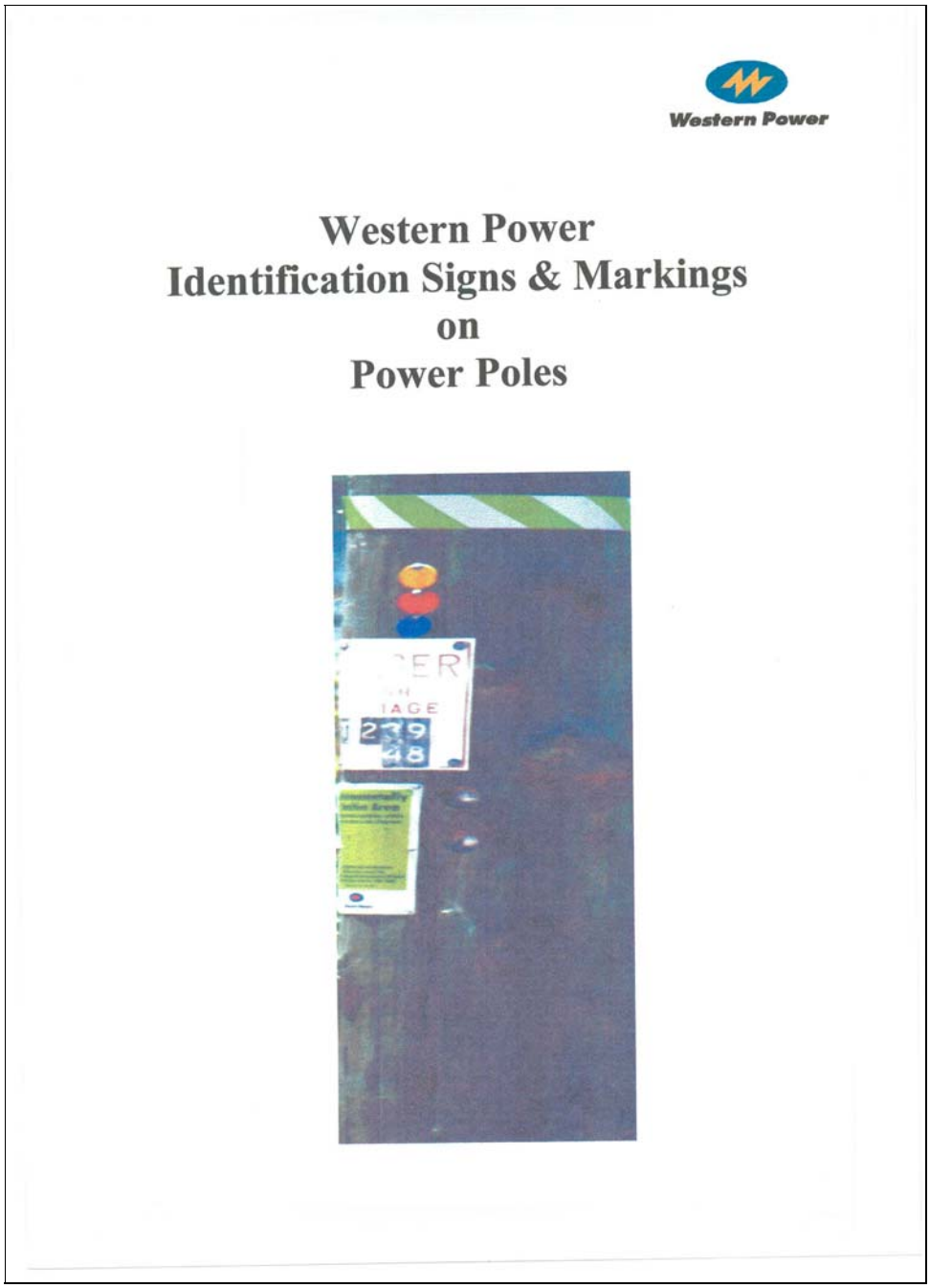
Western Power poles that have been declared unserviceable must be marked with a double horizontal white slash. The double white slash should be positioned approximately 1.8m above ground level on the roadside of the pole so that it can easily be seen.

8.1.17 Reinforceable Poles Sign

Poles suitable for reinforcing will be marked with a single white slash. The single white slash should be positioned approximately 1.8m above ground level on the roadside of the pole so that it can be easily seen.

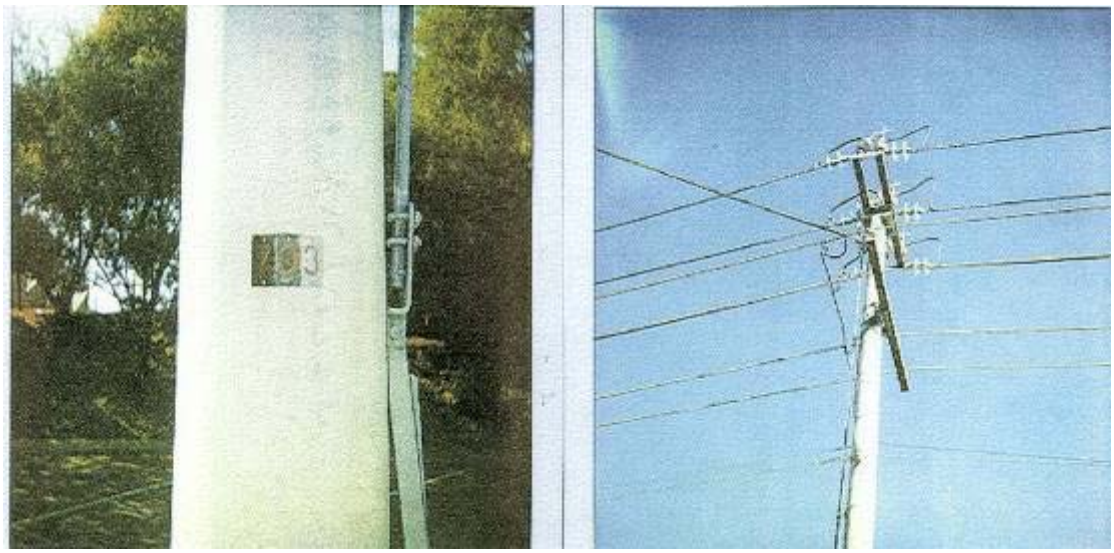
Appendix A: Appendix A - Pictorial Illustrations of Labels on Pole Mounted Equipment

The following images and references provide examples of equipment labelling on Western Powers network.



A.1 Pole Top Switch Labelling

The pole top switch identification number is either stencilled or fixed horizontally to the pole between 1.5m to 1.8m above ground level. These numbers are attached to the roadside of the pole.



A.2 Drop Out Fuse Labelling

The drop out fuse identification number is either stencilled or fixed horizontally to the pole between 1.5m to 1.8m above ground level. These numbers are attached to the roadside of the pole.

A.3 Fault Indicator Labelling

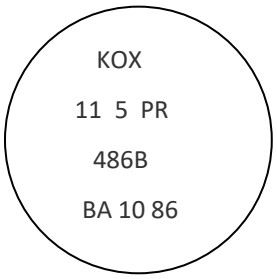
The fault indicator identification number is fixed horizontally on the pole between 1.5m to 1.8m from ground level and may also be located on the fault indicator control box.

A.4 Streetlight Labelling

Each streetlight structure whether wood, steel or concrete has an identification number on it. This number is placed on the pole, in a vertical position approximately between 1.5m to 1.8m above ground level, on the roadside of the pole.

A.5 Pole Identification

Both treated and concrete poles have identification discs embedded in the surface of the pole. This disc contains information detailed below and is positioned between 1.5m to 1.8m above ground level.



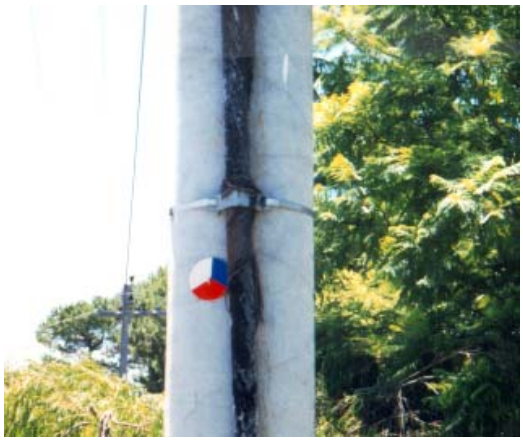
'K'	-	treatment Plant identification
'X'	-	poles treated with oxide formulation
'11'	-	pole length in metres
'5'	-	pole strength rating in kiloNewtons
'PR'	-	timber species
'BA'	-	the batch number
'10 86'	-	month and year of treatment

Poles which have been subjected to Chlorpyrophos soil treatment for white ants shall be identified by a date stamped green coloured disc fixed to the roadside of the pole. This shall be positioned at between 1.5m to 1.8m above ground level.

A.6 Phase position marking of pole top cable termination (1 Disc, R, W & B)

This method of marking is used in overhead areas where a cable is required to feed a ground mounted transformer and where a feeder cable is connected to the overhead network.

A disc containing three sections (R, W & B) approximately 90 mm in diameter is placed between the high voltage and low voltage crossarms. This disc indicates the phase sequence of the overhead conductors for the purpose of terminating the underground cable.



A.7 R, W & B transposition marking of low voltage conductors (4 plates on crossarm)

Refer to Section 8.1.15 for current requirements.

Some resource centres have poles that have a construction where the LV conductors are transposed (phase sequence configuration is opposite on other side of crossarm). This is sometimes indicated by a coloured plate situated under each phase of the crossarm.

The LV Transposition Sign is approximately 200mm x 160mm and is black on white with red lettering. The sign should be positioned below the crossarm and above the streetlight swan neck. The sign is to be placed on the roadside, to be easily seen.

A.8 Transformers in Parallel Labelling

Distribution transformers that have their low voltage bushings connected together by the low voltage network conductors are said to be operating in parallel. The transformers are also protected by common high voltage drop out fuses.

The signs indicating *Transformer in Parallel* are located on both sides and at the end of the low voltage crossarm on the roadside. These are approximately positioned so that they can easily be seen by any switching operator.

A.9 Unserviceable Pole Labelling

Refer to Section 8.1.16 for current requirements.

Historically, some existing poles may have a white or red cross to indicate that the pole is unserviceable. These poles are to be treated the same as poles marked with double white horizontal slashes.

A.10 Reinforceable Pole Labelling

Refer to Section 8.1.17 for current requirements.

Historically, a single white slash of paint has been used to identify these poles.

A.11 Pilot Cable Identification Markings

The identification sign is positioned beneath the sectionalising box of the pilot cable, which is installed at a height of approximately 3 metres above ground level. This indicates the route of the cable (where it starts and finishes) so cables can easily be identified when work or maintenance is to be carried out.

Refer to drawing number C57/52/1 for details on the dimensions of label.

A.12 Transmission & Sub Transmission Circuit Identification

This sign is the pole identifier and includes the following;

The pole number (67), the number of poles from the power station/switch yard or sub-station.

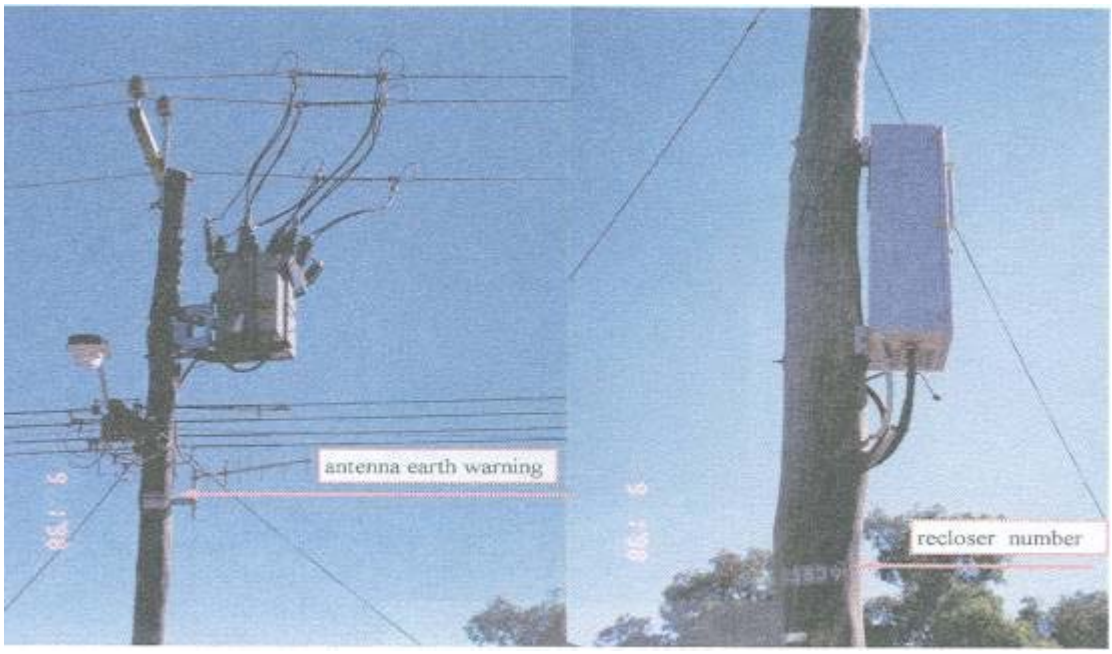
The circuit (SF-E72) South Fremantle to Edmund St. 72 line. The 72 identifies the voltage (66kV)

These circuits are identified with a sign positioned on the roadside of the pole between 1.5m to 1.8m above ground level. These signs were previously painted on the poles but are being replaced by a plastic sign which provides additional information.

Refer to T5000 Standard (DM# 5523449) for details.

A.13 Recloser Number

The recloser identification number is positioned horizontally on the pole between 1.5m to 1.8m above ground level. The number is located on the roadside for easy viewing. In the northern suburbs there may be some reclosers with their identification numbers fastened to the recloser box in red adhesive numbers.



A.14 Recloser Antenna

A warning sign for the disconnecting of this antenna is mounted directly underneath the antenna and this sign is large enough to be seen from the ground level.

Recloser Antenna Earth Warning Sign

A.15 Pole Number

The pole numbering system was designed according to the geographical lay out of the land where Western Power poles were not always accessible by road. This system makes identifying poles much easier for fault finding and customer location. The numbering identifies the feeder name, and the number of each pole in the circuit.

The numbering system is to be positioned in the bottom right hand corner of the high voltage danger warning sign. The danger sign is positioned between 1.5m to 1.8m above ground level and located for viewing on the best approachable side of the pole.

A.16 SPIDAweb Number

The SPIDAweb number forms part of the equipment label and is to be located on the pole at a height of approximately 1.8 m above ground level in a direction facing the nearest road or access track.

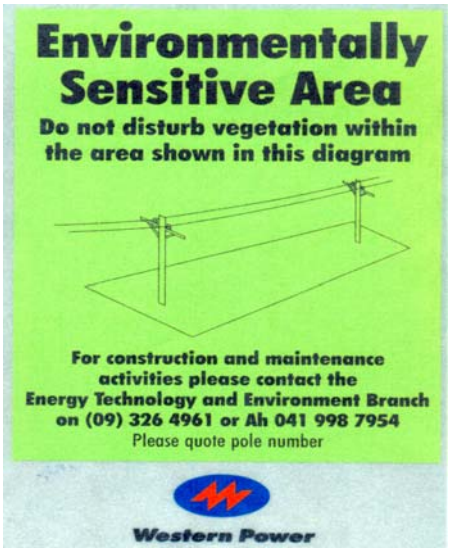
A.17 Danger High Voltage

The Danger High Voltage sign is to be located on the pole at a height of between 1.5m to 1.8m above ground level in a direction facing the nearest road or access way, refer to Section 8.1.1.

A.18 Environmentally Sensitive Area

Environmentally sensitive areas (ESAs) may contain one or more rare plants. ESAs are marked on SPIDAweb and signs are placed on the power poles in the respective areas.

The environmentally sensitive area sign is positioned on the pole at between 1.5m to 1.8m above ground level. Positioned above the sign is a reflective green and white warning strip which wrapped around the pole to help to identify the sensitive area.



A.19 Boundary Gate

In country areas where Western Power has an overhead distribution system, it can be quite difficult for line staff to patrol power lines or locate faults due to limited access to properties in farming areas, especially where power lines pass from property to property and paddock to paddock.

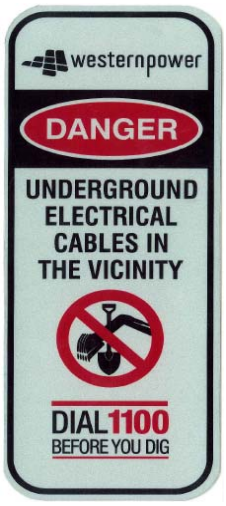
To eliminate this problem, Western Power has developed a sign which is attached to the last pole or boundary fence before the power line passes into the next property, indicating the direction of the nearest gate or access way.

The sign is positioned on the pole between 1.5m to 1.8m above ground level for easy viewing and on the property fence in the best suitable position.

A.20 URD Cables in Vicinity

To avoid any unnecessary damage to cables, loss of supply or serious injuries occurring, Western Power has developed a sign that indicates that there are underground electrical cables buried in the vicinity. These signs are to warn all contractors and the general public if any excavation is to be carried out that they should first contact the nearest Western Power office. Underground cables can then be located, and excavation can safely proceed.

These signs (Dial before you dig – DBYD) can be attached to standard poles but are primarily used on flexible above ground markers, stock code CR0327.



A.21 Power Watch Security Lighting

This sign identifies a security (Power Watch) light installed on a Western Power distribution pole or on a Power Watch customer's pole. The sign should be installed at eye level directly below the security light.

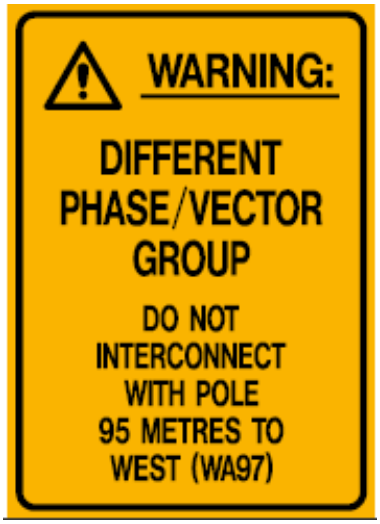
A.22 Labelling for different HV Networks on a single structure

On rare occasions a single HV structure will carry more than one HV circuit. In these cases, the networks cannot be connected due to differences either in Voltage, Phase or Vector group.

It is critical that a label be installed to highlight this difference and draw attention to the danger of interconnecting the two networks.

Labels must be specified and ordered as required to accurately describe the difference and highlight the danger.

A typical example is shown below.



Appendix B: Schedule of Label Requirements

Equipment Type	Label Required?	Label Tape Size	Label Type	Label Placement	Label Contents (L1, L2, L3)	Handimark Filename	Other Requirements
Capacitor	√	50 mm	Yellow vinyl & plate	The label shall be affixed to a plate (stock number CZ5005) on the roadside of the pole at a height of approximately 1.5m	CAPB, SPIDAweb PickID Street Name/pole number BLANK	CAPB	
Concrete Pole	√ (selected applications – rural or no address available)	50 mm	Yellow vinyl	The label shall be affixed to the roadside of the pole at a height of approximately 1.5m	POLE, SPIDAweb PickID Pole Name/Number BLANK	POLE	High Voltage poles require the fitting of a 'WESTERN POWER DANGER HIGH VOLTAGE' warning sign (stock number CZ0228) at a height of approximately 1.8m above ground.
Drop Out Fuse	√	50 mm	Yellow vinyl & plate	The label shall be affixed to a plate (stock number CZ5005) on the roadside of the pole at a height of approximately 1.5m	DOF, SPIDAweb PickID DOF Name/Number Street Address/pole number	DOF	
Fault Indicator – Alstom RMU	√	50 mm	Yellow vinyl	The label shall be placed on the switchgear front panel, directly below the fault indicator display.	FLTI, SPIDAweb PickID Fault Indicator Name SCADA name of the fault indicator.	FLTI	

Equipment Type	Label Required?	Label Tape Size	Label Type	Label Placement	Label Contents (L1, L2, L3)	Handimark Filename	Other Requirements
Fault Indicator – F&G RMU	√	50 mm	Yellow vinyl	The label shall be placed on the switchgear front panel, directly below the fault indicator display.	FLTI, SPIDAweb PickID Fault Indicator Name SCADA name of the fault indicator.	FLTI	
Fault Indicator – Pole Top	√	50 mm	Yellow vinyl & plate	The label shall be affixed to a plate (stock number CZ5005) on the roadside of the pole at a height of approximately 1.5m	FLTI, SPIDAweb PickID SPIDAweb PickID Address location/ pole number	PFLTI	
Fault Indicator – Relay & Flag	√	50 mm	Yellow vinyl	The label shall be placed on the side of the relay unit, or directly underneath the relay on the relay panel.	FLTI, SPIDAweb PickID Fault Indicator Name	FLTI	
Fault Indicator – Spring/Oil Bath	√	50 mm	Yellow vinyl	The label shall be placed on the locating band of the fault indicator.	FLTI, SPIDAweb PickID Fault Indicator Name	FLTI	
Fuse Disconnector - Overhead	√	50 mm	Yellow vinyl	The label shall be affixed to a plate (stock number CZ5005) on the roadside of the pole at a height of approximately 1.5m	FSDO, SPIDAweb PickID SPIDAweb PickID	FSDO	
Fuse Disconnector - Underground	√	50 mm	Yellow vinyl	The label shall be placed on the fuse disconnector label placard	FSDU, SPIDAweb PickID SPIDAweb PickID	FSDU	

Equipment Type	Label Required?	Label Tape Size	Label Type	Label Placement	Label Contents (L1, L2, L3)	Handimark Filename	Other Requirements
Fuse Switch	√	50 mm	Yellow vinyl	The label shall be placed on the label placard, or front panel, of the ring main switchgear unit.	FSSW, SPIDAweb PickID Fuse Switch Name Transformer Name plus the address of the location of the remote end of the cable to which the fuse switch is connected.	FSSW	'DANGER – HIGH VOLTAGE' label
Isolator – Pole Mounted	√	50 mm	Yellow vinyl & plate	The label shall be affixed to a plate (stock number CZ5005) on the roadside of the pole at a height of approximately 1.5m	DISO, SPIDAweb PickID SPIDAweb PickID BLANK	DISO	
Joints, Terminations, Line Hardware	×	-	-	-	-	-	Refer to section 7.1.5 for terminations
LV Disconnector	√	50 mm	Yellow vinyl	The label shall be placed on the LV disconnector label placard	DISU, SPIDAweb PickID SPIDAweb PickID Address of the location of the remote end of the cable to which the disconnector is connected.	DISU	

Equipment Type	Label Required?	Label Tape Size	Label Type	Label Placement	Label Contents (L1, L2, L3)	Handimark Filename	Other Requirements
LV Distribution Frame	√	50 mm	Yellow vinyl	The label shall be placed on the inside and outside of the kiosk door. The label shall be placed in the centre of the door. For freestanding frames in substations, the label shall be attached to the frame.	LVDF, SPIDAweb PickID LV Distribution Frame Name Address of the distribution frame.	LVDF	
Metal Pole	√ (selected applications – rural or no address available)	50 mm	Yellow vinyl	The label shall be affixed to the roadside of the pole at a height of approximately 1.5m	POLE, SPIDAweb PickID Pole Name/Number BLANK	POLE	
Metering Transformer – Ground Mounted	√	50 mm	Yellow vinyl	The label shall be placed on the front panel of the metering transformer unit	EMTR, SPIDAweb PickID Address with Zone1 or 2 etc BLANK	GEMTR	'DANGER – HIGH VOLTAGE' label
Metering Transformer – Pole Top	√	50 mm	Yellow vinyl & plate	The label shall be affixed to a plate (stock number CZ5005) on the roadside of the pole at a height of approximately 1.5m	EMTR, SPIDAweb PickID Metering Transformer Name/ pole number BLANK	PEMTR	
Overhead Conductor	×	-	-	-	-	-	-

Equipment Type	Label Required?	Label Tape Size	Label Type	Label Placement	Label Contents (L1, L2, L3)	Handimark Filename	Other Requirements
Pole Top Switch	√	50 mm	Yellow vinyl & plate	The label shall be affixed to a plate (stock number CZ5005) on the roadside of the pole at a height of approximately 1.5m	PTSD, SPIDAweb PickID Switch Name/Number Address location / pole number	PTSD	
Reactor	√	50 mm	Yellow vinyl & plate	The label shall be affixed to a plate (stock number CZ5005) on the roadside of the pole at a height of approximately 1.5m	REAC, SPIDAweb PickID Reactor Name/Number	REAC	
Load Break Switch	√	50 mm	Yellow vinyl & plate	The label shall be affixed to a plate (stock number CZ5005) on the roadside of the pole at a height of approximately 1.5m	LBS, SPIDAweb PickID Load Break Switch Name/Number Address location / Pole number	LBS	
Recloser	√	50 mm	Yellow vinyl & plate	The label shall be affixed to a plate (stock number CZ5005) on the roadside of the pole at a height of approximately 1.5m	RECL, SPIDAweb PickID Recloser Name/Number Address location / pole number	RECL	
Sectionaliser	√	50 mm	Yellow vinyl & plate	The label shall be affixed to a plate (stock number CZ5005) on the roadside of the pole at a height of approximately 1.5m	SECT, SPIDAweb PickID Sectionaliser Name/Number Address location / pole number	SECT	
Stays & Anchors	×	-	-	-	-	-	-

Equipment Type	Label Required?	Label Tape Size	Label Type	Label Placement	Label Contents (L1, L2, L3)	Handimark Filename	Other Requirements
Steelwork	×	-	-	-	-	-	-
Streetlight – on wood, concrete pole etc.	×	-	-	-	-	-	-
Streetlight – on underground lamp pole	×	-	-	-	-	-	-
Streetlight Control Box	√	50 mm	Yellow vinyl	The label shall be placed on the outside of the control box door.	SLCB, SPIDAweb PickID Control Box Name Address of the streetlight control box	SLCB	
Streetlight pole	√	50 mm	Yellow vinyl	The label is to be fixed to the steel column, on the roadside, at a height of approximately 1.5m above ground.	Lamp Pole SPIDAweb PickID The SPIDAweb PickID of the pillar or streetlight control box to which the streetlight is connected	LAMPPO	
Substation – Brick Building	√	50 mm	Yellow vinyl	The label shall be fitted at a height of approximately 1.5m above the finished floor level, on the inside of the door.	SBST, SPIDAweb PickID Substation Name Address of the substation	SBST	'DANGER – HIGH VOLTAGE' sign 'AUTHORISED PERSONS ONLY sign
Substation – Brick Compound	√	50 mm	Yellow vinyl	The label shall be fitted at a height of approximately 1.5m above the finished floor level, on the inside of the door.	SBST, SPIDAweb PickID Substation Name Address of the substation	SBST	'DANGER – HIGH VOLTAGE' sign 'AUTHORISED PERSONS ONLY sign

Equipment Type	Label Required?	Label Tape Size	Label Type	Label Placement	Label Contents (L1, L2, L3)	Handimark Filename	Other Requirements
Substation – Fenced Compound	√	50 mm	Yellow vinyl & plate	The label shall be fitted at a height of approximately 1.5m above the finished floor level, on the door, using the metal plate.	SBST, SPIDAweb PickID Substation Name Address of the substation	SBST	'DANGER – HIGH VOLTAGE' sign 'AUTHORISED PERSONS ONLY sign
Substation – Kiosk	√	50 mm	Yellow vinyl	Labels shall be fitted on the inside of the doors to both the HV and LV switchgear	KISK, SPIDAweb PickID Kiosk Name Address of the kiosk	KISK	'DANGER – HIGH VOLTAGE' label
Substation – MPS/Non-MPS	√	50 mm	Yellow vinyl	Labels shall be fitted on the inside of the door to the LV switchgear	SBST, SPIDAweb PickID Substation Name Address of the substation	SBST	'DANGER – HIGH VOLTAGE' sign 'AUTHORISED PERSONS ONLY sign
Surge Diverter	×	-	-	-	-	-	-
Switch Disconnector	√	50 mm	Yellow vinyl	The label shall be placed on the label placard, or front panel, of the ring main switchgear unit.	SWDC, SPIDAweb PickID Switch Disconnector Name The address of the location of the remote end of the cable to which the isolator or switch disconnector is connected.	SWDC	'DANGER – HIGH VOLTAGE' label
Transformer - Ground Mounted in Brick or Non-Brick Enclosures	√	50 mm	Yellow vinyl	The label shall be fitted adjacent to the transformer nameplate	DSTR, SPIDAweb PickID Transformer Name Address of the remote end of the cable that feeds the transformer.	GDSTR	

Equipment Type	Label Required?	Label Tape Size	Label Type	Label Placement	Label Contents (L1, L2, L3)	Handimark Filename	Other Requirements
Transformer – MPS	√	50 mm	Yellow vinyl	The label shall be fitted to the inside of the door to the LV switchgear	DSTR, SPIDAweb PickID Transformer Name Address of the remote end of the cable that feeds the transformer.	GDSTR	'DANGER – HIGH VOLTAGE' label
Transformer – Non MPS	√	50 mm	Yellow vinyl	The label shall be fitted to the inside of the door to the LV terminals	DSTR, SPIDAweb PickID Transformer Name Address of the remote end of the cable that feeds the transformer.	GDSTR	'DANGER – HIGH VOLTAGE' label
Transformer – Padmount	√	50 mm	Yellow vinyl	The label shall be fitted to the inside of the door to the HV & LV switchgear	DSTR, SPIDAweb PickID Transformer Name Address of the remote end of the cable that feeds the transformer.	GDSTR	'DANGER – HIGH VOLTAGE' label
Transformer – Pole Top	√	50 mm	Yellow vinyl & plate	The label shall be affixed to a plate (stock number CZ5005) on the roadside of the pole at a height of approximately 1.5m	DSTR, SPIDAweb PickID Transformer Name/pole number	PDSTR	
Transformer – Submersible	√	50 mm	Yellow vinyl	The label shall be fitted adjacent to the transformer nameplate	DSTR, SPIDAweb PickID Transformer Name Address of the remote end of the cable that feeds the transformer.	SDSTR	'DANGER – HIGH VOLTAGE' label

Equipment Type	Label Required?	Label Tape Size	Label Type	Label Placement	Label Contents (L1, L2, L3)	Handimark Filename	Other Requirements
Transformer – with Piggyback Connections	√	50 mm	Yellow vinyl	Labels shall be fitted to the inside of the doors to both the HV & LV switchgear or terminals.	DSTR, SPIDAweb PickID Transformer Name Address of the remote end of the cable that feeds the transformer and the address of the remote end of the piggy-backed transformer. (i.e. From, To)	GDSTR	'DANGER – HIGH VOLTAGE' label
Transformer Disconnector	√	50 mm	Yellow vinyl	The label shall be placed on the transformer disconnector label placard	DISU, SPIDAweb PickID Transformer Disconnector Name Address of the transformer which is feeds the disconnector.	TDISU	
Underground Cable	×	-	-	-	-	-	Refer to 7.1.5 for terminations
Underground Supply Pit	√	50 mm	Yellow vinyl	The label shall be placed on the neutral incoming cable, or neutral connector	PIT, SPIDAweb PickID "NEUTRAL" Address of the remote end of the cable which feeds the pit. For pits with loop-in, loop-out connections the street or lot number of the remote end of the downstream cable is also mentioned.	PIT	

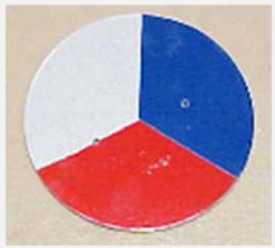
Equipment Type	Label Required?	Label Tape Size	Label Type	Label Placement	Label Contents (L1, L2, L3)	Handimark Filename	Other Requirements
Universal Pillar	√	50 mm	Yellow vinyl	The label shall be placed on the top of the orange plastic covering, located inside the universal pillar	PILL, SPIDAweb PickID Address of the location of the remote end of the cable to which the top bar of the disconnector is connected. Address of the location of the remote end of the cable to which the bottom bar of the disconnector is connected. Note that there may be two cables connected to this bar. A cable terminating to the left of the disconnector bar is denoted with a '(Left)' and a cable terminating to the right of the disconnector bar is denoted with a '(Right)'.	PILL	Universal pillars functioning as normally open points shall have a reflective red or white 'I' marking on the outer case of the pillar lid.
Un-Metered Supply Pit	×	50 mm	Yellow vinyl	-	-	-	-
Voltage Regulator – Ground Mounted	√	50 mm	Yellow vinyl	The label shall be placed on the exterior surface of the regulator control panel door.	RGTR, SPIDAweb PickID Voltage Regulator Name/address or pole number	RGTR	'DANGER – HIGH VOLTAGE' label
Voltage Regulator – Pole Top	√	50 mm	Yellow vinyl & plate	The label shall be affixed to a plate (stock number CZ5005) on the roadside of the pole at a height of approximately 1.5m	RGTR, SPIDAweb PickID Voltage Regulator Name/address or pole number	RGTR	

Equipment Type	Label Required?	Label Tape Size	Label Type	Label Placement	Label Contents (L1, L2, L3)	Handimark Filename	Other Requirements
Wood Pole	√ (selected applications – rural or no address available)	50 mm	Yellow vinyl & plate	The label shall be affixed to a plate (stock number CZ5005) on the roadside of the pole at a height of approximately 1.5m	POLE, SPIDAweb PickID Pole Name/Number	POLE	

Appendix C: Schedule of Labels with Stock Numbers and Description

Photo	Stock Code	Description
	CR0327	SLEEVE,MARKER,CABLE; CABLE MARKER,ABOVE GROUND & EQUIPMENT,PROTECTION MARKER,ORANGE DANGER UNDERGROUND ELEC CABLES IN VICINTY
	CZ0217	PLATE,INSTRUCTION INSCRIBED;DANGER H V,KEEP OUT;ALUMINIUM; BACKGRD WHITE,LEGEND & PICTOGRAPH RED/BLACK;REFLECTIVE PLASTIC COATED; 350MM W;700MM LG;2MM THK;SUBSTATION
	CZ0225	PLATE,INSTRUCTION INSCRIBED;DANGER;MEN WKG ON LINES;STEEL;BACKGROUND WHITE,LEGEND RED/BLACK;BAKED ENAM COATED;100MM W;305MM LG;2MM THK; RECT SHAPE

Photo	Stock Code	Description
	CZ0228	PLATE,INSTRUCTION INSCRIBED DANGER HV;ALUMINIUM;BACKGROUNDWHITE,LEGEND RED;ANODIZED;124MM W;497MM LG;0.8MM THK;LIGHT/SWITCH/FUSE IDENTIFIER;RECT
	CZ0327	TAG,MARKER RECT;ALUMINIUM ALLOY O/A;LEGEND;THIS POLE HAS BEEN TREATED AGAINST TERMITES; YELLOW;170MM W;70MM H;W/HOLES,4MM DIA X 2
	CZ5004	SIGN WARNING AUTHORISED PERSONNEL ONLY;RED & BLACK ON WHITE METAL; 300 X 200MM
	CZ5005	PLATE,LABEL BASE PLATE;BARE ALUMINIUM;FOR EQUIPMENT INFORMATION LABELS; 180MM X 60MM;R10 CORNERS;FIXING HOLES;C/W 4 X 1.5IN GALV CLOUTS

Photo	Stock Code	Description
	CZ5006	SIGN WARNING;FOR RECLOSER & FAULT INDICATOR PANELS
	CZ5007	SIGN PHASE IDENTIFICATION;DISC;RED/WHITE/BLUE100MM DIA;FOR HV (CABLE) POLES
	UA3149	SIGN WARNING-D.O.F MUST NOT BE USED FOR CAPACITOR BANK SWITCHING;BLACK PRINT ON YELLOW BACKGROUND;ALUMINIUM;RECTANGULAR SHAPE
	CZ0223	On the outside of a substation enclosure and at each means of access to the enclosure. Wording on signs at these locations shall consist of bold letters not less than 40 mm high and shall contain the words 'DANGER — HIGH VOLTAGE'.