

	Work Instruction	Matla Power Station
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Title: **PLANT LABELLING AND CODING
WORK INSTRUCTION**

Document Identifier: **4011**

Alternative Reference Number: **N/A**

Area of Applicability: **Matla Power Station**

Functional Area: **Engineering (Design & Specification)**

Revision: **6**

Total Pages: **36**

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Disclosure Classification: **Controlled Disclosure**

APPROVED

**Matla Power Station
Documentation
Centre**

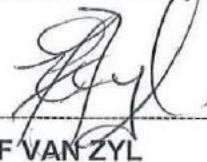
Reviewed by



**N SIBIYA
SENIOR TECHNICIAN
CONFIGURATION**

Date: 2019/02/12

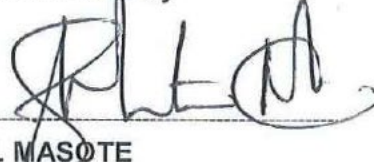
Functional Responsibility



**EF VAN ZYL
DESIGN &
SPECIFICATION
ENGINEERING MANAGER**

Date: 2019/02/12

Authorized by



**L MASOTE
ENGINEERING
MANAGER**

Date: 14/02/2019

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1. Introduction

The codification system for Eskom serves to identify plants, sections of plants and items of equipment in any type of Power Station according to task, type and location. It is used by all engineering disciplines for planning, licensing, construction, operation and maintenance during the life cycle of the plant within configuration management processes.

2.Supporting Clauses

2.1 Scope

2.1.1 Purpose

2.1.2 Applicability

This procedure includes all activities at Matla Power Station related to coding and installation of labels for identification of plant items. This procedure is applicable to all personnel and any process requesting that change(s) to plant code, labels and/or description be made, this will ensure effective use in all plant management information systems.

2.1.3 Effective date

It is the authorisation date.

2.2 Normative/Informative References

Parties using this document shall apply the most recent edition of the documents listed in the following paragraphs.

2.2.1 Normative

- [1] GGS 0443: Abbreviation Standard for Labelling of Plant at Power Stations
- [2] GGG1016: KKS Identification System
- [3] Lim 103A: AKZ Identification System
- [4] New GBE abbreviations List Rev 3
- [5] OPS 0158: AKZ Power Plant Classification System
- [6] OPS 0014: KKS Power Plant Classification System
- [7] OMOP 2050:Technical drawing workflow procedure
- [8] 240-71432150: Plant Labelling and Equipment Description Standard

2.2.2 Informative

- [1] ISO 9001: Quality Management Systems
- [2] ISO 10007: Guidelines for Configuration Management

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2.3 Definitions

- 2.3.1 **Description:** A description given to a process, structure, point of installation, component or equipment.
- 2.3.2 **Label:** Flat piece of material with text, used for identification of process, structure, point of installation, component or equipment by means of approved fixing methods, materials and ergonomic requirements
- 2.3.3 **Configuration Item:** Any item or equipment, which needs to be specified and controlled in order to do Engineering, Maintenance or Operating.
- 2.3.4 **Plant Labelling:** The physical label that is fixed to the plant.

2.4 Abbreviations

Abbreviation	Explanation
FLOC	Functional Location Code
KKS	Kraftwerk Kennzeichen System – German abbreviation for (Power Plant Classification System)
AKZ	(Locally known as Alpha Numeric) Anlagen Kennzeichnungs System – German abbreviation for (Plant Identification Code)
D&S	Design & Specification

2.5 Roles and Responsibilities

- 2.5.1 The Power Station Manager: has overall responsibility for ensuring that this procedure is adhered to.
- 2.5.2 All Matla personnel: Responsible for complying with the codification and plant labelling principles.
- 2.5.3 The Engineering Manager and D&S Engineering Manager: Responsible for implementing and controlling all processes prescribed in this procedure.
- 2.5.4 C&I Engineering Manager: Responsible for the storage and integrity of the control and instrumentation equipment's cable schedules database.
- 2.5.5 Configuration Management team: Responsible for creating, reviewing, storing KKS/ AKZ coding and custodians of the coding database.
- 2.5.6 Design Authority (Team): Responsible for the correctness of KKS/AKZ codes on designs/project documents as per Engineering Change Management process.

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2.5.7 Engineer: Responsible for reviewing labelling of structures, system, equipment and components on the plant. Responsible for issuing descriptions that defines configuration items, Is accountable for the correctness of coding and labelling on their plant system.

2.5.8 SAP Master Data Capturer: Responsible for loading the AKZ & KKS Data Base in SAP PM as instructed by Configuration Management.

2.6 Process for Monitoring

2.6.1 The quality assurance department monitors the adherence of the process through periodic internal and external audits.

2.7 Related/Supporting Documents

2.7.1 Refer to normative/ informative references in 2.2 above.

3. Document Content

3.1 Plant Coding

3.1.1 **The KKS and AKZ plant coding system shall be able to do the following:**

- The configuration items shall be identified with the KKS & AKZ identification number.
- Each codification number shall be unique.
- Each level of the plant breakdown shall have the same code, except for the part identifying the specific unit.

3.1.2 **The KKS and AKZ system shall be available and shall adhere to the following requirements**

- Contain all plant KKS and AKZ Codes.
- All KKS and AKZ Codes shall be linked to appropriate equipment names.
- The KKS and AKZ Code shall be broken down to third level where applicable.
- The dictionary shall have the following references:

⇒ Hardware breakdown structure

⇒ KKS and AKZ Code.

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3.1.3 In Matla's plant, two coding systems will be used, namely AKZ and KKS. These codes will only be maintained simultaneously on certain plants. In a bid to achieve standardisation and simplification on coding, certain plants will be coded and labelled using either AKZ or KKS as it will be applied on all the reference documents. The process to standardise on KKS in the labelled items on the plant and having both AKZ and KKS on the database and other reference documents has been initiated

3.1.4 Plant codes will be used in or on the following:

- Manuals and other documents
- Operating panels
- Drawings
- Plant labels
- Instrument schedule
- Data acquisition system
- Computerised management software
- Configuration management software
- PLC/ HMI

3.1.5 The plant coding database will be Pigo Commander or any other approved system such as excel or MS Access, then SAP and other systems where possible. The codes will be linked to their associated drawings.

3.2 Plant labelling and descriptions

3.2.1 Polymerizing vinyl chloride material of 100x40 mm will be hand written with codes and descriptions using permanent markers to label plant items as per labelling process on Annexure B on emergency cases, only for a temporal period, thereafter permanent labelling will be attached and the temporal label removed. Cable ties will be used to tie those

3.2.2 Although the plant code is sufficient to uniquely identify the plant, the need still exists to describe the plant with a plant functional description. This is especially required when lists of KKS codes are reviewed.

The KKS/ AKZ code does not clearly differentiate between e.g. left hand and right hand or between pump inlet and outlet. These problems could be overcome by forcing the users to always refer to the P&ID. It is a possible solution but not very practical. The allocation of item descriptions is useless if it does not clearly describe the function of the item e.g., "isolating valve" instead of "pump inlet isolating valve". **Details are on Annexure D.**

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- 3.2.3 Misplaced or removed labels will be collected through specially-crafted bins positioned at designated areas across the station to minimize loss of labels and also maintain plant identification integrity. During outages or maintenance activities, sometimes labels get removed and have to be accounted for. Technicians will retrieve such labels on a monthly basis or less as the situation demands.

3.3 Cable coding and labelling

- 3.3.1 Control and Instrumentation Equipment numbering is currently stored and updated on designated books from Siemens database for all units as per adopted numbering system. The refurbished (all Units done) unit's equipment cables are currently controlled in a (EIP Comos) database controlled by ABB as per arrangement with the C & I Engineering Manager.

- 3.3.2 Electrical cabling numbering will be recorded and stored on an excel spreadsheet stored at central location with controlled access until an approved database is made available. The electrical cable numbering follows the format as outlined in the next paragraphs on the current heading.

A cable number comprises of 3 distinct portions, which form its unique identification code in accordance with the KKS/ AKZ coding manual.

A typical cable number 1 1BBA 0076 is broken down as follows: **1 2 3**

- 1** - This number discerns between units 1 to 6 (1-6) and station or common plant with the digit 0,
in the example unit 1.
- 2**- This portion identifies the origin or source from which the cable is laid, in this case 11kv board A.
- 3** - These 4 numerals represent the consecutive cable number depending on the voltage level for grouping purposes within the cable number. Grouping of cable numbers are recommended in order to keep agreements on the allocation of cable numbers during planning to a minimum and to prevent duplication of cable numbers. The first digit of the four numeric data characters serve to identify the application area, the three other numeric data characters to number cables within that area. :

0001 - 0999	=	Power Cables > 1 kV
1001 - 1999	=	Power Cables < or = 1 kV
2001 - 2999	=	Control Cables > 60V
3001 - 3999	=	Control and Instrumentation cables > 60V
4001 - 7000	=	Control Cables < or = 60V
8001 - 9999	=	Control and Instrumentation Cables < or = 60V

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Computer cable i.e. optic fibre and UTP, will fall in the “8” series. associated drawings.

3.4 Process for the Allocation of Plant Codes

3.4.1 Requester completes Annexure A (all mandatory fields must be completed).

3.4.2 Form is registered and filed.

3.4.3 Codes are allocated.

3.4.4 Codes are approved.

3.4.5 Drawings are marked up and processed.

3.4.6 Final close out and verification gets done.

3.4.7 Close out and authorisation.

3.4.8 Codes are forwarded to Planned Maintenance Support for upload on SAP database.

3.5 Process for Installation of Plant Labels

3.5.1 Requester completes Annexure B (produce own attachment of codes to be installed).

3.5.2 An order for labels is made and the codes get accepted by the requester.

3.5.3 Labels are delivered, checked and accepted / rejected for quality purposes.

3.5.4 Labels are installed in the plant by Configuration management team or contractor.

3.5.5 Installed labels are checked and correctness is verified.

3.5.6 All documents are filed and stored.

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3.6 Piping and Instrumentation Diagrams (P & ID), Isometric or Flow Diagrams

All codes allocated prior to final conclusion of any of the drawings will be assumed to be temporary and not final. Codes will only be finalised upon the authorisation of the baseline diagrams. A drawing will be termed final after it has been authorised and updated with a status as described in document 2050 (Technical drawing workflow procedure). Annexure C will be used to request for coding changes or requests on drawings in addition to Annexure A.

4. Acceptance

This document has been seen and accepted by:

Name	Designation
T Temo	General Manager (Acting)
L Masote	Engineering Manager
O Malele	Finance Manager
J Khoza	Production Manager
J Ngoepe	Production Manager
P Potgieter	Risk & Assurance Manager
A Hemson	Human Resource Manager (Acting)
S Motha	Chemical Service Manager
F Managa	Maintenance Manager (Acting)
B Mohale	Outside Plant Production Manager
N Nxumalo	Outside Plant Production Manager
Thwadi Kekana	Outage Manager (Acting)

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5. Revisions

Date	Rev.	Compiler	Remarks
December 2019	6	N Sibiya	Document reviewed. New label sizes added. Description and breakdown added. Cable coding and labelling updated.
August 2015	5	B.R Sono	Cable labels coding and specifications added. Standardised coding standard approach initiated. Label specifications updated. Title of document changed from Configuration Management. Mimic description added. Misplaced labels process added. Process Forms revised. Document Change Request form added. New template used.
December 2011	4	B.R Sono	Review Date
October 2008	3	M Mtsweni	Specification updated. AKZ Coding- Electrical equipments in conjunction with refurbishment plant coding & labelling process at Matla defined.

6. Development Team

The following people were involved in the development of this document:

- Siyabonga Mbokane
- Nkosinathi Sibiya

7. Acknowledgements

N/A

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Appendix A – Eskom Document Hierarchy

	MATLA POWER STATION ALLOCATION OF NEW PLANT CODES	Template Identifier	240-43921804	Rev	5
		Document Identifier	13811	Rev	0
		Effective Date	13 August 2015		
		Review Date	August 20		

Process for Allocation of New Plant Codes

Requester: _____

Date: _____

Unique No: _____

Position: _____

Reason: _____

	AKZ	KKS	DESCRIPTION	PLANT	SYSTEM	DRAWING NO
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

RESPONSIBLE SYSTEM ENGINEER/S

NAME/S: _____

SIGNATURE/S: _____

DATE: _____

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Appendix B

	MATLA POWER STATION PLANT LABELLING PROCESS	Template Identifier	240-43921804	Rev	5
		Document Identifier	13810	Rev	0
		Effective Date	12 August 2015		
		Review Date	August 20		

REQUESTER: _____
 UNIQUE NO: _____
 DATE: _____
 REASON: _____
 DATE REQUIRED: _____
 SYSTEM ENGINEER RESPONSIBLE ACCEPTS: _____

ACCEPTANCE OF MANUFACTURED LABELS

CONFIGURATION TECHNICIAN: _____

UNIQUE NO: _____

DATE: _____

SIGNATURE: _____

QUALITY ASSURANCE OFFICER: _____

UNIQUE NO: _____

DATE: _____

SIGNATURE: _____

ACCEPTANCE OF INSTALLED LABELS

REQUESTER/ ENGINEER: _____

UNIQUE NO: _____

DATE: _____

SIGNATURE: _____

QUALITY ASSURANCE OFFICER: _____

UNIQUE NO: _____

DATE: _____

SIGNATURE: _____

FINAL ACCEPTANCE

ENGINEERING LINE MANAGER: _____

UNIQUE NO: _____

DATE: _____

SIGNATURE: _____

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Appendix C

		MATLA POWER STATION Document Change Request		Doc no: 4593		Rev No : 1	
				Page 1 of 1		Date :	
				Doc Type: FORM		Classification : CD Public Domain	
TITLE : DCR							
DRAWING No		REV		DETAILS OF THE REQUEST			
Priority 1 (3 days)				Priority 2 (1 week)			
REQUESTED BY;							
Mechanical Engineer	Name		Tel		Date		Signature
C&I Engineer	Name		Tel		Date		Signature
Electrical Engineer	Name		Tel		Date		Signature
DCR No.							
NOTE: THE RED LINE DRAWING AND THE DATA MUST BE ACCOMPANIED BY THIS REQUEST AT ALL TIMES							
TO : CONFIGURATION MANAGEMENT CO ORDINATOR							
Name		Tel		Date		Signature	
TO : KKS TECHNICIAN. Ref: Form 13811							
Name		Tel		Date		Signature	
TO : DRAUGHTSMAN							
Name		Tel		Date		Signature	
TO : DATA CAPTURER							
Name		Tel		Date		Signature	
TO : CONFIGURATION MANAGEMENT CO ORDINATOR							
Name		Tel		Date		Signature	
TO : SYSTEM ENGINEER							
Name		Tel		Date		Signature	
Status		Final Signatures		Repeat Process			
TO : SIGNED OFF - CONFIGURATION MANAGEMENT CO ORDINATOR							
Name		Tel		Date		Signature	
Labels Required		Yes		No			
LABELLING COMPLETED CONFIGURATION MANAGEMENT CO ORDINATOR. Ref: Form 13810							
Name		Tel		Signature		DATE RECEIVED	

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Appendix D

Label Specifications

1. PURPOSE

- The purpose of this technical specification is to define the manufacture and installation of labels and backing plates for Matla Power Station.

This specification shall apply for:

- Mechanical components
- Instrumentation and electrical components
- Electrical panels
- Instrumentation panels
- Electrical and instrumentation cabling

2. OBJECTIVE

The objective of permanent plant labelling at Matla Power Station is to:

- Uniquely identify components
- Assist in reporting of defective plant
- Be used as a point of isolation for the plant permit to work system
- Be used as a “self teach” system for all plant personnel

3. LABEL SPECIFICATION

3.1 Label Material

The following material will be used for the different plant areas. (Refer to table: 1)
Table: 1

PLANT AREA	LABEL MATERIAL TYPE	BACK PLATE MATERIAL TYPE
Boiler	Anodised Aluminium	Anodised Aluminium
Turbine	Anodised Aluminium	Anodised Aluminium
Ash Plant	Anodised Aluminium	Anodised Aluminium
Coal Plant	Anodised Aluminium	Anodised Aluminium
Water Treatment Plant	Stainless Steel	Stainless Steel
Switchgear and Panels, Mimic	White Graflux	N/A
Internal panels/cubicles	White Graflux/Traffolite	N/A
Transformers and structures	Chromadeck	Pre manufactured stand or wall mounted
Room Identification	Chromadeck (orange background with black text)	

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3.2 Size

The size of all labels and their corresponding characters are defined in pages in this annexure. However the first line shall always be AKZ and where applicable the second, third and fourth line will be text, and then the KKS code.

3.3 Engraving

- The characters are to be of the Arial type font and of the upper case.
- To differentiate between a zero and the alpha letter o, the zero will have a forward slash superimposed on it.
- The KKS code and text are to be centred with respect to the label and engraved to a depth of 0.2 mm. The engraving width shall be 0.8 mm unless otherwise stated.
- Where an aluminium label is used the characters are to be filled in a durable black paint. Once complete the surface is to be buffed, free of any scratches and all sharp edges removed.
- There will be no spaces in between for both AKZ and KKS codes.

3.4 Description

- The description shall consist of the following (in sequence): plant, plant number, medium and component.
- Where the description doesn't fit on the label, the Eskom abbreviation standards shall be used (Abbreviation Standard for Labelling of Power Stations GGS0443 Rev 2).

4. BACKING PLATE

4.1 Material

- Where required the backing plate will be manufactured from 1.5 mm anodised aluminium or 316 stainless steel, depending on the environmental application.
- For electrical and instrumentation applications, aluminium slide-in backing plates shall be used.
- No metal label or backing plate shall be mounted inside an electrical enclosure.

4.2 Size

- The dimensions of the backing plates are as follows.

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5. METHOD OF ATTACHMENT

- An effort will be made as far as possible not to attach labels on the component, but on the pedestal or stable stationery objects. Where necessary a stand or a pedestal will be welded near the component for labels to be attached.
- Engraved labels which are riveted onto a backing plate will be strapped on the plant components using either the “Band-it” strap or stainless steel jubilee clamps. As a guideline the “band-it” strapping will be used on the larger components and the stainless steel jubilee clamps on the smaller diameters or where access for the “band-it” tensioning tool is restricted. Electrical cable labels will be strapped to the cable using plastic cable ties on the plastic labels and galvanised wire on the stainless steel labels.
- Where the label is to be attached to the component via adhesives, the component must be suitably prepped to accommodate the label.
- All labels shall be mounted so that the text runs in a horizontal plane, reading from left to right, to the nearest fixed point that is being described. For labels that have to be mounted vertically due to space constraints, the method of text reading will be from bottom to top (This excludes cable labels).
- All labels to be mounted in a vertical plane to minimise dirt build-up and damage from falling debris.
- No label to be fixed physically to the component itself, except cable labels.
- No label shall in any way be installed so that the installation could result in damage or obstruction to equipment during normal maintenance or operation of the power plant.
- Label fixing devices e.g. rivets, self-tappers, adhesives etc. shall not penetrate the equipment housing, or constitute a potential source of corrosion.
- Valve labels should not be installed on hand wheels and labels will not cover equipment specification plates.
- Where it is not easy to reach certain plant components, a stand will be built nearby and labels will be put on it as per flow diagram (mimic). C or D labels will be attached using:
 - (a) Silicon
 - (b) Drill holes (where safe) and rivet
 - (c) Use strap and tie label to pipe work or stationery object.

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6. LABEL TYPES

6.1 Label type GC

Equipment Identification Label. This is used for field equipment and measuring circuits, for example Valves, Tanks, Gearbox, Clutch, Coupling and Motors.

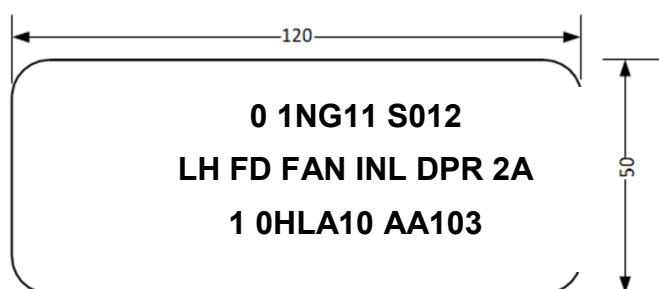


Figure GC

Engraving:

Figure : GC

- ☐ Alphanumeric Characters: 7mm High.
- ☐ Description Characters: 5mm High.

Only when using back plates, holes should be site drilled to suit back plate.

6.2 Label type GD

Process code labels for process control equipment on local and control panels.

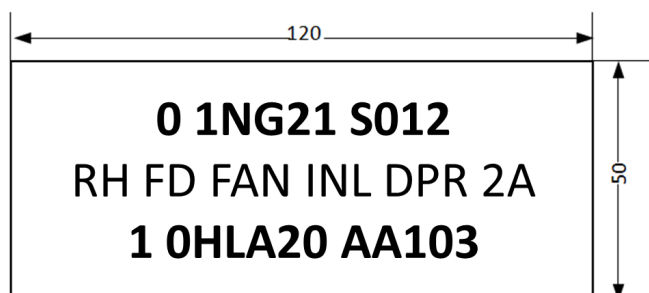


Figure GD

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Engraving: GD

- ☐ Alphanumeric Characters: 7mm High
- ☐ Description Characters: 5mm High
- ☐ White background

6.3 Label type GH

Equipment Identification Label. This is used for direct measuring circuits and closed loop control circuits, for example density, flow, mass flow, pressure and temperature.

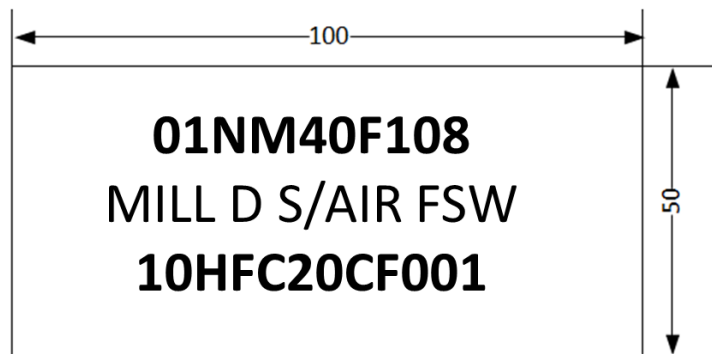


Figure GH

Engraving:
Figure : GH

- ☐ Alphanumeric Characters: 7mm High.
- ☐ Description Characters: 5mm High.

Only when using back plates, holes should be site drilled to suit back plate.

6.4 Label type EB Lighting Distribution Board Label

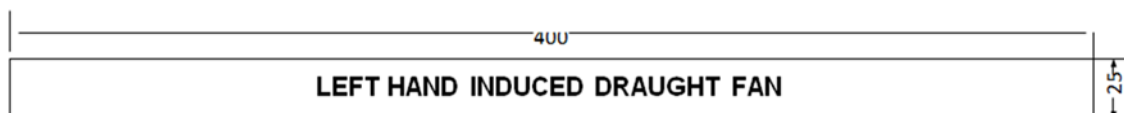


Figure EB

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Electrical board sub section

Fixing Method: Aluminium sliding holder, no drilling into electrical or process control panels.

Engraving:

- ☐ Alphanumeric Characters: 15mm High.
- ☐ White background

6.5 Label type EF

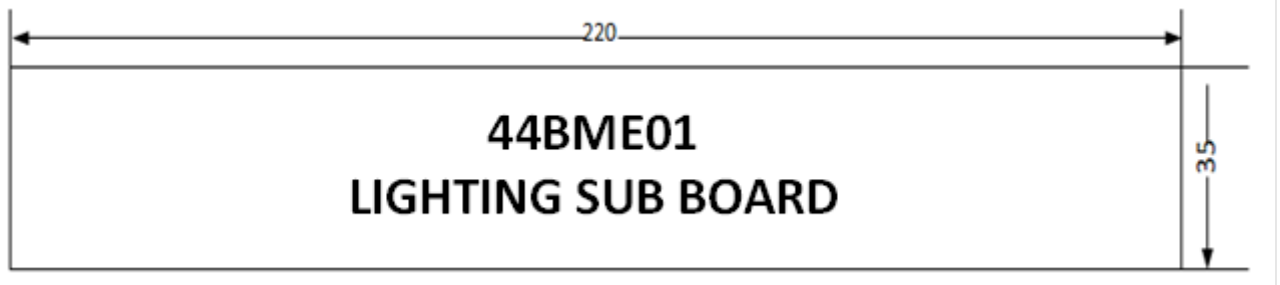


Figure EF

Fixing Method: Adhesive

Engraving:

Figure : EF

- ☐ Alphanumeric Characters: 10mm High
- ☐ Description Characters: 10mm High
- ☐ White background

6.6 Label type EG Hydraulic panels

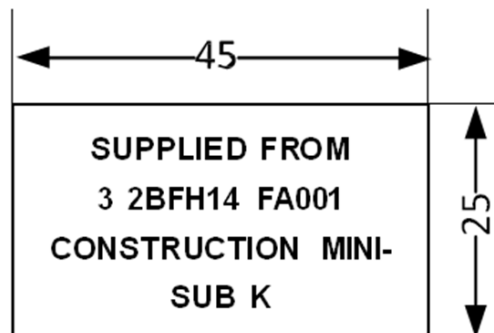


Figure EG

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Fixing Method: Adhesive
Engraving:
Figure : EG

- ☐ Alphanumeric Characters: 4mm High
- ☐ Description Characters: 3mm High
- ☐ White background

6.7 Label type EM
Transformer, Electrical related Building Identification Label

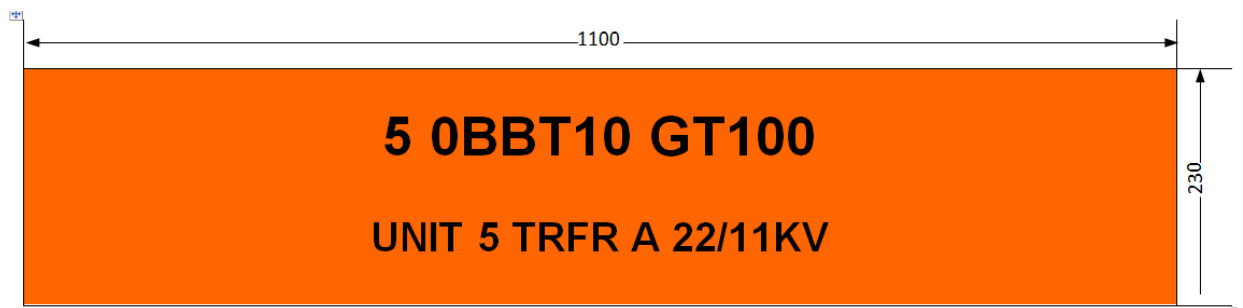


Figure EM

Text:

- ☐ Cut out characters
- ☐ Characters in Black Engineering Grade 7 Years Vinyl.
- ☐ Alphanumeric Characters: 60mm High.
- ☐ Description Characters: 40mm High.
- ☐ Orange background

6.8 Label type EM.1
Structure related label (Not electrical switchgear)

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Figure EM.1

Text:

- ☐ Cut out characters
- ☐ Characters in Black Engineering Grade 7 Years Vinyl.
- ☐ KKS code characters: 60 mm High
- ☐ Description text characters: 40 mm High
- ☐ White background

6.9 Label type EM.2

Label to be used inside buildings where a description is required on a room/area.

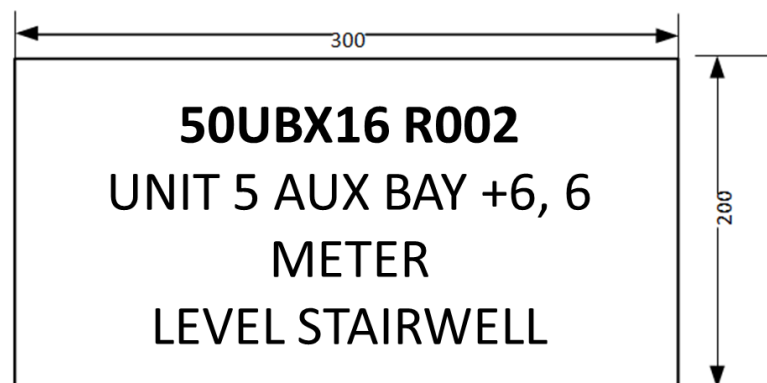


Figure EM.2

Text:

- ☐ Cut out characters
- ☐ Characters in Black Engineering Grade 7 Years Vinyl.
- ☐ KKS code characters: 30 mm High
- ☐ Description text characters: 20 mm High
- ☐ White background.

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6.10 Label type EM.3

Label to be used inside buildings where a description is required on Electrical related room/area

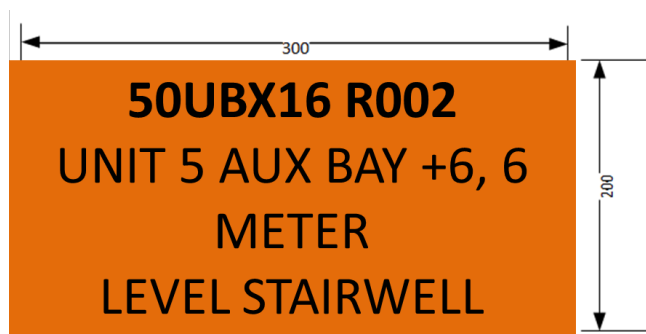


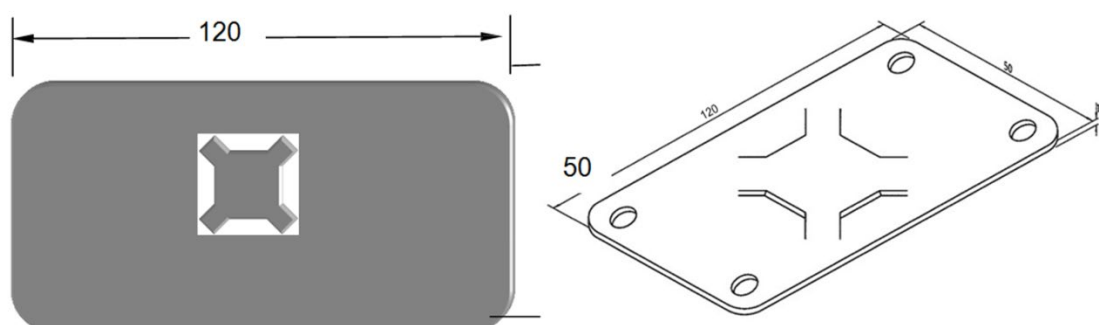
Figure EM.3

Text:

- ☐ Cut out characters
- ☐ Characters in Black Engineering Grade 7 Years Vinyl.
- ☐ KKS code characters: 30 mm High
- ☐ Description text characters: 20 mm High
- ☐ Orange background

7. BACK PLATES

The back plate size and shape shall be set to fit the specification (size and shape) of the respective label as shown in Figure 24.



BACK PLATE STRAP

- ☐ The strap of stainless steel strapping and size to fit in pressed out slot.

8. PIPE LABELS

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8.1 NON-LAGGED PIPING LESS THAN OR EQUAL TO 35MM

Pipelines of diameter less than or equal to 35mm shall be painted in the basic colour over their full length. Colour code indicator bands shall be superimposed around the pipes with a suitable mechanical label to be strapped around the pipes and a direction of flow be painted as showed in Figure below.

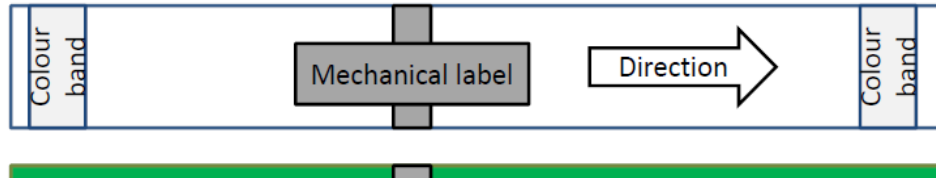


Figure 25

The indicators shown in [Figure 25](#) above are to be placed at 10 m intervals nominally along the length of the pipe and adjacent to valves, wall and floor penetrations. The direction of flow arrows are of white colour with dimensions in accordance with [Figure 26](#). For the length of the arrow please refer to [Table 2](#)

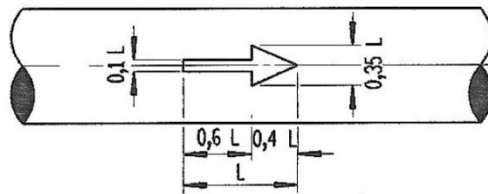


Figure 26: Direction of flow

Table 2: Legend dimensions for pipelines and vessels

Outside diameter mm	Legend height mm	Chemical hazard Legend height mm	Direction of flow arrow Length mm
Up to 50	20	20	75
51 to 100	25	25	100
101 to 150	38	50	150
151 to 225	50	100	200
226 to 300	75	150	300
301 to 600	100	150	300
Above 600	150	150	300

☐ Font type – Arial

8.2 NON-LAGGED PIPING GREATER THAN 35MM

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Pipelines of diameter greater than 35mm shall be painted in the basic colour over their full length. In cases of long exposed sections of large diameter pipes, due consideration shall be given to the costs incurred with regard to the use of a basic colour over the full length. Colour code indicator bands are to be superimposed around the pipes, a KKS code label shall be stencilled along the pipe length, a medium description to be stencilled along the pipe length and a direction of flow to be stencilled as showed in [Figure 27](#) below



Figure 27: Pipeline label (Greater than 35mm)

The height of the letters used on the KKS code and medium description stencilling is superimposed on a 'rectangular area' in accordance with Table 2. The direction of flow arrows are of white colour with dimensions in accordance with Table 2. The indicators shown in Figure 27 above are to be placed at 10 m intervals nominally along the length of the pipe and adjacent to valves, wall and floor penetrations.

8.3 LAGGED PIPING PROTECTED WITH CLADDING

Pipelines lagged and protected with cladding do not require painting in basic colour over their full length, however colour code indicator bands are to be superimposed around the cladding. A KKS code label shall be stencilled/labelled along the cladding length, and medium description shall stencilled/labelled along the cladding length as well as direction of flow shall stencilled/labelled as shown in Figure 27 above. The height of the letters used on the KKS code and medium description stencilling is superimposed on a 'rectangular area' in accordance with Table 2. The indicators shown in Figure 27 above shall be placed at 10 m intervals nominally along the length of the pipe and adjacent to valves, wall and floor penetrations.

For the basic colour and colour code indicator band paint specification please refer to [10] 240- 75655504 - Corrosion Protection Standard for New Indoor and Outdoor Eskom Equipment, Components, Materials and Structures Manufactured from Steel Standard.

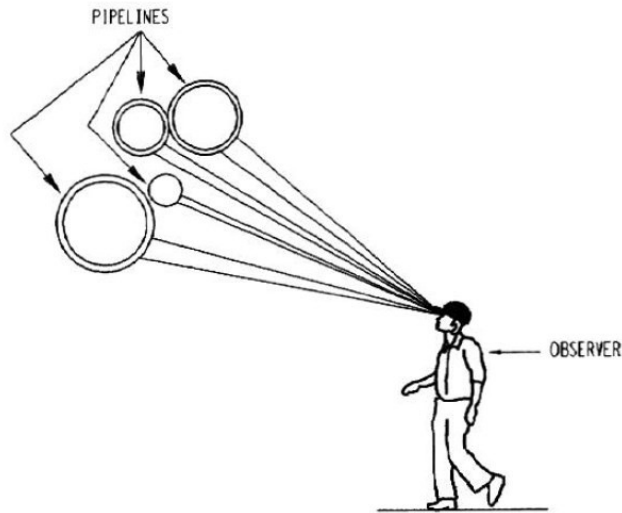
8.4 MULTIPLE-PIPELINE RUNS

Colour identification, descriptive identification and labels are positioned on multi-pipeline runs such that the identification of all pipes in the run is clearly visible from an observation position as shown in [Figure 28](#) below.

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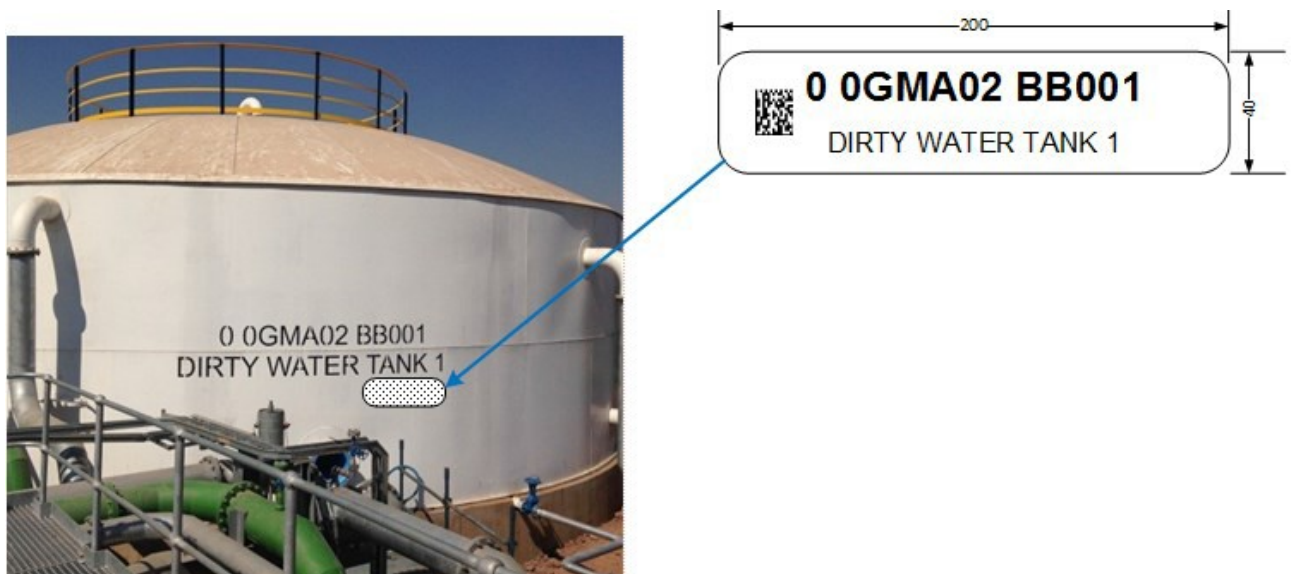
NOTE — Extract from SABS 0140-3:1992.

Figure 28: Pipelines observation position

9. VESSELS

9.1 ROUND VESSELS

Round vessels shall be stencilled as showed below. The height of the letters used on the KKS code and medium description stencilling is superimposed on a 'rectangular area' in accordance with [Table 2: Legend dimensions for pipelines and vessels](#). A label type GA bearing data matrix shall be attached beside the stencilled section on the vessel as illustrated below



Round vessel label

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For the stenciling paint specifications for the vessels refer to [10] 240-75655504 - Corrosion Protection Standard for New Indoor and Outdoor Eskom Equipment, Components, Materials and Structures Manufactured from Steel Standard.

9.2 SQUARE VESSELS

Square vessels shall be labelled using label type GA as shown in [Figure 30](#) below. An identification label shall be fixed on a flat surface of the vessel using adhesive or to be fixed on a bracket using rivets



Figure 30: Square vessel label

10. CABLE RACKS

Cable rack/tray coding is the identification of cable racks/trays according to the location, voltage level and type of rack/tray. The cable rack/tray number format shall be as follows:

Cable rack number format

TOTAL PLANT	SYSTEM CODE	EQUIPMENT UNIT CODE
0	0 UGB 11	BQ 101
0	0 UGB 21	BQ 101
0	0 UGB 31	BQ 101

The KKS code for the rack/tray to be stencilled and clearly visible from an observation position as shown in [Figure 31](#).

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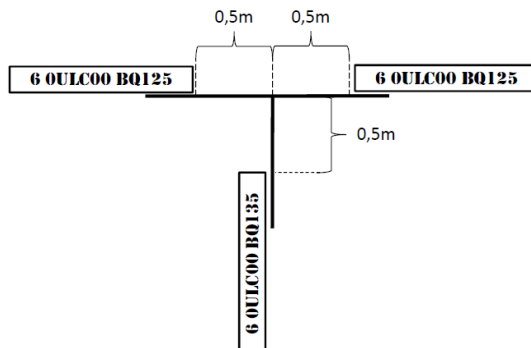
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Figure 31: Cable rack label

The height of the letters used on the KKS code is to be '50% of the width of rack/tray and black in colour and Arial font.

The KKS codes are to be placed at 10 m intervals nominally along the length of the horizontal and vertical racks/ trays as well as adjacent to T-junctions as shown below

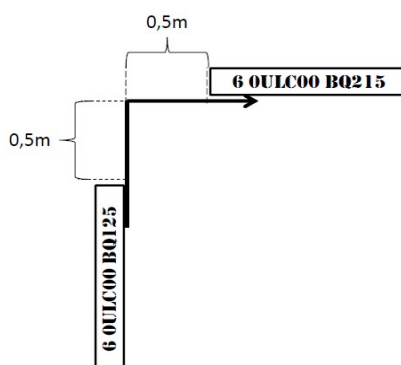


When the rack/tray is changing direction or penetrating a floor or wall opening the KKS code is to be placed as shown below.

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For the stencilling paint specifications for the rack/tray please refer to 240-75655504 - Corrosion Protection Standard for New Indoor and Outdoor Eskom Equipment, Components, Materials and Structures Manufactured from Steel Standard.

11. CRANES, CRAWL BEAM AND SEMI-PORTAL LABELS

Cranes, crawl beams and semi-portals shall be stencilled with the KKS code in black and shall be clearly visible from an observation position as shown in [Figure 34](#). Label type GA bearing the code and the data matrix shall be used by adhering to the specifications below:

- Cranes shall have GA labels attached to the stairs leading to the cabins
- Semi-portals shall have GA labels on the beams running on the rails on the floor levels and,
- Crawl beams shall have GA labels on the structure where the beams are attached to.



Figure 34: Crane and crawl beam stencilling

Text:

- ☐ Stencilled characters
- ☐ Characters in Black Engineering Grade 7 Years Vinyl.

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- ☐ KKS code characters: 50% of the beam breadth
- ☐ Orange background (crane colour)

For the stencilling paint specifications to be used for the crane or crawl beam please refer to [10] 240- 75655504 - Corrosion Protection Standard for New Indoor and Outdoor Eskom Equipment, Components, Materials and Structures Manufactured from Steel Standard.

12. STAIRWELL, CAT LADDERS & PIPE SUPPORT LABLES

12.1 Stairwells

Stairwells to be labelled using label Type EM.2. The label is to be installed on stairwell points of entry.

12.2 Cat ladders

Cat ladders will be labelled using GC mechanical label in this specification. The label is to be installed on cat ladder points of entry.

12.3 Pipe supports

Pipe supports to be labelled using GC mechanical label in this specification.

13. CABLE LABLES

13.1 Label type EN

1	0	B	F	A	1	0	0	8	B	B	C	C
---	---	---	---	---	---	---	---	---	---	---	---	---

Internal cables

All internal cables shall be labelled with standard PVC K Type flexible cable markers and more than 13- digit carrier strips and attached on both ends with suitable cable ties (T18R or T30R, depending on cable thickness). Data matrix do not apply for this type of label.

14. ELECTRICAL AND C&I COMPONENT LABELS

14.1 Label type EK

Terminal Label

20	
-X05	10

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Fixing Method: Adhesive

Engraving:

☐ Alphanumeric Characters: 3mm High.

☐ White background

14.2 Label type EL

Electrical Component

20	
-F01	10

Fixing Method: Adhesive

Engraving:

☐ Alphanumeric Characters: 3mm High.

☐ White background

15. MIMIC

Identification mimic is a graphical representation of a small plant area where, due to space constraints normal plant labels can't be installed. A legend for the drawing must be included and each component must be labelled with the legend number to ensure there is no ambiguity in component identification.

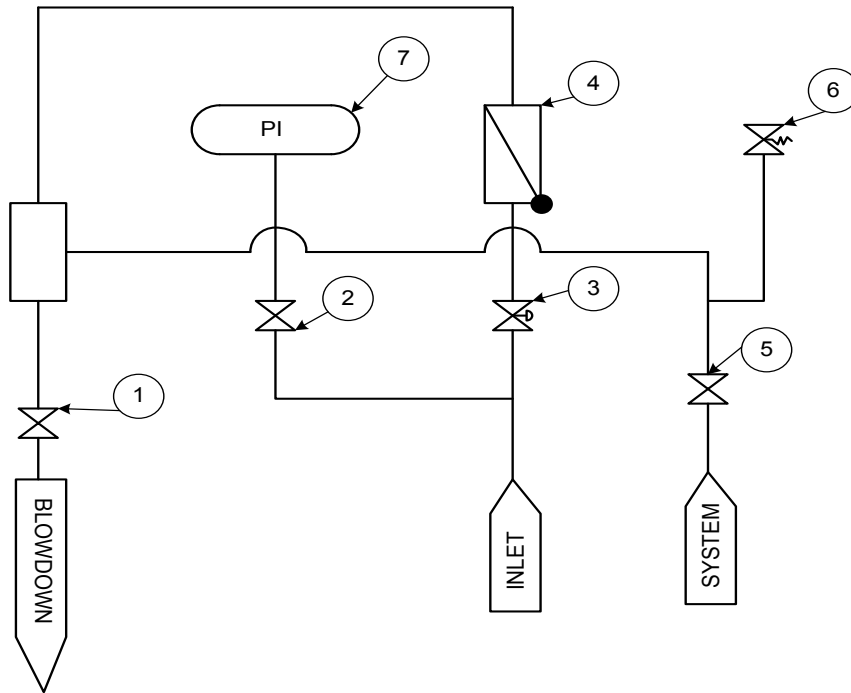
Engraved graphical representation: Eskom drawing standards & symbols must be used, fill colour black.

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N2 VALVE PANEL



- 1) 10HFC23AA401 U1 MILL B RAM CYL DRN VLV
- 2) 10HFC23AA301 U1 MILL B RAM CYL GAS PRESS IND IV
- 3) 10HFC23AA501 U1 MILL B RAM CYL GAS REG VLV
- 4) 10HFC23AA601 U1 MILL B RAM CYL GAS NRV
- 5) 10HFC23AA502 U1 MILL B RAM CYL GAS IV
- 6) 10HFC23AA602 U1 MILL B RAM CYL GAS PRESS RELIEF VLV
- 7) 10HFC23CP501 U1 MILL B RAM CYL GAS PRESS IND

BDL2	DESCRIPTION OF BREAKDOWN LEVEL 2	LABEL TYPE
A	Mechanical equipment (machinery including driven or hand	
AA	Valve , damper including actuator , rupture disk , equipment ,also	GC
AB	Isolating element (access gates, doors, locks etc.)	GC
AC	Heat exchanger , heat transfer surface	GC
AE	Turning , driving , lifting and slewing unit (manipulators also)	GC
AE	Overhead Cranes, Hoist, Crawl beams	GC
AF	Continuous conveyor unit (escalator)	GC
AG	Generator unit	GC
AH	Heating , cooling and air conditioning unit	GC
AJ	Size reduction equipment , (crushing milling plant)	GC
AK	Pressing and packaging unit	GC
AM	Mixer , agitator , vibrating unit	GC

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AN	Compressor, fan and blower unit	GC
AP	Pump unit	GC
AS	Positioning and tensioning equipment # for non-electrical variable	GC
AT	Purifying, drying, filtering, separating and screening unit, steam trap, equip. other than "BT"	GC
AU	Brake , coupling and gearbox unit , not electrical converter	GC
AV	Combustion	GC
AW	Fixed workshop equipment	GC
AX	Testing control and monitoring equipment (e.g. weighing devices)	GC
B	MECHANICAL EQUIPMENT	
BB	Storage equipment (vessel , tank , dam)	GC
BE	Tunnel and trench (e.g. inspection/cable access)	GC
BF	Foundation	Not labelled
BG	Boiler-heating surface	Not labelled
BN	Ejector , injector , jet pump (attenuator)	GC
BP	Flow restricting limiter , orifice (not for metering)	GC
BQ	Hanger , support , frame , rack , pipe penetration , cable tray	GC, Stencilled
BR	Piping , duct and channel	Stencilled
BS	Sound absorber (silencer)	GC
BT	Flue gas catalytic converter module	GC
BU	Insulation , cladding	GC
BY	Mechanically operated controlling unit	GC
C	DIRECT MEASURING CIRCUIT	
CD	Density	GH
CE	Electrical quantities (e.g. current , voltage , power , electrical frequency)	GH
CF	Flow , mass	GH
CG	Distance , length , position , direction of rotation	GH
CH	Manual input (as manually operated sensor , e.g. fire detector)	GH

CJ	Power (mechanical or heat , not electrical)	GH
CK	Time	GH
CL	Level (also for dividing line)	GH
CM	Humidity	GH
CP	Pressure	GH
CQ	Quality quantities (analysis , material characteristic other than "CD", "CM"	GH
CR	Radiation	GH
CS	Rotational speed , velocity , frequency , acceleration (mechanical)	GH
CT	Temperature	GH
CU	Combined quantities	GH
CV	Viscosity	GH
CW	Weight , force , mass	GH

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CX	Neutron flux (reactor power measurement)	GH
CY	Vibration , expansion	GH
D	CLOSED LOOP CONTROL CIRCUIT	
DD	Density	GH
DE	Electrical quantities (e.g. current, voltage, power, electrical frequency)	GH
DF	Flow, mass flow	GH
DG	Distance, length, position direction of rotation	GH
DJ	Power (mechanical or heat, not electrical)	GH
DK	Time	GH
DL	Level (also for dividing line)	GH
DM	Humidity	GH
DP	Pressure	GH
DQ	Quality quantities (analysis, material characteristic other than "DD", "DM" and	GH
DR	Radiation	GH
DS	Rotational speed, velocity frequency, acceleration mechanical)	GH
DT	Temperature	GH
DU	Combined quantities	GH
DV	Viscosity	GH
DW	Weight, force, mass	GH
DX	Neutron flux (reactor power closed loop control)	GH
DY	Vibration, expansion	GH
E	ANALOGUE AND BINARY SIGNAL CONDITIONING	
EG	Alarm/annunciati	Not labelled
EK	Process computer (also for operating and monitoring)	Not labelled
EM	Process computer (also for operating and monitoring)	GD
EN	Process computer (also for operating and monitoring)	GD
EP	Process computer (also for operating and monitoring)	GD
EQ	Reactor	GD

ER	Combined analogue and binary signal processing	Not labelled
EU	Protection	Not labelled
EZ	INDIRECT MEASURING CIRCUIT	Not labelled
G	ELECTRICAL EQUIPMENT	
GA	Sub-distributor/penetration	GD
GB	Sub-distributor/penetration	GD
GC	Sub-distributor/penetration	GD
GD	Sub-distributor/penetration	GD
GE	Sub-distributor/penetration	GD
GF	Sub-distributor/penetration general	GD
GG	Penetration - cable cover	GD

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GH	Cubicle , box for process control and electrical	GD
GK	Periphery equipment for information preparation	GD
GM	Sub-distributor for GPO telecommunication system	GG
GP	Sub-distributor for lighting	EF
GQ	Power socket	EF
GR	Direct current power source device (battery)	GC
GS	Switchgear equipment (not process related)	GD
GT	Transformer winding	GD
GU	Converter equipment including battery charger	GD
GV	Structure related earthing and lightning protection, surge arrestor	GC
GW	Actuating device for electrical quantities e.g. (tap changer)	GD
GX	Actuating equipment for electrical variables	GD
GY	Sub-distributor for telecommunication system (not GPO)	GD
H	SUB-ASSEMBLY OF MAIN AND HEAVY MACHINE	
HA	Machine static assembly	GD
HB	Machine rotating assembly	GD
HD	Bearing	GD
K	MECHANICAL UNIT COMPONENT (PRODUCTION)	
Gate valve, globe valve, cock, damper, rupture disk, orifice etc.		
KB	Gate , door , dam door	GC
KC	Heat exchanger , cooler	GC
KD	Vessel , storage tank , surge tank	GC
KE	Turning , driving , lifting , and slewing devices	GC
KF	Endless conveyor , (escalator , conveyor)	GC
KH	Heating and cooling device	GC
KJ	Crushing device	GC
KK	Pressing and packaging device	GC
KM	Mixer , stirrer	GC
KN	Compressor , fan , blower , ventilator	GC
KP	Pump	GC

KT	Purifier , drier , filter , separator	GC
KU	Converter	GC
KV	Burner	GC
KW	Workshop	GC
KX	Stationary testing device	GC
KZ	Special mechanical device (production)	GC
M	MECHANICAL UNIT COMPONENT (AUXILIARY)	
MB	Brake	GC
MF	Foundation	GC
MG	Gearbox	GC

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MK	Clutch and coupling	GC
MM	Engine (not electric)	GC
MR	Piping part , ducting component	GC
MS	Positioning drive (not electric)	GC
MT	Turbine	GC
MU	Transmission device , other than coupling and gearbox	GC
Q	UNIT COMPONENT (NOT ELECTRICAL) FOR CONTROL AND INSTRUMENTATION	
QB	Sensor/transducer (only , if not integrated in "QP")	Note1
QH	Annunciation system	Note1
QN	Controller , fly bolt governor	Note1
QP	Measuring device (transmitter) testing equipment	Note1
QR	Impulse	Not labelled
QS	Equalising chamber	EL
QT	Protection tube , thermo well (only for protection of the sensor)	Not labelled
QU	Converter	
-	ELECTRICAL UNIT COMPONENT	
-A	Assembly and sub-assembly	EL
-B	Transducer for non-electric to electric quantities and reverse, vice-versa	EL
-C	Capacitor	EL
-D	Binary element, time delay equipment, memory equipment	EL
-E	Special unit component	EL
-F	Protection equipment	EL
-G	Generator, power supply	EL
-H	Annunciation system	EL
-K	Relay, miniature circuit breaker	EL
-L	Inductance	EL
-M	Electrical motor	GB
-N	Amplifier , controller	EL
-P	Measuring device , testing equipment	EL
-Q	Power switching device (contactors)	EL
-R	Resistance	EL

-S	Switch ,	EL
-T	Transformer	EL
-U	Modulator , transducer from electric to electric quantities	EL
-V	Vacuum tube, semi-conductor	EL
-W	Current transmission system, wave guide antennae	EL

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**PLANT LABELLING AND CODING
PROCEDURE**

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-X	Terminal, plug , socket outlet	EL
-Y	Electric actuated equipment, e.g. magnet, solenoid not electric motor	GB
-Z	Cable termination, compensating equipment, filter, limiter	EL

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