

 <b>Eskom</b>	<b>Standard</b>	<b>Technology</b>
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Title: **STANDARD FOR ELECTRICAL AND RELATED EQUIPMENT LOCKS AND KEYS**

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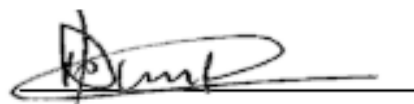
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## 1. Introduction

This standard technical specification was originally prepared to standardize the locks and keys used on / for electrical plant and associated equipment in the Distribution and Transmission environments. This standard requirements / specifications are meant to ensure that the minimum requirements stipulated in SANS 1533 and OHSAct are complied with.

## 2. Supporting clauses

### 2.1 Scope

#### 2.1.1 Purpose

The purpose of this document is to standardize the technical specification for locks and keys used on / for electrical plant and associated equipment within the Distribution and Transmission network. The Grid / Operating Unit / area more stringent standards / requirements will form an extension of national minimum requirements and it is binding to the relevant Grid / OU / Area.

#### 2.1.2 Applicability

This standard is applicable to Eskom Distribution, Transmission and the contractors employed by the divisions.

### 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] DIN 17224, 1982 Stainless Steel Wire And Strip For Springs: Technical Delivery Conditions.
- [2] OHS Act No. 85, Occupational Health And Safety Act And Regulations.
- [3] NRS 000, Rationalized User Definitions For Use In The Electricity Supply Industry.
- [4] SANS 1533, Padlocks.
- [5] 240-114967625, Operating Regulations For High Voltage Systems.
- [6] 240-70413865, Authorisation Standard In Terms Of Regulations For High Voltage Systems and
- [7] 240-70500880, Standard For The Control And Application Of Master Locks And Issue Of Master Keys.

### 2.3 Definitions

#### 2.3.1 General

All definitions listed in recognised industry glossaries such as NRS 000, ORHVS, IEV and SANS1533 are applicable.

Definition	Description
<b>Individually keyed</b>	Descriptive of a padlock that can be opened by means of a specific key only. [SANS1533]
<b>Key cabinet</b>	Means a locked or sealed cabinet provided for safe custody of keys. Each key shall be adequately labelled. [ORHVS]

Definition	Description
<b>Key safe</b>	Means an approved device for the secure retention of safety lock keys used to lock isolations, earthing or other safety devices necessary for the issue of a work permit. [ORHVS]
<b>Master key</b>	Key manufactured in such a way that it opens a set of locks that are all identically master keyed. [SANS1533]
<b>Master locks</b>	These are a range of locks that are opened by one key.
<b>Safety or Non-standard lock</b>	Means an approved lock for which only one unique key is available. [ORHVS]
<b>Unique locks</b>	These are locks that can only be opened by only its designated keys and it is kept in the key cabinet at the substation.

### 2.3.2 Disclosure classification

**Controlled disclosure:** controlled disclosure to external parties (either enforced by law, or discretionary).

## 2.4 Abbreviations

None

## 2.5 Roles and responsibilities

### 2.5.1 Designated Person

It is the responsibility of the Designated Person or his delegate to ensure that the locks and keys purchased or issued to be used in Eskom Network system is in accordance to this document and SANS 1533.

### 2.5.2 Manufacturer

It is the responsibility of the manufacturer to ensure that the quality of locks and keys meet the requirements of this standard technical specification and the manufacturer shall comply with the provisions of ISO 9001 or ISO 9002. Eskom will carry out audits at random, to ensure that quality requirements are being adhered to.

Notification of any deviation or non - conformance shall be given to Eskom in writing before manufacturing / delivery.

## 2.6 Process for monitoring

Document number	Document title
-	Process Control Manual (PCM) for <b>Develop Operating Procedures</b> .
34-04	Procedure For Management Of Technical Documents For SCOT.

## 2.7 Related/supporting documents

Document number	Document title
240-70500880	Standard For The Control And Application Of Locks And Issue Of Master keys

### **3. Requirements**

#### **3.1 Padlocks and Keys specifications**

##### **3.1.1 Quality Assurance**

###### **3.1.1.1 Records**

- a) Acceptance test records shall be kept by the manufacturer for inspection by Eskom.
- b) The test results in accordance with the manufacturer's quality control procedure shall be made available to Eskom.

###### **3.1.1.2 Padlocks**

###### **3.1.1.2.1 General**

- a) The padlocks shall be CP type (pin tumbler cylinder type) and have a category 2 Insurance Grading as stated in SANS1533.

###### **3.1.1.2.2 Casing**

- a) The casing of each padlock shall be constructed as follows:
  - Constructed of laminated steel with quality zinc plating where each laminate is 2mm thick, the plating shall be as per SANS1533, Or
  - Constructed off flame resistant glass reinforced nylon.
- b) The padlock casing dimensions shall be as follows:
  - 40mm lock dimensions:
    - Case height: maximum: 38mm, minimum: 35mm
    - Case width: maximum: 40mm, minimum: 28mm
    - Case thickness: maximum:20mm, minimum: 18 mm
  - 50mm lock dimensions:
    - Case height: maximum: 45mm, minimum: 40mm
    - Case width: maximum: 55mm, minimum: 50mm
    - Case thickness: maximum:32mm, minimum 28mm
- c) The colors of the casings in relation to the applications shall be as follows:
  - Master Locks:
    - White for General Master lock;
    - Orange for Restricted Area Master lock;
    - Green for Prohibited Area Master lock;
    - Yellow for Operating Master lock;
    - Black for Live Chamber Master lock; and
  - Unique Locks:
    - Yellow for Unique Operating lock;
    - Blue for Safety / Non Standard / Supervisor lock.

- d) The casing jacket for the steel lock shall have a coloured rubber material as stipulated in the buyers guide.

#### **3.1.1.2.3 Shackles**

- a) Shackles shall be made of 303 stainless-steel and shall be dimensioned as follows:
- 40mm lock dimensions:
    - Diameter 6 mm;
    - Shackle length: maximum: 34mm, minimum; 30 mm (in the locked position); and
    - Shackle width: minimum: 20mm.
  - 50mm lock dimensions:
    - Diameter 9mm;
    - shackle length: maximum: 40mm, minimum; 34mm ( in the locked position); and
    - shackle width: minimum: 25mm

**Note:** No plating will be acceptable as an alternative for stainless steel.

#### **3.1.1.2.4 Mechanisms**

- a) Padlock mechanisms shall be of the pin tumbler cylinder type, with anti-pick mushroom pins and security plate or pin and the number of key pins in relation to their different applications shall be as follows:
- Master Locks:
    - Minimum of three for White master lock (General Master lock);
    - Minimum of three for Orange master lock ( Restricted Area Master lock);
    - Minimum of four for Green master lock (Prohibited Area Master lock);
    - Minimum of five for Yellow master lock (Operating Master lock); and
    - Minimum of six for Black master lock (Live Chamber Master lock).
  - Unique Locks:
    - Minimum of five for Yellow unique lock (Operating lock) ; and
    - Minimum of seven for Blue lock (Safety / Non Standard / Supervisor lock).
- b) The number of anti-pick mushroom pins shall not be less than four.
- c) The number of anti-pick plates / wafers shall not be less than three and should be randomly positioned.
- d) The padlock mechanisms shall be factory pre-lubricated with silicone or graphite.
- e) Pin springs shall be made of phosphor bronze.
- f) Shackle locking shall be by means of a dual stainless steel bolt mechanism.
- g) Shackle springs shall be nickel coated 304-grade stainless steel in accordance with DIN 17224.

#### **3.1.1.2.5 Keyways**

- a) The keyway shall be unique and owned by Eskom, and shall be registered as such.
- b) The supplier shall guarantee that the registered keyways shall remain unique for not less than 25 years from the date of final delivery and Eskom shall have right to transfer, use and / or manufacture this keyway under any manufacturer selected or approved whenever the agreement / contract expires.

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- c) Keyways excluding the Blue and Unique Yellow locks must be cascaded as per 3.1.1.2.2 c) where the first bullet is the lowest level keyway.
  - d) Keyways for the Blue and Unique Yellow locks shall be opened by one key per pad lock.
  - e) Operating Units / Grids shall have unique keyways which shall only be opened by keys belonging to Transmission Grid or Distribution OU in that specific province.

#### **3.1.1.3 Keys**

- a) Keys shall be manufactured from brass.
- b) Keys opening the Blue (Safety / Non Standard / Supervisor) pad lock shall be unique to a pad lock.
- c) Keys opening the Unique Yellow (Operating) padlock shall be unique to a pad lock.
- d) Each key shall be clearly stamped or engraved with a unique identification code, the characters shall be at least 2,5 mm high as indicated in the enquiry document.
- e) The manufacturer shall apply the identification code and apart from the stated code a key shall bear no mark identifying it as Eskom property.
- f) Keys shall only be manufactured and supplied against an officially printed Eskom order.
- g) The manufacturer shall undertake that key blanks for this profile will be distributed only with Eskom's written permission on a restricted and confidential basis to no person other than professional locksmiths who are members of the Locksmith Association of South Africa and whose credentials have been checked and found to be impeccable.

#### **3.1.1.4 Testing**

- a) Each supplier shall be required to have their locks tested in accordance with SANS1533 & SANS9227.

#### **3.1.1.5 Deviations and guarantees**

- a) The supplier shall be deemed to guarantee that the goods comply fully with the specification, unless:
  - The supplier clearly stated in his tender all the aspects in which the goods offered deviated from the specification and Eskom accepted those deviations in writing.
  - Where in the specification, approximate maximum or minimum values (e.g. dimensions), are stated, these values shall be deemed to be exact values guaranteed by the supplier, unless the supplier stated, in his tender the actual values offered, as in sections 3.1.1.2 and 3.1.1.3 above.
  - Where the deviation (Request from Eskom or from the manufacturer) on the requirements of this specification is necessary the completed Padlocks or Keys shall comply to the requirements stipulated in latest revision of SANS1533 & SANS9227.

### **3.2 Packing and marking**

- a) Each lock shall be so packed or wrapped that it will not be damaged in transit or in storage.
- b) The protective cover shall display in permanent ink the identification code of the locks enclosed.

### **3.3 Commercial information**

The enquiry document shall state the following:

- a) The type of locks and keys required.
- b) The quantity of locks required.
- c) The delivery address.

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- Keys shall be delivered as specified in an order to the Designated Person.
  - Locks shall be delivered to the specified store in accordance with the order.
- d) The unique number to be engraved or stamped on each key shall be requested by the Designated Person.

#### 4. Authorization

This document has been seen and accepted by:

Name and surname	Designation
Amelia Mtshali	Senior Manager (DB & OUS)
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#### 5. Revisions

This revision of Task Manual DMN\_ 240-70500896 **supersedes all revisions of this document.**

Date	Rev	Compiler	Remarks
June 2021	3	David Ntombela	<p>Removed the word "Master" from the title, Restructured the Introduction section, Added the definition section,</p> <p>Restructured sections 3.1.1.2.1 to "The padlocks shall be CP type (pin tumbler cylinder type) and have a category 2 Insurance Grading as stated in SANS1533." Updated 3.1.1.2.2 a) "with the plating shall be as per SANS1533, Or", and reviewed c) bullets to "Yellow for Unique Operating lock" and Safety / Non Standard / Supervisor lock and Added "The casing jacket for the steel lock shall have a coloured rubber material as stipulated in the buyers guide in 3.1.1.2.2 d)"</p> <p>Added a unique Lock in section 3.1.1.2.4 and removed the term "Master" on the Blue lock.</p> <p>Reconstructed section 3.1.1.2.5 a) to "The keyway shall be unique and owned by Eskom, and shall be registered as such." And b) to "The supplier shall guarantee that the registered keyways shall remain unique for not less than 25 years from the date of final delivery and Eskom shall have right to transfer, use and / or manufacture this keyway under any manufacturer selected or approved whenever the agreement / contract expires."</p> <p>Included Unique key in section 3.1.1.2.5 and 3.1.1.3</p> <p>Reviewed normative references and included the acknowledgement section.</p>



Date	Rev	Compiler	Remarks
March 2020	2	David Ntombela	Changed the date on the front page of this document, reviewed normative references and included the acknowledgement section.
Aug 2014	1	David Ntombela	All documents are being re-registered and allocated a 240 number. DSP_34-1488 has changed to DST_240-70500896. A New format has been implemented and the document was also formatted.
March 2011	1	David Ntombela	Reformatted the document Relocated documents below to "Informative" section and added ISO 9001 in "Normative:" <ul style="list-style-type: none"> <li>The Occupational Health and Safety Act No. 85 of 1993;</li> <li>EPC_34-846: Rev 0, Operating regulations for high voltage systems (ORHVS);</li> <li>DPC_34-146: Rev 0, Procedure for the training, testing and authorization of persons in terms of the ORHVS and LV standards; and</li> <li>DST_34-616: Rev 1, Standard for the control and application of master locks and issue of master keys.</li> </ul> Added "Informative" documents section.
June 2008	0	DM Ntombela	Document approved as DSP_34-1488 Introduced Introduction, Key words and Bibliography paragraphs and rephrased Foreword section. The document number changed to DSP_34-1488
Aug 2004	1	DM Ntombela	Reformatted the document Added Related documents Added the Revision information Included the assessment form to the document Document reference prefix number changed from SCS to DIS
Sept 2000	0	E Mutloane	Original issue as SCSSCAAM8.

## 6. Development team

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

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## 7. Acknowledgements

The Switchgear care group would like to thank the former WG members below for their contribution:

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