

	Specification	
---	----------------------	--

Title: **Personal Protective Equipment for Work at Heights Specification** Document Identifier: **240-100979499**

Alternative Reference Number: **N/A**

Area of Applicability: **Eskom Holdings SOC Ltd**



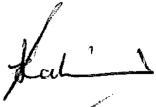
Functional Area: **Sustainability Division**

Revision: **1**

Total Pages: **13**

Next Review Date: **December 2020**

Disclosure Classification: **Controlled Disclosure**

Compiled by	Functional Responsibility	Authorized by
		
TJ Mabeleng	J Naidoo	K Pather
Senior OHS Advisor	Senior OHS Manager	General Manager
Sustainability Systems	Sustainability Systems	Sustainability Division
Date: 02.12.2015	Date: 15.12.2015	Date: 15.12.2015

Content

	Page
1. Introduction.....	3
2. Supporting Clauses	3
2.1 Scope.....	3
2.1.1 Purpose.....	3
2.1.2 Applicability	3
2.1.3 Effective date.....	3
2.2 Normative/Informative References	3
2.2.1 Normative.....	3
2.2.2 Informative.....	4
2.3 Definitions	4
2.4 Abbreviations	6
2.5 Roles and Responsibilities	7
2.6 Process for Monitoring.....	7
2.7 Related/Supporting Documents.....	7
3. Personal Protective Equipment for Work at Heights Specification	7
3.1 General Requirements	7
3.2 Minimum Requirements of Fall Arrest System	8
3.2.1 Full body harness	8
3.2.2 Lanyards	8
3.2.4 Attachment straps.....	9
3.2.5 Fall Arrest System Live Work	9
3.2.6 Rope Access System	10
3.2.7 Protector bags.....	10
3.2.8 Remote Access Connector	11
3.2.9 Retractable Fall Arrestor.....	11
3.3 FAS Rescue Kit.....	11
3.4 Hard Hat.....	11
3.5 Additional Back Support	12
3.6 Aerial bucket work	12
3.7 Kit: Telescopic stick.....	12
3.8 Test and certification requirements.....	12
3.9 Instruction for use, maintenance, periodic examinations, repair, marking and packaging.....	12
4. Acceptance.....	13
5. Revisions.....	13
6. Development Team	14
7. Acknowledgements	14

CONTROLLED DISCLOSURE

When downloaded from the document management system, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorized version on the system.

No part of this document may be reproduced without the expressed consent of the copyright holder, Eskom Holdings SOC Ltd, Reg No 2002/015527/30.

1. Introduction

This specification was compiled to satisfy the need for simplification and standardisation of Eskom's Personal Protective Equipment for Work at Heights. In the event where specific work at heights personal protective equipment is not covered in this specification, the onus is on the Division/OU/BU to ensure that all safety requirements are complied with in accordance with the relevant standards, regulations or codes of practice for that specific work at heights equipment requirement.

2. Supporting Clauses

2.1 Scope

2.1.1 Purpose

The purpose of this specification is to prescribe the minimum requirements for Personal Protective Equipment for Work at Heights in Eskom. The operating/business Units may determine additional requirements to suit their own needs or working conditions, provided that the minimum requirements as set out in this specification are met as well as the relevant legislation, and such additional requirements do not expose an employee or a member of the public to any risk.

2.1.2 Applicability

This specification sets out the minimum requirements for Personal Protective Equipment for Work at Heights to be met by employees and it shall apply throughout Eskom Holdings SOC Limited, its divisions, subsidiaries and entities where Eskom has a controlling interest. In cases where Eskom does not have a controlling interest, this procedure shall apply only if no such similar document exists.

2.1.3 Effective date

The date from which this document is effective is with immediate effect after the authorisation.

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] 240-62196227 Life-saving Rules Standard.
- [2] 240 -62582234 OHS roles and responsibilities and statutory appointments standard.
- [3] 32-288 Policy Procurement and Supply Chain Management Standard.
- [4] 32-599 Standard Procurement and Supply Chain Management Standard.
- [5] 32-727 SHEQ Policy.
- [6] Eskom Corporate Identity Manual ESK AM AAA 1, Rev 1.

CONTROLLED DISCLOSURE

When downloaded from the document management system, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorized version on the system.

No part of this document may be reproduced without the expressed consent of the copyright holder, Eskom Holdings SOC Ltd, Reg No 2002/015527/30.

[7] ISO 9001 Quality Management Systems.

[8] Occupational Health and Safety Act, Act No. 85 of 1993.

2.2.2 Informative

[9] SANS 50353-2: Personal Protective Equipment against Falls from a Height – Guided-type Fall Arresters on a Flexible Anchorage Rope.

[10] SANS 50354: Personal Protective Equipment against Falls from a Height – Lanyards.

[11] SANS 50355: Personal Protective Equipment against Falls from a Height – Energy Absorbers.

[12] SANS 50358: Personal Equipment for Work Positioning and Prevention of Falls from a Height – Work Positioning Systems.

[13] SANS 50361: Personal Protective Equipment against Falls from a Height – Full Body Harness.

[14] SANS 50362: Personal Protective Equipment against Falls from a Height – Connectors.

[15] SANS 50363: Personal Protective Equipment against Falls from a Height – Fall Arrest System.

[16] SANS 50365: Personal Protective Equipment against Falls from a Height – General Requirements for Instructions for Use and for Marking.

[17] SANS 50795: Protection against Falls from Height – Anchorage Devices; Requirements and Testing.

[18] SANS 50795: Protection against Falls from Height – Anchor Devices; Requirements and Testing.

[19] SANS 50341: Personal Protective Equipment against Falls from a Height – Descender Device.

[20] SANS 1397: Safety Helmets for Industrial Use and for Firemen.

[21] SANS 10085: The Design, Erection, Use, and Inspection of Access Scaffolding.

[22] British: The Work at Height Regulations 2005.

[23] AS/NZS 1891.4: Industrial Fall-arrest Systems and Devices – Selection, Use, and Maintenance.

2.3 Definitions

Definition	Description
Additional back support	Padding which wraps over the existing portion of the Work Positioning belt to allow for added back support when working long hours at height, or in case of back sensitivity.
Attachment element (SANS 50361 EN 361)	Specific connecting point for components or subsystems, e.g. buckles and D-rings.
Attachment strap	A webbing strap used to attach safety lanyard to structure (SABS EN

CONTROLLED DISCLOSURE

When downloaded from the document management system, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorized version on the system.

No part of this document may be reproduced without the expressed consent of the copyright holder, Eskom Holdings SOC Ltd, Reg No 2002/015527/30.

	<i>795:1996 Protection against falls from height anchor devices – Requirements and testing).</i>
Connector (SABS EN 362:1992)	A connecting element or component for a fall arrest system. A connector may be a karabiner or a pylon hook.
Energy absorber (SABS EN 355:1992)	A component of a fall arrest system. An energy absorber guarantees the full ability for the safe arresting of a fall from a height in all cases of recommended application.
Fall arrest system (SABS EN 363:1992)	The basic personal protective equipment to protect against falls from a height comprising a full body harness, safety lanyard, work positioning belt, attachment straps, karabiners and a connecting subsystem for all fall arrest purposes.
FAS live work (LW)	A fall arrest system which allows live line workers to perform their maintenance and construction duties without the FAS system compromising the safety while working live, or unduly inconveniencing the worker. This FAS Live Work therefore has the same components and specialised attributes as specified in this document.
Full body harness (SABS EN 361)	A body support for all fall arrest purposes, i.e. a component of a FAS. The full body harness may comprise straps, fittings, buckles or other elements suitably arranged and assembled to support the whole body of a person and to restrain the wearer during a fall and after the arrest of a fall.
Karabiner	A component which connects elements of the FAS. Self-closing with a locking mechanism.
Lanyard (SABS EN 54:1992)	A connecting component or element of a fall arrest system.
Pylon hook	A connector with a self-closing and self-locking or manual locking facility intended to connect the FAS to a secure position.
Rope access system	An Eskom-specified system which allows the worker to ascend and descend a structure by attaching their FAS to a secured rope, thereby eliminating the need for use of energy-absorbing lanyards while ascending and descending.
Rope grab system	A system used to ascend and descend while attached to a rope system which has been secured to a structure.
Rescue system	A system which complies with the Eskom rescue system specifications (SABS EN 341, SABS EN 1891) for the purpose of safely allowing safe descent of workers who have been injured or trapped at height.
Safety lanyard/Energy absorbing lanyard	A lanyard with the sole purpose of safely arresting a fall from a height in all

CONTROLLED DISCLOSURE

When downloaded from the document management system, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorized version on the system.

No part of this document may be reproduced without the expressed consent of the copyright holder, Eskom Holdings SOC Ltd, Reg No 2002/015527/30.

(SABS EN 355:1992	cases of recommended application.
Work at height helmet	A helmet which allows reduced levels of risk to workers working at height, by ensuring secure attachment (webbing 3 point), reduced risk of accidental removal (marginal peak and gutters), and improved comfort (webbing harness).
Work positioning belt	The belt covering the back and kidneys as a body support while leaning and working at height.
Work positioning lanyard	The lanyard is the component which loops around the pole or structure and attaches onto the Work Positioning belt.
Work positioning system (SABS EN 358:1992)	Including a back padded work positioning belt and an adjustable work positioning lanyard for positioning the worker onto a structure.

2.4 Abbreviations

Abbreviation	Description
FAS	Fall Arrest System
FBH	Full Body Harness
HV	High Voltage
kN	Kilo Newton
M	Metre
Mm	Millimetre
MV	Medium Voltage
OHS Act	The Occupational Health and Safety Act, Act 85 of 1993.
PPE	Personal Protective Equipment
PVC	Polyvinyl chloride
WP	Work Positioning
WAH	Work at Heights
WAH WG	Work at Heights Work Group
SANS	South African National Standard
SETA	Sectorial Education and Training Authority
SWL	Safe Work Load

CONTROLLED DISCLOSURE

When downloaded from the document management system, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorized version on the system.

No part of this document may be reproduced without the expressed consent of the copyright holder, Eskom Holdings SOC Ltd, Reg No 2002/015527/30.

Abbreviation	Description
T&Q	Technical and Quality

2.5 Roles and Responsibilities

The delegated employer, in terms of section 16(2) of the OHS Act, together with the appointed responsible managers as per the OHS roles and responsibilities and statutory standard (240–62582234), shall be responsible for ensuring compliance with this specification in their designated area of responsibility.

2.6 Process for Monitoring

Compliance with the requirements of this specification shall be audited by the operating unit/business unit at least annually as part of an internal review process.

All records shall be audited by the Assurance and Forensic Department (A&F) or any person delegated by A&F to carry out the audit and at a frequency determined by A&F.

2.7 Related/Supporting Documents

- [1] 240-103139003 Fall Arrest System and Rescue Checklist
- [2] 240-100979553 Appointment of a Fall Arrest System Inspector
- [3] 240-103763416 PPE for Work at Heights Specification Leadership Questionnaire

3. Personal Protective Equipment for Work at Heights Specification

3.1 General Requirements

- a) An employer shall ensure that all information, instructions and training on the usage of PPE for work at heights is communicated to all applicable employees prior to its use. This shall include the limitations of identified equipment/accessories.
- b) An employer shall not require or permit any employee to work unless such an employee is issued with the required work at heights safety equipment and makes proper use thereof.
- c) The warranty shall be at least 12 months for each component of the fall arrest system supplied.
- d) The marking on all FAS components shall be as described in SANS 50365.
- e) The marking on all FAS components shall have a transparent cover to preserve markings for the duration of the unit.
- f) The marking on all FAS components shall have a serial number for traceability.
- g) The harness shall:
 - be comfortable
 - have adequate buttocks support

CONTROLLED DISCLOSURE

When downloaded from the document management system, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorized version on the system.

No part of this document may be reproduced without the expressed consent of the copyright holder, Eskom Holdings SOC Ltd, Reg No 2002/015527/30.

- have straps guides to prevent the end of loose straps flapping; must be circumferential
 - have a chest support that joins shoulder straps in the front
 - have ease of fastening and fitting
- h) Adjustment to remain constant. No movement allowed after fitting.
- i) There is a preference for relatively lighter weight units. That is relative to what a worker can comfortably wear on a structure and various products which are available in the market place.
- j) The FAS unit must be supplied in a hold bag.
- k) The life expectancy of the work at height equipment shall be determined by the manufacture

3.2 Minimum Requirements of a Fall Arrest System

3.2.1 Full body harness

- a) The full body harness shall be manufactured according to Eskom-specified sizes. A means of adjustment shall be provided.
- b) The full body harness shall not be easily disassembled. It is required that it shall be so constructed that it is not possible to disassemble without the use of a tool or equipment.

3.2.2 Lanyards

3.2.2.1 Sewing threads

- a) The sewing threads shall be of the same material as the webbing, but shall be of contrasting colour to facilitate visual inspection

3.2.2.2 Work positioning lanyard

- a) Work positioning lanyards made from chains or wire ropes shall not be used.
- b) The work positioning lanyard shall have a protective sleeve of not less than 600 mm and shall be made of webbing. The protective sleeve shall be able to slide open for inspection purposes.

3.2.2.3 Safety lanyards

- a) The maximum force that is allowed during the braking period of a fall shall not exceed 6 kN for the safety lanyards.
- b) The length of a lanyard shall not be more than 1,75 m. The safety lanyard shall be made from synthetic fibre rope or webbing.
- c) Wire rope and chain lanyards shall not be used.
- d) The sewing thread shall be of the same material as the webbing but shall be of contrasting colour to facilitate visual inspection.

CONTROLLED DISCLOSURE

When downloaded from the document management system, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorized version on the system.

No part of this document may be reproduced without the expressed consent of the copyright holder, Eskom Holdings SOC Ltd, Reg No 2002/015527/30.

- e) The energy absorber and the lanyard shall form an integral part of the lanyard (no loop on the connecting point sun brim).

3.2.3 Connectors and attachment elements

- a) All metallic components (excluding karabiners and pylon hooks) shall be of stainless steel or aluminium alloy construction.
- b) All metallic components shall bear a serial number and an SWL value plus name of manufacturer.
- c) The connectors shall be capable of being opened only by at least two consecutive deliberate manual actions (no screw-gate connector). The connector shall withstand a force of 15 kN without tearing or rupture when tested as described in SABS EN 362:1992 paragraph 5.1.
- d) Karabiner and pylon hooks must be of a weatherproof, non-corrosive alloy (not weatherproof coated), e.g. aluminium alloy or stainless steel.
- e) Pylon hooks shall be lightweight and durable and have a minimum gate-opening aperture of 60 mm.

3.2.4 Attachment straps

- a) The attachment straps supplied for fall arrest purposes shall comply with SABS EN 795:1996 and SABS EN 566.
- b) The attachment strap shall have a lined cover sleeve for the purpose of:
 - wear protection
 - grip to vertical undressed poles and structures
- c) The lined cover sleeve shall have:
 - a standard warp/wet weave with acrylic finish, which has proven to work best for adhesion and workability on poles.
 - cover material constructed from polyester yarn, for adhesive in dry. The attachment strap cover shall be 45 mm wide, and shall be black in colour.
- d) The attachment strap shall not have any metallic constituent material in it.

3.2.5 Fall Arrest System Live Work

- a) All the basic components are the same as the normal FAS used by non-live work members, but shall have the following attributes which are specific to HV/MV live work equipment
- b) The live work unit shall also be:
 - flame resistant
 - non-conductive webbing, and
 - labelled as flame resistant and non-conductive

CONTROLLED DISCLOSURE

When downloaded from the document management system, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorized version on the system.

No part of this document may be reproduced without the expressed consent of the copyright holder, Eskom Holdings SOC Ltd, Reg No 2002/015527/30.

3.2.6 Rope Access System

- a) The rope access system shall be able to integrate with the existing specified FAS system.
- b) The rope shall comply with SABS EN 341 class A 10-11 mm and PrEN 12841 type C 10-13 mm.
- c) The size of the rope grab device shall range of 8 mm to 12 mm.
- d) A low stretch/static inner shroud rope, 11 mm, to be used with an Ultimate Tensile Strength (UTS) of at least 2 040 kg.
- e) The length of rope shall be according to the requirement of the specification.
- f) The colour of the rope shall be any colour except red, which is exclusively reserved for the rescue kit.
- g) The knot in the rope shall be sealed on the one end.
- h) The pylon hook on the rope shall be sealed on the other end.
- i) A serial number shall be marked on the rope.

3.2.7 Protector bags

- a) The protector bag for the fall arrest system shall be labelled according to the supplier's details.
- b) The bag shall be easy to carry.
- c) The bag may be any colour except red, which is exclusively reserved for the rescue kit.
- d) The bags shall be labelled as follows:
 - "Fall Arrest System – Powerlines" for Powerlines FAS
 - "Fall Arrest System – Live work" for live work FAS
 - "Fall Arrest System – Subs and aux" for substation FAS
 - "Fall Arrest System – Rope Access" for rope access systems
 - "Fall Arrest System – Retractable" for retractable FAS
 - "Fall Arrest System – Rescue" for rescue kit
 - "Fall Arrest System – Climb Safe" for climb safe FAS
- e) For cylinder/round type bags, the size of the top of the bag shall be 420 mm for ease of packing and unpacking of the harness.
- f) For carry bags with zip opening, bag size shall be 420 mm for ease of packing and unpacking of the harness.

CONTROLLED DISCLOSURE

When downloaded from the document management system, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorized version on the system.

No part of this document may be reproduced without the expressed consent of the copyright holder, Eskom Holdings SOC Ltd, Reg No 2002/015527/30.

3.2.8 Remote Access Connector

- a) The remote pylon hook used shall comply with the requirements for connectors.
- b) The remote connector shall be able to attach and remove safely by means of a standard Eskom link stick. If the remote connector does not fit onto a standard Eskom link stick an adapter fitting onto the Eskom link stick shall be provided.
- c) The remote connector shall be able to attach safely onto standard Eskom plant (e.g. MV pole eye bolt, HV pylon structures).

3.2.9 Retractable Fall Arrestor

- a) The retractable FAS shall integrate with the existing basic FAS unit.
- b) The descender device shall:
 - comply with SABS EN 341 class A10-11 mm and PrEN 12841 type C10-13 mm.
 - have a registered breakable seal, applied to the descender device for inspection purposes.
 - have a minimum load bearing capability of 150 kg.
 - have a double brake system.
 - be attached to a rope and it should not be required to reeve the rope through the descender device.

3.3 FAS Rescue Kit

- a) The rescue kit shall be packaged to accommodate easy use and practicable to take up.
- b) The rescue kit shall be taken up as a standard practice when working.
- c) The rescue kit shall consist of the following:
 - a red bag labelled 'rescue kit' with shoulder straps.
 - a double brake descending device as per the specification.
 - a rope system that is weather proof labelled and numbered and marked.
 - two stainless steel karabiners.
 - one webbing cutter.

3.4 Hard Hat

- a) The hard hat shall:
 - be SANS marked.
 - be suitable for industrial climbing and normal ground work application.
 - have an adjustable webbing three point chin strap, using lock-in type clip.
 - have a shortened sun peak.
 - have a limited side rim/gutter.

CONTROLLED DISCLOSURE

When downloaded from the document management system, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorized version on the system.

No part of this document may be reproduced without the expressed consent of the copyright holder, Eskom Holdings SOC Ltd, Reg No 2002/015527/30.

- have a webbing suspension harness.
- have a thick sweatband, approximately 4.5 cm.
- have an adjustable head band (standard size 53 – 63 cm).

3.5 Additional Back Support

- a) A device which wraps over the existing portion of the Full Body Harness belt to allow for added back support when working long hours at height is required, or for back sensitivity.
- b) Additional back support shall be able to easily attach onto existing FAS (e.g. Velcro straps).

3.6 Aerial bucket work

- a) An adjustable single safety lanyard, not to exceed 1,75 m at full extension, with twist-lock karabiner on one end and screw-gate karabiners on the other end may be used.

3.7 Kit: Telescopic stick

- a) The frog karabiner with telescopic stick, 460 mm long and extendable to 3 200 mm in a holdall bag.
- b) All the requirements in the SANS 795 must be adhered to.

3.8 Test and certification requirements

- a) Type Test certificates shall be issued by an accredited third party laboratory.
- b) Declaration of conformity certificate per product supplied issued by the manufacture.
- c) For each requirement there shall be an equivalent test certification unless the tests are already covered in the relevant normative references.
- d) The third party suppliers shall submit a document to confirm that the test laboratory is duly authorised by an appropriate accredited body.

3.9 Instruction for use, maintenance, periodic examinations, repair, marking and packaging

- a) The general requirements for instructions for use, maintenance, periodic examinations, repair, marking and packaging shall be according to SANS 50365 EN 365 standard.
- b) Documents on the information supplied by the manufacturer shall be according to the relevant standard.
- c) The marking on all FAS components shall have a transparent cover to preserve markings for the duration of the unit.

CONTROLLED DISCLOSURE

When downloaded from the document management system, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorized version on the system.

No part of this document may be reproduced without the expressed consent of the copyright holder, Eskom Holdings SOC Ltd, Reg No 2002/015527/30.

d) The FAS shall be:

- kept as a unit at all times (in a bag)
- Discarded if it has experienced a fall. .
- Inspected every three months by a person appointed in writing as being competent, but that does not absolve the user of the responsibility to inspect the FAS before every usage.

4. Acceptance

This document has been seen and accepted by:

Name	Designation
Sivi Govender	Chief Advisor OHS Governance and Assurance
Nosipho Noveve	Middle Manager OHS Performance
Robin Pillay	Middle Manager Contractor Safety
Work at heights Workgroup	
OHS Steering Committee	

5. Revisions

Date	Rev.	Remarks
November 2015	01	New specification developed due to operational requirements

CONTROLLED DISCLOSURE

When downloaded from the document management system, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorized version on the system.

No part of this document may be reproduced without the expressed consent of the copyright holder, Eskom Holdings SOC Ltd, Reg No 2002/015527/30.

6. Development Team

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

- Ishmael Ledingwane Group Technology: Engineering
- Piet Pretorius Distribution
- Freddy Werner Distribution
- Corrie Van der Merwe Distribution
- Xolile Myoyo Distribution
- Eric Mohlodine Generation
- Oscar Manaka Telecommunications
- Buks De Klerk Transmission
- Diff De Villiers Group Technology: Asset Management
- Arrie Botha Group Capital
- Rebecca Tshabalala Eskom Academy of Learning
- Pilasande Qika Group Customer Services
- Mangaga Singo Sustainability
- Thulani Ngwenya Sustainability
- Ntokozo Ngubane Sustainability
- Nompumelelo Bofu Group Technology: Line Engineering Services

7. Acknowledgements

- N/A.

CONTROLLED DISCLOSURE

When downloaded from the document management system, this document is uncontrolled and the responsibility rests with the user to ensure it is in line with the authorized version on the system.

No part of this document may be reproduced without the expressed consent of the copyright holder, Eskom Holdings SOC Ltd, Reg No 2002/015527/30.