



Kenya Power

TITLE:

**SPECIFICATION FOR
OVERHEAD LINES
LOAD HANDLING DEVICES**

Part 1: Special Ladders and
Tubular Platforms

Doc. No.

KP1/3CB/TSP/09/060-1

Issue No.

1

Revision No.

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0.1 Circulation List

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0.2 Amendment Record

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FOREWORD

This specification has been prepared by the Research and Development Department in collaboration with Distribution Division, both of The Kenya Power and Lighting Company Limited (KPLC) and it lays down requirements for overhead lines load handling devices (special ladders and tubular platforms) for use on power lines. It is intended for use by KPLC in purchasing the items.

It shall be the responsibility of the manufacturer to ensure adequacy of the design and good engineering practice in the manufacture of the special ladders and tubular platforms for KPLC. The supplier shall also submit information which confirms satisfactory service experience of the manufacturer with products which fall within the scope of this specification.

1. SCOPE

- 1.1. This specification is for overhead lines load handling devices (special ladders and tubular platforms) for use on overhead power lines (distribution networks) and shall include:
- a) Aluminium Suspension Ladder
 - b) Fibre Glass Extension Ladders
 - c) Aluminium Work-Platforms For Tubular Or Polygonal Poles
- 1.2. The specification also covers inspection and test of the special ladders and tubular platforms as well as schedule of Guaranteed Technical Particulars to be filled, signed by the manufacturer and submitted for tender evaluation.
- 1.3. The specification stipulates the minimum requirements for special ladders and tubular platforms; acceptable for use in the company and it shall be the responsibility of the supplier to ensure adequacy of the design, good engineering practice, adherence to the specification and applicable standards and regulations as well as ensuring good workmanship in the manufacture of the special ladders and tubular platforms for The Kenya Power & Lighting Company.

The specification does not purport to include all the necessary provisions of a contract.

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2. REFERENCES

The following standards contain provisions which, through reference in this text constitute provisions of this specification. Unless otherwise stated, the latest editions (including amendments) apply:

- ISO 1461: Hot dip galvanizing coatings on fabricated iron and steel articles. Specification and test methods
- BS EN 1706: Aluminium and aluminium alloys. Castings. Chemical composition and mechanical properties.
- BS EN 362: Personal protective equipment against falls from a height. Connectors
- BS EN 353-1: Personal protective equipment against falls from a height. Guided type fall arresters including a rigid anchor line
- BS EN 131-1: Ladders. Specification for terms, types, functional sizes
- BS EN 131-2: Ladders. Specification for requirements, testing and markings.
- ANSI A14.5: Ladders - Portable Reinforced Plastic - Safety Requirements

3. TERMS AND DEFINITIONS


For the purpose of this specification the definitions given in the reference standards shall apply.

4. REQUIREMENTS

4.1. SERVICE CONDITIONS

The special ladders and tubular platforms shall be tropicalized, designed and constructed for continuous outdoor operation in tropical areas and harsh climatic conditions including areas exposed to:

- Sea spray (along the coast),
- Humidity of up to 95% and
- Average ambient temperature of +30°C with a minimum of -1°C and a maximum of +40°.

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4.2. DESIGN AND CONSTRUCTION

4.2.1. Aluminium Suspension Ladder

- 4.2.1.1. The design, manufacture and testing of the aluminium suspension ladders shall conform to BS EN 131: part 1 & 2.
- 4.2.1.2. The ladder shall be manufactured from aluminium alloy designation LM4, minimum tensile strength 280 N/mm² conforming to BS EN 1706 standard welded structure (TIG system) with corrugated rungs and interchangeable tubular hot dip galvanized (to ISO 1461) steel hook "C" type standard supply, with safety chain device.
- 4.2.1.3. The ladder shall be suitable for vertical suspension using the corrugated rungs and the tubular steel hooks with minimum opening of 220mm, complete with safety chains and connectors conforming to BS EN 362, fitted to prevent the ladder becoming detached from the anchoring position. The hooks shall be attached to a light aluminium alloy structure, with tubular rails.
- 4.2.1.4. The ladder shall be equipped with integrated anti-fall device (fall arrester), fixed type (not dismountable), sliding along a T guide fixed to one rail of the ladder. The fall arrester shall be complete with an energy absorber, compliant with standard BS EN 353-1:2002.
- 4.2.1.5. The ladder shall have corrugated anti-sliding round rungs, made of aluminium, welded to the lateral structure of the ladder, with a distance of 300mm between two rungs.
- 4.2.1.6. The minimum Safe Working Load shall be 3kN and minimum breaking load of 15kN. The sizes of the ladder and other design requirements shall be as per Table 1 and Fig. 1a & b :

Table 1: Sizes of suspension ladders

Length, L	Number of fall arrestors	Weight of ladder
m		Kg
4	1	15.4
6	2	23
8	2	30

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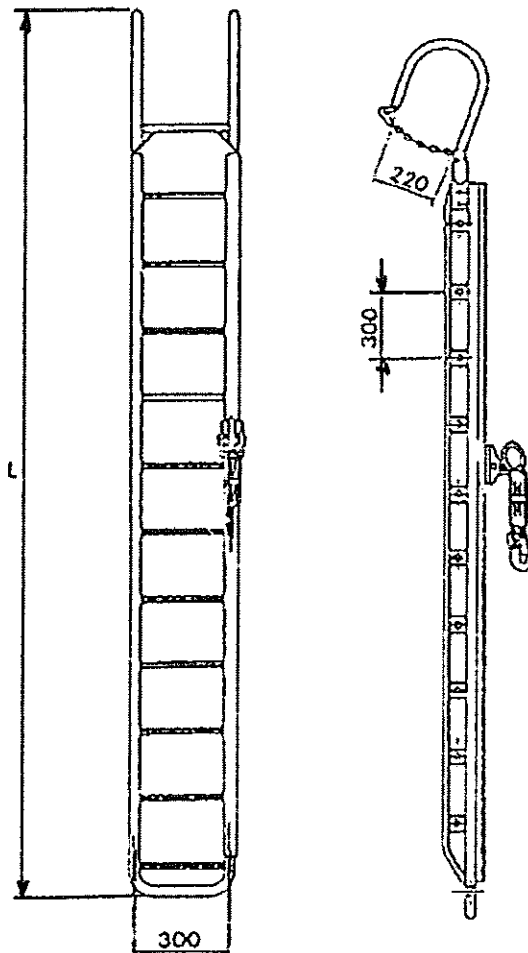


Fig. 1a: Suspension ladder

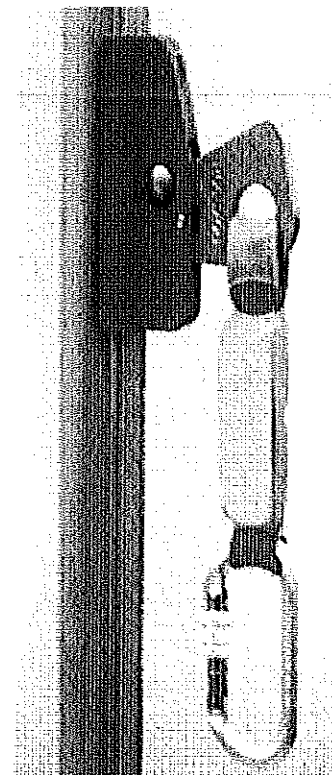


Fig. 1b: Fall arrestor.

4.2.2. Fibre Glass Extension Ladders

4.2.2.1. The ladder shall be designed and manufactured according to BS EN 131 standard. It shall be a type I, heavy-duty industrial ladder with a 120kg duty rating as per ANSI A14.5-2000.

4.2.2.2. The material used shall compose of fibreglass-reinforced plastic side rails (coated with an epoxy material compatible with the fibreglass), open C shaped section with minimum dimensions of 72mm x 30mm.

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- 4.2.2.3. The rungs shall have a rectangular profile with anti-sliding surface, dimensions 20mm x 35mm. They shall be connected to the rails by means of at least 8 rivets (4 on each rail), the fixing plate between rung and rail should be made of aluminium with a minimum safe working load (SWL) of 1.50kN.
- 4.2.2.4. All elements composing the ladder should be separable and usable stand-alone as simple ladder. All of them equipped with anti-sliding cap on the bottom part.
- 4.2.2.5. The base shall have swivelling feet with anti-sliding surface made of suitable plastic. The contact surface shall be at least L120mm x B65mm x H25 mm. The feet shall be reinforced with hot dip galvanized (to ISO 1461) steel plate included inside the anti-sliding surface.
- 4.2.2.6. The ladder shall be equipped with a device allowing the ladder to lean against the pole or move along the pole. This device shall be complete with nylon strap and buckle to secure the ladder connection to the pole.
- 4.2.2.7. The device shall allow the ladder to run on the pole by means of 2 rollers placed at a V-geometry and covered by plastic material.
- 4.2.2.8. The ladder shall be equipped with an external adjustable foot, detachable and capable to compensate differences in levels up to at least 20 cm to the ground.
- 4.2.2.9. All elements shall be complete with rollers to facilitate the extension of the ladder. The running brackets shall be made of hot dip galvanized (to ISO 1461) steel and covered by anti-wear material.
- 4.2.2.10. The complete ladder shall have the following dimensions:
 - a) Closed length shall be 4.260m
 - b) Extended length of 11.0m
- 4.2.2.11. The manufacturer of the ladder shall issue certificates of conformity with the relevant International Standards at the time of placing the order. These certificates shall always be available for all the usage of the ladder.

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4.2.2.12. The ladder shall be clearly identifiable by means of a metal plate as per clause 6.1 and design shall resemble that of Fig. 2

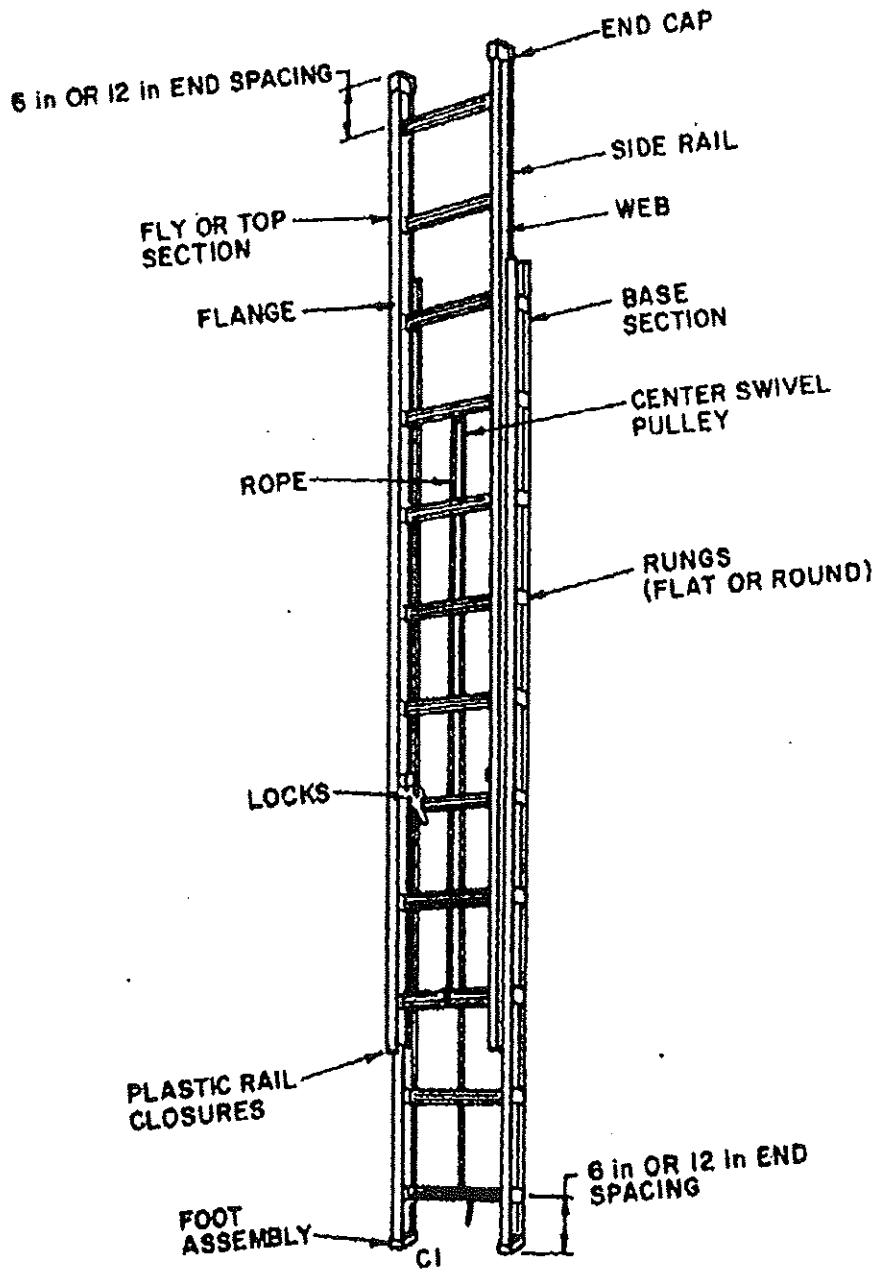


Fig. 2: Fiberglass extension ladder

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4.2.3. Aluminium Work - Platforms for Tubular or Polygonal Poles

- 4.2.3.1. The platform shall be manufactured from aluminium alloy designation LM4, minimum tensile strength 280 N/mm² conforming to BS EN 1706 standard
- 4.2.3.2. The design shall include a serrated pole-gripping device, incorporating a non-slip open plate platform.
- 4.2.3.3. The platform shall have a safe working load of 2.5 kN and the pole step shall have a safe working load of 1.5 kN.
- 4.2.3.4. The platform shall be suitable for securing onto a round wood/concrete pole of diameter of 270 mm – 320 mm. It shall be supplied complete with all relevant accessories for securing on poles including securing chain and lock; pole mounting brackets and securing bolts, nuts and at least two washers.
- 4.2.3.5. The brackets, bolts, nuts and washers shall be made of hot dip galvanized steel conforming to ISO 1461 standard requirements.
- 4.2.3.6. The platform shall be of light weight approximately 13 kg and shall be easy to mount on a pole without the assistance of specialised equipment
- 4.2.3.7. The design of the platform shall be as per Fig. 3. A complete drawing of the platform including the accessories shall be forwarded for approval before manufacture by the tenderers.

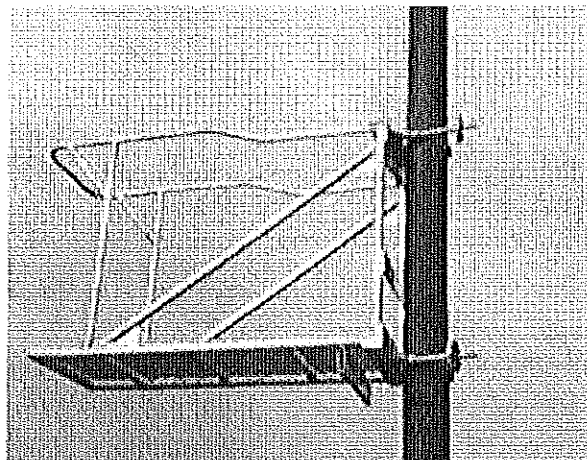


Fig. 3: Aluminium Work - Platforms for Tubular or Polygonal Pole

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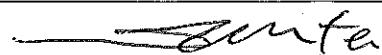
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4.3. Quality Management System

- 4.3.1. The supplier shall submit a quality assurance plan (QAP) that will be used to ensure that the design, material, workmanship, tests, service capability, maintenance and documentation of the special ladders and tubular platforms fulfil the requirements stated in the contract documents, standards, specifications and regulations. The QAP shall be based on and include relevant parts to fulfil the requirements of ISO 9001:2008.
- 4.3.2. The Manufacturer's Declaration of Conformity to applicable standards and copies of quality management certifications including copy of valid and relevant ISO 9001: 2008 certificate shall be submitted with the tender for evaluation.
- 4.3.3. The bidder shall indicate the delivery time of the special ladders and tubular platforms, manufacturer's monthly & annual production capacity and experience in the production of the type and size of items being offered.

5.0. TESTS AND INSPECTION

- 5.1. The special ladders and tubular platforms shall be inspected and tested in accordance with the requirements of ISO 1461, BS EN 1706, BS EN 362, BS EN 353-1, BS EN 131-1 & 2 and ANSI A 14.5 standards and all the provisions of this specification. It shall be the responsibility of the supplier to perform or to have performed the tests specified and whatever other tests he normally performs at works.
- 5.2. Copies of previous Type Tests Reports issued by a third party testing laboratory that is accredited to ISO/IEC 17025 shall be submitted with the tender for the purpose of technical evaluation. The accreditation certificate to ISO/IEC 17025 for the same third party testing laboratory used shall also be submitted with the tender document (all in English Language)
- 5.3. The ladders and tubular platforms shall be subject to acceptance tests at the manufacturer's works before dispatch. Acceptance tests shall be witnessed by two Engineers appointed by The Kenya Power and Lighting Company Limited (KPLC). Routine and Sample Test Reports for the load handling accessories to be supplied shall be submitted to KPLC for approval before delivery of the goods.
- 5.4. On receipt of the product, KPLC will perform any of the tests specified in order to verify compliance with this specification. The supplier shall replace without charge to KPLC the ladders and tubular platforms which upon examination, test or use; fail to meet any of the requirements in the specification.

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6.0. MARKING AND PACKING

6.1. MARKINGS

6.1.1. Special ladders and tubular platforms shall be permanently marked with a manufactures trademark and a serial number for traceability in English Language.

NOTE: Primary hazard "DANGER" and "CAUTION" markings shall conform to the general design principles (and where labels are used) to the design and color principles of these requirements as provided in BS EN 131: part 1 & 2 standard - Appendices "A" and "B" for these kinds of ladders; Appendix B refers to "SAFETY FIRST" and "NOTICE" labels/markings.

6.1.2. The following required information shall be legibly and indelibly inscribed or embossed on the body of the ladder preceded by the word "NOTICE" in boldface and preferably shall be in the following sequence:

- a) Ladder and platform sizes.
- b) Type and duty rating.
- c) Maximum walking length (if extension ladder).
- d) Highest standing level.
- e) Total length of sections (if extension ladder).
- f) Model number or name.
- g) Manufacturer or distributor name (may be logo).
- h) Manufacturing plant (if multi-plant organization may be coded).
- i) Month and year of manufacture.
- j) Standards of manufacture for compliance.
- k) Warranty, if offered (optional).
- l) Words "PROPERTY OF KPLC"

6.2. PACKAGING

6.2.1. The ladders and tubular platforms shall be packed in such a manner so as to avoid damage during transportation and storage. The platform shall be shipped in knocked down form fully packaged in a plastic bag.

6.2.2. The following information shall be printed on a suitable label firmly attached to each packaging:

- a) Purchase order number/tender
- b) Manufacturer's name
- c) Year of manufacture

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- d) Insulated hand tools catalog number
- e) The words, "**PROPERTY OF KENYA POWER & LIGHTING CO.**"

7. DOCUMENTATION

7.1 The bidder shall submit its tender complete with technical documents required by Annex A (Guaranteed Technical Particulars) for tender evaluation. The technical documents to be submitted (all in English language) for tender evaluation shall include the following:

- a) Guaranteed Technical Particulars signed by the manufacturer;
- b) Copies of the Manufacturer's catalogues, brochures, drawings and technical data;
- c) Sales records for the last five years and at least four customer reference letters;
- d) Details of manufacturing capacity and the manufacturer's experience;
- e) Copies of required type test reports by a third party testing laboratory accredited to ISO/IEC 17025;
- f) Copy of accreditation certificate to ISO/IEC 17025 for the third party testing laboratory;
- g) Manufacturers letter of authorization, ISO 9001:2008 certificate and other technical documents required in the tender.

7.2 The successful bidder (supplier) shall submit the following documents/details to The Kenya Power & Lighting Company for approval before manufacture:

- a) Guaranteed Technical Particulars signed by the manufacturer;
- b) Design Drawings with details of ladders to be manufactured for KPLC.
- c) Quality assurance plan (QAP) that will be used to ensure that the design, material; workmanship, tests, service capability, maintenance and documentation will fulfill the requirements stated in the contract documents, standards, specifications and regulations. The QAP shall be based on and include relevant parts to fulfill the requirements of ISO 9001:2008
- d) Detailed test program to be used during factory testing;
- e) Marking details and method to be used in marking the ladders and tubular platforms;
- f) Manufacturer's undertaking to ensure adequacy of the design, good engineering practice, adherence to the specification and applicable standards and regulations as well as ensuring good workmanship in the manufacture of the ladders for The Kenya Power & Lighting Company;
- g) Packaging details (including packaging materials).

7.3 The supplier shall submit recommendations for use, care, storage and routine inspection/testing procedures, all in the English Language, during delivery of the ladders and tubular platforms to KPLC store

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ANNEX A: Guaranteed Technical Particulars (to be filled and signed by the Supplier and submitted together with copies of manufacturer's catalogues, brochures, drawings, technical data, sales records, customer reference letters and copies of certificates/test reports for tender evaluation)

Tender No.

Clause number	Bidder's offer (indicate full details of the offered item for each requirement of the tender & specification)
Bidder's Name	
Manufacturer's Name, address and country	
Type reference/model number of item(s) offered	
Scope: 1.1	
1.2 Overhead lines load handling devices	
a) Aluminium Suspension Ladder	
b) Fibre Glass Extension Ladders	
c) Tubular Platforms	
2.0 Applicable Standards (References)	
3.0 Terms & definitions	
4.0 Requirements	
4.1 Service conditions	
4.2 Design and construction	
4.2.1 Aluminium Suspension Ladder	
4.2.1.1. -4.2.1.6.	
4.2.2 Fiber Glass Extension Ladders	
4.2.2.1 – 4.2.2.12	
4.2.2.3 Tubular platforms	
4.2.3.1– 4.2.3.7	
4.3 Quality Management System	
4.3.1 – 4.3.3	
5.0 Tests and Inspection	
5.1 – 5.4	
6.0 Marking and Packing	
6.1 Packing	
6.1.1	
6.1.2	
6.2 Marking	

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6.2.1	
6.2.2	
7.0 Documentation	
7.1 Completed tender document	
7.2 Catalogues, brochures, drawings & technical data submitted with offer	
8.0. Manufacturer's Guarantee and Warranty	
9.0 List catalogues, brochures, technical data and drawings submitted to support the offer.	
10.0 List customer sales records and reference letters submitted to support the offer.	
11.0 List Test Certificates submitted with tender	
12.0 List test reports of overhead lines load handling devices to be submitted to KPLC for approval before shipment	
13.0 Statement of compliance to specification (indicate deviations if any & supporting documents)	

.....
Supplier's Name, Signature, Stamp and Date

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