



Kenya Power

TITLE:

**SPECIFICATION FOR
PULLING AND LIFTING
MACHINES**

Part 3: Cable Rollers and Ratchet
Pullers

Doc. No.	KP1/3CB/TSP/09/061-3
Issue No.	1
Revision No.	0
Date of Issue	2014-08-08
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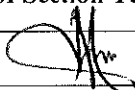
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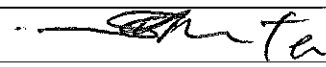
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0.1 Circulation List

COPY NO.	COPY HOLDER
1	Research & Development Manager
2	Supply Chain Manager (Procurement)
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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 line pulling and lifting machines (cable rollers and ratchet pullers) for use on power lines. It is intended for use by KPLC in purchasing the item.

1. SCOPE

- 1.1. This specification is for pulling and lifting machines for use on distribution power lines by KPLC teams and shall include:
 - a) Cable Rollers
 - (i) Straight cable rollers
 - (ii) Triple Cable Corner Rollers
 - b) Ratchet Puller
- 1.2. The specification also covers inspection and test of the cable rollers and ratchet pullers 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 cable rollers and ratchet pullers 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 cable rollers and ratchet pullers for The Kenya Power & Lighting Company.

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

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 9001: Quality management systems -- Requirements

BS EN 1706: Aluminium and aluminium alloys. Castings. Chemical composition and mechanical properties.

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3. TERMS AND DEFINITIONS

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

4. REQUIREMENTS

4.1. SERVICE CONDITIONS

The cable rollers and ratchet pullers shall be tropicalized, designed and constructed for continuous outdoor operation in tropical areas and harsh climatic conditions including areas exposed to:

- a) Sea spray (along the coast),
- b) Humidity of up to 95% and
- c) Average ambient temperature of +30°C with a minimum of -1°C and a maximum of +40°C.
- d) Altitudes of up to 2000m above the sea level.

4.2. PARTICULAR REQUIREMENTS

4.2.1. Cable Rollers

- 4.2.1.1. Cable rollers in this specification shall include straight cable rollers and triple corner cable rollers for pulling underground cables into trenches and ducts up to 33kV. Cable rollers shall entirely be applicable when pulling cables and related products.
- 4.2.1.2. The design shall include a hot dip galvanized reinforced steel tube frame, fitted with large waisted solid high strength aluminium alloy roller running on low friction sintered bushes as shown in Fig. 1 & 2.
- 4.2.1.3. The aluminium used shall lightweight high strength aluminium alloy designation LM4, tensile strength of 280 N/mm² conforming to BS EN 1706 standard, easy to handle and compact.

a) Straight cable rollers

It shall have the following characteristics:

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- (i) A durable flat trench high strength aluminium alloy (see clause 4.2.1.3) guide of about 140mm that can also be turned on its side for corner pulls.
- (ii) A 125kg SWL aluminium roller which comes standard with sealed bearing.
- (iii) A roller that shall be placed behind the direction of pull and be offset from centre to reduce the possibility of the roller tipping forward during pulling operations.
- (iv) A general design that shall have an approximate base size of 350mm x 300mm , and weigh 8 kg
- (v) The heavy duty cable rollers shall be suitable for laying cables up to 400mm² cross sectional area. The straight cable roller shall resemble Fig. 1.

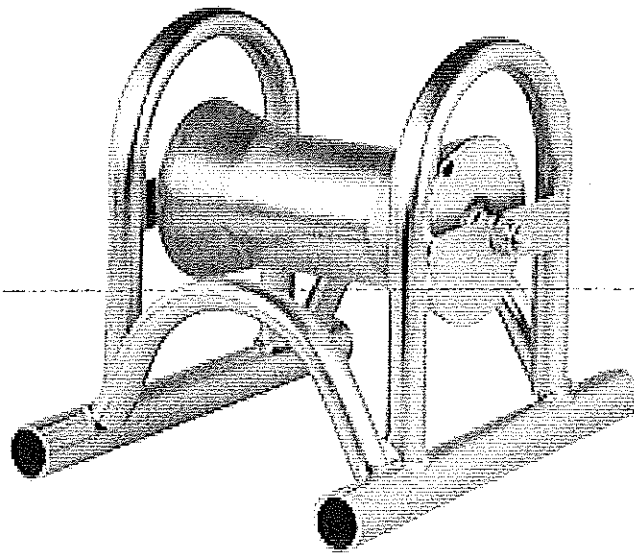



Fig. 1: Straight cable rollers

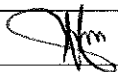
b) Triple Cable Corner Rollers

- (i) This design shall have two vertical and one horizontal steel roller identical to the straight cable roller (see clause 4.2.1.3 a) for taking the heaviest cables round difficult corners.
- (ii) The assembly shall be of a robust construction for use in the most arduous conditions and can be linked together with stake pins provided to form a continuous corner roller system.

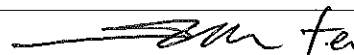
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(iii) General designed shall have approximate size of Height: 295mm; Width: 290mm; Length: 540mm and Weight: 12Kgs

(iv) The general design arrangement shall be as per Figure 2.

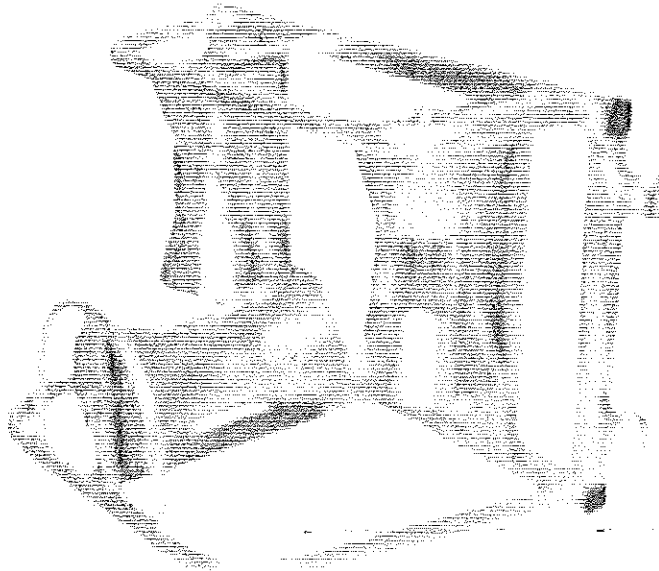



Fig. 2: Triple Corner Cable Roller

4.2.2. Ratchet Puller

- 4.2.2.1. This shall be a one (1) ton mini ratchet puller-tension type machine and shall be suitable for use by linesmen for tensioning low voltage conductors of sizes from 25mm² AA to 100mm² AA at maximum spans of 60 meters between the poles.
- 4.2.2.2. The ratchet wheel shall be made from precision cast aluminium alloy designation LM4, tensile strength 280 N/mm² conforming to BS EN 1706 standard.
- 4.2.2.3. The equipment shall have interlocking, precision fit, steel alloy pawls with safety spacer sleeve and cold -rolled, high strength tempered steel frame and handle.

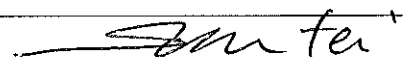
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- 4.2.2.4. The equipment shall drop forged steel slip hooks with robust safety latches and heavy gauge steel reinforced ratchet guard.
- 4.2.2.5. The bolts shall be heat-treated, while the equipment shall have a high tensile fully rotating steel swivel with permanent, comfortable, non-slip grip.
- 4.2.2.6. Each unit shall be supplied with a cable clamp / come along clamp (refer to KP1/3CB/TSP/09/061-1) suitable for gripping low voltage cables in AA of up to 100 sq. mm. The bid shall therefore include per unit cost of the mini ratchet + clamp to form the complete bid for this item and the award for both items (ratchet + clamp) shall be awarded to the same winning bidder.

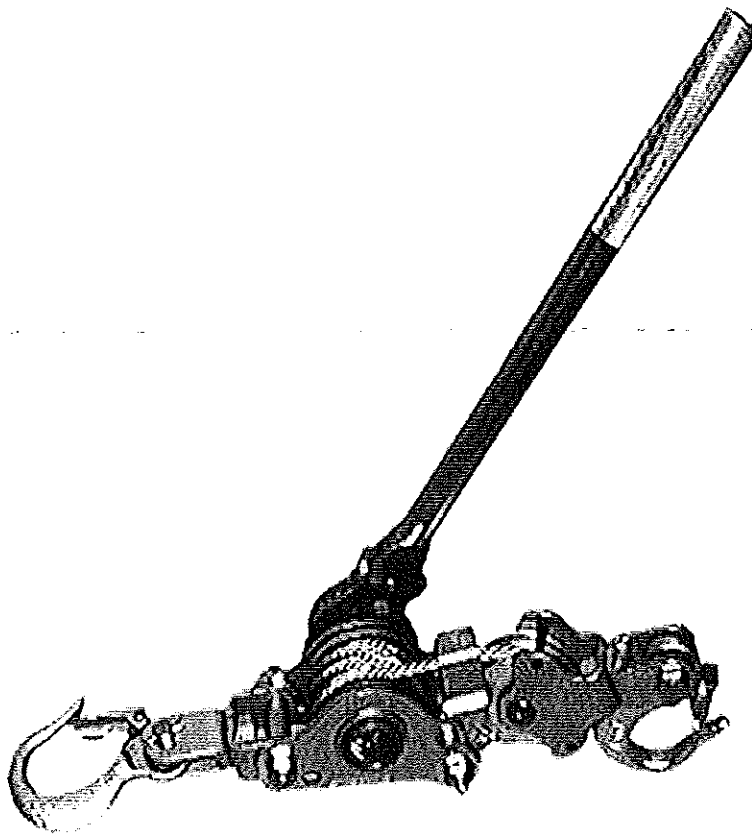


Figure 3: Mini ratchet puller

4.3. QUALITY MANAGEMENT SYSTEM

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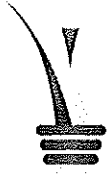
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- 4.3.1. The supplier shall submit a quality assurance plan (QAP) that will be used to ensure that the design, material, workmanship, tests, service capability, maintenance and documentation of the cable rollers and ratchet pullers fulfil the requirements 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 cable rollers and ratchet pullers, 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 cable rollers and ratchet pullers shall be inspected and tested in accordance with the requirements of the respective 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 cable rollers and ratchet pullers 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 cable rollers and ratchet pullers 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 cable rollers and ratchet pullers which upon examination, test or use; fail to meet any of the requirements in the specification.

6.0. MARKING AND PACKING

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6.1. MARKINGS

All cable rollers and ratchet pullers shall be permanently marked with a manufacturer's trademark and a serial number on a top part of the stick for traceability in English Language.

- a) Standard of manufacture
- b) Identity of the manufacturer
- c) Type reference number
- d) The standard of manufacture
- e) Words "PROPERTY OF KPLC".

6.2. PACKAGING

6.2.1. The cable rollers and ratchet pullers shall be packed in such a manner so as to avoid damage during transportation, handling and storage.

6.2.2. Each cable rollers and ratchet pullers shall be packaged in a waterproof storage bags that help guard against contaminants and abrasion. This shall help maintain their original properties.

6.2.3. 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
- 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) Fully filled clause by clause Guaranteed Technical Particulars (GTP) signed by the manufacturer;
- b) Copies of the Manufacturer's catalogues, brochures, drawings and technical data;

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
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- 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:

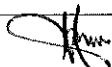
- a) Guaranteed Technical Particulars signed by the manufacturer;
- b) Design Drawings with details of cable rollers and ratchet pullers to be manufactured for KPLC.
- c) Quality assurance plan (QAP) that will be used to ensure that the design, material; workmanship, tests, service capability, maintenance and documentation will 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
- d) Detailed test program to be used during factory testing;
- e) Marking details and method to be used in marking the cable rollers and ratchet pullers;
- 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 cable rollers and ratchet pullers 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 cable rollers and ratchet pullers devices to KPLC stores.

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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 Pulling and lifting machines	
a) Cable Rollers	
(i) Straight cable rollers	
(ii) Triple Cable Corner Rollers	
b) Ratchet Puller	
1.2 – 1.3.	
2.0 Applicable Standards (References)	
3.0 Terms & definitions	
4.0 Requirements	
4.1 Service conditions	
4.2 Particular requirements	
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4.2.1.1 - 4.2.1.2	
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b) Triple corner cable rollers	
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4.3 Quality Management System	
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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 cable rollers and ratchet pullers 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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