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Kenya Power

SPECIFICATION FOR STRAIN LINK STICK, SPIRAL LINK STICK AND ROLLER LINK STICK FOR LIVE-LINE WORK

A Document of the Kenya Power & Lighting Plc

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Table of Contents

0.1 Circulation List 2
0.2 Amendment Record 3
0.3 Foreword 4
1. SCOPE 5
2. NORMATIVE REFERENCES 5
3. DEFINITIONS AND ABBREVIATIONS 5
3.1 Abbreviations 5
3.2 Definitions 6
4. REQUIREMENTS 7
4.1 Service Conditions 7
4.2 Design and Construction 7
4.3 Insulating Pole 8
4.4 Strain Link Stick 8
4.5 Spiral Link Stick 9
4.6 Roller Link Stick 9
4.7 Mechanical Requirements 10
4.8 Accessories 10
4.9 Technical Particulars 10
5. TEST REQUIREMENTS 11
6. MARKING AND PACKING 12
6.1 Marking 12
6.2 Packing 12
7. WARRANTY 12
8. TRAINING 13
8.1 Training at the manufacturer's premises 13
8.2 Local Training 13
APPENDICES 14
A: TESTS AND INSPECTION (Normative) 14
B: QUALITY MANAGEMENT SYSTEM (Normative) 14
C: TECHNICAL DOCUMENTATION (Normative) 14

0.1 Circulation List

Copy No.	Copy Holder
1	Manager Transmission
2	Senior Engineer, Sub-Transmission

REVISION OF KPLC STANDARDS

To keep abreast of progress in the industry, KPLC Standards shall be regularly reviewed. Suggestions for improvements to approved Standards, addressed to the Manager, Standards Department, are welcome.

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0.2 Amendment Record

Rev No.	Date (YYYY-MM-DD)	Description of Change	Prepared by (Name & Signature)	Approved by (Name & Signature)
0	2026-10-19	New issue	Eng. Alistair Akute	Eng. George Korir

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0.3 Foreword

This specification has been prepared by the Transmission Department and Live Line Section, of The Kenya Power and Lighting Company Plc. The specification lays down requirements for the Strain Link Stick, the Spiral Link Stick and the Roller Link Stick for Live-Line Work. It is intended to be used by KPLC live-line teams to support, hold, spread and move energized conductors on 66 kV to 220 kV overhead lines.

Live-line working avoids planned outages, which shortens the time customers are without supply and improves network performance indices such as SAIDI (System Average Interruption Duration Index). Link sticks carry the conductor load while a lineman works on insulators, cross-arms, dead-ends and running corners, and when conductors are moved at mid-span. A link stick is part of the insulation between the lineman and the energized conductor and also carries a mechanical load, so a defect in the insulation or in a metal fitting can be fatal to the crew.

This specification therefore stipulates the minimum requirements for the materials, construction, insulation, mechanical strength, testing, marking, packing and training for link sticks that are acceptable for use on the KPLC power network. The three types are the strain link stick, the spiral link stick, which replaces a strain link stick where a lineman cannot safely install one by hand, and the roller link stick, which spreads and holds conductors at mid-span.

There are no other specifications in this series.

It shall be the responsibility of the suppliers and manufacturers to ensure that the offered design is of the highest quality and guarantees excellent service to KPLC, good workmanship and good engineering practice in the manufacture of the link stick.

Users of Kenya Power specifications are responsible for their correct interpretation and application.

The following are members of the team that developed this specification:

Name	Department	Signature	Date
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1. SCOPE

1.1 This specification covers technical requirements for the strain link stick, the spiral link stick and the roller link stick that shall be used by KPLC live-line teams to support, hold and move energized conductors on 66 kV to 220 kV overhead lines.

1.2 The specification covers requirements for design, inspection and tests, packing, warranty and training for the link sticks.

2. NORMATIVE REFERENCES

The following standards contain provisions which, through reference in this text, constitute provisions of this specification. For dated editions the cited edition will apply; for undated editions the latest edition of the referenced document shall apply.

Standard	Title
ASTM F711	Fiberglass-reinforced plastic (FRP) rod and tube used in live-line tools
IEC 60855-1	Live working – Insulating foam-filled tubes and solid rods – Part 1: Tubes and rods of a circular cross-section
IEC 61235	Live working – Insulating hollow tubes for electrical purposes
IEC 60832 (Parts 1 & 2)	Live working – Insulating sticks and universal tool attachments
IEC 61477	Live working – Minimum requirements for the utilization of tools, devices and equipment
IEC 60060-1	High-voltage test techniques – Part 1: General definitions and test requirements
IEC 60815	Selection and dimensioning of high-voltage insulators intended for use in polluted conditions
IEEE 978	Guide for in-service maintenance and electrical testing of live-line tools
ISO 1461	Hot dip galvanized coatings on fabricated iron and steel articles – Specifications and test methods
ISO 9001	Quality Management Systems – Requirements
ISO/IEC 17025	General requirements for the competence of testing and calibration laboratories

3. DEFINITIONS AND ABBREVIATIONS

For the purpose of this specification, the definitions and abbreviations given in the reference standards shall apply together with the following.

3.1 Abbreviations

Standard	Title
ASTM F711	Fiberglass-reinforced plastic (FRP) rod and tube used in live-line tools
EN 586-2	Aluminium and aluminium alloys – Forgings – Part 2: Mechanical properties and additional property requirements

EN 1706	Aluminium and aluminium alloys – Castings – Chemical composition and mechanical properties
EN 10083-2	Steels for quenching and tempering – Part 2: Technical delivery conditions for non alloy steels
EN 10083-3	Steels for quenching and tempering – Part 3: Technical delivery conditions for alloy steels
IEC 60815	Selection and dimensioning of high-voltage insulators intended for use in polluted conditions
IEC 60832 (Parts 1 & 2)	Live working – Insulating sticks and universal tool attachments
IEC 60855-1	Live working – Insulating foam-filled tubes and solid rods – Part 1: Tubes and rods of a circular cross-section
IEC 61477	Live working – Minimum requirements for the utilization of tools, devices and equipment
IEEE 978	Guide for in-service maintenance and electrical testing of live-line tools
ISO 1461	Hot dip galvanized coatings on fabricated iron and steel articles – Specifications and test methods
ISO 3506-1	Fasteners – Mechanical properties of corrosion-resistant stainless steel fasteners – Part 1: Bolts, screws and studs
ISO 9001	Quality Management Systems – Requirements
ISO 9227	Corrosion tests in artificial atmospheres – Salt spray tests
ISO/IEC 17025	General requirements for the competence of testing and calibration laboratories
OSHA 29 CFR 1910.269	Electric power generation, transmission and distribution (minimum approach distances)

3.2 Definitions

Link stick: an insulating stick with a metal head at one end and a butt ring at the other, used to support, hold or move an energized conductor.

Strain link stick: a link stick with a hook that is attached to the conductor close to the wire tong, to support conductor loads on dead-end structures and running corners.

Spiral link stick: a link stick with a spiral hook and a lifting eye on the head ferrule, so that it can be guided onto the conductor with a hot stick.

Roller link stick: a link stick with a hook and a head that rolls along the conductor, used to spread and hold conductors at mid-span.

Wire tong: a clamp with a hook that grips the conductor so that the conductor load can be taken by rope blocks or link sticks.

Effective insulating length: the length of insulating material between the nearest metal fitting at the working end and the nearest metal fitting at the butt end, in accordance with IEC 60832.

Working load: the maximum load that the link stick is designed to carry in service.

4. GENERAL REQUIREMENTS

4.1 Service Conditions

4.1.1 The link sticks shall be suitable for outdoor use in tropical areas and in harsh climatic conditions including areas exposed to:

a) Altitudes of up to 2200 m above sea level;

b) Humidity of up to 90%;

c) Average ambient temperature of +30 °C with a minimum of -1 °C and a maximum of +40 °C;

d) Isokeraunic levels of up to 180 thunderstorm days per year;

e) Pollution (IEC 60815) Very Heavy: Class IV.

4.1.2 The link sticks shall be used on 66 kV, 132 kV and 220 kV overhead lines at 50 Hz. The network voltage on which the sticks will be used shall be specified for each tender.

4.2 Design and Construction

4.2.1 The link sticks shall be designed, manufactured and tested in accordance with ASTM F711, IEC 60855-1, IEC 60832, IEC 61477 and this specification.

4.2.2 Each link stick shall consist of an insulating FRP pole, a metal ferrule at each end, a conductor head (hook, spiral hook or roller hook, according to the type), and a butt ring.

4.2.3 Hooks and ferrules shall be heat-treated aluminium alloy castings, to give the best strength-to-weight ratio. Butt rings shall be of high-quality steel, for attaching rope blocks or hand lines. Spiral hooks and butt rings of the spiral link stick shall be galvanised steel (ISO 1461) as per table 1 below.

Table 1: Hooks and ferrules, Butt rings and spiral hooks material quality table

Component	Material	Grade / temper	Standard
Hooks and ferrules	Heat-treated aluminium alloy castings	EN AC-42100 (AlSi7Mg0.3) or EN AC-42200 (AlSi7Mg0.6), temper T6 (solution heat-treated and artificially aged)	EN 1706 (casting alloys and properties); EN 1676 for ingots; equivalent to ASTM B26 alloy A356.0-T6
Butt rings	High-quality forged steel, quenched and tempered	C45 (1.0503), or 42CrMo4 (1.7225) for higher strength	EN 10083-2 (C45) or EN 10083-3 (42CrMo4); forgings per EN 10250-2
Spiral hooks and butt rings (spiral link stick)	Steel, hot-dip galvanised	Base steel as above (or S355J2 per EN 10025-2); zinc coating applied afterwards	ISO 1461 (coating); ISO 10684 if the parts are threaded fasteners

4.2.4 The jaw edges of all hooks shall be rounded to prevent scarring of the conductor. All metal parts shall be free from burrs and sharp edges.

4.2.5 The butt swivel shall spin freely on a ball-thrust bearing.

4.2.6 The effective insulating length of each stick, and the voltage class for which it is rated, shall be stated by the tenderer. The effective insulating length shall be not less than the value in Table 2 for the voltage class, and shall not be less than the MAD in the KPLC Safety Rules.

Table 2: Minimum effective insulating length (to be confirmed by KPLC)

Voltage class	Minimum effective insulating length
66 kV	1.4 m (or MAD in KPLC Safety Rules, whichever is greater)
132 kV	1.8 m (or MAD in KPLC Safety Rules, whichever is greater)
220 kV	[2.3 m] (to be confirmed by KPLC against the MAD in the KPLC Safety Rules)

4.2.7 Where the pole length in Tables 3, 4 or 5 is less than the effective insulating length required for the voltage class, the link stick shall be used in series with an insulating hot stick or insulating hand line, and the tenderer shall state the voltage class and the assembly with which the stick has been tested.

4.3 Insulating Pole

4.3.1 The pole shall be made of epoxy-glass FRP tube or rod, foam-filled or solid, complying with ASTM F711 and IEC 60855-1.

4.3.2 The pole surface shall be smooth, hydrophobic and UV resistant, free from cracks, voids, pits, delamination, exposed fibres and resin-starved areas. The ends shall be sealed against moisture, and the ferrules shall be bonded and pinned to the pole.

4.3.3 The pole shall withstand 100 kV (rms, 50 Hz) per 300 mm of pole length for 1 minute, without flashover, puncture or perceptible heating (IEC 60060-1, ASTM F711).

4.3.4 The link sticks shall be tested in accordance with OSHA and ASTM F711 and a test certificate shall be supplied.

4.4 Strain Link Stick

4.4.1 The strain link stick shall be used on dead-end structures and running corners. It shall be attached to the conductor close to the wire tong to support conductor loads, and shall be supported from above by rope blocks that are operated in unison with the rope blocks attached to the wire tong.

4.4.2 The strain link stick shall also be used to support the middle conductor on H-frame structures during insulator or cross-arm changes.

4.4.3 The strain link stick shall comply with ASTM F711 and shall be suitable for live working on systems up to 220 kV. The hook and ferrules shall be heat-treated (T6) aluminium alloy castings of alloy A356.0 to ASTM B26/B26M. The butt ring shall be forged, quenched and tempered steel to ASTM A668/A668M, for attaching rope blocks or hand lines. The butt swivel shall rotate freely on a ball-thrust bearing, with balls and races of high-carbon bearing steel to ASTM A295/A295M. Galvanised steel parts shall comply with ASTM A153/A153M. All jaw edges shall be rounded and free from burrs and sharp projections.

4.4.4 The strain link sticks shall be supplied in the sizes shown in Table 2. The tenderer shall state the weight of each stick.

Table 3: Strain link sticks

Item	Overall length	Pole diameter and length	Conductor diameter range	Maximum working load
SLS-01	11 ft 3 in (3.43 m)	1-1/4 in x 10 ft (31.75 mm x 3.05 m)	0.22 to 0.75 in (5.6 to 19.1 mm)	3,500 lb (15.6 kN)
SLS-16	13 ft 2 in (4.01 m)	1-1/2 in x 12 ft (38.1 mm x 3.66 m)	1.00 to 2.50 in (25.4 to 63.5 mm)	6,500 lb (28.9 kN)

4.5 Spiral Link Stick

4.5.1 The spiral link stick shall replace the strain link stick where the lineman cannot safely install one by hand.

4.5.2 The spiral link stick shall have a lifting eye on the head ferrule, so that the lineman can guide the stick onto the conductor with a hot stick.

4.5.3 The spiral link stick shall have a 1-1/4 in (31.75 mm) epoxy-glass pole, heat-treated aluminium alloy ferrule castings, and a galvanised steel spiral pig-tail open loop hook and butt ring.

4.5.4 The spiral link sticks shall be supplied in the sizes shown in Table 3.

Table 4: Spiral link sticks

Item	Overall length (m)	Pole diameter × length	Conductor diameter range (mm)	Max. working load (kN)	Test voltage, whole pole (kV rms)
SLS-16	4.01	38.1 mm × 3.66 m	25.4 to 63.5	28.9	1,220

4.6 Roller Link Stick

4.6.1 The roller link stick shall be used for spreading and holding conductors at mid-span when relocating poles. It shall be applied to the conductor at the pole and pulled into position by a hand line attached to the butt ring.

4.6.2 The hand line shall be secured by a temporarily installed screw anchor or other fixed object.

4.6.3 The roller link stick shall also be used for measuring the conductor-to-ground clearance, by attaching a measuring tape or a length of rope to the butt ring.

4.6.4 The roller link stick shall have a pole with a diameter of 1.25 inches (31.75 mm). Rotating the pole shall close the hook, leaving the head free to roll along the conductor.

4.6.5 The roller link sticks shall be supplied in the sizes shown in Table 4.

Table 5: Roller link sticks

Item	Overall length (m)	Pole diameter × length	Max. conductor size (mm^2)	Max. working load (kN)	Approx. weight (kg)
RLR-04	3.91	31.75 mm × 3.66 m	307	4.45	2.6

4.7 Mechanical Requirements

4.7.1 Each link stick shall carry its maximum working load in Tables 3,4 and 5 without damage. A proof load of 2 x the working load shall be held for 5 minutes with no permanent deformation, slip of the ferrules, or damage to the pole, hook or butt ring.

4.7.2 The ultimate load of the complete stick shall be not less than [3] times the working load. The tenderer shall state the ultimate load and the design factor.

4.7.3 The hook, roller and swivel shall be free-running, with no binding, and shall not damage the conductor strands.

4.8 Accessories

4.8.1 The following shall be supplied:

a) One (1) carrying bag or tube for each stick;

b) Spare pins, bolts and retaining parts for the first year of use, including one spare roller assembly for each two roller link sticks;

c) One (1) set of operating and maintenance instructions in English, including inspection and in-service dielectric testing.

4.8.2 The carrying bags shall be of high quality and shall meet the following requirements:

- **Material:** heavy-duty, water-resistant polyester fabric 600D or heavier, with a soft, non-abrasive lining that will not scratch or contaminate the insulating surface.
- **Construction:** reinforced, double-stitched seams and a padded or reinforced base and end caps. Closure by roll-top with a flap, so that rain and dust cannot enter.
- **Fit and length:** sized for the full length of each stick including the head, with an internal divider or sleeve if more than one stick is carried. Rigid tubes shall be used for the longer sticks if a bag cannot support them without bending.
- **Handling:** padded shoulder strap and carrying handles, rated for the weight of the stick plus its accessories.
- **Identification:** each bag shall be marked with the item number and the stick serial number, so the stick is returned to its own bag.
- **Moisture and cleanliness:** the bag shall keep the insulating surface clean and dry, and shall be listed in the operating instructions as the required means of storage and transport.

4.9 Technical Particulars

4.9.1 The link sticks shall have the technical particulars shown in Table 6 below, in addition to Tables1,2 3, 4 and 5.

Table 6: Technical particulars of link sticks for live-line work

Parameter	Revised specification
Voltage classes of application	66 kV (Um = 72.5 kV), 132 kV (Um = 145 kV) and 220 kV (Um = 245 kV).
Minimum insulating length	Determine in accordance with IEC 61472 for each applicable voltage class, supplemented by the Employer's approved live-working safety margins. Confirm the final dimensions before procurement.
Pole material	Fibreglass-reinforced plastic (FRP) rods or foam-filled tubes complying with ASTM F711 or IEC 60855-1, as applicable to the construction. End fittings and moisture protection shall be suitable for live-line service.
Dielectric withstand of pole	Electrical performance and testing shall comply with the applicable requirements of ASTM F711 or IEC 60855-1. Any additional requirement of 100 kV rms at 50 Hz per 300 mm for one minute shall be stated as a supplementary purchaser requirement and verified for compatibility with the applicable standard.
Hooks and ferrules (strain and roller link sticks)	Corrosion-resistant, mechanically suitable metal fittings designed for the specified working loads. The manufacturer shall declare the material grade, heat treatment and mechanical properties.
Butt rings (strain and roller link sticks)	Metal butt rings with material properties and mechanical strength suitable for the specified working loads. The manufacturer shall provide material identification and mechanical test evidence.
Spiral hook and butt ring (spiral link stick)	Corrosion-resistant, load-bearing metal components suitable for the specified working loads. Material grade, heat treatment and corrosion protection shall be declared by the manufacturer.
Butt swivel (strain link stick)	Corrosion-resistant steel body with a freely rotating mechanism and suitable thrust-bearing arrangement. The assembly shall withstand the specified working and proof loads.
Thrust bearing balls and races	Bearing components shall have adequate load capacity, wear resistance and corrosion protection for the intended application. The manufacturer shall provide relevant technical data.
Jaw edges	Rounded, smooth and free from burrs or sharp projections that could damage conductors or create undesirable electrical stress concentrations.
Maximum working load	Strain link stick: 15.6 kN (3,500 lb) or 28.9 kN (6,500 lb). Spiral link stick: 15.6 kN (3,500 lb). Roller link stick: 4.45 kN (1,000 lb). The manufacturer shall declare the rated working load for each model.

Proof load	Where specified by the Employer, test at twice the rated working load for five minutes. The assembly shall show no permanent deformation, cracking or functional damage. The test method and acceptance criteria shall be documented.
Ultimate load	Specify a minimum ultimate load factor of three times the rated working load only after confirming its suitability for the tool design. The manufacturer shall provide supporting mechanical test results.
Operating temperature	−5 °C to +50 °C, or the operating range declared and verified by the manufacturer.
Storage temperature	−5 °C to +60 °C, subject to confirmation by the manufacturer.
Humidity range	Storage: 20% to 96% relative humidity, non-condensing, if confirmed as an Employer requirement. The equipment shall satisfy the applicable electrical performance requirements following the specified environmental conditioning.
Type tests	Insulating rods and tubes: ASTM F711 or IEC 60855-1, as applicable. Complete insulating sticks: IEC 60832-1. Attachments and end devices: IEC 60832-2, where applicable. Testing shall cover the relevant electrical, mechanical and environmental requirements.
Routine tests	Carry out the applicable routine tests required by the relevant ASTM or IEC standard. Where individual dielectric and proof-load testing is additionally required by the Employer, specify the test levels, methods and acceptance criteria. Each item shall be traceable to its test certificate.
In-service testing and maintenance	Inspection, maintenance and electrical testing shall follow the applicable ASTM or IEC requirements, together with the manufacturer's instructions and the Employer's approved maintenance programme.
Material certificates	The manufacturer shall provide material identification, declared material properties and supporting conformity or test documentation for metallic components.
Marking	Each tool shall be permanently and legibly marked with the manufacturer's name, model, serial number, year of manufacture, rated working load where applicable, voltage rating where specified, and applicable ASTM or IEC standard reference.

5. TEST REQUIREMENTS

5.1 The link sticks shall be inspected and tested in accordance with ASTM F711, IEC 60855-1, IEC 61235, IEC 60832, IEC 61477, IEC 60060-1 and this specification. It shall be the responsibility of the manufacturer to perform or to have performed all the tests specified. Tenderers shall confirm the manufacturer's capabilities in this regard when submitting tenders. Any limitations shall be clearly specified.

5.2 Copies of previous test reports issued by the manufacturer or a third-party testing laboratory that is accredited to ISO/IEC 17025:2005 or 17025:2017, confirming the dielectric and mechanical performance and compliance of each link stick offered, shall be submitted with the offer for evaluation (all in English language).

5.3 Copies of test reports for the link sticks offered shall be submitted, covering the following tests:

a) Routine tests (on every unit)

i. Visual and dimensional inspection
ii. Dielectric withstand test of each pole, with leakage current
iii. Proof load test at 2 x working load, held for 5 minutes
iv. Functional test: hook, spiral hook, roller, closing action and free-spinning swivel
v. Marking and durability of markings

b) Type tests

i. Dielectric tests on the pole: power-frequency withstand, and moisture absorption after wet conditioning
ii. Mechanical tests on the pole: bending, torsion, tension and deflection under load
iii. Tensile test of the ferrule joints and ultimate load test of the complete stick
iv. Ultimate load test of the hook, spiral hook, roller head and butt ring
v. Impact test
vi. Galvanising thickness and adhesion (ISO 1461)
vii. Hardness and heat-treatment verification of aluminium alloy castings, and material certificates for steel and aluminium parts
viii. Ageing and weathering tests on the FRP

c) Functional tests on the stick that shall include:

i. Strain link stick: attachment to a conductor close to the wire tong, and operation with rope blocks
ii. Spiral link stick: guiding the stick onto the conductor with a hot stick through the lifting eye
iii. Roller link stick: closing of the hook by rotating the pole, and rolling of the head along the conductor

iv. Attachment of rope blocks, hand lines, measuring tape and rope to the butt ring

6. MARKING AND PACKING

6.1 Marking

The following information shall be marked legibly and permanently on each link stick:

i. The manufacturer's name or trade mark;
ii. Type and item number;
iii. Maximum voltage of use (kV) and effective insulating length;
iv. Serial number and month/year of manufacture;
v. Maximum working load and conductor size or range;
vi. Letters "Property of Kenya Power & Lighting Plc".

6.2 Packing

6.2.1 Each live-line link stick shall be supplied in a purpose-designed, durable carrying bag, protective tube or rigid carrying case suitable for live-line insulating equipment. The packaging shall protect the link stick against mechanical damage, moisture ingress, dust, dirt, oil, chemicals and other contaminants that may compromise its electrical insulating properties during transportation, handling and storage.

6.2.2 The packaging shall be impact-resistant and adequately cushioned to protect the insulating rod or tube, hooks, ferrules, butt rings, swivels, bearings and other fittings against damage resulting from normal transportation, handling and foreseeable accidental impacts.

6.2.3 The packaging shall prevent excessive bending, abrasion, scratching, cracking, deformation and damage to the insulating surface and metallic components. Each link stick shall be securely supported and restrained within the package to prevent movement, rubbing or impact against other equipment during transportation.

6.2.4 The carrying bag, protective tube or case shall be moisture-resistant and designed to minimise the entry of water, humidity, dust and other contaminants. The packaging shall not trap moisture in a manner that could adversely affect the insulating surface or metallic fittings.

6.2.5 The internal lining and cushioning materials shall be non-abrasive, non-contaminating and compatible with the insulating material of the link stick. Materials that may leave conductive residues, damage the insulating surface or adversely affect its dielectric performance shall not be used.

6.2.6 The packaging shall allow the link sticks to be stored and transported without placing undue mechanical stress on the insulating sections or their end fittings. Where multiple link sticks are packed together, each stick shall be adequately separated to prevent contact, abrasion and damage.

6.2.7 Each carrying bag, protective tube or case shall be clearly and durably labelled with the manufacturer's name, equipment description, model or type, serial number or other traceability identification, and appropriate handling and storage instructions. Labels shall include, where applicable, "LIVE-LINE INSULATING EQUIPMENT", "KEEP DRY", "KEEP CLEAN" and "HANDLE WITH CARE".

6.2.8 The packaging shall be suitable for the transportation, handling and storage conditions encountered by Kenya Power and Lighting Company PLC (KPLC), including movement between the live-line laboratory, stores, vehicles and field work locations.

6.2.9 The packaging shall be designed to permit safe removal and replacement of the link stick without dragging, scraping or contaminating the insulating surface. The link stick shall be capable of being returned to its packaging after use, inspection and cleaning in accordance with the manufacturer's instructions.

6.2.10 The supplier shall provide instructions for the inspection, cleaning, drying and storage of the carrying bag, protective tube or case. Packaging that is damaged, contaminated or no longer provides adequate protection shall be repaired or replaced before further use.

7. WARRANTY

7.1 The link stick shall be backed by a minimum of 12-months warranty period from the date of delivery to KPLC stores.

7.2 Technical support, and the availability of spare parts (pins, bolts, rollers, hooks), shall be guaranteed for a period of not less than 5 years. Technical support shall be provided free of charge for not less than 36 months.

7.3 The Bidder shall submit a clause-by-clause statement of compliance with the specification (GTP) together with copies of the manufacturer's catalogues, brochures, technical data and proven test reports, all in English, for evaluation, according to Appendix C1 of this Specification. The manufacturer's type reference/designation of the item offered shall be indicated.

7.4 In the case of tender award, technical details for the link stick shall be submitted to Kenya Power for approval before manufacture commences, according to Appendix C2 of this Specification.

8. TRAINING

8.1 Training at the manufacturer's premises

8.1.1 The successful bidder/manufacturer shall arrange to conduct a Factory Acceptance Test for the manufactured link sticks. The Factory Acceptance Test shall include training on the link stick for [two (2)] KPLC engineers/technicians. At least one (1) of the engineers/technicians shall be live-line users.

8.1.2 The training shall include theory followed by practical demonstrations on the use of strain, spiral and roller link sticks on a live line, their inspection, cleaning and in-service dielectric testing.

8.1.3 The manufacturer shall plan adequate time for the training, which shall be conducted by the manufacturer's expert.

8.1.4 The training shall be deemed successful once the engineers/technicians are able to inspect, test and use the link stick safely.

8.1.5 The supplier shall meet all the costs of the factory training.

8.2 Local Training

8.2.1 Following delivery of the link sticks, the manufacturer shall conduct training in Nairobi, Kenya. The training shall be conducted in one session of [20] KPLC engineers/technicians and shall last at least [one (1) day].

8.2.2 The training shall include theory on features and how the equipment works, safe live-line working practice, safe working practice with link sticks and rope blocks, inspection, in-service dielectric and load testing, and storage, followed by practical demonstrations. All steps shall be exhaustively explained and demonstrated.

8.2.3 The training shall be considered to have been successful once the engineers/technicians are able to completely inspect, test and use the link stick.

8.2.4 The supplier shall meet all the costs for conducting the local training, including local accommodation and transport for their training staff. The supplier shall provide all the training materials including notes.

APPENDICES

A: TESTS AND INSPECTION (Normative)

A.1 It shall be the responsibility of the supplier to test or to have all the relevant tests performed on the link stick.

A.2 Copies of previous test reports issued by the manufacturer or a third-party testing laboratory that is accredited to ISO/IEC 17025:2005 or 17025:2017 shall be submitted with the tender for the purpose of technical evaluation. A copy of the accreditation certificate for the testing laboratory shall also be submitted with the tender (all in English language). Any translations of certificates and test reports into English language shall be signed and stamped by the Testing Authority.

A.3 Test certificates and calibration certificates shall be submitted by the supplier to KPLC for approval before supply/delivery.

A.4 On receipt of the link sticks, Kenya Power will inspect the items and may perform relevant tests (including dielectric tests of the poles and load tests) in order to verify compliance with the specification. The supplier shall replace without charge to Kenya Power any unit that upon test or use fails to meet any or all of the requirements in the specification.

B: QUALITY MANAGEMENT SYSTEM (Normative)

B.1 The supplier shall submit a Quality Assurance Plan (QAP) that will be used to ensure that the physical properties, tests and documentation of the link stick 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 9001:2015.

B.2 The manufacturer's Declaration of Conformity to applicable standards and copies of quality management certifications, including a copy of valid and relevant ISO 9001:2015 certificate, shall be submitted with the tender for evaluation.

B.3 The bidder shall indicate the delivery time of the equipment. A detailed list and contact addresses (including e-mail) of the manufacturer's previous customers for similar live-line equipment sold shall be submitted with the tender for evaluation.

C: TECHNICAL DOCUMENTATION (Normative)

C.1 The bidder shall submit its tender complete with technical documents for tender evaluation. The technical documents to be submitted (all in English language) shall include:

a) Where the bidder is not the Original Equipment Manufacturer (OEM), the bidder shall be a licensed dealer or an agent duly authorized by the OEM to supply the offered equipment. The bidder shall submit a valid Manufacturer's Authorization Letter (MAL) issued by the OEM

b) Fully filled clause-by-clause Guaranteed Technical Particulars (GTP) signed by the dealer, agent or manufacturer as indicated in Appendix D of this Specification;

c) Copies of the manufacturer's catalogues, brochures, drawings giving all relevant dimensions and technical data;

d) Records for previous projects, local or foreign, for the items;

e) Details of manufacturing capacity and the manufacturer's experience;

f) Copies of required test reports of a testing laboratory accredited to ISO/IEC 17025;

g) Copy of accreditation certificate to ISO/IEC 17025 for the testing laboratory;

h) Manufacturer's letter of authorisation, ISO 9001 certificate, and other technical documents required in the tender;

i) Manufacturer's warranty and guarantee, subject to 12 months from date of delivery of items to KPLC stores;

j) Operational and service manual for the items.

k) Where the bidder is not the Original Equipment Manufacturer (OEM), the bidder shall be a licensed dealer or an agent duly authorized by the OEM to supply the offered equipment. The bidder shall submit a valid Manufacturer's Authorization Letter (MAL) issued by the OEM

C.2 The successful bidder (supplier) shall submit the following documents/details to The Kenya Power & Lighting Company for approval before manufacture:

a) Fully filled clause-by-clause GTP stamped and signed by the manufacturer, as indicated in Appendix D;

b) Drawings of the link sticks to be manufactured for KPLC;

c) Product operation manuals and brochures;

d) Quality assurance plan (QAP) 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 9001:2015;

e) Marking details and method to be used in marking the link sticks;

f) All documentation necessary for safety of the equipment;

g) Packaging details (including packaging materials).

C.3 The supplier shall submit recommendations for use, care, storage, and routine inspection and in-service dielectric testing procedures, all in the English language, during delivery of the link sticks to KPLC stores.

C.4 Spiral Link Stick photo;



C.5 Roller Link Stick

C.



C.6

Head of Section: Sub-transmission, Central office	Head of Department: Transmission, Central office
Signed:	Signed:
Date: 2026-10-19	Date: 2026-10-19

D: GUARANTEED TECHNICAL PARTICULARS (Normative)

To be filled and signed by the Manufacture, dealer or agent and submitted together with relevant copies of the Manufacturer's catalogues, brochures, drawings, technical data, sales records for previous five years, four customer reference letters, details of supplier's capacity and experience, and copies of complete type test certificates and test reports for tender evaluation, all in English language.

Tender No. .....

Bidder's name and address .....

Clause number	Requirement	KPLC Requirement	Bidder's offer
	Manufacturer's name and address	State	
	Country of manufacture	State	
	Name and model number	State	
1.0	Scope	State	
2.0	Normative references	State	
3.0	Definitions and abbreviations	State	
4.0	**Requirements**		
4.1	Service conditions	State	
4.2	**Design and construction**		
4.2.1	Standards of design and manufacture	State	
4.2.2	Main components of each stick	State	
4.2.3	Materials of hooks, ferrules, spiral hooks and butt rings	State	
4.2.4	Hook jaw edges and butt swivel	State	
4.2.5	Effective insulating length and voltage class rating of each item	Specify	
4.2.6	Assembly (hot stick / hand line) used where pole is shorter than Table 1	State	
4.3	**Insulating pole**		
4.3.1	Pole material and standard	State	
4.3.2	Surface finish and end sealing; ferrule bonding	State	
4.3.3	Dielectric withstand of pole (100 kV per 300 mm, 1 min)	State	
4.3.4	OSHA / ASTM F711 test certificate	Attach	
4.4	**Strain link stick**		
4.4.1	Application and features (dead-end, running corner, H-frame, rope blocks)	State	

Clause number	Requirement	KPLC Requirement	Bidder's offer
4.4.2	Hook, ferrules, butt ring and swivel	State	
4.4.3	Items offered, with overall length, pole size and length (Table 2)	State	
4.4.4	Conductor diameter range and working load of each item	State	
4.4.5	Weight of each item	State	
4.5	**Spiral link stick**		
4.5.1	Application and features (replaces strain link stick)	State	
4.5.2	Lifting eye on head ferrule	State	
4.5.3	Pole, ferrules, spiral hook and butt ring	State	
4.5.4	Overall length and pole size (27-1/2 in and 57-1/2 in; 1-1/4 in x 15.5 in and 42 in)	State	
4.5.5	Maximum conductor size (not less than 1510.5 kcmil ACSR) and working load (3,500 lb)	State	
4.5.6	Weight (not more than 3-1/2 lb and 4-1/2 lb)	State	
4.6	**Roller link stick**		
4.6.1	Application and features (spreading and holding at mid-span; clearance measurement)	State	
4.6.2	Hook closing by rotating pole and rolling head	State	
4.6.3	Overall length and pole size (58 in and 82 in; 1-1/4 in x 4 ft and 6 ft)	State	
4.6.4	Maximum conductor size (not less than 605 kcmil ACSR) and working load (1,000 lb)	State	
4.6.5	Weight (not more than 3-3/4 lb and 4-1/4 lb)	State	
4.7	**Mechanical requirements**		
4.7.1	Proof load (2 x working load, 5 minutes)	State	
4.7.2	Ultimate load and design factor	State	
4.8	Accessories supplied	State	
4.9	**Table 5 technical particulars**		
4.9.1	Dielectric withstand of pole (100 kV per 300 mm)	State	
4.9.2	Operating temperature (-5 °C to +50 °C)	State	
5.0	**Test requirements**		
5.1	Manufacturer's capabilities of inspection and testing	State	

Clause number	Requirement	KPLC Requirement	Bidder's offer
5.2	Copies of previous test reports; accreditation certificate and scope	Attach	
5.3	Copies of routine, type and functional test reports	Attach	
6.0	**Marking and packing**		
6.1	Marking	Specify	
6.2	Packing	Specify	
7.0	**Warranty: state duration**	State	
7.1	Minimum 12-months factory warranty	State	
7.2	Technical support (36 months) and spare parts availability (5 years)	State	
7.3	Clause-by-clause statement of compliance with supporting documents	State	
7.4	Technical details for KPLC approval before manufacture	State	
8.0	**Training**		
8.1	Training at manufacturer's premises ([2] engineers/technicians)	State compliance	
8.2	Local training ([20] engineers/technicians, at least [1] day)	State compliance	
A	**Test and inspection**		
A.1	Responsibility of carrying out tests	State	
A.2	Copies of type test reports submitted with tender	Provide	
A.3	Test and calibration certificates for approval before delivery	Provide	
A.4	Inspection at the stores and replacement of rejected items	State	
B	**Quality management system**		
B.1	Quality Assurance Plan	Provide	
B.2	Copy of ISO 9001:2015 certificate	Provide	
B.3	Manufacturer's experience and list of previous customers	Provide	
C	**Technical documentation**		
C.1	Documents submitted with tender	Provide	
C.2	Documents to be submitted for approval before manufacture	Provide	
C.3	Documents to be submitted during delivery at the store	Provide	
	Statement of deviations, if any, and supporting documents	State deviations	

NOTE:

1) Bidders shall give full details of the items on offer as per the specification and applicable standards. The details provided shall conform to the test reports and their certificates, as well as labelled drawings complete with dimensions, catalogues and/or brochures for the purpose of tender evaluation.

2) Bidders should note that the above Guaranteed Technical Particulars schedules must be fully completed and submitted with the bid. Wherever there is conflict between the GTPs and the clauses in the specification, the clauses in the specification take precedence. Failure to complete the schedules shall lead to rejection of the bid.

3) Guaranteed values shall be specified. Words like 'agreed', 'confirmed', 'As per KPLC specifications', etc. shall not be accepted and shall be considered non-responsive.

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Manufacturer's Name, Signature, Stamp and Date