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Kenya Power

BATTERY OPERATED HYDRAULIC CRIMPING TOOL - SPECIFICATION

A Document of the Kenya Power & Lighting Co. Ltd

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Kenya Power

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TOOL – SPECIFICATION**

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0.1 Circulation List

COPY NO.	COPY HOLDER
1	Manager, Standards
2	Electronic copy (pdf) on Kenya Power server (http://172.16.1.40/dms/browse.php?fFolderId=23)

REVISION OF KPLC STANDARDS

In order 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

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FOREWORD

This specification has been prepared by the Standards Department in collaboration with Network Management division, both of the Kenya Power and Lighting Company Limited (KPLC) and it lays down requirements for battery operated hydraulic crimping tool. It is intended for use by KPLC in purchasing the tool Kit.

The battery operated hydraulic crimping tool is to be used on copper, aluminium, compressed, compact, stranded, solid and flex conductors and to install lugs, splices, taps and terminations.

The specification stipulates the minimum requirements for battery operated hydraulic crimping tool acceptable for use in the company and it shall be the responsibility of the suppliers & manufacturer to ensure adequacy of the design, good workmanship and good engineering practice in the manufacture of the tool kit for KPLC.

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

Name	Division
Stanley Ngetich	Network Management
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1. SCOPE

- 1.1 This specification covers a battery operated hydraulic crimping tool for use on conductors and to install lugs, splices, taps and terminations.
- 1.2 This specification covers requirements, inspection and tests of the battery operated hydraulic crimping tool as well as schedule of Guaranteed Technical Particulars.

2. NORMATIVE REFERENCES

The following standard contains provision which through reference in this text constitute provisions of this specification. For dated editions, the edition will apply, for undated edition the latest edition of this document applies:

- ISO 9001:2008: Quality Management System
- ISO/IEC 17025: General requirements for the competence of testing and calibration laboratories.
- ISO 9461: Hydraulic fluid power -- Identification of valve ports, sub-plates, control devices and solenoids
- ISO 10763: Hydraulic fluid power—Plain-end, seamless and welded precision steel tubes—Dimensions and nominal working pressures.
- IEC 60900: Live working – Hand tools for use up to 1000 V a.c. and 1500 V d.c.
- ISO 4957: Tool steel.



3. DEFINITIONS AND ABBREVIATIONS

For the purpose of this specification the definitions and abbreviations given in the reference standards and the following abbreviations shall apply:-

3.1. Abbreviations

KPLC- Kenya Power and Lighting Company Limited

IEC – International Electrotechnical Commission

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ISO – International Organization for Standardization

kV - kilovolt

a.c – Alternating current

LV -Low Voltage

HV- High Voltage

Ni-MH – Nickel Metal hydride.

4. REQUIREMENTS

4.1. SERVICE CONDITIONS

The Battery operated hydraulic crimping tool shall be designed and constructed for continuous outdoor use in tropical areas and harsh climatic conditions including areas exposed to:

- a) Altitudes of up to 2200m above sea level;
- b) Humidity of up to 95%;
- c) Average ambient temperature of +30°C with a minimum of -1°C and a maximum of +40°C
- d) Heavy saline conditions along the coast.

4.2. GENERAL REQUIREMENTS

- 4.2.1. The battery operated hydraulic crimping tool shall dieless and shall be designed and manufactured to conform to the requirements of ISO 9461 and ISO 10763 standard requirements and those of this specifications.
- 4.2.2. The battery operated hydraulic crimping tool shall be designed ergonomically to allow for one hand operation so that the other is free to position the connectors and conductors prior to crimping.
- 4.2.3. The battery operated hydraulic crimping tool handle insulation shall be dielectrically tested to 10 kV a.c according to IEC 60900.
- 4.2.4. The battery operated hydraulic crimping tool shall be lightweight and compact for crimping and compression of cable lugs, splices, taps and connectors for low and high voltage cables

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- 4.2.5. The battery operated hydraulic crimping tool shall be made of high grade tool steel as per ISO 4957 and have rubber handle grips. The tool steel shall be black zinc oxide coated to help reduce corrosion.
- 4.2.6. The battery operated hydraulic crimping tool head shall have a capability to be fully rotated through 360 degrees for easy operation in any position.
- 4.2.7. The battery operated hydraulic crimping tool design shall also feature a built-in safety valve which by-pass the oil supply when the maximum pressure is reached.
- 4.2.8. The battery operated hydraulic crimping tool shall have a twin speed operation and automatically switches from a rapid advancing speed of the ram to a slower more powerful crimping speed as the nibs close and compress onto the connector.
- 4.2.9. The battery operated hydraulic crimping tool shall have an on-board pressure monitoring with visual (LED) and audible warnings of an incomplete crimp.
- 4.2.10. It shall have a low battery status indication.
- 4.2.11. The battery operated hydraulic crimping tool shall have the features shown in table 1 below:


Table 1: Features of battery operated hydraulic crimping tool

Feature	Unit of measure	Requirement
Minimum crimping Force.	kN	60
Approximate Weight (without battery)	kg	5
Minimum opening between nibs	mm	32
Reservoir capacity	cc	100

- 4.2.12. The battery shall be a high capacity rechargeable Lithium ion or Ni-MH battery with a charging time of 30 to 45 minutes.

5. TESTS REQUIREMENTS

The battery operated hydraulic crimping tools shall be tested in accordance with the requirements of relevant ISO, IEC and Kenyan standards and provisions of this specification

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6. MARKING AND PACKING

- 6.1. Each battery operated hydraulic crimping tools shall be supplied complete with two rechargeable batteries, a 240/250 V a.c charger and a shoulder strap in a double molded carrying case. The case shall be suitable for storage, transportation and long term use.
- 6.2. The battery operated hydraulic crimping tools shall be marked in a permanent manner with the following information (in English Language):
- a) Name of manufacturer and/or manufacturer's trademark
 - b) Tool Catalogue or designation number
 - c) The words "**Property of KPLC**".
 - d) Operating voltage.

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APPENDICES

A: QUALITY MANAGEMENT SYSTEM (Normative)

- A.1. The supplier shall submit a quality assurance plan (QAP) that will be used to ensure that the battery operated hydraulic crimping tool design, physical properties, tests 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 or ISO 9001: 2015.
- A.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 or ISO 9001: 2015 certificate shall be submitted with the tender for evaluation.
- A.3. The bidder shall indicate the delivery time of the battery operated hydraulic crimping tool, manufacturer's monthly & annual production capacity and experience in the production of the type and size of item being offered. A detailed list and contact addresses (including e-mail) of the manufacturer's previous customers for similar type of the cables sold in the last five years as well as reference letters from customers shall be submitted with the tender for evaluation.

B: TESTS AND INSPECTION (Normative)

- B.1 It shall be the responsibility of the supplier to perform or to have performed the tests specified.
- B.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).
- B.3. Routine and sample test reports for the battery operated hydraulic crimping tool to be supplied shall be submitted to KPLC for approval before shipment/delivery of the goods. KPLC Engineers will witness tests at the factory before shipment.

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- B.4 On receipt of the goods KPLC will perform any of the tests specified in order to verify compliance with this specification.
- B.5 The supplier shall replace without charge to KPLC the battery operated hydraulic crimping tool, which upon examination, test or use; fail to meet any of the requirements in the specification.
- B.6. The Crimping tool shall be backed with at least 3 year warranty.

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C: DOCUMENTATION (Normative)



C.1. The bidder shall submit its tender complete with technical documents required by Annex C (Guaranteed Technical Particulars) for tender evaluation. The technical documents to be submitted (all in English language) for tender evaluation shall include the following:

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

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

- (i) Guaranteed Technical Particulars signed by the manufacturer;
- (ii) Design (Manufacturing) drawings and technical details of battery operated hydraulic crimping tool to be manufactured for KPLC.
- (iii) 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
- (iv) Detailed test program to be used during factory testing.

C.3. The supplier shall submit recommendations for use, care, storage and routine inspection/testing procedures, all in the English Language, during delivery of crimping tool to KPLC stores

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D: GUARANTEED TECHNICAL PARTICULARS (Normative)

To be filled and signed by the Manufacturer 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 manufacturing capacity, the manufacturer's experience and copies of complete type test certificates and type test reports for tender evaluation, all in English Language)

Tender No **Bidder's Name & Address**

No	Description	Bidder's Offer	
1	Name of the manufacturer and country of origin	Specify	
	Type Reference Number or Model Number	Specify	
2	Applicable Standards	Specify	
3	Terms and Definitions	Specify	
4	Requirements		
4.1	Service conditions	Specify	
4.2	General Requirements		
4.2.1	Is the tool dieless?	Specify	
4.2.2	Is the tool designed for one hand operation?	Specify	
4.2.3	Is the handle insulated dielectrically to 10kV a. c?	Specify	
4.2.4	Tools capability	Specify	
4.2.5	Tool and handle material and coating of tool	Specify	
4.2.6	Tool head rotating capability.	Specify	
4.2.7	Does the tool have a built-in safety valve which by-pass the oil supply when the maximum pressure is reached?	Specify	
4.2.8	Is the twin speed operation present?	Specify	
4.2.9	On-board pressure monitoring present.	Specify	
4.2.10	Low battery status indication present?	Specify	
4.2.11	Crimping tool features	Crimping Force, min.	Specify
		Approximate Weight (without battery)	
		Opening between nibs	
		Reservoir capacity	
4.2.12.	Battery type	Specify	
	Battery voltage:	Specify	
	Battery capacity:	Specify	
	Charging time:	Specify	
5	Tests requirements	Specify	
6	Marking and packing	Specify	

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No	Description	Bidder's Offer
A	Quality Management System	
A.1	Quality Assurance Plan	Provide
A.2	Copy of ISO 9001:2008 Certificate	Provide
A.3	Manufacturer's experience	Provide
	Manufacturing Capacity (units per month)	Provide
	List of previous customers	Provide
	Customer reference letters	Provide
B	Test and Inspection	
B.1	Test standards and responsibility of carrying out tests	
B.2	Copies of Type Test Reports submitted with tender	
B.3	Acceptance tests to be witnessed by KPLC at factory before shipment	
B.4	Test reports to be submitted by supplier to KPLC for approval before shipment	
B.5	Replacement of rejected battery operated hydraulic crimping tool	
B.6	Warranty	
C	Documentation	
C.1	Documents submitted with tender	Provide
C.2	Documents to be submitted by supplier to KPLC for approval before manufacture	Provide
	Statement of compliance to specification	Provide

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Manufacturer's Name, Signature, Stamp and Date

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