



**TITLE:**  
**SPECIFICATION FOR POLE  
TOP BRACKET FOR SINGLE  
WIRE EARTH RETURN SYSTEM**

Doc. No.	KP1/3CB/TSP/03/013
Issue No.	1
Revision No.	0
Date of Issue	2014-09-18
Page 1 of 11	

## TABLE OF CONTENTS

### 0.1 Circulation List

### 0.2 Amendment Record

### FOREWORD

1. SCOPE
2. REFERENCES
3. TERMS AND DEFINITIONS
4. REQUIREMENTS
5. TESTS AND INSPECTION
6. MARKING AND PACKING
7. DOCUMENTATION

### ANNEX A: SCHEDULE OF GUARANTEED TECHNICAL PARTICULARS FOR POLE TOP BRACKET OFFERED

*(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 past five years, four customer reference letters, details of manufacturing capacity, the manufacturer's experience, copies of type test reports and accreditation certificate to ISO/IEC 17025 for the testing laboratory for tender evaluation, all in English Language)*

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Issue No.	1
Revision No.	0
Date of Issue	2014-09-18
Page 2 of 11	

**0.1 Circulation List**

COPY NO.	COPY HOLDER
1	Head of Department, Standards
2	Supply Chain Manager – Procurement
Electronic copy (pdf) on KPLC server currently: <a href="http://172.16.1.40/dms/browse.php?fFolderId=23">http://172.16.1.40/dms/browse.php?fFolderId=23</a>	

**0.2 Amendment Record**

Rev No.	Date (YYYY-MM-DD)	Description of Change	Prepared by (Name & Signature)	Approved by (Name & Signature)

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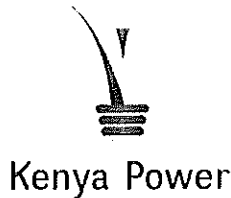
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Doc. No.	KP1/3CB/TSP/03/013
Issue No.	1
Revision No.	0
Date of Issue	2014-09-18
Page 3 of 11	

## FOREWORD

This specification has been prepared by the Standards Department in collaboration with The Design Optimization Committee both of The Kenya Power & Lighting Company Ltd (abbreviated as KPLC) and it lays down requirements for Pole Top Bracket for Single Wire Earth Return systems. It is intended for use by KPLC in purchasing the items.

The bid shall be submitted complete with information that confirms satisfactory service experience of the manufacturer with products which fall within the scope of this specification

### 1. SCOPE

This specification is for hot dip galvanized steel pole top bracket for use on overhead lines operated at 19.1kV single wire earth return system.

The specification stipulates the minimum requirements for pole top bracket for single wire earth return system acceptable for use in the company (KPLC) and it shall be the responsibility of the supplier to ensure adequacy of the design, good workmanship, good engineering practice and adherence to standards, specifications and applicable regulations in the manufacture of the brackets for The Kenya Power & Lighting Company Ltd.

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 edition of the referenced documents (including any amendments) applies.

ISO 1461: Metallic Coatings – Hot dip galvanized coatings on fabricated ferrous products – Requirements.

BS 4360: Specification for weldable structural steel

KS 02-572: Specification for hot-rolled structural steel sections

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Issue No.	1
Revision No.	0
Date of Issue	2014-09-18
Page 4 of 11	

### 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 Pole Top Bracket shall be suitable for continuous use outdoors in tropical areas at altitudes of up to 2200m above sea level, humidity of up to 95%, average ambient temperature of +30°C with a minimum of -1°C and a maximum of +40°C and saline conditions along the coast.

#### 4.2 MATERIALS

4.2.1. Structural steel used shall be grade 43A as specified in the BS 4360.

The tensile strength and yield stress of the steel shall be not less than 430/510 N/mm<sup>2</sup> and 255 N/mm<sup>2</sup> respectively.

Angle sections shall be in accordance with KS 02-572.

#### 4.3 CONSTRUCTION/FABRICATION

4.3.1 All materials before and after fabrication shall be straight and free from twists. The material shall be free from blisters, scale and other defects.

4.3.2 All dimensions specified shall be subject to the following tolerances, unless otherwise stated.

(i) Dimensions up to and including 50 mm: ±1 mm

(ii) Dimensions greater than 50 mm: ±2 mm

*Note: All dimensions on the drawings shall be in mm unless otherwise stated.*

4.3.3 Cutting may be by shearing, cropping, sawing or machine flare cutting. Sheared or cropped edge shall be dressed to a neat finish and be free from distortion where parts are to be in metal contact.

4.3.4 All holes shall be drilled in one operation and burrs shall be removed. Holes shall not be formed by a gas cutting process. All matching holes for bolts shall register with each other so that a gauge 2mm less in diameter than the diameter of the bolt shall

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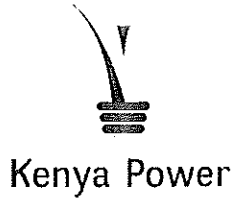
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Doc. No.	KP1/3CB/TSP/03/013
Issue No.	1
Revision No.	0
Date of Issue	2014-09-18
Page 5 of 11	

pass freely through the assembled members in a direction at right angle to such members.

#### 4.3.5 Galvanizing

- a) All materials to be galvanized shall be of the full dimensions shown or specified and all punching, cutting, and the removal of burrs shall be completed before the galvanizing process commences.
- b) All galvanizing shall be done by the hot dip process (molten Zinc), not less than 98% of which must be pure Zinc. The process shall be in accordance with ISO 1461.
- c) The Zinc coating shall be uniform, clean, smooth and as free from spangle as possible.

Table 1: Galvanizing

Installation →→	Steel Structures for Inland installations	Steel Structures for installation along the coast
Minimum Average Coating Weight	610 g/m <sup>2</sup>	800 g/m <sup>2</sup>

#### 4.4 Quality Management System

- 4.4.1 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, will fulfill the requirements stated in the contract documents, standards, specifications and regulations.
- 4.4.2 The Manufacturer's Declaration of Conformity to reference standards and copy of quality management certification (Diamond Mark of Quality by Kenya Bureau of Standards) shall be submitted with the tender for evaluation.
- 4.4.3 The bidder shall indicate the delivery time of the pole top brackets, manufacturer's monthly & annual production capacity and experience in the production of galvanized steel structures. A detailed list & contact addresses (including e-mail) of the manufacturer's previous customers for galvanized steel structures sold in the last five years together with reference letters from four of the customers shall be submitted with the tender for evaluation.

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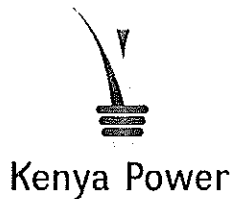
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Issue No.	1
Revision No.	0
Date of Issue	2014-09-18
Page 6 of 11	

## 5 TESTS AND INSPECTION

5.1 The manufacturer shall be responsible for performing or for having performed all the required tests in this specification. Tenderers shall confirm the manufacturer's capabilities in this regard when submitting tenders. Any limitations shall be clearly specified.

5.2 The tensile strength, yield strength, elongation and bending tests shall be done in accordance with the requirement of BS 4360 and KS 02-572.

5.3 Tests on galvanizing shall be carried on the finished steel in accordance with the requirement of ISO 1461 and this specification.

5.4 Copies of previous test reports (for similar items) 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.

Copies of test reports to be submitted shall include tensile, yield strength, elongation and galvanizing tests.

5.5 KPLC authorized Engineers shall have access at all reasonable time to all places of work and when work is being carried out and shall be provided (by the manufacturer) with all necessary facilities for inspection and testing during and after fabrication.

Test reports shall be completed (by the manufacturer) and submitted to KPLC for approval before shipment/delivery of the materials.

5.6 On receipt of the goods KPLC may perform any of the tests specified in order to verify compliance with this specification. The supplier shall replace without charge to KPLC Pole Top Brackets which upon examination, test or use fail to meet any of the requirements in the specification.

## 801 MARKING AND PACKING

6.1 Each item shall be engraved legibly with the following information:

- Manufacturer's Name
- The letters "KPLC"
- Size/dimensions

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Issue No.	1
Revision No.	0
Date of Issue	2014-09-18
Page 7 of 11	

6.2 The pole top brackets shall be packed in such a manner as to protect them from damage during transportation and storage. The package shall bear the manufacturer's name, type and identification of the items.

**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 documents to be submitted (all in English language) for tender evaluation shall include the following:

- a) Guaranteed Technical Particulars fully filled and signed by the manufacturer;
- b) Copies of the Manufacturer's catalogues, brochures, drawings and technical data;
- c) Sales records for previous five years and reference letters from at least four of the customers;
- 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) Manufacturer's warranty and guarantee;
- h) Manufacturer's letter of authorization, copy of the manufacturer's Diamond Mark of Quality Certificate and other technical documents required in the tender.

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

- a) Guaranteed Technical Particulars fully filled and signed by the manufacturer;
- b) Design drawings, dimensions and material details of the pole top brackets;
- 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;
- d) Test Program to be used after manufacture;
- e) Marking details and method to be used in marking each item and package;
- f) Manufacturer's undertaking to ensure adequacy of the design, adherence to applicable regulations, standards and specification, ensure good workmanship and

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Issue No.	1
Revision No.	0
Date of Issue	2014-09-18
Page 8 of 11	

- good engineering practice in the manufacture of the pole top brackets for The Kenya Power and Lighting Company Limited;
- g) Packaging details (including packaging materials and marking and identification of packages).

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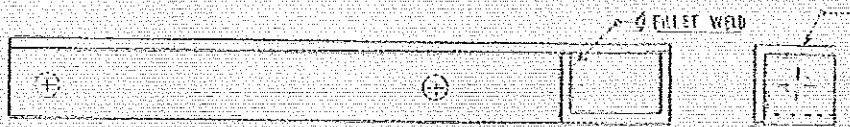
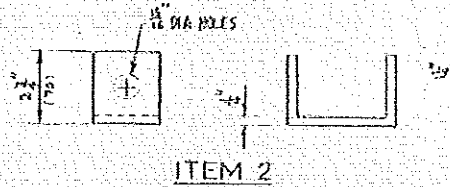
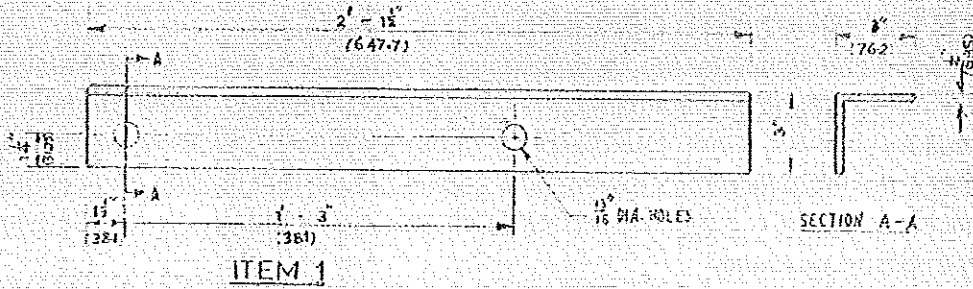
Revision  
No.

0

Date of  
Issue

2014-09-18

Page 9 of 11



ASSEMBLY

NOTES:

- \*MATERIAL TO BE MILD STEEL
- \*FABRICATION OF U-PIECE TO BE WELDED TO STEEL ANGLE AS SHOWN
- \*WELD ON TOP OF BRACKET TO BE FLUSH TO GIVE EVEN BEARING FOR PPI COLLAR

POLE TOP BRACKETS FOR S.W.E.R

SCALE	1 : 5	ISSUE	ISSUC	ISSUE	ISSUE	K. P. & L. Co. Ltd.
DATE	31.8.93					
DRAWN	W. OJOBI					
TRACED						
CHECKED						
APPROVED						

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Issue No.	1
Revision No.	0
Date of Issue	2014-09-18
Page 10 of 11	

**ANNEX A: SCHEDULE OF GUARANTEED TECHNICAL PARTICULARS FOR THE POLE TOP BRACKETS OFFERED**

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**TENDER NO. ....BIDDER'S NAME & ADDRESS .....**

CLAUSE	Description	Guaranteed Technical Particulars for Pole Top Bracket offered
	Name of Manufacturer & Country of manufacture of the pole top bracket being offered	
	Type/Model Reference Number	
1	Scope: Supplier to ensure adequacy of the design, good workmanship, good engineering practice and adherence to standards, specifications and applicable regulations in the manufacture of the pole top bracket for KPLC	
2	Design standards complied with	
3	Terms and Definitions	
4	Requirements	
4.1	Service conditions	
4.2	Materials	
	Grade of steel & standard	
	Tensile strength	
	Yield strength	
	Angle sections	
4.3	Construction/Fabrication	
	4.3.1	
	4.3.2	
	4.3.3	
	4.3.4	

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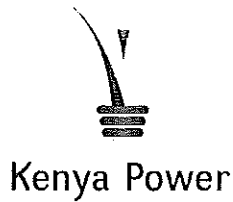
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Revision No.	0
Date of Issue	2014-09-18
Page 11 of 11	

CLAUSE	Description	Guaranteed Technical Particulars for Pole Top Bracket offered
	Galvanizing	
	a)	
	b)	
	c)	
	Minimum average coating weight g/m <sup>2</sup>	
4.4	Quality Management System	
	Quality Assurance Plan	
	Copy of Diamond Mark of Quality Certificate	
	Manufacturer's experience	
	Manufacturing Capacity (units per month)	
	List of previous customers	
	Customer reference letters	
5.1	Test standards and responsibility of carrying out tests	
	Copies of Type Test Reports submitted with tender	
	Acceptance tests to be witnessed by KPLC at factory before shipment	
	Test reports to be submitted by supplier to KPLC for approval before shipment	
	Replacement of rejected pole top brackets (if any)	
6.1	Marking	
6.2	Packing	
7.1	Documents submitted with tender	
7.2	Documents to be submitted by supplier to KPLC for approval before manufacture	
	Deviations from specification	

.....  
**Manufacturer's Name, Signature, Stamp and Date**

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