



Kenya Power



OIP BUSHING- SPECIFICATION

A Document of the Kenya Power & Lighting Co. Ltd
January 2024

TITLE: OIP BUSHING NEW BAMBURI SPECIFICATION	Doc. No.	
	Issue No.	1
	Revision No.	0
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0.1 CIRCULATION LIST

COPY NO.	COPY HOLDER
1	In charge, E/plant
2	

0.2 AMENDMENT RECORD

Rev No.	Date (YYYY-MM-DD)	Description of Change	Prepared by (Name & Signature)	Approved by (Name & Signature)
0	2025-02-28	New issue	Douglas Kanyi 	George Welimo 

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FOREWORD

This specification have been prepared by the Electrical plant, coast of The Kenya Power and Lighting Company Limited (KPLC) and it lays down requirements for specifications of OIP Bushing for New Bamburi substation transformer


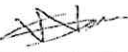
OIP Bushing will be used to replace faulty OIP Bushing in power transformer at New Bamburi substation that have OIP Bushing.

This specification was prepared to establish uniform requirements for specifications of OIP Bushing for used at Kenya Power and Lighting Company Ltd.

There are no other specifications in this series.

This specification stipulates the minimum requirements for specifications of OIP Bushing acceptable for use in the company and it shall be the responsibility of the supplier to ensure that the offered spares is of the highest quality and guarantees excellent service to KPLC, good workmanship and good engineering practice.

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

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1. SCOPE

1.1. This specification is for OIP Bushing

2. NORMATIVE REFERENCES

The following standards contain provision, 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.

IEC/ISO 17025

IEC: 60137

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 abbreviations.

3.1. ABBREVIATIONS

A-Amp

AC-Alternating Current

KPLC- Kenya Power and Lighting Company Limited

ISO – International Organization for Standardization.

IEC- International electrotechnical commission

Kg –Kilogram

KV - Kilovolt

LV – Low Voltage

EN – European Standard

mA-milliAmp

RMS-Root mean Square

V-Volt

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4. REQUIREMENTS



4.1. GENERAL REQUIREMENT

4.1.1. Transformer Technical details

- 4.1.1.1. Transformer MVA rating:45MVA
- 4.1.1.2. Transformer voltage 33kV
- 4.1.1.3. Vector group-YNyn0d11
- 4.1.1.4. Y winding insulation LI650AC275-LI350AC140
- 4.1.1.5. y winding insulation LI170AC70

4.2. TECHNICAL BUSHING DETAILS

TECHNICAL DATA		
1	Type of lead	Solid conductor
2	Standard	IEC 60137
3	Insulation	Oil impregnated Paper condenser
4	Rated Voltage L-L	52kV
5	Working Voltage L-E	30kV
6	Standard insulation level(BIL)	250kV
7	Standard value of rated current (I_r)	1250A
8	Rated frequency	50Hz
9	minimum withstand values of cantilever load	state
10	Ac 1 min, test voltage(dry)	105kV
11	Nominal Creepage distance	1500mm
12	Maximum mounting angle	30°
13	Altitude of operation	Less than1000 meters above sea level
14	Capacitance(C1)	state
15	Temperature limits and temperature rise	105°C (Class A)
16	bushings supplied with a conductor	yes
17	dimensional requirements	As per drawing below
18	test tap	provide
19	Total weight	state

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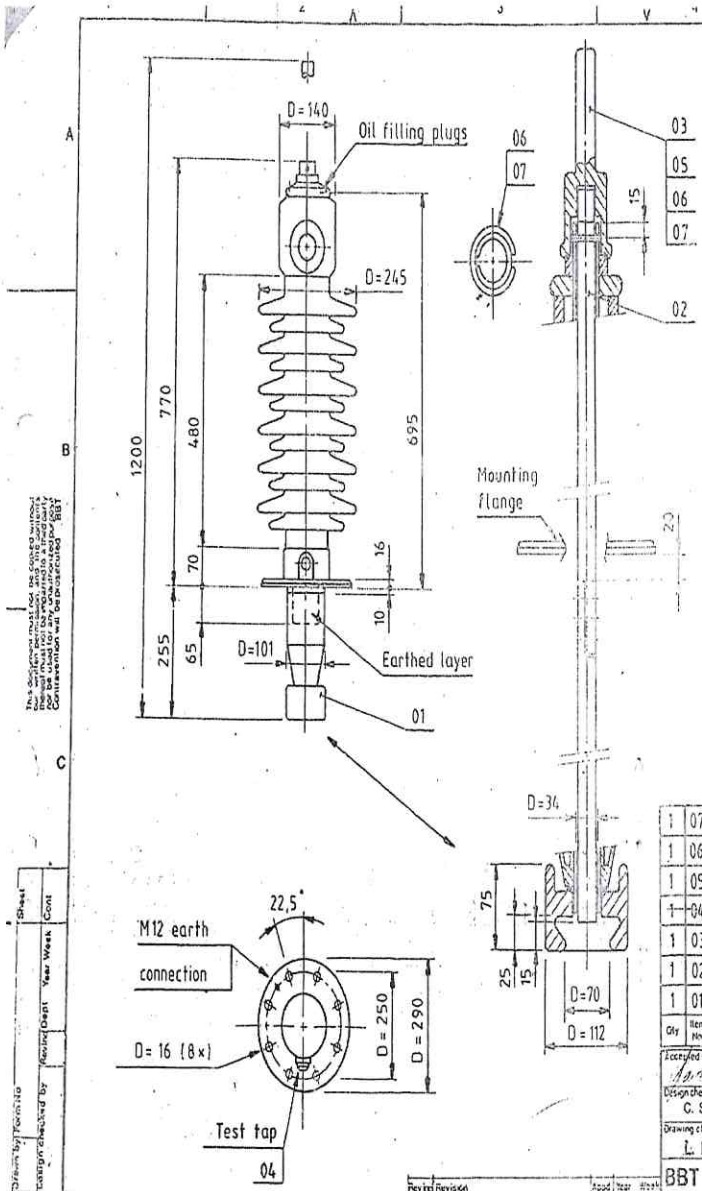
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ELECTRICAL DATA	
NOMINAL VOLTAGE	52 kV
MAXIMUM PHASE TO EARTH VOLTAGE	52 kV
RATED CURRENT OF BUSHING	1250 A
MAXIMUM CURRENT WITH SOLID CONDUCTOR	1300 A
MAXIMUM CURRENT WITH STRANDED CABLE	- A
LIGHTNING IMPULSE 1,2 / 50 μ s	250 kV
ROUTINE TEST VOLTAGE 1 min 50 Hz	105 kV
WET AC TEST (IEC and ANSI)	105 kV
CREEPAGE DISTANCE	1500 \pm 50 mm
PROTECTED DISTANCE	530 mm

- Note**
- Exterior coating area electro-finned to BS 1872:1964 table 1. Classification Sn 12 C. Minimum local thickness 30 microns without heat treatment.
 - Test certificate required.

Mass 30,4 kg

Qty	Item No.	Item desc.	Article No.	Material, type, dimensions, etc.	Name of item	Note
1	07	PR 2111 2835-348	D=6 x 45		Locking pin	-
1	06	PR 2111 2835-265	D=4 x 45		Locking pin	-
1	05	2152 2012-420	65,5 x 59,5 x 3		O-Ring	-
1	04	2769-519-A			Ground-layer conn.	-
1	03	PR 2743 4105-1	D=38		Outer terminal	3,1
1	02	PR 2631 6110-A			Inner terminal	7,3
1	01	PR 123 167-K	BBT Pretoria West		Bushing	28

Approved by: *[Signature]* / Accepted for prod by: *[Signature]* / Description (English): PURCHASE DRAWING
 Design checked by: C. Southwell / Drawn by: R.J. Kleinscheldt / Description (from language): BUSHING GOB 250
 Drawing checked by: L. D'ARCH / Issued by Dept. Trial. Week: TTM 91 40 / Date: 2025-02-28
 BBT Power Transformers / PR 2761 4277 / Rev: 0 / Sheet: 1 of 1

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4.3. DOCUMENTATION AND SUPPORT

4.3.1. Warranty



4.3.1.1. The OIP Bushing shall be backed by a minimum of 12-months factory warranty after delivery.

4.3.2. Documentation

4.3.2.1. The Bidder shall submit a clause by clause statement of compliance with the specifications together with copies of the manufacturer's catalogues, brochures, technical data and proven test reports clearly marked to support each clause, all in English for evaluation. The manufacturer's type reference/designation of the item offered shall be indicated

4.3.3. Drawings

4.3.3.1. Detailed Bushing and draw rod drawings

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5. TESTS REQUIREMENTS


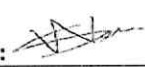
5.1. The OIP Bushing shall be inspected and tested in accordance with standards and this specification. It shall be the responsibility of the manufacturer to perform or to have performed all the tests specified. Tenderers shall confirm the manufacturer's capabilities in this regard when submitting tenders. Any limitations shall be clearly specified.

5.2. Copies of previous Test Reports issued by own or a third party testing laboratory that is accredited to ISO/IEC 17025:2005 or 17025:2017 confirming compliance of the OIP Bushings spares offered shall be submitted with the offer for evaluation (all in English Language). A copy of the **accreditation certificate** and the **scope of accreditation** of the testing laboratory shall also be submitted. Any translations of certificates or reports into English language shall be signed and stamped by the Testing Authority that carried out tests. Copies of test reports for the OIP Bushing offered to be submitted for tender evaluation shall include but not limited to the following test

- a) Lightning and switching Impulse Voltage
- b) Power Frequency voltage withstand test
- c) Temperature Rise

6. INSPECTION REQUIREMENTS

6.1 On receipt of the OIP Bushing, Kenya Power will inspect them in order to verify compliance with the specification. The supplier shall replace without charge to Kenya Power, any ordered OIP Bushing, which upon examination or use fail to meet any or all of the requirements in the specification.

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7. MARKING AND PACKING



7.1 MARKING

The following information shall be marked legibly and in a permanent manner on the OIP Bushing:

- a) The manufacturer's name or trade mark;
- b) The type reference number / model number;
- c) Standard of manufacture and tests;
- d) The serial number;
- e) Power factor and capacitance



8. PACKING

8.1 OIP Bushing shall be packaged to protect it from damage and entry of moisture during transportation, handling and storage.

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Clause number	REQUIREMENT	Bidder's offer
	bushings supplied with a conductor	specify
	dimensional requirements	specify
	test tap	specify
	Total weight	specify
4.3.	DOCUMENTATION AND SUPPORT	
4.3.1.	Warranty	
4.3.1.1.	Factory warranty after delivery.	State
4.3.2.	Documentation	
4.3.2.1.	The Bidder shall submit a clause by clause statement of compliance with the specifications together with copies of the manufacturer's catalogues, brochures, technical data and proven test reports clearly marked to support each clause, all in English for evaluation. The manufacturer's type reference/designation of the item offered shall be indicated	Submit
4.3.3.	Drawings	
4.3.3.1.	Detailed OIP Bushing drawings	Submit
5	TESTS REQUIREMENTS	
5.1.	Manufacturer tests capabilities	state
5.2.	Copies of previous Test Reports issued by own or a third party testing laboratory that is accredited to ISO/IEC 17025:2005 or 17025:2017 confirming compliance of the OIP Bushing offered shall be submitted with the offer for evaluation (all in English Language). A copy of the accreditation certificate of the testing laboratory shall also be submitted. Copies of test reports for the OIP Bushing offered to be submitted for tender evaluation shall include but not limited to the following test a) Lightning and switching Impulse Voltage b) Power Frequency voltage withstand test c) Temperature Rise	Submit
6	INSPECTION REQUIREMENTS	
6.1	On receipt of the OIP Bushing, Kenya Power will inspect them in order to verify compliance with the	State

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A: 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, 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	Bidder's offer
	Manufacturer's Name and address	specify
	Country of origin	specify
4.1.	GENERAL REQUIREMENT	
4.1.1.	Transformer Technical details	
4.1.1.1.	Transformer MVA rating:	specify
4.1.1.2.	Transformer voltage	specify
4.1.1.3.	Vector group	specify
4.1.1.4.	Insulation for Y winding	specify
4.1.1.5.	Insulation y winding	specify
4.2.	TECHNICAL OIP BUSHING DETAILS	
	Type of lead	specify
	Standard	specify
	Insulation	specify
	Rated Voltage L-L	specify
	Working Voltage L-E	specify
	Standard insulation level(BIL)	specify
	Standard value of rated current (I_r)	specify
	Rated frequency	specify
	minimum withstand values of cantilever load	specify
	Ac 1 min, test voltage(dry)	specify
	Nominal Creepage distance	specify
	Maximum mounting angle	specify
	Altitude of operation	specify
	Capacitance(C1)	specify
	Temperature limits and temperature rise	specify

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Clause number	REQUIREMENT	Bidder's offer
	specification. The supplier shall replace without charge to Kenya Power, any ordered OIP Bushing which upon examination or use fail to meet any or all of the requirements in the specification.	
7	MARKING AND PACKING	
7.1	MARKING	
	The following information shall be marked legibly and in a permanent manner on the OIP Bushing: a) The manufacturer's name or trade mark; b) The type reference number / model number; c) Standard of manufacture and tests; d) The serial number; e) Power factor and capacitance	State
8	PACKING	
8.1	Packaging to protect it from damage and entry of moisture during transportation, handling and storage.	State

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

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