

DOCUMENT NO.: KP1/13D/4/1/TSP/09/121



**Kenya Power**

**BENCH VICE AND BENCH GRINDER  
— SPECIFICATION**

A Document of the Kenya Power & Lighting Company Plc.

**January 2023**



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**BENCH VICE AND BENCH GRINDER  
— SPECIFICATION**

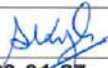
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**01. Circulation List**

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

**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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Users are reminded that by virtue of Section 25 of the Copyright Act, 2001 (Revised 2014) Cap 130 of the Laws of Kenya, copyright subsists in all KPLC standards and except as provided under Section 26 of this Act, no KPLC standard produced by KPLC may be reproduced, stored in retrieval system by any means without prior permission from the Managing Director & CEO, KPLC.

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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)
Issue 1 Rev 0	2023-01-27	New Issue	Rotich Benard	Eng. Dr. P. Kimemia

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**FOREWORD**

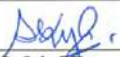

This Specification has been prepared by the Standards Department in collaboration with Quality Control of Logistics Department, both of the Kenya Power and Lighting Company Plc (herein called KPLC), and it lays down requirements for the Bench Vice and Bench Grinder for use in the Quality Control materials' laboratory.

This specification stipulates the minimum requirements for the Bench Vice and Bench Grinder acceptable for use in the company and it shall be the responsibility of the suppliers and manufacturer 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 for KPLC.

Users of this KPLC specification are responsible for its correct interpretation and application.

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

No	Name	Department
1.	Wesley Terer	Logistics
2.	Rotich Benard	Standards

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### 1. SCOPE

This specification covers the Bench Vice and the Bench Grinder for use by the company's Quality Control teams. Each Bench Vice and Bench Grinder shall be complete with steel structure mounting that comprises of steel angle sections of at least 50mmx50mmx6mm.

### 2. NORMATIVE REFERENCES

The Bench Vice and the Bench Grinder shall comply with all the applicable ISO, IEC Standards and Kenya Standards including the following:

BS 4659: Specification for tool and die steels

Note: *References to brand names or catalogue numbers are intended to be descriptive only and not restrictive. The Tenderer may adopt higher standards, brand names, and or catalogue numbers in its Tender, provided that it demonstrates to KPLC's satisfaction that the substitutions ensure equivalence to all requirements of this specification.*

### 3. DEFINITIONS AND ABBREVIATIONS

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

Grinding: Is a type of machining using an abrasive wheel as the cutting tool. Each abrasive grain on the wheel's surface cuts a small chip from the work piece via shear deformation.

### 4. REQUIREMENTS


#### 4.1. SERVICE CONDITIONS

The Bench Vice and the Bench Grinder shall be suitable for use in tropical climatic conditions including areas exposed to:

- Altitudes of up to 2200m above sea level;
- Humidity of up to 95% without condensing;
- Average ambient temperature of +30°C with a minimum of -1°C and a maximum of +40°C;
- Heavy Saline conditions along the coast.

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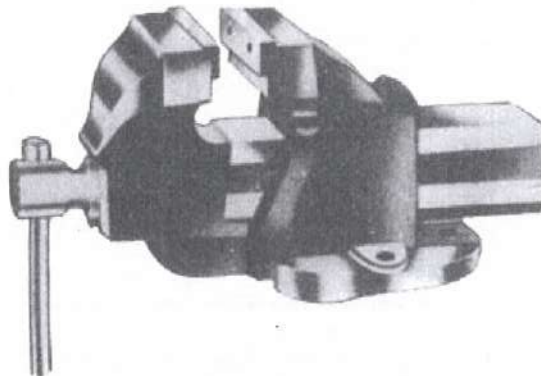
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#### 4.2. DESIGN & CONSTRUCTION

##### 4.2.1. BENCH VICE

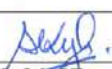

- 4.2.1.1. The bench vice shall be used as a machine tool used for holding work pieces as other machining operations are carried out.
- 4.2.1.2. The vice shall be manufactured to applicable ISO / IEC/BS Standards, Kenya Standards and the requirements of this specification.
- 4.2.1.3. The vice shall be made from cast iron for strength and durability. The Bench Vice shall be designed for heavy duty applications.
- 4.2.1.4. The vice shall be supplied complete with mounting bolts and screw handle. The handle shall be forged steel type.
- 4.2.1.5. The base bolts shall be mounted directly to the workbench surface for stability, and swivels and locks for versatility. Roll-formed screw threads shall be used in fixing the jaws to the Bench Vice.



*Figure 1: General Arrangement of the Bench Vice*

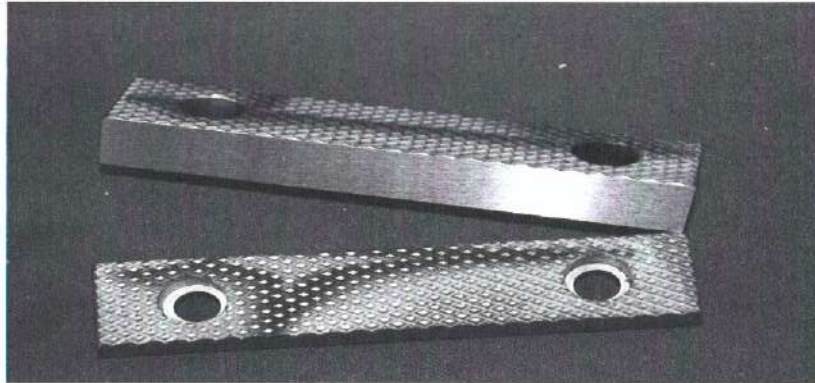
##### 4.2.1.6. Vice Jaws.

- 4.2.1.6.1. The jaws shall be manufactured from tool steel complying with BS 4659:1989.

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4.2.1.6.2. Jaws shall be versatile characterized by good toughness and excellent dimensional stability in heat treatment. Jaws shall have effective combination of strength and toughness and tool performance.

4.2.1.6.3. The jaws shall be easily replaceable.



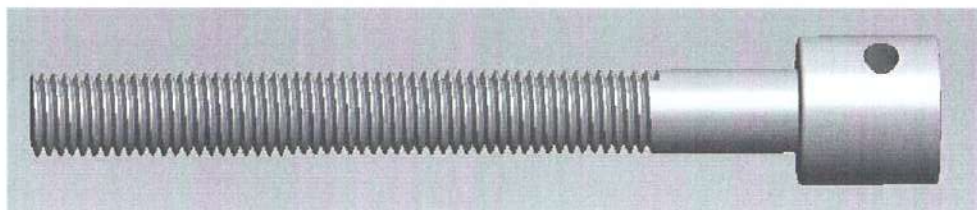
*Figure 2: Bench Vice Replaceable Jaws*

4.2.1.7. **Vice Driving Screw.**

4.2.1.7.1. The material of manufacture for the screw shall be Nickel Chromium Steel AISI 3140 or its equivalent and acme threaded.

4.2.1.7.2. The bench vice's driving screw shall, through its rotary action, give movement to the movable jaw in to and fro direction.

4.2.1.7.3. The vice screw shall hold work piece tightly by tightening the work piece between the fixed and movable jaws.



*Figure 3: Driving screw*

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#### 4.2.1.8. Vice Dimensions

The vices shall be of the following sizes with their dimensions as follows:

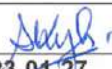

**Table 1: Vice Sizes and their Dimensions**

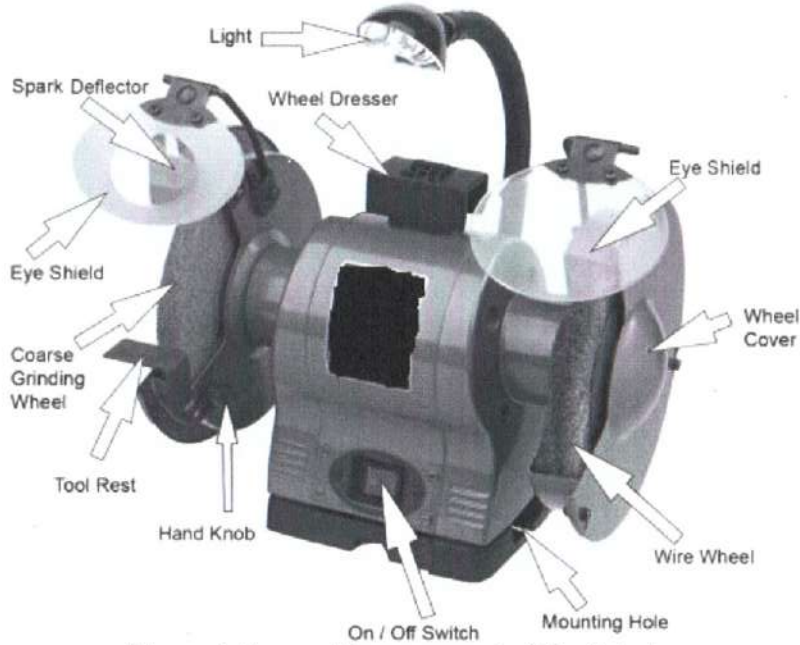
a) Vice No. *	00	0	1	2	3	4	5	6	8
b) Size	2 ¼"	2 ½"	3"	3 ½"	4"	4 ½"	5"	6"	8"
c) Width Of Jaws (mm)	60	65	80	90	100	115	125	150	200
d) Opening Of Jaws (mm)	60	65	85	100	120	140	170	200	235
e) Depth Of Jaws (mm)	45	50	55	60	70	75	85	90	110
f) Weight (Approx. In Kgs)	3	4	6	9	13	15	20	25	42

\*The size shall be stated at the time of purchase.

#### 4.2.2. BENCH GRINDER

- 4.2.2.1. The bench grinder shall be used as a machine tool used for grinding and cutting a work piece desired shape or size.
- 4.2.2.2. The grinder shall be manufactured to applicable ISO / IEC/BS Standards, Kenya Standards and the requirements of this specification.
- 4.2.2.3. The grinder shall be designed for heavy-duty applications.
- 4.2.2.4. The grinder shall be supplied complete with mounting bolts
- 4.2.2.5. The base bolts shall be mounted directly to the workbench surface for stability, and swivels and locks for versatility.

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**Figure 4: General Arrangement of the Grinder**


4.2.2.6. The grinder's features shall be as per Table 2 below:


**Table 2: Grinder's Requirements**

No	Item	Values
1.	Rated Voltage	240V- 50HZ
2.	Rated input	370W
3.	No load speed	2850 RPM (+/-5%)
4.	Sound pressure level, LPA	84db Max.
5.	Sound power level, LWA	94db Max
6.	Weight	13-15kg
7.	Abrasive wheel supplied	Coarse (36 Grit)

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No	Item	Values
8.	Wheel dimensions	7 inch
9.	Lamp	integral 10W lamp
10.	Plug	Must be BS 1363/A approved
11.	Construction	Robust
12.	Wheel dresser	For dressing grinding wheels back to their original shape
13.	Combined eye shield / spark arrestors plus wheel guards	to protect against flying particles
14.	Adjustable tool rest	enable controlled presentation of the work piece
15.	Tray	Tool tray not coolant tray

#### 5. TESTS AND INSPECTION

The Bench Vice and Bench Grinder shall be inspected and tested in accordance with the requirements of this specification. It shall be the responsibility of the supplier to test or to have all the relevant tests performed.

#### 6. MARKING AND PACKING

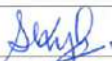

##### 6.1. MARKING

The Bench Vice and Bench Grinder shall be marked in a permanent and visible manner with the following:

- a) Name or trade mark of the manufacturer;
- b) Model No.
- c) Year of manufacture.
- d) The words **“PROPERTY OF KPLC”**

##### 6.2. PACKING

Each Bench Vice and Bench Grinder shall be packed in a manner so as to protect it from damage during transportation and storage.

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**APPENDICES**

**APPENDIX A: TESTS AND INSPECTION (NORMATIVE)**

- A.1 After manufacture, KPLC shall nominate three engineers to inspect the items at the factory.
- A.2. On receipt of the items at stores, KPLC will inspect them for acceptance and may perform or have tests performed in order to verify compliance with this specification. The supplier shall replace without charge to KPLC any tool, which upon examination, test or use fail to meet any or all of the requirements in the specification, during the warranty period.

**APPENDIX B: QUALITY MANAGEMENT SYSTEM (Normative)**

- B.1 The supplier shall submit a Quality Assurance Plan (QAP) that will be used to ensure that the items physical properties, tests 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.
- B.2 The Manufacturer's Declaration of Conformity to applicable standards and copies of quality management certifications including copy of valid and relevant ISO 9001: 2015 certificate shall be submitted with the tender for evaluation.

**APPENDIX C: 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) for tender evaluation shall include the following:
- a) Fully-filled clause by clause Guaranteed Technical Particulars (GTP) signed by the manufacturer, specific values shall be filled in. Terms like "Yes", "Agree", "Complied" **shall not be acceptable;**
  - b) Copies of the Manufacturer's catalogues, brochures, drawings and technical data;
  - c) Design Drawings with details of the bench vice and bench grinder to be manufactured for KPLC.
  - d) ISO 9001:2015 Certificate and other technical documents required in the tender.
  - e) Manufacturer's warranty and guarantee; subject to 12 months from the date of delivery to KPLC stores.

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C.2 The successful bidder (supplier) shall submit the following documents/details to KPLC for approval before manufacture:

- a) Fully-filled clause by clause Guaranteed Technical Particulars (GTP) signed by the manufacturer, specific values shall be filled in. Terms like “Yes”, “Agree”, “Complied” **shall not be acceptable**;
- b) Design Drawings with details of the bench vice and bench grinder to be manufactured for KPLC.
- c) Marking details
- d) Packaging details (including packaging materials).

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**APPENDIX 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 suppliers' capacity and experience; and copies of complete type test certificates and test reports for tender evaluation, all in English Language)*

Tender No. ....

Clause number	KPLC requirement	Bidder's offer (indicate full details )
	Manufacturer's Name and address	<i>Specify</i>
	Country of Manufacture	<i>Specify</i>
	Bidder's Name and address	<i>Specify</i>
1.	Scope	<i>Specify</i>
2.	References	<i>Specify</i>
3.	Definitions and abbreviations	<i>State</i>
4.	<b>Requirements</b>	
4.1	Service Conditions	<i>State</i>
4.2	<b>DESIGN &amp; CONSTRUCTION</b>	
4.2.1	<b>Bench Vice</b>	
4.2.1.1	Use	<i>State</i>
4.2.1.2	Design and Standards met by the vice	<i>List</i>
4.2.1.3	Material of manufacture	<i>Specify</i>
	Application	<i>Specify</i>
4.2.1.4	Mounting bolts and screw handle	<i>Specify</i>
	Material of manufacture of the handle	<i>Specify</i>
4.2.1.5	Means of mounting	<i>Specify</i>
4.2.1.6	<b>Vice Jaws</b>	
4.2.1.6.1	Material of manufacture of the jaws	<i>Specify</i>
4.2.1.6.2	Jaws characteristics	<i>State</i>
4.2.1.6.3	Replaceability of jaws	<i>State</i>
4.2.1.7	<b>Vice Driving Screw</b>	
4.2.1.7.1	Material of manufacture of the screw	<i>Specify</i>
4.2.1.7.2	Drive's action	<i>State</i>
4.2.1.7.3	Vice operation mechanism	<i>State</i>
4.2.1.8	<b>Dimensions</b>	
Table 1	Vice size being offered	
	a) Vice No.*	<i>State</i>
	b) Size	<i>State</i>

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Clause number	KPLC requirement	Bidder's offer (indicate full details )	
	c) Width Of Jaws (mm)	State	
	d) Opening Of Jaws (mm)	State	
	e) Depth Of Jaws (mm)	State	
	f) Weight (Approx. In Kgs)	State	
4.2.2	<b>Bench Grinder</b>		
4.2.2.1	Use of grinder	State	
4.2.2.2	Design Standards met by the vice	State	
4.2.2.3	Application	State	
4.2.2.4	Mounting bolts and screw handle	Specify	
4.2.2.5	Means of mounting	Specify	
4.2.2.6 Table 2	Grinder's Features Requirements	a) Rated Voltage	Specify
		b) Rated input	Specify
		c) No load speed	Specify
		d) Sound pressure level, LPA	Specify
		e) Sound power level, LWA	Specify
		f) Weight	State
		g) Abrasive wheel supplied	State
		h) Wheel dimensions	State
		i) Lamp	State
		j) Plug	Specify
		k) Construction	Specify
l) Wheel dresser	Specify		
m) Combined eye shield / spark arrestors plus wheel guards	State		
n) Adjustable tool rest	State		
o) Tray	State		
5	<b>TEST REQUIREMENTS</b>		
	Test standards and responsibility of testing	Specify	
6	<b>Marking and Packing</b>		
6.1	<b>Marking</b>		
	Markings on the Bench Vice and Bench Grinder	Specify	
6.2	<b>Packing</b>		
	Packaging details	Specify	
<b>APPENDICES</b>			
A	<b>TESTS AND INSPECTION</b>		
A1	Inspection at the factory	Specify	

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



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Clause number	KPLC requirement	Bidder's offer (indicate full details )
A2	Supplier shall replace without charge to KPLC items that don't meet specification	State
B	<b>Quality Management System</b>	
B.1	Quality Assurance Plan	<i>Provide</i>
B.2	Manufacturer's ISO 9001:2015	<i>Provide</i>
C	<b>Documentation</b>	
C.1	Documents submitted with tender	<i>State compliance</i>
C.2	Documents to be submitted by supplier to KPLC for approval before manufacture	<i>State compliance</i>
	Statement of compliance to specification (indicate deviations if any & supporting documents)	<i>State compliance</i>

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

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