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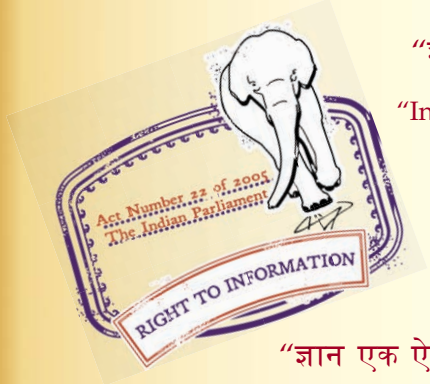
IS 6007 (1971): Pipe Vices (Hinged Type) [PGD 6: Earth, Metal And Wood Working Hand Tools]



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"Knowledge is such a treasure which cannot be stolen"

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Indian Standard

SPECIFICATION FOR PIPE VICES (HINGED TYPE)

(First Reprint DECEMBER 1983)

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INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Gr 3

August 1971

Indian Standard

SPECIFICATION FOR PIPE VICES (HINGED TYPE)

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SPECIFICATION FOR PIPE VICES (HINGED TYPE)

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 8 February 1971, after the draft finalized by the Hand Tools Sectional Committee had been approved by the Mechanical Engineering Division Council.

0.2 Pipe vices are generally required for plumbing jobs and erection of other types of pipe lines. This standard covers the requirements for hinged type pipe vices. The shape shown in the figure is only to illustrate the dimensions. The actual shape and other details are left to the discretion of the manufacturer. An Indian Standard on pipe vices (open side type and fixed sides type) (IS : 2587-1964) has already been issued.

0.3 While preparing this standard, assistance has been derived from the following:

JIS B 4642-1958 Pipe vice. Japanese Industrial Standards Committee.

GGG-V-00415 March 1965 Vice pipe. USA Federal Supply Service.

0.4 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified values in this standard.

1. SCOPE

1.1 This standard covers the requirements for hinged type pipe vices commonly used for clamping pipes.

2. MATERIAL

2.1 The materials for the manufacture of different components of vices shall be such as to fulfil the requirement laid down in **3** and **11**. Some of the suitable materials for the manufacture of various components of vices

*Rules for rounding off numerical values (*revised*).

are as given below:

Component	*Materials*
Base, frame, hook and jaw crosshead	Steel casting conforming to Grade 3 of IS : 1030 - 1962*
	or
	Grey cast iron conforming to Grade 35 of IS : 210 - 1962 †
Jaws	Tool steel conforming to designation T 75 of IS : 1570 - 1961‡
Screw spindle and handle	Steel conforming to designation St 42 of IS : 1570 - 1961‡

3. HARDNESS

3.1 The hardness measured at the jaws shall be within the range of 45 to 52 *HRC* (*see* IS : 1586 - 1968§) or 450 to 550 *HV* (*see* IS : 1501 - 1968‖).

4. SHAPES AND DIMENSIONS

4.1 The main dimensions of the vices shall be as given in Table 1 read with Fig. 1.

4.2 The main dimensions for jaws shall be as given in Table 2.

4.3 The shape given in the figure is only to illustrate the dimensions, the actual shape and other design details are left to the descretion of manufacturer. The untoleranced dimension may have a variation of ± 2 percent.

5. MANUFACTURE

5.1 Base — The vertical upright section of the base shall be provided with holes for the mounting of the frame, and shall have provisions on both sides for automatic engagement of the latch hook. The upright section shall be symmetrical about the vertical centre line to provide for hinging the frame from either the right or left side. The lower jaw mounting shall be so designed as to allow the vice to clamp the minimum pipe-size capacity of the vice as indicated in Table 1.

*Specification for steel castings for general engineering purposes (*revised*).

†Specification for grey iron castings (*revised*).

‡Schedules for wrought steels for general engineering purposes.

§Methods for Rockwell hardness test (B and C scales) for steel (*first revision*).

‖ Methods for Vickers hardness test for steel (*first revision*).

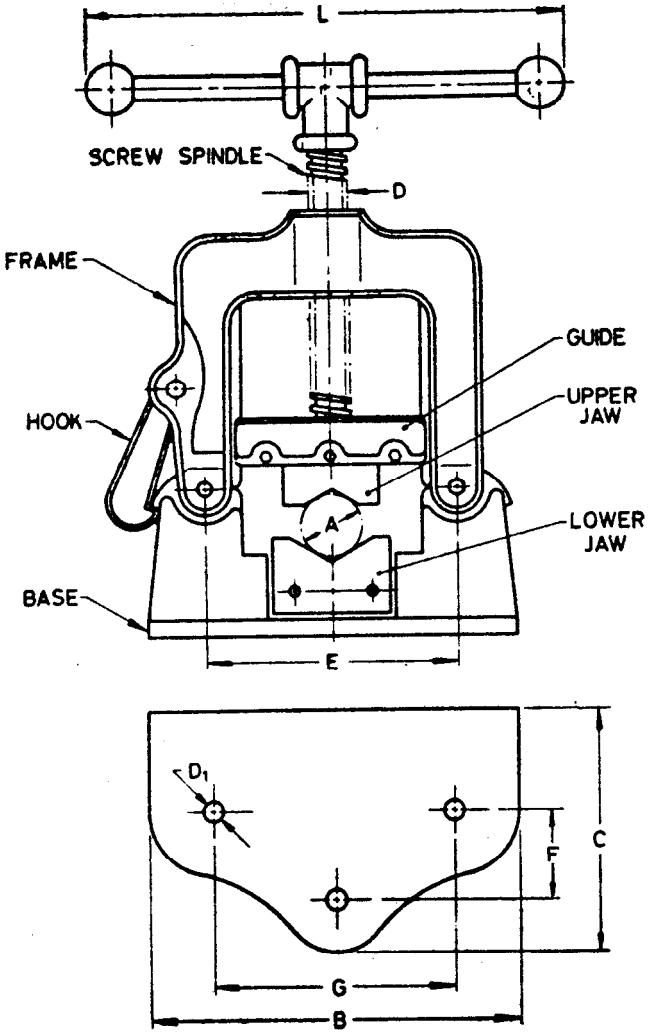


FIG. 1 DIMENSIONS FOR PIPE VICES (HINGED TYPE)

TABLE 1 DIMENSIONS FOR PIPE VICES (HINGED TYPE)

(*Clauses* 4.1, 5.1 *and* 5.5 and *Fig.* 1)

All dimensions in millimetres.

Nominal Size (Jaw Opening)	Capacity (Outside Pipe Diameter) *A*	*B* *Max*	*C* *Max*	*D*	D_1 $^{+0\cdot2}_{-0}$	*E* ±1·2	*F*	*G* ±1·2	*L*
80	10 to 77	165	115	T_r 22 × 5 or Sq 22 × 5*	14	130	40 ± ·7	120	220
105	10 to 102	210	145	T_r 25 × 5 or Sq 26 × 5*	15	155	53 ± ·7	150	270
130	10 to 128	250	165	T_r 25 × 5 or Sq 26 × 5*	15	185	63 ± ·7	180	300
170	21 to 166	300	180	T_r 28 × 5 or Sq 28 × 5*	16	240	70 ± 1·2	215	350

*According to IS : 4694-1968 Dimensions for square threads.

5.2 Frame and Hook — The open ends of the frame shall have mounting bolt-holes to align with the bolt holes in the uprights of the base. The closed end shall have provision for an internal threaded hole in the centre. One of the legs shall have a hole for mounting the latch hook and shall be such designed as to automatically lock the frame in the closed position. The assembled frame shall be so designed as to be reversible in a vertical plane to the base to provide for hinging the frame either from the right or left side of the base. The inside edge of the frame shall have smooth and parallel ways free of burrs and fins to act as guides for the jaw crosshead and shall permit the crosshead to slide freely over the entire length of adjustment without binding.

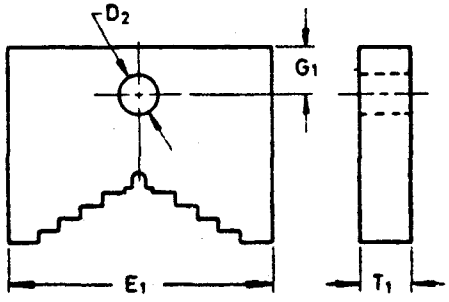
5.3 Jaw Crosshead — The top of the crosshead shall be provided with means to allow the end of the screw spindle to swivel and be designed to both raise and lower the crosshead by action of the screw spindle.

5.4 Jaws — The gripping surface shall be V or semicircular in shape and have mill cut V-shaped teeth.

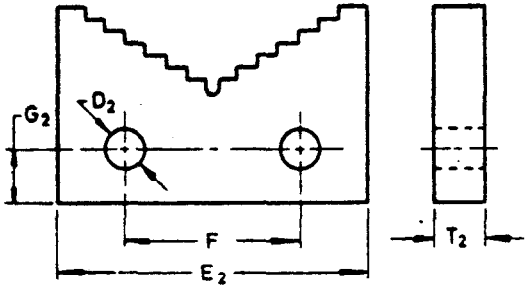
TABLE 2 DIMENSIONS FOR JAWS

(*Clause* 4.2)

All dimensions in millimetres.



UPPER JAW



LOWER JAW

Nominal Size	D_2 $^{+0.2}_{-0}$	E_1 *Min*	E_2 *Min*	F_1 ±1	G_1 ±1·5	G_2 ±1·5	T_1 $^{+1.5}_{-0}$	T_2 $^{+1.5}_{-0}$
80	10	55	65	35	12	12	11	10
105	10	68	80	45	12	14	13	12
130	13	85	105	60	14	16	15	13
170	13	110	130	70	16	16	16	14

5.5 Screw Spindle — The screw spindle shall have square or ISO metric trapezoidal screw threads. One end of the screw spindle shall have a head which shall be either an integral part of the screw or welded to the screw in a permanent manner. The head shall be provided with a hole to receive the handle. The screw spindle shall engage the full length of the threaded bearing of the body when the jaw is at the maximum opening indicated in Table 1.

5.6 Handle — The handle shall be straight and shall slide freely in the hole of the screw spindle head with means provided at each end of the handle to prevent disengagement from the screw spindle head.

6. WORKMANSHIP AND FINISH

6.1 The vices shall be smooth all over, and shall be free from burrs, cracks or other manufacturing defects. The screw spindle shall provide for proper alignment of the jaws, and the jaws shall distribute even pressure over the entire area of contact. The movement of the spindle shall be easy without undue slackness or resistance throughout the opening, and the hacklash shall not exceed the one-eighth of the pitch of the screw.

7. PRESERVATIVE TREATMENT

7.1 The vices shall be painted on all non-working surfaces. The working surfaces shall be covered with rust-proofing material.

8. DESIGNATION

8.1 The pipe vices (hinged type) shall be designated by:

a) commonly used name,

b) nominal size, and

c) the number of this standard.

Example:

A pipe vice (hinged type) of 105 mm nominal size shall be designated as:

Vice 105, IS 6007-1971

9. MARKING

9.1 The vices shall be marked with the manufacturer's name, initials or recognized trade-mark and the nominal size.

9.1.1 The vices may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act, and the Rules and Regulations made thereunder. Presence of this mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard, under a well-defined system of inspection, testing and quality control during production. This system, which is devised and supervised by ISI and operated by the producer, has the further safeguard that the products as actually marketed are continuously checked by ISI for conformity to the standard. Details of conditions, under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

10. SAMPLING

10.1 Unless otherwise agreed upon between the supplier and the purchaser the sampling plan as given in Appendix A shall be followed.

11. TESTS

11.1 Clamping Test — A bar of 30 mm diameter and of smooth surface having a hardness not less than 50 *HRC* (*see* IS : 1586-1968*) or 510 *HV* (*see* IS : 1501-1968†) shall be gripped in the vice and a turning moment as given in Table 3 shall be applied to the screw spindle. The bar shall then be twisted with a turning moment as given in Table 3. The bar shall not rotate and the vice shall not show any sign of damage.

11.1.1 A mild steel bar of 30 mm diameter and of smooth surface shall be gripped in the vice and then removed. After removal of the bar the lines on the bar shall show a uniform pressure throughout the contact area.

APPENDIX A

(*Clause* 10.1)

SAMPLING OF PIPE VICES AND CRITERIA FOR CONFORMITY

A-1. SCALE OF SAMPLING

A-1.1 Lot — In any consignment all the pipe vices of the same designation and manufactured under essentially similar conditions shall be grouped together to constitute a lot.

A-1.2 For ascertaining the conformity of the lot to the requirements of this specification test shall be carried out for each lot separately. The number of pipe vices to be selected at random for this purpose shall be in

*Method for Rockwell hardness test (B and C scales) for steel (*first revision*).

†Method for Vickers hardness test for steel (*first revision*).

accordance with col 1 and 2 of Table 4. To ensure the randomness of selection, IS : 4905-1968* shall be followed.

A-2. NUMBER OF TESTS AND CRITERIA FOR CONFORMITY

A-2.1 Vices selected according to **A-1.2** shall be examined for the requirements of this specification. If none of the sample vices fails to meet these requirements, the lot shall be declared to conform to this specification.

TABLE 3 TESTING MOMENT FOR PIPE VICES (HINGED TYPE)

(*Clause* 11.1)

Nominal Size	Turning Moment			
	To be Applied to Screw Spindle		To be Applied to Test Bar	
mm	N.m	(kgf.m)	N.m	(kgf.m)
80	69	(7)	98	(10)
105	88	(9)	118	(12)
130	88	(9)	128	(13)
170	98	(10)	137	(14)

TABLE 4 SCALE OF SAMPLING

(*Clause* A-1.2)

No. of Vices in the Lot	No. of Vices to be Selected
N	n
(1)	(2)
Up to 5	All
6 „ 25	5
26 „ 50	8
51 „ 100	13
101 and above	20

*Methods for random sampling.