IS 5684 (1970): Pipe Vices (Chain Type) [PGD 6: Earth, Metal And Wood Working Hand Tools]

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Indian Standard

SPECIFICATION FOR PIPE VICES (CHAIN TYPE)

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

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Indian Standard

SPECIFICATION FOR PIPE VICES (CHAIN TYPE)

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Indian Standard

SPECIFICATION FOR PIPE VICES (CHAIN TYPE)

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 24 June 1970, 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 chain type pipe vices. The shapes shown in the figures are only to illustrate the dimensions. The actual shape and other details are left to the discretion of the manufacturer. . A standard on open side type and fixed sides type pipe vices (IS : 2587-1964*) has already been issued.

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

Drg No. IND/GS/173 (b) Vices, pipe, $\frac{1}{4}$ in. to 4 in., Chains. Chief Inspectorate of General Stores, Ministry of Defence, Government of India.

Drg No. IND/GS/1129 (c) Vices, pipe $\frac{1}{8}$ in. to 6 in. Chains. Chief Inspectorate of General Stores, Ministry of Defence, Government of India.

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 value in this standard.

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1. SCOPE

1.1 This standard lays down the requirements for chain type pipe vices.

*Specification for pipe vices (open side type and fixed sides type).
†Rules for rounding off numerical values (*revised*).

2. MATERIAL

2.1 The materials for the manufacture of different components of vices shall be such as to fulfil the requirements laid down in **3** and **11**. Some of the suitable materials for the manufacture of different component are given below:

Component	*Material*
Base and nut	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 T75 of IS : 1570-1961‡
Screw spindle and handle	Steel conforming to designation St42 of IS : 1570-1961‡

3. HARDNESS

3.1 The hardness measured at the jaws shall be within the range of 45 to 55 *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, jaws and screw nut assembly shall be as given in Tables 1, 2 and 3 respectively.

4.1.1 The shapes given in the figures are only to illustrate the dimensions. The actual shape and other design details are left to the discretion of manufacturer. The dimensions may have a variation of ± 2 percent.

5. MANUFACTURE

5.1 Base — The base shall be notched or other means shall be provided to anchor the chain by means of the chain pins.

5.2 Jaws—The jaws shall be rigidly mounted on the base or integral with base. The clamping surface of the jaw shall be V-shaped or semi-circular and shall have mill cut V-shaped teeth for gripping the pipe.

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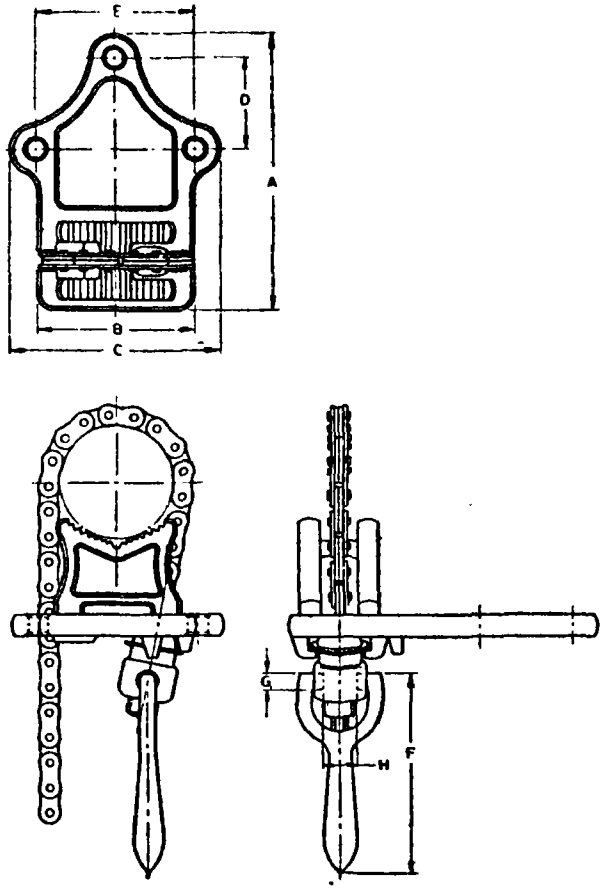
*Specification for steel castings for general engineering purposes (*revised*).
†Specification for grey iron castings (*revised*).
‡Schedules for wrought steels for general engineering purposes.
§Method for Rockwell hardness test (B and C scales) for steel (*first revision*).
¶Method for Vickers hardness test for steel (*first revision*).

TABLE 1 DIMENSIONS FOR PIPE VICES (CHAIN TYPE)

(*Clause* 4.1)

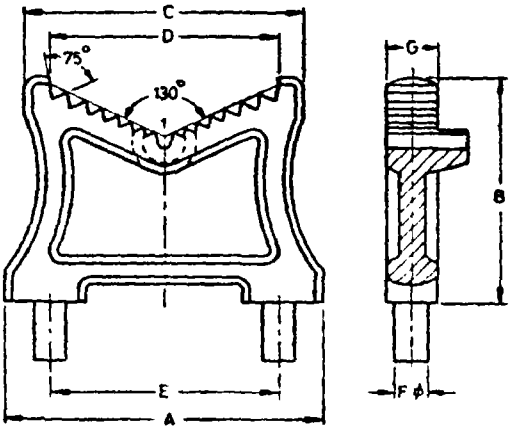
All dimensions in millimetres.



Nominal Size	Capacity (Outside Pipe Diameter)	*A*	*B*	*C*	*D*	*E*	*F*	*G*	*H*
63	3 to 63	135	75	100	45	75	115	11	24
102	6 to 102	213	119	160	70	121	153	11	30
152	10 to 152	248	150	197	89	153	162	12·5	36·5

TABLE 2 DIMENSIONS FOR JAWS
(*Clause* 4.1)

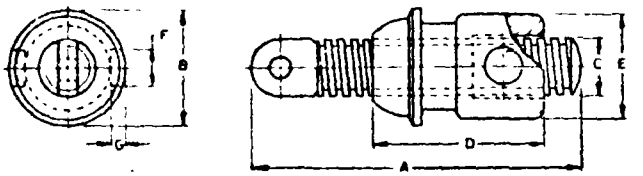
All dimensions in millimetres.



NOMINAL SIZE	*A*	*B*	*C*	*D*	*E*	*F*	*G*
63	62	12	60	50	50	8	12
102	95	73	89	73	73	10	16
152	133	95	118	100	108	13	20

TABLE 3 DIMENSIONS FOR SCREW-NUT ASSEMBLY
(*Clause* 4.1)

All dimensions in millimetres.



NOMINAL SIZE	*A*	*B*	*C*	*D*	*E*	*F*	*G*
63	80	35	T_r 16×3 or SQ 16×2*	35	30	9	4
102	105	45	T_r 22×5 or SQ 22×5*	50	40	14	6
152	125	45	T_r 22×5 or SQ 22×5*	65	40	14	6

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

5.3 Chain — The chain shall be of the flat link type with projecting link pins to engage the slot in the base. The chain shall be replaceable and of such length as to grip the pipe of the maximum size for which the vice is designed. The chain shall conform to Chain No.1222 of IS : 1072-1963*.

5.4 Screw — The screw shall have square or ISO metric trapezoidal screw threads which shall be properly and accurately cut. The ISO metric trapezoidal screw threads shall conform to the Indian Standard on 'ISO metric trapezoidal screw threads' (*under preparation*).

NOTE — Till the Indian Standard on ' ISO metric trapezoidal screw threads ' is published, the requirements relating to trapezoidal screw threads shall be as agreed to between the supplier and the purchaser.

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 movement of the screw shall be easy without undue slackness or resistance throughout the opening and the backlash shall not exceed the one-eighth of the pitch of the screw.

7. DESIGNATION

7.1 The pipe vices (chain type) shall be designated by:

a) Commonly used name,

b) Nominal size, and

c) Number of this standard.

Example

A pipe vice (chain type) of 63 mm nominal size shall be designated as:

Pipe Vice 63 IS : 5684

8. PRESERVATIVE TREATMENT

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

9. MARKING

9.1 The vices shall be marked with the nominal size and manufacturer's trade-mark.

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. The ISI Mark on products covered by an Indian Standard

*Specification for leaf chains.

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 which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. 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 purchaser and the manufacturer, the sampling plan and criterion for conformity 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 4 shall be applied to the screw. The bar shall then be twisted with a turning moment as given in Table 4. The bar shall not rotate and the vice shall not show any sign of damage.

TABLE 4 TURNING MOMENT FOR PIPE VICES (CHAIN TYPE)

Nominal Size	Turning Moment Kgf.m	
	To be Applied to Screw	To be Applied to Test Bar
63	8	10
102	9	12
152	10	14

11.1.1 A mild steel bar of 30 mm 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.

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

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 of manufacture shall be grouped together to constitute a lot.

A-1.2 For ascertaining the conformity of the lot to the requirements of this specification tests shall be carried out for each lot separately. The number of pipe vices to be selected at random for this purpose shall be in accordance with col 1 and 2 of Table 5. To ensure the randomness of selection, IS : 4905-1968* shall be followed.

TABLE 5 SCALE OF SAMPLING

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

A-2. NUMBER OF TESTS AND CRITERION FOR CONFORMITY

A-2.1 Vices selected according to **A-1.3** 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.

*Methods for random sampling.

INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

Quantity	*Unit*	*Symbol*
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

Quantity	*Unit*	*Symbol*
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

Quantity	*Unit*	*Symbol*	*Conversion*
Force	newton	N	1 N = 1 kg.1 m/s^2
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m^2
Frequency	hertz	Hz	1 Hz = 1 c/s (s^{-1})
Electric conductance	siemens	S	1 S = 1 A/V
Pressure, stress	pascal	Pa	1 Pa = 1 N/m^2

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