

For Comments only

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IS 5684: XXXX

Draft Indian Standard
PIPE VICES (CHAIN TYPE) — SPECIFICATION
(First Revision)

ICS 25.140.30

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Last date for receipt of comment is

FOREWORD

This Indian Standard (*first revision*) will be adopted by the Bureau of Indian Standards, after the draft is finalized by the Hand Tools Sectional Committee and approval by the Production and General Engineering Division Council (PGDC).

This standard was first published in 1970. The first revision has been taken up to keep pace with the latest technological developments and international practices.

In this revision, the following changes have been made:

- a) Clause on references has been added;
- b) Material designations have been updated;
- c) BIS certification marking clause has been updated.

This standard covers requirements for Chain type pipe vices generally used for plumbing jobs and erection of pipelines. For open side type and fixed sides type pipe vices please refer IS 2587: 1964 'Specification for pipe vices (open side type and fixed sides type) '.

The composition of the Committee responsible for the formulation of this standard is given in Annex B.

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 or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (revised) '.

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PIPE VICES (CHAIN TYPE) — SPECIFICATION
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1 SCOPE

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

2 REFERENCES

2.1 The following standards contain provisions which through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards listed below:

<i>IS No.</i>	<i>Title</i>
1501 (Part 1) : 2020	Metallic Materials — Vickers hardness test: Part 1 Test Method (<i>fifth revision</i>)
1586 (Part 1) : 2018	Metallic materials — Rockwell hardness test: Part 1 Test method (<i>fifth revision</i>)
1570 (Part 1) : 1978	Schedules for wrought steels: Part 1 Steels specified by tensile and/or yield properties (<i>fifth revision</i>)
1570 (Part 6) : 1996	Schedules for wrought steels: Part 6 Carbon and Alloy Tool Steels (<i>first revision</i>)
IS 1030 : 1998	Carbon Steel Castings for General Engineering Purposes — Specification (<i>fifth revision</i>)
IS 210 : 2009	Grey Iron Castings — Specification (<i>fifth revision</i>)
IS 4694 : 1968	Basic dimensions for square threads (<i>Withdrawn</i>)
IS 1072 : 2014	Leaf Chains, Clevises and Sheaves — Dimensions, Measuring Forces and Tensile Strengths (<i>Third Revision</i>)
7008 (Part 1) : 1999	ISO metric trapezoidal screw threads: Part 1 basic profile and maximum material profile (<i>second revision</i>)
4905 : 2015	Random sampling and randomization procedures (<i>first revision</i>)

3 MATERIAL

3.1 The materials for the manufacture of different components of vices shall be such as to fulfil the requirements laid down in 4 and 12. Some of the suitable materials for the manufacture of different component are given below:

<i>Component</i>	<i>Material</i>
Base and nut	Steel casting conforming to Grade 230-450N of IS 1030 : 1998 Or

	Gray cast iron conforming to Grade FG 350 of IS 210 : 2009
Jaws	Tool steel conforming to designation TC 6 of IS 1570 (Part 6) : 1996
Screw spindle and handle	Steel conforming to designation Fe 410 of IS 1570 (Part 1) : 1978

4 HARDNESS

4.1 The hardness measured at the jaws shall be within the range of 45 to 55 HRC or 450 to 550 HV when determined in accordance with IS 1586 (Part 1) or IS 1501 (Part 1) as applicable.

5 SHAPES AND DIMENSIONS

5.1 The dimensions of the vices shall be as given in Table 1 and Fig.1.

5.2 The dimensions of jaws shall be as given in Table 2 and Fig.2.

5.3 The dimensions for screw nut assembly shall be as given in Table 3 and Fig 3.

5.4 The shapes given in the Fig. 1, Fig. 2 and Fig. 3 are only to illustrate the dimensions. The actual shape and other design details are left to the discretion of manufacturer. The untoleranced dimensions may have a variation of ± 2 percent.

6 MANUFACTURE

6.1 Base

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

6.2 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.

6.3 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. LH 1222 of IS 1072.

6.4 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 IS 7008 (Part 1).

7 WORKMANSHIP AND FINISH

7.1 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.

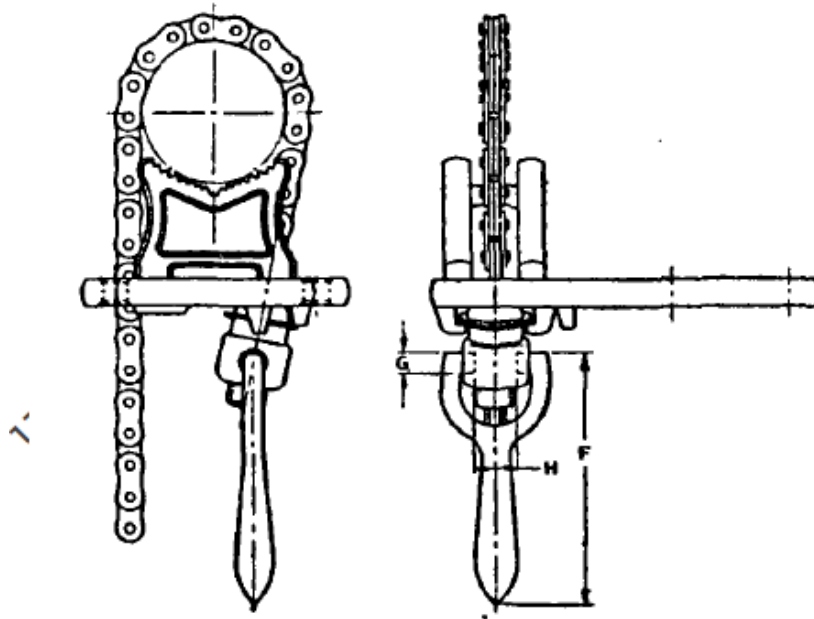
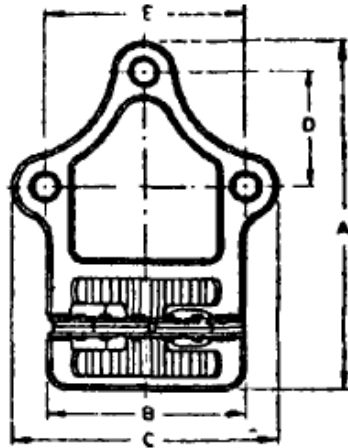


Fig. 1 Dimensions for Pipe Vices (Chain Type)

TABLE 1 Dimensions for Pipe Vices (Chain Type)
(Clause 5.1 and Fig.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

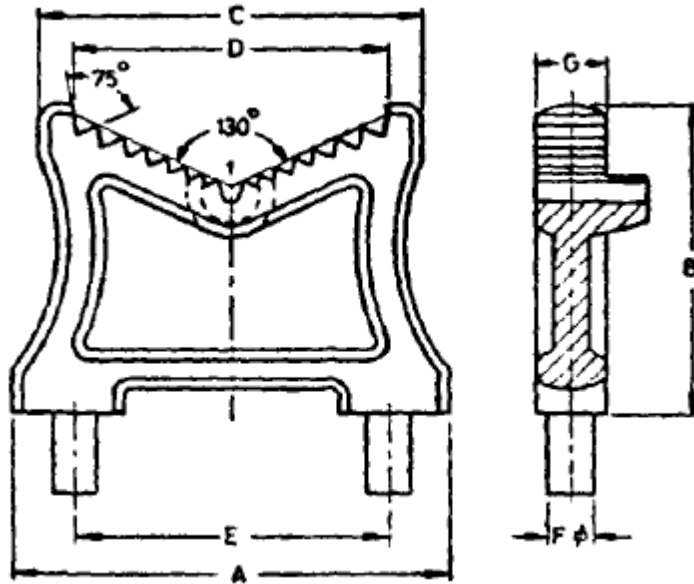


Fig. 2 Dimensions for Jaws

TABLE 2 Dimensions for Jaws
(Clause 5.2 and Fig. 2)

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

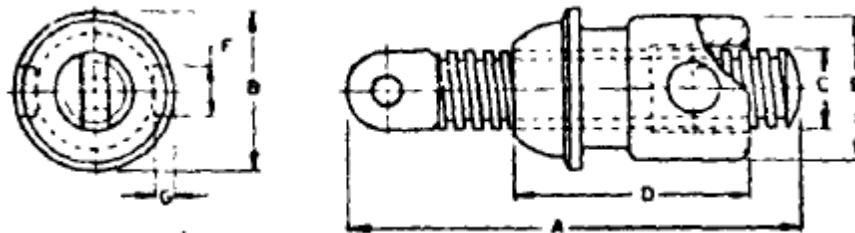


Fig. 3 Dimensions for Screw-Nut Assembly

TABLE 3 Dimensions for Screw-Nut Assembly
(Clause 5.3 and Fig. 3)

All dimensions in millimetres.

Nominal Size	A	B	C	D	E	F	G
63	80	35	T _T 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

8 PRESERVATIVE TREATMENT

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

9 DESIGNATION

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

- Commonly used name.
- Nominal size, and
- Number of this standard.

Example

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

Pipe Vice 63, IS 5684

10 MARKING

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

10.2 BIS Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act, 2016* and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

11 SAMPLING

11.1 Unless otherwise agreed upon between the purchaser and the manufacturer, the sampling plan and criterion for conformity given in Annex A shall be followed.

12 TESTS

12.1 Clamping Test

A bar of 30 mm diameter and of smooth surface having a hardness not less than 50 HRC or 510 HV 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

12.1.1 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.

Annex A
(Clause 11.1)

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 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 accordance with col 1 and 2 of Table 5. To ensure the randomness of selection. IS 4905 : 2015 shall be followed.

TABLE 5 SCALE OF SAMPLING
(Clause A-1.2)

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

A-2 NUMBER OF TESTS AND CRITERION 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.