भारतीय मानक
Indian Standard

IS 5684 : 2024

पाइप शिकंजे (चेन टाइप) — विशिष्टि

(पहला पुनरीक्षण)

Pipe Vices (Chain Type) — Specification

(First Revision)

ICS 25.140.30

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November 2024 **Price Group 5**

Hand Tools Sectional Committee, PGD 34

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards after the draft finalized by the Hand Tools Sectional Committee had been approved by the Production and General Engineering Division Council.

This standard was first published in 1970. This revision has been brought out to align it with the latest technological developments and international practices.

In this revision, the following major changes have been made:

a) Clause on references has been added; and

b) Material designations have been updated as per latest standards.

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 may be referred IS 2587 : 1975 ‘Specification for pipe vices (open side type and fixed sides type)’(*first revision*).

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

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 : 2022 ‘Rules for rounding off numerical values (*second revision*)’. The number of significant places retained in the rounded off value should be same as that of the specified value in this standard.

Indian Standard

PIPE VICES (CHAIN TYPE) — SPECIFICATION

(First Revision)

1 SCOPE

This standard specifies requirements for chain type pipe vices.

2 REFERENCES

The standards listed in Annex A 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 edition of these standards.

3 MATERIAL

The materials for the manufacture of different components of vices shall be such as to fulfil the requirements laid down in **4** and **9**. Some of the suitable materials for the manufacture of different components are given below:

Sl No.	*Component*	*Material*
(1)	(2)	(3)
i)	Base and nut	Steel casting conforming to Grade 230 N to 450N of IS 1030 or Gary cast iron conforming to Grade FG 350 of IS 210
ii)	Jaws	Tool steel conforming to designation TC 6 of IS 1570 (Part 6)
iii)	Screw spindle and handle	Steel conforming to designation Fe 410 of IS 1570 (Part 1)

4 HARDNESS

The hardness measured at the jaws shall be within the range of 45 HRC to 55 HRC or 450 HV 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 Fig. 1 and Table 1.

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

5.3 The dimensions for screw nut assembly shall be as given in Fig. 3 and Table 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 shall be properly and accurately cut. The ISO metric trapezoidal screw threads shall conform to IS 7008 (Part 1).

7 WORKMANSHIP AND FINISH

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.

8 PRESERVATIVE TREATMENT

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

9 TESTS

9.1 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.

9.1.1 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.

10 DESIGNATION

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

a) Commonly used name;

b) Nomination 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

11 MARKING

11.1 The vices shall be marked with the nominal size and manufacturer's trademark and month and year of manufacture/batch no.

11.2 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 product(s) may be marked with the Standard Mark.

12 SAMPLING

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

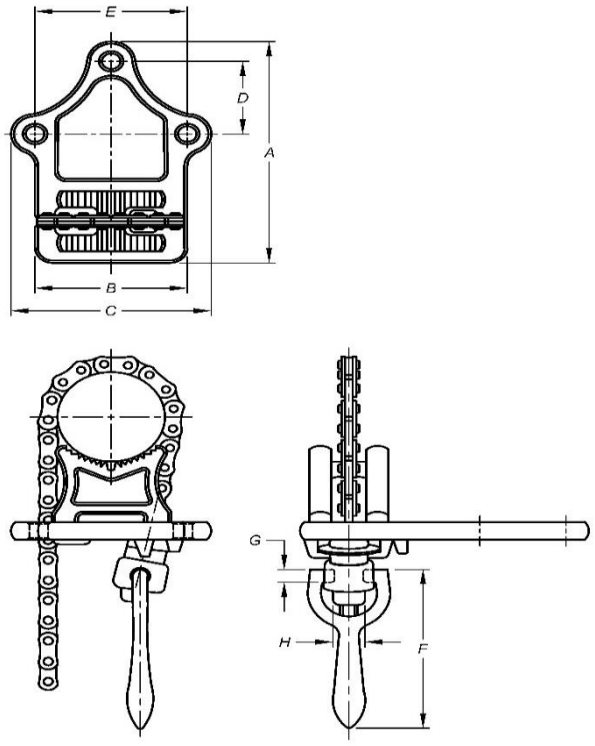

FIG. 1 DIMENSIONS FOR PIPE VICES (CHAIN TYPE)

Table 1 Dimensions for Pipe Vices (Chain Type)

(*Clause* 5.1)

All dimensions in millimetres.

Sl No.	Nominal Size	Capacity (Outside pipe diameter)	*A*	*B*	*C*	*D*	*E*	*F*	*G*	*H*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
i)	63	3 to 63	135	75	100	45	75	115	11	24
ii)	102	6 to 102	213	119	160	70	121	153	11	30
iii)	152	10 to 152	248	150	197	89	153	115	12.5	36.5

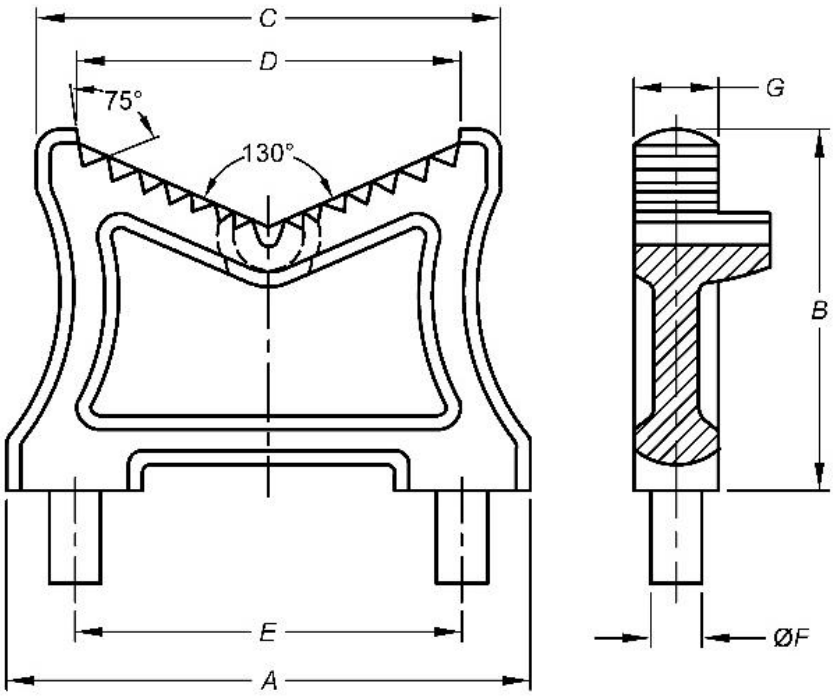

FIG. 2 DIMENSIONS FOR JAWS

Table 2 Dimensions for Jaws

(*Clause* 5.2)

All dimensions are in millimetres.

Sl No.	Nominal Size	*A*	*B*	*C*	*D*	*E*	*F*	*G*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
i)	63	62	12	60	50	50	8	12
ii)	102	95	73	89	73	73	10	16
iii)	152	133	95	118	100	108	13	20

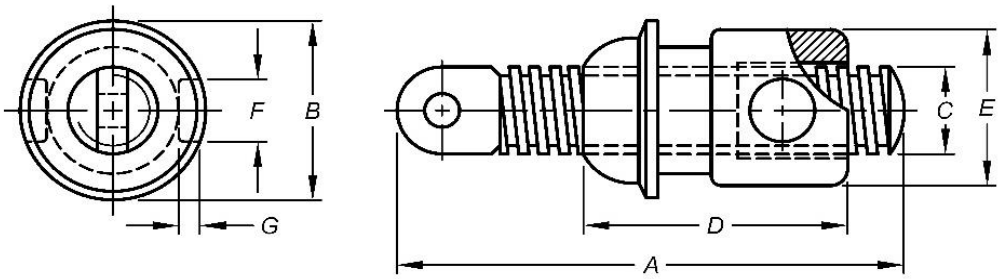

FIG. 3 DIMENSIONS FOR SCREW-NUT ASSEMBLY

Table 3 Dimensions for Screw-Nut Assembly

(*Clause* 5.3)

All dimensions are in millimetres.

Sl No.	Nominal Size	*A*	*B*	*C*	*D*	*E*	*F*	*G*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
i)	63	80	35	T_T 16 × 3 or SQ 16 × 2	35	30	9	4
ii)	102	105	45	T_r 22 × 5 or SQ 22 × 2	50	40	14	6
iii)	125	125	45	T_r22 × 5 or SQ 22 × 5	65	40	14	6

Table 4 Turning Moment for Pipe Vices (Chain Type)

(*Clause* 9.1)

Sl No.	Nominal Size	Turning Moment kgfm(N-m)	
		To be Applied to Screw	To be Applied to Test Bar
(1)	(2)	(3)	(4)
i)	63	8 (78)	10 (98)
ii)	102	9 (88)	12 (117)
iii)	152	10 (98)	14 (137)

ANNEX A

(*Clause* 2)

LIST OF REFERRED STANDARDS

IS No.	*Title*	*IS No.*	*Title*
IS 210 : 2009	Grey iron castings — Specification (*fifth revision*)	(Part 6) : 1996	Carbon and alloy tool steels (*first revision*)
IS 1030 : 1998	Carbon steel castings for general engineering purposes — Specification (*fifth revision*)	IS 1586 (Part 1) : 2018	Metallic materials — Rockwell hardness test: Part 1 Test method (*fifth revision*)
IS 1072 : 2024	Leaf chains, clevises and sheaves — Dimensions, measuring forces and tensile strengths and dynamic strengths (*fourth Revision*)	IS 4905 : 2015 ISO 24153 : 2009	Random sampling and randomization procedures (*first revision*)
IS 1501 (Part 1) : 2020	Metallic materials — Vickers hardness test: Part 1 Test method (*fifth revision*)	IS 7008 (Part 1) : 2021	ISO metric trapezoidal screw threads: Part 1 Basic and design profile (*third revision*)
IS 1570	Schedules for wrought steels:		
(Part 1) : 1978	Steels specified by tensile and/or yield properties (*first revision*)		

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ANNEX B

(*Clause* 12)

SAMPLING OF PIPE VICES AND CRITERIA FOR CONFORMITY

B-1 SCALE OF SAMPLING

B-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.

B-1.2 For ascertaining the conformity of the lot to the requirements of this specifications, 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 (2) and col (3) of Table 5. To ensure the randomness of selection. IS 4905 shall be followed.

B-2 NUMBER OF TESTS AND CRITERION FOR CONFORMITY

Vices selected according to **B-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 5 Scale of Sampling

(*Clause* B-1.2)

Sl No.	No. of Vices in the Lot	No. of Vices to be Selected
	N	*n*
(1)	(2)	(3)
i)	Up to 5	All
ii)	6 to 25	5
iii)	26 to 50	8
iv)	51 to 100	13
v)	101 and above	20

ANNEX C

(*Foreword*)

COMMITTEE COMPOSITION

Hand Tools Sectional Committee, PGD 34

Organization	*Representatives(s)*
Institute for Auto Parts and Hand tools Technology, Ludhiana	SHRI SANJEEV KATOCH **(*Chairperson*)**
Ajay Industries Private Limited, Jalandhar	SHRI AJAY GOSWAMI SHRI RAJAT GOSWAMI (*Alternate*)
Central Institute of Hand Tools, Jalandhar	SHRI AMIT KUMAR
Engineering Export Promotion Council, New Delhi	SHRI ASHWANI KUMAR SHRI OPINDER SINGH (*Alternate*)
Hand Tools Industries Association, Nagaur	SHRI ASHFAQ ALI SHRI ZULFIQAR ALI (*Alternate*)
Hand Tools Manufacturers Association, Jalandhar	SHRI SUKHDEV RAJ SHRI ASHWANI KUMAR (*Alternate*)
Inder Industries, Jalandhar	SHRI VIJAY CHATRATH SHRI SUNIL CHATRATH (*Alternate*)
Indian Oil Corporation Limited, New Delhi	MS NEETA AGARWAL SHRI ABHISHEK ANUPAM (*Alternate*)
Institute for Auto Parts and Hand tools Technology, Ludhiana	SHRI PANKAJ KAUNDAL SHIVANI THAKUR (*Alternate*)
Ludhiana Hand Tools Association, Ludhiana	SHRI S. C. RALHAN SHRI ASHOK GUPTA (*Alternate*)
Mansarovar Forgings Pvt. Ltd, Ludhiana	SHRI KHUSHVIR SINGH
Oaykay Forgings Private Limited, Jalandhar	SHRI SHARAD AGGARWAL
Osho Tools Private Limited, Jandiali	SHRI ASHOK GUPTA SHRI RAJESH PESHION (*Alternate*)
Pahwa Metal Tech Pvt Ltd Pune.	SHRI LALIT KUMAR PAHWA SHRI AAKASH PAHWA (*Alternate*)
Precise Fasteners Private Limited, Mumbai	SHRI PARAG PRAKASH SHAH
Pye Tools Private Limited, Ludhiana	SHRI GAURAV SEHGAL SHRI RAJENDER PAL (*Alternate*)
Taparia Tools Limited, Nashik	SHRI NIKHIL BHUTUJA SHRI N. B. BORSE (*Alternate*)
Tata Motors Limited, Pune	SHRI ANOOP TOBY SHRI HANAMANT GURAV (*Alternate*)
Victor Forgings, Jalandhar	SHRI SUKHDEV RAJ SHRI ANIL KUMAR (*Alternate*)
BIS Directorate General	SHRI RAJEEV RANJAN SINGH, SCIENTIST'F'/SENIOR DIRECTOR AND HEAD (PRODUCTION AND GENERAL ENGINEERING) [REPRESENTING DIRECTOR GENERAL (*Ex-officio*)]

Member Secretary
SHRI VIMAL KUMAR
SCIENTIST 'C'/DEPUTY DIRECTOR
(PRODUCTION AND GENERAL ENGINEERING), BIS

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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