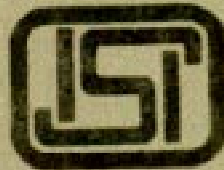


IS : 10299 - 1982

*Indian Standard*  
SPECIFICATION FOR  
CAST IRON SADDLE PIECES FOR  
SERVICE CONNECTION FROM ASBESTOS  
CEMENT PRESSURE PIPES

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

# Indian Standard

## SPECIFICATION FOR CAST IRON SADDLE PIECES FOR SERVICE CONNECTION FROM ASBESTOS CEMENT PRESSURE PIPES

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(Continued on page 2)

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*Indian Standard*  
SPECIFICATION FOR  
CAST IRON SADDLE PIECES FOR  
SERVICE CONNECTION FROM ASBESTOS  
CEMENT PRESSURE PIPES

**0. FOREWORD**

**0.1** This Indian Standard was adopted by the Indian Standards Institution on 30 September 1982, after the draft finalized by the Cast Iron & Malleable Cast Iron Sectional Committee had been approved by the Structural and Metals Division Council.

**0.2** This standard has been prepared with a view to help both the manufacturers and users with regard to the various requirements of saddle pieces for service connection from asbestos cement pressure pipes.

**0.3** It has been felt desirable to specify only the essential dimensions required for proper functioning and interchangeability.

**0.4** Connection to consumers from asbestos cement water mains can easily and quickly be provided by means of a cast iron saddle piece assembly on the pipe. Each assembly consists of two cast iron straps, two rubber gaskets and two bolts and nuts. The top strap with the boss is called saddle and the lower one is called strap. The boss of the saddle is drilled and tapped to the required size.

**0.5** 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\*. 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 covers the requirements for cast iron saddle piece for service connection from asbestos cement pressure pipes conforming to IS : 1592-1970†.

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

†Specification for asbestos cement pressure pipes (*first revision*).

## **2. SUPPLY OF MATERIAL**

**2.1** The general requirements relating to the supply of saddle piece shall be as laid down in IS : 1387-1967\*.

## **3. MANUFACTURE**

**3.1** The metal used for the manufacture of saddle and the strap shall be of quality not less than that specified in IS : 210-1978† Grade FG 150.

**3.2** Both the cast iron parts of saddle piece, that is saddle and the strap shall be stripped with all precautions necessary to avoid warping or shrinking defects. They shall be free from defects, other than any unavoidable surface imperfections which results from the method of manufacture and which do not affect the use of saddle pieces. By agreement between the purchaser and the manufacturer, minor defects may be rectified.

**3.3** The cast iron parts shall be such that they could be cut, drilled or machined. In case of any dispute, the castings may be accepted provided the hardness measured on the external unmachined surface does not exceed 215 HB.

## **4. MECHANICAL TESTS**

**4.0** Mechanical tests shall be carried out during manufacture and at the most twice per day of castings. The results obtained are taken to represent all the saddle pieces of all sizes made during the day.

**4.1 Tensile Test** — Two tensile tests shall be made on bars cast from the same metal in accordance with the method specified in Appendix A. The results of the tests shall show a minimum tensile strength of 150 MPa ( 15 kgf/mm<sup>2</sup> ).

**4.2 Brinell Hardness Tests** — For checking the Brinell hardness specified in 3.3, Brinell hardness tests shall be carried out on the test bars used for the tests in 4.1. The test shall be carried out by applying either a load of 3 000 kg to a ball of 10 mm diameter for 15 seconds, or a load of 750 kg to a ball of 5 mm diameter for 10 seconds.

**4.3 Retest** — If any test piece representing a lot fails to pass the test in the first instance, two additional tests shall be made on test pieces made from the same metal used from the same lot. Should either of these additional test pieces fail to pass the test, the lot shall be deemed as not complying with the standard.

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\*Specification for general requirements for the supply of metallurgical materials (*first revision*).

†Specification for grey iron castings (*third revision*).

## 5. DIMENSIONS

5.1 The dimensions of saddle piece shall be as given in Table 1 read with Fig 1.

5.2 Actual size of tapping required may be specified by the purchaser at the time of enquiry and order.

**TABLE 1 DIMENSIONS FOR SADDLE PIECES**

All dimensions in mm.

NOMINAL DIAMETER OF PIPE	THICKNESS OF SADDLE OR STRAP	WIDTH OF SADDLE OR STRAP	BOSS DIAMETER	BOSS THICKNESS	TAPPING SIZE	MASS
(DN)	(t)	(b)	(d)	(t <sub>1</sub> )	Max	Kg
(1)	(2)	(3)	(4)	(5)	(6)	(7)
80	11	38	60	13	25	1.7
100	11	42	65	13	25	2.0
125	11	45	75	13	25	2.5
150	12	45	75	14	37	3.0
200	12	45	85	14	37	3.9

NOTE — Mass given is for one set of undrilled saddle pieces excluding gaskets, bolts and nuts.

## 6. TOLERANCES

6.1 The tolerances on the various dimensions shall be as follows:

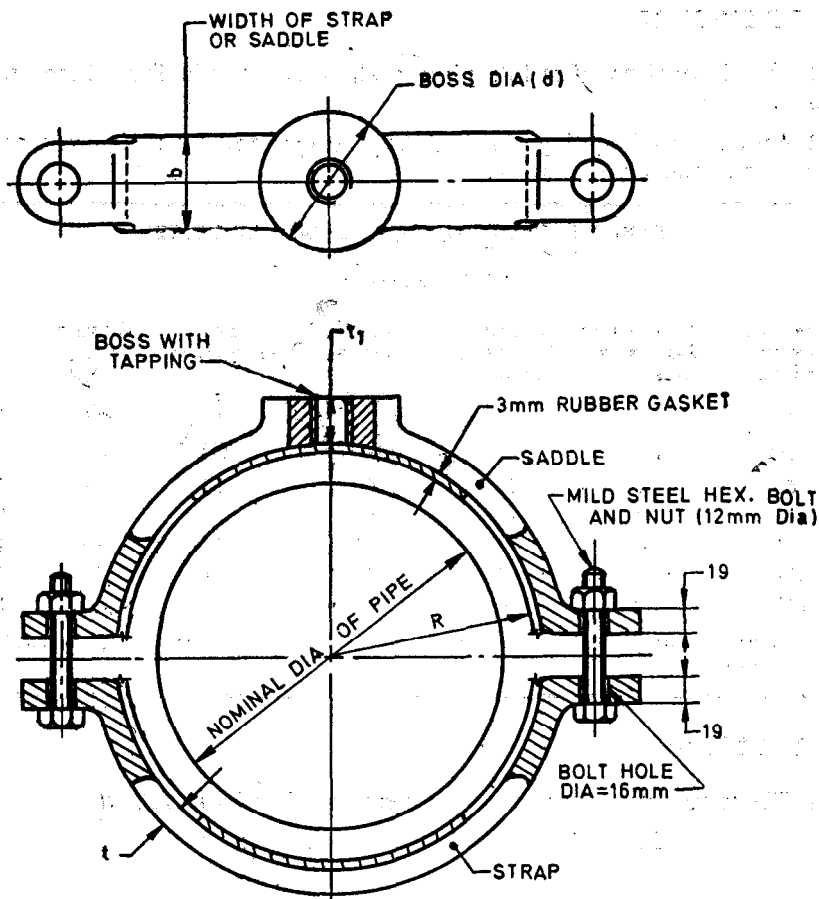
<i>Dimensions</i>	<i>Tolerances</i>
	mm
Cored holes and other dimensions	± 2
Drilled holes	± 1.5

## 7. MASS

7.1 The values for the mass of the C.I. parts shall be calculated by taking the density of the cast iron as 7.15 kg/dm<sup>3</sup>.

7.2 Tolerances on the mass of saddle piece (excluding rubber gasket and bolts) (see Table 1) shall be —5 percent.

NOTE — No limit for plus tolerance is specified.



1. M.S. Bolts and Nuts to IS : 1363 - 1967.
2. Rubber Gasket to IS : 5382 - 1969.
3. Radius 'R' to suit the external dia. of respective classes of pipe.

FIG. 1 SADDLE PIECE FOR SERVICE CONNECTION FROM ASBESTOS CEMENT PRESSURE PIPES

## 8. COATING

8.0 After inspection, the saddle and the strap shall be coated as specified in 8.1 to 8.5.

8.1 Coating shall not be applied to any part unless its surface is clean, dry and free from rust.

**8.2** Except when otherwise agreed to between the purchaser and the manufacturer, all cast iron parts shall be coated externally and internally with the same material, the parts being pre-heated prior to total immersion in a bath containing a uniformly heated composition having a tar or other suitable base.

**8.2.1** Alternatively, the coating on the cast iron parts may be done by cold dipping process, if agreed at the time of enquiry and order.

**8.3** The coating material shall set rapidly with good adherence and shall not scale off.

**8.4** In all instances where the coating material has a tar or similar base, it shall be smooth and tenacious and hard enough not to flow when exposed to a temperature of 77°C but not so brittle at a temperature of 0°C as to chip off when scribed lightly with a penknife.

**8.5** In case of parts ( wholly or partially coated ) which are imperfectly coated or where the coating does not set or conform to the quality specified above, the coating shall be removed and the parts re-coated.

## 9. SAMPLING

**9.1** The requirements for sampling and criteria for conformity shall be as given in Appendix B.

## 10. MARKING

**10.1** The saddle and the strap shall have cast, stamped or indelibly painted on it the following appropriate marks:

- a) Manufacturer's name, initials or identification mark;
- b) The nominal diameter;
- c) Class reference; and
- d) Last two digits of the year of manufacture.

**10.1.1** Any other mark may be painted on as required by the purchaser.

**10.1.2** The material 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 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.



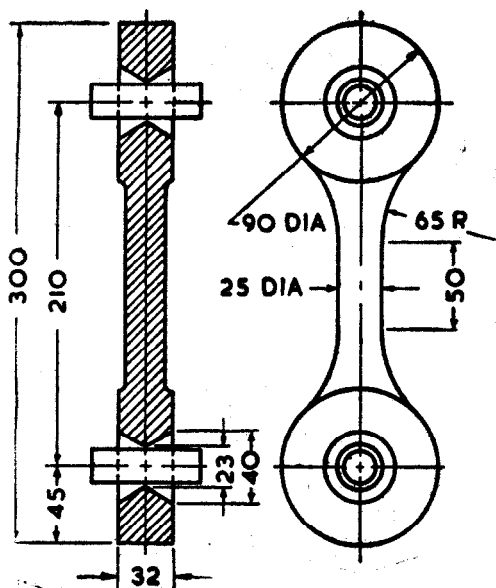
## APPENDIX A

( Clause 4.1 )

## MECHANICAL TESTS

A-1. TESTS ON BARS FOR CAST IRON SADDLE PIECE PARTS  
CAST IN SAND MOULDS

A-1.1 The tensile tests bars are properly moulded free from defects and are either unmachined, or machined to give a diameter of about 20 to 25 mm. The ends are selected by the manufacturer to fit the testing machine. Fig. 2 shows one satisfactory design.



All dimensions in millimetres.

FIG. 2 TENSILE TEST SPECIMEN

## APPENDIX B

( Clause 9.1 )

## SAMPLING OF CAST IRON SADDLE PIECES

## B-1. LOT

**B-1.1** In any consignment, all the straps manufactured under similar conditions shall be grouped together to constitute a lot.

**B-1.1.1** Samples shall be taken and tested from each lot for ascertaining the conformity of the lot.

## B-2. SCALE OF SAMPLING

**B-2.1** The number of straps to be sampled shall be according to col 1 and 2 of Table 2. These fittings shall be taken at random ( see IS : 4905-1968\* ).

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**TABLE 2 SCALE OF SAMLING AND PERMISSIBLE NUMBER OF DEFECTIVES**

LOT SIZE	SAMPLE SIZE	PERMISSIBLE No. OF DEFECTIVES
(N)	(n)	(a)
(1)	(2)	(3)
Up to 500	8	0
501 ,, 1 000	13	1
1 001 ,, 3 000	20	2
3 001 ,, 10 000	32	3
10 001 and above	50	5

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## B-3. NUMBER OF TESTS AND CRITERIA FOR CONFORMITY

**B-3.1** The straps selected according to col 1 and 2 shall be tested for dimensions, tolerances, and coating tests. A strap failing to meet the requirement of any of the tests, shall be called a defective strap.

**B-3.1.1** If the number of defectives found in a lot is less than or equal to the corresponding number of permissible number of defectives, the lot shall be considered as conforming to the requirements of the standard otherwise not.

\*Method for random sampling.

# INDIAN STANDARDS

## ON

### CAST IRON AND MALLEABLE CAST IRON

#### IS:

- 210-1970 Grey iron castings (*second revision*)
- 1230-1978 Cast iron rain-water pipes and fittings (*second revision*)
- 1536-1976 Centrifugally cast (spun) iron pressure pipes for water, gas and sewage (*second revision*)
- 1537-1976 Vertically cast iron pressure pipes for water, gas and sewage (*first revision*)
- 1538 (Parts I to XXIII)-1976 Cast iron fittings for pressure pipes for water, gas and sewage (*second revision*)
- 1729-1964 Sand cast iron spigot and socket soil, waste and ventilating pipes, fittings and accessories
- 1865-1974 Iron castings with spheroidal or nodular graphite (*second revision*)
- 1879 (Parts I to X)-1975 Malleable cast iron pipe fittings (*first revision*)
- 2107-1977 Whiteheart malleable iron castings (*first revision*)
- 2108-1977 Blackheart malleable iron castings (*first revision*)
- 2640-1977 Pearlitic malleable iron castings (*first revision*)
- 2749-1974 Austenitic iron castings (*first revision*)
- 3005-1964 Grey cast iron ingot moulds, stools and slag ladles
- 3355-1974 Grey iron castings for elevated temperatures for non-pressure containing parts (*first revision*)
- 3486-1966 Cast iron spigot and socket drain pipes
- 3516-1966 Cast iron pipe flanges and flanged fittings, Class 9, for petroleum industry
- 3896-1966 Comparison of Indian and overseas standards, for iron castings
- 3989-1970 Centrifugally-cast (spun) iron spigot and socket soil, waste and ventilating pipes, fittings and accessories (*first revision*)
- 4771-1972 Abrasion-resistant iron casting (*first revision*)
- 5519-1969 Deviations for untoleranced dimensions of grey iron castings
- 5531 (Parts I to III)-1977 Cast iron specials for asbestos cement pressure pipes (*first revision*)
- 5787-1970 Spheroidal or nodular graphite iron castings for paper mill dryer rolls
- 5788-1970 Iron castings with spheroidal or nodular graphite for pressure-containing parts for use at elevated temperatures
- 5789-1970 Austenitic spheroidal iron castings for pressure-containing parts suitable for low temperature service
- 6163-1978 Centrifugally cast (spun) iron low pressure pipes for water, gas and sewage (*first revision*)
- 6331-1971 Automotive grey iron castings
- 6418-1971 Cast iron and malleable cast iron flanges for general engineering purposes
- 6629-1972 Cast iron rolls
- 7181-1974 Horizontally cast iron double flanged pipes for water, gas and sewage
- 7520-1974 Corrosion-resistant high silicon iron castings
- 7925-1976 Low alloy types of abrasion resistant iron castings
- 8329-1977 Centrifugally cast (spun) ductile iron pressure pipes for water, gas and sewage
- 8349-1977 Deviations for untoleranced dimensions of malleable iron castings
- 8350-1977 Deviations for untoleranced dimensions of spheroidal or nodular graphite iron castings
- 8794-1978 Cast iron detachable joints for use with asbestos cement pressure pipes
- 9523-1980 Ductile iron fittings for pressure pipes for water, gas and sewage