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IS 8442 (2008): Stand post type water and foam monitor for fire fighting -Specification [CED 22: Fire Fighting]



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(पहला पुनरीक्षण)

Indian Standard

STAND POST TYPE WATER AND FOAM MONITOR
FOR FIRE FIGHTING — SPECIFICATION

(*First Revision*)

ICS 13.220.10

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

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Fire Fighting Sectional Committee had been approved by the Civil Engineering Division Council.

Water monitors are fixed on the fire fighting appliances and are one of the important equipment used for fighting fire. With the help of this equipment it is possible to direct the flow of water at any angle on horizontal and vertical axis. This standard has been formulated to lay down minimum performance requirements.

When the water monitor is used with sea water, aluminium parts should not be used.

This standard was first published in 1977. The present revision includes modifications with regard to inclusion of copper alloy and stainless steel components and figures have been modified according to various types of monitors. The materials of construction are given in Table 2 with an idea to use compatible material for all components in individual monitor.

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*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

STAND POST TYPE WATER AND FOAM MONITOR FOR FIRE FIGHTING — SPECIFICATION

(First Revision)

1 SCOPE

This standard lays down the requirements for stand post type monitor of size 63 mm, 75 mm and 100 mm used for fire fighting. This standard covers following types of monitors:

- a) Water monitor, and
- b) Foam-cum-water monitor:
 - 1) With water/foam barrel with aspirating type nozzle, and
 - 2) With non-aspirating type jet/spray nozzle.

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 editions of the standards indicated at Annex A.

3 GENERAL

3.1 The size of water monitor is denoted by its waterway dimension which shall be as per Table 1 or provided by the purchaser as per their requirement.

3.2 Monitors are designed for rated discharge capacity of 1 750 l/min for 63 mm size, 2 580 l/min for 75 mm size, and 3 500 l/min for 100 mm size at inlet pressure of 0.7 N/mm², at nozzle end.

3.3 The shape of the monitor shall be so designed that it shall allow free flow of water with minimum friction loss and maximum stability against nozzle reaction. The shapes are generally as shown in Fig. 1 and Fig. 2.

3.4 The monitor shall consist of following components:

- a) Base flange,
- b) Reducer — wherever applicable,
- c) Water barrel of seamless pipe,
- d) Elbow 90° and 45°,
- e) Swivel joint for horizontal and vertical rotation,
- f) Lock handles for horizontal and vertical rotation,

- g) Nozzle (details as given in 5.2),
- h) Handle or worm and worm wheel to facilitate vertical rotation, and
- j) Drain valve.

4 MATERIAL

Material for different components shall be as per Table 2.

NOTES

- 1 Aluminium components shall not be used with sea water.
- 2 The material of construction to be selected as agreed to between the purchaser and the manufacturer keeping in view the compatibility of materials.

5 CONSTRUCTION

5.1 Monitor shall have the flange of diameter corresponding to standpost, that is, 63 mm, 75 mm and 100 mm respectively. Flanges of higher size may be used for better hydraulic efficiency and in that case it shall be welded with reducer. The swivel joint which shall be connected with pipe by screwing or welding so as to have horizontal rotation of 360° in either direction and vertical rotation of minimum 135° (90° upward and 45° downward). Traversing mechanism shall be provided to facilitate the horizontal and vertical rotation of monitor. This shall be either single handle bar type or worm and worm wheel type. Positive locks shall be provided for unattended operation. In case of worm and worm wheel geared unit, it shall be self-locking type. Drain valve shall be fitted above inlet flange to drain water from water barrel after usage.

5.2 The construction of monitor shall be welded, screwed or flanged. All screwed joints except nozzle shall have minimum threading length of 20 mm and epoxy based sealant shall be used and threads shall be locked permanently so that threads will not get unscrewed during horizontal or vertical rotation of monitor. The outlet of barrel shall have external threads conforming to IS 2643 with class A tolerance. The nozzle shall be of standard orifice size as given in Fig. 3, 4 and 5 and confirming to performance requirements given in 9. The inlet of the nozzle shall be provided with external hexagon or other means to facilitate tightening of nozzle and internal threads to suit the monitor outlet barrel size.

Table 1 Flange Dimensions
(Clause 3.1)

SI No.	Size of Monitor	Size of Inlet Flange (Nominal Bore)	Outer Diameter	Bolt Circle Diameter	Bolt Hole Diameter	No. of Holes	Thickness	Flange Diameter/Height
(1)	mm	mm	mm	mm	mm	(7)	mm	mm
i)	63	80	200	160	19	4	18	—
ii)	63	80	190.5	152.4	19	4	23.8	127/1.6
iii)	75	100	220	180	19	4	20	—
iv)	75	100	220	190.5	19	4	23.8	157/1.6
v)	100	100	220	180	19	8	20	—
vi)	100	100	220	190.5	19	8	23.8	157/1.6
vii)	100	150	285	240	22	8	22	—
viii)	100	150	280	240	22	8	25.4	216/1.6

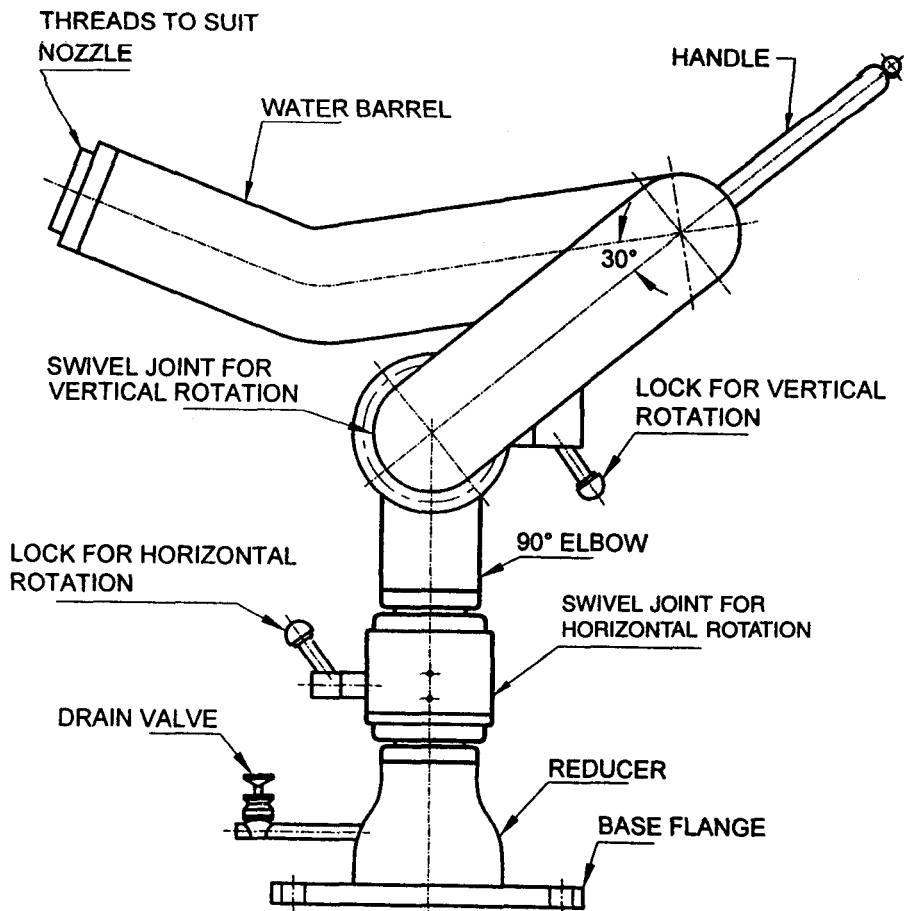


FIG. 1 STAND POST TYPE MONITOR

Table 2 Material
(Foreword, and Clause 4)

SI No.	Component	Material		
		Mild Steel Construction	Copper Alloy Construction	Stainless Steel Construction
(1)	(2)	(3)	(4)	(5)
i)	Base flange	Carbon steel conforming to IS 6392 or Mild steel conforming to IS 2062	Grade 2/3 of IS 318 or Grade 3 of IS 304	Plates, sheets conforming to IS 6911
ii)	Reducer	Pipe fittings conforming to IS 11428 (Parts 1 to 3)	Grade 2/3 of IS 318 or Grade 3 of IS 304	Stainless steel
iii)	Elbow	Pipe fittings conforming to IS 11428 (Parts 1 to 3)	Grade 2/3 of IS 318 or Grade 3 of IS 304	Stainless steel
iv)	Swivel joint/worm and worm wheel	Grade 2/3 of IS 318 or Grade 3 of IS 304	Grade 2/3 of IS 318 or Grade 3 of IS 304	Grade 2/3 of IS 318 or Grade 3 of IS 304 or Stainless steel conforming to IS 6603
v)	Lock handle	Brass conforming to IS 291 or IS 319 or stainless steel conforming to IS 6603	Brass conforming to IS 291 or IS 319 or S.S. conforming to IS 6603	Stainless steel conforming to IS 6603
vi)	Water barrel	Mild steel conforming to IS 11428 (Parts 1 to 3) or brass tube conforming to IS 407 or aluminium conforming to IS 1285 and IS 2673	Brass tube conforming to IS 407	Stainless steel
vii)	Nozzle/Jet spray nozzle	Copper alloy conforming to Grade 2/3 of IS 318 or Grade 3 of IS 304 or aluminium alloy conforming to Grade 4450 or 4225 of IS 617	Copper alloy conforming to Grade 2/3 of IS 318 or Grade 3 of IS 304	Stainless steel conforming to IS 3444
viii)	Handle	Mild steel conforming to IS 1732	Mild steel conforming to IS 1732	Mild steel conforming to IS 1732
ix)	Worm shaft	Stainless steel conforming to IS 6603	Stainless steel conforming to IS 6603	Stainless steel conforming to IS 6603
x)	Foam barrel	Brass tube conforming to IS 407 or aluminium conforming to IS 1285 and IS 2673	Brass tube conforming to IS 407 or aluminium conforming to IS 1285 and IS 2673	Stainless steel
xi)	Hand wheel	Cast iron conforming to Grade 200 of IS 210	Cast iron conforming to Grade 200 of IS 210	Cast iron conforming to Grade 200 of IS 210
xii)	Drain valve	Copper alloy conforming to IS 778	Copper alloy conforming to IS 778	Stainless steel

6 WORKMANSHIP AND FINISH

The complete assembly shall be of good workmanship and finish and free from burrs and sharp edges. Particularly, waterway shall have smooth finish.

7 ANTI-CORROSIVE TREATMENT

All steel components subject to direct water contact shall be hot dip galvanized after fabrication to a minimum thickness of 0.03 mm. The aluminium parts subject to direct water contact shall be hard anodized to a minimum thickness of 0.015 mm. The thickness of galvanizing shall be measured with suitable thickness measuring meter.

8 PAINTING

Monitor shall be painted with fire red or post office red colour conforming to shade No. 536 or 538 of IS 5. The paint shall conform to IS 2932.

9 PERFORMANCE REQUIREMENTS

9.1 Water Monitor

The monitor shall be tested at operative pressure

of 0.7 N/mm² at nozzle end, at an angle of 30° from horizontal in still air condition. It shall have minimum discharge capacity and horizontal throw as given in Table 3.

Table 3 Minimum Discharge Capacity and Horizontal Throw of Water Monitor

SI No.	Size	Discharge Capacity	Horizontal Throw
	mm	Min l/min	Min m
(1)	(2)	(3)	(4)
i)	63	1 750	53
ii)	75	2 580	60
iii)	100	3 500	64

9.2 Foam-cum-Water Monitor

The monitor shall be tested at operative pressure of 0.7 N/mm² at nozzle end, at an angle of 30° from horizontal in still air condition. It shall have minimum discharge capacity and horizontal throw as Table 4.

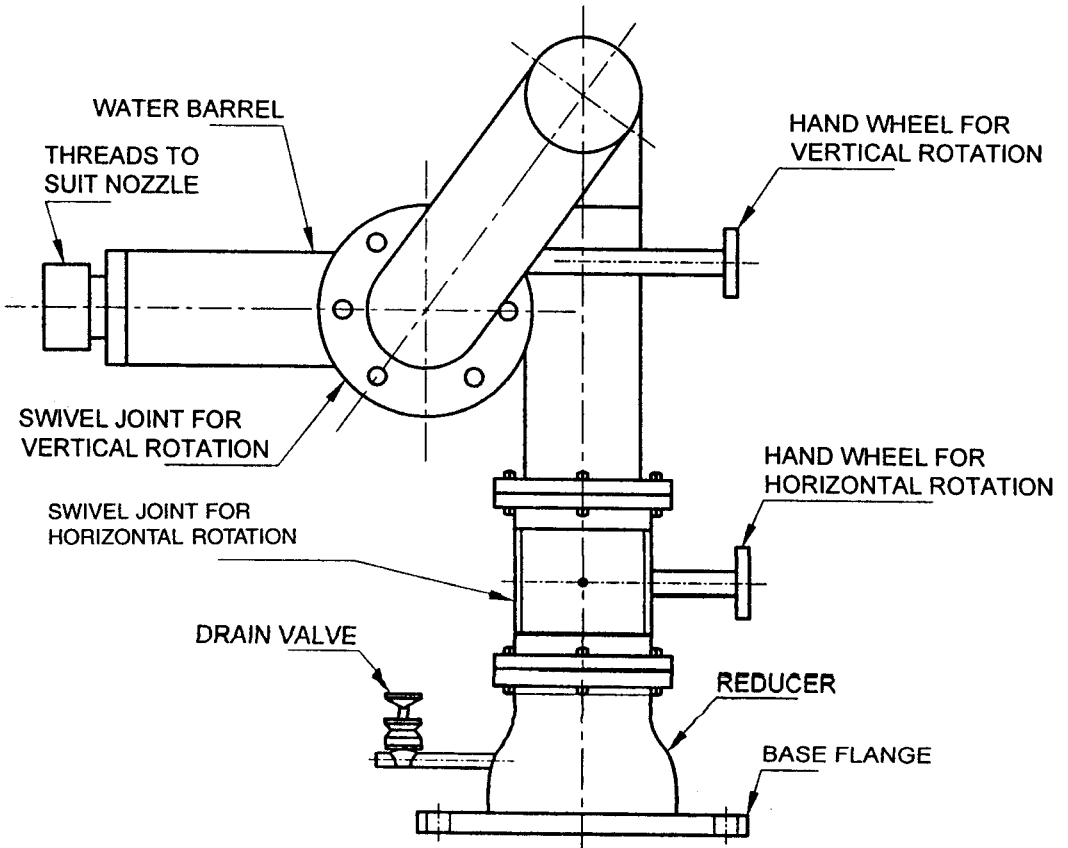
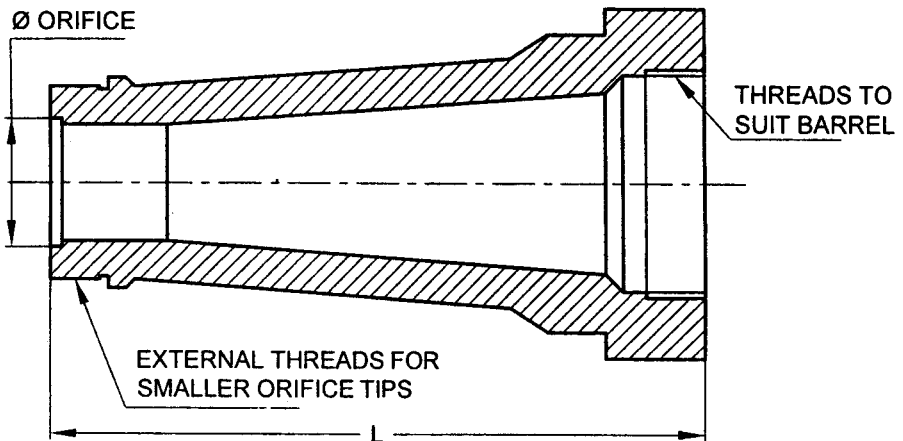


FIG. 2 STAND POST TYPE MONITOR-WORM AND WORM WHEEL TYPE



NOTES

- 1 The Orifice Diameter for 63 mm, 75 mm, and 100 mm Size Shall be Respectively 32 mm, 38 mm, and 45 mm, *Min.*
- 2 The Length (*L*) of Nozzle Shall be Such as to Give Desired Performance Requirement.

FIG. 3 JET SPRAY NOZZLE

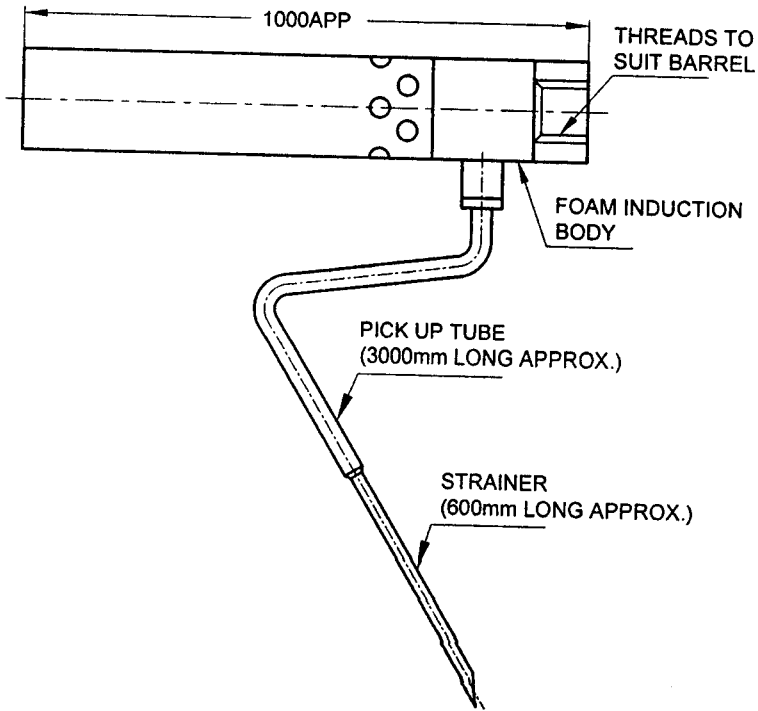


FIG. 4 AIR ASPIRATION TYPE FOAM INDUCED NOZZLE

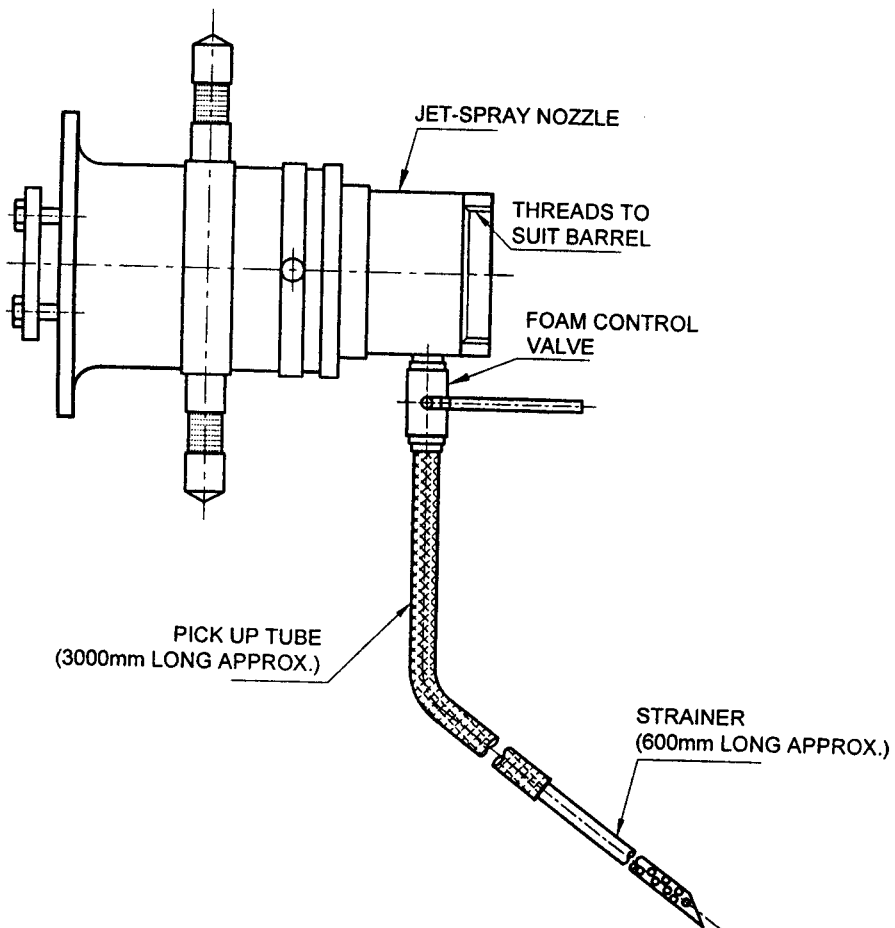


FIG. 5 NON-AIR ASPIRATING TYPE JET/SPRAY NOZZLE

Table 4 Minimum Discharge Capacity and Horizontal Throw Foam-cum-Water Monitor
(Clause 9.2)

Sl No.	Size mm	Discharge Capacity	Horizontal Throw (Water)	Horizontal Throw (Foam)
		Min l/min	Min m	Min m
(1)	(2)	(3)	(4)	(6)
i)	63	1 750	53	45
ii)	75	2 580	60	50
iii)	100	3 500	64	55

NOTE — This shall be a type test.

10 LEAKAGE TEST

10.1 The entire assembly shall be hydraulically tested to a pressure of 2.3 N/mm² for 5 min and there shall not be any leakage.

10.2 The entire assembly shall be hydraulically tested to a pressure of 2.3 N/mm² and horizontal rotation shall be carried out 5 times and then vertical rotation up and down for 5 cycles. During the test there shall be no leakage observed in any of the swiveled joints. After the above test is carried out, the performance test as

given in 9.1 shall be performed and assembly shall meet the requirements.

11 ACCESSORIES

The accessories shall include nozzle spanner which shall be optional.

12 MARKING

12.1 Each monitor shall be clearly and permanently marked with the following:

- Manufacturer's name and his trade-mark,
- Year of manufacture, and
- Discharge capacity, in l/min.

12.2 BIS Certification Marking

The monitor may also be marked with the Standard Mark.

12.2.1 The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act, 1986* and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

ANNEX A

(Clause 2)

LIST OF REFERRED INDIAN STANDARDS

IS No.	Title	IS No.	Title
5 : 2004	Colours for ready mixed paints and enamels (<i>fifth revision</i>)	407 : 1981	Specification for brass tubes for general purposes (<i>third revision</i>)
210 : 1993	Grey iron casting — Specification (<i>fourth revision</i>)	617 : 1994	Aluminium and aluminium alloy ingots and castings for general engineering purposes (<i>third revision</i>)
291 : 1989	Machining purposes — Specification (<i>third revision</i>)	778 : 1994	Specification for copper alloy gate, globe and check valves for water works purposes (<i>fourth revision</i>)
304 : 1981	Specification for high tensile brass ingots and castings (<i>second revision</i>)	1285 : 2002	Wrought aluminium and aluminium alloys — Extruded round tube and hollow sections for general engineering purposes — Specification (<i>third revision</i>)
318 : 1981	Specification for leaded tin bronze ingots and castings (<i>second revision</i>)		
319 : 1989	Free cutting leaded brass bars, rods and sections — Specification (<i>fourth revision</i>)		

<i>IS No.</i>	<i>Title</i>	<i>IS No.</i>	<i>Title</i>
1732 : 1989	Dimensions for round and square steel bars for structural and general engineering purposes (<i>second revision</i>)	2932 : 2003	Enamel, synthetic, exterior: (a) undercoating, (b) finishing — Specification (<i>third revision</i>)
2062 : 2006	Hot rolled low, medium and high tensile structural steel (<i>sixth revision</i>)	3444 : 1999	Corrosion resistant high alloy steel and nickel base castings for general applications — Specification (<i>third revision</i>)
2643 : 1999	Pipe threads where pressure tight joints are not made on the threads — Dimensions, tolerances and designation	6392 : 1971	Steel pipe flanges
2673 : 2002	Dimensions for wrought aluminium and aluminium alloys extruded round tube — Specification (<i>second revision</i>)	6603 : 2001	Stainless steel bars and flats — Specification (<i>first revision</i>)
		6911 : 1992	Stainless steel plate, sheet and strip (<i>first revision</i>)
		11428 (Parts 1 to 3) : 1985	Specification for wrought carbon steel butt welding pipe fittings

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Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Catalogue' and 'Standards : Monthly Additions'.

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Amendments Issued Since Publication

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