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मानक

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IS 14845 (2000): Resilient Seated Cast Iron Air Relief Valves for Water Works Purposes - [CED 3: Sanitary Appliances and Water Fittings]



“ज्ञान से एक नये भारत का निर्माण”

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“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”



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भारतीय मानक  
जलकल के लिए रेजीलिएंट सीटिड ढलवां लोहे के वायु  
निकास वाल्व — विशिष्टि

*Indian Standard*  
**RESILIENT SEATED CAST IRON AIR RELIEF VALVES  
FOR WATER WORKS PURPOSES — SPECIFICATION**

ICS 23.060.99

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

October 2000

Price Group 7

**AMENDMENT NO. 1 SEPTEMBER 2003**  
**TO**  
**IS 14845 : 2000 RESILIENT SEATED CAST IRON**  
**AIR RELIEF VALVES FOR WATER WORKS**  
**PURPOSES — SPECIFICATION**

( *Second cover page, Foreword, para 2, lines 4 and 5* ) — Delete 'Typical layouts are shown in Fig. 6, 7, 8, 9, 10 and 11'.

( CED 3 )

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Reprography Unit, BIS, New Delhi, India

## FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Sanitary Appliances and Water Fittings Sectional Committee had been approved by the Civil Engineering Division Council.

Air relief valves are widely used in clear water mains in order to evacuate accumulated air under pressure, for exhaust of air when such mains are charged with water and for ventilating the mains when they are being emptied of water. This standard therefore has been formulated with a view to guide the manufacturers and purchasers in the selection of appropriate type/size/rating of valves for the intended application. Typical layouts are shown in Fig. 6, 7, 8, 9, 10 and 11.

In the formulation of this standard the experience of the manufacturers and user of such valves has been kept in view.

Certain technical details required to be supplied by the purchaser at the time of enquiry or placing orders given in Annex A of this standard.

The composition of the technical committee responsible for the formulation of this standard is given at 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 : 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 values in this standard.

*Indian Standard***RESILIENT SEATED CAST IRON AIR RELIEF VALVES  
FOR WATER WORKS PURPOSES — SPECIFICATION****1 SCOPE**

This Indian Standard covers requirement of single air valve (small and large orifice) double air valves (small and large orifice with or without integral isolating valve) and kinetic air valves with or without separate isolating sluice valve for use on water mains.

**2 REFERENCES**

The Indian Standards given in Annex B contain provisions which through reference in this text, constitute provision 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.

**3 TYPES**

- |                      |  |
|----------------------|--|
| a) Single air valve  | Small orifice type (S 1)<br>Large orifice type (S 2)                                   |
| b) Double air valve  | Standard type with in-built isolating valve (DS 1), or without isolating valves (DS 2) |
| c) Kinetic air valve | Kinetic air valve (DK)   |

**4 NOMINAL PRESSURES**

Air valves shall be designated by nominal pressure (PN) defined as maximum permissible gauge working pressure in MPa as follows:

PN 1.0 and PN 1.6

**5 NOMINAL SIZES**

Air valves shall be of the following sizes:

- |                               |   |
|-------------------------------|---|
| a) Single air valve S 1       | (Small orifice type) 15, 25, 40 mm          |
| b) Single air valve S 2       | (Large orifice type) 25, 40, 50 mm          |
| c) Double air valve (DS 1, 2) | (All types) 40, 50, 80, 100, 150 and 200 mm |
| d) Kinetic air valve (DK)     | 40, 50, 80, 100, 150 and 200 mm             |

**6 TEMPERATURE RATING**

All air valves shall be suitable for continuous use at their PN rating within the temperature of 45°C.

**7 SERVICE APPLICATION****7.1 Single Air Valve (Small Orifice)**

For automatically releasing air which may accumulate under pressure in a section of pipe line during normal working condition.

**7.2 Single Air Valve (Large Orifice)**

For automatically releasing/admitting air that may accumulate under pressure in a section of pipe line at the time of initial charging or draining of mains.

**7.3 Double Air Valves**

These valves are simply a combination of small and large orifice air valves with common connection to the main, small orifice function being similar to that of a single air valve. Large orifice serves for automatically exhausting air when a pipe is being filled with water, or automatically ventilating a pipe when it is being emptied of water.

**7.4 Kinetic Air Valves**

These valves are essentially the same as the conventional double air valves but with certain refinements and are suitable for high head pipe lines where high rates of air discharge and ventilation is required.

**8 END CONNECTION**

**8.1** End connection of single air valves (small and large orifice) shall be either flanged according to IS 6418 or screwed. Screwed type shall have external pipe threads conforming to IS 554.

**8.2** Double air valves shall have flange ends machined and drilled according to IS 1538 (Parts IV and VI) and IS 6418.

**8.3** For kinetic air valves, all flanges including that of the isolating sluice valve shall be machined and drilled in accordance with IS 1538 (Parts IV and VI). Unless otherwise agreed to between the manufacturer and the purchaser, flange for 50-mm dia air valves shall be in accordance with IS 780. Flanges shall be at right angle to the axis of the inlet bore and also concentric to bore. Flange bolt holes shall be drilled off centre.

**9 MATERIAL**

**9.1** The material for different components of valves shall conform to the requirements given in Table 1.

**Table 1 Materials for Body and Component Parts**  
(Clause 9.1)

Sl No.	Component / Body	Basic			Alternative		
		Material	Ref to IS No.	Grade or Designation	Material	Ref to IS No.	Grade or Designation
i)	Body, cover, valve disk, stuffing box, valve guide, cowl, gland, cap, joint support ring	Grey cast iron	210	FG 200	—	—	—
ii)	Stem	High tensile brass	320	HTB 1 or HTB 2	Stainless steel	6603	04 Cr 17 Ni 12 Mo 2 04 Cr 18Ni 10 12 Cr. 13
iii)	Low pressure seat ring and face ring	Natural rubber	11855	—	EPDM nitrile rubber	—	—
iv)	High pressure orifice	Leaded tin bronze	318	LTB - 2	High tensile brass Stainless steel	320 6603	HTB 2 04 Cr 18Ni 10
v)	Stem nut	Leaded tin bronze	318	LTB - 2	High tensile brass	320	HTB 2
vi)	Body seat ring	Leaded tin bronze	318	LTB - 2	Stainless steel	3444	Grade 1
vii)	Bolts	Carbon steel	1363	Class 4.6	Stainless steel	6603	—
viii)	Nuts	Carbon steel	1363	Class 4	Stainless steel	6603	—
ix)	Gasket	Rubber	638	Type B	—	—	—
x)	Gland packing	Jute/hemp	5414	Type III	—	—	—
xi)	Float (Low pressure orifice)	Timber core with vulcanite coating	—	—	—	—	—
xii)	Float (High pressure orifice)	Timber core with rubber coating	—	—	Stainless steel	3444	—
xiii)	Float guide	Leaded tin bronze	318	LTB-2	High tensile brass	320	HTB1

Where alternative materials are specified, or other suitable materials are to be used, such shall be in agreement with the purchaser.

## 10 DESIGN AND MANUFACTURE

**10.1** Typical illustration of single air valves, double air valves and kinetic air valves are given in Fig. 1, 2, 3A, 3B and 4.

### 10.2 Body

**10.2.1** Body design shall ensure that there are no recesses or pockets, sheltering escaping air. Also the large orifice chamber in the ordinary (non-kinetic) design shall be such that the floating ball inside is free to drop to the bottom without any obstruction when the water level goes down.

**10.2.2** For kinetic air valve, valve body shall be designed in such a way that turbulent air at the time of filling of pipe shall not circulate and cause the ball to be caught in the discharging air stream and blowing the valve shut prematurely. The cone angle of the low-pressure chamber shall be such that even at critical velocity of air escaping at 344 m/sec the total impact force on the vulcanite covered ball is less than the suction force on the annular area between the ball and the cone. Normal range of cone angle is 45° to 60°.

**10.2.3** The thickness of metal shall be maintained throughout the section as uniform as practicable to avoid strains set up due to sudden changes of cross sections. Where section changes are unavoidable, generous fillets and radii shall be provided.

**10.2.4** Minimum body thickness shall be as indicated in Table 2.

**10.2.5** In high pressure chamber integrally cast and duly machined vertical lugs (min 3 nos) to be provided to guide the float during operation.

#### 10.2.6 Guides for Small Orifice Floats

Suitable gunmetal or brass lined guides may be provided for small orifice floats and the clearance between the floats and the guides shall not exceed 3 mm per side.

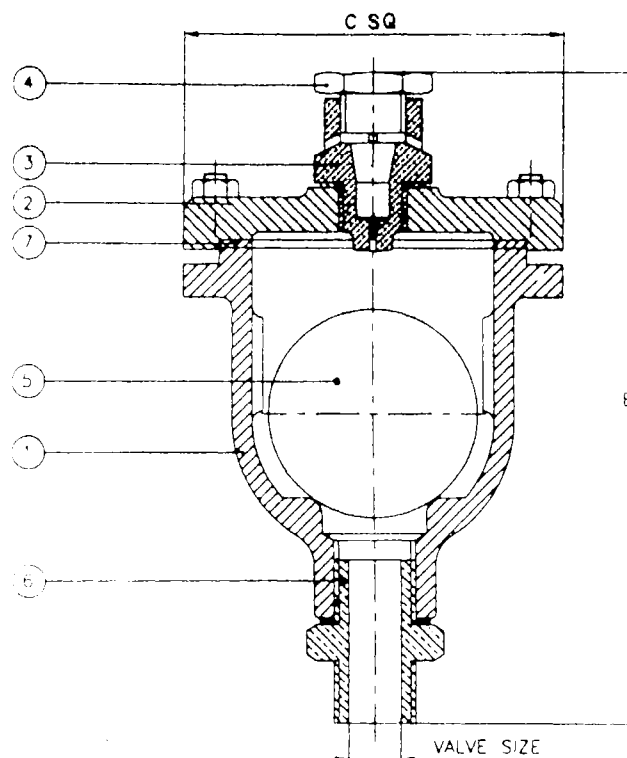
### 10.3 Covers of Large Orifice Chamber

The cover for large orifice chamber shall be of sufficient thickness so as to withstand the full operating thrust in working condition. Profile of orifice in cover shall be compatible with that of low pressure seat ring.

### 10.4 High Pressure Orifice

The high pressure chamber having small orifice shall be so designed that the orifice is effectively sealed in





## LEGEND

- |                        |                      |
|------------------------|----------------------|
| 1) BODY                | 5) H.P. BALL (FLOAT) |
| 2) HIGH PRESSURE COVER | 6) FERRULE           |
| 3) H.P. ORIFICE COVER  | 7) GASKET            |
| 4) H.P. ORIFICE PLUG   | 8) BOLTS & NUTS      |

VALVE SIZE	B (Min)	C SQ. (Min)	SUITABLE FOR MAIN SIZE
15	196	118	UP TO 100
25	255	158	UP TO 100
40	290	158	UP TO 100

All dimensions in millimetres.

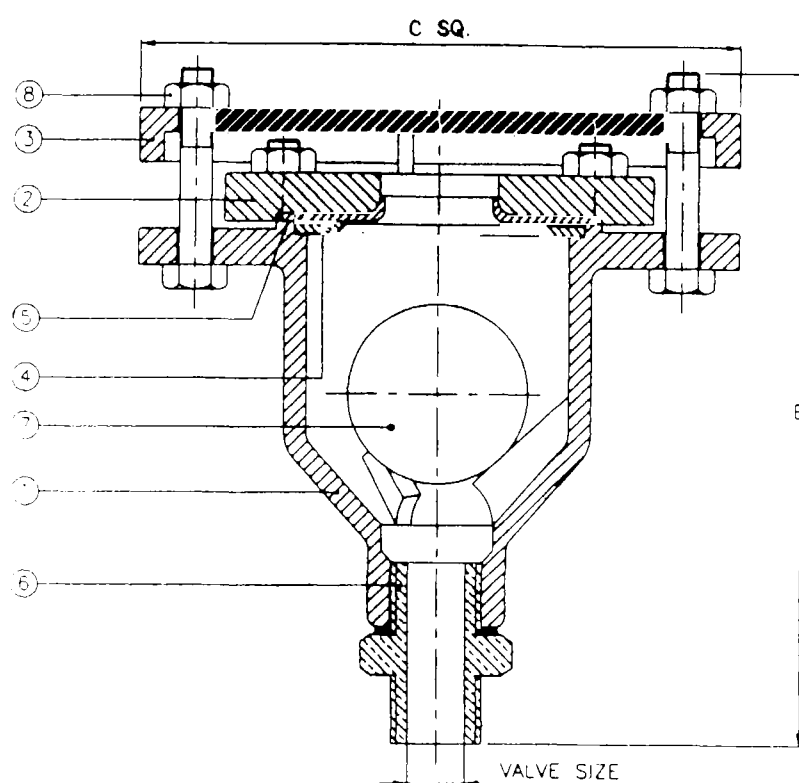
FIG. 1 TYPICAL CROSS-SECTIONAL ARRANGEMENT FOR SINGLE AIR VALVE (SMALL ORIFICE) S 1

Table 2 Body Thickness

(Clause 10.2.4)

All dimensions in millimetres.

Valve Size	Single Air Valve				Double Air Valve (DS 1 & 2)		Kinetic Air Valve (DK)	
	Small Orifice		Large Orifice		PN 1.0	PN 1.6	PN 1.0	PN 1.6
	PN 1.0	PN 1.6	PN 1.0	PN 1.6				
15	6	8	—	—	—	—	—	—
25	6	8	6	8	—	—	—	—
40	8	10	8	10	8	10	8	10
50	—	—	9	10	9	10	9	10
80	—	—	—	—	10	12	10	12
100	—	—	—	—	10	12	10	12
150	—	—	—	—	13	16	13	16
200	—	—	—	—	14.5	18	14.5	18



## LEGEND

- |                       |                      |
|-----------------------|----------------------|
| 1) BODY               | 5) L.P. SEAT RING    |
| 2) LOW PRESSURE COVER | 6) FERRULE           |
| 3) COWL               | 7) L.P. BALL (FLOAT) |
| 4) JOINT SUPPORT      | 8) BOLTS & NUTS      |

VALVE SIZE	B (Min)	C SQ. (Min)	SUITABLE FOR MAIN SIZE
25	202	164	UP TO 100
40	237	180	UP TO 100
50	287	180	125 To 200

All dimensions in millimetres.

FIG. 2 TYPICAL CROSS-SECTIONAL ARRANGEMENT FOR SINGLE AIR VALVE (LARGE ORIFICE) S 2

working condition. The orifice shall be of size not less than 2.5 mm and tapering to 10 mm suitable to release accumulated air within the pipe. The end of orifice shall be carefully profiled to avoid damage to the float surface. High pressure orifice may be fitted from bottom side of cover.

### 10.5 Floats

**10.5.1** Minimum float diameters shall be as indicated in Table 3.

**10.5.2** The buoyancy of the floats shall ensure effective sealing of large orifice even at low pressure.

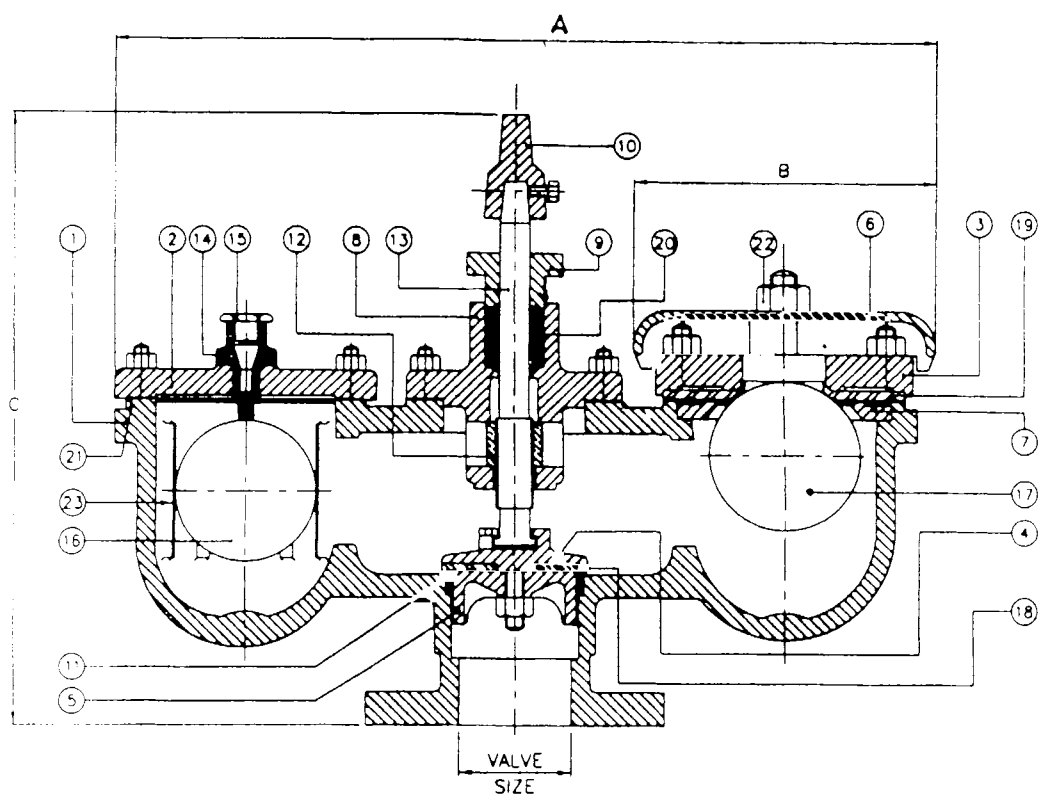
**10.5.3** The inner core of the floats shall be made from seasoned wood or any other synthetic material having

**Table 3 Float Diameter**

(Clause 10.5.1)

All dimensions in millimetres.

Valve Size	Single Air Valve		Double Air Valve		Kinetic Air Valve	
	Small Orifice	Large Orifice	Small Orifice	Large Orifice	Small Orifice	Large Orifice
15	75	40	—	—	—	—
25	100	75	—	—	—	—
40	100	75	100	75	90	55
50	100	75	100	75	100	75
80	—	—	100	100	115	100
100	—	—	125	125	125	125
150	—	—	125	200	150	200
200	—	—	140	250	150	250



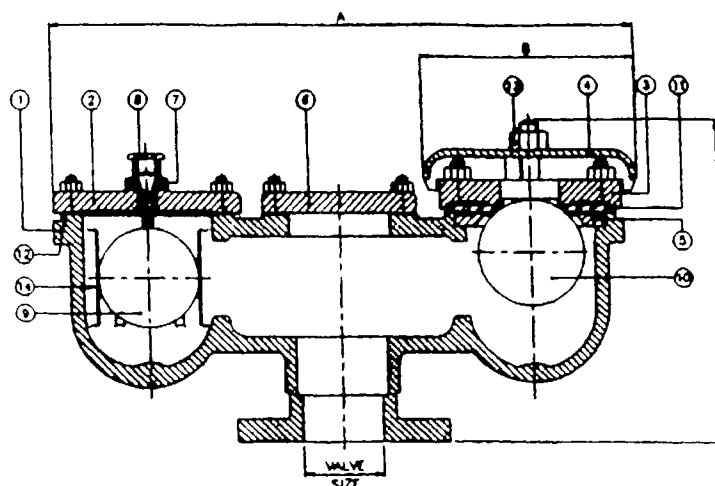
## LEGEND

- |                        |                                   |
|------------------------|-----------------------------------|
| 1) BODY                | 12) NUT FOR SPINDLE               |
| 2) HIGH PRESSURE COVER | 13) SPINDLE                       |
| 3) LOW PRESSURE COVER  | 14) H.P. ORIFICE COVER            |
| 4) VALVE               | 15) H.P. ORIFICE PLUG             |
| 5) VALVE HOLDER        | 16) BALL FOR H.P. CHAMBER (FLOAT) |
| 6) COWL                | 17) BALL FOR L.P. CHAMBER (FLOAT) |
| 7) JOINT SUPPORT RING  | 18) VALVE DISC                    |
| 8) VALVE COVER         | 19) L.P. SEAT RING                |
| 9) GLAND               | 20) PACKINGS                      |
| 10) CAP                | 21) GASKET                        |
| 11) SEAT RING          | 22) BOLTS & NUTS                  |
|                        | 23) GUIDE BUSH                    |

VALVE SIZE	A (Min)	B (Min)	C (Min)	SUITABLE FOR MAIN SIZE
40	442	210	371	UP TO 100
50	442	210	407	125 TO 200
80	504	236	431	225 TO 350
100	634	280	501	400 TO 500
150	862	430	620	600 TO 900
200	988	506	735	1 000 TO 1 200

All dimensions in millimetres.

FIG. 3A TYPICAL CROSS-SECTIONAL ARRANGEMENT FOR STANDARD DOUBLE AIR VALVE WITH IN-BUILT ISOLATING VALVE (DS I)



## LEGEND

- |                        |                                   |
|------------------------|-----------------------------------|
| 1) BODY                | 8) H.P. ORIFICE PLUG              |
| 2) HIGH PRESSURE COVER | 9) BALL FOR H.P. CHAMBER (FLOAT)  |
| 3) LOW PRESSURE COVER  | 10) BALL FOR L.P. CHAMBER (FLOAT) |
| 4) COWL                | 11) L.P. SEAT RING                |
| 5) JOINT SUPPORT RING  | 12) GASKET                        |
| 6) COVER               | 13) BOLTS & NUTS                  |
| 7) H.P. ORIFICE COVER  | 14) GUIDE BUSH                    |

VALVE SIZE	A (Min)	B (Min)	C (Min)	SUITABLE FOR MAIN SIZE
40	442	210	224	UP TO 100
50	442	210	264	125 TO 200
80	504	236	287	225 TO 350
100	634	280	356	400 TO 500
150	862	430	476	600 TO 900
200	988	506	580	1 000 TO 1 200

All dimensions in millimetres.

FIG. 3B TYPICAL CROSS-SECTIONAL ARRANGEMENT FOR STANDARD DOUBLE AIR VALVE WITH IN-BUILT ISOLATING VALVE (DS 2)

sufficient bearing strength and giving an equivalent specific gravity.

**10.5.4** Shore hardness of the outer coating of the large orifice float (LP Orifice) shall be  $100 \pm 5$ .

**10.5.5** Shore hardness of the outer cover of the small orifice floats (HP Orifice) shall be  $80 \pm 5$ .

**10.5.6** The specific gravity of float shall be 0.7 to 0.8, and the homogeneity of the float (ball) is an essential quality in the smooth operation of an air valve.

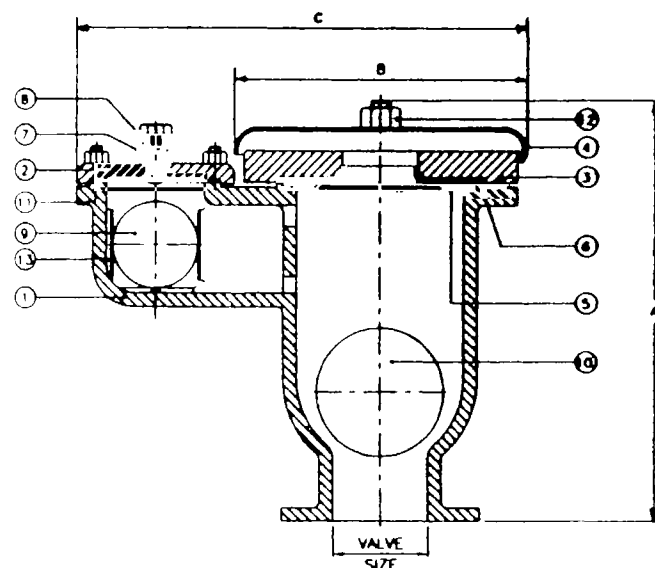
**10.5.7** The diameter of ball in high pressure chamber is related to the maximum working pressure and for a given size of orifice increases with pressure. The

alternative to a larger diameter ball is a smaller diameter orifice. However too small an orifice diameter shall be avoided for eliminating mechanical problem.

#### 10.6 Low Pressure Seat Ring

**10.6.1** Low pressure seat ring shall be made of natural or synthetic rubber having a shore hardness of  $70 \pm 5$ . The central orifice shall be profiled for maximum discharge in any given condition of pressure differential between the chamber and atmosphere.

**10.6.2** Thickness of ring and orifice size shall be as indicated in Table 4.



## LEGEND

- |                        |                                   |
|------------------------|-----------------------------------|
| 1) BODY                | 7) H.P. ORIFICE                   |
| 2) HIGH PRESSURE COVER | 8) H.P. ORIFICE PLUG              |
| 3) LOW PRESSURE COVER  | 9) BALL FOR H.P. CHAMBER (FLOAT)  |
| 4) COWL                | 10) BALL FOR L.P. CHAMBER (FLOAT) |
| 5) JOINT SUPPORT RING  | 11) GASKET                        |
| 6) L.P. SEAT RING      | 12) BOLTS & NUTS                  |
|                        | 13) GUIDE BUSH                    |

VALVE SIZE	A (Min)	B (Min)	C (Min)	SUITABLE FOR MAIN SIZE
40	260	196	324	UP TO 100
50	280	211	352	125 TO 200
80	305	236	373	225 TO 350
100	360	280	424	400 TO 500
150	487	450	674	600 TO 900
200	700	506	739	1 000 TO 1 200

All dimensions in millimetres.

FIG. 4 TYPICAL CROSS-SECTIONAL ARRANGEMENT FOR KINETIC AIR VALVE (DK)

Table 4 Thickness and Orifice Size of Low Pressure Seat Ring

(Clause 10.6.2)

All dimensions in millimetres.

Valve Size	Low Pressure Seat Thickness (Min)	Orifice Size (Min)
40	5	37
50	5	37
80	6	49
100	6	65
150	8	110
200	8	134

10.6.3 The inner profile of the seat ring shall make contact with the float in the large orifice chamber and its profile shall match with the machined profile in

low pressure cover so as to be able to withstand the bearing load under working condition without any deterioration in the quality.

10.6.4 Low pressure seat ring may also be manufactured with impregnation of metallic plate along with fabric layer inside to avoid sagging when float is not sealing the orifice. In this case it is not necessary to use joint support ring underneath low pressure seat ring.

#### 10.7 Joint Supporting Ring

The low pressure seat ring shall be held securely in place under the low pressure cover by a joint support ring to prevent it from sagging when the float is not sealing the orifice.

### 10.8 Cowl

10.8.1 A cowl is basically a shield for the protection of low pressure, large orifice chamber, seat ring and the float. It shall be designed accordingly to prevent direct ingress of foreign matter inside and protect damageable parts from the ill effects of sunrays, monsoon and other damaging elements. There shall be sufficient clearance between the orifice and the shield to ensure easy passage of air out of (and into) the valve chamber under a given pressure differential.

### 10.9 Gaskets or Jointing Material

Gaskets used between the flanges of component parts of the valves shall have minimum 3 mm thickness.

### 10.10 Bolts and Nuts

Bolts and nuts shall conform to IS 1363.

### 10.11 Built-in Isolating Valves

#### 10.11.1 Double Air Valve

10.11.1.1 Where screw down type isolating valve form an integral part of the double air valve materials of construction for this valve shall be selected from those listed in Table 1.

10.11.1.2 Lift of isolating valve shall be  $(d/4)+2$  mm minimum where 'd' is nominal size of the valve.

10.11.1.3 Diameter of spindle measured at stuffing box shall not be less than that specified in Table 5.

**Table 5 Spindle Diameters of Isolating Valve**

All dimensions in millimetres.

Valve Size	Spindle Diameter (Min)	
	1.0 MPa	1.6 MPa
40	18	22
50	22	24
80	22	24
100	28	30
150	28	32
200	32	36

#### 10.11.1.4 Valve cap

The isolating valve shall be operated by a removable key and the spindle shall be provided with a cap of dimensions as given in Table 6 and shall be secured by set screws. The direction of closing shall be indicated on the cap.

#### 10.11.1.5 Direction of operation

Isolating sluice valves shall be closed by turning the operating key in clockwise direction, unless otherwise specified.

## 11 FINISH

The finish of the castings shall be smooth and free from blow-hole, crack, flaw, burr and other defects.

## 12 TESTING AND PERFORMANCE

12.1 When tested as per 12.4.1, the air passage and the function of ball floats in a valve shall be satisfactory, and the valve shall work smoothly.

12.2 Hydrostatic test of valve body, when tested in accordance with 12.4.4 shall reveal no leakage through pressure sustaining components and joints. There shall be no permanent deformation of any part.

12.3 When tested in accordance with 12.4.2 and 12.4.3 the valve seat body shall not show any leakage.

### 12.4 Function and Performance Test

12.4.1 The valve shall be fitted on the test bench as shown in Fig. 5. The pressure of the water in pipe shall be developed to working pressure, and the main valve or cock shall be gradually opened to check the air release and float function. Compressed air shall then be slowly injected into the valve through underside of the valve to check the function of the floats. In case of large orifice single air valve the pressure of the water in the pipe shall be developed to working pressure. The float shall automatically lift and seal against the seal. There shall be no sign of leakage.

#### 12.4.2 High Pressure Orifice Seat Test

Subsequent to high pressure orifice performance test, hydraulic pressure shall be reduced up to half of the working pressure to check leakage of orifice seat for a duration of three minutes.

#### 12.4.3 Low Pressure Orifice Seat Test

Subsequent to high pressure orifice performance test, hydraulic pressure shall be reduced up to half of the working pressure to check leakage of orifice seat for a duration of three minutes.

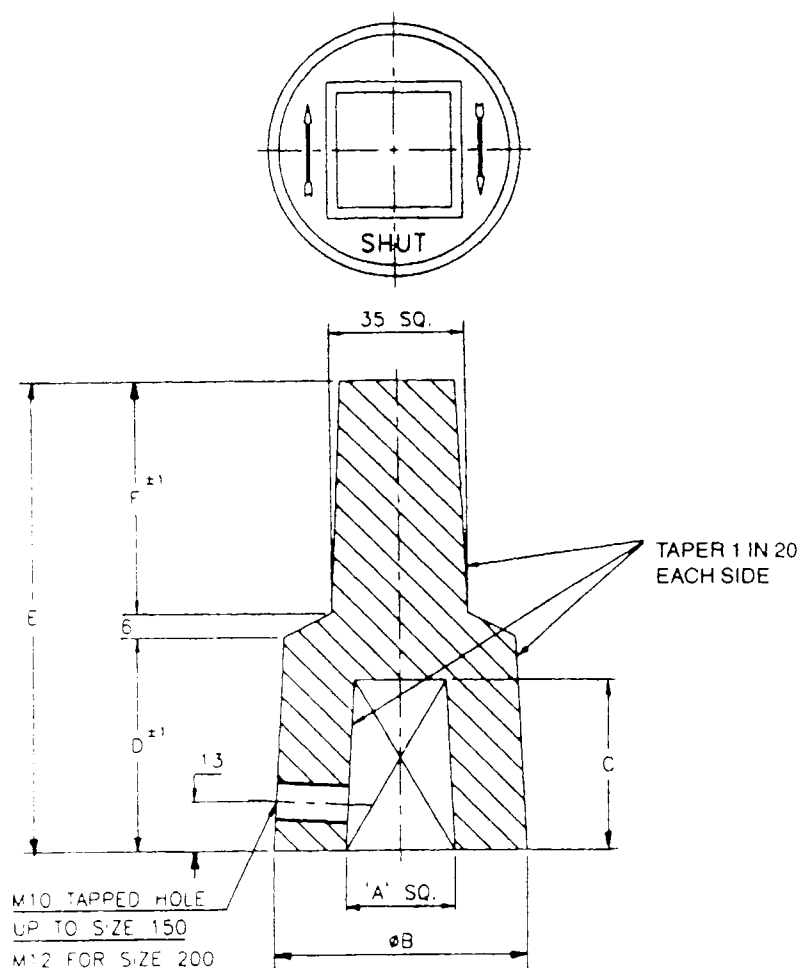
#### 12.4.4 Body Test

The valve body (without cover, ball floats) shall be covered by a blank flange, keeping isolating valve/cock open. Hydrostatic pressure of 1.5 times the pressure rating of the valve shall be applied for a duration of 5 min to check the water tightness of the body.

## 13 INSPECTION

13.1 If inspection is required, this shall be stated in the enquiry and order. The purchaser or his authorised representative shall have access to the manufacturer's works at all reasonable times to inspect the assembled

**Table 6 Cap for Isolating Valve**  
(Clause 10.11.1.4)



Valve Size	"A" SQ	$\phi B$	<i>C</i>	<i>D</i>	<i>E</i>	<i>F</i>
40	15	50	22	32	88	50
50	19	50	26	32	88	50
80	19	50	26	32	88	50
100	24	60	40	50	116	60
150	24	60	44	50	116	60
200	28	65	44	55	121	60

valves to his order.

### 13.2 Protection of Exposed Machined Surface

When required, exposed-machined surfaces shall be coated with suitable rust preventive compound.

## 14 COATING

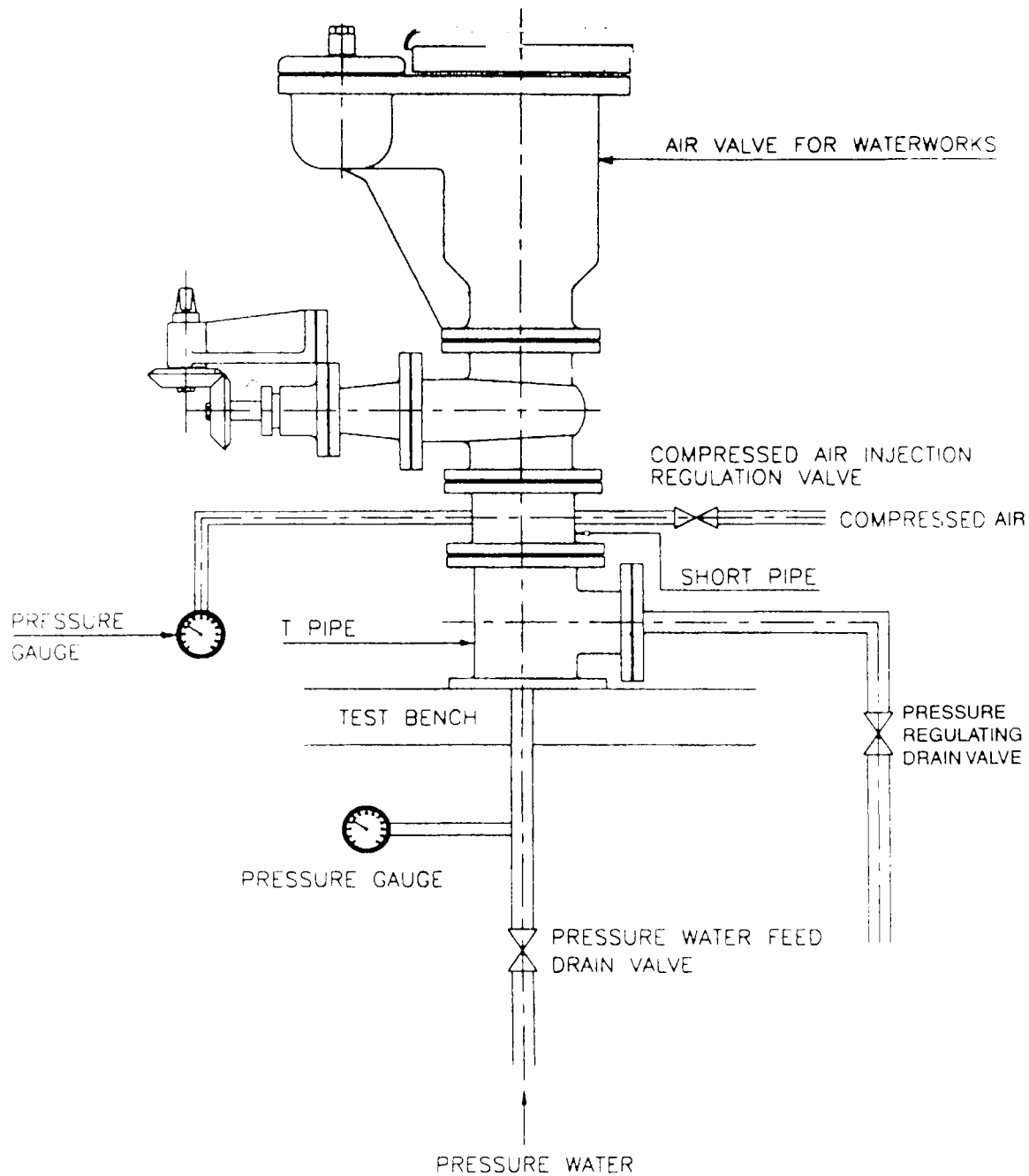
**14.1** Coating material shall not impart any taste and odour to the water. It shall not contain any ingredients injurious to health, neither shall it be affected by water

after drying, not shall it have any ill effect on the quality of water, it shall not also be affected by heat and cold.

**14.2** Two coats of black japan conforming to Type B of IS 341 or paint conforming to Type 2 of IS 9862 shall be applied as specified by the purchaser.

### 14.3 Coating Method

When black paint as per IS 9862 is used coating shall be applied by brushing or spraying. When coating



All dimensions in millimetres.

FIG. 5 TYPICAL ARRANGEMENT FOR TESTING AIR VALVES FUNCTION AND PERFORMANCE

material is epoxy paint, the method of application shall be specified by the purchaser.

#### 14.4 Appearance After Coating

The finished coated surface shall be free from base spots, bubble blistering, sticking of foreign matter, excess floating and other harmful defects.

#### 15 MARKING

15.1 Each valve body shall be permanently marked with a plate securely fixed to the body with the

following information:

- a) Nominal size;
- b) Nominal pressure rating;
- c) Type of valve:
  - i) Single air valve S1, S2, etc
  - ii) Double air valve DS1, DS2, etc
  - iii) Kinetic air valve (DK)
- d) Manufacturers name or trade-mark; and
- e) Sl No. and year of manufacture.



**15.2** Each sluice valve may also be marked with the Standard Mark.

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

## **16 PACKING AND STORAGE**

**16.1** Valves shall be so packed as to minimize the

possibility of damage, during storage or transit. If special packaging is necessary the purchaser shall specify his requirement.

**16.2** Valves shall be stored in roofed stores.

## **17 PREPARATION FOR DESPATCH**

**17.1** Each valve shall be drained, cleaned, dressed inside and outside and prepared to meet appearance specification and suitably protected for despatch in such a way as to minimize the possibility of damage and deterioration during transit and storage.

# **ANNEX A**

(Foreword)

## **ENQUIRY/ORDER INFORMATION**

The following shall be stated in the enquiry/order:

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>a) Type of valve;</li> <li>b) Nominal diameter;</li> <li>c) Nominal pressure;</li> <li>d) End connections required;</li> <li>e) If gunmetal/brass guides for floats are required;</li> <li>f) If drain plugs are required;</li> </ul> | <ul style="list-style-type: none"> <li>g) If valves are to be protected, against electro-static build-up;</li> <li>h) Specific requirements of following things:               <ul style="list-style-type: none"> <li>i) Test certificates;</li> <li>ii) Inspection or certificate of conformity;</li> <li>iii) Painting, other than those specified;</li> <li>iv) Protection to exposed machined surfaces; and</li> </ul> </li> <li>j) Isolating valve, if any, required.</li> </ul> |
|--|---|

**ANNEX B***(Clause 2)***LIST OF REFERRED INDIAN STANDARDS**

<i>IS No.</i>	<i>Title</i>	<i>IS No.</i>	<i>Title</i>
210 : 1978	Grey iron castings ( <i>third revision</i> )		pressure pipes for water, gas and sewage ( <i>third revision</i> )
318 : 1981	Leaded tin bronze ingots and castings ( <i>second revision</i> )	1570 (Part 5) : 1985	Schedules for wrought steels for general engineering purposes : Part 5 Stainless steel and heat resisting steels ( <i>second revision</i> )
320 : 1980	High tensile brass rods and sections (other than forgings stock) ( <i>second revision</i> )	3444 : 1987	Specification for corrosion resistant high alloy steel and nickel base casting for general applications
341 : 1973	Black japan, Types A, B and C ( <i>first revision</i> )	5414 : 1969	Gasket and packings — Jute and hemp
554 : 1985	Dimensions for pipe threads where pressure tight joints are required on the threads ( <i>third revision</i> )	6418 : 1971	Cast iron and malleable cast iron flanges for general engineering purposes
638 : 1979	Sheet rubber jointing and rubber insertion jointing ( <i>second revision</i> )	6603 : 1972	Stainless steel bars and flats
780 : 1984	Specification for sluice valves for water works purposes (50 to 300 mm size) ( <i>sixth revision</i> )	9862 : 1981	Ready mixed paint, brushing, bituminous, black lead-free, acid, alkali, water and chlorine resisting
1363 (Parts 1 to 3) : 1992	Hexagonal head bolts, screws and nut of product grade C ( <i>third revision</i> )	11855 : 1986	General requirements for rubber seals for hydraulic gates
1538 : 1993	Specification for cast iron fittings for		

**ANNEX C***(Foreword)***COMMITTEE COMPOSITION**

Sanitary Appliances and Water Fittings Sectional Committee, CED 3

*Chairman*  
SHRI S. K. CHIDABRA

*Members*

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DEPUTY HYDRAULIC ENGINEER (*Alternate*)  
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SHRI V. K. SETHI (FIELD OFFICER) (*Alternate*)  
SHRI M. P. JAIPURIA  
SHRI S. A. KHAN (*Alternate*)  
ADVISOR (PH ENGG)  
DEPUTY ADVISOR (PH ENGG) (*Alternate*)  
SHRI SURESH KUMAR SHARMA  
SHRI AJAY SINGH (*Alternate*)  
DR A. K. GUPTA

*Representing*  
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Brihanmumbai Municipal Corporation, Mumbai  
Building Materials & Technology Promotion Council, New Delhi  
Capstan Meters (India) Ltd, Jaipur  
Central Public Health and Environmental Engineering Organization, New Delhi  
Central Building Research Institute, Roorkee  
Central Glass & Ceramic Research Institute (CSIR), Calcutta

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SOW (NDZ-I) ( <i>Alternate</i> )	
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