

Indian Standard
CODE OF PRACTICE FOR
SELECTION, INSTALLATION AND
MAINTENANCE OF SLUICE VALVES
(*First Revision*)

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

Indian Standard

CODE OF PRACTICE FOR SELECTION, INSTALLATION AND MAINTENANCE OF SLUICE VALVES (*First Revision*)

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(Continued on page 7)

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Indian Standard

CODE OF PRACTICE FOR SELECTION, INSTALLATION AND MAINTENANCE OF SLUICE VALVES (*First Revision*)

0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 30 July 1971, after the draft finalized by the Sanitary Appliances and Water Fittings Sectional Committee had been approved by the Civil Engineering Division Council.

0.2 This standard was first published in 1964. The Sectional Committee has revised the standard after reviewing it in the light of experience gained in the usage of the same and has incorporated the necessary modifications to facilitate the use of valves conforming to IS : 780-1969*.

0.3 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.

1. SCOPE

1.1 This code covers the selection, installation and maintenance of sluice valves conforming to IS : 780-1969*.

2. SELECTION

2.1 The aspects governing the selection of sluice valves are listed below:

- a) Nominal bore of pipe.
- b) *Nature of Pipe* — whether it is made of cast iron, cast steel, asbestos-cement or steel coated with concrete.
- c) *Situation* — whether distribution or rising main.

*Specification for sluice valves for water-works purposes (50 to 300 mm size) (*fourth revision*).

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

- d) *Location* — whether underground or above.
- e) Nature of location of the valve which would depend upon the following factors:
 - 1) Whether centre line of spindle is vertical or horizontal, and
 - 2) Whether inside or in a terminal position in a pipe line.
- f) Nature of end connections, namely, flanged, socketed or plain ended.
- g) Quality of water:
 - 1) Whether raw unfiltered or filtered;
 - 2) Acidic or alkaline, if possible pH value (hydrogen-ion concentration); and
 - 3) Temperature.
- h) Pressure of water, both working and unbalanced, and the static head at the centre of the valve.

Note — Unbalanced pressure is the difference between the pressures on the two sides of the door with the valve shut. This determines the resultant unbalanced thrust against which the valve has to be operated.
- j) For headstock operation only:
 - 1) Distance, between the centre line of waterway and the base of headstock, that is level of operating platform;
 - 2) Distance between the centre line of extension spindle and the face of wall or masonry; and
 - 3) Headroom available on the operating platform.

3. INSTALLATION

3.1 Sluice valves shall normally be installed with spindle vertical on horizontal pipes except on vertical pipes where spindle shall be horizontal. On slopes, the sluice valves may preferably be kept vertical if slope is nominal and gradient can be adjusted with the help of connecting pipes on either sides.

3.1.1 It shall be ensured while fixing sluice valves in pipe lines below ground level that a clear space of about 200 mm is available between the top of the sluice valve spindle and surface box, so that valve cap may be easily provided when surface box is kept in flush with road level.

3.2 It is most important to ensure that:

- a) all grit and foreign matters are removed from the inside of the valves before placing in pipes, and

- b) all the four faces are thoroughly cleaned and coated with a thin layer of mineral grease.

3.3 It is important to check tightening of gland with a pair of inside calipers. Clearance between the top of the stuffing box and the underside of the gland should be uniform on all the sides.

3.4 Gland should not be tightened too hard. The pressure applied should be just enough to stanch leakage.

3.5 Hemp packing should be adequately soaked in grease and should not be allowed to remain dry.

3.6 The valves should be tightly closed when being installed, as this keeps the valve rigid and prevents any foreign matter from getting in between the working parts of the valve.

3.7 While installing flanged valves, each flange bolt should be tightened a little at a time, taking care to tighten diametrically opposite bolts alternately. The practice of fully tightening the bolts one after the other is highly undesirable.

3.8 After installation of the valve, the valve and the pipe line should be flushed with water to remove any foreign matter that may be present in them.

3.9 If any leak is detected at the valve seats, applying extra torque on the valve spindle to set right the valve is not good practice. The valve seats should be examined and, if necessary, repaired by scraping or replacing where necessary.

3.10 Valves in exposed positions should be protected in cold weather where there is a likelihood of their becoming frozen and bursting.

3.11 Surface boxes conforming to IS : 3950-1966* should be provided to cover the valve chamber for the safety and easy identification of the valves.

3.12 The direction of opening and closing should be clearly indicated.

3.13 Suitable identification plate should be provided as near to the actual location of valves as possible.

3.14 Care should be taken to ensure that the joining material sits squarely between the flanges of the valves and pipe lines or tails without obstructing the waterway. It is equally important to ensure that there are no kinks in the jointing material as might allow leakage in service.

*Specification for surface boxes for sluice valves.

4. MAINTENANCE

4.1 A valve normally kept open or shut in a pipe should be operated once every three months to full travel of gate and any jamming that may have developed due to its remaining unused is to be freed.

4.2 It should be ensured that packings inside stuffing box are in good trim and impregnated with grease. It may be necessary to change the packing as often as necessary to ensure these requirements.

4.3 For T-key operation the end of the key should have good fit on the square taper at the top of spindle. It is dangerous to operate valves by oversize keys fitted direct to the spindle as this practice may result in rounded square top and the key may eventually slip.

4.4 Partial opening of valves frequently in a pipe is dangerous particularly against high unbalanced pressures. Where frequent partial opening of a valve is necessary against high unbalanced pressures a duplicate valve may be provided on the upstream side of the operating valve which should be kept fully open all the time. This will enable isolation of the pipe section for repairing the operative valve when it becomes defective.

4.4.1 Where a valve has been fully opened, the back-lash should be taken out and the valve slightly eased so that it will not stick.

4.5 The valve should be regularly inspected internally and externally, preferably, at intervals of not more than a year, the frequency of inspections depending upon the service conditions and the frequency of valve operations. The stuffing box packing should be adjusted or replaced soon after leakage past the spindle is detected.

(Continued from page 2)

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AMENDMENT NO. 1 MARCH 1990
TO
IS : 2685 - 1971 CODE OF PRACTICE FOR
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OF SLUICE VALVES

(First Revision)

(Page 3, clause 0.2, last line) — Substitute 'IS : 780-1984*' for 'IS : 780-1969*'.
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(Page 3, clause 1.1, last line) — Substitute 'IS : 780-1984*' for 'IS : 780-1969*'.
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(Page 3, foot-note, first line) — Substitute '(sixth revision)' for '(fourth revision)'.
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(Page 5, clause 3.11, first line) — Substitute 'IS : 3950 - 1979*' for 'IS : 3950-1966*'.
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(Page 5, foot-note) — Insert '(first revision)' in the end.

(CED 3)

Reprography Unit, BIS, New Delhi, India