



उत्पाद मैनुअल
आई एस 3745: 2024 के अनुसार
पिन इंडेक्स कनेक्शन सहित योक टाइप चिकित्सा सिलिन्डर वाल्व के लिए
दस्तावेज संख्या-पी एम/आई एस 3745/3/ दिसम्बर 2024

भारतीय मानक ब्यूरो की स्कीम-I (अनुरूपता मूल्यांकन) विनियम, 2018 के तहत यह उत्पाद मैनुअल प्रमाणीकरण के प्रचालन में रीति और पारिशिष्ट की सुसंगतता सुनिश्चित करने के लिए सभी क्षेत्रीय/शाखा कार्यालयों और लाइसेंसि द्वारा संदर्भ सामग्री के रूप में उपयोग किया जाएगा। बीआईएस प्रमाणीकरण लाइसेंस/प्रमाणपत्र प्राप्त करने के इच्छुक भावी आवेदकों द्वारा भी इस दस्तावेज का उपयोग किया जा सकता है।

**PRODUCT MANUAL FOR
YOKE TYPE MEDICAL CYLINDER VALVE WITH PIN INDEX
CONNECTION
ACCORDING to IS 3745:2024**

Document No.-PM/IS 3745/3/ December 2024

This Product Manual shall be used as reference material by all Regional/Branch Offices & licensees to ensure coherence of practice and transparency in operation of certification under Scheme-I of Bureau of Indian Standards (Conformity Assessment) Regulations, 2018 for various products. The document may also be used by prospective applicants desirous of obtaining BIS certification licence/certificate.

भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS
मानक भवन, ९, बहादुर शाह ज़फ़र मार्ग
Manak Bhawan, 9, Bahadur Shah Zafar Marg
नई दिल्ली- ११०००२
New Delhi- 110002



**PRODUCT MANUAL FOR
YOKE TYPE MEDICAL CYLINDER VALVE WITH PIN INDEX
CONNECTION
ACCORDING TO IS 3745: 2024**

This Product Manual shall be used as reference material by all Regional/Branch Offices & licensees to ensure coherence of practice and transparency in operation of certification under Scheme-I of Bureau of Indian Standards (Conformity Assessment) Regulations, 2018 for various products. The document may also be used by prospective applicants desirous of obtaining BIS certification license/certificate.

1.	Product	:	IS 3745: 2024
	Title	:	Yoke Type Medical Cylinder Valve with Pin Index Connection
	No. of Amendments	:	Nil
2.	Sampling Guidelines:		
a)	Raw material	:	As per Cl. 3 of IS 3745
b)	Grouping guidelines	:	Each Variety of valve shall be tested for GoL/CSoL
c)	Sample Size	:	1. Assembled valves- 5 pieces 2. Samples for material testing (Tensile and Izod)- 3 pieces each 3. Valve body piece for chemical test- 3 pieces 4. Brass components- 5 pieces
3.	List of Test Equipment	:	Please refer ANNEX – A
4.	Scheme of Inspection and Testing	:	Please refer ANNEX –B
5.	Possible tests in a day:	:	Please refer ANNEX- C
6.	Scope of the Licence:	:	Please refer ANNEX –D

ANNEX--A**List of Test Equipment*****Major test equipment required to test as per the Indian Standard***

Sr No	Tests used in with clause reference	Test equipment
1.	Tensile strength and % Elongation, 3.2.1	Tensile testing machine
2.	Izod impact test, Cl. 3.2.2	Izod Impact testing machine
3.	Coating thickness, Cl. 3.4	Suitable test equipment as per the relevant method used referred in IS 1068
4.	Corrosion resistance, Cl. 3.4	Salt spray chamber as per IS 1068
5.	Adhesion test, Cl. 3.4	Arrangement for File test or Quenching test as per IS 1068
6.	Valve inlet connections, Cl. 10	Thread Plug Gauges and Ring gauges of suitable sizes
7.	Valve outlet connections, Cl. 9.1 to 9.11	Thread Plug Gauges and Ring gauges of suitable sizes
8.	Hydraulic Burst Pressure Test, Cl. 11	Test bench with pressure gauge
9.	Internal and External Tightness test, Cl. 12	Test bench with Pressure gauges
10.	Valving Torque test, Cl. 13	Torque wrench with fixture
11.	Endurance test, Cl. 14	Holding fixture for cycle test and arrangement counter
12.	Yoke dimensions, Cl. 6.2, 7, 8	Vernier caliper, micrometer

The above list is indicative only and may not be treated as exhaustive.

ANNEX B**Scheme of Inspection and Testing**

1. LABORATORY - A laboratory shall be maintained which shall be suitably equipped (as per the requirement given in column 2 of Table 1) and staffed, where different tests given in the specification shall be carried out in accordance with the methods given in the specification.

1.1 The manufacturer shall prepare a calibration plan for the test equipments. The following equipments shall be calibrated at a frequency shown against each and records kept:

1.1.1 Universal Testing Machine - Once in a year

1.1.2 Impact Testing Machine- Once in three years

1.1.3 Pressure Gauges - Once in a month

1.1.4 Pyrometer used for heating furnace- Once in six months

1.1.5 Master gauges against which inspection gauges are checked periodically shall be sent for rechecking in an independent laboratory once in three years.

1.2 The firm shall procure a set of certified gauges for inspection of different components.

2. TEST RECORDS – The manufacturer shall maintain test records for the tests carried out to establish conformity. Records of all the tests made at the valve manufacturer's work shall be kept and copies of test certificates shall be forwarded to the purchaser of the valve and the inspecting authority.

3. LABELLING AND MARKING – As per the requirements of IS 3745: 2024.

4. CONTROL UNIT – The control unit shall consist of a lot of valve blanks of the same type & size manufactured in a day from the material from the same supplier or blanks from the same heat number, whichever is later, under similar process of production.

5. LEVELS OF CONTROL - The tests as indicated in column 1 of Table 1 and the levels of control in column 3 of Table 1, shall be carried out on the whole production of the factory which is covered by this plan and appropriate records maintained in accordance with paragraph 2 above.

5.1 Each control unit of finished valves shall be offered for inspection to BIS before dispatch (See Table 2). Valves failing to meet the requirements of the specification shall not be marked with the BIS Standard Mark.

5.2 A certificate as per *Annexure -I* shall be issued by the BIS Inspecting Officer in respect of every batch/inspection lots of cylinders marked with BIS Standard Mark.

5.3 MATERIAL - The material shall conform to the requirements specified in 3.1 & 3.2 of IS 3745:2024. A test certificate shall be supplied by the supplier with the supply of the material for the valve fabrication. The Bureau shall be given the opportunity of making an independent check test, if necessary. The manufacturer of the valves should establish means to identify the valves with the certificate. Material with seams, cracks, lamination or other injurious defects shall not be used.

5.4 DESIGN, FABRICATION & DIMENSIONS – The valves shall conform to the requirements given in clause 4 to 10 of IS 3745:2024. A fully dimensional sectional drawing of the valve and scheme of manufacture shall be submitted by the manufacturer to the inspecting authority for final approval by Statutory Authority.

5.5 In respect of all other clauses of the specification at all stages of production, appropriate controls and checks shall be maintained by the factory so as to ensure that the product conforms to the various requirements of the specification.

6. FORGING & MACHINING

The licensee shall possess all the requisite infrastructure for the forging and machining of the valve housing in their own premises. Under no circumstances, the forgings of valve housing (body) or machining there of shall be permitted to be sub-contracted or bought from outside.

7. REJECTIONS – Disposal of non-conforming product shall be done in such a way so as to ensure that there is no violation of provisions of BIS Act, 2016.

TABLE 1

(1)				(2)	(3)		
Test Details					Levels of Control		
Clause	Requirement	Test Methods		Test equipment requirement Required (R) or Sub-contracting permitted (S)	No. of Sample	Frequency	Remarks
		Clause	Reference				
3	MATERIAL						
	Chemical composition of Valve body	3.1	IS 3745	S	One	Each consignment	No further testing is required, if accompanied with test certificate or ISI marked. The approved material as per drawing shall only be used.
	Metallic and Non-metallic components	3.1	IS 3745 IS/ISO 11114-1 IS/ISO 11114-2	S	One	Each consignment	No further testing is required, if accompanied with test certificate or ISI marked. The approved material as per drawing shall only be used.
	Tensile strength and % Elongation	3.2.1	IS 3745 IS 1608	R	Annex B of IS 3745	Each Control Unit	If any of the samples fail, twice the number of samples shall be tested for the failed test from the same control unit. If any of these samples fail to meet the requirements, the entire control unit shall be rejected. (Ref. B-2.3 of Annexure B of IS 3745)
	Izod impact strength	3.2.2	IS 3745 IS 1598	R	Annex B of IS 3745	Each control unit	

3.4	Protective Finish						
	Appearance	7.1	IS 1068	R	Each valve		
	Thickness	7.2, 7.2.3, 7.2.4,9.1	IS 1068	R	1 of 1000 valves or less electroplated at a time		
	Ductility	7.2.3.2, 9.4	IS 1068	R	1 of 1000 valves or less electroplated at a time		
	Adhesion	7.3, 9.2	IS 1068	R	1 of 1000 valves or less electroplated at a time		
	Corrosion resistance	7.4, 9.4	IS 1068	R	1 of 1000 valves or less electroplated at a time		
4	Design	4.1	IS 3745	R	Design validation requirement, to be checked at the time of initial approval or whenever there is any change in design or material.		
5	Pressure relief device, if provided						
5.1.6	Minimum flow rate	5.1.6	IS 3745	R	Two	Each Control Unit	
5.2	Relief/Bursting Pressure test	5.2	IS 3745	R	Two	Each Control Unit	
6	CONSTRUCTION						
6.2	Yoke dimensions	7.1, 7.2, 8.2, 8.3, 9.1 to 9.11	IS 3745	R	Each Valve	-	

9	Valve outlet Connections	9.1 to 9.11	IS 3745	R	Each Valve	-
10	Valve inlet connections	10	IS 3745 IS 3224	R	Each Valve	
11	Hydraulic Bursting Pressure test	11	IS 3745	R	Annex B of IS 3745	Each Control unit
12	Internal and External Tightness test	12	IS 3745	R	Each valve	
13	Valving torque test	13	IS 3745	R	One sample out of 5000 valves of same type subject to minimum of one valve in a month	
14	Endurance test	14	IS 3745	R	One sample out of 5000 valves of same type subject to minimum of one valve in a month	

Table 2*(Cl. 5.1 of SIT)***INSPECTION OF FINISHED LOT**

Lot – For the purpose of lot inspection, the lot shall be the same as the Control Unit defined in Clause 4 of the Scheme of Inspection and Testing.

1. Depending upon the size of the lot, the following number of samples shall be drawn at random and subjected to the test for valve inlet connections (Cl. 10), valve outlet connections (Cl. 9) and Internal and External Tightness test (Cl. 12) etc.:

Control Unit Size	Sample Size
Upto 500	13
501 to 1000	20
Over 1000	32

In case of failure of a sample in any requirement mentioned under 1, all the valves in the lot should be tested by the licensee for the requirement where failure has occurred and segregated lot be reoffered for BIS Inspection as fresh lot.

2. Hydraulic Burst Pressure Test (Cl. 11), Coating thickness Test (Cl. 3.4) and Bursting Pressure and flow rate of Pressure Relief Device (Cl. 5.1.6 and Cl. 5.2), if provided, shall be carried out on 2 valves from each control unit.

3. The lot may be considered as having passed the requirements of IS 3745: 2024 if all the samples tested above are found to be conforming.

NOTES:

1. Tensile strength, Elongation and Impact Strength of the material of valve body as per frequency given in Table 1 of SIT shall be carried out by the licensee. BIS officer will verify the relevant test records before carrying out lot inspection. However, such tests to be witnessed by BIS officer whenever possible.

2. Endurance test, and valving torque test as per the frequency given in Table 1 of SIT shall be carried out by the licensee in the presence of BIS officer whenever possible. Records of such tests shall be verified by BIS officer before taking up the batches for inspection and testing during the lot inspection.

ANNEX – I

(Para 5.2 of the Scheme of Inspection and Testing)

Test Certificate for Yoke Type Valve Connections for Small Medical Gas Cylinders - IS 3745

Manufacturer:		Certificate No.		
Purchaser:		Order No:		
Control unit No:				
Valve fittings description / Outlet No.		Quantity offered for Inspection:		
This is to certify that the valve fittings as mentioned below were inspected at M/s _____ and _____ these meet the Requirements of IS 3745: 2024 and Drawing No. _____ approved by CCOE.				
RESULTS OF INSPECTION:				
Sr. No	Requirements	Quantity Inspected	Quantity Passed	Quantity Rejected
1	Valve inlet connections			
2	Valve outlet connections			
3	Internal and External Tightness test			
4	Hydraulic Burst Pressure test			
5	Coating thickness test			
6*	Tests for protective finish (other than coating thickness test)			
7*	Tensile strength and elongation tests			
8*	Impact strength test			
9*	Valving torque test			
10*	Endurance Test -Batch No			
* From manufacturer's test record.				
Quantity Passed				
Rejected valve fittings and the method of their disposal				
Signature:		Signature		
Name & Designation of the Officer		Inspecting Officer		
representing the company		Bureau of Indian Standards		

ANNEX C**Possible tests in a day**

Sr No.	Test	Clause reference
1.	Tensile Strength and elongation	3.2.1
2.	Impact strength	3.2.2
3.	Coating thickness test	3.4
4.	Bursting pressure and flow rate capacity of PRD, if provided with Valve	5
5.	Valve outlet connections	9
6.	Valve inlet connections	10
7.	Hydraulic Burst Pressure test	11
8.	Internal and External Leakage test	12
9.	Valving torque test	13
10.	Endurance test	14

ANNEX D**Scope of Licence**

“Licence is granted to use Standard Mark as per IS 3745: 2024 with the following scope:

Name of the product	Yoke Type Medical Cylinder Valve with Pin Index Connection
Type of gas/gas mixture	
Inlet connection	
Outlet connection	
Whether with Pressure Relief Device, if yes, specify flow rate of PRD	
Any other aspect required as per Standard	PESO approval number and drawing number