

NEWSLETTER

OCTOBER 2022 TO MARCH 2023

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From the Partner's desk

We rounded off another successful financial year on 31st March 2023 and this edition of our newsletter gives me the opportunity to showcase our highlights and achievements in the last six months. Tekno Valves has always been keenly involved in standardization activities by participating in national and international technical committees related to cylinder valves. As a result, the undersigned was felicitated by the Indian Standardization Institute (BIS) in "Appreciation of long-term association in journey of quality".

We have launched several new designs of cylinder valves for industrial, medical as well as firefighting application for the domestic market as per IS:3224:2021. These models offer unparalleled quality at a competitive price. The users of the new models will get significantly improve life and safety compared to the previous valve models they have been using across the industry spectrum.

We have significantly enhanced our pressure testing facility. The facilities allow us to pressure test cylinder valves pneumatically up to 1000 bar and hydraulically up to 2000 bar.

Lastly, it gives me immense pleasure to inform that Rohit Behani received award for presenting the best technical paper in the 42nd AIIGMA seminar held in Bahrain.



Y.K. Behani
Partner
Tekno Valves



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Changes in the Statutory landscape for Gas Cylinder Valves in India

Technical standards are generally revised every five years so that they stay relevant to changing technology and evolving stakeholder expectations. The review ensures that they incorporate the latest knowledge and best practices. As a minimum, the standards are reaffirmed in case no changes are necessary.

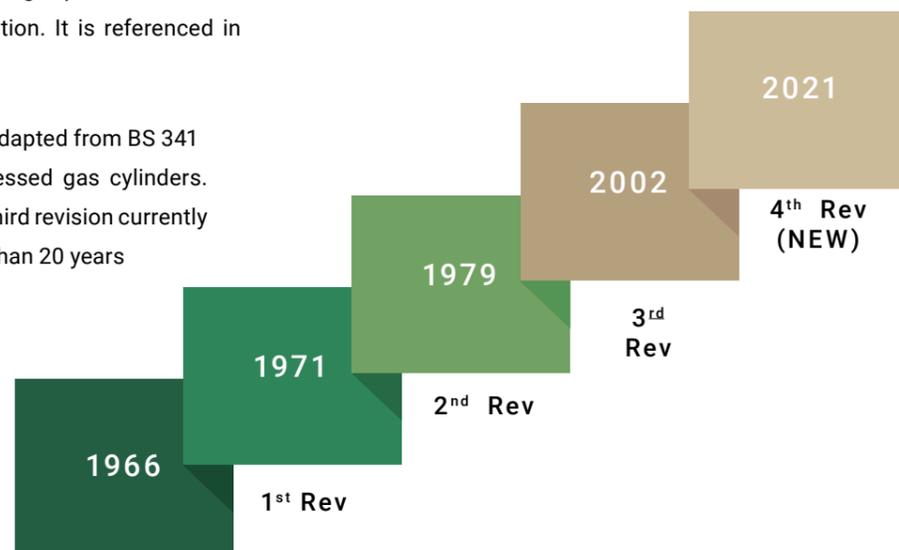
In a meeting of the BIS Gas Cylinder Valves and Fittings Subcommittee, MED 16:1 held at Kumarakom, in 2011, halfway through the draft of the 4th revision, the committee agreed to the suggestions of Mr. D.K. Gupta, Mr. Vutukuru Ramana and Rohit Behani to align IS 3224 with ISO 10297.

A panel headed by Mr Y K Behani, convener MED 16:1 was formed to make wholesome changes in IS 3224:2021 in line with type testing requirements of the international standard. The revision got delayed when ISO 10297:2006 standard was revised in 2014 as it was decided to incorporate the latest changes in the new draft of IS 3224, which was finally published in January 2022.

Evolution of IS 3224

IS 3224 is the Indian standard for Valves Fittings for Compressed Gas Cylinders Excluding Liquefied Petroleum Gas (LPG) Cylinders - Specification. It is referenced in Indian Gas Cylinder Rules.

IS 3224 standard was originally adapted from BS 341 Part 1 - Valve fitting for compressed gas cylinders. Originally published in 1966, the third revision currently being used was published more than 20 years back in 2002.



Main Differences between IS 3224:2002 & IS 3224:2021



OPERATING & STORAGE TEMPERATURE RANGE

IS 3224:2002

Clause 6.1.1
Valve shall be designed to operate under the extreme conditions of environment, which could cause a pressure rise in the cylinder contents up to maximum developed pressure. No temperature range defined. Leakage testing is not carried out at extreme temperatures

IS 3224:2021

Clause 6
Valve shall be designed to operate satisfactorily and be leak tight over a range of service temperatures from -20°C to +65°C. Leakage testing is carried out at room, as well as highest & lowest service temperatures during type testing.



MATERIAL COMPATIBILITY

IS 3224:2002

Only valve body material specified in generic terms for different gases e.g., ferrous & non-ferrous

IS 3224:2021

Clause 5.2
IS/ISO 11114-1 & IS/ISO 11114-2 given as mandatory references for material compatibility. IS/ISO 11114-1 provides requirements for the selection of metallic valve materials & gas contents. IS/ISO 11114-2 gives guidance on the compatibility between non-metallic materials for valves & gas contents.



LUBRICANT

IS 3224:2002

Use of lubricant not mentioned

IS 3224:2021

Clause 10.1.3, 10.1.5 & 10.2 mentions use of compatible lubricant. The lubricant becomes important design parameter and essential for smooth performance.



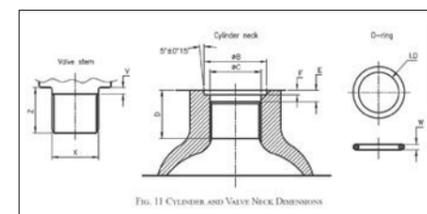
CYCLE TEST REPLACED WITH ENDURANCE TEST

IS 3224:2002

Clause 10.1.1.5
Cycle Test does not specify any pressure requirement during the test

IS 3224:2021

Clause 10.6
Endurance test introduced to ensure valve sealing systems can withstand 2,000 opening & closing cycles at valve test pressure without increase in torque except for some special designs. The valve test pressure used for compressed gases is 1.2 x WP in consideration of the temporary increase in cylinder pressure at the time of filling. Torque used during endurance test depends on the valve operating mechanism & the handwheel diameter.



PARALLEL INLET CONNECTIONS INCLUDED

IS 3224:2002

Clause 8
Only covered taper inlet connections and its oversizes

IS 3224:2021

Clause 8.3
Parallel inlet connections (commonly used metric & UNF threads), have been included along with respective O-ring dimensions



SCOPE OF PRESSURE RELIEF DEVICE ENLARGED

IS 3224:2002

Clause 7.2.2
Pressure relief device only specified for CO2 & CNG service.

IS 3224:2021

Clause 7.2.2
Pressure relief device (burst discs) made mandatory for all high pressure liquefiable gases such as CO2, N2O & SF6.
Parallel safeties (thermal & pressure actuated) introduced for CNG service.



EXCESSIVE TORQUE TEST INTRODUCED

IS 3224:2002

No requirement

IS 3224:2021

Clause 10.4.4
Excessive Torque Test ensures strength of the valve operating mechanism when subjected to over-torque & safe failure
Requirement: Mechanical failure shall occur before unscrewing of the valve operating mechanism & shall not result in ejection of the valve components.
Over Torque has been specified depending on the valve design type and/or handwheel diameter.



FLAME IMPINGEMENT TEST INTRODUCED

IS 3224:2002

No requirement

IS 3224:2021

Clause 10.8
Flame Impingement Test checks whether the valve can be closed even after the valve operating device (e.g. handwheel) has been exposed to a fire.
Flame Impingement Test involves exposing and engulfing the valve operating device for 1 min between 800°C & 1000°C flame of 150 mm length.



CHANGES IN VALVING TORQUE

IS 3224:2002

Table-11
Valve installation torque values borrowed from BS 341-1:1991

IS 3224:2021

Table-13 to 16
The valve installation torques have been taken from ISO 13341.
The recommended torques for taper threads have been significantly reduced. This will help reduce stresses in the valve body.

VALVING TORQUE VALUES OF 25.4 MM/25E INLET SIZE*

IS 3224:2002	IS 3224:2021
250-380 Nm	200-300 Nm

*Applicable for Brass valve body & seamless steel cylinder.

Scaling up Capacity

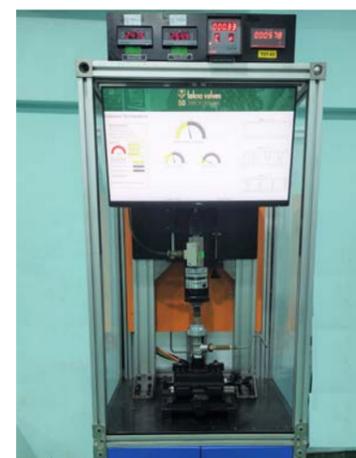


Gas Booster station

Two stage Gas Booster station for pressure testing up to 1000 bar (14500 psig)
Make: MAXIMATOR
The enhanced capability allows us to carry pneumatic testing on cylinder valves and allied components up to a Working Pressure of 800 bar which requires tightness testing at WP x 1.2 = 960 bar.

Hydraulic Test Unit for pressure testing

Hydraulic Test Unit for pressure testing up to 2000 bar (29000 psig)
Make: MAXIMATOR
The enhanced capability allows us to carry burst pressure tests in-house for cylinder valves rated for a Working Pressure of 800 bar (11600 psig) as per requirements given in international standard EN ISO 10297:2017.



Endurance Testing Machine

Valves can be endurance / cycle tested as per EN ISO 10297/IS 3224 up to 450 bar.



Turn Mill Centre with Y-axis

Make - Tsugami Precision Engineering
Model - M08DY-II
12 station VDI Turret
High rigidity integral spindle/Motor - 4500 pm, 11 kW
MAX live tool speed/Motor - 5000 pm, 3.7 kW

New Product Developments



We are pleased to introduce two brand new cylinder valve designs meeting IS 3224:2021 which will provide increased safety, reliability and performance for fire fighting and industrial gases application compared to the cylinder valve designs currently used.

BSWN-12/F

Handwheel Operated O-ring Seal Design

Cylinder Valve for Fire Fighting

Application Carbon Dioxide

Pressure rating 250 bar

Product Features

- Stainless steel internals
- Metallic sealing of gland nut
- Ease of movement
- Capsulated PRD design with Nickel burst disc & copper gasket

* The valves meet IS:3224:2021* supplied with ISI mark & PESO approval.



BSKM-21/O

Key Operated Metal Seated Valves in Single Spindle Compression Packed Design

Application Industrial, Medical & Technical gases.

Pressure rating 200 bar

Product Features

- Self-centering spindle- Engages the valve seat by linear motion reducing abrasion & eliminating the need for an extra- one spindle in service.
- Robust spindle threads - Provide resistance against seizing & galling, eliminating the need to use oversize spindles in service.
- High tensile valve body - For wear & impact resistance.
- Higher flow coefficient (C, > 0.4) - For faster filling & evacuation.

* BSKM-21/O is approved by PESO to IS 3224:2021 & supplied with ISI mark for the Indian market.

Certification for “Rho” ρ Marking



SWN-12/O
SWN-12/N
SWN-12/D

TWN-12/O
TWN-12/D

BOWN-12/O
BOWN-12/N

PBN-12



Tekno Valves is pleased to announce certification for “Rho” marking for cylinder valve designs supplied to the GB market from the UK-notified body Arrowhead.

These valve designs shall be supplied with dual “Rho and Pi” marking to allow the valves to be transported and used within Great Britain and the EU.

RECOGNITION

Mr. Y. K. Behani was felicitated by the Indian Standardization Institute (BIS) in **“Appreciation of long-term association in journey of quality”**.

14TH OCTOBER 2022



EVENT PARTICIPATIONS

‘XII CLOROSUR Technical Seminar and Safety Workshop’ held in Bahua, Brazil through its channel partner Suinca.

18TH NOVEMBER 2022



November 20 – 23, 2022
Costa do Sauípe, Bahia – Brasil



42nd AIIGMA seminar, Bahrain

21ST FEBRUARY 2023



Mr Rohit Behani, received an award for presenting the best technical paper in the **42nd AIIGMA seminar held in Bahrain**

25TH FEBRUARY 2023



Safety Week Celebration

4TH MARCH 2023 ONWARDS

The celebration included Safety Awareness Program followed by Safety Pledge and a Cultural Program.



