



# tekno valves

*driven by excellence*

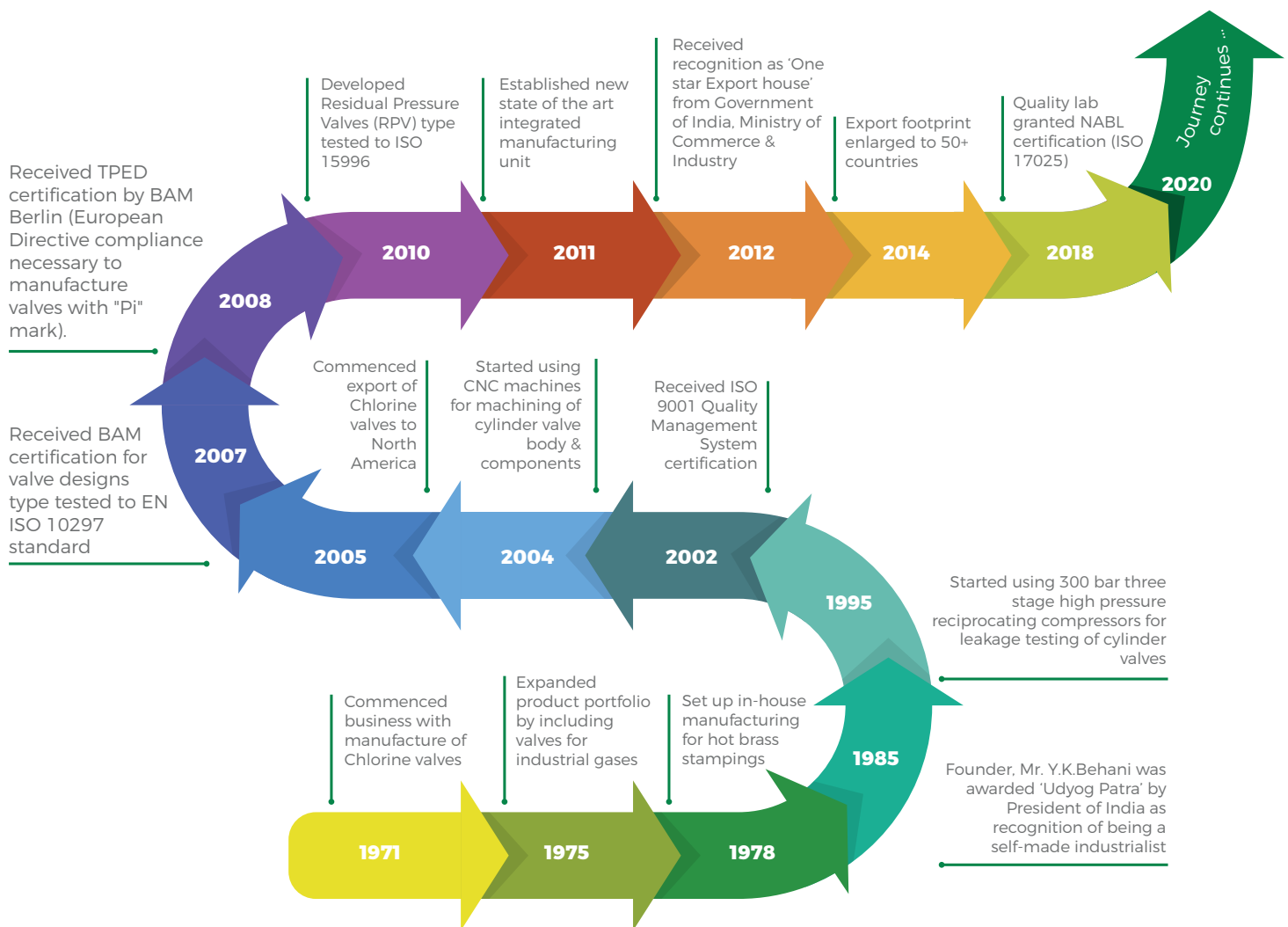


## High Pressure Cylinder Valves

Product Catalogue

*Your safety is valued*

# JOURNEY THROUGH FIVE DECADES



# Your Technology Partner for Gas Cylinder Valves

Tekno Valves, based in Kolkata, India, is one of the world's reputable manufacturer of industrial, medical & specialty gas cylinder valves.

Our manufacturing facility spanning over an area of 20,000 square metres is equipped & regularly upgraded with latest machinery & supported with tool & die shop, forging unit & ISO 17025 certified laboratory in the field of calibration, mechanical & chemical testing.

Cylinder valves are meticulously designed, manufactured & certified to comply with national & international standards.

Valves bearing  $\Pi$  mark are type tested & approved by Federal Institute for Materials Research & Testing (BAM), Germany in conformance to Transportable Pressure Equipment Directive (TPED) & the European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR).

Our expertise acquired over five decades, in handling "High Pressure" & delivering reliable valving solutions has allowed us to build trust & establish our footprint in 65+ countries across 6 continents around the globe.



Through active participation, we contribute towards development of technical standards in International Organization for Standardization (ISO) / Compressed Gas Association (CGA) / Chlorine Institute (CI) / Bureau of Indian Standards (BIS) cylinder valve committees.

Our association with the gas industry is extended through membership in IOMA, CGA, GAWDA, CI, ASTM & AIIGMA.

We are accepted in Independent Welding Distributors Cooperative (IWDC) & its subsidiary PurityPlus, a recognized buying group in United States of America.

Our memberships help us network with our customers & stay abreast with their needs & expectations.

Members since 2008



Members since 2004



Members since 2017



Members since 2019



Approved supplier since 2020



Members since 2019



Members since 1975





# Driven by Excellence

- Design & Development
- Type Testing Laboratory
- Tool & Die Manufacturing Studio
- Forging Plant
- Cutting Edge Machine Shop
- Oxygen Cleaning Facility
- Assembly & Testing
- ISO 17025 Certified Laboratory



**360° manufacturing**  
under one roof



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# Cylinder Valve Designs

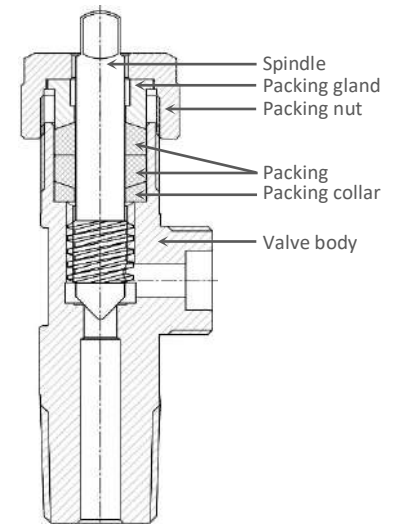
## Nomenclature

<b>Valve Body</b>	Portion of the valve that contains the orifice, seat, inlet & outlet connections. It is machined to accept the components to create the valve assembly & sealing system.
<b>Inlet</b>	Portion of the valve body that connects to the cylinder.
<b>Outlet</b>	Portion of the valve body through which gas is introduced or discharged.
<b>Seat</b>	Sealing surface surrounding the orifice in the valve body.
<b>Pressure Relief Device (PRD)</b>	Device used to prevent the pressure in a normally charged cylinder from rising above a predetermined maximum, thereby preventing rupture of the cylinder in case of fire & / or overfilling.
<b>Valve Operating Mechanism</b>	Mechanism which opens & closes the valve orifice.
<b>Valve Operating Device</b>	Component which actuates the valve operating mechanism – handwheel, key, knob or actuator.
<b>Residual Pressure Device (RPD)</b>	Device that is designed to prevent ingress of contaminants by maintaining a positive pressure within the cylinder relative to atmosphere by closing off its internal gas passages in the discharging direction.

## Designs

### 1. Compression Packed Valves (Key Operated, Single Spindle, Metal Seated)

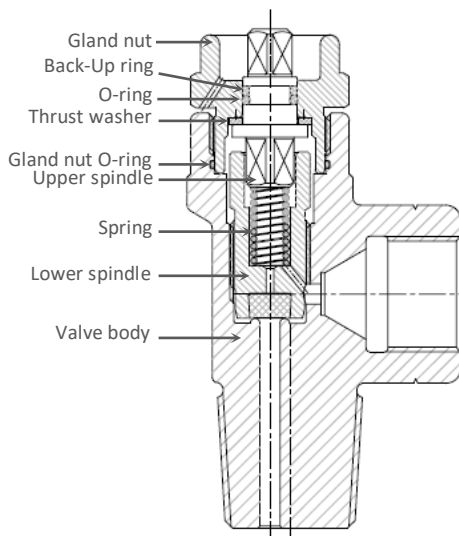
These valves, available in Brass & Al-Si Bronze body, use compressed packing to make a seal around the valve spindle & body. To ensure a good seal, the packing nut is tightened to compress the packing against the spindle. As this results in higher torques, the valve is operated with wrench. The design allows for tightening of the gland nut in case of leakage past the packings. These valves are used for corrosive gases because of the ability of the operating mechanism to withstand higher torques to overcome any build-up of salts or contaminants in the seating area. These valves are generally used up to valve test pressure of 50 bar & not preferred for high purity applications because of particulate generation from valve seat & packing wear.



Compression Packed Valves

### 2. O-ring Seal Valves (Two-piece Spindle, Soft Seated)

These valves, available in brass body, have a non-rising upper spindle & threaded lower spindle. It uses O-ring/s to create a seal around the upper spindle. These valves are easier to operate than packed valves due to absence of packing load on the upper spindle & hence used for a wide range of pressure & non-corrosive gas applications where low torque operation is desired. The top spindle is designed to fail first, allowing valve maintenance & package content recovery in the event of a failure, even when the cylinder is full. These valves come in key, toggle, handwheel & handle operation.



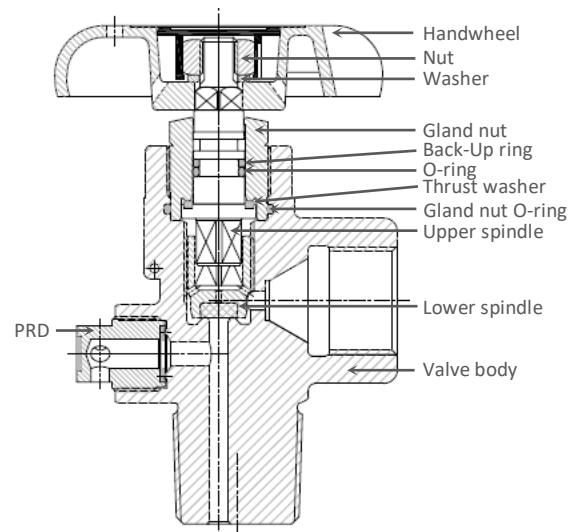
O-ring Seal Valves - Key Operation

#### a) Key Operation

The upper spindle is usually manufactured from Stainless steel as the valves are expected to withstand high torques in the field.

#### b) Handwheel Operation

The upper spindle is fitted to a handwheel to operate the valve by hand. This restricts imparting of high torques by the user to operate the valve, preventing damage to the operating mechanism & facilitating high cycle life.



O-ring Seal Valves - Handwheel Operation



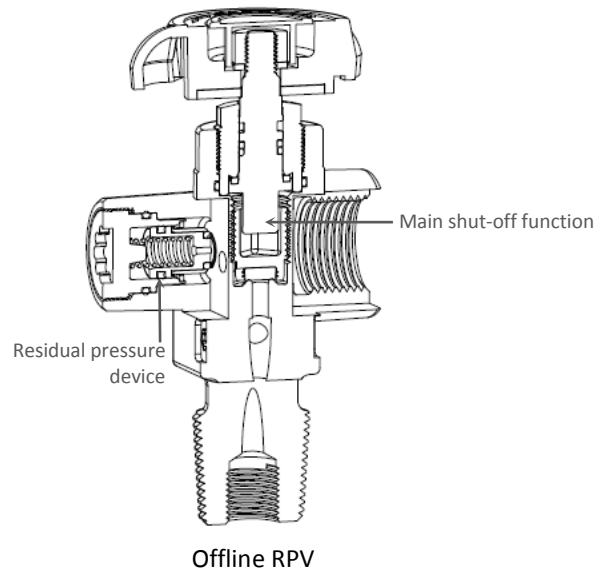
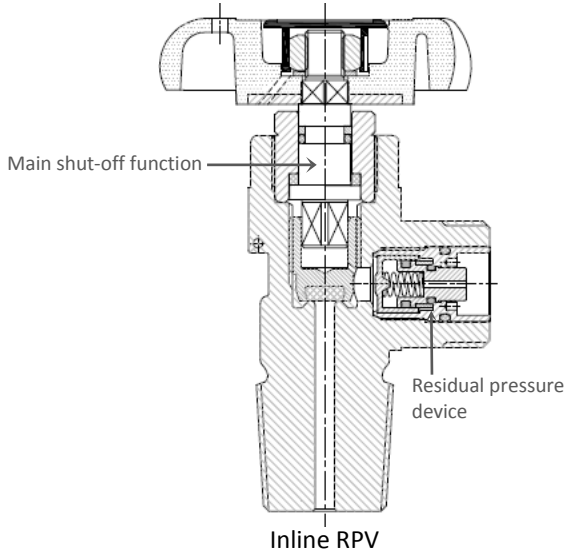
# Cylinder Valve Designs

## 3. Residual Pressure Valves (RPV)

These are handwheel operated O-ring seal valves fitted with an offline or inline Residual Pressure Device (RPD). The RPD has a built in Non-Return Valve (NRV) function to prevent backflow of downstream contents preventing contamination risks as a result of positive pressure always present in the cylinder. RPV technology provides improved safety of the cylinder & ensures purity of gas contents negating the need to purge cylinder each time it comes back for filling. The user needs a filling connector consisting of a projected "Pin" during filling & evacuation to neutralize the NRV function.

### Offline RPV

The outlet is offset with respect to the inlet plane & the RPD is backside of the outlet. Offline valves can be designed for any outlet connection but are mainly used for outlet with internal threads & for external threaded outlet requiring sealing in the cone. They are less restrictive on the flow passage of the valve.



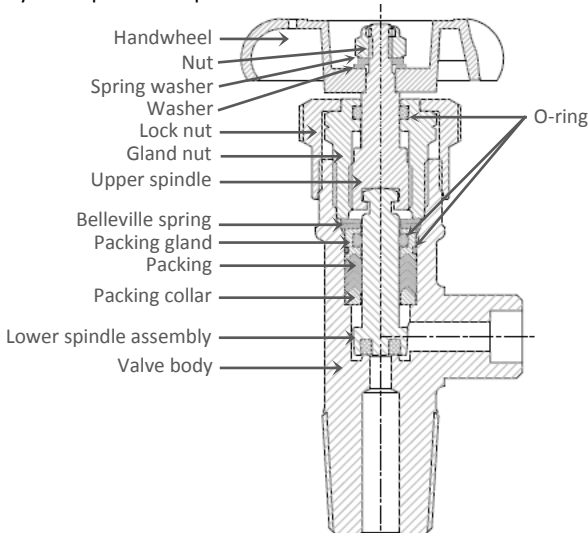
### Inline RPV

The RPD is contained within the outlet & therefore is mainly used for external threaded outlet requiring sealing on the face. Due to limitation of the volume within which the inline RPD have to be accommodated, they have greater flow limitation than the offline version.

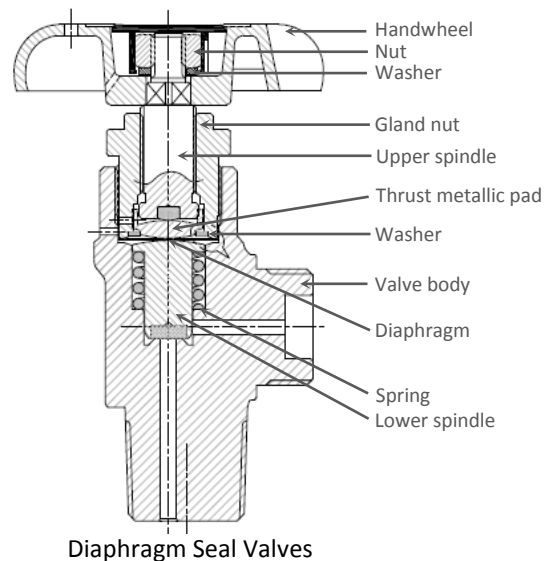
## 4. Diaphragm Seal Valves (Handwheel Operated, Two-piece Spindle, Soft Seated)

These valves, available in brass & stainless steel body, use diaphragms for gland sealing. The gland nut threads into the valve body & clamps the outer edges of the diaphragms against a ledge in the valve body to form a seal. The lower spindle assembly is non-threaded & encased in a spring which forces it away from the seat when the valve is opened. The upper spindle is threaded into the gland nut.

The replacement of elastomeric seals with metal diaphragms gives the valve superior leak integrity. The lower spindle is non-threaded & non-lubricated making the design highly suitable for toxic, pyrophoric & high purity gas. The valve opening is restricted by the stroke of the diaphragm, limiting the flow through the valve. Due to high torque required to close the valve by overcoming cylinder pressure X area of the diaphragm plus the spring force, the use of these valves is limited to cylinder pressure up to 200 bar.



Compression Packed Valves with O-ring Seal



## 5. Compression Packed Valves with O-ring Seal (Handwheel Operated, Two-piece Spindle, Soft Seated)

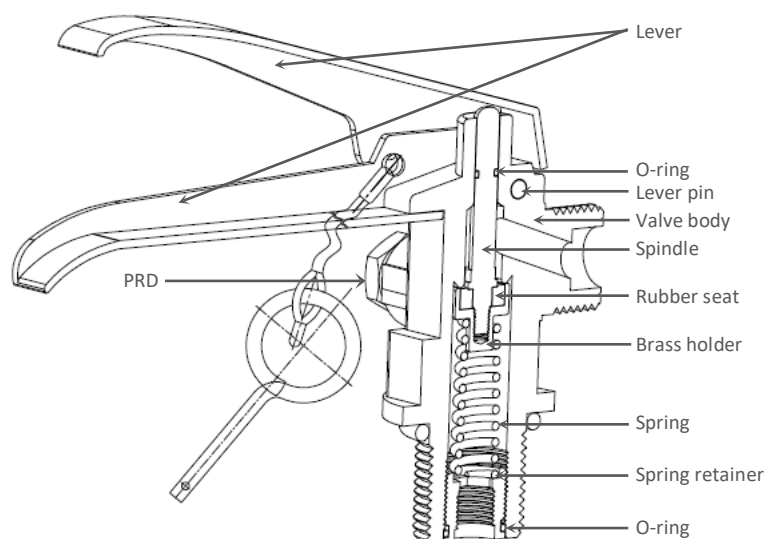
These valves, available in Brass, Al-Si Bronze, Carbon Steel & Stainless Steel body, combine compressed gland packing & O-ring technology to gland seal the valve. The lower spindle connects to the upper spindle via a slip joint. The lower spindle assembly seals against the seat without rotating, reducing wear & particle generation. The gland nut is usually secured by a lock nut having threads in the opposite direction to prevent accidental loosening of the gland nut.

Unlike the single spindle packed valve, the packing is smaller, better contained, spring loaded & backed by O-ring/s. This allows the mechanism to seal with handwheel up to 200 bar & eliminates the need to retighten gland nut making the design very suitable for toxic & corrosive gases.





## Cylinder Valve Designs



Reverse Seated Valves

### 6. Reverse Seated Valves

These are brass valves & use an O-ring to seal around the valve spindle. Pressure tends to keep the valve shut & as the cylinder pressure decreases, the total force available to sustain valve shut-off also decreases & seat closure is achieved by spring force. If there is a leak at the seat when the valve closes, there is no way to manually apply more force. This design is used for squeeze grip carbon dioxide valves for firefighting application where quick release of gas content is desired.

## Series Selection Table

Valve Design		Valve Body Material							
		Brass		Al-Si Bronze		Carbon Steel		Stainless Steel	
			Page		Page		Page		Page
1	Compression Packed Valves (Key Operated, Single Spindle, Metal Seated)	IHO-06 (O <sub>2</sub> , H <sub>2</sub> & Inert Gases)	<a href="#">4.01</a>	CAV-06 (P-17)	<a href="#">4.18</a>	CST-06 (V-9)	<a href="#">4.25</a>		
		IHO-06 (Acetylene)	<a href="#">4.11</a>	CAV-06 (ISO V)	<a href="#">4.19</a>	CST-06 (IS 3224)	<a href="#">4.26</a>		
2	O-ring Seal Valves (Two-piece Spindle) Key Operated (Soft Seated)	KHO-10/I & KVO-10/I	<a href="#">4.02</a>						
		BSKN-12/D & BAKN-12/D	<a href="#">4.13</a>						
		KHO-10/D & KVO-10/D	<a href="#">4.12</a>						
		SKN-12/C	<a href="#">4.07</a>						
		MYC-10C	<a href="#">4.16</a>						
	Handwheel Operated (Soft Seated)	SWN-12/O	<a href="#">4.03</a>						
		SWN-12/C	<a href="#">4.08</a>						
		SWN-12/45	<a href="#">4.04</a>						
		CWH-10/D & CWV-10/D	<a href="#">4.14</a>						
		BSWN-12/D & BAWN-12/D	<a href="#">4.15</a>						
		PBN-12	<a href="#">4.17</a>						
		HBA-10/I	<a href="#">4.29</a>						
		HBA-10/I with PG	<a href="#">4.30</a>						
		MBA-10	<a href="#">4.31</a>						
		ALV-10	<a href="#">4.32</a>						
		BMV-09	<a href="#">4.34</a>						
	Handle Operated (Metal Seated)								
3	Residual Pressure Valves (RPV) Offline	BOWN-12/O & BOWN-12/N	<a href="#">4.05</a>						
		BOWN-12/C	<a href="#">4.09</a>						
	Inline	IRPV-10 I/O	<a href="#">4.06</a>						
		IWN-12/C	<a href="#">4.10</a>						
4	Diaphragm Seal Valves (Handwheel Operated, Two-piece Spindle, Soft Seated)	RWH-03	<a href="#">4.21</a>					TWH-03	<a href="#">4.22</a>
		RDP-03	<a href="#">4.28</a>						
5	Compression Packed Valves with O-ring Seal (Handwheel Operated, Two-piece Spindle, Soft Seated)	SWN-22/V	<a href="#">4.20</a>	SWN-22/V	<a href="#">4.20</a>	SWN-22	<a href="#">4.27</a>	SSWN-22/V	<a href="#">4.23</a>
								SSWN-22/V -S3	<a href="#">4.24</a>
6	Reverse Seated Valves	FSG-07/F	<a href="#">4.33</a>						



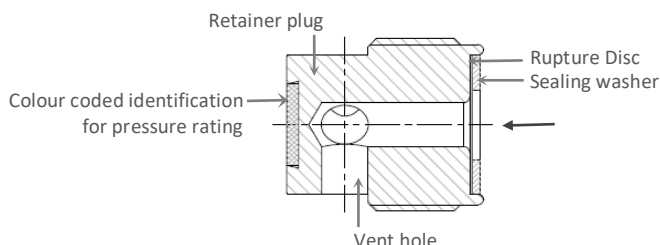


# Pressure Relief Device (PRD) Technology

Pressure & / or temperature activated device installed on cylinders to prevent the pressure in a cylinder from rising above a predetermined maximum, thereby preventing rupture of the cylinder in case the cylinder is exposed to fire, high temperature & / or overfilling.

## Types of PRD

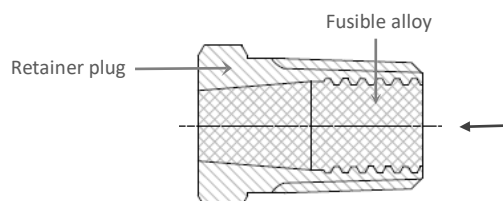
### Rupture Disc Device (CG-1)



It is a pressure operated non-reclosing device designed to function by the bursting of a pressure containing disc at the test pressure of the cylinder. Once the disc is ruptured, there is no way to prevent the complete release of the contents.

Note – For compressed gas UN cylinder, test pressure of the cylinder is 1.5 times the working pressure of cylinder. For liquefiable gas UN cylinder, test pressure & the corresponding filling ratio is given in P200 of ADR. Test pressure of a DOT cylinder is 5/3 times the working/service pressure.

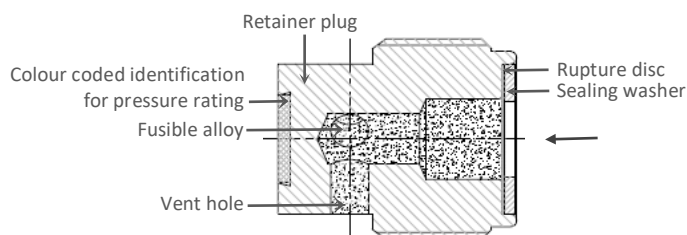
### Fusible Plug Device (CG-2/CG-3)



It is a thermally operated non-reclosing device designed to function by the yielding of a fusible metal at a set temperature. These devices do not protect from overpressurization at temperatures below their melting point but are designed to protect the cylinder from overpressurization caused by exposure to excessive heat. In the event a cylinder is exposed to fire or excess heat, the fusible plug is designed to melt & release the cylinder contents preventing product within the cylinder from creating excessively high pressures, caused by high external temperatures, & rupturing the cylinder. These devices are limited to use on cylinders of 500 psig service pressure or less due to risk of extrusion of the alloy.

- CG-2 plug uses fusible alloy that yields at a temperature between 157°F to 170°F (69.4°C to 76.7°C)  
Nominal temperature 165 °F (74 °C)
- CG-3 plug uses fusible alloy that yields at a temperature between 208°F to 224°F (97.8°C to 106.7°C)  
Nominal temperature 212 °F (100 °C)

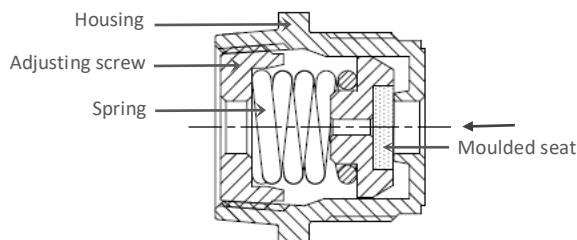
### Combination Rupture Disc/Fusible Alloy (CG-4/CG-5)



It is a combination of pressure & temperature operated non-reclosing device consisting of a rupture disc backed by fusible alloy on the atmospheric side of the disc. In case of fire or high temperature, the fusible metal yields & cylinder overpressure caused by the heated gas is relieved by the bursting of the rupture disc. Both the pressure & temperature requirements of the device must be satisfied for the device to actuate. This device will not protect a cylinder from overpressurization if the fusible alloy is not heated to its yield temperature. The fusible metal prevents premature rupture disc failure from momentary overpressurization & also protects the disc from external corrosion

- CG-4 plug uses fusible alloy that yields at a temperature between 157°F to 170°F (69.4°C to 76.7°C)  
Nominal temperature 165 °F (74 °C)
- CG-5 plug uses fusible alloy that yields at a temperature between 208°F to 224°F (97.8°C to 106.7°C)  
Nominal temperature 212 °F (100 °C)

### Pressure Relief Valve (PRV, CG-7)



It is a spring-loaded device designed to relieve excessive pressure & reclose & reseal to prevent further flow of gas or fluid from the container after resealing pressure is achieved. When the cylinder pressure exceeds the pressure setting of the spring in the relief valve, the valve opens to discharge the cylinder contents. Once the cylinder pressure decreases to the PRV's pressure setting, it reseats above the pressure in a normally charged cylinder at 130°F (54.4 °C) after venting sufficient gas to control the internal cylinder pressure. The pressure setting of the pressure relief valve is between 75% & 100% of the minimum test pressure of the cylinder.

This device does not protect against rupture of the container when the application of heat weakens the container to the point where its rupture pressure is less than the operating pressure of the device. These devices are limited to use on cylinders with charging pressures no greater than 500 psig.



# How to Select Cylinder Valves

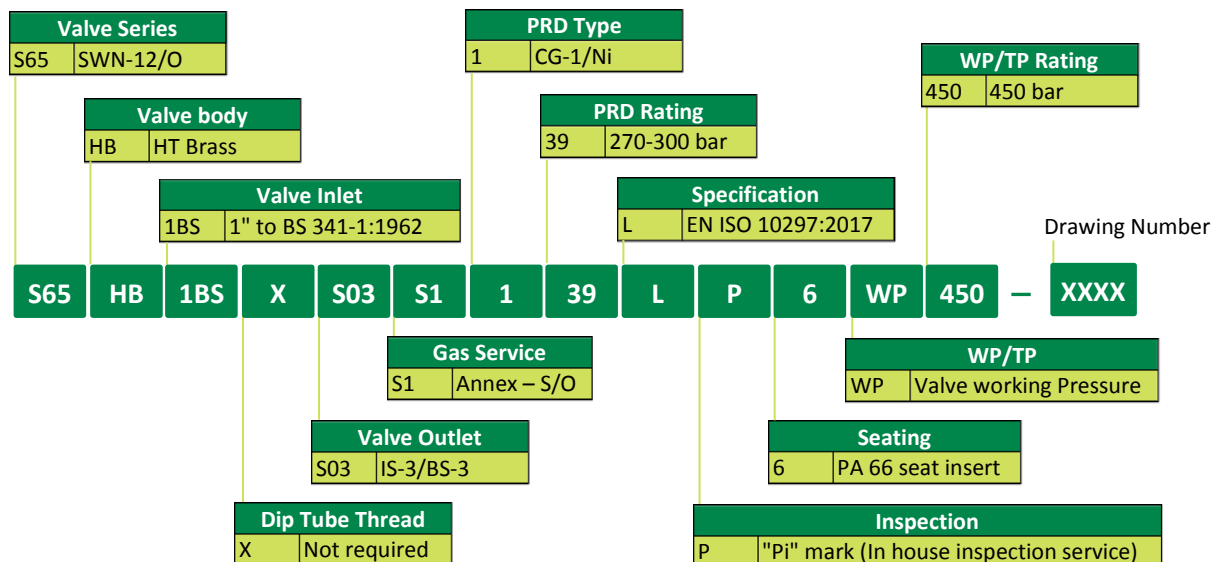
1. <b>Valve Series</b>	Select the suitable series based on design/materials/orientation/flow requirement/operating device/pressure rating etc. for your application from 'Series Selection Table' given in page-2.3. Refer 'Detailed Series Catalogue' of the selected series & ensure gases for which the valve shall be used are included in the 'List of approved gases'. Refer 'Product Selection Guide' to choose the appropriate three-digit combination to reflect in the item code.
2. <b>Valve Body</b>	Select from the different grades of material offered in the 'Product Selection Guide'. Typically, brass & stainless-steel valve body have different choice of grades depending upon on severity of application & cost. Choose code for chrome plating, if required. Select the applicable two-digit combination.
3. <b>Valve Inlet</b>	Specific inlet connection is required to match the cylinder neck thread. Distinguish clearly between taper & parallel threads & their respective thread types as they differ significantly in sealing from each other. Taper threads seal is created by a combination of thread sealant & metal deformation. Parallel thread seal is created by O-ring compression wherein the O-ring material, size / tolerance & hardness are critical for proper seal. Select the applicable three-digit combination from the options. Customer specific inlet size / respective oversize may be offered on request.
4. <b>Dip Tube Thread</b>	Check whether dip tube thread is needed on inlet connection to fit dip tube for quick withdrawal of the liquid content of the cylinder. If required, select the corresponding single-digit for the dip tube thread. Choose "X" if dip tube thread is not required. Customer specific dip tube thread may be offered on request.
5. <b>Valve Outlet</b>	Specific outlet connection is required based on the gas service / pressure rating according to the outlet connection standard (e.g. CGA/BS/DIN/AFNOR/UNI/AS/IS/ISO) depending upon the country of use. Select the applicable three-digit combination.
6. <b>Gas Service</b>	Select the applicable two-digit combination for the intended gas.
7. <b>Pressure Relief Device (PRD)</b>	Valves may be offered with PRDs. Select the applicable single digit for the PRD type & /or material of the burst disc (Nickel / Copper). Choose "X" if PRD is not required.
8. <b>PRD Rating</b>	Select the PRD rating (temperature &/or pressure) from the applicable two-digit combination. Choose "X" if PRD is not required.
9. <b>Specification</b>	Select the single-digit for the type testing standard/s (e.g. ISO 10297/ CGA V-9/IS 3224) to which certification is required. <i>Note - With the exception of post-type medical valves, CGA V-9-2012 does not prejudice the use of valves that are in compliance with both ISO 10297 &amp; ISO 14246.</i>
10. <b>Inspection</b>	Select the single digit for the inspection requirement (e.g. In-house/third party).
11. <b>Seating</b>	Select the single digit for the soft seat option ensuring the selection is compatible with the gas (refer list of approved gases).
12. <b>Valve Pressure Rating Nomenclature</b>	Select "WP" (Working pressure) or "TP" (Test pressure) to reflect in the item code. WP is the settled pressure of a compressed gas at 15 °C in a full gas cylinder. <i>Note 1) As per ISO 10297, the term WP is only applicable for compressed gases* &amp; does not apply to liquefied** or dissolved gases**. TP is the minimum pressure applied to a valve during testing.</i> <i>* TP = 1.2 x WP</i> <i>**TP shall be at least equal to the minimum test pressure given in ADR.</i> <i>Note 2) As per CGA V-9-2012, the working/service pressure is based on the DOT cylinder rating. However, design qualification is carried out at the maximum pressure rating of the outlet connection given in CGA V-1.</i>
13. <b>WP / TP Rating</b>	Select the three-digit combination for the maximum pressure to which the valve is required against the selected "WP" or "TP"
14. <b>Drawing Number</b>	Four-digit number following the item code is the drawing number & marked on the valve body representing the unique combination of selected technical parameters from 1-13

## Options

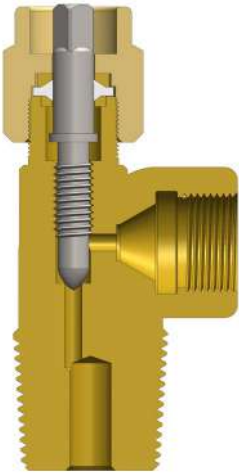
Handwheel material & colour, filter, seal nut, gasket, dip tube, chain & keeper ring, EFV- are not unique to the item code & need to be specified separately. The options selected shall be captured in the drawing & / or order document.

Note – If any technical parameter is not offered for selection in the 'Detailed Series Catalogue', it implies that the design does not provide any option for that parameter currently, but may be accommodated upon request. Refer to "features & benefit page" for details.

## Sample Item Code Matrix

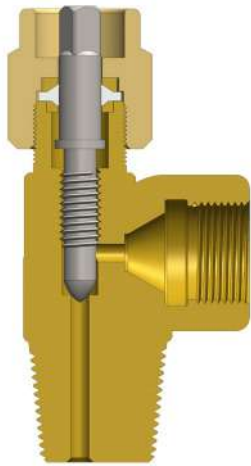


IHO-06 - Key Operated Valves in Packed Design



Design Specifications	
Maximum working pressure (WP)	200 bar
Spindle square	7.1 mm
Minimum closing torque*	8 Nm
Failure torque	>70 Nm
Gland nut installation torque	60 Nm
Flow coefficient (C <sub>v</sub> )	0.35
Lubricant	Krytox NRT 8908 Krytox GPL 225
- Oxygen & oxidizing gases	
- Others	
Oxygen cleaned	Yes

\* Higher torques may be required to operate the valve in service  
(Maximum recommended 25 Nm)



Material of Construction	
Part	Material
Valve body	Forged brass
Gland nut, Packing collar & Packing washer	Free cutting brass
Packing	PTFE
Spindle	SS 304

For features & benefits, refer detailed catalogue

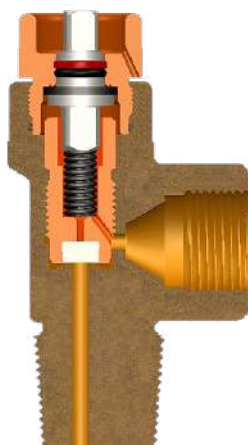


Compliance & Certification

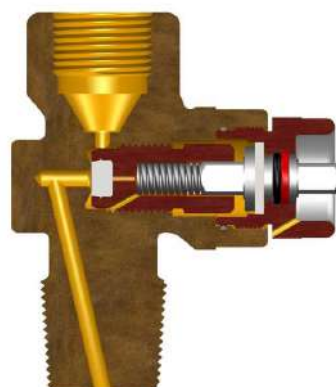
- Valves meet IS 3224:2002
- Valves are approved by PESO & supplied under BIS inspection



## KHO-10/I & KVO-10/I - Key Operated Valves in O-ring Seal Design



KHO-10/I



KVO-10/I

### Design Specifications

Minimum life	2000 cycles
Pressure rating	360 bar
Spindle square	7.1 mm
Oxygen pressure surge test	50 cycles at 360 bar
Operating temperature range	-20 °C to +65 °C
Storage temperature range	-40 °C to +65 °C
Minimum closing torque	8 Nm
Gland nut installation torque	75 Nm
Failure torque	>75 Nm
Flow coefficient (C <sub>v</sub> )	0.35
Lubricant	
- Oxygen & other oxidizing gases	Krytox NRT 8908
- Others	Krytox GPL 225
Oxygen cleaned	Yes

### Material of Construction

Part	Material
Valve body	Forged brass
Gland nut	Free cutting brass
Upper spindle	SS 303
Lower spindle	Naval brass
Thrust washer & Seat insert	PA 66
O-rings & Back-Up ring	EPDM
Spring	SS 302

For features & benefits, refer detailed catalogue



KHO-10/I



KVO-10/I

### Compliance & Certification

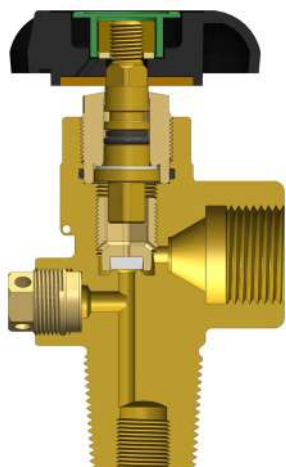
- Valves meet EN ISO 10297:2006
- Valves are certified by BAM to European Transportable Pressure Equipment Directive (TPED) & available with  $\Pi$  mark
- Valves meet IS 3224:2002, approved by PESO & supplied under BIS inspection for Indian market



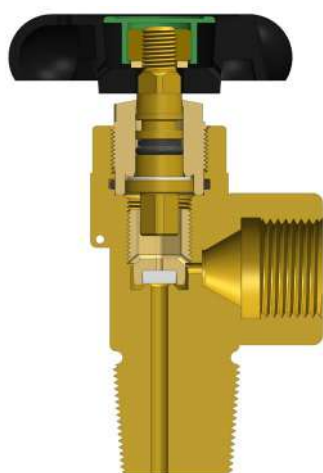
KHO-10/I

KVO-10/I



**SWN-12/O - Handwheel Operated Valves in O-ring Seal Design**

Valve shown with PRD

**Design Specifications**

	Metric	English
Minimum life	2000 cycles	
Pressure rating		
- Oxygen & oxidizing gases	360 bar	5220 psig
- Others	540 bar	7830 psig
Oxygen pressure surge test	50 cycles at 360 bar	50 cycles at 5220 psig
Temperature range	-46 °C to +85 °C	-51 °F to +185 °F
Pressure relief device (PRD)*	CG-1 / CG-4 / CG-5	
Minimum closing torque	3 Nm	2.2 ft.lb
Gland nut installation torque	65 Nm	48 ft.lb
PRD installation torque*	32 Nm	24 ft.lb
Flow coefficient (C <sub>v</sub> )	0.35	
Lubricant		
- Oxygen & oxidizing gases	Gleitmo 599	
- Others	Klubertemp GR M30	
Oxygen cleaned	Yes	

**Material of Construction**

Part	Material
Valve body	Forged brass
Upper & Lower spindle**, Gland nut & Colour coded burst disc retainer plug	Free cutting brass
Seat insert	PA 66 / PEEK
Thrust washer	PEEK
O-rings & Back-Up ring	EPDM
Handwheel	Aluminium (CED coated) / 30% glass filled PA 6 with brass insert
Burst disc	Nickel / Copper
Burst disc sealing washer	Copper

\* Optional

\*\* SS 303 lower spindle material is available for non-oxidizing gases

For features, benefits & ordering information,  
refer detailed catalogue

**Compliance & Certification**

- Valves meet EN ISO 10297:2017
- Valves are certified by BAM to European Transportable Pressure Equipment Directive (TPED) & available with  $\Pi$  mark
- PRD complies with CGA S-1.1

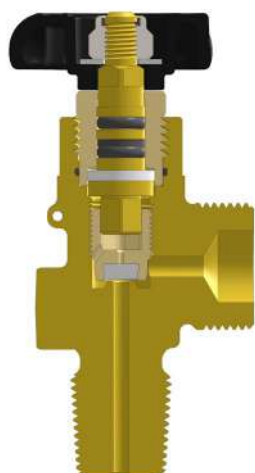


Valve shown with PRD

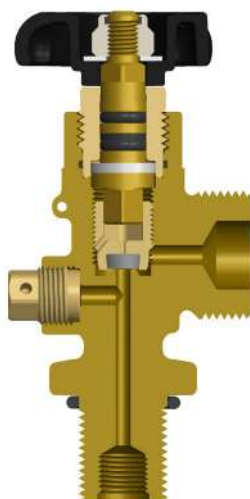


Valve shown with chrome plating

## SWN-12/45 - Handwheel Operated Valves in O-ring Seal Design for Cylinders up to 10 Litres WC



Valve with Taper Inlet

Valve with Parallel Inlet  
(shown with PRD)

### Design Specifications

	Metric	English
Minimum life	2000 cycles	
Pressure rating	360 bar	5220 psig
Oxygen pressure surge test	20 cycles at 360 bar	20 cycles at 5220 psig
Temperature range	-46 °C to +90 °C	-51 °F to +194 °F
Pressure relief device (PRD)*	CG-1	
Minimum closing torque	4 Nm	3 ft.lb
Gland nut installation torque	50 Nm	37 ft.lb
PRD installation torque*	17 Nm	13 ft.lb
Flow coefficient (C <sub>v</sub> )	0.25	
Lubricant	Klueberalfa YV 93-302 Krytox GPL 225	
- Oxygen & oxidizing gases		
- Others		
Oxygen cleaned	Yes	

### Available Inlet Connections

Taper Inlet Connection	Parallel Inlet Connection
18T to BS 341-1:1991	M18 X 1.5 mm to ISO 15245-1
19T to BS 341-1:1991	
17E to ISO 11363-1	3/4-16 UNF to JIS B 8246
1/2-14 NGT to CGA V-1	

### Material of Construction

Part	Material
Valve body	Forged brass
Gland nut & Colour coded burst disc retainer plug	Free cutting brass
Upper & Lower spindle	Naval brass
Thrust washer & Seat insert	PA 66
O-rings & Back-Up ring	EPDM
Handwheel	ø45 mm Aluminium (CED coated)
Burst disc	Nickel / Copper
Burst disc sealing washer	Copper
Inlet O-ring**	EPDM

\* Optional

\*\* For parallel inlet connection only

For features, benefits & ordering information,  
refer detailed catalogue

### Compliance & Certification

- Valves meet EN ISO 10297:2017
- Valves are certified by BAM to European Transportable Pressure Equipment Directive (TPED) & available with TP mark
- PRD complies with CGA S-1.1



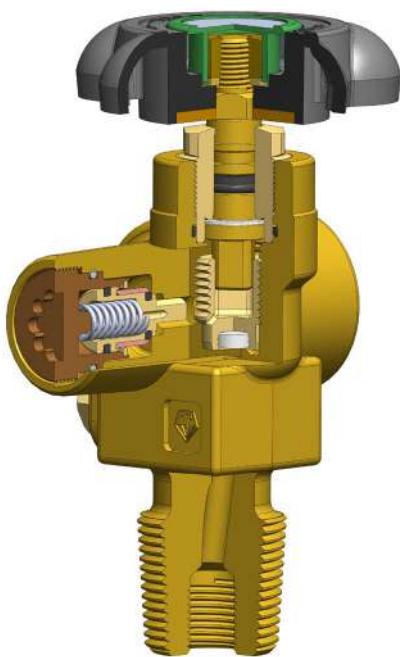
Valve with Taper Inlet



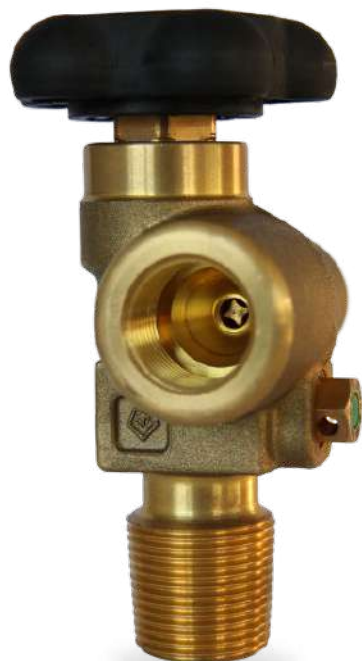
Valve with Parallel Inlet

**BOWN-12/O** – Oxygen & Hydrogen

**BOWN-12/N** – Inerts & Argon + CO<sub>2</sub> Gas Mixtures



Valve shown with taper inlet & PRD



Valve shown with taper inlet & PRD

## Design Specifications

	Metric	English
Minimum life		
- Main shut-off mechanism		2000 cycles
- RPD with NRV function		100000 cycles
Pressure rating	360 bar	5220 psig
Closing-off pressure	2-4 bar	30-60 psig
Opening pressure	4-6 bar	60-90 psig
Stroke length	5.00 – 5.50 mm	0.20 – 0.22 in
Temperature range (Main shut-off mechanism)	-46 °C to +85 °C	-51 °F to +185 °F
Temperature range (RPD)	-20 °C to +65 °C	-4 °F to +149 °F
OPST (BOWN-12/O only)	50 cycles at 360 bar	50 cycles at 5220 psig
Pressure relief device (PRD)*	CG-1	
Minimum closing torque	3 Nm	2.2 ft.lb
Gland nut installation torque	65 Nm	48 ft.lb
RPD installation torque	19 Nm	14 ft.lb
PRD installation torque*	28 Nm	21 ft.lb
Flow coefficient (C <sub>v</sub> )	0.35	
Lubricant for main shut-off mechanism		
- Oxygen & oxidizing gases	Gleitmo 599	
- Others	Klubertemp GR M30	
Lubricant for RPD	Gleitmo 599	
Oxygen cleaned	Yes	

## Material of Construction

Part	Material
Valve body	Forged brass
Upper spindle, Gland nut, Piston, Piston bush & Colour coded burst disc retainer plug	Free cutting brass
Lower spindle	Free cutting brass (BOWN-12/O) SS 303 (BOWN-12/N)
Seat insert	PA 66 / PEEK
O-rings, Back-Up ring & Quad ring	EPDM
Housing	Dezincification resistant brass
RPD O-rings	PUR
Thrust washer	PEEK
Handwheel	Aluminium (CED coated) / 30% glass filled PA 6 with brass insert
Spring	Copper beryllium
Burst disc	Nickel / Copper
Burst disc sealing washer	Copper
Inlet O-ring**	EPDM

\* Optional

\*\* For parallel inlet connection only

For features, benefits & ordering information, refer detailed catalogue




BOWN-12/O



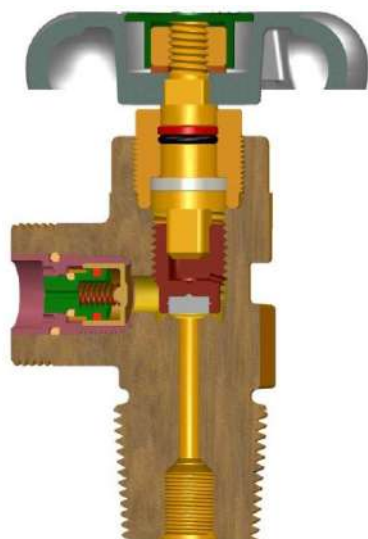
BOWN-12/N

## Compliance & Certification

- Valves meet EN ISO 10297:2017 & EN ISO 15996:2017
- Valves are certified by BAM to European Transportable Pressure Equipment Directive (TPED) & available with  mark
- Valves for Indian market are approved by PESO and supplied under Lloyd inspection
- PRD complies with CGA S-1.1



## IRPV-10 I/O – Oxygen, Hydrogen & Inerts



Design Specifications	
Minimum life	2000 cycles
- Main shut-off mechanism	100000 cycles
- RPD with NRV Function	
Pressure rating	276 bar
- Oxygen & oxidizing gases	360 bar
- Others	
Closing-off pressure	3-5 bar
Opening pressure	5-8 bar
Stroke length	3.25 mm
Temperature range	-20 °C to +65 °C
Pressure relief device (PRD)*	CG-1
Oxygen pressure surge test	50 cycles at 276 bar
Minimum closing torque	3 Nm
Gland nut installation torque	65 Nm
RPD installation torque	5 Nm
PRD installation torque*	32 Nm
Flow coefficient (C <sub>v</sub> )	0.35
Lubricant for main shut-off mechanism	
- Oxygen & oxidizing gases	Krytox NRT 8908
- Others	Krytox GPL 225
Lubricant for RPD	
- Oxygen & oxidizing gases	Gleitmo 599
- Others	Krytox GPL 225
Oxygen cleaned	Yes



Material of Construction	
Part	Material
Valve body	Forged brass
Upper & Lower spindle	Naval brass
Gland nut, Housing, Piston, Bush, Sleeve & Colour coded burst disc retainer plug	Free cutting brass
Seat insert & Thrust washer	PA 66
O-rings, Back-Up ring & Quad ring	EPDM
Handwheel	Aluminium (CED coated) / 30% glass filled PA 6 (V-0) with brass insert
Spring	Copper beryllium
Burst disc	Nickel / Copper
Burst disc sealing washer	Copper

\* Optional

For features & benefits, refer detailed catalogue



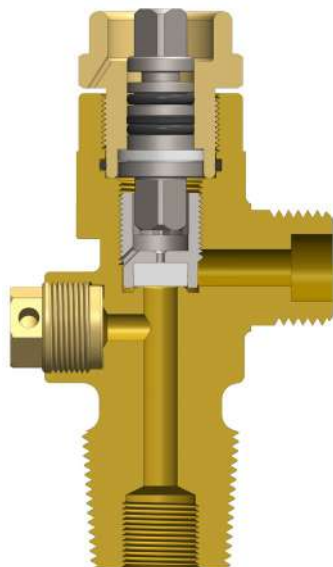
## Compliance & Certification

- Valves meet EN ISO 10297:2006 & EN ISO 15996:2007
- Valves are certified by BAM to European Transportable Pressure Equipment Directive (TPED) & available with TT mark
- PRD complies with CGA S-1.1





## SKN-12/C - Key Operated Valves in O-ring Seal Design



### Design Specifications

	Metric	English
Minimum life	2000 cycles	
Pressure rating	360 bar	5220 psig
Temperature range	-46 °C to +65 °C	-51 °F to +149 °F
Pressure relief device (PRD)	CG-1	
Spindle square	9.50 mm	3/8 in
Minimum closing torque	8 Nm	6 ft.lb
Gland nut installation torque	65 Nm	48 ft.lb
PRD installation torque	30-35 Nm	22-26 ft.lb
Failure torque	>70 Nm	>51.6 ft.lb
Flow coefficient (C <sub>v</sub> )	0.70	
Lubricant	Krytox GPL 225	

### Material of Construction

Part	Material
Valve body	Forged brass
Gland nut & colour coded burst disc retainer plug	Free cutting brass
Upper & Lower spindle	SS 303
Seat insert	PA 66 / PCTFE
O-rings & Back-Up ring	EPDM
Thrust washer	PA 66
Burst disc	Nickel
Burst disc sealing washer	Copper

For features, benefits & ordering information, refer detailed catalogue

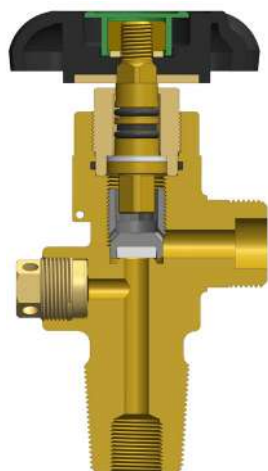


### Compliance & Certification

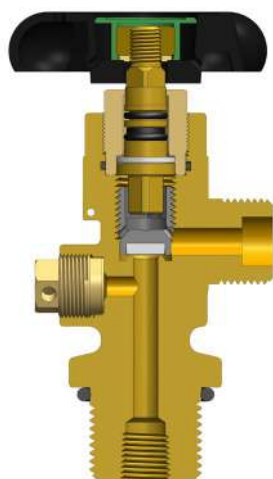
- Valves meet EN ISO 10297:2017
- Valves are certified by BAM to European Transportable Pressure Equipment Directive (TPED) & available with T mark
- PRD complies with CGA S-1.1



## SWN-12/C - Handwheel Operated Valves in O-ring Seal Design



Valve with Taper Inlet



Valve with Parallel Inlet

### Design Specifications

	Metric	English
Minimum life	2000 cycles	
Pressure rating	360 bar	5220 psig
Temperature range	-46 °C to +85 °C	-51 °F to +185 °F
Pressure relief device (PRD)	CG-1	
Minimum closing torque	3 Nm	2.2 ft.lb
Gland nut installation torque	65 Nm	48 ft.lb
PRD installation torque	32 Nm	24 ft.lb
Flow coefficient (C <sub>v</sub> )	0.70	
Lubricant	Krytox GPL 225	

### Material of Construction

Part	Material
Valve body	Forged brass
Upper spindle, Gland nut & Colour coded burst disc retainer plug	Free cutting brass
Lower spindle	SS 303
Seat insert	PA 66 / PCTFE
O-rings & Back-Up ring	EPDM
Inlet O-ring**	NBR
Thrust washer	PA 66
Handwheel	Aluminium (CED coated) / 30% glass filled PA 6 with brass insert
Burst disc	Nickel
Burst disc sealing washer	Copper

\* Optional

\*\* For parallel inlet connection only

For features, benefits & ordering information, refer detailed catalogue



### Compliance & Certification

- Valves meet EN ISO 10297:2017
- Valves are certified by BAM to European Transportable Pressure Equipment Directive (TPED) & available with T mark
- PRD complies with CGA S-1.1

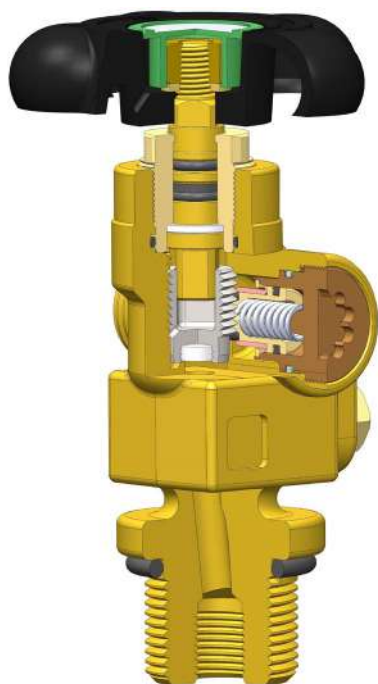


Valve with Taper Inlet



Valve with Parallel Inlet

## BOWN-12/C – Carbon Dioxide



Valve shown with parallel inlet



Valve shown with parallel inlet

### Design Specifications

	Metric	English
Minimum life	2000 cycles	
- Main shut-off mechanism	100000 cycles	
- RPD with NRV Function		
Pressure rating	360 bar	5220 psig
Closing-off pressure	2-4 bar	30-60 psig
Opening pressure	4-6 bar	60-90 psig
Stroke length	5.00 – 5.50 mm	0.20 – 0.22 in
Temperature range (Main shut-off mechanism)	-46 °C to +85 °C	-51 °F to +185 °F
Temperature range (RPD)	-20 °C to +65 °C	-4 °F to +149 °F
Pressure relief device (PRD)	CG-1	
Minimum closing torque	3 Nm	2.2 ft.lb
Gland nut installation torque	65 Nm	48 ft.lb
RPD installation torque	19 Nm	14 ft.lb
PRD installation torque	28 Nm	21 ft.lb
Flow coefficient (C <sub>v</sub> )	0.45	
Lubricant for main shut-off mechanism	Krytox GPL 225	
Lubricant for RPD	Gleitmo 599	

### Material of Construction

Part	Material
Valve body	Forged brass
Upper spindle, Gland nut, Piston, Piston bush & Colour coded burst disc retainer plug	Free cutting brass
Lower spindle	SS 303
Seat insert	PA 66 / PCTFE
O-rings, Back-Up ring & Quad ring	EPDM
Housing	Dezincification resistant brass
RPD O-rings	PUR
Thrust washer	PA 66
Handwheel	Aluminium (CED coated) / 30% glass filled PA 6 with brass insert
Spring	Copper beryllium
Burst disc	Nickel
Burst disc sealing washer	Copper
Inlet O-ring*	NBR

\* For parallel inlet connection only

For features, benefits & ordering information, refer detailed catalogue

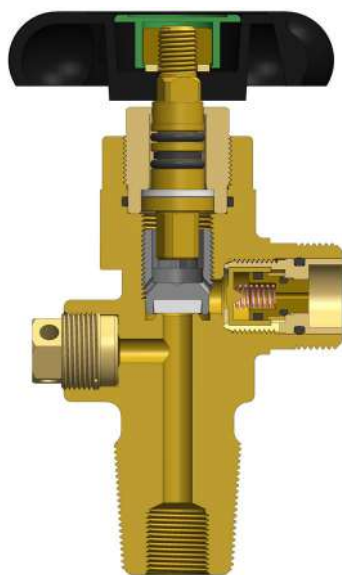


### Compliance & Certification

- Valves meet EN ISO 10297:2017 & EN ISO 15996:2017
- Valves are certified by BAM to European Transportable Pressure Equipment Directive (TPED) & available with T mark
- Valves for Indian market are approved by PESO and supplied under Lloyd inspection
- PRD complies with CGA S-1.1



## IWN-12/C - Carbon Dioxide



### Design Specifications

Minimum life	
- Main shut-off mechanism	2000 cycles
- RPD with NRV function	100000 cycles
Pressure rating	360 bar
Closing-off pressure	3-5 bar
Opening pressure	5-8 bar
Stroke length	3.25 mm
Temperature range (Main shut-off mechanism)	-46 °C to +85 °C
Temperature range (RPD)	-20 °C to +65 °C
Pressure relief device (PRD)	CG-1
Minimum closing torque	3 Nm
Gland nut installation torque	65 Nm
RPD installation torque	5 Nm
PRD installation torque	32 Nm
Flow coefficient (C <sub>v</sub> )	0.35
Lubricant	Krytox GPL 225



### Material of Construction

Part	Material
Valve body	Forged brass
Upper spindle, Gland nut, Housing, Piston, Bush, Sleeve & Colour coded burst disc retainer plug	Free cutting brass
Lower spindle	SS 303
Seat insert	PA 66 / PCTFE
O-rings, Back-Up ring & Quad ring	EPDM
Thrust washer	PA 66
Handwheel	Aluminium (CED coated) / 30% glass filled PA 6 with brass insert
Spring	Copper beryllium
Burst disc	Nickel
Burst disc sealing washer	Copper

For features, benefits & ordering information, refer detailed catalogue

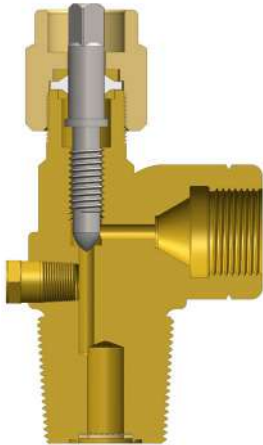


### Compliance & Certification

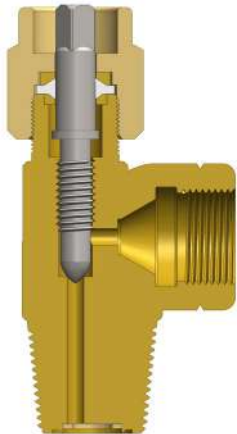
- Valves meet EN ISO 10297:2017 & EN ISO 15996:2007
- Valves are certified by BAM to European Transportable Pressure Equipment Directive (TPED) & available with TT mark
- PRD complies with CGA S-1.1



## IHO-06 - Key Operated Valves in Packed Design



Valve with Fusible Plug



Valve without Fusible Plug

### Design Specifications

Working pressure (WP)	60 kgf/cm <sup>2</sup>
Pressure relief device (PRD)**	Temperature operated device
Fusible alloy yield temperature	98 °C to 104 °C
Spindle square	7.1 mm
Minimum closing torque*	8 Nm
Failure torque	>70 Nm
Gland nut installation torque	60 Nm
Fusible plug installation torque**	17 Nm
Filter net size	250 micron (60 mesh)
Flow coefficient (C <sub>v</sub> )	0.35
Lubricant	Krytox GPL 225

\* Higher torques may be required to operate the valve in service  
(Maximum recommended 25 Nm)

### Material of Construction

Part	Material
Valve body	Forged brass
Gland nut, Packing collar, Filter Washer & Packing washer	Free cutting brass
Packing	PTFE
Spindle	SS 304
Fusible plug	Naval brass with fusible alloy
Filter net	Stainless steel

\*\*Optional

For features & benefits, refer detailed catalogue



### Compliance & Certification

- Valves meet IS 3224:2002
- Valves are approved by PESO & supplied under BIS inspection
- Fusible plug complies with IS 5903 & IS 13497

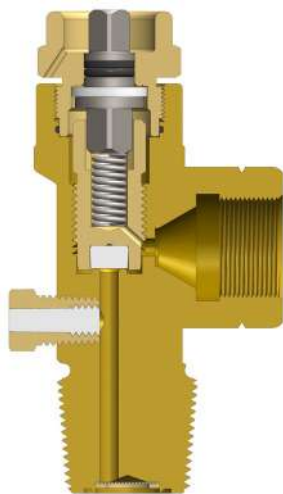


Valve with Fusible Plug

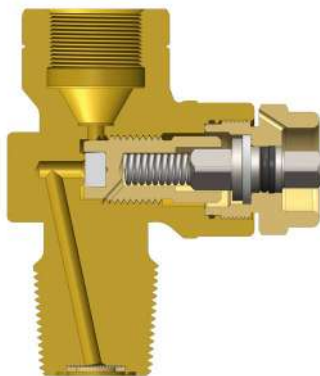


Valve without Fusible Plug



**KHO-10/D & KVO-10/D – Key Operated Valves in O-ring Seal Design**
**KHO-10/D**

(shown with Fusible Plug)

**KVO-10/D**
**Design Specifications**

	Metric	English
Minimum life	2000 cycles	
Pressure rating	60 bar	870 psig
Spindle square	7.1 mm	9/32 in
Hydraulic burst test pressure	909 bar	13180 psig
Temperature range	-40 °C to +85 °C	-40 °F to +185 °F
Pressure relief device (PRD)*	CG-3 (only available for KHO-10/D)	
Fusible alloy yield temperature	97.8 °C to 106.7 °C	208 °F to 224 °F
Minimum closing torque	8 Nm	6 ft.lb
Gland nut installation torque	75 Nm	55 ft.lb
Fusible plug installation torque*	20 Nm	15 ft.lb
Failure torque	>75 Nm	>55 ft.lb
Filter net size	250 micron	60 mesh
Flow coefficient (C <sub>v</sub> )	0.25	
Lubricant	Krytox GPL 225	

**Material of Construction**

Part	Material
Valve body	Forged brass
Gland nut & Filter washer	Free cutting brass
Upper spindle	SS 303
Lower spindle	Naval brass
Seat insert	PA 66 / PEEK
O-rings & Back-Up ring	EPDM
Thrust washer	PA 66
Spring	SS 302
Filter net	Stainless steel
Fusible plug	Naval brass with fusible alloy

\* Optional

For features, benefits &amp; ordering information, refer detailed catalogue



KHO-10/D



KVO-10/D

**Compliance & Certification**

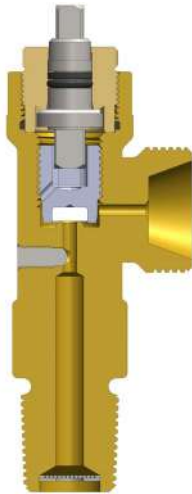
- Valves meet EN ISO 10297:2017, tested by BAM
- Valves without fusible plug are certified by BAM to European Transportable Pressure Equipment Directive (TPED) & available with T mark
- Fusible plug complies with CGA S-1.1

**KHO-10/D**

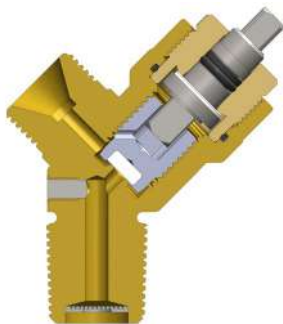
(shown with Fusible Plug)

**KVO-10/D**

## BSKN-12/D & BAKN-12/D - Key Operated Valves in O-ring Seal Design



BSKN-12/D



BAKN-12/D

### Design Specifications

	Metric	English
Minimum life	2000 cycles	
Pressure rating	60 bar	870 psig
Hydraulic burst test pressure	909 bar	13180 psig
Temperature range	-46 °C to +85 °C	-51 °F to +185 °F
Stem square	5.00 mm	0.20 in
Integrated fuse metal*	CG-3	
Fuse metal yield temperature	97.8 °C to 106.7 °C	208 °F to 224 °F
Minimum closing torque	2 Nm	1.5 ft.lb
Packing nut installation torque	45 Nm	33 ft.lb
Failure torque	>27 Nm	>20 ft.lb
Filter net size	250 micron	60 mesh
Flow coefficient (C <sub>v</sub> )	0.15	
Lubricant	Krytox GPL 225	

### Valve Selection & Application

Series	Cylinder style	Outlet Connection	Inlet Connection
BSKN-12/D	B	CGA 520	3/8-18NGT
BAKN-12/D	MC	CGA 200	

### Material of Construction

Part	Material
Valve body	HT brass
Packing nut	Free cutting brass
Upper & Lower stem	SS 303
Thrust washer & Seat insert	PEEK
O-rings & Back-Up ring	EPDM
Filter net	Stainless steel
Filter washer	SS 304

\* Valves for manifold application shall be supplied without fuse metal & marked "Manifold" on packing nut

For features, benefits & ordering information, refer detailed catalogue



### Compliance & Certification

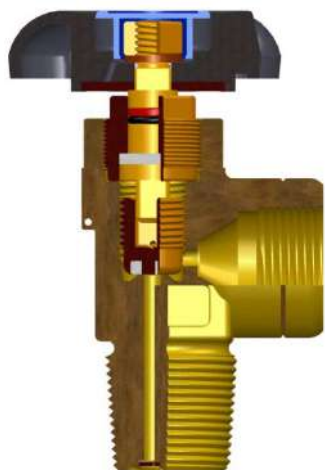
- Valves meet EN ISO 10297:2017, tested by BAM
- Valves without fuse metal are certified by BAM to European Transportable Pressure Equipment Directive (TPED) & available with T mark
- Fuse metal complies with CGA S-1.1



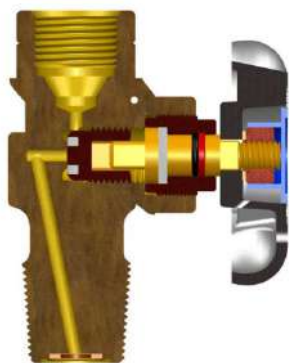
BSKN-12/D



BAKN-12/D

**CWH-10/D & CWV-10/D - Handwheel Operated Valves in O-ring Seal Design**


CWH-10/D



CWV-10/D

**Design Specifications**

	Metric	English
Minimum life	2000 cycles	
Pressure rating	60 bar	870 psig
Temperature range	-20 °C to +65 °C	-4 °F to +149 °F
Pressure relief device (PRD)*	CG-3 (only available for CWH-10/D)	
Fusible alloy yield temperature	97.8 °C to 106.7 °C	208 °F to 224 °F
Minimum closing torque	3 Nm	2.2 ft.lb
Gland nut installation torque	65 Nm	48 ft.lb
Fusible plug installation torque*	20 Nm	15 ft.lb
Filter net size	250 micron	60 mesh
Flow coefficient (C <sub>v</sub> )	0.20	
Lubricant	Gleitmo 591	

**Material of Construction**

Part	Material
Valve body	HT brass
Gland nut & Filter washer	Free cutting brass
Upper & Lower spindle	Naval brass
Thrust washer & Seat insert	PA 66
O-ring & Back-Up ring	EPDM
Handwheel	Aluminium (CED coated) / 30% glass filled PA 6 (V-0) with brass insert
Filter net	Stainless steel
Fusible plug	Naval brass with fusible alloy

\* Optional

For features & benefits, refer detailed catalogue



CWH-10/D



CWV-10/D

**Compliance & Certification**

- Valves meet EN ISO 10297:2006, tested by BAM
- Valves without fusible plug are certified by BAM to European Transportable Pressure Equipment Directive (TPED) & available with  $\Pi$  mark
- Fusible plug complies with CGA S-1.1



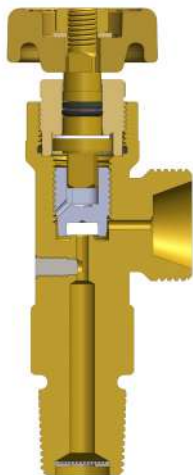
CWH-10/D



CWV-10/D



## BSWN-12/D-30 & BAWN-12/D-30 - Handwheel Operated Valves in O-ring Seal Design



BSWN-12/D-30



BAWN-12/D-30

### Design Specifications

	Metric	English
Minimum life	2000 cycles	
Pressure rating	60 bar	870 psig
Hydraulic burst test pressure	909 bar	13180 psig
Temperature range	-46 °C to +85 °C	-51 °F to +185 °F
Integrated fuse metal*	CG-3	
Fuse metal yield temperature	97.8 °C to 106.7 °C	208 °F to 224 °F
Minimum closing torque	2 Nm	1.5 ft.lb
Packing nut installation torque	45 Nm	33 ft.lb
Filter net size	250 micron	60 mesh
Flow coefficient (C <sub>v</sub> )	0.15	
Lubricant	Krytox GPL 225	

### Valve Selection & Application

Series	Cylinder style	Outlet Connection	Inlet Connection
BSWN-12/D-30	B	CGA 520	3/8-18NGT
BAWN-12/D-30	MC	CGA 200	

### Material of Construction


Part	Material
Valve body	HT brass
Upper stem & Packing nut	Free cutting brass
Lower stem	SS 303
Seat insert	PVDF
Thrust washer	PEEK
O-rings & Back-Up Ring	EPDM
Handwheel (Gold)*	ø30 mm Zinc base alloy (Powder coated)
Filter net	Stainless steel
Filter washer	SS 304

\* Valves for manifold application shall be supplied without fuse metal & with Red handwheel

For features, benefits & ordering information,  
refer detailed catalogue



### Compliance & Certification

- Valves meet EN ISO 10297:2017, tested by BAM
- Valves without fuse metal are certified by BAM to European Transportable Pressure Equipment Directive (TPED) & available with  mark
- Fuse metal complies with CGA S-1.1



BSWN-12/D-30

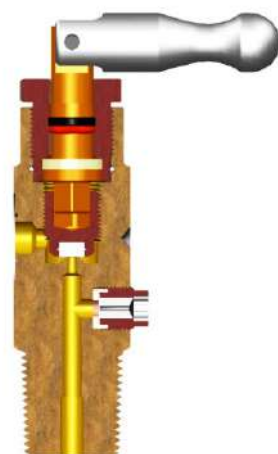


BAWN-12/D-30

## MYC-10C – Key (Post) & Toggle Operated Pin Index Valves



**Key [Post] Operated Valve**  
(shown with parallel inlet & PRD)



**Toggle Operated Valve**  
(shown with long toggle,  
taper inlet & PRD)

### Design Specifications

	Metric	English
Minimum life	2000 cycles	
Pressure rating	240 bar	3000 psig
Oxygen pressure surge test	50 cycles at 240 bar	50 cycles at 3480 psig
Temperature range	-46 °C to +65 °C	-51 °F to +149 °F
Pressure relief device (PRD)*	CG-1 / CG-4	
Minimum closing torque	2.33 Nm	21 in.lb
Packing nut installation torque	50 Nm	37 ft.lb
PRD installation torque*		
- CG-1 (9.50 mm / 3/8" HEX)	16 Nm	12 ft.lb
- CG-4 (TORX-T30)	9 Nm	7 ft.lb
Flow coefficient (C <sub>v</sub> )	0.15	
Lubricant	Krytox NRT 8908	
Oxygen cleaned	Yes	

### Material of Construction

Part	Material
Valve body - Chrome plated (CP)	Forged / Extruded brass
Packing nut (CP), Retainer plug (CP) & Flange ring** (CP)	Free cutting brass
Upper & Lower stem	Naval brass
Seat insert & Thrust washer	PA 66
O-rings & Back-Up Ring	EPDM
Toggle (Short / Long)	Aluminium
Burst disc	Nickel 201
Retainer gasket	Copper
Inlet O-ring**	PTFE / EPDM

\* Optional

\*\* For parallel inlet connection

For features & benefits, refer detailed catalogue



### Compliance & Certification

- Valves meet EN ISO 10297:2006 & CGA V-9:2012
- Valves are certified by BAM to European Transportable Pressure Equipment Directive (TPED) & available with  $\pi$  mark
- Valves meet IS 3745:2006, approved by PESO & supplied under BIS inspection for Indian market
- All valves are MRI approved up to 3 Tesla as per ASTM F2052-15 & stamped as per ASTM F2503-13
- PRD complies with CGA S-1.1



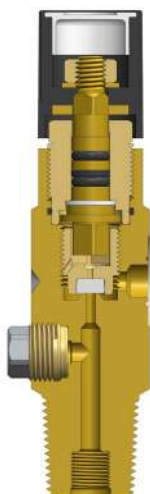
**Key [Post] Operated Valve**  
(shown with parallel inlet & PRD)



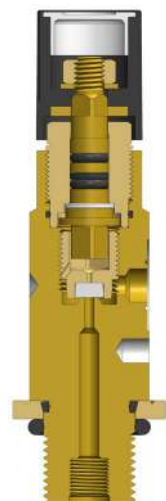
**Toggle Operated Valve**  
(shown with long toggle, taper inlet & PRD)



## PBN-12 – Knob Operated Pin Index Valves in O-ring Seal Design



Valve with Taper Inlet  
(shown with PRD)



Valve with Parallel Inlet

### Design Specifications

	Metric	English
Minimum life	2000 cycles	
Pressure rating	240 bar	3000 psig
Oxygen pressure surge test	50 cycles at 240 bar	50 cycles at 3480 psig
Temperature range	-46 °C to +65 °C	-51 °F to +149 °F
Pressure relief device (PRD)*	CG-1 / CG-4 / CG-5	
Minimum closing torque	0.6 Nm	5.3 in.lb
Gland nut installation torque	50 Nm	37 ft.lb
PRD installation torque*		
- CG-1 (9.50 mm / 3/8" HEX)	16 Nm	12 ft.lb
- CG-4 (TORX-T30)	9 Nm	7 ft.lb
Flow coefficient (C <sub>v</sub> )	0.13	
Lubricant	Gleitmo 595	
Oxygen cleaned	Yes	

### Material of Construction

Part	Material
Valve body	Forged / Extruded brass
Upper spindle, Gland nut, Flange ring** & Burst disc retainer plug	Free cutting brass
Lower spindle	Naval brass
Seat insert	PA 66 / PEEK
Flange O-ring**, O-rings & Back-Up ring	EPDM
Inlet O-ring**	EPDM / PTFE
Thrust washer	PEEK
Knob assembly	ø22 mm 30% glass filled PA 6 (V-0) moulded with brass insert
Burst disc	Nickel
Burst disc sealing washer	Copper

\* Optional

\*\* For parallel inlet connection only

For features, benefits & ordering information,  
refer detailed catalogue



### Compliance & Certification

- Valves meet EN ISO 10297:2017 & CGA V-9:2012
- Valves with ISO-V marking are certified by BAM to European Transportable Pressure Equipment Directive (TPED) & available with T mark
- PRD complies with CGA S-1.1

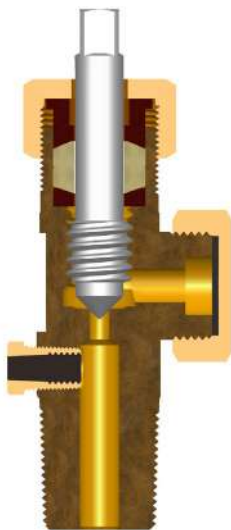


Valve with Taper Inlet  
(shown with PRD)

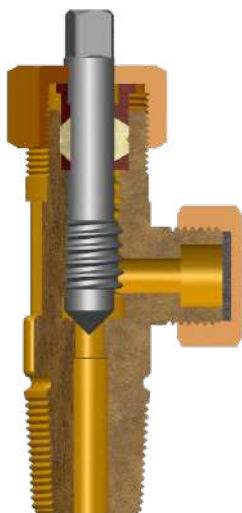


Valve with Parallel Inlet

## CAV-06 - Key Operated Valves in Standard Chlorine Institute Packed Design



Valve for Cylinder



Valve for Ton Container

### Design Specifications

Minimum life	2000 cycles
Maximum design service pressure	3000 psig
Operating temperature range	-50 °F to +149 °F
Storage temperature range	-60 °F to +149 °F
Pressure relief device (PRD)	CG-2 (for cylinder valve only)
Fusible alloy yield temperature	157 °F to 165 °F
Stem square	3/8 in
Flow coefficient (C <sub>v</sub> )	
- Cylinder (3/16" orifice)	0.96
- Ton Container (5/16" orifice)	1.8
Minimum closing torque*	
- Cylinder	6 ft.lb
- Ton container	8 ft.lb
Packing nut installation torque	40 ft.lb
Fusible plug installation torque	14 ft.lb
Failure torque in closing direction	>75 ft.lb
Lubricant	Krytox GPL 225

\* Higher torques may be required to operate the valve in service  
(Maximum recommended 30 ft.lb)

### Available Outlet & Inlet Connections

Outlet Connection	Inlet Connection
CGA 660 & CGA 820	3/4-14 NGT (CL)-1 to 5 & 1-11 1/2-NGT (CL)-1 to 5

### Material of Construction

Part	Material
Valve body & Packing collar	Al-Si Bronze
Packing nut, Packing gland & Outlet cap	Free cutting brass
Packing X 2	PTFE
Stem	Monel metal
Gasket	Lead
Fusible plug	Naval brass with fusible alloy

For features, benefits & accessories, refer detailed catalogue



### Compliance & Certification

- Valves meet performance requirements of Pamphlet 17 of the Chlorine Institute (CI)
- Valves meet CGA V-9:2012
- Fusible plug complies with CGA S-1.1
- Cylinder valve compatible with CI Emergency Kit A
- Ton container valve compatible with CI Emergency Kit B



Valve for Cylinder

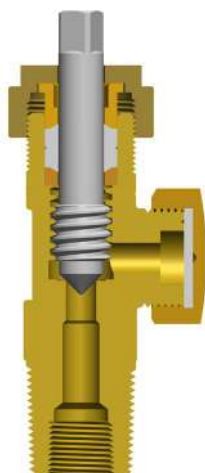


Valve for Ton Container

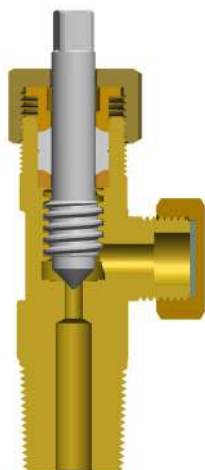




## CAV-06 - Key Operated Valves in Packed Design (ISO V)



**Valve for Cylinder**  
(shown with Robust Gland Nut)



**Valve for Ton Container**  
(shown with Standard Gland Nut)

Design Specifications		
	Metric	English
Minimum life	2000 cycles	
Pressure rating	50 bar	725 psig
Temperature range	-20 °C to +65 °C	-4 °F to +149 °F
Spindle square	9.50 mm	3/8 in
Flow coefficient (C <sub>v</sub> )	0.96	
- Cylinder (3/16" orifice)		
- Ton container (5/16" orifice)	1.8	
Minimum closing torque*		
- Cylinder	8 Nm	6 ft.lb
- Ton container	10 Nm	8 ft.lb
Gland nut installation torque	57 Nm	42 ft.lb
Failure torque in closing direction	>102 Nm	>75 ft.lb
Lubricant	Krytox GPL 225	

\* Higher torques may be required to operate the valve in service  
(Maximum recommended 35 Nm/26 ft.lb)

Material of Construction	
Part	Material
Valve body, Packing collar & Gland nut	Al-Si Bronze
Packing gland & Outlet cap**	Free cutting brass
Packing X 2	PTFE
Spindle	Monel metal
Gasket**	Lead / PTFE
Chain & keeper ring**	Stainless steel

\*\* Optional

For features, benefits & accessories refer detailed catalogue



## Compliance & Certification

- Valves meet EN ISO 10297:2006
- Valves are certified by BAM to European Transportable Pressure Equipment Directive (TPED) & available with  $\Pi$  mark



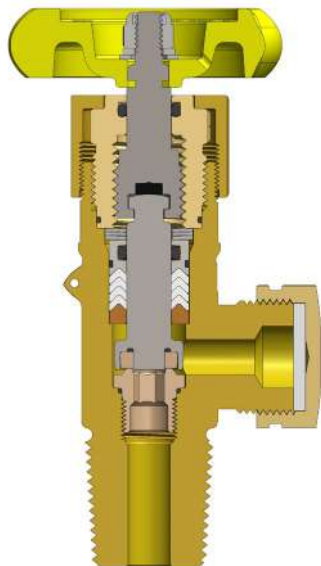
**Valve for Cylinder**  
(shown with Robust Gland Nut)



**Valve for Ton Container**  
(shown with Standard Gland Nut)



## SWN-22/V - Handwheel Operated Compression Packed Valves with O-ring Seal



### Design Specifications

Minimum life	2000 cycles
Pressure rating	50 bar**
Operating temperature range	-20 °C to +65 °C
Storage temperature range	-40 °C to +65 °C
Minimum closing torque	6 Nm
Gland nut installation torque	60 Nm
Lock nut installation torque	30 Nm
Flow coefficient (C <sub>v</sub> )	1.4
Lubricant	Klubertemp GR M30

### Material of Construction

Part	Material
Valve body	Al-Si Bronze / HT brass
Gland nut, Lock nut & Outlet cap*	Free cutting brass
Upper spindle & Packing gland	SS 303
Lower spindle & Body seat insert	Monel metal
Seat insert	PCTFE / PVDF
O-rings	FKM
Packing X 4	PTFE
Packing collar	Al-Si Bronze
Belleville spring X 3	EN 42
Tip blank & Gasket*	PVDF
Handwheel	Zinc base alloy (Powder coated)

\* Optional

\*\* 30 bar for Chlorine

For features, benefits & ordering information,  
refer detailed catalogue

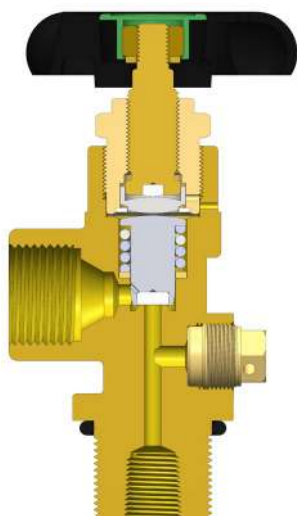


### Compliance & Certification

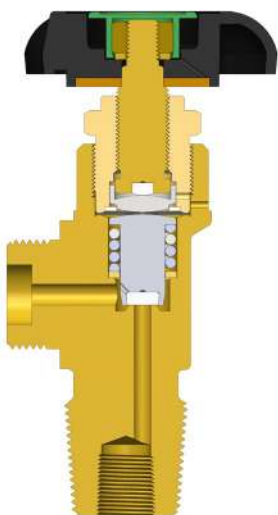
- Valves meet EN ISO 10297:2017
- Valves are certified by BAM to European Transportable Pressure Equipment Directive (TPED) & available with  $\Pi$  mark



## RWH-03 - Handwheel Operated Brass Valves in Diaphragm Design



Valve with Parallel Inlet  
(shown with PRD)



Valve with Taper Inlet

### Design Specifications

	Metric	English
Minimum life	2000 cycles	
Pressure rating	250 bar	3600 psig
Oxygen pressure surge test	50 cycles at 250 bar	50 cycles at 3625 psig
Temperature range	-40 °C to +65 °C	-40 °F to +149 °F
Pressure relief device (PRD)*	CG-1 / CG-4 / CG-5	
Minimum closing torque	6 Nm	4 ft.lb
Gland nut installation torque	95 Nm	70 ft.lb
PRD installation torque*	32 Nm	24 ft.lb
Flow coefficient (C <sub>v</sub> )	0.27	
Lubricant	Krytox GPL 225	
Oxygen cleaned	Yes	

### Material of Construction

Part	Material
Valve body & Gland nut	HT brass
Upper spindle assembly	Naval brass with PA tip
Lower spindle & Thrust metallic pad	SS 303
Seat insert	PA 66 / PCTFE
Diaphragm X 5	SS 301
Spring	SS 302
Handwheel	Aluminium (CED coated) / 30% glass filled PA 6 with brass insert
Colour coded burst disc retainer plug	Free cutting brass
Burst disc	Nickel / Copper
Burst disc sealing washer	Copper
Inlet O-Ring**	PTFE / NBR

\* Optional

\* For parallel inlet connection only

For features, benefits & ordering information, refer detailed catalogue



### Compliance & Certification

- Valves meet EN ISO 10297:2017
- Valves are certified by BAM to European Transportable Pressure Equipment Directive (TPED) & available with T mark
- PRD complies with CGA S-1.1

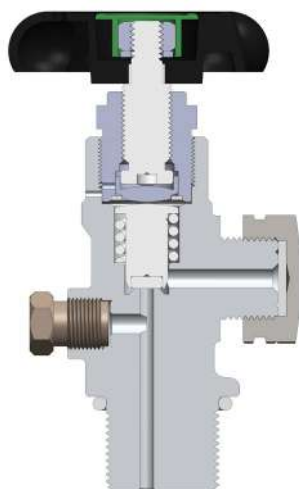


Valve with Parallel Inlet  
(shown with PRD)

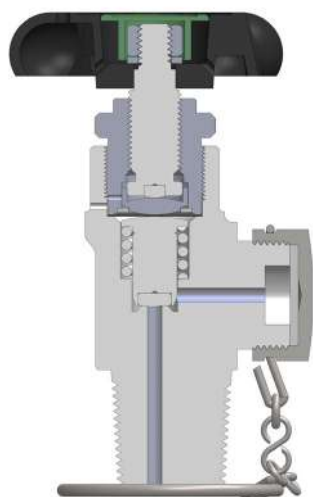


Valve with Taper Inlet

## TWH-03 - Handwheel Operated Stainless Steel Valves in Diaphragm Design



Valve with Parallel Inlet  
(shown with PRD)



Valve with Taper Inlet  
(shown with chain & keeper ring)

### Design Specifications

	Metric	English
Minimum life	2000 cycles	
Pressure rating	240 bar	3000 psig
Oxygen pressure surge test	50 cycles at 240 bar	50 cycles at 3480 psig
Temperature range	-20 °C to +65 °C	-4 °F to +149 °F
Pressure relief device (PRD)*	CG-1 / CG-4 / CG-5	
Minimum closing torque	6 Nm	4.4 ft.lb
Gland nut installation torque	95 Nm	70 ft.lb
PRD installation torque*	35-40 Nm	26-30 ft.lb
Flow coefficient (C <sub>v</sub> )	0.16	
Lubricant	Krytox GPL 225	
Oxygen cleaned	Yes	

### Material of Construction

Part	Material
Valve body & Lower spindle	SS 303 / SS 316L
Upper spindle, Gland nut, Lock nut*, Thrust metallic pad, Outlet cap* & Retainer plug	SS 303
Seat insert	PCTFE / PA 66 / PVDF / PI
Upper diaphragm X 4	SS 301
Lower diaphragm X 1	Inconel® 625
Handwheel	Aluminium (CED coated)
Burst disc	Nickel
Burst disc sealing washer	SS alloy
Outlet gasket*	PCTFE
Inlet O-ring**	PTFE / NBR
Chain & keeper ring*	Stainless steel

\* Optional

\*\* For parallel inlet connection only

For features, benefits & ordering information,  
refer detailed catalogue



### Compliance & Certification

- Valves meet EN ISO 10297:2006
- Valves are certified by BAM to European Transportable Pressure Equipment Directive (TPED) & available with T mark
- PRD complies with CGA S-1.1
- Valves for Indian market are approved by PESO & supplied under Lloyd inspection



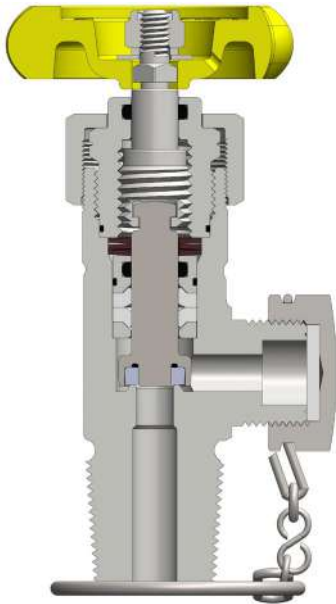
Valve with Parallel Inlet  
(shown with PRD)



Valve with Taper Inlet  
(shown with chain & keeper ring)



## SSWN-22/V - Handwheel Operated Compression Packed Valves with O-ring Seal



### Design Specifications

	Metric	English
Minimum life	2000 cycles	
Pressure rating	250 bar	3600 psig
Operating temperature range	-20 °C to +65 °C	-4 °F to +149 °F
Storage temperature range	-40 °C to +65 °C	-40 °F to +149 °F
Minimum closing torque	6 Nm	4 ft.lb
Gland nut installation torque	95 Nm	70 ft.lb
Lock nut installation torque	35 Nm	26 ft.lb
Flow coefficient (C <sub>v</sub> )	1.1	
Lubricant	Klubertemp GR M30	

### Material of Construction

Part	Material
Valve body, Lock nut & Packing collar	SS 316L
Upper spindle, Gland nut, Packing gland & Outlet cap*	SS 303
Lower spindle	Monel metal
Seat insert & Gasket*	PCTFE / PVDF
Tip blank	PVDF
Packing X 2	PTFE
O-rings	FKM
Belleville spring X 3	EN 42
Handwheel	Zinc base alloy (Powder coated)
Chain & keeper ring*	Stainless steel

*\*Optional*

For features, benefits & ordering information, refer detailed catalogue

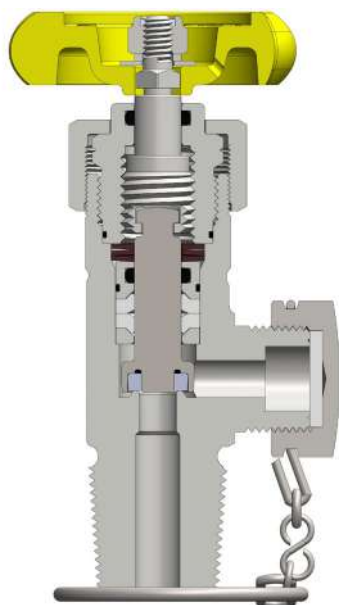


### Compliance & Certification

- Valves meet EN ISO 10297:2017
- Valves are certified by BAM to European Transportable Pressure Equipment Directive (TPED) & available with  $\Pi$  mark
- Valves for Indian market are approved by PESO & supplied under Lloyd inspection



## SSWN-22/V-S3 - Handwheel Operated Compression Packed Valves with O-ring Seal



### Design Specifications

	Metric	English
Minimum life	2000 cycles	
Pressure rating	250 bar	3600 psig
Operating temperature range	-20 °C to +65 °C	-4 °F to +149 °F
Storage temperature range	-40 °C to +65 °C	-40 °F to +149 °F
Minimum closing torque	6 Nm	4 ft.lb
Gland nut installation torque	95 Nm	70 ft.lb
Lock nut installation torque	35 Nm	26 ft.lb
Flow coefficient (C <sub>v</sub> )	1.1	
Lubricant	Klubertemp GR M30	

### Material of Construction

Part	Material
Valve body, Lock nut, Packing collar, Upper spindle, Lower spindle, Gland nut, Packing gland & Outlet cap*	SS 303
Seat insert & Gasket*	PA 66 / PCTFE
Tip blank	PA 66
Packing X 2	PTFE
O-rings	EPDM
Belleville spring X 3	EN 42
Handwheel	Zinc base alloy (Powder coated)
Chain & keeper ring*	Stainless steel

*\*Optional*

For features, benefits & ordering information,  
refer detailed catalogue

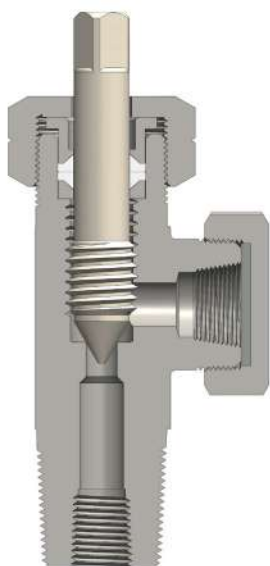


### Compliance & Certification

- Valves meet EN ISO 10297:2017
- Valves are certified by BAM to European Transportable Pressure Equipment Directive (TPED) & available with  mark



## CST-06 - Key Operated Carbon Steel Valves in Packed Design (CGA V-9)



### Design Specifications

Minimum life	2000 cycles
Maximum design service pressure	3000 psig
Temperature range	-51 °F to +149 °F
Stem square	3/8 in
Minimum closing torque*	10 ft.lb
Failure torque in closing direction	>100 ft.lb
Packing nut installation torque	42 ft.lb
Flow coefficient (C <sub>v</sub> )	1.5
Lubricant	Krytox GPL 225
Pressure relief device (PRD)**	CG-2

\* Higher torques may be required to operate the valve in service  
(Maximum recommended 25 ft.lb)

### Available Outlet & Inlet Connections

Outlet Connection	Maximum Rated Outlet Pressure	Inlet Connection
CGA 240	500 psig	3/4-14 NGT (CL)-1 & 3/4-14 NGT (CL)-2
CGA 800		
CGA 845		
CGA 705	3000 psig	

### Material of Construction

Part	Material
Valve body	Low carbon steel
Stem	SS 316L
Packing X 2	PTFE
Packing gland, Packing nut, Packing collar & Seal nut **	Carbon steel
Gasket **	PA 66

\*\* Optional

For features & benefits, refer detailed catalogue

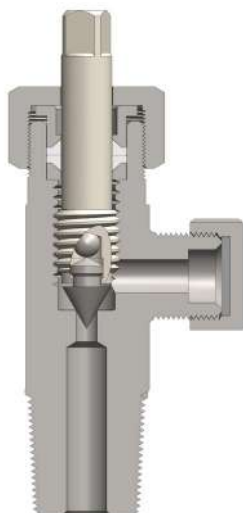


### Compliance & Certification

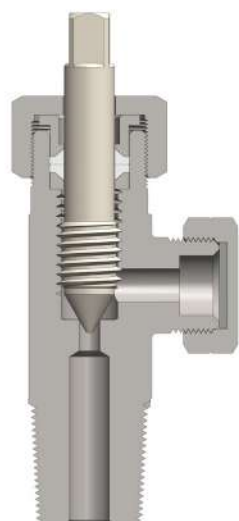
- Valves meet CGA V-9:2012, tested by BAM



## CST-06 - Key Operated Carbon Steel Valves in Packed Design (IS 3224)



Valve with Self-centering Spindle



Valve with Solid Spindle

### Design Specifications

Maximum working pressure	60 kgf/cm <sup>2</sup>
Spindle square	9.5 mm
Minimum closing torque*	8 Nm
Failure torque in closing direction	>135 Nm
Gland nut installation torque	60 Nm
Flow coefficient (C <sub>v</sub> )	0.8
Lubricant	Kluebertemp GR AR 555

\* Higher torques may be required to operate the valve in service  
(Maximum recommended 30 Nm)

### Available Outlet Connections

Outlet Connection		Gas Service
Designation	Thread Size	
IS-9 / BS-10	G 1/2A	Ammonia
IS-6 / BS-7	G 5/8-LH	Dimethylamine, Ethylene oxide
IS-10 / BS-11	G 1/2A-LH	Ethylamine, Methylamine

### Available Inlet Connections

25.4 mm / 1"BS	Refer Inlet chart (Page-5.1 & 5.2) for thread details
25E	
3/4-14 NGT (CI)-1	

### Material of Construction

Part	Options	
	Self-centering Spindle for Ammonia	Solid Spindle for Amines
Valve body	Low carbon steel	
Spindle	SS 410 with SS 304 tip	SS 316
Packing X 2	PTFE	
Packing gland, Packing collar, Gland nut, Gland washer & Seal nut **	Carbon steel	
Gasket **	PA 6 / Lead	

\*\* Optional

For features & benefits, refer detailed catalogue



### Compliance & Certification

- Valves meet IS 3224:2002
- Valves are approved by PESO & supplied under BIS inspection



Valve with Self-centering Spindle

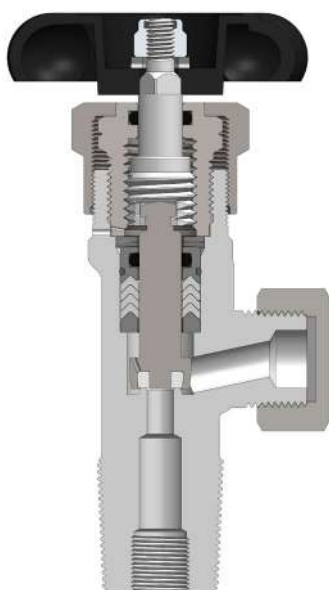


Valve with Solid Spindle





## SWN-22 - Handwheel Operated Carbon Steel Valves in Packed Design with O-ring Seal



### Design Specifications

Minimum life	2000 cycles
Pressure rating	100 bar
Temperature range	-46 °C to +65 °C
Minimum closing torque	6 Nm
Gland nut installation torque	55 Nm
Lock nut installation torque	32 Nm
Flow coefficient (C <sub>v</sub> )	0.90
Lubricant	Krytox GPL 225

### Material of Construction

Part	Material
Valve body	Low carbon steel
Upper & Lower spindle, Packing gland & Packing collar	SS 303
Gland nut, Lock nut & Outlet cap*	Carbon steel
Seat insert	PA 66 / PCTFE
Packing X 4	PTFE
O-rings	EPDM
Belleville spring X 2	EN 42
Handwheel	Aluminium (CED coated)
Gasket*	PA 6

\* Optional

For features, benefits & ordering information,  
refer detailed catalogue

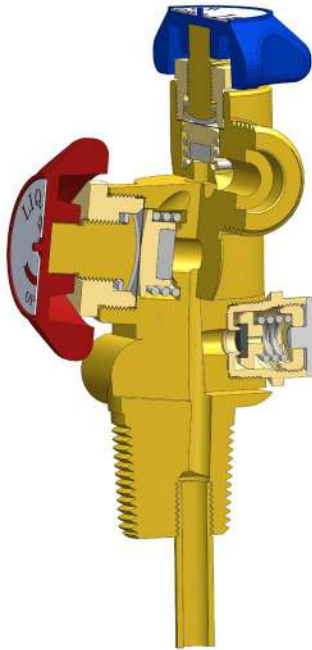


### Compliance & Certification

- Valves meet EN ISO 10297:2017
- Valves are certified by BAM to European Transportable Pressure Equipment Directive (TPED) & available with TT mark



## RDP-03 - Handwheel Operated Twin Phase Valves in Diaphragm Design



Valve shown with PRV & Dip Tube



Valve shown with PRV & Dip Tube

### Design Specifications

	Metric	English
Minimum life	2000 cycles	
Pressure rating	50 bar	725 psig
Temperature range	-20 °C to +65 °C	-4 °F to +149 °F
Pressure relief device (PRD)*	CG-7 (PRV)	
Pressure relief valve (PRV) set pressure (minimum)	450 psig / 600 psig	
Minimum closing torque	4 Nm	3 ft.lb
Gland nut installation torque	60 Nm	45 ft.lb
PRV installation torque*	30 Nm	22 ft.lb
Flow coefficient (C <sub>v</sub> )		
- Liquid port	0.51	
- Vapour port	0.56	
Lubricant	Krytox GPL 225	

### Material of Construction

Part	Material
Valve body	HT brass
Spindle, Tip holder & Gland nut	Free cutting brass
Tip, Washer & Friction washer	PA 66
Diaphragm X 4	SS 301
Spring	SS 302
Circular disc	Aluminium
Handwheel	ø52 mm 30% glass filled PA 6 (V-0) - Red for liquid service - Blue for vapour service
Dip tube*	Brass or as per customer requirement
Pressure Relief Valve (PRV)	
Housing, Seat holder & Adjusting screw	Free cutting brass
Seat	Neoprene (Moulded)
Spring	SS 304
Dust cap	Polyamide
Sealing washer	Copper

\* Optional

For features & benefits, refer detailed catalogue



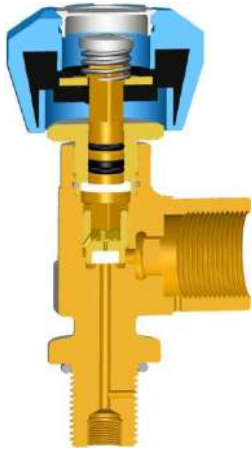
### Compliance & Certification

- Valves meet EN ISO 10297:2006, tested by BAM
- Valves without PRV meet IS 3224:2002, approved by PESO & supplied under BIS inspection for Indian market
- Pressure Relief Valve complies with CGA S-1.1

## HBA-10/I - Handwheel Operated Breathable Air Cylinder Valves



**Valve with Self-locking Handwheel**  
(shown with taper inlet)



**Valve with Normal Handwheel**  
(shown with parallel inlet)

### Design Specifications

Minimum life	2000 cycles
Pressure rating	360 bar
Outlet connection	232 bar / 300 bar as per EN 144-2 / ISO 12209
Temperature range	-46 °C to +85 °C
Pressure relief device (PRD)*	CG-1
Minimum closing torque	3 Nm
Gland nut installation torque	50 Nm
PRD installation torque*	17 Nm
Lubricant	Krytox GPL 225

### Material of Construction

Part	Material
Valve body	HT brass
Gland nut, Special nut & Burst disc retainer plug	Free cutting brass
Upper & Lower spindle	Naval brass
Thrust washer & Seat insert	PA 66
O-rings, Inlet O-ring** & Back-Up ring	EPDM
Spring	SS 302
Handwheel (Blue / Black)	ø52.5 mm PA 6 (V-0) moulded with brass insert & coated with Hytrel® HRT 8068
Burst disc	Nickel
Burst disc sealing washer	Copper

\* Optional

\*\* For parallel inlet connection only

### Options

1. Anti-dust tube	4. Sintered filter
2. EFV with anti-dust tube	5. Photo luminescent handwheel
3. EFV with sintered filter	

For features, benefits & ordering information,  
refer detailed catalogue



### Compliance & Certification

- Valves meet EN ISO 10297:2017, EN 144-1:2018 & EN 144-2:2018
- Valves are certified by BAM to European Transportable Pressure Equipment Directive (TPED) & available with T mark
- Valves without PRD meet IS 7302:1974, approved by PESO & supplied under Lloyds inspection for Indian market
- PRD complies with CGA S-1.1

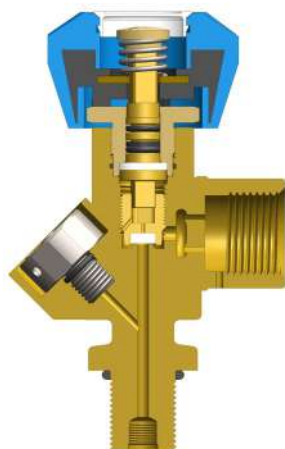


**Valve with Self-locking Handwheel**  
(shown with taper inlet)



**Valve with Normal Handwheel**  
(shown with parallel inlet)

## HBA-10/I - Handwheel Operated Breathable Air Cylinder Valves with Pressure Gauge (PG)



Valve with Normal Handwheel



Valve with Self-locking Handwheel

### Design Specifications

Minimum life	2000 cycles
Pressure rating	360 bar
Outlet connection	232 bar / 300 bar as per EN 144-2 / ISO 12209
Temperature range	-46 °C to +85 °C
Pressure relief device (PRD)*	CG-1
Minimum closing torque	3 Nm
Gland nut installation torque	50 Nm
PRD installation torque*	17 Nm
Pressure gauge installation torque	20 Nm
Pressure gauge	0 to 300 bar (Make – WIKA)
Lubricant	Krytox GPL 225

### Material of Construction

Part	Material
Valve body	HT brass
Gland nut, Special nut & Burst disc retainer plug	Free cutting brass
Upper & Lower spindle	Naval brass
Thrust washer & Seat insert	PA 66
O-rings, Inlet O-ring** & Back-Up ring	EPDM
Spring	SS 302
Handwheel (Blue / Black)	ø52.5 mm PA 6 (V-0) moulded with brass insert & coated with Hytrel® HRT 8068
Burst disc	Nickel
Burst disc sealing washer	Copper

\* Optional

\*\* For parallel inlet connection only

### Options

1. Anti-dust tube	4. Sintered filter
2. EFV with anti-dust tube	5. Photo luminescent handwheel
3. EFV with sintered filter	

For features, benefits & ordering information,  
refer detailed catalogue



### Compliance & Certification

- Valves meet EN ISO 10297:2017, EN 144-1:2018 & EN 144-2:2018
- Valves are certified by BAM to European Transportable Pressure Equipment Directive (TPED) & available with T mark
- PRD complies with CGA S-1.1



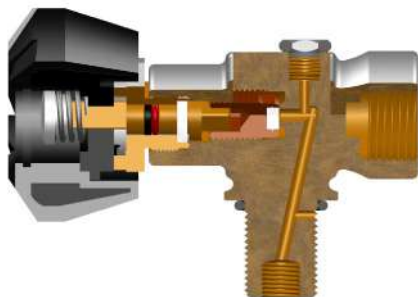
Valve with Normal Handwheel



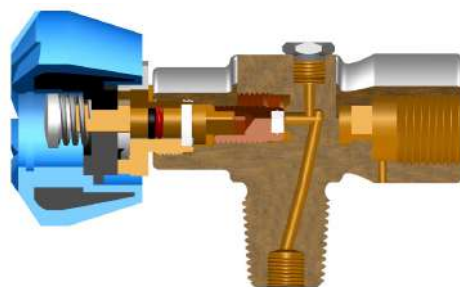
Valve with Self-locking Handwheel



## MBA-10 – Side Handwheel Operated Breathable Air Cylinder Valves



Valve with Parallel Inlet



Valve with Taper Inlet

### Design Specifications

Minimum life	2000 cycles
Pressure rating	360 bar
Outlet connection	200 bar / 300 bar as per EN 144-2:1998
Temperature range	-30 °C to +65 °C
Minimum closing torque	3 Nm
Gland nut installation torque	55 Nm
Lubricant	Krytox GPL 225

### Material of Construction

Part	Material
Valve body	HT brass
Gland nut & Special nut	Free cutting brass
Upper & Lower spindle	Naval brass
Thrust washer & Seat insert	PA 66
O-ring, Inlet O-ring* & Back-Up ring	EPDM
Spring	Spring steel
Handwheel (Blue / Black)	ø52.5 mm PA 6 (V-0) moulded with brass insert & coated with Hytrel® HRT 8068

\* For parallel inlet connection only

### Options

1. Anti-dust tube	4. Sintered filter
2. EFV with anti-dust tube	5. Photo luminescent handwheel
3. EFV with sintered filter	6. Pressure gauge port provision (1/8"-28 BSP THD)

For features, benefits & ordering information, refer detailed catalogue



### Compliance & Certification

- Valves meet EN ISO 10297:2006, EN 144-1:2000/A2:2005 & EN 144-2:1998
- Valves are certified by BAM to European Transportable Pressure Equipment Directive (TPED) & available with  $\Pi$  mark
- Valves meet IS 7302:1974, approved by PESO & supplied under Lloyds inspection for Indian market



Valve with Parallel Inlet

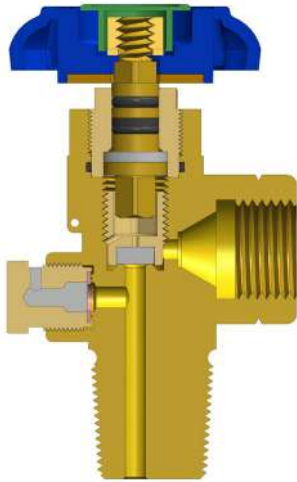


Valve with Taper Inlet

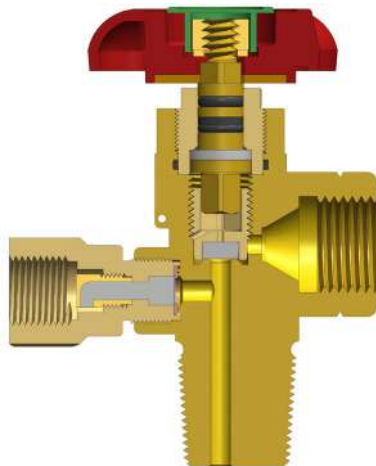


## Cylinder Valves for Compressed Natural Gas (CNG)

### ALV-10 - Handwheel Operated Valves for CNG in O-ring Seal Design



Valve for On-board Application



Valve for Cascade Application  
(shown with venting thread provision)

#### Design Specifications

Minimum life	6000 cycles
Working pressure (WP)	
- On-board application	205 kgf/cm <sup>2</sup>
- Cascade application	260 kgf/cm <sup>2</sup>
Pressure relief device (PRD)	Pressure & temperature combination device
Fusible alloy yield temperature	115 °C to 135 °C
PRD burst pressure	
- On-board application	295-325 kgf/cm <sup>2</sup>
- Cascade application	360-390 kgf/cm <sup>2</sup>
Minimum closing torque	3 Nm
Gland nut installation torque	65 Nm
PRD installation torque	35 Nm
Lubricant	Kluebertemp GR AR 555
Venting thread provision for PRD*	<ol style="list-style-type: none"> <li>3/8"-18 NPT</li> <li>1/4"-18 NPT</li> <li>M16 X 1.5</li> </ol>

#### Material of Construction

Part	Material
Valve body	HT brass
Upper & Lower spindle, Gland nut & Burst disc retainer plug	Free cutting brass
O-rings & Back-Up ring	FKM
Thrust washer & Seat insert	PA 66
Handwheel	30% glass filled PA 6 (V-0) with brass insert - Blue colour for on-board application - Red colour for cascade application
Burst disc	Nickel 201
Burst disc sealing washer	Copper

\*Optional

For features & benefits, refer detailed catalogue



#### Compliance & Certification

- Valves meet IS 3224:2002
- Valves are approved by PESO & supplied under BIS inspection



Valve for On-board Application



Valve for Cascade Application  
(shown with venting thread provision)



## FSG-07/F – Squeeze Grip Carbon Dioxide Valves



Valve with Parallel Inlet



Valve with Taper Inlet

### Design Specifications

Valve Orientation	Front outlet
Maximum working pressure (WP)	190 kgf/cm <sup>2</sup>
Pressure relief device (PRD)	Pressure operated device
PRD burst pressure	200-220 kgf/cm <sup>2</sup>
Spring retainer torque	4-6 Nm
PRD installation torque	12 Nm
Lubricant	Gleitmo 591

### Material of Construction

Part	Material
Valve body	Forged brass
Spring retainer & Retainer nut	Free cutting brass
Spindle & Brass holder	Brass
Rubber seal, O-rings & Inlet O-ring*	Nitrile rubber
Spring	SS 302
Lever	Mild steel (Powder coated)
Lever pin (Rivet) & Lock pin	Mild steel (Plated)
Lock pin chain	Rubber
Bursting disc	Copper
Bursting disc washer	PA 6

\* For parallel inlet connection only

For features & benefits, refer detailed catalogue



### Compliance & Certification

- Valves meet IS 3224:2002
- Valves are approved by PESO & supplied under BIS & Lloyds inspection



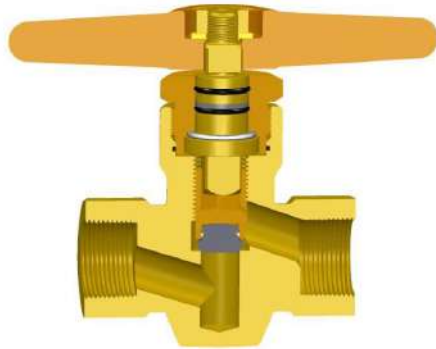
Valve with Parallel Inlet



Valve with Taper Inlet

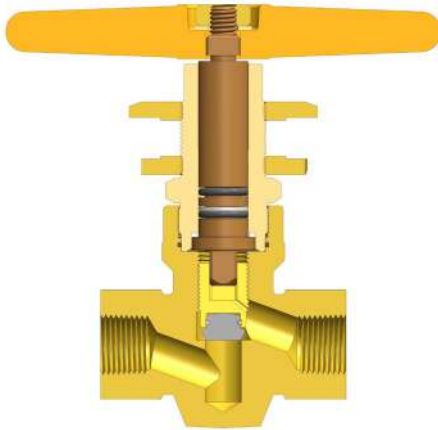


## BMV-09 – Handle Operated Master Shut-off Valves



Standard Model Valve

Design Specifications		
	Metric	English
Minimum life	2000 cycles	
Pressure rating	360 bar	5220 psig
Oxygen surge pressure test (tested via filling & inlet connection)	20 cycles at 360 bar	20 cycles at 5220 psig
Temperature range	-40 °C to +65 °C	-40 °F to +149 °F
Minimum closing torque	10 Nm	7.4 ft.lb
Packing nut installation torque	105 Nm	77 ft.lb
Flow coefficient (C <sub>v</sub> )	3.16	
Lubricant	Gleitmo 599	
Oxygen cleaned	Yes	
Panel hole size (to be specified by the customer)*	ø31 - ø45 mm	ø1.22 - ø1.77 in



Panel Mounting Valve

Available Outlet & Inlet Connections		
1. 1"-11 BSP	2. 3/4"-14NPT (F)	3. 1/2"-14NPT (F)

Material of Construction	
Part	Material
Valve body	LT brass
Packing nut & Panel mounting nut*	Free cutting brass
Upper stem	Al-Si Bronze
Lower stem assembly	High silicon bronze with self-centering Monel seat
Thrust washer	PA 66
O-rings & Back-Up ring	EPDM
T-handle	152.4 mm long Leaded brass

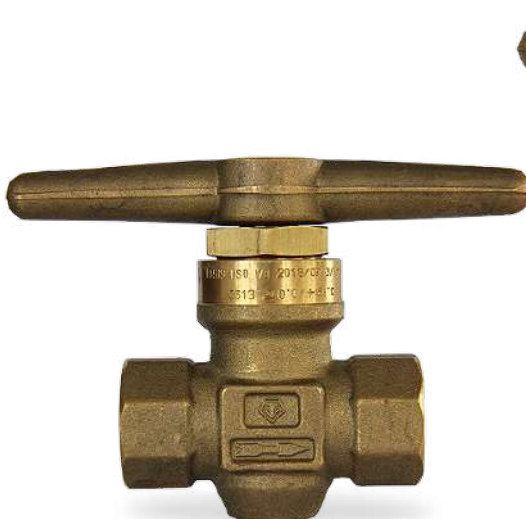
\* For panel mounting valve

For gas service, features, benefits & ordering information, refer detailed catalogue

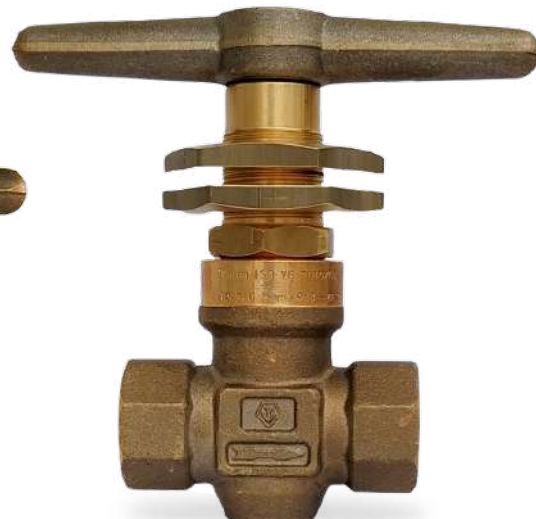


## Compliance & Certification

- Valves meet EN ISO 10297:2017
- Valves are certified by BAM to European Transportable Pressure Equipment Directive (TPED) & available with T mark



Standard Model Valve



Panel Mounting Valve





*Don't let your profit leak through your cylinders*



## Cylinder Valve Inlet Connections

### Taper Threads

Sl. No.	Designation	Small End Major Diameter (mm)	Taper on Diameter	Thread Angle	Thread Per Inch (TPI)	Specification	Remarks
1a	1/8-27 NGT	9.984	1:16	60°	27	CGA V-1	
1b	1/4-18 NGT	13.253			18		Also as per IS : 12300 for refrigerant valves
1c	3/8-18 NGT	16.672			14	Type 1, Size 1 of IS 3224	Also as per CGA V-1
1d	1/2-14 NGT	20.716				Type 1, Size 2 of IS 3224	
1e	3/4-14 NGT	26.029				Standard size for Chlorine as per IS 3224	
i)	3/4-14 NGT (CI)-1	26.029				4 turns oversize as per IS 3224 for Chlorine & other gases	
ii)	3/4-14 NGT (CI)-2	26.484				7 turns oversize as per IS 3224 : 2002 other than Chlorine	
iii)	3/4-14 NGT	26.824				8-1/2 turns oversize as per IS 3224 for Chlorine	
iv)	3/4-14 NGT (CI)-3	26.995				14 turns oversize as per IS 3224 for Chlorine	
v)	3/4-14 NGT (CI)-4	27.617				28 turns oversize as per CGA V-1 for Chlorine	
vi)	3/4-14 NGT (CI)-5	29.204					
1f	1-11 1/2 NGT	32.593	1:16	60°	11.5	Type 1, Size 3 of IS 3224	Also as per CGA V-1
i)	1-11 1/2 NGT (CI)-1	32.593				Standard size as per CGA V-1 for Chlorine	Also as per Chlorine Institute P-17
ii)	1-11 1/2 NGT (CI)-2	33.144				4 turns oversize as per CGA V-1 for Chlorine	
iii)	1-11 1/2 NGT (CI)-3	33.766				8-1/2 turns oversize as per CGA V-1 for Chlorine	
iv)	1-11 1/2 NGT (CI)-4	34.523				14 turns oversize as per CGA V-1 for Chlorine	
v)	1-11 1/2 NGT (CI)-5	36.454				28 turns oversize as per CGA V-1 for Chlorine	
2a	W 19.8 (17E)	17.4	3:25	55°	14	Type 2 Size 1 of IS 3224, fourth revision	Equivalent to 19.8 mm of DIN 477-1 : 1990, E 17 con of EN 144-1 & 17E of EN ISO 11363-1
2b	W 28.8 (25E)	25.8				Type 2 Size 2 of IS 3224	Equivalent to 28.8 mm of DIN 477-1 : 1990, 25T of BS: 341-1991, 25E of EN ISO 11363-1 (supersedes EN 629-1 : 1996)
2c	W 31.3 (28E)	28.3				DIN 477-1	



## Cylinder Valve Inlet Connections

### Taper Threads

Sl. No.	Designation	Small End Major Diameter (mm)	Taper on Diameter	Thread Angle	Thread Per Inch (TPI)	Specification	Remarks
3a	18.16* (18T)	18.16	1:8	55°	14	Type 4, Size 1 of IS 3224	Equivalent to 18T of BS 341-1 : 1991 & 0.715-18AU of AS 2473.2
3b	25.4 (1"BS)	25.4				Type 4, Size 2 of IS 3224	Equivalent to 1.0-25AU of AS 2473.2
i)	26.194 (1 1/32")	26.194				3.5 turns oversize as per IS 3224	Also as per BS 341-1962
ii)	26.987 (1 1/16")	26.987				7 turns oversize as per IS 3224	
iii)	27.781 (1 3/32")	27.781				10.5 turns oversize as per IS 3224	
iv)	28.574 (1 1/8")	28.574				14 turns oversize as per IS 3224	
3c	31.75* (32T)	31.75			11	Type 4, Size 3 of IS 3224	Also as per BS 341-1 : 1991
Sl. No.	Designation	Large End Major Diameter (mm)	Taper on Diameter	Thread Angle	Thread Per Inch (TPI)	Specification	Remarks
4a	V1	21.2	3:26	55°	14	JIS 8246	
4b	V2	29.5					
4c	V3	29.5					
4d	1.455" (W39)	40.3 (Approx.)			12	JIS 8244	

\* Oversize of 18.16 & 31.75 are also available (Refer IS 3224)

### Parallel Threads

Sl. No.	Designation	Thread Angle	Major Diameter (mm)	Specification	Remarks
1	3/4-16 UNF-2A	60°	19.012 / 18.773	JIS B 8246	Also as per IS 3224, fourth revision
2	1 1/8-12 UNF-2A		28.529 / 28.240		
3	3/4-14 NPSM		26.264 / 26.010	JIS B 8246 & IS 3224, fourth revision	Equivalent to 3/4-14 NGS-2A as per AS 2473.2
4	M18X1.5-6g		17.968 / 17.732	EN ISO 15245	Also as per EN 144-1, BS 341-1 : 1991 & IS 3224, fourth revision
5	M25X2.0-6g		24.962 / 24.682		
6	M30X2.0-6g		29.982 / 29.662		Also as per BS 341-1 : 1991 & IS 3224, fourth revision



# Beyond Compliance ...



## **CED Coating**

Aluminium handwheel is CED coated to prevent atmospheric corrosion and surface degradation, by using current to deposit paint on the surface of the handwheel connected to the cathode of the electrical circuit. In addition, CED coating improves aesthetics and weather resistant properties.

## **Color Coded Safety**

CG-1 / CG-4 / CG-5 PRD is equipped with colour coded safety for easy identification of its set pressure.

## **Hot Forgings**

Forging dies and Brass hot forgings are manufactured in-house to close tolerances. Induction heating of the slugs ensure better ductility, finer grains and superior resistance to Dezincification.

## **Stress Relieving**

Brass valve body forgings are stress relieved to remove residual stresses to improve impact performance and resist stress corrosion cracking in the field.

## **Machining**

Valve body and components are precision machined in-house in latest technology CNC machines in single set up for unparalleled accuracy.

## **Electropolishing**

SS valve body forging is electropolished to remove free iron, contamination and brighten the surface. The preferential removal of free iron enhances chrome / nickel content and makes the surface resistant to atmospheric corrosion and degradation.

## **Gland Nut O-Ring**

O-ring seal design valves are equipped with gland nut O-ring to prevent leakage through the gland nut threads in case the metallic seal is compromised by any impact on the gland nut.

## **Failure Torque**

Key operated valves resist over-torque through use of Stainless steel / Monel material of construction with specified hardness. In two-piece spindle design, the upper spindle is designed to fail first to allow safe cylinder recovery procedure and maintenance in the event of a failure, even when the cylinder is full.

## **Lower Spindle**

SS-303 material is provided in valves for CO<sub>2</sub> and CO<sub>2</sub> gas mixtures to prevent cracks experienced in brass soft seal retention skirts due to stress corrosion cracking.



# ... Valuing your Safety

**tekno valves**  
*driven by excellence*

## **Fail Safe Design**

Residual pressure valves meet fail safe design criteria given in EIGA document-21/08/E.

## **Loosening of Gland Nut**

For valve designs with rotating lower spindle, inadvertent unscrewing of the valve operating mechanism due to loosening of the gland nut is prevented by having a finer pitch thread on the gland nut than is used on the lower spindle.

## **Compressive Stress**

PRD's have retainer plug in compressive (instead of tensile) stress to prevent cracking due to stress corrosion cracking or over-stressing due to over-torquing.

## **Wrench Flat**

Generous 30 mm wrench flat is provided on most designs to facilitate easy valve installation and removal from the cylinder.

## **Plating on Brass Material**

Chrome plating is only carried out on non-gas wetted parts of the valve body & components to avoid any abrasion to the sealing surfaces due to flaking of the plating. Hard punch marking is always carried out before the plating operation.

## **Surface Treatment**

Brass valve body is shot blasted and not acid pickled for surface treatment to avoid problems of stress corrosion cracking and, unsightly marking if exposed to rainwater.

## **Cleaning**

Valve body and parts are cleaned to a much higher level of cleanliness than required by industry standards.

## **Pressure Relief Device**

Corrosion resistant Nickel rupture disc is used wherever compatible with gas / gas mixtures. Internal plug capsule design uses Copper sealing washer to reduce torsional stress on the rupture disc and provides secure sealing thereby protecting the PRD from loosening, damage or premature failure.

## **Packaging**

Instapak® foam trays used for packaging are eco-friendly reducing environmental footprint by cutting greenhouse gas emissions. The foam compacts to 10% of its original volume, is biostable and will not degrade to pollute air or ground water.

## Certifications

### International Homologation



### Quality Management



### National Homologation



## Warranty

Seller's manufactured products carry **One year's Limited Warranty** from the invoice date against defects in material or workmanship subject to the terms & conditions mentioned below,

1. The product had not been used in a manner contrary to Seller's product use/preservation instructions &/or recommendations & not been modified in any way. The onus to prove these compliances is on the buyer.
2. Seller, at its discretion, may repair or replace without any charges the defective product covered under this warranty. Warranty excludes any other direct/indirect, incidental/consequential damages/loss/expenses of any nature, & under no circumstances seller shall be liable for the same.
3. Under no circumstances, Seller's monetary liability shall exceed the purchase price of the product.
4. The warranty extends only to the first purchaser of the seller's product either directly or through authorised distributor & does not extend to a subsequent buyer.
5. This is seller's sole warranty. Seller makes no other warranty of any kind, expressed or implied, & all implied warranties of merchantability & fitness for a particular purpose which exceed seller's aforesaid obligation are hereby disclaimed by seller & excluded from this warranty.
6. In the event of warranty claim by buyer is found untenable, then buyer shall reimburse direct expenses incurred by seller in verifying the warranty claim.

Buyer's acceptance of delivery of the product includes acceptance of the terms of the limited warranty mentioned above.

#### Seller's Liability:

Seller will not be liable for any loss, damage, cost of repairs, incidental or consequential damages of any kind, whether based upon warranty (except for the obligation accepted by Seller under "Limited Warranty" above), contract or negligence, arising in connection with the design, manufacture, sale, use or repair of the products or of the engineering designs supplied to Buyer.

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Tekno Valves reserves the right to modify details at any time without any prior notice.



Standard	Title
ISO 407	Small medical gas cylinders - Pin-index yoke-type valve connections
ISO 5145	Cylinder valve outlets for gases & gas mixtures - Selection & dimensioning
ISO 9001	Quality Managements Systems - Requirements
EN ISO 10297	Gas cylinders - Cylinder valves - Specification & type testing
IS ISO 11114-1	Transportable gas cylinders - Compatibility of cylinder & valve materials with gas contents - Part 1: Metallic materials
IS ISO 11114-2	Transportable gas cylinders - Compatibility of cylinder & valve materials with gas contents - Part 2: Non-metallic materials
EN ISO 11363-1	17E & 25E taper threads for connection of valves to gas cylinders - Part 1: Specification
ISO 12209	Gas cylinders - Outlet connections for gas cylinder valves for compressed breathable air
EN ISO 14246	Gas cylinders - Cylinder valves - Manufacturing tests & examination
EN ISO 15001	Anesthetic & respiratory equipment - Compatibility with oxygen
ISO 15245-1	Gas cylinders - Parallel threads for connection of valves to gas cylinders - Part 1: Specification
EN ISO 15996	Gas cylinders - Residual pressure valves - Specification & type testing of cylinder valves incorporating residual pressure devices
ISO 17025	General requirements for the competence of testing & calibration laboratories
IS 3224	Valve fittings for compressed gas cylinders excluding Liquefied Petroleum Gas (LPG) cylinder
IS 3745	Specification for yoke type valve connections for small medical gas cylinders
IS 5903	Recommendation for safety devices for gas cylinders
IS 7302	Valve fittings for Self Contained Breathing Apparatus (SCBA) & Self-Contained Underwater Breathing Apparatus (SCUBA) - Specification
IS 13497	Fusible plug for dissolved acetylene gas cylinder - Specification
CGA G-4.1	Cleaning equipment for oxygen service
CGA S-1.1	Pressure Relief Device standards - Part 1 - Cylinders for compressed gases
CGA V-1	Compressed Gas Association standard for compressed gas cylinder valve outlet & inlet connection
CGA V-9	Compressed Gas Association standard for compressed gas cylinder valve
EN 144-1	Respiratory protective devices - Gas cylinder valves - Thread connections for insert connector
EN 144-2	Respiratory protective devices - Gas cylinder valves - Outlet connections
ASTM F2052	Standard test method for measurement of magnetically induced displacement force on medical devices in the magnetic resonance environment
ASTM F2503	Standard practice for marking medical devices & other items for safety in the magnetic resonance environment
BS 341-1:1991	Transportable gas container valves - Specification for industrial valves for working pressure up to & including 300 bar
BS 341-3:2002	Transportable gas container valves - Valve outlet connection
ADR (Volume I & II)	European agreement concerning the international carriage of dangerous goods by road
AFNOR NF E 29-650	Gas cylinders - Valve outlet connections
AS 2473-2	Valves for compressed gas cylinders - Part 2: Outlet connections (threaded) & stem (inlet) threads
CI Pamphlet 17	Pamphlet 17 - Packaging plant safety & operational guidelines
DIN 477-1	Gas cylinder valves for cylinder test pressures up to 300 bar - Part 1: Valve inlet & outlet connections
JIS B 8246	Valves for high pressure gas cylinders
2010/35/EU	Transportable Pressure Equipment Directive (TPED)
UNI 11144	Transportable gas cylinders - Cylinder valves for working pressure $\leq$ 250 Bar - Outlet, Inlet valve connections & fittings: Shapes & dimensions



6 Continents  
65+ Countries




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***Your safety is valued***

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[www.teknovalves.com](http://www.teknovalves.com)

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