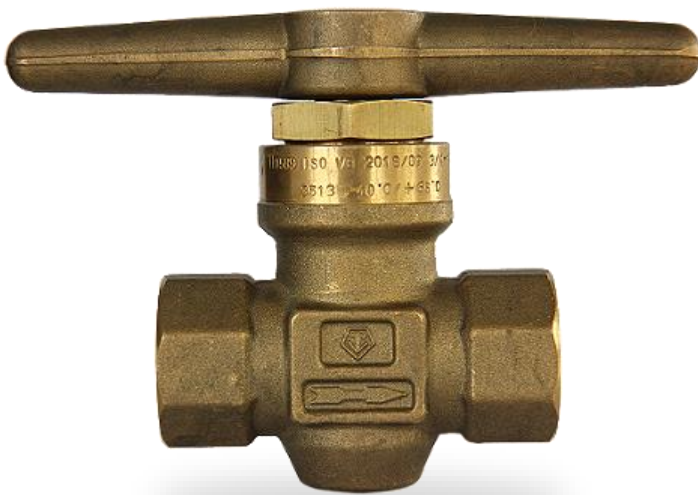
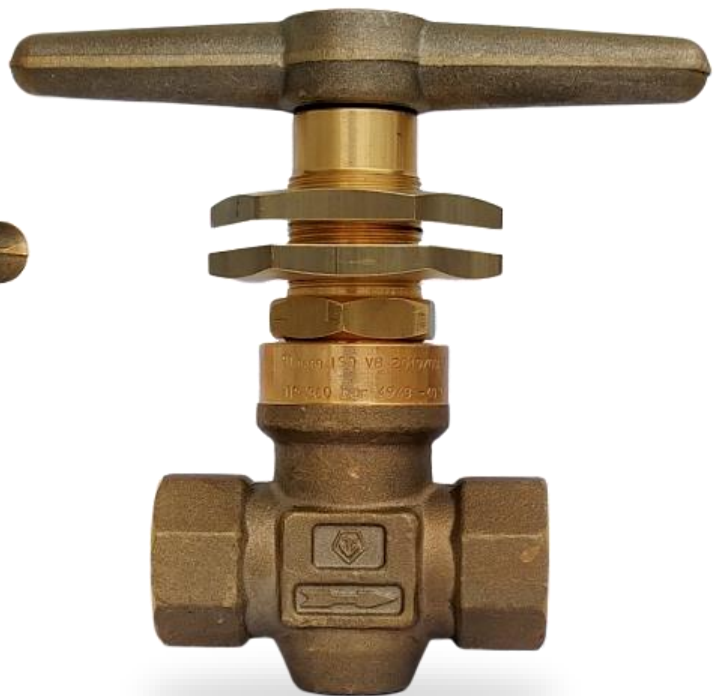


Soft Seat Master Shut-off Valves for Manifold & Bundles

Detailed Series Catalogue – BHN-12/N



Standard Valves



Panel Mounting Valves



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Series BHN-12/N

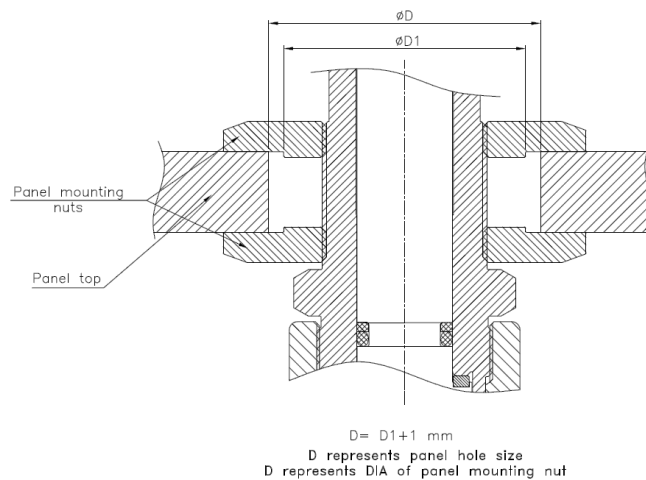
Identifying features

BHN-12/N is high flow soft seat master shut-off (main) valve designed for high pressure compressed gas manifold and piping systems. It is suitable for use as a main valve for bundles, tube trailers and cylinder filling panels (filling, venting, vacuum).

It is available in standard as well as panel mounted version.

The O-ring gland seal valve operated by brass T-handle offers smooth operation under pressure. The upper stem interfaces with lower stem assembly through a square drive. The threads are located on the lower stem while the upper stem is free-floating. The design uses O-ring to create a seal around the upper stem. PEEK thrust washer is capsuled with the upper spindle & acts as an anti-friction ring when the upper spindle rotates to open & close the valve under high pressure. Leakage past the gland nut metallic sealing is prevented by gland nut O-ring. The lower spindle is manufactured from SS-303 to eliminate the problem of stress corrosion of the spindle skirting associated with brass material in industrial gas mixtures containing Carbon dioxide. It has PA 66/PEEK/PCTFE seat insert to ensure low torque closure.

The Panel mounted valves have modified packing nut which acts as a frame to mount the panel mounting nuts to fix the valve with the panel. The design of panel mounting nuts (see figure below) depends upon the diameter of the hole in the panel to provide proper rigidity after fitment.



Recommended opening procedure

It is strongly recommended to fully open the valve gradually in anti-clockwise direction while ensuring the lower spindle does not back thrust against the upper stem collar.

As the valve in the fully open position can be mistaken as closed by inexperienced or untrained operators, operator should always check the position of the valve by attempting to close the valve, never by trying to open the valve.

Recommended closing procedure

Close the cylinder valve by rotating the T-handle in the clockwise direction.

Procedure to Install Panel Mounting Valve

1. Unscrew the handle retaining nut using 17 mm (21/32") HEX box spanner in counterclockwise direction.
2. Remove the T-handle and plain washer from the upper stem square.
3. Unscrew the upper panel mounting nut from the packing nut thread and insert the valve into the panel hole.
4. Tighten the filling pipes in the inlet and outlet connection.
5. Rotate the lower panel mounting nut in counterclockwise direction till it touches the lower face of the panel top.
6. Screw in the upper panel mounting nut from top of the panel and tighten both the nuts in clockwise direction.
7. Place the T-handle on the upper stem square. Place plain washer and tighten handle retaining nut to 15 Nm (11 ft.lb.) using a 17 mm (21/32") HEX box spanner in clockwise direction.

CAUTION

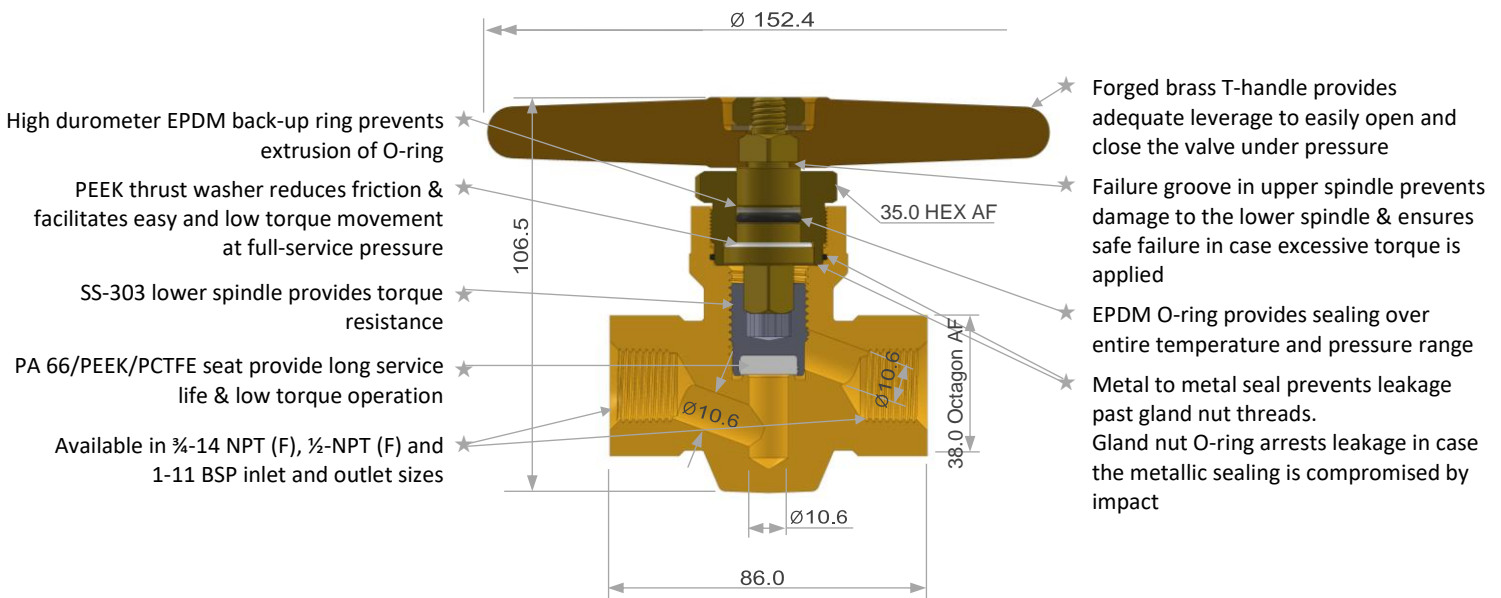
1. Do not use the valves in Oxygen & Acetylene service.
2. NEVER use wrenches or other persuaders to operate the valve.
3. Do not degrease the valve in service without consulting the manufacturer as it may dry-off the lubrication provided in the valve.
4. Do not partially open the valve, e.g. one turn only. This will create thread mismatch between the used and unused threads of the valve body thereby restricting full thread movement and causing hindrance during disassembly for maintenance of the valve.



Features & Benefits for Best-in-Class Performance

Series BHN-12/N (Standard Valve)

Not approved for Oxygen service
(Refer list of approved gases)



Dimensions are in mm

Dimensions shown are for 3/4-14 NPT (F) inlet and outlet

MAX Pressure Rating

	Valve with ISO V approval		Valve with ISO V & CGA V-9 approval	
	Metric	English	Metric	English
Working*/Service pressure	375 bar	5437 psig	312 bar	4524 psig
Test pressure (used for type & production testing)	450 bar	6525 psig	375 bar	5437 psig
Proof pressure test	750 bar	10875 psig	750 bar	10875 psig
Hydraulic burst pressure test	845 bar	12252 psig	845 bar	12252 psig

* As per ISO 10297, the term working pressure is only applicable for compressed gases

Design Specifications

	Metric	English
Minimum life	2000 cycles	
Operating temperature range	-20 °C to +85 °C	-4 °F to +185 °F
Storage temperature range	-40 °C to +85 °C	-40 °F to +185 °F
Minimum closing torque	10 Nm	7.4 ft.lb
Packing nut installation torque	105 Nm	77 ft.lb
Handle retaining nut installation torque	15 Nm	11 ft.lb.
Flow coefficient (C _v)	1.57	
Lubricant	Klübertemp® GR M30	

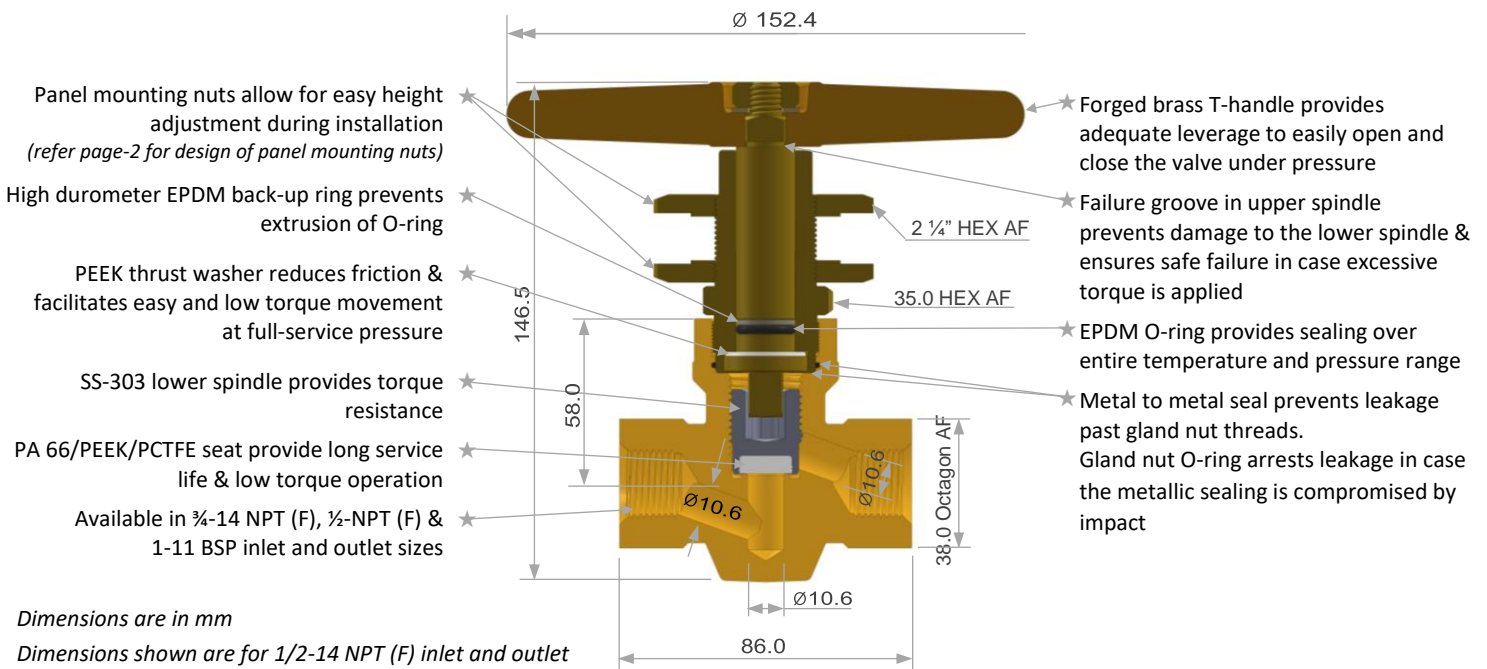
Testing & Certification

- Valves meet EN ISO 10297:2017 & CGA V-9:2019
- Valves are certified by BAM to European Transportable Pressure Equipment Directive (TPED) & available with T mark
- Production testing as per EN ISO 14246



Series BHN-12/N (Panel Mounting Valve)

Not approved for Oxygen service
(Refer list of approved gases)



MAX Pressure Rating				
	Valve with ISO V approval		Valve with ISO V & CGA V-9 approval	
	Metric	English	Metric	English
Working*/Service pressure	375 bar	5437 psig	312 bar	4524 psig
Test pressure (used for type & production testing)	450 bar	6525 psig	375 bar	5437 psig
Proof pressure test	750 bar	10875 psig	750 bar	10875 psig
Hydraulic burst pressure test	845 bar	12252 psig	845 bar	12252 psig

* As per ISO 10297, the term working pressure is only applicable for compressed gases

Design Specifications		
	Metric	English
Minimum life	2000 cycles	
Operating temperature range	-20 °C to +85 °C	-4 °F to +185 °F
Storage temperature range	-40 °C to +85 °C	-40 °F to +185 °F
Minimum closing torque	10 Nm	7.4 ft.lb
Packing nut installation torque	105 Nm	77 ft.lb
Handle retaining nut installation torque	15 Nm	11 ft.lb.
Flow coefficient (C _v)	1.57	
Lubricant	Klübertemp® GR M30	
Panel hole size (to be specified by the customer)	ø31 - ø45 mm	ø1.22 - ø1.77 in

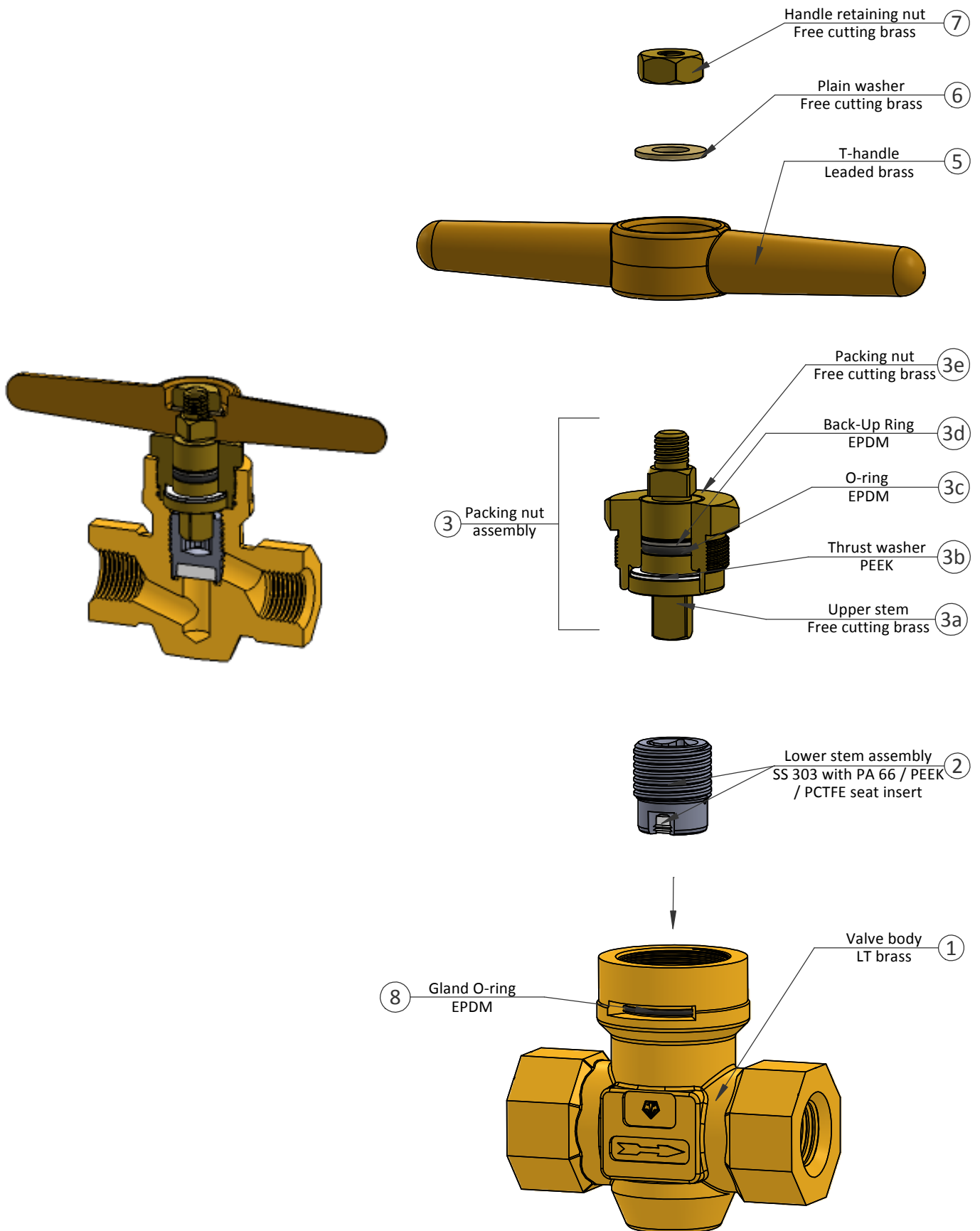
Testing & Certification

- Valves meet EN ISO 10297:2017 & CGA V-9:2019
- Valves are certified by BAM to European Transportable Pressure Equipment Directive (TPED) & available with T mark
- Production testing as per EN ISO 14246



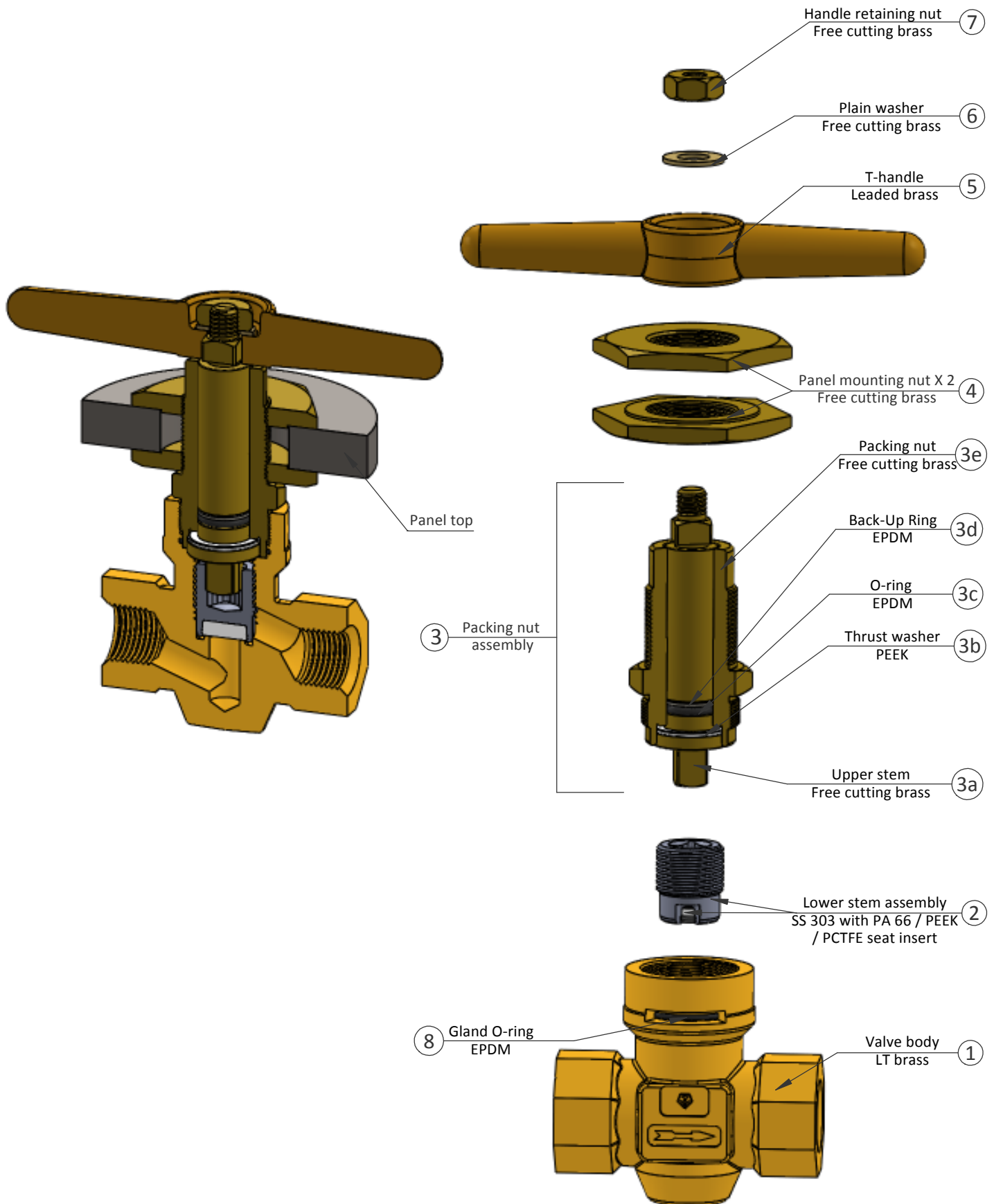
Material of Construction & Assembly Arrangement

Series BHN-12/N (Standard Valve)





Series BHN-12/N (Panel Mounting Valve)





Disassembly of Panel Mounting Valve from Panel Top

1. Unscrew the handle retaining nut (7) using 17 mm (21/32") HEX box spanner in counter-clockwise direction.
2. Remove the T-handle (5) and plain washer (6) from the upper stem (3a) square.
3. Unscrew the filling pipes from the inlet and outlet connection.
4. Unscrew the upper panel mounting nut (4) from the packing nut (3e) thread in counterclockwise direction and remove the valve from the panel hole.

Disassembly of Valve

1. Unscrew the lower panel mounting nut (4), if applicable, from the packing nut (3e) thread in counter-clockwise direction.
2. Using a 35 mm (1 3/8") socket wrench or HEX box wrench, unscrew the packing nut assembly (3) in counter-clockwise direction.
3. Use the upper stem (3a) to remove the lower stem assembly (2) from the valve chamber, by rotating it counter-clockwise.

Inspection of Valve Body and Components

1. Valve body (1)
 - a. Inspect the valve body chamber for dirt, debris or damage. Where possible, blow out the valve body chamber using clean, dry, compressed Air or Nitrogen to remove any foreign particles.
 - b. Inspect the valve body for seat damage and thread wear.
 - c. Do not attempt to repair the valve body if damaged.
2. Components
 - a. Inspect all parts visually for wear, damage. In case of damage to upper stem (3a) and / or elastomers, replace packing nut assembly (3).
 - b. Inspect lower stem threads and seat insert for significant signs of wear / damage. It is recommended to replace lower stem assembly (2), duly lubricated, after every 2000 cycles.
 - c. Inspect if gland O-ring (8) is in place inside the valve body groove.

Assembly of Valve

1. Fit gland O-ring (8) inside the groove provided in the valve body (1) just below the packing nut (3e) threads.
2. Place the lower stem assembly (2) into the valve body. Position the upper stem (3a) square to engage with the lower stem square and screw in packing nut assembly (3) into the valve body by rotating the upper stem square. This will also drive the lower stem assembly to rest with the valve body seat.
3. Tighten the packing nut assembly to 105 Nm (77 ft.lb.) in clockwise direction using a 35 mm (1 3/8") socket wrench or HEX box wrench.
4. Screw the panel mounting nuts (4) in the packing nut thread by hand in clockwise direction, if applicable. It is not required to tighten panel mounting nuts during assembly as it needs to be unscrewed while installing in panel.
5. Place T-handle (5) on the upper stem square.
6. Place plain washer (6) and tighten handle retaining nut (7) to 15 Nm (11 ft.lb.) using a 17 mm (21/32") HEX box spanner in clockwise direction.

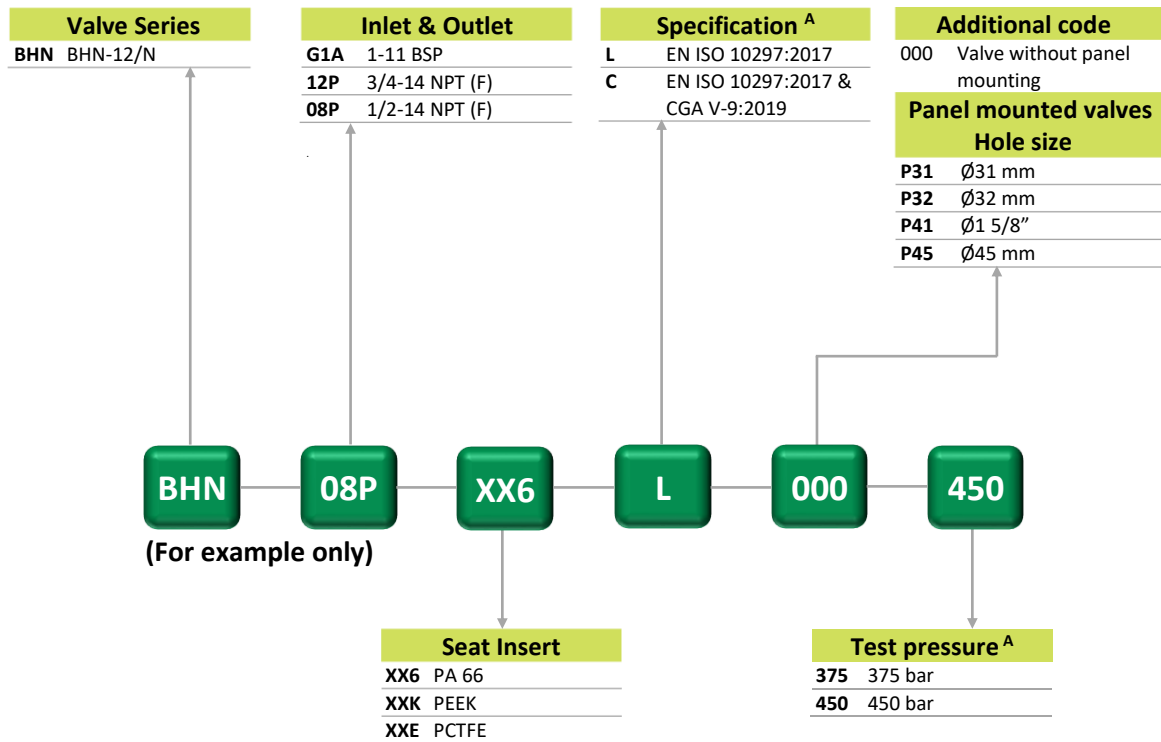
Assembly of Panel Mounting Valve in Panel Top

Refer operating principle and identifying features page (Page No. – 2) for installation procedure.

NOTE Refer "Material of construction and assembly arrangement" page to identify the part No. given in the bracket.



Series BHN-12/N



A – Valves with EN ISO 10297:2017 approval is rated up to test pressure 450 bar.
Valves with EN ISO 10297:2017 & CGA V-9:2019 approval is rated up to 375 bar.



List of Approved Gases

Series BHN-12/N

Sl. No.	UN No.	Name of gas	Chemical formula	ASHRAE No.	Condition	Seat insert MATL		
						PEEK	PA 66	PCTFE
1	1006	Argon	Ar	-	-	✓	✓	✓
2	2188	Arsine	AsH ₃	-	-	✓	✓	✓
3	1013	Carbon dioxide	CO ₂	-	A	✓	✓	✓
4	1016	Carbon monoxide	CO	-	AA	✓	✓	✓
5	1018	Chlorodifluoromethane	CHClF ₂	R 22	A	✓	✓	✓
6	1957	Deuterium	D	-	-	✓	✓	✓
7	1911	Diborane	B ₂ H ₆	-	-	✓	✓	✓
8	2192	Germane	GeH ₄	-	-	✓	✓	✓
9	1046	Helium	He	-	-	✓	✓	✓
10	1049	Hydrogen	H ₂	-	-	✓	✓	✓
11	1056	Krypton	Kr	-	-	✓	✓	✓
12	1064	Methyl mercaptan	CH ₄ S	-	A	✓	✓	✓
13	1065	Neon	Ne	-	-	✓	✓	✓
14	1066	Nitrogen	N ₂	-	-	✓	✓	✓
15	1976	Octafluoro-Cyclobutane	C ₄ F ₈	RC 318	A	✓	✓	✓
16	2422	Octafluorobut-2-ene	C ₄ F ₈	R 1318	A	✓	✓	✓
17	2424	Octafluoropropane	C ₃ F ₈	R 218	A	✓	✓	✓
18	2199	Phosphine	PH ₃	-	-	✓	X	✓
19	2203	Silane	SiH ₄	-	A	✓	n	✓
20	1079	Sulphur dioxide	SO ₂	-	A	✓	X	✓
21	1080	Sulphur hexafluoride	SF ₆	-	-	✓	✓	✓
22	2418	Sulphur Tetrafluoride	SF ₄	-	A	✓	✓	✓
23	1081	Tetrafluoroethylene	C ₂ F ₄	R 114	A	✓	✓	✓
24	1984	Trifluoromethane	CHF ₃	R 23	A	✓	✓	X
25	2036	Xenon	Xe	-	-	✓	✓	✓

* - Valve may also be used for mixture of listed gases

✓ - Material resistant to the gas

X - Not acceptable for use under all normal service conditions

A – Anhydrous (Water content <100 ppm)

AA - Anhydrous (Water content <5 ppm)

n - No reliable recommendation can be made due to a lack of definitive information

Valve shall be fitted with pressure retaining gas-tight plugs or caps having threads that match those of the valve outlets and made of material not liable to attack by the contents of the pressure receptacle



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