

BLOCKING RING TYPE BI-FLOW REFRIGERANT BALL VALVES

Ensure Spindle Tightness By Double Safety System



How to use blocking ring on the bi-flow valve

These shut-off valves have an excellent performance level of internal and external tightness, which are 100% controlled for leakages by a highly sensitive Helium Mass Spectrometer.

Sealing of the valve stem is ensured by two o-rings and a PTFE gasket (1) that ensures double safety. Additionally, the body and end-cover are welded hermetically together.

Bi-flow valve (BFV) means a valve having a hole (2) on the ball at flow axis, called pressure balancing hole (PBH).

PBH keeps the pressure equal (inside of the ball and high side of the system) in order to prevent any pressure increase between the ball and body due to volumetric expansion of some amount of liquid refrigerant remaining inside the ball.

BFV can be bi-directionally installed on the refrigerant system. Please take care of below mentioned explanations before installing : If high side and low side are known on your system, install BFV preferably on the hermetic welding side (end-cover side) of the valve to be at the high side.

Blocking ring (3) has an indicator as a double sided stamped arrow (4) sign to trace PBH position. This arrow has to be positioned where PBH is. Note that PBH on the ball has to be positioned at the high side pressure of the system.

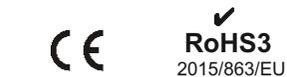
BFV has a blocking ring to stop spindle rotation in 90°. This ring can be symmetrically turned up and down in order to switch 90° rotation on the other side than previous situation.

Before brazing ;

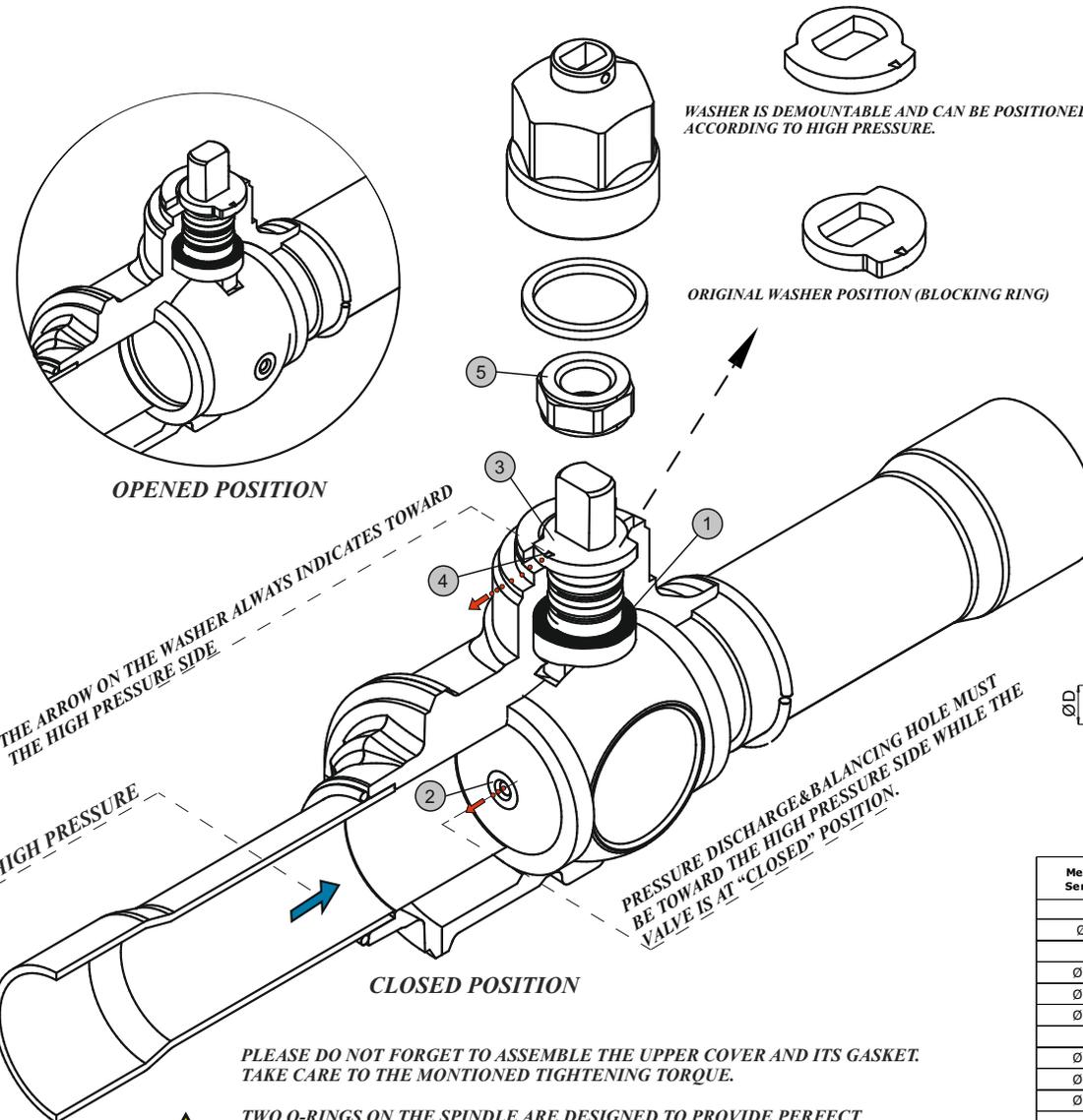
Check the arrow sign on the blocking ring is located at the same side to show PBH.

If PBH and indicator is not located at the same direction, please follow these instructions :

- unscrew the nut (5)
- remove blocking ring (3)
- turn it up and down



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TWO O-RINGS ON THE SPINDLE ARE DESIGNED TO PROVIDE PERFECT TIGHTNESS.

IF ANY UNDESIRED LEAKAGE IS OCCURED FROM THE SPINDLE SIDE AFTER BRAZING OF THE BFV ON YOUR COOLING UNIT, PLEASE SCREW THE NUT (5) SMOOTHLY UNTIL TIGHTNESS IS ENSURED AND CHECK IT.

PLEASE REFER TO THE BRAZING INSTRUCTIONS LISTED ON THE BACK PAGE.

Field of Use

All environmental friendly gases for refrigerant systems (except NH₃) and cooling agents like glycol can be used with this type of valves appropriately.

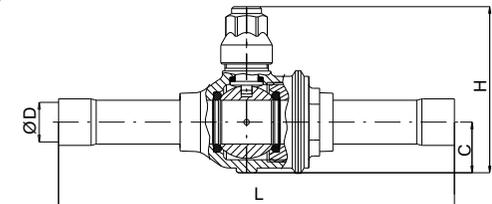
In the CO₂ applications, contact with the manufacturer for the ball valve codes which are used at the low and high pressure side of the system.

Technical Properties

Nominal pressure :
 45 bar (Standard production)
 45 bar (CO₂ systems, low side)
 130 bar (CO₂ systems, high side)

Temperature Range : -40°C , +150°C

Body Material : Forged brass
 (EN 12420, EN 12165, CW617N)



Metric Series	Inch Series	Ball I.D.	L	C	H	Kv
Connection Size						
Ø6	1/4"	10	126	13	49	1,6
Ø8 - 5/16"		10	132	13	49	4,2
Ø10	3/8"	10	132	13	49	5,3
Ø12	1/2"	10	140	13	49	6,6
Ø15	---	16	146	18,5	61	13
Ø16 - 5/8"						
Ø18	3/4"	16	146	18,5	61	17
Ø22	7/8"	20	185	21	72	26
Ø28	1 1/8"	25	205	26	78	41
Ø35 - 1 3/8"						
Ø42	1 5/8"	38	242	38,5	112	110
Ø54 - 2 1/8"						
Ø64 (Ø54 body)	2 5/8" (Ø54 body)	50	280	48,5	130	208
Ø64 (Ø76 body)	2 5/8" (Ø76 body)	62	378	60	177	237
Ø76	3 1/8"	64	378	60	177	340
Ø89	3 5/8"	83	423	76	210	480
Ø108	4 1/8"	83	423	76	210	470

*All Products are also available with charging unit upon request.

How to braze for perfect performance

Cooling down the body of valve is very important, as heating higher than 150 °C may damage the seals consistently. Avoid excessive and unnecessary energy loading in order not to heat up the body. Keep the body temperature as lower as possible during brazing. Rapidly cooling can reduce o-ring deformation risk.

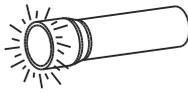
Please follow the below mentioned instructions :
During brazing, temperature should not exceed the allowable value on the indicator.
Otherwise colour of the heat sensitive area will change irreversibly.

1) Preferably use oxygen-acetylene brazing equipment and a torch capable to increase temperature to the required value as soon as possible.

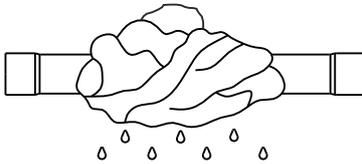
2) Turn the stem to open the valve. The arrow must be positioned as shown aligned to the groove on the body.



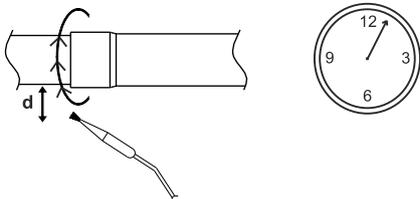
4) Clean the tube end joints from all dirt and grease.



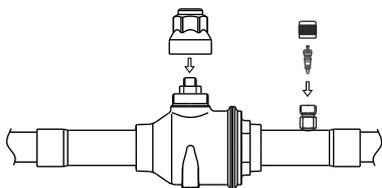
6) Wrap a very wet cloth which is immersed to cold water. It must cover the existing brazed tubes on the body and spindle group.



8) Keep the distance, 30 mm to 40 mm, between torch flame and copper tube. Use flux in order to get better brazing performance. When the flux become liquid, apply the brazing alloy. Carry out the work within the shortest possible time. (in seconds)



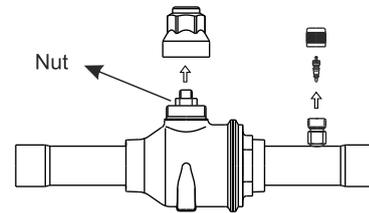
10) Do not forget to attach the brass caps, nut and inner parts of charging unit back to their places. Screw the nut smoothly. Check the leak tightness of valve and connections.



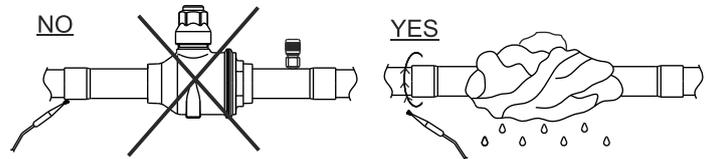
3) Remove the plastic cap ends just before starting to braze.



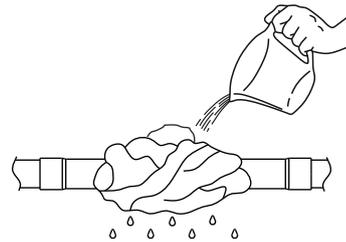
5) Remove the brass upper cap of spindle group. Also remove the cap and inner parts of charging unit, if present. Do not forget to loosen the nut on the spindle group before brazing.



7) Flame direction should be reverse to the valve body. Do not touch the flame of the torch directly to the copper tube. Heat the tube by turning the torch around. Do not focus on one point.



9) After brazing one side, pour cold water onto the cloth for cooling down the body fastly to be touchable by hand. Then apply the above listed steps again for the other side.



11) Tighten the cap for sealing, with the torque written on it. Please, check if the gasket is properly placed in the cap.

