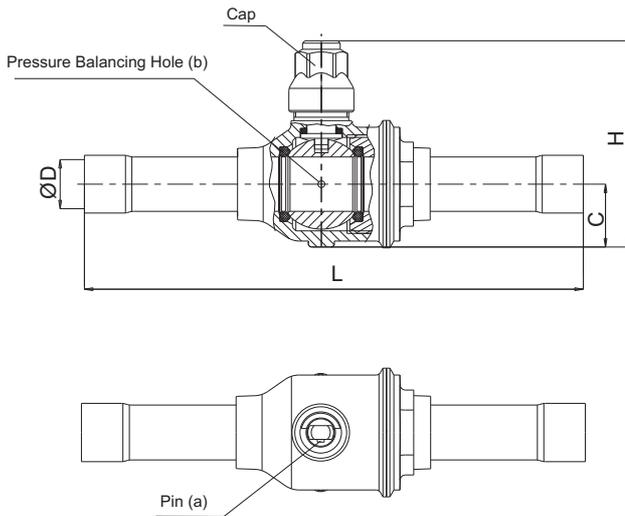


# BI-FLOW REFRIGERANT BALL VALVES (Optimized Series)



Metric Series	Inch Series	Ball I.D.	L	C	H	Kv	Weight
Connection Size		mm.	mm.	mm.	mm.	m3/h	gr.
Ø6	1/4"	10	126	13	49	1,6	159
Ø8 - 5/16"		10	132	13	49	4,2	163
* Ø10	3/8"	10	132	13	49	5,3	168
* Ø12	1/2"	10	140	13	49	6,6	171
* Ø15	---	16	146	18,5	61	13	293
Ø16 - 5/8"		16	146	18,5	61	13	295
* Ø18	3/4"	16	146	18,5	61	17	297
* Ø22	7/8"	20	185	21	72	26	710
* Ø28	1 1/8"	25	205	26	78	41	760
Ø35 - 1 3/8"		32	208	32	92	86	1300
* Ø42	1 5/8"	38	242	38,5	112	110	2300
Ø54 - 2 1/8"		50	273	48,5	130	208	3475
* Ø64 (Ø54 body)	2 5/8" (Ø4 body)	50	280	48,5	130	208	3600
* Ø64 (Ø76 body)	2 5/8" (Ø76 body)	62	378	60	177	237	6960
* Ø76	3 1/8"	64	378	60	177	340	7780
* Ø89	3 5/8"	83	423	76	210	480	12750
* Ø108	4 1/8"	83	423	76	210	470	13920

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

## Bi-Flow Ball Valve Features

These shut-off valves have excellent performance of internal and external tightness, which are 100% controlled by Helium Mass Spectrometer with highly sensitive leak values.

Sealing of the stem is provided by two o-rings plus PTFE gasket that ensures double safety. Additionally, the body and cover are welded hermetically.

A pin on the stem (a) indicates the direction of the pressure balancing hole (b). If the pin is positioned parallel to the tube axis, it means "valve closed". If the pin is positioned perpendicular to the tube axis, it means "valve open".

The valves themselves offer an exceptional degree of reliability, which is further enhanced by pressure balancing hole (b) in the ball, which dependably prevents the valve from bursting in the case of a rise in temperature. The hole can be consistently turned by a valve stem to the side exposed to pressure, in accordance with pressure drops, thereby reliably preventing the liquid refrigerant from being shut off inside the ball. The position of hole (b) can be seen when the valve cap is unscrewed and removed.

These valves are in conformity with the European Directive PED 2014/68/EU.

## Field of Use

All environmental friendly gases for refrigerant systems (except NH<sub>3</sub>) and cooling agents like glycol can be used with this type of valves appropriately. In the CO<sub>2</sub> applications, contact with the manufacturer for the ball valve codes that are used at the low and high pressure side of the system.

## Technical Properties

Nominal pressure : 45 bar (Standard production)  
45 bar (CO<sub>2</sub> systems, low side)  
130 bar (CO<sub>2</sub> systems, high side)

Temperature Range: -40°C , +150°C

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

Tube Material : Copper (EN 12735-1)



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## HOW TO BRAZE FOR PERFECT PERFORMANCE

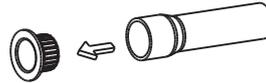
Cooling down the body of valve is very important, as heating higher than 150°C may damage the seals consistently. Avoid excessive and unnecessary energy loading in order not to heat up the body. Keep the body temperature as lower as possible during brazing. Rapidly cooling can reduce o-ring deformation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

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

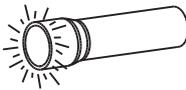
2) Turn the stem to open the valve. The pin must be positioned as shown.



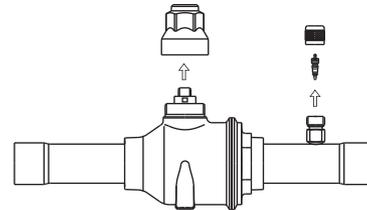
3) Remove the plastic cap ends just before starting to braze.



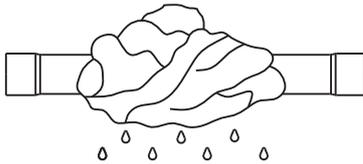
4) Clean the tube end joints from all dirt and grease.



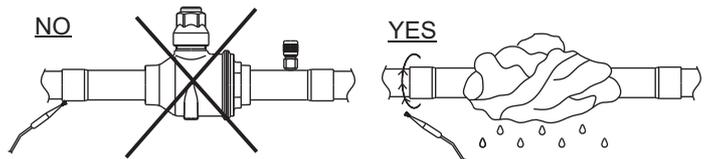
5) Remove the brass upper cap of spindle group. Also remove the cap and inner parts of charging unit, if present.



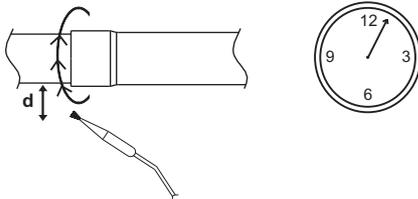
6) Wrap a very wet cloth which is immersed to cold water. It must cover the existing brazed tubes on the body and spindle group.



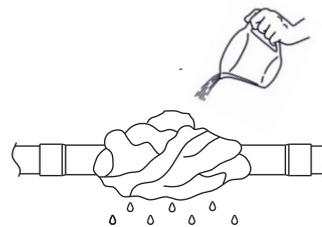
7) Flame direction should be reverse to the valve body. Do not touch the flame of the torch directly to the copper tube. Heat the tube by turning the torch around. Do not focus on one point.



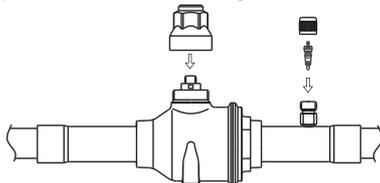
8) Keep the distance, 15mm to 50mm, between torch flame and copper tube. Use flux in order to get better brazing performance. When the flux become liquid, apply the brazing alloy. Carry out the work within the shortest possible time. (in seconds)



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.



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



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

