	<b>MTUT001VPEN</b>	
	<b>Floating Monoblock Installation</b>	
	<b>Operating Manual</b>	
		REV. A
		PAG. 1/9




# MONOBLOCK INSTRUMENTATION VALVES

Models IBF1, IBF2, IBF3, IBM, IBS, IBJ

## INSTALLATION, OPERATING & MAINTENANCE MANUAL



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## 1. INTRODUCTION

This manual is intended as a guide to assist customers in the installation, and maintenance of WIKA instruments Monoblock Instrumentation Valves series (ball/needle).

Before using any of these series valves, read the entire Installation and Operation Manual (IOM) carefully and make sure you understand everything.

If in doubt, please consult with WIKA Instruments Italia's technical dept.

### WARNINGS & SAFETY INSTRUCTIONS



WIKA instruments Monoblock Ball Valves must only be used, installed, and repaired in accordance with these instructions.

In the event of leakage or other malfunction, please contact a qualified service person, as a continued operation may cause system failure or a general hazard.

Keep hands and objects away from the valve ports at all times.

Before removing a valve from the line, always make sure the line has been depressurized and drained. Cycle the valve a few times to relieve any pressure that could be trapped in the body cavity.

Always wear Personal Protective Devices when handling a valve especially with toxic, flammable or corrosive fluids.

Do not operate valves with visible leaks: valves have to be isolated and repaired.

Valve surface temperature may become extremely hot or cold due to operating conditions. Avoid any type of direct contact with the valve that may cause harm or injury.

The valves should be used in a well-designed, adequately supported piping system in order not to be subjected to undue forces, stresses or shock loads during service.

The system should be adequately protected to ensure that external and internal pressure and temperature limits do not exceed the valve limits.

Never look into the valve bore while the valve is in a flow line. Pressure and fluids could escape from the valve causing harm or injury.

The Monoblock ball valves are fit to be used completely open or completely closed: therefore they shall not be used for flow lamination.

Monoblock ball valves are not designed to undergo full  $\Delta P$ . Monoblock ball valves shall be operated with maximum 4bar (60psi)  $\Delta P$ .

Always use WIKA original spare parts.

## 2. WARRANTY CONDITIONS

It is suggested to always check the contract for clarification about warranty terms and conditions.

Warranty will ever falls in case of:

- **Dismantling under warranty period on customer own initiative;**
- Product is used in an improper way;
- Careless handling;
- Damage from external causes;
- Alteration/modification from original design;
- Excessive wear;
- Use out of design parameters;

If a malfunction occurs during the warranty period, please contact the nearest WIKA dealer for the best solution.

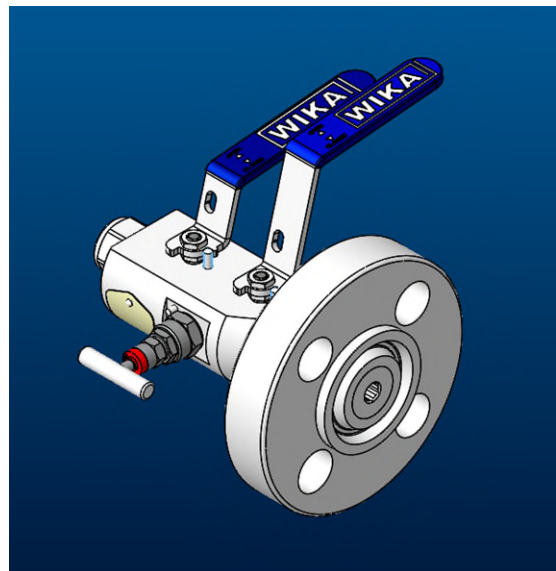
### Sizes included:

$\frac{1}{2}$ " –  $\frac{3}{4}$ " – 1" – 1"  $\frac{1}{2}$  – 2"

DN 15 – 25 – 40 – 50

### Series:

- Single block (IBF1)
- Single Block and bleed or SBB (IBF2, IBM2)
- Double block and bleed or DBB (IBF3, IBM3, IBS3, IBJ4)



### 3. VALVES IDENTIFICATIONS

We recommend checking, before commissioning, that the conditions of use are in compliance with the design specification of the valve.

Valves features can be read on the tag plate attached to the valve body.



Valves identifications included:

- Part number
- Inlet & outlet dimensions and class
- Tag number
- Heat codes
- Drain size
- Specification applied
- Lot number

### 4. HANDLING AND STORAGE

Valves shall be stored in a dry and clean place. Condensation shall be avoided through suitable warming and ventilation system.

Prior to storage, inspect the valve for shipping damage.

Keep all protective packaging, flange covers and end caps attached to the valves during storage.

During storage valves shall be kept in close position to avoid introduction of foreign bodies.

Carbon steel valves have an oil finish to retard rusting during storage: it is not a substitute for paint or other means of protective coating to be applied to the valve once installed.

Stainless steel valves have their natural finish and do not require additional protection once installed.

Valves shall be handled by use of lifting lugs or other suitable lifting devices.

It is suggested not to lift the valves by means of valve handles.

### 5. OPERATING INSTRUCTIONS

On manual operated valves, the valve operation is done by turning the valve handle 90° clockwise to open (handle is parallel to flow line), and 90° counter clockwise to close (handle is perpendicular to flow line).

The bleed line should be in closed position while flow line is in open position, and open when flow line is in closed position. To open the bleed valve, turn counter clockwise the T bar up to the limit. To close turn clockwise the T bar.

Before starting to open the bleed valve is suggested to remove the plug on the bleed line if any.

### 6. INSTALLATION

Monoblock instrumentation valves are potentially bidirectional so they do not have preferential flow direction.

Just before installation unpack the valve and remove the flange and closure fitting protection: ensure that no packing material are in the flow passages or attached to the body.

Check for damage and internal and external corrosion if any.

Inspect the functionality of the valve opening and close few times both flow line and bleed line.

Balls shall be in open position during the installation to avoid their damage.

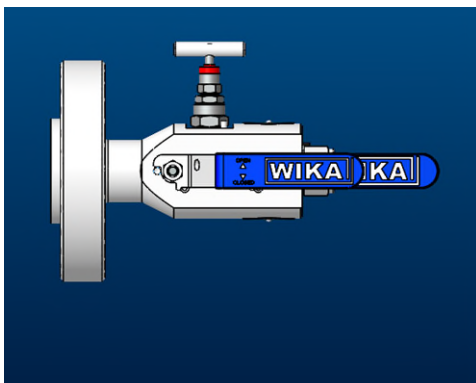
Make sure that flange faces and threads ends are free from damage, rust, dust or foreign bodies.

It is suggest to clean flanged pipeline connection before the installation of the valve (flush with nitrogen or other inert gas) and to remove foreign bodies or dirt from the internal of the pipes.

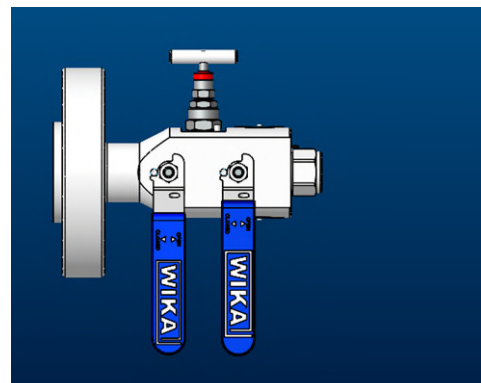
If welding operations are required ensure that temperature do not exceed 150°C. We recommend to keep the ball in open position.

Gaskets, flange bolts, bolts torque value, sealants, adapters and tube fittings are responsibility of the customer.

**VALVE OPEN**


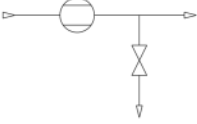

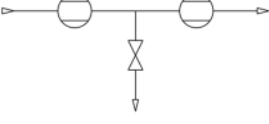


**VALVE CLOSED**



## 7. COMMISSIONING

### 7.1. Flow diagram

Single block	
Single block & bleed	
Double block	
Double block & bleed	

Handle Colors:

- Red = drain/vent
- Blue = isolate

### 7.2. Pressurization

After installation check that installation of the lines, included bleeding line, is correctly executed and that bleed valve is closed.

Check that balls are open.

Before pressurizing with process gas, the entire line shall be purged by means of inert gas (nitrogen). During the line purging the valve shall be cycled a few times to ensure the purging of the body cavity.

Purging of the lines shall be done according to a detailed procedure from the customer or the contractor in charge for the plant installation.

After purging, slowly pressurize the plant or plant section with process fluid by means of upstream process valve or other system.

During the pressurization with process fluid, cycle the valve few times to ensure the pressurization of the body cavity.

After the pressurization, set the valve in the required position.

### 7.3. Check of external tightness

Valves have been already pneumatically and hydrostatically factory tested so the valves do not need to be retested at site.

Tightness test on flange between valves and line is required.

The tightness test of the flange connections to the plant shall be carried out in accordance to the customer procedures.

Flange tightness test can be performed with foaming solution applied to the joints: if no bubble appears than test is acceptable.

In case of liquids, tightness is ensured if no visible leaks appear.

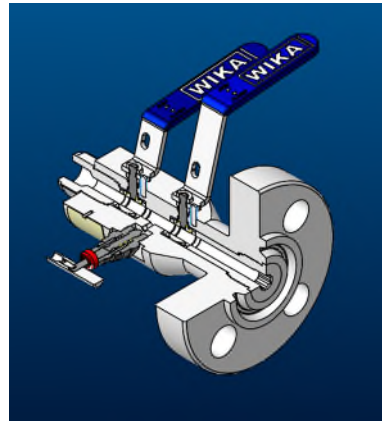
It is suggested to pressurize the plant step-by-step and to perform the flange leak test each step.

### 7.4. Control of internal tightness (only DBB models)

After line pressurization close both the ball valves.

To check the internal tightness remove the plug on bleed line, if any, and open the bleed valve.

Check that there is no constant fluid leak from the bleed line.



## 8. MAINTENANCE

To prevent leakage (internal and external) or malfunction due to the wear and seals degradation, the final user must establish a preventive maintenance and inspection program.

The program shall consider two type of operations:

- Maintenance **without** disassembly;
- Maintenance **with** disassembly;

Frequency of maintenance depends on fluid quality, environment conditions and system working conditions.

### 8.1. Maintenance without disassembly

This type of maintenance does not require the disassembly of the valve from the line and can be done as routine maintenance. This shall include at least:

- Walk around: visually check that everything goes right, valve is in their normal position, no vibrations occur, place is clean and nothing hinders the valve operation;
- External leak check: inspect the equipment to locate possible leaks
- External coating check: inspect the coating to prevent rust formation, peeling and any type of damage on coating;
- Complete stroke: open and close the valve's handles (balls and needles) to make sure they are not stuck;
- Loose check: check tightening of levers and all the threaded connections to avoid loosening of equipment;

If a leak is detected on the stem during the check, tighten the gland nut about a 1/6 -turn as a routine maintenance procedure. This will compensate for any wear or settling of the gland packing. Excessive tightening of stem nut can result in high valve operating torque.

### 8.2. Maintenance with disassembly

#### WARNING



**Disassembly of the valve during the warranty period determines the end of the warranty**

This type of maintenance require the disassembly of the valve from the process line.

- Internal check: Inspection of parts to detect loss of wall thickness which may result in decreased pressure capacity. Check for internal wear of the valve bore, flange connection, threaded connections, ball, stem etc.;
- Seals replacement: replace seals and seats of the complete valve for proper operation;

We suggest the use of WIKA Instruments original spare parts kit. The kit is composed of: valve seats, soft rings seals, graphite rings, metal seal rings

In addition to repair kits, other spare parts are available from WIKA, such as: valve balls, stems, glands, bolts, screws and nuts. Should additional parts be required, it is recommended that the complete valve is replaced.

## 9. DISASSEMBLY

During the operation of disassembly it is important to avoid any damage of the seals surfaces.

Before disassembling the valve from the line it is suggested to purge the line using inert gas (Nitrogen). During the purging of the line and then during depressurization, open the valve at 45° to purge and depressurize the body cavity.

Prior to servicing the valve, bring it to the open position making sure to release line pressure and drain all trapped media in the valve cavity.

It is suggested to place the valve on a work bench and not on the ground. During the operation be careful not to introduce foreign bodies or dirt like sand, dust or others.

### 9.1. Replacement of ball valve flow seals (Fig.1)

1. Unscrew inlet closure fitting (1) or/and unscrew terminal closure fitting (7);
2. Remove closure gasket ring (2);
3. Remove spacer (3) if any;
4. Remove first seat (4);
5. Set ball in closed position;
6. Remove ball (5);
7. Remove second seat (6)

### 9.2. Replacement of stem seals (Fig.2)

1. Unscrew stem nut (1);
2. Remove lever (2);
3. Unscrew adjustment stem nut (3)
4. Remove metal gland ring (4)
5. Remove packing ring (5)
6. Remove stem from opened side of the valve, be careful not to damage the seal surfaces of stem and closures (7);
7. Remove seal ring (6)

### 9.3. Replacement of bonnet (Fig.3)

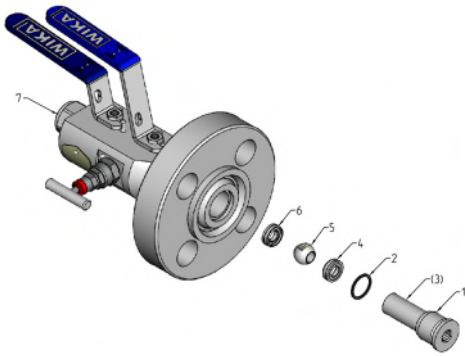
1. Unscrew T-bar internal screw (1);
2. Remove T-bar (2);
3. Remove cap (3);
4. Remove complete bonnet;

#### WARNING

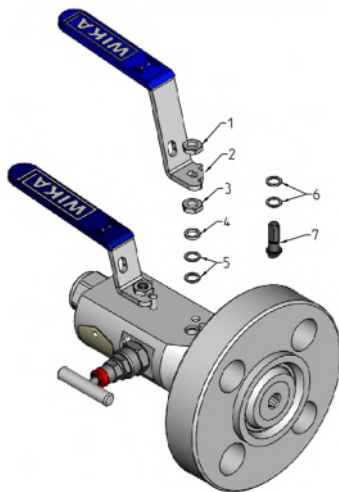


**It is highly recommended to change all the graphite and metals seals once they have been dismantled from body.**

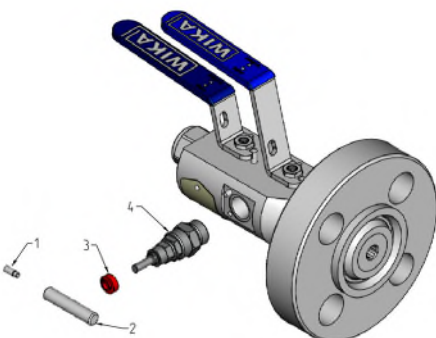
**Fig.1**



**Fig.2**



**Fig.3**



## **10. ASSEMBLY OF THE VALVE**

For the assembly it is suggested to place the valve in vertical position clamped on the work bench.

1. Insert the first seat (fig.1 - 6)
2. Lubricate stem thread and place internal packing ring (even spring and ball if antistatic design required);
3. Insert the stem through the side of the valve, be careful not to damage the sealing surface; guide it up to the stem bore;
4. Holding up the stem, insert external packing rings, the gland ring
5. Place locking clip if any;
6. Thread the stem nut onto the stem. Tighten the stem nut;
7. Place the lever and the stem nut; tight the nut;
8. Place levers in closed position;
9. Place the ball and maintaining the lever in close position to prevent the ball from falling;
10. Place second seat (fig.1 – 4) and then the spacer (if any);
11. Place closure gasket ring on closure fitting and put a small quantity of lubricant on thread to help its insertion on body;
12. Place closure on its body housing and tight;
13. Leave the valve in open position for line flushing.
14. Repeat from p.1 for the other ball

For bonnet:

1. Prepare the new bonnet with needle in open position;
2. Screw the bonnet on its body housing and tight;
3. Place the red cap pushing it on the packing gland;
4. Place T bar on stem and the screw from the side of T bar;
5. Place new seal ring on body and then screw the body bonnet into the valve body.

## 11. LUBRICANT

The valves are already lubricated during the assembly phase for the following reasons:

- ease the components assembly
- improve maneuverability
- ease the preservation in case of warehouse storage;

The type of lubricant depends on the type of fluid and pressure/temperature conditions. We suggest the using of the following:

- Natural gas, oil, hydrocarbon fluids: Molycote Longterm W2 for seals and Molycote HSC plus for threaded connections;
- Oxygen: Solvay Fomblin oil or Dupont Krytox;
- Food products: Vaseline or similar nontoxic materials;

For special applications we suggest to require information specifying in detail the type of fluid and the operating conditions.

## 12. TIGHTENING TORQUES

### 12.1. Flanges bolts Tightening Torque

Thread in	Torque N/m		
	A193 B8 - B8M CL.1	A193 B8M CL.2	A193 B7 A320 L7
1/4	9	13	14
5/16	18	26	29
3/8	31	46	52
7/16	50	74	83
1/2	76	112	127
9/16	109	162	183
5/8	151	223	252
3/4	268	395	447
7/8	431	636	720
1 /0	646	954	1079

### 12.2. Stem tightening torque

There is not a value for stem tightening torque.

Nuts have to be screwed up to the end, then the plate springs (Belleville washers) have to be released unscrewing the nut 1/2 turn.

## 13. SUGGESTED SPARE PARTS

The suggested spare parts are usually:

- Soft Rings seals (statics and dynamics);
- Fire safe rings (Graphite rings);
- Metal seal rings;
- Ball seats

When ordering the spare parts, list:

- Type of valve;
- Serial no;
- Year of manufacture;
- Type of fluid used;
- Part no. (position);
- Quantity

Other parts such as plugs, bleeders, stems, bonnets etc. are available upon request.





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