

Eliptix by A.R.I.
Hydraulic Control Valves

R-20 ME

Electrically Controlled ON/OFF Valve

3 Way

The following is a step by step narrated description of the Eliptix R-20ME 3W Electrically Controlled ON/OFF Valve installation, operation and maintenance processes.

The A.R.I. R-20 Series is a line of composite material, diaphragm-operated, hydraulic control valves. The valves are suitable for installation in agriculture, water transmission and waterworks systems for irrigation, landscape and infrastructure applications.

The R-20 series has an innovative elliptic shaped diaphragm that integrates well with a wide variety of regulating control pilots, solenoids and control accessories.

They are compatibility designed for water level control, flow control, electric & remote control as well as pressure reducing & pressure sustaining operation.

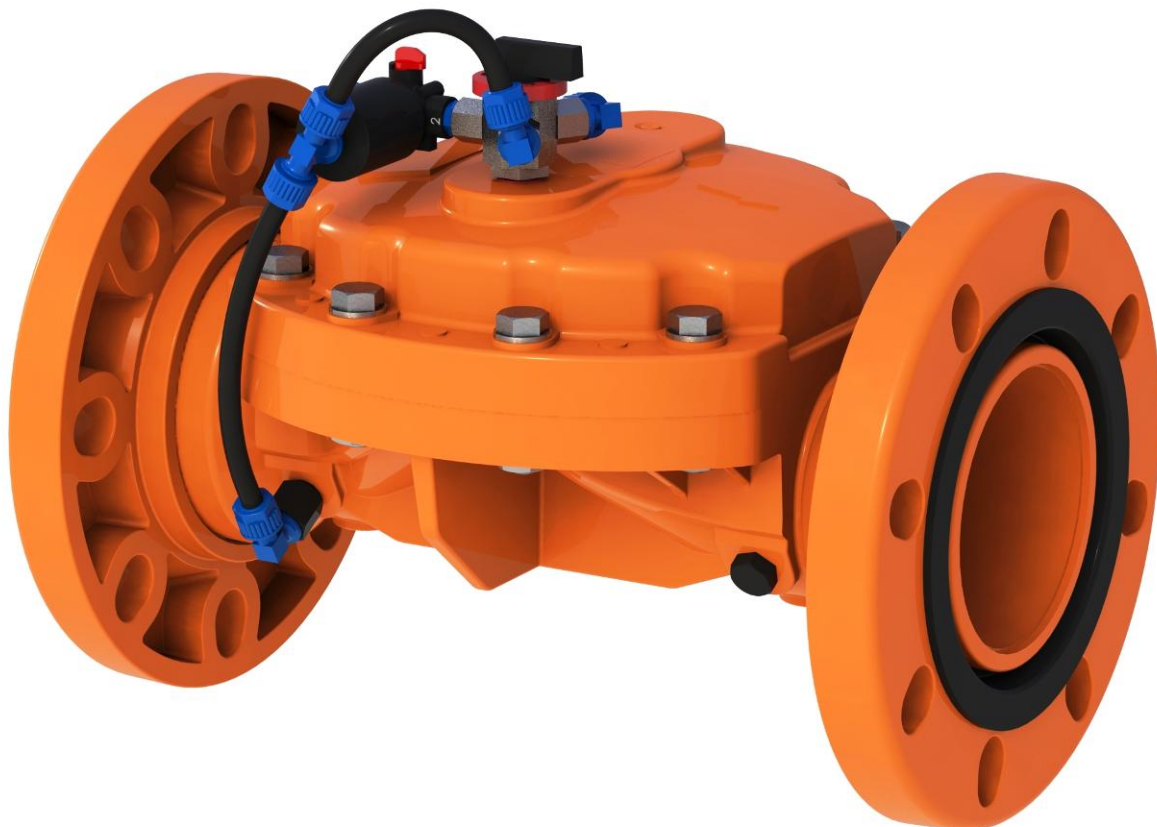


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- product has not been duly installed and thereafter maintained in strict compliance with its designated Maintenance Instructions and/or any other installation and operation manuals provided by A.R.I. for the product and/or applicable ordinances and/or codes;
- Repairs made in and to the products by personnel not authorized by A.R.I.
- Maintenance or repairs using parts or components other than those specified by A.R.I. and in their original condition.
- Operating the products in ways other than the operating procedures described in the manuals provided by A.R.I., or resulting from not following the cautionary remarks and warnings in the product manual.
- Improper storage, workplace conditions and environmental conditions which do not conform to those stated in the Product manual.
- Fires, earthquakes, floods, lightning, natural disasters, or acts of God.

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1. SAFETY INSTRUCTIONS

General

1. A.R.I. products always operate as components in a larger system. It is essential for the system designers, installers, operators and maintenance personnel to comply with all the relevant safety standards.
2. Installation, operation or maintenance of the product should be done only by qualified workers, technicians and/or contractors using only good engineering practices, complying with and observing all conventional safety instructions in order to minimize risk and/or danger and/or hazard to workers, the public or to property in the vicinity in accordance with all relevant local standards.
3. Extra safety considerations should be taken with hot and hazardous liquids or in hazardous environments' applications to avoid bodily/physical harm and damage to public or private property.
4. All individuals installing operating and/or handling the products including all workers should at all times adhere to the occupational safety and health (OSH) instructions and wear safety helmets, goggles, gloves, and any other personal safety equipment required by the local standards and regulations.
5. Use only appropriate standard tools and equipment operated by qualified operators when installing, operating and maintaining the product.
6. Prior to installation, operation, maintenance or any other type of action carried out on the product, read carefully the safety, installation and operation instructions of the product.
7. Please note:
 - Pressurized fluid and/or gas may be discharged from the product without prior warning. Make sure that all products' outlet ports are not directed toward electrical elements (pumps) or people.
8. Always open and close valves slowly and gradually.
9. Please note that the maximum working pressure indicated at the product's specifications table doesn't include pressure changes caused by water hammer and pressure surge effects. Use the product only according to its designated pressure rate specifications.
10. Use the product only for its intended use as designed by A.R.I. Any misuse of the product may lead to undesired damages and may affect your warranty coverage. Please consult with A.R.I. prior to any non-regular use of this product and make no change or modification to the product without a prior written consent to be provided by A.R.I. at A.R.I.'s sole discretion.
11. Please note that A.R.I. shall **NOT** assume any liability with respect to any damage losses and/or expenses caused to any person and/or property whatsoever unless the product has been duly installed and thereafter maintained in strict compliance with its designated maintenance Instructions and/or any other installation and operation manuals provided by A.R.I. for the product and/or applicable ordinances and/or codes.

Handling

1. Shipping and handling the product must be done in a safe and stable manner and in accordance with the relevant standards and regulations.
2. Storage should be in the original delivery crates or cases. Storage should be off the ground in a clean, dry indoor area.
3. For lifting and positioning the product, use only approved lifting equipment operated by authorized employees and contractors.
4. Prior to the installation visually verify that the product was not damaged during shipment to the installation site.

Installation

1. Install the product according to the detailed Installation Instructions provided with it by A.R.I. and according to the description given in this manual.
2. The user should install manual Isolation Valves at the valve's upstream and downstream ports.
3. In all installation sites, the user should enable good visibility and verify that the work and auxiliary equipment used are done in accordance with the relevant local authorized standards. Extra safety considerations should be taken on hazardous environment sites.
4. Check and re-tighten the bolts connecting the product to the pipeline during commissioning and before operating the product for the first time.

Commissioning and Operation

1. Read carefully the operation instructions prior to any attempt to operate the product.
2. Observe the safety stickers on the product (when exist) and never perform any operation contradicting the instructions given.
3. In order to achieve maximum performance and smooth operation of the product, it is crucial to perform the startup and first operation procedures exactly as described in this manual.
4. In cases where formal commissioning procedure is required, it should be done by an authorized A.R.I. technician prior to the first operation of the product.

Maintenance

Before any maintenance or non-regular operation, please read the following:

1. Servicing the product should be done only by qualified technicians for this type of work.
2. Make sure that you know the exact type of the system fluid. Act accordingly and comply with all the relevant standards and regulations set for handling this type of fluid.
3. Before disconnecting the product from the system and before releasing the residual pressure do **NOT**:
 - loosen or unscrew the product bolts;
 - remove any protection cover;
 - Open any service port.
4. Before any maintenance or non-regular operation, shut off the Isolation valves and release the residual pressure:
 - A. For control valves with a pressure release outlet, slowly open the pressure release plug or the ball valve and make sure that all pressure is released.
 - B. For control valves without a pressure release outlet, slowly unscrew the flange bolts until all the pressure is released from the valve.
5. Make sure the control valve is empty of all liquid prior to commencing maintenance.
6. Remove the product from the line only after ensuring that internal pressure has been released.
7. Place warning signs around the work area as required by the local standards and procedures.
8. Inspect the product's safety stickers and replace any damaged or faded sticker.
9. Manual cleaning of the product and/or its components using high water pressure or steam should be performed in accordance with its specific cleaning instructions, the local standards and regulations and without endangering the operator or the vicinity.
10. Manual cleaning of product and/or its components using acid or other chemical agents should be performed in accordance with the specific cleaning instructions, the relevant safety instructions for using that chemical as given by its supplier, the local standards and regulations and without endangering the operator or his vicinity.
11. For products used in potable water systems, if it is required to disinfect the product, do so according to the local water authority standards and regulations before putting the product into service.

Before returning to regular operation

1. Re-assemble any protection covers or protection mechanisms removed during service or maintenance operations.
2. Make sure that all the tools, ladders, lifting devices, etc. used during the maintenance procedures are taken away from the product area and stored.
3. Remove grease and fat material residues in order to avoid slipping.
4. In order to return the product to regular operation, follow the First Start-up Operation instructions as detailed in your user manual.

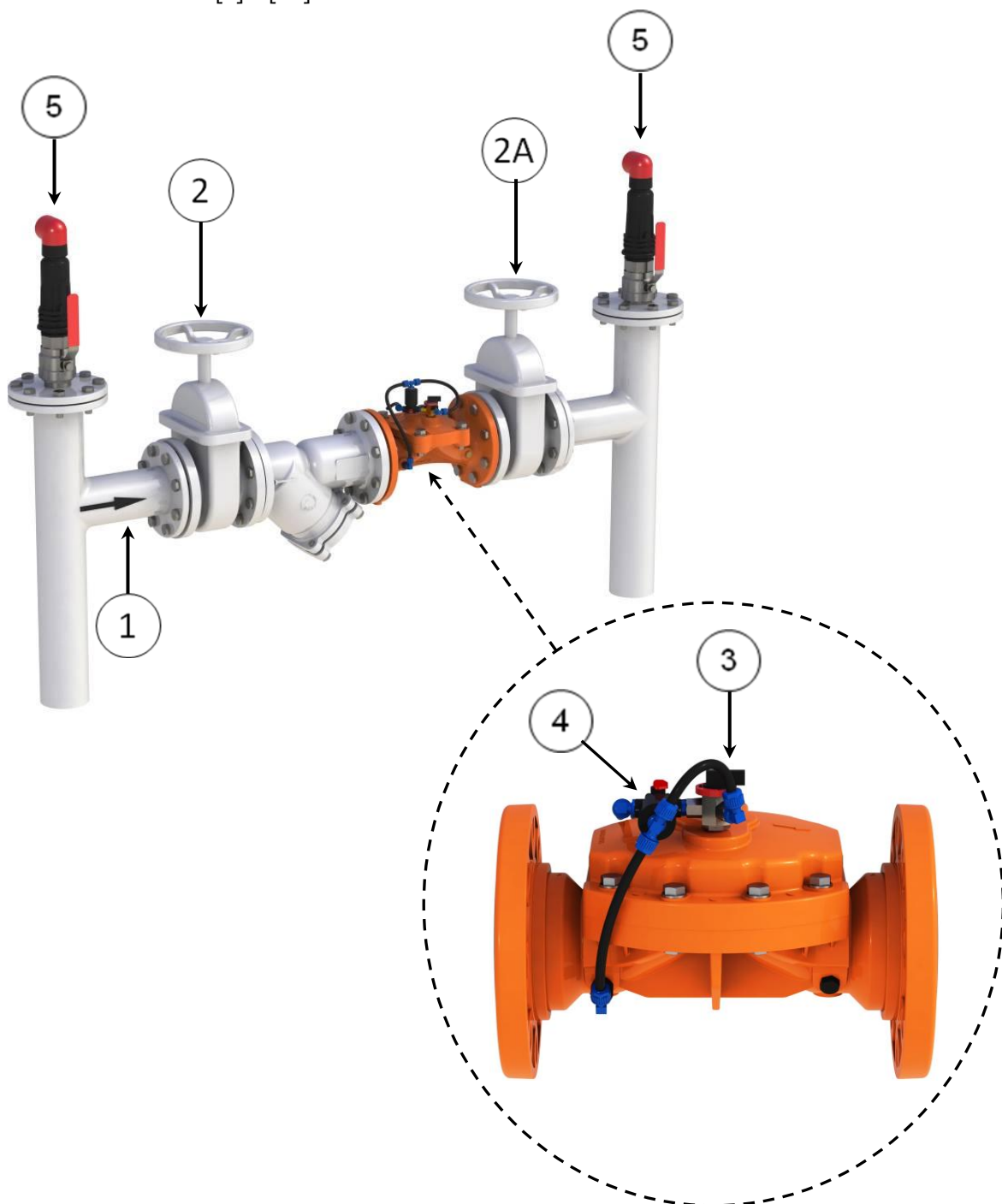
2. INSTALLATION

2.1. Pre installation requisites

1. Important: Before performing any work on the valve make sure that all workers on site are familiar with the safety instructions and the relevant local and general safety instructions and work regulations.
2. Before installing the valve, flush the pipeline to remove scale, dirt and other particles that might affect the valve performance.
3. Carefully remove the valve from the shipping package. Unload all valves carefully to a sturdy and leveled surface taking care not to drop them.
4. Valves fitted with hoist rings should only be lifted and conveyed using these hoist rings.
5. It is recommended that the valve be easily accessible and clearly marked to prevent damage.

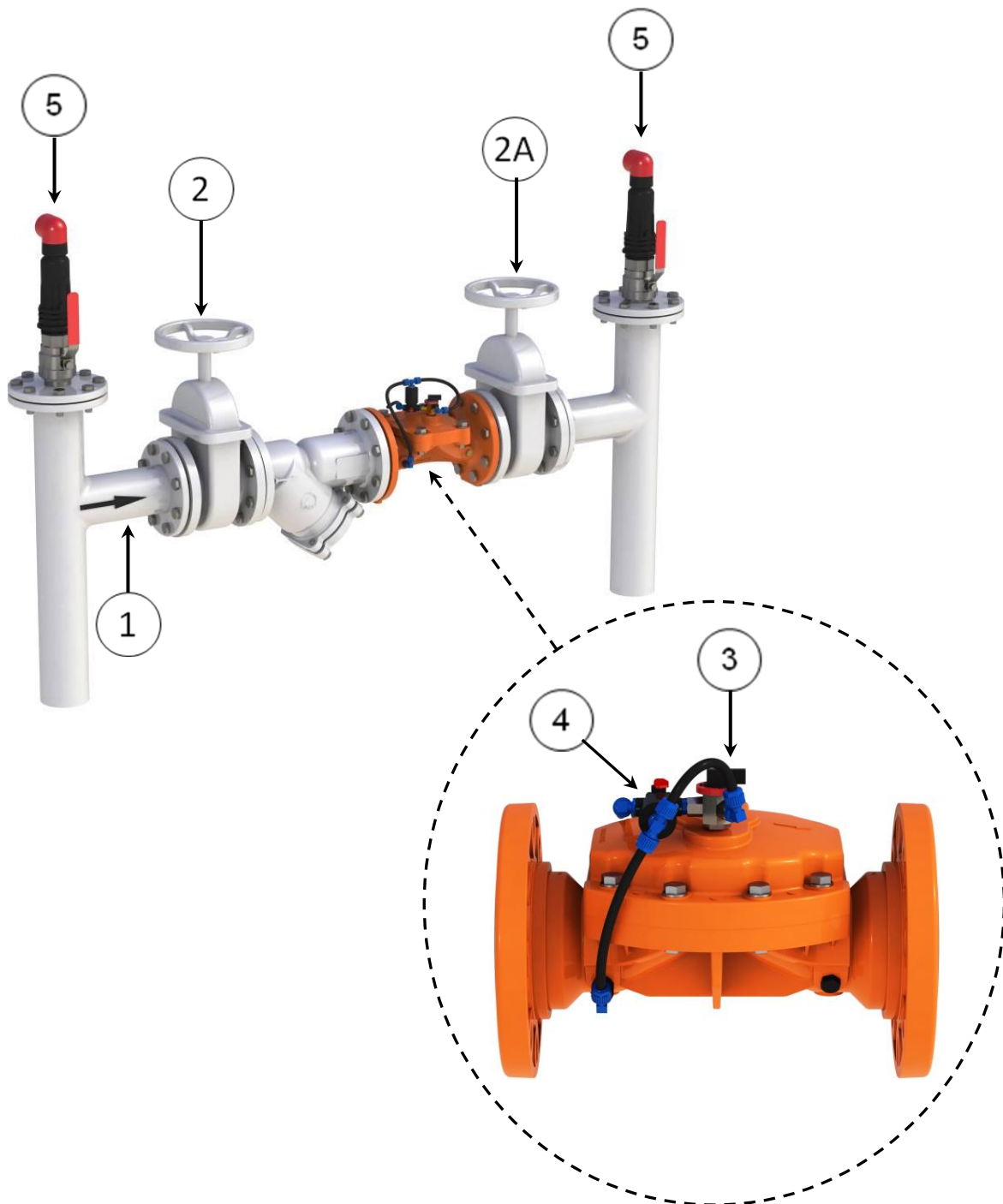
2.2. Installation procedure

1. Install the valve as indicated by the arrow on the valve bonnet, indicating flow direction [1].
2. In addition of the control valve it is recommended to install the following valves:
Isolation valves upstream and downstream of the control valve [2] & [2A].
Air valves upstream and downstream of the control valve [5].
3. Close the 3-way selector [3] to its "CLOSE" position
4. Turn on the water supply to the valve.
5. Check for leaks; tighten bolts & fittings, if necessary.
6. Close the 2 isolation valves [2] & [2A].



2.3. Initial Start-up - The Control Valve

1. Make sure that the upstream and the downstream isolation valves are closed [2] and [2A].
2. Gradually open the upstream isolation valve [2].
3. Check for leaks; tighten bolts & fittings, if necessary.
4. For Normally Open Valve - Energize the solenoid [4] (use the PLC's or the Controller's HMI screen).
5. For last position valve (Latch) – manually open the solenoid using the manual override and turn it back to its “AUTO” position.
6. Turn the 3-way selector [3] to its “AUTO” position.
7. For Normally Open Valve - De-energize the solenoid [4] (use the PLC's or the Controller's HMI screen)
8. For Normally Close / Latch Valve - Energize the solenoid [4] (use the PLC's or the Controller's HMI screen)
9. Gradually open the downstream isolation valve [2A].



2.4. Initial Set-up - The ON/OFF Application

1. The following is a general description of the ON/OFF Application:

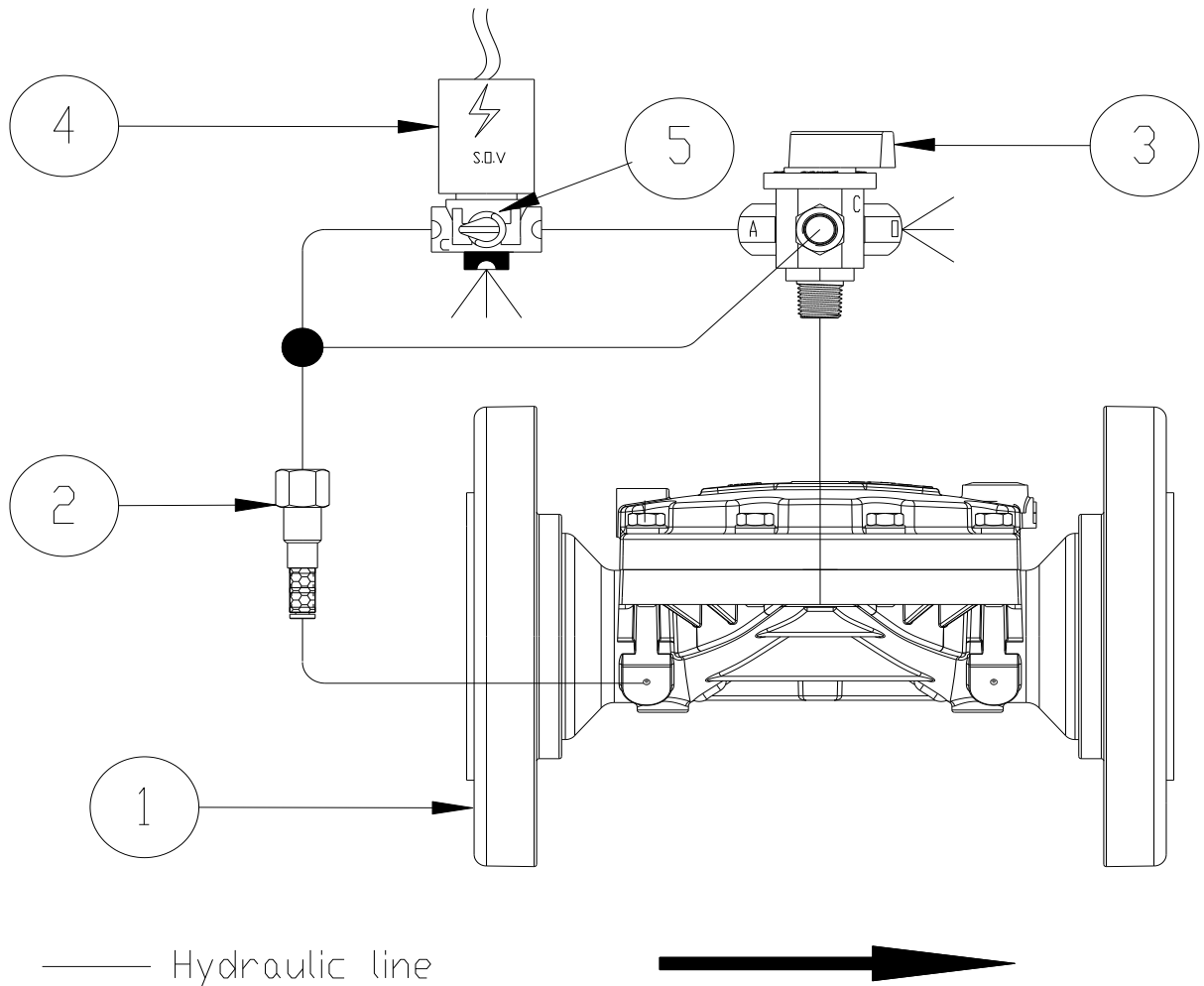
This ON/OFF Electrically Operated Valve is an automatic control valve designed to be opened and closed by an electrical command sent to its solenoid valve by an external controller.

The valve can be controlled either by a Normally Open (N.O.), Normally Close (N.C.) or last position (Latch) solenoid.

For N.O. valve when the solenoid is energized water from the valve's upstream port flows into the control chamber and the valve closes. When the solenoid is de-energized water from the control chamber is released to the atmosphere and the valve fully opens.

For N.C. valve when the solenoid is energized water from the control chamber is released to the atmosphere and the valve opens. When the solenoid is de-energized upstream water from the valve's upstream port flows into the control chamber and the valve closes.

For last position valve each time the solenoid is energized the valve changes position to either fully open or closed.



No.	Description	QTY.
1	Main Valve	1
2	Finger filter	1
3	Manual selector, ball valve, 3-Way	1
4	Solenoid valve, 3-Way	1
5	Solenoid manual override lever	1

3. OPERATION INSTRUCTIONS

1. To manually open the valve, turn the manual 3-way selector [3] to its "OPEN" position.
2. To manually close the valve, turn the manual 3-way selector [3] to its "CLOSE" position.
3. In order to operate the valve using a PLC or a Controller, turn the 3-way selector [3] to its "AUTO" position.

4. MAINTENANCE

Under regular operation A.R.I.'s valves require minimal maintenance and no lubrication, however in freezing climates the valve should be dismantled and drained for the winter months.

Make sure the solenoid valve is disconnected from its power supply before attempting to do any maintenance.

4.1. Periodic Inspection

1. Every 6 months visually inspect the valve's diaphragm for any tears.
2. Every 12 months inspect the valve's operation and clean the Finger Filter.
3. Check the downstream pressure; adjust if required.

4.2. Storing the valve

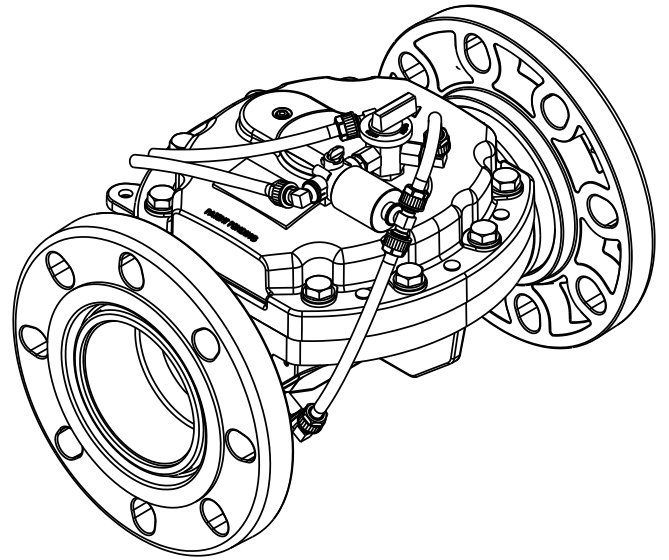
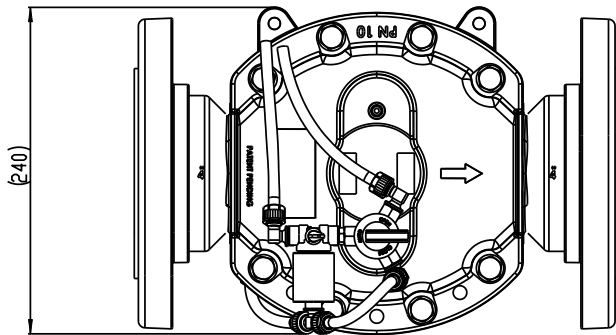
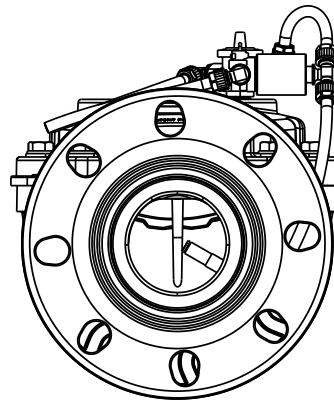
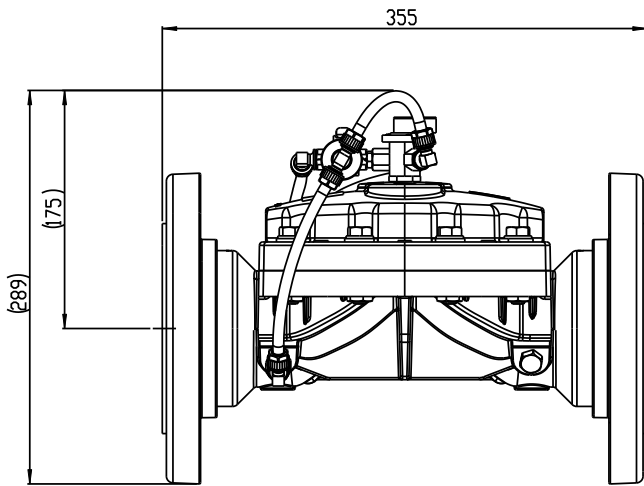
It is not recommended to store the valve or its spare parts for long periods (years); under improper storage conditions rubber parts can harden, have ozone cracking, grow mold bloom and heat aging.

It is recommended to order new rubber parts when required.

5. TROUBLESHOOTING

Problem	Cause	Check	Solution
Valve does not open	1. The inlet pressure is too low	1. Check the inlet pressure	1. Make sure water supply and/or pump is on.
	2. The 3-Way selector (3) is set to "close".	2. Check the position of the 3-way selector (3)	2. Turn the 3-Way selector (3) to "Auto".
	3. Blocked Solenoid valve	3. No water is coming out through the solenoid port.	3. Turn off the water supply to the valve. Dismantle and clean the solenoid valve ports.
Valve does not close	1. Debris on the sealing seat	1. The valve is constantly discharging small amount of water	1. Turn the 3-way selector (3) to "open" for 5 seconds, and then to "close". If the problem continues, turn off the water supply to the valve. Remove the bonnet and diaphragm, remove the foreign object, and check that the diaphragm, body and cover are not damaged.
	2. The Diaphragm is damaged	2. Constant flow through the solenoid (4) vent, when valve is set to open	2. Turn off the water supply to the valve. Remove the bonnet and replace the diaphragm.
	3. Blocked control filter (2)	3. Check the control filter	3. Turn off the water supply to the valve, remove the filter and clean or replace it.
Valve does not respond to remote command	1. The Solenoid's manual override lever (5) is turned.	1. Solenoid manual override lever (5) position	1. Turn the solenoid manual override lever to its "Auto" position.
	2. Controller malfunction	2. Touch the solenoid while command is given; movement should be felt.	2. See the controller's user manual.
	3. Solenoid malfunction	3. Manually opening and closing the valve	3. Replace the solenoid.

6. DIMENSIONAL DRAWING



Dimensions are in mm.

7. SOLENOIDS DATASHEETS

SOLENOID VALVES



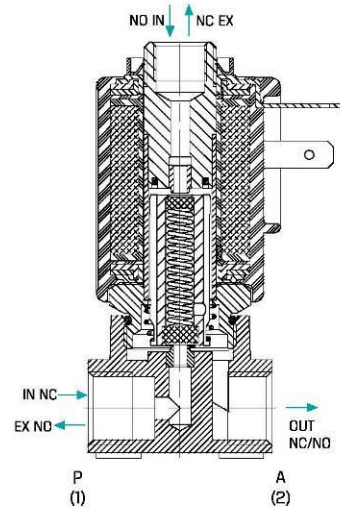
GEM-A | 1/8", 1/4" 3 Way NC, NO



GEM-A Stainless Steel



GEM-A Brass



Technical Data

Function	3 Way NC, NO
Ports size	1/8" and 1/4" BSP & NPT
Orifice size	See table
Pressure range	• See table • Valves for pressure higher than 25 bar cannot be supplied with manual override
Kv (l/min)	See table
Temperature range	Fluid : -10°C to 80°C Ambient : -10°C to 50°C
Materials in contact with media	Manual override* : Plastic, Brass screw or Brass finger knob, Stainless Steel for Stainless Steel valves * unavailable in 3W NO through base applications Main Valve : Brass or Stainless Steel AISI 316 Solenoid Operator : Stainless Steel AISI 300 & 400 series Seals : NBR, FPM (Viton®), EPDM, FFKM (Kalrez®) or PTFE
Media	Air, water, oil
Coil voltage	• Voltage and power consumption - see table • All Baccara coil voltages are ± 10% of nominal
Standard / Certification	• NSF/ANSI 61 • AS/NZS 4020 • UL 429 * Available on selected models only. Please contact our technical sales department for details.
Standard protection class	IP65 with connector * Option : IP68 (please refer to GEM-BP Coil)

• Latch valves are available upon request.

Max. Pressure (bar) 3W NC table

Coil Current/Power	Orifice (mm)					
	0.8	1.2	1.6	2.0	2.4	3.0
ADC *	23	20	15	10	8	5.5
AC8W, DC10W	35	30	17	14	10	6
AC5.5W	23	20	15	10	8	5.5
AC2.5W DC5.5W DC3.5W	20	16	10	9	5	4
Flow factor Kv(l/min)	0.6	1.1	1.7	2.5	3.5	4.5

Max. Pressure (bar) 3W NO table

Coil Current/Power	Orifice (mm)					
	0.8	1.2	1.6	2.0	2.4	3.0
ADC *	25	20	15	11	8	6
AC/8W DC/10W	30	22	17	12	10	7
AC/5.5W,DC/5.5W	25	20	15	11	8	6
AC/2.5W,DC/3.5W	20	18	12	8	6	4
Flow factor Kv(l/min)	0.6	1	1.4	2.2	3.0	3.5

* ADC valves are only suitable for use with AC8W or DC10W coils.

Voltage & Power Consumption

V	AC (W)						DC (W)		
	50 Hz			60 Hz					
	8	5.5	2.5	8	5.5	2.5	10	5.5	3.5
6							•	•	•
12	•			•			•	•	•
24	•	•	•	•	•	•			
48	•			•			•		
110	•			•	•		•		
120	•			•					
220	•	•	•	•			•		
230	•	•							
240	•			•			•		

• Available options

SOLENOID VALVES

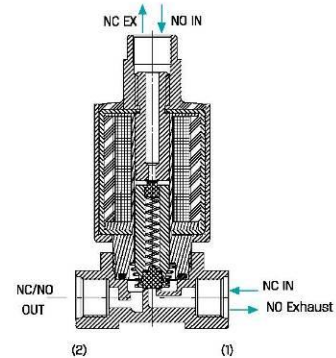
G75-A | 1/8", 1/4" 2 Way, 3 Way NC, NO



G75-A Brass



G75-A Plastic



Technical Data

Function	2 Way, 3 Way NC, NO
Ports size	1/8" and 1/4" BSP & NPT
Orifice size	See table
Pressure range	See table
Temperature range	Fluid : 5°C to 50°C Ambient : -10°C to 50°C
Materials in contact with media	Manual override: Reinforced Nylon Main Valve: Brass or Reinforced Nylon Solenoid Operator: Stainless Steel AISI 300 & 400 series Seals: EPDM
Coil voltage	• Voltage and power consumption - see table
Standard protection class	IP66

• Available with brass adaptor upon request.

Max. Pressure (bar) table

Function	Orifice (mm)	AC	DC	DC Latch
2W NC	up to 2.0	12	12	12
3W NC	1	16	12	16
	1.2	11	9	11
	1.6	6	5	6
3W NO	1.0	16	16	16
	1.2	12	12	12
	1.6	8	8	8

Voltage & Current table

Solenoid	Voltage	Inrush [A]	Holding [A]
2W 50 Hz	V +10% n-20%	0.3	0.19
2W 60 Hz		0.2	0.14
3W 50/60 Hz		0.125	0.125
DC		4.5W	

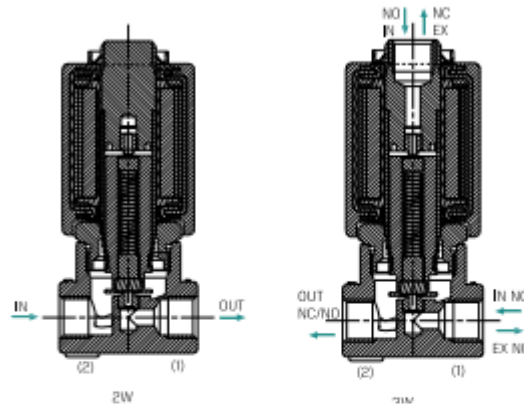
Voltage & Power Consumption

V	AC (W)	DC (W)
	50 Hz	
12	•	•
24	•	•
110	• 2W only	

• Available options

SOLENOID VALVES

GEM-A3P | Latch 3 positioning manual override
2 Way, 3 Way NC, NO



Technical Data

Function	2/2, 3 Way NC, NO
Ports size	1/8" and 1/4" BSP & NPT
Orifice size	See table
Pressure range	See table
Kv (l/min)	See table
Temperature range	Fluid : -10°C to 80°C Ambient : -10°C to 50°C
Materials in contact with media	Manual override: Plastic Main Valve: Brass Solenoid Operator: Stainless Steel AISI 300 & 400 series Seals: NBR, FPM (Viton®), EPDM, FFKM (Kalrez®) or PTFE
Media	Air, water, oil
Coil type	Latch
Standard protection class	IP65 with connector * Option : IP67, IP68

Max. Pressure (bar) 2W NC table

Orifice (mm)	0,8	1,2	1,6	2,0	2,4	3,0	4,0
Pressure (bar)	16	16	16	16	16	16	8
Flow factor Kv(l/min)	0,5	1,1	1,7	2,5	3,5	4,5	5

Max. Pressure (bar) 2W NO table

Orifice (mm)	0,8	1,2	1,6	2,0	2,4	3,0
Pressure (bar)	16	16	16	16	15	10
Flow factor Kv(l/min)	0,5	1,1	1,7	2,5	3,5	4,5

Max. Pressure (bar) 3W NC table

Orifice (mm)	0,8	1,2	1,6	2,0	2,4	3,0
Pressure (bar)	16	16	16	14	10	6
Flow factor Kv(l/min)	0,5	1,1	1,7	2,5	3,5	4,5

Max. Pressure (bar) 3W NO table

Orifice (mm)	0,8	1,2	1,6	2,0	2,4	3,0
Pressure (bar)	16	16	16	12	10	7
Flow factor Kv(l/min)	0,5	1,1	1,7	2,5	3,5	4,5

8. A.R.I. LIMITED WARRANTY

A.R.I. Standard International Warranty

A.R.I. manufactured products are guaranteed to be free from defect in material and/or workmanship and to perform as advertised when properly installed, used and maintained in accordance with current instructions, written or verbal.

Should any item prove defective within the time period set forth for that item(s), but in any case not later than within 12 (twelve) months of that product having left A.R.I.'s premises, and subject to receipt by A.R.I. or its authorized representative, of written notice thereof from the purchaser within 30 days of discovery of such defect or failure - A.R.I. will repair or replace or refund the purchase price, at its sole option, any items proven defective in workmanship or material.

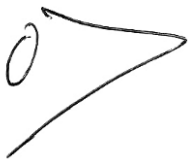
A.R.I. will not be responsible, nor does this warranty extended to any consequential or incidental damages or expenses of any kind or nature regardless of the nature thereof, including without limitation, injury to persons or property, loss of use of the products, loss of goodwill, loss of profits or any other contingent liabilities of any kind or character alleged to be the cause of loss or damage to the purchaser.

This warranty does not cover damage or failure caused by misuse, abuse or negligence, nor shall it apply to our products upon which repairs or alterations have been made by other than an authorized A.R.I. representative.

This warranty does not extend to components, parts or raw materials used by A.R.I. but manufactured by others, which shall be only to extent warranted by the manufacturer's warranty.

THERE ARE NO WARRANTIES, EXPRESS OR IMPLIED, EXCEPT THIS WARRANTY WHICH IS GIVEN IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

(R10822)



Ori Sheffi
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