

Eliptix by **A.R.I.**
Hydraulic Control Valves

R-22 GE

Electrically Controlled Manual Throttling ON/OFF Valve

2 Way

The following is a step by step narrated description of the Eliptix R-22GE 2W Electrically Controlled, Manual Throttling, ON/OFF Valve installation, operation and maintenance processes.

The A.R.I. R-22 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-22 series has an innovative elliptic shaped diaphragm that integrates well with a wide variety of regulating control pilots, solenoids and control accessories.

The R-22 GE valve has a mechanical Throttling Mechanism that is used for manually control the flow-rate through the valve.



TABLE OF CONTENTS

1. SAFETY INSTRUCTIONS	4
General.....	4
Handling.....	4
Installation	5
Commissioning and Operation	5
Maintenance.....	5
Before returning to regular operation	6
2. INSTALLATION	7
2.1. Pre installation requisites.....	7
2.2. Installation procedure.....	8
2.3. Initial Start-up - The Control Valve	9
2.4. The ON/OFF Application.....	10
3. OPERATION INSTRUCTIONS.....	10
4. MAINTENANCE.....	11
4.1. Periodic Inspection.....	11
4.2. Storing the valve	11
5. TROUBLESHOOTING.....	12
6. DIMENSIONAL DRAWING.....	13
7. SOLENOIDS DATASHEETS	13
8. A.R.I. LIMITED WARRANTY	16

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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.

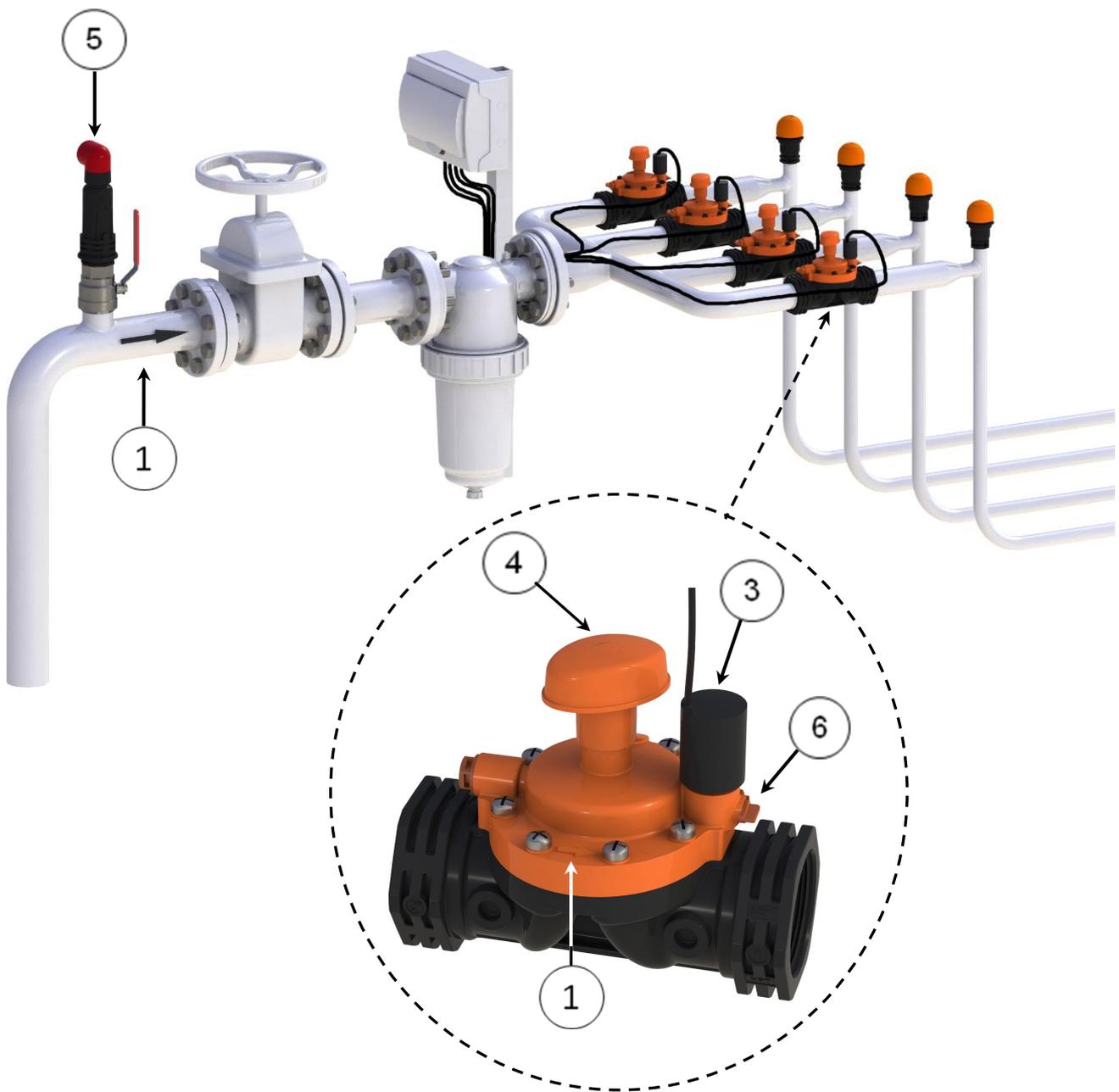
2. INSTALLATION

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.

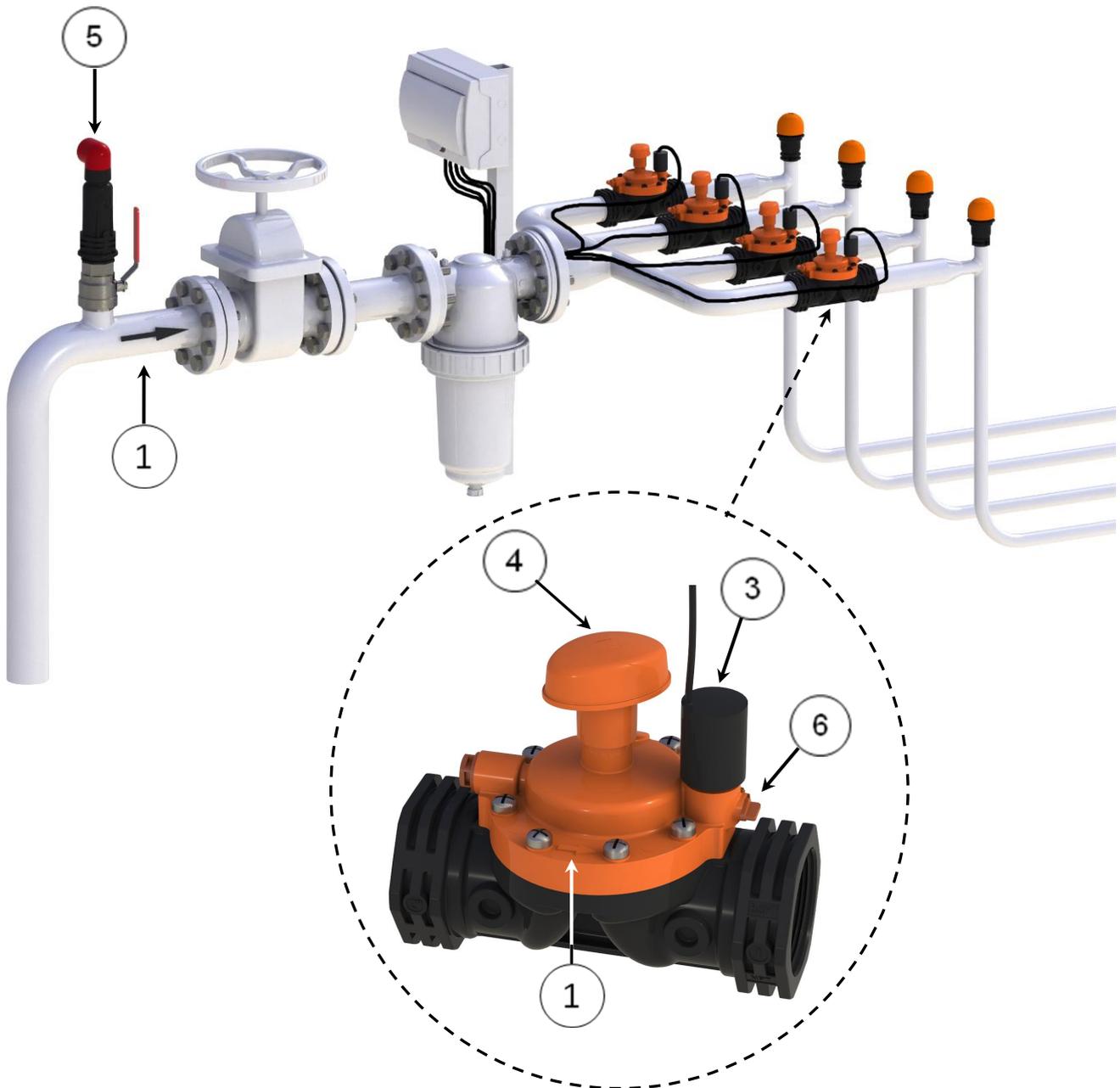
2.2. Installation procedure

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 Air valve downstream of the control valve [5].
3. Connect the solenoid [3] to the controller.
4. Make sure that the solenoid manual override lever valve [6] is in horizontal position.
5. Close the valve through the controller's interface.
6. Turn on the water supply to the valve.
7. Check for leaks; tighten bolts & fittings, if necessary.



2.3. Initial Start-up - The Control Valve

1. Gradually open the water supply to the valve.
2. Check for leaks; tighten bolts & fittings, if necessary.
3. In order to open the valve - Energize the solenoid [3] (use the PLC's or the Controller's HMI screen).
4. Use the throttling handle [4] to adjust the flow-rate through the valve.



2.4. 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 Close (N.C.) or last position (Latch) solenoid.

For N.C. valve, when the solenoid is energized, water from the control chamber is released to the downstream port of the valve 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.

3. OPERATION INSTRUCTIONS

1. To manually open the valve, turn the manual override lever to its vertical position.
2. In order to operate the valve using a PLC or a Controller, turn the manual override lever to its horizontal 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 12 months inspect the valve's operation and clean the Finger Filter.

4.2. Storing the valve

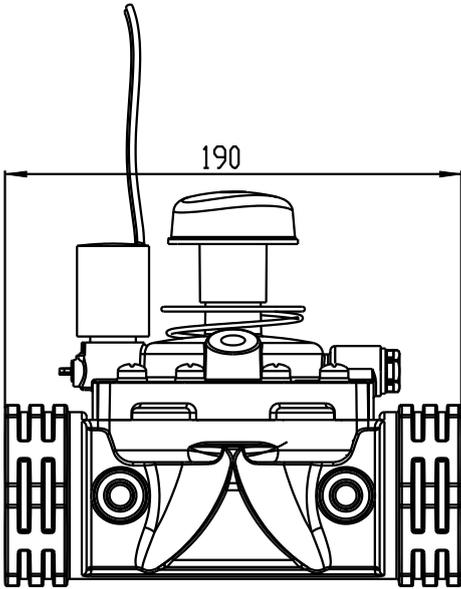
It is not recommended to store the valve or its spare parts for long periods (years); under improper storage conditions rubber parts can harden, have ozone cracking, grow mold bloom and heat aging.

It is recommended to order new rubber parts when required.

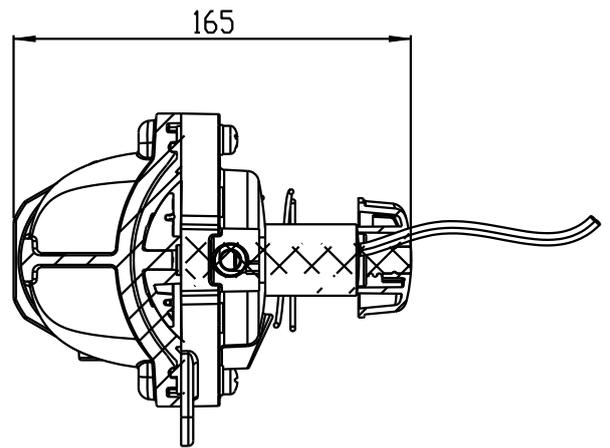
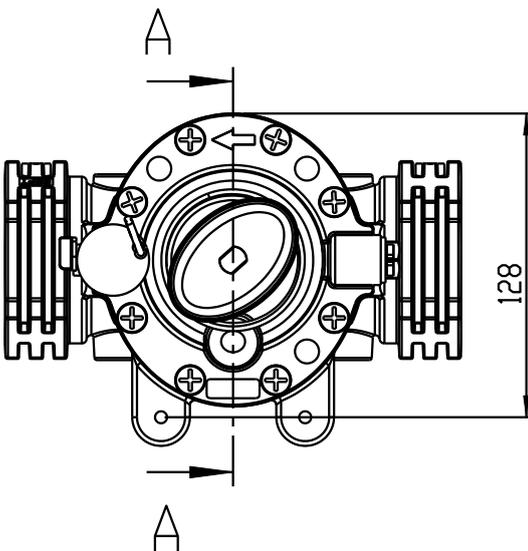
5. TROUBLESHOOTING

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 throttling Device [4] is closed.	2. Check the throttling Device [4].	2. Slightly open the throttling Device [4] and adjust the flow-rate.
	3. Blocked Solenoid Valve seat	3. Check the solenoid valve seat.	3. Turn off the water supply to the valve. Dismantle the coil and clean the solenoid valve seat.
Valve does not close	1. Debris on the sealing seat	1. The valve is constantly discharging small amount of water	1. 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 valve.	2. Turn off the water supply to the valve. Remove the bonnet and replace the diaphragm.
	3. Blocked control filter	3. Check the control filter	3. Turn off the water supply to the valve, remove the bonnet and the filter, clean or replace it.
Valve does not respond to remote command	1. Manual override lever position	1. Check the Manual override lever position	1. Turn the manual override lever to horizontal 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



A.R.I. Catalog no.
5CR22GE000-02NTNF-01
5CR22GE000-02BTNF-01



SECTION A-A

Dimensions are in mm.

7. SOLENOIDS DATASHEETS

SPARE PARTS

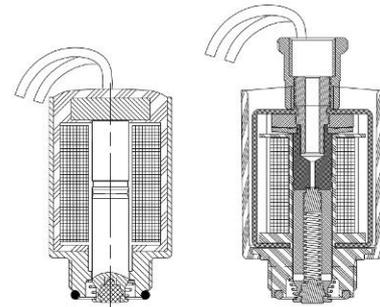
G75-O | Latch Operator 2 Way, 3 Way NC, NO



2W Operator



3W Operator



2WNC

3WNC/3WNO

Technical Data

Function	2 Way, 3 Way NC, NO Latch
Orifice size	2 Way : No orifice 3 Way : See table
Pressure range (bars)	See solenoid valve performances
Capacitors	• 4700µF for 9V DC • 2200µF for 12V DC
Switching time	25-50 ms
Temperature range	Fluid : 5°C to 50°C (no freezing) Ambient : -10°C to 50°C
Materials in contact with media	Housing: Reinforced Nylon 66 Plunger & pole: Passivated Stainless Steel AISI 430F Rubber Seals: EPDM Encapsulate: Polyurethane Spring: Stainless Steel AISI 300 series
Threads on operator tube	G1/8" or 1/8" NPT female to connect exhaust, muffler etc
Two wire operator	One coil with exit of 2 lead wires. To pull the plunger up, connect the black wire (-) and the green to the (+).
Three wire operator	One coil and an integrated electrical circuit. To pull plunger up, pulse is given to the red wire (-). To release the plunger, pulse is given to the black wire (-). Operate only by a controller.
Electrical connection	• Lead wires 35 cm, 18 AWG (0.75mm ²) (black/green) • Lead wires : red, white, black for 3 wires
Voltage	9, 12V DC (coils for other voltages available)
Standard protection class	IP66

• Available with brass adaptor.

Working pressure (bar) 2W NC

Orifice (mm)	up to 2.0
Pressure (bar)	12

Working pressure (bar) 3W NC

Orifice (mm)	10	12	16
AC Pressure (bar)	16	11	6

Working pressure (bar) 3W NO

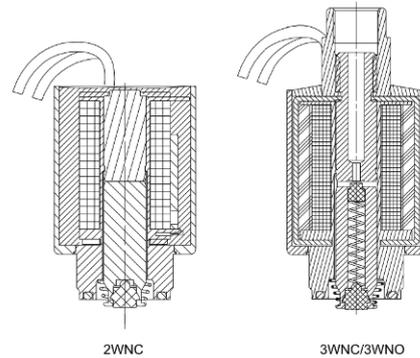
Orifice (mm)	10	12	16
Pressure (bar)	16	12	8

Various controllers adaption table

Controller Type	V	Q[µF]	Ω
-	6	6800	4
Baccara	9	4700	4
Talgil	16	4700	12
Motorola	≥20	≥3300	23
Alextronix	12	4700	9
QT	12	4700	9
Rainbird	12	4700	9
Miracle	12	4700	9
Galcon	12	4700	9
Other	Please consult		

SPARE PARTS

G75-O | AC/DC Operator 2 Way, 3 Way NC, NO



Technical Data

Function	2 Way, 3 Way NC, NO
Orifice size	2 Way : No orifice 3 Way : See table
Pressure range (bars)	See solenoid valve performances
Temperature range	Fluid : 5°C to 50°C (no freezing) Ambient : -10°C to 50°C
Materials in contact with media	Housing: Reinforced Nylon 66 Plunger & pole: Passivated Stainless Steel AISI 430F Rubber Seals: EPDM Encapsulate: Polyurethane Spring: Stainless Steel AISI 300 series
Media	Air, water, oil *
Threads on operator tube	G1/8" or 1/8" NPT female to connect exhaust, muffler etc
Operator assembly	By manually screwing 3/4" UNEF to valve body. • Max. tightening torque : 2 N/m
Electrical connection	Lead wires 35 cm, 18 AWG (0.75mm ²) * other lengths are available
Coil voltage	• Voltage and power consumption - see table
Standard protection class	IP66

- Available with brass adaptor upon request.
- * For other fluids and for use in abnormal conditions, please contact our technical sales department

Working pressure (bar) 2W NC

Orifice (mm)	up to 2.0
Pressure (bar)	12

Working pressure (bar) 3W NC

Orifice (mm)	10	12	16
AC Pressure (bar)	16	11	6
DC Pressure (bar)	12	9	5

Working pressure (bar) 3W NO

Orifice (mm)	10	12	16
Pressure (bar)	16	12	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

	AC (W)	DC (W)
V	2	4.5
12	•	•
24	•	•
110	•	
	2W only	

- Available options

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.

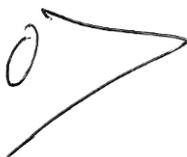
A.R.I. will not be responsible, nor does this warranty extended to any consequential or incidental damages or expenses of any kind or nature regardless of the nature thereof, including without limitation, injury to persons or property, loss of use of the products, loss of goodwill, loss of profits or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

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Ori Sheffi
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