

HYDROTHERMAL SYSTEMS
COMPARATO®

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COMPARATO NELLO SRL

SINTESI MOTORISED VALVE INSTRUCTION MANUAL



PRODUCT
DATA SHEET

SINTESI

The **SINTESI** motorised valve is the leading model of Comparato's range of products for heating systems.

USE

SINTESI is specifically used for the interception and regulation of fluids in:

- zone heating/cooling systems
- drinking water systems, with suitable ball valve
- systems using alternative energy
- thermal solar systems
- automation systems in general

MARKING:

The following data are indicated on the actuator:

- 1** Trademark and website of the manufacturing company: **COMPARATO**
www.comparato.com
Made in Italy
- 2** Model: SINTESI
- 3** EC regulations compliance
- 4** Wiring diagrams and data
- 5** Product code



SINTESI

ACTUATORS:

SINTESI actuator is available in the following versions:

Electric command selector



TECHNICAL FEATURES	Uni/Bidirectional <i>patented</i>	Bidirectional	
Electric control	2-point	3-point	<i>patented ALL IN ONE</i> with in-actuator selector 3-point 2-point
Price list root	SR...	SS...	SY...
Connection with ball valve	<i>patented</i> fast push coupling		
Operation (see dedicated sections)	ON/OFF	modulating/ ON/OFF	
Rotation	90° clockwise and counter clockwise		
Compatible ball valves	-	2-way 2-way with regulation disk 3-way with switch 3-way with mixer 3 way with by-pass TEE	-
Position indicator	rotating arrow, which indicates the ball position		
Motor	unidirectional	bidirectional	
Power supply	230 V ; 50/60 Hz 24 V ; 50/60 Hz		
Feeder cable length	80 cm		
Operating time (↗ 90°) and relative pickup torque	45 seconds; 8 Nm	35 seconds; 8 Nm 15 seconds; 5 Nm	
Input power	3,9 VA		
Power output of the outlet phase to grey wire	1 A, resistive ; 250 V		
Operational room temperature	-10°C ÷ 50°C		
Class protection	IP 54		
Insulation class	II - double insulation □		
Outlet shell material	poliammide PA 6, 30% fibreglass		
Maintenance	none		
Certification	EC		

ELECTRICAL CONNECTIONS

Before making the electrical connections the supply power must be properly disconnected by qualified personnel, according to the diagram shown on the actuator.

The cover must never be removed: connections can be made by means of the power supply cable which is fitted with suitable wiring.

This must be made inside a branch box ensuring at least an IP54 protection.

Thermo-magnetic switches, fuses and circuit breakers must be installed upstream the actuator, in order to ensure the compliance with the safety condition required by the existing laws.

The actuator maintains its position when no power is supplied.

SINTESI actuators have the following features:

- voltage phase to grey wire with completely open valve, to be used as a remote control. Its use is optional (e.g.: Notification of opening, pump relay actuation, etc.)
- one auxiliary opening microswitch (white and pink wire, **free contact**) which is electrically closed when the valve is open. Its use is optional (e.g.: notification of opening, pump relay actuation, boiler control, notification to PLC, etc.)

ELECTRICAL CONNECTIONS:

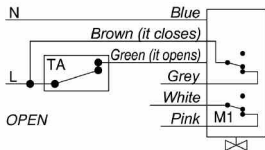
2-POINT CONTROL – ON/OFF (SWITCH)

Uni/Bidirectional AND Bidirectional ACTUATORS

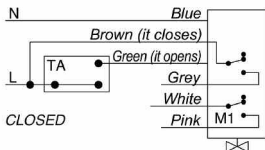
- **BLUE** wire: neutral;
- **BROWN** wire: fixed closing phase;
- **GREEN** wire: opening phase.

The phase to the green wire can be supplied by means of a switch.

One single control can activate several actuators.



GREY= OUTPUT PHASE WITH OPEN VALVE
TA= ENVIRONMENT THERMOSTAT
M1= EXTRA OPENING MICRO SWITCH



The figures show the wiring diagram of the actuator with a 2-POINT control device. The actuator is shown open and closed respectively. Supplying power by means of a phase across the brown wire causes the valve to close (electrical automatic closing); supplying power across the green wire, too, causes the valve to open. The led on the uni- bidirectional actuator cover lights up during the opening phase and at the end of it.

3-POINT CONTROL – MODULATING (2 SWITCHES) Bidirectional ACTUATOR

• BLUE wire: neutral; • BROWN wire: closing phase; • GREEN wire: opening phase.
The phase can be diverted to the brown wire or to the grey wire or to none of them, in order to obtain partial openings of the valve. This is necessary for modulating the flow when a regulation is needed. **Each actuator must be operated by a single control.**



The figures show the wiring diagram of the actuator with a 3-POINT MODULATING control device. The actuator is shown open and closed respectively. When the phase is across the green wire, the valve opens; on the contrary, when the phase is across the brown wire, the valve closes. When there is no phase on the above mentioned wires, the actuator can take intermediate positions between the points of complete closure and complete opening, allowing a modulating operation.

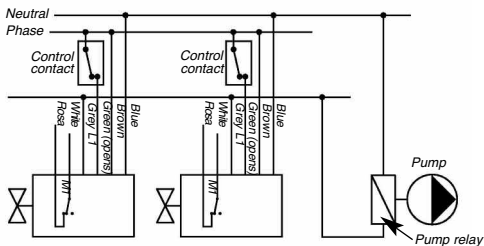
3-POINT CONTROL – ON/OFF (DIVERTER) Bidirectional ACTUATOR

• BLUE wire: neutral; • BROWN wire: closing phase; • GREEN wire: opening phase. Phase shall be diverted to the brown wire or the green wire. **Each actuator must be operated by a single control.**

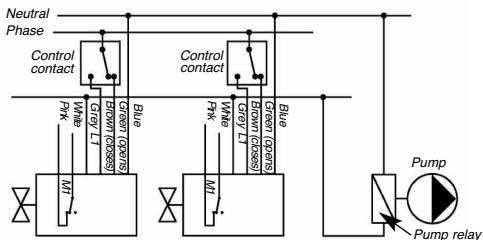


The figures show the wiring diagram of the actuator with a 3-point ON/OFF control device. The actuator is shown open and closed respectively. When the phase is across the green wire, the valve opens; on the contrary, when the phase is across the brown wire, the valve closes.

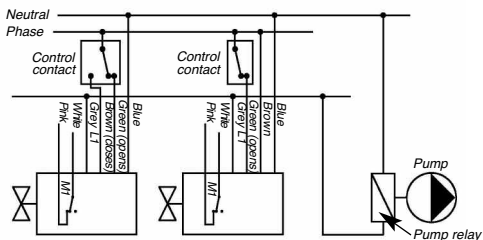
CONNECTION EXAMPLES



CONNECTION OF THE PUMP STOP WITH TWO 2-POINT ACTUATORS



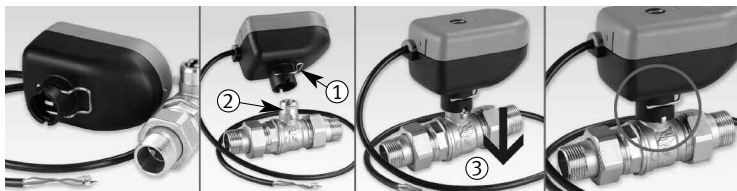
CONNECTION OF THE PUMP STOP WITH TWO 3-POINT ACTUATORS



CONNECTION OF THE PUMP STOP WITH ONE 3-POINT AND ONE 2-POINT ACTUATORS

ASSEMBLY

SINTESI actuator is equipped with a highly innovative "fast push" coupling system which connects it to the ball valve and allows a very fast and reliable coupling. The above mentioned features ease and quicken all installation and maintenance phase.

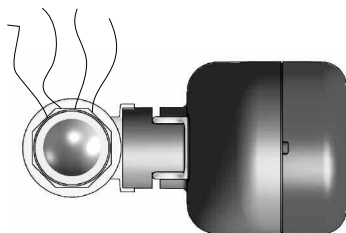


CAPTION

1. Coupling spring;
2. Coupling seat of the spring;
3. First insert the outlet shaft of the actuator in the relevant "female" seat of the ball valve, then rotate the shaft so that both coupling joints are aligned.
Then, press the actuator on the ball valve until the perfect coupling is achieved thanks to the spring tightness.

INSTALLATION

If the valve works with low-temperature fluids (possible frost formation on the valve stem) or with high-temperature fluids (danger of actuator overheating), it is advisable to install it in the **recommended position**, as shown in the picture.



RECOMMENDED POSITION

It is advisable not to expose the actuator to direct sunlight and to use it within the allowed temperature range.

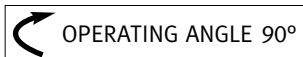
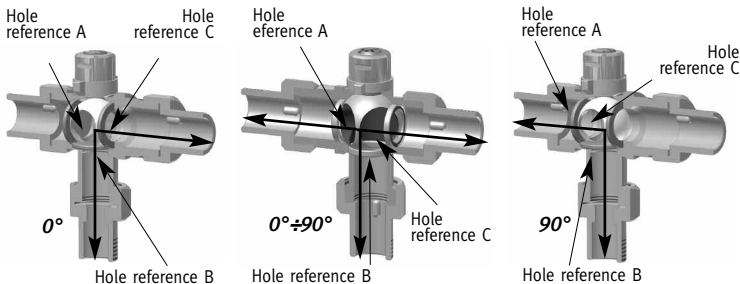


3-WAY VERTICAL BALL VALVE WITH 3-HOLE BALL (DIVERTER/MIXER)

It should be used when fluids must or can come into contact during the operation phase (mixing).

One of the ball holes (B) is constantly pointed towards the common way of the ball valve, while the other two holes (A & C), placed at 90° to each other, allow the full flow between one of the two opposed ways and the common (central) one, or any intermediate mixing position.

The complete operating angle is 90°.

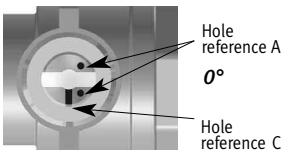


Plan detail of the ball valve control rod

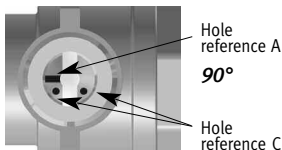
The ball valve is supplied in **POSITION 1**. Referring to the ball valve as shown in the picture, the communicating ways are the **RIGHT** and the **BOTTOM** ones. During the operation, the fluid flow is progressively deviated from the **RIGHT** way to the **LEFT** way, without ever interrupting the flow.

The ball rotates 90° clockwise until it reaches **POSITION 2**, which communicating ways are the **LEFT** and the **BOTTOM** ones.

POSITION 1



POSITION 2

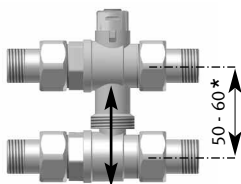
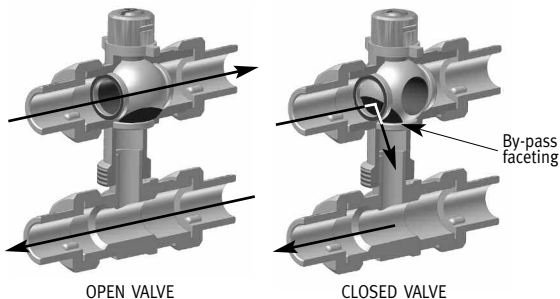




BY-PASS BALL VALVE

The BY-PASS type ball valve should be used in heating systems when the fluid has to be intercepted, allowing a limited flow between outlet and return.

The ball has a through hole and it is faced; therefore, in the open position, the operation is similar to that of a two-way ball valve. In the closing position, the faceting generates the BY-PASS, allowing the communication between the intercepted way to the central one.

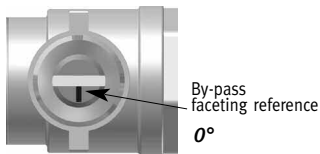


To change the distance, bring the ball valve and the by-pass tee closer or pull them away. No component has to be dismantled. The tightness is guaranteed by a special seal.

* for $\varnothing 1''$ valve, distance 55 - 60

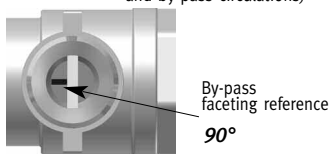
Plan detail of the ball valve control rod

POSITION 1 (open valve)



0°

POSITION 2 (closed valve and by-pass circulations)



90°

THERMAL SOLAR SYSTEMS

SINTESI motorised valve series features a range of ball valves fitted with special seals for the circulation of high-temperature liquid (max. 160°C). Combining them with a spacer, it is possible to create a complete thermal break between the ball valve and the actuator, therefore allowing the installation of a **SINTESI** motorised valve in thermal solar systems, where the water flow usually has very high temperatures.

a **SINTESI** motorised valve with spacer and 2-WAY ball valve with seals for high temperatures (max. 160°C).

b **SINTESI** motorised valve with spacer and MIXER/DIVERTER ball valve with seals for high temperatures (max. 160°C).

For the assembly of **SINTESI** actuators to ball valves with spacer, see page 6



CONNECTION KIT FOR BALL VALVES WITH ISO 5211 CONNECTION

Available for all ball valves with ISO 5211 F03 and F05 connections.

Spacer height: 20 mm



GENERAL WARRANTY CONDITIONS

WARRANTY

SINTESI valves are covered by a 6-year warranty from the date year of production. For any returned good, users should contact the Reseller they bought the items from. The goods should be returned postage-free.

DURING THE WARRANTY PERIOD

During the warranty period, **COMPARATO NELLO S.r.l.** will repair or replace, free of charge, any product or component, provided it turns out to have a manufacturing defect. Any repair or replacement of the component or of the product itself does not extend the warranty period.

COMPARATO NELLO S.r.l., reserves the right to replace the Product with an identical one; if the product is out of production, it will be replaced with one with identical specifications, provided that, according to the unquestionable opinion of **COMPARATO NELLO S.r.l.**, the repair is not economically excusable.

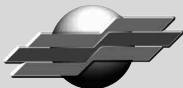
WARRANTY EXCLUSION PROVISION

Interventions and/or repairs and/or spare parts will not be covered by this Warranty if it turns out that they are defective because of:

- tampering;
- failure due to carelessness and/or unskilfulness during the installation (wrong, incomplete or missing assembling/wiring/setting);
- electrostatic discharge, electric discharge conducted/induced because of lightning or other phenomena not ascribable to the product, irradiated electromagnetic disturbances, intermittent or discontinuous power supply;
- defects or damages caused by fall, breakage, liquid seepage;
- repairs made by unauthorized people;
- products with expired warranty;
- systems made in a non-workmanlike manner;
- any other damage not directly ascribable to **COMPARATO NELLO S.r.l.**

In order to provide an up-to-date service, Comparato Nello S.r.l. reserves the right to modify technical data, drawings, graphs and photos of this instruction booklet at any time, without prior notice.

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HYDROTHERMAL SYSTEMS

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