

MOTORIZED ROTOR ZONE AND DIVERTING VALVES WITH AUTOMATIC RETURN ARP

BS5 ARP
 soft torque technology



V83.W.ARPM



V82.W.ARPM

patented **CE**

Description

Barberi® BS5 motorized rotor zone valves are used in the zone management of heating and air conditioning systems. They are used in central heating systems, wall-mounted boilers, solid fuel generators and heat pumps.

The valve body features the Soft-Torque technology, characterized by a patented design and very low friction materials, which allow a fast and smooth rotation in 8 seconds only.

The actuator is equipped with an Automatic Return in Position function (ARP) through supercapacitor, making both the operation and use of the valve more advantageous if compared to traditional spring return systems.

The fast clip coupling, the knob for manual operation, the auxiliary microswitch, the integrated cable, the general compactness, the ergonomic design, the low resistant torque and the ARP technology make the BS5 ARP line an easy to use and high energy saving product.

The 3-way valve can also be used as diverting valve since the AB-A and AB-B ways have the same flow coefficient Kv. The 2-way valve is bidirectional (indifferent flow direction).

Range of products

Series V83.W.ARPM	3-way rotor zone and diverting valve, actuator with automatic return in position ARP
Series V82.W.ARPM	2-way rotor zone valve, actuator with automatic return in position ARP
Series M10.ARP.3VM	Spare actuator with automatic return in position ARP for 3-way rotor zone and diverting valve V83.W.ARPM series
Series M10.ARP.2VM	Spare actuator with automatic return in position ARP for 2-way rotor zone valve V82.W.ARPM series

Technical features of the valve

Working temperature range: **0 (no frost)–90 °C**
 Maximum working pressure: **10 bar**
 Maximum differential pressure: **1 bar**
 Leakage: **<0,1% Kv**
 Suitable fluids: **water for thermal systems, glycol solutions (max 30%)**
 Threaded connections: **male ISO 228-1, female EN 10226-1; compression ends EN 1254-2**
 Factory configuration:
 - 3-way: **actuator on B, valve with AB-B way open**
 - 2-way: **actuator on O (Open), valve open**

Materials

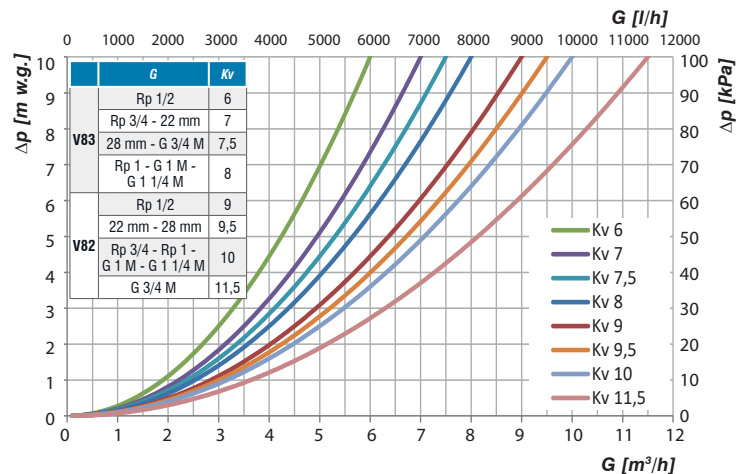
Valve body: **brass EN 12165 CW617N**
 Obturator: **brass EN 12164 CW614N**
 Gasket support: **polypropylene (PP)**
 Gasket: **NBR**
 Actuator case: **PA6**
 Plate for actuator connection: **PPS**

Technical features of the actuator

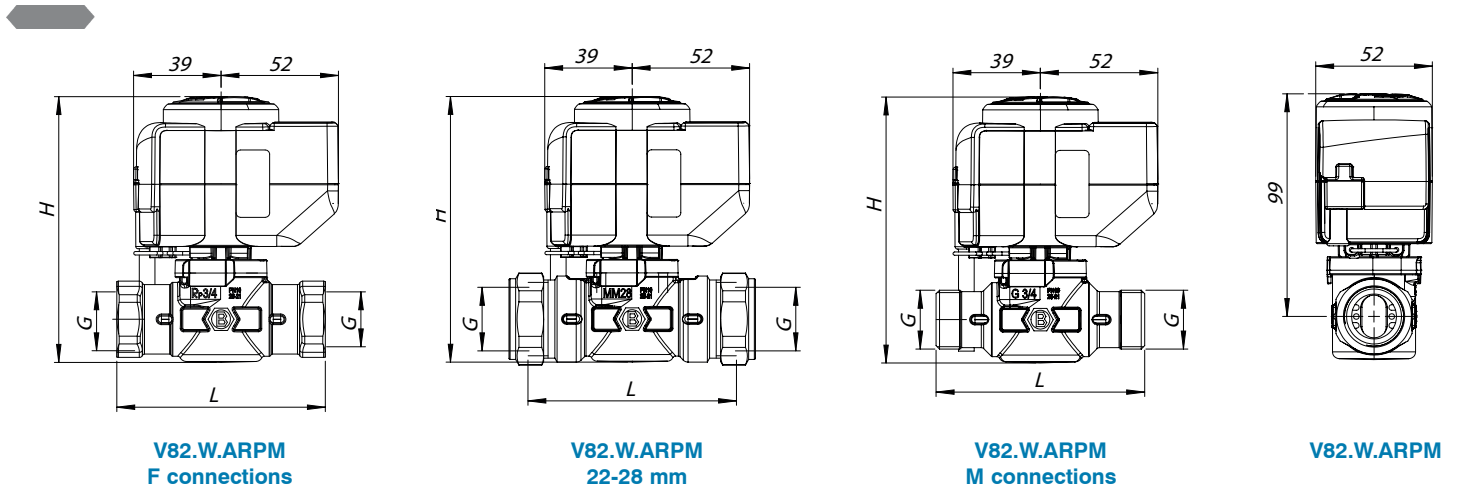
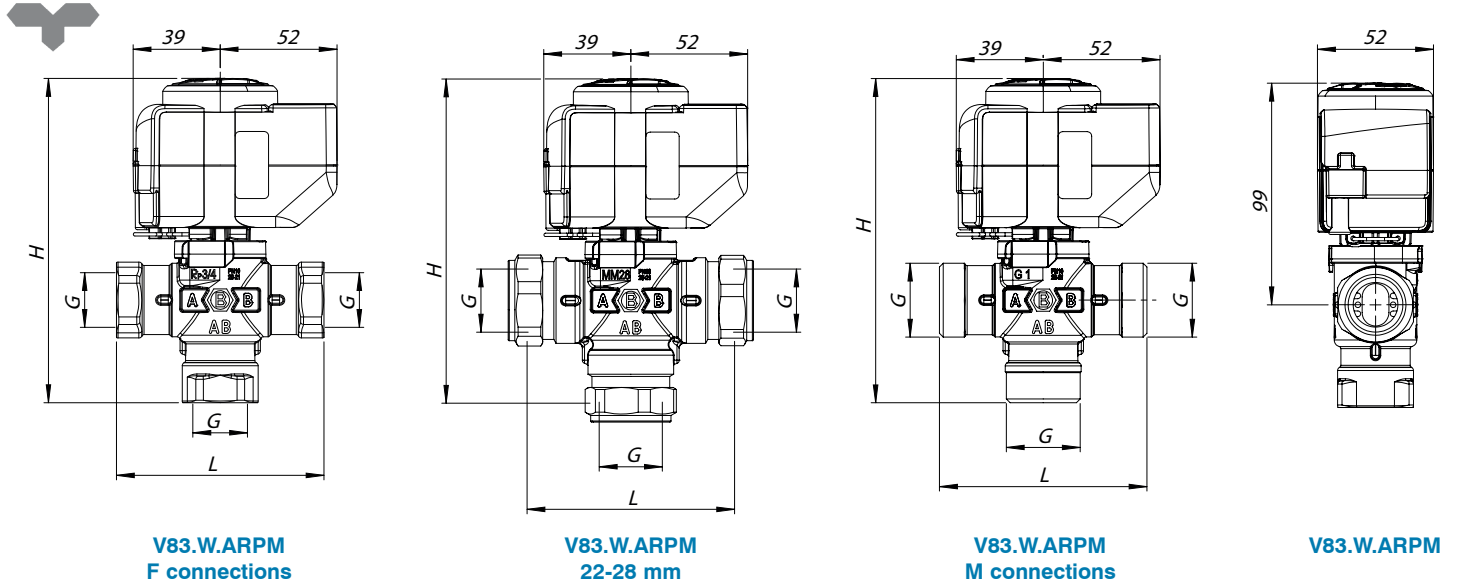
Running time: **8 s**
 Electric supply: **230±10% Vac/50–60 Hz**
 Power consumption: **6 VA**
 Type of command: **automatic return in position ARP**
 Pole number: **4**
 Cable lenght: **0,9 m, integrated**

Protection class: **IP 44**
 Electric protection: **class II**
 Auxiliary microswitch contact rating: **1 SPST, 6(1) A-230 V**
 Ambient temperature (max. humidity 95% non condensing):
 Functioning: **-5–50 °C EN 60721-3-3 Cl. 3K4**
 Transport: **-30–70 °C EN 60721-3-2 Cl. 2K3**
 Storage: **-10–50 °C EN 60721-3-1 Cl. 1K2**
 Certification: **CE**

Diagrams



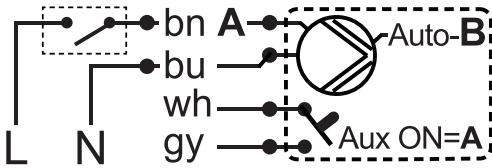
Dimensions



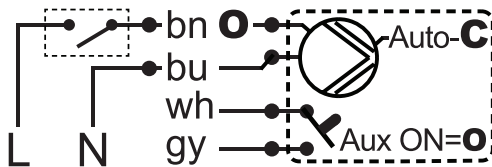
Series	Code	Ways	DN	G	Kv	P [bar]	L [mm]	H [mm]	V	Type of command	Running time [s]	Nr of poles	Cable connection	Weight [kg]	N. P/B	N. P/C
V83.W.ARPM	V83 AF1 WBD D	3	20	Rp 1/2	6	10	93	145	230	ARP	8	4	Integrated	0,66	1	6
	V83 AF2 WBD D	3	20	Rp 3/4	7	10	93	145	230	ARP	8	4	Integrated	0,72	1	6
	V83 AF3 WBD D	3	20	Rp 1	8	10	93	145	230	ARP	8	4	Integrated	0,85	1	6
	V83 A22 WBD D	3	20	22 mm	7	10	93	145	230	ARP	8	4	Integrated	0,80	1	6
	V83 A28 WBD D	3	20	28 mm	7,5	10	93	145	230	ARP	8	4	Integrated	0,95	1	6
	V83 AM2 WBD D	3	20	G 3/4 M	7,5	10	93	145	230	ARP	8	4	Integrated	0,66	1	6
	V83 AM3 WBD D	3	20	G 1 M	8	10	93	145	230	ARP	8	4	Integrated	0,71	1	6
V83 AM4 WBD D	3	20	G 1 1/4 M	8	10	93	145	230	ARP	8	4	Integrated	0,77	1	6	
V82.W.ARPM	V82 BF1 WBD E	2	20	Rp 1/2	9	10	93	119	230	ARP	8	4	Integrated	0,60	1	6
	V82 BF2 WBD E	2	20	Rp 3/4	10	10	93	119	230	ARP	8	4	Integrated	0,64	1	6
	V82 BF3 WBD E	2	20	Rp 1	10	10	93	121	230	ARP	8	4	Integrated	0,73	1	6
	V82 B22 WBD E	2	20	22 mm	9,5	10	93	119	230	ARP	8	4	Integrated	0,69	1	6
	V82 B28 WBD E	2	20	28 mm	9,5	10	93	120	230	ARP	8	4	Integrated	0,81	1	6
	V82 BM2 WBD E	2	20	G 3/4 M	11,5	10	93	119	230	ARP	8	4	Integrated	0,60	1	6
	V82 BM3 WBD E	2	20	G 1 M	10	10	93	119	230	ARP	8	4	Integrated	0,63	1	6
V82 BM4 WBD E	2	20	G 1 1/4 M	10	10	93	119	230	ARP	8	4	Integrated	0,68	1	6	
M10.ARP3VM	M10 ARP 004	Spare actuator for 3-way valve V83.W.ARPM							230	ARP	8	4	Integrated	0,22	1	10
M10.ARP2VM	M10 ARP 005	Spare actuator for 2-way valve V82.W.ARPM							230	ARP	8	4	Integrated	0,22	1	10

N. P/B: number of pieces in box - N. P/C: number of pieces in in carton

Wiring diagram



M10.ARP3VM: ARP with automatic return + auxiliary microswitch for 3-way valve		
Colour		Indication
BN		- Electrically supplied cable: clockwise rotation. - Cable not supplied: automatic anticlockwise rotation using the current supplied by the supercapacitor
BU		Neutral
WH		Aux. microswitch gets closed at the end of the clockwise rotation towards A (actuator in A, valve in AB-A, Aux=ON) and gets open at the beginning of the anticlockwise rotation towards B
GY		
L	-	Live
N	-	Neutral



M10.ARP2VM: ARP with automatic return + auxiliary microswitch for 2-way valve		
Colour		Indication
BN		- Electrically supplied cable: clockwise rotation for valve opening - Cable not supplied: automatic anticlockwise rotation, for valve closing, using the current supplied by the supercapacitor
BU		Neutral
WH		Aux. microswitch gets closed at the end of the clockwise rotation for valve opening (actuator in O=Open, Aux=ON) and gets open at the beginning of the anticlockwise rotation for valve closing
GY		
L	-	Live
N	-	Neutral

Advantages

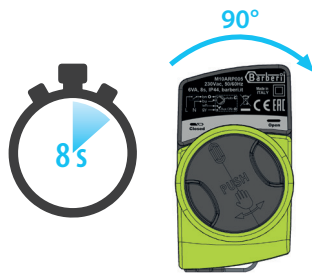
All the valves of Barberi® BS5 line are characterized by the following advantages:

Soft torque technology

The “soft torque technology” is a Barberi® patent which combines a particular design of the components with carefully selected materials; this combination allows to increase the product performance and ensure its maintenance over time. The result, in technical terms, is a very low resistant rotation torque which determines, in addition to the high flow rates and an anti-seize system, the following additional advantages:

Speed

The smooth and low-friction rotation makes the commutation faster (from one zone to the other in the 3-way valve, the zone closing in the 2-way valve), which occurs in 8 seconds only.

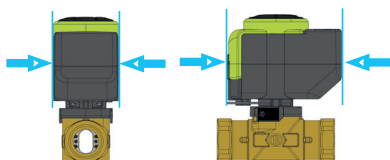


Energy saving

The low resistant torque requires a lower electrical consumption during the valve rotation. In addition, our new ARP actuator, which we will explain in detail in the following pages, is characterized by a reduction of up to 90% in electric consumption with the valve open.

Compact design

The BS5 design is totally “made in Barberi” and aims to optimize shape and function, with a more functional style. Thanks to the lower thermal and mechanical stresses produced by the Soft Torque Technology, it was possible to significantly reduce the actuator size, thus allowing wider application opportunities.



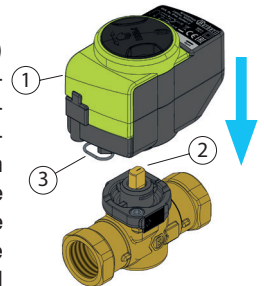
User friendly

Designed for intuitive use, the following systems simplify its installation and application:



One hand assembly

The installation of the actuator (1) on the valve body (2) can be performed with a single hand. Leaving the clip (3) placed in the specific slot, a simple click is enough to connect the actuator to the valve body, without any tool. The actuator disassembly can be made by removing the clip and unlocking the actuator from the valve stem.



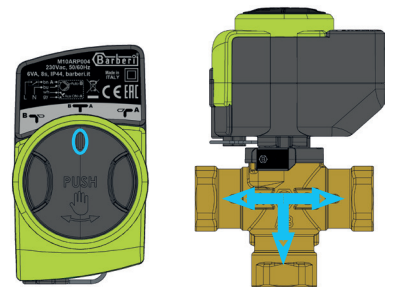
Push and turn system

The manual setting of the valve can be obtained by simply pushing down the knob and rotating it into the desired position.



Mid point - manual knob

Placing the actuator's manual knob half way (mid point), the 2-way valve gets partially open and the 3-way valve is set in the intermediate position. All the ports are therefore connected together thus making the system fill/drain faster.



Traceability control

A specific place on the valve body shows all the information for a complete product traceability.

In addition to the advantages of the entire BS5 series, the ARP series with automatic return (green cover) shows the following peculiarities:

ARP technology

The technology with “automatic return in position” is an innovative system that manages the automatic valve closing through the electronics of the actuator.

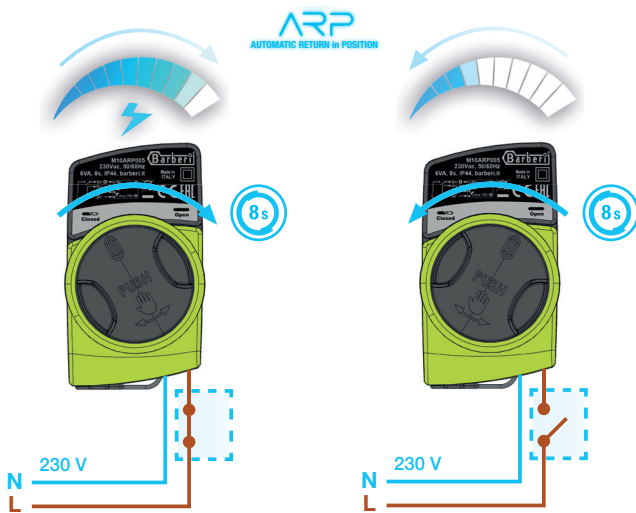
For a better comprehension of the working way, we invite you to combine the following explanation to the figures here beside:

Valve opening (2-ways) or diversion in A (3-ways):

- 1) electric supply on (for example thermostat contact closed)
- 2) the knob rotates in clockwise direction in 8 s to open the 2-way valve or divert the 3-way valve towards the port A
- 3) the supercapacitor charges
- 4) the valve remains in this position with an electric consumption reduced up to 90% if compared to a spring return valve

Valve closing (2-ways) or diversion in B (3-ways):

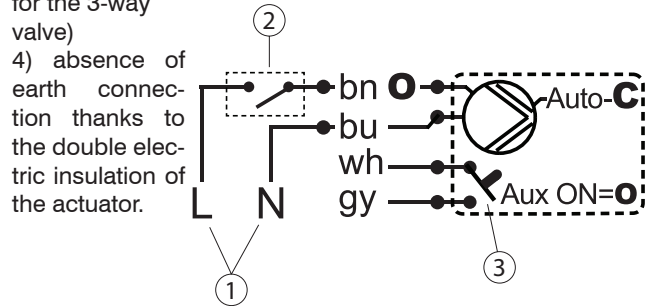
- 1) electric supply off (for example thermostat contact open)
- 2) the supercapacitor generates the electric current to restore the initial position of the valve (Automatic Return in Position ARP)
- 3) the knob rotates in anticlockwise direction in 8 s to close the 2-way valve or divert the 3-way valve towards the port B
- 4) the supercapacitor discharges.



Simplified electrical connection

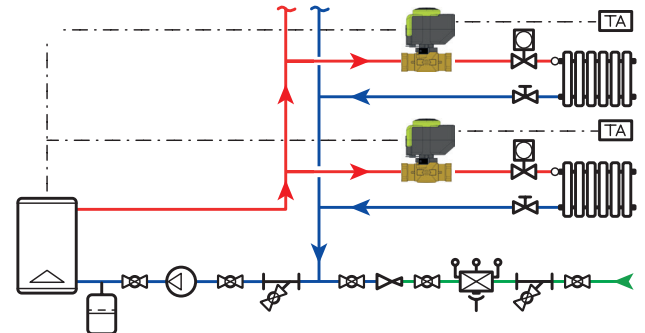
The BS5 ARP valves can be connected in the same way of the spring return valves:

- 1) 2 wire electric supply
- 2) on-off switch on the brown cable (for example: thermostat)
- 3) auxiliary microswitch closed with valve open (or diverted for the 3-way valve)
- 4) absence of earth connection thanks to the double electric insulation of the actuator.



Auxiliary microswitch

Both 2- and 3-way valves are equipped with auxiliary microswitch, SPST free of potential type. With the 2-way valve open or the 3-way diverted in A, the microswitch gets electrically closed thus allowing to activate other electric devices.



Wide range

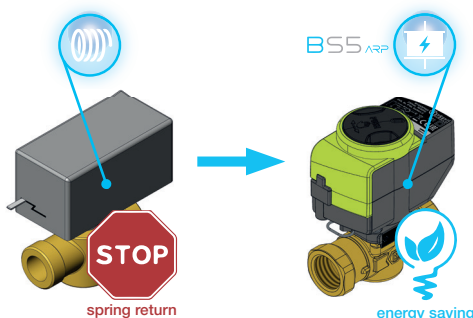
The width of the range makes the BS5 series a perfect choice for every application:

- Valve body available with 2 and 3 ways. Versions with female connections (from 1/2” to 1”), male connections (from 3/4” to 1 1/4”) and compression ends for copper pipe (22 and 28 mm);
- The actuator is available with ARP technology - Automatic Return in Position (green cover), fully interchangeable with the previous Y series and the traditional spring return zone valves. 2 point versions also available (red cover), V82.W.2PM-V83.W.2PM series.

Interchangeability with spring return

Spring return valves give way to the new technology with Automatic Return in Position (ARP), with the following advantages:

- 1) same configuration of the valve ports
- 2) same wiring diagram without earth connection (simplified connection)
- 3) the spring is replaced by an electronic system with supercapacitor
- 4) consumptions reduced up to 90% in open position. The valve does not need anymore to counteract against the spring: it is easily kept open through electricity with a consequent very low consumption of current
- 5) rotation speed in 8 s both during opening and closing.



VALVE SIZE

3/4" M	1/2" F	22 mm
1" M	3/4" F	28 mm
1 1/4" M	1" F	

ACTUATOR TYPE



VALVE TYPE



Working way

3-way valve

Fig. 3.1) Wiring diagram. When electrically supplying the brown cable, the supercapacitor charges and the valve rotates towards AB-A. When cutting the electric supply to the brown cable, the valve automatically rotates back to the AB-B position by using the electric current produced by the supercapacitor. The auxiliary microswitch gets closed at the end of the rotation towards AB-A.

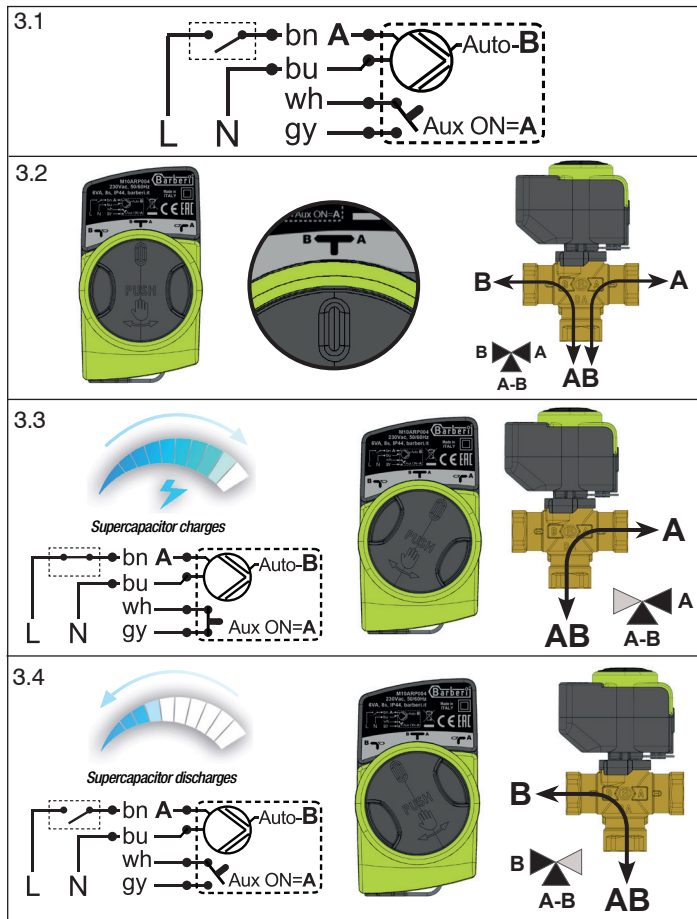
Fig. 3.2) Intermediate "Mid position": manual mode for system fill/drain. This operation separates the valve stem from the actuator rotation mechanism. Press and rotate the knob to the rotation mid position in order to manually connect the common port AB to both ports A and B. In manual mode, the knob stays down: supplying the phase (brown cable), the actuator is reconnected to the valve shaft, the knob is raised and automatic operation is restored.

Fig. 3.3) Factory configuration/Autoreset: actuator in B, valve in AB-B. At the first electric connection, supplying the phase (brown cable), the supercapacitor charges, the valve restores the automatic mode and, if previously manually rotated, rotates towards the AB-A position. The first charge of the supercapacitor (or after a long period of inactivity) could take up to a minute, the following ones will be very fast.

Fig. 3.4) Clockwise/anticlockwise rotation. By supplying the brown cable, the valve rotates clockwise fully up to the AB-A position (fig. 3.3). When cutting the electric supply to the brown cable, the valve automatically rotates back to the AB-B position by using the electric current produced by the supercapacitor. The automatic return towards AB-B always occurs when the electric contact on the brown cable gets open, also if the rotation towards AB-A is not complete.

Auxiliary microswitch. Two potential-free wire (SPST) type.

Safety function: with a power failure, the valve automatically returns to the position with AB-B open. Carefully choose the system zone to be connected to the AB-B way.



2-way valve

Fig. 2.1) Wiring diagram. When electrically supplying the brown cable, the supercapacitor charges and the valve opens. When cutting the electric supply to the brown cable, the valve automatically closes by using the electric current produced by the supercapacitor. The auxiliary microswitch gets closed at the end of the opening rotation.

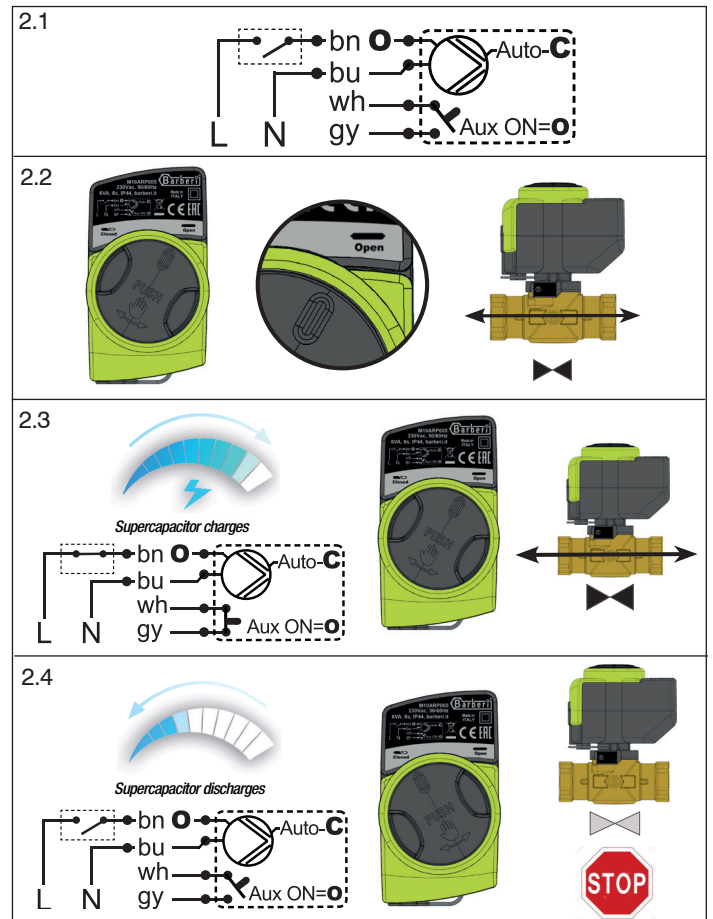
Fig. 2.2) Manual functioning for system fill/drain. The valve is supplied open for the system filling. It's possible to manually open/close it by pressing and rotating the knob. In manual mode, the knob stays down: supplying the phase (brown cable), the actuator is reconnected to the valve shaft, the knob is raised and automatic operation is restored.

Fig. 2.3) Factory configuration/First start-up: valve open, actuator in O (Open). At the first electric connection, supplying the phase (brown cable), the supercapacitor charges. If previously manually rotated before the first start-up, the valve restores the automatic mode and gets open (see point 2.2). The first charge of the supercapacitor (or after a long period of inactivity) could take up to a minute, the following ones will be very fast.

Fig. 2.4) Clockwise/anticlockwise rotation. By supplying the brown cable, the valve rotates clockwise fully up to the open position (fig. 2.3). When cutting the electric supply to the brown cable, the valve automatically rotates back to the closed position by using the electric current supplied by the supercapacitor. The automatic closing always occurs when the electric contact on the brown cable gets open, also if the opening rotation is not complete.

Auxiliary microswitch. Two potential-free wire (SPST) type.

Safety function: with a power failure, the valve automatically returns to the closed position. Carefully choose the system zone to be closed.

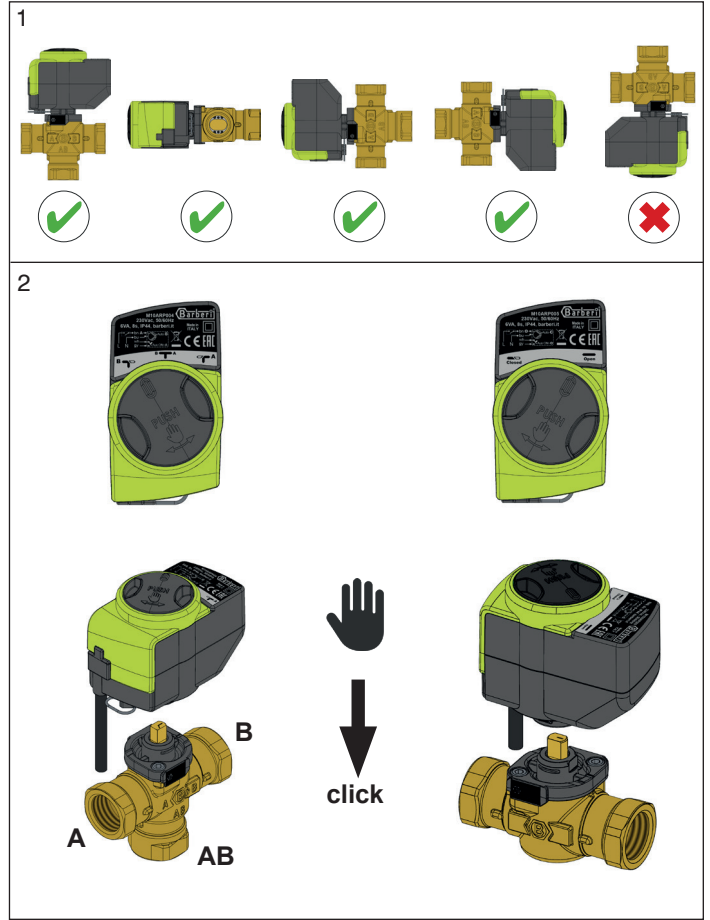
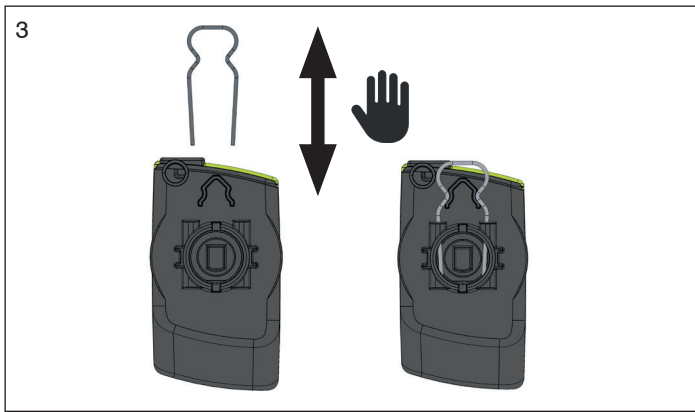


Installation

1) Motorized zone valves can be installed in any position except upside down. The 3-way valve cannot be converted into 2-way.

2) The installation of the actuator on the valve body can be performed through a clip, using a single hand without the need of any further tool (One hand assembly).

3) The actuator is supplied with the clip already placed in its specific seat. To assemble it on the valve body, it's necessary to align it to the valve body, as explained in the instruction sheet, and pushing it on the valve stem until hearing "click". To disassemble the actuator from the valve body, it's only necessary to remove the clip and lift the actuator. The insertion of the clip into its seat is made easier by specific chamfers that make the operation faster.



Accessories

M10.ARP.3VM

Spare ARP actuator with automatic return in position for 3-way zone and diverting valve. With rapid assembling on the valve, manual knob and cable. Auxiliary microswitch.

Protection class: **IP 44**
 Frequency: **50-60 Hz**
 Power consumption: **6 VA**
 Aux. microswitch contact rating: **1 SPST, 6(1) A-230 V**



Code	V	Running time [s]	Nr. poles	Cable [m]		
M10 ARP 004	230	8	4	0,9	1	10

M10.ARP.2VM

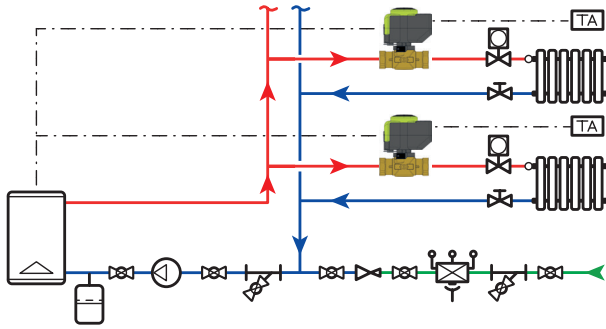
Spare ARP actuator with automatic return in position for 2-way zone valve. With rapid assembling on the valve, manual knob and cable. Auxiliary microswitch.

Protection class: **IP 44**
 Frequency: **50-60 Hz**
 Power consumption: **6 VA**
 Aux. microswitch contact rating: **1 SPST, 6(1) A-230 V**

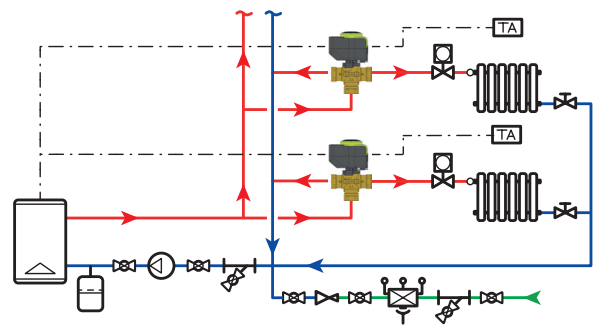


Code	V	Running time [s]	Nr. poles	Cable [m]		
M10 ARP 005	230	8	4	0,9	1	10

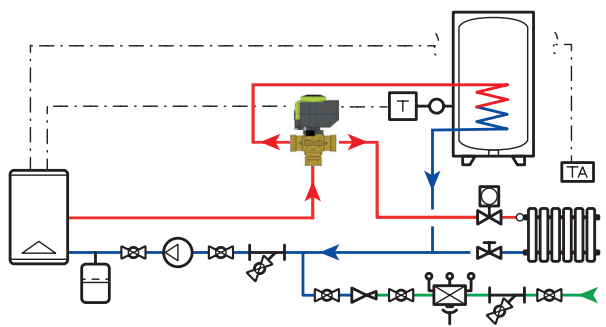
System diagrams



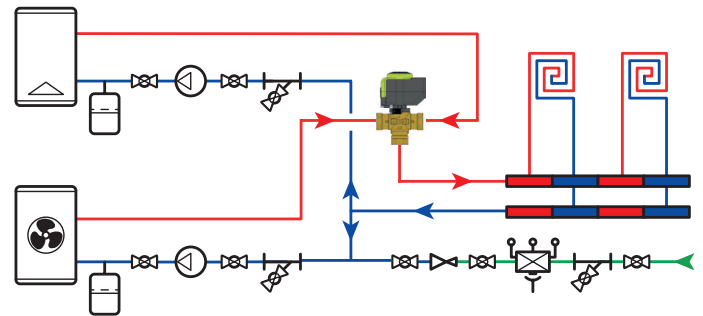
V82.W.ARP: use as zone valve in a heating system



V83.W.ARP: use as zone valve in a heating system



V83.W.ARP: use as diverting valve, 1 inlet and 2 outlets, as priority between the heating system and the domestic water storage



V83.W.ARP: use as diverting valve, 2 inlets and 1 outlet, to connect two generators to the same system

Specifications

Series V83.W.ARP

3-way rotor zone and diverting valve with automatic return in position ARP actuator. Threaded connections Rp 1/2 (from Rp 1/2 to Rp 1, from G 3/4 M to G 1 1/4 M, compression ends for copper pipe 22 mm and 28 mm). Brass body and obturator; gasket support in polypropylene; NBR gaskets; actuator case in polyamide. Maximum working pressure 10 bar. Maximum differential pressure 1 bar. Working temperature range 0–90 °C. Leakage <0,1% Kv. Complete with automatic return in position ARP actuator with manual knob: running time 8 s (complete commutation); electric supply 230±10% Vac, frequency 50–60 Hz; electric consumption 6 VA; number of poles 4 with integrated cable; cable length 0,9 m; protection class IP 44; electric protection class II; auxiliary microswitch contact rating (1 SPST) 6(1) A-230 V. Suitable fluids water for thermal systems, glycol solutions (max 30%).

Series V82.W.ARP

2-way rotor zone valve with automatic return in position ARP actuator. Threaded connections Rp 1/2 (from Rp 1/2 to Rp 1, from G 3/4 M to G 1 1/4 M, compression ends for copper pipe 22 mm and 28 mm). Brass body and obturator; gasket support in polypropylene; NBR gaskets; actuator case in polyamide. Maximum working pressure 10 bar. Maximum differential pressure 1 bar. Working temperature range 0–90 °C. Leakage <0,1% Kv. Complete with automatic return in position ARP actuator with manual knob: running time 8 s (complete commutation); electric supply 230±10% Vac, frequency 50–60 Hz; electric consumption 6 VA; number of poles 4 with integrated cable; cable length 0,9 m; protection class IP 44; electric protection class II; auxiliary microswitch contact rating (1 SPST) 6(1) A-230 V. Suitable fluids water for thermal systems, glycol solutions (max 30%).

Series M10.ARP3VM

Automatic return in position ARP spare actuator for 3-way rotor zone and diverting valve V83.W.ARP series with manual knob: running time 8 s (complete commutation); electric supply 230±10% Vac, frequency 50–60 Hz; electric consumption 6 VA; number of poles 4 with integrated cable; cable length 0,9 m; protection class IP 44; electric protection class II; auxiliary microswitch contact rating (1 SPST) 6(1) A-230 V.

Series M10.ARP2VM

Automatic return in position ARP spare actuator for 2-way rotor zone valve V82.W.ARP series with manual knob: running time 8 s (complete commutation); electric supply 230±10% Vac, frequency 50–60 Hz; electric consumption 6 VA; number of poles 4 with integrated cable; cable length 0,9 m; protection class IP 44; electric protection class II; auxiliary microswitch contact rating (1 SPST) 6(1) A-230 V.

