



2 way valve



3 way valve

1. Features

- Universal 2000 motorized valve has its peculiar use in interception of :
 - > zone heating systems
 - > low temperature refrigeration systems
 - > systems that make use of alternative energy
 - > industrial systems in general using hot and cold fluids
 - > irrigation
 - > automated systems in general

- The Universal 2000 servocontrol is available in the following versions :

3-point without relay (deviator)

terminal 1 neutral, phase on terminal 2 open,
deviated to terminal 3 close (see *wiring diagram*)

Each servo-control must be engaged using a single control

2-point with relay (switch)

terminal 1 neutral, terminal 2 fixed phase, terminal 3 control phase for opening (see *wiring diagram*)

several servo-controls may be engaged from a single control

- Both versions have an ON - OFF function (fully open or fully closed)
- 3-POINT version without relay may be set to intermediate positions using a suitable command.
- The Universal 2000 servocontrol features :
 - power to terminal 4 - with fully open valve to be used as a remote control (with indication of opening, pump relay engagement etc)
 - power to terminal 5 with valve fully closed to be used as a remote control (closure indication)
 - external components made of AISI 303 GVR and in OT 58 brass for the use of the servo-control in particularly difficult conditions (**PROTECTED TYPE**)

Accessories and options

- an auxiliary opening micro-switch (clean contact) which is electrically closed when the valve is open. optional use (opening complete indication, pump relay command, boiler command, PLC signal etc).
- an auxiliary closure micro-switch (clean contact) which is electrically closed when the valve is closed. optional use (closure completed indication, relay command, PLC signal etc).

Note :

For possible outdoor installations, if directly exposed at **SUN RAYS / BED WEATHER**, a **SIMPLE PREVIOUS FURTHER PROTECTION** is recommended..

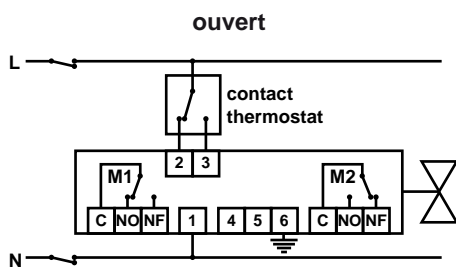
2. Servocontrol technical features

- Electrical motor dual-direction
- Electrical power supply 230/110/24V 50 Hz (*on request : 60Hz*)
- Torque 35 Nm*
- Manœuvre time $\triangleleft \rightarrow 90^\circ$ 50 s*
- Absorbed power 12 VA
- Degree of electrical protection IP 65
- Electrical capacity of the auxiliary micro 1A résistive
- Working environment temperature minimum -10°C maximum 50°C (*for lower temperatures please contact our technical office*)

* *Devis sur demande : durée de course $\triangleleft \rightarrow 90^\circ$: 30 s, couple : 25 Nm.*

Electrical connections

● Servocontrol without relay 3-point control

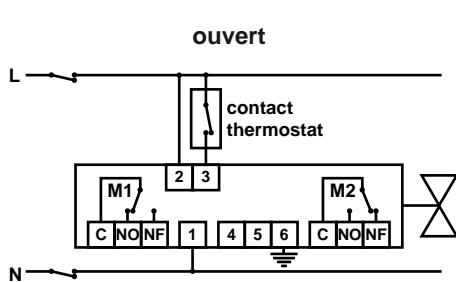


M1 FREE AUXILIARY MICRO-SWITCH ON OPENING
M2 FREE AUXILIARY MICRO-SWITCH ON CLOSURE

The illustrations show the terminals of the 3-POINT servocontrol, in the complete version which also features two auxiliary micros : the servocontrol is shown in the opening and closure conditions respectively.

The actuator supply on terminal 2 actuates the valve opening. Conversely, the power actuator on terminal 3 actuates the valve closing.

● Servocontrol with relay 2-point control



M1 FREE AUXILIARY MICRO-SWITCH ON OPENING
M2 FREE AUXILIARY MICRO-SWITCH ON CLOSURE

The illustrations show the terminals of the 2-POINT servocontrol with relay in the complete version which also features two auxiliary micros : the servocontrol is shown in the opening and closure conditions respectively.

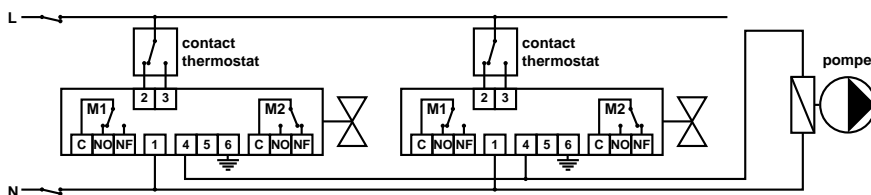
The uninterruptible power supply between terminals 1 and 2 determines and actuates the valve closing. The shunt through the thermostat contact between terminals 2 and 3 opens the valve.

Note :

In both cases, once opening has been undertaken, a power phase reaches terminal 4 and the contacts of the auxiliary micros, if present, arrange themselves as indicated in the diagram (opening servocontrol), vice versa, once closure occurs, a power phase reaches terminal 5 and the auxiliary micro contacts arrange themselves as shown in the relative diagram (closure servocontrol).

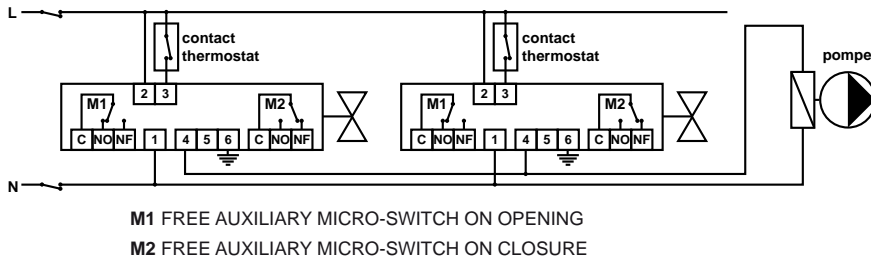
Both the 3-POINT and 2-POINT servocontrols with relay remain in their original position, in the absence of electrical power supply.

● Electrical connection examples

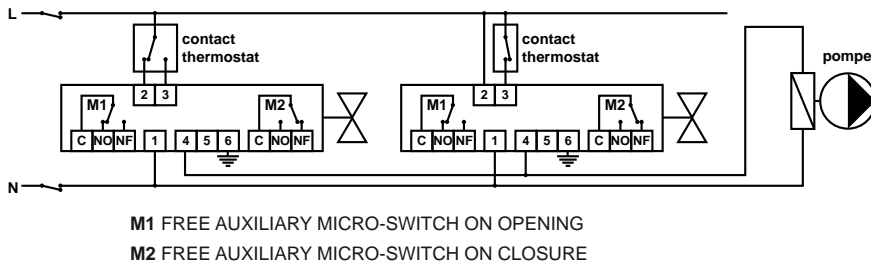


M1 FREE AUXILIARY MICRO-SWITCH ON OPENING
M2 FREE AUXILIARY MICRO-SWITCH ON CLOSURE

Pump stop connection with two standard servo-controls

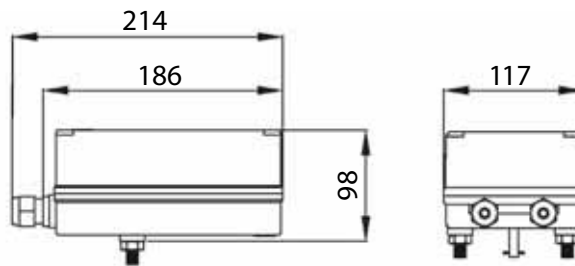


Pump stop connection with two special with relay servo-controls



Connection of the pump stop with one standard and one special with relay servo-controls

Overall dimensions of servocontrol



3. Brass body valve features



2 way
total passage
Ø 1"1/4 • 1"1/2 • 2" • 2"1/2 • 3"
with connection kit
and manual override



2 way long neck
total passage
Ø 1"1/4 • 1"1/2 • 2"
with connection kit
and manual override



3 way vertical
total passage
Ø 1"1/4 • 1"1/2 • 2"
with connection kit
and manual override

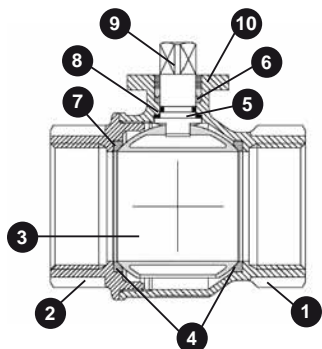


3 way horizontal
total passage
Ø 1"1/4 • 1"1/2 • 2"
with connection kit
and manual override

Spacer with connection kit and manual override

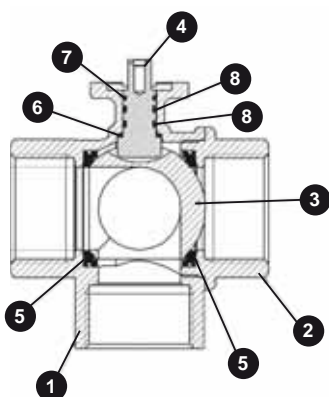


Stainless steel and OT58 components.
Length : 90 mm.



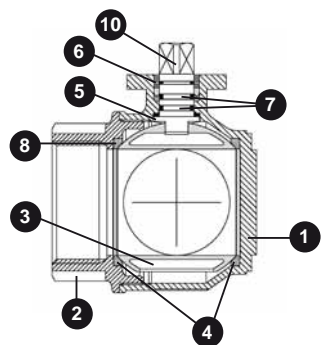
Used material for 2 way ISO 5211 body valve

1	Body	Brass CW617N UNI EN 12165
2	Coupling	Brass CW617N UNI EN 12165
3	Sphere	Brass CW617N UNI EN 12165
4	Sphere gasket	P.T.F.E (Téflon®)
5	Anti-friction gasket	P.T.F.E (Téflon®)
6	Rod gasket	P.T.F.E (Téflon®)
7	O-Ring	FKM VITON®
8	O-Ring	FKM VITON®
9	Control Rod	Brass CW617N UNI EN 12165
10	ISO5211 adaptor	Brass CW617N UNI EN 12165



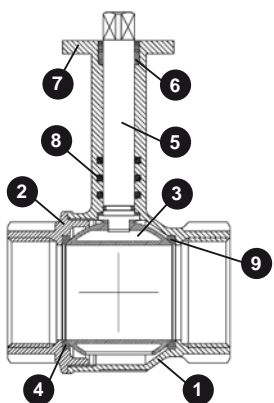
Used material for 3 way vertical ISO 5211 body valve

1	Body	Brass CW617N UNI EN 12165
2	Coupling	Brass CW617N UNI EN 12165
3	Sphere	Brass CW617N UNI EN 12165
4	Sphere gasket	P.T.F.E (Téflon®)
5	Anti-friction gasket	P.T.F.E (Téflon®)
6	Rod gasket	P.T.F.E (Téflon®)
7	O-Ring	FKM VITON®
8	O-Ring	FKM VITON®



Used material for 3 way horizontal ISO 5211 body valve

1	Body	Brass CW617N UNI EN 12165
2	Coupling	Brass CW617N UNI EN 12165
3	Sphere	Brass CW617N UNI EN 12165
4	Sphere gasket	P.T.F.E (Téflon®)
5	Anti-friction gasket	P.T.F.E (Téflon®)
6	Rod gasket	P.T.F.E (Téflon®)
7	O-Ring	FKM VITON®
8	O-Ring	FKM VITON®
10	Control Rod	Brass CW617N UNI EN 12165

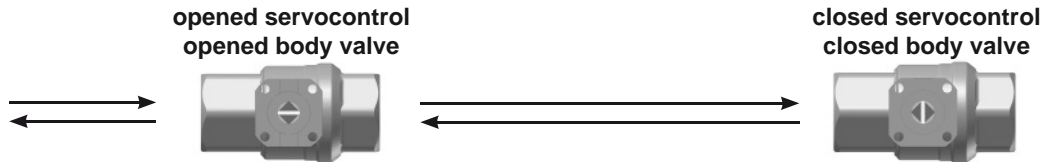


Used material for 2 way ISO 5211 long neckbody valve

1	Body	Brass
2	Coupling	Brass
3	Sphere	Brass
4	Seat	P.T.F.E (Téflon®)
5	Manouvre pin	Brass
6	Metal ring for adaptor stop	Brass
7	ISO 5211 F05 adaptor	Brass
8	O-Ring	EPDM peroxidic
9	O-Ring	EPDM peroxidic

2 way body valve

The body valve can be fitted without any differences as to the fluid sense.



3 way vertical body valve

In Universal 2000 valves, the 3 - way version available with two different spheres. In both cases, one hole is set axially to the common way, that is always opened.

● 3 hole body valve

In the case of 3 - hole ball, the second hole is located on one of the entrance ways while the third hole is positioned at right angles to the second hole: positioning towards the other entrance way requires 90° rotation.

A feature of the 3 hole shutter is that it is able to close one entrance way whilst beginning the opening of the next at the same time. For a short period, during the manoeuvre stage all the three ways inter-communicate.

Once the operation is complete the valve returns to being a deviation valve to all intents and purpose, so the use of the 3 - way - 3 hole deviation valve is recommended when the three deviated ways can communicate between themselves, which is usually the case in heating systems.

On the control rod there are two orthogonal millings that indicate which way communicates with the common way.

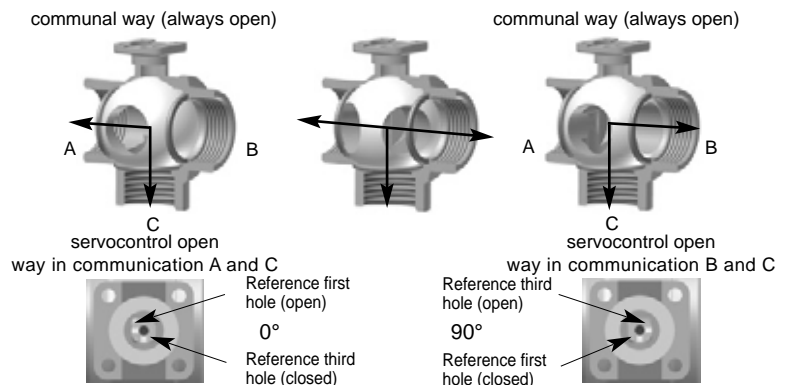
● 2 hole body valve

In the case of 2 hole ball, the second hole is positioned on one of the two entrance ways; positioning to the other entrance way requires 180° rotation.

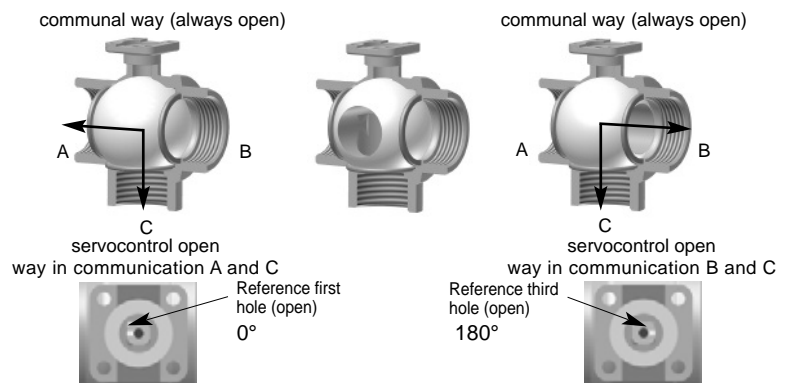
A feature of the 2 hole shutter is that it is able to close one of the 2 entrance ways before preparing the other for opening.

The use of the 3 - way - 2 hole deviation valve is necessary when the 2 deviated ways must never be in communication with each other.

On the control rod there is an orthogonal milling that indicates which way communicates with the common way.



The servocontrol rotates by **90° anti-clockwise**

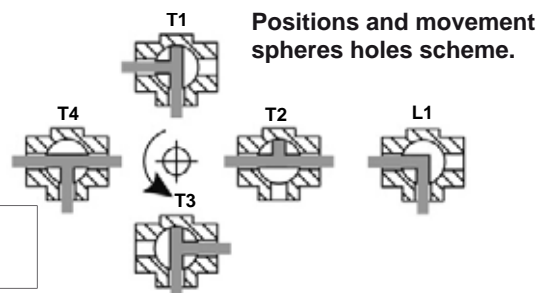


The servocontrol rotates by **180° anti-clockwise**

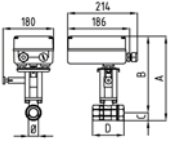
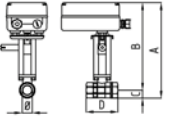
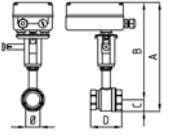
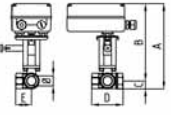
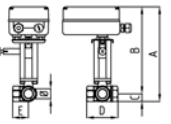
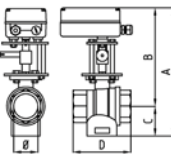
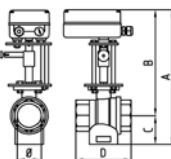
3 way horizontal body valve

3 way Universal 2000 with ISO 5211 connection is available with 2 different spheres and totally 5 holes positions.

The motor rotates **90° ANTI-CLOCKWISE**.
The position of the holes in the sphere is indicated by the milling on the rod.



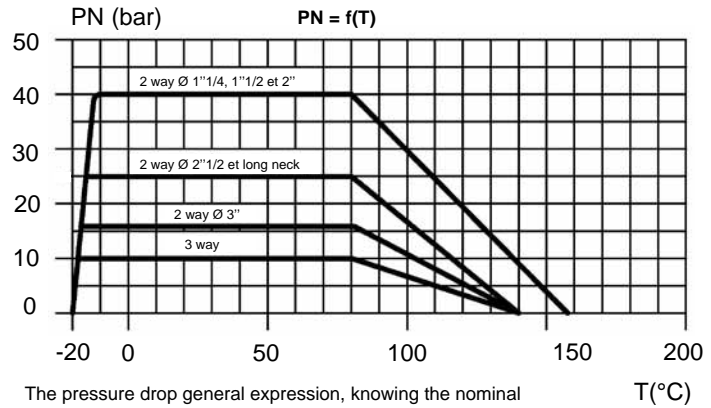
4. Overall dimensions

Model	DN	Ø	A	B	C	D	E
 <p>2 way with connection kit and manual override</p>	32	1"1/4	270	240	29	102	
	40	1"1/2	298	262	36	114	
	50	2"	327	281	46	138	
	65	2"1/2	362	306	57	157	
	80	3"	395	328	68	188	
 <p>2 way with spacer for insulation and manual override</p>	32	1"1/4	293	263	29	102	
	40	1"1/2	321	285	36	114	
	50	2"	350	304	46	138	
	65	2"1/2	385	329	57	157	
	80	3"	418	351	68	188	
 <p>2 way long neck with connection kit and manual override</p>	32	1"1/4	298	249	25	88	
	40	1"1/2	328	264	32	90	
	50	2"	344	271	36	102	
 <p>3 way horizontal with connection kit and manual override</p>	32	1"1/4	222	186	36	122,5	61
	40	1"1/2	236	193	43	138,5	69
	50	2"	247	192	56	166	83
 <p>3 way horizontal with spacer for insulation and manual override</p>	32	1"1/4	243	209	36	122,5	61
	40	1"1/2	259	216	43	138,5	69
	50	2"	270	215	56	166	83
 <p>3 way vertical with connection kit and manual override</p>	32	1"1/4	270	217	53	100	
	40	1"1/2	282	222	60	110	
	50	2"	300	225	75	130	
 <p>3 way vertical with spacer for insulation and manual override</p>	32	1"1/4	293	240	53	100	
	40	1"1/2	305	245	60	110	
	50	2"	323	248	75	130	

5. Fluid mechanical characteristics

Model	Ø	Kv
2 way	1"1/4	89
	1"1/2	230
	2"	265
	2"1/2	540
3 way vertical horizontal	3"	873
	1"1/4	20,7
	1"1/2	38,7
2 way long neck	2"	54
	1"1/4	76
	1"1/2	135
	2"	225

Kv (m³/h with Δp = 100kPa = 1 bar)



The pressure drop general expression, knowing the nominal pressure value of the fluid, is the following one* :

$$\Delta P [\text{bar}] = \left[\frac{Q [\text{m}^3/\text{h}]}{k_v} \right]^2$$

**The above mentioned expression is valid for water and similar fluids.

Pressure

	2 way 1"1/4 • 1"1/2 • 2"	2 way 2"1/2	2 way 3"	2 way long neck	3 way
Nominal working pressure	40 bar	25 bar	16 bar	25 bar	10 bar
Working max differential	16 bar	16 bar	16 bar	16 bar	10 bar

Fluids

Usable fluids Water and fluids compatible with EPDM® and Téflon® (Other fluids on request)

Temperatures*

	normal valve	valve with spacer for insulation (for fluid compatible with these temperatures)
Minimum	+7°C	- 20°C
Maximum	+100°C	+100°C

* Higher temperatures on request.