

COMPACT

MOTORIZED BALL VALVES



USE

COMPACT motorized valve has its peculiar use in interception and regulation of:

- zone heating systems
- glycol refrigeration systems
- systems that make use of alternative energy
- industrial systems in general using hot and cold fluids
- aqueducts
- automated systems in general



Servocontrol

All **COMPACT** servocontrols are made for being directly installed on body valve with ISO 5211 F05 - F07 - F10 attachment.

The **COMPACT** 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.

For modulating regulations refer to page 12.

The **COMPACT** 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**)

Thanks to the high quality of this servo-control it is widely used in a variety of industrial fields for the regulation of fluids in the preservation field, as well as in the food sector and in glycol passage.

- manual opening on the servo-control to engage the valve in the event of an electrical power failure or emergency.
- 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 / BAD WEATHER**, a **SIMPLE PREVIOUS FURTHER PROTECTION** is recommended.

SERVOCONTROL TECHNICAL FEATURES

- Electrical motor: dual-direction
- Electrical power supply: 230/110/24V 50 Hz (on request: 60Hz)
- Manoeuvre time (\sphericalangle 90°): 50 sec. Torque on the control rod: 35 Nm
- Absorbed power: 12 VA
- Degree of electrical protection: IP 65
- Electrical capacity of the auxiliary micro: 1A resistive
- Working environment temperature: minimum -10°C maximum 50°C, for lower temperatures please contact our technical office.



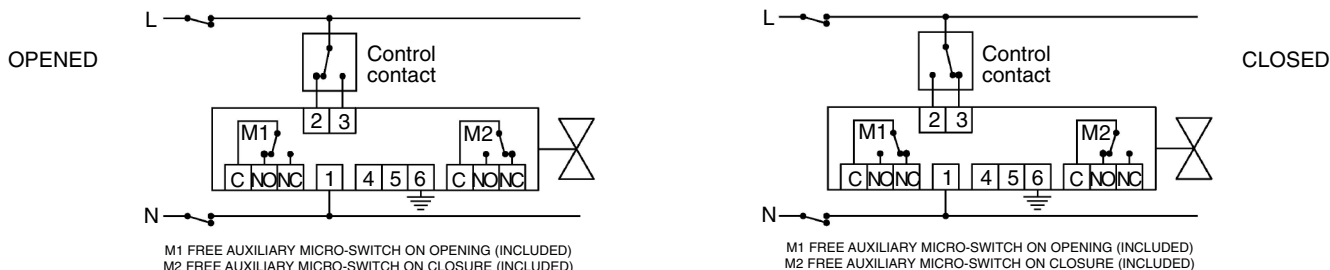
COMPACT

MOTORIZED BALL VALVES



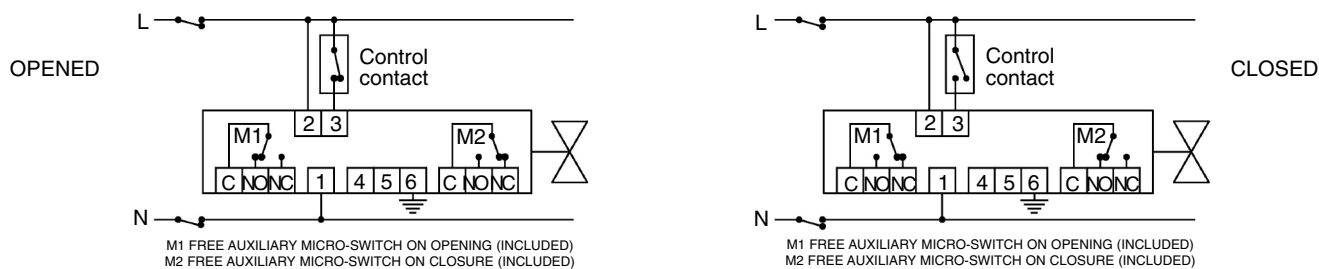
ELECTRICAL CONNECTIONS

Servocontrol WITHOUT RELAY 3-POINT CONTROL



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. Phase presence on terminal 2 opens the valve connected to the servocontrol, vice versa the presence of phase on terminal 3 undertakes the closure action.

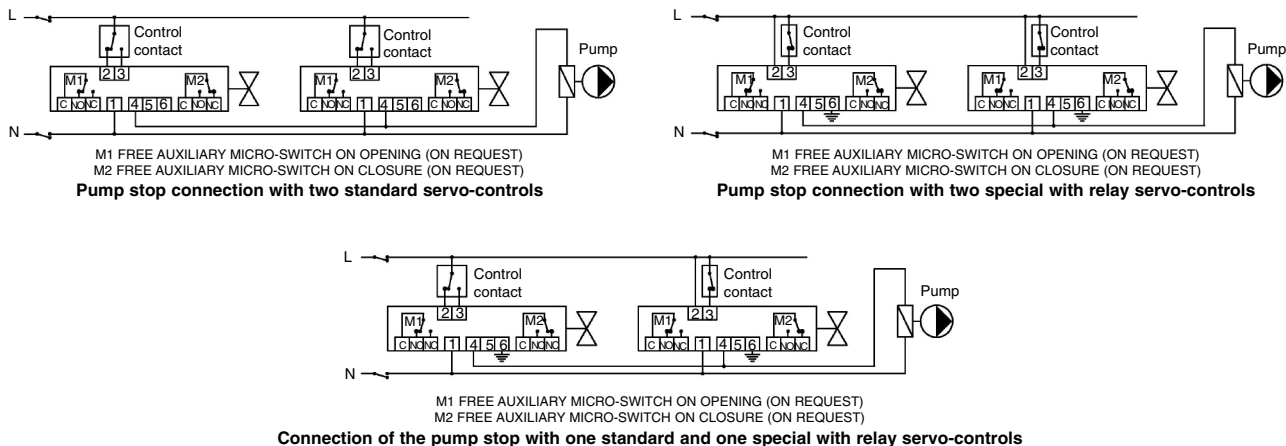
Servocontrol WITH RELAY 2-POINT CONTROL



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 presence of phase on terminal 3 permits the opening of the valve connected to the servocontrol, while the absence of phase on the same terminal determines its closure. (electrical auto-closure)

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



COMPACT

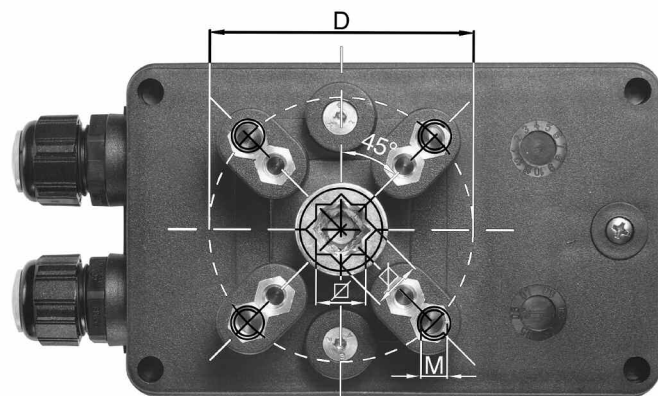
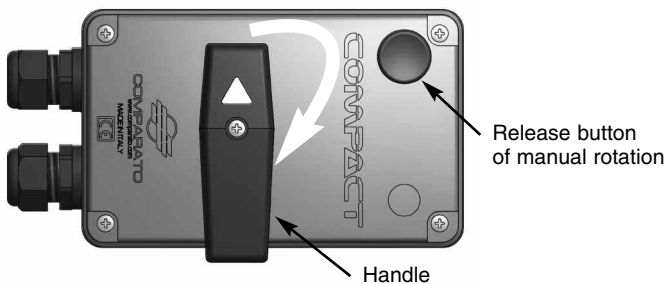
MOTORIZED BALL VALVES



MANUAL OPENING

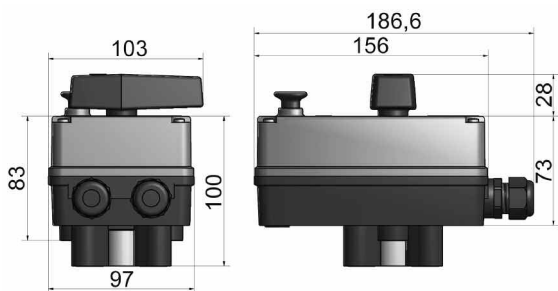
COMPACT actuators are supplied with an upper manual opening feature.

The manual opening feature makes it possible to operate the valve in emergency conditions.



Actuator		D	∠	M
COMPACT	F05	50 mm	11 mm	6 mm
COMPACT	F07	70 mm	14 mm	8 mm
COMPACT	F10	102 mm	14 mm	10 mm

OVERALL DIMENSIONS (mm) BASIC MODEL WITH ISO 5211 ATTACHMENT



BRASS Body valve

Ball shutter assures a better hydraulic seal and reduced charge loss.



2 WAY • TOTAL PASSAGE
Ø 1"1/4 • 1"1/2 • 2" • 2"1/2 • 3"



2 WAY • TOTAL PASSAGE
Ø 1"1/4 • 1"1/2 • 2"



3 WAY VERTICAL
TOTAL PASSAGE
Ø 1"1/4 • 1"1/2 • 2"



3 WAY HORIZONTAL
TOTAL PASSAGE
Ø 1"1/4 • 1"1/2 • 2"

AISI 316 Body valve

Ball shutter assures a better hydraulic seal and reduced charge loss.



2 WAY • TOTAL PASSAGE
Ø 1"1/4 • 1"1/2 • 2"



3 WAY HORIZONTAL
REDUCED PASSAGE
Ø 3/4" • 1" • 1"1/4"

Spacer FOR INSULATION

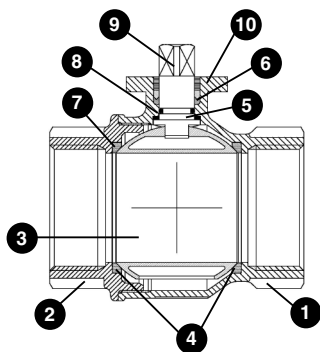


Low thermal conductivity plastic.
Length: 70 mm.



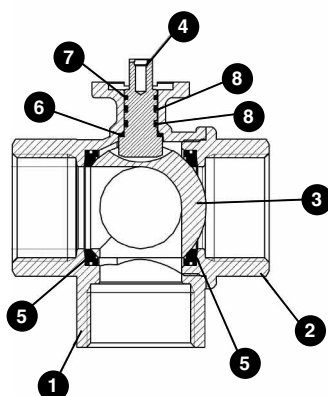
COMPACT

MOTORIZED BALL VALVES



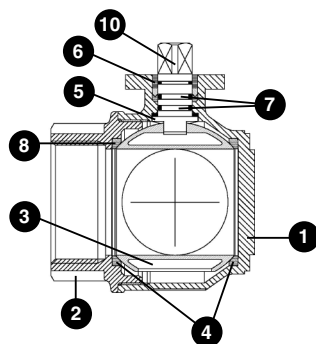
USED MATERIAL FOR 2 WAY - ISO 5211 BODY VALVE

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. (TEFLON®)
5 ANTI-FRICTION GASKET	P.T.F.E. (TEFLON®)
6 ROD GASKET	P.T.F.E. (TEFLON®)
7 O-RING	FKM VITON®
8 O-RING	FKM VITON®
9 CONTROL ROD	BRASS CW617N UNI EN 12165
10 ISO 5211 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. (TEFLON®)
5 ANTI-FRICTION GASKET	P.T.F.E. (TEFLON®)
6 ROD GASKET	P.T.F.E. (TEFLON®)
7 O-RING	FKM VITON®
8 O-RING	FKM VITON®

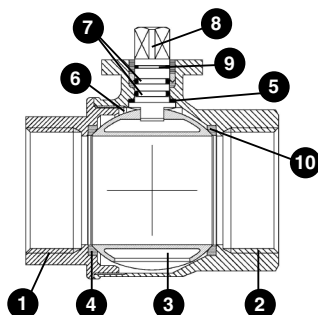


USED MATERIAL FOR 3 WAY HORIZONTAL - ISO 5211 BODY VALVE

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. (TEFLON®)
5 ANTI-FRICTION GASKET	P.T.F.E. (TEFLON®)
6 ROD GASKET	P.T.F.E. (TEFLON®)
7 O-RING	FKM VITON®
8 O-RING	FKM VITON®
10 CONTROL ROD	BRASS CW617N UNI EN 12165

USED MATERIAL FOR 3 WAY HORIZONTAL - AISI 316 BODY VALVE

1 BODY	CF8M
2 COUPLING	CF8M
3 SPHERE	INOX AISI 316
4 SPHERE GASKET	P.T.F.E. (TEFLON®)
5 ANTI-FRICTION GASKET	P.T.F.E. (TEFLON®)
6 ROD GASKET	P.T.F.E. (TEFLON®)
7 O-RING	FKM VITON®
8 O-RING	FKM VITON®
10 CONTROL ROD	INOX AISI 316



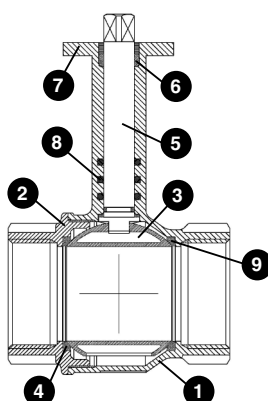
USED MATERIAL FOR 2 WAY - AISI 316 BODY VALVE

1 BODY	CF8M
2 COUPLING	CF8M
3 SPHERE	INOX AISI 316
4 SPHERE GASKET	P.T.F.E. (TEFLON®)
5 GASKET	P.T.F.E. (TEFLON®)
6 ROD WASHER	P.T.F.E. (TEFLON®)
7 O-RING	FKM VITON®
8 CONTROL ROD	INOX AISI 316
9 ROD GASKET	P.T.F.E. (TEFLON®)
10 O-RING	FKM VITON®



COMPACT

MOTORIZED BALL VALVES

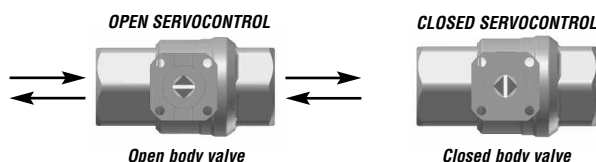


USED MATERIAL FOR 2 WAY - ISO 5211 LONG NECK BODY VALVE

1 BODY	BRASS
2 COUPLING	BRASS
3 SPHERE	BRASS
4 SEAT	P.T.F.E. (TEFLON®)
5 MANOUVRE PIN	BRASS
6 METAL RING FOR ADAPTER STOP	BRASS
7 ISO 5211 F05ADAPTER	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 **COMPACT** 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.

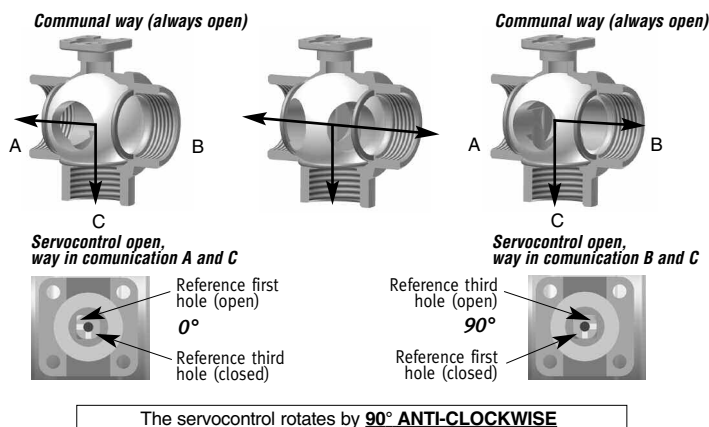
3 - WAY - 3 HOLE BODY VALVE.

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**.



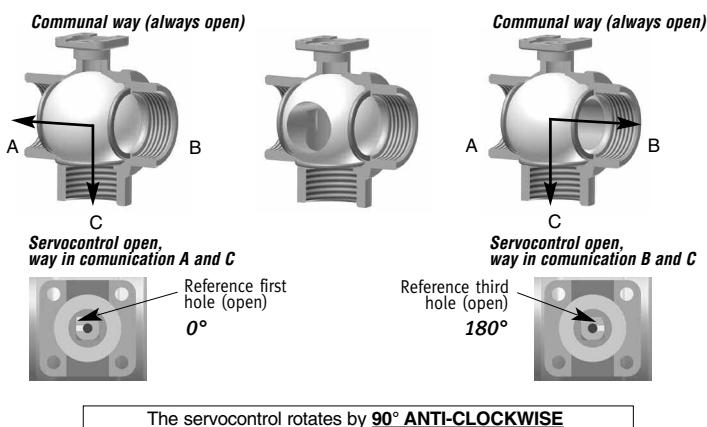
3 - WAY - 2 HOLE BODY VALVE

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**.



COMPACT

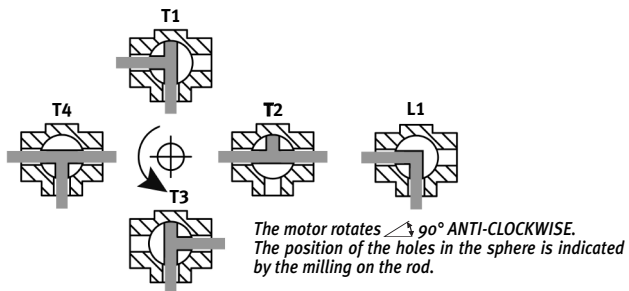
MOTORIZED BALL VALVES



3 WAY HORIZONTAL Body valve

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

Positions and movement spheres holes scheme



PVC Body valve



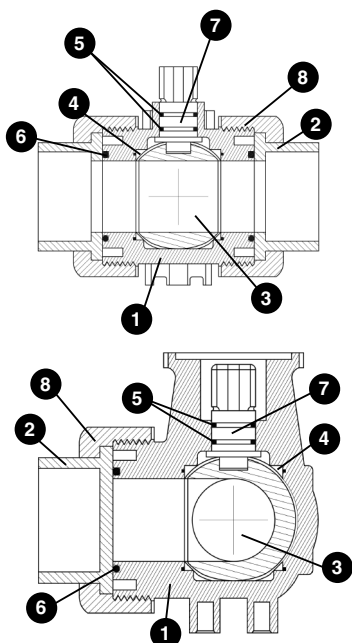
2 WAY • TOTAL PASSAGE

CONNECTION	TO BE GLUED	DN 50	63	75	90
	THREADED	Ø 2" • 2"1/2 • 3"			



3 WAY • TOTAL PASSAGE

CONNECTION	TO BE GLUED	DN 40	50	63
	THREADED	Ø 1"1/4 • 1"1/2 • 2"		



USED MATERIAL FOR 2 AND 3 WAY PVC BODY VALVE

1	BODY	PVC
2	COUPLING	PVC
3	SPHERE	PVC
4	SPHERE GASKET	P.T.F.E. (TEFLON®)
5	ROD GASKET	EPDM
6	SEAL GASKET	EPDM
7	CONTROL ROD	PVC
8	COUPLING RING NUT	PVC



COMPACT

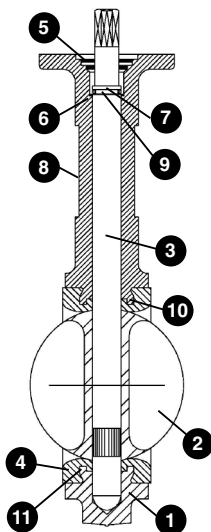
MOTORIZED BALL VALVES



BUTTERFLY Body valve



2 WAY • TOTAL TOTALE
DN 40 • 50 • 65 • 80



USED MATERIAL FOR BUTTERFLY BODY VALVE

Being the shutter made of made a lens, the body valve can be fitted without any differences as to the fluid sense.

1 BODY	BRASS CW617N UNI EN 12165
2 BUTTERFLY	BRASS CW617N UNI EN 12165
3 ROD	BRASS CW617N UNI EN 12165
4 COUPLING	P.T.F.E. (TEFLON®)
5 SEALING RING	P.T.F.E. (TEFLON®)
6 GASKET	P.T.F.E. (TEFLON®)
7 RING	FKM VITON®
8 SIGNALING PLATE	FKM VITON®
9 ANTI-EXTRUSION RING	BRASS CW617N UNI EN 12165
10 SUPERIOR GUIDE BEARING	BRASS CW617N UNI EN 12165
11 INFERIOR GUIDE BEARING	BRASS CW617N UNI EN 12165

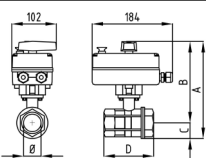
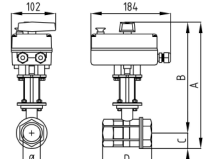
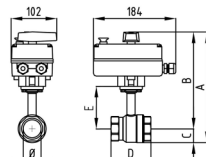
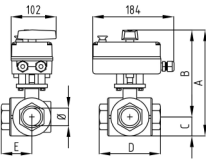
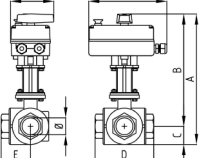
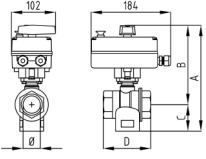
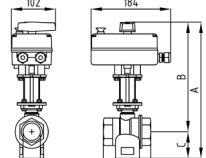
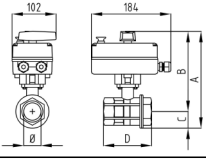
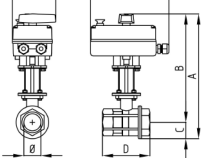


COMPACT

MOTORIZED BALL VALVES



OVERALL DIMENSIONS

MODEL		DN	Ø	A	B	C	D	E
 <p>2 Way with manual override from above</p>		32	1"1/4	250	221	29	102	
		40	1"1/2	279	243	36	114	
		50	2"	308	262	46	138	
		65	2"1/2	343	287	57	157	
		80	3"	376	309	68	188	
 <p>2 Way with spacer for insulation and manual override from above</p>		32	1"1/4	278	251	29	102	
		40	1"1/2	302	266	36	114	
		50	2"	322	276	46	138	
		65	2"1/2	346	289	57	157	
		80	3"	368	300	68	188	
 <p>2 Way Long Neck with manual override from above</p>		32	1"1/4	286	237	25	88	95
		40	1"1/2	316	252	32	90	110
		50	2"	332	259	36	102	118
 <p>3 Way Horizontal with manual override from above</p>		32	1"1/4	203	167	36	122,5	61
		40	1"1/2	217	174	43	138,5	69
		50	2"	228	173	56	166	83
 <p>3 Way Horizontal with spacer for insulation and manual override from above</p>		32	1"1/4	309	262	36	122,5	61
		40	1"1/2	333	276	43	138,5	69
		50	2"	349	287	56	166	83
 <p>3 Way Vertical with manual override from above</p>		32	1"1/4	241	186,5	53	100	
		40	1"1/2	255	193,5	60	110	
		50	2"	278	205	75	130	
 <p>3 Way Vertical with spacer for insulation and manual override from above</p>		32	1"1/4	311	256,5	53	100	
		40	1"1/2	325	263,5	60	110	
		50	2"	348	275	75	130	
 <p>2 Way AISI 316 with manual override from above</p>		32	1"1/4	223	191	30	100	
		40	1"1/2	245	206	36	110	
		50	2"	264	215	44	131	
 <p>2 Way AISI 316 with spacer for insulation and manual override from above</p>		32	1"1/4	267,5	234,5	30	100	
		40	1"1/2	275,5	236,5	36	110	
		50	2"	305,5	256,5	44	131	

BODY VALVES
BRASS

BODY VALVES
AISI 316



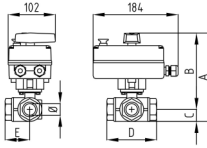
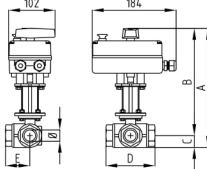
COMPACT

MOTORIZED BALL VALVES

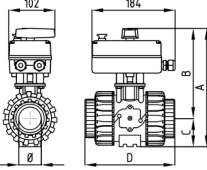
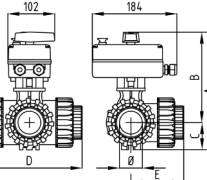


OVERALL DIMENSIONS

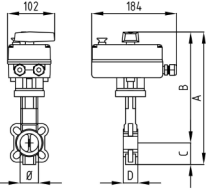
BODY VALVES
AISI 316

MODEL	DN	Ø	A	B	C	D	E
 3 Way Horizontal AISI 316 with manual override from above	20	3/4"	187,5	164,5	26	108	62
	25	1"	192,5	166,5	33	124	67
	32	1"1/4	220,5	186,5	38	134	81
 3 Way Horizontal AISI 316 with spacer for insulation and manual override from above	20	3/4"	257,5	234,5	26	108	62
	25	1"	262,5	236,5	33	124	67
	32	1"1/4	290,5	256,5	38	134	81

BODY VALVES
PVC

MODEL	DN	Ø TO BE GLUED mm	Ø THREADED	A	B	C	D	E
 2 Way PVC with manual override from above	50	63	2"	261	199	62	199	
	65	75	2"1/2	286	209	77	236	
	80	90	3"	322	227	95	270	
 3 Way PVC with manual override from above	32	40	1"1/4	216	174	42	180	90
	40	50	1"1/2	230	181	49	189	95
	50	63	2"	250	191	59	230	115

BODY VALVES
BUTTERFLY

MODEL	DN	Ø	A	B	C	D	E
 2 Way BUTTERFLY with manual override from above	40	1"1/2	333	276	57	32	
	50	2"	344	282	62	41	
	65	2"1/2	361	291	70	44	
	80	3"	386	297	89	44	



COMPACT

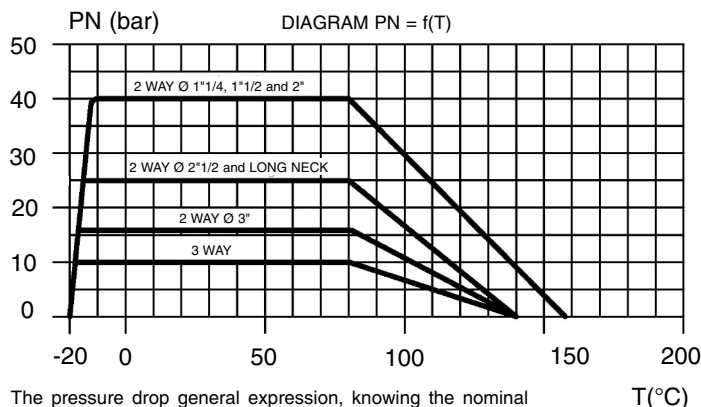
MOTORIZED BALL VALVES



FLUID MECHANICAL CHARACTERISTICS

Kv (m³/h with Δp = 100kPa = 1bar)

MODEL	Ø	Kv
2 Way	1"1/4	89
	1"1/2	230
	2"	265
	2"1/2	540
3 Way Vertical Horizontal	1"1/4	20,7
	1"1/2	38,7
	2"	54
2 Way Long Neck	1"1/4	76
	1"1/2	135
	2"	225



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

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"	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 TEFLON® • Other fluids on request

* TEMPERATURES

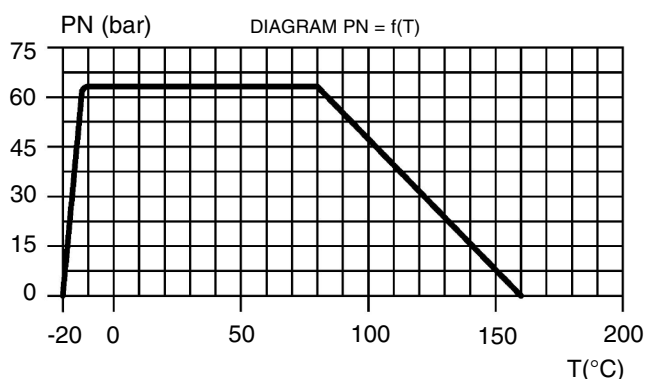
	Normal valve	Valve with spacer for insulation (for fluid compatible with these temperatures)
• Minimum	+7 °C	-20 °C
• Maximum	+100 °C	+100 °C

* Higher temperatures on request

BODY VALVES
BRASS

Kv (m³/h with Δp = 100kPa = 1bar)

MODEL	Ø	Kv
2 Way AISI 316	1"1/4	89
	1"1/2	230
	2"	265
3 Way AISI 316	3/4"	6
	1"	11
	1"1/4	16



PRESSURE

• Nominal working pressure	64 bar
• Working max differential	16 bar

FLUIDS Usable fluids

Water and fluids compatible with EPDM® and TEFLON® • 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

BODY VALVES
AISI 316



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COMPACT

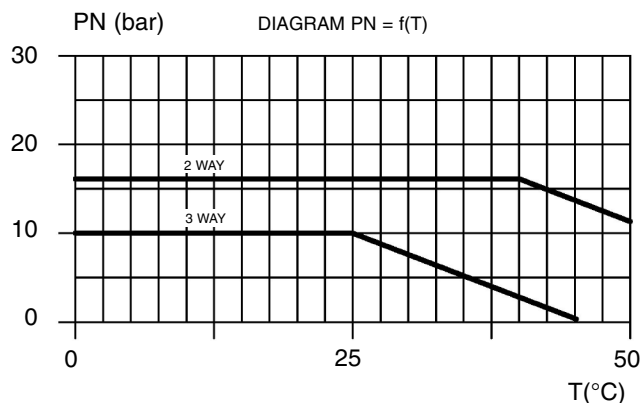
MOTORIZED BALL VALVES



FLUID MECHANICAL CHARACTERISTICS

Kv (m³/h with Δp = 100kPa = 1bar)

MODEL	Ø	Kv
2 Way PVC	2"	204
	2"1/2	525
	3"	710
3 Way PVC	1"1/4	45
	1"1/2	67
	2"	130



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

• Nominal working pressure	2 WAY 16 bar	3 WAY 10 bar
• Working max differential	16 bar	

FLUIDS Usable fluids

Water and fluids compatible with EPDM® and TEFLON® • Other fluids on request

* TEMPERATURES

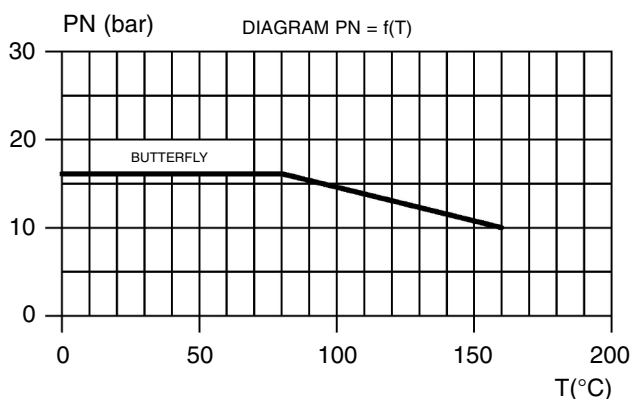
• Minimum	2 WAY +7°C	3 WAY +7°C
• Maximum	+40°C	+25°C

* Higher temperatures on request

BODY VALVES
PVC

Kv (m³/h with Δp = 100kPa = 1bar)

MODEL	DN	Kv
BUTTERFLY	40	62
	50	79
	65	174
	80	275



PRESSURE

• Nominal working pressure	16 bar
• Working max differential	16 bar

FLUIDS Usable fluids

Water and fluids compatible with EPDM® and TEFLON® • Other fluids on request

* TEMPERATURES

	Normal valve
• Minimum	+7°C
• Maximum	+100°C

* Higher temperatures on request

BODY VALVES
BUTTERFLY



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COMPACT

MOTORIZED BALL VALVES



USE IN ZONE HEATING SYSTEMS

Zone regulation is prescribed, in provided cases, by paragraph no. 12 of art. n. 5 of D.P.R. 412/93 and regulated by art. 7 paragraphs no. 3,4,5,7 and 8.

COMPACT motorized valve can be used either in a "ON - OFF" regulation or a modulating one.

"ON - OFF" REGULATION:

You execute it with a traditional thermostat, that can be a two-wire one, to be coupled to a servocontrol 2-POINT type, or with three-wire thermostat to be coupled with a servocontrol 3-POINT type.

MODULATING REGULATION:

To obtain high returns, new plant engineering requests a modulating regulation.

Modulation action can be accomplished through two different kinds of servocontrol.

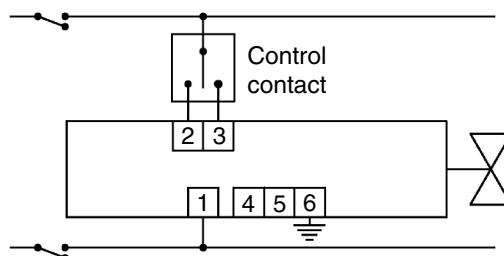
- MODULATING THERMOSTAT WITH 2-WIRE CONTROL (to be coupled to 2-POINT servocontrol with relay) and MODULATING THERMOSTAT WITH 3-WIRE CONTROL (to be coupled to 3-POINT servocontrol) which alternates opening and closing periods, which can be longer or shorter according to the difference between environmental temperature and set one.
- MODULATING THERMOSTAT WITH 3-WIRE CONTROL WITH STILL IN POSITION OF THE VALVE (to be coupled to 3-POINT servocontrol) which determines a valve opening angle proportional to the difference between environmental temperature and set one.

EXAMPLE:

With an environmental temperature of 15°C and a set one of 20°C, opening angle would be of 90° correspondent to 100% of the fluid passage, when the environmental temperature will increase to 19°C, opening angle decreases to 45°C correspondent to 50% of the fluid passage.

The more the difference between environmental temperature and set one decreases the more the opening angle will decrease, until a difference of 0°C correspondent to closed valve.

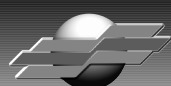
ELECTRIC SCHEME OF STANDARD TYPE SERVOCONTROL WITH MODULATING USE FOR STILL IN POSITION



UNI10348 norm provides different efficiency for different ways for zone regulation. In particular, the following scheme, shows how to a modulating zone regulation correspond higher values of efficiency.

ZONE REGULATION WITHOUT CLIMATIC PRE-REGULATION	Radiators and convectors			Radiant panels		
	isolated from structure	isolated from structure	flooded in the structure	isolated from structure	isolated from structure	flooded in the structure
"ON - OFF" regulator	0,93	0,91	0,87	0,96	0,94	0,92
Modulating regulator (proportional band 1°C)	0,97	0,96	0,92	0,98	0,97	0,95
Modulating regulator (proportional band 2°C)	0,95	0,93	0,89	0,97	0,96	0,94

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