

AUTOMATION BALL VALVES
WITH EQUAL PERCENTAGE CHARACTERISTIC

2010

NEW



ENOLGAS



ENOLGAS



● REVOLUTIONARY

● PURPOSE DESIGNED

● QUICK FIT

● 100% ITALIAN MADE

● PRICE COMPETITIVE

● HIGH QUALITY



Index

MOTORISED VALVES



**Definition and Description
of a Control Valve**

page **4**



**Electric Actuator
On-Off / Proportional**

page **19**



**2-Way Valve Quick
Mounting up to 2"**

page **8**



**Technical Bulletin
with Guide Tables**

page **30**



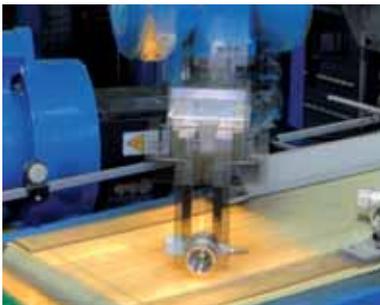
**3-Way Valve Iso•Top
up to 2"**

page **13**



**Operating Principle and
Typical Applications**

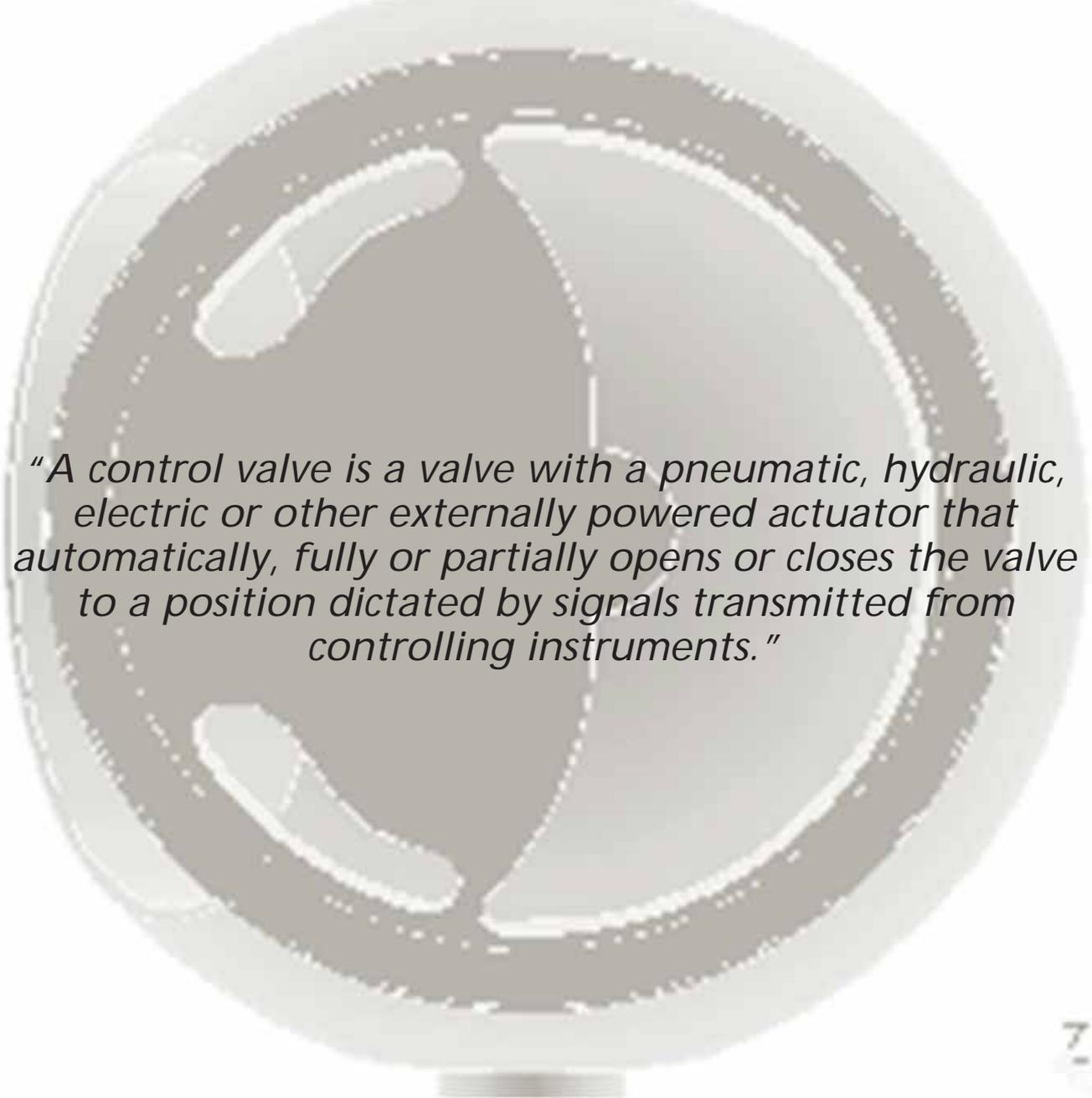
page **41**





DEFINITION OF A CONTROL VALVE

The following definition of a control valve (from *Process Instruments and Controls Handbook*, Ed. by Considine D.M., McGraw-Hill Book Company, 1985, p. 19.4) is used by the Scientific Apparatus Makers Association (SAMA):



“A control valve is a valve with a pneumatic, hydraulic, electric or other externally powered actuator that automatically, fully or partially opens or closes the valve to a position dictated by signals transmitted from controlling instruments.”

Control valves are used primarily to throttle energy in a fluid system and not only for shut-off purposes. Their internals must withstand high fluid velocity and turbulence for long periods without maintenance.

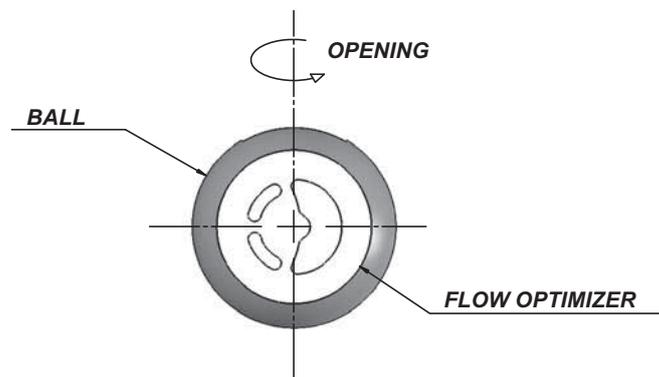
DEFINITION OF A CONTROL VALVE



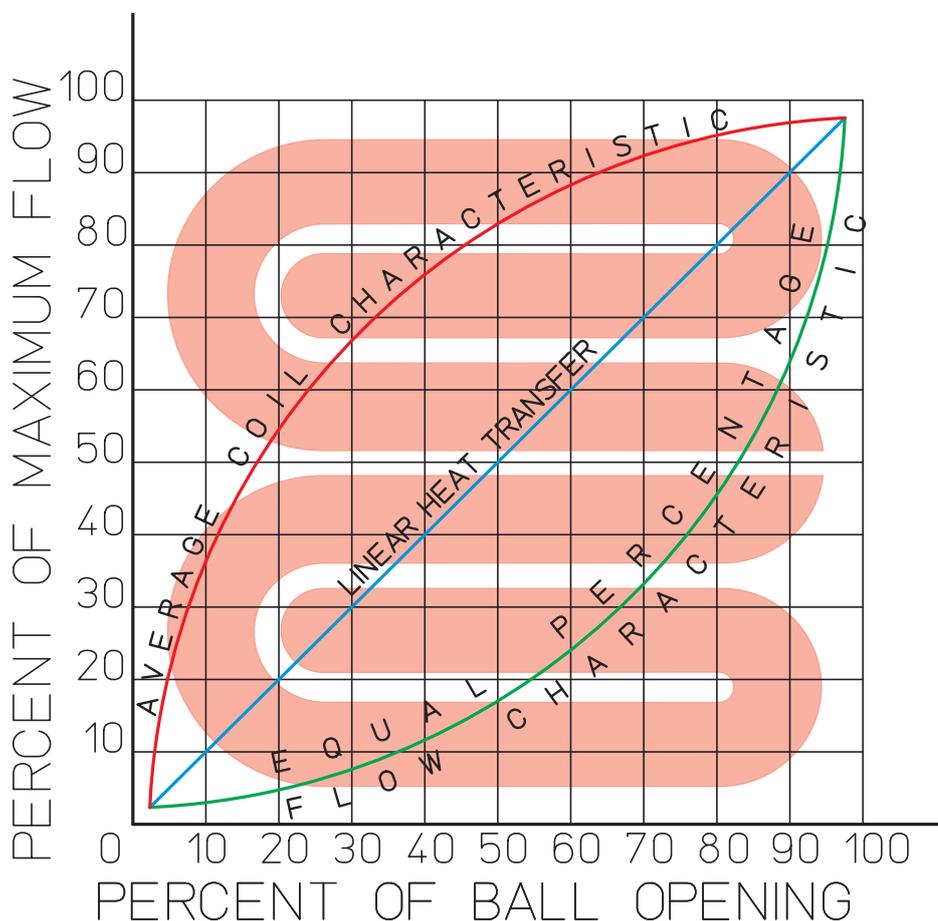
The control ball valve is an innovative component combining the simplicity and the economy of traditional ball valve with the accuracy and the reliability of a linear ball valve.

The conversion of a common ball valve, which is not at all suitable for calibration, into a control ball valve is carried out by inserting a specific diaphragm conferring the valve its typical equal proportional feature.

Such a valve is suitable for conferring the proper linear proportionality between the openness of the characterised disc and the supplied flow rate.



The characterised disc, assembled downstream of the ball, changes the valve fluid characteristic diagram into a better performing one, suitable for the control modulation.





DESCRIPTION OF A CONTROL VALVE

AIM

Inserted in hydraulic circuits and coupled with ENOLGAS actuators (they are supplied together with the valves), the control ball valve provides the following benefits and advantages:

- ✓ Equal proportional regulation of flow rate
- ✓ Excellent control stability thanks to the integrated control, characterised disc
- ✓ Kvs values similar to the ones given by linear valves if the same size
- ✓ Economic competitiveness of the control ball valve when compared to any linear valve of the same size
- ✓ Same advantages shown by any common ball valve, such as:
 - reduced dimensions
 - perfect seal
- ✓ High values for admissible differential pressure
- ✓ Actuators which can be controlled by any electronic regulator BMS/PLC on the market, particularly:
 - regulators with on-off connection for valve control with line voltage (typical of compact climate power units)
 - regulators with connection for valve control by means of a modulation signal 0 to 10V DC (typical of programmable regulators and multi-regulators)

The above mentioned features provides designers, consultants, contractors or plumbers flexibility when choosing the heat exchanger, especially in the following cases:

- the electrician has to buy himself the heat exchanger
- control signals come from a more complex centralized system for building automation, whose definition or installation times do not coincide with the ones of the whole system

USAGE

The control ball valve is particularly suitable for heat regulation of the following uses:

- Chilled & hot recycled water coils for air treatment system
- Chilled & hot water coils for the instantaneous production of domestic hot water production
- Static climate mixing circuits for heating systems and for systems for convective and radiant cooling
- Chilled & hot water coils for residential & commercial applications



CHOICE

A control ball valve showing any reduced flow rate resistance will generate an unavoidable regulation discrepancy (the valve will suddenly and continuously open and close).

This phenomenon brings to the following consequences:

- Consumption of energy
- Premature wear of the stem and its seal
- Possible damages or even complete break of the actuator
- High temperature fluctuations of the fluid to be controlled in comparison to the set up value
- Unstoppable range of temperature of the fluid to be controlled especially in the presence of sudden changes in heat conditions or in initial thermo hygrometric conditions (air treatment or maintenance of fluid temperature), or in case of discontinuous uses (instantaneous production of domestic hot water)

Electronic heat regulation, piloted by the valve actuator, will be unable to negate the above listed effects.

The general principle to be applied in order to identify the proper control ball valve is the following:

- The loss of head of an open valve shall be at least the same as the total loss of head of its components (pipes, valves) relevant to the circuit, or to the portion of the circuit, run by incremental range

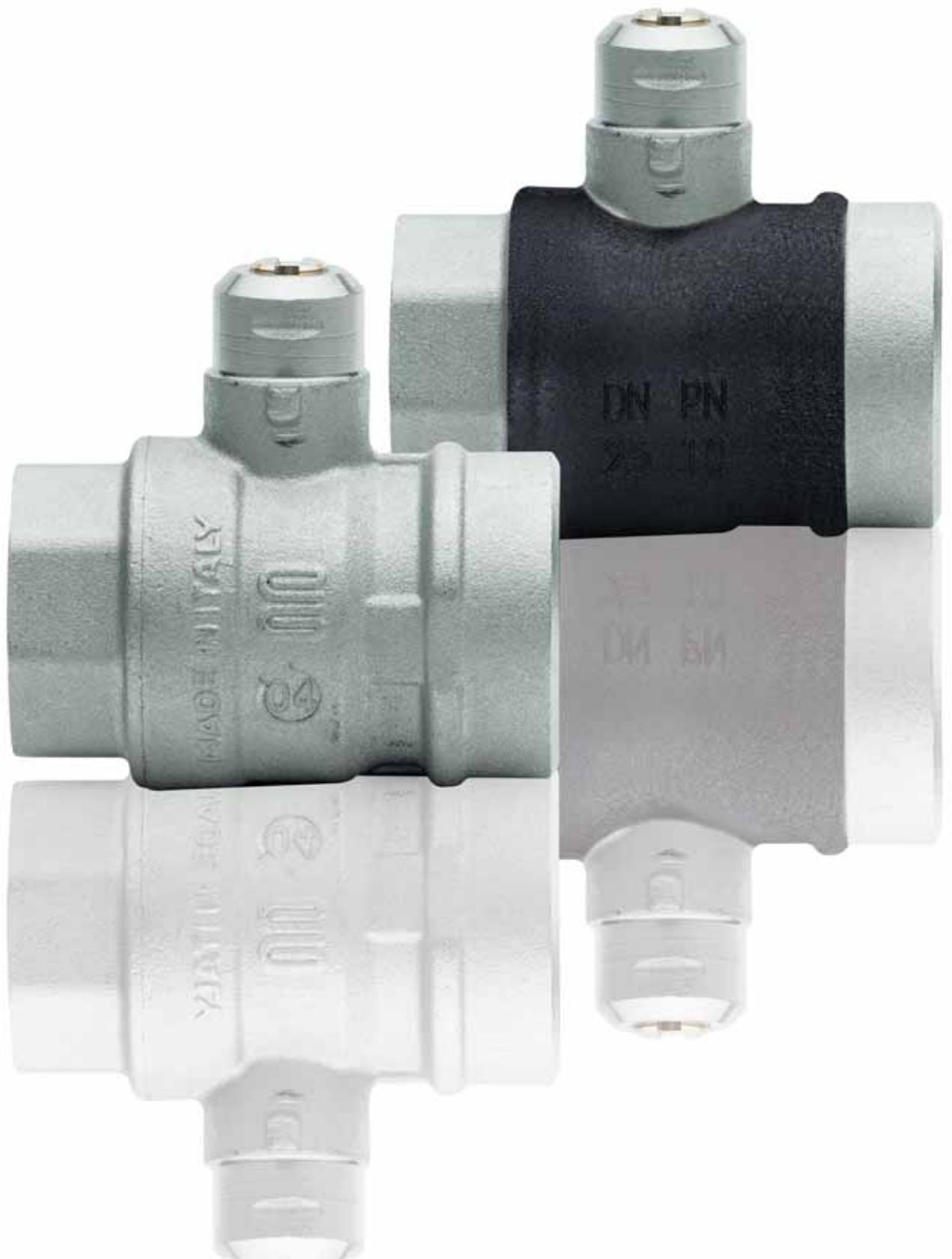
For any further information please notice that some basic principles and practical advice can be found at the end of this data sheet.





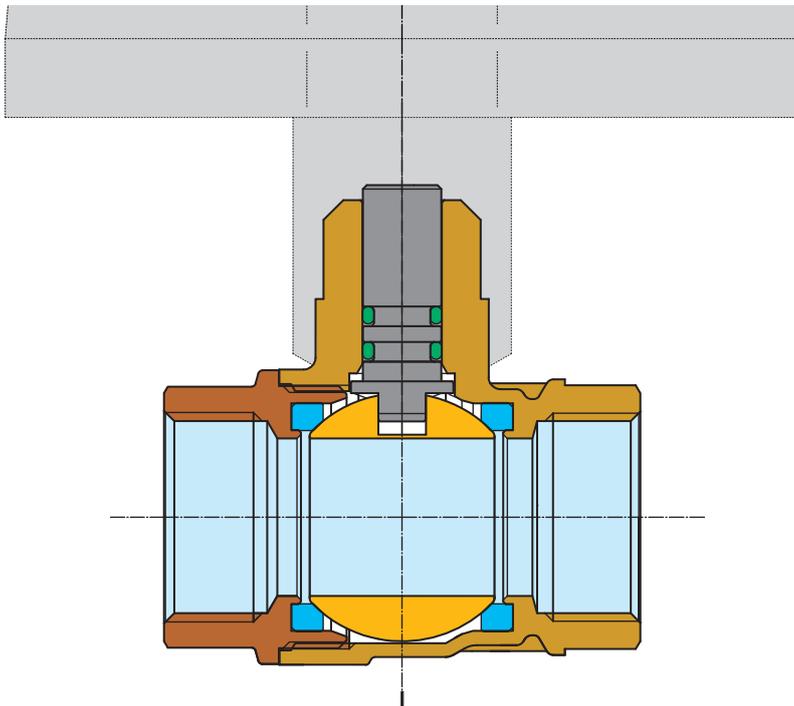
SWIFT•O•MATIC® 2-WAY

2-way valve quick mounting



SWIFT•O•MATIC® QM

Quick mounting full bore ball valve



BODY 1	
CW 617 N UNI EN 12165	
END ADAPTER 2	
CW 617 N UNI EN 12165	
BALL 3	
CW 614 N UNI EN 12164	
BALL GASKETS 4	
P.T.F.E.	
STEM 5	
CW 614 N UNI EN 12164	
THRUST WASHER 6	
P.T.F.E.	
STEM GASKET 7	
2 ELASTOMER O-RINGS	

TECHNICAL, DYNAMIC AND STRUCTURAL CHARACTERISTICS

CHARACTERISTICS AND NORMS

SWIFT•O•MATIC QUICK MOUNTING valves are made of brass, robust and specially designed to be easily and quickly automated with the actuators.

Full bore.

Brass: UNI EN 12165 CW 614 / CW 617 N

Threaded connections: NPT - BSPT - ISO 228

PED 97/23/CE - MODULE H

LIMITS OF USE

Temperature: -4F (-20°C) + 266F (130°C) (valve)

Temperature: -4F (-20°C) + 176F (80°C) (actuator)

MAIN USES

Hot, cold water and air

Hydrocarbons in general

Non-aggressive fluids

ADVANTAGES AND COMPETITIVENESS

The mechanical characteristics of **SWIFT•O•MATIC QUICK MOUNTING** provide the motorized valve with considerable advantages.

The quick and easy connection between the **SWIFT•O•MATIC QUICK MOUNTING** valve and the actuator is extremely stable.

The reduced operating torque allows a substantial reduction in the choice of the electrical or pneumatic drives.

COATED OPTIONS



POLYMER PROPERTIES	UNITS	GLOBAL	TEST METHOD
DENSITY	Kg/m ³	500	ISO 845
TENSILE STRENGTH	Kg/cm ²	45	ISO 37
ELONGATION AT BREAK	%	100	ISO 37
TEAR STRENGTH	N/m	11	ISO 34
HARDNESS AT 23°C	Shore A	65-70	ISO 868
COMPRESSION SET (50%)	%	10	ISO 1855
C.L.D. (40%)	Kpa		ISO 3386
TEMPERATURE LIMITS	°C	-20 +110	-

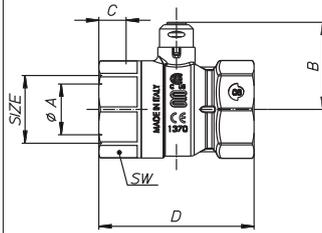
1. Tensile and Elongation core properties were tested also according to ISO 1798 Test Method

The coated valves has been designed for chilled water applications, easier installation and coating of the pipeline. So the most complicated part, between the valve and the actuator, is already coated with Semirigid Integral Skin foams with model density of 400-600 kg/m³ and a skin hardness of 60-77 Shore A.

NOTE: To require this valve, please put a "P" instead of "N" in the articles number.

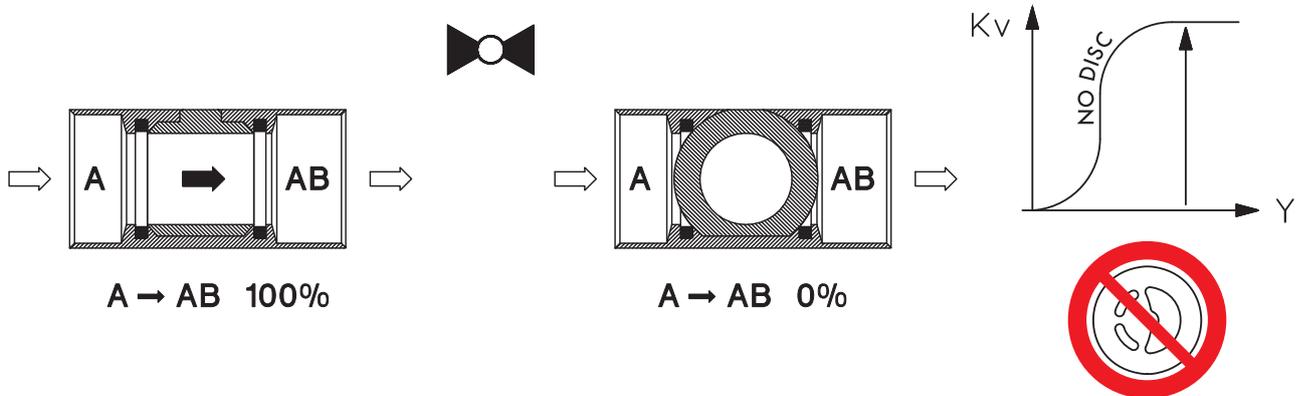


Art. S.3041
SWIFT•O•MATIC QM



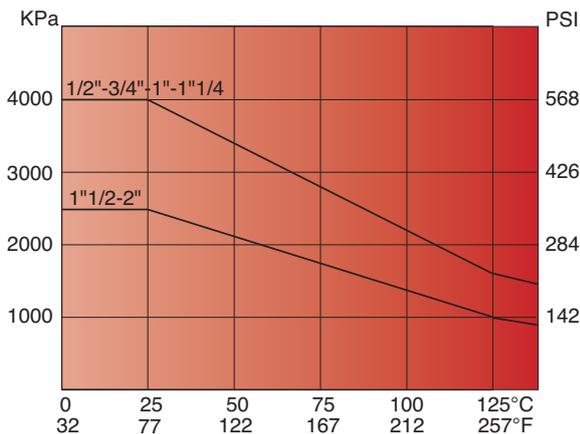
Ball valve, full bore, female/female, with quick mounting connection for actuator, nickel-plated.

Size	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
øA bore	15	20	25	32	32	40
B mm	37	41	45	50	50	57,5
C mm	7,2	11	12,5	13,5	15,5	17,5
D mm	50	58,5	77	82	90	105
SW mm	26	31	38	47	54	66

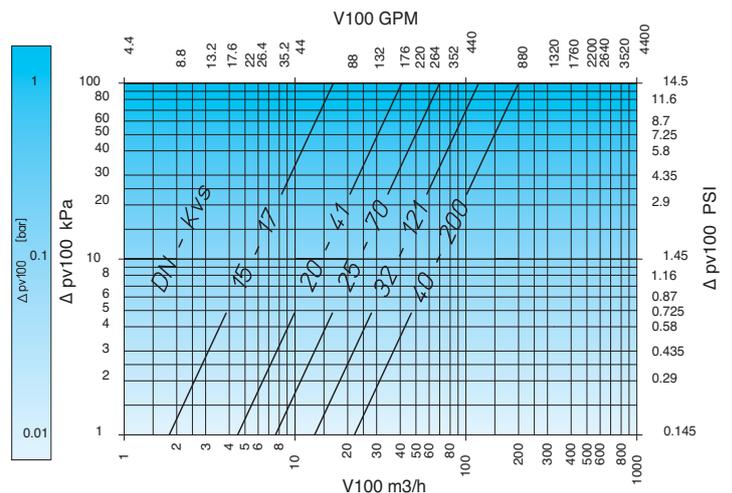


BALL VALVE FOR 2-POSITION CONTROL ON-OFF FULL BORE WITHOUT DISC						
Size	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
DN (mm)	15	20	25	32	40	50
Kvs (m ³ /h)	17	41	70	121	121	200
Article	S3041N04	S3041N05	S3041N06	S3041N07	S3041N08	S3041N09

Pressure/temperature diagram
(test carried out with water)

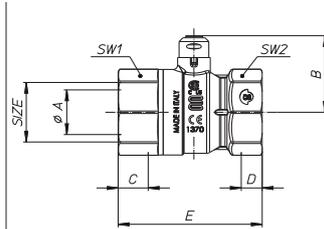


Loss of head diagram
(for water applications)



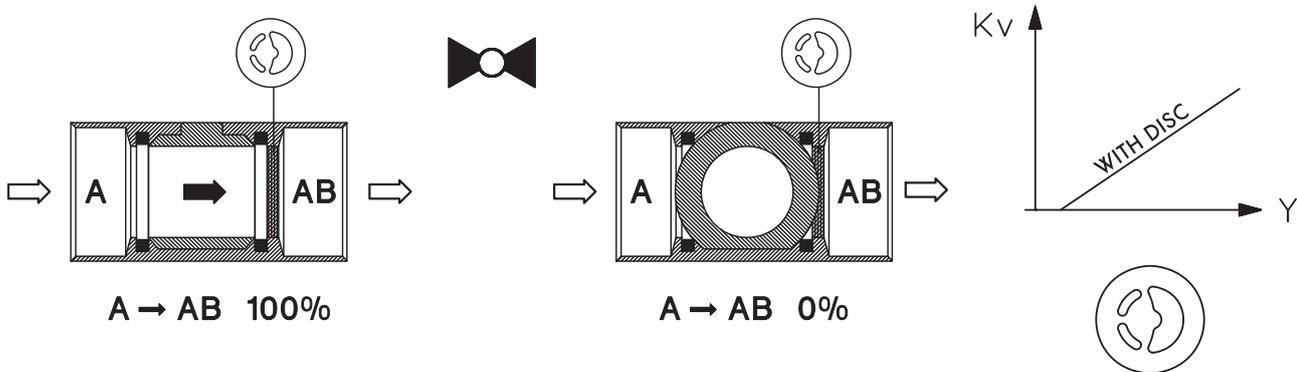


Art. S.3041
SWIFT•O•MATIC QM



Ball valve, full bore, female/female, with quick mounting connection for actuator, nickel-plated, with optimizer disc.

Size	½"	¾"	1"	1¼"	1½"	2"
ØA bore	15	20	25	32	32	40
B mm	37	41	45	50	50	57,5
C mm	15	16,3	19,1	21,4	21,4	25,7
D mm	7,2	11	12,5	13,5	15,5	17,5
E mm	56	64,5	77	90,5	95	112,5
SW1 mm	26	31	38	47	54	66
SW2 mm	26	30	38	47	54	65



BALL VALVE FOR MODULATING CONTROL WITH DISC

Size	1/2"	3/4"	1"	1" 1/4	1" 1/2	2"
DN (mm)	15	20	25	32	40	50
Kvs (m³/h)	3	6,7	9	16	20,4	31
Article	S3041N35 + S1661L04 + S1665P04	S3041N37 + S1661L05 + S1667P05	S3041N40 + S1661L06 + S1668P06	S3041N42 + S1661L07 + S1669P07	S3041N44 + S1661L08 + S1671P08	S3041N46 + S1661L09 + S1672P09

Operation

The parabolic shape of the flow optimizer orifice (figure 1) provides a slowly opening valve. Equal movements of the valve stem, at any point of the flow range, change the existing flow an equal percentage regardless of existing flow. The ball valve equal percentage flow characteristic (figure 2) mirrors the flow characteristic of a coil, resulting in linear heat transfer.

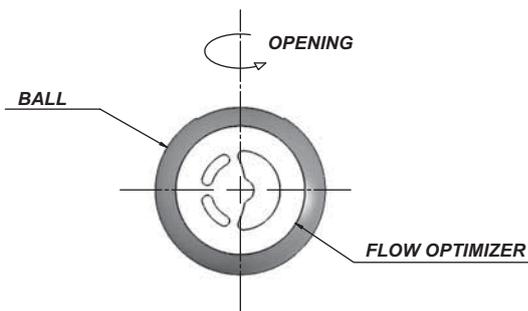


Fig. 1 Ball Valve Flow Optimizer

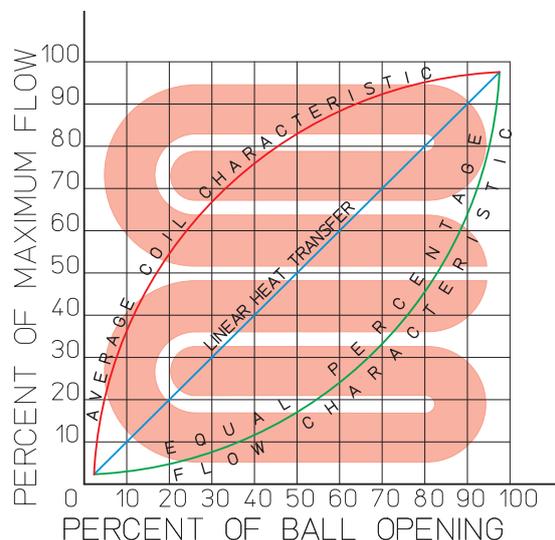
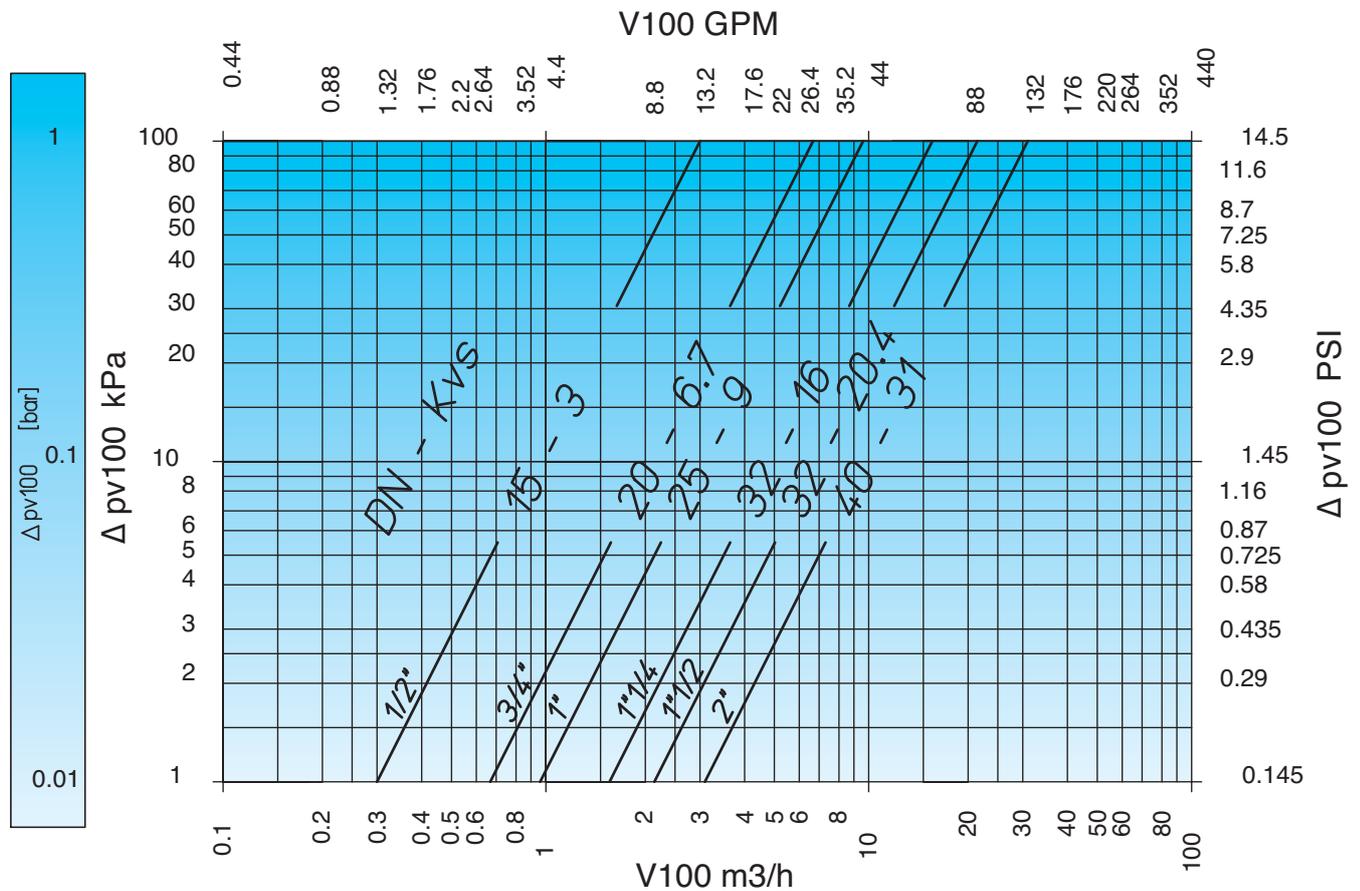


Fig. 2 Ball Valve Equal Percentage Flow Control





Loss of head diagram with optimizer disc



- Size from DN 15.....up to DN 50 mm (1/2".....2")
- Kvs 3.....to 292 m³/h
- Can be easily equipped with R2813.....S2815.....S2818.....S2912..... for 2-Way valve
- Manual assembly between valve and actuator quick mounting
- Suitable for small or medium size-sized heating, ventilating and air conditioning plants as a control or safety shut off valve
- Cooling water
- Chilled water
- Low temperature hot water
- Water with anti-freeze
- Range = -20 to + 130°C

BALL•O•MATIC® 3-WAY

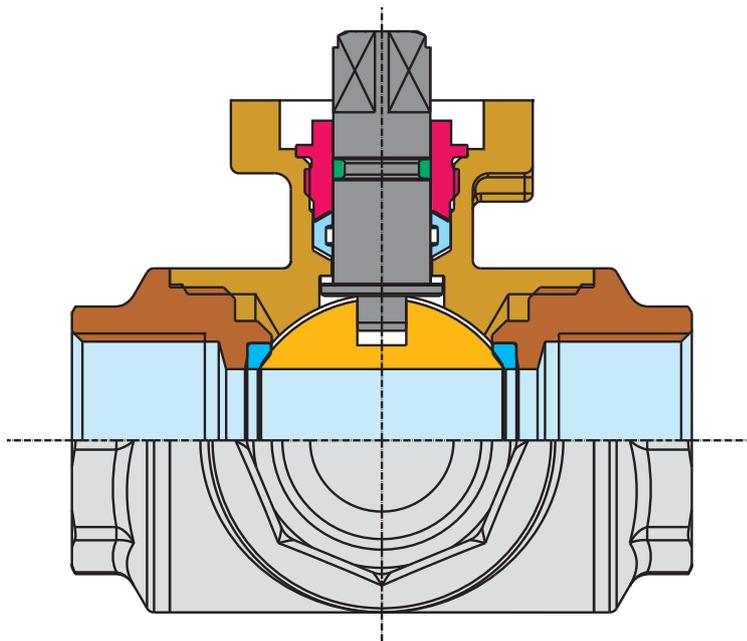
3-way ball valve for actuators





BALL•O•MATIC® 3-WAY

3-way ball valve for actuators



- BODY** 1 CW 617 N UNI EN 12165
- END ADAPTER** 2 CW 617 N UNI EN 12165
- BALL** 3 CW 614 N UNI EN 12164
- BALL GASKETS** 4 P.T.F.E.
- STEM** 5 CW 614 N UNI EN 12164
- O-RING** 6 ELASTOMER
- GLAND** 7 CW 614 N UNI EN 12164
- THRUST WASHER** 8 P.T.F.E.
- STEM GASKET** 9 P.T.F.E.

Size	DN	Max Breaking Torque	Kv	
			ON-OFF	MODULATING
PN 0 T 25°C				
1/4"	8	5 Nm	5.9	-
3/8"	10	5 Nm	9.4	-
1/2"	15	5 Nm	17	3
3/4"	20	6,5 Nm	41	6,7
1"	25	9,5 Nm	70	9
1 1/4"	32	15 Nm	121	16
1 1/2"	40	25 Nm	200	27
2"	50	30 Nm	292	40

(*) technical information available upon request.

The above mentioned values refer to a new valve, as released by its manufacturer, after a fixed time. Please consider adequate safety margin in case you might use the valve with different actuators.

FEATURES

BALL•O•MATIC 3-way valves are in brass, heavy line, designed to be easily and quickly combined with an actuator.

Wear resistant, made up of solid and long-lasting materials.

Connections to actuators according to ISO 5211.

TECHNICAL FEATURES

Full bore, 4 gaskets.

THREADS

Ends are EN 10226 (ex UNI ISO 7/1) threaded.

WORKING PRESSURES

From PN 40 (1/2"), see diagram.

TEMPERATURE LIMITS

- 20°C + 130°C, see diagram.

APPLICATIONS

BALL•O•MATIC 3-way valves are suitable for applications with hot and cold water, compressed air, oils, hydrocarbons and non-corrosive fluids. For any special uses see the table of chemical resistance.

COATED OPTIONS



POLYMER PROPERTIES	UNITS	GLOBAL	TEST METHOD
DENSITY	Kg/m ³	500	ISO 845
TENSILE STRENGTH	Kg/cm ²	45	ISO 37
ELONGATION AT BREAK	%	100	ISO 37
TEAR STRENGTH	N/m	11	ISO 34
HARDNESS AT 23°C	Shore A	65-70	ISO 868
COMPRESSION SET (50%)	%	10	ISO 1855
C.L.D. (40%)	Kpa		ISO 3386
TEMPERATURE	°C	-20 +110	-

1. Tensile and Elongation core properties were tested also according to ISO 1798 Test Method

The coated valves has been designed for chilled water applications, easier installation and coating of the pipeline. So the most complicated part, between the valve and the actuator, is already coated with Semirigid Integral Skin foams with model density of 400-600 kg/m³ and a skin hardness of 60-77 Shore A.

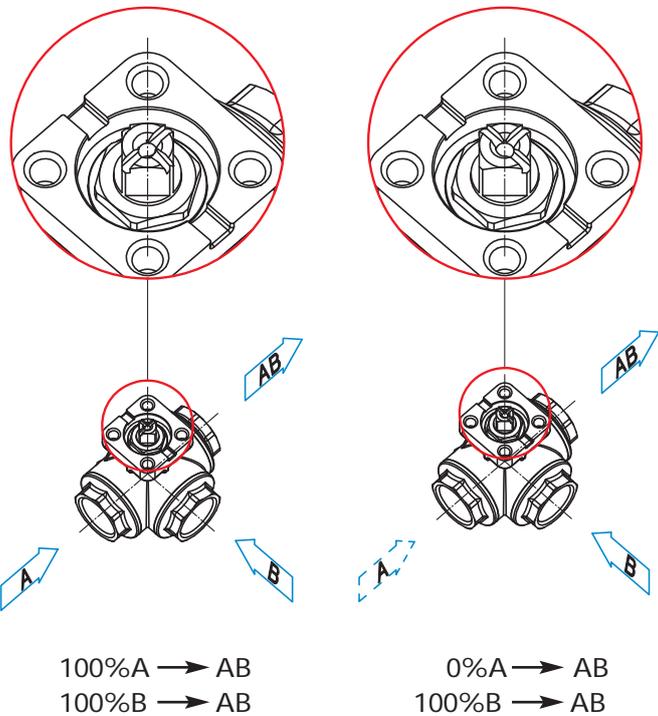
NOTE: To require this valve, please put a "P" instead of "N" in the articles number.

BALL•O•MATIC® 3-WAY

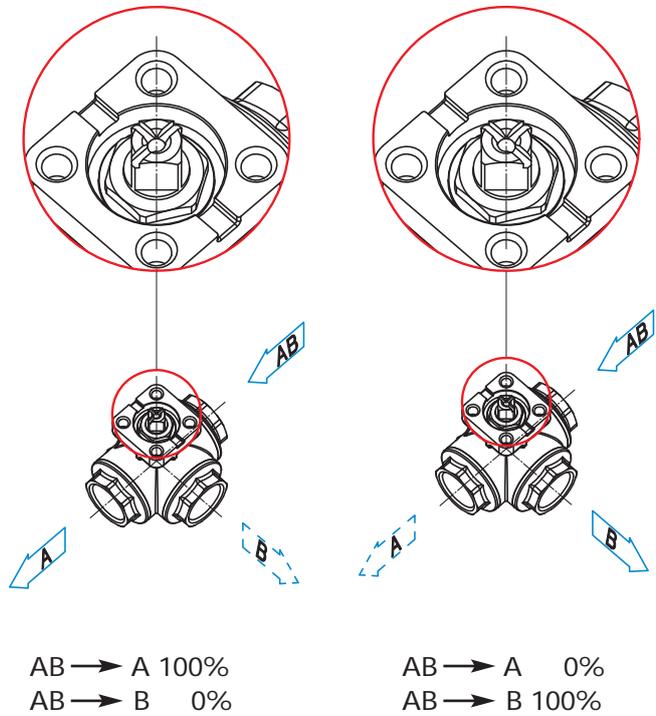
Applications



MIXING

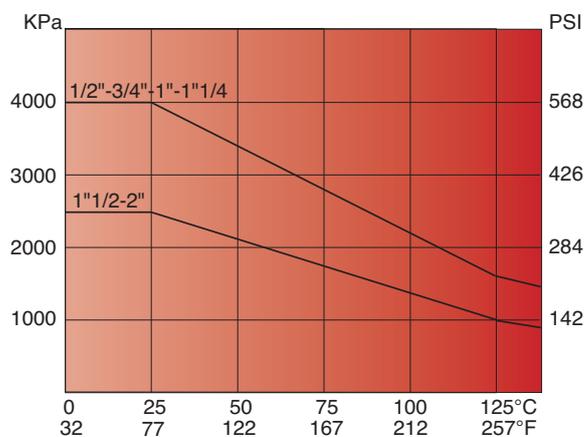


DIVERTING

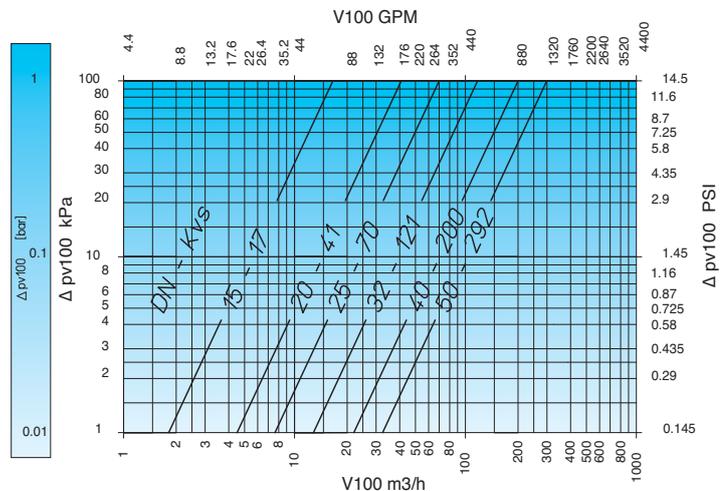


Note: Mixing or diverting depends on installation and flow optimizer position. Specify when ordering.

Pressure/temperature diagram
(test carried out with water)



Loss of head diagram
(for water applications)





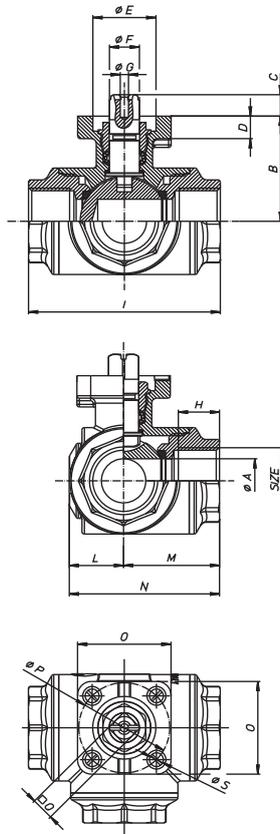
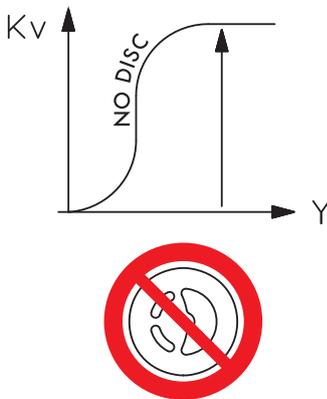
BALL•O•MATIC® 3-WAY

ON-OFF

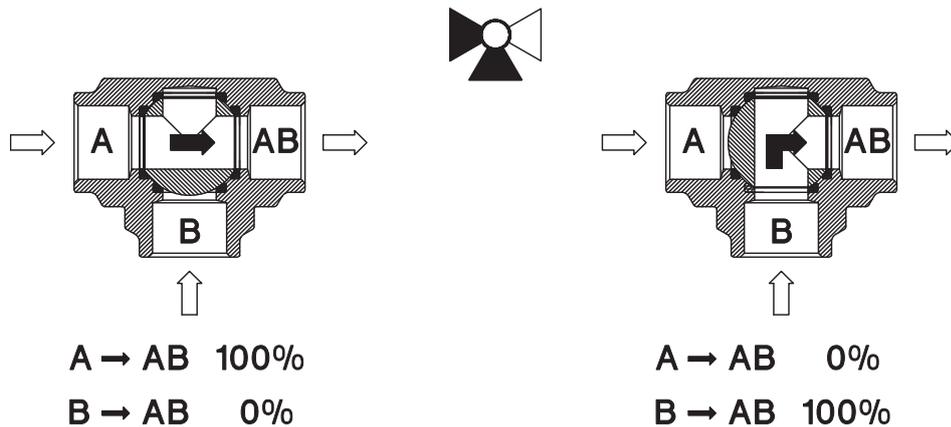
Art. S.1070 BALL•O•MATIC T-PORT



3-way ball valve, full bore with T-port.



Size	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
øA pass./bore	8	10	14,1	17,6	25	32	40	50
B mm	38	38	38	42	46,5	61,5	63,5	74
C mm	9	9	9	9	9	11	11	14
D mm	9	9	9	9	9	10	10	12
øE _{HS}	25	25	25	25	25	30	30	35
øF	10,8	10,8	10,8	11,9	11,9	13,9	13,9	17,9
øG	M4	M4	M4	M4	M4	M4	M4	M5
H mm	15	15	15	16,3	19,1	21,4	21,4	25,7
I mm	64,5	64,5	64,5	76	97	118	135	157
L mm	17	17	17	21,5	26	36	37,5	43
M mm	32,5	32,5	32,5	38	48,5	59	67,5	78,5
N mm	49,5	49,5	49,5	59,56	74,5	95,2	105	121,5
O mm	37	37	37	37	42	48	48	48
øP	F3	F3	F3	F3	F3-F4	F4-F5	F4-F5	F5
øQ	9	9	9	9	9	11	11	11
øS	5,5	5,5	5,5	5,5	5,5	5,5-6,5	5,5-6,5	6,5
SW mm	25	25	25	31	41	55	55	67



BALL VALVE FOR 2-POSITION CONTROL ON-OFF FULL BORE WITHOUT DISC

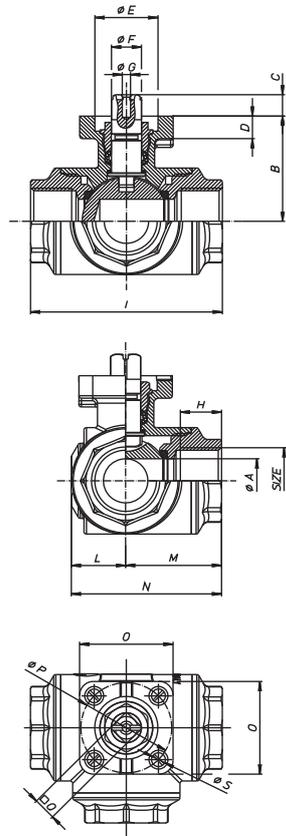
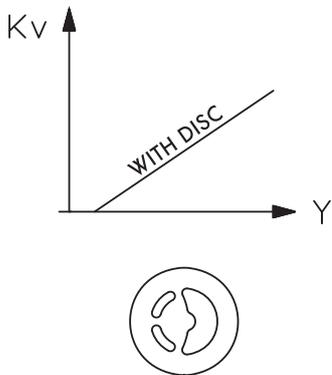
Size	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
DN (mm)	8	10	15	20	25	32	40	50
Kvs (m ³ /h)	5,9	9,4	17	41	70	121	200	292
Article	S.1070N32	S.1070N33	S.1070N34	S.1070N35	S.1070N36	S.1070N37	S.1070N38	S.1070N39



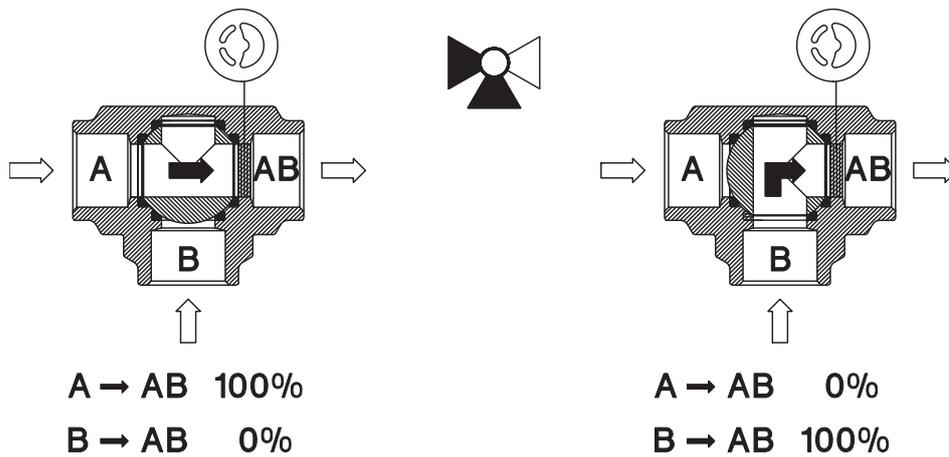
Art. S.1661L
BALL•O•MATIC T-PORT



3-way ball valve, full bore with T-port.



Size	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
øA pass./bore	8	10	14,1	17,6	25	32	40	50
B mm	38	38	38	42	46,5	61,5	63,5	74
C mm	9	9	9	9	9	11	11	14
D mm	9	9	9	9	9	10	10	12
øE _{HB}	25	25	25	25	25	30	30	35
øF	10,8	10,8	10,8	11,9	11,9	13,9	13,9	17,9
øG	M4	M4	M4	M4	M4	M4	M4	M5
H mm	15	15	15	16,3	19,1	21,4	21,4	25,7
I mm	64,5	64,5	64,5	76	97	118	135	157
L mm	17	17	17	21,5	26	36	37,5	43
M mm	32,5	32,5	32,5	38	48,5	59	67,5	78,5
N mm	49,5	49,5	49,5	59,56	74,5	95,2	105	121,5
O mm	37	37	37	37	42	48	48	48
øP	F3	F3	F3	F3	F3-F4	F4-F5	F4-F5	F5
øQ	9	9	9	9	9	11	11	11
øS	5,5	5,5	5,5	5,5	5,5	5,5-6,5	5,5-6,5	6,5
SW mm	25	25	25	31	41	55	55	67



BALL VALVE FOR MODULATING CONTROL WITH DISC

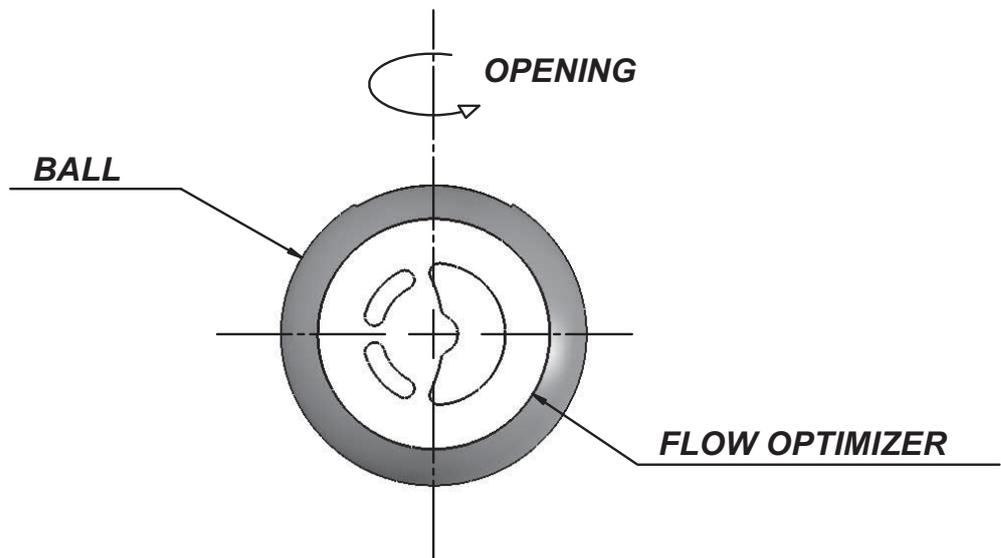
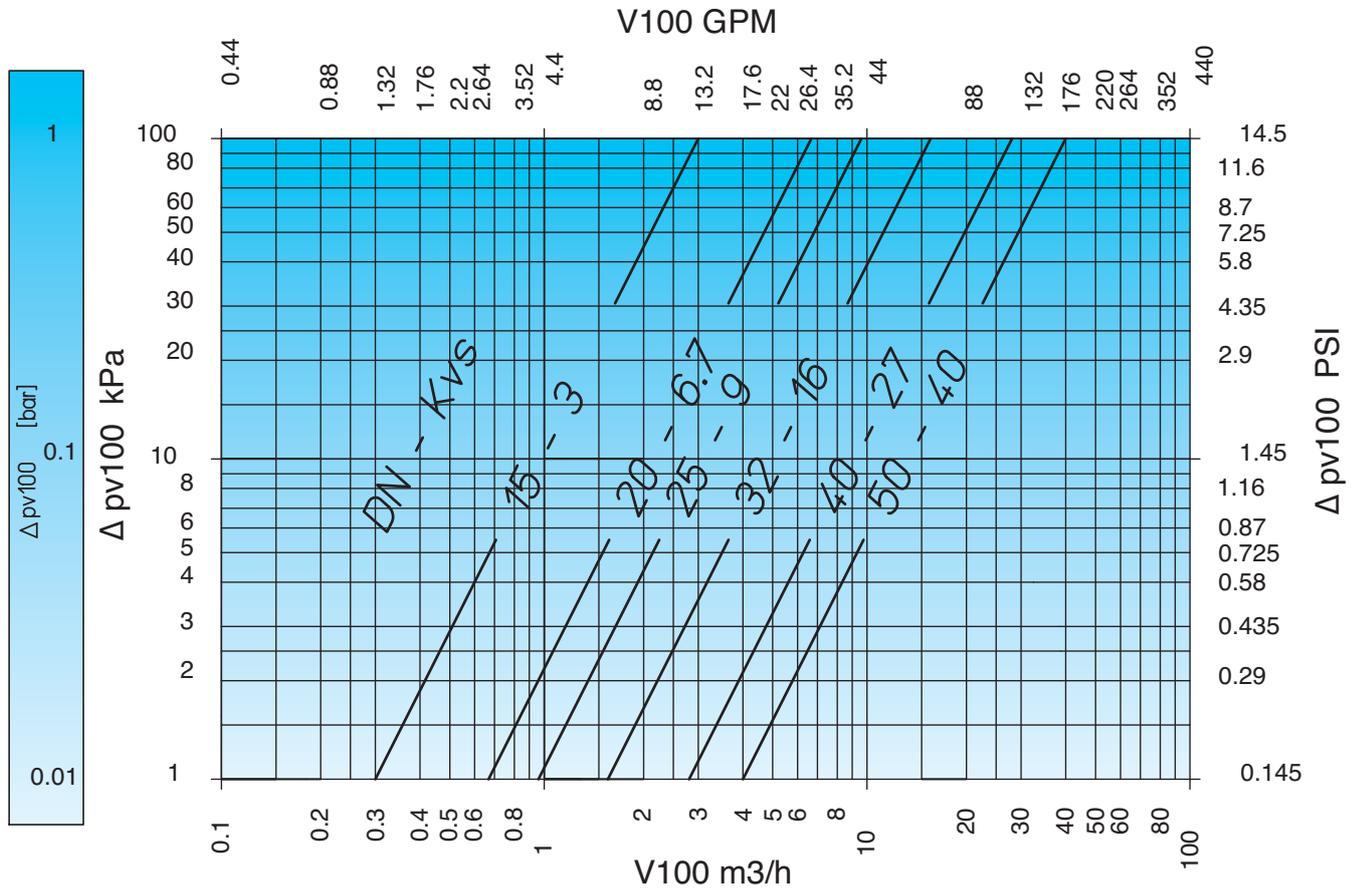
Size			1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
DN (mm)			15	20	25	32	40	50
Kvs (m ³ /h)			3	6,7	9	16	27	40
Article			S1070N34 + S1661L04 + S1665P04	S1070N35 + S1661L05 + S1667P05	S1070N36 + S1661L06 + S1668P06	S1070N37 + S1661L07 + S1669P07	S1070N38 + S1661L08 + S1671P08	S1070N39 + S1661L09 + S1672P09





BALL•O•MATIC® 3-WAY **MODULATING**

Loss of head diagram with optimizer disc



ACTUATORS

Electrical actuators





ACTUATORS

Electrical actuators

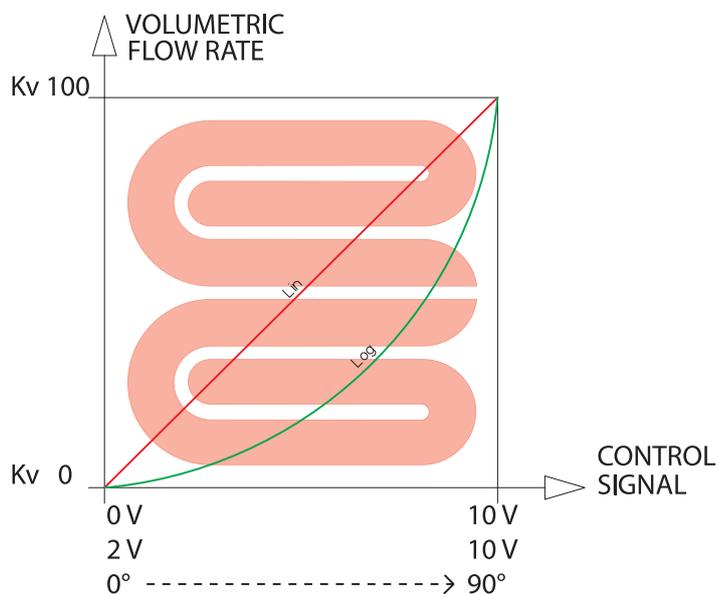
FEATURES

- R2813P00 AC 230V operating voltage, 2-position control signal, red colour, without auxiliary switch
- S2815,17 QM for 2-way ball valves - S2935,37 ISO•TOP for 3-way ball valves..... AC 230V operating voltage
- S2816,18 QM for 2-way ball valves - S2936,38 ISO•TOP for 3-way ball valves.....AC 24V operating voltage
- S2912P00 and S2940P09 AC 24V operating voltage and 0 to 10 Vdc, for 2-way modulating ball valves
- All actuators are from IP 54 to IP 65
- All actuators include an auxiliary switch for additional functions
- Directly mounting on the valve, without adjustment or brackets

APPLICATIONS

- Suitable to operate the valves S3041....S1070....
- Ambient temperatures: -20°C to +80°C; -4°F to +176°F
- Cooling water
- Chilled water
- Low temperature hot water
- Water with anti-freeze
- -20 to + 130°C

PRODUCT NUMBER	OPERATING VOLTAGE	TYPE OF CONTROL (CONTROL SIGNAL)	TORQUE (Nm)	RUN-TIME (SECOND) 90°	AUXILIARY SWITCHES	QM OR ISO-TOP CONNECTION VALVE ACTUATOR
R2813P00	AC 230 V	2 position control signal	10Nm; 88,50Lbin max.	60	No	QM
S2815P00		3 position control signal				ISO-TOP
S2935P00					QM	
S2936P00	AC 24 V	2 position control signal			Yes	ISO-TOP
S2816P00						QM
S2817P00	AC 230 V	2 position control signal			Yes	ISO-TOP
S2937P00						QM
S2938P00	AC 24 V	AC 0...10 VDC			Yes	ISO-TOP
S2818P00						QM
S2940P00	AC/DC 24 V	AC 0...10 VDC			Yes	ISO-TOP
S2912P00			QM			

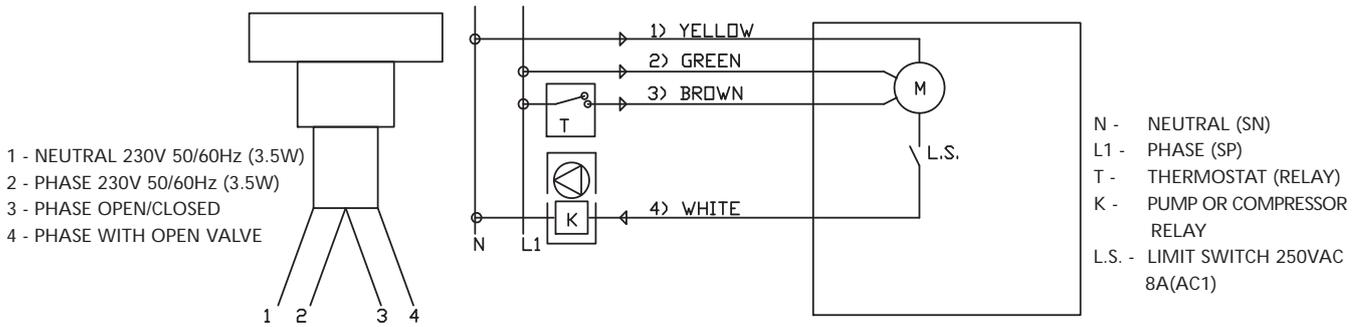




ELECTRIC ACTUATORS QM SERIES - COMPACT

CODE	R2813
POWER SUPPLY VOLTAGE	230V 50-60Hz
ABSORBED POWER W	3.5W
OUTPUT TORQUE	10Nm max.; 88.50 Lbin max.
WORKING TIME	60 Sec/90°
MOTOR TYPE	Unidirectional
ASSEMBLY	Quick Mounting
WORKING ANGLE	90°
INPUT SIGNAL	2 Position Control Signal / SPST / On-Off / With Internal Relay
OUTPUT SIGNAL	230V 50-60Hz 200VA - White Wire Out (L) Pump Relay Output (Open Valve)
PROTECTION	IP54
CONNECTION	4-Wires Cable With Cable Gland
WEIGHT	0.4 Kg; 0.88 lb
OPERATING TEMPERATURE	-20° +80°; -4F +176F
PLENUM RATED CABLE	

WIRING DIAGRAM



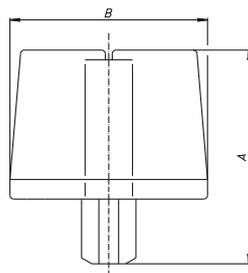
CONNECTION

ELECTRIC CONNECTION	2 WIRE SPST:
YELLOW	IN (N) NEUTRAL (SN)
GREEN	IN (L) PHASE (SP)
BROWN	IN (L) OPEN (Y1)
WHITE	OUT (L.S.) PUMP RELAY OUTPUT (OPEN VALVE)

WIRE COLOR	DIRECTION	CONNECTION	DESCRIPTION
YELLOW	IN	NEUTRAL (SN)	POWER SUPPLY VOLTAGE NEUTRAL CONNECTION
GREEN	IN	PHASE (SP)	POWER SUPPLY VOLTAGE PHASE CONNECTION
BROWN	IN	OPEN (Y1)	WHEN POWER SUPPLY VOLTAGE PHASE IS CONNECTED TO THE BROWN WIRE THE VALVE OPENS
WHITE	OUT	PUMP RELAY OUTPUT	WHEN OPEN, PRESENCE OF PHASE ON THE GREY WIRE

OPERATING LED RED LIGHT ON: IN MOTION
 RED LIGHT OFF: ACTUATOR OFF

Art. R.2813 ELECTRIC ACTUATOR



Electric actuator with quick mounting connection, for two valves.

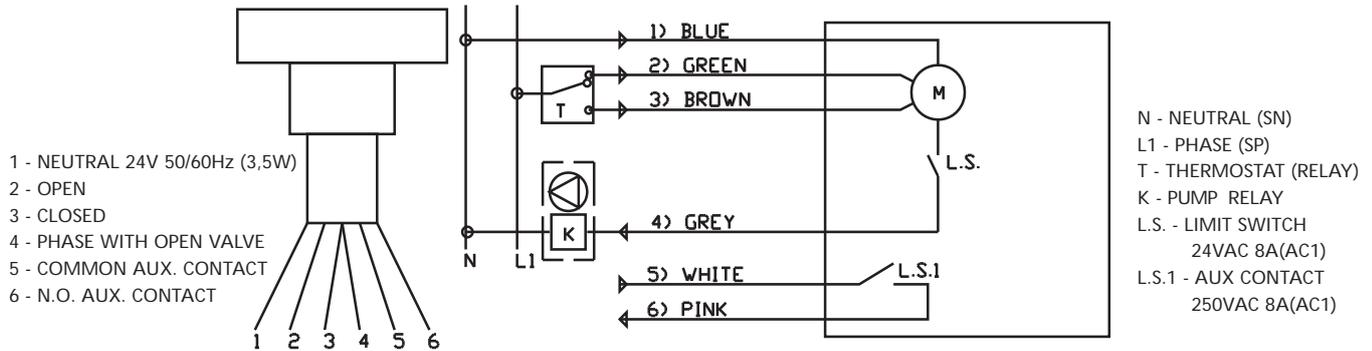
SIZE																				
A mm	84																			
B mm	100																			



ELECTRIC ACTUATORS QM SERIES - COMPACT

CODE	S2816
POWER SUPPLY VOLTAGE	24V 50-60Hz Available 230V: ART. S2815
ABSORBED POWER W	3.5W
OUTPUT TORQUE	10Nm max.; 88.50 Lbin max.
WORKING TIME	60 Sec/90°
MOTOR TYPE	Bidirectional
ASSEMBLY	Quick Mounting
WORKING ANGLE	90°
INPUT SIGNAL	3 Position Control Signal / SPST / On-Off / With Internal Relay
OUTPUT SIGNAL	24V 50-60Hz 200VA - Grey Wire Out (L) Pump Relay Output (Open Valve)
PROTECTION	IP54
CONNECTION	6-Wires Cable With Cable Gland
WEIGHT	0.4 Kg; 0.88 lb
OPERATING TEMPERATURE	-20° +80°; -4F +176F
PLENUM RATED CABLE	

WIRING DIAGRAM



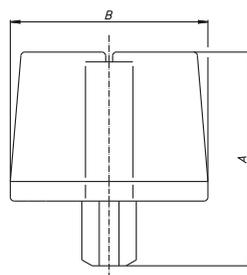
CONNECTION

ELECTRIC CONNECTION	3 WIRE SPST:	N°	WIRE COLOR	DIRECTION	FUNCTION	CONNECTION	DESCRIPTION
BLUE	IN (N) NEUTRAL (SN)G	1	BLUE	IN	POWER SUPPLY	NEUTRAL (SN) G	CONNECTION TO NEUTRAL
GREEN	IN (L1) PHASE (Y1)	2	GREEN	IN	THERMOSTAT (RELAY)	PHASE-OPEN (Y1)	WHEN PHASE CONNECTED VALVE OPENS
BROWN	IN (L1) PHASE (Y2)	3	BROWN	IN	THERMOSTAT (RELAY)	PHASE-CLOSED (Y2)	WHEN PHASE CONNECTED VALVE CLOSES
GREY	OUT (L.S.) PUMP RELAY OUTPUT (OPEN VALVE)	4	GREY	OUT	VOLTAGE OUTPUT	PUMP RELAY OUTPUT	WHEN VALVE IS OPEN, PRESENCE OF PHASE
WHITE	OUT (L.S.1) PUMP RELAY OUTPUT (OPEN VALVE)	5	WHITE	OUT	AUXILIARY OUTPUT	CLEAN CONTACT	WHEN VALVE IS OPEN, THE TWO WIRES ARE SHORTED
PINK		6	PINK	OUT			

OPERATING LED

RED LIGHT ON: IN MOTION
 RED LIGHT OFF: ACTUATOR OFF

Art. S.2816 ELECTRIC ACTUATOR



Electric actuator with quick mounting connection, for two valves.

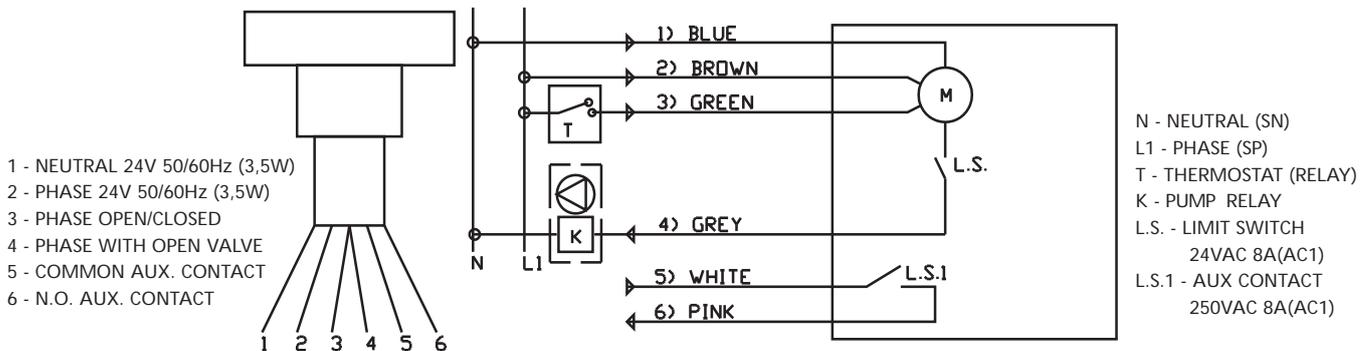
SIZE																				
A mm	84																			
B mm	100																			



ELECTRIC ACTUATORS QM SERIES - COMPACT

CODE	S2818
POWER SUPPLY VOLTAGE	24V 50-60Hz Available 230V: ART. S2817
ABSORBED POWER W	3.5W
OUTPUT TORQUE	10Nm max.; 88.50 Lbin max.
WORKING TIME	60 Sec/90°
MOTOR TYPE	Bidirectional
ASSEMBLY	Quick Mounting
WORKING ANGLE	90°
INPUT SIGNAL	2 Position Control Signal / SPST / On-Off / With Internal Relay
OUTPUT SIGNAL	24V 50-60Hz 200VA - Grey Wire Out (L) Pump Relay Output (Open Valve)
PROTECTION	IP54
CONNECTION	6-Wires Cable With Cable Gland
WEIGHT	0.4 Kg; 0.88 lb
OPERATING TEMPERATURE	-20° +80°; -4F +176F
PLENUM RATED CABLE	

WIRING DIAGRAM



CONNECTION

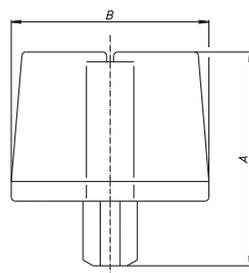
ELECTRIC CONNECTION	2 WIRE SPST:
BLUE IN (N)	NEUTRAL (SN)
BROWN IN (L1)	PHASE (SP)
GREEN IN (L1)	PHASE
GREY OUT (L.S.)	PUMP RELAY OUTPUT (OPEN VALVE)
WHITE OUT (L.S.1)	PUMP RELAY OUTPUT (OPEN VALVE)
PINK	

N°	WIRE COLOR	DIRECTION	FUNCTION	CONNECTION	DESCRIPTION
1	BLUE	IN	POWER SUPPLY	NEUTRAL (SN)	CONNECTION TO NEUTRAL
2	BROWN	IN	POWER SUPPLY	PHASE (SP)	CONNECTION TO PHASE
3	GREEN	IN	THERMOSTAT (RELAY)	OPEN-CLOSED (Y1)	WHEN PHASE CONNECTED VALVE OPENS; WHEN NOT PHASE CONNECTED VALVE CLOSES
4	GREY	OUT	VOLTAGE OUTPUT	PUMP RELAY OUTPUT	WHEN VALVE IS OPEN, PRESENCE OF PHASE
5	WHITE	OUT	AUXILIARY OUTPUT	CLEAN CONTACT	WHEN VALVE IS OPEN, THE TWO WIRES ARE SHORTED
6	PINK				

OPERATING LED

RED LIGHT ON: IN MOTION
 RED LIGHT OFF: ACTUATOR OFF

Art. S.2818 ELECTRIC ACTUATOR



Electric actuator with quick mounting connection, for two valves.

SIZE															
A mm	84														
B mm	100														

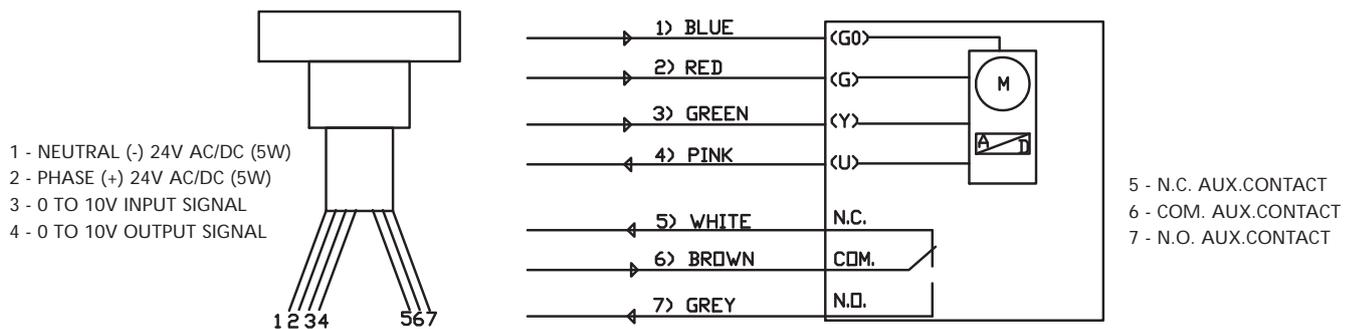


ACTUATORS QM PROPORTIONAL FOR 2-WAY

ELECTRIC ACTUATORS QM SERIES - PROPORTIONAL ACTUATOR

CODE	S2912
POWER SUPPLY VOLTAGE	24V AC/DC
ABSORBED POWER W	5W
OUTPUT TORQUE	10Nm max.; 88.50 Lbin max.
WORKING TIME	35 Sec/90°
MOTOR TYPE	Bidirectional
ASSEMBLY	Quick Mounting
WORKING ANGLE	90°
INPUT SIGNAL	0..10VDC
OUTPUT SIGNAL (FEEDBACK)	0..10VDC
AUX.CONTACT	SPDT Normally Open and Normally Close
PROTECTION	IP54
WEIGHT	0.51 Kg; 1.13 lb
OPERATING TEMPERATURE	-20° +80°; -4F +176F
PROTECTION	IP54
CONNECTION	7-Wires Cable
PLENUM RATED CABLE	

WIRING DIAGRAM



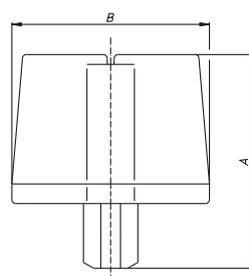
CONNECTION

ELECTRIC CONNECTION	0 TO 10VDC:
1-BLUE	IN (N) (-) NEUTRAL (SN)
2-RED	IN (L) (+) PHASE (SP)
3-GREEN	IN 0 TO 10VDC
4-PINK	OUT 0 TO 10VDC
5-WHITE	AUX.CONTACT N.C.
6-BROWN	AUX.CONTACT COM.
7-GREY	AUX.CONTACT N.O.

OFFSET	START POINT BETWEEN 0 TO 5 VDC
SPAN	END POINT BETWEEN 2 TO 10 VDC
RELAY	SWITCH BETWEEN 0 TO 10 VDC (0° TO 90°)

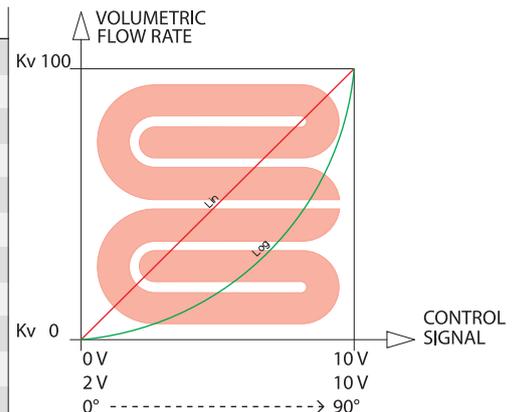
OPERATING LED	GREEN/LED:	OFF: POWER FAILURE
		ON: REACHED POSITION
		BLINK: WORKING
RED/LED:	OFF:	AUX SWITCH OFF
	ON:	AUX SWITCH ON
	BLINK:	FAILURE

Art. S.2912 ELECTRIC ACTUATOR



Proportional actuator with quick mounting connection.

SIZE	
A mm	84
B mm	100





ELECTRIC ACTUATORS

ELECTRIC INDUSTRIAL ACTUATOR

- Power supply voltage:
24/230V A.C. 50 Hz - IP 54 - IP65
- Minimum and maximum running temperature: +14F (-10°C) +176F (+80°C)
- Torque on control rod: 9,8Nm
- Electric connection: with or without relay incorporated
- Manoeuvre time for 3-way valve both on opening and closing: 90° 60 s
- Other manoeuvre times on request
- Plenum rated cable

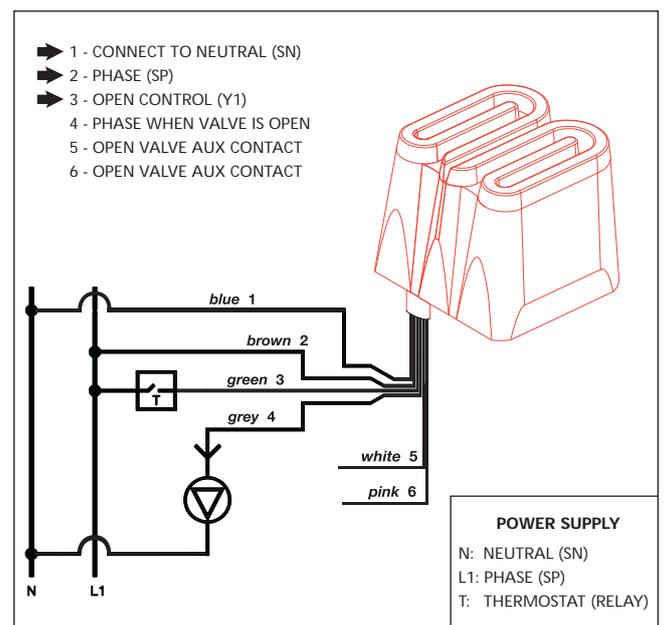
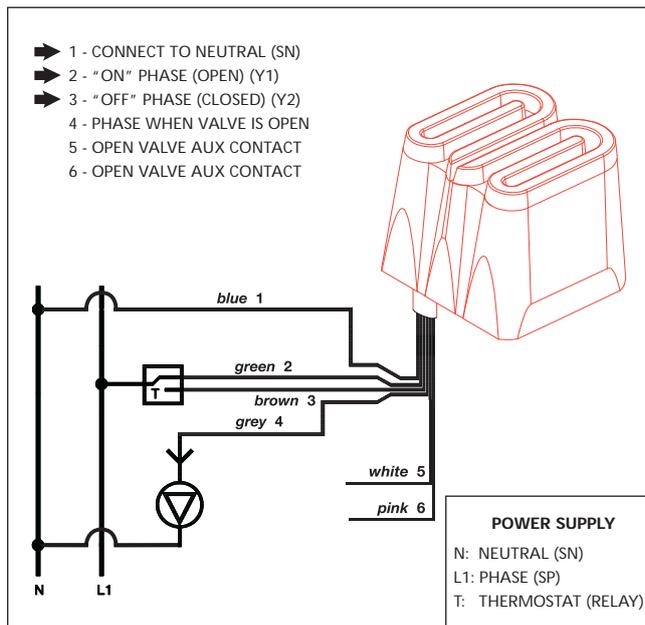
PROPORTIONAL ACTUATOR FOR REGULATION

- Power supply voltage:
24/230V A.C. - 50HZ - IP 54 - IP65
- Minimum and maximum running temperature: +14F (-10°C) +176F (+80°C)
- Piloting: (0 -10V) for opening 0-90°/ 0 -180°
- Manoeuvre time: 90° 35 s
- Torque on control rod: 9,8 Nm

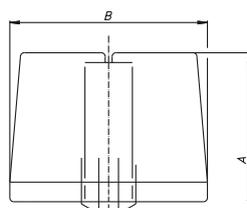
WIRING DIAGRAMS

Connection with **3 position control signal** (indicated by an arrow).

Connection with **2 position control signal** (indicated by an arrow).



Art. S.2936 ELECTRIC ACTUATOR



Electric actuator with ISO•TOP connection.

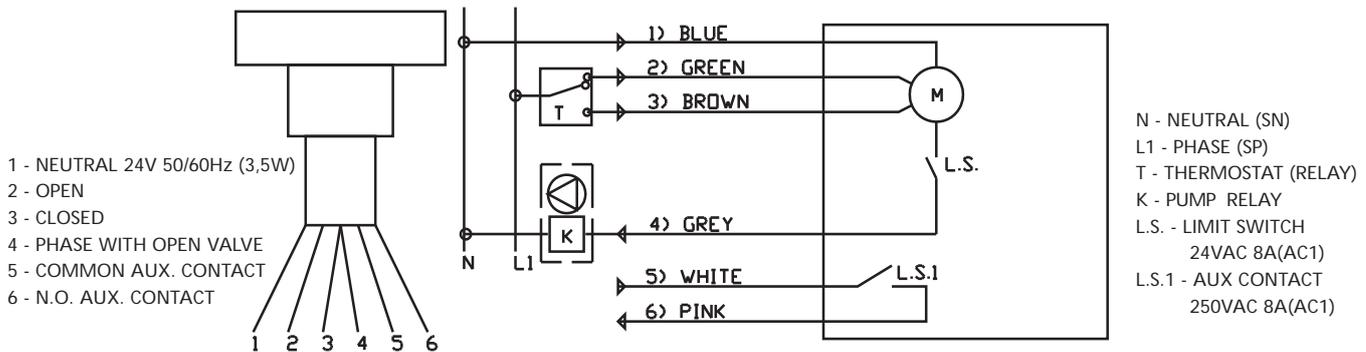
SIZE															
A mm	75														
B mm	100														



ELECTRIC ACTUATORS QM SERIES - COMPACT

CODE	S2936
POWER SUPPLY VOLTAGE	24V 50-60Hz Available 230V: ART. S2935
ABSORBED POWER W	3.5W
OUTPUT TORQUE	10Nm max.; 88.50 Lbin max.
WORKING TIME	60 Sec/90°
MOTOR TYPE	Bidirectional
ASSEMBLY	Quick Mounting
WORKING ANGLE	90°
INPUT SIGNAL	3 Position Control Signal / SPST / On-Off / With Internal Relay
OUTPUT SIGNAL	24V 50-60Hz 200VA - Grey Wire Out (L) Pump Relay Output (Open Valve)
PROTECTION	IP54
CONNECTION	6-Wires Cable With Cable Gland
WEIGHT	0.4 Kg; 0.88 lb
OPERATING TEMPERATURE	-20° +80°; -4F +176F
PLENUM RATED CABLE	

WIRING DIAGRAM



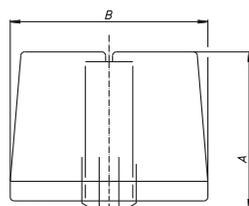
CONNECTION

ELECTRIC CONNECTION	3 WIRE SPST:	N°	WIRE COLOR	DIRECTION	FUNCTION	CONNECTION	DESCRIPTION
BLUE	IN (N) NEUTRAL (SN)G	1	BLUE	IN	POWER SUPPLY	NEUTRAL (SN) G	CONNECTION TO NEUTRAL
GREEN	IN (L1) PHASE (Y1)	2	GREEN	IN	THERMOSTAT (RELAY)	PHASE-OPEN (Y1)	WHEN PHASE CONNECTED VALVE OPENS
BROWN	IN (L1) PHASE (Y2)	3	BROWN	IN	THERMOSTAT (RELAY)	PHASE-CLOSED (Y2)	WHEN PHASE CONNECTED VALVE CLOSES
GREY	OUT (L.S.) PUMP RELAY OUTPUT (OPEN VALVE)	4	GREY	OUT	VOLTAGE OUTPUT	PUMP RELAY OUTPUT	WHEN VALVE IS OPEN, PRESENCE OF PHASE
WHITE	OUT (L.S.1) PUMP RELAY OUTPUT (OPEN VALVE)	5	WHITE	OUT	AUXILIARY OUTPUT	CLEAN CONTACT	WHEN VALVE IS OPEN, THE TWO WIRES ARE SHORTED
PINK		6	PINK				

OPERATING LED

RED LIGHT ON: IN MOTION
 RED LIGHT OFF: ACTUATOR OFF

Art. S.2936 ELECTRIC ACTUATOR



Electric actuator with ISO•TOP connection.

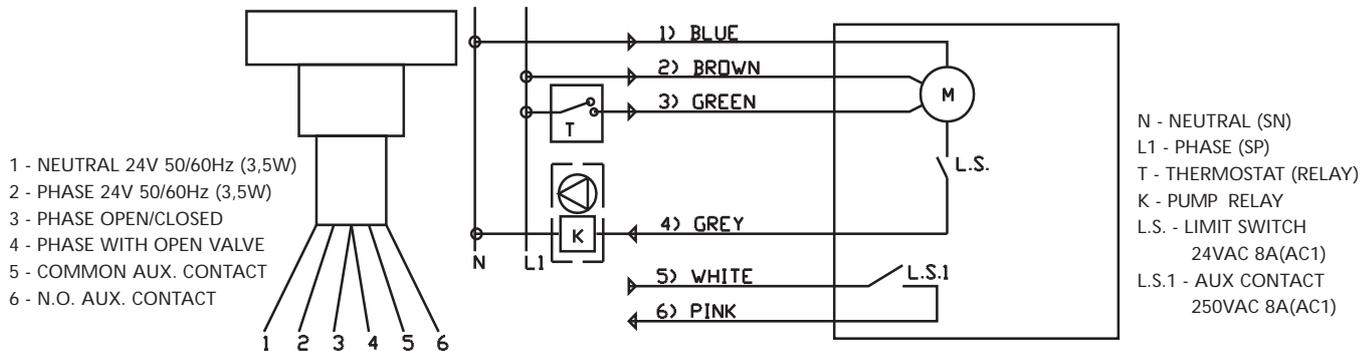
SIZE																				
A mm	75																			
B mm	100																			



ELECTRIC ACTUATORS QM SERIES - COMPACT

CODE	S2938
POWER SUPPLY VOLTAGE	24V 50-60Hz Available 230V: ART. S2937
ABSORBED POWER W	3.5W
OUTPUT TORQUE	10Nm max.; 88.50 Lbin max.
WORKING TIME	60 Sec/90°
MOTOR TYPE	Bidirectional
ASSEMBLY	Quick Mounting
WORKING ANGLE	90°
INPUT SIGNAL	2 Position Control Signal / SPST / On-Off / With Internal Relay
OUTPUT SIGNAL	24V 50-60Hz 200VA - Grey Wire Out (L) Pump Relay Output (Open Valve)
PROTECTION	IP54
CONNECTION	6-Wires Cable With Cable Gland
WEIGHT	0.4 Kg; 0.88 lb
OPERATING TEMPERATURE	-20° +80°; -4F +176F
PLENUM RATED CABLE	

WIRING DIAGRAM



CONNECTION

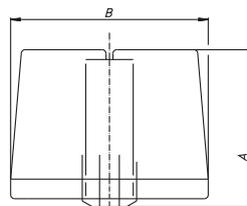
ELECTRIC CONNECTION	2 WIRE SPST:
BLUE IN (N)	NEUTRAL (SN)
BROWN IN (L1)	PHASE (SP)
GREEN IN (L1)	PHASE
GREY OUT (L.S.)	PUMP RELAY OUTPUT (OPEN VALVE)
WHITE OUT (L.S.1)	PUMP RELAY OUTPUT (OPEN VALVE)
PINK	

N°	WIRE COLOR	DIRECTION	FUNCTION	CONNECTION	DESCRIPTION
1	BLUE	IN	POWER SUPPLY	NEUTRAL (SN)	CONNECTION TO NEUTRAL
2	BROWN	IN	POWER SUPPLY	PHASE (SP)	CONNECTION TO PHASE
3	GREEN	IN	THERMOSTAT (RELAY)	OPEN-CLOSED (Y1)	WHEN PHASE CONNECTED VALVE OPENS; WHEN NOT PHASE CONNECTED VALVE CLOSES
4	GREY	OUT	VOLTAGE OUTPUT	PUMP RELAY OUTPUT	WHEN VALVE IS OPEN, PRESENCE OF PHASE
5	WHITE	OUT	AUXILIARY OUTPUT	CLEAN CONTACT	WHEN VALVE IS OPEN, THE TWO WIRES ARE SHORTED
6	PINK				

OPERATING LED

RED LIGHT ON: IN MOTION
 RED LIGHT OFF: ACTUATOR OFF

Art. S.2938 ELECTRIC ACTUATOR



Electric actuator with ISO•TOP connection.

SIZE																			
A mm	75																		
B mm	100																		

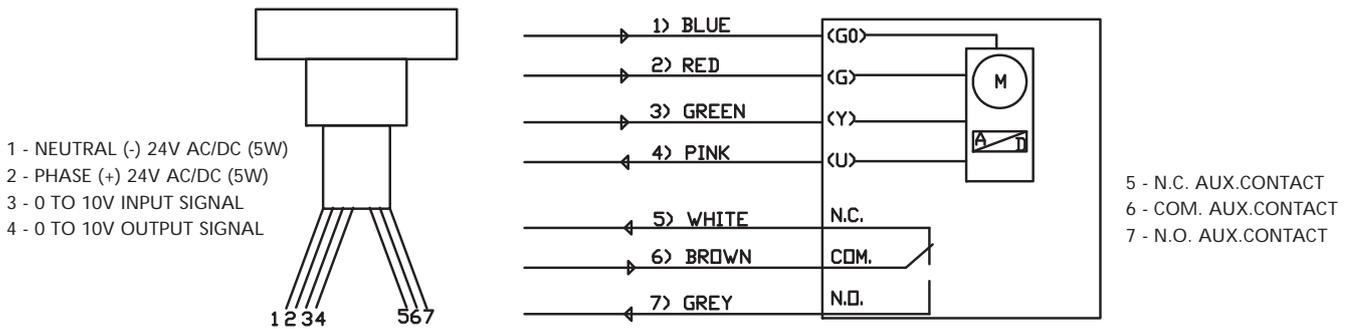
ACTUATORS ISO•TOP PROPORTIONAL FOR 3-WAY



ELECTRIC ACTUATORS QM SERIES - PROPORTIONAL ACTUATOR

CODE	S2940
POWER SUPPLY VOLTAGE	24V AC/DC
ABSORBED POWER W	5W
OUTPUT TORQUE	10Nm max.; 88.50 Lbin max.
WORKING TIME	35 Sec/90°
MOTOR TYPE	Bidirectional
ASSEMBLY	Quick Mounting
WORKING ANGLE	90°
INPUT SIGNAL	0..10VDC
OUTPUT SIGNAL (FEEDBACK)	0..10VDC
AUX.CONTACT	SPDT Normally Open and Normally Close
PROTECTION	IP54
WEIGHT	0.51 Kg; 1.13 lb
OPERATING TEMPERATURE	-20° +80°; -4F +176F
PROTECTION	IP54
CONNECTION	7-Wires Cable
PLENUM RATED CABLE	

WIRING DIAGRAM

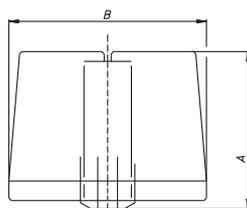


CONNECTION

ELECTRIC CONNECTION	0 TO 10VDC:
	1-BLUE IN (N) (-) NEUTRAL (SN)
	2-RED IN (L) (+) PHASE (SP)
	3-GREEN IN 0 TO 10VDC
	4-PINK OUT 0 TO 10VDC
	5-WHITE AUX.CONTACT N.C.
	6-BROWN AUX.CONTACT COM
7-GREY AUX.CONTACT N.O.	

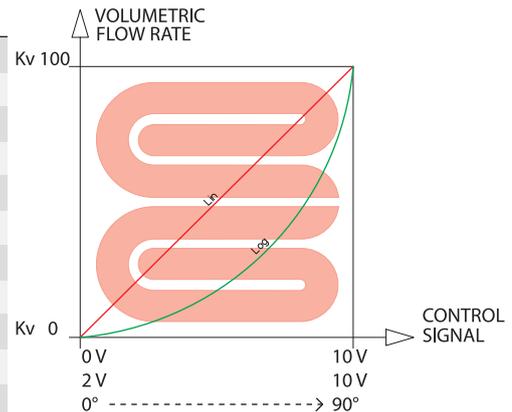
OFFSET	START POINT BETWEEN 0 TO 5 VDC
SPAN	END POINT BETWEEN 2 TO 10 VDC
RELAY	SWITCH BETWEEN 0 TO 10 VDC (0° TO 90°)
OPERATING LED	GREEN/LED:
	OFF: POWER FAILURE
	ON: REACHED POSITION
	BLINK: WORKING
	RED/LED:
	OFF: AUX SWITCH OFF
	ON: AUX SWITCH ON
	BLINK: FAILURE

Art. S.2940 ELECTRIC ACTUATOR



Proportional actuator with quick mounting connection.

SIZE	
A mm	75
B mm	100





Series of Ball Valves and Actuator Assemblies Selection

Description

This Technical Bulletin aids in the selection of a ball valve and actuator assembly.

- Tables 1 and 2 list ball valve product numbers, close-off torque, and flow rates respectively for two-way and three-way ball valves
- Tables 3 and 4 identify product numbers for all possible combinations of ball valves and compatible actuators that can be ordered as complete valve assemblies from the factory

NOTE: It is recommended that two-position applications use a full-port ball valve without a flow optimizer. For modulating applications, it is recommended that the ball valve include a flow optimizer.

NOTE: Actuators for two-way valves have the same connection from 1/2" size valve up to 2". One actuator is suitable for all these 2-way valves. Therefore in Table 3 all the actuators will be suitable to all the valves.

Meanwhile for the 3-way valves, check Table 4, to find out the right actuators that match the right valve and size.

Selecting a Ball Valve and Actuator for a 2-Position Control

1. Obtain the supply line size from job specifications.
2. See Table 1 or 2 and select a full-port valve with a line size that matches the supply line size. In Tables 1 and 2, full-port valves are denoted *without an asterisk (*)*.
3. In the Table 3 or 4, locate the actuator column corresponding to the required application. Also, locate the row corresponding to the valve product number. Read down the actuator and valve product number.

Selecting a Ball Valve and Actuator for Modulating Control

1. Obtain the supply line size, flow rate, and differential pressure from job specifications.
2. See Table 1 or 2 and locate the column corresponding to the required differential pressure. Read down this column to locate the flow rate equal to or greater than the required value. Read to the left to determine the line size and products number of the valve. Make certain that the valve has a flow optimizer and is not a full-port valve. In Table 1 and 2, valve with *optimizer disc are denoted by an asterisk (*)*.
3. In Table 3 or 4, locate the actuator column corresponding to the required application. Also, locate the row corresponding to the valve products number. Read down the actuator and valve product number.

Example of Selecting a 2-Way Ball Valve and Actuator for 2-Position Control

1. Job specification requires a two-position, ball valve in a supply line size of 1" 1/4 inch (32 mm) and a flow rate of 16 Kvs (16 m³/h).
2. See Table 1 to locate a full-port valve with a 1" 1/4 inch (32 mm) supply line size. Select valve product number S3041N07.
3. In Table 3, locate the column for a two-position actuator. Also, locate the row corresponding to the S3041N07 valve. Read down the actuator product number.

Example of Selecting a 2-Way Ball Valve and Actuator for Modulating Control

1. Job Specification requires 24V, modulating 0 to 10 Vdc, BALL VALVE in a supply line size of 1" 1/4 inch (32 mm) and a flow rate of 16 Kvs (16 m³/h).
2. See Table 1 and locate the column corresponding to the flow rate equal to or greater than the required 16 Kvs (16 m³/h) value. For example, 16 Kvs (16 m³/h) read left for the S3041N42 + S1661L07 + S1669P07 valve product number. This valve has a flow optimizer disc so it is suitable for modulating applications.
3. In the Table 3, locate the actuator column for a 24V, 0 to 10 Vdc, actuator. Also, locate the row corresponding to the S3041N42 valve product number. Read down the actuator product numbers (S2912P00).





2-WAY

TABLE 1

VALVE PRODUCT NUMBER	FLOW OPTIMIZER DISC	SIZE	DN (mm)	TORQUE (Nm)	Kvs (m ³ /h)
S3041N35 + S1661L04 + S1665P04	*	1/2"	15	2,7	3
S3041N04					17
S3041N37 + S1661L05 + S1667P05	*	3/4"	20	3,7	6,7
S3041N05					41
S3041N40 + S1661L06 + S1668P06	*	1"	25	5,6	9
S3041N06					70
S3041N42 + S1661L07 + S1669P07	*	1" 1/4	32	6,6	16
S3041N07					121
S3041N44 + S1661L08 + S1671P08	*	1" 1/2	40	8	20,4
S3041N08					121
S3041N46 + S1661L09 + S1672P09	*	2"	50	9,5	31
S3041N09					200

3-WAY

TABLE 2

VALVE PRODUCT NUMBER	FLOW OPTIMIZER DISC	SIZE	DN (mm)	TORQUE (Nm)	Kvs (m ³ /h)
S1070N34 + S1661L04 + S1665P04	*	1/2"	15	5	3
S1070N34					17
S1070N35 + S1661L05 + S1667P05	*	3/4"	20	6,5	6,7
S1070N35					41
S1070N36 + S1661L06 + S1668P06	*	1"	25	9,5	9
S1070N36					70
S1070N37 + S1661L07 + S1669P07	*	1" 1/4	32	15	16
S1070N37					121
S1070N38 + S1661L08 + S1671P08	*	1" 1/2	40	25	27
S1070N38					200
S1070N39 + S1661L09 + S1672P099	*	2"	50	30	40
S1070N39					292

Note: Valve marked with an asterisk (*) have a flow optimizer disc for modulating applications.

Note: For coated valves specify the last letter with P instead of N or L on the valve product number.

Example: S1070P36.



2-WAY ACTUATOR

TABLE 3

VALVE PRODUCT NUMBER	230V 3 POINT CONNECTION NO MICRO RED COLOUR	230V 3 POINT CONNECTION ON-OFF	24V 3 POINT CONNECTION ON-OFF	230V 2 POINT CONNECTION ON-OFF	24V 2 POINT CONNECTION ON-OFF	24 V 0-10 VDC MODULATING	230 V 0-10 VDC MODULATING
S3041N35 + S1661L04 + S1665P04	R2813P00	S2815P00	S2816P00	S2817P00	S2818P00	S2912P00	AV. ON RQST
S3041N04	R2813P00	S2815P00	S2816P00	S2817P00	S2818P00	S2912P00	AV. ON RQST
S3041N37 + S1661L05 + S1667P05	R2813P00	S2815P00	S2816P00	S2817P00	S2818P00	S2912P00	AV. ON RQST
S3041N05	R2813P00	S2815P00	S2816P00	S2817P00	S2818P00	S2912P00	AV. ON RQST
S3041N40 + S1661L06 + S1668P06	R2813P00	S2815P00	S2816P00	S2817P00	S2818P00	S2912P00	AV. ON RQST
S3041N06	R2813P00	S2815P00	S2816P00	S2817P00	S2818P00	S2912P00	AV. ON RQST
S3041N42 + S1661L07 + S1669P07	R2813P00	S2815P00	S2816P00	S2817P00	S2818P00	S2912P00	AV. ON RQST
S3041N07	R2813P00	S2815P00	S2816P00	S2817P00	S2818P00	S2912P00	AV. ON RQST
S3041N44 + S1661L08 + S1671P08	R2813P00	S2815P00	S2816P00	S2817P00	S2818P00	S2912P00	AV. ON RQST
S3041N08	R2813P00	S2815P00	S2816P00	S2817P00	S2818P00	S2912P00	AV. ON RQST
S3041N46 + S1661L09 + S1672P09	R2813P00	S2815P00	S2816P00	S2817P00	S2818P00	S2912P00	AV. ON RQST
S3041N09	S3041N07	S2815P00	S2816P00	S2817P00	S2818P00	S2912P00	AV. ON RQST

3-WAY ACTUATOR

TABLE 4

VALVE PRODUCT NUMBER	230V 3 POINT CONNECTION ON-OFF	24V 3 POINT CONNECTION ON-OFF	230V 2 POINT CONNECTION ON-OFF	24V 2 POINT CONNECTION ON-OFF	24 V 0-10 VDC MODULATING	230 V 0-10 VDC MODULATING
S1070N34 + S1661L04 + S1665P04	S2935P00	S2936P00	S2937P00	S2938P00	S2940P00	AV. ON RQST
S1070N34	S2935P00	S2936P00	S2937P00	S2938P00	S2940P00	AV. ON RQST
S1070N35 + S1661L05 + S1667P05	S2935P00	S2936P00	S2937P00	S2938P00	S2940P00	AV. ON RQST
S1070N35	S2935P00	S2936P00	S2937P00	S2938P00	S2940P00	AV. ON RQST
S1070N36 + S1661L06 + S1668P06	S2935P00	S2936P00	S2937P00	S2938P00	S2940P00	AV. ON RQST
S1070N36	S2935P00	S2936P00	S2937P00	S2938P00	S2940P00	AV. ON RQST
S1070N37 + S1661L07 + S1669P07	AV. ON RQST	AV. ON RQST	S2860P10	S2862P10	AV. ON RQST	AV. ON RQST
S1070N37	AV. ON RQST	AV. ON RQST	S2860P10	S2862P10	AV. ON RQST	AV. ON RQST
S1070N38 + S1661L08 + S1671P08	AV. ON RQST0	AV. ON RQST	S2863P40	S2865P40	AV. ON RQST	AV. ON RQST
S1070N38	AV. ON RQST	AV. ON RQST	S2863P40	S2865P40	AV. ON RQST	AV. ON RQST
S1070N39 + S1661L09 + S1672P09	AV. ON RQST	AV. ON RQST	S2863P40	S2865P40	AV. ON RQST	AV. ON RQST
S1070N39	AV. ON RQST	AV. ON RQST	S2863P40	S2865P40	AV. ON RQST	AV. ON RQST



VALVES OVERVIEW

PRODUCT NUMBER	DN		Kvs (m ³ /h)	2-WAY 3-WAY	TORQUE (Nm)	QM OR ISO-TOP CONNECTION VALVE/ACTUATOR		
	mm	Inch						
S3041N35 + S1661L04 + S1665P04	15	1/2"	3	2-Way	2,7	QM		
S3041N04			17					
S1070N34 + S1661L04 + S1665P04			3	3-Way			5	ISO-TOP F03
S1070N34			17					
S3041N37 + S1661L05 + S1667P05	20	3/4"	6,7	2-Way	3,7	QM		
S3041N05			41					
S1070N35 + S1661L05 + S1667P05			6,7	3-Way			6,5	ISO-TOP F03
S1070N35			41					
S3041N40 + S1661L06 + S1668P06	25	1"	9	2-Way	5,6	QM		
S3041N06			70					
S1070N36 + S1661L06 + S1668P06			9	3-Way			9,5	ISO-TOP F03-F04
S1070N36			70					
S3041N42 + S1661L07 + S1669P07	32	1" 1/4	16	2-Way	6,6	QM		
S3041N07			121					
S1070N37 + S1661L07 + S1669P07			16	3-Way			15	ISO-TOP F04-F05
S1070N37			121					
S3041N44 + S1661L08 + S1671P08	40	1" 1/2	20,4	2-Way	8	QM		
S3041N08			121					
S1070N38 + S1661L08 + S1671P08			27	3-Way			25	ISO-TOP F04-F05
S1070N38			200					
S3041N46 + S1661L09 + S1672P09	50	2"	31	2-Way	9,5	QM		
S3041N09			200					
S1070N39 + S1661L09 + S1672P09			40	3-Way			30	ISO-TOP F05
S1070N39			292					

ACTUATORS OVERVIEW

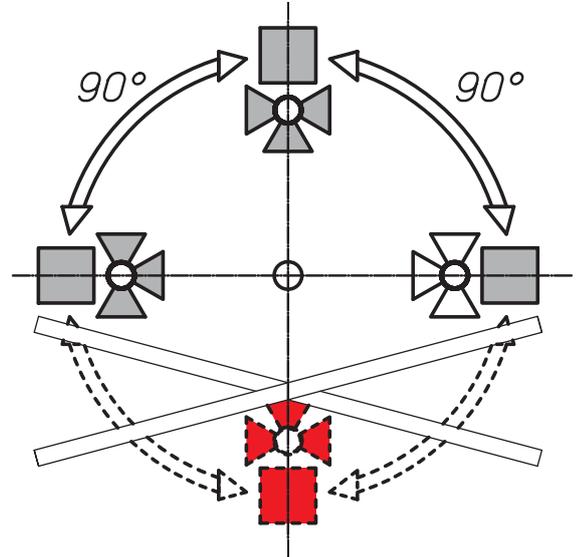
PRODUCT NUMBER	OPERATING VOLTAGE	TYPE OF CONTROL (CONTROL SIGNAL)	TORQUE (Nm)	RUN-TIME (SECOND) 90°	AUXILIARY SWITCHES	QM OR ISO-TOP CONNECTION VALVE ACTUATOR	
R2813P00	AC 230 V	2 position control signal	10Nm; 88,50Lbin max.	60	No	QM	
S2815P00		3 position control signal					ISO-TOP
S2935P00							
S2936P00	AC 24 V	2 position control signal			QM		
S2816P00							
S2817P00	AC 230 V	2 position control signal			ISO-TOP		
S2937P00							
S2938P00	AC 24 V	AC 0...10 VDC			QM		
S2818P00							
S2940P00	AC/DC 24 V	AC 0...10 VDC	ISO-TOP				
S2912P00							



NOTE ON INSTALLATION, DIRECTION OF FLOW AND COMMISSIONING

Installation Notes

- 1) Recommended Mounting Positions
The valve may be mounted either vertically or horizontally.
It is not permissible, mounting the valve with stem pointing downwards.
- 2) Water quality requirements
Valves are suitable for cooling water, chilled water, and water with anti-freeze.
Optimizer control valve discs are relatively sensitive control devices. In order to ensure a long service life, it is advisable to fit strainers.
- 3) Wiring connection
Please carefully install and connect the actuator wires in the proper manner. This is clearly explained in our brochures and on the actuator sticker. The actuator models with an auxiliary switch, can be wired to a pump relay, alarm or indicate the valve positional status.
- 4) Regulation
There are three types of valve actuators available. 2 point controlled (on/off), 3 point controlled (floating) or modulating 0 to 10VDC.
- 5) Installation
Importantly pay attention to the correct flow direction, particularly on the modulating control valves with proportional actuator. Then turn off the pump and the operating voltage, close the shut-off valves, depressurize the pipes and allow them to cool down. Disconnect the electrical connection, where required, from the terminals.



The valve and actuator have to be carefully installed together. Concerning the 2 way valves, please check the valve position: **must be open at the first installation**. Then assemble the actuator on the valve stem and put on the security spindle to guarantee the connection between valve and actuator. Meanwhile for the 3 way valve, check the stem position and the actuator position and then (with the 4 nuts and screws that are supplied in each box) assemble the valve and actuator.

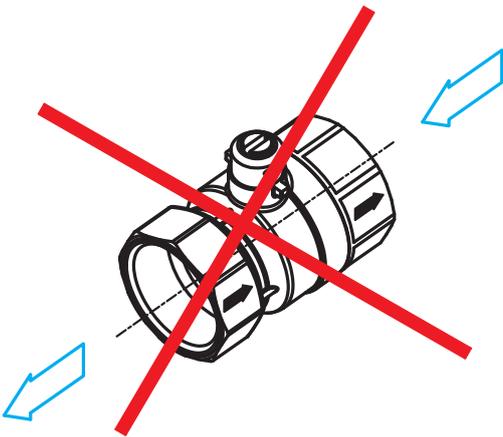
In both cases before assembling any valve to any actuator its recommended and very important to **operate the valve manually at least one time**, before any installation. This enables the marriage of the valve and actuator and ensures a better and longer life performance.

- 6) Maintenance
The modulating and on-off valves are maintenance free. Before any kind of service work is carried out on actuators, it's essential to isolate the rotary actuator from the power supply; by unplugging the power lead. Any related pumps in the relevant piping system must also be switched off and the appropriate isolating fitting closed, allowing everything to cool down and if necessary reduce the pressure in the system to atmospheric. The system must not be returned to service until the ball valve and rotary actuator have been properly re-assembled in accordance with the instructions and the pipe-work has been refilled in the proper manner.

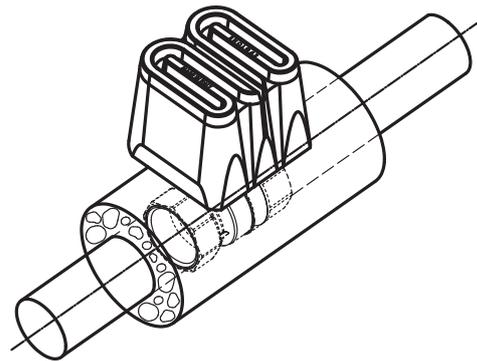
Safety Notes

- 1)The valve has been designed for use in stationary heating, ventilating and air conditioning systems and is not allowed to be used outside the specific field of application, especially in aircraft or in any other airborne means of transport.
- 2)It may only be installed by suitably trained personnel. All applicable legal or institutional installation regulations must be complied with.
- 3)The valve does not contain any parts that can be replaced or repaired by the user.
- 4)The valve is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.
- 5)The recognized rules should be applied when determining the flow characteristic of final controlling elements.

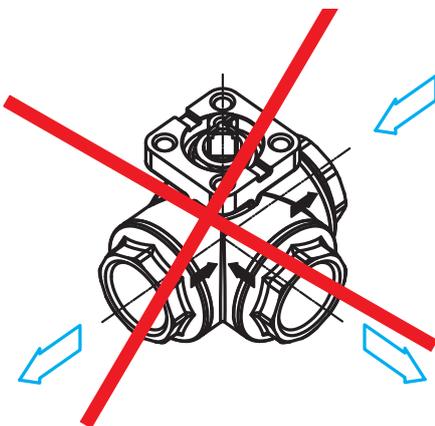
INCORRECTLY INSTALLED



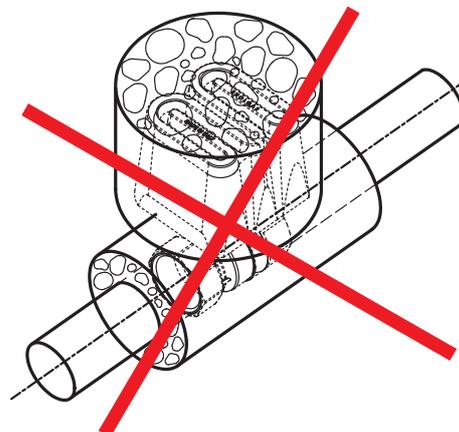
CORRECTLY INSULATED



INCORRECTLY INSTALLED



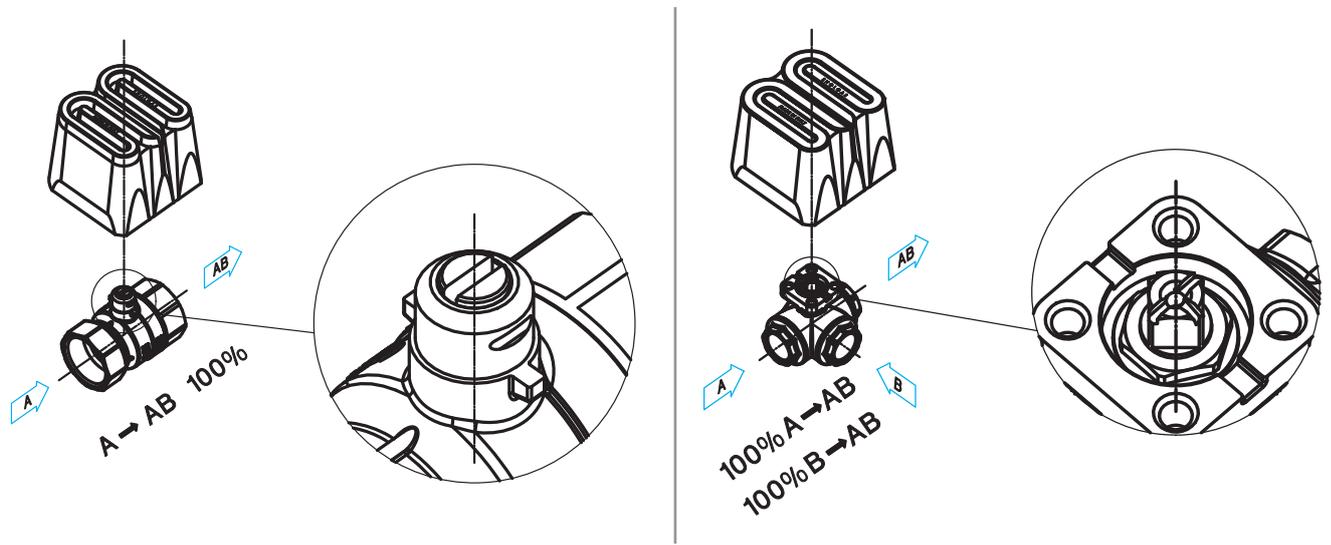
INCORRECTLY INSULATED





SWIFT•O•MATIC®

Technical bulletin



<p>Kv ↑</p> <p>WITH DISC</p> <p>Y</p> <p>characterized control valves</p>	<p>A - AB open</p>	<p>A - AB closed</p>	2-way
	<p>A - AB open</p>	<p>A - AB closed</p>	3-way
<p>Kv ↑</p> <p>NO DISC</p> <p>Y</p> <p>open-closed ball valve</p>	<p>A - AB open</p>	<p>A - AB closed</p>	2-way
	<p>A - AB open</p>	<p>A - AB closed</p>	3-way

NOTE: when assembling the actuator to the valve, carefully double-check the stem is in the correct position. This is very important to guarantee correct use of the product.

MANUAL OPERATION

In case of emergency, the 2-Way valve, can be easily operated with a screw driver, from the stem above. For the 3 way valves a spanner is required. To operate the valve with a screw driver or spanner, kindly remove the spindle (nuts and screw for 3-Way valve) on the actuator and remove it from the valve. At this point you can easily operate the valve with the screw driver or spanner, but remember to re-stroke the valve and actuator, prior to installation.



BALL VALVES

- Size from DN 15.....up to DN 50 mm (1/2".....2")
- Kvs 3.....to 292 m³/h
- Can be easily equipped with R2813.....S2815....S2818.....S2940..... actuators
- Manual assembly between valve and actuator quick mounting
- Suitable for small or medium size-sized heating, ventilating and air conditioning plants as a control or safety shut off valve
- Cooling water
- Chilled water
- Low temperature hot water
- Water with anti-freeze
- -20 to + 130°C

ELECTRIC ACTUATORS

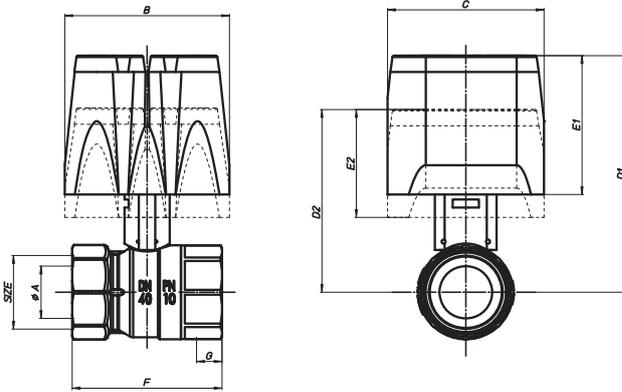
- R2813P00 AC 230V operating voltage, 2-position control signal, red colour, without auxiliary switch
- S2815,17 QM for 2-way ball valves - S2935,37 ISO•TOP for 3-way ball valves..... AC 230V operating voltage
- S2816,18 QM for 2-way ball valves - S2936,38 ISO•TOP for 3-way ball valves.....AC 24V operating voltage
- S2912P00 and S2940P09 AC 24V operating voltage and 0 to 10 Vdc, for 2-way modulating ball valves
- All actuators are from IP 54 to IP 65
- All actuators include an auxiliary switch for additional functions
- Directly mounting on the valve, without adjustment or brackets

APPLICATIONS

- Suitable to operate the valves S3041.....S1070....
- Ambient temperatures: -20°C to +80°C; -4°F to +176°F
- Cooling water
- Chilled water
- Low temperature hot water
- Water with anti-freeze
- -20 to + 130°C

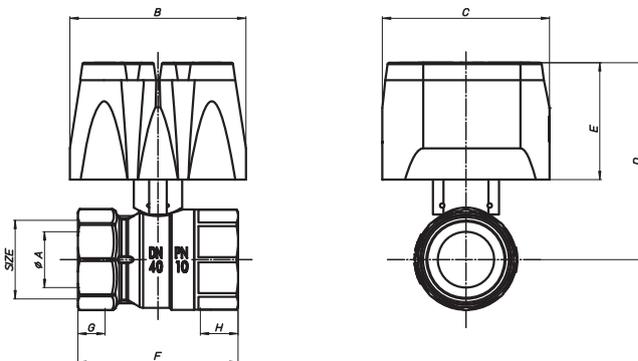


2-WAY ON-OFF



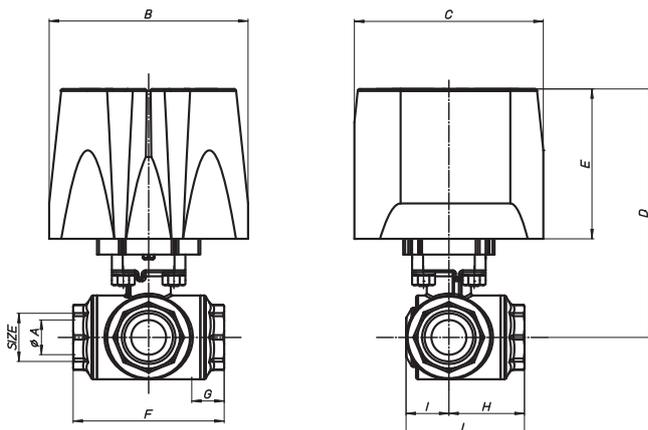
Size		½"	¾"	1"	1¼"	1½"	2"
øA bore		15	20	25	32	32	40
B mm		100	100	100	100	100	100
C mm		73	73	73	73	73	73
D1 mm		122	126	130	135	135	142
E1 mm		76	76	76	76	76	76
D2 mm		110	114	118	123	123	130
E2 mm		66	66	66	66	66	66
F mm		50	58,5	71	82	90	105
G mm		7,2	11	12,5	13,5	15,5	17,5

2-WAY MODULATING



Size		½"	¾"	1"	1¼"	1½"	2"
øA bore		15	20	25	32	32	40
B mm		100	100	100	100	100	100
C mm		73	73	73	73	73	73
D mm		110	114	118	123	123	130
E mm		66	66	66	66	66	66
F mm		57	64,5	77	90,5	95	112,5
G mm		7,2	11	12,5	13,5	15,5	17,5
H mm		15	16,3	19,1	21,4	21,4	25,7

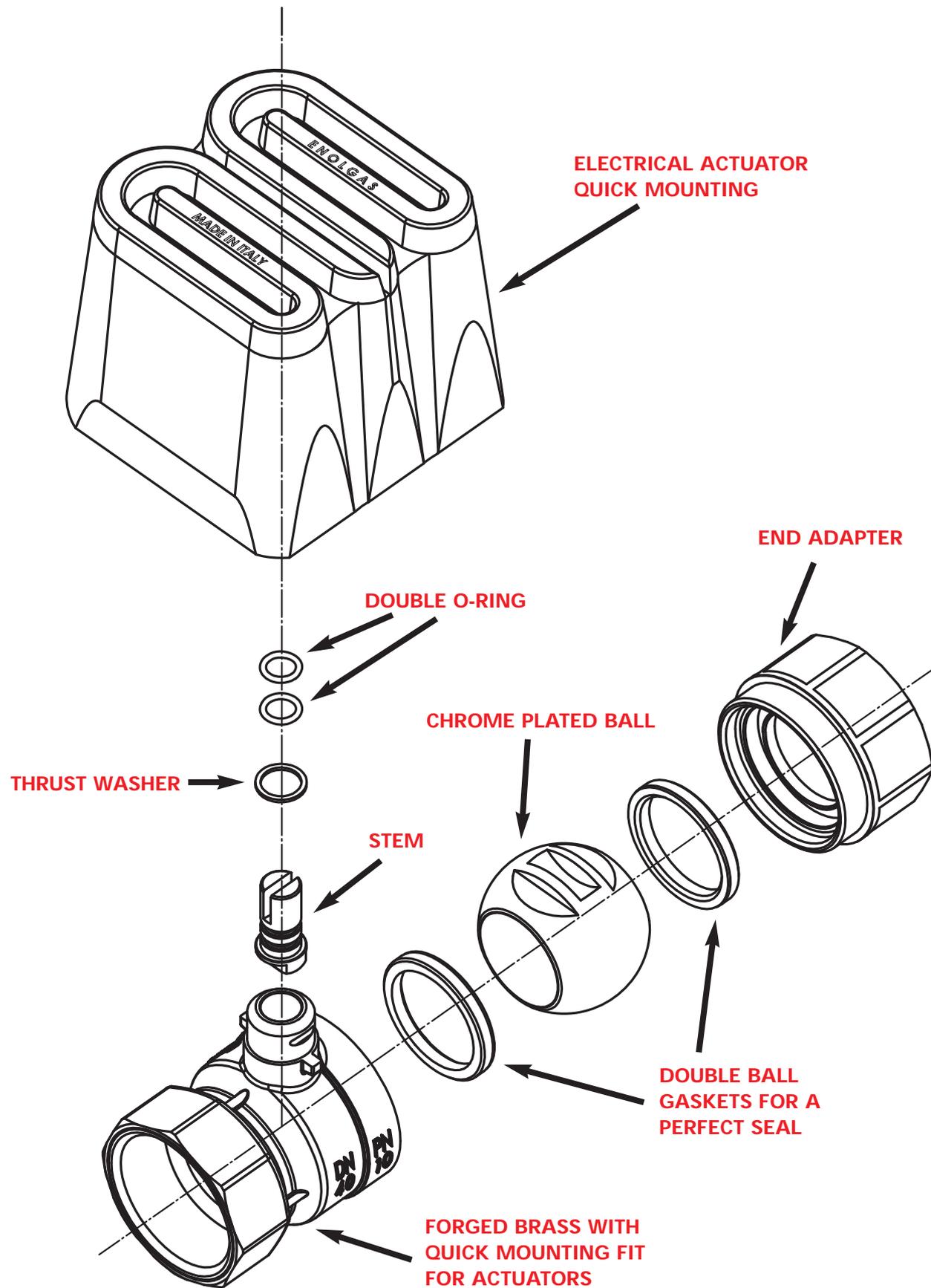
3-WAY ON-OFF and MODULATING



Size	¼"	¾"	½"	¾"	1"	1½"	1¾"	2"
øA bore	8	10	14,1	17,6	25	-	-	-
B mm	100	100	100	100	100	-	-	-
C mm	73	73	73	73	73	-	-	-
D mm	122	122	122	126	130	-	-	-
E mm	66	66	66	66	66	-	-	-
F mm	64,5	64,5	64,5	76	97	-	-	-
G mm	15	15	15	16,3	19,1	-	-	-
H mm	32,5	32,5	32,5	38	48,5	-	-	-
I mm	17	17	17	21,5	26	-	-	-
L mm	49,5	49,5	49,5	59,5	74,5	-	-	-

SWIFT•O•MATIC® QM

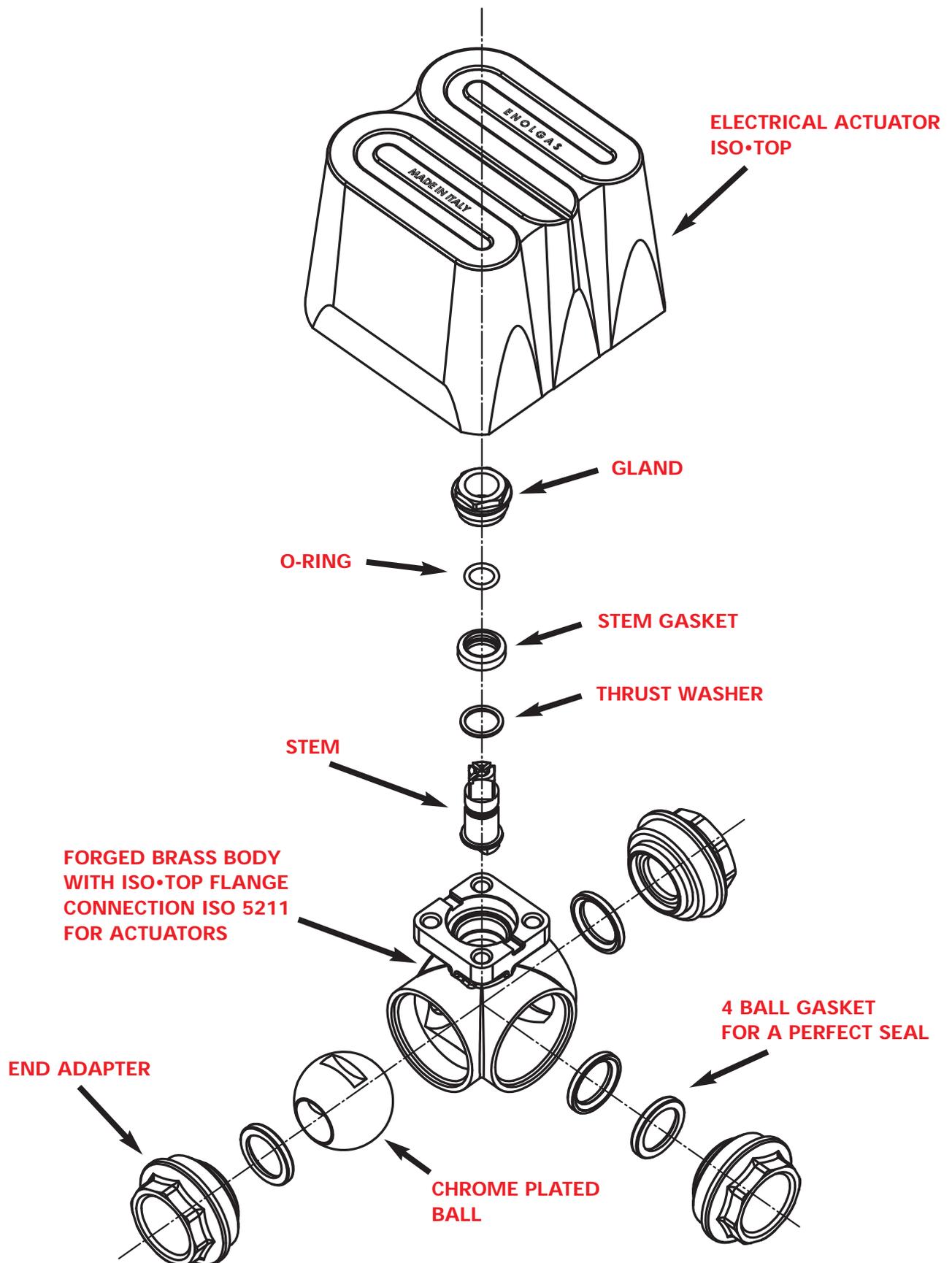
Assembly 2-way





SWIFT•O•MATIC® ISO•TOP

Assembly 3-way

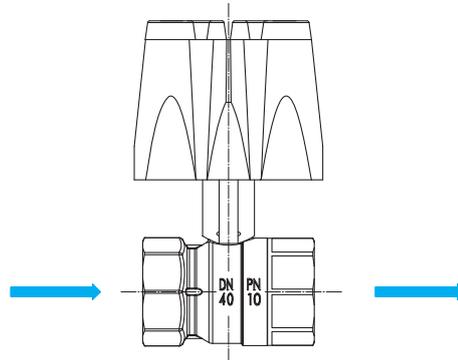


SWIFT•O•MATIC®

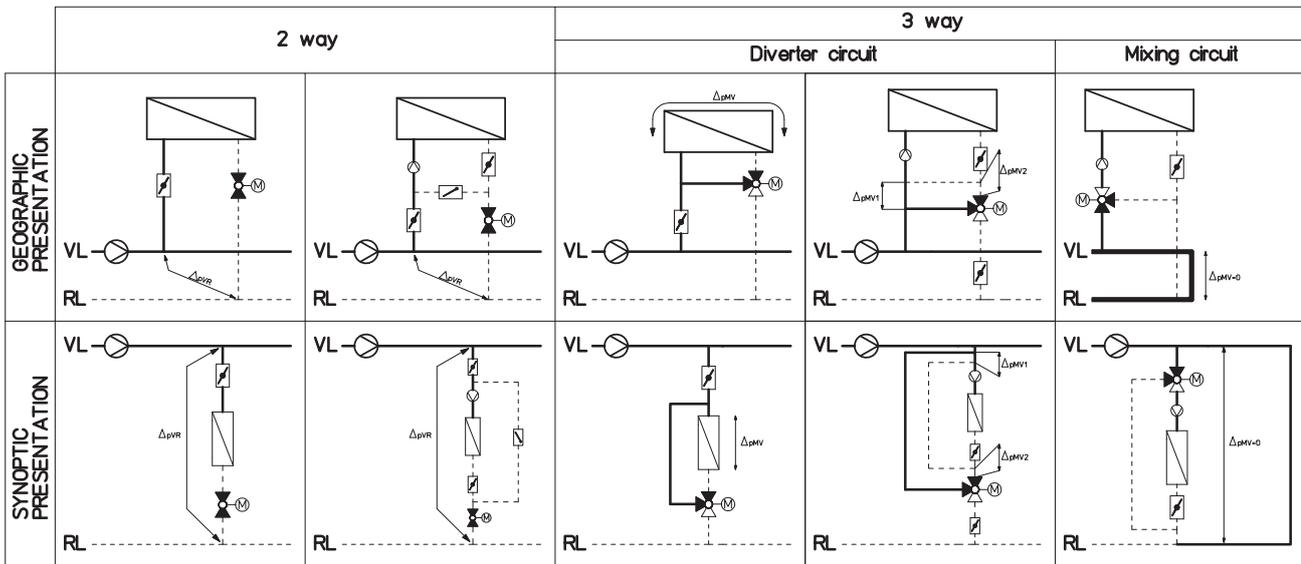
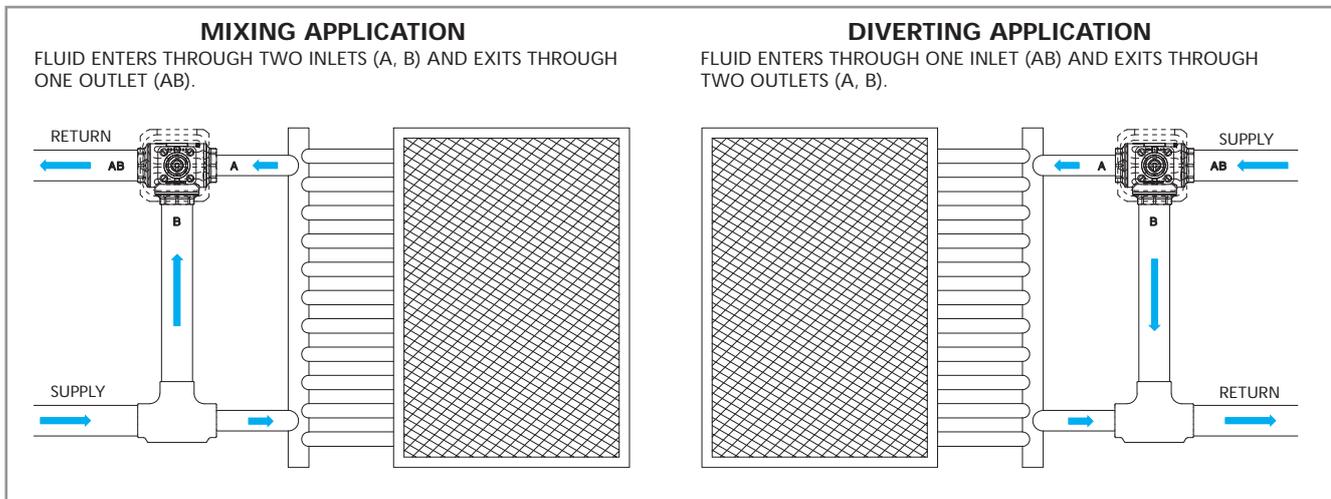
Typical applications



2-WAY



3-WAY

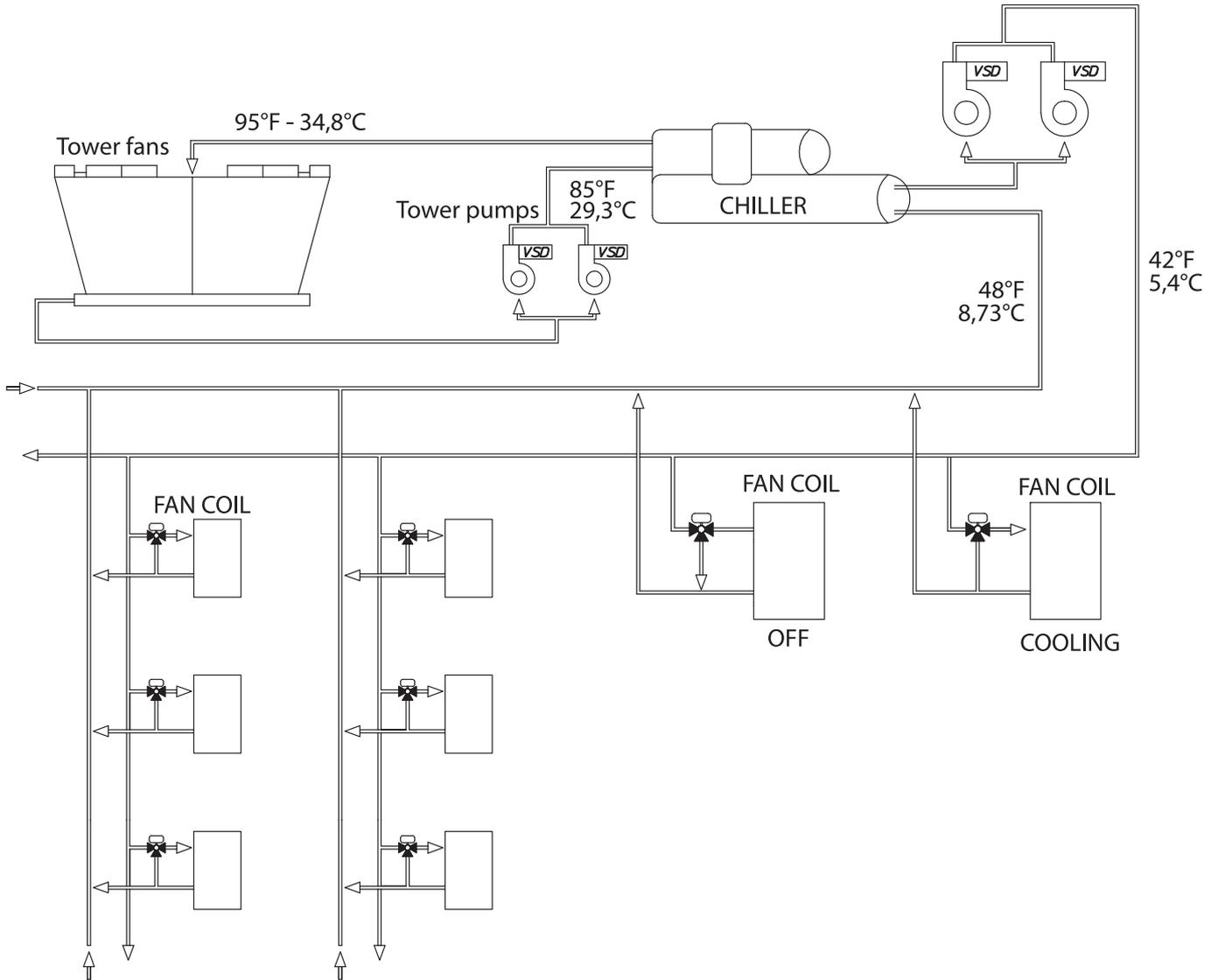


	Characterized control valve, 2-way, with rotary actuator	VL ——— Supply	Δp_{VR} Differential pressure across specified section at rated load
	Characterized control valve, 3-way, with rotary actuator	RL - - - - - Return	Δp_{MV} Differential pressure across variable-flow section at rated load (e.g. head exchanger)
	Pump		
	Non-return valve		
	Balancing valve		



SWIFT•O•MATIC® QM

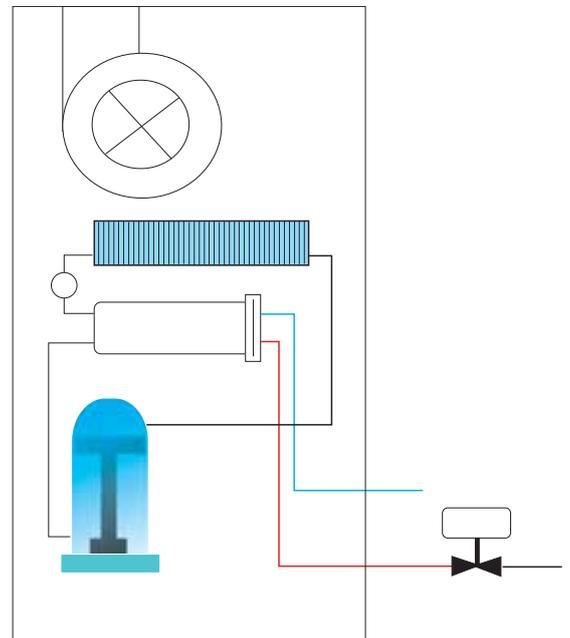
Typical applications

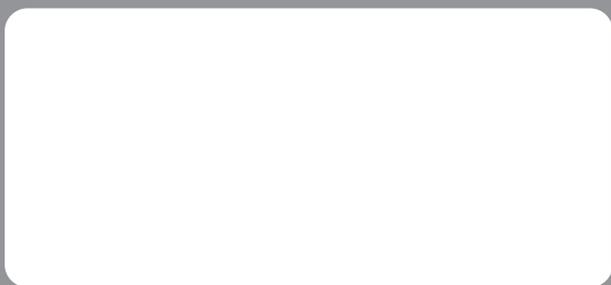


Many states have adopted ASHRAE Standard 90.1, "Energy Standard for Buildings".

The standard has specific requirements for HVAC pumping systems. These requirements (see Standard 90.1, section 6.5.4, "Hydronic System Design & Control") include a mandatory, two-position, automatic shutoff valve on all water-source heat pumps (see diagram), along with a variable flow pumping system.

Enolgas has added specific design features to its Swift o Matic series of valves, making them particularly suited to this application.





ENOLGAS BONOMI S.p.A. • via Europa 227 • 25062 Concesio (Bs) • Italy
tel. 030 2184311 • fax 030 2184333 • www.enolgas.it • enolgas@enolgas.it