

# VZ\*19\*

VZ219E, VZ319E, VZ419E  
VZ219C, VZ319C, VZ419C

## Design

Two-way, Three-way and Three-way with integral by-pass (4 ports) (Linear stroke operation)

## Specifications

Function	Normally Closed (A-AB) [Valve stem UP, without actuator fitted]
Stroke	5.5 mm
Max fluid speed	3 m/s (quiet operation 2m/s)
Max Glycol concentration	50%
Media Temperature	2°C to 95°C
Pressure Class	PN16
Rangeability	50:1
Leakage	0%, Tight close off (A-AB & B-AB)
Flow Characteristic	
Equal percentage (EQM)	on direct (A-AB) way
Linear	on by-pass (B-AB) way
Connection	
VZ219E, VZ319E, VZ419E	External thread to ISO 228/1 (flat face seal)
VZ219C, VZ319C, VZ419C	15mm and 22mm O/D tube compression
Materials	
Valve body	Brass (EN 12165 CW 617 N)
Stem	Stainless steel (AISI 303)
Stem packing	double EPDM O-ring
Plug material	PPS Glass Fiber Reinforced
Seat/cartridge material	PPS Glass Fiber Reinforced
Seat Sealing	EPDM

It is the responsibility of the installer or product specifier to verify media compatibility of the valves construction materials with the supplier of water treatment/heat transfer solution.

## Recommendations

It is recommended to fit a strainer upstream of the valve to increase reliability and to follow water treatment guidelines as detailed in VDI 2035. Valves should be installed in the return pipe to reduce exposure to media temperature extremes.



## Small linear Zone valves

These small linear zone valves are used for the fine control of hot or chilled water in terminal units such as fan coils, radiator heating; or for small re-heaters, re-coolers. The range consists of two-way, three-way and three-way with bypass.

The 5.5mm stroke length coupled with the high resolution MZ20 electro-mechanical actuator provides good hydronic control.

The valves utilise a double O-ring design on the plug to ensure a leak tight seal on both valve ports, this ensures no loss of energy leakage through the valve.

An adjustment cap for manually operating the valves, e.g. for priming the system upon installation, is provided with all models.

## Suitable Actuators

All VZ\*19\* valves are designed to be used with the MZ20 family of electro-mechanical actuators, these actuators are available in 3 point floating and modulating control. Modulating control types have 7 different command signals including 0-10V and 4-20mA.

- MZ20B, 24V and 230V, 3 Point floating control (data sheet 03-00085)
- MZ20A, 24V, 0-10V modulating control (data sheet 03-00086)

## Compression Ended Valves (VZ\*19C)

VZ219C, VZ319C and VZ419C are integral compression ended valves. Single pack ordering of these valve types are delivered with the nuts and olives and manual adjustment caps.

## Externally threaded Valves (VZ\*19E)

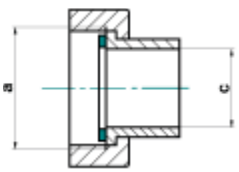
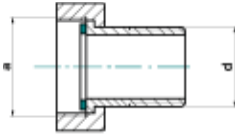
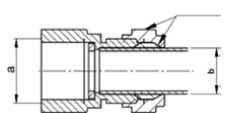
VZ219E, VZ319E and VZ419E are BSP male threaded valves with flat face seals, a range of connection sets are available to mate onto pipe.

### Part Number Ordering

		 VZ*19E Flat face external thread		 VZ*19C Compression End Connection*		Max Close-off (kPa) MZ20		
<b>Two-way valves</b>								
Size	Kvs	Part Number	Connection	Part Number	End Connection	A-AB		
DN 15	0.25	VZ219E-15BP01 SU 00	G1/2A	VZ219C-15BP01 SU 00	15mm O/D	400		
	0.4	VZ219E-15BP02 SU 00		VZ219C-15BP02 SU 00				
	0.6	VZ219E-15BP03 SU 00		VZ219C-15BP03 SU 00				
	1	VZ219E-15BP04 SU 00		VZ219C-15BP04 SU 00		350		
	1.6	VZ219E-15BP05 SU 00		VZ219C-15BP05 SU 00				
	2	VZ219E-15BP06 SU 00		VZ219C-15BP06 SU 00				
DN 20	2.5	VZ219E-20BP07 SU 00	G3/4A	VZ219C-20BP07 SU 00	22mm O/D	250		
	4	VZ219E-20BP08 SU 00				150		
	6.0	VZ219E-20BP09 SU 00						
<b>Three-way valves</b>								
	Kvs		Part Number	Connection	Part Number	End Connection	A-AB	B-AB
	A-AB	B-AB						
DN 15	0.25	0.25	VZ319E-15BP01 SU 00	G1/2A	VZ319C-15BP01 SU 00	15mm O/D	400	
	0.4	0.25	VZ319E-15BP02 SU 00		VZ319C-15BP02 SU 00			
	0.6	0.4	VZ319E-15BP03 SU 00		VZ319C-15BP03 SU 00			
	1	0.6	VZ319E-15BP04 SU 00		VZ319C-15BP04 SU 00		350	
	1.6	1	VZ319E-15BP05 SU 00		VZ319C-15BP05 SU 00			
	2	1.6	VZ319E-15BP06 SU 00		VZ319C-15BP06 SU 00			
DN 20	2.5	1.6	VZ319E-20BP07 SU 00	G3/4A	VZ319C-20BP07 SU 00	22mm O/D	100	
	4	2.5	VZ319E-20BP08 SU 00				40	
	6.0	4	VZ319E-20BP09 SU 00					
<b>Three-way valves with integral by-pass (4 ports)</b>								
DN 15	0.25	0.25	VZ419E-15BP01 SU 00	G1/2A	VZ419C-15BP01 SU 00	15mm O/D	400	
	0.4	0.25	VZ419E-15BP02 SU 00		VZ419C-15BP02 SU 00			
	0.6	0.4	VZ419E-15BP03 SU 00		VZ419C-15BP03 SU 00			
	1	0.6	VZ419E-15BP04 SU 00		VZ419C-15BP04 SU 00		350	
	1.6	1	VZ419E-15BP05 SU 00		VZ419C-15BP05 SU 00			
	2	1.6	VZ419E-15BP06 SU 00		VZ419C-15BP06 SU 00			
DN 20	2.5	1.6	VZ419E-20BP07 SU 00	G3/4A	VZ419C-20BP07 SU 00	22mm	100	
	4	2.5	VZ419E-20BP08 SU 00				40	
	6.0	4	VZ419E-20BP09 SU 00					

Nuts and olives supplied with the compression end connection valve

Connections Sets for VZ\*19E valves

	Connection type	Pipe size	DN	a	c (mm)	d	e	Part Number	Pack quantity
	Flat Face External thread to Solder* <sup>1</sup>	15mm 12mm	15 20	G 1/2 G 3/4	12 15	-- --	-- --	911 2076 000 911 2077 000	1 1
	External Thread	R 3/8" R 1/2"	15 20	G 1/2 G 3/4	-- --	R 3/8 R 1/2	-- --	911 2078 010 911 2079 010	10 10
	Flat face external thread to compression* <sup>2</sup>	15 mm 22 mm	15 20	G 1/2 G 3/4	-- --	-- --	15 22	911 2080 000 911 2081 000	1 1

\*One fitting required per valve port.

1 Note: The valve must not be over heated: solder the pipes to the connection bush before connecting the valve

2 Olive and nut included.

For valves VZ219E two connection sets are required, for valves VZ319E three and for valves VZ419E four connection sets.

Each set consists of a union nut, a solder bush (soldering) or tailpiece (external thread), and a gasket.

### Function

The main spring on the valve, provides a tight close-off against the pressure values given in the ordering table. The valve with no actuator force applied is in a closed state.

An O-ring between seat and plug ensures zero leakage on both direct and angle way designs.

The valve assembly with MZ20 actuators is easily made thanks to its threaded ring nut, which allows a comfortable cable positioning (See MZ20 data sheets, 03-00085 / 03-00086).

### Mounting And Typical Operation

When installing the valve, care must be taken to ensure the valve is mounted with the flow direction in accordance to the flow arrows on the valve body. Always mount the valve on the return of the heat exchanger.

The valve must not be mounted with the stem pointing downwards and the actuator thus upside down.

The adjustment cap should be removed from the valve only when the actuator is fitted. The adjustment cap can be screwed down to prime and fill the system.

The valve should be mounted with minimum stress onto the connecting pipe work. Mounting the valve connectors should not exceed a tightening torque of 25 to 30 Nm (18 to 22 lbf-ft).

### Two-way valves, VZ219

Direction of flow always from port A to port B.

### Three-way valves, VZ319

The valves should be installed as mixing valves, with ports connected as:

- Port AB: Combined flow outlet
- Port A: Controlled flow inlet
- Port B: Bypass inlet

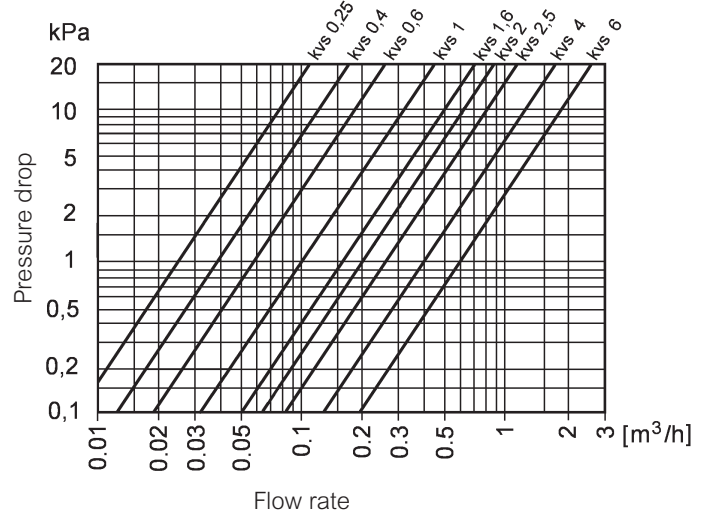
Valves should preferably be mounted in the return flow to reduce the media temperature exposed to the valve and actuator. If the Delta p values exceed 60 kPa (or 2m/s) attention should be paid to the development of noise and cavitations.

### Three-way valves with integral bypass, VZ419

These Versions can simplify and reduce the installation time, since the bypass pipe is an integral part of the valve.

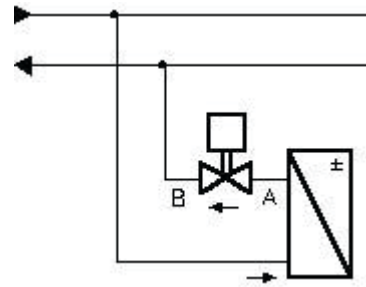
The port connections as for the 3 way valves also apply for these bypass types.

### Flow Capacity / Pressure Drop Chart

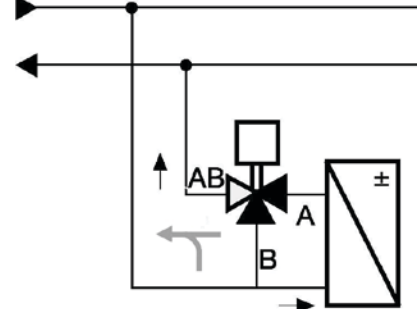


### Mounting

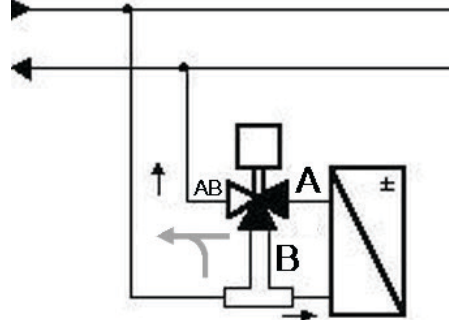
VZ219\*



VZ319\*

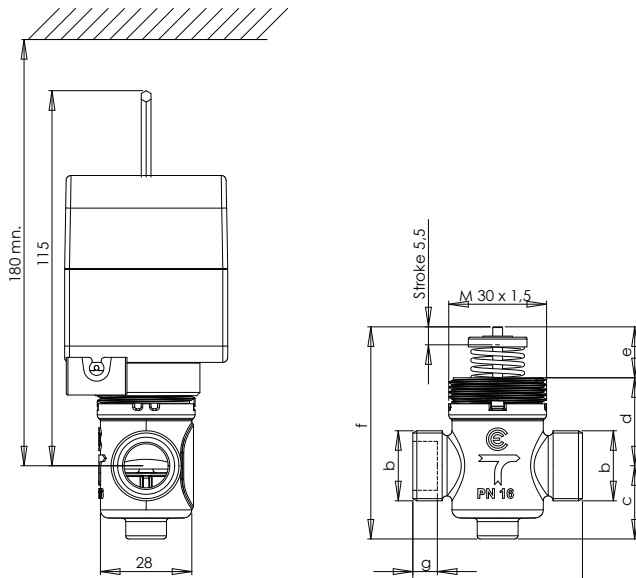


VZ419\*



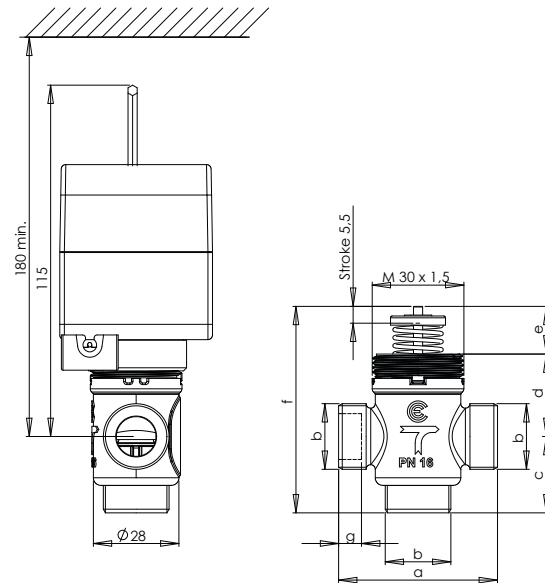
### Dimensions mm (inches)

Two-way valve  
VZ219\*



Valve (Actuator MZ20)	a	b	c	d	e	f	g <sup>3</sup>
VZ219*-15BP01 to 15BP06	52	G1/2"A	22,5	27			7,5
VZ219*-20BP07					15,6	65	9,5
VZ219*-20BP08 /20BP09	56	G3/4"A	23,6	25,8			11

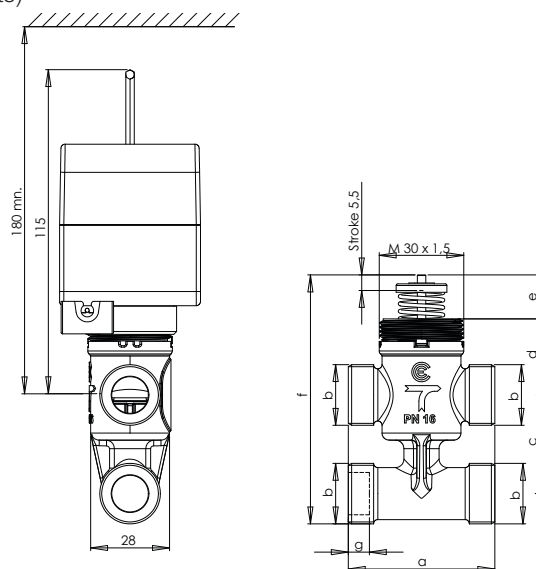
Three-way valve  
VZ319\*



Valve Actuator MZ20	a	b	c	d	e	f	g <sup>3</sup>
VZ319*-15BP01 to -15BP06	52	G1/2"A	25	27		67,6	7,5
VZ319*-20BP07					15,6		9,5
VZ319*-20BP08/-20BP09	56	G3/4"A	34	25,8		75,4	11

Three-way valve with integral by-pass (4 ports)

VZ419\*



Valve	Actuator	a	b	c	d	e	f	g <sup>3</sup>
VZ419*-15BP01 to 15BP06	MZ20	52	G1/2"A	40	27		88,4	7,5
VZ419*-20BP07				50	25,8	15,6	98,4	9,5
VZ419*-20BP08 / 20BP09				44				11

Notes for VZ\*19C valves: The overall dimensions for V\*19C models are without fittings mounted.  
3 - g dimensions relevant only for compression models (VZ\*19C).

## Type Designation

