SIEMENS

Install the "Scan to HIT" app and scan the DMC code on the product to get product information.

Acvatix hydronics. Everything under control.

Valves and actuators for any application – planning, installation and commissioning are fast and easy

www.siemens.com/acvatix

The right solution for every hydronic project

Acvatix™ is a versatile range of valves and actuators for superior ease of use, maximum control accuracy and energy efficiency. It allows you to meet virtually any control and hydronic requirement associated with the generation, distribution and use of heating and cooling. Siemens provides useful tools and extensive knowledge to assist you in every project phase.

Easy planning, easy installation and easy commissioning

Benefit from our decades of experience

Acvatix valves and actuators are improved continually based on our many years of experience in the field and subjected to rigorous testing in Siemens' in-house HVAC laboratory. The result: Acvatix products have been used for decades inmillions of successful installations world-wide. You can be sure to receive the highest quality and maximum reliability.

Selection and engineering made easy

The VDI3805/ISO16757 Selector makes planning easier than ever. In addition to CAD data, it also includes specifier texts. The HIT Portal, the valve slide ruler or the Combi Valve Sizer app allow you to quickly find the right products for your application. You can use the HIT Portal to design the entire HVAC application step by step, including specifications complete with plant diagrams and lists of materials.

Installation in a few simple steps

Acvatix products make your daily work easier, whether it is intuitive manual operation irrespective of the installation position or valve actuator coupling with just one screw or via bayonet mount. Lost the instructions for a product? No problem! Simply use the "Scan to HIT" app from Siemens to scan the data matrix code on the product and receive complete product information.

Intelligent comfort for optimized plant operation

Acvatix offers rapid commissioning and efficient plant control. Easy-to-see operating status and position indicators speed up commissioning, testing and maintenance of the plant and help with troubleshooting. State-of-the-art products such as pressure independent combi valves save time and effort through automatic hydronic balancing. Acvatix is synonymous with robust design, outstanding reliability as well as minimal need for maintenance.

Highlights

- Products for any hydronic requirement
- Support and practical tools for every project phase
- High level of investment protection thanks to long life and maximum reliability
- Easy and quick planning, installation and commissioning

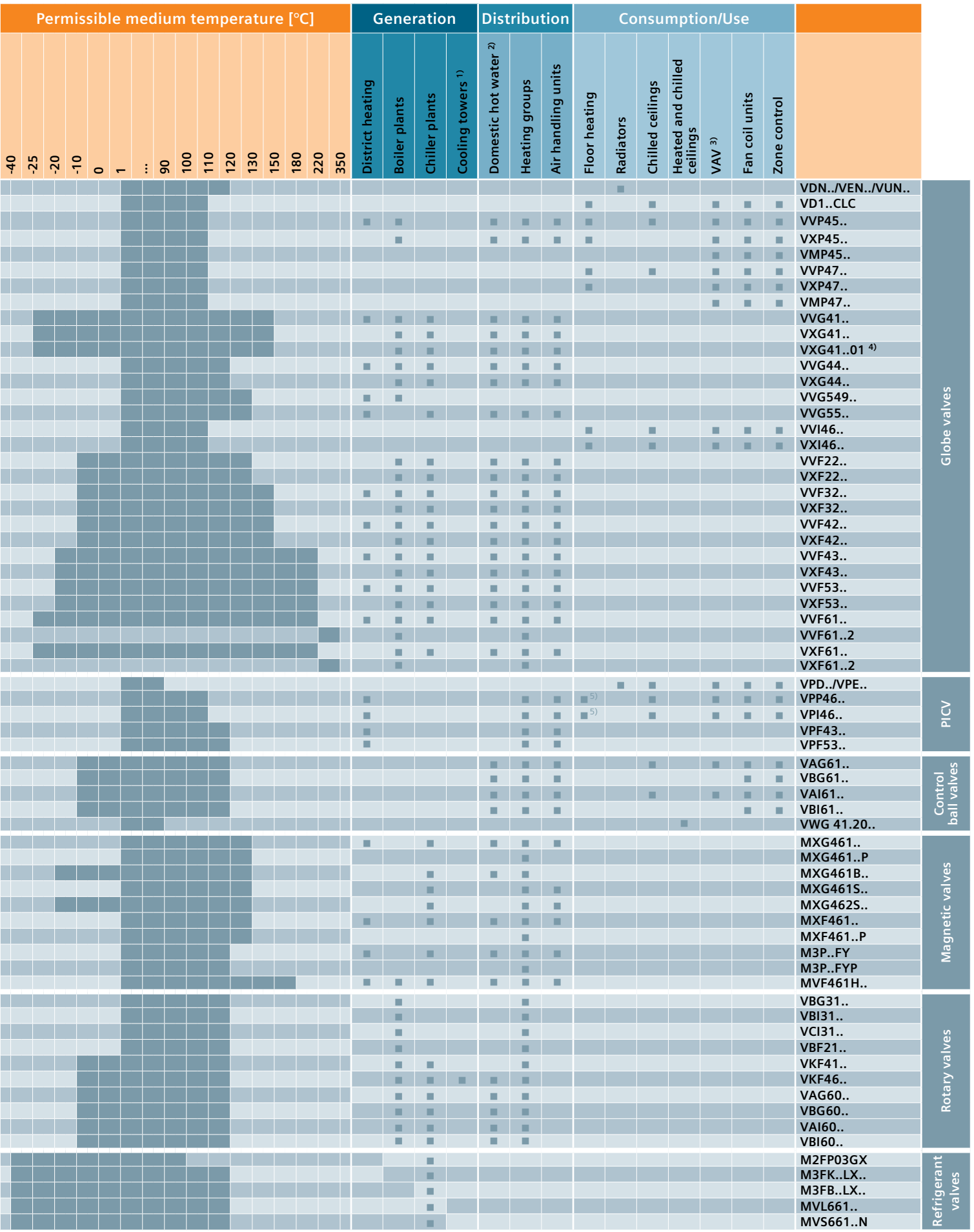
The Combi Valve Sizer app for smartphones makes it easy to select the right Acvatix combi valve and actuator. This makes designing energy-efficient HVAC systems easier than ever.

											Recommended media													
		Straight-way valve	3-port valve	4-port valve	6-port valve	PN class	Type of connection	Silicon-free grease	Closed circuits	Open circuits	Chilled water	Cooling water [1]	Drinking water	Low-temperature hot water	High-temperature hot water	Water glycol mixture	Saturated steam	Superheated steam	Heat transfer oil	Media containing mineral oils	Safety refrigerants	R744 (CO_2)	R717 (ammonia)
Globe valves	VDN../VEN../VUN..	■				10	AG		■		■			■		■								
	VD1..CLC	■				10	AG		■		■			■		■								
	VVP45..	■				16	AG		■		■			■		■								
	VXP45..		■			16	AG		■		■			■		■								
	VMP45..		■			16	AG		■		■			■		■								
	VVP47..	■				16	AG		■		■			■		■								
	VXP47..		■			16	AG		■		■			■		■								
	VMP47..		■			16	AG		■		■			■		■								
	VVG41..	■				16	AG	■	■	■	■	■		■	■	■	■	■						
	VXG41..		■			16	AG	■	■	■	■	■		■	■	■								
	VXG41..01 [4]		■			16	AG	■	■	■	■	■	■	■	■	■								
	VVG44..	■				16	AG	■	■		■			■		■								
	VXG44..		■			16	AG	■	■		■			■		■								
	VVG549..	■				25	AG		■		■	■		■	■	■								
	VVG55..	■				25	AG	■	■		■			■	■	■								
	VVI46..	■				16	IG		■		■			■		■								
	VXI46..		■			16	IG		■		■			■		■								
	VVF22..	■				6	F	■	■		■			■	■	■								
	VXF22..		■			6	F	■	■		■			■	■	■								
	VVF32..	■				10	F	■	■		■			■	■	■								
	VXF32..		■			10	F	■	■		■			■	■	■								
	VVF42..	■				16	F	■	■		■			■	■	■								
	VXF42..		■			16	F	■	■		■			■	■	■								
	VVF43..	■				16	F	■	■	■	■	■		■	■	■	■	■	■					
	VXF43..		■			16	F	■	■	■	■	■		■	■	■			■					
	VVF53..	■				25	F	■	■	■	■	■		■	■	■	■	■	■					
	VXF53..		■			25	F	■	■	■	■	■		■	■	■			■					
	VVF61..	■				40	F		■	■	■	■		■	■	■	■	■	■					
	VVF61..2	■				40	F		■	■	■	■		■	■	■			■					
	VXF61..		■			40	F		■	■	■	■		■	■	■			■					
	VXF61..2		■			40	F		■	■	■	■		■	■	■			■					
PICV	VPD../VPE..	■				10	AG		■		■			■		■								
	VPP46..	■				25	AG		■		■			■		■								
	VPI46..	■				25	IG		■		■			■		■								
	VPF43..	■				16	F	■	■		■			■		■								
	VPF53..	■				25	F	■	■		■			■		■								
Control ball valves	VAG61..	■				40	AG	■	■		■			■	■	■								
	VBG61..		■			40	AG	■	■		■			■	■	■								
	VAI61..	■				40	IG	■	■		■			■	■	■								
	VBI61..		■			40	IG	■	■		■			■	■	■								
	VWG41.20..				■	16	AG/IG	■	■		■			■	■	■								
Magnetic valves	MXG461..	■	■			16	AG		■		■			■		■								
	MXG461..P	■	■			16	AG		■										■	■				
	MXG461B..	■	■			16	AG		■	■	■	■	■	■		■								
	MXG461S..	■	■			16	AG		■	■	■	■		■		■								
	MXG462S..	■	■			16	AG		■	■	■	■		■		■								
	MXF461..	■	■			16	F		■		■			■		■								
	MXF461..P	■	■			16	F		■										■	■				
	M3P..FY	■	■			16	F		■		■			■		■								
	M3P..FYP	■	■			16	F		■										■	■				
	MVF461H..	■				16	F		■		■			■	■	■	■	■						
Rotary valves	VBG31..		■			10	AG		■					■	■									
	VBI31..		■			10	IG		■					■	■									
	VCI31..			■		10	IG		■					■	■									
	VBF21..		■			6	F		■					■	■									
	VKF41..	■				16	F		■		■			■	■	■								
	VKF46..	■				16	F		■	■	■	■		■		■								
	VAG60..	■				40	AG	■	■		■			■	■	■								
	VBG60..		■			40	AG	■	■		■			■	■	■								
	VAI60..	■				40	IG	■	■		■			■	■	■								
	VBI60..		■			40	IG	■	■		■			■	■	■								
Refrigerant valves	M2FP03GX					32	–		■												■			■
	M3FK..LX..		■			32	L		■												■			
	M3FB..LX..		■			PS 43	L		■												■			
	MVL661..	■				PS 45	L		■												■		■	
	MVS661..N	■				PS 53	S		■												■		■	■

Recommendation: water treatment according to VDI 2035

[1] Open circuits; [2] Not for drinking water circuit (open circuit) [3] Variable air volume; [4] Sealed bypass; [5] As zone valve for floor heating systems

IT = internally threaded connection, ET = externally threaded connection, F = flanged connection, S = soldered connection, W = welded connection


Permissible medium temperature [°C]
-40
-25
-20
-10
0
1
...
90
100
110
120
130
150
180
220
350
Generation
District heating
Boiler plants
Chiller plants
Cooling towers 1)
Distribution
Domestic hot water 2)
Heating groups
Air handling units
Consumption/Use
Floor heating
Radiators
Chilled ceilings
Heated and chilled ceilings
VAV 3)
Fan coil units
Zone control
VDN../VEN../VUN..
VD1..CLC
VVP45..
VXP45..
VMP45..
VVP47..
VXP47..
VMP47..
VVG41..
VXG41..
VXG41..01 4)
VVG44..
VXG44..
VVG549..
VVG55..
VVI46..
VXI46..
VVF22..
VXF22..
VVF32..
VXF32..
VVF42..
VXF42..
VVF43..
VXF43..
VVF53..
VXF53..
VVF61..
VVF61..2
VXF61..
VXF61..2
Globe valves
VPD../VPE..
VPP46..
VPI46..
VPF43..
VPF53..
PICV
VAG61..
VBG61..
VAI61..
VBI61..
VWG 41.20..
Control ball valves
MXG461..
MXG461..P
MXG461B..
MXG461S..
MXG462S..
MXF461..
MXF461..P
M3P..FY
M3P..FYP
MVF461H..
Magnetic valves
VBG31..
VBI31..
VCI31..
VBF21..
VKF41..
VKF46..
VAG60..
VBG60..
VAI60..
VBI60..
Rotary valves
M2FP03GX
M3FK..LX..
M3FB..LX..
MVL661..
MVS661..N
Refrigerant valves

Threaded globe valves

Typical applications	Actuators	Data sheet
– Radiators	**RTN..**	N2111



	RTN51/RTN51G	RTN71	RTN81
	4.5 mm	2.5 mm	4.5 mm
	100 N	100 N	90 N

Typical applications	Actuators	Data sheet				
– Radiators	**STA..**	N4884				
	SSA..	N4893				
	Operating voltage	**Positioning signal**	**Positioning time [s]**			
	AC 230 V	2-position	210	**STA23**	–	**STA23HD** [1]
		3-position	150	–	**SSA31**	–
	AC 24 V	3-position	150	–	**SSA81**	–
		0...10 V	270 [2]	**STA63**	–	–
	AC/DC 24 V	2-position/PDM	270	**STA73**	–	**STA73HD** [1]
		0...10 V	34	–	**SSA61**	–
	Normally open/normally closed (for radiator valves)			**NC**	–	**NC**

PN 10 1...120 °C	DIN	NF	DN	Rp/R	k_v	Δp_{max}
Data sheet	N2105	N2106		[inch]	[m³/h]	[kPa]
	VDN110	**VDN210**	10	Rp/R ⅜	0.09...0.63	60
	VDN115	**VDN215**	15	Rp/R ½	0.10...0.89	60
	VDN120	**VDN220**	20	Rp/R ¾	0.31...1.41	60
	VEN110	**VEN210**	10	Rp/R ⅜	0.09...0.63	60
	VEN115	**VEN215**	15	Rp/R ½	0.10...0.89	60
	VEN120	**VEN220**	20	Rp/R ¾	0.31...1.41	60
	–	**VUN210**	10	Rp/R ⅜	0.14...0.60	60
	–	**VUN215**	15	Rp/R ½	0.13...0.77	60

Presettings for radiator valves VEN... VDN... VUN..

k_v values [m³/h] at the different preadjusted positions (XP = 2K)

Control range with electromotoric and electrothermic actuators SSA... STA..	■	■	■	■	■	■	–
Control range with thermostatic head RTN..	■	■	■	■	■	■	■
Reference numbers for preadjustment	1	2	3	4	5	N	N (k_{vs})
VDN110/VDN210/VEN110/VEN210	0.072	0.17	0.24	0.28	0.37	0.43	0.63
VDN115/VDN215/VEN115/VEN215	0.07	0.17	0.28	0.36	0.45	0.50	0.89
VDN120/VDN220/VEN120/VEN220	0.22	0.35	0.44	0.52	0.60	0.71	1.41
VUN210	0.14	0.26	0.34	0.39	0.40	0.43	0.60
VUN215	0.13	0.22	0.30	0.39	0.45	0.50	0.77

Threaded globe valves

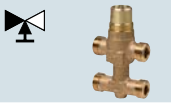
Typical applications	Actuators	Datenblatt			
– Chilled ceilings	**STA..**	N4884			
	SSA..	N4893			
	Operating voltage	**Positioning signal**	**Positioning time [s]**		
	AC 230 V	2-position	210	**STA23**	–
		3-position	150	–	**SSA31**
	AC 24 V	3-position	150	–	**SSA81**
		0...10 V	270 [2]	**STA63**	–
	AC/DC 24 V	2-position/PDM	270	**STA73**	–
		0...10 V	34	–	**SSA61**
	Normally open/normally closed (for radiator valves)			**NC**	–


	4.5 mm	2.5 mm
	100 N	100 N

PN 10 1...110 °C		DN	Rp/R	k_v	Δp_{max}
Data sheet	N2103		[inch]	[l/h]	[kPa]
	VD115CLC	15	Rp/R ½	0.25...1.9	150
	VD120CLC	20	Rp/R ¾	0.25...2.6	150
	VD125CLC	25	Rp/R 1	0.25...2.6	150

[1] Optimized for floor heating systems
[2] In control mode (warm-up time) min. running time approx. 30 s/mm
k_v = nominal flow rate of cold water (5...30 °C) through the valve at the respective stroke and a differential pressure of 100 kPa (1 bar)
The selected k_v values of the radiator valves can be easily and precisely set on the valve head in 5 steps + N (fully open)

Threaded globe valves

Typical applications	Actuators	Data sheet			5.5 mm	
– Floor heating – Chilled ceilings – VAV – Fan coil units – Zone control	**SSB..**	N4891			200 N 	200 N 
	Operating voltage	**Positioning signal**	**Positioning time [s]**	**Auxiliary switch** SSB..1.1		
	AC 230 V	3-Punkt	150	✓	**SSB31**	**SSB31.1**
	AC 24 V	3-Punkt	150	✓	**SSB81**	**SSB81.1**
	AC/DC 24 V	0...10 V	75	–	**SSB61**	–
PN 16	1...110 °C	DN	G [inch]	k_{vs} [m³/h]	Δp_s [kPa]	Δp_{max} [kPa]
Data sheet	N4845					
	**VVP45.10-..** [1]	10	G ½B	0.25 / 0.4 / 0.63 / 1 / 1.6	725	400
	VVP45.15-2.5	15	G ¾B	2.5	350	350
	VVP45.20-4	20	G 1B	4	350	350
	VVP45.25-6.3	25	G 1¼B	6.3	300	300
	**VXP45.10-..**	10	G ½B	0.25 / 0.4 / 0.63 / 1 / 1.6	–	400
	VXP45.15-2.5	15	G ¾B	2.5	–	350
	VXP45.20-4	20	G 1B	4	–	350
	VXP45.25-6.3	25	G 1¼B	6.3	–	300
	**VMP45.10-..**	10	G ½B	0.25 / 0.4 / 0.63 / 1	–	400
	VMP45.10-1.6	10	G ½B	1.6	–	400
	VMP45.15-2.5	15	G ¾B	2.5	–	350
	VMP45.20-4	20	G 1B	4	–	350

Typical applications	Actuators	Data sheet			4.5 mm	2.5 mm	
– Chilled ceilings – VAV – Fan coil units	**STP..** **SFP..** **SSP..**	N4884 N4865 N4864			100 N 	135 N 	160 N 
	Operating voltage	**Positioning signal**	**Positioning time [s]**	**Spring return function [s]**			
	AC 230 V	2-position	210	–	**STP23**	–	–
		2-position	10	30-50	–	**SFP21/18**	–
		3-position	150	–	–	–	**SSP31**
	AC 24 V	2-position	10	30-50	–	**SFP71/18**	–
		3-position	43	–	–	–	**SSP81.04**
		3-position	150	–	–	–	**SSP81**
		0...10 V	270 [2]	–	**STP63**	–	–
	AC/DC 24 V	2-position/PDM	270	–	**STP73**	–	–
		0...10 V	34	–	–	–	**SSP61**

PN 16	1...110 °C	DN	G [inch]	k_{vs} [m³/h]	Δp_s [kPa]	Δp_{max} [kPa]	Δp_s [kPa]	Δp_{max} [kPa]
Data sheet	N4847							
	**VVP47.10-..** [1]	10	G ½B	0.25 / 0.4	700	400	1000	400
	VVP47.10-..	10	G ½B	0.63 / 1	250	250	500	400
	VVP47.10-1.6	10	G ½B	1.6	150	150	300	300
	VVP47.15-2.5	15	G ¾B	2.5	150	150	300	300
	VVP47.20-4	20	G 1B	4	100	100	175	175
	**VXP47.10-..**	10	G ½B	0.25 / 0.4	–	400	–	400
	VXP47.10-..	10	G ½B	0.63 / 1	–	250	–	400
	VXP47.10-1.6	10	G ½B	1.6	–	150	–	300
	VXP47.15-2.5	15	G ¾B	2.5	–	150	–	300
	VXP47.20-4	20	G 1B	4	–	100	–	175
	**VMP47.10-..**	10	G ½B	0.25 / 0.4	–	400	–	400
	VMP47.10-..	10	G ½B	0.63 / 1	–	250	–	400
	VMP47.10-1.6	10	G ½B	1.6	–	150	–	300
	VMP47.15-2.5	15	G ¾B	2.5	–	150	–	300

Union nuts for threaded valves

Union nuts for threaded valves	**See page 9**

VVP45..N with Serto compression fittings, k_{vs} = 2.5 / 4 / 6.3 m³/h
VVP45..S, VMP45..S with Conex® compression fittings, k_{vs} = 0.63 / 1 / 1.6 / 2.5 m³/h
VVP47..S, VMP47..S with Conex® compression fittings, k_{vs} = 0.63 / 1 / 1.6 / 2.5 m³/h

[1] .. = k_{vs} value
[2] In control mode (warm-up time) min. running time approx. 30 s/mm

Threaded globe valves

Typical applications	Actuators	Data sheet			2.5 mm		4.5 mm	2.5 mm
– Floor heating – Fan coil units – Zone control	**SFA..** **SUA21/1** **STA..** **SSA31.04** [1]	N4863 N4830 N4884 N4860			200 N	150 N	100 N	160 N
	Operating voltage	**Positioning signal**	**Positioning time [s]**	**Spring return function [s]**				
	AC 230 V	2-position	10	30-50	**SFA21/18**	–	–	–
		2-position	210	–	–	–	**STA23**	–
		2-position/SPST [2]	10	–	–	**SUA21/1**	–	–
		3-position/SPST [2]	43	–	–	–	–	**SSA31.04**
	AC 24 V	2-position	10	30-50	**SFA71/18**	–	–	–
		0...10 V	270 [3]	–	–	–	**STA63**	–
	AC/DC 24 V	2-position/PDM	270	–	–	–	**STA73**	–

PN 16	1...110 °C	DN	Rp	k_{vs}	Δp_s	Δp_{max}	Δp_s	Δp_{max}	Δp_s	Δp_{max}
Data sheet	N4842		[Zoll]	[m³/h]	[kPa]	[kPa]	[kPa]	[kPa]	[kPa]	[kPa]
	**VVI46.15**	15	Rp ½	2	300	300	300	300	200	200
	VVI46.20	20	Rp ¾	3.5	300	300	300	300	200	200
	VVI46.25	25	Rp 1	5	300	300	250	250	200	200
	**VXI46.15** [4]	15	Rp ½	2	–	300	–	300	–	200
	VXI46.20 [4]	20	Rp ¾	3.5	–	300	–	300	–	200
	VXI46.25 [4]	25	Rp 1	5	–	300	–	300	–	200
	VXI46.25T [5]	25	Rp 1	5	–	200	–	200	–	200

Thermal actuators and connecting cables for combinable range, STx..3..

Color		White						Black		
Equipped with		–	Function module DC 0...10 V		Auxiliary switch for STA	Auxiliary switch for STP	LED	–	Function module DC 0...10 V	
Positioning signal		2-position (On/Off)	DC 0...10 V	DC 0...10 V	2-position (On/Off)	2-position (On/Off)	2-position (On/Off)	2-position (On/Off)	DC 0...10 V	DC 0...10 V
		[STA.., NC]	[STA.., NC]	–	[STA.., NC]	–	[STA.., NC]	[STA.., NC]	[STA.., NC]	–
		[STP.., NO]	–	[STP.., NO]	–	[STP.., NO]	[STP.., NO]	[STP.., NO]	–	[STP.., NO]
Standard PVC cables	0.8 m	**ASY23L08**								
	1 m	**ASY23L10**			**ASA23U10**	**ASP23U10**				
	2 m	**ASY23L20**	**ASY6AL20**	**ASY6PL20**	**ASA23U20**	**ASP23U20**	**ASY23L20LD**		**ASY6AL20B**	**ASY6PL20B**
	3 m	**ASY23L30**						**ASY23L30B**		
	4 m	**ASY23L40**								
	5 m	**ASY23L50**	**ASY6AL50**	**ASY6PL50**			**ASY23L50LD**	**ASY23L50B**	**ASY6AL50B**	
	6 m	**ASY23L60**								
	7 m	**ASY23L70**	**ASY6AL70**	**ASY6PL70**					**ASY6AL70B**	
	10 m	**ASY23L100**						**ASY23L100B**		
	15 m	**ASY23L150**								
Halogen-free cables	2 m	**ASY23L20HF**	**ASY6AL20HF**	**ASY6PL20HF**						
	5 m	**ASY23L50HF**	**ASY6AL50HF**	**ASY6PL50HF**						
	7 m		**ASY6AL70HF**	**ASY6PL70HF**						
	10 m	**ASY23L100HF**								

Actuator									
STA73/00	■	■		■		■			
STA23/00	■			■					
STP73/00	■		■		■	■			
STP23/00	■				■				
STA73PR/00 [6]	■			■		■			
STP73PR/00 [6]	■				■	■			
STA73MP/00 [7]	■	■		■		■			
STA23MP/00 [7]	■			■					
STA73B/00							■	■	
STA23B/00							■		
STP73B/00							■		■
STP23B/00							■		

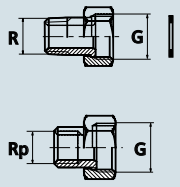
[1] Not suited for radiator valves
[2] SPST = single-pole single-throw, SPDT = single-pole double-throw
[3] In control mode (warm-up time) min. running time approx. 30 s/mm
[4] 70% k_{vs} in bypass, leakage rate in bypass 2...5% of k_{vs} value
[5] 100% k_{vs} in bypass, leakage rate in bypass 0.05% of k_{vs} value. **For noiseless operation, the value of 100 kPa should not be exceeded.**
[6] Actuators ideal for parallel running. Pulse duration modulation (PDM) in connection with Siemens room controllers of the Desigo™ range and room thermostats.
[7] Multipack with 50 actuators (OEM) NC: normally closed, NO: normally open

Threaded globe valves

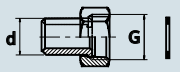
Typical applications	Actuators	Data sheet				Spring return function [s]		20 mm		
– District heating – Boiler plants – Chiller plants – Domestic hot water – Heating groups – Air handling units	**SAX..** **SKD..** **SKB..**	N4501 N4561 N4564						800 N 	1000 N 	2800 N 
	Operating voltage	**Positioning signal**	**Positioning time [s]**							
			SAX	SKD	SKB	SKD	SKB			
	AC 230 V	3-position	120	120	120	–	–	**SAX31.00**	**SKD32.50**	**SKB32.50**
		3-position	–	120	120	8	10	–	**SKD32.51**	**SKB32.51**
		3-position	30	–	–	–	–	**SAX31.03**	–	–
		3-position	–	30	–	8	–	–	**SKD32.21**	–
	AC 24 V [1]	3-position	120	120	120	–	–	**SAX81.00**	**SKD82.50**	**SKB82.50**
		3-position	–	120	120	8	10	–	**SKD82.51**	**SKB82.51**
		3-position	30	–	–	–	–	**SAX81.03**	–	–
		0...10 V, 4...20 mA	–	30	120	–	–	–	**SKD60**	**SKB60**
		0...10 V, 4...20 mA	–	30	120	15	10	–	**SKD62**	**SKB62**
	AC/DC 24 V	0...10 V, 4...20 mA	30	–	–	–	–	**SAX61.03**	–	–

PN 16	-25...150 °C [2]			DN	G	k_{vs}	Δp_s	Δp_{max}	Δp_s	Δp_{max}	Δp_s	Δp_{max}
Data sheet	N4363	N4463			[inch]	[m³/h]	[kPa]	[kPa]	[kPa]	[kPa]	[kPa]	[kPa]
	**VVG41.11..12**	–	–	15	G 1B	0.63 / 1	1600	800	1600	800	1600	800
	VVG41.13	–	**VXG41.1301**	15	G 1B	1.6	1600	800	1600	800	1600	800
	VVG41.14	–	**VXG41.1401**	15	G 1B	2.5	1600	800	1600	800	1600	800
	VVG41.15	**VXG41.15**	**VXG41.1501**	15	G 1B	4	1600	800	1600	800	1600	800
	VVG41.20	**VXG41.20**	**VXG41.2001**	20	G 1¼B	6.3	1600	800	1600	800	1600	800
	VVG41.25	**VXG41.25**	**VXG41.2501**	25	G 1½B	10	1550	800	1600	800	1600	800
	VVG41.32	**VXG41.32**	**VXG41.3201**	32	G 2B	16	875	800	1275	800	1600	800
	VVG41.40	**VXG41.40**	**VXG41.4001**	40	G 2¼B	25	525	525	775	775	1600	800
	VVG41.50	**VXG41.50**	**VXG41.5001**	50	G 2¾B	40	300	300	450	450	1225	800

Union nuts for threaded valves [3]



Type		G	R, Rp	Material
Set of 2	3er Set	[inch]	[inch]	
ALG132	**ALG133**	G ½B	R ⅜ (externally threaded)	Brass
ALG142	**ALG143**	G ¾B	R ½ (externally threaded)	Brass
ALG122	**ALG123**	G ¾B	Rp ⅜	Malleable cast iron
ALG152	**ALG153**	G 1B	Rp ½	Malleable cast iron
ALG152B	**ALG153B**	G 1B	Rp ½	Brass
ALG202	**ALG203**	G 1¼B	Rp ¾	Malleable cast iron
ALG202B	**ALG203B**	G 1¼B	Rp ¾	Brass
ALG252	**ALG253**	G 1½B	Rp 1	Malleable cast iron
ALG252B	**ALG253B**	G 1½B	Rp 1	Brass
ALG322	**ALG323**	G 2B	Rp 1¼	Malleable cast iron
ALG322B	**ALG323B**	G 2B	Rp 1¼	Brass
ALG402	**ALG403**	G 2¼B	Rp 1½	Malleable cast iron
ALG402B	**ALG403B**	G 2¼B	Rp 1½	Brass
ALG502	**ALG503**	G 2¾B	Rp 2	Malleable cast iron
ALG502B	**ALG503B**	G 2¾B	Rp 2	Brass



TypE	G	⌀ d	Material
Set of 2	[inch]	[mm]	
ALS152	G ¾B	21.3	Steel, weldable
ALS202	G 1B	26.8	Steel, weldable
ALS252	G 1¼B	33.7	Steel, weldable

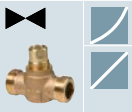
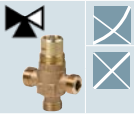
[1] SAX81..: AC/DC 24 V
[2] SAX.. max. 130 °C
[3] Valve side: cylindrical thread G according to ISO 228-1, pipe side: ALG.. with cylindrical Rp- or tapered R-thread according to ISO 7-1 Pipe side: ALS.. with welded connection

Threaded globe valves

Typical applications	Actuators	Data sheet		Spring return function [s]	5.5 mm		
– Boiler plants – Domestic hot water – Heating groups – Air handling units	**SAS..**	N4581	400N				
	Operating voltage	**Positioning signal**	**Positioning time [s]**				
	AC 230 V	3-position	120	–	**SAS31.00**	–	–
		3-position	30	–	**SAS31.03**	–	–
		3-position	120	28	–	**SAS31.50**	–
		3-position	30	14	–	**SAS31.53**	–
	AC/DC 24 V	0...10 V,	30	–	**SAS61.03**	–	–
		4...20 mA,	30	14	–	–	**SAS61.33**
		0...1000 Ω	30	14	–	**SAS61.53**	–
		3-position	120	–	**SAS81.00**	–	–
		3-position	30	–	**SAS81.03**	–	–
		3-position	30	14	–	–	**SAS81.33**

PN 16	1...120 °C			DN	G [inch]	k_{vs} [m³/h]	Δp_s [kPa]	Δp_{max} [kPa]
Data sheet	N4364		N4464					
	**VVG44.15-..** [1]		**VXG44.15-..**	15	G 1B	0.25 / 0.4 / 0.63	1600	400
	VVG44.15-..		**VXG44.15-..**	15	G 1B	1 / 1.6	725	400
	VVG44.15-..		**VXG44.15-..**	15	G 1B	2.5 / 4	400	400
	VVG44.20-6.3		**VXG44.20-6.3**	20	G 1¼B	6.3	750	400
	VVG44.25-10		**VXG44.25-10**	25	G 1½B	10	400	400
	VVG44.32-16		**VXG44.32-16**	32	G 2B	16	250	250
	VVG44.40-25		**VXG44.40-25**	40	G 2¼B	25	125	125
PN 25	1...130 °C			DN	G [inch]	k_{vs} [m³/h]	Δp_s [kPa]	Δp_{max} [kPa]
Data sheet	N4379							
	**VVG55.15-..** [1]			15	G ¾B	0.25 / 0.4 / 0.63	2500	1200
	VVG55.15-..			15	G ¾B	1 / 1.6 / 2.5	2000	1200
	VVG55.20-4			20	G 1B	4	1000	1000
	VVG55.25-6.3			25	G 1¼B	6.3	800	800

Typical applications	Actuators	Data sheet			5.5 mm
– Boiler plants – Heating groups – Air handling units	**SSC..**	N4895			300 N 
	Operating voltage	**Positioning signal**	**Positioning time [s]**	**Spring return function [s]**	
	AC 230 V	3-Punkt	150	–	**SSC31**
	AC 24 V	3-Punkt	150	–	**SSC81**
	AC/DC 24 V	0...10 V	30	–	**SSC61**
		0...10 V	30	30	**SSC61.5**

PN 16	1...110 °C			DN	G [inch]	k_{vs} [m³/h]	Δp_s [kPa]	Δp_{max} [kPa]
Data sheet	N4845		N4845					
	**VVP45.20-4**		**VXP45.20-4**	20	G 1B	4	350	350
	VVP45.25-6.3		**VXP45.25-6.3**	25	G 1¼B	6.3	300	300
	VVP45.25-10		**VXP45.25-10**	25	G 1½B	10	300	300
	VVP45.32-16		**VXP45.32-16**	32	G 2B	16	175	175
	VVP45.40-25		**VXP45.40-25**	40	G 2¼B	25	75	75

Typical applications	Actuators	Data sheet		Spring return function [s]	5.5 mm	
– District heating – Boiler plants	**SAT..**	N4584	300N			
	Operating voltage	**Positioning signal**	**Positioning time [s]**			
	AC 230 V	3-position	8	–	**SAT31.008**	–
		3-position	15	8	–	**SAT31.51**
	AC/DC 24 V	0...10 V,	8	–	**SAT61.008**	–
		4...20 mA, 0...1000 Ω	15	8	–	**SAT61.51**

PN 25	1...130 °C	DN	G [inch]	k_{vs} [m³/h]	Δp_s [kPa]	Δp_{max} [kPa]
Data sheet	N4380					
	**VVG549.15-..** [1]	15	G ¾B	0.25 / 0.4 / 0.63	2500	1200
	VVG549.15-..	15	G ¾B	1 / 1.6 / 2.5	2000	1200
	VVG549.20-4K	20	G 1B	5	1600	1200
	VVG549.25-6.3K	25	G 1¼B	6.3	1600	1200

[1] .. = insert k_{vs} value

Flanged globe valves

Typical applications	Actuators	Data sheet
– District heating	SAX..	N4501
– Boiler plants	SKD..	N4561
– Chiller plants	SKB..	N4564
– Domestic hot water	SKC..	N4566
– Heating groups		
– Air handling units		

Operating voltage	Positioning signal	Positioning time [s]			Spring return function [s]		20 mm			40 mm
		SAX	SKD	SKB/C	SKD	SKB/C	800 N	1000 N	2800 N	2800 N
AC 230 V	3-position	120	120	120	–	–	**SAX31.00**	**SKD32.50**	**SKB32.50**	**SKC32.60**
	3-position	–	120	120	8	10/18	–	**SKD32.51**	**SKB32.51**	**SKC32.61**
	3-position	30	–	–	–	–	**SAX31.03**	–	–	–
	3-position	–	30	–	8	–	–	**SKD32.21**	–	–
AC 24 V [1]	3-position	120	120	120	–	–	**SAX81.00**	**SKD82.50**	**SKB82.50**	**SKC82.60**
	3-position	–	120	120	8	10/18	–	**SKD82.51**	**SKB82.51**	**SKC82.61**
	3-position	30	–	–	–	–	**SAX81.03**	–	–	–
	0...10 V, 4...20 mA	–	30	120	–	–	–	**SKD60**	**SKB60**	**SKC60**
	0...10 V, 4...20 mA	–	30	120	15	10/20	–	**SKD62**	**SKB62**	**SKC62**
AC/DC 24 V	0...10 V, 4...20 mA	30	–	–	–	–	**SAX61.03**	–	–	–

PN 6	-10...130 °C		DN	k_{vs} [m³/h]	Δp_s [kPa]	Δp_{max} [kPa]	Δp_s [kPa]	Δp_{max} [kPa]	Δp_s [kPa]	Δp_{max} [kPa]	Δp_s [kPa]	Δp_{max} [kPa]
Data sheet	N4401	N4401										
	VVF22.25-.. [2]	**VXF22.25-..**	25	2.5 / 4 / 6.3 / 10	600	300	600	300	600	300	–	–
	VVF22.40-..	**VXF22.40-..**	40	16 / 25	550	300	600	300	600	300	–	–
	VVF22.50-40	**VXF22.50-40**	50	40	350	300	450	300	600	300	–	–
	VVF22.65-63	**VXF22.65-63**	65	63	200	150	250	200	600	300	–	–
	VVF22.80-100	**VXF22.80-100**	80	100	125	75	175	125	450	300	–	–
	VVF22.100-160	**VXF22.100-160**	100	160	–	–	–	–	–	–	300	250
PN 10	-10...150 °C [3]		DN	k_{vs} [m³/h]	Δp_s [kPa]	Δp_{max} [kPa]	Δp_s [kPa]	Δp_{max} [kPa]	Δp_s [kPa]	Δp_{max} [kPa]	Δp_s [kPa]	Δp_{max} [kPa]
Data sheet	N4402	N4402										
	VVF32.15-.. [2]	**VXF32.15-..**	15	1.6 / 2.5 / 4	1000	400	1000	400	1000	400	–	–
	VVF32.25-..	**VXF32.25-..**	25	6.3 / 10	1000	400	1000	400	1000	400	–	–
	VVF32.40-..	**VXF32.40-..**	40	16 / 25	550	400	750	400	1000	400	–	–
	VVF32.50-40	**VXF32.50-40**	50	40	350	300	450	400	1000	400	–	–
	VVF32.65-63	**VXF32.65-63**	65	63	200	150	250	200	700	400	–	–
	VVF32.80-100	**VXF32.80-100**	80	100	125	75	175	125	450	400	–	–
	VVF32.100-160	**VXF32.100-160**	100	160	–	–	–	–	–	–	300	250
	VVF32.125-250	**VXF32.125-250**	125	250	–	–	–	–	–	–	190	160
	VVF32.150-400	**VXF32.150-400**	150	400	–	–	–	–	–	–	125	100
PN 16	-10...150 °C [3]		DN	k_{vs} [m³/h]	Δp_s [kPa]	Δp_{max} [kPa]	Δp_s [kPa]	Δp_{max} [kPa]	Δp_s [kPa]	Δp_{max} [kPa]	Δp_s [kPa]	Δp_{max} [kPa]
Data sheet	N4403	N4403										
	VVF42.15-.. [2]	**VXF42.15-..**	15	1.6 / 2.5 / 4	1600	400	1600	400	1600	400	–	–
	VVF42.20-6.3	**VXF42.20-6.3**	20	6.3	1600	400	1600	400	1600	400	–	–
	VVF42.25-..	**VXF42.25-..**	25	6.3 / 10	1600	400	1600	400	1600	400	–	–
	VVF42.32-16	**VXF42.32-16**	32	16	900	400	1200	400	1600	400	–	–
	VVF42.40-..	**VXF42.40-..**	40	16 / 25	550	400	750	400	1600	400	–	–
	VVF42.50-..	**VXF42.50-..**	50	31.5 / 40	350	300	450	400	1200	400	–	–
	VVF42.65-..	**VXF42.65-..**	65	50 / 63	200	150	250	200	700	400	–	–
	VVF42.80-..	**VXF42.80-..**	80	80 / 100	125	75	175	125	450	400	–	–
	VVF42.100-..	**VXF42.100-..**	100	125 / 160	–	–	–	–	–	–	300	250
	VVF42.125-..	**VXF42.125-..**	125	200 / 250	–	–	–	–	–	–	190	160
	VVF42.150-..	**VXF42.150-..**	150	315 / 400	–	–	–	–	–	–	125	100
	VVF42.50-40K	–	50	40	1600	400	1600	400	1600	400	–	–
	VVF42.65-63K	–	65	63	1600	400	1600	400	1600	400	–	–
	VVF42.80-100K	–	80	100	1600	400	1600	400	1600	400	–	–
	VVF42.100-160K	–	100	160	–	–	–	–	–	–	1600	400
	VVF42.125-250K	–	125	250	–	–	–	–	–	–	1600	400
	VVF42.150-360K	–	150	360	–	–	–	–	–	–	1600	400
PN 16	-20...220 °C		DN	k_{vs} [m³/h]	Δp_s [kPa]	Δp_{max} [kPa]	Δp_s [kPa]	Δp_{max} [kPa]	Δp_s [kPa]	Δp_{max} [kPa]	Δp_s [kPa]	Δp_{max} [kPa]
Data sheet	N4404	N4404										
	VVF43.65-50	–	65	50	–	–	–	–	–	–	700	650
	VVF43.65-63	**VXF43.65-63**	65	63	–	–	–	–	–	–	700	650
	VVF43.80-80	–	80	80	–	–	–	–	–	–	450	400
	VVF43.80-100	**VXF43.80-100**	80	100	–	–	–	–	–	–	450	400
	VVF43.100-125	–	100	125	–	–	–	–	–	–	300	250
	VVF43.100-160	**VXF43.100-160**	100	160	–	–	–	–	–	–	300	250
	VVF43.125-200	–	125	200	–	–	–	–	–	–	190	160
	VVF43.125-250	**VXF43.125-250**	125	250	–	–	–	–	–	–	190	160
	VVF43.150-315	–	150	315	–	–	–	–	–	–	125	100
	VVF43.150-400	**VXF43.150-400**	150	400	–	–	–	–	–	–	125	100
	VVF43.65-63K	–	65	63	–	–	–	–	–	–	1600	800
	VVF43.80-100K	–	80	100	–	–	–	–	–	–	1600	800
	VVF43.100-150K	–	100	150	–	–	–	–	–	–	1600	800
	VVF43.125-220K	–	125	220	–	–	–	–	–	–	1600	800
	VVF43.150-315K	–	150	315	–	–	–	–	–	–	1600	800

[1] SAX81..: AC/DC 24 V
[2] .. = insert k_{vs} value
[3] SAX.. max. 130 °C
VVF43.., VXF43..: For DN 15...50 and k_{vs} values ≤ 40 m³/h see V..F53..

Flanged globe valves

Typical applications	Actuators	Data sheet
– District heating	SAX..	N4501
– Boiler plants	SKD..	N4561
– Chiller plants	SKB..	N4564
– Domestic hot water	SKC..	N4566
– Heating groups		
– Air handling units		

Operating voltage	Positioning signal	Positioning time [s]			Spring return function [s]		20 mm			40 mm
		SAX	SKD	SKB/C	SKD	SKB/C	800 N	1000 N	2800 N	2800 N
AC 230 V	3-position	120	120	120	–	–	**SAX31.00**	**SKD32.50**	**SKB32.50**	**SKC32.60**
	3-position	–	120	120	8	10/18	–	**SKD32.51**	**SKB32.51**	**SKC32.61**
	3-position	30	–	–	–	–	**SAX31.03**	–	–	–
	3-position	–	30	–	8	–	–	**SKD32.21**	–	–
AC 24 V [1]	3-position	120	120	120	–	–	**SAX81.00**	**SKD82.50**	**SKB82.50**	**SKC82.60**
	3-position	–	120	120	8	10/18	–	**SKD82.51**	**SKB82.51**	**SKC82.61**
	3-position	30	–	–	–	–	**SAX81.03**	–	–	–
	0...10 V, 4...20 mA	–	30	120	–	–	–	**SKD60**	**SKB60**	**SKC60**
	0...10 V, 4...20 mA	–	30	120	15	10/20	–	**SKD62**	**SKB62**	**SKC62**
AC/DC 24 V	0...10 V, 4...20 mA	30	–	–	–	–	**SAX61.03**	–	–	–

PN 25	-20...220 °C [2]		DN	k_{vs} [m³/h]	Δp_s [kPa]	Δp_{max} [kPa]	Δp_s [kPa]	Δp_{max} [kPa]	Δp_s [kPa]	Δp_{max} [kPa]	Δp_s [kPa]	Δp_{max} [kPa]
Data sheet	N4405	N4405										
VVF53.15-.. [3]	**–**	15	0.16 / 0.2 / 0.25 / 0.32 / 0.4 / 0.5 / 0.63	2500	1200	2500	1200	2500	1200	–	–
VVF53.15-..	**–**	15	0.8 / 1 / 1.25 / 2 / 3.2	2500	1200	2500	1200	2500	1200	–	–
VVF53.15-..	**VXF53.15-..**	15	1.6 / 2.5 / 4	2500	1200	2500	1200	2500	1200	–	–
VVF53.20-6.3	**VXF53.20-6.3**	20	6.3	2500	1200	2500	1200	2500	1200	–	–
VVF53.25-..	**–**	25	5 / 8	1600	1200	2100	1200	2500	1200	–	–
VVF53.25-..	**VXF53.25-..**	25	6.3 / 10	1600	1200	2100	1200	2500	1200	–	–
VVF53.32-16	**VXF53.32-16**	32	16	900	750	1200	1100	2500	1200	–	–
VVF53.40-..	**–**	40	12.5 / 20	550	500	750	650	2000	1200	–	–
VVF53.40-..	**VXF53.40-..**	40	16 / 25	550	500	750	650	2000	1200	–	–
VVF53.50-31.5	**–**	50	31.5	350	300	450	400	1200	1150	–	–
VVF53.50-40	**VXF53.50-40**	50	40	350	300	450	400	1200	1150	–	–
VVF53.65-63	**VXF53.65-63**	65	63	–	–	–	–	–	–	700	650
VVF53.80-100	**VXF53.80-100**	80	100	–	–	–	–	–	–	450	400
VVF53.100-160	**VXF53.100-160**	100	160	–	–	–	–	–	–	300	250
VVF53.125-250	**VXF53.125-250**	125	250	–	–	–	–	–	–	190	160
VVF53.150-400	**VXF53.150-400**	150	400	–	–	–	–	–	–	125	100
VVF53.50-40K	**–**	50	36	–	–	2500	1250	2500	1250	–	–
VVF53.65-63K	**–**	65	63	–	–	–	–	–	–	2500	1250
VVF53.80-100K	**–**	80	100	–	–	–	–	–	–	2500	1250
VVF53.100-150K	**–**	100	150	–	–	–	–	–	–	2500	1250
VVF53.125-220K	**–**	125	220	–	–	–	–	–	–	2500	1250
VVF53.150-315K	–	150	315	–	–	–	–	–	–	2500	1250

PN 40	-25...220 °C (350 °C)		DN	k_{vs} [m³/h]	Δp_s [kPa]	Δp_{max} [kPa]	Δp_s [kPa]	Δp_{max} [kPa]	Δp_s [kPa]	Δp_{max} [kPa]	Δp_s [kPa]	Δp_{max} [kPa]
Data sheet	N4382	N4482										
VVF61.09..11 [4]	**–**	15	0.19 / 0.3 / 0.45	–	–	4000	1600	4000	1600	–	–
VVF61.12..13 [4]	**–**	15	0.7 / 1.2	–	–	4000	1600	4000	1600	–	–
VVF61.14..15 [4]	**VXF61.14..15** [4]	15	1.9 / 3	–	–	4000 –	1600 1200	4000 –	1600 1600	–	–
VVF61.23..25 [4]	**VXF61.24..25** [4]	25	3 / 5 / 7.5 5 / 7.5	–	–	2250 –	1600 1200	4000 –	1600 1600		
VVF61.39..40 [4]	**VXF61.39..40** [4]	40	12 / 19	–	–	–	–	4000 –	1600 1200	–	–
VVF61.49..50 [4]	**VXF61.49..50** [4]	50	19 / 31	–	–	–	–	4000 –	1600 1000	–	–
VVF61.65	**VXF61.65**	65	49	–	–	–	–	–	–	4000 –	1000 800
VVF61.80	**VXF61.80**	80	78	–	–	–	–	–	–	4000 –	700 500
VVF61.90	**VXF61.90**	100	124	–	–	–	–	–	–	4000 –	450 300
VVF61.91	**VXF61.91**	125	200	–	–	–	–	–	–	4000 –	300 200
VVF61.92	**VXF61.92**	150	300	–	–	–	–	–	–	4000 –	200 125

[1] SAX81..: AC/DC 24 V
[2] SAX.. max. 130 °C
[3] .. = insert k_{vs} value
[4] For 09...15, 14...15, 23...25, 24...25, 39...40, 49...50 = insert number in place of k_{vs} value

Threaded combi valves

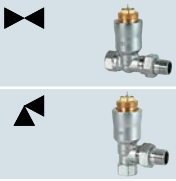
Typical applications	Actuators	Data sheet
– Radiators – Chilled ceilings – Fan coil units	**RTN..** **STA..** **SSA..**	N2111 N4884 N4893

4.5 mm, 100 N

2.5 mm, 100 N

Operating voltage	Positioning signal	Positioning time [s]			
AC 230 V	2-position	210	–	**STA23**	–
	3-position	150	–	–	**SSA31**
AC 24 V	3-position	150	–	–	**SSA81**
	0...10 V	270 [1]	–	**STA63**	–
AC/DC 24 V	2-position / PDM	270	–	**STA73**	–
	0...10 V	34	–	–	**SSA61**
			RTN51	–	–
			RTN71	–	–
			RTN81	–	–

PN 10 1...90 °C	DIN	DN	Rp/R	V	V_{nom} [2]			Δp_{min} [kPa]			Δp_{max} [kPa]
Data sheet	N2185		[inch]	[l/h]	[l/h]						
	VPD110A-..[2]	10	Rp/R ⅜	25...318	45	90	145	6 [3]	8 [3]	10 [3]	200
	VPD115A-..	15	Rp/R ½	25...318	45	90	145	6 [3]	8 [3]	10 [3]	200
	VPD110B-200	10	Rp/R ⅜	95...483	200				20		200
	VPD115B-200	15	Rp/R ½	95...483	200				20		200
	VPE110A-..	10	Rp/R ⅜	25...318	45	90	145	6 [3]	8 [3]	10 [3]	200
	VPE115A-..	15	Rp/R ½	25...318	45	90	145	6 [3]	8 [3]	10 [3]	200
	VPE110B-200	10	Rp/R ⅜	95...483	200				20		200
	VPE115B-200	15	Rp/R ½	95...483	200				20		200



Typical applications	Actuators	Data sheet
– Heating groups – Air handling units – Chilled ceilings – VAV – Fan coil units – Zone control	**STA..** **SSA..** **SAY..P..**	N4884 N4893 A6V10628469

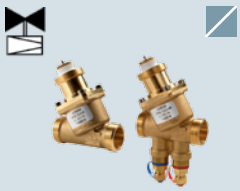
4.5 mm, 100 N

2.5 / 5 mm, 100 N

15 mm, 200 N

Operating voltage	Positioning signal	Positioning time [s]					
		STA	SSA	SAY			
AC 230 V	3-position	–	150/300	30	–	**SSA31**	**SAY31P03**
	2-position	210	–	–	**STA23**	–	–
AC 24 V	0...10 V	270 [1]	–	30	**STA63**	–	**SAY61P03**
AC/DC 24 V	3-position	–	150/300	30	–	**SSA81**	**SAY81P03**
	2-position/PDM	270	–	–	**STA73**	–	–
	0...10 V	–	34/70	–	–	**SSA61/SSA61EP**	–

PN 25 1...110 °C	Without pressure testing points	With pressure testing points	DN	G [inch]	V_{min} [l/h]	V_{100} [l/h]	Δp_{min} [kPa]	Δp_{max} [kPa]	Δp_{min} [kPa]	Δp_{max} [kPa]	Δp_{min} [kPa]	Δp_{max} [kPa]
Data sheet	N4855											
	VPP46.10L0.2	**VPP46.10L0.2Q**	10	½	30	200	16	400	16	400	–	–
	VPP46.15L0.2	**VPP46.15L0.2Q**	15	¾	30	200	16	400	16	400	–	–
	VPP46.15L0.6	**VPP46.15L0.6Q**	15	¾	100	575	19	400	19	400	–	–
	VPP46.20F1.4	**VPP46.20F1.4Q**	20	1	200	1190	21	400	–	–	–	–
			20	1	220	1330	–	–	22	400	–	–
	VPP46.25F1.8	**VPP46.25F1.8Q**	25	1 ¼	204	1470	39	400	–	–	–	–
			25	1 ¼	250	1800	–	–	39	400	–	–
	VPP46.32F4	**VPP46.32F4Q**	32	1 ½	450	3270	24	400	–	–	–	–
			32	1 ½	550	4001	–	–	28	400	–	–



PN 25 1...110 °C	Without pressure testing points	With pressure testing points	DN	Rp [inch]	V_{min} [l/h]	V_{100} [l/h]	Δp_{min} [kPa]	Δp_{max} [kPa]	Δp_{min} [kPa]	Δp_{max} [kPa]	Δp_{min} [kPa]	Δp_{max} [kPa]
Data sheet	N4855											
	VPI46.15L0.2	**VPI46.15L0.2Q**	15	½	30	200	16	400	16	400	–	–
	VPI46.15L0.6	**VPI46.15L0.6Q**	15	½	100	575	19	400	19	400	–	–
	VPI46.20F1.4	**VPI46.20F1.4Q**	20	¾	200	1190	21	400	–	–	–	–
			20	¾	220	1330	–	–	22	400	–	–
	VPI46.25F1.8	**VPI46.25F1.8Q**	25	1 ¼	204	1470	39	400	–	–	–	–
			25	1 ¼	250	1800	–	–	39	400	–	–
	VPI46.32F4	**VPI46.32F4Q**	32	1 ½	450	3270	24	400	–	–	–	–
			32	1 ½	550	4001	–	–	28	400	–	–
	–	**VPI46.40F9.5Q**	40	1 ½	1370	9500	–	–	–	–	25	400
	–	**VPI46.50F12Q**	50	2	1400	11500	–	–	–	–	36	400

[1] In control mode (warm-up time) min. running time approx. 30 s/mm

[2] .. = insert V_{nom}

V_{nom} = factory setting = volumetric flow at 0.5 mm stroke or setting mark 3 of the presetting

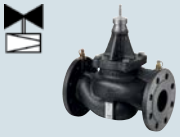
[3] Δp_{min} is valid for V_{nom} 45/90/145 l/h

Flanged combi valves

Typical applications	Actuators	Data sheet
– District heating – Heating groups – Air handling units	**SAX..P..** **SQV91P..** **SAV..P..**	N4509 N4833 N4510

Operating voltage	Positioning signal	Positioning time [s] SAX	SQV	SAV	Spring return function [s]	20 mm 500 N	20 / 40 mm 1100 N	40 mm 1100 N
AC 230 V	3-position	30	–	120	–	**SAX31P03**	**–**	**SAV31P00**
	3-position	–	40/80	–	30	**–**	**SQV91P40** [1]	**–**
	3-position	–	40/80	–	30	**–**	**SQV91P30** [2]	**–**
AC/DC 24 V	3-position	30	–	120	–	**SAX81P03**	**–**	**SAV81P00**
	3-position	–	40/80	–	30	**–**	**SQV91P40** [1]	**–**
	3-position	–	40/80	–	30	**–**	**SQV91P30** [2]	**–**
	0...10 V, 4...20 mA	30	–	120	–	**SAX61P03**	**–**	**SAV61P00**
	0...10 V, 4...20 mA	–	40/80	–	30	**–**	**SQV91P40** [1]	**–**
	0...10 V, 4...20 mA	–	40/80	–	30	**–**	**SQV91P30** [2]	**–**

PN 16 Data sheet	1...120 °C N4315	DN	V_{min} [m^3/h]	V_{100} [m^3/h]	Δp_{min} [kPa]	$\Delta p_s/\Delta p_{max}$ [kPa]	$\Delta p_s/\Delta p_{max}$ [kPa]	$\Delta p_s/\Delta p_{max}$ [kPa]
	**VPF43.50F16**	50	2.3	15	35	600	600	–
	VPF43.50F25	50	4.3	25	70	600	600	–
	VPF43.65F24	65	4.4	24	35	600	600	–
	VPF43.65F35	65	6	35	70	600	600	–
	VPF43.80F35	80	5.3	34	35	600	600	–
	VPF43.80F45	80	7	43	70	600	600	–
	VPF43.100F70	100	12.1	68	35	–	600	600
	VPF43.100F90	100	14.8	90	75	–	600	600
	VPF43.125F110	125	18.5	110	35	–	600	600
	VPF43.125F135	125	23	135	53	–	600	600
	VPF43.150F160	150	25.6	148	35	–	600	600
	VPF43.150F200	150	32	195	65	–	600	600

PN 25 Data sheet	1...120 °C N4316	DN	V_{min} [m^3/h]	V_{100} [m^3/h]	Δp_{min} [kPa]	$\Delta p_s/\Delta p_{max}$ [kPa]	$\Delta p_s/\Delta p_{max}$ [kPa]	$\Delta p_s/\Delta p_{max}$ [kPa]
	**VPF53.50F16**	50	2.3	15	35	600	600	–
	VPF53.50F25	50	4.3	25	70	600	600	–
	VPF53.65F24	65	4.4	24	35	600	600	–
	VPF53.65F35	65	6	35	70	600	600	–
	VPF53.80F35	80	5.3	34	35	600	600	–
	VPF53.80F45	80	7	43	70	600	600	–
	VPF53.100F70	100	12.1	68	35	–	600	600
	VPF53.100F90	100	14.8	90	75	–	600	600
	VPF53.125F110	125	18.5	110	35	–	600	600
	VPF53.125F135	125	23	135	53	–	600	600
	VPF53.150F160	150	25.6	148	35	–	600	600
	VPF53.150F200	150	32	195	65	–	600	600

[1] Fail-safe function: valve closed
[2] Fail-safe function: valve open

Control ball valves

Typical applications	Actuators	Data sheet
– Domestic hot water – Heating groups – Air handling units – Chilled ceilings – VAV – Fan coil units – Zone control	**GQD..9A**	N4659
	GDB..9E	N4657
	GMA..9E	N4658
	GLB..9E	N4657

Operating voltage	Positioning signal	Positioning time [s] GQD	GDB	GMA	GLB	Spring return function [s]	2 Nm	5 Nm	7 Nm	10 Nm
AC 230 V	3-position	–	150	–	150	–	–	**GDB331.9E**	–	**GLB331.9E**
AC 24 V	3-position	–	150	–	150	–	–	**GDB131.9E**	–	**GLB131.9E**
	0...10 V	–	150	–	150	–	–	**GDB161.9E**	–	**GLB161.9E**
AC/DC 24 V	3-position	30	–	90	–	15	**GQD131.9A**	–	**GMA131.9E**	–
	0...10 V	30	–	90	–	15	**GQD161.9A**	–	**GMA161.9E**	–

PN 40	-10...120 °C		DN	G [inch]	k_{vs} [m³/h]	Δp_s [kPa]	Δp_{max} [kPa]	Δp_s [kPa]	Δp_{max} [kPa]
Data sheet	N4211	N4211							
VAG61.15-..[1)]	**VBG61.15-..**	15	G 1B	1.6 / 2.5 / 4 / 6.3	1400	350	1400	350
VAG61.15-..	–	15	G 1B	1	1400	350	1400	350
VAG61.20-..	**VBG61.20-..**	20	G 1 ¼B	4 / 6.3	1400	350	1400	350
VAG61.20-10	–	20	G 1 ¼B	10	1400	350	1400	350
VAG61.25-10	**VBG61.25-10**	25	G 1 ½B	10	1400	350	1400	350
VAG61.25-..	–	25	G 1 ½B	6.3 / 16	1400	350	1400	350
VAG61.32-10	–	32	G 2B	10	–	–	1000	350
VAG61.32-16	**VBG61.32-16**	32	G 2B	16	–	–	1000	350
VAG61.32-25	–	32	G 2B	25	–	–	1000	350
VAG61.40-16	–	40	G 2 ¼B	16	–	–	800	350
VAG61.40-25	**VBG61.40-25**	40	G 2 ¼B	25	–	–	800	350
VAG61.40-40	–	40	G 2 ¼B	40	–	–	800	350
VAG61.50-25	–	50	G 2 ¾B	25	–	–	600	350
VAG61.50-40	**VBG61.50-40**	50	G 2 ¾B	40	–	–	600	350
VAG61.50-63	–	50	G 2 ¾B	63	–	–	600	350

PN 40	-10...120 °C		DN	Rp [inch]	k_{vs} [m³/h]	Δp_s [kPa]	Δp_{max} [kPa]	Δp_s [kPa]	Δp_{max} [kPa]
Data sheet	N4211	N4211							
VAI61.15-..[1)]	**VBI61.15-..**	15	Rp ½	1.6 / 2.5 / 4 / 6.3	1400	350	1400	350
VAI61.15-..	–	15	Rp ½	1 / 10	1400	350	1400	350
VAI61.20-..	**VBI61.20-..**	20	Rp ¾	4 / 6.3	1400	350	1400	350
VAI61.20-10	–	20	Rp ¾	10	1400	350	1400	350
VAI61.25-10	**VBI61.25-10**	25	Rp 1	10	1400	350	1400	350
VAI61.25-..	–	25	Rp 1	6.3 / 16	1400	350	1400	350
VAI61.32-10	–	32	Rp 1 ¼	10	–	–	1000	350
VAI61.32-16	**VBI61.32-16**	32	Rp 1 ¼	16	–	–	1000	350
VAI61.32-25	–	32	Rp 1 ¼	25	–	–	1000	350
VAI61.40-16	–	40	Rp 1 ½	16	–	–	800	350
VAI61.40-25	**VBI61.40-25**	40	Rp 1 ½	25	–	–	800	350
VAI61.40-40	–	40	Rp 1 ½	40	–	–	800	350
VAI61.50-25	–	50	Rp 2	25	–	–	600	350
VAI61.50-40	**VBI61.50-40**	50	Rp 2	40	–	–	600	350
VAI61.50-63	**VBI61.50-63**	50	Rp 2	63	–	–	600	350

6-way control ball valve

Typical applications	Actuators	Data sheet
– Heated and chilled ceilings	**GDB161.9E**	N4657
	GDB111.9E/KN	A6V10301232

Operating voltage	Positioning signal	Positioning time [s]	5Nm	5Nm
AC 24 V	DC 0... 10V	150	**GDB161.9E**	–
	KNX-TP	150	–	**GDB111.9E/KN**

PN 16	5...90 °C		DN	k_{vs} left [m³/h]	k_{vs} right [m³/h]	Δp_s [kPa]	Δp_{max} [kPa]	Δp_s [kPa]	Δp_{max} [kPa]
Data sheet	A6V10564480								
	VWG41.20-0.25-0.4		20	0.25	0.4	–	200	–	200
	VWG41.20-0.25-0.65		20	0.25	0.65	–	200	–	200
	VWG41.20-0.25-1.0		20	0.25	1	–	200	–	200
	VWG41.20-0.4-1.0		20	0.4	1	–	200	–	200
	VWG41.20-0.4-1.3		20	0.4	1.3	–	200	–	200
	VWG41.20-0.4-1.6		20	0.4	1	–	200	–	200
	VWG41.20-0.65-1.0		20	0.65	1	–	200	–	200
	VWG41.20-0.65-1.6		20	0.65	1.6	–	200	–	200
	VWG41.20-0.65-2.5		20	0.65	2.5	–	200	–	200
	VWG41.20-1.0-1.6		20	1	1.6	–	200	–	200
	VWG41.20-1.0-2.5		20	1	2.5	–	200	–	200
	VWG41.20-1.6-2.5		20	1.6	2.5	–	200	–	200
	VWG41.20-1.6-3.45		20	1.6	3.45	–	200	–	200
	VWG41.20-2.5-3.45		20	2.5	3.45	–	200	–	200
	VWG41.20-2.5-4.25		20	2.5	4.25	–	200	–	200
	VWG41.20-4.25-4.25		20	4.25	4.25	–	200	–	200

[1)] .. = insert k_{vs} value

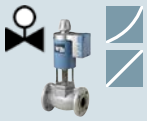
VBG61../VBI61..: For noiseless operation, the Δp_{max} value of 200 kPa should not be exceeded

Fittings for 6-way control ball valves

	Type	Item number	Description
	ALN15.152B	**S55845-Z156**	Fittings set made of brass for media temperatures up to 90 °C, consisting of 2x cap nuts 2x inserts with external threading per ISO 228-1 2x flat seals
	ALN15.202B	**S55845-Z157**	
	ALG15.152B	**S55845-Z158**	Fittings set made of brass for media temperatures up to 90 °C, consisting of 2x cap nuts with sleeves and insert per ISO 7-1 2x flat seals
	ALG15.202B	**S55845-Z159**	
	ALG15.252B	**S55845-Z160**	

Magnetic valves

Typical applications	Valve type	Operating voltage	Positioning signal	Type suffix
– District heating – Boiler plants – Chiller plants – Domestic hot water – Heating groups – Air handling units	**MXF461..**	AC/DC 24 V	0...10 V, 2...10 V, 4...20 mA	P [1]
	M3P..FY..	AC 24 V	0...10 V, 4...20 mA	P [1]
	MVF461H..	AC/DC 24 V	0...10 V, 2...10 V, 0...20 mA, 4...20 mA	–
	MXG461..	AC/DC 24 V	0...10 V, 2...10 V, 4...20 mA	P [1]
	MXG461B..	AC/DC 24 V	0...10 V, 2...10 V, 0...20 mA, 4...20 mA	–
	MXG461S..	AC/DC 24 V	0...10 V, 2...10 V, 4...20 mA	–
	MXG462S..	AC/DC 24 V	0...10 V, 2...10 V, 0...20 mA, 4...20 mA	–

PN 16 Data sheet	1...130 °C N4455			DN		k_{vs} [m³/h]	Δp_s [kPa]	Δp_{max} [kPa]	**Note**
	**MXF461.15-..** [2]			15		0.6 / 1.5 / 3	300	300	To be used as 2-port or mixing valves, not as diverting valves. Selectable valve characteristic: equal-percentage or linear.
	MXF461.20-5.0			20		5	300	300	
	MXF461.25-8.0			25		8	300	300	
	MXF461.32-12			32		12	300	300	
	MXF461.40-20			40		20	300	300	
	MXF461.50-30			50		30	300	300	
	MXF461.65-50			65		50	300	300	
	1...120 °C N4454								
	M3P80FY			80		80	300	300	
	M3P100FY			100		130	200	200	
PN 16 Data sheet	1...180 °C N4361			DN		k_{vs} [m³/h]	Δp_s [kPa]	Δp_{max} [kPa]	
	**MVF461H15-..** [2]			15		0.6 / 1.5 / 3	1000	1000	
	MVF461H20-5			20		5	1000	1000	
	MVF461H25-8			25		8	1000	1000	
	MVF461H32-12			32		12	1000	1000	
	MVF461H40-20			40		20	1000	1000	
	MVF461H50-30			50		30	1000	1000	
PN 16 Data sheet	1...130 °C N4455			DN	G [Zoll]	k_{vs} [m³/h]	Δp_s [kPa]	Δp_{max} [kPa]	
	**MXG461.15-..** [2]			15	G 1B	0.6 / 1.5 / 3	300	300	
	MXG461.20-5.0			20	G 1¼B	5	300	300	
	MXG461.25-8.0			25	G 1½B	8	300	300	
	MXG461.32-12			32	G 2B	12	300	300	
	MXG461.40-20			40	G 2¼B	20	300	300	
	MXG461.50-30			50	G 2¾B	30	300	300	
PN 16 Data sheet	-20...130 °C N4461			DN	G [Zoll]	k_{vs} [m³/h]	Δp_s [kPa]	Δp_{max} [kPa]	
	**MXG461B15-..** [2]			15	G 1B	0.6 / 1.5 / 3	1000	1000	
	MXG461B20-5			20	G 1¼B	5	800	800	
	MXG461B25-8			25	G 1½B	8	700	700	
	MXG461B32-12			32	G 2B	12	600	600	
	MXG461B40-20			40	G 2¼B	20	600	600	
	MXG461B50-30			50	G 2¾B	30	600	600	
PN 16 Data sheet	1...130 °C N4465		-20...130 °C N4466	DN	G [inch]	k_{vs} [m³/h]	Δp_s [kPa]	Δp_{max} [kPa]	**Note**
	**MXG461S15-1.5**		–	15	G 1B	1.5	300	300	To be used as 2-port or mixing valves, not as diverting valves. Selectable valve characteristic: equal-percentage or linear. [3]
	MXG461S20-5.0		–	20	G 1¼B	5	300	300	
	MXG461S25-8.0		–	25	G 1½B	8	300	300	
	MXG461S32-12		–	32	G 2B	12	300	300	
	–		**MXG462S50-30**	50	G 2¾B	30	600	600	

[1] P = media containing mineral oil
[2] .. = insert k_{vs} value
[3] Parts that are in contact with medium in stainless steel
MXG461B.. valves contain only materials in contact with drinking water that comply with the UBA Positive List dated April 23, 2013, Categories B+C

Slipper valves

Typical applications	Actuators	Data sheet				5 Nm	5 Nm	10 Nm
– Boiler plants – Heating groups	**SQK34../84..** **SQK33..** **SAL..**	N4508 N4506 N4502						
	Operating voltage	**Positioning signal**	**Positioning time [s]**					
			SQK	SQK33	SAL			
	AC 230 V	3-position	135	125	120	**SQK34.00**	**SQK33.00**	**SAL31.00T10**
		3-position	–	–	30	**–**	**–**	**SAL31.03T10**
	AC 24 V	3-position	135	–	–	**SQK84.00**	**–**	**–**
	AC/DC 24 V	3-position	–	–	120	**–**	**–**	**SAL81.00T10**
		3-position	–	–	30	**–**	**–**	**SAL81.03T10**
		0...10 V, 4...20 mA	–	–	120	**–**	**–**	**SAL61.00T10**
		0...10 V, 4...20 mA	–	–	30	**–**	**–**	**SAL61.03T10**
	Mounting set [1]					**direct**	**ASK32**	**ASK31N**
PN 6 Data sheet	1...120 °C N4241		DN		k_{vs} [m³/h]	Δp_{max} [kPa]	Δp_{max} [kPa]	Δp_{max} [kPa]
	**VBF21.40**		40		25	30	30	–
	VBF21.50		50		40	30	30	–
	VBF21.65		65		63	–	–	30
	VBF21.80		80		100	–	–	30
	VBF21.100		100		160	–	–	30
	VBF21.125		125		550	–	–	30
	VBF21.150		150		820	–	–	30
PN 10 Data sheet	1...120 °C N4233		DN	G [inch]	k_{vs} [m³/h]	Δp_{max} [kPa]	Δp_{max} [kPa]	Δp_{max} [kPa]
	**VBG31.20**		20	G 1¼B	6.3	30	30	–
	VBG31.25		25	G 1½B	10	30	30	–
	VBG31.32		32	G 2B	16	30	30	–
	VBG31.40		40	G 2¼B	25	30	30	–
PN 10 Data sheet	1...120 °C N4232		DN	Rp [inch]	k_{vs} [m³/h]	Δp_{max} [kPa]	Δp_{max} [kPa]	Δp_{max} [kPa]
	**VBI31.20**		20	Rp ¾	6.3	30	30	–
	VBI31.25		25	Rp 1	10	30	30	–
	VBI31.32		32	Rp 1¼	16	30	30	–
	VBI31.40		40	Rp 1½	25	30	30	–
PN 10 Data sheet	1...120 °C N4252		DN	Rp [inch]	k_{vs} [m³/h]	Δp_{max} [kPa]	Δp_{max} [kPa]	Δp_{max} [kPa]
	**VCI31.20**		20	Rp ¾	6.3	30	30	–
	VCI31.25		25	Rp 1	10	30	30	–
	VCI31.32		32	Rp 1¼	16	30	30	–
	VCI31.40		40	Rp 1½	25	30	30	–

[1] **Mounting sets ASK40, ASK41 for products of other manufacturers:** mounting sets for SQK33.. for 3-port and 4-port slipper valves from AXA, BUDERUS, CENTRA, ESBE/SHUNT AB, LOELL, MUEHLENBERG, ONDAMIX and VIESSMANN. For additional details, see data sheet N4291.

Butterfly valves

Typical applications	Actuators	Data sheet	Rotation angle		90°	
					10 Nm	40 Nm
– Boiler plants – Chiller plants – Heating groups	**SAL..**	N4502				
	Operating voltage	**Positioning signal**	**Positioning time [s]**			
	AC 230 V	3-position	120		**SAL31.00T10**	**SAL31.00T40**
		3-position	125		–	–
		3-position	30		**SAL31.03T10**	–
	AC/DC 24 V	3-position	120		**SAL81.00T10**	**SAL81.00T40**
		3-position	30		**SAL81.03T10**	–
		0...10 V, 4...20 mA	120		**SAL61.00T10**	**SAL61.00T40**
		0...10 V, 4...20 mA	30		**SAL61.03T10**	–
	Mounting set				**ASK33N**	**ASK33N**
PN 6/10/16 Data sheet	-10...120 °C N4131		DN	k_{vs} [m^3/h]	Δp_s [kPa]	Δp_s [kPa]
	VKF41.40		40	50	500	–
	VKF41.50		50	80	500	–
	VKF41.65		65	200	500	–
	VKF41.80		80	400	500	–
	VKF41.100		100	760	500	–
	VKF41.125		125	1000	300	–
	VKF41.150		150	2100	250	400
	VKF41.200		200	4000	125	300

Typical applications	Actuators	Data sheet	Rotation angle	90°						
				20 Nm	40 Nm	40 Nm		100 Nm	400 Nm	1200 Nm
– Boiler plants – Chiller plants – Cooling towers – Domestic hot water – Heating groups	**SAL..** **SQL36..**	N4502 N4505								
	Operating voltage	**Positioning signal**	**time [s]**							
	AC 230 V	3-Punkt	6 [1]	–	–	–	–	**SQL36E65**	–	–
		3-Punkt	12 [1]	–	–	–	–	–	**SQL36E110**	–
		3-Punkt	24 [1]	–	–	–	–	–	–	**SQL36E160**
		3-Punkt	25	–	–	**SQL36E50F04**	**SQL36E50F05**	–	–	–
		3-Punkt	120	**SAL31.00T20**	**SAL31.00T40**	–	–	–	–	–
	AC/DC 24 V	3-Punkt	120	**SAL81.00T20**	**SAL81.00T40**	–	–	–	–	–
		0...10 V, 4...20 mA	120	**SAL61.00T20**	**SAL61.00T40**	–	–	–	–	–
PN 16 Data sheet	-10...120 °C N4136	DN	k_{vs} [m^3/h]	Δp_s [kPa]	Δp_s [kPa]	Δp_s [kPa]	Δp_s [kPa]	Δp_s [kPa]	Δp_s [kPa]	Δp_s [kPa]
	VKF46.40	40	50	1600	–	1600	–	–	–	–
	VKF46.50	50	85	1600	–	1600	–	–	–	–
	VKF46.65	65	215	1600	–	1600	–	–	–	–
	VKF46.80	80	420	–	1600	–	1600	–	–	–
	VKF46.100	100	800	–	1200	–	1600	–	–	–
	VKF46.125	125	1010	–	800	–	1000	–	–	–
	VKF46.150	150	2100	–	–	–	–	1600	–	–
	VKF46.200	200	4000	–	–	–	–	1000	–	–
	VKF46.250	250	6400	–	–	–	–	–	1000	–
	VKF46.300	300	8500	–	–	–	–	–	1000	–
	VKF46.350	350	11500	–	–	–	–	–	600	–
	VKF46.400	400	14500	–	–	–	–	–	300	–
	VKF46.450	450	20500	–	–	–	–	–	–	300
	VKF46.500	500	21000	–	–	–	–	–	–	300
	VKF46.600	600	29300	–	–	–	–	–	–	300

[1] With auxiliary module SEZ31.1 variable positioning time: SQL36E65: 30...180 s, SQL36E110: 60...360 s, SQL36E160: 120...720 s

Recommended maximum flow velocity:

VKF41...: < 4 m/s for water, see data sheet for details

VKF46...: 4.5 m/s for water, 60 m/s for gas

Changeover and open/close ball valves

Typical applications
– Boiler plants
– Chiller plants
– Domestic hot water
– Heating groups

Actuators	Data sheet
GSD..9A	N4655
GQD..9A	N4659
GMA..9E	N4658
GLB..9E	N4657

Operating voltage	Positioning signal	Positioning time [s] GSD	GLB	GQD	GMA	Spring return function [s]	2 Nm	7 Nm	10 Nm
AC/DC 24 V	2-position	30	–	–	–	–	**GSD141.9A**	–	–
AC 230 V	2-position	30	–	–	–	–	**GSD341.9A**	–	–
AC 24 V	(2)/3-position	–	150	–	–	–	–	–	**GLB131.9E**
AC 230 V	(2)/3-position	–	150	–	–	–	–	–	**GLB331.9E**
AC/DC 24 V	2-position	–	–	30 (15)	–	✓	**GQD121.9A**	–	–
AC 230 V	2-position	–	–	30 (15)	–	✓	**GQD321.9A**	–	–
AC/DC 24 V	2-position	–	–	–	90 (15)	✓	–	**GMA121.9E**	–
AC 230 V	2-position	–	–	–	90 (15)	✓	–	**GMA321.9E**	–

PN 40 Data sheet N4213 -10…120 °C	DN	G [inch]	k_{vs} [m³/h]	2 Nm Δp_s [kPa]	2 Nm Δp_{max} [kPa]	7 Nm Δp_s [kPa]	7 Nm Δp_{max} [kPa]	10 Nm Δp_s [kPa]	10 Nm Δp_{max} [kPa]
VAG60.15-9	15	G 1B	9	1400	350	1400	350	1400	350
VAG60.20-17	20	G 1 ¼B	17	1400	350	1400	350	1400	350
VAG60.25-22	25	G 1 ½B	22	1400	350	1400	350	1400	350
VAG60.32-35	32	G 2B	35	–	–	1000	350	1000	350
VAG60.40-68	40	G 2 ¼B	68	–	–	800	350	800	350
VAG60.50-96	50	G 2 ¾B	96	–	–	600	350	600	350

PN 40 Data sheet N4213 -10…120 °C	DN	G [inch]	k_{vs} [m³/h]	2 Nm Δp_{max} [kPa]	7 Nm Δp_{max} [kPa]	10 Nm Δp_{max} [kPa]
VBG60.15-8T	15	G 1B	8	350	350	350
VBG60.20-13T	20	G 1 ¼B	13	350	350	350
VBG60.25-13T	25	G 1 ½B	13	350	350	350
VBG60.32-25T	32	G 2B	25	–	350	350
VBG60.40-49T	40	G 2 ¼B	49	–	350	350
VBG60.50-73T	50	G 2 ¾B	73	–	350	350

PN 40 Data sheet N4213 -10…120 °C	DN	Rp [inch]	k_{vs} [m³/h]	2 Nm Δp_s [kPa]	2 Nm Δp_{max} [kPa]	7 Nm Δp_s [kPa]	7 Nm Δp_{max} [kPa]	10 Nm Δp_s [kPa]	10 Nm Δp_{max} [kPa]
VAI60.15-15	15	Rp ½	15	1400	350	1400	350	1400	350
VAI60.20-22	20	Rp ¾	22	1400	350	1400	350	1400	350
VAI60.25-22	25	Rp 1	22	1400	350	1400	350	1400	350
VAI60.32-35	32	Rp 1¼	35	–	–	1000	350	1000	350
VAI60.40-68	40	Rp 1½	68	–	–	800	350	800	350
VAI60.50-96	50	Rp 2	96	–	–	600	350	600	350

PN 40 Data sheet N4213 -10…120 °C	DN	Rp [inch]	k_{vs} [m³/h]	2 Nm Δp_{max} [kPa]	7 Nm Δp_{max} [kPa]	10 Nm Δp_{max} [kPa]
VBI60.15-12T	15	Rp ½	12	350	350	350
VBI60.20-16T	20	Rp ¾	16	350	350	350
VBI60.25-16T	25	Rp 1	16	350	350	350
VBI60.32-25T	32	Rp 1¼	25	–	350	350
VBI60.40-49T	40	Rp 1½	49	–	350	350
VBI60.50-73T	50	Rp 2	73	–	350	350

PN 40 Data sheet N4213 -10…120 °C	DN	Rp [inch]	k_{vs} [m³/h]	2 Nm Δp_{max} [kPa]	7 Nm Δp_{max} [kPa]	10 Nm Δp_{max} [kPa]
VBI60.15-5L	15	Rp ½	5	350	350	350
VBI60.20-9L	20	Rp ¾	9	350	350	350
VBI60.25-9L	25	Rp 1	9	350	350	350
VBI60.32-13L	32	Rp 1¼	13	–	350	350
VBI60.40-25L	40	Rp 1½	25	–	350	350
VBI60.50-37L	50	Rp 2	37	–	350	350

Refrigerant valves

Typical applications	Valve	Operating voltage	Positioning signal	Auxiliary functions
– Chiller plants	**M2FP03GX**	AC 24 V	0...10 V, 4...20 mA, 0...20 Phs	–
	MVL661..	AC/DC 24 V	0...10 V, 2...10 V, 0...20 mA, 4...20 mA	Minimum stroke setting
	MVS661..N	AC/DC 24 V	0...10 V, 2...10 V, 0...20 mA, 4...20 mA	Minimum stroke setting
	M3FB..LX..	AC 24 V	0...10 V, 4...20 mA, 0...20 Phs	–
	M3FK..LX..	AC 24 V	0...10 V, 4...20 mA, 0...20 Phs	–

PN 32	-40...100 °C			k_{vs} [m^3/h]	Δp_{max} [kPa]
Data sheet	N4731				
	**M2FP03GX**		Pilot valve	0.3	1800

PS 45	-40...120 °C	DN	Connection	Inner Ø [inch]	k_{vs} [m^3/h]	k_{vs} reduced [m^3/h]	Δp_{max} [kPa]
Data sheet	N4714						
	**MVL661.15-0.4**	15	Sleeve	⅝	0.4	0.25	2500
	MVL661.15-1.0	15	Sleeve	⅝	1	0.63	2500
	MVL661.20-2.5	20	Sleeve	⅞	2.5	1.6	2500
	MVL661.25-6.3	25	Sleeve	1⅛	6.3	4	2500
	MVL661.32-10	32	Sleeve	1⅜	10	6.3	1600
	MVL661.32-12	32	Sleeve	1⅜	12	7.6	200

PS 53	-40...120 °C	DN	Connection	Inner Ø [mm]	Outer Ø [mm]	k_{vs} [m^3/h]	k_{vs} reduced [m^3/h]	Δp_{max} [kPa]
Data sheet	N4717							
	**MVS661.25-016N**	25	Weldable	22.4	33.7	0.16	0.1	2500
	MVS661.25-0.4N	25	Weldable	22.4	33.7	0.4	0.25	2500
	MVS661.25-1.0N	25	Weldable	22.4	33.7	1	0.63	2500
	MVS661.25-2.5N	25	Weldable	22.4	33.7	2.5	1.6	2500
	MVS661.25-6.3N	25	Weldable	22.4	33.7	6.3	4	2500

PN 32	-40...120 °C	DN	Connection	Inner Ø [inch]	k_{vs} [m^3/h]	Liquid Δp_{max} [kPa]	Gas Δp_{max} [kPa]
Data sheet	N4722						
	**M3FK15LX06**	15	Sleeve	⅝	0.6	200	800
	M3FK15LX15	15	Sleeve	⅝	1.5	200	800
	M3FK15LX	15	Sleeve	⅝	3	200	800
	M3FK20LX	20	Sleeve	⅞	5	200	800
	M3FK25LX	25	Sleeve	1⅛	8	200	800
	M3FK32LX	32	Sleeve	1⅜	12	200	800
	M3FK40LX	40	Sleeve	1⅝	20	200	800
	M3FK50LX	50	Sleeve	2⅛	30	200	800

PS 43	-40...120 °C	DN	Connection	Inner Ø [inch]	k_{vs} [m^3/h]	Δp_{max} [kPa]
Data sheet	N4721					
	**M3FB15LX06/A**	15	Sleeve	⅝	0.6	2200
	M3FB15LX15/A	15	Sleeve	⅝	1.5	2200
	M3FB15LX/A	15	Sleeve	⅝	3	2200
	M3FB20LX/A	20	Sleeve	⅞	5	1800
	M3FB25LX/A	25	Sleeve	1⅛	8	1200
	M3FB32LX	32	Sleeve	1⅜	12	800

Definitions

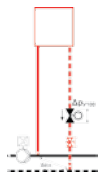
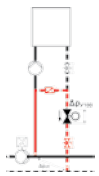
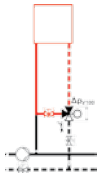
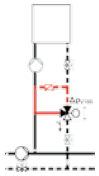
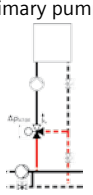
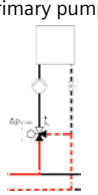
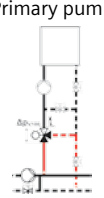
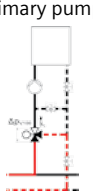
Abbr.	Term	Unit	Definition
Δp	Differential pressure	kPa	Pressure differential between plant sections.
Δp_{max}	Maximum differential pressure	kPa	Maximum permissible differential pressure across the valve's control path (when mixing), valid for the entire actuating range of the motorized valve.
Δp_{maxV}	Maximum differential pressure	kPa	Maximum permissible differential pressure across the valve's control path (when distributing), valid for the entire actuating range of the motorized valve.
Δp_{min}	Minimum differential pressure	kPa	Minimum differential pressure required, so that the differential pressure regulator works reliably with combi valves. Δp_{min} depends on presetting position, see data sheet for details.
Δp_{V0}		kPa	Maximum differential pressure across the valve's closed control path.
Δp_{V100}	Differential pressure at nominal flow rate	kPa	Differential pressure across the fully open valve and the valve's control path by a volumetric flow V_{100}.
Δp_s	Closing pressure	kPa	For 2-port valves, maximum permissible differential pressure at which the motorized valve will close securely against the pressure (close off pressure). Only valid for 2-port valves.
Δp_{MV}		kPa	Differential pressure across the variable flow path. Often Δp_{MV} is not known, in which case typical values can be used.
Δp_{VR}		kPa	Differential pressure between flow and return.
ΔT	Temperature spread	K	Temperature differential between flow and return.
DN	Nominal size		Characteristic for matching parts of the piping system.
H_0	Shutoff head	m	The head generated by a pump at closed value, at a given speed and a given pump medium.
kPa	Unit of pressure	kPa	100 kPa = 1 bar = 10 mWC
mWC	Meter water column	m	
k_V	Nominal flow	m^3/h	Amount of cold water (5...30 °C) passing through the valve at the respective stroke and at a differential pressure of 100 kPa (1 bar).
k_{VS}	Nominal flow rate	m^3/h	Nominal flow rate of cold water (5...30 °C) through the fully open valve (H_{100}) at a differential pressure of 100 kPa (1 bar).
	Spring return function		Shutoff in the event of a power failure.
PN	PN class		Characteristic relating to the combination of mechanical and dimensional properties of a component in the piping system.
Phs	Phase cut control signal	V	DC 0...20 V Phs
P_v	Valve authority		Ratio of differential pressure across fully open valve (H_{100}) and differential pressure across valve and variable flow path. To ensure correct control, a minimum valve authority of 0.25 is required.
Q_{100}	Rated capacity	kW	Plant's design capacity.
V_{100}	Volumetric flow	m^3/h	Volumetric flow with valve fully open (H_{100}).
V_{min}	Minimum volumetric flow	m^3/h	Smallest presettable volumetric flow through the fully open combi valve (H_{100}).
v	Kinematic viscosity	mm^2/s	In the case of kinematic viscosities v up to 10 mm^2/s, no corrections are required. For the selection of actuating devices for kinematic viscosities v above 10 mm^2/s, please contact your local Siemens branch office.
c	Specific heat capacity	kJ/kgK	
ρ	Specific density	kg/m^3	

Symbols

	3-port valve, control path with equal-percentage valve characteristic, bypass with linear valve characteristic.
	3-port valve, control path with equal-percentage valve characteristic, bypass with linear valve characteristic with 70 % of the k_{VS} value. This compensates for the flow resistance of the heat exchanger, so that the total volumetric flow V_{100} remains as constant as possible.
	2-port valve, control path with equal-percentage valve characteristic.
	2-port valve or 6-port control ball valve in the respective control path with linear valve characteristic.
	3-port, control path and bypass with linear valve characteristic. Bypass with 70 % of the k_{vs} value. This compensates for the flow resistance of the heat exchanger, so that the total flow amount V_{100} remains as constant as possible.
	3-port valve, control path and bypass with linear valve characteristic.
	3-port valve, control path and bypass with equal-percentage valve characteristic.

Valve sizing and actuator selection

Basic hydronic circuit

1	**Determine the type of hydronic circuit**	Throttling circuit	Injection circuit with 2-port valve	Diverting circuit	Injection circuit with 3-port valve	Mixing circuit		Mixing circuit with fixed premixing	
—	For valve sizing relevant variable flow path					Primary pump ✓ 	Primary pump ✗ 	Primary pump ✓ 	Primary pump ✗ 

HVAC plants and consumers

Heating								
Surface/floor heating	–	■	–	outdated	–	–	■	■
Heating plant (primary)	–	■	■	outdated	■	■	■	■
Zone control, heating	–	■	–	outdated	–	–	–	–
Heating group	–	■	–	–	■	■	■	■
Generation of heat energy	–	–	–	–	–	■	–	■
Heat exchanger water-water	■	uncommon	uncommon	uncommon	uncommon	–	–	–
Ventilation and air conditioning plants								
Air handling unit (AHU)	■	■	■	outdated	■	■	–	–
Fan coil unit	■	–	■	outdated	–	–	–	–
Cooling coil	dehumidifying	–	dehumidifying	uncommon	–	–	–	–
Reheating coil	■	■	outdated	outdated	uncommon	uncommon	uncommon	uncommon
Preheating coil	–	■	–	outdated	uncommon	uncommon	uncommon	uncommon
VAV	■	–	■	outdated	–	–	–	–
Zone control	■	–	■	outdated	–	–	–	–
Chiller plants								
Surface/floor cooling	–	■	–	outdated	–	–	–	–
Generation of cooling energy	–	–	–	–	–	■	–	■
Cooling towers	■	–	■	uncommon	–	–	–	–
Zone control, cooling	–	■	–	outdated	–	–	–	–
District heating and cooling								
District heating, primary	■	uncommon	–	–	–	uncommon	–	uncommon
District heating, secondary	■	■	–	–	–	uncommon	–	uncommon
District cooling, primary	■	uncommon	–	–	–	uncommon	–	uncommon
District cooling, secondary	■	■	–	–	–	uncommon	–	uncommon
Domestic hot water (DHW)								
DHW	–	■	–	–	–	■	–	–

Header

Differential pressure header	pressurized		pressureless
Volumetric flow	variable	constant	variable

Determination of k_{vs} value

2	**Δp_{VR} or Δp_{MV}**	Δp_{VR}		Δp_{MV}					
	typical range	10...200 kPa	10...200 kPa	10...50 kPa	2...5 kPa	2...5 kPa	5...15 kPa	2...5 kPa	5...15 kPa
	typical value	Use effective Δp_{VR} value		35 kPa	3 kPa	3 kPa	8 kPa	3 kPa	8 kPa
3	**Determine ΔpV_{100}**	$\Delta p_{V100} \geq \frac{\Delta p_{VR}}{2}$		$\Delta p_{V100} > \Delta p_{MV}$					
4	**Calculate V_{100}**	Water without anti-freeze $V_{100} = \frac{Q_{100}}{1.163 \cdot \Delta T}$		Water with anti-freeze $V_{100} = \frac{Q_{100} \cdot 3600}{c \cdot \rho \cdot \Delta T}$					
5	**Determine k_{vs} value**	$k_V = \frac{V_{100}}{\sqrt{\frac{\Delta p_{V100}}{100}}}$ => $k_{VS} \geq 0.85 \cdot k_V$ value							
6	**Check resulting ΔpV_{100}**	$\Delta p_{V100} = 100 \cdot \left(\frac{V_{100}}{k_{VS}}\right)^2$							

Selection of valve and actuator

7	**Select suitable valve series**	a) Type of valve (2-port, 3-port, 3-port with bypass) b) Connections (flanged, threaded, soldered)	c) PN class d) Nominal size DN	e) Max./min. medium temperature f) Medium
8	**Check valve authority P_v** (control stability)	$P_V = \frac{\Delta p_{V100}}{\Delta p_{VR}} \geq 0.25...0.8$	$P_V = \frac{\Delta p_{V100}}{\Delta p_{V100} + \Delta p_{MV}} \geq 0.25...0.8$	
9	**Select actuator**	a) Operating voltage b) Positioning signal c) Positioning time d) Spring return function e) Auxiliary functions		
10	**Check working range**	a) Differential pressure $\Delta p_{max} > \Delta p_{V0}$ b) Closing pressure $\Delta p_s > H_0$		
11	**Selection**	Valve and suitable actuator		

Size and select combi valves

Determine volumetric flow V				
1	**Determine Q_{100}**	Q_{100}		
2	**Determine ΔT**	ΔT		
3	**Calculate V**	Water without anti-freeze $V_{100} = \frac{Q_{100}}{1.163 \cdot \Delta T}$	Water with anti-freeze $V_{100} = \frac{Q_{100} \cdot 3600}{c \cdot \rho \cdot \Delta T}$	
Select combi valve and actuator				
4	**Select suitable combi valve**	a) Type of valve (with/without P/T plugs) d) Connection (flanged, threaded)	b) PN class e) Nominal size DN	c) Max./min. medium temperature f) Medium
5	**Determine presetting**	Determine presetting using the volumetric flow/dial table in data sheet of the respective combi valve		
6	**Select actuator**	a) Operating voltage b) Positioning signal c) Positioning time d) Auxiliary functions		
7	**Check working range**	a) $\Delta p < \Delta p_{max}$ – maximum permissible differential pressure across the valve's control path, valid for the entire actuating range of the motorized valve b) $\Delta p > \Delta p_{min}$ – minimum differential pressure required across the valve's control path, so that the differential pressure regulator works reliably		
8	**Select actuator**	Combi valve and suitable actuator		

Siemens Switzerland Ltd
Building Technologies Division
International Headquarters
Gubelstrasse 22
6301 Zug
Switzerland
Tel +41 41 724 24 24

Siemens Building Technologies
Brunel House
Sir William Siemens Square, Frimley
Camberley
Surrey, GU16 8QD
United Kingdom
Tel +44 1276 696000

Siemens Ltd
Building Technologies Division
22/F, AIA Kowloon Tower, Landmark East
100 How Ming Street
Kwun Tong, Hong Kong
Tel +852 2870 7888

Our world is undergoing changes that force us to think in new ways: demographic change, urbanization, global warming and resource shortages. Maximum efficiency has top priority – and not only where energy is concerned. In addition, we need to increase comfort for the well-being of users. Also, our need for safety and security is constantly growing. For our customers, success is defined by how well they manage these challenges. Siemens has the answers.

"We are the trusted technology partner for energy-efficient, safe and secure buildings and infrastructure."

www.siemens.com/acvatix