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



Valves and actuators: Acvatix hydronics. Everything under control.

Fast and easy planning, installation and commissioning

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The right solution for every hydronic project

With Acvatix™ you choose a versatile range of valves and actuators for superior ease of use, maximum control accuracy and energy efficiency. All control and hydraulic requirements can be met quickly and easily with Acvatix, from the generation of heating and cooling to energy distribution and use. Siemens provides useful tools and extensive knowledge to assist you in every project phase.

Your benefits at a glance

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

Acvatix valves and actuators are improved continually based on Siemens' many years of experience in the field and rigorous testing in the in-house HVAC laboratory. For you, that means the highest quality and maximum reliability.

Your needs and requirements are the focus of our product development. We analyze not only the individual product, but also the entire HVAC system and the working processes behind it. This enables us to always remain one step ahead, while you benefit from optimally coordinated products that make your work easier from planning to service.

Acvatix hydronics. Efficient all down the line



Product selection and engineering made easy

Tools from Siemens – such as the HIT Portal, the Acvatix slide ruler and the “Combi Valve Sizer” app – allow you to quickly find the right products. You can use the HIT Portal to design the entire HVAC application step by step while also accessing the specifications directly, complete with plant diagrams and lists of materials.



Installation in a few simple steps

Acvatix speeds up and simplifies installation thanks, for example, to color- and number-coded cables or a valve actuator coupling with just one screw or bayonet mount. If you lose the instructions for a product, simply use the “Scan to HIT” app from Siemens to scan the data matrix code on the product and receive complete product information.



Fast commissioning and 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 also help with any troubleshooting. Acvatix also features a robust design, outstanding reliability and minimal need for maintenance. Innovative products such as Intelligent Valves and PICVs save time and effort through automatic hydronic balancing – while also ensuring enhanced comfort and high energy efficiency. In addition, Intelligent Valves facilitate work through commissioning via WLAN with the “ABT Go” app or via cloud connection.



Understanding the language of buildings

Building Information Modeling (BIM) enables a significant productivity increase in the construction industry. BIM is a digitally supported process that changes the way we plan, build and operate buildings. Siemens provides a powerful, easy-to-use CAD browser that delivers BIM-compliant data that directly integrates into your BIM process, while also supporting more traditional CAD design workflows. Benefit from an easy transition to the future of construction with well over 4,000 products across all our global portfolio offerings:

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Combi Valve Sizer

App for easily selecting and sizing Acvatix PICVs and actuators. The app also calculates the maximum volumetric flow and presetting, checks the commissioning settings and provides access to all data sheets.



SIEMENS



Scan to HIT

App providing quick access to all product information, including data sheets and installation instructions. Just use the app to scan the data matrix code on the product in order to read or download all the necessary information.



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ABT Go

The mobile tool for commissioning and maintenance tasks of Siemens devices used in building automation and control systems e.g. the Intelligent Valves. Also suitable for fast and easy testing incl. test reports.



The right valve for every operating range

Valves are used in all parts of HVAC systems. We help you to find exactly the right valves for your application and for the particular purpose intended.



Intelligent Valves

Makes it a snap!

Intelligent Valves are self-optimizing dynamic valves with cloud connection used in heating groups and air handling units. They optimize consumption, increase energy efficiency and reduce operating costs.



PICVs

Hydronics made easy

PICVs (pressure-independent combi valves) prevent the oversupply of consumers, as well as reciprocal hydronic interference. They reduce energy consumption and thus energy costs. Precise temperature control also improves the comfort and well-being of building users.



Globe valves

Plan and install in record time

Globe valves are used for flow shutoff, flow regulation or fluids mixing in a wide variety of applications. They are used in the majority of HVAC applications – whether in energy generation, distribution or consumption.



Control ball valves

An excellent choice for your business

Control ball valves are used in closed circuits. They are highly efficient thanks to continuous and precise control and leak-free operation.

Magnetic valves

Solid conditions through accurate control

Magnetic valves have a preinstalled magnetic actuator and are used for the shutoff and mixing of fluids (water, water with antifreeze, heat transfer fluid, etc.) and steam in nearly all HVAC applications.

Rotary valves

Close off and mix reliably

Rotary valves are primarily used in energy generation and distribution. Typical applications are if an additional boiler needs to be connected, or for the switching over of storage tank charging.

	Energy consumption	Energy distribution	Energy generation
Intelligent Valves	–	Heating groups, air handling units	–
PICVs	Radiators, chilled ceilings, VAV, fan coil units, zone control	Heating groups, air handling units	District heating
Globe valves	Floor heating, radiators, chilled ceilings, VAV, fan coil units, zone control	Domestic hot water, heating groups, air handling units	District heating, boiler plants, chiller plants
Control ball valves	Chilled ceilings, heated and chilled ceilings, VAV, fan coil units, zone control	Domestic hot water, heating groups, air handling units	–
Magnetic valves	–	Domestic hot water, heating groups, air handling units	District heating, boiler plants, chiller plants
Rotary valves	–	Domestic hot water, heating groups	Boiler plants, chiller plants, cooling towers

Note the blue-highlighted recommendations from Siemens for maximum performance in every area of application.

The advantages of a dynamic valve

Static valves are currently the standard solution for HVAC systems, but are not state of the art. Although the systems mainly operate under a partial load in practice, they are actually designed for a full load. The result: an inefficient operation, high energy consumption, cost explosion and an uncomfortable room climate.

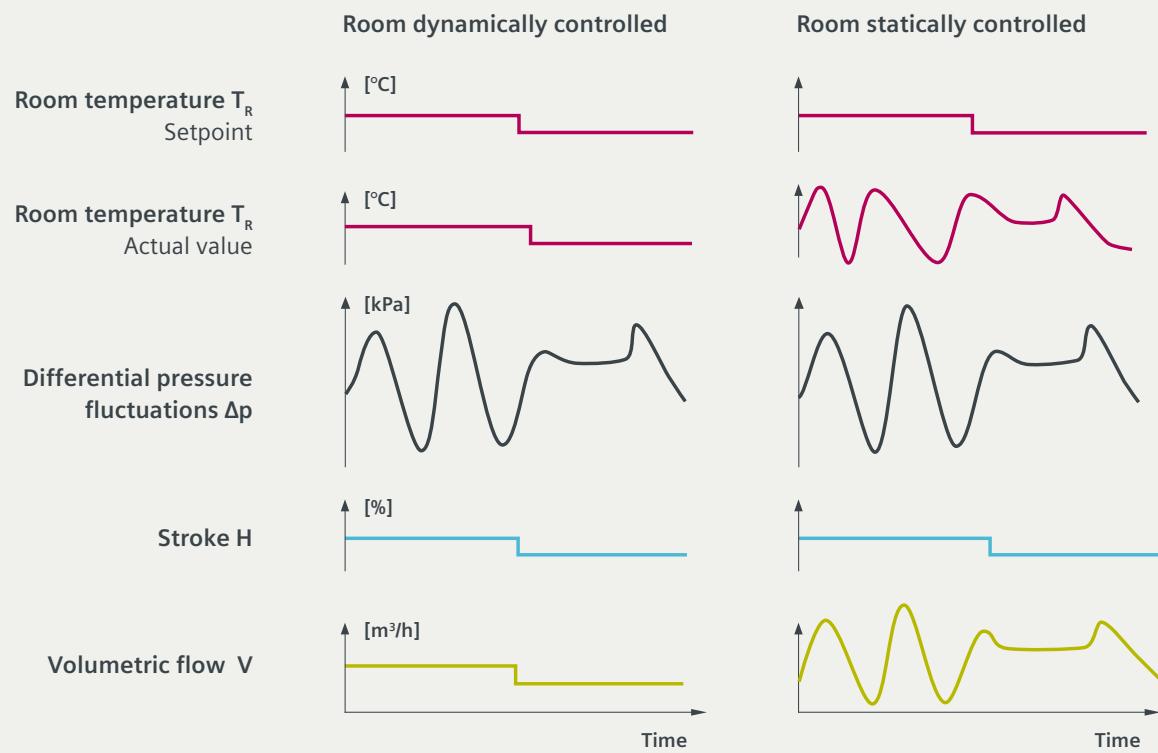
The solution for maximum efficiency

Dynamic valves such as Intelligent Valves and PICVs ensure balanced system pressure under all loads, thereby ensuring that any fluctuations have no effect on room temperature. In addition, full stroke for every setting ensures greater control accuracy. Thanks to optimal return temperatures for all operating conditions, heating and cooling achieve a high level of efficiency. In this way, dynamic valves significantly reduce heating and cooling costs and permit energy savings of up to 25 percent without sacrificing comfort. Planning, installation and commissioning are

also much simpler and faster with dynamic valves. When planning a system with valves that independently balance fluctuations in pressure, only the volumetric flow determines which valve must be used. There's no need for flow regulating valves, balancing valves or complicated hydronic calculations. Fewer components means less installation effort. Thanks to the presettable volumetric flow and automatic hydronic balancing, commissioning is fast and effortless. In addition, dynamic valves permit flexible commissioning in stages – for example, floor by floor.



More on
saving energy
with PICVs



							Recommended media											
PVCs	IV*	Globe valves			PN class	Type of connection	Silicon-free grease	Closed circuits	Open circuits	Permissible medium temperature [°C]	Chilled water	Cooling water ¹⁾	Drinking water	Low-temperature hot water	High-temperature hot water	Water glycol mixture	Saturated steam	Superheated steam
		2-port valve	3-port valve	6-port valve														
EVG..		■			16	ET				1...120	■							
EVF..		■			16	F				1...120	■							
VPD../VPE..		■			10	ET				1...90	■							
VPP46..		■			25	ET				1...110	■							
VPI46..		■			25	IT				1...120	■							
VPF43..		■			16	F	■			1...120	■							
VPF53..		■			25	F				1...120	■							
VDN../VEN../VUN..		■			10	ET				1...120	■							
VD1..CLC		■			10	ET				1...110	■							
VVP45..		■			16	ET				1...110	■							
VXP45..		■			16	ET				1...110	■							
VMP45..		■			16	ET				1...110	■							
VVP47..		■			16	ET				1...110	■							
VXP47..		■			16	ET				1...110	■							
VMP47..		■			16	ET				1...110	■							
VVG41..		■			16	ET	■		■	-25...150	■	■						
VXG41..		■			16	ET	■		■	-25...150	■	■						
VXG41..01 ⁴⁾		■			16	ET	■		■	-25...150	■	■	■					
VVG44..		■			16	ET	■		■	1...120	■							
VXG44..		■			16	ET	■		■	1...120	■							
VVG549..		■			25	ET				1...130	■	■						
VVI46../2		■			16	IT				1...110	■							
VXI46../2		■			16	IT				1...110	■							
VVF22..		■			6	F	■			-10...130	■							
VXF22..		■			6	F	■			-10...130	■							
VVF32..		■			10	F	■			-10...150	■							
VXF32..		■			10	F	■			-10...150	■							
VVF42..		■			16	F	■			-10...150	■							
VXF42..		■			16	F	■			-10...150	■							
VVF43..		■			16	F	■		■	-20...220	■	■						
VXF43..		■			16	F	■		■	-20...220	■	■						
VVF53..		■			25	F	■		■	-20...220	■	■						
VXF53..		■			25	F	■		■	-20...220	■	■						
VVF61..		■			40	F				-25...220	■	■						
VXF61..		■			40	F				-25...220	■	■						
VAG61..		■			40	ET	■			-10...120	■							
VBG61..		■			40	ET	■			-10...120	■							
VAI61..		■			40	IT	■			-10...120	■							
VBI61..		■			40	IT	■			-10...120	■							
VWG41..		■	■		16	ET/IT	■			1...90	■							
MXG461..		■			16	ET				1...130	■							
MXG461..P		■			16	ET				1...130								
MXG461B..		■			16	ET				-20...130	■	■	■					
MXG461S..		■			16	ET				1...130	■	■						
MXG462S..		■			16	ET				-20...130	■	■						
MXF461..		■			16	F				1...130	■							
MXF461..P		■			16	F				1...130								
M3P..FY		■			16	F				1...120	■							
M3P..FYP		■			16	F				1...120								
MVF461H..		■			16	F				1...180	■							
VBF21..		■			6	F				1...120								
VKF41..		■			16	F				-10...120	■							
VKF46..		■			16	F			■	-10...120	■	■						
VAG60..		■			40	ET	■			-10...120	■							
VBG60..		■			40	ET	■			-10...120	■							
VAI60..		■			40	IT	■			-10...120	■							
VBI60..		■			40	IT	■			-10...120	■							
M2FP03GX					32	—				-40...100								
M3FK..LX..					32	S				-40...120								
M3FB..LX..					PS 43	S				-40...120								
MVL661..					PS 45	S				-40...120								
MVS661..N					63	W/S				-40...120								

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

* Intelligent Valves

		Generation	Distribution	Consumption / Use													
	District heating	Boiler plants	Chiller plants	Cooling towers ¹⁾	Domestic hot water ²⁾	Heating groups	Air handling units	Floor heating	Radiators	Chilled ceilings	Heated and chilled ceilings	VAV ³⁾	Fan coil units	Zone control	EVG.. EVF..	IV*	
Heat transfer oil																VPD../VPE..	PtCVs
Media containing mineral oils																VPP46..	
Refrigerants																VPI46..	
Refrigerants (ammonia)																VPF43..	
																VPF53..	
																VDN../VEN../VUN..	
																VD1..CLC	
																VVP45..	
																VXP45..	
																VMP45..	
																VVP47..	
																VXP47..	
																VMP47..	
																VVG41..	
																VXG41..	
																VXG41..01 ⁴⁾	
																VVG44..	
																VXG44..	
																VVG549..	
																VVI46../2	
																VXI46../2	
																VVF22..	
																VXF22..	
																VVF32..	
																VXF32..	
																VVF42..	
																VXF42..	
																VVF43..	
																VXF43..	
																VVF53..	
																VXF53..	
																VVF61..	
																VXF61..	
																VAG61..	
																VBG61..	
																VAI61..	
																VBI61..	
																VWG41..	
																MXG461..	
																MXG461..P	
																MXG461B..	
																MXG461S..	
																MXG462S..	
																MXF461..	
																MXF461..P	
																M3P..FY	
																M3P..FYP	
																MVF461H..	
																VBF21..	
																VKF41..	
																VKF46..	
																VAG60..	
																VBG60..	
																VAI60..	
																VBI60..	
																M2FP03GX	
																M3FK..LX..	
																M3FB..LX..	
																MVL661..	
																MVS661..N	Refrigerant valves
																Rotary valves	
																Control ball valves	
																Magnetic valves	

Intelligent Valves

Typical applications	Valve type	Operating voltage		Positioning signal		Interface		
- Heating groups	EVG4U10E.. DN15-50	AC/DC 24 V		0...10 V, 2...10 V, 4...20 mA		BACnet over UDP/IP		
- Air handling units	EVF4U20E.. DN65-125	AC/DC 24 V		0...10 V, 2...10 V, 4...20 mA		BACnet over UDP/IP		
PN 16	1...120 °C	DN	k_{vs} [m³/h]	\dot{V}_{min} [m³/h]	\dot{V}_{100} [m³/h]	Δp_s [kPa]	Δp_{max} [kPa]	
Data sheet	A6V11444716							
		EVG4U10E015	15	4	0,5	1,5	1400	350
		EVG4U10E020	20	5	1	3	1400	350
		EVG4U10E025	25	10	1,5	4,5	1400	350
		EVG4U10E032	32	11	2,3	7	1000	350
		EVG4U10E040	40	26	3,5	11,5	800	350
		EVG4U10E050	50	30	6	18	600	350
		EVF4U20E065	65	55	10	30	1600	500
		EVF4U20E080	80	80	16	48	1600	500
		EVF4U20E100	100	113	25	75	1600	500
		EVF4U20E125	125	142	40	120	1600	500

Threaded PICVs

Typical applications		Actuators	Data sheet								4.5 mm	2.5 mm			
– Radiators		RTN..	N2111								100 N	100 N			
– Chilled ceilings		STA..	N4884								100 N	100 N			
– Fan coil units		SSA..	N4893												
PN 10		1...90 °C	DIN	DN	Rp/R [Inch]	\dot{V} [l/h]	$\dot{V}_{\text{Nom}}^2)$ [l/h]	\dot{V}_{100} [l/h]	Δp_{\min} [kPa]	Δp_{\max} [kPa]	Δp_{\min} [kPa]	Δp_{\max} [kPa]			
Data sheet			N2185												
		VPD110A-..²⁾	10	Rp/R 3/8	25...318	45	90	145	6 ³⁾	200	8 ³⁾	200	10 ³⁾ 200		
		VPD115A-..	15	Rp/R 1/2	25...318	45	90	145	6 ³⁾	200	8 ³⁾	200	10 ³⁾ 200		
		VPD110B-200	10	Rp/R 3/8	95...483	200			20	200	20	200	20 200		
		VPD115B-200	15	Rp/R 1/2	95...483	200			20	200	20	200	20 200		
		VPE110A-..	10	Rp/R 3/8	25...318	45	90	145	6 ³⁾	200	8 ³⁾	200	10 ³⁾ 200		
		VPE115A-..	15	Rp/R 1/2	25...318	45	90	145	6 ³⁾	200	8 ³⁾	200	10 ³⁾ 200		
		VPE110B-200	10	Rp/R 3/8	95...483	200			20	200	20	200	20 200		
		VPE115B-200	15	Rp/R 1/2	95...483	200			20	200	20	200	20 200		
Typical applications		Actuators	Data sheet								4.5 mm	2.5 / 5 mm	15 mm		
– Heating groups		STA..	N4884								100 N	100 N	200 N		
– Air handling units		SSA..	N4893												
– Chilled ceilings		SAY..P..	A6V10628469												
PN 25		1...120 °C	Without pressure testing points	With pressure testing points	DN	G [Inch]	\dot{V}_{\min} [l/h]	\dot{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	1/2	30	200	16	600	16	600	–	–		
		VPP46.10L0.4	VPP46.10L0.4Q	10	1/2	65	333	16	600	–	–	–	–		
		VPP46.15L0.2	VPP46.15L0.2Q	15	3/4	30	200	19	600	19	600	–	–		
		VPP46.15L0.6	VPP46.15L0.6Q	15	3/4	100	575	19	600	19	600	–	–		
		VPP46.20F1.4	VPP46.20F1.4Q	20	1	200	1190	22	600	–	–	–	–		
				20	1	220	1330	–	–	22	600	–	–		
		VPP46.25F1.8	VPP46.25F1.8Q	25	1 1/4	204	1470	39	600	–	–	–	–		
				25	1 1/4	250	1800	–	–	39	600	–	–		
PN 25		1...120 °C	Without pressure testing points	With pressure testing points	DN	Rp [Inch]	\dot{V}_{\min} [l/h]	\dot{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	1/2	30	200	19	600	19	600	–	–		
		VPI46.15L0.6	VPI46.15L0.6Q	15	1/2	100	575	19	600	19	600	–	–		
		VPI46.20F1.4	VPI46.20F1.4Q	20	3/4	200	1190	22	600	–	–	–	–		
				20	3/4	220	1330	–	–	22	600	–	–		
		VPI46.25F1.8	VPI46.25F1.8Q	25	1 1/4	204	1470	39	600	–	–	–	–		
				25	1 1/4	250	1800	–	–	39	600	–	–		
		VPI46.32F4	VPI46.32F4Q	32	1 1/2	450	3270	28	600	–	–	28	600		
				32	1 1/2	550	4001	–	–	28	600	–	–		
–		VPI46.40F9.5Q		40	1 1/2	1370	9500	–	–	–	–	25	600		
–		VPI46.50F12Q		50	2	1400	11500	–	–	–	–	36	600		

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

²⁾ .. = insert \dot{V}_{nom} | $\dot{V}_{\text{nom}} = \text{factory setting} = \text{volumetric flow at } 0.5 \text{ mm stroke or setting mark 3 of the presetting}$

³⁾ Δp_{\min} is valid for $\dot{V}_{\text{Nom}} 45/90/145 \text{ l/h}$; VPP46.. / VPI46..: Δp_{\min} is for the \dot{V}_{100} . For lower flows please consult the data sheet.

Flanged PICVs

Typical applications	Actuators	Data sheet					20 mm	20 / 40 mm	40 mm
- District heating	SAX..P..	N4509					500 N	1100 N	1100 N
- Heating groups	SQV91P..	N4833							
- Air handling units	SAV..P..	N4510							
Operating voltage	Positioning signal	Positioning time [s]			Spring return function [s]				
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	1...120 °C		DN	\dot{V}_{\min} [m³/h]	\dot{V}_{100} [m³/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]
Data sheet	N4315								
		VPF43.50F16	50	2.3	15	20	600	600	–
		VPF43.50F25	50	4.3	25	50	600	600	–
		VPF43.65F24	65	4.4	24	25	600	600	–
		VPF43.65F35	65	6	35	55	600	600	–
		VPF43.80F35	80	5.3	34	25	600	600	–
		VPF43.80F45	80	7	43	50	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	1...120 °C		DN	\dot{V}_{\min} [m³/h]	\dot{V}_{100} [m³/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]
Data sheet	N4316								
		VPF53.50F16	50	2.3	15	20	600	600	–
		VPF53.50F25	50	4.3	25	50	600	600	–
		VPF53.65F24	65	4.4	24	25	600	600	–
		VPF53.65F35	65	6	35	55	600	600	–
		VPF53.80F35	80	5.3	34	25	600	600	–
		VPF53.80F45	80	7	43	50	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

VPF43.. / VPF53..: Δp_{\min} is for the \dot{V}_{100} . For lower flows please consult the data sheet.

Threaded globe valves

Typical applications	Actuators	Data sheet							
- Radiators	RTN..	N2111							
Typical applications	Actuators	Data sheet	4.5 mm 100 N	2.5 mm 100 N	4.5 mm 90 N				
- Radiators	STA.. SSA..	N4884 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 [Inch]	k_v [m³/h]	Δp_{max} [kPa]	Δp_{max} [kPa]	Δp_{max} [kPa]
Data sheet		N2105	N2106						
	VDN110	VDN210	10	Rp/R 3/8	0.09...0.63	60	60	60	60
	VDN115	VDN215	15	Rp/R 1/2	0.10...0.89	60	60	60	60
	VDN120	VDN220	20	Rp/R 3/4	0.31...1.41	60	60	60	60
	VEN110	VEN210	10	Rp/R 3/8	0.09...0.63	60	60	60	60
	VEN115	VEN215	15	Rp/R 1/2	0.10...0.89	60	60	60	60
	VEN120	VEN220	20	Rp/R 3/4	0.31...1.41	60	60	60	60
	-	VUN210	10	Rp/R 3/8	0.14...0.60	60	60	60	60
	-	VUN215	15	Rp/R 1/2	0.13...0.77	60	60	60	60

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

k_v values [m^3/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	Data sheet					
- Chilled ceilings	STA.. SSA..	N4884 N4893					
Operating voltage	Positioning signal	Positioning time [s]					
AC 230 V	2-position	210	STA23	-	SSA31		
	3-position	150		-	SSA81		
AC 24 V	3-position	150		-	SSA81		
	0...10 V	270 ²⁾	STA63	-	-		
AC/DC 24 V	2-position/PDM	270	STA73	-	SSA61		
	0...10 V	34		-	-		
Normally Open / Normally Closed (for radiator valves)			NC	-	-		
PN 10	1...110 °C		DN	Rp/R [Inch]	k_v [l/h]	Δp_{max} [kPa]	Δp_{max} [kPa]
Data sheet		N2103					
	VD115CLC	15	Rp/R 1/2	0.25...1.9	150	150	150
	VD120CLC	20	Rp/R 3/4	0.25...2.6	150	150	150
	VD125CLC	25	Rp/R 1	0.25...2.6	150	150	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		200 N		200 N	
- Floor heating	SSB..	N4891											
- Chilled ceilings													
- VAV													
- Fan coil units													
- Zone control													
PN 16	Data sheet	1...110 °C N4845	DN	G [Inch]	k_{vs} [m^3/h]		Auxiliary switch SSB..1.1	200 N		5.5 mm		200 N	
		VVP45.10... ¹⁾	10	G 1/2B	0.25 / 0.4 / 0.63 / 1 / 1.6		725	400	725	400			
		VVP45.15-2.5	15	G 3/4B	2.5		350	350	350	350			
		VVP45.20-4	20	G 1B	4		350	350	350	350			
		VVP45.25-6.3	25	G 1 1/4B	6.3		300	300	300	300			
		VXP45.10...	10	G 1/2B	0.25 / 0.4 / 0.63 / 1 / 1.6		—	400	—	400			
		VXP45.15-2.5	15	G 3/4B	2.5		—	350	—	350			
		VXP45.20-4	20	G 1B	4		—	350	—	350			
		VXP45.25-6.3	25	G 1 1/4B	6.3		—	300	—	300			
		VMP45.10...	10	G 1/2B	0.25 / 0.4 / 0.63 / 1		—	400	—	400			
		VMP45.10-1.6	10	G 1/2B	1.6		—	400	—	400			
		VMP45.15-2.5	15	G 3/4B	2.5		—	350	—	350			
		VMP45.20-4	20	G 1B	4		—	350	—	350			
Typical applications		Actuators		Data sheet				4.5 mm		2.5 mm		160 N	
- Chilled ceilings	STP..	N4884						100 N		135 N			
- VAV	SFP..	N4865											
- Fan coil units	SSP..	N4864											
PN 16	Data sheet	1...110 °C N4847	DN	G [Inch]	k_{vs} [m^3/h]		Auxiliary switch SSB..1.1	2.5 mm		4.5 mm		160 N	
		VVP47.10... ¹⁾	10	G 1/2B	0.25 / 0.4		700	400	1000	400	1000	400	
		VVP47.10...	10	G 1/2B	0.63 / 1		250	250	500	400	500	400	
		VVP47.10-1.6	10	G 1/2B	1.6		150	150	300	300	300	300	
		VVP47.15-2.5	15	G 3/4B	2.5		150	150	300	300	300	300	
		VVP47.20-4	20	G 1B	4		100	100	175	175	175	175	
		VXP47.10...	10	G 1/2B	0.25 / 0.4		—	400	—	400	—	400	
		VXP47.10...	10	G 1/2B	0.63 / 1		—	250	—	400	—	400	
		VXP47.10-1.6	10	G 1/2B	1.6		—	150	—	300	—	300	
		VXP47.15-2.5	15	G 3/4B	2.5		—	150	—	300	—	300	
		VXP47.20-4	20	G 1B	4		—	100	—	175	—	175	
		VMP47.10...	10	G 1/2B	0.25 / 0.4		—	400	—	400	—	400	
		VMP47.10...	10	G 1/2B	0.63 / 1		—	250	—	400	—	400	
		VMP47.10-1.6	10	G 1/2B	1.6		—	150	—	300	—	300	
		VMP47.15-2.5	15	G 3/4B	2.5		—	150	—	300	—	300	

Union nuts for threaded valves

Union nuts for threaded valves

See page 14

VVP45..N with Serto compression fittings, $k_{vs} = 2.5 / 4 / 6.3 \text{ m}^3/\text{h}$

VVP45..S, VMP45..S with Conex® compression fittings, $k_{vs} = 0.63 / 1 / 1.6 / 2.5 \text{ m}^3/\text{h}$

VVP47..S, VMP47..S with Conex® compression fittings, $k_{vs} = 0.63 / 1 / 1.6 / 2.5 \text{ m}^3/\text{h}$

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			
		SFA..	N4863	200 N	170 N	100 N	160 N						
- Floor heating	SUA21/1	N4830											
- Fan coil units	STA..	N4884											
- Zone control	SSA31.04 ¹⁾	N4860											
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	-	-	SUA21/3	-	-	-	-	-	-		
	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 [Inch]	k _{vs} [m ³ /h]	Δp _s [kPa]	Δp _{max} [kPa]							
Data sheet	A6V10421629												
 	VVI46.15/2	15	Rp 1/2	2	300	300	400	400	200	200	200	200	
	VVI46.20/2	20	Rp 3/4	3.5	300	300	400	400	200	200	200	200	
 	VVI46.25/2	25	Rp 1	5	250	250	250	250	150	150	200	200	
	VXI46.15/2 ⁴⁾	15	Rp 1/2	2	-	300	-	400	-	200	-	200	
	VXI46.20/2 ⁴⁾	20	Rp 3/4	3.5	-	300	-	400	-	200	-	200	
	VXI46.25/2 ⁴⁾	25	Rp 1	5	-	250	-	250	-	150	-	200	
	VXI46.25T ⁵⁾	25	Rp 1	5	-	200	-	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		-
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)	2-position (On/Off)	2-position (On/Off)	
		[STA.., NC]	[STA.., NC]	-	[STA.., NC]	-	[STA.., NC]	[STA.., NC]	[STA.., NC]	[STA.., NC]	
Standard PVC cables	1 m	ASY23L20		ASY6AL20		ASY6PL20		ASA23U10		ASP23U10	
	2 m									ASY23L20LD	
	3 m										
	5 m										
	10 m										
	15 m										
Halogen-free cables	2 m	ASY23L20HF	ASY6AL20HF	ASY6PL20HF							
	5 m	ASY23L50HF									
	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											

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		2800 N			
		SAX..	N4501	SKD..	N4561	SKB..		800 N	1000 N	2800 N			
	Operating voltage	Positioning signal		Positioning time [s]									
- District heating - Boiler plants - Chiller plants - Domestic hot water - Heating groups - Air handling units	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⁾												
Data sheet	N4363		N4463		DN	G [Inch]	k _{vs} [m ³ /h]	Δp _s [kPa]	Δp _{max} [kPa]	Δp _s [kPa]	Δp _{max} [kPa]	Δp _s [kPa]	Δp _{max} [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		VXG41.1501	VXG41.1501	15	G 1B	4	1600	800	1600	800	1600	800
	VVG41.20		VXG41.2001	VXG41.2001	20	G 1 1/4 B	6.3	1600	800	1600	800	1600	800
	VVG41.25		VXG41.2501	VXG41.2501	25	G 1 1/2 B	10	1550	800	1600	800	1600	800
	VVG41.32		VXG41.3201	VXG41.3201	32	G 2B	16	875	800	1275	800	1600	800
	VVG41.40		VXG41.4001	VXG41.4001	40	G 2 1/4 B	25	525	525	775	775	1600	800
	VVG41.50		VXG41.5001	VXG41.5001	50	G 2 3/4 B	40	300	300	450	450	1225	800

Union nuts for threaded valves³⁾

Type	G [Inch]	R, Rp [Inch]	Material
Set of 2	Set of 3		
ALG132	ALG133	G 1/2 B	Brass
ALG142	ALG143	G 3/4 B	Brass
ALG122	ALG123	G 3/4 B	Malleable cast iron
ALG152	ALG153	G 1B	Malleable cast iron
ALG152B	ALG153B	G 1B	Brass
ALG202	ALG203	G 1 1/4 B	Malleable cast iron
ALG202B	ALG203B	G 1 1/4 B	Brass
ALG252	ALG253	G 1 1/2 B	Malleable cast iron
ALG252B	ALG253B	G 1 1/2 B	Brass
ALG322	ALG323	G 2B	Malleable cast iron
ALG322B	ALG323B	G 2B	Brass
ALG402	ALG403	G 2 1/4 B	Malleable cast iron
ALG402B	ALG403B	G 2 1/4 B	Brass
ALG502	ALG503	G 2 3/4 B	Malleable cast iron
ALG502B	ALG503B	G 2 3/4 B	Brass
Type	G [Inch]	Ø d [mm]	Material
Set of 2			
ALS152	G 3/4 B	21.3	Steel, weldable
ALS202	G 1B	26.8	Steel, weldable
ALS252	G 1 1/4 B	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				5.5 mm							
– Boiler plants		SAS..		N4581				400 N							
– Domestic hot water										400 N					
– Heating groups								400 N							
– Air handling unit															
PN 16		1...120°C													
Data sheet		N4364		N4464		DN		G [Inch]		k _{vs} [m ³ /h]					
 		VVG44.15.. ¹⁾		 		VXG44.15..		15		G 1B					
VVG44.15..		VVG44.15..		VXG44.15..		15		G 1B		0.25 / 0.4 / 0.63					
VVG44.15..		VVG44.15..		VXG44.15..		15		G 1B		1 / 1.6					
VVG44.15..		VVG44.15..		VXG44.15..		15		G 1B		2.5 / 4					
 		VVG44.20-6.3		 		VXG44.20-6.3		20		G 1¼B					
VVG44.25-10		VVG44.25-10		VXG44.25-10		25		G 1½B		10					
VVG44.32-16		VVG44.32-16		VXG44.32-16		32		G 2B		16					
VVG44.40-25		VVG44.40-25		VXG44.40-25		40		G 2¼B		25					
Typical applications		Actuators		Data sheet				5.5 mm							
– Boiler plants		SSC..		N4895				300 N							
 		VXP45.20-4		 		VXP45.25-6.3		20		G 1B					
VXP45.25-6.3		VXP45.25-6.3		VXP45.25-10		VXP45.25-10		25		G 1¼B					
VXP45.25-10		VXP45.32-16		VXP45.32-16		VXP45.40-25		25		G 1½B					
VXP45.32-16		VXP45.40-25		VXP45.40-25		32		G 2B		16					
VXP45.40-25		VXP45.40-25		VXP45.40-25		40		G 2¼B		25					
Typical applications		Actuators		Data sheet				5.5 mm							
– District heating		SAT..		N4584				300 N							
– Boiler plants															
PN 25		1...130°C				DN		G [Inch]		k _{vs} [m ³ /h]					
Data sheet		N4380													
 		VVG549.15-.. ¹⁾				15		G ¾B		0.25 / 0.4 / 0.63					
VVG549.15-..		VVG549.15-..				15		G ¾B		1 / 1.6 / 2.5					
VVG549.20-4K		VVG549.20-4K				20		G 1B		4					
VVG549.25-6.3K		VVG549.25-6.3K				25		G 1¼B		6.3					

¹⁾.. = insert k_{vs} value

Flanged globe valves

Typical applications	Actuators	Data sheet						Spring return function [s]	800 N	20 mm 1000 N	2800 N	40 mm 2800 N							
		SAX..	N4501	SKD..	N4561	SKB..	N4564	SKC..	N4566										
- District heating - Boiler plants - Chiller plants - Domestic hot water - Heating groups - Air handling units	Operating voltage	Positioning signal	Positioning time [s]			SKD	SKB/C	Spring return function [s]	800 N	20 mm 1000 N	2800 N	40 mm 2800 N							
			SAX	SKD	SKB/C														
	AC 230 V	3-position	120	120	120	-	-	SAX31.00	SAX31.00	SKD32.50	SKB32.50	SKC32.60	SKC32.61						
		3-position	-	120	120	8	10/18	-	-	SKD32.51	SKB32.51	SKC32.51	SKC32.61						
		3-position	30	-	-	-	-	SAX31.03	-	-	-	-	-						
		3-position	-	30	-	8	-	-	SKD32.21	-	-	-	-						
	AC 24 V ¹⁾	3-position	120	120	120	-	-	SAX81.00	SAX81.00	SKD82.50	SKB82.50	SKC82.60	SKC82.61						
		3-position	-	120	120	8	10/18	-	SKD82.51	SKB82.51	SKC82.51	SKC82.61	-						
		3-position	30	-	-	-	-	SAX81.03	-	-	-	-	-						
		0...10 V, 4...20 mA	-	30	120	-	-	-	SKD60	SKB60	SKC60	SKC60	SKC62						
		0...10 V, 4...20 mA	-	30	120	15	10/20	-	SKD62	SKB62	SKC62	SKC62	SKC62						
	AC/DC 24 V	0...10 V, 4...20 mA	30	-	-	-	-	SAX61.03	-	-	-	-	-						
PN 6	-10...130 °C				N4401	DN	k _{vs} [m ³ /h]	Δp_s [kPa]	Δp_{max} [kPa]	Δp_s [kPa]	Δp_{max} [kPa]	Δp_s [kPa]	Δp_{max} [kPa]						
Data sheet	N4401	VVF22.25-.. ²⁾						600	300	600	300	600	300	-					
	VVF22.40-..	VXF22.25-..						550	300	600	300	600	300	-					
	VVF22.50-40	VXF22.40-..						350	300	450	300	600	300	-					
	VVF22.65-63	VXF22.65-63						200	150	250	200	600	300	-					
	VVF22.80-100	VXF22.80-100						125	75	175	125	450	300	-					
	VVF22.100-160	VXF22.100-160						-	-	-	-	-	300	250					
PN 10	-10...150 °C ³⁾																		
Data sheet	N4402	VVF32.15-.. ²⁾						1000	400	1000	400	1000	400	-					
	VVF32.25-..	VXF32.15-..						1000	400	1000	400	1000	400	-					
	VVF32.40-..	VXF32.25-..						550	400	750	400	1000	400	-					
	VVF32.50-40	VXF32.40-..						350	300	450	400	1000	400	-					
	VVF32.65-63	VXF32.65-63						200	150	250	200	700	400	-					
	VVF32.80-100	VXF32.80-100						125	75	175	125	450	400	-					
	VVF32.100-160	VXF32.100-160						-	-	-	-	-	300	250					
	VVF32.125-250	VXF32.125-250						-	-	-	-	-	190	160					
	VVF32.150-400	VXF32.150-400						-	-	-	-	-	125	100					
PN 16	-10...150 °C ³⁾																		
Data sheet	N4403	VVF42.15-.. ²⁾						1600	400	1600	400	1600	400	-					
	VVF42.20-6.3	VXF42.15-..						1600	400	1600	400	1600	400	-					
	VVF42.25-..	VXF42.20-6.3						1600	400	1600	400	1600	400	-					
	VVF42.32-16	VXF42.25-..						900	400	1200	400	1600	400	-					
	VVF42.40-..	VXF42.32-16						550	400	750	400	1600	400	-					
	VVF42.50-..	VXF42.40-..						350	300	450	400	1200	400	-					
	VVF42.65-..	VXF42.50-..						200	150	250	200	700	400	-					
	VVF42.80-..	VXF42.65-..						125	75	175	125	450	400	-					
	VVF42.100-..	VXF42.80-..						-	-	-	-	-	300	250					
	VVF42.125-..	VXF42.100-..						-	-	-	-	-	190	160					
	VVF42.150-..	VXF42.125-..						-	-	-	-	-	125	100					
	VVF42.50-40K	VXF42.150-..						1600	400	1600	400	1600	400	-					
	VVF42.65-63K	VXF42.50-40K						1600	400	1600	400	1600	400	-					
	VVF42.80-100K	VXF42.65-63K						1600	400	1600	400	1600	400	-					
	VVF42.100-160K	VXF42.80-100K						-	-	-	-	-	1600	400					
	VVF42.125-250K	VXF42.100-160K						-	-	-	-	-	1600	400					
	VVF42.150-360K	VXF42.125-250K						-	-	-	-	-	1600	400					
PN 16	-20...220 °C				N4404	DN	k _{vs} [m ³ /h]	Δp_s [kPa]	Δp_{max} [kPa]	Δp_s [kPa]	Δp_{max} [kPa]	Δp_s [kPa]	Δp_{max} [kPa]						
Data sheet	N4404	VVF43.65-50						65	50	-	-	-	-	700	650				
	VVF43.65-63	VXF43.65-50						65	63	-	-	-	-	700	650				
	VVF43.80-80	VXF43.65-63						80	80	-	-	-	-	450	400				
	VVF43.80-100	VXF43.80-80						80	100	-	-	-	-	450	400				
	VVF43.100-125	VXF43.80-100						100	125	-	-	-	-	300	250				
	VVF43.100-160	VXF43.100-125						100	160	-	-	-	-	300	250				
	VVF43.125-200	VXF43.100-160						125	200	-	-	-	-	190	160				
	VVF43.125-250	VXF43.125-200						125	250	-	-	-	-	190	160				
	VVF43.150-315	VXF43.125-250						150	315	-	-	-	-	125	100				
	VVF43.150-400	VXF43.150-315						150	400	-	-	-	-	125	100				
	VVF43.65-63K	VXF43.150-400						65	63	-	-	-	-	1600	800				
	VVF43.80-100K	VXF43.65-63K						80	100	-	-	-	-	1600	800				
	VVF43.100-150K	VXF43.80-100K						100	150	-	-	-	-	1600	800				
	VVF43.125-220K	VXF43.100-150K						125	220	-	-	-	-	1600	800				
	VVF43.150-315K	VXF43.125-220K						150	315	-	-	-	-	1600	800				
	VVF43.200-450K	VXF43.150-315K						200	450	-	-	-	-	1200	800				
	VVF43.250-630K	VXF43.200-450K						250	630	-	-	-	-	1000	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						Spring return function [s]	800 N	20 mm 1000 N	2800 N	40 mm 2800 N				
		SAX..	N4501	SKD..	N4561	SKB..	N4564	SKC..	N4566							
- District heating	SAX..															
- Boiler plants	SKD..															
- Chiller plants	SKB..															
- Domestic hot water	SKC..															
- Heating groups																
- Air handling units																
Operating voltage	Positioning signal	Positioning time [s]			SKD	SKB/C	SKC	SKB/C								
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 °C²⁾															
Data sheet	N4405			N4405					DN	k_{vs} [m³/h]	Δp_s [kPa]	Δp_{max} [kPa]	Δp_s [kPa]	Δp_{max} [kPa]	Δp_s [kPa]	Δp_{max} [kPa]
		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	0.8/11/12.5/2/3.2	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	
		VVF53.200-450K			—	200	450	—	—	—	—	—	—	1200	800	
		VVF53.250-630K			—	250	630	—	—	—	—	—	—	1200	800	
PN 40	-25...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]
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	4000	1600	—	—	
		VVF61.23..25 ⁴⁾			VXF61.24..25 ⁴⁾	25	3/5/7.5 5/7.5	—	—	2250	1600	4000	1600			
		VVF61.39..40 ⁴⁾			VXF61.39..40 ⁴⁾	40	12/19	—	—	—	—	4000	1600			
		VVF61.49..50 ⁴⁾			VXF61.49..50 ⁴⁾	50	19/31	—	—	—	—	4000	1600	—	—	
		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

Control ball valves

Typical applications	Actuators	Data sheet			Spring return function [s]	2 Nm	5 Nm	7 Nm	10 Nm GLB 8 Nm GLD			
- Domestic hot water	GQD..9A	N4659										
- Heating groups	GSD..9A	A6V10636056										
- Air handling units	GDB..9E	A6V10636150										
- Chilled ceilings	GDB111.9E/KN	A6V10725318										
- VAV	GMA..9E	N4658										
- Fan coil units	GLB..9E	A6V10636203										
- Zone control	GLD..9E	A6V11171770										
	Operating voltage	Positioning signal	Positioning time [s]									
			G..D	G..B	GMA							
AC 100...240 V	3-position	—	150	—	—	—	GDB341.9E	—	GLB341.9E			
AC 24 V	KNX S-LTE-Mode, KNX PL-Link	—	150	—	—	—	GDB111.9E/KN	—	GLB111.9E/KN			
AC/DC 24 V	3-position	30	—	90	15	GQD131.9A	—	GMA131.9E	—			
	3-position	—	150	—	—	—	GDB141.9E	—	GLB141.9E			
	0...10 V	30	—	90	15	GQD161.9A	—	GMA161.9E	—			
	0/2...10 V	30	150	—	—	GSD161.9A	GDB161.9E	—	GLB161.9E			
	0/2...10 V	30	—	—	—	—	—	—	GLD161.9E			
PN 40	-10...120 °C			DN	G	k_{vs} [m ³ /h]	Δp_s [kPa]	Δp_{max} [kPa]	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	1400	350
	VAG61.15-..		VBG61.15-..	—	G 1B	1	1400	350	1400	350	1400	350
	VAG61.20-..		VBG61.20-..	20	G 1½B	4/6.3	1400	350	1400	350	1400	350
	VAG61.20-10		VBG61.20-10	—	G 1½B	10	1400	350	1400	350	1400	350
	VAG61.25-10		VBG61.25-10	25	G 1½B	10	1400	350	1400	350	1400	350
	VAG61.25-..		VBG61.25-..	—	G 1½B	6.3/16	1400	350	1400	350	1400	350
	VAG61.32-10		VBG61.32-10	32	G 2B	10	—	—	—	1000	350	1000
	VAG61.32-16		VBG61.32-16	32	G 2B	16	—	—	—	1000	350	1000
	VAG61.32-25		VBG61.32-25	—	G 2B	25	—	—	—	1000	350	1000
	VAG61.40-16		VBG61.40-16	—	G 2¼B	16	—	—	—	800	350	800
	VAG61.40-25		VBG61.40-25	40	G 2¼B	25	—	—	—	800	350	800
	VAG61.40-40		VBG61.40-40	—	G 2½B	40	—	—	—	800	350	800
	VAG61.50-25		VBG61.50-25	—	G 2¾B	25	—	—	—	600	350	600
	VAG61.50-40		VBG61.50-40	50	G 2¾B	40	—	—	—	600	350	600
	VAG61.50-63		VBG61.50-63	—	G 2¾B	63	—	—	—	600	350	600
PN 40	-10...120 °C			DN	Rp [Inch]	k_{vs} [m ³ /h]	Δp_s [kPa]	Δp_{max} [kPa]	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	1400	350
	VAI61.15-..		VBI61.15-..	—	Rp ½	1/10	1400	350	1400	350	1400	350
	VAI61.20-..		VBI61.20-..	20	Rp ¾	4/6.3	1400	350	1400	350	1400	350
	VAI61.20-10		VBI61.20-10	—	Rp ¾	10	1400	350	1400	350	1400	350
	VAI61.25-10		VBI61.25-10	25	Rp 1	10	1400	350	1400	350	1400	350
	VAI61.25-..		VBI61.25-..	—	Rp 1	6.3/16	1400	350	1400	350	1400	350
	VAI61.32-10		VBI61.32-10	32	Rp 1¼	10	—	—	—	1000	350	1000
	VAI61.32-16		VBI61.32-16	32	Rp 1¼	16	—	—	—	1000	350	1000
	VAI61.32-25		VBI61.32-25	—	Rp 1¼	25	—	—	—	1000	350	1000
	VAI61.40-16		VBI61.40-16	—	Rp 1½	16	—	—	—	800	350	800
	VAI61.40-25		VBI61.40-25	40	Rp 1½	25	—	—	—	800	350	800
	VAI61.40-40		VBI61.40-40	—	Rp 1½	40	—	—	—	800	350	800
	VAI61.50-25		VBI61.50-25	—	Rp 2	25	—	—	—	600	350	600
	VAI61.50-40		VBI61.50-40	50	Rp 2	40	—	—	—	600	350	600
	VAI61.50-63		VBI61.50-63	50	Rp 2	63	—	—	—	600	350	600

¹⁾ .. = insert k_{vs} value; VBG61.. / VBI61..: For noiseless operation, the Δp_{max} value of 200 kPa should not be exceeded

6-port control ball valves

Typical applications		Actuators	Data sheet			2 Nm		5 Nm		5 Nm		
- Heated and chilled ceilings		GSD..9A	A6V10636056									
		GDB341.9E	A6V10636150									
		GDB111.9E/KN	A6V10725318									
		GDB161.9E	A6V10636150									
Operating voltage		Positioning signal	Positioning time [s]									
			GSD GDB									
AC 100...240 V		2-position	– 150		–		GDB341.9E		–		–	
AC 24 V		KNX S-/LTE-Mode, KNX PL-Link	– 150		–		–		GDB111.9E/KN		–	
AC/DC 24 V		2-position	30 –		GSD341.9A		–		–		–	
		0/2...10 V	30 150		GSD161.9A		–		–		GDB161.9E	
PN 16 Data sheet	5...90 °C A6V10564480	DN	k_{vs} left [m³/h]	k_{vs} right [m³/h]	Δp_s [kPa]	Δp_{max} [kPa]						
		VWG41.10-0.25-0.4	10	0.25	0.4	–	200	–	200	–	200	–
		VWG41.10-0.25-0.65	10	0.25	0.65	–	200	–	200	–	200	–
		VWG41.10-0.25-1.0	10	0.25	1	–	200	–	200	–	200	–
		VWG41.10-0.25-1.3	10	0.25	1.3	–	200	–	200	–	200	–
		VWG41.10-0.25-1.6	10	0.25	1.6	–	200	–	200	–	200	–
		VWG41.10-0.25-1.9	10	0.25	1.9	–	200	–	200	–	200	–
		VWG41.10-0.4-0.4	10	0.4	0.4	–	200	–	200	–	200	–
		VWG41.10-0.4-0.65	10	0.4	0.65	–	200	–	200	–	200	–
		VWG41.10-0.4-1.0	10	0.4	1	–	200	–	200	–	200	–
		VWG41.10-0.4-1.3	10	0.4	1.3	–	200	–	200	–	200	–
		VWG41.10-0.4-1.6	10	0.4	1.6	–	200	–	200	–	200	–
		VWG41.10-0.4-1.9	10	0.4	1.9	–	200	–	200	–	200	–
		VWG41.10-0.65-0.65	10	0.65	0.65	–	200	–	200	–	200	–
		VWG41.10-0.65-1.0	10	0.65	1	–	200	–	200	–	200	–
		VWG41.10-0.65-1.3	10	0.65	1.3	–	200	–	200	–	200	–
		VWG41.10-0.65-1.6	10	0.65	1.6	–	200	–	200	–	200	–
		VWG41.10-0.65-1.9	10	0.65	1.9	–	200	–	200	–	200	–
		VWG41.10-1.0-1.0	10	1	1	–	200	–	200	–	200	–
		VWG41.10-1.0-1.3	10	1	1.3	–	200	–	200	–	200	–
		VWG41.10-1.0-1.6	10	1	1.6	–	200	–	200	–	200	–
		VWG41.10-1.0-1.9	10	1	1.9	–	200	–	200	–	200	–
		VWG41.10-1.3-1.3	10	1.3	1.3	–	200	–	200	–	200	–
		VWG41.10-1.3-1.6	10	1.3	1.6	–	200	–	200	–	200	–
		VWG41.10-1.3-1.9	10	1.3	1.9	–	200	–	200	–	200	–
		VWG41.10-1.6-1.6	10	1.6	1.6	–	200	–	200	–	200	–
		VWG41.10-1.6-1.9	10	1.6	1.9	–	200	–	200	–	200	–
		VWG41.10-1.9-1.9	10	1.9	1.9	–	200	–	200	–	200	–
		VWG41.20-0.25-2.5	20	0.25	2.5	–	–	–	200	–	200	–
		VWG41.20-0.25-3.45	20	0.25	3.45	–	–	–	200	–	200	–
		VWG41.20-0.25-4.25	20	0.25	4.25	–	–	–	200	–	200	–
		VWG41.20-0.4-2.5	20	0.4	2.5	–	–	–	200	–	200	–
		VWG41.20-0.4-3.45	20	0.4	3.45	–	–	–	200	–	200	–
		VWG41.20-0.4-4.25	20	0.4	4.25	–	–	–	200	–	200	–
		VWG41.20-0.65-2.5	20	0.65	2.5	–	–	–	200	–	200	–
		VWG41.20-0.65-3.45	20	0.65	3.45	–	–	–	200	–	200	–
		VWG41.20-0.65-4.25	20	0.65	4.25	–	–	–	200	–	200	–
		VWG41.20-1.0-2.5	20	1	2.5	–	–	–	200	–	200	–
		VWG41.20-1.0-3.45	20	1	3.45	–	–	–	200	–	200	–
		VWG41.20-1.0-4.25	20	1	4.25	–	–	–	200	–	200	–
		VWG41.20-1.3-2.5	20	1.3	2.5	–	–	–	200	–	200	–
		VWG41.20-1.3-3.45	20	1.3	3.45	–	–	–	200	–	200	–
		VWG41.20-1.3-4.25	20	1.3	4.25	–	–	–	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	–
		VWG41.20-1.6-4.25	20	1.6	4.25	–	–	–	200	–	200	–
		VWG41.20-2.5-2.5	20	2.5	2.5	–	–	–	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	–
		VWG41.20-3.45-3.45	20	3.45	3.45	–	–	–	200	–	200	–
		VWG41.20-4.25-4.25	20	4.25	4.25	–	–	–	200	–	200	–

Fittings for 6-port control ball valves

Type	Description
ALN15.152B	Fittings set made of brass for media temperatures up to 90 °C, consisting of 2x cap nuts
ALN15.202B	2x inserts with external threading per ISO 228-1 2x flat seals
ALG13.152B	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
ALG15.152B	2x cap nuts with sleeves and insert per ISO 7-1
ALG15.202B	2x flat seals
ALG15.252B	

Magnetic valves

Typical applications		Valve type	Operating voltage		Positioning signal		Type suffix	
- District heating		MXF461..	AC/DC 24 V		0...10 V, 2...10 V, 4...20 mA		P ¹⁾	
- Boiler plants		M3P..FY..	AC 24 V		0...10 V, 4...20 mA		P ¹⁾	
- Chiller plants		MVF461H..	AC/DC 24 V		0...10 V, 2...10 V, 0...20 mA, 4...20 mA		-	
- Domestic hot water		MXG461..	AC/DC 24 V		0...10 V, 2...10 V, 4...20 mA		P ¹⁾	
- Heating groups		MXG461B..	AC/DC 24 V		0...10 V, 2...10 V, 0...20 mA, 4...20 mA		-	
- Air handling units		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	1...130 °C		DN	k_{vs} [m³/h]	Δp_s [kPa]	Δp_{max} [kPa]	Note	
Data sheet	N4455							
	MXF461.15-.. ²⁾	15	0.6 / 1.5 / 3	300	300		To be used as 2-port or mixing valves, not as diverting valves.	
	MXF461.20-5.0	20	5	300	300		Selectable valve characteristic: equal-percentage or linear.	
	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	1...180 °C		DN	k_{vs} [m³/h]	Δp_s [kPa]	Δp_{max} [kPa]		
Data sheet	N4361							
	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	1...130 °C		DN	G [Inch]	k_{vs} [m³/h]	Δp_s [kPa]	Δp_{max} [kPa]	
Data sheet	N4455							
	MXG461.15-.. ²⁾	15	G 1B	0.6 / 1.5 / 3	300	300		
	MXG461.20-5.0	20	G 1½B	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	-20...130 °C		DN	G [Inch]	k_{vs} [m³/h]	Δp_s [kPa]	Δp_{max} [kPa]	
Data sheet	N4461							
	MXG461B15-.. ²⁾	15	G 1B	0.6 / 1.5 / 3	1000	1000		
	MXG461B20-5	20	G 1½B	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	1...130 °C		-20...130 °C	DN	G [Inch]	k_{vs} [m³/h]	Δp_s [kPa]	Δp_{max} [kPa]
Data sheet	N4465		N4466					Note
	MXG461S15-1.5	-	15	G 1B	1.5	300	300	To be used as 2-port or mixing valves, not as diverting valves.
	MXG461S20-5.0	-	20	G 1½B	5	300	300	Selectable valve characteristic: equal-percentage or linear. ³⁾
	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

Slipper valves

Typical applications	Actuators	Data sheet	10 Nm	10 Nm
– Boiler plants – Heating groups	SAL..	N4502		
	Operating voltage	Positioning signal	Positioning time [s]	
	AC 230 V	3-position	120	SAL31.00T10
		3-position	30	SAL31.03T10
	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			ASK32N
PN 6	1...120 °C			ASK31N
Data sheet	N4241			
		DN	k_{vs} [m³/h]	Δp_{max} [kPa]
	VBF21.40	40	25	30
	VBF21.50	50	40	30
	VBF21.65	65	63	–
	VBF21.80	80	100	30
	VBF21.100	100	160	30
	VBF21.125	125	550	30
	VBF21.150	150	820	30



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	-10...120 °C			DN	k_{vs} [m³/h]	Δp_s [kPa]		Δp_s [kPa]		
Data sheet	N4131									
	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°					
- Boiler plants - Chiller plants - Cooling towers - Domestic hot water - Heating groups	SAL.. SQL36..	N4502 N4505			20 Nm	40 Nm	40 Nm	100 Nm	400 Nm	1200 Nm
Operating voltage	Positioning signal	time [s]								
AC 230 V	3-position	6 ¹⁾			—	—	—	SQL36E65	—	—
	3-position	12 ¹⁾			—	—	—	SQL36E110	—	—
	3-position	24 ¹⁾			—	—	—	—	—	SQL36E160
	3-position	25		—	—	SQL36E50F04	SQL36E50F05	—	—	—
AC/DC 24 V	3-position	120	SAL31.00T20	SAL31.00T40	—	—	—	—	—	—
	3-position	120	SAL81.00T20	SAL81.00T40	—	—	—	—	—	—
	0...10 V, 4...20 mA	120	SAL61.00T20	SAL61.00T40	—	—	—	—	—	—
PN 16	-10...120 °C		DN	k_{vs} [m³/h]	Δp_s [kPa]					
Data sheet	N4136									
	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	Actuators	Data sheet				Spring return function [s]	2 Nm	7 Nm	10 Nm		
		Operating voltage	Positioning signal	Positioning time [s]			GQD321.9A GSD341.9A	GMA321.9E	-		
- Boiler plants	GQD..9A	N4659				15					
- Chiller plants	GSD..9A	N4655				-					
- Domestic hot water	GMA..9E	N4658				-					
- Heating groups	GLB..9E	A6V10636203				-					
PN 40 Data sheet 	AC 230 V	2-position	30	90	-	15	GQD321.9A	GMA321.9E	-		
		2-position	30	-	-	-	GSD341.9A	-	-		
	AC 100...240 V	2/3-position	-	-	150	-	-	-	GLB341.9E		
	AC/DC 24 V	2-position	30	90	-	15	GQD121.9A	GMA121.9E	-		
		2-position	30	-	-	-	GSD141.9A	-	-		
		2/3-position	-	-	150	-	-	-	GLB141.9E		
	-10...120 °C		DN	G	k_{vs} [Inch]		Δp_s [kPa]	Δp_{max} [kPa]	Δp_s [kPa]	Δp_{max} [kPa]	Δp_s [kPa]
PN 40 Data sheet 	VAG60.15-9	15	G 1B	9		1400	350	1400	350	1400	350
	VAG60.20-17	20	G 1 1/4B	17		1400	350	1400	350	1400	350
	VAG60.25-22	25	G 1 1/2B	22		1400	350	1400	350	1400	350
	VAG60.32-35	32	G 2B	35		-	-	1000	350	1000	350
	VAG60.40-68	40	G 2 1/4B	68		-	-	800	350	800	350
	VAG60.50-96	50	G 2 3/4B	96		-	-	600	350	600	350
	-10...120 °C		DN	G	k_{vs} [Inch]		Δp_{max} [kPa]		Δp_{max} [kPa]		Δp_{max} [kPa]
PN 40 Data sheet 	VBG60.15-8T	15	G 1B	8		350		350		350	
	VBG60.20-13T	20	G 1 1/4B	13		350		350		350	
	VBG60.25-13T	25	G 1 1/2B	13		350		350		350	
	VBG60.32-25T	32	G 2B	25		-		350		350	
	VBG60.40-49T	40	G 2 1/4B	49		-		350		350	
	VBG60.50-73T	50	G 2 3/4B	73		-		350		350	
	-10...120 °C		DN	Rp	k_{vs} [Inch]		Δp_s [kPa]	Δp_{max} [kPa]	Δp_s [kPa]	Δp_{max} [kPa]	Δp_s [kPa]
PN 40 Data sheet 	VAI60.15-15	15	Rp 1/2	15		1400	350	1400	350	1400	350
	VAI60.20-22	20	Rp 3/4	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 1 1/4	35		-	-	1000	350	1000	350
	VAI60.40-68	40	Rp 1 1/2	68		-	-	800	350	800	350
	VAI60.50-96	50	Rp 2	96		-	-	600	350	600	350
	-10...120 °C		DN	Rp	k_{vs} [Inch]		Δp_{max} [kPa]		Δp_{max} [kPa]		Δp_{max} [kPa]
PN 40 Data sheet 	VBI60.15-12T	15	Rp 1/2	12		350		350		350	
	VBI60.20-16T	20	Rp 3/4	16		350		350		350	
	VBI60.25-16T	25	Rp 1	16		350		350		350	
	VBI60.32-25T	32	Rp 1 1/4	25		-		350		350	
	VBI60.40-49T	40	Rp 1 1/2	49		-		350		350	
	VBI60.50-73T	50	Rp 2	73		-		350		350	
	-10...120 °C		DN	Rp	k_{vs} [Inch]		Δp_{max} [kPa]		Δp_{max} [kPa]		Δp_{max} [kPa]
PN 40 Data sheet 	VBI60.15-5L	15	Rp 1/2	5		350		350		350	
	VBI60.20-9L	20	Rp 3/4	9		350		350		350	
	VBI60.25-9L	25	Rp 1	9		350		350		350	
	VBI60.32-13L	32	Rp 1 1/4	13		-		350		350	
	VBI60.40-25L	40	Rp 1 1/2	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.. ¹⁾	AC/DC 24 V	0...10 V, 2...10 V, 0...20 mA, 4...20 mA				Minimum stroke setting	
		MVS661..N ¹⁾	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} [m³/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} [m³/h]	k_{vs} reduced [m³/h]			Δp_{max} [kPa]
Data sheet	N4714								
	MVL661.15-0.4	15	Sleeve	5/8	0.4	0.25			2500
	MVL661.15-1.0	15	Sleeve	5/8	1	0.63			2500
	MVL661.20-2.5	20	Sleeve	7/8	2.5	1.6			2500
	MVL661.25-6.3	25	Sleeve	1 1/8	6.3	4			2500
	MVL661.32-10	32	Sleeve	1 3/8	10	6.3			1600
	MVL661.32-12	32	Sleeve	1 3/8	12	7.6			200
PN 63	-40...120 °C	DN	Connection	Inner Ø [mm]	Outer Ø [mm]	k_{vs} [m³/h]	k_{vs} reduced [m³/h]		Δp_{max} [kPa]
Data sheet	N4717								
	MVS661.25-016N	25	Weldable, solderable	22.4	33.7	0.16	0.1		2500
	MVS661.25-0.4N	25	Weldable, solderable	22.4	33.7	0.4	0.25		2500
	MVS661.25-1.0N	25	Weldable, solderable	22.4	33.7	1	0.63		2500
	MVS661.25-2.5N	25	Weldable, solderable	22.4	33.7	2.5	1.6		2500
	MVS661.25-6.3N	25	Weldable, solderable	22.4	33.7	6.3	4		2500
PN 32	-40...120 °C	DN	Connection	Inner Ø [Inch]	k_{vs} [m³/h]			Liquid Δp_{max} [kPa]	Gas Δp_{max} [kPa]
Data sheet	N4722								
	M3FK15LX06	15	Sleeve	5/8	0.6			200	800
	M3FK15LX15	15	Sleeve	5/8	1.5			200	800
	M3FK15LX	15	Sleeve	5/8	3			200	800
	M3FK20LX	20	Sleeve	7/8	5			200	800
	M3FK25LX	25	Sleeve	1 1/8	8			200	800
	M3FK32LX	32	Sleeve	1 3/8	12			200	800
	M3FK40LX	40	Sleeve	1 1/8	20			200	800
	M3FK50LX	50	Sleeve	2 1/8	30			200	800
PS 43	-40...120 °C	DN	Connection	Inner Ø [Inch]	k_{vs} [m³/h]			Δp_{max} [kPa]	
Data sheet	N4721								
	M3FB15LX06/A	15	Sleeve	5/8	0.6			2200	
	M3FB15LX15/A	15	Sleeve	5/8	1.5			2200	
	M3FB15LX/A	15	Sleeve	5/8	3			2200	
	M3FB20LX/A	20	Sleeve	7/8	5			1800	
	M3FB25LX/A	25	Sleeve	1 1/8	8			1200	
	M3FB32LX	32	Sleeve	1 3/8	12			800	

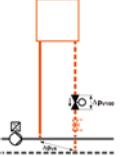
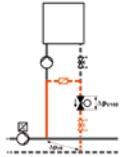
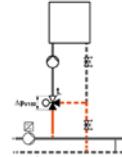
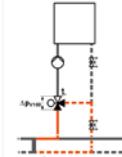
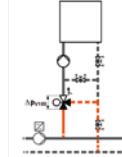
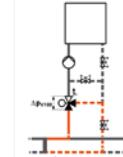
¹⁾ Also available as ATEX Zone 2

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 \dot{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 \dot{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.

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_{vo}		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 \dot{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 resp. $\Delta p_{v100} + \Delta p_{MV}$.
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.
H_{100}	Valve fully open		Stroke of fully open valve.
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.
PS	PS class		Maximum allowable pressure.
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 control, a minimum valve authority of 0.25 is required. $PV \geq 0.5$ is recommended for good controllability.
\dot{Q}_{100}	Rated capacity	kW	Plant's design capacity.
\dot{V}_{100}	Volumetric flow	m^3/h	Volumetric flow with valve fully open (H_{100}).
\dot{V}_{min}	Minimum volumetric flow	m^3/h	Smallest presettable volumetric flow through the fully open combi valve (H_{100}).
c	Specific heat capacity	kJ/kgK	
ρ	Specific density	kg/m^3	

Valve sizing and actuator selection								
Basic hydronic circuit								
1 Determine the type of hydronic circuit	Throttling circuit	Injection circuit with 2-port valve	Mixing circuit	Mixing circuit with fixed premixing	Diverting circuit	Injection circuit with 3-port valve		
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	outdated
Zone control, heating	–	■	–	–	–	–	–	outdated
Heating groups	–	■	■	■	■	■	–	–
Generation of heat energy	–	–	–	■	–	■	–	–
Heat exchanger water-water	■	uncommon	uncommon	–	–	–	uncommon	uncommon
Ventilation and air conditioning plants								
Air handling unit	■	■	■	■	–	–	outdated	outdated
Fan coil unit	■	–	–	–	–	–	outdated	outdated
Cooling coil	dehumidifying	■	–	–	–	–	uncommon	uncommon
Reheating coil	■	■	uncommon	uncommon	uncommon	uncommon	outdated	outdated
Preheating coil	–	■	uncommon	uncommon	uncommon	uncommon	–	outdated
VAV	■	–	–	–	–	–	outdated	outdated
Zone control	■	–	–	–	–	–	outdated	outdated
Chiller plants								
Surface/floor cooling	–	■	–	–	–	–	–	outdated
Generation of cooling energy	–	–	–	■	–	■	–	–
Cooling towers	■	–	–	–	–	–	outdated	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	–	–
Hot water								
Hot water directly	–	■	–	■	–	–	–	–
Header								
Differential pressure header	pressurized	variable	low-pressure	pressureless	low-pressure	pressureless	pressurized	
Volumetric flow	variable	variable	variable	variable	variable	constant	constant	

Valve sizing and selection: k_{vs} valves and actuators

1	Determine the type of hydronic circuit	Throttling circuit	Injection circuit with 2-port valve	Mixing circuit	Mixing circuit with fixed premixing	Diverting circuit	Injection circuit with 3-port valve
Determine volumetric flow \dot{V}							
2	Δp_{VR} or Δp_{MV} typical range typical value	Δp_{VR} 10...200 kPa Use effective Δp_{VR} value	Δp_{VR} 10...200 kPa 3 kPa	2...5 kPa 5...15 kPa	2...5 kPa 3 kPa	5...15 kPa 8 kPa	Δp_{MV} 10...50 kPa eff. value Δp_{MV} 3 kPa
3	Determine Δp_{V100}	$\Delta p_{V100} \geq \frac{\Delta p_{VR}}{2}$ ($P_v \geq 0.5$)				$\Delta p_{V100} \geq \Delta p_{MV}$ ($P_v \geq 0.5$)	
4	Calculate \dot{V}_{100}	Water without anti-freeze	$\dot{V}_{100} = \frac{\dot{Q}_{100}}{1.163 \cdot \Delta T}$			Water with anti-freeze	$\dot{V}_{100} = \frac{\dot{Q}_{100} \cdot 3600}{c \cdot \rho \cdot \Delta T}$
5	Determine k_{vs} value			$k_v = \frac{\dot{V}_{100}}{\sqrt{\frac{\Delta p_{V100}}{100 \text{ kPa}}}}$		$\Rightarrow k_{vs} \geq 0.85 \cdot k_v$ value	
6	Check resulting Δp_{V100}				$\Delta p_{V100} = 100 \cdot \left(\frac{\dot{V}_{100}}{k_{vs}} \right)^2$		
Selection of valve and actuator							
7	Select suitable valve series	1. Type of valve (2-port, 3-port, 3-port with bypass) 2. Connections (flanged, threaded, soldered)		3. PN class 4. Nominal size DN		5. Max. / min. medium temperature 6. Medium	
8	Check valve authority P_v	$P_v = \frac{\Delta p_{V100}}{\Delta p_{VR}} = 0.25 \dots 0.8$		$P_v = \frac{\Delta p_{V100}}{\Delta p_{V100} + \Delta p_{MV}} = 0.25 \dots 0.8$			
9	Select actuator	1. Operating voltage	2. Positioning signal	3. Positioning time	4. Spring return function	5. Auxiliary functions	
10	Check working range	1. Differential pressure $\Delta p_{max} > \Delta p_{vo}$	2. Closing pressure $\Delta p_s > H_0$				
11	Selection	Valve and suitable actuator					

Or just use the Acvatix slide ruler, the online tool for simple valve sizing, to find the right valve with actuator.



Valve sizing and selection: Intelligent Valves, PICVs and actuators

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

Or just install the Combi Valve Sizer on your smartphone to find the right PICV with actuator.



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