

Life Is On

Schneider
Electric



Valves & Actuators Catalog

EMEA/APAC
EcoBuilding | 2019



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Schneider Electric is leading the Digital Transformation of Energy Management and Automation in Homes, Buildings, Data Centers, Infrastructure and Industries.

With global presence in over 100 countries, Schneider is the undisputable leader in Power Management – Medium Voltage, Low Voltage and Secure Power, and in Automation Systems. We provide integrated efficiency solutions, combining energy, automation and software.

In our global Ecosystem, we collaborate with the largest Partner, Integrator and Developer Community on our Open Platform to deliver real-time control and operational efficiency.

We believe that great people and partners make Schneider a great company and that our commitment to Innovation, Diversity and Sustainability ensures that Life Is On everywhere, for everyone and at every moment.

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About This Catalog and Online Resources

Welcome to the Schneider Electric Valves and Actuators Catalog

Superior engineering, product design patents, ISO9001 certification, and Six Sigma lean manufacturing ensure our products conform to the highest standards of internationally recognized quality to deliver solid performance, unsurpassed value and exceptional reliability.

The Exchange Extranet

It is recommended to view this catalog in its electronic PDF version (Acrobat Reader required), from the [Exchange Extranet](#). Explore the **Exchange Extranet** for quick and easy access to as-sets; from software and firmware to technical documentation, as well as sales and marketing collateral.

Note: Installers and technicians should stay updated on the ["Recommendations / Best practices and Hazard Warnings" on page 109](#)

On-line Valve and Actuator Selection Tool

[Product Selection Tool](#)

The Valve and Actuator Selection Tool is a dynamic sizing tool designed to provide a very quick and simple way of choosing the most appropriate product for your application. A wealth of information is at your fingertips with full technical details and quick access to key product documentation.

Sizing and Selection for all HVAC valve and actuators

- Ball Valves
- Butterfly Valves
- Globe Valves
- Pressure Independent Balancing Control Valves
- Zone Valves
- Shoe Valves
- Damper Actuators

Features

- Intuitive selection based on calculators and/or drop down menus
- Customer and partner profiles possible in any schedule creation
- Create a Schedule of hydronic systems using the Valve and Actuator selection feature
- Create own or add to the hydronics a schedule of damper actuators
- Ability to view, edit, change, communicate and adjust schedules. Download completed schedules to Excel, pdf, BOM.
- Save schedules in progress to be worked on later or for use as a template for future projects.

Browser Compatibility

- Chrome (preferred). Use of other browsers may exhibit unintended behaviors.

PRODUCT SELECTION TOOLS: Actuators and Valves

The screenshot displays the 'PRODUCT SELECTION TOOLS: Actuators and Valves' web application. On the left is a dark sidebar with sections for 'Schedule Information' (Created On: 4/26/2018, 1:35:32 PM; Schedule Code: Save Schedule For Code; Last Saved: Not Saved; Save Schedule button), 'Clear Selection' ([clear all]), 'Valve Type' ([clear]), and 'Application Parameters' ([clear]). The main area has tabs for 'Customer Information', 'Valves & Actuators' (selected), and 'Damper Actuators', with a 'Schedule' button on the right. A search bar for 'Enter Schedule Code:' contains 'Optional' and a 'Load' button. Below is a 'Valve Type' section with six product images and checkboxes: Ball Valve, Butterfly Valve, Globe Valve, Pressure Independent Valve, Shoe Valve, and Zone Valve. A top right menu shows 'Language: English' with an 'Info' button, and 'Support/Feedback' and 'User Guide' links.

About This Catalog and Online Resources

MyExchange Sales Mobile App












Bring more “wow” to your customer meetings! MyExchange mobile app enables sales teams to share the latest marketing and sales content via their iOS or Android tablet or mobile phone – on- or off-line – to make meetings and follow up more productive.

With the MyExchange app you can:

- Easily access and view the latest assets (e.g. videos, presentations, specification sheets) while online
- Download assets for availability while offline
- Electronically mark up assets (highlight, pen) and save changes
- Manage a personal “channel” with your own presentation content
- Email assets to others (customers, consultants) and manage sharing activities/history
- Receive news and notifications on updates directly on your device
- To download MyExchange for iOS devices, visit the iTunes® App Store (search for “myexchange Schneider Electric”) or link to (in the U.S.):
 - MyExchange Schneider Electric on the App Store on iTunes.
 - For Android devices, access the app in the Google Play store by searching for ‘myexchange Schneider Electric’. See the Play Store for Android system requirements.

You must self-register on The Exchange before using MyExchange. Register at:
<https://ecobuilding.schneider-electric.com/login-register>



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1. PIBCV Valves and Actuators

Pressure Independent Balancing Control Valves provide the optimum control of fluid flow, unaffected by changes in system pressure. With inherent hydronic system balancing characteristics, PIBCV products provide the ultimate solution for the most energy efficient room temperature control.

Additional benefits of PIBCV include reducing the time taken for system balancing and commissioning.



1. PIBCV Valves and Actuators

VP228E, VP229E, VP220E

The VP228E, VP229E, and VP220E are threaded pressure independent balance and control valves for use in heating and cooling circuits.

- Stable hydronic flow, independent of any change in system pressure.
- Without an actuator, the valve can be operated an automatic balancing valve for flow limiting applications.
- Simple to calculate and adjust to the needed flow setting



DN10-32



DN40-50

Specifications

Pressure Class	PN16
Function	Normally Open / Stem Up
End Connection	External Thread, ISO228/1
Media Temperature	-10...120 °C
Leakage (ISO 5208)	Tight - no visible leakage Max. 0.05% of Q _{nom}
DN10...DN32	
DN40...DN50	
Stroke	
VP228E	2.25 mm
VP229E (DN15...DN20)	4.0 mm
VP229E (DN25...DN32)	4.5 mm
VP220E	10 mm

Materials	DN10...32	DN40...50
Valve body	DZR Brass	GG 25
Control Valve, Cone	Brass CW 614N	Brass CW 614N
Seat	DZR Brass	SS 1.4305
Seals	EPDM	EPDM

DN	Litres/Hour		Litres/Second		Cubic Meters/Hour		ΔP (Q _{nom}) (kPa)	Connection	Part No.		Suitable Actuator	
	Q _{min}	Q _{nom} (100%)	Q _{min}	Q _{nom} (100%)	Q _{min}	Q _{nom} (100%)			Ext. Thread (ISO 228/1)	Without T/P ports		With T/P Ports
DN10	30	150	0.008	0.04	0.03	0.15	16-600	G 1/2A	VP228E-10BQLNT	VP228E-10BQL	MP120 MP130 MP300-SR	
	55	275	0.015	0.08	0.06	0.28			VP228E-10BQSNT	VP228E-10BQS		
DN15	55	275	0.015	0.08	0.06	0.28		G 3/4A	VP228E-15BQLNT	VP228E-15BQL		
	90	450	0.025	0.13	0.09	0.45			VP228E-15BQSNT	VP228E-15BQS		
DN20	180	900	0.050	0.25	0.18	0.90		16-600	G 1A	VP228E-20BQSNT		VP228E-20BQS
	340	1,700	0.094	0.47	0.34	1.70				VP229E-20BQHNT		
DN25	340	1,700	0.09	0.47	0.34	1.70	20-600	G 1 1/4A	VP229E-25BQSNT	VP229E-25BQS		
	545	2,700	0.15	0.76	0.54	2.70			VP229E-25BQHNT			
DN32	640	3,200	0.18	0.89	0.64	3.20	25-600	G 1 1/2A	VP229E-32BQSNT	VP229E-32BQS		
	800	4,000	0.22	1.1	0.80	4.00			VP229E-32BQHNT			
DN40	3,200	7,500	0.8	2.08	3.0	7.5	30-600	G 2A		VP220E-40CQS		MP500C MP500C-SR
DN50	5,000	12,500	1.4	3.47	5.0	12.5	30-600	G 2 1/2A		VP220E-50CQS		

Note: A Higher flow (Q max) is achievable on some sizes by increasing the pressure drop through the valve; please refer to specific technical data sheets.
 ΔP : Differential Pressure Operating range. The differential pressure across the valve must be within the range specified for predictable, stable and fully adjustable flow to the limits detailed within

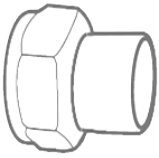
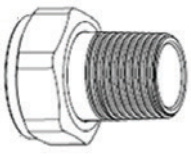
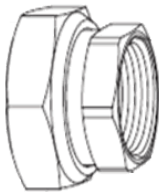
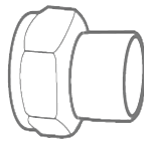
Accessories

Part Number	Description	Quantity per Pack
911 4060 000	Commissioning Label Set / Flow Tag Hanger ID	48

Pipe Connections

The VP228E, VP229E and VP220E have Male threaded end connections for the attachment of various pipe connections.

Pipe connections are supplied in pairs and are typically a two piece + gasket separable design allowing the valve to be removed with minimal disruption to the pipework. On some sizes a one piece + gasket inseparable design is necessary and additional couplings may be required for practical disassembly.

Valve DN	Pipe Connection type	Part Number	Valve Connection	End Fitting Connection
DN10	 <p>Solder</p>	911 2113 010	G1/2	15 mm*
DN15		911 2113 015	G3/4	15 mm
		911 2113 115		22 mm *
DN20		911 2113 020	G1	15 mm
		911 2113 120		22 mm
DN25		911 2113 025	G1.1/4	28 mm
DN32		911 2113 032	G1.1/2	35 mm
DN40		911 2113 040	G2	42 mm
DN50		911 2113 050	G2.1/2	54 mm
DN10		 <p>R taper Male thread</p>	911 2112 010	G1/2
DN15	911 2112 015		G3/4	R 1/2
DN20	911 2112 020		G1	R 3/4
DN25	911 2112 025		G1.1/4	R 1
DN32	911 2112 032		G1.1/2	R 1. 1/4
DN40	911 2112 040		G2	R 1.1/2
DN50	911 2112 050		G2.1/2	R 2
DN10	 <p>Female thread</p>	911 2111 010	G1/2	Rp 1/2*
DN15		911 2111 015	G3/4	Rp 1/2*
DN20		911 2111 020	G1	Rp 1/2
DN25		911 2111 025	G1.1/4	Rp 3/4
DN32		911 2111 032	G1.1/2	Rp 1
DN40		911 2111 040	G2	Rp 1.1/4
DN50		911 2111 050	G2 1/2	Rp 1.1/2
DN20	 <p>Weld</p>	911 2115 020	G1	26.9 mm
DN25		911 2115 025	G1.1/4	33.7 mm
DN32		911 2115 032	G1.1/2	42.4 mm
DN40		911 2115 040	G2	48.3 mm
DN50		911 2115 050	G2.1/2	60.3 mm

* One piece compact design (inseparable); additional coupler may be needed to ease assembly / disassembly. Two end connection sets per pack. Order one pack per valve.

1. PIBCValves and Actuators

VP220F, VP221F, VP222F

The VP220F, VP221F, and VP222F are flanged pressure independent balance and control valves for large flows in heating and cooling circuits.

- Stable Hydronic flow independent of any change in system pressure.
- Without an actuator, the valve can be operated as an automatic balancing valve for flow limiting applications.



Specifications

Pressure Class	PN16
Function	Stem Up Valve Open
End Connection	Flanged PN16, ISO 7005-2
Media Temperature	-20...120 °C
Leakage (ISO 5208)	
DN50...100	0.05 % of Q_{nom}
DN125...250	0.01 % of Q_{nom}

Materials	DN50...100	DN125	DN150...250
Valve body	GG25	GG25	GG25
Seals,		EPDM	
Membranes	EPDM	1.4571	EPDM
Cone	CW 614N	1 (W.Nr.1.4404NC)	1.4021
Seat	1.4305	1.4305	1.4027
Springs	1.4568/1.4310	1.4401	1.4310
Gaskets	NBR	Graphite	Non-asbestos

DN	Litres/Hour		Litres/Second		Cubic Meters/ Hour		ΔP (Q_{nom}) (kPa)	Part Number	Suitable Actuator	
	Qmin	Qnom (100%)	Qmin	Qnom (100%)	Qmin	Qnom (100%)				
DN50	5,000	12,500	1.4	3.5	5.0	12.5	30-600	VP220F-50CQS	MP500C MP500C-SR	
DN65	8,000	20,000	2.2	5.6	8.0	20.0	30-600	VP220F-65CQS		
	10,000	25,000	2.8	6.9	10.0	25.0	60-600	VP220F-65CQH		
DN80	11,200	28,000	3.1	7.8	11.2	28.0	30-600	VP220F-80CQS		
	16,000	40,000	4.4	11.1	16.0	40.0	60-600	VP220F-80CQH		
DN100	15,200	38,000	4.2	10.6	15.2	38.0	30-600	VP220F-100CQS		
	23,600	59,000	6.6	16.4	23.6	59.0	60-600	VP220F-100CQH		
DN125	36,000	90,000	10.0	25.0	36.0	90.0	60-600	VP221F-125CQS		MP2000 MP2000-SR
	44,000	110,000	12	31	44	110	60-600	VP221F-125CQH		
DN150	58,000	145,000	16	40	58	145	40-600	VP221F-150CQS		
	76,000	190,000	21	53	76	190	60-600	VP221F-150CQH		
DN200	76,000	200,000	21	56	76	200	40-600	VP222F-200CQS	MP4000	
	100,000	270,000	28	75	100	270	60-600	VP222F-200CQH		
DN250	112,000	300,000	31	83	112	300	40-600	VP222F-250CQS		
	148,000	370,000	41	103	148	370	60-600	VP222F-250CQH		

Accessories, Stem Lock Handles

Converts a standard PIBCValve to automatic flow regulation valve / flow controller which provides a fixed flow against varying pressure. Stem Lock Handle are fitted in replacement of an actuator.

*DN10-32 valves are supplied with a plastic flow setting cap for the same purpose.

Part Number	Valve Size
911 4070 000	DN40...100
911 4071 000	DN125...150
911 4072 000	DN200...250

MP130 Actuators

The MP130 is a family of compact and low power motoric actuators that drive the DN10...32 SmartX PIBCV in various hydronic HVAC applications.

The modulating actuators have fine positional control and are self-calibrating to the adjustable stroke/flow setting in the VP228E and VP229E valves which provide optimal hydronic control.

- Low Noise Operation
- Overload Protection
- Manual override in all models



Specifications

Close off force	130 N	Relative humidity	max. 95 %
Stroke	5 mm	Enclosure rating	IP 42
Max. medium temperature	120 °C	Weight	0.3 kg
Environment			
Operating Temperature	0... 55 °C		
Storage / transportation	-40 ...70 °C		

Part Number	Control Signal (Y)	Speed (s/mm)	Position Feedback (U)	Cable Length (m)	Voltage (50/60 Hz)	Power consumption running (standby)
MP130-24M	0 (2)...10 Vdc	24	-	1.5	24 Vac	2 VA (.5 w)
MP130-24M-10M				10		
MP130-24MP			0 (2)...10 Vdc	1.5		1.5 VA (.4 W)
MP130-24MP-10M				10		
MP130-24T	two-position	12	-	1.5	230 Vac	1 VA
MP130-230T					8 VA	
MP130-24F	floating	24	-	10	24 Vac	1 VA (0W)
MP130-24F-10M					230 Vac	8 VA (0W)
MP130-230F				1.5		

Note: Actuators with 5 m and 10 m cable length are produced on request. Please note this increases lead time.

1. PIBCV Valves and Actuators

MP120/MP140

MP120NC and MP140NO are small thermoelectric valve actuators in zone applications for two-point and pulse-width-modulated (PWM) regulation of the SmartX PIBCV valves, from DN10...DN32. The MP120 has a manual override operation for easy flushing.

- Water-protected housing design in all mounting positions
- Pluggable cable for easy installation and servicing
- Low power consumption – allowing many actuators to be driven from the same controller
- Visual indicator showing valve position and type of action (NO or NC)



MP120 NC



MP140 NO

Specifications

Power supply	
MP120xx-24T:	24 Vac/Vdc ± 20%
MP120xx-230T:	230 Vac + 10%...15%
Power consumption	2 W
Environment	
Operating Temperature	Max. 50 °C
Protection standard	IP44 in all mounting positions
Cable length (standard)	1.5 m
Cable size	2 x 0.5 mm ²
Medium temperature	Max. 120 °C
Valve connection	M30 x 1.5

Stroke Range	
MP120NC	8 mm
MP140NO	4 mm

Part Number	Action	Voltage	Operational Flow Range	
			VP228E	VP229E
MP120NC-24T	Normally Closed (Stem Down)	24 Vac/Vdc	20-120%	20-110%
MP120NC-230T		230 Vac		
MP140NO-24T	Normally open (Stem Up)	24 Vac/Vdc	20-120%	20-80%
MP140NO-230T		230 Vac		

MP140NO is limited to 80% of Q_{nom} on VP229E

MP300-SR

MP300-SR actuators with Floating and Proportional control are low voltage motoric actuators for the Smart X PIBCV DN10-32 Valves. These actuators have a spring return safety function that provides for an open or close valve in the event of power loss. The Spring return safety function should not be used for two-position control.



Specifications

Power supply	24 V; +10...-15 %; AC
Frequency	50/60 Hz
Power consumption	9 VA
Control input Y	0...10 (2...10) V 0...20 (4...20) mA
Output signal U	0...10 (2...10) V
Speed	11.75 (50 hz) s/mm
Max. medium temperature	120 °C
Environment	
Operating Temperature	0...55 °C
Enclosure rating	IP 54
Weight	0.8 kg

Part Number	Spring Return Direction	Linkage type (included with actuator)
MP300-SRU	Up - Normally Open	Adapter
MP300-SRD	Down - Normally Closed	Spacer

1. PIBCV Valves and Actuators

MP500C

MP500C linear electro-mechanical actuator for the control of the VP220 SmartX PIBCV, DN40...100.

MP500C is controls either by an increase/decrease floating signal or by a range of modulating control signals between the span of 0...10 V.

- High resolution control for precise fluid control.
- Working range and end point switches calibrate to any stroke and flow setting of the valve.
- Fixed proportional running time of 15s regardless of valve stroke.



- Multi-signal control for either 3-point increase/decrease signal or various modulating control signals including sequencing.
- Stroke Indicators on the yoke provide clear visual indication to the valves opening position.

Specifications

Supply Voltage	24 Vac +/- 10%, 50...60Hz 24 Vdc +/- 15%
Power consumption	average 15 VA
Transformer sizing	50 VA
Running time	
Modulating	15 s
Increase/decrease	300 s/60 s
Duty cycle	max. 20%/60 minutes
Analog input (Y-M)	
Voltage Range	0...10 Vdc
Selectable Input signals	2...10 V, 0...5 V, 2...6 V, 5...10 V, 6...10 V
Impedance	minimum 100 k Ohm
Digital input (Y2-Y1)	
Voltage across open input	24 Vac
Current through closed input	5 mA
Minimum Pulse time	20 ms

Output U (Position Feedback Signal)	2...10 V
Load	2 mA
Wiring Entry	
Conduit connection	2 x M20 knockout
Cable gland	1 x 6..12 mm O/D
Environment	
Operating Temperature	-10...+50 °C
Storage temperature	-25...+65 °C
Humidity	max. 90% RH non-condensing
Enclosure rating	IP 54 (NEMA 2)
Sound power level	max. 32 dBA
Material	
Housing	Aluminium
Cover	ABS/PC plastic
Color	aluminium/grey
Weight	1.8 kg (3.96 lb.)

Part Number	Description	SmartX Valve
MP500C	Forta Multi-signal control actuator	DN40-100
880 0104 000	S2 (Aux End Switch)	

MP500C-SR

The MP500C-SR is spring return linear electro-mechanical actuator for the control of the VP220 SmartX PIBCV, DN40-100.

- Universal control input and self calibrating to any valve setting.
- High resolution control board allows precise fluid control.
- Working range and end point switches calibrate to any stroke and flow setting of the valve.
- A proportional set running time of 15s regardless of valve stroke.
- Stroke Indicators on the yoke provide clear visual indication to the valves opening position.



Specifications

MP500C-SRU	Stem up (retract)
MP500C-SRD	Stem down (extend)
Voltage supply	24 Vac \pm 10% 50-60Hz
Power consumption	
Running	30 VA (21 W)
Rest	7 W
Running Time	
Modulating	15 sec.
Increase/decrease	60/300 sec. (selectable)
Spring return	13 sec.
Transformer Sizing	50 VA
Stroke Range	2...35 mm
Force, nominal	500 N
Analog input Voltage range	0...10 Vdc
Selectable input signals	0...10, 2...10, 0...5, 2...6, 5...10, 6...10 Vdc
Digital inputs, Y1, Y2	
Voltage across open input	24 Vac
Current through closed input	5 mA
Minimum Pulse time	20 ms

Output, Y (Feedback)	2...10 Vdc or 0...5 Vdc (0-100%) - Load 2 mA
Wiring Entry	
Conduit connection	4 x M20 capped holes
Cable gland	1 x 6..12 mm O/D, IP68
Environment	
Operating and Storage Temperature	-10 / +50 °C
Humidity	max 90% RH
Enclosure rating	IP54
Sound power level	43 dBa
Max cable core diameter	2.5 mm ²
S2 Auxillary Switch Relay (optional accessory)	SPDT, 24 Vac 4A AC1 (contacts made at 5% and 95% of end stroke)
Weight	2.8 Kg

Part Number	Description	Function on Power Failure	SmartX Valve
MP500C-SRU	Spring return (stem up)	Valve Open	DN40...100
MP500C-SRD	Spring return (stem down)	Valve Closed	
880 0104 000	S2 auxiliary end point switches		

1. PIBCV Valves and Actuators

MP2000

MP2000 actuator is used with pressure independent balancing and control large valve type SmartX PIBCV DN125 and DN150. The actuator has universal control inputs and is self-calibrating.

- Over load protected.
- Diagnostic LED for operational data capture and self-stroking feature.
- Manual override.



Specifications

Power supply	24 Vac, +10...-15%
Power consumption	9 VA
Frequency	50 / 60 Hz
Control signal input	Modulating and 3 Point floating
Control input Y	0...10 V (2...10) Ri = 24 kΩ 0...20 mA (4...20) Ri = 500 Ω
Output signal X	0...10 V (2...10)
Speed	8 s/mm
Max. medium temperature	200 °C

Environment	
Operating	0...55 °C
Storage / transp. temp	-40...+70 °C
Protection class	III safety extra-low voltage
Enclosure rating	IP 54
Weight	7.5 kg

Part Number	Description	SmartX Valve
MP2000	Multi-signal Actuator, Fail in place	DN125...150

MP2000-SR

The MP2000-SR is a spring return actuator used with the DN125...150 SmartX PIBCV.

The actuator has universal control inputs and is self-calibrating .

- Manual operation mechanical and/or electrical
- Position indication, LED signalization
- Selectable speed 4 or 6 s/mm
- Integrated external switch
- Linear to EQ% Curve Adaptation
- Anti-oscillation function
- 3-point floating or modulating control selection
- Thermal and overload protection
- Precise regulation and fast response on 3-point signal (0.01 s)

Specifications

Nominal voltage	24 Vac/Vdc, 50 Hz/60 Hz
Power consumption	15 VA
Control input signal	Modulating or 3-point floating
Control input Y	0...10 V (2...10 V) Ri = 24 kΩ 0...20 mA (4...20 mA) Ri = 500 Ω
Position Feedback U	0...10 V (2...10 V)
Speed (selectable)	4 or 6 s/mm
Environment	
Operating Temperature	0...+ 55 °C



Enclosure rating	IP 54
Weight	8.6 kg
Safety function runtime/50 mm stroke	120 s
Manual operation	Electrical and Mechanical

Part No.	Spring Return Direction	SmartX Valve
MP2000-SRU	Stem UP, retracts (valve open)	DN125...150
MP2000-SRD	Stem Down, extends (valve closed)	

MP2000-SR-230

The MP2000-SR-230 is a line voltage spring return actuator for the DN125...150 SmartX PIBCV.

The actuator has universal control inputs and is self-calibrating.

- Manual operation mechanical and/or electrical
- Position indication, LED signalization
- Integrated external switch
- 3-point or modulating control selection



Specifications

Nominal voltage	230 Vac, 50 Hz/60 Hz
Control input signal	Modulating or 3-point
Control input Y	0...10 Vdc (2...10) 0...20 mA (4...20) 3-point
Control output U	0...10 Vdc (2...10) 0...20 mA (4...20)
Speed (selectable)	2 or 6 s/mm
Temperature Operating	0...+ 55 °C

Humidity	5...95%
Enclosure rating	IP 54
Power consumption	35.7 VA
Weight	8.6 Kg
Safety function runtime/50 mm stroke	120 s.
Manual operation	Electrical and Mechanical

Part Number	Description	SmartX Valve
MP2000-SRU-230	Stem Up (Valve Open)	DN125...DN150
MP2000-SRD-230	Stem Down (Valve Closed)	

MP4000

The MP4000 is a powerful universal control actuator for the DN200 and DN250 Smart X PIBCV.

- Universal input control and self-calibrating.
- Manual operation mechanical and/or electrical
- Position indication, LED signalization
- Integrated external switch
- Characteristic optimization
- 3-point floating or modulating control selection
- Thermic and overload protection
- Precise regulation and fast response on 3-point signal (0.01 s)



Specifications

Power supply	24 Vac/Vdc (+10, -15%)
Power consumption	15 VA
Signal	10 mA
Frequency	50/60 Hz
Control input Y	0...10 Vdc (2...10 Vdc); 0...20 mA (4...20 mA)
Control output U	0...10 Vdc (2...10 Vdc); 0...20 mA (4...20 mA)
Speed (selectable)	3 s/mm or 6 s/mm
Max. spindle travel	80 mm
Max. medium temperature	200 °C

Environment	
Ambient Temperature	0...+ 55 °C
Storage / transport Temperature	-40...+70 °C
Humidity	5...95%
Protection class	II
Enclosure rating	IP 54, Type 2
Electrical connection	conduit
Weight	7.5 Kg
Manual operation	Electrical and mechanical
Power failure response	Stem remains in last position

Part Number	Description	SmartX Valve
MP4000	Multi-signal control, Fail in place	DN200-250

2. Zone Valves and Actuators



EPC 1089

COL
E6

2. Zone Valves and Actuators

Zone valves provide hydronic flow control in terminal units such as fan coils. A comprehensive range of products is provided with a large selection of capacities, connection types and choice in electrical actuator control.



2. Zone Valves and Actuators

VZ*08*

The VZ*08* short stroke (2.5 mm) zone valves are small linear valves designed for control of hot and chilled water in fan coils or other terminal unit applications.

These particular valves are designed to be used with thermo-electric actuators type MZ140, which is available in an on/off or a modulating variant.



VZ*08E

VZ*08C

Specifications

Valve types	2-way, 3-way, 3-way with bypass
Pressure class	PN16
Stroke	2.5 mm
Max fluid speed	3 m/s
Media	Water, water+glycol (30% max)
Temperature Range	5...95 °C

Leakage	0% tight close-off
Main Construction Materials	
Valve body	Brass (CW617N)
Trim	Glass reinforced PPS
Stem	Stainless steel (AISI 303)
Stem packing	Double EPDM O-ring
Plug sealing	EPDM

		VZ*08E		VZ*08C				
		Flat face		Compression*		Max Close-off (kPa) MZ140		
2-way valves								
Size	Kvs	Part Number	Connection	Part Number	Connection	A-AB		
DN15	0.25	VZ208E-15BP01	G1/2A	VZ208C-15BP01	15 mm	400		
	0.4	VZ208E-15BP02		VZ208C-15BP02				
	0.6	VZ208E-15BP03		VZ208C-15BP03				
	1	VZ208E-15BP04		VZ208C-15BP04				
	1.6	VZ208E-15BP05		VZ208C-15BP05				
DN20	2.5	VZ208E-20BP07	G3/4A	VZ208C-20BP07	22 mm	250		
	4	VZ208E-20BP08				150		
	6	VZ208E-20BP09						
3-way valves								
	Kvs		Part Number	Connection	Part Number	Connection	A-AB	B-AB
	A-AB	B-AB						
DN15	0.25	0.25	VZ308E-15BP01	G1/2A	VZ308C-15BP01	15 mm	400	400
	0.4	0.4	VZ308E-15BP02		VZ308C-15BP02			
	0.6	0.6	VZ308E-15BP03		VZ308C-15BP03			
	1	0.8	VZ308E-15BP04		VZ308C-15BP04			
	1.6	1	VZ308E-15BP05		VZ308C-15BP05			
DN20	2.5	1.6	VZ308E-20BP07	G3/4A	VZ308C-20BP07	22 mm	100	40
	4	2.5	VZ308E-20BP08					
	6	4	VZ308E-20BP09					
3-way valves with integral by-pass (4 ports)								
DN15	0.25	0.25	VZ408E-15BP01	G1/2A	VZ408C-15BP01	15 mm	400	400
	0.4	0.4	VZ408E-15BP02		VZ408C-15BP02			
	0.6	0.6	VZ408E-15BP03		VZ408C-15BP03			
	1	0.8	VZ408E-15BP04		VZ408C-15BP04			
	1.6	1	VZ408E-15BP05		VZ408C-15BP05			
DN20	2.5	1.6	VZ408E-20BP07	G3/4A	VZ408C-20BP07	22 mm	100	40
	4	2.5	VZ408E-20BP08					
	6	4	VZ408E-20BP09					

* Nuts and Olives supplied with Valve

MZ140

MZ140 thermo-electric actuators are wax filled actuators that are silent in operation, providing either on/off or modulating control for the VZ*08* zone valves.



MZ140-24T



MZ140-24M

Specifications

Environment	
Operating Temperature	2...50 °C
Storage Temperature	-10...60 °C
Stem force	140N
Max stroke	
MZ140-24T / 230T	4 mm
MZ140-24M	2.5 mm

Coupling ring	M30 x 1.5
Power cable	2m bipolar (0.75 mm ²)
Main Construction Materials	
Fire-resistant case	Class V0
Protection class	IP 44 (for vertical mounting)

Part Number	Full Type Designation	Cable Length	Control signal	Power	Power consumption	Initial consumption
					VA	A
MZ140-230T	MZ140-110/230T 2M44 00	2m	On/Off	110-230 Vac	1.8	0.25
MZ140-24T	MZ140-24T 2M44 00			24 Vac/Vdc		0.17
MZ140-24T-5M	MZ140-24T 5M44 00	5m				
MZ140-24T-10M	MZ140-24T 10M44 00	10m				
MZ140-24M	MZ140-24M 2M44 00	2m	0...10 V modulating	24 Vac		0.2

Connections for VZ*08 Series Zone Valves									
	Connection type	Pipe size	DN	a	c (mm)	d	e	Part Number	Pack quantity
	Flat Face External thread to Solder*	12 mm 15 mm	15 20	G 1/2 G 3/4	12 15	-	-	911 2076 000 911 2077 000	1
	External Thread	R 3/8" R 1/2"	15 20	G 1/2 G 3/4	-	R 3/8 R 1/2	-	911 2078 010 911 2079 010	10
	Flat face external thread to compression*	15 mm 22 mm	15 20	G 1/2 G 3/4	-	-	15 22	911 2080 000 911 2081 000	1
	Compression Capnut and olive	15 mm 20 mm	15 20	G1/2A Whitworth 1 1/8" - 14	-	-	15 22	911 2082 000 911 2083 000	10

*One fitting required per valve port.

2. Zone Valves and Actuators

VZ*19*

These long stroke (5.5 mm) small linear zone valves are designed for the regulation in flow of hot and chilled water in fan coils or other terminal unit applications.

These particular valves are designed to be used with the compact electro-mechanical actuators type MZ20.



VZ*19E

VZ*19C

Specifications

Pressure class	PN16
Stroke	5.5 mm
Max fluid speed	3 m/s
Media temperature range	2...95 °C
Max. Glycol concentration	30%
Flow Characteristics	
On direct (A-AB) way	Equal percentage
On by-pass (B-AB) way	Linear

Leakage	0% tight close-off
Rangeability	50:1
Main Construction Materials	
Valve body	Brass (CW617N)
Trim	Glass reinforced PPE
Stem	Stainless steel (AISI 303)
Stem packing	Double EPDM O-ring
Plug sealing	EPDM

		VZ*19E			VZ*19C			
		Flat face external thread			Compression End Connection*	Max Close-off (kPa) MZ20		
2-way valves								
Size	Kv	Part Number	Connection	Part Number	Connection	A-AB		
DN15	0.25	VZ219E-15BP01	G1/2A	VZ219C-15BP01	15 mm	400		
DN15	0.4	VZ219E-15BP02		VZ219C-15BP02		350		
DN15	0.6	VZ219E-15BP03		VZ219C-15BP03				
DN15	1	VZ219E-15BP04		VZ219C-15BP04				
DN15	1.6	VZ219E-15BP05		VZ219C-15BP05				
DN15	2	VZ219E-15BP06		VZ219C-15BP06				
DN20	2.5	VZ219E-20BP07	G3/4A	VZ219C-20BP07	22 mm	250		
DN20	4	VZ219E-20BP08				150		
DN20	6	VZ219E-20BP09						
3-way valves								
	Kvs		Part Number	Connection	Part Number	Connection	A-AB	B-AB
	A-AB	B-AB						
DN15	0.25	0.25	VZ319E-15BP01	G1/2A	VZ319C-15BP01	15 mm	400	400
DN15	0.4	0.25	VZ319E-15BP02		VZ319C-15BP02			
DN15	0.6	0.4	VZ319E-15BP03		VZ319C-15BP03			
DN15	1	0.6	VZ319E-15BP04		VZ319C-15BP04			
DN15	1.6	1	VZ319E-15BP05		VZ319C-15BP05			
DN15	2	1.6	VZ319E-15BP06		VZ319C-15BP06			
DN20	2.5	1.6	VZ319E-20BP07	G3/4A	VZ319C-20BP07	22 mm		
DN20	4		VZ319E-20BP08				100	40
DN20	6		VZ319E-20BP09					
3-way valves with integral by-pass (4 ports)								
DN15	0.25	0.25	VZ419E-15BP01	G1/2A	VZ419C-15BP01	15 mm	400	400
DN15	0.4	0.25	VZ419E-15BP02		VZ419C-15BP02			
DN15	0.6	0.4	VZ419E-15BP03		VZ419C-15BP03			
DN15	1	0.6	VZ419E-15BP04		VZ419C-15BP04			
DN15	1.6	1	VZ419E-15BP05		VZ419C-15BP05			
DN15	2	1.6	VZ419E-15BP06		VZ419C-15BP06			
DN20	2.5	1.6	VZ419E-20BP07	G3/4A	VZ419C-20BP07	22 mm		
DN20	4		VZ419E-20BP08				100	40
DN20	6		VZ419E-20BP09					

*Nuts and olives supplied with the compression end connection valve

MZ20

The long stroke MZ20 is an electro-mechanical zone valve actuator designed for use with the VZ*19* valves.

The actuator provides precise valve position and flow for good hydronic control.

Reliable long term operation is provided by the optimal design without feedback potentiometer or end switches.



Specifications

Input voltage	24 Vac, 50/60 Hz
MZ20A	24 Vac or 230 Vac 50/60 Hz
MZ20B	
Power consumption	
MZ20A	1 VA
MZ20B-24	0.7 VA
MZ20B-230	5 VA
Speed	18 s/mm (50 Hz)...15 s/mm (60 Hz)
Temperature	
Working	-5...+55 °C
Storage	-25...+65 °C
Stem force	200 N
Max stroke	5.5 mm
Connection cable	3 wires 1.5 m
Protection class	IP 43 (for vertical mounting)

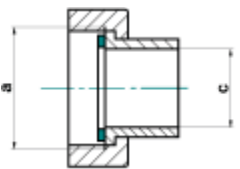
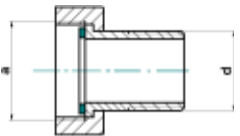
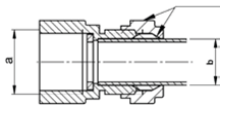
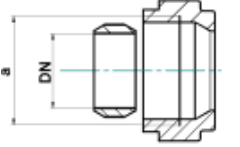
MZ20A/B zone valve actuator for VZ*19 valves

Part Number	Description	Control
845 5051 000	MZ20A	Selectable*
845 5052 000	MZ20A-R	0...10 V
845 5001 000	MZ20B-24	3P-24 Vac
845 5003 000	MZ20B-230	3P-230 Vac

* 0...10 V, 6...9 V, 1...5 V, 2...10 V, 4...7 V, 6...10 V, 8...11 V

Accessory

Part Number	Description
911 6006 000	6m 24V pluggable cable pack, 10 pieces

Connections for VZ*19 Series Zone Valves									
	Connection type	Pipe size	DN	a	c (mm)	d	e	Part Number	Pack quantity
	Flat Face External thread to Solder *	12 mm 15 mm	15 20	G 1/2 G 3/4	12 15	-	-	911 2076 000 911 2077 000	1
	External Thread	R 3/8" R 1/2"	15 20	G 1/2 G 3/4	-	R 3/8 R 1/2	-	911 2078 010 911 2079 010	10
	Flat face external thread to compression*	15 mm 22 mm	15 20	G 1/2 G 3/4	-	-	15 22	911 2080 000 911 2081 000	1
	Compression Capnut and olive	15 mm 20 mm	15 20	G1/2A Whitworth 1 1/8" - 14	-	-	15 22	911 2082 000 911 2083 000	10

*One fitting required per valve port.

2. Zone Valves and Actuators

Erie VT Zone Valve

The industry leading Erie Zone valve is suitable for on/off control of hot and chilled water in terminal unit applications.

High flow capacity paddle design and the unique 'pop-top' actuator connection allows for a quick and simple installation.



Specifications

Media	Hot and chilled water
Media temperature	0...93 °C
Glycol Concentration	50%
Pressure class	300 psi (PN20)
Seat Leakage	0.01% (ANSI class IV)

ΔPm	100kPa
Main Construction Materials	
Valve body	Forged Brass
Stem	Nickel-plated Brass
Seat	Brass
Paddle/ Stem o-rings	Buna-N/EPDM

2-way Valves				
Thread	Kvs	Part Number	Max ΔP (kPa) AG...Actuators	Max ΔP (kPa) AH...Actuators
Rp 1/2	0.85	VT2231	410	515
	2.2	VT2232	275	340
	3.0	VT2233	170	205
Rp 3/4	2.2	VT2332	275	340
	3.0	VT2333	170	205
	4.3	VT2335	135	170
	6.5	VT2337	115	135
Rp 1	6.9	VT2437		

3-way valves				
Thread	Kvs	Part Number	Max ΔP (kPa) AG...Actuators	Max ΔP (kPa) AH...Actuators
Rp 1/2	1.3	VT3231	410	515
	2.6	VT3232	275	340
	3.5	VT3233	170	205
Rp 3/4	2.6	VT3332	275	340
	3.5	VT3333	170	205
	4.3	VT3335	135	170
	6.5	VT3337	115	135
Rp 1	6.9	VT3437		

Erie AG/AH Zone Actuator

The AG (General Close Off) and AH (High Close Off) actuators are spring return, two-position actuators for coupling to the VT series valves.

The Pop-top connection allows for quick and simple assembly, all Normally Closed actuators feature a manual override lever.



Specifications

Supply Voltage	24 Vac @ 50/60 Hz 230 Vac @ 50 Hz
Power Consumption	6.5 watts, 7.5 VA
End Switch	24...240 Vac (101 mA min...5 A) 9-30 Vdc (100 mA max.)
Control Signal	On/Off, 2 position, spring return
Full Running time	30 Sec (50 Hz) 9 Sec (S.R. function)
Enclosure	IP31
Main Construction Materials	
Base Plate	Stainless Steel
Cover	Aluminium
Environment	
Shipping and Storage	-40...71 °C
Operating Temperature	40°
Humidity	5...95% RH, non-condensing

General Close-Off Actuator					
Part Number	Voltage	End Switch	Control	Spring Return Valve Function	Cable
AG13A230	24 Vac	-	On/Off	Normally Closed	910 mm (36")
AG13A23A		yes			
AG13U230	230 Vac	-			
AG13U23A		yes			
AG23A230	24 Vac	-		Normally Open	
AG23A23A		yes			
AG23U230	230 Vac	-			
High Close-Off Actuator					
AH13A230	24 Vac	-	On/Off	Normally Closed	910 mm (36")
AH13U230	230 Vac	-			
AH13U23A		yes			



3. Radiator Valve Actuators

Our selection of short stroke valve actuators is designed for BMS automation of fluid control in radiators and under floor heating manifolds. The Schneider Electric range provides a dependable discreet design in every variant.



3. Radiator Valve Actuators

MR95

The MR95 is a small thermoelectric linear radiator valve actuator used in room applications for time-controlled two-point (On/Off) and pulse-width-modulated (PWM) regulation radiators or underfloor heating manifolds.

The MR95 is a discreet design actuator suitable for living space installations.



Specifications

Max. stroke	4 mm
Supply voltage	MR95xx-24T: 24 Vac/Vdc \pm 20% MR95xx-230T: 230 Vac +10%-15%
Stem force	95 N
Temperature Range	Max. 50 °C
Power consumption	2 W
Protection standard	IP44 in all mounting positions
Cable length (standard)	1.0 m
Cable size	2 x 0.5 mm ²
Medium temperature	Max. 120 °C
Radiator connection	M30 x 1.5

Part Number	Type Designation	Action ¹	Voltage
MR95NC-24T	MR95-NCD-24T 1.0M44 00	Normally closed (stem down)	24 Vac/Vdc
MR95NO-24T	MR95-NOU-24T 1.0M44 00	Normally open (stem up)	
MR95NC-230T	MR95-NCD-230T 1.0M44 00	Normally closed (stem down)	230 Vac
MR95NO-230T	MR95-NOU-230T 1.0M44 00	Normally open (stem up)	

1- Without power, in combination with standard radiator valve.

"Normally Closed" = Actuator stem extends downward without power closing the valve, retracts when powered to open the valve.

"Normally Open" = Actuator stem retracts upward without power opening the valve, extending when powered to close the valve.

Accessories

Part Number	Description
911 4202 500	Additional cable set 2.5M, 10 pcs
911 4205 000	Additional cable set 5M, 10 pcs
911 4210 000	Additional cable set 10M, 10 pcs

Compatible Radiator Valves

Manufacturer	Type
Drayton	TRV 4
Honeywell	M30x1.5, all
Empur	M30x1.5
Heimeier	
Junkers	
Oventrop	
Siemens	Duogyr, M30x1.5
TA	M30x1.5 ²

2 - Some older TA valves are M28 and not suitable for the MR95.

MZ09L

The MZ09L LON® actuator is designed for decentralised building structures and gives customers an effective new capability in energy management and product flexibility. The actuator works with standard SNVTs to provide interoperability with controllers based on LonWorks® technology.

The MZ09L small linear actuator is specifically designed to provide LonMark® capabilities together with radiator valves and is used in fan coil units, induction units, small reheaters and recoolers, and for zone control applications. The MZ09L actuator is suitable for LonWorks technology. Using standard Echelon configuration tools, the actuator can be configured with job specific settings.

Specifications

Power supply	24 Vac, ± 20%, 50/60 Hz
Power consumption	1.4 VA
Control signal	SNVT_lev_percent 0...100%
Network protocol	LonTalk®
Channel	FTT10A
Stroke	2.5 mm
Running time	53s at 50 Hz 44s at 60 Hz
Stem force	90 N (for valves DN15...20)
Insulation class	III
Connection cables	1.5 m, three leads 1.5 m, two leads
Coupling ring	M 30 x 1.5
Environment	
Operating Temperature	0...55 °C
Enclosure rating	IP 42

MZ09B

The MZ09B actuator is designed to provide 3-point control together with radiator valves. The MZ09B actuator is used for radiator valves in fan coil units, induction units, small reheaters and recoolers, and for zone control applications. The absence of end switches and feedback potentiometer provides longtime reliability.

Specifications

Input voltage	24 Vac + 10 % / -30 %; 50/60 Hz
Power consumption	0.7 VA
Control mode	Floating (3-point)
Stroke	1.6 mm controlled valve stroke 7.9 mm complete actuator stroke
Running time	36 s / 1.6 mm valve stroke
Stem force	90 N
Protection standard	IP 43
Connection cable	0.9 m
Coupling ring	M 30 x 1.5
Environment	
Operating Temperature	0...60 °C
Enclosure rating	IP 42



MZ09L actuator for radiator valves

Part Number	Description
845 5112 000	MZ 09L(LON) 2.5 mm

Suitable Valves

Manufacturer	Valve type	Adapter
Honeywell	V100, V200	Not required
Heimeier		Not required
Siemens L&S	Duogyr	Not required
Danfoss	Series RA2000, RA-PN, RA-N, RA-U, RA-G	911 2075 000
Danfoss	Series RAVL	911 2074 000



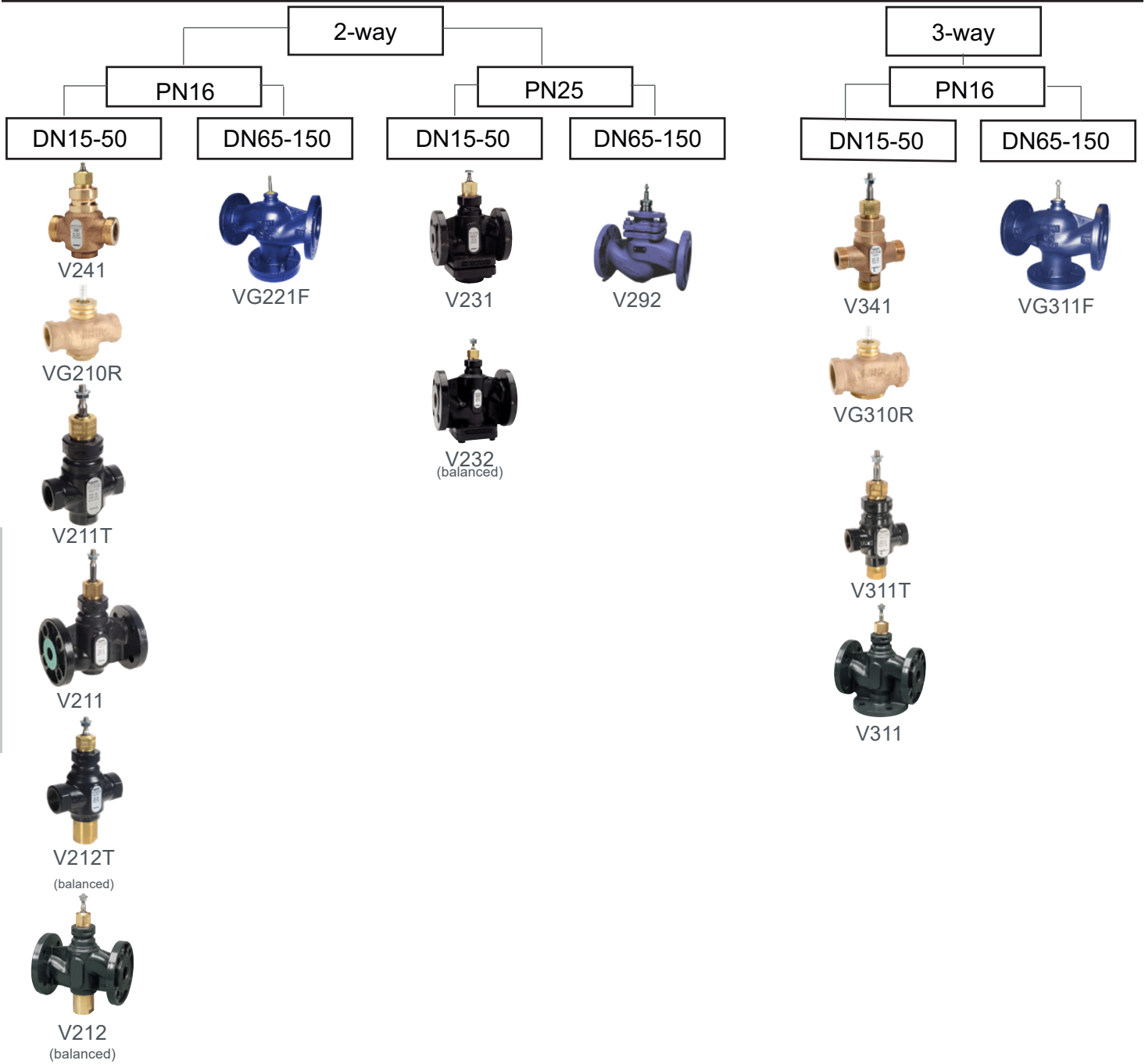
MZ09B actuator for radiator valves

Part Number	Description
845 5111 000	MZ 09B 2.5 mm

Suitable valves

Manufacturer	Valve type	Adapter
Honeywell	V100, V200	Not required
Heimeier		
Siemens L&S	Duogyr	
Danfoss	Series RA2000, RA-PN, RA-N, RA-U, RA-G, RA-UR, RA-KE, RA-K	911-2075-000
Danfoss	Series RAVL	911-2074-000

Hot and Chilled Water



4. Globe Valves

Steam (2-way, 200°C, PN16, DN15-100)



VGS211F

4. Globe Valves

Globe valves provide the finest level of fluid control. The Schneider Electric portfolio covers an extensive range of products for almost any working pressure and flow capacity.

Globe valves can be serviced to provide a very long and reliable working life to any plant they are installed within.



4. Globe Valves

V241

The V241 is a high quality general purpose valve. Polished stainless seats provide high differential pressure capability and low leakage.

Suitable for a wide range of applications such as heating, cooling, air handling, domestic hot water, and district heating applications. The valve can handle hot and cold water with phosphate, hydrazine and antifreeze additives.

If the valve is used for media at temperatures below 0 °C (32°F), it should be equipped with a heater to prevent ice formation on the valve stem.



Specifications

Design	2-way plug valve, stem up closed
Pressure class	PN 16
Flow characteristic	Equal percentage modified
Stroke	20 mm
Rangeability (Kvs/Kv _{min.})	(refer to table)
Leakage	up to 0.02% of Kv
ΔPm	600 kPa, water
Max. temperature of medium	150 °C
Min. temperature of medium	-20 °C

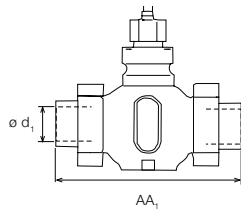
Max. glycol/concentration	50%
Connection	External pipe thread according to ISO 228/1
Main Construction Materials	
Body	Bronze Rg5
Plug and seat	Stainless steel SS 2346
Stem	Stainless steel SS 2346
Stem packing	EPDM

V241					Max Close-off Pressure (kPa)									
					Non-spring Return Actuators						Spring Return			
Part Number	DN	Connection	Kvs	Rangeability	M310	MG350	M400	M800	M1500	MV15B (1500N)	M700	MG900 SR		
721 4106 000	15	G1B	0.25	>50	800	800	1000	1600	1600	1600	1600	1600		
721 4110 000			0.40											
721 4114 000			0.63											
721 4118 000			1.0											
721 4122 000			1.6											
721 4126 000			2.5											
721 4130 000			4.0											
721 4134 000	20	G1¼B	6.3	>100	650	650	650	1500	1350	1350	1100	1510		
721 4138 000	25	G1½B	10		400	400	500	1150			850	1160		
721 4142 000	32	G2B	16		300	300	350	850			950	1350	650	855
721 4146 000	40	G2¼B	25		150	150	250	600			950	950	450	605
721 4150 000	50	G2½B	38		50	50	150	400			650	650	300	415

Replacement packing box: 1 001 0800 0

Connections V241

Internal Thread Connection

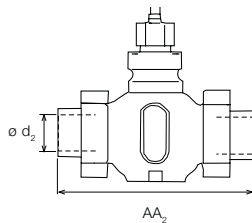


Main Construction Materials	
Union nut	malleable iron casting, galv.
Union end	malleable iron casting, galv.
Packing, standard	Fibre Gasket (Klingsil C4400)
or Packing, spec	PTFE Gasket (Kingsil Top Chem 1.5 mm)

Valve		Ød ₁	AA ₁	Part Number for connection, one pkg/port	
DN	End Conn.	Int. thread (ISO 7/1)	mm	Packing, std	Packing, spec.*
15	G1B	Rp ½	146	911 2100 015	911 2103 015
20	G1¼B	Rp ¾	146	911 2100 020	911 2103 020
25	G1½B	Rp 1	159	911 2100 025	911 2103 025
32	G2B	Rp 1¼	169	911 2100 032	911 2103 032
40	G2¼B	Rp 1½	197	911 2100 040	911 2103 040
50	G2½B	Rp 2	222	911 2100 050	911 2103 050

* The accessory intended for the primary circuit of district heating connections.

Soldering Type Connection

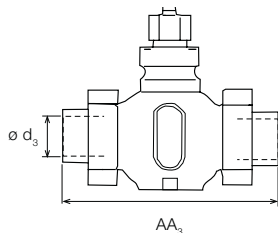


Main Construction Materials	
Union nut	malleable iron casting, galv.
Union end	Bronze, SS 5204
Packing, standard	Fibre Gasket (Klingsil C4400)
or Packing, spec	PTFE Gasket (Kingsil Top Chem 1.5 mm)

Valve		Ød ₂	AA ₂	Part Number for connection, one pkg/port	
DN	End Conn.	mm	mm	Packing, std	Packing, spec.*
15	G1B	15	136	911 2101 015	911 2104 015
20	G1¼B	22	146	911 2101 020	911 2104 020
25	G1½B	28	155	911 2101 025	911 2104 025
32	G2B	35	163	911 2101 032	911 2104 032
40	G2¼B	42	200	911 2101 040	911 2104 040
50	G2½B	54	232	911 2101 050	911 2104 050

* The accessory combination intended for the primary circuit of district heating connections.

Welded Type Connection



Main Construction Materials	
Union nut	malleable iron casting, galv.
Packing, standard	Malleable iron casting, galv.
or Packing, Spec	Brass
Union end	malleable iron casting, galv.
Packing, standard	Fibre Gasket (Klingsil C4400)
or Packing, spec	PTFE Gasket (Kingsil Top Chem 1.5 mm)

Valve		Ød ₃	AA ₃	Part Number for connection, one pkg/port	
DN	End Conn.	mm	mm	Packing, std	Packing, spec.*
15	G1B	21.8	182	911 2102 015	911 2105 015 (1)
20	G1¼B	26.9	182	911 2102 020	911 2105 020 (1)
25	G1½B	33.7	187	911 2102 025	911 2105 025 (1)
32	G2B	42.4	197	911 2102 032	911 2105 032 (1)
40	G2¼B	48.3	232	911 2102 040	911 2105 040
50	G2½B	60.3	262	911 2102 050	911 2105 050

(1) Material Union nut: brass SS 5252

* The accessory Combination intended for the primary circuit of district heating connections.
2 sets of connections required for 2-way valves

4. Globe Valves

VG210R 15-50B

The Venta VG210R 15-50B is a range of compact precision bronze globe valves, suitable for a wide range of fluid control applications, including heating, cooling, air handling and domestic hot water systems. The VG210R 15-50B series works reliably under a wide variety of conditions, including fluids with high glycol concentrations and very high temperature bands. The valve utilizes precision plugs for improved rangeability and fine fluid control on small opening degrees. Soft seating also guards against seepage of precious energy when not required.



Specifications

Design	2-way plug valve, stem up closed
Pressure class	PN 16
Flow characteristic	Equal percentage modified
Stroke	11 mm
Rangeability (Kvs/Kv _{min.})	>100
ΔPm	400 kPa, water
Max. temperature of medium	138 °C
Min. temperature of medium	-7 °C
Max. glycol concentration	60%
Connections	Internal pipe thread Rp

Main Construction Materials	
Body	Bronze; ASTM B584; CDA 83450 Oshalloy®
Bonnet / Packing	Brass; UNS C36000 and PTFE/EPDM
Cartridge chevrons	PTFE/EPDM
Stem	AISI 316 SS
Plug	Brass; UNS C36000
Plug Seal	EPDM, DN25...50
Seat Seal	PTFE, DN15...20
Integral Seat	Bronze; ASTM B584; CDA 83450 Oshalloy®
Slotted Stem Adaptor	RoHS compliant Zinc-plated steel

VG210R 15-50B					Max Close-off Pressure (kPa ^a)			
					MG350C		MG600C (-SR) Actuator	
Part Number	Type Designation	DN	Connection	Kvs	Class IV-S1 ≤0.005%	Class IV1 ≤0.01%	Class IV-S1 <0.005%	Class IV >0.01%
VG210R-15B02	VG210R 15B 0.4E SU 00	15	Rp 1/2	0.4	1000	1500	1600	1600
VG210R-15B03	VG210R 15B .63E SU 00			0.63				
VG210R-15B04	VG210R 15B 1E SU 00			1.0				
VG210R-15B05	VG210R 15B 1.6E SU 00			1.6				
VG210R-15B07	VG210R 15B 2.5E SU 00			2.5				
VG210R-15B08	VG210R 15B 4.0E SU 00			4.0				
VG210R-20B	VG210R 20B 6.3E SU 00	20	Rp 3/4	6.3	800	930		
VG210R-25B	VG210R 25B 10E SU 00	25	Rp 1	10	380	460	1100	1200
VG210R-32B	VG210R 32B 17E SU 00	32	Rp 1¼	17	250	290	600	700
VG210R-40B	VG210R 40B 24E SU 00	40	Rp 1½	24	100	170	350	450
VG210R-50B	VG210R 50B 35E SU 00	50	Rp 2	35	55	69	90	240

a - Valves designed for direct connection onto compact Forta actuators, type MG600C. For all other Forta actuators, stem extension, code AV-823 is required. M700 and MV15B will not connect to this valve. Leakage class as a percentage of a valves Kvs, EN60534-4. Replacement Bonnet, Packing Gland: YBA-689-C. Rangeability: 100:1

V211T

The V211T is an internally threaded valve with a soft seat for tight shut off.

Suitable for a wide range of applications such as heating, cooling and air handling systems with hot or chilled water.

If the valve is used for media at temperatures below 0 °C, it should be equipped with a heater to prevent ice formation on the valve stem.



Specifications

Design	2-way plug valve, stem up closed	Max. glycol concentration	50%
Pressure class	PN 16	Connections	Internal pipe thread Rp
Flow characteristic	Equal percentage modified	Main Construction Materials	
Stroke	20 mm	Body	Nodular iron EN-JS 1030
Rangeability (Kvs/Kv _{min.})	>50	Stem	Stainless steel SS 2346
Leakage	Tight sealing	Plug	Brass CW602N
ΔPm	400 kPa, water	Seat Sealing	EPDM
Max. temperature of medium	120 °C	Seat	Nodular iron EN-JS 1030
Min. temperature of medium	-20 °C	Stem packing	EPDM

V211T					Max Close-off Pressure kPa							
					Non-spring Return Actuators						Spring Return	
Part Number	DN	Connection	Kvs	Rangeability	M310	MG350	M400	M800	M1500	MV15B (1500N)	M700	MG900 SR
721 1716 000	15	Rp 1/2	1.6	>50	800	800	800	1600	1600	1600	1400	1600
721 1720 000			2.5									
721 1724 000			4.0									
721 1728 000	20	Rp 3/4	6.3		650	650	650	1500	1100	1510		
721 1732 000	25	Rp 1	10		400	400	500	1150	850	1160		
721 1736 000	32	Rp 1¼	16		300	300	350	850	1350	1350	650	855
721 1740 000	40	Rp 1½	25		150	150	250	600	950	950	450	605
721 1744 000	50	Rp 2	38		50	50	150	400	650	650	300	415

Replacement packing box: 1 001 0800 0

4. Globe Valves

V211

The V211 is a flanged valve with a soft seat for tight shut off.

Suitable for a wide range of applications such as heating, cooling and air handling systems with hot or chilled water.

If the valve is used for media at temperatures below 0 °C, it should be equipped with a heater to prevent ice formation on the valve stem.



Specifications

Design	2-way plug valve, stem up closed
Pressure class	PN 16
Flow characteristic	Equal percentage modified
Stroke	20 mm
Rangeability (Kvs/Kv _{min.})	>50
Leakage	Tight sealing
ΔPm	400 kPa, water
Max. temperature of medium	120 °C
Min. temperature of medium	-20 °C

Max. glycol/concentration	50%
Connections	Flange according to ISO 7005-2
Main Construction Materials	
Body	Nodular iron EN-JS 1030
Stem	Stainless steel SS 2346
Plug	Brass CW602N
Plug Sealing	EPDM
Seat	Nodular iron EN-JS 1030
Stem packing	EPDM

V211				Max Close-off Pressure (kPa)						
				Non-spring Return Actuators						Spring Return
Part Number	DN	Kvs	Rangeability	M310	MG350	M400	M800	M1500	MV15B (1500N)	MG900 SR
721 1116 000	15	1.6	>50	800	800	800	1600	1600	1600	1600
721 1120 000		2.5								
721 1124 000		4.0								
721 1128 000	20	6.3		650	650	650	1500			
721 1132 000	25	10		400	400	500	1150			1160
721 1136 000	32	16		300	300	350	850	1350	1350	855
721 1140 000	40	25		150	150	250	600	950	950	605
721 1144 000	50	38		50	50	150	400	650	650	415

Replacement packing box: 1 001 0800 0

V212T

The V212T is an internally threaded balanced valve requiring only minimal actuator force. Coupled with a soft seat and good rangeability the V212T provides very energy efficient control of hydronic applications. If the valve is used for media at temperatures below 0 °C, it should be equipped with a heater to prevent ice formation on the valve stem. Suitable for a wide range of applications such as heating, cooling and air handling systems with hot or chilled water.



Specifications

Design	2-way pressure balanced plug valve, stem up closed	Max. temperature of medium	120 °C
Pressure class	PN 16	Min. temperature of medium	-20 °C
Flow characteristic	Equal percentage modified	Max. glycol/concentration	50%
Stroke	20 mm	Connections	Internal pipe thread Rp
Rangeability (Kvs/Kv _{min.})	>50	Main Construction Materials	
Leakage	Tight sealing	Body	Nodular iron EN-JS 1030
ΔPm	400 kPa, water	Stem	Stainless steel SS 2346
		Plug	Brass CW602N
		Seat Sealing	EPDM
		Seat	Nodular iron EN-JS 1030
		Stem packing	EPDM

V212T					Max Close-off Pressure (kPa)					
					Non-spring Return Actuators			Spring Return		
Part Number	DN	Connection	Kvs	Rangeability	M400	M800	M1500	MV15B (1500N)	M700	MG900 SR
721 1832 000	25	Rp 1	10	>50	800	1600	1600	1600	1600	1600
721 1836 000	32	Rp 1¼	16		750					
721 1840 000	40	Rp 1½	25		700					
721 1844 000	50	Rp 2	38		600					

Replacement packing box: 1 001 0800 0

4. Globe Valves

V212

The V212 is a flanged balanced valve requiring only minimal actuator force. Coupled with a soft seat and good rangeability the V212 provides very energy efficient control of hydronic applications.

Suitable for a wide range of applications such as heating, cooling and air handling systems with hot or chilled water.

If the valve is used for media at temperatures below 0 °C, it should be equipped with a heater to prevent ice formation on the valve stem.



Specifications

Design	2-way pressure balanced plug valve, stem up closed
Pressure class	PN 16
Flow characteristic	Equal percentage modified
Stroke	20 mm
Rangeability (Kvs/Kv _{min.})	>50
Leakage	Tight sealing
ΔPm	400 kPa, water

Max. temperature of medium	120 °C
Min. temperature of medium	-20 °C
Max.glycol/concentration	50%
Connections	Flange according to ISO 7005-2
Main Construction Materials	
Body	Nodular iron EN-JS 1030
Stem	Stainless steel SS 2346
Plug	Brass CW602N
Sealing	EPDM
Seat	Nodular iron EN-JS 1030
Stem packing	EPDM

V212				Max Close-off Pressure (kPa)				
				Non-spring Return Actuators				Spring Return
Part Number	DN	Kvs	Rangeability	M400	M800	M1500	MV15B (1500N)	MG900 SR
721 1236 000	32	16	>50	750	1600	1600	1600	1600
721 1240 000	40	25		700				
721 1244 000	50	38		600				

Replacement packing box: 1 001 0800 0

VGS211F 15-100CS

The VGS211F...CS is a flanged high temperature valve for media temperatures up to 200°C.

Primarily designed for steam but also suitable for a wide range of applications such as heating, cooling and air handling systems with hot or chilled water and steam.

If the valve is used for media at temperatures below 0 °C, it should be equipped with a stem heater to prevent ice formation on the valve stem.



Specifications

Design	2-way plug valve, stem up open
Pressure class	PN 16
Flow characteristic	Equal Percentage
Rangeability (Kvs/Kv _{min.})	
DN15...20	>50
DN25...100	>35
Leakage	0.02% of Kvs
ΔPm	600 kPa
Max. temperature of medium	200 °C
Min. temperature of medium	-10 °C

Max. glycol/concentration	50%
Connections	Flange according to ISO 7005-2
Main Construction Materials	
Body	Cast iron, EN-GJL 250
Stem	Stainless steel (AISI 303)
Plug	Stainless steel (AISI 303)
Seat	Stainless steel (AISI 303)
Stem Packing	Spring Loaded PTFE V-Ring
Stroke	
DN15...DN25	16.5 mm
DN32...DN65	25 mm
DN80...DN100	45 mm

VGS211F...CS					Max Close-off Pressure (kPa)											
					Non-spring Return Actuators				Spring Return							
Part Number	Type Designation	DN	Kvs	Rangeability	M400	M800	M1500	MV 15B (1500N)	M3000	M700	MG 900 SR					
VGS211F-15CS03	VGS211F-15CS 0.63M SD00	15	0.6	>50	1600	1600	1600	1600	-	1600	1600					
VGS211F-15CS04	VGS211F-15CS 1M SD00		1.0													
VGS211F-15CS05	VGS211F-15CS 1.6M SD00		1.6													
VGS211F-15CS07	VGS211F-15CS 2.5M SD00		2.5													
VGS211F-15CS08	VGS211F-15CS 4M SD00		4.0													
VGS211F-20CS	VGS211F-20CS 6.3 M SD00	20	6.3	>35	750	1300	1350	1350	-	1500	1300					
VGS211F-25CS	VGS211F-25CS 10M SD00	25	10		450					900		900	900	350		
VGS211F-32CS	VGS211F-32CS 16M SD00	32	16		250					800		800	800	550	800	
VGS211F-40CS	VGS211F-40CS 24M SD00	40	24		150					500		900	900	350	500	
VGS211F-50CS	VGS211F-50CS 32M SD00	50	32		-					210		350	350	720	150	210
VGS211F-65CS	VGS211F-65CS 63M SD00	65	63		-					150		250	250	550	100	-
VGS211F-80CS	VGS211F-80CS 110M SD00	80	110		-					90		150	150	350	60	-
VGS211F-100CS	VGS211F-100CS 140M SD00	100	140		-					-		-	-	-	-	-

Replacement packing box: 1 001 0811 0.

4. Globe Valves

VG221F 65-150C

The VG221F...C is a large flanged balanced valve suitable for large hydronic flows in heating and air conditioning circuits. The balanced plug enables a low actuating force to control the valve.

Suitable for a wide range of applications using hot water or de-aerated cooling water

With cooling media at temperatures below 0 °C, a heater must be fitted to protect against stem seizure due to freezing.



Specifications

Design	2-way pressure balanced plug valve, stem up closed
Pressure class	PN 16
Flow characteristics	Equal Percentage
Rangeability (Kvs/Kv _{min.})	>50
Stroke	
DN65	25 mm
DN80...DN150	45 mm
Leakage	<0.03% of Kvs

ΔPm	200 kPa, water
Max. temperature of medium	150 °C
Min. temperature of medium	-10 °C
Connection	Flange according ISO 7005-2
Main Construction Materials	
Body	Grey cast iron (EN-GJL 250)
Stem	stainless steel (AISI 303)
Plug	Brass (CW614N)
Seat, Integrated	Grey cast iron (EN-GJL 250)
Stem Packing	EPDM

VG221F...C						Max Close-off Pressure (kPa)							
						Non-spring Return Actuators				Spring Return			
Part Number	Type Designation	Stroke	DN	Kvs	Rangeability	M800	M1500	MV15B (1500N)	M3000	M700	MG900 SR		
VG221F-65C	VG221F-65C 63M SU00	25	65	63	>50	1600	1600	1600	1600	1300	1600		
VG221F-80C	VG221F-80C 100M SU00	45	80	100		1450				1000	700	470	-
VG221F-100C	VG221F-100C 130M SU00		100	130		1000				700	470		
VG221F-125C	VG221F-125C 200M SU00		125	200		750	470	300					
VG221F-150C	VG221F-150C 300M SU00		150	300		550	1450	1450	300				

Replacement packing box: 1 001 0810 0

V231

The V231 is a flanged PN25 valve with a very high rangeability.

The valve is suitable for primary district heating circuits as well as hot and chilled water applications where high pressure or where a very fine resolution of flow control is required.

If the valve is used for media at temperatures below 0 °C, it should be equipped with a heater to prevent ice formation on the valve stem.



Specifications

Design	2-way plug valve, stem up closed	Max. temperature, water	150 °C
Pressure class	PN 25	Max. temperature, saturated steam	120 °C
Flow characteristic	Equal percentage modified	Min. temperature of medium	-20 °C
Stroke	20 mm	Max. Glycol concentration	50%
Rangeability (Kvs/Kv _{min.})	(refer to table)	Flanges drilling	According to SS 335 and ISO 2084
Leakage	Up to 0.02% of Kvs	Main Construction Materials	
ΔPm	Max. 800 kPa, water	Body	Nodular iron SS 0727 (GGG40.3)
		Plug and seat	Stainless steel SS 2346
		Stem	Stainless steel SS 2346
		Stem Packing	EPDM

V231				Max Close-off Pressure (kPa)					
				Non-spring Return Actuators					Spring Return
Part Number	DN	Kvs	Rangeability	M310	M400	M800	M1500	MV15B (1500N)	MG900 SR
721 3106 000	15	0.25	>50	1000	1000	1600	1600	1600	1600
721 3110 000		0.40							
721 3114 000		0.63							
721 3118 000		1.0		800	800	1500	1350	1350	
721 3122 000		1.6							
721 3126 000		2.5							
721 3130 000		4.0							
721 3134 000	20	6.3	>200	650	650	1150	1350	1350	1500
721 3138 000	25	10		400	500	1150	1350	1350	1150
721 3142 000	32	16		300	350	850	950	950	850
721 3146 000	40	25		150	250	600	650	650	600
721 3150 000	50	38		50	150	400	400	400	400

Replacement packing box: 1 001 0800 0

4. Globe Valves

V232

The V232 is a pressure balanced flanged PN25 valve with high rangeability and a high differential pressure capability. The balanced plug enables a low actuating force to control the valve.

The valve is suitable for primary district heating circuits as well as hot and chilled water applications where high pressure or a very fine resolution of controllable flow is required.

If the valve is used for media at temperatures below 0 °C, it should be equipped with a heater to prevent ice formation on the valve stem.



Specifications

Design	2-way, pressure balanced plug valve, stem up closed
Pressure class	PN 25
Flow characteristic	Equal percentage modified
Stroke	20 mm
Rangeability (Kvs/Kv _{min.})	(refer to table)
Leakage	Up to 0.02% of Kvs

ΔPm	Max. 800 kPa, water
Max. temperature of medium	150 °C
Min. temperature of medium	-20 °C
Flange drilling	According to SS 335 and ISO 2084
Main Construction Materials	
Body	Nodular iron SS 0727 (GGG40.3)
Plug and seat	Stainless steel SS 2346
Stem	Stainless steel SS 2346
Stem packing	EPDM

V232				Max Close-off Pressure (kPa)				
				Non-spring Return Actuators				Spring Return
Part Number	DN	Kvs	Rangeability	M400	M800	M1500	MV15B (1500N)	MG900 SR
721 3238 000	25	10	>200	800	1600	1600	1600	1600
721 3242 000	32	16		750				
721 3246 000	40	25		700				
721 3250 000	50	38		600				

Replacement packing box: 1 001 0800 0

V292

The V292 is a large pressure balanced flanged valve to PN25. The balanced plug enables a low actuating force to control the valve.

The valve is suitable for primary district heating circuits as well as high pressure hot and chilled water applications



Specifications

Design	2-way pressure balanced plug valve stem down, closed
Pressure class	PN 25
Flow characteristics	Equal Percentage
Stroke	
DN65...DN100	30 mm
DN125...DN150	50 mm
Rangeability (Kvs/Kv _{min.})	> 50
Leakage	<0.05% of Kvs

Max. temperature of medium	150 °C
Min. temperature of medium	-10 °C
Max. Glycol concentration	50%
Connection	Flange according ISO 7005-2
Main Construction Materials	
Body	Nodular iron GGG40.3
Stem	Stainless steel SS 1.4021
Plug	Stainless steel SS 1.4021
Seat	Stainless steel SS 1.4021
Packing box	Spring-loaded PTFE-V-ring

V292				Max Close-off Pressure (kPa)						
				Non-spring Return Actuators						Spring Return
Part Number	DN	Kvs	Rangeability	M800	M1500	MV15B	M3000	M22 (2200N)	M50 (5000N)	M700
721 9254 000	65	63	>50	1500	2500	2500	2500	-	-	1200
721 9258 000	80	85		1100	1600	1600				800
721 9262 000	100	130		-	-	-	-	1800	2500 2500	-
721 9266 000	125	250		-	-	-	-	1400		
721 9270 000	150	350		-	-	-	-	-	-	-

Replacement packing box

DN65...DN100: 1 001 0820 0

DN125...DN150: 1 001 0821 0

Stem Heater

DN65...DN100: 880 0112 000

DN125...DN150: 880 0113 000

Replacement stem adaptor/hex bush:

DN125...DN150: 880 0134 000

4. Globe Valves

V341

The V341 is a high quality general purpose valve. Polished stainless seats provide high differential pressure capability and low leakage.

The valve is suitable for a wide range of applications such as heating, cooling, air handling and domestic hot water systems. The valve can handle hot and cold water with phosphate, hydrazine and antifreeze additives.

If the valve is used for media at temperatures below 0 °C, it should be equipped with a heater to prevent ice formation on the valve stem.



Specifications

Design	3-way plug valve Stem up closed, A port (B-AB open)
Pressure class	PN 16
Flow characteristics A-AB	Equal percentage modified
Flow characteristics B-AB	Complementary
Stroke	20 mm
Rangeability (Kvs/Kv _{min.})	(refer to table)
Leakage A-AB	up to 0.02% of Kvs
Leakage B-AB	up to 0.05% of Kvs

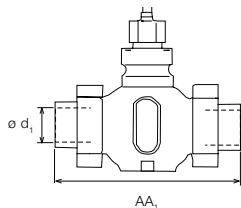
ΔPm (mixing)	600 kPa, water
ΔPm (diverting)	60 kPa, water
Max. temperature of medium	150 °C
Min. temperature of medium	-20 °C
Connection	External pipe thread according to ISO 228/1
Glycol Concentration	50%
Main Construction Materials	
Body	Bronze Rg5
Plug and seat	Stainless steel SS 2346
Stem	Stainless steel SS 2346
Stem packing	EPDM

V341					Max Close-off Pressure (kPa)							
					Non-spring Return Actuators						Spring Return	
Part Number	DN	Connection	Kvs	Rangeability	M310	MG350	M400	M800	M1500	MV15B (1500N)	M700	MG900 SR
731 4121 000	15	G1B	1.6	>50	800	800	800	1600	1600	1600	1400	1600
731 4125 000			2.5									
731 4129 000			4.0									
731 4133 000	20	G1½B	6.3	>100	650	650	650	1500	1350	1350	1100	1510
731 4137 000			10									
731 4141 000			25									
731 4145 000			32									
731 4149 000			40									
731 4149 000	50	G2¾B	25	150	150	250	600	950	950	450	605	
731 4149 000			38	50	50	150	400	650	650	300	415	

Replacement packing box: 1 001 0800 0

Connections V341

Internal Thread Connection

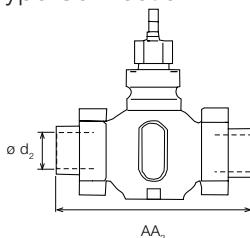


Main Construction Materials	
Union nut	malleable iron casting, galv.
Union end	malleable iron casting, galv.
Packing, standard or Packing, spec	Fibre Gasket (Klingsil C4400) PTFE Gasket (Kingersil Top Chem 1.5 mm)

Valve		$\varnothing d_1$	AA_1	Part Number for connection, one pkg/port	
DN	End Conn.	Int. thread (ISO 7/1)	mm	Packing, std	Packing, spec.*
15	G1B	Rp ½	146	911 2100 015	911 2103 015
20	G1¼B	Rp ¾	146	911 2100 020	911 2103 020
25	G1½B	Rp 1	159	911 2100 025	911 2103 025
32	G2B	Rp 1¼	169	911 2100 032	911 2103 032
40	G2¼B	Rp 1½	197	911 2100 040	911 2103 040
50	G2¾B	Rp 2	222	911 2100 050	911 2103 050

* The accessory intended for the primary circuit of district heating connections.

Soldering Type Connection

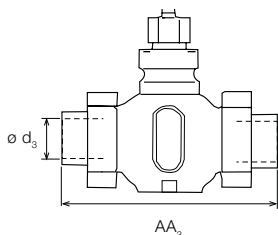


Main Construction Materials	
Union nut	malleable iron casting, galv.
Union end	Bronze, SS 5204
Packing, standard or Packing, spec	Fibre Gasket (Klingsil C4400)\ PTFE Gasket (Kingersil Top Chem 1.5 mm)

Valve		$\varnothing d_2$	AA_2	Part Number for connection, one pkg/port	
DN	End Conn.	mm	mm	Packing, std	Packing, spec.*
15	G1B	15	136	911 2101 015	911 2104 015
20	G1¼B	22	146	911 2101 020	911 2104 020
25	G1½B	28	155	911 2101 025	911 2104 025
32	G2B	35	163	911 2101 032	911 2104 032
40	G2¼B	42	200	911 2101 040	911 2104 040
50	G2¾B	54	232	911 2101 050	911 2104 050

* The accessory combination intended for the primary circuit of district heating connections.

Welded Type Connection



Main Construction Materials	
Union nut	Malleable iron casting, galv.
Packing, standard or Packing, Spec	Brass
Union end	malleable iron casting, galv.
Packing, standard or Packing, spec	Fibre Gasket (Klingsil C4400) PTFE Gasket (Kingersil Top Chem 1.5 mm)

Valve		$\varnothing d_3$	AA_3	Part Number for connection, one pkg/port	
DN	End Conn.	mm	mm	Packing, std	Packing, spec.*
15	G1B	21.8	182	911 2102 015	911 2105 015 ¹
20	G1¼B	26.9	182	911 2102 020	911 2105 020 ¹
25	G1½B	33.7	187	911 2102 025	911 2105 025 ¹
32	G2B	42.4	197	911 2102 032	911 2105 032 ¹
40	G2¼B	48.3	232	911 2102 040	911 2105 040
50	G2¾B	60.3	262	911 2102 050	911 2105 050

¹ - Material Union nut: brass SS 5252

* The accessory Combination intended for the primary circuit of district heating connections.

3 sets of connections required for 3-way valves

4. Globe Valves

VG310R 15-50B

The Venta VG310R 15-50B is a range of compact precision bronze globe valves, suitable for a wide range of fluid control applications, including heating, cooling, air handling and domestic hot water systems. The VG310R 15-50B series works reliably under a wide variety of conditions, including fluids with high glycol concentrations and very high temperature bands.

The valve utilizes precision plugs for improved rangeability and fine fluid control on small opening degrees. Soft seating provides an ultra tight close off performance against energy seepage.



Specifications

Design	3-way plug valve, stem up closed
Pressure class	PN 16
Flow characteristic	Equal percentage modified
Stroke	11 mm
Rangeability (Kvs/Kv _{min.})	>100
ΔPm	400 kPa, water
Max. temperature of medium	138 °C
Min. temperature of medium	-7 °C

Max. glycol concentration	60%
Connections	Internal pipe thread Rp
Main Construction Materials	
Body	Bronze
Stem	Stainless steel 316
Plug	Brass CW602N
Sealing	PTFE for 15 and 20 mm units. EPDM for others.
Seat	Bronze
Standard packing box	Brass with PTFE and EPDM Chevrons
Slotted Stem Adapter	RoHS compliant Zinc-plated Steel

VG310R 15-50B						Max Close-off Pressure (kPa)			
						with MG350C		with MG600C (-SR) actuator	
Part Number ^a	Type Designation	DN	Connection	Kvs	Rangeability	Class IV-S1 ≤0.005%	IV1 ≤0.01%	Class IV-S1 ≤0.005%	Class IV ≤0.01%
VG310R-15B05	VG310R-15B 1.6T SU00	15	Rp 1/2	1.6	>100	1000	1500	1600	1600
VG310R-15B07	VG310R-15B 2.5T SU00			2.5					
VG310R-15B08	VG310R-15B 4T SU00			4.0					
VG310R-20B	VG310R-20B 6.3T SU00	20	Rp 3/4	6.3		800	930		1600
VG310R-25B	VG310R-25B 10E SU00	25	Rp 1	10		380	460	1100	1200
VG310R-32B	VG310R-32B 17E SU00	32	Rp 1½	17		250	290	600	700
VG310R-40B	VG310R-40B 24E SU00	40	Rp 1½	24		100	170	350	450
VG310R-50B	VG310R-50B 35E SU00	50	Rp 2	35		55	69	90	240

a. Valves designed for direct connection onto compact Forta actuators, type MG600C, MG600C-SR. For all other Forta actuators, stem extension, code AV-823 is required. It is not possible to drive this valve with the M700 or MV15B actuator.

Replacement Bonnet, Packing Gland: YBA-689-C

V311T

The V311T is an internally threaded valve with a soft seat for tight shut off.

If the valve is used for media at temperatures below 0 °C, it should be equipped with a heater to prevent ice formation on the valve stem.



Specifications

Design	3-way plug valve stem up closed, A port (B-AB open)	Max. temperature of medium	120 °C
Pressure class	PN 16	Min. temperature of medium	-20 °C
Flow characteristic A-AB	Equal percentage modified Complementary	Max. Glycol concentration	50%
Flow characteristic B-AB		Connection	Internal pipe thread Rp
Stroke	20 mm	Main Construction Materials	
Rangeability (Kvs/Kv _{min.})	>50	Body	Nodular iron EN-JS 1030
Leakage A-AB and B-AB	Tight sealing	Stem	Stainless steel SS 2346
ΔPm (mixing)	400 kPa, water	Plug	Brass CW602N
ΔPm (diverting)	60 kPa, water	Sealing	EPDM
		Seat	Nodular iron EN-JS 1030
		Stem packing	EPDM

V311T					Max Close-off Pressure (kPa)							
					Non-spring Return Actuators						Spring Return	
Part Number	DN	Connection	Kvs	Rangeability	M310	MG350	M400	M800	M1500	MV15B (1500N)	M700	MG900SR
731 1717 000	15	Rp 1/2	1.6	>50	800	800	800	1600	1600	1600	1400	1600
731 1721 000			2.5									
731 1725 000			4.0									
731 1729 000	20	Rp 3/4	6.3		650	650	650	1500	1100	1510		
731 1733 000	25	Rp 1	10		400	400	500	1150	850	1160		
731 1737 000	32	Rp 1¼	16		300	300	350	850	1350	1350	650	605
731 1741 000	40	Rp 1½	25		150	150	250	600	950	950	450	604
731 1745 000	50	Rp 2	38		50	50	150	400	650	650	300	415

Replacement packing box: 1 001 0800 0

4. Globe Valves

V311

The V311 is a flanged valve with a soft seat for tight shut off.

The valve is suitable for a wide range of mixing applications with hot or chilled water in heating cooling and air handling systems.

If the valve is used for media at temperatures below 0 °C, it should be equipped with a stem heater to prevent ice formation on the valve stem.



Specifications

Design	3-way plug valve stem up closed (A port/B-AB open)
Pressure class	PN 16
Flow characteristic A-AB	Equal percentage modified
Flow characteristic B-AB	Complementary
Stroke	20 mm
Rangeability (Kvs/Kv _{min.})	>50
Leakage A-AB and B-AB	Tight sealing
ΔPm (mixing)	400 kPa, water
ΔPm (diverting)	60 kPa, water

Max. temperature of medium	120 °C
Min. temperature of medium	-20 °C
Max. Glycol concentration	25%
Connection	Flange according to ISO 7005-2
Main Construction Materials	
Body	Nodular iron EN-JS 1030
Stem	Stainless steel SS 2346
Plug	Brass CW602N
Sealing	EPDM
Seat	Nodular iron EN-JS 1030
Stem Packing	EPDM

V311				Max Close-off Pressure (kPa)							
				Non-spring Return Actuators						Spring Return	
Part Number	DN	Kvs	Rangeability	M310	MG350	M400	M800	M1500	MV15B (1500N)	M700	MG900 SR
731 1117 000	15	1.6	>50	800	800	800	1600	1600	1600	1400	1600
731 1121 000		2.5									
731 1125 000		4.0									
731 1129 000	20	6.3		650	650	650	1500	1100	1510		
731 1133 000	25	10		400	400	500	1150	850	1160		
731 1137 000	32	16		300	300	350	850	1350	1350	650	855
731 1141 000	40	25		150	150	250	600	950	950	450	605
731 1145 000	50	38		50	50	150	400	650	650	300	415

Replacement packing box: 1 001 0800 0

VG311F 65-150C

The VG311F...C is a large flanged general purpose valve suitable for a wide range of mixing applications with hot or chilled water in heating cooling and air handling systems.

If the valve is used for media at temperatures below 0 °C, it should be equipped with a stem heater to prevent ice formation on the valve stem.



Specifications

Design	3-way plug mixing valve stem up closed (A port/B-AB open)	ΔP_m (mixing)	200 kPa, water
Pressure class	PN 16	ΔP_m (diverting)	60 kPa, water
Connection	Flange according ISO 7005-2	Max. temperature of medium	150 °C
Rangeability (Kvs/Kv _{min.})	> 50	Min. temperature of medium	-10 °C
Flow characteristics		Max. Glycol concentration	50%
A – AB	Equal Percentage	Main Construction Materials	
B – AB	Linear	Body	Grey Cast iron (GJL 250)
Stroke		Stem	Stainless steel (AISI 303)
DN65	25 mm	Plug (DN65...DN100)	Brass (CW614)
DN80...150	45 mm	Plug (DN125...DN150)	Bronze (CB491K UNI EN 1982)
Leakage		Seat	Grey Cast iron (EN JL 1040)
A – AB	< 0.03% of Kvs	Stem Packing	EPDM
B – AB	< 2% of Kvs		

Mixing Applications

VG311F...C					Max Close-off Pressure ΔP_C (kPa)				
					Non-spring Return Actuators			Spring Return	
Part Number	Type Designation	DN	Kvs	Rangeability	M800	M1500 / MV15B (1500N)	M3000	M700	MG900 SR
VG311F-65C	VG311F-65C 63M SU00	65	63	>50	240	400	850	220	290
VG311F-80C	VG311F-80C 100M SU00	80	100		160	240	570	140	
VG311F-100C	VG311F-100C- 130M SU00	100	130		100	150	370	80	
VG311F-125C	VG311F-125C 200M SU00	125	200		60	90	230	50	
VG311F-150C	VG311F-150C 300M SU00	150	300		40	50	160	35	

Diverting Applications

VG311F...C					Max Close-off Pressure ΔP_C (kPa)				
					Non-spring Return Actuators			Spring Return	
Part Number	Type Designation	DN	Kvs	Rangeability	M800	M1500 / MV15B (1500N)	M3000	M700	MG900 SR
VG311F-65C	VG311F-65C 63M SU00	65	63	>50	80	135	285	75	85
VG311F-80C	VG311F-80C 100M SU00	80	100		53	80	190	45	
VG311F-100C	VG311F-100C- 130M SU00	100	130		33	50	125	25	
VG311F-125C	VG311F-125C 200M SU00	125	200		20	30	76	16	
VG311F-150C	VG311F-150C 300M SU00	150	300		13	16	55	12	

ΔP_C = Maximum allowed pressure drop across a closed valve (that the nominal force of the actuator will open or close against).



5. Globe Valve Actuators

Fine hydronic control in a globe valve is achieved from precise positioning actuators.

Forta actuators provide superb positioning accuracy across a broad range of valves and also accept multiple modulating input signals, as well as 3-position floating control. Running speed is fast and fixed to a set value based on the valve stroke limits, enabling simple tuning of control loops. Position feedback, manual override and the ability to add auxiliary switches are other features possible on globe valves actuators.



5. Globe Valve Actuators

MG350

The MG350 is a compact electro-mechanical actuator for controlling 2-way and 3-way Vanta globe valves V241/V341, V211, V211T, V311, and V311T. The MG350 actuators are primarily designed for applications where the demands on speed and thrust are relatively small.

- Stable force control with stall protection
- Dual 3-Point floating and 2-position control.
- Sink or source floating control
- High Resolution PCBA and motor transmission for fine valve plug position and excellent flow control.
- LED status indication
 - Tri-color LED for operation, calibration, and alarm notification
- Removable terminal block and cable gland for ease of installation.



Specifications

Supply voltage	24 Vac/Vdc ±20% 50/60 Hz
Power Consumption (50Hz)	
Running: MG350-24 (F)	5.2 VA (3.5 W)
MG350-24 (M/MP/FP)	7.2 VA (3.5 W)
Holding (M/MP/FP)	1.2 VA
Transformer sizing	(same as power consumption)
Running Time	4 s/mm (Full stroke time = 80 sec)
Max. Stroke	21.5 mm
Force	350 N
Control (Floating/Digital)	
Dependant upon wiring	
3 wire Floating	24 Vac/Vdc or 0 V
2 Position on/off	NO or NC
Minimum input pulse	100 msec
Control (Modulating)	
Selectable input signals	
MG350-24M	0...10 Vdc, 2...10 Vdc
MG350-24MP	0...10 Vdc, 2...10 Vdc, 4...20mA
Impedance	min. 100 kΩ
Environment	
Operating Temperature	-5...+55 °C (for valve fluid temperatures up to 130 °C)
Storage	-40...+70 °C
Humidity	max. 95%

Position Feedback	
MG350-(24MP/-24FP)	0...5 Vdc / 2...10 Vdc
Enclosure rating	IP 53 (vertically mounted)
Sound power level	max. 30 dBA
Weight (shipping)	0.36 kg
Material	
Yoke	Aluminum
Housing	PBT/PC
Manual Override	3 mm Hex
Position indication	Red and blue position markers for hot and cold pipe indication (green position indicator for closed valve)
Wiring entry	
Cable Gland wire size	min. 2.4 mm...max. 6.6 mm
Conduit hole	M20

Part Number	Control
MG350-24M	Modulating
MG350-24MP	Modulating with feedback and alarms
MG350-24F	Floating
MG350-24FP	Floating with feedback and alarms

MG350C

The MG350C is a compact electro-mechanical actuator for controlling the VG210 and VG310 2-way and 3-way linear globe valves. The MG350C actuators are primarily designed for applications where the demands on speed and thrust are relatively small.

- Stable force control with stall protection
- Hysteresis Control - Intelligent response to fluctuating control signals, extending actuator life and better plant regulation
- High Resolution PCBA and motor transmission for fine valve plug position and excellent flow control.
- Low power holding
- Auto adaptation to valve end stroke limits upon first power up
- LED status indication
 - Tri-color LED for operation, calibration, and alarm notification
- Removable terminal block and cable gland for ease installation



Specifications

Supply voltage	24 Vac/Vdc ±20% 50/60 Hz
Power Consumption (50Hz)	
Running	
MG350C-24F	5 VA (3.5 W)
MG350C-24M	7.2 VA (3.5 W)
Holding (Modulating only)	1.2 VA
Transformer sizing	(same as power consumption)
Running Time	8 s/mm (Full stroke time = 88 sec)
Max. Stroke	16.5 mm
Nominal Force	350 N
Control (Floating/Digital)	
Dependant upon wiring	
3 wire Floating	24 Vac/Vdc or 0 V
2 Position on/off	NO or NC
Minimum input pulse	100 msec
Control (Modulating)	
Selectable input signals	0...10 Vdc, 2...10 Vdc
Impedance	min. 100 kΩ
Environment	
Operating Temperature	-5...+55 °C (for valve fluid temperatures up to 130 °C)
Storage	-40...+70 °C
Humidity	max . 95% RH (NC)
Enclosure rating	IP 53 (vertically mounted)

Sound power level	max. 30 dBA
Weight (shipping)	0.36 kg
Material	
Yoke	Aluminum
Material Housing (Covers)	PBT/PC
Mechanical	
Manual Override	3 mm Hex
Position indication	Red and blue position markers for hot and cold pipe indication (green position indicator for closed valve)
Wiring entry	
Cable Gland wire size	min. 2.4 mm...max. 6.6 mm
Conduit hole	M20

Part Number	Control
MG350C-24M	Modulating
MG350C-24F	Floating

5. Globe Valve Actuators

Forta M310, M400, M800, M1500 and M3000

The Forta is a family of actuators for the control of 2-way and 3-way globe valves.

The Forta has a very fine resolution PCBA board which provides good rangeability of the valve. The Software in the actuator calibrates the running time and S2 switch points to the valve stroke limits. It may also be configured for different flow characteristics, inverse signal or sequence control.

The U-bolt mounting makes for a very easy and quick installation. The manual override allows the actuator to be overridden and valve position adjusted without disconnecting the power supply.



M310, M400, M800, M1500



M3000

Specifications

Supply Voltage	
AC	24 Vac +25% / -35%, 50/60 Hz
DC	24 Vdc ±10%
Duty cycle	Max. 20%/60 minutes
Full Stroke Runtime	
Modulating	(refer to table)
Increase/decrease	300s/60s
Analog Control Input	
Selectable Voltages	0...10 V / 2...10 V / 0...5 V / 5...10 / 2...6 / 6...10
Impedance	Min. 100 kΩ
Digital inputs VH-HC	
Voltage across open input	24 Vac
Current through closed input	5 mA
S2 Output – Auxiliary end point switch (optional)	
Type	2 x SPDT
Voltage	24 VAC
Load	4A (resistive) / 1A (inductive)
Regulated Voltage Output, G1	
Voltage	16 Vdc ±0.3 V
Load	25 mA, short-circuit proof

Position Feedback, Y	
Voltage	2...10 V (0...100%)
Load	2 mA
Environment	
Operating Temperature	-10...+50 °C
Storage Temperature	-10...+50 °C
Humidity	Max. 90% RH
Enclosure rating	IP 54
Wiring entry	
Conduit connection	3 x M20 screwed
Cable gland	1 x 6..12 mm O/D, IP68
Standards	
ElectroMagnetic Compatibility [EMC]	2014/30/EU
Low voltage directive [LVD]	2014/35/EU
Restriction of Hazardous Substances [RoHS2]	2011/65/EC
Heat	IEC 60068-2-2
Humidity	IEC 60068-2-3
Cold	IEC 60068-2-1
Vibration	IEC 60068-2-6
Main Construction Materials	
Housing	Aluminium
Cover	ABS/PC plastic
Color (M310, M400, M800, M1500)	Aluminium/Grey
Color (M3000)	Black/Grey

Forta Actuators		Force	Modulating control Running time / stroke			Avg. power consumption	Transformer sizing
Part Number	Description	N	9-25 mm	25-32 mm	32-51 mm	VA	
880 0210 030	M310	300	15s	20s	-	6	30
880 0211 030	M310 S2						
880 0230 030	M400	400	60s	60s	7	30	
880 0231 030	M400 S2						
880 0310 030	M800	800	15s	20s	30s	10	50
880 0311 030	M800 S2						
880 0450 000	M1500	1500	15s	20s	30s	15	
880 0451 000	M1500 S2						
880 0500 000	M3000	3000	14-40s	40-50s	50-80s	25	
880 0510 000	M3000 S2						

Forta MG900 SR

The Forta MG900 SR is a spring return actuator for the control of linear globe valves.

The Manual override is operated by a hex key and can be locked into position for commissioning.

Regenerative Braking is used to control the actuator closing speed when the actuator is driven under the spring return force.



Specifications

Supply voltage	24 Vac +25% / -30%, 50/60 Hz
Power consumption	Average 30 VA
Transformer sizing	50 VA
Spring return close off time at power failure	
20 mm stroke	Less than 50 seconds
32 mm stroke	Less than 95 seconds
Stroke Range	9...30 mm
Thrust	900 N
Duty cycle	Max. 20%/60 minutes (and 80%/ 60 min.) for half load / amb. temp
Running Time	
Modulating 10...25 mm (0.39...1 in.)	15s
Modulating 25...32 mm (1...1.26 in.)	20s
Increase/decrease	300s/60s
Analog input	
Voltage	0...10 V / 2...10 V / 0...5V / 5...10 / 2...6 / 6...10
Digital inputs VH-VC	
Voltage across open input	24 Vac
Current through closed input	5 mA
Pulse time	Min. 20 ms
Output, G1	
Voltage	16 Vdc / 20 Vdc ±0.3 V
Load	25 mA, short-circuit proof
Output, Y	
Voltage	2...10 V (0...100%)
Load	2 mA
Wiring Entry	
Conduit connection	4 x M20 capped holes
Cable gland	1 x 6..12 mm O/D, IP68

Environment	
Operating Temperature	-10...50 °C
Storage Temperature	-10...50 °C
Humidity	Max. 90% RH
Main Construction Materials	
Housing	Aluminium
Cover	Aluminium

Part Number	Spring Return Function	Type Designation	IP Rating
MG900-SU	Stem Up	MG900 SRU-24FM T54 00	54
MG900-SD	Stem Down	MG900 SRD-24FM T54 00	

Accessories

Part Number	Description
880 0104 000	S2 auxiliary end point switches
AV-821	Linkage kit to VB-7000 valves
AV-822	Linkage kit to VB-8000 valves
880 0109 000	Yoke Heater
MG900-SU-PCB	Circuit board for MG900 SRU
MG900-SD-PCB	Circuit board for MG900 SRD
880 0124 000	L2SV linkage kit to VZ and MZ Satchwell Valves.
880 0129 000	Linkage - M30 x 1.5, Spirax Sarco KE, KL, KF, DN15...100

5. Globe Valve Actuators

Forta MG600C, MG600C-SR

The MG600C and MG600C-SRU/SRD are short yoke Forta actuators designed for use with the VG210R and VG310R valves. Spring return and Non-spring return versions with the full Forta functionality and precision control: Flexible control configuration, floating or modulating, sequencing, position feedback and flow curve adaptation (EQ to Lin).

- Brushless DC motors and a high resolution control board allow a very fine fluid control in globe valves.
- Working range and end point switches adjust automatically to valve stroke.
- Firmware calibrates consistent running time regardless of valve stroke.
- On power loss the spring return mechanism drives the motor, generating power to control braking speed, avoiding mechanical stress and system water hammer.
- Available in spring return stem up or spring return stem down and either IP54 or rooftop IP65 enclosures.



MG600C



MG600C-SR

- Configurable for either a 3-point increase/decrease signal or various modulating control signals including sequencing.
- U-Bolt connection allows direct mounting without any mounting kit or special tools.

Specifications

Supply voltage	24 Vac +25% / -35%, 50/60 Hz
Duty cycle	Max. 20%/60 minutes
Analogue control input Selectable Voltages	0...10 V / 2...10 V / 0...5V / 5...10 / 2...6 / 6...10
Impedance	Min. 100 kΩ
Digital control input (3-point floating) Voltage across open input	24 Vac
Current through closed input	5 mA
Minimum Pulse Time	20 ms
S2 Output – Auxiliary end point switch where fitted	
Type	2 x SPDT
Voltage	24 Vac
Load	4A (resistive) / 1A (inductive)

Position feedback (Y)	
Voltage	2...10 V (0...100%)
Load	2 mA
Wiring entry	
Conduit connection 600C	3 x M20 screwed
600C-SR	4 x M20 screwed
Cable gland	1 x 6..12 mm O/D, IP68
Environment	
Operating Temperature	-10...+50 °C
Storage	-10...+50 °C
Humidity	Max. 90% RH
Enclosure rating	IP 54
Main Construction Materials	
Housing	Aluminium
Cover	ABS/PC plastic
Color	Aluminium/Grey

Part Number	Designation	SR Function	VG210R / VG310R function on SR operation	Running time		Transf. sizing	Power consumption	
				Modulating	Increase/Decrease		(running)	(rest)
MG600C	MG600C-24FM T54 00	-	-	60s	300s/60s	30 VA	4W	3W
MG600C-S	MG600C-24FMS T54 00			15s		50 VA	21W	7W
MG600C-SRU	MG600C SRU-24FM T54 00	Stem Up	A-AB Closed					
MG600C-SRD	MG600C SRD-24FM T54 00	Stem Down	A-AB Open					

The MG600C(-SR) will not connect on to Satchwell or the 20 mm stroked Venta valves. ex. V211, V241

MV15B

The MV15B is a powerful 3-point floating actuator for the control of 2-way and 3-way globe valves, available in both 24 Vac and 230 Vac versions. The actuator self-adjusts to the stroke of whatever valve it is connected to. The U-bolt mounting makes for a very easy and quick installation. A manual override is standard on all models.

Specifications

Supply voltage	24 Vac ±10%, 50/60 Hz 230 Vac ±10%, 50/60 Hz
Power consumption	12 VA
Transformer sizing	15 VA
Running speed	0.75 mm/s
Running time for 20 mm	27s
Stroke Range	9...52 mm
Thrust	1500 N
Environment	
Operating Temperature	15...50 °C
Storage Temperature	-25...+65 °C
Enclosure rating	IP 55
Wiring Entry	
Conduit connection	2 x PG13.5 capped hole
Cable gland	1 x 6..12 mm O/D



Main Construction Materials	
Housing	Aluminium
Cover	ABS plastic
Color	Black/Red

Optional auxiliary travel switch S2-MV15B	
Type	SPDT 10A (resistive), 3A (inductive)
Capacity	250 V

MV15B actuators		Power supply
Part Number	Description	Vac +10%/ -10%
880 0460 000	MV15B-230	230
880 0462 000	MV15B-24	24

MV15B accessories & linkage kits	
Part Number	Description
880 0126 000	Linkage M700-Satchwell L7SV
880 0469 000	Switch S2-MV15B
880 0109 000	Forta Yoke Heater for amb. temp -10 °C, media temp -8 °C

Forta M700 - Spring Return

The Forta M700 is a spring return actuator for control of longer stroked and larger size globe valves. It utilises the same flexible functionality as in the Forta non-spring return actuators so it has the same capability for self-adapting to the valve stroke, and the same flexibility in set-up configuration. The U-bolt mounting makes for quick installation. Manual override is standard on all models.

Specifications

Supply voltage	24 Vac +25% / -30%, 50/60 Hz
Power consumption	Average 30 VA
Transformer sizing	50 VA
Spring return close off time at power failure	
20 mm stroke	Less than 50 seconds
45 mm stroke	Less than 95 seconds
Stroke Range	9...52 mm
Thrust	700 N
Duty cycle	Max. 20%/60 minutes
Running Time	
Modulating 10...25 mm	15s
Modulating 25...32 mm	20s
Modulating 10...52 mm	30s
Increase/decrease	300s/60s
Analog input	
Voltage	0...10 V / 2...10 V / 0...5V / 5...10 V / 2...6V / 6...10 V
Impedance	Min. 100 kΩ
Digital inputs VH-VC	
Voltage across open input	24 Vac
Current through closed input	5 mA
Pulse time	Min. 20 ms
Position feedback	
Voltage	2...10 V (0...100%)
Load	2 mA



Wiring Entry	
Conduit connection	2 x PG13.5 capped hole
Cable gland	1 x 6..12 mm O/D

Environment	
Operating Temperature	-10...50 °C
Storage Temperature	-10...50 °C
Humidity	Max. 90% RH

Enclosure rating	IP 54
------------------	-------

Part Number	Description
880 0430 000	M700-SRSU
880 0431 000	M700-S2-SRSU
880 0440 000	M700-SRSD
880 0441 000	M700-S2-SRSD

Accessories

Part Number	Description
880 0126 000	Linkage M700-Satchwell L7SV
880 0109 000	Forta Yoke Heater for amb. temp -10 °C, media temp -8 °C

Key:
 S2- Auxiliary end point switch
 SRSU - spring return stem up
 SRSD - spring return stem down
 L7SV - Satchwell linkage to VZ and MZ valves

5. Globe Valve Actuators

Forta M400, M800, M1500, MG600C Electrical Accessories

Part Number	Description
880 0104 000	S2 – 2 x SPDT Axillary End Point Switches (24 Vac 4A AC-1)
880 0109 000	Forta Yoke Heater for amb. temp -10 °C, media temp -8 °C

Forta M400, M800, M1500 Linkage kits to other valves

Part Number	Description
880 0124 000	Linkage Forta-Satchwell L2SV: VSF-MJF-MZ, VZ-MZF- VZF
880 0116 000	Linkage Forta-Honeywell M6 and 6.25 mm (1/4") stem
880 0118 000	Linkage Forta-Siemens
880 0125 000	Linkage Forta-Danfoss
880 0129 000	Linkage Forta-Spirax Sarco (M30 x1.5 :KE, KF, and KL; DN15...100)
	Linkage – Controlli threaded valves with M30 bonnet types: VSB, VMB, VSB_F, VMB_F
880 0128 000	Linkage – Controlli Flanged Valves with M40 threaded bonnet VBG, SS, DS, VSS, VBA, 3V, VMS VSG, VMB16, SSGA
880 0135 000	Linkage Satchwell VZ 7*** and MZ 7*** series
	Regin/Osby: NTVS / GTRS / GTVS, 2SAS / 2SBS, MTVS / MTRS, MRT and FRS
880 0252 000	Linkage TAC V298, DN15
880 0253 000	Linkage kit for old TAC DN15 valves -V282/ V294/ V384/ V386/ V394
880 0130 000	V321 DN65...DN100 to Forta (convert from M16 actuator)
AV-821	Forta to VB-7000 valves (Siebe/TAC)
AV-822	Forta to VB-8000/VB-9000 valves (Siebe / TAC)
AV-823	Stem extension for VG210R/VG310R



6. Ball Valves and Actuators

Ball Valves provide reliable, high static pressure control of fluids. The Schneider Electric VB210R / VB310R / VB601R range of control valves provide excellent EQ proportional flow control with a full complement of electrical actuators.

The VB200R / VB300R types are a full flow design without any restrictive EQ characterisation disc and are ideal for isolation or change over in two-position control.



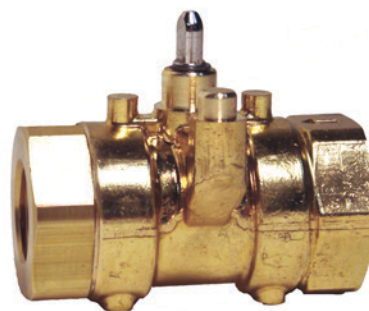
6. Ball Valves and Actuators

VB210R, VB200R & VB310R, VB300R

These VB range of ball valves utilise a low friction packing design around the ball which enables a low torque and compact motor to be used in the actuator.

The VB210R and VB310R ball valves variants incorporate a flow characterizing insert to providing an equal percentage flow characteristic with high rangeability.

These valves are suitable for control of hot or chilled water applications.



Specifications

Service ^a	Hot and chilled water, up to 60% glycol
System Static Pressure Limit	PN40
Media Temperature Limits	-7...120 °C
Close-off Pressure ^b	895 kPa 2-way; 480 kPa, 3-way
ΔPm	205 kPa normal operation, 135 kPa psi quiet operation
Seat Leakage ^c	ANSI class IV (0.01%)
End Connections	Rp threaded

Material	
Body Material	Forged UNC 37700 brass
Stem Material	Stainless steel anti-blow out stem with dual Viton™ o-rings
Ball Material	304 Stainless steel
Seat Material	PTFE
Characterized Insert	Glass-filled PEEK

a. Not rated for steam service.

b. Close-off is defined as the maximum allowable pressure drop to which a valve may be subjected while fully closed.

c. Seat Leakage in normal direction of flow only

VB210R 2-way Control Valves

Size	Part Number	Type Designation	Thread	kvs
DN15	VB210R-15BS01	VB210R-15BS 0.25T 00	Rp 1/2	0.25
	VB210R-15BS03	VB210R-15BS 0.6T 00		0.6
	VB210R-15BS04	VB210R-15BS 1.0T 00		1.0
	VB210R-15BS05	VB210R-15BS 1.8T 00		1.8
	VB210R-15BS07	VB210R-15BS 3.0T 00		3.0
	VB210R-15BS08	VB210R-15BS 4.0T 00		4.0
	VB210R-15BS09	VB210R-15BS 6.3T 00		6.3
20 mm	VB210R-20BS08	VB210R-20BS 4.0T 00	Rp 3/4	4.0
	VB210R-20BS09	VB210R-20BS 6.3T 00		6.3

VB310R 3-way Control Valves

Size	Part No.	Type Designation	Thread	kvs
DN15	VB310R-15BS03	VB310R-15BS 0.52T 00	Rp 1/2	0.52
	VB310R-15BS04	VB310R-15BS 0.86T 00		0.86
	VB310R-15BS05	VB310R-15BS05 1.6T 00		1.6
	VB310R-15BS07	VB310R-15BS07 2.5T 00		2.5
	VB310R-15BS08	VB310R-15BS 4.0T 00		4.0
	VB310R-15BS09	VB310R-15BS 6.3T 00		6.3
	DN20	VB310R-20BS08		VB310R-20BS 4.0T 00
VB310R-20BS09		VB310R-20BS 6.3T 00	6.3	

VB200R 2-way Full Port Valves

Size	Part Number	Type Designation	Thread	kvs
DN15	VB200R-15BS	VB200R-15BS 8.7T 00	Rp 1/2	8.7
DN20	VB200R-20BS	VB200R-20BS 8.7T 00	Rp 3/4	

VB300R 3-way Full Port Valves

Size	Part No.	Type Designation	Thread	kvs
DN15	VB300R-15BS	VB300R-15BS 8.7T 00	Rp 1/2	8.7
DN20	VB300R-20BS	VB300R-20BS 8.7T 00	Rp 3/4	

MB3, MB6

The MB3 and MB6 are compact actuators for the VB210R, VB310R, VB200R and VB300R.

A 'pop top' connection between the valve and actuator provides a fast and easy installation.

Actuators are available in both spring return and non-spring return versions for floating, proportional and 2-position control.



Specifications

Supply Voltage	24 Vac +25%, -15% @ 50/60 Hz.	Electrical Connection	Terminal Block
Floating and Modulating		Cable Gland (M20)	5...9 mm O/D
Two-Position	24 Vac 50/60, (+25%, -15%). 24 Vdc (+/-20%)	Shipping & Storage Temp. Limits	-40...76 °C
Manual Operation		Environment (at media temp. limits)	
Floating / Modulation	Hand lever	Operating Temperature	
Two-position	Hex Key 3.96 mm (5/32")	Floating	0...60 °C
Proportional Control		Proportional	0...60 °C
(Field Selectable)	0...10 V, 2..10 V, 0..5 V, 5..10 V, 4..20 mA Direct or reverse acting	Two-Position	0...76 °C
Main Construction Materials	Thermoplastic base and cover. Approved for use in air plenums.	Humidity	5...95% relative humidity, non-condensing
		Enclosure rating (Horizontal and Vertical Mounting)	IP31

Two-Position Actuators

Part Number	Type Designation	Spring Return Action (Valve Normal Position)	Stroke Time, sec. 50/60 Hz	Spring Return Time, sec. 50/60 Hz	VA @ 24 V ac/dc	Power Consumption ac/dc
MB6-SO-24T	MB6-SRO-24T T31 00	Normally Open	50	35	3.5/1.8	2.3/1.6 W
MB6-SC-24T	MB6-SRC-24T T31 00	Normally Closed				

Three Point Floating Actuators (Increase/Decrease)

Part Number	Type Designation	Spring Return Action (Valve Normal Position)	Stroke Time, sec. 50/60 Hz	Time-out Delay, sec. 50/60 Hz	VA	Power Consumption
MB3-24F	MB3-24F T31 00	None	135	180	4.5	2.0 W
MB3-SO-24F	MB3-SRO-24F T31 00	Normally Open			4.5*	2.0 W
MB3-SC-24F	MB3-SRC-24F T31 00	Normally Closed				

* Size transformer for each spring actuators at 7VA

Proportional Actuators (0...10 V, 2..10 V, 0..5V, 5...10 V, 4...20 mA)

Part Number	Type Designation	Spring Return Action (Valve Normal Position)	Stroke Time, sec. 50/60 Hz	Time-out Delay, sec. 50/60 Hz	VA	Power Consumption
MB3-24M	MB3-24M T31 00	None	135	166	4.5*	2.0 W
MB3-SO-24M	MB3-SRO-24M T31 00	Normally Open				
MB3-SC-24M	MB3-SRC-24M T31 00	Normally Closed				

* Size transformer for each spring actuators at 7VA

6. Ball Valves and Actuators

VB601R Motorized 6-port Ball Valve

The VB601R is a 6-port motorized ball valve that performs a diverting function between two water circuits in 4-pipe changeover system. The VB601R valve will switch between heating and cooling with the addition of the SmartX MB10 two-position rotary actuator.

Flow regulation is provided from an additional SmartX PIBCValve and actuator. This provides the additional benefit of having a balanced energy efficient solution with superb proportional control.

A single on/off control signal to the 6-port diverting valve actuator determines the direction of flow through the valve. Changing the control signal will rotate the actuator and switch the supply ports between heating and cooling or vice versa. During the 6-port valve motorization, the valve rotates through a mid point with all ports isolated and with no possibility to cross connect and mix the heating and cooling circuits.

- No cross-flow between supply circuits.
- Single on/off control signal to changeoversupply circuits.



- Visual indication of actual valve position.
- Silent and reliable operation.
- Maintenance free.
- Teflon seal and polished chrome valve ball to prevent valve sticking.
- Manual override.

Specifications

Valve

DN	15	20
Diff Pressure	3.6 kPa at Qnom of 450 l/h DN15-STD Flow SmartX PIBCValve	14 kPa Qnom of 900 l/h DN20-STD Flow SmartX PIBCValve
Kvs	2.4 m³/h	4.3 m³/h
Pressure Class, PN	16	16
Medium Temp.	0 ... 90 °C	
Shut off	800 kPa	
Valve neck	Quick fix connection	
Connection	Internal thread Rp 1/2 ISO 7/1	
Certifications	PED directive 97/23/EC (Art. 3§3)	
Weight	1140 g	
Main Construction		
Materials: Body and connection	CW 602 N (DZR Brass) CW 614 N Chrome plated	
Ball	CW 614 N Nickel plated	
Stem	P.T.F.E. (TEFLON)	
Seals	70 EPDM 281	
O-ring		

VB601R Valve bodies

DN	Kvs (m³/h)	Connection	Part Number
15	2.4	Rp 1/2	VB601R-15B
20	4.7	Rp 3/4	VB601R-20B

Actuator

Power supply	24 AC ± 20% V
Operating power consumption	5 VA (only when running)
Frequency	50/60 Hz
Running speed	80 sec/90°
Control input	2-point
Operating torque	10 Nm
Rotation angle	90 °
Environment	
Operating Temperature	0...55 °C
Storage / transp. temp	-10...80 °C
Protection Class (EN 60730-1)	II according
Enclosure rating	IP42
Weight	405 g
Connection cable (halogen free)	1.5 m 3×0.5 mm²

MB10 Actuators

Supply voltage (V)	Speed (s / 90°)	Cable length (m)	Part Number
24 AC	80	1.5	MB10-24T
24 AC		10	MB10-24T-10M

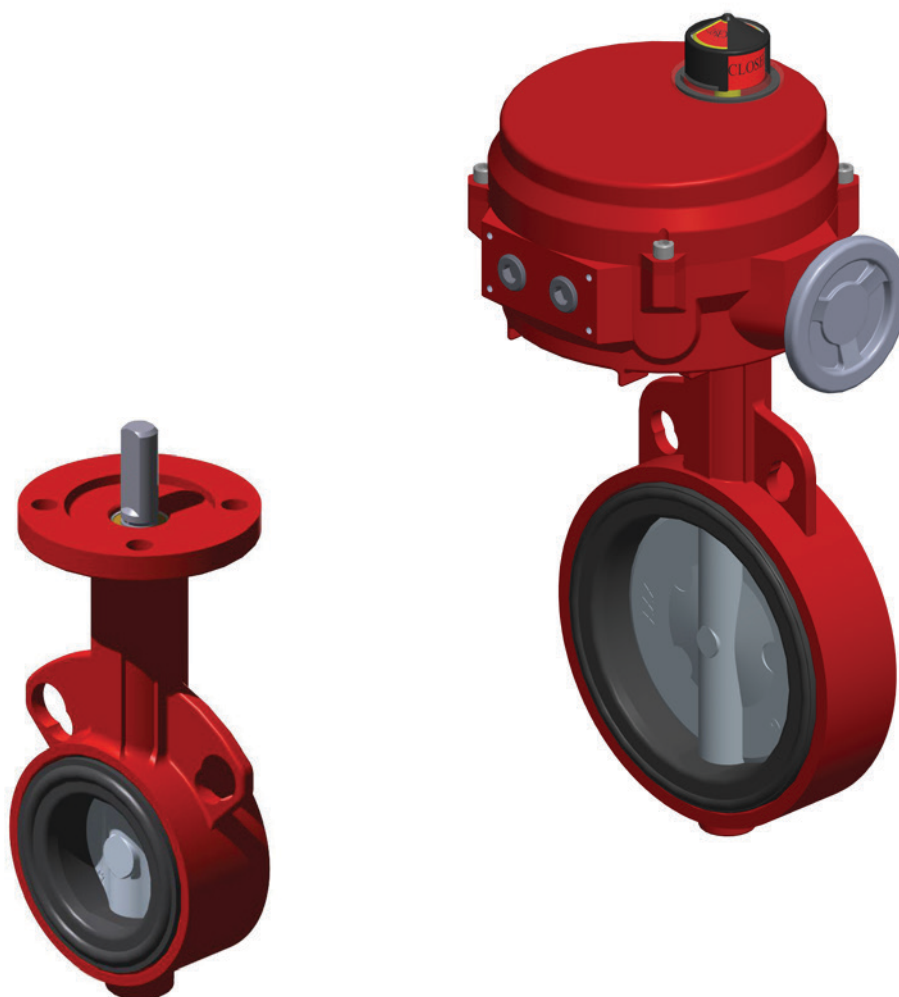
Notes



7. Butterfly Valves and Actuators

7. Butterfly Valves and Actuators

Butterfly Valves are the ideal choice of product for isolation (on/off control) where needed within a plants heating system. The full range of Schneider Electric products can be electrically or manually operated.

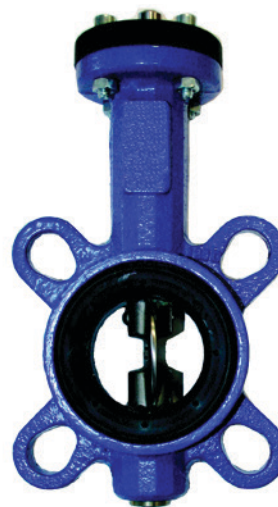


7. Butterfly Valves and Actuators

VF208W 25-200NS & 100-200NZ

The VF208W is a new generation butterfly valve for the isolation and control of water for HVAC systems such as boiler isolation or heat pump change over from cooling to heating. The butterfly valves have elongated wafer type eyelets for fitment between flanges

- Energy saving: EPDM soft seats provide tight shut off and zero leakage (complete insulation possible according to German energy saving order, EnEV)
- Approved for use with drinking water DN25-80 (DVGW)
- Maintenance free, double sealing of stem, central disc bearing
- Good flow control characteristics
- Integrated dew point barrier
- No linkage kits required



Specifications

Pressure Class	PN 16
Leakage (EN 12266-1)	Tight, (Leakage Rate A)
Temperature Range	-10 °C...+100 °C
Max glycol concentration	50%

Main Construction Materials	
Body	Nodular Iron (EN-JS1030)
Lining	EPDM
Disc	DN25-80: 1.4581 (AISI316)
with zinc-lamella coating	DN100-200: (EN-JS1030)
Stem	1.4021-QT

Size	Kv	Stainless Steel Disc		Max ΔP (kPa)	Actuator
		Part Number	Full Type Designation		
DN25	26	VF208W-25NS	VF208W-25NS 26E B00	600	MF20
DN32	26.5	VF208W-32NS	VF208W-32NS 26E B00	600	MF20
DN40	50	VF208W-40NS	VF208W-40NS 50E B00	600	MF20
DN50	115	VF208W-50NS	VF208W-50NS 115E B00	600	MF20
DN65	260	VF208W-65NS	VF208W-65NS 260E B00	600	MF20
DN80	375	VF208W-80NS	VF208W-80NS 375E B00	600	MF20
DN100	760	VF208W-100NS	VF208W-100NS 760E B00	600	MF20
DN125	1,025	VF208W-125NS	VF208W-125NS 1025E B00	600	MF40
DN150	1,790	VF208W-150NS	VF208W-150NS 1790E B00	300	MF40
DN200	3450	VF208W-200NS	VF208W 200NS 3450E B00	300	MF40

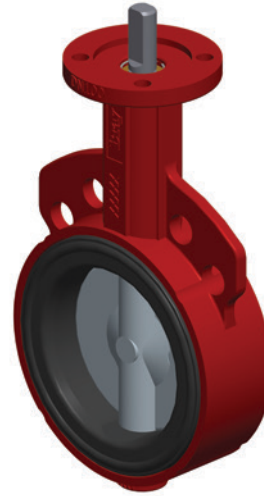
Size	Kv	Nodular Iron Disc		Max ΔP (kPa)	Actuator
		Part Number	Full Type Designation		
DN100	760	VF208W-100NZ	VF208W 100NZ 760E B00	600	MF20
DN125	1,025	VF208W-125NZ	VF208W 125NZ 1025E B00	600	MF40
DN150	1,790	VF208W-150NZ	VF208W 150NZ 1790E B00	300	MF40
DN200	3450	VF208W-200NZ	VF208W 200NZ 3450E B00	300	MF40

Contact Product Management for larger sizes.

VF299W-250...500CN

The VF299W is a general purpose, large butterfly valve with an undercut disc for low actuator torque.

- Wafer lugs for PN6, PN10 and PN16 pattern flanges
- The EPDM soft-seat provides a tight close off with low torque actuator
- Nylon 11 disc for compatibility with many media types including sea water
- Manual adjustment through hand lever, gearbox



Specifications

Pressure Class	PN 16
Leakage (EN 12266-1)	Gas tight, (Leak Rate A)
Temperature Range	-29 °C...121 °C
Fluids	Hot and cold water with 50% Glycol vol. max. Well water, Sea water

Main Construction Materials	
Body	ASTM A 126 ≈ GG25
Primary and Secondary seal, seat	EPDM
Disc	GGG40 Nylon11 coated
Stem	1.4405-QT

Size	Kvs	Part Number	Max ΔP (kPa)	Actuator	Gear operator
DN250	4670	VF299W-250CN	350	MF200	917 0300 000
DN300	6946	VF299W-300CN		MF550/700	
DN350	9063	VF299W-350CN			917 0400 000
DN400	12004	VF299W-400CN			
DN450	14804	VF299W-450CN			MF700
DN500	19212	VF299W-500CN			

7. Butterfly Valves and Actuators

VF209W-50...500CN

The VF209W is a premium high pressure butterfly valve for heavy duty HVAC and industrial applications.

The VF209W can be used as a manual isolation valves or be controlled from a choice of Two-position on/off, 3-point floating and modulating actuators.

- Wafer type connection for fitting between flanges. PN6 (DN50...DN400), PN10, and PN16 (DN50...DN500)
- The EPDM soft-seat provides a tight closing of the butterfly valve with the maximum close-off pressure.
- Suitable for cooling with salt, brackish and drinking water media from the Nylon 11 disc coating.
- Manual adjustment through a ten-position hand lever, gearbox or the handwheel on the actuators.



Specifications

Pressure Class	PN 16
Leakage (EN 12266-1)	Gas tight, (Leakage Rate A)
Temperature Range	-29 °C...121 °C
Fluids	Hot and cold water with 50% Glycol vol. max. Well water, Saltwater

Main Construction Materials	
Body	Grey cast iron GG25
Primary & secondary seal, seat	EPDM
Disc	GGG40 Nylon11 coated
Stem	1.4405-QT

DN	Kvs ^a	Valve Type / Part No.	ΔP	Actuator Type	Hand Lever	Gear Operator
50	124	VF209W-50CN	1200	MF68	916 0080 000	
65	243	VF209W-65CN				
80	397	VF209W-80CN				
100	723	VF209W-100CN		MF200	916 0100 000	
125	1.083	VF209W-125CN				
150	1.591	VF209W-150CN				
200	2.852	VF209W-200CN				
250	4.67	VF209W-250CN	MF550 / 700	917 0300 000		
300	6.946	VF209W-300CN				
350	9.063	VF209W-350CN	1000	MF700	917 0400 000	
400	12.044	VF209W-400CN		MF1450		
450	14.804	VF209W-450CN		MF2050		917 0500 000
500	19.212	VF209W-500CN				

a - The recommended angle of rotation range for modulating control is between 15° and 70°. At a disc angle of 70°, the KV is 55% of the stated Kvs value.

MF20 (SR), MF20-R, MF40 (ER)

The MF20 and MF40 are robust reliable actuators for the control of the VF208W butterfly valves. These actuators mount to the VF208W series valves without linkage kits and connect using terminal blocks to simplify and reduce installation time. The MF20-R actuator allows connection on to installed TRV-S butterfly valves, no linkage kit is required with this actuator too.

- Models for Floating / Modulating / On-Off control
- 2...10 V Positional feedback on modulating models
- Latching Manual override
- Direct Handlever / position indicator
- Auxillary switch available as an accessory
- Standard and Spring Return/Electronic return variants



MF20 / MF20-R



MF40ER



MF40



MF20SR

Actuators for VF208W Butterfly Valves

Suitable VF208W Valve	Loss of power function	Torque	Control	Part Number	Supply Voltage	Power Consumption			Operating time, 90°
						Rest	Operation	Transformer/Wire Sizing	
DN25...100	Stop in place	20Nm	On-Off/3P	MF20-230F	230 Vac	0.4 W	3 W	7 VA	90 sec
				MF20-24F	24 Vac/Vdc	0.2 W	2.5 W	5.5 VA	
	2...10 V		MF20-24M		0.4 W	2.5 W	5 VA		
	Spring return		On-Off	MF20SR-TS	24-230 Vac	3 W	7 W	18 VA	75 sec
2...10 V		MF20SR-24M	24 Vac/Vdc	3 W	5.5 W	8.5 VA	90 sec		
DN125-200	Stop in place	40Nm	On-Off / 3P	MF40-230F	230 Vac	2.5 W	5 W	9 VA	150 sec
				MF40-24F	24 Vac/Vdc	2 W	4 W	6 VA	
	2...10 V		MF40-24M		2 W	4.5 W	6.5 VA		
	Electronic return		On-Off	MF40ER-24T	24 Vac/Vdc	3 W	11 W	21 VA	150 sec
2...10 V		MF40ER-24M							

Actuators for installed base of TRV-S butterfly Valves

Suitable TRV-S valve size	Loss of power function	Torque	Control	Part Number	Supply Voltage	Power Consumption			Operating time, 90°
						Rest	Operation	Transformer/Wire Sizing	
DN25-125	Stop in place	20Nm	On-Off / 3P	MF20-230F-R	230 Vac	0.4 W	3 W	7 VA	90 sec
				MF20-24F-R	24 Vac/Vdc	0.2 W	2.5 W	5.5 VA	
				MF20-24M-R		0.4 W	2.5 W	5V A	

The MF40 and MF40-ER will connect without linkage kit to the TRV-S valves DN150-200

NOTE: Max ΔP Pressure for the valve remains (Max Valve ΔP is a function of construction, not the actuator)

Accessories

MD-S1, 1 x SPDT auxiliary switch	914 1060 000
MD-S2, 2 x SPDT auxiliary switch	914 1061 000

Handlevers can be ordered to fit the VF208W butterfly valve. This enables the valve to be used as hand isolation valves:

Hand Levers

DN25...65	915 0065 000
DN80...100	915 0100 000
DN125...200	915 0200 000



7. Butterfly Valves and Actuators

MF68, MF200, MF550, MF700, MF1470, MF2050

The direct-coupled IP65 rotary actuators are heavy duty dedicated actuators for VF209W and VF299W butterfly valves.

- Hand wheel for manual operation as standard
- Adjustable start/end point switch
- 2 additional auxiliary switches as standard
- Terminal connection
- Direct fit without any linkage kits
- Optical position display
- Suitable for outdoor and industrial environments (IP65)
- Very low maintenance
- Self-regulating heater to prevent condensation buildup within the actuator
- Adjustable positioning speed, 60 sec...360 sec (modulating models)
- Control signal sensitivity adjustment (modulation models)



Suitable VF209W Valve	Suitable VF299W Valve	Control	Part Number	Torque	Supply Voltage	Power Consumption			Operating Time 90° ↺
						Rest	Operation	Wire Sizing	
DN50-150	-	Floating & On/Off	MF68-24F	68 Nm	24 Vac	5 W	43 VA	48 VA	60 sec.
DN200	DN250		MF200-24F	226 Nm			48 VA	53 VA	
DN250-300	DN350-450		MF550-24F	565 Nm			69 VA	77 VA	
DN50-150	-	0(2)-10 V Modulating	MF68-24M	68 Nm		7 W	45 VA	50 VA	
DN200	DN250		MF200-24M	226 Nm			50 VA	55 VA	
DN250-300	DN350-450		MF550-24M	565 Nm			71 VA	79 VA	
DN50-150	-	Floating & On/Off	MF68-230F	68 Nm	230 Vac	5 W	140 VA	155 VA	36 sec.
DN200	DN250		MF200-230F	226 Nm			108 VA	120 VA	
DN250-350	DN350-500		MF700-230F	735 Nm			232 VA	258 VA	
DN400-450	-		MF1450-230F	1470 Nm		275 VA	305 VA	132 sec.	
DN500	-		MF2050-230F	2034 Nm		315 VA	350 VA		



8. Shoe Valves and Actuators

Shoe valves are the ideal type of valve for recirculation systems, allowing control of the fluid flow in both mixing and diverting circuits. Typical applications include heating, cooling and air conditioning.



8. Shoe Valves and Actuators

MB

The MB is a 3-port screwed rotary shoe valve.

Specifications

Design	3-way rotary shoe valve
Pressure Class	PN10
Flow Characteristic	Port 2 Modified Parabolic
Operating angle	90°
Rangeability (Kvs / Kv _{min.})	>50
Leakage	0.5% (%of Kvs)
Max. temperature of medium	120 °C
Min. temperature of medium	2 °C



Connection	Screwed Parallel (female) BSP to BS21
Main Construction Materials	Hot Pressed Brass to BS218
Body 12.7...25.4 mm (½"...1") valves	Close Grained Cast Iron BS1452 Grade 260
Body 31.75...50.8 mm (1¼"...2") valves	Close Grained Cast Iron BS1452 Grade 260 or 220
Body 65 mm...100 mm	Close Grained Cast Iron BS1452 Grade 260 or 220
Spindle	High Tensile Brass to BS2874 CZ114
O Rings	EPDM

MB					Max Close-off Pressure kPa	
Valve Part Number	Size mm (inches)	Reconditioning Kit Part Number	Kvs	Rangeability	RM XRM	MD10B MD10A
					2Nm	10Nm
MB1402	12.7 (½")	0617-9-410	2.0	>50	70	35
MB1452	19.05 (¾")	0617-9-410	4.0			
MB1502	25.4 (1")	0617-9-410	8.3			
MB1552	31.75 (1¼")	0617-9-411	12.5			
MB1602	38.1 (1½")	0617-9-412	21			
MB1652	50.8 (2")	0617-9-413	33			

The MD10 is a damper actuator requiring a linkage kit for use with the MB shoe valves. (LMD/MB linkage kit part number 914 1071 000). Order Auxiliary switches separately, type MD-S2 part number 914 1061 000, type MD-S1, part number 914 1060 000.

VTRE

The VTRE is a 3-way flanged rotary hydronic shoe valve.

The valve is delivered with a handle for manual operation.



Specifications

Valve type	3-way rotary shoe
Flow characteristic	Modified linear
Operating angle	90°
Pressure class	PN 6
Water temperature	
Max.	110 °C
Min.	-10 °C
Max glycol concentration	50%
Max pressure drop	50 kPa
Leakage	Max. 1% of Kvs
Main Construction Materials	
Body	Cast iron
Sleeve	Brass
Connections	Flanged DIN 2531

VTRE			Max Close-off Pressure kPa	
Part Number	DN	Kvs	Mixing Application	Diverting Application
			EM9, M9	EM9, M9B
			15Nm	
731 7039 000	20	12	50	
731 7041 000	25	18		
731 7045 000	32	28		
731 7049 000	40	44		
731 7053 000	50	60		
731 7057 000	65	90		
731 7061 000	80	150		
731 7065 000	100	225		
731 7067 000	125	280		
731 7069 000	150	400		

RM, XRM

These actuators operate the MB Shoe Valves. The XRM actuator is designed to be operated by a three point floating controller providing an output of 24 Vac. The RM actuator is a mains voltage reversing actuator, designed for two-position control when used with a changeover type thermostat or modulating control when used with an appropriate controller. On power failure the actuator can be operated manually.

Specifications

Input voltage XRM	24 Vac, 50 Hz, 0.5VA
Input voltage RM	230 Vac, 50 Hz, 5VA
Stroke	90° angular. Reversing
Running time	240 secs
Torque	2Nm
Protection standard	IP 41
Environment	
Operating Temperature	-20 °C...+35 °C with water at 120 °C



RM, XRM Actuators for MB Valves		Torque
Part Number	Description	Nm
XRM3201	Rotary 24 Vac 3-point	2
RM3601	Rotary 230 Vac 2-point reversing/modulating	

EM9, M9B

The EM9/M9B are electronic actuators for motorising VTRE rotary shoe valves. EM9 operates on 24 V and is controlled by selectable 0...10 Vdc, 2...10 Vdc, 0...20 mA or 4...20 mA control signal. The running time can be programmed. EM9/M9B can be operated manually and has a valve position indicator on the front of the unit.

Specifications

Power consumption	3 VA
Duty cycle	10%
Torque	15 Nm
Environment	
Operating Temperature	-15...+55 °C



Protection class	IP 54
Material	
Enclosure material	Reinforced plastic PA66
Color	Black/Red

M9B, EM9 actuators for valves VTRE		Control signal	Working range	Running time	Power
Part Number	Description				Vac ±10%
860 1010 000	M9B/24	3-point	30-180°	90° 4 min	24
860 1020 000	M9B/230				230
860 1100 000	EM9/90	modulating ¹	90°	60/90/120s	24
860 1110 000	EM9/180		180°		

1 - Selectable 0...10 V, 2...10 V, 0...20 mA, 4...20 mA

M9B, EM9 linkage kits for other valves

Part Number	Description
860 0990 000	Linkage E/M9-VTRA
860 0991 000	Linkage E/M9-TRV ²

2 - NOTE: Not suitable for TRV-S



9. Damper Actuators

A wide program of damper actuator products are available from Schneider Electric, enabling the control of air movement from the smallest to the very largest air handling equipment. Intelligent torque control is used in the motors for stall protection and low power holding providing a dependable range of products for the facility manager.



9. Damper Actuators - Non-Spring Return

MD5A, MD10A, MD20A, MD40A

The MD...A are 2...10 V modulating damper actuators designed for operating air control dampers in ventilation and air conditioning systems for building services installations.

As an accessory, these modulating actuators have a fully adjustable auxiliary switch unit.

Damper Actuators can be used with Mounting kits to drive selected Butterfly and Shoe valves.



Specifications

Power supply	24 Vac \pm 20%, 50/60 Hz, 24 Vdc \pm 20%
Connection cable	1 m, 4 \times 0.75 mm ² (AWG 18)
Input signal range X	0...10 Vdc
Input resistance	100 k Ohm
Operating range	2...10 Vdc (for set angle of rotation)
Synchronisation tolerance	\pm 5%
Position feedback Y	2...10 Vdc (max. 1 mA)
Direction of rotation	Reversible with switch 0 / 1 at switch position 0 resp 1
Angle of rotation	Max. 95° (adjustable by mechanical stops)
Running time	150 s

Position indication	Mechanical
Manual override	Gearing latch disengaged with push-button, self-resetting, manual locking
Enclosure rating	IP 54
Humidity	95% RH, non-condensing
Environment	
Operating Temperature	-30...+50 °C
Storage Temperature	-40...+80 °C
Maintenance	Maintenance free

Part Number	Description	Torque Nm	Power Consumption		
			In operation	At rest	For Transformer Sizing
875 1009 000	MD5A-24	5	1 W	0.4 W	2 VA
875 1019 000	MD10A-24	10	2 W		4 VA
875 1029 000	MD20A-24	20			
875 1039 000	MD40A-24	40	4.5 W	2 W	6.5 VA

Description	For air control dampers area	Damper spindle	Spindle length, mm	Spindle diameter, mm
MD5	approx. 1 m ²		min. 37	6...20
MD10	approx. 2 m ²	Clamp on top	min. 40	8...26.7
		Clamp on bottom*	min. 20	8...20
MD20	approx. 4 m ²	Clamp on top	min. 48	10...20
		Clamp on bottom	min. 20	
MD40	approx. 8 m ²	Clamp on top	min. 52	12...26.7
		Clamp on bottom	min. 20	

* Optional accessory K-MD10 part number 914 1062 000. For damper actuator accessories see "Damper Actuator Accessories" on page 86.

MD5B, MD10B, MD20B, MD40B

The MD...B are on/off damper actuators designed for operating air control dampers in ventilation and air conditioning systems for building services installations. The actuators are available in 24 Vac/Vdc or 230 Vac versions and versions with an integrated end point switch (-S types). The Auxiliary switch is also available as an accessory.

Damper Actuators can be used with Mounting kits to drive selected Butterfly and Shoe valves.



Specifications

Connection cable	
Actuator	1 m, 3×0.75 mm ² (AWG 18)
Auxiliary switches (-S)	1 m, 3×0.75 mm ² (AWG 18)
Angle of rotation	max. 95° (adjustable by mechanical stops)
Running time	150 s
Direction of rotation	Reversible with switch 0 / 1 at switch position 0 resp 1
Position indication	Mechanical
Auxiliary switch	1 mA...3 (0.5) A, 250 Vac
Switching point	(adjustable 0...100%)

Protection Class	III Safety extra-low voltage
MD..B-24(-S)	II Totally insulated
MD..B-230(-S)	IP 54
Enclosure rating	
Humidity	95% RH, non-condensing
Environment	
Operating Temperature	-30...+50 °C
Storage Temperature	-40...+80 °C
Maintenance	Maintenance free

Part Number	Description	Torque Nm	Power supply	Power Consumption			
				In operation	At rest	For Transformer Sizing	
875 1001 000	MD5B-230	5	230 Vac -60%/+15%	1.5 W	0.4 W	3.5 VA	
875 1003 000	MD5B-230-S						
875 1005 000	MD5B-24		24 Vac/Vdc ± 20%	1 W	0.2 W	1.5 VA	
875 1007 000	MD5B-24-S						
875 1011 000	MD10B-230	10	230 Vac -60%/+15%	2.5 W	0.6 W	5.5 VA	
875 1015 000	MD10B-24						
875 1021 000	MD20B-230	20	230 Vac -60%/+15%	2.5 W	0.6 W	6 VA	
875 1025 000	MD20B-24						
875 1035 000	MD40B-24		40	24 Vac/Vdc ± 20%	2 W	0.2 W	4 VA
					4 W	2 W	6 VA

Description	For air control dampers area	Damper spindle	Spindle length mm	Spindle diameter mm
MD5	approx. 1 m ²		min. 37	6...20
MD10	approx. 2 m ²	Clamp on top	min. 40	8...26.7
		Clamp on bottom*	min. 20	8...20
MD20	approx. 4 m ²	Clamp on top	min. 42	10...20
		Clamp on bottom	min. 20	
MD40	approx. 8 m ²	Clamp on top	min. 42	14...26
		Clamp on bottom	min. 20	

* Optional accessory K-MD10 part number 914 1062 000.

For damper actuator accessories see "Damper Actuator Accessories" on page 86.

9. Damper Actuators - (Spring / SuperCap Return)

LF24, LF230, LF24-SR

The LF series are compact, low-torque, spring return damper actuators suitable for controlling air dampers up to 0.8m² cross sectional area.

The LF24 and LF230 versions are on/off controlled. The LF24-SR version is for 0...10 V modulating control with 2...10 V position feedback



Specifications

Connection cable	2×0.75 mm ² (AWG 18)
Angle of rotation	Max. 95° (adjustable 37...100% with additional limit stop ZDB-LF)
Torque	
Spring return	Min. 4 Nm (3 ft-lbf)
Running time	
Actuator	40...75 s (0...4 Nm (0...3 ft-lbf))
Spring return	Approx. 20 s (at -20...+50 °C) max. 60 s (at -30 °C)
Direction of rotation	Selected by mounting L/R
Position indication	Mechanical

Enclosure rating	IP 54
Humidity	95% RH, non-condensing
Environment	
Operating Temperature	-30...+50 °C
Storage Temperature	-40...+80 °C
Service life	min. 60,000 operations
Maintenance	Maintenance free

Part Number	Description	Torque Nm	Control Signal	Power supply	Power Consumption		
					In operation	At rest	For Transformer Sizing
874 0003 000	LF24	4	on/off	24 Vac±20%	5 W	2.5 W	7 VA
875 0003 000	LF230			230 Vac±14%		3 W	
877 0003 000	LF24-SR		0...10 V	24 Vac±20%	2.5 W	1 W	

For damper actuator accessories see "Damper Actuator Accessories" on page 86.

MD10 SR

The MD10 SR is a compact spring return damper actuator for the operation of ventilation dampers up to 2m² in building service installations



Specifications

Motor Torque	Min. 10 Nm@ Nominal Voltage	Manual Override	5 mm Hex key, supplied plus interlocking switch
Spring Return	Min. 10Nm	Adjustable angle of rotation	0...Max 95°
Running Time, Motor Modulating	≤150 s	Position indication	Mechanical
On/off	≤75 s	Protection Class	III Extra low Voltage II Totally insulated
Spring Return	≤20 s	24 V versions	III Extra low Voltage
Control Signal, modulating		230 V Versions	II Totally insulated
Range of Operation (X)	2...10 Vdc	Enclosure rating	IP54
Input Resistance	100 kΩ	Humidity	95% r.h. Non-condensing
Position Feedback (Y)	2...10 Vdc, max. 0.5mA	Environment	
Position accuracy	+/- 5%	Operating Temperature	-30 °C...+ 50 °C
Cable Size	1m	Storage Temperature	-40 °C...+ 80 °C
-24M,	4 x 0.75 mm ²	Sound power level	
-T, -24T	2 x 0.75 mm ²	Motor	≤40 dB (mod.) 45dB (on/off)
S2 versions	2+6 x 0.75 mm ²	Spring return	≤62 dB
Direction of Rotation		Service Life	Min.60,000 emergency positions
Motor	Reversible with Switch I/O	Maintenance	Maintenance free
Spring return	via mounting orientation, L / R	Weight	2.1Kg

Part Number	Type Designation	Torque Nm	Power Supply	Power Consumption			Control Signal
				In Operation	At Rest	For wire sizing	
MD10SR-T	MD10 SR-24/230T 1M54 00	10	24...240 Vac / 24...125 Vdc	6W	2.5W	9.5VA	On/Off
MD10SR-TS	MD10 SR-24/230FTS 1M54 00					8.5VA	
MD10SR-24T	MD10 SR-24T 1M54 00		5.5VA				
MD10SR-24TS	MD10 SR-24TS 1M54 00		24 Vac/Vdc	3.5W			2...10 V Mod.
MD10SR-24M	MD10 SR-24M 1M54 00						

For damper actuator accessories see "Damper Actuator Accessories" on page 86.

Spindle Clamp

Damper Spindle Attachment		Spindle Length	Spindle Diameter		
			●	■	◆
Clamp on Top	With Insert	≥85 mm	10...22 mm	10 mm	14...25.4 mm
	Without Insert		19...25.4 mm	12...18 mm	
Clamp on Bottom	With Insert	≥15 mm	10...22 mm	10 mm	14...25.4 mm
	Without Insert		12...18 mm	19...25.4 mm	

9. Damper Actuators - (Spring / SuperCap Return)

MD20 SR

The MD20 SR is a compact spring return damper actuator for the operation of ventilation dampers up to 4m² in building service installations



Specifications

Motor Torque	Min. 20 Nm@ Nominal Voltage
Spring Return	Min. 20Nm
Running Time, Motor Modulating	≤150 s
On/off	≤75 s
Spring Return	≤20 s
Control Signal, modulating	2...10 Vdc
Input Resistance	100 kΩ
Position Feedback (Y)	2...10 Vdc, max. 0.5mA
Position accuracy	+/- 5%
Cable Size	1m, 0.75 mm ²
-24M,	4 x 0.75 mm ²
-T,-24T	2 x 0.75v mm ²
S2 versions	2+6 x 0.75 mm ²
Direction of Rotation	
Motor	Reversible with Switch I/O
Spring return	via mounting orientation, L / R
Manual Override	5 mm Hex key, supplied plus interlocking switch

Adjustable angle of rotation	0...Max 95°
Position indication	Mechanical
Protection Class	
24 V versions	III Extra low Voltage
230 V Versions	II Totally insulated
Enclosure rating	IP54
Environment	
Operating Temperature	-30 °C...+ 50 °C
Storage	-40 °C...+ 80 °C
Humidity	95% r.h. Non-condensing
Sound power level	
Motor	≤40 dB (mod.) ≤45dB (on/off)
Spring return	≤62 dB
Service Life	Min.60,000 emergency positions
Maintenance	Maintenance free
Weight	approx. 2.1Kg

Part Number	Type Designation	Torque Nm	Power Supply	Power Consumption			Control Signal
				In Operation	At Rest	For wire sizing	
MD20SR-T	MD20 SR-24/240T 1M54 00	20	24...240 Vac / 24...125 Vdc	6.5W	3.3W	18VA	On/Off
MD20SR-TS	MD20 SR-24/240TS 1M54 00						
MD20SR-24T	MD20 SR-24T 1M54 00		24 Vac/Vdc	5W	2.5W	7.5VA	
MD20SR-24TS	MD20 SR-24TS 1M54 00						
MD20SR-24M	MD20 SR-24M 1M54 00						

For damper actuator accessories see "Damper Actuator Accessories" on page 86.

Spindle Clamp

Damper Spindle Attachment		Spindle Length	Spindle Diameter	Spindle Diameter	Spindle Diameter
			●	■	◆
Clamp on Top	With Insert	≥85 mm	10...22 mm	10 mm	14...25.4 mm
	Without Insert		19...25.4 mm	12...18 mm	
Clamp on Bottom	With Insert	≥15 mm	10...22 mm	10 mm	14...25.4 mm
	Without Insert		19...25.4 mm	12...18 mm	

MD40 ER

The MD40 Electronic Return (SuperCap) Damper Actuator is a powerful rotary damper actuator with super capacitor technology for positional electronic drive return in the event of a power failure.

- Air Dampers up to 8m²
- 24 Vac/Vdc
- 2...10 V Position Feedback
- Long Life Supercaps



Specifications

Power Supply	AC: 19.2...28.8V; 50/60 Hz DC: 21.6...28.8V	Angle of Rotation	Max. 95°, limited both ends, adjustable end stops
Running Time Motor Driven	150 s/90°	Position Indication	Mechanical
Capacitor Driven	35 s/90°	Environment	
Control Signal		Operating Temperature	-30 °C...+ 50 °C
Range of Operation (X)	2...10 Vdc	Storage Temperature	-40 °C...+ 80 °C
Input Resistance	100 kΩ	Humidity	95% r.h. Non-condensing
Position Feedback (Y)	2...10 Vdc, max. 0.5 mA	Weight	approx. 1.8 kg
Position accuracy	+/- 5%	Safety Protection Class	III Safety Extra Low Voltage / UL Class 2 Supply
Functional Data		Enclosure rating	IP54 NEMA2, UL Enclosure Type 2
Electronic Return position	0...100% of max. angle or rotation (POP dial)	Standards	CE to 2004/108/EC cULus to UL60730-1A UL60730-2-14 and CAN/CSA E60730-1:02 IEC/EN 60730-1 and IEC/EN 60730-2-14
Direction of Rotation Motor (mod.)	Reversible with Switch 0/1		
Electronic Return (SuperCap) Position	0...100% (any position between, as set by POP dial)		

Part Number	Control	Torque	Power Consumption		
		Nm	In operation	At rest	For Transformer Sizing
MD40ER-24M	Modulating	Min. 40	11 W @ nominal torque	<3 W	≤21 VA
MD40ER-24T	Two-Position	Nm			

Description	For air control dampers area	Damper spindle	Spindle length, mm	Spindle diameter, mm
MD40	approx. 8 m ²	Clamp on top	min. 52	12...26.7
		Clamp on bottom	min. 20	

For damper actuator accessories see "Damper Actuator Accessories" on page 86.

9. Damper Actuators

Damper Actuator Accessories

Mechanical Accessories

Name	Description	Part Number	Actuators							
			MD5	MD10	MD20	MD40	LF	MD10 SR	MD20 SR	MD40 ER
AV8-25	Shaft extension Length approx. 250 mm For damper spindles 8...25 mm dia. or 10...25 mm square	914 1023 010		X					X	
K-MD10	Reversible spindle clamp	914 1062 000		X						
KH8	Universal damper crank arm Zinc-plated steel For damper spindles 10...18 mm dia. or 10...14 mm square Slot width 8.2 mm	914 1021 000			X				X	
ZG-MDSR	Mounting Kit for flat and side installation	914 1046 000							X	
ZDB-LF	Angle of rotation limiter and pointer	914 1045 000						X		
ZG-MD20	Parallel lever linkage kit	914 1063 000			X					
Z-AF	Mounting plate adaptor for anti-rotation strap-- Retrofitting MD20 SR or MD10 SR from AF installation	914 1047 000							X	

Electrical Accessories

Name	Description	Part Number	Actuators							
			MD5	MD10	MD20	MD40	LF	MD10 SR / MD20 SR	MD40 ER	
MD-S1	Auxiliary switch, add-on 1xSPDT 1mA...3(0.5)A, 250 Vac	914 1060 000							Actuators only available with integrated switches	X
MD-S2	Auxiliary switch, add-on 2xSPDT 1mA...3(0.5)A, 250 Vac	914 1061 000		X						

Notes



10. Specialist Products

Specialist products provide solutions for our wide installation base or the more demanding hydronic applications, such as globe and zone valves capable of handling higher pressure drops typically experienced in high rise buildings.



10. Specialist Products

VZ22, VZ32, VZ42

These long stroke (6.5 mm) zone valves have a very high working pressure capability and can be driven from a wide range of actuators including types with LON communication. The VZ22, VZ32 and VZ42 valves are a robust range of zone valves in 2-way, 3-way and 3-way with 4 ports.

With this range of products, the same valve body can be driven by both a thermal and motoric actuator.



Specifications

Valve types	
2-way valve	VZ22
3-way valve	VZ32
3-way with bypass	VZ42
Nominal pressure rating	PN16 (232 psi)
Flow characteristics	Equal percentage port A-AB Linear for bypass B-AB
Rangeability	
2-way valve	50:1
3-way valve	50:1 for controlled port
Leakage rate	< 0.02% of kv
Connections	External thread
Suitable medium	Water according to VDI 2035
Max. glycol concentration	50%
Controlled water temperature	2...120 °C (36...248°F)
Material	
Valve body	DN15 yellow brass DN20 red brass Stainless steel
Stem	
Plug	Brass
Function	
2-way valve	Stem up to open port A to B
3-way valve	Stem up to close port A to AB
Stroke	6.5 mm (0.26 in.)

(1) Up to 1000 kPa system pressure

For fittings please see the tables "Connections for VZ*08 Series Zone Valves" on page 21 and "Connections for VZ*19 Series Zone Valves" on page 23.

VZ22			Max Close-off Pressure kPa	
			MZ18L / MZ18A / MZ18B	MZ10T / MZ95
Part Number	Size (mm)	Kv	180N	95N
721 0702 000	15	0.16	1600	600
721 0706 000		0.25		
721 0710 000		0.4		
721 0714 000		0.63		
721 0718 000	20	1	1200	180
721 0722 000		1.6		
721 0726 000		2.5		
721 0730 000		4		
			400	50 (1)

VZ32				MZ18L / MZ18A / MZ18B	MZ10T / MZ95
Part Number	Size (mm)	Kv		180N	95N
		A-AB	B-AB		
731 0706 000	15	0.25	0.16	800	600
731 0710 000		0.4	0.25		
731 0714 000		0.63	0.4		
731 0718 000		1.0	0.63		
731 0722 000	20	1.6	1.0	250	180
731 0726 000		2.5	1.6		
731 0730 000		4.0	2.5		
731 0727 000		2.5	1.6		
731 0730 000				240	-
731 0730 000	20	2.5	1.6	100	50 (1)
731 0730 000	20	4.0	2.5	100	50 (1)

VZ42				MZ18L / MZ18A / MZ18B	MZ10T / MZ95
Part Number	Size (mm)	Kv		180N	95N
		A-AB	B-AB		
741 0706 000	15	0.25	0.16	800	500
741 0710 000		0.4	0.25		
741 0714 000		0.63	0.4		
741 0718 000		1.0	0.63		
741 0722 000	20	1.6	1.0	250	150
741 0726 000		2.5	1.6		
741 0730 000		4.0	2.5		
741 0730 000					
				240	-

MZ18A, MZ18B, MZ18L

For VZ22, VZ32, VZ42 Zone Valves, the MZ18 is a compact electro-mechanical zone valve actuator designed for use with the VZ*2 valves.

These actuators feature reliable long term operation ensured from a simple design without the need for end switches. Visual position indication on all models.



Specifications

Supply voltage	24 Vac
Running time (full stroke, 50 Hz)	150 s
Stroke	6.5 mm
Force	180 N
Connection cable	1.5 m
Coupling ring	M 30 x 1.5
Enclosure rating	IP 42

Part number	Description	Control	Power Consumption	Ambient Temperature
845 5100 000	MZ18A-24	0...10 V, 2...10 V, Direct/ Reverse	1.4 VA	0...55 °C
845 5101 000	MZ18B	3 Point Floating	0.7 VA	0...60 °C
845 5102 000	MZ18L (LON)	SNVT_lev_ percent 0...100%	1.4 VA	0...55 °C

MZ95

The MZ95 is a thermal zone valve actuator designed for use with the VZ*2 valves.

Normally used for on/off two-position control but PWM is possible with the appropriate controller.

A discreet design with high IP rating in any orientation, clear position indication and alternative cable lengths.



Specifications

Supply voltage	24 Vac
Power Consumption	2 W
Stroke	8 mm
Force	95 N
Connection Cable (standard)	2.5 m
Coupling Ring	M30 x 1.5
Ambient Operating Temperature	0...55 °C
Enclosure rating	IP44

Part Number	Voltage	Actuator Stem Action (2-way Valve Function)
MZ95NC-24T	24 Vac/Vdc	Stem Down (Normally Closed)
MZ95NO-24T		Stem UP (Normally Open)
MZ95NC-230T	230 Vac	Stem Down (Normally Closed)
MZ95NO-230T		Stem UP (Normally Open)

Additional cable set, MZ95

Part Number	Cable length	Qty in pack
911 4205 000	5.0 m	10 pcs
911 4210 000	10.0 m	

10. Specialist Products

V222

The V222 is a large flanged balanced globe valve, suitable for control of large flows in heating and air conditioning systems. The balanced plug enables a low actuating force to control the valve. A stainless steel seat allows a large pressure drop across the valve.

Suitable for a wide range of applications using hot water or de-aerated cooling water



Specifications

Design	2-way pressure balanced plug valve, stem down, closed	
Pressure class	PN 16	
Flow characteristics	Equal Percentage	
Stroke		
DN65...DN100	30 mm	
DN125...DN150	50 mm	
Rangeability (Kvs/Kv _{min.})	>50	
Leakage	<0.05% of Kvs	
Stem		
DN 65...100	M8	
DN 125...150	M16	
	(fitted with Hex Bush for M22/M50 actuators)	

Max. temperature of medium	150 °C
Min. temperature of medium	-10 °C
Connection	Flange according ISO 7005-2
Max. glycol/concentration	50%
Main Construction Materials	
Body	Grey Cast Iron GG25
Stem	Stainless steel SS 1.4021
Plug	Stainless steel SS 1.4021
Seat	Stainless steel SS 1.4021
Packing box	Spring-loaded PTFE-V-ring

Part Number	DN	Kvs	ΔPm (kPa)	Rangeability	Max Close-off Pressure (kPa)						
					Non-spring Return Actuators						Spring Return
					M800	M1500	MV15B (1500N)	M3000	M22 (2200N)	M50 (5000N)	M700
721 2254 000	65	63	800	>50	1500	1600	1600	1600	-	-	1200
721 2258 000	80	85	400								
721 2262 000	100	130	150		1100						800
721 2266 000	125	250	100		-						
721 2270 000	150	350									

Replacement packing box:

DN65...DN100:	1 001 0820 0
DN125...DN150:	1 001 0821 0
Stem Heater	
DN65...DN100:	880 0112 000
DN125...DN150:	880 0113 000
Replacement stem adaptor/hex bush:	
DN125...DN150:	880 0134 000

V321

The V321 is a large flanged valve with a stainless steel seat for high pressure drops.

The valve is suitable for a wide range of mixing applications with hot or chilled water in heating cooling and air handling systems.

If the valve is used for media at temperatures below 0 °C , it should be equipped with a heater to prevent ice formation on the valve stem.



Specifications

Design	3-way plug mixing valve stem up closed (A port/B-AB open)		
Pressure class	PN 16		
Connection	Flange according ISO 7005-2		
Flow characteristics	Equal Percentage		
A – AB	Linear		
B – AB			
DN65...100	30 mm		
DN125...150	40 mm		
Leakage			
A – AB DN65...DN100	<0.05% of Kv		
B – AB DN65...DN100	<0.05% of Kv		

Stem	Ø10 mm, M10 thread connection (fitted with Forta stem adaptor to M8)
DN65...100	Ø10 mm, M10 thread connection (fitted with Hex Bush for M22/M50)
DN125...150	
Max. temperature of medium	130 °C
Min. temperature of medium	-10 °C
Max. Glycol concentration	50%
Main Construction Materials	
Body	Grey Cast iron GG25
Stem	
DN65...100	Stainless steel SS 1.4571
DN125...150	Stainless steel SS 1.4021
Plug	Stainless steel SS 1.4021
Seat	Stainless Steel SS 1.4021
Stem Packing	EPDM

Mixing Application

V321					Max Close-off Pressure (kPa)						
					Non-Spring Return Actuators						Spring Return
Part Number	DN	Kvs	ΔPm	Rangeability	M800	M1500	MV15B (1500N)	M3000	M22 (2200N)	M50 (5000N)	M700
731 2153 010	65	63	100	>30	140	290	290	700	-	-	80
731 2157 010	80	100	80		80	180	180	440			40
731 2161 010	100	160	60		40	110	110	280			-
731 2165 010	125	220			-	90	340	-			
731 2169 010	150	320	60		240	-	-				

Replacement packing box:	Stem Heater:
DN65...DN150: 1 001 0822 0	DN65...DN100: 880 0110 000
Pre 2007, DN125...DN150	DN125...DN150: 880 0111 000
with 18 mm stem dia: 1 001 0821 0	Replacement Stem adaptors
Conversion kit	DN65...DN100: 880 0133 000
V321 with old M16 actuator	DN125...DN150: 1 001 0824 0
to Forta connection: 880 0130 000	

Diverting Application

Size		Kvs	ΔPm	Max Close Pressure, ΔPc (kPa)					
DN	In.	m³/h	kPa	Forta M800	Forta M1500/ MV15B	Forta M3000	Forta M700 SR	M22**	M50**
65	2½"	63	100	70	145	350	40	-	-
80	3"	100	80	45	60	220	20	-	-
100	4"	160	60	25	55	140	-	-	-
125	5"	220	60	-	-	-	-	55	165
150	6"	320	60	-	-	-	-	35	110

ΔPc = Maximum allowed pressure differential across a closed valve (a function of actuator performance)
 ΔPm = Maximum allowed pressure drop across a fully 'open' valve (a function of hydraulic valve performance)
 **M22 and M50 actuators will not fit to valves DN65...100
 Note: Never exceed a fluid velocity above 2m/s

10. Specialist Products

VZX

The VZX valve utilises a compact actuator for installations with limited space.

Suitable for a wide range of applications such as heating, cooling and air handling systems with hot or chilled water.



Specification

Design	2-way plug valve
Pressure class	PN 16
Flow characteristic	Equal Percentage
Stroke	12.7 mm
Rangeability (Kvs/Kvmin)	>50
Leakage	<0.1% of Kvs
Max. temperature of medium	120 °C
Min. temperature of medium	2 °C

Max. glycol concentration	25%
Connection	Screwed BSP to BS21 (Rp)
Main Construction Materials	
Body	Bronze: Leaded Gunmetal BS1400 LG2
Stem	Stainless steel BS970 Grade 303 S42
Plug	Copper Alloy BS2874 CZ132 or BS2871 CZ110
Seat Sealing	Gland O Ring
Seat	Integral with body
Stem packing	PTFE Chevrons

VZX				Max Close-off Pressure kPa	
				Non-Spring Return Actuators	
Part Number	Size mm (inches)	Kvs	Rangeability	MG350S	MZ300S
VZX4404	Rp 1/2	2.1	>50	1600	1600
VZX4451	Rp 3/4	4.2		1000	1000
VZX4501	Rp 1	8.3		500	500
VZX4551	Rp 1¼	12.5		300	300
VZX4601	Rp 1½	21		170	170
VZX4651	Rp 2	33		90	90

Replacement Packing Box: 0626 9 204

MZX

The MZX is a 3-way valve utilising a compact actuator for installations with limited space.

The valves are suitable for a wide range of mixing applications such as heating, cooling, air handling and domestic hot water systems.



Specification

Design	3-way plug valve
Pressure class	PN 16
Flow characteristic Port 2	Modified Parabolic
Flow characteristic Port 3	Linear
Stroke	12.7 mm
Rangeability (Kvs/Kvmin)	>50
Leakage (Ports 2-1)	0.1% max.
Leakage (Ports 3-1)	0.5% max.
Max. temperature of medium	120 °C
Min. temperature of medium	2 °C

Max. Glycol concentration	25%
Connections	Rp internal pipe thread (BSP to BS21)
Main Construction Materials	
Body	Bronze: Leaded Gunmetal BS1400 LG2
Stem	Stainless steel BS970 Grade 303 S42
Plug	Copper Alloy BS2874 CZ132 or BS2871 CZ 110
Sealing	Gland O Ring
Seat Top	Integral with body
Seat Bottom	Copper Alloy BS2874 CZ 132 (12.7...19.05 mm (½" & ¾") valves)
Seat Bottom	Leaded Gunmetal BS1400 LG2 (25.4...50.08 mm (1" to 2" valves)
Stem Packing	PTFE Chevrons

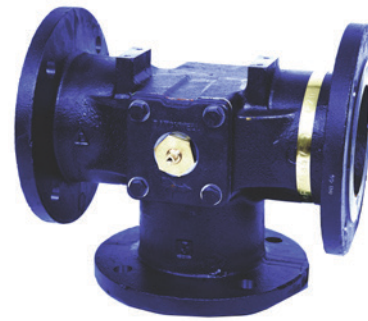
MZX				Max Close-off Pressure (kPa)	
				Non-Spring Return Actuators	
Part Number	Connection mm (inches)	Kvs	Rangeability	MG350S	MZ300S
MZX4402	Rp 1/2	2.6	>50	1600	1600
MZX4452	Rp 3/4	4.2		1000	1000
MZX4501	Rp 1	8.3		500	500
MZX4551	Rp 1¼	12.5		300	300
MZX4601	Rp 1½	21		170	170
MZX4651	Rp 2	33		90	90

Replacement Packing Box: 0626 9 204

10. Specialist Products

MBF

The MBF is a 3-port flanged rotary shoe valve suitable for both mixing and diverting circuits. The Valve is operated with a linkage kit and the MD20 Damper actuator.



Specifications

Design	3-way rotary shoe valve
Pressure Class	PN6
Flow Characteristic	Port 3 Linear
Operating angle	90°
Rangeability (Kvs / K _{vmin.})	>50
Leakage	0.5% (%of Kvs)
Max. temperature of medium	120 °C
Min. temperature of medium	2 °C

Connection	Flanged BS4504, Table 6/11
MBF	
Main Construction Materials	
Body 12.7...25.4 mm (½"...1") valves	Hot Pressed Brass to BS218
Body 31.75...50.8 (1¼"...2") valves	Close Grained Cast Iron BS1452 Grade 260
Body 65 mm...100 mm	Close Grained Cast Iron BS1452 Grade 260 or 220
Spindle	High Tensile Brass to BS2874 CZ114
O Rings	EPDM

MBF					Max Close-off Pressure kPa
Valve Number	DN	Spares Reconditioning Kit	Kvs	Rangeability	MD20B MD20A
					20Nm
MBF4732	65	0618 9 510	65	>50	35
MBF4782	80	0618 9 511	83		25
MBF4857	100	0618 9 512	125		

The MD20A/B is a damper actuator requiring linkage kit (LMD/MBF part number 914 1070 000).

Order auxiliary switches separately:

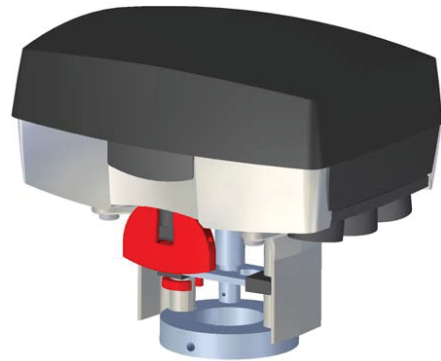
Type MD-S2 part number: 914 1061 000

Type MD-S1 part number: 914 1060 000.

M315

M315 is an electro-mechanical actuator for the control of V294, V282 and V394 Valves:

M315 utilizes the Forta universal functionality and may be controlled by an increase/decrease signal or by a modulating 0–10 V control signal.



Specifications

Part Number	880 0070 030
Supply voltage	24 V AC +25%/ -35%, 50–60 Hz
Power consumption	6 VA
Transformer sizing	30 VA
Running time	
Modulating 9–25 mm (0.35 - 1 in.)	15 s
Increase/decrease	300 s/60 s
Stroke	
Range	9...15 mm (0,35...0.59 in.)
Factory set stroke	15 mm (0.59 in.)
Thrust	300 N (67 lbf.)
Duty cycle	max. 20% / 60 minutes
Analog input	
Voltage	0–10 V
Impedance	min 100 kW
Digital inputs VH–VC	
Voltage across open input	24 V AC
Current through closed input	5 mA
Pulse time	min. 20 ms

Output G1	
Voltage	16 V DC \pm 0.3 V
Load	25 mA, short-circuit proof
Output Y (position feed back signal)	
Voltage	2...10 V (0...100%)
Load	2 mA
Wiring Entry	
Conduit connection	3 x M20 screwed
Cable gland	1 x 6..12 mm O/D, IP68
Environment	
Operating Temperature	-10...+50 °C (14 °F...122 °F)
Storage Temperature	-10 ...+50 °C (14 °F...122 °F)
Humidity	max. 90% RH
Enclosure rating	IP 54
Material	
Housing	Aluminium
Cover	ABS/PC plastic
Color	aluminium/black
Weight	1.8 kg (3.96 lb.)

Accessories

S2-Forta Aux switch relay	880 0104 000
Replacement Circuit board M315	1 001 0675 0

10. Specialist Products

MG350S

The MG350S is a compact electro-mechanical actuator for controlling the VZX and MZX 2-way and 3-way linear globe valves. The MG350S actuators are primarily designed for applications where the demands on speed and thrust are relatively small.

- Stable force control with stall protection
- Hysteresis Control - Intelligent response to fluctuating control signals, extending actuator life and better plant regulation
- High Resolution PCBA and motor transmission for fine valve plug position and excellent flow control.
- Low power holding
- Auto adaptation to valve end stroke limits upon first power up
- LED status indication
 - Tri-color LED for operation, calibration, and alarm notification
- Removable terminal block and cable gland for ease installation



Specifications

Supply voltage	24 Vac/Vdc \pm 20% 50/60 Hz
Power Consumption (50Hz)	
Running: MG350S-24M	7.2 VA (3.5 W)
MG350S-24F	5 VA (3.5 W)
Holding (Modulating only)	1.2 VA
Transformer sizing	(same as Power Consumption)
Running Time	8 s/mm (Full stroke time = 102 sec)
Max. Stroke	16.5 mm
Nominal Force	350 N
Control (Floating/Digital)	
Dependant upon wiring	
3 wire Floating	24 Vac/Vdc or 0 V
2 Position on/off	NO or NC
Minimum input pulse	100 msec
Control (Modulating)	
Selectable input signals	0...10 Vdc, 2...10 Vdc
Impedance	min. 100 k Ω
Environment	
Operating Temperature	-5...+55 °C (for valve fluid temperatures up to 130 °C)
Storage	-40...+70 °C
Humidity	max . 95% RH (NC)
Enclosure rating	IP 53 (vertically mounted)

Sound power level	max. 30 dBA
Weight (shipping)	0.36 kg
Material	
Yoke	Aluminum
Material Housing (Covers)	PBT/PC
Mechanical Manual Override	3 mm Hex
Position indication	Red and blue position markers for hot and cold pipe indication (green position indicator for closed valve)
Cable Gland wire size	6...12 mm
Conduit hole	M20

Part Number	Control
MG350S-24M	Modulating
MG350S-24F	Floating

MZ300S

MZ300S actuator is a universal actuator this can drive many valves with an M30 bonnet. It is supplied with an adapter to drive the Satchwell VUE, MEU and FEU zone valves, the VP224R PICV valve and for a specific 230 Vac model, the VZX and MZX globe valve.

Proportional models are equipped with 3 operation and alarm LED's.



Specifications

Power supply	
MZ300S-24x	24Vac ±10%
MZ300S-230F	230 Vac ±10%
Power Consumption	
MZ300S-24F	2.2VA / 2,2W
MZ300S-24M	3.6VA / 3W
MZ300S-230F	16.2VA / 1.1W
Frequency	50/60Hz
Speed	11.5s/mm at 50Hz - 9.4s/mm at 60Hz
Force	300N
Environment	
Operating Temperature	-5...55 °C
Storage Temperature	-25...65 °C
Protection class	II

Connection cable	
MZ300-24F / MZ300-230F	3-wire 1.5m
for MZ300S-24M (CEI20-22/II)	5-wire 1.5m
Protection degree	IP43
Weight	0.250 kg
Feedback signal (MZ300-24M)	2...10 V reversible according to dip switch configuration)

Part Number	Control signal	Power supply	Max. stroke
MZ300S-230F	3 point - ON/OFF	230 Vac	16 mm
MZ300S-24F		24Vac	
MZ300S-24M	0...10 V Modulating		

MC52

MC52 is a zone actuator designed to provide modulating control together with the old V354 valves using an adapter. Due to an automatic synchronization function the close-off point is self-adjusting. Based on a running time of 155 s, valve positioning and flow adjustment is very exact.



MC52 Actuator Adapter

Specifications

Range	7 different command field to be selected with embedded dip-switches and direct/reverse action
Input voltage	24 VAC 50/60 Hz
Power consumption	1 VA
Speed	18 s/mm (50 Hz) - 15 s/mm (60 Hz)
Environment	
Operating Temperature	-5...55 °C
Storage Temperature	-25...65 °C
Stem force	200 N (45 lbf)

Max stroke	8.5 mm
Connection cable	3 wires 1.5 m (5 ft)
Protection class	IP 43 (for vertical mounting)
Suitable valve	V354 - PN 731-5425-000

Part Number	Description	Control	Input voltage
853 2221 010	MC52A-24	Modulating	24 Vac 50/60 Hz
853 1320 000	MC52B-230	Floating	230 Vc 50/60 Hz
853 2320 000	MC52B-24		24 Vac 50/60 Hz

10. Specialist Products

MP140

MP140 is a thermoelectric actuator designed to provide two-position on/off control together VP223R pressure independent control valves.

The MP140, when connected to the VP223R valve, provides pressure independent flow limiting on/off control. Versions are available for normally open and normally closed duties.



Specification

Stem force	140 N
Max stroke	4 mm
Coupling ring	M30x 1.5
Power cable	2m twin core (0,35 mm ²)
Suitable valve	VP223R (DN15...32)
Nominal Power Supply	
MZ140-24T	21.8 ... 26.8 Vac 50/60 Hz
MZ140-230T	110 ... 250 Vac 50/60 Hz
Starting current	
24 V models	0.17A
230 V models	0.25A
Working current	
24 V models	75 mA
230 V models	8 mA

Power consumption	
24 V models	2W
230 V models	2W
Environmental	
Ambient working temperature	+2...+50 °C
Storage temperature	-45...+60 °C
Humidity	max. 95% Non-condensing
Material: Fire-resistant case	Class V0
Protection class	IP 44 / IP41

Part number	Function	Voltage
MP140NC-24T	Normally closed	24 Vac 50/60 Hz
MP140NO-24T	Normally open	24 Vac 50/60 Hz
MP140NC-230T	Normally closed	110 - 230 Vac 50/60 Hz
MP140NO-230T	Normally open	110 - 230 Vac 50/60 Hz

MP200

MP200 is an compact linear actuator for driving the the 5 mm Frese Optima compact PIBCV and the former VP223R short stroke pressure independent control valve. Versions available as either 3 point floating or 0...10 Vdc modulating control. A full stroke run time of 60 seconds provides very precise flow control. Stroke indication and manual override on all models.

Specification

Force	200 N
Stroke Range	3.5 mm...5 mm
Speed	18s/mm (50Hz), 15s/mm (60Hz)
Connection cable	3 wire 1.5 m
Full stroke time on VP223R valve	63s (50Hz), 52s (60Hz)
Recommended controller 'time out' function	120% of full stroke time (floating modules)
Supply Voltage	
MP200-24F/MP200-24M	21.6 ... 26.4 Vac (50/60Hz)
MP200-230F	207 ... 253 Vac (50/60Hz)
Power consumption	
MP200-24F	0.6W (0.7VA)
MP200-230F	1W (5VA)
MP200-24M	1.0W (1VA)



Environmental	
Working temperature	-5 ... 55 °C
Storage temperature	-25 ... 65 °C
Protection class	IP43/IP41 (dependant on mounting orientation)
Sound power level	35 dBa
Weight	162g
Humidity	Max 95% non-condensing

Part number	Control	Voltage
MP200-24M	Modulating Control	0...10 V
MP200-24F	3 Point Floating	24 V
MP200-230F		230 V

Note: The floating actuators (MP200-24F / MP200-230F) have no end switches for automatic shut off when the valve is fully open or closed. These floating actuators are intended for use with controllers with a time out facility. If the floating actuators are to be used with an on/off thermostat, a separate delay off timer should be used to cut the driven power to the actuator.

MR90

The MR90 is a range of low cost and simple thermal actuators that. Available in all voltages and Normally Open or Normally closed functions



Specifications

Part Number	MR90 NC	MR90NC-230T MR90NC-24T
	MR90 NO	MR90NO-230T MR90NO-24T
Type Designation	MR90 NC	MR90 NCD-230T 2M43 00 MR90 NCD-24T 2M43 00
	MR90 NO	MR90 NOU-230T 2M44 00 MR90 NOU-24T 2M44 00
Normal Stem position (without power)	MR90 NC	Down (Extended)
	MR90 NO	Up (Retracted)
Input voltage	MR90NC/NO-230T	110...230 Vac 50/60 Hz
	MR90NC/NO-24T	24 Vac/dc 50/60 Hz
Power consumption		1.8 W
Power consumption at start up	MR90NC/NO-230T	50 VA
	MR90NC/NO-24T	4 VA
Opening/closing time:	Refer to specification sheet 03-00247	
Max. stroke		4 mm
Force, nominal		90 N

Environment	Operating Temperature	2...50 °C
	Storage Temperature	-45...50 °C
Enclosure rating	MR90NC	IP43 (Vertical mount) IP41 (Horizontal mount) IP40 (Upside down)
	MR90NO	IP44
Connection thread		M30 x 1.5
Standards	Emission/Immunity	EMC 2004/108/CE according to EN 61326-1:2006
	Heat	IEC-68-2-2
	Humidity	IEC-68-2-3
	Cold	IEC-68-2-1
	Vibration	IEC-68-2-6
Main Construction Materials	Fire-resistant case	Class V0
Cable	MR90NC	2 m bipolar (0.35 mm ²), white
	MR90NO	2 m bipolar (0.75 mm ²), white
Cable diameter	MR90NC	4.5 mm
	MR90NO	6 mm
Weight	MR90NC	118 gr
	MR90NO	188 gr

Part Number	Type Designation	Voltage	Function - without power
MR90NC-230T	MR90 NCD-230T-2M43 00	110-230 V ac	Stem Down - Normally Closed
MR90NC-24T	MR90 NCD-24T-2M43 00	24 Vac/dc	
MR90NO-230T	MR90 NOU-230T-2M44 00	110-230 V ac	Stem Up - Normally Open
MR90NO-24T	MR90 NOU-24T-2M44 00	24 Vac/dc	

10. Specialist Products

M22, M50

The M22 and M50 actuators are powerful actuators suitable for driving DN125 and DN150 sizes of valve types V222, V292 and V321. The actuators are available in modulating or 3-point floating versions. The 3-point floating versions are available in 24 Vac or 230 Vac voltages with and without end switches.



Specifications

Supply voltage	24 Vac +10% / -15%, 50/60 Hz
Power consumption	Average 15 VA
Running time	0...50 mm 50Hz, 132s 60Hz, 112s
Duty cycle	Max. 80%/60 minutes
Analog input Voltage	0 (2)...10 V
Impedance	30 kOhm
Current	0 (4)...20 mA
Impedance	125 Ohm
Environment	
Operating Temperature	-20...+70 °C
Storage Temperature	-20...+70 °C
Humidity	<95 %RH
Enclosure rating	IP 65

Standards	
Emission	EN 50081-1: 03.1993
Immunity	EN 50082-1: 11.1997 EN 50082-2:02.1996
Material	
Housing	CoPA – Grivory GV-4H
Cover	PC – Polycarbonate
Weight	
M22A	5.4 kg
M50A	6.0 kg
Optional travel switch S2	
Type	Zero potential
Capacity	10A, 250 V

Modulating Actuators

Part Number	Description	Force (N)
890 0104 000	M22A-24 V	2200
890 0204 000	M50A-24 V	5000

M22B, M50B 3-Point Floating Actuators

Part Number	Description	Force (N)	Power supply Vac +10% / -15%	Power consumption 50 Hz
890 0106 000	M22B-24 V	2200	24	12 VA
890 0108 000	M22B-24 V-S2			
890 0110 000	M22B-230 V		230	11 VA
890 0112 000	M22B-230 V-S2			
890 0206 000	M50B-24 V	5000	24	19 VA
890 0208 000	M50B-24 V-S2			
890 0210 000	M50B-230 V		230	28 VA
890 0212 000	M50 V-230 V-S2			

TR32 / TR60 Transformer

The TR32 and TR60 are transformers moulded in thermoset plastic and mounted in a grey enclosure made of an impact-resistant, self-extinguishing thermoplastic. They can be mounted on a wall or use snap-locking on a 35 mm DIN rail (suitable for modular equipment enclosures).

The transformers are double-insulated and do not require safety grounding. Both the TR32 and the TR60 have primary and secondary terminal blocks in different connection sections.

The transformers are protected by PTC resistors on the secondary side. Reset the protection by switching the power off for 10 seconds.



Specifications

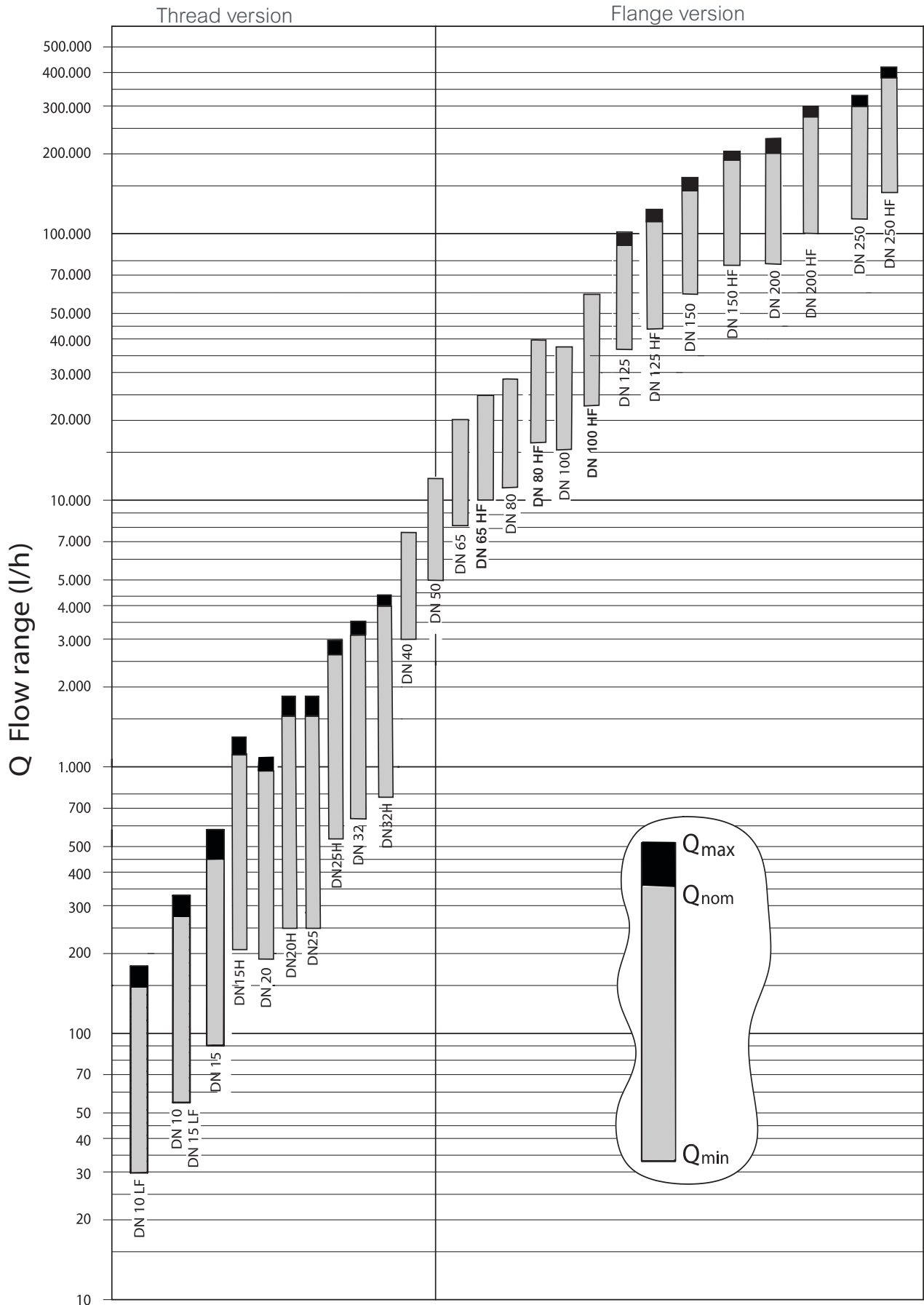
Input voltage	230 Vac 50-60Hz
Output voltage	24 Vac
Product standards, CE	
Safety	EN 61 558-1, EN 61 558-2-6
Emission	EN 55 014-1, EN 61000-3-2/3-3
Immunity	EN 55 014-2
Enclosure rating	IP 40
Material	Thermoplastic, Grey
Weight	
TR32	0.8 kg
TR60	1.3 kg

Model	Part No.	Power Consumption
TR32	341 3032 000	32 VA
TR60	341 3060 000	60 VA



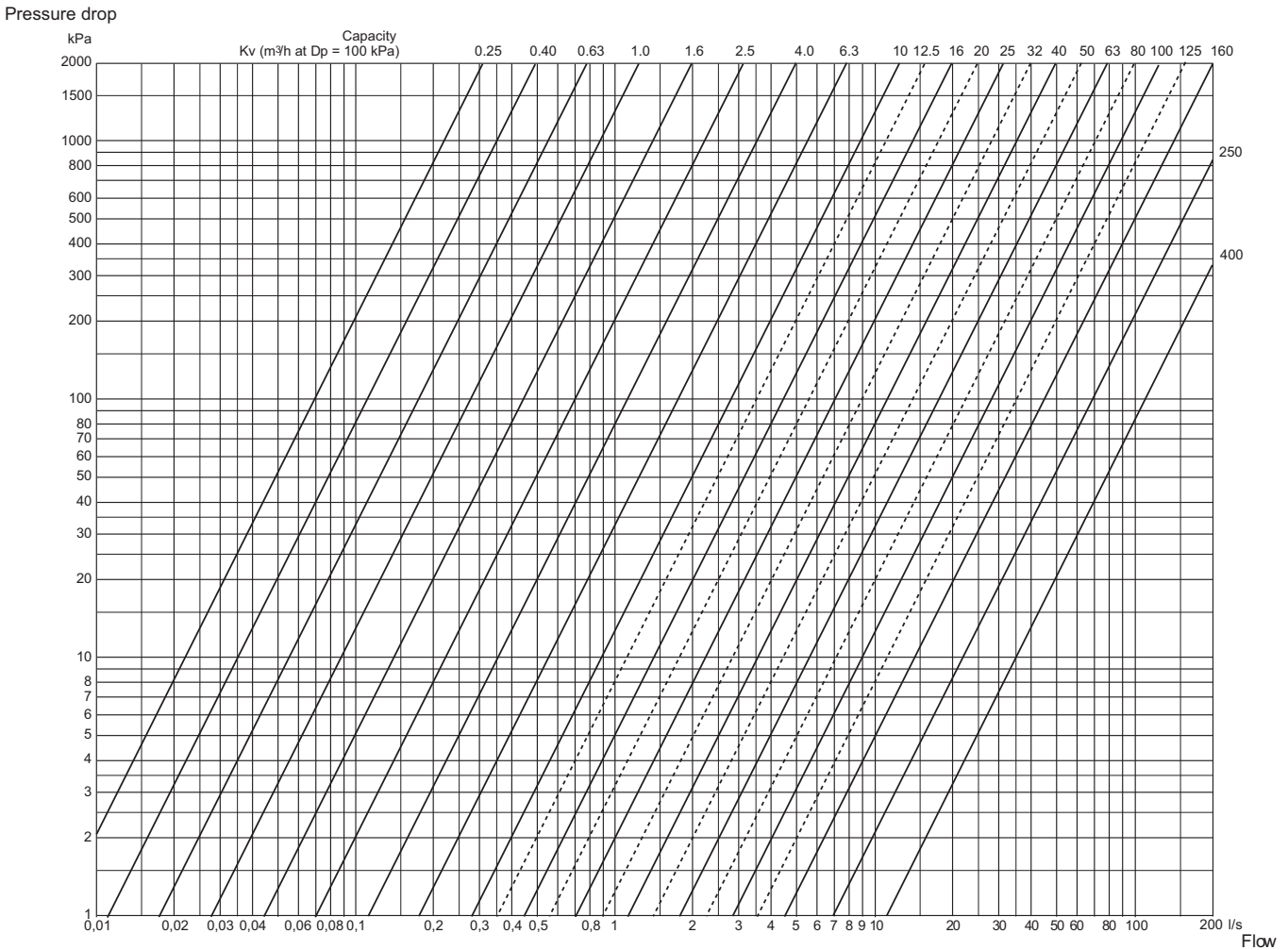
11. Supporting Information

SmartX PIBCV Flow Selection Chart



11. Supporting Information

Water Valve Sizing Chart, Traditional Pressure Dependant Valves



1 litre per second = 3.6m³/h
 100 kPa = 1 Bar = 14.5psi

Valve sizing formulae for water service

To size a valve, the following must be known: The volumetric flow rate through the valve, Q.
 The differential pressure across the valve, ΔP.

Calculation of valve flow coefficient, Kv

$$Kv = \frac{Q}{\sqrt{\left(\frac{\rho}{\Delta P}\right)}}$$

Kv = Valve Capacity (m³/h)
 Q - Volume flow (m³/h)

Calculation of valve flow rate, Q

$$Q = Kv \times \sqrt{\left(\frac{\Delta P}{\rho}\right)}$$

ΔP = Pressure drop across valve (bar)
 ρ = Specific gravity of fluid (kg/m³)

Calculation of Pressure drop, ΔP

$$\Delta P = \rho \times \left(\frac{Q}{Kv}\right)^2$$

Steam Valve Sizing Chart

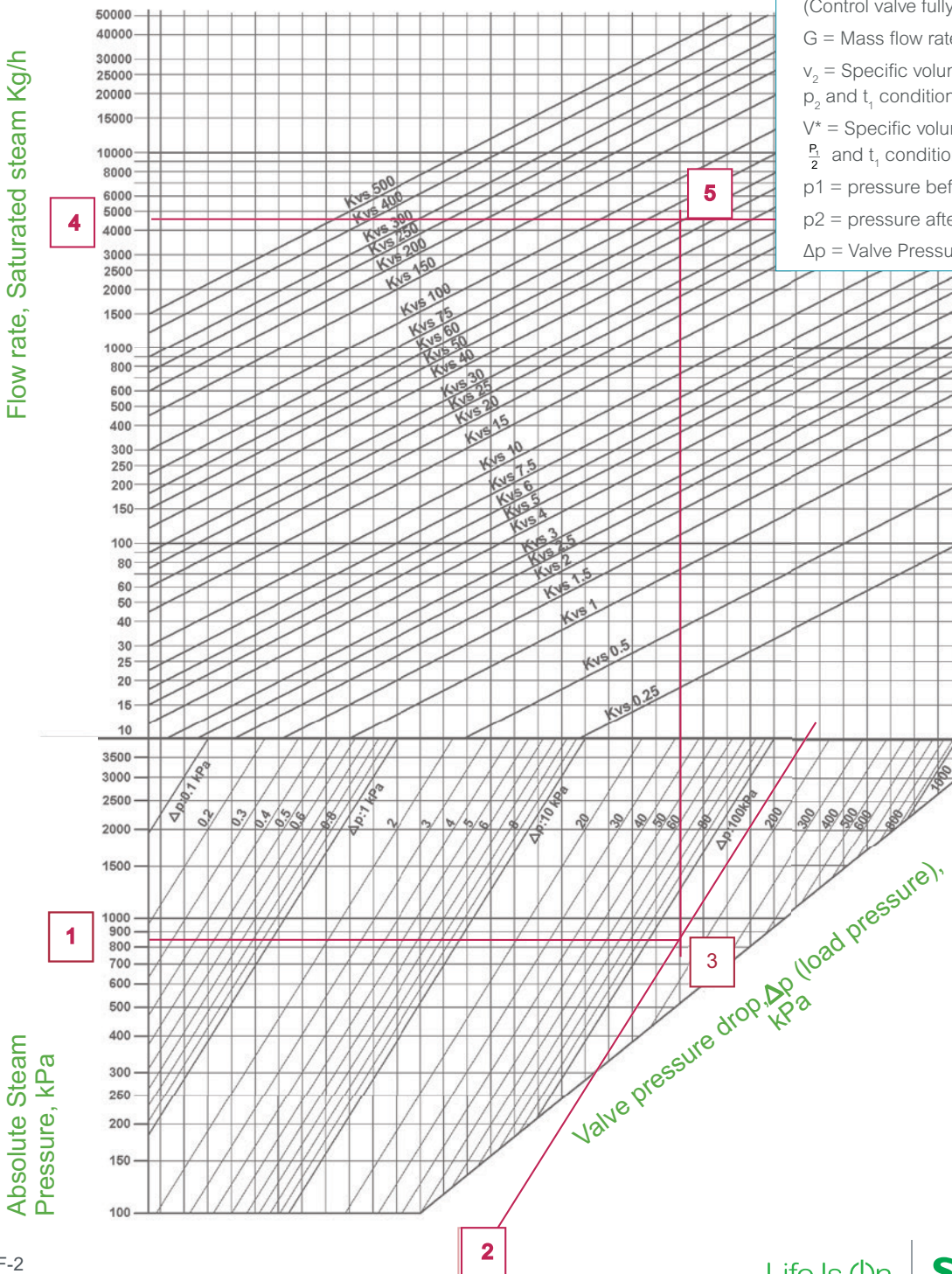
Example for saturated Steam:

Flow rate, (G)	4700 Kg/h
Abs. Pressure upstream (p1)	850 kPa
Load Pressure (ΔPv)	160 kPa

Mark the point of intersection [3] between the line originating from the absolute upstream pressure [1] and the inclined line corresponding to the load pressure (valve pressure drop)[2].

Identify the point of intersection between point [3] found above and the flow rate of Saturated steam [4]

The last found point would corresponds to a valve with a Kvs of 63 [5]



$$P_2 > \frac{P_1}{2}$$

$$\Delta P > \frac{P_1}{2}$$

$$K_{vs} = \frac{G}{31.6} \times \sqrt{\frac{v_2}{\Delta p}}$$

$$P_2 < \frac{P_1}{2}$$

$$\Delta P > \frac{P_1}{2}$$

$$K_{vs} = \frac{G}{31.6} \times \sqrt{\frac{2 \times v^*}{p_1}}$$

Key:

Kvs = Valve flow co-efficient, (Control valve fully open).

G = Mass flow rate (Kg/h)

v₂ = Specific volume (from steam table) for p₂ and t₁ condition

v* = Specific volume (from steam table) for $\frac{p_1}{2}$ and t₁ condition

p₁ = pressure before valve

p₂ = pressure after valve

Δp = Valve Pressure drop (bar)

Products Under the New Designation

VB200R page 62	Ball Valves - Full Port, 2-way
VB210R page 62	Ball Valves – Characterised Control, 2-way
VB300R page 62	Ball Valves – Full Port, 3-way
VB310R page 62	Ball Valves – Characterised Control, 3-way
MB3 page 63	Ball Valve Actuator
MB3 SR page 63	Ball Valve Actuator, Spring Return
MB6 SR–24T page 63	Ball Valve Actuator, Spring Return (Two-position)
VF209W page 70	Butterfly Valves (High Pressure)
VF299W page 69	Butterfly Valves (undercut disc)
MF20-R page 71	Butterfly Valve Actuator (replacement for MB15 on installed TRV-S Valves)
MF68/MF200/ MF500 MF1450 page 72	Butterfly Valve actuator for VF209/VF299
VG210R page 34	Venta Globe Valve - Rp threads, 2-way
VG310R page 46	Venta Globe Valve - Rp threads, 3-way
VG221F page 40	Globe Valve, 2-way, Balanced (former VG222)
VG311F page 49	Globe Valve, 3-way (former VG321)
VGS211F page 39	Globe Valve, Steam, 2-way (former VG211)
MG900 SR page 55	Forta Spring Return Globe Valve Actuator
MG600C page 56	Forta Short Yoke Globe Valve Actuator
MG600C SR page 56	Forta Spring Return Short Yoke Globe Valve Actuator
MD10 SR page 83	Damper Actuator Spring Return, 10 Nm
MD20 SR page 84	Damper Actuator Spring Return, 20 Nm
MD40 ER page 85	Damper Actuator, Electronic Return, 40Nm
VZ208E page 20	Zone Valve, 2-way, Short Stroke, External Thread (replaced VZ28)
VZ308E page 20	Zone valve, 3-way, Short Stroke, External Thread (replaced VZ38)
VZ408E page 20	Zone Valve, 3-way with bypass, 4 Ports, Short Stroke, External Thread (replaced VZ48)
VZ219E page 22	Zone Valve, 2-way, Long Stroke, External Thread (replaced VZ29)
VZ319E page 22	Zone Valve, 3-way, Long Stroke, External Thread (replaced VZ39)
VZ419E page 22	Zone Valve, 3-way with bypass, 4 Ports, Long Stroke, External Thread (replaced VZ49)

VZ208C page 20	Zone Valve, 2-way, Short Stroke, Compression Ended (replaced VZ28C)
VZ308C page 20	Zone Valve, 3-way, Short Stroke, Compression Ended (replaced VZ38C)
VZ408C page 20	Zone Valve, 3-way with bypass, 4 ports, Short Stroke, Compression Ended (replaced VZ48C)
VZ219C page 22	Zone Valve, 2-way, Long Stroke, Compression Ended (replaced VZ29C)
VZ319C page 22	Zone Valve, 3-way, Long Stroke, Compression Ended (replaced VZ39C)
VZ419C page 22	Zone Valve, 3-way with bypass, 4 ports, Long Stroke, Compression Ended (replaced VZ49C)
MZ140-*T page 21	Zone Valve Actuator, 2 Position (replaced MZ88T and MZ89T)
MZ140-24M page 21	Zone Valve Actuator, Modulating (replaced MZ88TA and MZ89TA)
MZ95* page 91	Zone Actuator, 2 position - for VZ*2 valves
MR90 page 101	Radiator Valve Actuator, Thermal
MR95 page 28	Radiator Valve Actuator, Thermal
MF20/MF40 page 71	Butterfly Valve Actuator
VP228E page 8	PIBCV DN10-20 (M30 connection, short stroke)
VP229E page 8	PIBCV DN10-32 (M30 connection, Long Stroke)
VP220E page 8	PIBCV DN40-50 Forta connection
VP220F page 8	PIBCV DN50-100 Forta connection
VP221F page 10	PIBCV DN125...DN150
VP222F page 10	PIBCV DN200-200
MP120 page 12	Thermal PIBCV Actuator, DN10-32
MP130 page 11	PIBCV Motoric actuators - DN10-32
MP300 SR page 13	PIBCV Spring Return motoric actuators, DN10-32
MP500C page 14	Forta PIBCV actuator, DN40-100
MP500C-SR page 15	Forta Spring return PIBCV actuator, DN40-100
MP2000 page 16	PIBCV actuator, DN125...DN150
MP2000-SR page 16	PIBCV spring return actuator
MP2000 230 page 17	PIBCV spring return actuator
MP4000 page 17	PIBCV actuator, DN200-250

Products under old designation

AVUX, AVUM, AVUE	Compact Linear Actuators (Satchwell)
AT**** / AG****	Erie Zone Valve Actuators
V241 page 32	Globe Valve, 2-way, Bronze, External Threads
VZX page 94	Globe Valve, 2-way, Bronze, Satchwell (for AVU.. Actuators)
V211T page 35	Globe Valve, 2-way, Nodular Iron, Threaded
V212T page 37	Globe Valve, 2-way, Nodular Iron, Balanced, Threaded
V211 page 36	Globe Valve, 2-way, Nodular iron, Flanged
V212 page 38	Globe Valve, 2-way, Nodular Iron, Flanged, Balanced
V222 page 92	Globe Valve, 2-way, DN65-150, Cast iron
V231 page 41	Globe Valve, 2-way, Nodular Iron, PN25
V232 page 42	Globe Valve, 2-way, Nodular Iron, PN25, Balanced
V292 page 43	Globe Valve, 2-way, Nodular Iron, PN25, DN65-150, Balanced
V341 page 44	Globe Valve, 3-way, Bronze, External Threads
MZX page 95	Globe Valve, 3-way, Bronze, Satchwell (for AVU.. Actuators)
V311T page 47	Globe Valve, 3-way, Nodular Iron, Threaded
V311 page 48	Globe Valve, 3-way, Nodular Iron, Flanged

V321 page 93	Globe Valve, 3-way, Cast Iron, DN65-150
VTRE page 76	Shoe Valves
VT****	Erie Zone Valves
M310/M400/M800/M1500/ M3000	Forta Linear Globe Actuator
MV15B page 57	Linear Globe Actuator (24 & 230 V Floating)
M700	Linear Globe Valve Actuator – Spring Return
M22, M50 page 102	Powerful Linear Globe Actuator
MZ18* page 91	Zone Valve Actuator – for VZ*2 Valves
MZ20* page 23	Zone Valve Actuator – for VZ*19* Valves
MZ09 page 29	Zone Valve Actuator – for VZ*2 Valves
EM9/M9B page 77	Shoe Valve Actuator
RM/XRM page 77	Shoe Valve Actuator (Satchwell)
LF24/LF230 page 82	Spring Return Damper Actuator
MB page 76	Shoe Valves, Threaded, Satchwell
MBF page 96	Shoe Valves, Flanged, Satchwell

Recommendations / Best practices and Hazard Warnings

It is the responsibility of the installer or product specifier to verify media compatibility of any valves construction materials with the supplier of water treatment/heat transfer solution. If the material details within this catalog are not sufficient to verify media compatibility, please refer to the respective product data sheet or consult product support services.

Only competent service engineers should undertake installation and maintenance. On installed hot water systems, safe working practice, including system de-pressurisation, should always be followed.

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

Hot Water Hazard

Whenever replacing an installed actuator: Depressurise the valve before removing the existing actuator and check integrity of the valve stem, spindle or plug by manually moving the stem within the valve. If the valve stem and plug have been damaged, the stem may blow out under pressure and cause injury and equipment damage.

Electrical Hazard

Safe electrical working practice should also always be followed; special care should be given to mains voltage actuators.

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