HVAC Valves and Actuators Catalogue

Issue: October 2013

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Schneider Electric

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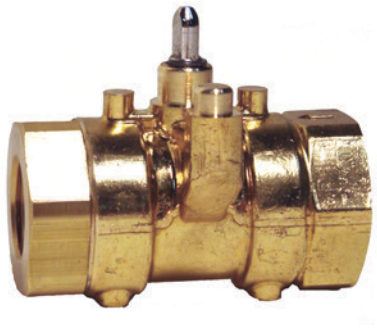
Ball Valves

VB210R, VB200R & VB310R, VB300R

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

VB210R and VB310R ball valves incorporate a flow characterizing insert to providing an equal percentage flow characteristic with high rangeability. Suitable for control of hot or chilled water applications.

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



Specification

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

Size	Part Number	Type Designation	Thread	kvs
15 mm	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

VB200R Two-Way Full Port Valves

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

VB310R Three-way Control Valves

Size	Part Number	Type Designation	Thread	kvs
15 mm	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
20 mm	VB310R-20BS08	VB310R-20BS 4.0T 00	Rp 3/4	4.0
	VB310R-20BS09	VB310R-20BS 6.3T 00		6.3

VB300R Three-way Full Port Valves

Size	Part Number	Type Designation	Thread	kvs
15 mm	VB300R-15BS	VB300R-15BS 8.7T 00	Rp 1/2	8.7
20 mm	VB300R-20BS	VB300R-20BS 8.7T 00	Rp 3/4	8.7

Ball Valve Actuators

MB3, MB6

Supply Voltage	
Proportional and Modulating	24 Vac +25%, -15% @ 50/60 Hz.
Two-Position	24 Vac 50/60, (+25%, -15%). 24V DC (+/-20%)
Manual Operation	
Floating / Modulation	Hand lever
Two Position	Hex Key (5/32")
Proportional Control (Field Selectable)	0-10V,0-5V, 5-10V, 4-20mA Direct or reverse acting
Materials	Thermoplastic base and cover. Approved for use in air plenums.
Electrical Connection	Terminal Block
Cable Gland (M20)	5-9mm O/D
Shipping & Storage Temp. Limits	-40 to 76°C
Operating Temperature Range (at media temp. limits).	
Floating	0 to 60 °C
Proportional	0 to 60 °C
Two-Position	0 to 76° C
Humidity	5 to 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 @ 24V AC/DC	Power Consumption AC/DC
MB6-SO-24T	MB6 SRO-24T T31 00	Normally Open	50 sec.	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	160/135	N/A[a]	2.3	2.5 W
MB3-24F-T3	MB3-24F T31 T3	None		217/181	2.5[b]	
MB3-SO-24F	MB3 SRO-24F T31 T3	Normally Open			3.2[b]	3.0 W
MB3-SC-24F	MB3 SRC-24F T31 T3	Normally Closed				

a. No Time-out feature. Controller must provide time-out after 3 minutes on time.

b. Size transformer for each spring actuators at 10VA

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

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	160/135	200/166	2.7[c]	2.5 W
MB3-SO-24M	MB3 SRO-24M T31 00	Normally Open			2.7[c]	
MB3-SC-24M	MB3 SRC-24M T31 00	Normally Closed				

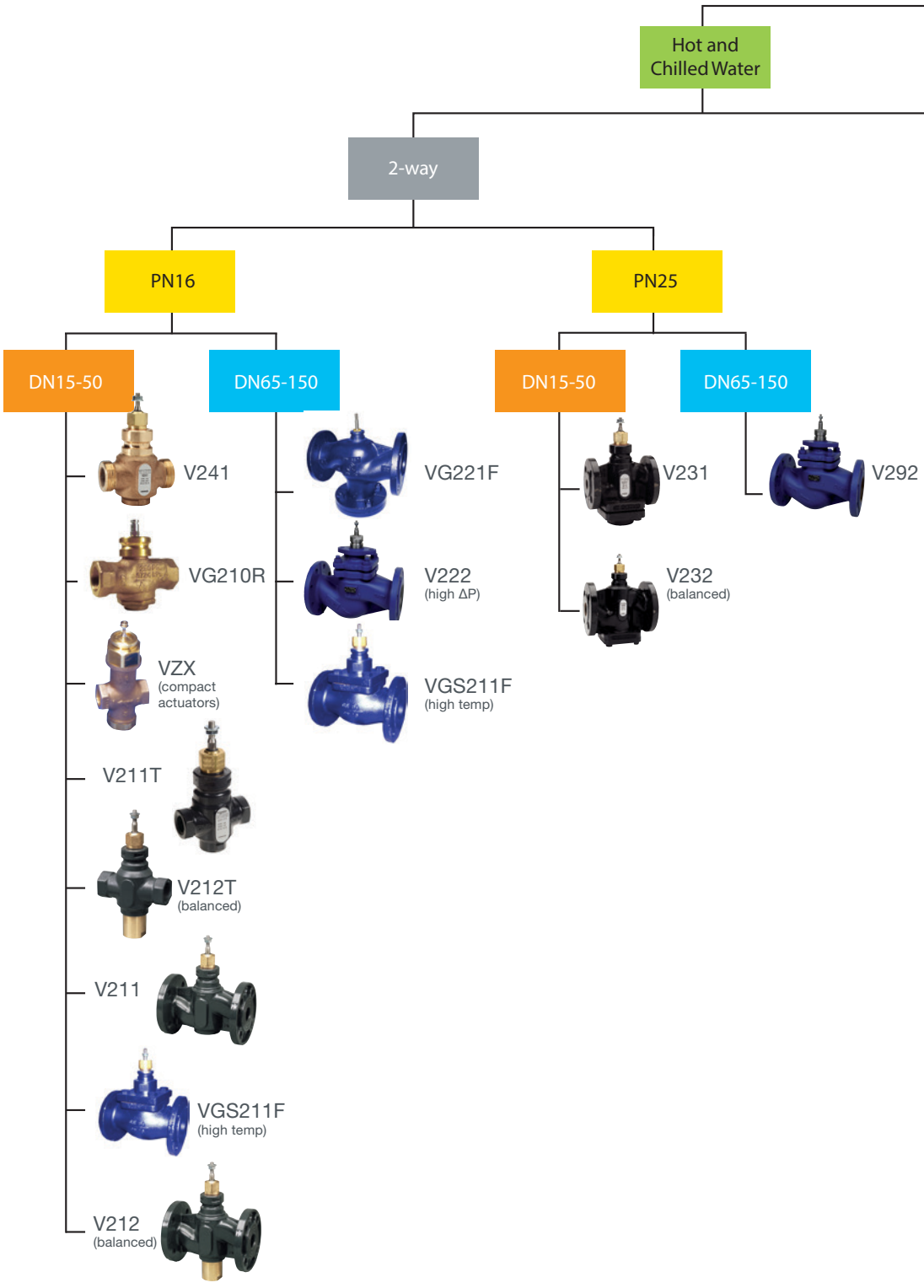
c. Size transformer for each spring actuators at 10VA

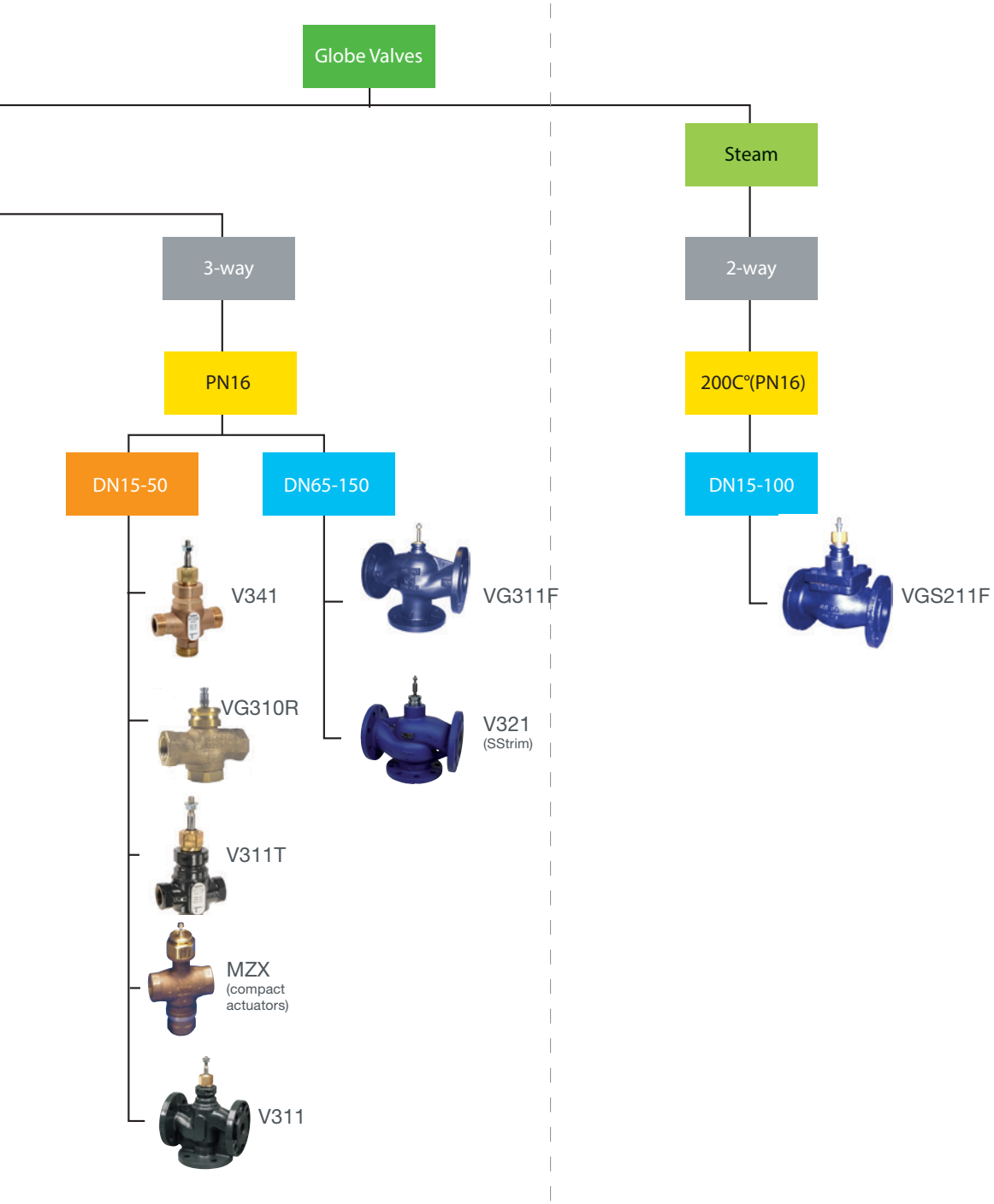
Globe Valves

Globe valves are the ideal plant room control valve. They deliver the best controllable flow of any proportional valve.

The Venta range of valves have excellent rangeability, low leakage and a robust stem sealing. The crown plug is self cleaning in design and is the consultants choice of control valve.

Globe Valve Overview





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 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 (32 °F), it should be equipped with a heater in order to prevent ice formation on the valve stem.

Design	2-way plug valve, stem up closed
Pressure class	PN 16
Flow characteristic	Equal percentage modified
Stroke	20 mm
Rangeability (Kvs/Kv min)	See 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

Materials

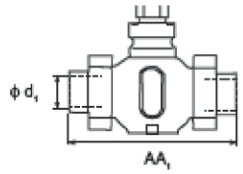
Body	Bronze Rg5
Plug and seat	Stainless steel SS 2346
Stem	Stainless steel SS 2346
Stem packing	EPDM

V241					Max Close-off Pressure kPa						
					Non Spring Return Actuators					Spring Return	
Part number	DN	Connection	Kvs	Rangeability	M310	M400	M800	M1500	MV15B	M700	MG900 SR
					300N	400N	800N	1500N	1500N	700N	900N
721-4106-000	15	G1B	0.25	>50	1000	1000	1600	1600	1600	1600	1600
721-4110-000	15	G1B	0.40	>50	1000	1000	1600	1600	1600	1600	1600
721-4114-000	15	G1B	0.63	>50	1000	1000	1600	1600	1600	1600	1600
721-4118-000	15	G1B	1.0	>50	1000	1000	1600	1600	1600	1600	1600
721-4122-000	15	G1B	1.6	>50	800	800	1600	1600	1600	1400	1600
721-4126-000	15	G1B	2.5	>50	800	800	1600	1600	1600	1400	1600
721-4130-000	15	G1B	4.0	>50	800	800	1600	1600	1600	1400	1600
721-4134-000	20	G1¼B	6.3	>100	650	650	1500	1600	1600	1100	1510
721-4138-000	25	G1½B	10	>100	400	500	1150	1600	1600	850	1160
721-4142-000	32	G2B	16	>100	300	350	850	1350	1350	650	855
721-4146-000	40	G2¼B	25	>100	150	250	600	950	950	450	605
721-4150-000	50	G2¾B	38	>100	50	150	400	650	650	300	415

Replacement packing box: 1-001-0800-0

Connections V241

Internal Thread Connection



Materials

Union nut: malleable iron casting, galv.

Union end: malleable iron casting, galv.

Packing, standard:
Fibre Gasket (Klingersil C4400)

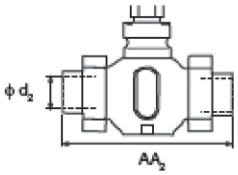
or

Packing, spec:
PTFE Gasket (Kingersil Top Chem 1,5mm)

Valve		Φd_1	AA_1	Part no. 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



Materials

Union nut: malleable iron casting, galv.

Union end: Bronze, SS 5204

Packing, standard:
Fibre Gasket (Klingersil C4400)

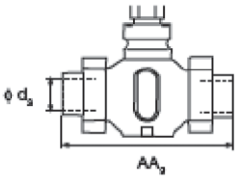
or

Packing, spec:
PTFE Gasket (Kingersil Top Chem 1,5mm)

Valve		Φd_2	AA_2	Part no. 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



Materials

Union nut:
Packing, standard:
Malleable iron casting, galv.

or

Packing, Spec: Brass

Union end: malleable iron casting, galv.

Packing, standard:
Fibre Gasket (Klingersil C4400)

or

Packing, spec:
PTFE Gasket (Kingersil Top Chem 1,5mm)

Valve		Φd_3	AA_3	Part no. 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.
2 sets of connections required for 2 way valves

VG210R 15-50B

The New Venta VG210R 15-50B is a new range of 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 ensures no seepage of precious energy when not required.

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 R_p

Materials

Body	Bronze
Stem	Stainless steel 316
Plug	Brass CW602N
Sealing	PTFE for 15 and 20 mm units. EPDM for others.
Seat	Bronze
Stem packing	Brass with PTFE and EPDM Chevrons
Slotted Stem Adapter	RoHS compliant Zinc-plated Steel

VG210R 15-50B						Max Close-off Pressure kPa	
Part number	Type Designation	DN	Connection	Kvs	Rangeability	leakage Class IV-S1	Leakage Class IV
						<0.005%	>0.01%
VG210R-15B02	VG210R 15B 0.4E SU 00	15	Rp ½	0.4	>100	1600	1600
VG210R-15B03	VG210R 15B .63E SU 00	15	Rp ½	0.63	>100	1600	1600
VG210R-15B04	VG210R 15B 1E SU 00	15	Rp ½	1.0	>100	1600	1600
VG210R-15B05	VG210R 15B 1.6E SU 00	15	Rp ½	1.6	>100	1600	1600
VG210R-15B07	VG210R 15B 2.5E SU 00	15	Rp ½	2.5	>100	1600	1600
VG210R-15B08	VG210R 15B 4.0E SU 00	15	Rp ½	4.0	>100	1600	1600
VG210R-20B	VG210R 20B 6.3E SU 00	20	Rp ¾	6.3	>100	1600	1600
VG210R-25B	VG210R 25B 10E SU 00	25	Rp 1	10	>100	1100	1200
VG210R-32B	VG210R 32B 17E SU 00	32	Rp 1¼	17	>100	600	700
VG210R-40B	VG210R 40B 24E SU 00	40	Rp 1½	24	>100	350	450
VG210R-50B	VG210R 50B 35E SU 00	50	Rp 2	35	>100	90	240

Note: Valves designed for direct connection onto compact Forta actuators, type MG600C. For all other Forta actuators, stem extention, code NYBA-234-30 is required. M700 and MV15B will not connect to this valve.

Leakage class as a percentage of a valves Kvs, EN60534-4.

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 in order to prevent ice formation on the valve stem.

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	Internal pipe thread R_p

Materials

Body	Nodular iron EN-JS 1030
Stem	Stainless steel SS 2346
Plug	Brass CW602N
Seat Sealing	EPDM
Seat	Nodular iron EN-JS 1030
Stem packing	EPDM

V211T					Max Close-off Pressure kPa						
					Non Spring Return Actuators					Spring Return	
Part number	DN	Connection	Kvs	Rangeability	M310	M400	M800	M1500	MV15B	M700	MG900 SR
					300N	400N	800N	1500N	1500N	700N	900N
721-1716-000	15	Rp ½	1.6	>50	800	800	1600	1600	1600	1400	1600
721-1720-000	15	Rp ½	2.5	>50	800	800	1600	1600	1600	1400	1600
721-1724-000	15	Rp ½	4.0	>50	800	800	1600	1600	1600	1400	1600
721-1728-000	20	Rp ¾	6.3	>50	650	650	1500	1600	1600	1100	1510
721-1732-000	25	Rp 1	10	>50	400	500	1150	1600	1600	850	1160
721-1736-000	32	Rp 1¼	16	>50	300	350	850	1350	1350	650	855
721-1740-000	40	Rp 1½	25	>50	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

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 in order 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.

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	-20°C
Connections	Internal pipe thread R_p

Materials

Body	Nodular iron EN-JS 1030
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	Range-ability	M400	M800	M1500	MV15B	M700	MG900 SR
					400N	800N	1500N	1500N	700N	900N
721-1832-000	25	R_p 1	10	>50	800	1600	1600	1600	1600	1600
721-1836-000	32	R_p 1¼	16	>50	750	1600	1600	1600	1600	1600
721-1840-000	40	R_p 1½	25	>50	700	1600	1600	1600	1600	1600
721-1844-000	50	R_p 2	38	>50	600	1600	1600	1600	1600	1600

Replacement packing box: 1-001-0800-0

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.

Design	2-way plug valve
Pressure class	PN 16
Flow characteristic	Equal Percentage
Stroke	12.7mm
Rangeability (Kvs/Kv min)	>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)

Materials

Body	Bronze: Leaded Gunmetal BS1400 LG2
Stem	Stainless steel BS970 Grade 303 S42
Plug	Copper Alloy BS2874 CZ132 or BS2871 CZ110
SeatSealing	Gland O Ring
Seat	Integral with body
Stem packing	PTFE Chevrons

Note: only suitable for operation by AVUX, AVUM and AVUE actuators.

VZX				Max Close-off Pressure kPa			
				Non Spring Return Actuators			
Part number	Size (inches)	Kvs	Rangeability	AVUE5304 (1)	AVUE5354 (2)	AVUX5202	AVUM5601
				220N	220N	220N	220N
VZX4404	½”	2.1	50	1180	1180	1180	1180
VZX4451	¾”	4.2	50	720	720	720	720
VZX4501	1”	8.3	50	340	340	340	340
VZX4551	1¼”	12.5	50	200	200	200	200
VZX4601	1½”	21	50	120	120	120	120
VZX4651	2”	33	50	60	60	60	60

(1) direct acting

(2) reverse acting

Replacement Packing Box: 0626-9-204

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 in order to prevent ice formation on the valve stem.

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

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	M400	M800	M1500	MV15B	MG900 SR
				300N	400N	800N	1500N	1500N	900N
721-1116-000	15	1.6	>50	800	800	1600	1600	1600	1600
721-1120-000	15	2.5	>50	800	800	1600	1600	1600	1600
721-1124-000	15	4.0	>50	800	800	1600	1600	1600	1600
721-1128-000	20	6.3	>50	650	650	1500	1600	1600	1600
721-1132-000	25	10	>50	400	500	1150	1600	1600	1160
721-1136-000	32	16	>50	300	350	850	1350	1350	855
721-1140-000	40	25	>50	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

V212

The V212T 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 in order to prevent ice formation on the valve stem.

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

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	M900 SR
				400N	800N	1500N	1500N	900N
721-1232-000	25	10	>50	800	1600	1600	1600	1600
721-1236-000	32	16	>50	750	1600	1600	1600	1600
721-1240-000	40	25	>50	700	1600	1600	1600	1600
721-1244-000	50	38	>50	600	1600	1600	1600	1600

Replacement packing box: 1-001-0800-0

VGS211F 15-100CS (VG211)

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

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 in order to prevent ice formation on the valve stem.

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

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

DN 15 to DN 25	16.5 mm
DN 32 to DN 65	25 mm
DN 80 to DN 100	45 mm

VGS211F...CS					Max Close-off Pressure kPa						
					Non Spring Return Actuators					Spring Return	
Part number	Type Designation	DN	Kvs	Range-ability	M400	M800	M1500	MV15B	M3000	M700	MG900 SR
					400N	800N	1500N	1500N	3000N	700N	900N
VGS211F-15CS03	VGS211F-15CS 0.63M SD00	15	0.6	>50	1600	1600	1600	1600	-	1600	1600
VGS211F-15CS04	VGS211F-15CS 1M SD00	15	1.0	>50	1600	1600	1600	1600	-	1600	1600
VGS211F-15CS05	VGS211F-15CS 1.6M SD00	15	1.6	>50	1600	1600	1600	1600	-	1600	1600
VGS211F-15CS07	VGS211F-15CS 2.5M SD00	15	2.5	>50	1300	1600	1600	1600	-	1600	1600
VGS211F-15CS08	VGS211F-15CS 4M SD00	15	4.0	>50	1300	1600	1600	1600	-	1600	1600
VGS211F-20CS	VGS211F-20CS 6.3 M SD00	20	6.3	>50	750	1600	1600	1600	-	1500	1600
VGS211F-25CS	VGS211F-25CS 10M SD00	25	10	>35	450	1300	1600	1600	-	900	1300
VGS211F-32CS	VGS211F-32CS 16M SD00	32	16	>35	450	1300	1600	1600	-	900	1300
VGS211F-40CS	VGS211F-40CS 25M SD00	40	25	>35	250	800	1350	1350	-	550	800
VGS211F-50CS	VGS211F-50CS 40M SD00	50	40	>35	150	500	900	900	-	350	500
VGS211F-65CS	VGS211F-65CS 63M SD00	65	63	>35	-	210	350	350	720	150	210
VGS211F-80CS	VGS211F-80CS 110M SD00	80	110	>35	-	150	250	250	550	100	-
VGS211F-100CS	VGS211F-100CS 140M SD00	100	140	>35	-	90	150	150	350	60	-

Replacement packing box: 1-001-0811-0

VG221F 65-150C (VG222)

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.

Design	2-way pressure balanced plug valve, stem up closed
Pressure class	PN 16
Flow characteristics	Equal Percentage
Rangeability (Kvs/Kv min)	>50

Stroke

DN 65	25 mm
DN 80 – DN 150	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

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	Range-ability	M800	M1500	MV15B	M3000	M700	MG900 SR
						800N	1500N	1500N	3000N	700N	900N
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	>50	1450	1600	1600	1600	1000	-
VG221F-100C	VG221F-100C 130M SU00		100	130	>50	1000	1600	1600	1600	700	-
VG221F-125C	VG221F-125C 200M SU00		125	200	>50	750	1600	1600	1600	470	-
VG221F-150C	VG221F-150C 300M SU00		150	300	>50	550	1450	1450	1600	300	-

Replacement packing box: 1-001-0810-0

V222

The V222 is a large flanged balanced 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

Design	2-way pressure balanced plug valve, stem down, closed
Pressure class	PN 16
Flow characteristics	Equal Percentage

Stroke

DN 65 – DN 100	30 mm
DN 125 – DN 150	50 mm
Rangeability (Kvs/Kv min)	>50
Leakage	<0.05% of Kvs
Max. temperature of medium	150°C
Min. temperature of medium	-10°C
Connection	Flange according ISO 7005-2
Max. glycol/concentration	50%

Materials

Body	Nodular 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

V222					Max Close-off Pressure kPa						
					Non Spring Return Actuators						Spring Return
Part number	DN	Kvs	ΔPm (kPa)	Rangeability	M800	M1500	MV15B	M3000	M22	M50	M700
					800N	1500N	1500N	3000	2200N	5000N	700N
721-2254-000	65	63	800	>50	1500	1600	1600	1600	---	---	1200
721-2258-000	80	85	400	>50	1500	1600	1600	1600	---	---	1200
721-2262-000	100	130	150	>50	1100	1600	1600	1600	---	---	800
721-2266-000	125	250	100	>50	---	---	---	---	1600	1600	---
721-2270-000	150	350	100	>50	---	---	---	---	1400	1600	---

Replacement packing box:

DN65-100: 1-001-0820-0

DN125-150: 1-001-0821-0

Stem Heater

DN65-100: 880-0112-000

DN125-150: 880-0113-000

Replacement stem adaptor/hex bush:

DN125-150: 880-0134-000

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 in order to prevent ice formation on the valve stem.

Design	2-way plug valve, stem up closed
Pressure class	PN 25
Flow characteristic	Equal percentage modified
Stroke	20 mm
Rangeability (Kvs/Kv min)	See table
Leakage	Up to 0.02% of Kvs
ΔPm	Max. 800 kPa, water
Max. temperature, water	150°C
Max. temperature, saturated steam	120°C
Min. temperature of medium	-20°C
Max. Glycol concentration	50%
Flanges drilling	According to SS 335 and ISO 2084

Materials

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	MG900 SR
				300N	400N	800N	1500N	1500N	900N
721-3106-000	15	0.25	>50	1000	1000	1600	1600	1600	1600
721-3110-000	15	0.40	>50	1000	1000	1600	1600	1600	1600
721-3114-000	15	0.63	>50	1000	1000	1600	1600	1600	1600
721-3118-000	15	1.0	>50	1000	1000	1600	1600	1600	1600
721-3122-000	15	1.6	>50	800	800	1600	1600	1600	1600
721-3126-000	15	2.5	>50	800	800	1600	1600	1600	1600
721-3130-000	15	4.0	>50	800	800	1600	1600	1600	1600
721-3134-000	20	6.3	>200	650	650	1500	1600	1600	1500
721-3138-000	25	10	>200	400	500	1150	1600	1600	1150
721-3142-000	32	16	>200	300	350	850	1350	1350	850
721-3146-000	40	25	>200	150	250	600	950	950	600
721-3150-000	50	38	>200	50	150	400	650	650	400

Replacement packing box: 1-001-0800-0

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 in order to prevent ice formation on the valve stem.

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)	See 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

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	MG900 SR
				400N	800N	1500N	1500N	900N
721-3238-000	25	10	>200	800	1600	1600	1600	1600
721-3242-000	32	16	>200	750	1600	1600	1600	1600
721-3246-000	40	25	>200	700	1600	1600	1600	1600
721-3250-000	50	38	>200	600	1600	1600	1600	1600

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

Design	2-way pressure balanced plug valve stem down, closed
Pressure class	PN 25
Flow characteristics	Equal Percentage

Stroke

DN 65 – DN 100	30 mm
DN 125 – DN 150	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

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	M50	M700
				800N	1500N	1500N	3000N	2200N	5000N	700N
721-9254-000	65	63	>50	1500	2500	2500	2500	---	---	1200
721-9258-000	80	85	>50	1500	2500	2500	2500	---	---	1200
721-9262-000	100	130	>50	1100	1600	1600	2500	---	---	800
721-9266-000	125	250	>50	---	---	---	---	1800	2500	---
721-9270-000	150	350	>50	---	---	---	---	1400	2500	---

Replacement packing box

DN65-100: 1-001-0820-0

DN125-150: 1-001-0821-0

Stem Heater

DN65-100: 880-0112-000

DN125-150: 880-0113-000

Replacement stem adaptor/hex bush:

DN125-150: 880-0134-000

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 in order to prevent ice formation on the valve stem.

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)	See table
Leakage A-AB	up to 0.02% of Kvs
Leakage B-AB	up to 0.05% of Kvs
ΔPm	600 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%

Materials

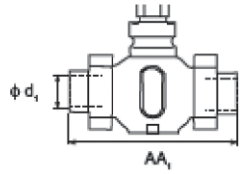
Body	Bronze Rg5
Plug and seat	Stainless steel SS 2346
Stem	Stainless steel SS 2346
Stem packing	EPDM

V341					Max Close-off Pressure (kPa)						
					Non Spring Return Actuators					Spring Return	
Part number	DN	Connection	Kvs	Rangeability	M310	M400	M800	M1500	MV15B	M700	MG900 SR
					300N	400N	800N	1500N	1500N	700N	900N
731-4121-000	15	G1B	1.6	>50	800	800	1600	1600	1600	1400	1600
731-4125-000	15	G1B	2.5	>50	800	800	1600	1600	1600	1400	1600
731-4129-000	15	G1B	4.0	>50	800	800	1600	1600	1600	1400	1600
731-4133-000	20	G1¼B	6.3	>100	650	650	1500	1600	1600	1100	1510
731-4137-000	25	G1½B	10	>100	400	500	1150	1600	1600	850	1160
731-4141-000	32	G2B	16	>100	300	350	850	1350	1350	650	855
731-4145-000	40	G2¼B	25	>100	150	250	600	950	950	450	605
731-4149-000	50	G2¾B	38	>100	50	150	400	650	650	300	415

Replacement packing box: 1-001-0800-0

Connections V341

Internal Thread Connection



Materials

Union nut: malleable iron casting, galv.

Union end: malleable iron casting, galv.

Packing, standard:
Fibre Gasket (Klingersil C4400)

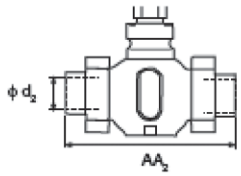
or

Packing, spec:
PTFE Gasket (Kingersil Top Chem 1,5mm)

Valve		Φd1	AA1	Part no. 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



Materials

Union nut: malleable iron casting, galv.

Union end: Bronze, SS 5204

Packing, standard:
Fibre Gasket (Klingersil C4400)

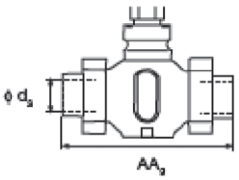
or

Packing, spec:
PTFE Gasket (Kingersil Top Chem 1,5mm)

Valve		Φd2	AA2	Part no. 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



Materials

Union nut:
Packing, standard:
Malleable iron casting, galv.

or

Packing, Spec: Brass

Union end: malleable iron casting, galv.

Packing, standard:
Fibre Gasket (Klingersil C4400)

or

Packing, spec:
PTFE Gasket (Kingersil Top Chem 1,5mm)

Valve		Φd3	AA3	Part no. 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.
2 sets of connections required for 2 way valves

VG310R 15-50B

The New Venta VG310R 15-50B is a new range of 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 ensures an ultra tight close off performance against energy seepage.

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 R_p

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 MG600C (-SR) actuator	
Part number	Type Designation	DN	Connection	Kvs	Rangeability	Class IV-S1	Class IV
						≤0.005%	≤0.01%
VG310R-15B05	VG310R 15B 0.4E SU00	15	Rp ½	0.4	>100	1600	1600
VG310R-15B07	VG310R 15B .63E SU00	15	Rp ½	0.63	>100		
VG310R-15B08	VG310R 15B 1E SU00	15	Rp ½	1.0	>100		
VG310R-20B	VG310R 20B 6.3E SU00	20	Rp ¾	6.3	>100		1600
VG310R-25B	VG310R 25B 10E SU00	25	Rp 1	10	>100	1100	1200
VG310R-32B	VG310R 32B 17E SU00	32	Rp 1¼	17	>100	600	700
VG310R-40B	VG310R 40B 24E SU00	40	Rp 1½	24	>100	350	450
VG310R-50B	VG210R 50B 35E SU00	50	Rp 2	35	>100	90	240

a. Valves designed for direct connection onto compact Forta actuators, type MG600C, MG600C-SR. For all other Forta actuators, stem extention, code NYBA-234-30 is required. It is not possible to drive this valve with the M700 or MV15B actuator.

V311T

The V211T 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 in order to prevent ice formation on the valve stem.

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	400 kPa, water
Max. temperature of medium	120°C
Min. temperature of medium	-20°C
Max. Glycol concentration	50%
Connection	Internal pipe thread R_p

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

V311T					Max Close-off Pressure kPa						
					Non Spring Return Actuators					Spring Return	
Part number	DN	Connection	Kvs	Rangeability	M310	M400	M800	M1500	MV15B	M700	M900
					300N	400N	800N	1500N	1500N	700N	900N
731-1717-000	15	Rp ½	1.6	>50	800	800	1600	1600	1600	1400	1600
731-1721-000	15	Rp ½	2.5	>50	800	800	1600	1600	1600	1400	1600
731-1725-000	15	Rp ½	4.0	>50	800	800	1600	1600	1600	1400	1600
731-1729-000	20	Rp ¾	6.3	>50	650	650	1500	1600	1600	1100	1510
731-1733-000	25	Rp 1	10	>50	400	500	1150	1600	1600	850	1160
731-1737-000	32	Rp 1¼	16	>50	300	350	850	1350	1350	650	605
731-1741-000	40	Rp 1½	25	>50	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

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.

Design	3-way plug valve
Pressure class	PN 16
Flow characteristic Port 2	Modified Parabolic
Flow characteristic Port 3	Linear
Stroke	12.7mm
Rangeability (Kvs/Kv min)	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)

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 (½" & ¾" valves)	Copper Alloy BS2874 CZ 132
Seat Bottom (1" to 2" valves)	Leaded Gunmetal BS1400 LG2
Stem Packing	PTFE Chevrons

Note: suitable for operation by AVUX, AVUM and AVUE actuators only.

MZX				Max Close-off Pressure kPa			
				Non Spring Return Actuators			
Part number	Connection	Kvs	Rangeability	AVUE5304 (1)	AVUE5354 (2)	AVUX5202	AVUM5601
				220N	220N	220N	220N
MZX4402	Rp ½"	2.6	50	1180	1180	1180	1180
MZX4452	Rp ¾"	4.2	50	720	720	720	720
MZX4501	Rp 1"	8.3	50	340	340	340	340
MZX4551	Rp 1¼"	12.5	50	200	200	200	200
MZX4601	Rp 1½"	21	50	120	120	120	120
MZX4651	Rp 2"	33	50	60	60	60	60

1) direct acting
(2) reverse acting
Replacement Packing Box: 0626-9-204

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 in order to prevent ice formation on the valve stem.

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	400 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

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	M400	M800	M1500	MV15B	M700	MG900 SR
				300N	400N	800N	1500N	1500N	700N	900N
731-1117-000	15	1.6	>50	800	800	1600	1600	1600	1400	1600
731-1121-000	15	2.5	>50	800	800	1600	1600	1600	1400	1600
731-1125-000	15	4.0	>50	800	800	1600	1600	1600	1400	1600
731-1129-000	20	6.3	>50	650	650	1500	1600	1600	1100	1510
731-1133-000	25	10	>50	400	500	1150	1600	1600	850	1160
731-1137-000	32	16	>50	300	350	850	1350	1350	650	855
731-1141-000	40	25	>50	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 (VG321)

The VG311F...C is a large flanged general purpose valve

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 in order to prevent ice formation on the valve stem.

Design	3-way plug mixing valve stem up closed (A port/B-AB open)
Pressure class	PN 16
Connection	Flange according ISO 7005-2
Rangeability (Kvs/Kv min)	> 50
Flow characteristics A – AB	Equal Percentage
Flow characteristics B – AB	Linear
Stroke DN65	25 mm
DN80-150	45mm
Leakage A – AB	< 0.03% of Kvs
Leakage B – AB	< 2% of Kvs

ΔPm	200 kPa, water
Max. temperature of medium	150°C
Min. temperature of medium	-10°C
Max. Glycol concentration	50%

Materials

Body	Grey Cast iron (GJL 250)
Stem	Stainless steel (AISI 303)
Plug (DN65-100)	Brass (CW614)
Plug (DN125-150)	Bronze (CB491K UNI EN 1982)
Seat	Grey Cast iron (EN JL 1040)
Stem Packing	EPDM

VG311F...C					Max Close-off Pressure kPa					
					Non Spring Return Actuators				Spring Return	
Part number	Type Designation	DN	Kvs	Rangeability	M800	M1500	MV15B	M3000	M700	MG900 SR
					800N	1500N	1500N	3000N	700N	900N
VG311F-65C	VG311F-65C 63M SU00	65	63	>50	240	400	400	850	220	290
VG311F-80C	VG311F-80C 100M SU00	80	100	>50	160	240	240	570	140	--
VG311F-100C	VG311F-100C- 130M SU00	100	130	>50	100	150	150	370	80	--
VG311F-125C	VG311F-125C 200M SU00	125	200	>50	60	90	90	230	50	--
VG311F-150C	VG311F-150C 300M SU00	150	300	>50	40	50	50	160	35	--

Replacement packing box: 1-001-0810-0

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 in order to prevent ice formation on the valve stem.

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 A – AB	Equal Percentage
Flow characteristics B – AB	Linear

Stroke

DN 65-100	30 mm
DN 125-150	40 mm
Leakage A – AB DN65 – DN100	<0.05% of Kv
Leakage B – AB DN65 – DN100	<0.05% of Kv
Max. temperature of medium	130°C
Min. temperature of medium	-10°C
Max. Glycol concentration	50%

Materials

Body	Grey Cast iron GG25
Stem	
DN 65-100	Stainless steel SS 1.4571
DN 125-150	Stainless steel SS 1.4021
Plug	Stainless steel SS 1.4021
Seat	Stainless Steel SS 1.4021
Stem Packing	EPDM

V321					Max Close-off Pressure kPa						
					Non Spring Return Actuators						Spring Return
Part number	DN	Kvs	ΔPm	Rangeability	M800	M1500	MV15B	M3000	M22	M50	M700
					800N	1500N	1500N	3000N	2200N	5000N	700N
731-2153-010	65	63	100	>30	140	290	290	700	---	---	80
731-2157-010	80	100	80	>30	80	180	180	440	---	---	40
731-2161-010	100	160	60	>30	40	110	110	280	---	---	---
731-2165-010	125	220	60	>30	---	---	---	---	90	340	---
731-2169-010	150	320	60	>30	---	---	---	---	60	240	---

Replacement packing box: DN65-100: 1-001-0822-0 DN-150: 1-001-0823-0
Conversion kit - V321 with old M16 actuator to Forta connection: 880-0130-000
Stem Heater
DN65-100: 880 0110 000
DN125-150: 880 0111 000
Replacement Stem adaptors,
DN65-100: 880-0133-000
DN125-150: 1-001-0824-0
Blanking flange set, to convert a V321 into a 2 way valve, e.g. when upgrading installations with VSD pumps.
DN65 913-0065-000, DN80 913-0080-000, DN100 913-0100-000,
DN125 913-0125-000; DN150 913-0150-000
Tight sealing versions available, contact Product Support for details.

Globe Valve Actuators

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 ensures 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

Forta: M310, M400, M800, M1500 and M3000

Full Stroke Runtime Modulating	see ordering table
Supply voltage	24 V AC +25% / -35%, 50-60 Hz
Increase/decrease	300s/60s
Duty cycle	Max. 20%/60 minutes

Analogue control input

Selectable Voltages	0-10V / 2-10V / 0-5V / 5-10 / 2-6 / 6-10
Impedance	Min. 100 kΩ

Digital inputs VH–VC

Voltage across open input	24 V AC
Current through closed input	5 mA

S2 Output – Auxiliary end point switch (optional)

Type	2 x SPDT
Voltage	24V AC
Load	4A (resistive) / 1A (inductive)

Regulated Voltage Output G1

Voltage	16 V DC ±0.3 V
Load	25 mA, short-circuit proof

Position Feedback, Y

Voltage	2-10 V (0-100%)
Load	2 mA

Ambient temperature

Operation	-10 to +50° C
Storage	-10 to +50° C
Ambient humidity	Max. 90% RH
Enclosure rating	IP 54

Standards

Emission	EN 61326-1
Immunity	EN 61326-1

Material

Housing	Aluminium
Cover	ABS/PC plastic
Colour (M310,M400,M800,M1500)	Aluminium/red
Colour (M3000)	Black/red

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	300	15s	20s	---	6	30
880-0230-030	M400	400	60s	60s	---	7	30
880-0231-030	M400 S2	400	60s	60s	---	7	30
880-0310-030	M800	800	15s	20s	30s	10	50
880-0311-030	M800 S2	800	15s	20s	30s	10	50
880-0450-000	M1500	1500	15s	20s	30s	15	50
880-0451-000	M1500 S2	1500	15s	20s	30s	15	50
880-0500-000	M3000	3000	14-40s	40-50s	50-80s	25	50
880-0510-000	M3000 S2	3000	14-40s	40-50s	50-80s	25	50

S2 – 2 x SPDT Auxiliary end point switches, 24V AC, 4A AC-1

Forta Accessories	
Part number	Description
880-0104-000	S2 – 2 x SPDT Axillary End Point Switches (24Vac 4A AC-1) (1)
880-0108-000	Stem heater Forta-Venta (1) – for media temp 0°C to -20°C
880-0109-000	Forta Yoke Heater for amb. temp -10°C, media temp -8°C

(1) Note: Not for Forta M700

Forta Linkage Kits for 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 1/4" stem
880-0118-000	Linkage Forta-Siemens
880-0125-000	Linkage Forta-Danfoss
880-0129-000	Linkage Forta-Spirax Sarco (M30:KE, KF, and KL; DN 15-100) [AG52]
880-0127-000	AG50 linkage – Controlli flanged Valves with M40 threaded bonnet, installed pre July 2009 types: VSG, VMB16, VBG (up to DN65).
880-0128-000	AG51 Linkage – Controlli Flanged Valves with M40 threaded bonnet, installed Pre July 2009 types: VBG, SS, DS, VSS, VBA, 3V, VMS (all sizes) types: VSG, VMB16, (DN80 or larger), SSGA
880-0129-000	AG52 linkage – Controlli, types: VSB, VMB, VSB_F, VMB_F
880-0135-000	Linkage Satchwell VZ 7*** and MZ 7*** series
880-0252-000	Linkage DN15-V298
880-0253-000	Linkage kit for old TAC DN15 valves -V282/ V294/ V384/ V386/ V394
AV-821	Forta to VB-7000 valves (Siebe/TAC)
AV-822	Forta to VB-8000 valves (siebe / TAC)
880-0130-000	V321 DN65-100 to Forta (convert from M16 actuator)
880-0135-000	Regin/Osby: NTVS / GTRS / GTVS, 2SAS / 2SBS, MTVS / MTRS, MRT and FRS
AV-823	Stem extension for VG210R/VG310R

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 retained in the cover. The manual override 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.

Supply voltage	24 V AC +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	9 to 32 mm
Thrust	900 N
Duty cycle	Max. 20%/60 minutes (and 80%/ 60 min) for half load / amb. temp

Running time

Modulating 10 to 25 mm (0.39 to 1 in.)	15s
Modulating 25 to 32 mm (1 to 1.26 in.)	20s
Increase/decrease	300s/60s

Analogue input

Voltage	0-10V / 2-10V / 0-5V / 5-10 / 2-6 / 6-10
Impedance	Min. 100 kΩ

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 / 20V DC ±0.3 V
Load	25 mA, short-circuit proof

Output Y

Voltage	2-10 V (0-100%)
Load	2 mA

Ambient temperature

Operation	-10 to 50 °C
Storage	-10 to 50 °C
Ambient humidity	Max. 90% RH

Standards

Emission	EN 61326-1
Immunity	EN 61326-1

Material

Housing	Aluminium
Cover	ABS/PC plastic
Colour	Red

Forta MG900 SR

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

Forta MG900 SR Accessories

Part number	Explanation
880 0104 000	S2 auxiliary end point switches
AV-821	Linkage kit to VB-7000 valves
AV-822	Linkage kit to VB-8000 valves
FYH50	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.

Forta: MG600C, MG600C-SR

The MG600C and MG600C-SR 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).

Supply voltage	24 V AC +25% / -35%, 50-60 Hz
Duty cycle	Max. 20%/60 minutes

Analogue control input

Selectable Voltages	0-10V / 2-10V / 0-5V / 5-10 / 2-6 / 6-10
Impedance	Min. 100 kΩ

Digital control input (3 point floating)

Voltage across open input	24 V AC
Current through closed input	5 mA
Pulse Time	Min. 20 ms

S2 Output – Auxiliary end point switch where fitted

Type	2 x SPDT
Voltage	24V AC
Load	4A (resistive) / 1A (inductive)
Part Number	880-0104-000

Position feedback(Y)

Voltage	2-10 V (0-100%)
Load	2 mA

Ambient temperature

Operation	-10 to +50°C
Storage	-10 to +50°C
Ambient humidity	Max. 90% RH
Enclosure rating	IP 54

Standards

Emission	EN 61326-1
Immunity	EN 61326-1

Material

Housing	Aluminium
Cover	ABS/PC plastic
Colour	Aluminium/grey

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

the MG600C(-SR) will not connect on to Satchwell or the 20mm 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.

The actuator is available in both a 24V AC and 230V AC 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.

Supply voltage	24 V AC ±10%, 50-60 Hz
	230 V AC ±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	9 to 52 mm
Thrust	1500 N

Ambient temperature

Operation	15 to 50°C
Storage	-25 to +65°C
Enclosure rating	IP 55

Standards

Emission	EN 61326-1
Immunity	EN 61326-1
LVD Low Voltage directive	EN 61010-1

Material

Housing	Aluminium
Cover	ABS plastic
Colour	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 the control of the longer stroked and the larger sized globe valves.

It utilises the same PCBA as the Forta non spring return actuators and so has the same capability with regard to self adapting to the valve stroke, and the same flexibility with regard to set up configuration.

The U bolt mounting makes for a very easy and quick installation. A manual over-ride is standard on all models.

Supply voltage	24 V AC +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	9 to 52 mm
Thrust	700 N
Duty cycle	Max. 20%/60 minutes

Running time

Modulating 10 to 25 mm	15s
Modulating 25 to 32 mm	20s
Modulating 10 to 52 mm	30s
Increase/decrease	300s/60s

Analogue input

Voltage	0-10V / 2-10V / 0-5V / 5-10V / 2-6V / 6-10V
Impedance	Min. 100 kΩ

Digital inputs VH–VC

Voltage across open input	24 V AC
Current through closed input	5 mA
Pulse time	Min. 20 ms

Regulated Voltage

Voltage	16 V DC ±0.3 V
Load	25 mA, short-circuit proof

Position feedback

Voltage	2-10 V (0-100%)
Load	2 mA

Ambient temperature

Operation	-10 to 50 °C
Storage	-10 to 50 °C
Ambient humidity	Max. 90% RH
Enclosure rating	IP 54

Standards

Emission	EN 61326-1
Immunity	EN 61326-1

Material

Housing	Aluminium
Cover	ABS/PC plastic
Colour	Black/red

Forta M700 actuators

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

Forta M700 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 switch
SRSU	spring return stem up
SRSD	spring return stem down
L7SV	Satchwell linkage to VZ and MZ valves

AVUX, AVUM, AVUE

The AVUX, AVUM and AVUE are compact actuators used to operate the VZX and MZX valves.

The AVUE 5304 and 5354 are modulating actuators. They have a linear output drive, and they can be used with any controller providing a 0-10Vdc output signal.

The AVUX is a 24Vac modulating linear actuator suitable to be driven from any 24Vac 3-point controller or device.

The AVUM is a mains voltage (230Vac) modulating linear actuator that can be controlled from any controller or device having a 3-point mains switched output.

Supply voltage AVUX	24 Vac, ±10% 50 Hz
Supply voltage AVUM	230 Vac, ±10% 50 Hz
Supply voltage AVUE	24 Vac, ±10% 50 Hz
Stroke	12.7mm

Running time	85 to 110 secs
Stem force	220N
Protection standard	IP 40
Connection cable	1.5m
Ambient operating temperature	0 to 50°C

AVUE,AVUX,AVUM Actuators for VZX, MZX valves	Force	Control Action	Control signal	Power supply	Power consumption 50Hz
Part number	N			Vac ±10%	VA
AVUE5304	220	Direct Acting	0-10 V	24Vac	3.1
AVUE5354	220	Reverse Acting	0-10 V	24Vac	3.1
AVUX5202	220	Floating	---	24Vac	2.3
AVUM5601	220	Floating	---	230Vac	3.6

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 24V AC or 230V AC voltages with and without end switches

Supply voltage	24 V AC +10% / -15%, 50-60 Hz
Power consumption	Average 15 VA

Running time

0 to 50mm	50Hz, 132s
60Hz, 112s	Duty cycle Max. 80%/60 minutes

Analogue input

Voltage	0 (2) – 10 V
Impedance	30 kOhm
Current	0 (4) – 20 mA
Impedance	125 Ohm

Ambient temperature

Operation	-20 to +70°C
Storage	-20 to +70°C
Ambient 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, 250V

M22A, M50A modulating actuators		Force
Part number	Description	N
890-0104-000	M22A-24V	2200
890-0204-000	M50A-24V	5000

M22B, M50B 3-Point floating actuators		Force	Power supply	Power consumption
Part number	Description	N	Vac +10% / -15%	50 Hz
890-0106-000	M22B-24V	2200	24	12 VA
890-0108-000	M22B-24V-S2	2200	24	12 VA
890-0110-000	M22B-230V	2200	230	11 VA
890-0112-000	M22B-230V-S2	2200	230	11 VA
890-0206-000	M50B-24V	5000	24	19 VA
890-0208-000	M50B-24V-S2	5000	24	19 VA
890-0210-000	M50B-230V	5000	230	28 VA

S2-Auxiliary end point switch

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 to 93°C
Glycol Concentration.	50%
Pressure class	400 psi (PN25)
Seat Leakage	0.01% (ANSI class IV)
ΔPm	100kPa

Materials

Valve body	Forged Brass
Stem	Nickel-plated Brass
Seat	Brass
Paddle/ Stem o-rings	FKM

Two-Way Valves				
Thread	Kvs	Part Number	Max ΔP (kPa) AG...Actuators	Max ΔP (kPa) AH...Actuators
1/2"	0.85	VT2231	410	515
	2.2	VT2232	275	340
	3	VT2233	170	205
3/4"	2.2	VT2332	275	340
	3	VT2333	170	205
	4.3	VT2335	135	170
	6.5	VT2337	115	135
1"	6.9	VT2437	115	135
Three-way valves				
1/2"	1.3	VT3231	410	515
	2.6	VT3232	275	340
	3.4	VT3233	170	205
3/4"	2.6	VT3332	275	340
	3.4	VT3333	170	205
	4.3	VT3335	135	170
	6.5	VT3337	115	135
1"	6.9	VT3437	115	135

Erie AG/AH Pop-Top 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 V ac (101 mA min. to 5A) 9-30V dc (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

Materials

Base Plate	Stainless Steel
Cover	Aluminium

Temperature Limits

Shipping and Storage:	-40 to 71°C
Operating	40° Ambient.
Humidity	5 to 95% RH, non-condensing

General Close-Off Actuator

Part number	Voltage	End Switch	Control	Spring Return Valve Function	Cable
AG12A230	24 Vac	-	On/Off	Normally Closed	910mm (36”)
AG12A23A		yes			
AG12U230	230 Vac	-			
AG12U23A		yes			
AG23A230	24 Vac	-		Normally Open	
AG23A23A		yes			
AG23U230	230 Vac	-			
AG23U23A		yes			

High Close-Off Actuator

Part number	Voltage	End Switch	Control	Spring Return Valve Function	Cable
AH13A230	24 Vac	-	On/Off	Normally Closed	910mm (36”)
AH13U230	230 Vac	-			
AH13U23A		yes			

Zone Valves - Short Stroke

VZ*08*

These small linear valves are 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.

Valve types

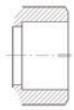
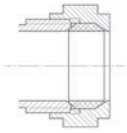
2-way, 3-way, 3-way with bypass

Pressure class	PN16
Stroke	2.5 mm
Max fluid speed	3 m/s
Media	Water, water+glycol (30% max)
Temperature	5 to 95°C
Leakage	0% tight close-off

Materials

Valve body	Brass (AISI 303)
Trim	Glass reinforced PPS
Stem	Stainless steel (AISI 303)
Stem packing	Double EPDM O-ring
Plug sealing	EPDM

* Nuts and Olives supplied with Valve

		VZ*08E		VZ*08C				
								
Two-way valves		Flat face		Compression*		Kvs		Max Close-off – kPa
Size	Kv	Part Number	Connection	Part Number	Connection	A-AB	B-AB	MZ140
DN15	0,25	VZ208E-15BP01	G1/2A	VZ208C-15BP01	15mm	0.25	--	250
DN15	0,4	VZ208E-15BP02	G1/2A	VZ208C-15BP02	15mm	0.4		
DN15	0,6	VZ208E-15BP03	G1/2A	VZ208C-15BP03	15mm	0.6		
DN15	1	VZ208E-15BP04	G1/2A	VZ208C-15BP04	15mm	1		
DN15	1,6	VZ208E-15BP05	G1/2A	VZ208C-15BP05	15mm	1.6		
DN20	2,5	VZ208E-20BP07	G3/4A	VZ208C-20BP07	22mm	2.5		150
DN20	4	VZ208E-20BP08	G3/4A					
DN20	6	VZ208E-20BP09	G3/4A					
Three-way valves								
DN15	0,25	VZ308E-15BP01	G1/2A	VZ308C-15BP01	15mm	0.25	0.25	250
DN15	0,4	VZ308E-15BP02	G1/2A	VZ308C-15BP02	15mm	0.4	0.4	
DN15	0,6	VZ308E-15BP03	G1/2A	VZ308C-15BP03	15mm	0.6	0.6	
DN15	1	VZ308E-15BP04	G1/2A	VZ308C-15BP04	15mm	1	0.8	
DN15	1,6	VZ308E-15BP05	G1/2A	VZ308C-15BP05	15mm	1.6	1	
DN20	2,5	VZ308E-20BP07	G3/4A	VZ308C-20BP07	22mm	2.5	1.6	150
DN20	4	VZ308E-20BP08	G3/4A					100 A-AB 40 B-AB
DN20	6	VZ308E-20BP09	G3/4A					
Three-way valves with integral by-pass (4 ports)								
DN15	0,25	VZ408E-15BP01	G1/2A	VZ408C-15BP01	15mm	0.25	0.25	250
DN15	0,4	VZ408E-15BP02	G1/2A	VZ408C-15BP02	15mm	0.4	0.4	
DN15	0,6	VZ408E-15BP03	G1/2A	VZ408C-15BP03	15mm	0.6	0.6	
DN15	1	VZ408E-15BP04	G1/2A	VZ408C-15BP04	15mm	1	0.8	
DN15	1,6	VZ408E-15BP05	G1/2A	VZ408C-15BP05	15mm	1.6	1	
DN20	2,5	VZ408E-20BP07	G3/4A	VZ408C-20BP07	22mm	2.5	1.6	150
DN20	4	VZ408E-20BP08	G3/4A					100 A-AB 40 B-AB
DN20	6	VZ408E-20BP09	G3/4A					

Zone Valve Actuators - Short Stroke

MZ140

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

Temperature

Working	2 to 50°C
Storage	-10 to 60°C

Stem force	140N
Max stroke	4 mm
Coupling ring	M30 x 1,5
Power cable	2m bipolar (0.75mm^2)
Material	Fire-resistant case: Class V0
Protection class	IP 44 (for vertical mounting)

Part number	Full Type Designation	Control signal	Power	Power consumption	Initial consumption
			VAC	VA	A
MZ140-230T	MZ140-110/230T 2M44 00	On/Off	110-230	1.8	0.25
MZ140-24T	MZ140-24T 2M44 00	On/Off	24	1.8	0.17
MZ140-24M	MZ140-24M 2M44 00	0-10V modulating	24	1.8	0.2

Note:

5 pc multi packs of the Compression variants (VZ*08C) are available, consult data sheet for full details and part numbers.

Zone Valves – Long Stroke

VZ*19*

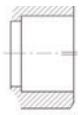
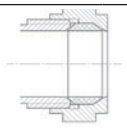
These small linear valves are designed for control of hot and chilled water in fan coils or other terminal unit applications. These particular valves are designed to be used with the compact electro-mechanical actuators type MZ20.

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

Leakage	0% tight close-off
Rangeability	50:1

Materials

Valve body	Brass (CW617N)
Trim	Glass reinforced PPE
Stem	Stainless steel (AISI 303)
Stem packing	EPDM
Plug sealing	EPDM

Two-way valves								
		VZ*19E		VZ*19C				
								
		Flat face		Compression*		Kvs		Close-off
Size	Kv	Part Number	Connection	Part Number	Connection	A-AB	B-AB	MZ20 actuator
DN 15	0,25	VZ219E-15BP01	G1/2A	VZ219C-15BP01	15mm	0.25	--	350
DN 15	0,4	VZ219E-15BP02	G1/2A	VZ219C-15BP02	15mm	0.4		
DN 15	0,6	VZ219E-15BP03	G1/2A	VZ219C-15BP03	15mm	0.6		
DN 15	1	VZ219E-15BP04	G1/2A	VZ219C-15BP04	15mm	1		
DN 15	1,6	VZ219E-15BP05	G1/2A	VZ219C-15BP05	15mm	1.6		
DN 15	2	VZ219E-15BP06	G1/2A	VZ219C-15BP06	15mm	2		250
DN 20	2,5	VZ219E-20BP07	G3/4A	VZ219C-20BP07	22mm	2.5		
DN 20	4	VZ219E-20BP08	G3/4A					150
DN 20	6	VZ219E-20BP09	G3/4A					
Three-way valves								
DN 15	0,25	VZ319E-15BP01	G1/2A	VZ319C-15BP01	15mm	0.25	0.25	350
DN 15	0,4	VZ319E-15BP02	G1/2A	VZ319C-15BP02	15mm	0.4	0.25	
DN 15	0,6	VZ319E-15BP03	G1/2A	VZ319C-15BP03	15mm	0.6	0.4	
DN 15	1	VZ319E-15BP04	G1/2A	VZ319C-15BP04	15mm	1	0.6	
DN 15	1,6	VZ319E-15BP05	G1/2A	VZ319C-15BP05	15mm	1.6	1	
DN 15	2	VZ319E-15BP06	G1/2A	VZ319C-15BP06	15mm	2	1.6	150
DN 20	2,5	VZ319E-20BP07	G3/4A	VZ319C-20BP07	22mm	2.5	1.6	
DN 20	4	VZ319E-20BP08	G3/4A					100 A-AB 40 B-AB
DN 20	6	VZ319E-20BP09	G3/4A					
Three-way valves with integral by-pass (4 ports)								
DN 15	0,25	VZ419E-15BP01	G1/2A	VZ419C-15BP01	15mm	0.25	0.25	350
DN 15	0,4	VZ419E-15BP02	G1/2A	VZ419C-15BP02	15mm	0.4	0.25	
DN 15	0,6	VZ419E-15BP03	G1/2A	VZ419C-15BP03	15mm	0.6	0.4	
DN 15	1	VZ419E-15BP04	G1/2A	VZ419C-15BP04	15mm	1	0.6	
DN 15	1,6	VZ419E-15BP05	G1/2A	VZ419C-15BP05	15mm	1.6	1	
DN 15	2	VZ419E-15BP06	G1/2A	VZ419C-15BP06	15mm	2	1.6	250
DN 20	2,5	VZ419E-20BP07	G3/4A	VZ419C-20BP07	22mm	2.5	1.6	
DN 20	4	VZ419E-20BP08	G3/4A					100 A-AB 40 B-AB
DN 20	6	VZ419E-20BP09	G3/4A					

Zone Valve Actuator – Long Stroke

MZ20A, MZ20B

The MZ20 is an electro-mechanical zone valve actuator designed for use with the VZ*19* valves.
Reliable long term operation is provided by the optimal design without feedback potentiometer or end switches.
The actuator provides exact valve position and flow adjustment due to the 100 second running time.

Input voltage MZ20A	24 V AC, 50/60 Hz
Input voltage MZ20B	24V or 230V AC 50/60 Hz
Power consumption MZ20A	1 VA
Power consumption MZ20B	0.5 VA
Speed	18 s/mm (50 Hz) – 15 s/mm (60 Hz)

Temperature

Working	-5 to +55°C
Storage	-25 to +65°C
Stem force	200 N
Max stroke	6.5 mm
Connection cable	3 wires 1.5 m
Protection class	IP 43 (for vertical mounting)

MZ20A/B zone valve actuator for VZ*19valves

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

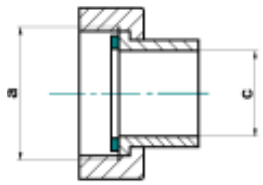
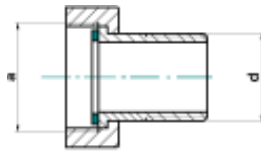
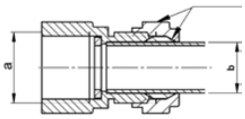
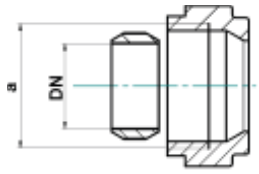
* 0-10V, 6-9V,1-5V, 2-10V, 4-7V, 6-10V, 8-11V

Contact Schneider Electric for LON actuators for long stroke zone valves.

Note:

5 pc multi packs of the VZ*19C valves are available, consult data sheet for full details and part numbers.

Connections for VZ Series Zone Valves

	Connection type	Pipe size	DN	a	c (mm)	d	e	Part number	Pack quantity
	Solder *	15mm 12mm	15 20	G 1/2 G 3/4	12 15	-- --	-- --	911-2076-000 911-2077-000	1 1
	External Thread	R 3/8” R 1/2”	15 20	G 1/2 G 3/4	-- --	R 3/8 R 1/2	-- --	911-2078-010 911-2079-010	10 10
	Flat to compres-sion*	15 mm 22 mm	15 20	G 1/2 G 3/4	-- --	-- --	15 22	911-2080-000 911-2081-000	1 1
	Compression Capnut and olive	15 mm 20 mm	15 20	G1/2A Withworth 1 1/8” - 14	-- --	-- --	15 22	911-2082-000 911-2083-000	10 10

*One fitting required per valve port.

Zone Valve Actuator – For VZ22, VZ32, VZ42 Valves

MZ18A

The MZ18A actuator is for modulation control of VZ22/VZ32/VZ42 series of small linear zone valves.

Input voltage	24 V AC, ± 15%, 50/60 Hz
Power consumption	1,4 VA
Input Signal	Modulating 0-10, 2-10V
Stroke	6.5 mm
Operation	Direct/reverse (selectable)
Running time	150s at 50 Hz
	120s at 60 Hz
Stem force	180 N (for valves DN 15-20)
Insulation class	III
Connection cable	1,5 m
Coupling ring	M 30 x 1,5
Ambient operating temperature	0 to 55°C
Enclosure rating	IP 42

MZ18A zone valve actuator for VZ22/32/42 valves

Part number	Description
845-5100-000	MZ18A-24

MZ 18B

The MZ18B actuator is for 3 point floating control of VZ22/VZ32/VZ42 small linear zone valves

Input voltage	24 Vac + 10 % / -30 %; 50/60 Hz
Power consumption	0,7 VA
Control mode	Floating (3-point)
Stroke	6.5 mm
Running time	150s at 50 Hz
	120s at 60 Hz
Stem force	180 N (for valves DN 15-20)
Insulation class	III
Connection cable	1.5 m
Coupling ring	M 30 x 1,5
Ambient operating temperature	0 to 60°C
Enclosure rating	IP 42

MZ18B zone valve actuator for VZ22/32/42 valves

Part number	Description
845-5101-000	MZ18B

Radiator Valve Actuators

MR90

The MR90 is a thermoelectric actuator designed to provide on/off control together with radiator valves. The actuators are used for radiant heating applications, such as radiators, underfloor heating manifolds, fan coil units, induction units, and small reheaters. The actuator operates together with controllers using on/off control signal.

Normally Open

Normally Closed

Opening/closing time	Approx. 5.5 min.
Stem force	90 N
Max stroke	4 mm
Coupling ring	M30 x 1.5
Connection cable	2m, white
Max. Ambient temperature	50°C

Protection Class

MR90 NC	IP43 (Vertically Mounted)
	IP41 (Horizontally Mounted)
	IP40 (Upside down)
MR90 NO	IP44 (Any orientation)

MR90 actuator for radiator valves		Power Supply	Power consumption (running)	Power Consumption (start up)	Valve Function
Part number	Type Designation	V	W	VA	Without Power
MR90NO-24T	MR90NOU-24T-2M 43 00	24 V AC/DC	2	4	Normally Open
MR90NC-24T	MR90NCD-24T-2M 43 00	24 V AC/DC	2	4	Normally Closed
MR90NO-230T	MR90NOU-230T-2M 43 00	110-230V AC	2	50	Normally Open
MR90NC-230T	MR90NCD-230T-2M 43 00	110-230V AC	2	50	Normally Closed

Suitable valves

Manufacturer	Valve type	Adapter
Honeywell	VT220E	Not required
Heimeier		Not required
Minstral		Not required
Danfoss	RAS-C	911-2074-000
Drayton	TRV-4	Not required
TA	TRV-2/TRV-4	Not required

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 ensures longtime reliability.

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 in accordance with EN 60529
Connection cable	0.9 m
Coupling ring	M 30 x 1.5
Ambient operating temperature limits	0 to 60°C
Enclosure rating	IP 42

MZ09B actuator for radiator valves

Part number	Description
845-5111-000	MZ 09B 2,5mm

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, RA-UR, RA-KE, RA-K	911-2075-000
Danfoss	Series RAVL	911-2074-000

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.

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	2.5mm
Running time	53s at 50 Hz
	44s at 60 Hz
Stem force	90 N (for valves DN 15-20)
Protection standard	IP 42
Insulation class	III
Connection cables	1.5 m, three leads
	1.5 m, two leads
Coupling ring	M 30 x 1.5
Ambient operating temperature	0 to 55°C
Enclosure rating	IP 42

MZ09L actuator for radiator valves

Part number	Description
845-5112-000	MZ 09L(LON) 2,5mm

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

Butterfly Valves

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 DN 25-80 (DVGW)
- Maintenance free, double sealing of stem, centrical disc bearing
- Good flow control characteristics
- Integrated dew point barrier
- No linkage kits required

OPTIONS: (upon special request)
- Lugged flange connections

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

Materials

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

Ordering Table

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

Shaded items are stocked products.

Contact Product Management for larger sizes.

Butterfly Valve Actuators

MF20 / MF20-R / MF40

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.

MF20 / MF20-R

- Models for Floating / Modulating / On-Off and LON control
- 2-10V Positional feedback on modulating models
- Latching Manual override
- Direct Handlever / position indicator
- Auxillary switch available as an accessory

MF40

Actuators for VF208W Butterfly Valves

Control	Part Number	Full Type Designation	Torque	Supply Voltage	Power Consumption (rest)	Power Consumption (operation)	Power Consumption (wire sizing)	Operating time, 90°	Suitable VF208W valve size
On-Off / 3P	MF20-24F	MF20-24F T54 00	20Nm	24V AC/ DC	0.2W	2.5W	5.5VA	90 sec	DN25-100
On-Off / 3P	MF20-230F	MF20-230F T54 00	20Nm	230V AC	0.4W	3W	7VA	90 sec	DN25-100
2-10V	MF20-24M	MF20-24M T54 00	20Nm	24V AC/ DC	0.4W	2.5W	5VA	90 sec	DN25-100
LON	MF20-24L	MF20-24L 1M54 00	20Nm	24V AC/ DC	1.25W	3.5W	6VA	90 sec	DN25-100
On-Off / 3P	MF40-24F	MF40-24F T54 00	40Nm	24V AC/ DC	2W	4W	6VA	150 sec	DN125-200
On-Off / 3P	MF40-230F	MF40-230F T54 00	40Nm	230V AC	2.5W	5W	9VA	150 sec	DN125-200
0-10V	MF40-24M	MF40-24M T54 00	40Nm	24V AC/ DC	2W	4.5W	6.5VA	150 sec	DN125-200
LON	MF40-24L	MF40-24L 1M54 00	40Nm	24V AC/ DC	1.5W	4W	7VA	90 sec	DN125-200

Actuators for installed base of TRV-S butterfly Valves

Control	Part Number	Full Type Designation	Torque	Supply Voltage	Power Consumption (rest)	Power Consumption (operation)	Power Consumption (wire sizing)	Operating time, 90°	Suitable TRV-S valve
Floating & On/Off	MF20-24F-R	MF20-24F-T54 R0	20Nm	24V AC/ DC	0.2W	2.5W	5.5VA	90 sec	DN25-125
Floating & On/Off	MF20-230F-R	MF20-230F-T54 R0	20Nm	230V AC	0.4W	3W	7VA	90 sec	DN25-125
0-10V	MF20-24M-R	MF20-24M T54 R0	20Nm	24V AC/ DC	0.4W	2.5W	5VA	90 sec	DN25-125

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

Accessories:
MD-S1, 1 x SPDT auxiliary switch, Part No. 914-1060-000
MD-S2, 2 x SPDT auxiliary switch, Part No. 914-1061-000

Handlevers:

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

DN25-65, Part No. :915-0065-000
DN80-100, Part No. :915-0100-000
DN125-200, Part No. : 915-0200-000

N.B Max ΔP Pressure for the valve remains
(Max Valve ΔP is a function of construction, not the actuator)

Shoe Valves

Shoe valves are designed to be used in both mixing and diverting circuits.
Typical applications include heating, cooling and air conditioning.

VTRE

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

The valve is delivered with a handle for manual operation.

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

Materials

Body	Cast iron
Sleeve	Brass
Connections	Flanged DIN 2531

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

MB

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

MBF

The MBF is a 3-port flanged rotary shoe valve.

MB

MBF

Design	3-way rotary shoe valve
Pressure Class (MB)	PN10
Pressure Class (MBF)	PN6
Flow Characteristic	Port 2 Modified Parabolic
Flow Characteristic	Port 3 Linear
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 MB	Screwed Parallel (female) BSP to BS21
Connection MBF	Flanged BS4504, Table 6/11

Materials

Body ½" to 1" valves	Hot Pressed Brass to BS218
Body 1¼" to 2" valves	Close Grained Cast Iron BS1452 Grade 260
Body 65mm to 100mm	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				
Part number	Size (inches)	Kvs	Rangeability	RM	XRM	MD10B-230	MD10B-24	MD10A-24
				2Nm	2Nm	10Nm	10Nm	10Nm
MB1402	½"	2.0	50	70	70	70	70	70
MB1452	¾"	4.0	50	70	70	70	70	70
MB1502	1"	8.3	50	70	70	70	70	70
MB1552	1¼"	12.5	50	35	35	35	35	35
MB1602	1½"	21	50	35	35	35	35	35
MB1652	2"	33	50	35	35	35	35	35

The MD10B 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.

MBF				Max Close-off Pressure kPa		
Part number	DN	Kvs	Rangeability	MD20B-24	MD20B-230	MD20A-24
				20Nm	20Nm	20Nm
MBF4732	65	65	50	35	35	35
MBF4782	80	83	50	25	25	25
MBF4857	100	125	50	25	25	25

The MD20B 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.

Rotary Shoe Valve Actuators

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.

Power consumption	3 VA
Duty cycle	10%
Torque	15 Nm
Operating temperature	-15 to +55°C
Protection class	IP 54

Material

Enclosure material	Reinforced plastic PA66
Colour	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	3-point	30-180°	90° 4 min	230
860-1100-000	EM9/90	modulating (1)	90°	60/90/120s	24
860-1110-000	EM9/180	modulating (1)	180°	120/180/240s	24

(1) Selectable 0-10V, 2-10V, 0-20mA, 4-20mA

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

RM and 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 24V ac.

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.

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
Ambient operating temperature with water at 120°C	-20°C to +35°C

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

Damper Actuators

Non-Spring Return

MD5A, MD10A, MD20A, MD40A

The MD...A are 2-10V 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.

Power supply	24 V AC ±20%, 50-60 Hz, 24 V DC ±20%
Connection cable	1 m, 4×0.75 mm² (AWG 18)
Input signal range X	0-10 V DC
Input resistance	100 k Ohm
Operating range	2-10 V DC (for set angle of rotation)
Synchronisation tolerance	±5%
Position feedback Y	2-10 V DC (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 pushbutton, self-resetting, manual locking

Standards conformity

EMC, emission	EN 6100-6-3: 07
EMC, immunity	EN 6100-6-2: 05
Protection class	III Safety extra-low voltage
Enclosure rating	IP 54
Ambient humidity	95%RH, non-condensing

Ambient temperature

Operation	-30 to +50°C
Storage	-40 to +80°C
Maintenance	Maintenance free

Part number	Description	Torque	Power Consumption		
		Nm	In operation	At rest	For wire sizing
875-1009-000	MD5A-24	5	1 W	0.4 W	2 VA
875-1019-000	MD10A-24	10	2 W	0.4 W	4 VA
875-1029-000	MD20A-24	20	2 W	0.4 W	4 VA
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 m²		min 37	6-20
MD10	approx. 2 m²	Clamp on top	min 40	8-26.7
		Clamp on bottom*	min 20	8-20
MD20	approx. 4 m²	Clamp on top	min 48	10-20
		Clamp on bottom	min 20	10-20
MD40	approx. 8 m²	Clamp on top	min 52	12-26.7
		Clamp on bottom	min 20	12-26.7

* Optional accessory K-MD10 part number 914-1062-000 For damper actuator accessories see page 57.

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 24V AC/DC or 230V AC versions.
Versions available with integrated end point switch (-S types).
Auxiliary switch also available as an accessory.

Connection cable

Actuator	1 m, 3×0.75 mm² (AWG 18)
Auxiliary switches (-S)	1 m, 3×0.75 mm² (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
Angle of Rotation	Max 95' (adjustable by mechanical stops)
Position indication	Mechanical
Auxiliary switch	1 mA to 3 (0.5) A, 250 V AC
Switching point	(adjustable 0-100%)

Standards conformity

EMC, emission	EN61000-6-3: 07
EMC, immunity	EN 61000-6-2: 05
LVD Safety; MD5B-230(-S)	EN 60730-1/2-14

Protection class

MD..B-24(-S)	III Safety extra-low voltage
MD..B-230(-S)	II Totally insulated
Enclosure rating	IP 54
Ambient humidity	95% RH, non condensing

Ambient temperature

Operation	-30 to +50°C
Storage	-40 to +80°C
Maintenance	Maintenance free

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

Description	For air control dampers area	Damper spindle	Spindle length mm	Spindle diameter mm
MD5	approx. 1 m²		min 37	6-20
MD10	approx. 2 m²	Clamp on top	min 40	8-26.7
		Clamp on bottom*	min 20	8-20
MD20	approx. 4 m²	Clamp on top	min 42	10-20
		Clamp on bottom	min 20	10-20
MD40	approx. 8 m²	Clamp on top	min 42	14-26
		Clamp on bottom	min 20	14-26

* Optional accessory K-MD10 part number 914-1062-000 For damper actuator accessories see page 57.

Damper Actuators

Spring 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 0-10V modulating control with 2-10V position feedback

Connection cable	2×0.75 mm² (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 to +50°C) max. 60 s (at -30°C)
Direction of rotation	Selected by mounting L/R
Position indication	Mechanical

Standards conformity

EMC, emission	EN 55014-1
EMC, immunity	EN61000-6-2
LVD Safety; LF230	EN 60730-1/-2-14
Enclosure rating	IP 54
Ambient humidity	95% RH, non condensing

Ambient temperature

Operation	-30 to +50°C
Storage	-40 to +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 wire sizing
874-0003-000	LF24	4	on/off	24Vac±20%	5 W	2.5 W	7 VA
875-0003-000	LF230	4	on/off	230Vac±14%	5 W	3 W	7 VA
877-0003-000	LF24-SR	4	0-10V	24Vac±20%	2.5 W	1 W	5 VA

For damper actuator accessories see page 57.

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

Motor Torque	Min. 10Nm @ Nominal Voltage
Spring Return	Min. 10Nm
Running Time, Motor	
Modulating	≤150 s
On/off	≤75 s
Spring Return	≤20 s

Control Signal, modulating

Range of Operation (X)	2-10V DC
Input Resistance	100 kΩ
Position Feedback (Y)	2-10V DC, max 0.5mA
Position accuracy	+/- 5%

Cable Size	1m
-24M,	4 x 0.75mm²
-T, -24T	2 x 0.75mm²
S2 versions	2+6 x 0.75mm²
Direction of Rotation	
Motor	Reversible with Switch I/O
Spring return	via mounting orientation, L / R

Manual Override	5mm Hex key crank, supplied plus interlocking switch
Adjustable angle of rotation	0 to Max 95°
Position indication	Mechanical
Protection Class	
24V versions	III Extra low Voltage
230V Versions	II Totally insulated
Degree of Protection	IP54

Environmental

Operation Temperature	-30°C to + 50°C
Storage (non operation)	-40°C to + 80°C
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	2.1Kg
Ambient Humidity	95% r.h. Non condensing

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	24-240V AC / 24-125V DC	6W	2.5W	9.5VA	On/Off
MD10SR-TS	MD10 SR-24/230FTS 1M54 00	10	24-240V AC / 24-125V DC	6W	2.5W	9.5VA	On/Off
MD10SR-24T	MD10 SR-24T 1M54 00	10	24V AC/DC	6W	2.5W	8.5VA	On/Off
MD10SR-24TS	MD10 SR-24TS 1M54 00	10	24V AC/DC	6W	2.5W	8.5VA	On/Off
MD10SR-24M	MD10 SR-24M 1M54 00	10	24V AC/DC	3.5W	2.5W	5.5VA	2-10V Mod.

For damper actuator accessories see page 62

Spindle Clamp

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

MD20 SR

The MD10 SR is a compact spring return damper actuator for the operation of ventilation dampers up to 4m² in building service installations

Motor Torque	Min. 20Nm @ Nominal Voltage
Spring Return	Min. 20Nm
Running Time, Motor	
Modulating	≤150 s
On/off	≤75 s
Spring Return	≤20 s

Control Signal, modulating

Range of Operation (X)	2-10V DC
Input Resistance	100 kΩ
Position Feedback (Y)	2-10V DC, max 0.5mA
Position accuracy	+/- 5%

Cable Size	1m, 0.75mm²
-24M,	4 x 0.75mm²
-T,-24T	2 x 0.75mm²
S2 versions	2+6 x 0.75mm²
Direction of Rotation	
Motor	Reversible with Switch I/O
Spring return	via mounting orientation, L / R

Manual Override	5mm Hex key crank, supplied plus interlocking switch
Adjustable angle of rotation	0 to Max 95°
Position indication	Mechanical
Protection Class	
24V versions	III Extra low Voltage
230V Versions	II Totally insulated
Degree of Protection	IP54

Environmental

Operational Temperature	-30°C to + 50°C
Storage temperature (non operation)	-40°C to + 80°C
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
Ambient Humidity	95% r.h. Non condensing

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	24-240V AC / 24-125V DC	6.5W	3.3W	18VA	On/Off
MD20SR-TS	MD20 SR-24/240TS 1M54 00	20	24-240V AC / 24-125V DC	6.5W	3.3W	18VA	On/Off
MD20SR-24T	MD20 SR-24T 1M54 00	20	24V AC/DC	5W	2.5W	7.5VA	On/Off
MD20SR-24TS	MD20 SR-24TS 1M54 00	20	24V AC/DC	5W	2.5W	7.5VA	On/Off
MD20SR-24M	MD20 SR-24M 1M54 00	20	24V AC/DC	5W	3W	7VA	2-10V Mod.

For damper actuator accessories seepage 62.

Spindle Clamp

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

Mechanical Accessories

Name	Description	Part number	Actuators						
			MD5	MD10	MD20	MD40	LF	MD10 SR	MD20 SR
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		x	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	x	x
ZG-MDSR	Mounting Kit for flat and side installation	914-1046-000						x	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	x

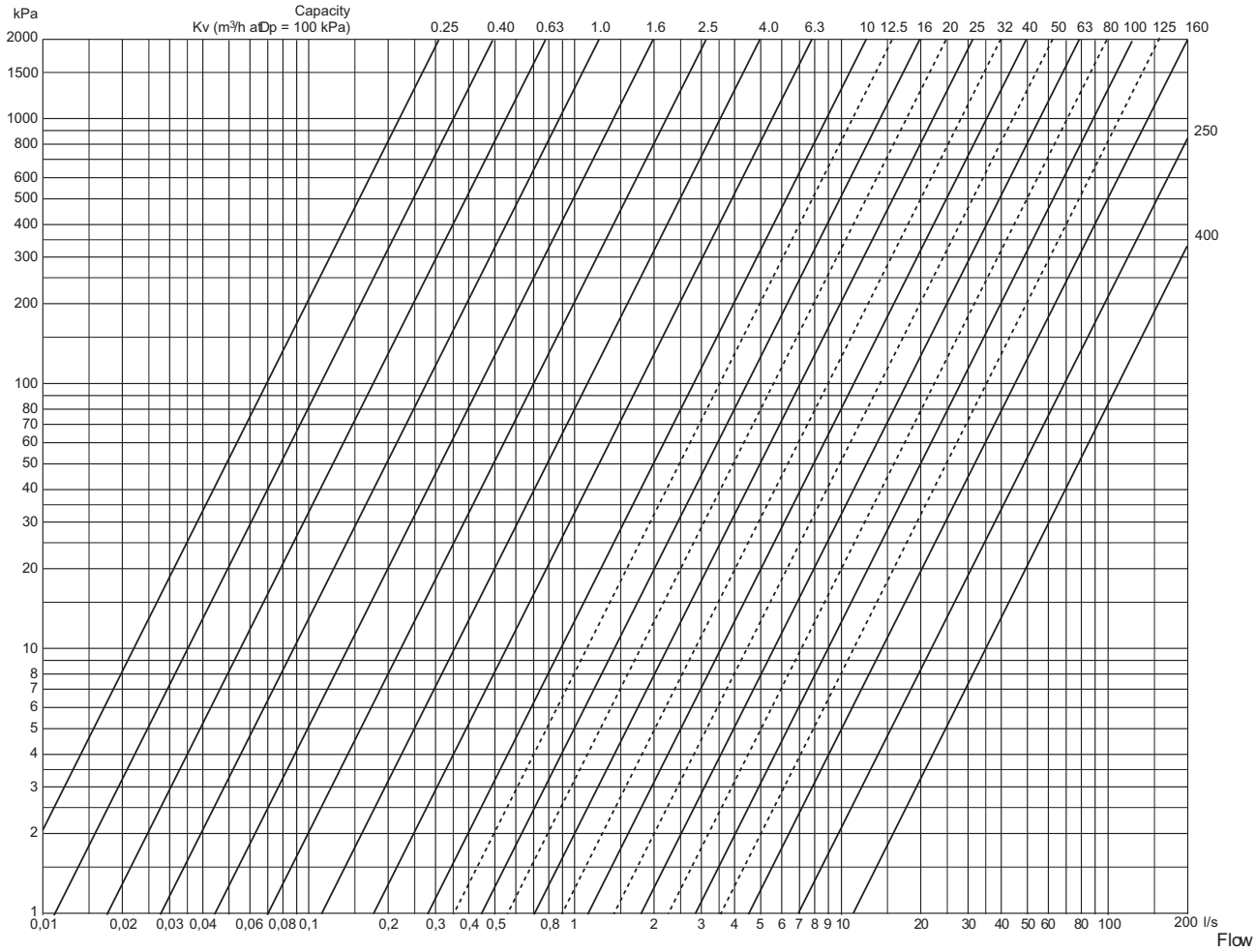
Electrical Accessories

Name	Description	Part number	Actuators					
			MD5	MD10	MD20	MD40	LF	MD10 SR / MD20 SR
MD-S1	Auxiliary switch, add-on 1xSPDT 1mA…3(0.5)A, 250V AC	914-1060-000	x	x	x	x		
MD-S2	Auxiliary switch, add-on 2xSPDT 1mA…3(0.5)A, 250V AC	914-1061-000	x	x	x	x		

Appendix

Water Valve Sizing Chart

Pressure drop



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

Valve sizing formulae for water service
In order 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

$$Kv = Q \times \sqrt{(\rho / \Delta P)}$$

Calculation of valve flow rate, Q

$$Q = Kv \times \sqrt{(\Delta P / \rho)}$$

Calculation of Pressure drop, ΔP

$$\Delta P = \rho \times (Q/Kv)^2$$

Kv = Valve Capacity (m³/h)
Q = Volume flow (m³/h)
ΔP = Pressure drop across valve (bar)
ρ = Specific Gravity of fluid (kg/m³)

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]

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

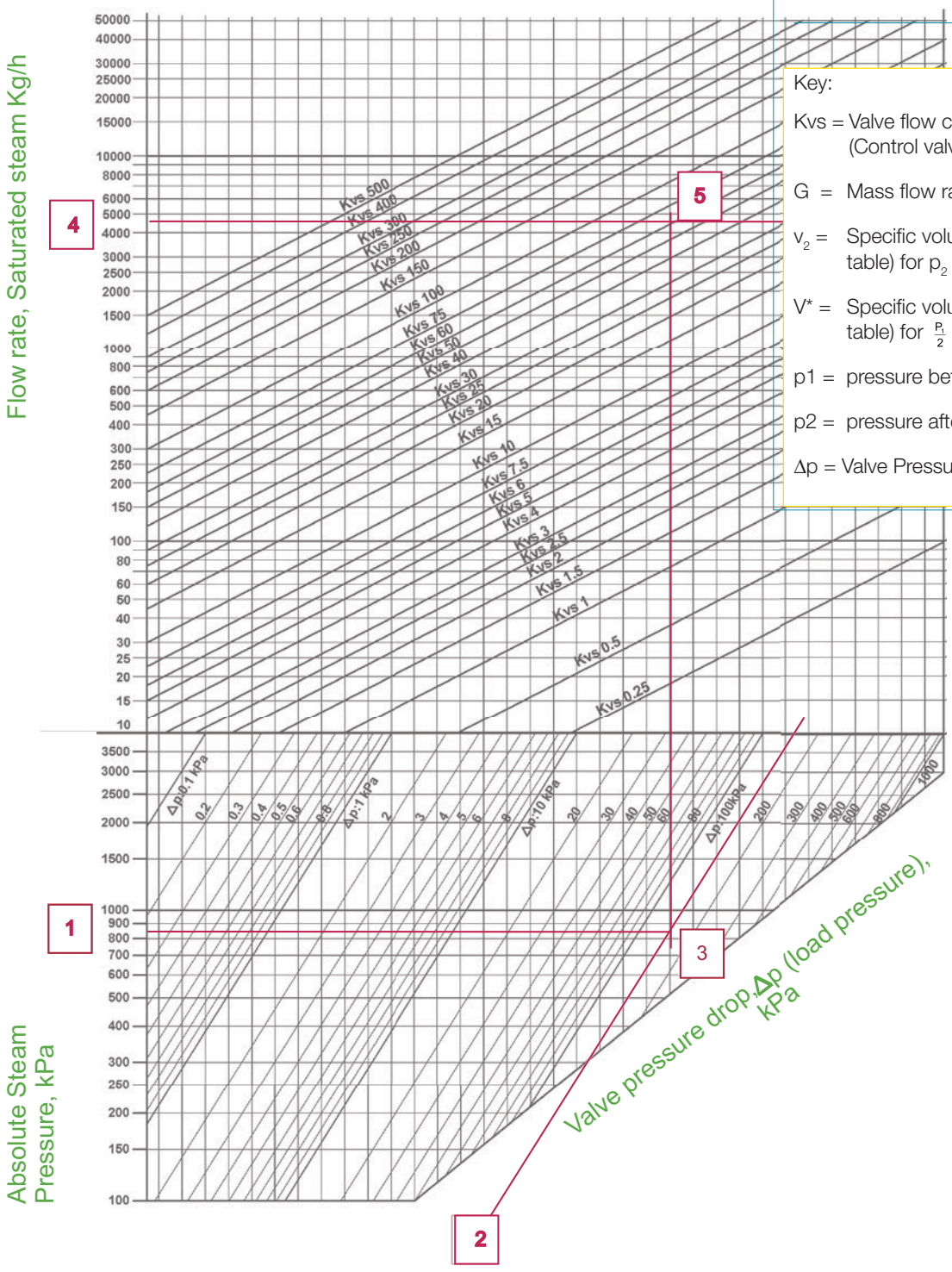
$\Delta P > \frac{P_1}{2}$

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

$P2 < \frac{P_1}{2}$

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

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



Key:

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

G = Mass flow rate (Kg/h)

v_2 = Specific volume (from steam table) for p_2 and t_1 condition

V* = Specific volume (from steam table) for $\frac{P_1}{2}$ and t_1 condition

p1 = pressure before valve

p2 = pressure after valve

Δp = Valve Pressure drop (bar)

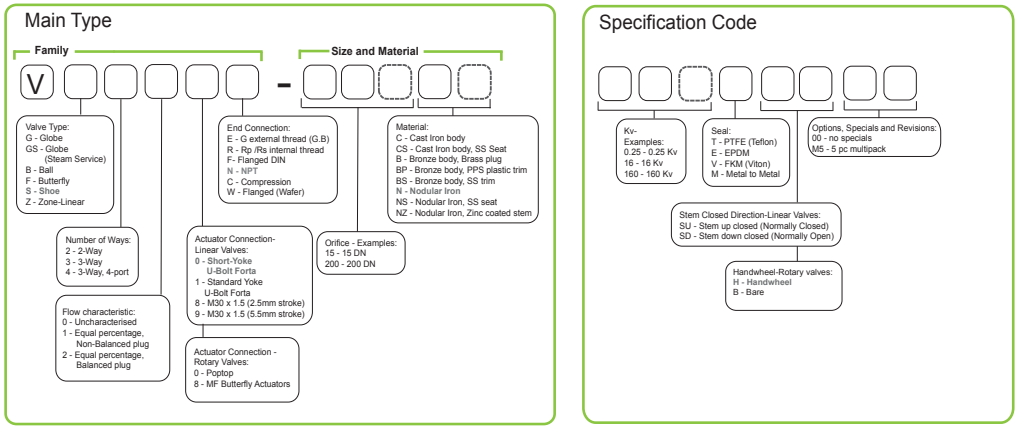
New Type Designation Guide

A new Type Designation has been introduced for all 'new' valve and actuator products released after July 2009. This guide herein covers those products. Current products released before July 2009 will continue to use the pervious designation.

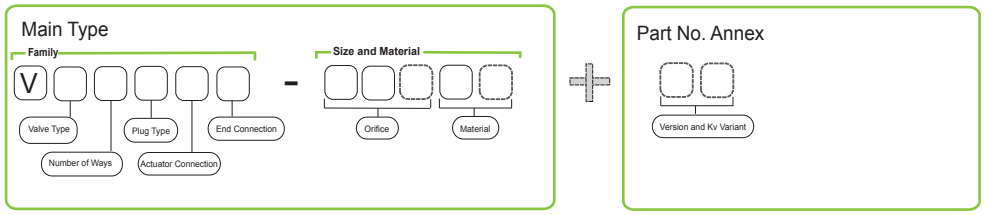
Products adopting the new type designation now utilise a descriptive part number. This part number generally follows the new type designation, although certain characters may be omitted to keep the part number length to a minimum

Build Up Code - Valve Body Type Designation

Full Type Designation

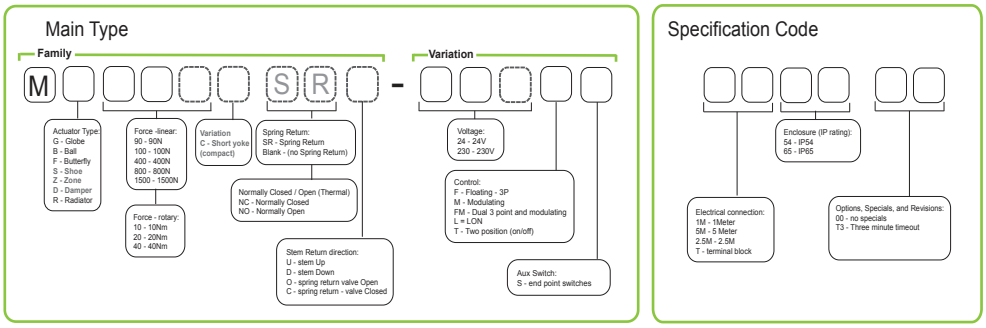


Part No.

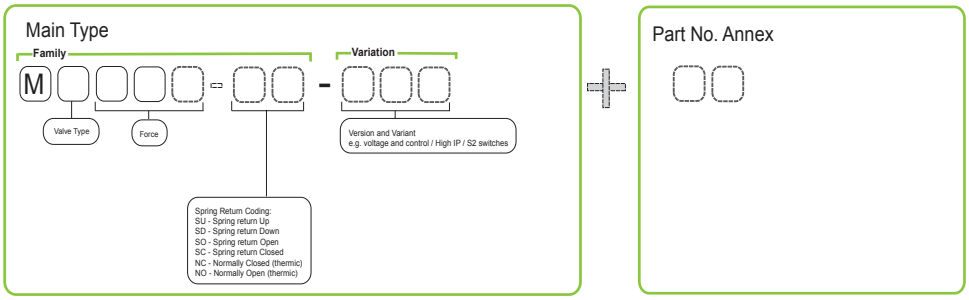


Build Up Code - Valve Actuators Type Designation

Full Type Designation



Part No.



Considerations:

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 catalogue is not sufficient to verify media compatibility, please refer to the respective product data sheet or consult product support services

Recommendations

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.

W A R N I N G - Hot Water hazard

Whenever replacing an installed actuator: Depressurize 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.

Only competent service engineers should undertake maintenance on an installed hot water systems, safe working practice should always be followed.

W A R N I N G - Electrical Hazard

Safe electrical working practice should also always be followed, special care should be given to voltage actuators

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