

Pressure-independent Control Valve

BOA-Control PIC

Type Series Booklet



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Type Series Booklet BOA-Control PIC

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Control Valves / Measurement Valves

Balancing and Shut-off Valves to DIN/EN

BOA-Control PIC



Main applications

- Hot-water heating systems
- Air-conditioning systems
- Cooling circuits

Fluids handled

- Water
- Water/glycol mixtures (glycol content ≤ 50 %)
- Other fluids on request.

Operating data

Table 1: Characteristic

Feature	Value
Nominal pressure	16/25
Nominal size	10 - 150
Max. permissible pressure [bar]	25 (DN 10-50) 16 DN 65-150
Min. permissible temperature [°C]	≥ -10
Max. permissible temperature [°C]	≤ +120

Valve body materials

Table 2: Overview of available materials

Material	Temperature limit	Nominal size
CW602N	≤ 120 °C	DN 10 - 50
EN-GJL-250	≤ 120 °C	DN 65 - 150

Design details

Design

- Pressure-independent control valve

DN 10 - 25

- Straight-way valve with male threaded ends
- Adjusting ring for presetting the flow rate limit
- Prepared for actuator mounting

DN 32 - 50

- Straight-way Y-pattern valve with female threaded ends
- Adjusting ring for presetting the flow rate limit
- Prepared for actuator mounting

DN 65 - 150

- Straight-way Y-pattern valve with flanged ends
- Prepared for manual gearbox¹⁾ for presetting the flow rate limit
- Prepared for actuator mounting

Product benefits

- Materials suitable for all applications in heating or cooling systems
- Quick and straightforward commissioning by presetting the volume flow rate
- Constant volume flow rate by mechanical volume flow rate control
- Variable adjustment of maximum volume flow rate by optional actuator
- Locking function for selected presetting
- Comprehensive control functions due to actuator variety (On/off, 3-point, continuous-action, thermal)
- Optimum system behaviour in full and part load operation due to constant volume flow rates in the system sections
- Straightforward hydraulic balancing of existing installations (single-pipe heating systems) due to pressure-independent volume flow rate control

Product information

Product information as per Regulation No. 1907/2006 (REACH)

For information as per European chemicals regulation (EC) No. 1907/2006 (REACH) see <https://www.ksb.com/en-global/company/corporate-responsibility/reach>.

Product information as per European Pressure Equipment Directive 2014/68/EU (PED)

The valves satisfy the safety requirements of Annex I of the European Pressure Equipment Directive 2014/68/EU (PED) for fluids in Group 2.

¹ This accessory is mandatory for valve function.

Product information as per UK Pressure Equipment (Safety) Regulations 2016

The valves satisfy the safety requirements of the UK Pressure Equipment (Safety) Regulations 2016 (PER) for fluids in Group 2.

Related documents

Table 3: Information/documents

Document	Reference number
Operating manual	7138.8
Quick-reference operating manual	7138.81
Operating manual EMV actuators	7138.82
Typical tender for BOA-Control PIC (DN 10 - 50)	7138.521
Typical tender for BOA-Control PIC (DN 65 - 150)	7138.522

Purchase order specifications

Please specify the following information in all enquiries or purchase orders:

1. Type
2. Nominal pressure
3. Nominal size
4. Reference number

Pressure/temperature ratings

Table 4: Test pressure and operating pressure

PN	DN	Shell test	Seat tightness test	Permissible operating pressure ²⁾	
		With water		-10 to +100 °C	120 °C
		Tests P10 and P11 to DIN EN 12266-1	Test P12, leakage rate A to DIN EN 12266-1		
		[bar]	[bar]	[bar]	[bar]
25	10-50	37,5	27,5	25	22
16	65-150	24	17,6	16	12

²⁾ Static load

Technical data of actuators
Table 5: Symbols key

Symbol	Description
X	Version available
-	Version not available / not feasible

Table 6: BOA-Control PIC/actuator combinations

Actuation method	Actuator type	Power supply	Mat. No.	Type	Threaded ends			Flanged ends		
					DN10 (1/2") - DN25 (1 1/4")	DN32 (1 1/4")	DN40 (1 1/2") - DN50 (2")	DN65 - DN80	DN100	DN125 - DN150
Without actuator	Handwheel		-	-	X	X	X	-	-	-
Manual gearbox			05107504	DN65 - 80	-	-	-	X	-	-
			05108777	DN100 - 150	-	-	-	-	X	X
Electric actuators	Continuous-action	24 V AC	05101492	EMV212/144	X	-	-	-	-	-
			05101518	EMV212/145	-	X	-	-	-	-
	Continuous-action / 3-point	24 V AC/DC	05101464	EMV212/148	-	-	X	-	-	-
			05101494	EMV213/145	-	-	-	X	X	-
			05101522	EMV213/148	-	-	-	-	-	X
	3-point (Open/Stop/Closed)	24 V AC	05101521	EMV211/146	X	-	-	-	-	-
			05101493	EMV212/146	-	X	-	-	-	-
		230 V AC	05101531	EMV211/147	X	-	-	-	-	-
			05101503	EMV212/147	-	X	-	-	-	-
			05101504	EMV212/150	-	-	X	-	-	-
			05101505	EMV213/147	-	-	-	X	-	-
			05101532	EMV213/150	-	-	-	-	X	X
	Electrothermal / 2-point	24 V AC	05101465	EMV311/NC24	X	-	-	-	-	-
			05101466	EMV311/NO24	X	-	-	-	-	-
			05101495	EMV312/NO24	-	X	-	-	-	-
		230 V AC	05101506	EMV311/NC230	X	-	-	-	-	-
			05101507	EMV311/NO230	X	-	-	-	-	-
05101508	EMV312/NO230	-	X	-	-	-	-			
Electrothermal / continuous-action	24 V AC	05101541	EMV311/PRO	X	-	-	-	-	-	

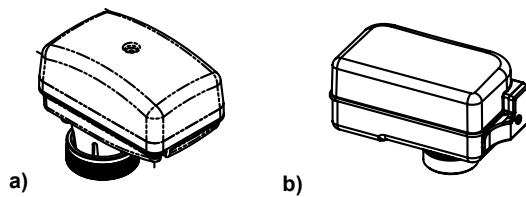
Actuators DN 10-25

Fig. 1: a) EMV211/146 EMV211/147 b) EMV212/144

Table 7: Technical data of EMV212/144, EMV211/146, EMV211/147

Characteristic	Actuator type		
	EMV212/144	EMV211/146	EMV211/147
Type	Continuous-action	3-point	
Supply voltage	24 V AC		230 V AC
Frequency	50 / 60 Hz	50 Hz	
Power	3,6 VA (3,3 W)	2,5 VA (1,5 W)	6 VA (2,2 W)
Input signal	0 (2)-10 V / 0-5 V / 0-20 mA	3-point	
Output signal	2-10 V	-	
Actuating force	300 N	120 N	
Closing pressure ΔP	8 bar	4 bar	
Max. stroke	9 mm	6,3 mm	
Actuating time	50 Hz: 11,5 s/mm 60 Hz: 9,4 s/mm	13 s/mm	
Max. fluid temperature	120 °C		
Enclosure	IP43		
Appliance class	II		
Cable length	1,5 m		
Threaded connection	M30 x 1,5		

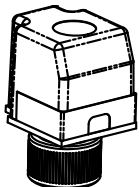

Fig. 2: EMV311

Table 8: Technical data of EMV311/PRO, EMV311/NC24, EMV311/NO24, EMV311/NC230, EMV311/NO230

Characteristic	Actuator type				
	EMV311/PRO	EMV311/NC24	EMV311/NO24	EMV311/NC230	EMV311/NO230
Type	Electrothermal / continuous-action	Electrothermal / 2-point			
Supply voltage	24 V AC			230 V AC	
Frequency	50 / 60 Hz				
Power	2,5 W				
De-energised condition	-	Closed	Open	Closed	Open
Input signal	0-10 V	2-point			
Actuating force	160 N				
Closing pressure ΔP	6 bar				
Max. stroke	4,5 mm				
Actuating time	30 s/mm	5 min		3 min	
Max. fluid temperature	95 °C				
Enclosure	IP54				

Characteristic	Actuator type				
	EMV311/PRO	EMV311/NC24	EMV311/NO24	EMV311/NC230	EMV311/NO230
Appliance class	II				
Cable length	1 m				
Threaded connection	M30 x 1,5				

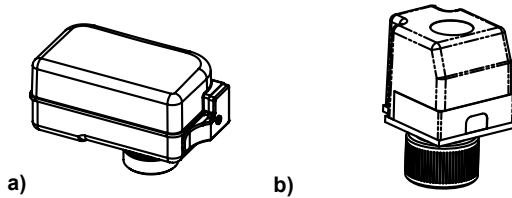
Actuators DN 32


Fig. 3: a) EMV212/145, EMV212/146, EMV212/147 b) EMV312/NO24, EMV312/NO230

Table 9: Technical data of EMV212/145, EMV212/146, EMV212/147, EMV312/NO24, EMV312/NO230

Characteristic	Actuator type				
	EMV212/145	EMV212/146	EMV212/147	EMV312/NO24	EMV312/NO230
Type	Continuous-action	3-point		Electrothermal / 2-point	
Supply voltage	24 V AC		230 V AC	24 V AC	230 V AC
Frequency	50 / 60 Hz				
Power	3,6 VA (3,3 W)	2,2 VA (2,2 W)	1,6 VA (1,1 W)	2,5 W	
De-energised condition	-			Open	
Input signal	0 (2)-10 V / 0-5 V / 0-20 mA	3-point		2-point	
Output signal	2-10 V				
Actuating force	300 N			250 N	
Closing pressure Δ P	4 bar			4 bar	
Max. stroke	9 mm			5,5 mm	
Actuating time	50 Hz: 11,5 s/mm, 60 Hz: 9,4 s/mm			5 min	3 min
Max. fluid temperature	120 °C			95 °C	
Enclosure	IP43			IP54	
Appliance class	II			II	
Cable length	1,5 m			1 m	
Threaded connection	M30 x 1,5				

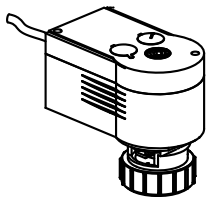
Actuators DN 40-50


Fig. 4: EMV212/148, EMV212/150

Table 10: Technical data of EMV212/148, EMV212/150

Characteristic	Actuator type	
	EMV212/148	EMV212/150
Type	Continuous-action / 3-point	3-point
Supply voltage	24 V AC/DC	230 V AC
Frequency	50 / 60 Hz	
Power	8,7 VA (4,9 W)	5 VA (2 W)
Input signal	0-10 V / 3-point	3-point
Output signal	0-10 V	-
Actuating force	500 N	

Characteristic	Actuator type	
	EMV212/148	EMV212/150
Closing pressure ΔP	4 bar	
Max. stroke	8 mm	
Actuating time	60 / 120 s	120 s
Max. fluid temperature	120 °C	
Enclosure	IP54	
Cable length	1,2 m	
Threaded connection	M30 x 1,5	

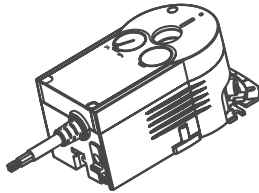
Actuators DN 65-80

Fig. 5: EMV213/145, EMV213/147

Table 11: Technical data of EMV213/145, EMV213/147

Characteristic	Actuator type	
	EMV213/145	EMV213/147
Type	Continuous-action / 3-point	3-point
Supply voltage	24 V AC/DC	230 V AC
Ripple	+ - 20 %	+ - 15 %
Frequency	50 / 60 Hz	50 Hz
Power	4,4 VA (2,4 W)	5,6 VA (2,9 W)
Input signal	0 - 10 V, 3-point	3-point
Current-carrying capacity	R > 10 k Ω	-
Output signal	0 - 10 V	-
Torque	10 Nm	
Max. actuating angle	95°	
Actuating time	60 / 120 s	120 s
Max. fluid temperature	120 °C	
Enclosure	IP54	
Cable length	1,2 m	

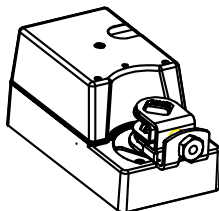
Actuators DN 100-150

Fig. 6: EMV213/148, EMV213/150

Table 12: Technical data of EMV213/148, EMV213/150

Characteristic	Actuator type	
	EMV213/148	EMV213/150
Type	Continuous-action / 3-point	3-point
Supply voltage	24 V AC/DC	230 V AC
Ripple	+ - 20 %	+ - 15 %
Frequency	50 / 60 Hz	50 Hz

Characteristic	Actuator type	
	EMV213/148	EMV213/150
Power	4,4 VA (2,4 W)	5,6 VA (2,9 W)
Input signal	0 - 10 V, 3-point	3-point
Current-carrying capacity	R > 10 kΩ	-
Output signal	0 - 10 V	-
Torque	15 Nm	18 Nm
Max. actuating angle	95°	
Actuating time	60 / 120 s	120 s
Max. fluid temperature	120 °C	
Enclosure	IP54	
Cable length	1,2 m	

Mounting of non-KSB actuators

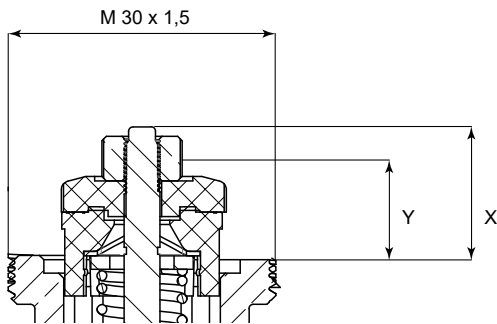


Fig. 7: Dimensions for mounting non-KSB actuators

Table 13: Technical data for mounting non-KSB actuators

DN	Actuating force [N]	Closing pressure ΔP [bar]	Stroke [mm]	X [mm]	Y [mm]
10 - 25	120	4	4	14,4	10,4
10 - 25	160	6	4	14,4	10,4
10 - 25	300	8	4	14,4	10,4
32	250	4	5	14	9
40 - 50	400	4	5	14	9

Materials

DN 10 - 25

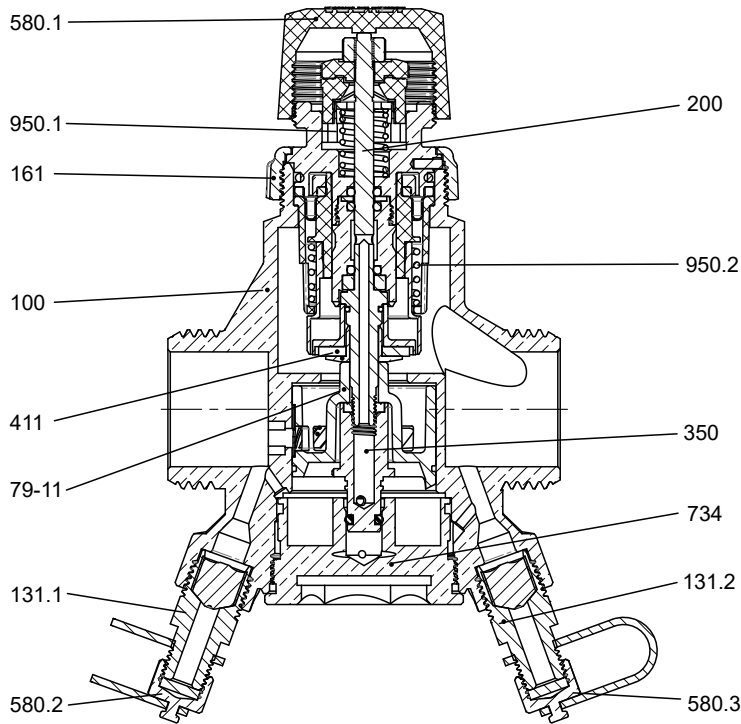


Fig. 8: Sectional drawing DN 10 - 25

Table 14: Overview of available materials DN 10 - 25

Part No.	Description	Material	Note
100	Body	CW602N	-
131.1/2	Pressure measurement connection branch	CW617N	-
161	Body bonnet	CW602N	-
200	Stem	CW617N	-
350	Valve disc	CW617N	-
411	Joint ring	EPDM 70SH	-
580.1	Cap	Nylon 6	-
580.2/3	Cap	CW617N	Red (580.2), blue (580.3)
734	Screwed union	CW617N	-
79-11	Flow controller	PSU	-
950.1/2	Spring	AISI302	-

DN 32 - 50

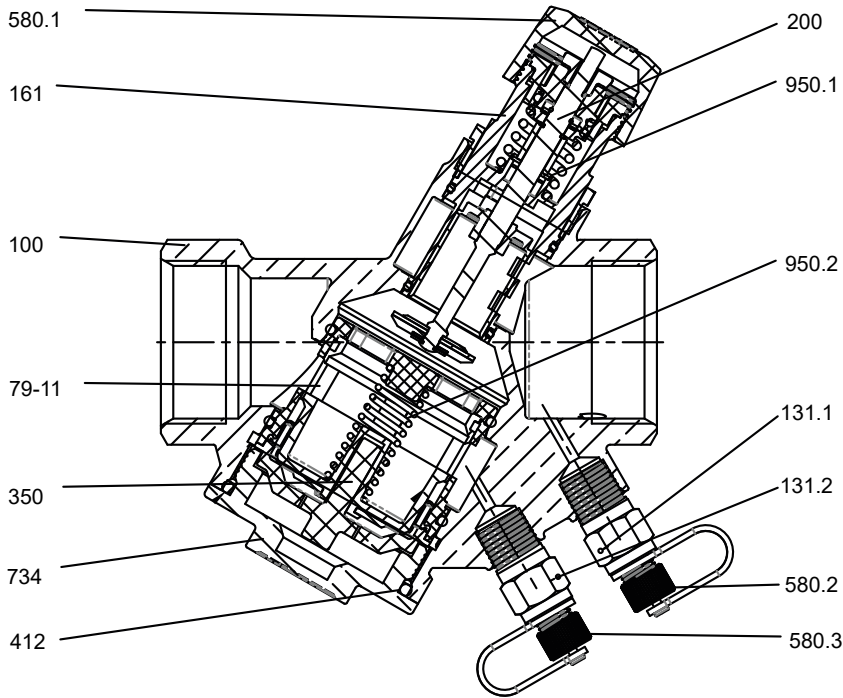


Fig. 9: Sectional drawing DN 32 - 50

Table 15: Overview of available materials DN 32 - 50

Part No.	Description	Material	Note
100	Body	CW602N	-
131.1/2	Pressure measurement connection branch	CW617N	-
161	Body bonnet	CW602N	-
200	Stem	CW617N	-
350	Valve disc	CW617N	-
412	O-ring	EPDM 70	-
580.1	Cap	Nylon 6	-
580.2/3	Cap	CW617N	Red (580.2), blue (580.3)
734	Screwed union	CW617N	-
79-11	Flow controller	PSU	-
950.1/2	Spring	AISI302	-

DN 65 - 150

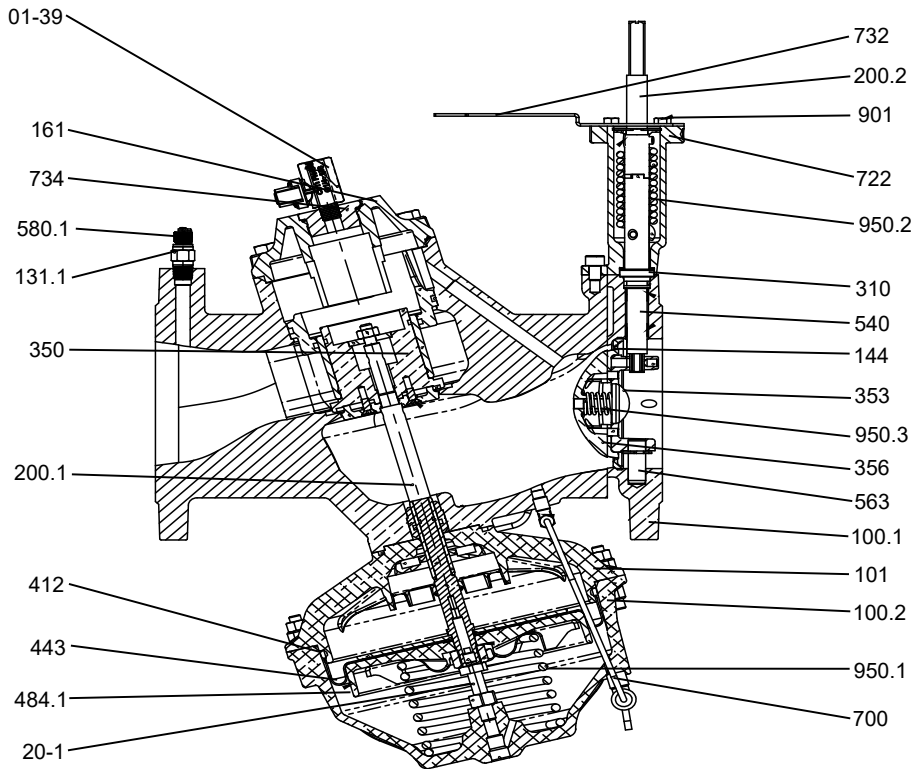


Fig. 10: Sectional drawing DN 65 - 150

Table 16: Overview of available materials DN 65 - 150

Part No.	Description	Material	Note
01-39	Ball valve	Brass	-
20-1	Adjusting stem	CW617N	-
100.1	Body (valve)	EN-GL-250 (5.1301)	Epoxy coating
100.2	Housing (actuator)	G-AlSi4.5MnMg	Epoxy coating
101	Lower housing section (actuator)	G-AlSi4.5MnMg	Epoxy coating
131.1./2 ³⁾	Pressure measurement connection branch	Brass	-
144	Seat	CW617N	-
161	Body bonnet	EN-GL-250 (5.1301)	Epoxy coating
200.1./2	Stem	CW617N	-
310	Plain bearing	PTFE	-
350	Valve disc	CW617N	-
353	Balanced plug	CW617N	-
356	Control valve plug	CW617N	-
412	O-ring	EPDM	-
443	Diaphragm	EPDM	-
484.1	Spring plate	G-AlSi4.5MnMg	Epoxy coating
540	Bush	PTFE-coated stainless steel	-
563	Pin	CW617N	-
580.1./2 ³⁾	Cap	CW617N	Red (580.1), blue (580.2)
700	Piping (capillary tube)	Copper	-
722	Top flange	G-AlSi4.5MnMg	-
732	Holder (actuator)	AISI304	-
734	Screwed union	CW617N	-
901	Hexagon head bolt	Stainless steel A2	-
950.1./3	Spring	AISI302	-
950.2	Spring	Steel 2FD	-

³ Not shown in sectional drawing

Dimensions and weights

Dimensions and weights of valves

DN 10 - 25

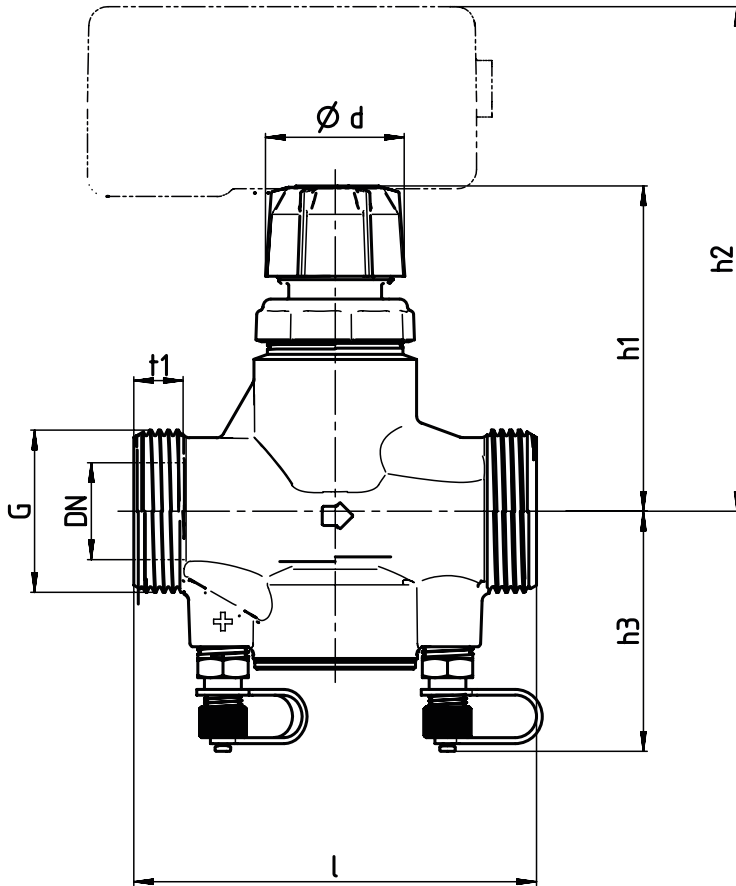


Fig. 11: Dimensions DN 10 - 25

Table 17: Dimensions and weights DN 10 - 25

PN	DN	NPS	$\varnothing d$	G	h1	h2			h3	l	t1	[kg]
						Actuator type						
						EMV211/146 EMV211/147	EMV212/144	EMV311/XXX				
[inch]	[mm]	[inch]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]				
25	10	3/8	35	1/2	75	126	122	126	55	53	9	0,45
	15	1/2	35	3/4	75	126	122	126	55	65	11	0,49
	20	3/4	35	1	85	136	132	136	65	82	12	0,79
	25	1	35	1 1/4	83	134	130	134	63	104	13	0,96

Mating dimensions as per standard

Threaded ends: ISO 228

DN 32 - 50

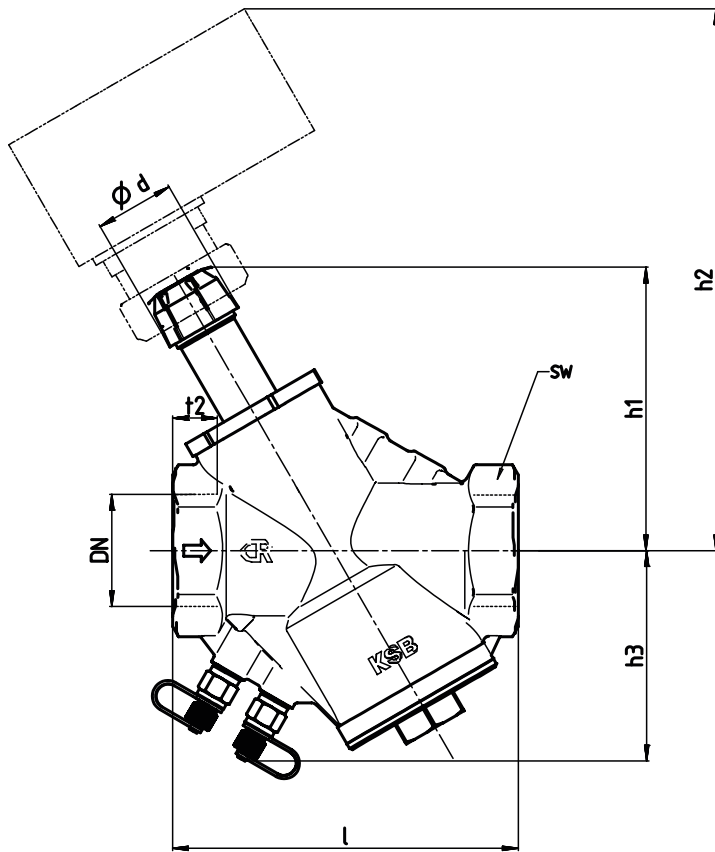


Fig. 12: Dimensions DN 32 - 50

Table 18: Dimensions and weights DN 32 - 50

PN	DN	NPS	Ø d	h1	h2			h3	l	SW	t1	[kg]
					Actuator type							
					EMV212/145 EMV212/146 EMV212/147	EMV212/148 EMV212/150	EMV311/XXX EMV312/XXX					
[inch]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]				
25	32	1 1/4	35	87	134	-	138	76	128	47	20	1,46
	40	1 1/2	35	120	-	212	-	87	144	54	17	2,55
	50	2	35	130	-	222	-	93	155	68	20	3,2

Mating dimensions as per standard

Threaded ends: ISO 228

DN 65 - 150

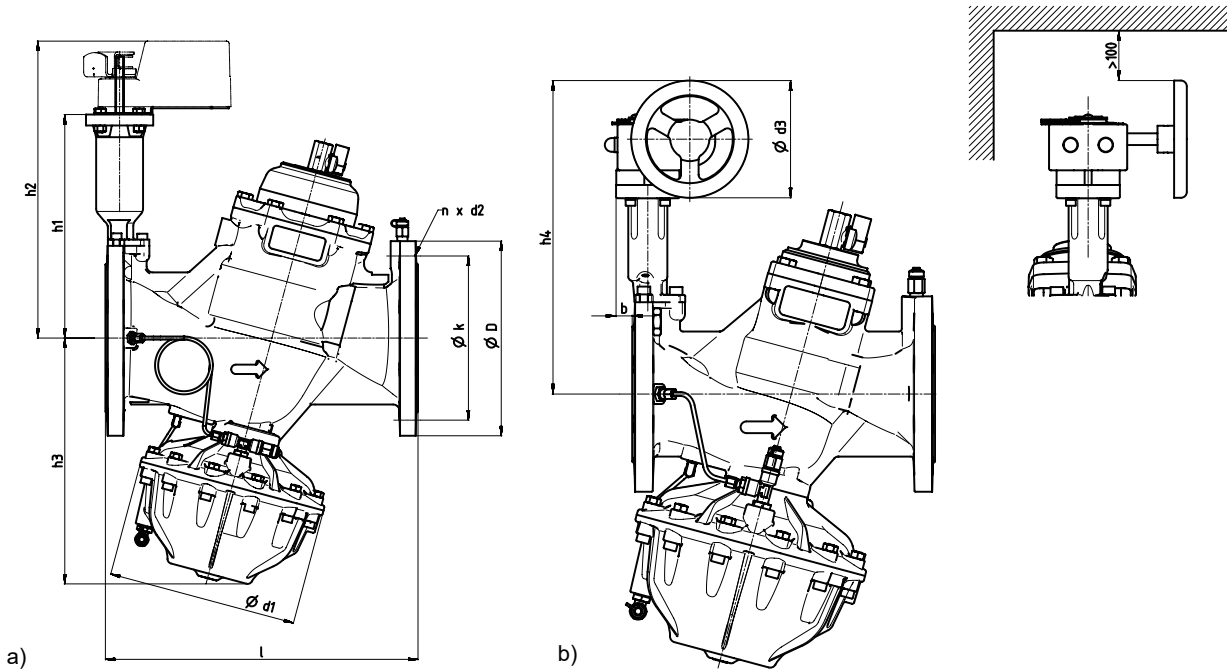


Fig. 13: Dimensions DN 65 - 150 a) Version with actuator b) Version with manual gearbox

Table 19: Dimensions and weights DN 65 - 150

PN	DN	b	d1	d3	h1	h2		h3	h4	l	D	k	n	d2	[kg]
						Actuator type									
						EMV213/145 EMV213/147	EMV213/148 EMV213/150								
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]		
16	65	15	200	120	205	278	299	217	324	290	185	145	4	18	21,6
	80	15	242	120	214	287	308	281	388	310	200	160	8	18	28,1
	100	15	242	120	224	297	318	295	437	350	220	180	8	18	33,6
	125	28	242	120	272	345	366	317	459	400	250	210	8	18	46,4
	150	28	242	120	301	374	395	341	483	480	285	240	8	22	75,4

Mating dimensions as per standard

Flanges: DIN EN 1092-2

Dimensions and weights of actuators

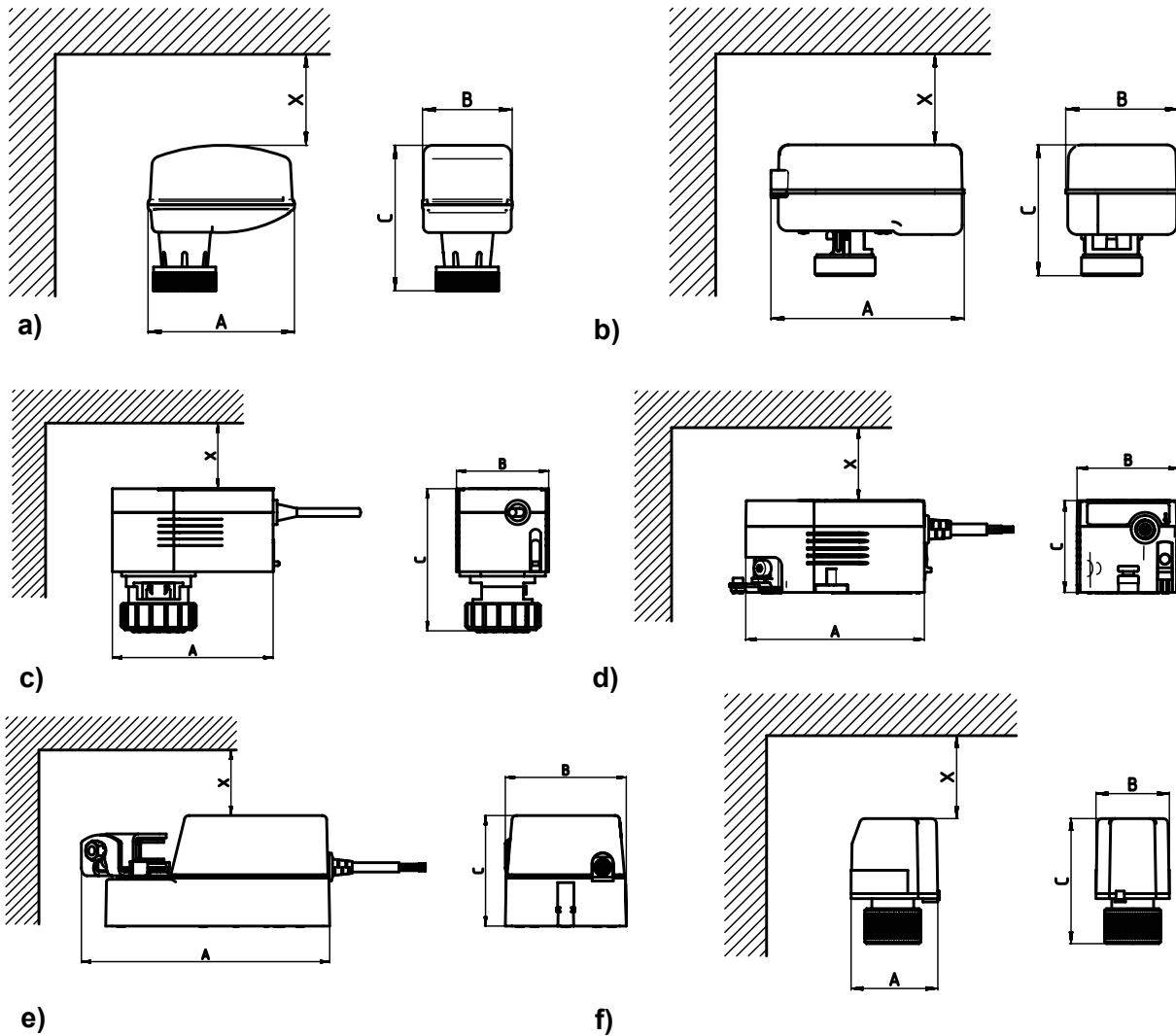


Fig. 14: Actuator dimensions a) EMV211/146 /147 b) EMV212/144 /145 /146 /147 c) EMV212/148 /150 d) EMV213/145 /147 e) EMV213/148 /150 f) EMV311/XXX EMV312/XXX

Table 20: Dimensions and weights of actuators

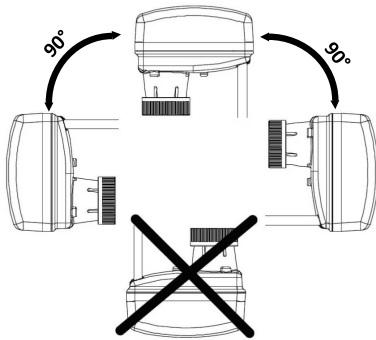
Actuator type	A	B	C	X	[kg]
	[mm]	[mm]	[mm]	[mm]	
EMV211/146	80	49	73,5	60	0,22
EMV211/147	80	49	73,5	60	0,25
EMV212/144	112	62	71,5	60	0,325
EMV212/145	112	62	71,5	60	0,325
EMV212/146	112	62	71,5	60	0,325
EMV212/147	112	62	71,5	60	0,29
EMV212/148	122	70	107	60	0,73
EMV212/150	122	70	107	60	0,73
EMV213/145	138	70	63	> 100	0,7
EMV213/147	138	70	63	> 100	0,7
EMV213/148	196	92	84	> 100	1,2
EMV213/150	196	92	84	> 100	1,2
EMV311/NC230	52	44	75	60	0,18
EMV311/NC24	52	44	75	60	0,18
EMV311/NO230	52	44	75	60	0,145
EMV311/NO24	52	44	75	60	0,145

Actuator type	A	B	C	X	[kg]
	[mm]	[mm]	[mm]	[mm]	
EMV311/PRO	52	44	75	60	0,18
EMV312/NO230	52	44	75	60	0,18
EMV312/NO24	52	44	75	60	0,18

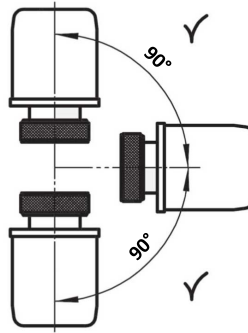
Installation information

Flow through the valves must be in the direction indicated by the flow direction arrow cast on the valve body. The valves are installed in a horizontal or vertical position.

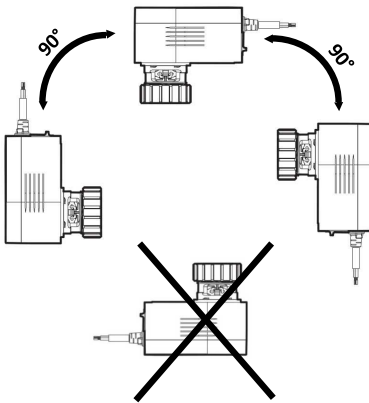
Installation positions by actuator type:



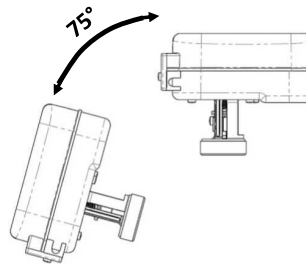
EMV 211/146 /147



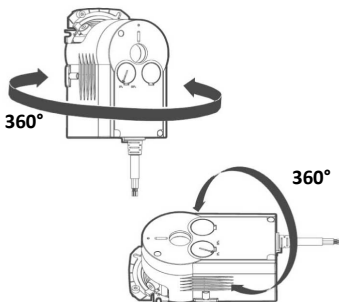
EMV 311/XXX, EMV312XXX



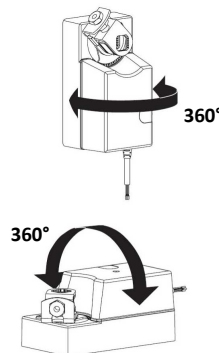
EMV 212/148 /150



EMV 212/144 /145 /146 /147



EMV213/145 /147



EMV213/148 /150

Fig. 15: Installation position by actuator type

Wiring diagrams

EMV211/146, EMV211/147

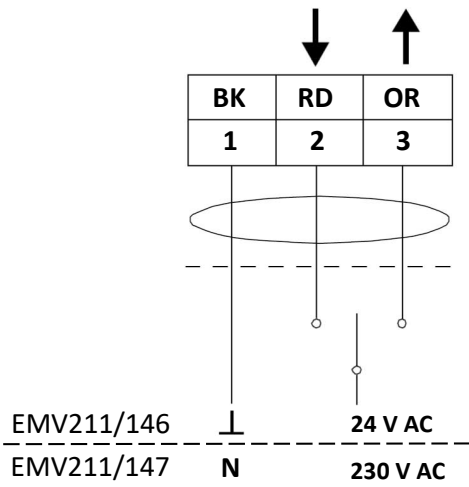


Fig. 16: Wiring diagram EMV211/146 and EMV211/147 (3-point)

BK	Blue	OR	Orange
RD	Red		

EMV212/144, EMV212/145, EMV212/146, EMV212/147

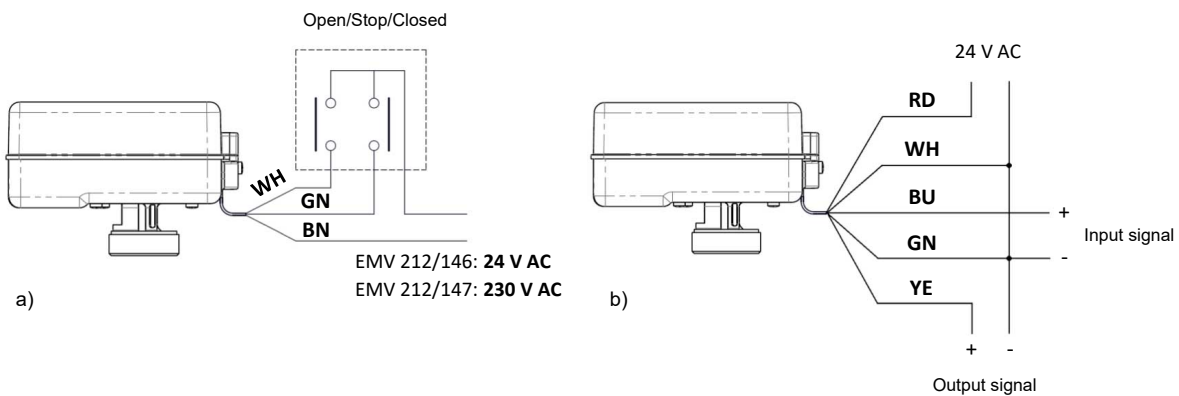


Fig. 17: Wiring diagrams a) EMV212/146 and EMV212/147 (3-point) b) EMV212/144 and EMV212/145 (continuous-action)

GN	Green	BN	Brown
RD	Red	BU	Blue
WH	White	YE	Yellow

EMV212/148, EMV212/150

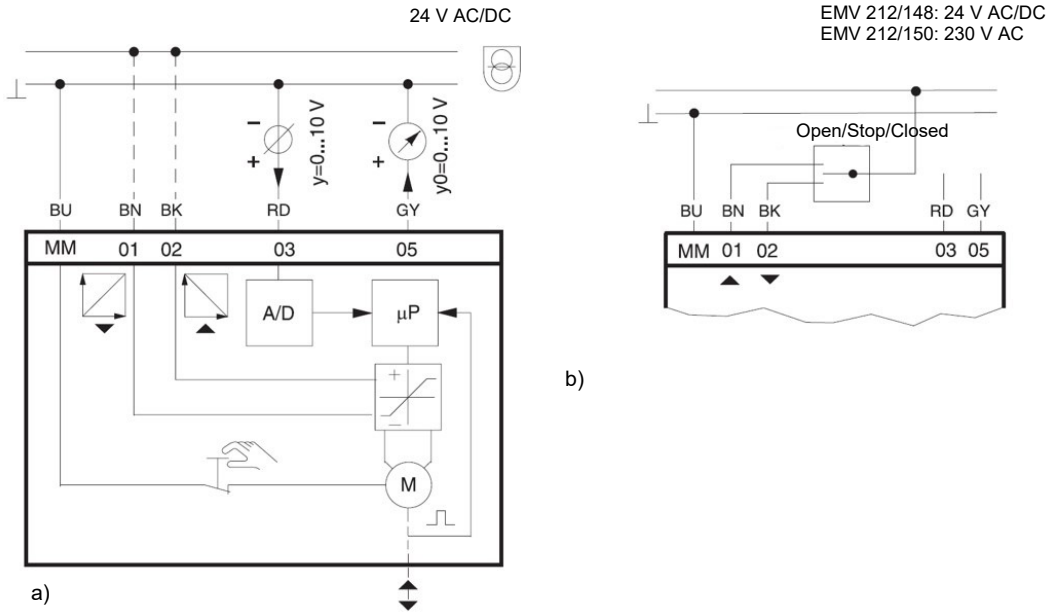


Fig. 18: Wiring diagrams a) EMV212/148 (continuous-action) b) EMV212/148 and EMV212/150 (3-point)

BK	Blue	BN	Brown
RD	Red	BU	Blue
GY	Grey		

EMV213/147, EMV213/150

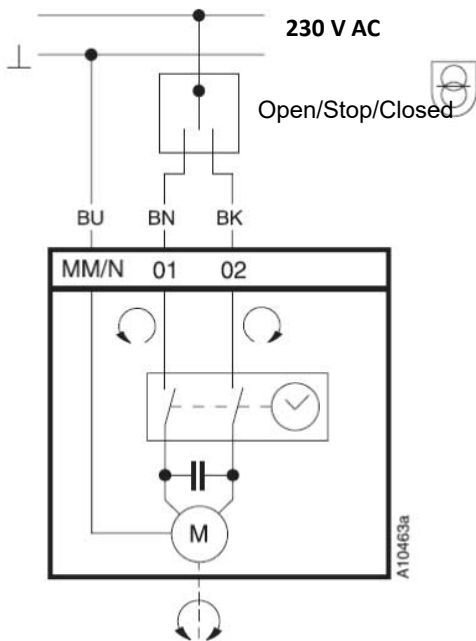


Fig. 19: Wiring diagram EMV213/147 and EMV213/150

BK	Blue	BN	Brown
BU	Blue		

EMV213/145, EMV213/148

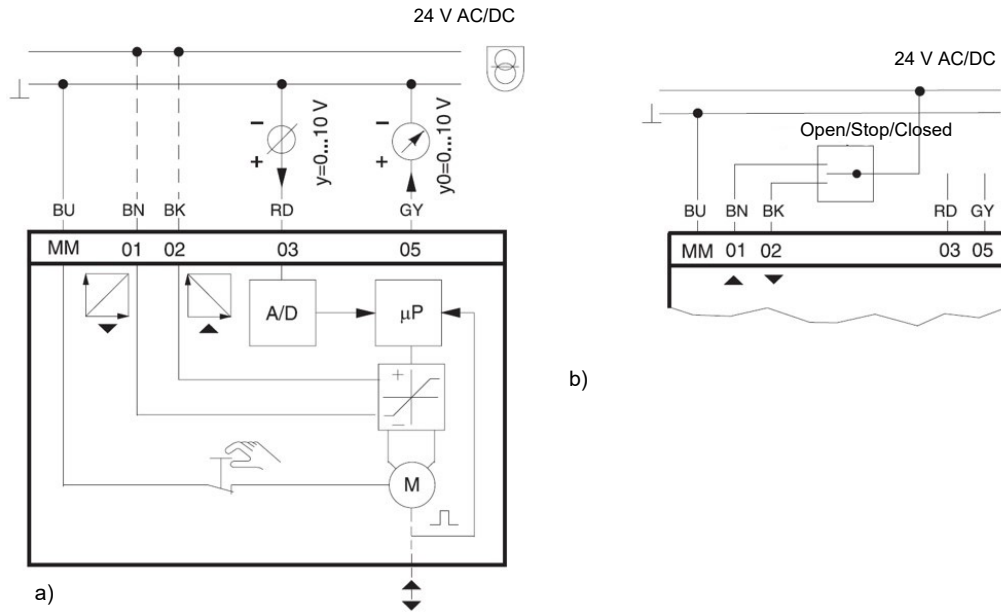


Fig. 20: Wiring diagrams a) EMV213/145 and EMV213/148 (continuous-action) b) EMV213/145 and EMV213/148 (3-point)

BK	Blue	BN	Brown
RD	Red	BU	Blue
GY	Grey		

EMV311/NC24, EMV311/NO24, EMV311/NC230, EMV311/NO230, EMV312/NO24, EMV312/NO230

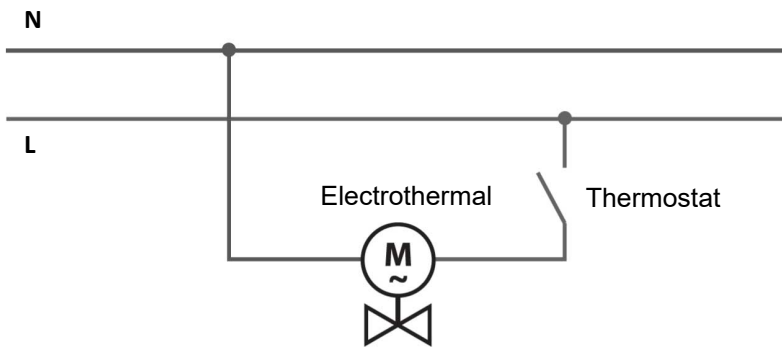


Fig. 21: Wiring diagram EMV311/NC24, EMV311/NO24, EMV311/NC230, EMV311/NO230, EMV312/NO24, EMV312/NO230

N	Blue	L	Brown
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EMV311/PRO

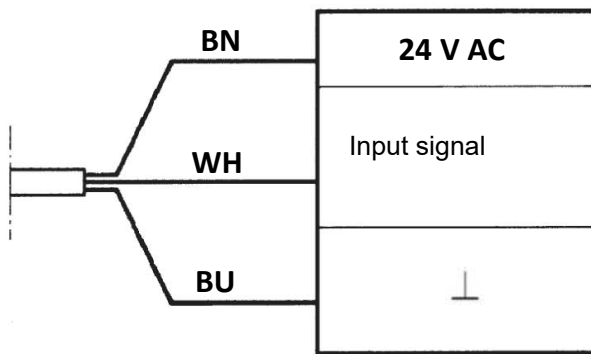


Fig. 22: Wiring diagram EMV311/Pro

BN	Brown	BU	Blue
WH	White		

Control range

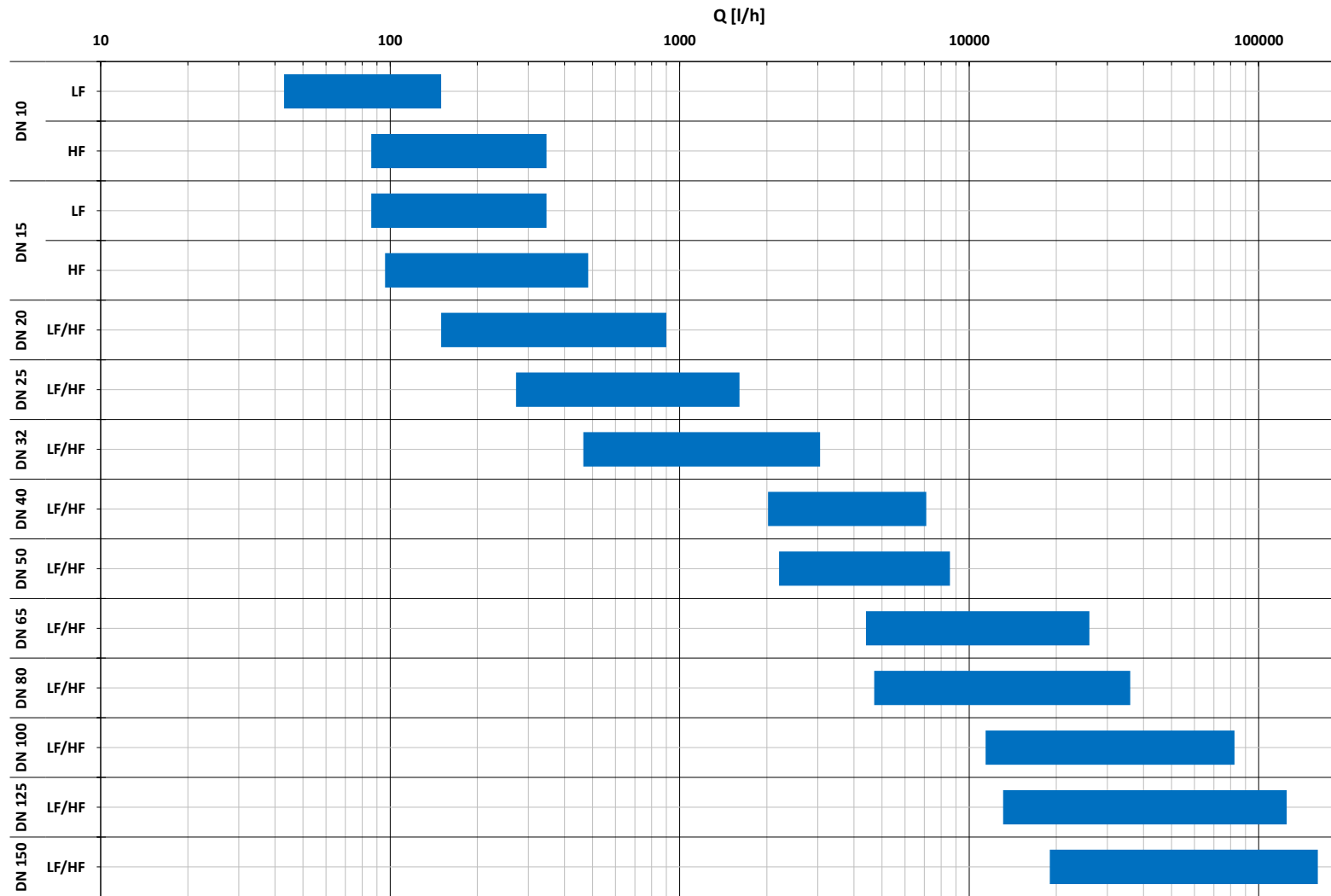


Fig. 23: Control ranges

Presettings

Table 21: Key

Symbol	Description
min Δp	Minimum differential pressure required to ensure valve function
Q	Volume flow rate

Table 22: Presettings for valve with threaded ends DN 10 - DN 50

DN	Selection parameters	Presettings for adjusting ring																				
		1	1,2	1,4	1,6	1,8	2	2,2	2,4	2,6	2,8	3	3,2	3,4	3,6	3,8	4	4,2	4,4	4,6	4,8	5
10 LF	Q [l/s]	0,012	0,013	0,015	0,018	0,02	0,022	0,024	0,025	0,026	0,027	0,027	0,028	0,029	0,03	0,031	0,033	0,035	0,037	0,039	0,04	0,042
	Min Δp [kPa]	15	15	15	15	15	15	15	15	15	15	16	16	16	16	16	16	16	16	16	16	16
	Kvs	0,11	0,12	0,14	0,16	0,18	0,2	0,22	0,23	0,24	0,24	0,25	0,25	0,26	0,27	0,28	0,3	0,31	0,33	0,35	0,36	0,37
10 HF	Q [l/s]	0,024	0,028	0,034	0,04	0,048	0,054	0,06	0,064	0,066	0,071	0,072	0,074	0,078	0,078	0,08	0,082	0,083	0,083	0,084	0,087	0,097
	Min Δp [kPa]	13	13	13,5	13,5	14	14	14	14	14,5	14,5	14,5	14,5	15	15	15	15	15,5	15,5	15,5	16	16,5
	Kvs	0,24	0,28	0,33	0,39	0,46	0,52	0,58	0,62	0,62	0,67	0,68	0,7	0,72	0,73	0,74	0,76	0,76	0,76	0,77	0,78	0,86
15 LF	Q [l/s]	0,024	0,028	0,034	0,04	0,048	0,054	0,06	0,064	0,066	0,071	0,072	0,074	0,078	0,078	0,08	0,082	0,083	0,083	0,084	0,087	0,097
	Min Δp [kPa]	13	13	13,5	13,5	14	14	14	14	14,5	14,5	14,5	14,5	15	15	15	15	15,5	15,5	15,5	16	16,5
	Kvs	0,24	0,28	0,33	0,39	0,46	0,52	0,58	0,62	0,62	0,67	0,68	0,7	0,72	0,73	0,74	0,76	0,76	0,76	0,77	0,78	0,86
15 HF	Q [l/s]	0,027	0,031	0,037	0,043	0,05	0,053	0,058	0,065	0,065	0,072	0,072	0,073	0,075	0,079	0,088	0,095	0,114	0,122	0,127	0,132	0,134
	Min Δp [kPa]	12,5	12,5	12,5	13	13	13	13	13,5	13,5	14	14	14	15	16	17	17,5	18	18,5	19	19,5	19,5
	Kvs	0,27	0,32	0,38	0,43	0,5	0,53	0,58	0,64	0,64	0,69	0,7	0,7	0,7	0,71	0,77	0,82	0,96	1,02	1,05	1,08	1,09
20	Q [l/s]	0,042	0,056	0,068	0,072	0,076	0,088	0,097	0,103	0,106	0,108	0,118	0,127	0,132	0,139	0,151	0,164	0,169	0,192	0,226	0,246	0,25
	Min Δp [kPa]	18	18	18,5	18,5	19	19	19	19	19	19	19	20	20	21	21	23	23	24	25	26	26
	Kvs	0,35	0,47	0,57	0,6	0,63	0,72	0,8	0,85	0,87	0,89	0,98	1,02	1,06	1,1	1,19	1,23	1,27	1,41	1,62	1,74	1,77
25	Q [l/s]	0,076	0,098	0,111	0,119	0,136	0,164	0,179	0,194	0,206	0,214	0,245	0,256	0,264	0,291	0,322	0,333	0,35	0,374	0,389	0,428	0,447
	Min Δp [kPa]	18	18	19	19	20	20	21	22	23	24	25	25	26	26	27	27	28	31	32	35	37
	Kvs	0,64	0,83	0,92	0,98	1,1	1,32	1,41	1,49	1,54	1,57	1,76	1,84	1,86	2,05	2,23	2,31	2,38	2,42	2,47	2,6	2,65
32	Q [l/s]	0,129	0,192	0,256	0,319	0,382	0,444	0,504	0,562	0,617	0,668	0,715	0,757	0,794	0,825	0,849	-	-	-	-	-	-
	Min Δp [kPa]	14,5	14,5	14,5	16	16	16	16	17	17	17	18	18	18	18	18	-	-	-	-	-	-
	Kvs	1,22	1,82	2,42	2,87	3,44	4	4,54	4,91	5,39	5,83	6,24	6,42	6,74	7	7,2	-	-	-	-	-	-
40	Q [l/s]	0,562	0,785	0,983	1,161	1,322	1,466	1,595	1,705	1,797	1,869	1,921	1,954	1,969	1,974	1,974	-	-	-	-	-	-
	Min Δp [kPa]	16	16,5	16,5	18	18	20	20	22	22,5	24	25	26	26	26	26	-	-	-	-	-	-
	Kvs	5,06	6,96	8,71	9,85	11,22	11,8	12,84	13,09	13,64	13,73	13,8	13,8	13,9	13,94	13,94	-	-	-	-	-	-
50	Q [l/s]	0,612	0,924	1,205	1,449	1,657	1,827	1,946	2,072	2,157	2,225	2,279	2,323	2,357	2,38	2,385	-	-	-	-	-	-
	Min Δp [kPa]	19	22	22	25	25	28	28	29	29	30	30	31	32	32	32	-	-	-	-	-	-
	Kvs	5,05	7,09	9,25	10,43	11,93	12,43	13,36	13,85	14,42	14,62	14,98	15	15	15,15	15,18	-	-	-	-	-	-

Table 23: Presettings for valve with flanged ends DN 65 - DN 150

DN	Selection parameters	Presettings for manual gearbox/actuator									
		15 %	20 %	30 %	40 %	50 %	60 %	70 %	80 %	90 %	100 %
		Valve opening angle									
		13,5 °	18 °	27 °	36 °	45 °	54 °	63 °	72 °	81 °	90 °
65	Q [m ³ /h]	4,4	6,2	8,6	11,6	14,9	17,4	20,2	22,3	24,0	26,0
	Q [l/s]	1,222	1,722	2,389	3,222	4,139	4,833	5,611	6,194	6,667	7,222
	Min Δp [kPa]	30	30	30	30	30	30	50	50	50	50
	Kv	9,7	13,7	19,2	25,9	34,7	42,6	48,8	54,7	61,2	66,3
80	Q [m ³ /h]	4,7	7,6	11,4	15,2	19,0	23,0	26,6	30,4	32,7	36,0
	Q [l/s]	1,306	2,111	3,167	4,222	5,278	6,389	7,389	8,444	9,083	10,000
	Min Δp [kPa]	30	30	30	30	30	30	30	50	50	50
	Kv	10,7	17,3	26,6	36,7	45,9	57,8	68,6	78,8	89,2	96,6
100	Q [m ³ /h]	11,4	15,8	23,2	30,7	38,2	47,9	58,3	68,3	75,2	82,5
	Q [l/s]	3,167	4,389	6,444	8,528	10,611	13,305	16,194	18,972	20,889	22,917
	Min Δp [kPa]	30	30	30	30	30	30	50	50	70	70
	Kv	26,4	37,4	57,9	79,3	102,4	136,1	171,8	215,6	244,1	278,0
125	Q [m ³ /h]	13,1	19,9	31,7	43,3	55,0	70,6	83,3	100,0	112,5	125,0
	Q [l/s]	3,639	5,528	8,806	12,028	15,278	19,611	23,139	27,778	31,250	34,722
	Min Δp [kPa]	30	30	30	30	30	30	50	60	70	70
	Kv	26,5	41,1	67,3	94,5	127,1	166,0	203,8	259,6	300,2	332,1
150	Q [m ³ /h]	19,0	26,8	44,7	63,9	78,6	94,2	113,3	132,1	148,9	160
	Q [l/s]	5,278	7,444	12,417	17,75	21,833	26,167	31,472	36,694	41,361	44,444
	Min Δp [kPa]	30	30	30	30	30	30	50	60	70	70
	Kv	38,1	55,2	96,7	142,6	189,2	231,3	275,1	335,6	386,7	427,5



KSB SE & Co. KGaA
Johann-Klein-Straße 9 • 67227 Frankenthal (Germany)
Tel. +49 6233 86-0
www.ksb.com