



01 - 02.7
03.23.GB

TWO-WAY AND THREE-WAY CONTROL VALVES LDM

RV 113



RV 113

Control valves RV 113 R are flanged, 2-way valves with pressure balanced plug (except DN 15 - 25) and high tightness designed for regulation and closing of the medium flow.

Its design enables the valve to be applicable at high differential pressures with low-linear-force actuators. Owing to unique flow characteristic LDMspline®, optimized for regulation of thermodynamic processes, the valves are ideal for applications in heating and air-conditioning. Flow characteristics, Kvs values and leakage rates correspond to international standards.

The valves type RV 113 R have connection to the following actuators: Siemens, Belimo, Ekorex, LDM a PS Automation.

Application

Control valves RV113 are designed for applications in heating and air-conditioning. Control valves type RV113 are also available in silicone free execution (marking in a specification number SF). The maximum permissible operating pressures are specified below on this page.

Process media

The valves RV113 are suitable for media such as water, air and other media compatible with material of body and internal parts in range +2 to +150°C.

Sealing surfaces of trim are resistant to common dirt and impurities in medium. However, for abrasive impurities it is recommended to pipe a strainer before the valve to ensure reliable function.

The valve cannot work in cavitation conditions.

Installation

The valve must be piped with the medium flow according to arrows indicated on the valve body.

The valve can be piped in any position except when the actuator is under the valve body.

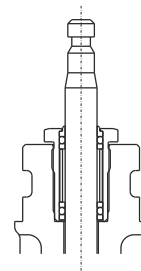
Flow characteristic selection in regard of valve stroke

To make right selection of valve flow characteristic, it is suitable to carry out checking of what stroke values will be reached in different operation states. We recommend to carry out such checking at least for minimal, nominal and maximal flow rates. The principle for flow characteristic selection is to avoid, if possible, 5, 10% of the beginning and end of the valve stroke range.

To calculate valve stroke at different operating conditions with different types of flow characteristics is possible with the advantage of using LDM's calculation programme VALVES. The programme serves for complete design of valve from Kv calculation to specification of a concrete valve with its actuator.

Packing O-ring EPDM

Well proven type of packing with sealing elements made of high quality EPDM is suitable for operating with temperature of, +2 to +150 C. The packing excels with its reliability and long time tightness. Its properties ensure safe usage in nomaintenance applications. Main preferences of the packing is low frictional forces, sealing capability in both ports (even when there is underpressure in the valve) and service life exceeding 500 000 cycles.





RV 113 R

Two-way
control valves

DN 15 - 40, PN 6
DN 15 - 150, PN 16
DN 15 - 150, PN 25

Technical data

Series	RV 113 R	
Type of valve	Two-way control valve	
Nominal size range	DN 15 to 150	
Nominal pressure	DN 15 - 40, PN 6; DN 15 - 150, PN 16	DN 15 - 150, PN 25
Body material	Grey cast iron EN-JL 1040	Spheroidal cast iron EN-JS 1025
Plug material	Stainless steel 1.4027 (1.4028)	
Stem material	Stainless steel 1.4305	
Seat sealing	EPDM	
Packing	EPDM	
Operating temperature range	+2 to +150 °C	
Connection	Flanges type B1 (raised-faced) Acc. to ČSN-EN 1092-2 (1/1999)	
Face to face dimensions	Section 1 acc. to ČSN-EN 558 + A1 (5/2012)	
Type of plug	V-ported with soft seat sealing	
Flow characteristic	LDMspline®	
Kvs values	0,63 to 360 m ³ /h	
Leakage rate	Class IV. - S1 acc. to ČSN-EN 1349 (5/2001) (<0.0005 % Kvs)	
Rangeability r	50:1	

Maximum permissible operating pressures [MPa] dle ČSN EN 1092-2

Material	PN	Temperature [°C]	
		120	150
Grey cast iron EN-JL 1040 (EN-GJL-250)	6	0,60	0,54
	16	1,60	1,44
Spheroidal cast iron EN-JS 1025 (EN-GJS-400-18-LT)	25	2,50	2,43

Kvs values and differential pressures

The value Δp_{\max} is maximum differential pressure when reliable closing and opening is guaranteed. Because of the seat and plug service life, it is recommended so that permanent differential pressure would not exceed 0.4 MPa.

For further info on actuating see actuators' catalogue sheets		Actuating (actuator)					see the table on next page								
		Linear force					800 N	1000 N	1500 N	2000 N	2500 N	3200 N	4000 N	4500 N	
		Kvs [m ³ /h]					Δp_{\max}	Δp_{\max}	Δp_{\max}	Δp_{\max}	Δp_{\max}	Δp_{\max}	Δp_{\max}	Δp_{\max}	
DN	H	1	2	3	4	5	MPa	MPa	MPa	MPa	MPa	MPa	MPa	MPa	
15	20	4	2.5	1.6	1	0.63	2.28	2.50	2.50	2.50	2.50	---	---	---	
20		6.3	4.0	2.5	---	---	1.43	1.96	2.50	2.50	2.50	---	---	---	
25		10	6.3	4.0	---	---	0.91	1.25	2.11	2.50	2.50	---	---	---	
32		16	10	6.3	---	---	2.50	2.50	2.50	2.50	2.50	---	---	---	
40		25	16	10	---	---	2.50	2.50	2.50	2.50	2.50	---	---	---	
50		40	25	16	---	---	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	
65		63	40	25	---	---	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	
80		100	63	40	---	---	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	
100	40	160	100	63	---	---	---	---	---	2.50	2.50	2.50	2.50	2.50	
125		250	160	100	---	---	---	---	---	2.50	2.50	2.50	2.50	2.50	
150		360	250	160	---	---	---	---	---	2.50	2.50	2.50	2.50	2.50	

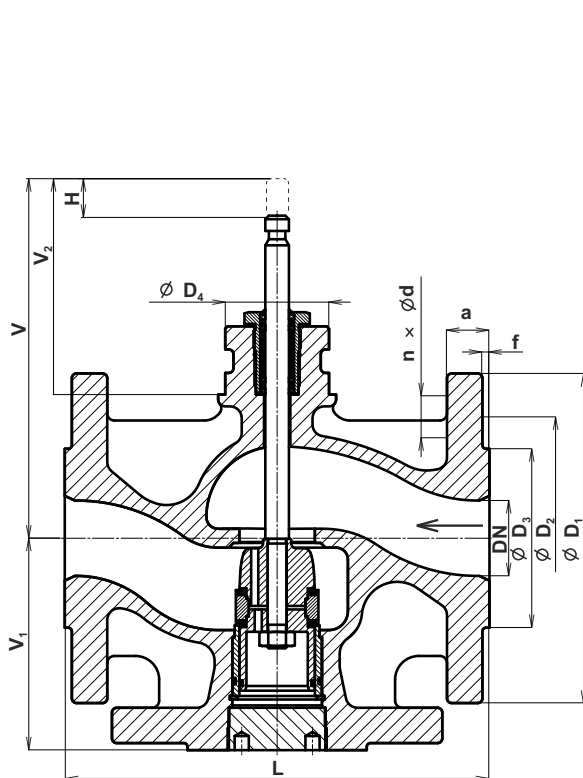
Supplied types of actuators

			stroke		
Siemens	Electric actuator SAX 31.00 a SAX 31.03	AC 230 V, 3-position control, 800 N	20 mm		
	Electric actuator SAX 81.00 a SAX 81.03	AC/DC 24 V, 3-position control, 800 N			
	Electric actuator SAX 61.03	AC/DC 24 V, control 0...10V, 4...20mA, 0-1000Ω, 800 N			
Belimo	Electric actuator NV230A-RE	AC 230 V, 3-position control, 1000 N	20 mm		
	Electric actuator NV24A-RE	AC/DC 24 V, 3-position control, 1000 N			
	Electric actuator NV24A-MP-RE	AC/DC 24 V, DC (0) 2...10V, 1000 N			
	Electric actuator NVC24A-MP-RE	AC/DC 24 V, DC (0) 2...10V, 1000 N			
	Electric actuator NVK24A-3-RE	AC/DC 24 V, 3-position control, 1000 N			
	Electric actuator NVK24A-MP-RE	AC/DC 24 V, DC (0) 2...10V, 1000 N			
	Electric actuator NVK230A-3-RE	AC 230 V, 3-position control, 1000 N			
	Electric actuator NVKC24A-MP-RE	AC/DC 24 V, DC (0) 2...10V, 1000 N			
	Electric actuator SV24A-MP-RE	AC/DC 24 V, DC (0) 2...10V, 1500 N			
	Electric actuator SV230A-RE	AC 230 V, 3-position control, 1500 N			
	Electric actuator SV24A-RE	AC/DC 24 V, 3-position control, 1500 N			
	Electric actuator SVC24A-MP-RE	AC/DC 24 V, DC (0) 2...10V, 1500 N			
	Electric actuator EV230A-RE	AC 230 V, 3-position control, 2500 N			
	Electric actuator EV24A-RE	AC/DC 24 V, 3-position control, 2500 N			
	Electric actuator EV24A-MP-RE	AC/DC 24 V, DC (0) 2...10V, 2500 N			
Ekorex	Electric actuator PTN2-XX.0	AC 230 V, 3-position control, 0...10V, 4...20mA, 2000 - 4000 N	20 - 40 mm		
	Electric actuator PTN2-XX.2	AC 24 V, 3-position control, 0...10V, 4...20mA 2000 - 4000 N			
	LDM	Electric actuator ANT40.11		AC/DC 24 V (230 V with modul), 2500 N 3(2)-position control, 0...10V, 4...20mA	20 - 40 mm
		Electric actuator ANT40.11S		AC/DC 24 V (230 V s modulem), 2000 N 3(2)-position control, 0...10V, 4...20mA fail-safe function - indirect	
Elektrický pohon ANT40.11R		AC/DC 24 V (230 V s modulem), 2000 N 3(2)-position control, 0...10V, 4...20mA fail-safe function - direct			
PS Automation	Electric actuator PSL202 AMS11	AC 230 V, AC/DC 24 V, 2300 N 3-position control, 0(2)-10 V; 0(4)-20 mA	20 - 40 mm		
	Electric actuator PSL204 AMS11	AC 230 V, AC/DC 24 V, 4500 N 3-position control, 0(2)-10 V; 0(4)-20 mA	40 mm		
	Electric actuator PSL204 AMS12	AC 230 V, AC/DC 24 V, 4500 N 3-position control, 0(2)-10 V; 0(4)-20 mA			
	Electric actuator PSF401 (mechanical fail-safe function)	AC 230 V, AC/DC 24 V, 1000 N 3-position control, 0(2)-10 V; 0(4)-20 mA	20 mm		
	Electric actuator PSF402 (mechanical fail-safe function)	AC 230 V, AC/DC 24 V, 2000 N 3-position control, 0(2)-10 V; 0(4)-20 mA	20 - 40 mm		
	Electric actuator PSF402.1 (mechanical fail-safe function)	AC 230 V, AC/DC 24 V, 2000 N 3-position control, 0(2)-10 V; 0(4)-20 mA			
	Electric actuator PSF-M402 (hand wheel)	AC 230 V, AC/DC 24 V, 2000 N 3-position control, 0(2)-10 V; 0(4)-20 mA			

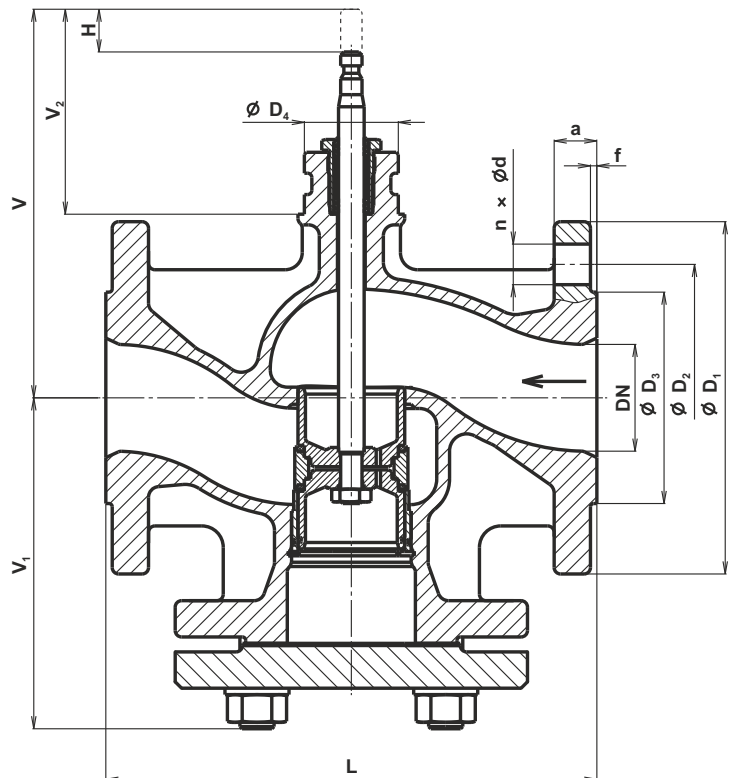
Dimensions and weights for the type RV 113 R

DN	PN 6							PN 16						
	D ₁ [mm]	D ₂ [mm]	D ₃ [mm]	d [mm]	n [mm]	a [mm]	m [kg]	D ₁ [mm]	D ₂ [mm]	D ₃ [mm]	d [mm]	n [mm]	a [mm]	m [kg]
15	80	55	38	11	4	12	2.6	95	65	46	14	4	14	3.5
20	90	65	48	11	4	14	3.5	105	75	56	14	4	16	4.6
25	100	75	58	11	4	14	4.1	115	85	65	14	4	16	5.4
32	120	90	69	14	4	16	6.3	140	100	76	19	4	18	8.5
40	130	100	78	14	4	16	7.9	150	110	84	19	4	18	10.5
50								165	125	99	19	4	20	16.7
65								185	145	118	19	4	20	23.0
80								200	160	132	19	8	22	29.5
100								220	180	156	19	8	24	40.5
125								250	210	184	19	8	26	58.8
150								285	240	211	23	8	26	80.7

DN	PN 25							PN 6, PN 16, PN 25						
	D ₁ [mm]	D ₂ [mm]	D ₃ [mm]	d [mm]	n [mm]	a [mm]	m [kg]	D ₄ [mm]	f [mm]	L [mm]	V [mm]	V ₁ [mm]	V ₂ [mm]	H [mm]
15	95	65	46	14	4	14	3.5	44	2	130	167	65	96	20
20	105	75	56	14	4	16	4.6	44	2	150	167	75	96	20
25	115	85	65	14	4	16	5.4	44	3	160	167	80	96	20
32	140	100	76	19	4	18	8.5	44	3	180	177	90	96	20
40	150	110	84	19	4	19	10.5	44	3	200	187	100	96	20
50	165	125	99	19	4	19	16.7	44	3	230	182	155	96	20
65	185	145	118	19	8	19	23.0	44	3	290	192	185	96	20
80	200	160	132	19	8	19	29.5	44	3	310	212	193	96	20
100	235	190	156	23	8	19	39.8	44	3	350	247	216	116	40
125	270	220	184	28	8	19	56.4	44	3	400	272	239	116	40
150	300	250	211	28	8	20	78.1	44	3	480	297	284	116	40



DN 15-40



DN 50-150



RV 113 M

Three-way
control valves

DN 15 - 40, PN 6
DN 15 - 150, PN 16
DN 15 - 150, PN 25

Technical data

Series	RV 113 M	
Type of valve	Three-way control valve	
Nominal size range	DN 15 to 150	
Nominal pressure	DN 15 - 40, PN 6; DN 15 - 150, PN 16	DN 15 - 150, PN 25
Body material	Grey cast iron EN-JL 1040	Spheroidal cast iron EN-JS 1025
Plug material	Stainless steel 1.4027 (1.4028)	
Stem material	Stainless steel 1.4305	
Seat sealing	EPDM	
Packing	EPDM	
Operating temperature range	+2 to +150 °C	
Connection	Flanges type B1 (raised-faced) Acc. to ČSN-EN 1092-2 (4/2002)	
Face to face dimensions	Section 1 acc. to ČSN-EN 558 (9/2008)	
Type of plug	Flanges type B1 (raised-faced), linear in angle way	
Flow characteristic	LDMspline*	
Kvs values	0,63 to 360 m ³ /h	
Leakage rate	Class IV. - S1 acc. to ČSN-EN 1349 (5/2001) (<0.0005 % Kvs)	
Leakage rate in angle way	not guaranteed (<2% Kvs)	
Rangeability r	50:1	

Maximum permissible operating pressures [MPa] acc. to ČSN EN 1092-2

Material	PN	Temperatures [°C]	
		120	150
Grey cast iron EN-JL 1040 (EN-GJL-250)	6	0,60	0,54
	16	1,60	1,44
Spheroidal EN-JS 1025 (EN-GJS-400-18-LT)	25	2,50	2,43

Kvs values and differential pressures

The value Δp_{max} is maximum differential pressure when reliable closing and opening is guaranteed. Because of the seat and plug service life, it is recommended so that permanent differential pressure would not exceed 0.4 MPa (Grey cast iron) respective 0.6 MPa (Spheroidal cast iron).

For further info. on actuating see actuators' catalogue sheets		Actuating (actuator)					see the table on next page									
		Linear force					800 N	1000 N	1500 N	2000 N	2300 N	2500 N	3200 N	4000 N	4500 N	
		Kvs [m ³ /h]					Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}	Δp_{max}	
DN	H	1	2	3	4	5	MPa	MPa	MPa	MPa	MPa	MPa	MPa	MPa	MPa	
15	20	4	2.5	1.6	1	0.63	2.28	2.50	2.50	2.50	2.50	2.50	---	---	---	
20		6.3	4.0	2.5	---	---	1.43	1.96	2.50	2.50	2.50	2.50	---	---	---	
25		10	6.3	4.0	---	---	0.91	1.25	2.11	2.50	2.50	2.50	---	---	---	
32		16	10	6.3	---	---	0.56	0.77	1.30	1.83	2.15	2.37	---	---	---	
40		25	16	10	---	---	0.36	0.49	0.84	1.19	1.40	1.54	---	---	---	
50		40	25	16	---	---	0.17	0.25	0.47	0.68	0.81	0.89	1.19	1.53	1.74	
65		63	40	25	---	---	0.10	0.15	0.28	0.41	0.49	0.54	0.72	0.93	1.06	
80		100	63	40	---	---	0.06	0.10	0.19	0.28	0.33	0.36	0.49	0.63	0.71	
100	40	160	100	63	---	---	---	---	---	0.14	0.17	0.19	0.28	0.37	0.43	
125		250	160	100	---	---	---	---	---	0.09	0.11	0.12	0.18	0.24	0.28	
150		360	250	160	---	---	---	---	---	0.06	0.07	0.09	0.12	0.17	0.19	

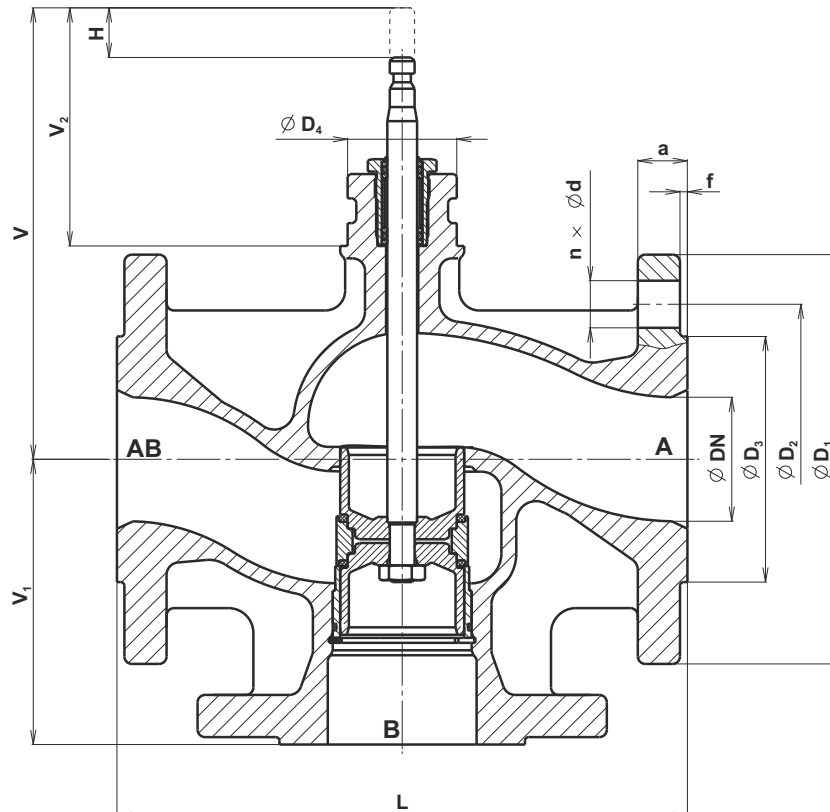
Supplied types of actuators

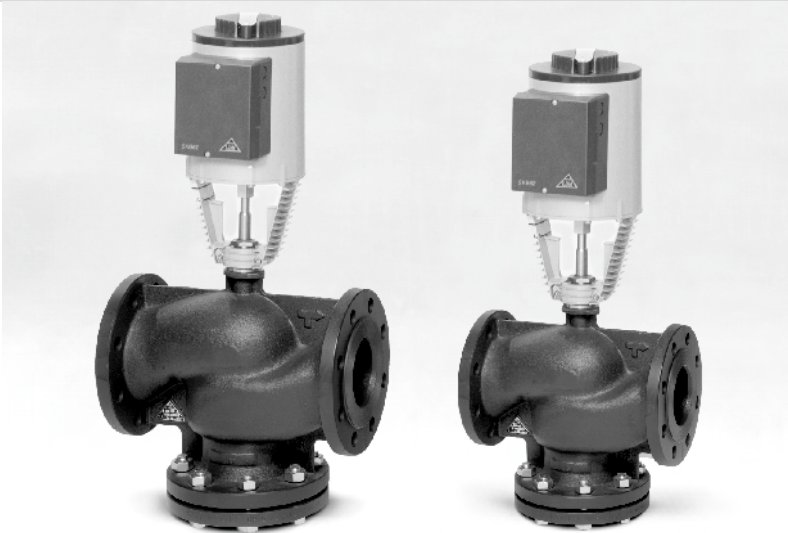
			stroke		
Siemens	Electric actuator SAX 31.00 a SAX 31.03	AC 230 V, 3-position control, 700 N	20 mm		
	Electric actuator SAX 81.00 a SAX 81.03	AC/DC 24 V, 3-position control, 800 N			
	Electric actuator SAX 61.03	AC/DC 24 V, 3-position control, 0...10V, 4...20mA, 0 to 1000 Ohm, 800 N			
Belimo	Electric actuator NV230A-RE	AC 230 V, 3-position control, 1000 N	20 mm		
	Electric actuator NV24A-RE	AC/DC 24 V, 3-position control, 1000 N			
	Electric actuator NV24A-MP-RE	AC/DC 24 V, DC (0) 2...10V, 1000 N			
	Electric actuator NVC24A-MP-RE	AC/DC 24 V, DC (0) 2...10V, 1000 N			
	Electric actuator NVK24A-3-RE	AC/DC 24 V, 3-position control, 1000 N			
	Electric actuator NVK24A-MP-RE	AC/DC 24 V, DC (0) 2...10V, 1000 N			
	Electric actuator NVK230A-3-RE	AC 230 V, 3-position control, 1000 N			
	Electric actuator NVKC24A-MP-RE	AC/DC 24 V, DC (0) 2...10V, 1000 N			
	Electric actuator SV24A-MP-RE	AC/DC 24 V, DC (0) 2...10V, 1500 N			
	Electric actuator SV230A-RE	AC 230 V, 3-position control, 1500 N			
	Electric actuator SV24A-RE	AC/DC 24 V, 3-position control, 1500 N			
	Electric actuator SVC24A-MP-RE	AC/DC 24 V, DC (0) 2...10V, 1500 N			
	Electric actuator EV230A-RE	AC 230 V, 3-position control, 2500 N			
	Electric actuator EV24A-RE	AC/DC 24 V, 3-position control, 2500 N			
Ekorex	Electric actuator PTN2-XX.0	AC 230 V, 3-position control, 0...10V, 4...20mA, 2000 - 4000 N	20 - 40 mm		
	Electric actuator PTN2-XX.2	AC 24 V, 3-position control, 0...10V, 4...20mA, 2000 - 4000 N			
	LDM	Electric actuator ANT40.11		AC/DC 24 V (230 V with modul), 2500 N 3(2)-position control, 0...10V, 4...20mA	20 - 40 mm
		Electric actuator ANT40.11S		AC/DC 24 V (230 V s modulem), 2000 N 3(2)-position control, 0...10V, 4...20mA fail-safe function - indirect	
Electric actuator ANT40.11R		AC/DC 24 V (230 V s modulem), 2000 N 3(2)-position control, 0...10V, 4...20mA fail-safe function - direct			
PS Automation	Electric actuator PSL202 AMS11	AC 230 V, AC/DC 24 V, 2300 N 3-position control, 0(2)-10 V; 0(4)-20 mA	20 - 40 mm		
	Electric actuator PSL204 AMS11	AC 230 V, AC/DC 24 V, 4500 N 3-position control, 0(2)-10 V; 0(4)-20 mA	40 mm		
	Electric actuator PSL204 AMS12	AC 230 V, AC/DC 24 V, 4500 N 3-position control, 0(2)-10 V; 0(4)-20 mA			
	Electric actuator PSF401 (fail-safe function)	AC 230 V, AC/DC 24 V, 1000 N 3-position control, 0(2)-10 V; 0(4)-20 mA	20 mm		
	Electric actuator PSF402 (fail-safe function)	AC 230 V, AC/DC 24 V, 2000 N 3-position control, 0(2)-10 V; 0(4)-20 mA	20 - 40 mm		
	Electric actuator PSF402.1 (fail-safe function)	AC 230 V, AC/DC 24 V, 2000 N 3-position control, 0(2)-10 V; 0(4)-20 mA			
	Electric actuator PSF-M402 (hand wheel)	AC 230 V, AC/DC 24 V, 2000 N 3-position control, 0(2)-10 V; 0(4)-20 mA			

Dimensions and weights for the type RV 113 M

DN	PN 6							PN 16						
	D ₁ [mm]	D ₂ [mm]	D ₃ [mm]	d [mm]	n [mm]	a [mm]	m [kg]	D ₁ [mm]	D ₂ [mm]	D ₃ [mm]	d [mm]	n [mm]	a [mm]	m [kg]
15	80	55	38	11	4	12	2.6	95	65	46	14	4	14	3.5
20	90	65	48	11	4	14	3.5	105	75	56	14	4	16	4.6
25	100	75	58	11	4	14	4.1	115	85	65	14	4	16	5.4
32	120	90	69	14	4	16	6.3	140	100	76	19	4	18	8.5
40	130	100	78	14	4	16	7.9	150	110	84	19	4	18	10.5
50								165	125	99	19	4	20	16.7
65								185	145	118	19	4	20	23.0
80								200	160	132	19	8	22	29.5
100								220	180	156	19	8	24	40.5
125								250	210	184	19	8	26	58.8
150								285	240	211	23	8	26	80.7

DN	PN 25							PN 6, PN 16, PN 25						
	D ₁ [mm]	D ₂ [mm]	D ₃ [mm]	d [mm]	n [mm]	a [mm]	m [kg]	D ₄ [mm]	f [mm]	L [mm]	V [mm]	V ₁ [mm]	V ₂ [mm]	H [mm]
15	95	65	46	14	4	14	3.5	44	2	130	167	65	96	20
20	105	75	56	14	4	16	4.6	44	2	150	167	75	96	20
25	115	85	65	14	4	16	5.4	44	3	160	167	80	96	20
32	140	100	76	19	4	18	8.5	44	3	180	177	90	96	20
40	150	110	84	19	4	19	10.5	44	3	200	187	100	96	20
50	165	125	99	19	4	19	13.0	44	3	230	182	115	96	20
65	185	145	118	19	8	19	18.3	44	3	290	192	145	96	20
80	200	160	132	19	8	19	24.1	44	3	310	212	155	96	20
100	235	190	156	23	8	19	33.1	44	3	350	247	175	116	40
125	270	220	184	28	8	19	46.9	44	3	400	272	200	116	40
150	300	250	211	28	8	20	66.7	44	3	480	297	240	116	40





RV 113 L

Two-way
control valves

DN 15 - 40, PN 6
DN 15 - 150, PN 16
DN 15 - 150, PN 25

Technical data

Series	RV 113 L	
Type of valve	Two-way control valve	
Nominal size range	DN 15 to 150	
Nominal pressure	DN 15 - 40, PN 6; DN 15 - 150, PN 16	DN 15 - 150, PN 25
Body material	Grey cast iron EN-JL 1040	Spheroidal cast iron EN-JS 1025
Plug material	Stainless steel 1.4027 (1.4028)	
Stem material	Stainless steel 1.4305	
Seat sealing	EPDM	
Packing	EPDM	
Operating temperature range	+2 to +150 °C	
Connection	Flanges type B1 (raised-faced) Acc. to ČSN-EN 1092-2 (1/1999)	
Face to face dimensions	Section 1 acc. to ČSN-EN 558 + A1 (5/2012)	
Type of plug	V-ported with soft seat sealing	
Flow characteristic	LDMspline*	
Kvs values	0,63 to 360 m ³ /h	
Leakage rate	Class IV. - S1 acc. to ČSN-EN 1349 (5/2001) (<0.0005 % Kvs)	
Rangeability r	50:1	

Maximum permissible operating pressures [MPa] acc. to ČSN EN 1092-2

Material	PN	Temperature [°C]	
		120	150
Grey cast iron EN-JL 1040 (EN-GJL-250)	6	0,60	0,54
	16	1,60	1,44
Spheroidal cast iron EN-JS 1025 (EN-GJS-400-18-LT)	25	2,50	2,43

Kvs values and differential pressures

The value Δp_{\max} is maximum differential pressure when reliable closing and opening is guaranteed. Because of the seat and plug service life, it is recommended so that permanent differential pressure would not exceed 0.4 MPa (Grey cast iron) respective 0.6 Mpa (Spheroidal cast iron).

For further info. on actuating see actuators' catalogue sheets		Actuating (actuator)					see the table below	
		Linear force					1000 N	2800 N
		Kvs [m ³ /h]					Δp_{\max}	Δp_{\max}
DN	H	1	2	3	4	5		
15	20	4	2.5	1.6	1	0.63	2.50	---
20		6.3	4.0	2.5	---	---	1.96	---
25		10	6.3	4.0	---	---	1.25	2.50
32		16	10	6.3	---	---	2.50	2.50
40		25	16	10	---	---	2.50	2.50
50		40	25	16	---	---	2.50	2.50
65		63	40	25	---	---	2.50	2.50
80		100	63	40	---	---	2.50	2.50
100	40	160	100	63	---	---	---	2.50
125		250	160	100	---	---	---	2.50
150		360	250	160	---	---	---	2.50

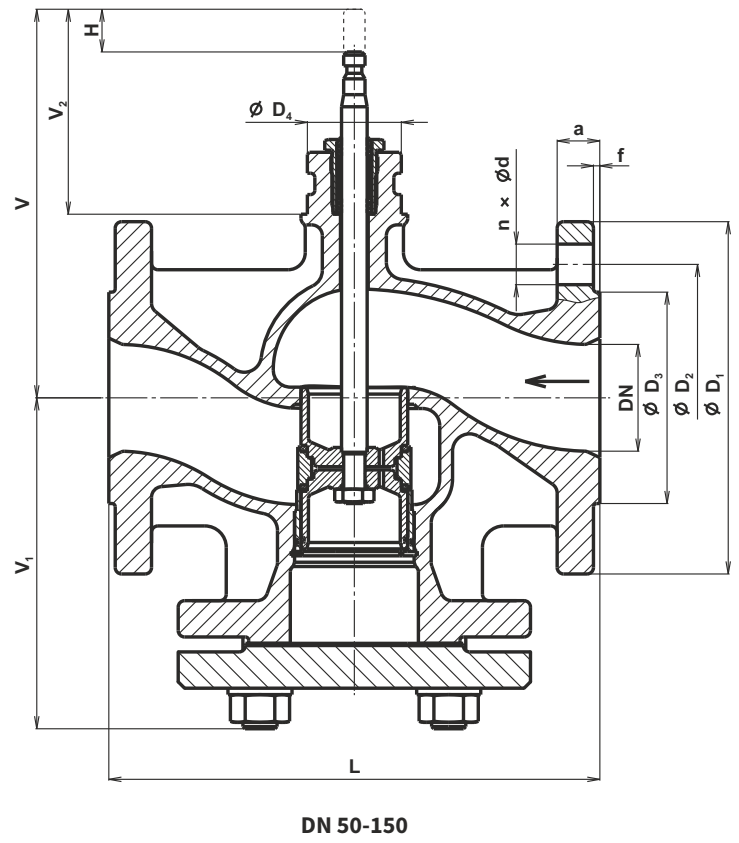
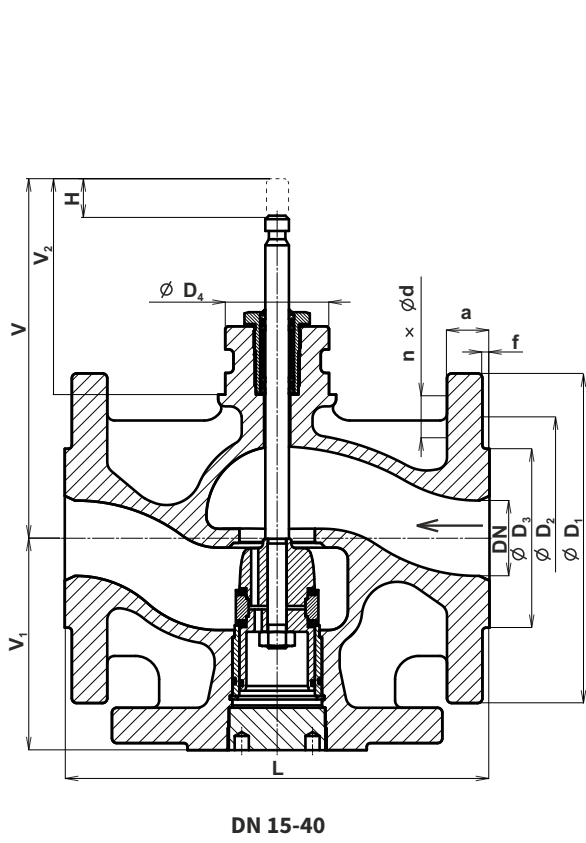
Supplied types of actuators

			stroke
Siemens	Electrohydraulic actuator SKD 32.50	AC 230 V, 3-position control, 120 s, 1000 N	20 mm
	Electrohydraulic actuator SKD 82.50	AC 24 V, 3-position control, 120 s, 1000 N	
	Electrohydraulic actuator SKD 32.51	AC 230 V, 3-position control, 120 s, fail-safe fct., 1000 N	
	Electrohydraulic actuator SKD 32.21	AC 230 V, 3-position control, 30 s, fail-safe funct., 1000 N	
	Electrohydraulic actuator SKD 82.51	AC 24 V, 3-position control, fail-safe function, 1000 N	
	Electrohydraulic actuator SKD 60	AC 24 V, control 0...10 V, 4...20 mA, 0-1000Ω, 1000 N	
	Electrohydraulic actuator SKD 62	AC 24 V, control 0...10 V, 4...20 mA, 0-1000Ω, fail-safe fct., 1000 N	
	Electrohydraulic actuator SKD 62UA	AC 24 V, control 0...10 V, 4...20 mA, 0-1000Ω, fail-safe fct., 1000 N	
Siemens	Electrohydraulic actuator SKB 32.50	AC 230 V, 3-position control, 120 s, 2800 N	20 mm
	Electrohydraulic actuator SKB 82.50	AC 24 V, 3-position control, 120 s, 2800 N	
	Electrohydraulic actuator SKB 32.51	AC 230 V, 3-position control, 120 s, fail-safe fct., 2800 N	
	Electrohydraulic actuator SKB 82.51	AC 24 V, 3-position control, 120 s, fail-safe fct., 2800 N	
	Electrohydraulic actuator SKB 60	AC 24 V, control 0...10 V, 4...20 mA, 0-1000Ω, 2800 N	
	Electrohydraulic actuator SKB 62	AC 24 V, control 0...10 V, 4...20 mA, fail-safe fct., 0-1000Ω, 2800 N	
	Electrohydraulic actuator SKB 62UA	AC 24 V, control 0...10 V, 4...20 mA, fail-safe fct., 0-1000Ω, 2800 N	
Siemens	Electrohydraulic actuator SKC 32.50	AC 230 V, 3-position control, 120 s	40 mm
	Electrohydraulic actuator SKC 82.50	AC 24 V, 3-position control, 120 s	
	Electrohydraulic actuator SKC 32.51	AC 230 V, 3-position control, 120 s, fail-safe function	
	Electrohydraulic actuator SKC 82.51	AC 24 V, 3-position control, 120 s, fail-safe function	
	Electrohydraulic actuator SKC 60	AC 24 V, control 0...10 V, 4...20 mA, 0-1000Ω, 2800 N	
	Electrohydraulic actuator SKC 62	AC 24 V, control 0...10 V, 4...20 mA, fail-safe function, 0-1000Ω, 2800 N	
	Electrohydraulic actuator SKC 62UA	AC 24 V, control 0...10 V, 4...20 mA, fail-safe function, 0-1000Ω, 2800 N	

Dimensions and weights for the type RV 113 L

DN	PN 6							PN 16						
	D ₁ [mm]	D ₂ [mm]	D ₃ [mm]	d [mm]	n [mm]	a [mm]	m [kg]	D ₁ [mm]	D ₂ [mm]	D ₃ [mm]	d [mm]	n [mm]	a [mm]	m [kg]
15	80	55	38	11	4	12	2.6	95	65	46	14	4	14	3.5
20	90	65	48	11	4	14	3.5	105	75	56	14	4	16	4.6
25	100	75	58	11	4	14	4.1	115	85	65	14	4	16	5.4
32	120	90	69	14	4	16	6.3	140	100	76	19	4	18	8.5
40	130	100	78	14	4	16	7.9	150	110	84	19	4	18	10.5
50								165	125	99	19	4	20	16.7
65								185	145	118	19	4	20	23.0
80								200	160	132	19	8	22	29.5
100								220	180	156	19	8	24	40.5
125								250	210	184	19	8	26	58.8
150								285	240	211	23	8	26	80.7

DN	PN 25							PN 6, PN 16, PN 25						
	D ₁ [mm]	D ₂ [mm]	D ₃ [mm]	d [mm]	n [mm]	a [mm]	m [kg]	D ₄ [mm]	f [mm]	L [mm]	V [mm]	V ₁ [mm]	V ₂ [mm]	H [mm]
15	95	65	46	14	4	14	3.5	44	2	130	167	65	96	20
20	105	75	56	14	4	16	4.6	44	2	150	167	75	96	20
25	115	85	65	14	4	16	5.4	44	3	160	167	80	96	20
32	140	100	76	19	4	18	8.5	44	3	180	177	90	96	20
40	150	110	84	19	4	19	10.5	44	3	200	187	100	96	20
50	165	125	99	19	4	19	16.7	44	3	230	182	155	96	20
65	185	145	118	19	8	19	23.0	44	3	290	192	185	96	20
80	200	160	132	19	8	19	29.5	44	3	310	212	193	96	20
100	235	190	156	23	8	19	39.8	44	3	350	247	216	116	40
125	270	220	184	28	8	19	56.4	44	3	400	272	239	116	40
150	300	250	211	28	8	20	78.1	44	3	480	297	284	116	40





RV 113 S

Three-way
control valves

DN 15 - 40, PN 6
DN 15 - 150, PN 16
DN 15 - 150, PN 25

Technical data

Series	RV 113 S	
Type of valve	Three-way control valve	
Nominal size range	DN 15 to 150	
Nominal pressure	DN 15 - 40, PN 6; DN 15 - 150, PN 16	DN 15 - 150, PN 25
Body material	Grey cast iron EN-JL 1040	Spheroidal cast iron EN-JS 1025
Plug material	Stainless steel 1.4027 (1.4028)	
Stem material	Stainless steel 1.4305	
Seat sealing	EPDM	
Packing	EPDM	
Operating temperature range	+2 to +150 °C	
Connection	Flange type B1 (raised-faced) Acc. to ČSN-EN 1092-2 (4/2002)	
Face to face dimensions	Section 1 acc. to ČSN-EN 558 + A1 (5/2012)	
Type of plug	V-ported with soft seat sealing	
Flow characteristic	LDMspline® in straight way, linear in angle way	
Kvs values	0,63 to 360 m ³ /h	
Leakage rate in direct way	Class IV. - S1 acc. to ČSN-EN 1349 (5/2001) (0.0005 % Kvs)	
Leakage rate in angle way	Not guaranteed (<2% Kvs)	
Rangeability r	50:1	

Maximum permissible operating pressures [MPa] dle ČSN EN 1092-2

Material	PN	Temperature [°C]	
		120	150
Grey cast iron EN-JL 1040 (EN-GJL-250)	6	0,60	0,54
	16	1,60	1,44
Spheroidal cast iron EN-JS 1025 (EN-GJS-400-18-LT)	25	2,50	2,43

Kvs values and differential pressures

The value Δp_{\max} is maximum differential pressure when reliable closing and opening is guaranteed. Because of the seat and plug service life, it is recommended so that permanent differential pressure would not exceed 0.4 MPa (Grey cast iron) respective 0.6 Mpa (Spheroidal cast iron).

For further info. on actuating see actuators' catalogue sheets		Actuating (actuator)					see the table below	
		Linear force					1000 N	2800 N
		Kvs [m ³ /h]					Δp_{\max}	Δp_{\max}
DN	H	1	2	3	4	5	MPa	MPa
15	20	4	2.5	1.6	1	0.63	2.50	---
20		6.3	4.0	2.5	---	---	1.96	---
25		10	6.3	4.0	---	---	1.25	2.50
32		16	10	6.3	---	---	0.77	2.50
40		25	16	10	---	---	0.49	1.74
50		40	25	16	---	---	0.25	1.02
65		63	40	25	---	---	0.15	0.62
80		100	63	40	---	---	0.10	0.42
100	40	160	100	63	---	---	---	0.23
125		250	160	100	---	---	---	0.15
150		360	250	160	---	---	---	0.10

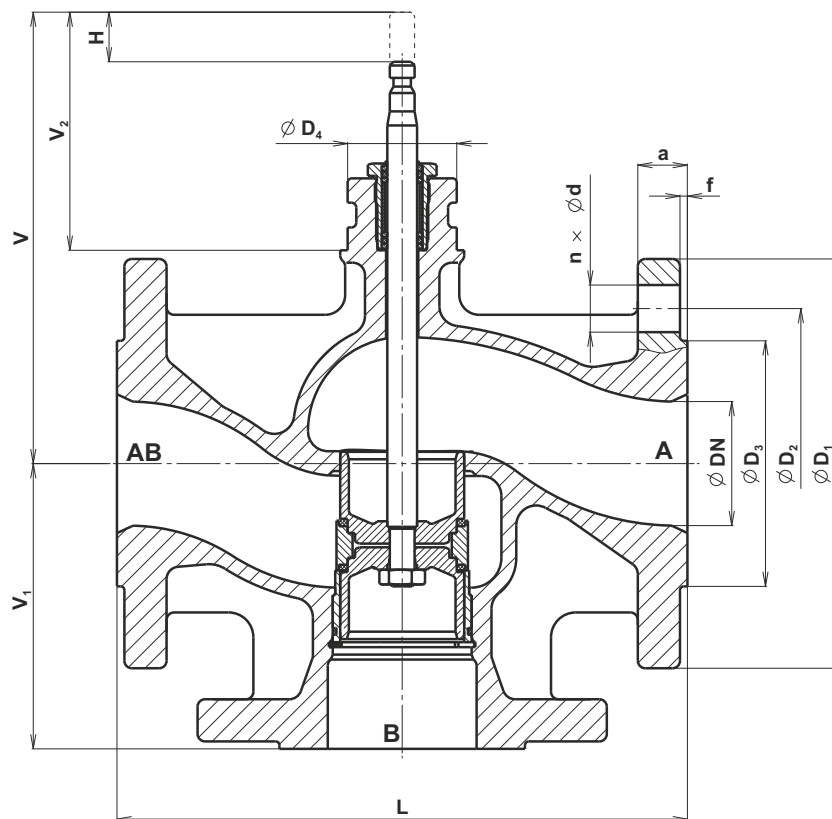
Supplied types of actuators

			stroke
Siemens	Electrohydraulic actuator SKD 32.50	AC 230 V, 3-position control, 120 s, 1000 N	20 mm
	Electrohydraulic actuator SKD 82.50	AC 24 V, 3-position control, 120 s, 1000 N	
	Electrohydraulic actuator SKD 32.51	AC 230 V, 3-position control, 120 s, fail-safe fct., 1000 N	
	Electrohydraulic actuator SKD 32.21	AC 230 V, 3-position control, 30 s, fail-safe funct., 1000 N	
	Electrohydraulic actuator SKD 82.51	AC 24 V, 3-position control, fail-safe function, 1000 N	
	Electrohydraulic actuator SKD 60	AC 24 V, control 0...10 V, 4...20 mA, 0-1000Ω, 1000 N	
	Electrohydraulic actuator SKD 62	AC 24 V, control 0...10 V, 4...20 mA, 0-1000Ω, fail-safe fct., 1000 N	
	Electrohydraulic actuator SKD 62UA	AC 24 V, control 0...10 V, 4...20 mA, 0-1000Ω, fail-safe fct., 1000 N	
Siemens	Electrohydraulic actuator SKB 32.50	AC 230 V, 3-position control, 120 s, 2800 N	20 mm
	Electrohydraulic actuator SKB 82.50	AC 24 V, 3-position control, 120 s, 2800 N	
	Electrohydraulic actuator SKB 32.51	AC 230 V, 3-position control, 120 s, fail-safe fct., 2800 N	
	Electrohydraulic actuator SKB 82.51	AC 24 V, 3-position control, 120 s, fail-safe fct., 2800 N	
	Electrohydraulic actuator SKB 60	AC 24 V, control 0...10 V, 4...20 mA, 0-1000Ω, 2800 N	
	Electrohydraulic actuator SKB 62	AC 24 V, control 0...10 V, 4...20 mA, fail-safe fct., 0-1000Ω, 2800 N	
	Electrohydraulic actuator SKB 62UA	AC 24 V, control 0...10 V, 4...20 mA, fail-safe fct., 0-1000Ω, 2800 N	
Siemens	Electrohydraulic actuator SKC 32.50	AC 230 V, 3-position control, 120 s	40 mm
	Electrohydraulic actuator SKC 82.50	AC 24 V, 3-position control, 120 s	
	Electrohydraulic actuator SKC 32.51	AC 230 V, 3-position control, 120 s, fail-safe function	
	Electrohydraulic actuator SKC 82.51	AC 24 V, 3-position control, 120 s, fail-safe function	
	Electrohydraulic actuator SKC 60	AC 24 V, control 0...10 V, 4...20 mA, 0-1000Ω, 2800 N	
	Electrohydraulic actuator SKC 62	AC 24 V, control 0...10 V, 4...20 mA, fail-safe function, 0-1000Ω, 2800 N	
	Electrohydraulic actuator SKC 62UA	AC 24 V, control 0...10 V, 4...20 mA, fail-safe function, 0-1000Ω, 2800 N	

Dimensions and weights for the type RV 113 S

DN	PN 6							PN 16						
	D ₁ [mm]	D ₂ [mm]	D ₃ [mm]	d [mm]	n [mm]	a [mm]	m [kg]	D ₁ [mm]	D ₂ [mm]	D ₃ [mm]	d [mm]	n [mm]	a [mm]	m [kg]
15	80	55	38	11	4	12	2.6	95	65	46	14	4	14	3.5
20	90	65	48	11	4	14	3.5	105	75	56	14	4	16	4.6
25	100	75	58	11	4	14	4.1	115	85	65	14	4	16	5.4
32	120	90	69	14	4	16	6.3	140	100	76	19	4	18	8.5
40	130	100	78	14	4	16	7.9	150	110	84	19	4	18	10.5
50								165	125	99	19	4	20	16.7
65								185	145	118	19	4	20	23.0
80								200	160	132	19	8	22	29.5
100								220	180	156	19	8	24	40.5
125								250	210	184	19	8	26	58.8
150								285	240	211	23	8	26	80.7

DN	PN 25							PN 6, PN 16, PN 25						
	D ₁ [mm]	D ₂ [mm]	D ₃ [mm]	d [mm]	n [mm]	a [mm]	m [kg]	D ₄ [mm]	f [mm]	L [mm]	V [mm]	V ₁ [mm]	V ₂ [mm]	H [mm]
15	95	65	46	14	4	14	3.5	44	2	130	167	65	96	20
20	105	75	56	14	4	16	4.6	44	2	150	167	75	96	20
25	115	85	65	14	4	16	5.4	44	3	160	167	80	96	20
32	140	100	76	19	4	18	8.5	44	3	180	177	90	96	20
40	150	110	84	19	4	19	10.5	44	3	200	187	100	96	20
50	165	125	99	19	4	19	13.0	44	3	230	182	115	96	20
65	185	145	118	19	8	19	18.3	44	3	290	192	145	96	20
80	200	160	132	19	8	19	24.1	44	3	310	212	155	96	20
100	235	190	156	23	8	19	33.1	44	3	350	247	175	116	40
125	270	220	184	28	8	19	46.9	44	3	400	272	200	116	40
150	300	250	211	28	8	20	66.7	44	3	480	297	240	116	40



The valve complete specification No. for ordering RV 113

		XX	XXX	X	XX XX	XX	/	XXX	-	XXX	XX
1. Valve	Control valve	RV									
2. Series	Valves made of grey cast iron		113								
3. Type of valve	Two-way control valve			R							
	Three-way control valve			M							
	Two-way control valve for electrohydraulic actuators			L							
	Three-way control valve for electrohydraulic actuators			S							
4. Execution	Flanged, two-way				4						
	Flanged, three-way mixing (diverting)				6						
5. Body material	Grey cast iron (PN 06, 16)				3						
	Spheroidal cast iron (PN 25)				4						
6. Flow characteristic	LDMspline®/ linear				3						
7. Kvs	Column No. acc. to Kvs value table				X						
8. Nominal pressure PN	PN 6 (grey cast iron only) DN 15 to 40							06			
	PN 16 (grey cast iron only)							16			
	PN 25 (spheroidal cast iron only)							25			
9. Max. temperature °C	150°C								150		
10. Nominal size DN	DN 15 to 150									XXX	
11. Execution	Normal										
	Silicone free										SF

Orderexample: **RV113 R4331 16/150-065**

The actuator must be specified separately.



Electric actuators

LDM

ANT40.11

Description

The actuators are designed for regulators with continuous or contact output. They are suitable to actuate two-way and three-way valves series RV 113 and RV 2xx. The actuator consists of cover made of self-extinguishing plastic housing a stepping motor, control unit with SUT technology, signalisation LEDs and no-maintenance gear made of sintered steel. The connection to its valve is provided by stainless steel columns and yoke made of light metal alloy. Electric connection (max. 2,5 mm²) is provided with the aid of screw clamps. There are three self-breaking openings for cable glands M20x1,5 (2x) and M16x1,5. One cable gland M20x1,5 is a part of standard delivery.

Application

Based on a connection variant (see wiring diagram), the actuator can be used as floating (0...10 V or 4...20 mA), or 2-position (open-closed) or 3-position (open-stop-closed). Manual operating is available with outer handle. The motor is disconnected when the hand crank is folded back. When the handle is positioned back, the actuator resumes into required position (without initialization). If the hand crank remains folded out, the actuator keeps its set position.

Installation position

Upright, vertical, max. horizontal.

SUT Technology

The actuator can be controlled by regulators with continuous (0...10 V and/or 4...20 mA) or contact (2-position or 3-position) output. The actuator feeding is optional. The running speed and output characteristic is also optional.

Features

- electronic switch off based on the running force registered by stops inside appliance or valve.
- automatic adapting to the valve stroke
- code switch for characteristic and running time selection
- hand crank for manual operating with swithing the motor off as a start for new initiation
- possibility of direction change of control signal (feeding voltage at terminal 2a or 2b)

Technical data

Type	ANT40.11
Suitable for valves	RV 113 R, M
Execution	Electric actuator with SUT technology
Voltage	24 V AC \pm 20%, 50 - 60 Hz; 24 V DC \pm 15%; 230 V AC \pm 15%
Frequency	50 Hz
Power consumption	18 VA
Control	0 - 10 V, 4 - 20 mA, 3-bod., 2-bod.
Open-close running time	Adjustable 2, 4, 6 s.mm ⁻¹
Nominal force	2500 N
Travel	20 and 40 mm
Enclosure	IP 66
Process medium max. temp.	150°C
Ambient temperature range	-10 and 55°C
Ambient humidity range	< 95 % of relative humidity
Weight	4,5 kg

Accessories

0313529 001	Split range unit to set sequences
0372332 001	Module, plug-in type, for 230 V ± 15% voltage supply and 3-point activation, additional power 2 VA
0372333 001	2 auxiliary changeover switches, continuously adjustable, additional load 5(2) A, 12 - 250 V, 3(1) A, 12 - 250 V AC ¹⁾
0372333 002	2 auxiliary changeover contacts with gold-plated contacts for low currents from 1 mA, max. 30 V, 3(1) A, 12 - 250 V AC ¹⁾
0372334 001	Potentiometer 2000 Ω, 1 W, 24 V ¹⁾
0372334 002	Potentiometer 130 Ω, 1 W, 24 V ¹⁾
0372334 006	Potentiometer 1000 Ω, 1 W, 24 V ¹⁾
0386263 001	Screwed cable gland M16 x 1,5
0386263 002	Screwed cable gland M20 x 1,5 (1 piece of cable gland is standard part of actuator delivery)

¹⁾ one option of accessory can be used only

Operation

Initialisation and feedback signal

When used as a continuous drive, the device initialises itself automatically. As soon as voltage is applied to the drive for the first time, it moves to the lower limit stop on the valve, thus enabling automatic connection with the valve spindle. Then it moves to the upper limit stop and the value is recorded and saved with the help of a path measurement system. The control signal and the feedback signal are adjusted to this effective stroke. There is no re-initialisation if the voltage is interrupted or if the voltage supply is removed. The values remain saved.

To re-initialise, the drive must be connected to the voltage. To trigger an initialisation, fold the hand crank out and back in again twice within 4 seconds. Both the LEDs will then flash red.

During initialisation, the feedback signal is inactive, or it corresponds to a value of "0". Initialisation uses the shortest run time. The reinitialisation is only valid once the entire procedure has been completed. Folding the hand crank out again will interrupt the procedure.

If the valve drive detects a blockage, it will report this by setting the feedback signal to 0 V after approx. 90 s. However, the drive will try to overcome the blockage during this time. If it is possible to overcome the blockage, the normal control function is activated again and the feedback signal is resumed.

No initialisation is performed with a 2-position or 3-position control. The feedback signal is inactive.

Connection as a 2-point valve drive (24 V)

This activation (OPEN/CLOSED) can take place via two cables. The voltage is applied to terminals 1 and 2a. Applying the voltage (24 V) to terminal 2b opens the valve's control passage. After this voltage has been switched off, the drive moves to the opposite end position and closes the valve. The electronic motor switch-off responds in the end positions (valve limit stop, or when maximum stroke is reached) or in case of overload (no limit switches).

The coding switch can be used to set the run times. The characteristic curve cannot be selected in this case (resulting in the characteristic curve for the valve). Terminals 3i, 3u and 44 must not be connected.

Connection as a 3-point valve drive (24 V)

Applying voltage to terminal 2a (or 2b) makes it possible to move the valve to any desired position. If voltage is applied to terminals 1 and 2b, the valve shaft moves out and opens the valve. It moves in and closes the valve when the electrical circuit is closed over terminals 1 and 2a.

In the end positions (at the valve stop, or when the maximum stroke is reached) or in case of an overload, the electronic motor switch-off responds (no limit switches). The direction of the stroke can be changed by transposing the connections.

The coding switch is used to set the run times. In this case, the characteristic curve cannot be selected (resulting in the characteristic curve for the valve). Terminals 3i, 3u and 44 must not be connected.

Connection as a 2-point/3-point or continuous activation of valve drive with 230 V (accessory 0372332)

The accessory module is plugged on in the connection area and is then connected for 3-position mode. If this accessory is used, only control in 3-position mode is available. The coding switch on the baseboard can be used to select the run times. The characteristic curve cannot be selected; the characteristic curve for the valve is applicable.

The module has a built-in switch which is automatically moved into the correct position when the module is installed. On this drive (which has no spring return action) the switching lever is in the lower position.

The accessory module is not suitable for 2-position activation.

Connection as continuous control (0...10 V and/or 4...20 mA) - (24V)

The built-in positioner controls the drive depending on the controller output signal.

The control signal used is a voltage signal (0...10 V-) at terminal 3u, or a current signal at terminal 3i. If a control signal is present at both terminals (3u (0...10 V) and 3i (4...20 mA)) simultaneously, the input with the higher value takes priority.

Mode of action 1 (mains voltage to internal connection 2a):

as the output signal increases, the valve shaft moves out and opens the valve (control passage).

Mode of action 2 (mains voltage to internal connection 2b):

as the output signal increases, the valve shaft moves in and closes the valve (control passage).

The starting point and the control span are fixed. To set partial ranges (and only for voltage input 3u), a split range unit is available as an accessory (see the split range unit function); this unit is intended for installation in the drive.

After the voltage supply is applied and after initialisation, the drive moves to each valve stroke between 0% and 100%, depending on the control signal. The electronics and the path measurement system ensure that no stroke is lost, and the drive does not require re-initialisation at intervals. When the end positions are reached, the position is checked, corrected as necessary and stored again. This ensures parallel running of several drives of the same SUT type. Feedback signal $y_0 = 0...10V$ corresponds to the effective valve stroke of 0 to 100%.

If the 0...10 V control signal is interrupted in direction of action 1, the spindle retracts completely and the valve is closed. So that the valve can be opened (direction of action 1), a voltage of 10 V must be connected between terminals 1 and 3u, or it is necessary to switch over to direction of action 2.

The coding switch can be used to set the characteristic for the valve.

Signal LED display

- Both LEDs flashing red: initialisation procedure
- Upper LED lit red: upper limit stop or "CLOSED" position reached
- Lower LED lit red: lower limit stop or "OPEN" position reached
- Upper LED flashing green: drive running, moving towards "CLOSED" position
- Upper LED lit green: drive stationary, last direction of running "CLOSED"
- Lower LED flashing green: drive running, moving towards "OPEN" position
- Lower LED lit green: drive stationary, last direction of running "OPEN"
- Both LEDs are lit green: waiting time after switching on, or after emergency function
- No LED lit: no voltage supply (terminal 2a or 2b)
- Both LEDs are flashing red and green: drive is in manual mode

Accessories application

Split range unit

This accessory can be built into the drive or can be accommodated externally in an electrical distribution box. The starting point U_0 and the control span ΔU can be set with the help of a potentiometer. This makes it possible to operate several regulating units in sequence or in a cascade with the control signal from the controller. The input signal (partial range) is converted into an output signal of 0...10V.

Auxiliary changeover switch

Auxiliary changeover switch double 0372333001

- Switching capacity max. 250V~, min. current 250 mA at 12 V (or 20 mA at 20V)
- Switching capacity max. 12...30V=, max. current 100 mA

Auxiliary changeover switch double gold 0372333002

- Switching capacity max. 250V~, min. current 1 mA at 5V
- Switching capacity max. 0.1...30V=, current 1...100 mA

Even if used only once above 10 mA or up to 50 V, the gold coating will be destroyed. The switch can then be used only for higher switching outputs.

Engineering and installation notes

Penetration of condensate or dripping water, etc. along the valve spindle into the drive should be avoided.

The valve is plugged directly onto the drive and is fixed with screws (no further settings are needed). The drive is automatically connected to the valve spindle. When the device is delivered, the drive spindle is in the middle position.

The housing contains three breakthrough-type cable leadthroughs which are broken open automatically when the cable leadthrough is screwed in. The stepping motor/ electronics concept guarantees parallel running of several valve drives of the same type. The cross-section of the connecting cable should be selected according to the line length and the number of drives. With five drives connected in parallel and a line length of 50 m, we recommend using a cable cross-section of 1.5 mm² (power consumption of the drive × 5). The drive can be assembled with a maximum of one 230 V module, one additional accessory component (auxiliary switch or potentiometer) and the split range unit.

Warnings

If the temperature of the medium in the valve is high, the drive columns and the shaft may also reach high temperatures. It is necessary to ensure that the maximum ambient temperature be max. 55°C during operation. If the temperature exceeds this limit, it is recommended to insulate the valve (eg. IKA insulation, see cataloguesheet01-09.6).

If a failure of the final control element could cause damage, additional protective precautions must be taken.

CE - Conformity

Directive EMC 2014/30/ES

- EN 61000-6-2 *)
- EN 61000-6-4

Low Voltage Directive 2014/35/ES

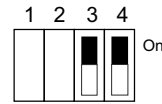
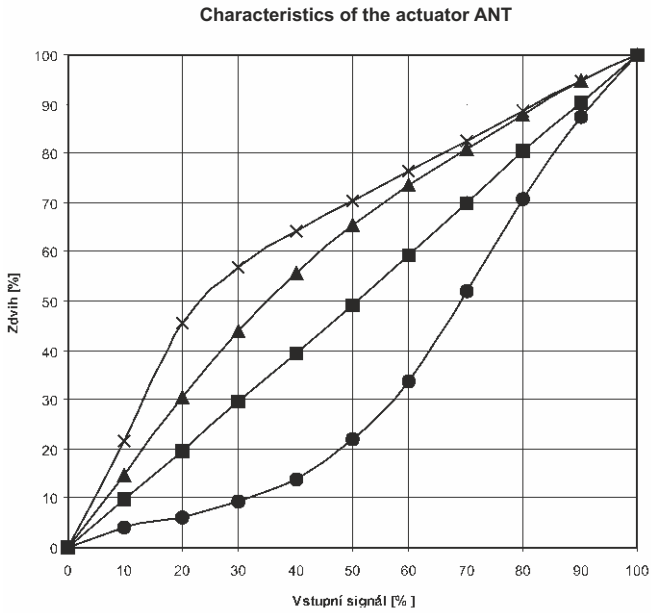
- EN 60730 1
- EN 60730-2-14
- Over-voltage category III
- Degree of pollution III

*) HF immunity, limitation of feedback signal between 80 MHz a 1000 Mhz criterion B, otherwise criterion A

Switch coding

Actuator characteristic (switches 3 and 4)

- optional for actuators with floating control only



A (linear)



B (quadratic)





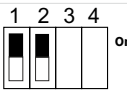

C (logarithmic)



D (equal-percentage)

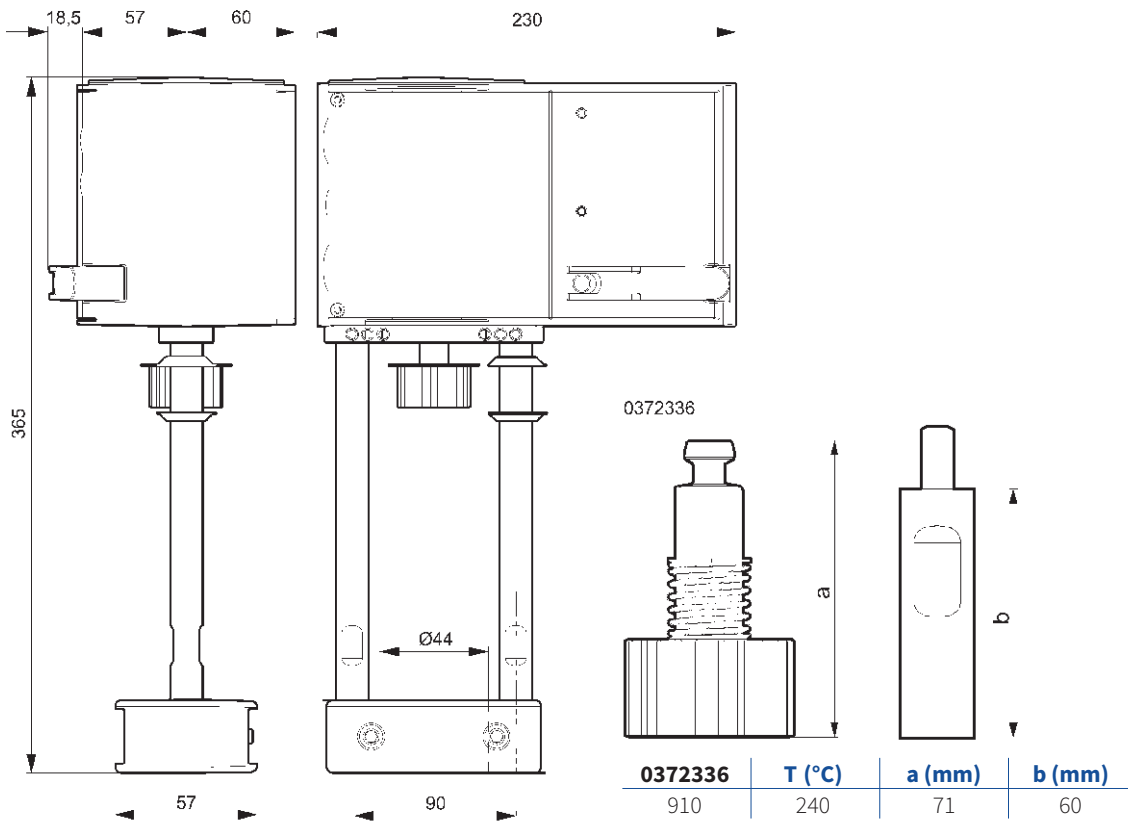
Run time (switches 1 and 2)

- optional for all types of control of the actuator

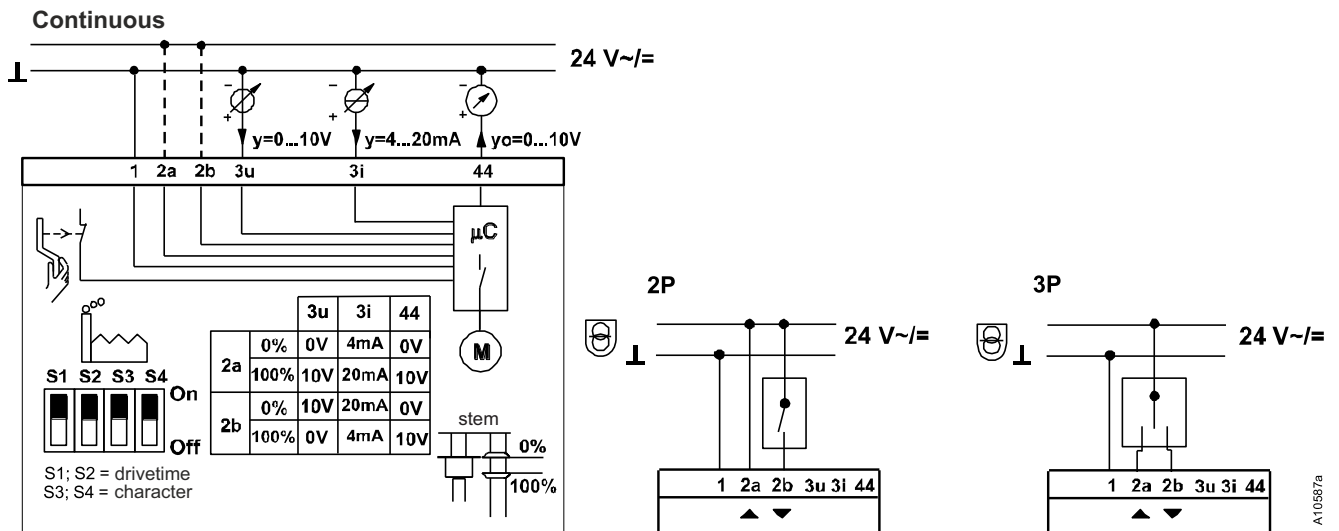
Run time per mm	Switch coding	Run time for stroke 20 mm	Run time for stroke 40 mm
2 s / mm		40 s ± 1	80 s ± 2
4 s / mm		80 s ± 2	160 s ± 4
6 s / mm	 	120 s ± 4	240 s ± 8

Note: Data in bold mean factory settings

Dimensions of actuator and a mid piece for higher temperatures

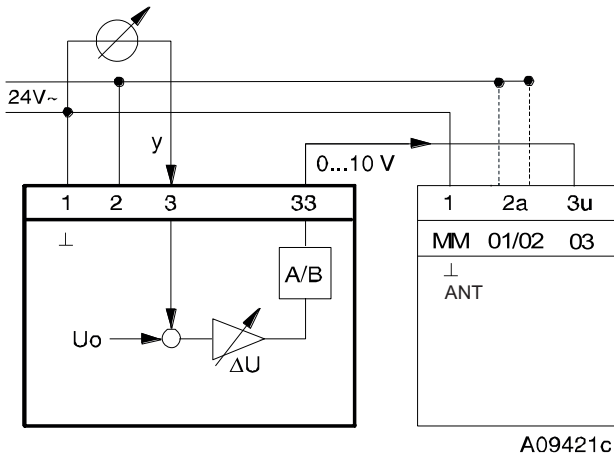


Wiring diagram of actuators

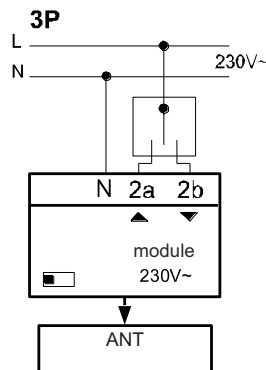
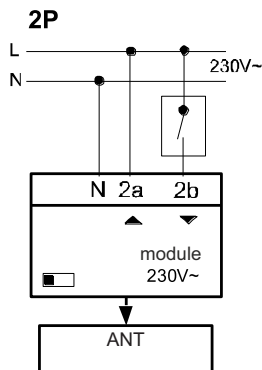
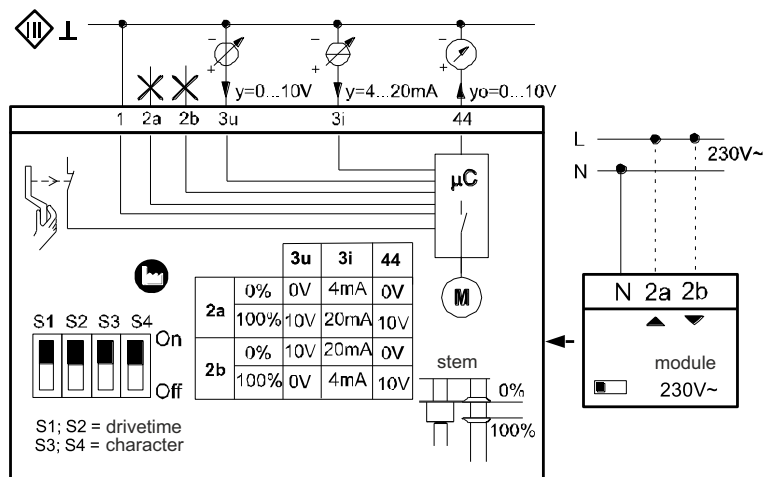


Wiring diagram of accessories

0313529

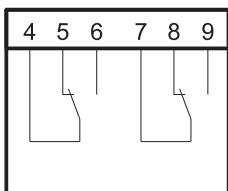


0372332001



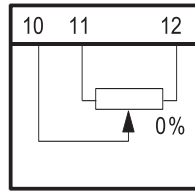
A 10564a

0372333

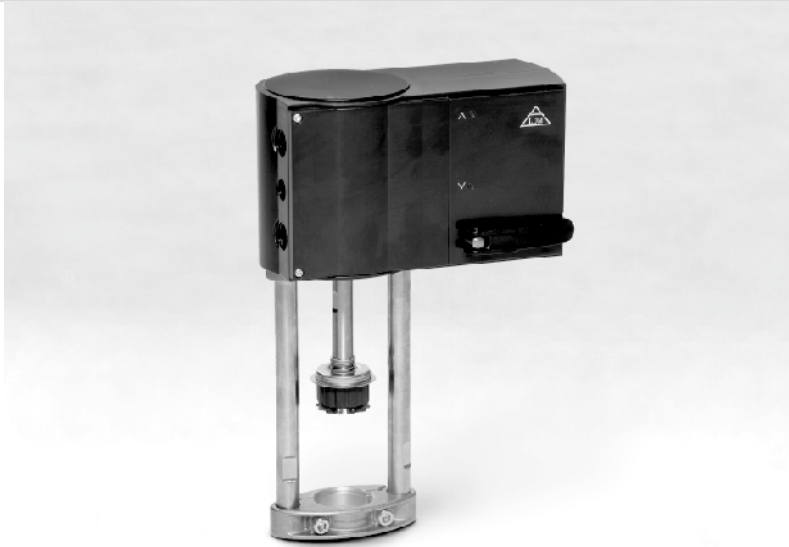


A10376

0372334



A01363



Electric actuators

LDM

ANT40.11S
ANT40.11R

Description

The actuator is designed for regulators with continuous or contact output. They are suitable for actuating two-way or three way valves series RV 113 and RV2xx. The actuator is equipped with a spring ensuring the actuator runs into its defined end position in case of power supply failure or when the sensor of limit value is activated. The actuator consists of a cover made of self-extinguishing plastic housing stepping motor, control unit with SUT technology, signalisation LEDs and no-maintenance gear made of sintered steel and spring roll. The connection to its valve is provided by stainless steel columns and yoke made of light metal alloy. Electric connection (max. 2,5 mm²) is provided with the aid of screw clamps. There are three self-breaking openings for cable glands M20x1,5 (2x) and M16x1,5. One cable gland M20x1,5 is a part of standard delivery.

Application

Based on a connection variant (see wiring diagram), the actuator can be used as floating (0...10 V or 4...20 mA), or 2-position (open-closed) or 3-position (open-stop-closed). Manual operating is with outer hand crank. The motor is disconnected when the hand crank is folded out. When the hand crank is folded back, the actuator resumes into required position (without initialization). If the hand crank remains folded out, the actuator keeps its set position.

Installation position

Upright, vertical, max. horizontal.

SUT Technology

The actuator can be controlled by regulators with continuous (0...10V and/or 4...20 mA) or contact (2-position or 3-position) output. The actuator feeding is optional. The running speed and output characteristic is also optional.

Features

- electronic switch off based on the running force registered by stops inside appliance or valve
- automatic adapting to the valve stroke
- codeswitch for characteristic and running time selection
- hand crank for manual operating with swithing the motor off as a start for new initiation
- possibility of direction change of control signal (feeding voltage at terminal 2a or 2b)

Direct and indirect function of actuator

Direct function ensures that actuator stem extends (the valve opens) upon power supply failure.

Indirect function ensures that actuator stem retracts (the valve closes) upon power supply failure.

Technical data		
Type	ANT40.11S	ANT40.11R
Specification code	RV 113 R, M	
Execution	Electric actuator with spring return action and SUT technology	
Voltage	24 V AC ± 20%, 50 - 60 Hz; 24 V DC ± 15%; 230 V AC ± 15%	
Frequency	50 Hz	
Powe consumption	in operation mode 20 VA, v klidu 7 VA	
Control	0-10 V, 4-20 mA, 3-position, 2-position	
Open-close running time	Adjustable 2, 4, 6 s.mm ⁻¹	
Running time for fail-safe function	Acc. to stroke 15 - 30 s	
Fail-safe function	indirect (NC)	Direct (NO)
Nominal force	2000 N	
Stroke	20 and 40 mm	
Enclosure	IP 66	
Process medium max. temperature	150 °C	
Ambient temperature range	-10 to 55 °C	
Ambient humidity range	< 95 % of relative humidity	
Weight	6,1 kg	

Accessories

0313529 001	Split range unit to set sequences
0372332 001	Module, plug-in type, for 230 V ± 15% voltage supply and 3-point activation, additional power 2 VA
0372333 001	2 auxiliary changeover switches, continuously adjustable, additional load 5(2) A, 12 - 250 V, 3(1) A, 12 - 250 V AC ¹⁾
0372333 002	2 auxiliary changeover contacts with gold-plated contacts for low currents from 1 mA, max. 30 V, 3(1) A, 12 - 250 V AC ¹⁾
0372334 001	Potentiometer 2000 Ω, 1 W, 24 V ¹⁾
0372334 002	Potentiometer 130 Ω, 1 W, 24 V ¹⁾
0372334 006	Potentiometer 1000 Ω, 1 W, 24 V ¹⁾
0386263 001	Screwed cable gland M16 x 1,5
0386263 002	Screwed cable gland M20 x 1,5 (1 piece of cable gland is standard part of actuator delivery)

¹⁾one option of accessory can be used only

Operation

After a new start, or after a start following activation of the reset (terminal 21), up to 45 s of waiting time will pass before the drive is available again. Depending on the type of connection (see the wiring diagram), the device can be used as a continuous-action drive (0...10 V and/or 4...20 mA), a 2-point drive (open-closed) or a 3-position drive (open-stop-closed).

Initialisation and feedback signal

The drive initialises itself automatically, whether it is used in continuous-action, 2-position or 3-position mode. As soon as voltage is applied to the drive for the first time and the waiting period has elapsed, the drive moves to the lower limit stop on the valve, thus enabling automatic connection with the valve spindle. Then it moves to the upper limit stop, and the value is recorded and saved with the help of a path measurement system. The control signal and the feedback signal are adjusted to this effective stroke. After an interruption to the voltage or a spring return action, no re-initialisation is performed and the values are saved.

To re-initialise, the drive must be connected to the voltage. To trigger an initialisation, fold the hand crank out and back in again twice within 4 seconds. Both the LEDs will then flash red.

During initialisation, the feedback signal is inactive, or it corresponds to a value of "0". Initialisation uses the shortest run time. The re-initialisation is only valid once the entire procedure has been completed. Folding the hand crank out again will interrupt the procedure.

If the valve drive detects a blockage, it will report this by setting the feedback signal to 0 V after approx. 90 s. However, the drive will try to overcome the blockage during this time. If it is possible to overcome the blockage, the normal control function is activated again and the feedback signal is resumed.

Spring return

If the voltage supply fails or is switched off, or if a monitoring contact responds, the brushless DC motor releases the gear and the drive is moved into the respective end position (depending on the design version) by the pre-tensioned spring. As this happens, the control function of the drive is disabled for 45 s (both LEDs flash green) so that the end position can be reached in every case. The reset speed is controlled with the help of the motor so that there are no pressure surges in the line. The brushless DC motor has three functions: as a magnet to hold the position, as a brake (by acting as a generator) and as a motor for the control function. After a spring return function, the drive does not re-initialise itself.

Connection as a 2-position valve drive (24 V)

This activation (OPEN/CLOSED) can take place via two cables. The voltage is applied to terminals 1 2a and 21. Applying the voltage (24 V) to terminal 2b causes the coupling rod to extend and opens the valve. After this voltage has been switched off, the drive moves to the opposite end position and closes the valve. The electronic motor switch-off responds in the end positions (valve limit stop, or when maximum stroke is reached) or in case of overload (no limit switches).

The coding switch can be used to set the run times. The characteristic curve cannot be selected in this case (resulting in the characteristic curve for the valve). The feedback signal is active as long as the initialisation is performed and there is voltage present at terminal 21. Terminals 3i, 3u and 44 must not be connected.

Connection as a 3-position valve drive (24 V)

Applying voltage to terminal 2a (or 2b) makes it possible to move the valve to any desired position. If voltage is applied to terminals 1 and 2b, the valve shaft moves out and opens the valve. It moves in and closes the valve when the electrical circuit is closed over terminals 1 and 2a.

In the end positions (at the valve stop, or when the maximum stroke is reached) or in case of an overload, the electronic motor switch-off responds (no limit switches). The direction of the stroke can be changed by transposing the connections.

The coding switch is used to set the run times. In this case, the characteristic curve cannot be selected (resulting in the characteristic curve for the valve). The feedback signal is active as long as the initialisation is performed and there is voltage present at terminal 21. Terminals 3i, 3u must not be connected.

Connection as a 3-position valve drive with 230 V

The accessory module is plugged on in the connection area and is then connected for 3-position mode. If this accessory is used, only control in 3-position mode is available. The coding switch on the baseboard can be used to select the run times. The characteristic curve cannot be selected; the characteristic curve for the valve is applicable.

The module has a built-in switch which is automatically moved into the correct position when the module is installed. With this application, the switching lever is in the upper position.

The accessory module is not suitable for 2-position activation.

Connection to a control voltage (0...10 V and/or 4...20 mA)

The built-in positioner controls the drive depending on the controller output signal.

The control signal used is a voltage signal (0...10 V-) at terminal 3u, or a current signal at terminal 3i.

If a control signal is present at both terminals (3u (0...10 V) and 3i (4...20 mA) simultaneously, the input with the higher value takes priority.

Mode of action 1 (mains voltage to internal connection 2a):
as the output signal increases, the valve shaft moves out and opens the valve (control passage).

Mode of action 2 (mains voltage to internal connection 2b):
as the output signal increases, the valve shaft moves in and closes the valve (control passage).

The starting point and the control span are fixed. To set partial ranges (and only for voltage input 3u), a split range unit is available as an accessory (see the split range unit function); this unit is intended for installation in the drive.

After the voltage supply is applied and after initialisation, the drive moves to each valve stroke between 0% and 100%, depending on the control signal.

The electronics and the path measurement system ensure that no stroke is lost, and the drive does not require re-initialisation at intervals. When the end positions are reached, the position is checked, corrected as necessary and stored again. This ensures parallel running of several drives of the same type. Feedback signal $y_0 = 0...10\text{ V}$ corresponds to the effective valve stroke of 0 to 100%.

If the control signal 0...10 V is interrupted in mode of action 1, the spindle moves in completely and the valve is closed. So that the valve can be opened (direction of action 1), a voltage of 10 V must be connected between terminals 1 and 3u, or it is necessary to switch over to direction of action 2.

The coding switch can be used to set the characteristic curve for the valve: linear, equal percentage or quadratic. This characteristic curve can only be generated if the drive is used as a continuous drive. Additional switches can be used to select the run times (applicable for 2-position, 3-position or continuous function).

Signal LED display

Both LEDs flashing red: initialisation procedure
Upper LED lit red: upper limit stop or "CLOSED" position reached
Lower LED lit red: lower limit stop or "OPEN" position reached
Upper LED flashing green: drive running, moving towards "CLOSED" position
Upper LED lit green: drive stationary, last direction of running "CLOSED"
Lower LED flashing green: drive running, moving towards "OPEN" position
Lower LED lit green: drive stationary, last direction of running "OPEN"
Both LEDs are lit green: waiting time after switching on, or after emergency function
No LED lit: no voltage supply (terminal 2a or 2b)
Both LEDs are flashing red and green: drive is in manual mode

Accessories application

Split range unit

This accessory can be built into the drive or can be accommodated externally in an electrical distribution box. The starting point U_0 and the control span ΔU can be set with the help of a potentiometer. This makes it possible to operate several regulating units in sequence or in a cascade with the control signal from the controller. The input signal (partial range) is converted into an output signal of 0...10 V.

Auxiliary changeover switch

Auxiliary changeover switch double 0372333 001

- Switching capacity max. 250 V~, min. current 250 mA at 12 V (or 20 mA at 20 V)
- Switching capacity max. 12...30 V=, max. current 100 mA

Auxiliary changeover switch double gold 0372333 002

- Switching capacity max. 250 V~, min. current 1 mA at 5 V
- Switching capacity max. 0.1...30 V=, current 1...100 mA

Even if used only once above 10 mA or up to 50 V, the gold coating will be destroyed. The switch can then be used only for higher switching outputs.

Engineering and installation notes

Penetration of condensate or dripping water, etc. along the valve spindle into the drive should be avoided.

The valve is plugged directly onto the drive and is fixed with screws (no further settings are needed). The drive is automatically connected to the valve spindle. When the device is delivered, the drive spindle is in the middle position.

The housing contains three breakthrough-type cable leadthroughs which are broken open automatically when the cable leadthrough is screwed in. The stepping motor/ electronics concept guarantees parallel running of several valve drives of the same type. The cross-section of the connecting cable should be selected according to the line length and the number of drives. With five drives connected in parallel and a line length of 50 m, we recommend using a cable cross-section of 1.5 mm² (power consumption of the drive × 5). The drive can be assembled with a maximum of one 230 V module, one additional accessory component (auxiliary switch or potentiometer) and the split range unit.

Warnings

If the temperature of the medium in the valve is high, the drive columns and the shaft may also reach high temperatures. It is necessary to ensure that the maximum ambient temperature be max. 55°C during operation. If the temperature exceeds this limit, it is recommended to insulate the valve (e.g. IKA insulation, see cataloguesheet 01-09.6).

If a failure of the final control element could cause damage, additional protective precautions must be taken.

CE - Conformity

Directive EMC 2014/30/ES

EN 61000-6-2 *)
EN 61000-6-4

Low Voltage Directive 2014/35/ES

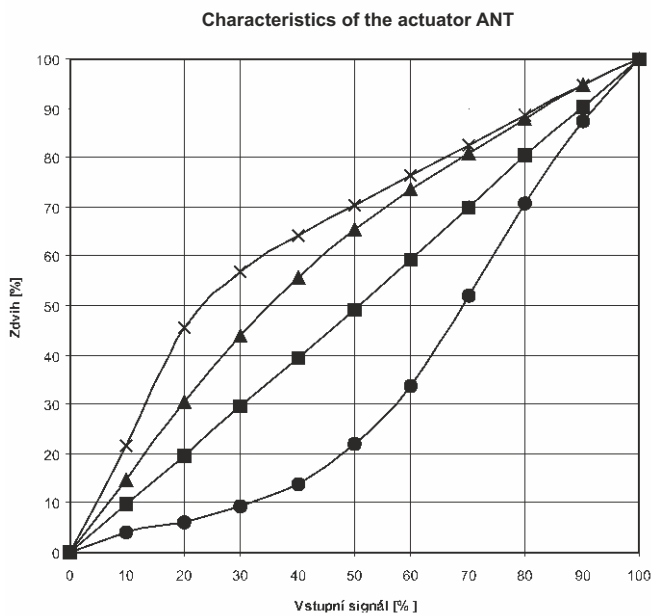
EN 60730 1
EN 60730-2-14
Over-voltage category III
Degree of pollution III

*) HF immunity, limitation of feedback signal between 80 MHz a 1000 Mhz criterion B, otherwise criterion A

Switch coding

Actuator characteristic (switches 3 and 4)

- optional for actuators with floating control only



A (linear)



B (quadratic)



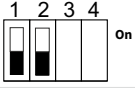
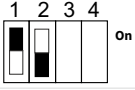
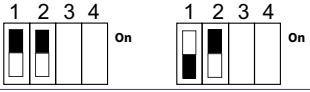
C (logarithmic)



D (equal-percentage)

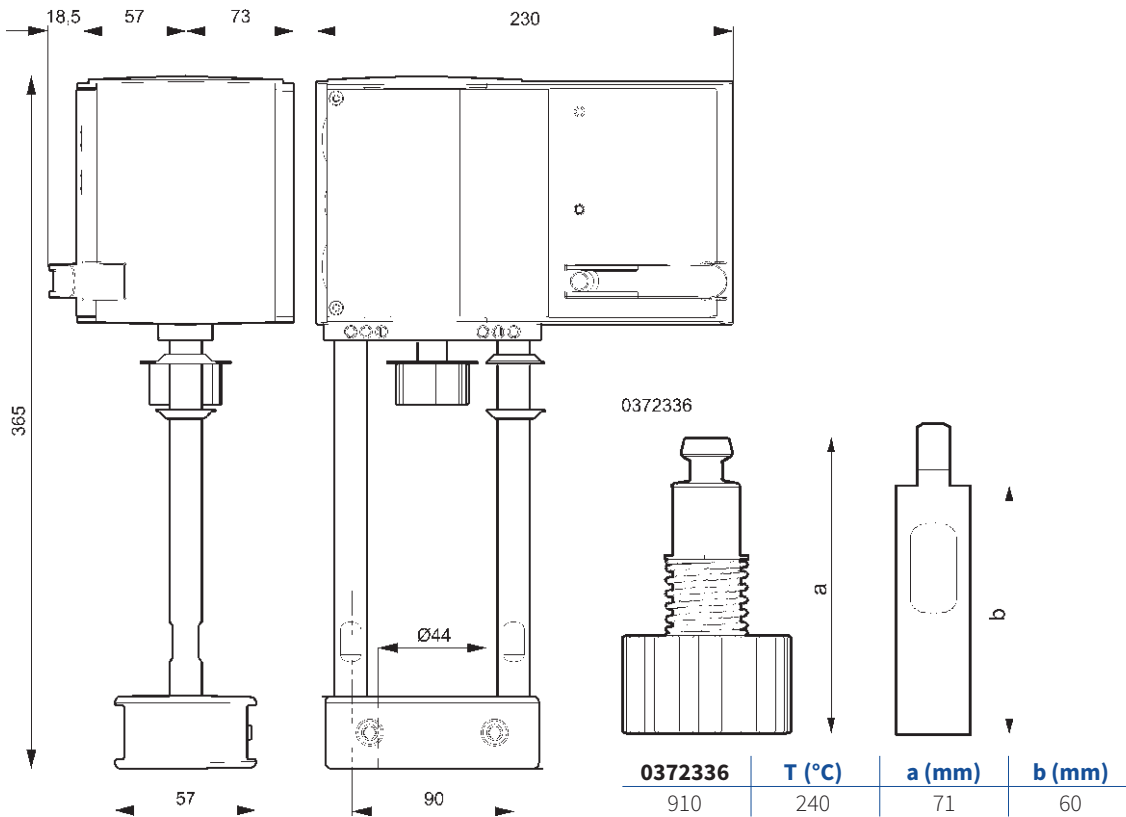
Run time (switches 1 and 2)

- optional for all types of control of the actuator

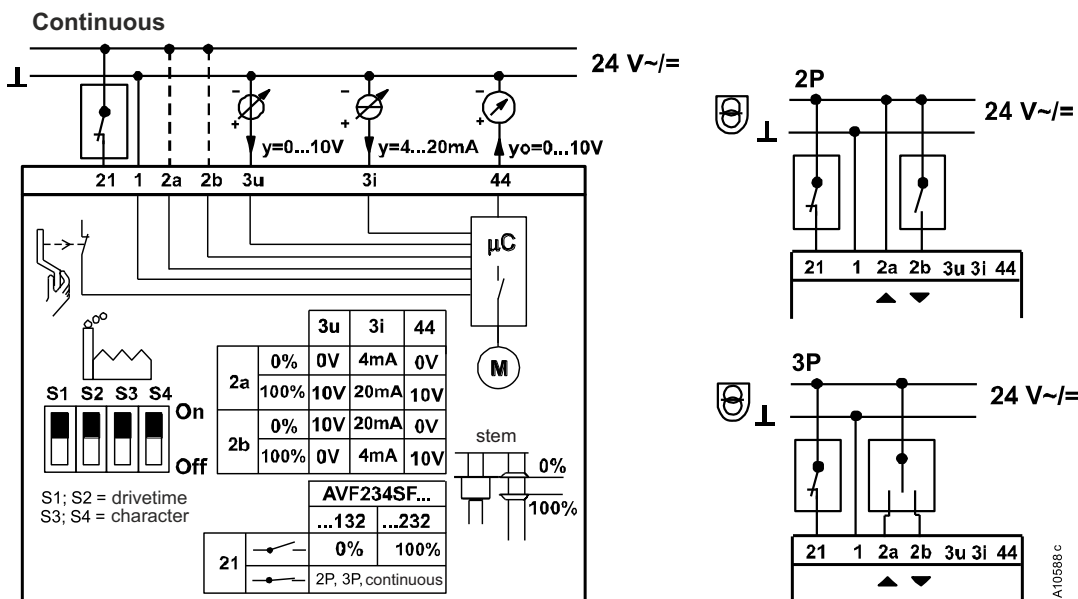
Run time per mm	Switch coding	Run time for stroke 20 mm	Run time for stroke 40 mm
2 s / mm		40 s ± 1	80 s ± 2
4 s / mm		80 s ± 2	160 s ± 4
6 s / mm		120 s ± 4	240 s ± 8

Note: Data in bold mean factory settings

Dimensions of actuator and a mid piece for higher temperatures

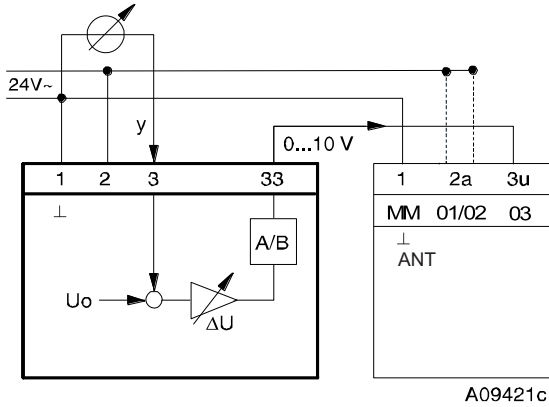


Wiring diagram of actuators

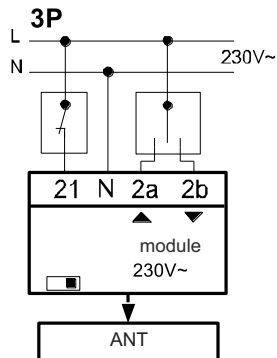
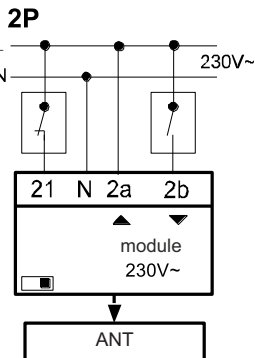
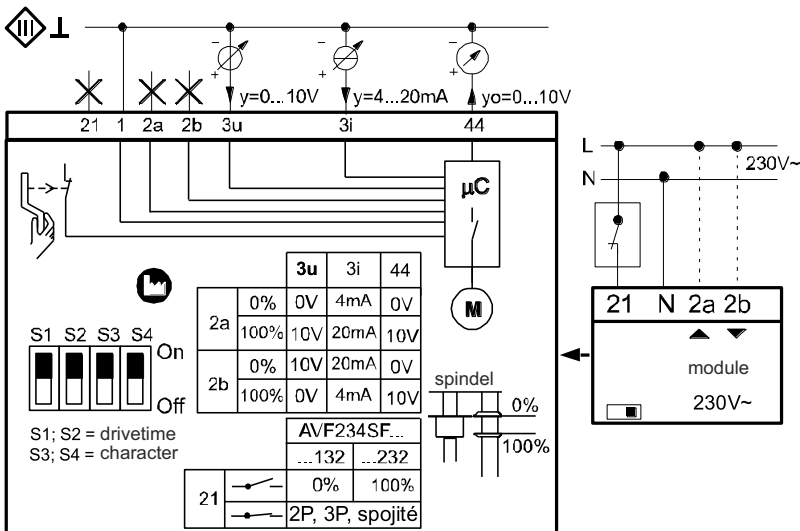


Wiring diagram of accessories

0313529

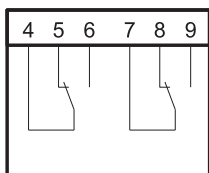


0372332001



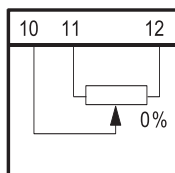
A10663c

372333



A10376

372334



A01363



LDM, spol. s r.o.
Litomyšlská 1378
560 02 Česká Třebová
Czech Republic

tel.: +420 465 502 511
fax: +420 465 533 101
e-mail: sale@ldm.cz

LDM, spol. s r.o.
Office Prague
Podolská 50
147 01 Praha 4
Czech Republic

tel.: +420 241 087 360
fax: +420 241 087 192
e-mail: sale@ldm.cz

LDM, spol. s r.o.
Office Ústí nad Labem
Ladova 2548/38
400 11 Ústí nad Labem
- Severní Terasa
Czech Republic

tel.: +420 602 708 257
e-mail: sale@ldm.cz

LDM servis, spol. s r.o.
Litomyšlská 1378
560 02 Česká Třebová
Czech Republic

tel.: +420 465 502 411-3
fax: +420 465 531 010
e-mail: servis@ldm.cz

LDM Bratislava s.r.o.
Mierová 151
821 05 Bratislava
Slovakia

tel.: +421 2 43415027-8
fax: +421 2 43415029
e-mail: ldm@ldm.sk

LDM, Polska Sp. z o.o.
ul. Bednorza 1
40 384 Katowice
Poland

tel.: +48 32 730 56 33
fax: +48 32 730 52 33
mobile: +48 601 354 999
e-mail: ldmpolska@ldm.cz

LDM Armaturen GmbH
Wupperweg 21
D-51789 Lindlar
Germany

tel.: +49 2266 440333
fax: +49 2266 440372
mobile: +49 177 2960469
e-mail: ldmmarmaturen@ldmvalves.com

OOO "LDM Promarmatura"
Jubilejnyj prospekt,
dom.6a, of. 601
141400 Khimki Moscow Region
Russia

tel.: +7 4957772238
fax: +7 4956662212
mobile: +7 9032254333
e-mail: inforus@ldmvalves.com

TOO "LDM"
Shakirova 33/1
kab. 103
100012 Karaganda
Kazakhstan

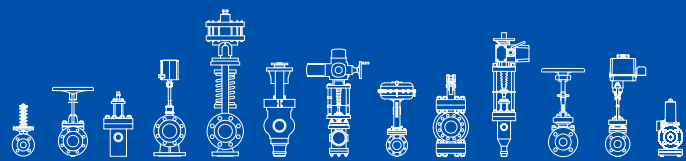
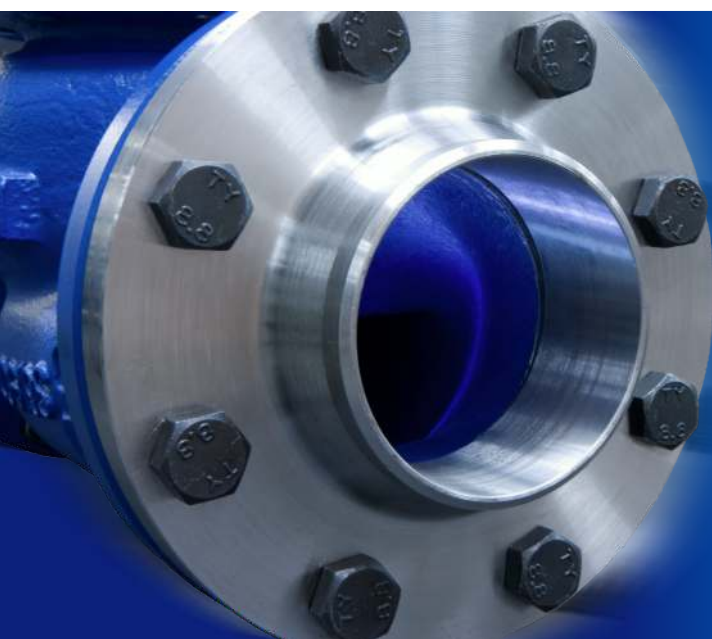
tel.: +7 7212 566 936
fax: +7 7212 566 936
mobile: +7 701 738 36 79
e-mail: sale@ldm.kz

LDM - Bulgaria - OOD
z. k. Mladost 1
bl. 42, floor 12, app. 57
1784 Sofia
Bulgaria

tel.: +359 2 9746311
fax: +359 2 9746311
mobile: +359 888 925 766
e-mail: ldm.bg@ldmvalves.com

www.ldmvalves.com

LDM reserves the right to modify or improve the designs or specifications of such products at any time without notice.



POWER THROUGH IDEAS