**LDM Control valves
COMAR line**

Kv coefficient calculation

Calculation itself is carried out with respect to conditions of regulating circuit and operating medium according to equations mentioned below. Control valve must be designed to be able to regulate maximal flow quantity at given operating conditions. At the same time it is necessary to check whether minimal flow rate can be even regulated or not.

Condition is the following ratio $\qquad$ **r > Kvs / Kv$_{min}$**

Because of possible minus tolerance 10% of Kv$_{100}$ against Kvs and requirement for possible regulation within range of maximal flow (decrement and increase of flow), producer recommends to select Kvs value higher than maximal operating Kv value:

Kvs = 1.1 ÷ 1.3 Kv

It is necessary to take into account to which extent Q$_{max}$ involve "precautionary additions" that could result in valve oversizing.

Relations of Kv calculation

Kv =		Pressure drop $p_2 > p_1/2$ $\Delta p < p_1/2$	Pressure drop $\Delta p \geqq p_1/2$ $p_2 \leqq p_1/2$
	Liquid	$\dfrac{Q}{100}\sqrt{\dfrac{\rho_1}{\Delta p}}$	
	Gas	$\dfrac{Q_n}{5141}\sqrt{\dfrac{\rho_n.T_1}{\Delta p.p_2}}$	$\dfrac{2.Q_n}{5141.p_1}\sqrt{\rho_n.T_1}$

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.

Valve flow characteristics
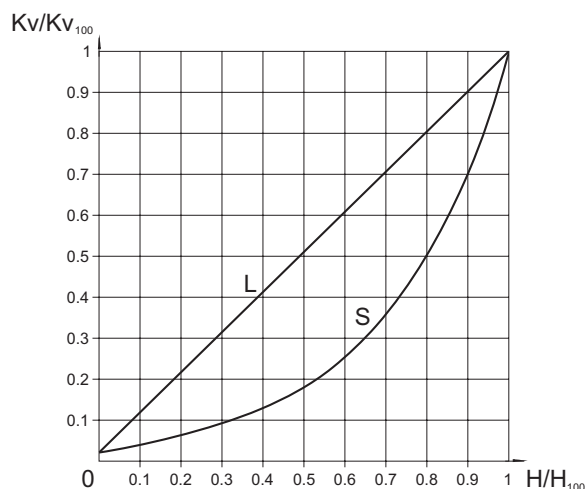

L - linear characteristic
$$Kv/Kv_{100} = 0.0183 + 0.9817 \cdot (H/H_{100})$$
S - LDMspline® characteristic
$$Kv/Kv_{100} = 0.0183 + 0.269 \cdot (H/H_{100}) - 0.380 \cdot (H/H_{100})^2$$
$$+ 1.096 \cdot (H/H_{100})^3 - 0.194 \cdot (H/H_{100})^4$$
$$- 0.265 \cdot (H/H_{100})^5 + 0.443 \cdot (H/H_{100})^6$$

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 +130 °C. The packing excels with its reliability and long time tightness. Its properties ensure safe usage in no-maintanance 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.
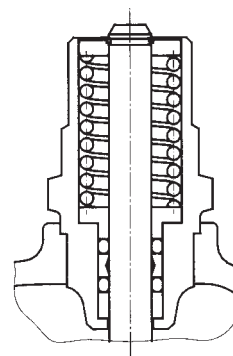
Dimensions and units

Marking	Unit	Name of dimension
Kv	m^3.h^{-1}	Flow coefficient under conditions of units of flow
Kv$_{100}$	m^3.h^{-1}	Flow coefficient at nominal stroke
Kv$_{min}$	m^3.h^{-1}	Flow coefficient at minimal flow rate
Kvs	m^3.h^{-1}	Valve nominal flow coefficient
Q	m^3.h^{-1}	Flow rate in operating conditions (T$_1$, p$_1$)
Q$_n$	Nm^3.h^{-1}	Flow rate in normal conditions (0 °C, 0.101 Mpa)
p$_1$	MPa	Upstream absolute pressure
p$_2$	MPa	Downstream absolute pressure
p$_s$	MPa	Absolute pressure of saturated steam at given temperature (T$_1$)
Δp	MPa	Valve differential pressure ($\Delta p = p_1 - p_2$)
ρ_1	kg.m^{-3}	Process medium density in operating conditions (T$_1$, p$_1$)
ρ_n	kg.Nm^{-3}	Gas density in normal conditions (0 °C, 0.101 Mpa)
T$_1$	K	Absolute temperature at valve inlet (T$_1$ = 273 + t$_1$)
r	1	Rangeability

Simplified procedure for designing of two-way control valve

Given: medium water, 115°C, static pressure at piping spot 600 kPa (6 bar), $\Delta p_{AVAIL.}$ = 40 kPa (0,4 bar), $\Delta p_{PIPELINE}$ = 7 kPa (0,07 bar), $\Delta p_{APPLIANCE}$ = 15 kPa (0,15 bar), nominal flow rate Q_{NOM} =3,5 $m^3.h^{-1}$, minimal flow rate Q_{MIN} = 0,4 $m^3.h^{-1}$.

$\Delta p_{AVAIL.} = \Delta p_{VALVE} + \Delta p_{APPLIANCE} + \Delta p_{PIPELINE}$

$\Delta p_{VALVE} = \Delta p_{AVAIL.} - \Delta p_{APPLIANCE} - \Delta p_{PIPELINE}$ = 40-15-7 = 18 kPa (0,18 bar)

$$Kv = \frac{Q_{NOM}}{\sqrt{\Delta p_{VALVE}}} = \frac{3,5}{\sqrt{0,18}} = 8,25 \ m^3.h^{-1}$$

Precautionary additions for process tolerances (provided that flow rate Q was not oversized):

$$Kvs = (1,1 \ to \ 1,3) \cdot Kv = (1,1 \ to \ 1,3) \cdot 8,25 = 9,1 \ to \ 10,7 \ m^3.h^{-1}$$

Now we choose the nearest Kvs value from those available in our catalogue, i.e. Kvs = 10 $m^3.h^{-1}$. This value corresponds to nominal size of DN 25. Then if we choose threaded valve PN 16 made of grey cast iron, we will get the following specification No.:
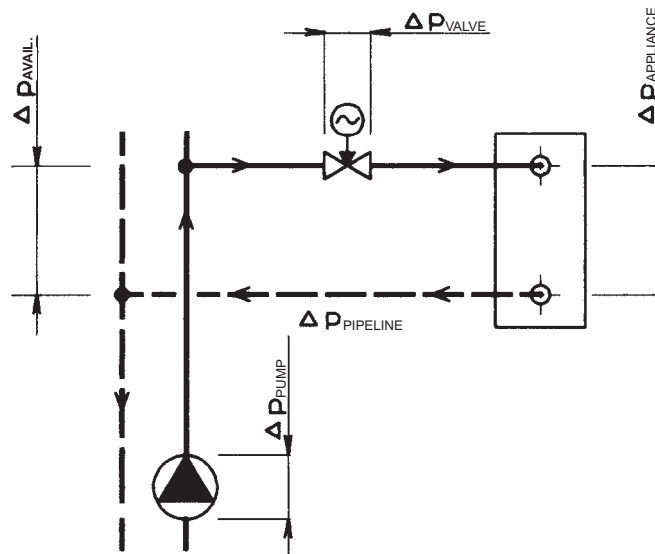
RV 111 R 2331 16/150-25/T

Then we select an appropriate actuator according to the regulation demands.

Determination of real pressure drop value of a chosen valve at fully open with given flow rate

$$\Delta p_{VALVE\ H100} = \left(\frac{Q_{NOM}}{Kvs}\right)^2 = \left(\frac{3,5}{10}\right)^2 = 0,123 \text{ bar (12,3 kPa)}$$

The control valve´s real pressure drop calculated this way shall be taken into account in a hydraulic calculation of regulating circuit.

Determination of valve´s real authority

$$a = \frac{\Delta p_{VALVEH100}}{\Delta p_{VALVEH0}} = \frac{12,3}{40} = 0,31$$

Value <u>a</u> should be at least equal to 0,3. A chosen valve checking is then satisfactory.
Caution: the valve's authority calculation should be related to a valve pressure difference in its closed position i.e. disposition pressure value in a branch $\Delta p_{AVAIL.}$ when flow rate is zero, not to a pressure value of a pump Δp_{PUMP}, because, due to pipeline circuit pressure drops up to the spot where the regulating branch is connected, the following equation applies: $\Delta p_{AVAIL.} < \Delta p_{PUMP}$. In such cases we consider for simplicity the following: $\Delta p_{AVAIL.H100} = \Delta p_{AVAIL.H0} = \Delta p_{DISP}$.

Checking of rangeability

We carry out the same checking for minimal flow rate Q_{MIN} = 0,4 $m^3.h^{-1}$. The following differential pressure values correspond to the min. flow rate: $\Delta p_{PIPELINE\ QMIN}$ = 0,40 kPa, $\Delta p_{APPLIANCE\ QMIN}$ = 0,66 kPa. $\Delta p_{AVAIL.QMIN}$ = 40 - 0,4 - 0,66 = 38,94 = 39 .

$$Kv_{MIN} = \frac{Q_{MIN}}{\sqrt{\Delta p_{VALVE\ QMIN}}} = \frac{0,4}{\sqrt{0,39}} = 0,64 \ m^3.h^{-1}$$

Necessary rangeability value

$$r = \frac{Kvs}{Kv_{MIN}} = \frac{10}{0,64} = 15,6$$

shall be lower than mentioned rangeability value of r = 50. Checking is then satisfactory.

Scheme of typical regulation loop with the application of two-way control valve

Remark: More detailed information on calculation and design of LDM control valves is mentioned in calculation instructions No. 01-12.0. Equations mentiened above apply in a simlified way to water. To reach optimum results, we recommend to use original calculation programme VALVES which is available on request free of charge.

Procedure for designing of three-way mixing valve

Given: medium water, 90°C, static pressure at piping spot 600 kPa (6 bar), Δp_{PUMP2} = 35 kPa (0,35 bar), $\Delta p_{PIPELINE}$ = 10 kPa (0,1 bar), $\Delta p_{APPLIANCE}$ = 20 kPa (0,2 bar), nominal flow rate Q_{NOM} = 5 m³.h⁻¹

$\Delta p_{PUMP2} = \Delta p_{VALVE} + \Delta p_{APPLIANCE} + \Delta p_{PIPELINE}$

$\Delta p_{VALVE} = \Delta p_{PUMP2} - \Delta p_{APPLIANCE} - \Delta p_{PIPELINE}$ = 35 - 20 - 10 = 5 kPa (0,05 bar)

$$Kv = \frac{Q_{NOM}}{\sqrt{\Delta p_{VALVE}}} = \frac{5}{\sqrt{0,05}} = 22,4 \text{ m}^3.\text{h}^{-1}$$

Precautionary additions for process tolerances (provided that flow rate Q was not oversized):

Kvs = (1,1 to 1,3) . Kv = (1,1 to 1,3) . 22,4 = 24,6 to 29,1 m³.h⁻¹

Now we choose the nearest Kvs value from those available in our catalogue, i.e. Kvs = 25 m³.h⁻¹. This value corresponds to nominal size of DN 40. Then if we choose threaded valve PN 16 made of grey cast iron, we will get the following specification No.:

RV 111 R 3311 16/150-25/T

Then we select an appropriate actuator according to the regulation demands.

Determination of real pressure drop value of a chosen valve at fully open

$$\Delta p_{VALVE\ H100} = \left(\frac{Q_{NOM}}{Kvs}\right)^2 = \left(\frac{5}{25}\right)^2 = 0,04 \text{ bar (4 kPa)}$$

The control valve's real pressure drop calculated this way shall be taken into account in a hydraulic calculation of regulating circuit.

Caution: To ensure reliable function of three-way valves, the most important condition is to keep minimum available pressure difference between A and B ports. Three-way valves are capable to manage even high pressure difference between A and B ports but valve's flow characteristic deformates then and so regulation properties deteriorate. So if in doubt about pressure difference value between those two ports (e.g. when three-way valve is piped directly into primary side without pressure separation), we recommend to use a two-way valve in combination with a primary-secondary side short cut to ensure a reliable regulation. The authority of A-AB way of three-way valve is, providing a constant flow rate in appliance circuit, the following:

$$a = \frac{\Delta p_{VALVE\ H100}}{\Delta p_{VALVE\ H0}} = \frac{4}{4} = 1 \quad,$$

which means that the behaviour of flow in A-AB way corresponds to ideal flow curve of the valve. In that case there are Kvs values in both ports the same with linear characteristic i.e. the total flow is nearly constant.
A combination of equal-percentage characteristic in A port and linear characteristic in B port shall be selected in those cases when loading of A port with differential pressure against B port cannot be avoided or when the primary side parametres are too high.

Scheme of typical regulation loop with the application of three-way control valve
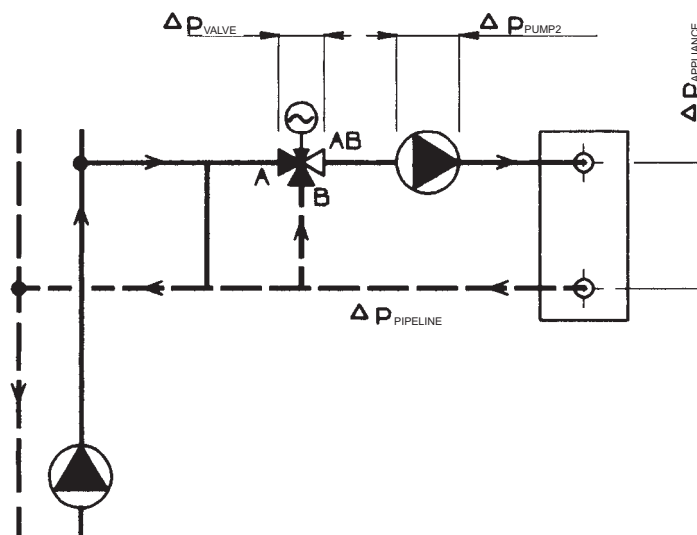
Remark: More detailed information on calculation and design of LDM control valves is mentioned in calculation instructions No. 01-12.0. Equations mentiened above apply in a simlified way to water. To reach optimum results, we recommend to use original calculation programme VALVES which is available on request free of charge.

COMAR line

RV 111

Control valves
DN 15 - 40, PN 16

Description

The valves series RV 111 COMAR are control valves of a compact construction with external threaded coupling connection. The valves excel with minimum dimensions and weight, quality control function and a high tightness in closed position. Thanks to an unique LDMspline® flow characteristic which has been optimized for thermodynamic processes control, the valves are ideal for applications in heating and air-conditioning. In regard of a sophisticated design of internal parts and long service life of packing, the valves fulfill every demand for a long-time service without necessary mainte-nance.

The valves are optionally manufactured either two-way or three-way. The part of the delivery is a screw joint enabling a quick and easy installation to an appliance.

Assembled with electromechanic actuators, the valve can be controlled with 3-point or continuous signal. The part of the delivery is also a hand wheel which can be used for the valve control untill assembling with an actuator.

Application

Used materials for throttling trim which consist of plug made of high-quality stainless steel and soft sealing elemnts, ensure a hermetic tightness in both ports and enable the valves to be used not only in common warm-water and hot-water regulation circuits in heating but also in applications with special characte-ristic features of process medium such as in refrigerating industry and air-conditioning.

Maximal permissible operating pressures in behaviour with process medium tempe-rature are mentioned in table on page 14 of this catalogue.

Process media

The valves series RV 111are suitable for applications where process medium is water or air. Further they can be used for refrigerating media and other non-aggressive liquids or gases with temperature ranging from +2°C to +150°C. The valves are not applicable to conditions with cavitation. Sealing surfaces of control trim are resistant to common sludge or water impurities. Yet it is recommended to pipe a strainer in front of valve to ensure a reliable function and tightness in case there are abrasive particles present.

Installation

The valves can be installed in any position except position when the actuator is under the valve body. The flow direction is indicated on the valve body - inlet ports are indicated by letters A and B, outlet port AB.
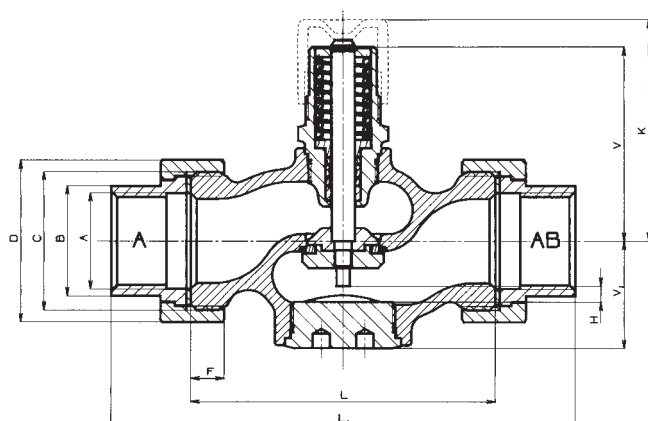
Technical data

| Series	RV 111	
Type of valve	Two-way, reverse, control valve	Three-way control valve
Nominal size range	DN 15 to 40	
Nominal pressure	PN 16	
Body material	Grey cast iron EN-JL 1030	
Plug material	Stainless steel 1.4021	
Operating temperature range	+2 to +150°C	
Connection	Externally threaded coupling + screw joints	
	Flanges with raised faces	
	Externally threaded coupling + weld unions	
Material of weld unions	DN 15 to 32 ... 1.0036	
	DN 40 ... 1.0308	
Type of plug	Contoured or V-ported, with soft seat sealing	
Flow characteristic	LDMspline® , linear	Linear / linear
Kvs value	0.16 to 25 m³/hour	0.25 to 25 m³/hour
Leakage rate	Class IV. - S1 acc. to ČSN-EN 1349 (5/2001) (<0.0005 % Kvs)	
Rangeability r	min 50 : 1	
Packing	O - ring EPDM	

Dimensions and weights of RV 111/T with threaded connection and RV 111/W with weld unions

DN	L	L₁	V	V₁	V₂	V₃	K	A	B	C	D	ØM	ØN	F	H	m 2-way	m 3-way
	mm	mm	mm	mm	mm	mm	mm		mm		mm	mm	mm	mm	mm	kg	kg
15	100	146	67	36.5	50	73	77	Rp 1/2	25	G 1	41	16.1	21.3	9		1.15	1.35
20	100	149	67	36.5	50	74.5	77	Rp 3/4	32	G 1 1/4	51	21.7	26.9	10		1.45	1.75
25	105	160	67	37	52.5	80	77	Rp 1	38	G 1 1/2	56	29.5	33.7	11	5,5	1.7	2.15
32	130	193	78	49	65	96.5	88	Rp 1 1/4	47	G 2	71	37.2	42.4	12		3.0	3.8
40	140	207	78	49	70	103.5	88	Rp 1 1/2	53	G 2 1/4	76	43.1	48.3	14		3.5	4.4

Valves RV 111/T with threaded connection   Valves RV 111/W with weld unions
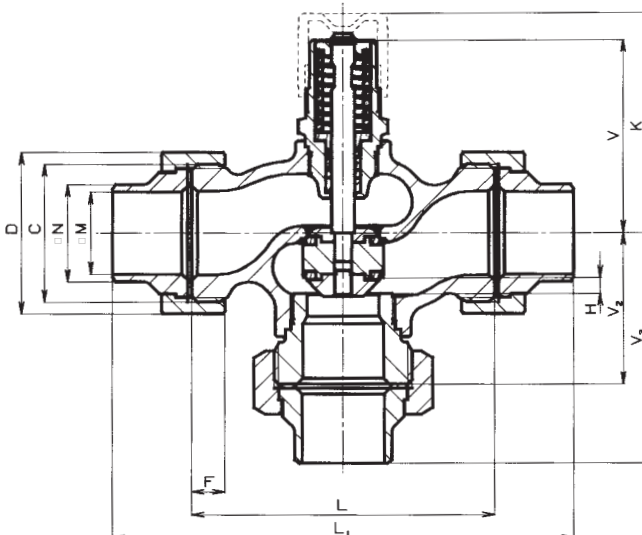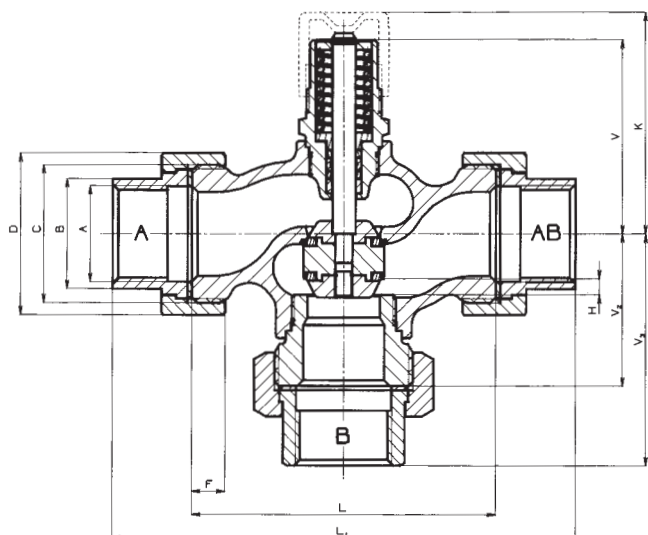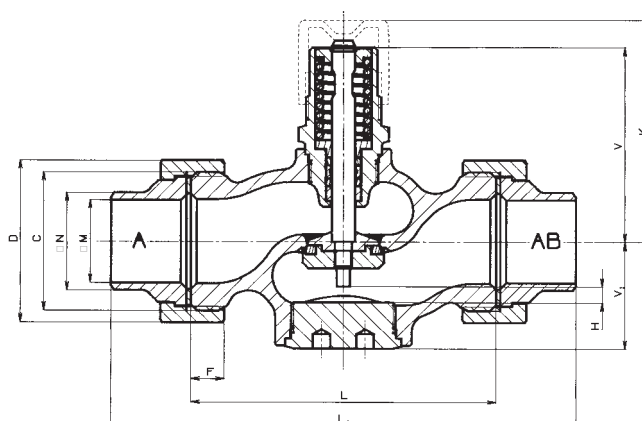
Dimensions and weights of RV 111/F with flanges

DN	L_1	V	V_1	V_2	V_3	$ØD_1$	$ØD_2$	$ØD_3$	a	f	n	Ød	K	H	m 2-way	m 3-way
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm		mm	mm	mm	kg	kg
15	130	67	36.5	42.5	65	95	65	45	16	2	4	14	77		2.3	3.1
20	150	67	36.5	52.5	75	105	75	58	16	2	4	14	77		3.2	4.4
25	160	67	37	57.5	80	115	85	68	18	2	4	14	77	5,5	3.8	5.3
32	180	78	49	70	90	140	100	78	18	2	4	18	88		5.9	8.1
40	200	78	49	75	100	150	110	88	19	3	4	18	88		6.9	9.5

Valves RV 111/F with raised-faced flanges
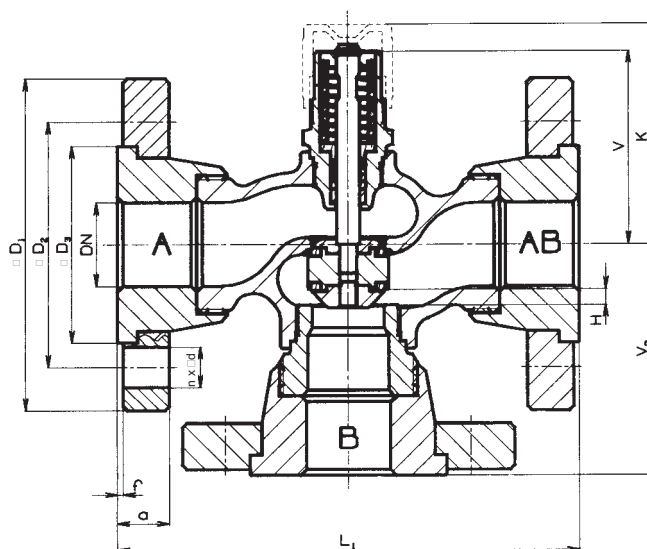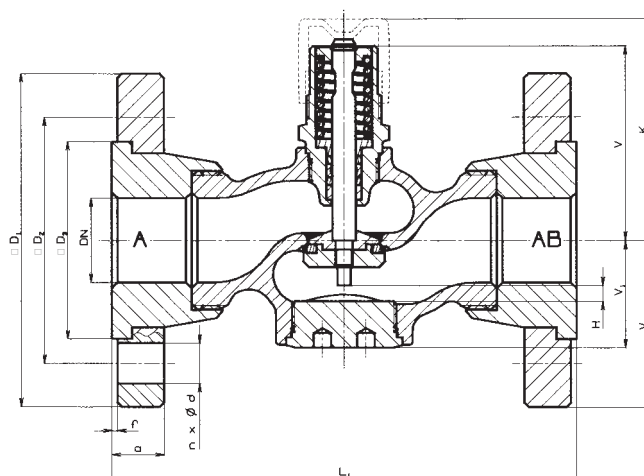
Kvs and differential pressure values

DN	Kvs [m³/hour]								Δ p max
	1	2	3	4	5	6	7	8	kPa
15	4.0	2.5	1.6	1.0	0.63	0.4	0.25	0.16 [1]	400
20	6.3	---	---	---	---	---	---	---	350
25	10.0	---	---	---	---	---	---	---	200
32	16.0	---	---	---	---	---	---	---	110
40	25.0	---	---	---	---	---	---	---	60

Two-way execution DN 15 to 25 - flow characteristic LDMspline®, DN 32 and 40 - flow characteristic linear.

Three-way execution - linear characteristic in both ports.
[1] applies to two-way execution only.

Valve complete specification No. for ordering RV 111 (COMAR)

		XX	XXX	X	XX	X X	XX	/	XXX	-	XX	/	X
1. Valve	Control valve	RV											
2. Series	Valve with external thread		111										
3. Type of actuating	Hand wheel with possibility of using electric actuator			R									
4. Execution	Two-way				2								
	Three-way				3								
5. Body material	Grey cast iron					3							
6. Flow characteristic	Linear (two-way execution DN 32, 40 and three-way execution)					1							
	LDMspline® (two-way execution DN 15 to 25)					3							
7. Kvs	Column No. acc. to Kvs values table					X							
8. Nominal pressure	PN 16						16						
9. Max. temperature °C	150°C								150				
10. Nominal size	DN 15 to 40										XX		
11. Connection	Threaded connection												T
	Raised-faced flanges												F
	Weld unions												W

Ordering example: **RV 111 R 2331 16/150-25/T**

Due to an uniqueness of each version, the valves can be ordered with a simplified code as follows:

Example:
    COMAR DN 25/2/T   two-way valve DN 25 with threaded connection
    COMAR DN 32/3/F   three-way valve DN 32 with flanges
    COMAR DN 15/2-1.6/W   two-way valve DN 15 with weld unions
        (for valves DN 15, Kvs value is mentioned behind the dash)

Table of simplified ordering codes

Kvs	25	16	10	6.3	4.0	2.5	1.6	1.0	0.63	0.4	0.25	0.16
2-way	40/2	32/2	25/2	20/2	15/2-4.0	15/2-2.5	15/2-1.6	15/2-1.0	15/2-0.63	15/2-0.4	15/2-0.25	15/2-0.16
3-way	40/3	32/3	25/3	20/3	15/3-4.0	15/3-2.5	15/3-1.6	15/3-1.0	15/3-0.63	15/3-0.4	15/3-0.25	---

Actuator must be specified separately.

Available actuators

LDM	Electric actuator ANT5.10	AC 24 V, 3-position control
	Electric actuator ANT5.11	AC 24 V, 0..10V, 2..10V, 0..20mA, 4..20mA control
	Electric actuator ANT5.20; ANT5.22	AC 230 V, 3-position control
	Electric actuator ANT5.10S	AC 24 V, 3-position control, fail-safe function
	Electric actuator ANT5.11S	AC 24 V, 0..10V, 2..10V, 0..20mA, 4..20mA control, fail-safe function
Siemens (Landis & Staefa)	Electric actuator SSC31	AC 230 V, 3-position control
	Electric actuator SSC61	AC 24 V, DC 0..10 V control
	Electric actuator SSC61.5	AC 24 V, DC 0..10 V control, fail-safe function
	Electric actuator SSC81	AC 24 V, 3-position control
	Electric actuator SQS 35.00 and SQS 35.03	AC 230 V, 3-position control
	Electric actuator SQS 35.50 and SQS 35.53	AC 230 V, 3-position control, fail-safe function
	Electric actuator SQS 65.5	AC 24 V, DC 0..10 V control, fail-safe function

LDM electric actuators

Description

Electromechanical actuators ANT 5 are designed to control the regulating valves LDM series RV 111 COMAR line. Its connection to the valve ensures a zero clearance between stem of the actuator and the valve so the precise regulating ability is ensured even for minimal position changes. The actuators are self-adaptive. The limit positions are limited by the valve stroke. To communicate with a control system, the actuators are equipped with either standard 3-position control or direct control (options: 0..10 V, 2..10 V, 0..20 mA or 4..20 mA). The version marked "S" contains electronically controlled fail-safe function that is activated by power supply failure at given terminal. In setting mode for the actuators with direct control, it is possible to define a starting position in percentage of the stroke value. The actuator automatically runs into that position when the fail-safe function is induced. As a source of energy for the fail-safe function, there are two NiMH batteries which are continuously charged when the actuator is in operation. All the types of ANT actuator are equipped with hand wheel for manual operating.

Application

The actuators in combination with LDM valves are designed especially for applications in heating, air-conditioning and refrigerating. There they can take advantage of combination of control flow characteristic LDMspline® optimized for heat transfer processes and precision and reliability provided by simple mechanic design. In some applications, it is possible to make use of its fail-safe function which is induced in case of power supply failure and puts the valve to previously defined position.

Properties

- Easy assembly to the valve without the necessity of any adjusting. No tools required.
- Self-adaptive function precisely sets the stroke range according to the limit positions of the valve stroke.
- Hand wheel for operating in case of emergency
- Stroke indicator for information on actual open position of the valve.
- Option of equipping with resistance feedback or adjustable position switch (for actuators with 3-position control)
- Intelligent microprocessor control (for actuators with a fail-safe function and direct control)
- Automatic recognition of presence of impurities between the seat and plug of the valve including an algorithm for self-cleaning function (for actuators with direct control)
- Option of control signal 0..10 V, 2..10 V, 0..20 mA, 4..20 mA (for actuators with direct function)
- Option of selecting a starting position for actuators with direct control and a fail-safe function in range of 0..100% of the stroke.
- Possibility to read history and detection of failures (for actuators with microprocessor)
- Long service life and reliability with a sophisticated and

Technical data for electric actuators ANT 5

Type	ANT5.10	ANT5.11	ANT5.20	ANT5.22	ANT5.10S	ANT5.11S
Voltageí	24 V AC ± 10%		230 V AC ± 10%		24 V AC ± 10%	
Frequency	50 Hz					
Control	3 - position	direct	3 - position		3 - position	direct
Power consumption	1,5 VA	7,0 VA	3,0 VA		7,0 VA	7,0 VA
Nominal force	300 N ± 15%					
Nominal stroke	5,5 mm					
Open-close run time 50 Hz	66 s	13 s	66 s	33 s	33 s	13 s
Fail-safe function	---	---	---		8 s	8 s
Feedback [1]	100 Ω, 1 kΩ	---	100 Ω, 1 kΩ		100 Ω, 1 kΩ	---
Adjustable position switch [1]	PS1	---	PS1		---	---
Impedance of input control signal	---	≥10 kΩ (V) 250 Ω (mA)	---		---	≥10 kΩ (V) 250 Ω (mA)
Adjustable position switch	IP 54 (IEC 60529)					
Medium max. temp.	150°C					
Ambient temp. range	-5 to +55°C					
Ambient humidity range	5 .. 95 % relative humidity					
Storage conditions	-15 to +55°C, 5 .. 95 % relative humidity					
Weight	0,55 kg				0,7 kg	

[1]Optional accessories. One piece of accessory can be used only. Must be specified in order.

Optional accessories

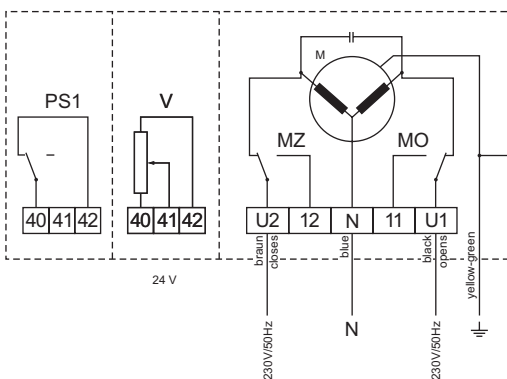|	
Resistance position transmitter 0..100 Ω or 0..1000 Ω	(for 3-position control actuators only)
Adjustable position switch PS1	(only for actuators with 3-position control without a fail-safe function)

Wiring diagrams of actuators
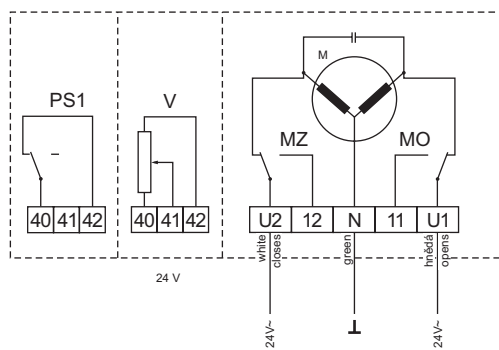
Note: ANT5 ... closes the valve by retracting its stem

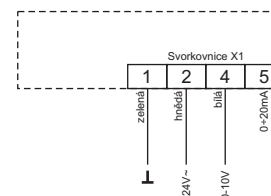### ANT5.20; ANT5.22
3-position control, 230 V / 50 Hz
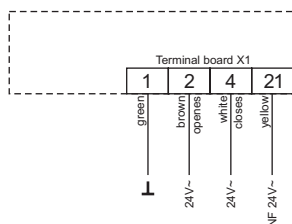
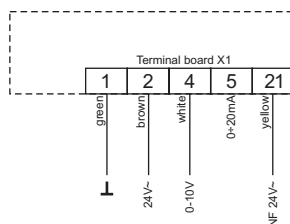### ANT5.10
3-position control, 24 V / 50 Hz

ANT5.11
Control 0-10 V, 24 V / 50 Hz

ANT5.10S

3-position control, 230 V / 50 Hz,
fail-safe function

ANT5.11S

3-position control, 24 V / 50 Hz,
fail-safe function

|	
MO	power switch for "Open" position
MZ	power switch for "Closed" position
M	motor
V	transmitter 100Ω or 1000Ω
21	terminal for fail-safe function
11,12	terminals for end positions signalisation (max. capacity 0,5 A)

Dimensions of actuator

	ANT5.xx
A	142
B	26
C	116
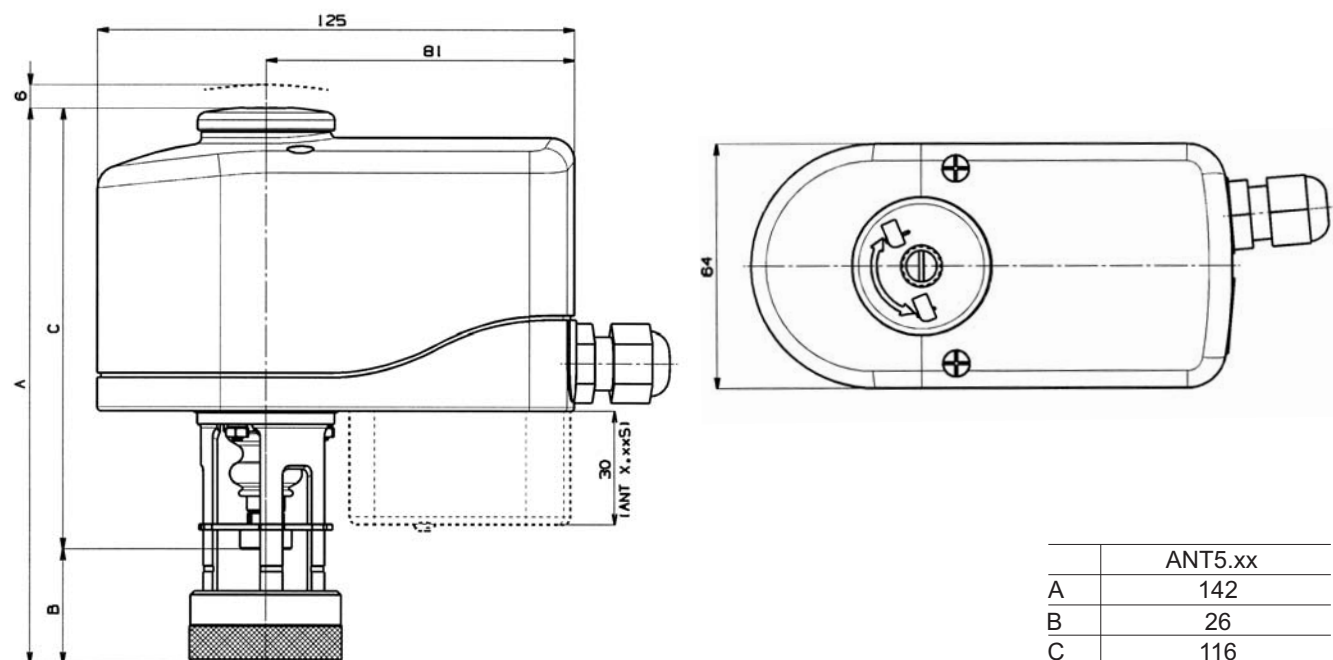
SSC31
SSC61...
SSC81

Electric actuators
Siemens (Landis & Staefa)

Technical data

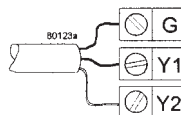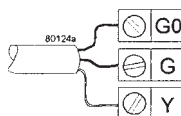| Type	SSC31	SSC61	SSC61.5	SSC81
Voltage	AC 230 V	AC 24 V		
Frequency	50 / 60 Hz			
Motor power	6 VA	2 VA	2 VA (3 VA when condensator fully charged)	0,8 VA
Control	3 - position control	DC 0 - 10 V		3 - position control
Open-close running time	150 s	30 s		150 s
Fail-safe function	---	---	30 s	---
Nominal force	300 N			
Stroke	5,5 mm			
Enclosure	IP 40			
Proces medium max. temp	2 to 110°C			
Ambient temperature range	5 to 50°C			
Ambient humidity range	0 ... 95 % without condensation			
Weight	0,31 kg	0,25 kg	0,27 kg	0,25 kg

Wiring diagram

SSC31
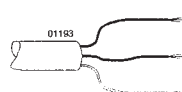
White (7) Y2 Closing of control valve

Black (6) Y1 Opening of control valve

Blue (4) Neutral

SSC81

G — Phase

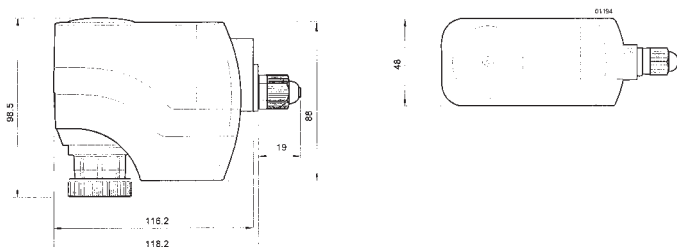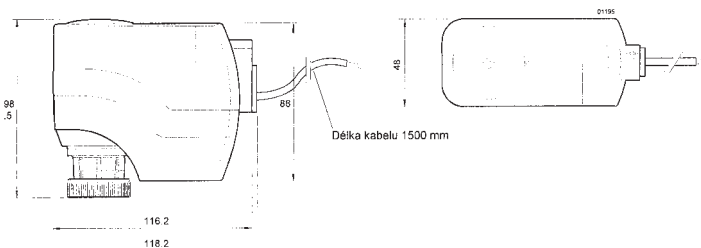Y1 — Opening of control valve

Y2 — Closing of control valve

SSC61...

G0 — System neutral

G — Phase

Y — Control signal 0...10 V

Dimensions of actuator

SSC81, SSC61...

SSC31

Délka kabelu 1500 mm

SQS35...

Electric actuators
Siemens (Landis & Staefa)

Technical data

| Type	SQS 35.00	SQS 35.03	SQS 35.50	SQS 35.53
Voltage	AC 230 V			
Frequency	50 / 60 Hz			
Motor power	2,5 VA	3,5 VA	5 VA	6 VA
Control	3 - position control			
Open-close running time	150 s	35 s	150 s	35 s
Fail-safe action time	---		8 s	
Nominal force	300 N			
Stroke	5,5 mm			
Enclosure	IP 54			
Process medium max. temp.	130°C			
Ambient temperature range	-5 to 50°C			
Ambient humidity limit	Class D, DIN 40040			
Weight	0,5 kg		0,6 kg	

Accessories

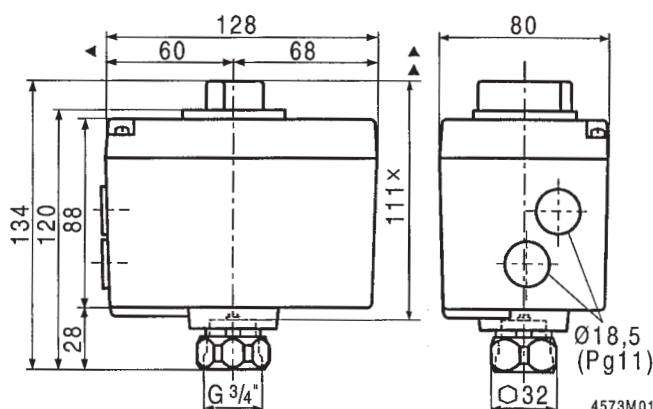| For SQS 35.00 and SQS 35.03	Auxiliary switch ASC 9.6

Wiring diagram

SQS 35.00 and SQS 35.03
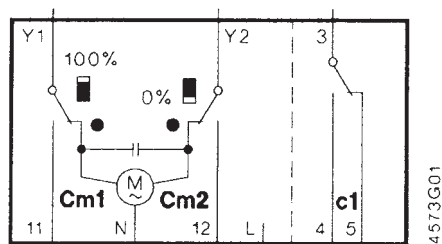
SQS 35.50 and SQS 35.53
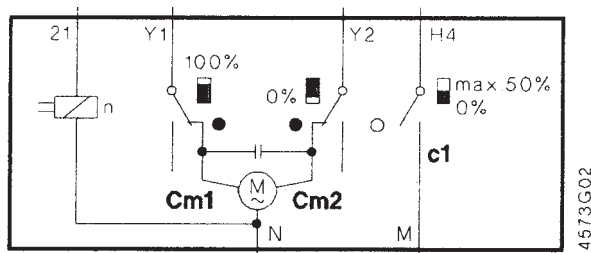
Cm1   end position switch for stroke 100%
Cm2   end positin switch for stroke 0%
c1   auxiliary switch ASC9.6
Y1   opening of control valve
Y2   closing of control valve
21   fail-safe function
N   measuring neutral

Actuator dimensions
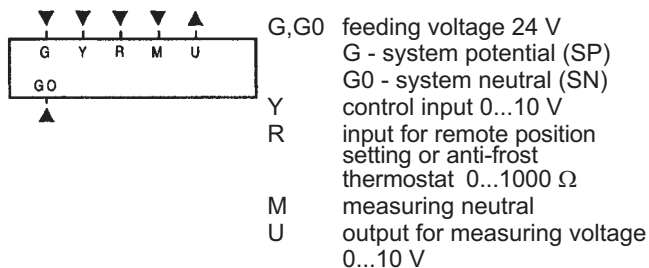

x - dimensions for valve connection

SQS65.5

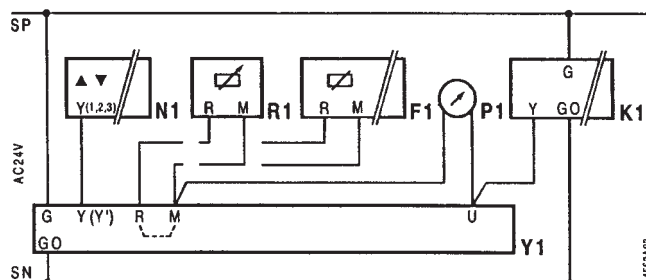## Electric actuator
Siemens (Landis & Staefa)

Technical data

Type	SQS 65.5
Voltage	24 V
Frequency	50 / 60 Hz
Motor power	7 VA
Control	0...10 V
Open-close running time	35 s
Fail-safe action time	8 s
Nominal force	300 N
Stroke	5,5 mm
Enclosure	IP 54
Process medium max. temp.	130°C
Ambient temp. range	-5 to 50°C
Ambient humidity limit	Class D, DIN 40040
Weight	0,6 kg

Wiring diagram

Terminal board

G,G0 feeding voltage 24 V
      G - system potential (SP)
      G0 - system neutral (SN)
Y   control input 0...10 V
R   input for remote position
      setting or anti-frost
      thermostat 0...1000 Ω
M   measuring neutral
U   output for measuring voltage
      0...10 V
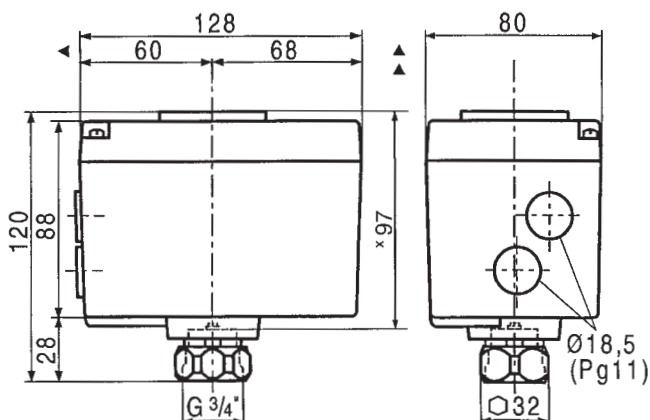
SQS 35.50 and SQS 35.53

F1   anti-frost thermostat
K1   two-position switch
N1   regulator
P1   position indicator
R1   device for remote position control
Y1   actuator

Dimensions of actuator

x - dimension for valve connection

Maximal permissible operating pressures [MPa]

Material	PN	Temperature [℃]										
		120	150	200	250	300	350	400	450	500	525	550
Grey cast iron EN-JL 1030	16	1,60	1,44	---	---	---	---	---	---	---	---	---
(EN-GLJ-200)		---	---	---	---	---	---	---	---	---	---	---