

9-SERIES



Sterile Control Valve

Nominal bores

- DN 10 to 50
- Up to DN 100 optional

Pressure ratings

- PN 10
- Up to PN 63 optional

Operating and maintenance instructions

Armaturen AG**von Rohr**

Pneumatic and electric control valves and appliance

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1. Warning symbols	3
2. Safety advices	3
3. Qualified personnel	3
I. Functional description	4
II. Installation	4
1. Mounting location	4
2. Mounting	4
3. Type plate	4
III. Initiation	5
IV. Maintenance	5
V. Dismounting / mounting the valve	5
1. Procedure	5
2. Actuator	6
3. Cover flange	6
4. Plug / stem / diaphragm	6
5. Sealing elements / guidings	6
6. Details for replacing the diaphragm	6
VI. Sectional drawing / bill of materials	7
VII. Torque table	8
1. Screwed joints general	8
VIII. Spare parts offer / orders	8

1. Warning symbols

Safety advices and warnings are made for preventing danger against life and health of users and maintenance personnel resp. preventing material damage. They are being stressed by the presently described signal terms and in addition marked with warning symbols (pictograms). The applied symbols have the following meanings:

Danger: Death, severe injury and/or significant material damage **will be** the consequence, if the appropriate precautions should not be taken.



Warning: Death, severe injury and/or significant material damage **may be** the consequence, if the appropriate precautions should not be taken.



Caution: Light injury and/or material damage **may be** the consequence, if the appropriate precautions should not be taken.



Note: Important information about the product itself, about how to handle the product, to which special attention is being called.



2. Safety advices

The valve has been exclusively designed for the use according to the specification in our order confirmation. Any other use is not according to the directives. For resulting damages the user alone is liable. Unauthorized changes, as well as the use of non original **von Rohr** spare parts exclude any responsibility for damages caused. Any change brought to the installation is done at the users own risk.



Maintenance and repair operation may only be done by qualified personnel observing the respective directives.

Actuators bring up great actuating power. Assembly and initiation are to be done under strict observation of the security instructions.

It is expressly pointed out to follow the instructions for explosive devices where appropriate.

The following instructions are to be observed before any maintenance operations:

- Drain the conduit.
- Be informed about possible dangers, e.g. caused by residues of the operating medium, and take such measures where appropriate. (e.g. safety gloves, safety glasses, etc.)
- Cool down the valve where appropriate.
- Exclude initiation by third party.
- Counteract pressure pads which may be formed in locked conduits.

3. Qualified personnel

According to the spirit of this manual, such persons are familiar with assembly, initiation and operation of this product, and have the qualifications for executing their function, like:



- Training or instruction according to the actual standards in safety features maintaining and using appropriate safety equipments.
- Training in first aid.
- Training resp. permission to perform tasks with explosive devices.
- Training at von Rohr Armaturen AG, CH-4132 Muttenz.

I. Functional description

Valves of that series are generally used as actuating elements according to DIN 19226. They reduce the pressure of a mass flow through the plug.

The valve's characteristics are the following:

- A parabolic plug executed single leveled in combination with a seat.
- The flow characteristic curve is defined by the shape of the plug.
- Metal sealing between plug and seat.
 - In stroke position 0% a chamfer on the plug actuates the edge of the seat hole and closes the valve.
- Sterile execution, free of dead space.

II. Installation

1. Mounting location

- The valve should be easily accessible from at least one side. Significant heights require the use of a service platform or similar.

2. Mounting

The valve is equipped with welding ends and is welded into the conduit.



Attention should be paid to:

- Mounting position:
 - Vertical inlet (from bottom), horizontal outlet
 - Vertical stem
 - Actuator above the valve

Other mounting positions require special arrangements to support the weight!

- No conduit forces must be transmitted to the valve.
- A straight conduit section with a length of at least $10 \times$ the nominal width needs to be foreseen in front and behind the valve. Installations and branchings are not allowed.

3. Type plate

Armaturen AG			
von Rohr	type		
		S/N	
PN	Δp	bar	kvs
			max. t °C

The type plate contains the following information:

- Type key
- Serial number
- Technical data (PN, Δp , kvs, max. t °C)

Type key and serial number are always to be indicated when submitting inquiries or ordering spare parts.



III. Initiation

- Avoid thermal shock!
 - Get the valve slowly to operation temperature.
- Verify impermeability of the body junctions and stem sealings.
 - Tighten screwed joints crossover where required. See chapter «Torque table» page 8.



IV. Maintenance

- Regularly clean the stem (3).
 - Bring actuator to upper final position and secure.
 - Clean the stem with a soft cloth, in no case use abrasive paper!



The valve is mostly maintenance free. After a long operating period or with significantly changing operating conditions, the steps according to chapter «Initiation» need to be performed where required.

V. Dismounting / mounting the valve

1. Procedure

Pay attention to the notes in chapter «Security advices» on page 3.

- Dismount the valve.
- Clean all parts.
- Assemble inversely:
 - Replace sealings and packings using the new parts.
 - Place dynamically used o-ring seals with o-ring grease where required, if the system handling allows it.
 - Lubricate existing dynamically used graphite seals with Joudol grease (Burgmann) where required, if the system handling allows it.
 - See chapter «Torque table» on page 8 for torques of the screwed junctions.
 - After assembly manually move the plug in upper and lower position. The plug should not jerk or scrape. Where required, loosen the flanged joints, center them to each other and retighten them.

- Initiate the valve according to chapter «Initiation» on page 5.
- To order spare parts, please copy the form on page 8 and fax it to the indicated address.

2. Actuator



- Move actuator to mid stroke position and secure.
- Decouple the actuator and remove it.
 - Note assembly advices of the actuator manufacturer!

3. Cover flange

- Loosen the screwed junctions (2, 3) between body (1) and cover flange (7).
- Remove cover flange (7).
 - The plug (3) and the diaphragm (4) are removed with the cover flange (7).

4. Plug / stem / diaphragm



- Remove bellows (17).
- Remove the plug (3) with the diaphragm (4) from the cover flange (7).
 - Caution! Do not twist the stem (3)!
 - The plug (3) and the stem (3) are one single part and cannot be replaced separately.
- Unscrew hexagon nut (6).
- Remove disc (5).
- Remove diaphragm (4).



- Make sure the bead of the diaphragm lies completely in the designated slot in the cover flange.

5. Sealing elements / guidings

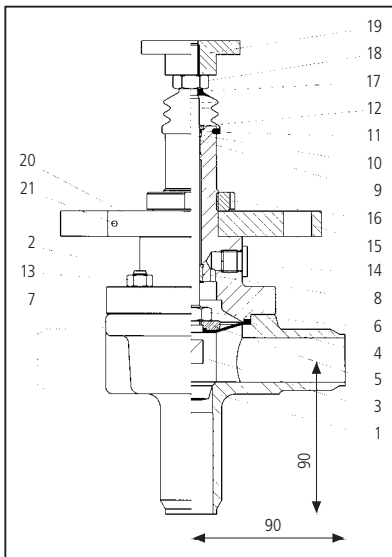
- Replace o-ring (11).
- Replace slide bearing (9).

6. Details for replacing the diaphragm

- To release the plug, start up the valve.
- Give air pressure on the air discharge port on the bottom side of the control valve (previously remove filter).
- Loosen the 4 nuts pos 13 and separate the body from the bonnet (do not twist).
- Loosen counter nut for the coupling on the valve's side, counter hold with appropriate tool.

- Unscrew stem from coupling (count the turns), simultaneously turn the stem to protect the o-ring pos. 11, remove from bonnet pos. 7.
- Clamp the plug together with the diaphragm in the vice between aluminium jaws on hexagon nut, unscrew the plug with a flat wrench without leaving traces on the plug. Remove diaphragm disc pos. 5 and diaphragm pos. 4. Premount manually new diaphragm (mind the direction), disc and nut. It is recommended to secure the nut with solvable Loctite. Clamp the stem with aluminium jaws horizontally into the vice. Tighten the nut pos. 6 with a flat wrench until metallic stop, while counterholding with a second flat wrench on the plug surface.
- Mount plug / stem / diaphragm unit inversely.
- Introduce the stem thread carefully rotating into the o-ring sealing. Screw the counter nut onto the stem.
- Screw the stem into the coupling on the valve's side with as many turns as when demounting, and secure with counter nut.
- Reconnect the air and action actuator in open position.
- Manually move the body to the bonnet, and make sure that the bead of the diaphragm lies correctly in the designated slot and that the body / bonnet guiding is in contact. Verify that the gap between body and bonnet is evenly sized around the device.
- Carefully tighten the nuts pos. 13 crosswise until the gap disappears.
- Ventilate the actuator and screw in the filter element.
- Connect supply air and signal, and start up the control valve according to instructions.

VI. Sectional drawing / bill of materials



Item		Description
1		Body
2		Stud
3	*	Stem with plug
4	*	Diaphragm
5		Diaphragm disc
6		Hexagon nut
7		Bonnet
8		Lower guide bush
9	*	Upper guide bush
10		Ring
11	*	O-ring
12		Disc
13		Hexagon nut
14		Screwed sealing plug
15		Traverse
16		Slotted nut
17		Bellows
18		Hexagon nut
19		Coupling
20		Plate
21		Hammer head bolt

Recommended spare parts are flagged with a *

VII. Torque table

1. Screwed joints general

Screws according to DIN 931

Thread	Torque [Nm]
M6	8,5
M8	14
M10	16

VIII. Spare parts offer / orders

To: von Rohr Armaturen AG
 Fichtenhagstrasse 4
 CH-4132 Muttenz
 Phone +41 (0) 61 467 91 20
 Fax +41 (0) 61 467 91 21
 e-mail: info@von-rohr.ch

Sender

In reference to the serial number(s):

Bill of materials

Item	Description	Quant.
3	Plug with stem	
4	Diaphragm	
9	Upper guide bush	
11	O-ring	

- We would like to request a spare parts bid for the following items
- We would like to order the following spare parts