E-RE-50 02.2021

Coaxial Valves

Series CV10

Operating Instructions

Product identification

CV10	2	D	C	016	F	10	A	G014	A	0

CV10 = Series
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Valve Functions 1
2 = 2/2 way valve
3 = 3/2 way valve

Operating Mode
D = direct acting
E = externally controlled

Valve Functions 2
C = normally closed (NC)
O = normally open (NO)

Operating Pressure (depending on type*)
016 = 0 to 16 bar
040 = 0 to 40 bar
064 = 0 to 64 bar
100 = 0 to 100 bar

Construction Material
F = PTFE / FKM
E = PTFE / EPDM
N = PTFE / NBR
H = PTFE / HNBR

Revision Level
0 = Revision level

Control Mode (depending on type*)
A = 24 VDC
A = without pilot valve

Port Size
G014 = G 1/4
G038 = G 3/8
G012 = G 1/2
G034 = G 3/4
N014 = NPT 1/4
N038 = NPT 3/8
N012 = NPT 1/2
N034 = NPT 3/4

Valve Body Material
A = Aluminium black anodized

Nominal Size
10 = DN10

*see technical data sheet for the relevant valve type

1 About this documentation

These instructions contain important information for the safe and appropriate installation, commissioning and operating of the product.

- Read these instructions completely before using the product.
- in addition, observe all applicable national guidlines for accident prevention and environmental protection.

1.1 Warning notice

In these operating instructions, the warning notices appear at the beginning of the section that contain handling requirements that pose a risk of personal injury or property damage.

Warning notices are structured as follows:

⚠ SIGNAL WORD
Type or source of danger! **Consequences** ▸ Measures to avert danger

- **Warning triangle:** Indicates the risk of death or serious injury.
- **Signal Word:** Indicates the severity of the danger.
- **Type or source of danger:** Shows the type or source of danger.
- **Consequences:** Describes the possible consequences of ignoring the warning.
- **Measures to avert danger:** Shows how the danger can be avoided. It is imperative that the security measures are taken.

⚠ **WARNING**	Indicates a potential hazard which, if not avoided, could result in death or serious injury.
⚠ **ATTENTION**	Indicates a hazard which, if not avoided, could result in minor to moderate injury.
DANGER	Indicates the risk of possible property damage to the product or its environment if these hazards are not avoided.

2 Content of the package

Items included:

- Coaxial Valve
- Accessories (Connector depending on valve type)

3 Notes on usage

The product has been manufactured in accordance with the recognized rules of current technology. If the following safety instructions and warnings in these operating instructions are not observed, there is a risk of personal injury or property damage.

3.1 Intended use

ROSS coaxial valves are used as in-line valves (single valve) and as multiple manifolds (valve block) to control gaseous, liquid, highly viscous and dirty media. Special options are available for vacuum.

The coaxial valves may only be used in industrial areas. Unauthorized changes to the valves are not permitted. Comply with the technical data and the limit values specified on the nameplate (see, among other things, the technical data sheet for the corresponding valve type).

3.2 Use of media (excerpt)

Liquid media – emulsions, oil, water, process water
Highly viscous media – lubricating oils (ISO VG 2 – ISO VG 320),
Lubricating greases (NLGI 0 – NLGI 000)
Contaminated media – cooling lubricant, water, process water
Gaseous **(neutral gases) media** – compressed air
Gases - nitrogen, neon, argon, krypton, xenon. radon, helium, CO2
Abrasive media - on request

If the coaxial valve is operated outside of these media, please contact ROSS Europa GmbH.

3.3 Foreseeable misuse

WARNING

In the event of incorrect use, personal injury and property damage are possible. The forseeable misuse include:

- Use in non-industrial areas, e.g. living areas
- Use outside of the limits of the products defined by the technical data
- Unauthorized changes
- Vacuum operation (see data sheet)

3.4 System operators responsibilities

- Use the coaxial valve only for the purpose described in section 3.1!
- Use the coaxial valve only under the conditions described in section 3.1 and section 3.2 and the respective technical data sheet!
- Install the coaxial valve as descibed in section 4!
- Only control the coaxial valve (electrical interface) as described in section 4.3!
- Make sure that assambly, commissioning and decommissioning of the coaxial valve is only carried out by trained personnel, who have the neccessary knowledge and experience with electrical, pneumatic and hydraulic systems.

3.5 Safety information

- Observe the safety rules and regulations of the country in which the product is used.
- Avoid overvoltages, this can lead to damage to electrical and other components of the valve.
- Corresponding voltage tolerances are listed in the technical data sheet of the respective product.
- If the machine vibrates heavily, use a suitable vibration-damping attachment for the valve.
- Avoid unnecessary connections and mechanical tension.
- Use appropriate lines, pipes for the desired pressure range.
- Protect the device from falling objects.

4 Assambly and installation

ATTENTION

Risk of injury when installing under pressure or with live parts!

If the installation is under pressure or the power is on, personal injury from sudden pressure build-up or electric shock could result.

- Disconnect the power supply and depressurise the system before installing the valve!
- Secure the system against unexpected startup!

DANGER

Damage to components!

Chemical substances can damage the surface, markings and seals of the device.

- Install the valve so that it is protected from the effects of chemcial substances!

Damage to the device due to storage at incorrect temperatures!

The storage temperature corresponds to the permissible ambient temperature and depends on the valve type.

- Note the temperatures in the data sheet for the corresponding valve type.

4.1 Mechanical installation

The valves described in this operating manual may only be installed by competent, appropriately trained personnel. They may only be used within the scope of the „intended use“ described in theses operating instructions. The lines and line connections as well as the electrical control of the coaxial valves must comply with the applicable safety regulations.

- Take the dimensions of your valve from the corresponding data sheet for the valve.

4.2 Pneumatic installation

- Connect the lines to the appropriate ports on the valve.
- Make sure that all ports are closed.
- Seal all unused ports.
- Leakage holes must not be closed.
- Make sure that the operating pressure for the corresponding coaxial valve (see technical data sheet) is not exceeded.

4.3 Electrical installation

Please ensure that the valve is operated with the correct voltage and frequency. ROSS solenoids are designed for continuous operation at 90% - 110% of the voltage specified on the solenoid coil. Multi-range solenoids (e.g. 110 - 120V) are designed for continuous operation at 85% - 90% of the highest specified voltage. Voltages outside of this range can lead to incorrect operation of the valve. With the directly controlled coaxial valve, make sure that it is a direct current solenoid. When using AC voltage, a connection box with a built-in rectifier must be used!

4.4 Lines and pipe connections

Before a valve is installed in the pipe system, this pipe must be flushed to remove impurities. It is recommended to install filters in front ot the coaxial valve.

- Avoid cross-sectional contrictions. Any contriction (e.g. sharp bends or clogged filter elements) reduce the flow rate ot the coaxial valve and cause a higher pressure loss.
- To assemble the piping on the valve, screw the pipe one thread into the valve port. Then apply sealing compound to the thread (soft sealing systems are ideal) and srew the pipe in completely. This prevents sealant from entering the valve and contaminating it.

5 Commissioning and operating

Before commissioning, the installation must be carefully checked by knowledgeable. trained personnel. Install the valve as described in Section 4. The valve may only be used under the conditions as described in Section 3.

- Make sure that the technical data of the valve match the operating criteria of the machine or system.
- Clean the device regularly as dust deposits on heated surfaces can ignite.

5.1 Perform a function test

- Check the valve for leaks at all ports and screw connections.
- Only use aids to search for leaks that neither change the valve nor leave residues behind.
- Check wether the desired position change has occured after actuation; a new leak test may be necessary.

Valve type	Direct acting		passage
2/2-Way	Normally closed (NC)	not actuated actuated	X P → A
	Normally open (NO)	not actuated actuated	P → A X
3/2-Way	Normally closed (NC)	not actuated actuated	P → R P → A
	Normally open (NO)	not actuated actuated	P → A P → R
Valve type	**Externally controlled**		**passage**
2/2-Way	Normally closed (NC)	not actuated actuated	X P → A
	Normally open (NO)	not actuated actuated	P → A X
3/2-Way	Normally closed (NC)	not actuated actuated	P → R P → A
	Normally open (NO)	not actuated actuated	P → A P → R

5.2 Working pressures and temperatures

The minimum and maximum pressure and operating temperature are specified for each coaxial valve (see technical data sheet or the Chapter8). Operating the valve within the specified ranges will help increase valve life. If you need to use the valve outside of these limits, you should contact ROSS.

5.3 Pilot pressure

Electropneumatically pilot controlled coaxial valves are supplied with pilot air externally as standard. To ensure that the valve functions properly, the pilot pressure must match the information on the nameplate or the data sheet.

6 Decommissioning and dismantling

ATTENTION

Risk of injury from dismantling under pressure or tension!

Dismantling under pressure or with electrical voltage applied can lead to injuries due to sudden pressure build-up or electric shock.

- De-pressurize and de-energize the relevant part of the system before you dismantle the valve.
- Secure the system against unexpected startup!

7 Disposal

Dispose of the coaxial valve in accordance with the applicable legal regulations in your country.

8 Technical specifications*

*For full technical information, see the data sheet for the relevant valve type.

Functionality	Direct acting	Externally controlled
Type of operation	electromagnetic	pneumatic / with pilot valve
Ambient temperature	-10°C to +50°C	-10°C to +80°C
Media temperature	-10°C to +100°C	-10°C to +130°C
Electrical parameters	see data sheet	
Pneumatic drive		see data sheet
Pressure range	0 to 40 bar	0 to 100 bar
Back pressure	0 to 16 bar	
Functions	normally open (NO) / normally closed (NC)	
Orientation	any	
Nominal size	DN10	
Port sizes	G 1/4 - G 3/4 and NPT 1/4 - NPT 3/4	
Media	gaseous, liquid, highly viscous, gelatinous, pasty, contaminated	
Material valve seat	PTFE	
Sealing material static	FKM (Standard), EPDM, NBR, HNBR	
Sealing material dynamic	PTFE	
Connectors	anodized aluminium	
Control tube	1.4571	
Mounting	mounting brackets (accessories)	
Functions	2/2 way / 3/2 way	

k_v-Values of the valve series				
k_v-Value	G 1/4	2.1 m³/h	NPT 1/4	2.1 m³/h
	G 3/8	3.2 m³/h	NPT 3/8	3.2 m³/h
	G 1/2	3.7 m³/h	NPT 1/2	3.7 m³/h
	G 3/4	3.7 m³/h	NPT 3/4	3.7 m³/h

9 Service, repair, maintenance

In the event of technical problems or repairs, contact your local ROSS service.When used as intended, maintanance of the coaxial valves is only required after the valve seat is worn down. Unless otherwise requested, ROSS recommends performing a function test at least once a year, but at latest after 2 million cycles. (see chapter 5.1 „Performing a function test“).

- Only ROSS spare parts may be used to rapair ROSS products. Failure to comply may impair the function of the products and lead to the risk of accidents.
- All ROSS products, including repair kits and spare parts, may only be installed and / or serviced by trained, experienced specialists.
- All switches and relays that are part of the valves external electrical system must be in good working order to avoid malfunctions of the solenoids.

9.1 Maintenance of the valve seat

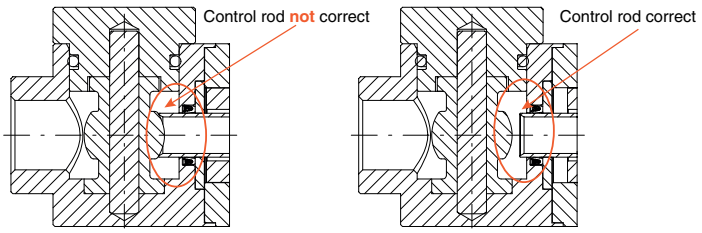
In many cases it is not necessary to remove the coaxial valve for maintenance. For maintenance, however, make sure that the system is depressurized.

ATTENTION

The control tube must not be on the valve seat!

▸ With normally closed valves (NC) - the valve must be pilot-controlled / activated accordingly in the depressurized state.

ACHTUNG



To replace or turn the sealing element, get the valve in the open position (turn on if NC)

Follow the instructions below to replace the valve seat:

1. (Fig. 2) Loosen the four screws on the valve cover.
2. (Fig. 3) To lift the valve cover, you need two screws that correspond to the next screw size.
3. (Fig. 4) These screws serve as a removal aid. By screwing the screws into the thread in the cover, the valve cover is released from the thread.
4. (Fig. 5) The valve seat can be removed and cleaned.
5. (Fig. 6) The valve seat can now be turned into a new sealing position accordingly (turn 90° further). Reinstall the valve seat accordingly.
6. Screw the valve back together with the four screws (Fig. 2).
7. After commissioning, check wether the seating position has changed after actuation, check the valve for leaks, a leak test may be necessary.

Instructions for replacing the valve seat

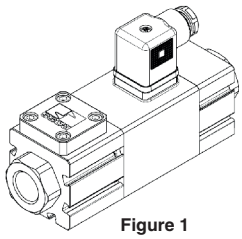
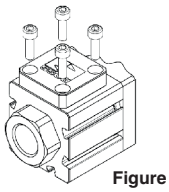


Figure 1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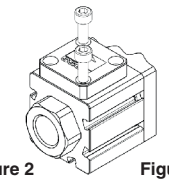
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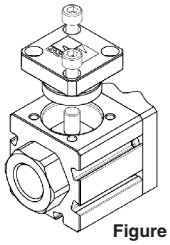
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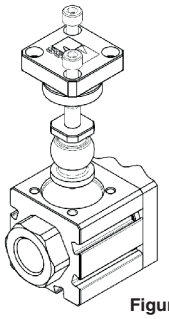
Figure 5

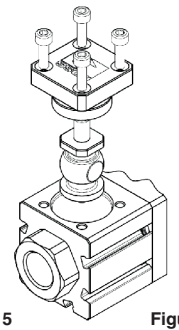
Figure 6

9.2 Maintenance of the valves

The coaxial valve as a pilot operated and directly controlled variant is only intended for maintenance on the valve seat, see point 9.1.

All other valve elements are excluded for repair and maintenance.

If you carry out unauthorized repairs on other valve elements that are not listed in these operating instructions, ROSS is not liable.

ROSS EUROPA GmbH
Germany
Phone: +49-6103-7597-100
sales@rosseuropa.com
www.rosseuropa.com

manufactIS GmbH
Germany
Phone: +49-201-316843-0
info@manufactis.net
www.manufactis.net

ROSS CONTROLS
U.S.A.
Phone: +1-248-764-1800
Customer Svs. 1-800-GET-ROSS
(438-7677)
Technical Svs. 1-888-TEK-ROSS
(835-7677)
sales@rosscontrols.com
www.rosscontrols.com

ROSS ASIA K.K.
Japan
Phone: +81-42-778-7251
custsvc.ra@rosscontrols.com
www.rossasia.co.jp

ROSS UK Ltd.
Great Britain
Phone: +44-1543-671495
sales.uk@rosscontrols.com
www.rossuk.co.uk

ROSS CONTROLS INDIA Pvt. Ltd.
India
Phone: +91-44-2624-9040
ross.chennai@rosscontrols.com
www.rosscontrols.com

ROSS SOUTH AMERICA Ltda.
Brasil
Phone: +55-11-4335-2200
vendas@rosscontrols.com
www.rosscontrols.com.br

ROSS FRANCE SAS
France
Phone: +33-1-49-45-65-65
sales@rossfrance.com
www.rossfrance.com

ROSS CONTROLS (CHINA) Ltd.
China
Phone: +86-21-6915-7961
sales@rosscontrols.com.cn
www.rosscontrolschina.com

ROSS CANADA
Canada
Phone: +1-416-251-7677
sales@rosscanada.com
www.rosscanada.com

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