



INSTALLATION, SERVICE AND MAINTENANCE INSTRUCTIONS

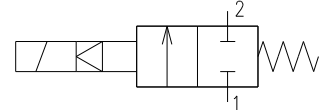
***Two-way solenoid valves
Normally closed (NC)
Ex versions pilot operated
designed for explosive environments***

***Types: 2VE10DA N-Ex , 2VE12DA N-Ex
2VE13DA N-Ex, 2VE16DA N-Ex
2VE25DA N-Ex, 2VE32DA N-Ex
2VE40DA N-Ex, 2VE50DA N-Ex***

1 Use

Two-way solenoid valves, 2VExxDA N-Ex, are designed for on/off control of water flow, air and other non-aggressive media appropriate given the materials used for valves. The control signal is electric. The valve is shut off in the basic position without voltage. After bringing voltage to the coil the valve opens and the medium starts to flow.

These solenoid valves are intended for use in explosive environments (consisting of mixtures of air and gases, vapours or mists or by air/dust mixtures) – **Equipment-group II – above the ground** (not mining environments), **Category 2** (likely to occur in normal operation occasionally), **Zone 1** (concerning explosive atmospheres caused by mixtures of explosive gasses “G” or vapours and air) and **Zone 21** (concerning explosive atmospheres caused by mixtures of explosive dust “D” and air) **under Directive 94/9/EC of the European Parliament and the Council** of 23 March 1994 (the ATEX Directive) (on 20 April 2016 replaced by the Directive 2014/34/EU), transposed in the Decree of the Government of the Slovak Republic No 117/2001 Coll. (on 20 April 2016 replaced by the Decree No 149/2016 Coll.).



2 Technical data of valves according to TP 75 0277/98

Type	Diameter DN [mm]	Connection	Operating pressure [MPa]		Medium temperature [°C]	Flow rates [m ³ /h]	Ambient temperature [°C]	Weight [kg]	Voltage	
			Min.	Max.						
2VE10DA N-Ex	10	G 3/8	0.03	1.0	max. 80	1.6	-10 ÷ +50	AC/DC	0.7	
2VE12DA N-Ex	12	G 1/2				2.2				0.7
2VE13DA N-Ex	13	G 1/2				3.0				1.1
2VE16DA N-Ex	16	G 3/4				3.6				1.0
2VE25DA N-Ex	25	G 1				8.5				1.8
2VE32DA N-Ex	32	G 1 1/4				17.5				3.6
2VE40DA N-Ex	40	G 1 1/2				18.5				3.2
2VE50DA N-Ex	50	G 2				38				5.0

Remarks:

Used materials

body, flange – brass; core, core guider – stainless steel, short circuit ring – copper, seals – NBR and FPM (solenoid)

Coil loading

permanent

Coil protection

coils with connector Nass Magnet System 13-36 ATEX are designed for use in potentially explosive atmosphere of mixtures of air and gasses, vapours and mists – **marked according to the Directive Ex II 2G Ex mb IIC T4**, or dust-air mixtures – **marked as Ex II 2D Ex mb tb IIIC T130°C IP 65** (coil with a plug covered by encapsulation material – ignition source is encapsulated)

3 Operation description

The valve consists of a body (10), flange (9) and solenoid. The valve body has two necks with internal thread to be connected to the pipeline. There is a diaphragm (2) inside the body and a flange shutting off the media flow through the valve. The solenoid consists of a coil (1), core guider (5) and a core with seal (3).

At the basic position, no voltage in the coil, the medium flowing through the valve's inlet neck gets through the opening in the diaphragm into the space above the diaphragm and the solenoid core and presses the diaphragm against the seat in the body. The valve is shut off. After bringing voltage to the coil the solenoid core opens the auxiliary hole which connects the space above the diaphragm and the outlet neck. This will cause a drop in the pressure above the diaphragm in comparison with the pressure under it. The pressure difference makes the diaphragm open and the medium flows through the open valve.

4 Installation

Before the installation of valves, clean the pipeline of any remains of suspended solids that may cause malfunction of valves. If the medium used contains solids, it is required to install a filter with fineness of 0.2 mm. The solenoid must not be used to capture the torque while it is being installed into the pipeline.

The working position of valves is both on and off. The preferentially recommended installation to horizontal pipelines is the one with the coil above the body. The medium should only flow in the direction of the arrow marked on the body. The valve prevents leaks and works properly only in the designated flow direction.

5 Electrical installation

Connect the coil in compliance with electrical regulations. Before connecting the coil, check the compliance of the coil's electrical data and the voltage supply. The electric cable is efficiently sealed in the terminal and is supplied as part of the solenoid along with the plug.

The electric connector plug ensures IP 65 protection of the coil. The coil can be turned at the valve by 360°.

Connect the voltage supply to the coil after it has been installed on the valve, the AC coil may be damaged while being connected unless it is slipped over the coil guider!!!!!!!!!!!!!!

The coils are under the ATEX Directive 94/9/EC classified as **temperature class T4 – for use in areas with explosive atmosphere consisting of a mixture of flammable gasses ("G") or vapours with air of ignition temperature over 135°C !!!!!, or for areas with explosive atmosphere consisting of a mixture of flammable dusts ("D") with air of ignition temperature over 130°C !!!!!** according to STN EN 60079-14. The cable connection from the connector is an electric cable, type H05VV-F 3G1 in the length of 3 m.

Max. frequency of turning valves on/off:

- 2VE10DA N-Ex to 2VE25DA N-Ex for air	120 switch on/min
- 2VE10DA N-Ex to 2VE25DA N-Ex for liquids.....	40 switch on/min
- 2VE32DA N-Ex, 2VE40DA N-Ex for air.....	100 switch on/min
- 2VE32DA N-Ex, 2VE40DA N-Ex for liquids.....	30 switch on/min
- 2VE50DA N-Ex for air.....	30 switch on/min
- 2VE50DA N-Ex for liquids.....	10 switch on/min

Solenoid coil voltage:

- basic versions.....	230 V / 50 Hz of input power 7.0 VA 24 V / DC of input power 10.1 W
- optional versions.....	110 V / 50 Hz of input power 9.1 VA
- permitted voltage deviation.....	±10%

6 Operation

Before pressurising the pipeline in which the valve has been installed, it is required to check the correctness of the installation and verify the valve's performance by bringing voltage (an audible slap when when it is switched on).

Operating conditions must be in compliance with the specified technical data of the valves. Temperature and the type of medium controlled must be in compliance with the valve's seals and materials used that the valve gets in contact with.

For proper operation the valve requires a minimum difference of working pressure (min. 0.030 MPa=30 kPa) between inlet and outlet!!!

The valves are not resistant against medium freezing that may damage it. In the event the medium in the valve freezes, the valve must not be switched because the coil may be damaged. The valves are designed for use in closed rooms (buildings) with natural ventilation without artificially regulated climatic conditions, where there is no effect of atmospheric precipitation, solar radiation and condensation of humidity.

Working ambient temperature is -10°C to +50°C.

Maximum viscosity of a flowing medium is 20 mm². s⁻¹.

7 Service

When correctly connected and operated under working conditions the valve does not require any service. It is only required to check the performance and leakage of the valve and its connections.

8 Maintenance

Maintenance is necessary in case of valve failure only (failure to operate, leakage). Failure to operate may be caused by e.g. breaking the coil winding, mechanical damage to the core guider and sealing or by expiration of its life. The cause of failure may be eliminated by replacement of the damaged part or by replacement of the entire valve. Preventative maintenance is recommended with respect to working conditions in the cases of high frequency of switching on or greater pollution of the medium. This may prevent malfunctions of valves. Repairs and maintenance may only be performed in the event the device is free of pressure and voltage, and may only be performed by qualified staff.

After being repaired it is recommended that the valve should be checked for pressure strength and leakage in the external environment by 1.5 times the maximum working pressure. The test may be conducted with the valve open or shut off. The valve must not be switched during the test.

9 Spare parts

Spare parts are not included with the product. Any required spare parts may be ordered with the manufacturer by referring to the type of valve, name and position of the part according to the picture and quantity. As for the coil its value and type of voltage should be noted.

10 Warranty and service

The product has been tested by the manufacturer according to the current documentation. The manufacturer shall be responsible for the solenoid valve properties for 12 months since its delivery, unless there was a different warranty period set out in the purchase agreement. The manufacturer shall be responsible for the fact that the product has properties given by technical standards, technical conditions, legal regulations or properties agreed in the purchase agreement.

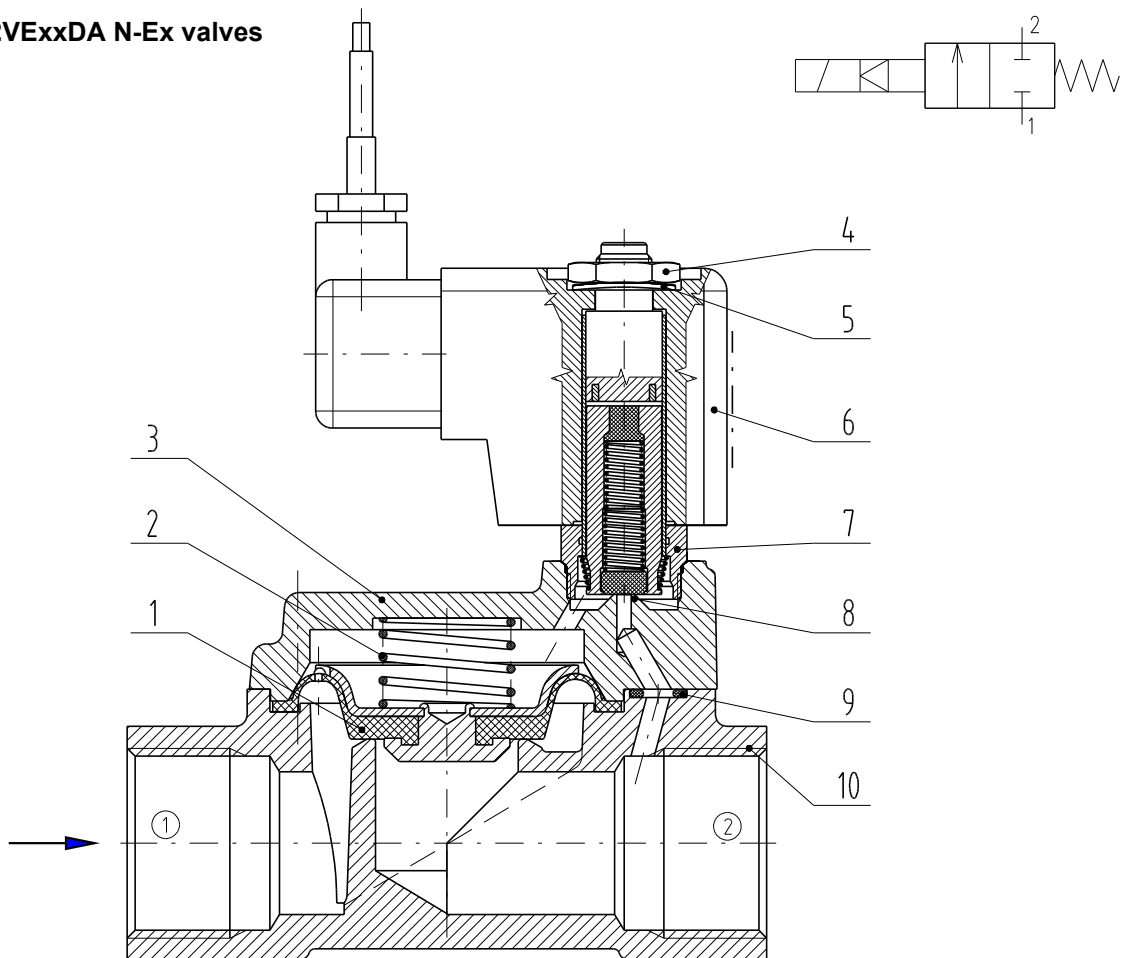
The warranty shall not cover any malfunctions caused by inappropriate or violent interventions with the product. The manufacturer shall not be responsible for any deterioration of product properties or damage caused by the buyer by failing to respect these instructions, or someone else by inappropriate storage, incorrect installation of the product or for damages caused by natural disasters.

Warranty and post-warranty repairs are performed by the manufacturer or organizations authorised by him that have a certificate issued by the manufacturer.

11 Product disposal

The components and packaging may be recycled after being dismantled. The product is not a source of environmental pollution and does not include any hazardous waste.

Cross-section of 2VExxDA N-Ex valves



Legend

- 1 – diaphragm subset
- 2 – diaphragm spring
- 3 – flange
- 4 – coil nut
- 5 – flexible curved washer
- 6 – coil with a plug
- 7 – core guider – control fittings (operator)
- 8 – solenoid control saddle
- 9 – O-ring
- 10 – body