

# Piezo-pneumatic switch valve Type S9/S29

Intrinsically safe according to ATEX

Operating instructions

Version 01

ID no.: PS09567A

  
**HOERBIGER**  
*because performance counts*



Version: 01  
Date: 2018

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# 1 Notes about using the operating instructions

## 1.1 About these instructions

These operating instructions describe how to work, operate, and maintain the piezo-pneumatic switch valves S9-G $\frac{1}{4}$ , S9-G $\frac{1}{8}$ , S29-G $\frac{1}{4}$ . They provide important notes for safe and efficient use of the product.

1. The operating instructions are part of the product. Keep the operating instructions carefully.
2. Transfer the operating instructions to any subsequent owner or user.

For additional information, contact the manufacturer at the following address:

HOERBIGER Flow Control GmbH  
Südliche Römerstraße 15  
86972 Altenstadt  
Germany

Information on the Internet: [www.hoerbiger.com](http://www.hoerbiger.com)

## 1.2 Warnings used

Warnings warn about dangers that can occur when handling the product. There are four danger levels with the following signal words:

Signal word	Meaning
DANGER	Identifies a danger with high risk that can cause death or severe injury.
WARNING	Identifies a danger with a medium risk that can cause death or severe injury.
CAUTION	Identifies a danger with a low risk that can cause slight or moderate injury.
NOTICE	Identifies a danger that can cause property damage.

## 1.3 Symbols



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This symbol indicates useful and important information.

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- ✓ This symbol stands for a prerequisite that must be fulfilled before performing an action.
- ⇒ This symbol stands for an individual action to be performed.
- 1. Numbers indicate several steps to be performed in an action instruction: Step 1
- 2. Step 2
  - ↳ This symbol stands for the intermediate result of an action.
  - ↳ This symbol stands for the result of an entire action instruction.

## 1.4 Abbreviations

Term / Abbreviation	Explanation
Ex area	Area subject to explosion
GSD	Device socket
LED	Light Emitting Diode
NG	Normally closed
NO	Normally open
RF	Reset with spring

## 2 Basic safety instructions

### 2.1 General notes

The product was constructed, manufactured, and tested according to the following standards and safety regulations:

- EMC directive 2004/108/EC

Furthermore, the following harmonized standards and other standards were applied:

- EN 61000-6-2 Electromagnetic compatibility (EMC); generic standard for immunity to interference; industrial sector
- EN 61000-6-4 Electromagnetic compatibility (EMC); generic standard for emitted interference; industrial sector

For this specification, a screened connection cable must be used.

The CE mark is on the valve's type plate.

### 2.2 Intended use

The piezo-pneumatic switch valves with two valve type series serve to control compressed air in the commercial/industrial sector (measuring and control technology) with additional requirements for explosion protection for intrinsically safe applications. They fulfill all requirements for installation in intrinsically safe electric circuits.

Typical areas of application are pneumatic process flow controls and process technology (turning and positioning drives) in measuring and control technology with special demands for low energy consumption and the lowest self-heating.

1. To ensure perfect, risk-free function and a long life span of the device, follow the notes in these operating instructions and adhere to the usage conditions and permissible data according to the data sheet and type plate.
2. The usage planning and operation of the device must be done according to the recognized rules of technology.
3. Prevent unintentional activations or impermissible interference by taking suitable measures.



1. Design the control system so that no hazardous situation can arise due to a failure of the valve. The valve is not a safety component for functional safety according to EN ISO 13849-1.
2. The manufacturer of the entire subsection must prove the safety concept of intrinsically safe electric circuits according to DIN EN 60079-14; VDE 0165-1.
3. For the interconnection of the valves with the intrinsically safe electric circuits of the associated tools, heed the respective highest values of the field device and the associated device in the interest of explosion protection.



**⚠ WARNING**

**Personal injury and property damage possible**

- Only have settings on the valve made by authorized specialized personnel trained by the manufacturer with suitable tools.
- Only operate valve in the pressure range specified on the data sheet.
- Only use valve according to the protection type.
- Heed the maximum switch-on duration according to the data sheet.



**⚠ WARNING**

**Use is forbidden in case of:**

- Use of aggressive gases that can damage the valve.
- Use of pneumatic variables that lie outside the area of application (see *Technical data, page 18*).
- Use of flammable gases that can also explode due to a lack of oxygen.
- Use as safety valve.
- Higher pressures than 1.1 bar if the medium is subject to explosion.
- Use in acid rain or other corrosive atmospheres. Use only after consultation with the manufacturer.

## 2.3 Permissible areas of application

Temperature class	Permissible ambient temperature range		Max. medium temperature	Max. power Pi (only for dust-Ex)
	Gas-Ex range	Dust-Ex range		
T6	-40 °C ≤ t ≤ 40 °C	-40 °C ≤ t ≤ 40 °C	40 °C	750 mW
T5	-40 °C ≤ t ≤ 8 °C	-40 °C ≤ t ≤ 70 °C	70 °C	650 mW
T4 and Group I	-40 °C ≤ t ≤ 90 °C	-40 °C ≤ t ≤ 80 °C	70 °C	550 mW

Tab. 1: Permissible use according to ambient temperature range

Qualification with respect to the surface temperature: T6/T5/T4.

The maximum powers Pi depend on the electronics selected.

The safety-technical data according to EU type-examination certificate must be heeded (see *type-examination certificate, page 20*).



- ⇒ If the device should be operated below the freezing point, dried compressed air must absolutely be used (pressure dew point 10 K below ambient temperature).



## 2.4 Safety concept

The valves were developed for use as intrinsically safe tool in intrinsically safe electric circuits.

## 2.5 Personnel qualification

Unqualified personnel cannot detect risks and is therefore subject to greater dangers.

1. Only commission qualified personnel with the activities described in these instructions.
2. Make sure that the personnel adheres to the locally valid regulations and rules for safe and danger-conscious work.

The following target groups are addressed in these instructions:

**Trained person:** A trained person is somebody who has been trained extensively by the operator in his tasks in connection with the safe operation of the valves.

Training is conducted by specialized personnel.

**Electrically-qualified person:** An electrically-qualified person is somebody who, based on his specialized training, knowledge, and experience, as well as knowledge of the applicable regulations, can judge and perform the work with which he is commissioned and detect possible hazards independently.

**Pneumatically-qualified person:** A pneumatically-qualified person is somebody who, based on his specialized training, knowledge, and experience with respect to pneumatic components and systems as well as knowledge of the applicable regulations, can judge and perform the work with which he is commissioned and detect possible hazards – especially with respect to interactions between pneumatic, mechanical, electrical, and control-technical components – independently.

Activity	Authorization
<ul style="list-style-type: none"> <li>■ Assembly</li> </ul>	<ul style="list-style-type: none"> <li>■ Pneumatically-qualified person</li> <li>■ Trained person</li> </ul>
<ul style="list-style-type: none"> <li>■ Installation incl. electrical connection</li> <li>■ Initial start-up</li> <li>■ Troubleshooting</li> <li>■ Elimination of faults</li> <li>■ Taking out of service</li> </ul>	<ul style="list-style-type: none"> <li>■ Electrically-qualified person</li> <li>■ Trained person with training in the area of explosion hazards</li> </ul>

## 2.6 Dangers



Here you will find information about various types of dangers and damage that can occur in connection with operation of the product.

### Electricity

1. Only have the device connected to the power supply and control lines by an electrically-qualified person.
2. Only perform installation and maintenance work when the power is disconnected.
3. Secure the device against unintentional switching on.

### Pressure

Compressed air escaping at high pressure and moving components of the entire system under pressure can cause severe injuries.

1. Only have the device assembled by a pneumatically-qualified person.
2. Only install pneumatic components when the compressed air system is depressurized.
3. Do not open screw connections and connections as long as the entire system is under pressure.
4. Release pressure between the valves and the lines. Even after removal of all pressure supplies, compressed air can still be present.
5. Open screw connections and connections slowly after releasing pressure.
6. During work on pneumatic systems, heed the special safety regulations.
7. Check lines and connections to ensure that they are sound and fit tightly before applying pressure to the device.
8. Secure the entire system against unintentional switching on.
9. Make sure that the entire system is in a safe switching state.

### Explosion

1. Make sure that there is no explosive atmosphere in the area of the valves and that none can arise.
2. Only operate the product in intrinsically safe power circuits that have proof of intrinsic safety.
3. Only operate the product with the electrical voltage specified on the type plate.
4. Only operate the product with permissible media (see *Technical data, page 18*).
5. Only operate the product within the temperature range  $T_a$  for the ambient temperature specified on the type plate.

### Risk of explosion due to mechanically-generated sparks

1. Only use rust-free tools.
2. Do not undertake any friction, hitting or ablation processes.

### **Risk of explosion due to exothermic flammable reaction in connection with rust, light allows, and kinetic energy**

1. Protect the housing of the gas metering valve (aluminum) against exterior blows.
2. Make sure that no objects can fall on the valves.

### **Operation**

1. Settings on the valve only by authorized personnel trained by the manufacturer with suitable tools.
  2. Only use the device in industrial applications for compressed air and permissible gases. Adhere to the working pressure according to the data sheet.
  3. The device is only approved for proper or intended use.
  4. Do not open the device.
  5. Do not remove type designations or seals that do not serve transport protection.
  6. Heed the prescribed air purity.
1. Only have repair work on the valve performed by the manufacturer since only the manufacturer has the equipment for optimal adjustment after repair and can therefore guarantee perfect function.
  2. Do NOT maintain the inner parts of the device.
  3. Send the complete valve to the manufacturer for maintenance and service.

### **Electrostatic discharge**

The discharge of static electricity through the human body can cause electric shock, which can trigger startle reactions.

1. Ground all electrically-conductive components of the entire system.
2. Wear ESD clothing.
3. Wear conductive shoes.

### **Mechanical injury**

Sharp edges can cause injuries on fingers and hands.

- ⇒ During all work in connection with the valves, wear work gloves according to EN 388, power level 1 to protect against mechanical hazards.

## **2.7 Duties of the manufacturer of the entire system**

1. Create proof of intrinsic safety for the electric circuit of the entire system incl. all components required for this.
2. Install the product EMC-appropriately according to the state of technology.
3. Complete these operating instructions with the results of the risk assessment for the entire system and the safety measures taken.
4. Ground all electrically-conductive components of the entire system according to the state of the technology.
5. Inform HOERBIGER immediately about faults or other problems with the product.

## 3 Product description

### 3.1 Function

The piezo-pneumatic switch valves with two valve type series serve to control compressed air with additional requirements for explosion protection for intrinsically safe applications.

Both valve type series distinguish themselves essentially through their pneumatic connections:

- S9-G $\frac{1}{8}$ : 3/2-, 5/2-, and 5/3-way valve S9 for pipe connection  $\frac{1}{8}$ "  
Piezo valve type: P8 381
- S9-G $\frac{1}{4}$ : 3/2-, 5/2-, and 5/3-way valve S9 for pipe connection  $\frac{1}{4}$ "  
Piezo valve type: P8 385
- S29: 3/2-, 4/2-, and 5/2-way valve S29 for pipe connection  $\frac{1}{4}$ "  
(supply air, ventilation) and NAMUR connection (working connections)  
Piezo valve type: P8 381

A valve consists of a spool valve that is upstream of one or two piezo valves. The spool valve is connected electrically to the piezo valve via a device outlet.

With manual operation, the spool valve can be operated without electrical activation. See *Manual operation, page 27*.

### 3.2 Scope of delivery

- Valve
- Only for valve S29 (NAMUR): Fastening kit for NAMUR connection
- Device outlet
- Excerpt from the operating instructions in the local language with reference to download of the complete operating instructions from the Internet



⇒ Complaints about any defect must be made in writing to HOERBIGER Flow Control GmbH within two working days at the latest.

Damage claims can only be brought within the applicable complaint periods.  
The manufacturer assumes no responsibility for complaints after the fact.

### 3.3 Connections

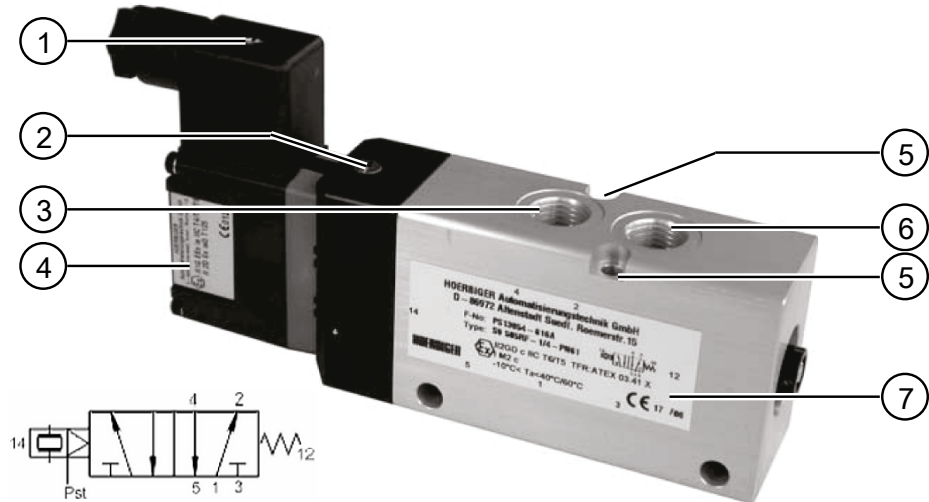


Fig. 1: Valve type series S9 with pipe connection using the example of 5/2-way RF

1	Electrical connection (device outlet)	5	Holes for fastening on RPS strip
2	Manual operation on the adapter	6	Working connection -2 (optionally G $\frac{1}{4}$ or G $\frac{1}{8}$ )
3	Working connection -4 (optionally G $\frac{1}{4}$ or G $\frac{1}{8}$ )	7	Type plate spool valve S9
4	Type plate piezo valve P8		

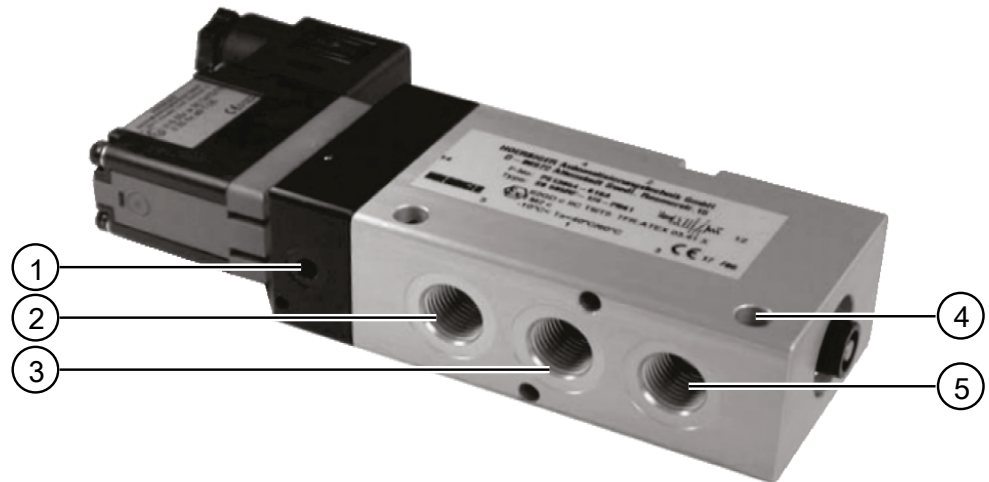


Fig. 2: Valve type series S9 with pipe connection - underside

1	External control air (optional, on the adapter). Connection M5 internal thread	4	Fastening holes for screw connections
2	Ventilation -5 (optionally G $\frac{1}{4}$ or G $\frac{1}{8}$ )	5	Ventilation -3 (optionally G $\frac{1}{4}$ or G $\frac{1}{8}$ )
3	Supply pressure -1 (optionally G $\frac{1}{4}$ or G $\frac{1}{8}$ )		

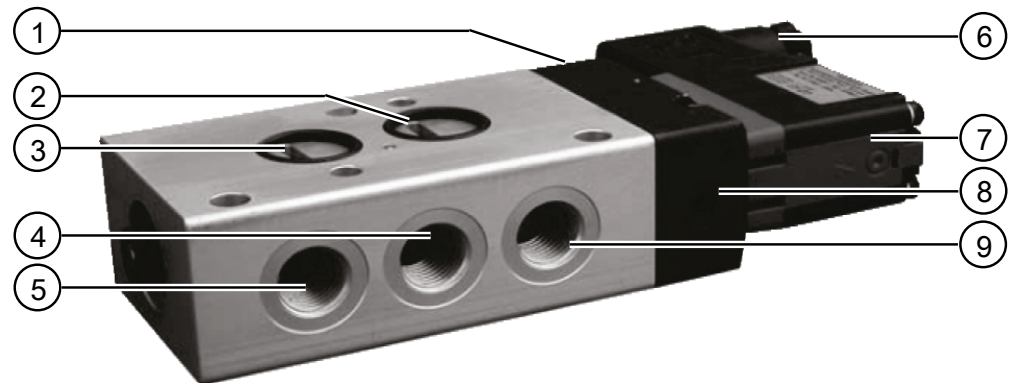
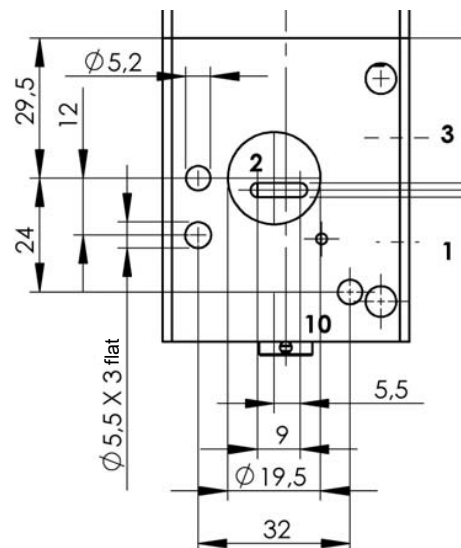


Fig. 3: Valve type series S9 with NAMUR-working connection using the example of 5/2-way RF

1	Manual operation (on the adapter)	6	Electrical connection
2	Working connection -4 (NAMUR)	7	Piezo pilot valve P8 385
3	Working connection -2 (NAMUR)	8	External control air (optional, on the adapter). Connection M5 internal thread
4	Supply -1 (G $\frac{1}{4}$ )	9	Ventilation -5 (G $\frac{1}{4}$ )
5	Ventilation -3 (G $\frac{1}{4}$ )		

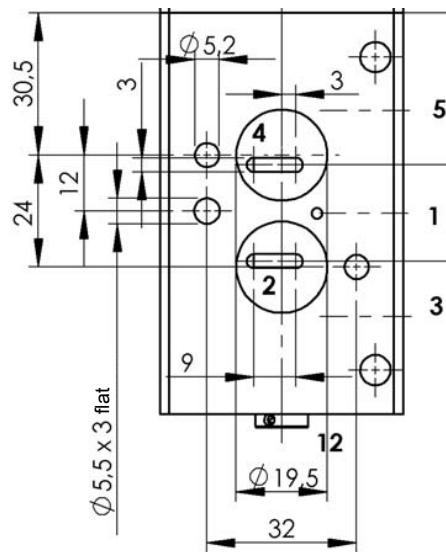
### 3.4 Connection patterns according to NAMUR

⇒ For the pneumatic connection of the working connections 2 or 2 and 4, mount the valve S29 according to the connection pattern according to NAMUR on a flange.



3/2-way valve with connection pattern according to NAMUR





4/2-way or 5/2-way valve with connection pattern according to NAMUR

## 3.5 Technical data

### General technical data

Designation	Switch valve S9-G $\frac{1}{4}$ , S9-G $\frac{1}{8}$ , S29-G $\frac{1}{4}$
Actuation type	Piezoelectric pilot valve-controlled
Design	Spool valve
Installation position	Any (preferred position: plug on top); possible compromising of emergency manual operation depending on installation position
Medium	Compressed air and nitrogen According to ISO 8573-1:2010 (7:3:4)
Storage temperature	-40 to +80 °C
Ambient temperature <sup>1)</sup>	<ul style="list-style-type: none"> <li>■ -10 to +60 °C at &lt; 5.5 bar control pressure</li> <li>■ -25 to +60 °C at &gt; 5.5 bar control pressure</li> </ul>
Medium temperature <sup>1)</sup>	<ul style="list-style-type: none"> <li>■ -10 to +60 °C at &lt; 5.5 bar control pressure</li> <li>■ -25 to +60 °C at &gt; 5.5 bar control pressure</li> </ul>

<sup>1)</sup> Use below the freezing point requires dried air (pressure dew point 10 K below ambient or medium temperature)

Subject to change without notice

Model series	S9 G $\frac{1}{4}$	S9 G $\frac{1}{8}$	S29 G $\frac{1}{4}$ -NAMUR
Pilot valve type	P8 385	P8 381	P8 385
Assembly	2 M6 screws (or M4 on RSP strip)	2 M5 screws (or M3 on RSP strip)	2 M6 screws
Connection for pressure supply/ventilation	G $\frac{1}{4}$	G $\frac{1}{8}$	G $\frac{1}{4}$
Working connections	G $\frac{1}{4}$	G $\frac{1}{8}$	Flange pattern according to NAMUR
Protection type according to IEC 60529 <sup>1)</sup>	IP65	IP43	IP65

On-time (ED)	100 % ED with maximum 6000 hours constant operation		
Connection	Device outlet according to DIN EN 175301-803-B		
Category, ignition protection type pilot valve gas	II 1G Ex ia IIC T4/T5/T6Ga	II 2G Ex ia IIC T4/T5/T6Gb	II 1G Ex ia IIC T4/T5/T6Ga
Category, ignition protection type pilot valve dust	-	II 2D EX ia IIIB T125°C Db	-
Category, ignition protection type complete valve mechanical	II 2G Ex c IIC T5/T6 (TFR: ATEX03.41)		
Protection class according to EN 61140	III - extra-low voltage		

<sup>1)</sup> Only with mounted device outlet and correctly connected control cable  
Subject to change without notice

### Pneumatic characteristics <sup>1)</sup>

Model series	S9 G <sup>1</sup> / <sub>4</sub>	S9 G <sup>1</sup> / <sub>8</sub>	S29 G <sup>1</sup> / <sub>4</sub> -NAMUR
Nominal pressure (p <sub>1</sub> )	6 bar		
Working pressure range	<ul style="list-style-type: none"> <li>■ With operation with internal control air: 2.5 to 8.0 bar</li> <li>■ With operation with external control air: 0 to 8.0 bar</li> </ul>		
Control pressure range (p <sub>st</sub> - operation with external control air)	<ul style="list-style-type: none"> <li>■ At p<sub>1</sub> &lt; 2.5 bar: p<sub>st</sub> &gt; 2.5 bar</li> <li>■ At p<sub>1</sub> = 2.5 to 8.0 bar: p<sub>st</sub> ≥ p<sub>1</sub></li> </ul>		
Nominal flow rate at 6 to 5 bar (Q <sub>N</sub> )	1300 l/min (Type 5/3:1000 l/min)	500 l/min	1300 l/min

<sup>1)</sup> Pressure specifications in overpressure

### Piezoelectric activation

Electronic type	PT(63)	PM(64)	PN(61)	PN(65) <sup>1)</sup>	PT(67) <sup>1)</sup>
Voltage type	DC voltage				
Switching voltage (U <sub>“on”</sub> )	5.5 to 9 V DC	6 to 16 V DC	7 to 30 V DC	11 to 20 V DC	4.5 to 9 V DC
Switching voltage (U <sub>“off”<sub>max</sub></sub> )	1 V DC				
Holding current (I <sub>“on”</sub> )	1 to 19 mA	1.7 to 23 mA	2 to 19 mA	2 to 6.6 mA	1 to 19 mA
Max. current switched off (I <sub>“off”<sub>max</sub></sub> ) <sup>1)</sup>	0.05 mA	0.1 mA	0.22 mA	0.1 mA	0.05 mA

<sup>1)</sup> not S9-G $\frac{1}{8}$  P8 381

Subject to change without notice.

### Safety technical data according to EU design type certificate

HOERBIGER code	PT(63)	PM(64)	PN(61)	PN(65) <sup>1)</sup>	PT(67) <sup>1)</sup>
Voltage (U <sub>i</sub> )	9 V DC	16 V DC	30 V DC	30 V DC	9 V DC
Current (I <sub>i</sub> )	Not relevant				
External capacity (C <sub>i</sub> )	12 nF	12 nF	12 nF	12 nF	12 nF
External inductance (L <sub>i</sub> )	Negligible				

<sup>1)</sup> Not S9-G $\frac{1}{8}$  P8 381

### Other conditions

Use outdoors	Permissible if heeding the required protection type according to IEC 60529 (IP protection class)
Protection against excessive heat emissions	Do not exceed the permissible surface temperatures. In case of solar radiation, ensure shading.

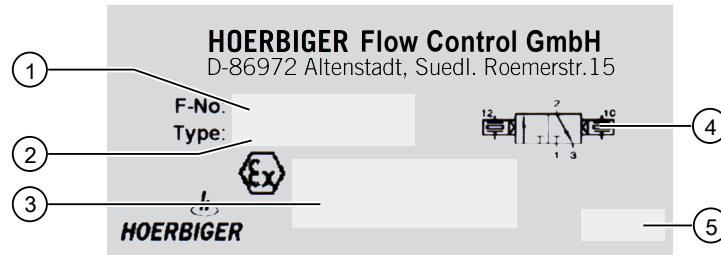


If necessary, request the current table of compatible, intrinsically safe tools for valves from HOERBIGER Flow Control GmbH.

### 3.6 Type plate

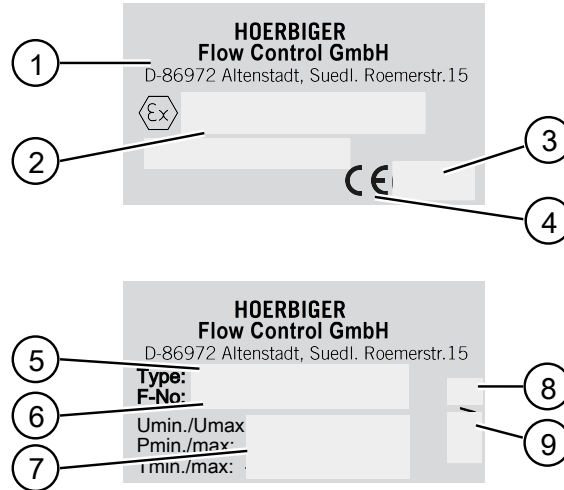
Each valve has the following type plates:

- A type plate on the spool valve with the type designation and the mechanical Ex protection identification:



1	Item number	4	Graphical symbol
2	Type designation	5	Production date
3	Identification for the explosion protection according to the ATEX directive		

- On each type plate and piezo pilot valve with type designation and electrical Ex protection identification:



1	Address	6	Item number
2	Ex protection identification	7	Technical data
3	Number of the test center	8	Technical state
4	CE mark	9	Production date (format WW/YY)
5	Type designation		

## 4 Assembly and installation

### 4.1 Assembly



#### **⚠ DANGER**

##### **Mortal danger due to electrical voltage!**

- Switch off current before assembling and dismantling the valve.



#### **⚠ WARNING**

##### **Danger of crushing due to uncontrolled movement of the machines**

Personal injury and/or property damage possible.

- Before restarting the system, take measures to prevent uncontrolled movement of the machines.
- Make sure that nobody is in the danger zone.



#### **⚠ WARNING**

##### **Personal injury or property damage due to fault arcs**

Fault arcs can cause extremely severe injuries and fire.

- Use low-spark tools.
- Wear work clothing to protect against fault arcs.



#### **⚠ WARNING**

##### **Personal injury or property damage due to overpressure**

Improperly connected or defective pneumatic connections can loosen under pressure and cause extremely severe injuries.

- Before assembly and dismantling of valves, switch off compressed air.
- Make sure that there is neither input nor output pressure on the valves.
- Only use components that are suitable for the permissible pressure ranges (see *Technical data, page 18*).
- Proceed according to the special country-specific safety regulations.



During installation of the valves in a system/machine in Ex areas, adhere to standards EN1127-1 and relevant standards.



**⚠ WARNING**

**Personal injury and property damage due to explosion**

- Only install devices within the categories specified on the data sheet.
- Undertake installation of the intrinsically safe circuits according to the applicable building regulations (demonstrate knowledge of the builder, protected laying of the intrinsically safe circuits).
- Maintain a safety distance of at least 50 mm between intrinsically safe and non intrinsically safe conductive connection parts.
- For the interconnection of the devices with the intrinsically safe circuits of the associated tools, heed the respective maximum values of the field device (valves) and the associated device in the interest of explosion protection (proof of intrinsic safety).
- In adverse ambient conditions, protect devices against spray water or dirt according to the protection type in the current data sheet.
- For the special conditions of the EU design test certificate, see *EU design type certificate, page 32*.

1. Only remove the valve from the packaging immediately before assembly.
2. Remove all residues completely and thoroughly from the surface of pipelines/hoses to be connected.
3. Blow out pipelines/hoses thoroughly with compressed air. **NOTICE! There may be no residues inside the lines.**
4. Clean all mounting surfaces with a clean, lint-free cloth and a commercially available cold cleanser.
5. Only valve S29 (NAMUR): Use the included fastening kit.
6. Only valve S29 (NAMUR): Make sure that the appropriate O-rings are inserted in the valve and connection plate.
7. Optionally place the valve on a connection plate for direct connection of lines or on a pneumatic amplifier stage. **NOTICE! All holes must be perfectly flush so that there is no twisting.**
8. Only for use in Ex areas: Maintain a safety distance of at least 50 mm between intrinsically safe and non intrinsically safe conductive connection parts.
9. Screw on the valve with 2 fastening screws (for screw type, see the table below).

Type series S9-G $\frac{1}{4}$
<ul style="list-style-type: none"> <li>■ Horizontal mounting: 2x M6</li> <li>■ Vertical mounting on air distributor strip: 2x cylinder screw ISO 4762 - M4x55; material: 8.8-A2K or A2-70</li> </ul>
Type series S9-G $\frac{1}{8}$
<ul style="list-style-type: none"> <li>■ Horizontal mounting: 2x M5</li> <li>■ Vertical mounting on air distributor strip: 2x cylinder screw ISO 4762 - M3x45; material: 8.8-A2K or A2-70</li> </ul>
Type series S29-G $\frac{1}{4}$
<ul style="list-style-type: none"> <li>■ 2x cylinder screw ISO 4762 - M5; material: 8.8-A2K or A2-70</li> </ul>

Tab. 2: Screw types for mounting



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### Compromising of the valve function possible

- Make sure that the ventilation openings are not covered.
  - Protect valve against excessive heat radiation.
  - Protect valve against adverse ambient conditions such as spray water or dirt, in order to guarantee the protection type according to the data sheet.
- 

## 4.2 Electrical installation



### DANGER

#### Mortal danger due to electrical voltage!

- Only have the device connected to the power supply and control lines by a specialist.
  - Installation may only be done when the device is de-energized.
  - Secure against unintentional switching on.
  - Check electric cables for damage before connecting.
- 



For electrical connections in Ex areas, heed the applicable standards.

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### DANGER

#### Mortal danger due to explosion

- In Ex areas, only use with device outlet according to chapter *Device socket*, page 25.
  - Only use the device in areas subject to explosion together with appropriately approved voltage sources and safety equipment (e.g. separator modules or similar).
  - Have the interconnection assessed by a specialized electrician with knowledge of the set-up of electrical systems in areas subject to explosion.
  - Lay intrinsically safe lines protected.
  - For the electrical connection, heed the prescribed switching voltage and the protection type of the cable.
-



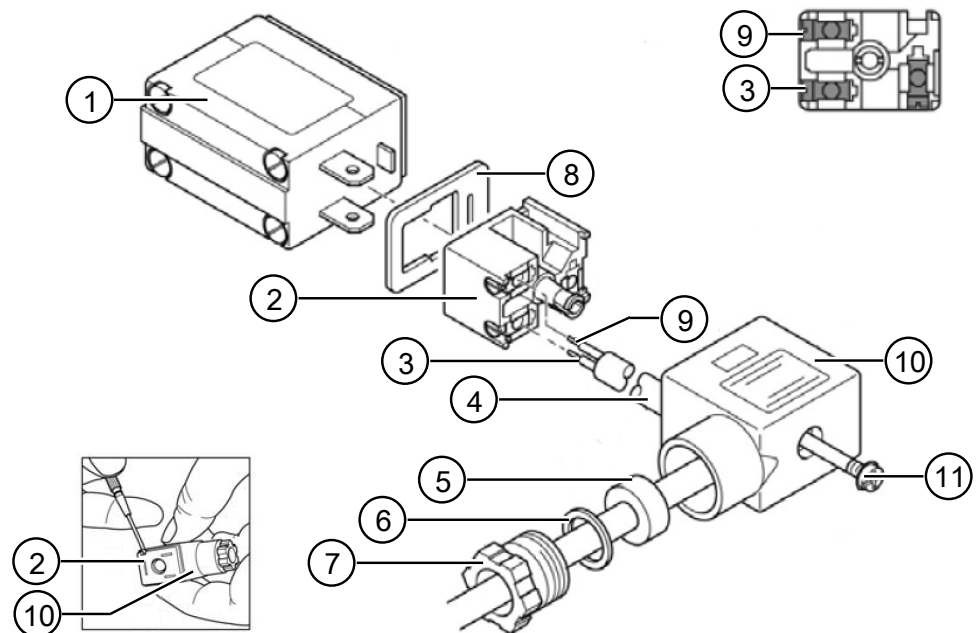
## 4.3 Device socket

The device outlet corresponds to design B according to industry standard according to DIN EN 175301-803-B (= type GSD-22).



Use in Ex areas is only permitted with GSD-22 according to DIN EN 175301-803-B.  
Use of a GSD with LED in Ex areas is not permitted.

## 4.4 Connect control cable to device outlet



The terminal assignments are depicted at the top right of the figure.

1. Loosen the connection locking screw (11).
2. Remove device outlet (10) from the blade contacts of the valve (1). **NOTICE! Heed the installation position of the plug seal (8). The seal must lie correctly and flat.**
3. Pull the plug locking screw completely out of the device outlet (10).
4. Pull the connection block (2) completely out of the device outlet with a screwdriver.
5. Turn the screw connection (7) out of the device outlet.
6. Remove the washer (6) and seal (5) from the device outlet.
7. Feed the control cable (4) through the screw connection (7), washer (6), seal (5) into the device outlet.
8. Adjust the control cable of the seal in diameter so that the cable is tight in the seal.

9. Remove insulation at the end of the control cable. **NOTICE! Do not damage the two wires.**
10. Strip the wires with a cable stripper. **NOTICE! For the installation, a two-line cable is sufficient.**
11. Clamp both wires of the cable to the screw terminals of the connection block: Wire "0 Volt" to terminal 1 (3), wire "control voltage" to terminal 2 (9). **NOTICE! The ground clamp is not used. The terminal numbering is engraved in both sides of the connection block.**
12. Place the seal (5), washer (6), and the screw connection (7) to the control cable.
13. Turn screw connection in the device outlet.
14. Place device outlet with connected cable on the contacts of the valve.
15. Tighten with plug locking screw. **NOTICE! Make sure that the plug seal (8) is placed on the valve over the blade contacts and there is no strain on the cables.**

## 5 Start-up

### 5.1 Start-up



With use in environments with flammable gases, heed the Ex directive and other applicable regulations and the respectively valid local regulations (e.g. flush with inert gas, avoid adiabatic processes, etc.).



#### **⚠ WARNING**

##### **Personal injury and property damage possible**

- Only have the start-up done by people who have sufficient knowledge and experience with respect to compressed air systems and the machine/system to be started up.
- Before operation with combustible gases, consult the manufacturer.
- Heed additional measures according to the local set-up provisions (e.g. incorporation into the repeated pressure test).
- For start-up of the valves, adhere to the following sequence of steps.

- ✓ The power supply is switched off.
  - ✓ There is neither input nor output pressure present.
1. Check proper mounting.
  2. Open compressed air supply.



#### **⚠ WARNING**

##### **Danger of crushing due to uncontrolled movement of the machines**

Personal injury and/or property damage possible.

- Before restarting the system, take measures to prevent uncontrolled movement of the machines.
- Make sure that nobody is in the danger zone.

3. Switch on electric signal control.

### 5.2 Manual operation

With manual operation, the spool valve can be operated without electrical activation. It functions both by pressing a button and by locking.

- By pressing a button:
  - On: by pressing the activation button.
  - Off: by releasing the activation button.
- By locking:
  - On: by pressing the activation button and turning to the right.
  - Off: by turning to the left and releasing the activation button.

## 6 Service



### **⚠ WARNING**

#### **Danger due to malfunction**

Insufficiently serviced valves can cause malfunction and extremely severe injuries.

- Perform all inspection and maintenance activities on time and carefully.
- Only perform inspection and maintenance work that is described in this chapter.
- Switch off the device before inspection and maintenance activities.



#### **Compromising of the valve function due to incorrect cleaning**

- Do not use cleansers that contain solvents for cleaning work.
- No solvents or solids may penetrate the openings for ventilation and manual activation.



### **⚠ WARNING**

#### **Personal injury and property damage due to improper servicing**

Malfunctions can result.

- In case of fault, do NOT service the device.
- In case of fault, shut the device down immediately.
- Remove the complete valve and send it to the manufacturer's local agent for servicing.

### 6.1 Inspection and maintenance plan

Work to be performed	ir	d	w	¼ y	y	oh
■ Check pneumatic connections for leaks				X		
■ Check electrical cable for cracks, kinks, and damage to the cable insulation. ■ Replaced damaged lines.				X		
■ Check type plates to ensure they are present, visible, legible, and complete; replace if necessary					1	
■ Check fastening screws to ensure they are tight, tighten if necessary				X		
<b>Legend:</b> ir= if required, d = daily, w = weekly , ¼ = quarterly, y = annually, oh = operating hours						

## 7 Transport and storage

1. Store the product in level, dry rooms that are free of dust and vibrations.
2. In case of longer unpackaged storage, seal all pneumatic connections of the valve with tape that can be removed without leaving residues.

For more information, see *Technical data, page 18*.

## 8 Troubleshooting

1. Customers and third parties should not make any changes to or perform any troubleshooting on the device.
2. Send the defective product to the manufacturer or its local representative for servicing.

## 9 Decommissioning and disposal

### 9.1 Decommissioning/dismantling



#### **⚠ WARNING**

##### **Risk of injury due to pressure**

- Do not perform any work on the valve when it is pressurized.
- 
- ✓ The power supply is switched off.
  - ✓ There is no input or output pressure.
  - ✓ The machines/systems (e.g. actuators) have been moved into a safe switch state (control positions).
- ⇒ Dismantle.

### 9.2 Disposal

The disposal of the packaging and used parts is the customer's responsibility.

- ⇒ Dispose of the product according to the local regulations at approved collection points or have removed by approved disposal companies.

## 10 Appendix

### 10.1 EU design type certificate

We will be glad to send the customer the EU design type certificate on request.

The EU design type certificate applies only for the electrical examination of the basic P8 valve devices.

The approval according to EU design type certificate is only provided with device outlets according to DIN EN 175301-803, design B according to industry standard.

### 10.2 Product observation

Our goal is continuous enhancement of our products and close cooperation with the customer. Please tell us about faults or problems with the valve.

### 10.3 Material defects and defects of title

These operating instructions and technical details with respect to the specifications and figures in these operating instructions are subject to change without notice.

The company HOERBIGER Flow Control GmbH makes no quality or durability guarantees, and also no guarantees about suitability for a particular purpose. These must be agreed upon expressly in writing. Public statements, promotions, and advertising do not constitute quality specifications for the product.

The operator's claims relating to material defects and defects of title assume that he presses this claim in writing immediately, at the latest within two working days. HOERBIGER Flow Control GmbH is in no case responsible for damage to the product itself or consequential damages caused by the product that are caused by improper handling of the product.

Insofar as HOERBIGER Flow Control GmbH is responsible for a defect, HOERBIGER Flow Control GmbH will, at its option, provide rectification or substitute performance.

Liability of HOERBIGER Flow Control GmbH – regardless of the legal justification – exists only in case of intention or gross negligence, negligent injury of life, body, health for defects that were fraudulently concealed or whose absence was guaranteed expressly in writing. Furthermore, according to the product liability law for personal injury or property damage to privately used objects.

In case of negligent injury of essential contract duties, HOERBIGER Flow Control GmbH is also liable, also in case of slight negligence, however limited to the contract-typical, foreseeable damages. Additional claims are excluded.

In case individual regulations of these operating instructions, the applicable legal regulations or other instructions of HOERBIGER Flow Control GmbH are disregarded, material defects and defects of title are terminated.



In particular, HOERBIGER Flow Control GmbH is not responsible for failures or faults that are caused by modifications by the customer or other persons. In such cases, the repair costs due will be invoiced. These will also be invoiced for the checking of the device if no fault could be found on the device.

There are no claims to the availability of previous versions and to the ability to refit devices delivered to the respective current series state.

## 10.4 Declaration of conformity

The current declaration of conformity is included in the scope of delivery and it can be found in the download area on the company's website:

<http://www.hoerbiger.com/>

