

# Maintenance and repair instructions

## Shut-off valve Series 17b

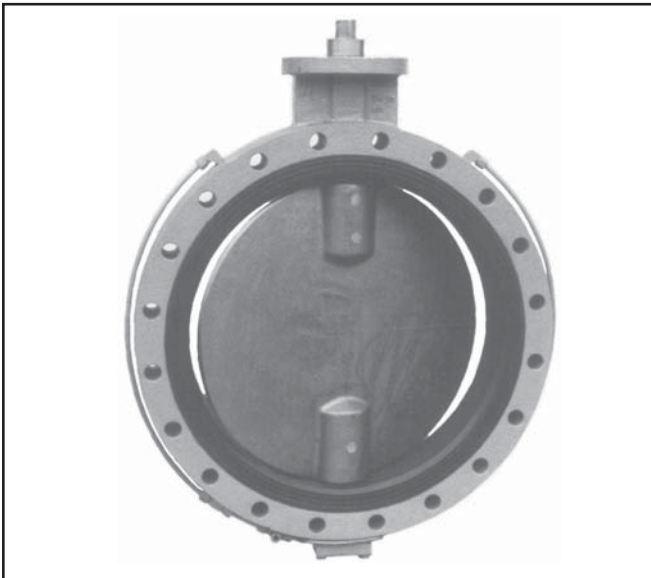


Fig 1 - centre shut-off valve, series 17b

### 0. General:

These instructions are intended to assist the user in the assembly and operation of centre and eccentric shut-off valves, series 17b. It is therefore important to follow these instructions.



This equipment may only be dismantled and disassembled by skilled personnel, who are familiar with the assembly, start-up and operation of this product. All personnel should be equipped with the necessary protective clothing. If the valve is not used immediately, it should be stored in the original packing in a clean dry room.

The valves are designed to customer specifications for a specific function. For this reason, they should only be used for that purpose. In compliance to these requirements, the valve, if applicable is then identified according to 97/23/EG.



**Note:** Important construction parts of the valve should be checked in regular intervals regarding their application function.

### 1. Design, operation and dimensions:

Design, operation, dimensions and all further technical details can be found in the **Data sheets** < TB 17b-wz\_EN > for centric shut-off valves, and < TB 17b-we\_EN > for eccentric shut-off valves.

### 2. Operation- and assembly of the valve in the pipeline:

#### 2.1 Flange connection

The dimensions of these control valves are so designed, that they can be fitted to all known DIN- and ANSI flanges. If the valve is used as an end valve instead of being fitted between pipings, ensure that there is no danger when draining. Dimensions for Flanges and Flange connecting screws must be according to operating conditions. Ensure, that the control valves which are designed for a certain flange norm standard, do not fit other flanges (other ND-bore holes). Ensure also, that the flanges are parallel to each other, the surfaces have be carefully mached and are not damaged, and stressed relieved when connecting. For the layout of the **flanges** see figures 6 and 7 and **Tables 2 and 3**.



**Note:** The use of flange sealings on valves with flange rubber is not permissible. Flange sealings should only be applied to metal sealing valves.

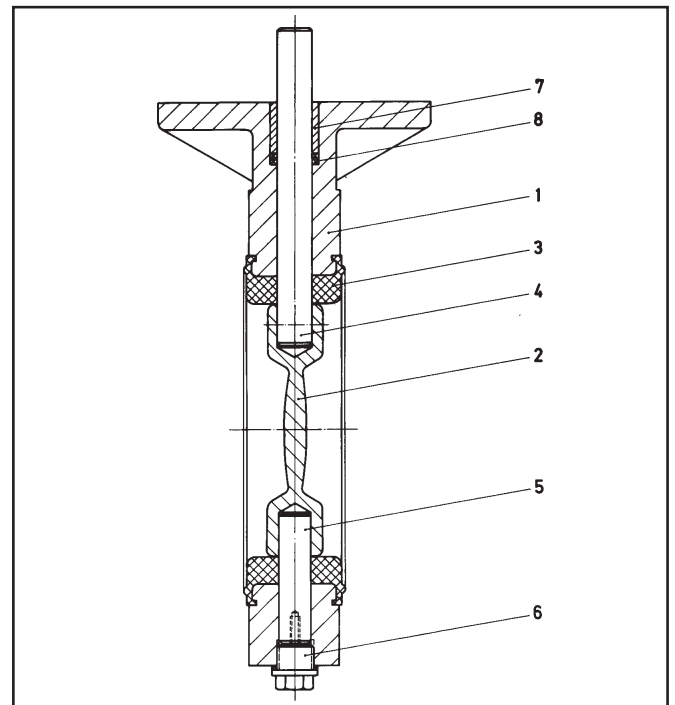


Fig. 2 - Sectional drawing of a valve series 17b -type WZ

Pos.	Description	Pos.	Description
1	Valve body	5	Bearing pin
2	Valve disc	6	Plug screw
3	Sealing gasket	7	Bearing sleeve
4	Valve shaft	8	Sealing ring

Table 1 - Parts list

# Shut-off valve Series 17b

## 2.2 Installation

Before installing, check the valve for functional efficiency. Especially the sealing lips to the flange sealing should be in a faultless condition.

Check the gearing i.e. rotary drive on the valve for easy movement, on no account use force!!

Furthermore, check if the valve corresponds to the required specifications.

The sleeve, valve disc and shaft must show sufficient consistency and durability to the flow media.

The pressure and temperature levels stated on the valve, must be above the operating conditions. Central shut-off valves are suitable for through flow in both directions. This has no effect on the sealing tightness or the throughflow characteristics.

Prior to installation, force the piping apart with an appropriate tool - on no account should the valve be misused for this purpose.

In the case of a vertical installation, especially by large nominal diameters, install the valve with the shaft in a horizontal position.

By closing the bottom half of the valve disc in flow direction, a self cleaning effect is achieved.

After the valve is vertically installed, and correctly aligned in the piping, first insert the screws in the bottom half of the flange connection.

If the flanges do not have rubbers, apply graphite or similar to both flange sealings by pushing between the flanges.

Position the valve and the flange sealings in a central position to the pipe cross-section, and lightly tighten the bottom flange connecting screws.

Insert the remaining connecting screws and tighten in alternating pattern to avoid the body twisting or distorting.



**Note:** Avoid any welding work near the flange when the valve is installed. The heat caused through the welding process will inevitably lead to damage of the sealing.

When working outside, make sure, that electrical components are not directly exposed to weather conditions – if necessary install a folding plate.



**Important:** After installing, check the valve for a functional operation.

## 2.3 Actuator

Depending on the design, the valve can be operated by hand-lever, hand gear, pneumatic actuator, or an electric actuator.

After disassembly- and assembly of the actuator, check the actuator setting adjustments.

Pneumatic operated shut-off valves should be "slightly pre-set" to allow an easy opening, i.e. in order to maintain a sealing reserve in case of wear.



**In general, the following applies for valves:**

turn to the right = valve closes  
turn to the left = valve opens.

Depending on the flow media (especially by fluids) the shut-off valves open and close slowly, in order to avoid shocks in the piping system.

## 3. Technical operation:

The shut-off valves are designed as intermediate valves with central, also eccentric bearing valve disc.

The body is cast in a single piece, only the stainless steel bodies are made in a welding construction. The lining of the body and the flange rubber are in one piece, and can be fixed (i.e. galvanised) or detached. The dimensions of the flange rubber are such, that a complete sealing in the throughflow and at the flange connection is assured without an additional flange sealing, enabling the valve to function completely efficiently.

## 4. Important operating details

### 4.1 Central shut-off valve series 17b - type WZ

All shut-off valves are tested for function and tightness of seals before they leave our factory.

An additional test, the gripping pressure required for the sealing sleeve is set in accordance with differential pressure given by the customer.



**Note:**

The calculated gripping pressure is recorded on the label on the valve.

Therefore, when ordering a valve, it is important to state the differential pressure.

Generally it can be said:

„The gripping pressure as less as possible - but as much as necessary“.



**Note:** The sleeve should **not** be attached directly to the

air supply for pneumatic drive without a pressure reducer, which is set to the factory required gripping pressure.

Even with a high differential pressure, the technical design of the sealing sleeve enables a relatively low gripping pressure. For example, a gripping pressure of 3 bar may be sufficient for a differential pressure of 6 bar.

A general statement regarding this is not possible, because the values depend on the nominal diameters of the valve, the composition of the Elastomere, and the media. Therefore the gripping pressure can only be individually evaluated.

This phenomena is due to the external working surface for the gripping pressure which is much larger than the sealing area near the medium.

A further indispensable requirement for a trouble free function is a delay switch, i.e. the sleeve is pressurised with air 1 - 3 sec. after the valve has closed. In this way it can be assured, that the valve disc is in the „Closed“ position, before the sealing sleeve is pressed onto it. This ensures a static sealing.

The same applies in the same way for the opening procedure.



**Important:** We strongly recommend adhering to these operating details, because failure to comply will result in all guarantee claims becoming void and invalid.

The specified controls as shown for example in fig. 3 to fig. 5 are possibilities for implementing these important parameters, in order to guarantee a trouble free operation.

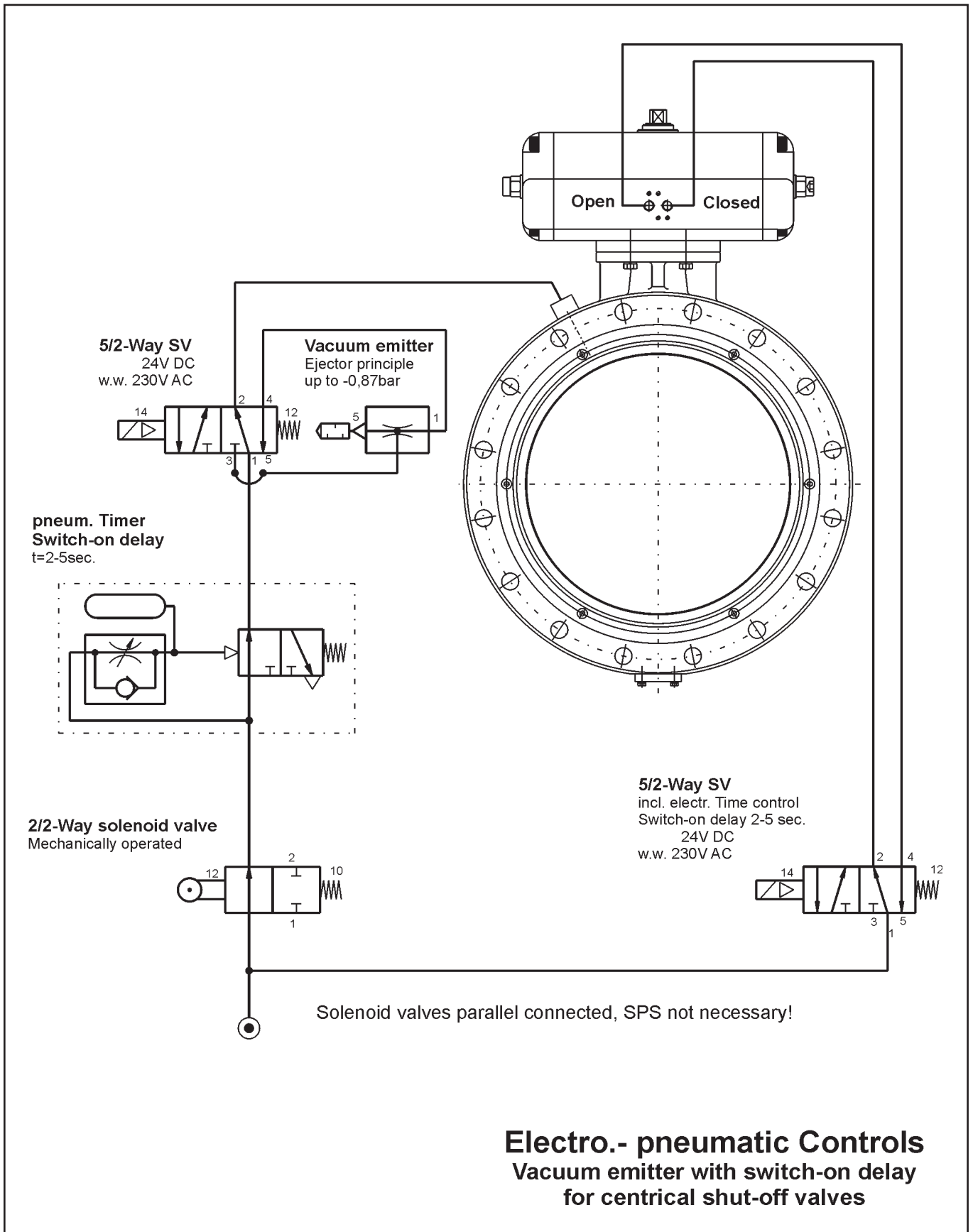


Fig 3 - Electro-pneumatic control

# Shut-off valve Series 17b

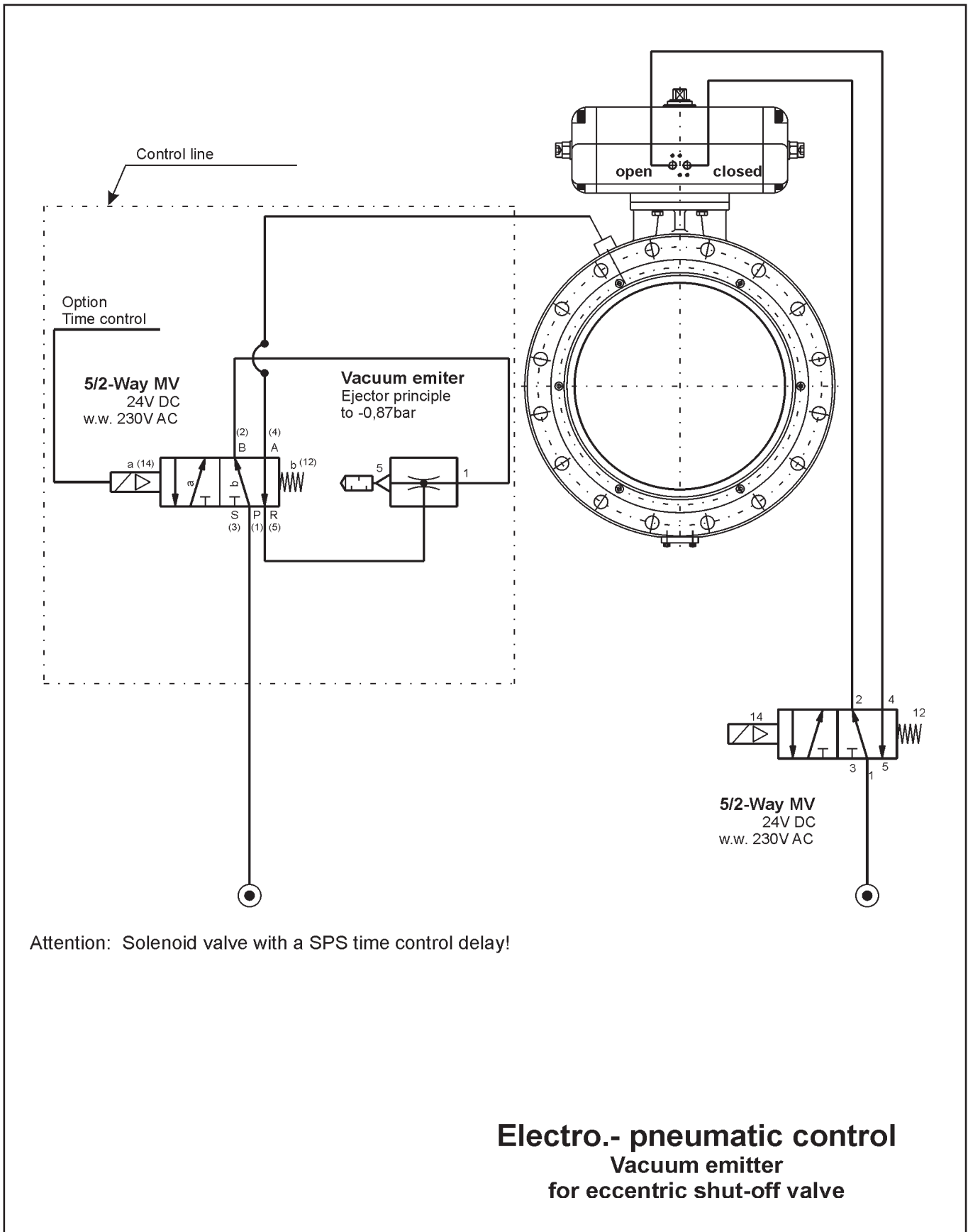


Fig 4 - Electro pneumatic control

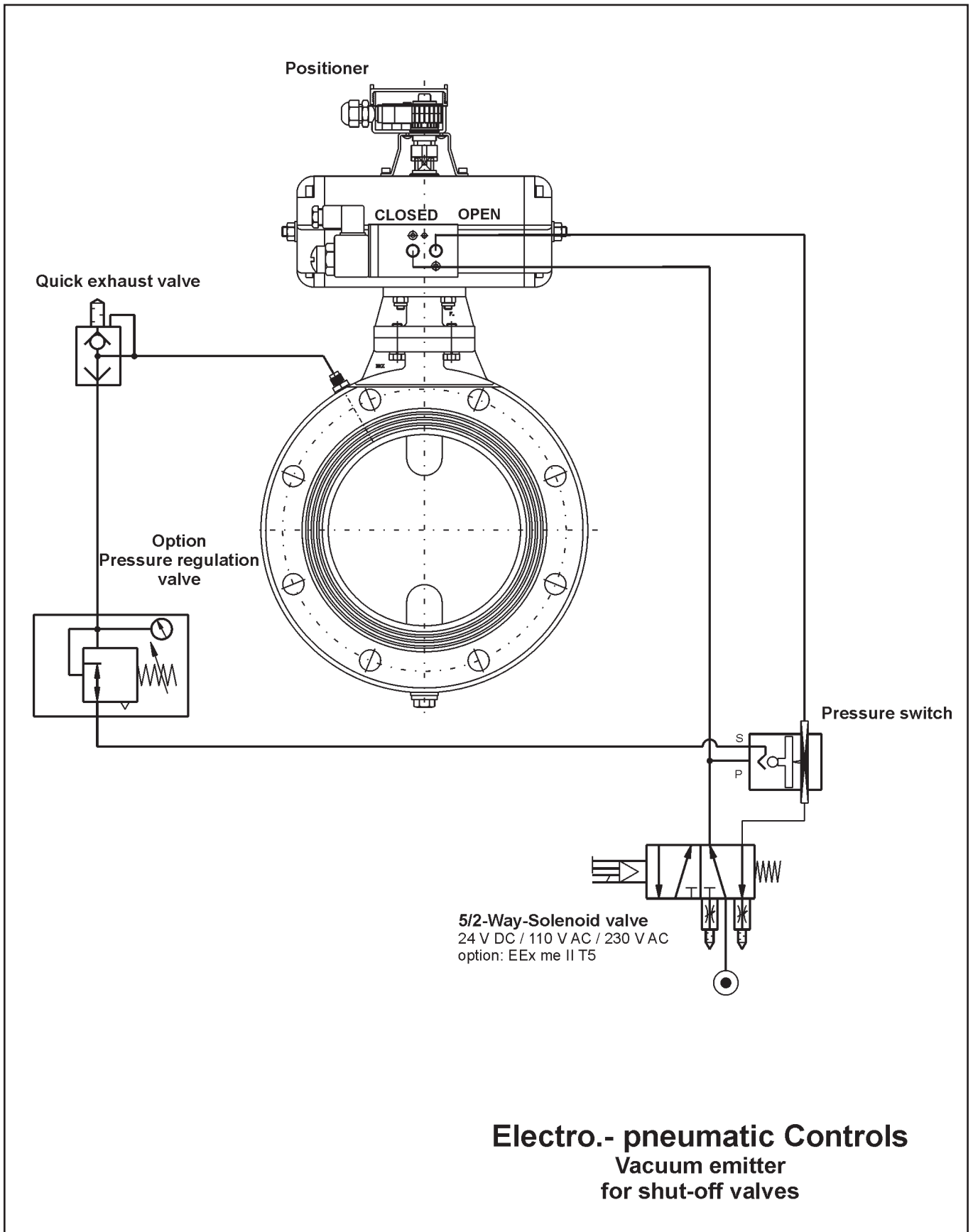


Fig 5 - Electro pneumatic control

# Shut-off valve Series 17b

## 4.2 Eccentric shut-off valve, series 17b - type WE

The advantages of this valve design compared to the central shut-off valve, is that the pressurised sealing element can be easily replaced without dismantling the valve - which has made a universal application possible for this series, as the sealing element can be adapted to the respective media.

However, for a trouble free and efficient operation, a delay switch is absolutely essential, that means, the sealing element has a time delay of 1 to 3 sec. after the valve has closed. (after receiving limit switch signal „Close“) it is then pressurised with compressed air, this ensures, that the valve disc has reached the „Closed“ position before the sealing element is pressed against it, and a static sealing is achieved.

The pressure on the sealing element must first be relieved before the valve disc can re-open, preferably supported through a vacuum emitter.

In this way, the elasticity of the sealing elastomer maintains a long lasting durability.



**Note:** The sleeve should **not** be attached directly to the air supply for pneumatic drive without a pressure reducer, which is set to the factory required gripping pressure.

With the application of the shut-off valve in the vacuum area, the use of a vacuum emitter is essential,

A reduction of the gripping pressure is not necessary, as the sealing element is completely enclosed when the valve disc is closed.



**Important:** We strongly recommend adhering to these operating details, because failure to comply will result in all guarantee claims becoming void and invalid.



**Important:** When installing, the smooth side of valve disc should be facing the media.

The specified controls as shown for example in fig. 3 to fig. 5 are possibilities for implementing these important parameters, in order to guarantee a trouble free operation.

## 4.3 Compressed air supply

The air supply should be dry, filtered compressed air. A reduction of the gripping pressure is not necessary, as the sealing element is completely enclosed when the valve disc is closed. However, the gripping pressure of the sleeve should be at least 1 to 1,5 bar over the system- differential pressure.

## 5. Maintenance and repair:

Apart from carrying out the regular inspections, it is not necessary to perform an additional service, e.g. lubricating the valve.

With regards to the inspection of the actuator, the maintenance instructions from the manufacturer must be observed.

### 5.1 Stuffing box

Valves used for hot gases (Temperature over 200°C) use the stuffing box instead of O-ring for sealing the shaft.

Leakage at the stuffing box packing can usually be eliminated by adjusting the stuffing box screw.

If this is not possible any more, the stuffing box packing must be replaced.



**Note:** Avoid adjusting too firmly.

### 5.2 Sealing gasket

The main part for wear and tear in the shut-off valve is the V-ring packing.

Depending on the particular application, a regular check for abrasion must be carried out (necessary if application as end-pipe valve).

#### • Replacing the sealing element by centric valves

By loosening the sealing element, the replacement can be carried out by the customer in the factory without any problem. The replacement of the hard vulcanised sealing gasket is only possible at the manufacturer's works.

#### • Replacing the sealing element by eccentric valves

##### **Dismantling:**

- Dismantle the shut-off valve from the piping with valve disc in closed position.
- Disconnect the valve from the power supply.
- Switch off the compressed air supply - **Attention danger of crushing!!!**
- Open the valve disc by hand.
- Loosen the sealing ring attachment bolts.
- Screw the larger bolts into the thread of the sealing ring, tighten evenly, in alternating pattern, and with these screw pull the sealing ring out of the body.
- Remove damaged sealings and if necessary remove O-rings.

##### **Assembly:**

- Clean the sealing ring and body seat and if necessary remove any burred edges.
- Carefully insert new sealing- and O-rings in the sealing ring, making sure, that the angled side of the sealing element is parallel to the angled side of the supporting ring (otherwise the sealing element cannot be inserted).
- Insert the sealing ring in the body.
- Screw in the attachment screws evenly, in alternating pattern to avoid the sealing disc slanting.
- Close the valve disc, and check for clearance.

### 5.2 Sealing gasket

Complete sealing- and abrasion part-sets are available for pneumatic actuators



**Important:** Only use original spare parts when assembling.

## 6. Dismantling the valve from the piping:

Before dismantling, approval must first be obtained from the authorised factory management (depending on the local regulations).



**Important:** If there is a pressure discharge in the piping, i.e. by dangerous media, this must be drained-off and cleaned with an appropriate substance.



**Important :** For safety reasons, the power and air supply must be first shut-off by authorised and qualified personal before assembly, disassembly, or any maintenance work on the shut-off can be carried out.

It is only possible to remove the valve disc from the piping, in the closed position.



**Attention:** If there is threat of an explosion through an electrostatic charge, the valve must be earthed. If required, the shut-off valve can also be delivered as a special design, with the valve disc directly earthed. In addition to this, electrical conductive sealings are also available (specific resistance less than 10<sup>4</sup> Ohm) – however, only in black quality. The wiring of electrical parts can be taken from relevant electrical installation data, and should only be carried out by authorised qualified personal.

## 7. Safety instructions and dangers:

Before working on the shut-off valve, the pressure in the pipe line must be switched off.



**Attention:** Never reach in a open valve disc with the hand, or any other part of the body if the electric- and compressed air have not been switch off. Caution must be observed, especially by cleaning work.



**Attention:** If the application of the valve is with product temperatures above +50°C this can lead to the valve body becoming intensely warm. Therefore, preventive measures must be taken to avoid skin burning by contact. Especially with manually operated valves, the operating personal must wear adequate protective clothing i.e. protective gloves.

## 8. Sealing area dimensions of the connection flange:

### 8.1 Dimensions for central shut-off valve

**Fig A** shows the **wrong** form of the connecting flange. The sealing gasket of the shut-off valve bears the main force of the connecting screws.

**Fig B** indicates the **correct** form of the connecting flange. The sealing area of the connecting flange bears the main force of the connecting screws.

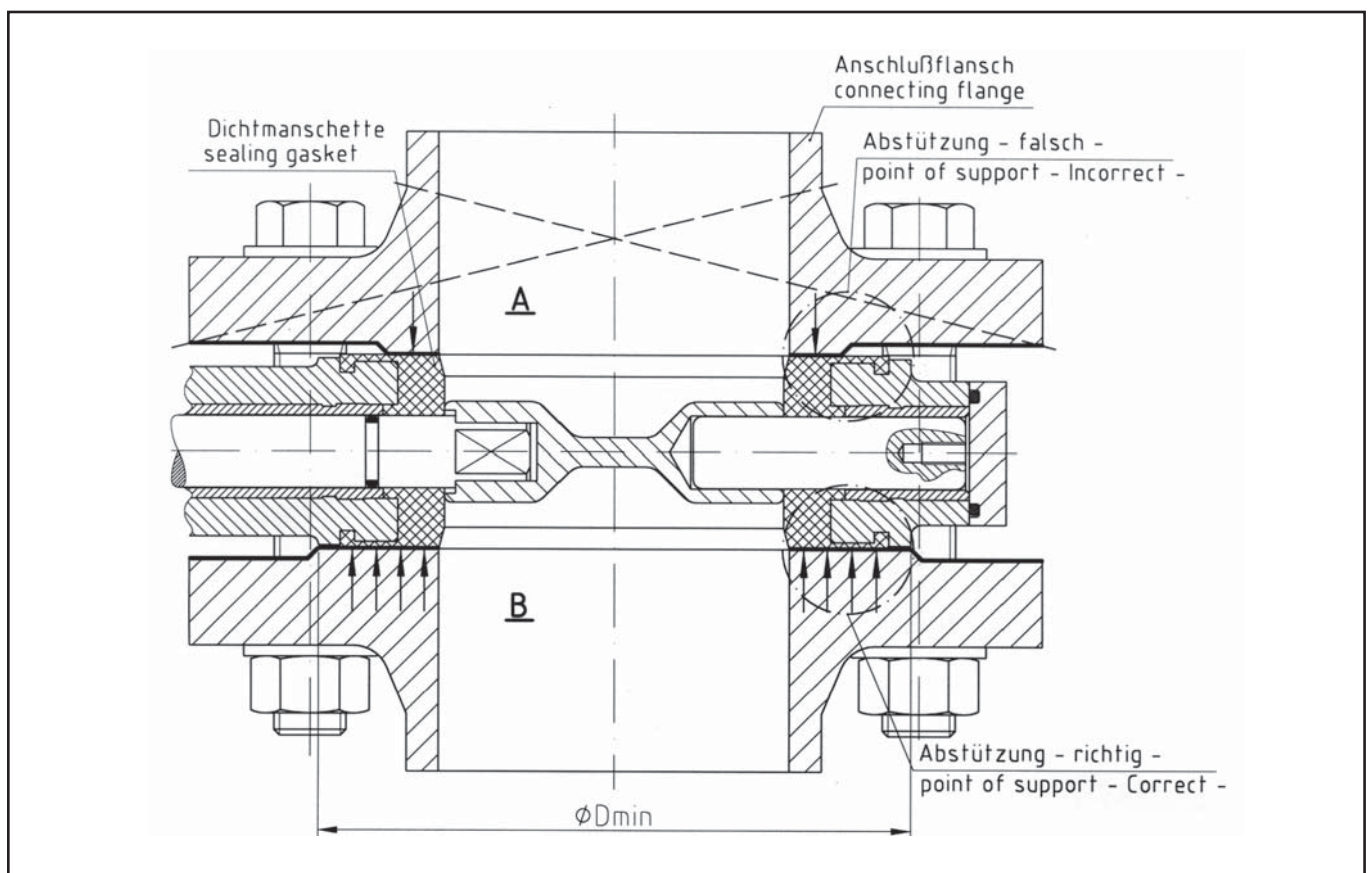


Fig 6 - Connecting flange by central valves

DN	50	65	80	100	125	150	200	250	300	350	400	500	600	700	800	900	1000
ØDmin.	102	122	138	158	188	212	268	320	370	430	482	585	685	800	905	1005	1110

Table 2 - Connecting flange dimensions

## 8.1 Dimensions for central shut-off valve

Fig A shows the **correct** form of the connecting flange.

In Fig B the **wrong** form can be reconised.

## 9. Customer inquiries

( should you have any inquiries, please state the following: )

1. Commision number ( embossed on the control body )
2. Type, product number, nominal diameter and version of valve
3. Pressure and temperature of process media
4. Flow rate in m<sup>3</sup>/h
5. Installation drawing, if possible

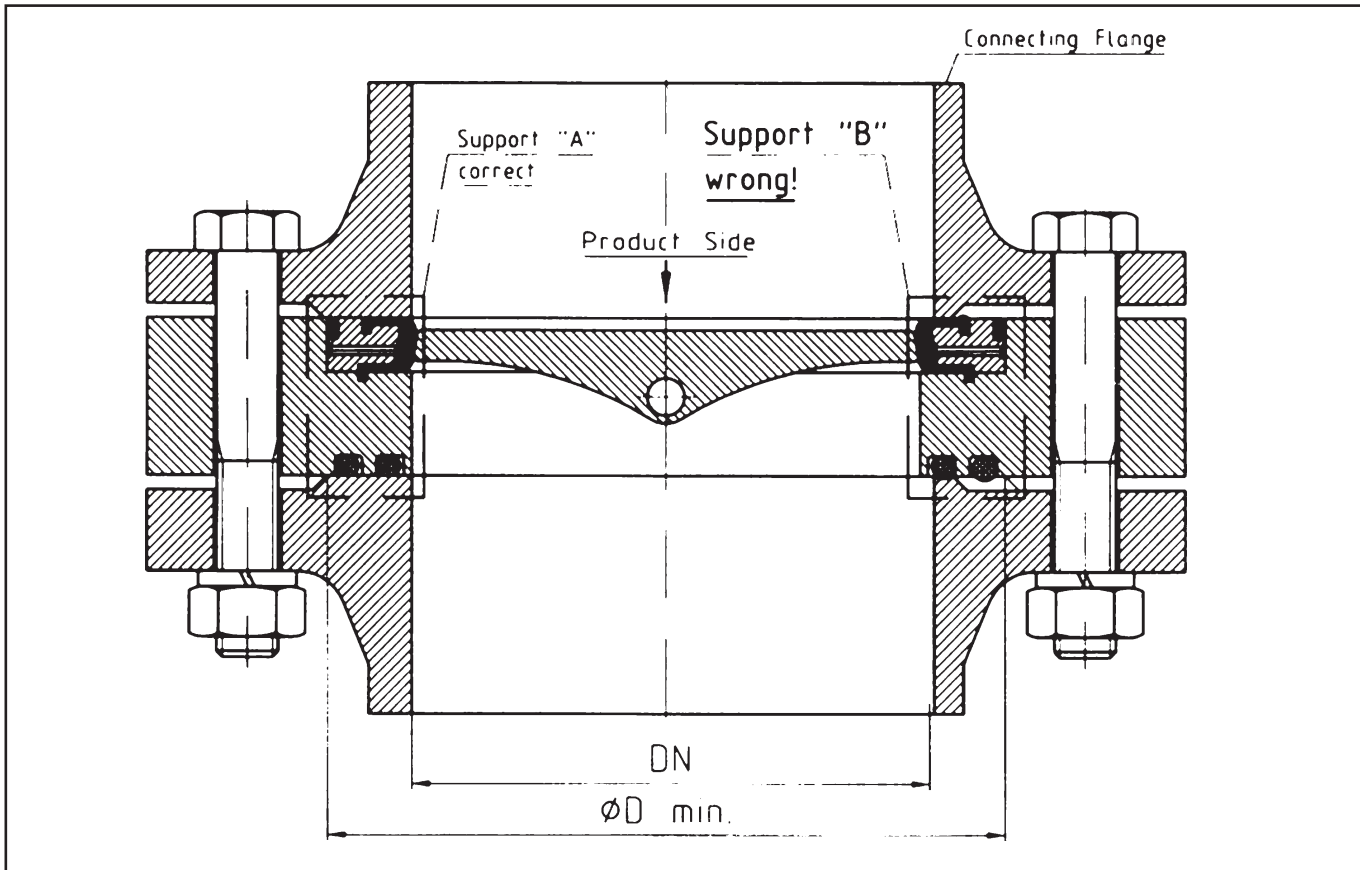


Fig 7 - The connecting flange of an eccentric valve

DN	150	200	250	300	350	400	500
ØDmin.	212	268	320	370	430	482	585

Table 3 - Connecting dimensions

Please contact our technical sales department for your special requirements

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