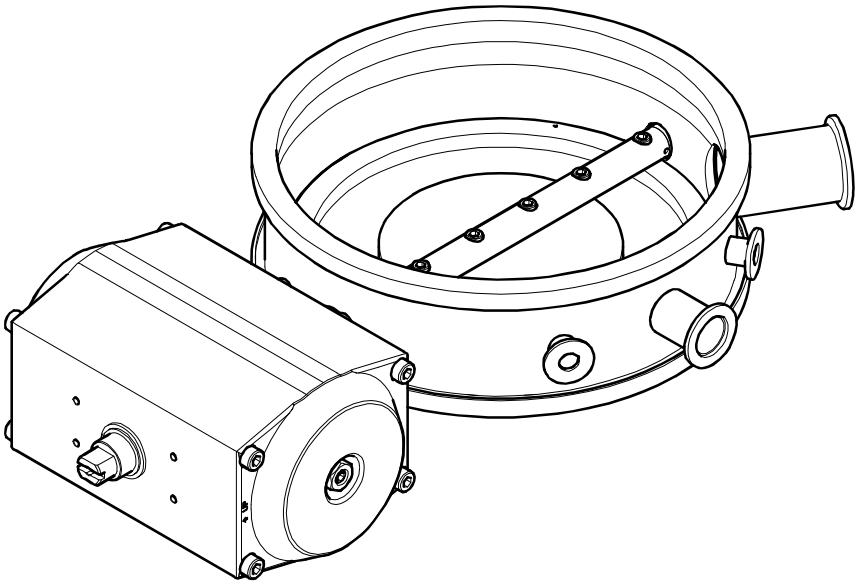
Butterfly valve

pneumatically actuated

21048-QE.4-000.

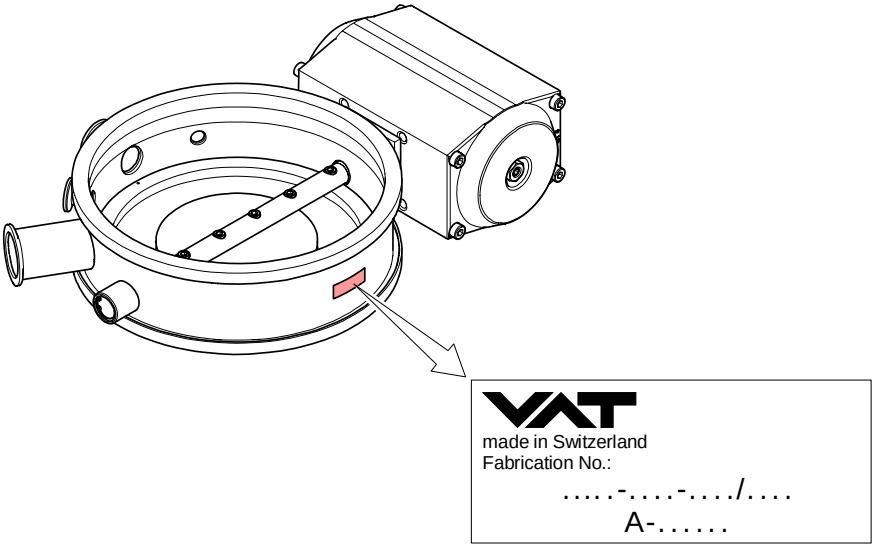
21048-QE.4-ABA.

21048-QE.4-ADJ.



Product Identification

In all communications with VAT, please specify the information on the product nameplate. For convenient reference copy that information into the space provided below:



Validity

This document applies to products with part numbers:

21048-QE14-000. (with orifice for operation with pilot valve)
21048-QE14-ABA. (with orifice for operation with pilot valve)

and the versions of

21048-QE24-000. (with position indicator and orifice for operation with pilot valve)
21048-QE24-ABA. (with position indicator and orifice for operation with pilot valve)
21048-QE24-ADJ (with position indicator and orifice for operation with pilot valve)
21048-QE44-000. (with position indicator and pilot valve)
21048-QE44-ABA. (with position indicator and pilot valve)
21048-QE44-ADJ (with position indicator and pilot valve)

The part number (PN) can be taken from the product nameplate.

If not indicated otherwise in the legends, the illustrations in this document correspond to the valve 21048-QE14-000. They apply to the 21048-QE.4-000. by analogy.

We reserve the right to make technical changes without prior notice.

All dimensions are indicated in mm.

Intended Use

The Butterfly Valves 21048-QE.4-000. and 21048-QE.4-ABA. are pneumatically actuated valves for high vacuum applications.

Functional Principle

The valve is opened and closed by the rotary motion of the pneumatic actuator.

Description

The valves have stainless steel housings. The 21048-QE.4-000. has radially arranged small flange connections for the bypass line, gauge and/or vent valve.

A position indicator providing electrical signals for the two final positions of the valve plate as well as a pilot valve for electropneumatic actuation of the valve are available as accessories.

Scope of Delivery

1× Butterfly Valve
1× Operating Manual German
1× Operating Manual English

Contents

For cross-references within this document, the symbol (→ 🗎 XY) is used.

1 Safety

1.1 Symbols Used

DANGER

Information on preventing any kind of physical injury.

WARNING

Information on preventing extensive equipment and environmental damage.

Caution

Information on correct handling or use. Disregard can lead to malfunctions or minor equipment damage.

Notice

1.2 Personnel Qualifications

Skilled personnel

All work described in this document may only be carried out by persons who have suitable technical training and the necessary experience or who have been instructed by the end-user of the product.

1.3 General Safety Instructions

- Adhere to the applicable regulations and take the necessary precautions for the process media used.

  Consider possible reactions between the materials (→ 🗎 6) and the process media.
- Adhere to the applicable regulations and take the necessary precautions for all work you are going to do and consider the safety instructions in this document.
- Before beginning to work, find out whether any vacuum components are contaminated. Adhere to the relevant regulations and take the necessary precautions when handling contaminated parts.

Communicate the safety instructions to all other users.

1.4 Liability and Warranty

VAT assumes no liability and the warranty becomes null and void if the end-user or third parties

- disregard the information in this document
- use the product in a non-conforming manner
- make any kind of interventions (modifications, alterations etc.) on the product
- use the product with accessories, spare parts, and consumables not listed in the corresponding product documentation.

The end-user assumes the responsibility in conjunction with the process media used.

Failures due to contamination or wear and tear, as well as expendable parts (e.g. seals, actuator), are not covered by the warranty.

2 Technical Data

2.1 Butterfly Valves

	21048-QE14-000.	21048-QE..-ABA.
Vacuum connections		
Axially arranged vacuum connections	DN 250 ISO-K	
Radially arranged vacuum connections	1× DN 40 ISO-KF 1× DN 25 ISO-KF 2× DN 10 ISO-KF	
Mounting orientation	any	
Cycles to first maintenance	1 million [1)]	
Tightness	1×10^{-9} mbar l/s	
Conductance for air Molecular flow	8200 l/s	
Pressure range	10^{-8} mbar … 1.3 bar	
Pressure difference in either direction	1.3 bar	
Actuator Functional principle Initial position Cycles	 double action rotary drive closed 1 million	
Compressed air supply Compressed air connection (NAMUR) Compressed air pressure Purity classes Air cylinder volume Opening time Closing time	 2× G1/4 4 … 6 bar overpressure 2 4 1 (ISO 8573-1) 700 cm^3 5 s 2 s	
Ambiance temperature	+5 … 40 °C	
Bakeout temperature Housing Actuator	 150 °C 80 °C	
Materials Housing, shaft, valve plate Seals	 stainless steel 1.4301 FKM	
Weight	≈15.7 kg	≈16 kg

[1)] Tested at Δp = 1 mbar under clean conditions.
If the valve is operated under harsh or dirty conditions, it should be cleaned / maintained before the specified service time to maintenance has been reached.

2.2 Pilot Valve (Accessory)

Nominal voltage		
Part number	586579	230 VAC / 50 Hz
	586580	115 VAC / 60 Hz
	586581	24 VAC / 50 Hz
	586582	24 VDC
Valve type		5/2-way pneumatic valve with NAMUR flange connection
Version		normally closed
Power connection		cable socket
Degree of protection		IP65
Pickup power		5.7 VA
Holding power		
DC voltage		2.5 W
AV voltage		2.0 W
Duty cycle		100% (i.e. continuous duty possible)
Compressed air pressure		≤10 bar
Nominal width		4 mm
Compressed air connection		1× G1/4, 2× G1/8
Temperatures		
Ambiance		–25 … +65 °C
Operation (continuous duty)		+75 °C
Weight (without solenoid coil)		0.25 kg

Accessories → 🗎 56.

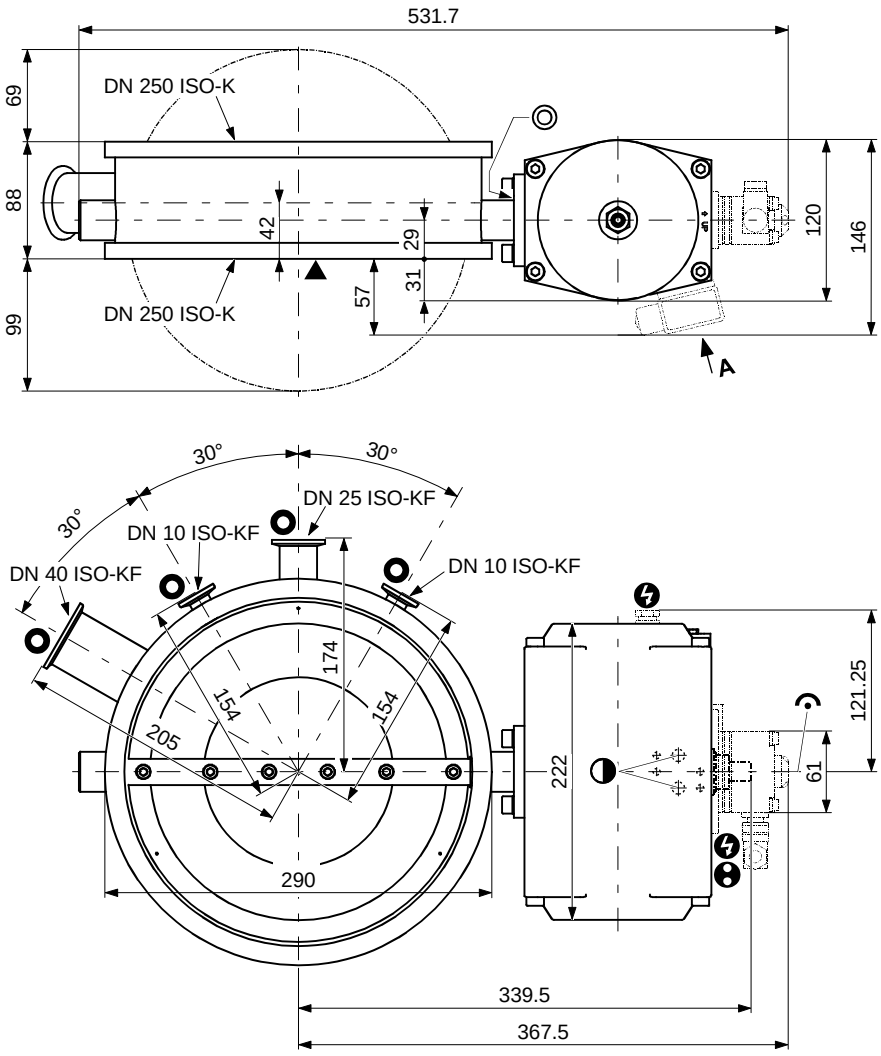
2.3 Position Indicator (Accessory)

Supply voltage	250 VAC, 1 A
Mounting orientation	any
Electrical connection	plug M12, 4 poles, DIN EN 61076--2-101
Cable	ø6 … 8 mm, 0.75 mm^2
Degree of protection	IP65
Materials	
Housing	PET GF30
Screws	stainless steel A2
Temperatures	
Ambiance	–20 … +90 °C
Operation	–20 … +85 °C
Weight	
without plug	106 g
with plug	130 g

Accessories → 🗎 56.

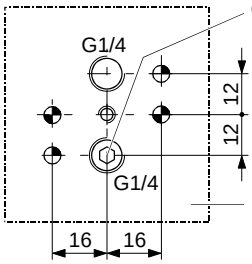
2.4 Dimensions [mm]

21048-QE.4-000.



Compressed air connection

View A



Threaded tapped holes for code pin (M5×8)

Threaded tapped holes for mounting the pilot valve (M5×8)

Power connection

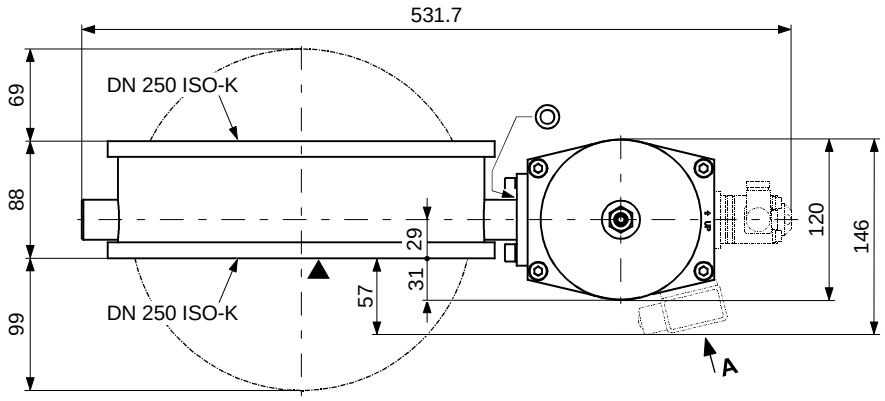
Connection for connection

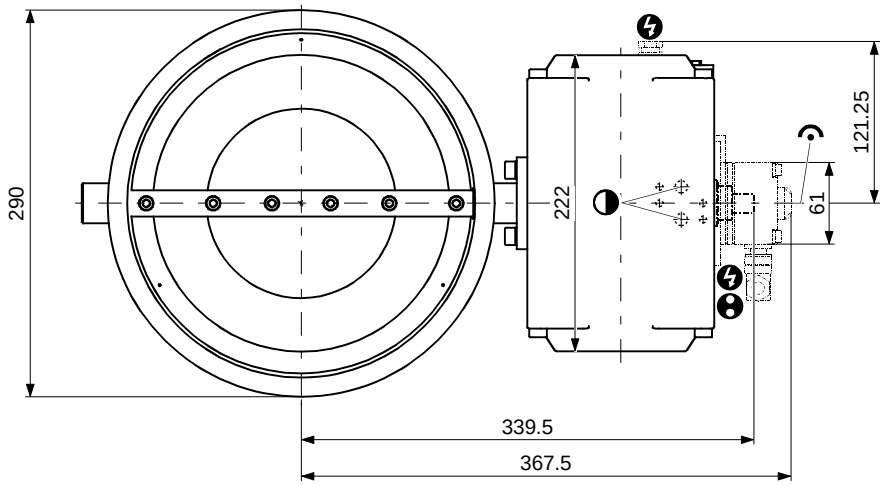
Visual position indicator

Valve seat side

Leak detection opening

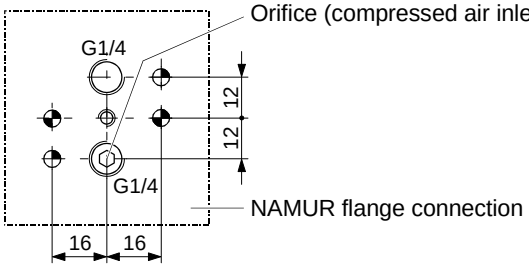
21048-QE.4-ABA.





Compressed air connection

View A



Threaded tapped holes for code pin (M5×8)

Threaded tapped holes for mounting the pilot valve (M5×8)

Power connection

Connection for connection

Visual position indicator

Valve seat side

Leak detection opening

3 Installation

DANGER

DANGER: overpressure in the vacuum system >2.5 bar

KF flange connections with elastomer seals (e.g. O-rings) cannot withstand such pressures. Process media can thus leak and possibly damage your health.

Use O-rings provided with an outer centering ring.

Caution

Caution: vacuum component

Dirt and damages impair the function of the vacuum component.

When handling vacuum components, take appropriate measures to ensure cleanliness and prevent damages.

Caution

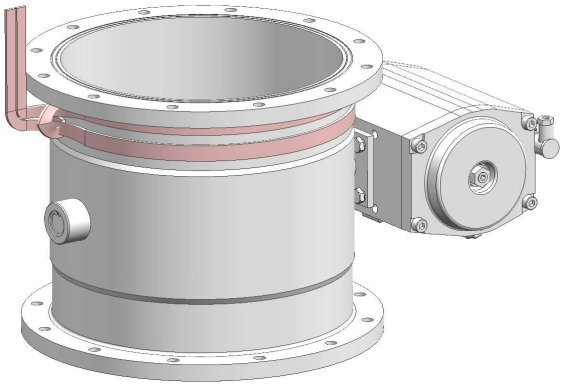
Caution: dirt sensitive area

Touching the product or parts thereof with bare hands increases the desorption rate.

Always wear clean, lint-free gloves and use clean tools when working in this area.

Load pick up

Lift the valve with an appropriate hoisting sling for unpacking and transport. (See sketch below)

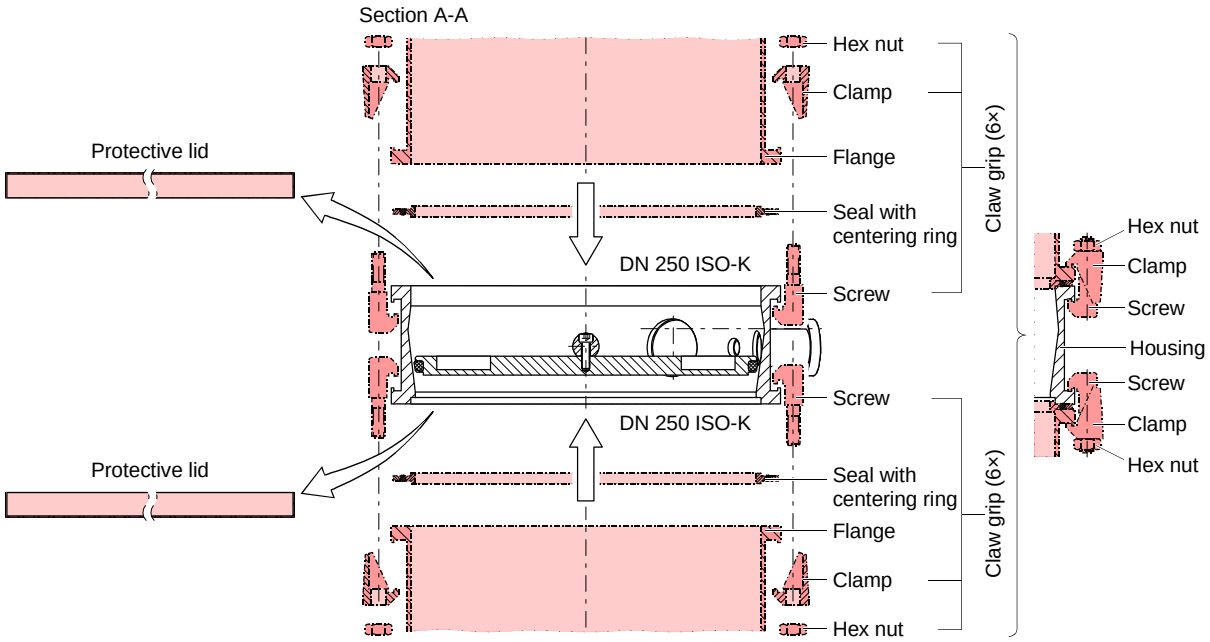


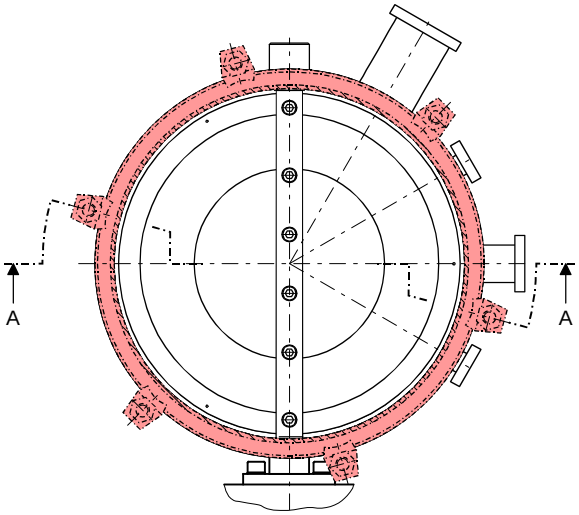
3.1 Vacuum Connection

If the valve has been stored for a prolonged period make sure the sealing surface of the valve housing and the O-ring of the valve plate are clean and uniformly lubricated. Otherwise, clean and lubricate the sealing surface and O-ring before installing the valve (→ "Minor Maintenance Work", 🗎 33).

Axially arranged vacuum connections

Remove the protective lids and install the product to the vacuum system.



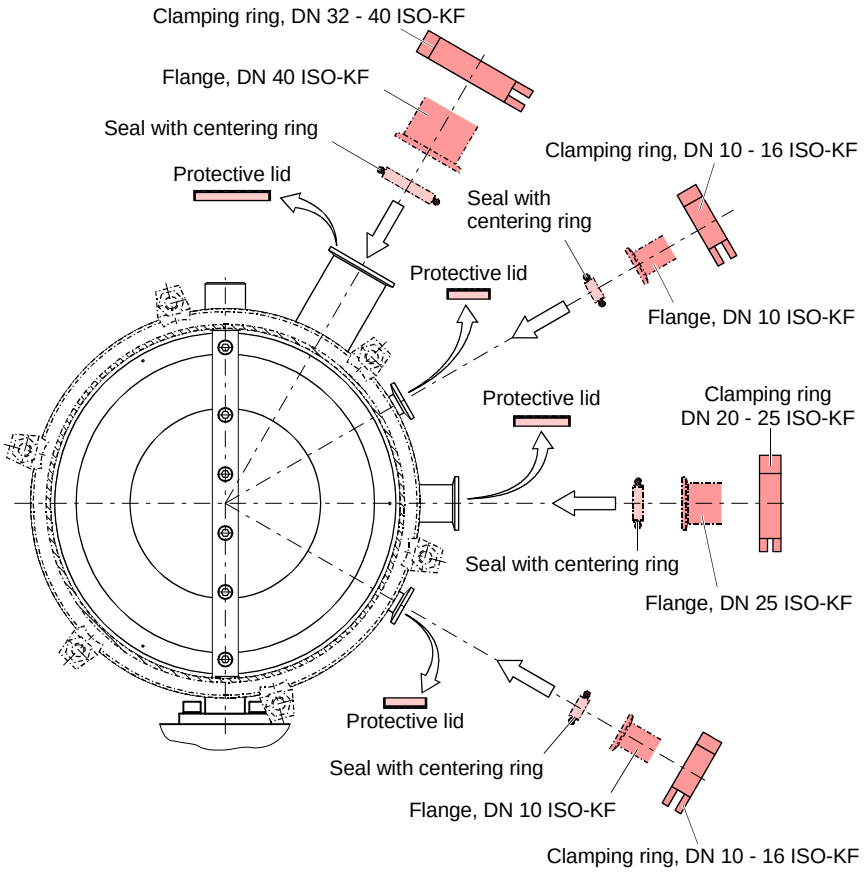


Keep the protective lids.

Arrange the claw grips (Accessories → 🗎 56) in intervals of ≈60°.

Radially arranged vacuum connections
(21048-QE.4-000. only)

Remove the protective lids and install the product to the vacuum system.



Keep the protective lids.

Cover the small flange connections that are not used with blanking flanges of the corresponding nominal diameter.

3.2 Compressed Air Connection

DANGER

DANGER: moving parts

When the product is connected to the supply media, parts can start moving. Moving parts can catch parts of the body and cause injuries.

The connection to the compressed air supply may only be established if

- the compressed air line is not pressurized
- the product is installed in a vacuum system or
- the moving parts are protected to avoid accidental contact.

DANGER

DANGER: compressed air

Unprofessionally handling compressed air can cause physical injury.

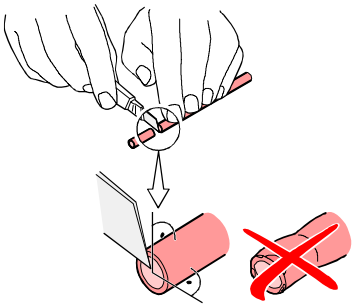
Adhere to the relevant regulations and take the necessary precautions when handling compressed air.

Specifications for the plastic tube:

- OD 6 mm, ID 4 mm
- bursting pressure ≥10 bar (overpressure)
- material: soft PA or PU

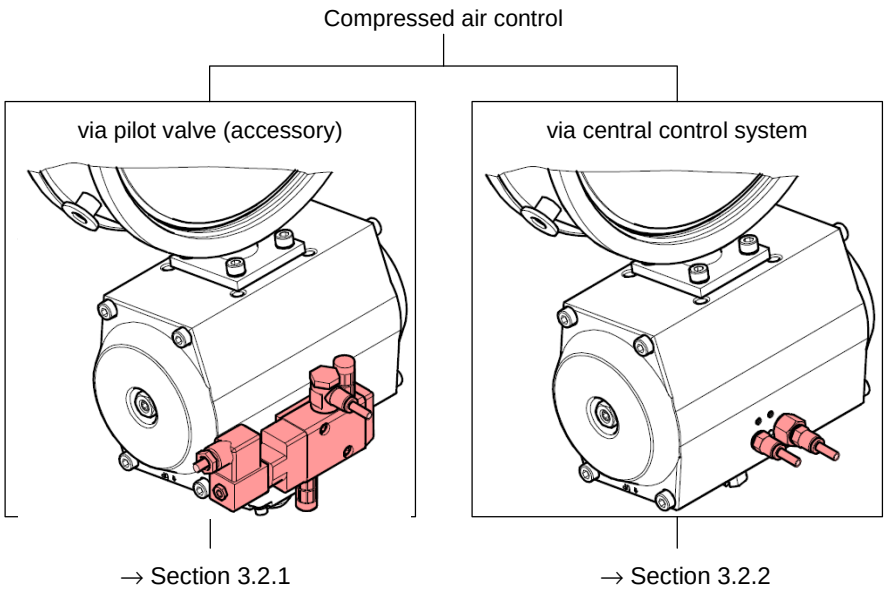
To ensure leak tightness:

- cut the plastic tube orthogonally
- make sure the outside of the plastic tube is not damaged



The compressed air must meet the following specifications:

- purity classes 2 4 1 (ISO 8573-1)
- 4 … 8 bar (overpressure)



The compressed air inlet <2> must always be equipped with an orifice:

- Butterfly Valves with PN 21048-QE14-000., 21048-QE14-ABA., 21048-QE24-000. and 21048-QE24-ABA. are delivered with a preinstalled orifice (G1/4", ø1 mm) for compressed air control via pilot valve.

3.2.1 For Operation with Pilot Valve (Accessory)

Accessories → 🗎 56.

3.2.1.1 Voltage Rating

Caution

Caution: supply voltage

A wrong supply voltage can destroy the product.

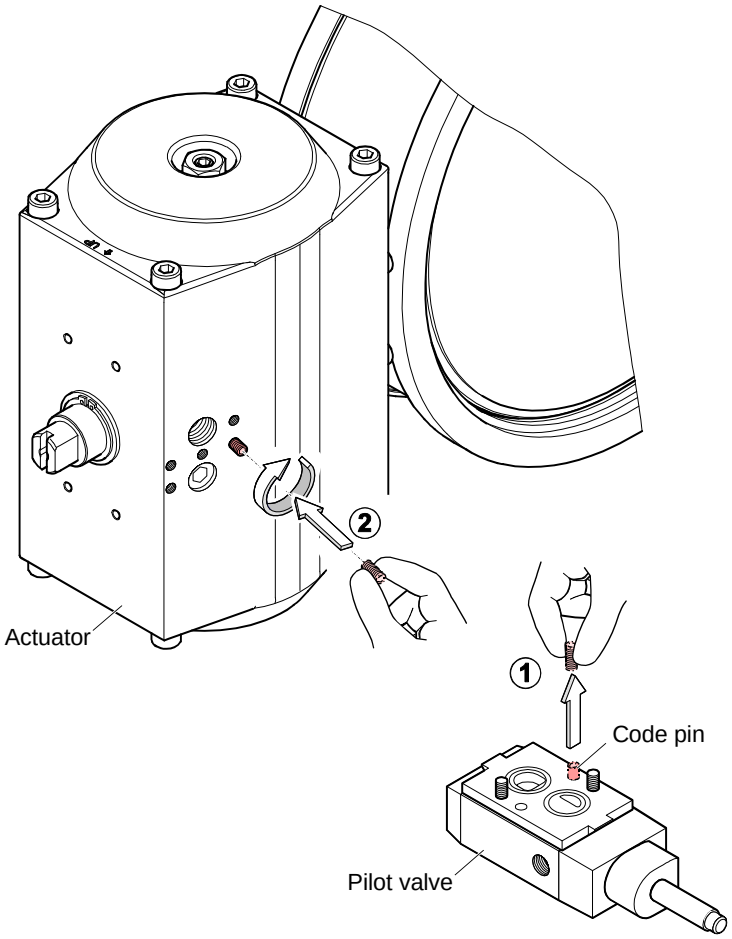
The supply voltage must correspond to the voltage rating of the product (→ solenoid coil). If it does not, please contact your local VAT service center.

3.2.1.2 Pilot Valve

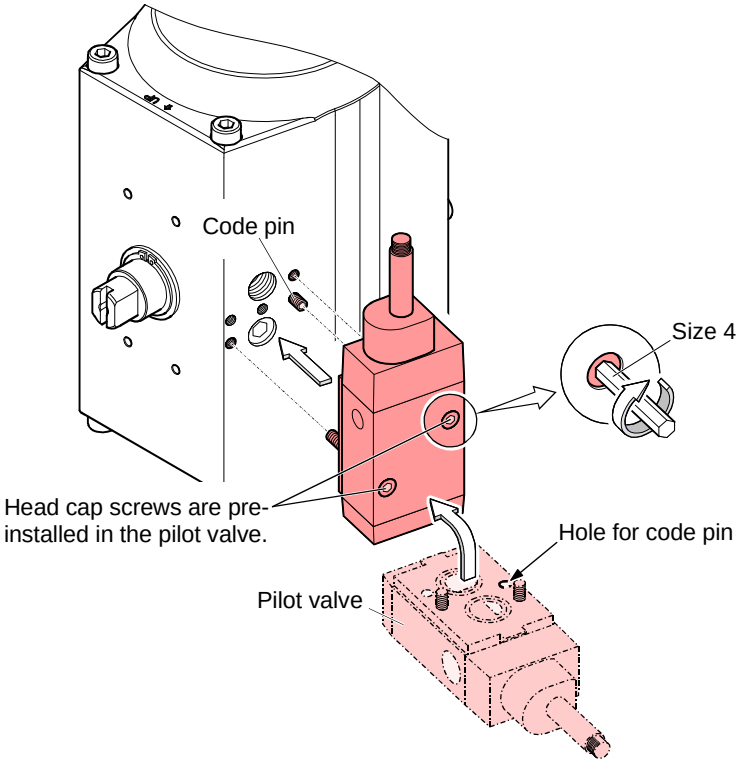
Screwing the Pilot Valve to the Actuator

❶ Pull the code pin out of the pilot valve and manually screw it into the actuator until the stop position is reached.

The code pin is now positioned in such a way that the de-energized state of the pilot valve corresponds with the initial position of the actuator (= Butterfly valve "closed").

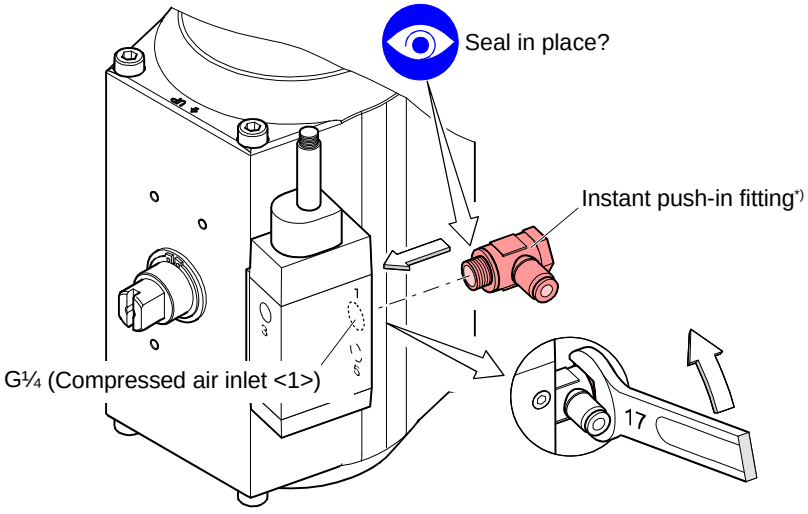


❷ Place the pilot valve on the actuator and tighten the screws.



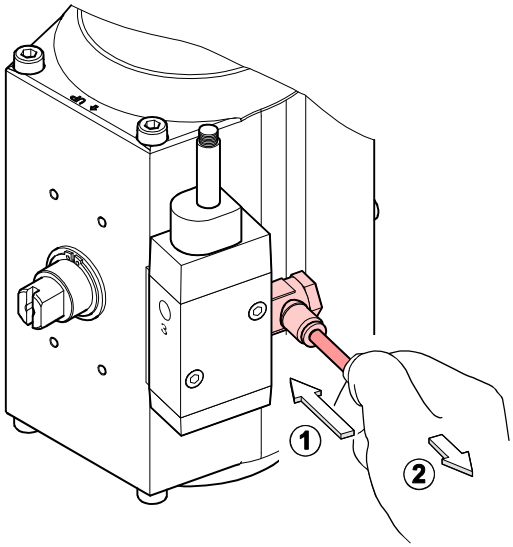
Establishing the compressed air connection

❸ Screw the instant push-in fitting into compressed air inlet <1>.



*) To be provided by the end-user

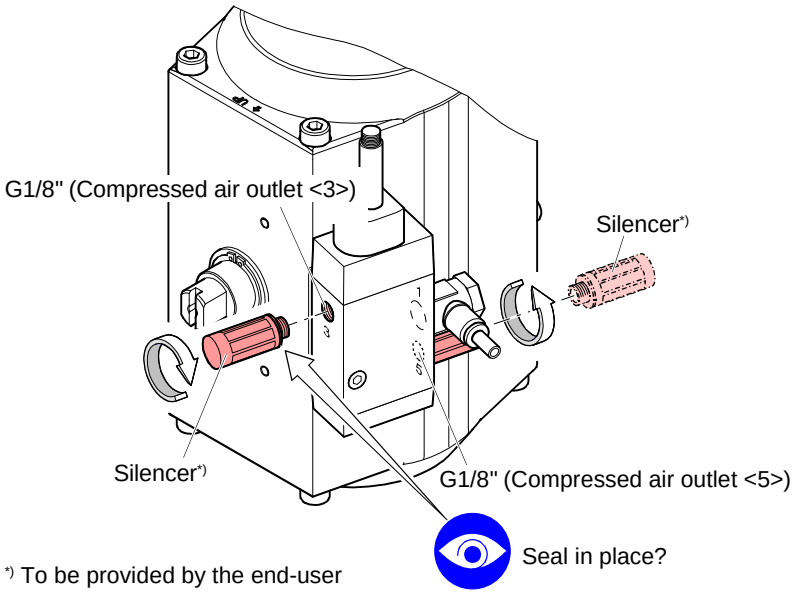
❹ Push in the plastic tube until the stop position is reached and check for correct mounting by slightly pulling.



Connecting the compressed air outlets

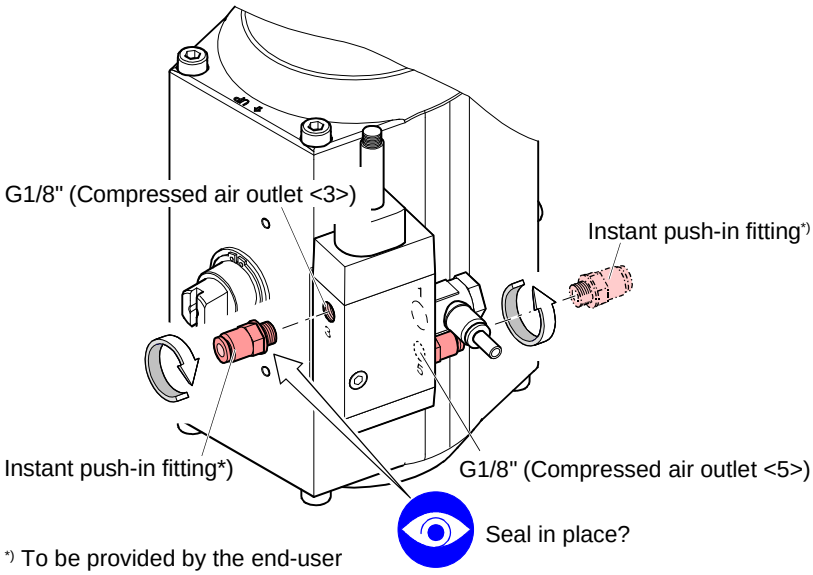
If required ...

❺ ... close compressed air outlets <3> and <5> with silencers ...



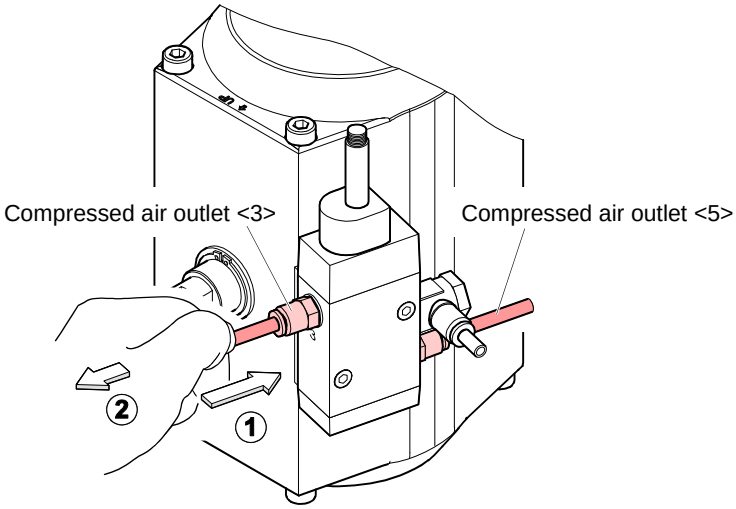
*) To be provided by the end-user

... or screw in instant push-in fittings for the return lines of the compressed air ...



*) To be provided by the end-user

… and mount the plastic tubes by pushing them into the instant push-in fittings until the mechanical stop is reached and check for correct mounting by slightly pulling.

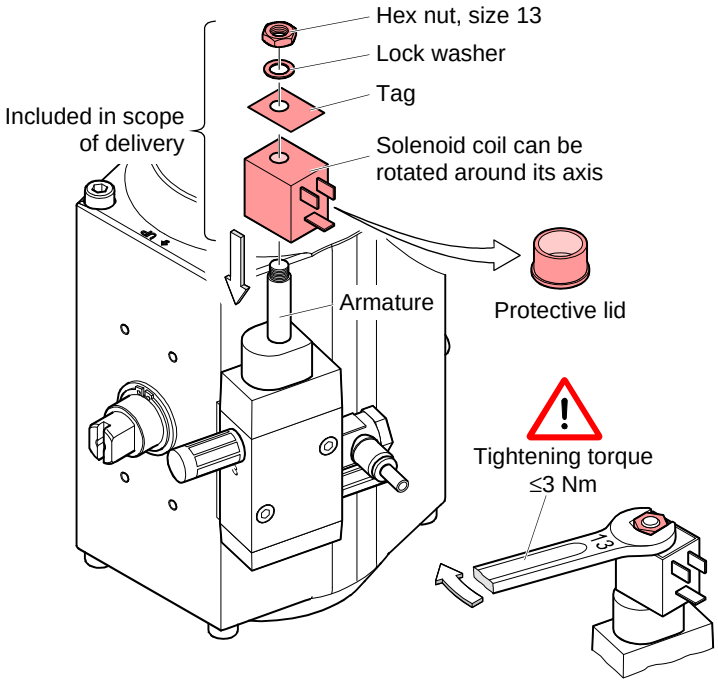


3.2.1.3 Power Connection

Mounting the solenoid coil

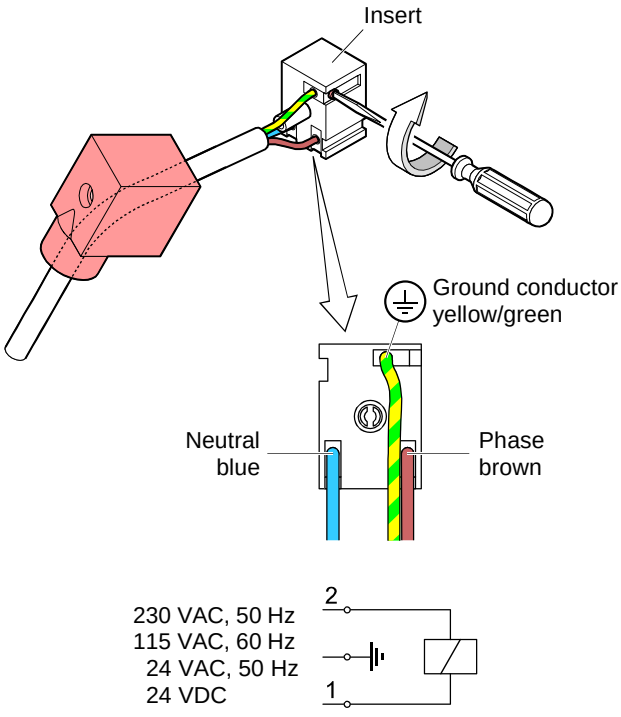
❶ Remove the protective lid.

Slide the solenoid coil, tag and lock washer on the armature and fix them with the hex nut.



Preparing the cable socket

❷ Prepare the cable socket.



The polarity need not be taken into consideration in the 24 VDC version.
For safety reasons, we recommend connecting the ground conductor also in the 24 VDC version.

Connecting the cable socket to the solenoid coil

❸ Mount the seal, plug in the cable socket, and secure it with the screw.

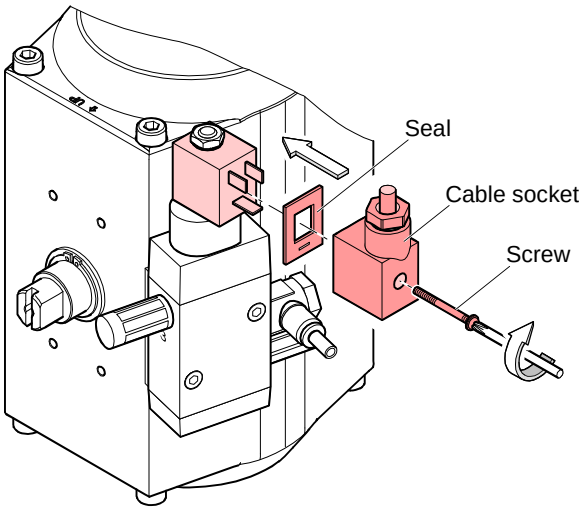
DANGER

DANGER: mains voltage (supply voltage)

Incorrectly grounded products can be extremely hazardous in the event of a fault.

Use only a 3-conductor power cable (supply cable) with protective ground. The power connector may only be plugged into a socket with a protective ground. The protection must not be nullified by an extension cable without protective ground.

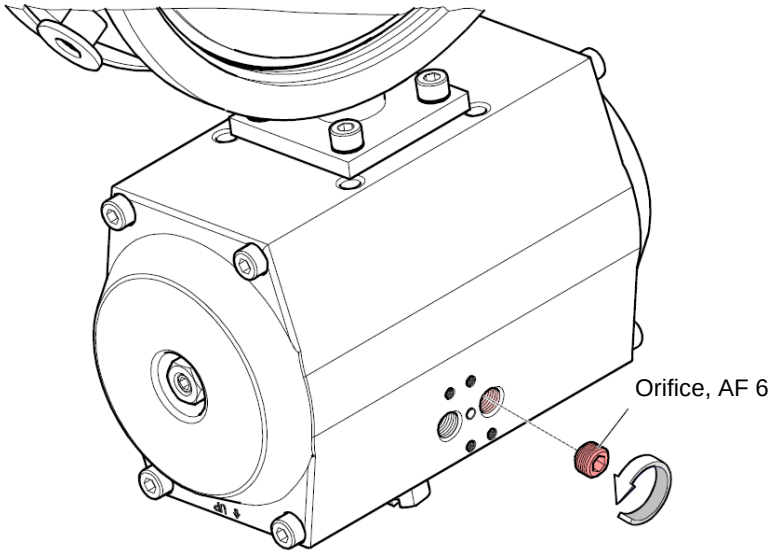
Before connecting or disconnecting the product, turn off the control system.



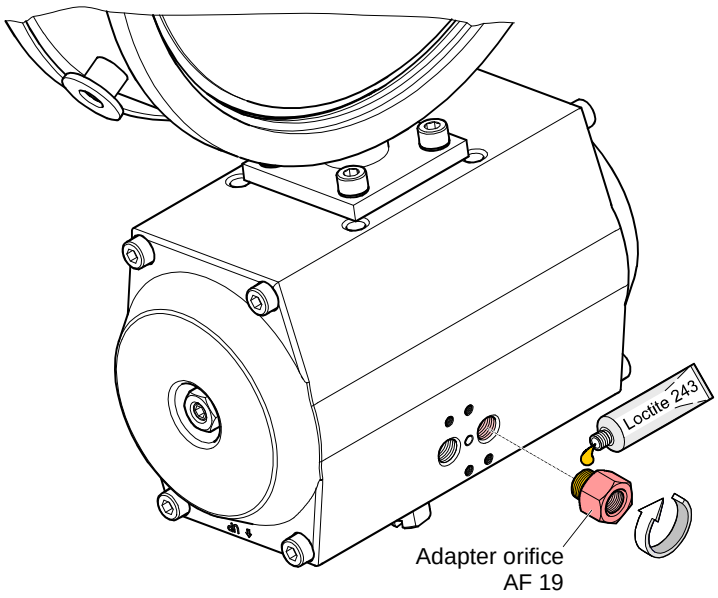
3.2.2 For Operation with Central Compressed Air Control System

❶ Remove the preinstalled orifice for compressed air control via pilot valve.

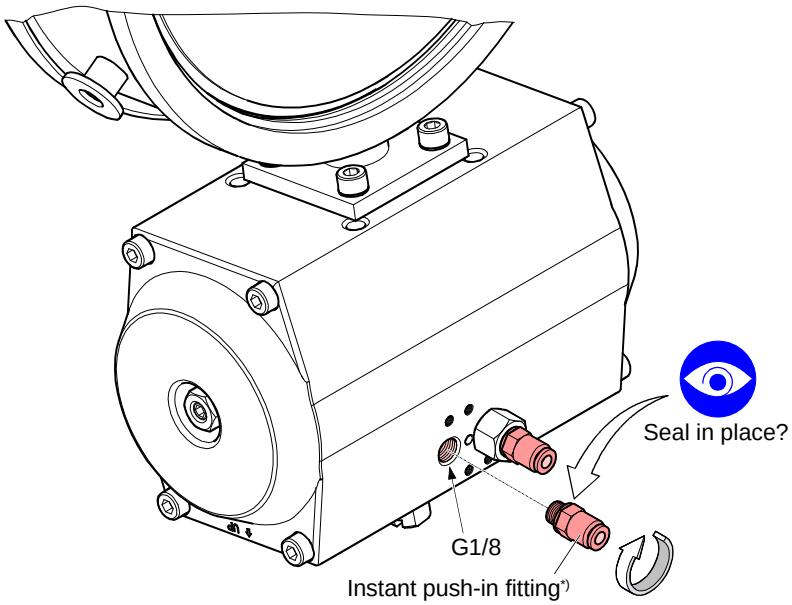
The orifice is secured with Loctite 243 and thus difficult to loosen.



❷ Mount the adapter orifice for direct connection of the instant push-in fitting (→ "Accessories", 🗎 56).

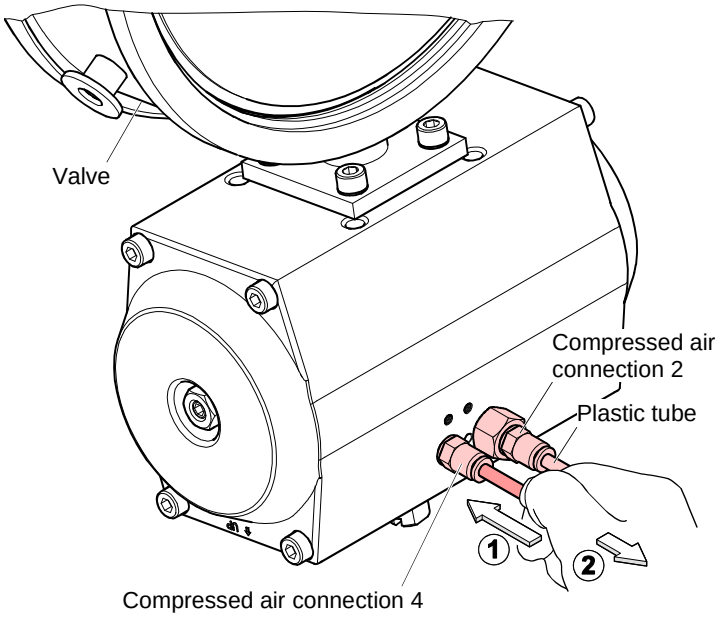


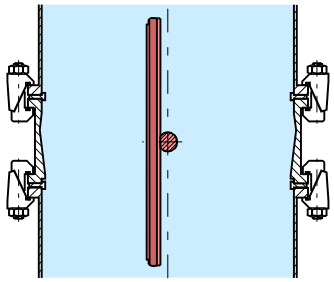
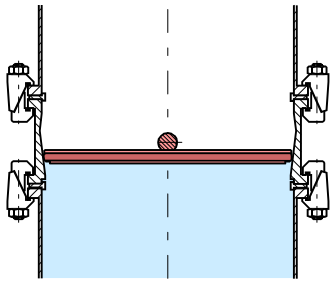
❸ Mount the instant push-in fittings.



*) To be provided by the end-user

❹ Push the plastic tubes into the instant push-in fittings until the stop position is reached and check for correct mounting by slightly pulling.



	Butterfly valve
Compressed air admitted to compressed air connection 4	**open** 
Compressed air admitted to compressed air connection 2	**closed** 

3.3 Position Indicator (Accessory)

Accessories → 🗎 56.

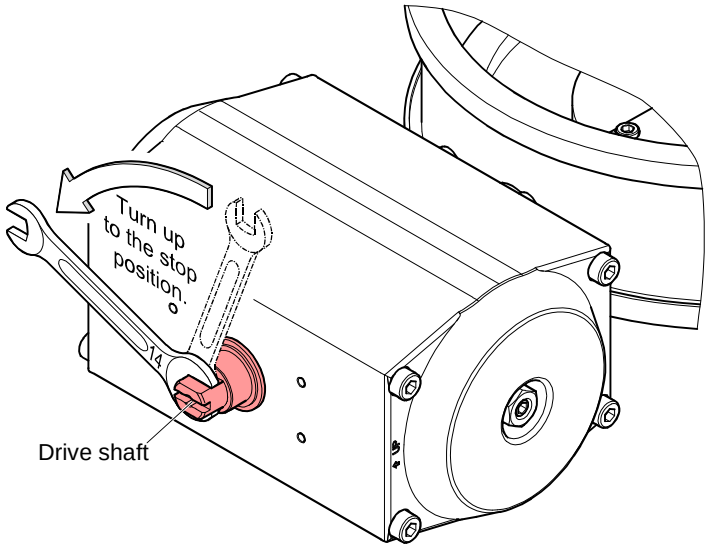
The position indicator signals that the valve plate has reached one of its final positions (open or closed).

Precondition

Butterfly valve closed.

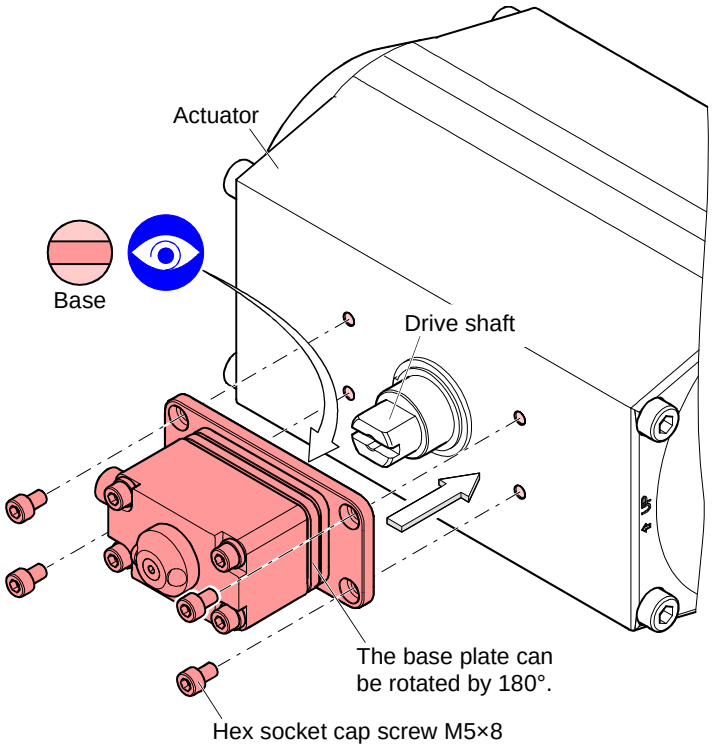
This is achieved by

- admitting compressed air to the actuator (→ 🗎 25) or ...
- ... turning the drive shaft counter-clockwise until the stop position is reached.

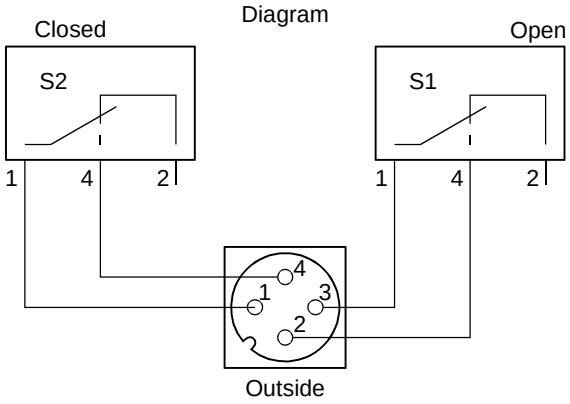


Procedure

❶ Slide the base plate of the position indicator on the drive shaft and mount it to the actuator with four hex socket cap screws.



❷ Make a cable according to the following diagram.



❸ Plug in the cable socket and secure it with the coupling ring.

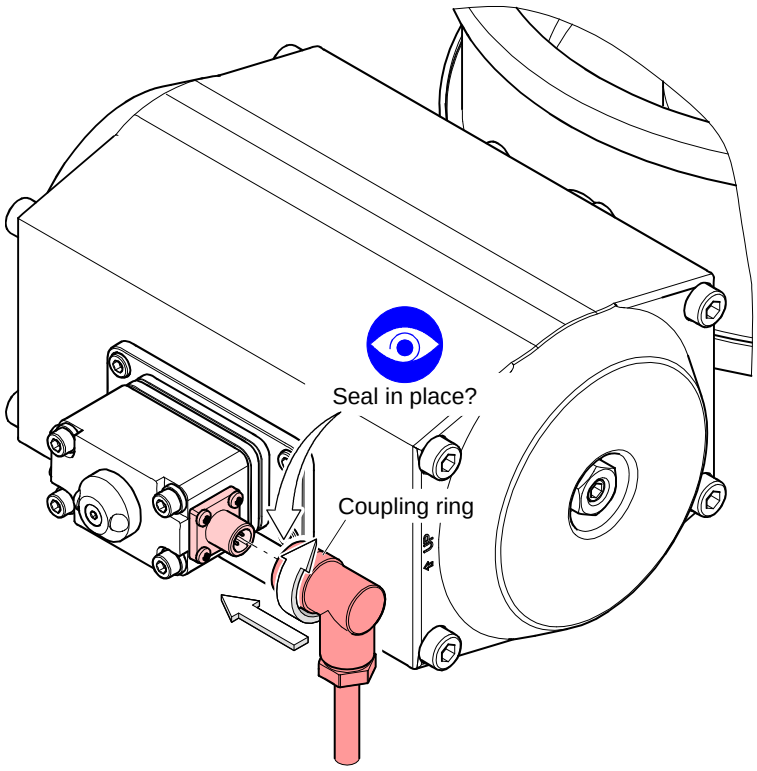
DANGER

DANGER: mains voltage (supply voltage)

Incorrectly grounded products can be extremely hazardous in the event of a fault.

Use only a 5-conductor power cable (supply cable) with protective ground. The power connector may only be plugged into a socket with a protective ground. The protection must not be nullified by an extension cable without protective ground.

Before connecting or disconnecting the product, turn off the control system.

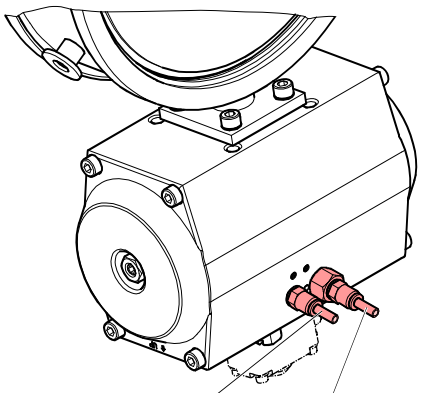
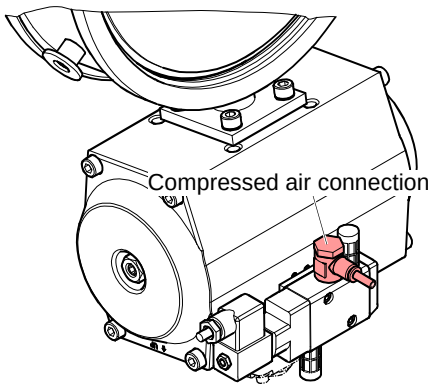
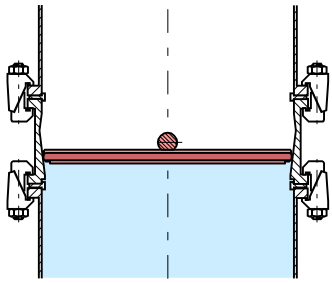
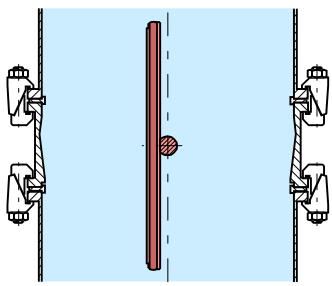


4 Operation

Periodically check that the sealing surface of the valve housing and the O-ring of the valve plate are clean and uniformly lubricated. Otherwise, clean and lubricate the sealing surface and O-ring (→ "Minor Maintenance Work", 33).

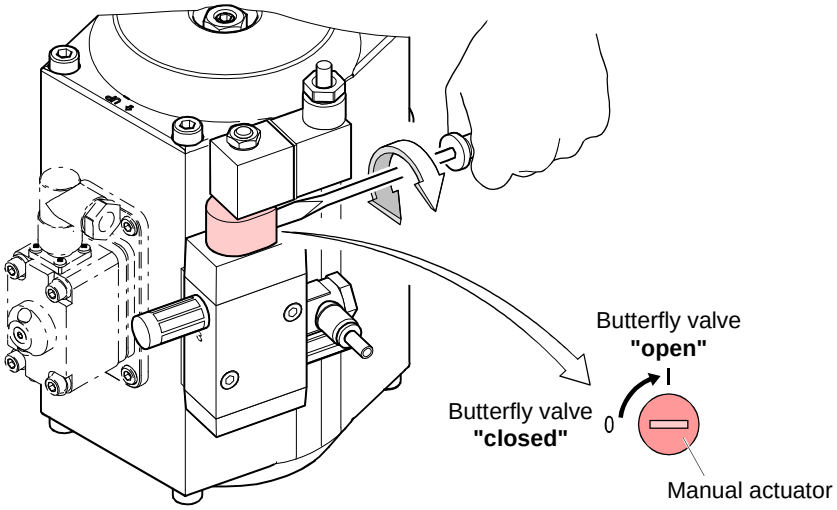
If the valve is operated under harsh or dirty conditions, it should be cleaned / maintained before the specified service time to maintenance (→ "Technical Data") has been reached.

Normal operation

Butterfly valve	**Compressed air control via control system**		**Compressed air control via pilot valve**	
	 Compressed air connection 4	Compressed air connection 2	 Compressed air connection	Nominal voltage
closed 	no compressed air admitted	compressed air admitted	compressed air admitted	no voltage supplied
open 	compressed air admitted	no compressed air admitted	compressed air admitted	voltage supplied

Power failure

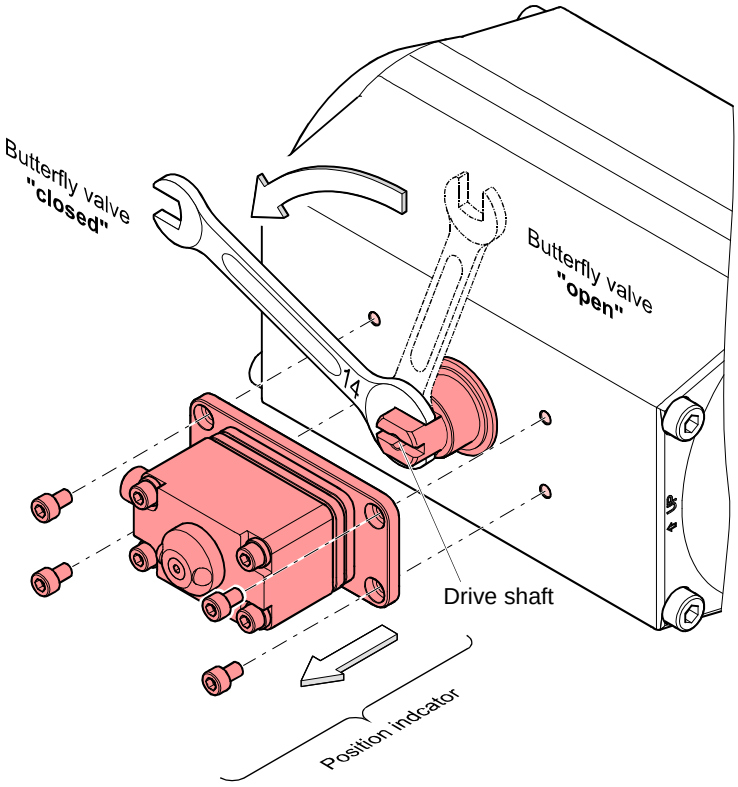
Butterfly valves controlled by the standard pilot valve (→ Accessories) close in the event of a power failure. If such failure occurs and compressed air is admitted, they can be opened and closed via the manual actuator.



Compressed air failure

In the event of a compressed air failure, the valve plate remains in an undefined position if it was moving. If such failure occurs, manually turn the drive shaft to open or close the Butterfly valve.

Precondition: Position indicator removed.



Power and compressed air failure

In the event of a power and compressed air failure, the valve plate remains in an undefined position if it was moving. If such failure occurs, manually turn the drive shaft to open or close the Butterfly valve (→ illustration above).

5 Deinstallation

Preconditions

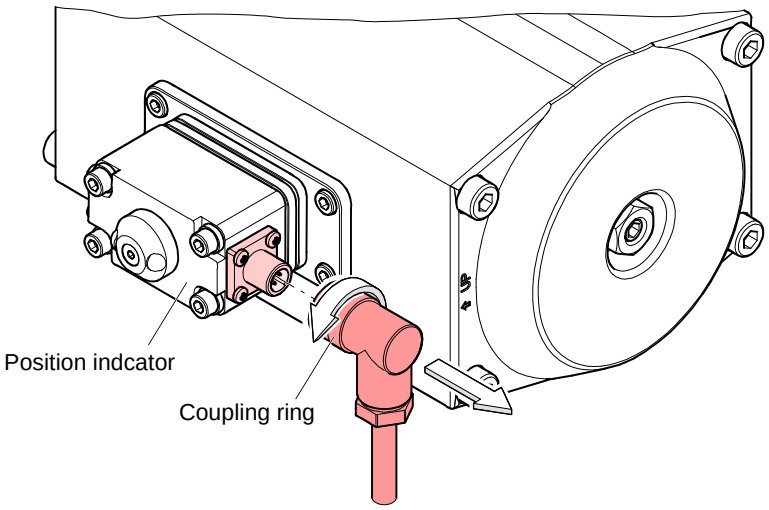
- Butterfly valve closed
- Vacuum system vented

5.1 Power Connection

Before connecting or disconnecting the product, turn off the control system.

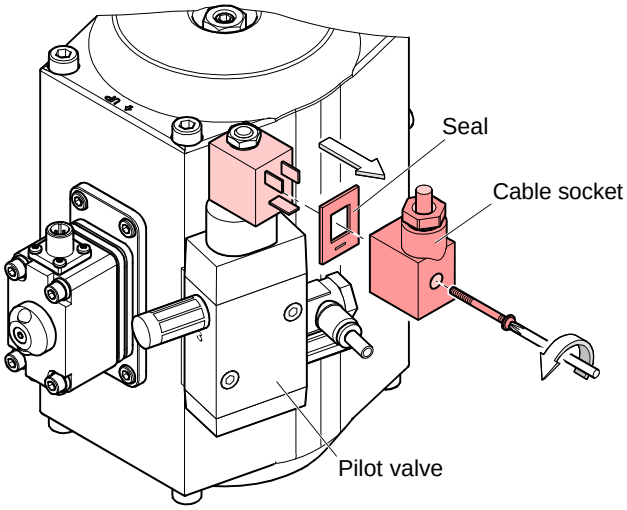
Position indicator

Unfasten the coupling ring and pull out the cable socket.



Pilot valve

Unlock the cable socket and pull it out.



5.2 Compressed Air Connection

DANGER

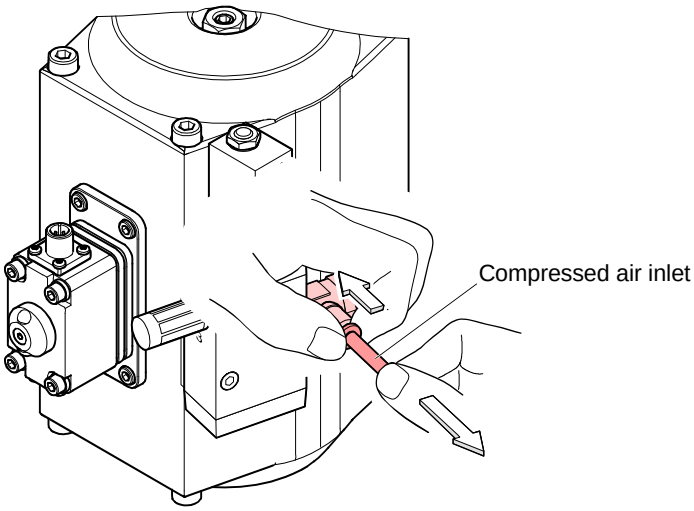
DANGER: compressed air

Physical injury can result if a pressurized compressed air line is disconnected.

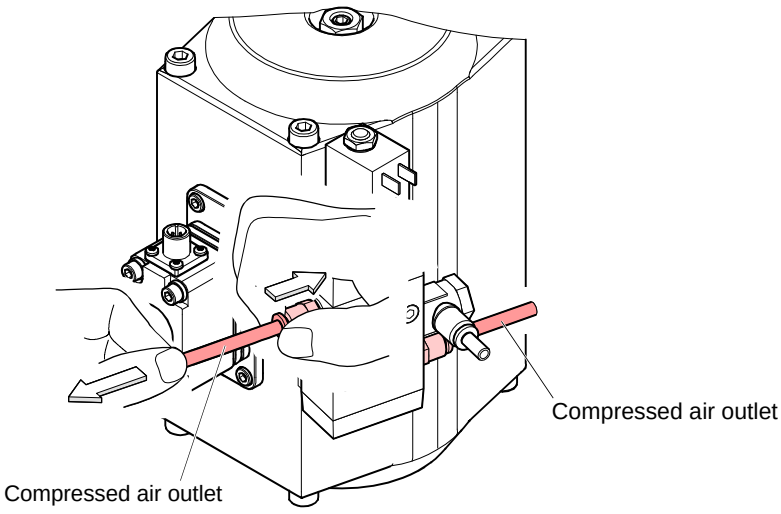
Before doing any work, turn off the compressed air supply and relieve the compressed air lines.

Pilot valve

❶ Press the ring towards the valve and pull out the plastic tube.



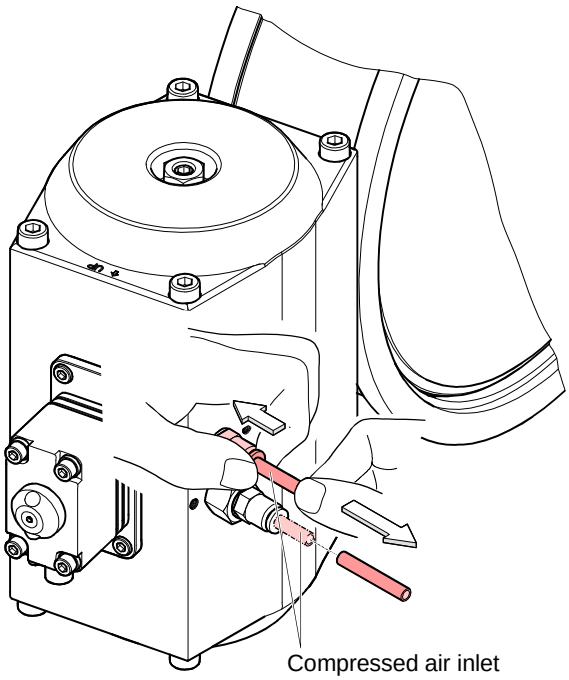
❷ Press the rings of the compressed air outlets towards the valve and pull out the plastic tubes.



Silencers that have been installed instead of instant push-in fittings need not be removed.

Central compressed air system

Press the ring towards the valve and pull out the plastic tube.



5.3 Vacuum Connection

DANGER

DANGER: contaminated parts

Contaminated parts can be detrimental to health and environment.

Before beginning to work, find out whether any parts are contaminated. Adhere to the relevant regulations and take the necessary precautions when handling contaminated parts.

Caution

Caution: vacuum component

Dirt and damages impair the function of the vacuum component.

When handling vacuum components, take appropriate measures to ensure cleanliness and prevent damages.

Caution

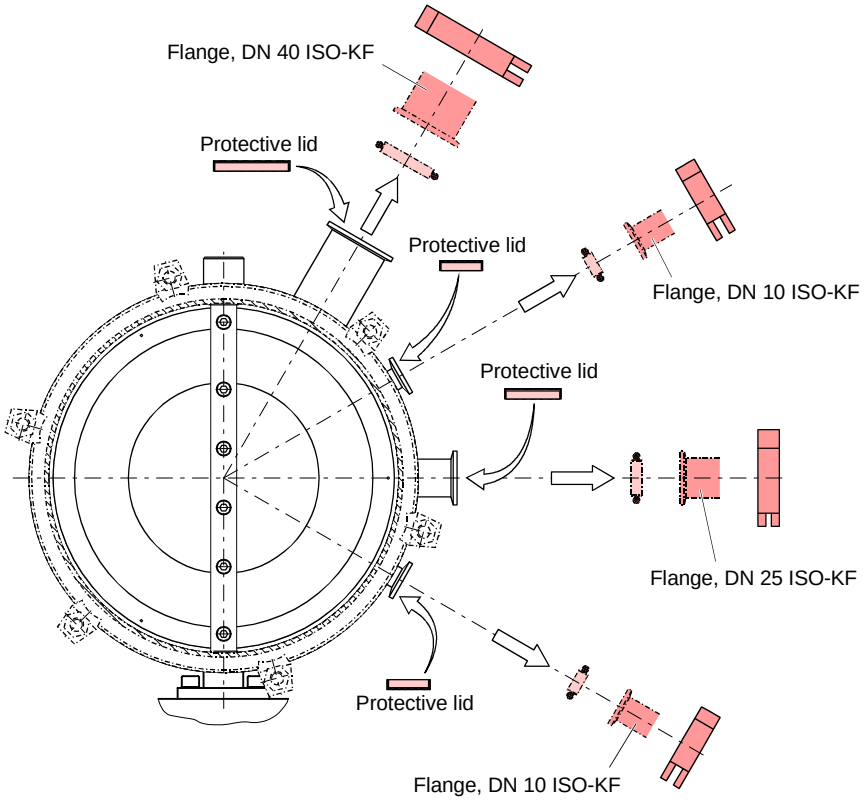
Caution: dirt sensitive area

Touching the product or parts thereof with bare hands increases the desorption rate.

Always wear clean, lint-free gloves and use clean tools when working in this area.

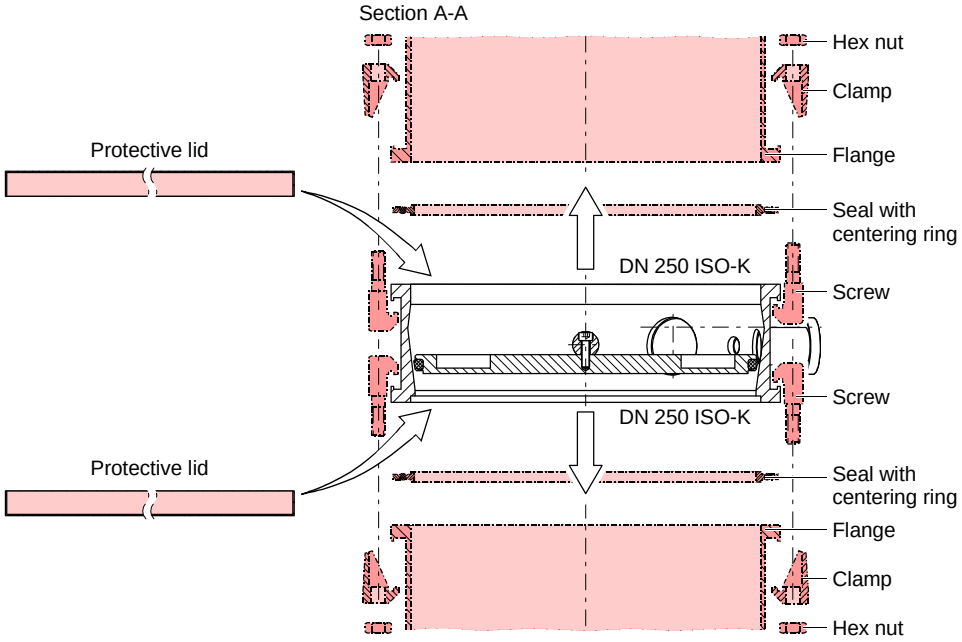
Radially arranged vacuum connections
(21048-QE.4-000. only)

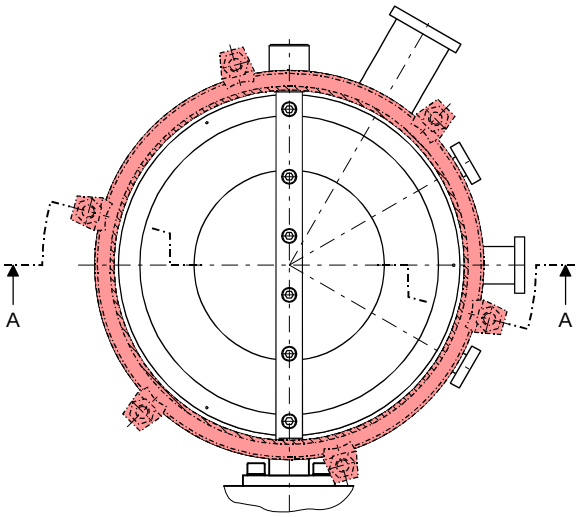
Deinstall the radially arranged vacuum connections and put the protective lids in place.



Axially arranged vacuum connections

Deinstall the axially arranged vacuum connections and put the protective lids in place.





6 Maintenance/Repair

Failures due to contamination or wear and tear, as well as expendable parts (e.g. seals, actuator), are not covered by the warranty.

VAT assumes no liability and the warranty becomes null and void if the end-user or third parties use the product with accessories, spare parts and consumables not listed in the corresponding product documentation.

DANGER

DANGER: heavy product

Physical injury can result if the product is lifted and carried by only one person.

Adhere to the local regulations and take the necessary precautions when lifting and transporting the product.

DANGER

DANGER: contaminated parts

Contaminated parts can be detrimental to health and environment.

Before beginning to work, find out whether any parts are contaminated. Adhere to the relevant regulations and take the necessary precautions when handling contaminated parts.

Caution

Caution: vacuum component

Dirt and damages impair the function of the vacuum component.

When handling vacuum components, take appropriate measures to ensure cleanliness and prevent damages.

6.1 Minor maintenance work (periodically during normal operation, → 🗎 33)

- Cleaning and lubricating the sealing surface on the valve housing and the O-ring of the valve plate

6.2 Major maintenance work (specified service time to maintenance has been reached, → 🗎 34)

- Disassembling the valve
- Replacing of O-rings and actuator
- Cleaning and assembling the valve
- Adjusting the actuator

6.1 Minor Maintenance Work

Precondition

- Butterfly valve opened

DANGER

DANGER: moving parts

Parts brought into motion by electrical power or compressed air can catch parts of the body and cause injuries.

Disconnect the supply media (→ "Deinstallation", 🗎 27) and make sure the valve is not inadvertently put into operation.

Cleaning and lubricating the sealing surface and O-ring

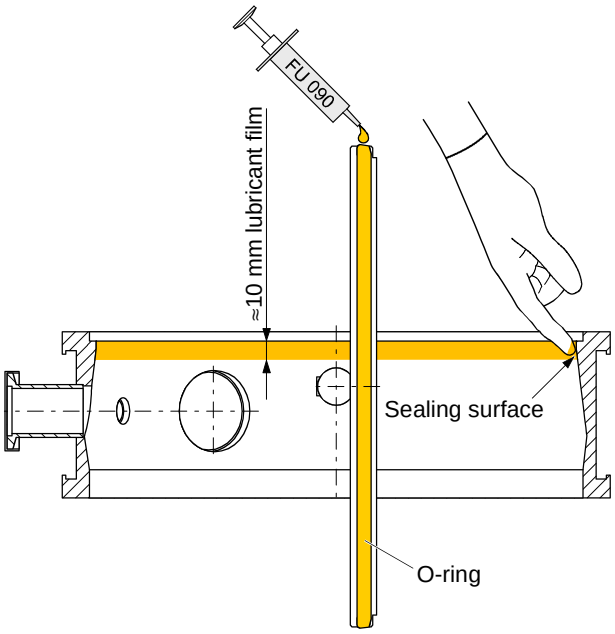
DANGER

DANGER: cleaning agents

Cleaning agents can be detrimental to health and environment.

Adhere to the relevant regulations and take the necessary precautions when handling cleaning agents and disposing of them. Consider possible reactions with the product materials (→ 🗎 6).

- Carefully clean the sealing surface and the O-ring with a lint-free cloth moistened with alcohol. Allow them to dry.
- Uniformly lubricate the sealing surface and the O-ring with FU 090 (→ "Consumables", 🗎 56).



6.2 Major Maintenance Work

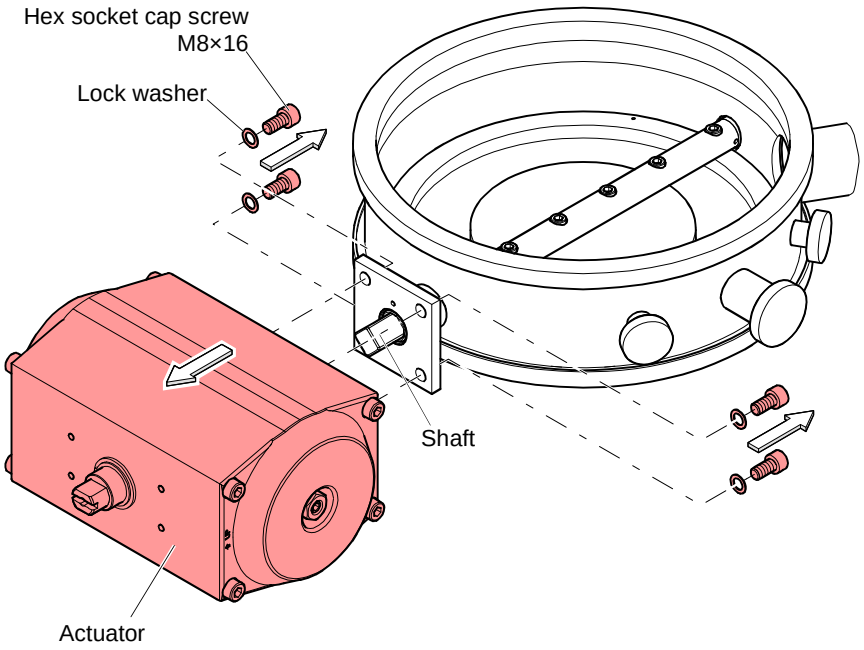
In the following illustrations, the valve is shown without accessories.

Precondition

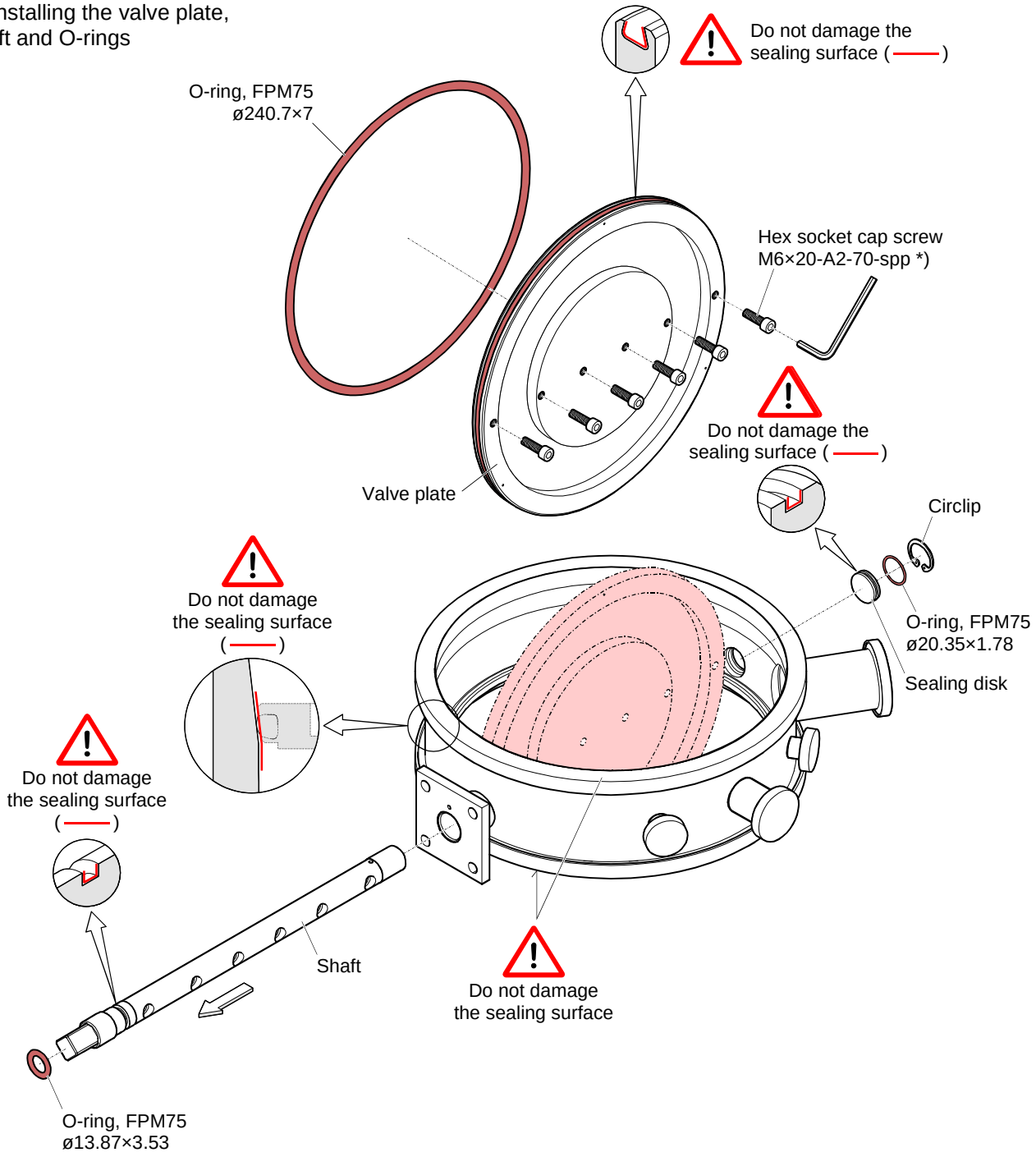
- Valve deinstalled (→ 🗎 27)
- Valve positioned as shown in the illustration

6.2.1 Disassembling the Valve

Deinstalling the actuator



Deinstalling the valve plate, shaft and O-rings



*) The hex socket cap screws are secured with spp (stepstop®) and thus difficult to loosen.

6.2.2 Cleaning the Valve

DANGER

DANGER: cleaning agents

Cleaning agents can be detrimental to health and environment.

Adhere to the relevant regulations and take the necessary precautions when handling cleaning agents and disposing of them. Consider possible reactions with the product materials (→ 🗎 6).

Procedure

- Carefully clean the parts with a grease solving, non-scouring cleaner.
- After cleaning, the parts should preferably be rinsed with alcohol and subsequently heated to ≈50 °C in an oven or with an industrial blower.
- Carefully clean the sealing surfaces with a lint-free cloth moistened with alcohol. Allow them to dry.

6.2.3 Reassembling the Valve

Caution

Caution: vacuum component

Dirt and damages impair the function of the vacuum component.

When handling vacuum components, take appropriate measures to ensure cleanliness and prevent damages.

Caution

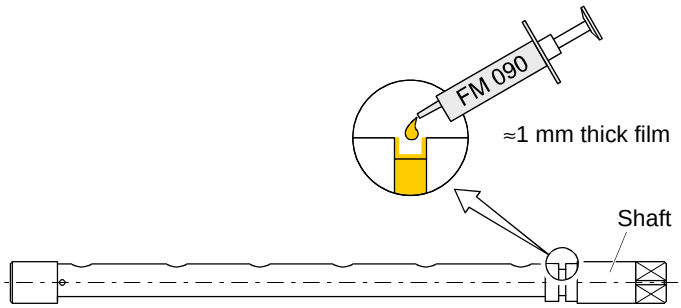
Caution: dirt sensitive area

Touching the product or parts thereof with bare hands increases the desorption rate.

Always wear clean, lint-free gloves and use clean tools when working in this area.

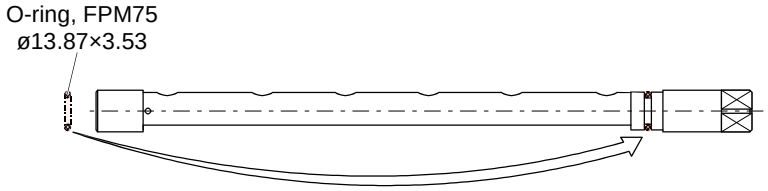
Mounting the O-ring and installing the shaft

❶ Lubricate the sealing groove with high vacuum lubricant FM 090 (→ "Consumables", 🗎 56).

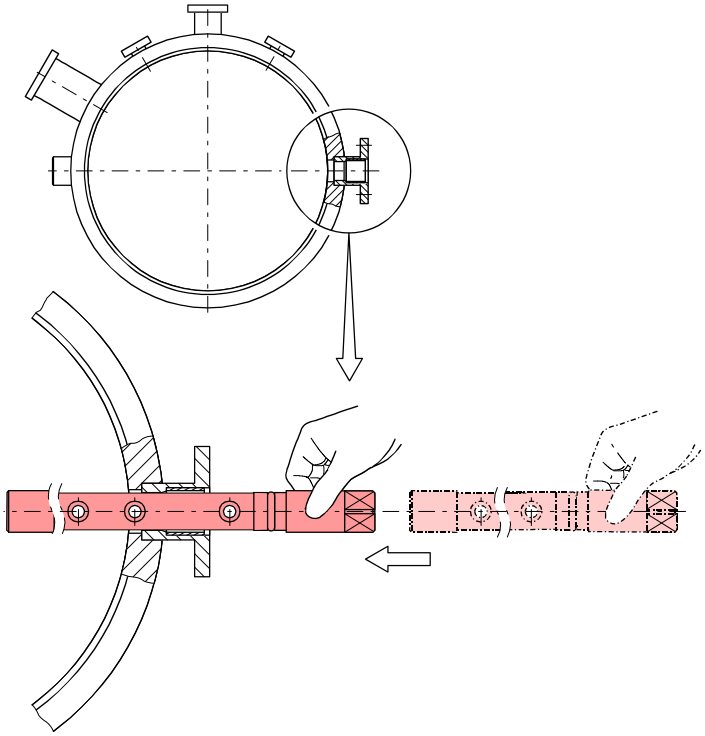


❷ Slide the O–ring onto the shaft and insert it level into the groove without twisting it.

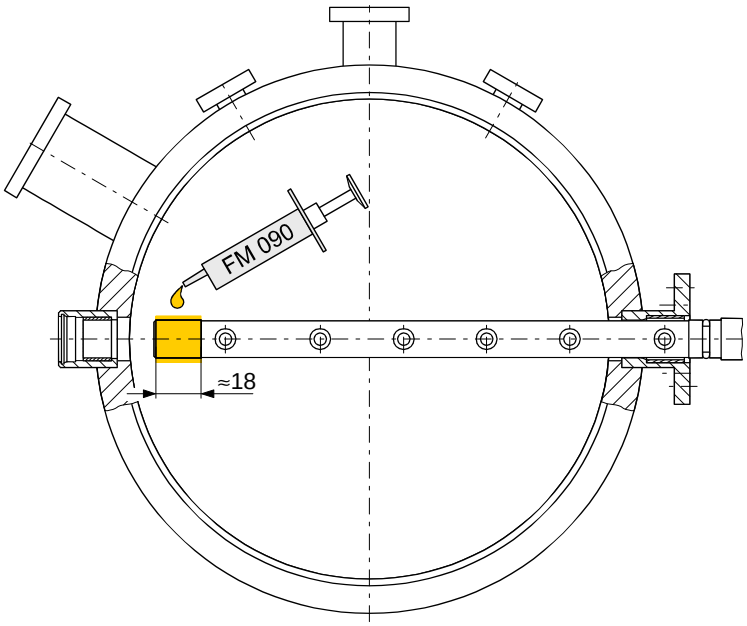
Use a new O–ring (Spare parts → 🗎 56).



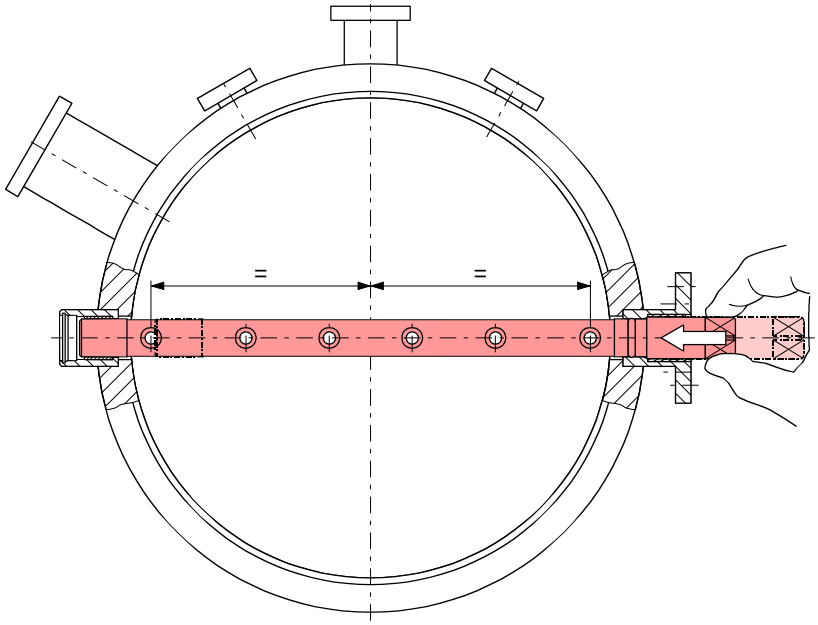
❸ Carefully insert the shaft into the housing.



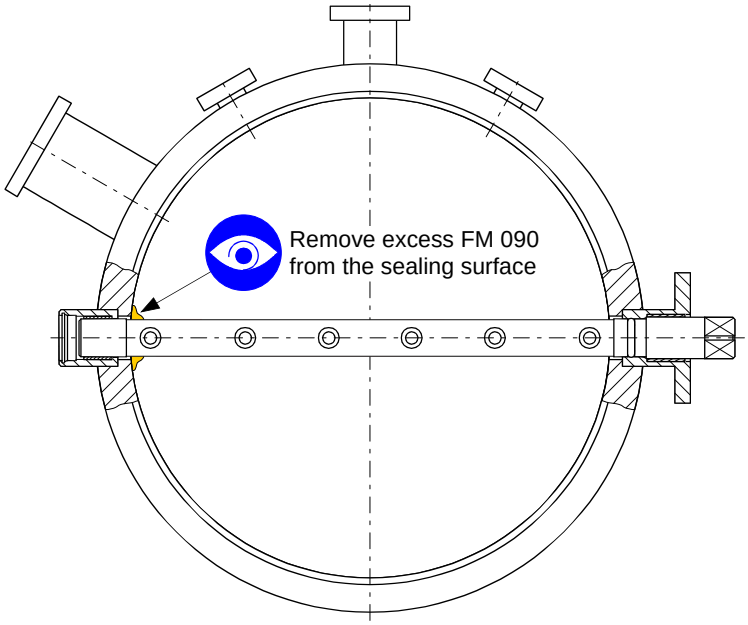
❹ Lubricate the contact surfaces of the shaft and the visible surface of the O-ring by applying a thin, uniform FM 090 film.



❺ Push the shaft in further and bring it to the axial position shown in the drawing …



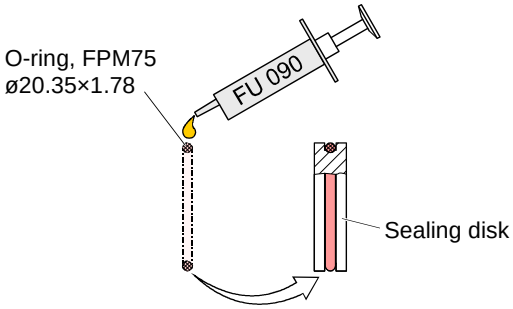
… and remove excess lubricant from the sealing surface.



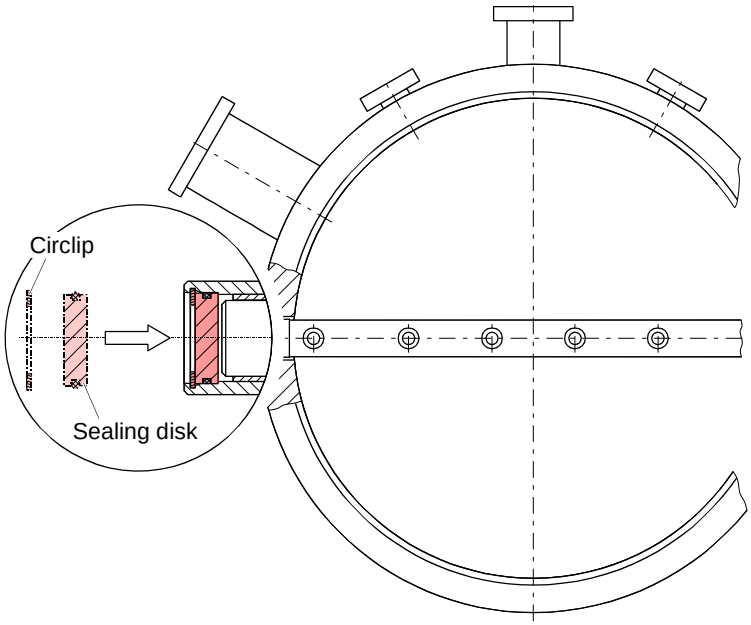
Installing the sealing disk

❻ Lubricate the surface of the O-ring by applying a thin, uniform FU 090 film and insert the O–ring level into the groove of the sealing disk without twisting it → 🗎 56).

Use a new O–ring (→ "Spare Parts", 🗎 56).



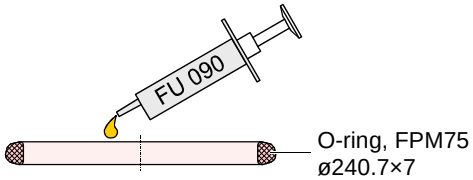
❼ Install the sealing disk with the O-ring and lock them with the circlip.



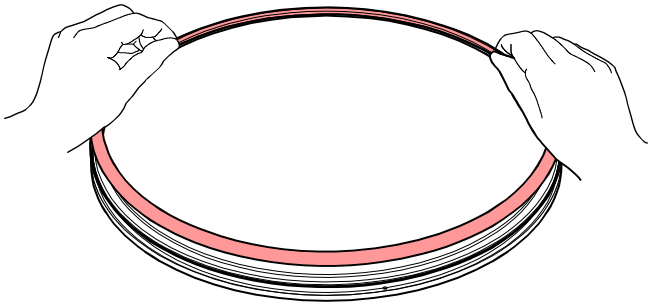
Mounting the O-ring to the valve plate

❽ Lubricate the surface of the O-ring by applying a thin, uniform FU 090 film.

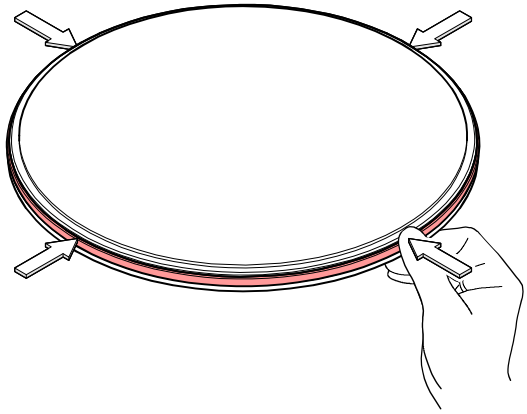
Use a new O–ring (→ "Spare Parts", 🗎 56).



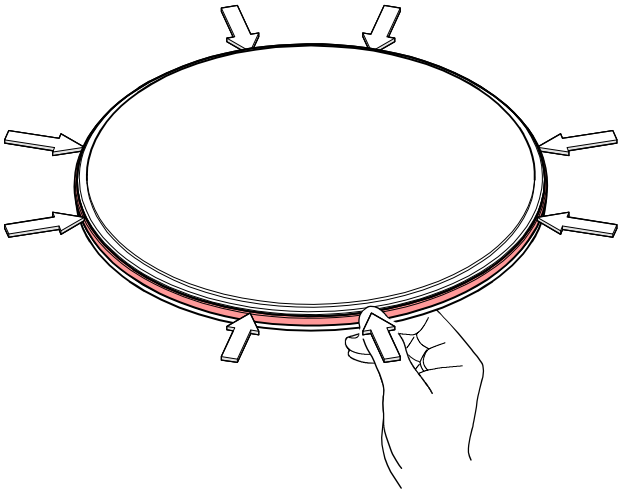
❾ Mount the O-ring to the valve plate without twisting it …



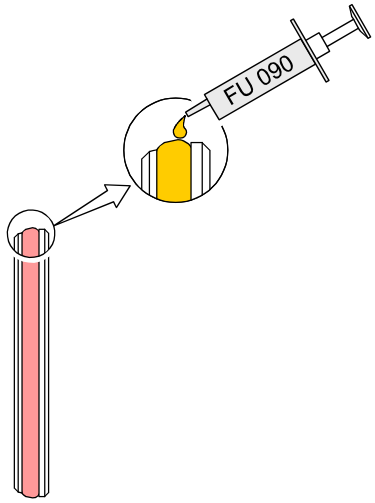
… and press it crosswise into the groove as shown in the illustration below.



❿ Press the remaining parts of the O-ring level into the groove without twisting the O-ring.

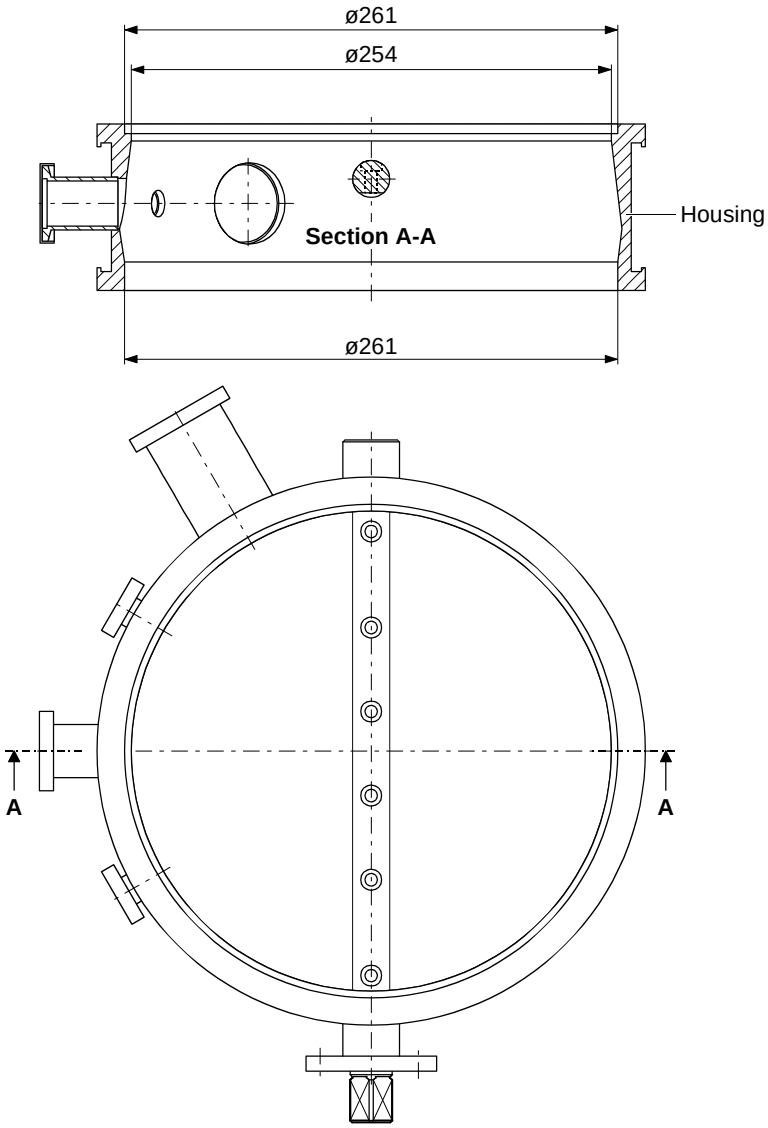


11 Lubricate the visible surface of the O-ring by applying a liberal, uniform FU 090 film.

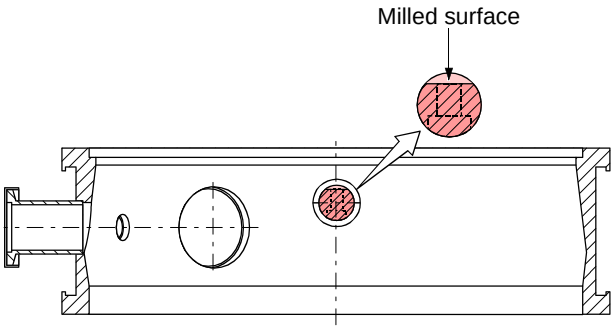


Lubricating the sealing surface

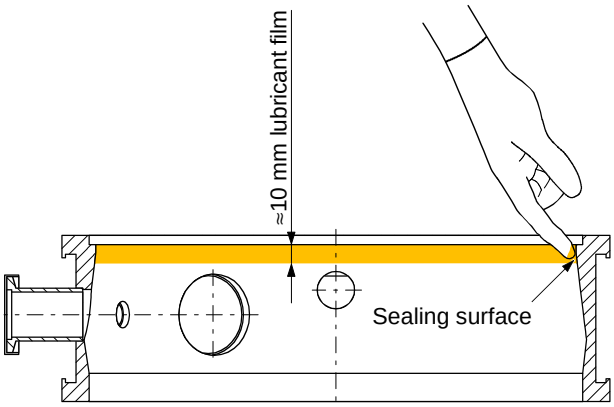
12 Position the housing as shown in the illustration, …



… rotate the shaft until the milled surface is visible …

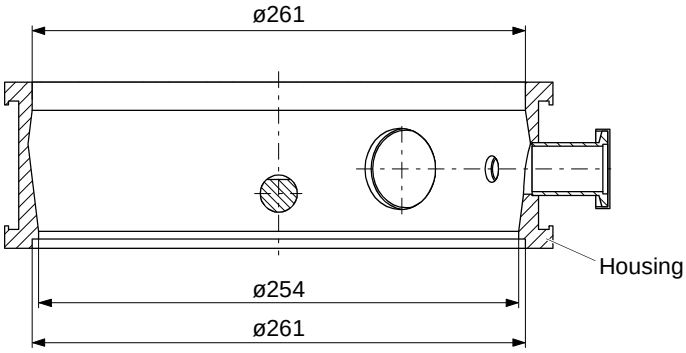


… and lubricate the sealing surface by applying a thin, uniform FU 090 film.

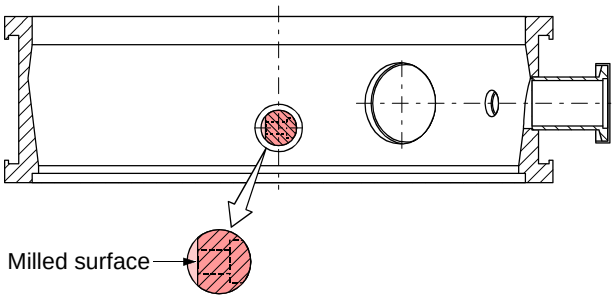


Pre-installing the valve plate

13 Turn the housing by 180°...

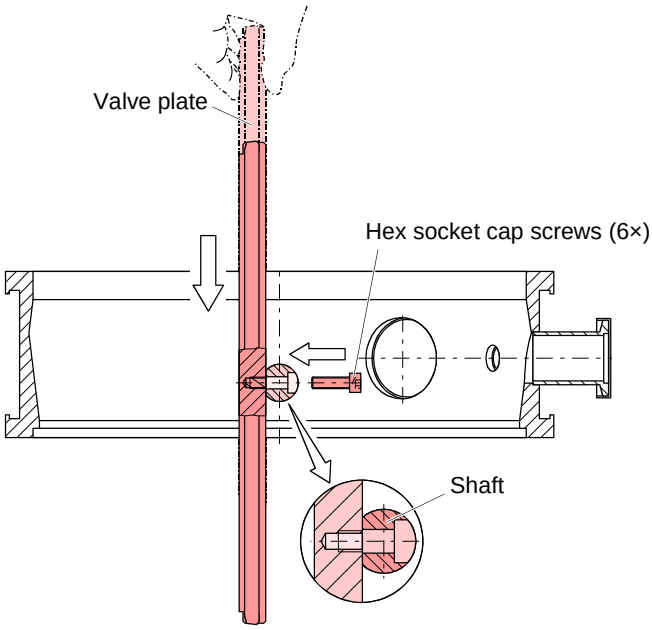


… and bring the shaft to the position shown in the illustration.

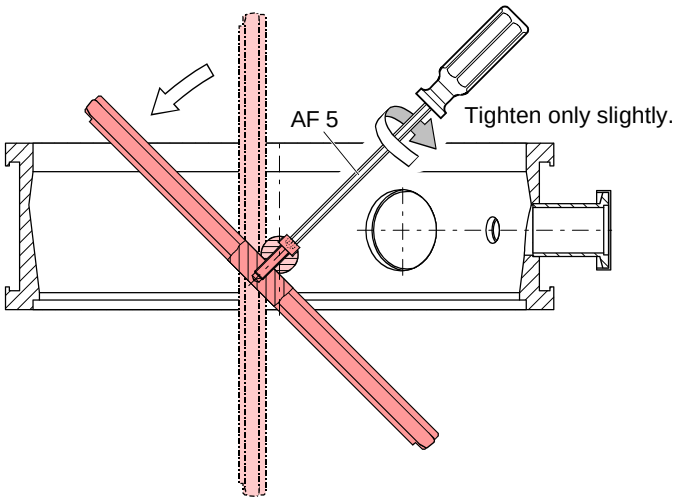


14 Carefully insert the valve plate into the housing on the side of milled shaft surface and manually turn in the new hex socket cap screws.

Use new hex socket cap screws (→ "Spare Parts", 🗎 56).

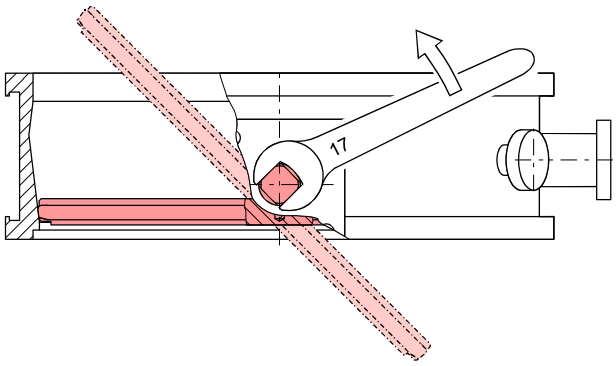


15 Tilt the valve plate by ≈45° and screw it to the shaft.

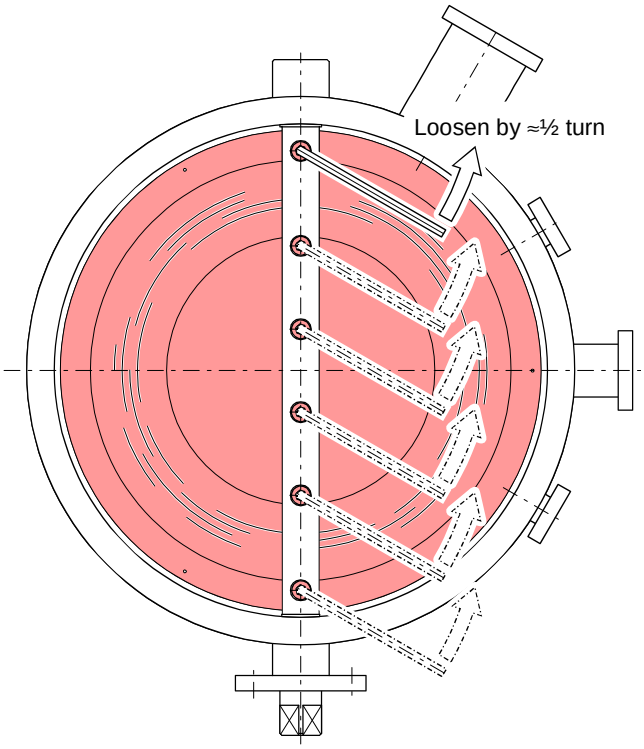


Centering and tightening the valve plate

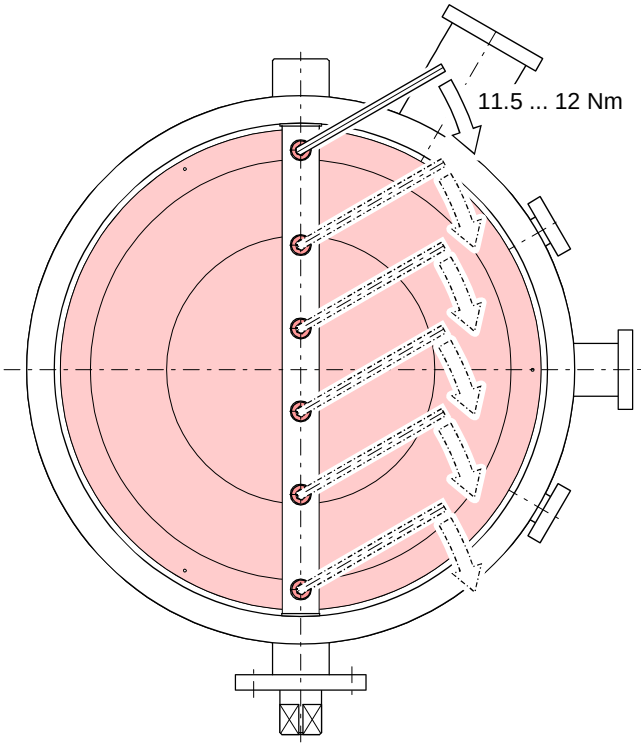
16 Bring the valve plate to the "closed" position by turning the square neck counter-clockwise, e.g. using a wrench.



17 Untighten the hex socket cap screws by ≈1/2 turn to allow the valve plate to center itself.



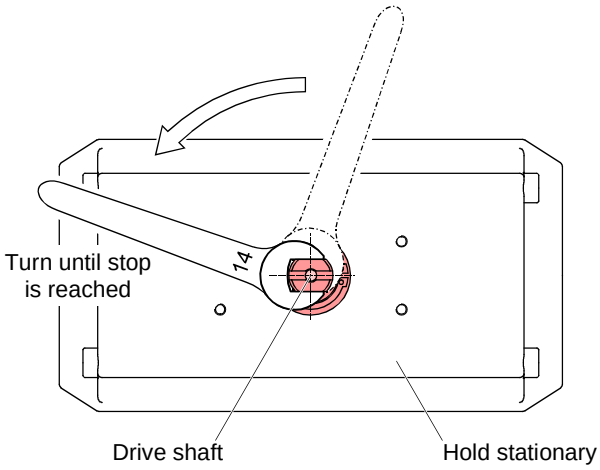
18 Tighten the hex socket cap screws with a torque of 11.5 … 12 Nm.



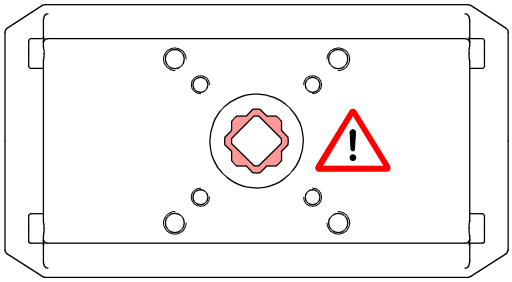
Installing the actuator

19 Make sure the actuator is in its initial position (Butterfly valve "closed"): Turn the drive shaft counter-clockwise until the stop position is reached.

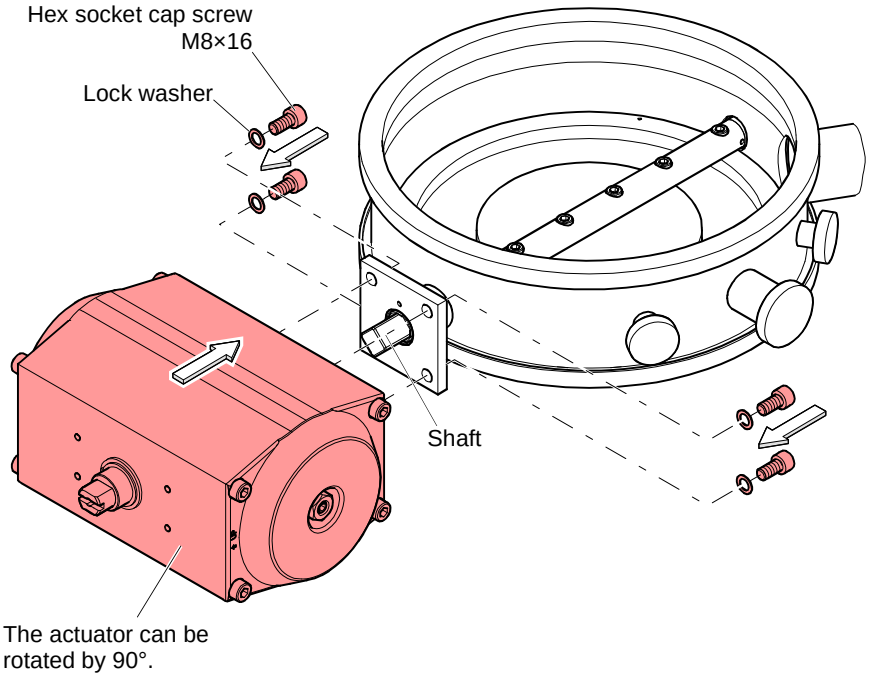
Use a new actuator (→ "Spare Parts", 🗎 56).



20 Check the position of the adapter, …

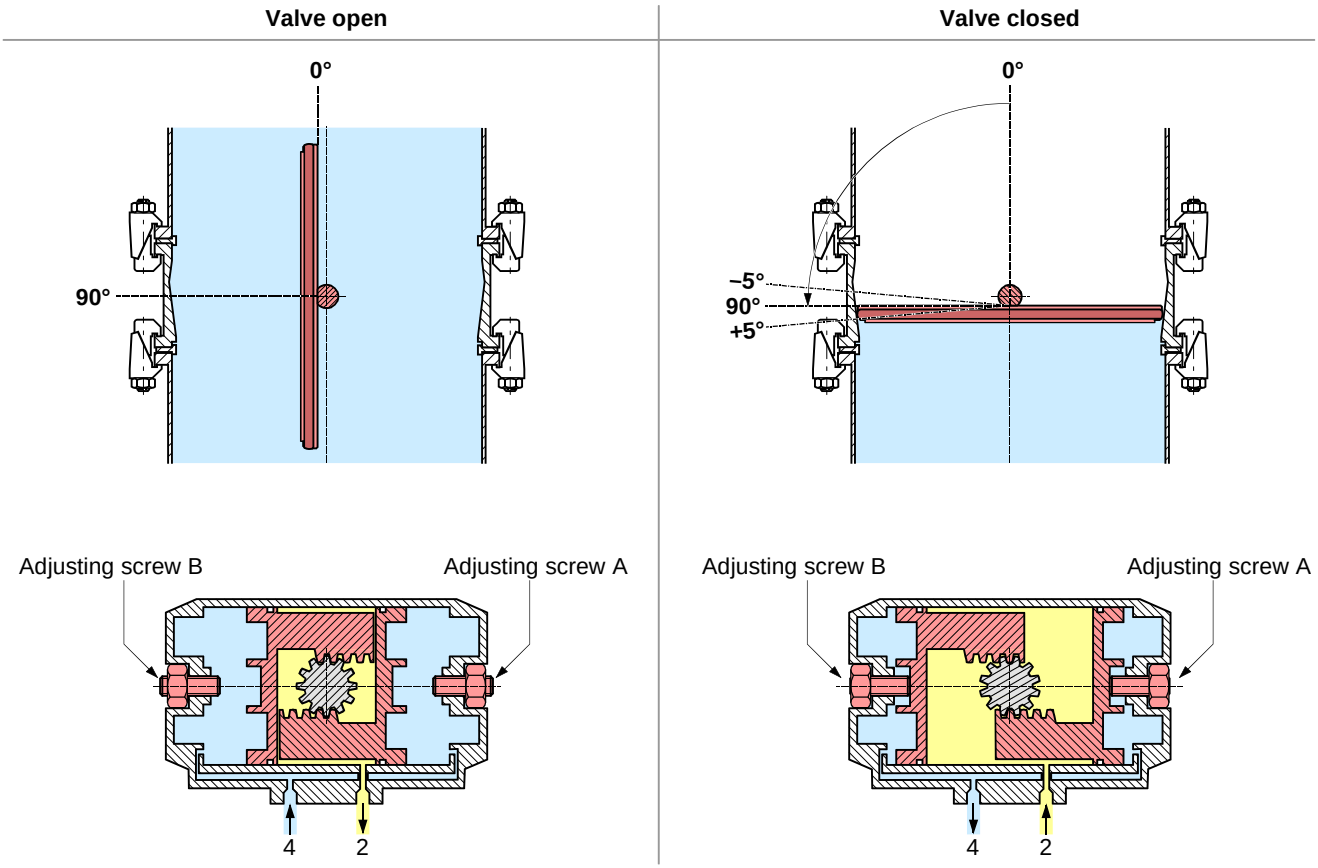


… slide the actuator onto the square neck of the shaft and screw the actuator to the valve. Tighten the M8 hex socket cap screws with a torque of 20 Nm.



6.2.4 Adjusting the Actuator (Spare Part)

Functional principle of the actuator

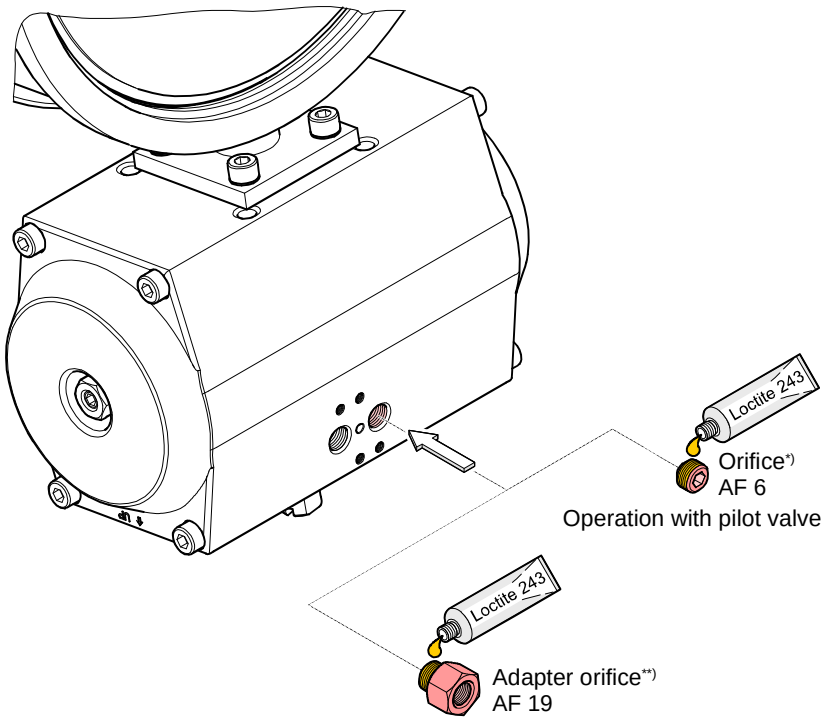


If compressed air is admitted to the compressed air connection <4>, the pistons move towards each other and the valve plate opens in position "0°". If compressed air is admitted to compressed air connection <2> and compressed air connection <4> is vented, the pistons move away from each other and the valve plate closes in position 90°. In this position, the pivot angle of the valve plate can be adjusted by ±5° with adjusting screw A or B and secured with the corresponding counter nut while the valve is not under pressure.

The parallelism of the valve plate may change due to operation, prolonged storage, contamination, etc. The valve plate is tight at a parallelism ≤5 mm.

Preconditions

- Valve deinstalled (→ 🗎 27)
- Actuator installed (→ 🗎 45)
- Orifice or adapter orifice installed



*) Included in scope of delivery

**) Accessories → 🗎 56

- Compressed air connection established (→ 🗎 13)
- If necessary, power connection(s) established (→ 🗎 19)

Procedure

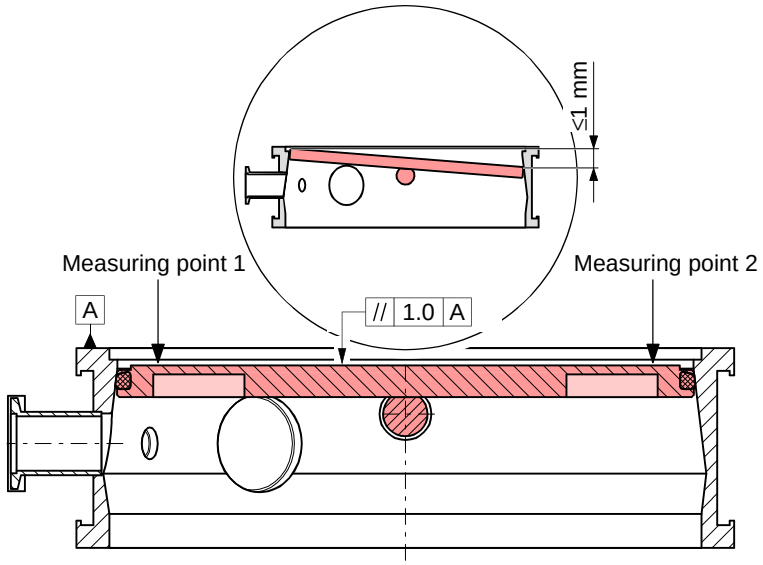
❶ Open and close the valve by admitting compressed air to the actuator.

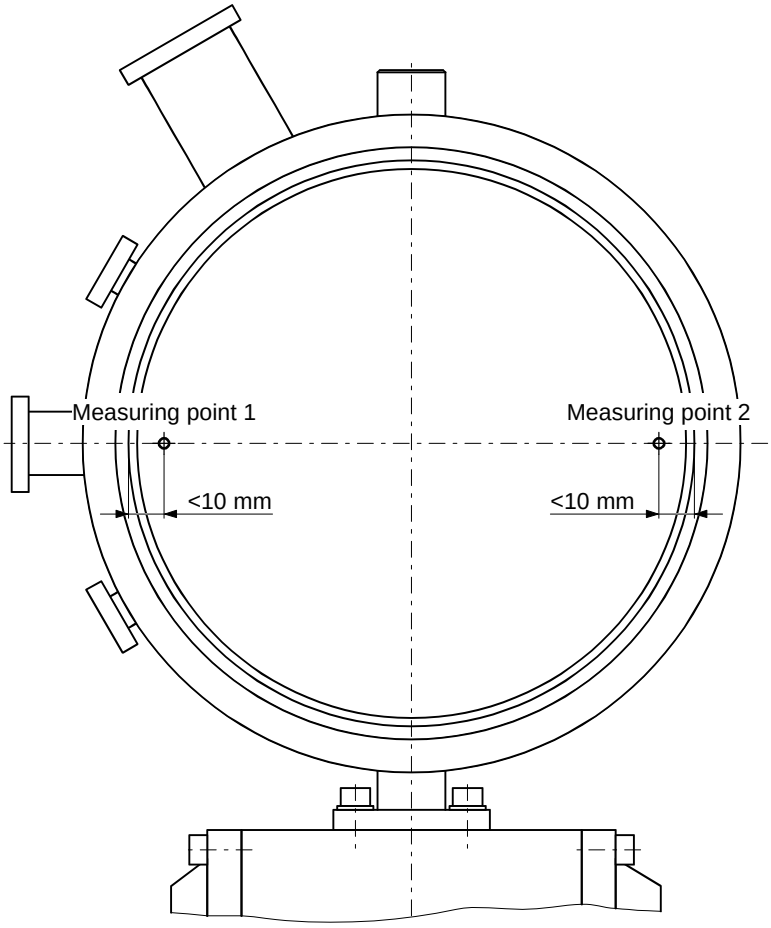
❷ Determine parallelism.

Parallelism ≤1 mm: ✓ Adjustment completed

Parallelism >1 mm: Go to step ❸

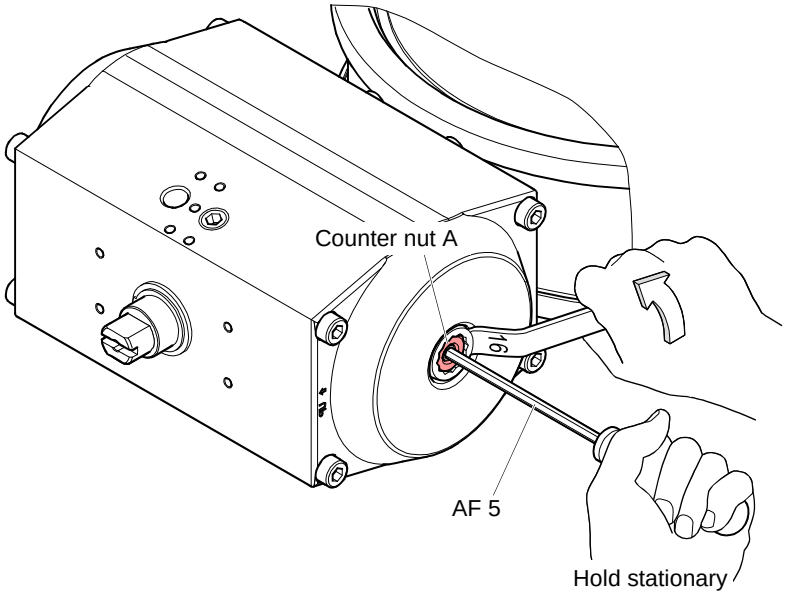
The valve plate is tight at a parallelism ≤5 mm.



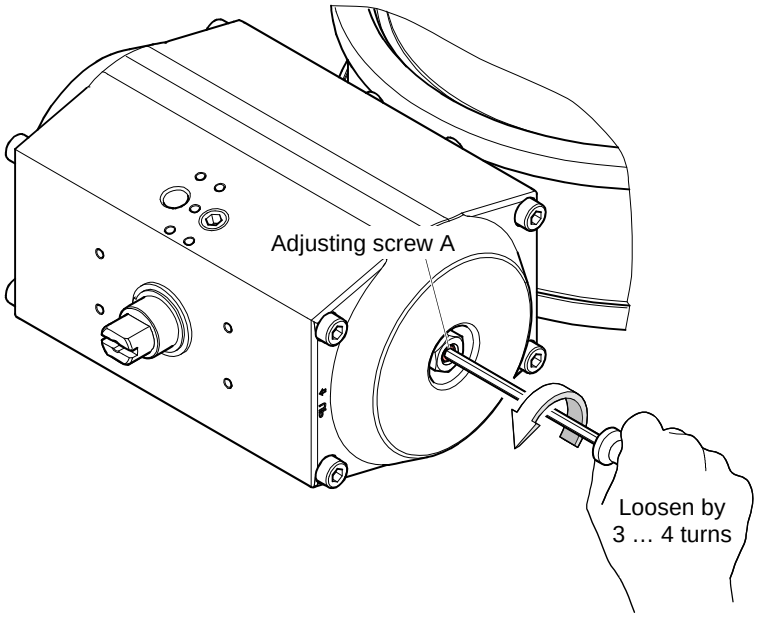


❸ Open the valve.

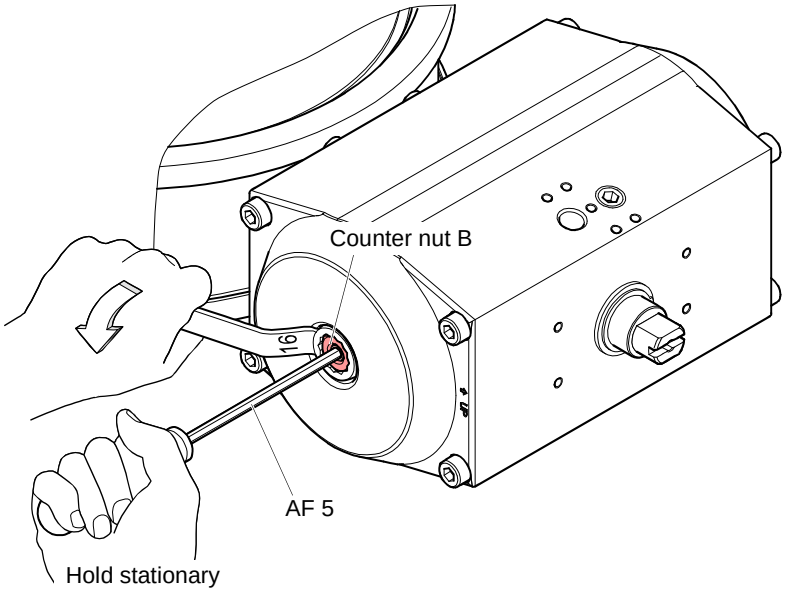
❹ Untighten counter nut A …



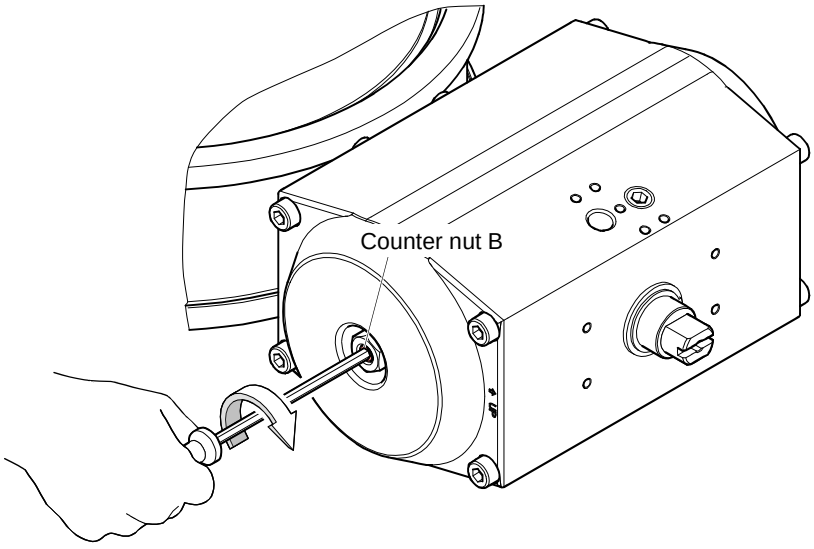
… and loosen adjusting screw A by 3 … 4 turns.



❺ Untighten counter nut B …

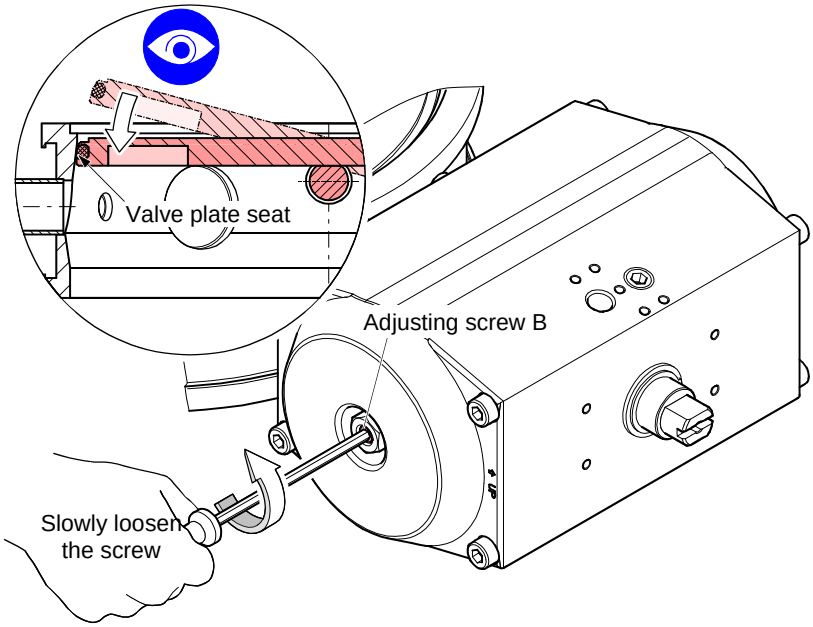


… and turn in adjusting screw B by 3 … 4 turns.



❻ Close the valve.

❼ Slowly loosen adjusting screw B until the valve plate has reached the valve plate seat.

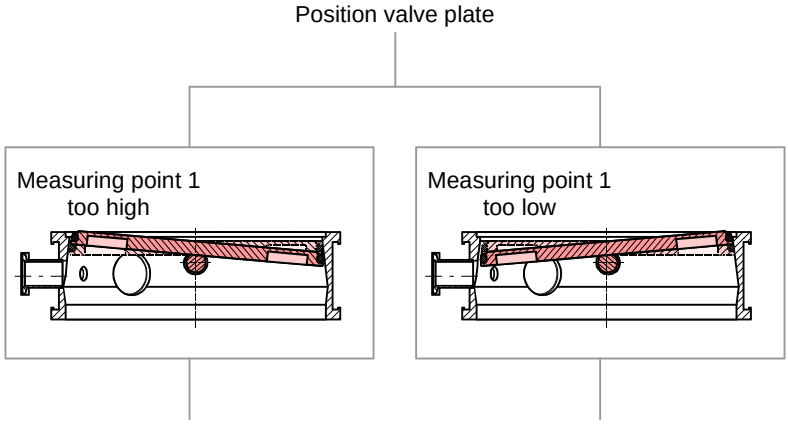


❽ Determine parallelism:

Parallelism ≤1 mm: Go to step ❿

Parallelism >1 mm: Go to step ❾

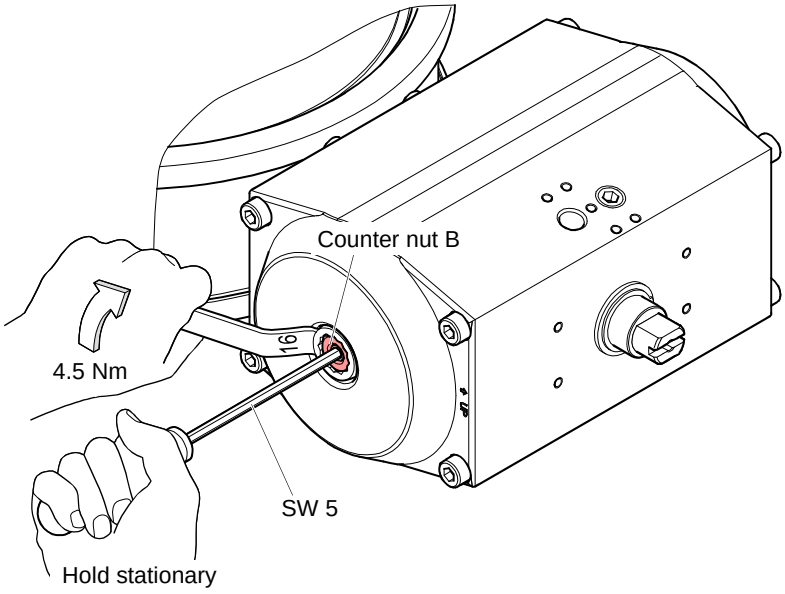
❾



- Go back to step ❼

- Open the valve
- Turn in adjusting screw B by ≈½ turn, according to the position of the valve plate
- Close the valve and go to step ❽

❿ Tighten counter nut B with a torque of 4.5 Nm …



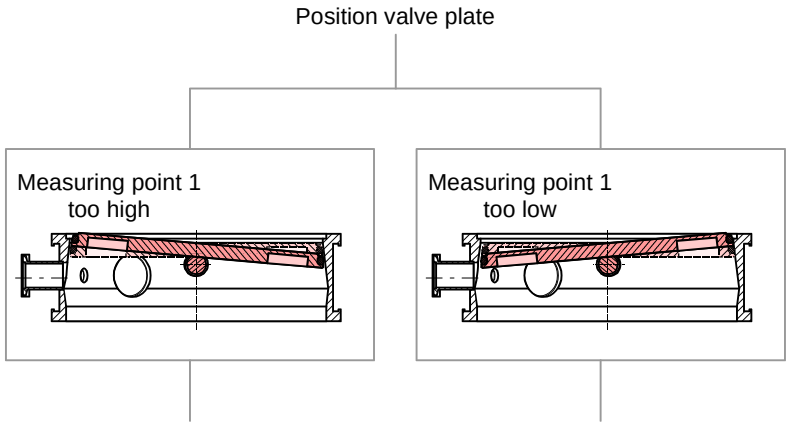
… and perform one switching cycle.

⓫ Determine parallelism:

Parallelism ≤1 mm: Go to step ⓭

Parallelism >1 mm: Go to step ⓬

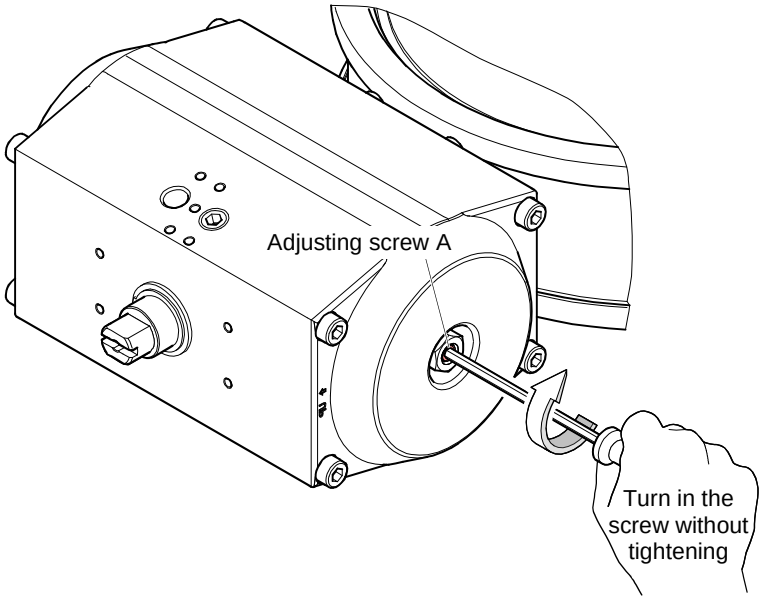
⓬



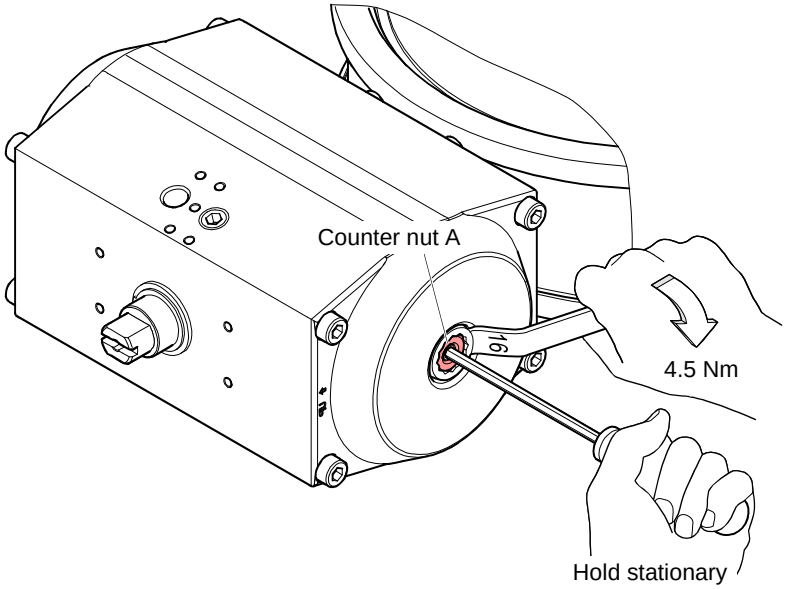
- Untighten counter nut B
- Go back to step ❼

- Open the valve
- Untighten counter nut B
- Turn in adjusting screw B by ≈½ turn, according to the position of the valve plate
- Close the valve and go to step ❽

13 Turn in adjusting screw A to the stop without tightening it …



… and tighten counter nut A with a torque of 4.5 Nm.

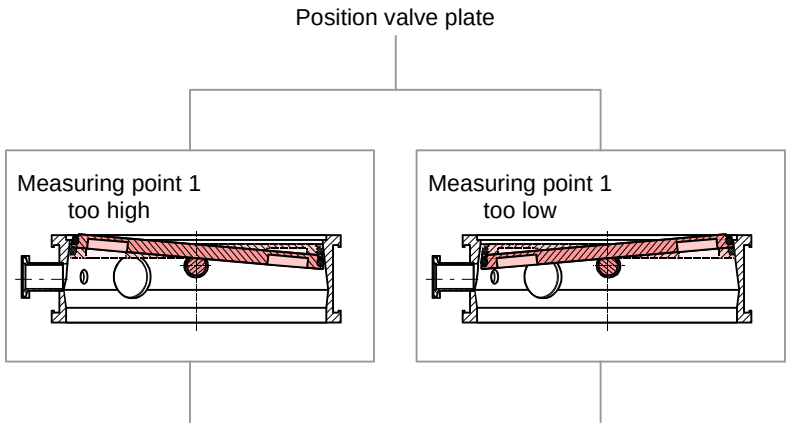


14 Perform five switching cycles.

15 Determine parallelism:

Parallelism ≤1 mm: ✓ Adjustment completed
Parallelism >1 mm: Go to step 16

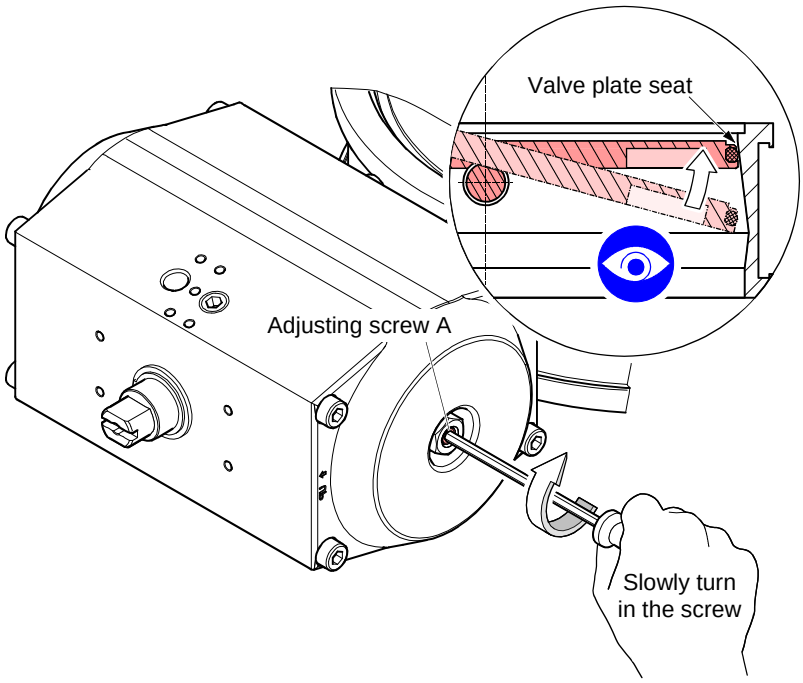
16



- Untighten counter nut A and go to step 17

- Untighten counter nut A
- Untighten counter nut B
- Turn in adjusting screw B by ≈½ turn, according to the position of the valve plate
- Close the valve and go to step 8

17 Slowly loosen adjusting screw A until the valve plate has reached the valve plate seat

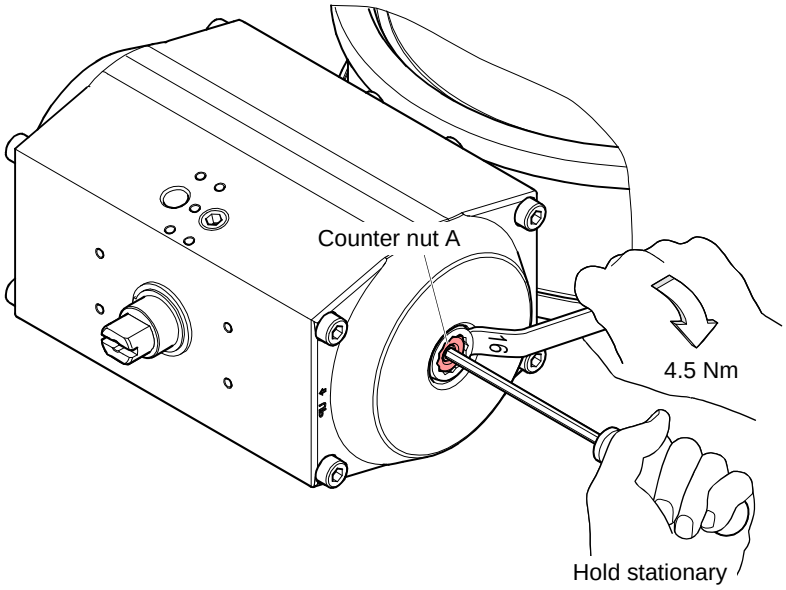


18 Determine parallelism:

Parallelism ≤1 mm: Go to step 19

Parallelism >1 mm: Go to step 16

19 Tighten counter nut A with a torque of 4.5 Nm …



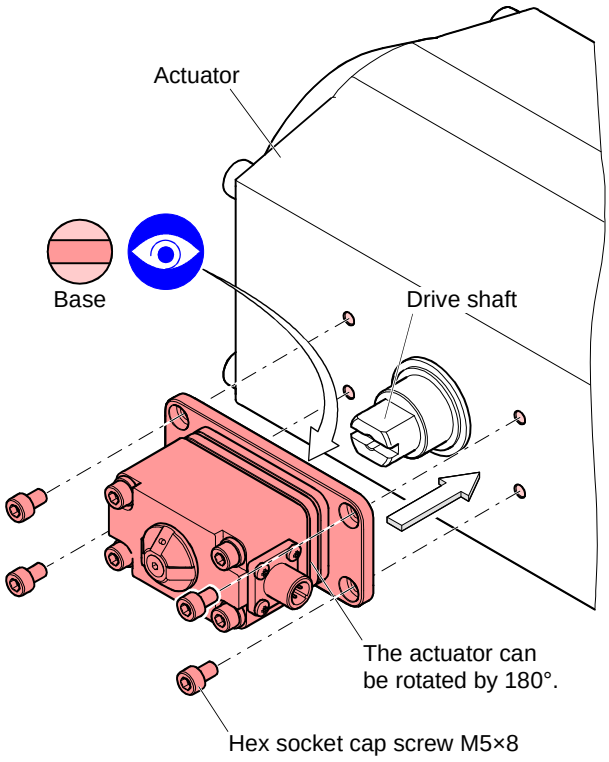
… and perform five switching cycles.

20 Determine parallelism.

Parallelism ≤1 mm: ✓ Adjustment finished
Parallelism >1 mm: Go to step 16

6.2.5 Installing the Position Indicator

Slide the position indicator on the drive shaft and mount it to the actuator with four hex socket cap screws.



7 Accessories

Pilot valves

	Ordering number
230 VAC, 50 Hz	586579
115 VAC, 60 Hz	586580
24 VAC, 50 Hz	586581
24 VDC	586582

Further information → 🗎 13.

Position indicator

	Ordering number
Load capacity 250 V, 1 A	587850

Further information → 🗎 23.

Claw grips

	Ordering number
Claw grip kit including 1 clamp 1 screw M10×60 1 hex nut M10	32036-QNKS-0001 (×12)

Further information → 🗎 11.

Orifice

		Ordering number
	Orifice (AF 6) for compressed air control via pilot valve (G1/4", ø1 mm)	579863
	Adapter orifice (AF 19) for compressed air control via central control system (2× G1/4", ø1 mm)	579926

8 Spare Parts

Seal kit

	Ordering number
including 1 O-ring, FKM75, ø240.7×7 1 O-ring, FKM75, ø20.35×1.78 1 O-ring, FKM75, ø13.87×3.53 6 hexagon socket head cap screws, M6×20-A2-70-spp	580280

Actuator

	Ordering number
including 1 actuator, 8 bar, 225 Nm 1 orifice G1/4", ø1 mm	580617

9 Consumables

High vacuum lubricants

	Ordering number
FM 090, 30 g	583409
FU 090, 10 g	N-6951-011

10 Returning the Product

WARNING

WARNING: forwarding contaminated products

Contaminated products (e.g. radioactive, toxic, caustic or biological hazard) can be detrimental to health and environment.

Products returned to VAT should preferably be free of harmful substances. Adhere to the forwarding regulations of all involved countries and forwarding companies and enclose a duly completed declaration of contamination *). The form can be downloaded from our website www.vatvalve.com.

Products that are not clearly declared as "free of harmful substances" are decontaminated at the expense of the customer.

Products not accompanied by a duly completed declaration of contamination are returned to the sender at his own expense.

11 Disposal

DANGER

DANGER: contaminated parts

Contaminated parts can be detrimental to health and environment.

Before beginning to work, find out whether any parts are contaminated. Adhere to the relevant regulations and take the necessary precautions when handling contaminated parts.

WARNING

WARNING: substances detrimental to the environment

Products or parts thereof (mechanical and electric components, operating fluids etc.) can be detrimental to the environment.

Dispose of such substances in accordance with the relevant local regulations.

Separating the components

After disassembling the product, separate its components according to the following criteria:

Contaminated components

Contaminated components (radioactive, toxic, caustic, or biological hazard etc.) must be decontaminated in accordance with the relevant national regulations, separated according to their materials, and disposed of.

Other components

Such components must be separated according to their materials and recycled.