Cryogenic Components

Cryogenic Valves
Transfer Line Couplings
Flow Sensors
Current Leads

Installation, operation and maintenance manual

Valves type TgxV DN250/PN6

Member of the ARCA FLOW Group

Content

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1. General information

The present manual contains instructions for safe and correct installation, operation and maintenance of the product. It is exclusively intended for specifically trained and authorized experts. In case of problems that cannot be solved with the help of this manual, please contact the manufacturer.

1.1 Applicability

The present manual applies to valves of type -TgxV with nominal widths from DN250 pressure levels up to PN6, equipped with a pneumatic diaphragm actuator.

1.2 Contact data

For more information on the product, please contact

WEKA AG
Schürlistrasse 8
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T: +41 43 833 43 43

cryo@weka-ag.ch
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1.3 Further applicable documents

In addition to the present manual, the technical drawing of the valve and the documentation of additional components must be considered.

1.4 Storage place of the manual

The operating manual and all other applicable documents are integral parts of the product and must always be kept in proximity of the product and be accessible to the staff.

2. Safety

2.1 General safety information

The manual contains detailed descriptions for safe and correct installation, operation and maintenance of the product.

Read the manual carefully and thoroughly to become familiar with the product.

The manufacturer accepts no liability for damage caused as a result of failure to comply with the safety information and warnings.

2.2 Explanations of symbols and notes

Safety information and warnings are intended to prevent hazards for the life and health of users or maintenance staff and to avoid property damage. They are highlighted by the signal words defined below. In addition, they are marked by warning symbols (pictograms) at the place they appear.
Safety information and warnings indicate important information. The following symbols are used to point out specific properties or hazards:

Danger
Severe physical injuries and/or major property damage may occur in case that the appropriate precautionary measures are not taken or not complied with.

Warning
Physical injuries and/or major property damage may occur in case that the appropriate precautionary measures are not taken or not complied with.

Caution
Minor physical injuries and/or property damage may occur in case that the appropriate precautionary measures are not taken or not complied with.

Please note
Marks important information on the product and/or handling of the product that requires specific attention.

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2.3 Intended use

At the time of delivery, the product complies with all applicable laws, regulations, and standards.
If the product is used as intended and the warnings in this manual and those at the product are complied with, the product does not pose any hazards or risks for persons, property, and the environment. This applies to the entire service life of the product, from delivery and installation to operation, disassembly and disposal.
The following is considered intended use:

- Only operate the product according to this manual, the specifications from our order confirmation and the technical drawing.
- Only use original WEKA spare parts for maintenance and repair of the product.

The following must be ensured prior to installation and any maintenance work:

- Depressurise the pipe.
- The pipe must be completely drained and, in case of hazardous media, purged with suitable cleaning fluids.
- Obtain information about potential hazards that may occur due to residues of the operating fluid and take appropriate measures (wearing personal protection equipment, etc.).
- If required, the product must be cooled down or heated up to ambient temperature.
- Interrupt the auxiliary energy of the actuator.
- Prevent potential re-start of the system by third parties.

2.4 Incorrect use

Any use of the product other than or not within the specifications as described in chapter 0 is considered incorrect. The following additionally applies:

- Any unauthorised modifications of the product may result in personal injuries, property damage and/or functional defects. The risk for any such situation is solely borne by the user. Any warranty or liability claims are excluded.

2.5 Residual risks

Residual risks may still be present even when the product is used as intended.

- Hazard due to crushing by non-secured actuator.

In case of negligent or incorrect use of personal protection equipment:

- Hazard due to noise resulting in loss of hearing
- Thermal hazard (burns, scalding, etc.)
- Hazard due to escape of operating fluid

Despite all precautions taken, there may be residual risks that are not obvious. Residual risks can be minimized if the safety information and information on commissioning and start-up, as well as the entire operating manual is observed.

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2.6 Qualification of personnel

The product is exclusively intended for application within systems and facilities where the required work is performed by trained and qualified experts. Experts are persons who are familiar with installation, commissioning and operation of this product and who have the appropriate qualifications for their tasks, e.g.

- vocational training or instructions about use and care of appropriate safety equipment based on the current state of safety engineering
- First-aid training
- For systems with explosion protection equipment: vocational training or instructions and/or authorisation to perform work at potentially explosive systems

Maintenance and repair work must only be performed by trained and qualified professionals. Work at electrical systems may only be performed by qualified electricians or by persons who have received instructions on electro-technical systems.

2.7 Operator's obligation to exercise due diligence

To prevent accidents, faults and damage to the environment, the person respectively responsible for transport, installation, commissioning, operation, maintenance, and disposal of the product must ensure the following:

- All warnings and information on hazards must be observed.
- The personnel must be instructed about occupational health and safety, the operating manual and particularly the contained safety information on a regular basis.
- Regulations and operating instructions for workplace safety and the relevant information about personnel conduct in case of accidents or fires must be kept in an easily accessible place or hung up within the premises in an easily visible manner.
- The product must only be operated in perfect and functional condition.
- Only use spare parts as well as lubricants and operating media that are approved by the manufacturer.
- Observe the specified operating conditions and requirements for the place of installation.
- Provide all necessary devices and the personal protection equipment required for the respective work tasks.
- The specified maintenance intervals and the corresponding regulations must be observed.
- Have installation, commissioning/start-up and maintenance of the product performed only by trained and qualified personnel according to this operating manual.
- The operator must ensure use of the product as intended.
- Prior to commissioning of the product, the operator shall carry out a risk assessment and define appropriate inspection and maintenance intervals according to the operating conditions.

2.8 Personal protection equipment

Wearing of personal protection equipment is required during work to minimize potential health hazards.

- The protective equipment required for the respective kinds of work must always be worn.
- The information and instructions on personal protection equipment displayed in the work area must be observed.

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3. Transport, storage and packaging

3.1 Transport

The valve is transported in wooden box and must be kept in the original WEKA packaging throughout the transport. Transport below -40 °C and/or above +80 °C is not permitted.

3.2 Storage

The valves must be stored in a dry and dust-free environment. Storage below -40 °C and/or above +80 °C is not permitted.

3.3 Packaging

Every valve is separately wrapped in transparent foil, either as one complete unit (housing with insert completely mounted) or as individual units (housing, insert, additional components). The valve inlet and outlet are covered by protective caps. To avoid unnecessary pollution, the packaging should only be removed shortly before the product is needed for installation.

4. Cleanliness

Prior to being packed, the valves are cleaned according to ISO 23208-2005, to be free of oil and grease. Particularly during installation, cleanliness must be ensured. Even the smallest pollution may impair the function and/or tightness of the valves.
The following rules must be observed during installation and maintenance.

- The valve inlet and outlet must be covered by protective caps.
- Disassembled components, such as actuator or inserts must be stored in PE bags in a dry and dust-free place.
- Open valve housings after removing the insert must be protected from ingress of particles and other kinds of pollution.

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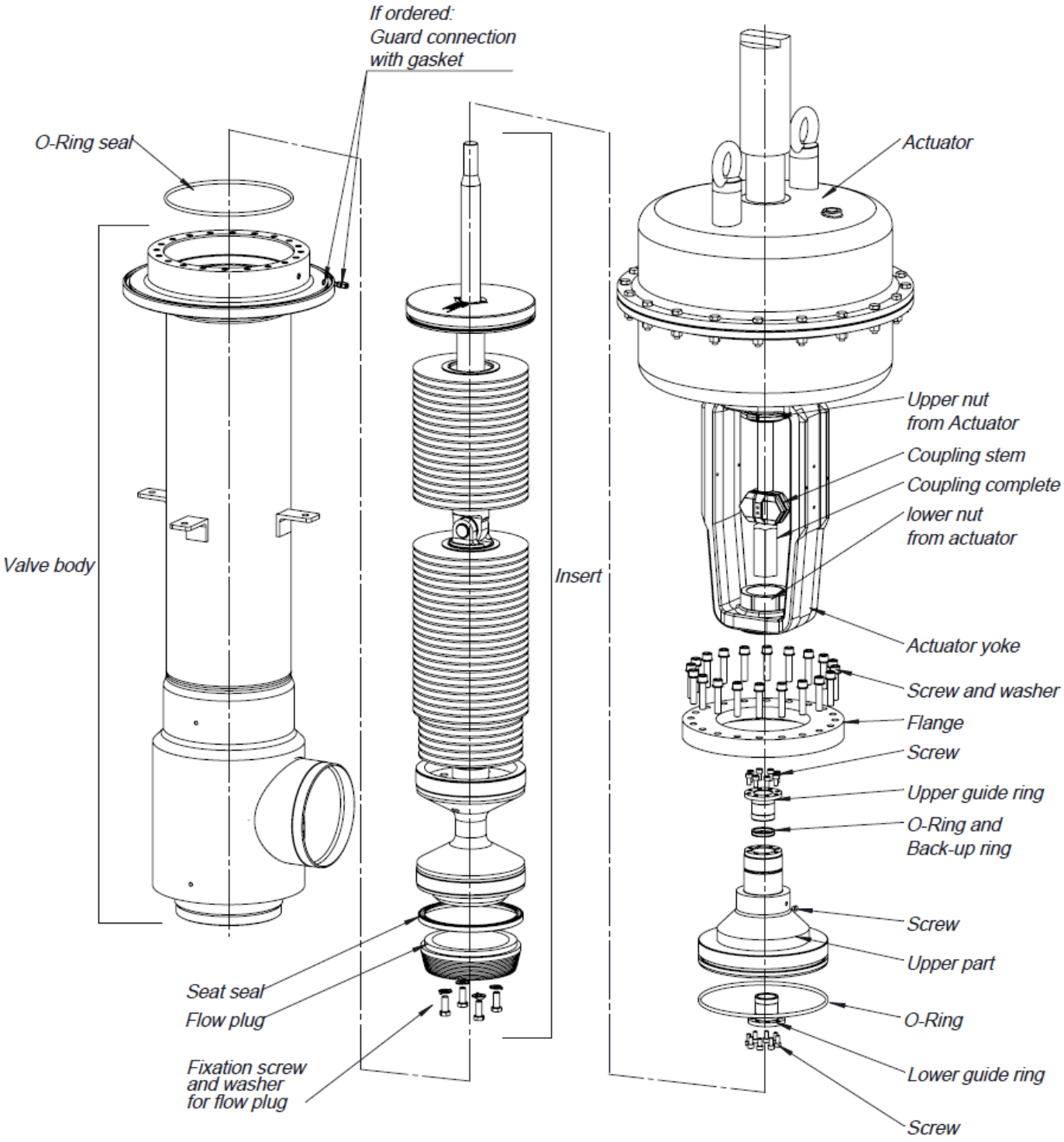
5. Designation of the valve components



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6. Installation, assembly and disassembly of valves

6.1 Unpack from wooden box / general transportation

To detect any transport damage at an early stage, a shock indicator has been applied to the wooden box. If the wooden box or the shock indicator are damaged, the WEKA AG company should be contacted

To unpack the valve from the wooden box, please follow the instructions

Fixation of the lifting material

Attach the lifting loops to the yoke of the valve.	
Pass the loops through the eyelets at the top of the pneumatic actuator. When selecting the lifting material, make sure that it is designed for the weight of the valve. Before lifting the valve, make sure that the box is secured against slipping away.	

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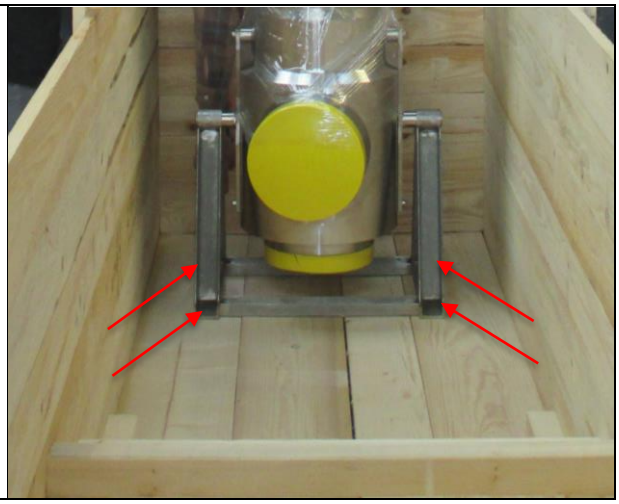
Uprightening the valve

Align the valve slowly and evenly until it is vertical.	
Loosen the four screws at the bottom of the wooden box. Now you can lift the valve out of the box.	

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Disassembly of the turning and transport device

Now position the valve just above the floor so that the device cannot fall during disassembly. Now you can remove the turning transport device from the valve. (WEKA number 46979). To remove the device, the 4 screws should be removed with allen wrench, 8mm. The other two screws are on the back side of the valve housing.	

Now lift the valve out of the device. The WEKA AG company recommends to keep the device.	

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6.2 General information

To install the valve into the pipeline or into the vacuum box, it is not necessary to completely disassemble the valve if the following conditions can be met:

Welding of the thread part

The temperature on the welding flange during welding must be kept as low as possible. Between valve housing and the insert are two static o-ring seals. The welding flange should always be cooled with a damp cloth.

Welding of the pipe connections

The temperature on the connection pipes during welding must be kept as low as possible. The seat seal can be destroyed by excessive heat. The connection and the valve body should always be cooled with a damp cloth.

During the welding the valve should be flushed so that the heat is always conducted out of the valve (heat does not pass through the seat area)

If this cannot be guaranteed, we recommend disassembling the actuator and valve inserts according to chapter 6.6.2 Disassembly of a TgxV DN250/PN6 valve. It must be ensured that insert and actuator are stored packed in a dry and dust-free place.

6.3 Installation position

The valves must be installed in vertical position with the actuator on top. A deviation from the vertical axis is generally possible up to an angle of 1 degree. Larger deviations are only permitted with the agreement of WEKA AG. Special fixing devices must be installed for this.

The valve housings must be installed into the pipeline possibly free of tension. Excessive transverse stresses caused by the pipeline may negatively affect the function of the valve. Any bending or shearing stresses during or after welding should be avoided.

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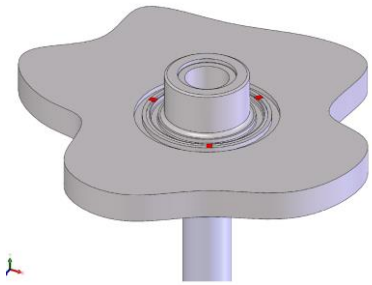
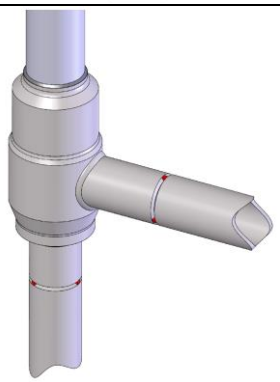
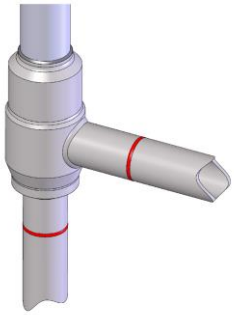
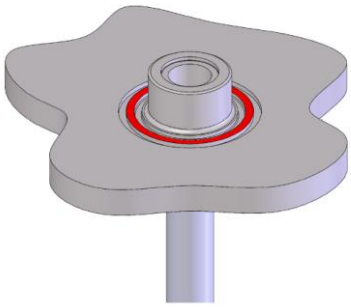
6.4 Installation welding of the housing

The valves must be carefully welded in by spot welding and minimum energy input to avoid deformation due to thermal distortion at the valve housing. The valve housing may be cooled with a damp cloth during welding. After spot welding, it is recommended to first weld on the fluid pipes and then the vacuum flange.

Ensure cleanliness during work. Pollution at the valve seat or at the guide areas may be the reason for malfunction or functional failure of the valve.

Step	Picture	Description
1		Fix the thread part in the valve plate with 3 welding spots.
2		Spot-welding of pipes with 3 spots around the circumference.
3		Weld the pipes with as low heat input as possible. If required, cool with a damp cloth.
4		In order to prevent tube tension, the welding points should now be removed.  Now weld another 3-6 tack sports at the thread part and subsequently carefully finish the weld joint. Check the housing again for distortion.

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Additional tips for reducing welding heat:

For welding procedure 141, TIG welding:

- Ensure low heat input
- For sockets with 2 mm wall thickness, use approx. 48-52 amps.
- The diameter of the filler wire should be 1-2 mm

These values are only intended as guidelines. Depending on the welder and the welding process, the values need to / may be adjusted.

Shielding gas:
The flow direction of the shielding gas should always be from the valve into the pipe.

- Welding at the seat socket: The shielding gas input must be from the output socket
- Welding at the output socket: The shielding gas input must be from the seat socket

Welding sequence:
First, weld 2 quarters of the circumference on opposite sides. Leave to cool. Then, weld the rest.

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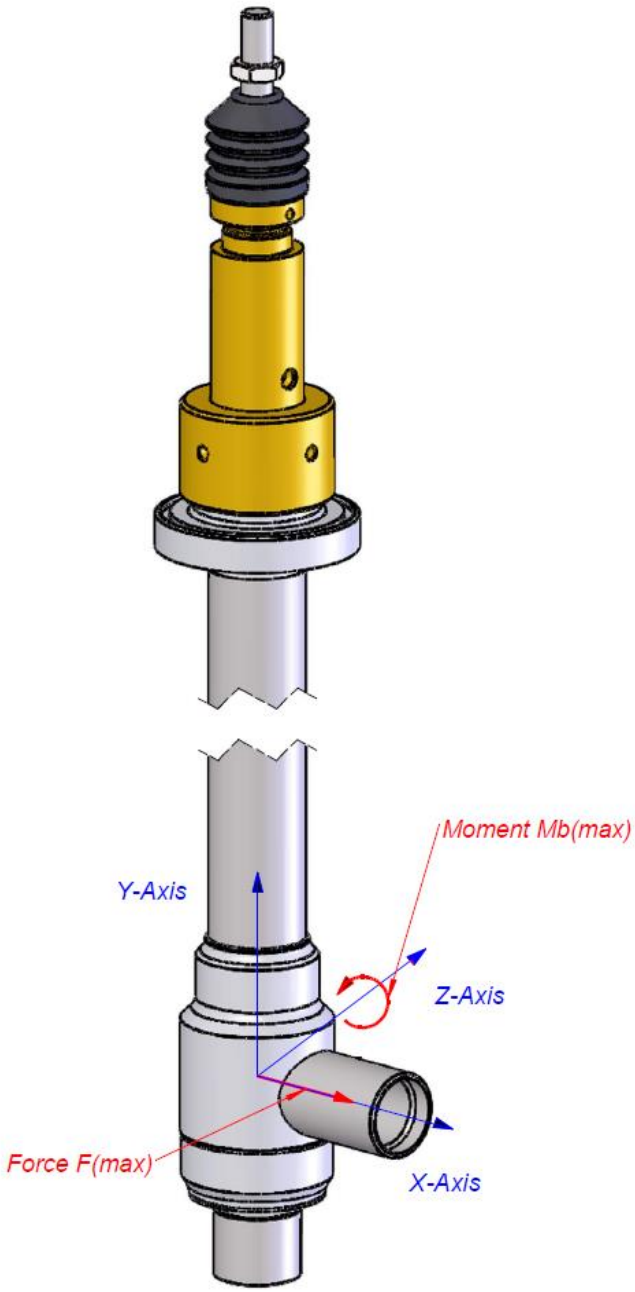
6.5 Allowed displacement

The following information shows the permissible pipe forces F(max) or moments Mb(max) which may act on the valve with a cryogenic length of 1400 mm. The maximum deflection (r max) for a valve is calculated based on the forces or torques.
The permissible forces or torques for different cryogenic lengths can be determined using the intercept theorem.

- maximum allowed deflection of 1.0 mm
- maximum resulting force: Fmax = 8.500 N or Mmax = 12.000 Nm (not overlapping)
    - Example: Fx = 4250 N combined with Mz = 6000 Nm would be a valid combination



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6.6 Assembly and disassembly of the valve

The work must be performed in a clean environment using suitable tools.

All disassembled parts must be taken to a clean place directly after disassembly and protected by means of a plastic bag to avoid pollution or damage.

In case that additional components, such as switches, sensors or other elements are installed at the actuators, these do not necessarily need to be disassembled beforehand. However, WEKA AG recommends disassembling them to avoid damage and minimize the risk of injury.

Tools
The required tools are listed in the respective chapters. Special tools or special auxiliary agents can be ordered from WEKA AG. They are not included in the scope of delivery.

Previous knowledge
A certain amount of previous knowledge of mechanical handling is mandatory to prevent damage to the valve. Tightening of fasteners, such as screws and nuts, must be performed according to generally applicable mechanical engineering guidelines.

Risk of injury
During certain work steps, parts are put into movement under great use of force. To avoid injuries, act with special care and caution. Also, some components may be very heavy. If possible, handling such components should be carried out using a crane.

Training
WEKA AG offers training courses in addition to this manual; participants receive valuable advice to make their work and specific work steps easier

6.6.1 Disassembly of the PM actuator, Samson type, Po

Prior to beginning with your work, you must first determine whether the actuator is Po (normally closed, pressure tend to open) or Ps (normally open, pressure tend to close), because there is a difference in the work steps for the two types. This information can be found on the type plate of the actuator.

The disassembled components must be stored in a clean place. Damage to the sealing surfaces can lead to tightness but not only problems.

Required tools and auxiliary agents

Allen-type wrench, 5mm
Open-end spanner SW24
Open-end spanner SW60
Hook spanner 120 - 130

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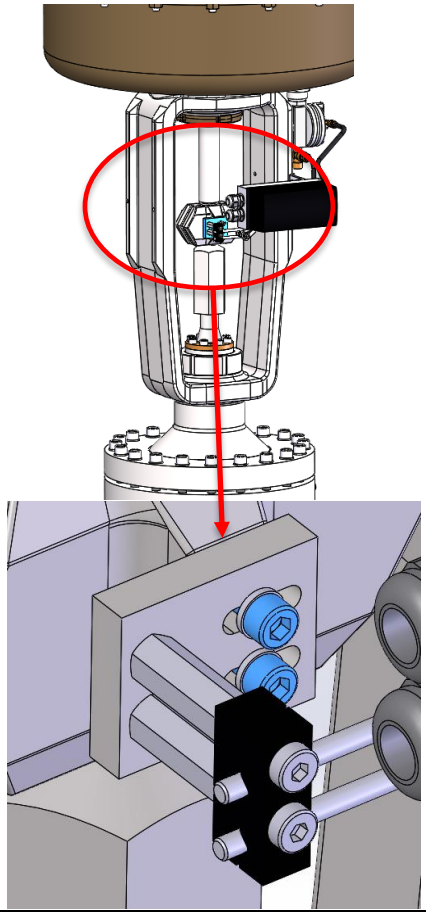
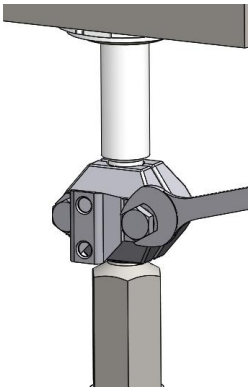
Step	Picture	Description
Additional note: Depending on the nominal width of the valve, the components may slightly vary in appearance. However, the steps remain the same.		
1		If position controller is used: Unscrew the blue marked screw with an Allen-type wrench, 5mm The plate can be removed together with the spacer and bracket. ➔ The position controller (Tapper) are not connected anymore
2		Remove the two screws at the coupling using an open-end spanner SW24. The coupling can be disassembled. **ATTENTION** The insert must not be turned during disassembly, this could result in irreversible damage to the seat surface or to the actuator diaphragm.

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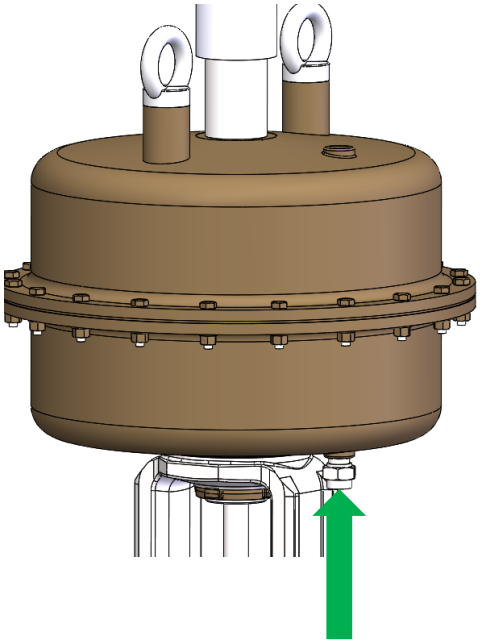
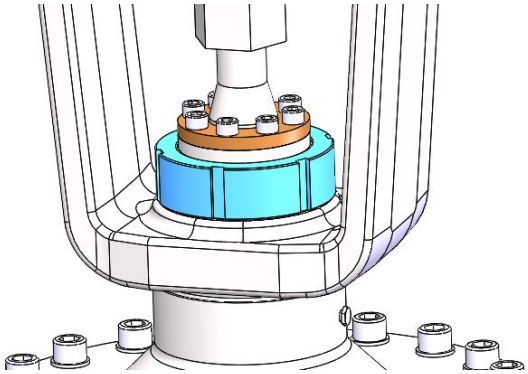
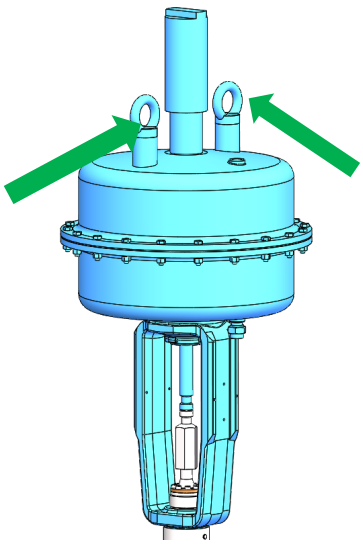
3		Connect the compressed air line to the actuator. The maximum and minimum air pressure values are provided in the customer drawing. Depending on the additional parts for the actuator, the air connection can be at a different location. **Please note:** The maximum air pressure of 6 bar must not be exceeded; higher pressure will result in damage to the actuator. **Attention:** The actuator and the coupling are moving parts. Risk of injury! Keep your hands off..
4		Loosen the lower nut from the actuator using a Hook spanner 120 - 130 The nut can be extended and removed between the spindles from the actuator.
5		Remove the actuator (blue marked) with a crane. Use the two eye bolts for this. **ATTENTION:** The insert must not be turned during disassembly, this could result in irreversible damage to the seat surface.

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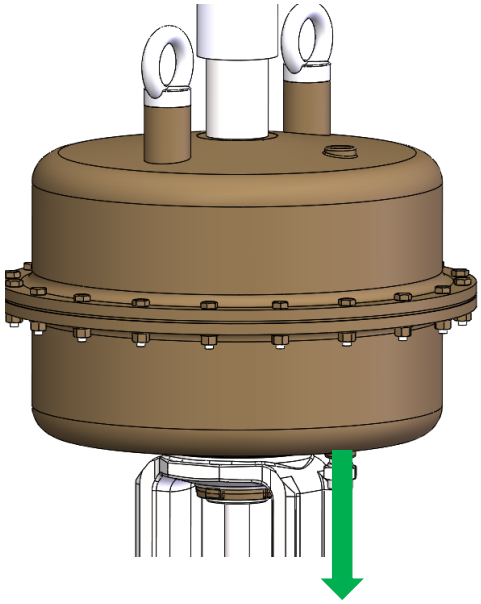
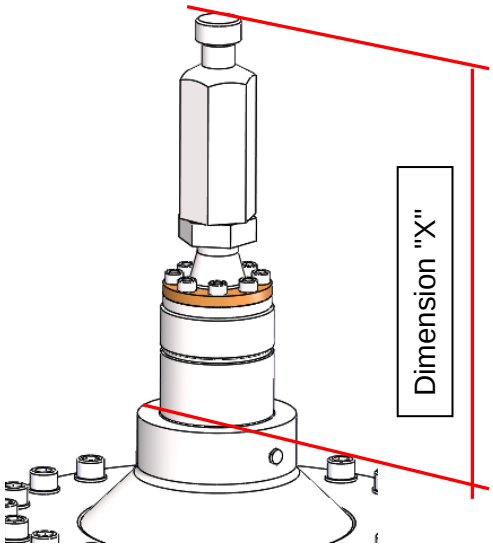
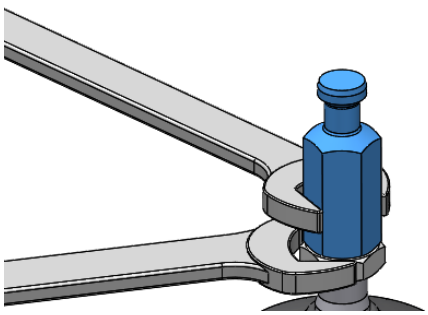
6		Remove the compressed air line from the actuator. **Attention:** The actuator and the coupling are moving parts. Risk of injury! Keep your hands off.
7		The dimension "X" must be measured from the upper edge of the coupling to the yoke stop During assembly of the valve, the dimension "X" must be set! Otherwise, the valve travel will be incorrect **We recommend writing down the dimension "X" and the respective tag no. of the valve.**
8		Using two open-end spanners, hold the coupling (blue marked) and the nut at the insert. Remove the coupling and put it aside. Loosen the counter-nut from the insert. Open-end spanner SW60 & SW60

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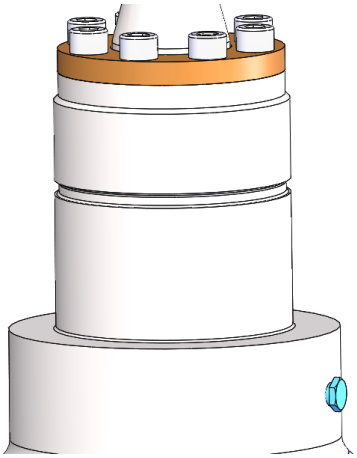
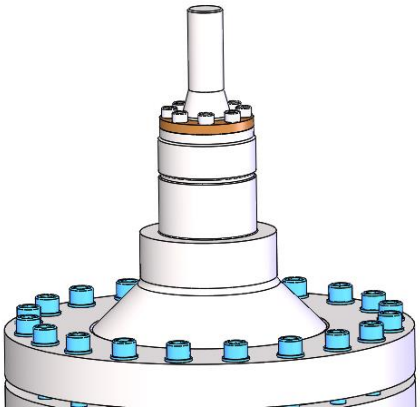
6.6.2 Disassembly of a TgxV DN250/PN6 valve

The disassembled components must be stored in a clean place. Damage to the sealing surfaces requires great effort and expenditure to remedy.

Required tools and auxiliary agents

Allen wrench, 14mm
Open-end spanner SW13.
Transport protection device with WEKA-no. 46933
Crane mounting tool (WEKA-no. 2838)

STEP	Picture	Description
Additional note: Depending on the nominal width of the valve, the components may slightly vary in appearance. However, the steps remain the same.		
1		Loosen the screw of the orifice hole using the open-end spanner SW13 Place the plug onto a clean surface. **Attention** Carefully remove the plug. The released space may be under pressure!
2		Loosen all cylinder head screws using an allen wrench, 14mm The screws and washers can be removed. Carefully lift the flange and pull over the upper part

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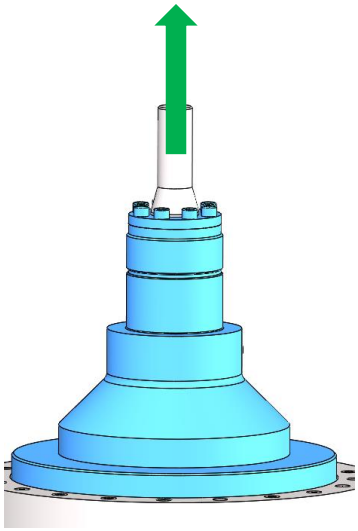
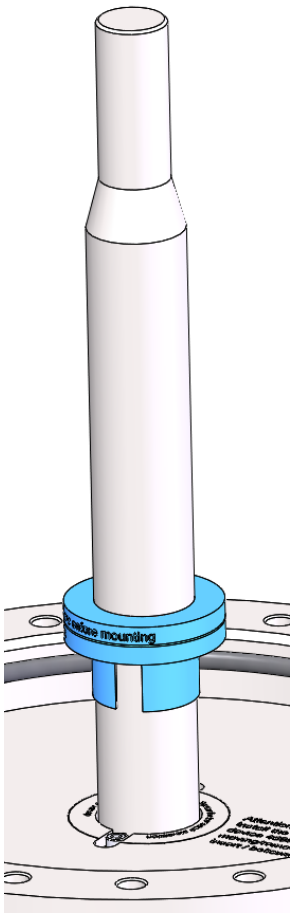
3		Carefully lift the upper part (blue marked) and pull over the insert. **Please note:** During this step, it must be ensured that the insert spindle is not scratched. Using a plastic tool (avoiding damage at the seat surface) remove the o-ring on the upper part and store it in a plastic bag.
4		Carefully lift the transport protection device with WEKA-no. 46933 (blue marked) over the actuator spindle and push it down. The device must be pressed down completely and rest completely on the piston. **Please note:** During this step, it must be ensured that the insert spindle is not scratched.

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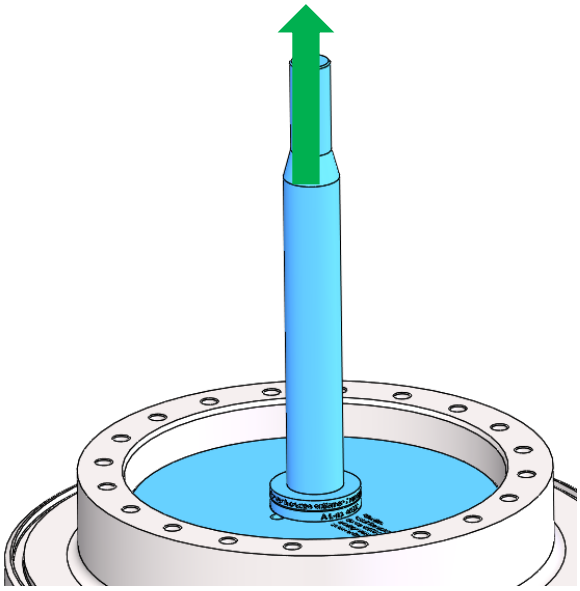
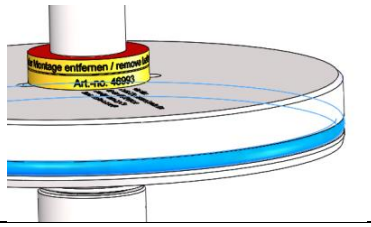
5		Lift the insert using a crane mounting tool. Special tools can be purchased from WEKA AG (WEKA-No. 2838) **Attention** Carefully lift the insert out of the housing and guide it with one hand! Damage to the flow plug or other parts must always be avoided. Using a plastic tool (avoiding damage at the seat surface) remove the o-ring on the piston of the insert and store it in a plastic bag. 

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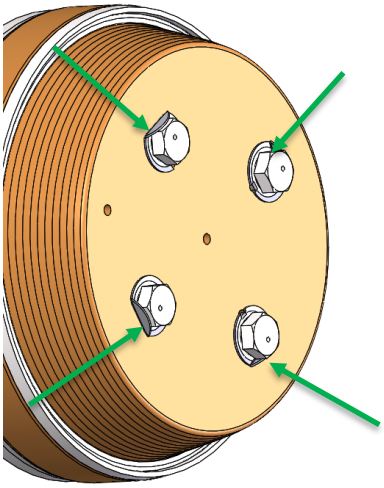
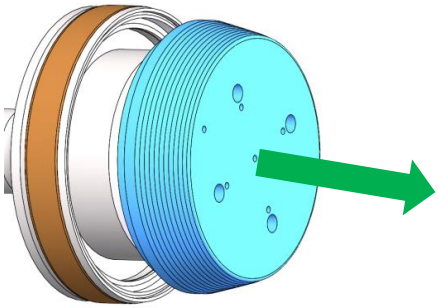
6.6.3 Replacing a flow plug or seat seal.

For this purpose, the valve and/or the insert must be completely disassembled. To this end, see chapter 6.6.2 Disassembly of a TgxV DN250/PN6 valve.

The insert should lie securely on a table or something similar.

Required tools and auxiliary agents

open-end spanner SW24
Rubbing alcohol
Lint-free cloth
Gleitmo 599

Step	Picture	Description
Additional note: Depending on the nominal width of the valve, the components may slightly vary in appearance. However, the work steps remain the same.		
1		The four secure washers in front of the flow plug must first be unfolded. **Please note:** Make sure not to damage the guiding points at the insert during this work. After that, loosen the screws using an open-end spanner SW24
2		Remove the flow plug by hand **Please note:** The flow plug is a delicate part with various functions. It should not be damaged or scratched.

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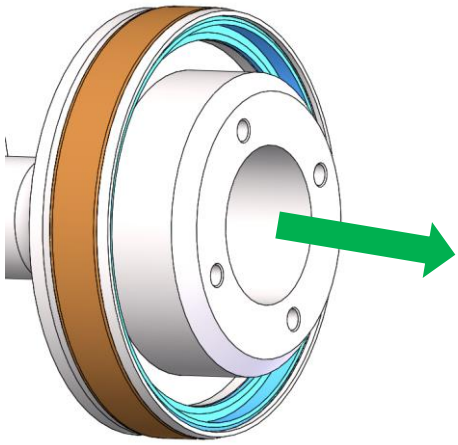
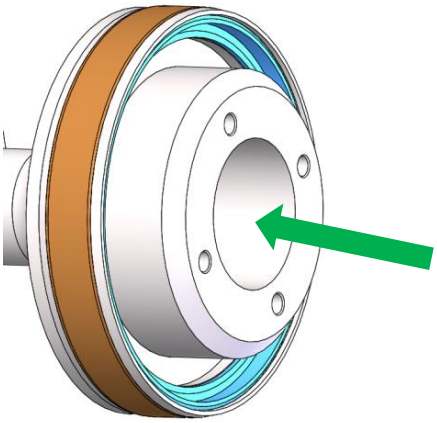
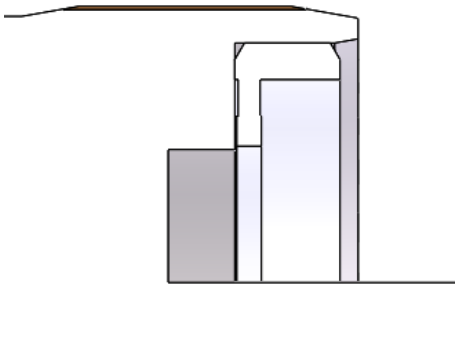
3		Remove the seat seal using a plastic tool or compressed air. **Please note:** Hard objects, such as metal tools or dirt particles may damage the sealing surface. **Attention:** Always wear goggles when using compressed air.
4		Clean the sealing surface and the seal using rubbing alcohol. WEKA AG recommends using a lint-free cloth! Re-assemble the new seat seal. **Please note:** Hard objects, such as metal tools or dirt particles may damage the sealing surface. **Attention:** The seat seal should be mounted according to the picture. Incorrect installation can lead to damage and leakage. 

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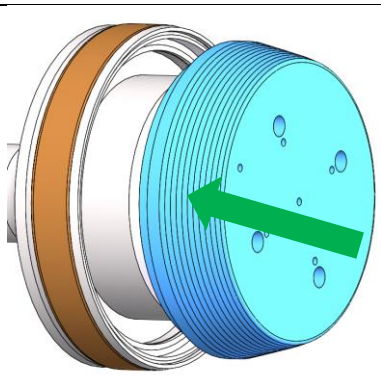
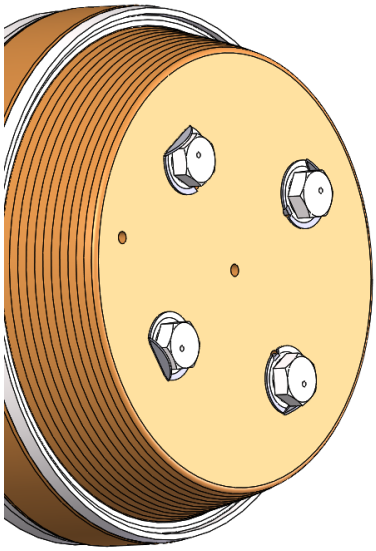
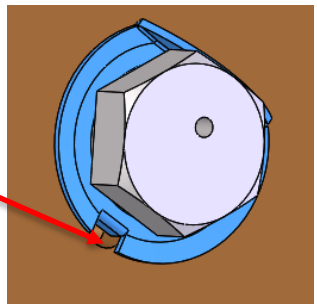
5		Re-assemble flow plug. **Attention:** This step must be taken with caution. Incorrect handling may cause damage to the seat seal.
6		Re-assemble the new secure washers and the screws. Grease the thread of the screws with Gleitmo 599. **Attention:** Secure washer must be aligned as shown in the picture The small tang must point into the hole of the flow plug  Tighten all screw using an open-end spanner SW24. Torque 135 Nm The four secure washers must be bent up to secure the screws.

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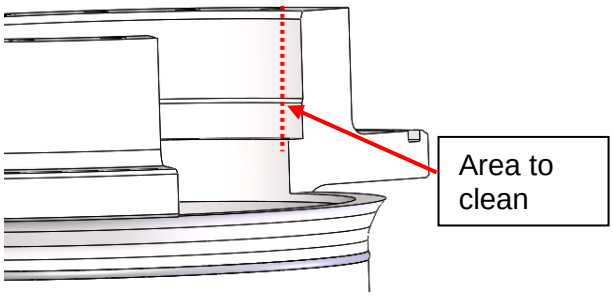
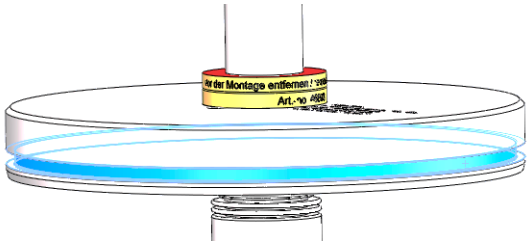
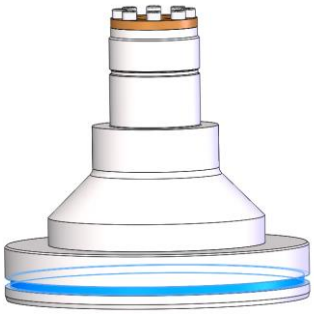
6.6.4 Assembly of a TgxV DN250/PN6 valve

Required tools and auxiliary agents

Rubbing alcohol
Lint-free cloth
Vacuum grease
Gleitmo 599
Allen wrench, 14mm
Open-end spanner SW13.
Transport protection device with WEKA-no. 46933
Crane mounting tool (WEKA-no. 2838)

Step	Picture	Description
Additional note: Depending on the nominal width of the valve, the components may slightly vary in appearance. However, the work steps remain the same.		
1		Clean the sealing surfaces at the thread part of the housing using rubbing alcohol. **Please note:** Use a lint-free cloth to avoid pollution.
2		Clean the sealing surfaces at the piston (insert) using rubbing alcohol. Clean the o-ring of the piston using rubbing alcohol. **Please note:** Use a lint-free cloth to avoid pollution.
3		Clean the sealing surfaces (blue marked) at the upper part using rubbing alcohol. Clean the o-ring of the upper part using rubbing alcohol. **Please note:** Use a lint-free cloth to avoid pollution.

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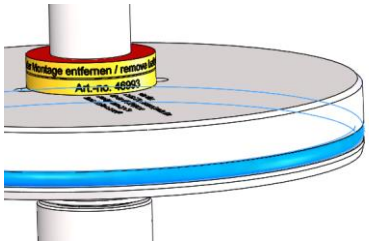
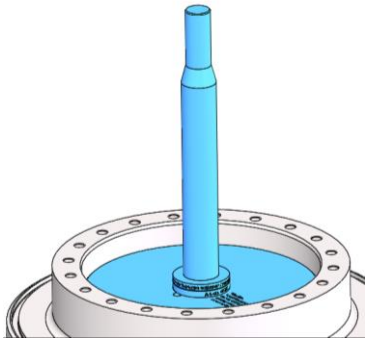
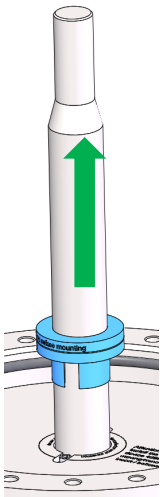
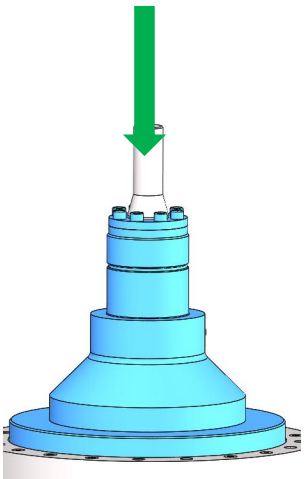
4		Slightly grease the o-ring with vacuum grease. Assemble the o-ring.
5		Assemble the insert in the housing. Lift the insert using a crane mounting tool. Special tools can be purchased from WEKA AG. (WEKA-no. 2838) **Attention** Carefully move the insert into the housing and guide it with one hand! Damage to the flow plug or other parts must always be avoided.
6		Carefully lift the transport protection device with WEKA-no. 46933 (blue marked) over the insert. **Please note:** During this step, make sure that the insert spindle is not scratched.
7		Slightly grease the o-ring with vacuum grease. Assemble the o-ring Carefully lift the entire unit (blue marked) over the insert and move it back down. **Please note:** During this step, make sure that the insert spindle is not scratched.

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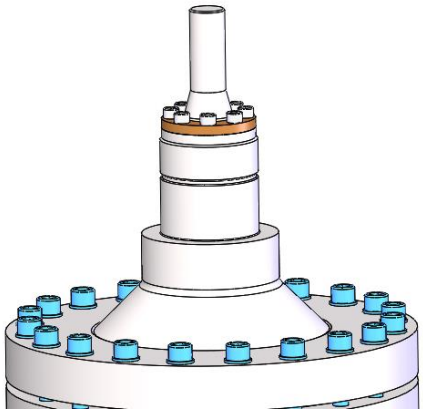
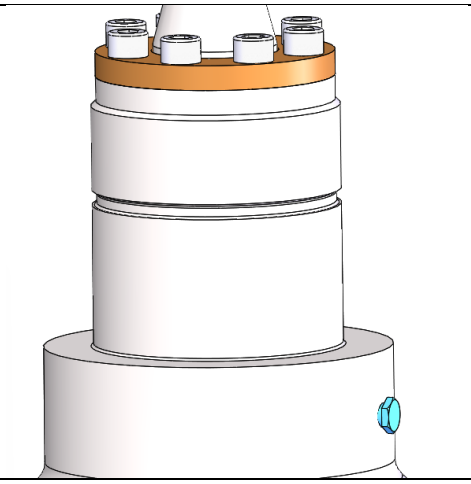
8		Grease all screws with Gleitmo 599. Re-assemble the flange. Assemble all washers and screws. Tighten all screw with an allen wrench, 14mm Torque 135 Nm.
9		Clean the orifice opening using rubbing alcohol. Assemble the plug with an open-end spanner SW13.

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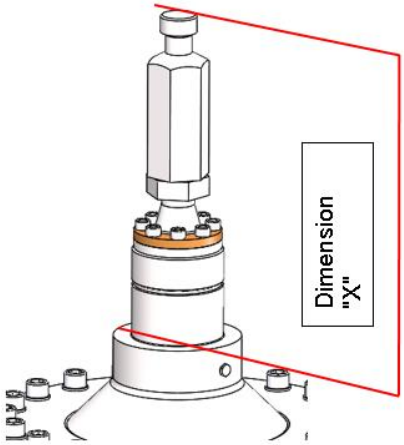
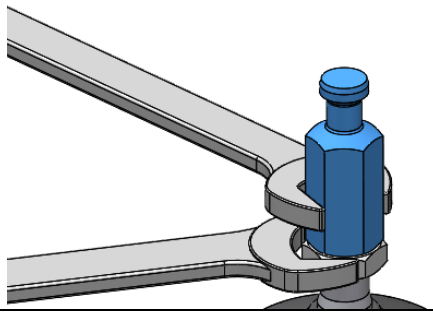
6.6.5 Assembly of the PM actuator, Samson type, Po

Prior to beginning with your work, you must first determine whether the actuator is Po (normally closed, pressure tend to open) or Ps (normally open, pressure tend to close), because there is a difference in the work steps for the two types. This information can be found on the type plate of the actuator.

Required tools and auxiliary agents

Gleitmo 599
Allen-type wrench, 5mm
Open-end spanner SW24
Open-end spanner SW60
Hook spanner 120 - 130

Step	Picture	Description
Additional note: Depending on the nominal width of the valve, the components may slightly vary in appearance. However, the work steps remain the same.		
1		Grease the thread on the insert with Gleitmo 599. Assemble the coupling and the counter-nut on the insert and tighten it hand-tight. **Set dimension "X"** **Please note:** This work step is critical for the correct travel of the valve.
2		Using two open-end spanners, hold the coupling (blue marked) and the counter-nut at the insert spindle. Tighten the coupling. Open-end spanner SW60 & SW60 **Check dimension "X" again.**

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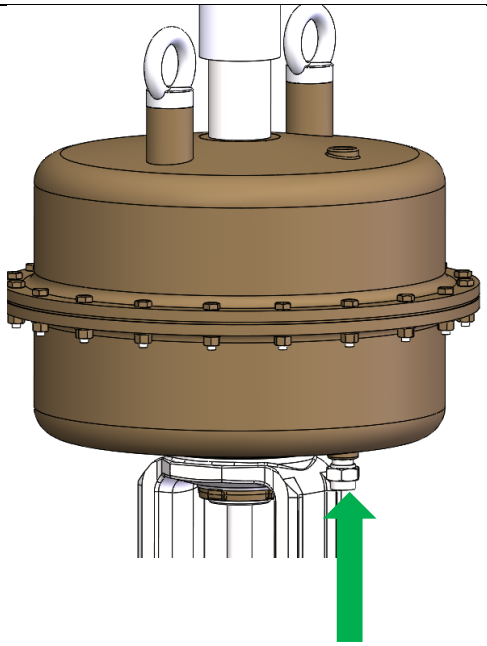
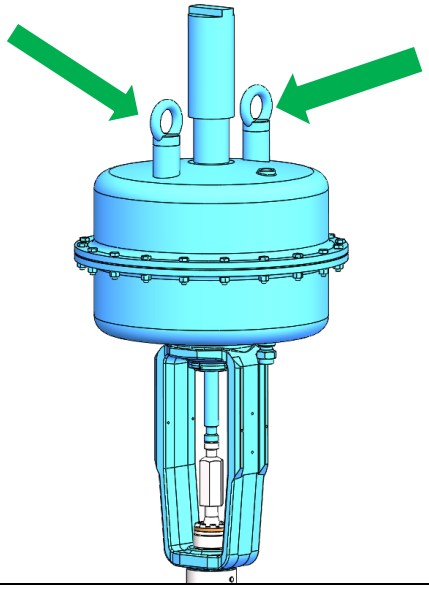
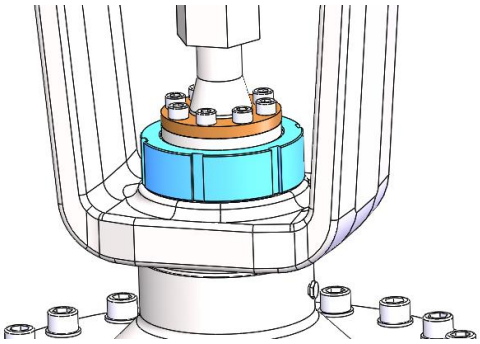
3		Connect the compressed air line to the actuator. The maximum and minimum air pressure values are provided in the customer drawing. Depending on the additional parts for the actuator, the air connection can be at a different location. **Please note:** The maximum air pressure of 6 bar must not be exceeded; higher pressure will result in damage to the actuator. **Attention:** The actuator and the coupling are moving parts. Risk of injury! Keep your hands off.
4		Carefully assemble the complete actuator unit (blue marked) with a crane. Use the two eye bolts for this. **ATTENTION:** The insert must not be turned during disassembly, this could result in irreversible damage to the seat surface.
5		Grease the thread from the lower nut with Gleitmo 599. The nut can be retracted between the spindles. Tighten the lower nut from the actuator using a Hook spanner 120 – 130.

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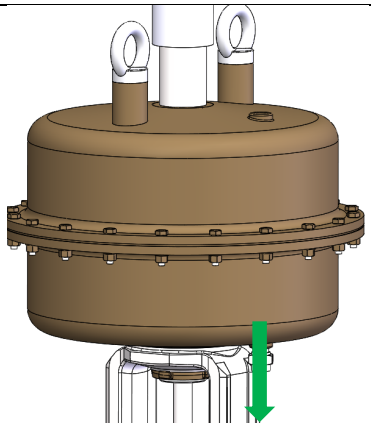
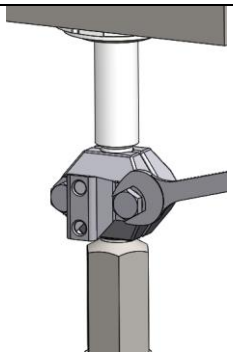
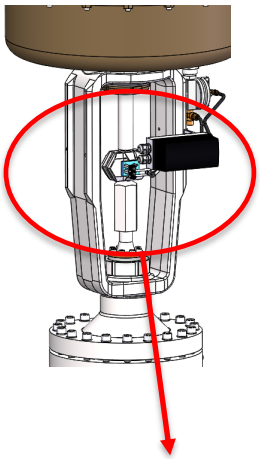
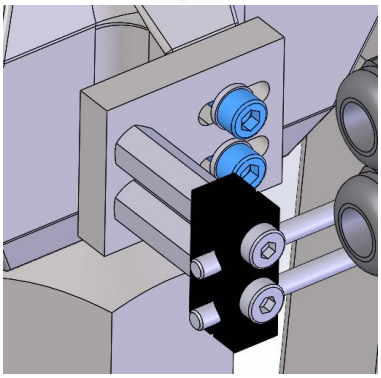
6		Remove the compressed air line from the actuator **Attention:** The actuator and the coupling are moving parts. Risk of injury! Keep your hands off.
7		Mount the coupling between actuator stem and insert. Tighten the two screws at the coupling with an open-end spanner SW24 **ATTENTION:** The insert must not be turned during disassembly, this could result in irreversible damage to the seat surface or to the actuator diaphragm.
8	 	If a position controller is used: Mount the plate in the coupling system and fix it with the screws. Do not tighten the screws. Swivel back the position controller. Insert the pin into the tappet. Tighten the blue marked screws with an Allen-type wrench, 5mm **Please note:** If the pin does not easily fit into the tappet, the coupling has not been aligned correctly.

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6.6.6 Replacing the seals

Spare parts like insert or seals are listed on the corresponding valve drawings.

WEKA AG recommends cleaning every seal with rubbing alcohol before installing it. Also clean the corresponding sealing surface of the valve. To avoid pollution, use a lint-free cloth.
WEKA AG recommends using vacuum grease for the o-rings.

For detailed instructions, please see the disassembly and assembly instructions of the valve and/or the flow plug.

Replacing the seat seal

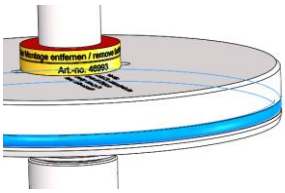
To replace the seat seal, perform the steps described in chapter 6.6.3 Replacing a flow plug or seat seal.. After removal of the flow plug, the seat seal can be replaced.

Replacing the complete insert

To replace the insert, first, the actuator needs to be disassembled, then, the instructions in chapter 6.6.2 Disassembly of a TgxV DN250/PN6 valve must be followed until the insert is exposed and free to be removed.

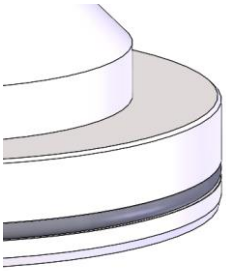
WEKA AG recommends replacing all seals when replacing the insert.

Replacing the o-ring at the insert



To replace the o-ring of the insert, first, the actuator needs to be disassembled, then, the instructions in chapter 6.6.2 Disassembly of a TgxV DN250/PN6 valve must be followed until the insert is exposed. After that, the o-ring can be replaced.

Replacing the o-ring at the upper part



To replace the o-ring at the upper part, first, the actuator needs to be disassembled, then, the instructions in chapter 6.6.2 Disassembly of a TgxV DN250/PN6 valve must be followed until the upper part is exposed. After that, the o-ring can be replaced.

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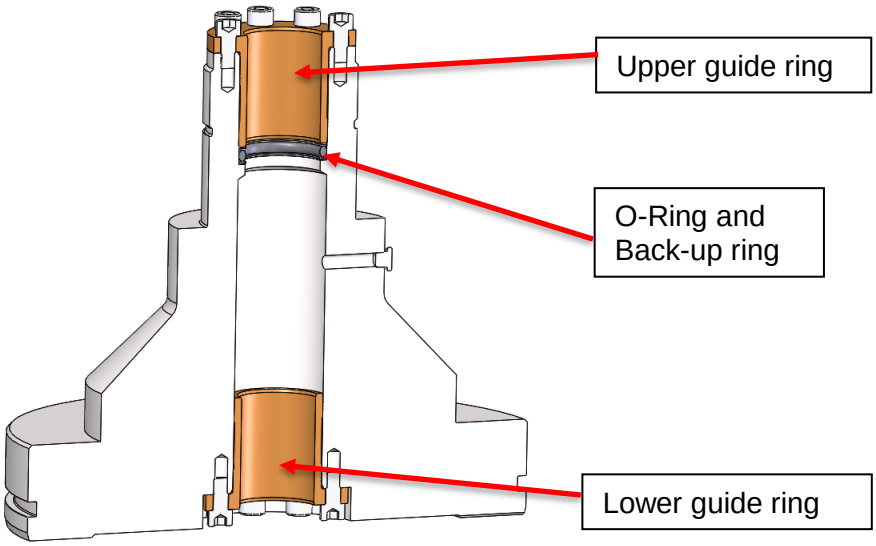
Replacing the guide rings and o-ring / back-up ring in the upper part



To replace the desired parts, first, the actuator needs to be disassembled, then, the instructions in chapter 6.6.2 Disassembly of a TgxV DN250/PN6 valve must be followed until the upper part can be removed.

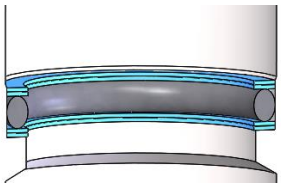
Change upper guide ring and/or lower guide ring
Loosen all screws using an allen wrench, 8mm. Guide ring can be removed.

Clean surfaces of the upper part. There may be small abrasions. Grease the surface of the new guide rings with Gleitmo 599. WEKA AG recommends changing also the o-ring and back-up rings.

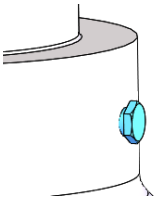
New guide rings can be mounted. Grease all screws with Gleitmo 599.
Tighten all screws again with an allen wrench, 8mm. Torque 32 Nm.

Change O-Ring and Back-up ring
The instructions must be followed until the upper guide ring can be removed.

After that, the o-ring and back-up ring can be replaced.
Back-up rings are blue marked

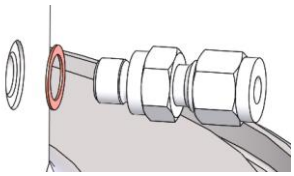


Replacing the seal of the orifice hole



For the required tools, please see chapter 6.6.2 Disassembly of a TgxV DN250/PN6 valve. First, the orifice hole must be opened, then the plug seal must be removed. Finally, some new PTFE band muss be added around the plug. Mount plug again.

Replacing the Gasket on the guard connection



To replace the gasket on the guard connection, the Swagelok fitting must be removed with an open-end spanner SW14.
Remove the gasket. Using a plastic tool (avoiding damage at the seat surface) the new gasket can be replaced.

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7. Marking of the valve

The valve housing is marked with following information:

Manufacturer sign
Order number
Tag number
Year of manufacture
Material
DN XXX / PN XX
PED marking

8. Commissioning and operation

8.1 General information

To ensure long service life of the valves, the following information must be observed:

- Loose parts must be (re-)tightened.
- The valve must not be blocked.
- If fluid leaks from the valve, operation must be stopped, and the manufacturer must be contacted.
- If the valve is iced up, operation must be stopped, and the manufacturer must be contacted.
- If the valve does not perform its full travel, operation must be stopped, and the manufacturer must be contacted.
- A travel check must always be performed to make sure that all parts are correctly assembled. In case of clamping/jamming or friction noise, operation must be stopped immediately, and the cause must be investigated.

Establish the electrical and pneumatic connections for all pneumatic (e.g. solenoid valves, pneumatic actuators, position controllers) and electrical (e.g. switches, position controllers) components according to the technical drawing of the valve.

Prior to commissioning of a new system and particularly after repair work, the entire piping system must be purged. For that purpose, all valves must be put in the open position. In this process, all hazardous particles, such as chips and welding beads are removed

8.2 Pneumatic valves

- The compressed air values must comply with the pneumatic diagram in the customer's drawing.
- Control the valve by applying the appropriate input signal to the control signal element of the valve (e.g. position controller or solenoid valve).
- Always connect the pneumatic air pressure line to the valve according to the pneumatic diagram in the customer's drawing.

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Attention:
During operation, the actuator and/or coupling move with substantial force. Risk of injury! Keep your hands off the actuator!

Compressed-air supply:

To achieve trouble-free operation of the position controller, dry, clean, and oil-free instrument air is required.

Required compressed-air quality as per ISO/DIS 8573-1:
• Size and density of solids: Class 2
• Pressure dew point: Class 2 (minimum 20 K below ambient temperature)

Travel limiting
travel limiting function of the actuator must be performed according to Samson's data sheet.

Alignment of the actuator
If the actuator is in an unsuitable position to install the cables and the connection for the position / end switch, the alignment can be adjusted by turning the yoke of the actuator.

8.3 Electrical and pneumatic additional components

If applicable, electrical signal values are defined in the technical drawings.

Initialization of the position controller:
The valves are already initialized with the positioner.
WEKA AG recommends re-initializing the position controllers during commissioning of the valves. For instructions for this process, either contact WEKA AG or download them directly from the homepage of the position controller supplier.

Various extra components
The valves can be equipped with various extra components, such as sensors, switches, solenoid valves, etc. Connect the components to your monitoring system. For instructions of this process either contact WEKA AG or download them directly from the homepage of the component manufacturer.

8.4 Operation Conditions

Ambient and fluid temperature range

Ambient and fluid temperature ranges are defined on the technical drawing of the valve.

Maximal allowed pressure

For the maximum allowed pressure please refer to the technical drawing of the valve.

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9. Maintenance

9.1 General information

The valve components are designed to be nearly maintenance-free.

Selection of optimum material combination limits wear to an absolute minimum. Make sure to keep the system clean during operation. Particularly valves that are accessed only rarely or are difficult to reach need to be checked carefully and thoroughly to ensure their proper function. The recommended spare parts are listed in the valve drawing and can be generally supplied within a few days. However, WEKA AG recommends keeping a set of seals, comprising the seat seal, dynamic seal, static seal and static safety seal (see drawings), in stock.

Inspection of the seals and the flow plug is generally only performed during a maintenance interval of a system. WEKA AG recommends disassembling the valves and replacing the seals at least every 5 years.

9.2 Orifice hole and/or guard connection

Tightness of the insert to the outside can be tested by means of the orifice hole and/or guard connection.

Orifice hole
By removing the plug from the orifice hole, a leakage test can be started to check the unit for tightness. Depending on the result of the test, maintenance may be required.

Guard connection
The Swagelok fitting is for a tube Ø6mm. Connect your test device to the Swagelok fitting. Depending on the result of the test, maintenance may be required.

Please note:
Over time, the pressure in the small test chamber will increase due to a slight natural leakage rate. Gas escapes through the o-ring. With normally acting seals, a pressure increase is only experienced after several months. During this period, the enclosed gas may reach pressure values that can be identified by a characteristic gas escape noise. This is not an unusual or dangerous operating condition.

10. Spare parts

All spare parts are listed in the technical drawing of the valve.

For spare parts requests, please contact us at the address below and always state the valve number and the correct spare parts number according to the specifications in the technical drawing.

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11. EU Declaration of conformity

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EU-KONFORMITÄTSERKLÄRUNG
EU DECLARATION OF CONFORMITY

Wir / We **WEKA AG**

(Name des Herstellers) (Manufacturers name)

erklären in alleiniger Verantwortung, dass das Produkt
declare under our sole responsibility that the product

Kryo-Ventil / Cryogenic valve

Typen / Types: **TDV, TEV, TGV, TYV, TZV, WDV, WEV, WGV, WZV**
TDQV, TEQV, TGQV, TEcQV, WDQV, WEQV, WGQV

Ausführung / Execution: **PM-, PK-, Hlc-, Hlcp-, Hls-, Hlsp-, HL-, EG-**
d, g, f

(Bezeichnung Typ oder Modell, Los-, Chargen- oder Seriennummer, möglichst Herkunft und Stückzahl)
(Name, type or model, lot, batch or serial number, possibly sources and numbers of items)

auf das sich diese Erklärung bezieht, mit den folgenden Normen oder normativen Dokumenten übereinstimmt
to which this declaration relates is in conformity with the following standards or other normative documents

DIN EN 12516-2:2015-01

(Titel und/oder Nummer sowie Ausgabedatum der Normen oder der anderen normativen Dokumente)
(Title and/or number and date of issue of the standards or other normative documents)

Gemäss den Bestimmungen der Richtlinie(n)
Following the provisions of directive(s)
(falls zutreffend) (if applicable)

2014/68/EU (PED)	Art 4.3	WEKA AG (Art. 4.3)	
Qualitätssicherung /	Kat. I	WEKA AG (CE) Modul / module A	
quality assurance	Kat. ≥ II	DNV-GL (CE 0575) Modul / module H	PEDH000000R
		DNV-GL (CE 0575) Modul / module H1	PEDH10000017
		DNV GL AS, Veritasveien 1, 1363 Høvik, Norway	

(Richtlinie, Geltungsbereich / Kategorie, ggf. Name, Nummer und Anschrift der notifizierten Stelle)
(Directive, scope / category, if necessary name, number and address of notified body)

(Ort und Datum der Ausstellung)
(Place and date of issue)

Bäretswil, 15.04.2020

(Name und Unterschrift des Befugten)
(Name and signature of authorized person)

Marc Hofmann
(Quality Manager)

Pascal Erni
(Product Manager)

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