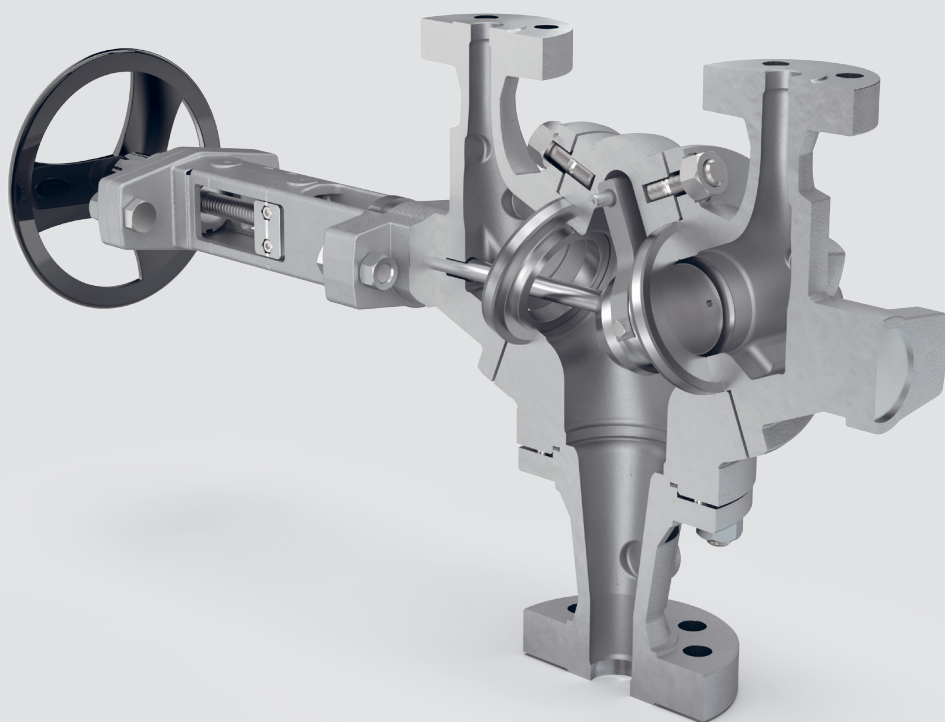


Operating, installation and general maintenance instruction

Operating instructions



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1 Introduction

1.1 Manufacturer

LESER manufactures Change-over Valves for all industrial applications. A large selection of types, materials and options are available.

Change-over Valves from LESER fulfil all quality and environmental requirements.

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sales@leser.com
www.leser.com

1.2 About this Document




This document describes Change-over Valves and attachments produced by LESER. It contains information regarding the design, function and installation of these valves and attachments. The document does not contain instructions regarding the actual use of these parts in the system.

Certain regulations and standards apply depending on the country of operation, the system and the fluid. These regulations and standards must be followed according to local regulations.

Always observe the instructions in the supplier documentation and adhere to the applicable occupational health and safety regulations. Also comply with all applicable environmental protection regulations.

1.3 Illustration Conventions

Safety guidelines and warnings identify safety-relevant information. The safety instructions differentiate between the following risk levels:

Signal word	Consequences of non-compliance
 DANGER	Non-compliance results in serious or fatal injury.
 WARNING	Non-compliance might result in serious or fatal injury.
 CAUTION	Non-compliance might result in minor injury.
CAUTION	Non-compliance might result in damage to property.

2 Safety

2.1 Proper use

Change-over Valves allow for the continuous operation of pressurised systems. For this purpose, two safety valves are connected through a Change-over Valve to a pressurised system. Such an arrangement allows for interruption-free operation of the system, as one safety valve is in operation and the other serves as a standby safety valve. The standby safety valve can be disassembled and serviced while the plant is in operation.

Each Change-over Valve is designed for operation within a specific pressure and temperature range and for a specific type of medium (vapours, gases or liquids).

The maximum permissible operating limits are determined by the following factors:

- the material of the Change-over Valve,
- the operating temperature,
- the operating pressure,
- the medium,
- the flange rating classes.

To determine whether a specific Change-over Valve is approved for the intended purpose, check the approval documentation.

Depending on the system design, there might be temperature and pressure limits for specific media.

Where there is a risk of intercrystalline corrosion, the suitability of the material must be assessed, especially in cases where the limit temperature might be exceeded. In such cases, special agreements need to be entered into between the manufacturer and the operator.

2.2 Improper use

DANGER

Change-over Valves must not be used improperly.

Any modification to the Change-over Valve is deemed improper, as it might affect the function and the performance of the Change-over Valve.

Such modifications also include the application of a protective coating to moving and functional parts.

The operation of the Change-over Valve at pressures that are outside the allowable range is prohibited.

The Change-over Valve must not be blocked. Blocking the handwheel using the optional locking device is permitted. Before changing over, release the locking device.

Do not use the actuator assembly of the Change-over Valve as a hanger for other objects.

2.3 Standards and technical guidelines

The Change-over Valves conform to the latest technical standards applicable at the time of delivery.

The standards and technical guidelines that are fulfilled by a specific type of Change-over Valve can be found in the Declaration of Conformity.

2.4 Safety instructions

2.4.1 Safe handling of media

In case of a technical failure or incorrect use during operation, fluids may escape. Contact with residual media in the change-over valve can cause injury from poisoning, caustic and cold burns.

DANGER

When working with dangerous or harmful media, the respective regulations and standards must be followed. Dangerous media includes:

- toxic media,
- caustic media,
- irritating media,
- environmentally hazardous media,
- hot media,
- explosive media,
- Cryogenic media.

If the change-over valve is not used, operated or maintained properly, fluid may escape uncontrollably at connections and joints, resulting in serious risks of injury.

For certain media, it may be necessary to install Change-over Valves of a special design. For instance: for oxygen, you must install oil and grease-free valve types. It is the responsibility of the operator to check whether the materials from which the Change-over Valve is made is compatible with the media to be used in the plant.

When handling hazardous media, always use appropriate safety equipment and collection containers and wear suitable personal protective equipment.

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Certain media, for instance corrosive or abrasive substances and media with a high particle content, can cause malfunctions, as particles might become trapped in the Change-over Valve. Regularly service the Change-over Valve and check it for free movement.

2.4.2 Modification of Change-over Valve

WARNING

Unauthorised modifications to the Change-over Valve are prohibited. Modifications can lead to leakage or inadmissibly high pressures in the system. This, in turn, results in a higher risk of injury.

Do not insulate the actuator assembly of the Change-over Valve, as this could cause the valve to become blocked.

Moving and functionally-important parts must not be given a protective coating.

Regularly inspect the Change-over Valve for inadvertent changes, such as damage to the seatings or foreign objects in the valve.

2.4.3 Ambient and operating temperature

CAUTION

Materials tend to expand at high temperatures. Take this fact into account when choosing and installing the Change-over Valve.

At a low ambient and/or operating temperature, the change-over valve may ice up and vapours may freeze. This can impair the function of the Change-over Valve. Observe the operating temperatures of the Change-over Valves and perform regular function tests.

Skin contact with hot or cold surfaces can cause injury from burns. Always wear suitable personal protective equipment.

Please note that, at operating temperatures higher than 300°C, the handwheel must be turned back by 20-25° after a complete manual change-over, provided that the change-over is carried out in a cold state. Observe the scale attached to the Change-over Valve. For disassembly, observe the instructions in chapter "4.2 Gaskets and leaks" on page 11.

Operating instructions

2.4.4 Potential hazard zones on components

⚠ CAUTION

Sharp edges and burrs, and exposed spindle guides can cause injury. Always wear suitable protective gloves and install appropriate safety guards.

2.4.5 High noise emissions

⚠ CAUTION

Certain systems cause high noise emissions when in operation. Always wear suitable hearing protection.

2.4.6 Use of valve in potentially explosive atmospheres

This section of the operating instructions is only valid in conjunction with a Declaration of Conformity in accordance with EU Directive 2014/34/EU on the harmonisation of the laws of the Member States relating to equipment and protective systems intended for use in potentially explosive atmospheres. An ignition hazard assessment according to DIN EN ISO 80079-36 was performed for the change-over valves, and the following findings were made:

- The maximum surface temperature of the change-over valve is caused exclusively by the respective fluid.
The permissible operating temperature of the change-over valve according to the type plate must not be exceeded.
- If suitably configured, the Change-over Valves are free of intrinsic ignition sources. The suitability of the configuration must be assessed prior to the installation of the valve, and must be certified by a declaration by the manufacturer. Such certificates are available on request from LESER.
- The Change-over Valves are not certified for use in potentially explosive atmospheres (ATEX) and are thus not labelled as such.
- The Change-over Valves may be operated in ATEX zones. For the installation of the valves in ATEX zones, the following requirements in connection with proper use must be strictly adhered to:
- The change-over valves must be connected to the flange connections on the pipe side and the safety valve side in a pressure-tight manner, as well as the pressure relief, drainage or flushing connections, if present, and relieved to a non-hazardous area outside if the ATEX zone. The drains and flushing connections can also be sealed with screw plugs in a pressure-tight manner.
- Additional components (products conforming to 2014/34/EU or electrical and non-electrical components that are not subject to conformity assessment according to 2014/34/EU) must be individually assessed as regards

their safe use in the ATEX zones defined by the operator (zone plan) before they are installed. The assembled unit is considered a product under EU Directive 2014/34/EU, and the operator must therefore carry out a conformity assessment of the assembly. LESER only provides Declarations of Conformity for individual components (and not for assemblies in the sense of the ATEX regulations). The installation and operating instructions required for the components are supplied with the products.

- The Change-over Valve must be properly grounded and incorporated into the grounding concept of the plant. All applicable statutory regulations and technical rules must be adhered to.
- Additional coats applied to the Change-over Valve must be separately assessed for conformity by the operator.
- It is the responsibility of the operator to ensure that all maintenance and repairs are performed in such a way that there is no risk of ignition sources.

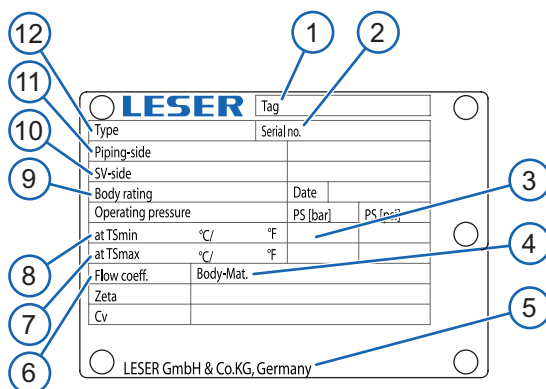
3 Marking

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Each Change-over Valve is equipped with a type plate.

It may feature additional markings, e.g.:

- marking with a marking stamp,
- cast marking,
- hammered-in marking,
- detachable label.



Type plate

- 1 Tag number
- 2 Serial number
- 3 Operating pressure
- 4 Body material
- 5 Manufacturer and country
- 6 Discharge coefficient
- 7 Max. permissible operating temperature
- 8 Min. permissible operating temperature
- 9 Rated pressure according to DIN or ASME class
- 10 Nominal diameter and pressure rating at safety valve side
- 11 Nominal diameter and pressure rating at safety pipeline side
- 12 Product number

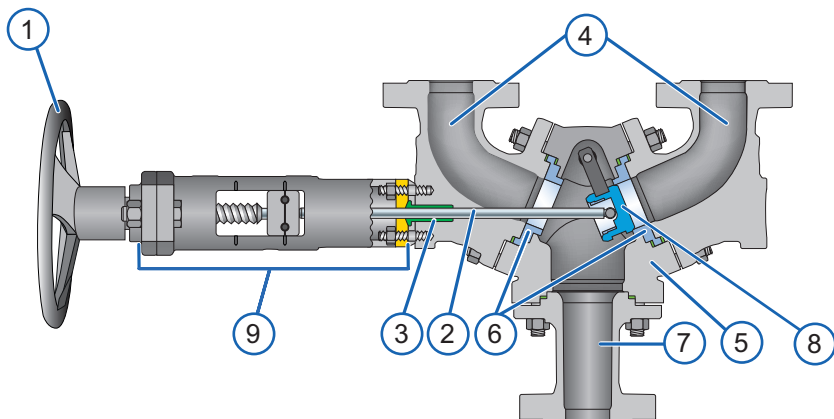
In the event of a modification to the Change-over Valve, which always requires the prior consent of the manufacturer, these specifications need to be amended accordingly.

4 Design and function of Change-over Valves

4.1 Designs

Change-over Valves come in different designs.

- single valve,
- combination with safety valves at inlet side
- lockable combination with safety valves



Design of Change-over Valve

- 1 Handwheel
- 2 Spindle
- 3 Packing gland
- 4 Elbow
- 5 Base Unit
- 6 Seats
- 7 Inlet body
- 8 Disc
- 9 Operating unit

4.2 Gaskets and leaks

The housing parts are sealed against the atmosphere by flat gaskets. A packing gland at the spindle seals the actuator side. All seals must be regularly checked by the operator for leakage.

LESER Change-over Valves are designed as metal-to-metal seat valves. If there is no safety valve installed, the Change-over Valve is sealed against the atmosphere by the seat and disc.

To detect leaks between the seat and the disc, mount a check gauge in the elbows (see chapter “4.5 Flushing and pressure gauge connection” on page

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14). To minimise emissions, choose the valve type that conforms to the Technical Instruction on Air Quality Control (TA-Luft).

Collect escaping media in suitable collection containers.

For operating temperatures up to 300°C: Prior to removing the stand-by safety valve, hand-tighten the handwheel to ensure that there is no risk of leakage.

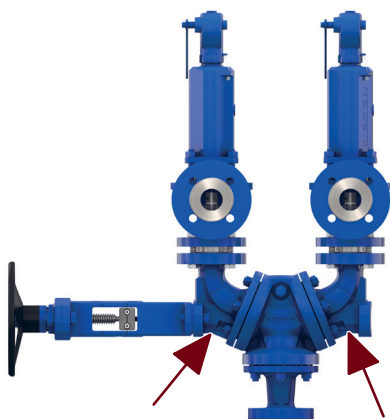
For operating temperatures above 300°C: Prior to removing the stand-by safety valve, hand-tighten the handwheel and then turn it back by 20-25° as shown on the scale of the Change-over Valve.

Should there be leakage between the disc and the seat, the valve must be repaired. Never tighten the handwheel more than hand-tight.

4.3 Drainage

LESER Change-over Valves can be equipped with drainage openings in the two elbows. The drainage openings are used to release any residual medium at the blocked side before the safety valve is removed so that there is no risk of uncontrolled escape of residual medium.

During normal operation, the drainage openings must be closed. Ensure that the screw fittings/screws do not protrude into the flow area, as this would result in a pressure loss.



Drainage openings of Change-over Valve

Due to the position of the drainage openings, not all residual medium is drained out. To prevent injury, avoid contact with the residual medium.

Operating instructions

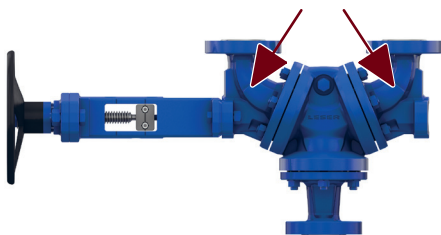
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4.4 Pressure relief

LESER Change-over Valves can be equipped with pressure relief valves (flange shut-off valves or needle valves). Pressure relief valves are used to release the pressure at the blocked side before a safety valve is removed.

The operator must take suitable measures to prevent that a pressure release results in the uncontrolled escape of medium, e.g. by connecting a suitable pipe to the flange shut-off or needle valve.

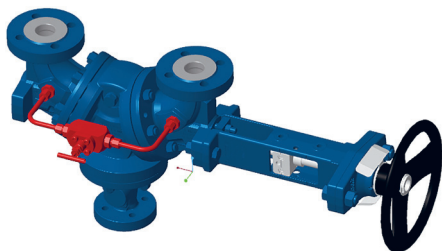
If the medium or the pressure poses a danger, choose a Change-over Valve with a pressure relief valve.



Pressure relief by means of needle or flange shut-off valves

4.5 Pressure equalisation

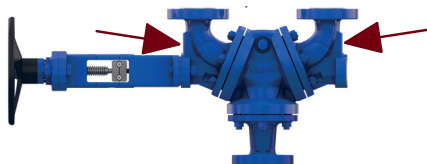
The change-over valve lets the pressurised line be switched over during normal operation. Depending on the operating pressure, maximum change-over pressures are defined (according to the table in the product catalogue at www.leser.com) up to which change-over valve can be switched over without pressure compensation. If a change-over should take place at higher operating pressures, pressure equalisation is necessary. LESER change-over valves can be equipped with a pressure equalisation valve (needle valve). Through this pressure equalisation valve, the pressure from the inlet of the change-over valve can be directed to the shut-off side of the change-over valve before the change-over valve is switched over. The pressure upstream and downstream of the cone is equalised in this way.



Pressure equalisation through a needle valve

4.6 Flushing and pressure gauge connection

LESER Change-over Valves can be equipped with a flushing and pressure gauge connection. The flushing and pressure gauge connection is designed for the attachment of a check gauge. The check gauge is used to check whether there is any pressure left in the blocked elbow before the safety valve is removed. After removal of the safety valve, the depressurised elbow of the Change-over Valve can be flushed through the flushing and pressure gauge connection.



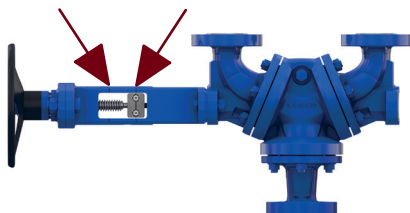
Flushing and pressure gauge connections

During normal operation, the flushing and pressure gauge connections must be closed.

4.7 Lift indicator

LESER Change-over Valves can be equipped with lift indicators that monitor the switching position of the Change-over Valve. The lift indicator is installed in the traverse of the actuator assembly.

Ensure that the lift indicator is not screwed too far into the device, so that it does not block the spindle and/or the position indicator.



Lift indicators

4.8 Operating pressure and pressure loss

The Change-over Valve must have correct dimensions so as not to interfere with the function of the safety valves. For this purpose, the inlet pressure loss and the back pressure must be taken into account when designing and selecting the dimensions of the system.

4.9 Ambient conditions

The Change-over Valves and pipelines must be protected from atmospheric influences. Do not insulate the actuator assembly.

For extreme conditions, LESER recommends installing Change-over Valves made in stainless steel.

4.10 Protective coating

Change-over Valves are given a protective coating at the factory. This coating protects the Change-over Valve during storage and transport. If the ambient conditions are corrosive, additional corrosion protection is necessary.

Moving and functionally-important parts must not be given a protective coating. Moving parts can be protected against corrosion by the application of a suitable lubricant.

4.11 Lubrication

For smooth switching, it may be necessary to lubricate the spindles. Use a lubricant that is suitable for the operating temperature.

At high operating temperatures, lubricants might evaporate, resulting in fumes. As suitable lubricants do not lose their lubrication properties even if their liquid component evaporates, such fumes do not affect the Change-over Valve operation.

4.12 Dimensioning

The pressure equipment is dimensioned on for quasi static operation and 500 load reversals according to DIN EN 12516-2 section 12.

5 Packaging, transport and storage

5.1 Packaging

The Change-over Valves must be properly packaged to prevent damage during transport. All seatings and threads must be equipped with protectors.

5.2 Transport

CAUTION

Damage from toppling over

If a Change-over Valve topples over, the seatings might become damaged. In such a case, the Change-over Valve is no longer tight, so that medium might escape, causing injury.

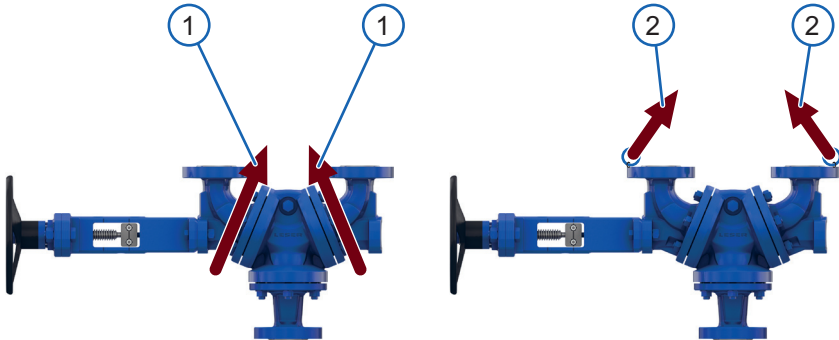
- Protect the Change-over Valve with suitable protectors.
- For transport, secure the Change-over Valve to prevent it from toppling over.

CAUTION

Damage caused by incorrect lifting

Lifting the Change-over Valve by the actuator assembly, the handwheel or other attachments might cause damage to the valve.

- Lift the Change-over Valve only with lifting straps or by its eye bolts.



Transport fixtures

- 1 Attachment of lifting straps
- 2 Eye bolts at valve flanges

Attach the lifting straps directly to the valve body or to the eye screws and nuts secured to the valve flange. Lift and transport the Change-over Valve with suitable lifting gear.

For transport, Change-over Valves must be protected against dirt.

5.3 Storage

Store the Change-over Valves in a clean and dry place.

Change-over Valves are equipped with flange protection caps at the factory. These flange protection caps must be in place during storage.

Temperature	Values
Safe storage temperature	41 °F / 5 °C to 104 °F / 40 °C
Maximum storage temperature	122 °F / 50 °C
Minimum storage temperature	14 °F / -10 °C

6 Installation

6.1 Instructions for the installation of a Change-over Valve

Only trained personnel may install Change-over Valves.

Before installing the Change-over Valve, inspect it for leakage.

Observe the manufacturer's instructions for the fastening elements. Adhere to the specified tightening torques.

All designated fastening elements must be used so that no excessively high forces or mechanical stress may arise.

The Change-over Valves must be installed so that the spindle in the valve is in a horizontal position. The spindle is not designed for vertical installation.

When installing the Change-over Valves, ensure that the drainage openings are at the lowest point of the assembly.

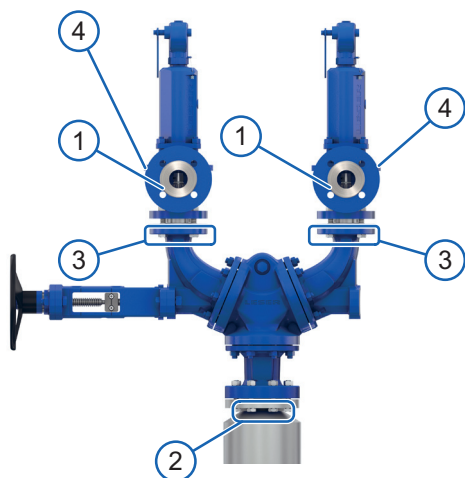
Establish the connections according to applicable regulations and standards.

Observe the direction of flow indicated on the inlet body and elbows.

Change-over Valves must be installed in such a way that dynamic vibrations in the system cannot be transmitted to the safety valves. In systems where vibration cannot be eliminated, install anti-vibration devices.

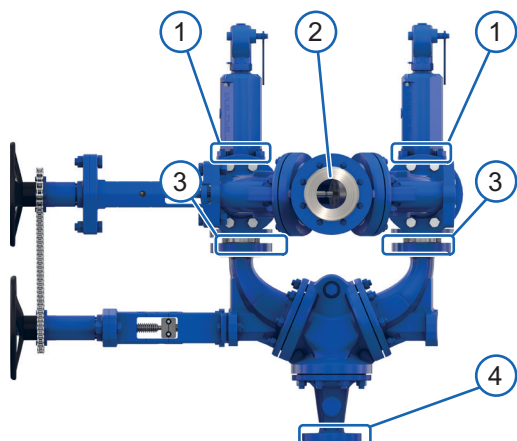
For correct installation, reaction forces and temperature expansion during operation must be taken into consideration. Take stress-relief measures such as:

- support of outlet pipeline,
- support of inlet pipeline,
- support of Change-over Valves around flange circumference at safety valve side,
- support of safety valves through bores in cast support brackets.



Support options with lockable combination

- 1 Support of outlet pipeline
- 2 Support of inlet pipeline
- 3 Support of Change-over Valves around flange circumference at safety valve side
- 4 Support of safety valves through bores in cast support brackets



Support options with inlet and outlet side combination

- 1 Support of safety valves through bores in cast support brackets
- 2 Support of outlet pipeline
- 3 Support of Change-over Valves around flange circumference at safety valve side
- 4 Support of inlet pipeline

Ensure that the inlets and outlets of the Change-over Valve are sufficiently large, suitable for the site and operating conditions and positioned to maximise flow (see operating instructions for LESER safety valves).

Make sure that the medium can flow freely through the valve, so that the function of the safety valves is not impaired in any way.

The specified maximum pressures and inlet pressure losses for the built-in safety valves, and the maximum operating temperature must not be exceeded.

6.2 Example of Change-over Valve installation in a system

CAUTION

Damage caused during installation

During installation, the Change-over Valve might be damaged if it is dropped or exposed to other impacts.

- Therefore secure the Change-over Valve during installation to prevent it from falling.
- During installation, protect the Change-over Valve against mechanical impact.

Prerequisites

- The Change-over Valve has been identified as being the correct one (type plate).
- A visual inspection of the system has been performed.
- Flat gaskets that do not obstruct the flow area are available at the installation site.
- The connections have been checked for leakage.
- The system has been flushed.
- All necessary tools are ready at the installation site.
- Suitable studs and nuts are ready at the installation site. For the installation of the Change-over Valve, it may be necessary to use longer studs (see product catalogue).
- Lifting gear and lashing equipment with the necessary load capacity (e.g. crane or forklift truck) are available at the installation site.
- The pipeline system into which the Change-over Valve is to be installed is free of force and torque stress.
- The dimensions of the connections have been checked and are correct.

⚠ CAUTION

Risk of injury from falling parts

Falling parts can cause injury.

- Secure all parts against falling.

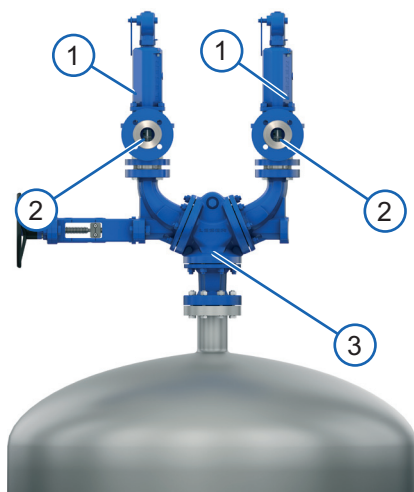
Procedure

1. Set the Change-over Valve to the centre position.
2. Attach the lifting straps to the valve body or the eye bolts screwed to the elbows.
3. Lift the Change-over Valve with suitable lifting gear, transport it to the site of installation and position it correctly.

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4. Align the connections of the Change-over Valve to the system connections.
5. Remove the protectors and the flange protection caps.
6. Insert the flat gaskets between the flanges.
7. Insert the flange screws and secure them with the nuts.
8. Tighten the nuts crosswise.
9. Connect the safety valves to the Change-over Valve.
10. Turn the spindles to position the disc of the Change-over Valve to the very left or the very right.
11. Seal the optional openings (e.g. drainage openings) at the Change-over Valve.
12. Connect the optional lift indicators to the process control unit.
13. If connecting Change-over Valves to pilot-operated safety valves (POSV) in order to provide a separate pressure take-off point, ensure that the opening of stagnation pressure pipe in the inlet of the Change-over Valves is facing against the flow.
 - » The Change-over Valve is installed.



Inlet side combination

- 1 Safety valves
- 2 Pipeline to blow-out system
- 3 Change-over Valve

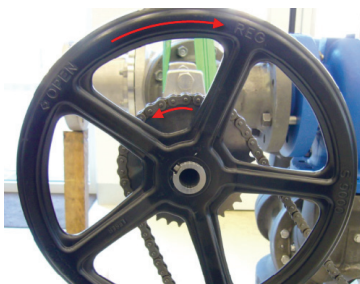
6.3 Example of connection of change-over valve combinations for synchronised switching

For a Change-over Valve combination, the two Change-over Valves must be installed as described in chapter “6.2 Example of Change-over Valve installation in a system” on page 21.

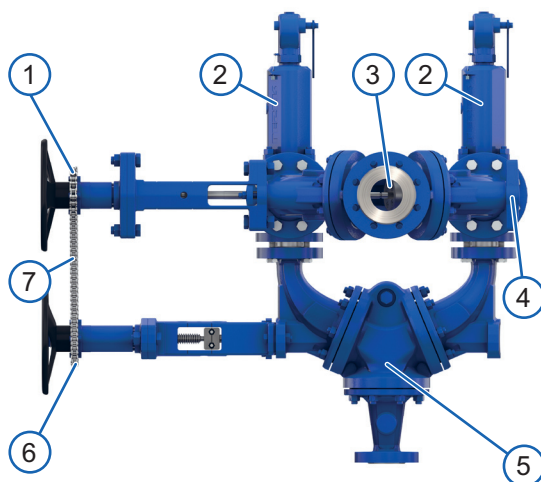
The handwheel and the chain wheel are not connected by a rigid shaft. There is a tolerance compensation between the two wheels, so that they can rotate separately within defined limits.

Procedure:

1. Turn the handwheels of the two Change-over Valves to be combined to the left or right stop. The two position indicators must be at the same end position.
2. Turn the chain wheels in opposite direction to the stop.
3. Turn the hand wheel of the Change-over Valve at the outlet side back by approx. 160° while keeping the chain wheel at the stop position. The tolerance compensation is now set.
4. Place the chain on the two chain wheels without turning the chain wheels relative to each other. Shorten the chain to fit the distance between the Change-over Valves and close the chain lock. This ensures that the second Change-over Valve is operated together with the first one.
 - » The Change-over Valves are now connected.



Direction of rotation of hand wheel and chain wheel (chain to be mounted during installation). See step 2 of procedure.



Change-over Valve combination

- 1 Chain wheel of second Change-over Valve
- 2 Safety valves
- 3 Pipeline to blow-out system
- 4 Second Inlet Change-over Valve
- 5 First Inlet Change-over Valve
- 6 Chain wheel of first Change-over Valve
- 7 Chain

7 Start-up

The commissioning procedure varies, depending on the system you operate. The instructions below provide a rough guide only.

Prerequisites

- The Change-over Valve is installed.
- The packing glands are tightened and not leaking. The packing gland is tightly packed against the spindle and seals the opening to the housing.
- The spindle rotates when the handwheel is turned.
- The disc of the Change-over Valve is positioned to the very left or the very right.
- For Change-over Valve combinations: the chain is mounted and the tolerance compensation has been checked. To do this, move the valves to the two end positions and make sure that the seats and discs seal properly (see chapter “6.3 Exemplarisches Verbinden bei Wechselventil-Kombinationen zum synchronen Umschalten” on page 24).

Procedure

1. Slowly increase the pressure, keeping it at all times below 90% of the set pressure of the safety valve to prevent leakage.
2. Should there be leakage at the packing gland, tighten it with the screws in the traverse. For tightening torques, see LGS_3327 (available on request from LESER).
3. Check the Change-over Valves and the connections in both switch positions for leakage. The position indicator roughly indicates the position of the disc. The valves and connections are only tight when the hand wheel is hand-tight.
 - » » The system is now fully commissioned.

8 Operation

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CAUTION

Incorrectly closed Change-over Valve

If a Change-over Valve is not closed correctly, the performance of the safety valves is impaired.

- During operation, do not move the disc of the Change-over Valve to the centre position.

8.1 Instructions for operation

If a safety valve is to be dismantled, switch over the Change-over Valve. Consequently, the side of the system that contains the safety valve to be removed is isolated. To switch over the change-over valve, a pressure equalisation valve (see chapter “4.5 Pressure equalisation” on page 13) must be used, if pertinent, through which the flange bends are connected and through which manual change-over is possible. The pressure must be equalised slowly to prevent sudden pressure changes. When switching over using pressure equalisation, you must also make sure that the pressure equalisation valve seals off completely again after the change-over. Leakage may be detected if the pressure relief valve cannot be used to empty the enclosed pressure chamber upstream of the safety valve to be removed in a depressurised manner.

You may then have to open and close the pressure equalisation valve several times to flush out contamination from the pressure equalisation valve seat.

Before dismantling the safety valve to be removed, turn the hand wheel to the closing position (hand-tight). This particularly applies if the safety valve was already shut off before dismantling to ensure that the plug seals correctly.

If the safety valve on one side of the change-over valve has been removed for maintenance or replacement, visually inspect the drain, flushing and pressure gauge connections, the pressure relief valves and all other components for dirt that might impair certain valve functions. If contamination is suspected, we recommend that you have the unpressurised fittings and components repaired.

To test the change-over valve during operation, make sure that both safety valves are installed (see chapter “8.2 Switching Change-over Valve” on page 27).

If the system is to be recommissioned from a standstill, the change-over valve must be moved to both switching positions one after the other before recommissioning to check the smooth running of the change-over device.

When switching, the handwheel must be moved to the end position (hand-tight).

In Change-over Valve combinations, the valve switched via the chain must be closed manually with its handwheel, as the tolerance compensation does not guarantee complete closing. If this is not done, medium might escape when the safety valve is removed.

8.2 Switching Change-over Valve

WARNING

Use of inadmissible tools and implements

The use of inadmissible tools and implements such as lever extensions when switching the Change-over Valve can cause damage to the valve. There is also a risk that the medium escapes. This can result in poisoning and caustic and other burns.

- Turn the handwheel with both hands. Do not use any tools or implements.
- Wear safety goggles, protective gloves and protective clothing.

WARNING

Risk of injury from escaping medium

There is a risk of serious injury when the medium escapes with a loud noise under high pressure and at a high temperature.

- Wear safety goggles, protective gloves and protective clothing.

WARNING

Risk of injury from escaping residual medium

Due to the design of the valve, it is not possible to fully drain all residual medium. Escaping residual medium can cause serious injury.

- Wear safety goggles, protective gloves and protective clothing.

WARNING

Risk of injury from escaping residual medium

In Change-over Valve combinations, one of the handwheels might not be properly tightened after switching, so that residual medium can escape. To prevent this, adjust the handwheels (hand-tight).

The instructions below refer to the switching process in general. As each system is configured differently, the system-specific instructions and regulations must be adhered to.

Prerequisites

- The system pressure is low enough for manual switching by means of the handwheel. Alternatively, install an optional pressure equalisation device between the two elbows to facilitate switching at high pressures (see product catalogue).
- The safety valves are installed so that no medium can escape during the switching procedure.
- All openings on the Change-over Valve are sealed.
- If the valve is equipped with an optional locking device, this device must be fully opened.

Procedure for single or inlet side combination

1. Clean the change-over device.
2. Turn the handwheel to move the disc to the opposite side. Stop turning the handwheel when there is resistance.
3. Adjust the handwheel by hand to seal the Change-over Valve.
4. For change-over valves in oil-free and grease-free or oxygen version, the threaded spindle must be greased with suitable lubricants every 20 cycles or before each change-over in case of a prolonged downtime of 3 months. Suitable lubricants can be requested from LESER. In deviation from the maximum of 1,000 switching cycles, LESER recommends that the valve and its internal components be serviced and repaired after 250 switching cycles (1 switching cycle = switch over twice) for the oil-free and grease-free or oxygen version.
 - » The Change-over Valve is switched.

For two-side combinations:

1. As above.
2. Turn first handwheel (e.g. at inlet side Change-over Valve) to move both discs to the opposite sealing position. Stop turning the handwheel when there is some resistance.

3. Adjust first handwheel by hand (at inlet side).
4. Adjust second handwheel (outlet side Change-over Valve) by hand to seal the Change-over Valve.
5. See item 4. above

The disc can now be returned to its initial position.

9 Decommissioning

Prior to removing the valve, ensure that the pressure vessel or the pipeline system to which the Change-over Valve is connected is depressurised and is at ambient temperature. To prevent damage from escaping hazardous media, drain and flush the system. Before opening the screw connections at the flanges to the pipelines, ensure that the assembly is not under stress. Otherwise, pipelines and components might perform sudden movements causing injury. To remove the Change-over Valve, use suitable lifting gear such as a crane. Lifting gear must be attached to the Change-over Valve as described in chapter „5.3 Storage“ on page 17. All decommissioning tasks must be performed by suitably qualified personnel.

10 Maintenance

10.1 General information about maintenance

LESER Change-over Valves are maintenance-free. LESER recommends however performing regular visual inspections. The inspection intervals must be shortened if:

- corrosive, aggressive or abrasive media are used,
- the Change-over Valve is switched frequently.

10.2 Checking Change-over Valve

Regularly check the following:

- Gaskets and sealing points:
In the event of leakage, readjust the packing gland at the actuation side. To do this, first depressurise the Change-over Valve. In the event of leakage, replace all gaskets.
- Perform function tests of the drainage, flushing and pressure gauge connections, the shut-off valves and other built-in components.

After disassembly of the Change-over Valve, replace all gaskets.

10.3 Change-over valves in an oil-free and grease-free or oxygen version

For change-over valves in oil-free and grease-free or oxygen version, the threaded spindle must be greased with suitable lubricants every 20 cycles or before each change-over in case of a prolonged downtime of 3 months. Suitable lubricants can be requested from LESER. In deviation from the maximum of 1,000 switching cycles, LESER recommends that the valve and its internal components be serviced and repaired after 250 switching cycles (1 switching cycle = switch over twice) for the oil-free and grease-free or oxygen version.

10.4 Repairing change-over valves

LESER Change-over Valves must only be repaired by certified workshops.

11 Technical data

For technical data, see supplier documentation and type plate.

12 Disposal

Decommission the valve as described in chapter “9 Decommissioning” on page 29. Change-over Valves that have come into contact with potentially hazardous substances must be decontaminated before they can be disposed of. Dispose of the valve in accordance with the applicable statutory regulations.

Solutions

LESER Products at a glance



High Performance



API



**High Efficiency –
Pilot Operated
Safety Valve**



**High Efficiency –
Supplementary
loading system**



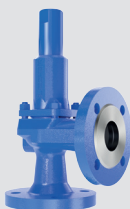
**Compact
Performance**



Critical Service



Clean Service



Modulate Action



**Best Availability –
KUB Bursting disc**



**Best Availability –
Change-over Valve**

Edition July 2023
0777.5774