

Assembly Compact Performance

Assembly instruction of the Type 437



Objectives of this Presentation. Increase special knowledge.

1. [Objectives](#) | 2. [General](#) | 3. [General Illustration](#) | 4. [Assembly instruction Type 437](#)

The aim of this presentation is to give an overview about the assembly of **LESER Compact Performance Safety Valves Type 437**.



General. Compact Performance Safety valves.

1. Objectives | 2. General | 3. General Illustration | 4. Assembly instruction Type 437

LESER Compact Performance safety valves offer **ultimate protection against overpressures** in all applications for steam, gases and liquids where smaller capacities are required

Advantages:

- Great variety of threaded or flanged connections available
- Soft seat for superior tightness
- Valves sizes from 3/8" through 1 1/2"
- Wide range of materials and options to fit any application

Information: The inner parts of the types 437, 438 and 439 are not interchangeable. LESER offers special kits for conversion.

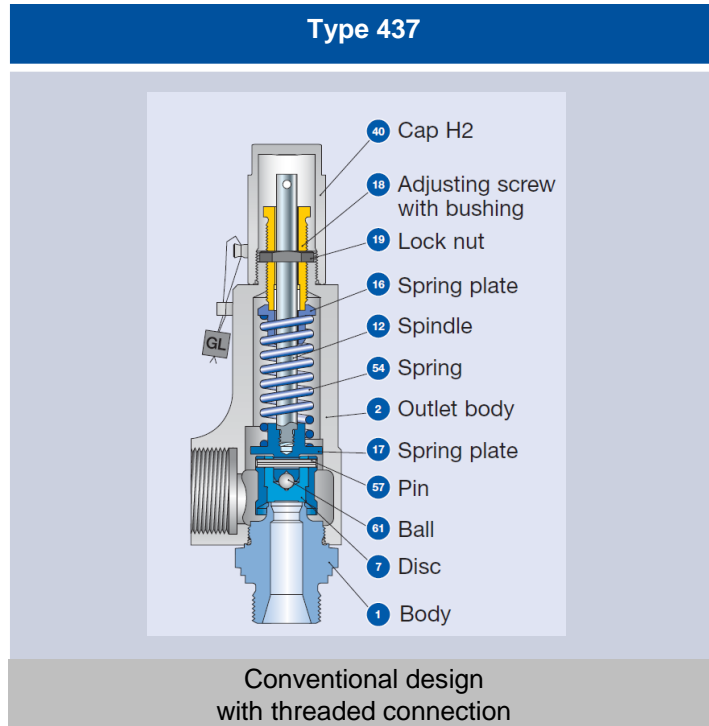


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General Illustration.

1. Objectives | 2. General | 3. General Illustration | 4. Assembly instruction Type 437



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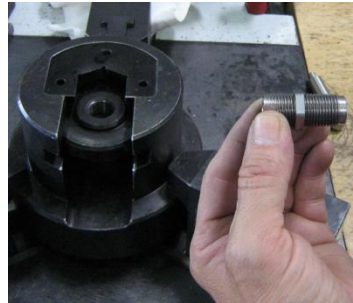
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Assembly of the type 437. 1. Assembly of the adjusting screw.

1. Objectives | 2. General | 3. General Illustration | 4. Assembly instruction Type 437

Step 1-1

- Assemble the adjusting screw and lock nut



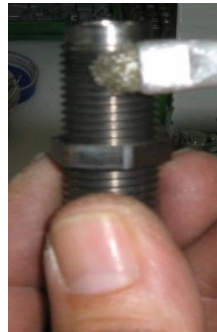
Step 1-3

- Screw the adjusting screw into the outlet body



Step 1-2

- Grease the adjusting screw on the thread and end face.
- Tools: Brush Halocarbon (OI-56 S / 60H)



Assembly of the type 437. 2. Assembly of the spindle / disc assembly. 2.1

1. Objectives | 2. General | 3. General Illustration | 4. Assembly instruction Type 437

2.1 Metallic seal (standard) 2.1.1 Spindle / spring plate assembly.

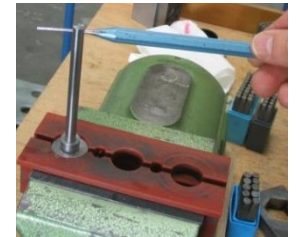
Step 1.1-1

- Put the spring plate in the apparatus and fasten in place with clamping block.



Step 1.1-3

- Put the spindle thread in the lower spring plate and screw it in until it is tight to the touch. Push the pin punch through the spindle hole and screw in until it is tight to the touch.
- Tools: Pin punch Vice




Step 1.1-2

- Put a very small amount of glue on the spindle thread (1 drop on the thread).
- Tools: Glue DELO ML 5449



Step 1.1-4

- Imbalance check of the spindle/disc assembly  Tolerance: max. 0.2mm



Assembly of the type 437. 2. Assembly of the spindle / disc assembly. 2.1

1. Objectives | 2. General | 3. General Illustration | 4. Assembly instruction Type 437

2.1 Metallic seal (standard) 2.1.2 Assembly installation.

Step 1.2-1

- Visual check: Check sealing surface for cleanliness and damage.
- Sharpen the pin



Step 1.2-2

- Assemble the disc and bonnet (holes on top of each other).



Step 1.2-3

- Insert the ball.



Step 1.2-4

- Place the spindle with the spring plate on the aligning punch in the apparatus.
- Tools: Aligning punch



Assembly of the type 437. 2. Assembly of the spindle / disc assembly. 2.1

1. Objectives | 2. General | 3. General Illustration | 4. Assembly instruction Type 437

2.1 Metallic seal (standard) 2.1.2 Assembly installation.

Step 1.2-5

- Install the pin using a lever press.
- Tools : Lever press



Step 1.2-6

- Spring plate and spindle assembled



Step 1.2-7

- Install the spring and top spring plate on the spindle
- Only for thrust bearings: Spring, top spring plate, thrust bearings, bearing washer Grease thrust bearing.
- Tools: Brush, Halocarbon (OI-56 S / 60H)



Assembly of the type 437. 2. Assembly of the spindle / disc assembly.

1. Objectives | 2. General | 3. General Illustration | 4. Assembly instruction Type 437

2.2 Plastic sealing plate (optional) 2.2.1 Disc assembly.

Step 2.1-1

- Visual check: Check sealing surface for cleanliness and damage.



Step 2.1-2

- Visual check: Check the evenness of the sealing plate (front and back side, no burrs permitted)



Step 2.1-3

- Screw disc body into the lifting aid hand tight and clamp in apparatus.
- Tools: Clamping block



Assembly of the type 437. 2. Assembly of the spindle / disc assembly. 2.2

1. Objectives | 2. General | 3. General Illustration | 4. Assembly instruction Type 437

2.2 Plastic sealing plate (optional) 2.2.1 Disc assembly.

Step 2.1-4

- Tighten the disc with the special spanner socket using 4Nm
- Tools: Special spanner socket, Torque wrench

Step 2.1-5

- Hammer the material codes into the lifting aid
- Tools: Punch numbers hammer



Assembly of the type 437. 2. Assembly of the spindle / disc assembly. 2.2

1. Objectives | 2. General | 3. General Illustration | 4. Assembly instruction Type 437

2.2 Plastic sealing plate (optional) 2.2.2 Spindle / Spring plate assembly.

Step 2.2-1

- Put the spring plate in the apparatus and fasten in place with clamping block.
- Tools: Clamping block



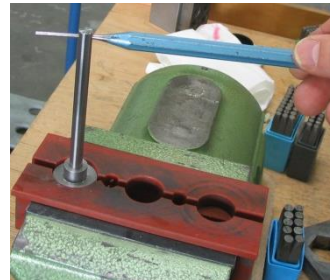
Step 2.2-2

- Put the spindle thread in the lower spring plate and screw it in until it is finger-tight.
- Push the pin punch through the spindle hole and screw in finger tight.
- Tools: Pin punch



Step 2.2-3

- Put a very small amount of glue on the spindle thread (1 drop on the thread).
- Tools: Glue DELO ML 5449



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Assembly of the type 437. 2. Assembly of the spindle / disc assembly. 2.2

1. Objectives | 2. General | 3. General Illustration | 4. Assembly instruction Type 437

2.2 Plastic sealing plate (optional) 2.2.3 Assembly instruction.

Step 2.3-1

- Put the ball in the disc assembly and connect to the spindle / spring plate group.



Step 2.3-2

- Visual check: The pin must have some play in the disc through-hole; connect with pin.
- Tools: Hammer support area for disc assembly



Step 2.3-3

- Install the spring and top spring plate on the spindle.



Assembly of the type 437. 3. Assembly of the inlet body and outlet body 3.1.

1. Objectives | 2. General | 3. General Illustration | 4. Assembly instruction Type 437

3.1 Insertion of the spindle / disc assembly.

Step 3.1-1

- Put the spindle assembly in the outlet body.
- Make sure that the spindle slides smoothly into the guide of the adjusting screw bushing and also the guide washer in the outlet body.



Assembly of the type 437. 3. Assembly of the inlet body and outlet body 3.2.

1. Objectives | 2. General | 3. General Illustration | 4. Assembly instruction Type 437

3.2 Securing the disc.

Step 3.2-1

- Push the splint pin through the hole of the spindle.
- Lift the spindle with the pin punch.
- Wedge the splint pin with the adjusting screw.
- Tools: Pin punch



Assembly of the type 437. 3. Assembly of the inlet body and outlet body 3.3.

1. Objectives | 2. General | 3. General Illustration | 4. Assembly instruction Type 437

3.3 Assembly of the inlet body 3.3.1 Threaded connector (cylindrical thread).

Step 3.3-1

- Visual check of inlet body: Check sealing surface for cleanliness and damage. Grease the thread of the inlet body.
- Tools: Brush, Halocarbon (OI-56 S / 60H)

Step 3.3-2

- The disc is in a secured state (see 3.2)
- Screw the inlet body into the body hand tight

Step 3.3-3

- The disc is in a secured state (see 3.3)
- Clamp the inlet body on the apparatus.



Assembly of the type 437. 3. Assembly of the inlet body and outlet body 3.3.

1. Objectives | 2. General | 3. General Illustration | 4. Assembly instruction Type 437

3.3 Assembly of the inlet body 3.3.1 Threaded connector (cylindrical thread).

Step 3.3-4

- The disc is in a secured state (see 3.2)

Step 3.3-5

- Tighten the inlet body with the specified torque (100 Nm).
- Tools: Torque wrench



Assembly of the type 437. 3. Assembly of the inlet body and outlet body 3.3.

1. Objectives | 2. General | 3. General Illustration | 4. Assembly instruction Type 437

3.3 Assembly of the inlet body 3.3.2 Flange connection (cylindrical thread).

Step 3.3-6

- Before gluing the inlet body to the inlet nozzle, make sure that the sealing surface and the sealing strip are lightly greased with Halocarbon.
- Tools: Halocarbon (OI-56 S / 60H)



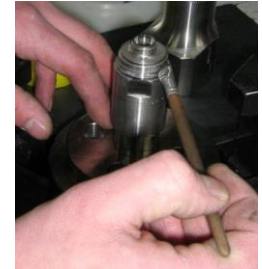
Step 3.3-2

- For inlet body screwed together with the sealing strip (150 lbs)



Step 3.3-3

- Visual check: Check sealing surface for cleanliness and damage.
- The disc is in a secured state (see 3.2)
- Grease the inlet body and screw it into the outlet body.
- Tools: Brush Halocarbon (OI-56 S / 60H) Glue DELO CA 2106



Step 3.3-4

- Tighten the inlet body with the specified torque (100 Nm).
- Tools: Pin punch, Torque wrench



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Assembly of the type 437. 3. Assembly of the inlet body and outlet body 3.4.

1. Objectives | 2. General | 3. General Illustration | 4. Assembly instruction Type 437

3.4 Assembly of the outlet flange 3.4.1 Assembly of outlet flange (cylindrical thread).

Step 3.4-1

- Grease the sealing lip and thread of the outlet nozzle. Screw the outlet flange into the outlet body and tighten.
- Tighten the outlet nozzle with the specified torque (100 Nm).
- Tools: Brush Halocarbon (OI-56 S / 60H) Torque wrench



Assembly of the type 437. 3. Assembly of the inlet body and outlet body 3.4.

1. Objectives | 2. General | 3. General Illustration | 4. Assembly instruction Type 437

3.4 Assembly of the outlet flange 3.4.2 Assembly of outlet flange with a conical thread (NPT).

Step 3.4-2

- Apply sealing tape to the thread of the outlet flange.
- Tools: Sealing tape



Step 3.4-3

- Screw the flange into the outlet body and tighten.



Assembly of the type 437. 4. Adjusting the set pressure.

1. Objectives | 2. General | 3. General Illustration | 4. Assembly instruction Type 437

Step 4-1

- Secure the splint pin against turning when adjusting the adjusting screw.
- Pressurize the valve and adjust to the set pressure with the adjusting screw in accordance with the specification.
- Check whether the valve opens at the set pressure. The set pressure of the valve has been reached when you can hear air escaping. Full opening must be achieved.
- If the valve opens outside the stipulated set pressure tolerance, then the adjusting screw must be adjusted again.
- Turning in a clockwise direction causes the valve to open at higher pressure. Turning in a counter-clockwise direction causes the valve to open at lower pressure.
- When resetting the adjusting screw, first of all release the pressure



Tools: Pin punch, open-end spanner, pressure gauge

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Assembly of the type 437. 5. Testing and documenting the seat tightness.

1. Objectives | 2. General | 3. General Illustration | 4. Assembly instruction Type 437

Step 5-1

- Raise the valve to its set pressure 3x. After the 3rd opening, throttle the valve from the set pressure to the test pressure. Unscrew the test cap from the outlet body. Seal the valve outlet with the test plug thereby connecting it to the water tank. Adjust the valve to the given test pressure.
- Check the functional seal tightness according to the order specifications and WI 0007.00 If the seal tightness is not met, then enter the number of bubbles that are counted in the fields. If the seal tightness has not been met after 3 attempts, then initiate a fault report. If the seal tightness has been met in accordance with the specifications, then document the results in Report 1.3 "Number of Bubbles".



Tools: Kellogg-Test Apparatus

Assembly of the type 437. 6. Assembly of the cap and lever - 6.1 Cap H2.

1. Objectives | 2. General | 3. General Illustration | 4. Assembly instruction Type 437

Step 6.1-1

- Grease the thread and sealing lip of cap H2. Put on the E-CTFE sealing ring if it is shown in the parts list.
- Caution: The sealing ring may only be used once. If it is necessary to disassemble the cap, the sealing ring must be replaced.
- Tools: Brush, Halocarbon (OI-56 S / 60H)

Step 6.1-2

- Screw on the cap and tighten with a spanner (torque as per LGS 3323).
- Tools: Torque wrench



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Assembly of the type 437. 6. Assembly of the cap and lever – 6.2 Lever H4.

1. Objectives | 2. General | 3. General Illustration | 4. Assembly instruction Type 437

Step 6.2-1

- Roll the O-ring onto the spindle cap.



Step 6.2-2

- Put the spindle cap onto the spindle and connect with a cylinder pin.



Step 6.2-3

- Grease the O-ring well (1).
- Grease the threads of the spindle cap (2).
- Put on the E-CTFE sealing ring if it is shown in the parts list.
- Caution: The sealing ring may only be used once. If it is necessary to disassemble the cap, the sealing ring must be replaced.



Tools:

- (1) Klübersynth UH 14-151 / 60H
- (2) Halocarbon (OI-56 S / 60H)

Assembly of the type 437. 6. Assembly of the cap and lever – 6.2 Lever H4.

1. Objectives | 2. General | 3. General Illustration | 4. Assembly instruction Type 437

Step 6.2-4

- Grease the thread and sealing lip of the lever cover.
- Tools: Brush, Halocarbon (OI-56 S / 60H)



Step 6.2-5

- Screw the lever cover onto the thread of the outlet body and tighten using approx. 60 - 75 Nm.
- Tools: Torque wrench



Step 6.2-6

- Mount the spindle cap with the pin and secure with the retaining clip




Assembly of the type 437. 6. Assembly of the cap and lever – 6.2 Lever H4.

1. Objectives | 2. General | 3. General Illustration | 4. Assembly instruction Type 437

Step 6.2-7

- Press the spindle cap down after assembly.

Step 6.2-9

- Screw in cylinder pin / nut is flush when closed. Set lever to "closed" / the inscription "CLOSED" can be read on the cap limit stop. 
- Check the lever after assembly to make sure it works (release compressed air with each lever).
- Tools: Flat-tip screwdriver



Step 6.2-8

- Grease the threads of the lever cap and install.
- Tools: Brush Halocarbon (OI-56 S / 60H)



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Assembly of the type 437. 6. Assembly of the cap and lever – 6.3 Lever H3.

1. Objectives | 2. General | 3. General Illustration | 4. Assembly instruction Type 437

Step 6.3-1

- Individual parts of the assembly



Step 6.3-2

- Place the O-ring in the groove of the lever cover.



Step 6.3-3

- Put the spindle cap onto the spindle and connect with a cylinder pin.



Assembly of the type 437. 6. Assembly of the cap and lever – 6.3 Lever H3.

1. Objectives | 2. General | 3. General Illustration | 4. Assembly instruction Type 437

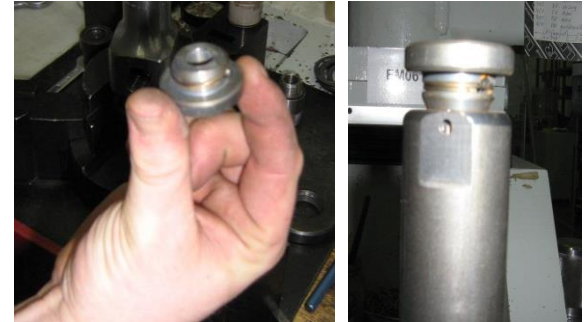
Step 6.3-4

- Grease the thread and sealing lip of the lever cover.
- Tools: Brush, Halocarbon (Öl 56 S / 60H)



Step 6.3-5

- Screw the lever cover onto the thread of the outlet body and tighten using approx. 60 - 75 Nm. Pull up the spindle cap and install the air button with the pin and secure with the retaining clip. Press the air button down after assembly.
- Tools: Torque wrench



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Assembly of the type 437. 7. Testing the seal tightness to the outside. 7.1

1. Objectives | 2. General | 3. General Illustration | 4. Assembly instruction Type 437

7.1 Testing the seal tightness to the outside (threaded valve).

Step 7.1-1

- Seal the valve at the inlet with a sealing cap.

Step 7.1-2

- Install a test connector to the outlet.



Assembly of the type 437. 7. Testing the seal tightness to the outside 7.1.

1. Objectives | 2. General | 3. General Illustration | 4. Assembly instruction Type 437

7.1 Testing the seal tightness to the outside (threaded valve).



Step 7.1-3



- Clamp the outlet side of the valve in the test apparatus and apply 6 bar of pressure.
- Test pressure for valves with elastomer and EPDM components:
Set pressure $p_0 < 3$ bar: $0,15 \times p_0$
Set pressure $p_0 \geq 3$ bar: 2bar

Step 7.1-4


- Pressure testing by immersion: Check whether any bubbles can be seen on the outside contour of the safety valve.
- If the seal tightness is good (no bubbles) document the test result.
- If there are any leaks, check the affected sealing surfaces and seals for damage and then test again.
- Dry the valve with compressed air.

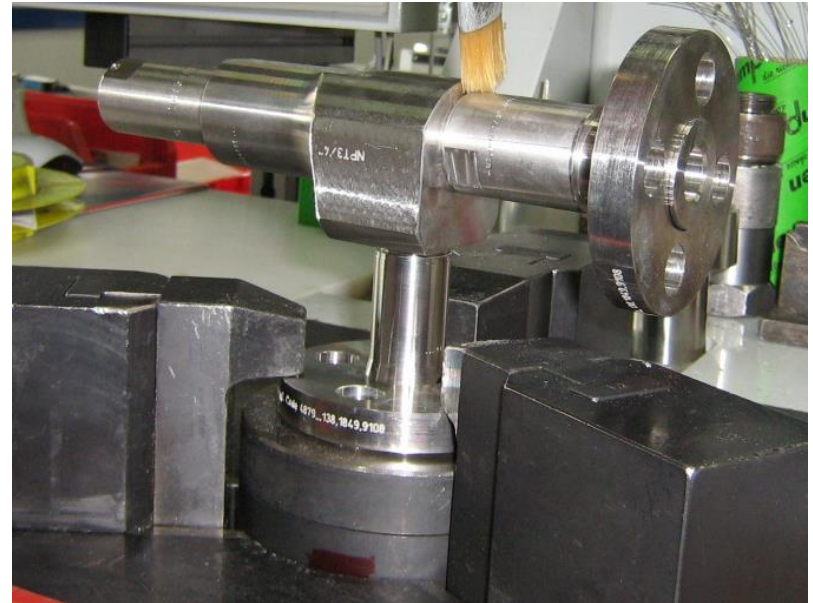
Assembly of the type 437. 7. Testing the seal tightness to the outside.

1. Objectives | 2. General | 3. General Illustration | 4. Assembly instruction Type 437

7.2 Testing the seal tightness to the outside (flanged valve).

Step 7.2-1

- Clamp the outlet side of the valve to the test bench. Pressurize the valve with 6 bar.
- Test pressure for valves with elastomer  components:
Set pressure $p_0 < 3 \text{ bar}$: $0,15 \times p_0$
Set pressure $p_0 \geq 3 \text{ bar}$: 2bar
- Wet the valve with leak detector on the interconnection points and the outlet area. If the seal tightness is good (no bubbles), document the test result. If there are any leaks, check the affected sealing surfaces and seals for damage and then test again.
- Dry the valve with compressed air.



Assembly of the type 437. 8. Sealing the valve.

1. Objectives | 2. General | 3. General Illustration | 4. Assembly instruction Type 437

Step 8-1

- Connect the sealing wire closely using the shortest path.
- Seal the lever, or alternatively cap H2 to the outlet body



Assembly Compact Performance
Thank you for your attention.



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