

# Clean Service

Types 483, 484, 485, 488

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| disclosure cat.: | II | proofread: | OR | published date: | 9/14/11 | effect. date: | 18.11.201 |
| author: | Nieh | released by: | KUW | replaces: | initial | status: | published |
| resp. depart.: | PP | date of release: | 11/8/11 | revision No.: | 0 | | |
| doc. type: | LGS | change rep. No.: | 651A | retention period: | 10 | | |

Contents





## 1 Purpose

This LESER Global Standard (LGS) is assembly documentation for various assembly scenarios for LESER safety valves of the Clean Service series. The required work steps, tools and materials are described.

## 2 Scope

This document must be applied to the assembly of Clean Service safety valves in agencies and subsidiaries of LESER GmbH & Co. KG.

## 3 Disclaimer

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## 4 Qualified assembly personnel

The assembly of LESER safety valves may only be performed by trained or qualified assembly personnel. The qualifications must be obtained through the appropriate training measures.

## 5 General Information

- Gloves must be worn during the entire assembly operation.

## 6 General illustration

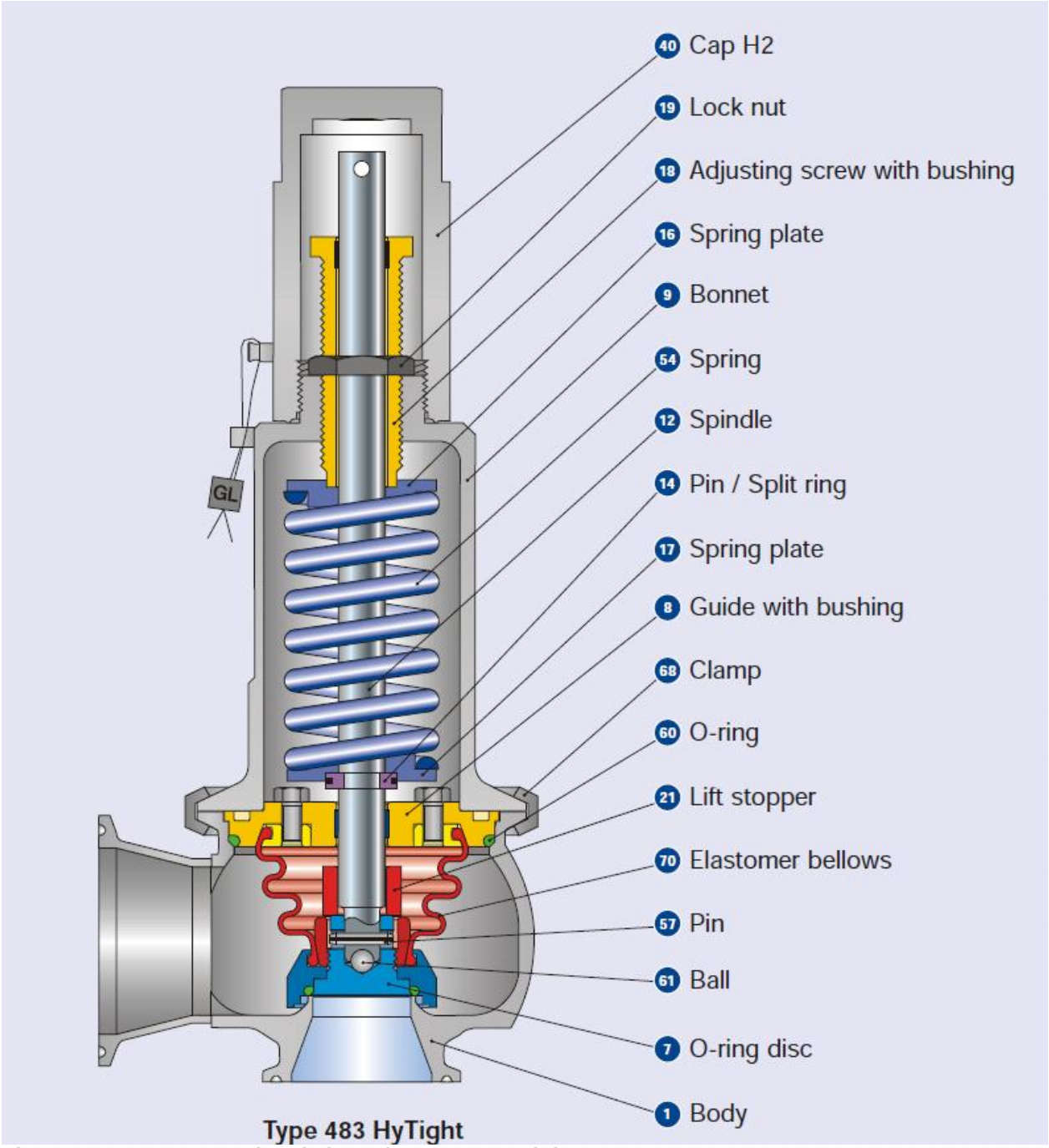



**Figure 6.1-1: Cross-sectional view of type 483 HyTight**

# 7 Assembly of the Clean Service series

## 7.1 Assembly of spindle/disc assembly

### 7.1.1 Disc assembly

| Illustrations | Description | Aids / Tools |
|---|---|---|
|  **Figure 7.1.1-1** | Put the O-ring into the groove of the lifting aid. | |
|  **Figure 7.1.1-2** | Elastomer bellows and disc body | |
|  **Figure 7.1.1-3** | Fit the elastomer bellows onto the other side of the lifting aid. | |
|  **Figure 7.1.1-4** | Put the disc body in the lifting aid. | |

### 7.1.2 Assembly of spindle assembly

| Illustrations | Description | Aids / Tools |
|---|---|---|
|  **Figure 7.1.2-1** | Insert the ball into the disc body.<br>Put the spindle in the disc and secure with a pin. | |
|  **Figure 7.1.2-2** | Put the cap nut onto the spindle and screw to disc body by means of the assembly aid. | Assembly aid |
|  **Figure 7.1.2-3** | Push the guide washer onto the spindle and pull the elastomer bellows over it. | |

| Illustrations | Description | Aids / Tools |
|---|---|---|
|  **Figure 7.1.2-4** | **<u>For DN 40:</u>** Then, push the lift stopper over the spindle. | |
|  **Figure 7.1.2-5** | Insert the PTFE bushing. insert the guide washer. | |
|  **Figure 7.1.2-6** | Insert O-ring on bottom side of the second guide washer. | |
|  **Figure 7.1.2-7** | Push guide washer on the spindle. Screw both guide washers finger tight with hexagon head bolts. | Ring spanner |

### 7.1.3 Inserting the assembly

| Illustrations | Description | Aids / Tools |
|---|---|---|
|  **Figure 7.1.3-1** | **DN 25:** Put bottom spring plate on the spindle and secure through the holes with pin. | |
|  **Figure 7.1.3-2** | **DN 40:** Put half-washers on the spindle and fasten with retaining clip. | |
|  **Figure 7.1.3-3** | Put the assembly on the body. In the process, carefully lower the disc onto the seat. | |

## 7.2 Assembly of the bonnet

### 7.2.1 Adjusting screw assembly

| Illustrations | Description | Aids / Tools |
|---|---|---|
|  **Figure 7.2.1-1** | Put the PTFE bushing in the adjusting screw. | |
|  **Figure 7.2.1-2** | Screw lock nut onto adjusting screw. | Brush<br>Halocarbon |
|  **Figure 7.2.1-3** | Grease the thread and screw into the bonnet. | |

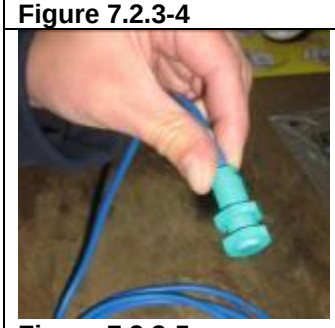
### 7.2.2 Bonnet without lift indicator

| Illustrations | Description | Aids / Tools |
|---|---|---|
|  **Figure 7.2.2-1** | Put the bottom spring plate, spring and top spring plate onto the spindle. | |
|  **Figure 7.2.2-2** | Put the bonnet over the spring onto the body. | |
|  **Figure 7.2.2-3** | **Caution:** *Surface for BT plate* always opposite the outlet. | |

| Illustrations | Description | Aids / Tools |
|---|---|---|
|  **Figure 7.2.2-4** | Firmly connect the bonnet and body with a split ring. | |
|  **Figure 7.2.2-5** | Tighten it with the nut. | Ring spanner |

### 7.2.3 Bonnet with lift indicator

| Illustrations | Description | Aids / Tools |
|---|---|---|
|  **Figure 7.2.3-1** | Put control sleeve on bottom spring plate. Then put on spring and top spring plate. | |
|  **Figure 7.2.3-2** | Put the bonnet over the spring onto the body. (**Attention**: *Surface for BT plate* always opposite to the outlet.) | |
|  **Figure 7.2.3-3** | Firmly connect the bonnet and body with a split ring. | |

| Illustrations | Description | Aids / Tools |
|---|---|---|
|  **Figure 7.2.3-4** | Tighten it with the nut. | Ring spanner |
|  **Figure 7.2.3-5** | Screw nut onto lift indicator. | |
|  **Figure 7.2.3-6** | Screw lift indicator onto the guide sleeve as far as it will go.<br>Afterwards, unscrew it one full turn. | |
|  **Figure 7.2.3-7** | Secure the position with the first nut and then tighten the lock nut with the open-end spanner. | Open-end spanner |

## 7.3 Adjusting the set pressure

| Illustrations | Description | Aids / Tools |
|---|---|---|
|  **Figure 7.3-1** | Slowly pressurise the valve on the test bench to find out 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.<br>If the valve opens outside the stipulated set pressure tolerance, then the adjusting screw must be adjusted again. Secure the spindle from turning with a pin punch.<br>Turning the adjusting screw in a clockwise direction causes the valve to open at higher pressure.<br>Turning in a counter-clockwise direction causes the valve to open at lower pressure.<br>Release the pressure before readjusting the adjusting screw. Readjust the adjusting screw and then pressurise the valve again. | Open-end spanner, pin punch |
|  **Figure 7.3-2** | If the pressure setting has been completed, secure the adjusting screw with a lock nut.<br>Afterwards, check the set pressure once again. | Open-end spanner |

## 7.4 Testing the seat tightness P12

This test is performed for every valve after setting the pressure.

## 7.5 Testing of the seal tightness of the pressure-bearing body P11

This test is performed for every flanged valve without a nozzle after its assembly P12.

## 7.6 Assembly of the cap / lever

### 7.6.1 Assembly of cap H2

| Illustrations | Description | Aids / Tools |
|---|---|---|
|  **Figure 7.6.1-1** | Grease the thread and sealing lip. | Brush<br>Halocarbon<br>(OI-56 S / 60H) |
|  **Figure 7.6.1-2** | Screw the cap onto the bonnet and tighten. | Open-end spanner |

### 7.6.2 Assembly of lever H4

| Illustrations | Description | Aids / Tools |
|---|---|---|
|  **Figure 7.6.2-1** | Pull the O-ring over the spindle cap and grease. | Brush<br>Halocarbon<br>(OI-56 S / 60H) |
|  **Figure 7.6.2-2** | Put the spindle cap onto the spindle and secure with a pin. | |
|  **Figure 7.6.2-3** | Grease the sealing lip and thread of the lever cover. | Brush<br>Halocarbon<br>(OI-56 S / 60H) |

| Illustrations | Description | Aids / Tools |
|---|---|---|
|  **Figure 7.6.2-4** | Afterwards, screw the lever cover (bottom section) onto the bonnet and tighten slightly. | Open-end spanner |
|  **Figure 7.6.2-5** | Pull the spindle cap out entirely and secure with a pin. | |
|  **Figure 7.6.2-6** | Position the spindle cap in the middle (pin is positioned centrally in the elongated hole) | |
|  **Figure 7.6.2-7** | Grease the thread of the lever cover (top section). | Brush<br>Halocarbon<br>(OI-56 S / 60H) |

| Illustrations | Description | Aids / Tools |
|---|---|---|
|  **Figure 7.6.2-8** | Grease spindle cap. | Brush<br>Halocarbon<br>(OI-56 S / 60H) |
|  **Figure 7.6.2-9** | Screw the cap onto the lever cover. | |
|  **Figure 7.6.2-10** | Screw in and tighten the screw plug. | |
|  **Figure 7.6.2-11** | Afterwards, screw up the cap as far as it will go so that the screw plug and cap are flush. | Flat-tip screwdriver |

Testing the lever:

Pressurise the valve (approx. 90% of the set pressure).

Check the lever by manual venting.

Testing passed: Pressure drops

Testing did not pass: Pressure remains constant

### 7.6.3 Assembly of lever H8

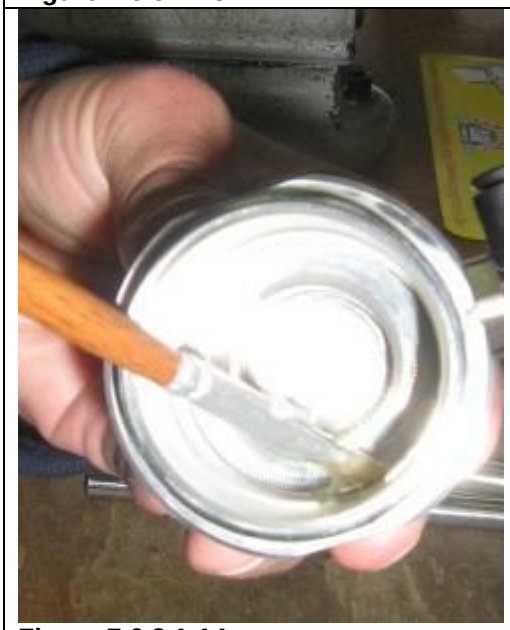
#### 7.6.3.1 Lever H8 (simple piston design)

| Illustrations | Description | Aids / Tools |
|---|---|---|
|  **Figure 7.6.3.1-1** | Grease the threads of the cap nut. | Brush<br>Halocarbon<br>(OI-56 S / 60H) |
|  **Figure 7.6.3.1-2** | Put the cap nut on the bonnet. | |
|  **Figure 7.6.3.1-3** | Grease the O-ring groove of the piston guide, and insert the O-ring avoiding twisting, possibly with the help of a pin punch. | Brush<br>Halocarbon<br>(OI-56 S / 60H) |

| Illustrations | Description | Aids / Tools |
|---|---|---|
|  **Figure 7.6.3.1-4** | Grease O-ring. | Brush<br>Halocarbon<br>(OI-56 S / 60H) |
|  **Figure 7.6.3.1-5** | Screw piston guide to bonnet and tighten with a C-spanner. | C-spanner with a nose |
|  **Figure 7.6.3.1-6** | Grease the groove on the inside of the piston. | Brush<br>Halocarbon<br>(OI-56 S / 60H)<br>Pin punch |

| Illustrations | Description | Aids / Tools |
|---|---|---|
|  **Figure 7.6.3.1-7** | Put the O-ring in the groove of the piston and grease again. | Brush<br>Halocarbon<br>(OI-56 S / 60H) |
|  **Figure 7.6.3.1-8** | Put the piston on the piston guide. | C-spanner with a nose |
|  **Figure 7.6.3.1-9** | Grease the groove and stretch the O-ring over the piston avoiding any twisting of the ring, possibly with the help of a pin punch. | Pin punch |

| Illustrations | Description | Aids / Tools |
|---|---|---|
|  **Figure 7.6.3.1-10** | Afterwards, grease the O-ring. | Brush<br>Halocarbon<br>(OI-56 S / 60H) |
|  **Figure 7.6.3.1-11** | Put the spindle cap on the spindle and secure with a roll pin.<br>Stretch the small O-ring for securing the pin onto the spindle cap. | |
|  **Figure 7.6.3.1-12** | Put the spring into the piston. | |

| Illustrations | Description | Aids / Tools |
|---|---|---|
|  **Figure 7.6.3.1-13** | Twist the angle-screw with the pneumatic valve into the cap and tighten. | |
|  **Figure 7.6.3.1-14** | Grease the inside of the cap for the O-ring guide. | Brush<br>Halocarbon<br>(OI-56 S / 60H) |
|  **Figure 7.6.3.1-15** | Put the cap on (possibly some pressure) and tighten. | |

| Illustrations | Description | Aids / Tools |
|---|---|---|
|  **Figure 7.6.3.1-16** | Tightening the cap nut also tightens the cap. | Open-end spanner |
|  **Figure 7.6.3.1-17** | Afterwards, secure the cap with a second open-end spanner.<br>(The angle-screw must always be opposite the outlet!) | Open-end spanner |

| Illustrations | Description | Aids / Tools |
|---|---|---|
|  **Figure 7.6.3.1-18** | Pressurise the piston to 6-8 bar line pressure via the pneumatic valve.<br>During the procedure, check through the outlet whether the valve lifts. | |
|  **Figure 7.6.3.1-19** | Spray/brush the interconnection points with leak detector to check the seal tightness. | Brush<br>Leak detection spray |

7.6.3.2 Lever H8 (double piston design)

| Illustrations | Description | Aids / Tools |
|---|---|---|
|  **Figure 7.6.3.2-1** | Grease the piston guide on the groove for the O-ring. | Brush<br>Halocarbon<br>(OI-56 S / 60H) |
|  **Figure 7.6.3.2-2** | Insert the O-ring and grease again. | Brush<br>Halocarbon<br>(OI-56 S / 60H) |
|  **Figure 7.6.3.2-3** | Put piston guide on valve and tighten with a C-spanner. | C-spanner with a nose |

| Illustrations | Description | Aids / Tools |
|---|---|---|
|  **Figure 7.6.3.2-4** | Insert O-ring avoiding twisting (grease before and after). | Brush<br>Halocarbon<br>(OI-56 S / 60H) |
|  **Figure 7.6.3.2-5** | Insert O-ring in piston (grease before and after). | Brush<br>Halocarbon<br>(OI-56 S / 60H) |
|  **Figure 7.6.3.2-6** | Put piston on piston guide and put O-ring into the outer groove (grease before and after). | Brush<br>Halocarbon<br>(OI-56 S / 60H) |

| Illustrations | Description | Aids / Tools |
|---|---|---|
|  **Figure 7.6.3.2-7** | Put on the spindle cap and secure with a pin and retaining clip. | |
|  **Figure 7.6.3.2-8** | Put on the spring. | |
|  **Figure 7.6.3.2-9** | Put on the cylinder. In the process, make sure the pneumatic valve is opposite the outlet. | |

| Illustrations | Description | Aids / Tools |
|---|---|---|
|  **Figure 7.6.3.2-10** | Fasten cylinder with split ring. | |
|  **Figure 7.6.3.2-11** | Pull on O-ring. | |
|  **Figure 7.6.3.2-12** | Insert O-ring in second piston. | |

| Illustrations | Description | Aids / Tools |
|---|---|---|
|  **Figure 7.6.3.2-13** | Grease all O-rings before and after!<br>Put piston on and insert O-ring. | Brush<br>Halocarbon<br>(OI-56 S / 60H) |
|  **Figure 7.6.3.2-14** | Put on the spindle cap and secure with a pin and retaining clip. | |
|  **Figure 7.6.3.2-15** | Put the spring onto the piston. | |

| Illustrations | Description | Aids / Tools |
|---|---|---|
|  **Figure 7.6.3.2-16** | Put on the cap. In the process, make sure the angle-screw is opposite the outlet. | |
|  **Figure 7.6.3.2-17** | Connect cap with split ring and tighten the nut. | Ring spanner |
|  **Figure 7.6.3.2-18** | Pressurise the piston to 6-8 bar line pressure via the pneumatic valve.<br>During the procedure, check through the outlet whether the valve lifts.<br>Afterwards, test the seat tightness P12 and seal tightness of the pressure-bearing body P11.<br>Apply leak detector to the interconnection points and look for bubbles. | |

## 7.7 Sealing the valve

| Illustrations | Description | Aids / Tools |
|---|---|---|
|  **Figure 7.7-1** | Weld on sealing lug if necessary.<br>Closely connect the sealing hole or lug from the cap/lever and bonnet in a clockwise direction. Interlace the wire.<br>Seal the lever/cap to the outlet body. | Sealing wire<br>Sealing block<br>Wire twisting pliers |
|  **Figure 7.7-1**Error! No sequence specified. | Sealed cap H2 | |
|  **Figure 7.7-2**Error! No sequence specified. | Sealed cap H4 | |
|  **Figure 7.7-3**Error! No sequence specified. | Sealed cap H8 (simple piston design) | |