# General Options

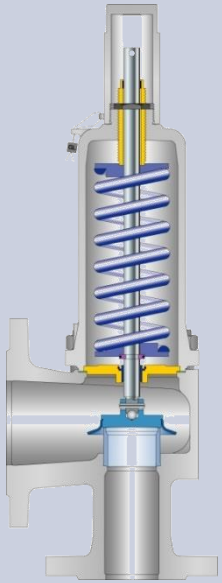
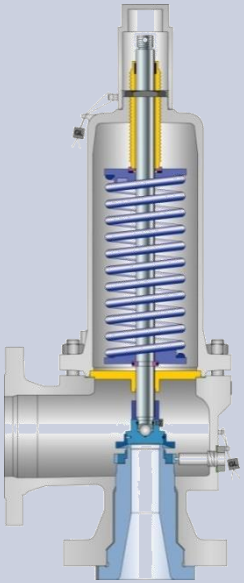
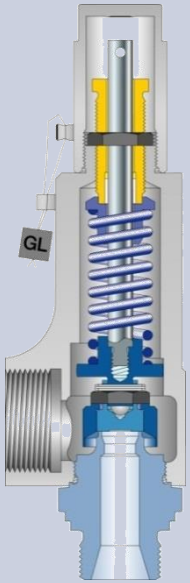
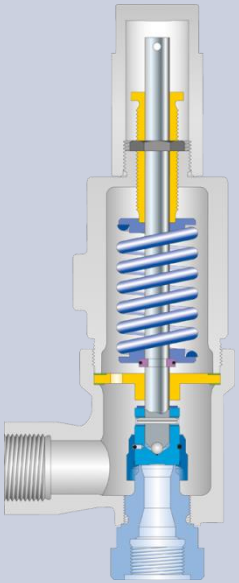
# **Objectives of this Presentation.** Knowledge to Learn.



The purpose of this presentation is to illustrate the **options LESER offers on its safety valves**.

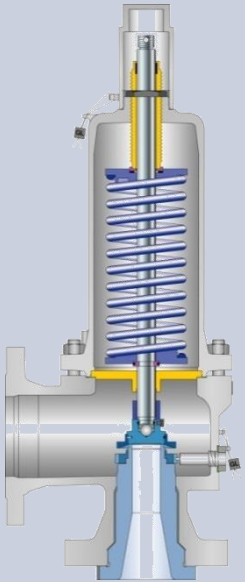
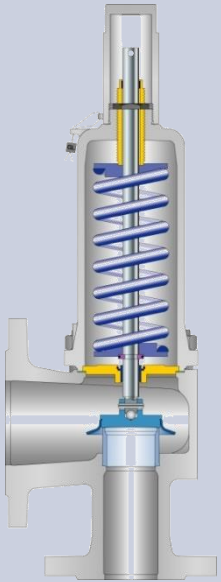
# General Design.



| Threaded connection | | Threaded connection | |
|---|---|---|---|
|  |  |  |  |
| Type 441 | Type 526 | Type 437 | Type 459 |

# General Design.

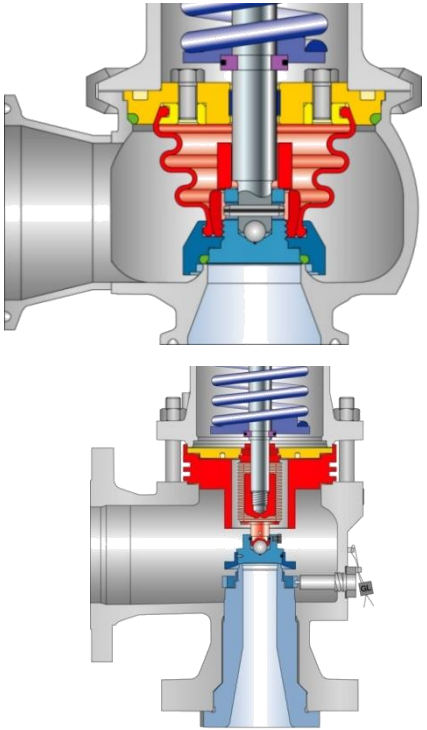


| Full Nozzle | Semi Nozzle |
| --- | --- |
|  |  |
| Type 526 | Type 441 |

# Bellows Design.



- **Elastomer bellows**
  - Protects the moving parts and spring against dirt, corrosion, impurities and the fluid itself. Set pressure range: p < 10 bar / 145 psig **ATTENTION**: Elastomer bellows can **not** be used for back pressure compensation.
- **Stainless Steel or Inconel Bellows**
  - Prevent changes in set pressure when the valve is subjected to variable back pressure
  - Isolate the bonnet chamber and spring against dirt, corrosion, impurities and the fluid itself
  - Should be used at variable superimposed back pressure or if the built up pressure exceeds 15 % of the valve set pressure.

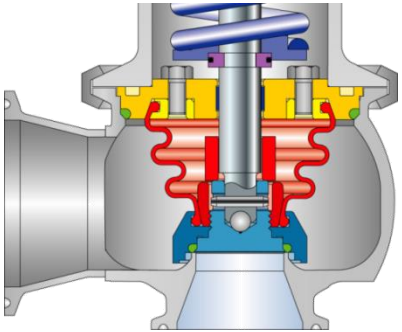


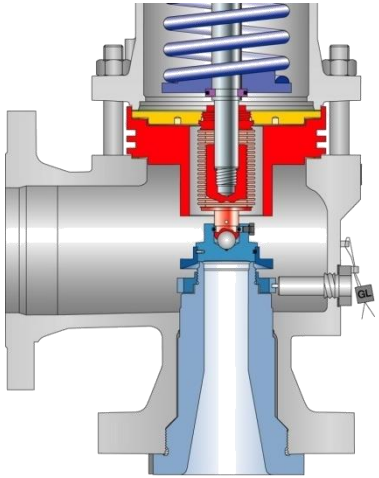
# Bellows Design.

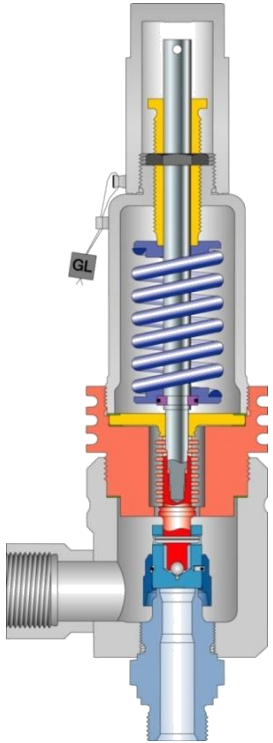


Available on:

- API Series 526
- High Performance Series 441
- Compact Performance Series 459
- Clean Service Series 48x
- Modulate Action Series 433 & 429
- Critical Service Series 447 & 449
- Change-over Series 310



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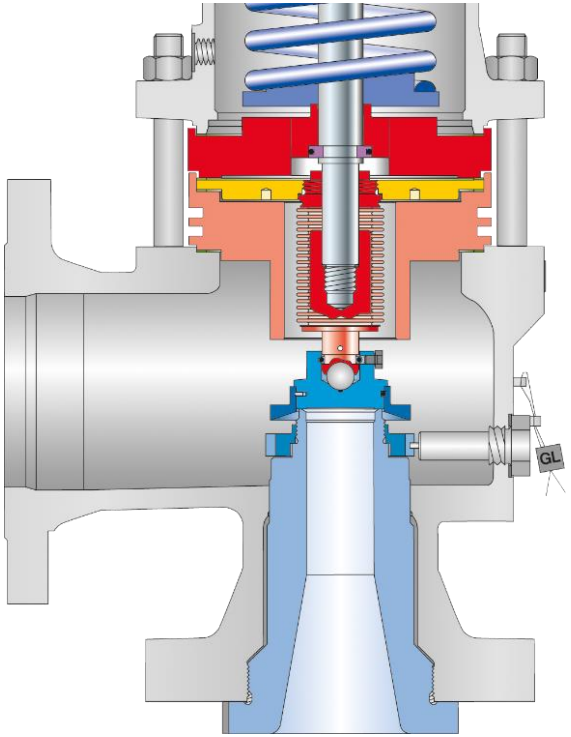
# **Bellows Design.** Balanced Piston.



- Ensures the back pressure compensation and the temperature screening to the spring room even in case of failure of the bellows
- Equal size of the piston surface and of the seat section generates the back pressure compensating effect
- Solution which is included in API 520
- Application field: Applications where the back pressure compensating function needs to be ensured
- Available for LESER API Series 526

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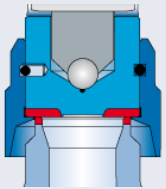
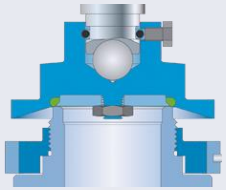
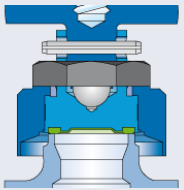
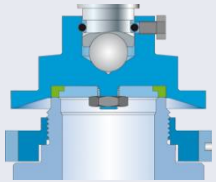
# Sealing Surface.



To prevent leakage and costly product loss as well as reduce downtime and maintenance costs, LESER offers optional sealing surfaces.

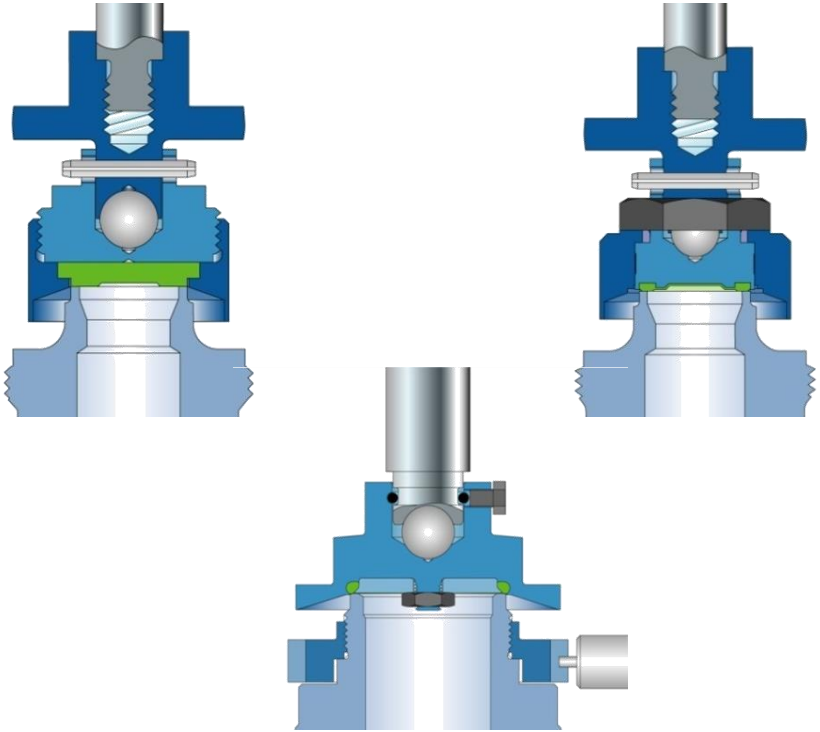
| Stellited | O-ring disc | Vulcanized Soft Seal | Sealing Plate |
|---|---|---|---|
| ■ For temperatures above + 450° C / + 842° F<br>■ Protection of sealing surface against abrasive media<br>■ Corrosion resistance<br>■ Resistance against impacts and changing temperatures | ■ For temperatures above + 450° C / + 842° F<br>■ Protection of sealing surface against abrasive media<br>■ Corrosion resistance<br>■ Resistance against impacts and changing temperatures | ■ Same use as O-ring disc<br>■ Only available for Compact Performance Series<br>■ Due to the small disc size, vulcanized soft seals have a minimum set pressure of 0.2 bar / 2.9 psig | ■ Same use as O-ring disc<br>■ Also applicable for very low temperatures own to – 270° C / - 454° F depending on the sealing materials |
|  |  |  |  |

# Sealing Surface.



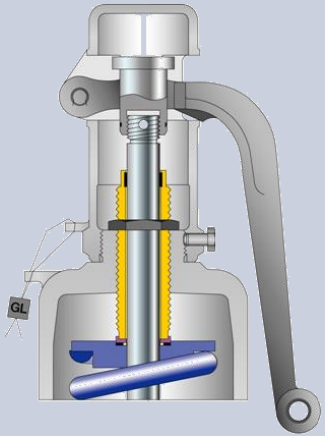
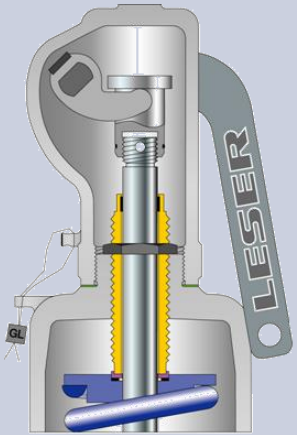
Soft seals are available on:

- API Series 526
- High Performance Series 441
- Compact Performance
  - Series 438 (437)
  - Series 462 (459)
- Clean Service Series 48x



# Lifting Devices.

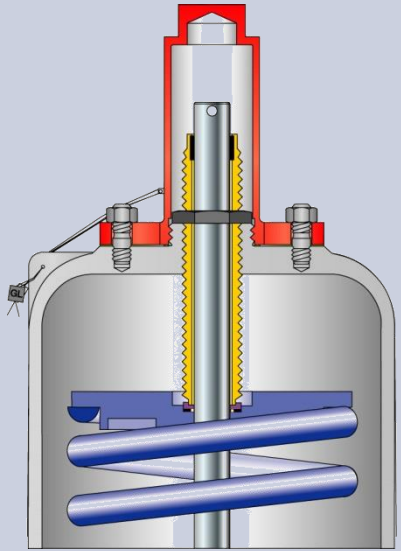
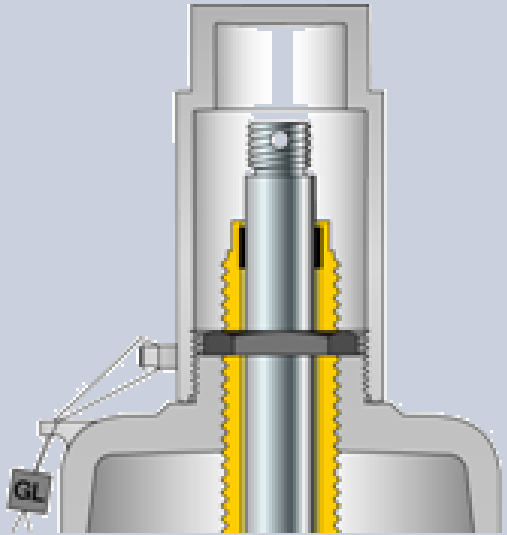


| Open Lever | Packed Lever |
| --- | --- |
|  |  |
| Not gas-tight | Gas-tight manual lifting possible |

ASME Code states that a lifting device shall be used on:
air, steam and hot water applications over 60°C/140° F.

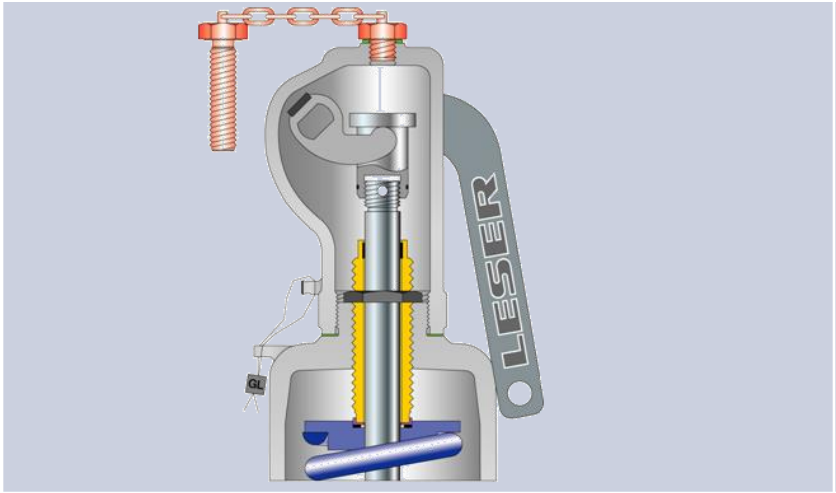
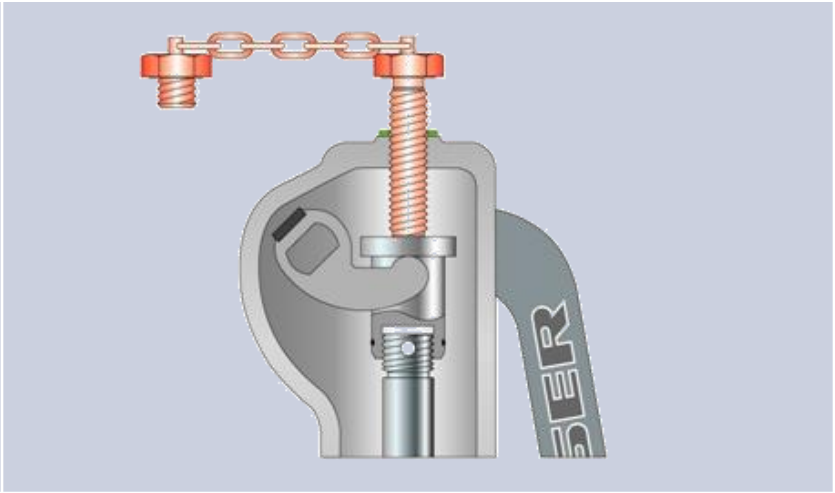
# Caps.



| Bolted Cap (H1) | Screwed Cap (H2) |
| --- | --- |
|  |  |
| Only if specification demands | Standard on LESER valves |

# Test Gag.



| Safety Valve In Use | Gagged for Line Testing |
| --- | --- |
|  |  |

The safety valve has to be gagged to perform a pressure test of the plant, otherwise the valve has to be removed or a blind has to be installed before.

# Special Materials.



As a global supplier, LESER can offer valve components in numerous materials. Especially the Compact Performance and Type 526 are consequently focused to fulfil the requirements of high alloy materials. These include the levelconcept, special cast supplier and short delivery times. Examples for high alloy materials are:

- Hastelloy
- Hastelloy
- Duplex Stainless Steel
- Titanium
- Tantalum
- Alloy 20
- Inconel

Please check with your local LESER contact for availability, pricing and delivery information.

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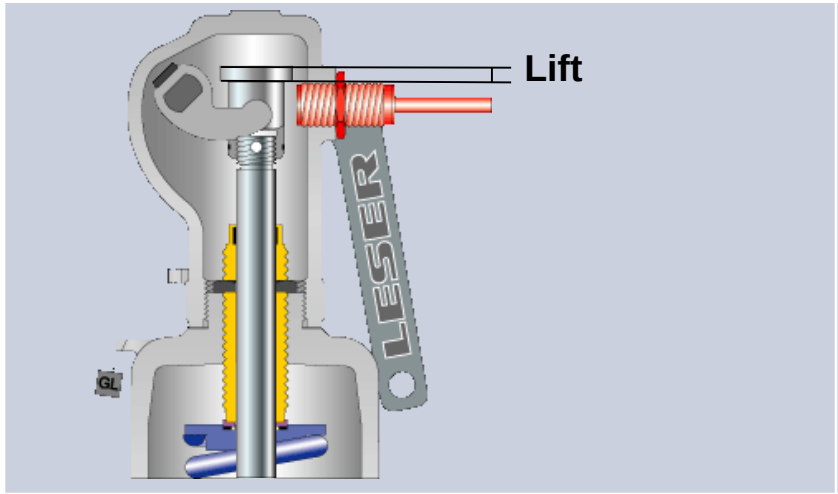
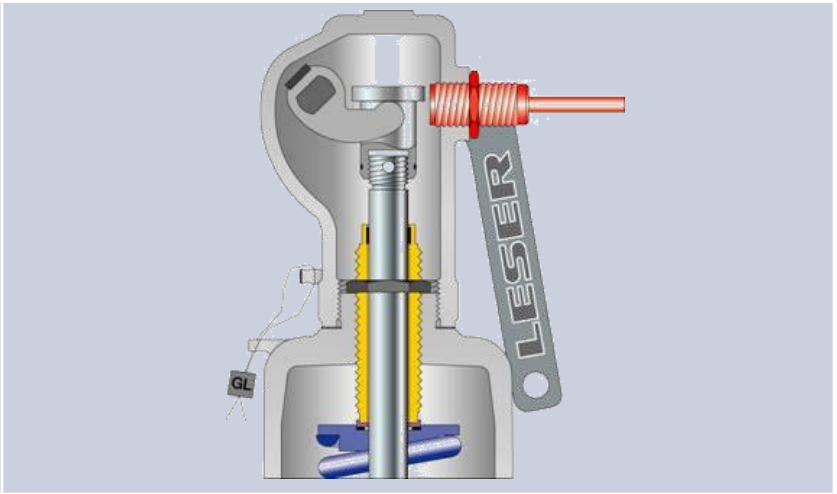
# Lift Indicator (Proximity Switch).



| Safety Valve Open | Safety Valve Closed |
| --- | --- |
|  |  |

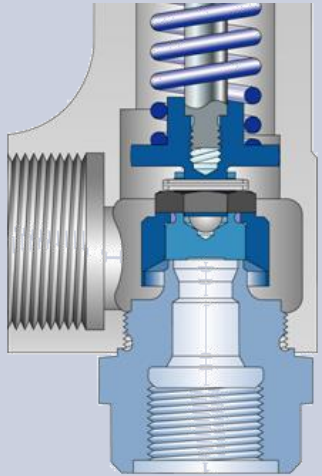
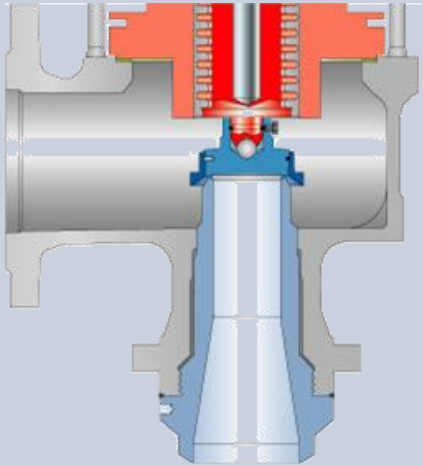
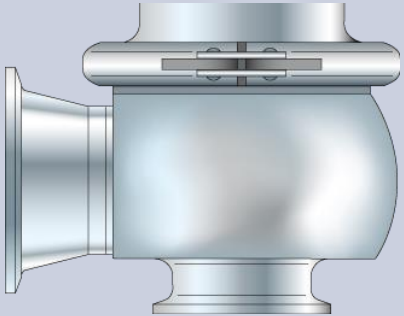


Indication of valve lift to control room

(Minimum lift of 1 mm / 0.04 inch is required)

# Special Connections.



| Female Threaded Inlet | Welded connections | Clamp connections |
|---|---|---|
|  |  |  |

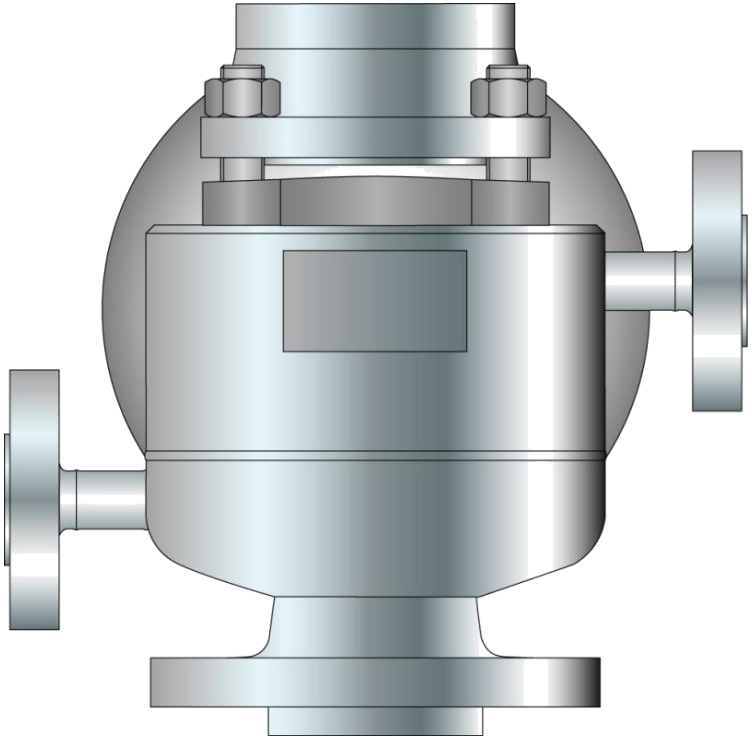
LESER offers a large variety of special connections to meet the needs of a global market.

# Heating Jacket.



In applications with highly viscous fluids (low Reynolds number)
a heating jacket with heated bonnet spacer ensures:

- The proper function of a safety valve
- The safety valve will not clog

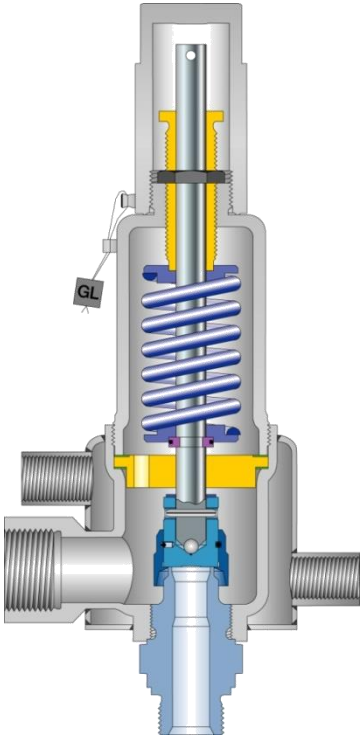


# Heating Jacket.



Available on:

- API Series 526
- High Performance Series 441
- Compact Performance
  - Series 438 (437)
  - Series 462 (459)
- Clean Service Series 48X

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# Bonnets.



| Open Bonnet | Closed Bonnet |
| --- | --- |
|  |  |
| Spring cooled by atmosphere | Completely sealed safety valve |

## General Options

Thank you for your attention.