

# Modulate Action Series 433

## Product Profile, Features and Options



# Objectives of this Presentation. Knowledge to learn.

1. [Objectives](#) | 2. [General Remarks](#) | 3. [Application Area](#) | 4. [Design](#) | 5. [Differentiation](#) | 6. [Main Features](#) | 7. [Benefits](#) | 8. [Materials](#) | 9. [Options](#) | 10. [Approvals](#)

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The aim of this presentation is to provide an overview of the **LESER** product range **Modulate Action**.



# General Remarks. Modulate Action Safety Valves.

1. Objectives | 2. General Remarks | 3. Application Area | 4. Design | 5. Differentiation | 6. Main Features | 7. Benefits | 8. Materials | 9. Options | 10. Approvals

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**LESER Modulate Action Safety Valves**  
are the first choice for all **industrial applications in the field of steams, gases and liquids**

Advantages:

- Suitable solutions for all application areas especially thermal expansion
- Least possible media loss
- Compact design and low weight



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# Application Area. Applications and References.

1. Objectives | 2. General Remarks | 3. **Application Area** | 4. Design | 5. Differentiation | 6. Main Features | 7. Benefits | 8. Materials | 9. Options | 10. Approvals

**LESER Modulate Action Safety Valves** are characterized by a specially stable operation behavior. Application areas are among others:

- Thermal expansion
- Compressors and applications with pulsative working pressures
- Cushioning of pressure peaks
- Bypass systems
- Mechanical engineering (OEM), piston compressors with small and medium performance



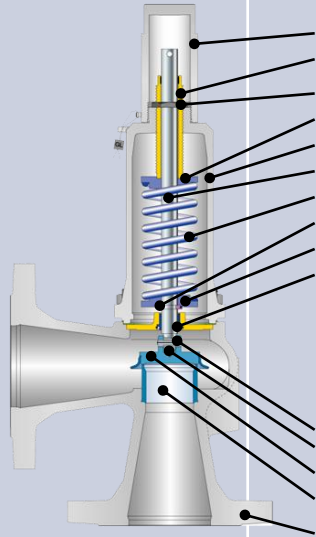
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# Design.

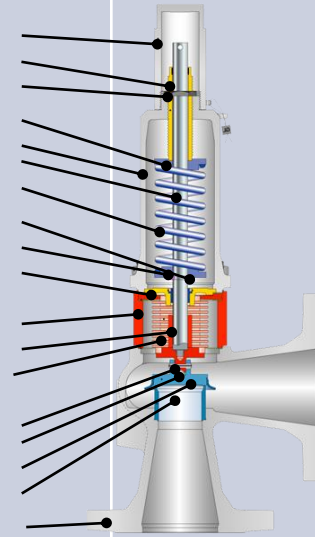
1. Objectives | 2. General Remarks | 3. Application Area | 4. Design | 5. Differentiation | 6. Main Features | 7. Benefits | 8. Materials | 9. Options | 10. Approvals

## Serie 433



Conventional design

Cap H2  
Adjusting screw  
Lock nut  
Spring plate  
Bonnet  
Spindle  
Spring  
Split-ring  
Spring plate  
Spindle guide with nozzle  
Bonnet spacer  
Lift stopper  
Stainless steel bellows  
Pin  
Ball  
Disc  
Seat  
Body angle type



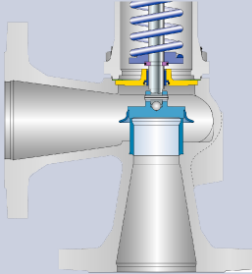
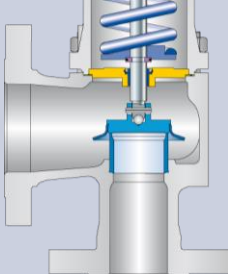
Balanced Bellows Design

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# Differentiation. Modulate Action to High Performance.

1. Objectives | 2. General Remarks | 3. Application Area | 4. Design | 5. Differentiation | 6. Main Features | 7. Benefits | 8. Materials | 9. Options | 10. Approvals

|                              | Modulate Action  | High Performance   |
|------------------------------|--|--|
| Relation<br>$DN_E$ to $DN_A$ |  <p><math>DN_E = DN_A</math></p> |  <p><math>DN_E &lt; DN_A</math></p> |
| Performance                  | Medium performance   | High performance   |
| Opening behavior             | Complete opening within a pressure increase of 10%.  | Abrupt opening after response with a pressure increase of max. 5%.   |

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# Main Features. Key Figures in Metric Units.

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| Series 433                |                       |          |                       |
|---------------------------|-----------------------|----------|-----------------------|
|                           | Type 431              | Type 433 | Type 433 PN 160       |
| <b>Bonnet</b>             | Open                  | Closed   | Closed                |
| <b>Size</b>               | DN 15 - DN 150        |          | DN 15                 |
| <b>d<sub>0</sub></b>      | 12 – 92 mm            |          | 12 mm                 |
| <b>Set pressure range</b> | 0,2 bar - 40 bar      |          | 0,3 bar - 160 bar     |
| <b>Temperature range</b>  | - 270° C ... + 450° C |          | - 270° C ... + 450° C |
| <b>Pressure range</b>     | PN 16 - PN 40         |          | PN 160                |

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# Benefits.

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- **Complete opening** within a pressure increase of **10%**.
- **Closing after response for steams and gases** within a pressure drop of **10%**, for **liquids** within a pressure drop of **20%**.
- **One body and one spring** for steams, gases, liquids and multiphase (Single Trim)
- The one-piece spindle **reduces the friction, guarantees an optimal conduct and a reliable operation**
- **A cost-efficient maintenance is guaranteed** by few required spare parts
- A self draining body angle type **avoids residues and reduces corrosion**



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# Materials. According to DIN EN Standard.

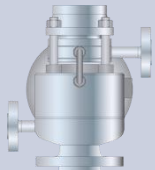
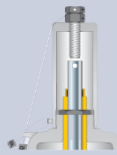
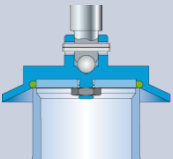
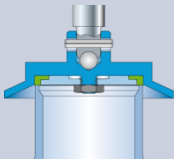
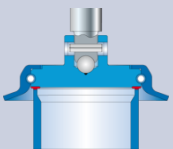
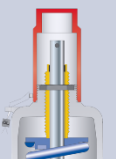

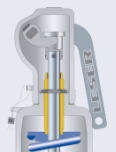
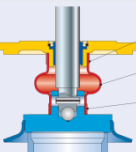
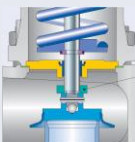
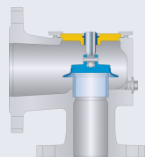
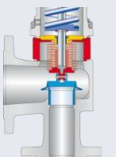
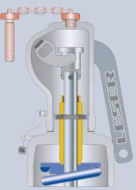
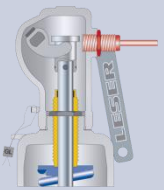
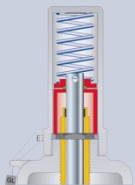

1. Objectives | 2. General Remarks | 3. Application Area | 4. Design | 5. Differentiation | 6. Main Features | 7. Benefits | 8. **Materials** | 9. Options | 10. Approvals

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| Body materials  | 0.6025 | 0.7043 | 1.0619 | 1.4408 |
|-----------------|--------|--------|--------|--------|
| Type 431        | x      | x      | x      | x      |
| Type 433        | x      | x      | x      | x      |
| Type 433 PN 160 |        |        | x      | x      |

# Options.

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|   |  |  |  |   |  |
|---|--|--|--|---|--|
|  <p>Heating jacket</p>         |  <p>Lift stopper -<br/>Adjustment screw</p> |  <p>O-ring-disc</p>       |  <p>Disc with sealing plate</p>                     |  <p>Stellite disc</p>  |  <p>Gas-proof cap H2</p>        |
|  <p>Open lifting device H3</p> |  <p>Gas-proof lifting device<br/>H4</p>     |  <p>Elastomer bellows</p> |  <p>Lift stopper - bushing</p>                      |  <p>Drain drilling</p> |  <p>Stainless steel bellows</p> |
|  <p>Blocking screw</p>         |  <p>Proximity switch</p>                    |  <p>O-ring damper H2</p>  |  <p>Sour gas acc. to NACE<br/>MRO103 and MRO175</p> |   |  |

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# Approvals.

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## Worldwide approvals for standardized design.

|                       |                      |
|-----------------------|----------------------|
| Europe                | ISO 4126-1           |
| Germany               | AD 2000-Merkblatt A2 |
| China                 | AQSIQ                |
| Eurasian Custom Union | EAC                  |

CE

EAC



**Modulate Action Series 433**  
Thank you for your attention.

