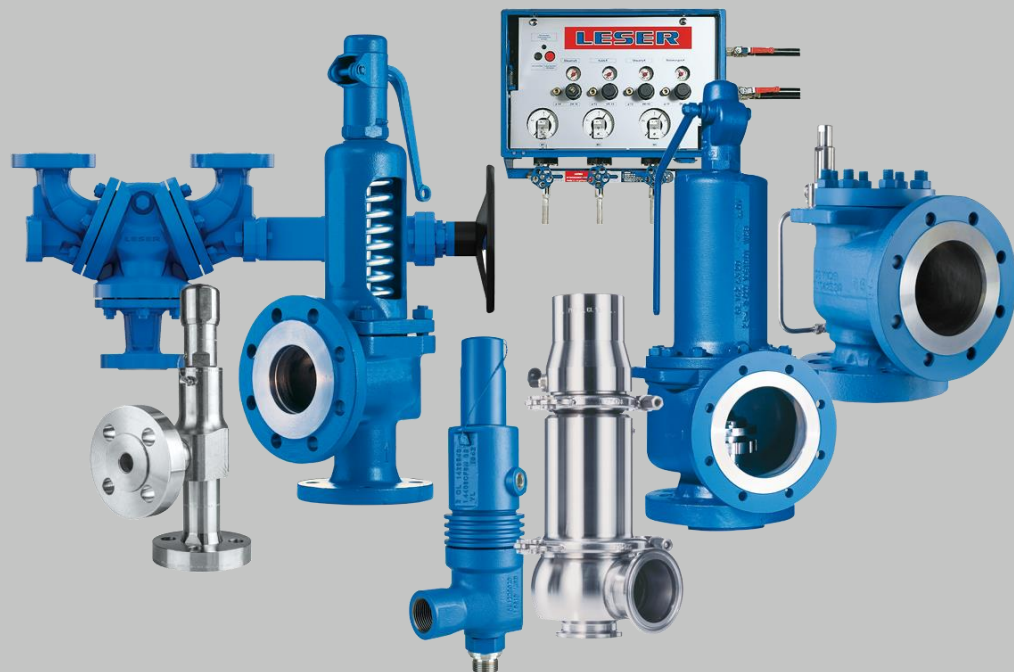


Scope of Products

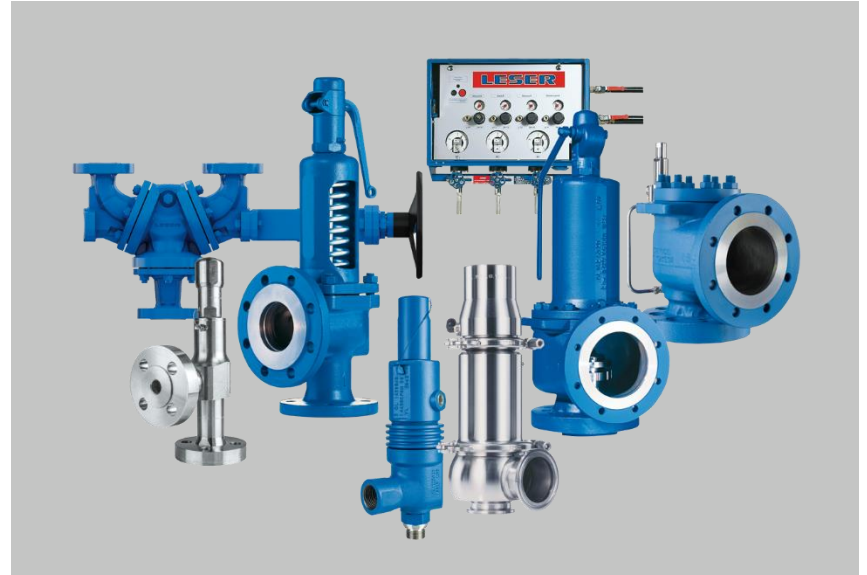


Objectives of this Presentation. Knowledge to learn.

1. [Objectives](#) | 2. [Extension ASME/PED](#) | 3. [Scope of Supply, Product and Valve Finder ASME](#) | 4. [Scope of Supply, Product and Valve Finder PED](#) | 5. [Differentiation](#)

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

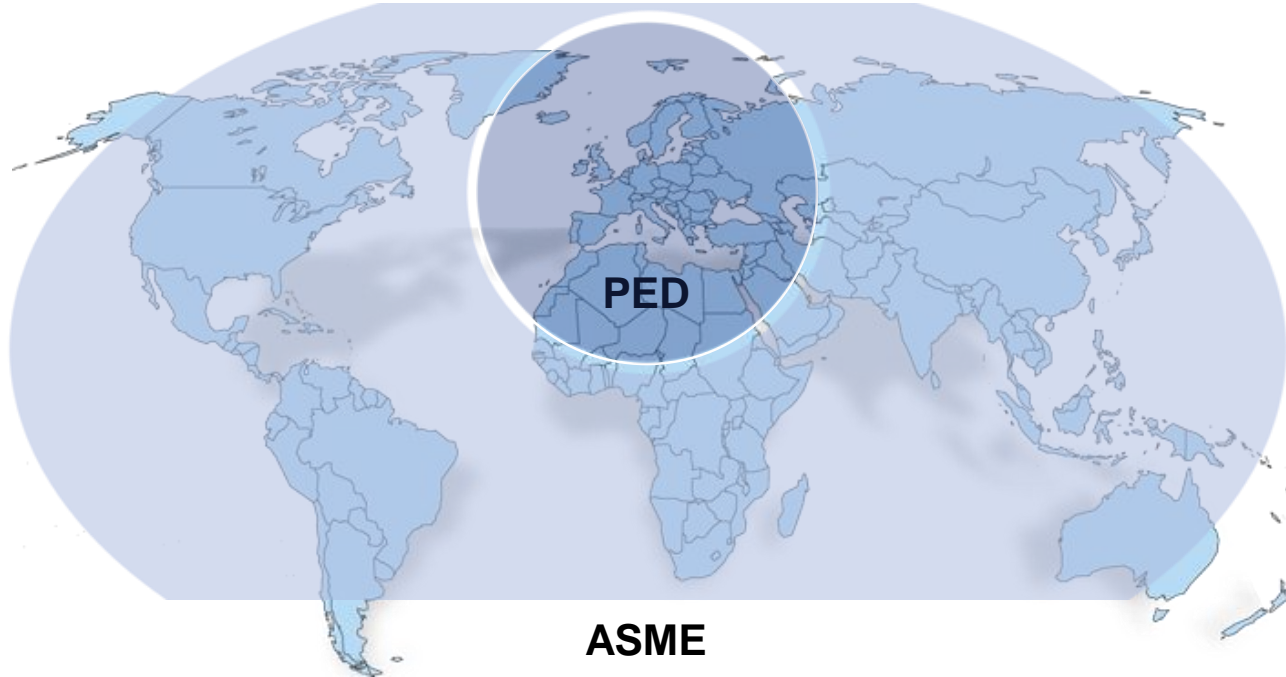
It explains the **product structure**, specifies the **product group names** to become familiar with the LESER wording and finally introduces the **LESER valve finder** in order to help finding the right safety valve.



Extension of ASME/PED.






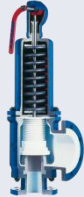

1. Objectives | 2. Extension ASME/PED | 3. Scope of Supply, Product and Valve Finder ASME | 4. Scope of Supply, Product and Valve Finder PED | 5. Differentiation

How to find the right Safety Valve – click and select your category:



Scope of Supply. Product Overview ASME.

1. Objectives | 2. Extension ASME/PED | 3. **Scope of Supply, Product and Valve Finder ASME** | 4. Scope of Supply, Product and Valve Finder PED | 5. Differentiation

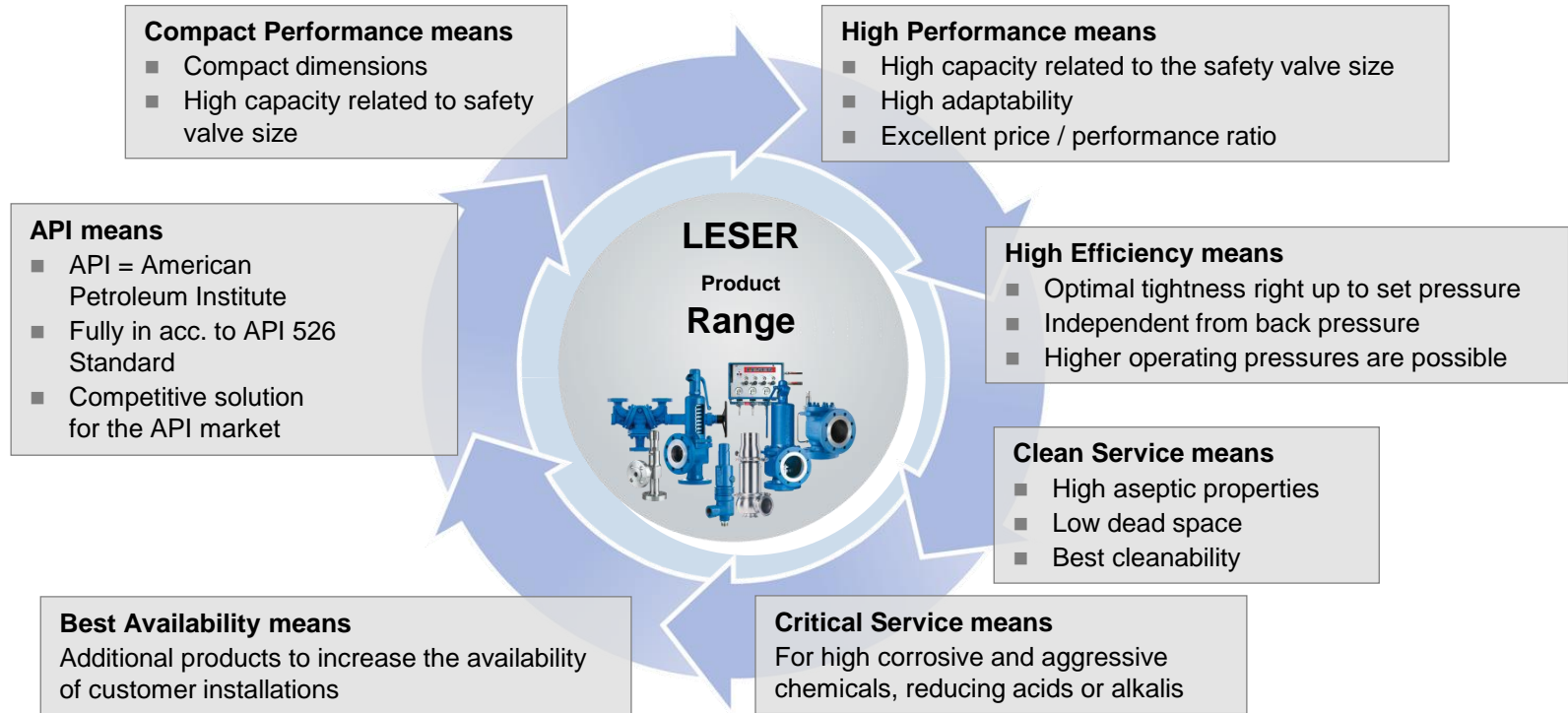
Process and General Industrial Safety Valves			
API	High Performance	Compact Performance	High Efficiency
			
Specialties			
Clean Service	Critical Service	Best Availability	
			

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Explanation. Product Group Names ASME.

1. Objectives | 2. Extension ASME/PED | 3. Scope of Supply, Product and Valve Finder ASME | 4. Scope of Supply, Product and Valve Finder PED | 5. Differentiation

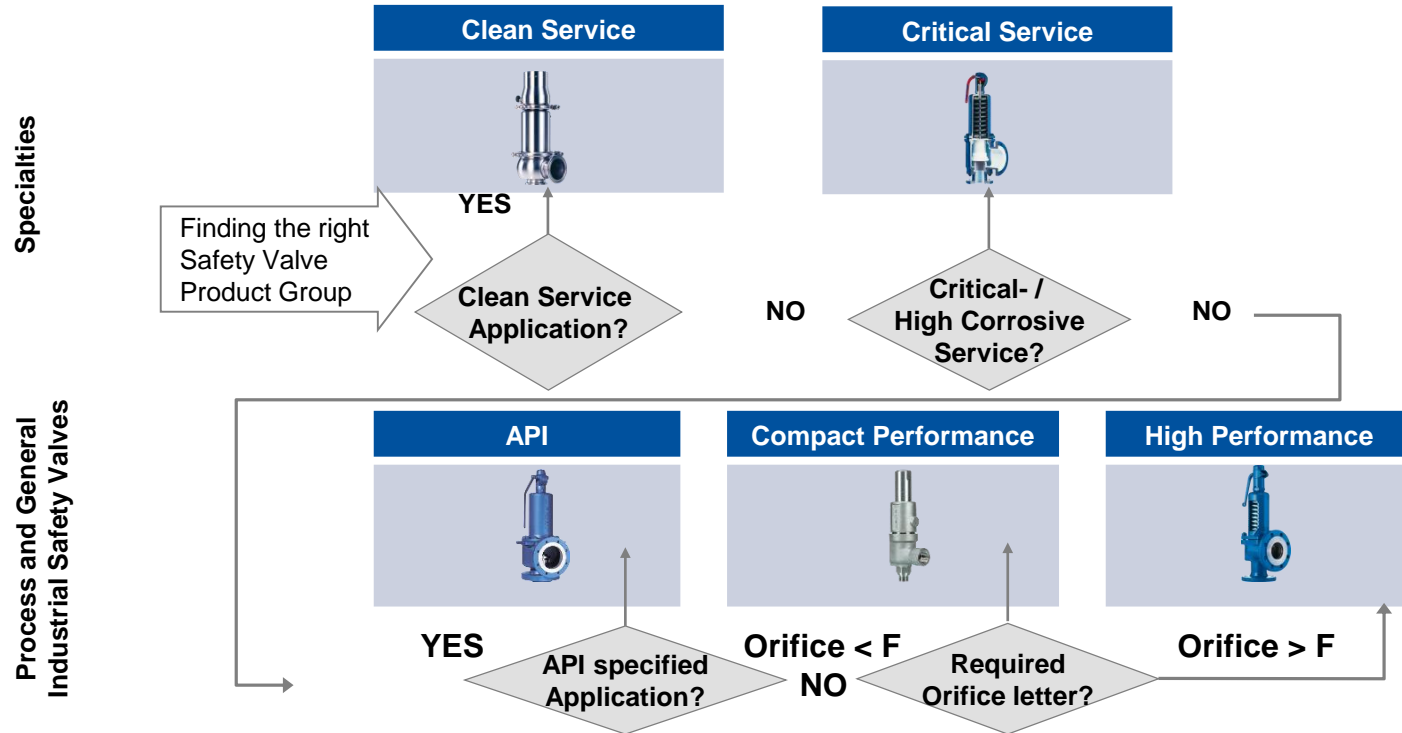


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Valve Finder ASME for spring loaded safety valves.

1. Objectives | 2. Extension ASME/PED | 3. Scope of Supply, Product and Valve Finder ASME | 4. Scope of Supply, Product and Valve Finder PED | 5. Differentiation



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API. Series 526 (ASME).

1. Objectives | 2. Extension ASME/PED | 3. Scope of Supply, Product and Valve Finder ASME | 4. Scope of Supply, Product and Valve Finder PED | 5. Differentiation

API Series 526	
Size	1" x 2" ... 8" x 10"
Orifice	D ... T
Set pressure range	1.5 psig ... 6,000 psig
Temperature range	- 450° F ... 1,000° F
Flange class	Class 150 x 150 to Class 2500 x 300
Available Standard Materials	WCB, LCB, CF8M, WC6, Duplex, Super Duplex, Hastelloy, Inconel, Monel
Applications	<ul style="list-style-type: none">■ Petrochemical industry■ Chemical industry■ All applications where API is specified



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High Performance. Type 441, 442, XXL, Full Nozzle, 444, 457, 458 (ASME).

1. Objectives | 2. Extension ASME/PED | 3. Scope of Supply, Product and Valve Finder ASME | 4. Scope of Supply, Product and Valve Finder PED | 5. Differentiation

High Performance Type 441, 442, XXL, Full Nozzle, 444, 457, 458	
Size	1" x 2" ... 16" x 20"
Set pressure range	1.5 psig ... 4,350 psig
Temperature range	- 450° F ... 1,000° F
Inlet Pressure Ratings	Class 150 x 150 to Class 2500 x 300
Available Standard Materials	WCB, CF8M, WC6
Applications	<ul style="list-style-type: none">■ Chemical industry■ Heating, Venting, Air conditioning (HVAC)■ Power plants (ASME VIII)■ Paper industry



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Compact Performance. Type 437, 438, 439, 459, 462, HDD (ASME).

1. Objectives | 2. Extension ASME/PED | 3. Scope of Supply, Product and Valve Finder ASME | 4. Scope of Supply, Product and Valve Finder PED | 5. Differentiation

Compact Performance Type 437, 438, 439, 459, 462, HDD	
Size	3/8" x 1/2" ... 1" x 1 1/2"
Orifice	D ... F
Set pressure range	1.5 psig ... 12,330 psig
Temperature range	-450°F ... 800°F
Inlet Pressure Ratings	Class 150 x 150 to Class 2500 x 2500
Available Standard Materials	■ 430, 316L, CF8M, WCB
Applications	■ Chemical industry ■ LNG/LPG/Cryogenic systems ■ High pressure ■ Technical gases



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High Efficiency. Serien 810, 820 (ASME).

1. Objectives | 2. Extension ASME/PED | 3. Scope of Supply, Product and Valve Finder ASME | 4. Scope of Supply, Product and Valve Finder PED | 5. Differentiation

High Efficiency Serie 810, 820	
Size	1" x 2" ... 8" x 10"
Set pressure range	36 psig ... 6.170 psig
Temperature range	- 54° F ... 500° F
Flange class	Class 150 ... Class 2500
Standard Materials	WCB, CF8M, LCB
Applications	<ul style="list-style-type: none">■ Oil and gas industry■ Chemical industry■ Petrochemical industry■ Power generation■ Technical gases



Clean Service. Type 481, 483, 484, 485, 488 (ASME).

1. Objectives | 2. Extension ASME/PED | 3. Scope of Supply, Product and Valve Finder ASME | 4. Scope of Supply, Product and Valve Finder PED | 5. Differentiation

Clean Service Type 481, 483, 484, 485, 488	
Size	d ₀ 0.394 inch ... d ₀ 3.622 inch
Orifice	D ... P
Set pressure range	1.5 psig ... 986 psig
Temperature range	- 49° F ... 482° F
Inlet Pressure Ratings	PN 10 ... PN 25
Available Standard Materials	316L
Applications	<ul style="list-style-type: none">■ Food and Beverage industry■ Pharmaceutical industry■ Cosmetic industry■ Chemical industry



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Critical Service. Type 447 (ASME).

1. Objectives | 2. Extension ASME/PED | 3. Scope of Supply, Product and Valve Finder ASME | 4. Scope of Supply, Product and Valve Finder PED | 5. Differentiation

Critical Service Type 447	
Size	1" x 1 1/2" ... 4" x 6
Orifice	G ... N
Set pressure range	1.5 psig ... 232 psig
Temperature range	- 20° F ... 392° F
Inlet Pressure Ratings	Class 150 x 150 to Class 300 x 150
Available Standard Materials	WCB
Applications	<ul style="list-style-type: none">■ Chemical industry■ High corrosive applications



Best Availability. Type 320, 330, 316, 317 (ASME).

1. Objectives | 2. Extension ASME/PED | 3. Scope of Supply, Product and Valve Finder ASME | 4. Scope of Supply, Product and Valve Finder PED | 5. Differentiation

Best Availability Type 320, 330 Change-over Valve

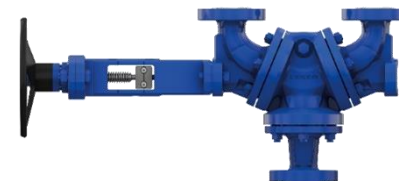
Possibility to switch over between parallel safety valves without interrupting operation.

Size	1" ... 4"
Size from autumn 2017	5" ... 16"
Temperature range	- 459° F ... 842° F
Inlet Pressure Ratings	Class 150 – 1500
Standard Materials	WCB/WCC, CF8M , LCB/ LCC
Size	1" ... 4"

Best Availability Safety valve and bursting disc in combination

Greatest possible tightness up to set pressure in combination with a safe closing.

Size	DN 25 ... DN 400
Temperature range	- 30° C ... + 550° C
Inlet Pressure Ratings	PN 40 ... PN 160



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Scope of Supply. Product Overview PED.

1. Objectives | 2. Extension ASME/PED | 3. Scope of Supply, Product and Valve Finder ASME | 4. Scope of Supply, Product and Valve Finder PED | 5. Differentiation

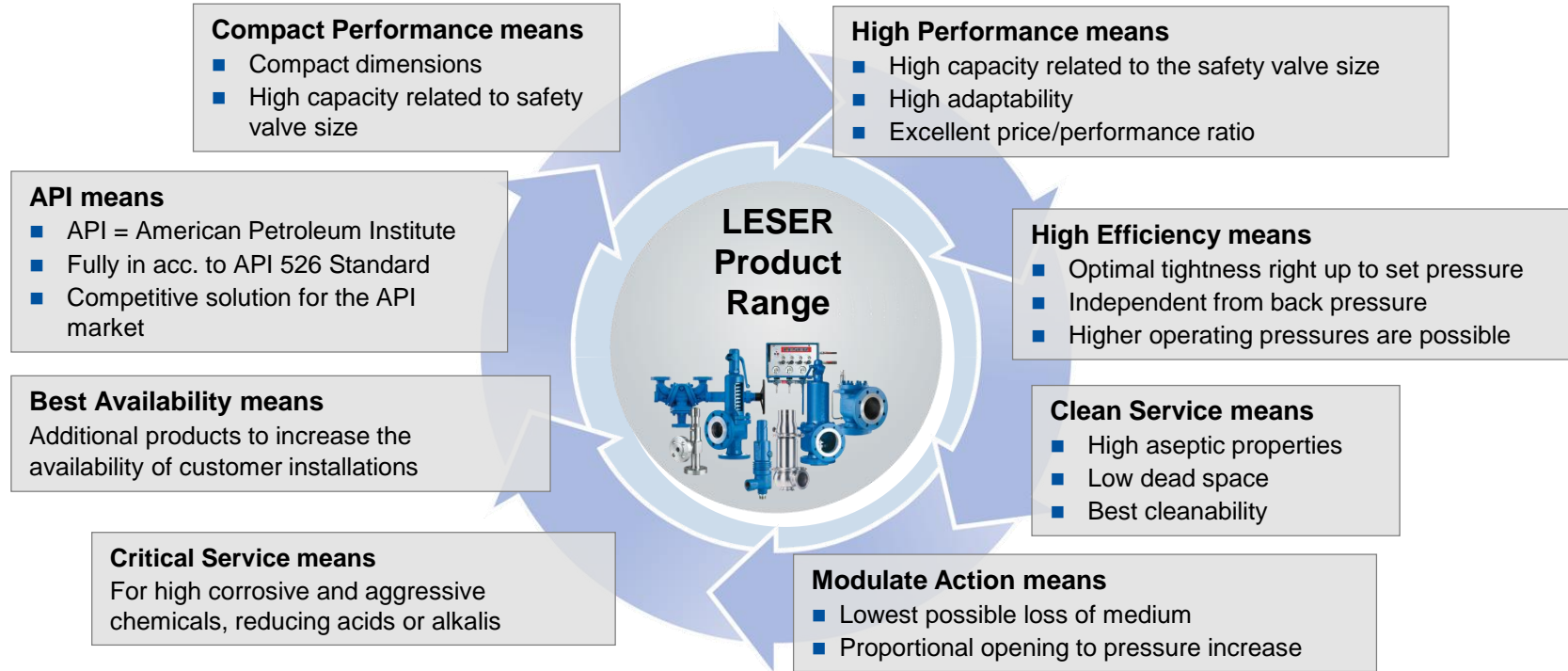
Process and General Industrial Safety Valves			
API	High Performance	Compact Performance	High Efficiency
			
Specialties			
Clean Service	Critical Service	Best Availability	Modulate Action
			

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Explanation. Product Group Names ASME.

1. Objectives | 2. Extension ASME/PED | 3. Scope of Supply, Product and Valve Finder ASME | 4. Scope of Supply, Product and Valve Finder PED | 5. Differentiation

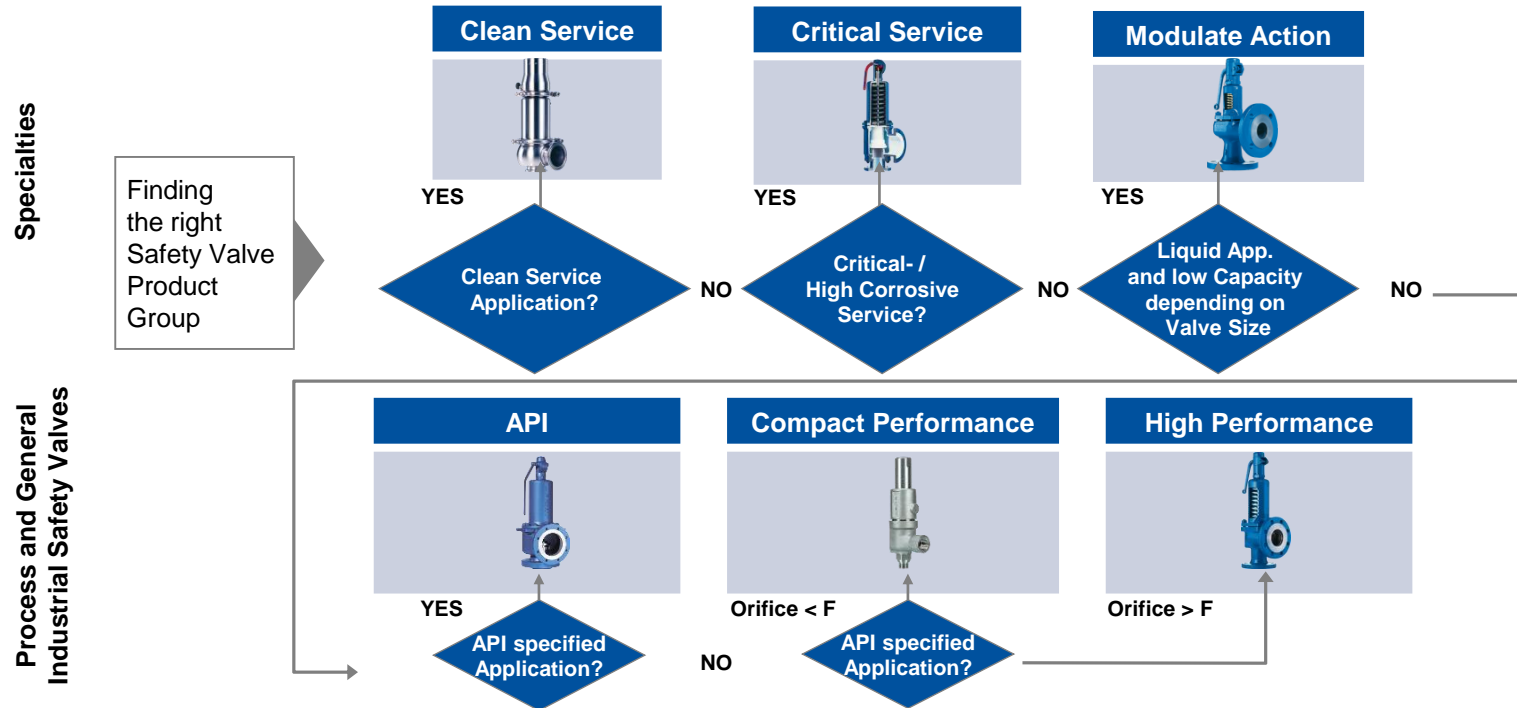


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Valve Finder ASME for spring loaded safety valves.

1. Objectives | 2. Extension ASME/PED | 3. Scope of Supply, Product and Valve Finder ASME | 4. Scope of Supply, Product and Valve Finder PED | 5. Differentiation



API. Series 526 (PED).

1. Objectives | 2. Extension ASME/PED | 3. Scope of Supply, Product and Valve Finder ASME | 4. Scope of Supply, Product and Valve Finder PED | 5. Differentiation

API Series 526	
Size	1" ... 8"
Orifice	D ... T
Set pressure range	0,1 bar ... 415 bar
Temperature range	- 268° C ... + 538° C
Flange class	Class 150 x 150 to Class 2500 x 300
Available Standard Materials	1.0619, 1.4408, 1.7357, Duplex, Super Duplex
Applications	<ul style="list-style-type: none">■ Petrochemical industry■ Chemical industry■ All applications where API is specified



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High Performance. Type 441, 442, XXL, Full Nozzle, 444, 457, 458 (PED).

1. Objectives | 2. Extension ASME/PED | 3. Scope of Supply, Product and Valve Finder ASME | 4. Scope of Supply, Product and Valve Finder PED | 5. Differentiation

High Performance Type 441, 442, XXL, Full Nozzle, 444, 457, 458	
Size	DN 20 ... DN 400
Set pressure range	0,1 bar ... 300 bar
Temperature range	- 268° C ... + 538° C
Inlet Pressure Ratings	PN 16 ... PN 400
Available Standard Materials	0.6025 0.7043, 1.0619, 1.4408, 1.7357
Applications	<ul style="list-style-type: none">■ Chemical industry■ Heating, Venting, Air conditioning (HVAC)■ Power plants (ASME VIII)■ Paper industry



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Compact Performance. Type 437, 438, 439, 459, 462, HDD (PED).

1. Objectives | 2. Extension ASME/PED | 3. Scope of Supply, Product and Valve Finder ASME | 4. Scope of Supply, Product and Valve Finder PED | 5. Differentiation

Compact Performance Type 437, 438, 439, 459, 462, HDD	
Size	3/8" x 1/2" ... 1" x 1 1/2"
Orifice	D ... F
Set pressure range	0,1 bar ... 850 bar
Temperature range	- 270° C ... + 550° C
Inlet Pressure Ratings	PN 16 ... PN 700
Available Standard Materials	1.4104, 1.4404, 1.4408, 1.0619
Applications	<ul style="list-style-type: none">■ Chemical industry■ LNG / LPG / Cryogenic systems■ High pressure■ Technical gases



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High Efficiency. Serien 810, 820, 700 (PED).

1. Objectives | 2. Extension ASME/PED | 3. Scope of Supply, Product and Valve Finder ASME | 4. Scope of Supply, Product and Valve Finder PED | 5. Differentiation

High Efficiency Serie 810, 820

tightness right up to set pressure

Size	DN 25 ... DN 200
Set pressure range	2,5 bar ... 400 bar
Temperature range	- 48° C ... + 260° C
Flange class	PN 10 ... PN 400
Standard Materials	1.0619, 1.4408
Size	DN 25 ... DN 200

High Efficiency Type 700 Supplementary Loading System

Increase in productivity as operating pressure is close to set pressure

Full lift at	1 % above set pressure
Closing pressure	- 3 % below set pressure
Operating pressure	96 % of the set pressure



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Clean Service. Type 481, 483, 484, 485, 488 (PED).

1. Objectives | 2. Extension ASME/PED | 3. Scope of Supply, Product and Valve Finder ASME | 4. Scope of Supply, Product and Valve Finder PED | 5. Differentiation

Clean Service Type 481, 483, 484, 485, 488	
Size	d ₀ 10 mm ... d ₀ 92 mm
Orifice	D ... P
Set pressure range	0,1 bar ... 68 bar
Temperature range	- 45° C ... + 250° C
Inlet Pressure Ratings	PN 10 ... PN 25
Available Standard Materials	1.4404, 1.4435
Applications	<ul style="list-style-type: none">■ Food and Beverage industry■ Pharmaceutical industry■ Cosmetic industry■ Chemical industry



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Critical Service. Type 447 (PED).

1. Objectives | 2. Extension ASME/PED | 3. Scope of Supply, Product and Valve Finder ASME | 4. Scope of Supply, Product and Valve Finder PED | 5. Differentiation

Critical Service Type 447	
Size	DN 25 ... DN 100
Orifice	G ... N
Set pressure range	0,1 bar ... 16 bar
Temperature range	- 65° C ... + 200° C
Inlet Pressure Ratings	PN 16 ... PN 40
Available Standard Materials	0.7043, 1.0619, 1.4404
Applications	<ul style="list-style-type: none">■ Chemical industry■ High corrosive applications



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Best Availability. Type 320, 330, 316, 317 (PED).

1. Objectives | 2. Extension ASME/PED | 3. Scope of Supply, Product and Valve Finder ASME | 4. Scope of Supply, Product and Valve Finder PED | 5. Differentiation

Best Availability Type 320,330 Change-over Valve

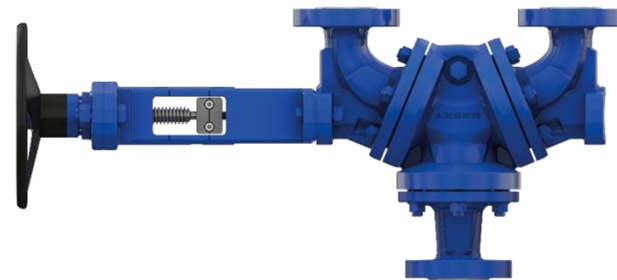
Possibility to switch over between parallel safety valves without interrupting operation

Size	DN 25 ... DN 100
Size from autumn 2017	DN 125 ... DN 400
Temperature range	- 273° C ... + 450° C
Inlet Pressure Ratings	PN 40 ... PN 250
Available Standard Materials	1.0619, 1.4408

Best Availability Safety valve and bursting disc in combination

Greatest possible tightness up to set pressure in combination with a safe closing.

Size	DN 25 ... DN 400
Temperature range	- 30° C ... + 550° C
Inlet Pressure Ratings	PN 40 ... PN 160



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Modulate Action. Type 431, 433, PN160 (PED).

1. Objectives | 2. Extension ASME/PED | 3. Scope of Supply, Product and Valve Finder ASME | 4. Scope of Supply, Product and Valve Finder PED | 5. Differentiation

Modulate Action Type 431, 433, PN160	
Size	DN 15 ... DN 150
Orifice	D ... M
Set pressure range	0,15 bar ... 160 bar
Temperature range	- 270° C ... + 450° C
Inlet Pressure Ratings	PN 16 ... PN 160
Available Standard Materials	0.6025, 0.7043, 1.0619, 1.4408
Applications	<ul style="list-style-type: none">■ Thermal expansion■ Pumps and compressors



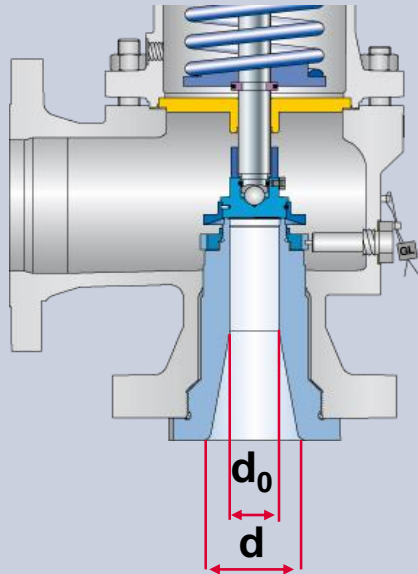
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Differentiation. API vs. High Performance.

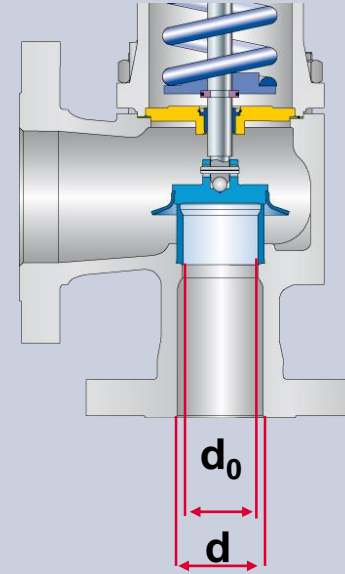
1. Objectives | 2. Extension ASME/PED | 3. Scope of Supply, Product and Valve Finder ASME | 4. Scope of Supply, Product and Valve Finder PED | 5. Differentiation

API



Full nozzle: $d_0 / d = 0,56 \dots 0,8$

High Performance



Semi nozzle: $d_0 / d \sim 0,925$

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Differentiation. API, High Performance and Compact Performance.

1. Objectives | 2. Extension ASME/PED | 3. Scope of Supply, Product and Valve Finder ASME | 4. Scope of Supply, Product and Valve Finder PED | 5. Differentiation

Product Group

High Performance Class 150 x 150

1" x 1 1/2"	1 1/2" x 2"	1 1/2" x 3"	2" x 3"	3" x 4"	3" x 5"	4" x 6"	6" x 10"	8" x 12"	10" x 14" 12" x 16" 16" x 20"
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API Class 150 x 150

1" x 2"	1 1/2" x 2"	1 1/2" x 3"	2" x 3"	3" x 4"	4" x 6"	6" x 8"	8" x 10"
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Class 300 x 150

1" x 2"	1 1/2" x 2"	1 1/2" x 3"	2" x 3"	3" x 4"	4" x 6"	6" x 8"	8" x 10"
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Compact Performance Class 150 x 150

3/4" x 1"	1" x 1 1/2"
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0,5 x D D E F G H J K L M N P Q R T 3 x T

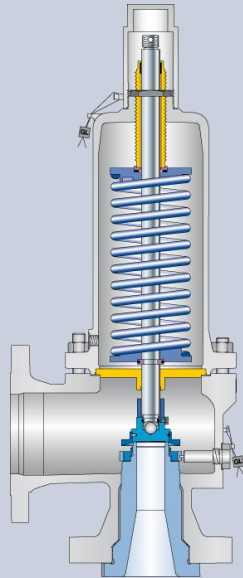
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Differentiation. Chemical resistance.

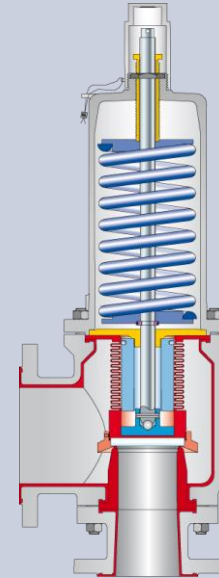
1. Objectives | 2. Extension ASME/PED | 3. Scope of Supply, Product and Valve Finder ASME | 4. Scope of Supply, Product and Valve Finder PED | 5. Differentiation

API



API Alloy Concept

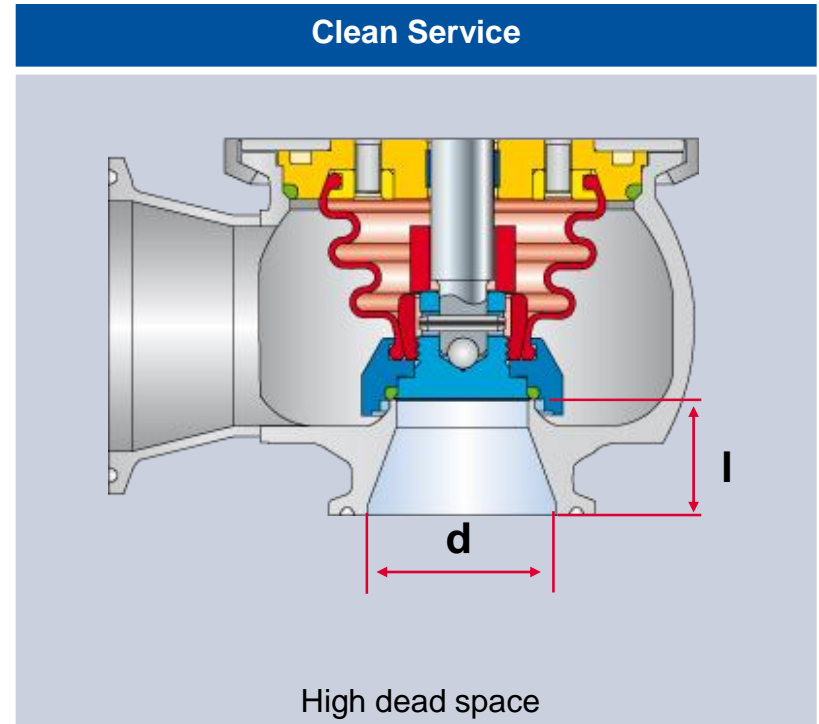
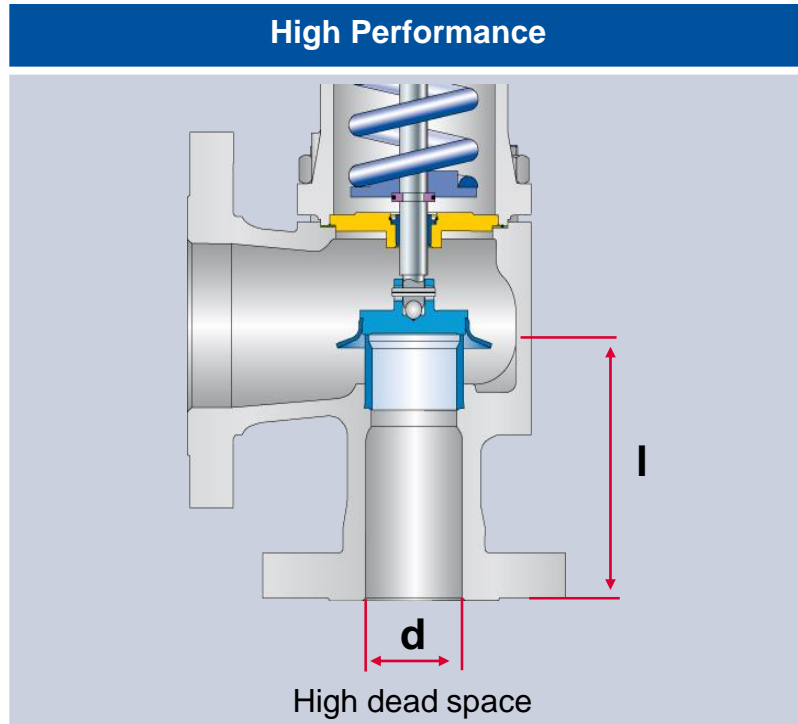
Critical Service



PTFE-Lined

Differentiation. Dead space ratio.

1. Objectives | 2. Extension ASME/PED | 3. Scope of Supply, Product and Valve Finder ASME | 4. Scope of Supply, Product and Valve Finder PED | 5. Differentiation



Scope of Products

Thank you for your attention.

