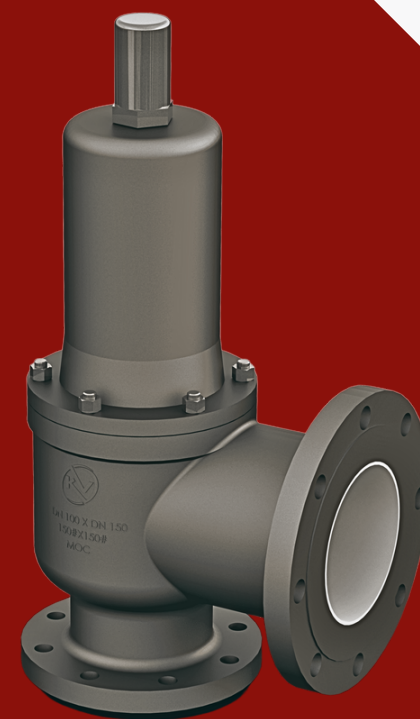
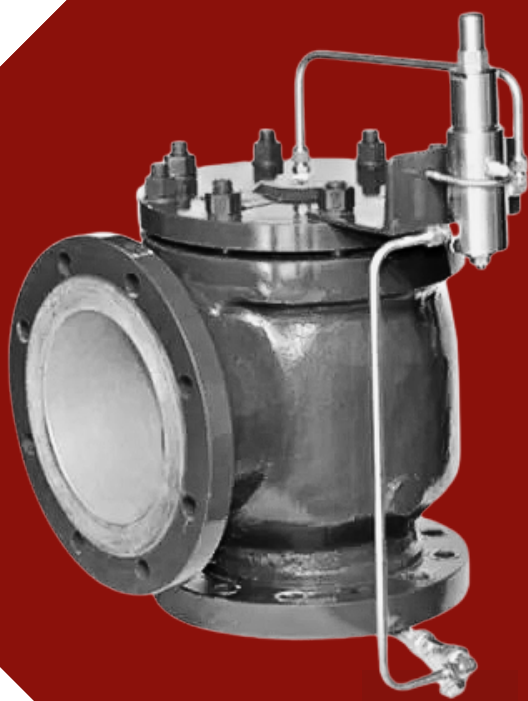




**KENT VALVE**  
CRITICAL PRESSURE & FLOW CONTROL

# SAFETY RELIEF VALVE



**AN ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 CERTIFIED COMPANY**

[www.kentvalve.com](http://www.kentvalve.com)



## KENT VALVE PROFILE

KENT VALVE is a fast growing valve manufacturing Company. Our wide range of superior quality valves especially designed to control water flow, gas, steam, air, and oil. The perfect blend of deep domain knowledge, technology experience and quality valves have enabled us to become leaders in the valve industry. Our quality team and proficient engineers make sure that we are delivering quality products in market. Our skilled professionals and technology competency, coupled with a reliable manufacturing process allows us to deliver end-to-end flow solutions especially catered to the user's needs and requirements.

KENT VALVE is a professional engineering firm, offering a broad spectrum of technical products and solutions, especially Valves, Instruments, Analyzers and spares to the Oil and Gas, Power Plants, Refineries, Petrochemical, Marine, Pulp & Paper, Water Treatment, District cooling, Solar Power, Irrigation and General Industry sectors, We have a proven track record and a reputation for quality and reliability in the selection of Valves, Instruments and Analyzers. We do Service support and On- time delivery of the world's leading Brand names in Valves, Analyzers and Process Instruments, KENT VALVE holds stock of comprehensive range of world leading brands of Gate, Globe, Check, DBB valves and Ball valves, Control globe valves, Safety Relief Valves, Electric and Pneumatic Actuators, etc.

KENT VALVE is a multinational company with group manufacturing plants at India, The United Kingdom and Italy. Kent has it's headquarter in Millano, Italy. It has sales office in Mumbai, Dubai, Sharjah, Kuwait, Oman, Italy and UK Etc. For meeting the requirements of its customers globally. The plant infrastructure comprises of highly efficient machine shop with a high level of quality aspects. It covers all the business processes like Sales, Design & Development, Procurement, Planning, Manufacturing, Quality, Store, Dispatch, HR and Finance.

## PRODUCT RANGE


- Gate, Globe & Check Valves – Bolted Bonnet
- Gate, Globe & Check Valves – Pressure Seal
- Gate, Globe & Check Valves – Forged
- Ball Valves – Floating Top Entry, Trunnion Mounted, Double Block & Bleed
- Butterfly Valves – Concentric, Offset, Double Offset and Triple Offset
- Dual Plate Check Valves
- Single Plate Check Valves
- Control Valves
- Pressure Safety Valves
- Instrumentation Valves – Ball, Needle, Plug, Gate, Globe and Check
- Quick Exhaust & Flow Control Valves
- Knife Edge Gate Valve
- Valve, Actuator & Automation system

# MANUFACTURING FACILITIES





# CERTIFICATIONS



**INTEGRATED MANAGEMENT SYSTEM POLICY**  
(Integration of ISO 9001:2015, ISO 14001:2015, ISO 45001:2018)


Kent valve Pvt. Ltd. is committed to the Integrated Management System that complies with ISO 9001:2015, ISO 14001:2015 & ISO 45001:2018 standards. We shall uphold the principles of this policy and promote a positive culture to create safe, healthy and environment-friendly workplace. We shall ensure that people at workplace take responsibility for aspects of Quality, Environment, Occupational Health & Safety over which we have control. We acknowledge the global concern on climate change and hence recognize energy as one of the most important resources used.

We shall continually improve our Integrated Management System to enhance its performance by:

- Enhancing customer satisfaction through manufacturing and delivery of environment friendly, safe & energy efficient products and services of right quality and on right time;
- Selecting and building partnership with external providers of processes, products and services to create the co-ownership of goals and exhibiting high level of ethical values;
- Involving employees at all levels and enhancing their competence through training, awareness and skill enhancement to fulfil stakeholders expectations;
- Fulfilling and satisfying the applicable Statutory, Regulatory, Legal requirements and other requirements related to environment, occupational health and safety, energy efficiency, use and consumption;
- Setting Integrated Management System objectives and reviewing them periodically against the target to ensure their achievement by availability of information and necessary resources;
- Protecting environment by prevention of pollution and 'reduction-reuse-recycling' of wastes and ensuring its environment-friendly disposal;
- Identifying, eliminating, isolating and controlling hazards and risks to avoid incidents/ accidents and ill health;
- Encouraging and promoting consultation and participation of those working under the control of organization in all occupational health & safety related activities.

This policy shall be communicated to all employees and made available to interested parties.

Issue no. 02  
Issue date: 17 May 2022



(Neyaz Khan)  
Director



## CERTIFICATE

Management system as per  
**ISO 9001 : 2015**

The Certification Body TÜV NORD CERT GmbH hereby confirms as a result of the audit, assessment and certification decision according to ISO/IEC 17021-1:2015, that the organization

**KENT VALVE PRIVATE LIMITED**  
Plot No-B-85/4, Ambernath Additional MIDC,  
Anand Nagar, Nr. ASB Company,  
Ambernath, Thane - 421 506,  
Maharashtra,  
India



operates a management system in accordance with the requirements of ISO 9001 : 2015 and will be assessed for conformity within the 3 year term of validity of the certificate.

Scope -  
**Design and Manufacture of Industrial Valves, Actuators and Valve Automation Systems.**

Certificate Registration No. 44 100 22393731  
Audit Report No. 2.5-10841/2022

Valid from 25.08.2022  
Valid until 24.08.2025  
Initial certification 25.08.2022



Certification Body  
at TÜV NORD CERT GmbH

Mumbai, 28.11.2023

TÜV NORD CERT GmbH    Am TÜV 1    45307 Essen    [www.tuev-nord-cert.com](http://www.tuev-nord-cert.com)

TUV India Pvt. Ltd., 801, Raheja Plaza – 1, L.B.S. Marg, Ghatkopar (W), Mumbai - 400 086, India    [www.tuv-nord.com/in](http://www.tuv-nord.com/in)




## CERTIFICATE

Management system as per  
**ISO 14001 : 2015**

The Certification Body TÜV NORD CERT GmbH hereby confirms as a result of the audit, assessment and certification decision according to ISO/IEC 17021-1:2015, that the organization

**KENT VALVE PRIVATE LIMITED**  
Plot No-B-85/4, Ambernath Additional MIDC,  
Anand Nagar, Nr. ASB Company,  
Ambernath, Thane - 421 506,  
Maharashtra,  
India



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## CERTIFICATE

Management system as per  
**ISO 45001 : 2018**

The Certification Body TÜV NORD CERT GmbH hereby confirms as a result of the audit, assessment and certification decision according to ISO/IEC 17021-1:2015, that the organization

**KENT VALVE PRIVATE LIMITED**  
Plot No-B-85/4, Ambernath Additional MIDC,  
Anand Nagar, Nr. ASB Company,  
Ambernath, Thane - 421 506,  
Maharashtra,  
India



operates a management system in accordance with the requirements of ISO 45001 : 2018 and will be assessed for conformity within the 3 year term of validity of the certificate.

Scope -  
**Design and Manufacture of Industrial Valves, Actuators and Valve Automation Systems.**

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Mumbai, 28.11.2023

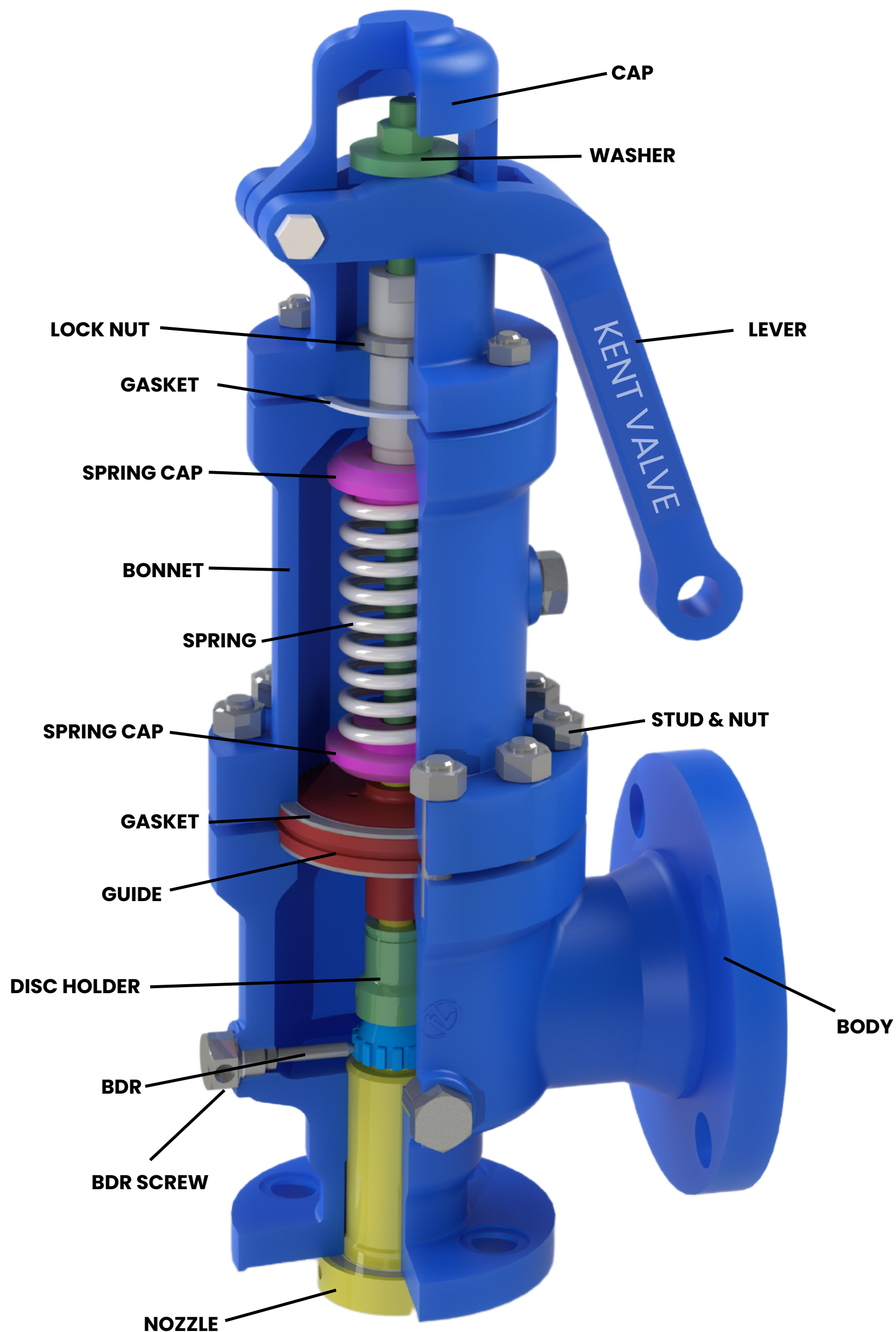
TÜV NORD CERT GmbH    Am TÜV 1    45307 Essen    [www.tuev-nord-cert.com](http://www.tuev-nord-cert.com)

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**Kent Valves has the distinction of having obtained a number of national and international approvals. Notable among these are :**

- ISO 9001 : 2015, ISO 14001 : 2015 & ISO 45001 : 2018 certified.
- Specific company approvals from national and international oil majors and EPC contractors.





# CONTENT

## General

Valve finder  
General Information

## Type

Materials

- Conventional design
- Balanced bellows design
- Corrosive Service PSV
- Pilot operated PSV

## Dimensions

- Metric units

## Weights

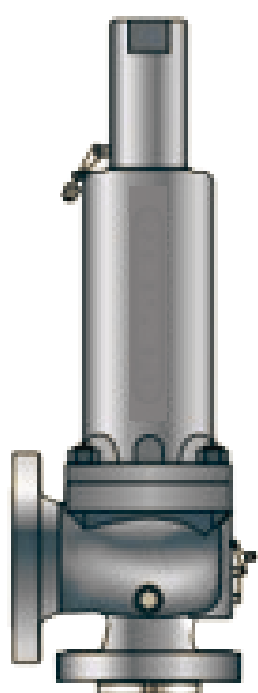
- Metric units

## Orifice D – T

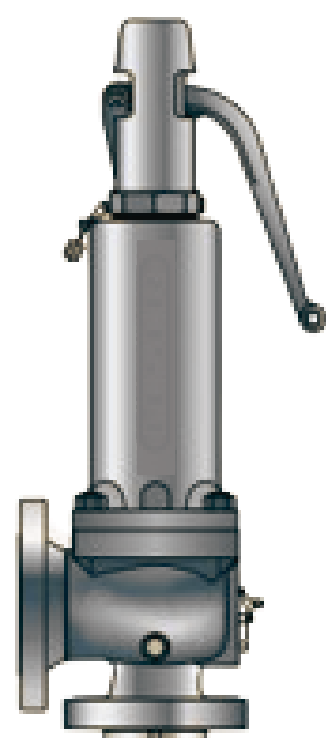
- Selection charts

## Options

Screwed cap  
Bolted caps  
Metal seat  
Balanced bellows  
Test gag  
Cap screwed with plain lever  
Bolted cap with plain lever  
Cap screwed with packed lever  
Bolted cap with packed lever



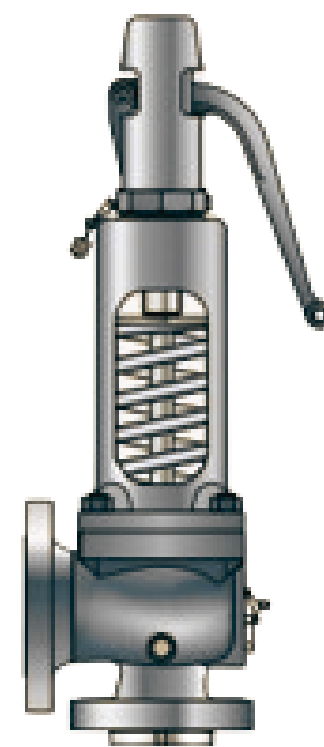
CAP CLOSED BONNET  
CONVENTIONAL  
DESIGN



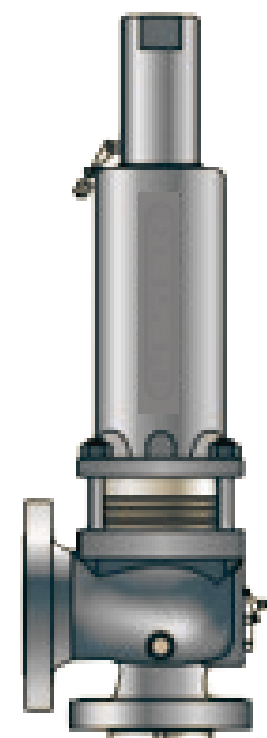
PLAIN LEVER CLOSED  
BONNET CONVENTIONAL  
DSIGN



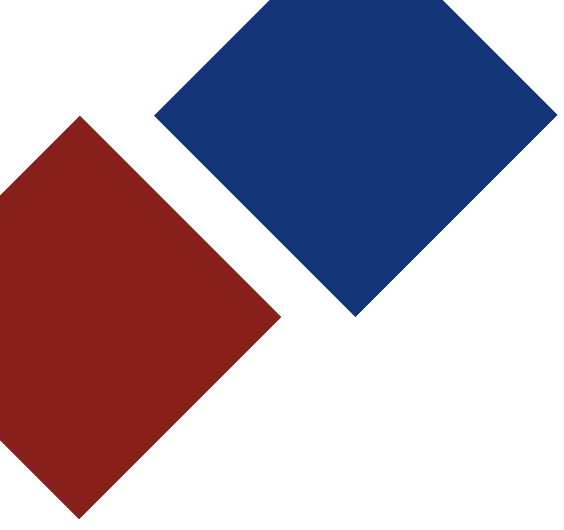
PACKED LEVER CLOSED  
BONNET  
CONVENTIONAL DESIGN



PLAIN LEVER OPEN  
BONNET CONVENTIONAL  
DESIGN

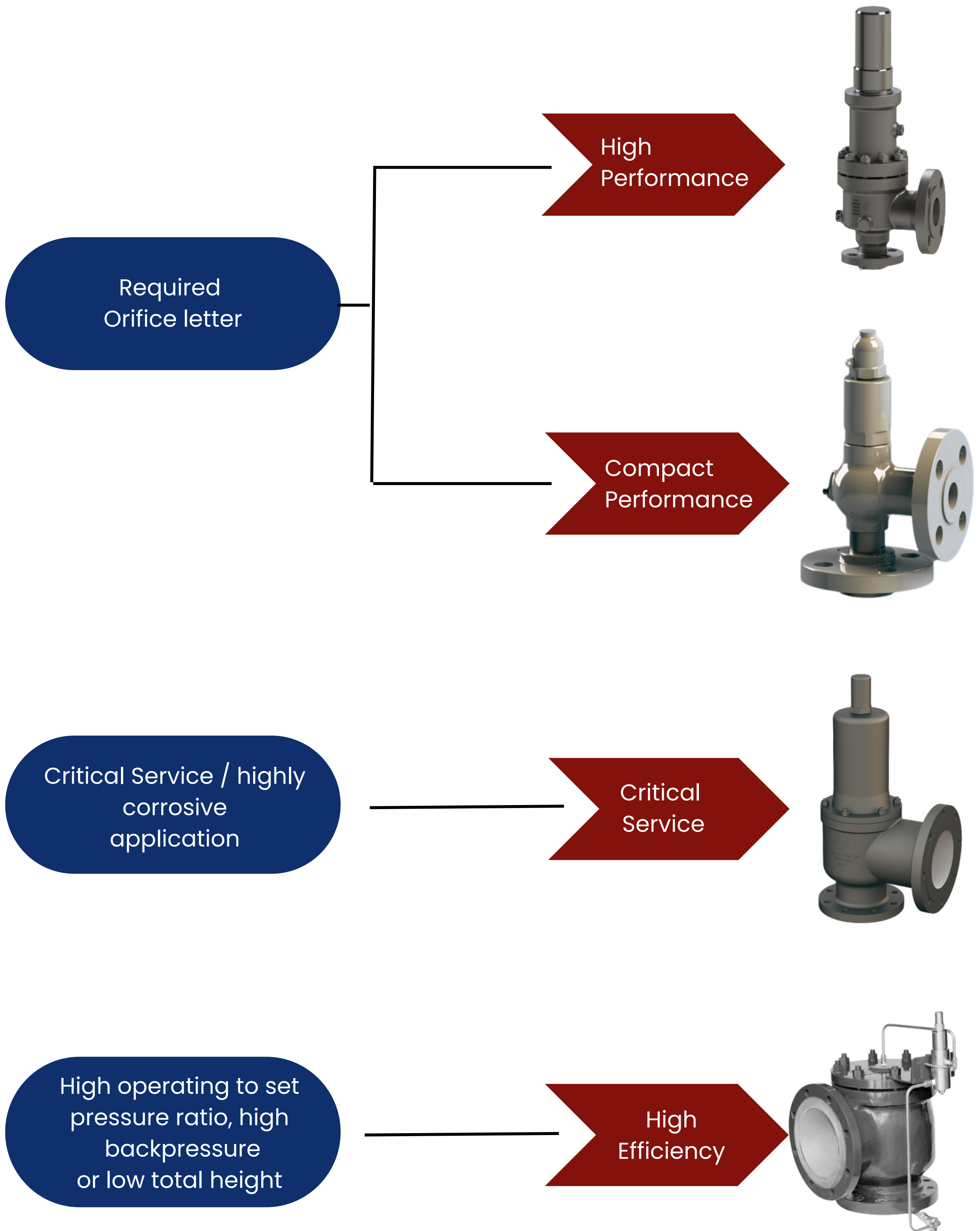


CAP CLOSED BONNET  
BALANCED BELLOWS  
DESIGN



# VALVE SELECTION

## How to find right product group





## GENERAL INFORMATION

### **The API product group represents**

### **: Full range of spring loaded safety valves acc. to API 526**

API safety valves from Kent valve

- Are designed to meet all applications which require API.
- Open rapidly with an overpressure of max. 10 % to the full design lift.
- Have a maximum blowdown of 7 % for steam/gas service and 20% for liquid service.
- Are developed in a close cooperation with plant engineers and service specialists.
- Serve for protection of processes and equipment.

## APPLICATIONS

KENT VALVE – API safety valves offer ultimate protection against overpressure in all applications for steam, gases and liquids.

API Series safety valves present the simple safe solution for heavy duty applications, such as crude oil extraction, transportation and processing in

- Refineries
- Chemical industry
- Petrochemical industry
- Oil and gas – Onshore and Offshore
- Vessels and piping systems
- Blow-down systems
- Storage tank farms





# SERIES KPREVA – S11

## FLANGED SAFETY RELIEF VALVES – SPRING LOADED



### Type

- Conventional design

### Dimensions

- Metric units

### Weights

- Metric units

### Orifice D – T

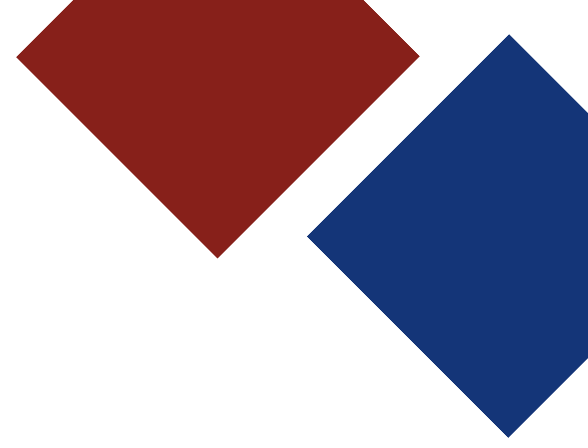
- Selection charts

### Features

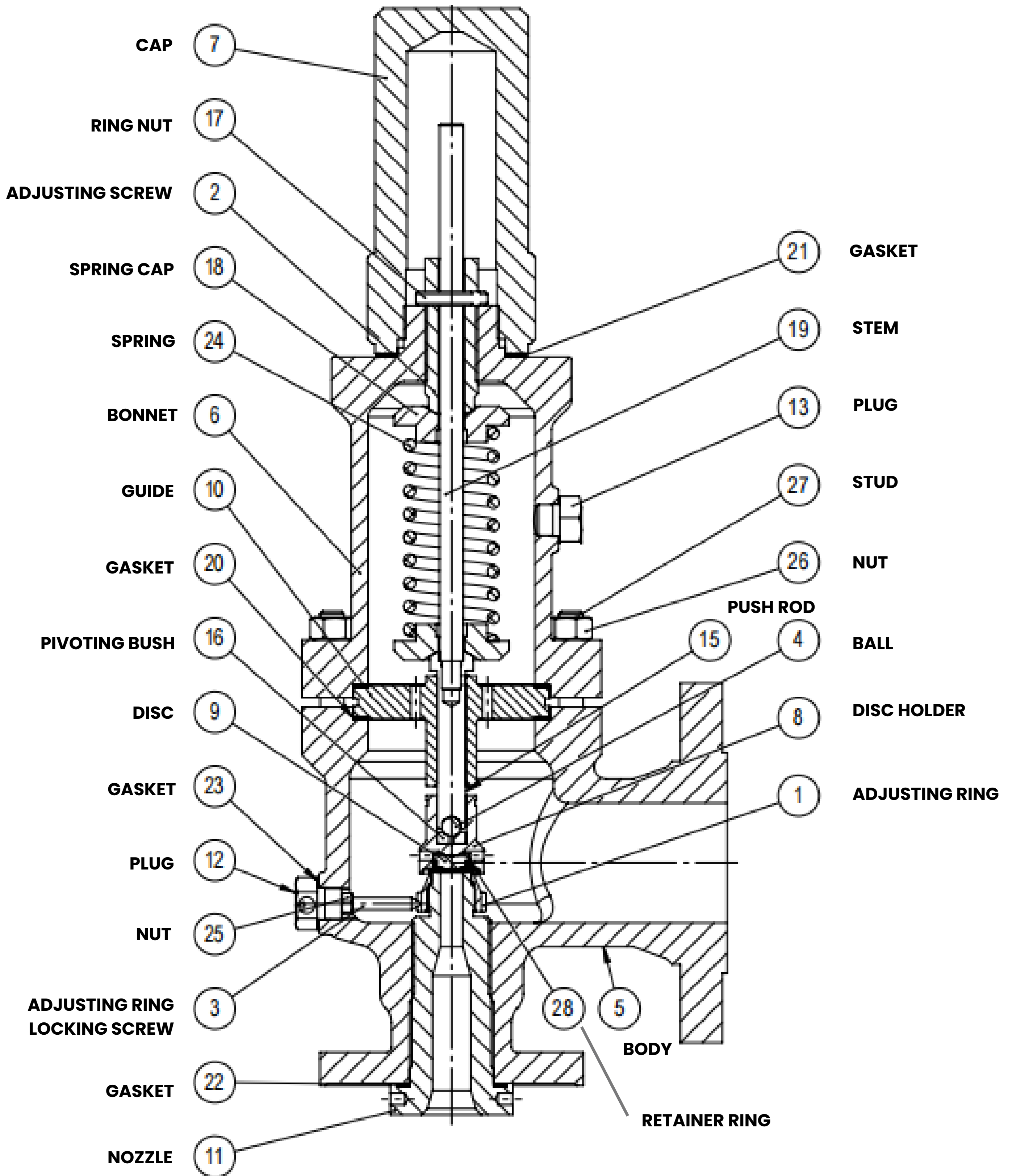
Packed lever

Bolted close bonnet

Plain lever



# SERIES KPREVA - S11 CONVENTIONAL DESIGN



# MATERIALS

## SERIES

### KPREVA - S11



Item	Component	Standard Service Trim: Standard	Corrosive Service Trim: Standard	Trim: Standard	Trim: Standard
1	Adjusting ring	CF8M	CF8M	CF8M	CF8M
2	Adjusting Screw	Chrome steel	316L	Chrome steel	Chrome steel
3	Adjusting ring locking screw	SS316L	SS316L	SS316L	SS316L
4	Ball	316	316	316	316
5	Body	SA 216 WCB	SA 351 CF8M	SA 217 WC6	SA 352 LCB
6	Bonnet	A 216 WCB	A 351 CF8M	A 216 WCB	A 352 LCB
7	Cap	SA 105 / Gr. 60-40-18	316L	SA 105 / Gr. 60-40-18	SA 105 / Gr. 60-40-18
8	Disc Holder	SS316L	SS316L	SS316L	SS316L
9	Disc	Hardened stainless steel	316L stellited	Hardened stainless steel	Hardened stainless steel
10	Guide	Steel	316L	316L	Steel
11	Nozzle	CF8M	CF8M	CF8M stellited	CF8M
12	Plug 1/4	Steel	SS 316L	Steel	Steel
13	Plug 1/4	Steel	SS 316L	Steel	Steel
14	Plug 3/8	Steel	SS 316L	Steel	Steel
15	Push rod	SS316L	SS316L	SS316L	SS316L
16	Pivoting Bush	SS316L	SS316L	SS316L	SS316L
17	Ring Nut	SS316L	SS316L	SS316L	SS316L
18	Spring Cap	SS316L	SS316L	SS316L	SS316L
19	Stem	SS316L	SS316L	SS316L	SS316L
20	Gasket	Graphite / 316	Graphite / 316	Graphite / 316	Graphite / 316
21	Gasket	Graphite / 316	Graphite / 316	Graphite / 316	Graphite / 316
22	Gasket	Graphite / 316	Graphite / 316	Graphite / 316	Graphite / 316
23	Gasket	Graphite / 316	Graphite / 316	Graphite / 316	Graphite / 316
24	Spring	High temp. alloy steel	Stainless steel	High temp. alloy steel	High temp. alloy steel
25	Nut	8M	8M	8M	8M
26	Nut	8M	8M	8M	8M
27	Stud	B8M	B8M	B8M	B8M



# SERIES KPREVA – SB12

## FLANGED SAFETY RELIEF VALVES – SPRING LOADED

### Type

- Balance Bellow design

### Dimensions

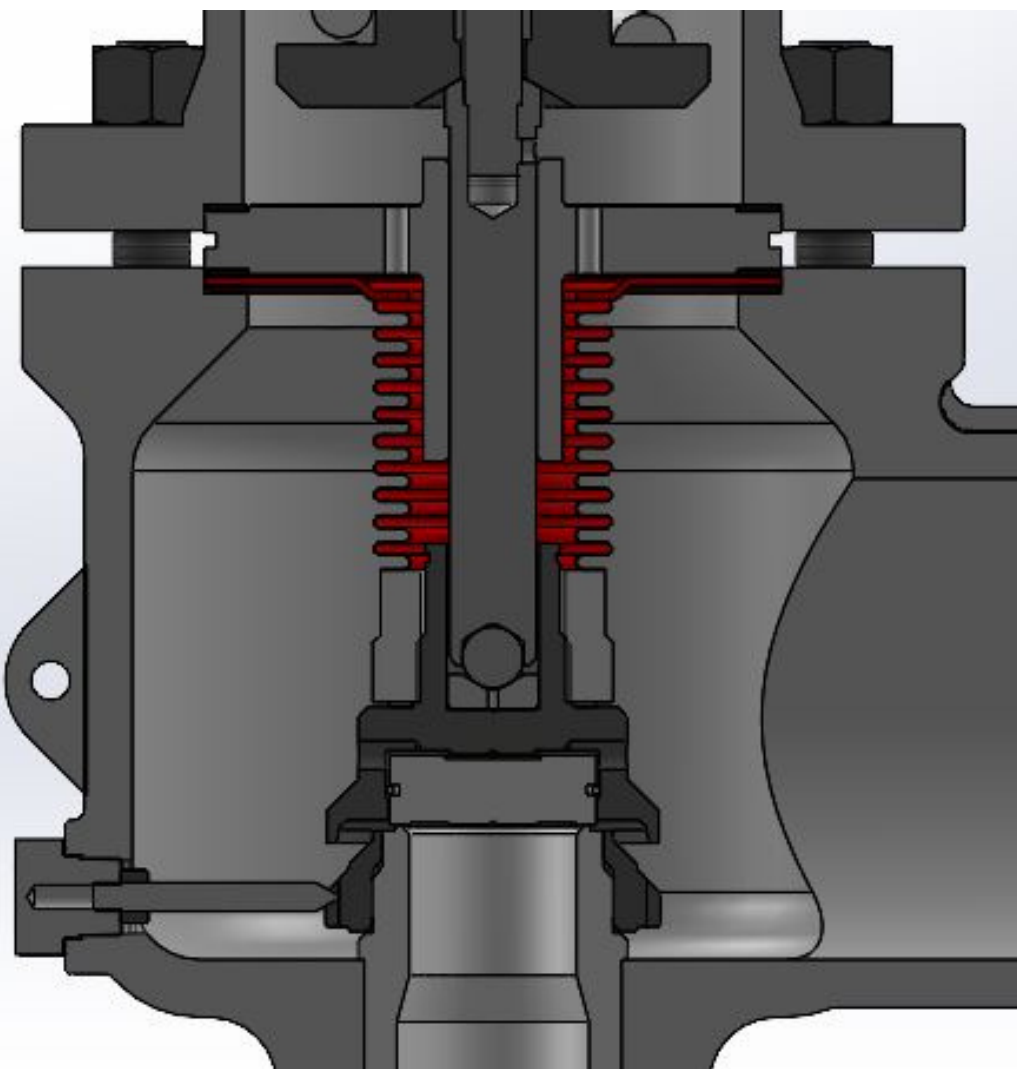
- Metric units

### Weights

- Metric units

### Orifice D – T

- Selection charts



**Bellow design**



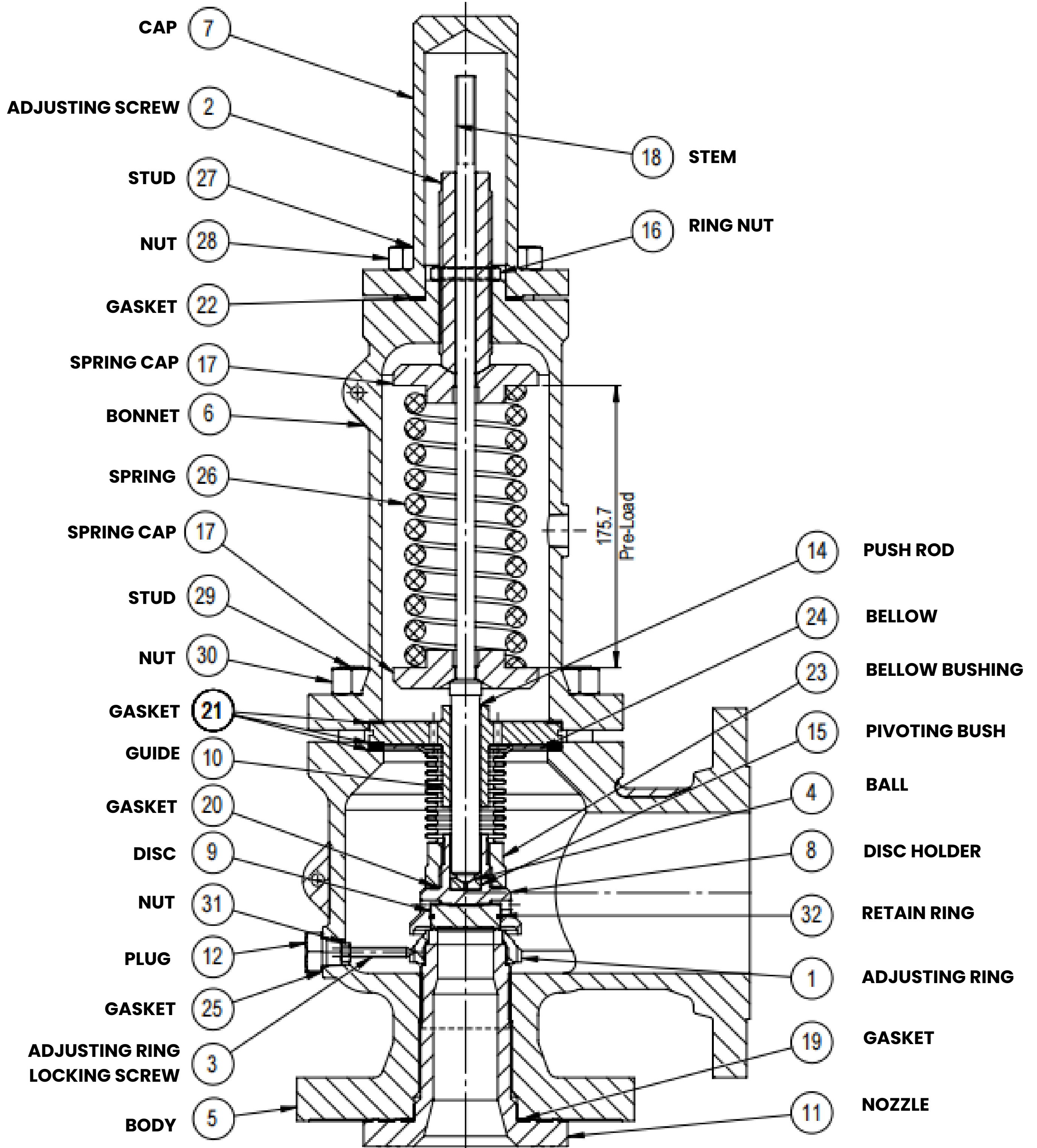
### Features

- Packed lever
- Bolted close bonnet
- Plain lever



# SERIES KPREVA - SB12

## BALANCED BELLOWS DESIGN





# MATERIALS

## SERIES KPREVA – SB12

Item	Component	Standard Service Trim: Standard	Corrosive Service Trim: Standard	Trim: Standard	Trim: Standard
1	Adjusting ring	CF8M	CF8M	CF8M	CF8M
2	Adjusting Screw	Chrome steel	316L	Chrome steel	Chrome steel
3	Adjusting ring locking screw	SS316L	SS316L	SS316L	SS316L
4	Ball	316	316	316	316
5	Body	SA 216 WCB	SA 351 CF8M	SA 217 WC6	SA 352 LCB
6	Bonnet	A 216 WCB	A 351 CF8M	A 216 WCB	A 352 LCB
7	Cap	SA 105 / Gr. 60-40-18	316L	SA 105 / Gr. 60-40-18	SA 105 / Gr. 60-40-18
8	Disc Holder	SS316L	SS316L	SS316L	SS316L
9	Disc	Hardened stainless steel	316L stellited	Hardened stainless steel	Hardened stainless steel
10	Guide	316 L	316L	316L	316L
11	Nozzle	CF8M	CF8M	CF8M stellited	CF8M
12	Plug 1/4	Steel	SS 316L	Steel	Steel
13	Plug 1/4	Steel	SS 316L	Steel	Steel
14	Push Rod	SS316L	SS316L	SS316L	SS316L
15	Pivoting Bush	SS316L	SS316L	SS316L	SS316L
16	Ring Nut	SS316L	SS316L	SS316L	SS316L
17	Spring Cap	SS316L	SS316L	SS316L	SS316L
18	Stem	SS316L	SS316L	SS316L	SS316L
19	Gasket	Graphite / 316	Graphite / 316	Graphite / 316	Graphite / 316
20	Gasket	Graphite / 316	Graphite / 316	Graphite / 316	Graphite / 316
21	Gasket	Graphite / 316	Graphite / 316	Graphite / 316	Graphite / 316
22	Gasket	Graphite / 316	Graphite / 316	Graphite / 316	Graphite / 316
23	Bellow Bushing	SS316L	SS316L	SS316L	SS316L
24	Bellow	Inconel 625   316L	Inconel 625   316L	Inconel 625   316L	Inconel 625   316L
25	Gasket	Graphite / 316	Graphite / 316	Graphite / 316	Graphite / 316
26	Spring	High temp. alloy steel	High temp. alloy steel	High temp. alloy steel	High temp. alloy steel
27	Stud	B8M	B8M	B16	B8M
28	Nut	8M	8M	7M	8M
29	Stud	B8M	B8M	B16	B8M
30	Nut	8M	8M	7M	8M
31	Nut	8M	8M	7M	8M
32	RETAIN RING	SS316L	SS316L	SS316L	SS316L



## DESIGN FEATURES

### KPREVA S11 & SB12

API Series covers a large variety of types, materials and options to fit any application:

- Design fully in accordance with API 526 for easy interchangeability
- Complete API 526 range: valve sizes 1" through 8"

#### ORIFICE 'D' THROUGH 'T'

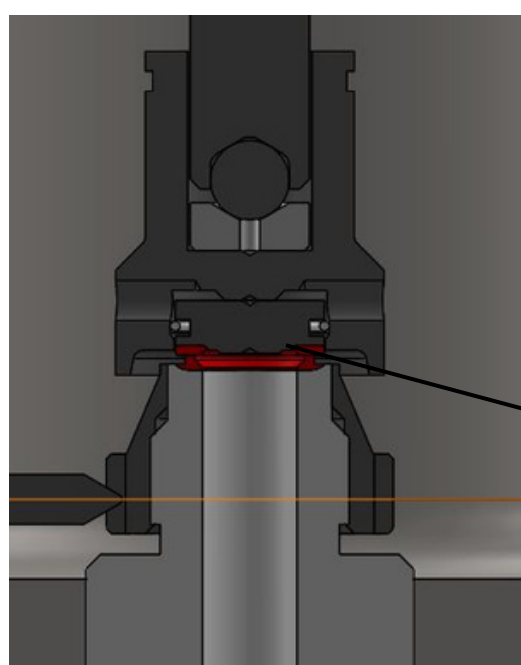
- **Materials:**

WCB, WCC, CF8M, WC6, LCB, LCC, and a wide range of special materials to fulfill the requirements of critical applications

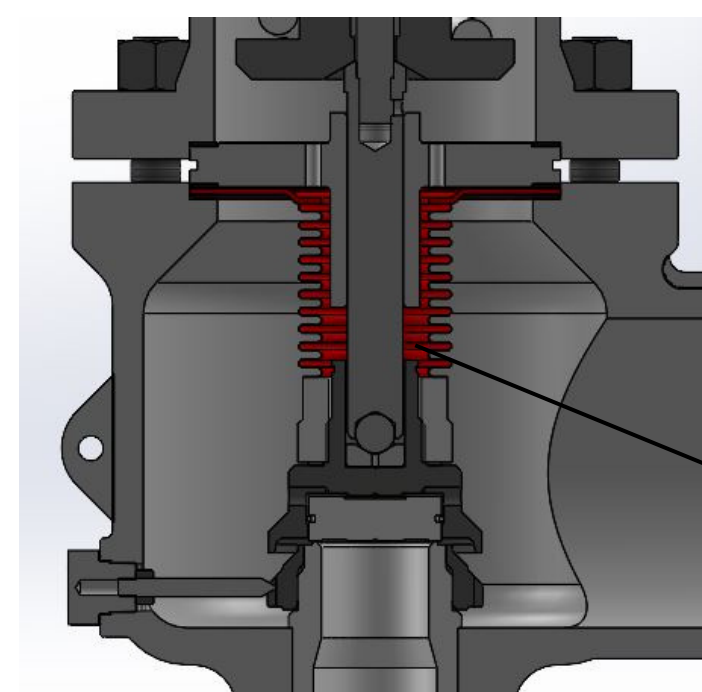
- Open or closed bonnet, packed or plain lifting lever or gastight cap
- Flanged connections according ASME and DIN guarantee a worldwide applicability
- One design and spring (single trim) for steam, gas and liquid applications reduces the number of spare parts and ensures low cost maintenance management.

#### OPTIONS

- Stellite or hardened metal sealing for longer product life.
- Balanced bellows for back pressure compensation.



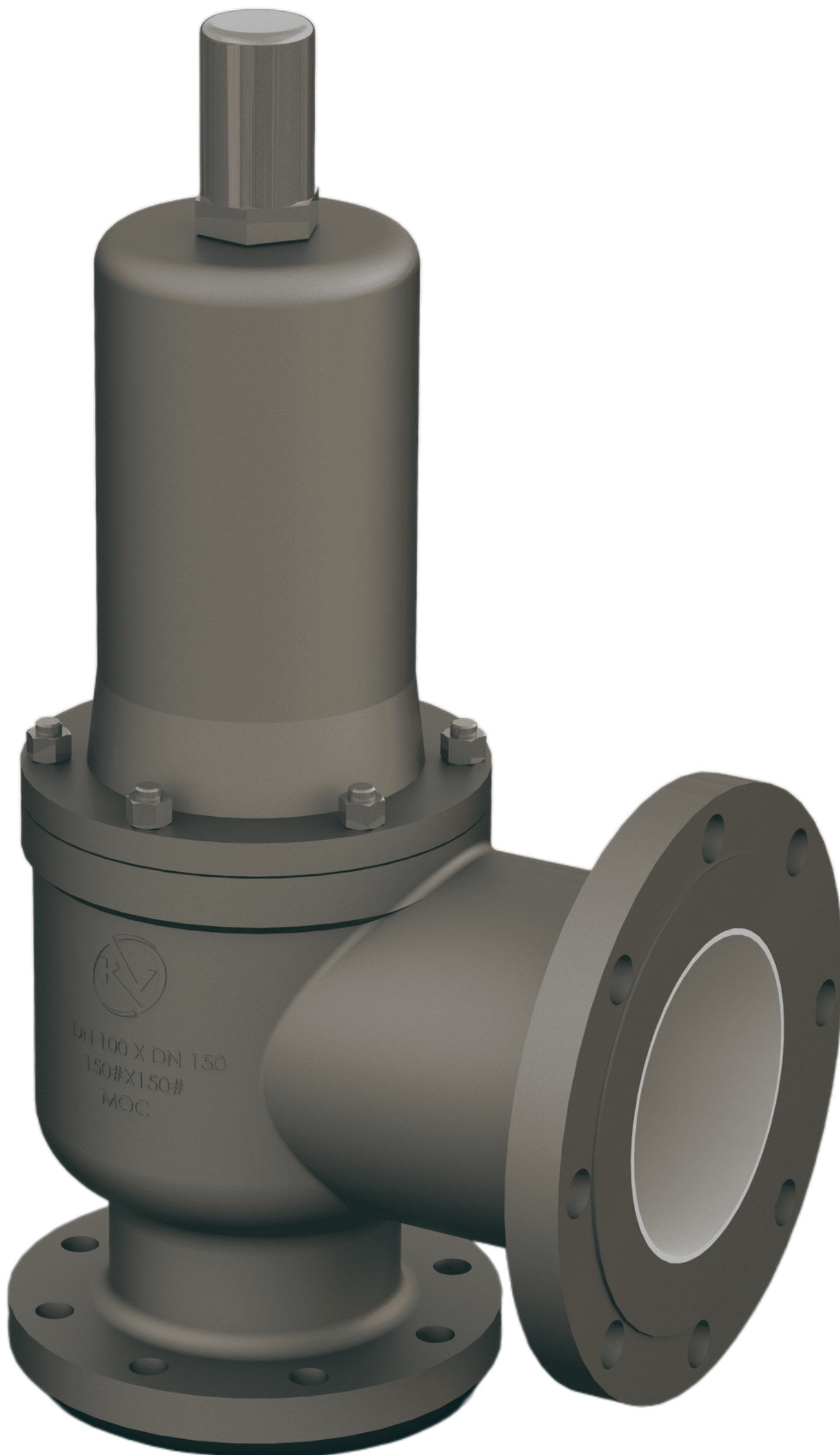
Stellite



Bellows



# SERIES KPREVA S13 CORROSIVE SERVICE



## **Type**

- Conventional design

## **Dimensions**

- Metric units

## **Weights**

- Metric units

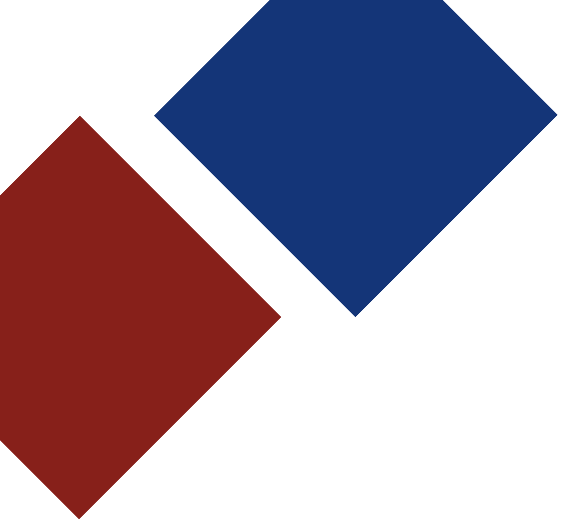
## **Orifice D – T**

- Selection charts

## **Features**

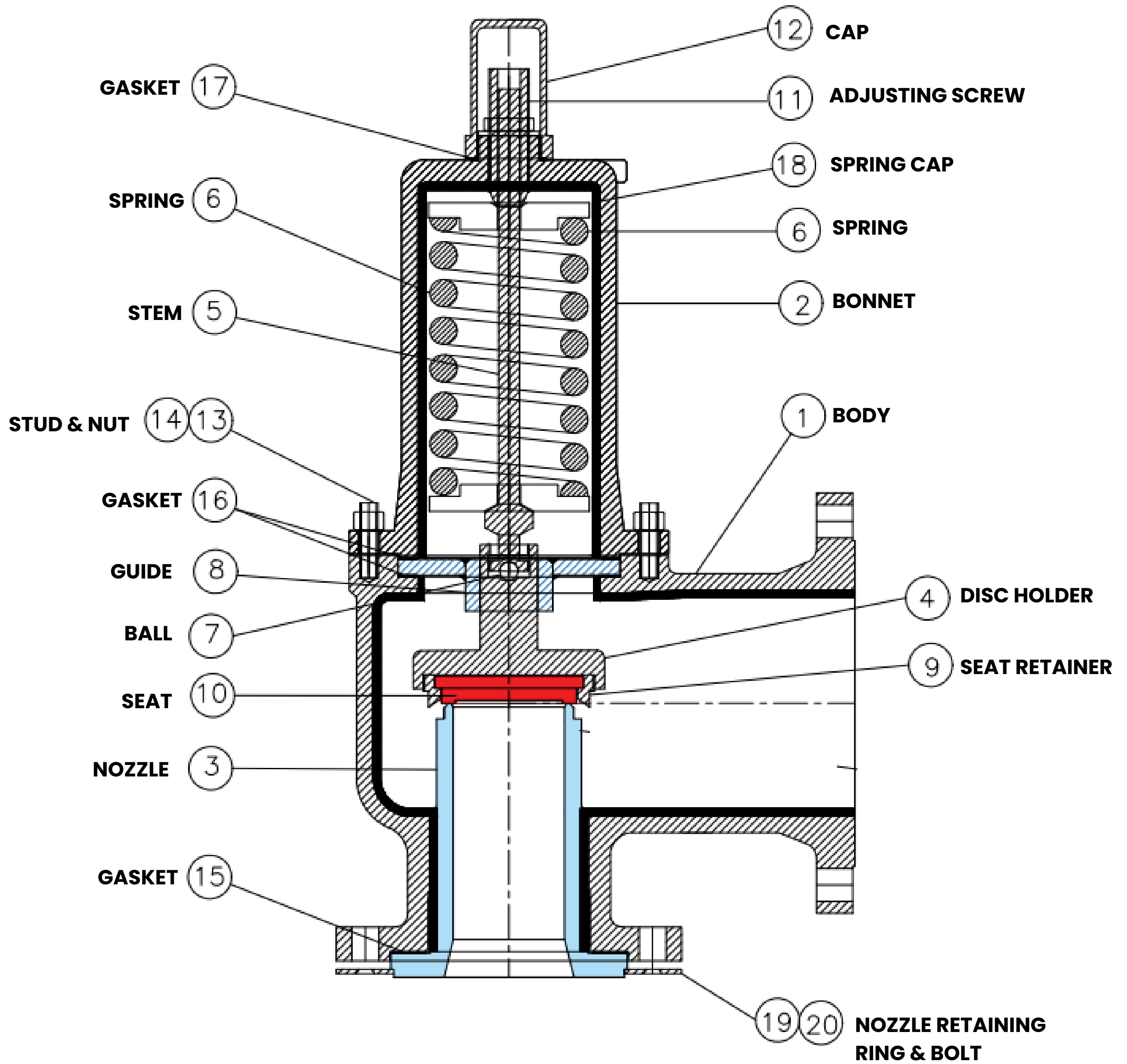
- Packed lever
- Bolted Closed bonnet
- Plain lever





# SERIES KPREVA S13

## SPRING LOADED SAFETY RELIEF VALVE





# MATERIALS SERIES KPREVA S13

Item	Component	Corrosive Service Trim: Standard
1	Body	SA 216 WCB + PTFE**
2	Bonnet	SA 216 WCB + PTFE**
3	Nozzle	PTFE
4	Disc Holder	AISI 316L
5	Stem	AISI 316L
6	Spring	Spring steel
7	Ball	SA 105 / Gr. 60-40-18
8	Guide	SS316L
9	Seat Retainer	AISI 316L
10	Seat	AISI 316L
11	Adjusting Screw	AISI 304
12	Cap	AISI 316L
13	Stud	A193 Gr. B8M
14	Nut	A194 Gr. 8M
15	Gasket	Grafoil
16	Gasket	Grafoil
17	Gasket	Grafoil
18	Spring Cap	AISI 316L
19	Nozzle retaining ring	AISI 316L
20	Bolt	A193 Gr. B8M

\*\*PTFE COATING : 300-500 MICRONS. THE OUTLET OF THE VALVE BODY AND BONNET WILL BE PROVIDED WITH TEFLON COATING FROM INSIDE TO PROVIDE PROTECTION AGAINST POSSIBLE CORROSION.

## DESIGN FEATURES

### KPREVA S13



The Critical Service product group represents

- Standardised solutions for special applications such as those involving critical and toxic media
- Optimal and permanent corrosion protection for chemical applications
- Technologically-sound and inexpensive alternative to nickel-based alloys (such as Hastelloy®)

The protection of valves against corrosion has a significant impact on the total cost of ownership (TCO) and plays a key role in system safety.

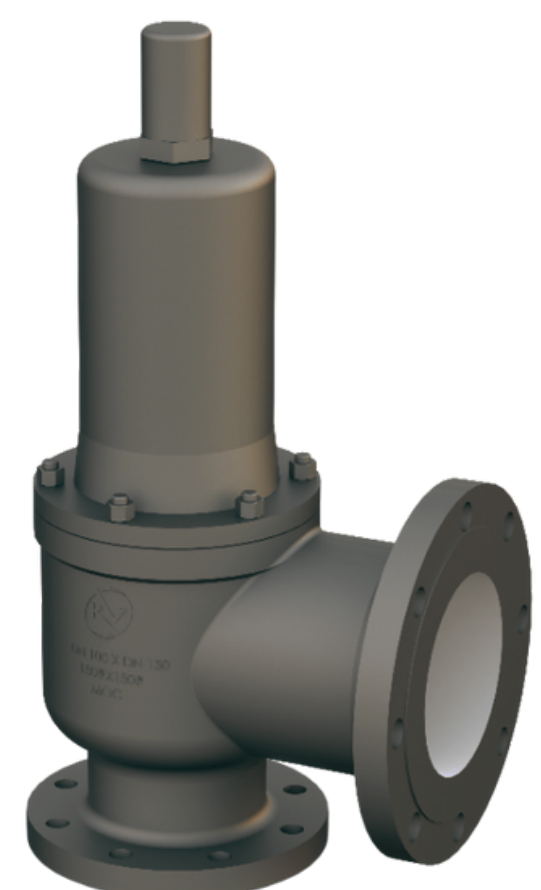
Polytetrafluorethylene (PTFE) is a high performance plastic which has become widely accepted in the chemical industry due to its unique properties.

Offer a large variety of types, materials, and options for adaptation to the respective system conditions:

- Valve sizes from DN 25 to DN 200, 1" to 8"
- Valve rating 150# to 300#
- All media-wetted parts are made with PTFE
- PTFE can also be used in EX areas, due to the antistatic and electrically conductive PTFE compound
- Identical design for steam, gases and fluids (single trim) Reduces the number of required spare parts and facilitates cost-effective maintenance
- The one-part spindle reduces friction, guarantees optimal guidance and reliable operation under all operating conditions
- The self-draining body avoids media residue
- Each part can be produced in other materials such as Hastelloy according to customer specifications

In this specific design, the Nozzle is made up of PTFE and the disk shall be GFT. This provides excellent seating and ensures as good as zero leakage through valve when it is closed. We provide PTFE/Halar coating to the body and bonnet from inside to ensure the corrosion resistance in the event of opening of the safety relief valve. Special arrangement for holding the PTFE Nozzle is provided. The internals like Disk Holder, Stem and Guide are provided in AISI 316L to facilitate the corrosion resistance.

Eminently installed on GLR, HCL, Chlorine or excessively corrosive fluid lines, mainly in Pharmaceuticals or Chemical Plants as these provide a cost effective solution as compared to combination of PTFE Rupture Disc with SS Safety Relief Valve.



corrosive service

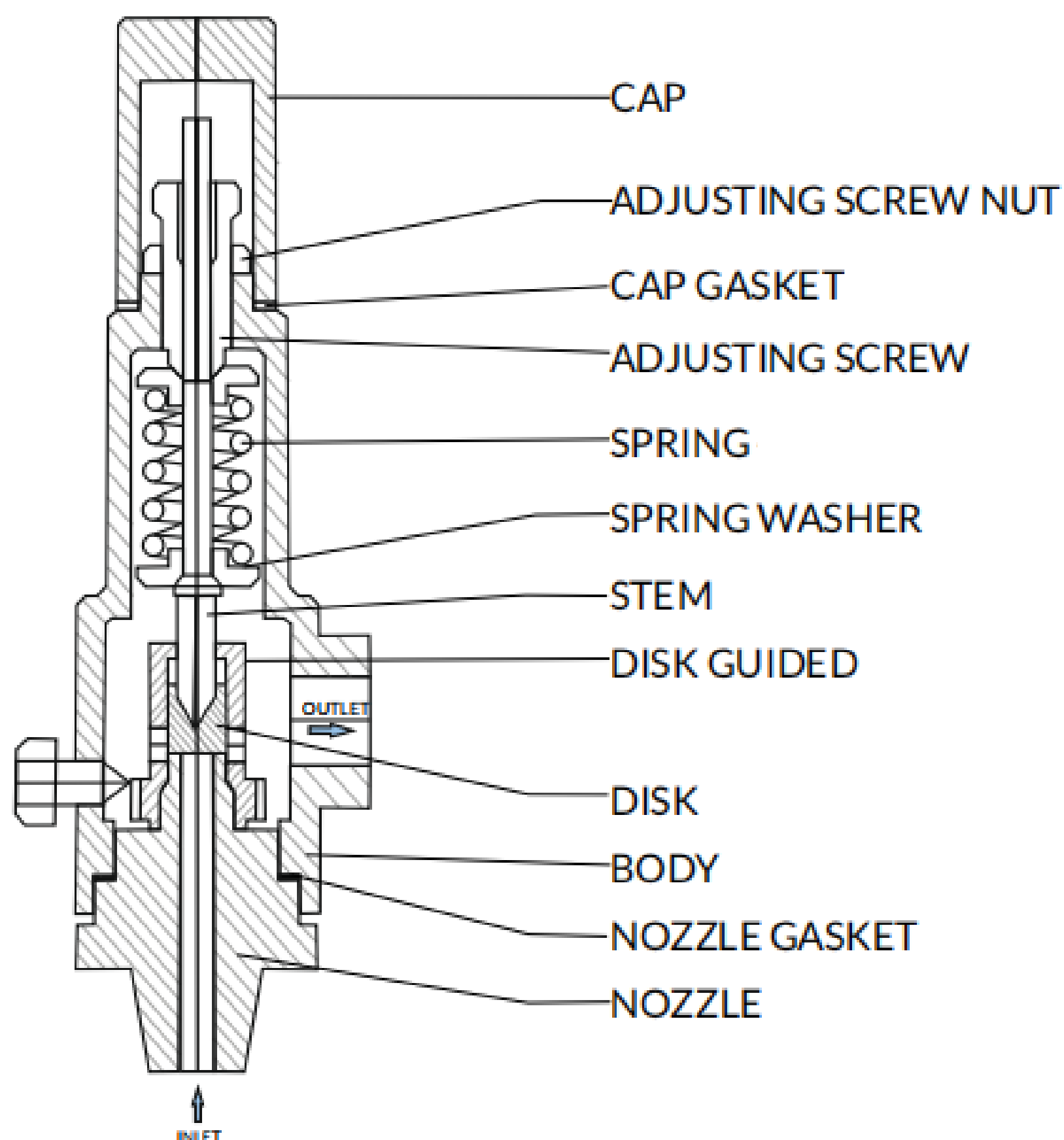


# PRESSURE RELIEF VALVE SMALL ORIFICE – SCREWED END

## SERIES KPREVA S14

Screwed end S14 are used in Pharmaceutical Industries, Food and Beverages, Nuclear Chemical Reactors, Vessels and Pipe line application.

Specific application is also found on high pressure triplex plunger pump-where this is used to protect the over pressure occurrence on such type of pumps and pipelines. This is also widely used on air eliminator in loading terminals of petroleum products.





## Technical Specification

Inlet	1/2" X1" - 3/4"X1" - 1"X1" - NPT (M)/ BSPT (M)/BSP(F)
Outlet	3/4" & 1" - NPT (F)/ BSPT (F)/ BSP(F)
Orifice area	9.0 mm (C) & 13.0 mm (O)
Pressure range	1.5 bar to 250 bar

## MATERIALS

### SERIES KPREVA S14

Item	Component	Carbon steel version	Stainless steel version
1	Body	A216 Gr.WCB	A351Gr.CF8M
2	Cap	A216 Gr.WCB	A351Gr.CF8M
3	Adjusting Screw	SS304	SS304
4	Adjusting Screw nut	SS304	SS304
5	Spring	Spring steel	Spring steel
6	Spring Washer	A105	SS316
7	Stem	SS316	SS316
8	Disc Guide	SS316	SS316
9	Disc	SS316	SS316
10	Nozzle	SS316	SS316
11	Nozzle Gasket	PTFE / GRAPHITE	PTFE / GRAPHITE
12	Cap Gasket	PTFE / GRAPHITE	PTFE / GRAPHITE



## PRESSURE RELIEF VALVE – FLANGED END DESIGN

### Series – KPREVA S14

Specially designed for medium size reaction vessels, pharma reactors, chemical and dyes intermediates, digester alcohol and beverages Industries. Flanged end Pressure Relief Valves is of investment cast body.



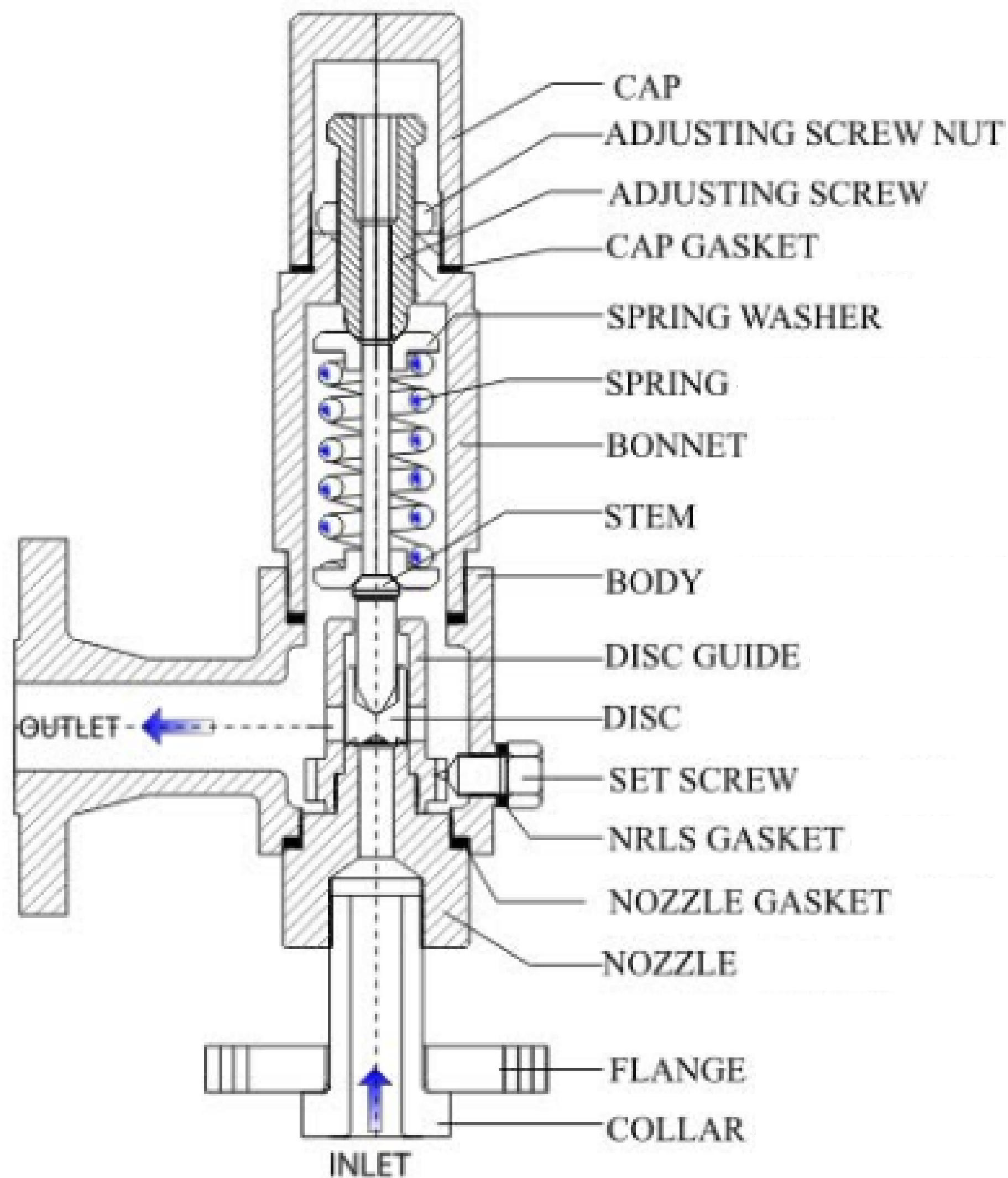
- Flanged end connection to ANSI 150 class To 900 class
- Sizes available – 3/4" x 1" & 1/2"x1", 1" x 1"
- Unique design of screwed bonnet made of investment casting process with highly precisely machine nozzle and disc.
- Guide ring/nozzle ring for better blow down controls.
- Soft seating available for liquid service.
- This design is not covered into API526/527 or ASME section VIII. The blow down percentage varies from 12% to 20%.

<b>Technical Specification</b>	
Inlet	1/2" x1" - 3/4"x1" - 1"x1"
Outlet	150# TO 900#
Orifice area	9.0 mm (C) & 13.0 mm (O)
Pressure range	1.5 bar to 250 bar



## FLANGED END DESIGN

### SERIES KPREVA-S14



- Standard material is carbon steel body and stainless steel internal. For specific services, complete stainless steel body/bonnet and internal are offered
- These are available in ANSI class 150,300 and 600, 900 rating with variety of set pressure, minimum set pressure possible is 1.5bar and maximum 60bar.
- Considering the design criteria, these valves has high percentage of blow down as high as 20%.
- Minimum blow down possible is 15%. Hence this need to be taken care of during designing the system.



# MATERIALS

## SERIES KPREVA-S14

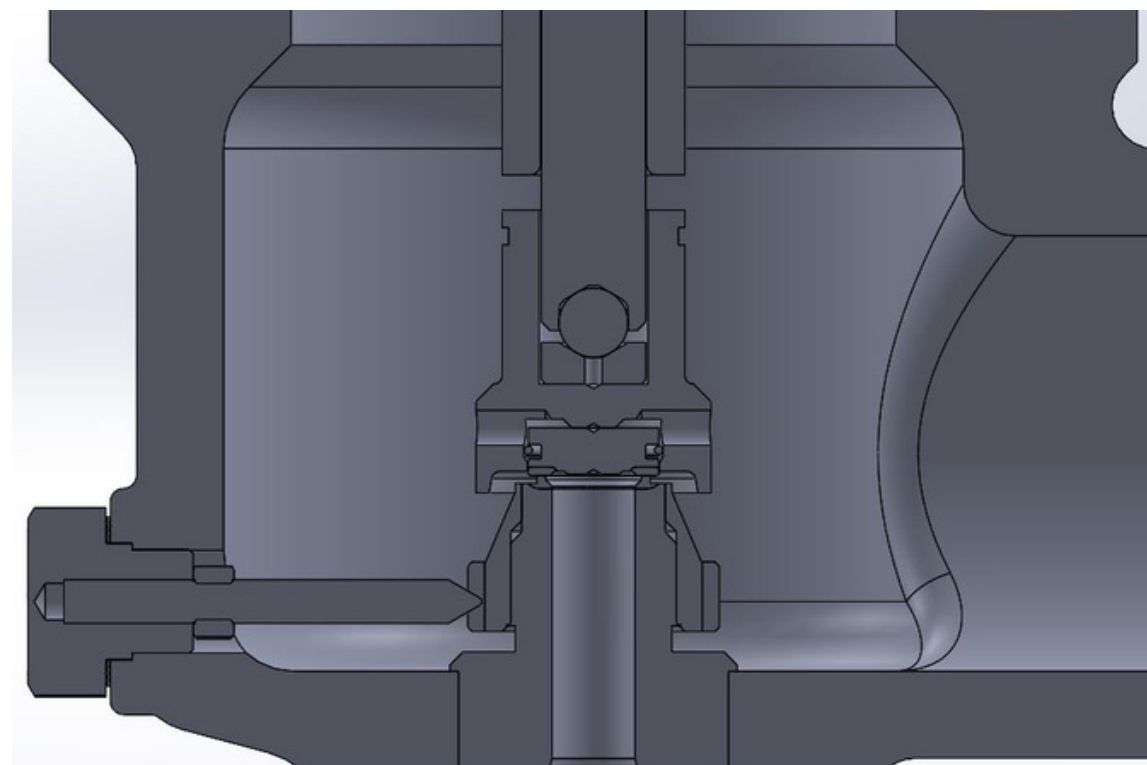
Item	Component	Carbon steel version	Stainless steel version
1	Body	A216 Gr.WCB	A351 Gr.CF8M
2	Bonnet	A216 Gr.WCB	A351 Gr.CF8M
3	Nozzle	SS316	SS316
4	Cap	A216 Gr.WCB	A351 Gr.CF8M
5	Adjusting Screw nut	SS304	SS304
6	Adjusting Screw	SS304	SS304
7	Cap Gasket	PTFE / Graphite	PTFE / Graphite
8	Spring Washer	A105	SS316
9	Spring	Spring steel	Spring steel
10	Stem	SS316	SS316
11	Disc Guide	SS316	SS316
12	Disc	SS316	SS316
13	Set screw	SS304	SS304
14	NRLs Gasket	PTFE	PTFE
15	Nozzle Gasket	PTFE / Graphite	PTFE / Graphite
16	Flange	A105	A182 F316
17	Collar	SS316	SS316



## METAL SEAT

The Kent Valve metal seats (disc and nozzle) are lapped to optical flatness to ensure a tight seal. Kent Valve safety relief valves are supplied with standard leak tightness according to API 527.

Improved tightness is available on request.



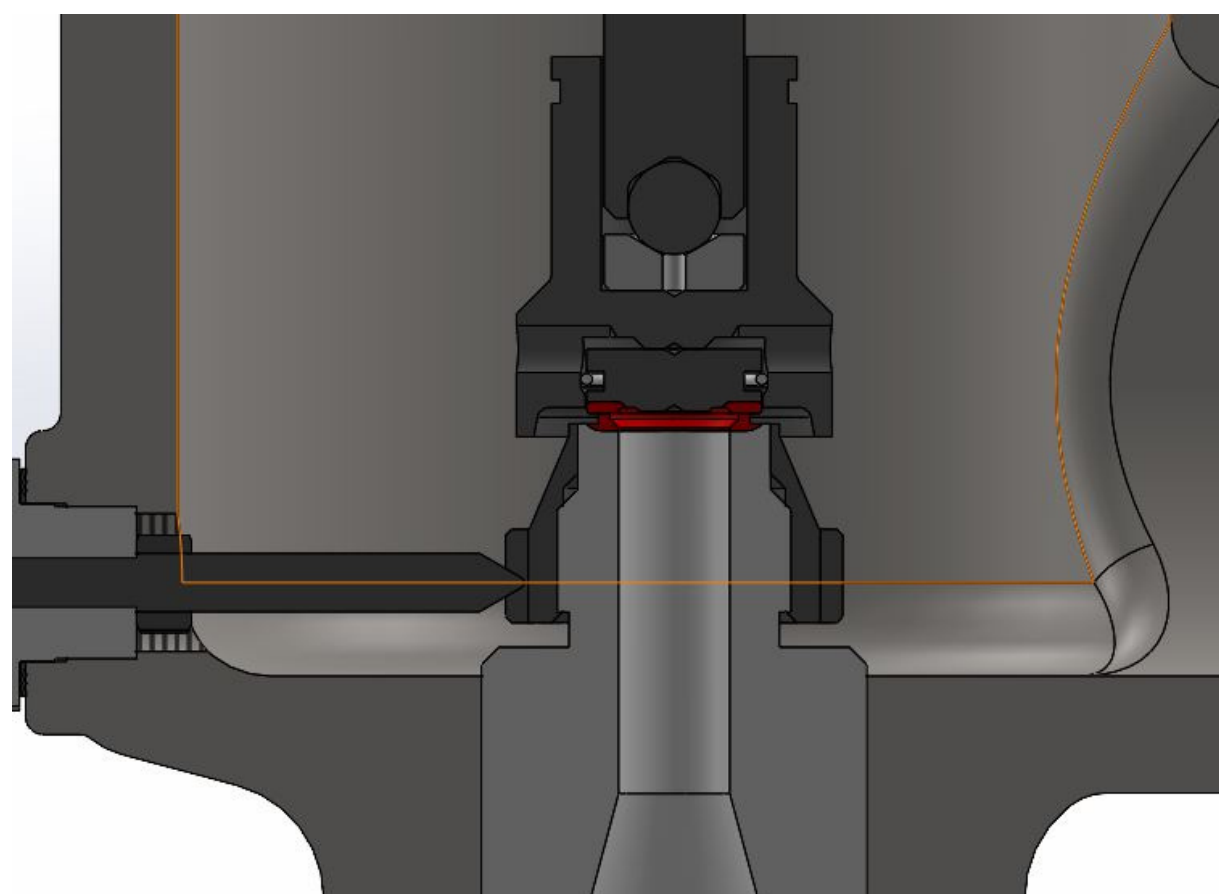
METAL SEAT

## STELLITED SEALING SURFACES

The sealing surfaces of stainless steel disc and nozzle can be stellited by build-up welding. Stellite is a cobalt-chromium based, non-ferrous alloy with increased hardness, corrosion resistance and wear resistance up to high temperatures.

Valves in the following cases:

- high pressure applications, due to the high stress of the sealing surfaces
- high temperature applications to avoid a permanent deformation of the sealing surfaces, due to the material properties of the seat and disc
- applications with abrasive fluids to increase the wear resistance of the sealing surfaces.



STELLITED SEALING SURFACES



## NACE-COMPLIANT SAFETY VALVES

### General requirements for safety valves in sour gas service

Media such as sour gas, which is especially common in oil and gas production, can have a corrosive effect on safety valves. The National Association of Corrosion Engineers (NACE) is a global association that deals with the development of corrosion control measures and defines these in standards such as NACE MR0175 and NACE MR0103. Both of these standards identify requirements for metallic materials used for piping and related components, to include safety valves, in the oil and gas industry.

The aim here is to protect the environment from escaping media. The focus is on the prevention of various types of corrosion (e.g. sulfur-induced stress corrosion cracking) of used materials that can be caused by acidic media. Both standards define the maximum material hardness for prevention of corrosion damage because hardness increases corrosion resistance. NACE MR0175 provides requirements for materials used in oil and gas extraction (upstream) whereas NACE MR0103 specifies less stringent requirements for materials used in refinery processes (downstream).

Various components of KENT VALVE safety valves can be constructed in corrosion resistant materials using a level concept. This way, KENT can offer efficient safety valve solutions according to the requirements of NACE MR0175 and NACE MR0103 for different application conditions.

### NORMS

#### NACE MR0175/ISO15156 – 20031

Scope : This part of NACE MR0175/ISO 15156 describes general principles and gives requirements and recommendations for the selection and qualification of metallic materials for service in equipment used in oil and gas production and in natural gas sweetening plants in H<sub>2</sub>S-containing environments, where the failure of such equipment could pose a risk to the health and safety of the public and personnel or to the environment.

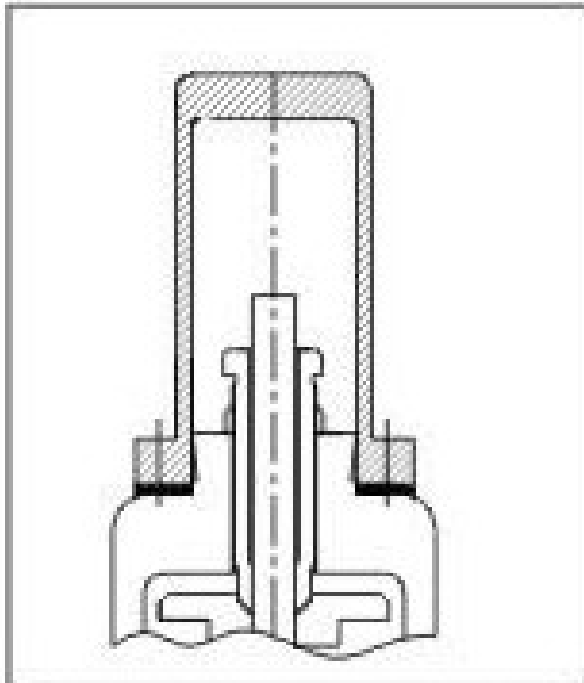
#### NACE MR0103 – 2012

- 1.1.1 : This standard establishes material requirements for resistance to SSC in sour petroleum refining and related processing environments containing H<sub>2</sub>S either as a gas or dissolved in an aqueous (liquid water) phase with or without the presence of hydrocarbon.
- 1.1.2 : Specifically, this standard is directed at the prevention of SSC of equipment (including pressure vessels, heat exchangers, piping, valve bodies, and pump and compressor cases) and components used in the refining industry.

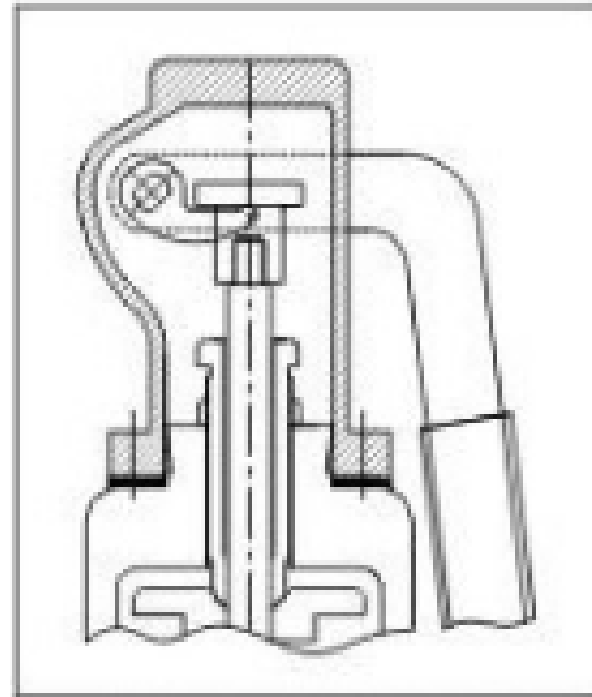
Part definition	Level 1		Level 2	
	Contact with the medium in closed position		Contact with the medium in opened position	
Contact surfaces	Conventional	Balanced bellows	Conventional	Balanced bellows
Safety valve operation	closed		closed /opened	
Parts concerned	Nozzle, disc	Nozzle, disc	Nozzle, disc, body, bonnet, cap/lifting device, spring	Nozzle, disc, body, bonnet, spacer, bellows

## CAP ARRANGEMENT

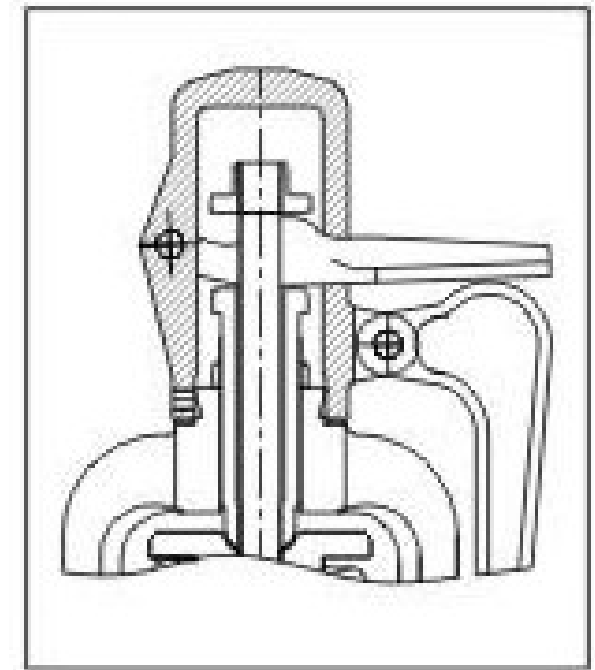
Various type of cap arrangement as possible depending on the Valve type and process requirement.



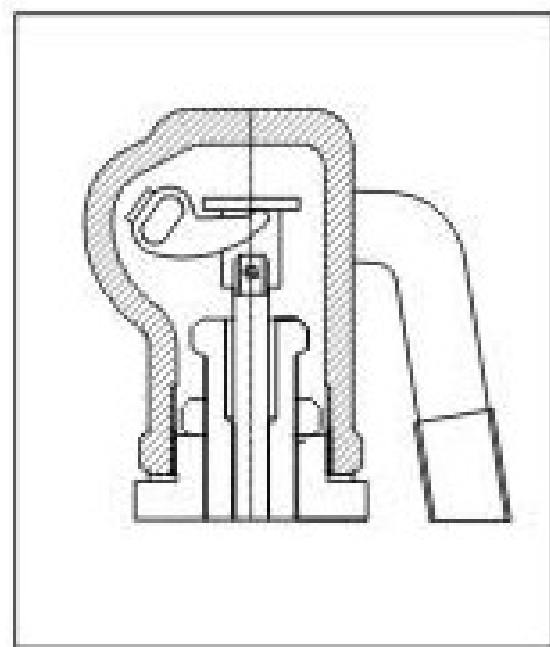
**BOLTED CLOSE CAP**



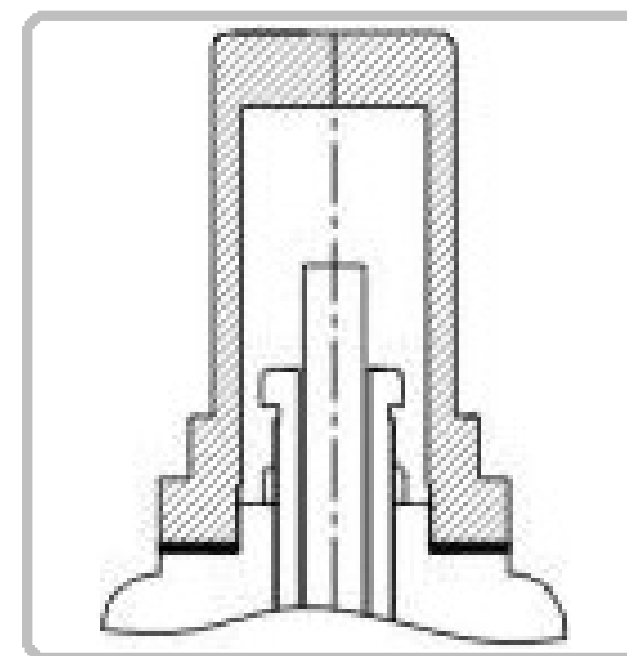
**PACK LIFTING LEVER WITH BOLTED CAP**



**OPEN CAP WITH PLAIN LEVER**

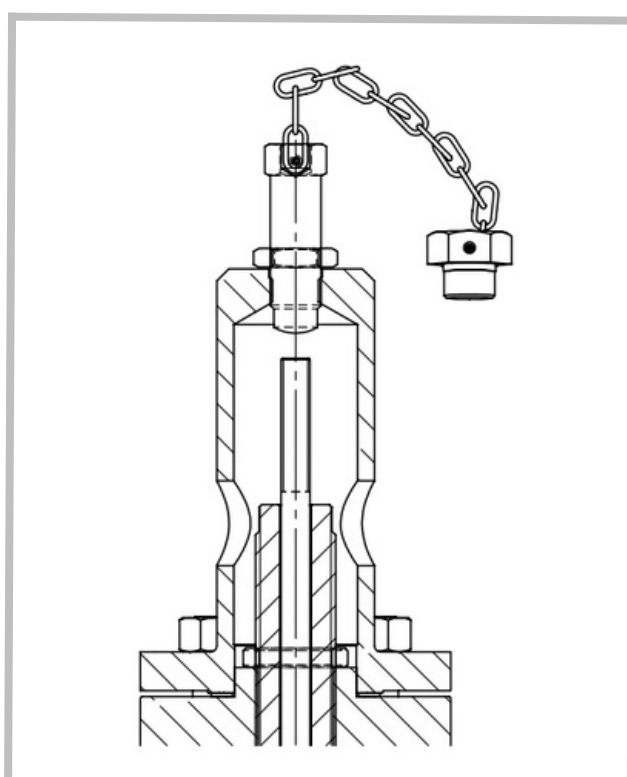


**PACKED LIFTING LEVER WITH SCREWED CAP**



**THREADED CLOSE CAP**

## ACCESSORIES



### TEST GAG

Test gag - provided so the entire vessel can be tested without removing safety valve. Safety valve stem will not move up due to increase in pressure.



# SERIES KPREVA S15 PILOT OPERATED SAFETY RELIEF VALVE



## Materials

- Pilot operated

## Dimensions

- Metric units

## Weights

- Metric units

## Orifice D – T

- Selection charts

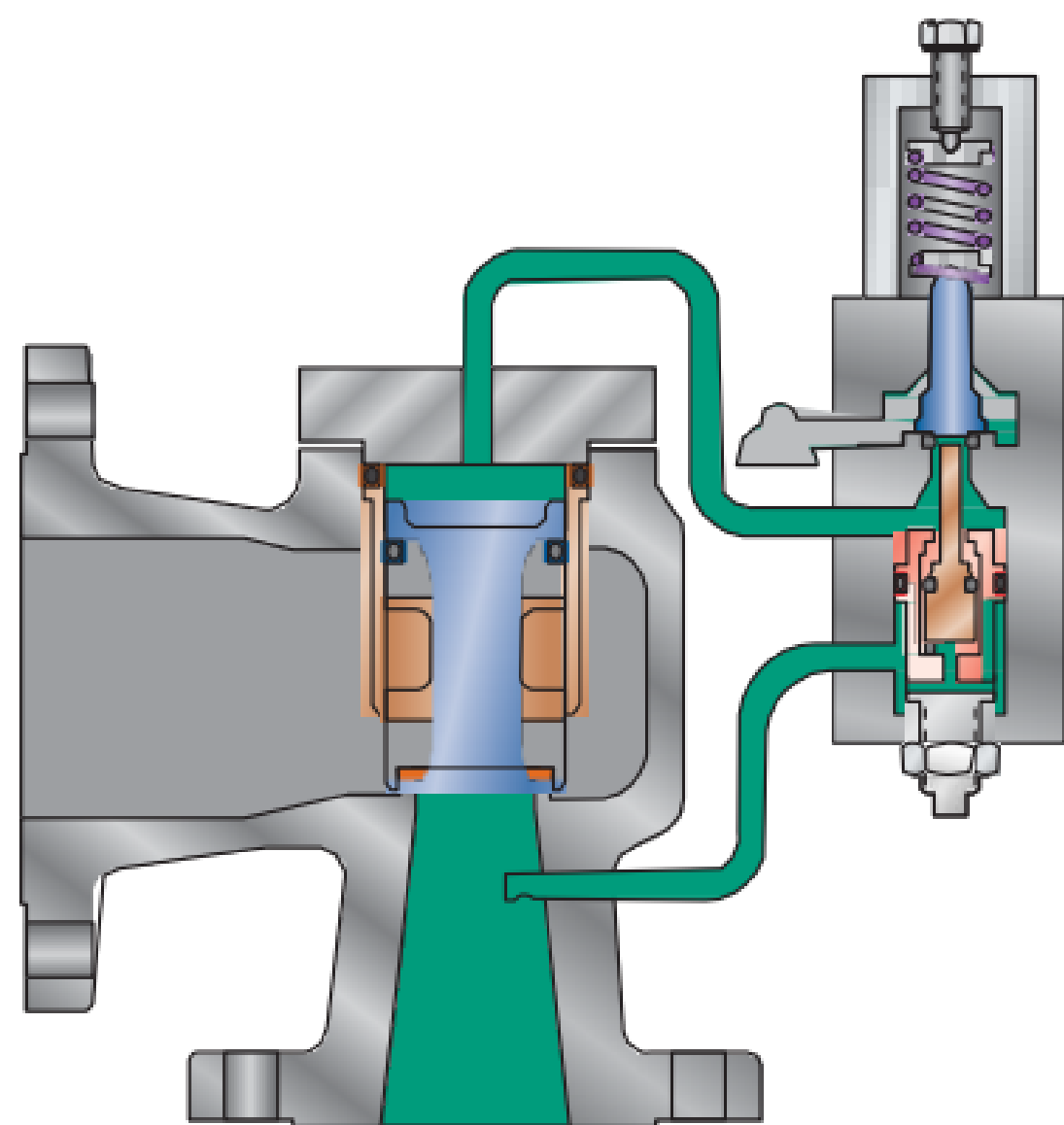
Kent Valve Pilot Operated Safety Valves (POSVs) are designed according to the API 526 standard. The full range of sizes from 1" x 2" up to 8" x 10" (DN 25 – DN 200) with all orifices from D – T is available for pressure ratings up to pressure class 2500 x 6001).



## GOOD REASONS FOR THE KENT VALVE PILOT OPERATED SAFETY VALVE

Pilot operated safety valves have been a proven technology for many decades especially in ASME oriented regions. However, some of the older designs show potential for improvement in areas like external tubing, capacity and delivery times. Based on customer feedback and extended research and using Computational Fluid Dynamics (CFD), Rapid Prototyping and one of the most modern factories for safety valves, KENT VALVE has developed the latest POSV on the market. The new KENT VALVE POSV offers unique benefits for both users and assemblers /maintenance personnel that are listed below.

FEATURE	FEATURE BENEFIT FOR USER	BENEFIT FOR ASSEMBLER / MAINTENANCE
Tubing between pilot valve and main valve integrated into top plate	<ul style="list-style-type: none"> <li>• Less risk of damage to tubing</li> <li>• Resistant against vibration</li> <li>• No freezing</li> </ul>	<ul style="list-style-type: none"> <li>• Less tubing for easy removal of top plate</li> <li>• Tubing between inlet and pilot remains accessible for easy cleaning</li> </ul>



Pilot Operated Safety Relief Valves are provided with considered if the superimposed backpressure is variable and higher than 10% of set pressure and or where the built up back pressure is too high for conventional and bellow type pressure relief valves. Pilot operated relief valve may also used when back pressure exceeds 50% of set pressure. A Pressure Relief Valve in which the major relieving device or main valve is combined with and controlled by a self actuated auxiliary pressure relief valve (pilot) is called Pilot Operated Safety Relief Valve.



## GENERAL INFORMATION

### KENT VALVE Pilot Operated Safety Valve (POSV)

Kent valve Pilot Operated Safety Valves (POSVs) are designed according to the API 526 standard. The full range of sizes from 1" x 2" up to 8" x 10" (DN 25 – DN 200) with all orifices from D – T is available for pressure ratings up to pressure class 2500 x 6001). Beyond API 526, Kent offers so-called Extra Orifices (also known as Full Port or Full Bore nozzles). The Extra Orifices provide maximum capacity in relation to valve size. In addition, Kent POSVs come in two different functional designs, i.e. Pop Action (Series S16) and Modulate Action (Series S17). These designs determine the POSVs operating characteristics.

Depending on their design, Kent POSVs open rapidly (Series S16 – Pop Action) or gradually in proportion to system pressure (Series S17 – Modulate Action)

### Series S16 – Pop Action

KENT VALVE POSVs Series S16 with rapid opening (Pop Action)

- are used for applications where the certified discharge capacity needs to be reached quickly
- are used for gas applications only
- have an adjustable blowdown of 3 – 7% of set pressure conforming to ASME VIII which can be adjusted beyond API standard up to 15%

### Series S17 – Modulate Action

KENT VALVE POSVs Series S17 with proportional opening (Modulate Action)

- are used to minimize medium loss
- are used if medium must not discharge to atmosphere
- open in proportion to the overpressure to ensure that only as much mass flow is discharged from the safety valve as is necessary to prevent further pressure increase



Main Valve and Pilot  
Valve Series S15



Series S16 – Pop  
Action Pilot

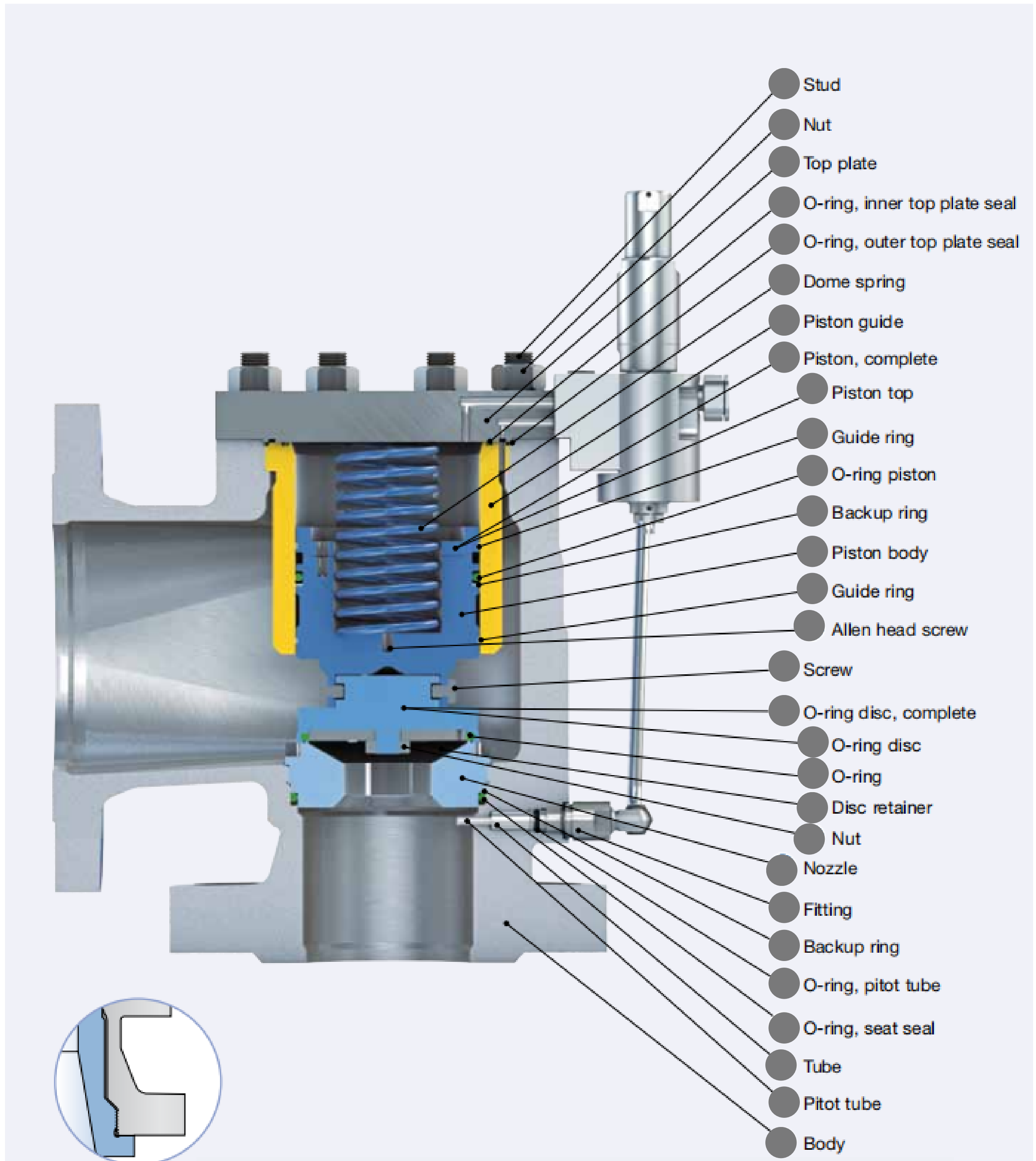


Series S17 – Modulate  
Action Pilot



# HIGH EFFICIENCY MAIN VALVE

## SERIES KPREVA S15



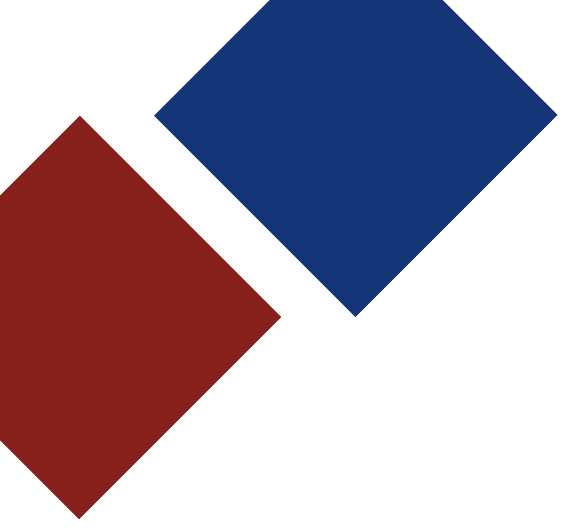


# MATERIALS

## SERIES KPREVA S15

Item	Component	MATERIALS		
1	Body	SA 216 WCB	SA 351 CF8M	SA 352 LCB
2	Pilot tube	316L	316L	316L
3	Tube	316L	316L	316L
4	Fitting	316L	316L	316L
5	Nozzle	316L	316L	316L
6	Piston complete	316L	316L	316L
7	Piston body	316L	316L	316L
8	Piston top	316L	316L	316L
9	Backup ring	PTFE	PTFE	PTFE
10	Guide ring	PTFE with carbon	PTFE with carbon	PTFE with carbon
11	Allen head screw	Stainless steel	Stainless steel	Stainless steel
12	O-ring disc, complete	316L	316L	316L
13	O-ring disc	316L	316L	316L
14	Disc retainer	316L	316L	316L
15	Nut	Stainless steel	Stainless steel	Stainless steel
16	Piston guide	316L	316L	316L
17	Top plate	SA 105	SA 105	SA 105
18	Stud	B7M	B8M	B8M
19	Nut	2H	8M	8M
20	Screw	Stainless steel	Stainless steel	Stainless steel
21	Dome spring	Stainless steel	Stainless steel	Stainless steel
22	Backup ring	PTFE	PTFE	PTFE





# POP ACTION FEATURES

## SERIES

### KPREVA S16

The Series – Pop Action Pilot Operated Safety Valve (POSV) is characterized by rapid opening, or pop action. When set pressure is reached, the dome of the main valve is vented quickly and completely and the main valve opens just as quickly and completely. The medium from the dome is discharged to atmosphere. The Pop Action POSV is used mainly for gas applications.

### PRODUCT FEATURES

#### **Robust and insensitive to vibrations.**

The robust connection of the pilot valve (= control valve for the main valve) to the main valve and the reduced exposed piping guarantee safe operation even if there are vibrations in the system.

#### **Easy spring replacement.**

The spring is easily accessible. This allows simple replacement of the spring, saving time and costs. In order to replace the spring only the top section of the bonnet needs to be removed. Other functional parts or soft goods do not have to be disassembled and therefore do not need to be replaced.

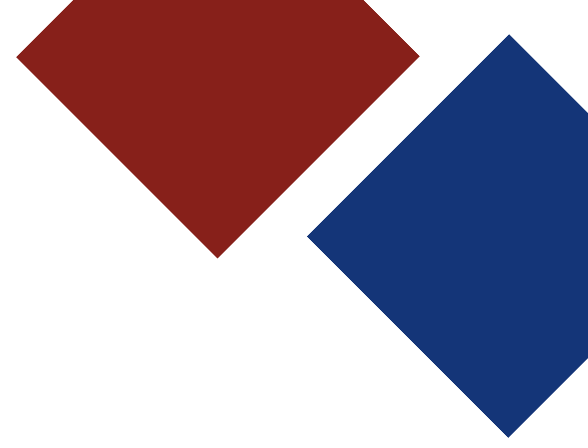
#### **Easy blowdown setting within the requirements of codes and standards.**

Kent valve sets the blowdown in the range of 3 – 7%, which conforms to codes and standards. This setting can easily be adjusted. Other testing devices are not required.

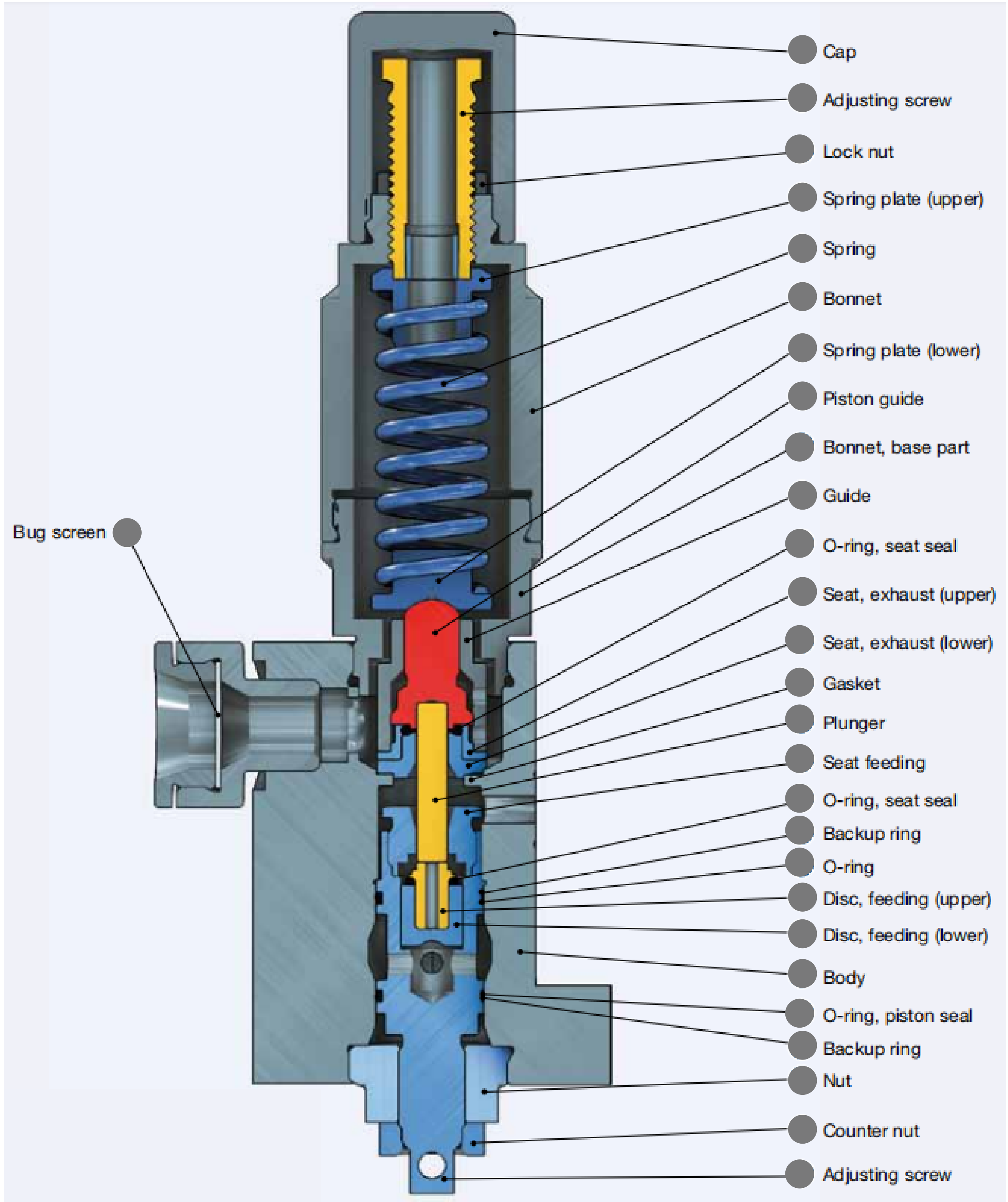


Pop Action Pilot Valve

**A large pressure range** of 2.5 – 426 bar (36 – 6170 psig) ensures that the Series 810 Pop Action POSV can be used for a wide variety of applications.



# SERIES KPREVA S16 POP ACTION PILOT VALVE





# MATERIALS

## SERIES

### KPREVA S16

Item	Component	Standard	NACE
1	Body	SA 479 316L	SA 479 316L
2	Guide	316L	316L
3	Seat, feeding	316L	316L
4	Disc, feeding (upper)	316L	316L
5	Disc, feeding (lower)	316L	316L
6	Bonnet	SA 479 316L	SA 479 316L
7	Bonnet, base part	SA 479 316L	SA 479 316L
8	Piston guide	316L	316L
9	Adjusting screw	316L	316L
10	Seat, exhaust (upper)	316L	316L
11	Seat, exhaust (lower)	316L	316L
12	Spring plate (upper and lower)	316L	316L
13	Adjusting screw	316L	316L
14	Lock nut	316L	316L
15	Nut	316L	316L
16	Counter nut	316L	316L
17	Piston	316L	316L
18	Backup ring	PTFE	PTFE
19	Gasket	PTFE	PTFE
20	Cap	316L	316L
21	Spring	Stainless steel	INCONEL X750
22	Bug screen	Plastic	Plastic



## SERIES KPREVA S17

### MODULATE ACTION: DIAPHRAGM OR PISTON DESIGN

Depending on the set pressure, Series – Modulate Action Pilot Operated Safety Valves (POSVs) are equipped with

- a diaphragm for set pressures of 2.5 – 30 bar (36 – 435 psig)
- a piston for set pressures of 30.01 – 426 bar (> 435 – 6170 psig)

The pilot valve uses the same springs in both designs.

#### **2.5 – 30 bar (36 – 435 psig) – Diaphragm**

In the lower pressure range a frictionless diaphragm in the pilot valve accurately transmits system pressure. Approaching set pressure, system pressure builds up underneath the diaphragm. This upward force is opposed by the greater force of the spring pushing downwards. The spring force can be adjusted within the designated pressure range using an adjustment screw. On reaching set pressure, the diaphragm triggers the opening mechanism in the pilot valve. The diaphragm lift is restricted to 1.5 mm by design to protect against tearing.

#### **30.01 – 426 bar (> 435 – 6170 psig) – Piston**

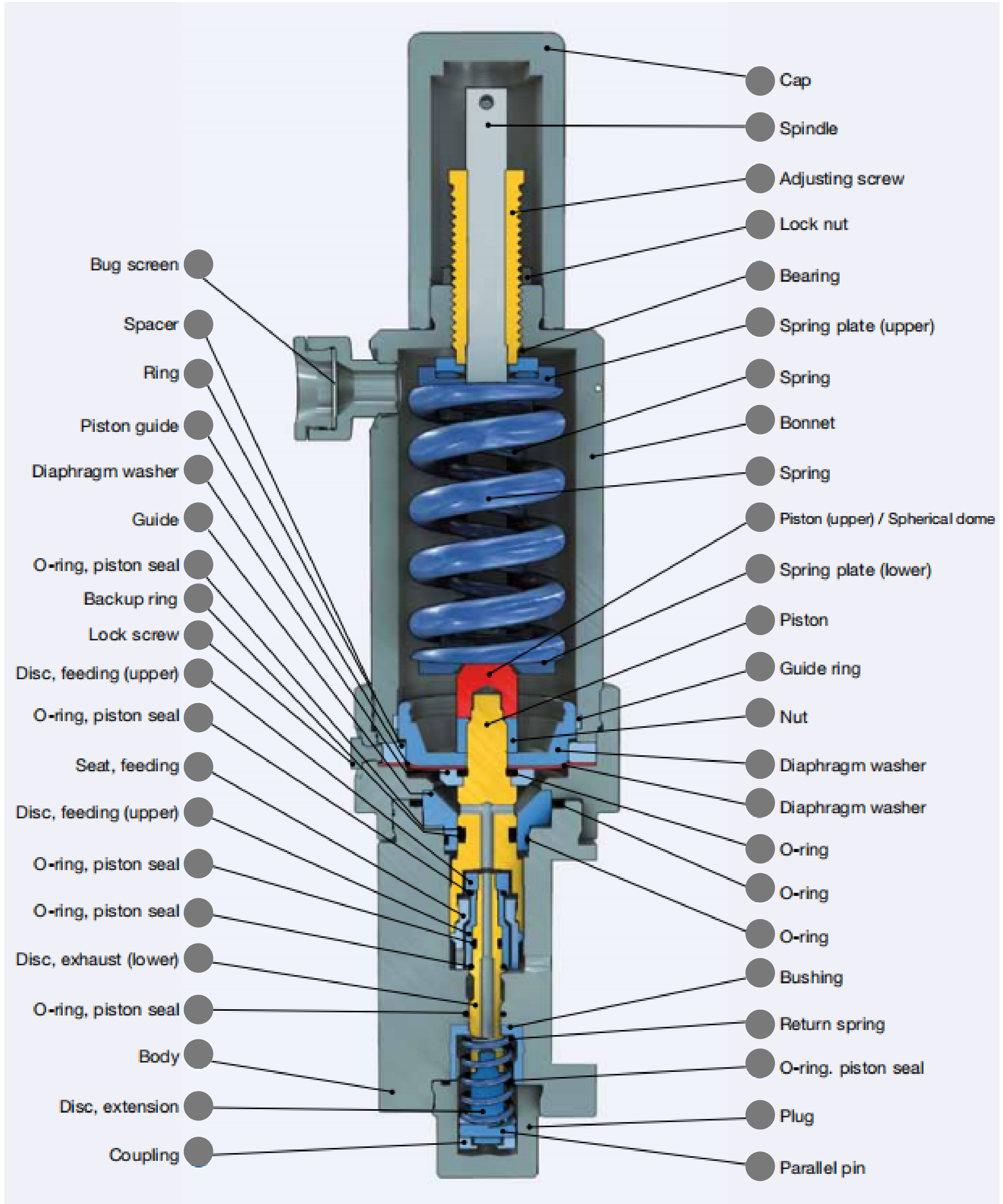
In the range of 30.01 – 426 bar (> 435 – 6170 psig) a piston is used to transmit the system pressure to the pilot valve and to trigger the main valve's opening when set pressure is reached.

Depending on the diaphragm or piston designs, specific parts and dimensions (e.g. the mounting of the diaphragm or piston dimensions) in the pilot may differ.





# SERIES KPREVA S17 MODULATE ACTION PILOT VALVE





# MATERIALS SERIES KPREVA S17

Item	Component	Piston	Diaphragm
1	Body	SA 479 316L	SA 479 316L
2	Guide	316L	316L
3	Seat, feeding	316L	316L
4	Disc, feeding (upper)	316L	316L
5	Disc, feeding (lower)	316L	316L
6	Bonnet	SA 479 316L	SA 479 316L
7	Disc, exhaust (lower)	316L	316L
8	Spindle	316L	316L
9	Spring plate (upper)	Stainless steel	Stainless steel
10	Spring plate (lower)	Stainless steel	Stainless steel
11	Adjusting screw	316L	316L
12	Lock nut	316L	316L
13	Plug	316L	316L
14	Cap	316L	316L
15	Piston	316L	316L
16	Return spring	INCONEL X750	INCONEL X750
17	Coupling	316L	316L
18	Parallel pin	Stainless steel	Stainless steel
19	Disc, extension	316L	316L
20	Bushing	316L	316L
21	Spring	Stainless steel	Stainless steel
22	Bug screen	Plastic	Plastic
23	Bearing	Stainless steel	Stainless steel
24	Nut	-	Stainless steel
25	Diaphragm washer	-	316L
26	Diaphragm	-	-
27	Spacer	-	316L
28	Ring	-	316L
29	Lock screw	-	Stainless steel
30	Diaphragm washer	-	316L
31	Guide ring	-	316L
32	Backup ring	-	-
33	Piston (upper)	316L	-
	Spherical dome	-	316L

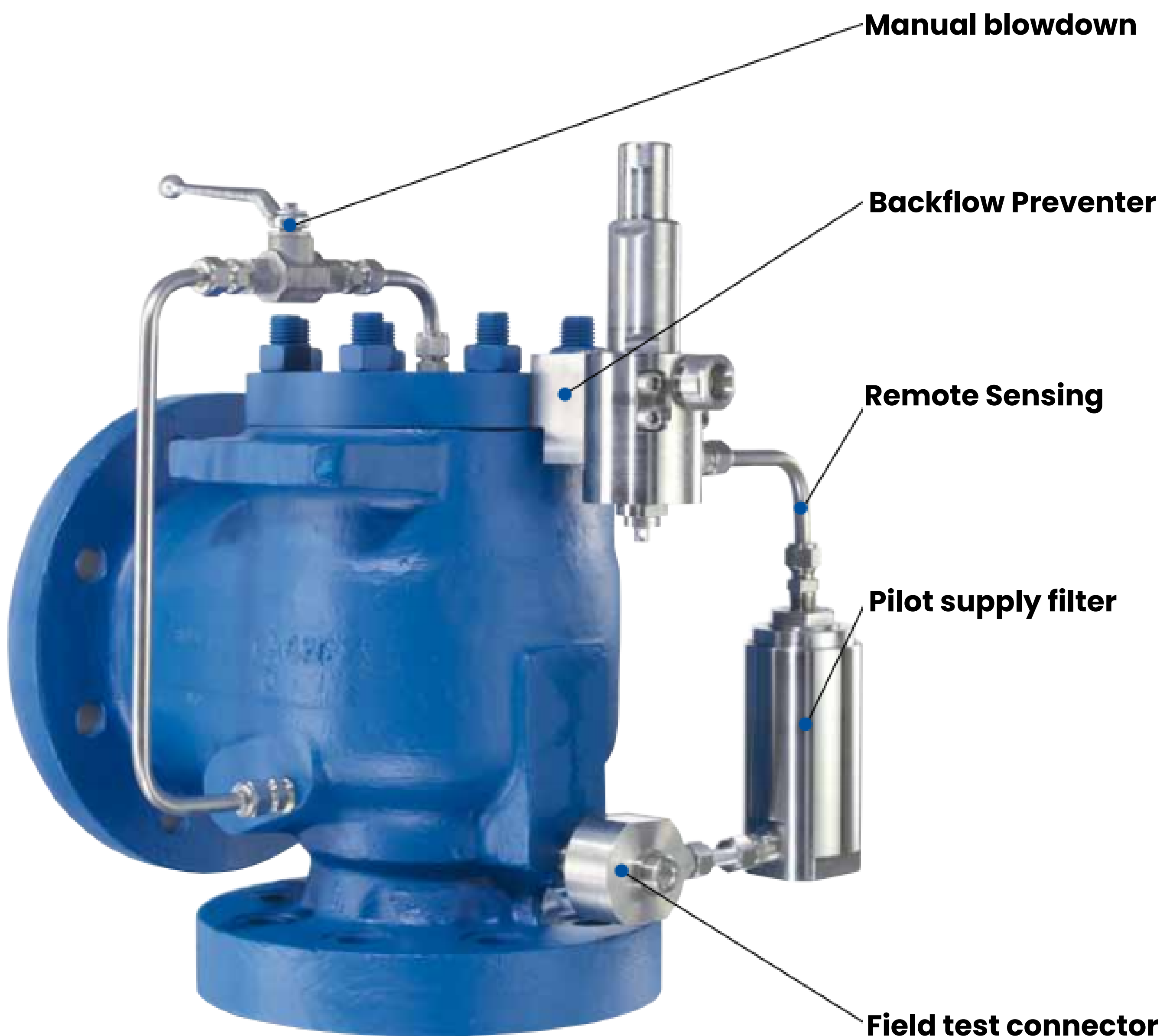


## HIGH EFFICIENCY

### ACCESSORIES

For both series of the KENT VALVE Pilot Operated Safety Valve (POSV) the following accessories are available. The accessories allow the adaptation of your safety valve to various special operating conditions.

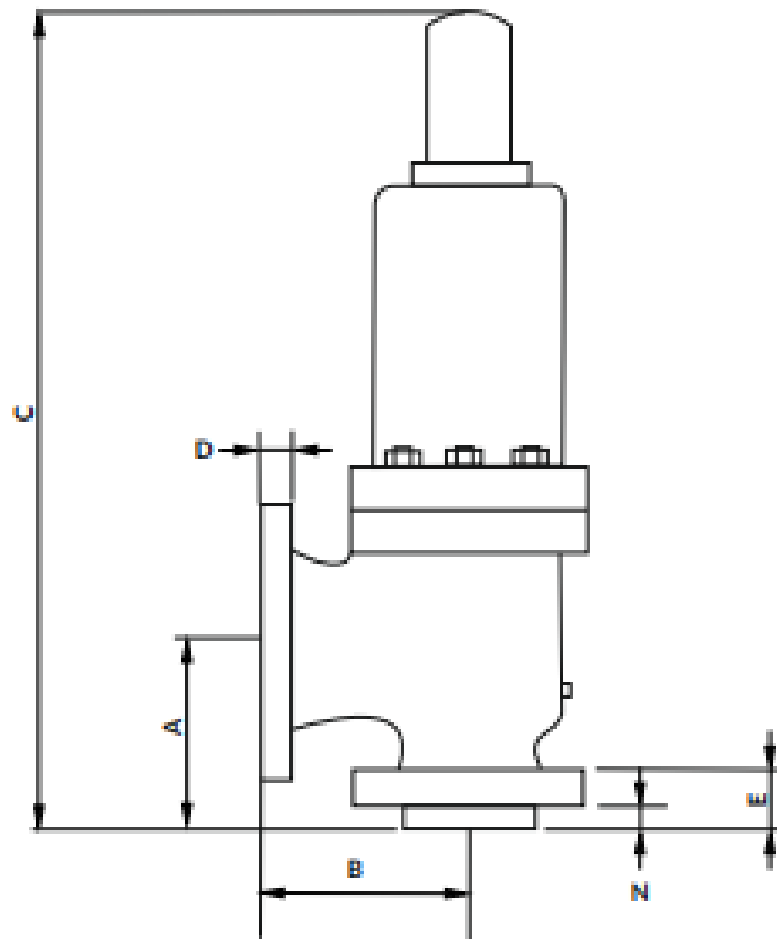
#### OVERVIEW – MAXIMUM CONFIGURATION





## DIMENSION DETAILS - KPREVA S11/SB12/S13

RATING	ORIFICE	SIZES Dimensions	A	B	C	D	N	APPX WEIGHT	
150		INLET X OUTLET	mm						<b>Kgs.</b>
	D -E-G	25 X 50	105	114.5	450	24	12	18	
	F	40 X 50	124	120.5	505	24	12	25	
	G	40 X 65	124	120.5	505	24	12	26	
	H-J	40 X 80	130	124.0	530	26	14	32	
	H-J-K	50 X 80	133	124.0	575	26	14	33	
	J	65 X 100	136.5	143.0	595	26	14	42	
	K-L-M	80 X 100	155.5	162.0	620	26	14	64	
	P-Q	100 X 150	181.0	229.0	900	27	14	149	
	Q - R	150 X 200	240.0	241.0	1145	30	18	210	
	T	200 X 250	276.0	280.0	1225	32	18	340	



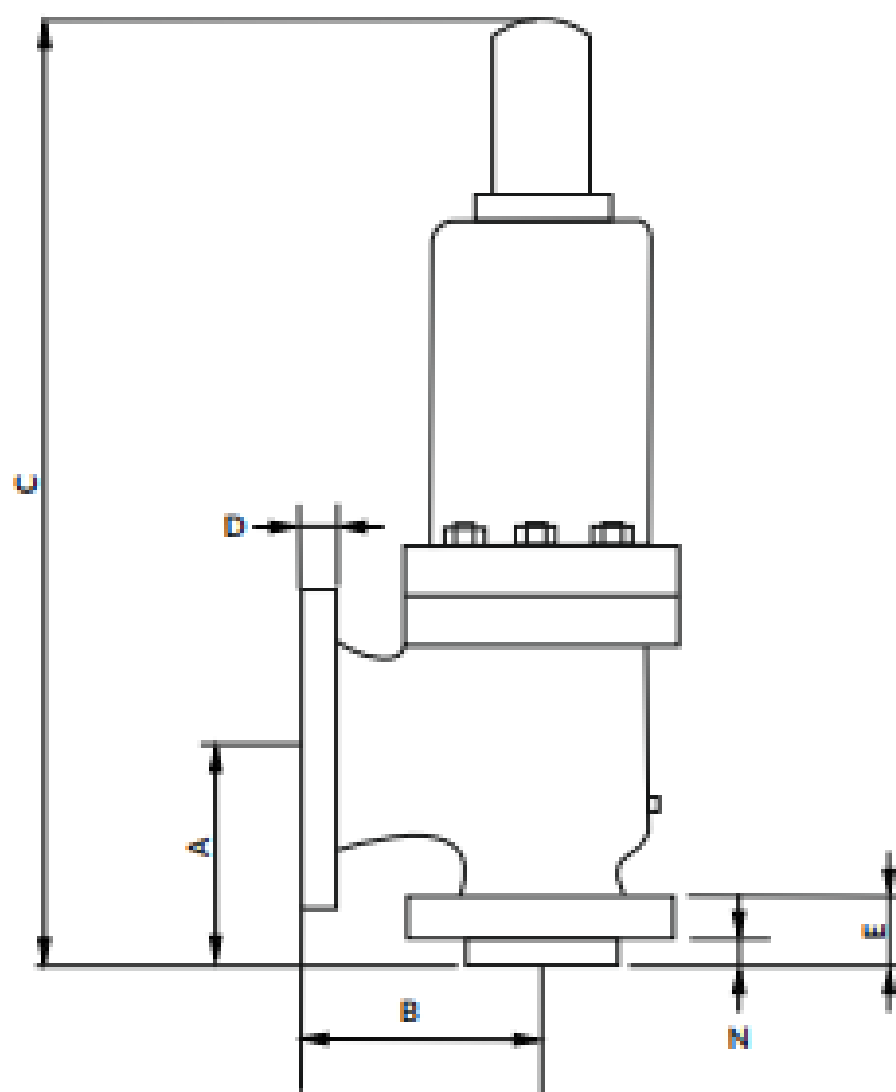
RATING	ORIFICE	SIZES Dimensions	A	B	C	D	N	APPX WEIGHT	
300		INLET X OUTLET	mm						<b>Kgs.</b>
	D -E-G	25 X 50	105	114.5	450	24	12	18	
	F	40 X 50	124	120.5	505	24	12	25	
	G	40 X 65	124	120.5	505	24	12	26	
	H-J	40 X 80	130	124.0	530	26	14	32	
	H-J-K	50 X 80	133	124.0	575	26	14	33	
	J	65 X 100	136.5	143.0	595	26	14	42	
	K-L-M	80 X 100	155.5	162.0	620	26	14	64	
	P-Q	100 X 150	181.0	229.0	900	27	14	149	
	Q - R	150 X 200	240.0	241.0	1145	30	18	210	
	T	200 X 250	276.0	280.0	1225	32	18	340	



## DIMENSION DETAILS - KPREVA S11/SB12



RATING	ORIFICE	SIZES Dimensions	A	B	C	D	N	APPX WEIGHT	
600		INLET X OUTLET	mm						<b>Kgs.</b>
	D -E-G	25 X 50	105	114.5	450	24	12	19	
	F	40 X 50	124	152.5	530	24	12	31	
	G	40 X 65	124	152.5	530	24	12	32	
	H-J	40 X 80	130	124.0	630	26	14	36	
	H-J-K	50 X 80	154	162.0	680	31	14	37	
	J	65 X 100	155.5	171.0	740	35	14	45	
	K-L-M	80 X 100	155.5	165.0	770	26	14	86	
	P-Q	100 X 150	225.0	254.0	1180	37	14	149	
	Q - R	150 X 200	240.0	254.0	1380	31	73	332	
	T	200 X 250	276.0	280.0	1225	32	62	340	



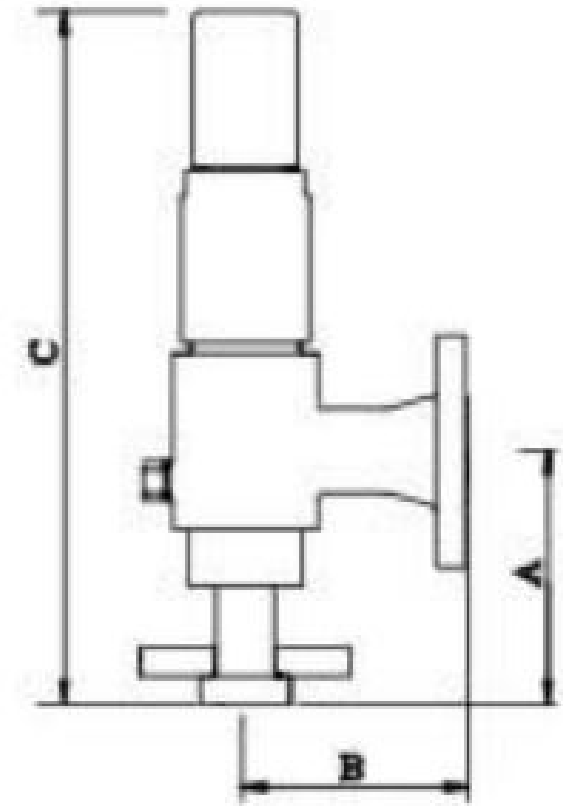
RATING	ORIFICE	SIZES Dimensions	A	B	C	D	E	N	APPX WEIGHT
900		INLET X OUTLET	mm						<b>Kgs.</b>
	D -E-G	25 X 50	105	114.5	450	24	33	12	18
	F	40 X 50	124	139.5	580	27	47	12	22
	G	40 X 65	124	152.5	630	27	47	12	35
	H-J	40 X 80	130	124.0	530	26	38	14	32
	H-J-K	50 X 80	155	181.0	730	31	55	14	53
	J	65 X 100	136.5	143.0	595	26	41	14	42
	K-L-M	80 X 100	184.0	181.0	970	26	65	14	96
	P-Q	100 X 150	197.0	254.0	1130	37	61	14	290



## DIMENSION DETAILS FLANGED & SCREWED END KPREVA S14

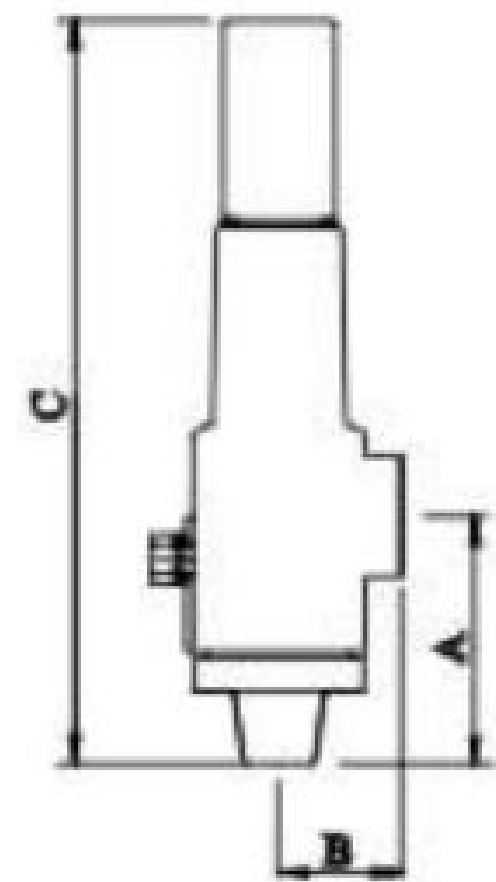
### SERIES KPREVA S14 FLANGED END PRESSURE RELIEF VALVE DIMENSIONS AND WEIGHTS

<b>SIZES</b> Dimensions	ORIFICE	<b>A</b>	<b>B</b>	<b>C</b>	APPX WEIGHT
INLET X OUTLET		mm			<b>Kgs.</b>
15 X 25	C	120	105	235	5.5
20 X 25	D	120	105	235	5.5
25 X 25	E	120	105	235	6.0



### SERIES KPREVA S14 SCREWED END PRESSURE RELIEF VALVE DIMENSIONS AND WEIGHTS

<b>SIZES</b> Dimensions	ORIFICE	<b>A</b>	<b>B</b>	<b>C</b>	APPX WEIGHT
INLET X OUTLET		mm			<b>Kgs.</b>
15 X 25	C	95.0	45.0	270	4.0
20 X 25	D	95.0	45.0	270	4.0
25 X 25	D	95.0	45.0	270	4.5





## WEIGHTS & DIMENSIONS (POP ACTION)

Type	Inlet x Outlet		Weight Approx Kg CS/SS	Weight Approx Kg Al Bronze	Inlet Rate R/F	Outlet Rate R/F	A mm	B mm	C mm
	Metric	Imperial							
D, E & F	25 x 50	1 x 2	15.5	17.1	150	150	114.3	105	384
D, E & F	25 x 50	1 x 2	16.4	18	300	150	114.3	111.2	390
D, E & F	25 x 50	1 x 2	16.1	17.5	600	150	114.3	111.2	390
D, E & F	25 x 50	1 x 2	27	29.7	900	300	120.7	125.5	418
D, E & F	25 x 50	1 x 2	27	29.7	1500	300	120.7	125.5	418
D, E & F	25 x 50	1 x 2	28	30.8	2500	300	120.7	125.5	418
D, E & F	40 x 50	1.5 x 2	22	24.2	150	150	121	124	424
D, E & F	40 x 50	1.5 x 2	23.5	25.9	300	150	121	124	424
D, E & F	40 x 50	1.5 x 2	23	25.3	600	150	121	124	424
D, E & F	40 x 50	1.5 x 2	38	41.8	900	300	140	149	450
D, E & F	40 x 50	1.5 x 2	38	41.8	1500	300	140	149	450
D, E & F	40 x 50	1.5 x 2	45	49.5	2500	300	140	149	450
G & H	40 x 80	1.5 x 3	23.5	25.9	150	150	123.7	130	418
G & H	40 x 80	1.5 x 3	25.5	28.1	300	150	123.7	130	418
G & H	40 x 80	1.5 x 3	25	27.5	600	150	123.7	130	418
G & H	40 x 80	1.5 x 3	43	47.3	900	300	171.5	162	454
G & H	40 x 80	1.5 x 3	43	47.3	1500	300	171.5	162	454
G & H	40 x 80	1.5 x 3	49	53.9	2500	300	171.5	162	454
G, H & J	50 x 80	2 x 3	30	33	150	150	123.7	136.4	433
G, H & J	50 x 80	2 x 3	30.5	33.6	300	150	123.7	136.4	433
G, H & J	50 x 80	2 x 3	30	33	600	150	123.7	136.4	433
G, H & J	50 x 80	2 x 3	50	55	900	300	171.5	166.6	466
G, H & J	50 x 80	2 x 3	50	55	1500	300	171.5	166.6	466
G, H & J	50 x 80	2 x 3	67	73.7	2500	300	171.5	177.8	486
J, K & L	80 x 100	3 x 4	53	58.3	150	150	162	156	489
J, K & L	80 x 100	3 x 4	54	60	300	150	162	156	490
J, K & L	80 x 100	3 x 4	54	59.4	600	150	162	162	496
J, K & L	80 x 100	3 x 4	84	92.4	900	300	180	190.5	514
J, K & L	80 x 100	3 x 4	87	95.7	1500	300	180	190.5	514
L, M, N & P	100 x 150	4 x 6	80.5	88.6	150	150	209.5	196.8	563
L, M, N & P	100 x 150	4 x 6	83.5	91.9	300	150	209.5	196.8	563
L, M, N & P	100 x 150	4 x 6	85	93.5	600	150	209.5	196.8	563
L, M, N & P	100 x 150	4 x 6	147	161.7	900	300	233.4	250	620
L, M, N & P	100 x 150	4 x 6	150	165	1500	300	233.4	247.3	620
Q & R	150 x 200	6 x 8	183.5	201.9	150	150	241.3	239.7	645
Q & R	150 x 200	6 x 8	189	207.9	300	150	241.3	239.7	645
Q & R	150 x 200	6 x 8	204	224.4	600	150	241.3	246.5	654
Q & R	150 x 200	6 x 8	210	231	900	300	265	246.5	654
T	200 x 250	8 x 10	311	342.1	150	150	279.4	276.3	729
T	200 x 250	8 x 10	319	350.9	300	150	279.4	276.3	729
T	200 x 250	8 x 10	345	379.5	600	150	279.4	297	729

A = Centre of Inlet to Outlet Face  
 B = Centre of Outlet to Inlet Face  
 C = Height



## WEIGHTS & DIMENSIONS (MODULATING ACTION)

Type	Inlet x Outlet		Weight Approx Kg CS/SS	Weight Approx Kg Al Bronze	Inlet Rate R/F	Outlet Rate R/F	A mm	B mm	C mm
	Metric	Imperial							
D, E & F	25 x 50	1 x 2	20.5	22.6	150	150	114.3	105	416
D, E & F	25 x 50	1 x 2	21.4	23.5	300	150	114.3	111.2	419
D, E & F	25 x 50	1 x 2	21.1	23.2	600	150	114.3	111.2	419
D, E & F	25 x 50	1 x 2	43	47.3	900	300	120.7	125.5	559
D, E & F	25 x 50	1 x 2	43	47.3	1500	300	120.7	125.5	559
D, E & F	25 x 50	1 x 2	44	48.4	2500	300	120.7	125.5	559
D, E & F	40 x 50	1.5 x 2	27	29.7	150	150	121	124	453
D, E & F	40 x 50	1.5 x 2	28.5	31.4	300	150	121	124	453
D, E & F	40 x 50	1.5 x 2	28	30.8	600	150	121	124	471
D, E & F	40 x 50	1.5 x 2	54	59.4	900	300	140	149	591
D, E & F	40 x 50	1.5 x 2	54	59.4	1500	300	140	149	591
D, E & F	40 x 50	1.5 x 2	60.5	66.6	2500	300	140	149	591
G & H	40 x 80	1.5 x 3	28.5	31.4	150	150	123.7	130	448
G & H	40 x 80	1.5 x 3	30.5	33.6	300	150	123.7	130	448
G & H	40 x 80	1.5 x 3	30	33	600	150	123.7	130	465
G & H	40 x 80	1.5 x 3	59	64.9	900	300	171.5	162	595
G & H	40 x 80	1.5 x 3	59	64.9	1500	300	171.5	162	595
G & H	40 x 80	1.5 x 3 2	65	71.5	2500	300	171.5	162	595
G, H & J	50 x 80	x 3	35	38.5	150	150	123.7	136.4	462
G, H & J	50 x 80	2 x 3	35.5	39.1	300	150	123.7	136.4	462
G, H & J	50 x 80	2 x 3	35	38.5	600	150	123.7	136.4	480
G, H & J	50 x 80	2 x 3	66	72.6	900	300	171.5	166.6	608
G, H & J	50 x 80	2 x 3	66	72.6	1500	300	171.5	166.6	608
G, H & J	50 x 80	2 x 3	83	91.3	2500	300	171.5	177.8	627
J, K & L,	80 x 100	3 x 4	58	63.8	150	150	162	156	518
J, K & L	80 x 100	3 x 4	59.9	65.5	300	150	162	156	519
J, K & L	80 x 100	3 x 4	59	64.9	600	150	162	162	525
J, K & L	80 x 100	3 x 4	100	110	900	300	180	190.5	655
J, K & L	80 x 100	3 x 4	103	113.3	1500	300	180	190.5	655
L, M, N & P	100x 150	4 x 6	85.5	94.1	150	150	209.5	196.8	592
L, M, N & P	100x 150	4 x 6	88.5	97.4	300	150	209.5	196.8	592
L, M, N & P	100x 150	4 x 6	90	99	600	150	209.5	196.8	610
L, M, N & P	100x 150	4 x 6	163	179.3	900	300	233.4	250	761
L, M, N & P	100 X150	4 x 6	166	182.6	1500	300	233.4	247.3	761
Q & R	150x200	6 x 8	188.5	207.4	150	150	241.3	239.7	674
Q & R	150x200	6 x 8	194	213.4	300	150	241.3	239.7	674
Q & R	150x200	6 x 8	209	229.98	600	150	241.3	246.5	701
Q & R	150x200	6 x 8	215	236.5	900	300	265	246.5	701
T	200x250	8 x 10	316	347.6	150	150	279.4	276.3	758
T	200x 250	8 x 10	324	356.4	300	150	279.4	276.3	758
T	200x 250	8 x 10	350	385	600	150	279.4	297	795

A = Centre of Inlet to Outlet Face  
 B = Centre of Outlet to Inlet Face  
 C = Height



# VALVE SIZING CALCULATION

## Safety Relief Valve for Steam Service

Formula for Steam Application (Sizing formula According to ASME Section VIII & API RP 520)

$$S = \frac{Q1}{51 * P_2 * K_{sh}}$$

Q1=Required Flow rate (Kg/Hr)  
P2 = Set pressure Bar A (with 10% over pressure)  
Ksh: Superheat Correction Factor  
S = Orifice Area (cm<sup>2</sup>)

**Example :**

Fluid: Steam  
Temp: 330 Deg.C, Required  
Set pressure:40 bar G , 10% over pressure

Back Pressure : ATM,  
Capacity: 47 TPH,

$$S = \frac{Q1}{51 * P_2 * K_{sh}}$$

P1 =40 bar G  
For 10% over pressure.

P2 =Set pressure - bar A  
=1.1 \* 40 + 1.013  
=45 bar A ( Over pressure 10%)

S = Cal Area in Cm<sup>2</sup>  
= 22.74

Flow rate for Safety Valve  
Q1 =47000 Kg/Hr

Temp: 330 Deg.C

Ksh = Superheat Correction Factor  
= 0.9

$$S = \frac{47000}{51 * 0.9 * 45}$$

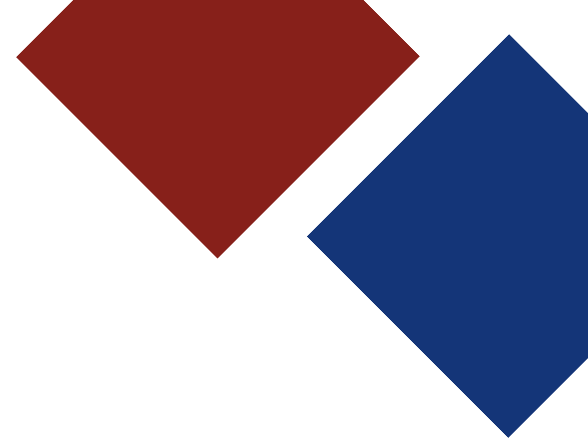
S = 22.74 Cm<sup>2</sup>

Calculated Orifice: 53.80 mm  
Selected Area M :24.63 cm<sup>2</sup>  
Orifice Area: M: 56 mm  
Rated Discharge Capacity: 50.9 TPH.  
Type: Conventional  
Valve Selection :4" x M x 6"  
Rating: 600# x 150#.



# VALVE SIZING CALCULATION

## Safety Relief Valve for Steam Service



### IBR Formula for Steam Application

$$S = \frac{Q1}{45 * P_2 * K_{sh}}$$

Q1=Required Flow rate (Kg/Hr)

P2 = Set pressure Bar A (without over pressure)

Ksh: Superheat Correction Factor

S = Orifice Area (cm<sup>2</sup>)

45 = Constant Allocated by IBR

#### Example :

Fluid: Steam

Back Pressure: ATM,

Temp: 330 Deg.C,

Required Capacity: 47 TPH,

Set pressure: 40 bar G ,without over pressure

$$S = \frac{Q1}{45 * P_2 * K_{sh}}$$

$$P1 = 40 \text{ Bar G}$$

$$S = \text{Cal Area in Cm}^2 \\ = 28.29$$

$$P2 = \text{Set pressure} - \text{Bar A} \\ = 40 + 1.013 \\ = 41.013 \text{ Bar A}$$

Flow rate for Safety Valve

$$Q1 = 47000 \text{ Kg/Hr}$$

Temp: 330 Deg.C

$$K_{sh} = \text{Superheat Correction Factor} \\ = 0.9$$

$$S = \frac{47000}{45 * 41.013 * 0.9}$$

$$S = 28.29 \text{ Cm}^2$$

Calculated Orifice: 60.01 mm

Selected Area P :41.28 cm<sup>2</sup>

Orifice : P:72.5 mm

Rated Discharge Capacity: 68.57 TPH.

Type: Conventional

Valve Selection :4" x P x 6"

Rating: 600# x 150#.



# VALVE SIZING CALCULATION

## Safety Relief Valve for For Gas Duty

Formula for Gas Application (Sizing formula According to ASME Section VIII & API RP 520)  
(Without Back Pressure)

$$S = \frac{V1 * \sqrt{Ta} * Z * M}{16.5 * C * P_2 * Kb}$$

V1 = Required Capacity (NM<sup>3</sup>/Hr)

Ta = Absolute Temp (K)

Z = Compressibility Factor

S = Orifice Area (cm<sup>2</sup>)

M = Molecular Weight

C = Constant

P<sub>2</sub> = Absolute Pressure with 10% over pressure

Kb = Back Pressure Co-efficient

### Example :

Fluid: Nitrogen

Set pressure: 3 bar G, 10% Over Pressure

Required Capacity: 2500 NM<sup>3</sup>/Hr

Temp: 20 Deg.C,

Back Pressure: Nil

P1 = Set Pressure (Bar G) = 3 Bar G

P2 = 1.1 x 3 + 1.013 (10% Over pressure)

P2 = 4.313 bar A

Kb = Back Pressure

Co-efficient = 1 (No Back pressure Exist)

k = 1.4 (Cp/Cv for Nitrogen )

M = Molecular Weight = 28.02

Ta = 273 + t = 293 K (T)

Ta = 273 + 20 = 293 K ( Absolute temp in Kelvin)

C = Constant = 356 ( As k = 1.4 )

$$S = \frac{V1 * \sqrt{Ta} * Z * M}{16.5 * C * P_2 * Kb}$$

$$S = \frac{2500 * \sqrt{293} * 1 * 28.02}{16.5 * 356 * 4.313 * 1}$$

S = 8.9411 cm<sup>2</sup>

Selected Area: K = 14.18 cm<sup>2</sup>

Orifice Area: K = 42.5 mm

Capacity: Q = (14.18 x 2500) / 8.9411

Capacity: Q = 3964 NM<sup>3</sup>/Hr

### Valve Selection:

t = 20 Deg.C & P = 3 Bar G

Type: Conventional

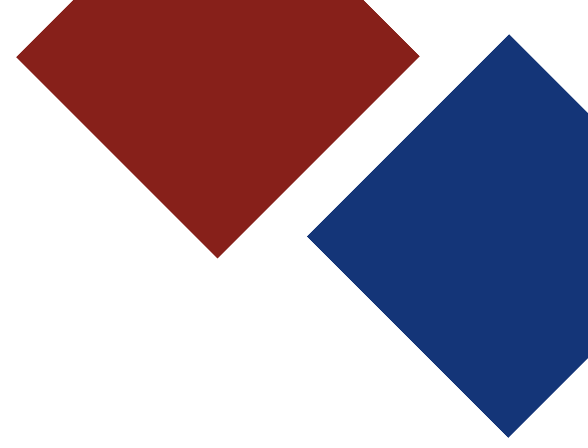
Size : 3" x K x 4"

Rating: 150# x 150#



# VALVE SIZING CALCULATION

## Safety Relief Valve For Gas Duty



Formula for Gas Application (Sizing formula According to ASME Section VIII & API RP 520)  
(with Variable Back Pressure)

$$S = \frac{V1 * \sqrt{Ta} * Z * M}{16.5 * C * P_2 * Kb}$$

V1 = Required Capacity (NM<sup>3</sup>/Hr)  
Ta = Absolute Temp (K)  
Z = Compressibility Factor  
S = Orifice Area (cm<sup>2</sup>)

Kb = Back Pressure Co-efficient  
M = Molecular Weight  
C = Constant  
P<sub>2</sub> = Absolute Pressure with 10% over pressure

### Example :

Fluid: Nitrogen  
Set pressure: 3 bar G, 10% Over Pressure  
Required Capacity: 2500 NM<sup>3</sup>/Hr,

Temp: 20 Deg.C,  
Back Pressure: 1-1.8 bar G (Variable)

P1 = Set Pressure (bar G) = 3 bar G

P2 = 1.1 x 3 + 1.013 (10% Over pressure)  
P2 = 4.313 bar A

% Back Pressure = 1.8 / 3 x 100  
% Back Pressure = 60%

Kb = Back Pressure Co-efficient = 0.93  
k = 1.4 (Cp / Cv for Nitrogen )

M = Molecular Weight = 28.02  
Ta = 273 + t = 293 K (T)  
Ta = 273 + 20 = 293 K ( Absolute temp in Kelvin)  
C = Constant = 356 ( As k = 1.4 )

$$S = \frac{V1 * \sqrt{Ta} * Z * M}{16.5 * C * P_2 * Kb}$$

$$S = \frac{2500 * \sqrt{293} * 1 * 28.02}{16.5 * 356 * 4.313 * 0.93}$$

S = 9.614 Cm<sup>2</sup>  
Selected Area: K = 14.18 cm<sup>2</sup>  
Orifice Area: K = 42.5 mm  
Capacity: Q = (14.18 x 2500) / 9.614  
Capacity: Q = 3687 NM<sup>3</sup>/Hr  
Valve Selection:  
t = 20 Deg.C & P = 3 Bar G  
Type: Conventional  
Size : 3" x K x 4"  
Rating: 150# x 150#





# VALVE SIZING CALCULATION

## Safety Relief Valve For Liquid Service

Formula for Liquid Application (Sizing formula According to ASME Section VIII & API RP 520)

$$S = \frac{q \cdot \sqrt{d}}{3.157 \cdot K_p \cdot K_w \cdot K_v \cdot \sqrt{(1.25 \cdot P_1) - P_c}}$$

S = Orifice Area (cm<sup>2</sup>)

q = Required capacity (M3/Hr)

d = Specific Gravity of Liquid

P1 = Set pressure in bar G

Pc = Back Pressure (bar G)

Kw = Back pressure Co-efficient

Kp = Over pressure correction factor

Kv = Viscosity Correction Factor

### Example :

Liquid with Specific Gravity : 0.8

Set pressure: 12 bar G, 10% Over Pressure

Back Pressure: 3 bar G

Required Capacity: 32 M3/Hr,

Temp : Ambient

Specific Gravity: 0.8

P1 : 12 Bar G

Pc = Back Pressure (bar G)

Pc = 3.0 bar G

Over pressure: 10%

Kp = 0.60

% Back Pressure = 3/12 x 100

% Back Pressure = 25%

Kw = 0.92 (Refer chart on Page:31)

Specific Gravity : d = 0.8

Bellows : Required

Kv= 1 (Viscosity correction Factor)

$$S = \frac{q \cdot \sqrt{d}}{3.157 \cdot K_p \cdot K_w \cdot K_v \cdot \sqrt{(1.25 \cdot P_1) - P_c}}$$

$$S = \frac{32 \cdot \sqrt{0.8}}{3.157 \cdot 0.60 \cdot 0.92 \cdot 1 \cdot \sqrt{1.25 \cdot 12 - 3}}$$

S = 4.74 cm<sup>2</sup>

Selected Area:

H = 6.154 cm<sup>2</sup>

Orifice H :28 mm

Capacity: Q = (6.154 x 32) / 4.74

Capacity: Q = 41.54 M3/H

Valve Selection:

t = Ambient & P = 12 Bar G

Type: Bellowsal

Size :1.5" x H x 3"

Rating: 150# x 150#

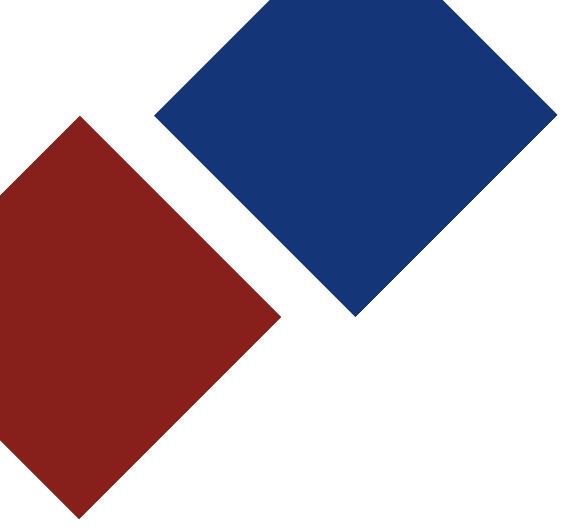


## KPREVA S11, SB12, S13 CAPACITIES – STEAM US UNITS

Capacities for saturated steam according to ASME Section VIII (UV), based on set pressure plus 10% overpressure.

### ASME Section VIII [lb/h]

Orifice	D	E	F	G	H	J	K	L	M	N	P	Q	R	T
Actual Orifice diameter d0 [inch]	0.551	0.551	0.709	0.886	1.11	1.42	1.69	2.11	2.37	2.6	3.15	4.15	4.96	6.36
Actual Orifice area Ah2]	0.2390	0.239	0.394	0.616	0.975	1.58	2.25	3.48	4.43	5.30	7.79	13.55	19.33	31.75
LEO2S/G [inch]	0.111	0.196	0.324	0.506	0.801	1.296	1.849	2.863	3.637	4.357	6.401	11.132	16.004	26.085
Set pressure [psig]	Capacities [lb/h]													
15	183	321	531	830	1313	1981	3032	4694	5963	7144	10496	18253	26036	42774
20	211	371	613	957	1515	2415	3497	5413	6876	8237	12103	21048	30022	49323
30	266	469	775	1212	1917	3239	4425	6850	8702	10425	15317	26637	37995	62421
40	328	577	954	1491	2359	4001	5446	8431	10711	12831	18852	32786	46765	76829
50	389	686	1133	1771	2802	4788	6468	10012	12719	15237	22387	38934	55535	91237
60	451	794	1312	2051	3244	5520	7489	11593	14728	17644	25923	45082	64305	105644
70	512	902	1491	2330	3686	6251	8511	13174	16736	20050	29458	51231	73075	120052
80	574	1010	1670	2610	4129	6980	9532	14756	18745	22456	32994	57379	81845	134460
90	635	1119	1849	2889	4571	7686	10553	16337	20753	24862	36529	63527	90614	148868
100	697	1227	2028	3169	5014	8411	11575	17918	22762	27269	40064	69676	99384	163276
120	820	1444	2386	3728	5898	9857	13618	21080	26779	32081	47135	81973	116924	192092
140	943	1660	2744	4288	6783	11301	15660	24242	30796	36894	54206	94269	134464	220907
160	1066	1877	3102	4847	7668	12744	17703	27404	34814	41706	61276	106566	152004	249723
180	1189	2093	3460	5406	8553	14147	19746	30567	38831	46519	68347	118863	169544	278539
200	1312	2310	3818	5966	9438	15585	21789	33729	42848	51331	75418	131159	187084	307355
220	1435	2526	4176	6525	10323	17024	23831	36891	46865	56144	82489	143456	204623	336170
240	1558	2743	4534	7084	11207	18464	25874	40053	50882	60956	89559	155753	222163	364986
260	1681	2959	4892	7644	12092	19905	27917	43216	54899	65769	96630	168050	239703	393802
280	1804	3176	5250	8203	12977	21347	29960	46378	58917	70581	103701	180346	257243	422618
300	1927	3392	5608	8762	13862	22792	32003	49540	62934	75394	110772	192643	274783	451433
320	2050	3609	5966	9322	14747	24172	34045	52702	66951	80206	117842	204940	292354	480301
340	2173	3825	6324	9881	15632	25617	36088	55864	70968	85019	124913	217237	309894	509117
360	2296	4042	6682	10440	16516	27065	38131	59027	74985	89832	131984	229533	327434	537932
380	2419	4259	7040	10999	17401	28515	40174	62189	79002	94644	139055	241830	344974	566748
400	2542	4475	7398	11559	18286	29969	42217	65351	83020	99457	146125	254127	362514	595564
420	2665	4692	7756	12118	19171	31425	44259	68513	87037	104269	153196	266424	380054	624380
440	2788	4908	8114	12677	20056	32884	46302	71676	91054	109082	160267	278720	397593	653195
460	2911	5125	8471	13237	20940	34347	48345	74838	95071	113894	167338	291017	415133	682011
480	3034	5341	8829	13796	21825	35814	50388	78000	99088	118707	174408	303314	432673	710827
500	3157	5558	9187	14355	22710	37179	52430	81162	103105	123519	181479	315610	450213	740301
600	3772	6641	10977	17152	27134	44566	62644	96973	123191	147582	216833	377094	537912	
700	4387	7723	12767	19948	31558	52057	72858	112784	143277	171644	252186	438600	625611	
800	5002	8806	14557	22745	35983	59498	83072	128596	163363	195707	287540	500084	713311	
900	5617	9889	16347	25541	40407	67216	93286	144407	183449	219770	322894	561567	801010	
1000	6232	10971	18136	28338	44831	75076	103500	160218	203534	243832	358248	623051		
1100	6847	12054	19926	31134	49255	82854	113714	176029	223620					
1200	7462	13137	21716	33931	53679	91018	123928	191840						
1300	8077	14219	23506	36728	58103	99369	134142	207651						
1400	8680	15281	25260	39469	62439	107926	144153	223148						
1500	9352	16463	27215	42523	67272	116375	155310	240420						
2000	12930	22763	37628	58794	93013	164706	214738							
2500	17111	30123	49795	77805	123088	227979								



# KPREVA S11, SB12, S13

## Capacities – Air US units

Capacities for air according to ASME Section VIII (UV), based on set pressure plus 10 % overpressure at 16 °C (60 °F).

ASME Section VIII [S.C.F.M.]

Orifice	D	E	F	G	H	J	K	L	M	N	P	Q	R	T
Actual Orifice diameter d[inch]	0.551	0.551	0.709	0.886	1.11	1.42	1.69	2.11	2.37	2.6	3.15	4.15	4.96	6.36
Actual Orifice area A[inch <sup>2</sup> ]	0.239	0.239	0.394	0.616	0.975	1.58	2.25	3.48	4.43	5.30	7.79	13.55	19.33	31.75
LEO2S/G [inch]	0.111	0.196	0.324	0.506	0.801	1.296	1.849	2.863	3.637	4.357	6.401	11.132	16.004	26.085
<b>SET PRESSURE [PSIG]</b>							<b>CAPACITIES [LB/H]</b>							
15	65.0	115	189	296	468	757	1080	1672	2124	2545	3739	6502	9275	15237
20	75.0	132	218	341	540	873	1246	1928	2449	2934	4311	7498	10695	17570
30	95.0	167	276	431	683	1105	1576	2440	3100	3714	5456	9489	13535	22236
40	117	206	340	531	840	1360	1940	3003	3815	4571	6715	11679	16659	27368
50	139	245	403	631	998	1615	2304	3566	4530	5428	7975	13869	19783	32501
60	161	283	467	730	1156	1870	2668	4129	5246	6285	9234	16060	22907	37633
70	183	322	531	830	1313	2125	3032	4692	5961	7142	10493	18250	26031	42765
80	205	399	658	1029	1628	2635	3759	5819	7392	8857	13012	22630	32279	53030
90	227	438	722	1128	1786	2891	4123	6382	8107	9714	14271	24821	35403	58163
100	249	515	849	1328	2101	3401	4851	7508	9538	11428	16790	29201	41651	68428
120	293	592	976	1527	2416	3911	5579	8635	10969	13143	19309	33582	47899	78693
140	336	670	1104	1726	2732	4421	6306	9761	12400	14857	21828	37962	54147	88957
160	380	747	1231	1925	3047	4931	7034	10887	13831	16571	24346	42343	60395	99222
180	424	824	1359	2124	3362	5441	7762	12014	15262	18286	26865	46723	66643	109487
200	468	901	1486	2323	3677	5951	8490	13140	16693	20000	29384	51104	72891	119752
220	512	979	1613	2522	3992	6462	9217	14266	18123	21715	31902	55484	79139	30017
240	556	1056	1741	2722	4308	6972	9945	15392	19554	23429	34421	59864	85388	140282
260	600	1133	1868	2921	4623	7482	10673	16519	20985	25143	36940	64245	91636	150547
280	644	1210	1995	3120	4938	7992	11400	17645	22416	26858	39458	68625	97884	160811
300	688	1288	2123	3319	5253	8502	12128	18771	23847	28572	41977	73006	104093	171011
320	731	1365	2250	3518	5568	9012	12856	19898	25278	30286	44496	77386	110338	181271
340	775	1442	2378	3717	5884	9522	13584	21024	26708	32001	47014	81767	116583	191531
360	819	1519	2505	3916	6199	10033	14311	22150	28139	33715	49533	86147	122828	201790
380	863	1597	2632	4116	6514	10543	15039	23277	29570	35429	52052	90528	129073	212050
400	907	1674	2760	4315	6829	11053	15767	24403	31001	37144	54571	94908	135318	222310
420	951	1751	2887	4514	7144	11563	16494	25529	32432	38858	57089	99289	141563	232570
440	995	1829	3014	4713	7460	12073	17222	26656	33863	40573	59608	103669	147808	242830
460	1039	1906	3142	4912	7775	12583	17950	27782	35294	42287	62127	108050	154053	
480	1083	1983	3269	5111	8090	13093	18678	28908	36724	44001	64645	112430	160298	
500	1126	2369	3906	6107	9666	15644	22316	34540	43879	52573	77239	134333	191523	
600	1346	2756	4543	7103	11242	18195	25955	40171	51033	61145	89832	156163	222749	
700	1565	3142	5180	8098	12818	20745	29593	45803	58187	69717	102426	178054	253974	
800	1785	3528	5817	9094	14394	23296	33232	51435	65341	78289	115019	199946	285199	
900	2004	3915	6454	10090	15970	25847	36870	57066	72496	86860	127613			
1000	2224	4301	7090	11085	17546	28398	40509	62698	79650					
1100	2443	4687	7727	12081	19122	30948	44147	68329						
1200	2663	5074	8364	13077	20698	33499	47786	73961						
1300	2882	5460	9001	14073	22274	36050	51424	79592						
1400	3101	5846	9638	15068	23850	38600	55063	85224						
1500	3321	6232	10274	16063	25426	41149	58696	90955						
2000	4418	7778	12822	20047	31730	51354	73256	113382						
2500	5515	9710	16007	25025	39610	64107								
3000	6613	11641	19191	30004										
3500	7710	13573	22375	34983										
4000	8807	15504	25560											
4500	9904	17436	28744											
5000	11002	19368	31928											
5500	12099	21299												
6000	13196	23231												



# KPREVA S11, SB12, S13

## Capacities – Water US units

Capacities for water according to ASME Section VIII (UV), based on set pressure plus 10 % overpressure at 21 °C (70 °F).

### ASME Section VIII [US-G.P.M.]

Orifice	D	E	F	G	H	J	K	L	M	N	P	Q	R	T
Actual Orifice diameter d[inch]	0.5510	0.551	0.709	0.886	1.11	1.42	1.69	2.11	2.37	2.6	3.15	4.15	4.96	6.36
Actual Orifice area A[ch <sup>2</sup> ]	0.2390	0.239	0.394	0.616	0.975	1.58	2.25	3.48	4.43	5.30	7.79	13.55	19.33	31.75
LEO2F [inch]	0.126	0.213	0.351	0.549	0.868	1.405	2.005	3.104	3.943	4.724	6.940	12.070	17.353	28.283
Set pressure [psig]	Capacities [US-G.P.M.]													
15	13.2	22.3	36.7	57.4	90.9	147	210	325	413	494	726	1263	1801	2960
20	14.9	25.2	41.5	64.9	103	166	237	367	466	559	821	1428	2036	3346
30	17.9	30.2	49.7	77.7	123	199	284	440	559	669	983	1710	2439	4007
40	20.6	34.8	57.4	89.8	142	230	367	568	721	773	1135	1975	2817	4627
50	23.1	38.9	64.2	100	159	257	402	622	790	864	1269	2208	3149	5173
60	25.3	42.7	70.3	110	174	282	434	672	853	947	1391	2418	3450	5667
70	27.3	46.1	76.0	119	188	304	464	718	912	1022	1502	2612	3726	6121
80	29.2	49.3	81.2	127	201	325	492	762	968	1093	1606	2793	3983	6544
90	31.0	52.2	86.1	135	213	345	519	803	1020	1159	1703	2962	4225	6941
100	32.6	55.1	90.8	142	225	364	568	879	1117	1222	1795	3122	4453	7316
120	35.7	60.3	99.5	155	246	398	614	950	1207	1339	1967	3420	4878	8015
140	38.6	65.2	107	168	266	430	656	1015	1290	1446	2124	3694	5269	8657
160	41.3	69.7	115	180	284	460	696	1077	1368	1546	2271	3949	5633	9255
180	43.8	73.9	122	190	301	488	734	1135	1442	1639	2409	4189	5975	9816
200	46.1	77.9	128	201	318	514	769	1191	1513	1728	2539	4416	6298	10347
220	48.4	81.7	135	211	333	539	804	1244	1580	1812	2663	4631	6605	10852
240	50.5	85.3	141	220	348	563	836	1294	1644	1893	2781	4837	6899	11335
260	52.6	88.8	146	229	362	586	868	1343	1707	1970	2895	5034	7181	11797
280	54.6	92.2	152	238	376	608	898	1390	1766	2045	3004	5224	7452	12243
300	56.5	95.4	157	246	389	630	928	1436	1824	2116	3109	5408	7713	12672
320	58.4	98.5	162	254	402	650	956	1480	1881	2186	3211	5585	7978	13107
340	60.2	102	167	262	414	670	984	1523	1935	2253	3310	5757	8224	13510
360	61.9	104	172	269	426	690	1011	1565	1988	2318	3406	5924	8462	13902
380	63.6	107	177	277	438	709	1037	1606	2040	2382	3500	6086	8694	14283
400	65.2	110	182	284	449	727	1063	1645	2090	2444	3590	6244	8920	14954
420	66.9	113	186	291	460	745	1112	1722	2187	2504	3679	6399	9140	15016
440	68.4	116	190	298	471	763	1136	1759	2234	2563	3766	6549	9355	15369
460	70.0	118	195	304	482	780	1160	1795	2280	2621	3850	6696	9565	15715
480	71.5	121	199	311	492	797	1271	1966	2498	2677	3933	6840	9771	16053
500	72.9	123	203	317	502	813	1372	2124	2698	2732	4014	6982	9973	16384
600	79.9	135	222	348	550	891	1467	2271	2885	2993	4397	7648	10924	
700	86.3	146	240	376	594	962	1556	2408	3060	3233	4750	8272	11800	
800	92.3	156	257	401	635	1028	1640	2539	3225	3456	5078	8844	12614	
900	97.9	165	272	426	674	1091	1720	2663	3382	3666	5386	9380	13380	
1000	103	174	287	449	710	1150	1797	2781		3864	5677			
1100	108	183	301	471	745	1206	1870	2895						
1200	113	191	314	492	778	1260	1941	3004						
1300	118	199	327	512	810	1311	2009	3109						
1400	122	206	340	531	841	1360	2320	3590						
1500	126	213	352	550	870	1408								
2000	146	275	454	710	1123	1818								
2500	163	302	497	777										
3000	179	326	537	840										
3500	193	348	574											
4000	206	369	609											
4500	219	389	642											
5000	231	408												
5500	242	427												
6000	253													

# SERIES KPREVA S15



## CAPACITIES – STEAM

Capacities for saturated steam according to ASME Section VIII (UV), based on set pressure plus 10% overpressure.

US units – ASME Section VIII [lb/h]

API Standard Orifice acc. to API	D	E	F	G	G	H	H	J	J	K	K+
526 Extra Orifice				G	G	H	H	J	J	K	K+
d0 [inch]	0.433	0.579	0.724	0.906	0.929	1.142	1.157	1.406	1.496	1.772	1.890
A [inch <sup>2</sup> ]	0.147	0.263	0.412	0.644	0.678	1.024	1.052	1.552	1.758	2.465	2.805
Set pressure [psig]	Capacities [US-G.P.M.]										
35	331	591	926	1447	1523	2300	2364	3485	3949	5538	6301
40	365	652	1022	1596	1681	2538	2608	3846	4357	6110	6952
50	434	774	1213	1895	1996	3013	3097	4567	5174	7256	8255
60	502	896	1405	2195	2311	3489	3586	5287	5990	8401	9558
70	570	1019	1596	2494	2626	3965	4075	6008	6807	9546	10861
80	639	1141	1787	2793	2940	4440	4563	6729	7624	10691	12164
90	707	1263	1979	3092	3255	4916	5052	7449	8440	11836	13467
100	776	1385	2170	3391	3570	5391	5541	8170	9257	12981	14770
120	913	1630	2553	3989	4200	6342	6519	9612	10890	15272	17376
140	1049	1874	2936	4588	4830	7294	7496	11053	12523	17562	19982
160	1186	2118	3319	5186	5460	8245	8474	12495	14156	19852	22587
180	1323	2363	3702	5784	6090	9196	9451	13936	15790	22143	25193
200	1460	2607	4085	6383	6720	10147	10429	15377	17423	24433	27799
220	1597	2852	4468	6981	7350	11098	11407	16819	19056	26723	30405
240	1734	3096	4851	7579	7980	12050	12384	18260	20689	29013	33011
260	1870	3340	5234	8178	8610	13001	13362	19702	22322	31304	35617
280	2007	3585	5617	8776	9240	13952	14339	21143	23955	33594	38223
300	2144	3829	6000	9374	9870	14903	15317	22585	25589	35884	40828
320	2281	4074	6382	9973	10500	15854	16295	24026	27222	38175	43434
340	2418	4318	6765	10571	11130	16805	17272	25468	28855	40465	46040
360	2555	4562	7148	11169	11759	17757	18250	26909	30488	42755	48646
380	2692	4807	7531	11767	12389	18708	19227	28351	32121	45045	51252
400	2828	5051	7914	12366	13019	19659	20205	29792	33755	47336	53858
420	2965	5296	8297	12964	13649	20610	21183	31234	35388	49626	56463
440	3102	5540	8680	13562	14279	21561	22160	32675	37021	51916	59069
460	3239	5784	9063	14161	14909	22513	23138	34116	38654	54207	61675
480	3376	6029	9446	14759	15539	23464	24115	35558	40287	56497	64281
500	3513	6273	9829	15357	16169	24415	25093	36999	41920	58787	66887
600	4197	7495	11743	18349	19319	29171	29981	44207	50086	70239	79916
700	4881	8717	13658	21340	22468	33927	34869	51414	58252	81690	92945
800	5566	9939	15572	24332	25618	38683	39757	58621	66418	93142	105975
900	6250	11161	17487	27323	28768	43438	44645	65829	74584	104593	119004
1000	6934	12383	19402	30315	31917	48194	49533	73036	82750	116045	132033
1100	7618	13605	21316	33306	35067	52950	54421	80243	90916	127496	145062
1200	8303	14827	23231	36298	38216	57706	59309	87451	99082	138948	158091
1300	8987	16049	25145	39289	41366	62462	64197	94658	107248	150399	171121
1400	9657	17247	27022	42222	44453	67124	68988	101722	115251	161623	183892
1480	10254	18313	28692	44831	47201	71272	73252	108010	122375	171613	195258



# SERIES KPFEVA S15

## Capacities – Air

US units – ASME Section VIII [S. C. F. M.]

API Standard Orifice acc. to API	L	M	N		P		Q	R		T	
526 Extra Orifice				N+		P +			R +		T +
d0 [inch]	2.205	2.480	2.717	2.953	3.268	3.740	4.331	5.236	5.591	6.614	7.087
A [inch <sup>2</sup> ]	3.818	4.832	5.796	6.848	8.386	10.987	14.730	21.534	24.547	34.359	39.443
Set pressure [psig]	Capacities [US-G.P.M.]										
35	3049	3858	4628	5468	6697	8773	11763	17196	19602	27437	31496
40	3364	4257	5107	6033	7389	9680	12979	18974	21628	30274	34753
50	3994	5055	6064	7164	8774	11495	15411	22529	25682	35947	41266
60	4625	5853	7021	8295	10159	13309	17843	26085	29735	41621	47779
70	5255	6651	7978	9426	11544	15123	20276	29641	33788	47294	54292
80	5885	7449	8935	10556	12928	16937	22708	33197	37841	52967	60804
90	6516	8246	9892	11687	14313	18751	25140	36752	41895	58641	67317
100	7146	9044	10849	12818	15698	20565	27572	40308	45948	64314	73830
120	8407	10640	12763	15079	18468	24194	32437	47420	54055	75661	86856
140	9668	12236	14677	17341	21237	27822	37302	54531	62161	87008	99882
160	10928	13831	16591	19602	24007	31450	42166	61643	70268	98355	112908
180	12189	15427	18505	21863	26776	35079	47031	68754	78374	109702	125933
200	13450	17023	20419	24125	29546	38707	51895	75866	86481	121049	138959
220	14711	18618	22333	26386	32316	42335	56760	8297	94587	132396	151985
240	15971	20214	24247	28648	35085	45964	61624	90089	102694	143743	165011
260	17232	21810	26162	30909	37855	49592	66489	97200	110800	155090	178037
280	18493	23405	28076	33171	40624	53220	71354	104312	118907	166437	191063
300	19754	25001	29990	35432	43394	56849	76218	111423	127014	177784	204088
320	21015	26596	31904	37693	46164	60477	81083	118535	135120	189131	217114
340	22275	28192	33818	39955	48933	64105	85947	125646	143227	200477	230140
360	23536	29788	35732	42216	51703	67734	90812	132758	151333	211824	243166
400	24797	31383	37646	44478	54472	71362	95676	139870	159440	223171	256192
420	26058	32979	39560	46739	57242	74990	100541	146981	167546	234518	269217
440	27318	34575	41474	49001	60012	78619	105406	154093	175653	24586	282243
460	28579	36170	43388	51262	62781	82247	110270	161204	183759	257212	295269
480	29840	37766	45302	53523	65551	85875	115135	168316	191866	268559	308295
500	31101	39362	47216	55785	68320	89504	119999	175427	199973	279906	321321
600	32361	40957	49130	58046	71090	93132	124864	182539	208079	291253	334346
700	38665	48936	58701	69353	84938	111274	149187	218096	24861	347988	399476
800	44969	56914	68271	80661	98786	129415	173510	253654	289145	404722	464605
900	51273	64892	77841	91968	112634	147557	197833	289212	329677	461457	529734
1000	57577	72871	87412	103275	126482	165699	222155	324769	370210	518191	594863
1100	63881	80849	96982	114582	140330	183840	246478	360327	410743	574926	659992
1200	70185	88827	106552	125889	154178	201982	270801	395885	451276	631661	725121
1300	76488	96806	116123	137196	168026	220124	295124	431442	491809	688395	790250
1400	82792	104784	125693	148503	181874	238265	319447	467000	532341	745130	855379
1500	89096	112762	135264	159810	195722	256407	343770	502558	572874	801865	920508
2000	95558	120940	145073		209916						
2500	127129	160897	193004		279270						
3000	158700	200855	240935		348624						
3500	190271	240812	288866		417978						
4000	221843	280770	336796		487333						
4500											
5000											
5500											
6000											

# SERIES KPREVA S15

## Capacities – Water US units



ASME Section VIII [US-G.P.M.]

API Standard Orifice acc. to API	L	M	N		P	Q	P+	R		T	
526 Extra Orifice				N+					R+		T+
d0 [inch]	2.205	2.480	2.717	2.953	3.268	3.740	4.331	5.236	5.591	6.614	7.087
A [inch <sup>2</sup> ]	3.818	4.832	5.796	6.848	8.386	10.987	14.730	21.534	24.547	34.359	39.443
Set pressure [psig]	Capacity [US-G.P.M.]										
35	620	785	942	1112	1362	1785	2393	3498	3988	5582	6408
40	663	839	1007	1189	1457	1908	2558	3740	4263	5967	6850
50	741	938	1125	1330	1628	2133	2860	4181	4766	6672	7659
60	812	1028	1233	1457	1784	2337	3133	4580	5221	7308	8390
70	877	1110	1332	1573	1927	2524	3384	4947	5640	7894	9062
80	938	1187	1424	1682	2060	2698	3618	5289	6029	8439	9688
90	995	1259	1510	1784	2185	2862	3837	5610	6395	8951	10275
100	1048	1327	1592	1880	2303	3017	4045	5913	6741	9435	10831
120	1148	1453	1743	2060	2523	3305	4431	6478	7384	10336	11865
140	1240	1570	1883	2225	2725	3570	4786	6997	7976	11164	12816
160	1326	1678	2013	2379	2913	3816	5117	7480	8526	11935	13700
180	1407	1780	2135	2523	3090	4048	5427	7934	9044	12659	14531
200	1483	1876	2251	2659	3257	4267	5720	8363	9533	13343	15318
220	1555	1968	2361	2789	3416	4475	6000	8771	9998	13995	16065
240	1624	2055	2466	2913	3568	4674	6266	9161	10443	14617	16779
260	1690	2139	2566	3032	3713	4865	6522	9535	10869	15214	17465
280	1754	2220	2663	3146	3854	5048	6768	9895	11279	15788	18124
300	1816	2298	2757	3257	3989	5226	7006	10242	11675	16342	18760
320	1875	2373	2847	3364	4120	5397	7236	10578	12058	16878	19375
340	1933	2447	2935	3467	4246	5563	7459	10904	12429	17397	19972
360	1989	2517	3020	3568	4370	5724	7675	11220	12790	17902	20551
380	2044	2586	3103	3666	4489	5881	7885	11527	13140	18392	21114
400	2097	2654	3183	3761	4606	6034	8090	11827	13481	18870	21662
420	2148	2719	3262	3854	4720	6183	8290	12119	13814	19336	22197
440	2199	2783	3339	3944	4831	6329	8485	12404	14139	19791	22720
460	2248	2846	3414	4033	4939	6471	8675	12683	14457	20236	23230
480	2297	2907	3487	4120	5046	6610	8862	12955	14768	20671	23730
500	2344	2967	3559	4205	5150	6746	9045	13223	15073	21098	24219
600	2568	3250	3899	4606	5641	6909	9908	14485	16511	23111	26531
700	2774	3510	4211	4975	6093	7390	10702	15645	17834	24963	28656
800	2965	3753	4502	5318	6514	7982	11441	16725	19066	26686	30635
900	3145	3980	4775	5641	6909	8303	12135	17740	20222	28305	32493
1000	3315	4196	5033	5946	7283	8617	12791	18700	21316	29836	34251
1100	3477	4401	5279	6236	7638	8919	13416	19612	22356	31293	35923
1200	3632	4596	5513	6514	7978	10299	14012	20484	23350	32684	37520
1300	3780	4784	5738	6780	8303	11515	14584	21321	24304	34019	39052
1400	3923	4964	5955	7036	8617	12614	15135	22126	25221	35303	40526
1500	3922	4964	5955		8617						
2000	4060	5139	6164		8919						
2500	4688	5934	7118		10299						
3000	5242	6634	7958		11515						
3500	5742	7267	8717		12614						
4000	6202	7849	9416		13624						
4500											
5000											
5500											
6000											



# ORDERING INFORMATION

A	B	C	D	E	F	G
KPREVA - S11	03	006	FR	21	04	PLO

A	
VALVE TYPE MODEL CODE	
BOLTED BONNET SAFETY VALVE	KPREVA - S11
BALANCED BELLOW SAFETY VALVE	KPREVA - SB12
CORROSIVE SERVICE SAFETY VALVE	KPREVA -S13
SCREWED BONNET SAFETY VALVE	KPREVA - S14

B	
SIZE	
3/4" X 1"	01
1/2" X 1"	02
1"x1"	03
1" X 1 1/2"	04
1 1/2" X 2"	05
2" X 3"	06
3" X 4"	07
4" X 6"	08
6" X 8"	09
8" X 10 "	10

C	
PRESSURE CLASS	
150	006
300	009
600	015
900	025

D		
END CONNECTION		
FLANGE	RF	FR
RING TYPE JOINT		RT
NPT (THREADING)		NT
BSPT		BT

E	
BODY MATERIAL ASTM	
A 216 Gr. WCB	16
A 216 Gr. WCC	17
A 352 Gr. LCC	18
A 352 Gr. LCB	19
A 217 GR. WC6	20
A 217 GR. WC9	21
A 217 GR. C5	22
A 351 GR. CF3	23
A 351 GR. CF8	24
A 351 GR. CF3M	25
A 351 GR. CF8M	26
A 351 GR. CF8C	27
A 351 GR. CN7M	28
A 890 GR. 5A	29

F			
TRIM MATERIAL			
TRIM NO.	SEAT	DISC	STEM
01	SS316	SS316	SS316
02	SS304	SS304	SS304
03	SS316L	SS316L	SS316L
04	HF*	HF*	SS316
05	MONEL	MONEL	MONEL
06	HASTALLOY	HASTALLOY	HASTALLOY
07	PTFE	GFT	SS316

G	
OPERATOR	
SCREWED CAP	SC
BOLTED CAP	BC
SCREWED CAP WITH PLAIN LEVER	SPL
BOLTED CAP WITH PLAIN LEVER	BPL
SCREWED CAP WITH PACKED LEVER	SCL
BOLTED CAP WITH PACKED LEVER	BCL

\* HF : Hard-faced with Stellite #6 (Co-Cr-W alloy) or equivalent.  
 Trim 8 valves can also be offered for NACE service on request.  
 Trim 12 valves comply with NACE MR 01 75 for hardness and heat treatment requirements of wetted components.

SPECIAL REQUIREMENT	
TEST GAG	TG

Note :- Other Combination if required, please ask.



## OFFICE AND FACTORY



**KENT VALVE**  
CRITICAL PRESSURE & FLOW CONTROL



**UK**

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**Kent Valve Pvt. Ltd.**

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