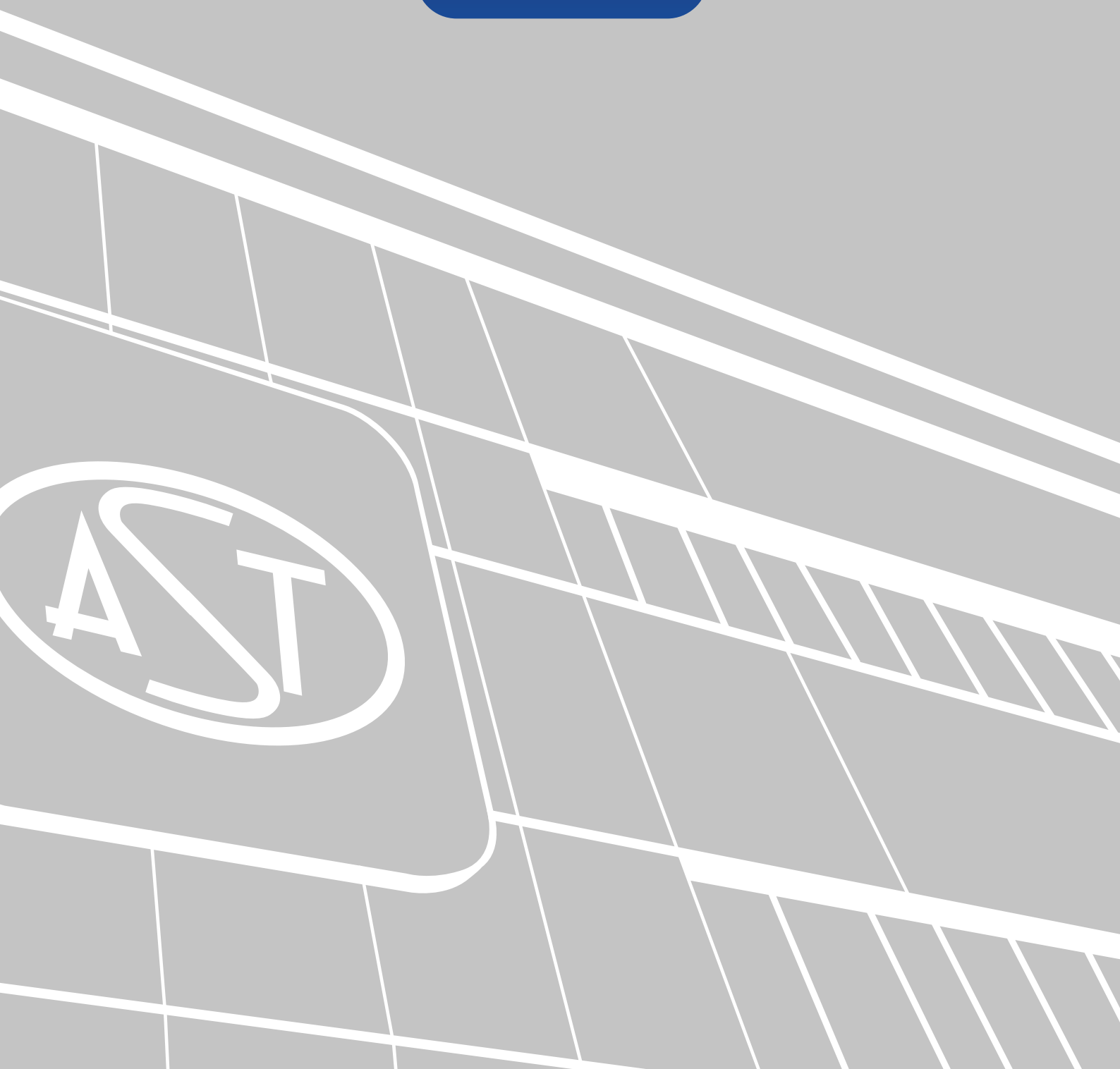


Know How

Quality

Flexibility

Reliability

Founded in 1951, AST S.p.A. is one of the first Italian manufacturers of spring loaded safety relief valves and change-over valves. Since the very early days, it has been distinguishing for technology and the degree of customization of its products.

As a matter of fact, in the following years, customers pushed AST to enter the control valve market to fulfill their most demanding requirements. These valves were specifically designed for demanding applications such as melamine and urea plants, and were manufactured from solid nickel alloy forgings.

In the following years, the range has been expanded with the introduction of heavy duty control valves with special low noise and anti-cavitation trims and, recently, with complementary products such as steam desuperheaters and steam conditioning systems for power generation field.

Over the years, AST has experienced a steady growth of sales by fostering a unique relationship with its customers made of closeness and listening to them.

The precursory adoption of state-of-the-art production equipment and the implementation of integrated processes, consolidated AST as a dependable solution provider of cutting edge products for the most severe service conditions.

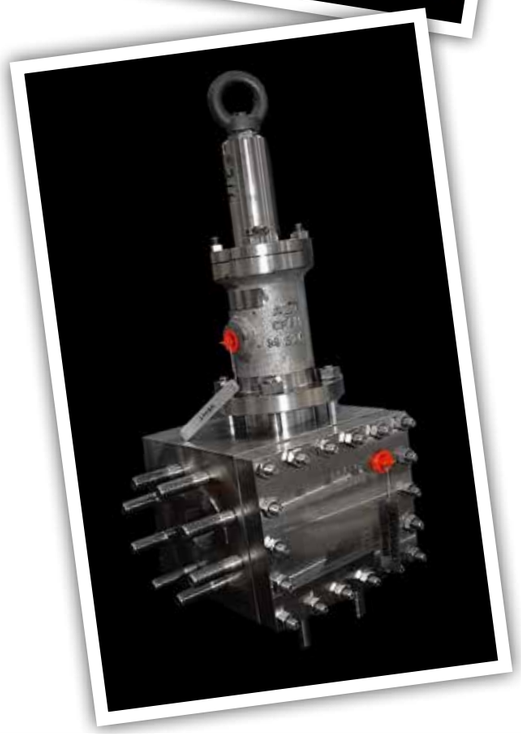
Thanks to the continuous support of the customers, AST has extended its product portfolio into the oil & gas business.

AST line of production includes a complete range of safety relief valves and pilot operated safety valves conceived for gas, steam, liquid and cryogenic applications.

Control valve series have been further developed at first for Melamine and Urea services and, in recent years, with the introduction of anti-cavitation, anti-erosion and anti-noise valves for critical applications, and of a complete series of devices for steam conditioning.

Since 2012, designing and manufacturing of pipeline gate, ball valves and rotary control valves have been transferred to another company of AST group.

Last but not least, AST is also active in the field of process automation and safety systems through a sister company, which rapidly established itself as a leading supplier of BMS and DCS for power and process industries.



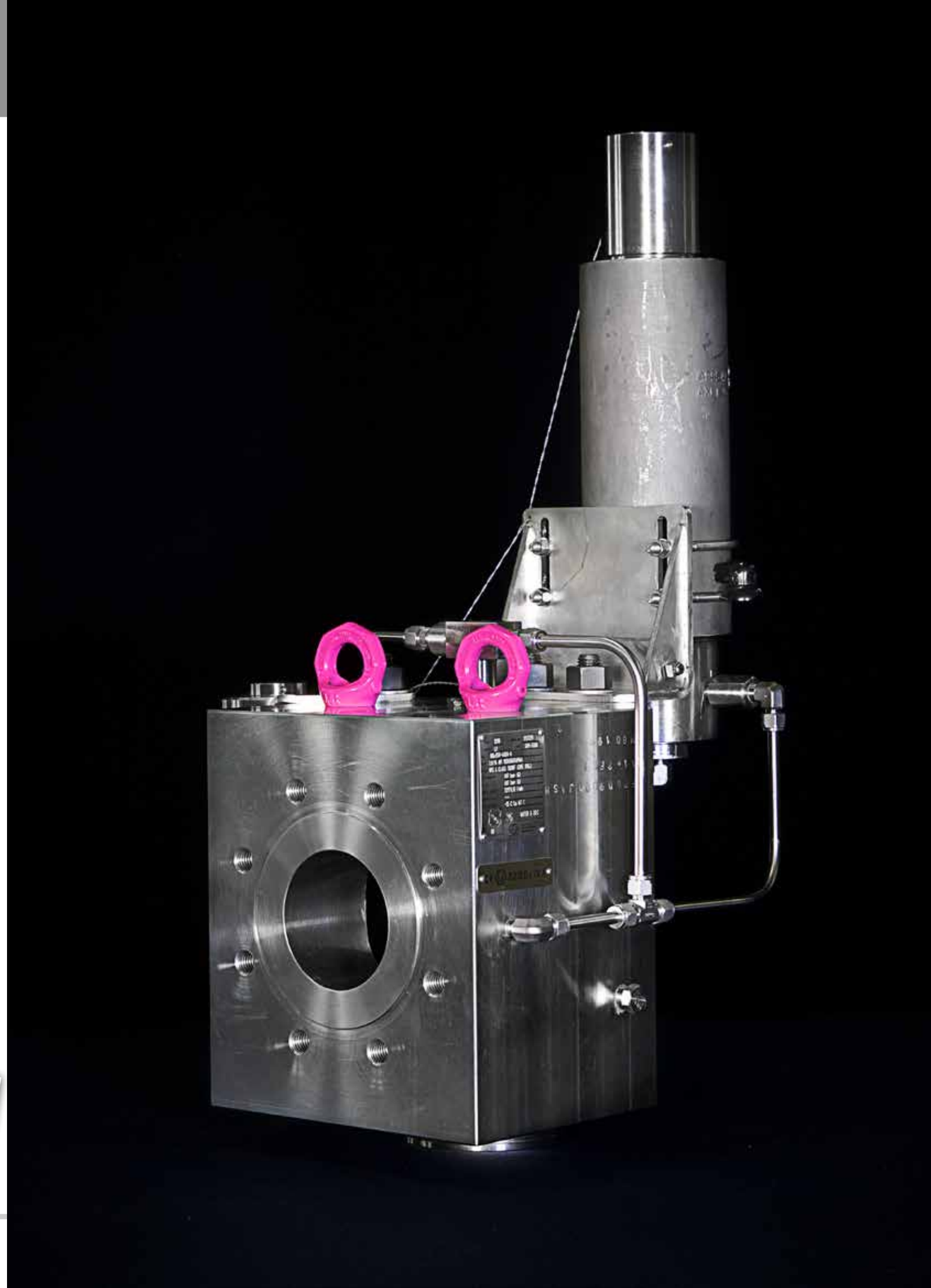
AST's growth has always been and still is based on sound technical backgrounds.
The Engineering and R&D departments are driving forces of the technology leadership, which guarantees high quality standards and product reliability.

A significant role on this regard is played by the close cooperation with two of the most advanced Universities and Research Centers in the northern Italy which dates back to early 90's. Since then, experimental tests and numerical investigations are carried out on a regular basis to validate and certify the performances of AST products.

The bottom line is that this know-how is available to the end-users to seek for optimal, innovative and unique solutions to their needs, every day.

A relevant part of AST production is customized. In addition to the usual equipment needed for production testing, AST can perform steam testing, high and low temperature fugitive emissions test (ISO 15848), cryogenic test and high pressure gas test up to 20.000 psi.
AST high qualified personnel works in compliance with detailed written instructions, issued by Engineering department and spread through the implemented quality assurance system, firstly put in place in 1993 in accordance with ISO 9001.

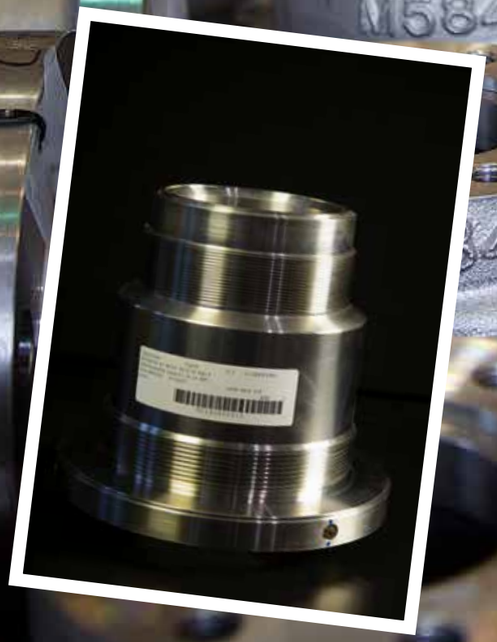
Since then AST gained several management system and product related certification, among which: OHSAS 18001 Occupational Health and Safety Assessment, ISO 14001 Environmental Management, Pressure Equipment Directive 2014/68/EU, ATEX 2014/34/EU, ASME and National Board certifications, AQSIQ for Chinese market and the approval for installation and exportation to Russia (CU TR).



AST workshop is fully equipped with machining centers, suitable to cover the entire AST range of products, which allow the production capacity to be rapidly increased.
In this way company ensures that quality standards are strictly observed and agreed delivery time are respected.

PUMA 12L

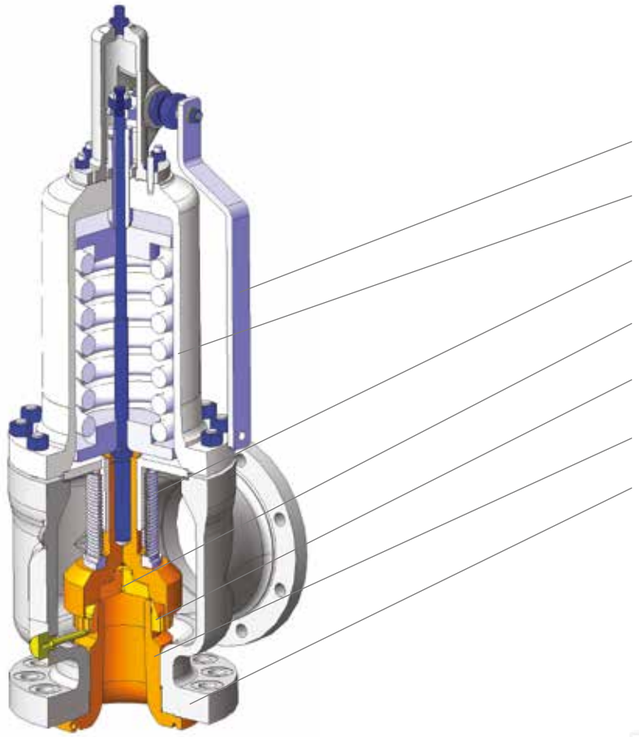
DOOSAN



DS 300 70C

TOPWORX

SMU / SMG / SML-7000



- Lifting lever
- Wide range of exotic material available
- Bellows, piston available
- Easy replaceable seat for quick maintenance and costs saving
- Certified discharge capacity for gas and liquid service
- Full nozzle design
- Special flanges available

Main features

Flanged, spring loaded, direct acting, full nozzle safety relief valves.
Media: gas, steam and liquid.
Orifices: from “D” to “T” acc. to API 526; intermediate orifices (K2, P2, Q2, R2)
Set pressure range: from 0.3 bar to 690 bar.
Temperature range: from –267 °C to 715 °C.
Overpressure: gas and steam 3% or 10%, liquid 10%.
Blowdown: gas and steam 5 to 7%.
Materials: carbon steel, alloy steel, hastelloy, monel and other materials upon request.
Options: bellows, flushing nozzle, lifting lever, test gag, finned bonnet, limit switch, resilient or hardened seat.

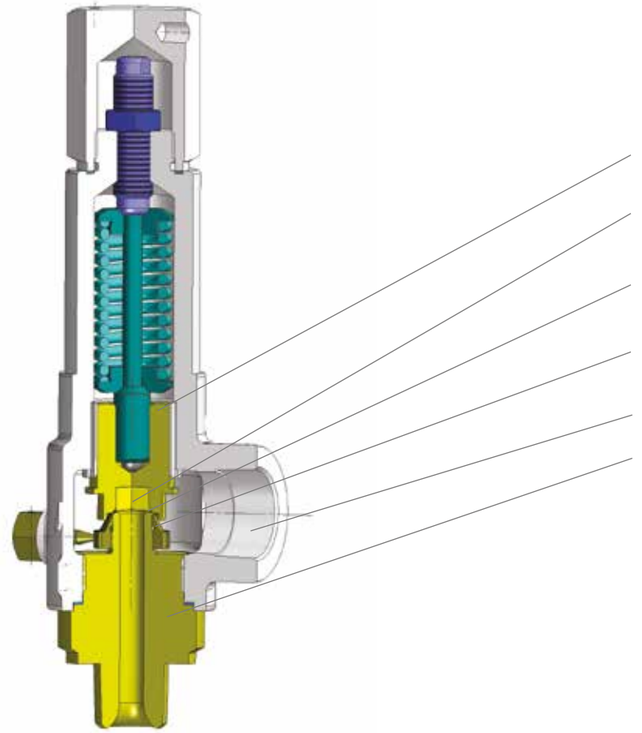
Sizes / Pressure Classes

Size inlet & outlet: from NPS 1 to NPS 8 & from NPS 2 to NPS 12.
Rating: up to ASME 2500. Special solution up to API 6A 10000 psi available.

Design Codes & Product Standards

EN ISO 4126-1, EN 764-7, EN 12516, EN 1092, API 520, API 521, API 526, API 527, ASME B16.34, ASME B16.5, ASME Sect.VIII.

SMFN / SMF / SU / SHL / SUL-7000



- Bellows and piston available
- Easy replaceable seat for quick maintenance and costs saving
- Metal to metal seat with superior tightness
- Certified discharge capacity for gas and liquid service
- Screwed or flanged connections
- Full nozzle design

Main features

Screwed and flanged, spring loaded, direct acting, full nozzle safety relief valves.
Media: gas, steam and liquid.
Overpressure: gas, steam and liquid 10%.
Blowdown: gas and steam 5 to 7%.
Orifices: from “b” to “f”.
Set pressure range: from 0.8 bar to 400 bar.
Temperature range: from –200 °C to 400 °C.
Materials: carbon steel, alloy steel, hastelloy, monel and other materials upon request.
Options: bellows, nozzle, lifting lever, test gag, resilient or hardened seat.

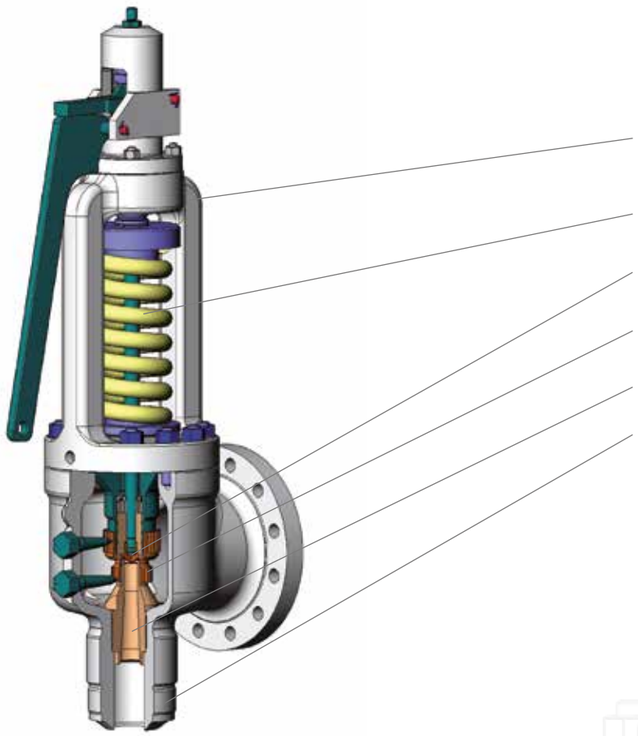
Sizes/Pressure Classes

Size inlet & outlet: from NPS 1/2 to NPS 1 & from NPS 1 to NPS 1 1/2.
Rating: up to API 6000 or ASME 2500.

Design Codes & Product Standards

EN ISO 4126-1, EN 764-7, EN 12516, EN 1092, API 520, API 521, API 527, ASME B16.34, ASME B16.5, ASME Sect.VIII.

SMS-7100



Weatherhood is available to protect the spring and the upper structure

Precision alloy wound spring for precise and repeatable performance

Flexible lip seat for superior tightness

Double ring design, 3% overpressure and 4% blowdown

High capacity discharge

Flanged or welded connection available

Main features

Flanged, spring loaded, direct acting, full nozzle safety relief valves for steam service (ASME Sect.I).
Media: steam (suitable also for gas).
Orifices: from “D” to “R2”.
Set pressure range: up to 206 bar.
Temperature range: up to 566 °C.
Overpressure: 3% or 0.14 bar.
Blowdown: 4% or 0.28 bar.
Materials: carbon steel, alloy steel and other materials upon request.
Options: lifting lever, test gag, finned bonnet, hardened seat.

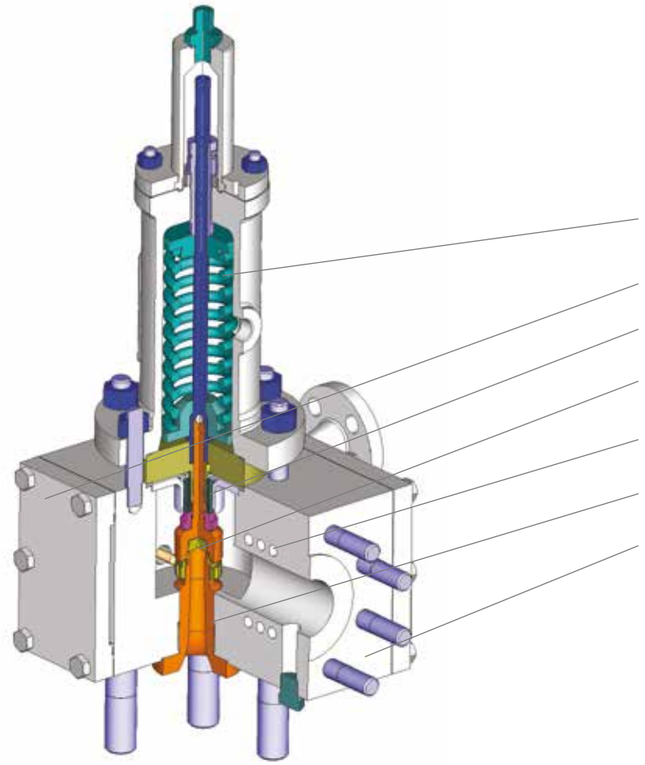
Sizes / Pressure Classes

Size inlet & outlet: from NPS 1 to NPS 8 & from NPS 1 1/2 to NPS 12.
Rating: up to ASME 2500.

Design Codes & Product Standards

EN ISO 4126-1, EN 12516, EN 12952-10, EN 1092, ASME B16.34, ASME B16.5, ASME Sect.I.

SMU / SMG / SML-7000/R



Precision alloy wound spring for precise and repeatable performance

Heating jacket

Bellows and piston available

Easy replaceable seat for quick maintenance and costs saving

Heating holes

Full nozzle design

Wide range of forged exotic material available

Main features

Flanged, spring loaded, direct acting, full nozzle safety relief valves.
The valve series 7000, are available with heating jacket in special execution where the body is made by machining a block of forged material.
Media: gas, steam and liquid.
Overpressure: gas, steam and liquid 10%. Blowdown: gas and steam 5 to 7%.
Materials: carbon steel, alloy steel, hastelloy, monel and other materials upon request.
Options: bellows, flushing nozzles, lifting lever, test gag, resilient or hardened seat.

Sizes / Pressure Classes

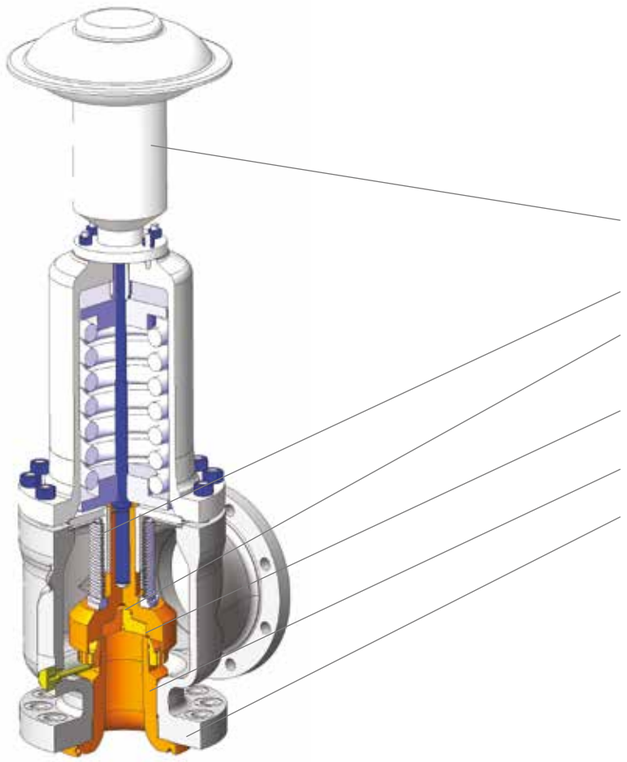
Size inlet & outlet: from NPS 3/4 to NPS 6 & from NPS 1 to NPS 8.
Rating: up to ASME 2500. Special solution up to API 6A 10000 psi available.

Design Codes & Product Standards

EN ISO 4126-1, EN 764-7, EN 12516, EN 1092, API 520, API 521, API 527, ASME B16.34, ASME Sect.VIII.

Safety Relief Valves

SMU-7000/ASV & /SLSV



- Actuator controlled by electronic or pneumatic devices
- Bellows and piston available
- Easy replaceable seat for quick maintenance and costs saving
- Metal to metal seat superior tightness
- Full nozzle design
- Special flanges available

Main features

These valves represent the capability of AST to develop special valves for customer needs.

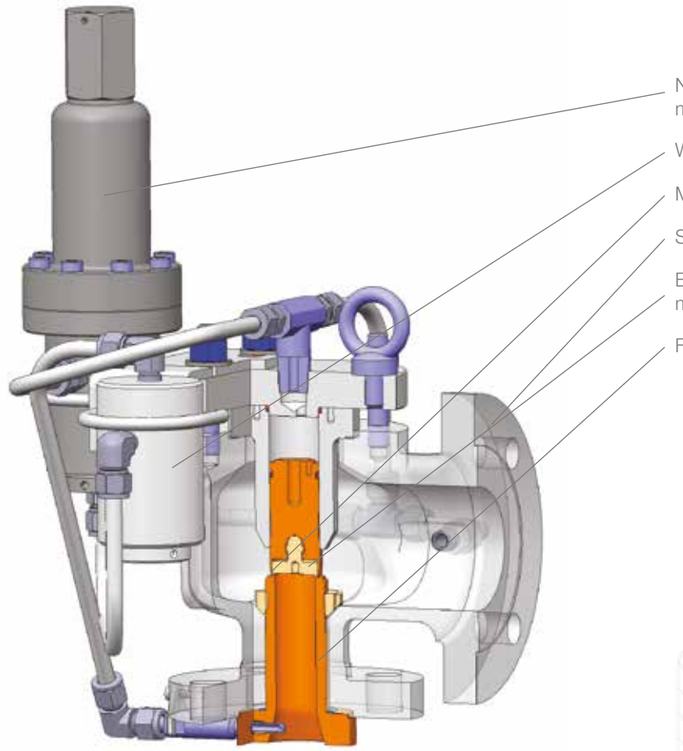
Assisted Safety Relief Valves (ASV)

This is a standard safety valve equipped with a pneumatic actuator that allows to open the valve with a pneumatic or electronic remote signal. It may be used to depressurize the vessel in case of fire or to check the functionality of the valve when the process medium tends to solidify. Overpressure can also be controlled and reduced to 2%.
The connection between the actuator and the valve stem is done in such a way that a failure of the assisting mechanism does not impair the functionality of the valve.

Supplementary Loaded Safety Relief Valves (SLSV)

This is a standard safety valve equipped with a secondary spring and a double acting pneumatic piston controlled by a redundant system.
This valve may be used when the difference between set pressure and operating pressure is less than 10%; in this case the leakage through the seats is greatly reduced or eliminated. Blowdown can also be controlled and kept between 3 and 4%.

SVP-7200



- No flowing pilot with pop or modulating action
- Wide range of accessory available
- Metal to metal or soft seat available
- Special flanges available
- Easy replaceable seat for quick maintenance and costs saving
- Full nozzle design

Main features

Flanged, pop and modulating action, full nozzle pilot operating safety valves (ASME Sect.VIII).
Media: gas, steam and liquid.
Orifices: from “D” to “T”; intermediate orifices (K2, P2, Q2, R2) and full bore orifices available.
Set pressure range: from 1 bar to 690 bar. Back pressure: up to 80%.
Temperature range: from –252 °C to 288 °C (high temperature special design available)
Materials: carbon steel, alloy steel, hastelloy, monel and other materials upon request.
Options: metal or soft seat, field test connection, back flow preventer, pilot supply filter, remote pressure sense connection, manual unloader, test gag, pilot lift lever.

Sizes / Pressure Classes

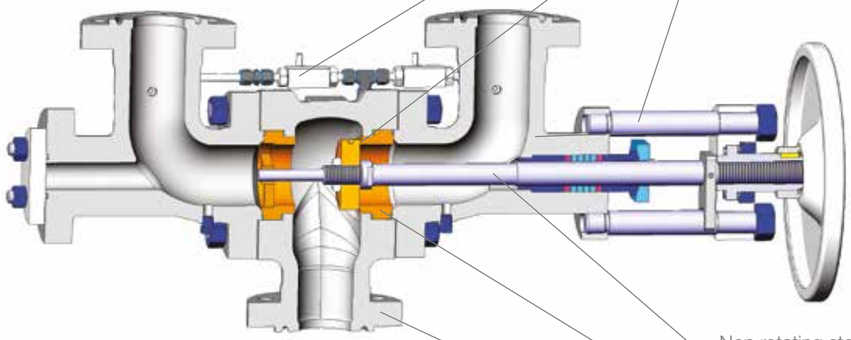
Size inlet & outlet: from NPS 1 to NPS 8 & from NPS 2 to NPS 12. Dual outlet available.
Rating: up to ASME 2500. Special solution up to API 6A 15000 psi available.

Design Codes & Product Standards

EN ISO 4126-4, EN 764-7, EN 12516, EN 1092, API 520, API 521, API 526, API 527, ASME B16.34, ASME B16.5, ASME Sect.VIII.

Safety Relief Valves

RV-6000



Pressure equalizing system

Metal to metal seat with superior tightness

Mechanical interlocked system available

Non rotating stem

Quick change seats for easy maintenance and costs saving

Special flanges available

Main features

Two safety valves can be installed together and one can be kept as spare.
Change-over valves have been designed to minimize pressure drop; flow areas are always bigger than inlet or outlet connections.
Materials: carbon steel, alloy steel, hastelloy, monel and other materials upon request.
Accessories: the change-over can be equipped with a variety of accessories such as limit switches and pneumatic or electric actuators. It is available with stem bellows for a bubble tight sealing.

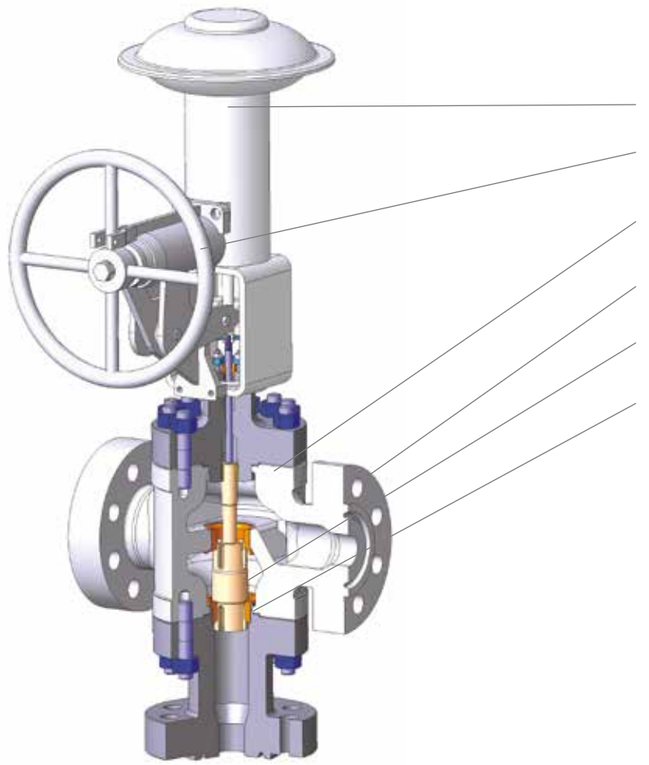
Sizes / Pressure Classes

Size: from NPS 3/4 to NPS 16.
Rating: up to ASME 2500.

Design Codes & Product Standards

EN 12516, EN 1092, ASME B16.34, ASME B16.5, ASME Sect.VIII, IEC 60534.

CV-8000



Direct or reverse acting actuator

Hand wheels, positioner and limit switches available

3 way globe valve for combining service

Special flanges available

Wide range of exotic material available

Graphite seals for fire safe design

Main features

AST produces a complete series of control valves with electric or pneumatic spring-diaphragm actuators.
Materials: carbon steel, alloy steel, hastelloy, monel and other materials upon request.
Accessories: handwheels (side and top mounted), stem bellows for bubble tight sealing, pneumatic, electropneumatic or digital positioners, filters, boosters, lockup valve etc.

Sizes / Pressure Classes

CV-8100: Globe single seat, top and bottom guided
Size: from NPS 3/4 to NPS 10.
Rating: up to ASME 2500.
CV: from 6 to 750.

CV-8200:
Globe double seat
Size: from NPS 3/4 to NPS 16.
Rating: up to ASME 2500.
CV: from 9 to 2560.

CV-8300C:
Globe three-way combining
Size: from NPS 3/4 to NPS 10.
Rating: up to ASME 2500.
CV: from 6 to 750.

CV-8300D:
Globe three-way diverting
Size: from NPS 3/4 to NPS 12.
Rating: up to ASME 2500.
CV: from 6 to 1100.

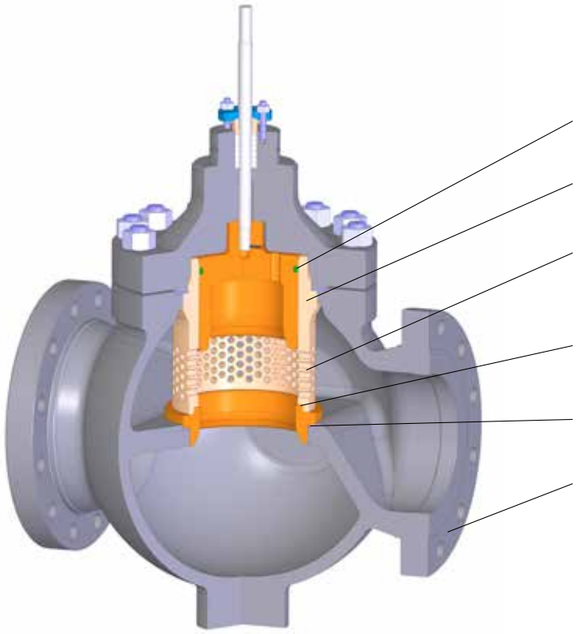
CV-8400:
Globe single seat, top guided
Size: from NPS 1/2 to NPS 8.
Rating: up to ASME 2500.
CV: from 0.001 to 650.

CV-8700:
Angle
Size: from NPS 3/4 to NPS 6.
Rating: up to ASME 2500.
CV: from 1.6 to 425.

Design Codes & Product Standards

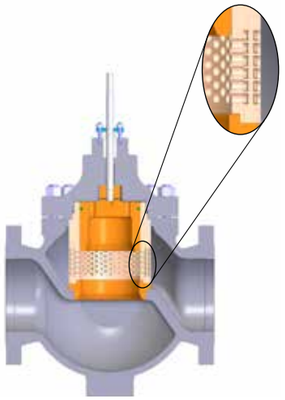
IEC 60534, FCI 70-2, EN 12516, EN 1092, ASME B16.34, ASME B16.5.

CV-8450 & CV-8750



- Balanced plug available in the whole range of temperatures and ratings
- Internal thermal differential compensation system allowing to extend working temperature up to 566 °C
- Wide range of trim configurations: cage conventional, low noise, multi-step anti-cavitation, velocity control multi-path, multi-stage for severe service applications
- Tightness up to class VI under 200 °C and up to class V in the whole range of temperature (up to 566 °C)
- Quick change trim with seat locked by bonnet trough cage
- BW and flanged connections according to ASME, EN standards, special flanged connections available

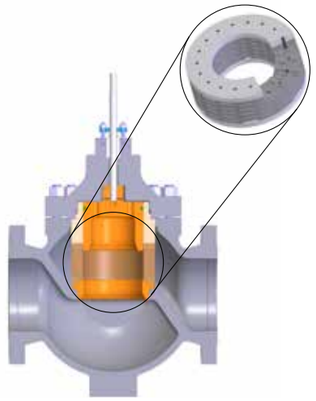
Multi cage anti cavitation trim



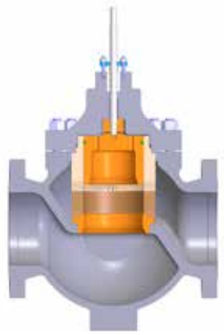
AC-DC / AC-TC
Double or Triple Cage Anti Cavitation,
high recovery trim is available for high pressure drop or when anti-cavitation trim is required

Multipath – Multistage labyrinth trim

for severe service applications



AST VeCo-LT
Velocity Controlled Labyrinth Trim,
is a multi-path, multi-stage labyrint trim specially designed for anti-cavitation, low noise and anti-erosion service.

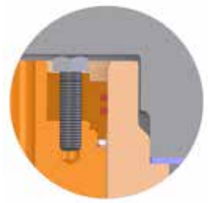


AST Vary-VeCo
Variable recovery factor trim,
combines VeCo-LT and conventional cage to avoid cavitation at low opening minimizing pressure drop at full opening.

CV-8450 & CV-8750

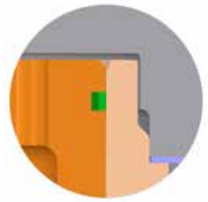
Plug Balancing available solutions

PTFE carbon-graphite loaded lip seal
up to **class VI**
T max 315 °C



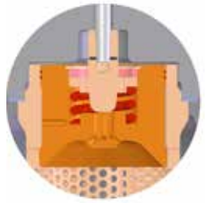
Metal C-Ring

up to **class V**
No temperature limitations



Carbon-graphite rings

up to **class IVS1**
No temperature limitations



Balanced trim with pilot plug

class **V and over**
No temperature limitations

Main features

Specially designed for critical service applications, where higher performances than conventional contoured plug, screwed seat valves are required, CV-8450 (straight way body) & CV-8750 (angle body) series valves feature a cage based robust, simple and reliable design with a wide range of anti-noise, anti-cavitation and velocity-controlling trims for heavy-duty applications.
All valves have quick change design with seat locked by the drilled cage also guiding the plug for the whole stroke, realizing flow control and allowing plug balancing to reduce actuating forces.
The trim design, with internal thermal differential compensation system, allows to extend working temperatures from -55 °C (-196 °C for the cryogenic series) up to 566 °C.
A large number of plug balancing solutions allows to reach highest sealing classes in the whole range of operating temperature with reduced actuating forces.
Standard, low noise, single and multi-cage trims in the flow capacity range from rated Cv 0.05 to over 6000 with equal-percentage or linear flow characteristic, allow to withstand most process solution by avoiding noise, cavitation and erosion.
Special designed VeCo-LT multi-path, multi-step Labyrinth Trim is available for most critical application on gas and liquid service.
Balanced trim with pilot plug is also available for high temperature compressible fluid service applications, likewise atmospheric vents, where zero leakage is required.
For service on compressible fluids with high differential pressures or in presence of evaporating fluids (flashing), special solutions with fixed orifices installed downstream the valve for a full velocity control can be supplied.

Materials: Wide range of material configurations are available: Carbon steel (WCC/LCB, A105/LF2), Cr-Mo steels (WC9/C12A, F22/F91), Stainless Steel, Duplex and Super Duplex Steels (S32760, S32550, HVD1), S31050, Nickel Alloys. Other materials upon request.

Actuators: pneumatic actuators with electro-pneumatic or digital positioners, mechanical or hydraulic side or top mounted hand-wheels. Electric or electro hydraulic actuators upon request.

Accessories: bellows for perfect tightness on the stem.

Sizes / Pressure Classes

Size from DN ½" to DN 24"
Rating: up to Class 2500.

Design Codes & Product Standards

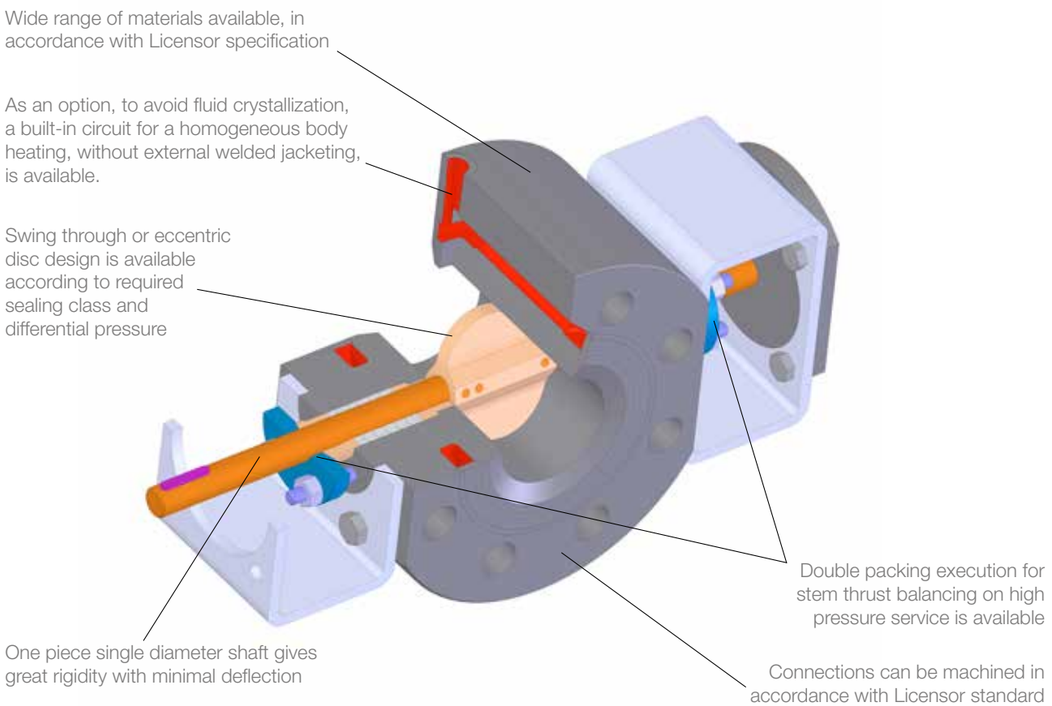
IEC 60534, FCI 70-2, EN 12516, EN 1092, ASME B16.34, ASME B16.5.

Approvals/Qualifications

CE marking 2014/68/UE CE PED and 2014/34/UE CE ATEX, CU-TR (Russia, Belarus, Kazakhstan, Armenia, Kyrgyzstas).

Control Valves

CV-8600/U & CV-8600/S



Main features

This valve series is designed and manufactured to resist to aggressive and corrosive fluids, as per Urea plant application. Although these valves have been designed for high pressures, they are also available for low pressure with special materials.
The valve body is generally from casting for pressures class 150 to 600, whereas for high pressure class and Urea application it is supplied in forged block only. Valve body can be jacketed type and heated by steam or diathermic fluids.
Materials: ASTM A182 F316L, F316L urea Grade, F310 MoLn S31050. Other material, in accordance to the Licensor standard, are available.
Connections: Flange, studded, lugged or wafer style connections, together with connection in accordance with Licensor standard, are available.

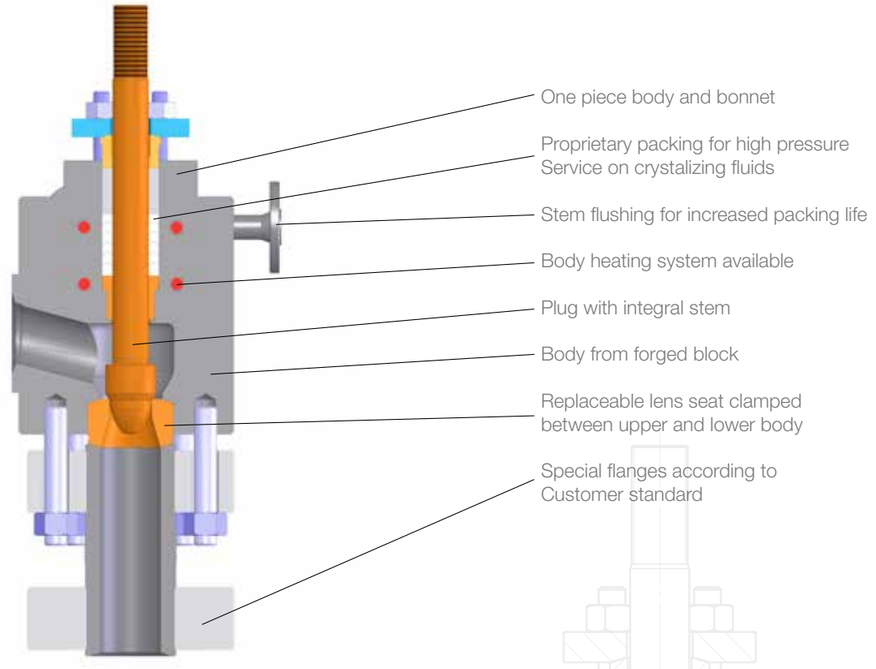
Sizes / Pressure Classes

Size: NPS 4 to NPS 12.
Rating: up to ASME 2500 or PN 400.

Design Codes & Product Standards

IEC 60534, FCI 70-2, EN12516, EN 1092, ASME B16.34, ASME B16.5.

CV-8700/U



Main features

The peculiarity of these valves is that they are made from a forged block body, in a single piece including bonnet. The total absence of threads in all the parts in contact with processing fluid, the absence of stagnation areas and the stem stiffness complete their features.
The expertise gained in the field of urea and melamine plants, the optimization of fluid-dynamic features and the use of specific materials allow to obtain a high resistance to erosion and corrosion, at high pressure, at high operating ΔP, and at high temperature.
Materials: ASTM A182 F316L, F316L urea grade, Duplex Stainless steels, F310 MoLn S31050 and others upon request.
Trim Materials: special duplex stainless steels and others, in accordance with Licensor standard, are available.
Accessories: pneumatic, electropneumatic or digital positioners, filters, boosters, lockup valve, flushing nozzle, heating jacket etc.

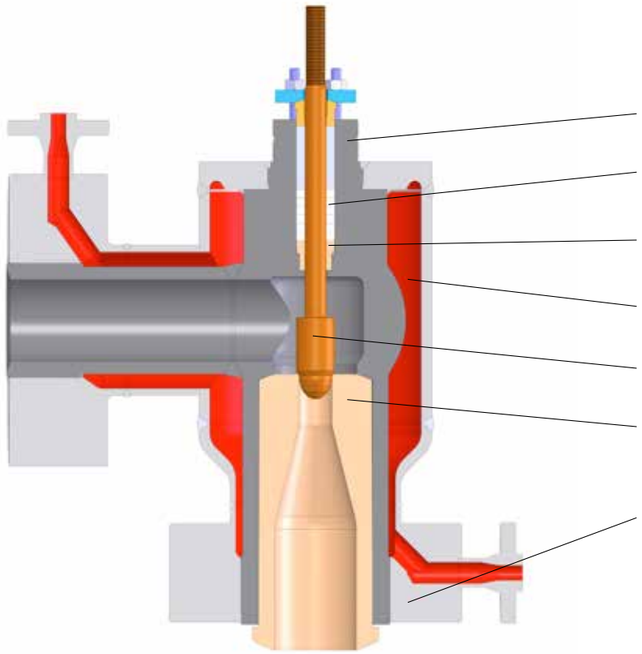
Sizes / Pressure Classes

Size: from NPS 3/4 to NPS 10.
Rating: up to PN 400 and ASME 2500.

Design Codes & Product Standards

IEC 60534, FCI 70-2, EN 12516, EN 1092, ASME B16.34, ASME B16.5.

CV-8700/S



Main features

The peculiarity of these valves is that they are made from two special material forged blocks angle welded with qualified welding process, to realize a single piece body including bonnet. The total absence of threads in all the parts in contact with processing fluid, the absence of stagnation areas and the stem stiffness complete their features.
The valve body and connection flanges are fully jacketed for heating by diathermic fluids to avoid any fluid crystallization.
The expertise gained in the field of melamine plants, the optimization of fluid-dynamic features and the use of specific materials allow to obtain a high resistance to erosion and corrosion, at high pressure, at high operating ΔP, and at high temperature.
Materials: Hastelloy C276, Alloy 59 and others upon request.
Trim Materials: Hastelloy C22, Hastelloy C276, Alloy 59 and others, in accordance with Licensor standard, are available.
Accessories: pneumatic, electropneumatic or digital positioners, filters, boosters, lockup valve, flushing nozzle, heating jacket etc.

Sizes / Pressure Classes

Size: from NPS 3/4 to NPS 10.
Rating: up to PN 400 and ASME 2500.

Design Codes & Product Standards

IEC 60534, FCI 70-2, EN 12516, EN 1092, ASME B16.34, ASME B16.5.

CV-8000 PRDS - Steam Conditioning Stations

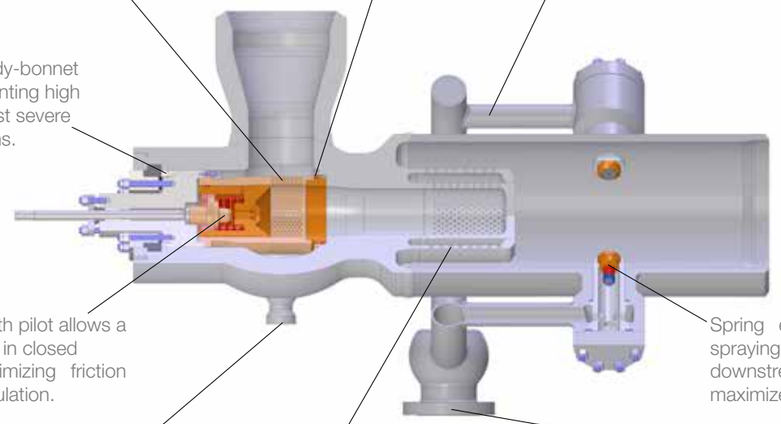
CV-8000 PRDS series has been specifically designed for severe steam conditioning services such as steam turbine bypass stations and all applications where perfect seal, frequent start-up from cold or warm conditions and fast opening is required.

Micro drilled free expanding cage reduces generated valve noise acting as strain protecting seat sealing surface from damages.

Lip seal seat design allows to minimize thermal expansions effects on body connection.

Free expanding design water distribution allows to compensate differential thermal expansions between hot (steam) and cold (water) sections.

Pressure seal body-bonnet connection warranting high reliability with most severe working conditions.



Balanced plug with pilot allows a perfect valve seal in closed position by minimizing friction forces during regulation.

Spring energized high rangeability spraying nozzles placed immediately downstream valve silencer allow to maximize desuperheating efficiency.

Drain and heating connections allow to avoid steam condensate accumulation and to reduce thermal stresses on valve body when quick opening is request on high temperature service applications.

Free expanding design silencer is optimized to reduce more critical acoustical frequencies by minimizing downstream transmitted noise. VeCo-LT silencer is available for most severe applications or when very low SPL is required.

Integrated water injection allows to dramatically reduce layout complexity allowing to optimize steam desuperheating efficiency.

Main features

AST produces a complete series of Pressure Reducing and Desuperheating Stations for steam conditioning in power generation and industrial applications.
Based on the wide range of CV-8000 control valve series and on the comprehensive range of DS-3000 steam desuperheaters, the DS-8000 PRDS's can be configurated to comply to practically all steam conditioning applications.

Sizes / Pressure Classes

Size from DN 1" to DN 60"
Rating: up to Class 4500.

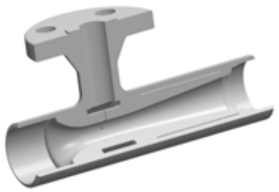
Design Codes & Product Standard

IEC 60534, FCI 70-2, EN 12516, EN 1092, ASME B16.34, ASME B16.5, TRD 301.

Available layout configurations:

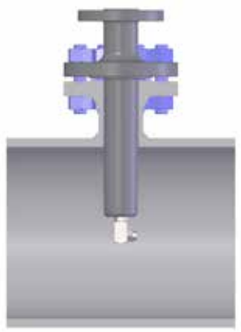
Straight-way body with cage trim, conventional balanced or pilot balanced plug.
Angle body, bottom inlet with cage trim, conventional balanced plug.
Angle body, side inlet with cage trim, conventional balanced or pilot balanced plug.
Offset body with cage trim, conventional balanced or pilot balanced plug.

DS-3000 - Steam Desuperheathers



DS-311C
Venturi Nozzle
Turndown 7÷1 max

DS-3211
Fixed Area Nozzle
Turndown 5÷1 max

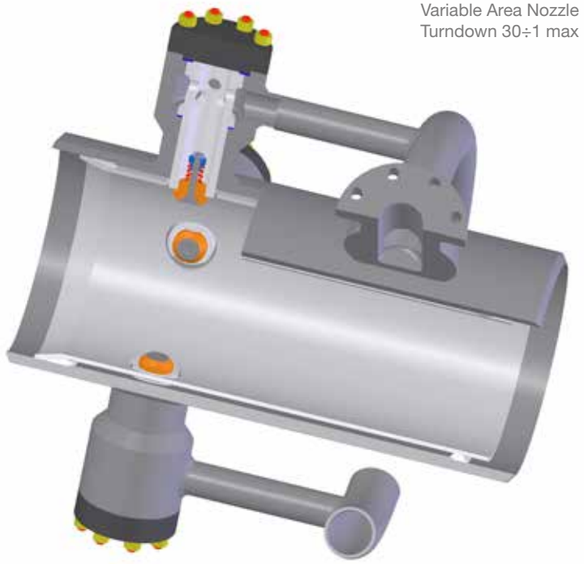


DS-321C
Fixed Area Nozzle
with injection cha[illegible]er

DS-3411
Variable Area Nozzle
Probe mounting

DS-3400
Variable Area Nozzle
Turndown 30÷1 max

DS-3711
Multi Nozzle self-actuated
Turndown up to 100÷1.



DS-343H
Injection chamber with integrated water distribution circuit, variable area nozzles and specialty thermal liner for frequent startups.

Main features

Thanks to the availability of a complete range of steam desuperheaters, AST can supply the optimal solution for whichever steam conditioning application.
An experienced technical staff is available to support the customer in selecting the most appropriate solution and providing support for a correct piping layout, allowing an optimal installation and satisfactory operation of the equipment supplied.

How to reach us

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05/2019

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