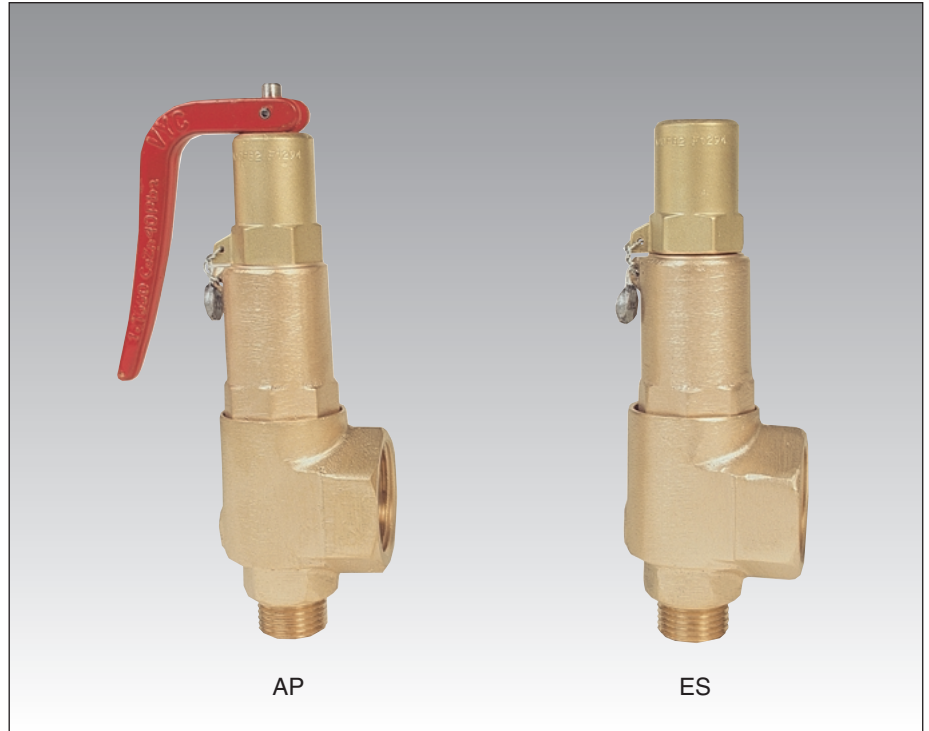


Normal safety valve with spring loading. (AN)

Model 295



The valve works as an automatic pressure releasing regulator activated by the static pressure existing at the entrance to the valve and is characterized by its ability to open, at the first proportional to the pressure increase, and after instantly and totally.

Desing in line with the “AD-MERKBLATT A2 Specifications shet” and “Technical safety instructions for TRD-421 steam boilers”.
In accordance with UNE 9-100-86 “Safety valve” (Steam boilers).

Complies with the requirements of “Regulation for pressurised equipment ITC-MIE-AP...” (Safety valve).

Component test stamp: TÜV Rheinland (German technical supervision authority).

Licence N°:

Specifications

- Model AP open cap with lever.
- Model ES closed cap without lever.
- 90° angular flow.
- Activated by direct action helicoid spring.
- Simplicity of construction ensuring minimum maintenance.
- Materials carefully selected for their resistance to corrosion.
- Internal body designed to offer favourable flow profile.
- Seat and sealing disk balanced, making them extremely tightness, even exceeding DIN-3230 requeriments. Page 3.
- Great discharge capacity.
- Deflector nut designed to make easier the steam expansion, a sudden opening and to measure the blowdown of any fluid.
- Guarantees absolute opening and closing precision.
- Equipped with draining screws for removing condensation.
- Orientation of the lever by rotation.
- All the valves are supplied sealed at the set pressure requested, simulating operational conditions, and are vigorously tested.
- All components are numbered, registered and checked. If requested in advance, material, casting, test and efficiency certificates will be enclosed with the valve.

IMPORTANT

1.- Silicone's rubber, Fluorelastomer (Vitón) seals, PTFE (Teflón)... etc., achieving leakage levels less than:

$$0,3 \times 10^{-3} \frac{\text{Pa cm}^3}{\text{sec.}}$$

The ranges of application allow certain flexibility although we recommend limiting them to:

| RANGE OF APPLICATIONS OF THE SEALS | | | | | | |
|------------------------------------|---|----------------------------|---------|--------------------|----------|-----|
| FLUID | | SET PRESSURE IN bar | | | | |
| | | 0,2 | 1,5 | 3,5 | 4,0 | 8,0 |
| Saturated steam | | S | V | | | T |
| Liquids and gases | | S | | V | | T |
| SEALS | | TEMPERATURE IN °C | | | | |
| | | ACCORDING TO MANUFACTURERS | | RECOMMENDED BY VYC | | |
| | | MINIMUM | MAXIMUM | MINIMUM | MAXIMUM | |
| Silicone's rubber | S | -60 | +200 | -50 | +115 | |
| Fluorelastomer (Vitón) | V | -40 | +250 | -30 | +150 | |
| PTFE (Teflón) | T | -265 | +260 | -80 | +230 (1) | |

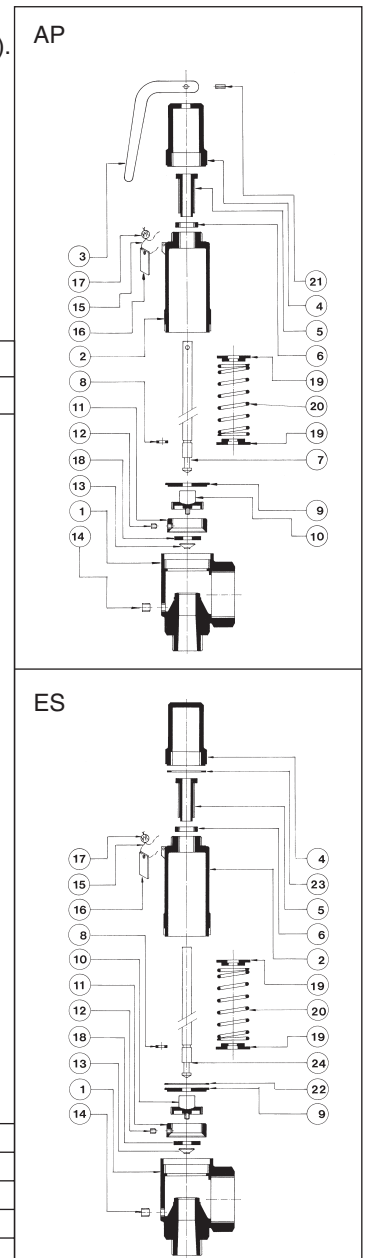
(1) For temperatures exceeding 230°C apply metallic seal only.

Depending on demand:

- Buna-nitrils seals, Butyl, Natural rubber, E.P.D.M., Chlorosulphonate polyethylene (Hypalon), Neoprene, etc.
- Seal metal by metal.
- Electrical contact indicating open/closed.
- Other connections.
- Possibility of manufacture in other types of material, for special operating conditions (high temperatures, fluids, etc.).
- Totally free of oil and grease, to work with oxygen, avoiding possible fire risks (UV-Oxygen-VBG62).

| Nº PIECE | PIECE | MATERIAL |
|-------------------------|----------------------|--------------------------------------------------------------|
| | | BRONZE |
| 1 | Body | Bronze (DIN-2.1096.01 G-Cu Sn 5 Zn Pb) |
| 2 | Bell | Bronze (DIN-2.1096.01 G-Cu Sn 5 Zn Pb) |
| 3 | Lever | Stainless steel (DIN-1.4301)(AISI-304) |
| 4 | Cap | Brass (DIN-1.7660 Cu Zn 40 Pb2) |
| 5 | Hollow screw | Brass (DIN-1.7660 Cu Zn 40 Pb2) |
| 6 | Hollow screw nut | Brass (DIN-1.7660 Cu Zn 40 Pb2) |
| 7, 24 | Rod | Stainless steel (DIN-1.4401) (AISI-316) |
| 8 | Ring | Stainless steel (DIN-1.4300) (AISI-302) (1) |
| 9 | Lead | Brass (DIN-1.7660 Cu Zn 40 Pb2) |
| 10 | Plug | Brass (DIN-1.7660 Cu Zn 40 Pb2) |
| 11 | Deflector | Brass (DIN-1.7660 Cu Zn 40 Pb2) |
| 12 | Stud | Stainless steel (DIN-1.4401) (AISI-316) |
| 13 | Sealing nut | Brass (DIN-1.7660 Cu Zn 40 Pb2) |
| 14 | Cap | Brass (DIN-1.7660 Cu Zn 40 Pb2) |
| 15 | Sealing wire | Sealing wire |
| 16 | Characteristic plate | Aluminium |
| 17 | Seal | Lead |
| 18 | Sealing disk | PTFE (Teflón) Silicone's rubber Fluorelastomer (Vitón) |
| 19 | Spring press | Brass (DIN-1.7660 Cu Zn 40 Pb2) |
| 20 | Spring | Stainless steel (DIN-1.4300) (AISI-302) |
| 21 | Clip | Stainless steel (DIN-1.4310) (AISI-301) |
| 22 | Joint | Klingerit cardboard |
| 23 | Washer | Copper |
| R1 x R2 | | 1/2" x 1" and 3/4" x 1 1/4" |
| PN | | PMS . 25 bar |
| OPERATING CONDITIONS | PRESSION IN bar | 25 |
| | MAX. TEMP. IN °C | 225 |
| | MIN. TEMP. IN °C | -60 |

(1) R. 1/2" x 1" in Phosphorous bronze (Cu Sn 6).



DISASSEMBLY AND ASSEMBLY

1 – Disassembly

To replace the spring (20), or clean any of the internal components of the valve, proceed in the following manner:

A – Withdraw the clip (21), using a punching tool, and lift the lever (3).

B – Unscrew the cap (4) and remove.

C – Holding the rod (7) (24) steady, loosen the hollow screw nut (6), until the constructive limit, and the hollow screw (5) until you note a releasing of the spring (20).

D – Unscrew the bell (2) holding the rod (7) (24) and the body (1) steady.

E – Lift the bell (2) and you will have access to all the components.

2 – Assembly

A – Enter the bell (2) and the joint (22) through the upper part the rod (7) (24).

B – Turn the bell (2) holding the rod (7) (24) and the body (1) steady.

C – Replace the hollow screw (5) with the hollow screw nut (6).

D – Adjust the set pressure with the hollow screw (5) and fix the adjustment position with the hollow screw nut (6).

E – Change the washer (23) and lightly tighten the cap (4).

F – Place the lever (3) and fix it with the clip (21).

ADJUSTING THE SET PRESSURE

A – Proceed according to DISASSEMBLY A, B, C.

B – Proceed according to ASSEMBLY D, E, F.

ADJUSTEMENT OF THE BLOWDOWN

A – Slack the stud (12).

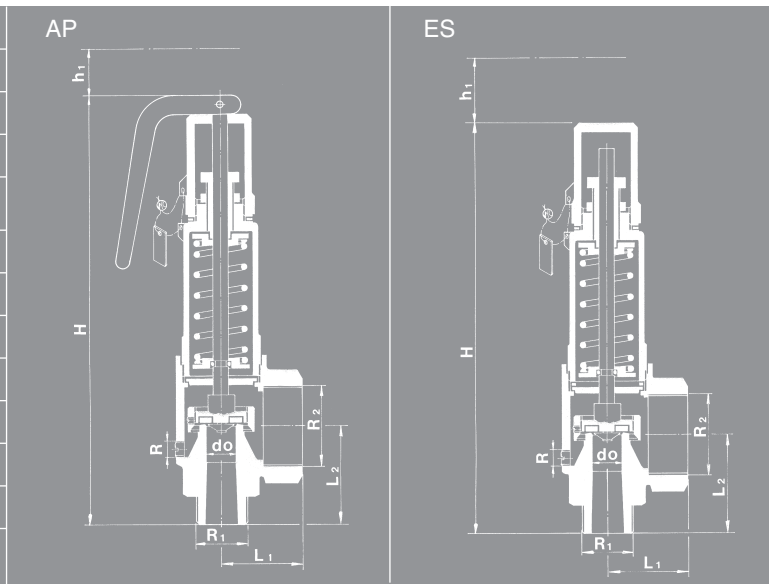
B – Twist or untwist the deflector (11) according to the difference in the wished locking pressure (blowdown).

C – Fix the deflector position screwing the stud (12).

WARNING

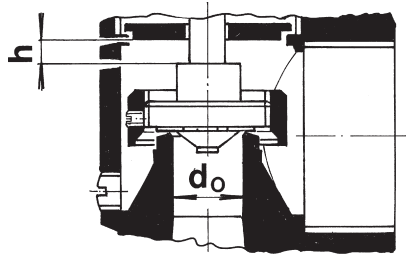
In case to do the change of the sealing disc (18) make sure that the surface of this as well as the one of the seat into the body (1) the correctly rectified and free of impurities.

| R ₁ x R ₂ | 1/2" x 1" | | 3/4" x 1 1/4" | |
|-----------------------------------|---------------------------------------------------------------------|-------|---------------|-------|
| CONNECTIONS | Whitworth cylindrical Male x Female thread ISO 228/1 1978 (DIN-259) | | | |
| MODEL | AP | ES | AP | ES |
| d ₀ | 15 | | 15 | |
| $A_0 = \frac{\pi \cdot d_0^2}{4}$ | 176,7 | | 176,7 | |
| H | 161 | 150 | 212 | 199 |
| h ¹ | 50 | 39 | 60 | 46 |
| L ₁ | 34 | 34 | 41 | 41 |
| L ₂ | 41 | 41 | 49 | 49 |
| R | 1/8" | | | |
| | Whitworth cylindrical Female thread ISO 228/1 1978 (DIN-259) | | | |
| WEIGHT IN Kgs. | 0,71 | 0,64 | 1,50 | 1,43 |
| CODE 2002-295. | 60211 | 60212 | 63411 | 63412 |



| SET PRESSURES AND REGULATING RANGES | | | | |
|-------------------------------------|--------------------------------|--------------------|---------------|-------|
| R ₁ x R ₂ | | 1/2" x 1" | 3/4" x 1 1/4" | |
| SET PRESSURES IN bar | MAXIMUM (LIQUIDS AND GASES) | | 25 | 25 |
| | MAXIMUM (SATURATED STEAM) | | 25 | 25 |
| | MINIMUM | STEAM AND GASES | 0,5 | 0,5 |
| | | LIQUIDS (1) | 0,2 | 0,2 |
| SPRING REGULATING RANGE IN bar | 0,20 to 0,70 | CODE | 56341 | 56348 |
| | 0,50 to 1,60 | CODE | 56342 | 56349 |
| | 1,40 to 3,50 | CODE | 56343 | 56350 |
| | 3,00 to 5,50 | CODE | 56344 | 56351 |
| | 5,00 to 10,00 | CODE | 56345 | 56352 |
| | 9,00 to 15,00 | CODE | 56346 | 56353 |
| | 14,00 to 20,00 | CODE | | 56354 |
| | 19,00 to 25,00 | CODE | 56347 | 56355 |

(1) For set pressures less than 0,5 bar previous consult with our technical department.



RECOMMENDED RANGES OF APPLICATION

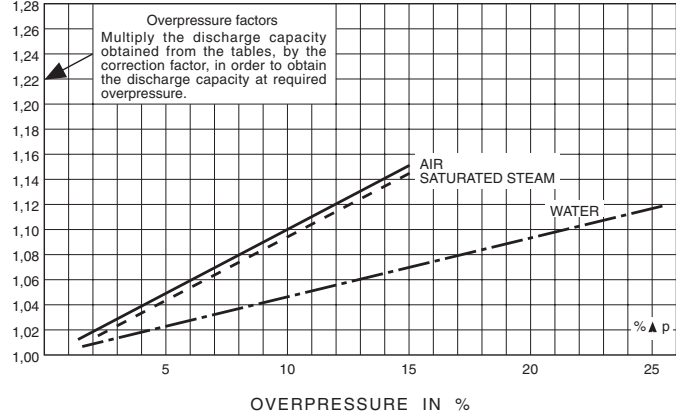
| | | MODEL | AP | ES |
|-------|-----------------|-------|-------|----|
| FLUID | SATURATED STEAM | | * | |
| | GASES | | * (1) | * |
| | LIQUIDS | | * (1) | * |

(1) With noxious or expensive fluids apply only ES model.
 If external overpressure exists, the AP model cannot be used.
 With external constant overpressure, the spring is adjusted deducting the overpressure from the set pressure.

COEFFICIENT OF DISCHARGE FOR SATURATED STEAM AND GASES

| R1 x R2 | | 1/2" x 1" | 3/4" x 1 1/4" |
|-----------------------------|---------------|-----------|---------------|
| d0 | | 15 | 15 |
| h | | 2,20 | 3,75 |
| h/d0 | | 0,14 | 0,25 |
| COEFFICIENT OF DISCHARGE αd | 0,50 to 1,00 | 0,29 | 0,55 |
| | 1,00 to 25,00 | 0,35 | 0,62 |

P_a = Overpressure permitted [bar] absolute.
 P = Set pressure [bar] absolute.



DISCHARGE CAPACITY

| R1 x R2 | 1/2" x 1" | 3/4" x 1 1/4" | | | | |
|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------|------|------|-------|
| d0 | 15 | 15 | | | | |
| $A_0 = \frac{\pi \cdot d_0^2}{4}$ | 176,7 | 176,7 | | | | |
| P [bar] | For other, not so dense liquids, other than water at 20°C apply: | | | | | |
| | $V_L = \sqrt{\frac{Q_A}{Q_L}} \cdot V_A \quad \text{and} \quad V_A = V_L \cdot \sqrt{\frac{Q_L}{Q_A}}$ <p>I - Saturated steam in Kg/h. II - Air at 0°C and 1.013 bar in [Nm³/h]. III - Water at 20°C in l/h.</p> <p>V_A = Water flow according to table. V_L = Liquid flow. Q_A = Water density at a 20°C. ($Q_A=998 \text{ Kg/m}^3$). Q_L = Liquid density.</p> | | | | | |
| SET PRESSURE IN bar | I | II | III | I | II | III |
| 0,5 | 40 | 50 | 1780 | 76 | 92 | 3435 |
| 1,0 | 54 | 68 | 2517 | 102 | 128 | 4858 |
| 1,5 | 74 | 101 | 3082 | 137 | 160 | 5959 |
| 2,0 | 98 | 122 | 3560 | 175 | 220 | 6877 |
| 2,5 | 113 | 143 | 3980 | 202 | 255 | 7588 |
| 3,0 | 128 | 162 | 4360 | 229 | 290 | 8299 |
| 3,5 | 144 | 183 | 4709 | 257 | 328 | 9010 |
| 4,0 | 160 | 204 | 5034 | 285 | 360 | 9720 |
| 4,5 | 176 | 231 | 5339 | 323 | 395 | 10306 |
| 5,0 | 192 | 258 | 5628 | 361 | 430 | 10870 |
| 6,0 | 225 | 286 | 6165 | 400 | 510 | 11908 |
| 7,0 | 255 | 327 | 6659 | 452 | 580 | 12859 |
| 8,0 | 285 | 368 | 7119 | 505 | 650 | 13745 |
| 9,0 | 315 | 409 | 7551 | 560 | 723 | 14576 |
| 10,0 | 346 | 450 | 7959 | 615 | 800 | 15370 |
| 12,0 | 407 | 530 | 8719 | 720 | 940 | 16828 |
| 14,0 | 468 | 612 | 9417 | 880 | 1090 | 18185 |
| 16,0 | 525 | 694 | 10068 | 935 | 1230 | 19440 |
| 18,0 | 588 | 775 | 10678 | 1045 | 1380 | 20610 |
| 20,0 | 647 | 857 | 11256 | 1150 | 1520 | 21725 |
| 22,0 | 709 | 940 | 11805 | 1260 | 1665 | 22786 |
| 24,0 | 770 | 1020 | 12330 | 1370 | 1810 | 23799 |
| 25,0 | 810 | 1060 | 12535 | 1470 | 1881 | 24290 |

Calculus according "AD-Merkblatt A2".