

Type 459

Safety Relief Valves
– spring loaded

Metric Units

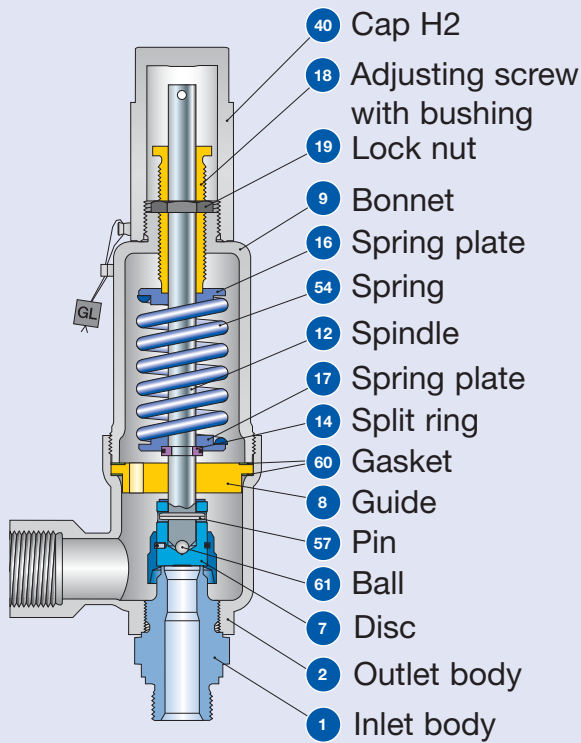


Facts

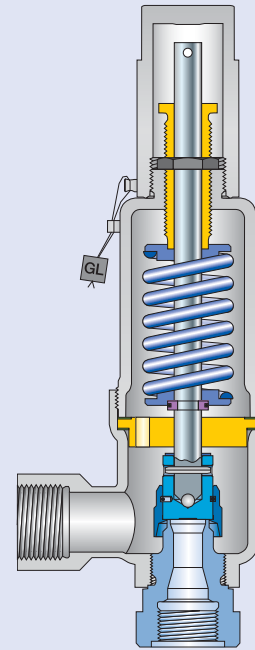
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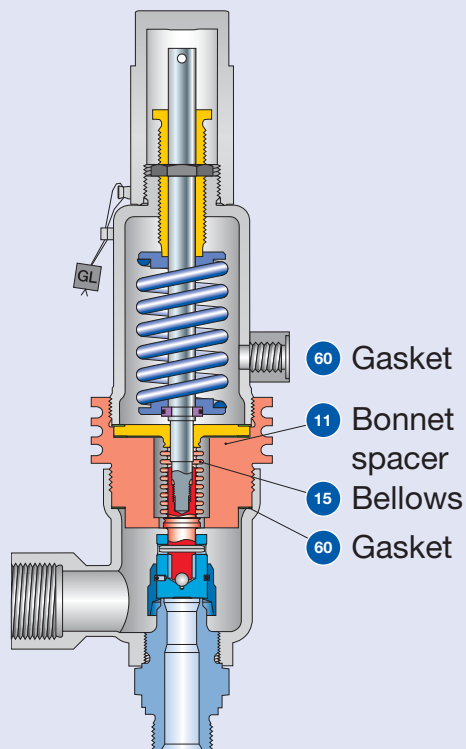
Available designs



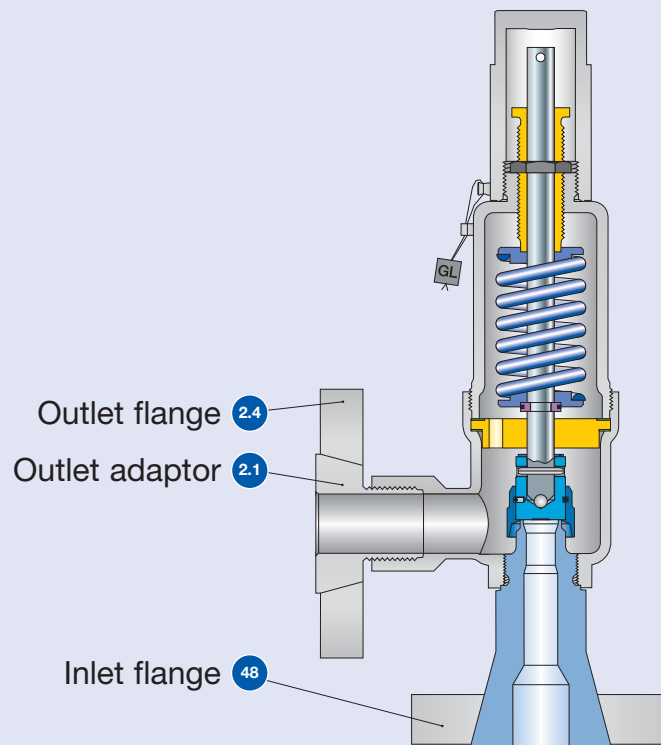
Conventional design
Threaded connection



Conventional design
Threaded connection



Balanced bellows
Threaded connection



Conventional design
Flange connection

Available designs – materials

| Materials | | | | | |
|-----------|------------------------------|-------------------------|--|--|--|
| Item | Component | Remarks | Type 4593 | Type 4592 | Type 4594 |
| 1 | Base / Inlet body | Threaded connection | 1.4104 SA 479 430 | 1.4404 SA 479 316L | 1.4404 SA 479 316L |
| | | Flange connection | 1.4404 SA 479 316L | 1.4404 SA 479 316L | 1.4404 SA 479 316L |
| 2 | Outlet body | | 0.7043 Ductile Gr. 60-40-18 | 1.0619 WCB | 1.4408 ¹⁾ CF8M ¹⁾ |
| 2.1 | Outlet adaptor | Flange connection | 1.4404 316L | 1.4404 316L | 1.4404 316L |
| 2.4 | Outlet flange | Flange connection | 1.4404 316L | 1.4404 316L | 1.4404 316L |
| 7 | Disc | Metal seat | 1.4122 Hardened stainless steel | 1.4122 Hardened stainless steel | 1.4404 316L |
| 8 | Guide | | 1.4104 tenifer Chrome steel tenifer | 1.4104 tenifer Chrome steel tenifer | 1.4404 316L |
| | | Balanced bellows design | 1.4404 / SA 316L Upper conn. part of balanced bellows | 1.4404 / SA 316L Upper conn. part of balanced bellows | 1.4404 / SA 316L Upper conn. part of balanced bellows |
| 9 | Bonnet | | 0.7043 Ductile Gr. 60-40-18 | 1.0460 105 | 1.4404 316L |
| | | Balanced bellows design | 1.4404 316L | 1.4404 316L | 1.4404 316L |
| 11 | Bonnet spacer | Balanced bellows design | 1.0460 Steel | 1.0460 Steel | 1.4404 316L |
| 12 | Spindle | | 1.4021 420 | 1.4021 420 | 1.4404 316L |
| | | Balanced bellows design | 1.4404 316L | 1.4404 316L | 1.4404 316L |
| 14 | Split ring | | 1.4104 Chrome steel | 1.4104 Chrome steel | 1.4404 316L |
| 15 | Bellows | Balanced bellows design | 1.4571 SA 316Ti | 1.4571 316Ti | 1.4571 316Ti |
| 16/17 | Spring plate | | 1.0718 Steel | 1.0718 Steel | 1.4404 316L |
| 18 | Adjusting screw with bushung | | 1.4104 / PTFE Chrome steel / PTFE | 1.4104 / PTFE Chrome steel / PTFE | 1.4404 / PTFE 316L / PTFE |
| 19 | Lock nut | | 1.4104 Chrome steel | 1.4104 Chrome steel | 1.4404 316L |
| 40 | Cap H2 | | 1.0718 Steel | 1.0718 Steel | 1.4404 316L |
| 48 | Inlet flange | Flange connection | 1.4404 316L | 1.4404 316L | 1.4404 316L |
| 54 | Spring | Standard | 1.1200 / 1.8159 / 1.7107 Carbon steel | 1.1200 / 1.8159 / 1.7107 Carbon steel | 1.4310 Stainless steel |
| | | Optional | 1.4310 Stainless steel | 1.4310 Stainless steel | - - |
| 57 | Pin | | 1.4310 Stainless steel | 1.4310 Stainless steel | 1.4310 Stainless steel |
| 60 | Gasket | | Graphite / 1.4401 Graphite / 316 | Graphite / 1.4401 Graphite / 316 | Graphite / 1.4401 Graphite / 316 |
| | | | 1.3541 Hardened stainless steel | 1.3541 Hardened stainless steel | 1.4401 316 |

Please notice:

- Modifications reserved by LESER.
- If several materials are specified LESER defines the material.
- LESER can upgrade materials without notice.
- Every part can be replaced by other material acc. to customer specification.

¹⁾Type 4594 with outlet body deep-drawn: outlet body material 1.4404 / 316L

How to order – Article numbers

| Article numbers | | | | | | |
|--------------------------------|--|-----------|-----------------------|--------------------|-------------------|-------------------|
| | Actual Orifice diameter d_0 [mm] | | | 9 | 13 | 17.5 |
| | Actual Orifice area A_0 [mm ²] | | | 63.6 | 133 | 241 |
| | Actual Orifice diameter d_0 [inch] | | | 0.354 | 0.512 | 0.689 |
| | Actual Orifice area A_0 [inch ²] | | | 0.099 | 0.206 | 0.374 |
| Outlet body casted | | | | | | |
| Inlet body | 1.4104 | H2 | Art.-No. 4593. | 2502 | 2512 | 2522 |
| Outlet body | 0.7043 | H3 | Art.-No. 4593. | 2503 | 2513 | 2523 |
| Bonnet | 0.7043 | H4 | Art.-No. 4593. | 2504 | 2514 | 2524 |
| | p [bar _g] | | S/G/L | 1.5 – 250 | 0.2 – 200 | 0.2 – 100 |
| | p [psig] | | | 21.7 – 3626 | 2.9 – 2901 | 2.9 – 1450 |
| Outlet body investment casted | | | | | | |
| Inlet body | 1.4404 | H2 | Art.-No. 4592. | 2472 | 2482 | 2492 |
| Outlet body | 1.0619 | H3 | Art.-No. 4592. | 2473 | 2483 | 2493 |
| | (WCB) | | | | | |
| Bonnet | 1.0460 | H4 | Art.-No. 4592. | 2474 | 2484 | 2494 |
| | p [bar _g] | | S/G/L | 1.5 – 250 | 0.2 – 200 | 0.2 – 100 |
| | p [psig] | | | 21.7 – 3626 | 2.9 – 2901 | 2.9 – 1450 |
| Outlet body investment casted | | | | | | |
| Inlet body | 1.4404 | H2 | Art.-No. 4594. | 2162 | 2172 | 2182 |
| Outlet body | 1.4408 | | | | | |
| | (CF8M) | | | | | |
| Bonnet | 1.4404 | H4 | Art.-No. 4594. | 2164 | 2174 | 2184 |
| | p [bar _g] | | S/G/L | 1.5 – 250 | 0.2 – 200 | 0.2 – 100 |
| | p [psig] | | | 21.7 – 3626 | 2.9 – 2901 | 2.9 – 1450 |
| Outlet body deep-drawn | | | | | | |
| All body and trim parts | 1.4404 | H2 | Art.-No. 4594. | 2552 | 2562 | 2572 |
| | | H4 | Art.-No. 4594. | 2554 | 2564 | 2574 |
| | p [bar _g] | | S/G/L | 1.5 – 250 | 0.2 – 200 | 0.2 – 100 |
| | p [psig] | | | 21.7 – 3626 | 2.9 – 2901 | 2.9 – 1450 |

For selection of inlet and outlet connection please refer to page 09/06 – 09/07.

Dimensions and weights – Metric Units

Threaded connections

| | 1/2" x 1" | 3/4" x 1" | 1" x 1" | 1/2" x 1" | 3/4" x 1" | 1" x 1" | 3/4" x 1 1/2" | 1" x 1 1/2" | 1 1/4" x 1 1/2" | 1 1/2" x 1 1/2" |
|---|-----------|-----------|---------|-----------|-----------|---------|---------------|-------------|-----------------|-----------------|
| Size Outlet body | 1/2" x 1" | 3/4" x 1" | 1" x 1" | 1/2" x 1" | 3/4" x 1" | 1" x 1" | 3/4" x 1 1/2" | 1" x 1 1/2" | 1 1/4" x 1 1/2" | 1 1/2" x 1 1/2" |
| Actual Orifice diameter d ₀ [mm] | 9 | 9 | 9 | 13 | 13 | 13 | 17.5 | 17.5 | 17.5 | 17.5 |
| Actual Orifice area A ₀ [mm ²] | 63.6 | 63.6 | 63.6 | 133 | 133 | 133 | 241 | 241 | 241 | 241 |

| | | | | | | | | | | | |
|--------------------------------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Weight | [kg] | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 3.0 | 3.0 | 3.0 | 3.0 |
| Balanced bellows | [kg] | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.8 | 3.8 | 3.8 | 3.8 |
| Required installation diameter | [mm] | 165 | 165 | 165 | 165 | 165 | 165 | 165 | 165 | 165 | 165 |

Inlet thread "Female"

| | 1/2" x 1" | 3/4" x 1" | 1" x 1" | 1/2" x 1" | 3/4" x 1" | 1" x 1" | 3/4" x 1 1/2" | 1" x 1 1/2" | 1 1/4" x 1 1/2" | 1 1/2" x 1 1/2" |
|---|-----------|-----------|---------|-----------|-----------|---------|---------------|-------------|-----------------|-----------------|
| Size outlet body | 1/2" x 1" | 3/4" x 1" | 1" x 1" | 1/2" x 1" | 3/4" x 1" | 1" x 1" | 3/4" x 1 1/2" | 1" x 1 1/2" | 1 1/4" x 1 1/2" | 1 1/2" x 1 1/2" |
| Actual Orifice diameter d ₀ [mm] | 9 | 9 | 9 | 13 | 13 | 13 | 17.5 | 17.5 | 17.5 | 17.5 |

Center to face / Height

| | | Inlet a | 53 | 56 | 62 | 53 | 56 | 62 | 60 | 66 | 67 | 73 |
|----------------------|------------------------|---------|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|
| DIN ISO 228-1 | G | | | | | | | | | | | |
| ASME B1.20.1 | NPT | | | | | | | | | | | |
| Center to face [mm] | Outlet b | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 |
| Height [mm] | H max | 283 | 286 | 292 | 283 | 286 | 292 | 287 | 293 | 294 | 300 | |
| | Balanced bellows H max | 315 | 318 | 324 | 315 | 318 | 324 | 319 | 325 | 326 | 332 | |
| ISO 7-1/BS 21 | Rc | | | | | | | | | | | |
| Center to face [mm] | Outlet b | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 | 75 |
| Height [mm] | H max | 283 | 286 | 294 | 283 | 286 | 294 | 287 | 295 | – | 304 | |
| | Balanced bellows H max | 315 | 318 | 326 | 315 | 318 | 326 | 319 | 327 | – | 336 | |

Inlet thread "Male"

| | | | |
|---|----|----|--------|
| Size outlet body | 1" | 1" | 1 1/2" |
| Actual Orifice diameter d ₀ [mm] | 9 | 13 | 17.5 |

Center to face [mm]

| | | | | | |
|----------------------|------------|-------------------------------|----|----|----|
| DIN ISO 228-1 | G | Inlet 1/2" – 1" a | 52 | – | – |
| | | Inlet 1" – 2" a | – | – | 56 |
| | | Outlet b | 75 | 75 | 75 |
| ISO 7-1/BS 21 | R | Inlet 1/2" – 1" a | 49 | 49 | – |
| ASME B1.20.1 | NPT | Inlet 1" – 2" a ¹⁾ | – | – | 53 |
| | | Outlet b | 75 | 75 | 75 |

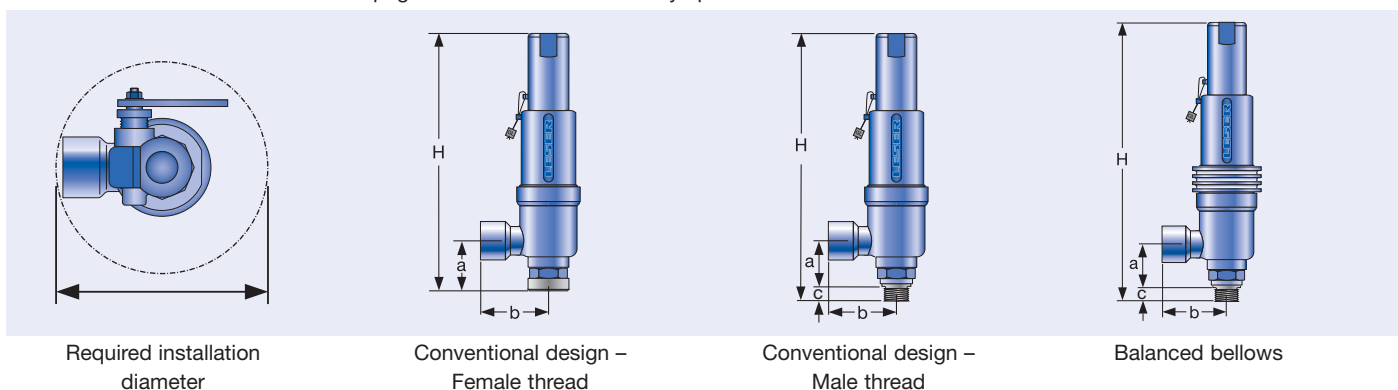
Height [mm]

| | | Conventional design | | | | | | Balanced bellows | | | | | | |
|----------------------|------------|---------------------|------|-----|--------|--------|-----|------------------|------|-----|--------|--------|-----|-----|
| Size inlet thread | | 1/2" | 3/4" | 1" | 1 1/4" | 1 1/2" | 2" | 1/2" | 3/4" | 1" | 1 1/4" | 1 1/2" | 2" | |
| DIN ISO 228-1 | G | H max. | 296 | 298 | 301 | 303 | 305 | – | 328 | 330 | 333 | 335 | 337 | – |
| ISO 7-1/BS 21 | R | H max. | 298 | 299 | 303 | – | 305 | – | 330 | 331 | 335 | – | 337 | – |
| ASME B1.20.1 | NPT | H max. | 301 | 301 | 307 | 308 | 308 | 309 | 333 | 333 | 339 | 340 | 340 | 341 |

Length of screwed end "c" [mm]

| Size inlet thread | | 1/2" | 3/4" | 1" | 1 1/4" | 1 1/2" | 2" |
|----------------------|------------|------|------|----|--------|--------|----|
| DIN ISO 228-1 | G | 14 | 16 | 18 | 20 | 22 | – |
| ISO 7-1/BS 21 | R | 19 | 20 | 23 | – | 25 | – |
| ASME B1.20.1 | NPT | 22 | 22 | 27 | 28 | 28 | 29 |

Available treaded connections refer to page 09/06. ¹⁾Inlet thread R only up to 1 1/2".



Dimensions and weights – Metric Units

Flanged connection

| | Conventional design | | | Balanced bellows | | |
|--|---------------------|-----|------|------------------|-----|------|
| Actual Orifice diameter d_0 [mm] | 9 | 13 | 17.5 | 9 | 13 | 17.5 |
| Actual Orifice area A_0 [mm ²] | 63.6 | 133 | 241 | 63.6 | 133 | 241 |

DIN EN 1092-1 (Available flange sizes refer to page 09/07)

Flange rating PN 40 – PN 400

| Center to face | [mm] | Inlet a | Conventional design | | | Balanced bellows | | |
|----------------|------|----------|---------------------|-----|-----|------------------|-----|-----|
| | | | 100 | 100 | 105 | 100 | 100 | 105 |
| | | Outlet b | 100 | 100 | 100 | 100 | 100 | 100 |
| Height | [mm] | H max. | 330 | 330 | 333 | 375 | 375 | 378 |

ASME B 16.5 (Available flange sizes refer to page 09/07)

Flange rating class 150 – 2500

| Center to face | [mm] | Inlet a | Conventional design | | | Balanced bellows | | |
|----------------|------|----------|---------------------|-----|-----|------------------|-----|-----|
| | | | 100 | 103 | 105 | 100 | 100 | 105 |
| | | Outlet b | 100 | 100 | 100 | 100 | 100 | 100 |
| Height | [mm] | H max. | 330 | 330 | 333 | 375 | 375 | 378 |

Note The outlet dimension b can differ at special combinations of nominal diameter and pressure range if flanged connections are used at the inlet and outlet. Special dimensions are possible. More information at sales@leser.com.

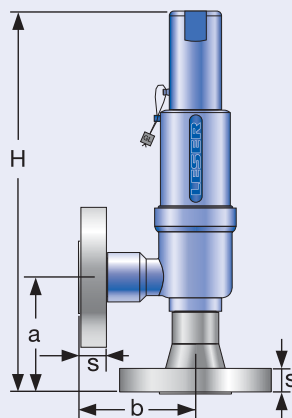
Weight

For the calculation of the total weight please use the Formular: $W_T = W_N + W_F$ (Inlet) + W_F (Outlet)

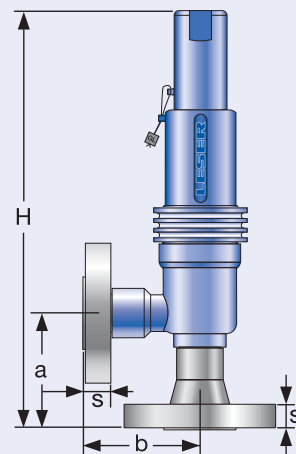
| Weight net (without inlet and outlet flange) | [kg] | m_N | 2.6 | 2.3 | 3 | 3.8 | 3.8 | 4.2 |
|--|------|-------|-----|-----|---|-----|-----|-----|
|--|------|-------|-----|-----|---|-----|-----|-----|

Flange dimensions

| | Size | DIN EN 1092-1 / Flange rating PN | | | | | | ASME B16.5 / Flange rating | | | | | |
|----------------------------|-------|----------------------------------|-----|-----|-----|-----|-----|----------------------------|------|------|------|------|------|
| | | 40 | 100 | 160 | 250 | 320 | 400 | Size | 150 | 300 | 600 | 900 | 1500 |
| DN 15 | | NPS 1/2" | | | | | | | | | | | |
| Flange thickness [mm] | s | 18 | – | 22 | 28 | 28 | 30 | 14 | 18 | 18 | 26 | 26 | 30.2 |
| Weight slip on flange [kg] | m_F | 0.8 | – | 1.2 | 2.5 | 2.5 | 3.6 | 0.6 | 0.9 | 0.9 | 2.1 | 2.1 | 3 |
| DN 20 | | NPS 3/4" | | | | | | | | | | | |
| Flange thickness [mm] | s | 20 | 22 | – | – | – | – | 15 | 18 | 18 | 25.4 | 25.4 | 32 |
| Weight slip on flange [kg] | m_F | 1.1 | 1.3 | – | – | – | – | 0.8 | 1.4 | 1.4 | 2.3 | 2.3 | 3.5 |
| DN 25 | | NPS 1" | | | | | | | | | | | |
| Flange thickness [mm] | s | 22 | – | 26 | 30 | 36 | 40 | 17 | 21.5 | 21.5 | 32.5 | 32.5 | 40 |
| Weight slip on flange [kg] | m_F | 1.3 | – | 2.6 | 3.5 | 5 | 7.5 | 1 | 2.1 | 2.1 | 4.1 | 4.1 | 5.1 |
| DN 40 | | NPS 1 1/2" | | | | | | | | | | | |
| Flange thickness [mm] | s | 21 | – | 23 | 32 | – | – | 22 | 24 | 24 | 32 | – | – |
| Weight slip on flange [kg] | m_F | 2.1 | – | 2.9 | 4.3 | – | – | 1.4 | 2.2 | 2.2 | 3.9 | – | – |



Conventional design



Balanced bellows

Pressure temperature ratings – Metric Units

| Metric Units | | | | | | | | | | | | | |
|---|-----------------------------|------------------------------------|------|----|------------------------------------|------|----|--------|----|--------|--------|----|--|
| Actual Orifice diameter d_0 [mm] | | 9 | | | | 13 | | | | 17.5 | | | |
| Actual Orifice Area A_0 [mm ²] | | 63.6 | | | | 133 | | | | 241 | | | |
| Body material: 1.4104 (430) Type 4593 | | | | | | | | | | | | | |
| Base / Inlet Body | Connection size | 1/2" | 3/4" | 1" | 1/2" | 3/4" | 1" | 3/4" | 1" | 1 1/4" | 1 1/2" | 2" | |
| | Pressure rating | PN 400 | | | PN 250 | | | PN 160 | | | | | |
| Outlet body | Pressure rating | PN 40 | | | PN 40 | | | PN 40 | | | | | |
| Minimum set pressure | p [bar _g] S/G/L | 1.5 | | | 0.2 | | | 0.2 | | | | | |
| Min. set pressure low press. bellows | p [bar _g] S/G/L | 3 | | | 3 | | | 3 | | | | | |
| Min. set pressure¹⁾ standard bellows | p [bar _g] S/G/L | 40 | | | 40 | | | 40 | | | | | |
| Maximum set pressure | p [bar _g] S/G/L | 250 | | | 200 | | | 100 | | | | | |
| Temperature acc. to DIN EN | min. [°C] | -10 | | | | | | | | | | | |
| | max. [°C] | +300 | | | | | | | | | | | |
| Temperature acc. to ASME | min. [°C] | -29 | | | | | | | | | | | |
| | max. [°C] | +427 | | | | | | | | | | | |
| Body material: 1.4404 (316L) Type 4592 | | | | | | | | | | | | | |
| Base / Inlet Body | Connection size | 1/2" | 3/4" | 1" | 1/2" | 3/4" | 1" | 3/4" | 1" | 1 1/4" | 1 1/2" | 2" | |
| | Pressure rating | PN 250 PN 500 (Option code L20) | | | PN 160 PN 250 (Option code L20) | | | PN 160 | | | | | |
| Outlet Body | Pressure rating | PN 40 | | | PN 40 | | | PN 40 | | | | | |
| Minimum set pressure | p [bar _g] S/G/L | 1.5 | | | 0.2 | | | 0.2 | | | | | |
| Min. set pressure low press. bellows | p [bar _g] S/G/L | 3 | | | 3 | | | 3 | | | | | |
| Min. set pressure¹⁾ standard bellows | p [bar _g] S/G/L | 40 | | | 40 | | | 40 | | | | | |
| Maximum set pressure | p [bar _g] S/G/L | 250 | | | 200 | | | 100 | | | | | |
| Temperature acc. to DIN EN | min. [°C] | -85 | | | | | | | | | | | |
| | max. [°C] | +400 | | | | | | | | | | | |
| Temperature acc. to ASME | min. [°C] | -29 | | | | | | | | | | | |
| | max. [°C] | +427 | | | | | | | | | | | |
| Body material: 1.4404 (316L) Type 4594 | | | | | | | | | | | | | |
| Base / Inlet Body | Connection size | 1/2" | 3/4" | 1" | 1/2" | 3/4" | 1" | 3/4" | 1" | 1 1/4" | 1 1/2" | 2" | |
| | Pressure rating | PN 250 PN 500 (Option code L20) | | | PN 160 PN 250 (Option code L20) | | | PN 160 | | | | | |
| Outlet Body | Pressure rating | PN 40 | | | PN 40 | | | PN 40 | | | | | |
| Minimum set pressure | p [bar _g] S/G/L | 1.5 | | | 0.2 | | | 0.2 | | | | | |
| Min. set pressure low press. bellows | p [bar _g] S/G/L | 3 | | | 3 | | | 3 | | | | | |
| Min. set pressure¹⁾ standard bellows | p [bar _g] S/G/L | 40 | | | 40 | | | 40 | | | | | |
| Maximum set pressure | p [bar _g] S/G/L | 250 | | | 200 | | | 100 | | | | | |
| Temperature acc. to DIN EN | min. [°C] | -200 | | | | | | | | | | | |
| | max. [°C] | +400 | | | | | | | | | | | |
| Temperature acc. to ASME | min. [°C] | -184 | | | | | | | | | | | |
| | max. [°C] | +427 | | | | | | | | | | | |

¹⁾ Min. set pressure standard bellows = Max. pressure low pressure bellows.

Because there is no open bonnet for this type available, please use at a temperature of 300 °C (572 °F) refer to SAP a stainless steel bellows or a specific high temperature model without a bellows. For DIN EN applications at temperatures under -10°C please proceed according to AD-2000 Merkblatt W 10.

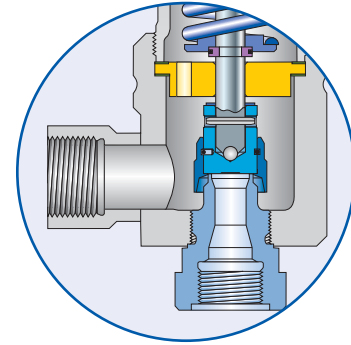
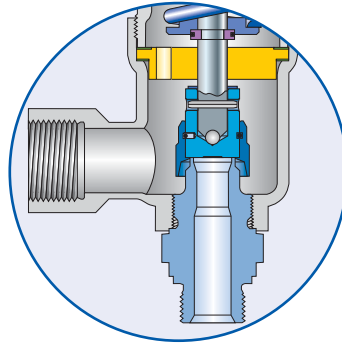
Available Options

Type 459

| | | | |
|--|--|--|---|
| <p>Male thread</p> | <p>Female thread</p> | <p>Flanged version</p> | |
| <p>Stellited sealing surface J25: Disc stellited L20: Base/inlet body</p> | <p>Disc with inserted sealing plate J44: PTFE-FDA "N" J48: PCTFE "D" J49: VESPEL-SP "K"</p> | | |
| <p>Heating jacket H29</p> | <p>Balanced bellows</p> | <p>INCONEL X-750 spring X08</p> | <p>Special material 2.4610 Hastelloy® C4 2.4360 Monel® 400 1.4462 Duplex</p> |
| <p>Lift indicator J93: Lift indicator</p> | <p>Test gag J69: H4 J70: H2</p> | <p>O-ring-damper H2 J65</p> | <p>O-ring-damper H4 J66</p> |

Available connections

For dimensions and weights refer to:
 Type 459 – page 05/08 + 05/10
 Type 459 HDD – page 06/08 + 06/10
 Type 462 – page 07/08 + 07/10
 Type 462 HDD – page 08/08 + 08/10



Threaded connections

Male thread

Female thread

| | | Male thread | | Female thread | | | |
|--|-------------------|-------------------|---------------|-------------------|---------------|--------------|---------------|
| Actual Orifice diameter d_0 [mm] | | 6 | | 9 / 13 | | 17.5 | |
| Actual Orifice area A_0 [mm ²] | | 28.3 | | 63.9 / 133 | | 241 | |
| Actual Orifice diameter d_0 [inch] | | 0.236 | | 0.345 / 0.512 | | 0.689 | |
| Actual Orifice area A_0 [inch ²] | | 0.044 | | 0.099 / 0.206 | | 0.374 | |
| | Valve size | Inlet | Outlet | Inlet | Outlet | Inlet | Outlet |
| Male thread DIN ISO 228-1 | | | | | | | |
| G | 1/2" | V54 | – | V54 ¹⁾ | – | – | – |
| | 3/4" | V55 | – | V55 | – | – | – |
| | 1" | V56 | V68 | V56 | V68 | V56 | – |
| | 1 1/4" | – | V79 | – | V79 | V83 | V79 |
| | 1 1/2" | – | V69 | – | V69 | V57 | V69 |
| Female thread DIN ISO 228-1 | | | | | | | |
| G | 1/2" | V50 | – | V50 | – | – | – |
| | 3/4" | V51 | – | V51 | – | V51 | – |
| | 1" | – | V66 | V52 ²⁾ | V66 | V52 | – |
| | 1 1/4" | – | V81 | – | V81 | V84 | V81 |
| | 1 1/2" | – | V67 | – | V67 | V53 | V67 |
| Male thread DIN ISO 7-1/BS 21 | | | | | | | |
| R/BSPT | 1/2" | V30 ³⁾ | – | V30 | – | – | – |
| | 3/4" | V31 | – | V31 | – | – | – |
| | 1" | V32 | V42 | V32 | V42 | V32 | – |
| | 1 1/2" | – | V43 | – | V43 | V33 | V43 |
| Female thread DIN ISO 7-1/BS 21 | | | | | | | |
| Rc/BSPT | 1/2" | V38 | – | V38 | – | – | – |
| | 3/4" | V39 | – | V39 | – | V39 | – |
| | 1" | V40 | V36 | V40 | V36 | V40 | – |
| | 1 1/2" | – | V37 | – | V37 | V41 | V37 |
| Male thread ANSI/ASME B1.20.1 | | | | | | | |
| NPT | 1/2" | V61 | – | V61 ⁴⁾ | – | – | – |
| | 3/4" | V62 | – | V62 | – | – | – |
| | 1" | V63 | V73 | V63 | V73 | V63 | – |
| | 1 1/4" | – | V82 | – | V82 | V85 | V82 |
| | 1 1/2" | – | V74 | – | V74 | V64 | V74 |
| | 2" | – | – | – | – | V86 | – |
| Female thread ANSI/ASME B1.20.1 | | | | | | | |
| NPT | 1/2" | V58 | – | V58 | – | – | – |
| | 3/4" | V59 | – | V59 | – | V59 | – |
| | 1" | V60 | V71 | V60 | V71 | V60 | – |
| | 1 1/4" | – | V80 | – | V80 | V87 | V80 |
| | 1 1/2" | – | V72 | – | V72 | V75 | V72 |
| | 2" | – | – | – | – | – | V88 |

Flanged and threaded connections can be combined.

Threads according to other standards are available, Please specify in writing (diameter, pressure rating, standard).

¹⁾ Only for d_0 9 mm

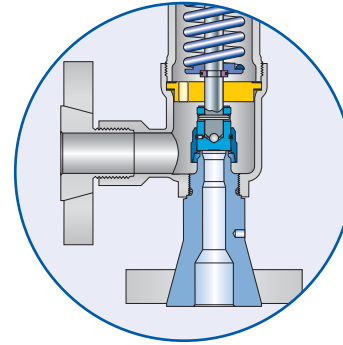
²⁾ d_0 9 mm: up to PN 420

³⁾ Only as special design

⁴⁾ d_0 13 mm: up to 125 bar and 455 °C

Available connections

For dimensions and weights refer to:
 Type 459 – page 05/09 + 05/11
 Type 459 HDD – page 06/09 + 06/11
 Type 462 – page 07/09 + 07/11
 Type 462 HDD – page 08/09 + 08/11



Flanged version

| Flanged connections | | Pressure rating | d ₀ 6 mm | | d ₀ 9 mm | | d ₀ 13 mm | | d ₀ 17.5 mm | |
|------------------------------------|-----------------|-----------------|---------------------|-------------|---------------------|-------------|----------------------|-------------|------------------------|--|
| DIN EN 1092-1 (PN > 100: DIN 2501) | | | | | | | | | | |
| Valve size | Pressure rating | Option code | | Option code | | Option code | | Option code | | |
| DN | PN | Inlet | Outlet | Inlet | Outlet | Inlet | Outlet | Inlet | Outlet | |
| 15 | 40 | I21 | - | I21 | - | I21 | - | - | - | |
| | 160 | I22 | - | I22 | - | I22 | - | - | - | |
| | 250 | I23 | - | I23 | - | I23 | - | - | - | |
| | 320 | I24 | - | I24 | - | I24 | - | - | - | |
| | 400 | I25 | - | I25 | - | I25 | - | - | - | |
| 20 | 40 | I26 | - | I26 | - | I26 | - | I26 | - | |
| | 100 | I27 | - | I27 | - | I27 | - | I27 | - | |
| 25 | 40 | I31 | I46 | I31 | I46 | I31 | I46 | I31 | - | |
| | 160 | I32 | I47 | I32 | I47 | I32 | I47 | I32 | - | |
| | 250 | I33 | I48 | I33 | I48 | I33 | I48 | I33 | - | |
| | 320 | I34 | - | I34 | - | I34 | - | I34 | - | |
| | 400 | I35 | - | I35 | - | I35 | - | I35 | - | |
| 40 | 40 | - | - | - | I49 | - | I49 | - | I49 | |
| | 160 | - | - | - | I50 | - | I50 | - | I50 | |
| | 250 | - | - | - | I51 | - | I51 | - | I51 | |
| ANSI/ASME B 16.5 | | | | | | | | | | |
| NPS | CL | Option code | | Option code | | Option code | | Option code | | |
| NPS | CL | Inlet | Outlet | Inlet | Outlet | Inlet | Outlet | Inlet | Outlet | |
| 1/2" | 150 | V01 | - | V01 | - | V01 | - | - | - | |
| | 300 | V02 | - | V02 | - | V02 | - | - | - | |
| | 600 | V02 | - | V02 | - | V02 | - | - | - | |
| | 900 | V03 | - | V03 | - | V03 | - | - | - | |
| | 1500 | V03 | - | V03 | - | V03 | - | - | - | |
| | 2500 | V04 | - | V04 | - | V04 | - | - | - | |
| 3/4" | 150 | V05 | - | V05 | - | V05 | - | V05 | - | |
| | 300 | V06 | - | V06 | - | V06 | - | V06 | - | |
| | 600 | V06 | - | V06 | - | V06 | - | V06 | - | |
| | 900 | V07 | - | V07 | - | V07 | - | V07 | - | |
| | 1500 | V07 | - | V07 | - | V07 | - | V07 | - | |
| | 2500 | V08 | - | V08 | - | V08 | - | V08 | - | |
| 1" | 150 | V09 | V18 | V09 | V18 | V09 | V18 | V09 | - | |
| | 300 | V10 | V19 | V10 | V19 | V10 | V19 | V10 | - | |
| | 600 | V10 | V19 | V10 | V19 | V10 | V19 | V10 | - | |
| | 900 | V11 | V20 | V11 | V20 | V11 | V20 | V11 | - | |
| | 1500 | V11 | - | V11 | - | V11 | - | V11 | - | |
| | 2500 | V12 | - | V12 | - | V12 | - | V12 | - | |
| 1 1/2" | 150 | - | - | - | V21 | - | V21 | - | V21 | |
| | 300 | - | - | - | V22 | - | V22 | - | V22 | |
| | 600 | - | - | - | V22 | - | V22 | - | V22 | |
| | 900 | - | - | - | V23 | - | V23 | - | V23 | |

Flanged and threaded connections can be combined.

Threads according to other standards are available. Please specify in writing (diameter, pressure rating, standard).