

# Safety Valve

Full lift

AT 4543XXL, 4550XXL,  
4580XXL

| Dimension range | PN | Temperature range | Material        |
|-----------------|----|-------------------|-----------------|
| DN 200-250      | 25 | -85°C to 450 °C   | Steel           |
| DN 300-400      | 16 | -85°C to 450 °C   | Steel           |
| DN 200-250      | 25 | -196°C to 550 °C  | Stainless steel |
| DN 300-400      | 16 | -196°C to 550 °C  | Stainless steel |

## Range of Application

Safety valve for protection of pressure vessels and piping systems with liquids, air, gases and steam.

## Quality Assurance

Approved by TÜV and several other classification authorities.

Fulfills the requirements according to ISO 4126.

Certificate SS-EN 10204, type 2, 3 and from most of the classification authorities.

Type of certificate has to be specified upon ordering.

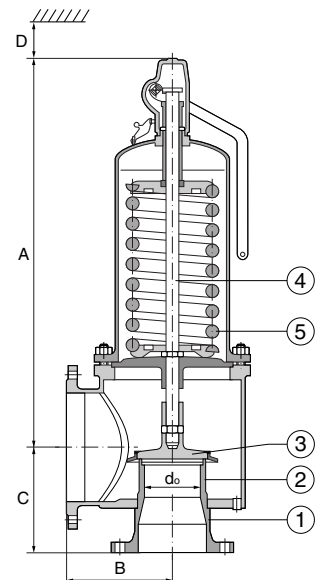
## CE-marking

Meets the requirements in AFS 2016:1 and 2014/68/EU (Pressure Equipment Directive) according to category IV, fluids group 1 and 2.



## Material Specification

|    |                       | AT 4543, 4550  | AT 4580                  |
|----|-----------------------|--|--------------------------|
| 1  | Body                  | 1.4060, 1.0425/carbon steel                                      | 1.4571/316Ti             |
| 2  | Seat                  | 1.0305 stellited,<br>1.0460 stellited/<br>stellited carbon steel | 1.4571/316Ti             |
| 3  | Disc                  | 1.4404/316L  | 1.4571/316Ti             |
| 4  | Spindle               | 1.4021/420   | 1.4404/316L              |
| 5  | Spring                | 1.1200, 1.8159,<br>1.7102/carbon steel                           | 1.4310/stainless steel   |
| 6a | Guide<br>DN200-250    | 0.7040/nodular cast iron<br>Gr. 60-40-18 or chrome steel         | 1.4404/316L              |
| 6b | Guide<br>DN300-400    | 1.4404/316L  | 1.4404/316L              |
| 7  | Bonnet                | 0.7043, 1.0254/nodular cast iron<br>Gr. 60-40-18 or steel        | 1.4571/316L              |
| 8  | Spring plate<br>2 pcs | 1.0570, 1.4404/<br>steel or 316L                                 | 1.4404/316L              |
| 9  | Adjusting<br>screw    | 1.4104 PTFE/chrome steel PTFE                                    | 1.4404 PTFE/316L<br>PTFE |
| 10 | Lever                 | 0.7040/nodular cast iron Gr. 60-40-18                            | 1.4404/316L              |



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## Dimension and weight

| DN inlet            | 200  | 250  | 300   | 400  |
|---------------------|------|------|-------|------|
| DN outlet           | 300  | 350  | 400   | 500  |
| Seat diameter       | 165  | 200  | 235   | 295  |
| A***                | 1168 | 1178 | 1303  | 1553 |
| B                   | 300  | 325  | 394*  | 477* |
| C                   | 305  | 340  | 330** | 400  |
| D                   | 700  | 700  | 850   | 1200 |
| Weight              | 285  | 335  | 384   | 588  |
| Weight with bellows | 289  | 340  | 390   | 595  |

Measurements in mm, weight in kg.

\* Outlet flange acc. to PN 10. Deviant measurements at PN 16.

\*\* Do not apply to inlet flange acc. to # 300.

\*\*\*Measurements applies to valve with or without bellows.

## Function and Design

Spring loaded and directly acting safety valve for air, gases and steam with full lift opening characteristics.

For liquids, the safety valve has normal opening characteristics.

With lifting device for manual testing or with gas tight cap.

## Technical Information

### Overpressure

The safety valve is fully open at an overpressure exceeding the set pressure with a maximum of 5 %.

Max 10 % for liquids, when the valve has standard opening characteristics.

For set pressure lower than 1,0 bar, the overpressure is set pressure + 0,1 bar.

If lower overpressure is requested please contact Armatec.

### Blowdown

|                  |   |
|------------------|---|
| Steam/air/gases: | Max 10% at set pressure $\geq$ 3,0 bar<br>Max 0,3 bar at set pressure $<$ 3,0 bar |
| Vätskor:         | Max 20% at set pressure $\geq$ 3,0 bar<br>Max 0,6 bar at set pressure $<$ 3,0 bar |

If lower blowing down is requested please contact Armatec.

## Pressure and Temperature

| DN  | AT 4543, 4550            |                 | AT 4580                  |                  |
|-----|--------------------------|-----------------|--------------------------|------------------|
|     | Set pressure max.<br>bar | Temp.           | Set pressure max.<br>bar | Temp<br>max °C   |
| 200 | 10                       | -85°C to +450°C | 10                       | -196°C to +550°C |
| 250 | 6                        | -85°C to +450°C | 6                        | -196°C to +550°C |
| 300 | 3,57                     | -85°C to +450°C | 3,57                     | -196°C to +550°C |
| 400 | 2,3                      | -85°C to +450°C | 2,3                      | -196°C to +550°C |

Pressure and temperatures according to applied standards for each valve material.

At temperatures above 200°C the temperature has to be specified in the order, so that a high temperature spring is used.

If other temperatures and pressures limits are requested please contact Armatec.

Rätten till ändringar utan föregående meddelande förbehålls.  
Armatec ansvarar inte för eventuella tryckfel eller misstänksfel.  
Dokumentet får kopieras endast i sin helhet.

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## Additional information

Sizing based on submitted data can be performed on request.

Please state: Fluid, density (for liquids), capacity/power, maximum temperature and set pressure

Bar implies bar gauge: bar(ö), bar(g), bar(e), atö or kg/cm<sup>2</sup> if nothing else is stated.

Nm<sup>3</sup>/h implies "free" capacity air/gas (N=normal) and is equal with m<sup>3</sup>/h if other is not stated.

## Coefficient of discharge steam/gases, $\zeta_d$ D/G

DN200: 0,75

DN250-400: 0,7

## Coefficient of discharge liquids, $\zeta_d$ F

DN200: 0,56

DN250-400: 0,52

Flow diameter diameter  $D_o$ , see *Dimension and weight* .

## Sizing DN200-250

| DN<br>Seat<br>Pset<br>bar | 200<br>165 mm |        |         | 250<br>200 mm |        |         |
|---------------------------|---------------|--------|---------|---------------|--------|---------|
|                           | Steam         | Air    | Water   | Steam         | Air    | Water   |
| 0,2                       | 8622          | 9956   | 371111  | 11444         | 13556  | 505556  |
| 0,5                       | 13000         | 16000  | 524444  | 17778         | 21778  | 715556  |
| 1                         | 18889         | 23778  | 710000  | 25889         | 32444  | 967778  |
| 2                         | 30111         | 38333  | 1003333 | 41333         | 52667  | 1366667 |
| 3                         | 40667         | 52222  | 1233333 | 55667         | 71444  | 1666667 |
| 4                         | 50667         | 65556  | 1422222 | 69444         | 89778  | 1933333 |
| 5                         | 60667         | 78889  | 1588889 | 83111         | 108111 | 2155556 |
| 6                         | 70667         | 92222  | 1733333 | 96778         | 125556 | 2366667 |
| 7                         | 80667         | 105556 | 1877778 | 110444        | 144444 | 2555556 |
| 8                         | 90556         | 118889 | 2011111 | 123333        | 162222 | 2733333 |
| 9                         | 100444        | 132222 | 2133333 | 136667        | 181111 | 2900000 |
| 10                        | 110333        | 145556 | 2244444 | 151111        | 198889 | 3055556 |
| 12                        | 130000        | 172222 | 2455556 | 177778        | 235556 | 3344444 |
| 14                        | 150000        | 198889 | 2655556 | 205556        | 276667 | 3622222 |
| 16                        | 170000        | 225556 | 2844444 | 233333        | 313333 | 3877778 |
| 18                        | 190000        | 252222 | 3011111 | 260000        | 351111 | 4111111 |
| 20                        | 210000        | 278889 | 3177778 | -             | -      | -       |
| 22                        | 228889        | 305556 | 3333333 | -             | -      | -       |
| 24                        | 248889        | 332222 | 3477778 | -             | -      | -       |

Pset = set pressure

According to applied standards the value above should be multiplied with the safety factor 0,9.

Saturated steam in kg/h. Air in Nm<sup>3</sup>/h (free air) at 0°C and atmospheric pressure 1013 mbar(a). Water in kg/h at 20°C.

Capacities are given for an overpressure of 10% of set pressure.

Contact Armatec for sizing with other fluids etc.

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## Sizing DN300-400

| DN<br>Seat<br>Pset<br>bar | 300<br>235 mm |        |         | 400<br>295 mm |        |         |
|---------------------------|---------------|--------|---------|---------------|--------|---------|
|                           | Steam         | Air    | Water   | Steam         | Air    | Water   |
|                           | 0,2           | 15778  | 18778   | 697778        | 24889  | 29556   |
| 0,5                       | 24556         | 30111  | 987778  | 38778         | 47556  | 1555556 |
| 1                         | 35667         | 44889  | 1333333 | 56333         | 70778  | 2100000 |
| 2                         | 57111         | 72667  | 1888889 | 90000         | 114444 | 2977778 |
| 3                         | 76889         | 98778  | 2311111 | 121111        | 155556 | 3644444 |
| 4                         | 95889         | 123333 | 2666667 | 151111        | 194444 | 4211111 |
| 5                         | 114444        | 148889 | 2988889 | 180000        | 234444 | 4700000 |
| 6                         | 133333        | 174444 | 3266667 | 211111        | 278889 | 5155556 |
| 7                         | 152222        | 198889 | 3533333 | -             | -      | -       |
| 8                         | 171111        | 224444 | 3777778 | -             | -      | -       |
| 9                         | 190000        | 250000 | 4000000 | -             | -      | -       |
| 10                        | 208889        | 278889 | 4233333 | -             | -      | -       |
| 12                        | 246667        | 330000 | 4633333 | -             | -      | -       |
| 14                        | -             | -      | -       | -             | -      | -       |
| 16                        | -             | -      | -       | -             | -      | -       |
| 18                        | -             | -      | -       | -             | -      | -       |

Pset = set pressure

According to applied standards the value above should be multiplied with the safety factor 0,9.  
Saturated steam in kg/h. Air in Nm<sup>3</sup>/h (free air) at 0°C and atmospheric pressure 1013 mbar(a). Water  
in kg/h at 20°C.

Capacities are given for an overpressure of 10% of set pressure.

Contact Armatec for sizing with other fluids etc.

## Accessories and Options

Test Gag for blocking the safety valve

Lift stopper

Heating jacket.

Flanges drilled acc. to ANSI.

Stainless steel bellows.

Supplementary loading system, see AT4505

## Installation

| Connections | Flanges drilled acc. to Armaturflänsar borrhade enligt             |
|-------------|--|
| Inlet       | DIN EN 1092-1, PN25 (DN 200-250), DIN EN 1092-1, PN16 (DN 300-400) |
| Outlet      | DIN EN 1092-1, PN10  |

See separate installation instruction. The valve should be mounted with the bonnet in vertical position.

## Maintenance and Spare parts

See separate installation and maintenance instruction.

## Marking

Manufacturer, Armatec article number, DN, PN, CE-marking, material and arrow showing the flow direction.

TÜV approval label with manufacturer fig. no. 441 mounted on body.

Set pressure is punched on the outlet flange and on the TÜV approval label.

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## How to order

### Metal seated safety valve

Example: AT 4543-4-5,0-200

| AT4543   | -4  | -5,0                       | -200      |
|--|---|----------------------------|-----------|
| Fig. no.<br>AT 4543=steel, closed bonnet<br><br>AT 4550=steel, open bonnet<br><br>AT 4580=stainless steel, closed bonnet | <b>Design</b><br>-2=gas tight cap<br>V2=gas tight cap and bellows<br>-4=gas tight lifting device<br>V4=gas tight lifting device and bellows<br>-3=open lifting device<br>V3=open lifting device and bellows | <b>Set pressure (barg)</b> | <b>DN</b> |