

# Ball valve

Reduced Bore

AT 3502, 3522

## Internet\_Variants

| Dimension range | PN     | Temperature range | Material        |
|-----------------|--------|-------------------|-----------------|
| DN 8-250        | 10/100 | -50 - 200 °C      | Stainless Steel |

## Range of Application

Shut-off valve mainly for:

- Caustic solutions, acid and salt solutions
- Solvents and alcohols
- LPG, natural gas and petroleum products.
- Warm and cold water, compressed air.
- Saturated steam, see pressure-temperature table.

## Program text

### PSB.1 Ball Valves

Ball valve in Stainless Steel AT 3502 ..., with reduced bore, weld ends and stainless steel lever. Gasket box of graphite.

Ball valve Stainless Steel AT 3522 ..., with reduced bore, internal thread and stainless steel lever. Gasket box of graphite.

## Quality Assurance

Tested according to SS-ISO 5208. Leakage class A applies to this valve type.

The valves are approved by TA-luft, and fulfil the requirements in EGN94 for combustible gases, maximum 4 bar(e)

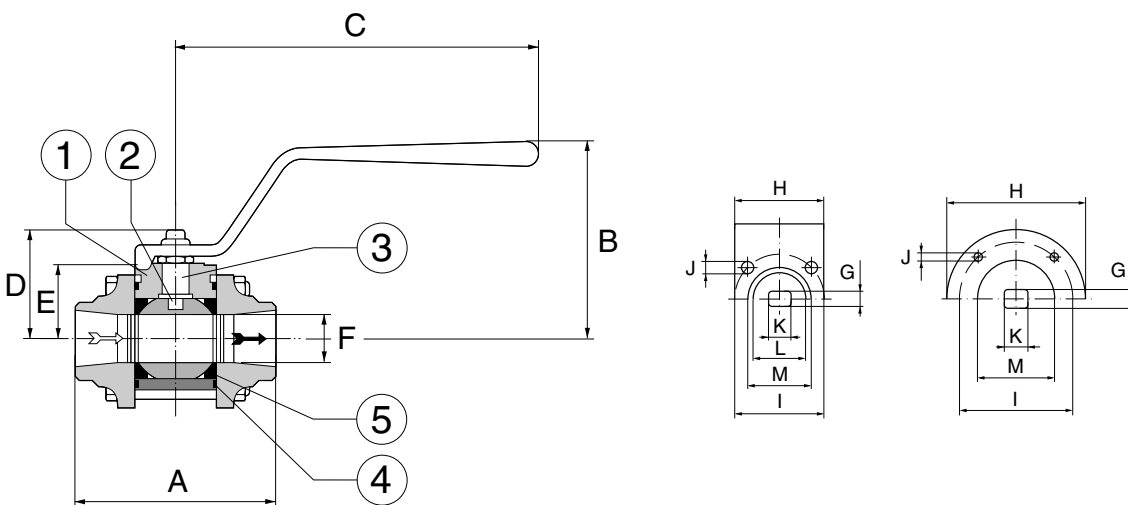
Certificate SS-EN 10204, type 2.2 and 3.1, has to be specified when ordering.

## CE-marking

The valves meet the demands from PED, AFS 2016:1, the directive for pressure equipment, according to category III, fluid group 1 and 2. Dimensions to DN 25 satisfies § 8 of the PED, AFS 2016:1.

## Surface

Standard surface finish from 3.1 to 6.3  $\mu\text{m}$  for body & ball. Finer surface finish on request.



## Material specification

|    |                | AT3502/3522                              |
|----|----------------|------------------------------------------|
| 1  | Body           | Stainless Steel<br>1.4404 / 1.4408       |
| 2  | Ball           | Stainless Steel<br>1.4404                |
| 3  | Stem           | Stainless Steel<br>1.4404                |
| 4  | Body gasket    | PTFE                                     |
| 5  | Seat ring*     | PTFE                                     |
| 6  | Stem seal      | PTFE, glass-reinforced                   |
| 7  | Stem gasket    | PTFE, carbon-filled and glass reinforced |
| 8  | Centering ring | PTFE, glass-reinforced                   |
| 9  | End piece      | Stainless Steel<br>1.4404                |
| 10 | Lever          | Steel/epoxi coated                       |

\*Seat in high temperature performance, carbon-filled (25%) PTFE, additional designation HT. Seat rings in different material on request.

## Dimension and weight for valves with reduced bore, AT 3502, 3522

| DN            | 8    | 10   | 15   | 20   | 25   | 32    | 40    | 50    | 65    | 80    | 100  | 125  | 150  | 200   | 250   |
|---------------|------|------|------|------|------|-------|-------|-------|-------|-------|------|------|------|-------|-------|
| A             | 65   | 65   | 65   | 72,5 | 85,4 | 99,3  | 110,4 | 126,3 | 142,6 | 169,5 | 214  | 277  | 307  | 409   | 460   |
| A1**          | -    | 130  | 130  | 150  | 160  | 180   | 200   | 230   | 290   | 310   | 350  | 400  | 480  | 600   | 730   |
| B             | 95   | 95   | 95   | 100  | 120  | 125   | 135   | 140   | 150   | 154   | 169  | 183  | 183  | 262   | 310   |
| C             | 145  | 145  | 145  | 145  | 185  | 185   | 200   | 200   | 250   | 480   | 480  | 480  | 480  | 720   | 800   |
| D             | 40   | 40   | 40   | 42   | 53   | 58    | 71    | 76    | 86    | 153   | 168  | 182  | 182  | 258   | 305   |
| E             | 30   | 30   | 30   | 32   | 38   | 36    | 42    | 46    | 70    | 99    | 114  | 128  | 128  | 186   | 232   |
| F             | 11,1 | 11,1 | 11,1 | 14,2 | 20,6 | 25,4  | 31,7  | 38    | 50    | 62    | 82,4 | 100  | 100  | 150   | 200   |
| G             | 5,4  | 5,4  | 5,4  | 5,4  | 7,5  | 7,5   | 8,9   | 8,9   | 8,9   | 19    | 19   | 19   | 19   | 28,5  | 30    |
| H             | 36   | 36   | 36   | 36   | 42   | 41,5* | 48,5* | 54    | 70    | 90    | 125  | 125  | 125  | 150   | 175   |
| I             | 36   | 36   | 36   | 36   | 42   | 42    | 50    | 50    | 70    | 70    | 102  | 102  | 102  | 125   | 140   |
| J             | M5   | M5   | M5   | M5   | M5   | M5    | M6    | M6    | M8    | M8    | M10  | M10  | M10  | M12   | M16   |
| K             | 9,5  | 9,5  | 9,5  | 9,5  | 11   | 11    | 14,3  | 14,3  | 14,3  | 22,5  | 22,5 | 22,5 | 22,5 | 35    | 38    |
| L             | 22   | 22   | 22   | 22   | 25   | 25    | 30    | 30    | 45    | -     | -    | -    | -    | -     | -     |
| M             | 25   | 25   | 25   | 25   | 30   | 30    | 35    | 35    | 55    | 55    | 70   | 70   | 70   | 85    | 100   |
| ISO flange    | F03  | F03  | F03  | F03  | F04  | F04   | F05   | F05   | F07   | F07   | F10  | F10  | F10  | F12   | F14   |
| Weight        | 0,5  | 0,5  | 0,5  | 0,8  | 1,3  | 1,8   | 2,8   | 3,8   | 7     | 12    | 21   | 35   | 40   | 85    | 150   |
| Weight AT3552 |      | 2,0  | 2,2  | 3,1  | 3,9  | 6,1   | 7,4   | 10,0  | 16,0  | 26,0  | 34,0 | 47,0 | 56,0 | 134,0 | 200,0 |

\*Body length

\*\* A1, face to face AT3552

Measurements in mm. weight in kg

## Function and Design

Three-piece ball valve for simple service and maintenance.

No disassembling or changing of gaskets is necessary when the valve is welded in.

Homogenous and floating ball for tight shut-off and low pressure drop.

Self-compensating stem packing gives a tight valve even with high operation frequency.

The design with blow-out safe stem prevents the stem to blow out at pressure hammer.

Mounting flange according to ISO 5211 for actuators.

No dismantling of valve at service and maintenance.

Valves bigger than DN50 have round body and mounting flange.

# Ball valve

## Reduced Bore

AT 3502, 3522

### Technical Information

| Pressure and temperature, reduced bore AT 3502, 3522 |                               |                                   |                                   |                                   |                                   |
|------------------------------------------------------|-------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| Seat material                                        |                               | DN 8-25                           | DN 32-40                          | DN 50-80                          | DN 100                            |
| Standard PTFE                                        | Max. working pressure bar(g)* | 100 (T ≤ 50°C)                    | 70 (T ≤ 50°C)                     | 50 (T ≤ 50°C)                     | 40 (T ≤ 50°C)                     |
|                                                      | Max. temperature °C**         | 200 (P ≤ 16 bar)                  | 200 (P ≤ 9 bar)                   | 200 (P ≤ 7 bar)                   | 200 (P ≤ 5 bar)                   |
| High temperature (HT)25% carbon-filled PTFE          | Max. working pressure bar(g)* | 100 (T ≤ 80°C)                    | 70 (T ≤ 80°C)                     | 50 (T ≤ 80°C)                     | 40 (T ≤ 80°C)                     |
|                                                      | Max. temperature °C**         | 250 (P ≤ 10 bar)                  | 250 (P ≤ 8 bar)                   | 250 (P ≤ 5 bar)                   | 250 (P ≤ 4 bar)                   |
| High pressure (HP)Delrin                             | Max. working pressure bar(g)* | 220 (T ≤ 65°C)                    | DN32, 150 DN40, 200 (T ≤ 65°C)    | DN 50-65, 60 DN80 70 (T ≤ 65°C)   | NA                                |
|                                                      | Max. temperature °C**         | 65 (P ≤ 220 bar)                  | DN 32, 65 (P ≤ 150 bar) DN 40 200 | DN 50, 150 DN65, 90 DN80, 70      | NA                                |
| Metal sealed                                         | Max. working pressure bar(g)* | See separate pressure/temp curves | See separate pressure/temp curves | See separate pressure/temp curves | See separate pressure/temp curves |
|                                                      | Max. temperature °C**         | See separate pressure/temp curves | See separate pressure/temp curves | See separate pressure/temp curves | See separate pressure/temp curves |

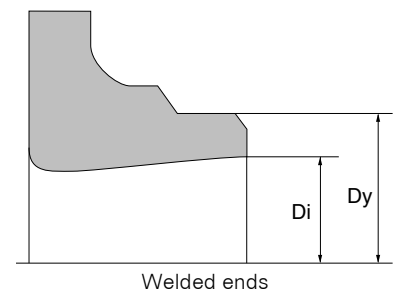
Pressure and temperature acc. to applied standards. Note that the pressure- and temperatures above is not related.\*Max temperature °C up to the specified pressure.\*\*Max pressure bar(g) up to specified temperature.

### Torque

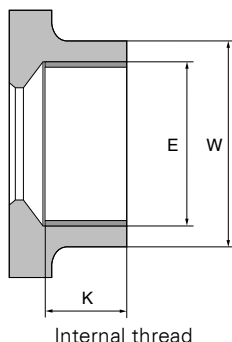
| Torque at dP 25 bar |   |    |    |    |    |    |    |    |    |     |     |     |     |     |     |  |
|---------------------|---|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|--|
| DN                  | 8 | 10 | 15 | 20 | 25 | 32 | 40 | 50 | 65 | 80  | 100 | 125 | 150 | 200 | 250 |  |
| Nm                  | 5 | 6  | 6  | 6  | 11 | 18 | 24 | 30 | 78 | 120 | 180 | 250 | 250 | 420 | 840 |  |

For torque from other seat materials and cavity filled valves add 20% to the torque listed aboveCryo seats decreases the torque by 50% under room temperature, but it increases by 50% under low temperatures, like -196 °C.

| Kv-value reduced and full bore |   |    |    |       |       |       |       |       |       |       |        |         |         |         |         |  |
|--------------------------------|---|----|----|-------|-------|-------|-------|-------|-------|-------|--------|---------|---------|---------|---------|--|
| DN                             | 8 | 10 | 15 | 20/15 | 25/30 | 32/25 | 40/32 | 50/40 | 65/50 | 80/65 | 100/80 | 125/100 | 150/125 | 200/150 | 250/200 |  |
| Kvs                            | 8 | 8  | 8  | 13    | 30    | 48    | 80    | 120   | 250   | 470   | 700    | 1250    | 1250    | 1800    | 2800    |  |



| AT 3502/3507 Measurements welded ends |      |      |      |      |      |      |      |      |      |      |       |       |       |       |     |  |
|---------------------------------------|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-----|--|
| DN                                    | 8    | 10   | 15   | 20   | 25   | 32   | 40   | 50   | 65   | 80   | 100   | 125   | 150   | 200   | 250 |  |
| Dy                                    | 13,5 | 17,2 | 21,3 | 26,9 | 33,7 | 42,4 | 48,3 | 60,3 | 76,1 | 88,9 | 114,3 | 139,7 | 168,3 | 219,1 | 273 |  |
| Di                                    | 9,5  | 12,6 | 16,2 | 20,6 | 26   | 32   | 40   | 50   | 65   | 80   | 100   | 125   | 150   | 200   | 260 |  |
| Material thickness                    | 2,0  | 2,3  | 2,55 | 3,15 | 3,85 | 5,2  | 4,15 | 5,15 | 5,55 | 4,45 | 7,15  | 7,35  | 9,15  | 9,55  | 6,5 |  |



## Measurements internal threads

| AT 3522 Measurements internal thread |      |       |       |       |       |       |       |       |
|--------------------------------------|------|-------|-------|-------|-------|-------|-------|-------|
| DN                                   | 8    | 10    | 15    | 20    | 25    | 32    | 40    | 50    |
| G                                    | 1/4  | 3/8   | 1/2   | 3/4   | 1     | 1 1/4 | 1 1/2 | 2     |
| E                                    | 13,1 | 16,67 | 20,95 | 26,44 | 33,25 | 41,91 | 47,8  | 59,61 |
| K                                    | 13,5 | 13,5  | 16,5  | 17,5  | 20,5  | 20,5  | 24,5  | 25,5  |
| W                                    | 21   | 21    | 27    | 33    | 41    | 51    | 56    | 68    |
| No. of threads                       | 19   | 19    | 14    | 14    | 11    | 11    | 11    | 11    |

Measurements in mm.

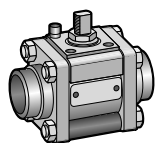
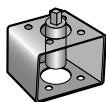
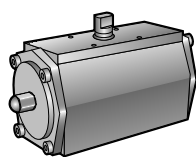
## Accessories and Options

Can be provided with different types of actuators and limit switches. (See separate datasheet AT 3830, AT 3831, AT3840, AT3841, AT 3900)

The valve is available with different types of accessories and in different performance as:

Stem extension, Cavity fillers, spring return lever with spring-to-open or spring-to-close function. Fire-safe design, three-way valves, heating jacket, Cryo performance, double gasket box, tank bottom valve, high pressure performance.

Three-piece valves give many variations for connection, for example one weld end and one threaded end. NPT threads and customer related welded ends.



## Installation

Valves with weld ends can be welded in without disassembling, provided that the ball is in open position. See separate manual.

### Fitting flanges AT 3552 drilled according to:

| DN     | Form        | DN      | Connection form |
|--------|-------------|---------|-----------------|
| 10-50  | SS 335-PN40 | 125-200 | SS 335-PN16     |
| 65-100 | SS 335-PN25 | 250     | SS 335-PN10     |

## Maintenance and Spare parts

The valve construction permits a simple exchanging of all parts. See separate installation- and maintenance instructions AT 9980-3502.

## Marking

Manufacturer, DN, PN, material code, CE and on special valves flow direction arrow.

# Ball valve

Reduced Bore

AT 3502, 3522

## How to order

| DN  | AT 3502     |           | AT 3522     |           |
|-----|-------------|-----------|-------------|-----------|
|     | Article No. | RSK-No.   | Article No. | RSK-No.   |
| 8   |             |           | 3522-8      | 451 59 20 |
| 10  | 3502-10     | 451 61 01 | 3522-10     | 451 59 38 |
| 15  | 3502-15     | 451 61 00 | 3522-15     | 451 59 46 |
| 20  | 3502-20     | 451 61 18 | 3522-20     | 451 59 53 |
| 25  | 3502-25     | 451 61 26 | 3522-25     | 451 59 61 |
| 32  | 3502-32     | 451 61 34 | 3522-32     | 451 59 79 |
| 40  | 3502-40     | 451 61 42 | 3522-40     | 451 59 87 |
| 50  | 3502-50     | 451 61 59 | 3522-50     | 451 59 95 |
| 65  | 3502-65     | 451 61 67 |             |           |
| 80  | 3502-80     | 451 61 75 |             |           |
| 100 | 3502-100    | 451 61 83 |             |           |

## How to order cont.

HT = High temperature performance

FS = Fire-safe

C = Cryogenic

HP = High pressure performance

G = 15% glass-filled PTFE

GF = 25% glass-filled PTFE

See separate pressure/temperature curves for selection of seat gaskets.