# BSA3HP
# Bellows Sealed High Pressure Stop Valve

## Description

The BSA3HP is a carbon steel bodied, high pressure in-line non-throttling stop valve with multi-ply bellows. Balanced and unbalanced options are available. These valves are rated to EN 1092 PN100 or ASME class 600 for use with both saturated and superheated steam applications and a range of other industrial gases and fluids.

### Range and options

| Size | Unbalanced | | Balanced | |
|---|---|---|---|---|
| | PN100 | Class 600 | PN100 | Class 600 |
| DN15 - DN50 | ● | ● | | |
| DN65 - DN100 | ● | ● | ● | ● |

### Standards

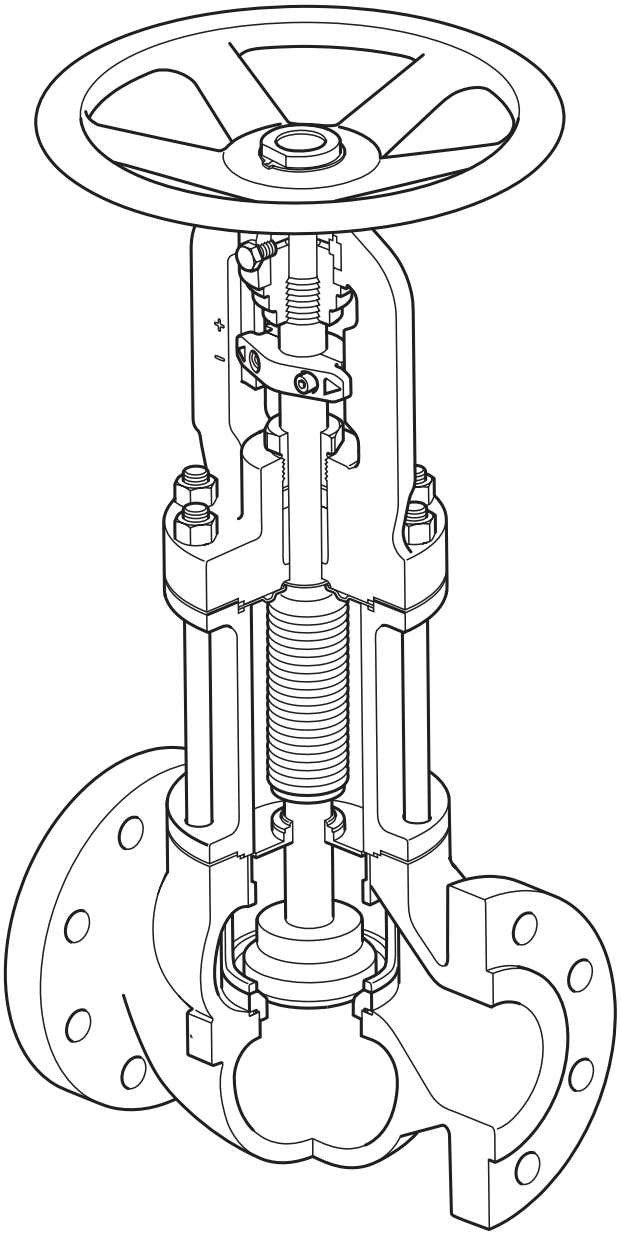
The product fully complies with the requirements of the European Pressure Equipment Directive and carries the CE mark when so required.

### Certification

The BSA3HP is available with certification to EN 10204 3.1.
**Note:** All certification / inspection requirements must be stated at the time of order placement.

## Size and pipe connection

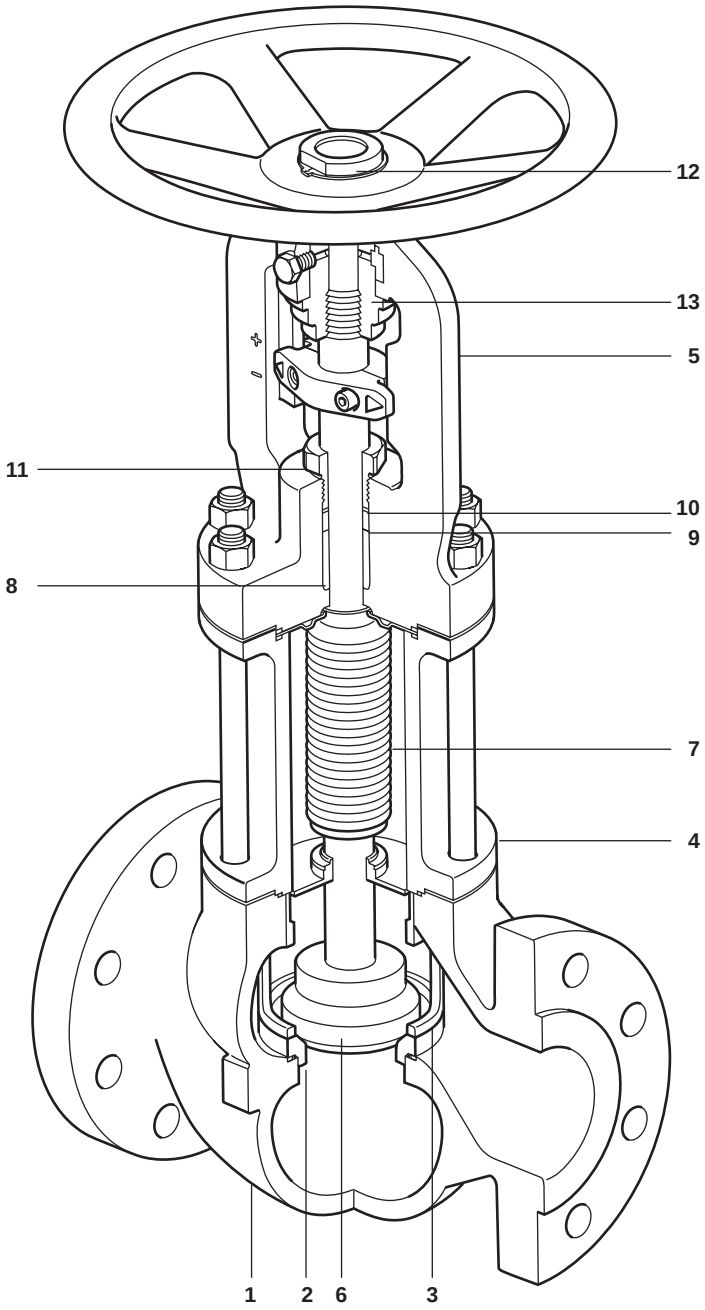
DN15, DN20, DN25, DN32, DN40, DN50, DN65, DN80 and DN100. Flanged EN 1092 PN100 and ½", ¾", 1", 1¼", 1½", 2", 2½", 3" and 4". Flanged ASME class 600



**DN100**
**ASME Class 600**
**BSA3HP shown**

**DN25**
**PN100 BSA3HP shown**

**Items 1 - 13**

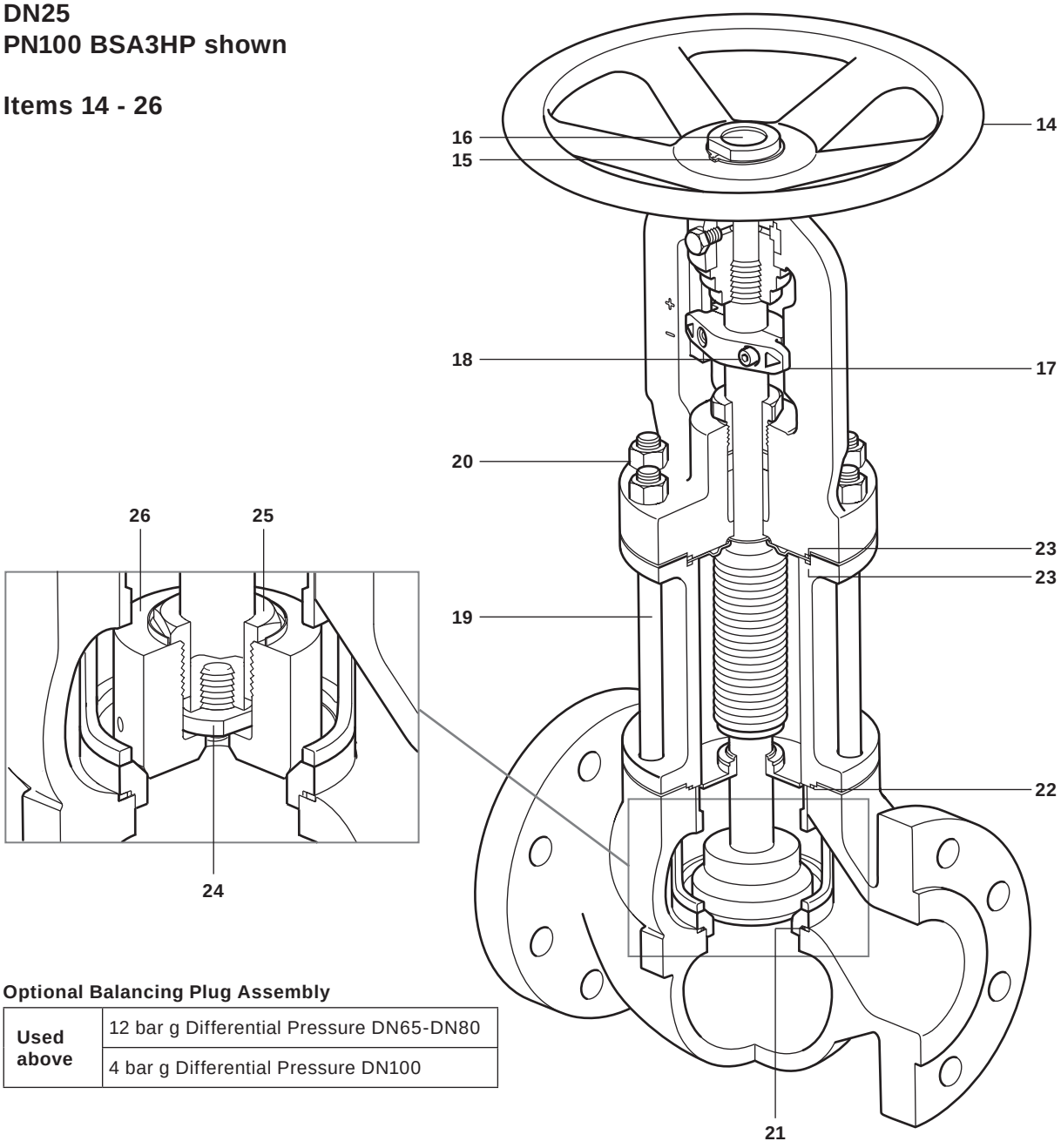



## Materials

| No. | Part | Material | |
|---|---|---|---|
| **1** | Body | Carbon steel | 1.0619+N / SA-216 WCB |
| **2** | Seat | Stainless steel | 1.4057 |
| **3** | Support cage | Stainless steel | 1.4408 / A351CF8M |
| **4** | Bellows housing | Carbon steel | 1.0619+N / SA-216 WCB |
| **5** | Bonnet | Carbon steel | 1.0619+N / SA-216 WCB |
| **6** | Plug | Stainless steel | 1.4021 |
| **7** | Stem and bellows assembly | Stainless steel | 1.4571 / 1.4301 / 1.4307 / ASTM A276 316L |
| **8** | Stem guide | Stainless steel alloy | UNS S21800 |
| **9** | Graphite ring | Graphite | |
| **10** | Gland ring | Stainless steel | 1.4301 / ASTM 304 |
| **11** | Gland nut | Steel | 1.0715 / 230M07 |
| **12** | Bonnet bush | Steel | 1.0715 / 230M07 |
| **13** | Thrust washer | Steel | 1.1231 / C67S |

**DN25**
**PN100 BSA3HP shown**

**Items 14 - 26**

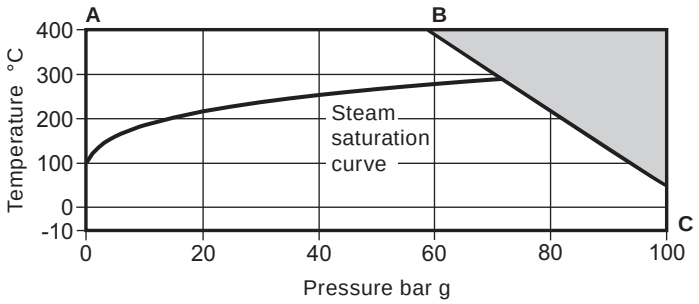



**Optional Balancing Plug Assembly**

| | |
|---|---|
| **Used above** | 12 bar g Differential Pressure DN65-DN80 |
| | 4 bar g Differential Pressure DN100 |

| No. | Part | Material | |
|---|---|---|---|
| **14** | Hand wheel | Steel | 1.0111 / P245NB |
| **15** | Circlip | Carbon steel | 1.1231 / C67S |
| **16** | Core plug | Mild steel | 1.0330/CR4 |
| **17** | Stem coupling | Stainless steel | ASTM A351 CF8 |
| **18** | Socket head screw | Stainless steel | ASTM 304/A2-70 |
| **19** | Studs | Alloy steel | ASTM A193 B7 |
| **20** | Nuts | Alloy steel | ASTM A194 2H |
| **21 22 23** | Gaskets | Graphite and stainless steel | 1.4401 / 316L |
| **24** | Stem plug | Stainless steel | 1.4057 / ASTM A276 431 |
| **25** | Nut retainer | Stainless steel | 1.4305 / ASTM A582 303 |
| **26** | Balanced plug | Stainless steel | 1.4021 |

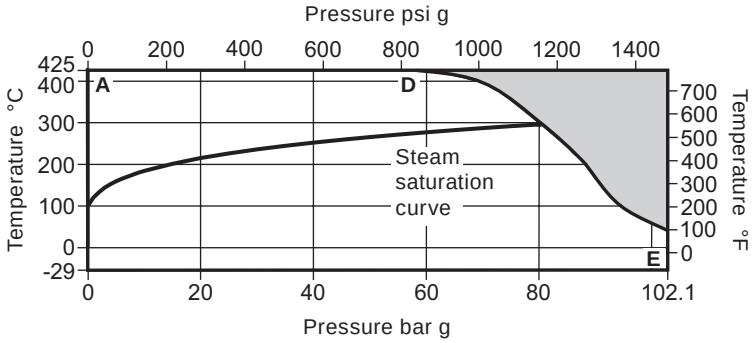
## Pressure / temperature limits (ISO 6552)




The product **must not** be used in this region or beyond the parameter of the PMA or TMA of the relative end connection.

### A - B - C PN100

| | | |
|---|---|---|
| Body design condition | | PN100 |
| PMA | Maximum allowable pressure | 100 bar g @ 50 °C |
| TMA | Maximum allowable temperature | 400 °C @ 59.5 bar g |
| Minimum allowable temperature | | -10 °C |
| PMO | Maximum operating pressure for saturated steam service | 70.5 bar g @ 287.3 °C |
| TMO | Maximum operating temperature | 400 °C @ 59.5 bar g |
| Minimum operating temperature | | -10 °C |
| Designed for a maximum cold hydraulic test pressure of: | | 150 bar g |




The product **must not** be used in this region or beyond the parameter of the PMA or TMA of the relative end connection.

### A - D - E Class 600

| | | | |
|---|---|---|---|
| Body design condition | | | Class 600 |
| PMA | Maximum allowable pressure | 102.1 bar g @ 38 °C | 1 481psi g @ 100 °F |
| TMA | Maximum allowable temperature | 425 °C @ 57.5 bar g | 797 °F @ 834 psi g |
| Minimum allowable temperature | | -29 °C | -20 °F |
| PMO | Maximum operating pressure for saturated steam service | 79.8 bar g @ 295.8 °C | 1 156 psi g @ 564.4 °F |
| TMO | Maximum operating temperature | 425 °C @ 57.5 bar g | 797 °F @ 834 psi g |
| Minimum operating temperature | | -29 °C | -20 °F |
| Designed for a maximum cold hydraulic test pressure of: | | 154 bar g | 2 233 psi g |

## Seat leakage

Plug to seat shut-off conforms to EN 12266-1 Rate A leakage.

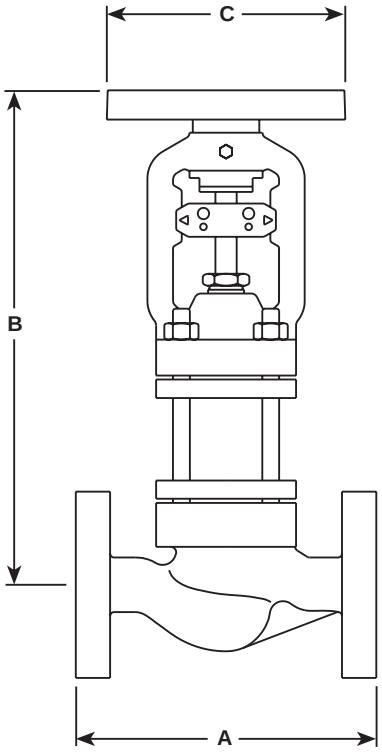
## $K_V$ values

| Size | DN15 (½") | DN20 (¾") | DN25 (1") | DN32 (1¼") | DN40 (1½") | DN50 (2") | DN65 (2½") | DN80 (3") | DN100 (4") |
|---|---|---|---|---|---|---|---|---|---|
| $K_V$ | 3.1 | 7.6 | 8.6 | 24 | 28 | 36.8 | 80 | 86 | 134 |

For conversion:
$C_V$ (UK) = $K_V$ x 0.963
$C_V$ (US) = $K_V$ x 1.156

## Dimensions/weights (approximate) in mm and kg

| Size | A | | B | C Ø | Weight | | | |
|---|---|---|---|---|---|---|---|---|
| | PN100 | Class 600 | | | PN100 | | Class 600 | |
| | | | | | Unbalanced | Balanced | Unbalanced | Balanced |
| **DN15** | 210 | 203 | 382 | 150 | 12.0 | | 12.5 | |
| **DN20** | 230 | 206 | 384 | 150 | 14.5 | | 15.0 | |
| **DN25** | 230 | 210 | 380 | 150 | 16.5 | | 17.0 | |
| **DN32** | 260 | 251 | 485 | 250 | 31.0 | | 31.0 | |
| **DN40** | 260 | 251 | 485 | 250 | 32.0 | | 32.0 | |
| **DN50** | 300 | 286 | 480 | 250 | 38.0 | | 37.0 | |
| **DN65** | 340 | 311 | 670 | 300 | 90.0 | 90.0 | 88.0 | 88.0 |
| **DN80** | 380 | 337 | 670 | 300 | 92.0 | 92.0 | 90.0 | 90.0 |
| **DN100** | 430 | 394 | 734 | 400 | 129.0 | 129.0 | 127.0 | 129.0 |




**DN25**
**PN100 BSA3HP shown**

## Safety information, installation and maintenance

For full details see the Installation and Maintenance Instructions (IM-P184-17) supplied with the product.

**Disposal:** These products are recyclable. No ecological hazard is anticipated with the disposal of these products, providing due care is taken

## How to order

**Example:** : 1 off DN25 Spirax Sarco type BSA3HP bellows sealed high pressure stop valve, flanged ASME 600.

**Note:** Should the differential pressure exceed those listed against the respective sizes in the table below, then please ensure balancing discs are specified for use in the valves (see illustration on page 6).

| Size | DN65 | DN80 | DN100 |
|---|---|---|---|
| **Differential pressure (bar g)** | 12 | 12 | 4 |

## Spare parts

The spare parts available are detailed below. No other parts are supplied as spares.

**Available spares**

| | |
|---|---|
| Seat/body/bonnet gaskets and graphite ring | **9, 21, 22** and **23** (2 off) |
| Seat, plug, stem and bellows assembly (Gaskets not included) | **2, 6** and **7** |
| Hand wheel and circlip | **14** and **15** |

**How to order spares**

Always order spares by using the description given in 'Available spares' and state the size and type of stop valve (balanced or unbalanced).

**Example: 1 -** Seat, plug, stem and bellows assembly for an unbalanced DN15 Spirax Sarco BSA3HP bellows sealed high pressure stop valve having EN1092 PN100 connections.