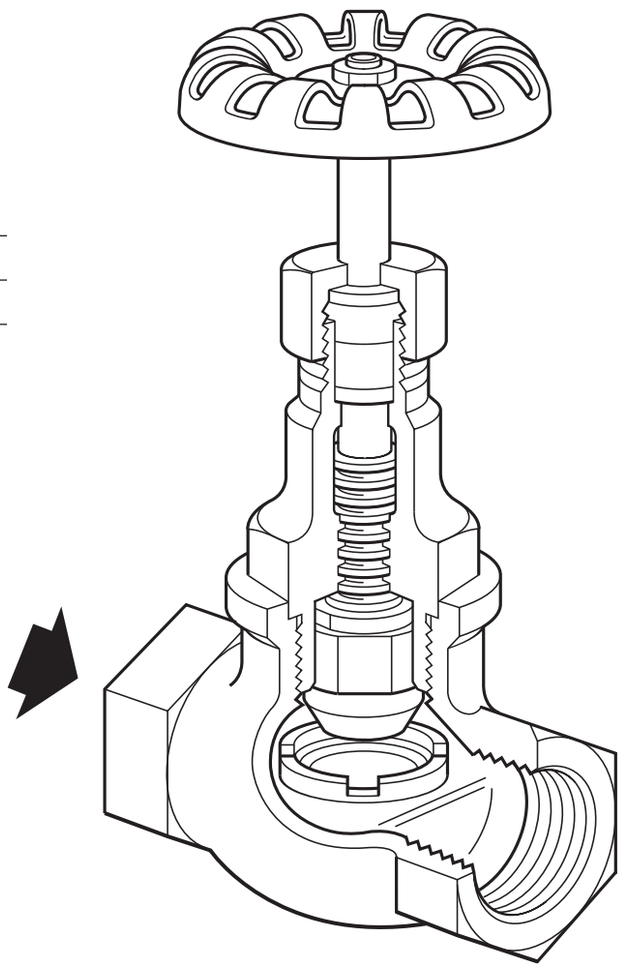
TI-P060-01
CMGT Issue 8

HV3
Stop Valve

Description
A bronze bodied globe valve for steam, water, oil or air applications.
To BS 5154 Series A.



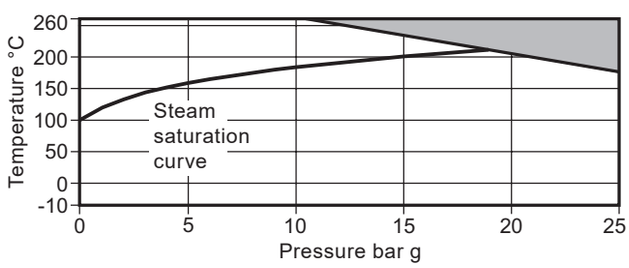
Sizes and pipe connections
½", ¾", 1", 1¼", 1½" and 2" screwed BSP parallel.

K_v values

Size	½"	¾"	1"	1¼"	1½"	2"
K_v	1.3	1.6	4.2	13.8	19.7	28

For conversion:
C_v (UK) = K_v x 0.963
C_v (US) = K_v x 1.156

Pressure/temperature limits



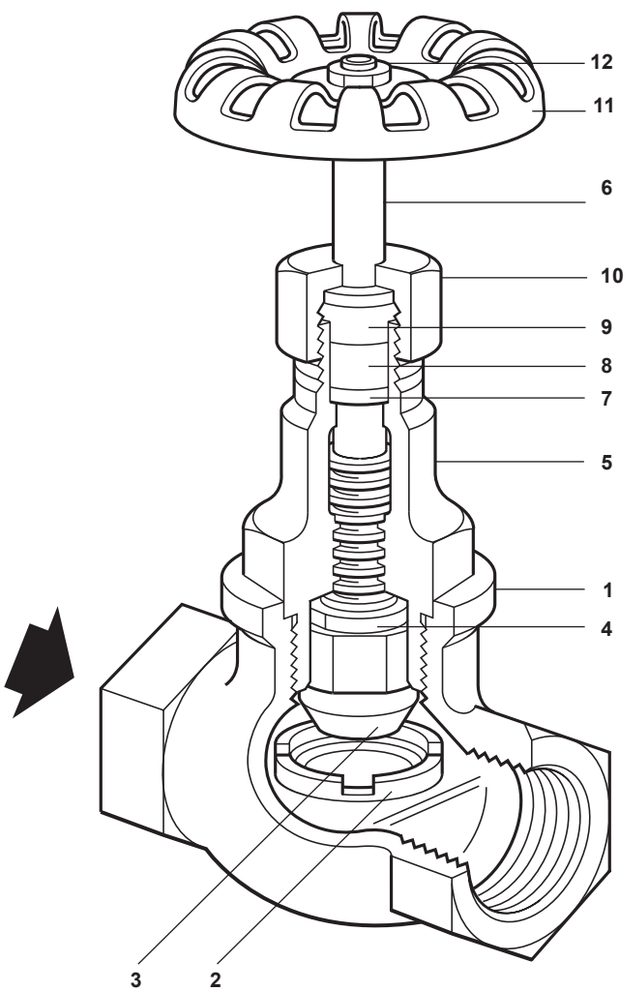
The product **must not** be used in this region.

Maximum body design conditions		PN25
PMA	Maximum allowable pressure	25 bar g @ 170 °C
TMA	Maximum allowable temperature	260 °C @ 10.5 bar g
Minimum allowable temperature		-10 °C
PMO	Maximum operating pressure	25 bar g @ 170 °C
TMO	Maximum operating temperature	260 °C @ 10.5 bar g
Minimum operating temperature		-10 °C
Designed for a maximum cold hydraulic test pressure of 38 bar g		

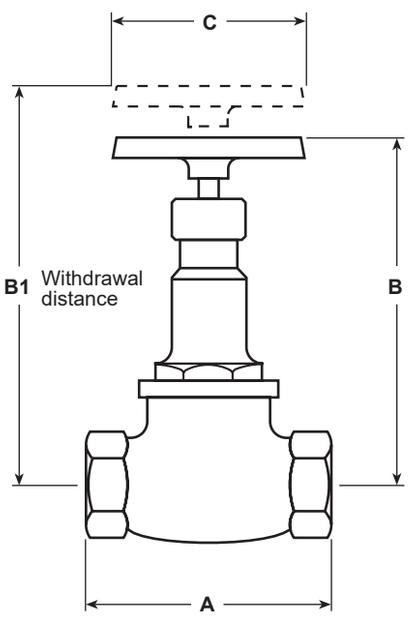
Pipeline ancillaries
HV3 stop valve

Materials

No.	Part		Material	
1	Body		Gunmetal	BS 1400 LG2
2	Valve seat		Stainless steel	AISI 431
3	Valve		Stainless steel	AISI 431
4	Lock-nut		Gunmetal	BS 1400 LG2
5	Bonnet		Gunmetal	BS 1400 LG2
6	Stem	½" - 1"	Austenitic stainless steel	BS 970 303 S31
		1¼" - 2"	Gunmetal	BS 1400 LG2
7	Washer		Gunmetal	BS 1400 LG2
8	Gland packing		PTFE	
9	Gland		Gunmetal	BS 1400 LG2
10	Packing nut		Gunmetal	BS 1400 LG2
11	Handwheel		Aluminium	DIN 1725 GK-A1 Si 1
12	Handwheel nut		Brass	DIN 17660 MS63



Dimensions/weights (approximate) in mm and kg



Size	A	B	B1	C	Weight
½"	67	102	110	60	0.60
¾"	80	110	125	60	0.86
1"	95	130	146	80	1.30
1¼"	112	144	160	100	2.08
1½"	132	144	160	100	2.86
2"	160	174	203	120	4.65

10.2
2

Safety information, installation and maintenance
For full details see the Installation and Maintenance Instructions (IM-P060-04) supplied with the product.

Installation note:
Install the valve in the direction of flow given by the arrow on the body. The valve can be installed in any plane but not with the handwheel below the valve body.

Disposal
The product is recyclable. No ecological hazard is anticipated with the disposal of this product, providing due care is taken.

How to order
Example: 1 off Spirax Sarco HV3 stop valve having 1½ BSP parallel connections.

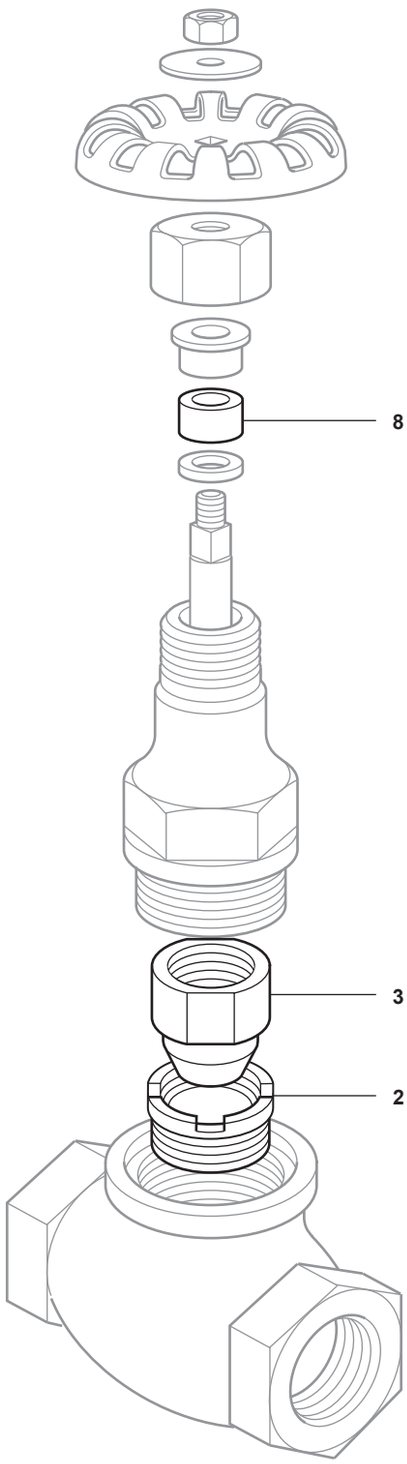
Spare parts
The spare parts available are shown in heavy outline. Parts drawn in a grey line are not supplied as spares.

Available spares

Valve and seat assembly	**2, 3**
Gland packing (packet of 3)	**8**

How to order spares
Always order spares by using the description given in the column headed 'Available spares' and state the size and type of valve.
Example: 1 - Valve and seat assembly for a 1" Spirax Sarco HV3 stop valve.

Note: The above spares are applicable to the HV3 stop valve only, identified by its blue handwheel.
They are not interchangeable with spares for the HV1 stop valve identified by its green handwheel, or the HV2 stop valve, identified by its red handwheel.



TI-P132-09
CMGT Issue 7

A3S and A3SS
Bellows Sealed Stop Valve

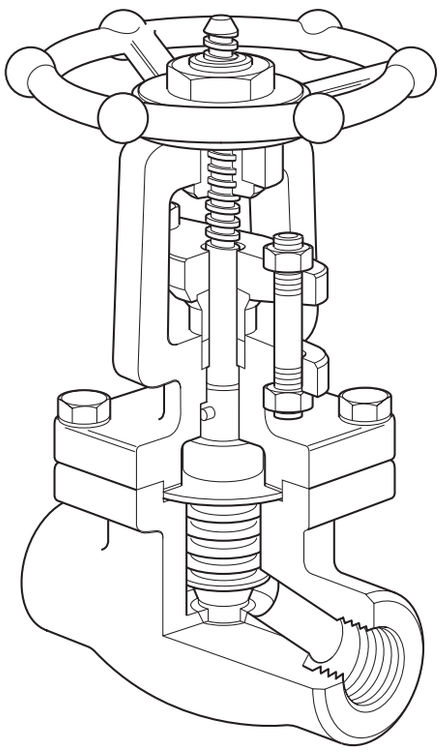
Description
A screwed and socket weld bellows sealed, in-line stop valve for use on steam, gas, liquid, condensate and water systems.

Standards
This product fully complies with the requirements of the Pressure Equipment Directive (PED).
The valve bellows fatigue life conforms to ISO 15761.

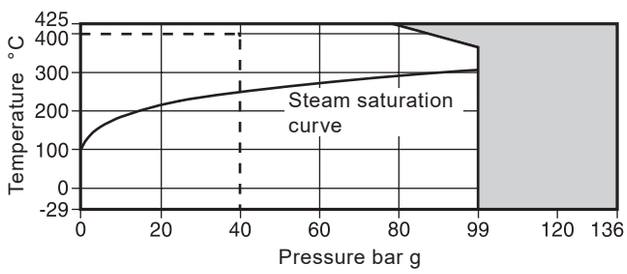
Seat leakage
Disc to seat shut-off conforms to API 598 and DIN 3230 leakage rate B01.

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

Sizes and pipe connections
½", ¾", 1", 1¼", 1½" and 2"
Screwed BSP (BS 21 parallel), NPT
Socket weld to BS 3799/ANSI B 16.11



Pressure/temperature limits (Class 800)



The product **must not** be used in this region.

Operating restrictions to conform to ISO 15761.

Body design conditions	Class 800
PMA Maximum allowable pressure	136 bar g
TMA Maximum allowable temperature	425 °C
Minimum allowable temperature	-29 °C
Maximum operating pressure	99 bar g @ 360 °C
PMO Maximum operating pressure for extended bellows life	40 bar g @ 400 °C
Maximum operating temperature	425 °C
TMO Maximum operating temperature for extended bellows life	400 °C @ 40 bar g
Minimum operating temperature	-29 °C
Without the bellows fitted the unit is designed for a maximum cold hydraulic test pressure of:	212 bar g

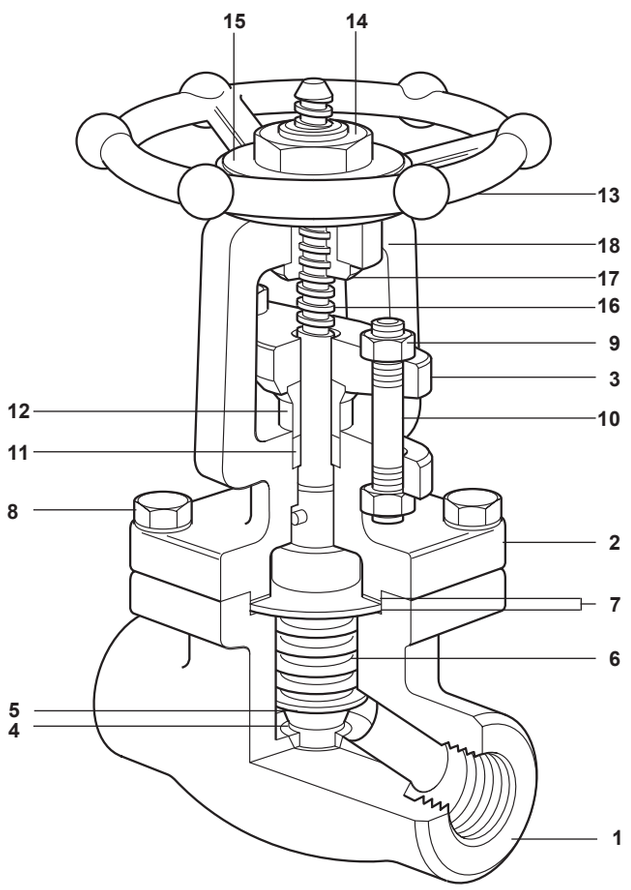
Polígono Industrial O Rebullón s/n. 36416 - Mos - España - rodavigo@rodavigo.com

Pipeline ancillaries

Bellows sealed stop valves

Materials

No.	Part		Material	
1	Body		Forged steel	ASTM A105N
2	Bonnet		Forged steel	ASTM A105N
3	Gland flange		Forged steel	ASTM A105
4	Integral seat		Stellite	Gr. 6
5	Disc	A3S	Stainless steel	ASTM A276 Type 410
		A3SS	Stainless steel	ASTM A276 Type 410 + stellite Gr. 6
6	Bellows		Stainless steel	ASTM A479 Type 321
7	Gaskets		Spirally wound stainless steel and graphite filler/graphite laminate with stainless steel insert.	
8	Body bolts		Carbon steel	ASTM A193 B7
9	Gland nuts		Carbon steel	ASTM A194 2H
10	Gland studs		Stainless steel	AISI 410
11	Stem packing		Graphite	
12	Gland follower		Stainless steel	ASTM A276 Type 410
13	Handwheel		Carbon steel	
14	Wheel nut		Carbon steel	
15	Name-plate		Stainless steel	
16	Stem		Stainless steel	ASTM A276 Type 410
17	Yoke nut		Stainless steel	ASTM A582 Type 410
18	Grease nipple		Carbon steel	



K_v values

Size	½"	¾"	1"	1¼"	1½"	2"
K_v	1.3	3.2	5.8	9.0	17.0	19.2

For conversion:
C_v (UK) = K_v x 0.963
C_v (US) = K_v x 1.156

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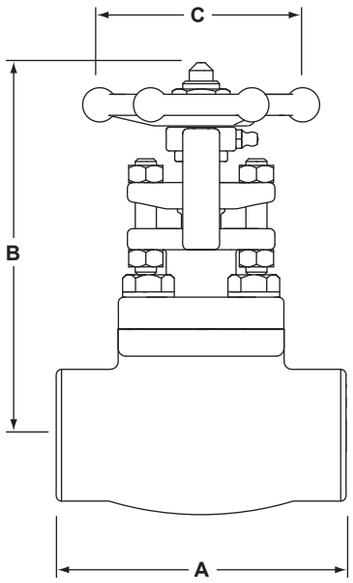
Dimensions/weights (approximate) in mm and kg

Size	A	B (valve open)	C	Weight
½"	80	136	70	1.7
¾"	90	144	90	2.3
1"	110	167	110	3.6
1¼"	127	194	110	5.9
1½"	155	220	130	8.5
2"	170	230	180	11.6



Safety information, installation and maintenance
For full details see the Installation and Maintenance Instructions (IM-P132-11) supplied with the product.

Installation note:
Install in the direction of flow given by the arrow on the body with the handwheel in a suitable position. The preferred position is with the spindle vertical.

Disposal
The product is recyclable. No ecological hazard is anticipated with the disposal of this product, providing due care is taken.

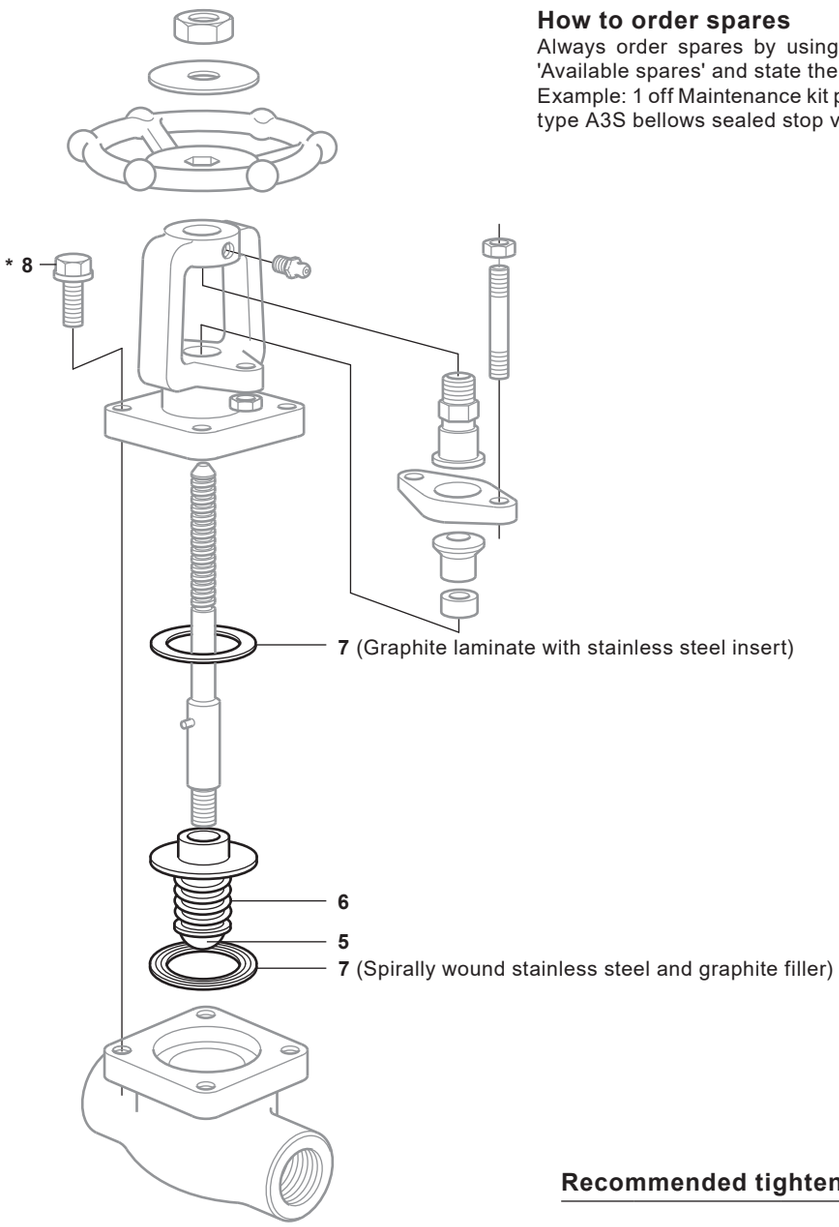
How to order
Example: 1 off Spirax Sarco A3S bellows sealed stop valve having screwed BSP connections.

Pipeline ancillaries
Bellows sealed stop valves

Spare parts
The spare parts available are shown in heavy outline. Parts drawn in a grey line are not supplied as spares.

Available spares

Set of body gaskets	**7**
Maintenance kit (Disc and bellows assembly + body gaskets)	**5, 6, 7**



How to order spares
Always order spares by using the description given in the column headed 'Available spares' and state the size and type of valve.
Example: 1 off Maintenance kit plus 1 - Set of body gaskets for a 1" Spirax Sarco type A3S bellows sealed stop valve having screwed BSP connections.

* Please note: Item **8** is not an available spare.

Recommended tightening torques

Item	Part		or mm		N m
8	Body bolt	½"		M10	40 - 50
		¾"		M10	40 - 50
		1"		M12	70 - 90
		1¼"		M12	70 - 90
		1½"		M14	110 - 130
		2"		M16	160 - 190

TI-P137-18
CMGT Issue 12

BSAT and BSA
Bellows Sealed Stop Valves

Description
A range of sealed, in-line stop valves having twin ply bellows as standard throughout the range. These valves have been designed for use on steam, gas, liquid, condensate and water systems.

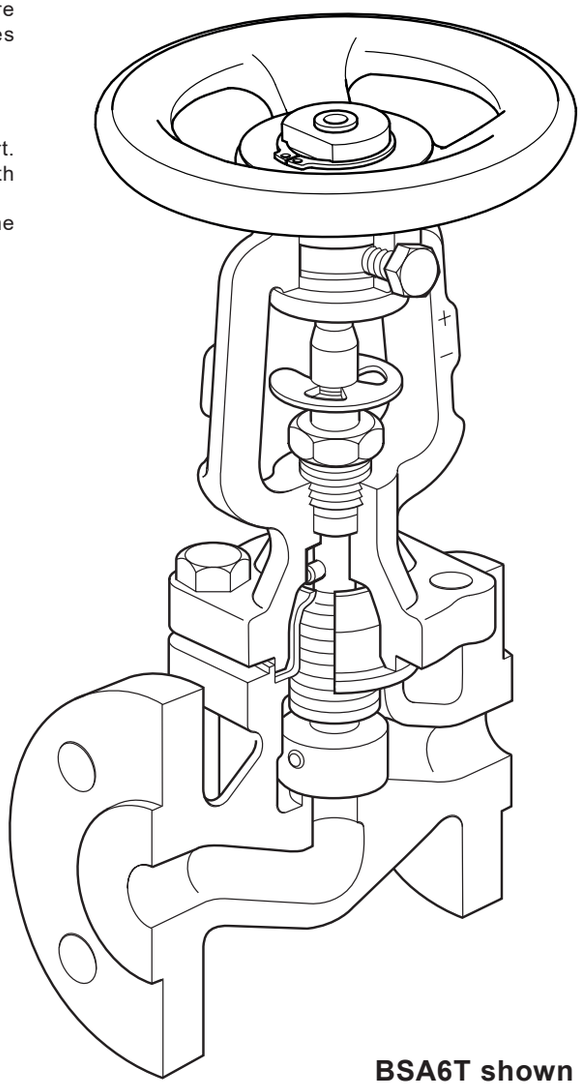
The standard BSAT range comes complete with throttling plug and locking device.

The alternative BSA range has a flat disc.

The Tables on page 2 clearly display the available sizes, pipeline connections and available options for the standard and alternative ranges.

Standards
The product fully complies with the requirements of the EU Pressure Equipment Directive/UK Pressure Equipment Regulations and carries the CE mark when so required.

Certification
The BSA1 and BSA1T is available with a manufacturer's Typical Test Report. The BSA2, BSA2T, BSA3, BSA3T, BSA6T and BSA64T is available with certification to EN 10204 3.1.
Note: All certification/inspection requirements must be stated at the time of order placement.



BSA6T shown

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Pipeline ancillaries
Bellows sealed stop valves
Range and options

Standard BSAT range - complete with throttling plug and locking device

Material		Cast iron		SG iron		Cast steel					Stainless steel	Stainless steel/ cast steel
Model and connections		BSA1T		BSA2T		BSA3T					BSA6T	BSA64T
		PN16	KS 10	PN16	PN25	PN25	PN40	ASME 150	ASME 300	KS 20	PN40	PN40
Sizes	DN15	●	●	●	●		●	●	●	●	●	●
	DN20	●	●	●	●		●	●	●	●	●	●
	DN25	●	●	●	●		●	●	●	●	●	●
	DN32	●	●	●	●		●				●	●
	DN40	●	●	●	●		●	●	●	●	●	●
	DN50	●	●	●	●		●	●	●	●	●	●
	DN65	●	●	●	●		●				●	●
	DN80	●	●	●	●		●	●	●	●	●	●
	DN100	●	●	●	●		●	●	●	●	●	●
	DN125	●	●	●	●		●					
	DN150	●	●	●	●		●		●	●		
	DN200	●	●	●	●	●			●	●		
	DN250				●							
Optional R-PTFE soft seat	DN15	●	●	●	●		●	●	●	●	●	●
	DN20	●	●	●	●		●	●	●	●	●	●
	DN25	●	●	●	●		●	●	●	●	●	●
	DN32	●	●	●	●						●	●
	DN40	●	●	●	●		●	●	●	●	●	●
	DN50	●	●	●	●		●	●	●	●	●	●
	DN65	●	●	●	●						●	●
	DN80	●	●	●	●		●	●	●	●	●	●
	DN100	●	●	●	●		●	●	●	●	●	●

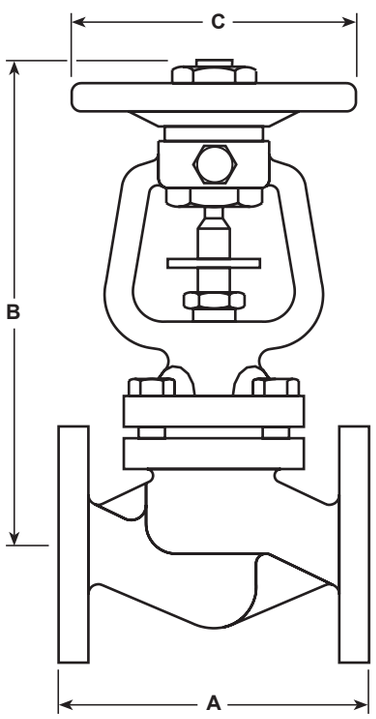
Alternative BSA range - complete with flat disc option

Material		Cast iron		SG iron		Cast steel					Stainless steel	Stainless steel/ cast steel
Model and connections		BSA1		BSA2		BSA3						
		PN16	KS 10	PN16	PN25	PN25	PN40	ASME 150	ASME 300	KS 20		
Sizes	DN125	●	●	●	●		●					
	DN150	●	●	●	●		●		●	●		
	DN200	●	●	●	●	●			●	●		
	DN250				●							
Optional balancing disc	DN125				●		●					
	DN150			●	●		●		●	●		
	DN200	●	●	●	●	●			●	●		
	DN250				●							

Dimensions/weights (approximate) in mm and kg

Size	A					B	C	Weight				
	PN	JIS/KS 10K	JIS/KS 20K	ASME 150	ASME 300			BSA1 BSA1T BSA2 BSA2T	BSA3 (DIN)	BSA3 (ASME) ANSI 150	BSA3 ASME 300 JIS/KS 20K	BSA6T BSA64T PN40
DN15	130	133	152	108	152	205	125	4	4	5	6	4
DN20	150	153	178	117	178	205	125	4	5	6	7	5
DN25	160	163	200	127	203	217	125	5	6	8	9	6
DN32	180	183	-	-	-	217	125	7	8	-	-	8
DN40	200	203	224	165	229	243	200	10	11	10	11	11
DN50	230	229	259	203	267	243	200	12	14	12	15	14
DN65	290	293	-	-	-	263	200	16	19	-	-	19
DN80	310	309	304	241	317	287	200	21	26	25	29	26
DN100	350	349	340	292	356	383	315	36	44	41	49	44
DN125	400	395	-	-	-	416	315	52	64	-	-	-
DN150	480	479	428	-	445	450	400	75	88	-	94	-
DN200	600	592	537	-	559	622	500	145	180	-	193	-
DN250	730	-	-	-	-	763	500	*180	-	-	-	-

*(BSA2T/BSA2 only)



Seat leakage

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

K_v values - all options

Size	DN15 (½")	DN20 (¾")	DN25 (1")	DN32 (1¼")	DN40 (1½")	DN50 (2")	DN65 (2½")	DN80 (3")	DN100 (4")	DN125 (5")	DN150 (6")	DN200 (8")	DN250 (10")
K_v	4	7	12	19	30	47	77	120	193	288	410	725	1 145

For conversion:
C_v (UK) = K_v x 0.963
C_v (US) = K_v x 1.156

Note: For K_v values and flow characteristic values of the **BSA1T, BSA2T** and **BSA3T** see the next section 'BSAT flow data'.

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Pipeline ancillaries

Bellows sealed stop valves

BSAT flow data

Size	BSAT valve DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100	DN125	DN150	DN200	DN250
Handwheel rotations	**K_v values for given handwheel rotations tested to EN 60534-2-3 Water at 20 °C**												
0	0	0	0	0	0	0	0	0	0	0	0	0	0
0.5	1.2	1.2	1.4	2.2	4.4	4.1	5.6	10.4	12.0	21	28	66	110
1	1.7	1.7	2.0	3.7	5.0	5.0	7.0	11.5	14.3	23	30	81	140
1.5	2.7	2.9	2.9	5.0	5.5	6.0	9.2	13.6	24.5	26	33	97	150
2	3.6	4.0	4.6	7.9	7.6	7.2	11.6	16.3	34.1	42	46	111	165
2.5	4.4	5.3	6.4	10.6	11.0	9.7	12.4	18.5	59.6	67	65	149	190
3	5.4	6.6	8.5	13.8	14.7	14.1	13.0	21.1	86.2	94	90	199	225
4			10.6	17.0	22.6	24.4	25.2	24.5	123.0	140	152	302	330
4.5			11.2	18.3	24.4	29.4	32.5	29.0	139.0	181	177	355	451
5			11.9	19.6	27.2	37.0	43.6	39.1	164.1	185	216	403	460
6					28.9	46.2	60.2	61.0	179.0	220	264	455	600
6.5					29.1	47.0	63.0	69.0	186.0	230	288	480	641
6.7					29.3	47.2	64.3	73.0		235	293	487	656
7							65.9	78.0		241	305	495	678
8							71.2	90.0		259	337	507	738
8.5							74.6	92.0			348	522	760
9.5								99.0			369		793
10								101.6					805
10.7													827

To convert K_v to volume flowrate in m³/h:

$\dot{Q} = K_v \times \sqrt{\Delta P}$

Where:

$\dot{Q}$ = Volume flow in cubic m/h

ΔP = Pressure drop in bar

Note: The maximum recommended differential pressure in throttling function:

DN15 - DN80	2.0 bar
DN100 - DN125	1.5 bar
DN150	1.0 bar
DN200 - DN250	0.8 bar

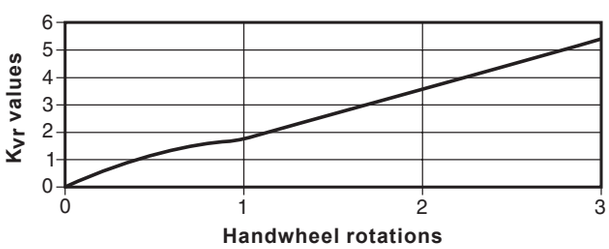
If the BSAT is used above these quoted figures, increased noise and vibration may be experienced.

10.1

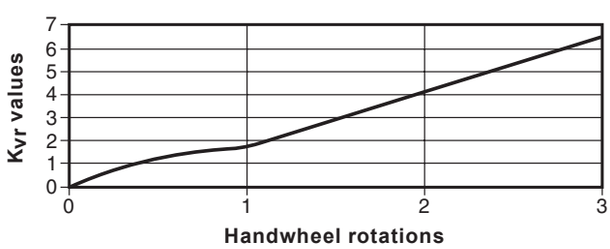
8

The following graphs show handwheel rotation and flow characteristic with water at 20 °C:

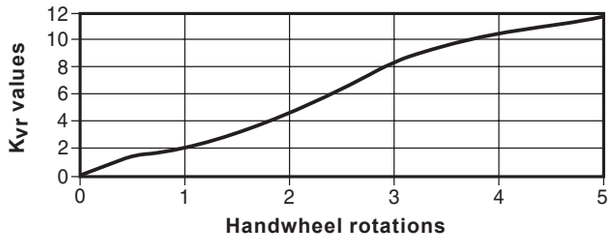
BSAT - DN15



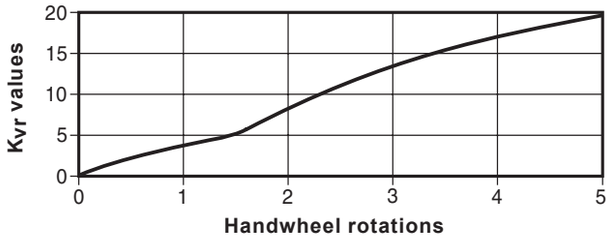
BSAT - DN20



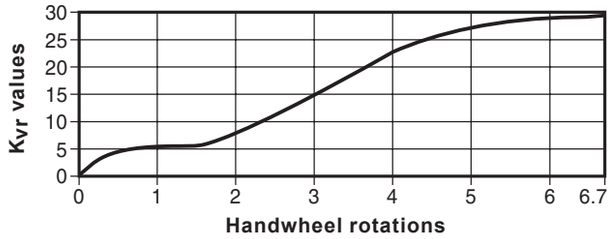
BSAT - DN25



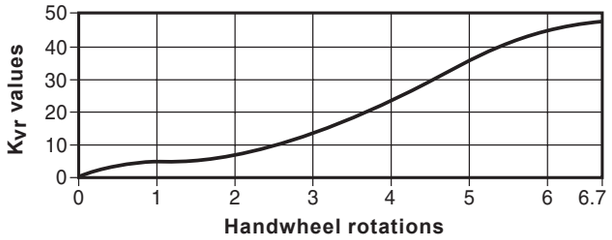
BSAT - DN32



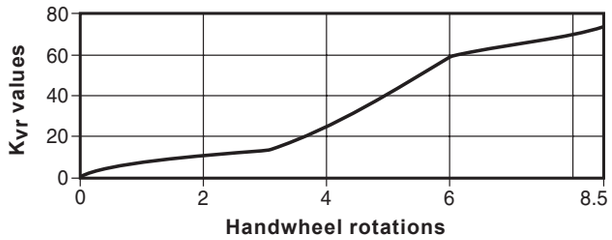
BSAT - DN40



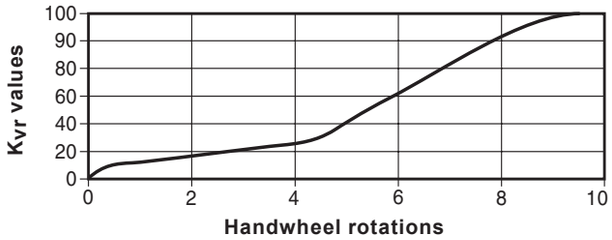
BSAT - DN50



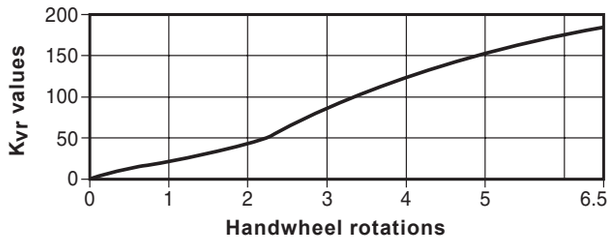
BSAT - DN65



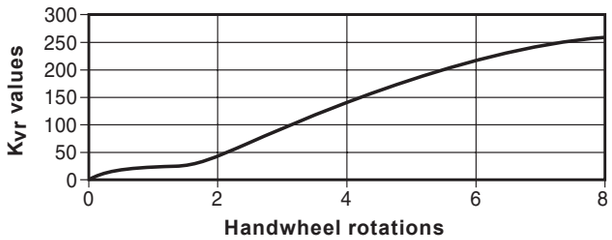
BSAT - DN80



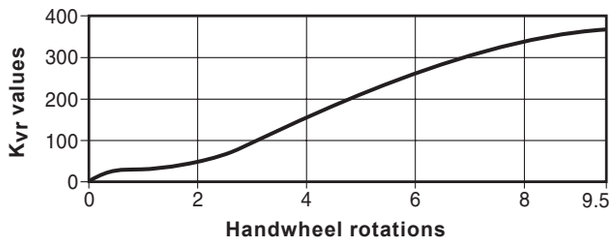
BSAT - DN100



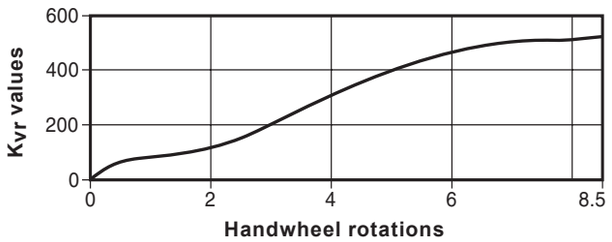
BSAT - DN125



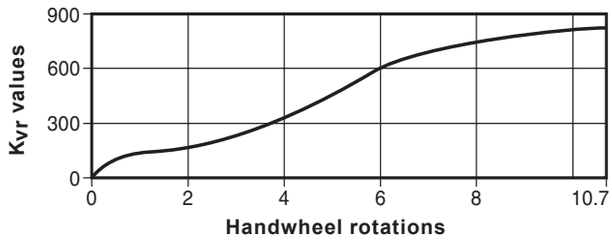
BSAT - DN150



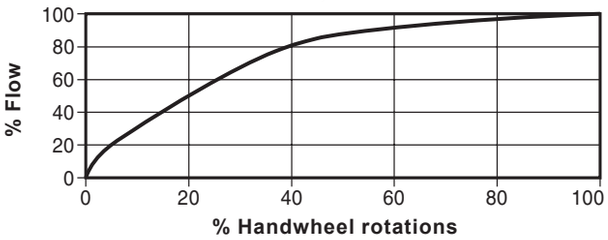
BSAT - DN200



BSAT - DN250



Typical standard flat disc
for the BSA1, BSA2 and BSA3



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Pipeline ancillaries

Bellows sealed stop valves

Materials for the BSA1T, BSA2T, BSA3T and BSA1, BSA2, BSA3

No.	Part			BSA1T and BSA1	BSA2T and BSA2	BSA3T and BSA3 DIN	BSA3T and BSA3 ANSI
1	Body			EN-GJL-250	SG iron EN-GJS-400-18-LT	Cast steel 1.0619+N (GSC 25N)	Cast steel ASTM A 216 WCB
2	Bonnet			SG iron EN-GJS-400-18-LT		Steel (DN15 - DN80) DIN 17243 C 22.8	Forged steel (DN15- DN80) ASTM A 105
						Steel (DN100 - DN200) 1.0619+N (GSC 25N)	Cast steel (DN100- DN200) ASTM A 216 WCB
3	Seat			Stainless steel AISI 420			
4	Disc	Metal		Stainless steel DIN 17440 X30 Cr13			
		Soft seat	Disc	Stainless steel DIN 17440 X30 Cr13			
			Insert	R-PTFE 25% carbon filled			
5	Bellows			Stainless steel WS 1.4571 EN10028-7 X6 CrNiMTi 17-12-2			
6	Stem			Stainless steel AISI 420			
7	Handwheel			Pressed steel BS 1449 CR4			
8	Stem packing			Graphite			
	Bonnet studs				Steel DIN 17420 24 Cr Mo 5		Steel ASTM A 193 B7
9	Bonnet nuts				Steel DIN 17420 Ck 35		Steel ASTM A 192 2 H
	Bonnet bolts			Steel DIN 931 Gr. 5.6			
10	Body/bonnet gasket			Graphite laminated with stainless steel insert			
11	Locking screw	DN15 - DN80		Steel M8 x 14 mm BS 3692 Gr. 8.8			
		DN100 - DN150		Steel M8 x 20 mm BS 3692 Gr. 8.8			
		DN200 - DN250		Steel M12 x 20 mm BS 3692 Gr. 8.8			
12	'D' washer			Mild steel			
13	Circlip			Mild steel			
14	Protective cap			Plastic			
15	Top nut			Steel			

Stroke limiter for throttling versions

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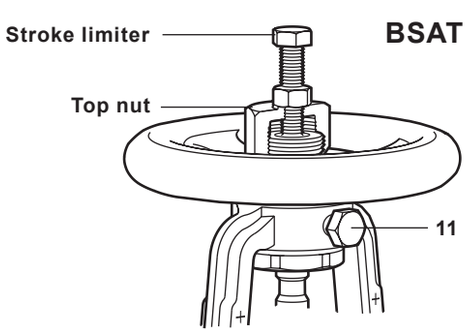
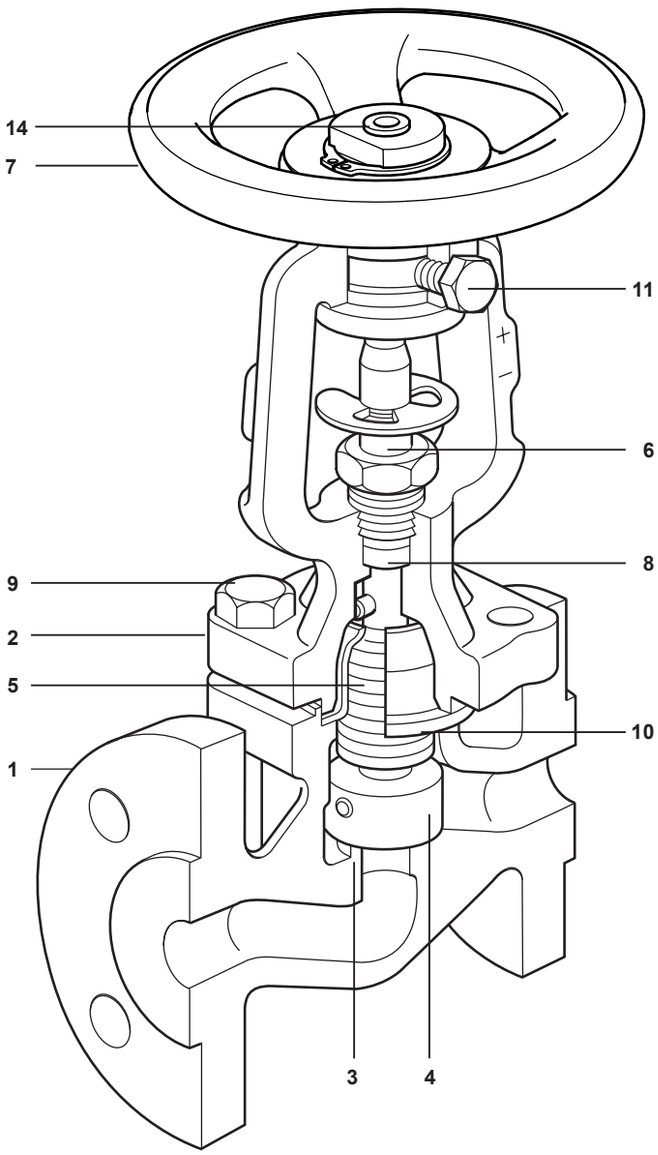
The handwheel nut on the **BSA1T, BSA2T and BSA3T** has a threaded hole for provision of a stroke limiter. Customer to supply standard nuts and bolts as indicated in the table below.

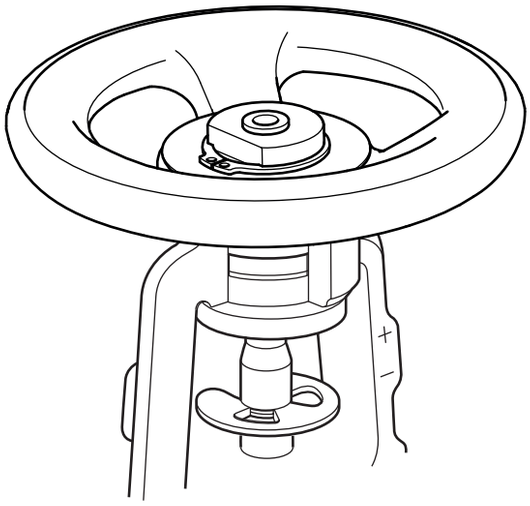
Size	Hexagon bolt
DN15- DN80	M8 x 50 mm
DN100- DN150	M12 x 75 mm
DN200- DN250	M12 x 100 mm

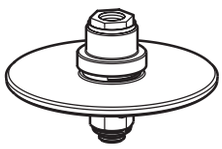


BSAT



BSA





DN150 shown

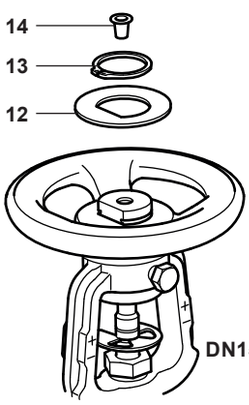
Optional balancing disc assembly

Used above	25 bar ΔP	DN125	
	17 bar ΔP	DN150	6"
	10 bar ΔP	DN200	8"
	6 bar ΔP	DN250	(BSA2 only)

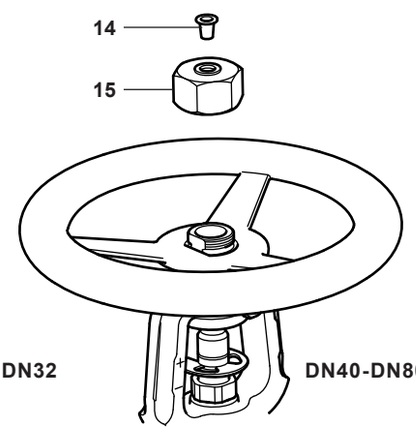
Optional soft sealing disc

Across the size range there are three hand wheel retention methods

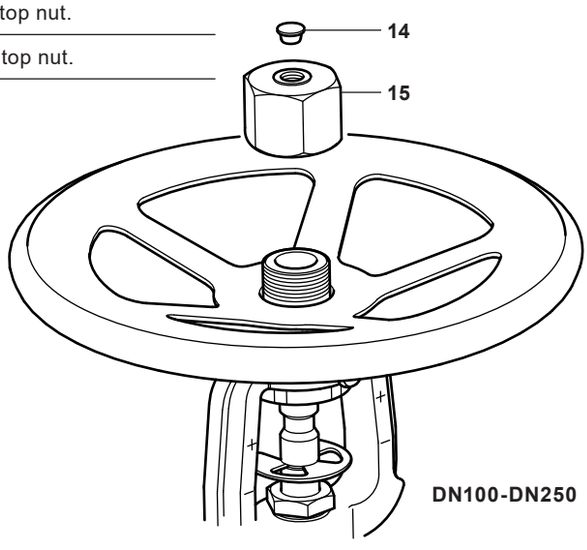
Sizes	**DN15 - DN32**	have a 'D' drive hand wheel retained by a 'D' washer and circlip.
	DN40 - DN80	have a 'D' drive hand wheel retained by a top nut.
	DN100 - DN250	have a screwed hand wheel retained by a top nut.



DN15-DN32



DN40-DN80



DN100-DN250

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Pipeline ancillaries

Bellows sealed stop valves

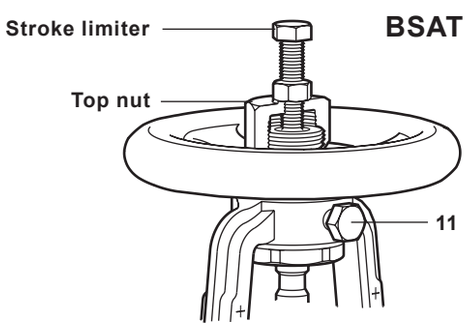
Materials for the BSA6T and BSA64T

No.	Part		BSA6T	BSA64T
1	Body		Stainless steel EN 10213 1.4408 or ASTM A351 CF8M	Stainless steel EN 10213 1.4408 or ASTM A351 CF8M
2	Bonnet		Stainless steel EN 10213 1.4581	Carbon steel DN15 - DN80 DIN 117243 C22.8 Carbon steel DN100 10619+N (GSC 25N)
3	Seat		Stainless steel EN 10213 1.4408 or ASTM A351 CF8M	
4	Disc	DN15 - DN40	Stainless steel EN 10088 1.4571	
		DN50 - DN100	Stainless steel EN 100222 1.4571	
5	Bellows		Stainless steel DIN 17440 1.4571	
6	Stem		Stainless steel EN 10088 1.4571	
7	Handwheel		Pressed steel BS 1449 CR4	
8	Stem packing		Graphite	
9	Bonnet studs		Stainless steel A4-70	
	Bonnet nuts		Stainless steel A4	
10	Body/bonnet gasket		Graphite laminated with stainless steel insert	
11	Locking screw	DN15 - DN80	Steel M8 x 14 mm A2-70	
		DN100	Steel M8 x 20 mm A2-70	

Stroke limiter for throttling versions

The handwheel nut on the **BSA6T and BSA64T** has a threaded hole for provision of a stroke limiter. Customer to supply standard nuts and bolts as indicated in the table below.

Size	Hexagon bolt
DN15- DN80	M8 x 50 mm
DN100	M12 x 75 mm



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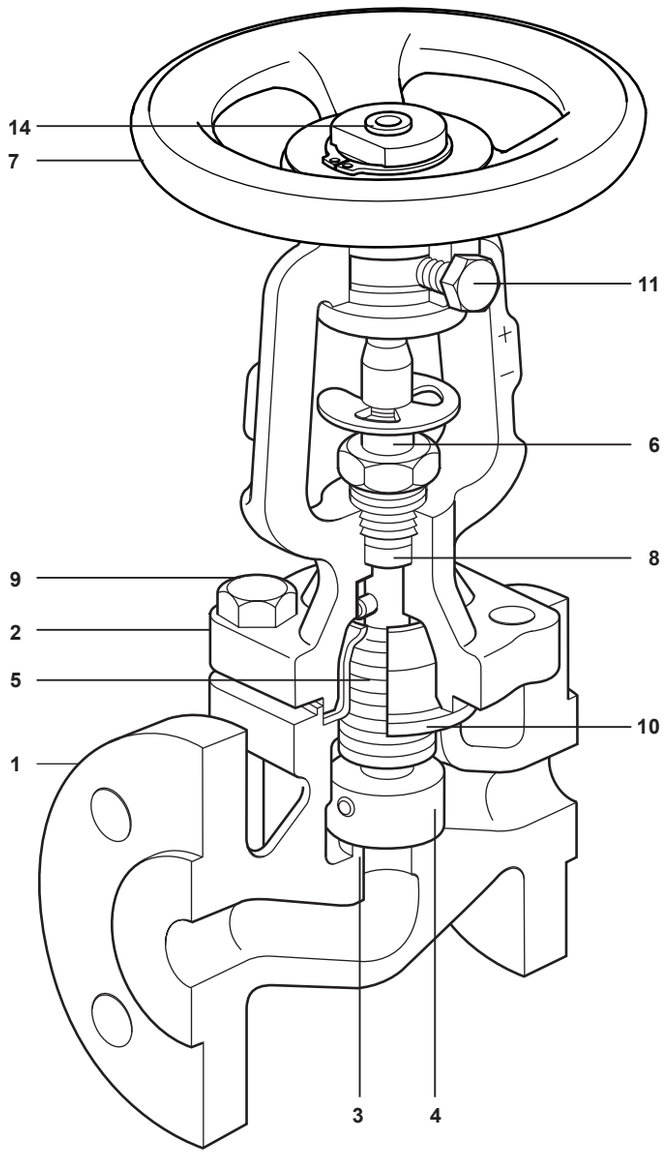
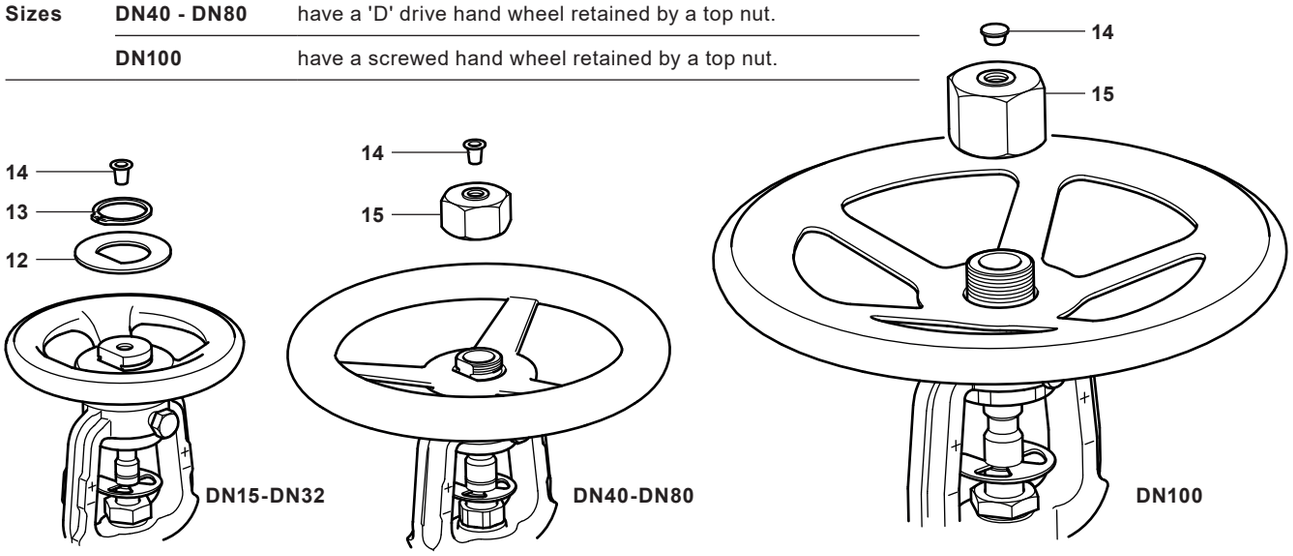
BSAT

DN15-DN32 shown



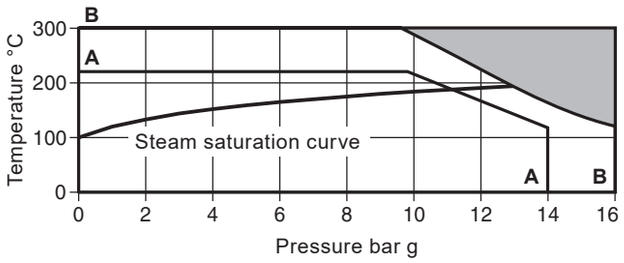
Across the size range there are three hand wheel retention methods

Sizes	**DN15 - DN32**	have a 'D' drive hand wheel retained by a 'D' washer and circlip.
	DN40 - DN80	have a 'D' drive hand wheel retained by a top nut.
	DN100	have a screwed hand wheel retained by a top nut.



Product limitations

BSA1T and BSA1

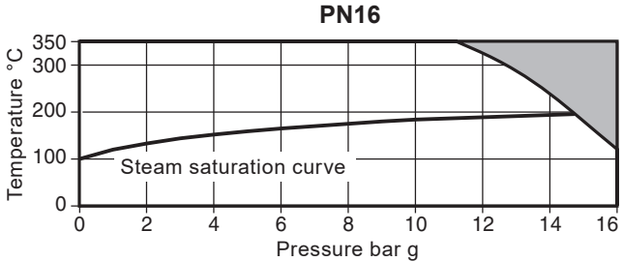


A - A Flanged JIS/KS 10K
B - B Flanged PN16

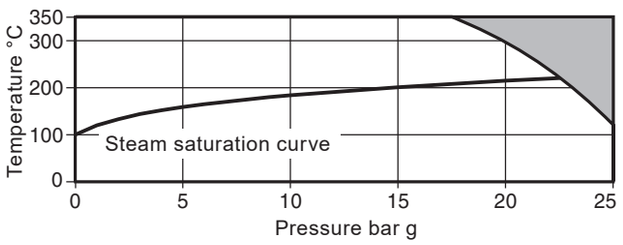
Body design conditions			PN16	JIS/KS 10K
PMA	Maximum allowable pressure		16 bar g	14 bar g
TMA	Maximum allowable temperature		300 °C	220 °C
PMO	Maximum operating pressure for saturated steam service		12.9 bar g	11 bar g
TMO	Maximum operating temperature	Soft seat	230 °C	220 °C
		Metal seat	300 °C	220 °C
Minimum operating temperature			-10 °C	-10 °C
Designed for a maximum cold hydraulic test pressure of:			24 bar g	20 bar g

BSA2T and BSA2

PN16



PN25



Body design conditions			PN16	PN25
PMA	Maximum allowable pressure		16 bar g	25 bar g
TMA	Maximum allowable temperature		350 °C	350 °C
PMO	Maximum operating pressure for saturated steam service		14.7 bar g	22.3 bar g
TMO	Maximum operating temperature	Soft seat	230 °C	230 °C
		Metal seat	350 °C	350 °C
Minimum operating temperature			-10 °C	-10 °C
Designed for a maximum cold hydraulic test pressure of:			24 bar g	38 bar g

Key

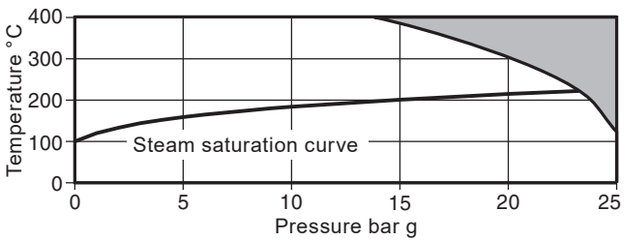
The product **must not** be used in this region.

Note: ΔPMX Maximum differential pressure is limited to the PMO.

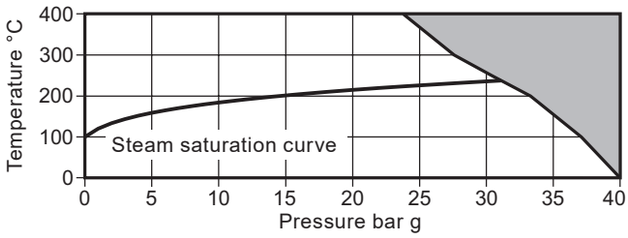
Maximum permissible differential pressure in throttling function:	
DN15 - DN80	2.0 bar
DN100 - DN125	1.5 bar
DN150	1.0 bar
DN200 - DN250	0.8 bar

BSA3T and BSA3 (DIN)

PN25, DN200



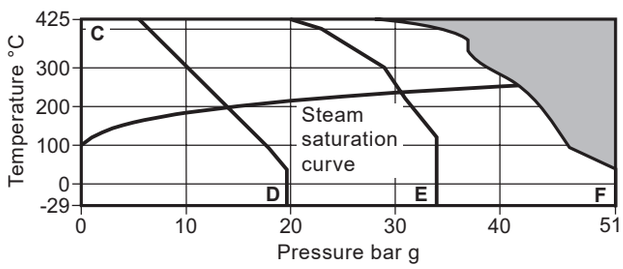
PN40, DN15 - DN150



Body design conditions			PN25, DN200	PN40, DN15 - DN150
PMA	Maximum allowable pressure		25 bar g	40 bar g
TMA	Maximum allowable temperature		400 °C	400 °C
PMO	Maximum operating pressure for saturated steam service		23.2 bar g	* 30.4 bar g
TMO	Maximum operating temperature	Soft seat	230 °C	230 °C
		Metal seat	400 °C	400 °C
Minimum operating temperature			-10 °C	-10 °C
Designed for a maximum cold hydraulic test pressure of:			38 bar g	60 bar g

* Maximum operating pressure is limited to 27 bar g for the soft seat version only

BSA3T and BSA3 (ASME)



C - D Flanged ASME 150
C - E Flanged JIS/KS 20K
C - F Flanged ASME 300

Body design conditions			ASME 150	ASME 300	JIS/KS 20K
PMA	Maximum allowable pressure		19.6 bar g	51 bar g	34 bar g
TMA	Maximum allowable temperature		425 °C	425 °C	425 °C
PMO	Maximum operating pressure for saturated steam service		14 bar g	*41.6 bar g	*30.7 bar g
TMO	Maximum operating temperature	Soft seat	230 °C	230 °C	230 °C
		Metal seat	425 °C	425 °C	425 °C
Minimum operating temperature			-29 °C	-29 °C	0 °C
Designed for a maximum cold hydraulic test pressure of:			31 bar g	77 bar g	50 bar g

* Maximum operating pressure is limited to 27 bar g for the soft seat version only

Key

The product **must not** be used in this region.

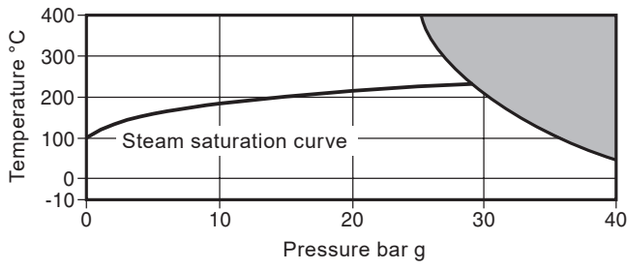
Note: ΔPMX Maximum differential pressure is limited to the PMO.

Maximum permissible differential pressure in throttling function:	
DN15 - DN80	2.0 bar
DN100 - DN125	1.5 bar
DN150	1.0 bar
DN200	0.8 bar

Pipeline ancillaries
Bellows sealed stop valves

Product limitations

BSA6T and BSA64



Body design conditions				PN40
PMA	Maximum allowable pressure			40 bar g @ 50 °C
TMA	Maximum allowable temperature			400 °C @ 25 bar g
Minimum allowable temperature				-10 °C
PMO	Maximum operating pressure for saturated steam service	Metal seat		29.8 bar g @ 236 °C
		Soft seat		27.0 bar g @ 230 °C
TMO	Maximum operating temperature	Metal seat		400 °C @ 25.6 bar g
		Soft seat		230 °C @ 27.0 bar g
Minimum operating temperature				-10 °C
ΔPMX	Maximum differential pressure	On/off function		Limited to the PMO
		Throttling function	DN15 - DN80	2 bar
			DN100	1.5 bar
Designed for a maximum cold hydraulic test pressure of:				60 bar g

Key

The product **must not** be used in this region.

Note: ΔPMX Maximum differential pressure is limited to the PMO.

Maximum permissible differential pressure in throttling function:	
DN15 - DN80	2.0 bar
DN100	1.5 bar

Safety information, installation and maintenance
For full details see the Installation and Maintenance Instructions (IM-P137-02) supplied with the product.

Installation note
Install in the direction of flow given by the arrow on the body with the handwheel in a suitable position.

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 BSA2T bellows sealed stop valve, flanged PN16 or PN25.

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 page 7).

Size	**DN125**	**DN150**	**DN200**	**DN250**
Differential pressure (bar)	25	17	10	6

Spare parts

The spare parts are shown in heavy outline. Parts drawn in a grey line are not supplied as spares.

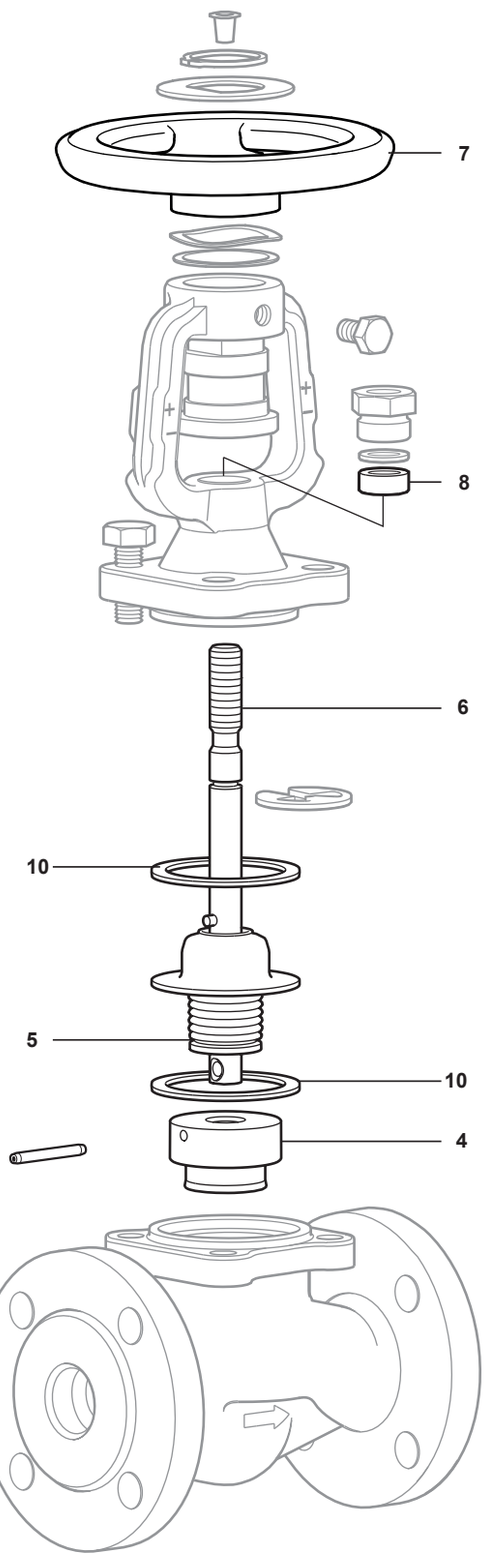
Available spares

Body/bonnet gasket and stem packing	**10, 8 (2 off)**
Stem and bellows assembly (state if BSAT or BSA)	**5, 6, 8, 10**
Disc (and optional disc where fitted) - state full description of the valve	**4, 8, 10**
Handwheel	**7**

How to order spares

Please note: for customer convenience spares are supplied in kits to ensure all the appropriate replacement parts are supplied to carry out a specific maintenance task. e.g. when a stem/bellows assembly is ordered, parts (10), (8) and (6, 5) will be included in the kit.

Always order spares by using the description given in 'Available spares' and state the size and type of stop valve.
Example: 1 - Body/bonnet gasket and stem packing for a DN15 Spirax Sarco BSA2T PN16 bellows sealed stop valve.



DN15-DN32 shown

10 Pipeline ancillaries
Bellows sealed stop valves

TI-P184-18
ST Issue 3

BSA3BD
Bellows Sealed Stop Valves

Description

A range of sealed, in-line stop valves having tri-ply bellows as standard throughout the range. These valves have been designed for use on steam, gas, liquid, thermal oils, condensate and water systems.
The **BSA3BD** is fitted with a flat, balanced pressure plug as standard.

Standards

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

Certification

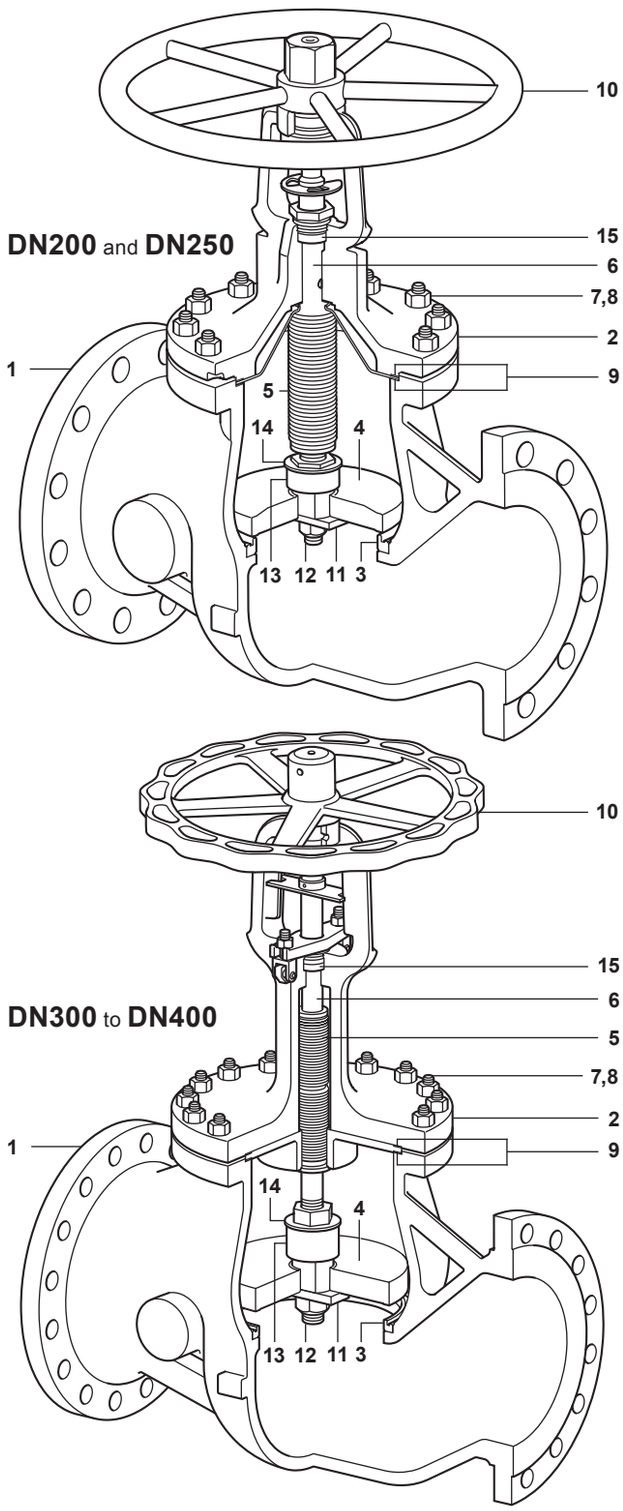
The BSA3BD is available with certification to EN 10204 3.1.
Note: All certification / inspection requirements must be stated at the time of order placement.

Size and pipe connection

DN200, DN250, DN300, DN350 and DN400
EN 1092 and EN 12516-1 PN16, PN25 and PN40

Materials

No.	Part	Material	
1	Body	Cast steel	1.0619+N
2	Bonnet	Cast steel	1.0619+N
3	Seat	A105 and Stellite	
4	Disc	Stainless steel	DIN 17440 X30 Cr13 and Stellite
5	Bellows	Stainless steel	DIN 17440 X6 Cr Ni Ti 1810
6	Stem	Stainless steel	AISI 420
7	Bonnet nut	Steel	ASTM A194 2H
8	Bonnet stud	Steel	ASTM A193 B7
9	Body / bonnet gasket	Graphite laminated with stainless steel insert	
10	Handwheel	Carbon steel	DN200 and DN250
		Cast iron	DN300 to DN400
11	Strap	Stainless steel	ASTM A276 304
12	Self locking nut	Stainless steel	
13	Balance plug	Stainless steel	DIN 17440 x 30 Cr13 and Stellite
14	Locking washer	ASTM A276 304	
15	Stem packing	Graphite	



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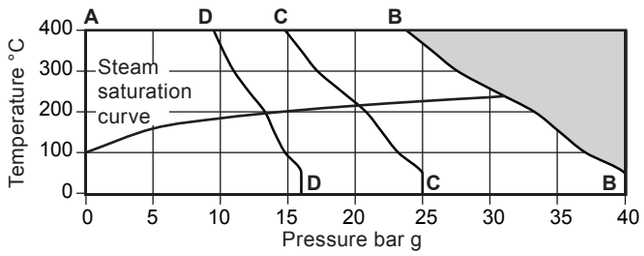
Pipeline ancillaries

Bellows sealed stop valves

Pressure / temperature limits - EN 1092 and EN 12516-1

Flanged:
PN16
PN25
PN40



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 - B PN40	Body design condition	PN40
	PMA Maximum allowable pressure	40 bar g @ 0 °C
	TMA Maximum allowable temperature	400 °C @ 23.8 bar g
	Minimum allowable temperature	-10 °C
	PMO Maximum operating pressure for saturated steam service	31.3 bar g
	TMO Maximum operating temperature	400 °C @ 23.8 bar g
	Minimum operating temperature	-10 °C
	Minimum operating pressure	0 bar g
	Maximum differential pressure is limited to the PMO	
	Designed for a maximum cold hydraulic test pressure of:	60 bar g
A - C - C PN25	Body design condition	PN25
	PMA Maximum allowable pressure	25 bar g @ 0 °C
	TMA Maximum allowable temperature	400 °C @ 14.8 bar g
	Minimum allowable temperature	-10 °C
	PMO Maximum operating pressure for saturated steam service	20.5 bar g
	TMO Maximum operating temperature	400 °C @ 14.8 bar g
	Minimum operating temperature	-10 °C
	Minimum operating pressure	0 bar g
	Maximum differential pressure is limited to the PMO	
	Designed for a maximum cold hydraulic test pressure of:	37.5 bar g
A - D - D PN16	Body design condition	PN16
	PMA Maximum allowable pressure	16 bar g @ 0 °C
	TMA Maximum allowable temperature	400 °C @ 9.5 bar g
	Minimum allowable temperature	-10 °C
	PMO Maximum operating pressure for saturated steam service	13.5 bar g
	TMO Maximum operating temperature	400 °C @ 9.5 bar g
	Minimum operating temperature	-10 °C
	Minimum operating pressure	0 bar g
	Maximum differential pressure is limited to the PMO	
	Designed for a maximum cold hydraulic test pressure of:	24 bar g

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Seat leakage Disc to seat shut-off conforms to EN 12266-1 Rate A leakage and ISO 5208 Rate A.

K_V values

Please note that the K_V values for a valve supplied without a balanced disc are shown for comparison purposes only. All BSA3BD valves will be supplied with a balanced disc.

DN200		DN250		DN300		DN350		DN400	
Balanced	Unbalanced	Balanced	Unbalanced	Balanced	Unbalanced	Balanced	Unbalanced	Balanced	Unbalanced
593	735	935	1 170	1 264	1 710	1 804	2 365	2 362	3 225

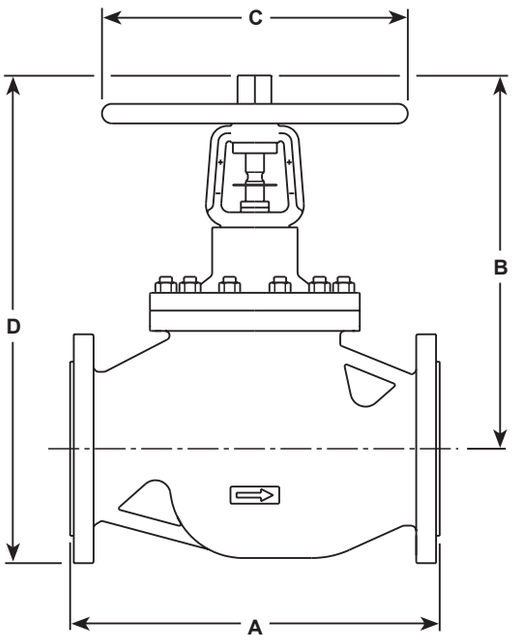
For conversion:
C_V (UK) = K_V x 0.963
C_V (US) = K_V x 1.156

To convert K_V to volume flowrate in m³/h:-

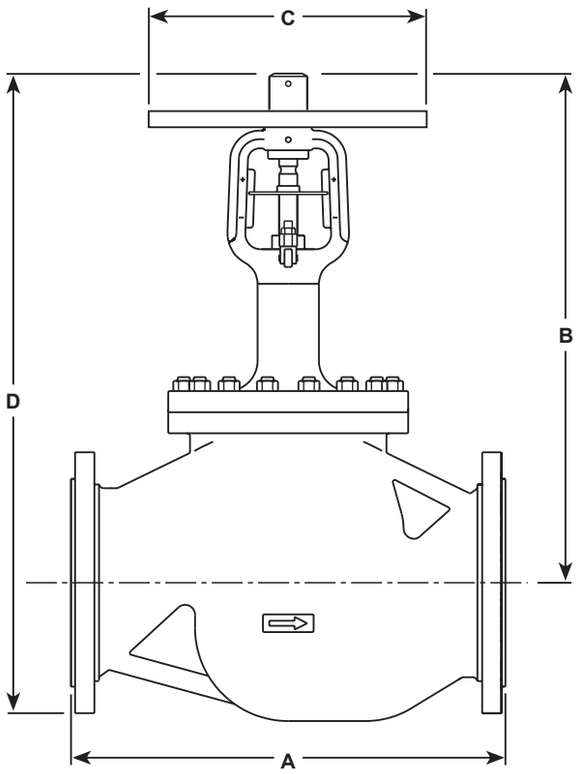
$\dot{Q} = K_V \times \sqrt{\Delta P}$ **Where:** $\dot{Q}$ = Volume flow in cubic m/h $\sqrt{\Delta P}$ = Pressure drop in bar

Dimensions/weights (approximate) in mm and kg

Size	A	B	C	D	Weight
DN200	600	612	500	800	180
DN250	730	765	500	990	316
DN300	850	1 005	600	1 265	480
DN350	980	1 095	650	1 420	690
DN400	1 100	1 173	700	1 505	950



DN200 and **DN250**



DN300 to **DN400**

Safety information, installation and maintenance

For full details see the Installation and Maintenance Instructions (IM-P184-19) supplied with the product.

Installation note: Install in the direction of flow given by the arrow on the body with the handwheel in a suitable position.

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 DN200 Spirax Sarco type BSA3BD bellows sealed stop valve, flanged EN 1092 PN40.

Pipeline ancillaries

Bellows sealed stop valves

Spare parts - DN200 and DN250

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

Available spares

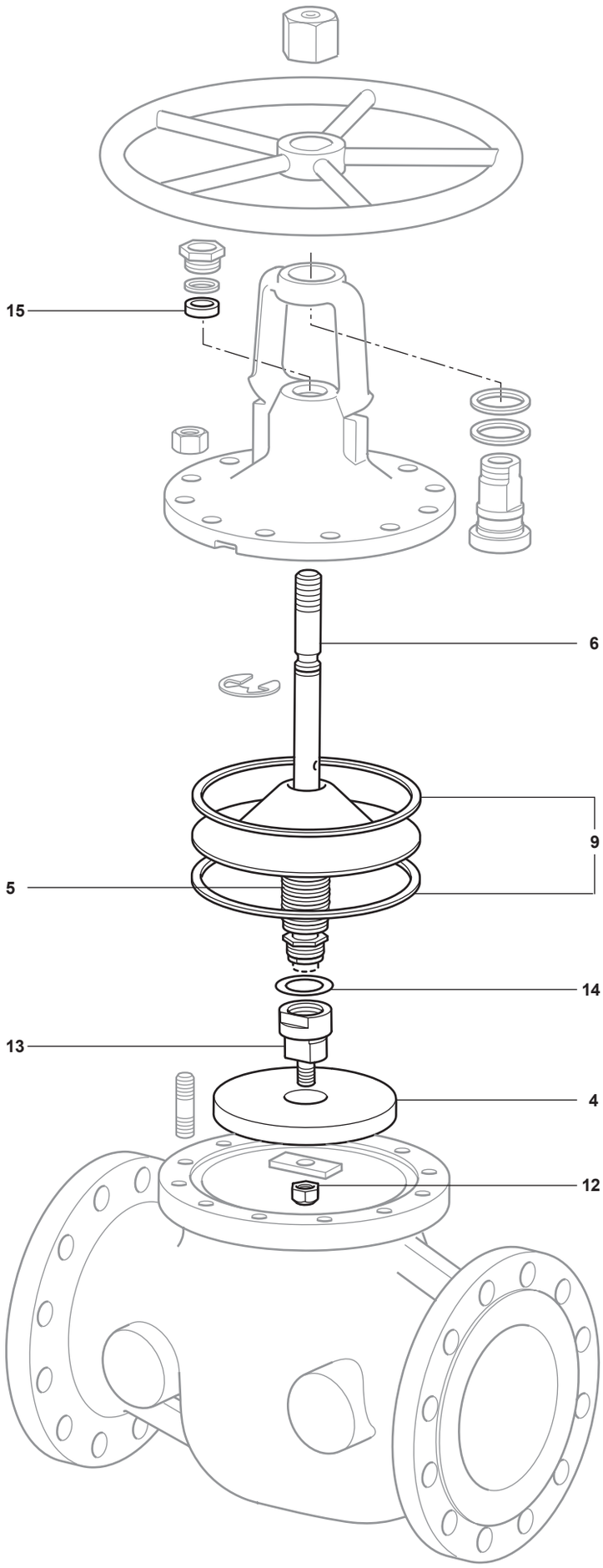
Body / bonnet gasket and stem packing	**15** and **9** (2 off)
Stem and bellows assembly	**5, 6, 12, 14, 15** and **9** (2 off)
Disc (state full description of the valve)	**4, 12, 13, 14, 15** and **9** (2 off)

How to order spares

Please note: for customer convenience spares are supplied in kits to ensure all the appropriate replacement parts are supplied to carry out a specific maintenance task. e.g. when a stem / bellows assembly is ordered, parts **9, 12, 14** and **15** will be included in the kit.

Always order spares by using the description given in 'Available spares' and state the size and type of stop valve.

Example: 1 - Body / bonnet gasket and stem packing for a DN200 Spirax Sarco BSA3BD PN40 bellows sealed stop valve.



Spare parts - DN300 to DN400

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

Available spares

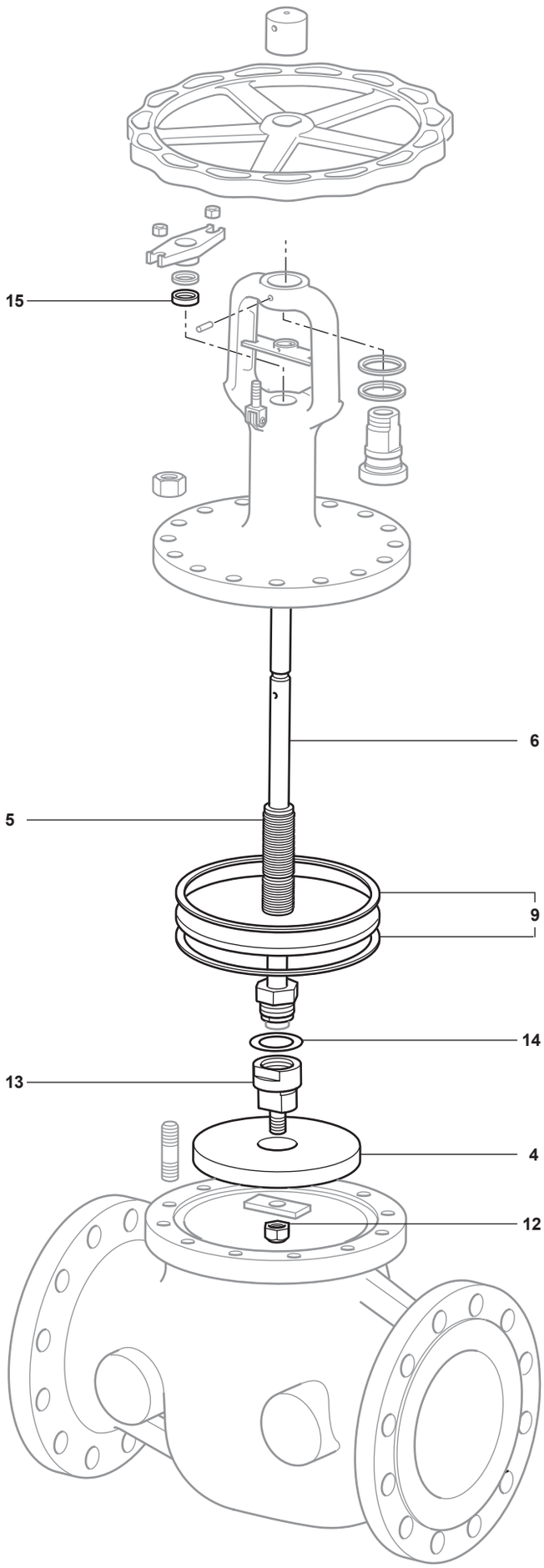
Body / bonnet gasket and stem packing	**15** and **9** (2 off)
Stem and bellows assembly	**5, 6, 12, 14, 15** and **9** (2 off)
Disc (state full description of the valve)	**4, 12, 13, 14, 15** and **9** (2 off)

How to order spares

Please note: for customer convenience spares are supplied in kits to ensure all the appropriate replacement parts are supplied to carry out a specific maintenance task. e.g. when a stem / bellows assembly is ordered, parts **9, 12, 14** and **15** will be included in the kit.

Always order spares by using the description given in 'Available spares' and state the size and type of stop valve.

Example: 1 - Body / bonnet gasket and stem packing for a DN200 Spirax Sarco BSA3BD PN40 bellows sealed stop valve.



10 Pipeline ancillaries
Bellows sealed stop valves