



TI-P405-45
EMM Issue 4

ABV21i and ABV40i Air Actuated Boiler Blowdown Valves

Description

The Spirax Sarco ABV21i and ABV40i one piece end entry, reduced bore ball valves are fitted with 90° rotary spring return pneumatic actuator, for boiler blowdown duties.

They are used in conjunction with a Spirax Sarco blowdown timer to provide timed control of bottom blowdown, ensuring that the recommended boiler blowdown cycles occur with minimum heat loss, avoiding duplication or omission.

The pneumatic actuator, (which can also be operated with other non-corrosive gases), moves through 90° to open the valve, and has a spring return fail-close operation.

A switch box is mounted on the actuator, and either or both microswitches may be wired to a Building Management System if required.

Note: The BT1050 blowdown timer uses one switch only to indicate 'valve fully closed' or 'valve not fully closed' positions, and does not indicate that the valve has opened fully.

A solenoid valve is required, which may be directly mounted to the NAMUR (VDI/VDE 3845) interface on the actuator.

A suitable solenoid valve may be selected from the Spirax Sarco MV range. Alternatively, an air supply may be connected directly to the actuator port 'A' (1/4" BSP), where it is necessary to install the solenoid valve remote from the actuator.

A standard 1/4" BSP 3-way solenoid valve may also be used.

3-port/2-way NAMUR mounting solenoid types:

MV11 - 230 Vac, **MV12** - 110 Vac, **MV13** - 24 Vac, **MV14** - 24 Vdc

The ABV21i and ABV40i must be installed with the flow in the direction of the arrow on the body.

Principal features:

- Automatic timed blowdown minimises wasted heat.
- Suitable for boiler pressures up to 17.25 bar g (250 psi g).
- Spring return for fail-safe operation.
- Pneumatic actuator for fast response.

Standards

These products comply with the requirements of the European Pressure Equipment Directive 2014/68/EU and carries the  mark when so required.

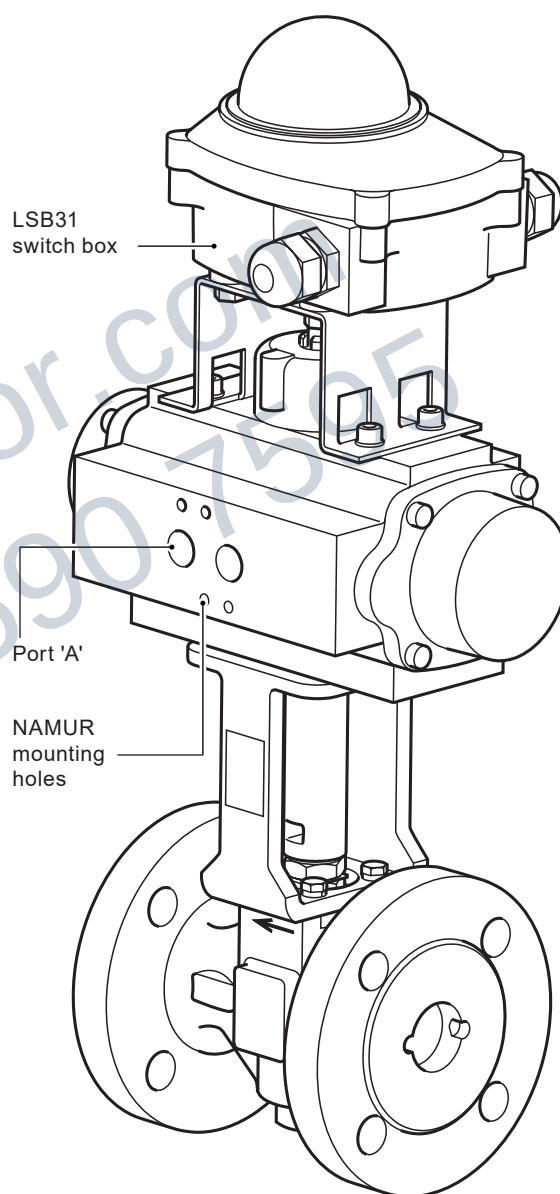
ISO mounting in accordance with ISO 5211.

Antistatic device complying with ISO 7121 and BS 5351.

Certification

These products are 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

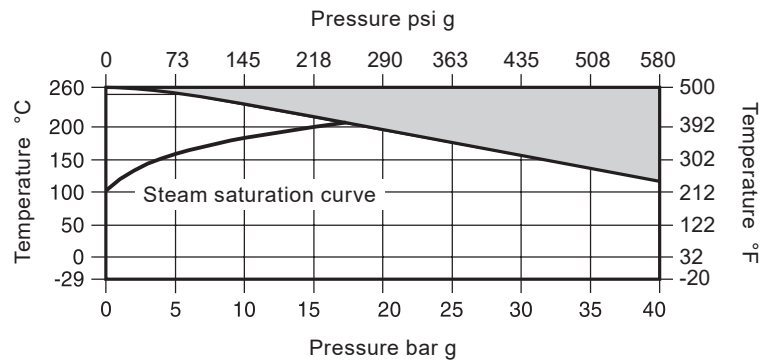
DN25, DN32, DN40, DN50 and DN65 (1", 1¼", 1½", 2" and 2½")
Flanged PN40 (F4), PN40 (BS) or ASME B 16.5 Class 300.

	Flange	Face-to-face	Flange thickness
Available flange options	PN40 (F4)	DIN 3002 F4	EN 1092 Part 1
	PN40 (BS)	BS 2080	EN 1092 Part 1
	ASME 300	ASME B 16.10	ASME B 16.5

Technical data

Operating time (full stroke)	0.25 - 0.6 seconds		
Operating media	Clean compressed air Non-corrosive gas		
Compressed air consumption @ 6 bar g (87 psi g)	DN25 (1")	BVA315S/14	0.0002 (N)m³/ stroke (0.0071 ft³/stroke)
	DN32 (1¼")	BVA320S/14	0.0006 (N)m³/ stroke (0.0212 ft³/stroke)
	DN40 (1½")	BVA325S/14 actuator	0.0008 (N)m³/ stroke (0.0283 ft³/stroke)
	DN50 (2")		
	DN65 (2½")	BVA330S/14 actuator	0.0011 (N)m³/ stroke (0.0388 ft³/stroke)
LSB31 switch rating	10 A 250 Vac		
Protection rating	IP67		
Switch sensor	Mechanical 2 - SPDT		

Pressure / temperature limits - ABV21i



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

Valve

Body design conditions		PN40	
PMA	Maximum allowable pressure	40 bar g @ 120 °C	580 psi g @ 248 °F
TMA	Maximum allowable temperature	260 °C @ 0 bar g	400 °F @ 0 psi g
Minimum allowable temperature		-29 °C	-20 °F
PMO	Maximum operating pressure for saturated steam service	17.25 bar g	250 psi g
TMO	Maximum operating temperature	260 °C @ 0 bar g	400 °F @ 0 psi g
Minimum operating temperature (Note: For lower operating temperatures consult Spirax Sarco)		-29 °C	-20 °F
Δ PMX Maximum differential pressure is limited to the PMO			
Designed for a maximum cold hydraulic test pressure of:		60 bar g	870 psi g

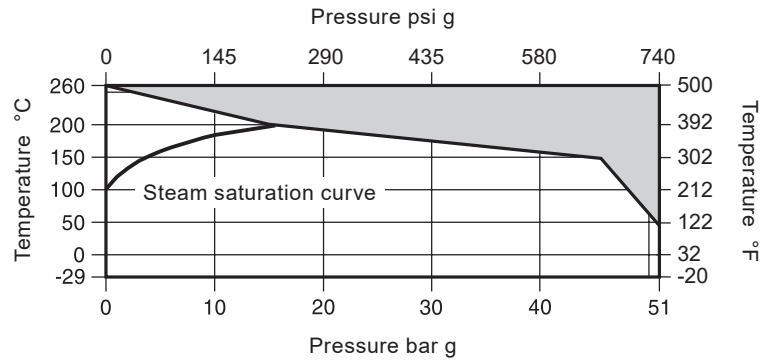
Actuator

Maximum ambient temperature		80 °C	176 °F
Minimum ambient temperature		0 °C	32 °F
Maximum air supply pressure		8 bar g	116 psi g
Minimum air supply pressure		Depends on operating conditions	

MV series solenoid

Maximum ambient temperature		50 °C	122 °F
Minimum ambient temperature		0 °C	32 °F

Pressure / temperature limits - ABV40i



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

Valve

Body design conditions		ASME 300	
PMA	Maximum allowable pressure	51 bar g @ 38 °C	740 psi g @ 100 °F
TMA	Maximum allowable temperature	260 °C @ 0 bar g	400 °F @ 0 psi g
Minimum allowable temperature		-29 °C	-20 °F
PMO	Maximum operating pressure for saturated steam service	17.25 bar g	250 psi g
TMO	Maximum operating temperature	260 °C @ 0 bar g	400 °F @ 0 psi g
Minimum operating temperature (Note: For lower operating temperatures consult Spirax Sarco)		-29 °C	-20 °F
Δ PMX Maximum differential pressure is limited to the PMO			
Designed for a maximum cold hydraulic test pressure of:		76.5 bar g	1110 psi g

Actuator

Maximum ambient temperature	80 °C	176 °F
Minimum ambient temperature	0 °C	32 °F
Maximum air supply pressure	8 bar g	116 psi g
Minimum air supply pressure	Depends on operating conditions	

MV series solenoid

Maximum ambient temperature	50 °C	122 °F
Minimum ambient temperature	0 °C	32 °F

Valve coefficients

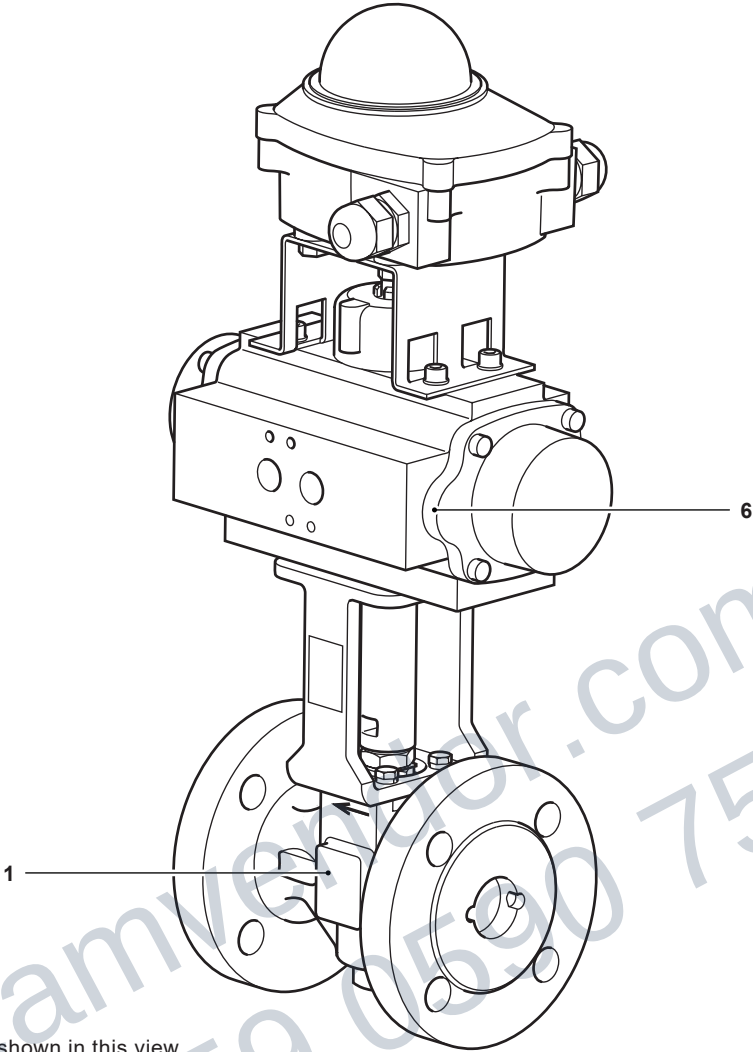
Size	DN25 (1")	DN32 (1¼")	DN40 (1½")	DN50 (2")	DN65 (2½")
Kv value	30	40	81	103	197

For conversion:

C_v (UK) = $K_v \times 0.963$

C_v (US) = $K_v \times 1.156$

Materials



Valve	No.	Part	Materials	
	1	Body and insert	Zinc plated carbon steel	ASTM A216 WCB
	2 *	Stem seals	Antistatic R-PTFE	
	3 *	Vented ball	Austenitic stainless steel	AISI 316
	4 *	Stem	DN65 (2½")	Austenitic stainless steel
			DN25 - DN50 (1" - 2")	Martensitic stainless steel
	5 *	Seats	Carbon and graphite reinforced PTFE	PDR 0.8
Actuator	6	Body, piston and end caps	Aluminium - anodised	
	7 *	Pinion	Carbon steel - nickel plated	
	8 *	'O' ring seals	Nitrile rubber	

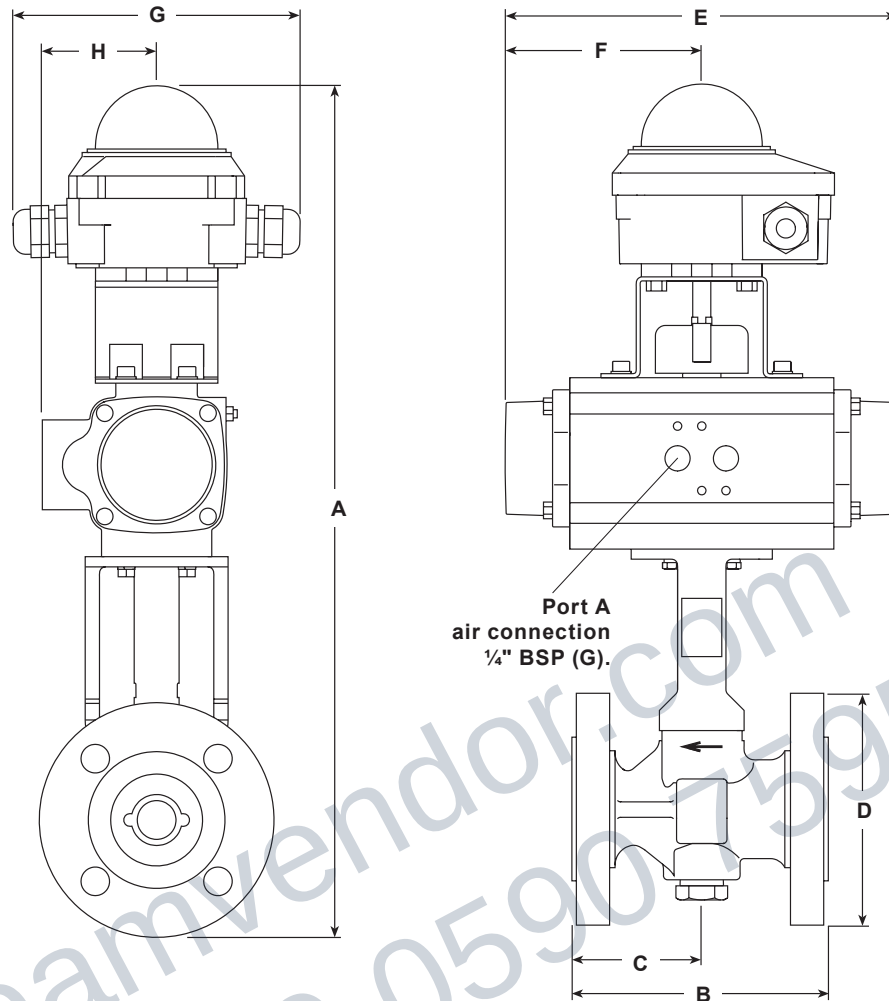
How to specify

Air actuated ball valve, DN40, PN40 with carbon reinforced seats, 90 degree rotary pneumatic actuator and switch box.
NAMUR compatible solenoid valve 220 / 240 Vac.

How to order

Example: 1 off Spirax Sarco DN40 ABV21i air actuated boiler blowdown valve having PN40 (F4) flanged connections plus 1 off MV11 solenoid valve 220 / 240 Vac.

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



Valve size	Actuator type	Flange	A	B	C	D	E	F	G	H	Weight
DN25 (1")	BVA315S/14	PN40 (F4)	417 (16.4)	125 (4.9)	63 (2.5)	115 (4.5)	196 (7.7)	98 (3.9)	140 (5.5)	56 (2.2)	6.7 (14.8)
		PN40 BS		165 (2.6)	103 (4.1)						6.5 (14.3)
		Class 300	421 (16.6)		124 (4.9)	6.8 (15)					
DN32 (1¼")	BVA320S/14	PN40 (F4)	456 (18)	130 (5.1)	65 (2.6)	140 (5.5)	217 (8.5)	108.5 (4.3)		66 (2.6)	9.2 (20.3)
		PN40 BS		178 (7)	113 (4.4)	140 (5.5)					9.6 (21.2)
		Class 300	450 (17.7)		65 (2.6)	134 (5.3)					9.4 (20.7)
DN40 (1½")	BVA325S/14	PN40 (F4)	475 (18.7)	140 (5.5)	70 (2.8)	150 (5.9)	258 (10.2)	129 (5.1)		71 (2.8)	11.7 (26)
		PN40 BS		190 (7.5)	120 (4.7)	150 (5.9)					12.2 (26.9)
		Class 300	478 (18.8)			156 (6.1)					13.0 (28.7)
DN50 (2")	BVA325S/14	PN40 (F4)	488 (19.2)	150 (5.9)	75 (3)	165 (6.5)		129 (5.1)		71 (2.8)	14.1 (31)
		PN40 BS		216 (8.5)	141 (5.6)	165 (6.5)					15.0 (33)
		Class 300		216 (8.5)							
DN65 (2½")	BVA330S/14	PN40 (F4)	530 (20.9)	170 (6.7)	91 (3.6)	185 (7.3)	299 (11.8)	149.5 (5.9)		78 (3.1)	20.7 (45.6)
		PN40 BS		241 (9.5)	162 (6.4)	185 (7.3)	299 (11.8)				22.2 (48.9)
		Class 300	533 (21)								191 (7.5)

Spare parts

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

Please note: There are no spares available for the switch box.

To ensure correct operation and maintain the warranty, use only Spirax Sarco original parts.

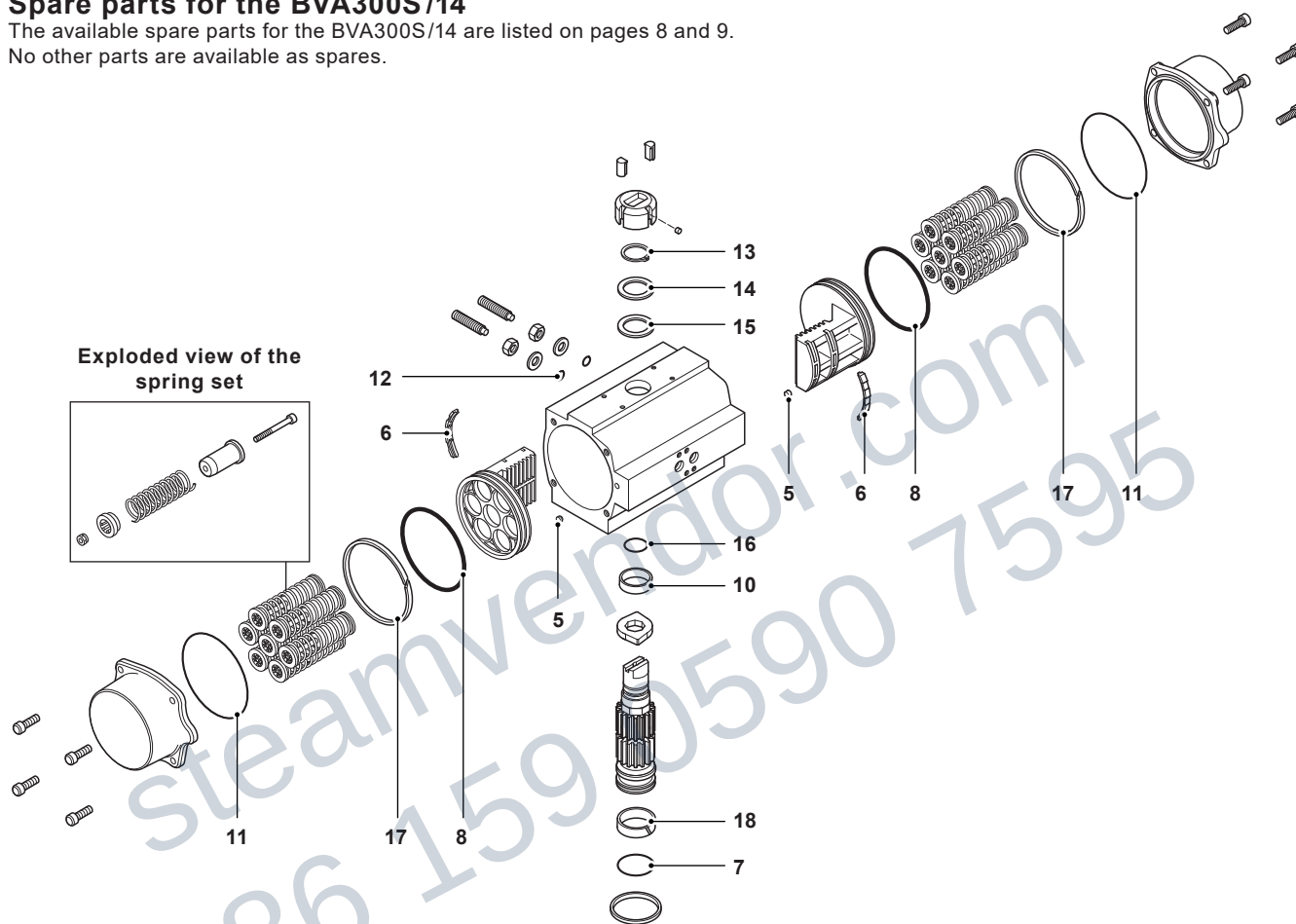
Before actioning any maintenance programme observe the 'Safety Information' in Section 1 of IM-P405-46 supplied with the unit.

Actuator

Spare parts for the BVA300S/14

The available spare parts for the BVA300S/14 are listed on pages 8 and 9.

No other parts are available as spares.



Spare parts

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

Available spares

BVA300 series maintenance kit	'O' rings set (NBR)	7, 8, 11, 12, 16
	Pinion washers	13, 14, 15
	Others	5, 6, 10, 17, 18

How to order spares

Always order spares by using the description given in the column headed 'Available spares' and state the nomenclature of the pneumatic actuator that they are intended for.

Note: all the spares mentioned above are sold together in one spare part kit.

Example: 1 - BVA300 series maintenance kit with 'O' rings in NBR for a Spirax Sarco BVA320S/14 pneumatic actuator.

Valve

DN25 to DN50 (1" - 2") Spare parts

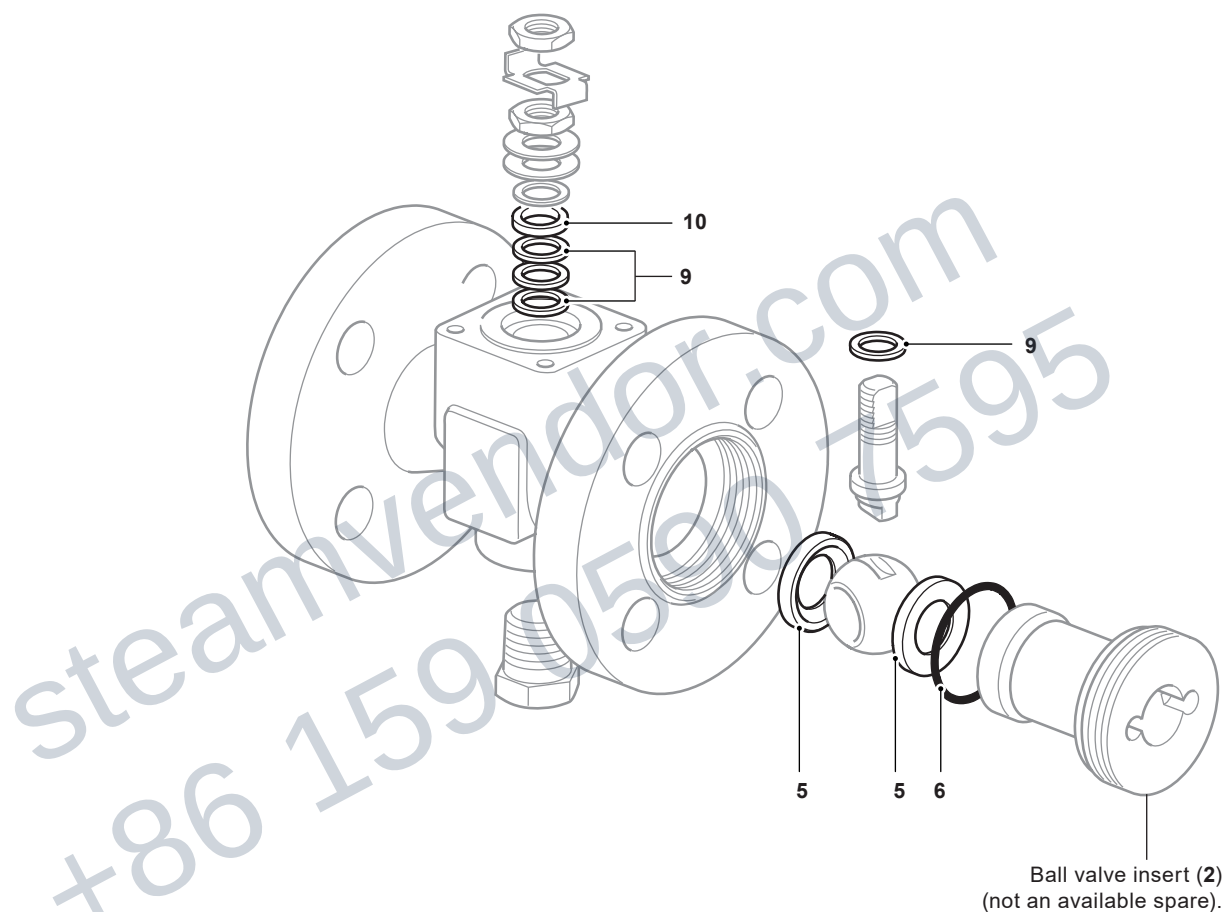
The spare parts available are shown in solid outline. Parts drawn in a grey line are not supplied as spares.

Available spares

Seats, insert 'O' ring and stem seals	5, 6, 9, 10
Insert tool - Required to aid the removal of the ball valve insert (2)	Not shown

Please note: Spare parts are common for both the ABV21i and ABV40i.

Caution - The ball must be installed with the vent hole on the upstream side of the valve.



Please note: You will need to order the **Insert tool** listed in the table above to aid removal.

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 ball valve.

Example: 1 set of seats, insert 'O' ring and stem seals for a Spirax Sarco DN50 ABV21i boiler blowdown valve.

DN65 (2½") Spare parts

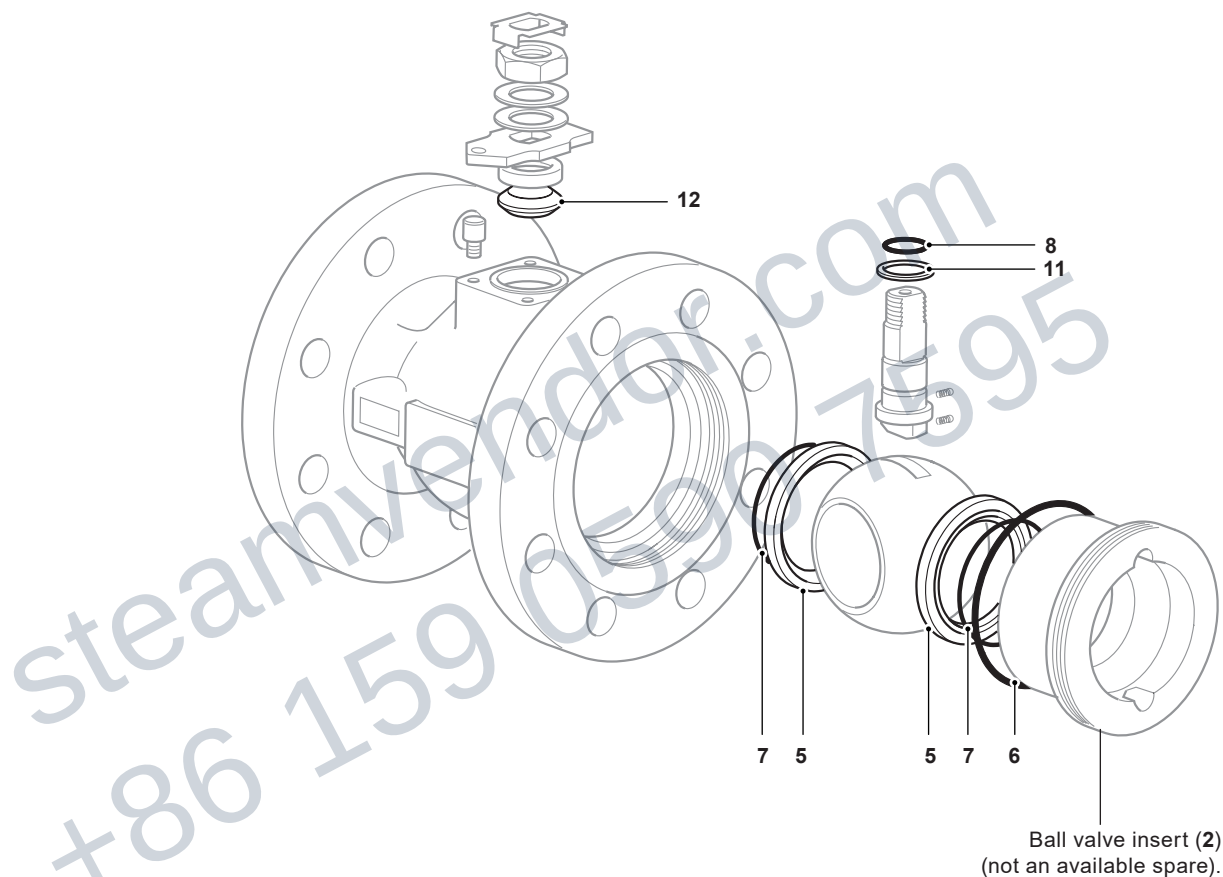
The spare parts available are shown in solid outline. Parts drawn in a grey line are not supplied as spares.

Available spares

Seats, insert 'O' ring, seat 'O' ring, stem 'O' ring, lower stem seals and upper stem packing	5, 6, 7, 8, 11, 12
Insert tool - Required to aid the removal of the ball valve insert (2)	Not shown

Please note: Spare parts are common for both the ABV21i and ABV40i.

Caution - The ball must be installed with the vent hole on the upstream side of the valve.



Please note: You will need to order the **Insert tool** listed in the table above to aid removal.

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 ball valve.

Example: 1 set of seats, insert 'O' ring, seat 'O' ring, stem 'O' ring, lower stem seals and upper stem packing for a Spirax Sarco DN50 ABV40i boiler blowdown valve.