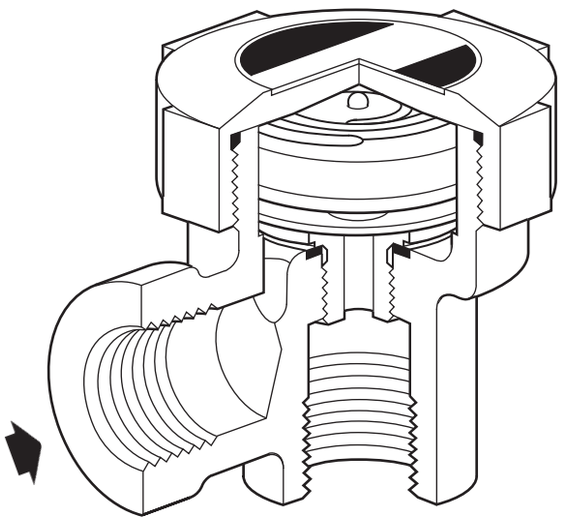
TI-P010-02
CMGT Issue 11

AV13
Air Vent for Steam Systems



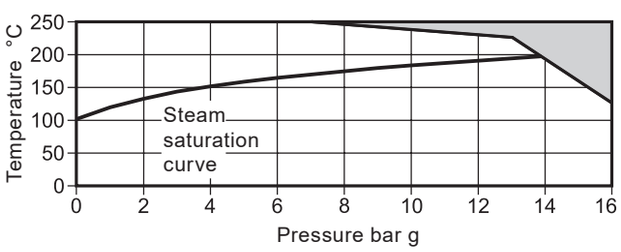
Description
The AV13 is a maintainable balanced pressure thermostatic air vent with angled connections.

Standards
This product fully complies with the requirements of the Pressure Equipment Directive (PED).

Certification
This product is available with a manafacturers' Typical Test Report.
Note: All certification/inspection requirements must be stated at the time of order placement.

Sizes and pipe connections
⅜", ½" and ¾" screwed BSP (BS 21 parallel) or NPT.

Pressure/temperature limits (ISO 6552)



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

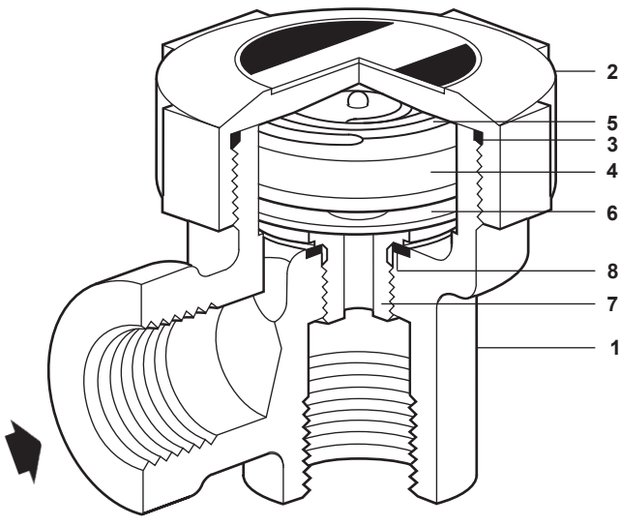
Body design conditions		PN16
PMA	Maximum allowable pressure	16 bar g @120 °C
TMA	Maximum allowable temperature	250 °C @ 7 bar g
Minimum allowable temperature		-20 °C
PMO	Maximum operating pressure	13 bar g @ 220 °C
TMO	Maximum operating temperature	250 °C @ 7 bar g
Minimum operating temperature		0 °C
Designed for a maximum cold hydraulic test pressure of 24 bar g		

Pipeline ancillaries
Air vents and air eliminators

K_v value
K_v value 0.45 (cold)

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

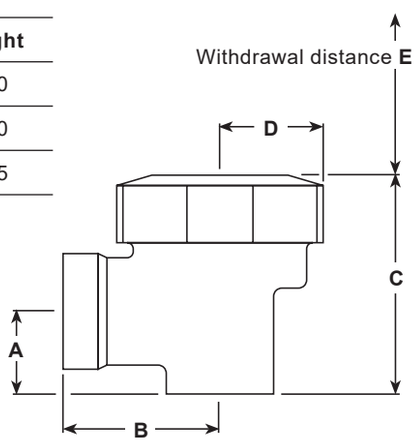
Materials



No.	Part	Material	
1	Body	Brass	BS EN 12165 CW 617N
2	Cap	Brass	BS EN 12165 CW 617N
3	'O' ring	Synthetic rubber high fluorine fluorocarbon	
4	Capsule	Stainless steel	
5	Spring	Stainless steel	BS 2056 302 S26
6	Spacer plate	Stainless steel	BS 1449 304 S16
7	Seat	Stainless steel	BS 970 431 S29
8	Seat gasket	Stainless steel	BS 1449 304 S11

Dimensions/weights (approximate) in mm and kg

Size	A	B	C	D	E	Weight
⅜"	18	32	49	25	55	0.40
½"	20	38	53	25	55	0.40
¾"	27	40	62	25	55	0.45



Safety information, installation and maintenance
For full details see the Installation and Maintenance Instructions (IM-P010-07) supplied with the product.

Installation note:
The air vent should be positioned at the highest point of the main or plant where the air collects. The outlet should be piped to a safe place.

Disposal
The product is recyclable. No ecological hazard is anticipated with disposal of this product providing due care is taken. However, if the recycling processs involves a temperature approaching 315 °C, caution is advised regarding decomposition of the fluorocarbon rubber component.

How to order
Example: 1 off ½" Spirax Sarco AV13 air vent screwed BSP.

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

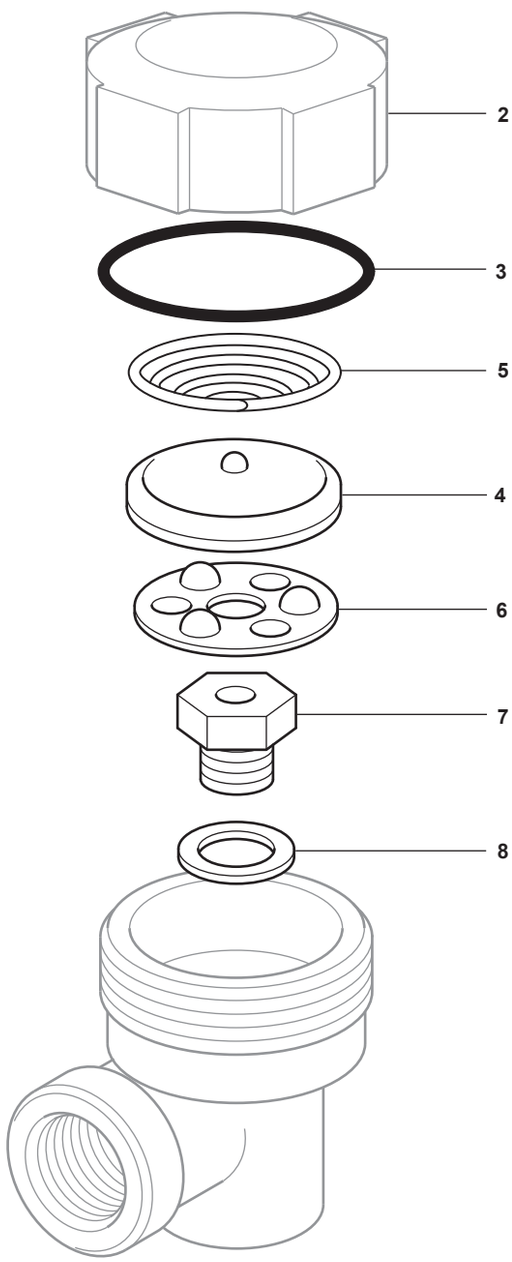
Available spares

Capsule and seat assembly		**3, 4, 5, 6, 7, 8**
Cap gasket	(earlier models) (packet of 3)	**3**
'O' ring	(current models) 2 x (packet of 3)	**3**

Notes: Earlier models were fitted with conventional gaskets. Current models are fitted with an 'O' ring to seal cap.

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 air vent.

Example: 1 - Capsule and seat assembly for ½" Spirax Sarco AV13.



Recommended tightening torques

Item	Part	or mm	N m
2	Gasket	50 A/F	90 - 100
	'O' ring	50 A/F	50 - 60
7	Seat	17 A/F	35 - 40

10 Pipeline ancillaries
Air vents and air eliminators

TI-P123-15
CMGT Issue 6

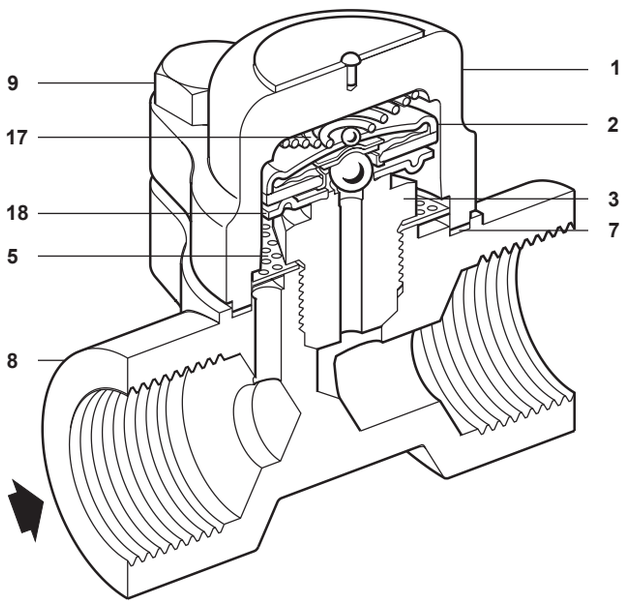
AVC32
Carbon Steel
Air Vent for Steam Systems

Description
The AVC32 is a carbon steel maintainable balanced pressure thermostatic air vent for use on steam systems. It has an integral flat strainer screen and straight connections. All pressure bearing components are produced by TÜV approved suppliers in accordance with AD-Merkblatt WO/TRD100.

Standards
This product fully complies with the requirements of the Pressure Equipment Directive (PED).

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" and 1" screwed BSP or NPT.
½", ¾" and 1" socket weld ends to BS 3799.
½", ¾" and 1" butt weld ends to EN 12 627
DN15, DN20 and DN25 standard flange to EN 1092 PN40, ANSI B 16.5 Class 150 and 300, JIS/KS 10K and JIS/KS 20K.

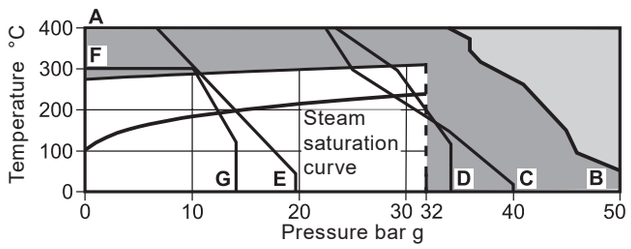


Materials

No.	Part	Material	
1	Cover	Carbon steel	DIN 17243 C22.8 (W/S 1.0460)ASTM A105N
2	Capsule	Stainless steel	
3	Valve seat	Stainless steel	BS 970 431 S29
5	Strainer screen	Stainless steel	AISI 304
7	Cover gasket	Stainless steel reinforced exfoliated graphite	
8	Body/flanges	Carbon steel	DIN 17243 C22.8 (W/S 1.0460)ASTM A105N
9	Cover bolts	Stainless steel (M10 x 30)	A2-70
17	Spring	Stainless steel	
18	Spacer plate	Stainless steel	

Pipeline ancillaries
Air vents and air eliminators

Pressure/temperature limits (ISO 6552)



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

The product should not be used in this region or beyond its operating range as damage to the internals may occur.

A - B Screwed, socket weld, butt weld and flanged ANSI 300.

A - C Flanged EN 1092 PN40.

A - D Flanged JIS/KS 20K.

A - E Flanged ANSI 150.

F - G Flanged JIS/KS 10K.

Maximum body design conditions		PN40
PMA	Maximum allowable pressure	50 bar g @ 50 °C
TMA	Maximum allowable temperature	400 °C @ 35 bar g
Minimum allowable temperature		-60 °C
PMO	Maximum operating pressure for saturated steam service	32 bar g
TMO	Maximum operating temperature	287 °C @ 32 bar g
Minimum operating temperature **Note:** For lower operating temperatures consult Spirax Sarco		0 °C
Designed for a maximum cold hydraulic test pressure of:		75 bar g

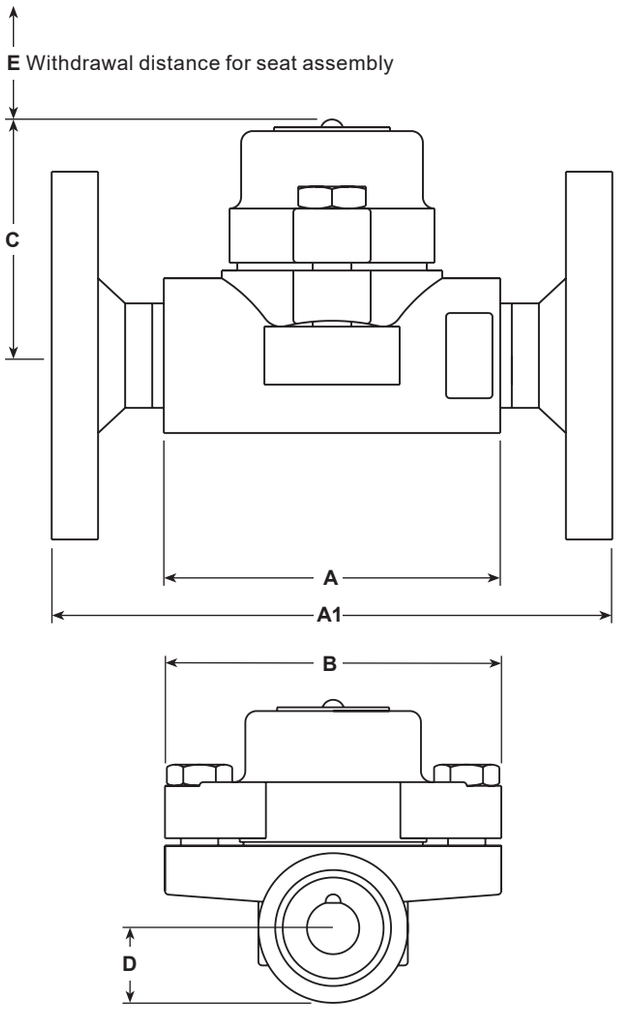
K_v values

Size	DN15 - ½"	DN20 - ¾"	DN25 - 1"
K_v	0.8	0.8	0.8

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	A1	B	C	D	E	Weight Scrd/SW/BW	Weight Flgd
½"	DN15	95	150	94	64	17	37	1.4	2.9
¾"	DN20	95	150	94	64	19	37	1.4	3.5
1"	DN25	95	160	94	64	23	37	1.5	4.1



Safety information, installation and maintenance

For full details see the Installation and Maintenance Instructions (IM-P123-14) supplied with the product.

Installation note:

The AVC32 is designed for installation with the capsule in a horizontal plane with the cover at the top.
The AVC32 should be positioned at the highest point of the steam main or plant where the air collects. The outlet should be piped to a safe place.
For ease and maintenance, consideration should be given to fitting isolation valves upstream and downstream of the air vent.
The air vent must not be insulated.

Disposal

This 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 ½" AVC32 air vent having screwed BSP connections.

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Pipeline ancillaries
Air vents and air eliminators

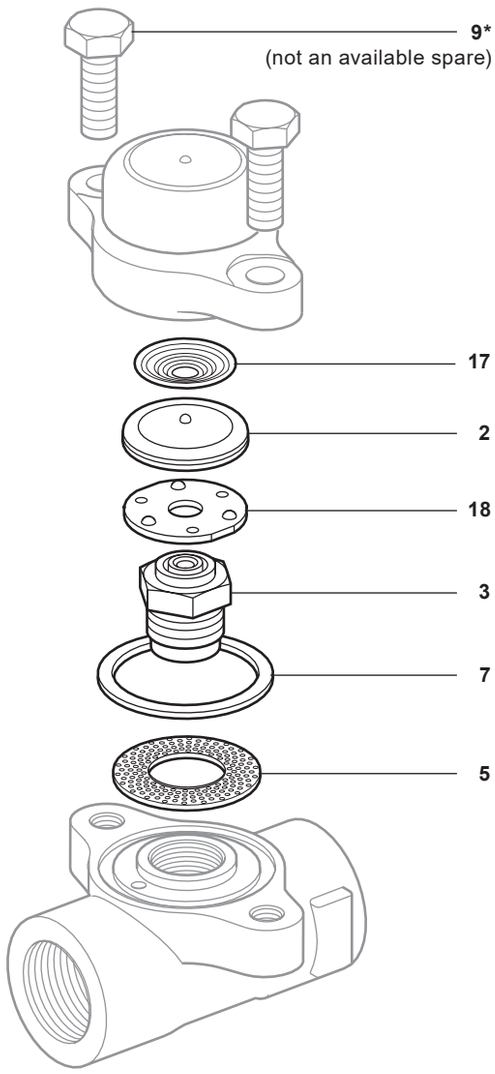
Spare parts
The spare parts available are shown in solid outline.
Parts drawn in a grey line are not supplied as spares.

Available spares

Capsule and seat assembly set		**2, 3, 17, 18**
Strainer screen	(packet of 3)	**5**
Set of cover gaskets	(packet of 3)	**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 air vent.

Example: 1 - Capsule and seat assembly set for a Spirax Sarco DN25 AVC32 air vent.



Recommended tightening torques

Item	Part	or mm		N m
3	Valve seat	24 A/F		115 - 125
9	Cover bolts	16 A/F	M10 x 30	23 - 27

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TI-P123-16
ST Issue 5

AVS32
Stainless Steel
Air Vent for Steam Systems

Description

The AVS32 is a stainless steel maintainable balanced pressure thermostatic air vent for use on steam systems. It has an integral flat strainer screen and straight connections. All pressure bearing components are produced by TÜV approved suppliers in accordance with AD-Merkblatt WO/TRD100.

Standards

This product fully complies with the requirements of the European Pressure Equipment Directive 97/23/EC.

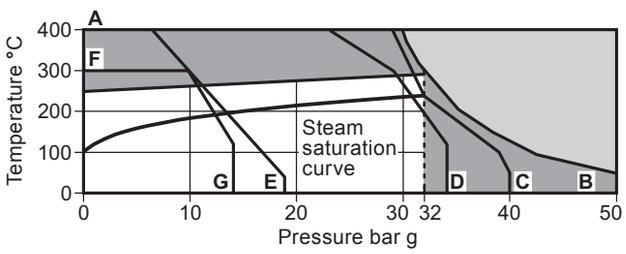
Certification

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

Sizes and pipe connections

½", ¾" and 1" screwed BSP or NPT.
½", ¾" and 1" socket weld ends to BS 3799.
½", ¾" and 1" butt weld ends to EN 12 627.
DN15, DN20 and DN25 standard flange to EN 1092 PN40, ANSI B 16.5 Class 150 and 300, JIS/KS 10K and JIS/KS 20K.

Pressure/temperature limits (ISO 6552)



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

The product should not be used in this region as damage to the internals may occur.

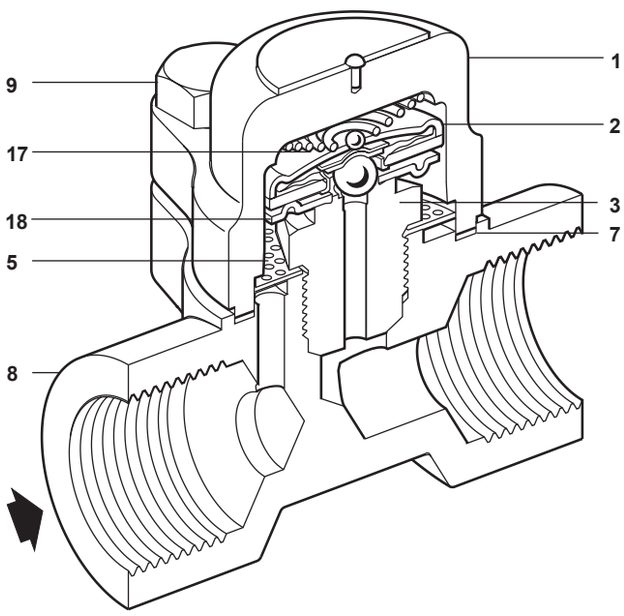
A - B Screwed, socket weld, butt weld and flanged ANSI 300.
A - C Flanged EN 1092 PN40.
A - D Flanged JIS/KS 20K.
A - E Flanged ANSI 150.
F - G Flanged JIS/KS 10K.

Body design conditions		PN40
PMA	Maximum allowable pressure	50 bar g @ 50°C
TMA	Maximum allowable temperature	400°C @ 30 bar g
Minimum allowable temperature		-200°C
PMO	Maximum operating pressure for saturated steam service	32 bar g
TMO	Maximum operating temperature	287°C @ 32 bar g
Minimum operating temperature **Note:** For lower operating temperatures consult Spirax Sarco.		0°C
Designed for a maximum cold hydraulic test pressure of 75 bar g		

K_V values

Size	DN15 - ½"	DN20 - ¾"	DN25 - 1"
K_V	0.8	0.8	0.8

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

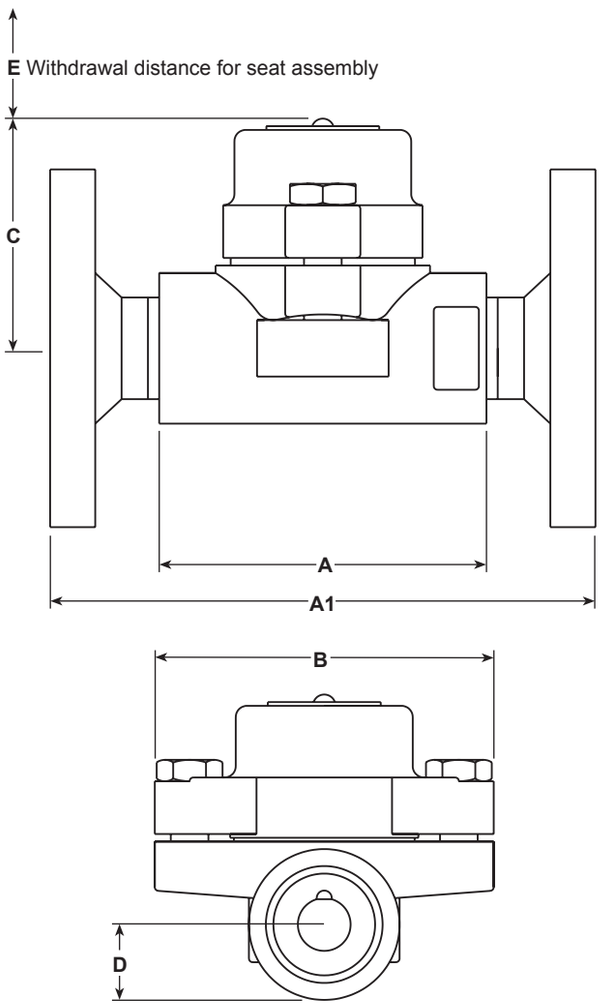


Materials

No.	Part	Material	
1	Cover	Austenitic stainless steel	DIN 17440 (W/S 1.4571) 316Ti
2	Capsule	Stainless steel	
3	Valve seat	Stainless steel	BS 970 431 S29
5	Strainer screen	Stainless steel	AISI 304
7	Cover gasket	Stainless steel reinforced exfoliated graphite	
8	Body	Austenitic stainless steel	DIN 17440 (W/S 1.4571) 316Ti
9	Cover bolts	Stainless steel (M10 x 30)	A2-70
17	Spring	Stainless steel	
18	Spacer plate	Stainless steel	

Dimensions/weights (approximate) in mm and kg

Size	A	A1	B	C	D	E	Weight Scrd/SW/BW	Weight Flgd
½" DN15	95	150	94	64	17	37	1.4	2.9
¾" DN20	95	150	94	64	19	37	1.4	3.5
1" DN25	95	160	94	64	23	37	1.5	4.1



Spare parts

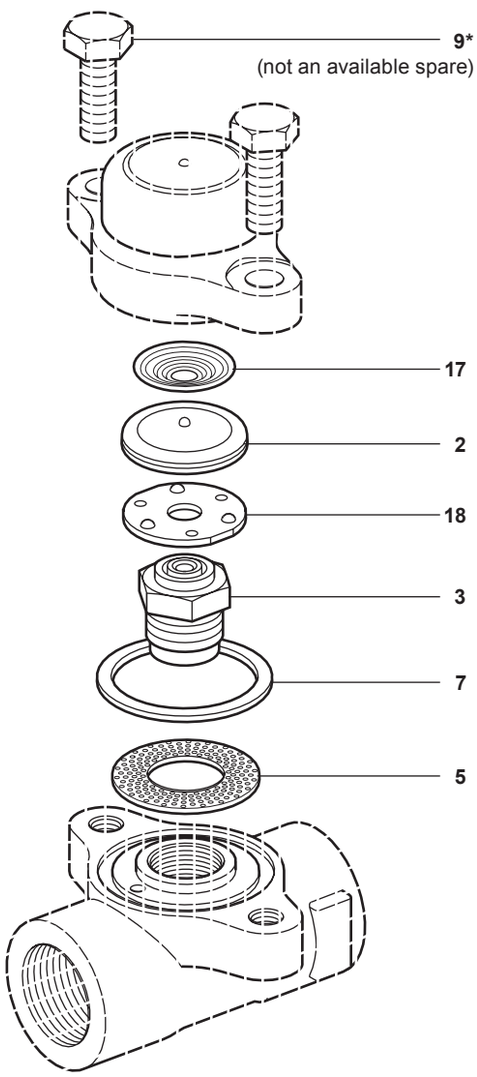
The spare parts available are shown in solid outline. Parts drawn in broken line are not supplied as spares.

Available spares		
Capsule and seat assembly set		2, 3, 17, 18
Strainer screen	(packet of 3)	5
Set of cover gaskets	(packet of 3)	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 air vent.

Example: 1 - Capsule and seat assembly set for a Spirax Sarco DN25 AVS32 air vent.



Recommended tightening torques

Item	Part	or mm		N m
3	Valve seat	24 A/F		115 - 125
9	Cover bolts	16 A/F	M10 x 30	23 - 27

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Safety information, installation and maintenance

For full details see the Installation and Maintenance Instructions (IM-P123-17) supplied with the product.

Installation note:

The AVS32 is designed for installation with the capsule in a horizontal plane with the cover at the top.

The AVS32 should be positioned at the highest point of the steam main or plant where the air collects. The outlet should be piped to a safe place.

For ease and maintenance, consideration should be given to fitting isolation valves upstream and downstream of the air vent.

The air vent must not be insulated.

Disposal

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

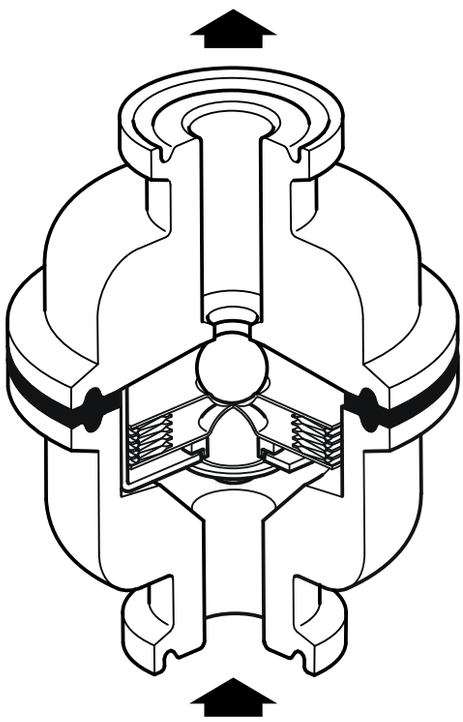
How to order

Example: 1 off Spirax Sarco ½" AVS32 air vent having screwed BSP connections.

TI-P080-01
CMGT Issue 5

AVM6.1
Balanced Pressure Sanitary Thermostatic Air Vent

Description
The Spirax Sarco AVM6.1 is a clean (chemical-free) maintainable thermostatic air vent designed to remove air and other non-condensible gases from clean (chemical free) and pure steam systems. Manufactured in 316L stainless steel with a crevice free body design, it is self-draining and operates close to steam temperature. The AVM6.1 has an internal finish of 0.5 µm Ra whilst the external finish is 1.0 µm Ra. When supplied, the AVM6.1 is individually packaged within an "ISO CLASS 7" clean environment with protective end caps and sealed in a protective plastic bag.



AVM6.1
(clamp removed for clarity)

Options and available types
½" Tri-Clover connections.

Standards
- The AVM6.1 has been designed and manufactured in general accordance with ASME BPE standards.
- The unit also complies with the requirements of the EU Pressure Equipment Directive/UK Pressure Equipment (Safety) Regulations.
- FDA CFR Title 21. Paragraph 177.2600.
- USP Class VI Biological Reactivity Cytotoxicity Testing in-Vivo <88> extracted at 121 °C for 1 hour.
- ADI Free (Animal Derived Ingredients) for materials used, manufacturing processes involved in producing the part.
- TSE/BSE Free as Certified.
- EC1935 : 2004.
- Full material lot number product traceability.

Certification
This product is available with the following certification:

- EN 10204 3.1 Material Certification Pressure Retaining Parts - Chargeable.
- EN 10204 3.1 Material Certification for Wetted Parts including the WFI element fill (also available for element spares) - Chargeable.
- Specific Internal Surface Finish - Chargeable.
- Typical Internal Surface Finish - F.O.C.
- Certificate of Compliance for FDA, USP Class VI Testing Statement, and ADI Free Statement - F.O.C.
- TSE-BSE Statement - F.O.C.
- EC1935:2004 Declaration of Compliance - F.O.C.
- Declaration of Conformity BS EN ISO 14644-1:2015 Class 7 Clean Room - F.O.C.
- Typical Test Report - F.O.C.

Note: All certification/inspection requirements must be stated at the time of order placement, and may be subject to additional cost as detailed above.

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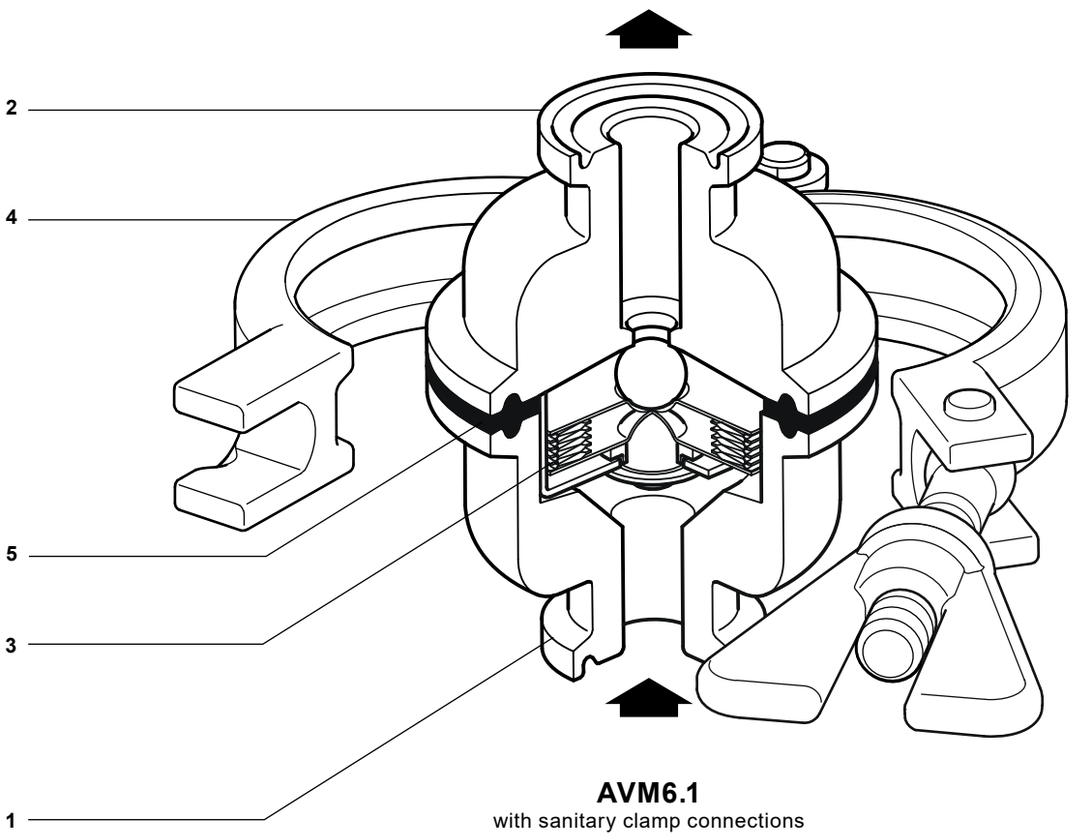
Polígono Industrial O Rebullón s/n. 36416 - Mos - España - rodavigo@rodavigo.com

Sizes and pipe connections

½" sanitary clamp compatible hygienic connections.
For other connections please consult Spirax Sarco

Materials



AVM6.1
with sanitary clamp connections

No.	Part	Material	
1	Body (inlet)	Stainless steel	
2	Body (outlet)	Stainless steel	
3	Capsule element	Stainless steel	316L (1.4404)
4	Safety clamp	Stainless steel	
5	Seal	PTFE/Stainless Steel Composite gasket	

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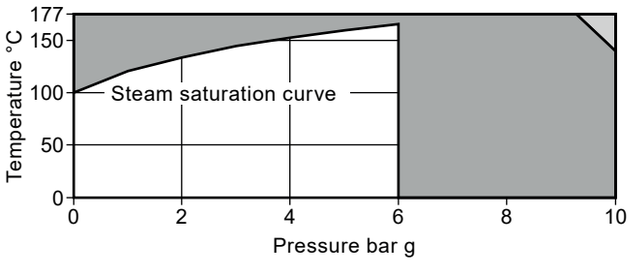
Polígono Industrial O Rebullón s/n. 36416 - Mos - España - rodavigo@rodavigo.com

Pressure/temperature limits (ISO 6552)



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

The product should not be used in this region as damage to the internals may occur.

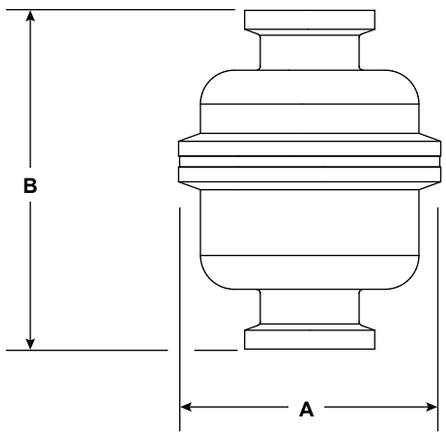
Note: For hygienic/sanitary clamp ends the maximum pressure/temperature may be restricted by the gasket or sanitary clamp used. Please consult Spirax Sarco.

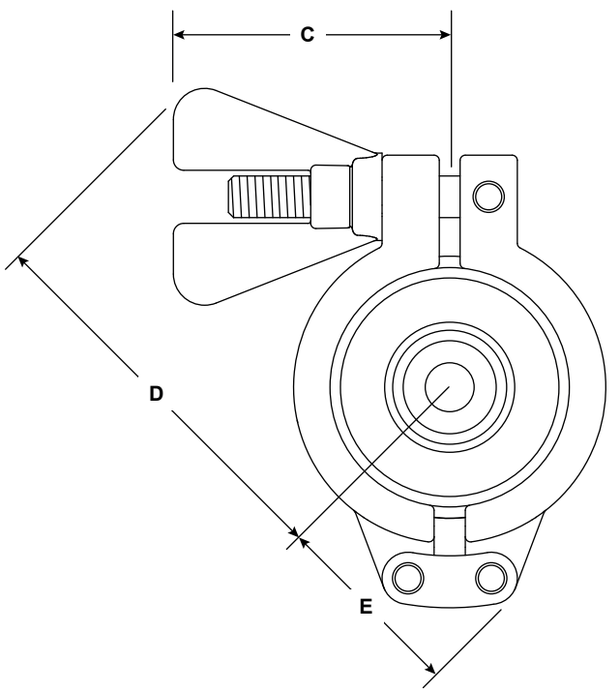
Body design condition		PN10
PMA	Maximum allowable pressure	9.7 bar g @ 38 °C
TMA	Maximum allowable temperature	171 °C @ 7.1 bar g
Minimum allowable temperature		-10 °C
PMO	Maximum operating pressure for saturated steam service	6 bar g
TMO	Maximum operating temperature	165 °C @ 6 bar g
Minimum operating temperature		0 °C
Designed for a maximum cold hydraulic test pressure of:		14.55 bar g

Note: Refer to IM-P080-02 for instruction on how to perform hydraulic testing.

Dimensions/weights (approximate) in mm and kg

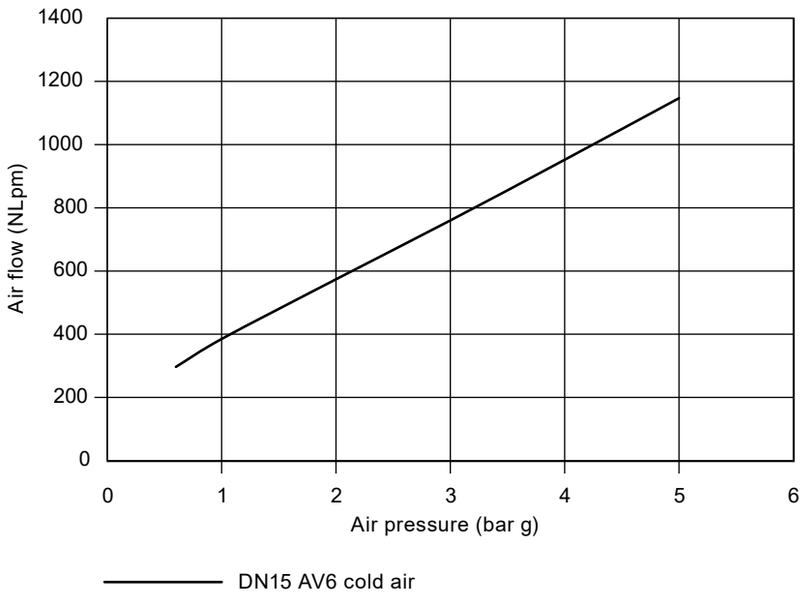
Size	A	B	C	D	E	Weight
½"	50.4	65	53	76	37	0.69 kg



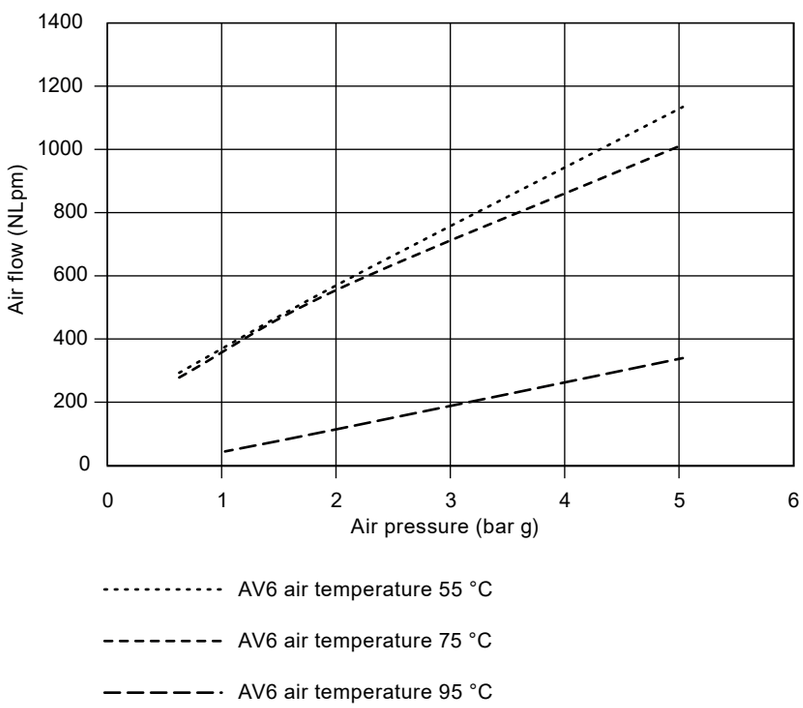


Capacities

½" AVM6.1 cold air



½" AVM6.1 hot air



Safety information, installation and maintenance

For full details see the Installation and Maintenance Instructions (IM-P080-02) supplied with the product.

Installation note: The air vent is designed for installation in vertical lines with the flow upwards to ensure self-draining operation. Do not expose the element to superheat conditions since over-expansion may result. Suitable isolation valves must be installed to allow for safe maintenance/replacement.

How to order example

1 off Spirax Sarco ½" AVM6.1 maintainable thermostatic air vent. Connections to be sanitary clamp ends to meet the requirements of ASME BPE.
Material Certification to EN10204 3.1 for pressure containing parts.

Spare parts

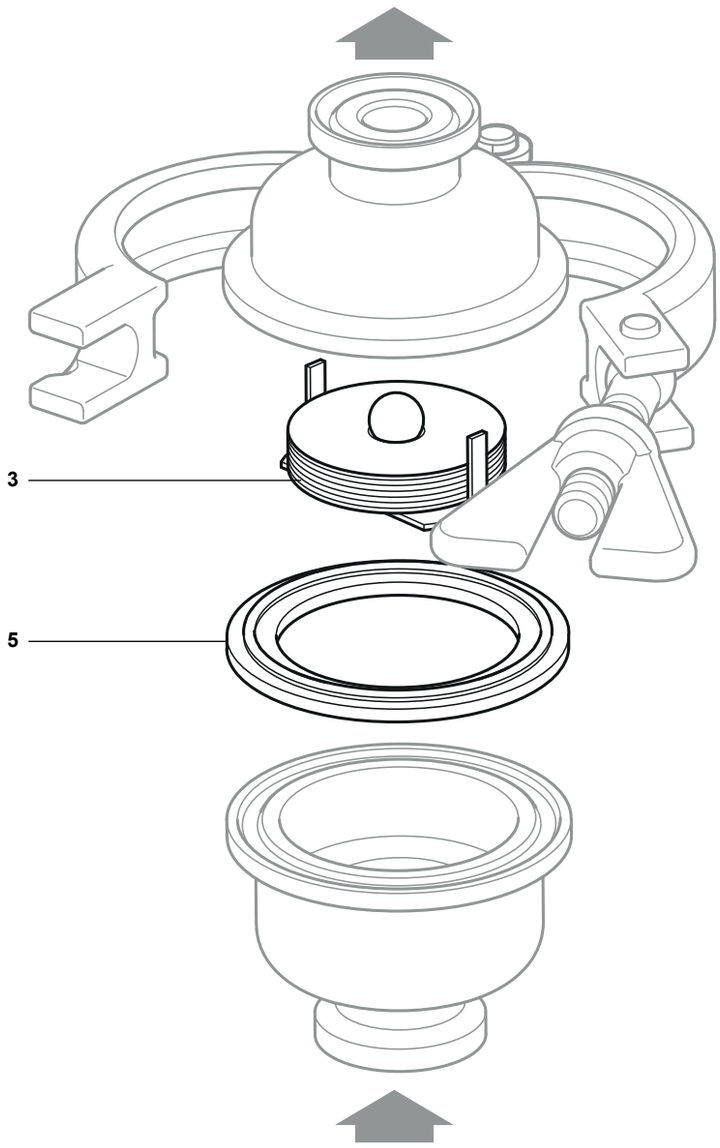
Available spares are shown in solid outline. Parts drawn in a grey line are not available as spares.

Available spares

Element assembly	**3**
Gasket (set of 3)	**5**

How to order spares

Always order spares by using the description given in the column headed 'Available spares' and state the size, type and end connection of the unit.
Example: 1 - Element assembly for a BT6/BT6F/AVM6.1/AVM7.



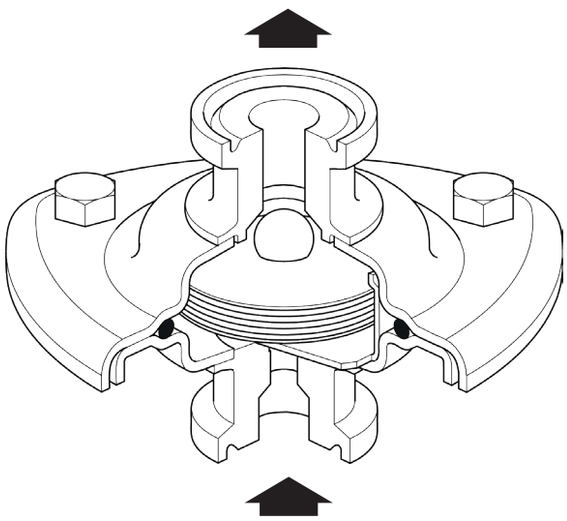
10 Pipeline ancillaries
Air vents and air eliminators

TI-P123-22
CMGT Issue 11

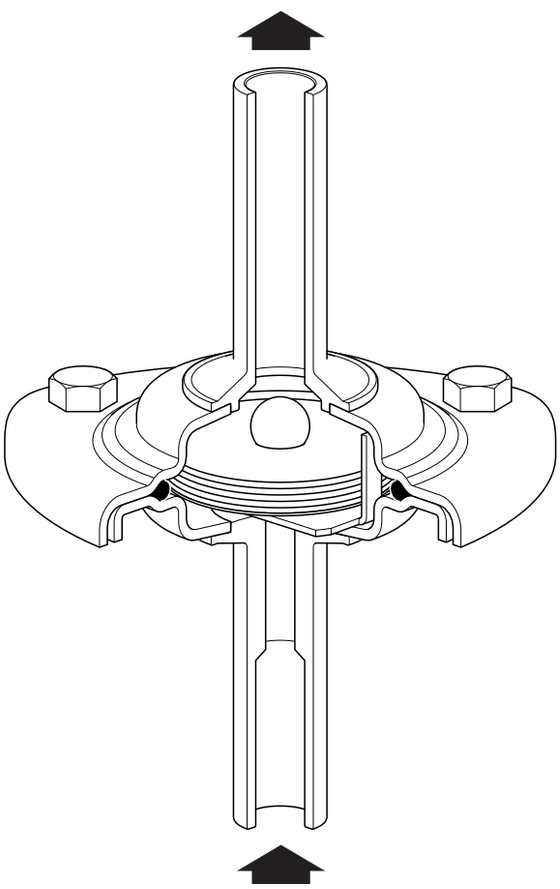
AVM7
Balanced Pressure Thermostatic Air Vent

Description
The AVM7 is a clean (chemical-free) maintainable thermostatic air vent designed to remove air and other non-condensible gases from clean steam systems. Manufactured in 316L stainless steel with minimal crevices, and a typical internal surface finish of 1.6 - 3.2 µm Ra the AVM7 operates close to steam temperature. Each trap is individually packaged within an 'ISO CLASS 7' clean environment with protective end caps and sealed in a protective plastic bag.

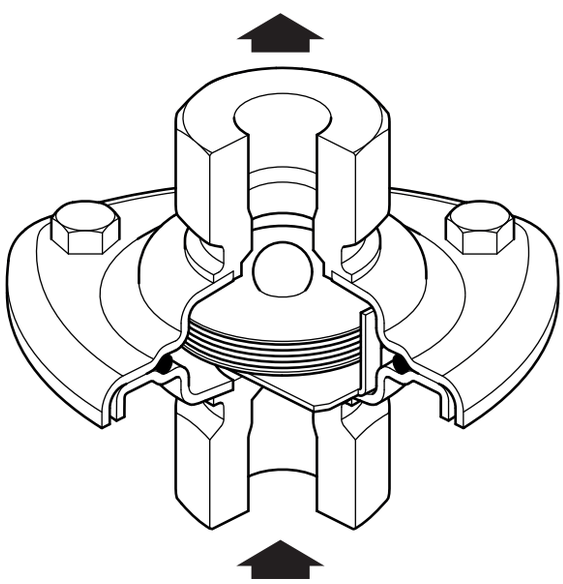
Options and available types
Special connections to suit most piping systems.



Sanitary clamp ended variant



Tube ended variant



Screwed ended variant

10.11
17

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

Pipeline ancillaries
Air vents and air eliminators

Standards

- The AVM7 has been designed and manufactured general accordance with ASME BPE standards.
- The unit also complies with the requirements of the EU Pressure Equipment Directive / UK Pressure Equipment (Safety) Regulations.
- FDA CFR Title 21. Paragraph 177. 2600.
- USP Class VI Biological Reactivity Cytotoxicity Testing In-Vivo <88> extracted at 121 °C for 1 hour.
- ADI Free (Animal Derived Ingredients) for materials used, manufacturing processes involved in producing the part.
- TSE/BSE Free as Certified.
- EC1935 : 2004.
- Full material lot number product traceability.

Certification

This product is available with the following certification:

- EN 10204 3.1 Material Certification Pressure Retaining Parts - Chargeable.
- EN 10204 3.1 Material Certification for Wetted Parts including the WFI element fill (also available for element spares) - Chargeable.
- Typical Internal Surface Finish - F.O.C.
- Certificate of Compliance for FDA, USP Class VI Testing Statement, and ADI Free Statement - F.O.C
- TSE-BSE Statement - F.O.C.
- EC1935:2004 Declaration of Compliance - F.O.C.
- Declaration of Conformity BS EN ISO 14644-1:2015 Class 7 Clean Room - F.O.C.
- Typical Test Report - F.O.C.

Note: All certification/inspection requirements must be stated at the time of order placement, and may be subject to additional cost as detailed above.

Sizes and pipe connections

Sanitary Clamp Ended Variants

Standard	Issue	Type	Sizes				
ASME BPE		Type A			½"	¾"	
ASME BPE		Type B					1"

Tube Ended Variants

Standard	Issue	Type	Sizes				
Imperial		Wall 16 swg			½"	¾"	1"
DIN11850	1999-01	Series-2		DN10	DN15		DN25
ISO1127	1997	Series 1	DN8	DN10	DN15		

Screwed Ended Variants

Standard	Issue	Type	Sizes				
Socket BSP Socket NPT				¼"	½"	¾"	1"

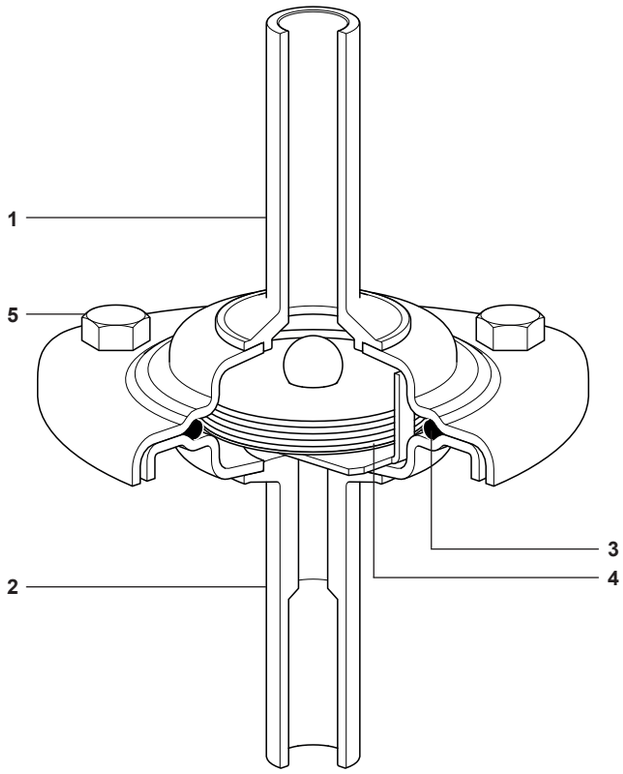
Note: On request other connection options are available at extra cost. Please note that seat end spares for specially requested connections will require a minimum order quantity - Please consult Spirax Sarco for further information.

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

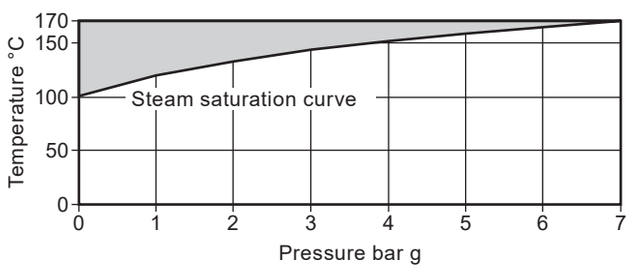
Materials

No.	Part	Material	
1	Body (outlet)	Stainless steel	316L (1.4404)
2	Body with seal (inlet)	Stainless steel	316L (1.4404)
3	'O' ring	FKM	
4	Capsule element	Stainless steel	316L (1.4404)
5	Nuts and bolts	Stainless steel	BS 6105 Gr. A4 80
	Washers	Austenitic stainless steel	

Tube Ended Variant



Pressure/temperature limits (ISO 6552)



The product should not be used in this region as damage to the internals may occur.

Body design conditions		PN7
PMA	Maximum allowable pressure	7 bar g @ 170 °C
TMA	Maximum allowable temperature	170 °C @ 7 bar g
Minimum allowable temperature		-10 °C
PMO	Maximum operating pressure for saturated steam service	7 bar g
TMO	Maximum operating temperature	170 °C
Minimum operating temperature		0 °C
Designed for a maximum cold hydraulic test pressure of		10.7 bar g

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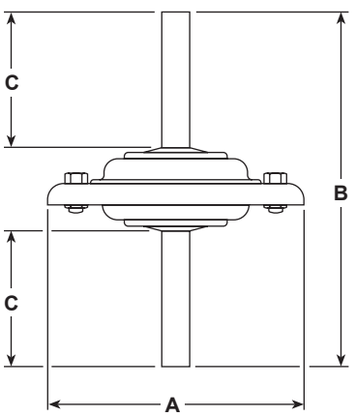
Pipeline ancillaries

Air vents and air eliminators

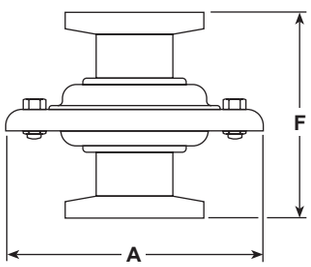
Dimensions (approximate) in mm

Products each weigh 1kg maximum

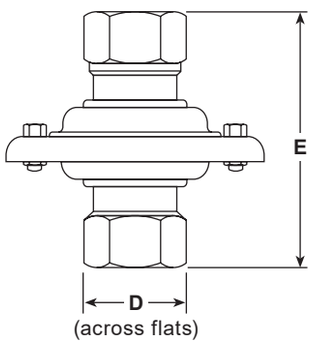
Standard	Sizes	A	B TUBE	C TUBE	D Screwed	E Screwed	F Sanitary Clamp	Weight (kg)
Sanitary Clamp ended variants								
ASME BPE Types A & B	½", ¾" and 1"	70					49 for ½" and ¾", 53 for 1"	1
Tube ended variants								
Imperial 16 swg, DIN11850 Series 2, ISO1127 Series 1	Imperial = ½", ¾" and 1" DIN/ISO = DN8 ISO (1127 only), DN10, DN15	70	106	40				1
Screw ended variants								
Socket BSP + NPT	¼", ½", ¾" and 1"	70			27, 27, 32, 41	58, 74, 81, 95		1



Tube ended variant



Sanitary clamp ended variant



Screwed ended variant

Safety information, installation and maintenance

For full details see the Installation and Maintenance Instructions (IM-P123-23) supplied with the product.

Installation note:

The unit is designed for installation in vertical lines with the flow upwards to ensure self-draining operation. Do not expose element to superheat conditions since over-expansion may result.

Suitable isolation valves must be installed to allow for safe maintenance/replacement.

10.11

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How to order

Example: 1 off Spirax Sarco DN15 AVM7 maintainable thermostatic clean steam air vent with tube ends to ISO 1127, Series 1. (21.3 mm O/D x 1.6 mm wall thickness). Tangent length of tube ends to be 40 mm for ease of orbital welding. Body to be self-draining. Suitable for pressures up to 7 bar g.
Material certification to EN 10204 3.1.

Spare parts

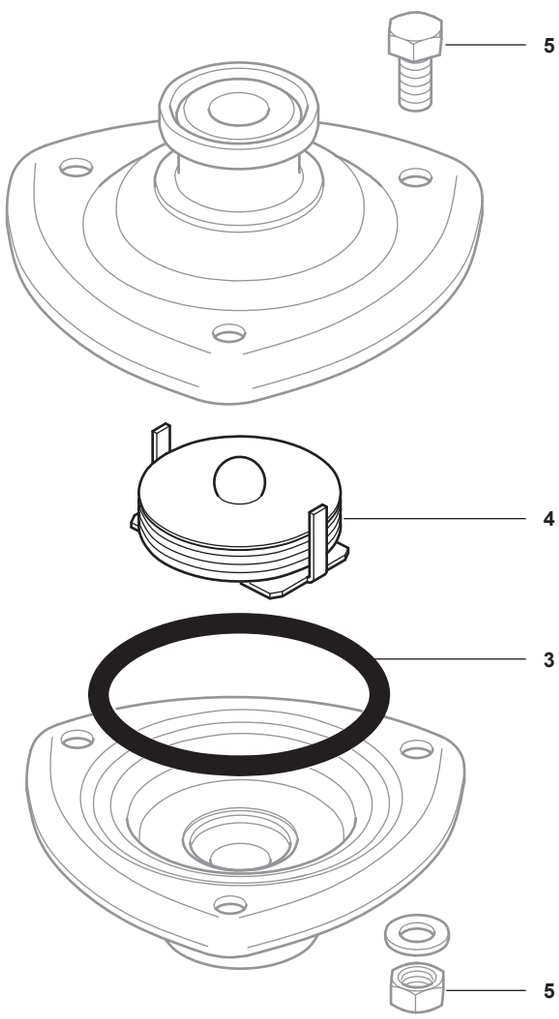
Available parts are shown in solid outline. Parts drawn in a grey line are not available as spares.

Available spares

Element assembly	**4**
'O' ring (packet of 3)	**3**

How to order spares

Always order spares by using the description given in the column headed 'Available spares' and state the size, type and end connection of the trap.
Example: 1 off Element assembly for a Spirax Sarco ½" AVM7 thermostatic clean steam air vent having screwed NPT connections.



Recommended tightening torques

Item	Part	or mm		N m
5	Nuts and bolts	8 A/F	M5	3 - 4

10 Pipeline ancillaries
Air vents and air eliminators

spirax sarco

TI-P123-03
ST Issue 6

AV45
Air Vent for Steam Systems

Description

The AV45 is a forged alloy steel, medium pressure, temperature sensitive, maintainable air vent. The operating element comprises a stack of bimetal discs which control the flow of air and other incondensable gases at a preset temperature below steam saturation.

Standards

This product fully complies with the requirements of the European Pressure Equipment Directive 97/23/EC and carries the CE mark when so required.

Certification

The 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" and 1"
Screwed BSP or NPT,

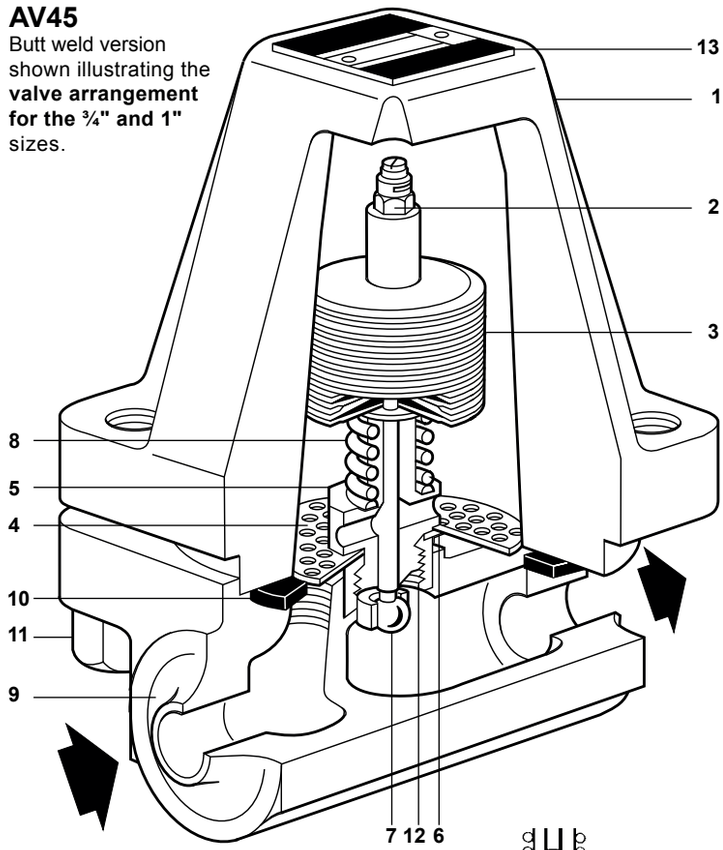
½", ¾", 1" and 1½"
Butt weld to suit Schedule 80 pipe and
Socket weld to BS 3799 Class 3000.

DN15, DN20, DN25 and DN40
Standard flange to:
EN 1092 PN64,
ASME 300 and
JIS/KS 30K.

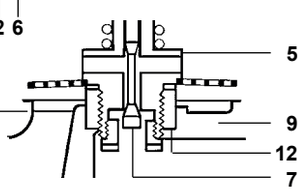
Pressure/temperature limits (ISO 6552)

See page 2.

AV45
Butt weld version shown illustrating the **valve arrangement for the ¾" and 1"** sizes.



Valve arrangement for the ½" sizes



Materials

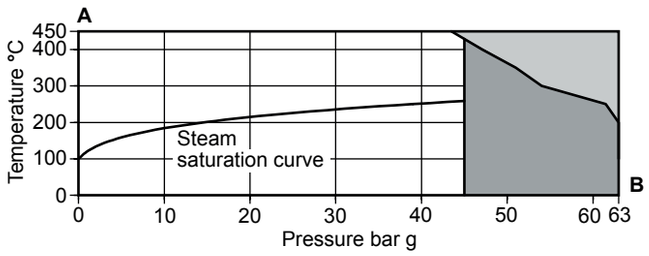
No.	Part	Material	
1	Cover	Alloy steel	DIN 17243 13Cr Mo44 (W/S 1.7335)
2	Locking nut	Stainless steel	BS 970 303 S21
3	Thermostatic element	Corrosive resistant bimetal and stainless steel	½" - Rau Type RR ¾" - 1½" Type 100
4	Strainer screen	Stainless steel	ASTM A240 316L
5	Valve seat	Stainless steel	BS 970 431 S29
6	Valve seat gasket	Stainless steel	BS 1449 304 S12
7	Valve	Stainless steel	BS 970 431 S29
8	Spring	Stainless steel	BS 2056 302 S26
9	Body	Alloy steel	DIN 17245 CS 22 Mo4
10	Cover gasket	Spirally wound stainless steel graphite filled gasket	
	Cover stud	Alloy steel	ASTM A193 Gr. B7
11	Cover nut	Carbon steel	BS 4882 Gr. 2H
	Cover washer	Carbon steel	BS 4320 Table 1 Form A
12	Seat insert	Stainless steel	BS 970 321 S20
13	Name-plate	Stainless steel	BS 1449 304 S16

K_V values

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

Size	DN15 - ½"	DN20 - ¾"	DN25 - 1"	DN40 - 1½"
K_V value	0.25	0.6	0.6	0.6

Pressure/temperature limits (ISO 6552)

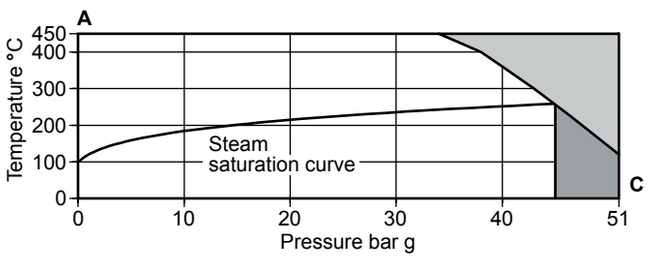


The product **must not** be used in this region or beyond the parameter of the PMA or TMA of the relative end connection.

The product should not be used in this region as damage to the internals may occur.

A - B Screwed
Socket weld
Butt weld
Flanged: EN 1092 PN64

Body design condition	PN64
PMA Maximum allowable pressure	63 bar g @ 200°C
TMA Maximum allowable temperature	450°C @ 43.5 bar g
Minimum allowable temperature	-10°C
PMO Maximum operating pressure for saturated steam service	45 bar g @ 259°C
TMO Maximum operating temperature	450°C @ 43.5 bar g
Minimum operating temperature	0°C
Designed for a maximum cold hydraulic test pressure of:	95 bar g

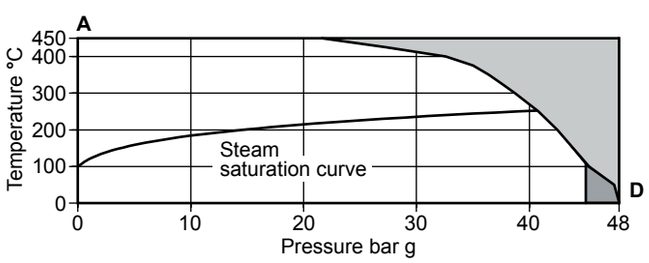


The product **must not** be used in this region or beyond the parameter of the PMA or TMA of the relative end connection.

The product should not be used in this region as damage to the internals may occur.

A - C Flanged: ASME 300

Body design condition	ASME 300
PMA Maximum allowable pressure	51 bar g @ 120°C
TMA Maximum allowable temperature	450°C @ 34 bar g
Minimum allowable temperature	-10°C
PMO Maximum operating pressure for saturated steam service	45 bar g @ 259°C
TMO Maximum operating temperature	450°C @ 34 bar g
Minimum operating temperature	0°C
Designed for a maximum cold hydraulic test pressure of:	72 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.

The product should not be used in this region as damage to the internals may occur.

A - D Flanged: JIS/KS 30K

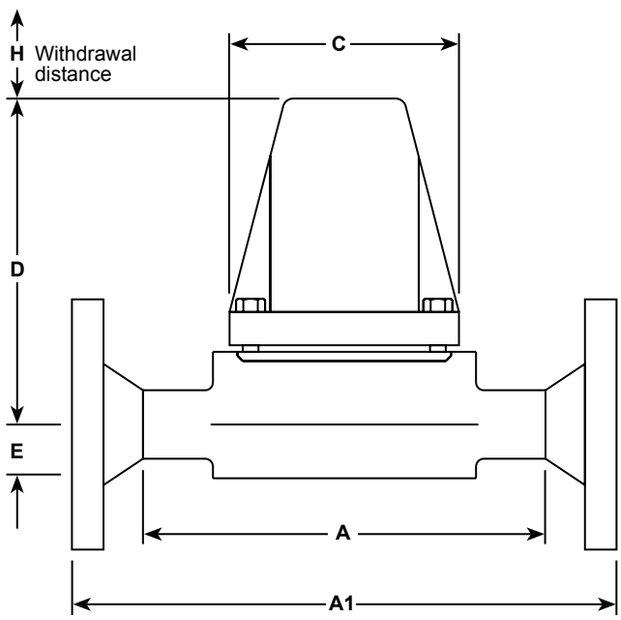
Body design condition	JIS/KS 30K
PMA Maximum allowable pressure	48 bar g @ 0°C
TMA Maximum allowable temperature	450°C @ 22 bar g
Minimum allowable temperature	-10°C
PMO Maximum operating pressure for saturated steam service	45 bar g @ 100°C
TMO Maximum operating temperature	450°C @ 22 bar g
Minimum operating temperature	0°C
Designed for a maximum cold hydraulic test pressure of:	77 bar g

Dimensions / weights (approximate) in mm and kg

Screwed, butt weld and socket weld

Size	A	C	D	E	H	Weight
½"	130	102	138	24	108	5.4
¾"	130	102	138	24	108	5.4
1"	130	102	138	24	108	5.4
* 1½"	149	102	146	30	114	6.0

* Butt weld and socket weld only.



Flanged

Size	A1	C	D	E	H	Weight
DN15	210	102	138	24	108	7.2
DN20	230	102	138	24	108	8.6
DN25	230	102	138	24	108	9.5
DN40	260	102	146	30	114	13.6

Safety information, installation and maintenance

For full details see the Installation and Maintenance Instructions (IM-P123-13) supplied with the product.

Installation note:
The AV45 is designed for installation with the element in a horizontal plane with the cover at the top. Positioned at the highest point of the main, or plant where air collects. For maximum air removal, the discharge should be as free as possible or piped to a safe location. When welding the trap into the line there is no need to remove the element providing the welding is done by the electric arc method. For ease and maintenance consideration should be given to fitting isolation valves upstream and downstream of the air vent. The air vent should not be insulated.

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

How to order

Example: 1 off Spirax Sarco ½" AV45 air vent having screwed BSP connections.

Spare parts

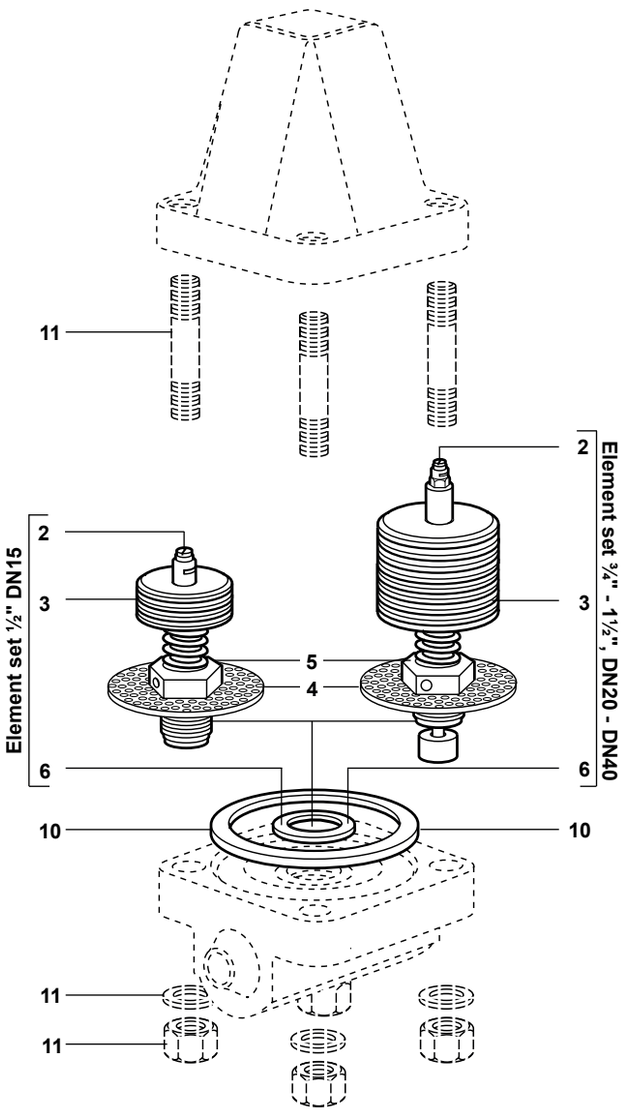
The spare parts available are shown in solid outline. Parts drawn in broken line are not supplied as spares.

Available spares

Element set	Complete with valve, valve seat and valve seat gasket	**2, 3, 6**
Strainer screen	(3 off)	**4**
Set of gaskets	(packet of 3 of each)	**6, 10**

Important note
The earlier design of the AV45 incorporated 4 off long cover studs and 8 off washers and nuts for assembling the body and cover.
The current design of the AV45 incorporates a threaded cover and 4 off shorter studs and 4 off washers and nuts.

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 steam trap.
Example: 1 - Element set for a DN25 Spirax Sarco AV45 air vent.



Recommended tightening torques

Item	or mm		N m
5	27 A/F		120 - 132
11	19 A/F	M12	110 - 120

10 Pipeline ancillaries
Air vents and air eliminators

TI-P017-07
ST Issue 14

AE30, AE30A, AE30B and AE30C Automatic Air Eliminators/ Air and Gas Vents for Liquid Systems

Description

The AE30 range of automatic air eliminators/air and gas vents are designed for use on liquid installations.The body and the cap are made from a special brass alloy, which is dezincification resistant (DZR).

Available options

AE30	Air eliminator/air vent
AE30A	Air eliminator/air vent with check valve
AE30B	Air eliminator/air vent with lockshield
AE30C	Air eliminator/air vent with check valve and lockshield

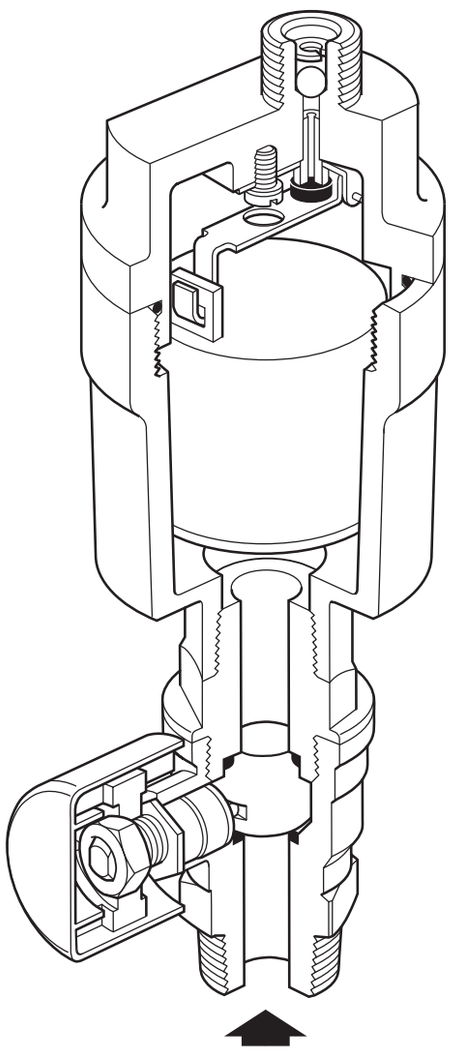
The fitted lockshield valve (versions AE30B and AE30C) has a unique 3 way locking system enabling the valve to be either locked open, locked closed or be used as conventional ball valve. You will need to use a standard socket set (not included with the product) to operate the valve.

Standards

This product fully complies with the requirements of the European Pressure Equipment Directive.

Certification

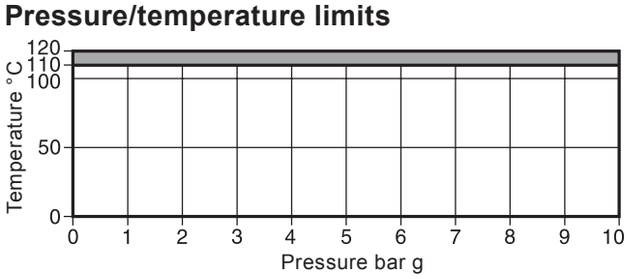
This product is available with a manufacturer's Typical Test Report.
Note: All certification/inspection requirements must be stated at the time of order placement.



Sizes and pipe connections

AE30, AE30A: Inlet ½" female, outlet ¼" male both BSP or NPT.
AE30B, AE30C: Inlet ½" male, outlet ¼" male both BSP.

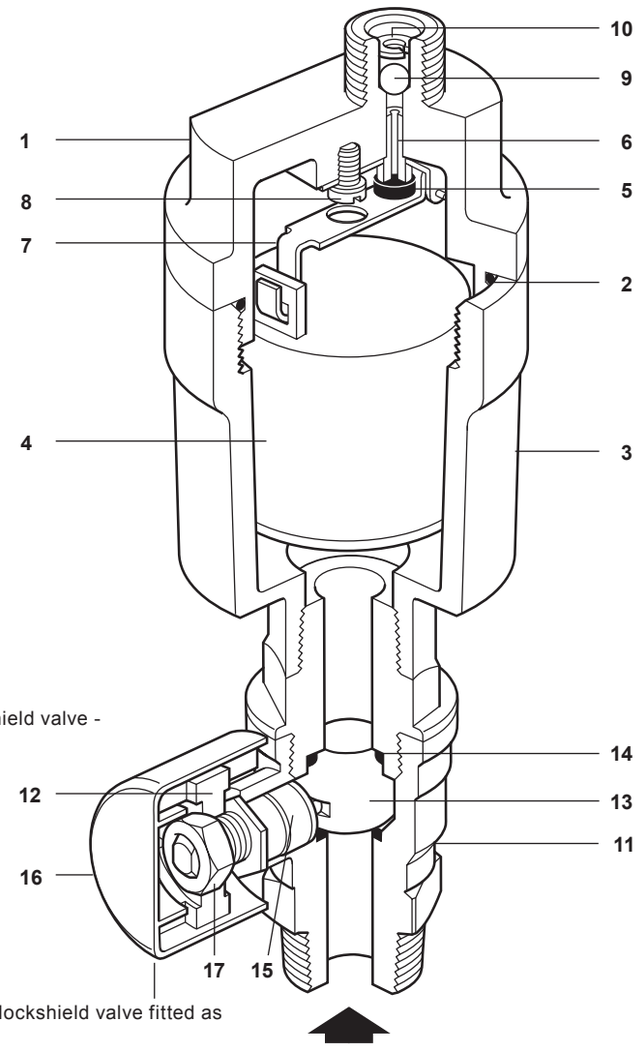
Pressure/temperature limits



The product **should not** be used in this region as damage to the internals may occur.

Body design conditions		PN10
PMA	Maximum allowable pressure	10 bar g @ 120 °C
TMA	Maximum allowable temperature	120 °C @ 10 bar g
Minimum allowable temperature		-10 °C
PMO	Maximum operating pressure	10 bar g @ 110 °C
TMO	Maximum operating temperature (at all pressures)	110 °C
ΔPMX	Maximum differential pressure	8 bar g @ 110 °C
Minimum operating temperature		0 °C
Designed for a maximum cold hydraulic test pressure of 15 bar g		
Minimum specific gravity of liquid		0.926

Pipeline ancillaries
Air vents and air eliminators



A **standard socket set** is required to operate the lockshield valve - Not included with the product

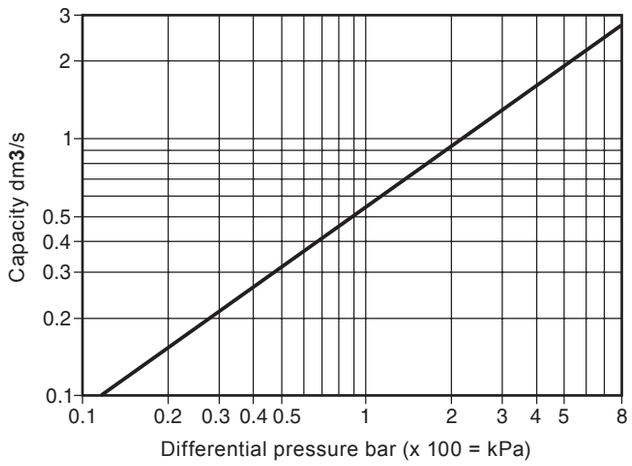
The **AE30B** and **AE30C** have a lockshield valve fitted as standard

Materials

No.	Part	Material		
1	Cap	DZR brass alloy		BS 2872 CZ 132
2	Cap 'O' ring	Green Viton 75		
3	Body	DZR brass alloy		BS 2872 CZ 132
4	Float	Acetal co hostaform/stainless steel		
5	Valve cone	EPDM or Green Viton (IRHD 50-55)		
6	Valve seat		Stainless steel	BS 970 431 S29
7	Bracket/lever assembly		Stainless steel	BS 1449 304 S11
8	Screw		Stainless steel	BS 4183 18/8
9	Check valve ball	(AE30A and C)	Stainless steel	AISI 440 B
10	Circlip	(AE30A and C)	Stainless steel	BS 970 302 S25
11	Lockshield valve body	(AE30B and C)	DZR brass alloy	EN 12165 CW 602N
12	Lockshield valve		Hard Cr. DZR alloy	EN 12165 CW 602N
13	Ball	(AE30B and C)	Hard Cr. DZR alloy	EN 12165 CW 602N
14	Seal	(AE30B and C)	Virgin PTFE	
15	Stem seal	(AE30B and C)	Virgin PTFE	
16	Cover	(AE30B and C)	Polypropylene	
17	Hex-nut	(AE30B and C)	Zinc plated steel	

Free discharge capacity

For air at 16 °C



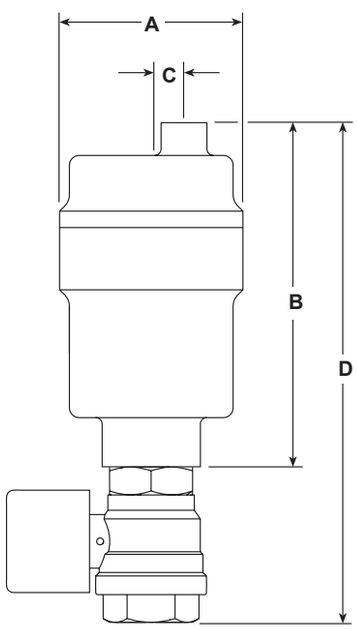
If the temperature of the air differs from 16 °C, the discharge capacity from the graph can be corrected by multiplying it by the following equation:

$$\frac{289}{273 + T \text{ (T is the actual temperature in °C)}}$$

It may be assumed that the temperature of the air is equal to the temperature of the water.

Dimensions/weight (approximate) in mm and kg

Version	A	B	C	D	Weight
AE30, AE30A	56	105	10	-	0.7
AE30B, AE30C	56	105	10	155	0.9



Safety information, installation and maintenance

For full details see the Installation and Maintenance Instructions (IM-P017-08) supplied with the product.

Installation note:
The automatic air eliminator/air vent should be installed vertically with the inlet at the bottom. We recommend piping the discharge from the air eliminator/air vent to a suitable drainpoint.

How to order

Example: 1 off Spirax Sarco ½" AE30C automatic air eliminator with check valve and lockshield valve screwed BSP.

Pipeline ancillaries
Air vents and air eliminators

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

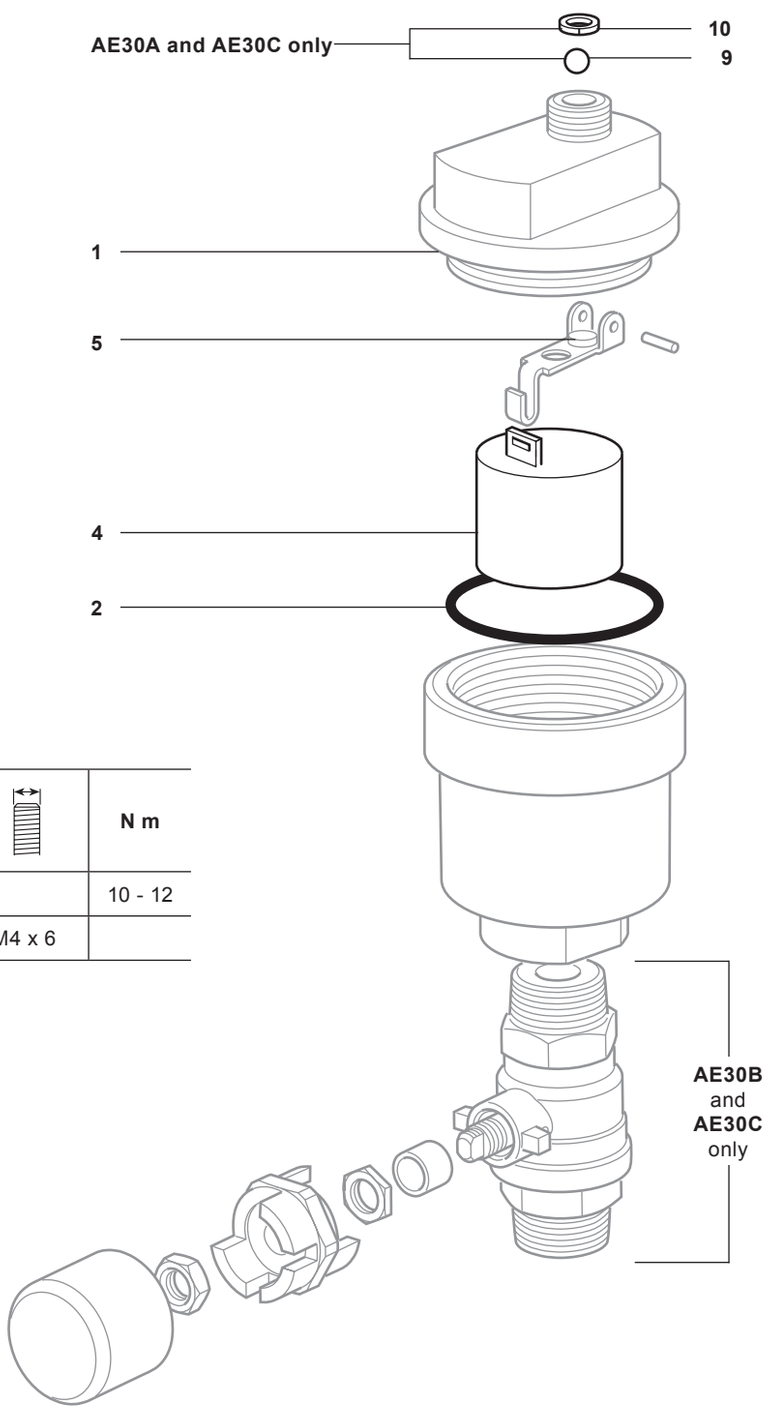
Available spares

Maintenance kit comprising: Valve cone, float, cap 'O' ring, check valve ball and check valve circlip	**2**, **4**, **5**, **9**, **10**

Important note
If you have earlier versions of the AE30 designated AE30 and AE30CV which operate over the range 0 - 30 bar then the spares set for the AE30, A, B and C can be used (but this will not convert it to operate over the range 0 - 8 bar).
However if you have the AE30H and AE30HCV which operate over the range 3 - 8 bar then the earlier spares set should be used.

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 automatic air eliminator/air vent.

Example: 1 - Maintenance kit for a Spirax Sarco ½" AE30A automatic air eliminator with check valve.



Recommended tightening torques

Item	or mm	N m
1	30	10 - 12
8	Cheesehead M4 x 6	

TI-P017-16
CMGT Issue 5

AE30LV
Automatic Air Eliminator/ Air and Gas Vent for Liquid Systems

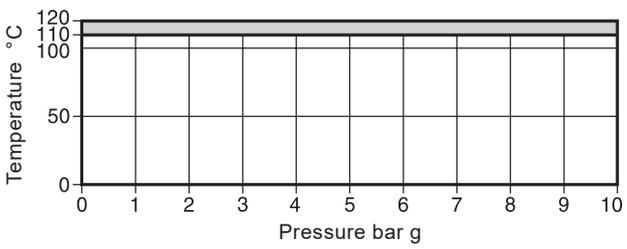
Description
The AE30LV range of automatic air eliminators/air vents for liquid systems have a lightweight float for use on liquids with a minimum specific gravity of 0.7 and a Viton valve cone for chemical resistance. The body and cap are of a special brass alloy which is dezincification resistant (DZR). It is available as a standard air and gas vent designated AE30LV and with check valve designated AE30LVA.

Standards
This product fully complies with the requirements of the Pressure Equipment Directive (PED).

Certification
This product is available with a manufacturer's Typical Test Report.
Note: All certification/inspection requirements must be stated at the time of order placement.

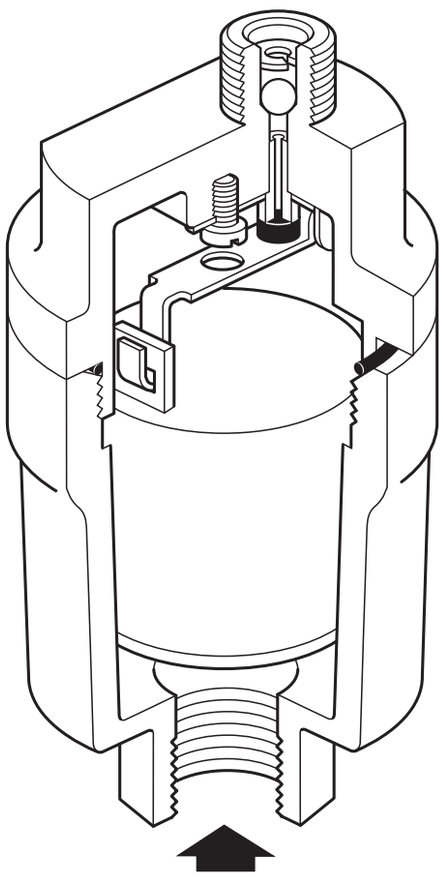
Sizes and pipe connections
Inlet ½" female, outlet ¼" male both BSP or NPT.

Pressure/temperature limits



The product should not be used in this region as damage to the internals may occur.

Body design conditions		PN10
PMA	Maximum allowable pressure	10 bar g @ 120 °C
TMA	Maximum allowable temperature	120 °C @ 10 bar g
Minimum allowable temperature		-10 °C
PMO	Maximum operating pressure	10 bar g @ 110 °C
TMO	Maximum operating temperature	110 °C at all pressures
ΔPMX	Maximum differential pressure	3 bar g @ 110 °C
Minimum operating temperature		0 °C
Designed for a maximum cold hydraulic test pressure of:		15 bar g
Minimum specific gravity of liquid		0.7



AE30LVA shown

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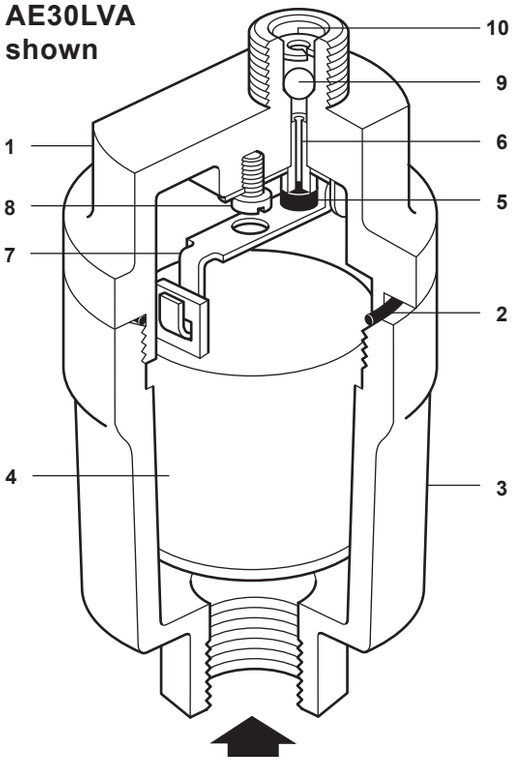
Pipeline ancillaries
Air vents and air eliminators

Materials

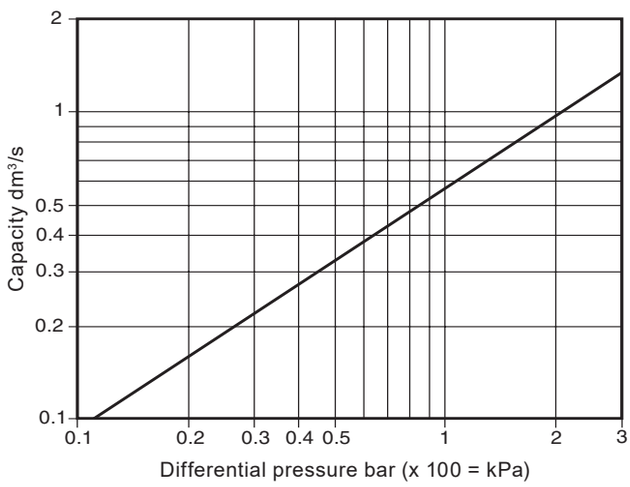
No.	Part	Material	
1	Cap	DZR brass alloy	BS 2872 CZ 132
2	Cap 'O' ring	Green Viton 75	
3	Body	DZR copper alloy	BS 2872 CZ 132
4	Float	Acetal co hostaform/stainless steel	
5	Valve cone	Synthetic rubber	Green Viton
6	Valve seat	Stainless steel	BS 970 431 S29
7	Bracket/lever assembly	Stainless steel	BS 1449 304 S11
8	Screw	Stainless steel	BS 4183 18/8
9	Check valve ball (AE30LVA)	Stainless steel	AISI 440 B
10	Circlip (AE30LVA)	Stainless steel	BS 970 302 S25

AE30LVA shown



Free discharge capacity

For air at 16 °C



If the temperature of the air differs from 16 °C, the discharge capacity from the graph can be corrected by multiplying it by the following equation:

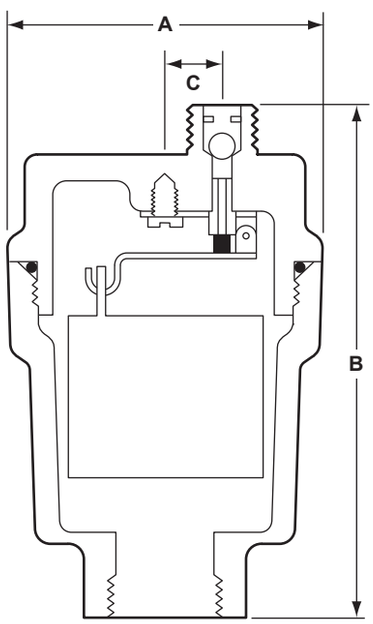
$$\frac{289}{273 + T \text{ (T is the actual temperature in °C)}}$$

It may be assumed that the temperature of the air is equal to the temperature of the water.

Dimensions/weight

(approximate) in mm and kg

A	B	C	Weight
56	105	10	0.7 kg



Safety information, installation and maintenance

For full details see the Installation and Maintenance Instructions (IM-P017-08) supplied with the product.

Installation note:

The automatic air vent should be installed vertically with the inlet at the bottom. We recommend piping the discharge from the air eliminator to a suitable safe place.

How to order

Example: 1 off Spirax Sarco ½" AE30LVA automatic air eliminator with check valve screwed BSP.

Spare parts

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

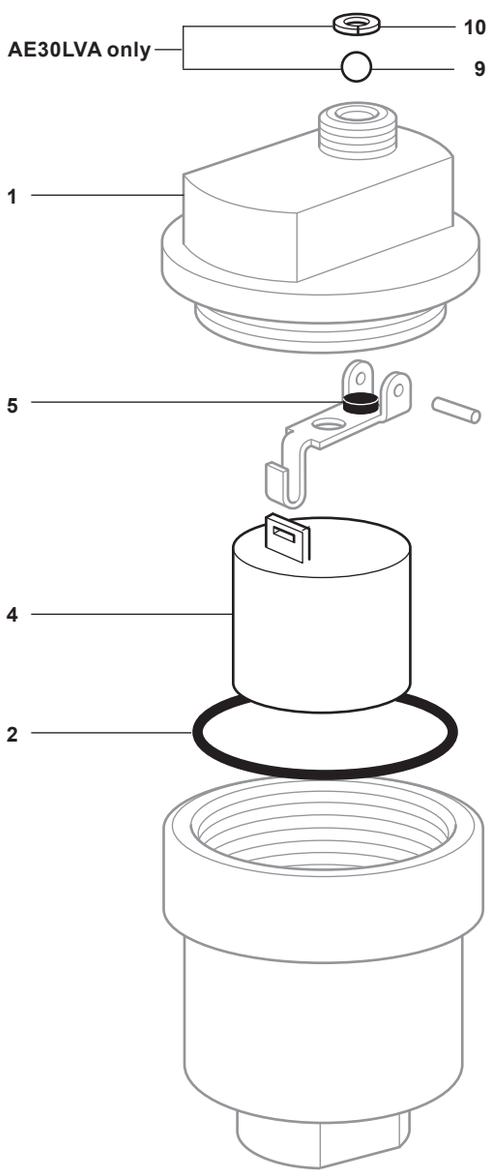
Available spares

Maintenance kit comprising:	
Valve cone, float, cap 'O' ring, check valve ball and check valve circlip	**2, 4, 5, 9, 10**

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 automatic air eliminator/ air vent.

Example: 1 - Maintenance kit for a Spirax Sarco ½" AE30LVA automatic air eliminator with check valve.



Recommended tightening torques

Item	or mm	N m
1	30	10 - 12
8	Cheesehead M4 x 6	

10 Pipeline ancillaries
Air vents and air eliminators

TI-P149-07
CMGT Issue 6

AE10S High Capacity Automatic Air and Gas Vent for Liquid Systems

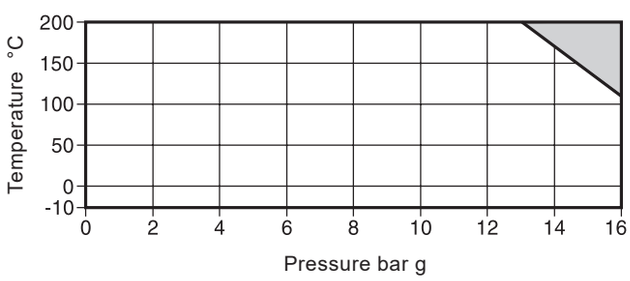
Description
The AE10S is a high capacity float type automatic air and gas vent for liquid systems and is readily maintainable. The body and cover are of cast iron and the valve and seat of stainless steel.

Standards
This product fully complies with the requirements of the Pressure Equipment Directive (PED).

Certification
The product is available with certification to EN 10204 2.2 for body and cover as standard.
Note: All certification/inspection requirements must be stated at the time of order placement.

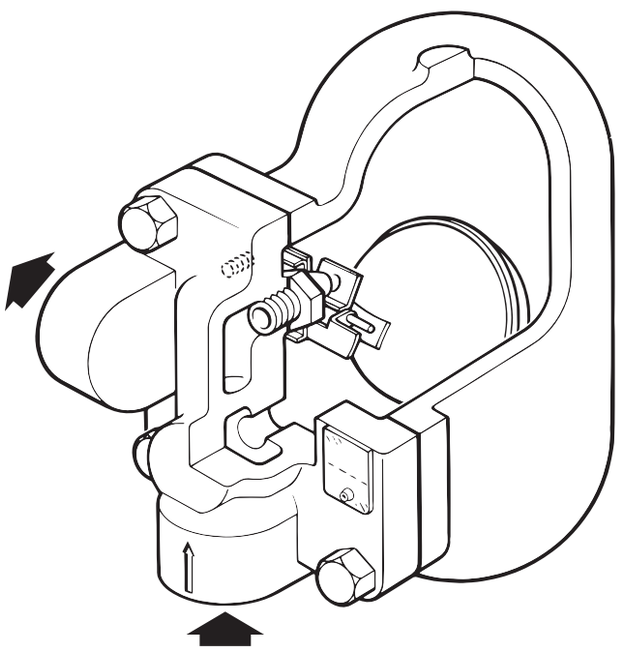
Sizes and pipe connections
¾" screwed BSP or NPT.

Pressure/temperature limits



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

Body design conditions		PN16
PMA	Maximum allowable pressure	16 bar g @ 110 °C
TMA	Maximum allowable temperature	200 °C
Minimum allowable temperature		-10 °C
PMO	Maximum operating pressure	16 bar g @ 110 °C
TMO	Maximum operating temperature	200 °C @ 13 bar g
Minimum operating temperature		-10 °C
ΔPMX	Maximum differential pressure	6 bar
Designed for a maximum cold hydraulic test pressure of 24 bar g		
Minimum specific gravity of liquid		0.6



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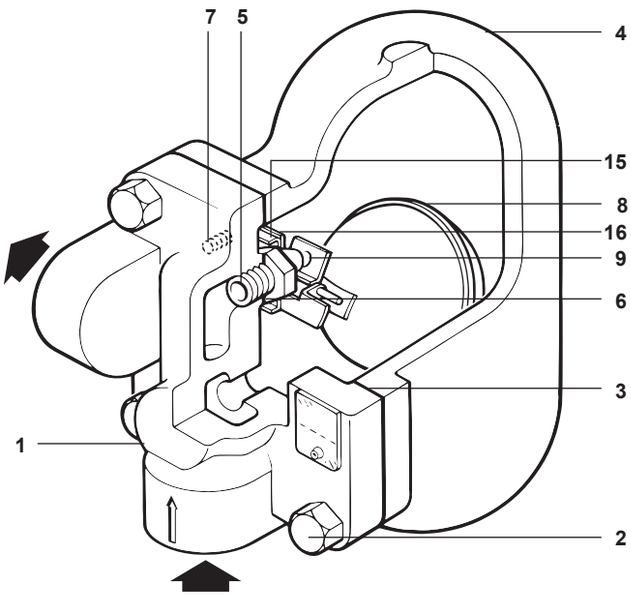
10 Pipeline ancillaries
Air vents and air eliminators

Materials



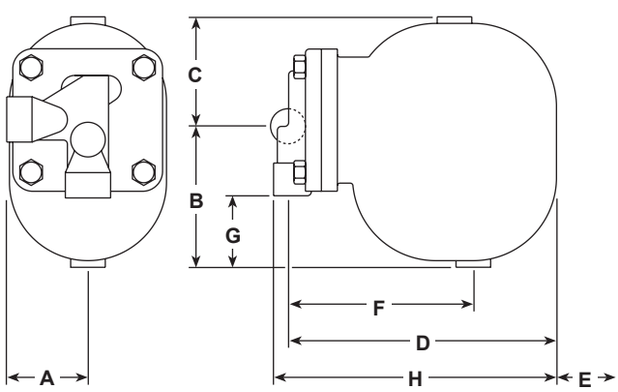
No.	Part	Material	
1	Body	Cast iron	DIN 1691 GG 25
2	Cover bolts	Steel	BS3692 Gr.8.8
3	Cover gasket	Reinforced exfoliated graphite	
4	Cover	Cast iron	DIN 1691 GG 25
5	Valve seat	Stainless steel	BS 970 431 S29
6	Valve seat gasket	Stainless steel	BS 1449 304 S11
7	Pivot frame assembly set screws	Stainless steel	BS 4183 18/8
8	Ball float and lever	Stainless steel	BS 1449 304 S16
9 *	Valve cone	Stainless steel	AISI 440B
15	Support frame	Stainless steel	BS 1449 304 S16
16	Pivot frame	Stainless steel	BS 1449 304 S16
17	Pivot	Stainless steel	

* **Note:** The valve cone is permanently attached to the ball float and lever mechanism.

10.11
36

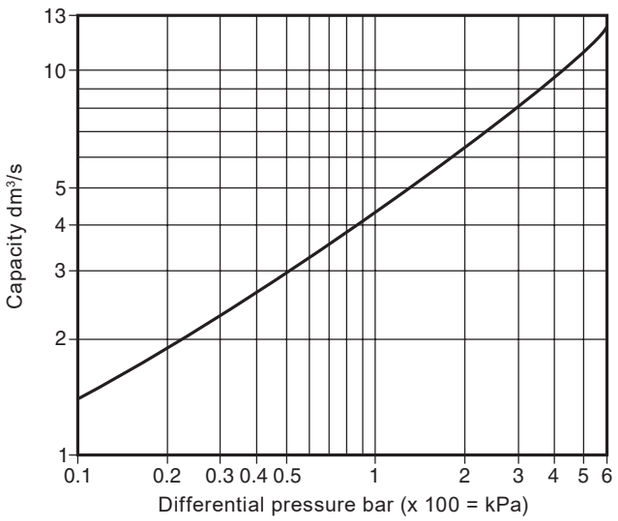
Dimensions/weight (approximate) in mm and kg

Size	A	B	C	D	E	F	G	H	Weight
¾"	60	111	77	195	165	118	50	217	6.8



Withdrawal distance

Free air discharge capacity



If the temperature of the air differs from 15 °C, the discharge capacity from the graph can be corrected by multiplying it by the following equation:

$$\frac{289}{273 + T \text{ (T is the actual temperature in °C)}}$$

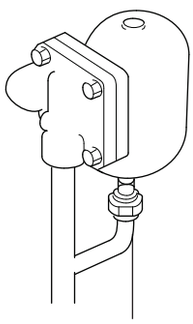
It may be assumed that the temperature of the air is the same as the temperature of the water.

Safety information, installation and maintenance

For full details see the Installation and Maintenance Instructions (IM-P149-13) supplied with the product.

Installation note:

The ¾" AE10S high capacity automatic air vent must always be fitted with the inlet at the bottom so that the float mechanism is rising and falling in a vertical plane. From the tapping provided at the low point of the cover, a ½" balance pipe having continuous rise towards the automatic air vent must be fitted and connected into the inlet pipework (as shown in the sketch) which is essential for satisfactory operation.
Because of the way automatic air and gas vents operate they all dribble water and liquid when discharging air and gas. This is perfectly normal. Spirax Sarco recommend piping the discharge to a safe visible point or drain via an air break.



½" Balance pipe

Maintenance note:

With suitable isolation, repairs can be carried out with the automatic air vent in line.

Disposal

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

How to order

Example: 1 off Spirax Sarco ¾" screwed BSP AE10S high capacity automatic air and gas vent with cast iron body and stainless steel valve and seat.

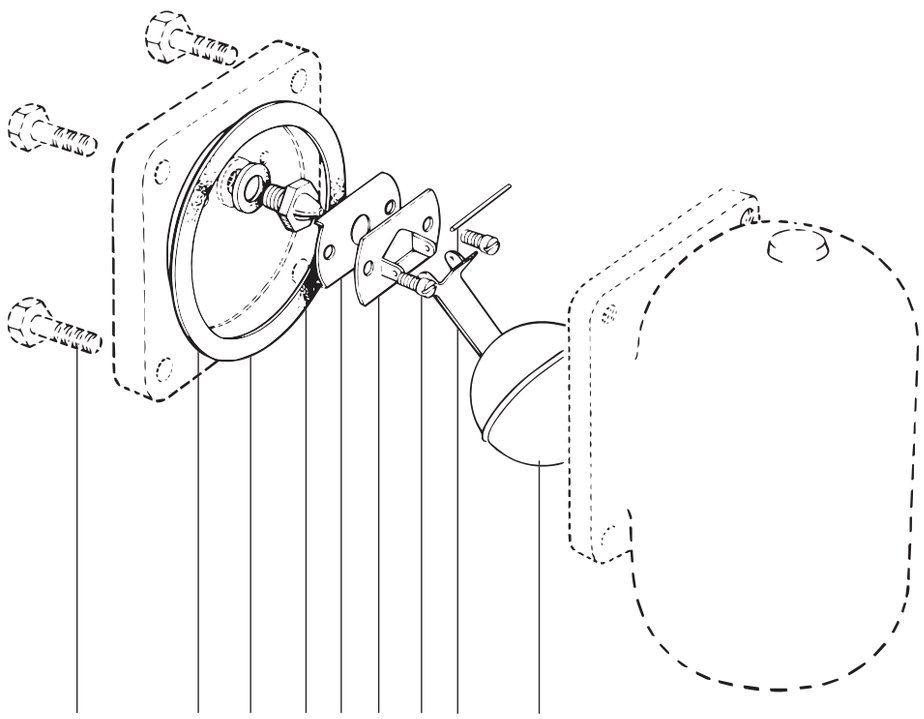
Pipeline ancillaries
Air vents and air eliminators

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

Available spares

Main valve assembly with float	**5, 6, 7, 8, 9, 15, 16, 17**
Three complete sets of gaskets (packet of 3 sets)	**3, 6**

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 automatic air vent.
Example: 1 - Main valve assembly for a Spirax Sarco ¾" AE10S high capacity automatic air and gas vent.



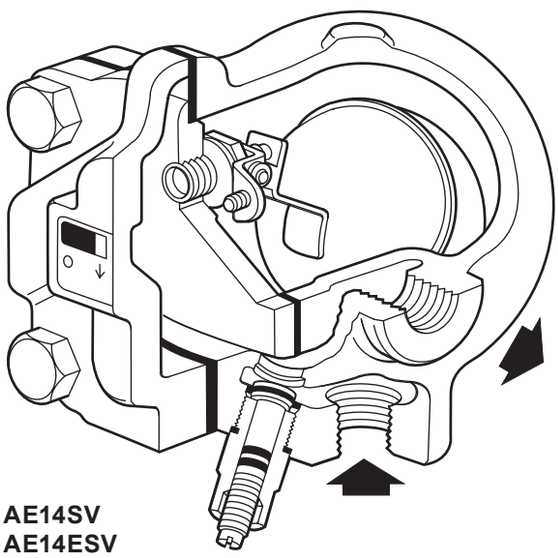
Main valve assembly with float

Recommended tightening torques

Item	or mm		N m
2	17	M10 x 30	29 - 32
7		M5 x 20	2.5 - 2.8
5	17	M12 x 8	50 - 55

TI-P149-01
CMGT Issue 10

AE14
SG Iron
Automatic Air Vents for Liquid Systems



AE14SV
AE14ESV

Description

AE14	The AE14 is a range of float type air vents for liquid systems. The body and cover are manufactured in SG iron and the complete unit is readily maintainable. The standard version with a viton valve cone is designated AE14. This model is also available with an inbuilt stop valve fitted to the inlet port designated AE14SV and AE14ESV.
AE14E	The AE14E version has an EPDM valve cone. This model is also available with an inbuilt stop valve fitted to the inlet port designated the AE14ESV.
AE14S	The AE14S is a stainless steel valve cone version.

Available types

AE14	Fitted with a viton valve head (standard version)
AE14E	Fitted with an EPDM valve head
AE14S	Fitted with a stainless steel valve head
AE14SV	Fitted with a viton valve head and stop valve
AE14ESV	Fitted with an EPDM valve head and stop valve

Standards

These products fully comply with the requirements of the EU Pressure Equipment Directive/UK Pressure Equipment (Safety) Regulations and carry the CE mark when so required.

Certification

The product is available with material certification to EN 10204 2.2.
Note: All certification/inspection requirements must be stated at the time of order placement.

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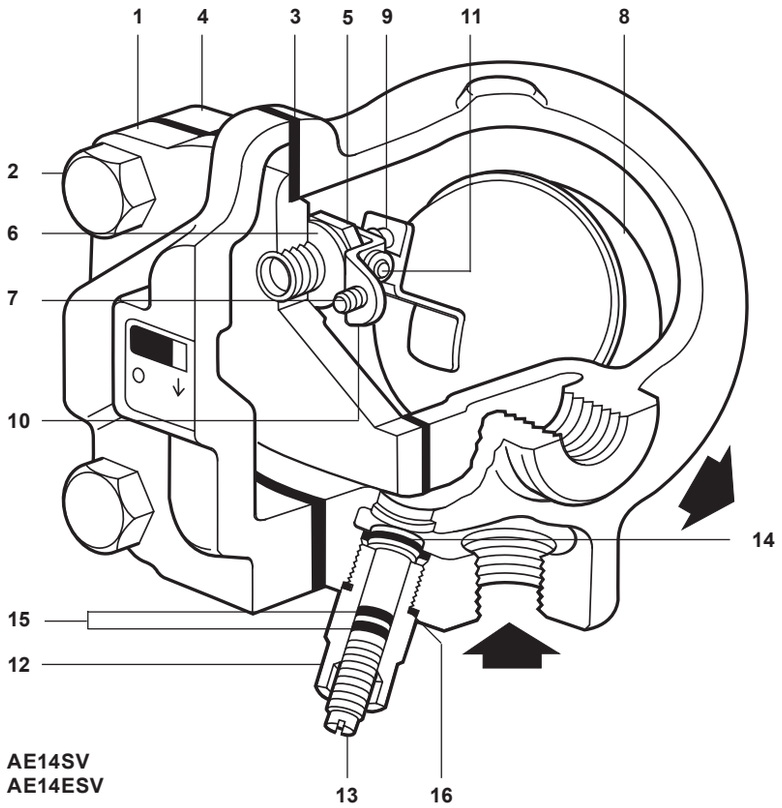
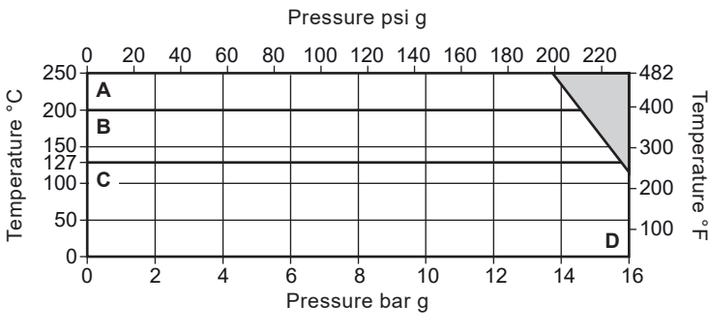
Materials



No.	Part		Material	
1	Body		SG iron	EN-GJS-400-15
2	Cover bolt		Steel	BS 3692 Gr. 8.8
3	Cover gasket		Reinforced exfoliated graphite	
4	Cover		SG iron	EN-GJS-400-15
5	Main valve seat		Stainless steel	BS 970 431 S29
6	Main valve seat gasket		Stainless steel	BS 1449 304 S11
7	Main valve assembly screws		Stainless steel	BS 6105 Cl A2-70
8	Ball float and lever		Stainless steel	BS 1449 304 S16
9	Valve head	AE14, AE14SV	Viton	
		AE14E, AE14ESV	EPDM	
		AE14S	Stainless steel	AISI 440B
10	Pivot frame		Stainless steel	BS 1449 304 S16
11	Pivot pin		Stainless steel	
12 *	Stop valve housing		Brass	BS 2874 CZ 121 3Pb
13 *	Stop valve spindle		Brass	BS 2874 CZ 121 3Pb
14 *	Stop valve head		Brass	BS 2874 CZ 121 3Pb
15 *	'O' rings		Synthetic rubber	Flurocarbon
16 *	Stop valve gasket		Copper	BS 2870 C 101

* **Note:** Parts 12 to 16 are used for AE14ESV and AE14SV only.

Pressure/temperature limits



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

A - D AE14S

B - D AE14 and AE14SV

C - D AE14E and AE14ESV

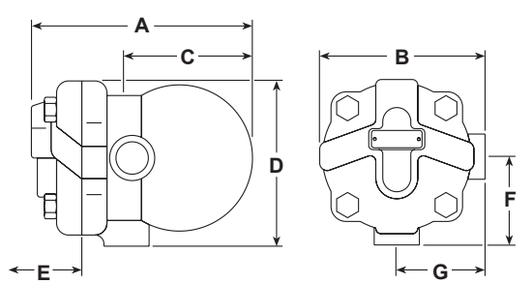
Body design conditions			PN16
PMA Maximum allowable pressure @ 110 °C (230 °F)		16 bar g	(232 psi g)
TMA Maximum allowable temperature @ 13.6 bar g (197.3 psi g)		250 °C	(482 °F)
Minimum allowable temperature		0 °C	(32 °F)
PMO Maximum operating pressure		16 bar g	(232 °F)
TMO Maximum operating temperature	**AE14E and AE14ESV** @ 15.5 bar g (224.5 psi g)	127 °C	(261 °F)
	AE14 and AE14SV @ 14.5 bar g (210 psi g)	200 °C	(392 °F)
	AE14S @ 13.6 bar g (197.3 psi g)	250 °C	(482 °F)
Minimum operating temperature		0 °C	(32 °F)
ΔPMX Maximum differential pressure		14 bar g	(203 psi g)
Designed for a maximum cold hydraulic test pressure of:		24 bar g	(348 psi g)
Minimum specific gravity of liquid			0.6

Dimensions/weights (approximate)

AE14, AE14E, AE14S

mm and kg

Size	A	B	C	D	E	F	G	Weight
½" ¾"	147	114	80	114	105	60	60	2.5



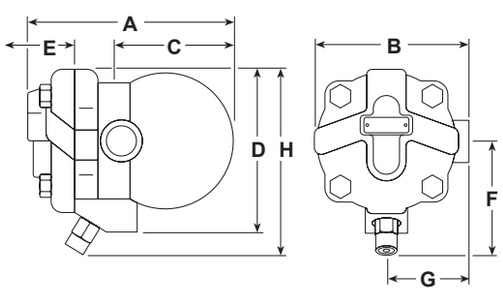
inches and lbs

Size	A	B	C	D	E	F	G	Weight
½" ¾"	5.78	4.48	3.14	4.48	4.13	2.36	2.36	5.51

AE14ESV, AE14SV

mm and kg

Size	A	B	C	D	E	F	G	H	Weight
½" ¾"	148	114	65	129	105	76	60	147	2.7

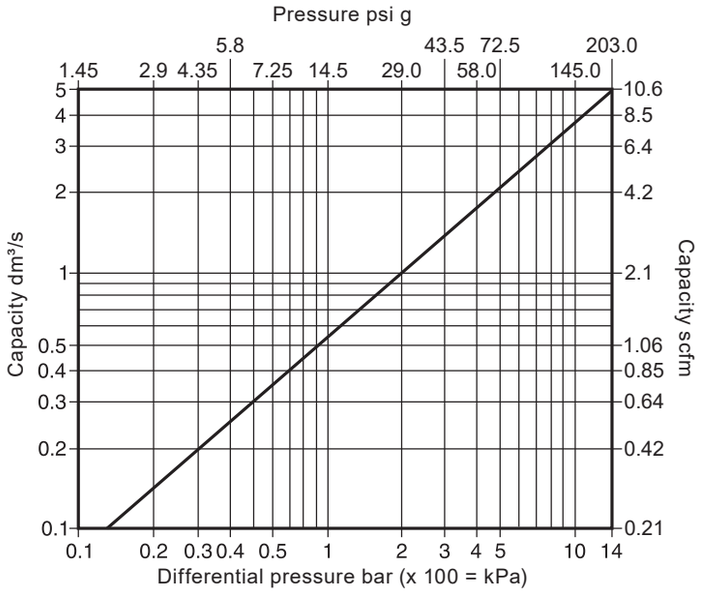


inches and lbs

Size	A	B	C	D	E	F	G	H	Weight
½" ¾"	5.82	4.48	2.55	5.07	4.13	2.99	2.36	5.78	5.95

Pipeline ancillaries
Air vents and air eliminators

Capacities



Safety information, installation and maintenance
For full details see the Installation and Maintenance Instructions (IM-P149-06) supplied with the product.

Disposal
This 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 ½" screwed BSP AE14 automatic air vent with SG iron body and Viton valve head.

Spare parts

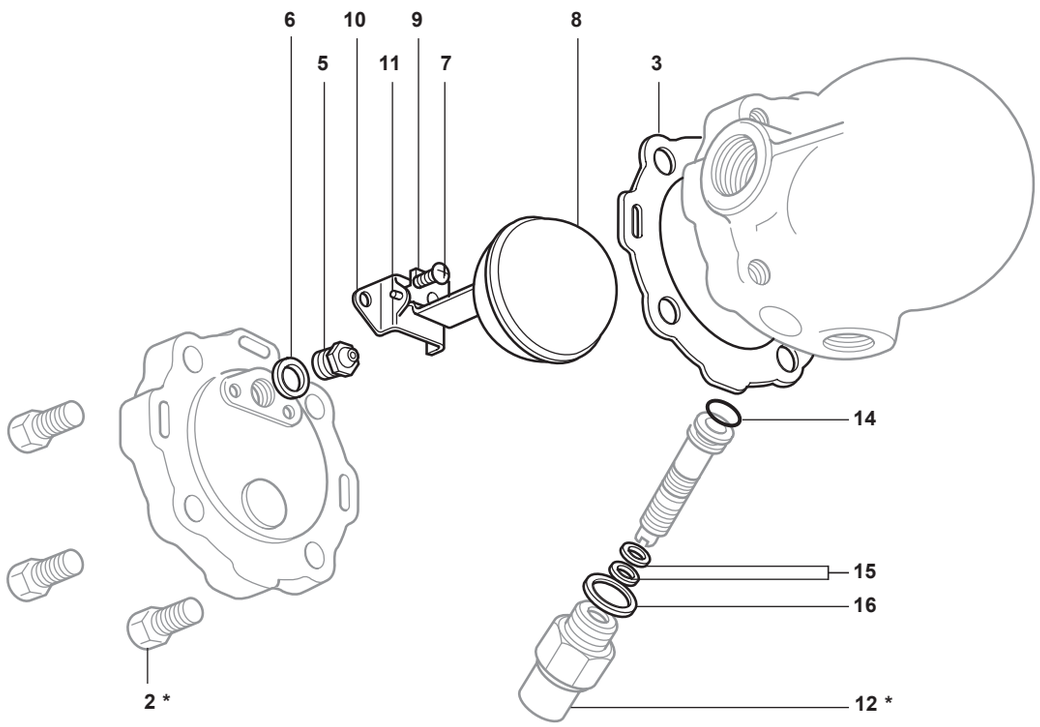
The spare parts available are shown in solid outline. Parts drawn in a grey line are not supplied as spares.

Available spares

Maintenance kit (**Note:** Item 9 is attached to item 8 when supplied for the AE14S)	**3, 5, 6, 7 (2 off), 8, 9, 10, 11, 14, 15 (2 off), 16**
Seal kit	**3, 5 (EPDM), 14, 15 (2 off), 16**
Valve head (not available for the AE14S) packet of 3 (**Note:** 1 off EPDM and Viton valve head is supplied to fit as required)	**9**

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 automatic air vent.
Example: 1 - Maintenance kit for a Spirax Sarco ½" AE14ESV automatic air vent.



Recommended tightening torques

Item	Part	or mm		N m	(lbf ft)
2 *	Cover bolts	17 A/F	M10 x 30	47 - 50	35 - 37
5	Main valve seat	17 A/F		50 - 55	33 - 40
7	Main valve assembly screws	Pozidrive	M4 x 6	2.5 - 3.0	1.8 - 2.2
12 *	Stop valve housing	21 A/F		30 - 35	22 - 26

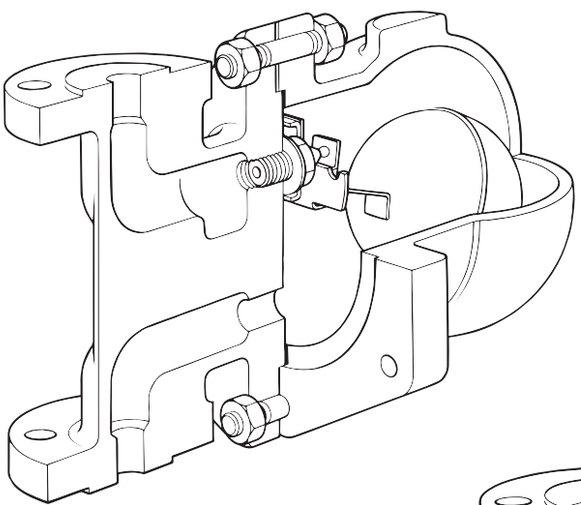
* **Note:** Items 2 and 12 are not available as spares.

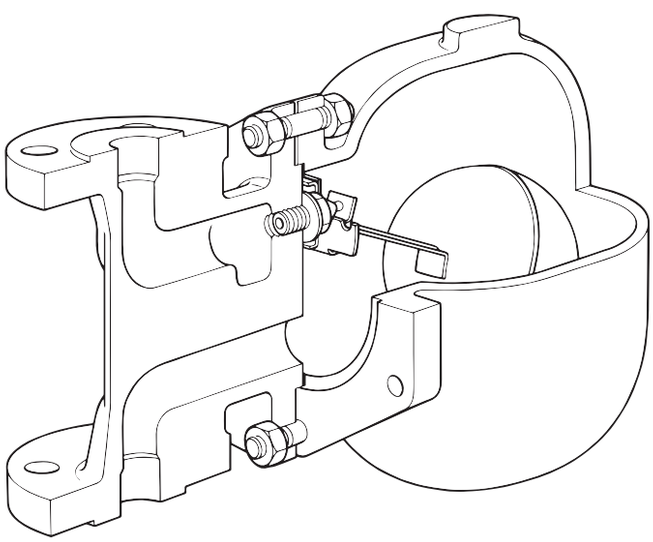
TI-P149-08
CMGT Issue 8

AE44 and AE44S
Automatic Air and Gas Vents for Liquid Systems

Description

The AE44 and AE44S are float type automatic air and gas vents for liquid systems.The body and cover are of steel and the valve cone is available in synthetic rubber designated AE44 or in stainless steel designated AE44S. Body and cover castings are produced by a TÜV approved foundry.





Available types

AE44	Steel body and cover. Valve cone in synthetic rubber.
AE44S	Steel body and cover. Valve cone in stainless steel.

Certification

This product is available with a Manufacturer's Typical Test Report for the body and cap as standard and certification to EN 10204 3.1 if specified at time of ordering.

Sizes and pipe connections

AE44 DN15 and DN20, AE44S DN15, DN20 and DN25.
Standard flanges are EN 1092 PN40 with DIN face-to-face dimensions. On request ASME 150, ASME 300 and JIS/KS 20 flanges with drilled and tapped bolt holes with DIN face-to-face dimensions can be provided. The ½" tapping for the balance pipe will normally be screwed NPT for ASME and JIS/KS flanges and BSP for other flanges unless specified otherwise.

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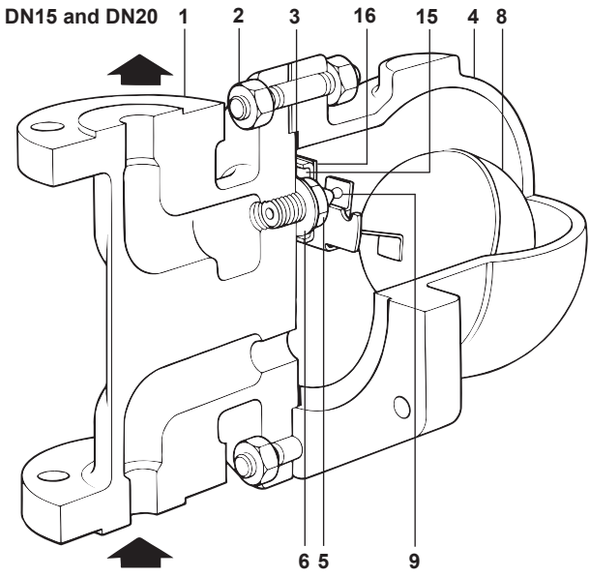
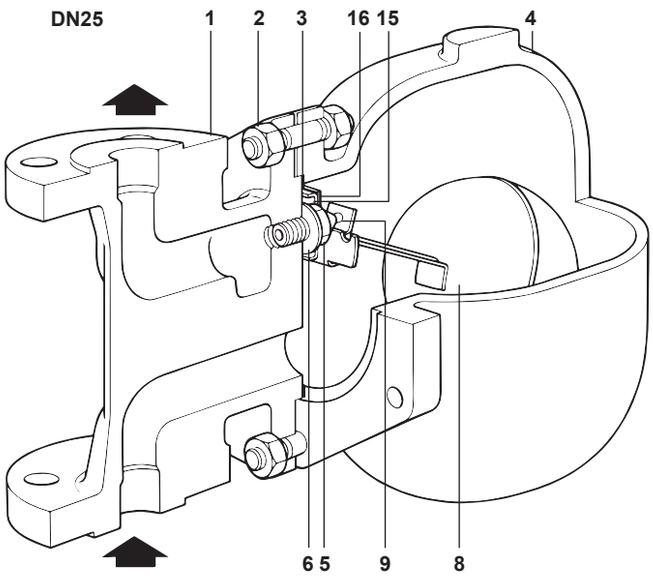


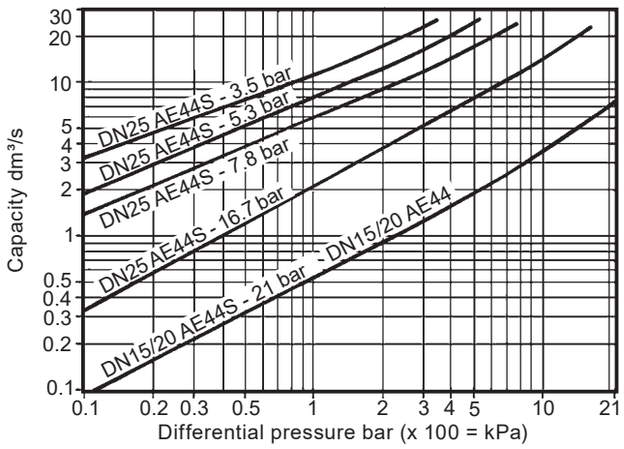


Materials

No.	Part		Material	
1	Body		Carbon steel	ASTM A216 WCB/BS EN 10213 GP240GH +N
2	Cover studs		Chrome moly steel	DIN 17240 21Cr MoV57
	Cover nuts		Chrome moly steel	EN 10269 25 Cr Mo 4
3	Cover gasket		Reinforced exfoliated graphite	
4	Cover		Carbon steel	ASTM A216 WCB/BS EN 10213 GP240GH +N
5	Valve seat		Stainless steel	BS 970 431 S29
6	Valve seat gasket		Stainless steel	BS 1449 304 S11
7	Pivot frame assy.set screws (not shown)		Stainless steel	BS 4183 18/8
8	Ball float and lever		Stainless steel	BS 1449 304 S16
9	Valve cone	AE44	Viton	
		AE44S	Stainless steel	AISI 440B
15	Support frame		Stainless steel	BS 1449 304 S16
16	Pivot frame		Stainless steel	BS 1449 304 S16
17	Pivot (not shown)		Stainless steel	

Note: The valve cone AE44S is permanently attached to the ball float and lever.

Capacities



Hot water capacity ———

Free air discharge capacity
If the temperature of the air differs from 15 °C, the discharge capacity from the graph can be corrected by multiplying it by the following equation:

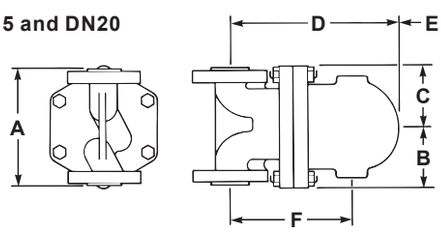
$$\frac{289}{273 + T \text{ (T is the actual temperature)}}$$

It may be assumed that the temperature of the air is the same as the temperature of the water.

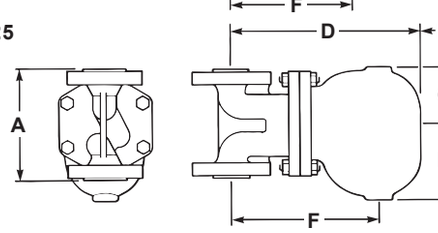
Dimensions/weights (approximate) in mm and kg

Size	A	B	C	D	E	F	Weight
DN15	150	80	80	215	120	155	10.8
DN20	150	80	80	225	120	165	10.8
DN25	160	115	85	282	170	215	15.0

DN15 and DN20



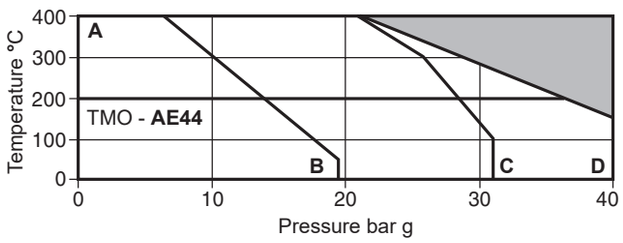
DN25



Flange bolt hole tappings

Size	ASME 150	ASME 300	JIS/KS 20
DN15	½" - 13 UNC - 2B	½" - 13 UNC - 2B	M12
DN20	½" - 13 UNC - 2B	⅝" - 11 UNC - 2B	M12
DN25	⅝" - 11 UNC - 2B	⅝" - 11 UNC - 2B	M16

Pressure/temperature limits



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

A - B ASME 150.

A - C JIS/KS 20

A - D PN40, ASME 300

Body design conditions			PN40
PMA	Maximum allowable pressure		40 bar g
TMA	Maximum allowable temperature		400 °C
TMO	Maximum operating temperature	AE44	200 °C
		AE44S	400 °C
Designed for a maximum cold hydraulic test pressure of:		ASME 150	30 bar g
		JIS/KS 20	49 bar g
		PN40/ASME 300	60 bar g

Note: For lower operating temperatures consult Spirax Sarco.

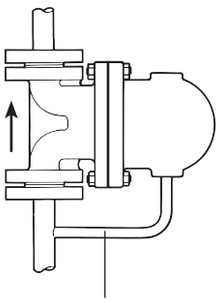
ΔPMX - Maximum differential pressures

AE44	DN15	21 bar	**AE44S-3.5**	DN25	3.5 bar
AE44S-21	DN15	21 bar	**AE44S-5.3**	DN25	5.3 bar
AE44	DN20	21 bar	**AE44S-7.8**	DN25	7.8 bar
AE44S-21	DN20	21 bar	**AE44S-16.7**	DN25	16.7 bar

The automatic air and gas vent in its complete operational form must not be subjected to a pressure greater than 48 bar g otherwise damage to the mechanism may result.

Pipeline ancillaries
Air vents and air eliminators
Safety information, installation and maintenance

Installation note:
The automatic air and gas vent must be fitted into a vertical pipeline above the point being vented with the direction of flow upward as indicated on the body so that the float mechanism is free to rise and fall in a vertical plane. The arrow on name-plate must point downwards. The low point of the cover is provided with a ½" tapping for a balance pipe which is essential for satisfactory operation. The balance pipe must be connected between the inlet pipe and the tapping provided on the cover as shown in the sketch.
As with all automatic air vents, dribbling may occur if the valve becomes fouled with dirt. For this reason it is recommended that a drip pipe is fitted to the outlet discharging to a safe place.



Maintenance
Servicing: With suitable isolation, repairs can be carried out with the vent in line. Undo cover studs and nuts and lift off cover. When reassembling make sure that all joint faces are clean. Always use a new gasket. Tighten cover studs and nuts uniformly. Open up isolating valve.
Note: on reassembly make sure that the dowel is located into the body.

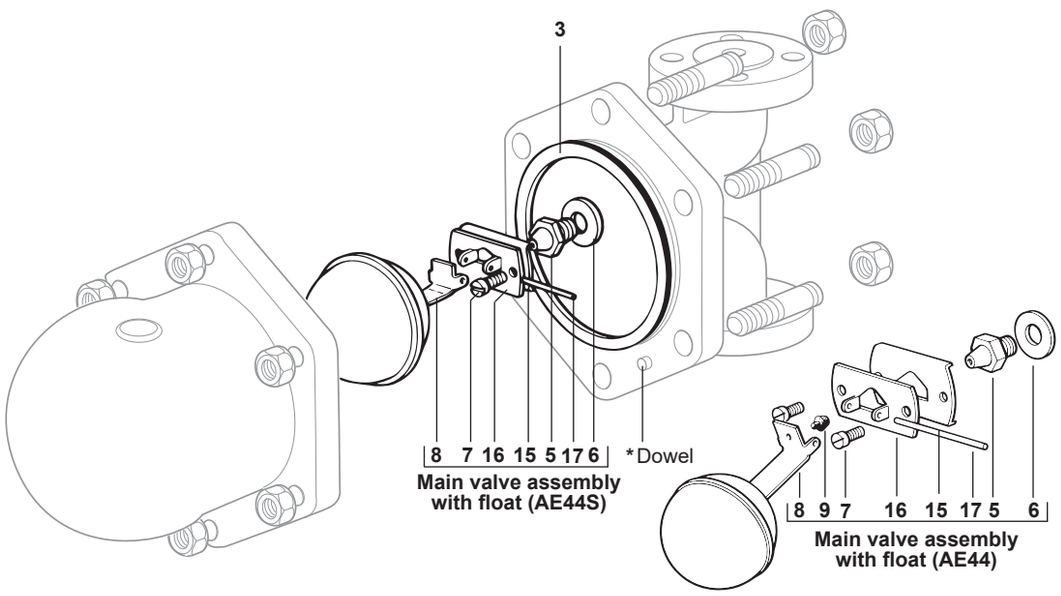
How to order
Example: 1 off Spirax Sarco DN20 AE44 automatic air and gas vent with steel body and Viton valve head flanged to EN 1092 PN40.

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

Available spares

Soft valve cone AE44	(packet of 3 of each)	**9**
Main valve assembly with float	AE44	**5, 6, 7, 8, 9, 15, 16, 17**
	AE44S	**5, 6, 7, 8, 15, 16, 17**
Complete set of gaskets	(packet of 3 sets)	**3, 6**

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 automatic air and gas vent.
Example: 1 - Main valve assembly for a Spirax Sarco DN20 AE44 automatic air vent.



Recommended tightening torques

Item		or mm		Nm
2	17		M10 x 60	19 - 21
5	17		M12 x 8	50 - 55
7	Cheesehead		M5 x 20	2.5 - 2.8

TI-P017-02
CMGT Issue 10

AE36 and AE36A Automatic Air Eliminators/ Air Vents for Liquid Systems

Description

The AE36 range of automatic air eliminators/air vents is designed for use on hot and cold water installations. The body and cap are of austenitic stainless steel type 316L. It is available as a standard air vent designated AE36, with check valve the designation becomes AE36A.

Standards

This product fully complies with the requirements of the Pressure Equipment Directive (PED).

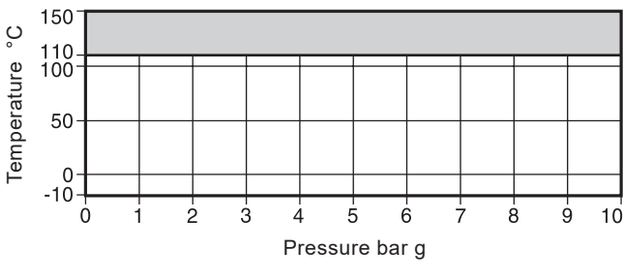
Certification

This product is avaliable with Manufacturers' Typical Test Report.
Note: All certification/inspection requiements must be stated at the time of order placement.

Sizes and pipe connections

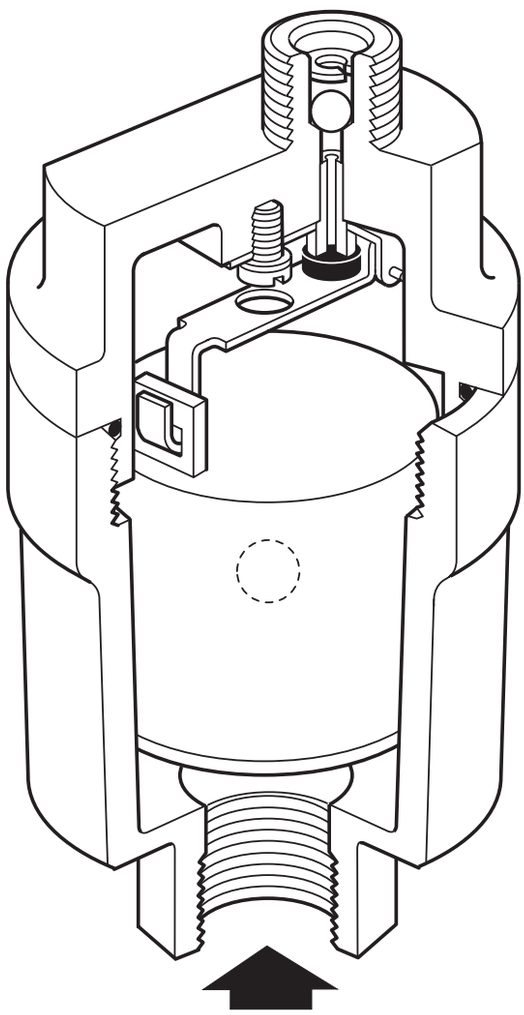
Inlet	½" female	BSP or NPT
Outlet	¼" male	BSP or NPT

Pressure/temperature limits



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

Body design conditions		PN10
PMA	Maximum allowable pressure	10 bar g @ 150 °C
TMA	Maximum allowable temperature	150 °C @ 10 bar g
Minimum allowable temperature		-10 °C
PMO	Maximum operating pressure	10 bar g @ 110 °C
TMO	Maximum operating temperature	110 °C @ 10 bar g
Minimum operating temperature		-10 °C
ΔPMX	Maximum differential pressure	8 bar g
Designed for a maximum cold hydraulic test pressure of:		15 bar g
Minimum specific gravity of liquid		0.926



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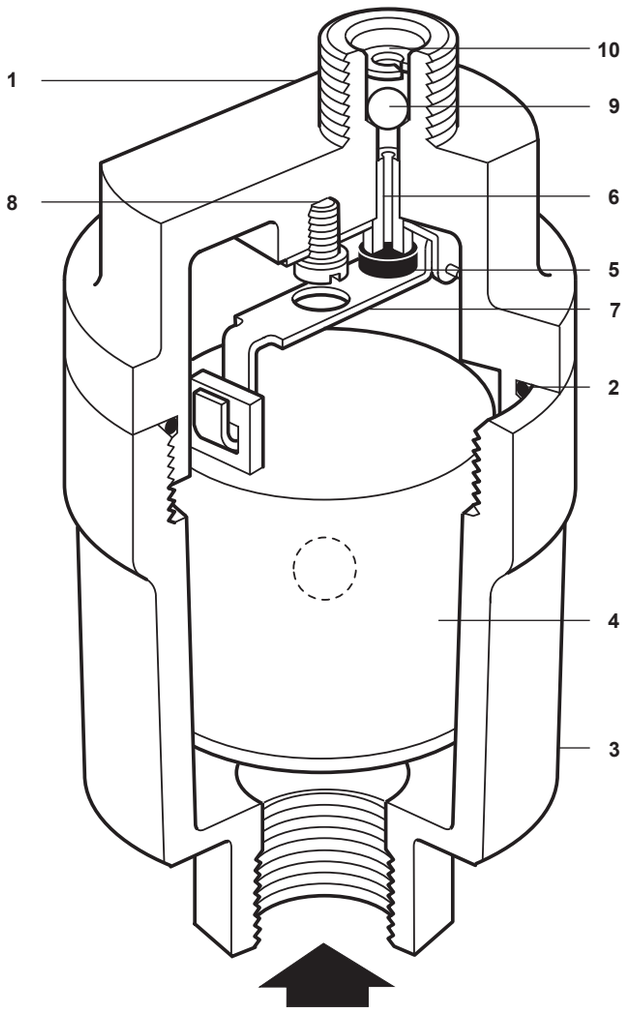
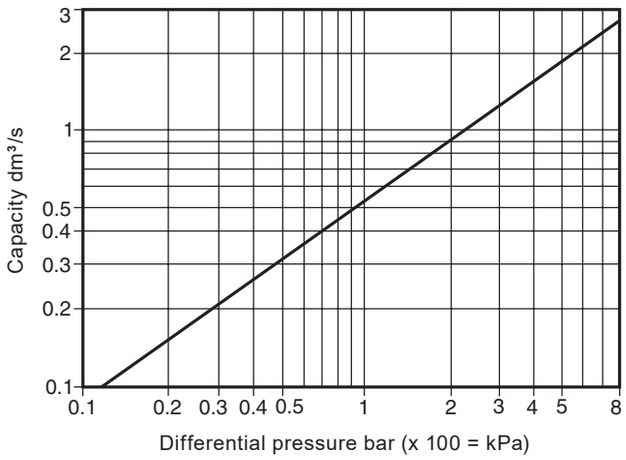
Materials



No.	Description	Material	
1	Cap	Austenitic stainless steel type 316L	ASTM A351 CF3M
2	Cap 'O' ring	Green Viton 75	
3	Body	Austenitic stainless steel type 316L	ASTM A351 CF3M
4	Float	Acetal co hostaform/stainless steel	
5	Valve head	EPDM	
6	Valve seat	Stainless steel	BS 970 431 S29
7	Bracket/lever assembly	Stainless steel	BS 1449 304 S11
8	Screw	Stainless steel	BS 4183 18/8
9	Check valve ball (AE36A only)	Stainless steel	AISI 440 B
10	Circlip	Stainless steel	BS 970 302 S25

Free discharge capacity

For air at 16 °C



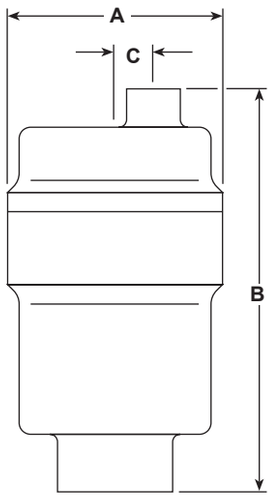
If the temperature of the air differs from 16 °C, the discharge capacity from the graph can be corrected by miltiplying it by the following equation:

$$\frac{289}{273 + T \text{ (T is the actual temperature in °C)}}$$

It may be assumed that the temperature of the air is equal to the temperature of the water.

Dimensions/weight (approximate) in mm and kg

Version	A	B	C	Weight
AE36	56	105	10	0.7
AE36A	56	105	10	0.7



Safety information, installation and maintenance

For full details see the Installation and Maintenance Instructions (IM-P017-03) supplied with the product.

Installation note:

The automatic air eliminator/air vent should be installed vertically with the inlet at the bottom. We recommend piping the discharge from the air eliminator/air vent to a suitable drain point.

How to order

Example: 1 off Spirax Sarco ½" AE36A automatic air eliminator/air vent with check valve having screwed BSP connections.

Pipeline ancillaries
Air vents and air eliminators

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

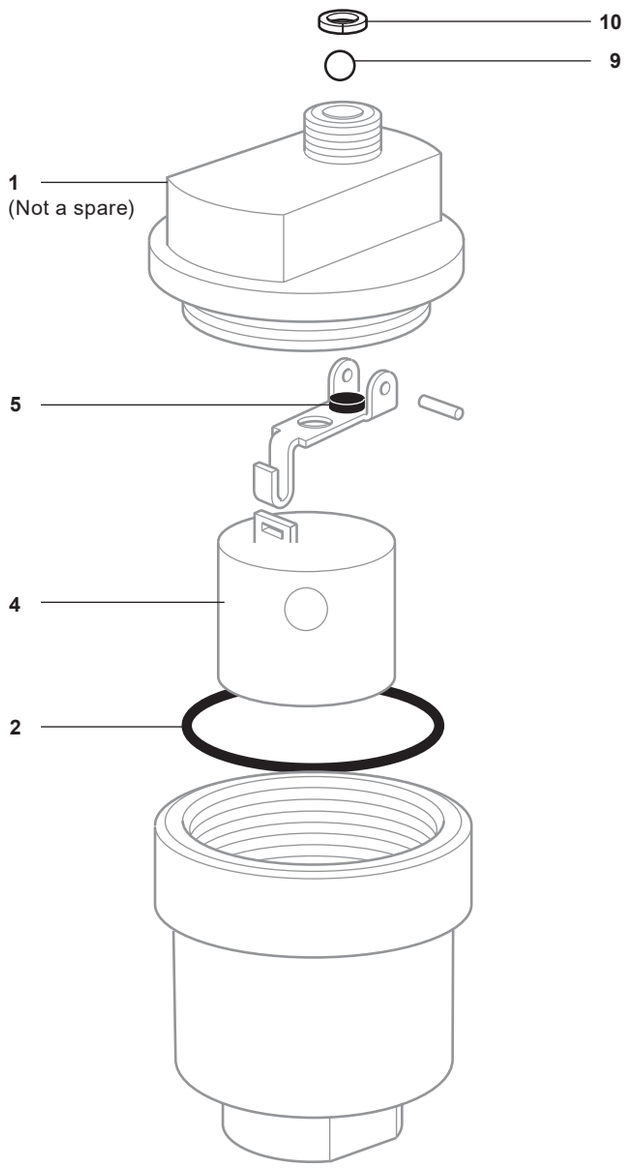
Available spares

Maintenance kit comprising: Valve cone, float, cap 'O' ring, check valve ball and check valve circlip	2, 4, 5, 9, 10

Important note
If you have earlier versions of the AE36 designated AE36CV which operate over the range 3 - 8 bar then the spares set for the AE36A can not be used. The earlier spares set should be used.

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 automatic air eliminator/air vent.

Example: 1 - Maintenance kit for a Spirax Sarco ½" AE36A automatic air eliminator/air vent with check valve.

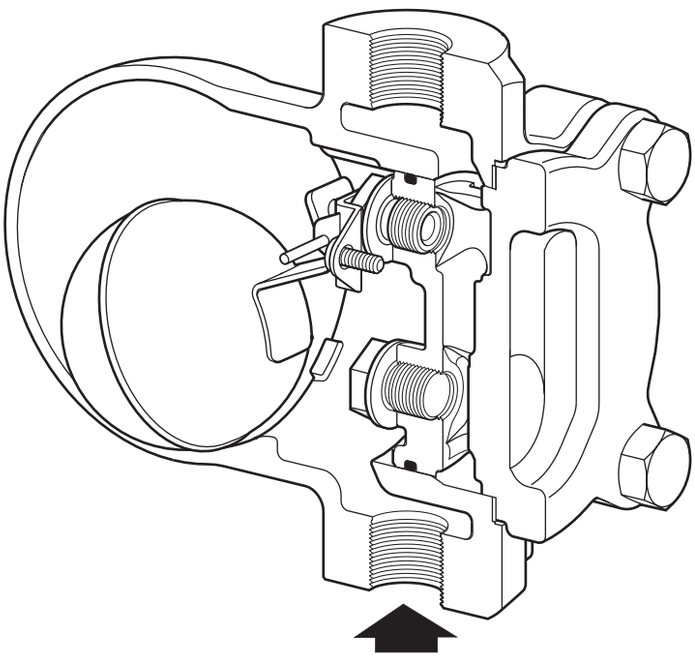


Recommended tightening torques

Item	or mm	N m
1	30	10 - 12
8	Cheesehead M4 x 6	2.5 - 2.8

TI-P149-14
CMGT Issue 2

AES14, AES14S and AES14E Austenitic Stainless Steel Automatic Air Vents for Liquid Systems



Description

The AES14, AES14S and AES14E are austenitic stainless steel ball float type air vents for liquid systems. They are available with Viton, stainless steel and EPDM valve cones respectively. The connections are in the vertical plane for flow upwards.
Body and cover castings are produced by a TÜV approved supplier in accordance with AD-Merkblatt WO/TRD100.

Available types

AES14	fitted with a viton valve cone.
AES14S	fitted with a stainless steel valve cone.
AES14E	fitted with an EPDM valve cone.

Standards

These products fully comply with the requirements of the Pressure Equipment directive (PED) and carry the CE mark when so required.

Certification

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

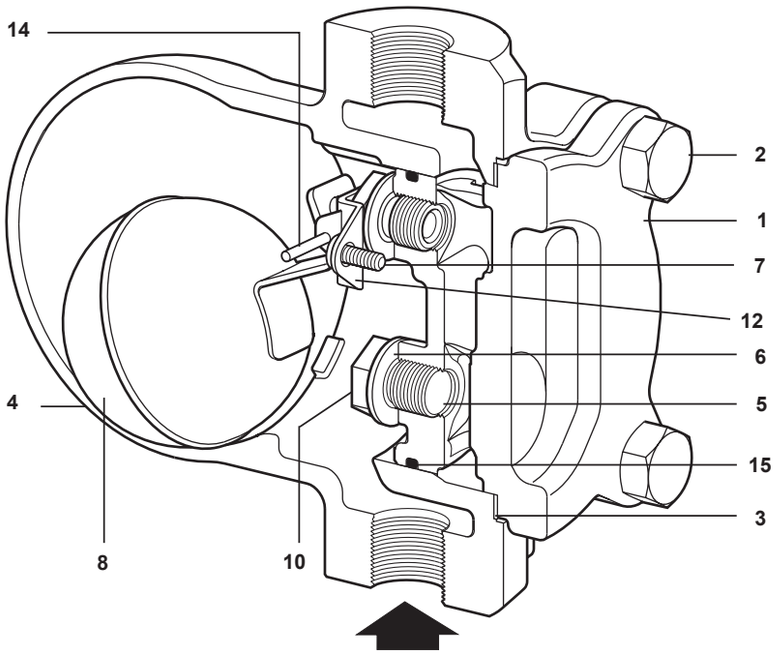
Sizes and pipe connections

½" and ¾"	Screwed BSP (BS 21 and DIN 2999) or NPT (ANSI B 1.20.1).
½" and ¾"	Socket weld ends to ANSI B 16.11, BS 3799 Class 3000 and DIN 3239.

Note: For alternative connections please consult Spirax Sarco.

Pipeline ancillaries
Air vents and air eliminators

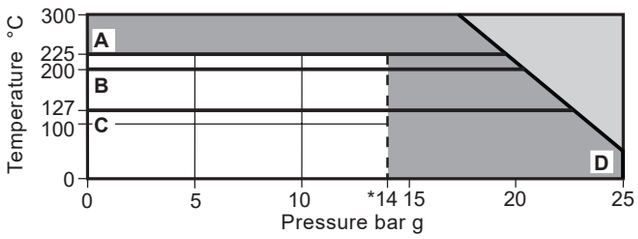
Materials



No.	Part		Material	
1	Body		Austenitic stainless steel (316)	EN 10213-4 (1.4408) ASTM A351 CF8M
2	Cover bolts		Stainless steel	BS EN 3506 A2-70
3	Cover gasket		Reinforced exfoliated graphite	
4	Cover		Austenitic stainless steel (316)	EN 10213-4 (1.4408) ASTM A351 CF8M
5	Main valve seat		Stainless steel	BS 970 431 S29
6	Main valve seat gasket		Stainless steel	
7	Main valve assembly screws		Stainless steel	
8	Ball float and lever		Stainless steel	BS 1449 304 S16
9 *	Valve cone	AES14	Viton	
		AES14S	Stainless steel	AISI 440B
		AES14E	EPDM	
10	Blanking plug		Stainless steel	
12	Pivot frame		Stainless steel	
14	Pivot pin		Stainless steel	
15	'O' ring		Grey viton complies with FDA CFR Title 21, Para 177, Section 2600	

* **Note:** Item 9 is clearly identified in spare parts.

Pressure/temperature limits (ISO 6552)



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

The Viton and EPDM soft seat versions should not be used in this region or beyond their maximum operating temperature as damage to the internals may occur.

*PMO Maximum operating pressure 14 bar g.

A - D Flanged ASME (ANSI) 300.

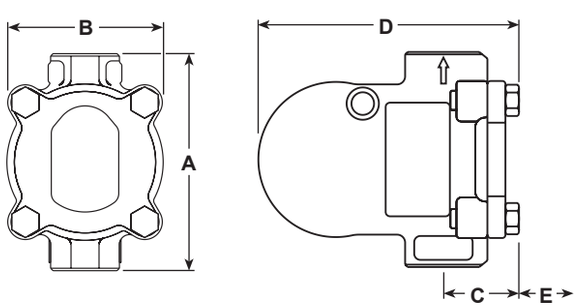
B - D Flanged EN 1092 PN40.

C - D Flanged ASME (ANSI) 150.

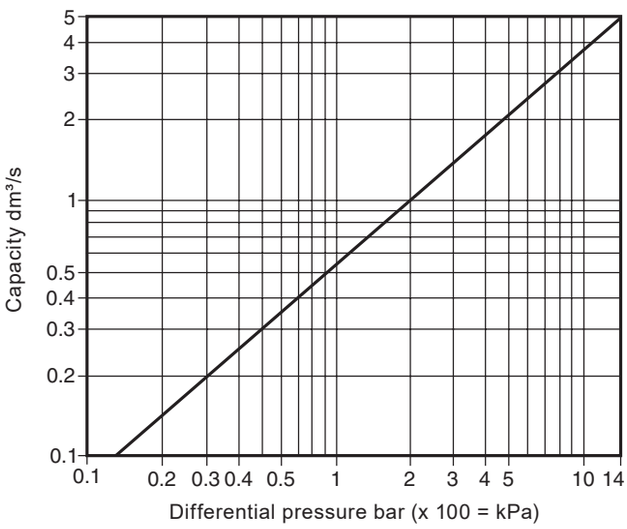
Body design conditions			PN25
PMA	Maximum allowable pressure		25 bar g
TMA	Maximum allowable temperature		300 °C
PMO	Maximum operating pressure		14 bar g
TMO	Maximum operating temperature	AES14	200 °C
		AES14S	225 °C
		AES14E	127 °C
Minimum operating temperature **Note:** For lower operating temperatures consult Spirax Sarco.			-20 °C
Designed for a maximum cold hydraulic test pressure of			37.5 bar g
Minimum specific gravity of liquid			0.75

Dimensions/weights (approximate) in mm and kg

Size	A	B	C	D	E Withdrawal distance	Weight
½"	135	97	48	162	135	3.73
¾"	135	97	48	162	135	3.73



Capacities



Pipeline ancillaries
Air vents and air eliminators

Safety information, installation and maintenance
For full details see the Installation and Maintenance Instructions (IM-P149-15) supplied with the product.

How to order
Example: 1 off Spirax Sarco ½" AES14 austenitic stainless steel automatic air vent having screwed BSP connections.

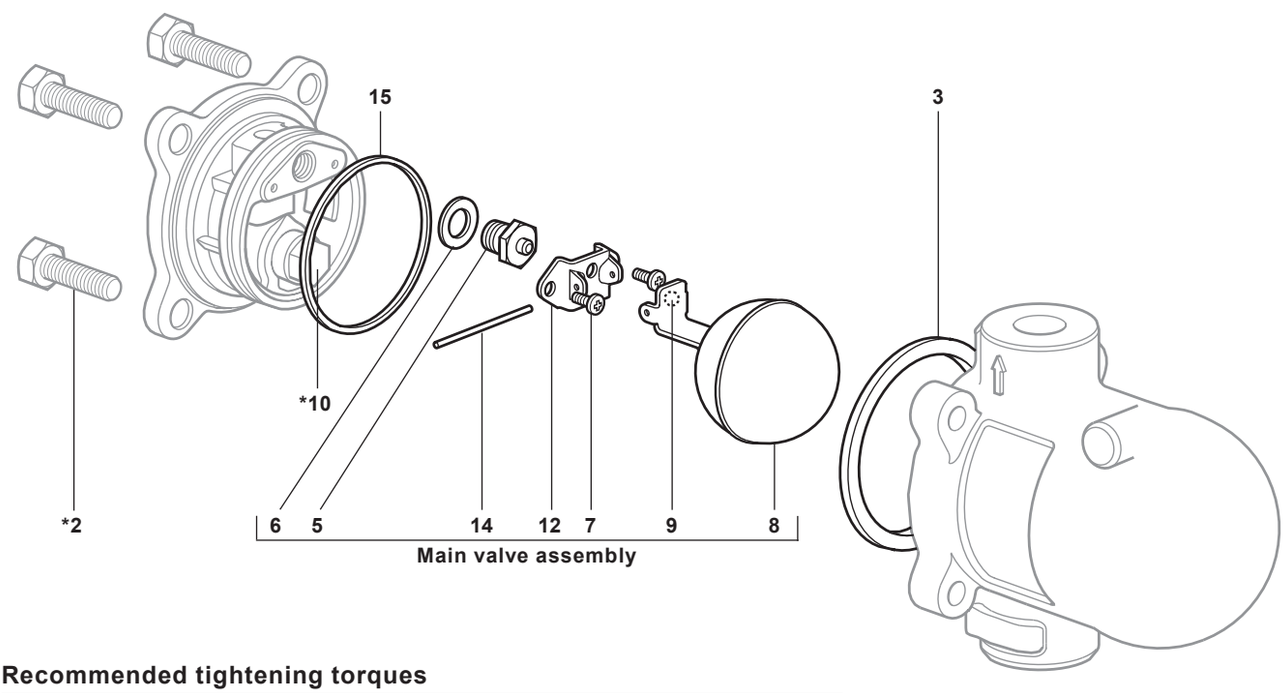
Spare parts
The spare parts available are shown in heavy outline.
Parts drawn in a grey line are not supplied as spares.

Available spares

Maintenance kit	AES14	**3, 5, 6, 7 (2 off) 8, 9, 12, 14, 15**
	AES14S	**3, 5, 6, 7 (2 off) 8, 9, 12, 14, 15**
	AES14E	**3, 5, 6, 7 (2 off) 8, 9, 12, 14, 15**
Seal kit	(packet of 3)	**3, 15, 9***

* **Note:** One of each EPDM and Viton valve cones are supplied to fit as required.

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 trap.
Example: 1 - Maintenance kit for a Spirax Sarco ½" AES14 austenitic stainless steel automatic air vent.



Recommended tightening torques

Item	Part	or mm		N m
2 *	Cover bolts		M10 x 30	20 - 25
5	Main valve seat	17 A/F		50 - 55
7	Main valve assembly screws	Pozidrive	M4 x 6	2.5 - 3.0
10 *	Blanking plug	17 A/F		50 - 55

* **Note:** Items 2 and 10 are not available as spares.

TI-P017-10
CMGT Issue 6

AE50S
Automatic Air and Gas Vent for Liquid Systems

Description
The AE50S automatic air and gas vent is designed for use on liquid systems. It has a welded construction and the body is manufactured in 304L austenitic stainless steel.

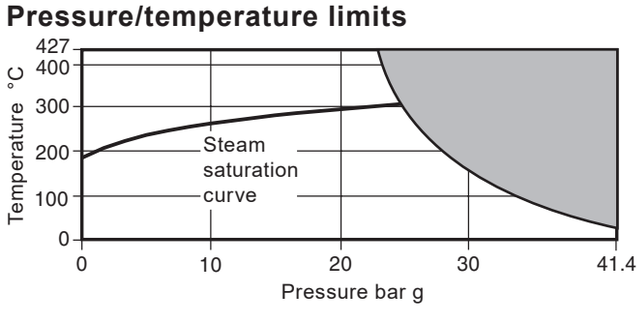
Standards
This product fully complies with the requirements of the Pressure Equipment Directive (PED) and carries the CE mark when so required.

Certification
The product is available with material certification EN 10204 3.1 for bowl, cover and inlet connection as standard.

Sizes and pipe connections

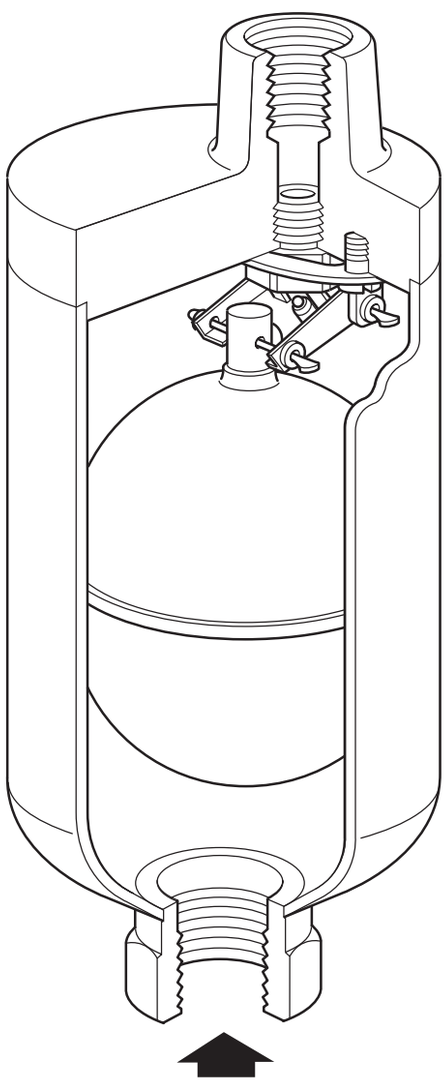
Inlet	¾" female	BSP or NPT
Outlet	½" female	BSP or NPT

Pressure/temperature limits



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

Body design conditions		ANSI 300
PMA	Maximum allowable pressure	41.4 bar g @ 30 °C
TMA	Maximum allowable temperature	427 °C
Minimum allowable temperature		-254 °C
PMO	Maximum operating pressure	41.4 bar g @ 30 °C
TMO	Maximum operating temperature	427 °C @ 23.6 bar g
Minimum operating temperature		-60 °C
ΔPMX	Maximum differential pressure	30 bar g
Designed for a maximum cold hydraulic test pressure of 63 bar g		
Minimum specific gravity of liquid		0.65



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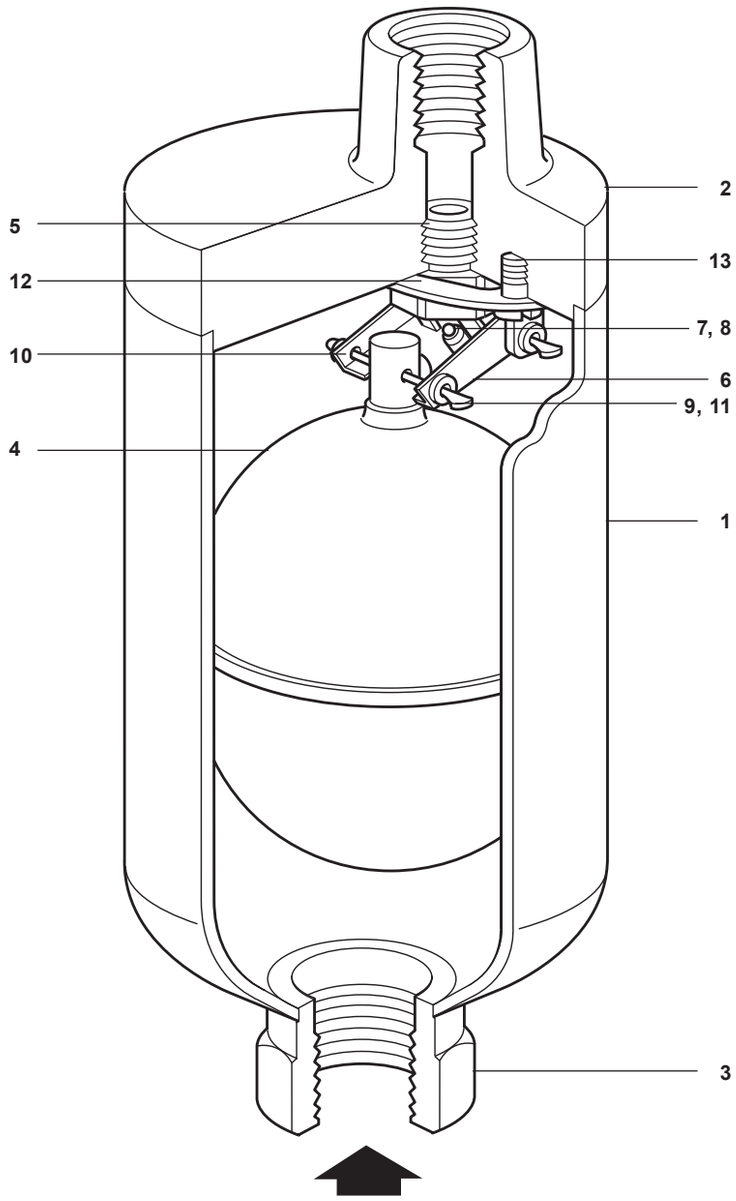
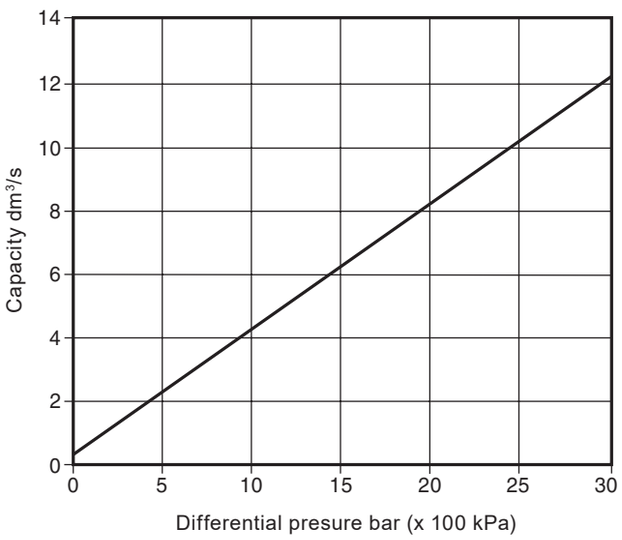
Materials



No.	Part	Material	
1	Bowl	Austenitic stainless steel	ASTM A240 304L
2	Cover	Austenitic stainless steel	ASTM A182 304L
3	Inlet connection	Austenitic stainless steel	AISI 304
4	Float	Austenitic stainless steel	AISI 316L
5	Valve seat	Austenitic stainless steel	ASTM A276 316
6	Lever	Austenitic stainless steel	AISI 304 2B
7	Valve cone	Stainless steel	X30 Cr 13
8	Washer	Austenitic stainless steel	AISI 301
9	Washer	Austenitic stainless steel	AISI 304
10	'E' cap	Austenitic stainless steel	AISI 316
11	Hinge pin	Austenitic stainless steel	AISI 304
12	Support	Austenitic stainless steel	AISI 304 2B
13	Screw	Austenitic stainless steel	B5 6105 CI A2.70

Free air discharge capacity

For air at 15 °C



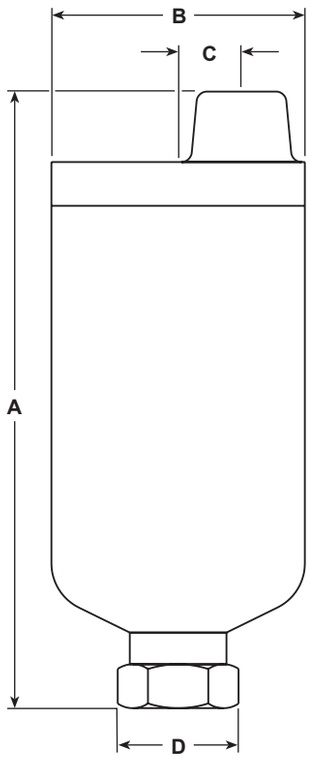
If the temperature of the air differs from 15 °C, the discharge capacity from the graph can be corrected by multiplying it by the following equation:

$$\frac{289}{273 + T \text{ (T is the actual temperature in °C)}}$$

It may be assumed that the temperature of the air is equal to the temperature of the water.

Dimensions/weight (approximate) in mm and kg

A	B	C	D	Weight
175	79	18.5	32 A/F	1



How to order

Example: 1 off Spirax Sarco ¾" AE50S automatic air and gas vent manufactured in austenitic stainless steel having screwed BSP connections.

Safety information, installation and maintenance

For full details see the Installation and Maintenance Instructions (IM-P017-11) supplied with the product.

Installation note:

The AE50S should be installed vertically with the inlet at the bottom. We recommend piping the discharge to a safe visible point or drain via an air break.

Installation in superheated water:

For superheated water applications we recommend that 1 m to 2 m of ¾" vertical pipeline be fitted prior to the inlet of the vent. On superheated water systems the outlet pipework must be sized to accomodate any flash steam created during discharge. Direct the outlet pipework to a safe point of discharge where there is no risk of injury to personnel or damage to property.

Spare parts

There are no spare parts available for this sealed, maintenance free product.

10 Pipeline ancillaries
Air vents and air eliminators