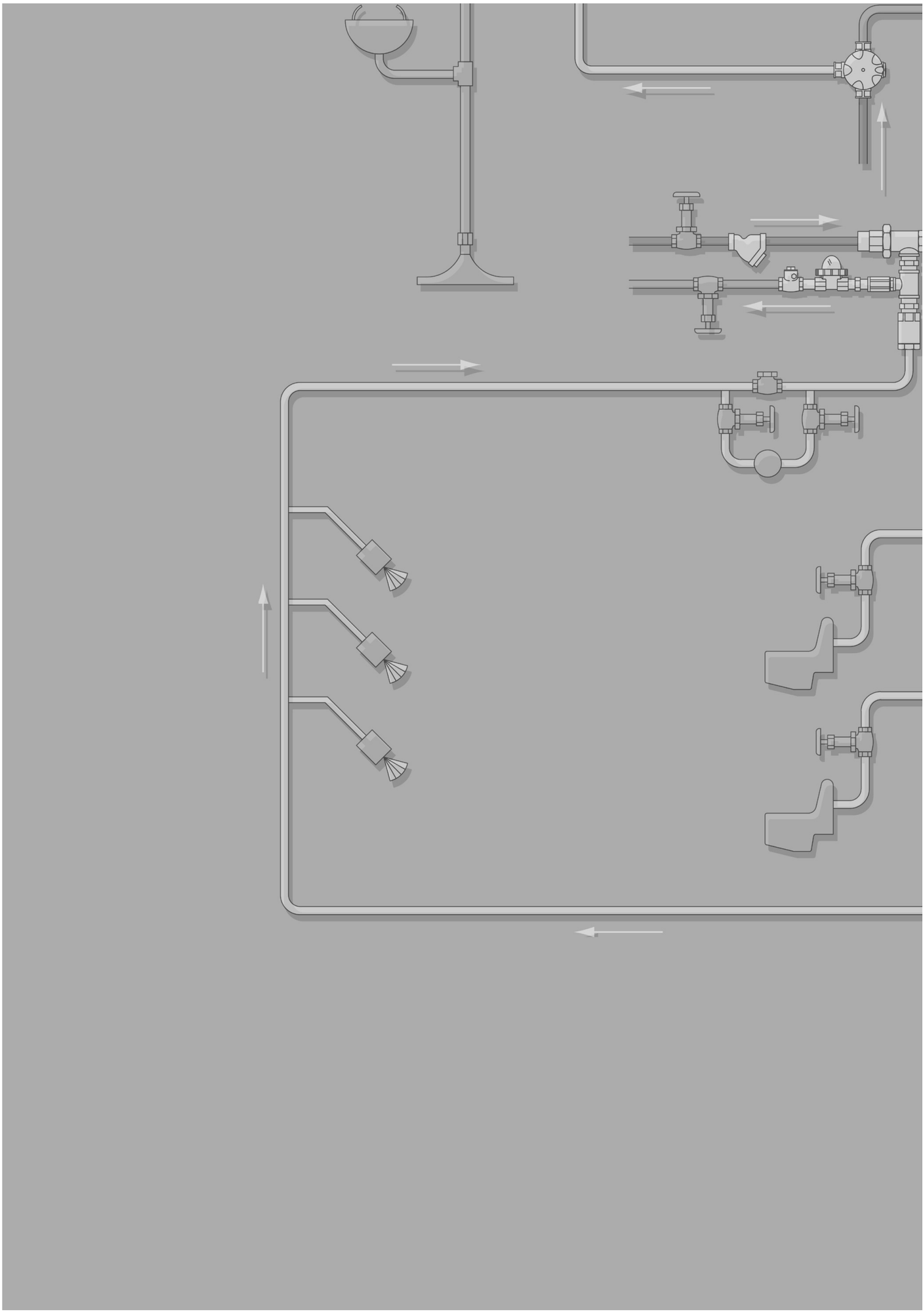
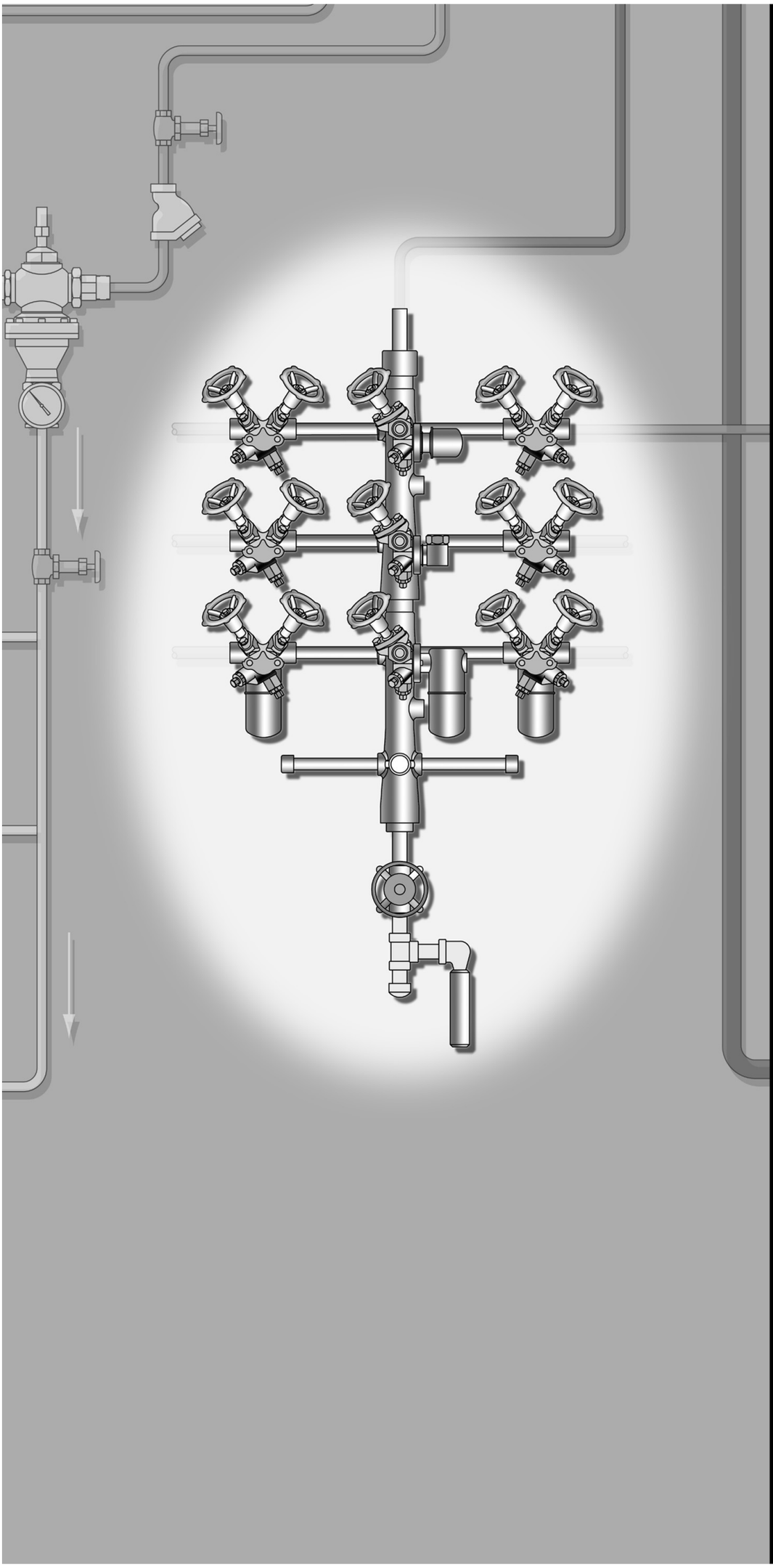




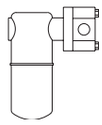
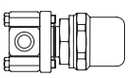
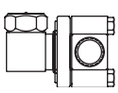
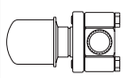
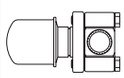
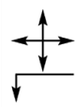
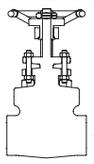
Steam Tracing Equipment

Armstrong

Armstrong®
Intelligent System Solutions™
STEAM • AIR • HOT WATER

Armstrong Steam Tracing Equipment ID Chart

Table STE-176-1. Steam Tracing Equipment ID Chart

Illustration	Type	Flow Direction	Connection Type	Max. Allow. Pressure barg	TMA °C	Body Material	Model	Max. Oper. Pressure barg	Number of Tracers	Connection Size	Located on Page
	**TCMS** Piston Valve		Socketweld	50	288	ASTM A216	**TCMS**	50	–	1/2"	STE-179
	**MSD and SMSD** Manifolds for Steam Distribution		Socketweld Buttweld Flanged †	32	400	ASTM A105 Forged Steel	**MSD-04** **MSD-08** **MSD-12** **SMSD-04** **SMSD-08** **SMSD-12**	32	**4** **8** **12** **4** **8** **12**	Inlet and Drain: 1 1/2" Tracers: 1/2" 3/4"	STE-182
	**CCA-160 with TVS-3150** Condensate Collection Assembly		Socketweld Buttweld Flanged †	32	400	ASTM A105 Forged Steel	**CCA-160-04** **CCA-160-08** **CCA-160-12**	32	**4** **8** **12**	Outlet and Drain: 1 1/2" Tracers: 1/2" 3/4"	STE-184
	**CCA-203 with TVS-4000** Condensate Collection Assembly		Socketweld Buttweld Flanged †	42	427	ASTM A105 Forged Steel	**CCA-203-04** **CCA-203-06** **CCA-203-08** **CCA-203-10** **CCA-203-12**	42	**4** **6** **8** **10** **12**	Outlet and Drain: 1 1/2" Tracers: 1/2" 3/4"	STE-186
	**TVS-4000** Trap Valve Station		Screwed Socketweld Flanged †	45	315	ASTM A351 Gr. CF8M	**TVS-4000**	45	–	1/2" 3/4"	STE-188
	**Series 2000** Inverted Bucket Steam Trap Capacities to **590** kg/h		Screwed Socketweld Flanged †	28 45	427 315	304L Stainless Steel	**2010** **2011** **2022**	14 28 45	– –	1/2" 3/4" 1"	STE-190
	**Model AB-3000** Bimetallic Steam Trap Capacities to **2 100** kg/h		Screwed Socketweld Flanged †	28	343	304L Stainless Steel	**AB-3000**	22	–	1/2" 3/4" 1"	STE-192
	**Model CD-3300** Controlled Disc Steam Trap Capacities to **360** kg/h		Screwed Socketweld Flanged †	50	400	Stainless Steel	**CD-3300**	31	–	1/2" 3/4" 1"	STE-193
	**Model WT-2000** Thermostatic Wafer Steam Trap Cold Water Start-up Capacities to **730** kg/h		Screwed Socketweld Flanged †	28	343	304L Stainless Steel	**WT-2000**	28	–	1/2" 3/4" 1"	STE-194
	**Model TT-2000** Thermostatic Bellows Steam Trap Capacities to **1 570** kg/h		Screwed Socketweld Flanged †	20	232	304L Stainless Steel	**TT-2000**	20	–	1/2" 3/4" 1"	STE-195
	**RP-2000** Double Sealed Valve		Screwed Socketweld Buttweld Flanged †	50	260	ASTM A105N Forged Steel	**RP-2003** **RP-2004** **RP-2005** **RP-2006** **RP-2007** **RP-2008**	50	– – – – – –	1/2" 3/4" 1" 1 1/4" 1 1/2" 2"	STE-180

† Operating pressure and temperature may be limited depending on the class of flange selected.
All models comply with the Pressure Equipment Directive PED 97/23/EC. For details, see specific product page or Armstrong PED Certificate.

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Armstrong Simplifies Your Tracing Line Systems

Designed to simplify and supply all the components (steam traps, manifolds, valves, etc.) necessary for your drip and tracer line applications, Armstrong's new Steam Distribution and Condensate Collection Manifolds bring all components together to reduce installation costs and provide a compact, easily accessible, centrally located assembly.

Armstrong's manifold series includes four different configurations, a Steam Distribution (MSD/SMSD), and a Condensate Collection Assembly (CCA/CCAF). As an option, the condensate manifolds can offer freeze protection.

In either case, you will save the expensive headaches of trying to fabricate in-house. What's more, your manifold will be backed by the famous Armstrong quality – and a standard three-year limited warranty.

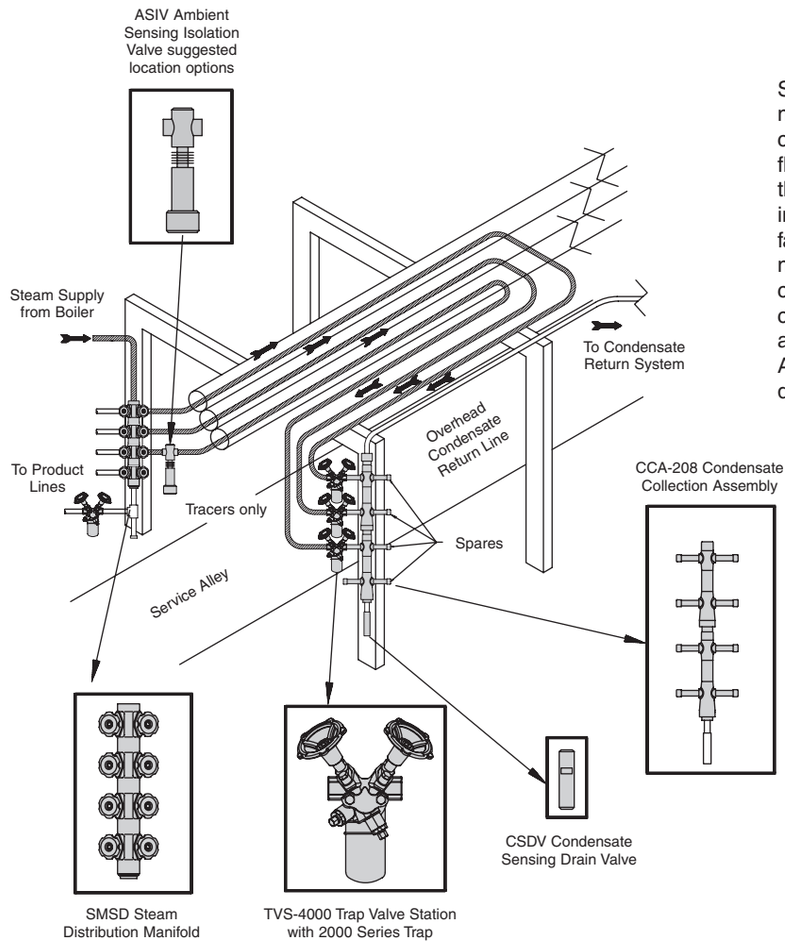
Steam Distribution Manifolds

As a Steam Distribution Assembly (MSD/SMSD), the manifold places all steam supply valves in one location. Standardizing components and centralizing their location simplifies installation, cutting costs from the beginning. You also save because routine maintenance is faster.

Condensate Collection Manifolds

To make industry's trapping and valving more efficient, Armstrong combines its stainless steel steam trap valve stations with manifolds into a package called the Condensate Collection Assembly (CCA). This prepackaged assembly offers many great benefits – cost savings in installation, design flexibility, and reduced purchasing time. CCAF would also include syphon tube freeze protection.

Whatever your condensate collection or steam distribution needs, Armstrong has the manifold for savings over the long term.



Shown are typical locations for Armstrong manifolds. The many manifolds in chemical/petrochemical plants consume valuable floor space and often block movement among the units. Operating costs are high, and installation requires expensive custom fabrication on site. Clearly, a prefabricated manifold permitting standardization of components offers substantial savings over conventional units. Shaded products are available from Armstrong. Call or consult your Armstrong Representative if additional product details are required.

The Proof Is in the Piston

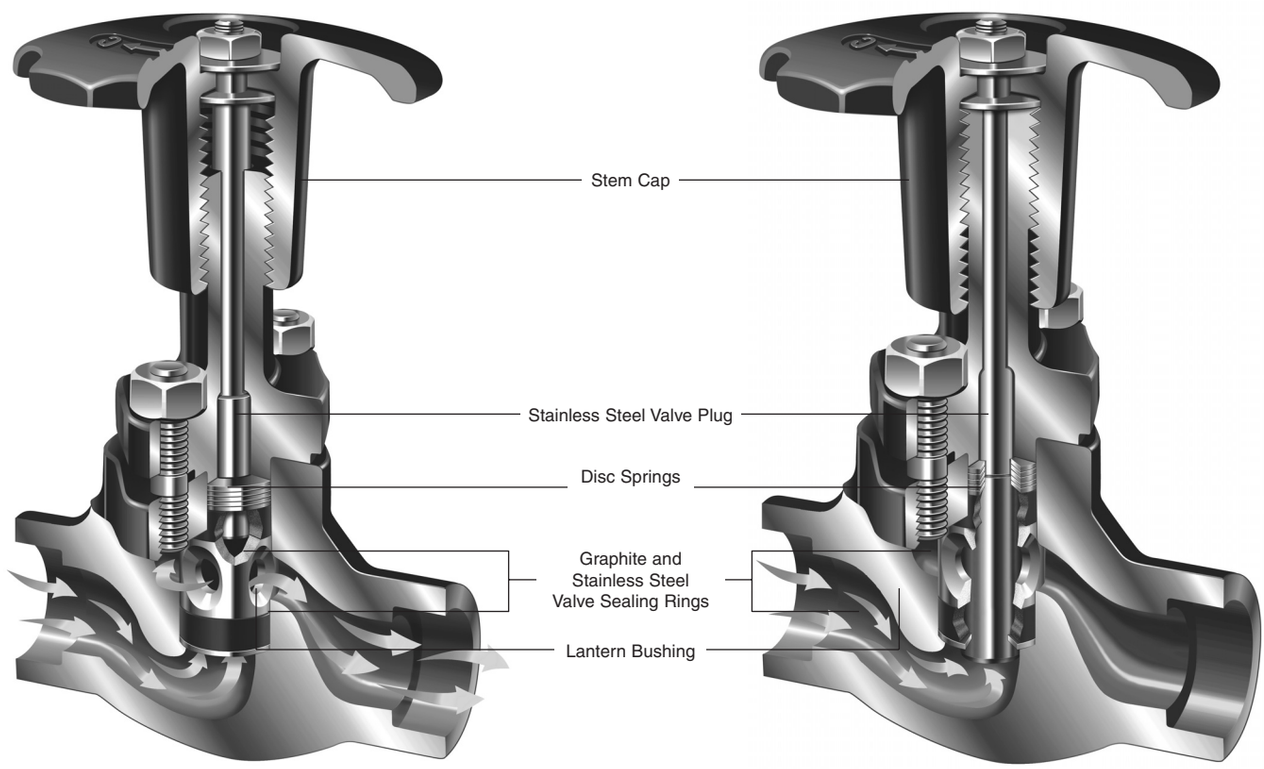
Many of Armstrong's manifolds utilize the piston valve because of its years of excellent performance in steam systems all over the world. The proof of Armstrong's long service life for manifolds…is in the piston.

All types of valves – plug valves, gate valves, piston valves and even ball valves – have been summoned for duty in steam service. Due to its excellent sealing characteristics in steam service, and because it has no gland packing, the piston valve is frequently selected for steam systems.

People who have used it over the past 90 years can testify that leakage to atmosphere is extremely rare, even without any maintenance. The elastic contact between piston and valve sealing rings provides a perfect tightness, both in-line and to atmosphere.

Steam system valves, whatever their design, are used to isolate steam and condensate lines or when a faulty steam trap needs to be removed from the line. This means the valves stay in the open position for long periods and are nearly always in contact with the atmosphere. It is not surprising, therefore, that when the valves need to be closed, they can often prove difficult to operate. Our experience and the demands from end users for energy efficiency have led us to a sealing system designed especially for steam service.

The Piston Valve



Open Position **Closed Position**

- **Dual sealing action.** The piston valve is a seatless valve that includes two graphite and stainless steel valve sealing rings that seal the stem and function as a seat. This combination provides long-term protection against leaks to the atmosphere and downstream piping.
- **Self-cleaning action.** Stainless steel piston slides without rotating between the two valve sealing rings, preventing dirt from damaging the surfaces.
- **Sealing integrity.** Flexible disc springs automatically provide leak tightness by exerting pressure, which keeps the upper and lower valve sealing rings compressed at all times. Sealing tightness is ensured by the compression of the sealing rings against the piston and valve body. This combination of disc springs and dual valve seal rings protects against expansion and contraction due to heating and cooling. This ensures dependable operation, even after years of service.
- **Protected valve stem.** The valve stem and sealing surfaces are completely protected from dirt and corrosion by the stem cap, whether in an open or closed position.
- **In-line repairability.** All sealing valve components may be easily replaced in-line.
- **Long-term operation.** Piston valve design ensures actuation even after many years without operation.

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TCMS Piston Valve

Armstrong TCMS is a carbon steel piston valve that has been designed for and perfectly adapted to steam applications.

Features

- Rated ANSI Class 300, 41 barg @ 288°C
- Inline sealing
- External tightness
- Reduced bore
- Easy to operate and maintain
- Bonnet and internals are interchangeable with valves used on Armstrong manifolds and TVS-3150. Thus maintenance, purchase and stock management are easier and less costly.

Connections

- 1/2" SW

Operating conditions:

Maximum Design Pressure: 50 barg
Maximum Design Temperature: 400°C
Weight: 1,2 Kg

This model complies with the Article 3.3 of the PED (97/23/EC).

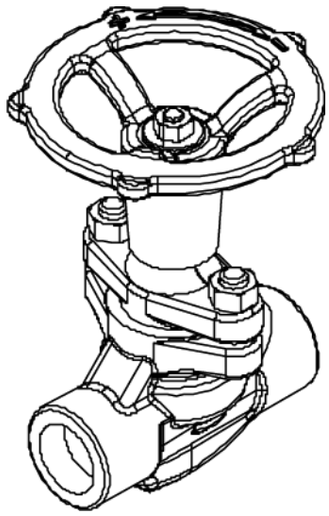
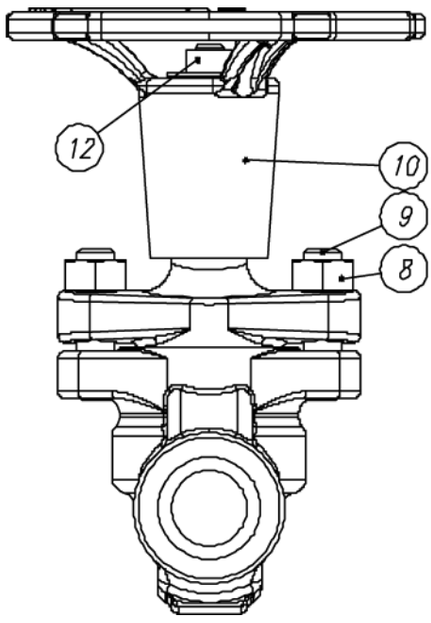
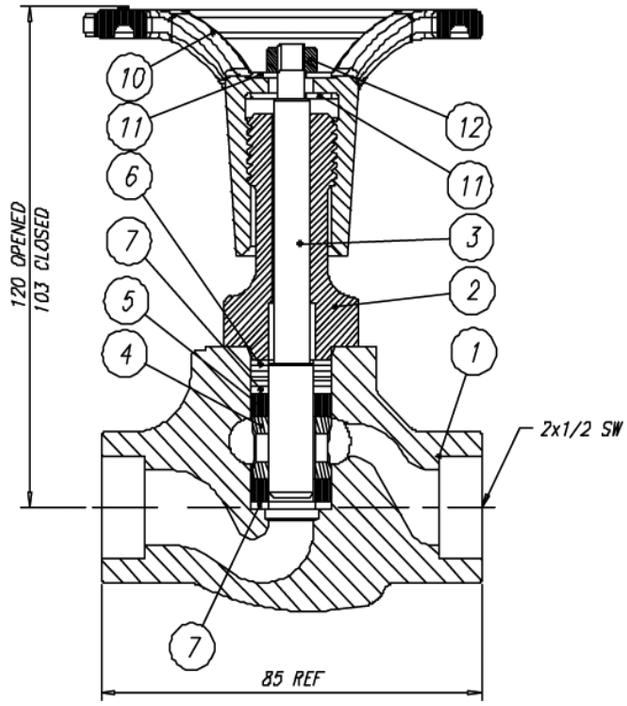


Table STE-179-1. Material Specification

Part	Description	Material
1	Body	ASTM-A216,WCB
2	Bonnet	ASTM-A105 N
3	Valve stem	Z6 CDF 18.02
4	Lantern bush	304 STN.STL
5	Valve ring	Reinforced graphite
6	Spring washer	17-4 STN.STL.
7	Washer	303 STN.STL.
8	Nuts	ASTM-A194,Gr.2H
9	Studs	ASTM-A193,Gr.B7
10	Handwheel	Ductile iron
11	Washer flat	304 STN.STL.
12	Nuts	304 STN.STL.





All dimensions and weights are approximate. Use certified print for exact dimensions. Design and materials are subject to change without notice.

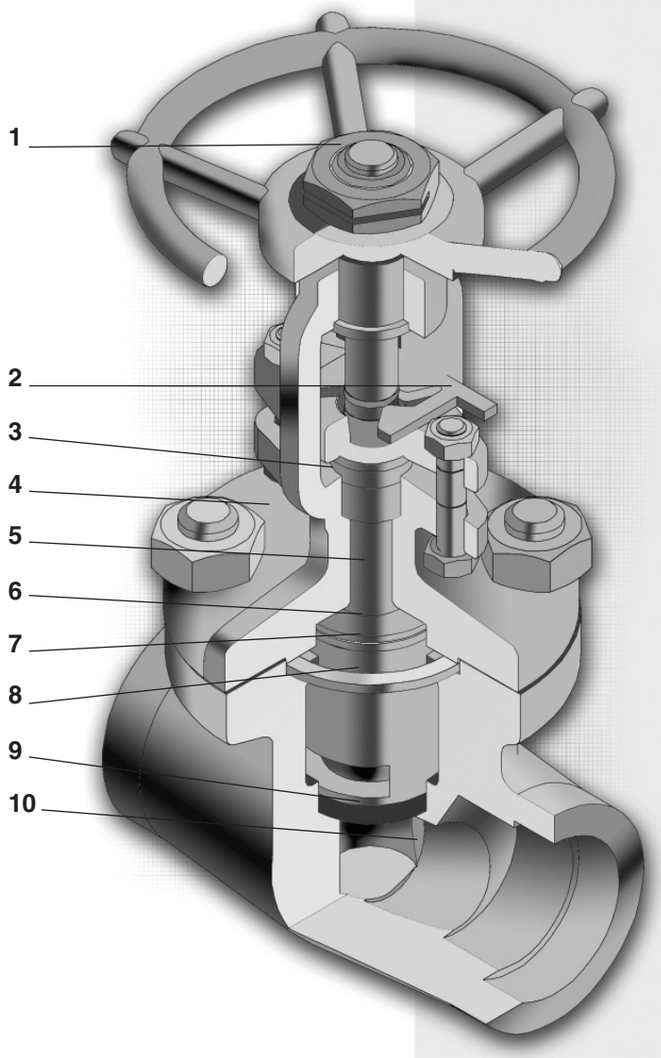
RP-2000 - Double sealing valve for industrial fluids applications

The RP-2000, a result of the collaboration between Armstrong, the world's leader in steam installation optimization, and Roforge, a French manufacturer of high quality industrial valves and fittings, meets all requirements in terms of long lasting life, safety, ease of maintenance and compliance with demanding environmental standards of today's process industries. The RP-2000 combines the best features of globe valves and traditional piston valves. An exceptional valve, its components were designed to guarantee long lasting life that surpasses API, ISO, BS and NFM standards.
Constructed with perfectly adapted materials, the RP-2000 is unparalleled in performance.

The RP-2000 is clearly the ideal product for sensitive applications such as networks for steam, condensate, superheated water or heating oil as well as gas or other fluids. Double tightness considerably limits emissions or leaks both in open and closed position.

Simplified Maintenance

Maintaining the RP-2000 is simplicity itself. For example, the packing can be extracted simply with standard tools without risk of damaging the body. Also, there is no need to lap the valve and the seat. Closure of the double sealing enables maintenance in operation.



Quality that speaks for itself

- 1 Self-braking handwheel nut
- 2 Open/Closed position indicator
- 3 Graphite packing box assembly and anti-extrusion rings.
- 4 All valves undergo hydraulic and pneumatic testing at 100%
- 5 Finish, machining of the piston stem and materials prevent seizing (one-piece external non-swiveling stem, 13% chromium sulfurfree steel to prevent external corrosion). Rolled stem with edge rolled threads
- 6 In open position: double outside sealing (metal/metal rear seat and flexible packing)
- 7 Pressurize Spring washers (thermal shock and expansion proofed)
- 8 Body/bonnet seal: 316L stainless steel/graphite spiral wound gasket
- 9 Integral stellited seat
- 10 In closed position: in-line double sealing (flexible lateral and metal/metal conical)

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RP-2000 Double Sealed Valve

ROFORGE Armstrong®

The RP-2000 is a forged steel double-sealed valve. It could be used on steam, water, compressed air, nitrogen, oils, thermal fluids, etc.

Features

- Closed position: double sealing in-line (soft side sealing; metal-to-metal conical sealing)
- Open position: double sealed to outside (back seat metal-to-metal; soft stuffing box)
- External rising non-rotating piston stem in 13% chrome without sulfur steel
- Integral stellited seat
- Graphite stuffing box and anti-extrusion rings are repackable on site
- Body and cap sealing: stainless steel 316L / graphite spiral gasket
- Pressurized spring washers resist thermal shocks and expansion
- "Open / Closed" position indicator

Options

- Electrical actuator
- Pneumatic single or double effect operator
- Contacts "end of stroke" switches

Connections

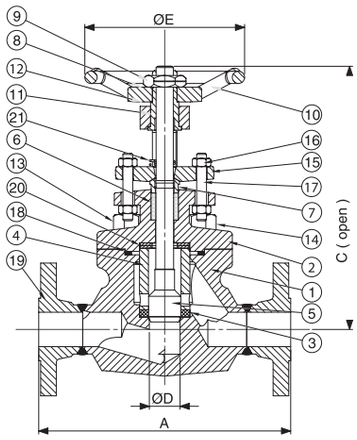
- Screwed NPT and BSPT
- Socketweld
- Buttweld
- Flanged PN10/16, PN25/40, ANSI 150# and ANSI 300#

Operating conditions:

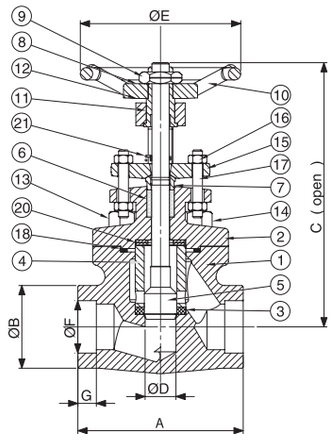
Maximum Design Pressure: 50 barg
Maximum Design Temperature: 400°C

Table STE-181-1. RP-2000 List of Materials

Part	Description	Material
1	Body	A105N
	Body seat	A105N + Stellite
2	Bonnet	A105N
3	Lateral seat	Graphite
4	Lantern	A182 F6
5	Piston stem	A182 F6
6	Packing ring	Graphite + anti-extrusion
7	Gland	A182 F6
8	Name plate	Stainless steel
9	Handwheel nut	Carbon Steel R60
10	Handwheel	Forged Carbon Steel
11	Thread bushing	A182 F6 + Sursulf
12	Friction washer	A182 F430 + Sursulf
13	Nuts	A194 2H
14	Studs	A193 B7
15	Gland flange	A105
16	Stuffing box nuts	A194 2H
17	Stud bolts	A193 B7
18	Gasket	Spiral 316L / Graphite
19	Flanges	A105N
20	Spring washers	Steel
21	Stem guide	Stainless Steel



RP-2000 Flanged



RP-2000 Screwed & Socketweld

Table STE-181-2. RP-2000 Double Sealed Valve (dimensions in mm)

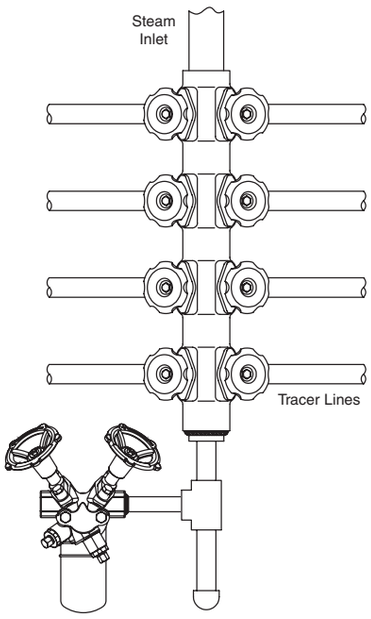
Size	Model	Stroke	A PN10/16	A PN25/40	A 150#	A 300#	A Scr.	B	C	D	E	F x G	Weight PN10/16, 25/40	Weight 150#	Weight 300#	Weight Sc & SW
1/2"	RP2003	13	130	130	108,0	152,5	82	32	151	14,5	85	22 x 10	3,3 kg	3,1 kg	3,4 kg	1,8 kg
3/4"	RP2004	13	150	150	117,5	178,0	82	38	151	14,5	85	27 x 13	3,7 kg	3,0 kg	4,5 kg	1,9 kg
1"	RP2005	17	160	160	127,0	203,2	102	48	183	18,0	115	34 x 13	5,8 kg	5,5 kg	6,7 kg	3,3 kg
1 1/4"	RP2006	22	180	180	–	–	134	67	233	24,0	130	43 x 15	8,2 kg	–	–	7,2 kg
1 1/2"	RP2007	22	200	200	165,0	228,5	134	67	233	24,0	130	49 x 15	10,8 kg	10,4 kg	11,9 kg	7,0 kg
2"	RP2008	25	230	230	203,2	266,5	160	78	273	35,0	175	61 x 16	15,6 kg	15,2 kg	17,8 kg	10,5 kg

Shade indicates products that are CE Marked according to the PED (97/23/EC). All the other sizes comply with the Article 3.3 of the same directive.

All dimensions and weights are approximate. Use certified print for exact dimensions. Design and materials are subject to change without notice.

MSD & SMSD Manifolds for Steam Distribution

As Steam Distribution Assemblies (MSD/SMSD), the manifolds place all steam supply valves in one location. Standardizing components and centralizing their location simplifies installation while providing cost savings. You also save because routine maintenance is faster. Insulation can also be provided…and can be a major savings in most installations.



Typical SMSD steam distribution application
(shown with optional nipples and TVS-4000 Trap Valve Station with 2000 Series Inverted Bucket Trap)

Cost Savings

- Reduced design specification costs
- Prefabrication vs. field assembly for easy installation
- Reduced shipping and field handling costs
- Lower long-term maintenance and operating costs
- **3-years guarantee**

Design Flexibility

- Dimensional consistency
- Space savings
- Insulation package available

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MSD & SMSD Manifolds for Steam Distribution

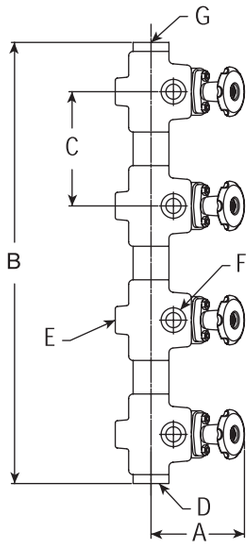


Table STE-183-2. MSD and SMSD List of Materials	
Name	**Material**
Manifold Body	ASTM A105 Forged Steel
Handwheel	Ductile Iron
Bonnet	ASTM A105 Forged Steel
Spring Washer	Stainless Steel
Bolts and Nuts	Bolts: ASTM A193 grade B7
	Nuts: ASTM A194 grade 2H
Piston & Stem	17% Chrome Stainless Steel
Valve Sealing Rings	Expanded Graphite & Stainless Steel
Bushing, Valve	Stainless Steel

Options

Top Inlet:

- Socketweld
- Flanged DIN or ANSI
- Gate valve 1 1/2" SW or Flanged
- Armstrong RP-2000 double sealed valve 1 1/2" SW or Flanged

Drain:

- 1/2" or 3/4" SW reducer
- TCMS piston valve
- TVS-4000 with 2011 steam trap (horizontal or vertical piping)

Insulation:

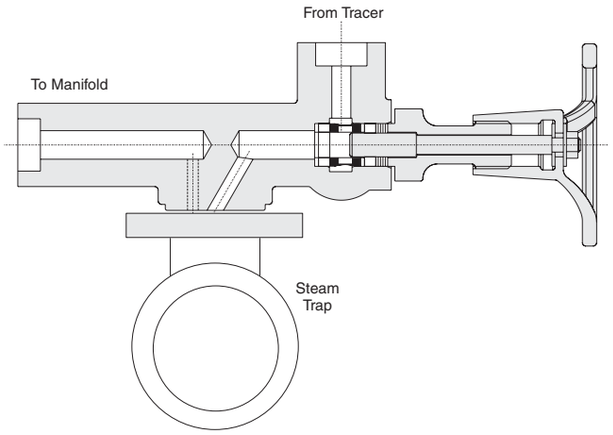
- Armstrong Insulation Jacket
- Modular or 1 piece versions
- Insulation jackets could be installed without removing the handwheels

Table STE-183-2. MSD and SMSD Steam Distribution Manifolds (dimensions in mm)						
Model	**MSD Series**			**SMSD Series**		
	MSD-04	**MSD-08**	**MSD-12**	**SMSD-04**	**SMSD-08**	**SMSD-12**
Number of tracers	4	8	12	4	8	12
"A" Open Position	118	118	118	118	118	118
"B" Manifold Height (SW)	272	596	920	240	480	720
"C" ℄ to ℄	162	162	162	120	120	120
"D" Drain Connection	1 1/2" SW			1 1/2" SW		
"E" Number of Holes for Mounting (1/2 - 13 UNC)	2	4	6	2	4	6
"G" Inlet	1 1/2" SW			1 1/2" SW		
"F" Outlet to tracer	1/2" and 3/4" – Socketweld and Screwed NPT			1/2" and 3/4" – Socketweld and Screwed NPT		
Weight in kg (SW)	10	21	30	9	18	27
Maximum Operating Pressure	32 bar @ 400°C					

All MSD and SMSD models are CE Marked according to the PED (97/23/EC). For TVS and traps, please check the specific page.

All dimensions and weights are approximate. Use certified print for exact dimensions. Design and materials are subject to change without notice.

CCA-160 Condensate Collection Assembly with TVS-3150



Armstrong combines its Trap Valve Stations (TVS) concept with MSD manifolds into a package called the CCA-160 Condensate Collection Assembly. This prepackaged assembly offers many great benefits – cost savings in assembly, design flexibility and reduced purchasing and design time. The CCA-160 with TVS-3150 and 2000 Series Inverted Bucket Traps is **guaranteed for 3 years.**

Cost Savings

This preassembled concept offers tremendous savings by reducing multiple component purchases that cause additional purchase order monitoring and shipping costs. Other savings include far less labor time required for field assembly.

This modular forged steel body design provides quick assembly/delivery, reducing overall project costs.

- Eliminates multiple component purchases
- Reduced design specification costs
- Prefabrication vs. field assembly for easy installation
- Reduced shipping and field handling costs
- Lower long-term maintenance and operating costs
- 3-years guarantee

TVS-3150 Concept

Armstrong Traps Valve Stations (TVS) concept gives compact alternative to traditional trap installations including 4 valves and a strainer. The universal connector allows easy installation and replacement of traps using any of the existing operating principles. Armstrong TVS-3150 includes:

- Inlet valve to isolate the trap
- Blowdown valve
- Test valve for visual trap checking
- Outlet valve is located on the manifold

Table STE-184-1. CCA-160 List of Materials

Name	Material
Manifold Body	ASTM A105 Forged Steel
Handwheel	Ductile Iron
Bonnet	ASTM A105 Forged Steel
Spring Washer	Stainless Steel
Bolts and Nuts	Bolts: ASTM A193 grade B7
	Nuts: ASTM A194 grade 2H
Piston & Stem	17% Chrome Stainless Steel
Valve Sealing Rings	Expanded Graphite & Stainless Steel
Bushing, Valve	Stainless Steel

System Design Flexibility

Armstrong can meet virtually any design parameter with your choice of socketweld or threaded connections. Inverted bucket, bimetallic, thermostatic bellow, thermostatic wafer or disc steam traps can be provided. If you require a specific piping arrangement, Armstrong can offer the flexibility to meet your specifications.

- All existing steam trap types could be used
- Dimensional consistency
- Space savings
- Insulation jacket available

Removable Insulation Jackets

A removable insulation jackets are available for all steam and condensate manifolds.

- Inexpensive
- Quick to install
- Removable for maintenance
- Reusable after maintenance
- Weatherproof
- Formed to cover all manifold elements
- Strong, durable cover
- Available to fit all manifold sizes

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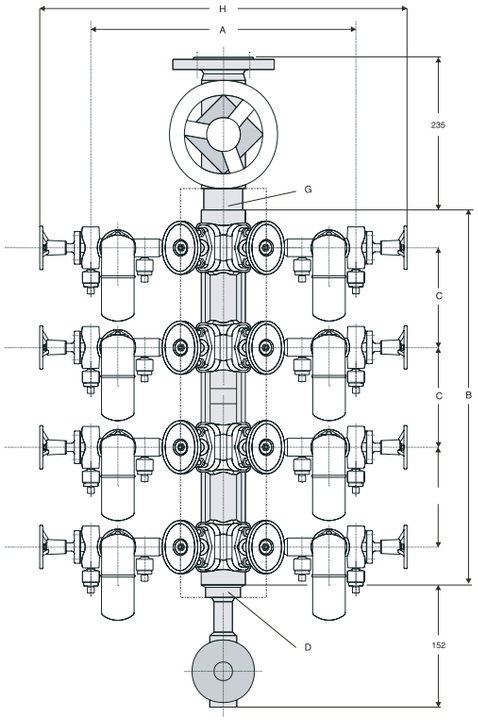
CCA-160 Condensate Collection Assembly with TVS-3150

CCA-160 with 12 x TVS-3150 stations (less Blowdown and Test Valves), CD-3300 Traps and Insulation Jacket



CCA-160 with 8 x TVS-3150 stations with Blowdown and Test Valves, 2010 Traps and Insulation Jacket

Options

Top Outlet:

- Socketweld
- Flanged DIN or ANSI
- Gate valve 1 1/2" SW or Flanged
- Armstrong RP-2000 double sealed valve 1 1/2" SW or Flanged

Drain:

- 1/2" or 3/4" SW reducer
- TCMS piston valve

Insulation:

- Armstrong Insulation Jacket
- Modular or 1 piece versions
- Insulation jackets could be installed without removing the handwheels

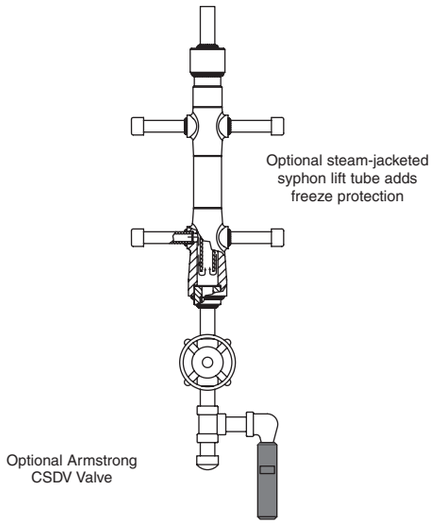
Table STE-185-1. CCA-160 with TVS-3150 (dimensions in mm)

Model	CCA-160-04	CCA-160-08	CCA-160-12
Number of tracers	4	8	12
"A" ℄ TVS Inlet to ℄ TVS Inlet	484	484	484
"B" Manifold Height (SW)	272	596	920
"C" ℄ to ℄	162	162	162
"D" Drain Connection	1 1/2" SW		
"H" Total Width	680	680	680
"G" Outlet	1 1/2" SW		
"F" TVS Connection	1/2" and 3/4" – SW and Screwed NPT		
Weight in kg (without traps)	21	42	61
Maximum Operating Pressure	32 bar @ 400°C		

All CCA-160 models are CE Marked according to the PED (97/23/EC).
TVS-3150 complies with the Article 3.3 of the same directive.
For traps, please check the specific page.

All dimensions and weights are approximate. Use certified print for exact dimensions. Design and materials are subject to change without notice.

CCA-203 Condensate Collection Assembly with TVS-4000



CCA-203-04 with TVS-4000
(shown with optional nipples, drain valve and TVS-4000 with 2000 Series Inverted Bucket all stainless steel steam traps)

Armstrong combines its Trap Valve Stations (TVS) with manifolds into a package called the CCA-203 Condensate Collection Assembly. This prepackaged assembly offers many great benefits – cost savings in assembly, design flexibility and reduced purchasing and design time. The CCA-203 with TVS-4000 and 2000 Series Inverted Bucket Traps is **guaranteed for 3 years**.

Cost Savings

This preassembled concept offers tremendous savings by reducing multiple component purchases that cause additional purchase order monitoring and shipping costs. Other savings include far less labor time required for field assembly.

This modular forged steel body design provides quick assembly/delivery, reducing overall project costs.

- Eliminates multiple component purchases
- Reduced design specification costs
- Prefabrication vs. field assembly for easy installation
- Reduced shipping and field handling costs
- Lower long-term maintenance and operating costs
- 3-years guarantee

Design Flexibility

Armstrong can meet virtually any design parameter with your choice of socketweld or threaded connections. Inverted bucket, bimetallic, thermostatic bellow, thermostatic wafer or disc steam traps can be provided. If you require a specific piping arrangement, Armstrong can offer the flexibility to meet your specifications.

- All existing steam trap types could be used
- Dimensional consistency
- Space savings
- Freeze protection option
- Insulation jacket available

Materials

Manifold body:	ASTM A105 forged steel All Stainless Steel 304L available on request

Freeze Protection Package (CCAF) – Optional

A manifold assembly for more efficient condensate return has another benefit – freeze protection. Armstrong's innovative manifold design actually serves as a heat station, heating one or more traps if the steam supply is interrupted or shut off to the traps. The protection is accomplished as long as one trap continues to discharge into the manifold. The manifold's internal syphon tube creates a water seal, which contains the flash steam from the discharge of the live trap. This allows radiant heat to protect shut-off traps from freezing.

An optional freeze protection valve package senses condensate temperature. When this device opens, it drains condensate from the manifold assembly, thus providing further freeze protection.

Removable Insulation Jackets

A removable insulation jackets are available for all steam and condensate manifolds.

- Inexpensive
- Quick to install
- Removable for maintenance
- Reusable after maintenance
- Weatherproof
- Formed to cover all manifold elements
- Strong, durable cover
- Available to fit all manifold sizes

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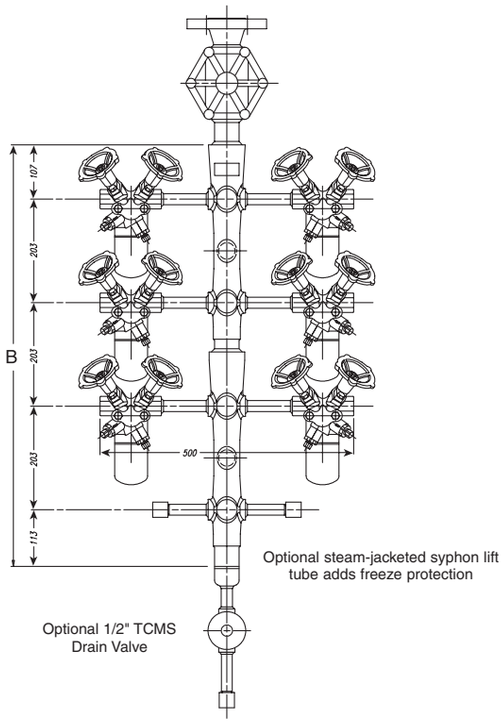
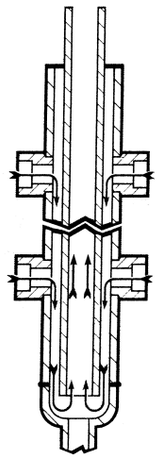
CCA-203 Condensate Collection Assembly with TVS-4000



CCA-203-08 with 6 x TVS-4000 Trap Valve Station with 2000 Series Inverted Bucket Traps



Optional Freeze Protection
Improves condensate flow inside of the manifold's body, thus giving better protection against freezing.

Table STE-187-1. CCA-203 Condensate Collection Assembly (dimensions in mm)

Model	CCA-203-04	CCA-203-06	CCA-203-08	CCA-203-10	CCA-203-12
Number of tracers	4	6	8	10	12
"B" Manifold Height (SW)	423	626	829	1 032	1 235
Drain Connection	1 1/2" SW				
Manifold Outlet	1 1/2" SW				
TVS Connection	1/2" and 3/4" – Socketweld and Screwed NPT				
Weight in kg (manifold only)	20	30	40	50	60
Maximum Allowable Pressure	42 bar @ 427°C				

All CCA-203 models are CE Marked according to the PED (97/23/EC). TVS-4000 complies with the Article 3.3 of the same directive. For traps, please check the specific page.

Options

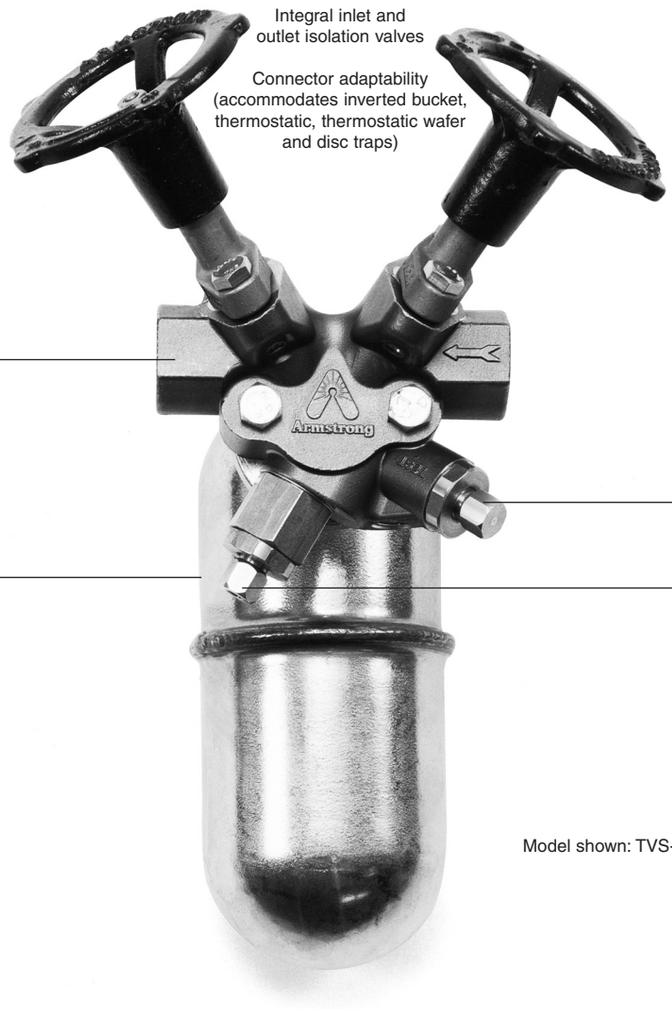
Top Outlet:
- Socketweld
- Flanged DIN or ANSI
- Gate valve 1 1/2" SW or Flanged
- Armstrong RP-2000 double sealed valve 1 1/2" SW or Flanged

Drain:
- 1/2" or 3/4" SW reducer
- TCMS piston valve

Insulation:
- Armstrong Insulation Jacket
- Modular or 1 piece versions
- Insulation jackets could be installed without removing the handwheels

All dimensions and weights are approximate. Use certified print for exact dimensions. Design and materials are subject to change without notice.

TVS-4000 Stainless Steel Trap Valve Station



Model shown: TVS-4000 with 2011

3-years guarantee

Trap Valve Station

- **Reduced costs**
  TVS saves on these fronts: energy, installation and maintenance.
- **Integration of trap, four valves and strainer**
  Inverted bucket long life and energy efficiency plus the savings and convenience of components merged into a single connector.
- **A full range of features**
  TVS has test and strainer blowdown valves. When installed with Model 2011 and 2022 steam traps, it will also accommodate the Armstrong pop drain as well as TrapAlert™ and SteamEye™ – remote steam trap monitoring and testing devices.
- **Reduced design time**
  Permits combining products with exact face-to-face dimensions.
- **Three-year guarantee**
  The TVS-4000 is guaranteed for three years when it's used with an Armstrong stainless steel inverted bucket trap.
- **Easy, in-line repairability**
- **Installation versatility**
  The connector design makes the TVS adaptable to any piping configuration.
- **Simplified trap testing**
  TVS enhances your capability to check trap operation and offers a built-in method to block and bleed traps.
- **Elimination of potential leak points**

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Armstrong 360° Universal Connector

Since Armstrong has designed the first Universal Connector in 1982, this one has become a standard everywhere in the world.

Features:

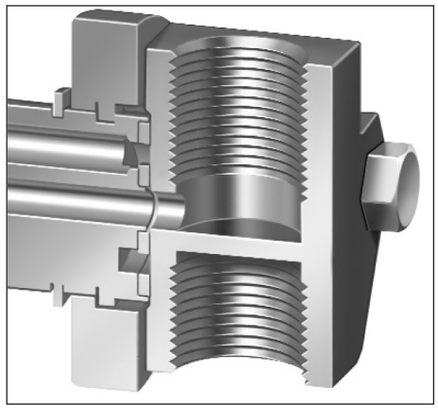
- Trap remains in the same position does not matter the pipe configuration
- Connectors remain in-line for easy trap replacement (2 bolts)
- Spiral-wound gasket
- 304 Stainless Steel corrosion resistant construction
- Lightweight
- Optional integrals strainer (IS-2)

All existing trap types:

- Inverted Bucket (2000 Series)
- Bimetallic (AB-2000)
- Thermodynamic (CD-3300)
- Thermostatic wafer (WT-2000)
- Thermostatic bellows (TT-2000)
- Float & Thermostatic (F&T-2000)

Connections:

- Screwed NPT and BSPT
- Socketweld
- Flanged DIN and ANSI

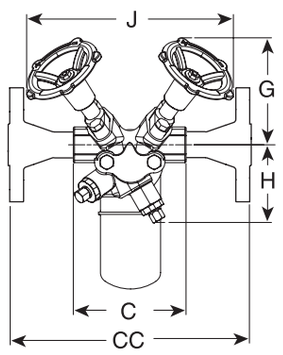


Available with Standard Connector
Material: 304 Stainless Steel

Available with IS-2 Integral Strainer Connector
(shown with optional blowdown valve)
Material: 316 Stainless Steel

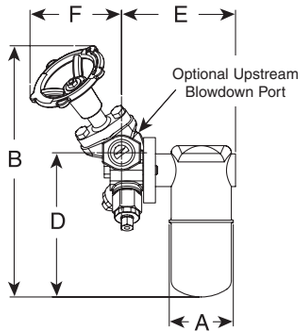
TVS-4000 Stainless Steel Trap Valve Station

Stainless Steel with 360° Connector
For Pressures to 45 bar...Capacities to 590 kg/h (Using 2000 Series Inverted Bucket Steam Traps)



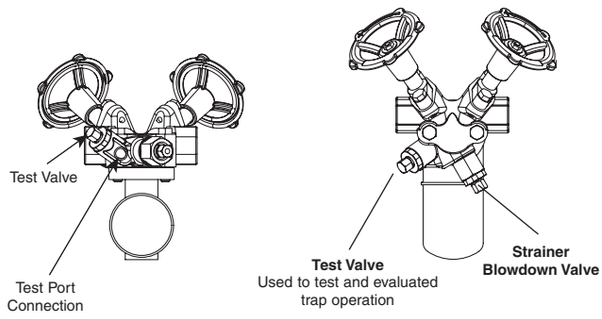
Model TVS-4000 with 2000 series SS Trap

Front View



Model TVS-4000 with 2000 series SS Trap

Side View



Model TVS-4000 with 2000 series SS Trap

Bottom View

Same principle. Different package with two piston-style isolation valves, test valve and integral stainless steel strainer with blowdown valve. Now the energy-saving performance and reliability of the inverted bucket steam trap are available in a versatile new package.

You'll still enjoy all the familiar benefits. And the same efficient condensate drainage from virtually every kind of steam-using equipment. What you'll find new are all the benefits of a piston valve integrated into the same space-saving package.

Materials – TVS-4000 Connector

Connector:	ASTM A351 Gr. CF8M
Strainer Screen:	Stainless steel
Screen Retainer:	Stainless steel
Gasket:	Stainless steel
Retainer Unit:	Stainless steel
Test Valve:	Stainless steel
Blowdown Valve:	Stainless steel

Connections

Screwed BSPT and NPT
Socketweld
Flanged DIN or ANSI (welded)

Isolation Valve Components

Handwheel:	Cast iron
Nut :	Stainless steel
Stem, Washers:	Stainless steel
Bonnet:	ASTM A351 Gr. CF8M
Bonnet, Bolts:	Stainless steel Gr. A2
Valve Plug:	Stainless steel
Disc Springs:	Stainless steel
Valve Sealing Rings:	Graphite and stainless steel
Lantern Bushing:	Stainless steel
Valve Washers:	Stainless steel

Materials – Series 2000 Traps

Body:	ASTM A240 Gr. 304L
Internals:	All stainless steel – 304
Valve and seat:	Hardened chrome steel – 440F (<38 bar) Titanium (>38 bar)

Table STE-190-1. TVS-4000 Series with 2000 Series Inverted Bucket Steam Trap (dimensions in mm)

Model No.	2010	2011	2022
Pipe Connections	15 – 20	15 – 20	15 – 20
"A" Trap Diameter	68	68	98
"B" Height Valve Open	203	268	318
"C" Face-to-Face (screwed & SW)	120	120	120
"CC" Face-to-Face (flanged PN40*)	384	384	384
"D" Connection ℄ to Bottom	120	154	203
"E" Connection ℄ to Outside of Trap	114	122	149
"F" Connection ℄ to Front of Handwheel (Valve Open)	89	98	98
"G" Connection ℄ to Top of Handwheel (Valve Open)	83	114	114
"H" Connection ℄ to Bottom of Connector	47	83	83
"J" Width Across Handwheels (Valve Open)	235	222	222
Weight in kg (screwed & SW)	4,1	4,3	5,4
Weight in kg (flanged PN40*)	5,8 – 6,4	6,0 – 6,6	7,1 – 7,7
Maximum Operating Pressure (Trap)	14 bar	28 bar	45 bar
Maximum Allowable Pressure (Trap)	28 bar @ 399°C	28 bar @ 399°C	45 bar @ 315°C

* Standard flanges are in carbon steel, stainless steel flanges are optional. Other flange sizes, ratings and face-to-face dimensions are available on request.
All models comply with the article 3.3 of the PED (97/23/EC).

All dimensions and weights are approximate. Use certified print for exact dimensions. Design and materials are subject to change without notice.

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TVS-4000 Stainless Steel Trap Valve Station

Stainless Steel with 360° Connector
For Pressures to 45 bar...Capacities to 590 kg/h (Using 2000 Series Inverted Bucket Steam Traps)

Table STE-191-1. Model 2010 Capacity

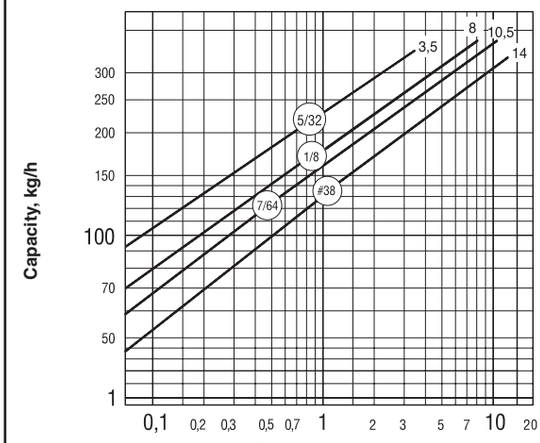


Table STE-191-2. Model 2011 Capacity

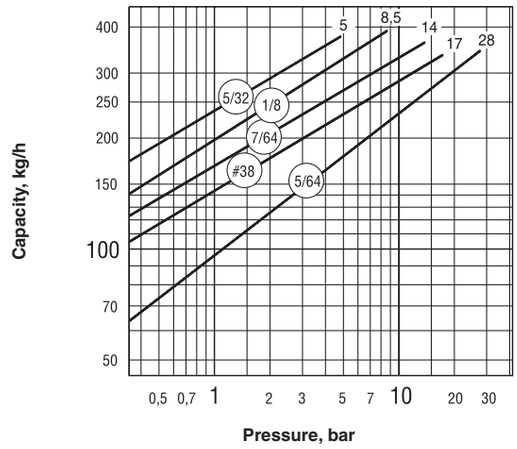
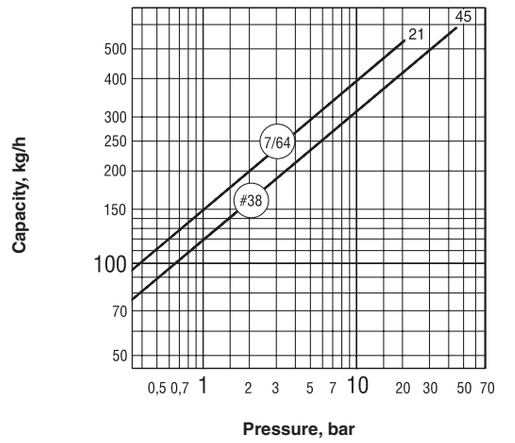


Table STE-191-4. How to Order

Model	Connection	Type of Connection Inlet/Outlet	Flow Direction	Trap Type
TVS-4000	15 20	NPT SW BSPT Flanged	R = Right to Left L = Left to Right	Inv. Bucket Disc Thermostatic Bimetallic F&T

Table STE-191-3. Model 2022 Capacity

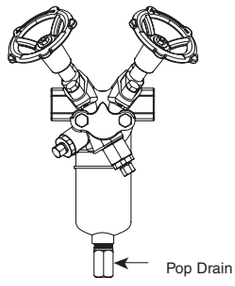


Options

Insu-Pak™
Now you can insulate the in-line traps in your plant without complicating regular trap maintenance. Insu-Pak, a simple reusable insulation package, cuts the time and cost of in-field installation because it goes on in a snap. And it comes off just as easily. The Insu-Pak can prevent trap freeze-up when used with a properly designed condensate manifold. Designed for use with Model 2010 and Model 2011 traps.

Pop Drain
Simple but effective against freeze-up. Properly installed and maintained at low points in your system, the simple, pressure-actuated pop drain opens for condensate drainage at 0,35 barg for Models 2011 and 2022.

Probe Connections are available for trap monitoring on Models 2011 and 2022.



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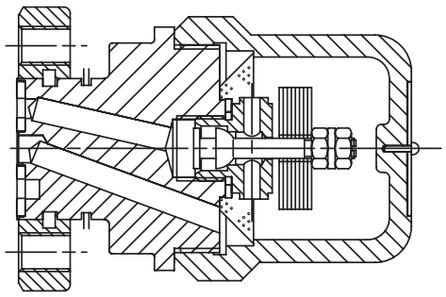
AB-3000 Bimetallic Steam Trap

Stainless Steel

For Pressures to 22 bar…Capacities to 2 100 kg/h



Description

Armstrong's AB-3000 Bimetallic Steam Trap operates by the effect that rising temperature has on bimetallic elements. It adjusts itself to changing conditions, as the increasing pressure on the valve is compensated by the curving of the bimetallic elements caused by the increasing temperature. The valve of the AB-3000 is specially treated (boronization) in order to be more resistant to wiredrawing due to erosive condensate flashing.

Armstrong's AB-3000 has a sealed, stainless steel body that is lightweight, compact and highly resistant to corrosion. The AB-3000 is repairable (body and cap can be unscrewed). It is piped through the Armstrong 360° Universal Connector or Trap Valve Station (TVS). This makes it easy to install and replace, as the trap can be removed while the connector remains in-line. The result is savings in labor cost and increasing in flexibility, as other trap types (Inverted Bucket, Thermostatic and Thermodynamic) can be installed on the same connector.

Valve Boronized

The problem of wiredrawing of valve and seat materials is well known to users of steam traps and other types of valves. Wiredrawing is a particular problem to valves and seats of bimetallic traps, which rely on bimetallic elements to operate.

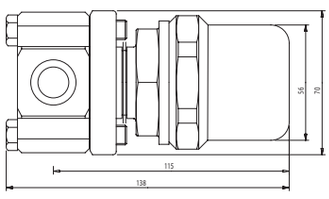
To solve the problem of wiredrawing, a new thermochemical surface treatment has been developed. The basic valve material is machinable hardened chrome steel. Atoms of highly resistant material are thermochemically diffused into the valve, giving a layer of protection and a hardness of 1700 HV to the basic material. Because of this new thermochemical treatment, the surface of the valve is highly resistant to the erosive action of flashing condensate. The failure rate of Armstrong bimetallic traps due to wearing out of valve and seat material is greatly reduced.

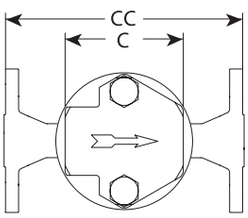
Table ST-192-1. Model AB-3000 Trap (dimensions in mm)

Pipe Connections	15 – 20 – 25
"C" Face-to-Face (screwed & SW)	60 – 60 – N/A
"CC" Face-to-Face (flanged PN40*)	150 – 150 – 160
Weight in kg (screwed & SW)	1,9
Weight in kg (flanged PN40*)	4,3 – 4,5 – 4,7

* Standard flanges are in carbon steel, stainless steel flanges are optional. Other flange sizes, ratings and face-to-face dimensions are available on request.

All sizes comply with the article 3.3 of the PED (97/23/EC).





Maximum operating conditions

Maximum allowable pressure (vessel design):	28 bar @ 343°C
Maximum operating pressure:	22 bar
Maximum back pressure:	99% of inlet pressure

Connections

Screwed BSPT and NPT
Socketweld
Flanged DIN or ANSI (welded)

Materials

Body:	ASTM - A240 304L
Standard connector:	Stainless steel – 304
Valve:	Chrome steel – 440F, Boronized
Seat:	303 Stainless steel
Elements:	Nickel plated
Strainer:	304 Stainless steel

Specification

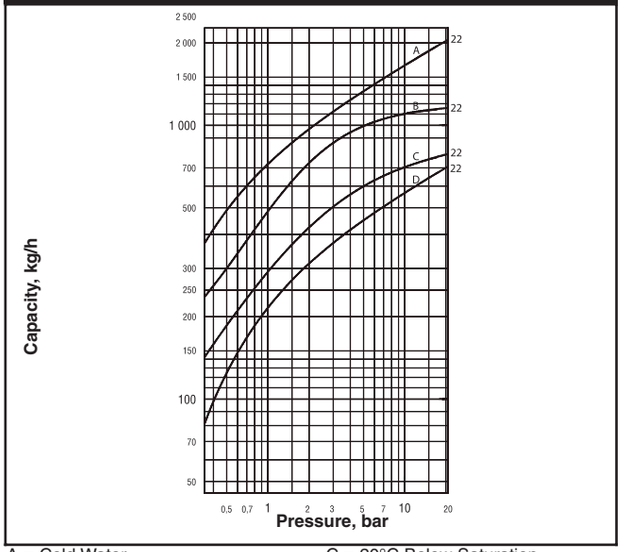
Bimetallic repairable steam trap with valve boronized, type AB-3000 in stainless steel, with integral strainer. Piped through 360° Universal Connector or Trap Valve Station (TVS). Maximum allowable back pressure 99% of inlet pressure.

How to order

Specify:

- Size and type of pipe connection.
- Maximum working pressure that will be encountered
- Maximum condensate load

Table ST-192-2. Model AB-3000 Capacity



A = Cold Water
B = 40°C Below Saturation
C = 20°C Below Saturation
D = 10°C Below Saturation

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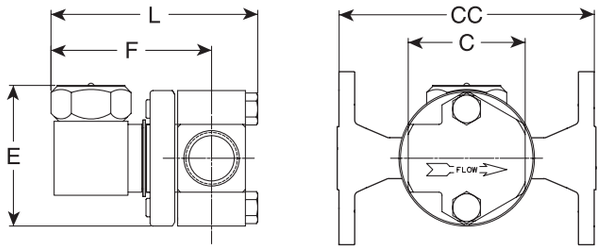
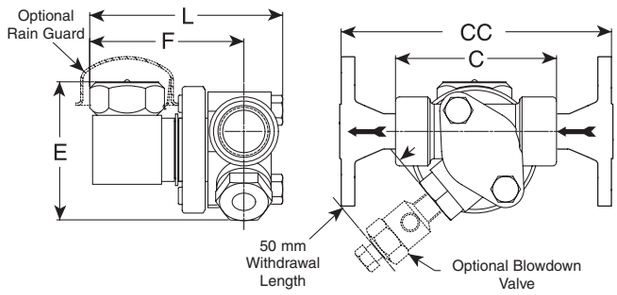
CD-3300 Disc Steam Trap

All Stainless with 360° Connector

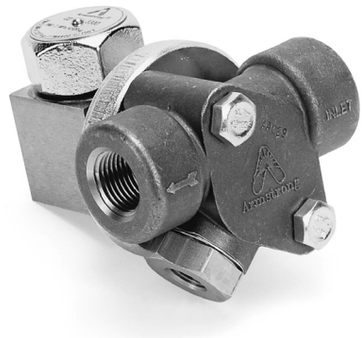
For Pressures to 31 bar…Capacities to 360 kg/h



CD-3300 with Standard Connector



CD-3300 with IS-2 Connector with Integral Strainer



The Armstrong CD-3300 is a three discharge port design, which provides stable disc operation to extend operating life.

The CD-3300 is piped in-line by a 360° universal connector which allows you to install the trap in virtually any piping configuration. Armstrong's unique standard connector or its IS-2 connector with integral strainer makes the CD-3300 easy to install, easy to renew. You save on labor time and cost because the connector simplifies piping and remains in-line.

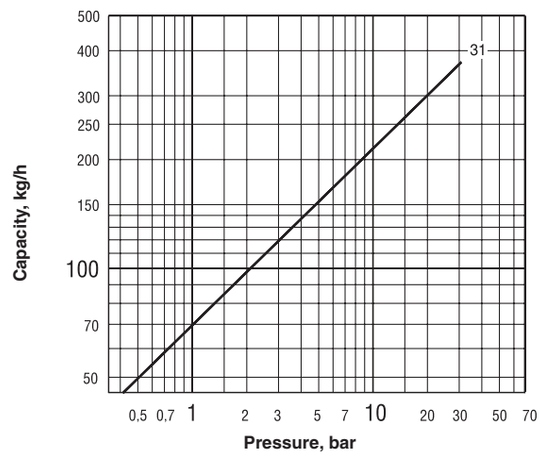
Materials

Trap and cap:	ASTM A743 CA40
Trap disc:	ASTM A276 Gr.420
Trap body:	ASTM A276 Gr.420
Standard connector:	Stainless steel – 304
IS-2 connector with integral strainer:	ASTM A351 Gr.CF8 20 x 20 mesh 304 SS Screen

Connections

Screwed BSPT and NPT
Socketweld
Flanged DIN or ANSI (welded)

Table STE-193-1. CD-3300 Series Capacity



Note: CD traps can operate with minimum of 0,15 bar inlet pressure and a maximum of 80% back pressure. However, for best results, inlet pressure should not drop below 0,70 bar and back pressure should not exceed 50% of inlet pressure.

Options

Rain guard insulating cap
Blowdown valve – IS-2 connector only
Plug for IS-2 strainer blowdown connection

Table STE-193-2. Model CD-3300 Trap (dimensions in mm)

Model No.	CD-3300		
	Standard Connector	IS-2 Connector w/Integral Strainer	
Pipe Connections	15 – 20 – 25	15 – 20	25
"C" Face-to-Face (screwed & SW)	60 – 60 – N/A	89	102
"CC" Face-to-Face (flanged PN40*)	150 – 150 – 160	150	160
"L" Overall Length	106	106	106
"H" Overall Height	76	76	89
"F" ℄ to Body End	86	86	86
Blowdown Connection Size	–	1/4" NPT	1/4" NPT
Weight in kg (screwed)	1,6	1,8	2,0
Weight in kg (flanged PN40*)	3,3 – 3,9 – 4,4	3,5 – 4,1	4,8
Maximum Allowable Pressure	50 bar @ 400°C		
Maximum Operating Pressure	31 bar @ 236°C		

* Standard flanges are in carbon steel, stainless steel flanges are optional. Other flange sizes, ratings and face-to-face dimensions are available on request. All sizes comply with the article 3.3 of the PED (97/23/EC).

All dimensions and weights are approximate. Use certified print for exact dimensions. Design and materials are subject to change without notice.

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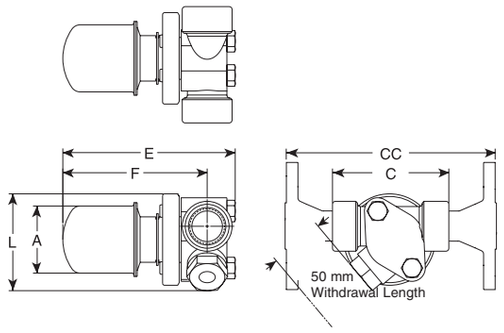
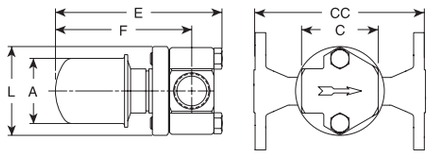
WT-2000 Thermostatic Wafer Steam Trap

Stainless Steel or Carbon Steel

For Pressures to 41 bar...Cold Water Start-Up Capacities to 730 kg/h



Model WT-2000 with IS-2 Connector with Integral Strainer



Model WT-2000 with Standard Connector

Description

The WT-2000 does not have an internal strainer, but is equipped with a special 360° connector to expand piping options and simplify installation. Choice of NPT or BSPT screwed connections, or socketweld connections. Also available with optional IS-2 stainless steel connector with integral strainer.

Note: Since the normal operation of all suppressed temperature-discharge (subcooling) steam traps is to back up condensate, they should not be used on drip legs for saturated steam service, heating or process equipment. Exercise care in the maintenance of any thermostatic wafer trap with a small discharge area susceptible to clogging.

Specification

Thermostatic wafer steam trap, type WT-2000 in stainless steel. Maximum allowable back pressure 99% of inlet pressure.

Table STE-194-1. WT-2000	
Design	Welded
Connections	Screwed BSPT and NPT – Socketweld – Flanged
Material	
Body	ASTM A240 – 304L
Cap	
Capsule wafer	Hastelloy
Capsule body	Stainless Steel – 303
Capsule cap	
Connector	
Standard	Stainless Steel – 304
IS-2 w/integral strainer	ASTM A351 Gr.CF8 w/20x20 mesh 304 SS screen
Maximum operating conditions	
Maximum allowable pressure (vessel design)	28 bar @ 343°C
Maximum operating pressure	22 bar
Options	
Blowdown Valve IS-2 Connector Only	
Plug for IS-2 Strainer Blowdown Connection	

Maximum back pressure: 99% of inlet pressure

How to Order

Specify:

- Model number
- Size and type of pipe connection, or connector style
- Any options required

Connectors

Besides the inverted bucket traps, the standard connectors or IS-2 connector with integral strainer can also be used on thermostatic, thermostatic wafer and controlled disc traps.

Table STE-194-2. WT-2000 Capacity			
Differential Pressure*	**Cold Water Start-Up 21°C**	**Hot Water Start-Up 100°C**	**Operating Condensate 10°C Below Saturation**
bar	kg/h	kg/h	kg/h**
0,35	54	45	4,5
0,7	68	77	5,9
1,4	145	113	8,2
2,0	177	136	9,1
3,0	191	159	10,9
3,5	222	181	11,8
5,0	259	218	13,6
7,0	295	263	15,9
10,5	318	318	18,1
14,0	408	363	20,9
17,0	454	431	22,7
21,0	476	465	25,4
24,0	522	544	28,6
28,0	590	567	31,8

* Capacities based on differential pressure with no back pressure.
** Capacities will vary with the degree of subcooling. When greater capacities are required, the trap will automatically adjust to the load, up to the maximum (cold water) capacity shown, by increasing the amount of subcooling.

Table STE-194-3. WT-2000 Trap (dimensions in mm)			
Model No.	**Standard Connector**	**IS-2 Connector with Integral Strainer**	
Pipe Connections	15 – 20 – 25	15 – 20	25
"A" Diameter	57	57	57
"C" Face-to-Face (screwed & SW)	60 – 60 – N/A	89	102
"CC" Face-to-Face (flanged PN40*)	150 – 150 – 160	150	160
"F" ℄ to Bottom End	108	111	111
"E" Overall Length	133	130	133
"L" Overall Height	72	72	72
Blowdown Connection	–	1/4"	1/4"
Weight in kg (screwed & SW)	1,4	1,5	1,5
Weight in kg (flanged PN40*)	3,8 – 4,0 – 4,2	3,2 – 3,8	4,3

* Standard flanges are in carbon steel, stainless steel flanges are optional. Other flange sizes, ratings and face-to-face dimensions are available on request.
All sizes comply with the article 3.3 of the PED (97/23/EC).

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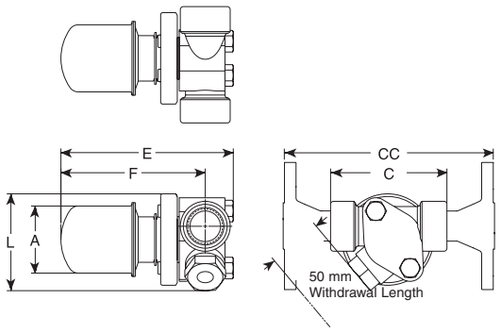
TT-2000 Thermostatic Bellows Steam Trap

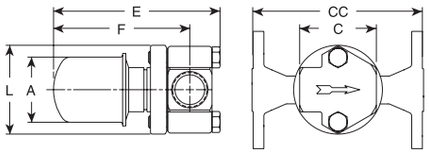
All Stainless Steel

For Pressures to 20 bar...Capacities to 1 570 kg/h



Model TT-2000 with IS-2 Connector with Integral Strainer

Model TT-2000 with Standard Connector



Model TT-2000 with Standard Connector

Description

The balanced pressure bellows thermostatic steam trap has a sealed, stainless-steel body that is lightweight, compact and highly resistant to corrosion. The cage, bellows, valve and seat are all assembled into a precisely calibrated operating unit that ensures positive opening and closing action at slightly below steam temperature. The unique, stainless-steel construction is smaller and much lighter than comparable cast iron, brass or steel traps. TT-2000 with the 360° universal stainless steel connector comes with either a standard connector or the IS-2 connector with integral strainer.

Note: Can also be used as a thermostatic air vent (Reference TTF Series Thermostatic Air Vents page AV-406).

Specification

Thermostatic steam trap, type TT-2000 in stainless steel. Maximum allowable back pressure 99% of inlet pressure.

How to Order

Specify:

- Model number
- Size and type of pipe connection
- Connector type

Connections

Screwed BSPT and NPT
Socketweld
Flanged DIN or ANSI (welded)

Table STE-195-2. TT-2000 Trap (dimensions in mm)

Model No.	Standard Connector	IS-2 Connector with Integral Strainer	
Pipe Connections	15 – 20 – 25	15 – 20	25
"A" Diameter	57	57	57
"C" Face-to-Face (screwed & SW)	60 – 60 – N/A	89	102
"CC" Face-to-Face (flanged PN40*)	150 – 150 – 160	150	160
"E" Overall Length	133	130	133
"F" ℄ to Body End	108	111	111
"L" Overall Height	72	72	72
Weight in kg (screwed & SW)	1,4	1,5	1,5
Weight in kg (flanged PN40*)	3,8 – 4,0 – 4,2	3,2 – 3,8	4,3

* Standard flanges are in carbon steel, stainless steel flanges are optional. Other flange sizes, ratings and face-to-face dimensions are available on request.
All sizes comply with the article 3.3 of the PED (97/23/EC).

Table STE-195-1. TT-2000

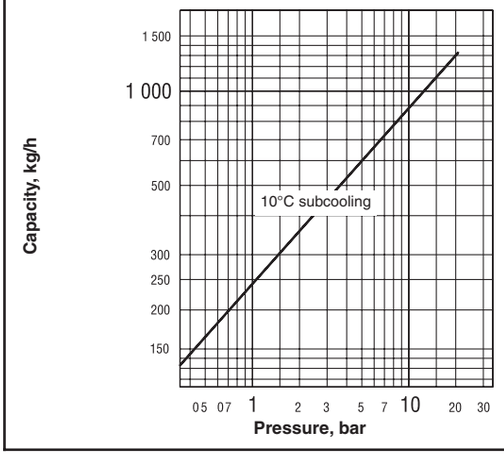
Design	Welded
Connections	Screwed BSPT and NPT – Socketweld – Flanged
Material	
Body	ASTM A240 – 304L
Valve	Bronze
Seat	Stainless Steel
Thermostatic air vent	Standard Stainless steel & bronze w/phosphor bronze bellows caged in stainless steel
Optional: All stainless steel thermostatic air vent	
Connector	
Standard	Stainless steel – 304
IS-2 w/integral strainer	ASTM A351 Gr.CF8 w/20x20 mesh 304 SS screen
Maximum Operating Conditions	
Max. allowable pressure (vessel design)	20 bar @ 232°C
Max. operating pressure	20 bar
Max. operating temperature bellows	190°C

Maximum back pressure: 99% of inlet pressure

Materials

Body: 304L Stainless steel
Connector: 304 Stainless steel
Bellows: Stainless steel and bronze with phosphor-bronze bellows, caged in stainless steel

Table STE-195-3. Model TT-2000 Capacity



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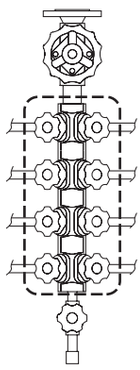
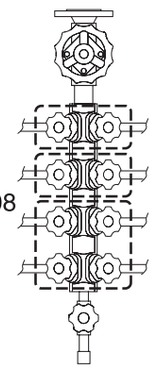
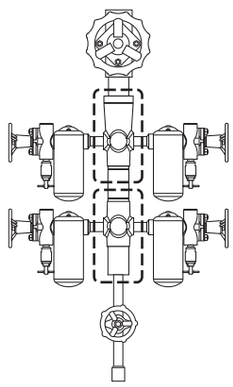
Insulation Jackets for Manifolds

Manifold Type	MSD or SMSD		CCA
	Please specify: - distance between tracers 162 or 120 mm - number of tracers 4, 8, 12		**Please specify:** - number of tracers 4, 6, 8, 10, 12
Jacket	**ONE PIECE**	**MODULAR**	
example	MSD-08 	SMSD-08 	CCA-203-04 
range	MSD-04, MSD-08, MSD-12	MSD-04, MSD-08, MSD-12	CCA-04, CCA-06, CCA-08, CCA-10, CCA-12,

A removable insulation jackets are available for all steam and condensate manifolds. This includes also the condensate return manifolds assembled with Trap Valve Stations (TVS) and steam traps.

Features

- Inexpensive
- Safe
- Quick and easy to install (no special knowledge is required)
- Removable for maintenance
- Reusable after maintenance
- Weatherproof
- Strong, durable cover increase service life

Maximum operating conditions

Maximum operating temperature:	260°C
Flame resistance:	BS 476 Part 7, Class 1

Materials

Base fabric:	Fiberglass
Weave:	Satin
Coating:	Silver silicone rubber

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Notes

ASIV Ambient Sensing Isolation Valve

For Automatic On-Off Activation of Steam Lines up to 13,8 bar

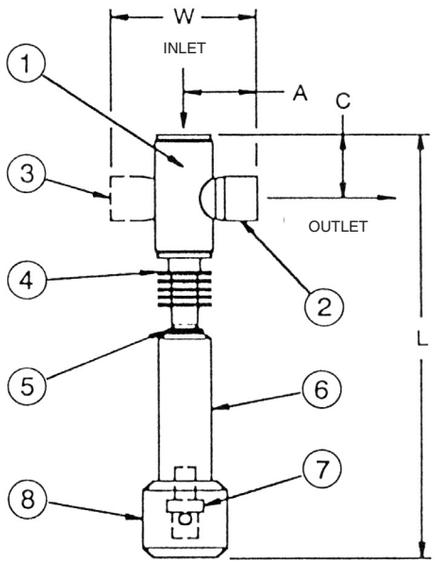

Table STE-198-1. ASIV List of Materials		
Item	**Name of Part**	**Material**
1	Body	Stainless Steel
2	Outlet Fitting	Stainless Steel
3	Second Outlet Fitting (optional)	Stainless Steel
4	Yoke	Stainless Steel
5	Calibration Locknut	Stainless Steel
6	Isolation Extension	Acetal Copolymer
7	Thermal Actuator	Stainless Steel
8	Solar Shield (optional)	Acetal Copolymer

Applications

The Armstrong ASIV has a multitude of applications. Among them are turning on and off steam, air, gas, or liquids in response to ambient temperature change. They can automate steam tracing lines, automate pneumatically controlled pumps for injecting antifreeze liquids, control water line freeze protection, etc. They may also control heated drum heater enclosures, plate or panel clad tanks, unit heaters, etc. Reverse acting models automate cooling sprinklers, cooling baths, etc.

Operation

A thermal element which is physically isolated from the valve, opens or closes the valve within a 3,0°C to 5,5°C differential to control the flow of a liquid, gas or steam based on ambient temperature. The ASIV can control up to 120 meters of 1/2" tracer (two 60 meters lines using a double outlet model) providing about 285 000 kJ/h at 6,8 bar. An available solar shield permits installation where sunlight may affect set-point of the valve.

Advantages

At any chosen set-point from -1°C to 60°C, these valves can economically automate a system in response to ambient temperature. NPT piping connections allow easy connection to any configuration and for providing large flow capacity. Reduce energy waste, lower maintenance cost and save space.

Design Features

- Light weight
- No castings, all welded construction
- Large flow change on small temperature change
- Fast response, unaffected by fluid pressure changes
- Ram-type plug for reliable tight shut-off
- Quick easy installation
- Long service life (36 month pro rated warranty)
- Direct acting, no pilot valve
- 100% factory tested
- Single or double outlet
- Three different capacities available
- Special temperatures and connections available

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ASIV Ambient Sensing Isolation Valve

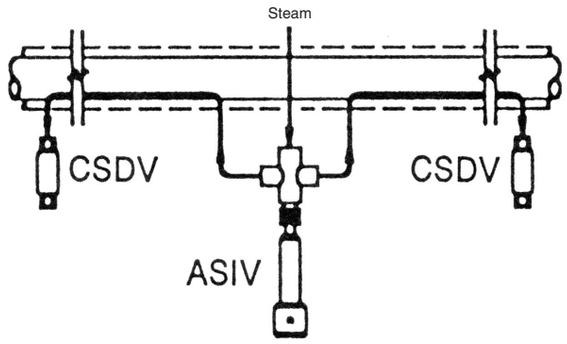
For Automatic On-Off Activation of Steam Lines up to 13,8 bar

Table STE-199-1. ASIV Specifications	
Maximum Operating Pressure	13,8 bar
Maximum Operating Temperature	Saturated Steam Temperature
Full Open Temperature	-1°C and up
Full Closed Temperature	-12°C Higher Than Set-Point
Flow Coefficient C_v at Set-Point 1/2" NPT or BSPT	**Port Sizes:** 1,3 (Standard) 1,7 (High Capacity)
3/4" NPT or BSPT	2,0 (Standard)

Table STE-199-2. ASIV Dimensions and Weights (Dimensions in mm)

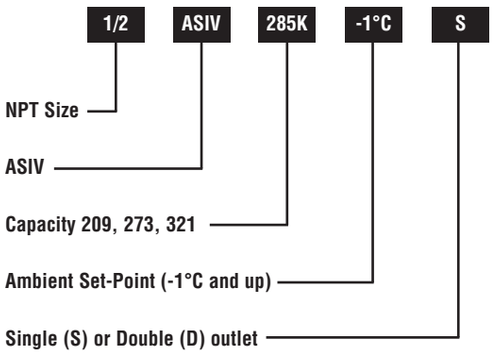
Outlet	Size (in)	L	A	C	W	Weight (kg)	Port Dia. (in)	C_v	Steam Capacity (kg/h)	Maximum Pressure (bar)
Single	1/2" *	286	43	38	–	0,68	3/8"	1,3	209	13,8
	1/2" * Hi-Cap	286	43	38	–	0,68	3/8"	1,7	273	13,8
	3/4" *	292	45	45	–	0,80	1/2"	2,0	321	13,8
Double	1/2"	–	–	–	86	0,72	–	–	–	–
	3/4"	–	–	–	89	0,86	–	–	–	–

*** Note:** 1 1/2" available on request.
This model comply with the article 3.3 of the PED (97/23/EC).



Steam Tracing System

How To Order



All dimensions and weights are approximate. Use certified print for exact dimensions. Design and materials are subject to change without notice.

ASDV Ambient Sensing Drain Valve

For Freeze Protection of Condensate Systems up to 20,7 bar

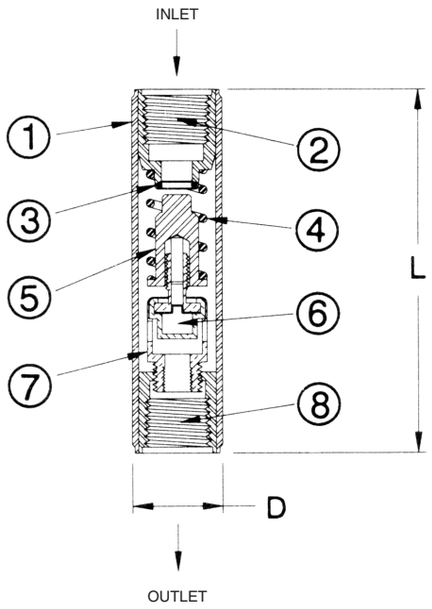


Table STE-200-1. ASDV List of Materials

Item	Name of Part	Material
1	Tubular Body	304 Stainless Steel
2	Inlet Fitting	303 Stainless Steel
3	Seat Seal	PTFE
4	Operating Spring	Stainless Steel
5	Ram-Type Plug	303 Stainless Steel
6	Thermal Actuator	F.M. Brass*
7	Actuator Carrier	F.M. Brass*
8	Outlet Fitting	303 Stainless Steel

* All Stainless Steel models avaible

Applications

The Armstrong ASDV is ideal for protection of piping, valves, fittings, pumps, condensate systems, safety showers, fire lines, spray nozzles, freeze sensitive equipment, etc., or as back-up protection on steam traced systems or equipment.

Operation

The ASDV thermal element senses ambient temperature, and at a pre-set temperature the drain valve will open. Water from the line will then flow past the element. If the water temperature becomes high enough, the valve will then close. If the water temperature is low, the valve will modulate to maintain temperature or will open to drain completely. The valve will be fully open at 2,0°C. On rising temperature, the valve will be tightly closed at 4,4°C.

Advantages

Manual freeze protection with cracked valves for continuous drainage is wasteful and possibly susceptible to freezing. The ASDV automates freeze prevention and reduces waste by opening only when freezing is imminent and closing when the danger is past. Water loss is minimized and damage and down time are eliminated. The unique ram-type plug and seat provide reliable, tight shut-off longer than any other design. All valves are 100% factory tested.

Design Features

- All stainless steel body, fittings, spring, and plug
- Corrosion resistant for long life
- Narrow temperature band
- Compact low mass; fast response
- Ram-type plug for reliable tight shut-off
- Downstream actuator for greater sensitivity
- Sensitive to temperature only
- Unaffected by pressure variations
- Easy installation with simple wrenches

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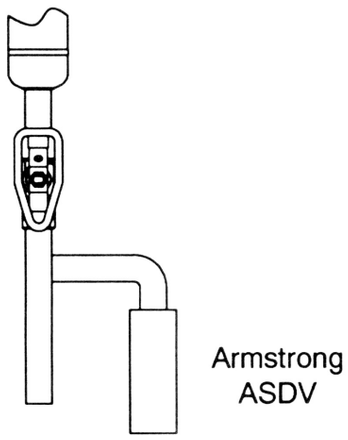
ASDV Ambient Sensing Drain Valve

For Freeze Protection of Condensate Systems up to 20,7 bar

Table STE-201-1. ASDV Specifications	
Maximum Operating Pressure	20,7 bar
Maximum Operating Temperature	Saturated Steam Temperature
Full Open Temperature	2 °C
Full Closed Temperature	4,4°C
Flow Coefficient C_V at Set-Point 3/8" and 1/2" NPT or BSPT	**Port Sizes:** A - 0,13 B - 0,57 C - 0,82 (Standard)
3/4" NPT or BSPT	D - 2,0 (Standard)

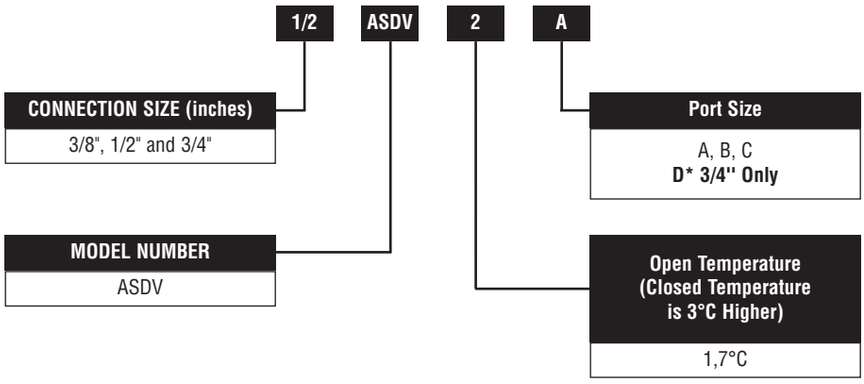
* Other set-points available with longer lead times and minimum quantities required.
This model comply with the article 3.3 of the PED (97/23/EC).

Table STE-201-2. ASDV Dimensions and Weights (Dimensions in mm)			
Size Tube OD	**D**	**L**	**Weight (kg)**
3/8" or 1/2"	28	114	0,31
3/4"	34	140	0,54



Armstrong ASDV on Manifold Assembly

How To Order



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