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.

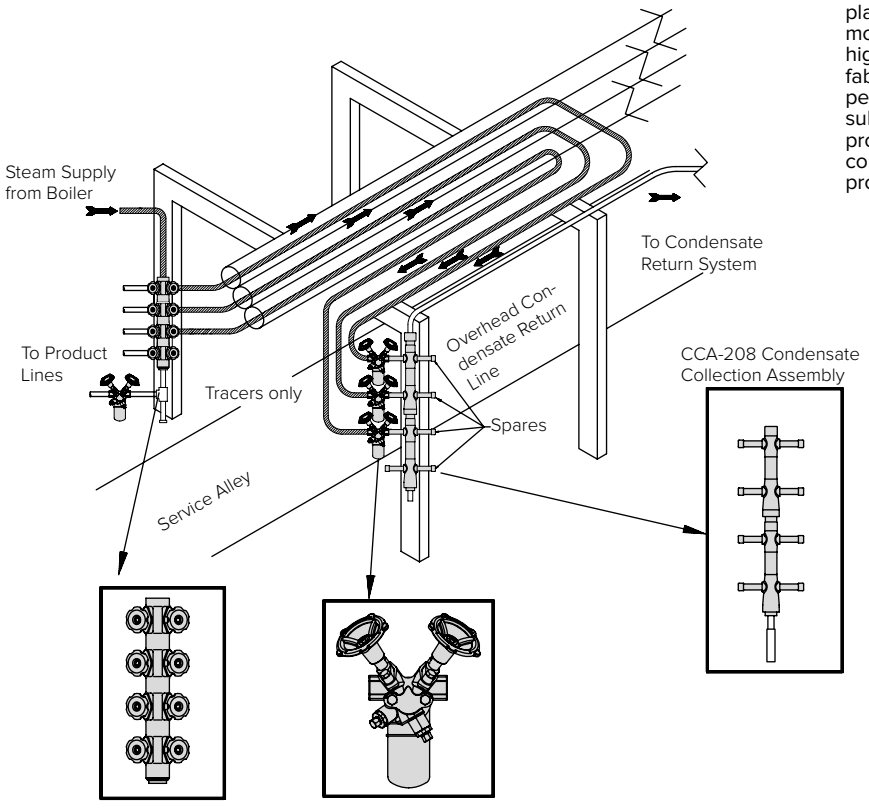
Armstrong's manifold series includes four different configurations, a Steam Distribution (MSD/SMSD), and a Condensate Collection Assembly (CCA/CCAF). As an option, the condensate manifolds can offer freeze protection.

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.



SMSD Steam Distribution Manifold

TVS-4000 Trap Valve Station with 2000 Series Trap

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.

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Insulation Jackets for Manifolds

Manifold Type

Jacket

example

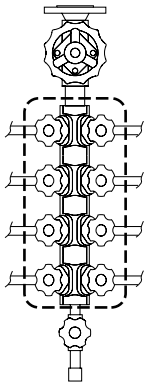
Range

MSD

Please specify: - distance between tracers 162 or 120 mm
- number of tracers 4, 8, 12

ONE PIECE

MSD-08

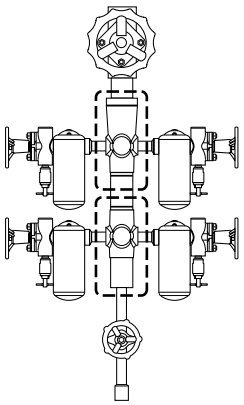


MSD-04, MSD-08, MSD-12

CCA

Please specify: - number of tracers 4, 6, 8, 10, 12

CCA-203-04



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

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

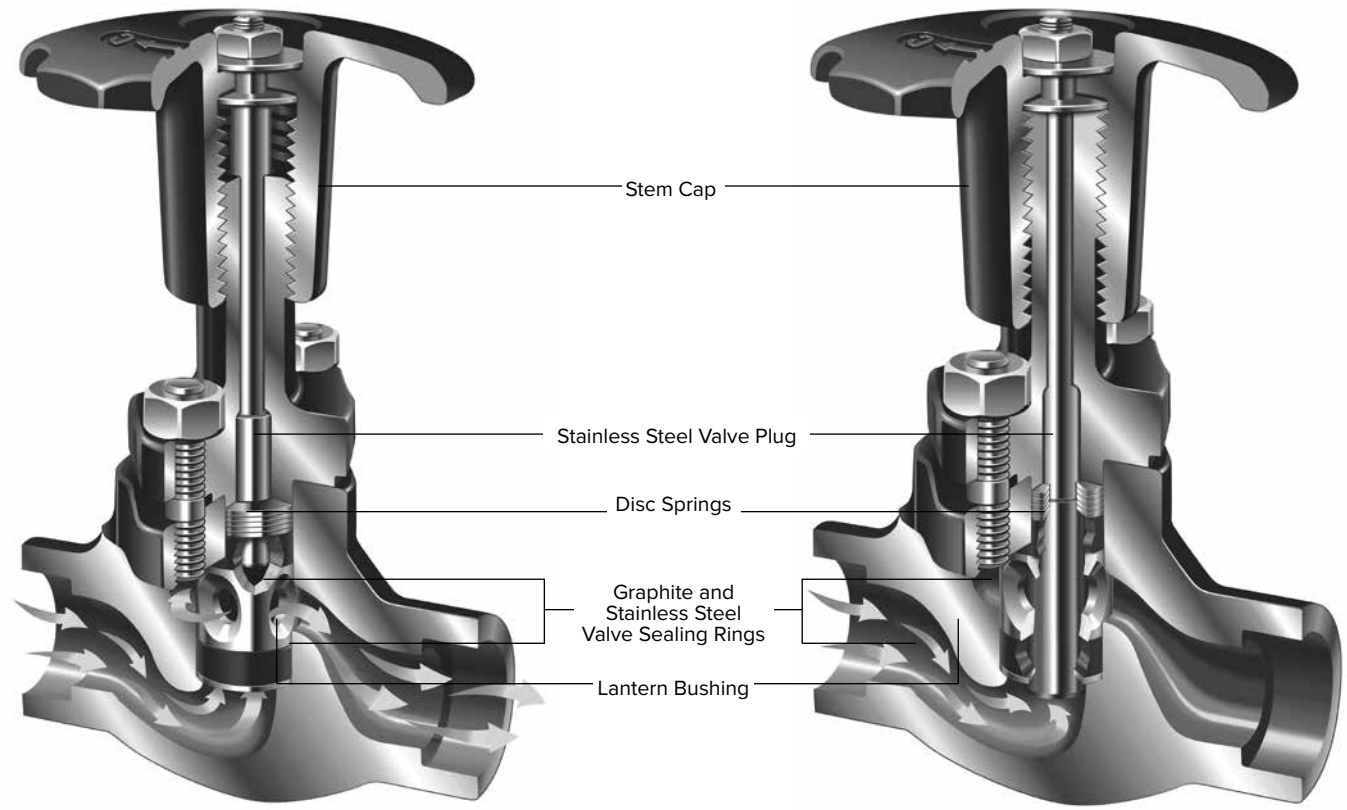
The Proof Is in the Piston

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.

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, pur chase 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 4.3 of the PED (2014/68/UE).

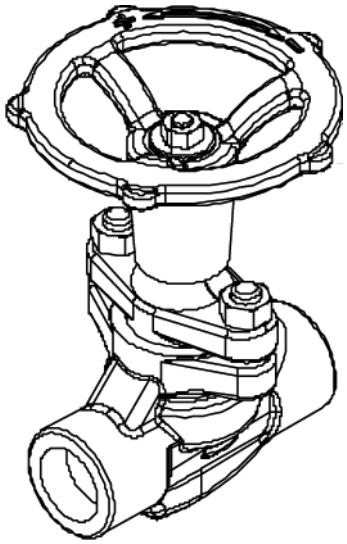
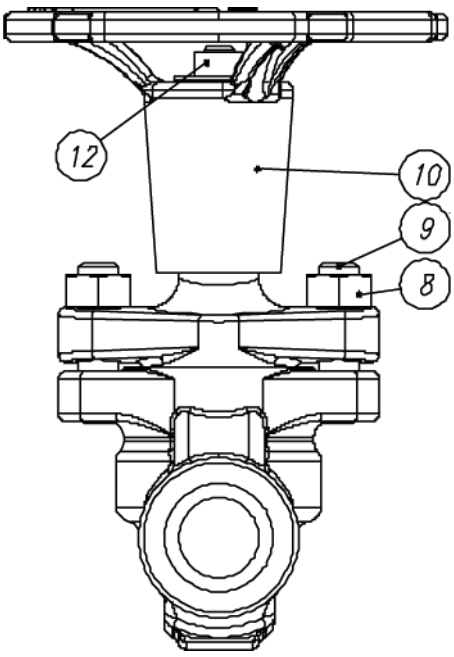
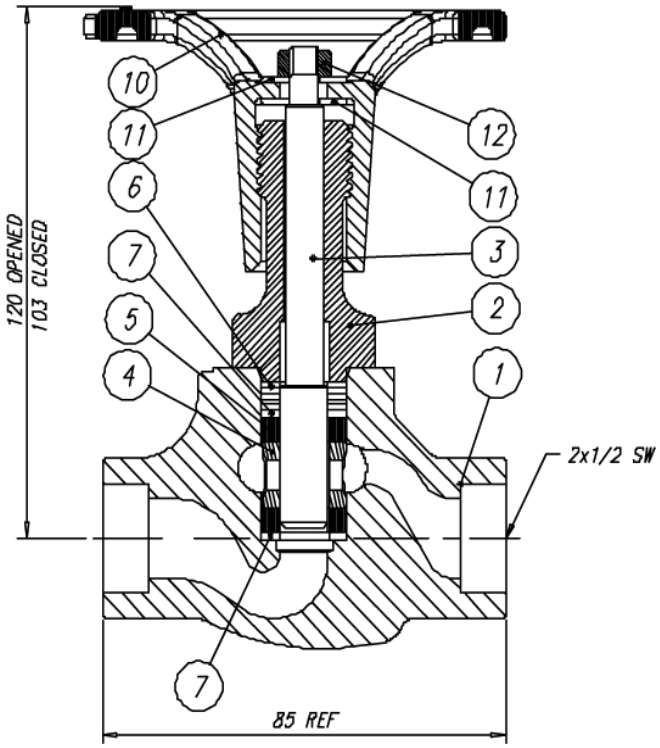


Table STE-201-1. Material Specification

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.





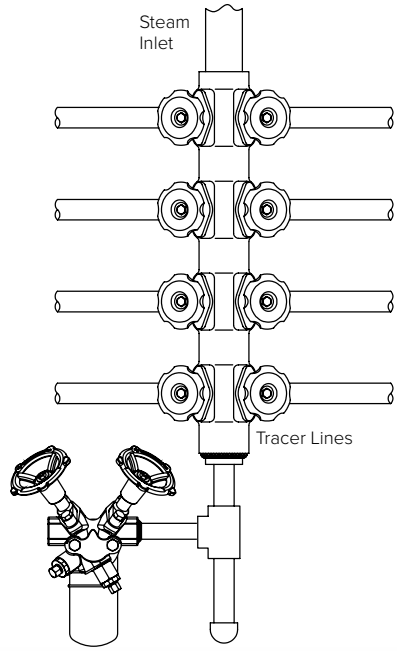
All dimensions and weights are approximate. Use certified print for exact dimensions. Design and materials are subject to change without notice.

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.

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



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

MSD & SMSD Manifolds for Steam Distribution

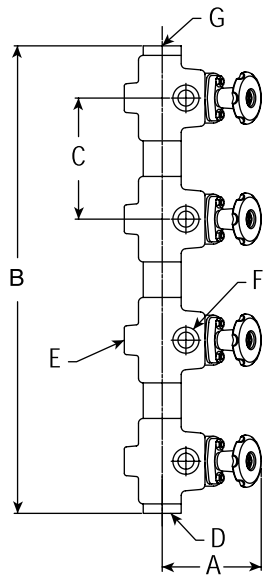


Table STE-203-2. MSD and SMSD List of Materials	
Name	**Material**
Manifold Body	ASTM A105 Forged Steel
Handwheel	Ductile Iron
Bonnet	ASTM A105 Forged Steel
Spring Washer	Stainless Steel
Bolts and Nuts	Bolts: ASTM A193 grade B7
	Nuts: ASTM A194 grade 2H
Piston & Stem	17% Chrome Stainless Steel
Valve Sealing Rings	Expanded Graphite & Stainless Steel
Bushing, Valve	Stainless Steel

Options

Top Inlet:
- Socketweld
- Flanged DIN or ANSI
- Armstrong piston 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-203-2. 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 - 14 M)	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 (2014/68/UE). 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.

MCC-160 Manifold Condensate Collection with TVS-5111

Armstrong combines its Trap Valve Stations (TVS) concept with MSD manifolds into a package called the MCC-160 Condensate Collection Assembly. This prepackaged assembly offers many great benefits – cost savings in assembly, design flexibility and reduced purchasing and design time. The MCC-160 with TVS-5111 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-5111 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-5111 includes:

- Upstream isolating piston valve
- Blowdown valve
- Test valve

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

Table STE-204-1. MCC-160 List of Materials

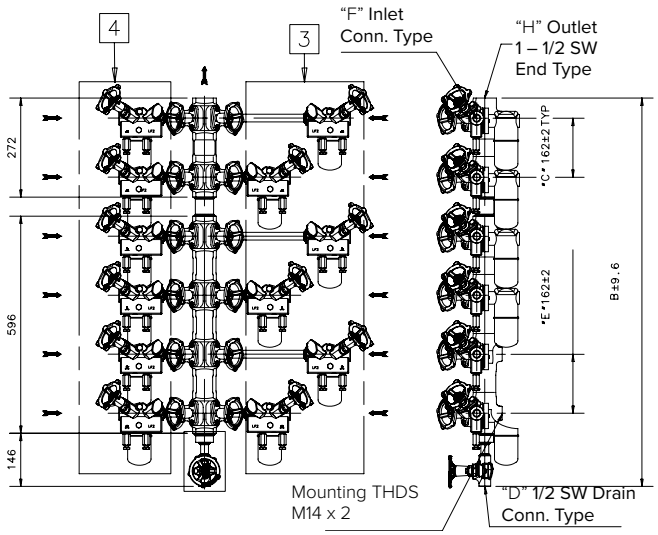
Name	Material
Manifold Body	ASTM A105 Forged Steel
Handwheel	Ductile Iron
Bonnet	ASTM A105 Forged Steel
Spring Washer	Stainless Steel
Bolts and Nuts	Bolts: ASTM A193 grade B7
	Nuts: ASTM A194 grade 2H
Piston & Stem	17% Chrome Stainless Steel
Valve Sealing Rings	Expanded Graphite & Stainless Steel
Bushing,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

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

MCC-160 Manifold Condensate Collection with TVS-5111



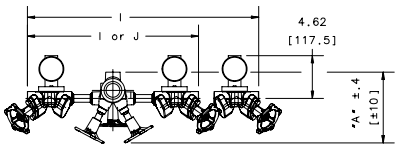


Table STE-205-1. MCC-160 with TVS-5111 (dimensions in mm)

Model	MCC-160-04	MCC-160-08	MCC-160-12
Number of tracers	4	8	12
"A" Valve, Open Position	195	195	195
"B" Height	418	742	1 065
"C" ℄ Inlet to Outlet	162	162	162
"D" Connection, Blowdown	1/2" SW		
"E" ℄ to ℄	2	4	6
"F" Connection Size	1/2" and 3/4" – SW and Screwed NPT		
"H" Outlet Connection	1 1/2" SW		
"I" Face to Face [3] (with 2011 steam trap configuration)	800 - 470		
"J" Face to Face [4]	470	470	470
Weight in Kg (without traps)	24	46	68
Maximum Operating Pressure	28 bar @ 399 °C		

All MCC-160 models are CE Marked according to the PED (2014/68/UE).
For traps, please check the specific page.

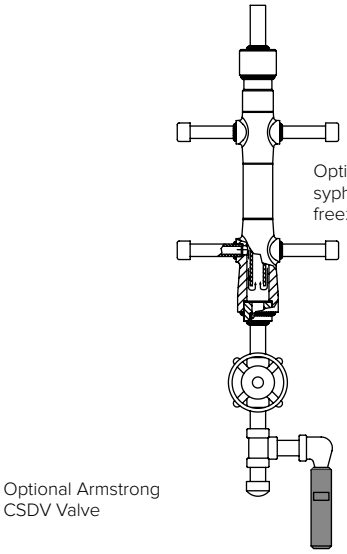
Options

Top Outlet:
- Socketweld
- Flanged DIN or ANSI
- Armstrong piston 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

CCA-203 Condensate Collection Assembly with TVS



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 or TVS-5000 **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.

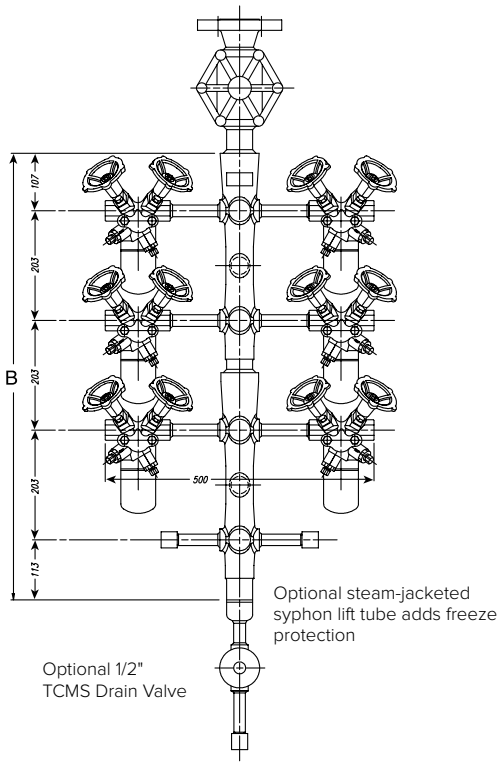
An optional freeze protection valve package senses condensate temperature. When this device opens, it drains condensate from the manifold assembly, thus providing further freeze protection.

Removable Insulation Jackets

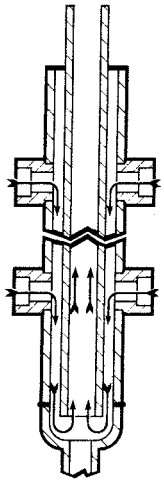
A removable insulation jackets are available for all steam and condensate manifolds.

- 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

CCA-203 Condensate Collection Assembly with TVS



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-207-1. 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 (2014/68/UE). TVS-4000 complies with the Article 4.3 of the same directive. For traps, please check the specific page.

Options

Top Outlet:
- Socketweld
- Flanged DIN or ANSI
- Armstrong piston 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 hand wheels

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