

# CD-4080 Steam Trap Installation & Operations Manual



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these instructions



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# General Safety Information

This bulletin should be used by experienced personnel as a guide to the installation of the Armstrong CD-4080 high-pressure, disc-type steam trap. Selection or installation of equipment should always be accompanied by competent technical assistance. You are encouraged to contact Armstrong International, Inc. or its local sales representative for additional information.

## Icon Legend



**WARNING!**

**Injury or death and property damage are possible.**



**CAUTION!**

**Potential property damage, expensive repairs, and/or voiding the equipment warranty may result.**



**BURN HAZARD!**

**Contact with steam, hot water, or hot metal surfaces can cause severe skin burns. Skin exposure to 140°F (60°C) water or metal for only five (5) seconds may cause a second degree burn.**

**Failure to comply with instructions following a safety icon may result in adverse consequences including property damage, personal injury, or, in extreme cases, death.**

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## General Safety Guidelines:

1. Inappropriate use (beyond typical, intended use) could cause damage to the product and other property. It may also result in personal injury or, in extreme cases, death.
2. Only designated, qualified, and competent personnel should operate, maintain, and service this equipment in accordance with the directions in this product instruction manual.
3. Improper setup, operation, or maintenance may void the product warranty.
4. When operating and maintaining this product:
  - a. ALWAYS select and wear appropriate personal protective equipment (PPE) before carrying out any physical work at the job site, per site-specific requirements. Appropriate PPE may include hard hats, safety glasses, gloves, boots or shoes w/ non-slip soles and toe guards, and protective overalls.
  - b. ALWAYS scan the work area and take note of potential hazards before entering. Adjust your travel path or work position to avoid hazards and personal injury.
  - c. ALWAYS observe designated safety procedures when working in hazardous locations (areas containing explosive and combustible gases, vapors, and dusts) and confined spaces (locations where the breathable air supply is limited or variable, or where entrapment could occur).
  - d. ALWAYS use proper lockout-tagout procedures to disconnect power sources and de-energize machinery before conducting installation, service, and repair.
  - e. ALWAYS use great care and appropriate safety gear when working above ground level, especially on ladders and platforms or in the presence of overhead, electrical power lines.
  - f. ALWAYS shut off all “live” steam, water supply, and condensate return lines before breaking or loosening any plumbing joints.
  - g. ALWAYS carefully relieve any residual internal pressure in the system or connecting pipe work before breaking or loosening any plumbing joints.
  - h. ALWAYS allow hot parts to cool before servicing to avoid the risk of skin burns.

# Product Information

The CD-4080 is a durable, disc-style steam trap, designed for high-pressure steam applications. The CD-4080 is engineered to meet the demanding conditions found in power plant, refinery and chemical plant applications. The CD4080 is designed for installation on a 4-bolt, in-line, connector block, e.g. the Armstrong model IS-4. The IS-4 connector block allows trap installation in virtually any piping configuration with the added flexibility of easier field replacement. For best performance, the CD-4080 should be mounted horizontally.

## Advantages

- Compact
- Replaceable seat and disc
- Freeze-resistant
- Exceptional corrosion resistance

The CD-4080 disc steam trap combines savings in three important areas: energy, installation and replacement. Mounting the CD-4080 on an IS4 4-bolt connector provides quick and easy in-line replacement.

## Maximum Operating Conditions

Maximum allowable pressure (vessel design):  
1245 psig @ 900°F (85.9 barg @ 482°C)

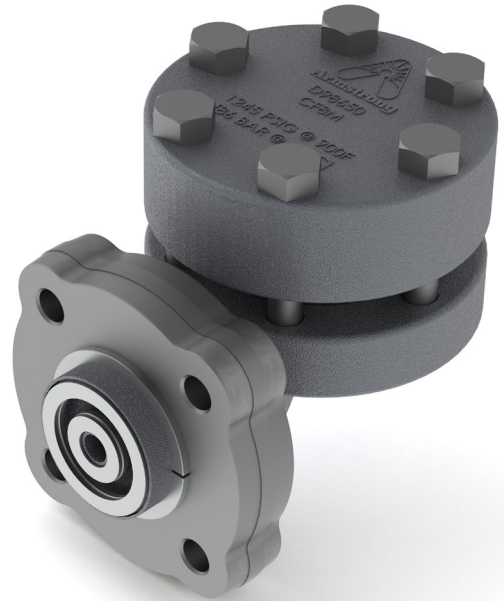
Maximum operating pressure:  
1245 psig (85.9 barg)  
Minimum operating pressure:  
150 psig (10.3 barg)

## Materials of Construction

Body: ASTM A351 Gr. CF8M  
Cap: ASTM A351 Gr. CF8M  
Seat: ASTM A681 Type D2  
Disc: ASTM A681 Type D2

## 360° Universal Connector Options

- Blowdown valve
- Connection sizes: ¾" or 1" NPS
- Connection types: SW, NPT or Flange



# Product Installation



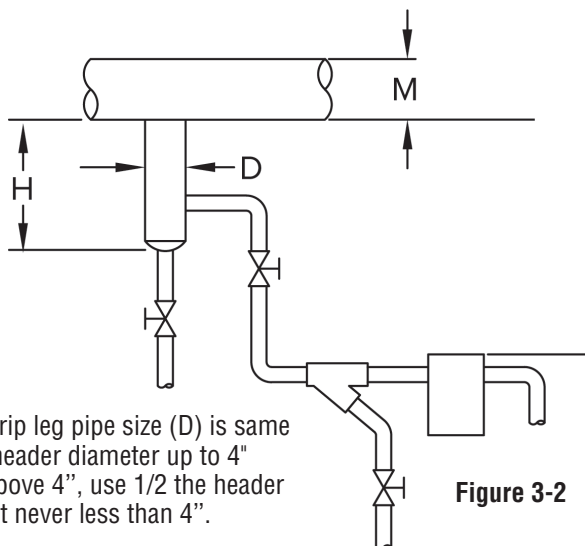
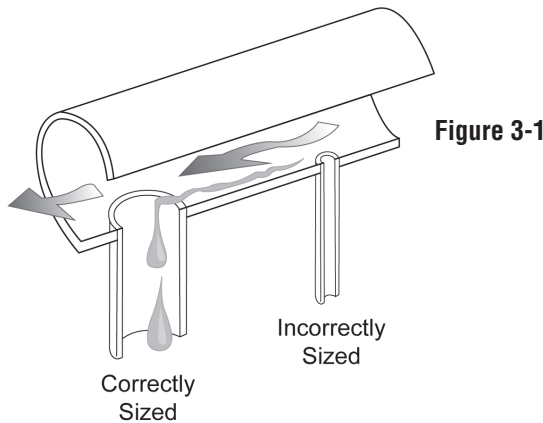
**WARNING!:** When working with high pressure/temperature steam, please review the General Safety Guidelines.

Before installation, verify that the maximum allowable pressure/temperature and maximum operating pressure of the trap are sufficient to handle the system design pressure and temperature. This information can be found on the outside surface of the cap, located on the trap or refer to the "Maximum Operating Conditions". Steam trap installation is critical from both a performance and maintenance aspect. Below are some 'best practice' guidelines for CD-4080 installation in steam systems.

1. Before installing the trap, ensure the steam line is clean. Blow down the strainers ahead of the trap.
2. Install the trap so that it is accessible for inspection and repair, below the drip point and close to the vertical drip leg.
3. The trap must be installed on a 4-bolt connector block (IS-4) See section "Installing Connector Blocks and Steam Traps on Connector Blocks" for more details. Armstrong recommends installing the trap in a horizontal branch of the steam line.
4. Proper piping and drip legs of adequate size and diameter are essential for the successful operation of the Armstrong traps, see Table 3-1 and Figure 3-1.
5. Isolation valves are needed before and after traps. When putting a new trap into service in a hot steam system, be sure to open the isolation valve on the steam line slowly.



**BURN HAZARD!:** Due to the high temperatures of steam, trap surface will be hot. For personnel safety, ensure proper precaution is taken while working near the steam trap.



**Note:** Drip leg pipe size (D) is same as the header diameter up to 4" NPS. Above 4", use 1/2 the header size, but never less than 4".

**Table 3-1. Proper Piping and Drip Leg Size and Diameter**

M Steam Main Size (in) NPS	D Drip Leg Diameter (in) NPS	H Drip Leg Length Minimum (in)	
		Supervised Warm-Up	Automatic Warm-Up
1/2	1/2	10	28
3/4	3/4	10	28
1	1	10	28
2	2	10	28
3	3	10	28
4	4	10	28
6	4	10	28
8	4	12	28
10	6	15	28
12	6	18	28
14	8	21	28
16	8	24	28
18	10	27	28
20	10	30	30
24	12	36	36

# Installing Connector Blocks and Steam Traps on Connector Blocks

## New Installations Using the IS-4 Connector Block

The IS-4 connector block should be installed in piping with the flow direction stamp pointing in the direction of steam flow as indicated on the connector block.

- The trap will then be bolted to the connector block after the connector block has been installed.
- When installing the trap to the connector block, apply 35-50 lbf-ft (47 to 68 N-m) of torque to the bolts using a 3/8" wrench. Allow 3" (80 mm) clearance for bolt installation and removal.
- When putting a trap into service, be sure to open the steam line isolation (or shutoff) valve slowly.

**NOTE: Armstrong strongly recommends installing isolation valves upstream and downstream of the trap. Refer to Figure 4-1.**

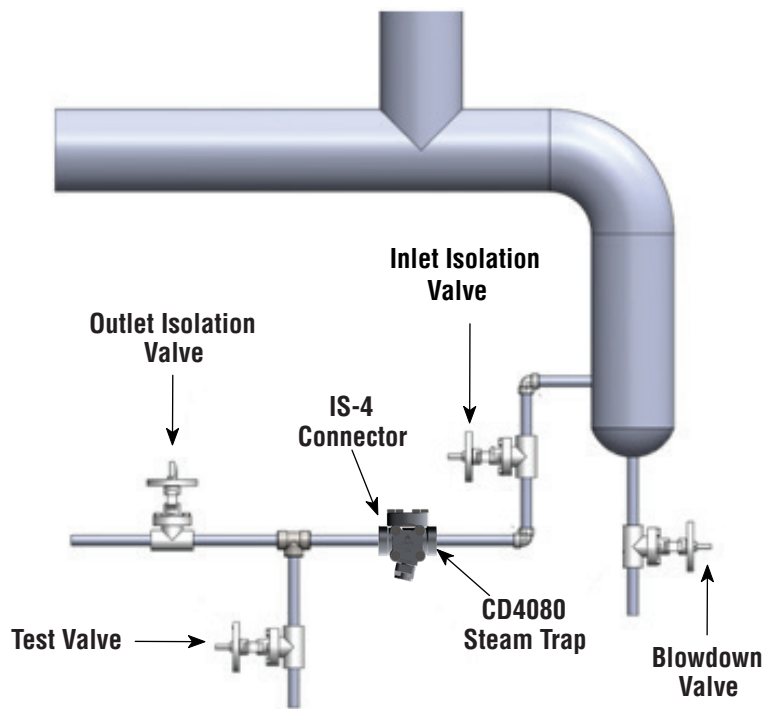


Figure 4-1

# Replacing a Failed Steam Trap on a Connector Block



## WARNING!

## SHUT OFF FLOW TO AND FROM STEAM TRAP

Isolate the steam trap by closing the steam supply valve and condensate return valve before attempting to install the replacement cap assembly.



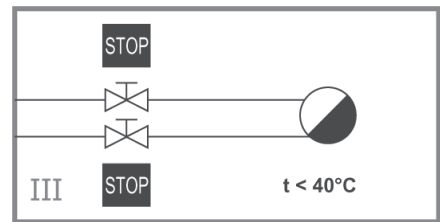
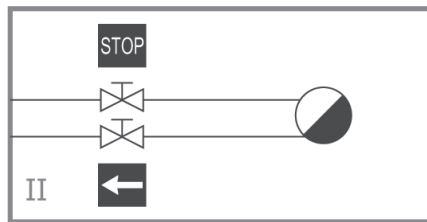
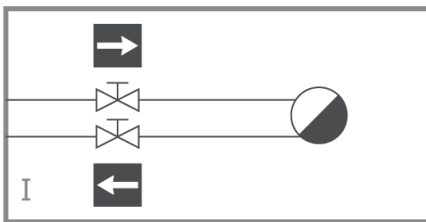
## BURN HAZARD!

## ALLOW TRAP TO COOL BEFORE SERVICING

Allow trap to cool below 100°F (40°C) before attempting to install the replacement trap.

**Note:** It is not necessary to remove the connector block from the piping to install the replacement trap.

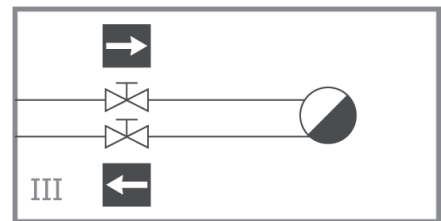
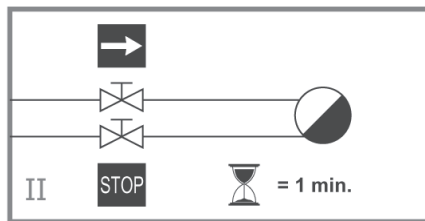
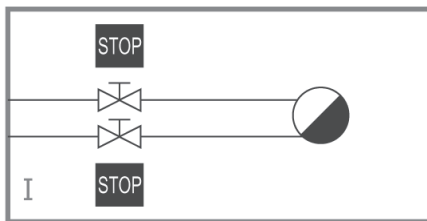
1. Shut off the steam supply to the steam trap. Refer to Figure I below.
2. Shut off the condensate return valve for the steam trap. Refer to Figure II below.



3. Ensure that trap is cold (less than 100°F/40°C), then drain the body of any remaining condensate. Refer to Figure III above.
4. Consider treating connector block bolts with rust penetrant before attempting to remove them from the connector block.
5. Remove and recycle or discard the bolts from the connector block. Use a breaker bar with a 6-point socket or a closed-end wrench to remove 'frozen' bolts, as required.
6. Use a scraper, knife, or abrasive pad to remove all traces of the old gasket from the flange surface of the connector block.
7. Inspect connector block for damage or erosion. If badly damaged, the connector block may need to be replaced. If present, remove or wash off any dirt or debris trapped on the connector block filter screen. If the screen is missing or damaged, contact your local Armstrong sales representative to obtain a replacement.
8. Install the new gasket between the connector block and the trap body.
9. Install the new trap on the connector block.

**Note:** Coat all new bolt threads with an anti-seize compound. Insert new bolts through the connector block flange and turn each bolt in to a 'finger-tight' condition. Use care to avoid cross-threading any bolts and damaging the connector block.

10. Gradually tighten bolts evenly, in a crisscross fashion, using a torque wrench to a maximum torque of 35 to 50 lbf-ft (47 to 68 N-m)
11. Slowly open steam valve to trap, wait ~1 minute, then slowly open the condensate return valve. Refer to Figures I, II, and III, below.



12. Confirm trap appears to be operating correctly by observing trap discharge if possible. Verify that air vent opens at startup and closes, and that trap discharges only condensate with no live steam.

**Contact Armstrong or your local Representative if you have any questions regarding installation or use of the Armstrong model CD-4080 high-pressure disc trap.**

# Maintenance Requirements

When the steam trap is suspected of malfunctioning, it can be checked by observing the discharge of the trap. To assist you in the troubleshooting and repair of steam traps, Armstrong makes available the following reference material: **Handbook “[Steam Conservation Guidelines for Condensate Drainage](#)”**.

**In order to ensure continuous optimum performance from any steam trap, it should be inspected according to the following schedule:**

Operating Pressure (psig)	Application				
	Drip	Tracer	Coil	Process	Critical Drip, Tracer, Coil or Process
0-100	1	1	2	3	4 or Continuous Real Time Monitoring
101-250	2	3	2	3	4 or Continuous Real Time Monitoring
251-450	2	3	3	4	4 or Continuous Real Time Monitoring
451 and above	3	4	4	4	4 or Continuous Real Time Monitoring

False Indicator: If it appears that steam escapes every time trap discharges, remember hot condensate forms flash steam when released to lower pressure. However, the escaping steam usually condenses quickly in the return line.

**Wear progresses simultaneously on both the disc and the seating surfaces. Simply replacing the disc is not sufficient to repair a disc trap. Replace the disc, seat and gaskets with a CD-4080 Series Repair Kit if the disc/seat are not sealing due to wear.**

If the trap is found defective:

1. Isolate the trap
2. Blow down/bleed off the internal pressure
3. With the connector block in line, remove the four bolts that hold the trap to the connector block using a 3/8” wrench.
4. Remove the trap from the connector block
5. Replace the failed trap with a working trap (refer to the installation section "Replacing a Failed Steam Trap on a Connector Block")







# Limited Warranty and Remedy

Armstrong International, Inc. or the Armstrong division that sold the product (“Armstrong”) warrants to the original user of those products supplied by it and used in the service and in the manner for which they are intended, that such products shall be free from defects in material and workmanship for a period of one (1) year from the date of installation, but not longer than 15 months from the date of shipment from the factory, [unless a Special Warranty Period applies, as listed below]. This warranty does not extend to any product that has been subject to misuse, neglect or alteration after shipment from the Armstrong factory. Except as may be expressly provided in a written agreement between Armstrong and the user, which is signed by both parties, Armstrong **DOES NOT MAKE ANY OTHER REPRESENTATIONS OR WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.**

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