

# **Heat Transfer Compounds**

## **INSTALLATION PROCEDURES**



**The Heat Tracing Specialists®**

# Heat Transfer Compounds

## Compound Preparation . . .

1. Prior to installing compound, review the minimum application temperature limits listed below.

| Minimum Application Temperatures |         |          |
|----------------------------------|---------|----------|
| Product                          | Ambient | Compound |
| T-3                              | 0°C     | 0°C      |
| T-99                             | 0°C     | 0°C      |
| T-80                             | -18°C   | -12°C    |
| T-85                             | 0°C     | 21°C     |
| T-802                            | 0°C     | 0°C      |
| SnapTrace®                       | -12°C   | -12°C    |
| EFS™-1                           | -12°C   | -12°C    |
| Nonhardening                     | 0°C     | ≥93°C    |

2. Moderate freezing temperatures will not damage the compound. However, it is recommended that the compound be stored in a heated room for eight hours prior to use.

## Storage and Handling . . .

1. T-3 and T-99 grades are air-setting products with a shelf life of one year. Store at room temperatures below 65°C. These grades freeze at -1°C; however, freezing will not damage compound. Frozen compound should be heated to a temperature above freezing before installation.
2. Cartridges of T-80 and T-85 grades stored at average room temperatures above 5°C have a shelf life of 90 days. Refrigerate these grades below 5°C to extend shelf life to one year. 3.78 l and 18.9 l cans have a 30-day shelf life.
3. SnapTrace is non-aging but should be stored at room temperatures below 50°C.

## Surface Preparation . . .

1. Surface areas where heat transfer compound is to be installed must be reasonably clean. Dirt, rust and scale can be removed with a wire brush. Oil and grease films should be removed with a solvent. Mill varnish and protective coatings may be removed with a suitable stripper.
2. If T-3 is to be installed on aluminum surfaces, Thermon ALP primer should be applied to the surface prior to installation.

## Curing Procedures . . .

1. ChannelTrace™ or hand-troweled applications using T-3 or T-99 grades require curing within 60 days of installation.
2. For T-3 and T-99 hand-troweled applications, the compound must be cured for 4 to 12 hours at 70°C to 100°C. Use copper or stainless steel tubing tracers. Carbon steel tubing tracers are not recommended unless curing takes place immediately.
3. T-80 and T-85 at room temperatures up to 65°C may remain tacky for months. This does not change the heat transfer characteristics of the compound. T-80 and T-85 cure in 4 to 12 hours at temperatures between 100°C and 165°C.
4. T-802 grade, when mixed one part B to two parts J, cures in 1.25 to 4 hours between 15°C and 40°C.
5. SnapTrace, EFS-1, T-80, T-85, T-802 and Non-hardening compounds may be put into operation immediately—no curing procedures required.

## Precautionary and Cleanup Measures . . .

1. Wearing gloves and safety glasses is a must.
2. T-3 and T-99 grades are slightly alkaline and should be kept away from eyes.
3. Waterless soap may be used to remove compounds from hands, arms, etc.
4. When using T-80, T-85, NH or T-802, equipment and spillages should be cleaned using suitable hydrocarbon solvents.



# INSTALLATION PROCEDURES

## T-3 and T-99 . . .

### Installation on Straight Run Piping

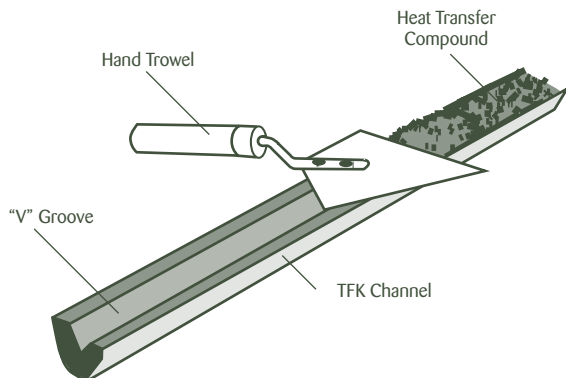
1. Install tube tracers in accordance with Illustrations A and B below. Pressure test tracing for leaks with steam pressure equal to or greater than the normal operating pressure or preferably with suitable hydrostatic tests. Repair any leaks and retest until the tracing system is free of leaks.
2. Fill TFK channel with T-3 or T-99 compound and use trowel to groove compound for tube tracer. The trowel should be used to remove heat transfer compound from the channel leaving a "V" groove. The mass of compound removed corresponds to the space which will be occupied by the tracer tube.
3. Press TFK channel over tracer.
4. If two or more tracers are used, they should be equally spaced circumferentially around the pipe in accordance with Illustration E on page 4.
5. Attach channel to process piping with stainless steel banding and crimp-type seals as shown.
  - Banding should be a minimum of 12 mm x 0.5 mm for TFK-4 systems.\*
  - Banding should be a minimum of 12 mm x 0.5 mm for TFK-7 or TFK-9 systems.\*
  - Banding tool should exert a force of 4450 N or greater.\*

\* Banding, crimp seals and tools meeting the required specifications are available from Thermon.

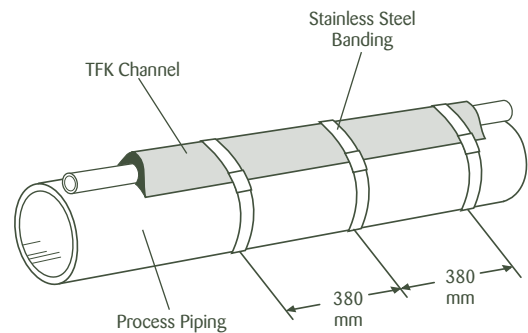
#### Note . . .

T-3 and T-99 grades are water-soluble and should never be exposed to moisture. In all places where heat transfer compound has been applied with a hand trowel and the compound is exposed, temporary weather protection is required. Polyethylene film placed over heat transfer compound provides excellent weather protection. Remove film prior to installing insulation. For applications above 210°C channels should be stainless steel versus galvanized metal.

**Illustration A: Installation of ChannelTrace System**



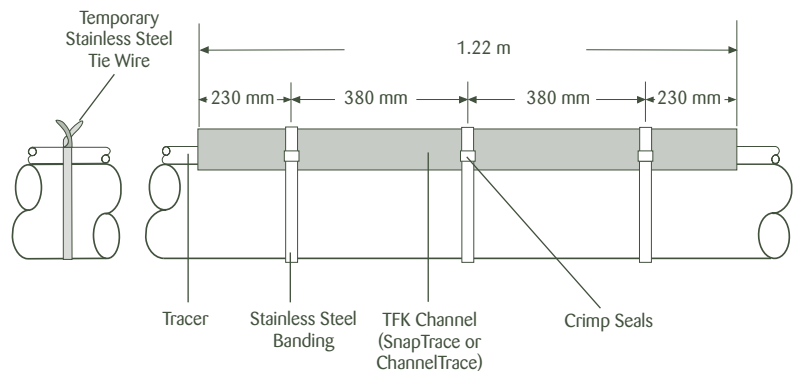
Fill TFK channel with compound and use trowel to groove compound for tracer.



Press filled TFK channel over tracer and secure to process pipe using stainless steel banding.

**Illustration B: Installation of Tube Tracers**

1. Band with minimum of 12 mm x 0,5 mm banding. For temporary attachment, secure with 1 mm stainless steel wire.
2. Place ChannelTrace™ system or SnapTrace® with channel over tracer after removing the wire.



# Heat Transfer Compounds

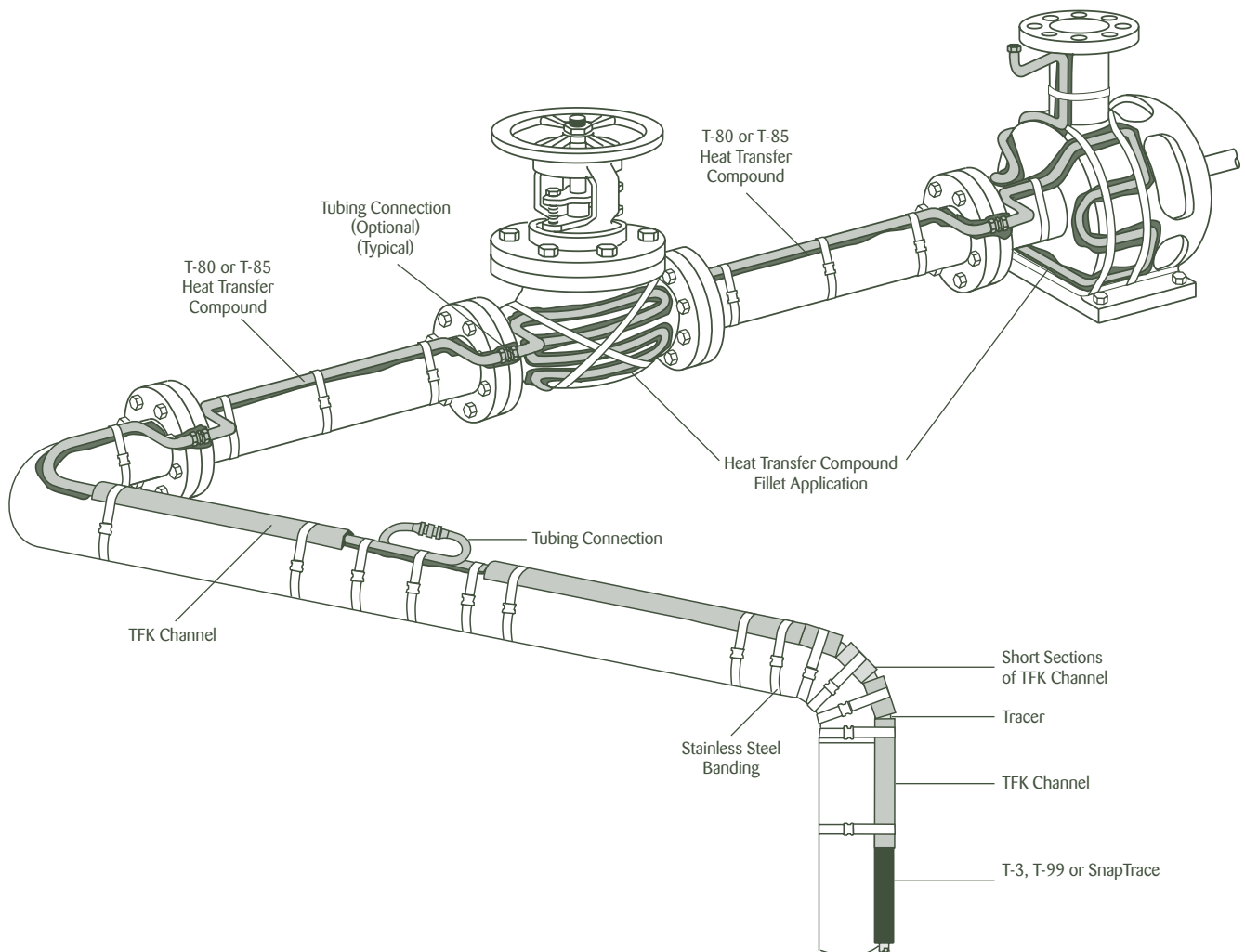
## Installation on Valves, Flanges, Elbows and Pumps . . .

1. Install tube tracers in accordance with Illustration C below. Pressure test tracing for leaks with steam pressure equal to or greater than the normal operating pressure, or preferably with suitable hydrostatic tests. Repair any leaks and retest until the tracing system is free of leaks.
2. Hand trowel heat transfer compound over tracers so that the tracer tube is completely embedded in compound (see illustration below). Fill all voids between surface and tracer

to ensure maximum heat transfer. Cure the heat transfer compound. If the maximum thickness of the compound is greater than 25 mm, best results and more rapid overall application will be obtained by installing these particular grades in two layers with an air drying time of at least 24 hours between applications.

3. Insulate and weatherproof equipment.

**Illustration C: Heat Transfer Compound Installation**



# INSTALLATION PROCEDURES

## T-80 and T-85 . . .

### Installation on Straight Run Piping

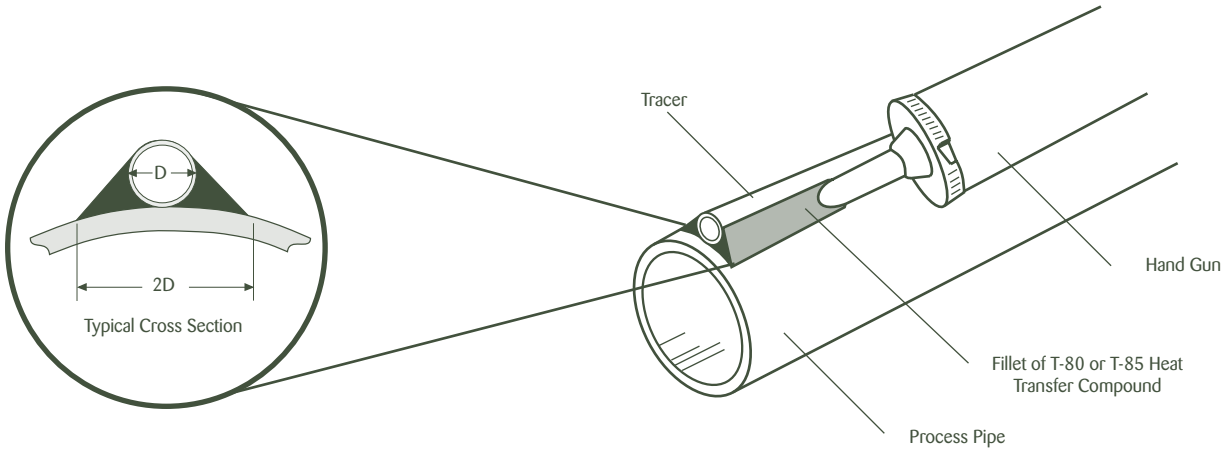
Tracers are to be run parallel and in direct contact with the process pipe where possible. Tracer location on pipe is to be where most accessible. If more than two tracers are used, they should be equally spaced circumferentially around the pipe.

1. Install tracers as shown below. Pressure test tracing for leaks with steam pressure equal to or greater than the normal operating pressure or preferably with suitable hydrostatic tests. Repair any leaks and retest until the tracing system is free of leaks.

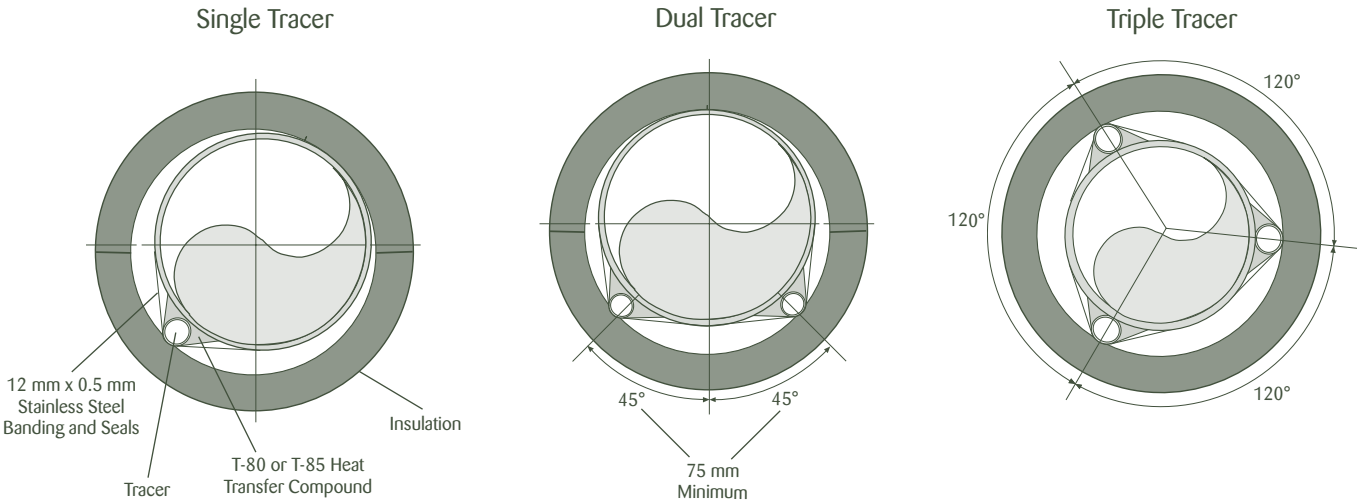
2. Attach tracer to process piping with stainless steel banding and crimp seals in accordance with Illustration A (see T-3 and T-99 installation).
3. Apply fillet of compound along sides of the tracer as shown on Illustration D below.
4. Insulate and weatherproof equipment.

**Note . . .**  
T-80 and T-85 are not soluble in water. However, systems employing T-80 or T-85 which are not insulated should be temporarily protected from the erosive action of rain or moisture during the curing period.

**Illustration D: Fillet Application**



**Illustration E: T-80 and T-85**



**Note . . .**  
For ease of installation and serviceability, all tracers shall be installed parallel to and against the heated pipe or equipment and shall be placed on the most accessible surface location in regard to supports, ease of installation, connection and thermal insulation. Multiple tracers shall be equally spaced around the circumference of the pipe.

# Heat Transfer Compounds

## SnapTrace® . . .

### Installation on Straight Run Piping

Tracers are to be run parallel and in direct contact with the process pipe where possible. Tracer location on pipe is to be where most accessible. If more than two tracers are used, they should be equally spaced circumferentially around the pipe as shown in Illustration G.

1. Install tube or pipe tracers in accordance with Illustration A (see T-3 and T-99 installation). Pressure test tracing for leaks with steam pressure equal to or greater than the normal operating pressure or preferably with suitable hydrostatic tests. Repair any leaks and retest until tracing system is free of leaks.
2. Place SnapTrace over tracer as shown in Illustration F below.

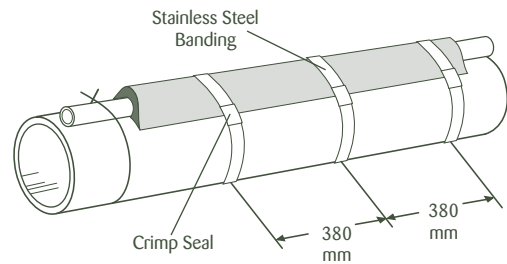
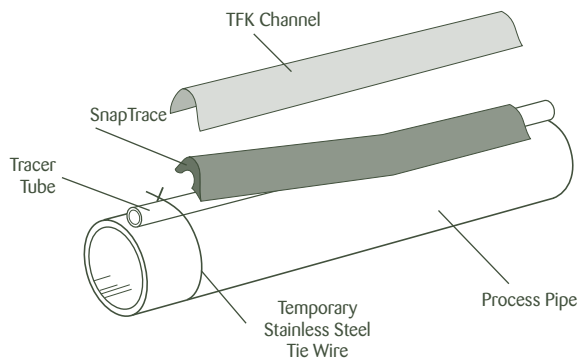
3. Position TFK channel over SnapTrace.
4. Attach channel to process piping with stainless steel banding and crimp-type seals as shown.
  - Banding should be a minimum of 12 mm x 0.5 mm for ST-1 and ST-2 systems.\*
  - Banding should be a minimum of 12 mm x 0.5 mm for ST-3, ST-4, ST-5 and ST-6 systems.\*
  - Banding tool should exert a force of 4450 N or greater.\*
5. Insulate and weatherproof piping.

\* Banding, crimp seals and tools meeting the required specifications are available from Thermon.

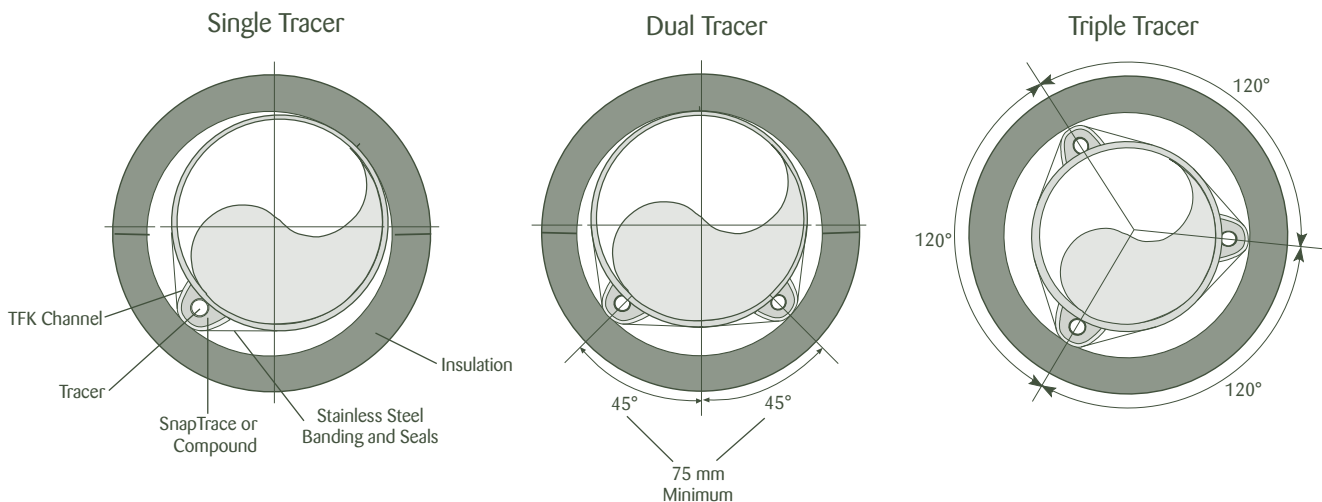
**Illustration F: Installation of SnapTrace Compound**

Place SnapTrace and channel over tracer.

Band SnapTrace to pipe (see Illustration A).



**Illustration G: SnapTrace and ChannelTrace™**



**Note . . .**

For ease of installation and serviceability, all tracers shall be installed parallel to and against the heated pipe or equipment and shall be placed on the most accessible surface location in regard to supports, ease of installation, connection and thermal insulation. Multiple tracers shall be equally spaced around the circumference of the pipe.



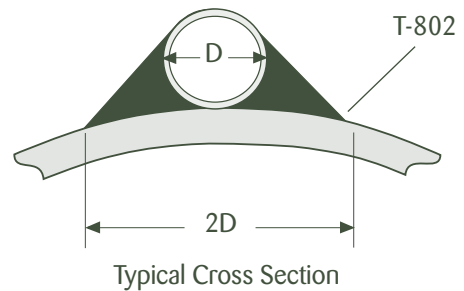
The Heat Tracing Specialists®

# INSTALLATION PROCEDURES

## T-802 . . .

### Installation

1. T-802 is installed just as T-80 and T-85.
2. Mix the two-part compound.
3. Install with a hand trowel.
4. Air curing will occur as noted on page 1. The T-802 can be put into service without curing.



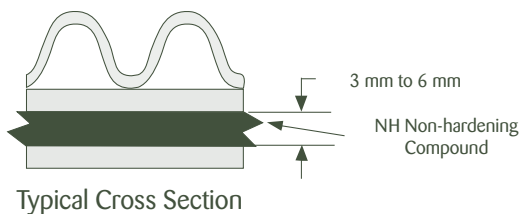
## NH Non-hardening . . .

### Installation

1. Approximate thickness of compound required is 3 mm to 6 mm covering the entire contact side surface area of plate(s). Coverage rates are 6 m<sup>2</sup> per 19 liters for 3 mm thickness, 3 m<sup>2</sup> per 19 liters for 6 mm thickness.
2. Heat NH heat transfer compound to approximately 95°C to 120°C before application.
3. For best results, preheat the plate surface(s) to 95°C to 120°C; this will allow the compound to flow more smoothly onto the plate surface(s).
4. Trowel on and spread the hot heat transfer compound over the plate surface(s) using a mortar trowel. After

spreading the compound over the entire surface, ensure that sufficient compound is installed to fill the normal air voids and other irregular surfaces which may exist on the vessel or plate.

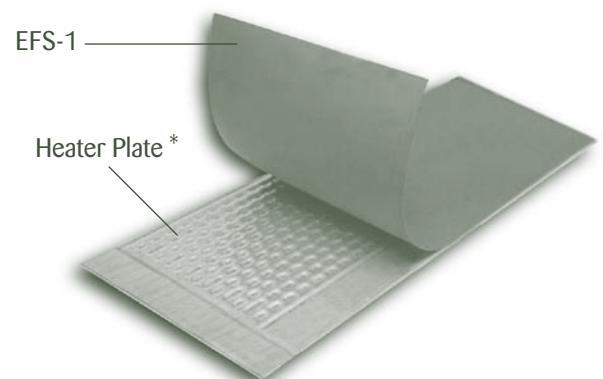
5. No curing is required.
6. Install the plate(s) on the vessel wall.
7. Insulate and weatherproof.



## EFS™-1 . . .

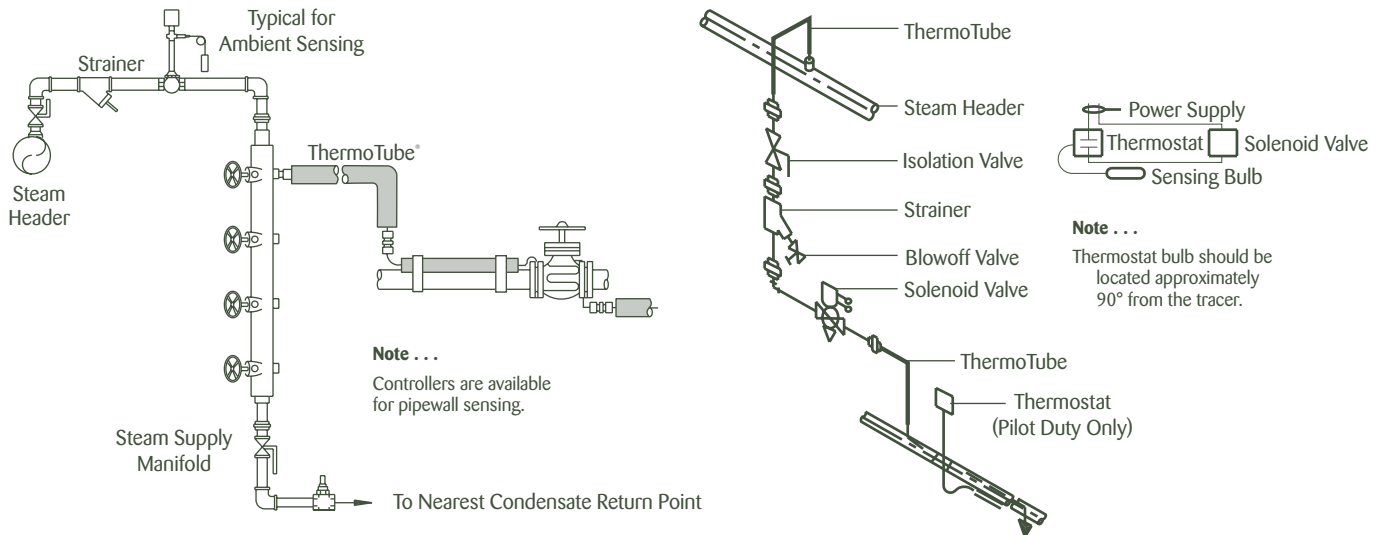
### Installation

1. Cut the EFS to desired size.
2. Place the EFS between the surface of the heat source and the equipment being heated.
3. Mechanically secure the heat source to equipment.
4. No curing is required.



\* Such as HeetSheet® vessel heating unit.

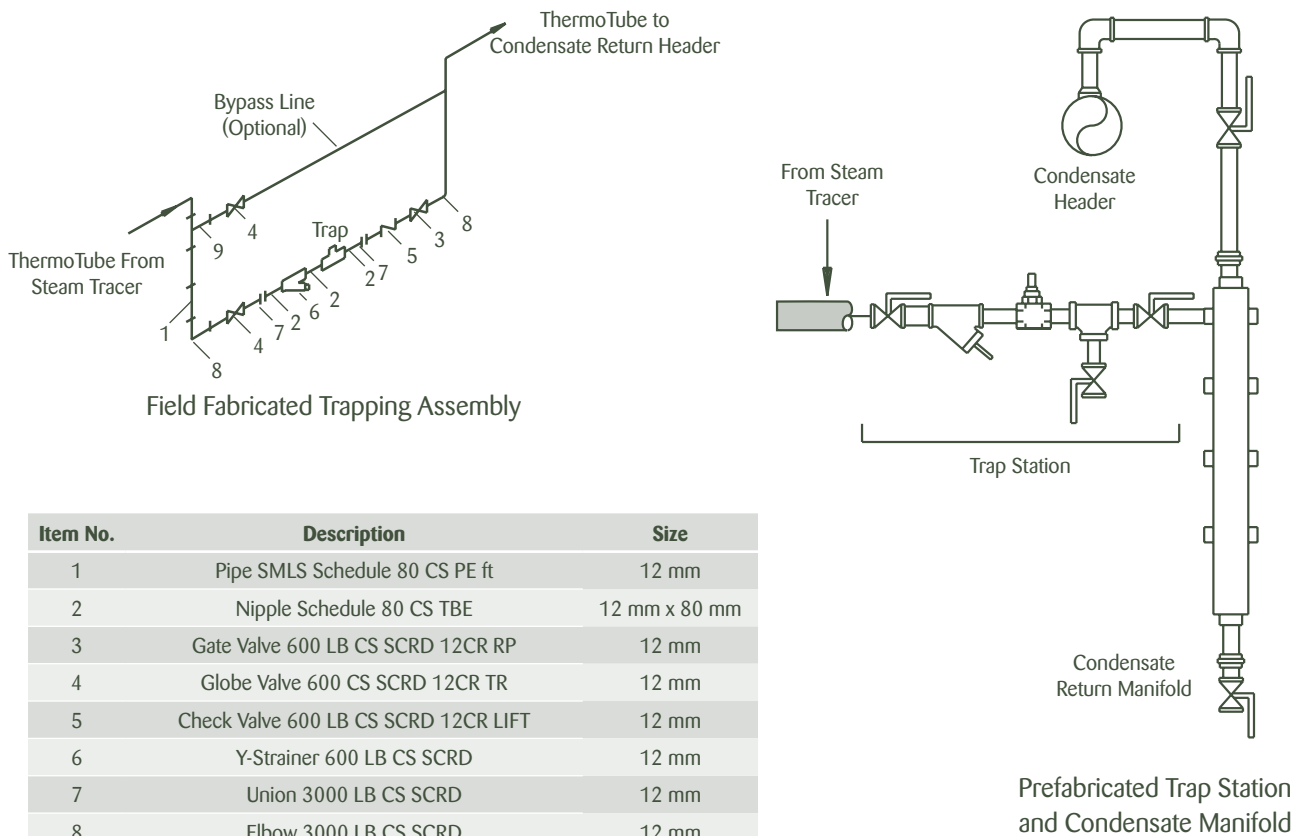
## Illustration H: Temperature Control Details



Steam Temperature Control Using Self-Actuated Mechanical Controller with Prefabricated Manifold

Steam Temperature Control Using Thermostat and Solenoid Valve for Pipe or Ambient Sensing (Field Assembly)

## Illustration I: Trapping and Condensate Handling Details



| Item No. | Description                           | Size          |
|----------|---------------------------------------|---------------|
| 1        | Pipe SMLS Schedule 80 CS PE ft        | 12 mm         |
| 2        | Nipple Schedule 80 CS TBE             | 12 mm x 80 mm |
| 3        | Gate Valve 600 LB CS SCR D 12CR RP    | 12 mm         |
| 4        | Globe Valve 600 CS SCR D 12CR TR      | 12 mm         |
| 5        | Check Valve 600 LB CS SCR D 12CR LIFT | 12 mm         |
| 6        | Y-Strainer 600 LB CS SCR D            | 12 mm         |
| 7        | Union 3000 LB CS SCR D                | 12 mm         |
| 8        | Elbow 3000 LB CS SCR D                | 12 mm         |
| 9        | Tee Schedule 80 CS                    | 12 mm         |



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