

# 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
<b>T-3</b>	32°F (0°C)	32°F (0°C)
<b>T-75</b>	32°F (0°C)	32°F (0°C)
<b>T-80</b>	0°F (-18°C)	10°F (-12°C)
<b>T-85</b>	32°F (0°C)	70°F (21°C)
<b>T-99</b>	32°F (0°C)	32°F (0°C)
<b>T-802</b>	32°F (0°C)	32°F (0°C)
<b>SnapTrace*</b>	10°F (-12°C)	10°F (-12°C)
<b>EFS™-1</b>	10°F (-12°C)	10°F (-12°C)
<b>Nonhardening</b>	32°F (0°C)	≥200°F (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. T-80 and T-85 may be applied using an application gun with a heated barrel.
3. **T-75** and **T-99** Thermon Manufacturing Company's new BondTrace™ series of heat transfer compounds have been developed for special applications but may also be used for traditional pipe heating applications. For more information see T-75 Product Specification Form TSP0035 and T-99 Product Specification Form TSP0033.

## Storage and Handling . . .

1. **T-3**, **T-75** and **T-99** grades are air-setting products with a shelf life of one year. Store at room temperatures below 150°F (66°C). These grades freeze at 30°F (-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 40°F (5°C) have a shelf life of 90 days. Refrigerate these grades below 40°F (5°C) to extend shelf life to one year. One-gallon and five-gallon cans have a 30-day shelf life.
3. SnapTrace is nonaging but should be stored at room temperatures below 120°F (49°C).

## Surface Preparation . . .

1. Surface areas where heat transfer compound is to be installed must be clean in order to provide a good thermal connection with the substrate. Contact surfaces should be free of oil, grease, dirt, rust, scale, mill varnish and other contaminants. Degreasers and solvents along with hand tool

or power tool cleaning may be used in accordance with the appropriate SSPC (the Society for Protective Coatings) and NACE (the Corrosion Society) surface preparation guides and standards. Follow all safety precautions when using any surface cleaning material and method.

2. If **T-3**, **T-63** or **T-75** grades are 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**, **T-75** or **T-99** grades require curing within 60 days of installation.
2. **T-3**, **T-75** or **T-99** hand-troweled applications, the compound must be cured for 4 to 12 hours at 160°F to 212°F (71°C to 100°C). Use copper or stainless steel tubing tracers. Carbon steel tubing tracers are not recommended.
3. **T-80** and **T-85** at room temperatures up to 150°F (66°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 212°F and 325°F (100°C and 163°C).
4. **T-802** grade, when mixed one part B to two parts J, cures in 1.25 to 4 hours between 60°F and 100°F (16°C and 38°C).
5. **SnapTrace** and **EFS-1** heat transfer compounds must be heated to a temperature of at least 200°F (93°C) to promote surface wetting and curing. For applications where the heating media and the equipment will be below 200°F (93°C), the materials must be heated to at least 200°F (93°C) for a period of 24 hours before returning to the lower operating temperature.
6. **T-80**, **T-85**, **NH** or **T-802** compounds may be put into operation immediately. No curing procedures required. T-80 and T-85 will cure in 4 to 12 at temperatures of 212°F to 325°F (100°C to 163°C).

## Precautionary and Cleanup Measures . . .

1. Wearing gloves and safety glasses is recommended.
2. **T-3**, **T-75** 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** or **T-802** equipment and spillages should be cleaned using approved solvents, emulsions or cleaning compounds. MEK and toluene will clean up these materials but make sure they are approved for the workplace before using and follow all safety precautions.

# INSTALLATION PROCEDURES

## T-3, T-75 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 with suitable hydrostatic tests. Repair any leaks and retest until the tracing system is free of leaks.
2. Fill TFK channel with T-3, T-75 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. Refer to Thermon's Estimating Bill of Materials, Form TSP0034 for compound coverage details.
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 0.50" wide by 0.020" thick (12.7 mm x 0.51 mm) for TFK-4 systems.\*
  - Banding should be a minimum of 0.50" wide by 0.030" thick (12.7 mm x 0.76 mm) for TFK-7 or TFK-9 systems.\*
  - Banding tool should exert a force of 1,000 pounds (4,448 N) or greater.\*

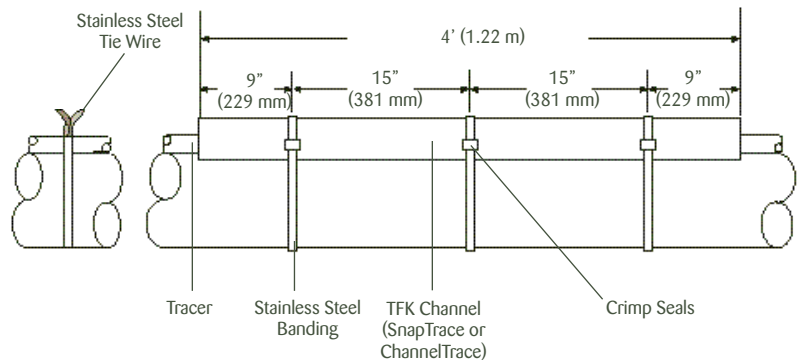
\*Banding, crimp seals and tools meeting the required specifications are available from Thermon.
6. Insulate and weatherproof piping.

#### Note . . .

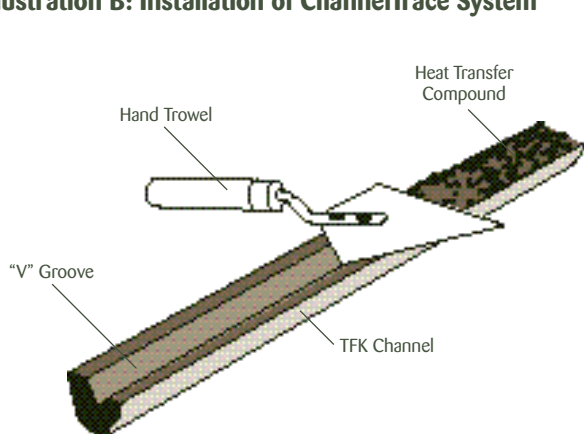
T-3, T-63, T-75 and T-99 grades are water-soluble and should never be exposed to moisture. In all places where heat transfer compound has been applied with a hand trowel and the compound is exposed, temporary weather protection is required. Polyethylene film placed over heat transfer compound provides excellent weather protection. Remove film prior to installing insulation.

### Illustration A: Installation of Tube Tracers

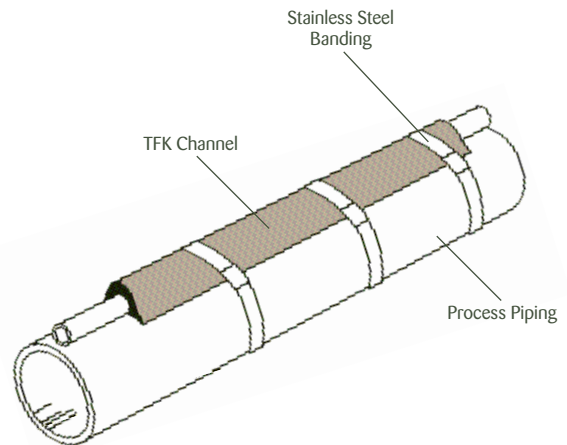
1. Prior to installing TFK jackets, tracers may be temporarily positioned on the pipe using fixing tape or 14-gauge stainless steel tie wire every 2 to 4 feet (0.6 to 1.2 m).
2. Place ChannelTrace™ system or SnapTrace® with TFK channel over tracer and wire.



### Illustration B: 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.

# Heat Transfer Compounds

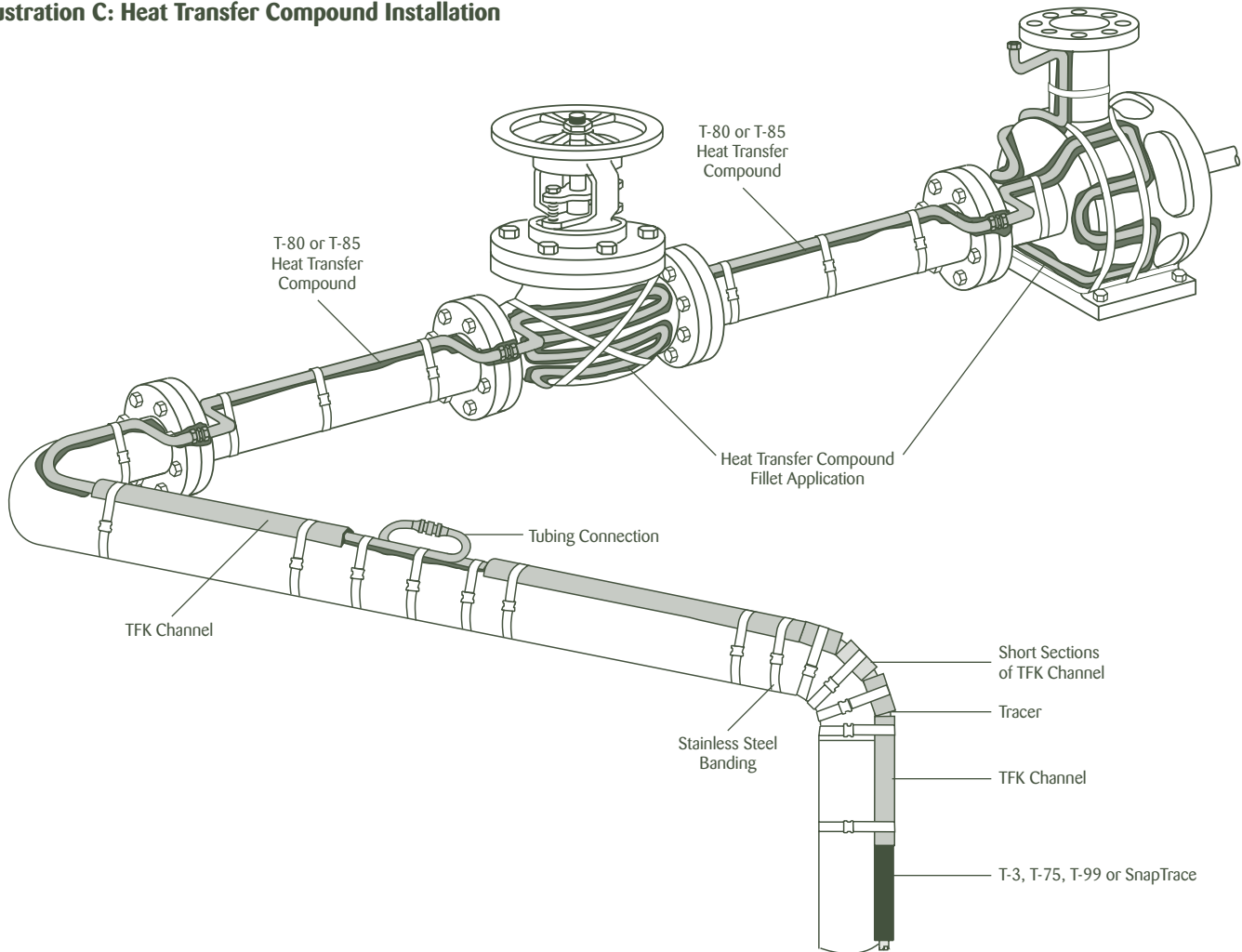
## Installation on Valves, Flanges, Elbows and Pumps . . .

1. Install tube tracers in accordance with Illustration C below. Pressure test tracing for leaks with steam pressure equal to the normal operating pressure or with suitable hydrostatic tests. Repair any leaks and retest until the tracing system is free of leaks.
2. T-80 or T-85 heat transfer compounds are often used where moist and corrosive environments exist. These materials may be applied as a fillet along each side of the tracer as shown in Illustration C. See Curing Procedures on page 1. Heat transfer compound is not generally applied over the top of a flange.

Where moist or corrosive conditions are not likely to be present T-3, T-75 or T-99 heat transfer compounds may be hand trowelled onto tracers. These materials should cover the top of the tracer by a minimum of 1/4" (6mm), completely embedding the tracer. All voids between the tracer and the contact surface should be filled to ensure maximum heat transfer. See Curing Procedures on page 1. On valves and other irregular shaped equipment where the material is installed in a large mass, the curing period should be at least 24 hours.

3. Insulate and weatherproof equipment.

**Illustration C: Heat Transfer Compound Installation**



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# 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 the normal operating pressure or with suitable hydrostatic tests. Repair any leaks and retest until the tracing system is free of leaks.
2. Tracers may be temporarily positioned on the pipe using fixing tape or 14-gauge stainless steel tie wire every 2 to 4 feet (0.6 to 1.2 m). Prior to installing T80 or T-85 compound, secure the tracer to the pipe on 2-foot (0.6m) centers using

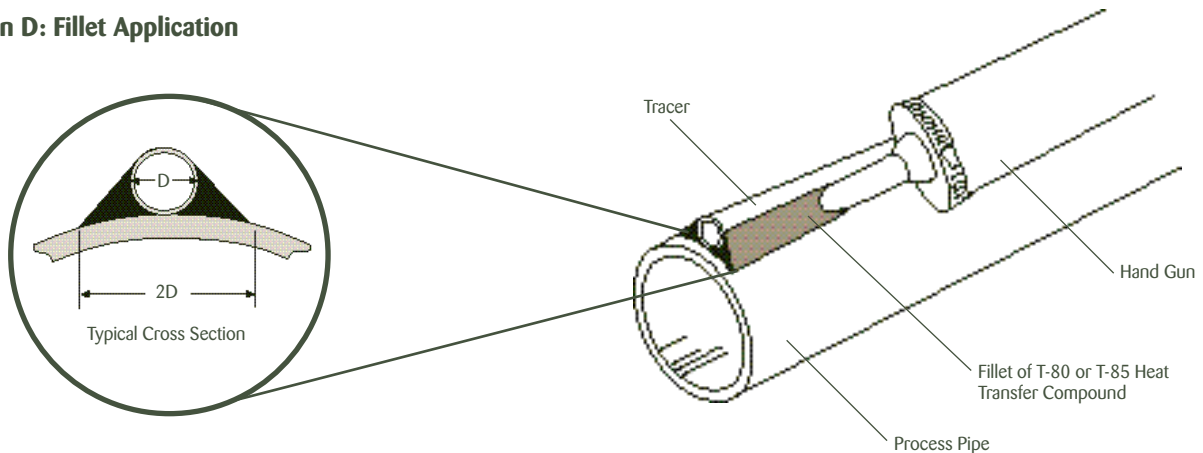
T2SSB stainless steel banding and crimp seals for 3/8" or 1/2" O.D. (10mm or 12mm) tracers and T3SSB for 3/4" O.D. (20mm) tracers or larger. The bands should be as tight as possible without denting or flattening the tracer.

3. Apply fillet of compound along sides of the tracer as shown on Illustration D below. Refer to Thermon's Estimating Bill of Materials, Form TSP0034 for compound coverage details.
4. Insulate and weatherproof equipment.

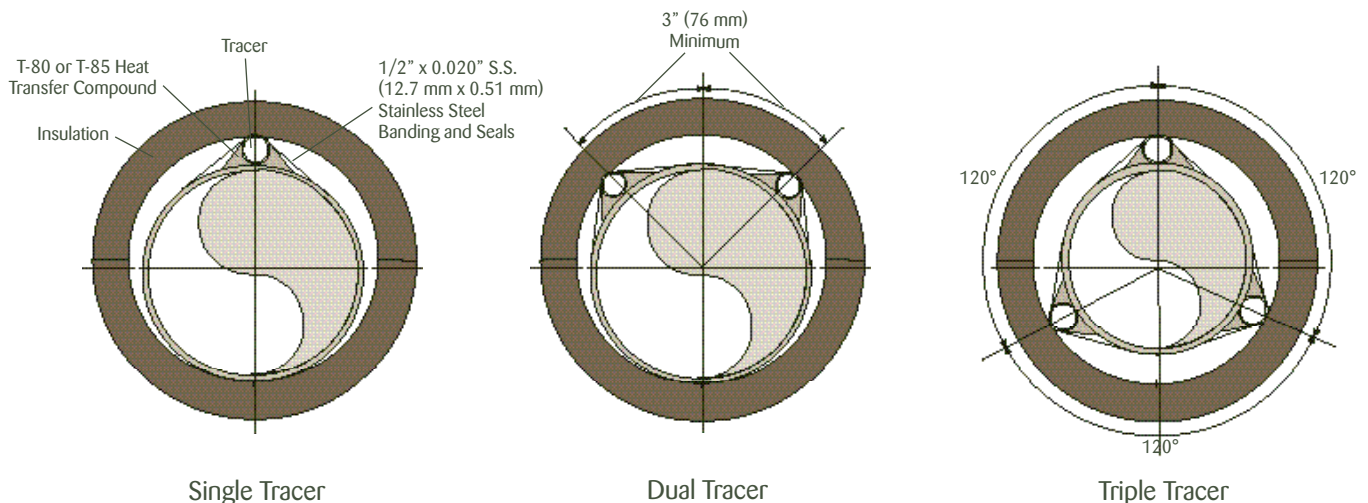
#### Note . . .

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 or corrosive action of rain or moisture during the curing period.

**Illustration D: Fillet Application**



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



# 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, T-75 and T-99 installation). Pressure test tracing for leaks with steam pressure equal to or greater than the normal operating pressure or 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.

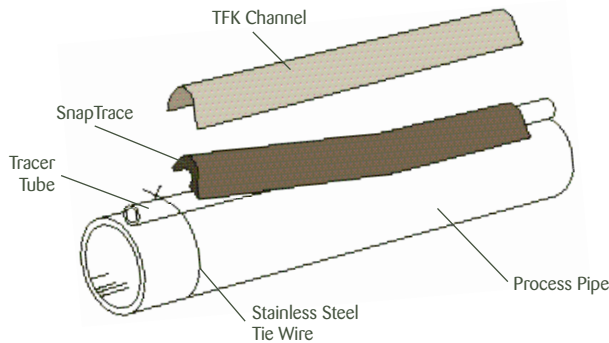
3. Position TFK channel over SnapTrace.
4. Attach jacket to process piping with stainless steel banding and crimp-type seals as shown.
  - Banding should be a minimum of 0.50" wide by 0.020" thick (12.7 mm x 0.51 mm) for ST-1 and ST-2 systems.\*
  - Banding should be a minimum of 0.50" wide by 0.030" thick (12.7 mm x 0.76 mm) for ST-3, ST-4, ST-5 and ST-6 systems.\*
  - Banding tool should exert a force of 1,000 pounds (4,448 N) or greater.\*
5. Insulate and weatherproof piping.

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

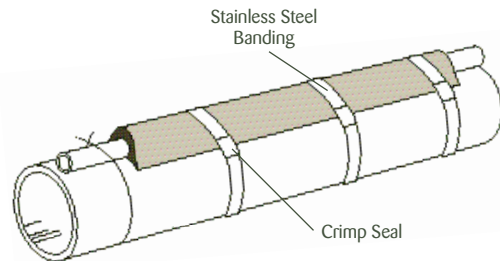
**Note . . .** In all places where SnapTrace is exposed, temporary weather protection is required. Polyethylene film placed over SnapTrace provides excellent weather protection. Remove film prior to installing insulation.

### Illustration F: Installation of SnapTrace Compound

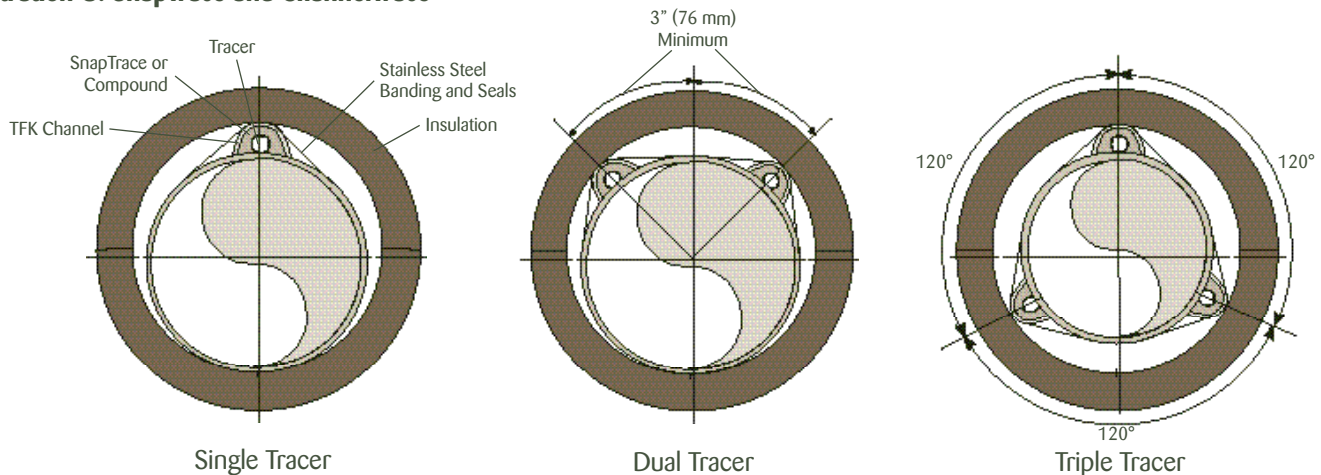
Place SnapTrace and channel over tracer.



Band SnapTrace to pipe (see Illustration A).



### Illustration G: SnapTrace and ChannelTrace™



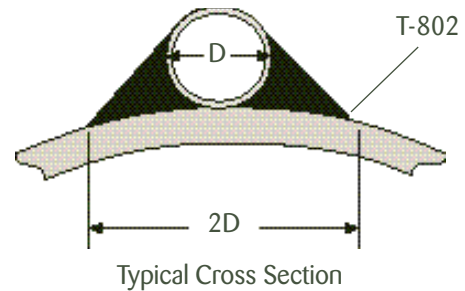
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# INSTALLATION PROCEDURES

## T-802 . . .

### Installation

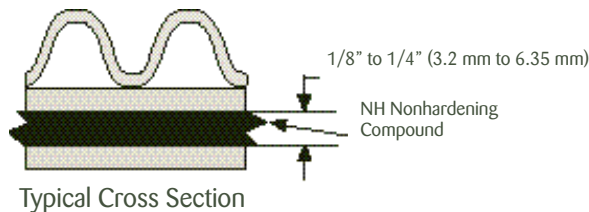
1. T-802 is installed just as T-80 and T-85.
2. Mix the two-part compound.
3. Install with a hand trowel. Refer to Thermon's Estimating Bill of Materials, Form TSP0034 for compound coverage details.
4. Air curing will occur as noted on page 1. The T-802 can be put into service without curing.



## NH Nonhardening . . .

### Installation

1. Approximate thickness of compound required is 1/8" (3.2 mm) to 1/4" (6.35 mm) covering the entire contact side surface area of coil(s). Coverage rates are 64 ft<sup>2</sup> per 5-gallon can for 1/8" thickness, 32 ft<sup>2</sup> per 5-gallon can for 1/4" thickness (5.95 m<sup>2</sup> per 19 liters for 3.2 mm thickness, 2.97 m<sup>2</sup> per 19 liters for 6.35 mm thickness). Refer to Thermon's Estimating Bill of Materials, Form TSP0034 for compound coverage details.
2. Heat NH heat transfer compound to approximately 200°F to 250°F (93°C to 121°C) before application.
3. For best results, preheat the coil surface(s) to 200°F to 250°F (93°C to 121°C); this will allow the compound to flow more smoothly onto the coil surface(s).



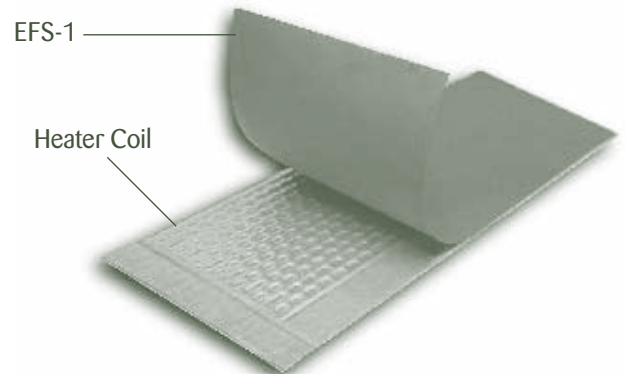
4. Trowel on and spread the hot heat transfer compound over the coil surface(s) using a mortar trowel. After spreading the compound over the entire surface, ensure that sufficient compound is installed to fill the normal air voids and other irregular surfaces which may exist on the vessel or coil.
5. No curing is required.
6. Install the coil(s) on the vessel wall.



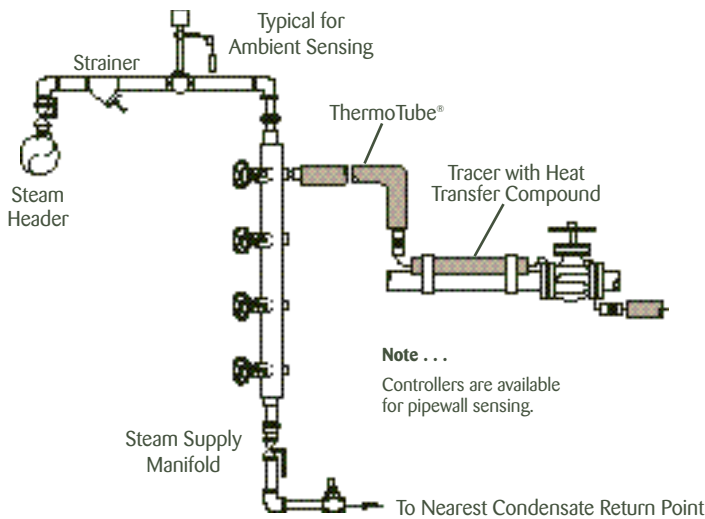
## EFS™-1 . . .

### Installation

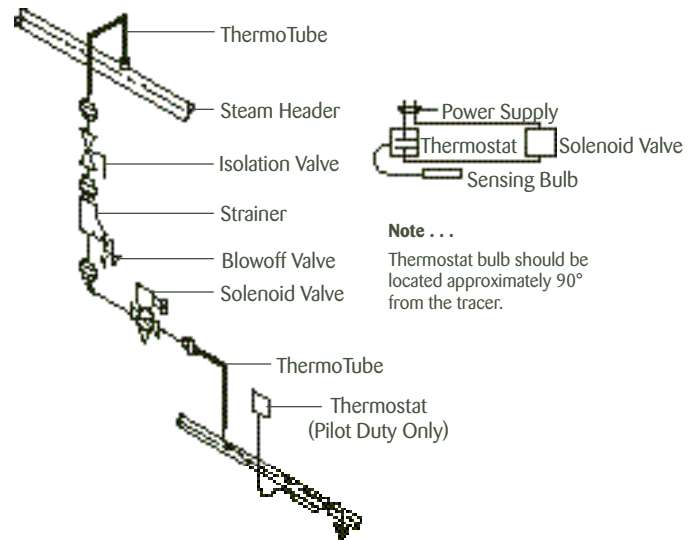
1. Cut the EFS to desired size.
2. Place the EFS between the surface of the heat source and the equipment being heated.
3. Mechanically secure the heat source to equipment.
4. No curing is required.



## Illustration H: Temperature Control Details

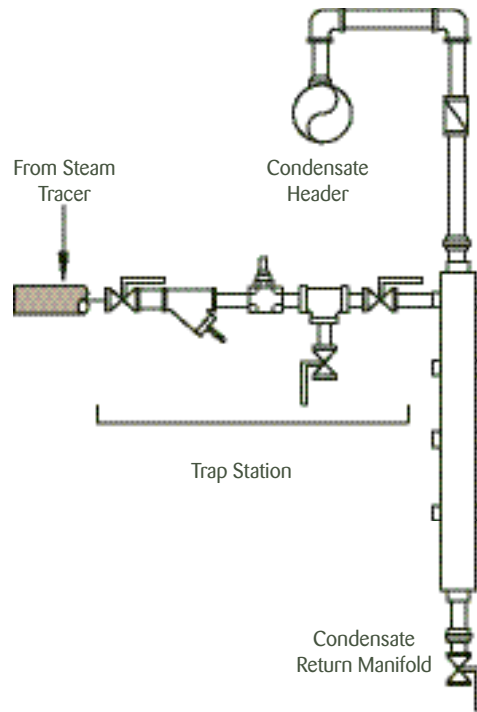
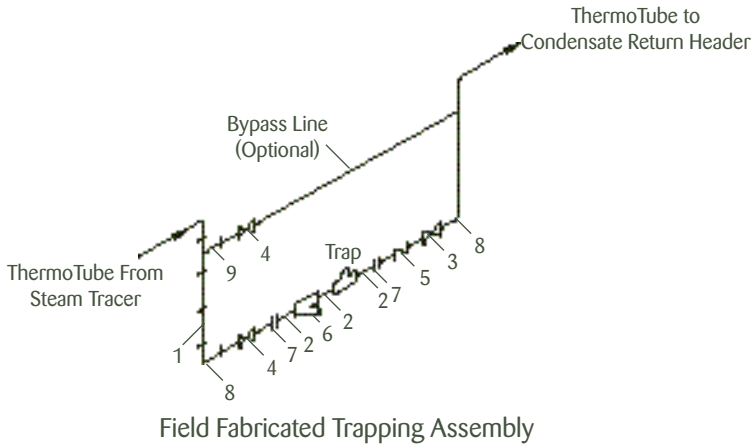


Steam Temperature Control Using Self-Actuated Mechanical Controller with Prefabricated Manifold



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

## Illustration I: Trapping and Condensate Handling Details



Prefabricated Trap Station and Condensate Manifold

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



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