



Installation Procedures

QMax™ CST (Carbon Steel Tracing) is specifically designed for long-run, hot oil or steam tracing. As with any system, if not properly installed, it may not function as intended. It is important to review and follow these procedures and inspect the system to ensure a successful application.

Required Equipment:

- QMax CST components (straight and elbow trace elements, customized elements, jumper hoses, and system isometric if applicable)
- QMax Industries, Inc. approved installation banding, buckles and tool (normally supplied with system)
 - Snips (for cutting banding to length)
 - Ball peen hammer and channel lock pliers (for bending banding/buckle tabs)
 - Gloves are suggested (banding can have sharp edges)
- QMax Industries, Inc. approved Heat Transfer Compound (normally supplied with system)
- Applicator Trowel for spreading QMax Industries, Inc. approved Heat Transfer Compound
- Cutting and welding equipment if on-site modifications or fabrications will be necessary



Image A

Steps for Preparation:

- **System Isometrics:** If the QMax CST components came with a system isometric, verify that all QMax CST elements are present and have correct dimensions prior to installation. Each QMax CST element will have an information tag that includes its location and orientation on the isometric.
- **Flexible Systems:** A Flexible QMax CST system comes with standard length trace elements that can be field modified to fit a process line. Flexible systems do not have a system isometric and will not include customized elements (unless specified otherwise).
- **Staging:** Organize all QMax CST elements along the process pipe in their order on the system isometric, prior to installation. Staging ensures that all CST elements fit their respective places on the process pipe, and that all CST elements are present. For Flexible systems that do not include system isometrics, verify that there are enough sections, jumper hoses, and banding materials to cover the desired process line. Staging and modification should be performed simultaneously to ensure the installation can be completed in full.
- **Dry Fitting:** Always verify that the inner concave surface of the QMax CST elements and the outer surface of the process pipe fit together evenly. The CST elements should complement the radius of the process pipe (**Image B**). Any abnormalities on the mating surfaces of the process pipe and QMax CST elements (excessive residues, raised weld beads, uneven pipe diameters, etc.) should be removed.



Image B

- **Banding:** Banding should be cut prior to installation, using the following general rule to insure a sufficient amount of band length is available for the banding tool operation:

$$\text{Band Length} = \text{Pipe Circumference} + 12 \text{ inches}$$

Installation Procedures:

- 1) Start with the first QMax CST elbow in the system to begin each circuit.
- 2) Apply QMax Industries, Inc. approved Heat Transfer Compound to QMax CST elements using the applicator trowel (**Image C**).
- 3) Ensure again that the area between the QMax CST and the process pipe is clear of any obstructions, as they may prevent proper surface mating and optimum performance. Position the QMax CST on the process pipe, and secure its placement using the following QMax Industries, Inc. approved installation hardware (**Image D, Image E**).

- i. 1/2" SS Banding
- ii. 1/2" SS Buckles
- iii. Installation Tool
(Ratchet type tools are also available)

- 4) Tighten the banding until Heat Transfer Compound is squeezed from the sides of the QMax CST (**Image D**). The tighter the fit between QMax CST and the piping, the better the system will perform. Recapture and reuse any Heat Transfer Compound that is not directly between the QMax CST and the process pipe.

- 5) When installing jumper hoses or tubing for *steam* circuits, ensure that they are looped downward (**Image F, Image G**). This allows them to catch any excess condensate and prevent damage to QMax CST components. For hot oil systems, ensure that hoses are looped upward so that any air bubbles are trapped in the hoses and not in the QMax CST.

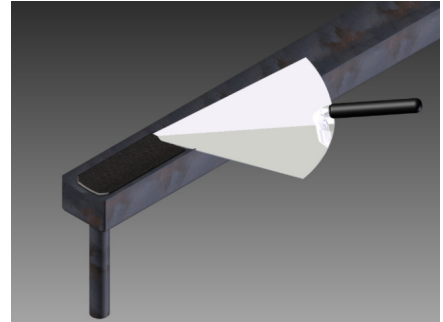


Image C



Image D

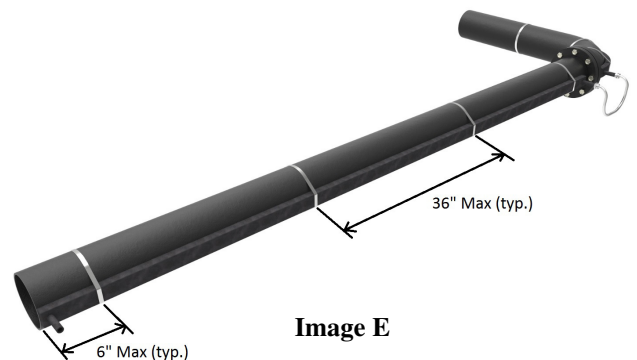


Image E



Image F

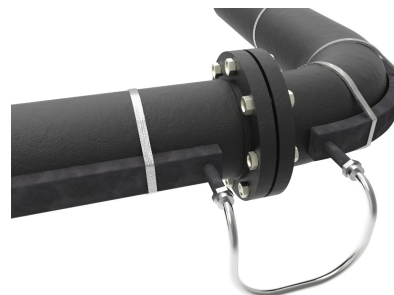


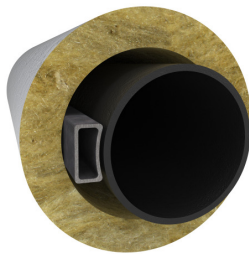
Image G

Inspection:

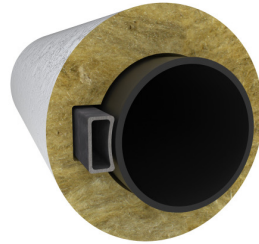
- Inspect for secure installation of the entire system. Installation guidelines could vary with each project because QMax CST is designed for each application. If no spacing guidelines are provided, the following guidelines should be adhered to:
 1. Spacing between QMax CST sections along straight runs and at fittings should be no more than 2 inches, unless otherwise specified. There must be a minimum 1-inch gap between all QMax Industries, Inc. components to allow for thermal expansion.
 2. Consult your QMax representative if any equipment or QMax components have more than a 2-inch gap.

Supplemental 1: Insulation:

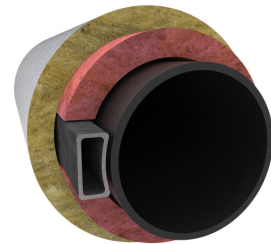
Insulation is installed over the QMax CST in accordance with plant standards. It is necessary to accommodate the system using one of the following methods:



***Oversized
Insulation***



***Coping Standard-Size
Insulation***



***Coping 1st inch, then apply
Standard Insulation***

Insulation Notes:

- 1) Threaded connections should extend outside the insulation.
- 2) QMax CST profile is approximately 1" tall from the pipe surface. Insulation should be sized accordingly.

Detail Notes:

- 1) QMax installation instructions and detailed drawings should not replace plant standards without plant consent.
- 2) Details above are offered as general guidelines and should not be used to defy logic.