



Installation Procedures

The simplicity of QMax™ ETS is one of its many benefits. As with any system, if not properly installed, it may not function as intended. Therefore, it is important to review and follow these procedures and inspect the system to ensure a successful application.

Required Equipment:

- Thin gauge wire for temporarily holding ETS in place
- QMax ETS materials (straight sections, fittings, custom parts if applicable)
- QMax Industries, Inc. approved installation banding, buckles and tool (normally supplied with system)
- QMax Industries, Inc. approved Heat Transfer Compound (normally supplied with system)
- QMax ETS HTC applicator tool (always supplied with system)
- Aluminum cutting tool (band saw is preferred)

Step 1 - Preparation:

- 1) Verify the electric cable and process pipe fit well within the QMax ETS (**Image A**). QMax ETS should closely match both diameters.
- 2) Ensure that pipe surface is free of scale and debris.
- 3) Set the QMax ETS Materials and the Heat Transfer Compound aside.

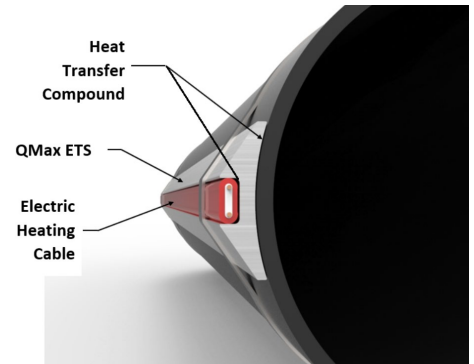


Image A

Step 2 - Installing QMax ETS:

- 4) Stage the QMax ETS system before applying the Heat Transfer Compound to ensure an efficient installation. This means placing the proper QMax fittings at the location of each pipe fitting and the proper length of QMax straights sections to match the length of piping.
- 5) Begin applying the QMax ETS in the following sequence:
 - a. Install the first QMax ETS elbow in the system to begin each circuit.
 - b. Measure and cut the adjacent QMax ETS straights to fit each straight section using a suitable aluminum saw (portable band saw with aluminum cutting blade works well). Remove any sharp edges after cutting to ensure a safe working environment.
 - c. Apply Heat Transfer Compound to QMax ETS using the applicator tool (**Image B**). The QMax applicator will apply the proper amount of compound in all areas of the QMax ETS.

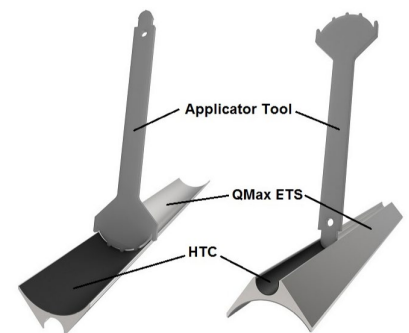


Image B

- d. Install QMax ETS over the process pipe and make sure that any obstructions which may prevent the QMax from properly mating with the pipe or electric cable are removed to ensure optimum performance (**Image C**).



Image C

- e. Begin installation of electric cable by insuring:
 - 1. Electric cable is installed at proper position(s) on the upper groove of the QMax ETS channel (refer to installation drawings for electric cable positions).
 - 2. All site-specific specifications are followed that do not conflict with these instructions.
- f. **See Supplemental 2 – Coverage for valves and flanges** at the end of this manual for details on how QMax recommends to wrap cable for the heating of valves and flanges.
- g. (Optional) Using standard tubing wire, apply a supporting wire at every fitting. Apply directly on the weld to loosely secure the electric cable to the pipe (wires will be removed after QMax supplied strapping is applied).
- h. Secure the QMax into place using QMax Industries, Inc. approved installation hardware (**Image D**, **Image E**):
 - 1. 1/2" SS Banding
 - 2. 1/2" SS Buckles
 - 3. Banding Installation Tool: Helicopter-style tool is standard, other style tools are also available

- i. Tighten the QMax ETS channel until Heat Transfer Compound is squeezing out the sides (**Image D**). The tighter the fit between the channel and the piping, the better the system will perform. Recapture and reuse the Heat Transfer Compound that is not directly under the QMax ETS.



Image D

Step 3 - Inspection:

- 1) Inspect for secure installation of the entire system. Installation guidelines will vary with each project because QMax ETS is designed for each application. If no spacing guidelines have been given, the following guidelines should be adhered to:

- a. Spacing between QMax ETS sections along straight runs and at fittings shall be no more than 2 inches unless otherwise specified. Allow 1/2 inch gap between all QMax pieces to allow for thermal expansion of the systems.
- b. QMax ETS channel shall be secured within 2 inches from the back of each flange.
- c. Consult your QMax representative if any section of pipe or equipment has more than a 2-inch gap between QMax components.

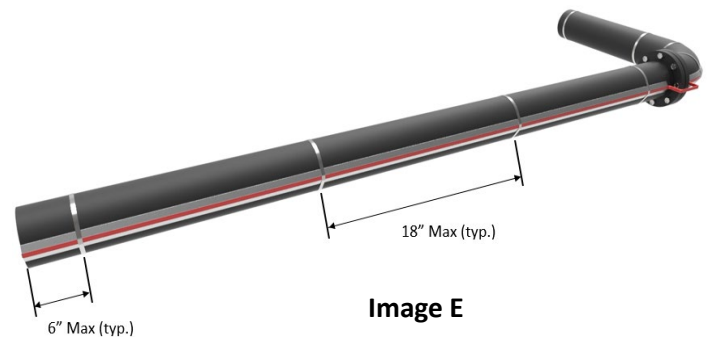


Image E

Supplemental 1 - Insulation:

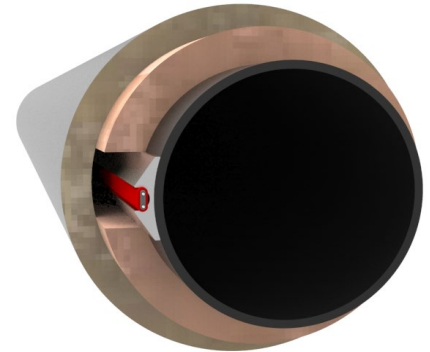
Insulation is installed over the electric cable and QMax ETS in accordance with plant standards. It is necessary to accommodate the system using one of the following methods:



**Oversized
Insulation**



**Coping Standard-Size
Insulation**



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

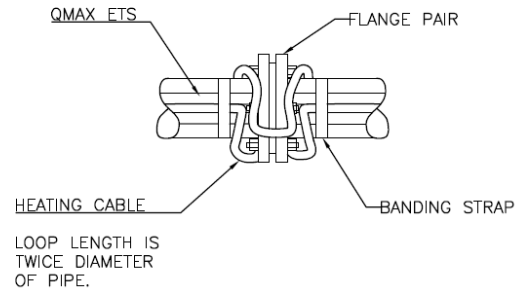
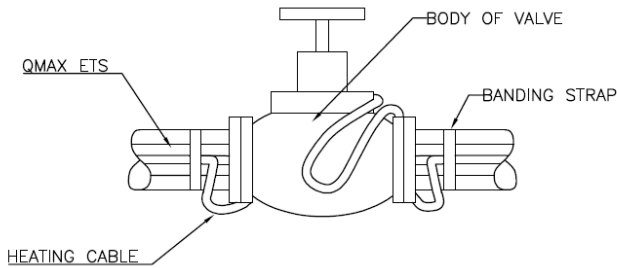
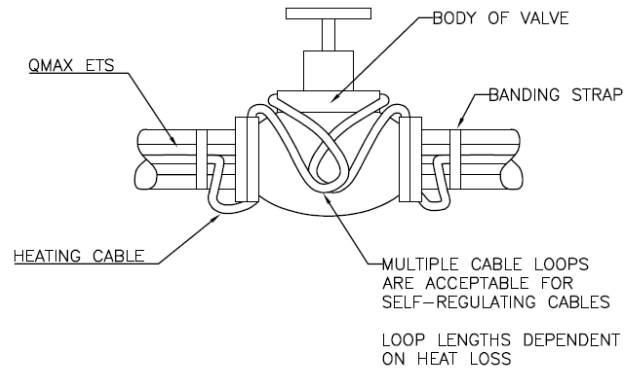
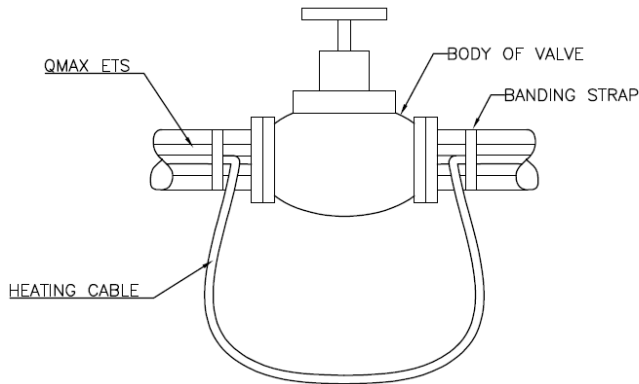
Insulation Notes:

- 1) QMax ETS adds 0.125 inch to the electric cable size. Insulation should be oversized accordingly. Insulation over (1) QMax ETS should be oversized approximately 1/2 inch. Insulation over (2) or more QMax ETS should be oversized approximately 1 inch.
- 2) Electric cable connection points should always extend outside the insulation.

Supplemental 2 – Coverage for valves and flanges:

For applications where QMax Electric Heating Jackets (EHJ) cannot be used (these items are not certified for use in Class 1 / Division 2 areas) it will be necessary to loop extra lengths of the electric heating cable around valves and flanges to replace heat lost to ambient conditions.

Valves and Flanges: Use the details below as a guide for how to wrap these items with electric heating cable.

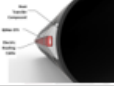



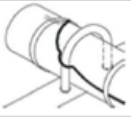


Detail Notes:

- 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.



QMax ETS Installation Checklist

		SIGN OFF			REMARKS
		CONSTR.	CONSTR. QA/QC	END USER QA/QC	
1	DOES THE QMAX ETS FIT THE CONTOUR OF THE PROCESS PIPE? (BOTH DIAMETERS SHOULD MATCH)				
2	DOES THE ELECTRIC CABLE FOLLOW THE HEEL OF THE PIPE ELBOWS?				
3	IS HEAT TRANSFER COMPOUND PROPERLY APPLIED? (MAX OF 1/8" THICK)				
4	IS BANDING OR STRAPPING INSTALLED PROPERLY? (MAX 3 FEET APART)				
5	ARE CABLE PINCH POINTS AVOIDED AS MUCH AS POSSIBLE? (EX: CABLE ROUTED OVER U-BOLTS INSTEAD OF UNDER, ETC.)				
6	ARE THERE ANY GAPS OVER 2 INCHES? IF SO, HAS QMAX APPROVED?				
7	ARE ANY SERVICE LOOPS ROUTED OUTSIDE OF THE INSULATION, IF REQUIRED?				
8	ARE CABLE CIRCUIT LENGTHS CORRECT FROM SUPPLY TO RETURN?				
9	ARE ALL FLANGES, VALVES, SUPPORTS, AND PROCESS INSTRUMENTATION COMPLETELY INSULATED?				