

ThermoTube® & TubeTrace® Tubing Bundles

INSTALLATION PROCEDURES

Metric Units



The Heat Tracing Specialists®

ThermoTube® & TubeTrace® Tubing Bundles

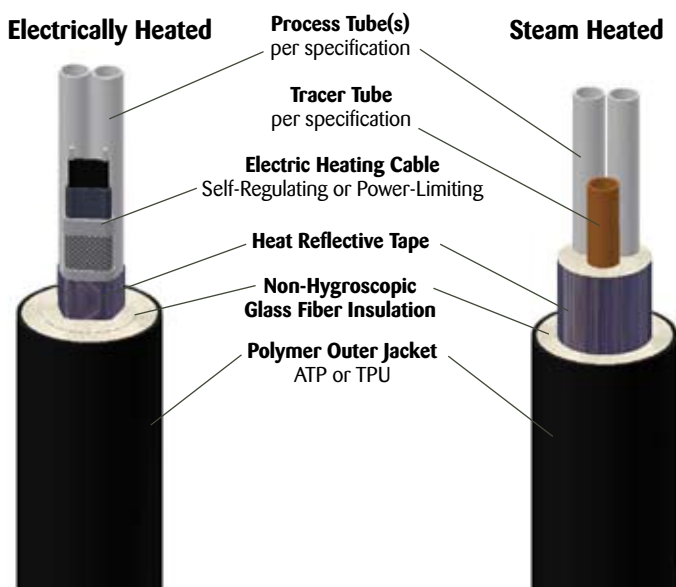
INSTALLATION PROCEDURES

The following installation procedures are suggested guidelines for the installation and support of Therman tubing bundles. They are not intended to preclude the use of other methods and good engineering or field construction practices.

Receiving, Storing and Handling . . .

1. Inspect materials for damage incurred during shipping. Report damages to carrier for settlement.
2. Identify the Therman tubing bundle type to ensure the proper material and quantity has been received. Boxes and reels are marked on the outside with part number, length, product description, weight and customer purchase order number. Compare information on box or reel with packing slip and purchase order to verify receipt of correct shipment.
 - Lengths shorter than 25m are generally shipped in heavy-weight cardboard boxes.
 - Lengths greater than 25m are shipped on non-returnable wooden reels.
3. The ends of Therman tubing bundles are factory-sealed to prevent dirt, moisture and insect intrusion. As a preventive measure, keep ends sealed until final connections are made. Cut ends may be temporarily sealed with plastic wrap and tape.

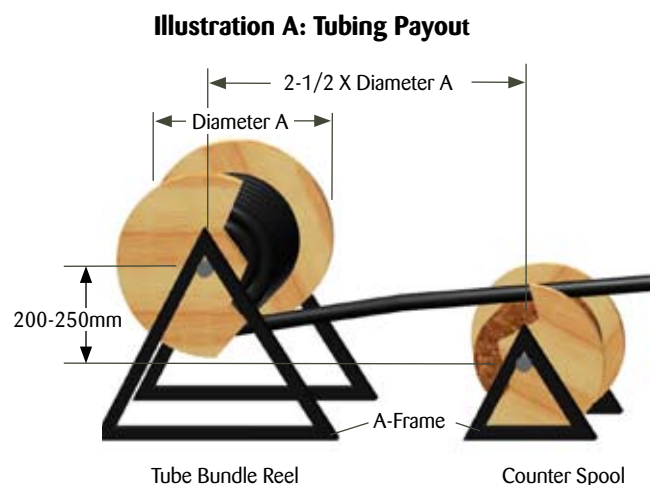
Typical TubeTrace Pre-insulated & Heated Tubing



4. Cardboard boxes and wooden reels of product should be stored indoors away from water and or driving rain. However, wooden reels may be stored outdoors using protective covering.
5. Therman tubing bundles are shipped with the end of the tubing strapped to the side of wooden reel. Use caution when releasing the end of tubing from reel as it is under tension and may uncoil when released.

Tubing Layout . . .

1. Determine lengths and number of fittings prior to uncoiling Therman tubing bundle since repeated uncoiling and re-coiling may "work harden" the tubing.
2. Position reel such that Therman tubing bundle may be pulled from the reel toward the least accessible end point allowing installation to begin at the end point working back toward the reel.
3. To uncoil and straighten Therman tubing bundles anchor the loose end of the tubing on a flat surface and roll the hand coil or shipping reel. If additional straightening is needed, apply tension to the tubing bundles.
4. Wooden spools of Therman tubing bundles containing long lengths of tubing can be placed on a pay-off tray as shown in illustration A. To "pay-off" Therman tubing bundles, place the reel containing the tubing on one tray allowing the tubing to freely spool from the bottom of the reel.
5. Straighten Therman tubing bundle by utilizing a counterspool located in front of the reel containing the tubing (see illustration A). The counterspool should be located at a distance of 2-1/2 times the diameter of the Therman tubing bundle's reel. Include a vertical offset of 200 to 250 mm between the reel centers.



The Heat Tracing Specialists®

ThermoTube® & TubeTrace® Tubing Bundles

INSTALLATION PROCEDURES

Bending Procedure . . .

Thermon tubing bundles must be bent so there is no strain on any fittings after the tubing is installed. The cross-sectional area of Thermon tubing bundle should not be flattened, kinked or wrinkled. Refer to Table 1 for the minimum acceptable bend radius for each type of Thermon tubing bundle. Use a properly sized conduit bender or mechanical tubing bender to assure constant radius bends where possible.

Technical Data

Imp. Tube O.D. (in)	Met. Tube O.D. (mm)	Nominal Weight (kg/m)	Tracer Tube O.D. in (mm)	Nominal Bundle O.D. (mm)	Min. Bend Radius (mm)
---------------------	---------------------	-----------------------	--------------------------	--------------------------	-----------------------

Electrical Traced Bundles

1/8	3	0.5	--	33	150
1/4	6	0.7	--	38	180
3/8	10	0.9	--	43	180
1/2	12	1.0	--	46	200
5/8	16	1.2	--	48	230
3/4	20	1.3	--	51	250
1	25	1.5	--	56	300
(2) 1/4	3	0.9	--	41	200
(2) 3/8	10	1.0	--	46	230
(2) 1/2	12	1.2	--	51	280

Steam Traced Bundles

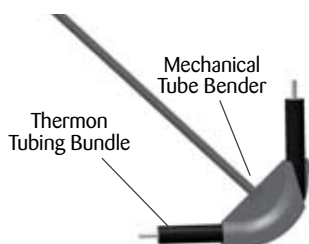
1/4	6	0.7	1/4 (3)	31	150
3/8	10	0.9	1/4 (3)	33	150
1/2	12	1.0	3/8 (10)	41	180
5/8	16	1.2	3/8 (10)	43	180
3/4	20	1.3	1/2 (12)	46	200
(2) 1/4	3	0.9	1/4 (3)	33	150
(2) 3/8	10	1.0	3/8 (10)	38	180
(2) 1/2	12	1.2	3/8 (10)	41	200

ThermoTube

1/8	3	0.5	--	25	150
1/4	6	0.5	--	29	180
3/8	10	0.5	--	32	180
1/2	12	0.6	--	34	180
5/8	16	0.7	--	41	200
3/4	20	0.9	--	46	250
1	25	1.1	--	51	280

High Temperature Bundles HT, HTX and HTX2

HT	--	2.6	--	76	400
HTX	--	3.1	--	89	500
HTX2 (1)	--	1.6	--	58	300
HTX2 (2)	--	2.8	--	79	400



Tubing Bundle Installation . . .

1. For ease on installation and maintenance, route multiple runs of Thermon tubing bundles symmetrically utilizing the most accessible path possible. Routing should take advantage of existing cable trays, angles, channels, struts and I-beams for support. Maintain a 12mm minimum clearance between lines. **Do not secure bundles to each other (See Illustration C).**
2. Thermon steam heated tubing bundles must maintain a 25mm per meter minimum slope toward the tracer, supply station or condensate return header to avoid trapping water during shutdown periods (not required for TubeTrace SE/ME bundles.)
3. Secure Thermon tubing bundles to support structure every 1.5 to 1.8m on horizontal straight runs and every 3 to 4.5m on vertical runs (See Illustration B). Provide additional support within 450mm of any connection point or transition fitting and within 150 to 250mm of any bends.
4. Cable trays and channel struts provide optimal support for multiple passes of Thermon tubing bundle. Secure bundle to cable tray using UV resistant plastic cable ties, or preferably stainless steel bundle clamps or standard conduit straps for channel strut attachment (see Table 2 for conduit strap sizing). Use caution when securing bundle to structure. **Do not deform or crush the thermal insulation and outer jacket.**

Table 2: Conduit Clamp Selection

Nominal Bundle O.D.	Conduit Clamp Size
25mm	3/4" EMT
28mm	3/4" Rigid
32mm	1" EMT
34mm	1" Rigid
43mm	1-1/4" Rigid
46mm	1-1/2" EMT
61mm	2" Rigid

5. As an option, angle iron may be used to support Thermon tubing bundles on long vertical and horizontal runs (See Illustration B). Angle iron should be sized approximately 12mm larger than the tubing O.D. Place the angle over the bundle to prevent moisture buildup. Secure bundle to the angle using UV resistant cable ties or stainless steel banding, as outlined in step 3 above.
6. Contact factory to obtain maximum ThermoTube and TubeTrace SP/MP and SI/MI lengths relative to steam pressure. A time proven empirical method used by Thermon is to limit the accumulated vertical tracer rise "AVTR" in bar g, to 0.66 of the inlet steam pressure. For example, using a steam pressure of 10.35 bar g x 0.66, the AVTR would be approximately 6.89m.

Illustration B: Typical Tube Bundle Installation

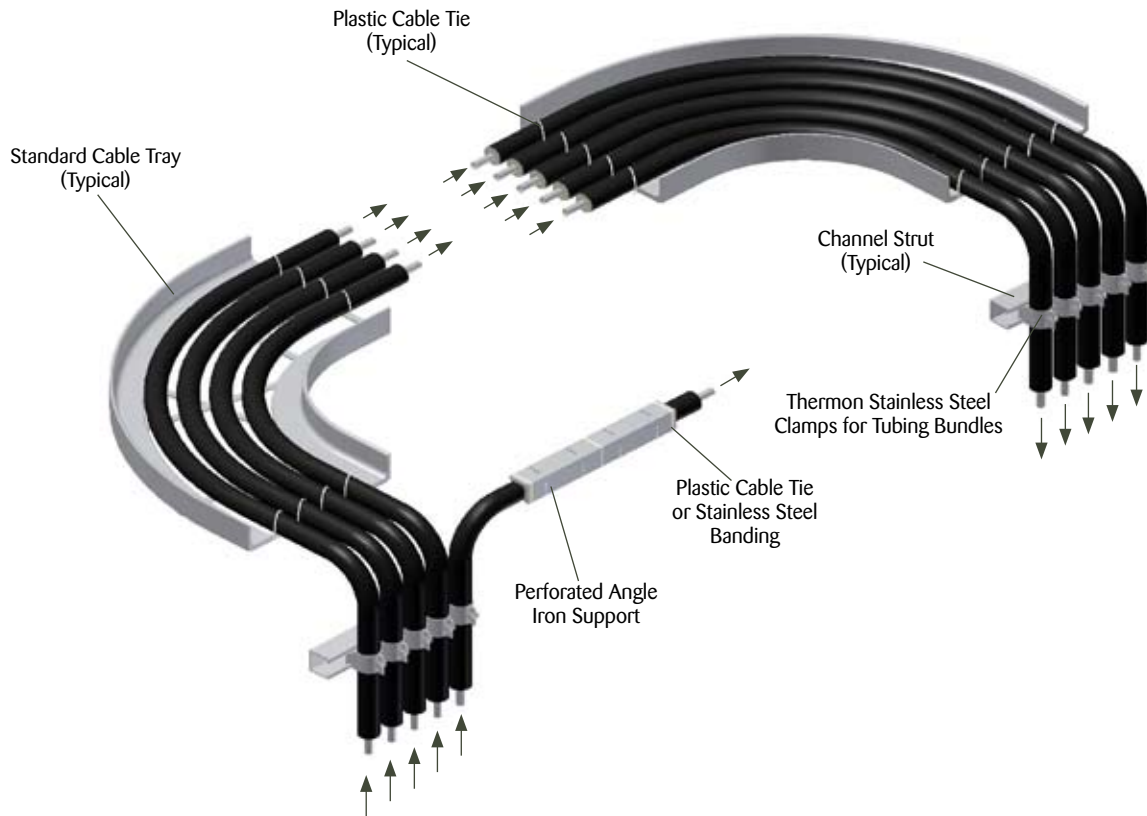
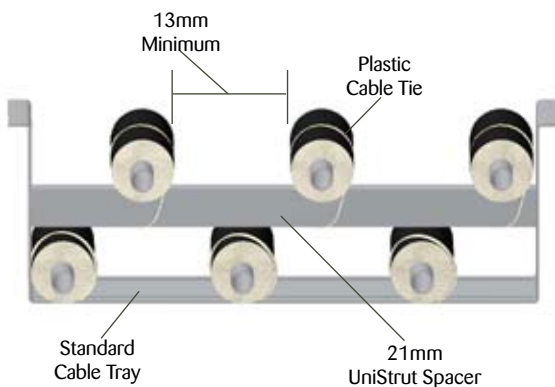


Illustration C: Typical Installation



Maximum Distance Between Supports per step 3 of Tubing Bundle Installation.

Inspection of System . . .

1. Verify that bundle is properly secured to the support structure without causing deformation to insulation and outer jacket.
2. Thoroughly inspect the Thermon tubing bundle to ensure all bends are free of kinks and wrinkles and that flattening has not occurred. Refer to the Bending Procedure on page 2 of these installation procedures.
3. Properly terminate and seal all open ends of each bundle using the appropriate FAK Bundle Accessory Kit
4. Clean the tubing before connection. After all connections have been completed, test the circuit for leaks by subjecting to pressure equal to or greater than which is to be used in the system, or preferably with suitable hydrostatic tests. Repair any steam and/or process leaks and retest the system.



THERMON . . . The Heat Tracing Specialists®
www.thermon.com

European Headquarters
Boezemweg 25 • PO Box 205
2640 AE Pijnacker • The Netherlands
Phone: +31 (0) 15-36 15 370

Corporate Headquarters
100 Thermon Dr. • PO Box 609
San Marcos, TX 78667-0609 • USA
Phone: +1 512-396-5801

For the Thermon office nearest you
visit us at . . .
www.thermon.com

