

Introduction

Principal of Operation

The use of DEKORON/UNITHERM pre-insulated steam supply and condensate return lines offers cost savings features in both installation and energy conservation.

Pre-insulated supply lines come in long lengths, making storage, handling and installation simple. The prefabricated construction with its thermal insulation, weather and chemical resistant jacket provides protection and energy efficiency. Pre-insulated lines have a comparatively small overall diameter and are semi-flexible which allows for ease of handling and supporting. These guidelines and recommendations will allow the steam supply system to be installed in the most economical manner while maintaining the design integrity of the total system.

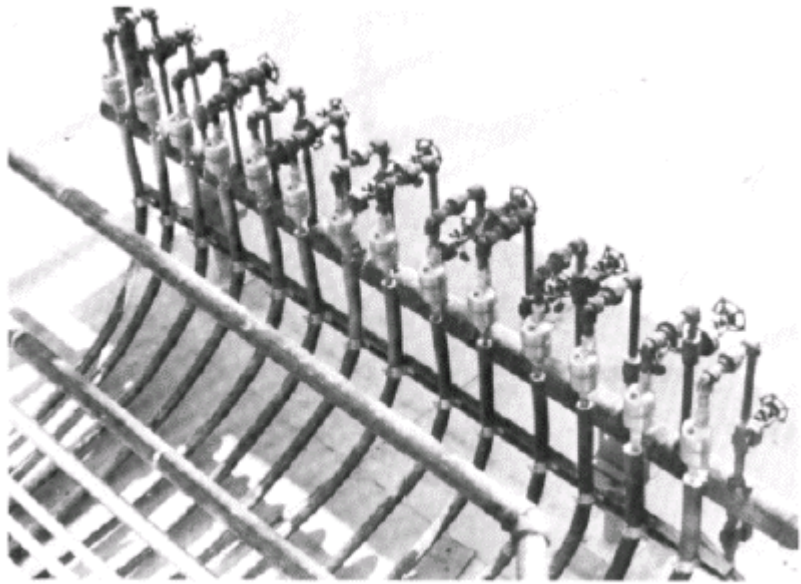


Figure I
Unique manifold arrangements are made possible with 2200 pre-insulated tubing.

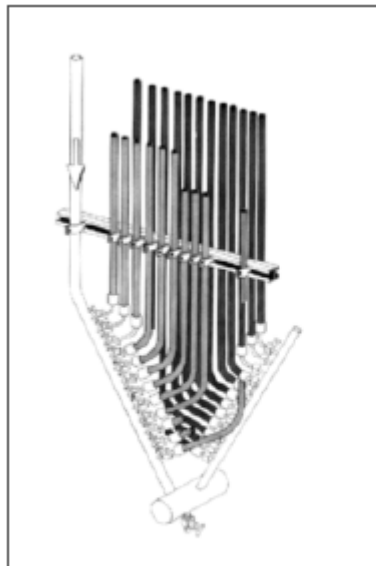


Figure II
The offset "V" supply manifold allows for high density grouping and common support.

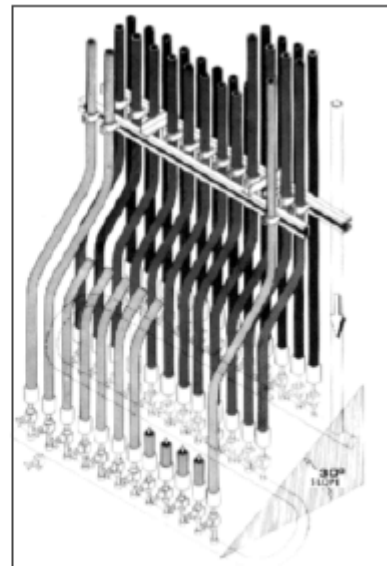


Figure III
The column mounted "S" type manifold allows for high density grouping and easy access to valves.

The Manifold System

Steam tracing systems, at one time high-energy consumers, are now critically engineered and designed for efficiency. The increasingly high cost of energy has dictated its efficient use. Manifold systems such as illustrated in Figure I thru VII are a major part of an efficient, well-designed system. They simplify the design engineering, installation, check out, and provide for an easily maintained system. These manifolds can be fabricated in many configurations to meet steam capacity requirements as well as space on these and subsequent pages illustrate the many types of manifold systems, which may be employed.

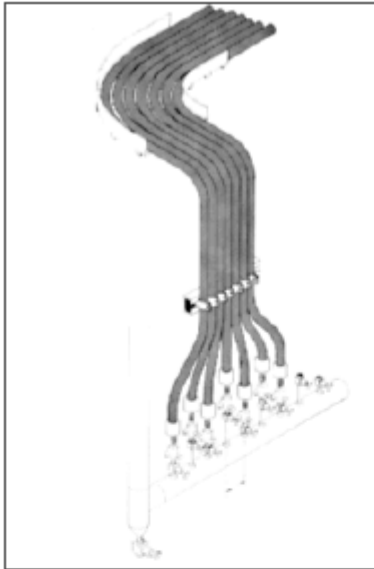


Figure IV
Simple horizontal manifolds are most easily employed.

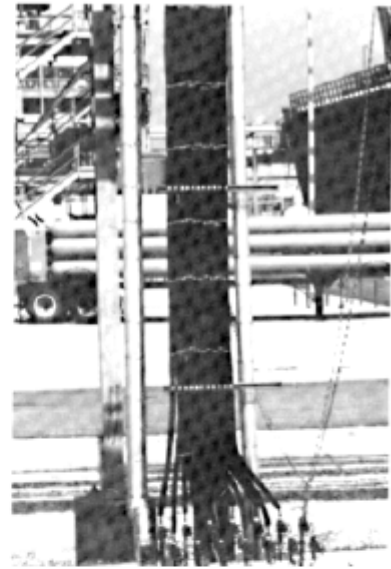


Figure V
Note how pre-insulated bundle supports are mounted on main stream riser.



Figure VI
Condensate returns to vertical header allow for innovative space savings, too expensive for conventional systems.

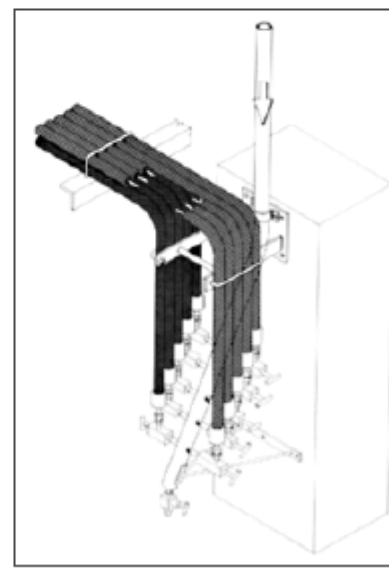


Figure VII
Vertical manifolds save space, are easily installed and allow for ease of check-out and plant maintenance.

Steam Supply and Condensate Return Lines

Running

To assure a neat, orderly installation, begin running the pre-insulated lines – supply or return – from the manifold to the traced piping or other process equipment.

These lines can then be grounded and supported as they leave the manifold. The support requirements then become self-evident, note the multiple line supports in the illustrations and photographs on this and subsequent pages.

The long length coil should be placed at the manifold – supported on a free-wheeling “A” frame (see photo Fig. VIII) and runs then pulled to the tracer connections. These runs may then be grouped and firmly supported using existing framework and piping wherever possible.

Multiple groupings must allow space for heat dissipation. A 1/2” or more spacing between the pre-insulated lines is recommended. Layered horizontal runs can be made by providing a wooden or insulating block spacer between layers at the recommended support centers.

Supporting

Cable tray may be efficiently used in horizontal support systems where runs are long enough, space allows and support members are distant such as along pipe alleys (Fig. IX, X and XI). When running pre-insulated steam lines in cable tray, allow minimum 1/2” spacing between lines and when layered, provide an insulating spacer at the recommended support center. Lines should be secured in the tray every 10-15 feet and within 18 inches of any directional change. **Do not** firmly support within a bend, as this will limit line movement due to thermal expansion. Support clips or clamps should have a wide bearing surface. Securing hardware should not be the type, which exerts point pressure or can be over tightened.

Support clamps should be sized one size less than bundle O.D. Existing structure may often be used to simplify the support requirements and further reduce the installation cost. The photo and illustrations on the adjacent page (Fig. XII, XIII, XIV, XV and XVI) show the use of existing structural members for support. Individual lines, where existing structure is not available, may be supported in channel or angle and secured with tie-wrap fasteners.

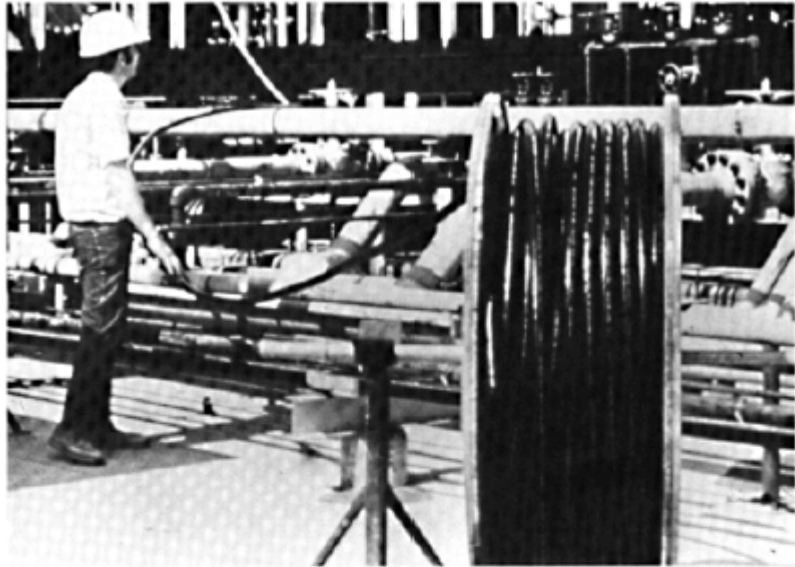


Figure VIII
Long length coils, placed at the manifolds, supported from free-wheeling “A” frame, facilitate neatness and ease of installation.



Figure IX
Multiple groupings require 1/2” or more spacing to allow for heat dissipation.

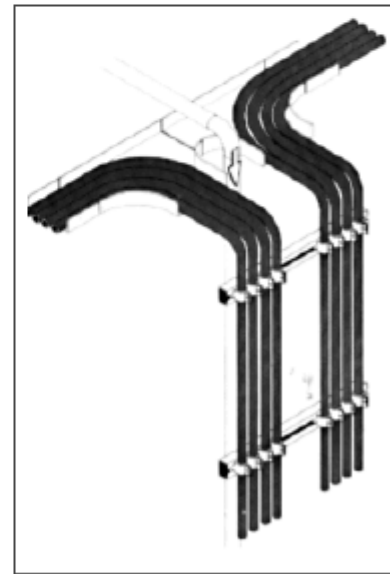


Figure X
Cable tray can be effectively used for long run horizontal supports.

Continued on Page 5

*See Page 3 for previous Figures



Figure XI
Typical tray arrangements are similar to instrument tubing or electrical cable tray.

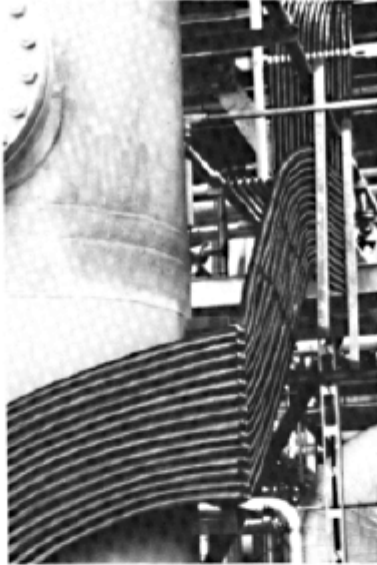


Figure XII
Channel type strut can be effectively used for support through compound bends around vessels, piping and equipment.



Figure XIII
Horizontal ladder type cable tray used for support on long field runs.

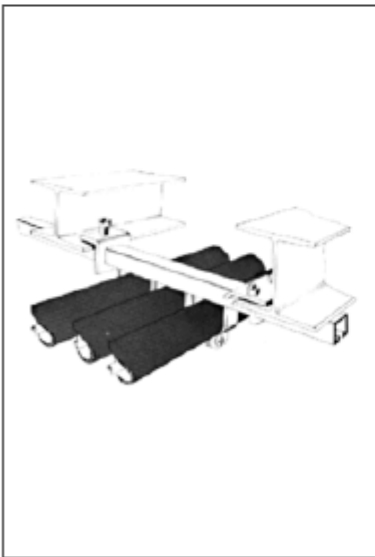


Figure XIV
Channel type strut connected by beams for overhead runs.

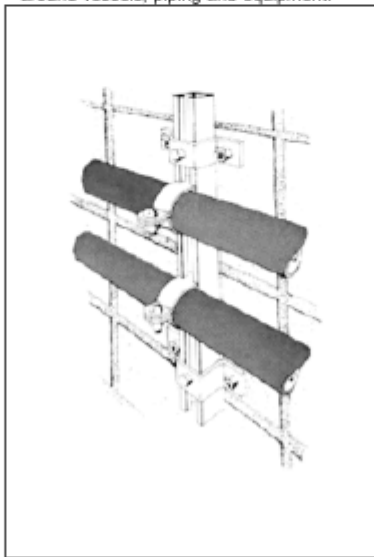


Figure XV
Channel type strut connected to wall for horizontal runs.

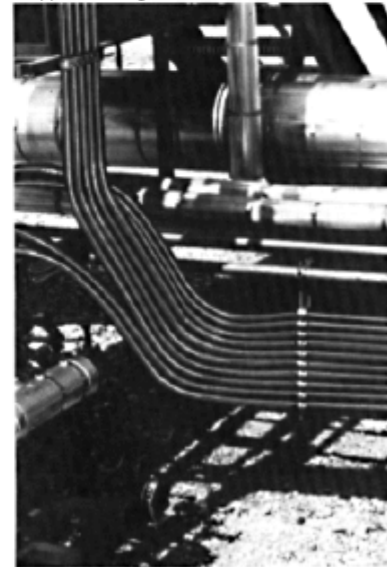


Figure XVI
Easily adaptable for use with existing structure and commercially available supports.

Installation Dos and Don'ts

DO Provide long radius, sweeping bends where possible.

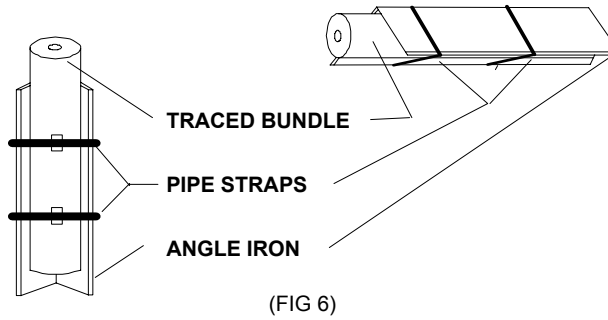
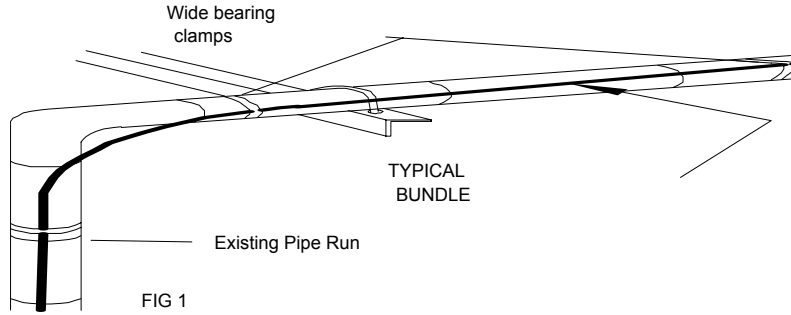
DO Seal all exposed insulation with **UNITHERM™** End Sealant.

DO Seal fittings and splice with **UNITHERM™** Seal patch.

DO Strip jacket to make tight 90° bends – use a union elbow where tight bends are necessary and seal insulation.

DO Use a properly-sized conduit bender or mandrel to assure constant radius bend where possible.

DO Allow 1" per foot slope to steam trap on condensate return lines.



DO NOT exceed minimum bend radius.

DO NOT exceed recommended support centers.

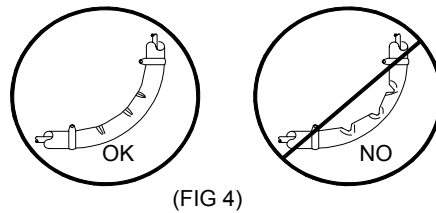
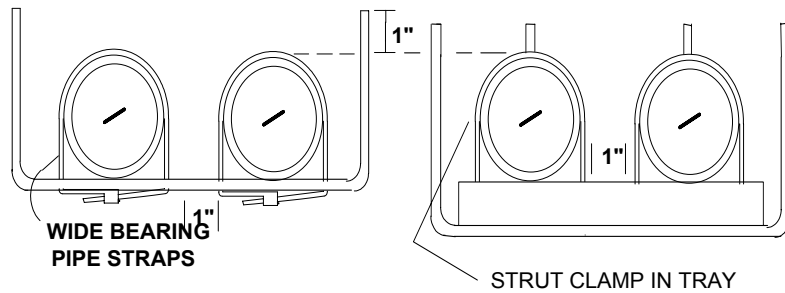
DO NOT over tighten support clamps – jackets should not be pinched.

DO NOT severely crimp jacket as this may affect insulation properties. Some slight crimping can be expected with hand-formed bends.

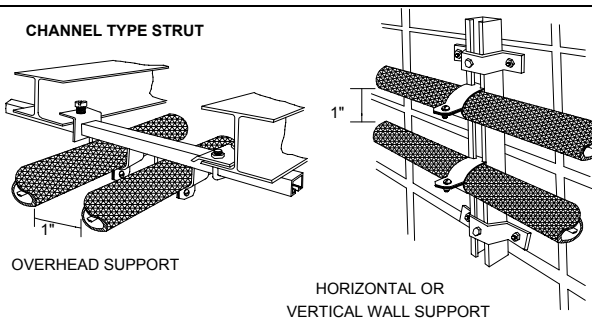
DO NOT remove excessive amounts of jacket and insulation at fitting.

DO NOT tie multiple runs together to form one bundle – proper spacing (1/2" minimum) is required for heat dissipation.

CABLE TRAY INSTALLATION



CHANNEL TYPE STRUT



Installation Recommendations

Tube Size Inches	Support Centers (FT.)		Min. Bend Radius (Inches)
	Horizontal	Vertical	
1/4	6	15	8
3/8	6	15	10
1/2	6	15	12
5/8	6	15	14

Form Guidelines for Pre-Insulated 2200 - 040903