

**Armaflex®**

# REFRIGERATION INSTALLATION GUIDE

## Golden Rules for Working with Armaflex®

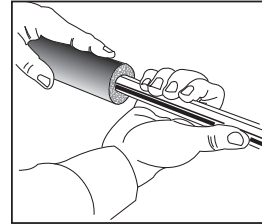
- Use good quality tools and, in particular,
  - fresh 520, 520 Black or 520 BLV Adhesive
  - and good adhesive brushes
  - sharp non-serrated edge knives
- Armaflex Insulation must be dry and clean prior to application
- Apply Armaflex Insulations only when the pipes are clean, dry and unheated or uncooled. Surface to be insulated must be free of rust or debris.
- Never stretch insulation when sealing the joints. It is better to compress it slightly. Use pieces of Armaflex that are slightly longer than the section of pipe to be insulated.
- Always use the proper-size Armaflex for a particular sized pipe. Do not stretch it over the pipe!
- Do not crowd Armaflex-covered pipes. Space pipes to allow for the free circulation of air. Air movement is an extra safeguard against surface condensation of cold pipes, especially under hot, humid conditions.
- Proper sealing of all pipe insulation is important to minimize heat loss and control condensation. On cold lines, open pipe insulation joints may allow the formation of condensation, increasing the potential for or contributing to possible pipe or tubing corrosion. All Armaflex insulation joints must be sealed as shown in this guide.
- When using Armaflex outdoors, always paint with two coats of Armaflex WB Finish within seven days of installing the insulation. Allow proper drying times between coats.
- In double layer work, apply insulation with the side and end joints staggered.
- Use Armaflex Insulation Pipe Hangers to prevent thickness compression and condensation gaps. Do not compress Armaflex at joists, studs, columns, ducts, hangers, etc. This is important because the insulation will lose thermal efficiency where it is compressed. On cold systems, surface condensation may occur where insulation is compressed.

## INSTALLATION

1

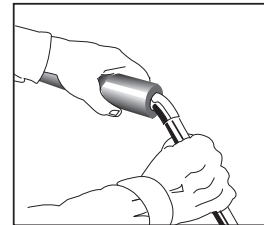
### Armaflex on New Refrigeration Piping: The Slip-On Method

The Slip-On Method is used when you can insulate new piping before it goes up or as it is being connected.

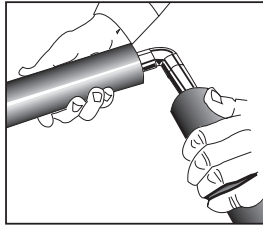


All you do is slip the pipe insulation over the pipe or copper tubing. The inside of the Armaflex Pipe Insulation is coated with a powdered lubricant, making it easy to slip the insulation over the pipe.

**(NOTE: Small amounts of powdered lubricant may enter open ends of pipe or tubing. This dust must be kept out of refrigeration systems. Plug open ends of pipe before slipping on Armaflex Pipe Insulation.)**



Since Armaflex tubing is flexible, it will follow bends in tubing and can be slipped right over bent tubing, 45° sweat ells, 90° sweat ells and couplings. We would recommend wall thicknesses above 1/2" installed using fabricated mitered fittings.

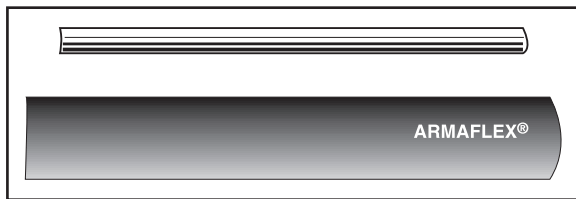


When using 3/4 and 1-inch wall insulation, it is recommended to fabricate a miter-cut fitting cover. To do this, fabricate a miter cut using the carton template. See the section on Fabricating Fitting Covers.

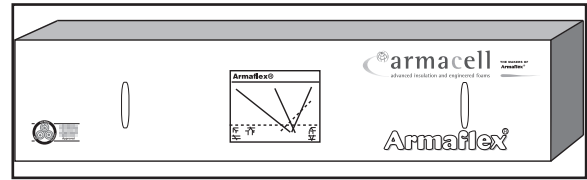
Allow the adhesive to set until tacky to the touch when joining surfaces; apply slight pressure to both ends.

At the beginning, at every 12 to 18 feet and ends of piping runs, the insulation shall be adhered directly to the copper using a 2" strip of adhesive. Insulation should not be adhered to the pipe at the extreme low points in any piping run.

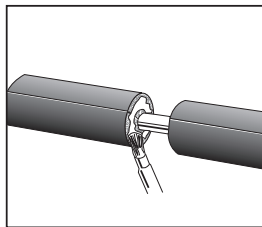
### ***Fabricating Fitting Covers from Armaflex Tubes***



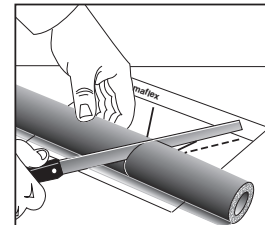
Use a length of Armaflex as long or slightly longer than the section of piping to be covered. NEVER STRETCH ARMAFLEX.



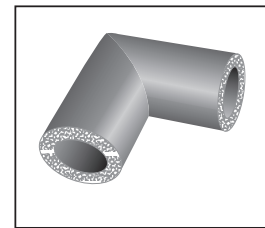
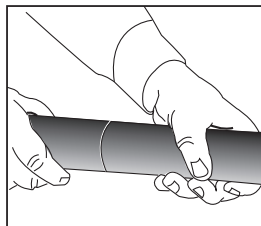
The Armaflex carton provides a convenient miter guide with all angles necessary for normal installations.



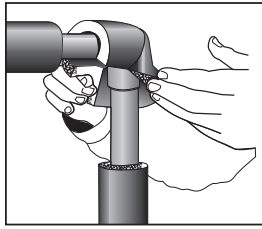
Since this is a contact-type adhesive, apply a brush coating of 520, 520 Black or 520 BLV Adhesive to both butt ends to be joined.



Cut through the Armaflex tube at a 45° angle with the help of the miter template on the carton.

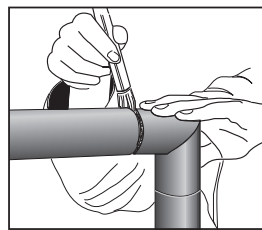


Reverse the position of one of the sections in relation to the other so that an elbow is formed, and join the two sections using 520, 520 Black or 520 BLV Adhesive.



Slit open on the inside, taking care not to damage the opposite wall of the tube.

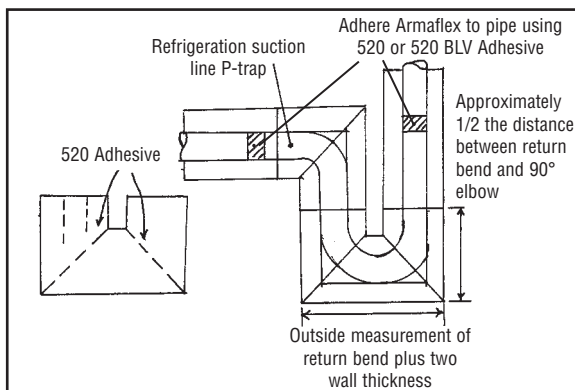
Apply adhesive to the seam (not to the butt ends), allow to tack dry, and fit over the fitting. Press the seams together working from the ends toward the center of the elbow.



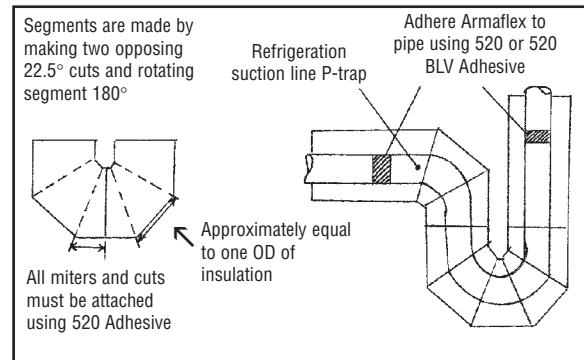
Finally, wet seal the butt ends to the incoming lengths of Armaflex tube. Cut the incoming lengths so that the butt joints are in slight compression.

### ***P-Trap Fittings***

When using 3/4 and 1-inch wall insulation, it is normally necessary to fabricate miter-cut fitting covers. This can be accomplished by using either a 45° miter layout or a 22.5° miter layout.



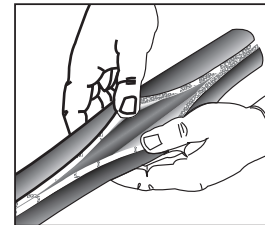
After fabrication, the 180° cover can be slit along the inside radius so that it may be snapped around the trap and then sealed with Armaflex 520, 520 Black or 520 BLV Adhesive.



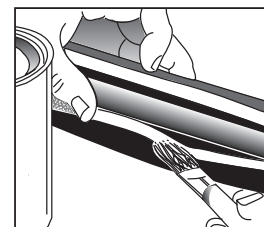
The Armaflex Insulation must be adhered to the pipe on both sides of the P-trap using 520, 520 Black or 520 BLV Adhesive.

## **2** ***Armaflex on Existing Refrigeration Piping: The Snap-On Method***

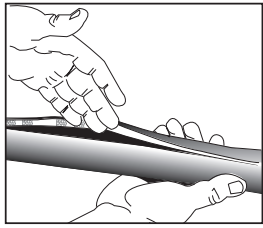
The Snap-On Method is used when pipe or copper tubing is insulated after it has been installed and connected.



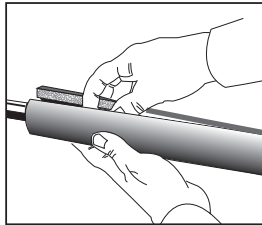
With unslit tubular Armaflex Pipe Insulation, use a sharp knife to slit the Armaflex lengthwise on one side. Snap the insulation over the pipe.



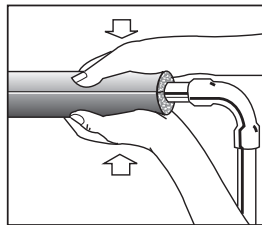
Brush-coat both slit surfaces with Armaflex 520, 520 Black or 520 BLV Adhesive. Push the insulation down over the pipe to hold the adhesive-coated surfaces apart while the adhesive dries.



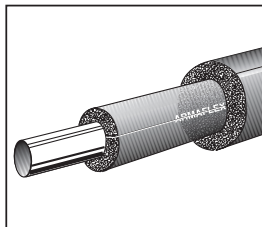
Adhesive should be dry to the touch but tacky under slight pressure before joining surfaces. Test with back of fingernails.



If the insulation should become stuck to the pipe after applying adhesive, break the insulation loose by running a finger down the pipe.



When the adhesive has air-dried, apply moderate pressure to the entire joint to assure a vapor-tight bond.



**Double-Layer Insulation:** apply Armaflex with the side and the end joint staggered where possible.

### 3 Armaflex at Pipe Hanger Locations

At pipe hanger locations where the insulation must resist compression, supporting devices must be used in combination with metal hanger shields.

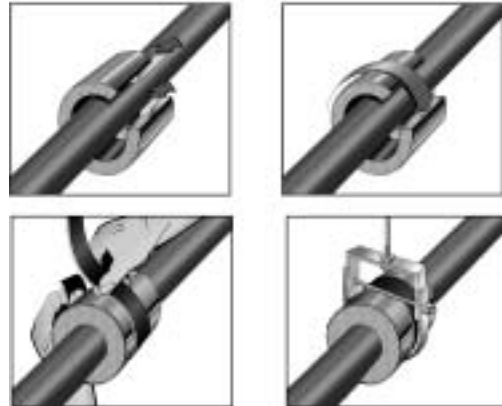
## Armaflex Insulation Pipe Hangers

Armaflex IPH (Insulation Pipe Hangers) and NPH (Nonhalogen Insulation Pipe Hangers) provide fast, reliable support for insulated pipes, an innovative alternative to traditional block and dowel methods. The pre-insulated hangers ensure optimum load bearing, protect against thickness compression, and prevent condensation gaps that could otherwise compromise system integrity.

Armaflex features a self-adhesive closure and an exclusive foam-to-foam bond. The insulated pipe hanger is adhered to Armaflex insulations using Armaflex 520, 520 Black or 520 BLV Adhesive.

If the application is for clevis or saddle type of pipe hangers it is recommended that Armaflex Tape be wrapped around the Armaflex prior to placing in the clevis or saddle hanger. To minimize the movement of Armaflex, it is recommended that a pair of non-skid pads be adhered to the clamps. In addition to prevent loosening of the clamps, use of an anti-vibratory fastener, such as a nylon locking nut, is also recommended.

### Easy Application on Clevis (Saddle)



### Application with insulation



### Clamp (Friction fit)



## Traditional method

Although timesaving Armafix IPH or NPH is recommended, you can use traditional supporting devices such as short lengths of wood dowels or wood blocks, which are the same thicknesses as the Armaflex. These supporting devices rest on the metal shield that is installed between the insulation surface and the pipe hanger.

Short wood dowels, used singly or in multiples, may be used to support small-size pipes (see Figure 1). Larger-size pipes will require woodblocks approximately 1" x 3" or 1-1/2" x 4" by the Armaflex thickness, singly or in multiples. It is always best to curve the woodblock surfaces to match the curve of the pipe and the curve of the metal shield.

The holes cut into the Armaflex to receive the supporting devices are to be undersized so the supporting devices fit tightly. Coat the supporting device with 520, 520 Black or 520 BLV Adhesive, and insert into the hole in the Armaflex while the adhesive is still wet; then coat the outer surface with adhesive as a vapor seal.

To eliminate the possibility of large or heavy pipes from teetering on the woodblocks, it is recommended that 3/4"- or 1"-diameter wood dowels be placed at 4 o'clock and 8 o'clock positions with each woodblock (see Figure 2).

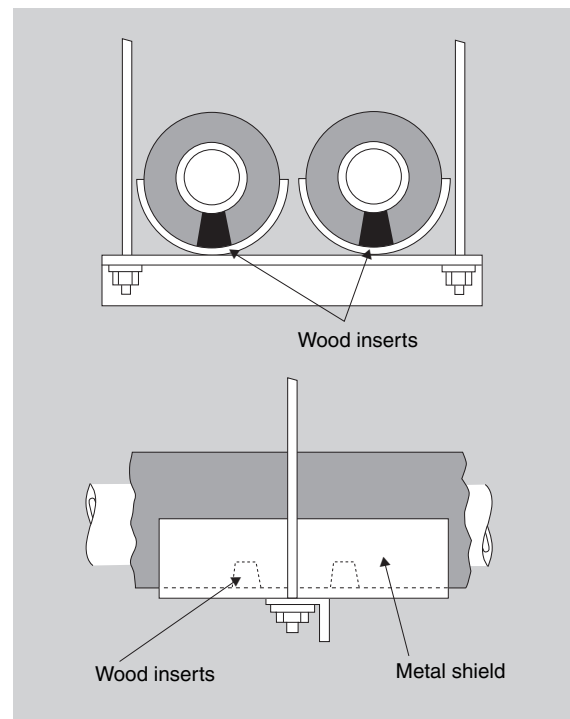


FIG. 1

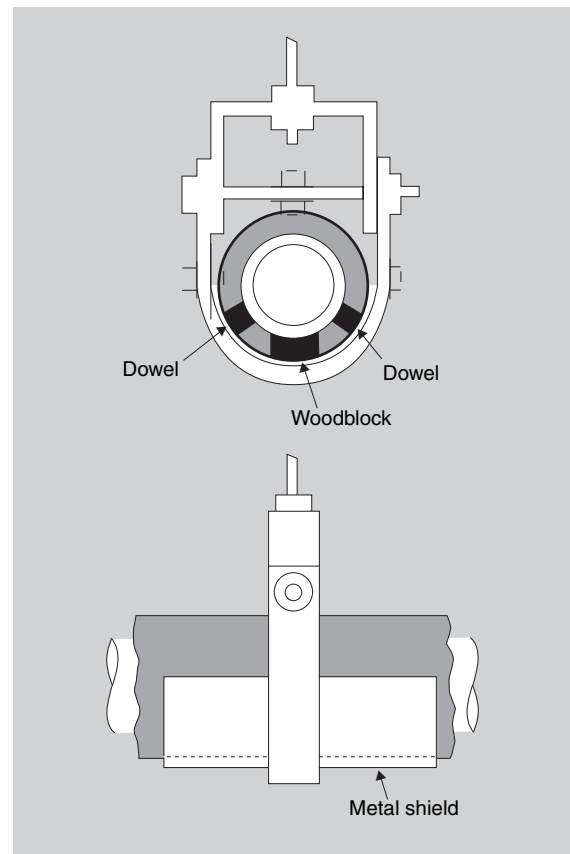


FIG. 2

## CORRECT USE OF ARMAFLEX 520, 520 BLACK OR 520 BLV ADHESIVE

Before use, shake or stir the adhesive thoroughly. Use small cans of 520, 520 Black or 520 BLV Adhesive for actual insulation work to prevent it from drying too rapidly. Keep can covered to prevent drying. Use a brush with short, stiff bristles.

Apply adhesive in a thin, uniform layer to both surfaces. 520, 520 Black or 520 BLV Adhesive becomes tacky between 2 to 5 minutes after application. This time will vary according to ambient temperatures and relative humidities. Avoid "open times" in excess of 10 minutes.

Allow the adhesive to "tack dry". The correct initial drying period is checked by the "fingernail test": touch the surface with a fingernail; if the fingernail adheres to the surface and the joint feels tacky, the joint may be closed. The maximum adhesive force will be obtained when two tack-dry surfaces are brought together.

Press the surfaces being joined together firmly for a short time only. If the surfaces are left to dry for too long a period, they will not adhere when pressed together. In this case, reactivate by applying a further film of adhesive.

520, 520 Black or 520 BLV Adhesive may not adhere to asphalt, bitumen, red-lead or cement surfaces.

To clean tools, contaminated metal surfaces or surfaces which have talc applied, wipe with a cloth dampened with alcohol or acetone.

In general, the application of adhesive should not be carried out when the ambient temperature is below 40°F. If working outdoors at temperatures between 40°F and 50°F, keep the can of adhesive indoors at 65°F until needed.

**Wet sealing:** at times, two Armaflex surfaces or joints may require "wet sealing" for condensation control. This method will require compressed joints and overlapping surfaces. This is accomplished by applying wet adhesive between the surfaces and immediately closing in the desired position without any "open time" for the adhesive.

The "open time" is defined as the period between first applying the adhesive and finally closing together the joint seam or surface.

## IMPORTANT INSTALLATION CONSIDERATIONS:

- All seams and joints of elastomeric insulation must be properly sealed with 520 or 520 BLV Adhesive, thereby preventing condensation between the insulation and the copper tubing.
- Installers of copper should avoid introducing applied stress to the copper. Applied stress can be a result of any manipulation, direct or indirect, resulting in stresses to the copper tubing.
- Under no circumstances should chlorinated solvents such as 1,1,1-trichloroethane be used to clean a copper refrigeration system. Such solvents have been linked to rapid system failure.
- No acidic materials such as citric acid or acetic acid (vinegar) should be used on copper systems. Such acids are found in many cleaners.
- Self-evaporating lubricating oil, and even refrigerants themselves, can react with moisture to produce corrosive acidic materials such as acetic acid. Therefore, all soldered connections must be gas tight, as a leak could result in failure to a section of insulated copper tubing.
- Armaflex, when installed in accordance with Armacell specifications, will not cause stress corrosion cracking of copper tubing.

### **Engineering Considerations:**

- Appropriate wall thicknesses of insulation suitable for the environment and the operating conditions must be used to avoid condensation of the copper tubing.
- Extraneous chemicals or chemical-bearing materials, such as corrosive cleansers containing ammonia and/or amine salts, wood smoke, nitrates and ground or trench water, should not come into contact with the insulation.
- Where the layout of the system is such that condensation may form and run along uninsulated copper by gravitational force, a beginning run of insulation must be adhered completely to the copper tubing with 520 or 520 BLV Adhesive. This will prevent the entrance of water between the insulation and the copper.
- Copper used on refrigeration systems should comply with ASTM B 280 and should be from a reputable manufacturer.

### **System Testing:**

- When pressure testing copper tube systems, care must be taken not to exceed the specific yield point of the copper tube used.
- When testing copper tubing for leaks, use only a detector solution specifically designed for that purpose.
- It must be assumed that all commercially available soap and detergent products contain ammoniacal or amine materials which do contribute to the formation of stress cracks.
- Any insulation that has become wetted or saturated with refrigeration lubricating oils should be completely replaced. Such oils can react with moisture to form corrosive materials.



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