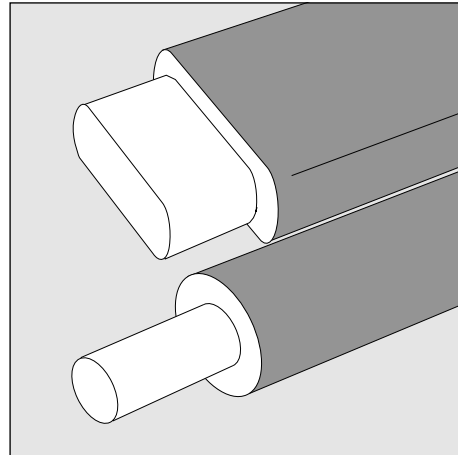




## **TE Connectivity Wildlife and Asset Protection**



### **Installation Instructions EPP-0513-5/19**

### **Insulation Enhancement System**

### **LVIT Busbar Insulation Tubing For 1000 Volt Flashover Protection**

To view the TE Energy website:



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[TE.com/energy](http://TE.com/energy)

## Before Starting

Check to ensure that the kit you are going to use fits the cable.

Refer to the kit label and the title of the installation instructions.

Components or working steps may have been modified since you last installed this product.

Carefully read and follow the steps in the installation instructions.

## General Instructions

Use a propane (preferred) or butane gas torch.

Ensure the torch is always used in a well-ventilated environment.

Adjust the torch to obtain a soft blue flame with a yellow tip.

Pencil-like blue flames should be avoided.

Keep the torch aimed in the shrink direction to preheat the material.

Keep the flame moving continuously to avoid scorching the material.

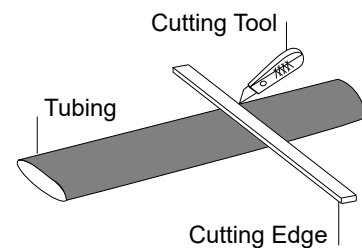
Clean and degrease all parts that will come into contact with adhesive.

If a solvent is used follow the manufacturer's handling instructions.

Start shrinking the tubing at the position recommended in the instruction.

Ensure that the tubing is shrunk smoothly all around before continuing along the cable.

Tubing should be smooth and wrinkle free with inner components clearly defined.



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The Information contained in these installation instructions is for use only by installers trained to make electrical power installations and is intended to describe the correct method of installation for this product. However, TE Connectivity has no control over the field conditions which influence product installation.

It is the user's responsibility to determine the suitability of the installation method in the user's field conditions.

TE Connectivity's only obligations are those in TE Connectivity's standard Conditions of Sale for this product and in no case will TE Connectivity be liable for any other incidental, indirect or consequential damages arising from the use or misuse of the products.

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## A. Installation Instructions Straight Busbar

Remove any sharp edges from the busbar by filing smooth.

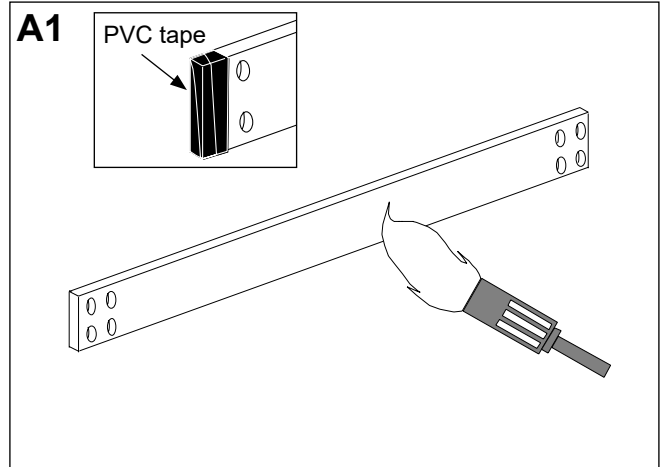
Clean and degrease the busbar.

Preheat the busbar until it is hot to the touch.

### NOTE

To prevent possible damage to the inside of the tubing when positioning tubing over the busbar, apply 4-5 wraps of PVC tape over the end of the busbar as shown in the inset drawing.

Tape should be removed before shrinking tubing.

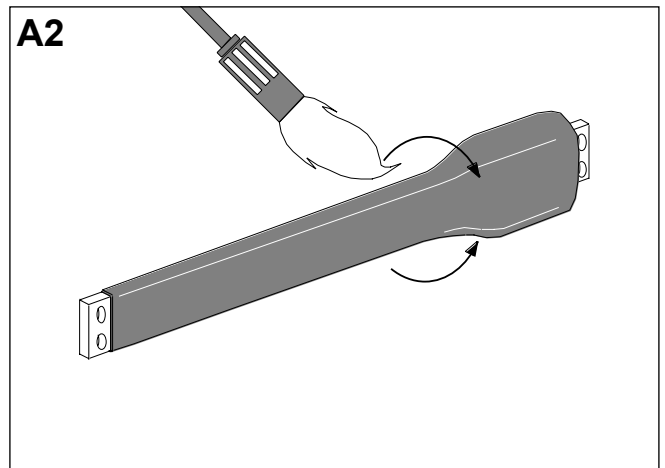


Slide tubing over the bus bar to the required position.

Remove any protection tape from the ends of the bus bar.

LVIT is a fast shrinking tubing. To avoid wrinkling or overlapping, apply slight tension to the tubing by pulling in the direction shown in the drawing.

Shrink tubing, starting from one end, moving the flame continuously while moving the gas torch towards the other end of the bus bar.



### NOTE

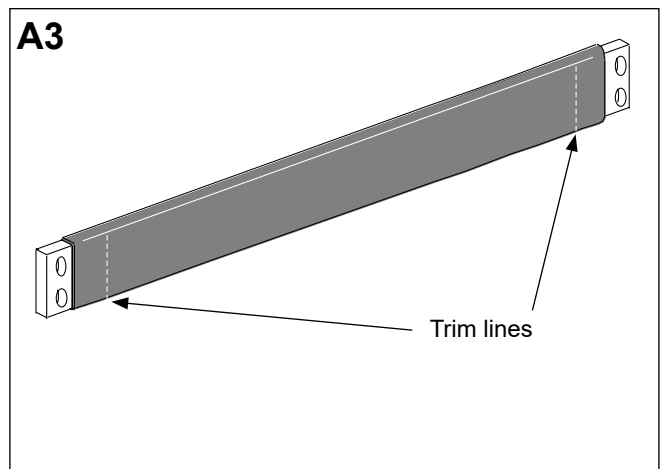
Inspect the tubing surface. Any flat spots or wrinkles should be reheated until the surface is smooth.

During reheating the torch should be moved continuously to avoid scorching the material.

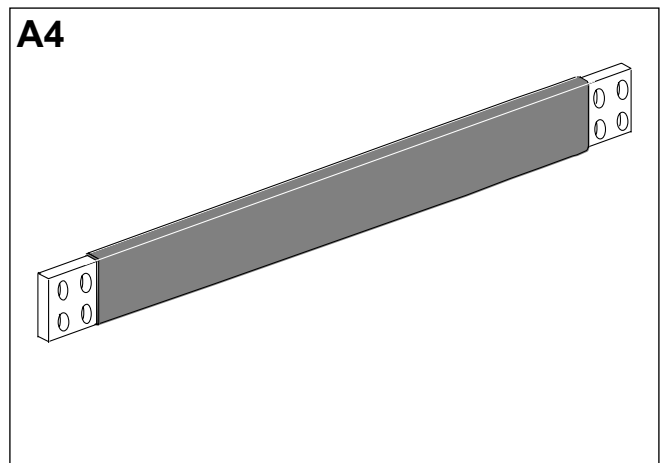
### NOTE

After installation the tubing may require trimming back to allow bolted connections to be made. Wait until tubing has cooled and mark trim lines on the tubing.

Using a sharp knife and a straight edge cut around trim lines. The end of the tubing should be smooth and free of any nicks.



Installation on straight busbar completed.



## B. Installation instructions Bent Busbar

Remove any sharp edges from the busbar by filing smooth.

Clean and degrease the busbar.

Using a gloved hand apply a thin layer of high temperature grease to the bus bar at the position shown in the drawing (eg. EPPA 212). The grease will help the tubing slide around the bent bus bar during shrinking.

Preheat the busbar until it is hot to the touch.

### NOTE

To prevent possible damage to the inside of the tubing when positioning tubing over the busbar, apply 4-5 wraps of PVC tape over the end of the busbar as shown in the inset drawing.

Tape should be removed before shrinking the tubing.

Slide tubing over the bus bar to the required position. Remove any protection tape from the ends of the bus bar.

LVIT is a fast shrinking tubing. To avoid wrinkling or overlapping, apply slight tension to the tubing by pulling in the direction shown in the drawing.

Shrink tubing, starting from one end, moving the flame continuously while moving the gas torch towards the other end of the bus bar.

### NOTE

Inspect the tubing surface. Any flat spots or wrinkles should be reheated until the surface is smooth to the touch.

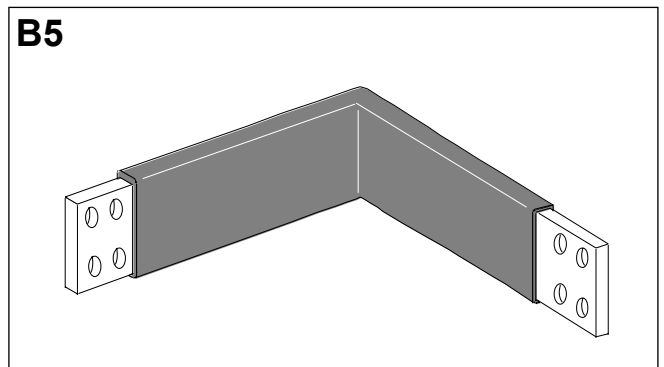
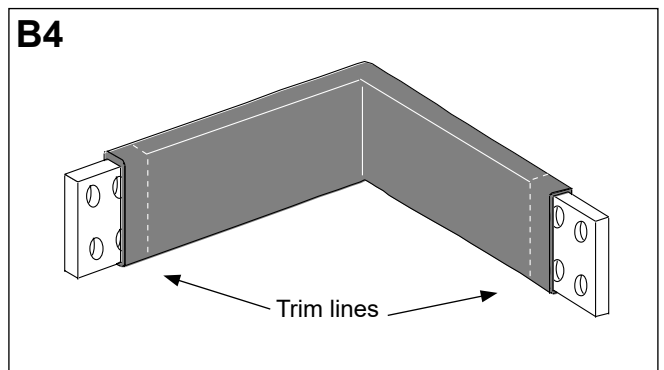
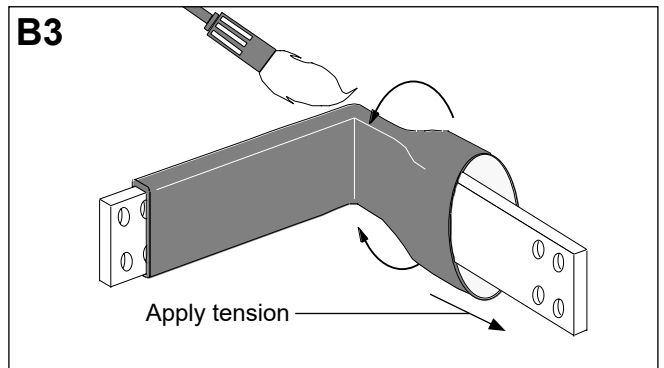
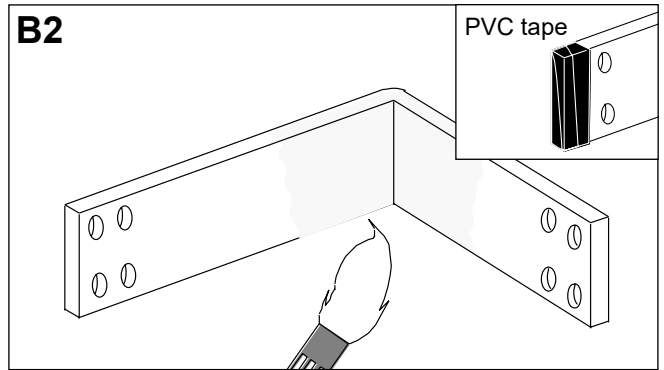
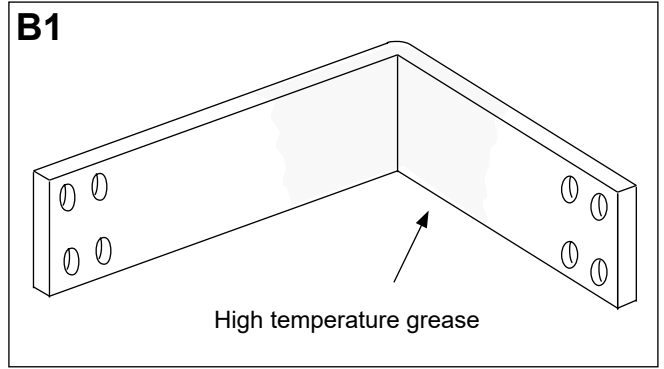
During reheating the torch should be moved continuously to avoid scorching the material.

### NOTE

After installation the tubing may require trimming back to allow bolted connections to be made. Wait until tubing has cooled and mark the trim lines on tubing. Using a sharp knife and a straight edge cut around trim lines. The end of the tubing should be smooth and free of any nicks.

**Installation on bent busbar complete**

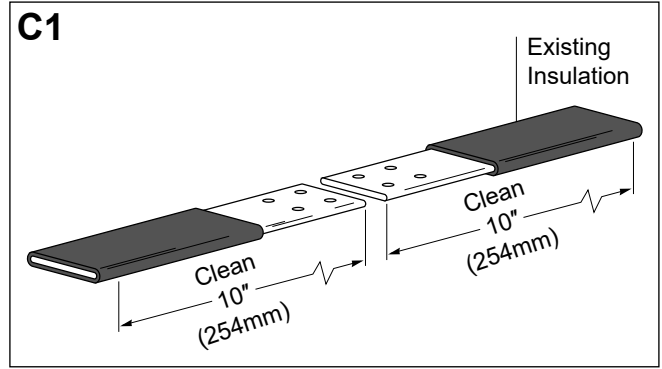
Please dispose of all waste according to environmental regulations.



### C. Instalation instructions bolted in-line connection

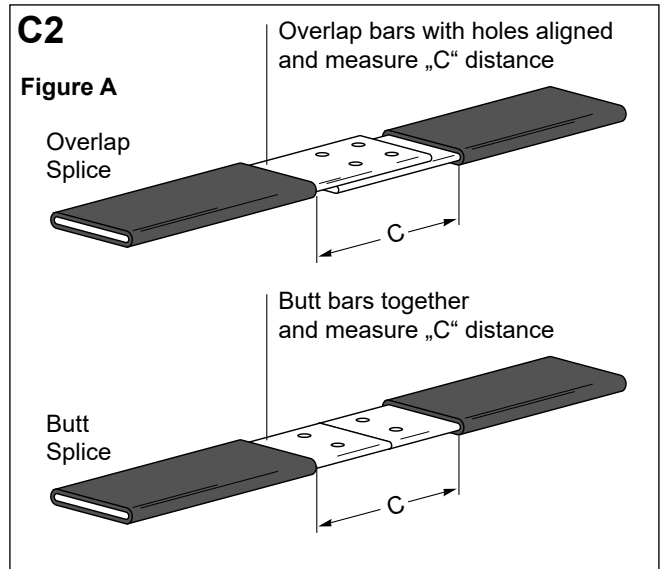
#### Clean busbar and insulation.

Using an approved solvent, clean exposed busbar connection area and adjacent insulation as shown.



#### Cut tubing.

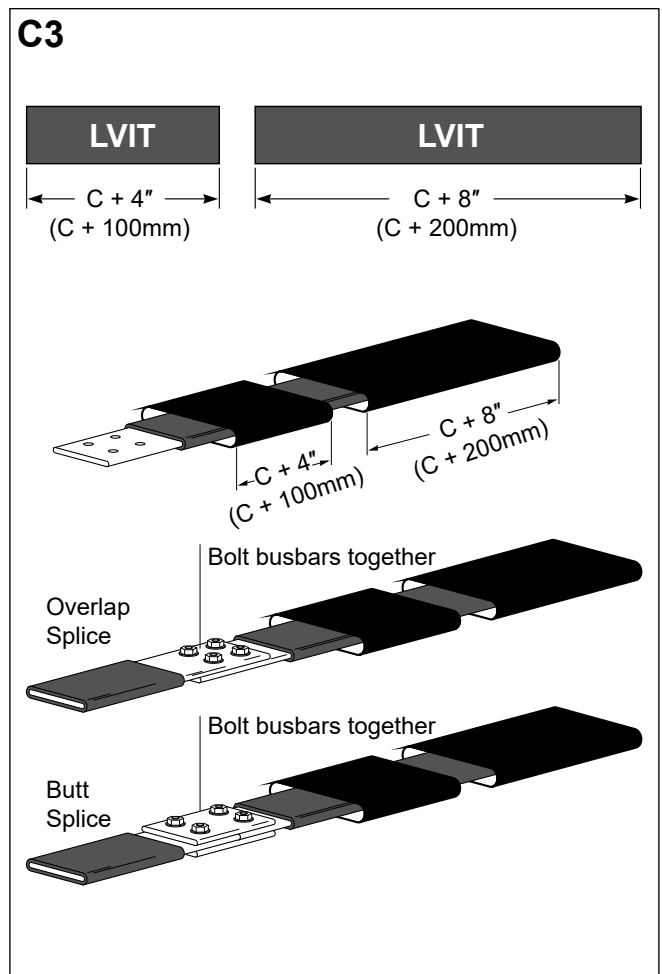
Refer to Figure A for Dimension C and cut 2 pieces of LVIT as shown.



#### Position pieces on busbar; connect busbars.

Slide the longer piece of LVIT over one side of the connection, then slide the shorter piece on the same side as shown.

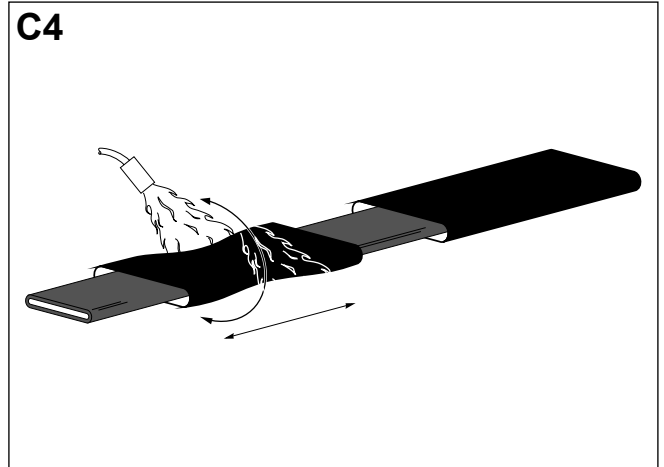
Connect the busbars. Deburr and remove any sharp edges from the connection.



**Position short tubing; shrink in place.**

Center the shorter length of LVIT over the connection.

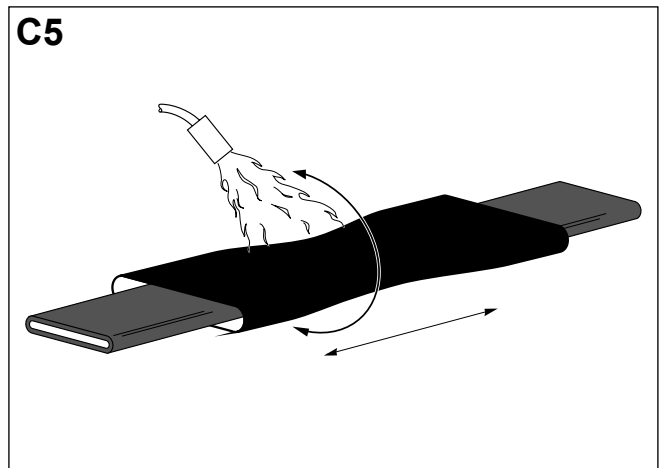
Begin shrinking at the center of the tube, working the torch with a smooth brushing motion around the tube. As the tube shrinks, work torch as before toward the one end, then the other, continuously moving the torch to avoid scorching.



**Position longer tube; shrink in place.**

Center the longer length of LVIT over the piece installed in Step C4.

Shrink in place using method described in Step C4.



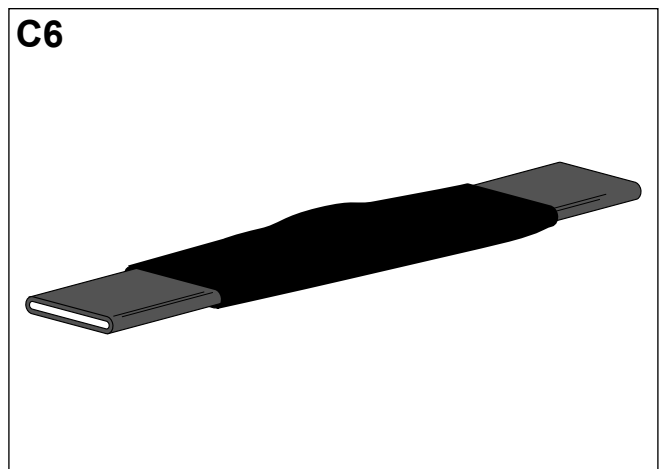
**Inspect installation.**

A properly installed tube will be smooth and conform to the contour of the busbar.

**NOTE**

Cold spots (or dimpling) may be present. These may be eliminated by applying more heat to the tube. As before, keep the torch moving to avoid scorching.

**Installation is complete.**

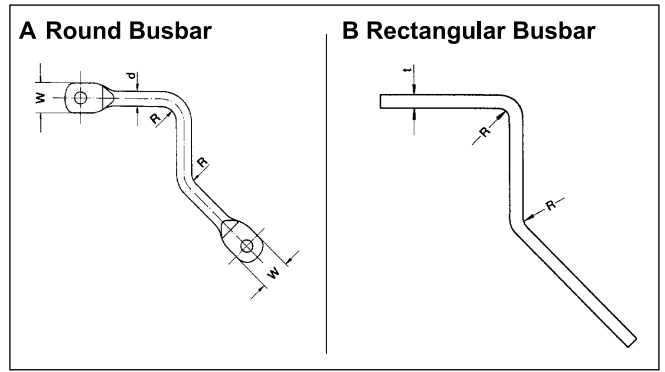


**Busbar Configuration**

The width **W** of the terminals should not exceed 1.25 times supplied tubing diameter (Drawing A).  
 Burrs should be removed to avoid damage to the tubing.  
 The bending radius **R** should not be less than:

- round busbar  $R = 2 \times d$  (Drawing A)
- rectangular busbar  $R = 3 \times t$  (Drawing B)

**d** = Overall diameter  
**w** = Width of terminal  
**t** = Thickness of the busbar



**Preparation of Busbar**

Remove any sharp edges from the busbar by filing smooth.

Clean and degrease the busbar.

To prevent possible damage to the inside of the tubing when positioning tubing over the busbar, apply 4-5 wraps of PVC tape over the end of the busbar as shown in the inset drawing.

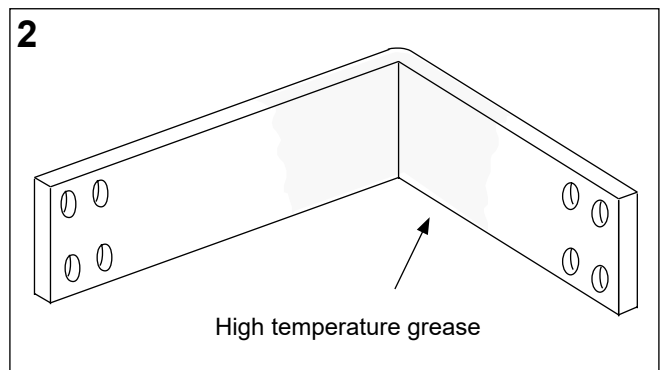
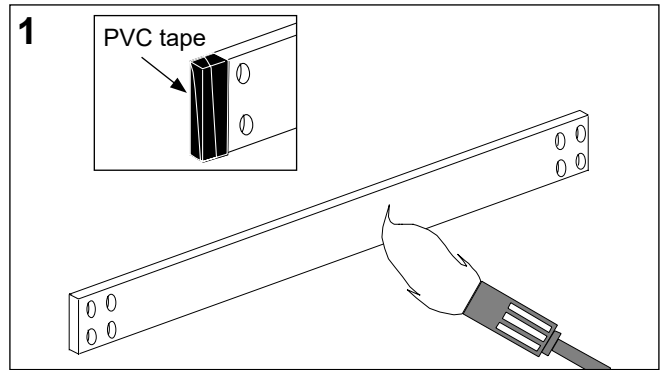
**NOTE**

Remove any PVC tape before starting the recovery procedure.

Lubricate bent busbars by applying a thin film of grease with a melting temperature above intended shrink temperature (e.g. silicone grease such as EPPA 212).  
 Straight busbars do not need to be lubricated. Slide the tubing over the busbar.

**NOTE**

Bent busbars and especially U-shaped busbars may cause a certain longitudinal shrinkage of the tubing. To achieve full coverage of the bar up to the terminals, apply the tubing in folds evenly over the total length. For bars with several bends it is recommended to determine the exact length with a trial run.



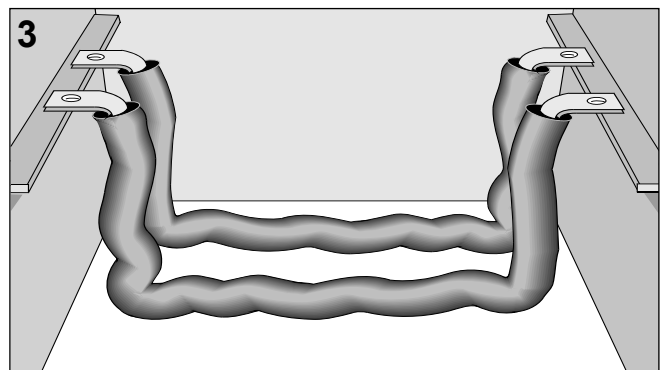
**Tubing Recovery Procedure**

For industrial production an oven with air circulation is recommended with a minimum temperature of 135°C.

Place the bars with tubing in the prewarmed oven.

Suspend or support the bars at the terminals as shown to allow unrestricted recovery.

The shrinking temperature should not exceed 180°C.



**Installation Inspection and Finishing**

A correctly installed tube will be smooth and conform to the contour of the busbar, free of creases and folds.

Allow the insulated busbar to cool to room temperature before beginning any trimming of the ends to the required length and/or punching of any holes in the tube.

Note: Cold spots (or dimpling) may be present if the oven temperature was too low or if the bars did not remain in the oven long enough. To prevent dents in the tubing, avoid resting bars against any hard surface while cooling. Cold spots and dents may be eliminated by returning the bars to the oven.

