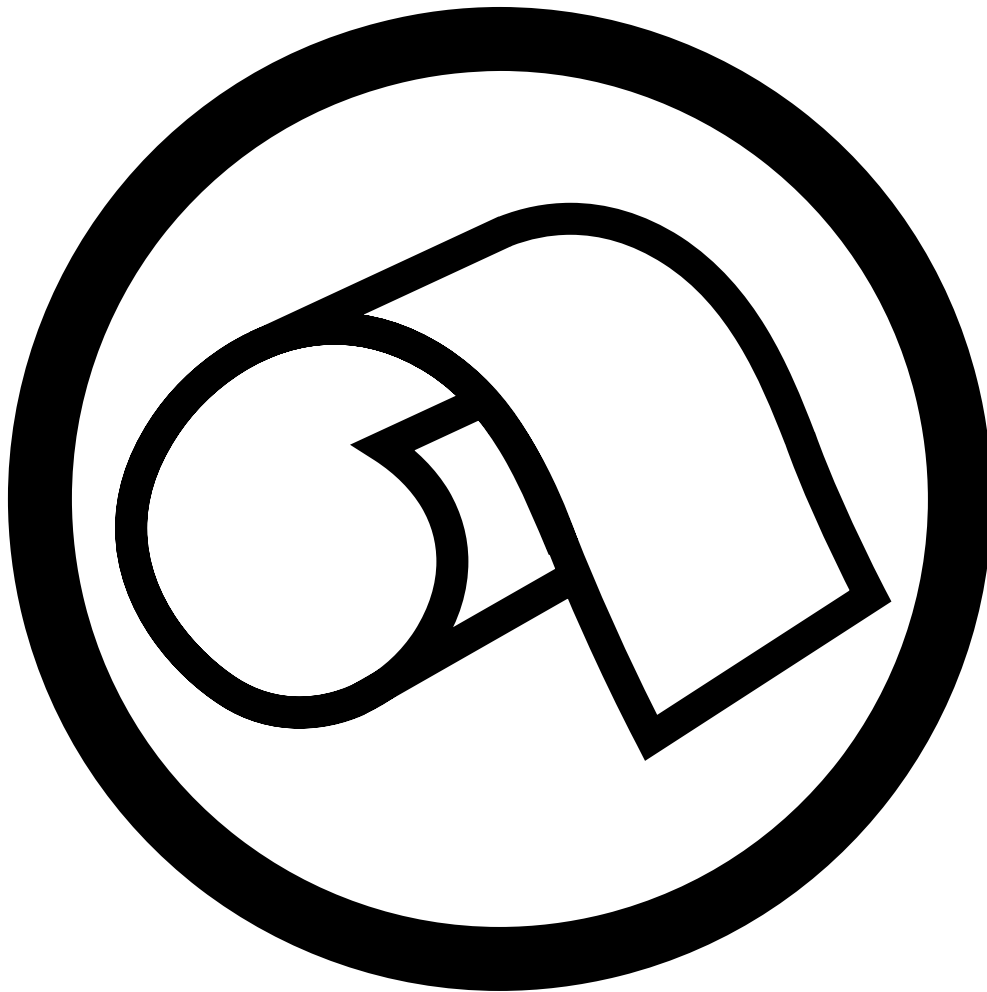


## NJRT

Nuclear, Low Voltage  
Heat-shrinkable Jacket Repair and  
Insulating Tape



## General Instructions

### General Information

The NJRT kits are supplied with black WBTF heat-shrinkable tape and red S1119 ribbon sealant.

#### Mechanical & Radiation Protection

When environmental sealing is not required, the WBTF heat-shrinkable tape may be used by itself to wrap cable or cable bundles for radiation and mechanical protection.

#### Sealing & Flame Retardancy

The S1119 ribbon sealant must be applied to provide environmental sealing. Two, 1/2-lapped layers of WBTF must be applied over the sealant to provide flame retardancy.

### Suggested Installation Equipment (not supplied with kit)

- A cleaning solvent, approved by the site or cable manufacturer.
- Raychem recommended hot air heater.
- Gloves
- Scissors or razor knife.

### Recommended Raychem Heaters

Install heat-shrinkable tape with an electric hot air heater.

Raychem CV-5000 Model 750B Thermogun (115V) is

recommended.

**Warning:** When installing electrical power system accessories, failure to follow applicable personnel safety requirements and written installation instructions could result in fire or explosion, and serious or

fatal injuries.

To minimize any effect of fumes produced by installation, always provide good ventilation of confined

### General Shrinking Instructions

Cable surface must be free of sharp edges and thoroughly cleaned and degreased before applying.

Unless otherwise instructed, start shrinking at the beginning of the wrap, working around the cable with a smooth motion.

If space requirements prevent the use of complete rolls, WBTF may be cut into shorter lengths using a scissors or razor knife. Follow safety procedures when using these tools. Refer to Table 1 below to determine the length of WBTF needed.

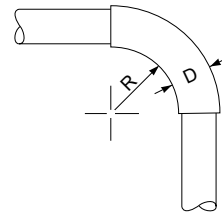
#### Inspection:

##### 1. Mechanical and Radiation Protection Applications

Correct installation can be determined by looking for conformance with the underlying profile.

##### 2. Sealing and Flame Retardancy Applications

Verify that two half lapped layers of black WBTF tape are applied during installation. Correct installation can be determined by looking for conformance with the underlying profile. When the red S1119 ribbon sealant is used (to provide environmental sealing), a bead of sealant at both ends should be visible. Ensure that the black WBTF loose end is secured properly.



**Bending:** Do not flex or bend until the wrapped area is comfortable to touch. The wrapped area should not be bent to a radius (R) tighter than 5 times the outside diameter (D). Do not violate the cable manufacturer's recommended bend radius for the conductor.

## Installation Instructions

### 1. Product selection.

Check kit selection with cable dimensions in Table 1.

**Note:** NJRT has not been type tested for insulating and sealing configurations such as WYE splices, stub connections and splices where there is more than one wire. Use of this product in these configurations will invalidate the qualification type test.

**Table 1**

Catalog Number	Examples of Cable/ Cable Bundle Diameters	Application Information: Approximate Cable Length Wrapped Per Roll		
		Single Layer Wrapped 1/2 Overlap	Double Layer Wrapped 1/2 Overlap	Single Layer Wrapped 2/3 Overlap
NJRT-1	0.4 inches (10mm)	8.0 feet (2.4m)	4.0 feet (1.2m)	5.0 feet (1.5m)
NJRT-2	1.0 inches (25mm)	8.0 feet (2.4m)	4.0 feet (1.2m)	5.0 feet (1.5m)
NJRT-2	2.0 inches (51mm)	3.8 feet (1.2m)	1.9 feet (0.6m)	2.5 feet (0.7m)
NJRT-2	3.0 inches (76mm)	2.3 feet (0.7m)	1.1 feet (0.4m)	1.5 feet (0.4m)

### 2. Select application.

Choose the application (Choice 1-3) and follow the directions given.

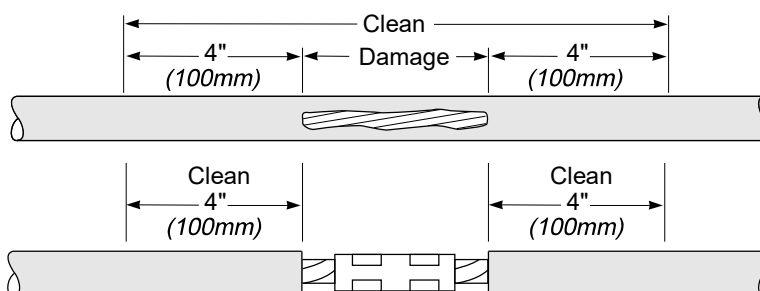
Choice 1	Choice 2	Choice 3
<b>Sealing and flame retardancy.</b>  If repairing damaged cable jacket or sealing and insulating crimped connections, go to Step 1 below.	<b>Mechanical and radiation protection.</b>  If protecting a straight cable run and sealing is not required, go to Page 7, Step 1.	<b>Mechanical and radiation protection.</b>  If covering a cable bundle branch and sealing is not required, go to Page 8, Step 1.

Choice 1	NOTE: For sealing requirements, the qualification status of Raychem NJRT is conditional upon the capability of the substrate materials to maintain physical integrity under the same conditions which the Raychem materials are expected to withstand.
<b>Repairing damaged cable jacket or sealing and insulating crimped connections.</b>	

#### 1. Clean cable.

Clean and degrease the area to be wrapped with solvent approved by cable manufacturer or site.

Raychem products are designed to seal to smooth, non-woven surfaces.



## 2. Apply red sealant.

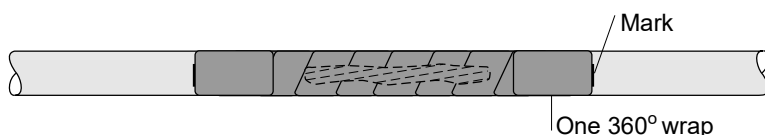
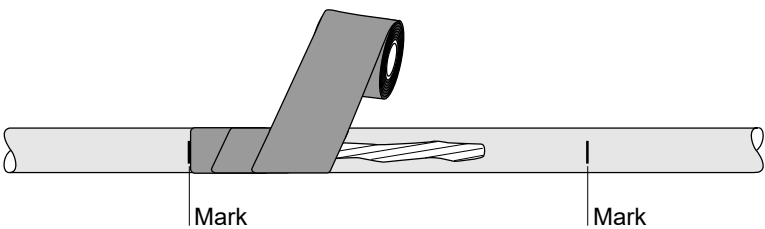
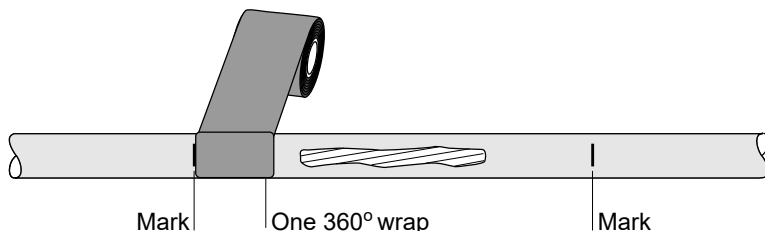
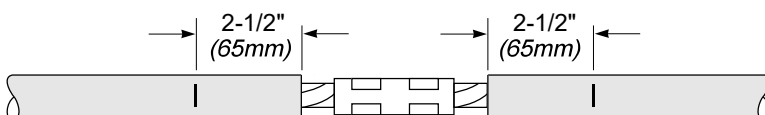
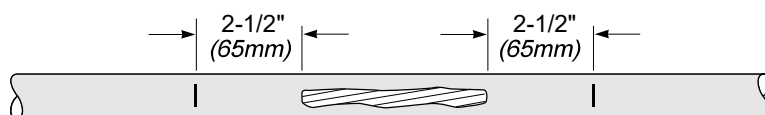
**2a.** Make a start and finish mark on cable as shown.

**2b.** Preheat the cable area which is to be wrapped.

Start red S1119 Ribbon Sealant by making one 360 degree wrap at outer mark and continue to opposite mark as shown using half lapped layers.

Secure loose end by making one 360 degree wrap at outer mark and pressing to itself.

**CAUTION:** Discard white release paper.

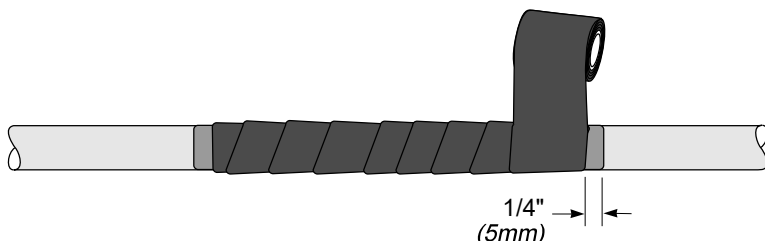
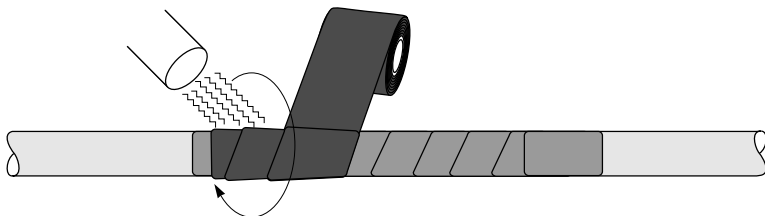
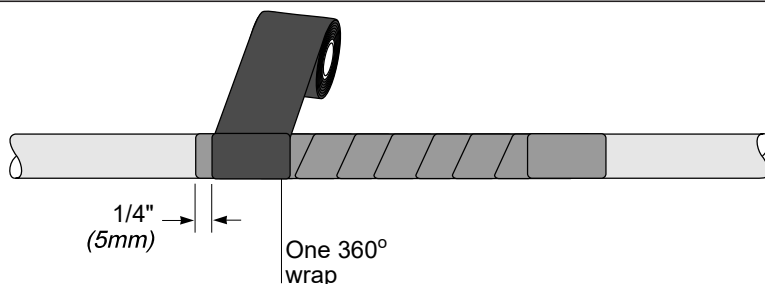


## 3. Wrap Black WBTF Tape

**3a.** Make one 360 degree wrap 1/4 inch from end of red sealant. Maintaining light tension, heat this wrap until it turns glossy. **DO NOT STRETCH.**

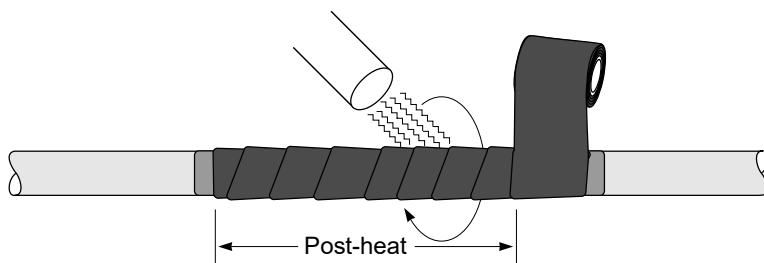
**3b.** Maintaining light tension on the unwrapped tape, half lap the next layer. Heat the wrapped layer until shrinkage is visible by conformance with the underlying substrate. The tape will turn glossy when the surface has reached shrinking temperature. Continue half lapping up to 1/4 inch of the end of the red sealant.

**CAUTION:** Do not stretch the black WBTF tape.



## 4. Post-heat tape wraps.

Post-heat each length for about 30 seconds for each foot of installed tape. Use a brushing motion from end to end and around the full circumference.

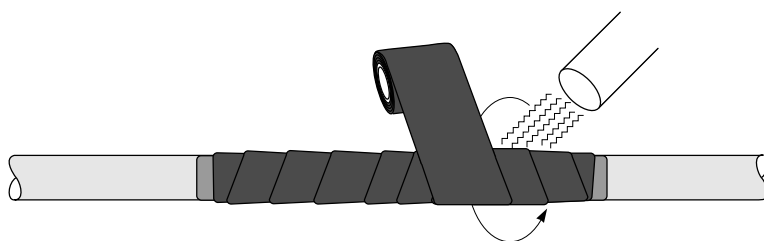


23

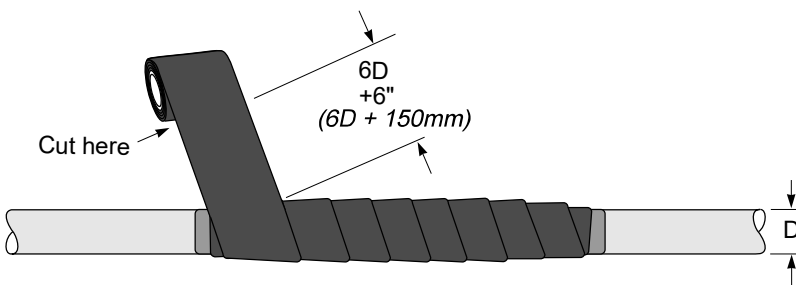
## 5. Wrap second layer of WBTF tape.

**5a.** Reverse direction by making one 360 degree wrap and applying second layer of black WBTF tape.

Maintaining light tension on the unwrapped tape, half lap the next layer. Heat the wrapped layer until shrinkage is visible by conformance with the underlying substrate. The tape will turn glossy when the surface has reached shrinking temperature. Continue half lapping to the end of the first layer. Make one 360° wrap. Leave enough extra length (approximately 6 times the diameter of the material underneath plus 6 inches) to be able to tuck under the last lap; cut off excess with a utility knife or scissors.



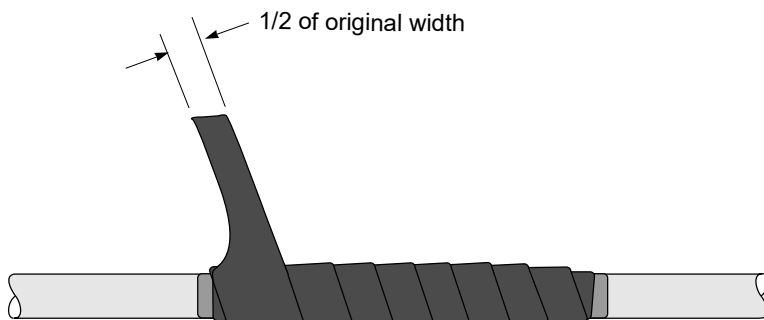
24



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**5b.** Trim approximately 1/2 width as shown. Make a smooth angled cut to the full width. Cut should have no jagged edges or nicks.

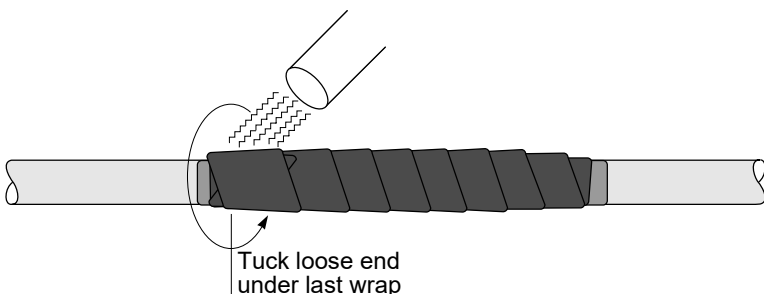
**DO NOT SHRINK THE LAST LAP.**



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## 6. Secure end; Post heat tape wraps.

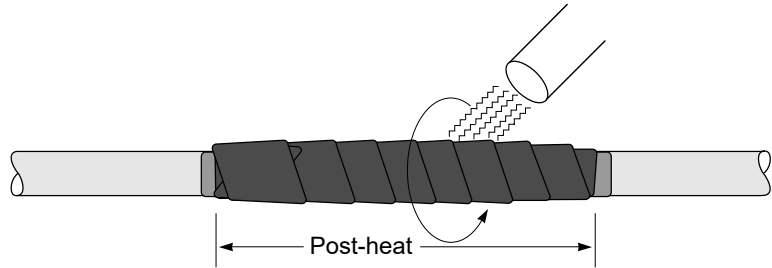
Tuck the loose end under the last lap. Continue shrinking until conformance to the underlying substrate is achieved. Cut off excessive black WBTF tape.



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### 7. Post-heat tape wraps.

Post-heat each length for about 30 seconds for each foot of installed tape. Use a brushing motion from end to end and around the full circumference.

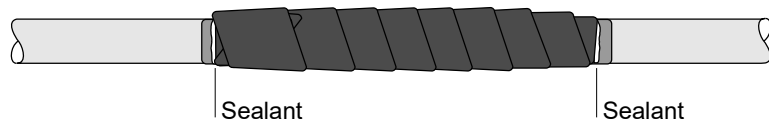


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### 8. Installation is complete.

Inspect for proper installation. Inspection instructions are given under General Shrinking Instructions on Page 2.

**NOTE:** If removal is required, preheating the tape wraps will help but is not necessary. Removal can be accomplished by scoring the outer layer of tape with a sharp blade and then heating to open the cut.



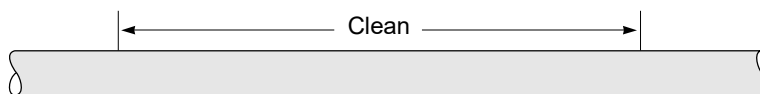
28

## Choice 2

**If protecting a straight cable run and sealing is not required:**

### 1. Clean cable.

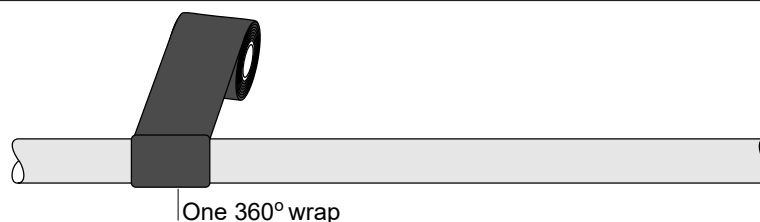
Clean and degrease the area to be wrapped with solvent approved by cable manufacturer or site.



1

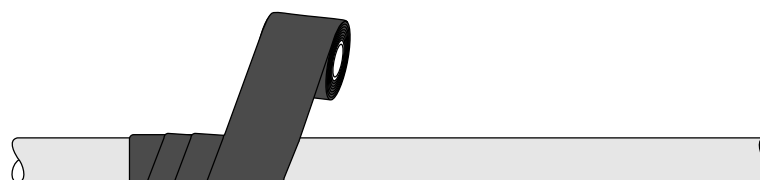
### 2. Wrap black WBTF tape.

**2a.** Make one 360 degree wrap. Maintaining light tension.



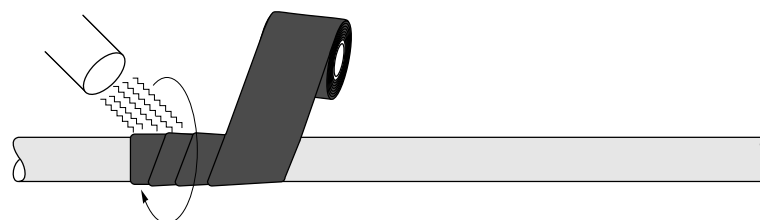
8

**2b.** Apply approximately 2/3 lapped; wrap 3-4 laps of WBTF across the cable. Use sufficient tension to provide a snug fit, but do not stretch the tape.



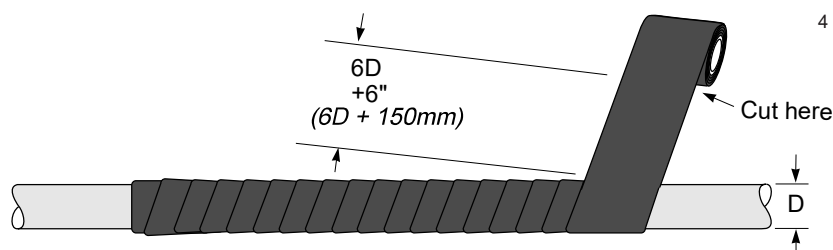
2

**2c.** Heat all installed laps until shrinkage is visible by conformance with the underlying profile. The tape will turn glossy when the surface has reached shrinking temperature.



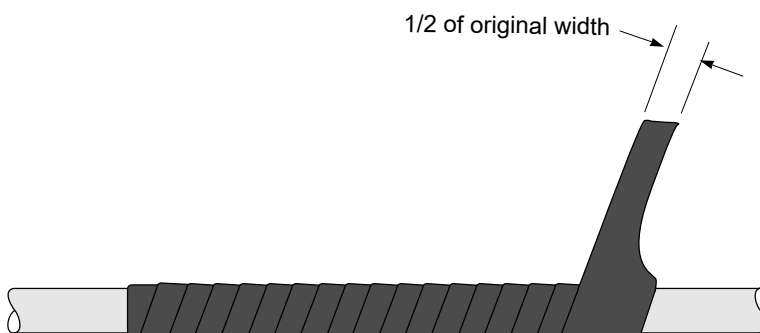
3

Repeat Steps 2b and 2c until the desired length is reached.



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**2d.** Trim approximately 1/2 width as shown. Make a smooth angled cut to the full width. Cut should have no jagged edges or nicks.

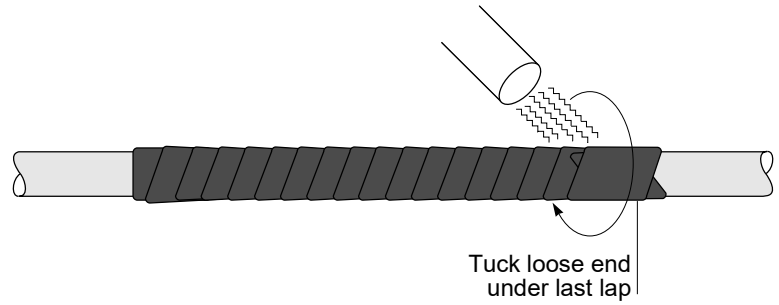


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**Do not shrink the last lap. Go to Step 3, Page 8.**

## 3. Secure end.

Tuck the loose end under the last lap. Continue shrinking until conformance to the underlying substrate is achieved.

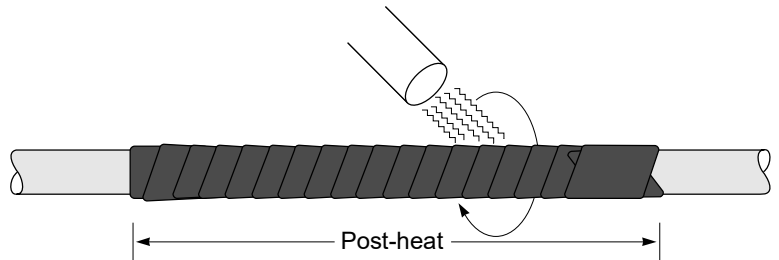


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## 4. Post-heat tape wraps.

Post-heat each length for about 30 seconds for each foot of installed tape. Use a brushing motion from end to end and around the full circumference.

**Note:** If applying more than one layer of black WBTF tape, this step must be performed for each layer.



6



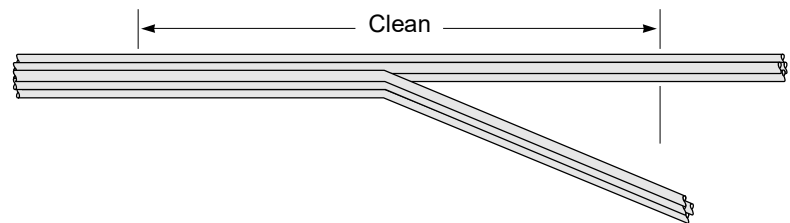
7

## Choice 3

If covering a cable bundle branch and sealing is not required:

## 1. Clean cable.

Clean and degrease the area to be wrapped with solvent approved by cable manufacturer or site.

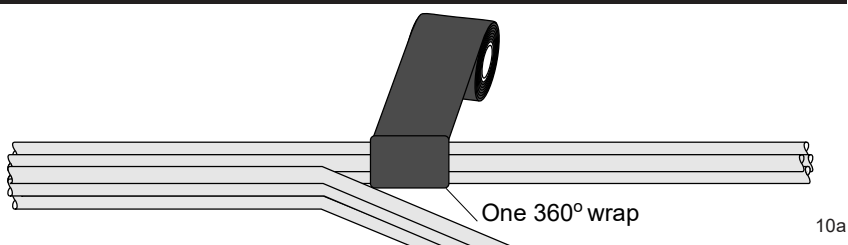


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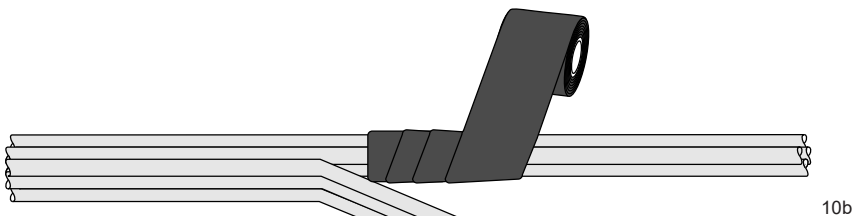


## 2. Wrap black WBTF.

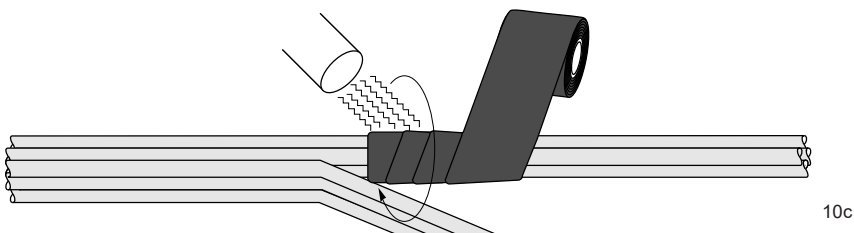
**2a.** Make one 360 degree wrap. Maintaining light tension.



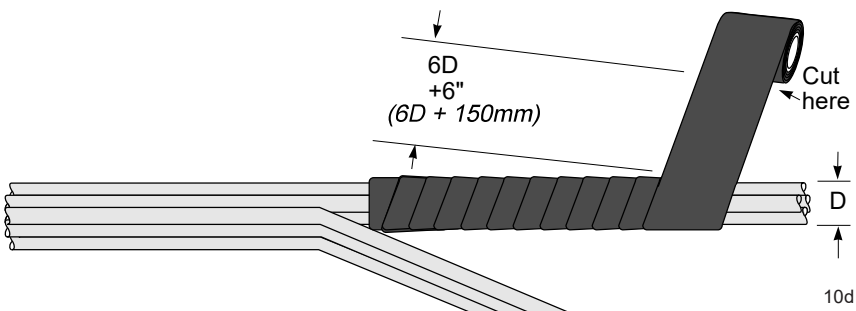
**2b.** Apply approximately 2/3 lapped; wrap 3-4 laps of WBTF across the cable. Use sufficient tension to provide a snug fit, but do not stretch the tape.



**2c.** Heat all installed laps until shrinkage is visible by conformance with the underlying profile. The tape will turn glossy when the surface has reached shrinking temperature.

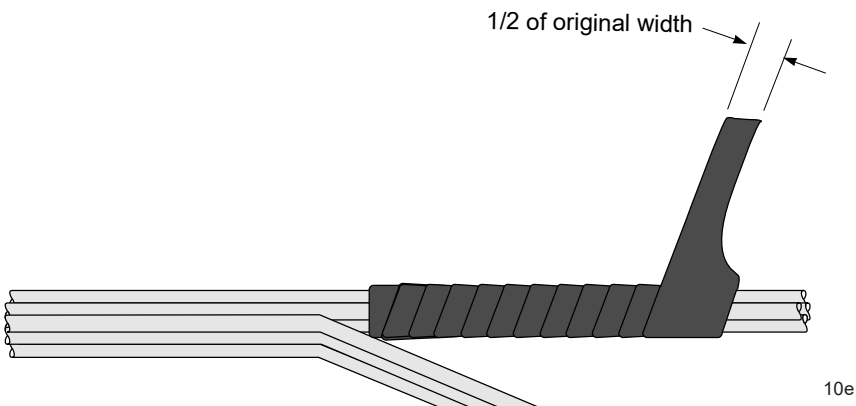


Repeat Steps 2b and 2c until the desired length is reached.



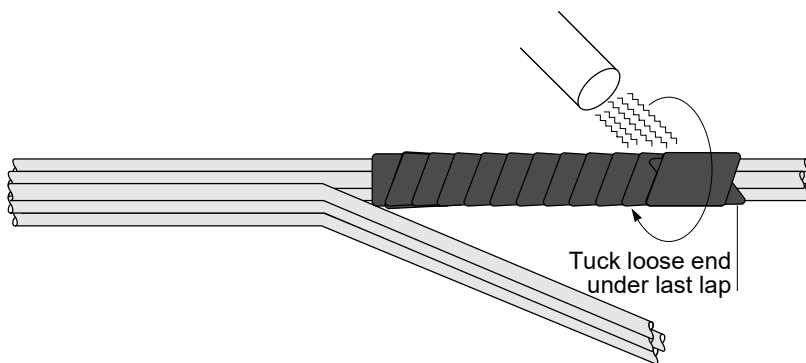
**2d.** Trim approximately 1/2 width as shown. Make a smooth angled cut to the full width. Cut should have no jagged edges or nicks.

**Do not shrink the last lap. Go to Step 3, Page 10.**



## 3. Secure end.

Tuck the loose end under the last lap. Continue shrinking until conformance to the underlying substrate is achieved.

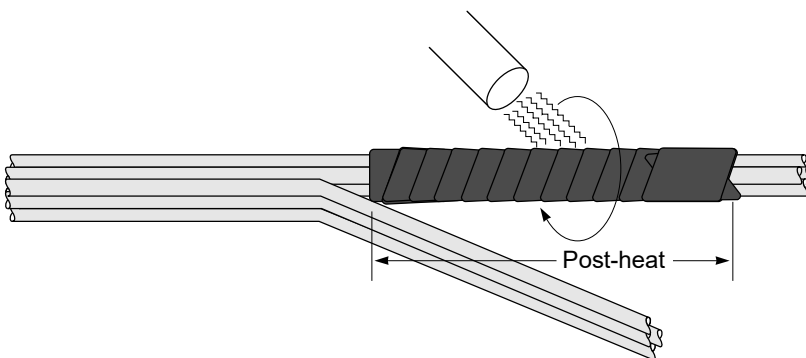


10f

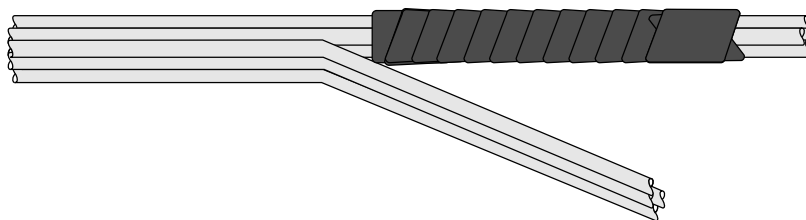
## 4. Post-heat tape wraps.

Post-heat each length for about 30 seconds for each foot of installed tape. Use a brushing motion from end to end and around the full circumference.

**Note:** If applying more than one layer of black WBTF tape, this step must be performed for each layer.

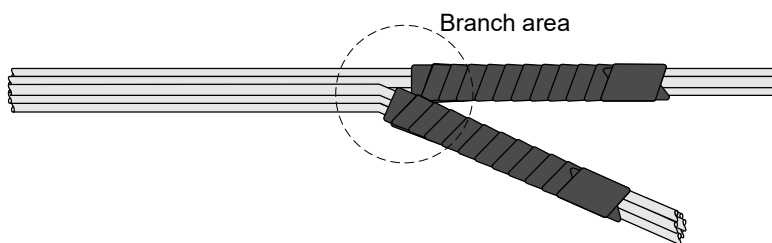


10g



10h

Go to Page 9 and repeat Steps 2-4 for the other leg of branch. When complete, continue to Step 5, Page 11.

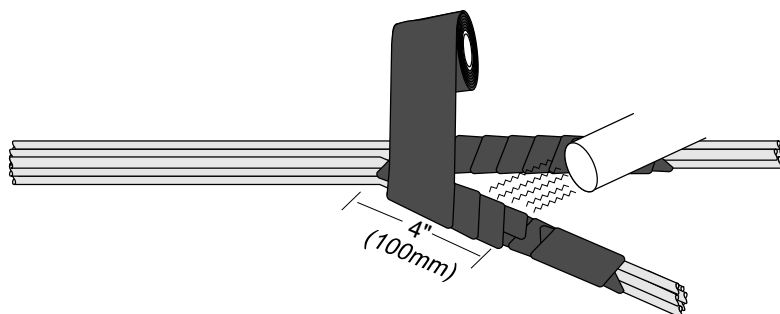


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## 5. Apply second wrap of black WBTF tape to one branch and main bundle.

Begin wrapping the black WBTF tape on the leg leaving the main bundle, approximately 4" (100mm) away from the branch area as shown.

Shrink tape in place.

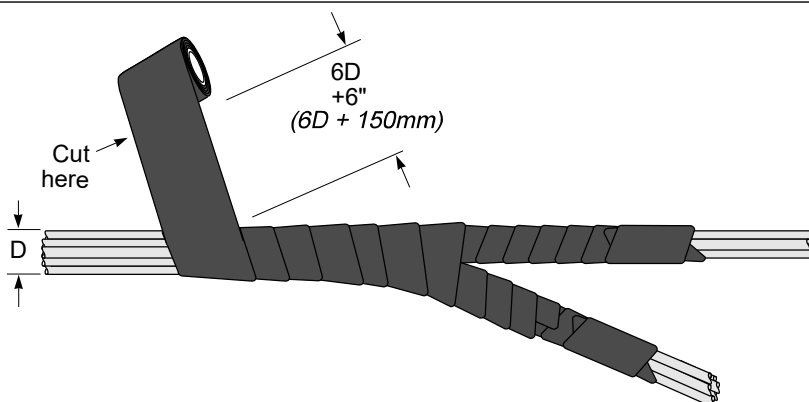


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## 6. Wrap black WBTF tape onto main bundle.

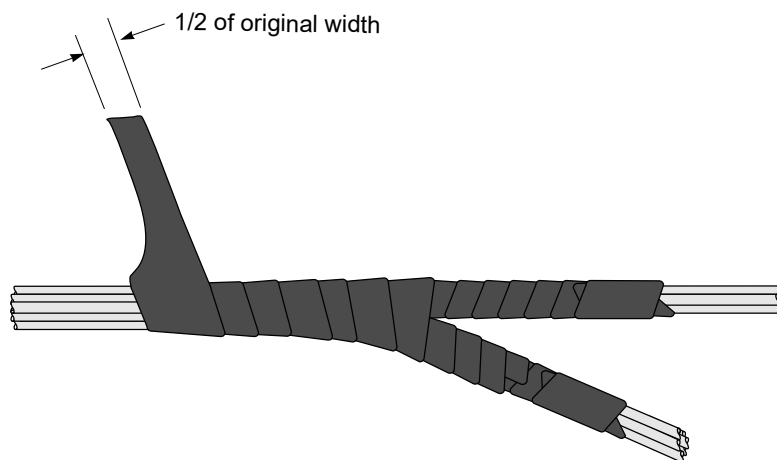
Pull the two legs together and continue to wrap over both branch legs. Continue applying tape to main cable bundle as far as necessary.

Shrink tape in place. Leave enough extra length (approximately 6 times the bundle diameter plus 6 inches) to be able to tuck under the last lap; cut off excess with utility knife or scissors.



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Trim approximately 1/2 width as shown. Make a smooth angled cut to the full width. Cut should have no jagged edges or nicks.

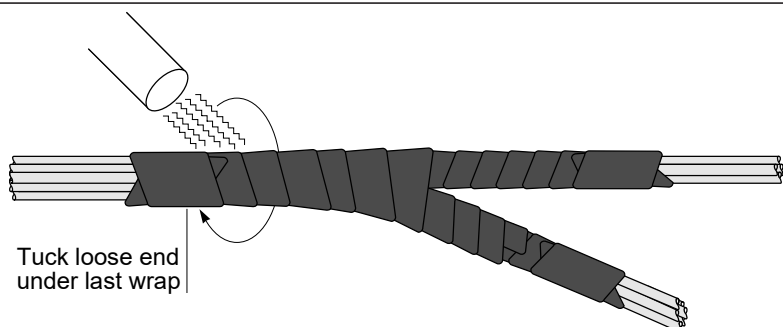


35

**Do not shrink the last lap.**

## 7. Secure end.

Tuck the loose end under the last lap. Continue shrinking until conformance to the underlying substrate is achieved.

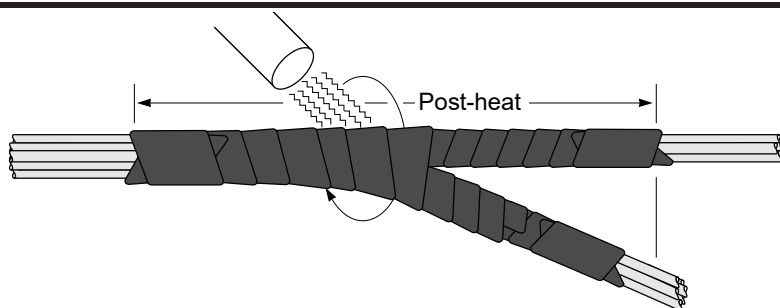


14

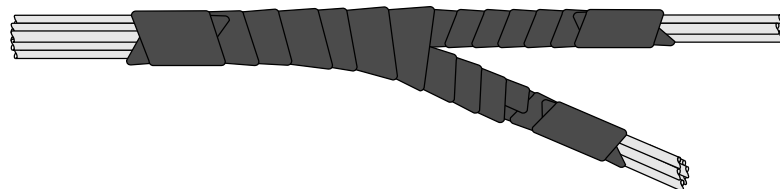
### 8. Post-heat tape wraps.

Post-heat each length for about 30 seconds for each foot of installed tape. Use a brushing motion from end to end and around the full circumference.

**Note:** If applying more than one layer of black WBTF tape, this step must be performed for each layer.



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