

STS Skin-effect Tracing System

STS-MT Wire Splice Instructions



Throughout the instructions the following symbol:  **Warning:** identifies particularly important safety warnings that must be followed.

 Warning: Shock Hazard

Ensure that the STS Skin-effect Tracing System power supply is either disconnected from the heater, or locked and tagged out before handling STS Skin-effect Tracing System wire or making terminations or splices!

 Warning: Shock Hazard

The STS Skin-effect Tracing System wire and heat tube act like a large capacitor and will hold the test voltage for a considerable length of time after dielectric testing. Be sure any residual charge has been safely dissipated before handling STS Skin-effect Tracing System wire or making terminations or splices!

Installation Conditions:

Ensure the work area is protected from rain, snow, wind or other adverse weather conditions. Ensure the work area is clean and protected from wind-blown dust and dirt. Ensure the work space temperature is kept above the minimum installation temperature.

Minimum installation temperature: 0°C

 Warning: Shock Hazard

When installing electrical power system accessories, failure to follow applicable personal safety requirements and written installation instructions could result in fire or explosion and serious or fatal injuries.

 Warning: Fire Hazard

To avoid risk of accidental fire or explosion when using gas torches, always check all connections for leaks before igniting the torch and follow the torch manufacturer's safety instructions.

 Warning: Fume Hazard

To minimize any effects of fumes produced during installation, always provide good ventilation of confirmed work spaces.

1. MATERIALS REQUIRED

There are (3) three different splice kits for STS-MT wires, one kit for each different gauge STS Skin-effect Tracing System wire. See Table 1 below for kit part numbers. Each kit will complete (1) one splice. The splice connector is shown in Figure 1 and the crimp dies and strip lengths can be found in Table 2.

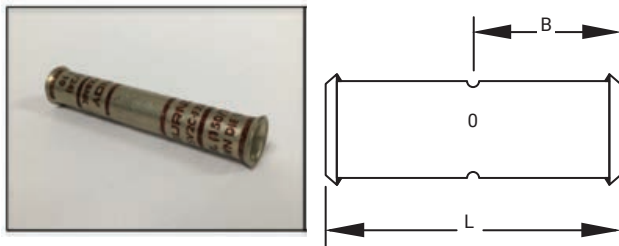
TABLE 1

Item	Part Number	Quantity	Description
	T1250034	1	STS-MT-SPLICE-KIT-13, 6AWG
1		1	STS-MT-HT-SPLICE-CONN-13, 6AWG
2		1	STS-MT-SPLICE-TAPE (Scotch 70)
3		1	WCSM-34/8-300-S, 1FT HEATSHRINK TUBE
4		2	STS-HV-HP-CLEANING-WIPES
5		1	STS-MT-INSTALLATION-INSTR-SPLICE-KIT-13, 6AWG
	T1250035	1	STS-MT-SPLICE-KIT-21, 4AWG
1		1	STS-MT-HT-SPLICE-CONN-21, 4AWG
2		1	STS-MT-SPLICE-TAPE (Scotch 70)
3		1	WCSM-34/8-300-S, 1FT HEATSHRINK TUBE
4		2	STS-HV-HP-CLEANING-WIPES
5		1	STS-MT-INSTALLATION-INSTR-SPLICE-KIT-21, 4AWG
	T1250036	1	STS-MT-SPLICE-KIT-33, 2AWG
1		1	STS-MT-HT-SPLICE-CONN-33, 2AWG
2		1	STS-MT-SPLICE-TAPE (Scotch 70)
3		1	WCSM-34/8-300-S, 1FT HEATSHRINK TUBE
4		2	STS-HV-HP-CLEANING-WIPES
5		1	STS-MT-INSTALLATION-INSTR-SPLICE-KIT-33, 2AWG

TABLE 2

Description	Conductor Size	L	B	Die Index	Color Code	Die Number	Strip Tool MT	Strip Length
STS-MT-HT-SPLICE-CONN-13, 6AWG	#6 AWG (13 mm ²)	2.62" (67 mm)	1.22" (31 mm)	7	Blue	U5CRTW	Blue #6	1-5/16" (33 mm)
STS-MT-HT-SPLICE-CONN-21, 4AWG	#4 AWG (21 mm ²)	2.62" (67 mm)	1.22" (31 mm)	8	Gray	U4CRTW	Blue #4	1-5/16" (33 mm)
STS-MT-HT-SPLICE-CONN-33, 2AWG	#2 AWG (33 mm ²)	2.89" (73 mm)	1.35" (34 mm)	10	Brown	U2CRTW	Blue #2	1-7/16" (37 mm)

FIGURE 1



Other items required but not included:

- T1015912 ➔ STS-CRIMP-KIT*
- H87227 ➔ Crimp Kit Work Instructions
- H58914 ➔ STS Installation and Construction Manual
- Raychem recommended torch

* **Note:** Chemelex requires an STS Field Crimping Kit which includes a battery operated hydraulic crimping tool (Burndy PAT750Li), crimping dies and wire stripping tools necessary to perform splices and terminations in the field. This kit is required by Chemelex to ensure high quality STS tracing wire splices and terminations. A force gauge is included in the kit to verify that the hydraulic crimping tool is applying sufficient force during crimping, thus ensuring a good connection. When the use of battery operated hydraulic crimping tool is not allowed, then Burndy's Y750HSXT or Y750CHSXT manual crimpers with correct dies are allowed.

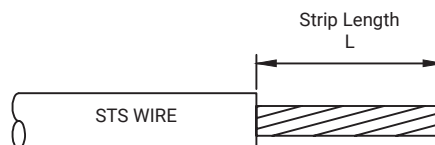
2. GENERAL NOTES AND INSTRUCTIONS

1. Be sure to keep the tape clean and dry while storing, handling and wrapping. Dirt and contaminants on the tape will lead to splice failure. Tapes are supplied with a backing or liner which is to be removed and discarded.
2. ⚠ To avoid accidental fire or explosion when using gas torches, always check all connections for leaks before igniting the torch and follow the torch manufacturers safety instructions.
3. ⚠ To minimize any effects of fumes produced during heat shrinking, provide good ventilation of work spaces.
4. Adjust regulator and torch as required to provide an overall 12" bushy flame.
5. General heat shrinking instructions:
 - Apply outer 3"-4" tip of the flame to heat shrink tubing with a rapid brushing motion
 - Keep flame moving to avoid scorching
 - Start shrinking the tube at the center of the splice, working the flame around all sides of the heat shrink tube to apply uniform heat
 - To determine if a heat shrink tube has shrunk completely, look for the following, especially on the back and underside of the tube:
 - i) uniform wall thickness, ii) conformance to the underlying wire and splice tape, iii) no flat spots, and iv) visible, uniform sealant flow out of the ends of the heat shrink tube

3. INSTALLATION

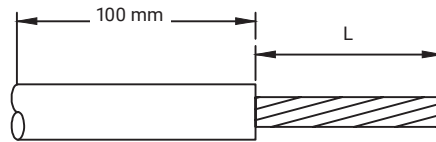
1

Refer to H87227 Crimp Kit Work Instructions. Using the STS-MT wire stripping tool identified in Table 2 for the wire size being installed, strip the insulation strip for the length shown in Table 2.



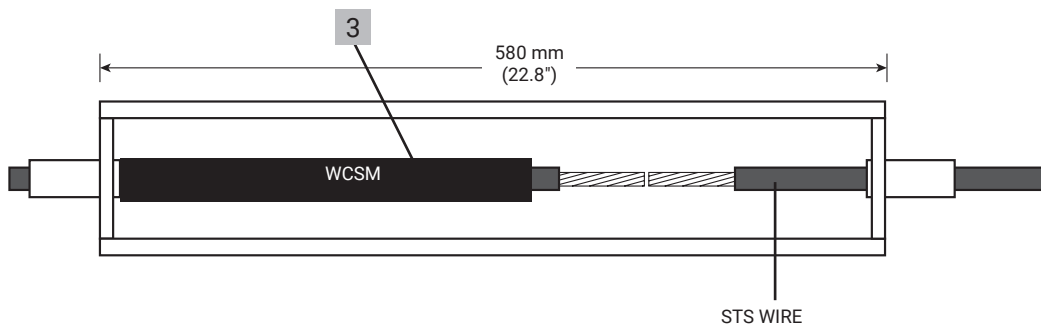
2

Clean and dry the conductor and 100 mm of the wire jacket using the HP Wipes, working from jacket toward conductor.



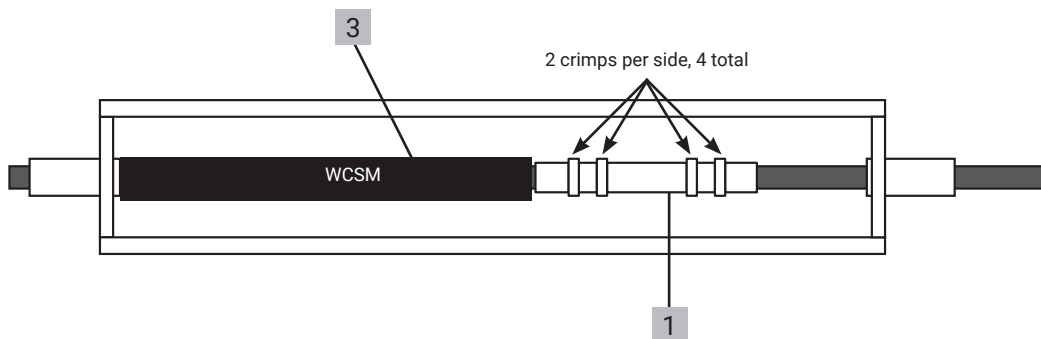
3

Place the heat shrink tube **3** (WCSM) over one of the STS wires as shown to clear it away from the wire ends. Be careful not to damage the heat shrink tube while placing it over the STS wire end.



4

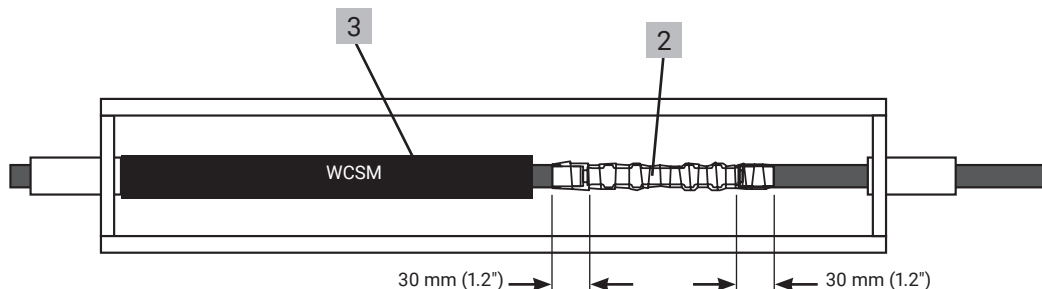
Fully insert the conductors into the connector **1** and crimp in 2 places on each side as shown. Refer to H87227 Crimp Kit Work Instructions to ensure the crimper is calibrated, the connector is fully inserted, and proper crimping technique is used. When complete, deburr the connector and clean with the HP Wires to remove any loose metallic particles.



5

Remove backing from long lengths of the splice tape **2**. Tightly and evenly wrap the tape around the connector and the exposed STS wire using a 50% overlap. Do not stretch the tape to less than $\frac{3}{4}$ of its original width. Continue to wrap, back and forth across the splice area extending 1.2" (30 mm) onto the wire insulation until the diameter over the splices is $\frac{1}{4}$ " (6 mm) more than the diameter of the STS wire.

Be sure to keep the tape clean and dry while handling and wrapping. Dirt and contaminants on the tape will lead to splice failure.

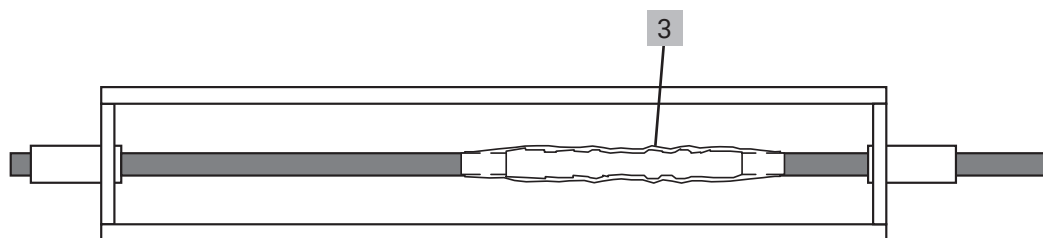


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⚠ To avoid accidental fire or explosion when using gas torches, always check all connections for leaks before igniting the torch and follow the torch manufacturers safety instructions.

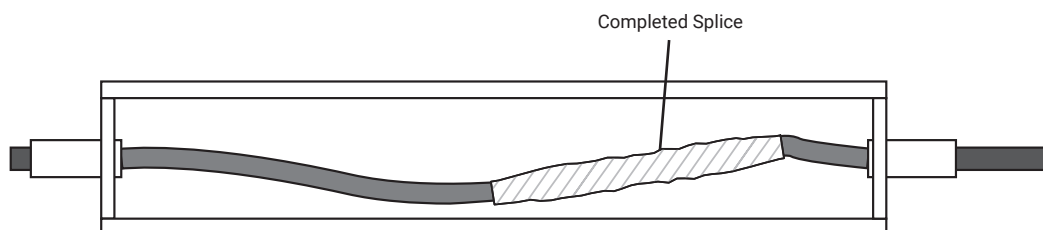
⚠ To minimize any effects of fumes produced during heat shrinking, provide good ventilation of work spaces.

Slide the heat shrink tube **3** over the splice insulation and center it so that it overlaps both ends equally. Adjust regulator and torch as required to provide an overall 12" (305 mm) bushy flame. Begin shrinking at the center of the tube, working the torch with a smooth brushing motion around the tube. After the center portion shrinks, work the torch as before toward one end, then to the opposite end. Allow splice to cool to the touch before further handling.



7

Lay the completed splice back down into the splice box. Leave only enough slack in the STS wire to provide a slight curve. There should be no more than 25" (630 mm) of STS wire remaining in the box when finished.





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