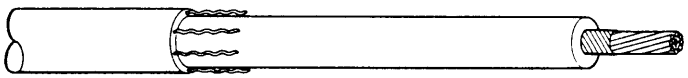
Instructions for

3M

Quick Splice Inline Splicing Kits
for Shielded Cables

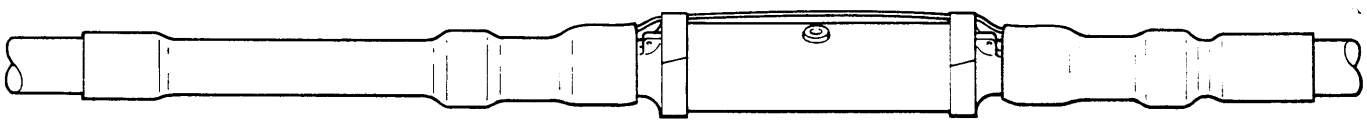
Ribbon Shield

Wire Shield



Unishield®

Unishield is a registered trademark of Anaconda Wire and Cable Company



Kit No.	Conductor * Size (AWG or kcmil)	Cable Primary Insulation O.D. Range
5501	#2 - 2/0†	.637 - .900 in. 16,3 - 22,9 mm
5502	2/0†† - 4/0	.840 - 1.050 in. 21,3 - 26,7 mm

* NOTE: Final determining factor is primary insulation O.D.
† .175 in. insulation thickness only.
†† .220 in. insulation thickness only.

Technical Information:
for use on Ribbon or Wire Shielded and Uni-Shield® Cables

Copper or Aluminum Conductors
Cable Size Range: #2 - 4/0

15kV rated: 150kV BIL

IEEE Std. No. 404 1977

Issue	Date	Rev.	Ch.
1	Oct. 1, 1982		
Not to scale		Ch.	9/24/82
Dr. J. F. KRENIK		App.	9/24/82

2047 T46

Electro-Products Division/3M
St Paul, MN 55144 Made in U.S.A.

3M Quick Splice Inline Splicing Kits
for Shielded Cables
5501
5502

34-7017-1941-0

Instructions for Ribbon Shielding

NOTE: Check to be sure cable insulation fits within the kit O.D. range as shown in table on page one.

A. Prepare Cables According to Standard Procedures

1. Clean cable jackets by wiping with a dry cloth for approximately two feet from each end.
2. Remove jacket to distance B and C for cables "X" and "Y" respectively (Figure 1, Table A).

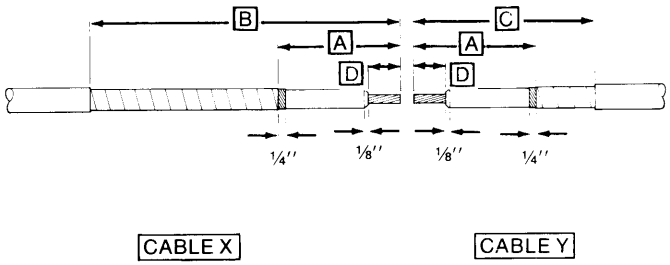


Figure 1

Kit No.	Dimensions				
	A		B	C	D
	Insulation Level				
	100% .175 in.	133% .220 in.			
5501	4⅜ in. 111,1 mm	4⅛ in. 104,8 mm	12 in. 304,8 mm	7 in. 177,8 mm	1¼ in. 31,8 mm
5502	4½ in. 114,3 mm	4½ in. 114,3 mm	12 in. 304,8 mm	7 in. 177,8 mm	1⅝ in. 41,3 mm

Table A

3. Remove metallic shielding for distance A.
4. Remove cable semi-con, allowing it to extend ¼'' beyond metallic shielding (dimension A).
5. Remove insulation for dimension D and taper edges ⅛'' at approximately 45°.
6. Clean exposed insulation using enclosed cleaning pads. Do not use solvent or abrasive on cable semi-con layer. If abrasive **must be** used on insulation, do not reduce diameter below that specified for minimum splice application.
7. Apply two highly elongated half-lapped layers of Scotch Brand 13 Semi-Conductive Tape starting 1'' on cable metallic shield and extending ½'' onto cable insulation. Leave a smooth leading edge and tape back to starting position (Figure 2).
8. On cable "X" apply one half-lapped layer (adhesive side out) orange vinyl tape (supplied in kit) over metallic shield beginning approximately ¼'' on previously applied #13 Tape and ending over cable jacket. (Figure 2)

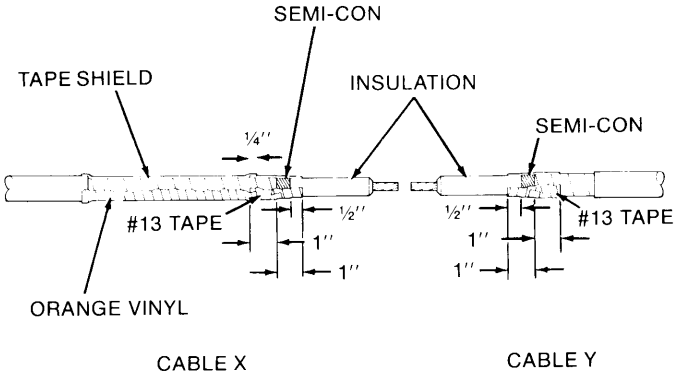


Figure 2

B. Splice Installation

1. Slide **longer** PST Cold Shrink insulator onto cable "X" jacket and the shorter PST onto cable "Y" jacket directing pull tabs away from cable ends as shown in figure 3.

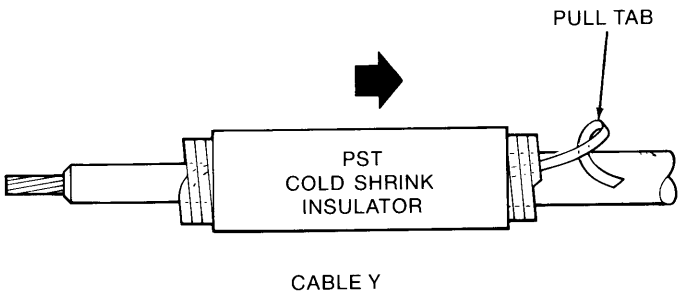


Figure 3

2. Apply a few wraps of vinyl tape over cable "X" conductor end to protect splice bore while installing.
3. Lubricate exposed insulation, #13 Tape and orange vinyl tape of cables "X" and "Y" with silicone grease provided. Do not allow grease to extend onto metallic shield of cable "Y".
4. Lubricate bore of splice with silicone grease and install onto cable "X" leaving conductor exposed for connector. (Figure 4).
   HINT: Rotation of splice while pulling will ease installation.

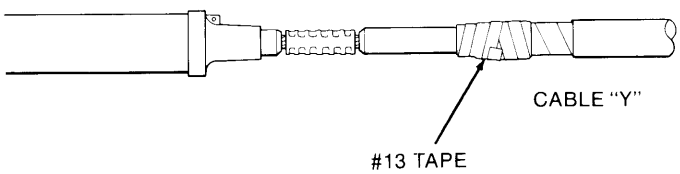


Figure 4

NOTE: Make certain all splicing components (PST's and Splice Body) are located properly on their respective cable end before installing connector.

5. Remove vinyl tape from cable "X" conductor.
6. Install CI connector crimped per instructions in table on back page (8). Wipe excess contact aid from conductor and connector area: REMOVE ANY SHARP EDGES THAT MAY EXIST.
7. Slide splice body into final position over connector, using bumps formed on splice ends as guides for centering (Figure 5).
8. Remove previously applied orange vinyl tape and wipe off any remaining silicone grease.

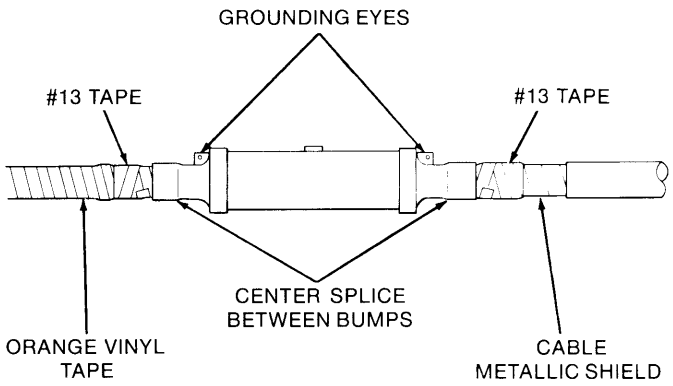


Figure 5

C. Install Shield Continuity Assembly

1. Position shield continuity assembly over splice body and hold it in place with a wrap or two of vinyl tape at each end of splice body (Figure 6). Form the shield continuity strap over the splice shoulder (Figure 8) on each side.
   NOTE: Coils of assembly must be facing cable and positioned so they will only make contact with metallic shielding when applied.
   NOTE: Avoid positioning flat strap over splice grounding eyes.

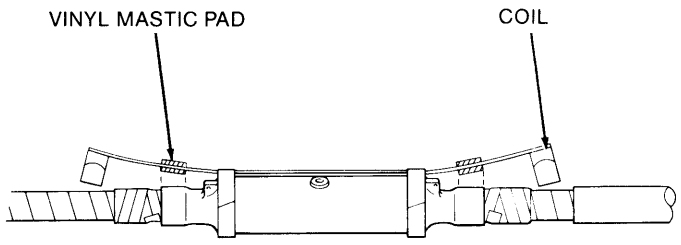


Figure 6

2. Coil Application:
   a. Unwrap coil and straighten for one to two inches.
   b. Hold the coil and shield strap in place with thumb (Figure 7). Pull (to unwrap) the coil around the cable and rewrap around cable metallic shield and itself.
      NOTE: Cinch (tighten) the applied coil after final wrap.
   c. Repeat "a" and "b" for other end of splice.

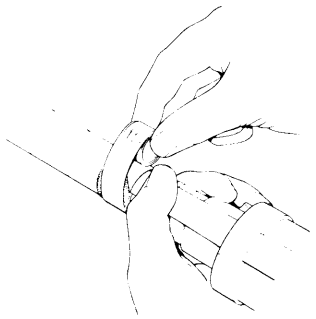


Figure 7

3. Sealing Shield Strap:
   a. Cut the supplied strip of vinyl mastic into four equal length pads.
   b. After removing liner, place one pad **under** strap, mastic side toward strap and located at the end of the splice body (Figure 6). Place a second pad over the strap and first pad and press together, mastic to mastic, forming a sandwich. (This will be overwrapped with #13 Tape.)
   c. Repeat step "b" for other end of splice body.
   d. Beginning just beyond splice body, wrap #13 Tape over vinyl mastic pads extending onto splice for approximately ¼" and returning to starting point. Do this on both ends (Figure 8).

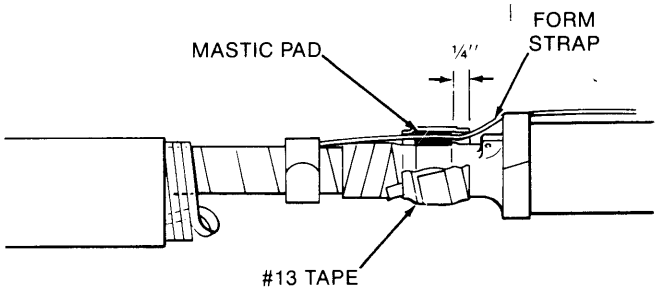


Figure 8

D. Install PST Cold Shrink Insulators

1. Position each PST so its leading edge will butt against grounding eye of splice body. Remove core by unwinding counterclockwise and tugging occasionally (Figure 9).

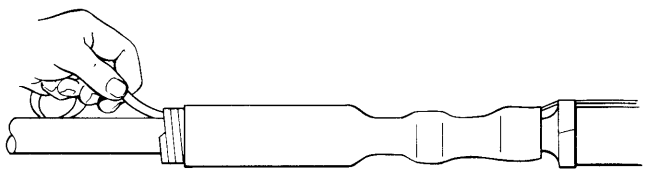


Figure 9

E. Grounding Splice

1. If the practice calls for grounding the splice, fasten the alligator ground clamp (provided) to the exposed shield continuity strap approximately at the center of the splice. A ground strap conductor can then be fastened to alligator clamp. Discard black plastic shoe packaged with ground clamp.

Instructions for Wire Shield

NOTE: Check to be sure cable insulation fits within the kit O.D. range as shown in table on page one.

A. Prepare Cables According to Standard Procedures

1. Clean cable jackets by wiping with a dry cloth for approximately two feet from each end.
2. Remove jacket to distance [B] and [C] for cables "X" and "Y" respectively (Figure 1, Table A).

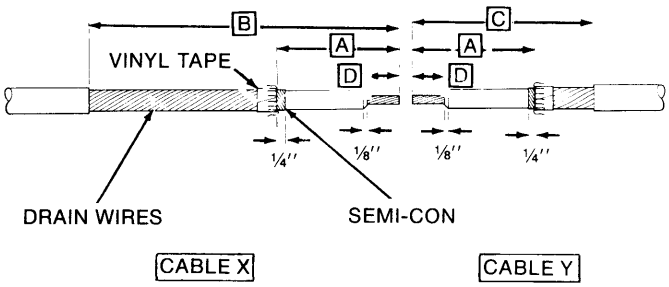


Figure 1

Kit No.	Dimensions				
	A		B	C	D
	Insulation Level				
	100% .175 in.	133% .220 in.			
5501	4⅜ in. 111,1 mm	4⅛ in. 104,8 mm	12 in. 304,8 mm	7 in. 177,8 mm	1¼ in. 31,8 mm
5502	4½ in. 114,3 mm	4½ in. 114,3 mm	12 in. 304,8 mm	7 in. 177,8 mm	1⅝ in. 41,3 mm

Table A

3. Apply two wrap of vinyl tape at dimension [A] on both cables. Figure 1. Wires must be uniformly spaced around cable between jacket and vinyl tape. Do not allow wire overlaps.
4. Fold loose shield wires back and cut off at center of vinyl tape (Figure 2).

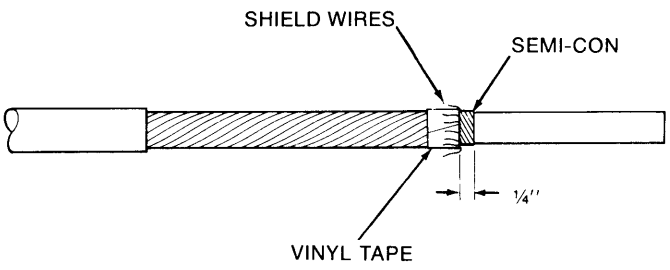


Figure 2

5. Remove cable semi-con, leaving ¼" exposed beyond folded back wires (Figure 2).
6. Remove insulation for dimension [D] and taper edges ⅛" at approximately 45°.
7. Clean exposed insulation using enclosed cleaning pads. Do not use solvent or abrasive on cable semi-con layer. If abrasive **must be** used on insulation, do not reduce diameter below that specified for minimum splice application.
8. Apply two highly elongated half-lapped layers of Scotch Brand 13 Semi-Conducting Tape over vinyl tape, folded back wire ends, cable semi-con and ½" onto cable insulation. Leave a smooth leading edge. Begin and end taping approximately ¼" onto shield wires beyond vinyl tape (Figure 3).

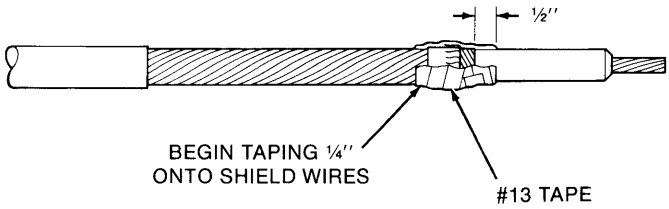


Figure 3

9. On cable "X", apply one half-lapped layer (adhesive side out) orange vinyl tape (supplied with kit) over shield wires beginning approximately ¼" on #13 Tape and ending over cable jacket.

B. Splice Installation

1. Slide **longer** PST Cold Shrink insulator onto cable "X" jacket and the shorter PST onto cable "Y" jacket directing pull tabs away from cable ends as shown in figure 4.

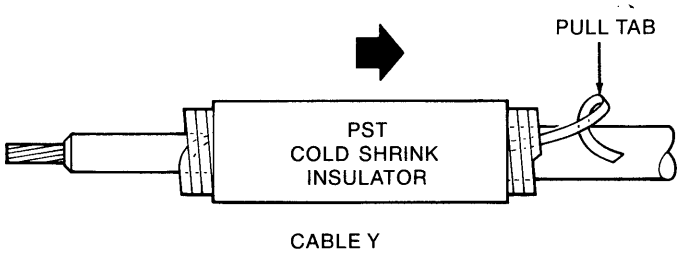


Figure 4

2. Apply a few wraps of vinyl tape over cable "X" conductor end to protect splice bore while installing.
3. Lubricate exposed insulation, 13 Tape and orange vinyl tape of cables "X" and "Y" with silicone grease provided. Do not allow grease to extend onto shield wires of cable "Y".
4. Lubricate bore of splice with silicone grease and install onto cable "X" leaving conductor exposed for connector (Figure 4).
   HINT: Rotation of splice while pulling will ease installation.
5. Remove vinyl tape from cable "X" conductor end.

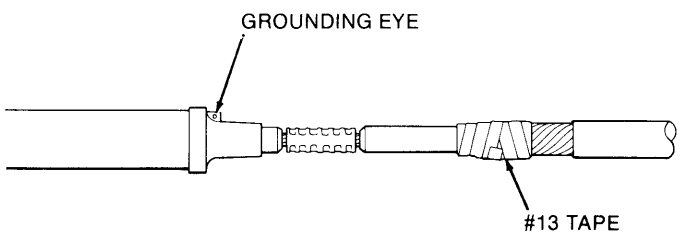


Figure 5

NOTE: Make certain all splicing components (PST's and Splice Body) are located properly on their respective cable end before installing connector.

6. Install CI connector crimped per instructions in table on back page (page 8). Wipe excess contact aid from conductor and connector area. REMOVE ANY SHARP EDGES THAT MAY EXIST.
7. Slide splice body into final position over connector, using bumps formed on splice ends as guides for centering (Figure 6).
8. Remove previously applied orange vinyl tape and wipe off any remaining silicone grease.

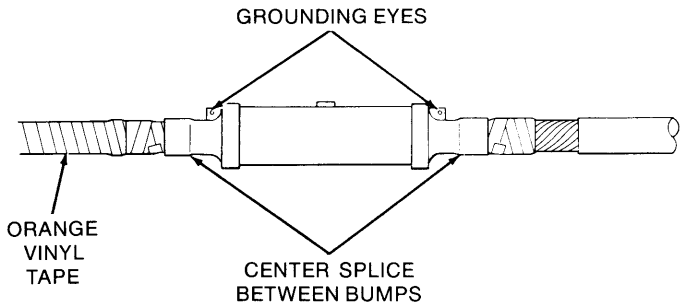


Figure 6

C. Install Shield Continuity Assembly

1. Position shield continuity assembly over splice and hold it in place with a wrap or two of vinyl tape at each end of splice body (Figure 7). Form the shield continuity strap over the splice shoulder (Figure 9) on each end.
   NOTE: Coils of assembly must be facing cable and positioned so they will cover ***shielding wires only*** *when applied.*
   NOTE: Avoid positioning the flat strap over the splice grounding eyes.

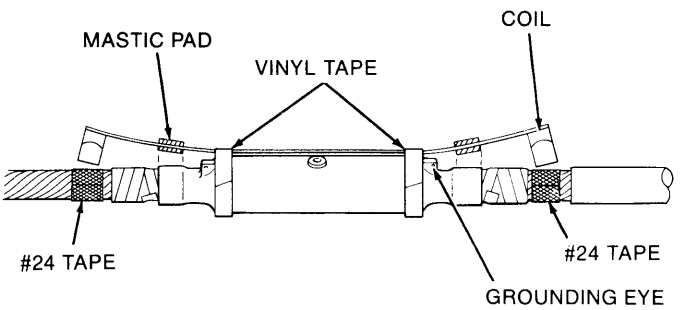


Figure 7

2. Note position of coil over cable shield wires and wrap "Scotch" #24 Metallic Shielding Tape (one complete length as supplied) at this point (Figure 7). Install coil over the #24 Tape (see "Coil Application" procedure). Do this for both ends.
   NOTE: In the following step be certain #24 Tape and shield strap coil are wrapped in the same direction and that the coil is centered within the edges of the #24 Tape. Reapply #24 Tape if necessary.
3. Coil Application:
   a. Unwrap coil and straighten for one to two inches.
   b. Hold the coil and shield strap in place with thumb (Figure 8). Pull (to unwrap) the coil around the cable and rewrap around #24 Tape and itself.
      NOTE: Cinch (tighten) the applied coil after final wrap.
   c. Repeat application procedure on opposite side of splice.

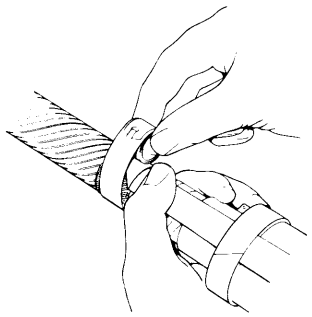


Figure 8

4. Seal Shield Strap:
   a. Cut the supplied strip of vinyl mastic into four equal length pads.
   b. After removing liner, place one vinyl mastic pad **under** strap, mastic side toward strap and located at the end of the splice body (Figure 7). Place a second pad over the strap and first pad and press together, mastic to mastic forming a sandwich. (This will be overwrapped with #13 Tape).
   c. Repeat step "b" for other end of splice body.
   d. Beginning just beyond splice body, wrap two half-lapped layers of #13 Tape over vinyl mastic pads extending onto splice for approximately ¼" and returning to starting point. Do this on both ends (Figure 9).

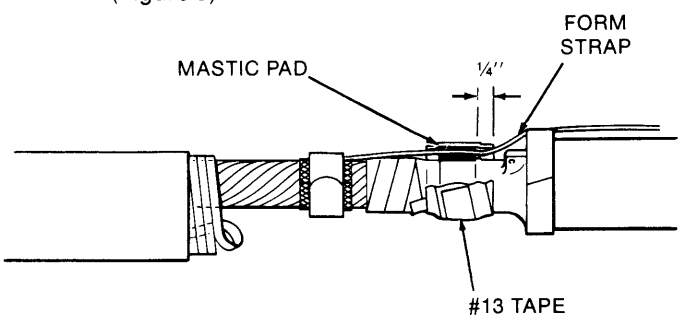


Figure 9

D. Install PST Cold Shrink Insulators

1. Position each PST, so its leading edge will butt against grounding eye of splice body. Remove core by unwinding counterclockwise and tugging occasionally.

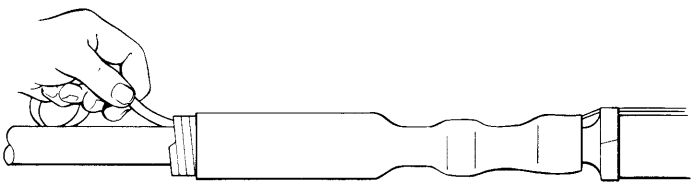


Figure 10

E. Grounding Splice

1. If the practice calls for grounding the splice, fasten the alligator ground clamp (provided) to the shield continuity strap, approximately at the center of the splice body. A ground conductor can then be fastened to alligator clamp. Discard black plastic shoe packaged with ground clamp.

Instructions for Unishield Cable

NOTE: Check to be sure cable insulation fits within the kit O.D. range as shown in table on page one.

A. Prepare Cables According to Standard Procedures

1. Clean cable jackets by wiping with a dry cloth for approximately two feet from each end.
2. Place vinyl tape marker at dimension [B] plus ¾" for cable "X" and C plus ¾" for cable "Y" (Figure 1, Table A). Pull shield wires back to this marker. DO NOT CUT WIRES OFF.
3. Ring cut approximately 75% through semi-con jacket at dimensions [B] and [C]. Caution: Do not cut all the way through. Remove jacket to these ring cuts. *HINT: The use of a hose clamp will prevent semi-con jacket end lifting during removal.*
4. Removel insulation to dimension [D] (Figure 1) and taper edges ⅛", at approximately 45°.
5. Clean exposed insulation using enclosed cleaning pads. Do not use solvent or abrasive on cable semi-con jacket. If abrasive **must be** used on insulation do not reduce diameter below that specified for minimum splice application.
6. Apply 2 highly elongated half-lapped layers of Scotch Brand 13 Semi-Conductive Tape starting ½" on semi-con jacket and continuing along insulation to dimension "A" for cables "X" and "Y" (Figure 1). Leave a smooth even leading edge and tape back to semi-con jacket cut-off point.

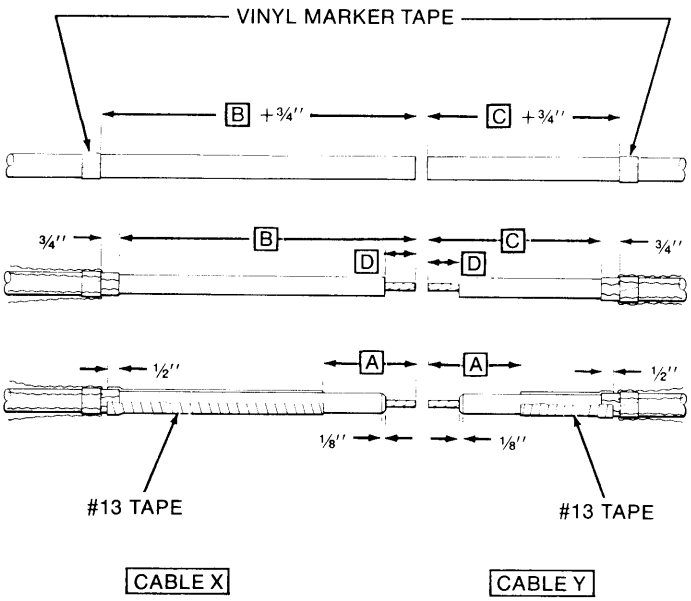


Figure 1

Kit No.	Dimensions				
	A		B	C	D
	Insulation Level				
	100% .175 in.	133% .220 in.			
5501	3⅝ in. 92,1 mm	3⅜ in. 85,7 mm	12 in. 304,8 mm	7 in. 177,8 mm	1¼ in. 31,8 mm
5502	3¾ in. 95,3 mm	3¾ in. 95,3 mm	12 in. 304,8 mm	7 in. 177,8 mm	1⅝ in. 41,3 mm

Table A

B. Splice Installation

1. Slide **longer** PST Cold Shrink insulator onto cable "X" jacket and the shorter PST onto cable "Y" jacket directing pull tabs away from cable ends as shown in Figure 2.

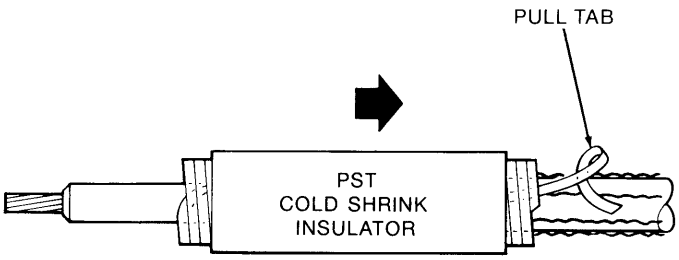


Figure 2

2. Apply a few wraps of vinyl tape over cable "X" conductor end to protect splice bore while installing.
3. Lubricate exposed insulation and #13 Tape of cables "X" and "Y" with silicone grease furnished. Do not allow grease to extend onto ground wires.
4. Lubricate bore of splice with silicone grease and install onto cable "X" leaving conductor exposed for connector (Figure 3). *HINT: Rotation of splice while pulling will ease installation.*

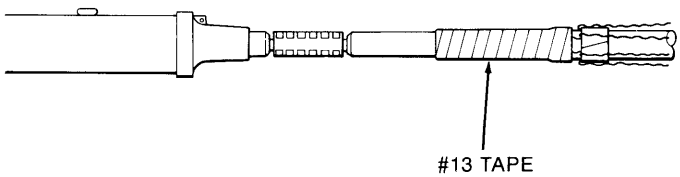


Figure 3

NOTE: Make certain all splicing components (PST's and Splice Body) are located properly on their respective cable end before installing connector.

5. Remove vinyl tape from cable "X" conductor end.
6. Install CI connector, crimped per instructions in table on back page (8). Wipe excess contact aid from conductor and connector area. REMOVE ANY SHARP EDGES THAT MAY EXIST.
7. Slide mold body into final position over connector, using bumps formed on splice ends as guides for centering (Figure 4). Wipe off any remaining silicone grease.

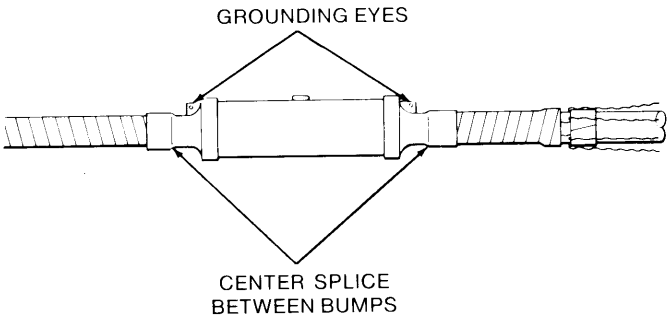


Figure 4

C. Install Shield Continuity Assembly

1. Apply a two layer band of vinyl tape over #13 Tape wrappings adjacent to each splice end (vinyl tape should butt against splice end).
2. Lay ground wires down over #13 tape and trim lengths approximately ⅛" short of splice. Secure wire ends in place over vinyl tape with an additional two layer tape band. Evenly space wires around cable while securing. Repeat for both ends.
3. Coil Application
   a. Hold the flat strap of the shield continuity assembly against the mold body with a wrap or two of vinyl tape at each end of splice (Figure 5). Form the shield continuity strap over the splice shoulder on each end. Make certain coils are only positioned over **ground wires** before securing strap to splice. Avoid laying flat strap over splice grounding eyes.

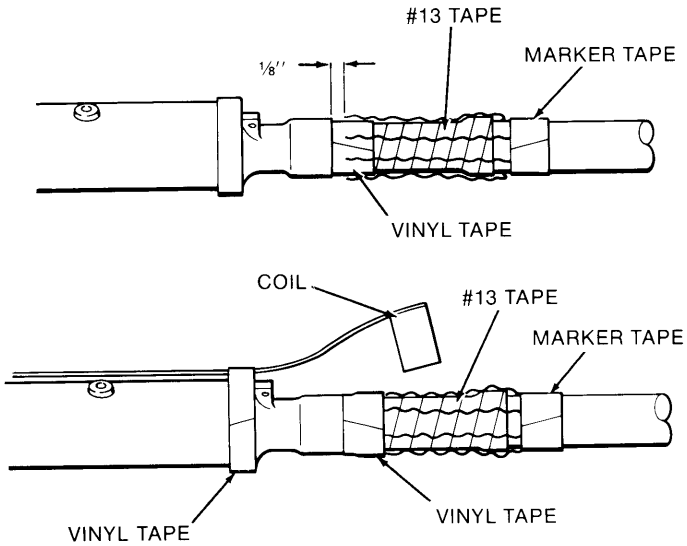


Figure 5

   b. Unwrap coil for one to two inches.
   c. Apply one complete length of #24 Metallic Shielding Tape (supplied) over ground wires directly beneath coil position (Figures 6 and 8).
   d. Hold the coil and shield strap in place with thumb (Figure 7).
   NOTE: Be certain #24 Tape and shield strap coil are wrapped in the same direction and that the coil is centered within the edges of the #24 Tape. Pull (to unwrap) the coil around the cable and rewrap around #24 Tape and itself.
   NOTE: Cinch (tighten) the applied coil after final wrap. Repeat for both ends.

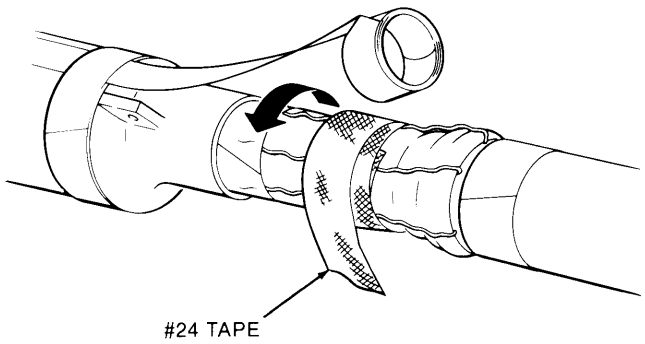


Figure 6

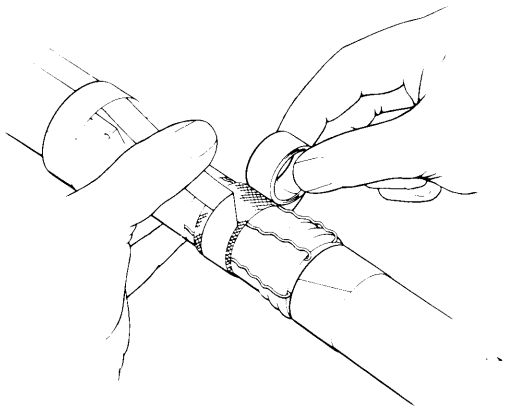


Figure 7

   4. Seal shield strap:
      a. Cut the supplied strip of "vinyl mastic" into four equal length pads.
      b. After removing liner, place one pad **under** strap, mastic side toward strap and located over the end of the splice body (Figure 8). Place a second pad over the strap and the first pad and press together, mastic to mastic, forming a sandwich. (This will be overwrapped with #13 Tape).

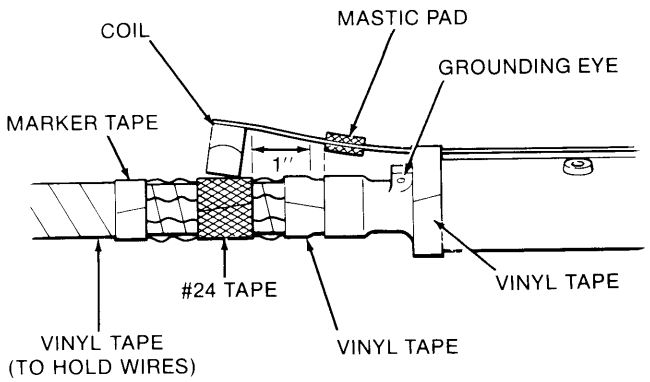


Figure 8

      c. Repeat step "b" for other end of splice.
      d. Beginning just beyond splice body, wrap 2 half-lapped layers of #13 Tape over vinyl mastic pads extending onto splice for approximately ¼" and returning to starting point. Do this on both ends.

Instructions for Unishield Cable (cont.)

D. Install PST Cold Shrink Insulators

1. Position each PST so its leading edge will butt against grounding eye of splice body. Remove core by unwinding counterclockwise and tugging occasionally.

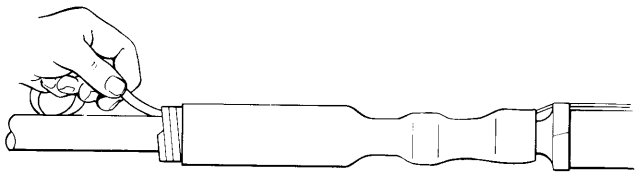


Figure 9

E. Grounding Splice

1. If the practice calls for grounding the splice, fasten the alligator ground clamp (provided) to the exposed shield continuity strap, approximately at the center of the splice body. A ground conductor can then be fastened to the alligator clamp. Discard the black plastic shoe packed with ground clamp.

Connector and Crimping Information

Kit No.	Conductor Size				3M Connector No.
	Stranded or Compressed (AWG)		Compact or Solid (AWG)		
5501	—		#2		CI-22
	#2		#1		CI-21
	#1		1/0		CI-21
	1/0		—		CI-1/0
	2/0†		—		20006
	Transition Splice				
	From		To		
	Str.	Solid	Str.	Solid	
	#4	#2	#1	1/0	CI-T-1
	#2	#1	#1	1/0	CI-T-2
	#4	#2	1/0	—	CI-T-3
	#2	#1	1/0	—	CI-T-4
	#2	#1	#4	#2	CI-T-5

Kit No.	Conductor Size		3M Connector No.
	Stranded or Compressed (AWG)	Compact (AWG)	
5502	2/0††	3/0	CI-2/0
	3/0	4/0	CI-3/0
	4/0	—	CI-4/0

† .175″ insulation thickness only
†† .220″ insulation thickness only

Crimping Tool Table				
Mfg.	Mechanical		Hydraulic	
	Tool	Die (Crimps per end)	Tool	Die (Crimps per end)
Burndy	MD6	BG (3)	Y-35,Y-39,Y-45*	U25 ART (1)
Kearney	0-52,0-51	5/8-1 (3)	12,20 & 40 Ton	5/8-1 (3)
T & B	TBM-8	Olive (2)**	TBM-15	50 (1)**
Anderson	—	—	VC6††	Universal (2)

Crimping Tool Table				
Mfg.	Mechanical		Hydraulic	
	Tool	Die (Crimps per end)	Tool	Die (Crimps per end)
Burndy	MD6	W660 (3)	Y-35,Y-39,Y-45*	U28 ART (2)
Kearney	—	—	WH-1,WH-2	840 (3)
T & B	TBM-8	White (3)**	TBM-15	66 (2)**
Anderson	—	—	VC6	Universal (2)

* Usable with U-Die adapter PT 651.
** Excess flash must be filed off to round out connector.

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