

3M™ Mining Cable Splice Kit 3104

Instructions

Kit Contents:

- 1 Scotch® Heavy Duty Mining Tape 31, 2" x 8.5'
- 1 3M™ Temflex™ Vinyl Electrical Tape 1700P, 1½" x 44'
- 2 Scotch® Electrical Shielding Tape 24, 2" x 10'
- 1 3M™ Cable Cleaning Preparation Kit CC-2-Dry
- 2 Scotch® Linerless Rubber Splicing Tape 130C, 1½" x 30'
- 1 Instruction Sheet


Note: *Scotch® Linerless Rubber Splicing Tape 130C is applied highly-stretched with tacky side DOWN.*

Technical Information:

For use on 3-conductor mine and portable cables, type SHD-GC
#6 AWG–1/0 kcmil (14-50 mm²)
2 kV
Cables up to 500 kcmil (250 mm²) will require the use of additional tapes.


Mine Safety and Health Administration Acceptance:

P-07-KA080005/00-MSHA



DANGER

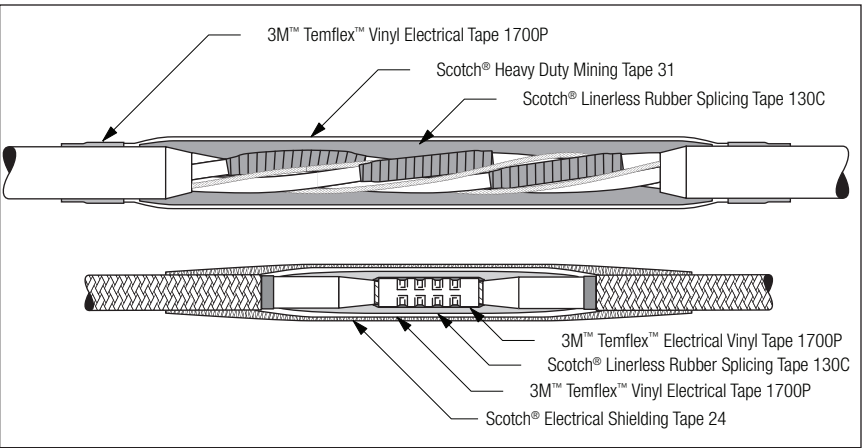
Before attempting any cable repairs, make sure that the proper cable is disconnected, locked out and suitably tagged.



CAUTION

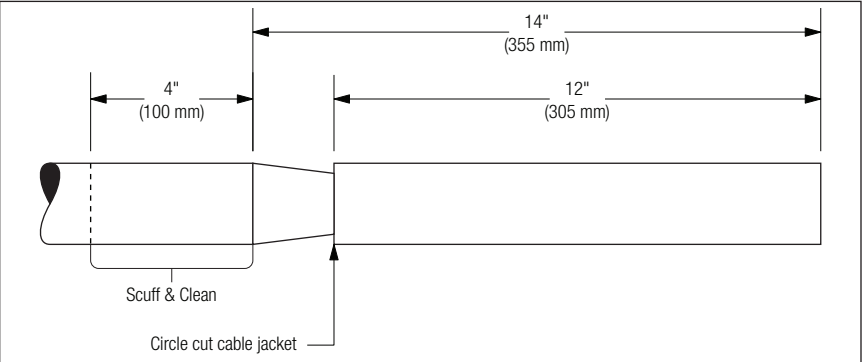
Working around energized systems may cause serious injury or death. Installation should be performed by personnel familiar with good safety practice in handling electrical equipment. De-energize and ground all electrical systems before installing product.

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78-8127-6849-3-C

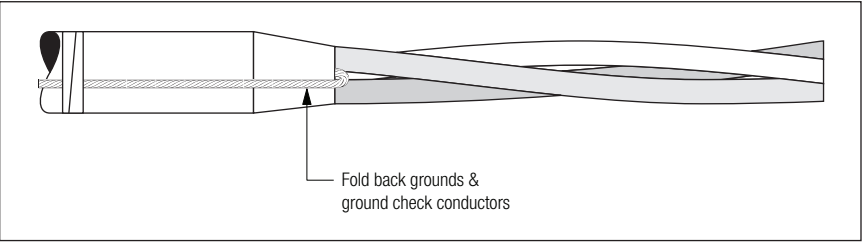


1.0 Prepare Cable

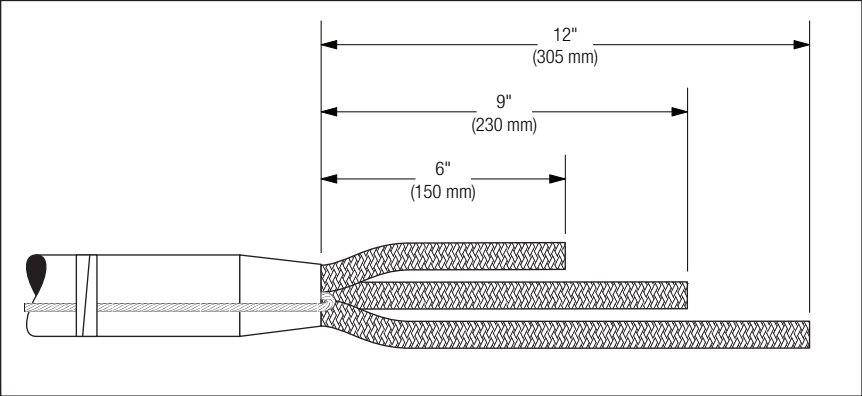
- 1.1 Position cable ends so that conductor color rotation matches.
- 1.2 Circle-cut cable jacket approximately 12" (305 mm) from each end. Be sure not to damage cable conductors.
- 1.3 Measure approximately 14" (355 mm) from cable end and fully taper cable jacket down to circle cut.



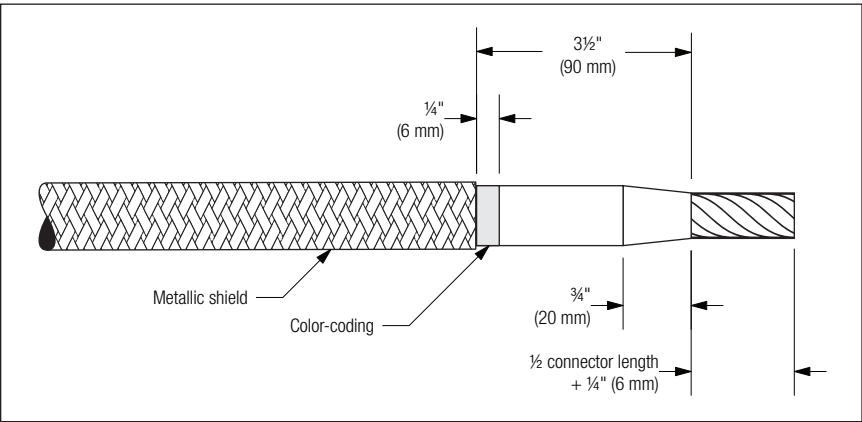
- 1.4 Remove approximately 12" (305 mm) of cable jacket.
- 1.5 Scuff and clean 4" (100 mm) of cable jacket beyond top of taper.
- 1.6 Remove cable fillers.
- 1.7 Fold back grounds and ground check conductors and temporarily tape to cable jacket with vinyl tape.



- 1.8 Select one conductor and cut conductor approximately 9" (230 mm). Match this conductor with same color conductor on opposite end.
- 1.9 Take next conductor in rotation and cut approximately 6" (150 mm) from end.



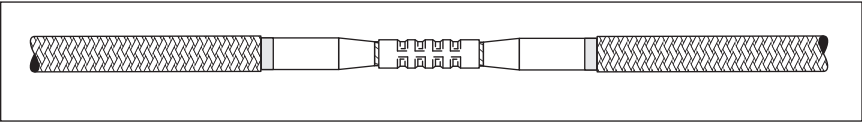
- 1.10 From the end of each conductor cutback remove 3½" (90 mm) of braid or tape metallic shielding.
- 1.11 Remove cable color-coding to ¼" (6 mm) from edge of shielding.
- 1.12 Remove insulation from ends of conductors for one-half connector length plus ¼" (6 mm).
- 1.13 Pencil insulation for ¾" (20 mm), sand smooth and even with electrical grade abrasive cloth from cable cleaning materials.



2.0 Connect Phase Conductors

- 2.1 Join power conductors with proper connectors and appropriate crimping tool. Make certain conductors butt up to center indents of connector.

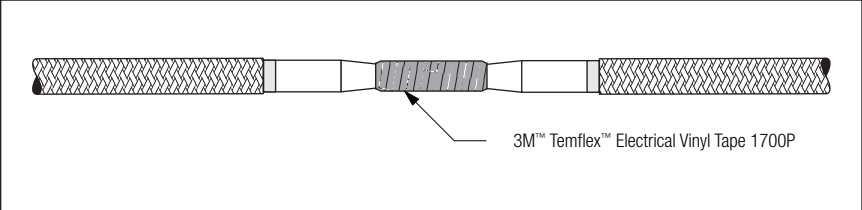
Note: *Ground wires and ground check will be joined later.*



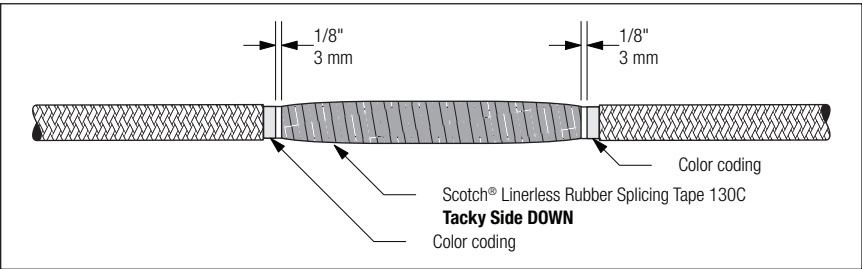
3.0 Apply Primary Insulation

- 3.1 Apply one half-lapped layer of 3M™ Temflex™ Electrical Vinyl Tape 1700P from edge of taper to edge of taper, making sure to completely cover edges of the connector

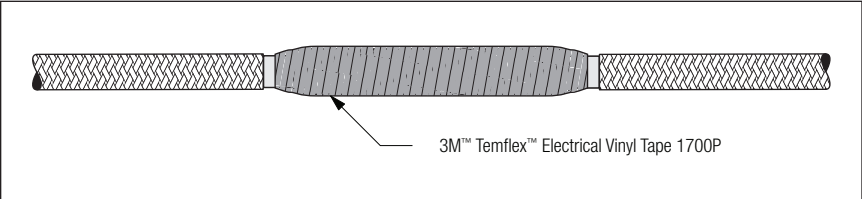
NOTE: *Scotch® Glass Cloth Tape 27, while not included, may be used at this time.*



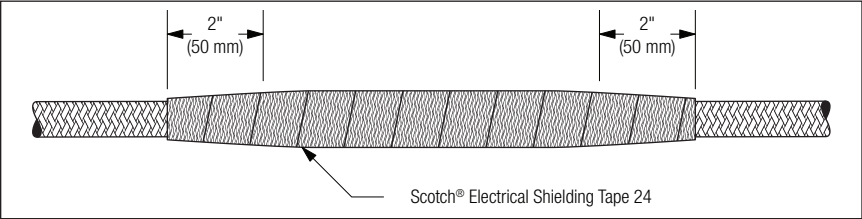
- 3.2 Apply highly-stretched half-lapped layers of Scotch® Linerless Rubber Splicing Tape 130C (**tacky side DOWN**) over 1700P tape and up onto tapers. Build up half-lapped layers of tape gradually going out on existing insulation to 1/8" (3 mm) from edge of original color coding. Tape should be wrapped to a thickness equal to or greater than original insulation.



- 3.3 Apply one half-lapped layer of 1700P tape over the 130C tape.



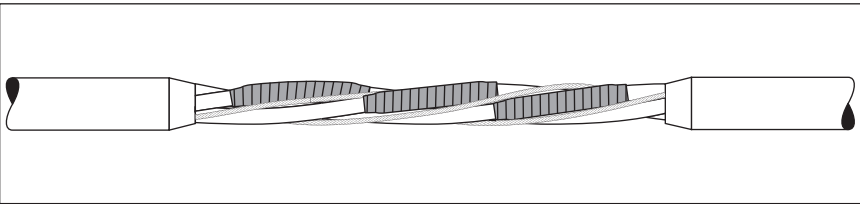
- 3.4 Starting 2" (50 mm) up on exposed metallic shielding, wrap one half-lapped layer of Scotch® Electrical Shielding Tape 24 over the vinyl tape continuing onto opposite shielding for 2" (50 mm). Wrap back down the shielding, secure with a half hitch or square knot, and trim ends.



- 3.5 Repeat sections 2.0 & 3.0 for remaining phases.

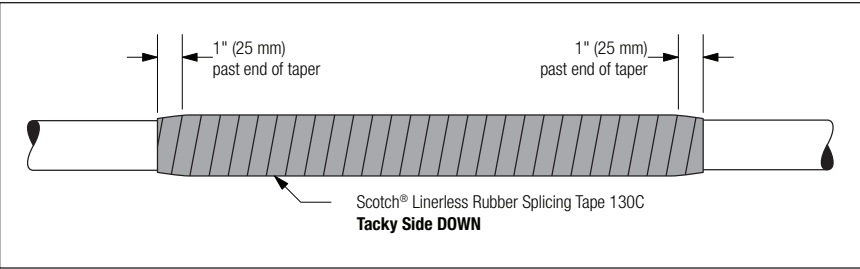
4.0 Connect Ground Connectors

- 4.1 Before cutting ground wires, reposition the spliced power conductors so that the conductors are returned to the natural helix of the cable.
- 4.2 Lay the ground wires in their natural position in the valley between two power conductors. Cut ground to lengths staggered to avoid connection over power conductor connections.
- 4.3 Join conductors with proper connectors and appropriate crimping tool.
- 4.4 If present, connect the ground check conductor after trimming to proper length and removing one connector length of insulation from each lead. Use proper connector and crimping tool.
- 4.5 On ground check, clean the insulation 1" (25 mm) on both sides of the connection and apply one half-lapped layer of 3M™ Temflex™ Vinyl Electrical Tape 1700P, one half-lapped layer Scotch® Linerless Rubber Splicing Tape 130C (tacky side up), and one half-lapped layer of 1700P tape over the connector and the cleaned insulation.

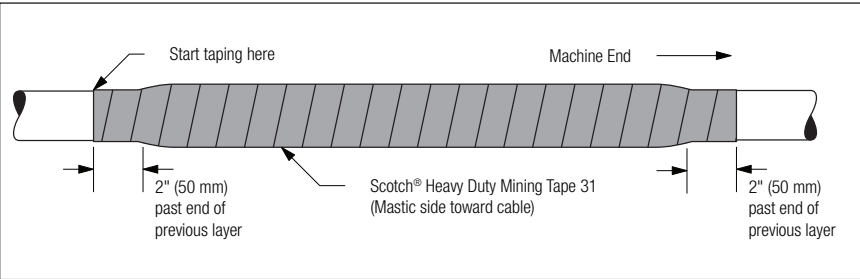


5.0 Jacketing the Splice

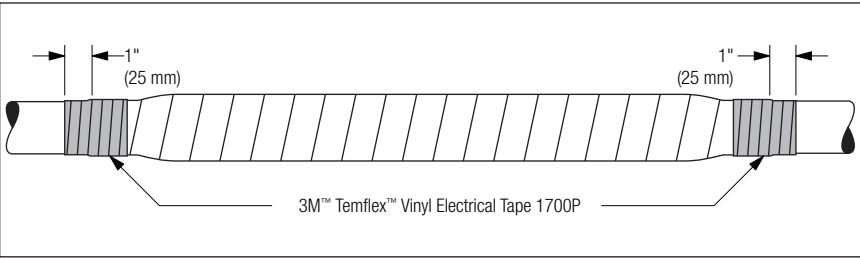
- 5.1 Bundle cable assembly and bind with 1700P tape. Starting half way up the tapers, wrap half-lapped layers of 130C tape (**tacky side DOWN**), building up and across the splice until tape is equal to or greater than original jacket thickness and extends 1" (25 mm) past the top of jacket tapers.



- 5.2 Start 2" (50 mm) beyond 130C tape, wrap one half-lapped layer of 31 tape extending 2" (50 mm) beyond the Scotch® Linerless Rubber Splicing Tape 130C on the opposite end. Always wrap the 31 tape toward the machine end of the cable.



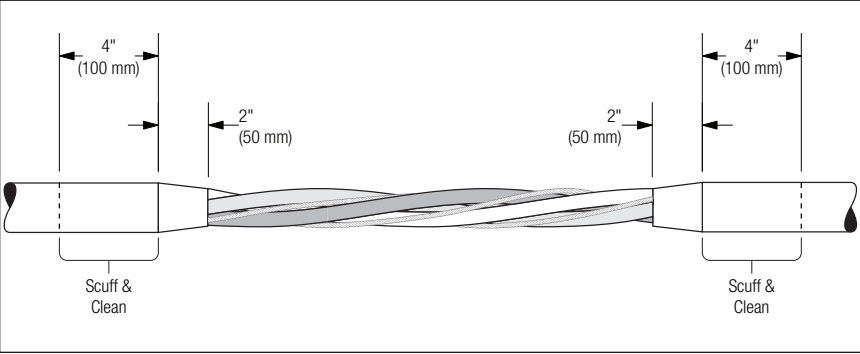
- 5.3 Starting 1" (25 mm) past the 31 tape, apply 3 half-lapped layers of 1700P tape to each end to temporarily secure the ends of the 31 tape jacket until the jacket reaches full bond.



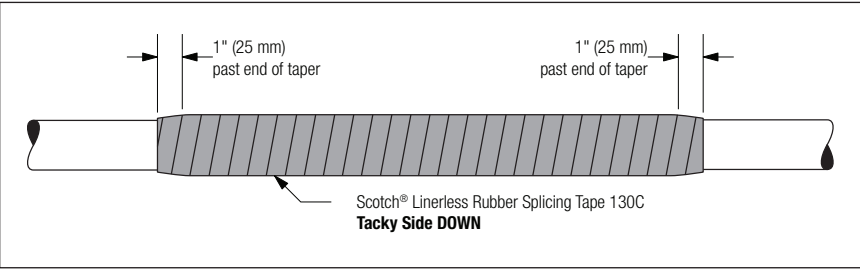
6.0 Repairing Damaged Cable Jacket

Note: For jacket repair option, additional tape may be needed for longer repairs.

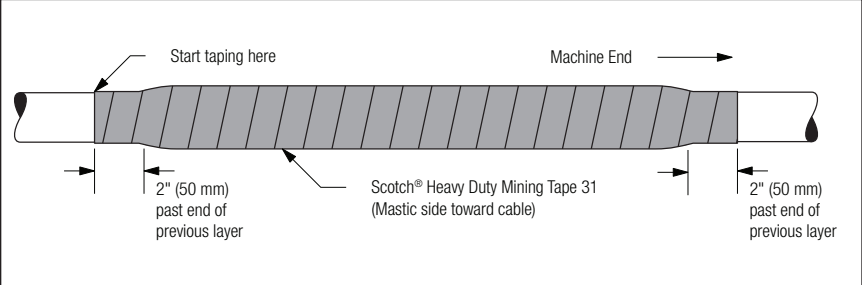
- 6.1 Remove damaged cable jacket and taper jacket approximately 2" (50 mm).
- 6.2 Scuff and clean 4" (100 mm) of cable jacket beyond each split end.



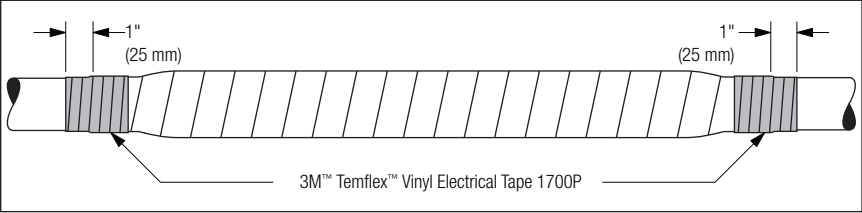
- 6.3 Starting half way up the tapers, wrap half-lapped layers of 130C tape (**tacky side DOWN**), building up and across the splice until tape is equal to or greater than original jacket thickness and extends 1" (25 mm) past the top of jacket tapers.



- 6.4 Start 2" (50 mm) beyond 130C tape, wrap one half-lapped layer of 31 tape mastic side toward cable extending 2" (50 mm) beyond the 130C tape on the opposite end. Always wrap the 31 tape toward the machine end of the cable.

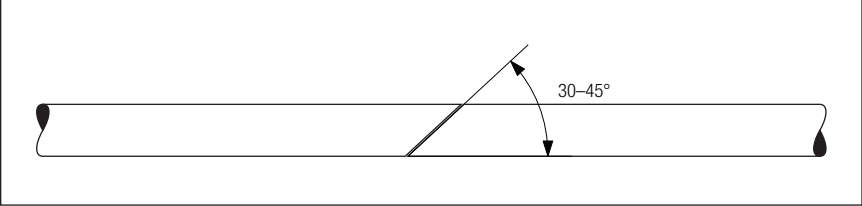


- 6.5 Starting 1" (25 mm) past the e 31 tape, apply 3 half-lapped layers of 1700P tape to each end to temporarily secure the ends of the 31 tape until the tape reaches full bond.

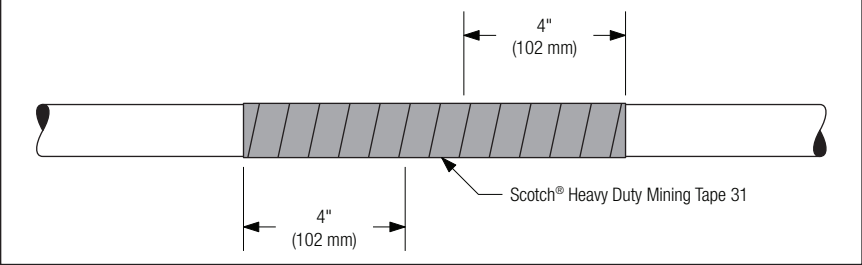


7.0 For Conduit Repair and Splicing

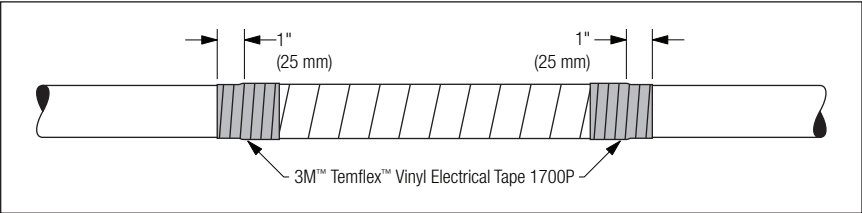
- 7.1 If splicing, cut conduit at 30–45° angle.



- 7.2 Clean and abrade conduit surface.
- 7.3 Fill voids using 130C tape.
- 7.4 Apply one half-lapped layer of 31 tape beginning and ending a minimum of 4" (102 mm) from each side of the conduit cut or repair location.



- 7.5 Starting 1" (25 mm) past the 31 tape, apply 3 half-lapped layers of 1700P tape to each end to temporarily secure the ends of the 31 tape until the tape reaches full bond.



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