

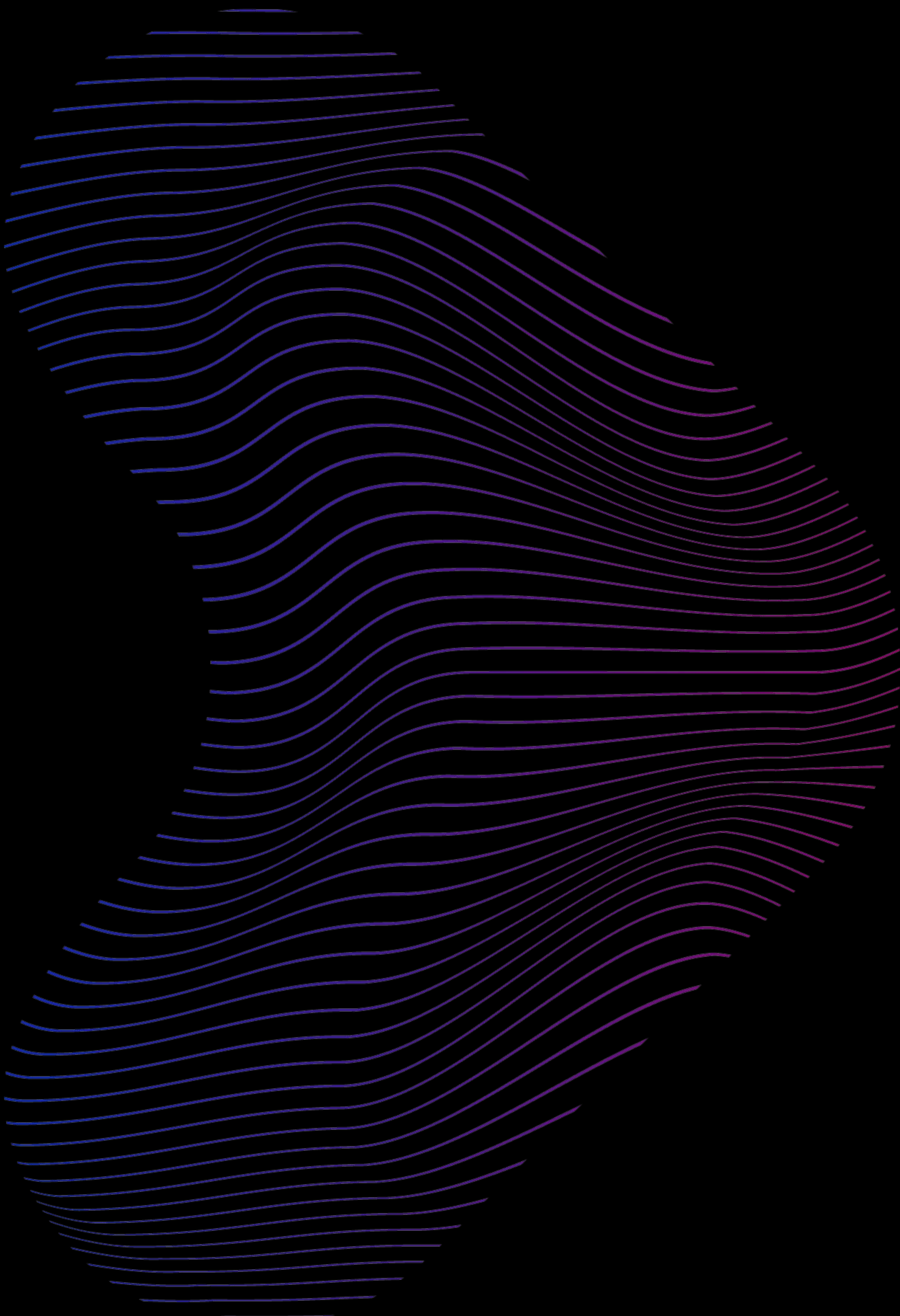
Celesta ARMORED IBR

Optical Fiber Cable

Cable Preparation Guide

Table Of Contents

1 Overview	03
2 Tools Used in the Process	04
3 End Preparation	07
4 Mid Span Access	14



Overview

The purpose of this document is to provide guidelines for accessing the fibers of STL armored IBR optical fiber cables, made with a corrugated armor tape, and two steel wires embedded in the HDPE Jacket.

This document covers both end preparation and mid-span access. It is not all inclusive and is only one method of preparing the cables for splicing in a closure or enclosure. It also features common issues encountered during preparation and highlights best practices and techniques.

This document does not cover grounding, given the hardware for grounding may vary depending on installer preference or closure used. It shows how to leave enough wire and armored tape to be used with most grounding hardware.



Tools Used In The Process

Unless otherwise specified, the tools listed below are generic and manufactured by multiple suppliers.

Where a specific tool manufacturer and model is identified, STL has found these to be more effective for use with STL cables than other tools.

1



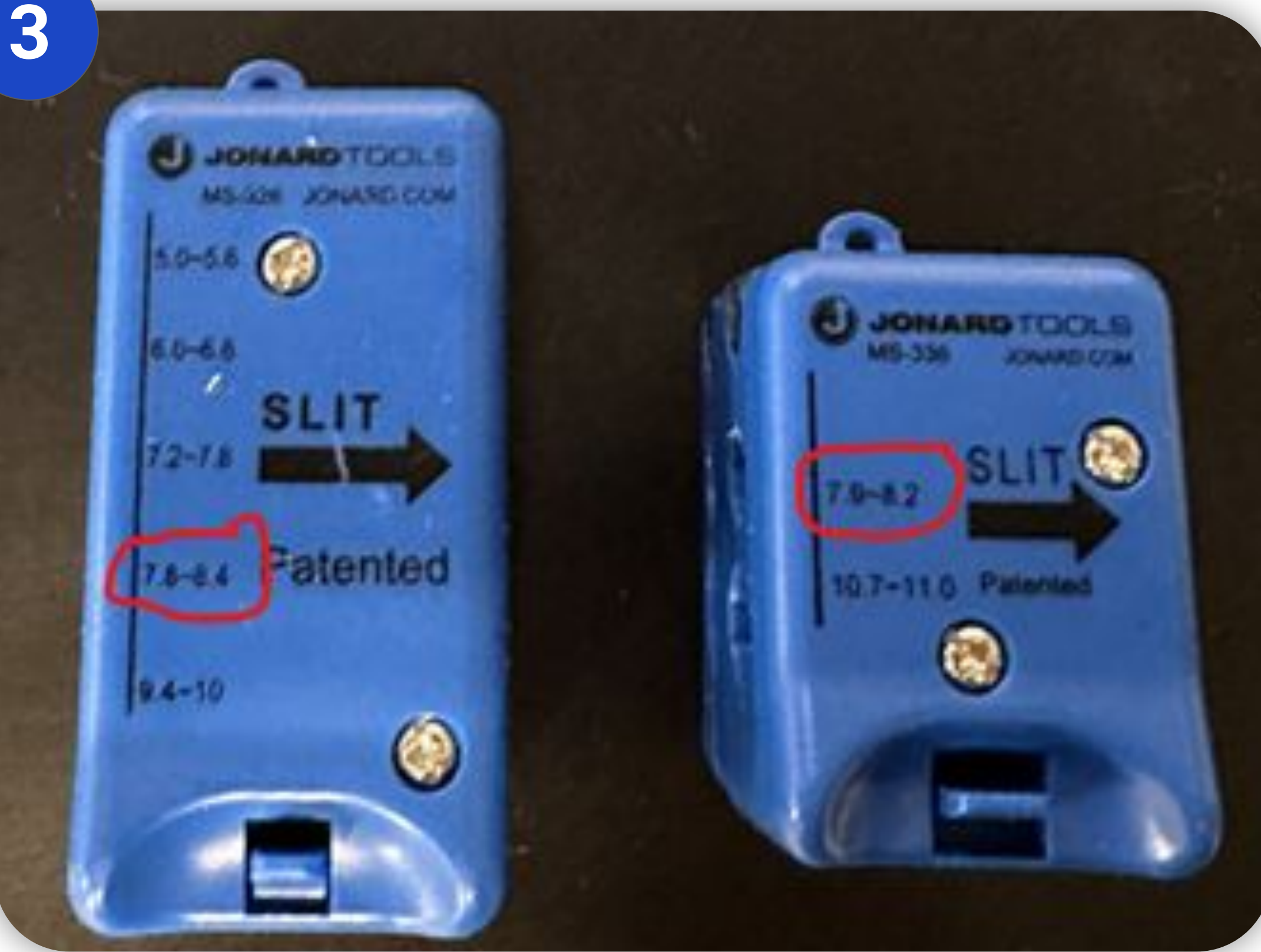
Tool Name: Cable Stripper
Manufacturer: Jonard
Model No: AST-200

2



Tool Name: Cable Stripper
Manufacturer: Miller
Model No: ACS+

3



Tool Name: Buffer Tube Ring and Slit tool
Manufacturer: Jonard
Model No: MS-326 or MS-336

4



Tool Name: Ideal Buffer Tube Stripper
45-164 (6.4 – 14.3 mm)

5



Tool Name: Kevlar Scissors
Manufacturer: Miller
Model No: KS-1

6



Tool Name: Kevlar Scissors
Manufacturer: Jonard
Model No: JIC-186

Tools Used In The Process



Tool Name: Side Cutter



Tool Name: Small Side Cutter



Tool Name: Pliers



Tool Name: Linesman Pliers



Tool Name: White marker



Tool Name: Gray Marker



Tool Name: Colored Electrical Tape



Tool Name: Wire Markers

Tools Used In The Process

15



Tool Name: Seam ripper

16



Tool Name: Hook blade

17



Tool Name: Cable knife

18



Tool Name: Cut Resistant Gloves

19



Tool Name: Tape measure

End Preparation

1



This is the procedure for end preparation of STL Celesta Armored Intermittently Bonded Ribbon (IBR) cable, with two embedded steel strength rods.

2



Mark the required distance from the end of the cable that is needed for the closure or hardware used.

Use colored tape or marker.

Refer to the closure manufacturer's instructions on the amount of exposed fiber needed.

3



Set up the cable stripping tool to ring cut.

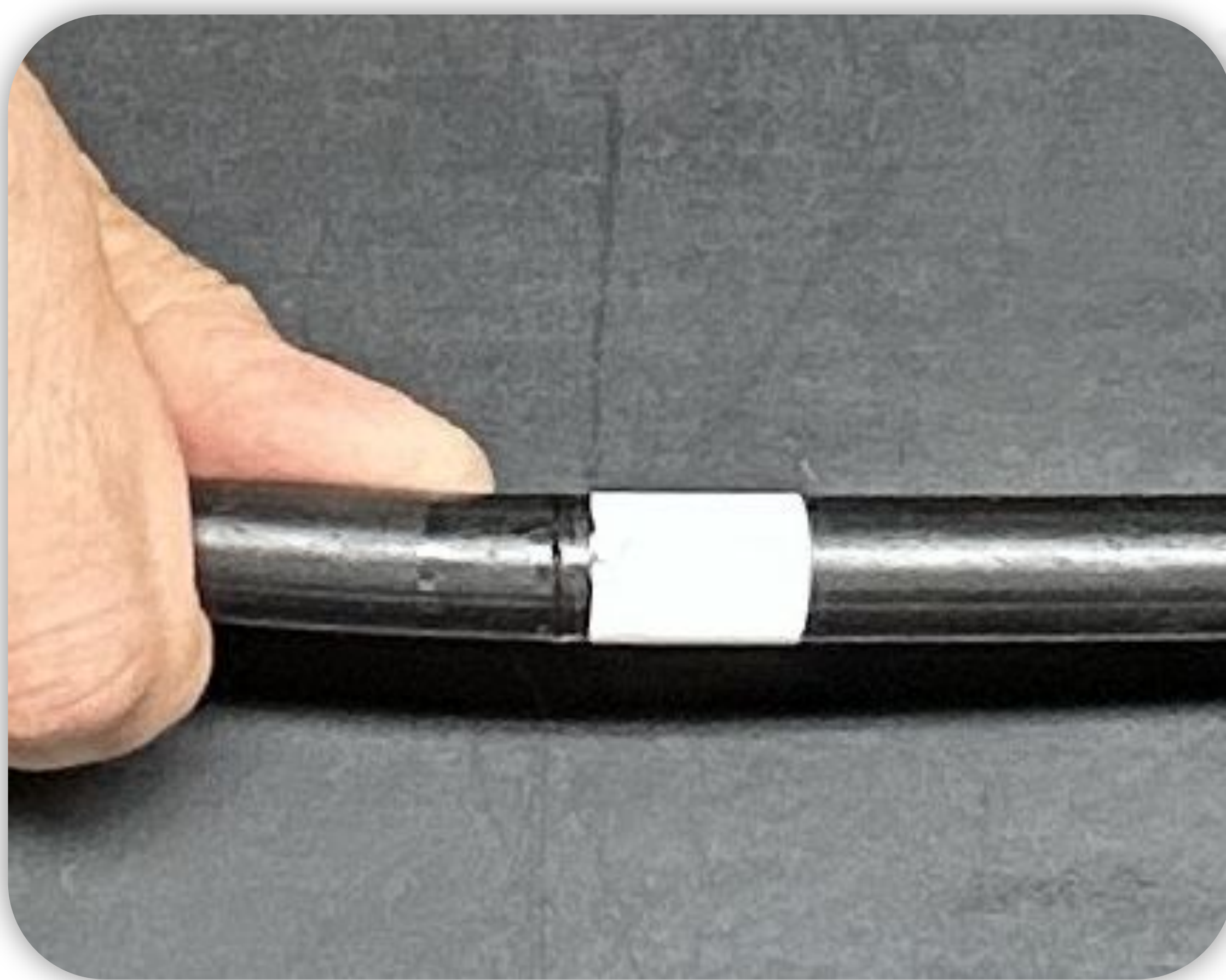
The purpose for the ring cut is to make it easier to trim the sheath close to the point where one wants the jacket to end. The ring cut will not go all the way through the PE jacket due to the embedded steel wires.

Adjust the depth of the blade on the cable cutting tool so that it is deep enough to cut through the outer PE sheath. One will be limited in how deep to go, given the steel wires are embedded.

One can adjust the depth using a sample of the cable.

End Preparation

4



Ring cut the outer jacket and armor at both positions.

5



Before starting the longitudinal slits, it is best to expose the steel wires.

One of the steel rods embedded in the HDPE jacket is typically located under the print. One can also shave the HDPE jacket down to expose the wires.

Starting the slit close to the steel wire make it easier to pull the steel rods away from the sheath in later steps. This is necessary for grounding.

6



Set up the cable stripping tool to slit the cable longitudinally.

Adjust the depth of the blade on the cable cutting tool so that it is deep enough to cut through the outer sheath and armor, but not too deep to damage the water blocking tape which provides limited protection to the fiber bundles.

One can adjust the depth using a sample of the cable.

Remember, one can always adjust the blade deeper on the cable if the initial longitudinal cut is not deep enough.

End Preparation

7a



7b



Set up the cable stripping tool to slit the sheath.

Pull the tool away from the mark. It is helpful to secure the cable and pull it straight in the same direction as the cable to prevent it from kinking.

If the blade depth is properly set, one will hear a “zippering” noise as the blade cuts across the corrugations on the armor tape surrounding the fiber bundle core.

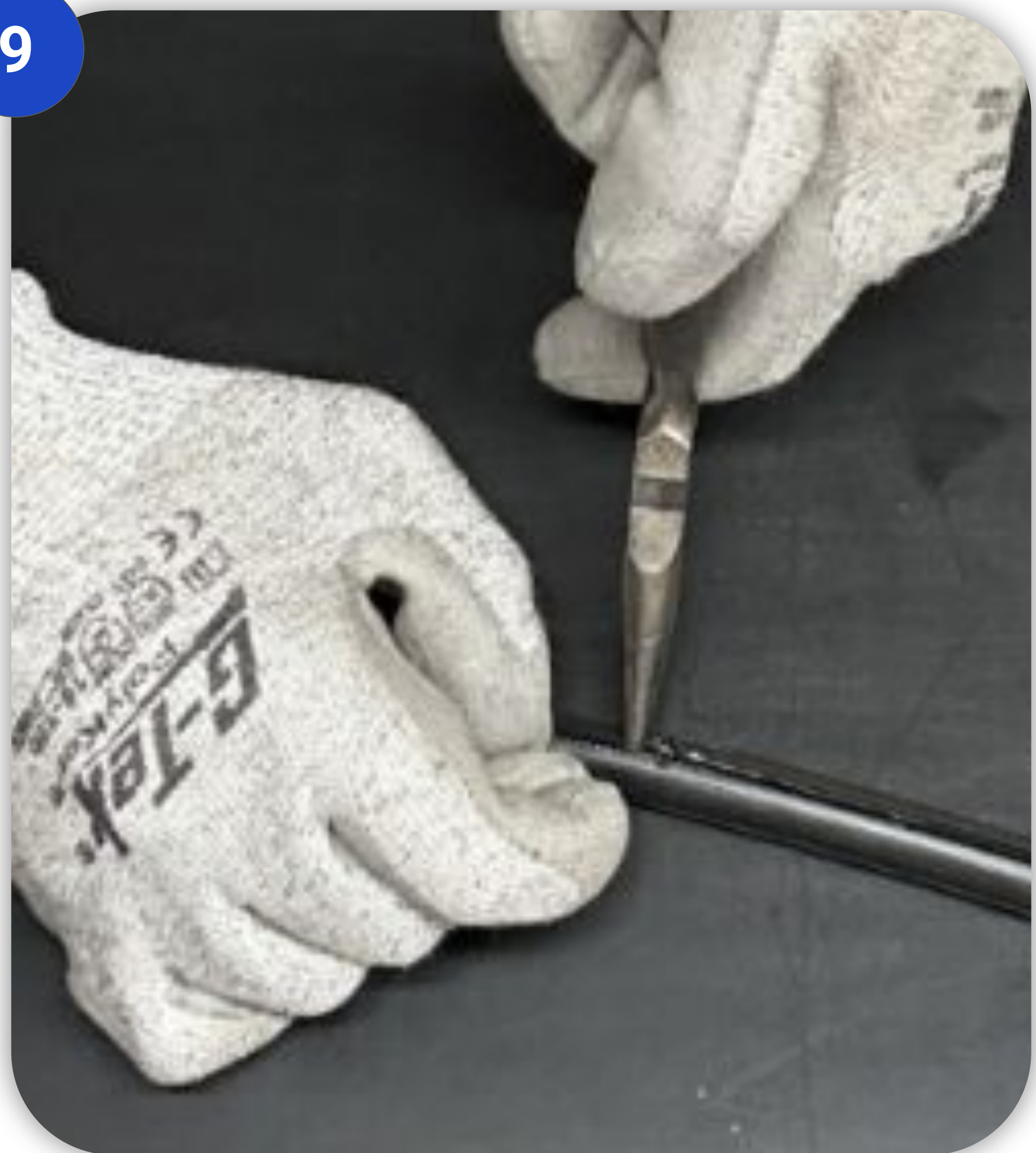
If the blade is not deep enough, one will not slit completely through the HDPE. One can repeat the slit in the same cut after adjusting the blade depth.

8



Rotate the tool 180 degrees and make another longitudinal cut in the same direction.

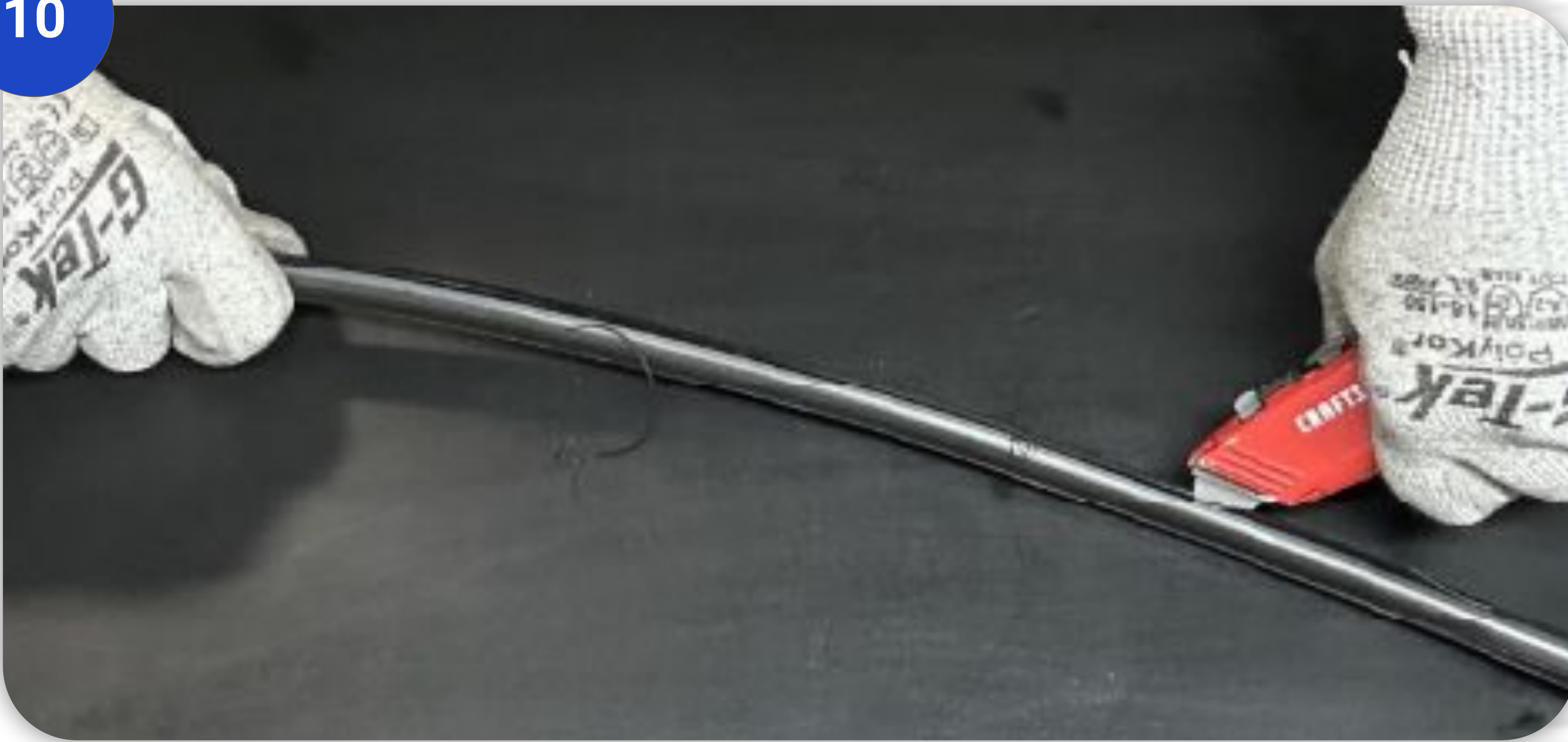
9



Use pliers to help remove pry / separate the outer sheath from the inner core.

End Preparation

10

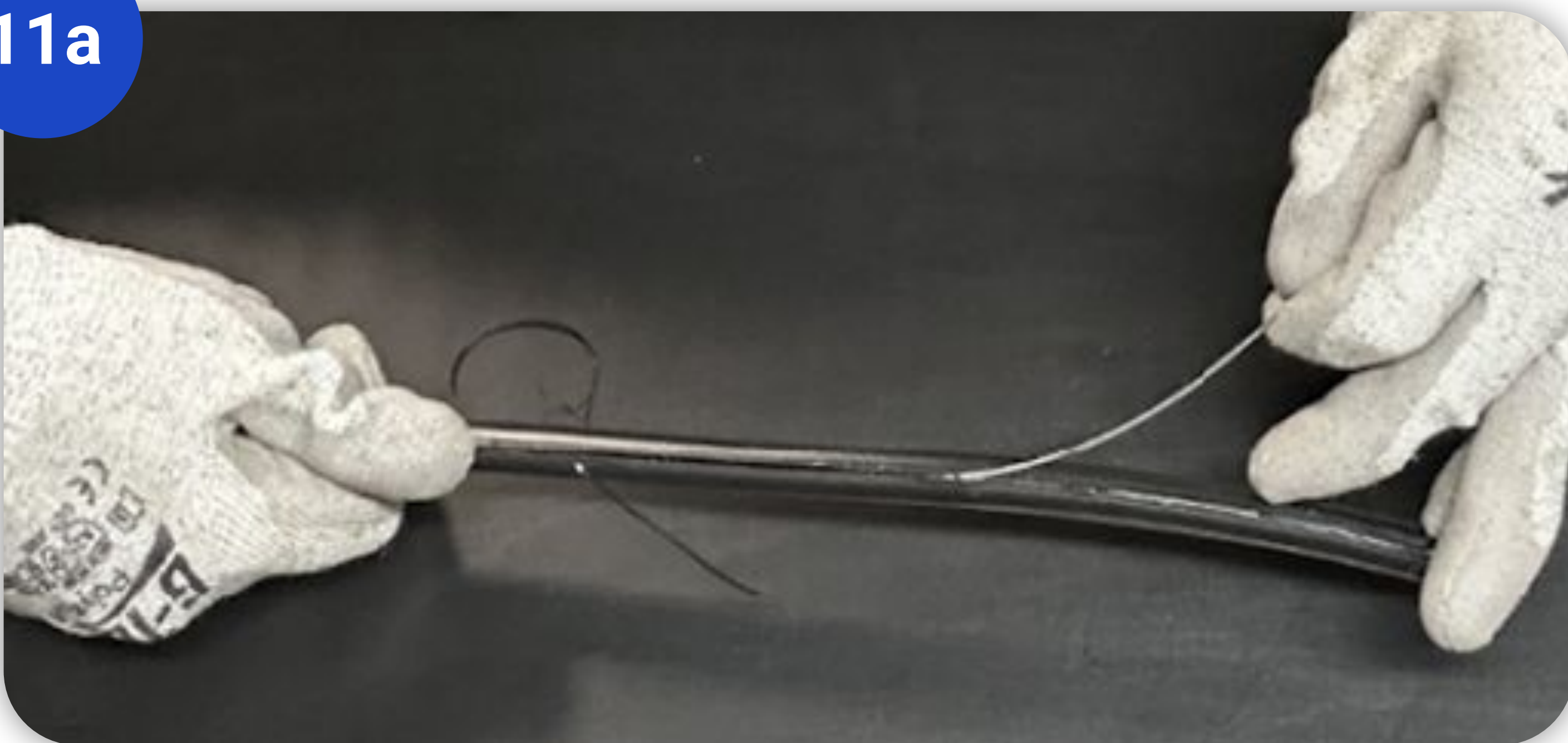


In some cases, it may be necessary to use a hook blade to assist. In that case, be careful to place the blade between the armor tape and the PE jacket.

Place the blade at an angle over the armor, pushing the blade away from one's body while holding the cable.

Ensure that cut resistant gloves are worn in the event of any accidental slipping of the blade from under the armor.

11a



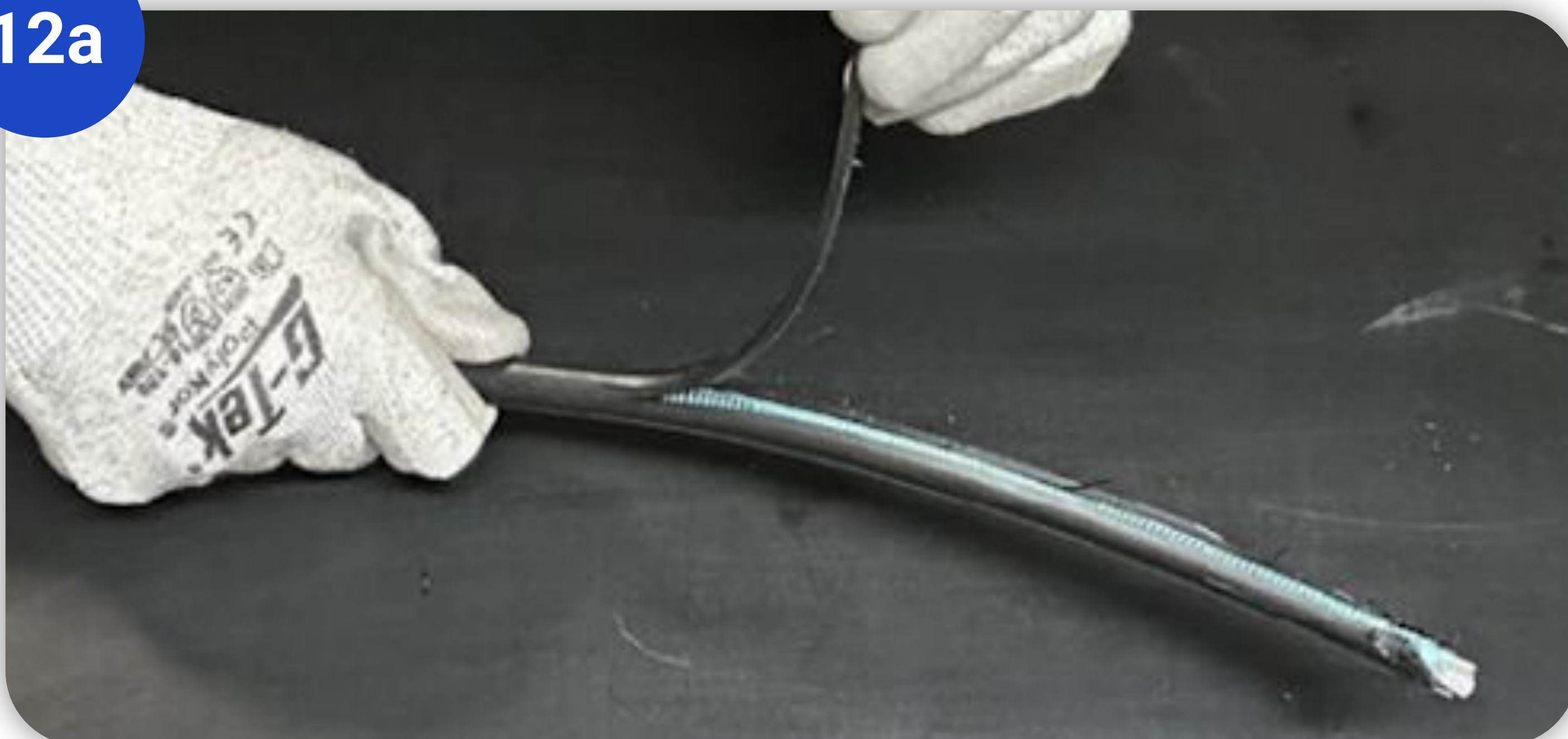
11b



It is necessary to expose the two steel wires for grounding with the armor tape in the closure.

Pull the wires away from the jacket as close to the cable mark as possible.

12a



12b

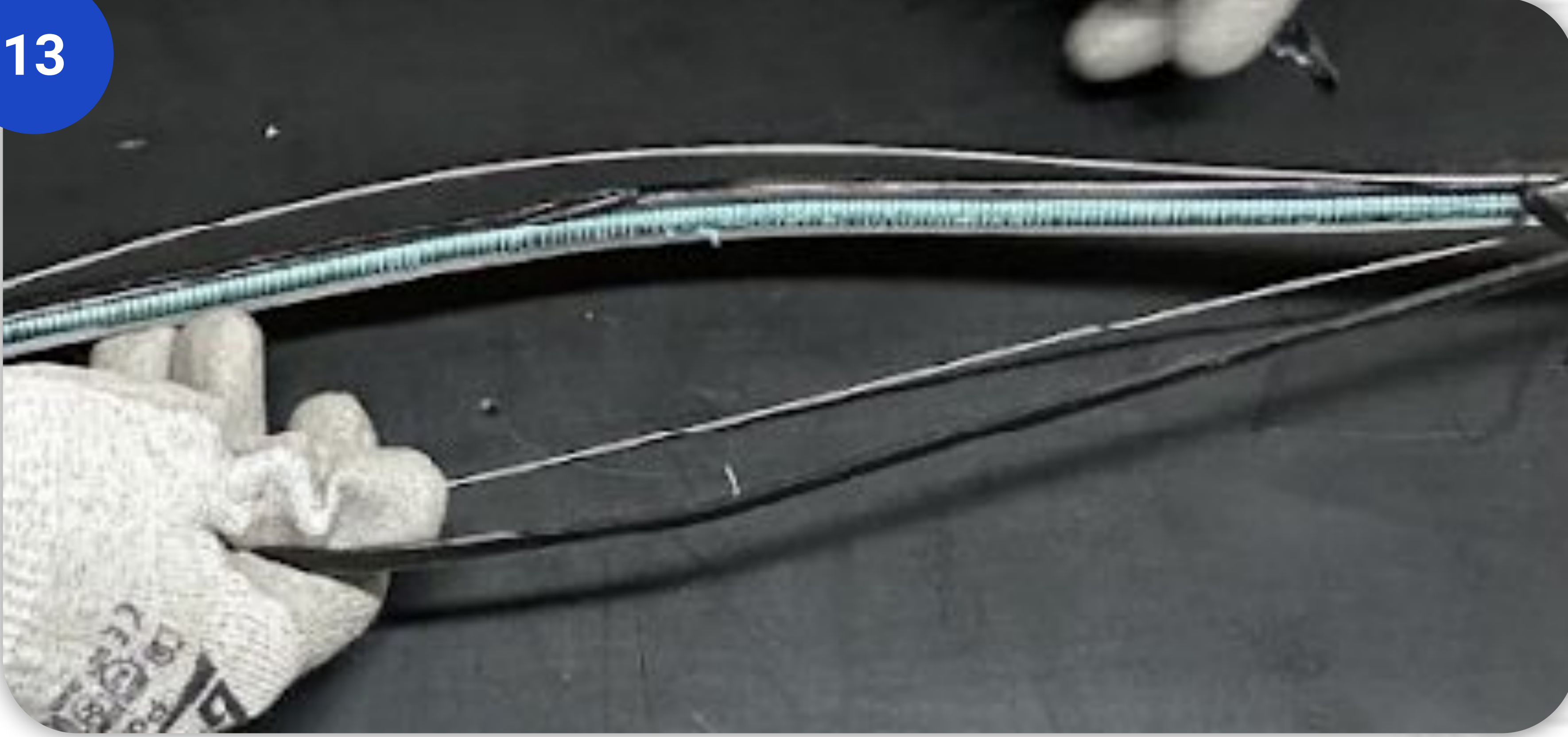


Depending on how well the slits are opposite one another, the PE jacket open up so that one can pull the HDPE sheath back, like a "banana peel".

When one side is exposed, it makes it easier to remove the other side of the cable jacket.

End Preparation

13



In some instances, the slit will not be deep enough, and it will be difficult to separate the jacket. One can re-slit the cable with a longer blade depth and/or slitting additional longitudinal cuts at 90 degrees to another existing slit.

In some instances, the slit will cut through the armor tape, but the water blocking tape helps protect the fibers. In this case, it will be easier to remove the sheath.

14



When the sheath is removed, either the water blocking tape or armor around the core is exposed.

Using small side cutters, trim the sheath as close to the cable marking as possible.

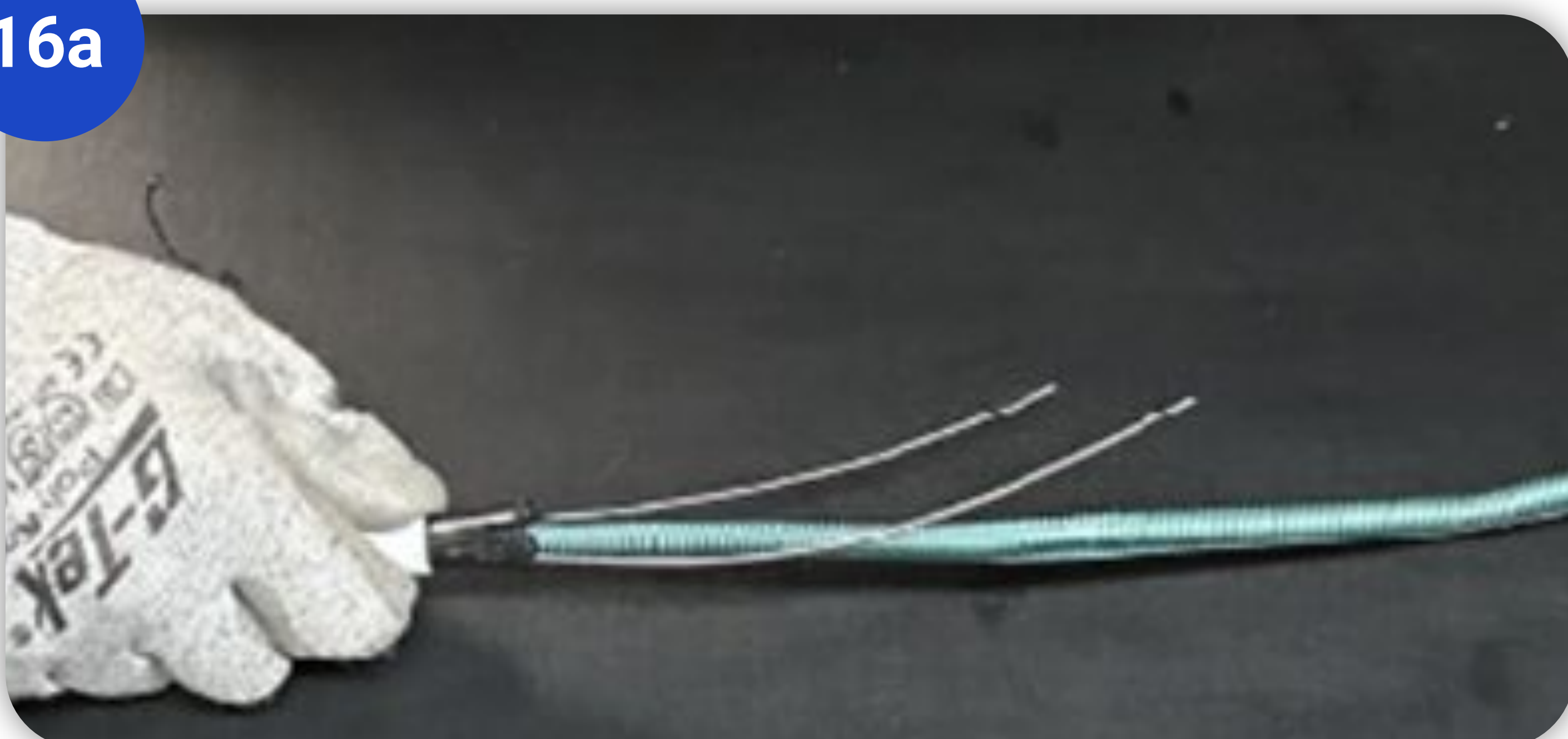
15



Using linesman pliers, cut the steel wires leaving enough length for grounding.

Follow the grounding instructions for the manufacturer's closure.

16a



16b



Once the steel wires are trimmed, bend them back and secure them temporarily with tape.

This will allow more room to remove the armor tape

End Preparation

17

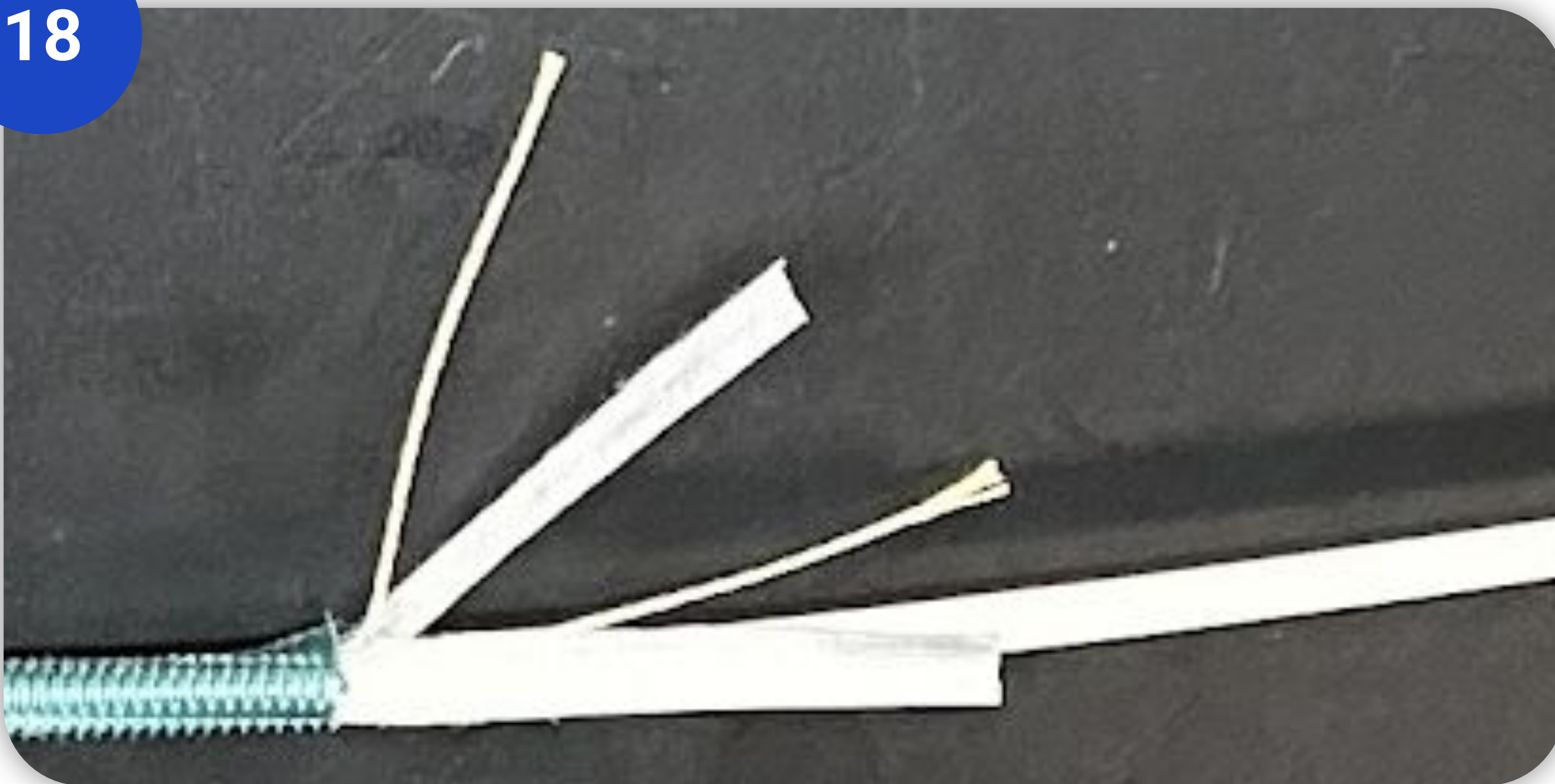


With the armored core exposed, use small side cutters to cut the armor approximately one inch from sheath end.

Another method to remove the armor tape is to access the ripcord under the armor at the end.

Using a mandrel, wrap the ripcord around it and pull toward the cable sheath end.

18



Open the armor to form a tab for the grounding hardware. Make sure that armor tape maintains continuity with the armoring under the sheath.

Cut the water blocking tape from around the core. The tape should extend beyond the armor tab to protect the fiber bundles from sharp edges.

Cut the two ripcords with scissors several inches from the sheath end in the event more sheath needs to be removed (e.g. fibers damage making it necessary to strip more cable back).

19



Adjust the blade depth of the buffer tube ring cutter to less than the thickness of the buffer tube wall. Once the tube is scored, it will easily snap open. One can also use the Jonard ring tool; select the tool with the appropriate buffer tube range.

Ring cut the tube at the appropriate length as needed for the closure. Slightly flex the tube to complete snap the buffer tube off and pull straight revealing the IBR bundles.

Do not "spin" the cutter around the tube; there is a risk of cutting completely through the buffer tube wall and damaging the fiber ribbons.

End Preparation

20



Cut any water blocking threads around the bundles.

Place a wire marker or piece of tape at the end of the ribbon bundles to keep the ribbon binders from unraveling; otherwise, one may lose traceability of the fiber bundle sequence.

Once the bundles are loaded in the hardware, one can individually secure the binders on the bundles as they enter the splice trays.

21



After removing the inner component elements except the ribbons with binders, follow the closure manufacturer's instructions for grounding, sheath retention, securing the cable, and routing of fiber bundles to the splice trays.

Mid Span Access

1



This is the procedure for mid span access of STL Celesta Armored IBR cable with two embedded steel strength rods.

2



Mark the two positions between which the mid portion of the cable is to be accessed, using the closure manufacturer's instructions.

3



Set up the cable stripping tool to ring cut.

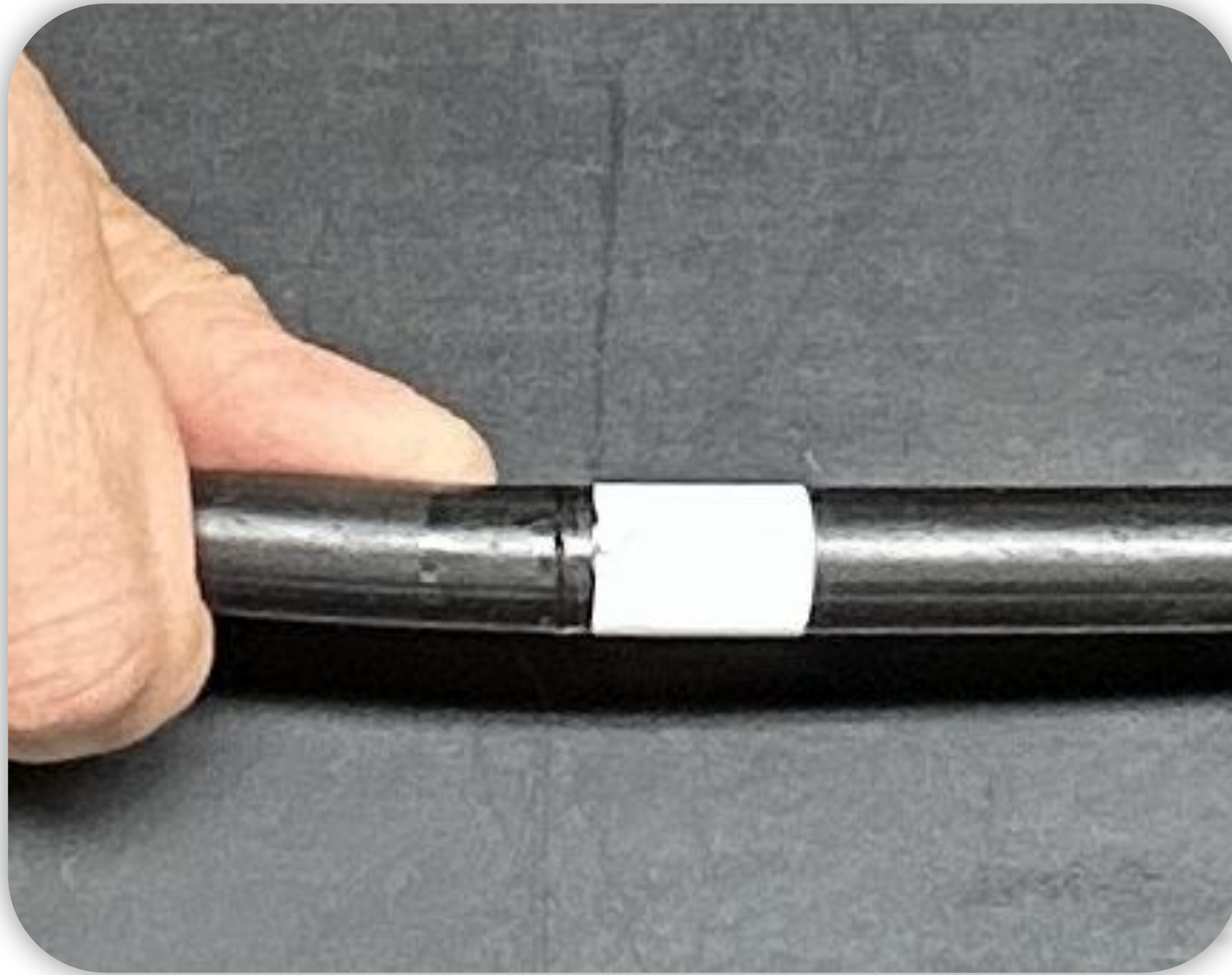
The purpose for the ring cut is to make it easier to trim the sheath close to the point where one wants the jacket to end. The ring cut will not go all the way through the PE jacket due to the embedded steel wires.

Adjust the depth of the blade on the cable cutting tool so that it is deep enough to cut through the outer PE sheath. One will be limited in how deep to go, given the steel wires are embedded.

One can adjust the depth using a sample of the cable.

Mid Span Access

4



Ring cut the outer jacket and armor at both positions.

5



Before starting the longitudinal slits, it is best to expose the steel wires.

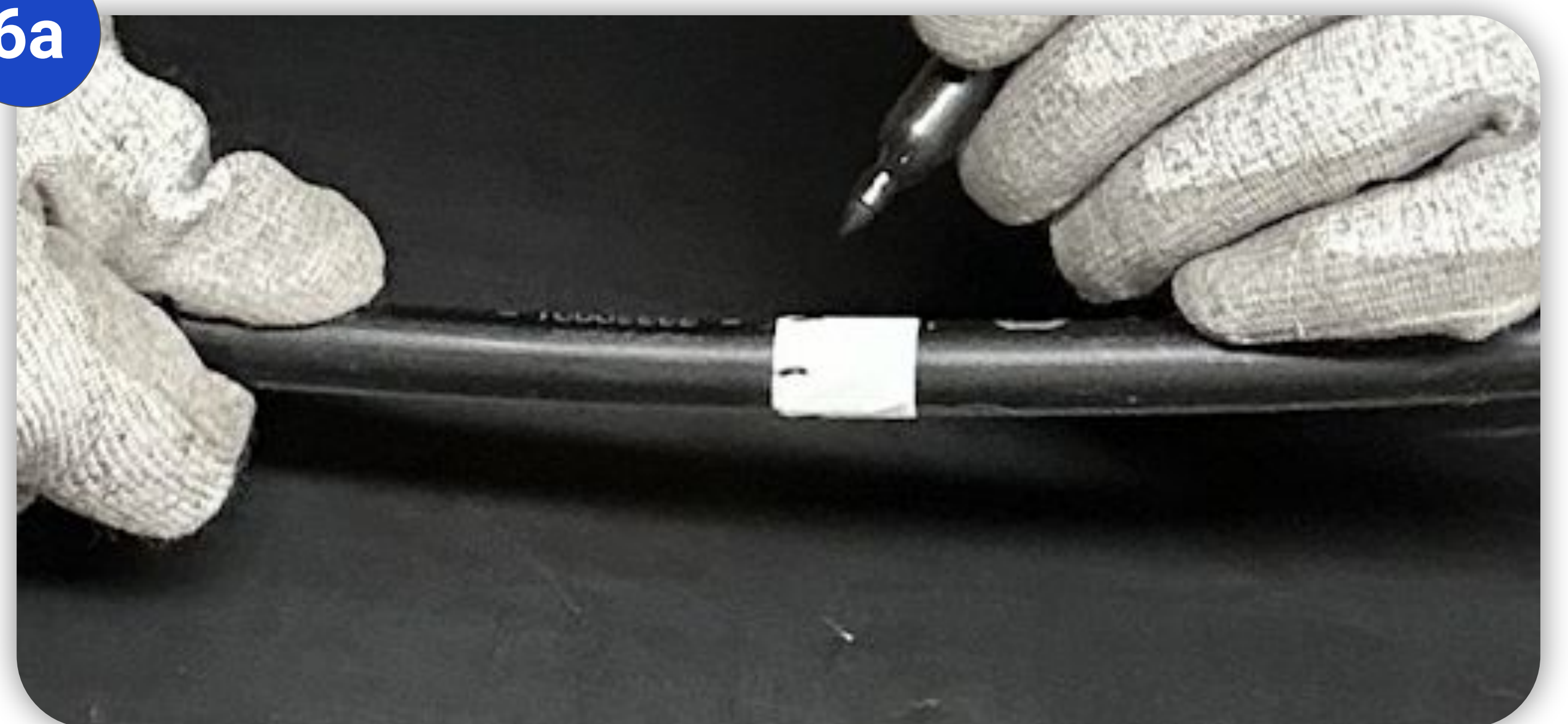
One of the steel rods embedded in the HDPE jacket is typically located under the print. One can also shave the HDPE jacket down to expose the wires.

Starting the slit close to the steel wire makes it easier to pull the steel rods away from the sheath in later steps. This is necessary for grounding.

6a



6a



Set up the cable stripping tool to slit the sheath.

Set the blade into the groove on the sheath that was previously ring cut.

At least two longitudinal slits are necessary to expose the core.

It is recommended that four longitudinal slits (90 degrees from one another) are best to separate the PE jacket and armor tape from the core.

It can be helpful to mark these on the cable, given it is hard to distinguish previous cuts.

Mid Span Access

7a



7b



Pull the tool away from the ring cut in the direction of the other ring cut.

It is helpful to secure the cable and pull it straight in the same direction as the cable to prevent it from kinking.

If the blade depth is properly set, one will hear a “zippering” noise as the blade cuts across the corrugations on the armor tape surrounding the fiber bundle core.

If the blade is not deep enough, one will not slit completely through the HDPE. One can repeat the slit in the same cut after adjusting the blade depth.

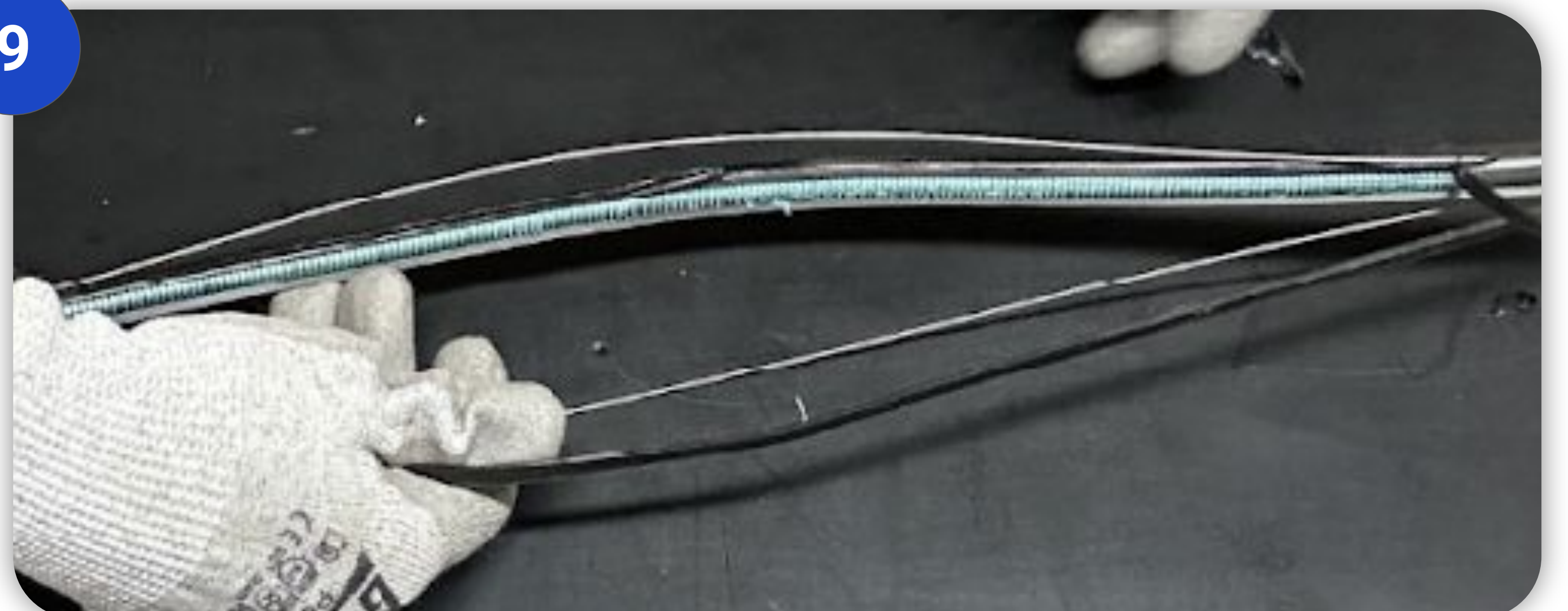
8



Rotate the tool 180 degrees and make another longitudinal cut in the same direction from one ring cut to the other.

Rotate and position the slitter to make two more longitudinal slits.

9



In some instances, the slit will not be deep enough, and it will be difficult to separate the jacket. One can re-slit the cable with a longer blade depth.

In some instances, the slit will cut through the armor tape, but the water blocking tape helps protect the fibers. In this case, it will be easier to remove the sheath.

Separate out the components as best possible.

Mid Span Access

10



When the sheath is removed, either the water blocking tape or armor around the core is exposed.

Using small side cutters, trim the sheath as close to the cable marking as possible or ring cut.

11



Using linesman pliers, cut the steel wires leaving enough length for grounding.

12a



12b



Once the steel wires are trimmed, bend them back and secure them temporarily with tape. This will allow more room to remove the armor tape

13



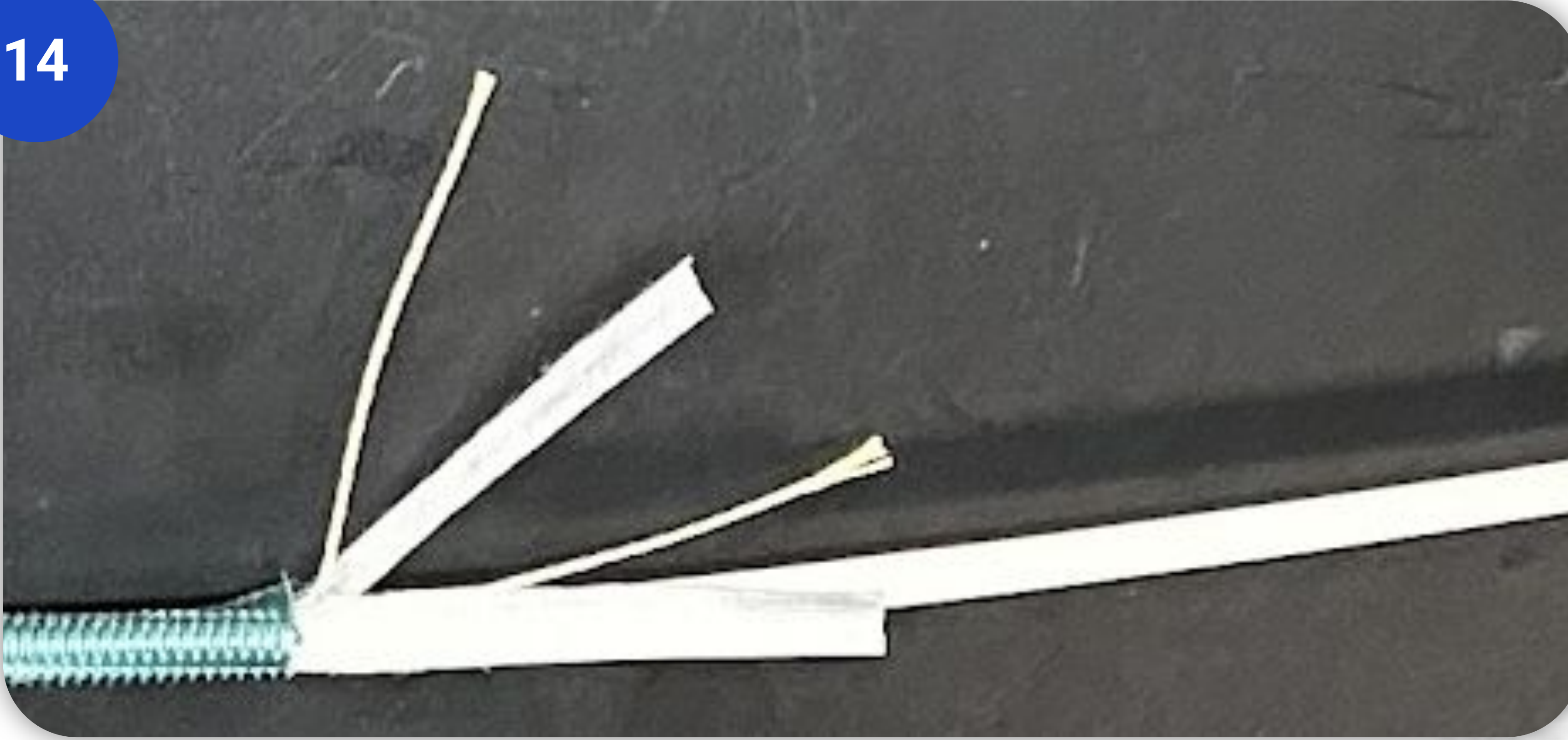
With the armored core exposed, use small side cutters to cut the armor approximately one inch from sheath end.

Another method to remove the armor tape is to access the ripcord under the armor at the end.

Using a mandrel, wrap the ripcord around it and pull toward the other cable sheath end.

Mid Span Access

14

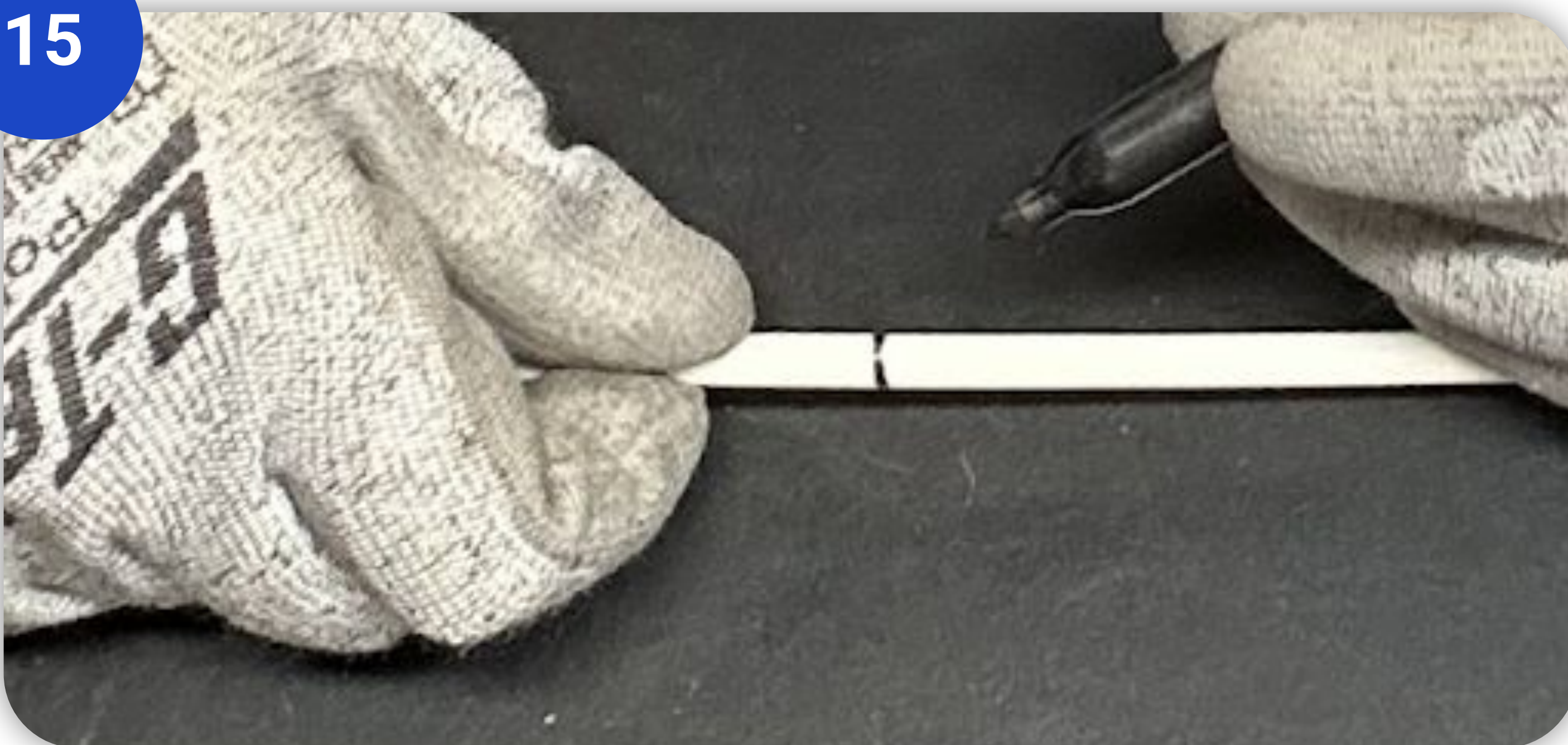


Open the armor to form a tab for the grounding hardware. Make sure that armor tape maintains continuity with the armoring under the sheath.

Cut the water blocking tape from around the core. The tape should extend beyond the armor tab to protect the fiber bundles from sharp edges.

Cut the two ripcords with scissors several inches from the sheath end in the event more sheath needs to be removed (e.g. fibers damage making it necessary to strip more cable back).

15



Mark the buffer tube where the ribbons will be exposed for the midspan.

16a



16b



Adjust the round blade of the buffer tube cutter so that it is “slightly” deeper than the wall of the buffer tube. The blade needs to be deep enough to cut through the tube, but not so deep that it damages the ribbons.

While holding the cutting blade firmly onto the buffer tube, use the other hand to slowly push the cutter in the direction of the other mark.

There is a tendency for the blade to “roll” if there is inadequate pressure holding the top and bottom of the cutter together.

Also, there is a tendency for the slit to roll (or spiral) around the tube; apply slight torque to the tube to keep the slit as straight as possible. Adjust as one incrementally pushes the cutter along the tube.

Once the first slit is completed, rotate the cutter blade 180 degrees to start a second slit.

Mid Span Access

17



One may notice that the halves of the buffer tube will start to open up with the second slit.

Hold the two halves together at the mark where the slits end, keeping the tube as “round” as possible. Using the ring cutting blade, score the tube and then snap to separate the halves. Make sure that the ring cut is over **both** slits.

18

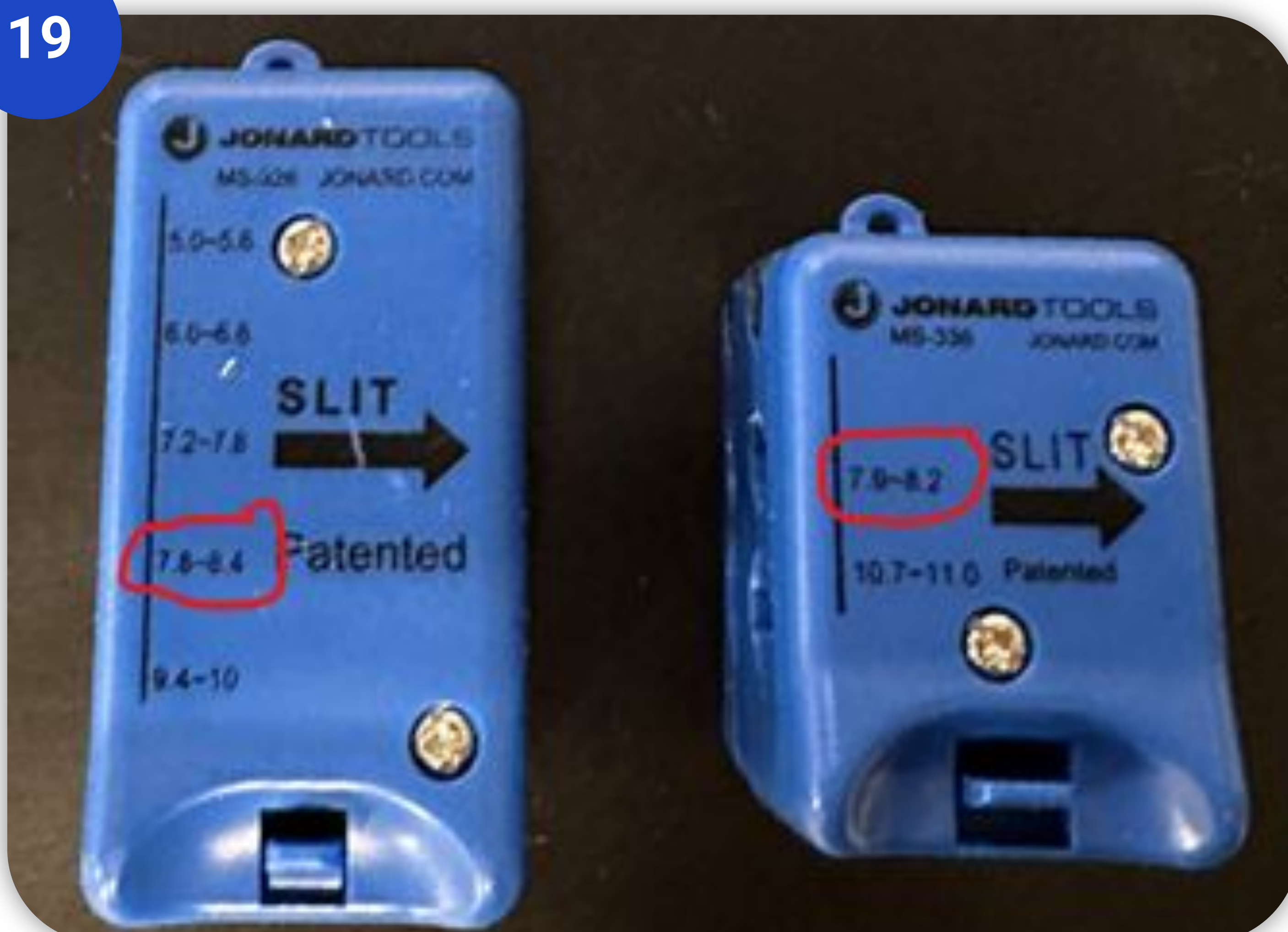


If the ring cut is not over both slits, one or both halves will still be attached to the main tube.

In that case, carefully cut the tube with small side cutters.

Repeat the ring cut on the other end of the midspan.

19



The Jonard Ring and Slitting tools can also be used and are less dependent on technique as the Ideal tool.

Choose the tool that provides the tightest fit around the cable. There is some overlap in the range of tube diameters that the tools can accommodate.

Mid Span Access

20



Cut any water blocking threads around the bundles.

Place a wire marker or piece of tape at the end of the ribbon bundles to keep the ribbon binders from unraveling; otherwise, one may lose traceability of the fiber bundle sequence.

Once the bundles are loaded in the hardware, one can individually secure the binders on the bundles as they enter the splice trays.

21



After removing the inner component elements except the ribbons with binders, follow the closure manufacturer's instructions for grounding, sheath retention, securing the cable, and routing of fiber bundles to the splice trays.