

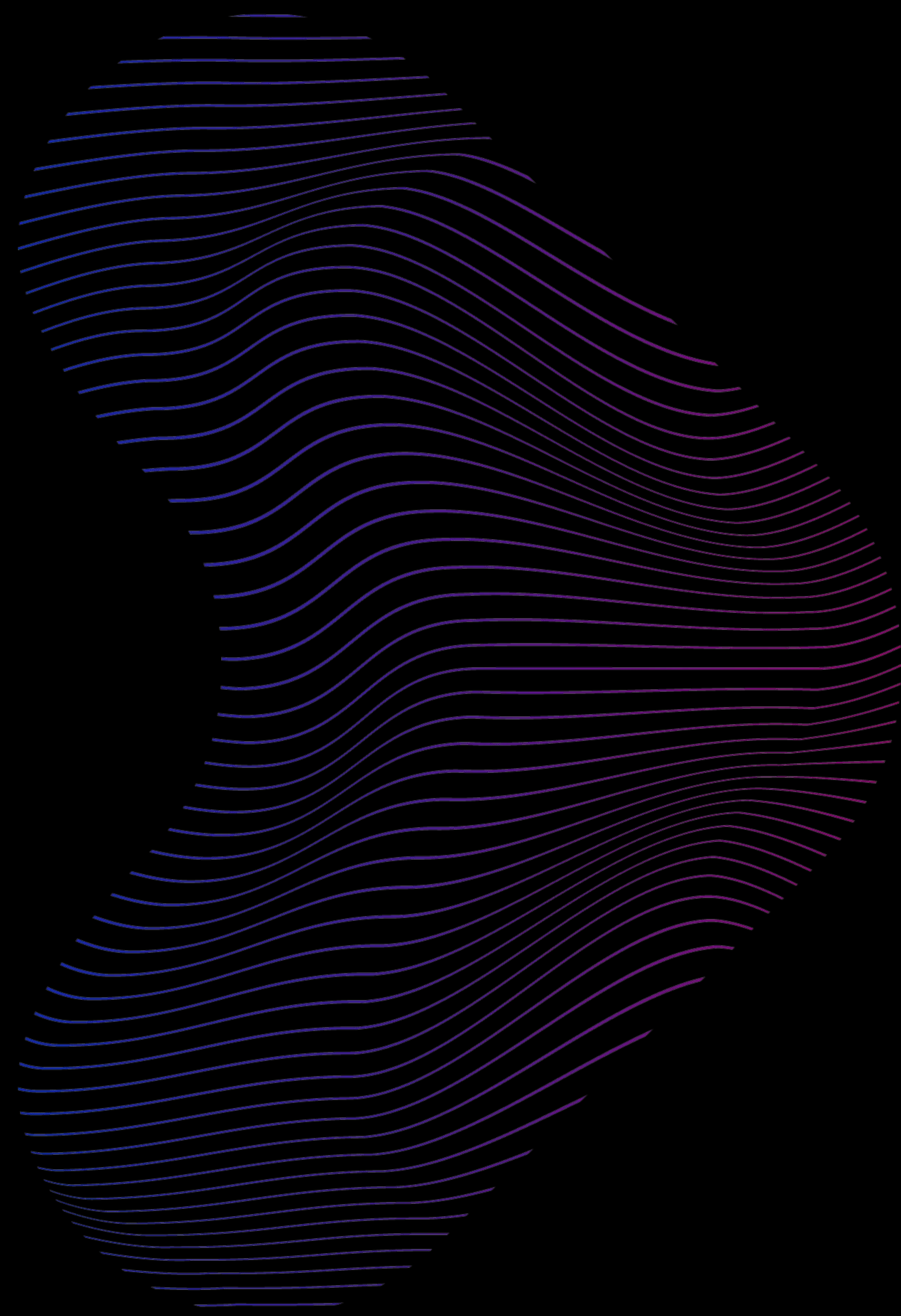
RapidTube Duct Cable

Optical Fiber Cable

Cable Preparation Guide

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Overview

The purpose of this document is to provide guidelines for accessing the optical fibers of the STL RapidTube Duct Cable.

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. Installers may use other tools that provide the same functionality.

This document does not include the loading of the cable in hardware (closures or pedestals); refer to the instructions for the hardware vendor's product.

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.



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



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



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



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



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



Tool Name: Side Cutter

Tools Used In The Process

7



Tool Name: Small Side Cutter

8



Tool Name: Pliers

9



Tool Name: Linesman Pliers

10



Tool Name: White marker

11



Tool Name: Colored Electrical Tape

Tools Used In The Process

12



Tool Name: Seam ripper

13



Tool Name: Hook blade

14



Tool Name: Cable knife

15



Tool Name: Cut Resistant Gloves

16



Tool Name: Tape measure

Tools Used In The Process

17



MS-6

Mid Span Slitter (1.2 mm-3.3 mm)



MS-306

Mid Span Slit & Ring Tool (1.2 mm-3.3 mm)

Tool Name: Buffer Tube Mid Span and Ring Tool

Manufacturer: Jonard

Model Nos: MS-6, MS-306

End Preparation

1



This is the procedure for end preparation of the STL RapidTube Duct Cable.

2



Using colored tape or marker, mark the required distance from the end of the cable that is needed for the closure or hardware used. Additionally, place another mark mark 6 inches from the end of the cable. This 6 inches is for the initial sheath removal to access the ripcords needed to strip the sheath to the overall needed length for the hardware.

Refer to the closure manufacturer's instructions on the amount of buffer tube and 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 should not go all the way through the PE jacket, to prevent damage to the ripcords or buffer tubes.

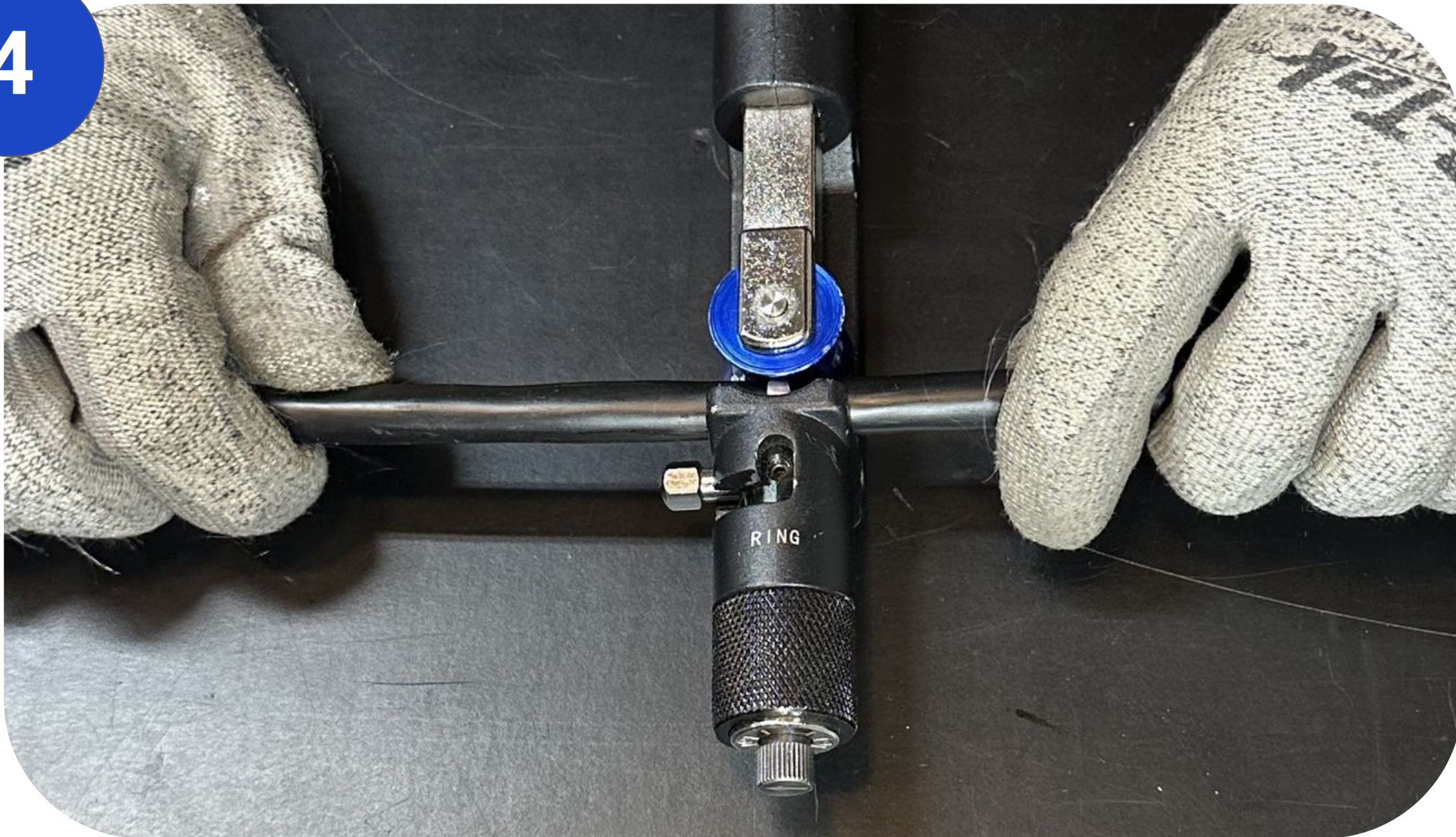
Adjust the depth of the blade on the cable cutting tool so that it slightly less than the jacket wall thickness.

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

Note: If a Jonard AST-200 is not available, a standard hook blade, or large Ideal tube cutter can be used as effectively.

End Preparation

4



Ring cut the outer jacket at both marks (6 inch and overall length needed), using either the Jonard AST-200, standard hookblade, or tube cutter.

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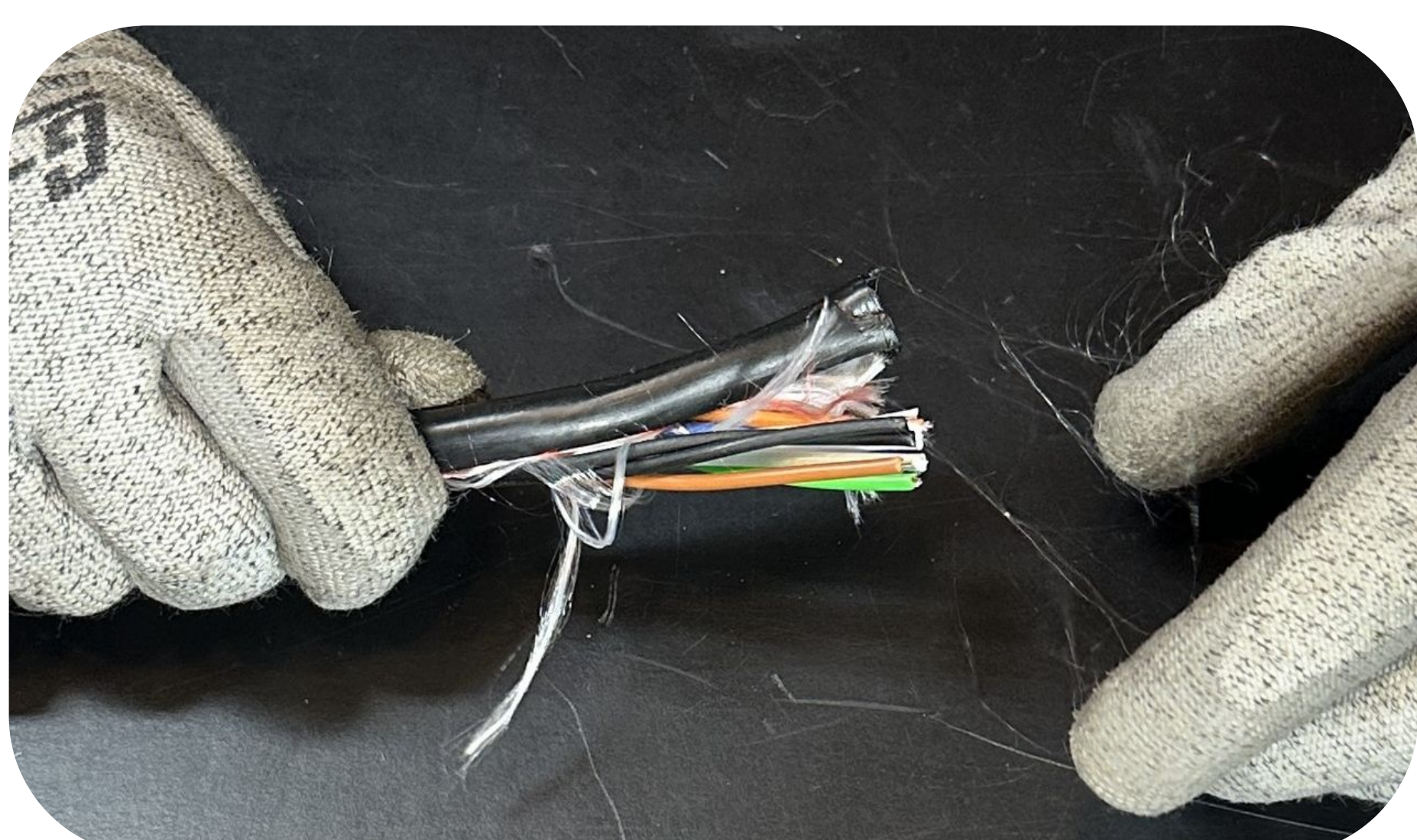


Starting at the ring cut 6 inches from the end, flex the jacket to complete the break of the PE jacket. One can be more aggressive in flexing the cable, given any damage to the buffer tubes is minimal, given they will be removed later.

One may be able to then pull the jacket off, exposing the ripcords and water blocking tape.

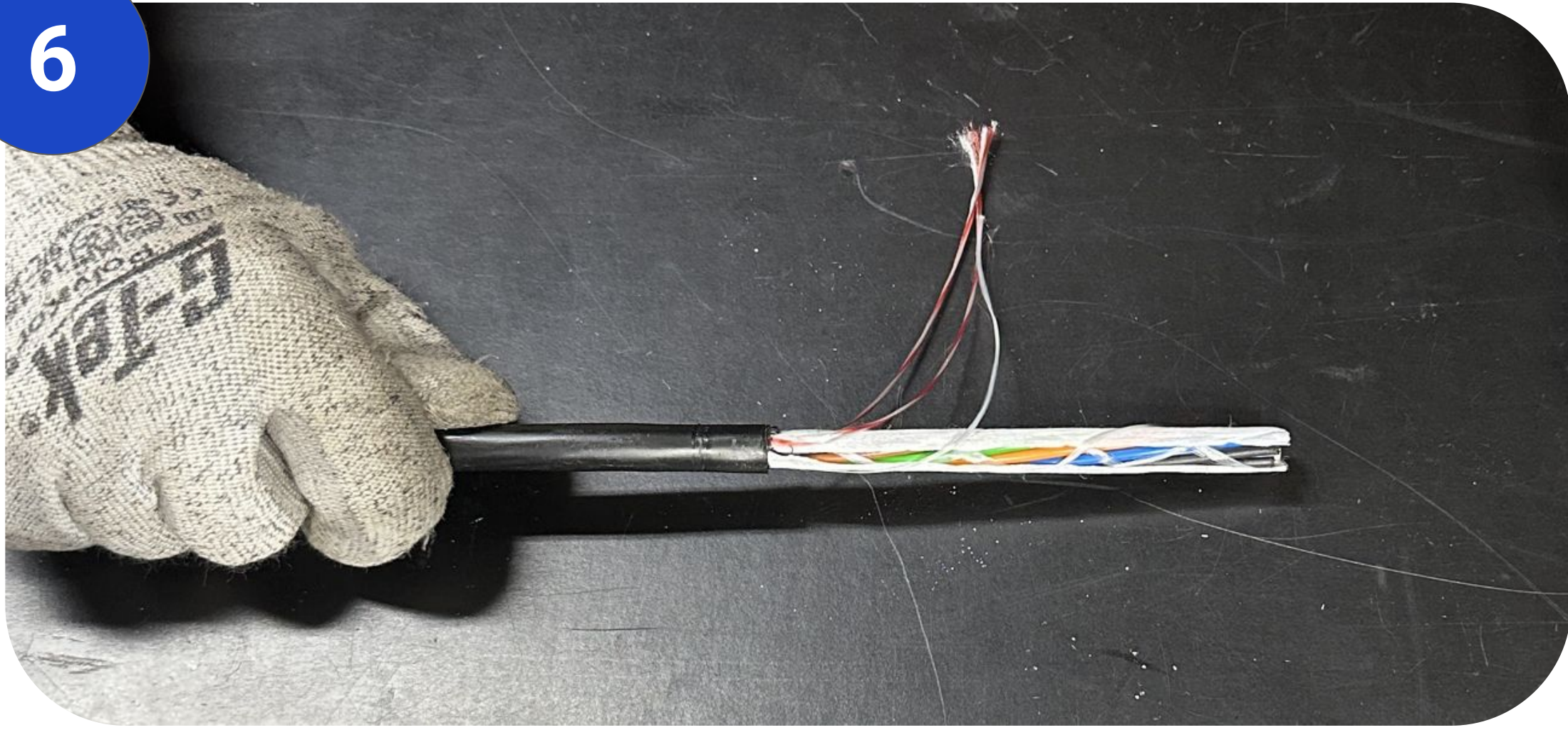


If necessary, use a hook blade at an angle to slit the jacket, starting at the ring cut. While it is higher risk to damage the tubes, the buffer tubes are normally removed later.



End Preparation

6



Using a needle nose plier or hands, remove the outer sheath to expose the ripcords; inspect to ensure they are not frayed.

7



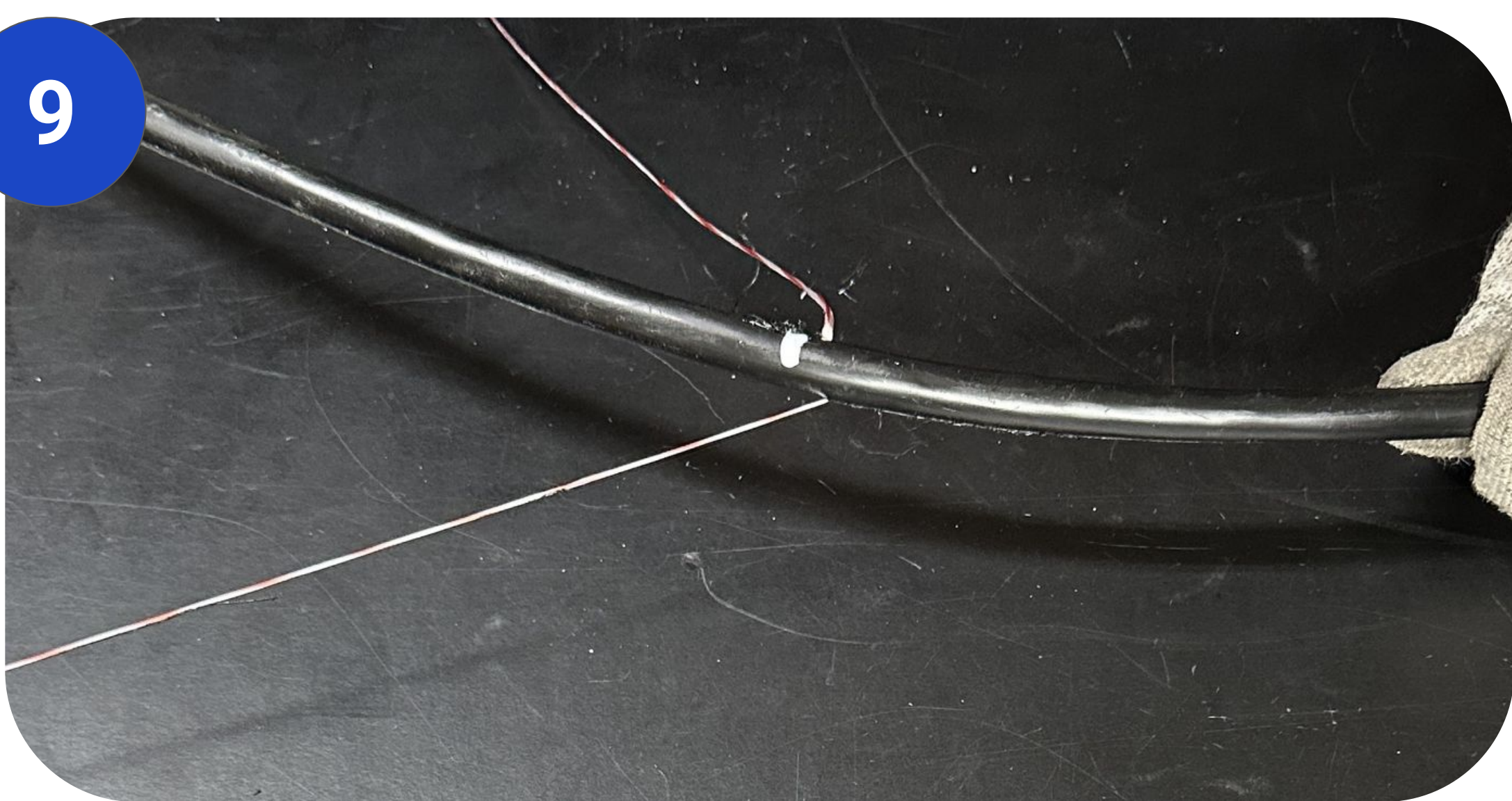
Using a hook blade, carefully notch the jacket near the ripcord.

8



Then, using pair of needle nose pliers, wrap the ripcord around it and pull to the second ring cut.

9



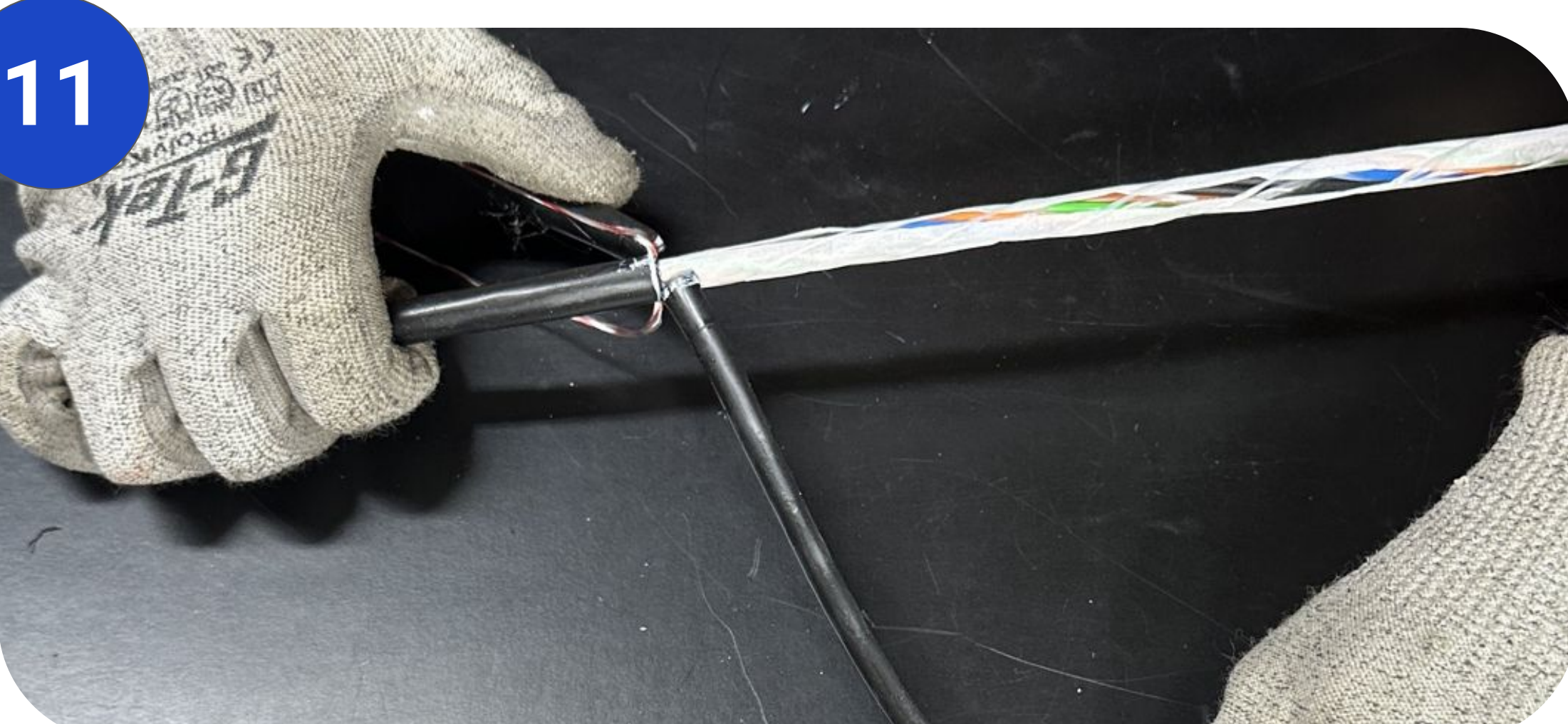
Repeat for the second ripcord.

10



Pull the two jacket sheath halves apart to expose the cable core (water blocking tape and binders).

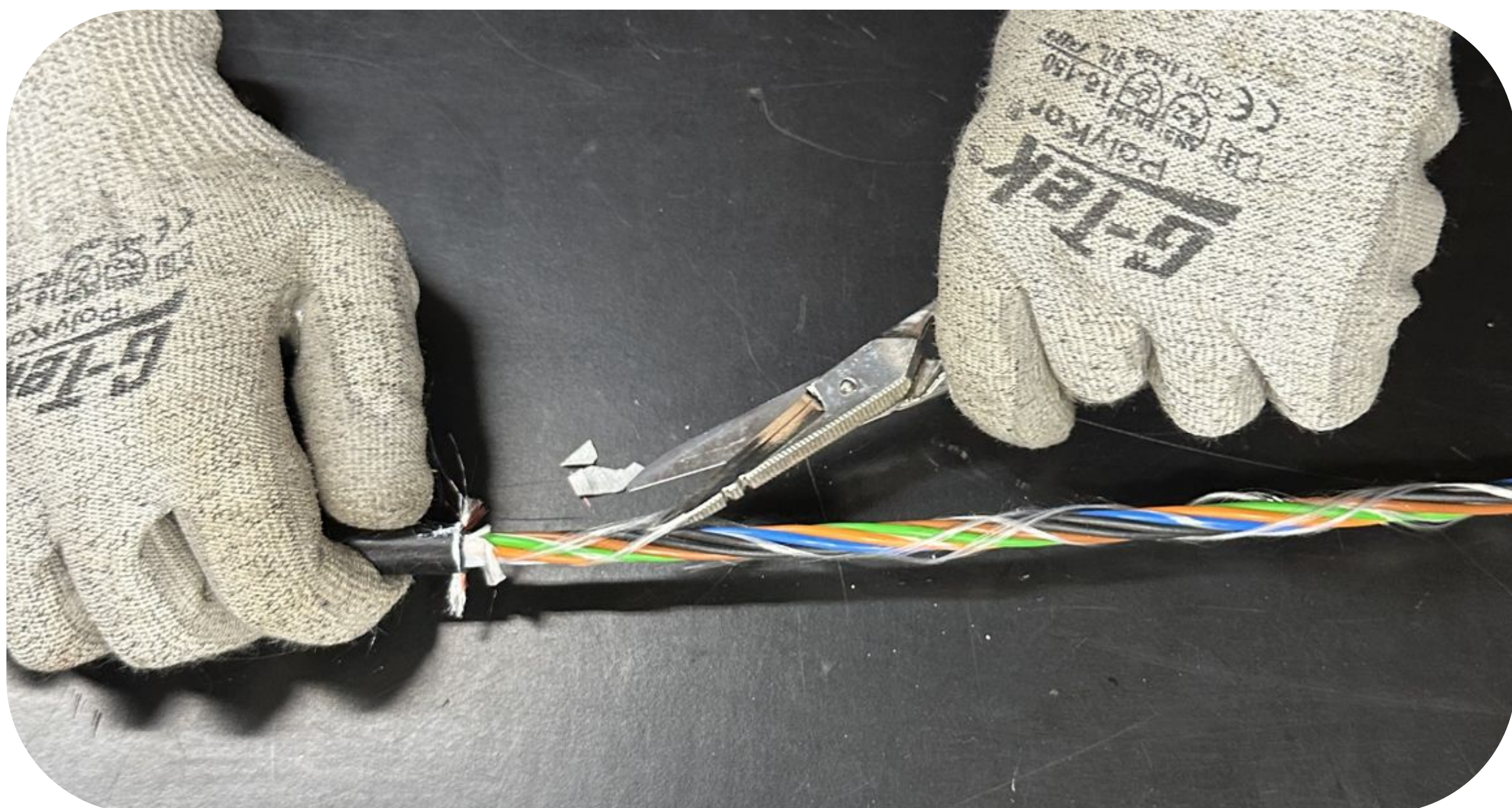
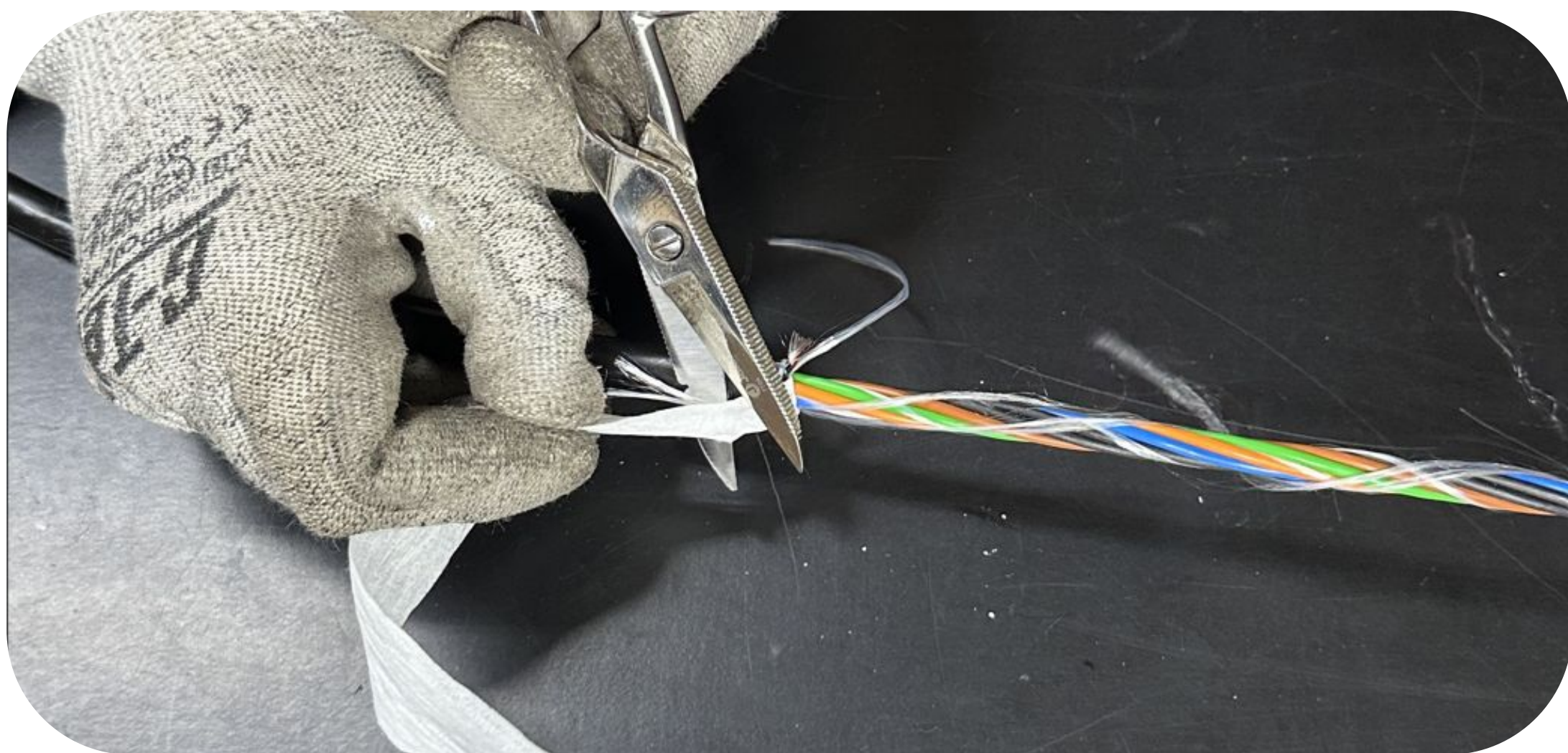
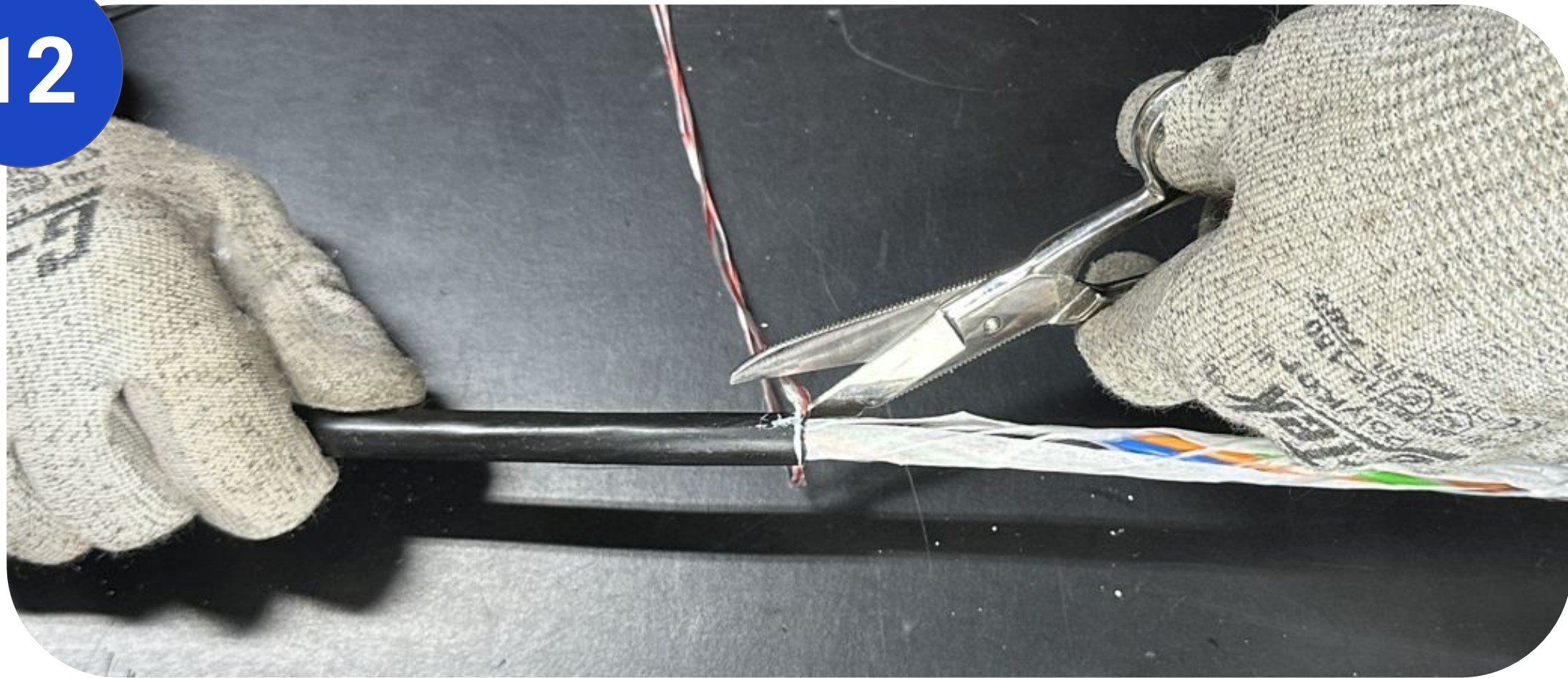
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If necessary, use a pair of side cutters to trim the jacket at the ring cut.

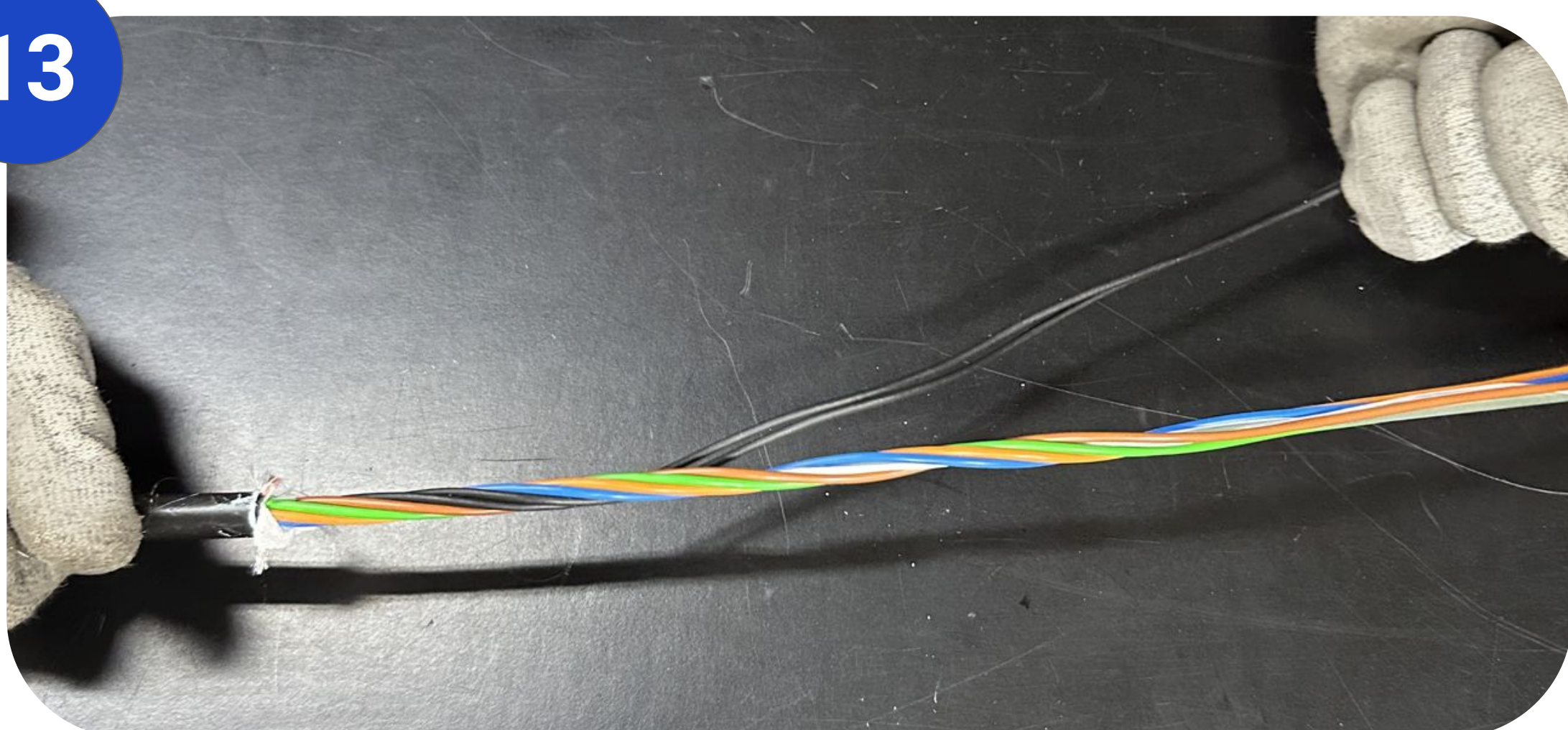
End Preparation

12



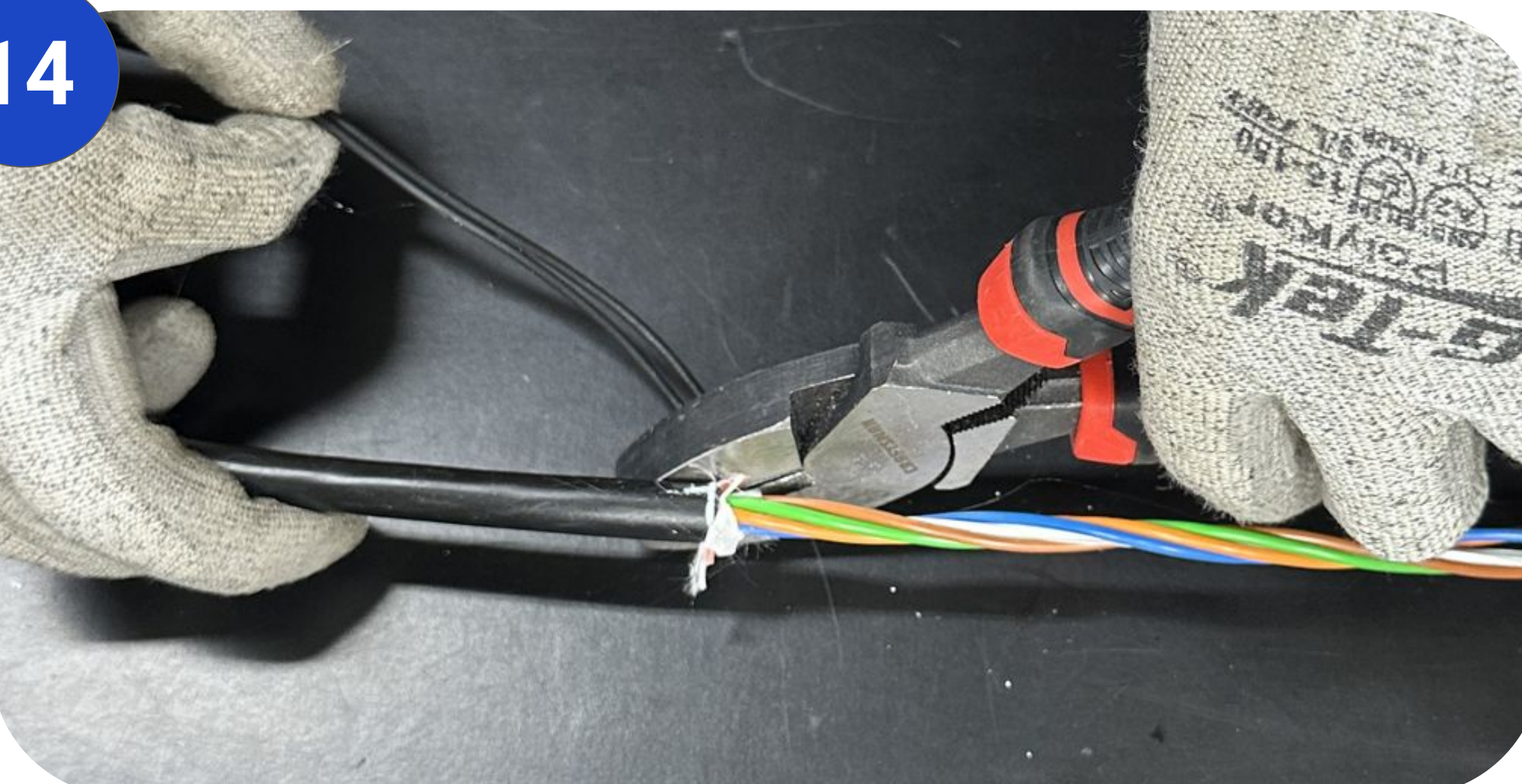
Cut the ripcords, water blocking tape and buffer tube binders, using scissors or a seam ripper.

13

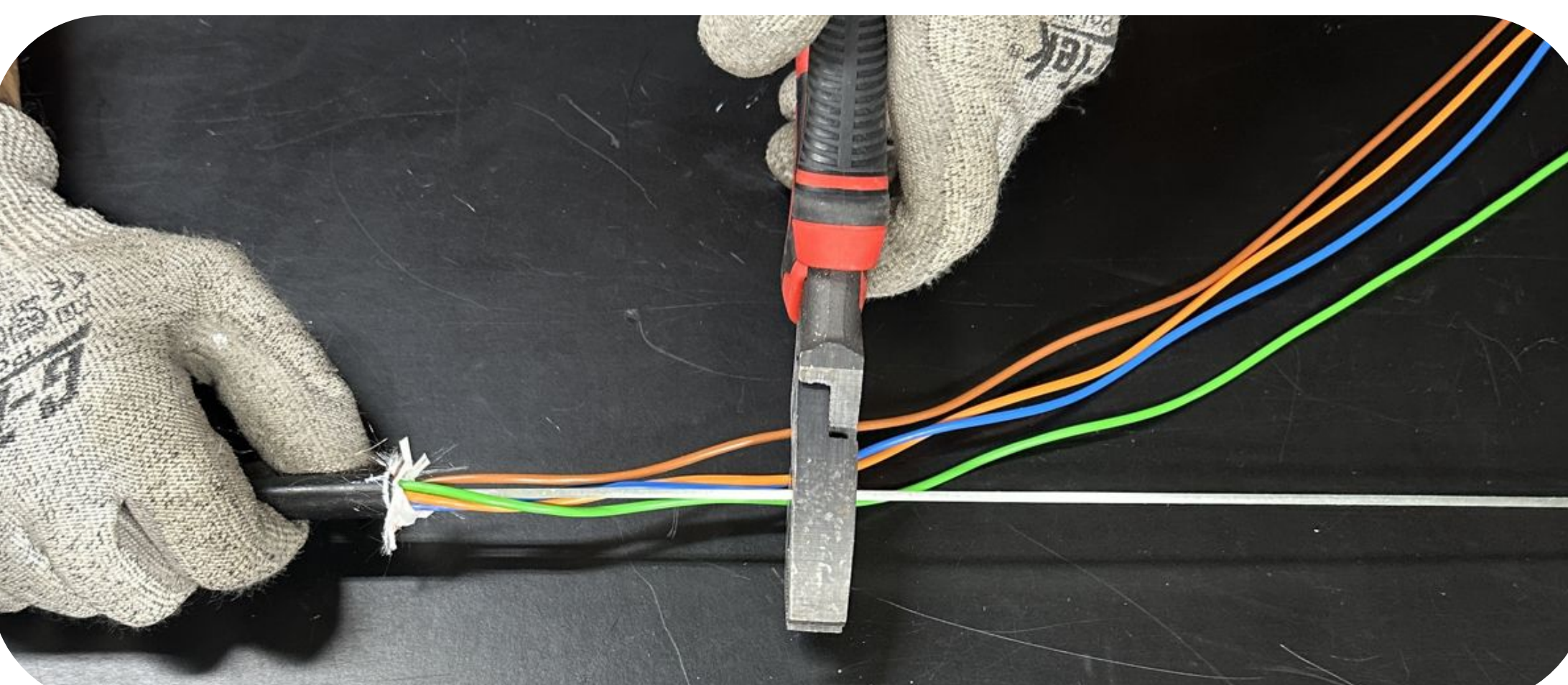


Unwind any filler tubes (solid black PE) from around the core. Cut with a pair of side cutters close to the sheath end.

14



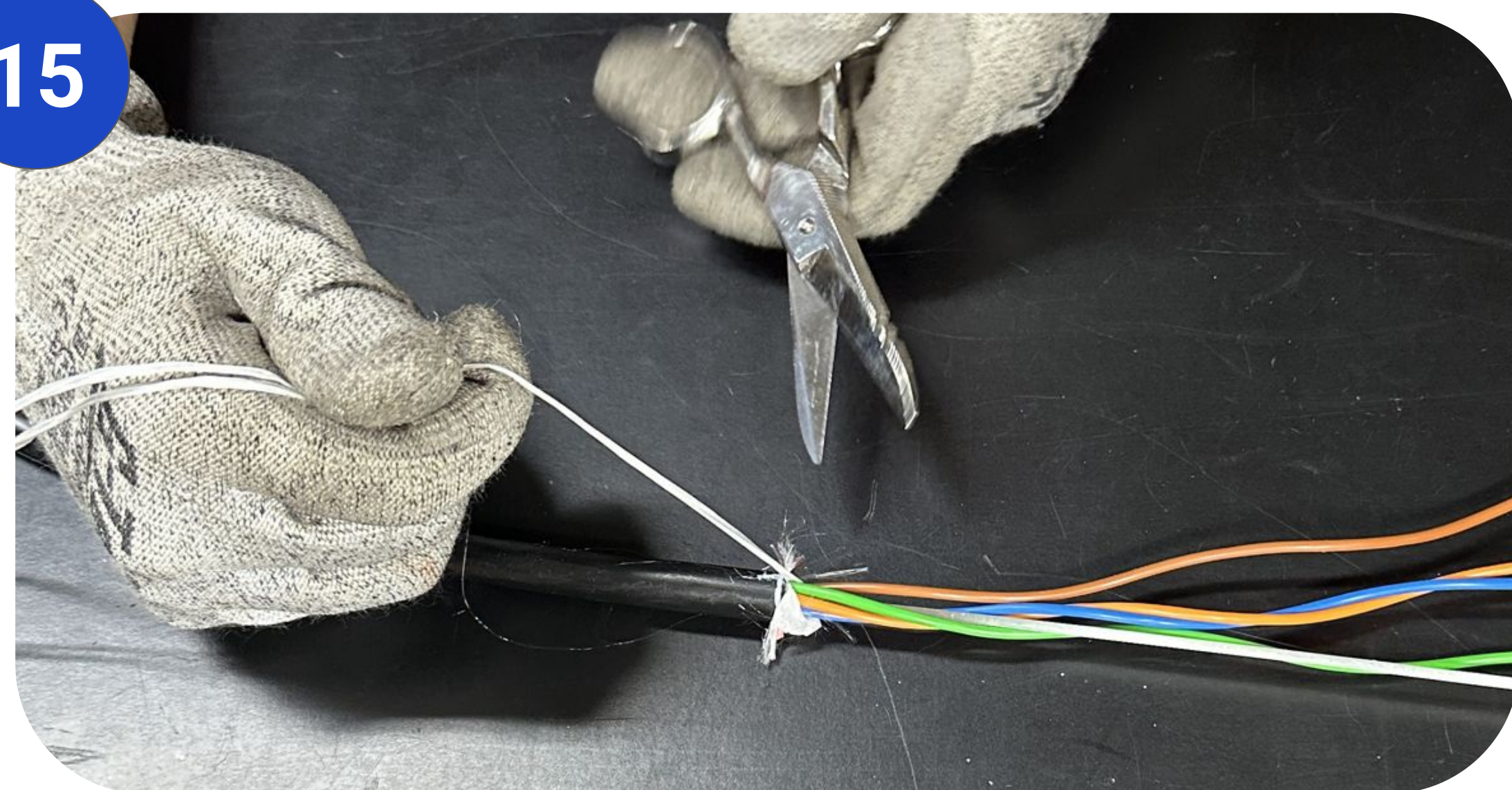
Using a pair of side cutters, cut the central member to the required length for the closure or pedestal the cable will be loaded in. Refer to the hardware manufacturer's instructions.



For higher fiber counts (84F - 432F) the PE overcoat on the central member may need to be shaved down with a cable knife or straight blade to fit under the closure's central member stop (to prevent core pistoning).

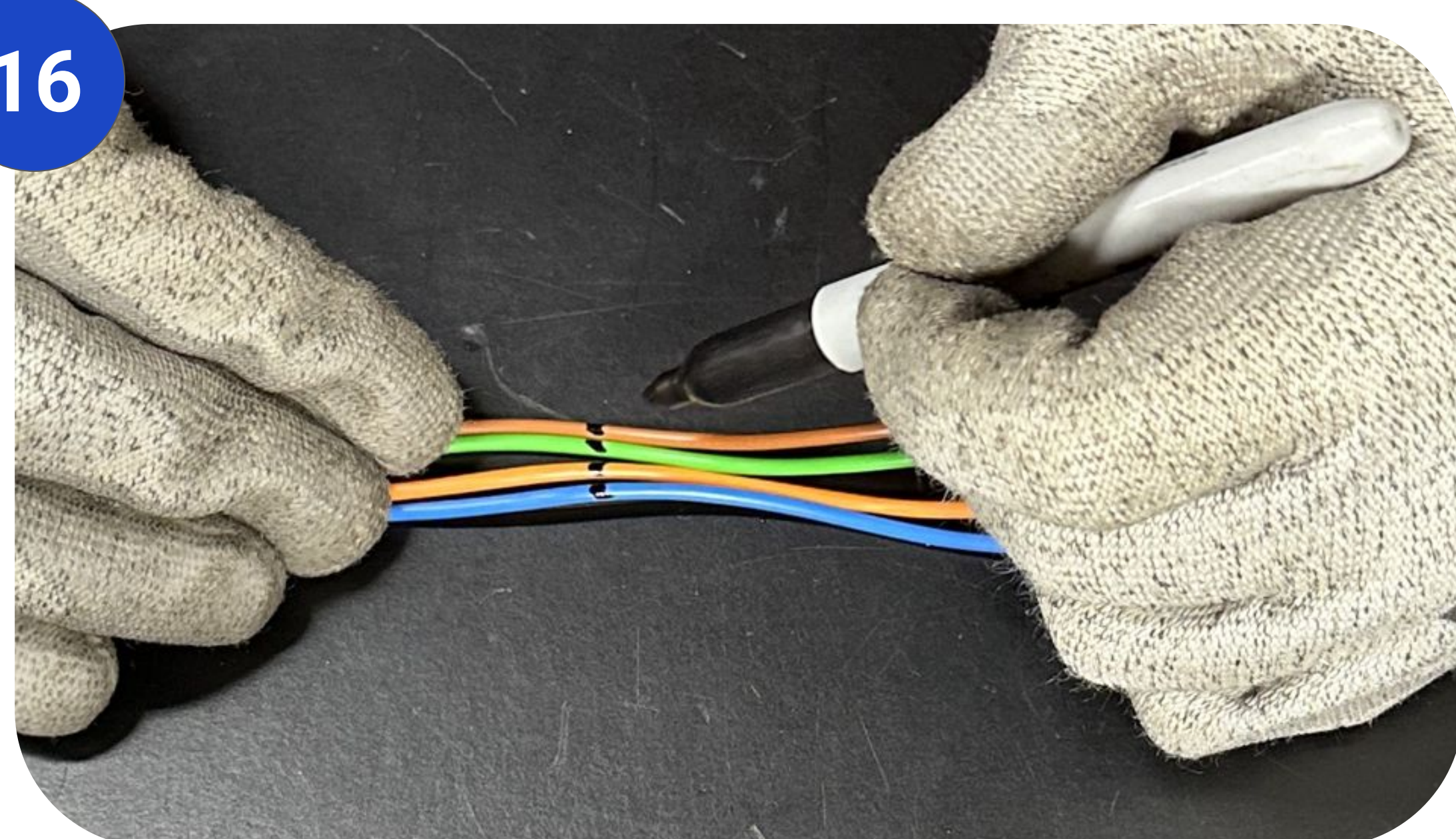
End Preparation

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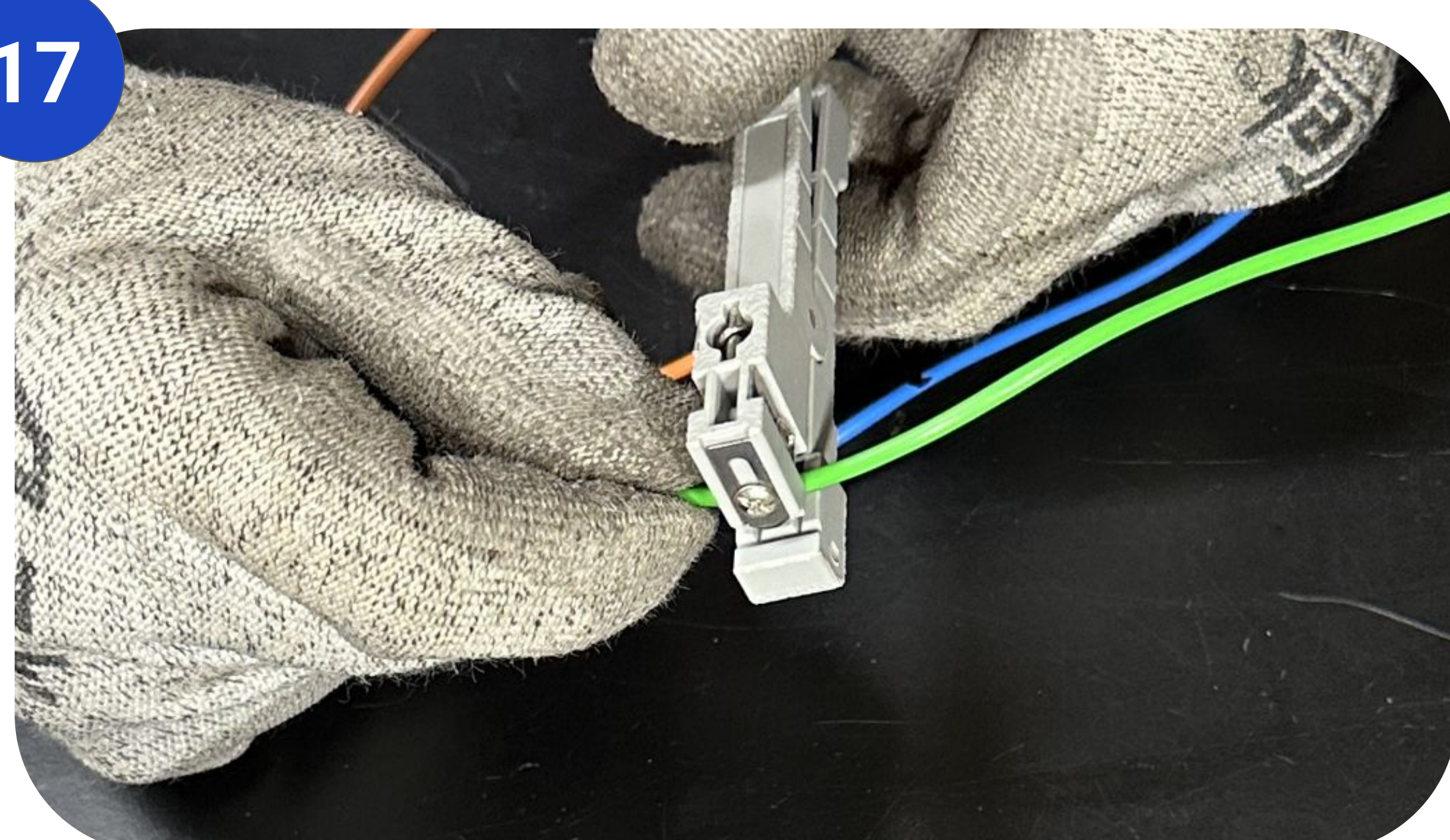
Cut the water blocking threads with scissors.

16



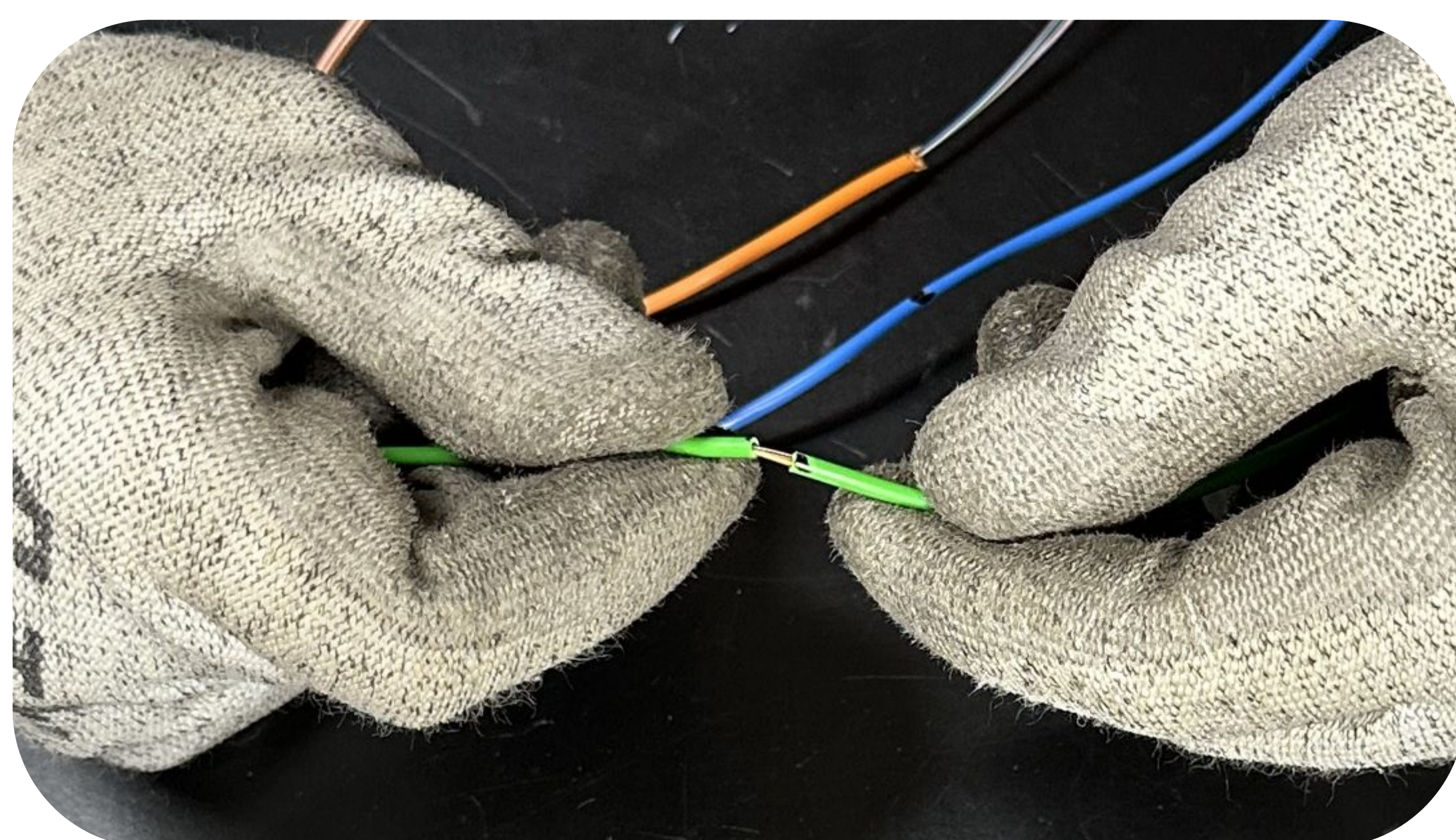
Mark the tubes with a black marker the length that needs to be removed for loading in the hardware.

17



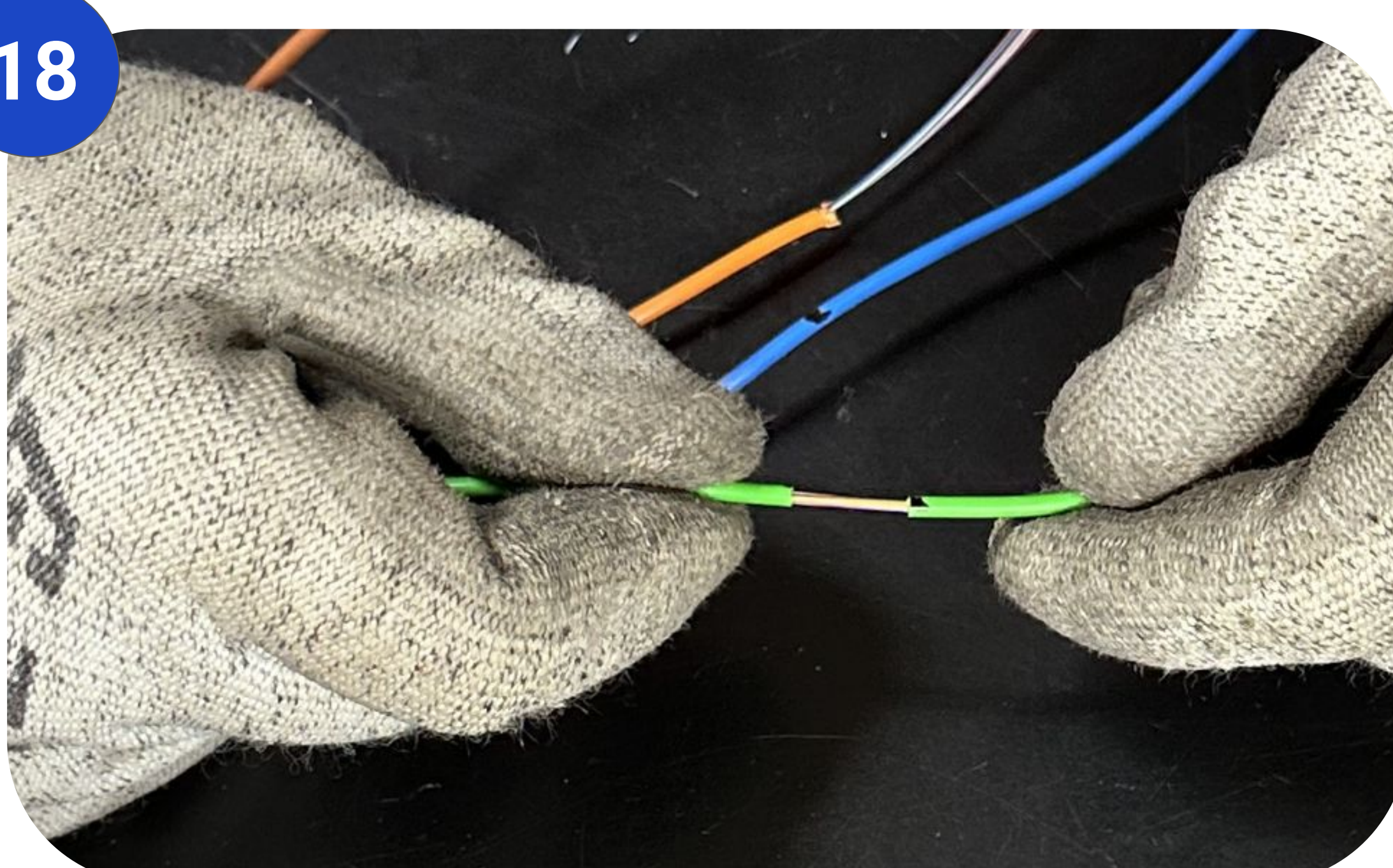
Using an Ideal tool, ring cut and snap the buffer tube off.

Repeat for the other tubes.



Make sure that the ring cut does not cut all the way through the buffer tube in order to prevent ribbons from being damaged by the blade.

18



Pull the buffer tube in a straight line from the cable.

End Preparation

Repeat for the remaining tubes. Use scissors to cut the water blocking threads from each tube.

Load the cable into the hardware and route the ribbons to the appropriate trays for splicing. Refer to the hardware instructions on how to secure the buffer tubes in the splice trays.

If the buffer tubes are not going to be removed and just routed in the hardware for future use, ensure that the buffer tubes will not kink by maintaining a minimum bend diameter of 30 x buffer tube OD.

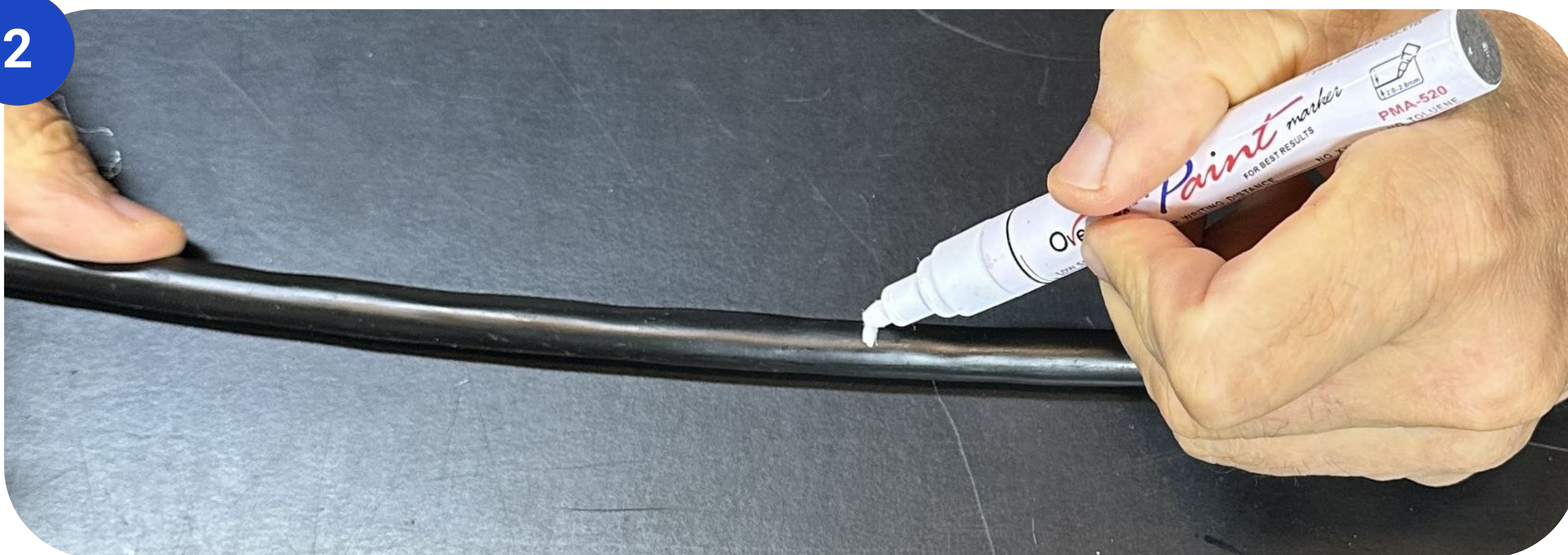
Mid Span Access

1



This is the procedure for midspan preparation of STL RapidTube Duct Cable.

2



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

Ideally, the reverse oscillation point (where the tubes change direction) will be located in the middle of the mid span.

Additionally, another mark should be added approximately 6 inches from one of the end marks. A short piece of jacket will be removed to access the ripcords and open the sheath to the other end mark.

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 should not go all the way through the PE jacket, to prevent damage to the ripcords or buffer tubes.

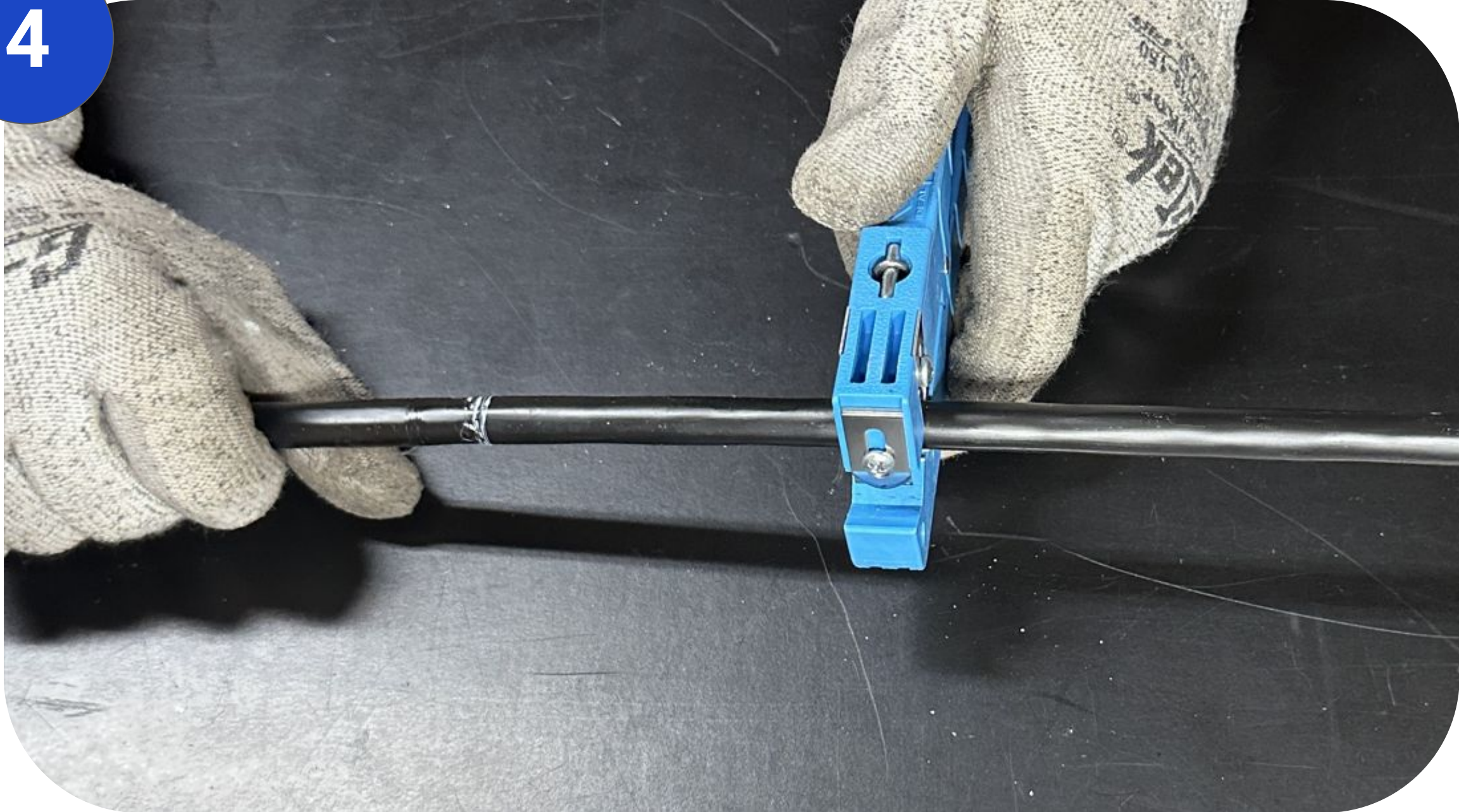
Adjust the depth of the blade on the cable cutting tool so that it slightly less than the jacket wall thickness.

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

Note: If a Jonard AST-200 is not available, a standard hook blade, or large Ideal tube cutter can be used as effectively.

Mid Span Access

4



Ring cut the outer jacket at both ends and the mark 6 inches from one end (total of three ring cuts).

The ring cut at the 6 inch mark is to access the two ripcords under the sheath.

5



Starting at the cut 6 inches from the end, flex the jacket to complete the break of the PE jacket.

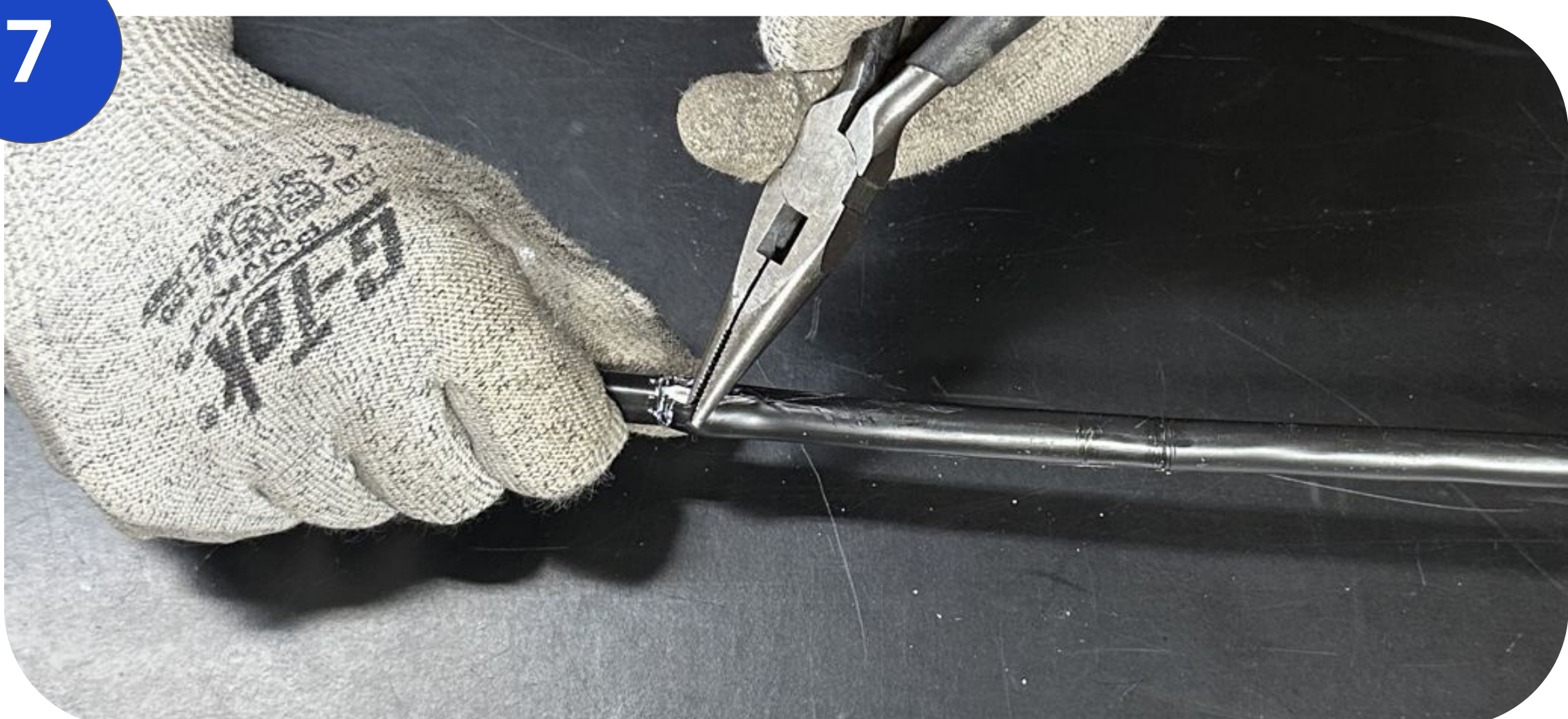
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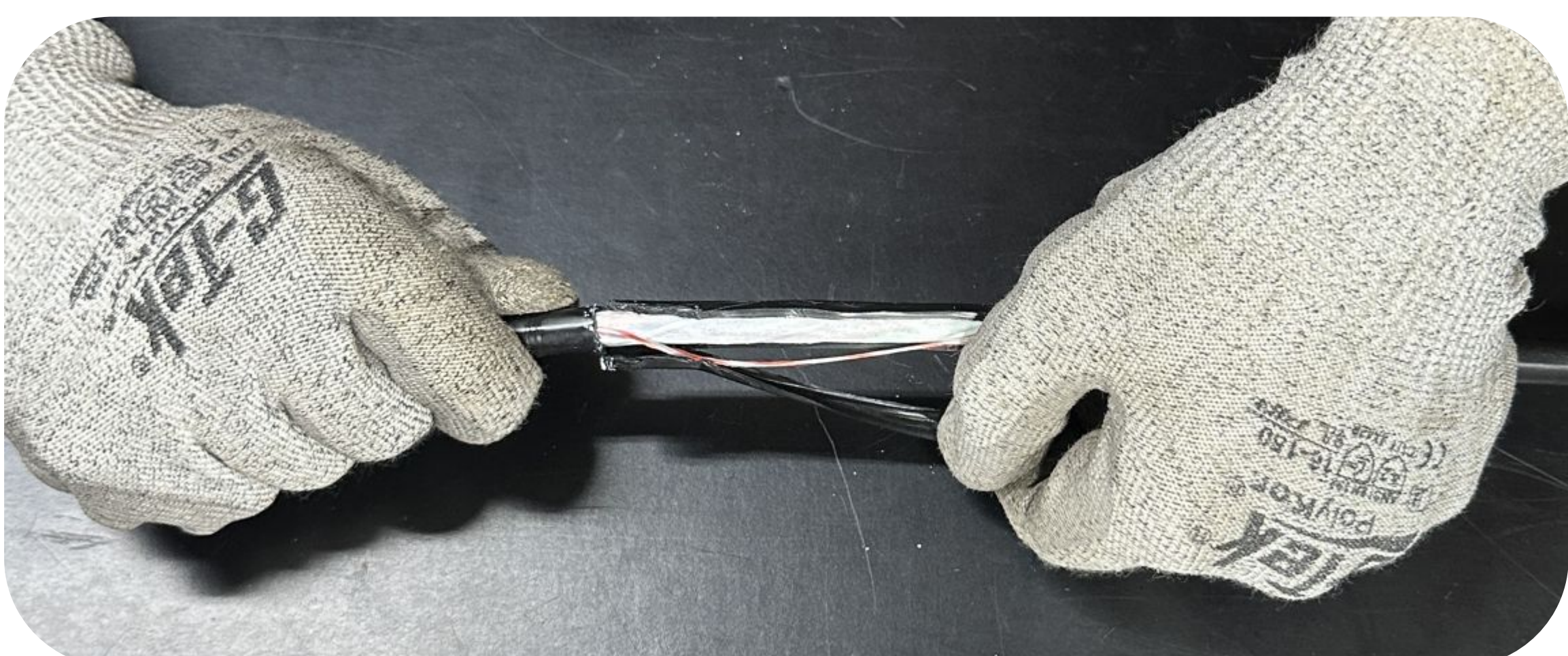
Where the ring cut is flexed, carefully use a hook blade (positioned at a sharp angle between the jacket and water blocking tape) so as to slit the jacket. Use extreme caution to avoid damage to the buffer tubes or ripcords.

It is not uncommon for the hook blade to “slip out” during cutting. If so, start the cut at another location on the ring cut.

7

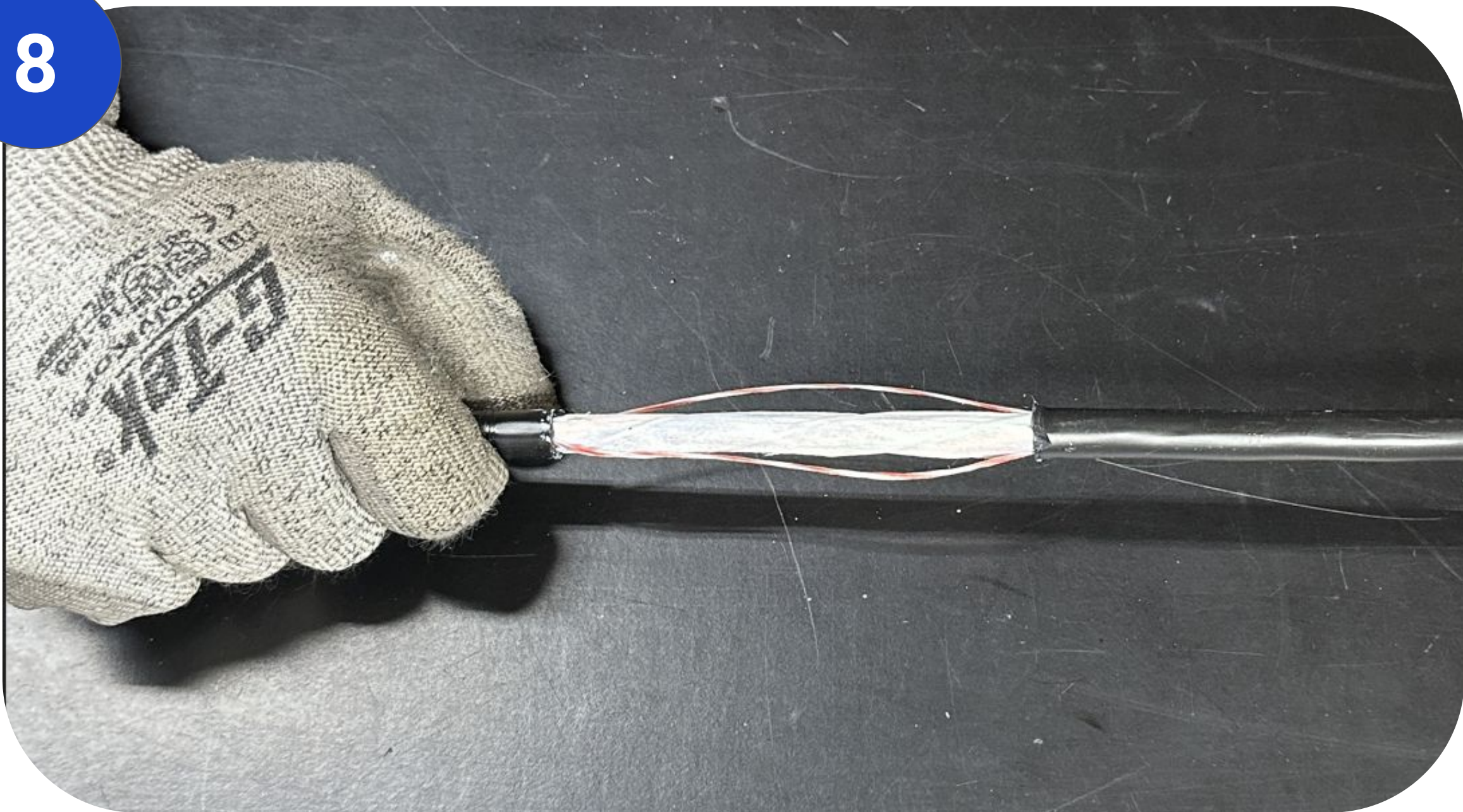


Once a longitudinal slit is cut, use a pair of needle nose pliers to remove the 6 inches of sheath. In some cases, it may be necessary to slit the jacket on the opposite side.



Mid Span Access

8



Inspect the ripcords to make sure they are not frayed. If so, one will need to remove an additional 6 inches of sheath to access a non-frayed portion of the ripcords.

9



Using scissors, cut both ripcords from the end mark.

10



Using a hook blade, carefully notch the jacket near the ripcords.

11



Then, using pair of needle nose pliers, wrap the ripcord around it and pull to the other ring cut.

Repeat for the second ripcord.

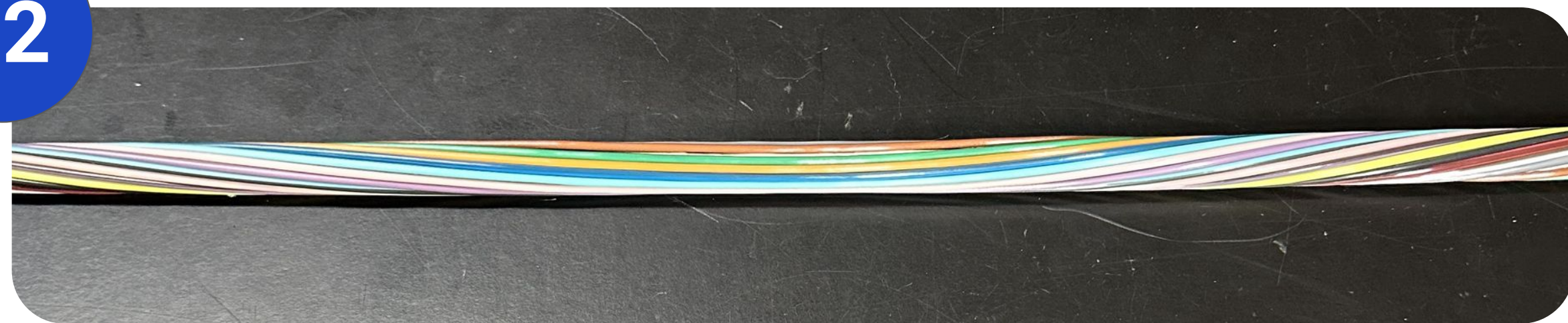
Mid Span Access

As in the end preparation process, one should be able to pull the two jacket sheath halves apart to expose the cable core (water blocking tape and binders).

If necessary, use a pair of small side cutters to trim the jacket at the ring cut.

Cut the ripcords, water blocking tape and tube binders, using scissors and a seam ripper.

12



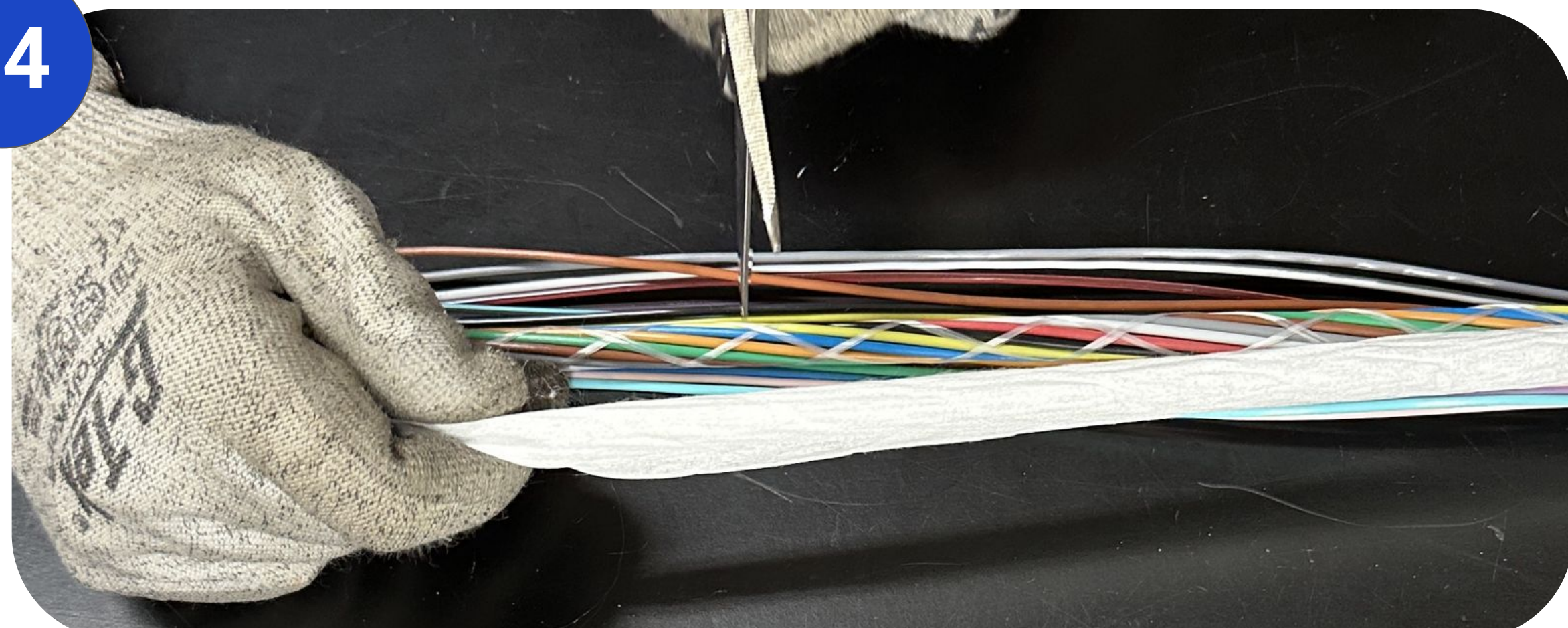
Find the switch back point, where the buffer tubes change direction around the core. In some fiber counts, there is an inner and outer layer. The switch back point will be offset from the inner and outer layer. Additionally, the inner layer will have a water blocking tape with binders around it.

13



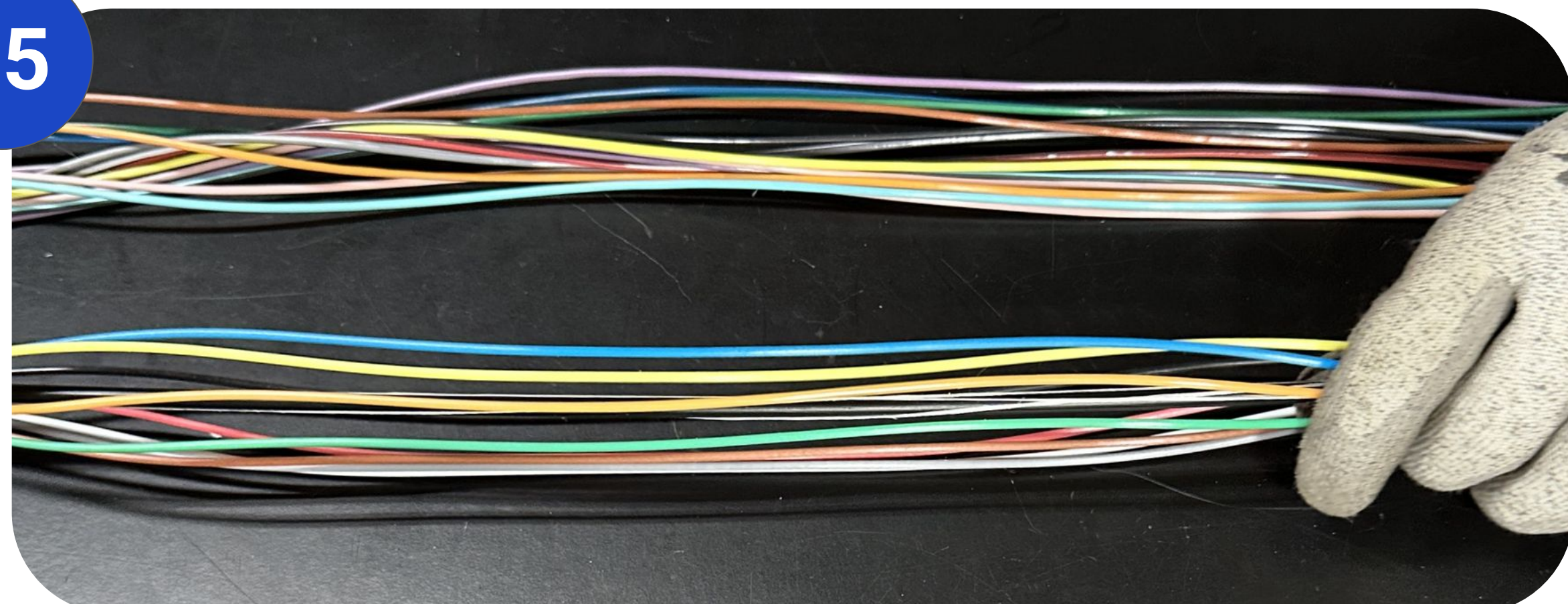
Unwind the tubes from the central member to expose the central member. If the reverse oscillation point is not in the middle of the mid span, one may need to “twist” one end of the cable to relieve the preferential twist.

14



If there is an inner layer, cut the water blocking tape and binders with a scissors.

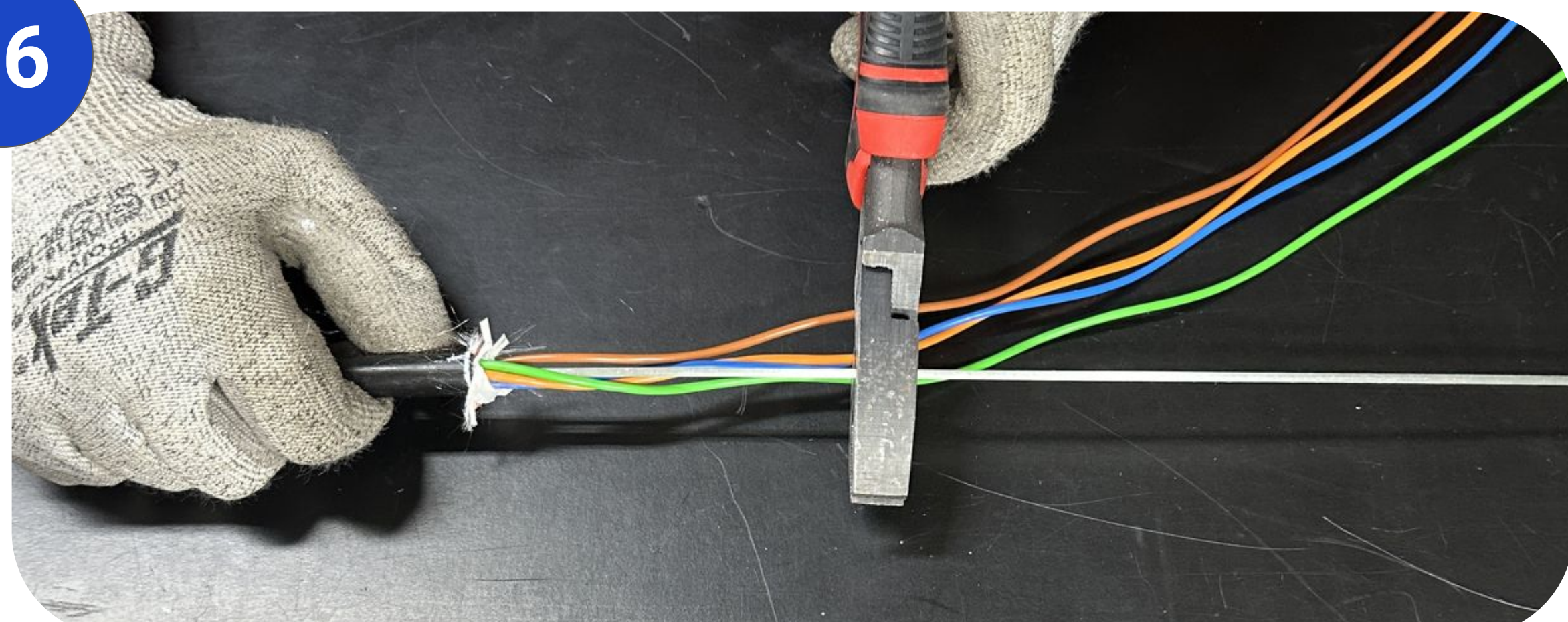
15



Inner and outer layers are separated.

Note: buffer tubes 13 - 24 (outer layer) will have a black stripe on one side of the tube (white stripe for black buffer tube).

16



Using a pair of side cutters, cut the central member to the required length at both ends for the closure or pedestal the cable will be loaded in. Refer to the hardware manufacturer's instructions.

The PE overcoat on the central member may need to be shaved down with a cable knife or straight blade to fit under the closure's central member stop (to prevent core pistoning).

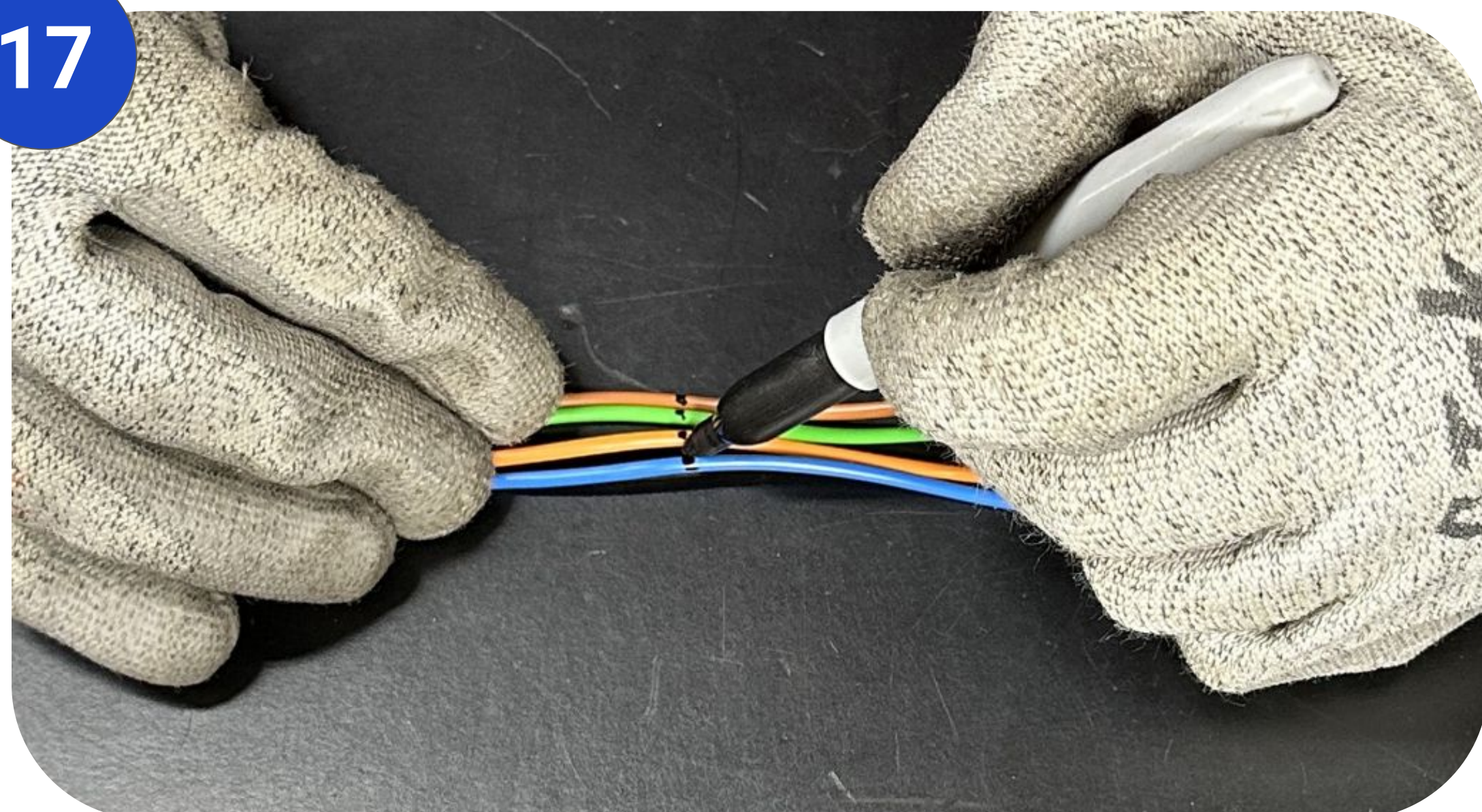
For higher fiber counts (84F - 432F) the PE overcoat on the central member may need to be shaved down with a cable knife or straight blade to fit under the closure's central member stop (to prevent core pistoning).

Mid Span Access

Depending on the splicing plan, one may need to access ribbons in one or more buffer tubes. In some cases, the whole tube (and ribbons) can be cut. In other instances, some or all of the ribbons in a tube may not be cut.

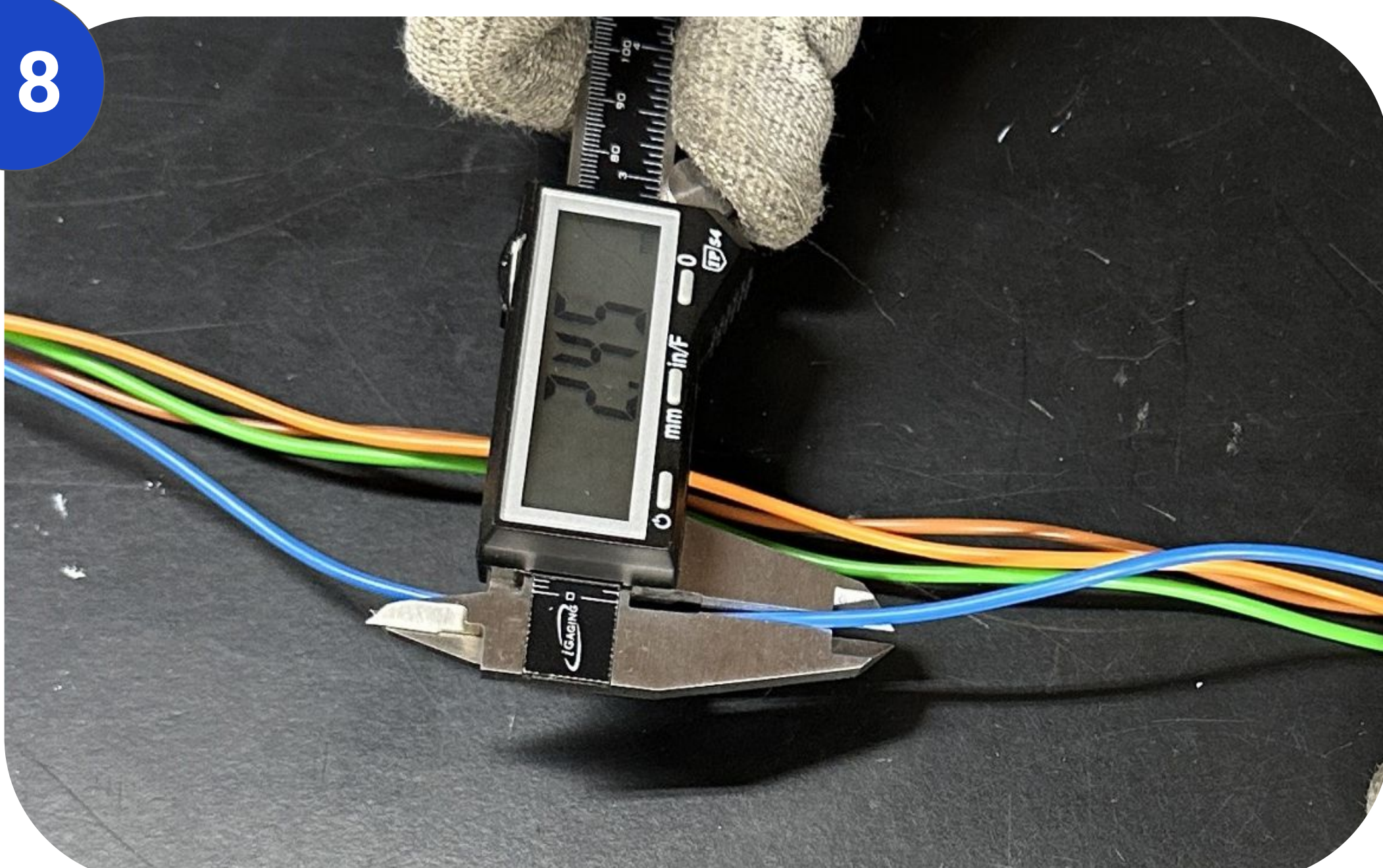
Note that the buffer tubes can kink if routed in a closure less than the recommended 30 x tube diameter.

17



Mark the two ends of the buffer tubes that need to be removed.

18



Measure the outside diameter with a caliper to ensure the proper slitting block is selected.

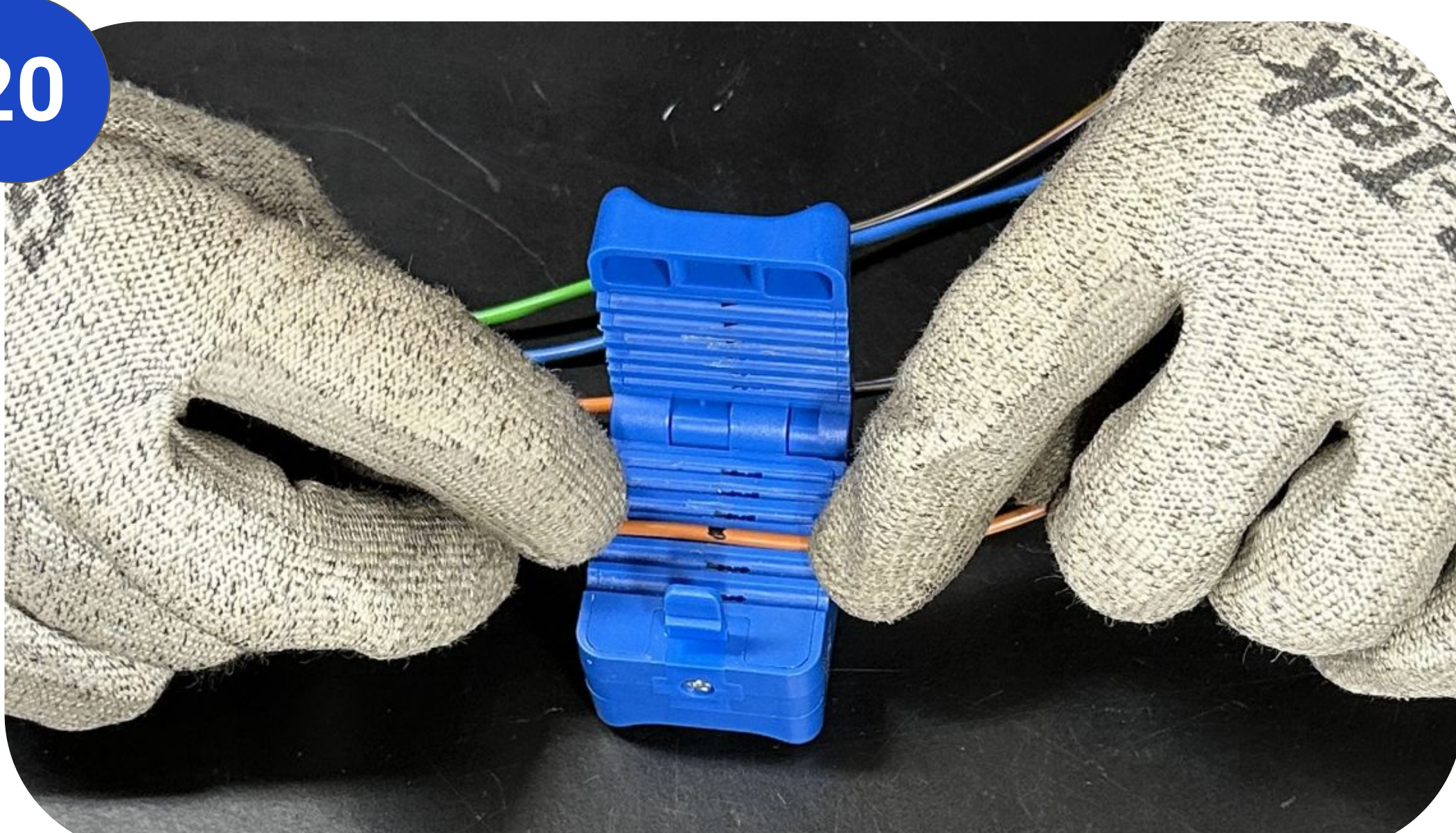
19



The best available tools for longitudinal slitting buffer tubes are the Jonard block slitters.

There is a series of blocks can be used for ring cuts or ring cuts and slits. Each block has several OD ranges. There can be some slight overlap in OD ranges from one block model to another.

20



Start with the block that has the higher OD range. This will ensure that the blades of the tool do not cut too deeply through the buffer tube and damage the ribbons.

Place the block on the buffer tube and lock the tab.

Mid Span Access

20



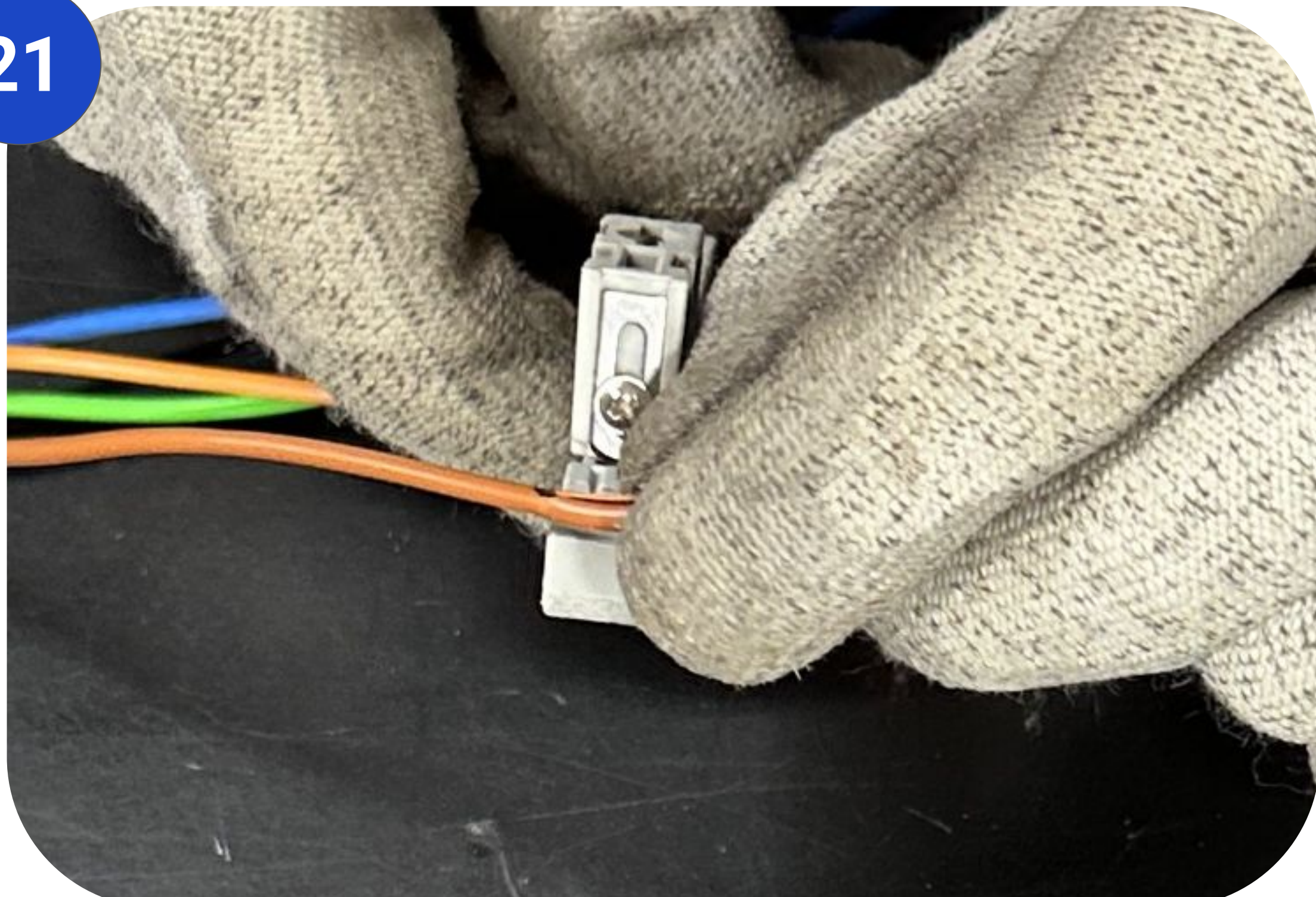
Pull the block along the length of the tube in a straight pull to the other mark. This may require another person to assist, if the reverse oscillation point is not in the middle which causes a preferential twisting of the cable and buffer tubes.

Slightly twist the tube to see if the blades cut deep enough to separate the buffer tube halves.

If not, use the block with the next smallest range of ODs and repeat the longitudinal slit. Again, twist the tube to ensure it will separate.

Inspect the ribbons for any damage.

21



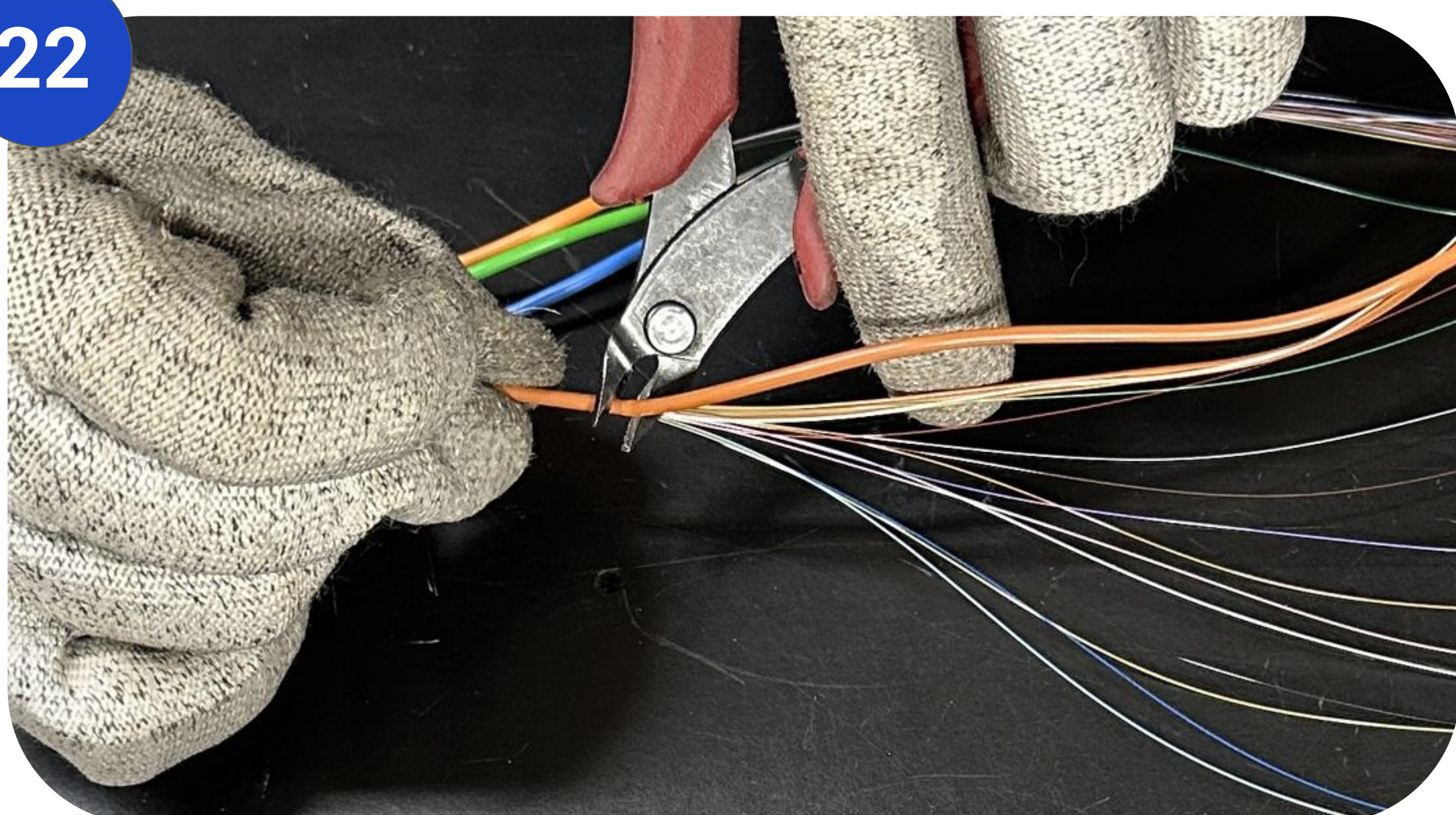
Ring cut the buffer tube with the block tool or use an Ideal tool.

It is helpful to hold the two halves together at the mark where the slits end, keeping the tube as "round" as possible.

Score the tube and then snap to separate the halves.

Make sure that the ring cut is over **both** slits.

22



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.

Cut the water blocking threads for each buffer tube removed.