WetLink Penetrator Assembly Guide

Introduction

The WetLink Penetrator (WLP) is our next-generation solution for low-cost, high pressure, high reliability sealing of electrical cables. The WetLink Penetrator is easy to assemble and doesn't require any adhesives, potting compounds, or rubber molding.

The full WLP product line supports sealing of cables from 3.7mm up to 9.8mm in diameter. This guide will show you how to assemble a WetLink Penetrator onto a compatible cable using our WLP assembly tools or common hand tools.

This guide assumes you have already selected the correct size WLP for your cable. If you are unsure which WetLink Penetrator to use for your cable, our "Choosing a WetLink Penetrator" guide will help you through the process of choosing the correct size. It also provides more information about how WLP works and troubleshooting steps for assembly on untested cables.

Parts and Tools

You Will Need

WetLink Penetrator

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Last updated on 25 Apr 2023

Compression gland seal for 3.7mm–9.8mm electrical cables

$12.00 – $56.00

Select options

WetLink Penetrator Assembly Block

Holds the WLP bulkhead securely during assembly

$25.00

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WetLink Penetrator Plug Wrench

Fastens the WLP plug with ease

$14.00 – $19.00

Select options

Please refer to the “Choosing the Correct Tools” section below for tool compatibility information.

You will also need:

- A 1/4 inch (6.3mm) or 3/8 inch (9.5 mm) square drive ratchet or torque wrench
- A way to secure the WetLink Assembly Block. This could be: a vice **or** 2x 6mm bolts **or** 2x M6X1.0 thread bolts

We highly recommend using the WLP tools for assembly. We’ve designed these tools for ease of assembly, especially if you’ll be putting together more than a few. If the WLP tools are not available, assembly can also be completed using common hand tools. Please refer to the “Choosing the Correct Tools” section below for compatible tool sizes.

Choosing the Correct Tools

The required Plug Wrench or hand tools depends on the size of the WetLink Penetrator. Use the “Compatible Tools” table below to find the correct tool sizes for the WetLink Penetrator you are assembling. Locate the correct row in the table by matching the “Seal

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Size" and "Bulkhead Size" columns to the WetLink Penetrator you are using. The WLP Assembly Block is used for all WetLink Penetrator sizes.

Plug Wrench: The compatible Plug Wrench is listed in the "Plug Wrench" column.

Hand tools: The compatible hand tool sizes for the Bulkhead and Plug are listed in the "Bulkhead/Nut Flat Size" column and the "Plug Hex Size" column respectively.

Square drive ratchet or torque wrench: Both the 11 mm and 14 mm Plug Wrench use a 1/4 inch (6.3) square drive. The 18 mm Plug Wrench uses a 3/8 inch (9.5 mm) square drive.

Compatible Tools

Seal Size	Bulkhead Size	Bulkhead Wrench	Bulkhead/Nut Flat Size	Bulkhead Installation Torque	Plug Wrench	Plug Hex Size	Plug Installation Torque
4.5	M06	WL-M06-BULKHEAD-WRENCH	12 mm	1 N·m	WLP-11MM-PLUG-WRENCH	11 mm	14 N·m
4.5	M10	WL-M10-BULKHEAD-WRENCH	16 mm	3.5 N·m	WLP-11MM-PLUG-WRENCH	11 mm	14 N·m
5.5, 6.5, 7.5, 8.5	M10	WL-M10-BULKHEAD-WRENCH	16 mm	3.5 N·m	WLP-14MM-PLUG-WRENCH	14 mm	14 N·m
9.5	M14	WL-M14-BULKHEAD-WRENCH	20 mm	3.5 N·m	WLP-18MM-PLUG-WRENCH	18 mm	20 N·m

* The WetLink Penetrator Assembly Block is compatible with all WetLink Penetrator sizes

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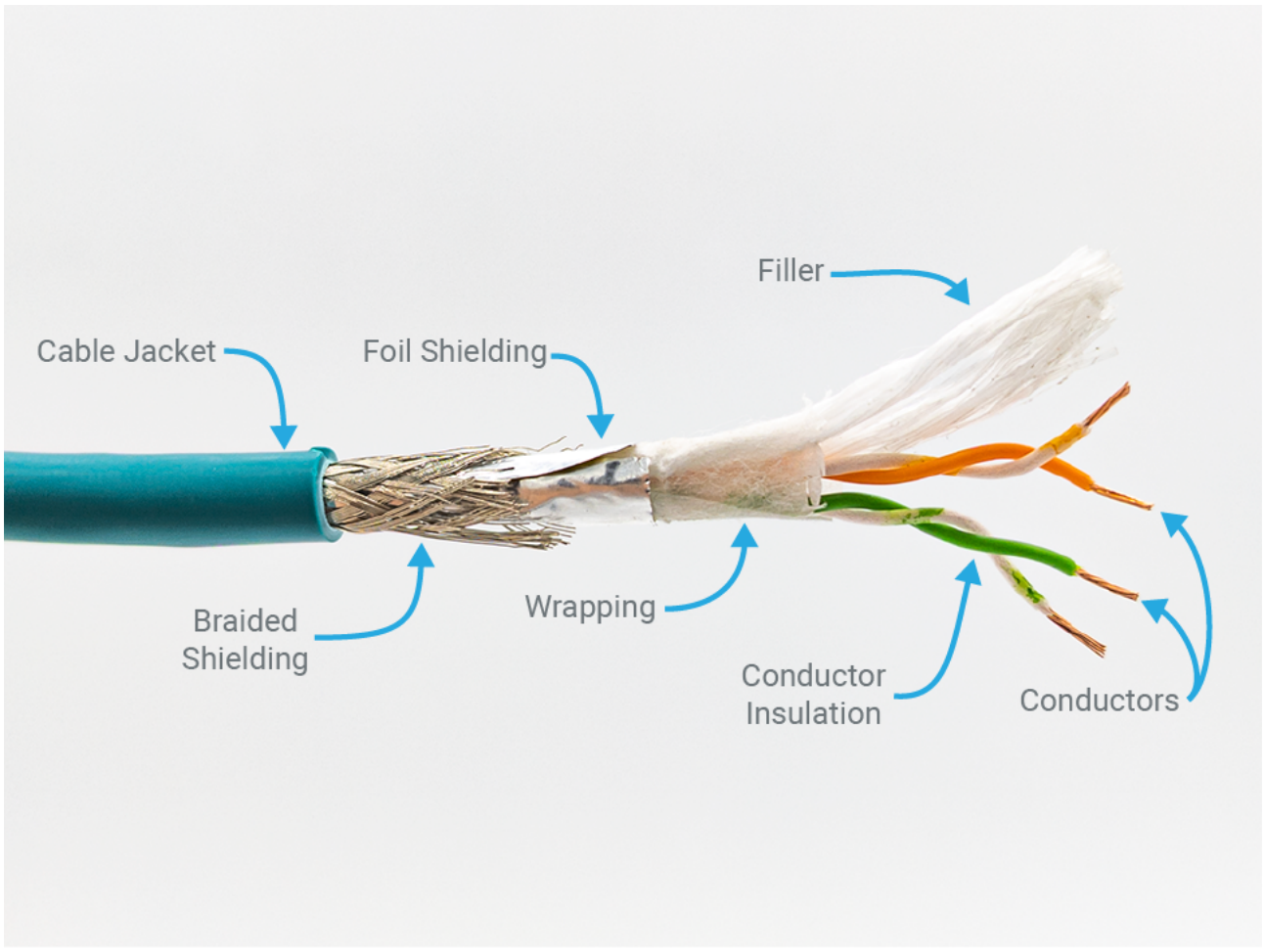
Parts of a WetLink Penetrator

Parts of a Cable



Prepping the Cable

The cable jacket must be properly stripped prior to assembly. Please visit our Cable Jacket Stripping Guide for information on how to properly strip cable for use with WetLink Penetrators:

Cable Stripping

Learn how to properly strip cables for use with WetLink Penetrators!

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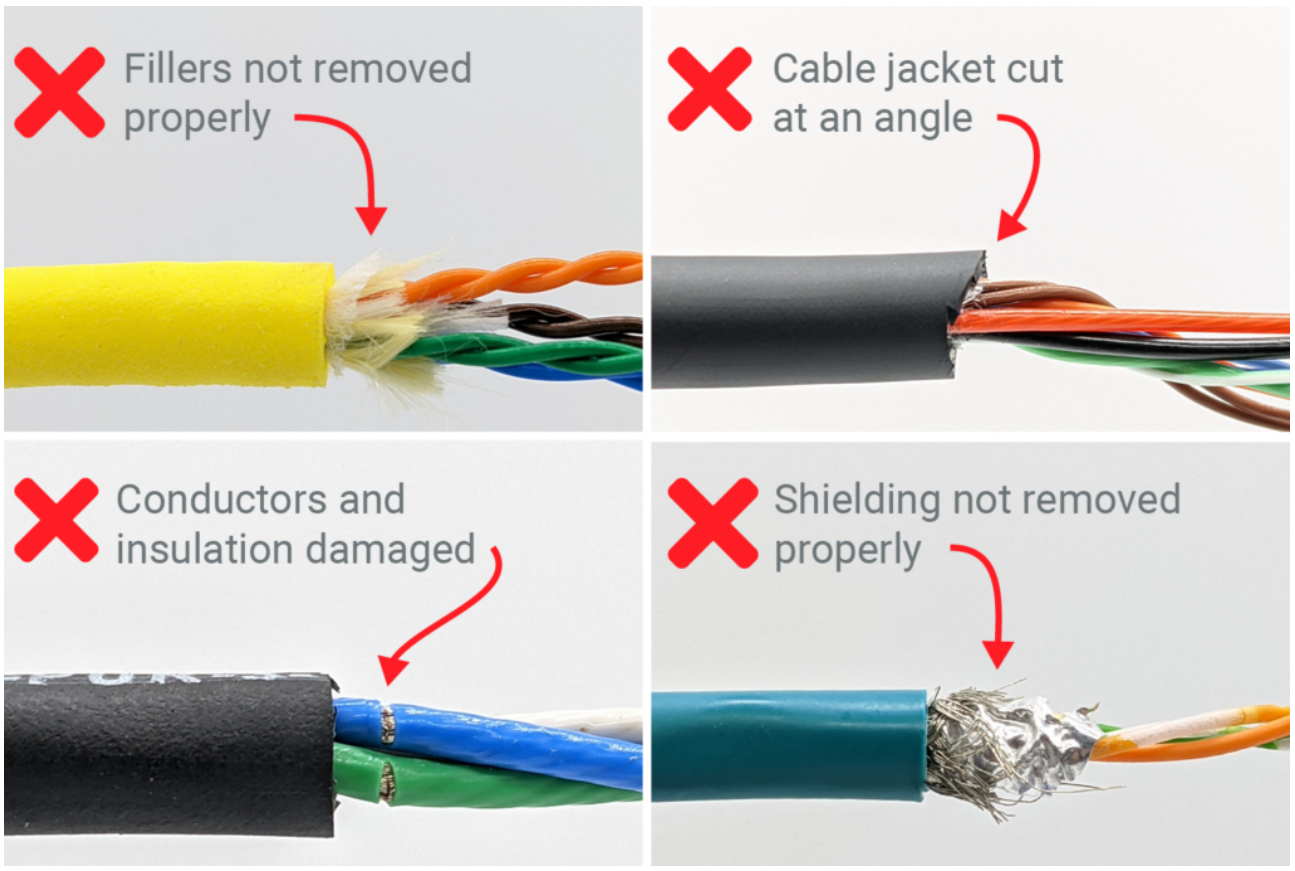
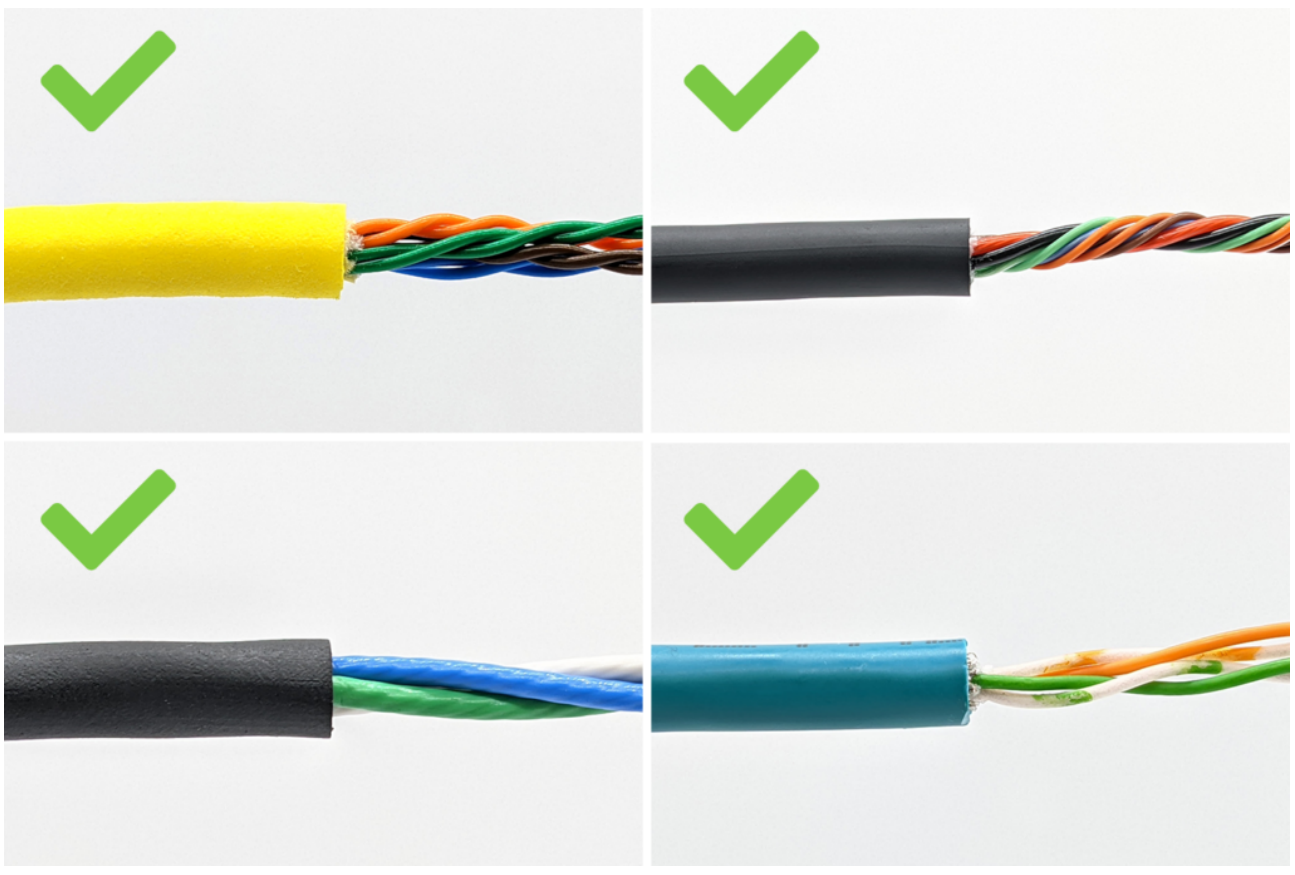
The basic guidelines for properly stripping cable for WetLink Penetrators are:

- **The cable jacket must be cut straight across, perpendicular to the cable.** A straight, perpendicular cut is necessary to allow the cable to seat fully into the penetrator and ensure proper performance.
- **Cable shielding, wrapping, and fillers must be removed cleanly.** Any loose shielding, wrapping, or fillers may prevent the cable from seating fully in the penetrator or interfere with the seal.
- **Avoid damaging the conductor insulation.** Accidentally cutting the insulation may lead to shorts between the conductors.

The following picture shows examples of improperly stripped cables.



The next picture shows examples of properly stripped cables.



Assembly

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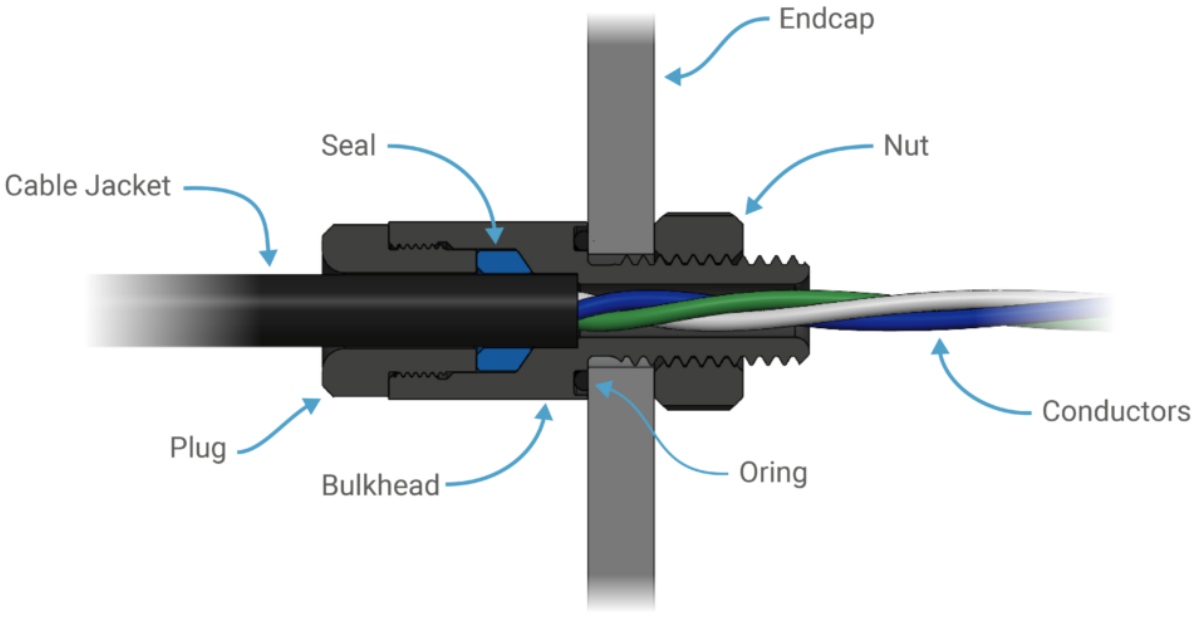

Cross section of an assembled WetLink Penetrator.

Video Tutorial

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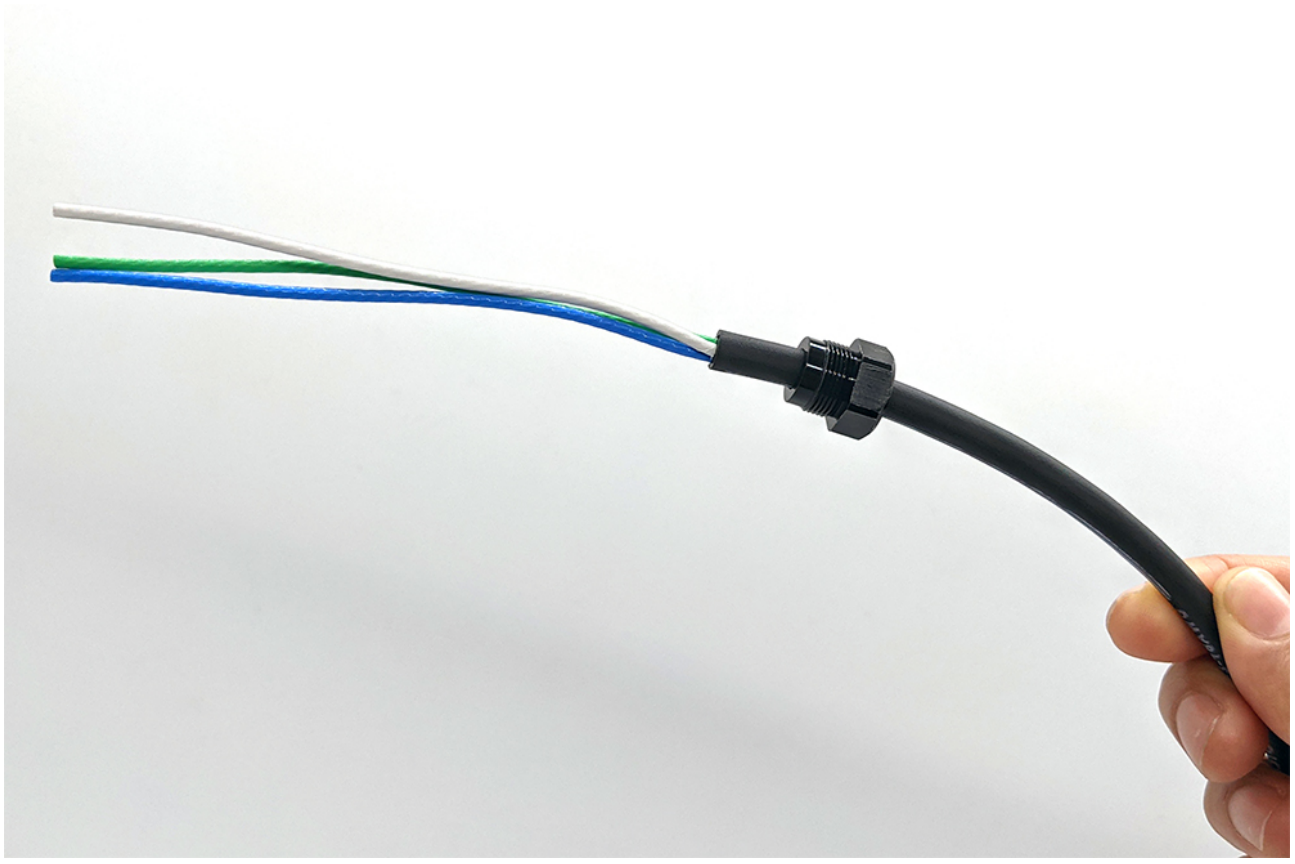
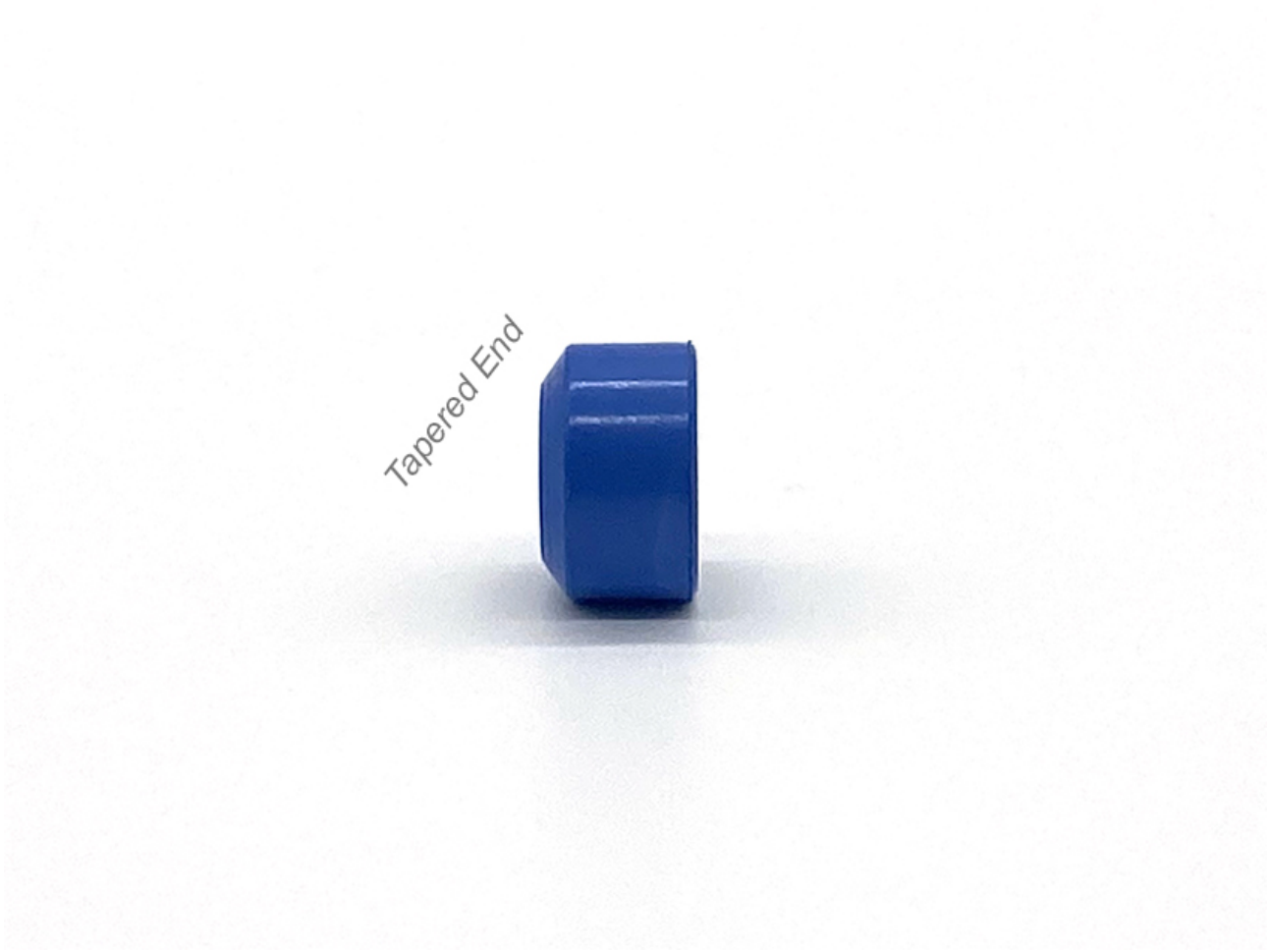
Install the Plug and Seal Onto Cable

1. Slide the plug onto the cable with the threads pointed towards the stripped end of the cable.

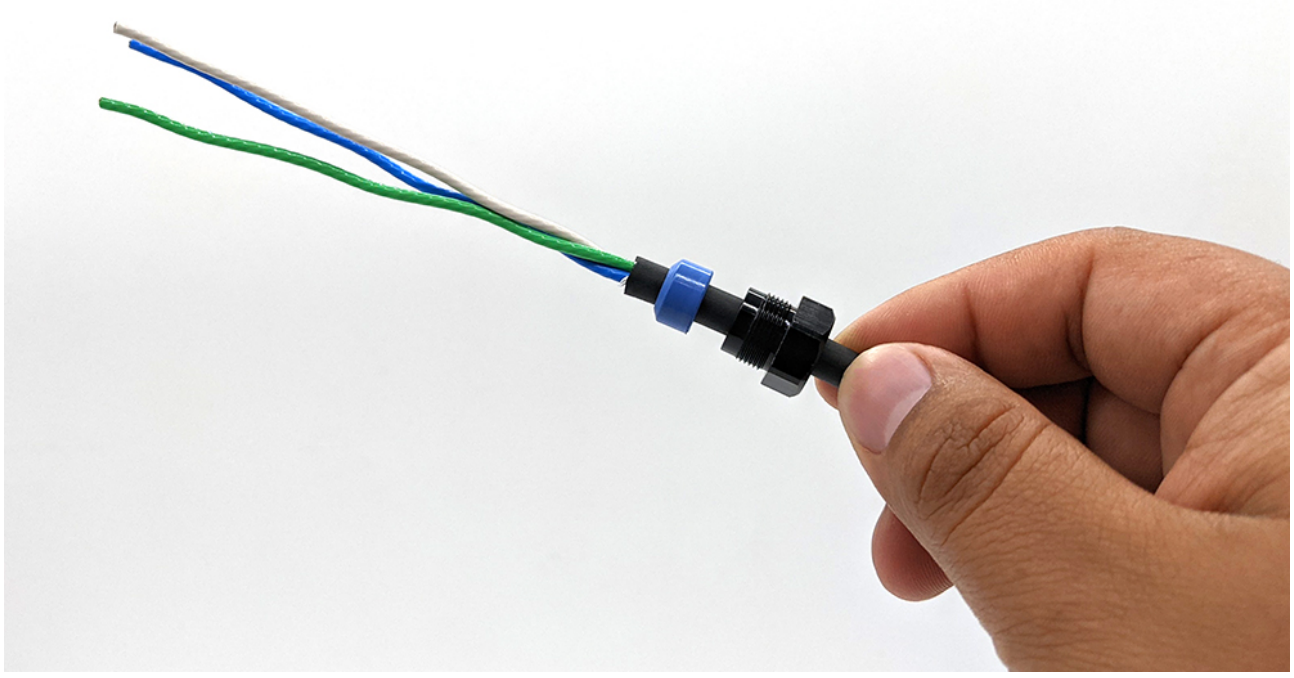


Plug installed on the cable.

2. Slide the seal onto the cable. The seal has a flat end and a tapered end, make sure the tapered end is pointing towards the stripped end of the cable.



Plug tapered end.



Plug and seal installed on the cable.

Prepping the Conductors

The next step involves inserting the conductors through the bulkhead. This sometimes may be difficult, especially if the cable has many conductors. It is important not to force the conductors through the bulkhead to avoid damaging the conductor insulation or the conductor itself. Below are some useful methods for easily inserting the conductors through the bulkhead without damage.

- **Twist the conductors into a tight, neat bundle.**

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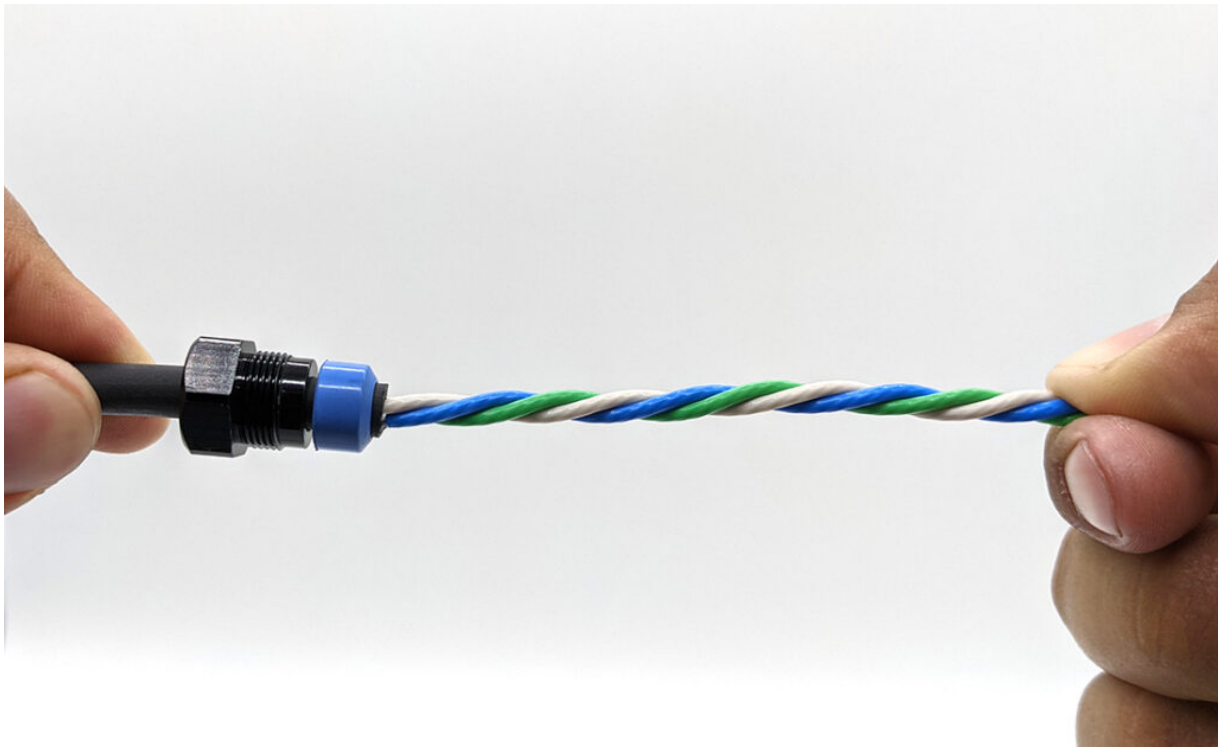

- **Twist the bulkhead onto the conductors.** Some cables have conductors that are already twisted, try turning the bulkhead in the direction of the twist as you insert the conductors through the bulkhead.

- **Tape the tip of the conductors.** Wrap a small piece of tape around the conductors to keep them together as you insert the conductors through the bulkhead.

- **Install heat shrink around the conductors.** Install a small piece of heat shrink around the conductors to keep them together as you insert the conductors through the bulkhead.

> Forcing the wires through the bulkhead without proper preparation may result in damage to the insulation or conductors, which will affect performance or compromise the watertight seal.

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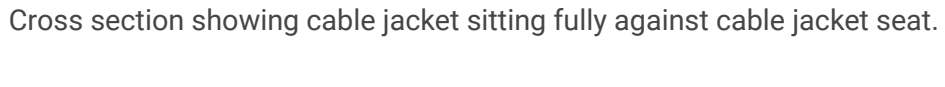
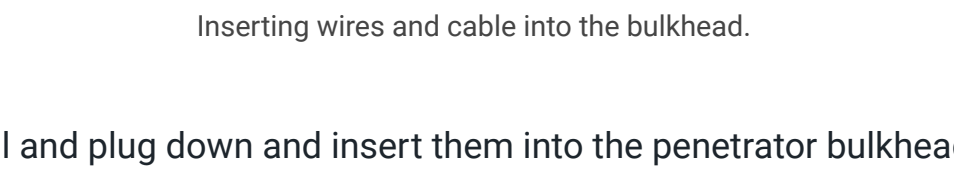
Installing into the Bulkhead

Insert the conductors and cable into the penetrator bulkhead. Make sure the cable jacket sits firmly and fully into the bulkhead. The cable jacket should be seated against the cable jacket seat.

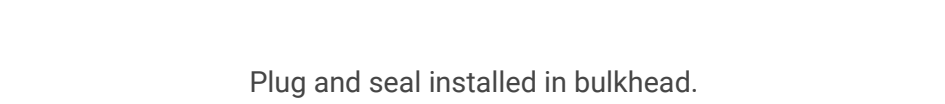


Cross section showing cable jacket sitting fully against cable jacket seat.



Inserting wires and cable into the bulkhead.

2. Slide the seal and plug down and insert them into the penetrator bulkhead. Use your fingers to thread the plug into the bulkhead. Make sure the cable jacket stays firmly seated against the cable jacket seat while doing so. It helps to gently pull on the wires while tightening the plug to ensure the cable stays seated against the jacket seat. Tighten until finger tight.



Plug and seal installed in bulkhead.

> ⚠ Failure to seat the cable fully against the jacket seat will compromise performance of the watertight seal.

Completing the Assembly

The rest of the assembly process can be completed using either the recommended WLP Tools or with common hand tools:

Using WLP Tools

For this step you will need:

- Compatible Plug Wrench (refer to the “Choosing the Correct Tools” section above)

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- Compatible square drive ratchet or torque wrench (refer to the "Choosing the Correct Tools" section above)
- WLP Assembly Block
- A vice **or** 2x 6mm diameter bolts **or** 2x M6X1.0 thread bolts

1. Secure the WLP Assembly Block to a table or work surface using a vice.

WLP Assembly Block secured with a vice.

The WLP Assembly Block can also be secured using 6mm bolts with the side-mounting through holes.

WLP Assembly Block side mounting holes.

Or with M6X1.0 thread bolts into the underside threaded mounting holes.

WLP Assembly Block underside mounting holes.

2. Insert the bulkhead with installed cable, plug, and seal into the appropriate space in the Assembly Block. The spaces are labeled according to the bulkhead size. The wires extending from the bulkhead should feed through and come out of the bottom of the Assembly Block.

Bulkhead in Assembly Block.

3. Attach the Plug Wrench onto a compatible square drive ratchet or torque wrench.

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Plug wrench on ratchet.

4. Tighten the plug using the Plug Wrench and ratchet until it bottoms out into the bulkhead with no gap, then turn an additional 1/16th of a turn. If using a torque wrench, the correct installation torque is provided in the “Plug Installation Torque” column of the Compatible Tools table.

Tightening the plug with Plug Wrench and ratchet.

Alternatively, the Plug Wrench can be turned by hand using the included lever bar.

Tightening the plug with Plug Wrench and lever bar.

Using Hand Tools

For this step you will need compatible hand tools for the size of WetLink Penetrator you are assembling. Refer to the “Choosing the Correct Tools” section above to select a compatible open ended wrench for both the bulkhead and plug.

1. Use an open-ended wrench to hold the penetrator bulkhead while tightening the plug.
2. Use another open-ended wrench to tighten the plug. Tighten the plug until it bottoms out into the bulkhead with no gap, then turn an additional 1/16th of a turn.

Using hand tools.

Check Your Work

After assembly, pull on the cable with around 5 to 10 pounds of force. The cable should stay firmly installed in the penetrator. If the cable comes out, the cable jacket was not seated all the way into the bulkhead or the plug was not fully seated.

It’s also a good idea to always vacuum test newly assembled penetrators before use in the field.

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Reusing a WetLink Penetrator

WetLink Penetrators are reusable. We recommend the Wetlink Penetrator Bulkhead and Plug be reused no more than 3 times to maintain performance. When reinstalling a WetLink Penetrator onto a cable, the seal **must** be replaced and the penetrator should be installed on a previously uncompressed section of cable jacket. Replacement WLP Seals are available here.

Feedback

We're always trying to make our documentation, instructions, and user experience better. If you'd like to leave feedback about how we can make this guide better, let us know here.

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