



Coaxial Cable Preparation Tools for Crimp Connectors

DXE-UT-KIT-CC1-INS-Revision 0b



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Introduction

This guide will explain the preparation of the most popular types of coaxial cable for use with **Crimp Style** connectors using the various specialized coaxial cable prep tools manufactured by DX Engineering.

The complete DX Engineering Coaxial Cable Stripping Tools for Crimp Style Connectors Kit **DXE-UT-KIT-CC1** is the perfect companion for the DX Engineering Ultra-Grip 2 Crimp Connector Hand Tool Kit - **DXE-UT-CRMP2** allowing you to prepare and crimp many styles of crimp-on connectors and coaxial cables.

These specialized tools were designed by DX Engineering and made in the USA to make the task of preparing coaxial cable for crimp style connectors easy, fast and safer than older methods. The cutting blades are automatically aligned in the tools for repeated, precise cutting action.

General Information

DX Engineering Coaxial Cable Stripping Tools for Crimp Style Connectors (drop cutters) provide a new way to prepare your 50 ohm coax cable for the installation of crimp type connectors. These handy coax cable strippers work on foam or solid dielectric cables with a precision, 2-step operation. DX Engineering strippers are made with premium long-lasting cutter blades for clean coaxial cable preparation.

Coaxial Cable with foil and braid should only use crimp style connectors. This includes LMR-400 and DXE-400MAX coaxial cable. Since the foil is aluminum, it does not lend itself to soldering.

Replacing blades in these tools is easy, the only tool needed is a Phillips screwdriver. The cutting blades are automatically aligned in the tools for repeated, precise cutting action.

Individual Coaxial Cable Stripping Tools for Crimp Style Connectors

There are four different colored DX Engineering Coaxial Cable Stripping Tools for Crimp Style Connectors:

DXE-UT-405C-P1 - **DARK RED** crimp prep tool

DXE-UT-240C-P1 - **SPRUCE GREEN** crimp prep tool

DXE-UT-405C-N1 - **ORANGE** crimp prep tool

DXE-UT-240C-N1 - **FLUORESCENT GREEN** crimp prep tool



Warning

The DX Engineering Coaxial Cable Stripping Tools for Crimp Style Connectors have four very sharp blades fixed in place to make the proper cuts in the coaxial cable. Take care to avoid touching the blades when working with these tools. They will cut your fingers.



Complete Kit

A complete tool kit is available **DXE-UT-KIT-CC1**. This kit includes:

DXE-UT-405C-P1 - **DARK RED** crimp prep tool

DXE-UT-240C-P1 - **SPRUCE GREEN** crimp prep tool

DXE-UT-405C-N1 - **ORANGE** crimp prep tool

DXE-UT-240C-N1 - **FLUORESCENT GREEN** crimp prep tool

DXE-UT-RB-CC1 10 pack of Spare Cutting Blades

DXE-CGH-8U Coaxial Cable Gripper, Red, for RG-213 sized coaxial cable

DXE-CGH-8X Coaxial Cable Gripper, Green, for 8X sized coaxial cable

CNL-911 Coaxial Cable Shears

DXE-170M Precision Braid Trimmer (may have red or blue handles)

DXE-UT-CC1-CASE Custom Hard Plastic Carry Case with Custom Cut Foam Insert

This kit is convenient, easy to transport and helps keep all of your coaxial cable prep tools for crimp style connectors in one organized place.

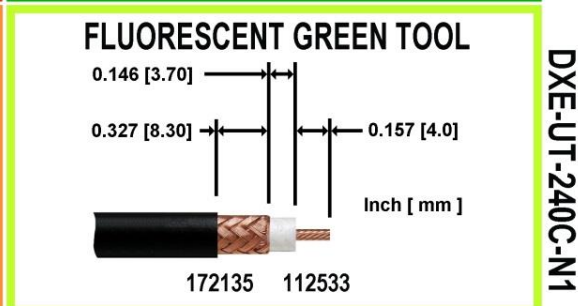
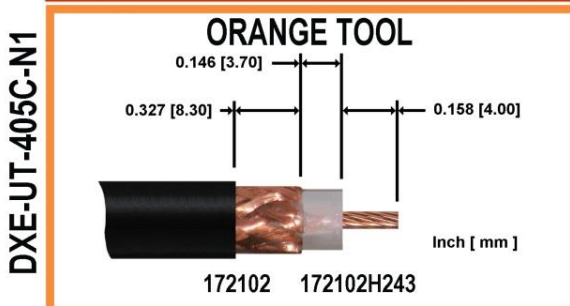
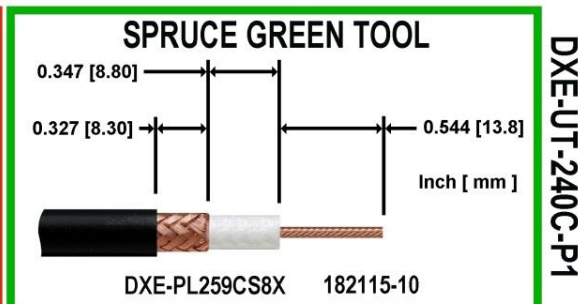
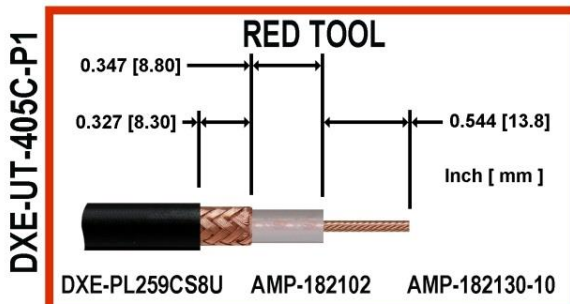
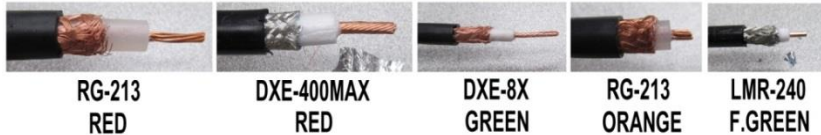


Connector/Tool/Coax Chart

Coaxial Cable Preparation Tool for Crimp Connectors	DXE-UT-405C-P1 Dark Red			DXE-UT-240C-P1 Spruce Green		DXE-UT-405C-N1 Orange		DXE-UT-240C-N1 Fluorescent Green	
Connector Type	PL-259			PL-259		Type N		Type N	BNC
Connector Part Number	DXE-PL259CS8U	AMP-182102	AMP-182130-10	DXE-PL259CS8X	AMP-182115-10	AML-172102	AMP-172102H243	AMP-172135	AML-112533
Use Die DXE-UT-	DIE-8U	DIE-8U	DIE-8U	DIE-8X	DIE-8X	DIE-8U	DIE-8U	DIE-8X	DIE-8X
Hex Crimp Center Pin*	Solder Pin	0.100	0.118	Solder Pin	0.068	0.100	0.118	0.100	0.068
Hex Crimp Ferrule*	0.429	0.429	0.429	0.255	0.255	0.429	0.429	0.255	0.255

Coax Cable Type	XX	XX	XX	XX	XX	XX	XX	XX	XX
DXE-400MAX	XX		XX				XX		
DXE-11U	XX	XX							
DXE-213U	XX	XX				XX			
DXE-8U	XX		XX				XX		
DXE-8X				XX	XX			XX	XX
LMR-240				XX	XX			XX	XX
LMR-400	XX		XX				XX		
LMR-400 UltraFlex	XX		XX				XX		
RG-213	XX	XX				XX			
RG-8 with 12-13 AWG center conductor	XX	XX				XX			
RG-8U with 10-11 AWG center conductor	XX		XX				XX		
RG-8X				XX	XX			XX	XX
Davis RF Bury Flex™	XX		XX				XX		
Belden 8214	XX		XX				XX		
Belden 9913F7	XX		XX				XX		
Belden 8237	XX	XX				XX			
Belden 8267	XX	XX				XX			
Belden 9258				XX	XX				

(* dimensions are in inches)



Using the Coaxial Cable Stripping Tools for Crimp Style Connectors

The following examples show only two of the Coaxial Cable Stripping Tools for Crimp Style Connectors. The same method is used for all four of the tools.

Coaxial Cable with foil and braid should only use crimp style connectors. This includes LMR-400 and DXE-400MAX coaxial cable. Since the foil is aluminum, it does not lend itself to soldering.

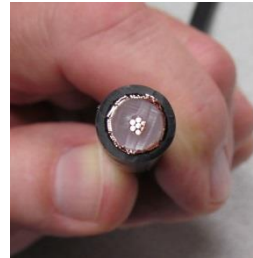
The foil shield that is used on certain types of coaxial cable (LMR-400, DXE-400MAX, etc.) may adhere to the dielectric more than others. In this case when prepping the coaxial cable, the foil shield may not come off. This is explained in detail in this procedure.

Most RG-213 type cables with a solid polyethylene dielectric will cut properly using the tool, but the part that needs to be removed may be strongly adhered to the center conductor(s). Some will twist off, others may need to be slit to break it loose from the center conductor. Take care to avoid damaging the center conductor(s). This is explained in detail in this procedure.

Example One: RG-213, LMR-400, DXE-400MAX and other similar sized coaxial cable

Note that all of the tools use the same technique. This example shows using the Red tool.

1. Make a clean cut using the CNL-911 Coaxial Cable Cutter. Once cut you can also use the CNL-911 to round out the end of the coaxial cable.



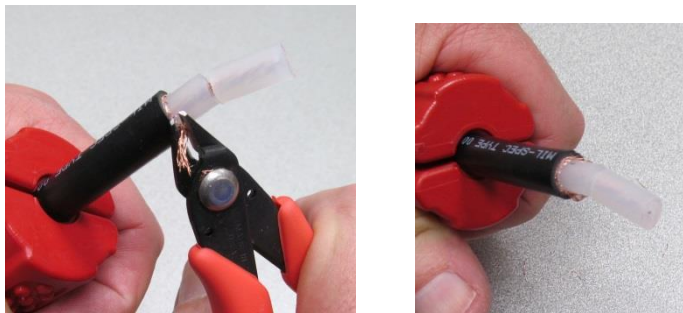
2. Place the coaxial cable in the tool on the end that has the three blades as shown. Use the Cable Gripper to help hold the coaxial cable. While holding the tools parallel to each other, squeeze the gripper to hold the coax and squeeze the cutting to make the initial cut in the coax. Rotate the coax cutter a few turns around the coax while squeezing to make the three cuts complete.



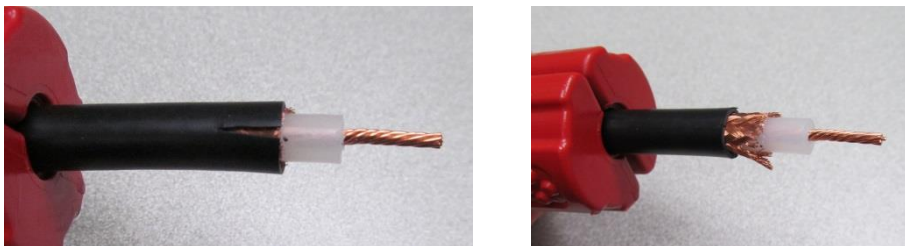
- Place the prepped coax cable into the other side of the pre tool that has the single blade. While gripping and firmly squeezing both the cable gripper and the tool pull the cutter off of the coaxial cable. This action puts a single length-wise slit in the coaxial cable jacket.



- Remove the two pieces of the coax jacket on the end to expose the center insulator. Some of the braid may still be present. Use the DXE-170M Precision Braid Trimmers to cut the braid even with the second cut as shown.



- Remove the end piece of the dielectric (see the “Notes about Coaxial Cables” on page 7) and peel off the last part of the cut jacket to expose the braid. Gently flare it out slightly and install the crimp style connector under the braid. Ensure the center conductor is straight so it will go into the center conductor of the connector.



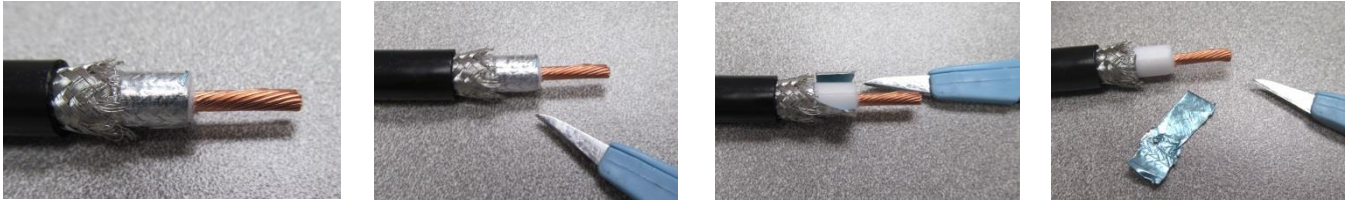
- Slip the connector onto the coaxial cable under the braid, then slip the coax connector ferrule into place. Crimp the ferrule and you’re ready to solder the center pin to complete the installation.



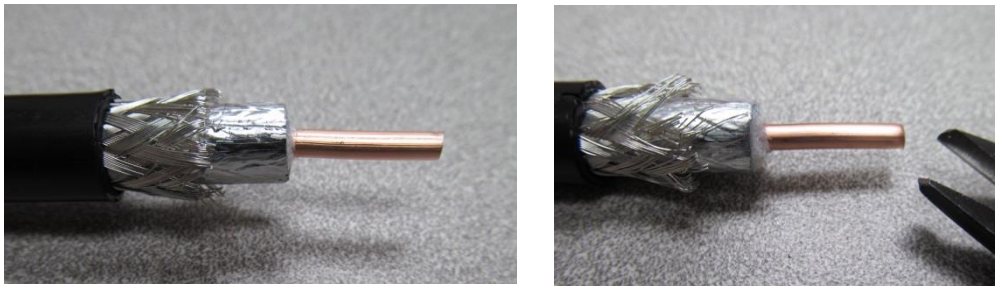
Notes about Coaxial Cables

Some coaxial cable has a foil shield between the braid and the dielectric such as DXE-400MAX and LMR-400. The DX Engineering foil is easy to remove while the LMR foil is bonded to the center dielectric.

When using the DX Engineering DXE-400MAX you can use a sharp knife to gently score the foil and remove it as shown below.

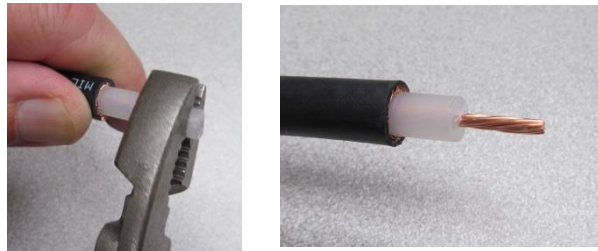


When using the LMR coaxial cable, the foil will not peel off. Use the DXE-170M Precision Braid Trimmers to put a slight bevel on the end of the dielectric, which will trim the foil back just a small distance as shown below.

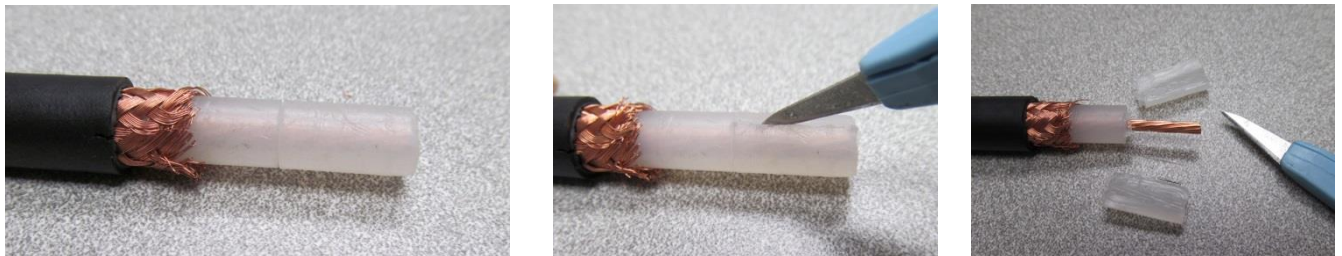


Most RG-213 type cables with a solid polyethylene dielectric will cut properly using the tool, but the end part of the dielectric that needs to be removed may be strongly adhered to the center conductor(s). Some will twist off, others may need to be slit to break it loose from the center conductor. Take care to avoid damaging the center conductor(s). The photos below show this method to remove the dielectric without damaging the center conductors.

This example uses pliers to gently remove the end piece of the dielectric.



This example shows cutting the dielectric to remove it from the center conductor strands.



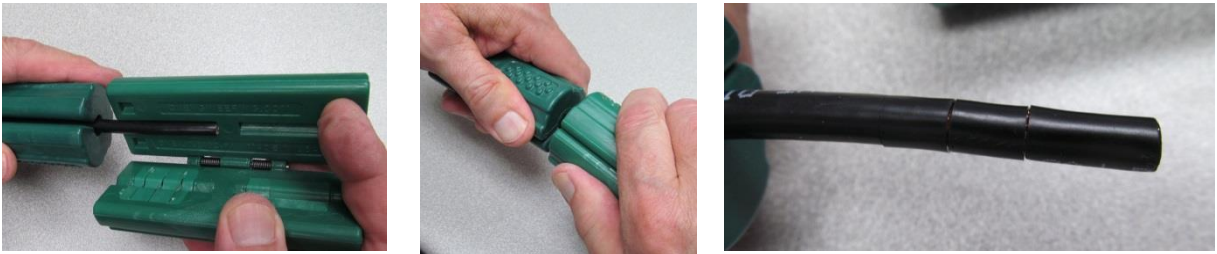
Example Two: DXE-RG8X, LMR-240 and other similar sized coaxial cable

Note: This example uses the GREEN tool. All of the tools use the similar technique shown.

1. Make a clean cut using the CNL-911 Coaxial Cable Cutter. Once cut you can also use the CNL-911 to round out the end of the coaxial cable.



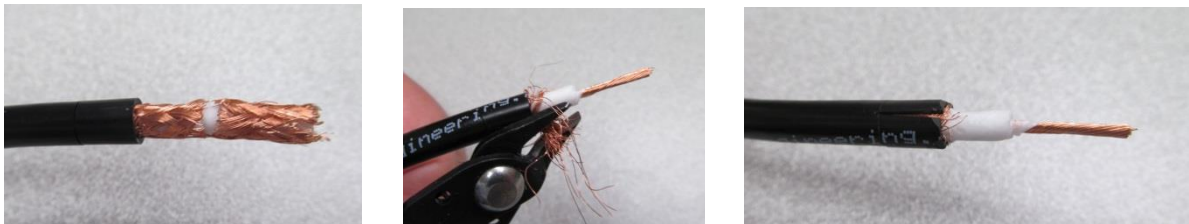
2. Place the coaxial cable in the tool on the end that has the three blades as shown. Use the Cable Gripper to help hold the coaxial cable. While holding the tools parallel to each other, squeeze the gripper to hold the coax and squeeze the cutting to make the initial cut in the coax. Rotate the coax cutter a few turns around the coax while squeezing to make the three cuts complete.



3. Place the prepped coax cable into the other side of the pre tool that has the single blade. While gripping and firmly squeezing both the cable gripper and the tool pull the cutter off of the coaxial cable. This action puts a single length-wise slit in the coaxial cable jacket.



4. Remove the two pieces of the coax jacket on the end to expose the center insulator. Some of the braid may still be present. Use the DXE-170M Precision Braid Trimmers to cut the braid even with the second cut as shown.



- Remove the last cut piece of the jacket and slightly flare out the braid. Install the coaxial connector on the coaxial cable. Ensure the center conductor is straight and the connector is under the braid as shown below.



Note: Some coaxial cables such as LMR-240 have a foil shield between the braid and the dielectric. See the “Notes About Coaxial Cables” on page 7 about trimming the foil.

- Slide the ferrule in place and you are ready to crimp the connector, then you are ready to solder the center conductor.



Replacing the Cutting Blades

The cutting blades used in the Coaxial Cable Stripping Tools for Crimp Style Connectors are all the same. If you suspect you are having a problem with a single cutting blade, it can be swapped with another blade in the tool. Replacement blades are available and come 10 to a pack, part number **DX-UT-RB-CC1**. The following instructions can be used for any of the four Coaxial Cable Stripping Tools for Crimp Style Connectors.



blades.

WARNING - The
Be careful when
to avoid any injuries.
blades in a manner that
accidentally injured by



blades are sharp.
handling the blades
Dispose of the old
no one else may get
one of the discarded

Changing the three cutting blades used for making the first cut on the coaxial cable

- Using a Phillips screwdriver, remove the Phillips screw holding the three blade retention parts in place.



- Using the small Phillips screwdriver, you can gently push the internal parts loose and remove the blade retainer parts from the tool.



- When the retainer parts and blades are laid out, it looks like the picture below. **Note: Each of the retainer parts has a small square and number molded into the part for easier assembly.**



- Starting with part number 1, insert the alignment pin and the first blade. **Note: The blade will only go in part number 1 one way (this is the same for all of the blades and the other retainer parts as well).**



- Add part number 2 and a cutting blade to the stack.



- Add part number 3 and a cutting blade to the stack.



- Add part 4 to the stack. Gently pick up the stack and place it in the tool. Not the alignment tab. The stack only goes into the tool one way. Gently push on the stack to fully seat it in the tool. **Be careful - sharp blades!**



- Replace the Phillips screw that held the stack in the tool.



Changing the cutting blade used for making the second cut on the coaxial cable

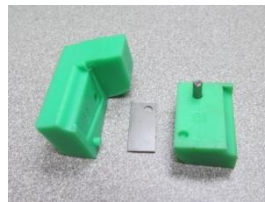
1. Using a Phillips screwdriver, remove the Phillips screw holding the single blade retention parts in place.



2. Using the small Phillips screwdriver, you can gently push the internal parts loose and remove the blade retainer parts from the tool.



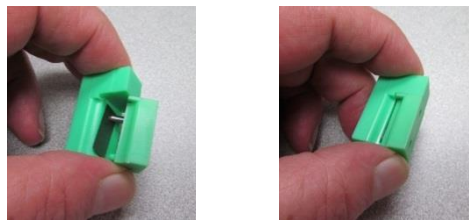
3. When the blade and retainer parts are laid out, it looks like the picture below.



4. Place the blade in place on the first part as shown. Note the blade will only go in one way.



5. Add the second retainer with the metal pin to the stack as shown.



6. Gently pick up the stack and place it in the tool. Note the way it is inserted into the tool. The stack only goes into the tool one way. There is an alignment tab. Gently push on the stack to fully seat it in the tool. ***Be careful - sharp blade!***



8. Replace the Phillips screw that held the blade retainer parts in the tool.



Weatherproofing

Over the years many different methods have been used to weatherproof coaxial cable connections. Some worked, some did not. Once water or condensation enters your coaxial cable, it will ruin the coaxial cable or worse yet, cause shorting or high SWR conditions which could lead to permanent damage to your transmitter.

One type of coaxial connector sealing material is a gummy tar like substance that you wrap around the coaxial connector. This gummy substance works well, except when you try to remove it for maintenance or coaxial cable replacement, it can cause further problems. The gummy substance just doesn't come off cleanly and small bits of it may remain in the threads of PL-259's or SO-239's. These small bits of material are mini-insulators, and could cause intermittent operation.

The method described here uses a combination of two types of tape which not only protect your coaxial connection, but also allow easy removal for future maintenance.

The two products, available from DX Engineering, used are:

3M Temflex™ 2155 Rubber Splicing Tape.

Conformable self-fusing super stretchy rubber electrical insulating tape. It is designed for low voltage electrical insulating and moisture sealing applications. For outdoor use, it should be protected from UV deterioration with an overwrap of Super 33+ tape.



Scotch® Super 33+.

Highly conformable tape for all weather applications. This tape provides flexibility and easy handling for all around performance. It also combines PVC backing with excellent electrical insulating properties to provide primary electrical insulation for splices up to 600V and protective UV resistant jacketing.



These tapes can be used indoors or outdoors. When used outdoors the temperature should be above freezing, and if it's raining, keep the assembly you are wrapping covered and dry while applying the tapes. Any airborne moisture such as fog, rain and snow may cause the tape to not stick properly, so take adequate precautions to protect the assembly you are weatherproofing.

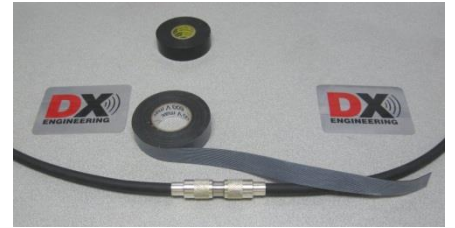
Additionally, the coaxial cable and connectors should be clean and free of any moisture, dirt or other residues.

The only tool you will need for this procedure is a pair of scissors. The following example uses two pieces of coaxial cable with PL-259 connectors that are joined together with a short UHF barrel connector. This same method may be used on any connection you are weatherproofing.



- A. Cut a piece of 3M Temflex™ 2155 Rubber Splicing Tape long enough to complete the job you are doing. If the length you cut is too short, that's okay. You can add more where needed and it will not compromise the weatherproofing.

In this example a 15" length of the 3M Temflex™ 2155 Rubber Splicing Tape was used to weatherproof two PL-259's tightly connected together with a short UHF barrel connector.



- B. The 3M Temflex™ 2155 Rubber Splicing Tape has a protective backing material so the tape will not stick to itself when on the roll. As shown below, peel this protective backing off of the length that you cut from the roll.



- C. Starting at one end, hold the end of the cut length of 3M Temflex™ 2155 Rubber Splicing Tape in place about one inch before the end of the PL-259 and stretch it out until the width of the tape is about 50% as shown below.

Starting



Stretched while overlapping wraps

- D. While keeping the 3M Temflex™ 2155 Rubber Splicing Tape stretched, wrap the tape around the assembly and overlap the previous wrap by about 50%. Keep going until the complete assembly is covered, and go an extra inch beyond. If the length you cut is too short for the entire assembly, that's okay. You can add more starting where the one piece ended (overlap it) and then continue on in the same manner described above. This completes the first layer wrap. 3M Temflex™ 2155 Rubber Splicing Tape requires an added wrap of Scotch® Super 33+ tape for UV protection.



- E. Starting about one inch before the previously installed 3M Temflex™ 2155 Rubber Splicing Tape start a wrap of the Scotch® Super 33+ tape. While wrapping, over lap the previous wrap by about 50%. Use firm pressure while wrapping to ensure the tape is on flat and there are no wrinkles or open spots.

Keep wrapping the Scotch® Super 33+ tape until you are about an inch past the end of the previously installed 3M Temflex™ 2155 Rubber Splicing Tape. Use the scissors to cut the tape rather than stretching and breaking the tape.



Using these quality products and this method, the completed weatherproofing will be complete and reliable.



Removal of Weatherproofing

There comes a time when you have to separate the previously weatherproofed coaxial cable connections for maintenance or some other reason. This is when you will be glad you used the above method and DX Engineering supplied products to put on the weatherproofing!

- A. Carefully cut the weatherproofing as shown. Be careful not to cut the coaxial cable, or your fingers. Peel the weatherproofing off and the assembly will look like new.



Looking at the removed weatherproofing, you can see the 3M Temflex™ 2155 Rubber Splicing Tape fully conformed to your connector assembly and fully protected the connectors when properly applied as described in this guide.

DX Engineering and Amphenol Connex coaxial cable crimp connectors available from DX Engineering:

DXE-PL259CS8U-6/12/24 DX Engineering Next Generation Crimp/Solder UHF Male

Silver plated PL-259 body, solder center conductor, 50 ohm, PTFE dielectric, crimp shield. For DXE-400 MAX, DXE-8U, DXE-RG-11/U, DXE-213U, RG-8/U, LMR-400 type, most RG-213/U and equivalent coax cables with center conductors up to 10 AWG. Sold in packages of 6, 12 or 24.



AML-182102 Amphenol UHF Male Crimp Connector 182102

Silver plated nickel body, shell and center pin. 50 ohm. PTFE dielectric. Nickel plated copper crimp ferrule. For some RG-8/U, most RG-213/U and equivalents with 12-13 AWG center conductors.



AMP-182130-10 Amphenol Connex UHF Male Crimp Connector 182130-10

Silver plated brass body, shell and center pin. Nickel plated copper crimp ferrule. 50 ohm. PTFE dielectric. Fits DXE-8U, DXE-400MAX, LMR-400 and equivalent cables and RG-8U with 10-11 AWG center conductors.



DXE-PL259CS8X-6/12/24 DX Engineering Next Generation Crimp/Solder UHF Male

Silver plated PL-259 body, solder center conductor, 50 ohm, PTFE dielectric, crimp shield. For DXE-8X, RG-8X, LMR-240 type and equivalent coax cables with center conductors up to 10 AWG. Sold in packages of 6, 12 or 24.



AMP-182115-10 Amphenol Connex UHF Male Crimp Connector 182115-10

Silver plated brass body, shell and center pin, nickel plated copper crimp ferrule. 50 ohm. PTFE dielectric. For RG-8X, LMR-240 and equivalent cables.



AMP-172102 Amphenol Connex N-Type Male Crimp Connector 172102

White bronze finished brass with gold plated contact. PTFE dielectric. 50 ohm. For RG-8 (with 12-13 AWG center conductors), RG-213 and equivalents.



AMP-172102H243 Amphenol Connex N-Type Male Crimp Connector

White bronze finished brass with gold plated contact. PTFE dielectric. 50 ohm. For DXE-400MAX, DXE-8U, RG-8 (with 10-11 AWG center conductors), LMR-400 and equivalents.



AMP-172135 Amphenol Connex N-Type Male Crimp Connector 172135

Coaxial Cable Connector, Solderless crimp, PTFE dielectric. N Type Male for RG-8X, LMR-240, 50 ohm.



AML-112533 Amphenol BNC Male Crimp Connector 112533.

Nickel finished brass with gold plated contact. Delrin dielectric. 50 ohm. For RG-8X, LMR-240, and equivalents.



DX Engineering Crimp Tool Kit - DXE-UT-KIT-CRMP2

The DX Engineering Ultra-Grip 2 Crimp Connector Hand Tool Kit is ready for you to make professional quality crimped coaxial cable assemblies, Powerpole® connectors and other popular size wire terminations.

The **DXE-UT-CRMP2** Ultra-Grip 2 Crimp Connector Hand Tool is a quality ratcheting steel crimper, ergonomically shaped for power, with soft non-slip dual color thermoplastic rubber grips for comfortable and positive connector crimping results. The Ultra-Grip 2 Crimp Connector Hand Tool is also made from high quality carbon steel with black oxide finish for corrosion resistance and durability. The **DXE-UT-CRMP2** Ultra-Grip 2 Crimp Connector Hand Tool features high crimping quality that is repeatable with precision dies and their integral locking mechanism.

The DX Engineering Ultra-Grip 2 Crimp Connector Hand Tool Kit, model **DXE-UT-KIT-CRMP2**, provides a handsome, convenient carrying case furnished with the Ultra-Grip 2 Crimp Connector Hand Tool, cable cutting, braid snipping tool and all five crimp die sets with a precut foam insert providing a home for each tool and die set. The coaxial cable connector dies are designed to crimp the full ferrule and the center pin.



Guide Updates

Every effort is made to supply the latest guide revision. Occasionally a guide will be updated between the time your DX Engineering product is shipped and when you receive it. Please check the DX Engineering web site (<http://www.dxengineering.com>) for the latest revision guide.

Technical Support

If you have questions about these products, or if you experience difficulties during using these instructions, contact DX Engineering at (330) 572-3200. You can also e-mail us at:

DXEngineering@DXEngineering.com

For best service, please take a few minutes to review this guide before you call.

Warranty

All products manufactured by DX Engineering are warranted to be free from defects in material and workmanship for a period of one (1) year from date of shipment. DX Engineering's sole obligation under these warranties shall be to issue credit, repair or replace any item or part thereof which is proved to be other than as warranted; no allowance shall be made for any labor charges of Buyer for replacement of parts, adjustment or repairs, or any other work, unless such charges are authorized in advance by DX Engineering. If DX Engineering's products are claimed to be defective in material or workmanship, DX Engineering shall, upon prompt notice thereof, issue shipping instructions for return to DX Engineering (transportation-charges prepaid by Buyer). Every such claim for breach of these warranties shall be deemed to be waived by Buyer unless made in writing. The above warranties shall not extend to any products or parts thereof which have been subjected to any misuse or neglect, damaged by accident, rendered defective by reason of improper installation, damaged from severe weather including floods, or abnormal environmental conditions such as prolonged exposure to corrosives or power surges, or by the performance of repairs or alterations outside of our plant, and shall not apply to any goods or parts thereof furnished by Buyer or acquired from others at Buyer's specifications. In addition, DX Engineering's warranties do not extend to other equipment and parts manufactured by others except to the extent of the original manufacturer's warranty to DX Engineering. The obligations under the foregoing warranties are limited to the precise terms thereof. These warranties provide exclusive remedies, expressly in lieu of all other remedies including claims for special or consequential damages. SELLER NEITHER MAKES NOR ASSUMES ANY OTHER WARRANTY WHATSOEVER, WHETHER EXPRESS, STATUTORY, OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS, AND NO PERSON IS AUTHORIZED TO ASSUME FOR DX ENGINEERING ANY OBLIGATION OR LIABILITY NOT STRICTLY IN ACCORDANCE WITH THE FOREGOING.

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Specifications subject to change without notice.



DXE-UT-KIT-CC1-INS