



CURRENT OH 5000 and 6000 Series

Install Guide

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CURRENT OH 5000 and 6000 Series Install Guide

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Revision History

ECO	Revision	Effectivity Date	Description of change
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C02774	D	3/19/2009	Added CURRENT LV Repeater 6511 and power wire safety note.

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Chapter 1 – Introduction

1. Introduction

Powerline workers must meet both requirements listed below to be allowed to install the equipment of the CURRENT 5000 and 6000 series:

- 1. Be qualified to perform work in the utility power zone (see OSHA 1910.269).**
- 2. Receive appropriate CURRENT training specific to the CURRENT 6000 series (training course CURRENT 6000 F101 – CURRENT 6000 Field Installation of CURRENT equipment or the equivalent).**

1.1 Purpose

This manual contains the procedures for installing the CURRENT Broadband over Power line (BPL) series equipment on the Overhead (OH) system. This manual covers the equipment listed in *Table 1*.

BPL OH Equipment
CT Coupler [®] OH 5000-15 (#210-0080-xxxx)
CT Coupler [®] OH 5000-25 (#210-0088-xxxx)
CT Coupler URD 5010rp (#210-0160-xxxx)
CURRENT Bridge OH 6021 (#210-0181-0003)
CT Backhaul-Point [®] OH 5000g (#210-0135-xxxx)
CURRENT Gateway-Bridge OH 6030 (#210-0181-0008)
CT LVR [™] OH 5000 (#210-0129-xxxx)

Table 1 – OH Equipment

Please direct questions or requests for support to your ground supervisor.

1.2 Overview

The *CURRENT*[®] BPL solution provides broadband access to residential and business customers over power lines. The *pole assembly* is the piece of the solution installed on utility poles. An example of the pole assembly is shown in *Figure 1*.

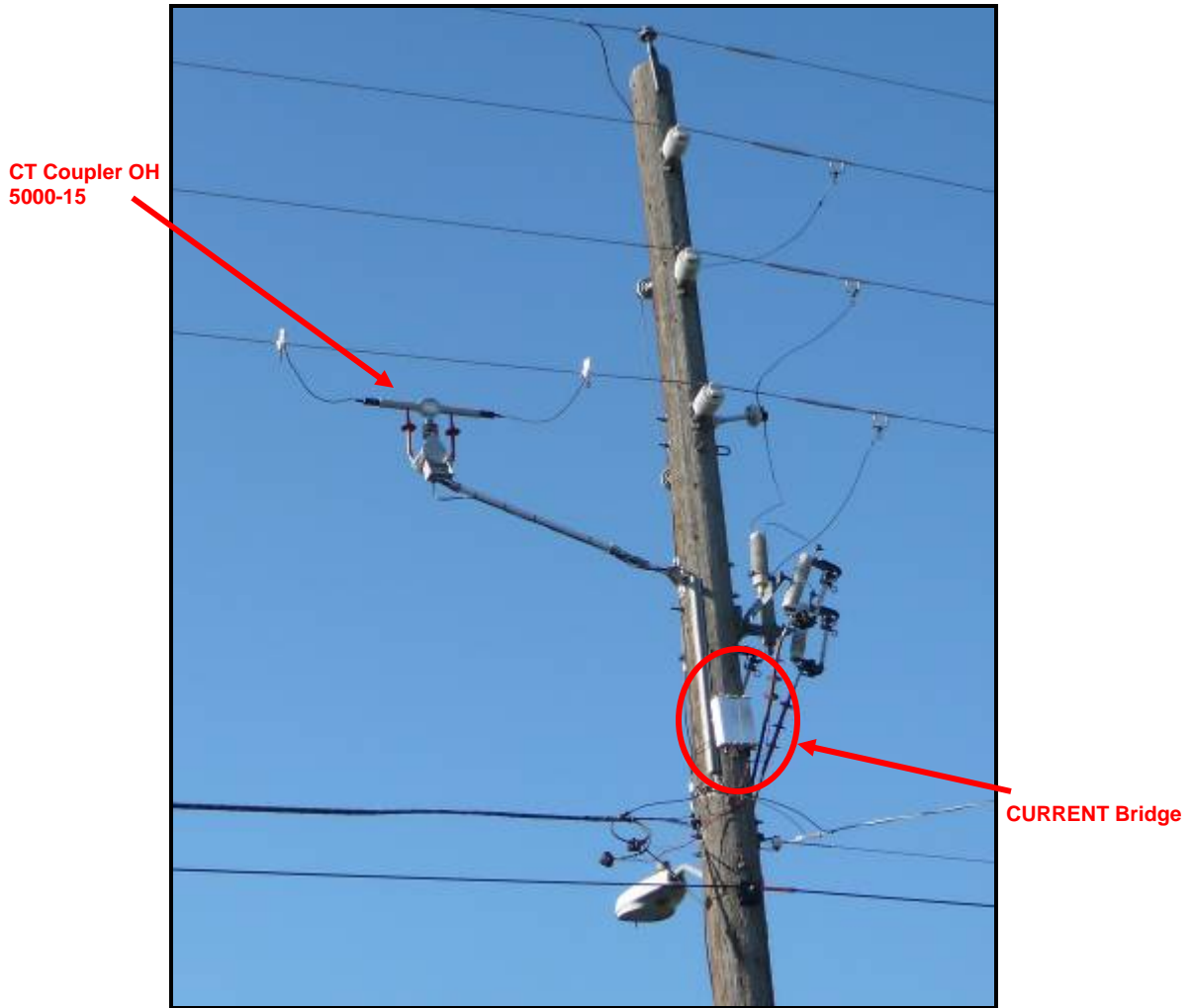


Figure 1 – Pole Assembly

- CURRENT Bridge OH 6021– routes and controls data traffic between the secondary and primary lines on the overhead power lines. Also provides the gateway between the BPL equipment and the backhaul network at the riser pole.
- CT Backhaul-Point OH 5000g or CURRENT Gateway-Bridge OH 6030 – provides the gateway between the BPL equipment and the backhaul network at the UG Termination pole.
- CT Coupler OH 5000-15/25 – couples the signal to the primary cable at each pole where a CURRENT Bridge OH 6021 or CT Backhaul-Point OH 5000g is installed.
- CT Coupler URD 5010rp – couples the signal to the primary cable at a UG Termination pole where a CURRENT Bridge OH 6021 or CT Backhaul-Point OH 5000g is installed.

1.2.1 FCC Compliance

The statement below refers to CURRENT equipment - CURRENT Bridge OH 6021, CT Backhaul-Point OH 5000g, and CT Coupler OH 5000-15/25.

These devices comply with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) These devices may not cause harmful interference, and (2) these devices must accept any interference received, including interference that may cause undesired operation.

1.3 Standards and Organization

The following conventions are used in this document:

<u>Convention</u>	<u>Description</u>
1. Numbered list	Provides step-by-step procedures for performing an action
➤ Bulleted list	Provides grouped information, not procedural steps

This manual has the following chapters:

- *Chapter 2 – General Guidelines for Install:* This chapter describes the tools and preparation needed before beginning the installation of the CURRENT BPL equipment
- *Chapter 3 – CT Coupler OH 5000:* This chapter describes how to install the CT Coupler OH 5000 on the overhead power lines.
- *Chapter 4 – CT Coupler URD 5010rp:* This chapter describes how to install the CT Coupler URD 5010rp on UG Termination poles.
- *Chapter 5 – CT Backhaul-Point OH 5000g:* This chapter describes how to install the CT Backhaul-Point OH 5000g on overhead poles.
- *Chapter 6 – CURRENT Bridge OH 6021:* This chapter describes how to install the CURRENT Bridge OH 6021 on the overhead poles.

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- *Chapter 7 – CURRENT Gateway-Bridge OH 6030:* This chapter describes how to install the CURRENT Gateway-Bridge OH 6030 on UG Termination poles.
- *Chapter 8 – CURRENT LV Repeater 6511:* This chapter describes how to install the CURRENT LV Repeater 6511 on the overhead poles.
- *Chapter 9 – CT LVR OH 5000:* This chapter describes how to install the CT LVR OH 5000 on the overhead poles.
- *Appendix A – Truck BOM:* This appendix lists all the components needed when installing CURRENT BPL equipment.
- *Appendix B – Installation Drawings:* This appendix contains detailed installation drawings of the CURRENT BPL equipment.
- *Appendix C – EMB Mounting Distance:* This appendix contains the distances between the EMB and the pole ground.
- *Appendix D – CURRENT Backhaul Point 6420 BOM:* This appendix lists the materials needed to install the CURRENT Backhaul Point 6420 with the OH equipment.
- *Appendix E – Hubbell Installation Specification Sheet:* This appendix contains the specification sheet for the Hubbell hot line clamps used on the CT Coupler.
- *Index –* Reference section to direct the user to pertinent sections within this guide.

1.4 Installation Configuration

Table 2 shows the typical installation configuration that can be used when installing the CURRENT BPL solution.

Assembly Kit	Components	P/N	Qty
CT Coupler 5000 with CURRENT Bridge OH 6021 – installed at overhead poles	CURRENT Bridge OH 6021	210-0181-0003	1
	CT Coupler OH 5000-15 or CT Coupler OH 5000-25	210-0080-xxxx or 210-0088-xxxx	1
CT Coupler URD 5010rp with CURRENT Bridge OH 6021 – installed at UG Termination pole	CURRENT Bridge OH 6021	210-0181-0003	1
	CT Coupler URD 5010rp	210-0160-xxxx	1
Dual CURRENT Bridge OH 6021 –installed at overhead poles	CURRENT Bridge OH 6021	210-0181-0003	2
	CT Coupler OH 5000-15/25 or CT Coupler URD 5010rp	210-0080/8-xxxx or 210-0160-xxxx	1
CT Coupler 5000 with CT Backhaul-Point OH 5000g – installed at overhead poles	CT Backhaul-Point OH 5000g	210-0135-xxxx	1
	CT Coupler OH 5000-15 or CT Coupler OH 5000-25	210-0080-xxxx or 210-0088-xxxx	1
CT Coupler URD 5010rp with CT Backhaul-Point OH 5000g – installed at UG Termination pole	CT Backhaul-Point OH 5000g	210-0135-xxxx	1
	CT Coupler URD 5010rp	210-0160-xxxx	1
CT Coupler URD 5010rp with CURRENT Gateway-Bridge OH 6030 – installed at UG Termination pole	CURRENT Gateway-Bridge OH 6030	210-0181-0008	1
	CT Coupler URD 5010rp	210-0160-xxxx	1
CURRENT Gateway-Bridge OH 6030 with CT Backhaul-Point OH 5000g – installed at UG Termination pole	CURRENT Gateway-Bridge OH 6030	210-0181-0008	1
	CT Backhaul-Point OH 5000g	210-0135-xxxx	1
	CT Coupler URD 5010rp	210-0160-xxxx	1
CURRENT LV Repeater 6511 – installed at overhead poles	CURRENT LV Repeater 6511	210-0181-0007	1
CT LVR OH 5000 – installed at overhead poles	CT LVR OH 5000	210-0129-xxxx	1

Table 2 – Installation Configuration

► **Note**

The CURRENT Backhaul Point 6420 (#210-0202-0001) can be mounted with the CURRENT Bridge OH 6021 or the CT Backhaul-Point OH 5000g. Please refer to the *CURRENT Backhaul Point 6420 Install Guide* (#520-0043-0001) for the complete installation details. For quick reference on which components are needed for this type of install see *Appendix E*.

1.5 Acronyms

Acronym	Definition
BP	CT Backhaul-Point OH 5000g
BPL	Broadband over Power Line
EMB	Equipment Mounting Bracket
LV	Low Voltage (secondary lines)
LVR	Low Voltage Repeater
MV	Medium Voltage (primary lines)
OH	Overhead
RF	Radio Frequency

1.6 Definitions

Term	Definition
UG Terminal Pole	A pole which serves as the overhead connection to the URD system. Sometimes called riser pole or dip pole.

1.7 Reference

Doc #	Title
520-0041-0001	CURRENT URD 6000 Series Install Guide
520-0030-0001	CURRENT Universal Splitters – Installation Scenarios
520-0043-0001	CURRENT Backhaul Point 6420 Install Guide

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Chapter 2 – General Guidelines for Installation

2. General Guidelines for Installation

This section describes the general guidelines, requirements and safety concerns applicable to all installations of *CURRENT's* Broadband over Power Line solution. Please direct questions or requests for support to your ground supervisor.

Powerline workers must meet both requirements listed below to be allowed to install the equipment of the CURRENT 5000 and 6000 series:

- 1. Be qualified to perform work in the utility power zone (see OSHA 1910.269).**
- 2. Receive appropriate *CURRENT* training specific to the CURRENT 6000 series (training course CURRENT 6000 F101 – CURRENT 6000 Field Installation of CURRENT equipment or the equivalent).**

2.1 Safety

2.1.1 Crew requirements

Powerline workers must be qualified to perform work in the utility power zone (OSHA 1910.269) to be able to install the *CURRENT* BPL equipment listed in *Chapter 1*.

2.1.2 Pole Selection Requirements

The National Electrical Safety Code requires that there be a vertical Communications Worker Safety Zone between the lower limit of the Power Zone and the upper limit of the Communications Zone (*NESC Rule 235C. Vertical Clearance Between Line Conductors 1. & 4.*). NESC Table 235-5 states the allowable size of the mandatory Communications Worker Safety Zone.

All BPL equipment being installed on a standard pole or riser pole must be installed in the Power Zone **and cannot extend below the Power Zone**. *Figure 2* illustrates these zones.

Due to the variances in utility pole layouts, it is difficult to specify the exact dimensions for the BPL equipment layout. The word “approximately” is often used throughout this install guide. This is to allow the lineperson some flexibility in the location where the equipment is installed. The BPL equipment should not be installed in such a way as to impede the climbing of the pole and/or the maintenance of the utility equipment on that pole. The installation must be done in accordance with the utility approved standard.

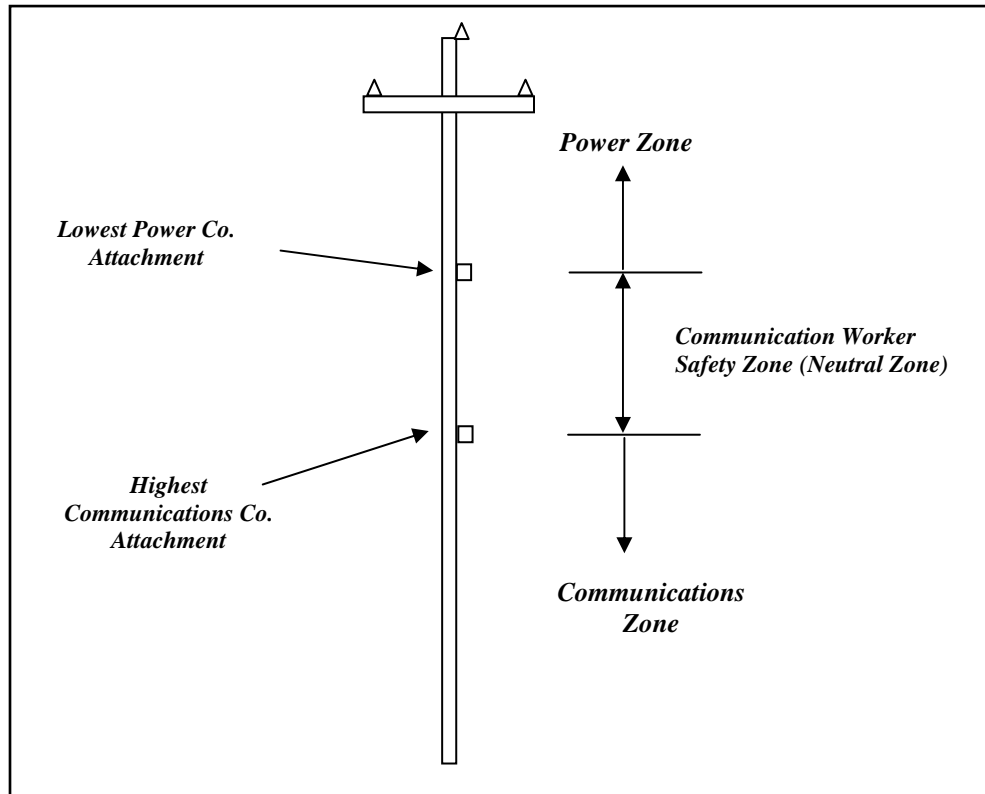


Figure 2 – Location for Equipment Installation

Any pole that is **not bucket truck accessible** is required to have sufficient climbing space. This means that at least one of the four sides of the pole must be clear of equipment.

2.1.3 Approved Equipment

- Only approved equipment shall be installed.
- Only equipment which has a label with an appropriate voltage rating may be installed in the utility power zone.

2.1.4 Site Safety Inspection

- Mechanical Inspection: Verify that a ground rod and ground wire have been properly installed on the riser pole or transformer cabinet.
- If the site fails any inspection, perform the proper action per accepted procedures.
- Record results of mechanical safety inspection.

2.1.5 Clearances

All equipment must be installed with the appropriate clearances as shown in the installation drawings. Please refer to *Appendix B* for the complete set of installation drawings.

2.1.6 OH Grounding Instructions

CURRENT's OH equipment needs to be grounded via the pole ground and primary neutral. If there is no pole ground in place, then one needs to be run. The only exception to this rule is the following:

- If the base of the pole is completely surrounded by concrete, brick, or paving, then no pole ground is required as long as a pole ground exists within ten (10) pole spans of the location.

If a new pole ground is installed, it must be installed according to utility specifications (refer to your utility pole ground drawing).

2.2 Tools and Equipment

2.2.1 Tools and Truck Stock

Appendix A provides a complete list of all the equipment needed for the install of the CURRENT broadband overhead equipment. The list is grouped by component install and includes the number of components needed per pole or transformer. This amount is a suggested amount. The actual amount needed will vary depending on the pole or transformer, the size of the wire being used, etc.

2.3 Removing Equipment

Disassemble the components in the reverse sequence from assembly. Be sure to trim all wires connected to the secondary wire to the insulation, so that no bare wire is visible.



WARNING

The drain/ground wire must not be removed before the CT Coupler is de-energized. Removing the RF Drain/ground wire before the CT Coupler is de-energized may result in serious injury or death.

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Chapter 3 – CT Coupler OH 5000

3. CT Coupler OH 5000

This chapter describes the procedure for installing the CT Coupler OH 5000-15/25. Please direct questions or requests for support to your ground supervisor.

The CT Coupler is the device in a Broadband over Power Lines (BPL) solution that transfers the communications signal to and from the primary distribution line. It works in conjunction with other components in a pole assembly.

The CT Coupler OH 5000-15 is rated for use on a 15kV-class phase-to-phase (8.6kV phase-to-ground) distribution system. The CT Coupler OH 5000-25 is rated for use on a 25kV-class phase-to-phase (14.4kV phase-to-ground) distribution system.

There are two main configurations for installing the CT Coupler. These are:

- EMB mount – described in *section 3.4.1*
- Cross Arm mount – described in *section 3.4.3*

Powerline workers must meet both requirements listed below to be allowed to install the equipment of the CURRENT 5000 and 6000 series:

- 1. Be qualified to perform work in the utility power zone (see OSHA 1910.269).**
- 2. Receive appropriate CURRENT training specific to the CURRENT 6000 series (training course CURRENT 6000 F101 – CURRENT 6000 Field Installation of CURRENT equipment or the equivalent).**

3.1 Products Required

The following items are required to install a CT Coupler:

- CT Coupler OH 5000-15 (#210-0080-xxxx) *or*
- CT Coupler OH 5000-25 (#210-0088-xxxx)
 - CT Coupler Hanging Bracket (#240-0141-xxxx)
- A standard set of consumables on the truck as identified in the CURRENT truck stock. Please refer to *Appendix A* for a complete listing of the items needed to install the CT Coupler.

The CT Coupler attaches to a CURRENT Bridge OH 6021 or a CT Backhaul-Point OH 5000g.

3.2 Nomenclature

Figure 3 illustrates and shows the names of the various parts of the CT Coupler using the 15kV Coupler. Figure 4 shows the 25kV for comparison with the 15kV Coupler.

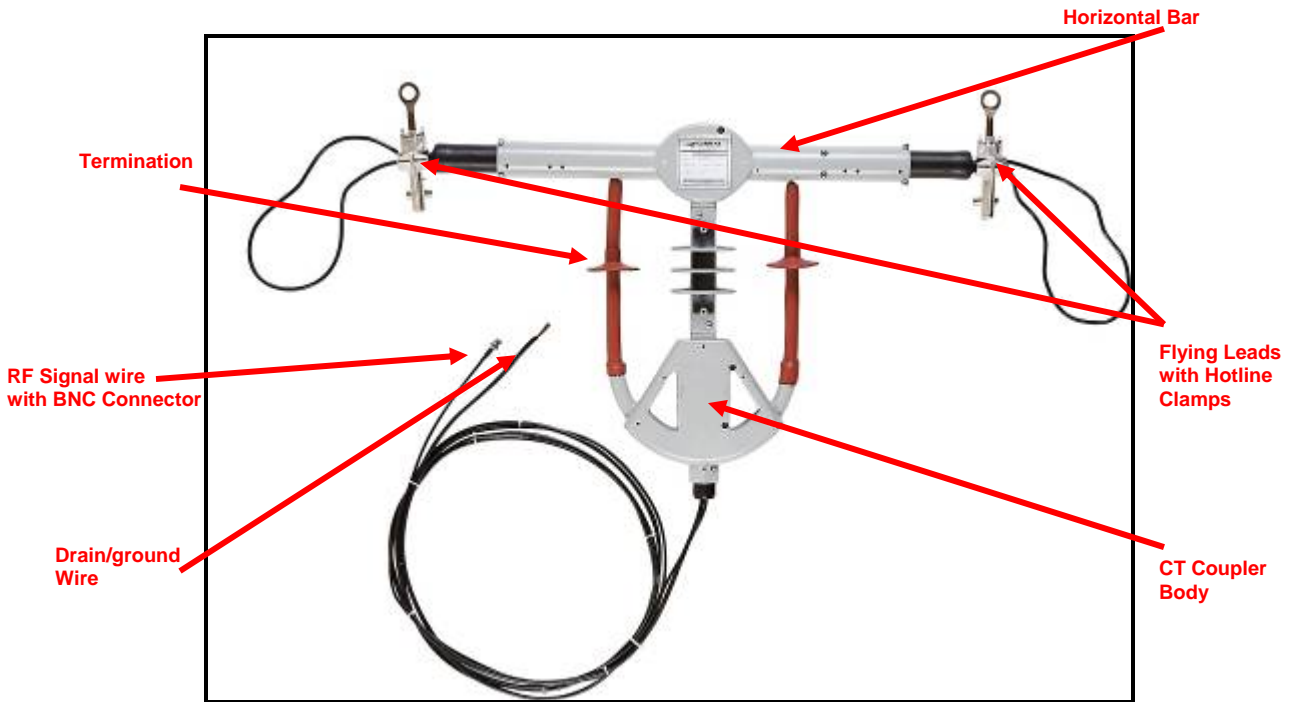


Figure 3 – CT Coupler OH 5000 nomenclature

- ▶ **Note**
CURRENT recommends keeping the RF signal and ground wires secured with the tie wraps until the Coupler has been hung.

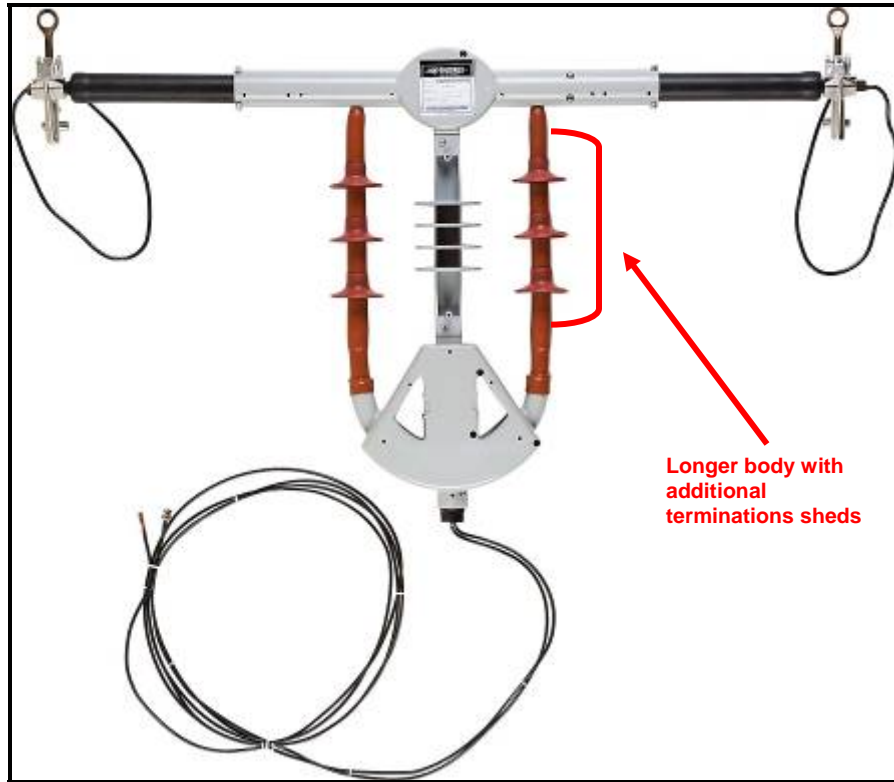


Figure 4 – CT Coupler OH 5000-25kV

3.3 Ground Preparation

CURRENT recommends covering the exposed end of the ground cable with electrical tape. This will prevent a mishap from occurring by inadvertently touching the ground cable against any live wires.

It will be necessary to attach the CT Coupler Hanging Bracket to the CT Coupler. *Figure 5* shows the nomenclature for the CT Coupler Hanging Bracket. There are two ways that the hanging bracket attaches to the CT Coupler:

- Top Mount (*Figure 6*)
- Body Mount (*Figure 7*)

The orientation of the bracket is determined by the install configuration being used. The steps for both configurations are listed below.

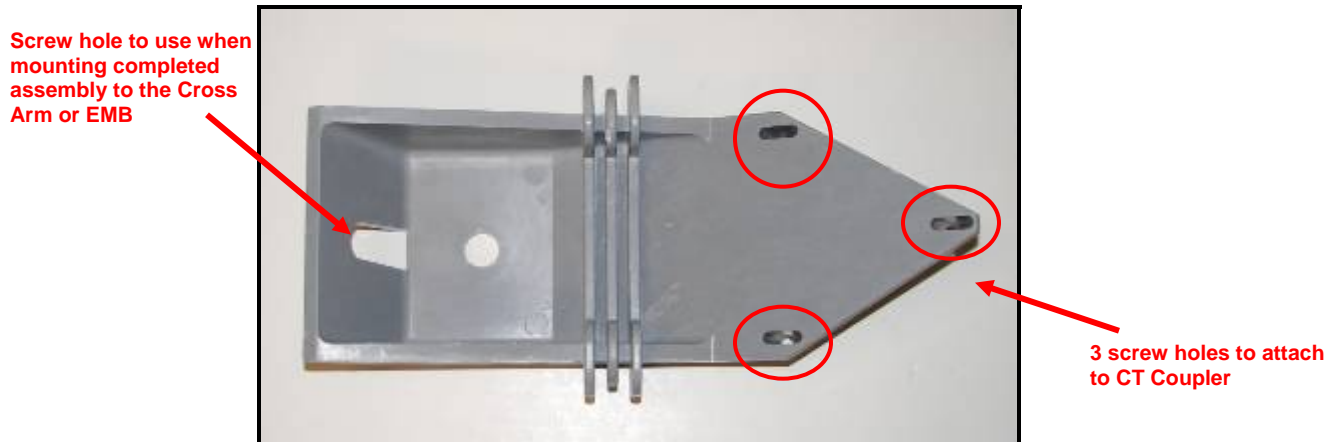


Figure 5 – CT Coupler Hanging Bracket

3.3.1 Top Mount

The Top Mount configuration is applicable when performing *Cross Arm* or *Equipment Mounting Bracket* (EMB) installations.

1. Place the hanging bracket on the top of the CT Coupler on the opposite side of the product label. The bend of the hanging bracket is hanging over the CT Coupler.
2. Using the Hi-tech Fastener screws #1032PLPP, which are part of the truck kit, screw the bracket onto the Coupler making sure that the label is not covered.

► **Note**

Be sure to use **only** the Hi-tech Fastener screws #1032PLPP.

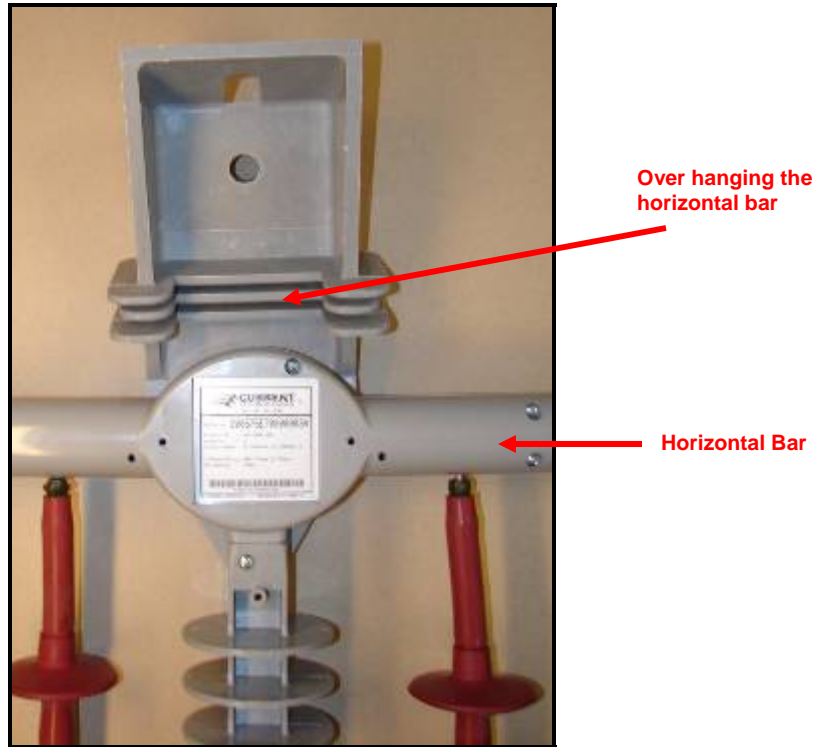


Figure 6 – Top Mount

3.3.2 Body Mount

The Body Mount configuration is used for installations which require additional distance between the EMB and the primary conductors.

1. Place the hanging bracket on the CT Coupler body with the pointed side pointing at the horizontal bar. The hanging bracket will fit on either side of the CT Coupler. It is recommended that the bracket be mounted so that the product label is easily visible from the ground.
2. Using the Hi-tech Fastener screws #1032PLPP, screw the bracket onto the CT Coupler.

► **Note**

Be sure to use **only** the Hi-tech Fastener screws #1032PLPP.

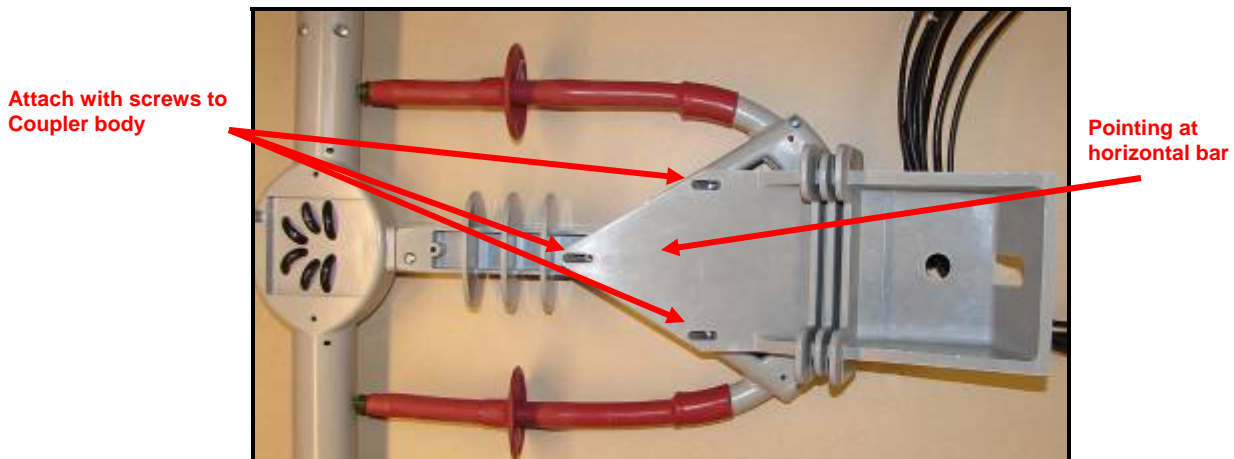


Figure 7 – Body Mount

3.4 Installation Procedure

This section lists the steps for installing the CT Coupler on an overhead pole.

► **Note**

If there isn't a ground rod in place, determine if one is required. If so, then one needs to be installed following the prescribed company procedures. The Truck BOM for this procedure is shown in *Appendix A*.



CT Coupler leads are energized at primary voltage. Therefore, they need to be treated exactly like a primary jumper. If there is inadequate clearance to install a primary jumper into an area on a pole, then the CT Coupler should **not** be installed there.

When mounting with an EMB, it is important to mount the EMB and CT Coupler so that the hotline clamps can be spaced 70" apart (accepted range is 66" to 74").

3.4.1 EMB Mount

This configuration is used when mounting the CT Coupler is using the fiberglass EMB. The EMB is used to mount the Coupler directly to the pole. The steps below detail how to mount the CT Coupler using the EMB. The EMB can be used with either the Top Mount configuration (*Figure 6, section 3.3.1*) or Body Mount configuration (*Figure 7, section 3.3.2*). Please refer to *section 3.4.2* if it is necessary to use the optional t-strap on the EMB.

1. Position the EMB so that the CT Coupler hotline clamps can reach the MV conductor and be separated 70" (acceptable range is 66-74").
2. Use the appropriate sized through-bolt and washer to secure the top hole of the EMB as determined by the pole diameter.
3. Use a lag screw or bolt (whichever meets your utility's standards and practices) to secure the bottom hole.



Figure 8 – EMB Nomenclature

4. Remove the existing front nut and associated washers (starting from the front 3" square washer) from the EMB. Leave the back square washer and flat washer on the EMB.

▶ **Note**

Figure 9 below shows the end of the EMB before the nut and washers are removed.



Figure 9 – EMB Head

5. Place the CT Coupler Hanging Bracket over the EMB bolt.
6. Place the 3” square washer on the CT Coupler Hanging Bracket. This is followed by the flat washer, then the lock washer, and finally the nut.

Figure 10 shows the washers and nut removed and numbered in the order they go back on the EMB.

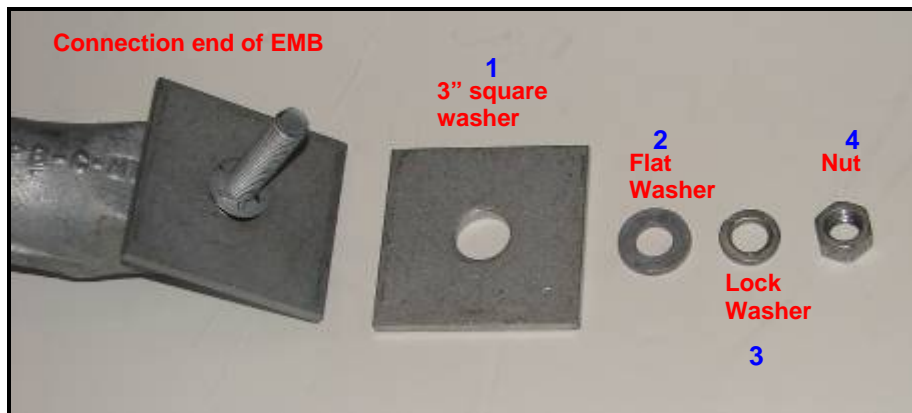


Figure 10 – EMB Washer and Nut Components

Figure 11 shows the EMB and CT Coupler Hanging Bracket attached with the washers and nut numbered in the correct order, before tightening.

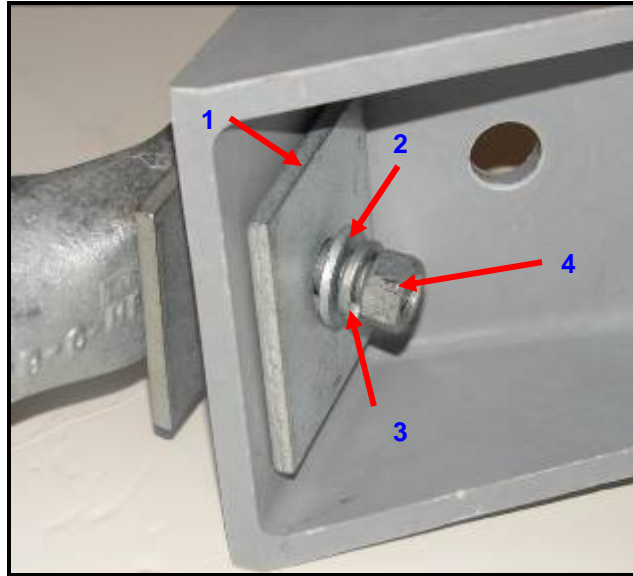


Figure 11 – Washers and Nuts Assembled



WARNING

It is critical that the CT Coupler Hanging Bracket be attached to the EMB in this manner!

7. Torque to 45 ft. lbs.
8. Dress the RF Signal and ground wires on the EMB arm using the 12” tie wraps.

Continue with section 3.4.4 to complete the single phase mount installation.

3.4.2 EMB with T-Strap Mount

There will be times when it will be necessary to use an EMB with a t-strap. The t-strap provides flexibility when positioning the CT Coupler so that the hotline clamps can be attached to the MV conductor at the recommended 70" width. This section explains how to attach the Coupler to an EMB with a t-strap.



Figure 12 – EMB with T-strap

1. Position the EMB so that the CT Coupler hotline clamps can reach the MV conductor and be separated 70" (acceptable range is 66-74").
2. Use the appropriate sized through-bolt and washer to secure the top hole of the EMB as determined by the pole diameter. Refer to *Figure 8* for the EMB nomenclature.
3. Use the lag screw or bolt (per your utility's standards and practices) to secure the bottom hole.
4. Remove the lock, washer, and nut on the end of the t-strap where the CT Coupler Hanging Bracket will be attached.
5. Place one of the 3" square washers on that end of the t-strap as shown in *Figure 13*.



Figure 13 – 3" Square Washer Placement on T-strap

6. Place the CT Coupler Hanging Bracket on top of the washer.
7. Place the 3" square washer on the CT Coupler Hanging Bracket. This is followed by the flat washer, then the lock washer, and finally the nut.

Figure 14 shows the washers and nut numbered in the order they are placed on the t-strap.

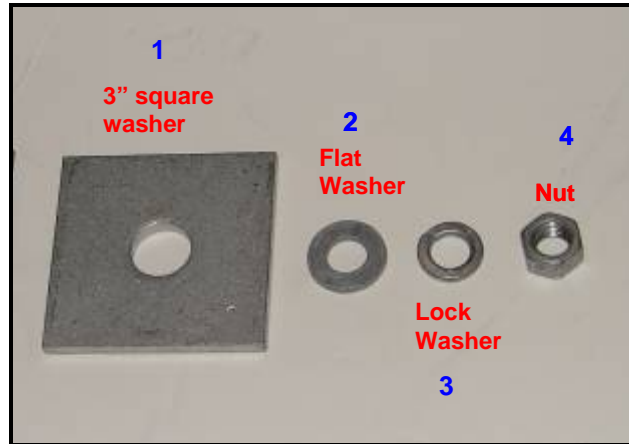


Figure 14 – EMB Washer and Nut Components

Figure 15 shows the EMB and CT Coupler Hanging Bracket attached with the washers and nut numbered in the correct order, before tightening.

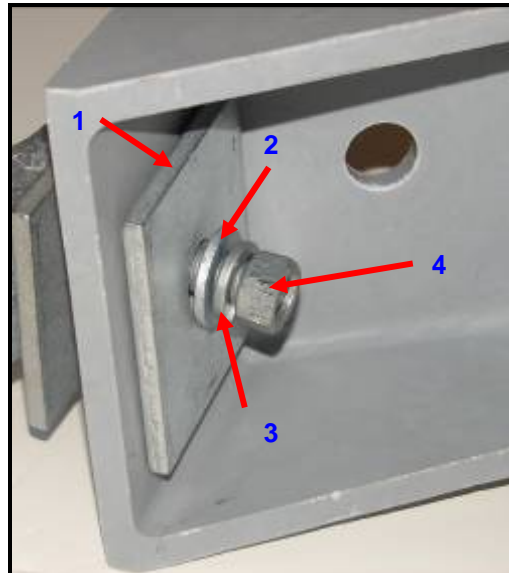


Figure 15 – Washers and Nuts Assembled



WARNING

It is critical that the CT Coupler Hanging Bracket be attached to the t-strap in this manner!

8. Torque to 45 ft. lbs.
9. Dress the RF Signal and ground wires on the EMB arm using the 12” tie wraps.

Continue with section 3.4.4 to complete the single phase mount installation.

3.4.3 Cross Arm Mount

This configuration is used when mounting the CT Coupler directly onto the cross arm. The Cross Arm mount requires that the CT Coupler Hanging Bracket be mounted using the Top Mount configuration (*Figure 6, section 3.3.1*).

1. Remove the washer and nut from underneath the pin insulator.
2. Place the CT Coupler hanging bracket on the bottom of the cross arm by threading the pin insulator through either of the vertical holes.



Figure 16 – Attaching CT Coupler to Cross Arm

3. Secure the CT Coupler by attaching the 3” square washer. Follow this with the flat washer, the lock washer, and finally the nut. Refer to *Figure 14* which shows the numbered sequence.

- ▶ **Note**
A 3” square washer is required to safely secure the CT Coupler to the cross arm! 3” square washers are part of the truck ready kit if you do not have one available.
- 4. The RF and ground wires should be secured to the pole using utility approved cover to dress the wires.

- ▶ **Note**
The ground wires can be secured to the cross-arm and cross-arm support using tie-wraps. The wires are then dressed down the pole.

Continue with section 3.4.4 to complete the Cross Arm mount installation.

3.4.4 Ground Wires and Pole Dressing

Remove the tie wraps holding the RF Signal and Ground wires together. Dress the RF Signal Wire and ground wire from the Coupler (or EMB arm) to the pole using utility approved cover. If using staples, do not staple the wire directly. For correct operation, maintain a 2-inch minimum bend radius and avoid sharp bends or kinks in the wire. This is demonstrated in *Figure 17*.

- ▶ **Note**
For cross arm mounts, the ground and RF wires are dressed horizontally across and then vertically down the pole. The RF wire will be attached to the CURRENT Bridge OH (*Chapter 6*).

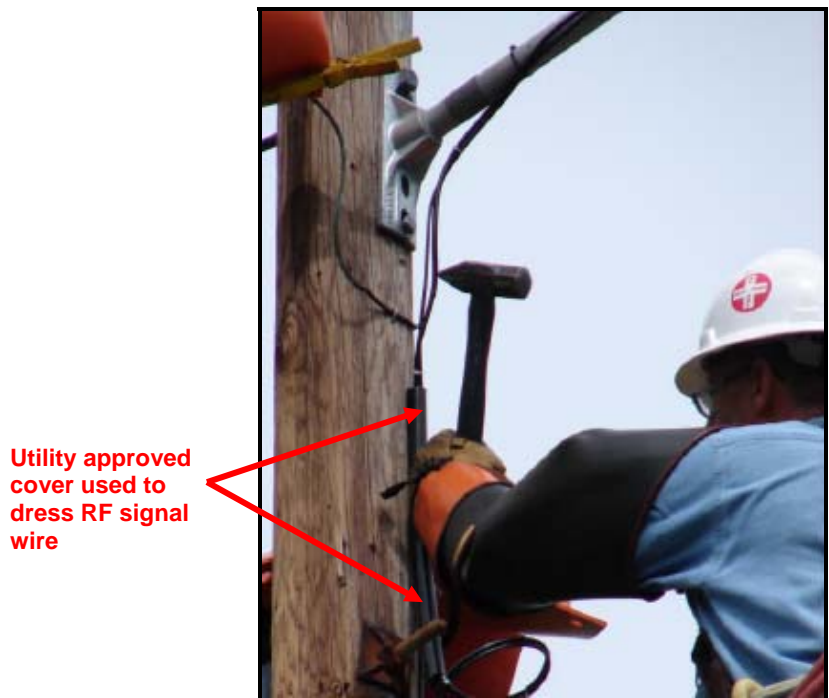


Figure 17 – Dressing the RF signal wire

Connecting to the pole ground (only):

1. If there isn't a primary neutral, connect the CT Coupler ground wire to the pole ground using one of the compression H-Tap connectors or other utility approved connectors per your utility's standard procedures.

Connecting to primary neutral (only):

1. If there isn't a pole ground, connect the CT Coupler ground wire to the primary neutral using one of the compression H-Tap connectors or other utility approved connectors per your utility's standard procedures.

Connecting to the pole ground and primary neutral:

1. If a jumper between the pole ground and primary neutral does not already exist, inter-connect the primary neutral and the pole ground together using #6 ground wire along with one of the compression H-Tap connectors or other utility approved connectors per your utility's standard procedures.
2. If a jumper is already in place, inspect the jumper and make corrections if needed.
3. Connect the CT Coupler ground wire to the pole ground using one of the compression H-Tap connectors or other utility approved connectors per your utility's standard procedures.



WARNING

The Drain/ground Wire must be connected to a verified and reliable ground before the CT Coupler is activated. The pole ground must be shown to be less than 100 ohms impedance to earth. Failure to connect the RF Drain/ground wire before energizing the CT Coupler, or to verify the integrity of the ground connection, could result in serious injury or death.

Installation must be de-energized when the ground wire has come loose, broken or otherwise disconnected.

- The CT Coupler is now installed, but not live. The next step is to install the CT Backhaul-Point (*Chapter 5*), the CURRENT Bridge (*Chapter 6*) or the CURRENT Gateway-Bridge OH 6030 (*Chapter 7*).

3.4.5 Bringing the CT Coupler to a Live State

Once the CT Backhaul-Point, the CURRENT Bridge OH, or the CURRENT Gateway-Bridge has been installed (as described in *Chapters 5, 6, and 7* respectively), and the RF wire connected, then the CT Coupler needs to be brought to the live state. It is important that the hotline clamps be cleaned and prepped per the manufacturer’s specifications. This is described below. For more details, please refer to *Appendix D* for the instruction sheet provided by the manufacturer.

1. Thoroughly clean the aluminum and copper conductor contact surfaces by brushing to remove oxides and other foreign matter.
2. Immediately after brushing, generously coat the cleaned portion of the conductor with inhibitor. Use a high quality joint compound such as Anderson’s HTJC, Fargo GF178 Inhibitor or Chance’s ZLN Inhibitor.
3. Using either the shotgun stick or gloved hands, attach the hotline clamps to the primary. The distance range between the two hotline clamps is 66-74 inches. It is highly recommended that the hotline clamps be installed as close to 70” as possible.
4. Tighten the clamps. If using an inch pound torque, do not exceed 200 lb. in. If not using an inch pound torque, be sure not to use power tools as this will cause damage.

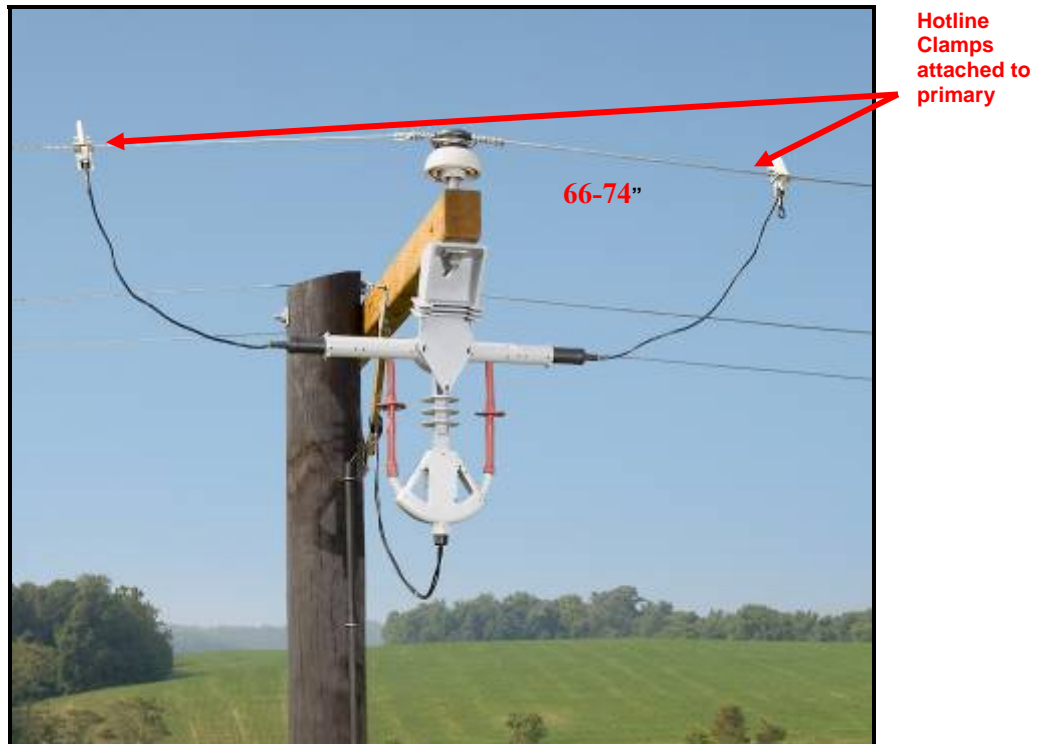


Figure 18 – Hotline Clamps Attached to Primary on CT Coupler OH 5000-15

Figure 19 shows a CT Coupler hung above the conductor, which is too high, causing the wire to be too loose.



Figure 19 – CT Coupler Hung Incorrectly

3.4.6 Shorten or Lengthen Flying Lead

It is possible that you will need to shorten or lengthen the flying lead in order to obtain the required distance. It is necessary to keep the overall length the same, so if you lengthen one lead, then the other will need to be shortened the same amount.

To lengthen the flying lead length:

1. Cut a piece of the #6 AWG wire to the desired length.
2. Using the crimp sleeve, attach the wire to the existing flying lead.

To shorten the flying lead length:

1. Loosen and remove the bolt which is holding the #6 jumper on the hot clamp.
2. Cut the eyelet off of the jumper.
3. Cut a new piece of the #6 stranded copper leads to the desired length so that the distance range between the hotline clamps will be as close to 70” as possible.
4. Remove the insulation from the #6 jumper to the length needed so that it can be fully inserted into the butt splice and eyelet.

▶ **Note**

You need to be careful when removing the insulation so as to avoid nicking or damaging the conductor strands.

5. Crimp both ends of the butt splice.
6. Slide the heat shrink over the conductor butt splice and apply a small amount of heat to seal it over the conductor.
7. Install the eyelet on the hotline clamp end of the jumper by fully inserting the #6 stranded conductor, then crimp.
8. Insert the bolt.
9. Attach the jumper eyelet to the hotline clamp and tighten.



Once the first flying lead is attached, then the other lead becomes **hot!** Use extreme caution when handling the second lead!

Chapter 4 – CT Coupler URD 5010rp

4. CT Coupler URD 5010rp

This section describes the procedure for a new install of a CT Coupler URD 5010rp. Please direct questions or requests for support to your ground supervisor.

The CT Coupler URD 5010rp is used to couple the BPL signal to the primary cable at a UG Termination pole where a CURRENT Bridge OH 6021, CT Backhaul-Point OH 5000g or CURRENT Gateway-Bridge OH 6030 is installed.

Powerline workers must meet both requirements listed below to be allowed to install the equipment of the CURRENT 5000 and 6000 series:

1. Be qualified to perform work in the utility power zone (*see* OSHA 1910.269).
2. Receive appropriate *CURRENT* training specific to the CURRENT 6000 series (training course CURENT 6000 F101 – CURRENT 6000 Field Installation of CURRENT equipment or the equivalent).

4.1 Components

The following items are required to install a CT Coupler URD 5010rp:

- CT Coupler URD 5010rp (#210-0160-xxxx)
- A standard set of consumable on the truck as identified in the CURRENT truck stock. Please refer to *Appendix A* for a complete listing of the items needed to install the CT Coupler URD 5010rp.

4.2 Nomenclature

Figure 20 illustrates the various parts of the CT Coupler URD 5010rp. *Figure 21* shows the inner parts of the CT Coupler.

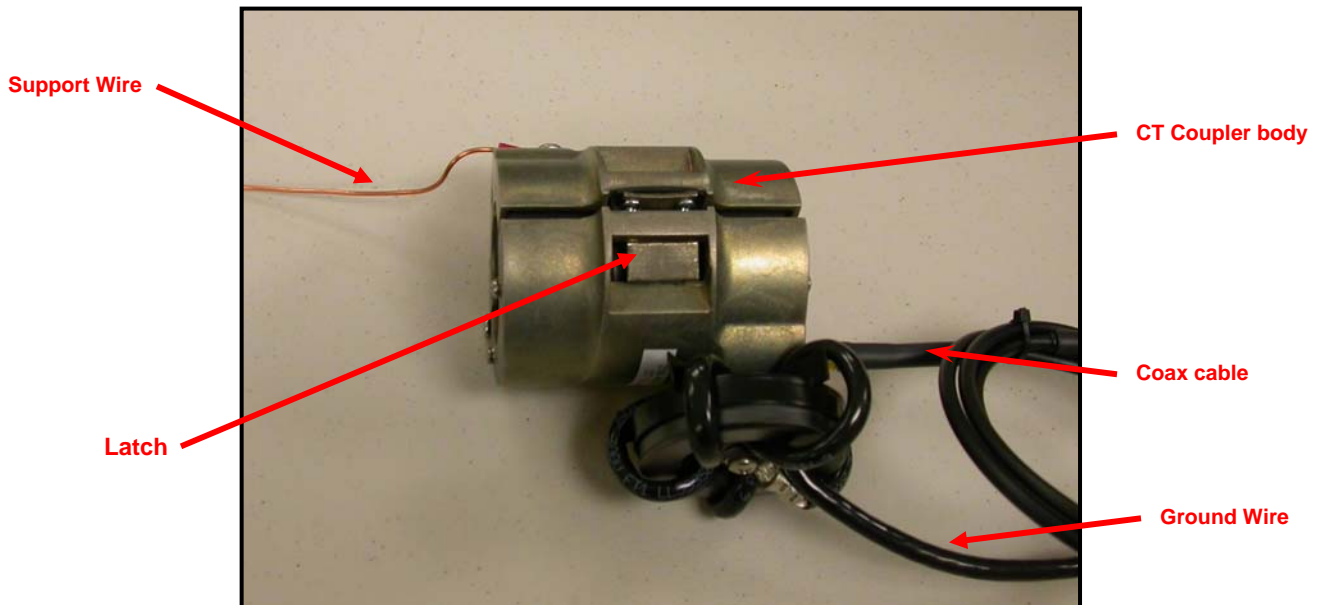


Figure 20 – CT Coupler URD 5010rp Nomenclature

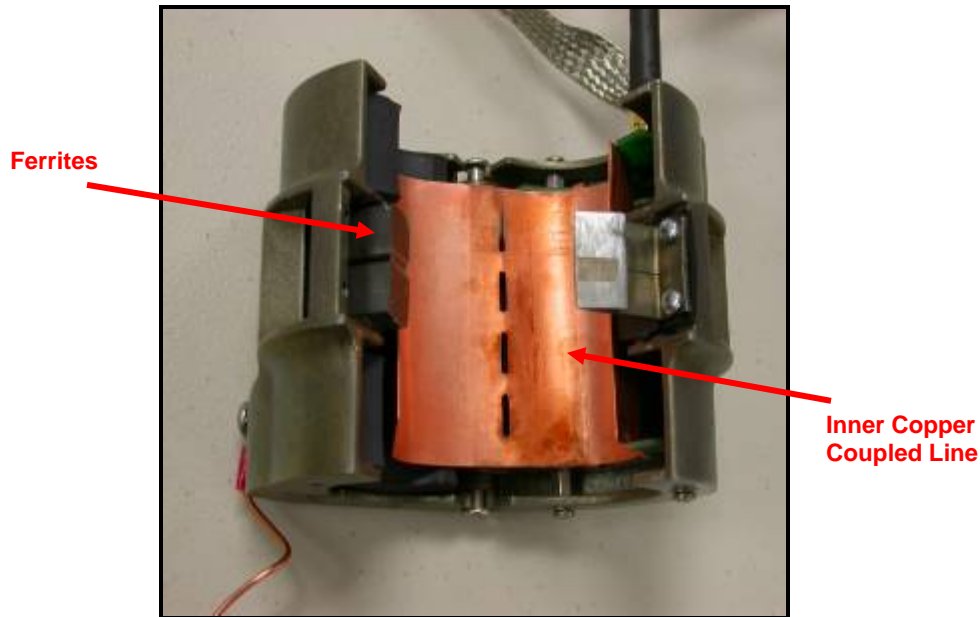


Figure 21 – CT Coupler Internal Nomenclature

4.3 Cable Preparation

The CT Coupler is installed directly over the cable semicon. The CT Coupler is approximately 3.5" long.

► **Note**

If your utility practice for installing the Coupler entails de-energizing the MV cable, then before installing the Coupler, it is recommended that you perform a continuity test to verify that the Coupler is being installed on the proper cable.

If additional cable jacket and neutrals must be removed to expose sufficient cable semicon in order to install the CT Coupler, CURRENT recommends that the cable be de-energized per your utility's standard operating procedures prior to installing the CT Coupler.

1. Strip the neutral wires back a minimum of 6".
2. Once the jacket has been pulled back from the cable, unwind the neutral wires and fold them back so that they are out of the way. *Figure 22* illustrates an example of how to prep and seal the cable.

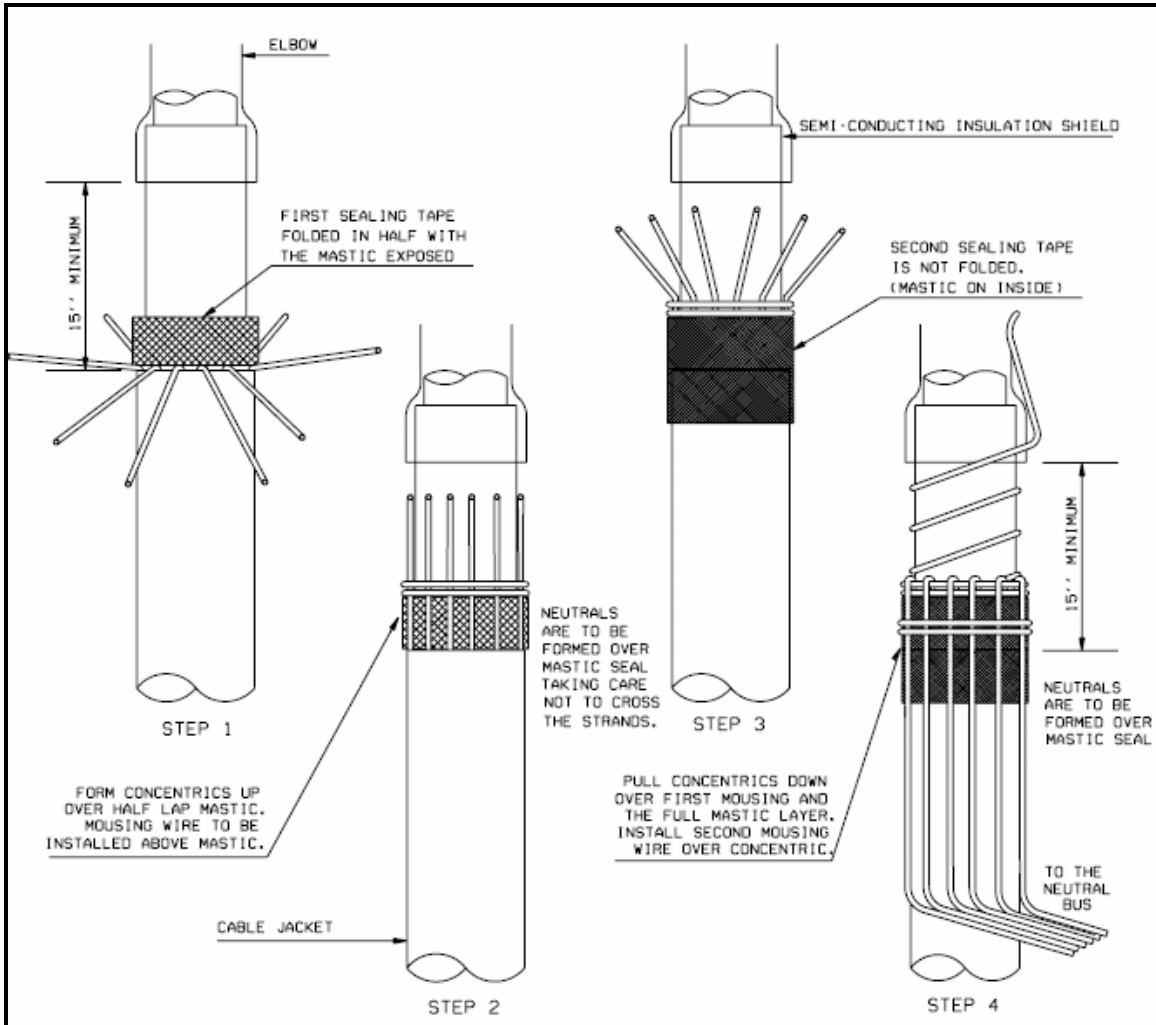


Figure 22 – Illustrated Steps for Cable Jacket Prep (example)

3. Clean the semicon so that it is free of any dirt, oil or residue. This ensures a clean attachment of the CT Coupler.
4. Reseal the jacketed cable as required per your utility’s standard procedures. The neutral wires must be exposed for connection to the CT Coupler’s ground straps. *Figure 23* shows the neutral wires wrapped concentrically, before the cable has been resealed.



Figure 23 – Neutral Wires wrapped concentrically

4.4 Riser Pole Install

The Riser Pole install uses the CT Coupler URD 5010rp (#210-0160-xxxx). Once installed it is attached to the appropriate overhead network element (CT Backhaul-Point OH 5000g, CURRENT Bridge OH 6021 or CURRENT Gateway-Bridge OH 6030).

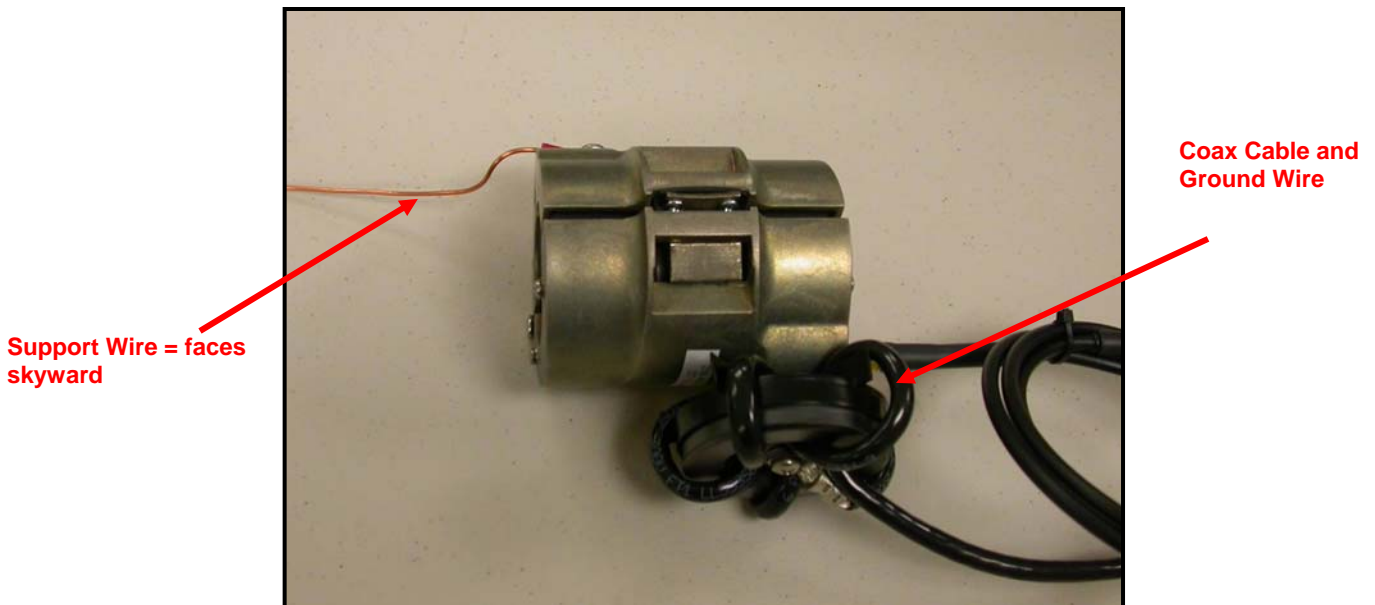


Figure 24 – CT Coupler URD 5010rp Orientation

1. Ensure that at least 3.5” of the semicon is exposed between the pothead or termination and the neutral dressing. This is where the CT Coupler will be installed.
- ▶ **Notes**
 - a) If the cable needs to be resealed, then at least 6” of semicon will need to be exposed.
 - b) The Coupler may be placed lower on the cable if required by utility standards or existing hardware makes it necessary.
2. If there is no need to strip back the jacket or neutrals, and the semicon is already covered with tape or coldshrink, then the CT Coupler is installed directly over the existing tape or coldshrink. Continue with *step 8*.
3. If the cable is jacketed, then 6” of the jacket will need to be removed.
4. Open up the concentric and seal both ends with mastic tape.
5. Install two (2) layers of half lapped plastic electrical tape over the top of the exposed semicon. Make sure that the electrical tape is installed starting at the top of the exposed semicon, working down and then back up the semicon.
6. Install a concentric neutral jumper. The end result is shown in *Figure 25*.

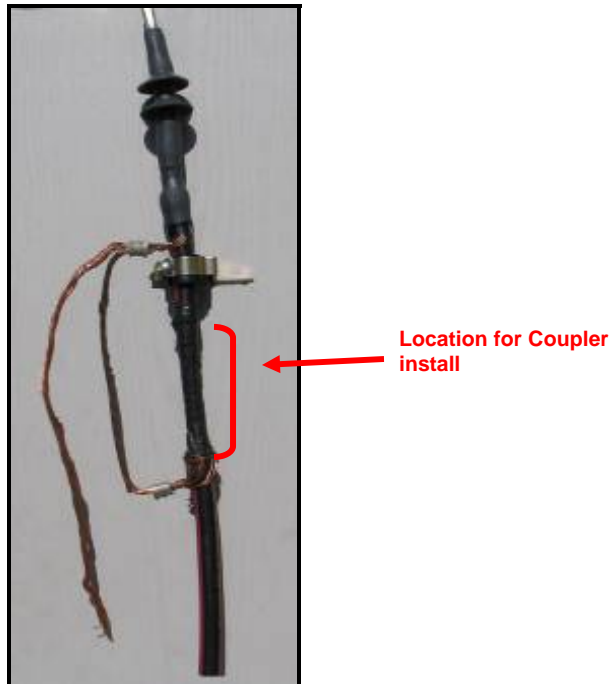


Figure 25 – Concentric Neutral Jumper installed

7. The CT Coupler is now installed over the electrical taped area as described in the next steps.
8. Open the CT Coupler (if not already open).
9. Make sure that the inner copper coupled line is open.

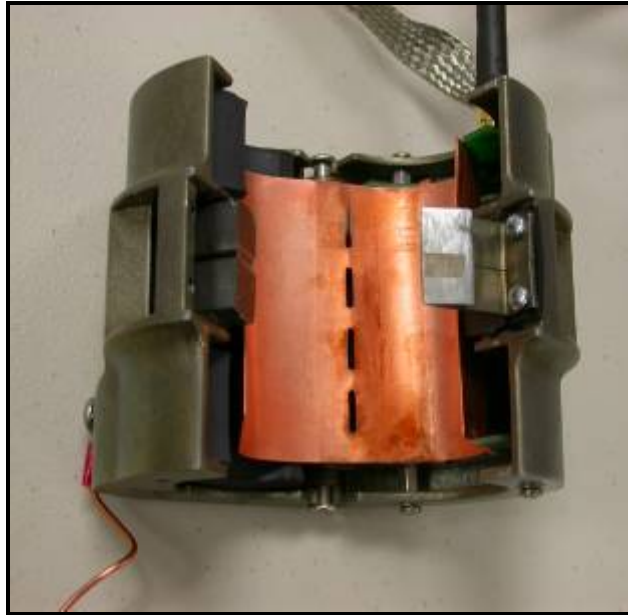


Figure 26 – Opening the CT Coupler

10. Place the CT Coupler around the cable, making sure that the inner copper coupled line wraps securely around the EPR sealing tape or coldshrink. The inner copper coupled line should NOT come in contact with the cable semicon, the MV cable neutrals or the drain wires.
11. Close the CT Coupler case. The inner copper coupled line will close on its own.
12. Secure and ground the neutral wires per your utility's standard procedures. Follow your utility's standard procedures for attaching the cable neutral wires to the pole ground and lightning arrestors. The support wire is attached to the pothead or termination.

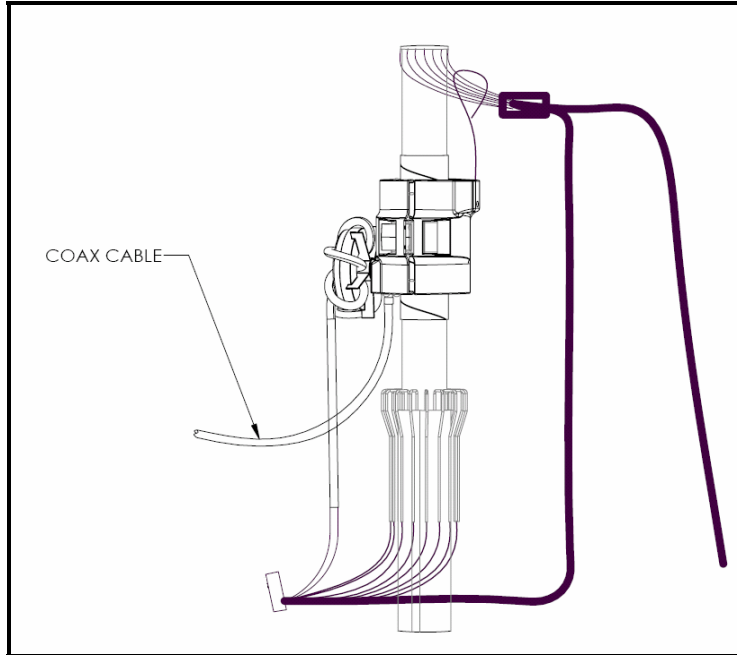


Figure 27 – CT Coupler URD 5010rp install (detailed illustration)



Figure 28 – CT Coupler URD 5010rp installed

13. Using a compression connector or split bolt (whichever is your utility's preferred method), firmly connect the ground wire to the pole ground as close to the base of the CT Coupler as possible.

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14. Once the CURRENT Bridge OH 6021 (*chapter 6*) has been hung, attach the CT Coupler coax cable to the unit.

Please refer to *Appendix B* for the complete install drawings.

▶ **Note**

Ensure that the neutrals do NOT come in contact with the CT Coupler's inner copper coupled line. If it appears that the coupled line may come in contact with the neutrals, then you should wrap the neutrals with electrical tape.

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Chapter 5 – CT Backhaul-Point OH 5000g

5. CT Backhaul-Point OH 5000g

This chapter describes the procedure for installing a CT Backhaul-Point OH 5000g. Please direct questions or requests to your ground supervisor.

The CT Backhaul-Point OH 5000g is the device in a Broadband over Power Line (BPL) that transfers power line communications signals to the primary distribution line from the upstream data communications network and vice versa, with communications to the upstream network via fiber optic cables. It works in conjunction with other components in a pole assembly.

Powerline workers must meet both requirements listed below to be allowed to install the equipment of the CURRENT 5000 and 6000 series:

1. Be qualified to perform work in the utility power zone (*see* OSHA 1910.269).
2. Receive appropriate *CURRENT* training specific to the *CURRENT 6000* series (training course *CURRENT 6000 F101 – CURRENT 6000 Field Installation of CURRENT equipment or the equivalent*).

5.1 Components

The major components for a CT Backhaul-Point OH 5000g installation are listed below.

- CT Backhaul-Point OH 5000g (#210-0135-xxxx)
- A standard set of consumables on the truck as identified in the *CURRENT* truck stock. Please refer to *Appendix A* for the truck items specific for installing the CT Backhaul-Point.

Figure 29 and *Figure 30* shows the CT Backhaul-Point nomenclature.

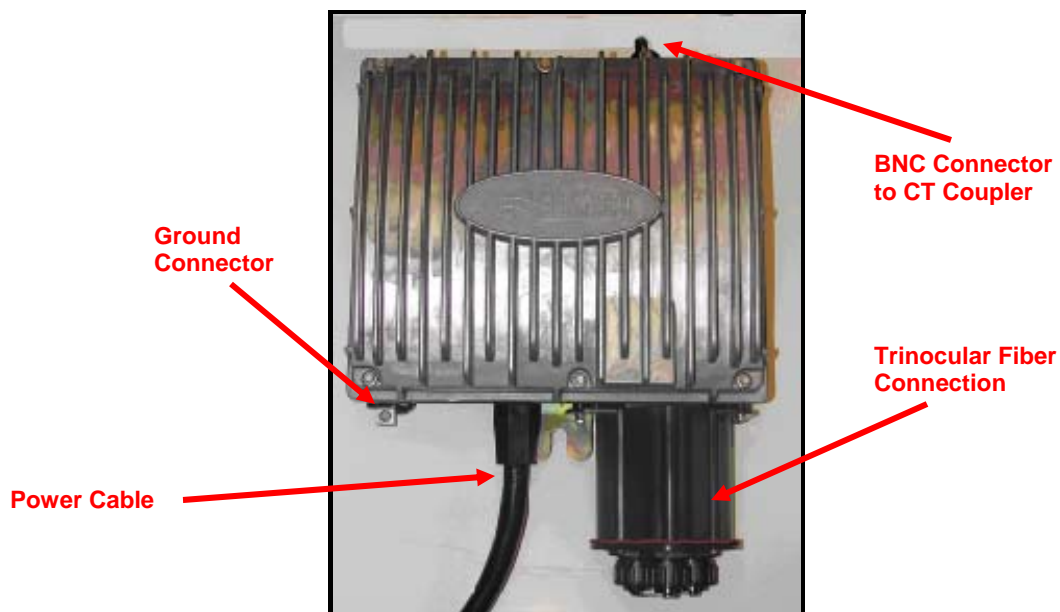


Figure 29 – CT Backhaul-Point Nomenclature

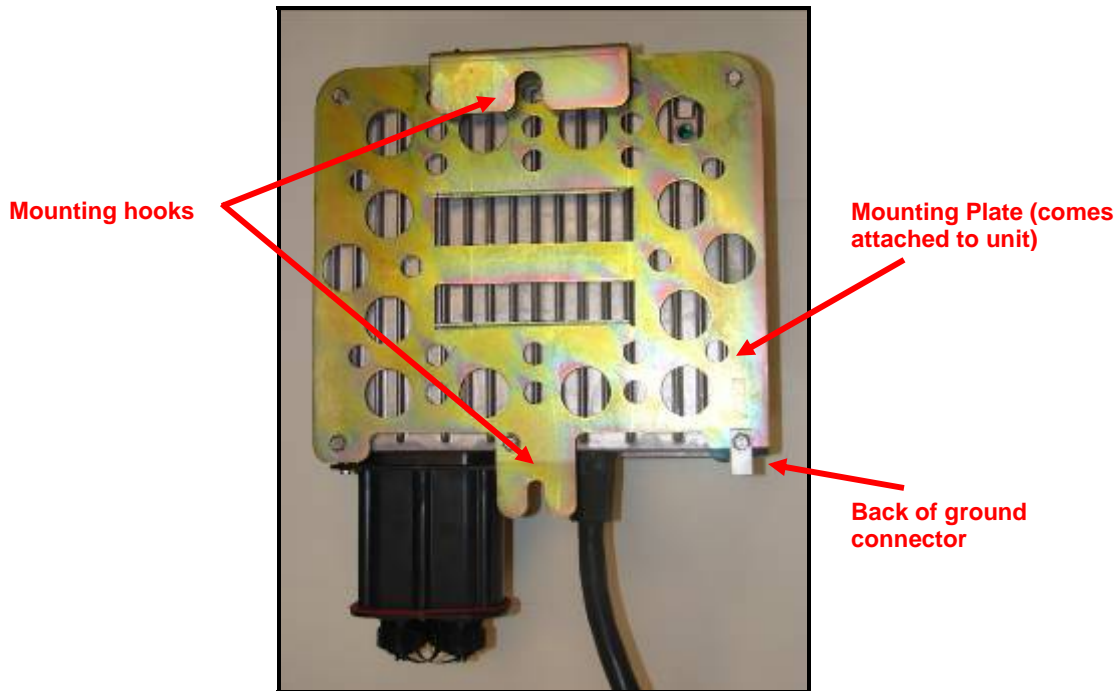


Figure 30 – Back of the CT Backhaul-Point

5.2 Installation

The CT Backhaul-Point will be mounted on the pole and then attached to the CT Coupler OH 5000 or CT Coupler URD 5010rp.

► Notes

- a) Apply an approved lubricant (e.g., Burndy type A-13 Penetrox) to all electrical connections.
- b) Do **not** use the power cable as a handle.

When connecting the power cables of the CURRENT equipment, it is important to remember that when only one of the red or black wires is connected, the unconnected wire will float to the same voltage potential as the wire which is connected. When both wires are connected, current flow is limited by the circuitry in the equipment.

1. To mount the CT Backhaul-Point, ensure that the location where the CT Backhaul-Point will be mounted is within six (6) feet of the distribution secondary.
2. Drill a clearance hole for the 5/8" through bolt. Loosely install the appropriate length through bolt using the square nut on the back side of the pole.
3. Measure 10.25" down from the through bolt and drive in the lag screw.
4. Loosen the lag screw slightly.

5. Hang the CT Backhaul-Point on the through bolt. The slotted hook on the top of the mounting plate will fit on the lag bolt with the hook on the bottom fitting over the lag screw.
 6. Secure the CT Backhaul-Point by tightening the lag screw and the nut on the through bolt.
- ▶ **Note**
It is very important to handle the fiber cable with care. Improper handling can damage the cable.
7. Remove the protective cap(s) on the fiber, handling the fiber with care.
 8. Gently wipe the fiber end with a lint-free soft tissue which has been moistened with 99% Alcohol Wipes.
 9. Dry the fiber using a lint-free soft tissue.
 10. Connect the fiber cable to the cable connector on the CT Backhaul-Point. Twist the connectors closed. *Figure 31* shows the *Transmit* and *Receive* connectors, as well as defining the trinocular connectors. Connect to A, B, or C per the service provider's instructions.

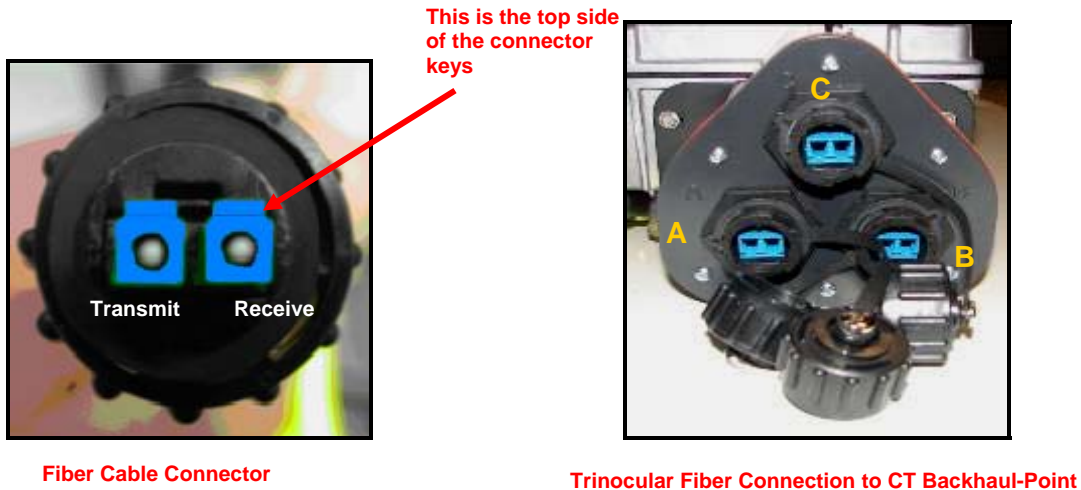


Figure 31 – Transmit and Receive Connectors for Fiber Cable

11. Connect the CT Coupler cable to the BNC connector on the CT Backhaul-Point.
12. The CT Coupler is now connected to the CT Backhaul-Point. If there is any excess RF cable, then coil, tie-wrap and secure it as required by your utility's standard procedures.

When connecting the power cables of the CURRENT equipment, it is important to remember that when only one of the red or black wires is connected, the unconnected wire will float to the same voltage potential as the wire which is connected. When both wires are connected, current flow is limited by the circuitry in the equipment.

13. Cover the exposed wire on the red and black power wires with electrical tape. This will protect in case of accidental contact with the power wires before they are connected in *step 19*.
14. Cut ground wire to the length needed.
15. Attach one end of the wire to the CT Backhaul-Point ground connector using a screwdriver.
16. Attach the other end of the ground wire to the pole ground or system neutral conductor with a crimp. Verify that the pole ground and system neutrals are interconnected.



WARNING

Always make sure that the unit is properly grounded before connecting or disconnecting the power cable!

17. **CAUTION:** Check for the correct secondary voltage prior to connecting any CURRENT equipment to power supply lines. This ensures that the power wires are properly connected to the secondary.
 - Phase to GND = 120V
 - Phase to GND = 120V
 - Phase to Phase = 240V
18. Grease and clean the conductors.
19. Connect the power cable to the distribution secondary using either the split bolt, or one of the compression connectors, whichever is your utility's preferred method. Be sure to only cut back the power cable the amount needed to make the connection.
 - Red = Line 1, 120 volts → **Remember to remove the electrical tape covering the exposed wire.**
 - Black = Line 2, 120 volts → **Remember to remove the electrical tape covering the exposed wire.**
 - White = if it exists, cut and tape it. Do **not** connect this wire!
 - Green = if it exists, cut and tape it. Do **not** connect this wire!
21. Once the wires have been attached, wrap with electrical tape if per standard utility procedure.
22. If needed, dress the excess power wires utility approved cover on the pole. If using staples, be sure not to staple into the power wires when attaching to the pole.
23. Continue with *section 5.2.1* to verify installation.

The illustration in *Figure 32* is an example of an installed CT Backhaul-Point with the CT Coupler OH 5000. *Figure 33* is an example of an installed CT Backhaul-Point with a CT Coupler URD 5010rp. Please refer to *Appendix B* for the complete install drawing.

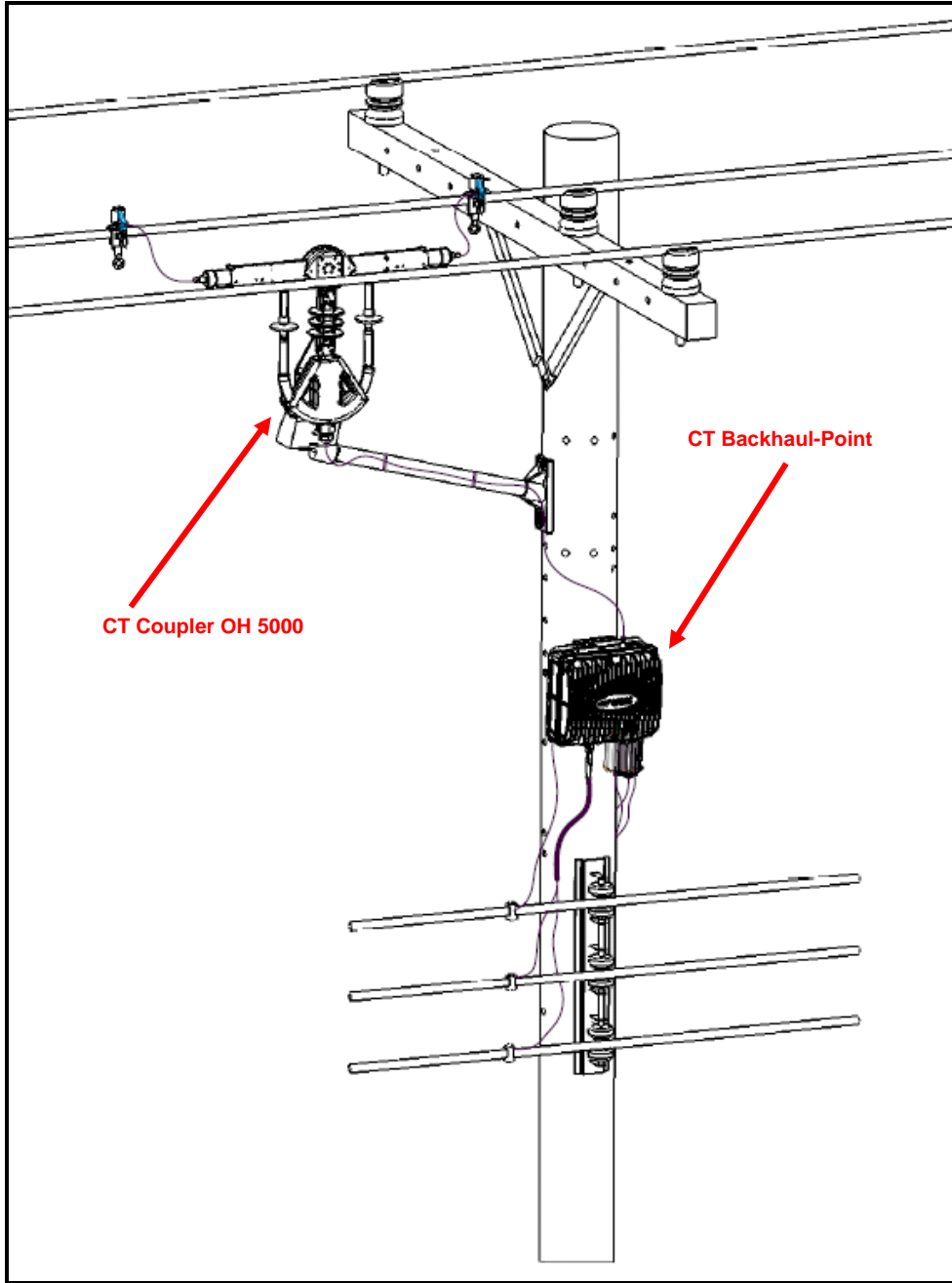


Figure 32 – CT Backhaul-Point Installed with CT Coupler OH 5000

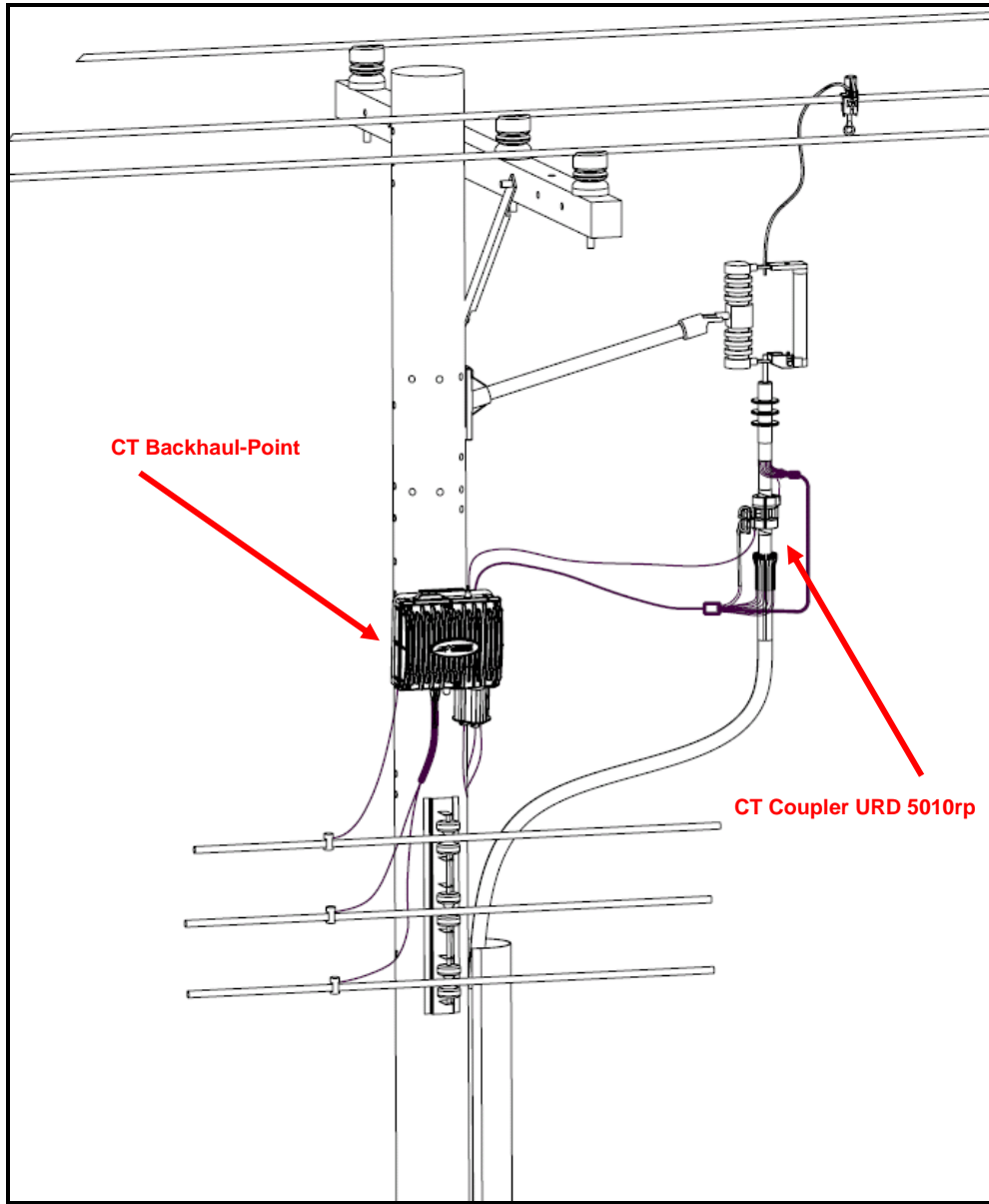


Figure 33 – CT Backhaul-Point Installed with CT Coupler URD 5010rp

5.2.1 Verify Installation

The CT Backhaul-Point will emit tones indicating that the CT Backhaul-Point is powered up properly.

- A few seconds after the last 120 volt power wire is connected, the CT Backhaul-Point will emit a single tone signifying that it has power. If you do not hear the beep, check the LV power supply. If the LV power supply is fine, then change out the unit.
- After 30 seconds the CT Backhaul-Point will emit four (4) sequential tones signifying the CT Backhaul-Point has booted correctly and loaded the necessary software. These four (4) sequential tones are confirmation that the CT Backhaul-Point has been properly installed.
- You should not have to wait more than two (2) minutes for the entire process to take place.

▶ **Note**

If you do not hear the proper tones (or no tones at all) follow your utility standard procedures for dealing with equipment failures.

5.3 Removing Equipment

There is no specific order for removing the CT Backhaul-Point. The simplest way is to disassemble in the reverse sequence from assembly.

When removing the CT Backhaul-Point, be sure to **blunt cut** the wires. This will prevent the possibility of the neutral (white) wire from touching the energized wire and blowing the neutral fuse.

Chapter 6 – CURRENT Bridge OH 6021

6. CURRENT Bridge OH 6021

This chapter describes the procedure for installing a CURRENT Bridge OH 6021. Please direct questions or requests to your ground supervisor.

The CURRENT Bridge OH 6021 is the device in a Broadband over Power Line (BPL) that transfers the communications signal to the primary distribution line from the secondary distribution lines and vice versa. It works in conjunction with other components in a Pole Assembly.

Powerline workers must meet both requirements listed below to be allowed to install the equipment of the CURRENT 5000 and 6000 series:

1. Be qualified to perform work in the utility power zone (*see* OSHA 1910.269).
2. Receive appropriate *CURRENT* training specific to the CURRENT 6000 series (training course CURRENT 6000 F101 – CURRENT 6000 Field Installation of CURRENT equipment or the equivalent).

6.1 Components

The major components for a Bridge installation are listed below.

- CURRENT Bridge OH 6021 (#210-0181-0003)
- A standard set of consumables on the truck as identified in the CURRENT truck stock. Please refer to *Appendix A* for the truck items specific for installing the Bridge.

Figure 34 below shows the nomenclature for the front of the Bridge. *Figure 35* shows the nomenclature for the back of the Bridge. *Figure 36* shows the connections on the bottom of the Bridge.



Figure 34 – CURRENT Bridge Nomenclature (front view)

Figure 35 shows the back of the Bridge.

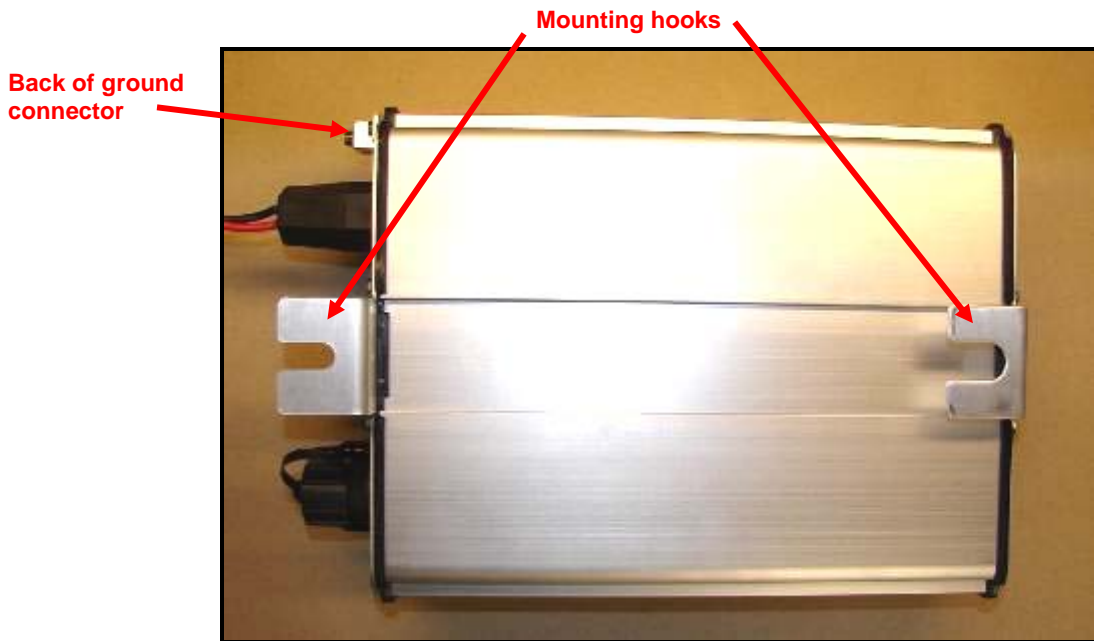


Figure 35 – CURRENT Bridge (back view)

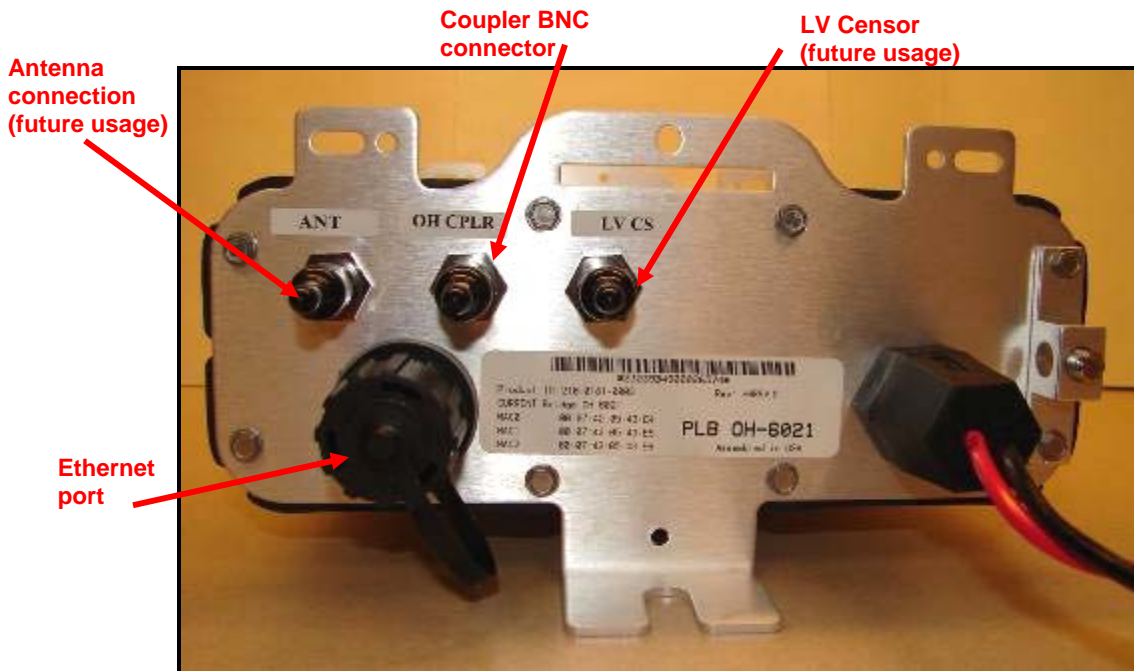


Figure 36 – CURRENT Bridge (bottom view)

6.2 Installation

The Bridge will be mounted on the pole and then attached to the CT Coupler OH 5000 or CT Coupler URD 5010rp. It is also possible to mount two (2) Bridges together on one pole. *Section 6.3* explains how to perform a dual Bridge install. Please refer to *Appendix B* for the install drawing.

▶ Notes

- a) Apply an approved lubricant (e.g., Burndy type A-13 Penetrox) to all electrical connections.
- b) Do **not** use the power cable as a handle.

When connecting the power cables of the CURRENT equipment, it is important to remember that when only one of the red or black wires is connected, the unconnected wire will float to the same voltage potential as the wire which is connected. When both wires are connected, current flow is limited by the circuitry in the equipment.

1. To mount the Bridge, ensure that the location where the Bridge will be mounted is within six (6) feet of the distribution secondary.
2. Drill a clearance hole for the 5/8" through bolt. Loosely install the appropriate length through bolt using the square nut on the back side of the pole.
3. Measure 11 1/2" down from the through bolt and drive in the lag screw.
4. Loosen the lag screw slightly.
5. Hang the Bridge on the through bolt. The slotted hook on the top of the mounting plate will fit on the lag bolt with the hook on the bottom fitting over the lag screw.
6. Secure the Bridge by tightening the lag screw and the nut on the through bolt.
7. Connect the CT Coupler cable to the BNC connector on the Bridge.

When connecting the power cables of the CURRENT equipment, it is important to remember that when only one of the red or black wires is connected, the unconnected wire will float to the same voltage potential as the wire which is connected. When both wires are connected, current flow is limited by the circuitry in the equipment.

8. Cover the exposed wire on the red and black power wires with electrical tape. This will protect in case of accidental contact with the power wires before they are connected in *step 13*.
9. Cut ground wire to the length needed.
10. Attach one end of the wire to the Bridge ground connector using a screwdriver.

11. Attach the other end of the ground wire to the pole ground or system neutral conductor with a crimp. Verify that the pole ground and system neutrals are interconnected.



Always make sure that the unit is properly grounded before connecting or disconnecting the power cable!

12. **CAUTION:** Check for the correct secondary voltage prior to connecting any CURRENT equipment to power supply lines. This ensures that
 - Phase to GND = 120V
 - Phase to GND = 120V
 - Phase to Phase = 240V
13. Connect the power cable to the distribution secondary using either the split bolt or one of the compression connectors, whichever is your utility's preferred method. Be sure to only cut back the power cable the amount needed to make the connection.
 - Red = Line 1, 120 volts → **Remember to remove the electrical tape covering the exposed wire.**
 - Black = Line 2, 120 volts → **Remember to remove the electrical tape covering the exposed wire.**
- ▶ **Note**

If only 120 volt power is available, then the **Red** wire is connected to the 120V and the Black wire is connected to neutral. Wrap the **Black** wire with **white** electrical tape to indicate it is being utilized as a neutral wire.
14. Once the wires have been attached, wrap with electrical tape per standard utility procedure.
15. If needed, dress the excess power wires with utility approved cover on the pole. If using staples, be sure not to staple into the power wires when attaching to the pole.
16. The CT Coupler needs to be brought to a live state in order to activate the Bridge. Refer to *Chapter 3, section 3.4.5* for the CT Coupler OH 5000 or *Chapter 4, section 4.4* for the CT Coupler URD 5010rp for this final installation step. Then continue with *section 6.4* to verify installation.

Figure 37 shows the Bridge installed on the OH pole with the CT Coupler OH 5000.

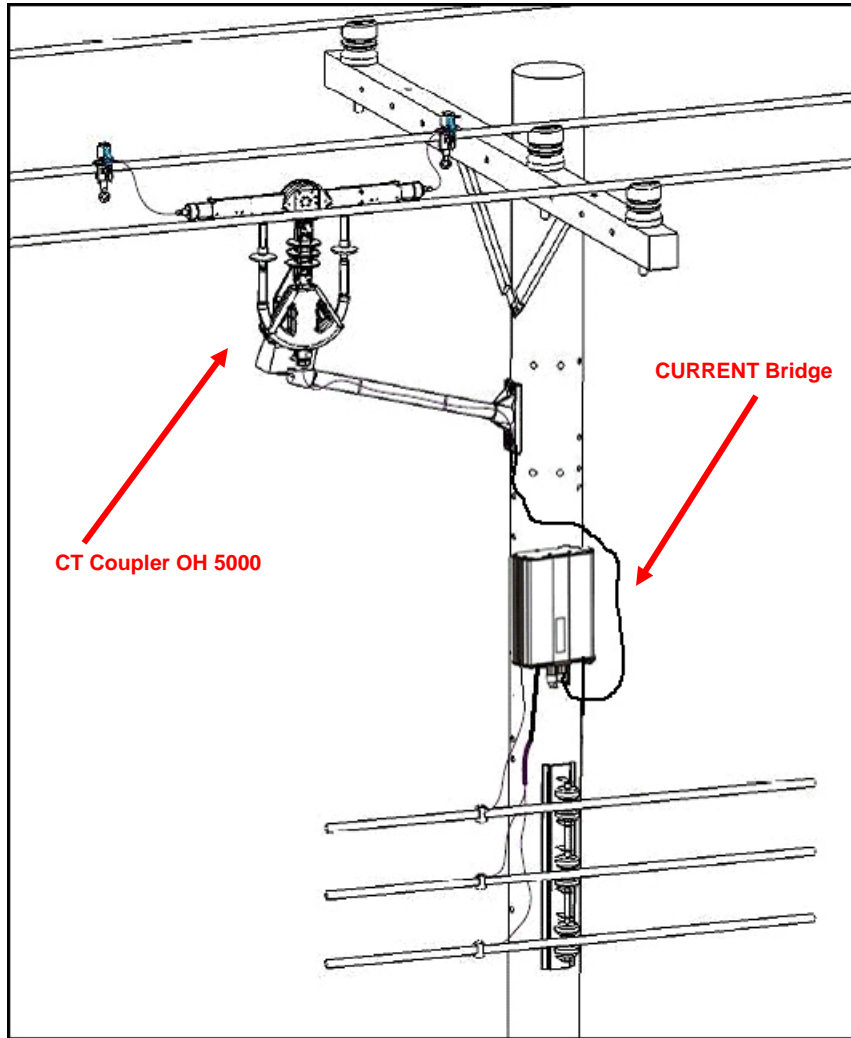


Figure 37 – CURRENT Bridge installed with CT Coupler OH 5000

- ▶ **Note**
The Coupler's coax cable connecting to the Bridge is to be dressed on the pole (*section 3.4.4*). It only appears loose for illustration purposes.

6.3 Dual Bridge Installation

There will be times when the network design will call for two Bridges to be installed on the same pole. The Bridges connect to one CT Coupler using an NE Asymmetrical Splitter (#210-0187-0005) mounted on one of the Bridges. *Section 6.3.1* explains how to attach the Splitter to the Bridge. *Section 6.3.2* explains how to install two Bridges.

6.3.1 Splitter Preparation

The NE Asymmetrical Splitter is the splitter used in a Dual Bridge install. The splitter should be attached to the Bridge while still on the ground. The Splitter will be installed on the second Bridge in the Dual Bridge install. The steps for attaching the Splitter to the Bridge are below.)

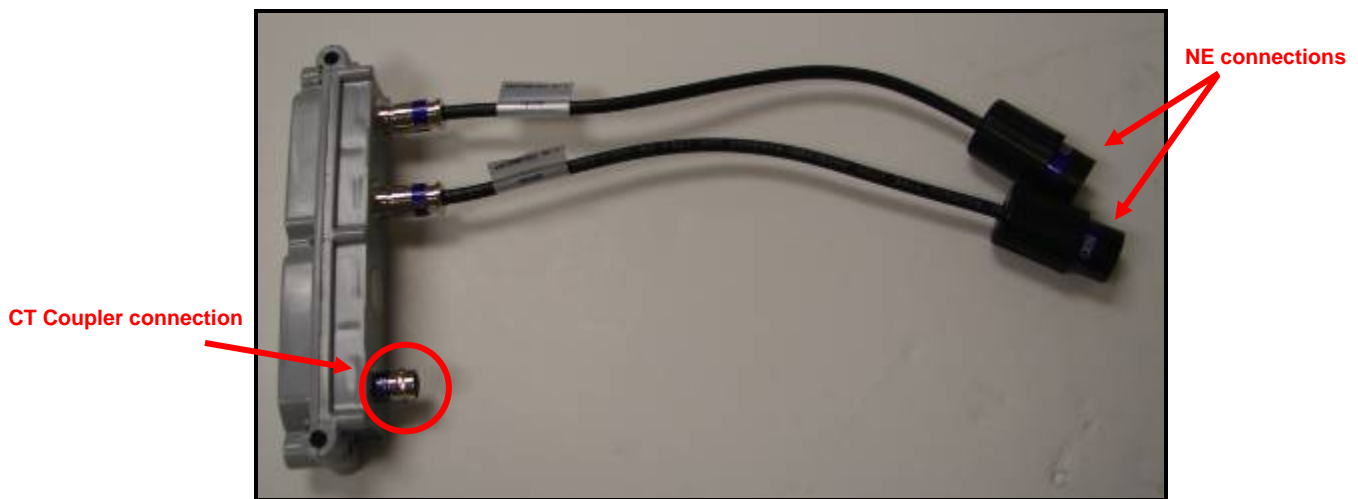


Figure 38 – NE Asymmetrical Splitter nomenclature

1. Place the Splitter on the bottom of the Bridge, lining up the mounting holes with the openings on the Bridge mounting bracket.
2. Using two #10-32 screws (*see Appendix A for choices*), secure the splitter onto the Bridge. Be sure not to over torque the screws.

► **Note**

The Splitter may not lay flush against the Bridge, but it will be secure.



Splitter mounting holes are on both sides of the splitter. Orientation of the splitter on the Bridge can be in either direction.

Figure 39 – Splitter mounting holes

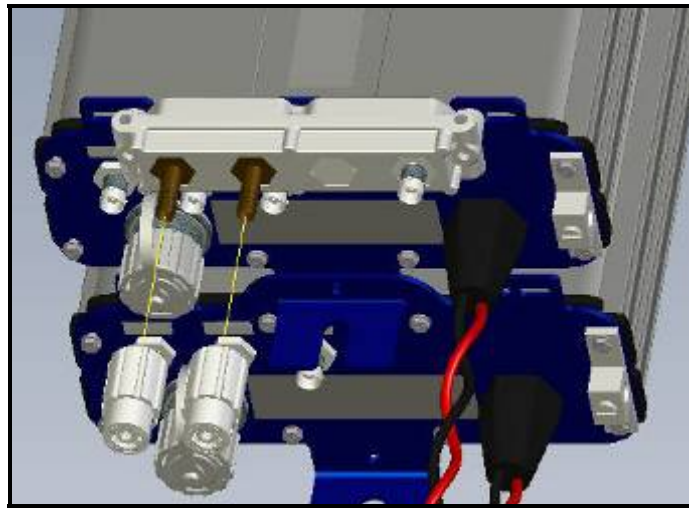


Figure 40 – Splitter mounted on Bridge

6.3.2 Installing the Dual Bridges

Installing two (2) Bridges on one pole is very similar to installing just one Bridge. If this is a new installation, then connecting the Bridges can be done as part of the ground prep. If one Bridge is already mounted on the pole, then the second Bridge is mounted to the installed Bridge.

► **Note**

The NE Asymmetrical Splitter should already be attached to the Bridge as described in the previous section.

When connecting the power cables of the CURRENT equipment, it is important to remember that when only one of the red or black wires is connected, the unconnected wire will float to the same voltage potential as the wire which is connected. When both wires are connected, current flow is limited by the circuitry in the equipment.

New Install – Ground Prep:

1. Attach the Bridge (with splitter) to the other Bridge by having the mounting hooks on the Bridge (with splitter) slide into the slots on the mounting bracket of the other Bridge as shown in *Figure 41*.

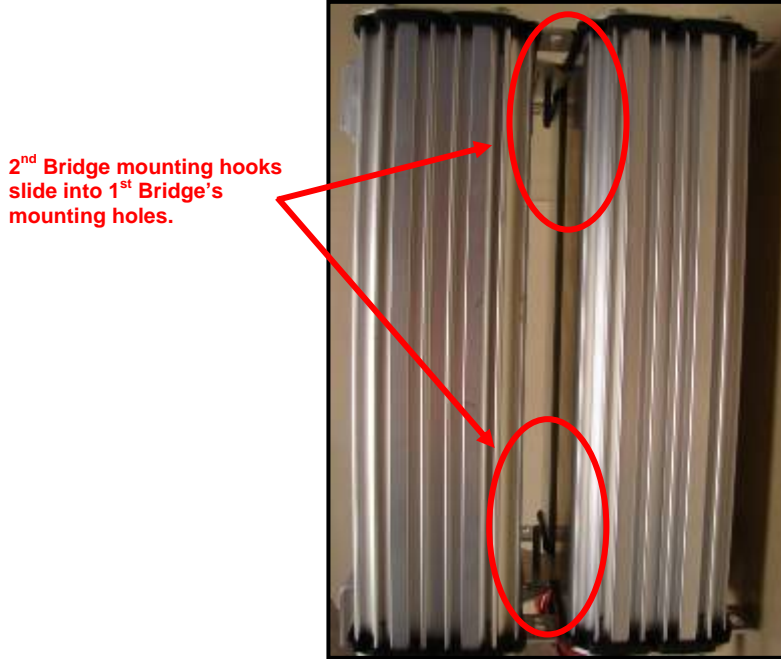


Figure 41 – Dual Bridges attached

2. Using two (2) #10 screws (*see Appendix A for selection*), secure the two Bridges as shown in *Figure 42*.

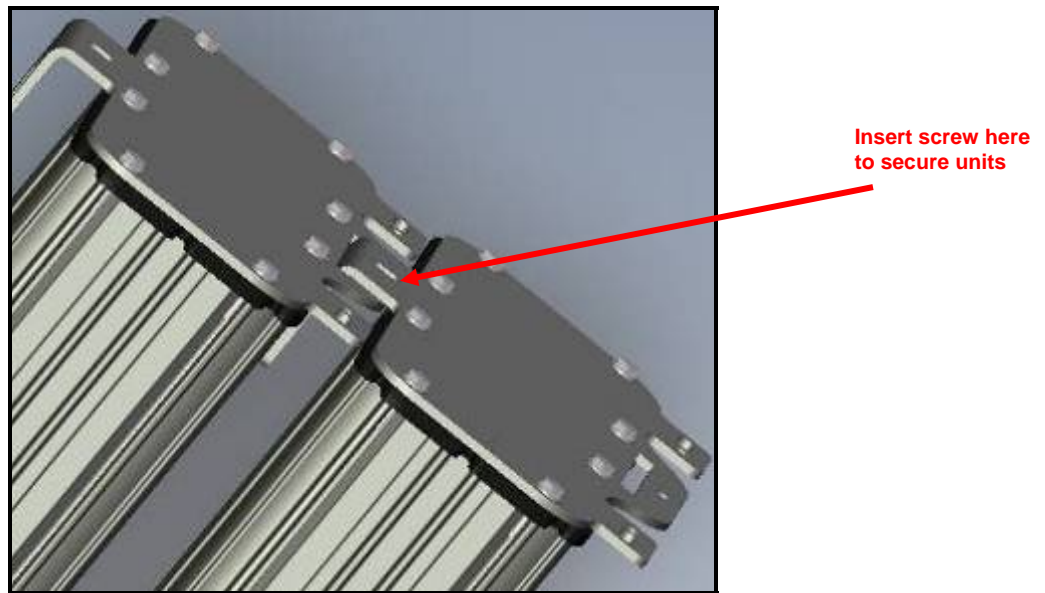


Figure 42 – Securing Backhaul Point to Bridge

3. Follow steps 1 – 6 in *section 6.2* to mount the Bridges onto the pole.
4. Connect the two Bridge cables to the connectors on the Splitter.
5. Connect the CT Coupler BNC cable to the Splitter.
6. Continue with steps 8 – 14 in *section 6.2* to complete the install.

Bridge already installed:

1. Attach the second Bridge (with splitter) to the installed Bridge by having the mounting hooks on the Bridge (with splitter) slide into the slots on the mounting bracket of the installed Bridge as shown in *Figure 41*.
2. Using two (2) #10 screws (*see Appendix A for selection*), secure the two Bridges together as shown in *Figure 42*.
3. Connect the two Bridge cables to the connectors on the Splitter.
4. Connect the CT Coupler BNC cable to the Splitter.
5. Continue with steps 8 – 14 in *section 6.2* to complete the install.

6.4 Verify Installation

The Bridge will emit tones indicating that the Bridge is powered up properly. The backhaul must be installed first in order to get all the beeps described below.

- A few seconds after the last 120 volt power wire is connected, the Bridge will emit a single tone signifying that it has power. If you do not hear the beep, check the LV power supply. If the LV power supply is fine, then change out the unit.
- After 30 seconds the Bridge will emit four (4) sequential tones signifying the Bridge has booted correctly and loaded the necessary software. These four (4) sequential tones are confirmation that the Bridge has been properly installed.
- You should not have to wait more than two (2) minutes for the entire process to take place.

▶ **Note**

If you do not hear the proper tones (or no tones at all) follow your utility standard procedures for dealing with equipment failures.

6.5 Removing Equipment

There is no specific order for removing the Bridge. The simplest way is to disassemble in the reverse sequence from assembly.

When removing the Bridge, be sure to **blunt cut** the wires. This will prevent the possibility of the neutral (white) wire from touching the energized wire and blowing the neutral fuse.

Chapter 7 – CURRENT Gateway-Bridge OH 6030

7. CURRENT Gateway-Bridge OH 6030

This chapter explains how to install the CURRENT Gateway-Bridge OH 6030 on a UG Terminal Pole. Please direct questions or request to your ground supervisor.

Powerline workers must meet both requirements listed below to be allowed to install the equipment of the CURRENT 5000 and 6000 series:

- 1. Be qualified to perform work in the utility power zone (see OSHA 1910.269).**
- 2. Receive appropriate CURRENT training specific to the CURRENT 6000 series (training course CURRENT 6000 F101 – CURRENT 6000 Field Installation of CURRENT equipment or the equivalent).**

The CURRENT Gateway-Bridge OH 6030 is the device in a Broadband over Power Line (BPL) system that transfers the communications signal to the primary distribution line from the secondary distribution lines and vice versa. The Gateway-Bridge is used at the UG Terminal Pole to transition between the overhead and underground BPL systems.

There are two possible install configurations for the Gateway-Bridge. The Gateway-Bridge may be installed by itself on the pole or with a CT Backhaul-Point on the pole. *Table 3* provides the type of installation along with the corresponding section.

Installation Type	Equipment	Section
Gateway-Bridge (solo)	Gateway-Bridge	7.2
Gateway-Bridge w/Backhaul-Point	<ul style="list-style-type: none"> • Gateway-Bridge • Backhaul-Point • Hanging Bracket 	7.2.1

Table 3 – CURRENT Gateway-Bridge Installation Types

7.1 Components

The major components for a Gateway-Bridge installation are listed below.

- CURRENT Gateway-Bridge OH 6030 (#210-0181-0008)
- A standard set of consumables on the truck as identified in the CURRENT Truck BOM listed at the end of this document.

The figures below show the nomenclature for the Gateway-Bridge.

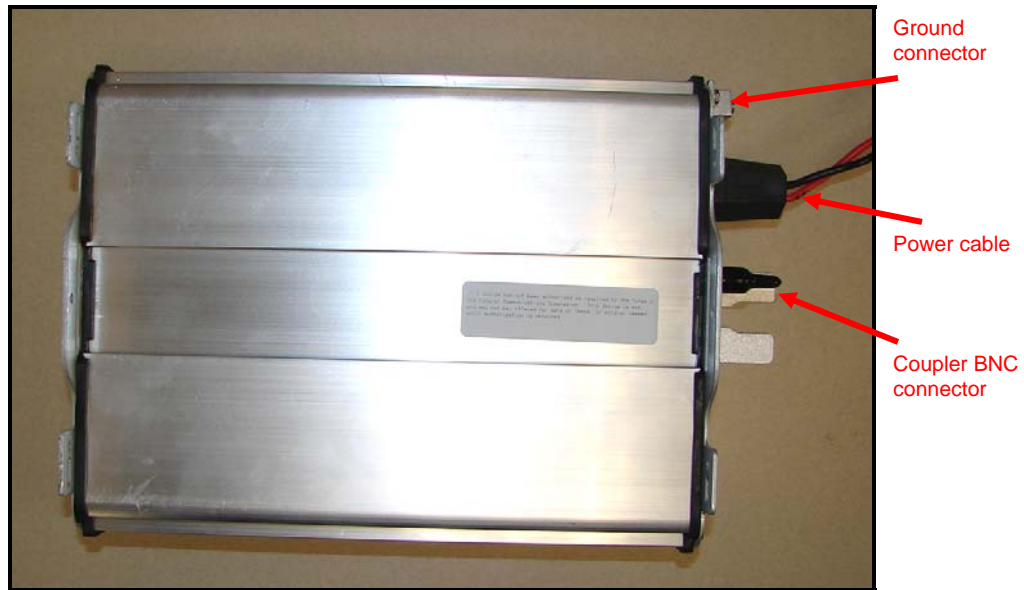


Figure 43 – CURRENT Gateway-Bridge nomenclature (front view)

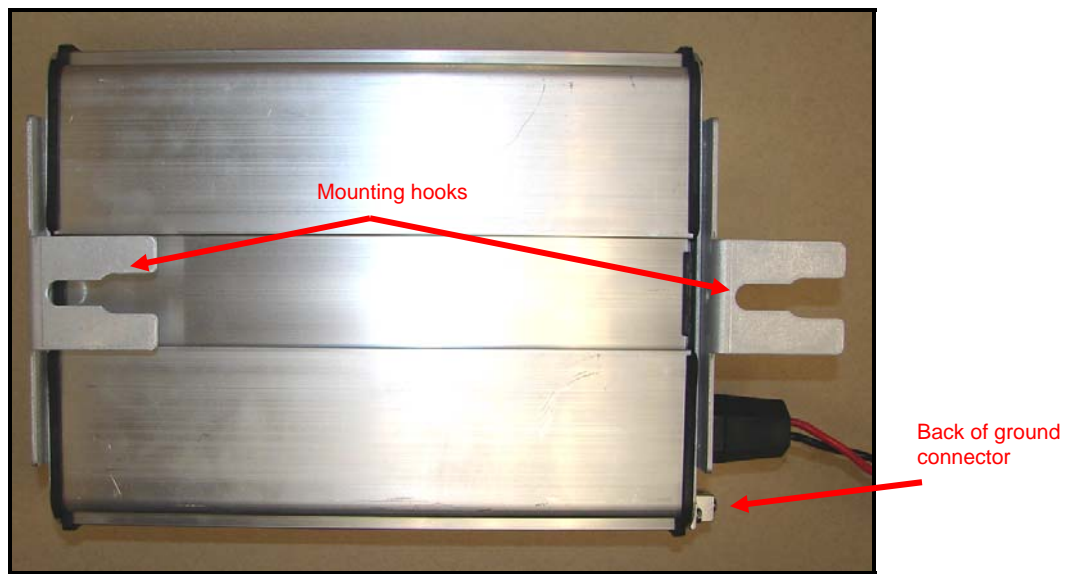


Figure 44 – CURRENT Gateway-Bridge nomenclature (back view)

7.2 Installation

The Gateway-Bridge will be mounted on the pole and then attached to the CT Coupler.

► **Notes**

- a) Apply an approved lubricant (e.g., Burndy type A-13 Penetrox) to all electrical connections.
- b) Do **not** use the power cable as a handle.

When connecting the power cables of the CURRENT equipment, it is important to remember that when only one of the red or black wires is connected, the unconnected wire will float to the same voltage potential as the wire which is connected. When both wires are connected, current flow is limited by the circuitry in the equipment.

1. To mount the Gateway-Bridge, ensure that the location where the Gateway-Bridge will be mounted is within six (6) feet of the distribution secondary. Be sure to mount per your approved utility standards.
2. Drill a clearance hole for the 5/8" through bolt. Loosely install the appropriate length through bolt using the square nut on the back side of the pole.
3. Measure 11 1/2" down from the through bolt and drive in the lag screw.
4. Loosen the lag screw slightly.
5. Hang the Gateway-Bridge on the through bolt. The top mounting plate will fit on the through bolt. The bottom mounting plate will fit over the lag screw.
6. Secure the Gateway-Bridge by tightening the nut on the through bolt and then the lag screw.

When connecting the power cables of the CURRENT equipment, it is important to remember that when only one of the red or black wires is connected, the unconnected wire will float to the same voltage potential as the wire which is connected. When both wires are connected, current flow is limited by the circuitry in the equipment.

7. Cover the exposed wire on the red and black power wires with electrical tape. This will protect in case of accidental contact with the power wires before they are connected in *step 13*.
8. Cut the ground wire to the length needed.
9. Attach one end of the wire to the Gateway-Bridge ground connector using a screwdriver.
10. Attach the other end of the ground wire to the pole ground or system neutral conductor with a crimp. Verify that the pole ground and system neutrals are interconnected.
11. Connect the coax cable from the Coupler to the coax cable on the Gateway-Bridge.



Always make sure that the unit is properly grounded before connecting or disconnecting the power cable!

12. **CAUTION:** Check for the correct secondary voltage prior to connecting any CURRENT equipment to power supply lines. This ensures that
 - Phase to GND = 120V
 - Phase to GND = 120V
 - Phase to Phase = 240V
13. Connect the power cable to the distribution secondary using either the split bolt or one of the compression connectors, whichever is your utility's preferred method. Strip back the power cable needed to make the connection.
 - Red = Line 1, 120 volts → **Remember to remove the electrical tape covering the exposed wire.**
 - Black = Line 2, 120 volts → **Remember to remove the electrical tape covering the exposed wire.**
- ▶ **Note**

If only 120 volt power is available, then the **Red** wire is connected to the 120V and the Black wire is connected to neutral. Wrap the **Black** wire with **white** electrical tape to indicate it is being utilized as a neutral wire.
14. Once the wires have been attached, wrap with electrical tape per standard utility procedure.
15. If needed, dress the excess power wires with utility approved cover on the pole. If using staples, be sure not to staple into the power wires when attaching to the pole.
16. Continue with *section 7.3* to complete the installation.

7.2.1 Install with CT Backhaul-Point 5000g

There will be times when the network design will call for the Gateway-Bridge to be installed with a CT Backhaul-Point on the same pole. The two units connect to one CT Coupler using an NE Asymmetrical Splitter (#210-0187-0005) mounted on the Gateway-Bridge. *Section 6.3.1* explains how to attach the Splitter to the Gateway-Bridge. This section explains how to install a CT Backhaul-Point and a Gateway-Bridge together on one pole.

The major components for a Gateway-Bridge installation with a CT Backhaul-Point are listed below.

- CURRENT Gateway-Bridge OH 6030 (#210-0181-0008)
- CT Backhaul-Point OH 5000g (#210-0135-xxxx)
 - Hanging Bracket (#240-0458-xxxx)
 - NE Asymmetrical Splitter (#210-0187-0005)
 - RF Extension cable – 4 ft. (#240-3107-0001)
- A standard set of consumables on the truck as identified in the CURRENT Truck BOM listed at the end of this document.

To minimize the amount of pole real estate needed to install both units on the pole, the hanging bracket is used to attach the Gateway-Bridge to the CT Backhaul-Point. *Figure 45* shows the nomenclature of the hanging bracket.)

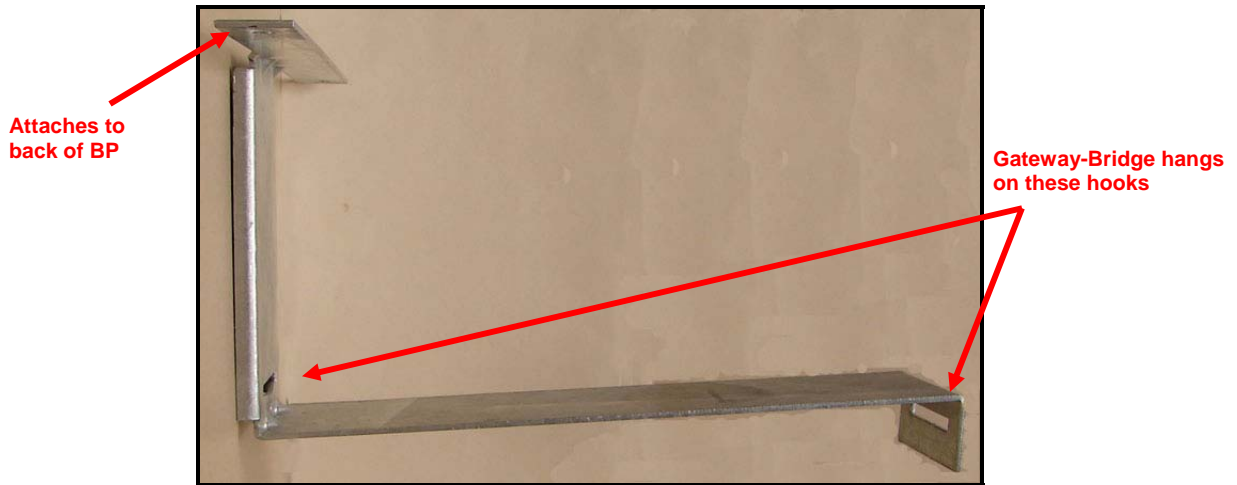


Figure 45 – Hanging Bracket nomenclature

1. If the CT Backhaul-Point is on the pole, remove it from the pole.
2. Remove the two screws from the top of the back plate on the CT Backhaul-Point (*Figure 46*).

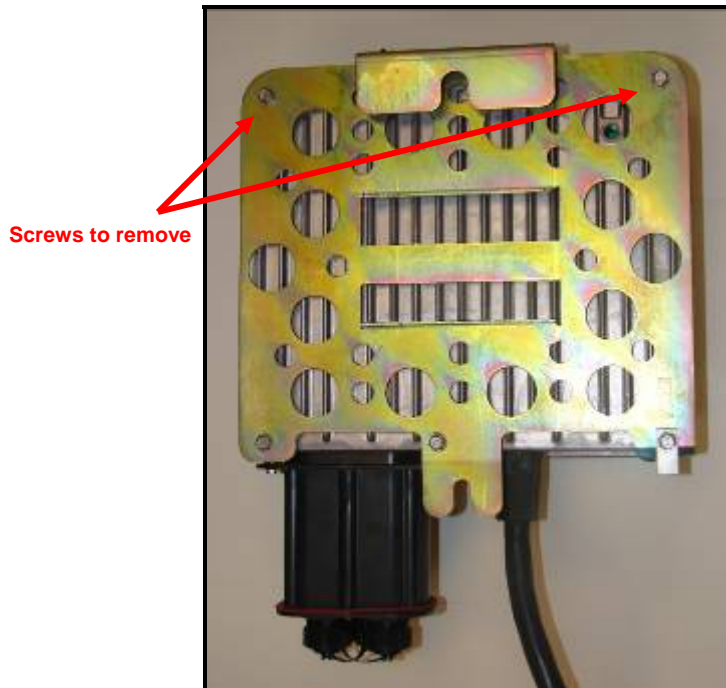


Figure 46 – Remove screws from CT Backhaul-Point back plate

3. Slide the mounting bracket between the CT Backhaul-Point's back plate and the unit (*Figure 47*). Use Loctite[®] to secure the back plate with the screws removed in step 2.

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Figure 47 – Bracket attached to CT Backhaul-Point

4. Hang the CT Backhaul-Point on the pole. If this is a new install, follow the procedures listed in *section 5.2*. If you are putting the CT Backhaul-Point back on the pole, simply reattach it to the existing bolts.
5. Slide the Gateway-Bridge hooks into the slots of the bracket (*Figure 48*).

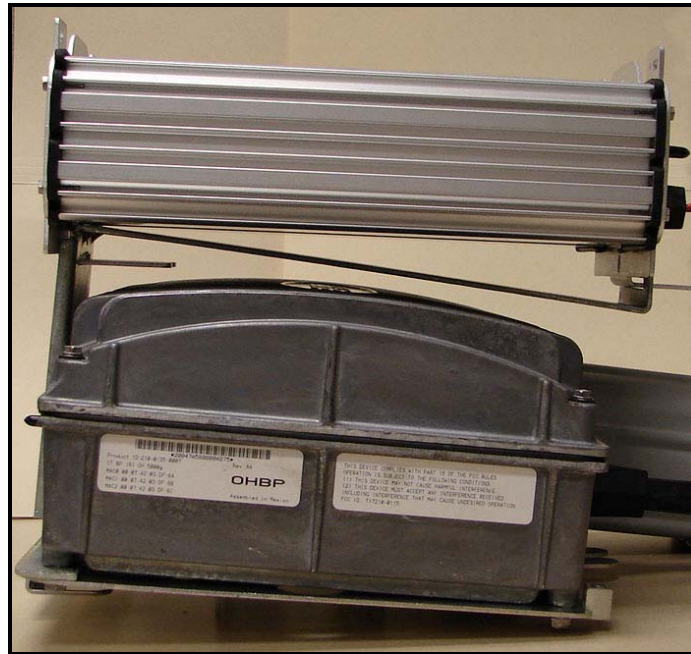


Figure 48 – Gateway-Bridge attached to CT Backhaul-Point

6. Secure the Gateway-Bridge by using a #10 screw (*see Appendix A for selection*). Secure the top of the Gateway-Bridge to the hanging bracket as shown in *Figure 49*.

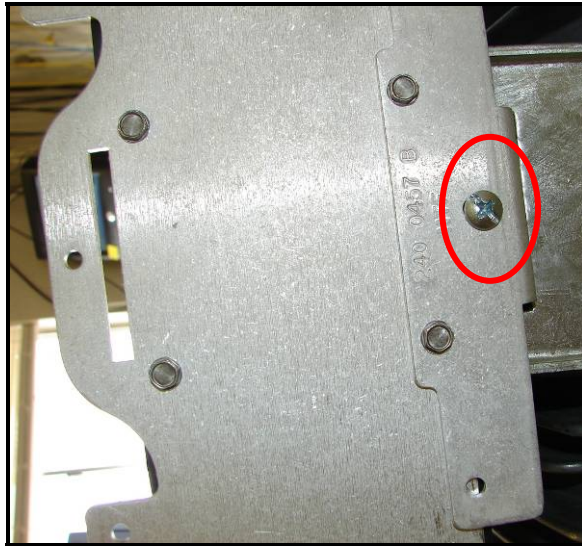


Figure 49 – Secure Gateway-Bridge to hanging bracket

When connecting the power cables of the CURRENT equipment, it is important to remember that when only one of the red or black wires is connected, the unconnected wire will float to the same voltage potential as the wire which is connected. When both wires are connected, current flow is limited by the circuitry in the equipment.

7. Cover the exposed wire on the red and black power wires with electrical tape. This will protect in case of accidental contact with the power wires before they are connected in *step 15*.
8. Cut the ground wire to the length needed.
9. Attach one end of the wire to the Gateway-Bridge ground connector using a screwdriver.
10. Attach the other end of the ground wire to the pole ground or system neutral conductor with a crimp. Verify that the pole ground and system neutrals are interconnected.
11. Repeat the ground wire steps for the CT Backhaul-Point.
12. Connect one NE connector on the splitter to the Gateway-Bridge.
13. Connect the other NE connector to the CT Backhaul-Point using the RF Extension cable.
14. Connect the CT Coupler BNC cable to the Splitter.
15. Continue with steps 12 – 15 in *section 7.2*.



Figure 50 – Gateway-Bridge installed with CT Backhaul-Point

7.3 Verify installation

Listen for the Gateway-Bridge tones indicating that the Gateway-Bridge is powered up properly.

- A few seconds after the last 120 volt power wire is connected, the Gateway-Bridge will emit a single tone signifying it has power.
- The Bridge will emit four (4) sequential tones signifying the Gateway-Bridge has booted correctly and loaded the necessary software. These four (4) sequential tones are confirmation that the Bridge has been properly installed. This should take less than a minute.

▶ **Note**

If you do not hear the proper tones (or no tones at all) follow your utility's standard procedures for dealing with equipment failures.

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Chapter 8 – CURRENT LV Repeater 6511

8. CURRENT LV Repeater 6511

This chapter describes the procedure for installing the CURRENT LV Repeater 6511. please direct questions or requests to your ground supervisor.

The CURRENT LV Repeater (LV Repeater) is used to extend the reach of the BPL signal along the distribution secondary. The LV Repeater is mounted on a utility pole as part of the overhead solution. The LV Repeater works in conjunction with the rest of the 6000 series equipment.

Powerline workers must meet both requirements listed below to be allowed to install the equipment of the CURRENT 5000 and 6000 series:

1. Be qualified to perform work in the utility power zone (*see* OSHA 1910.269).
2. Receive appropriate *CURRENT* training specific to the CURRENT 6000 series (training course CURRENT 6000 F101 – CURRENT 6000 Field Installation of CURRENT Group equipment or the equivalent).

8.1 Components

The major components for a CURRENT LV Repeater 6511 installation are listed below.

- CURRENT LV Repeater 6511 (#210-0181-0007)
- A standard set of consumables on the truck as identified in the CURRENT Group truck stock. Please refer to *Appendix A* for a complete listing of the truck items specific for installing the CURRENT LV Repeater.

Figure 51 and *Figure 52* below show the nomenclature of the front and back of the LV Repeater.

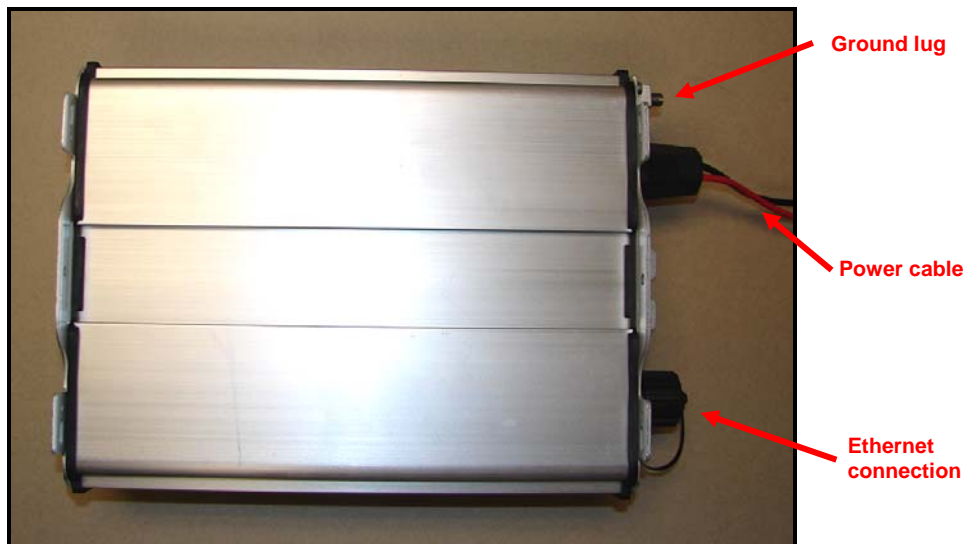


Figure 51 – Front of LV Repeater

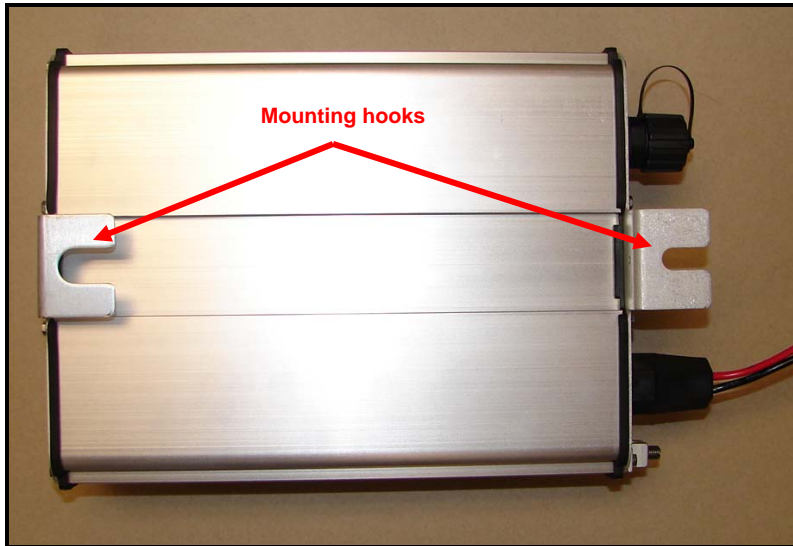


Figure 52 – Back of LV Repeater

8.2 Installation

► Notes

- Apply an approved lubricant (e.g., Burndy type A-13 Penetrox) to all electrical connections.
- **The CURRENT LV Repeater is not compatible with CT Backhaul-Point OH 5000 and should not be mounted with one.**

When connecting the power cables of the CURRENT equipment, it is important to remember that when only one of the red or black wires is connected, the unconnected wire will float to the same voltage potential as the wire which is connected. When both wires are connected, current flow is limited by the circuitry in the equipment.

1. To mount the LV Repeater, ensure that the location where the LV Repeater will be mounted is within six (6) feet of the distribution secondary.
2. Drill a clearance hole for the 5/8" through bolt. Loosely install the appropriate length through bolt using the square nut on the back side of the pole.
3. Measure 11 1/2" down from the through bolt and drive in the lag screw.
4. Loosen the lag screw slightly.
5. Hang the LV Repeater on the through bolt. The slotted hook on the top of the mounting plate will fit on the lag bolt with the hook on the bottom fitting over the lag screw.
6. Secure the LV Repeater by tightening the lag screw and the nut on the through bolt.

When connecting the power cables of the CURRENT equipment, it is important to remember that when only one of the red or black wires is connected, the unconnected wire will float to the same voltage potential as the wire which is connected. When both wires are connected, current flow is limited by the circuitry in the equipment.

7. Cover the exposed wire on the red and black power wires with electrical tape. This will protect in case of accidental contact with the power wires before they are connected in *step 12*.
8. Cut the #6 copper ground wire to the length needed.
9. Attach one end of the wire to the LVR ground connector using a screwdriver.
10. Attach the other end of the ground wire to the pole ground or neutral wire (if there isn't a pole ground) with a utility approved connector.
11. **CAUTION:** Check for the correct secondary voltage prior to connecting any CURRENT equipment to power supply lines. This ensures that the power wires are properly connected to the secondary.
 - Phase to GND = 120V
 - Phase to GND = 120V
 - Phase to Phase = 240V
12. Connect the power cable to the distribution secondary using utility approved connectors. Be sure to only cut back the power cable the amount needed to make the connection.
 - Red = Leg 1, 120 volts → **Remember to remove the electrical tape covering the exposed wire.**
 - Black = Leg 2, 120 volts → **Remember to remove the electrical tape covering the exposed wire.**
13. If needed, dress the excess power wires with molding and staples on the pole. Be sure not to staple into the power wires when attaching to the pole.
14. Continue with the *Verify Installation* section (pg. 4).

8.3 Verify Installation

Listen for the LV Repeater tones indicating that the LV Repeater is powered up properly.

- As soon as the last 120 volt power wire is connected, the LV Repeater will emit a single tone signifying it has power.
- After 30 seconds the LV Repeater will emit four (4) sequential tones signifying the LV Repeater has booted correctly and loaded the necessary software. These four (4) sequential tones are confirmation that the LV Repeater has been properly installed.
- ▶ **Note**
If you do not hear the proper tones (or no tones at all) follow your utility's standard procedures for dealing with equipment failures.

Chapter 9 – CT LVR OH 5000

9. CT LVR OH 5000

This chapter describes the procedure for installing a CT LVR OH 5000. Please direct questions or requests to your ground supervisor.

The CT LVR OH 5000 is the device in a Broadband over Power Line (BPL) that extends the reach of the broadband communications on the secondary distribution line. It is used when the broadband signal is not able to reach a building from the CT Bridge directly. LVR stands for Low Voltage Repeater. As its name suggests, it is mounted on the Low Voltage power line.

Powerline workers must meet both requirements listed below to be allowed to install the equipment of the CURRENT 5000 and 6000 series:

- 1. Be qualified to perform work in the utility power zone (see OSHA 1910.269).**
- 2. Receive appropriate *CURRENT* training specific to the CURRENT 5000 series (training course CURRENT 5000 F101 – CURRENT 5000 Field Installation of CURRENT Group equipment or the equivalent).**

9.1 Components

The major components for a CT LVR OH 5000 installation are listed below.

- CT LVR OH 5000 (#210-0129-xxxx)
- A standard set of consumables on the truck as identified in the CURRENT Group truck stock. Please refer to *Appendix A* for a complete listing of the truck items specific for installing the CT LVR.

Figure 53 and *Figure 54* below show the nomenclature of the front and back of the CT LVR.

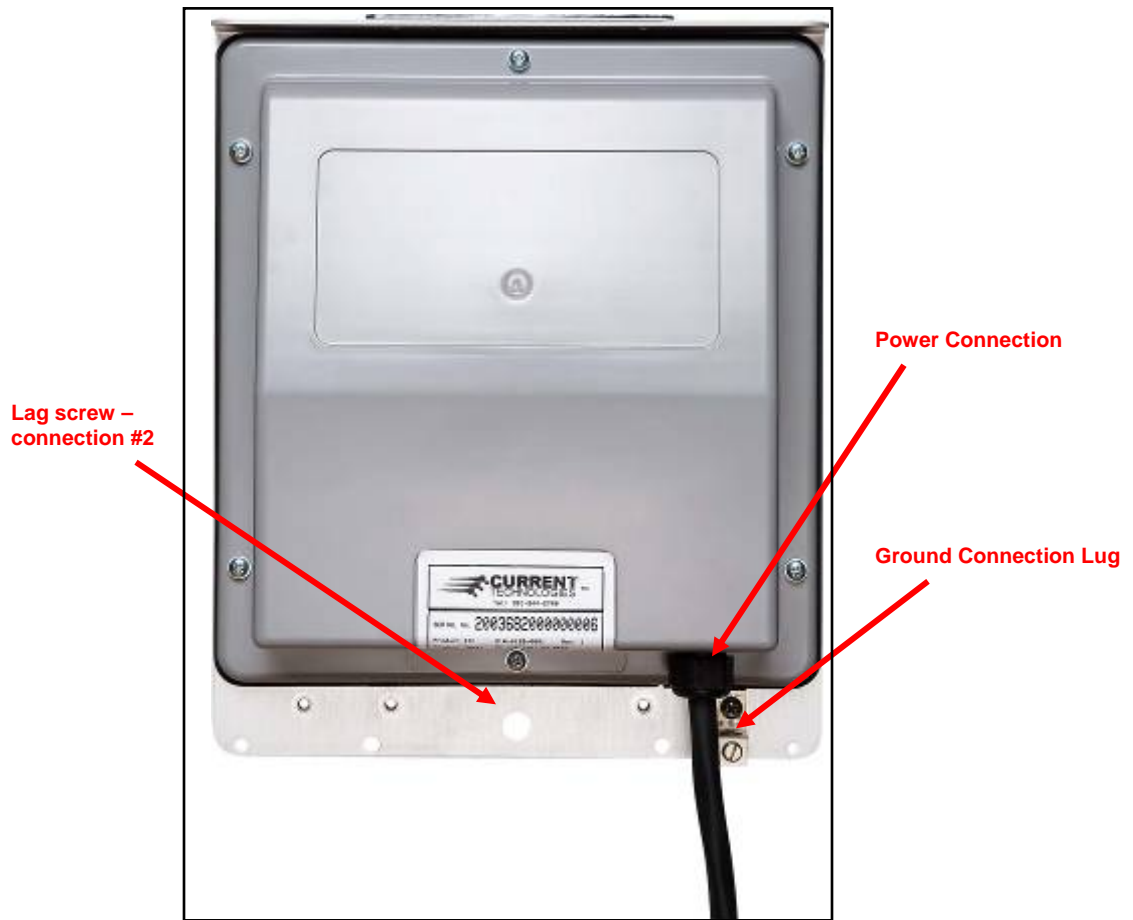


Figure 53 – Nomenclature for the front of the CT LVR

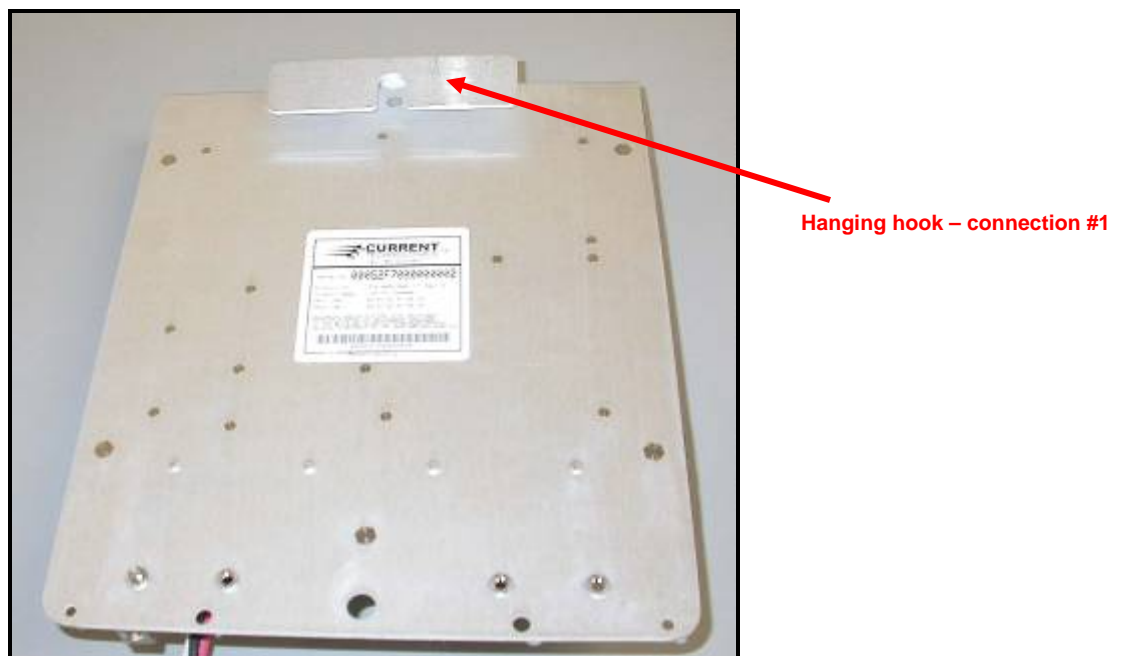


Figure 54 – Nomenclature for the back of the CT LVR

9.2 Installation

The steps for mounting the CT LVR on a utility pole are listed below.

► **Notes**

Apply an approved lubricant (e.g., Burndy type A-13 Penetrox) to all electrical connections.

When connecting the power cables of the CURRENT equipment, it is important to remember that when only one of the red or black wires is connected, the unconnected wire will float to the same voltage potential as the wire which is connected. When both wires are connected, current flow is limited by the circuitry in the equipment.

1. Ensure that the location where the CT LVR will be mounted is within six (6) feet above the distribution secondary.
2. Screw a lag screw into the utility pole. Leave the screw protruding about 1/8 inch.
3. Hang the CT LVR on the protruding lag screw.
4. Ensure that the CT LVR is hanging vertically straight and install a second lag screw at the bottom of the mount by tightening the second lag screw using a wrench or bolt-driver against the bottom bolt connection of the mounting bracket. **Be sure not to bang so as to avoid any unnecessary vibrations of the CT LVR!**

When connecting the power cables of the CURRENT equipment, it is important to remember that when only one of the red or black wires is connected, the unconnected wire will float to the same voltage potential as the wire which is connected. When both wires are connected, current flow is limited by the circuitry in the equipment.

5. Cover the exposed wire on the red and black power wires with electrical tape. This will protect in case of accidental contact with the power wires before they are connected in *step 10*.
6. Cut ground wire to the length needed.
7. Attach one end of the wire to the CT LVR ground connector using a screwdriver.
8. Attach the other end of the ground wire to the pole ground or neutral wire (if there isn't a pole ground) with a crimp.
9. Trim the CT LVR power wires to the shortest possible length that will still reach the secondary.
10. Using either crimp type connectors or split bolts (whichever is the preferred method of the utility) attach the unit wires using the following color code.
 - Red = 120 volts (leg 1) → **Remember to remove the electrical tape covering the exposed wire.**

- Black = 120 volts (leg 2) → **Remember to remove the electrical tape covering the exposed wire.**

10. Connect the wires to the secondaries per your utility's standard procedures.
11. If needed, dress the excess power wires with molding and staples on the pole.

The illustration in *Figure 55* is an example of an installed CT LVR. Please refer to *Appendix B* for the complete install drawing.

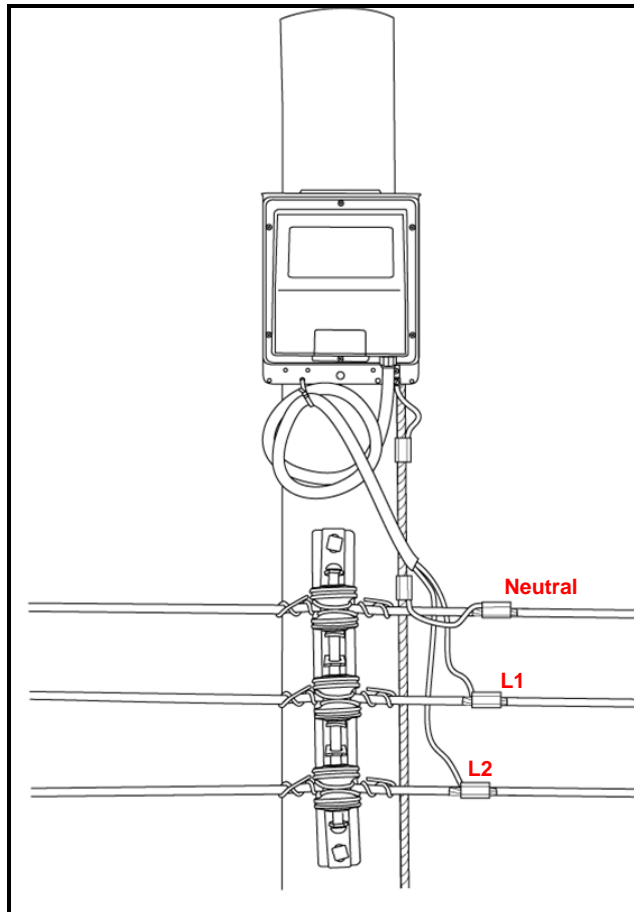


Figure 55 – CT LVR Installed

9.3 Removing Equipment

Disassemble in the reverse sequence from the assembly. When removing the CT LVR, be sure to **blunt cut** the wires.

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Appendix A – Truck Stock BOM

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A. Truck Stock BOM

This appendix contains the complete bill of materials for the Truck BOM for the components which comprise the OH 5000- and 6000-series. The table below lists the additional parts which are needed to install any of the CURRENT equipment in the OH 5000- and 6000-series. These parts are not necessarily provided by *CURRENT*.

► **Note**

Any product marked with a ♦ means that you may only use the approved manufacturer's part which is listed.

Product Name	Approved Manufacturer P/N	Quantity per Assembly	CURRENT Equipment	Notes
#6 AWG ground wire	Graybar - #XHHW2-6-STR-BLACK Nehring Electrical Works - #238050000	As needed	All assemblies	
#6 AWG wire, 300V	New England Wire Technologies - #N30-36T-775-2UC1	As needed	CT Coupler OH 5000	Used when shortening hotline leads
#10 screw (1.25")	<ul style="list-style-type: none"> ▪ Century Fasteners - #SH010F116-IHWTA35 ▪ Hi-Tech Fasteners - #1020TTMW 	2	CURRENT Bridge OH 6021	Use any stainless steel #10-32 Taptite™ screw of .375" – 1.25" length
#10-32, Hex Washer Head (1.5")	<ul style="list-style-type: none"> ▪ Century Fasteners - #SH010F132-IHWTA35 ▪ DB Roberts/Holbrook - #HWH1032X1-1/2-IND-SS-TTII ▪ Hi-Tech Fasteners - #1124TTMW-SS 	2	NE Asymmetrical Splitter CURRENT Bridge OH 6021 CT Backhaul-Point OH 5000 CURRENT Gateway-Bridge OH 6030	Or anything similar
Bracket, hanging	Must be ordered thru CURRENT	1	CT Coupler OH 5000	CURRENT P/N = #240-0141-xxxx
Compression H-Tap connectors, Cu → Cu. Ground size P/N 4-6	Thomas & Betts/Blackburn - #CF44-1	1	CT Coupler OH 5000 CURRENT Bridge OH 6021 CT Backhaul-Point OH 5000 CURRENT Gateway-Bridge OH 6030 CT LVR OH 5000	Select one of these or anything similar
Compression H-Tap connectors, Cu → Cu. Ground size P/N 2-4	Thomas & Betts/Blackburn - #CFS22-1			

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Product Name	Approved Manufacturer P/N	Quantity per Assembly	CURRENT Equipment	Notes
18" EMB – straight w/T-Strap	Maclean Power System - #G1MDA318AASB	As needed	CT Coupler OH 5000	Choose one per pole assembly that requires an EMB
18" EMB – cloverleaf	Hubble/Chance - #1SBH18CL or 1SBM18CLRH			
21" EMB – cloverleaf	Hubble/Chance - #1SBH21CL			
24" EMB - cloverleaf	Hubble/Chance - #1SBH24CL			
43" EMB – swing arm	Hubble/Chance - #1SBM12AM43B			
60" EMB – swing arm	Hubble/Chance - #1SBM12AM60B			
Hanging Bracket	Must be ordered thru CURRENT	1	CURRENT Gateway-Bridge OH 6030 installed with CT Backhaul-Point OH 5000g	CURRENT P/N = #240-0458-xxxx
◆ Hi-tech Fastener screws	Hi-Tech - #1032PLPP	3	CT Coupler OH 5000	Used to fasten CT Coupler OH 5000 Bracket to the CT Coupler OH 5000 – MUST NOT BE SUBSTITUTED!
Lag screw – 2"	<ul style="list-style-type: none"> ▪ McMaster-Carr - #94048A290 ▪ Hi-Tech Fasteners - #3732L-HDG 	2	CT LVR OH 5000	Or anything similar
Lag screw – 4"	Joslyn Manufacturing - #J8754TP	1	CT Coupler OH 5000 CT Backhaul-Point OH 5000 CURRENT Bridge OH 6021 CURRENT Gateway-Bridge OH 6030 CURRENT LV Repeater 6511	
Lubricant	Burndy type A-13 or something similar	As needed	All assemblies	Used on all electrical connections
Plastic cable guard	Hubbell/Chance - #96KG-3/4	As needed	CT Coupler OH 5000	
RF Extension cable – 4 ft.	Must be ordered thru CURRENT	1	CURRENT Gateway-Bridge OH 6030 installed with CT Backhaul-Point OH 5000g	CURRENT P/N = #240-3107-0001
Rubber tape, EPR – linerless, 2" wide	3M - #130C; 2x30 ft.	6"	CT Coupler URD 5010rp	
Square nut for through bolt – 2-1/4 x 2-1/4 x 3/16	Joslyn Manufacturing - #J1076	1	CT Coupler OH 5000 CURRENT Bridge OH 6021 CT Backhaul-Point OH 5000 CURRENT Gateway-Bridge OH 6030 CURRENT LV Repeater 6511	
Square washer, 3"	American Anchor Bolt - #SFWG34	1	CT Coupler OH 5000	

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Product Name	Approved Manufacturer P/N	Quantity per Assembly	CURRENT Equipment	Notes
Staples for cable guard	Joslyn Manufacturer - #7513	As needed	CT Coupler OH 5000	
Splice, Solis Butt, 6 awg	Tyco - #36886	As needed	CT Coupler OH 5000	
Street lighting compression connector. Main run size P/N 2-6 stranded, P/N 2-4 solid	Thomas & Betts/Blackburn - #WR9	1-3	CT Coupler URD 5010rp = 1 CURRENT Bridge OH 6021 = 2	Choose one per assembly
Street lighting compression connector. Main run size P/N 3-2/0 stranded, P/N 1-2 solid	Thomas & Betts/Blackburn - #WR139		CT Backhaul-Point OH 5000 = 3 CURRENT Gateway-Bridge OH 6030 = 2	
Split bolt/bug	Burndy – KS22		CT LVR OH 5000 = 2	
Through bolt – 5/8"d, 10"L	Joslyn Manufacturing - #J8810	As needed	CT Coupler OH 5000 CURRENT Bridge OH 6021 CT Backhaul-Point OH 5000 CURRENT Gateway-Bridge OH 6030 CURRENT LV Repeater 6511	Choose one per assembly
Through bolt – 5/8"d, 12"L	Joslyn Manufacturing - #J8812			
Through bolt – 5/8"d, 14"L	Joslyn Manufacturing - #J8814			
Through bolt – 5/8"d, 16"L	Joslyn Manufacturing - #J8816			
Tie wraps, weather resistant nylon 12" x 0.185"	Panduit - #BT3S-C0	As needed	CT Coupler OH 5000 CURRENT Bridge OH 6021 CT Backhaul-Point OH 5000 CURRENT Gateway-Bridge OH 6030	

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Appendix B – Installation Drawings

B. Installation Drawings

This appendix contains the basic installation drawings for the CURENT OH 5000 and 6000 series. Always check with your utility to ensure that the illustrated configurations shown here comply with your utility's standards and procedures.

CT Coupler OH 5000-15/25 – Cross Arm Mount

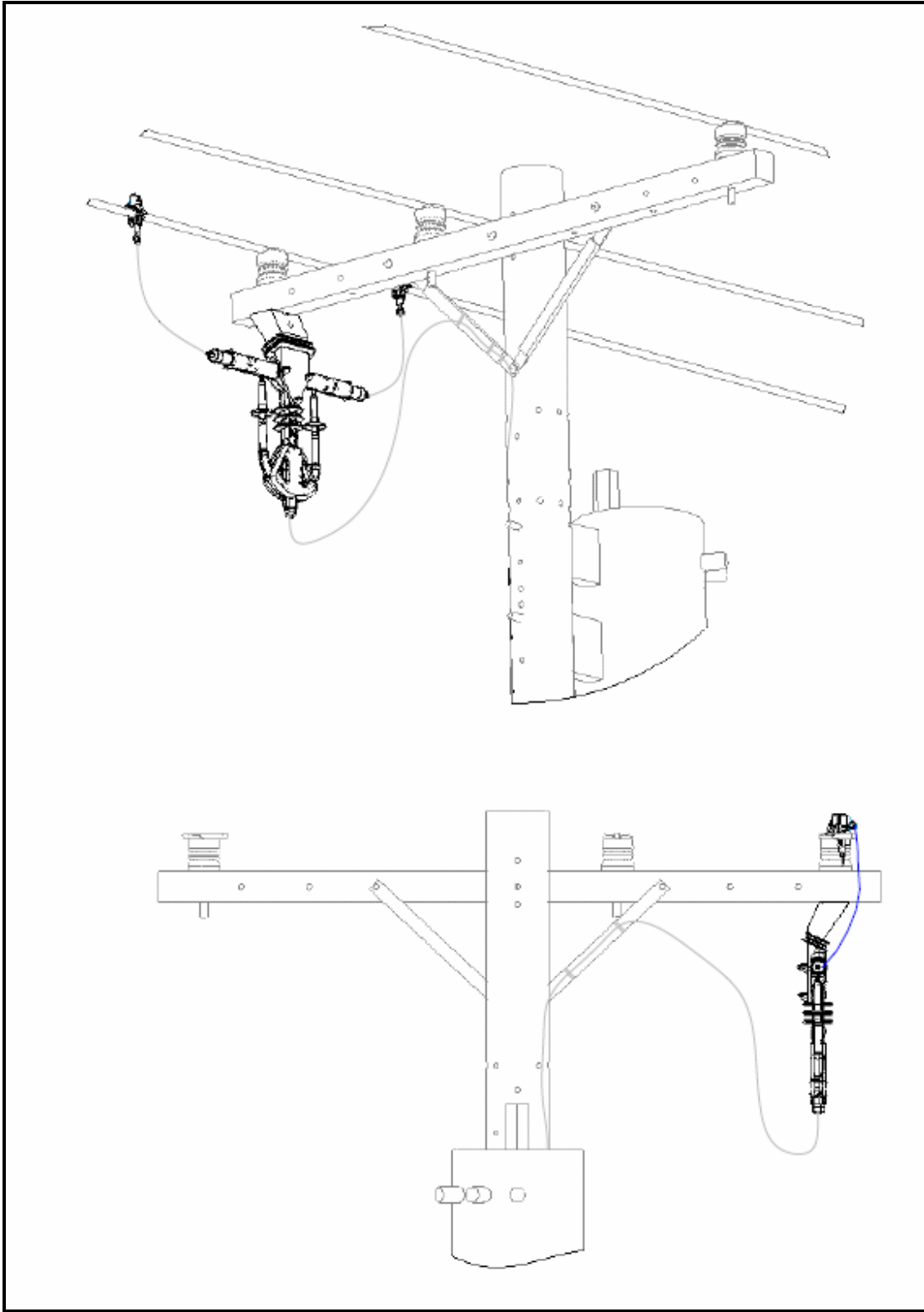


Figure 56 – Cross Arm Mount drawing

CT Coupler OH 5000-15/25 – EMB Mount

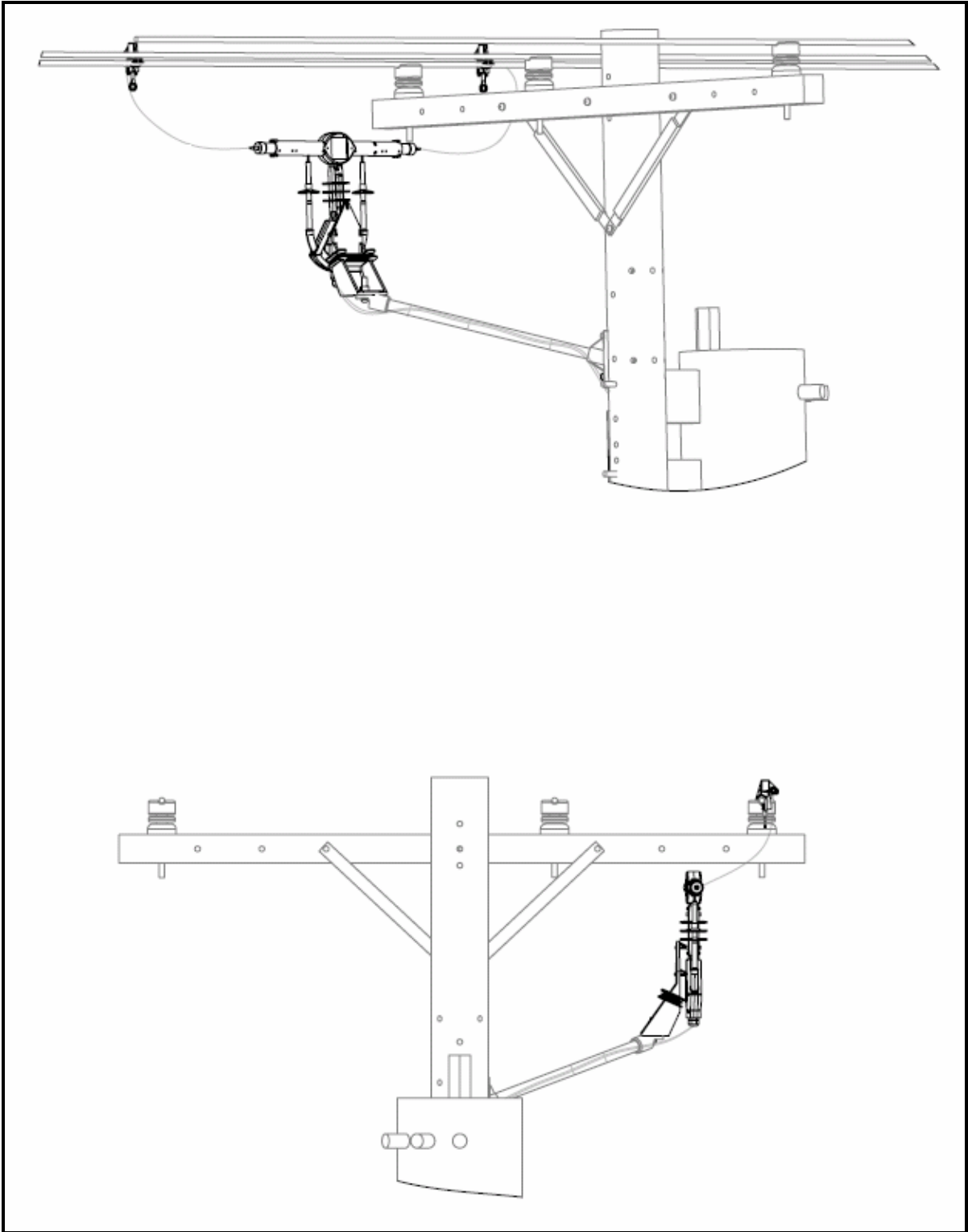


Figure 57 – EMB Mount drawing

CT Coupler URD 5010rp – Riser Pole install

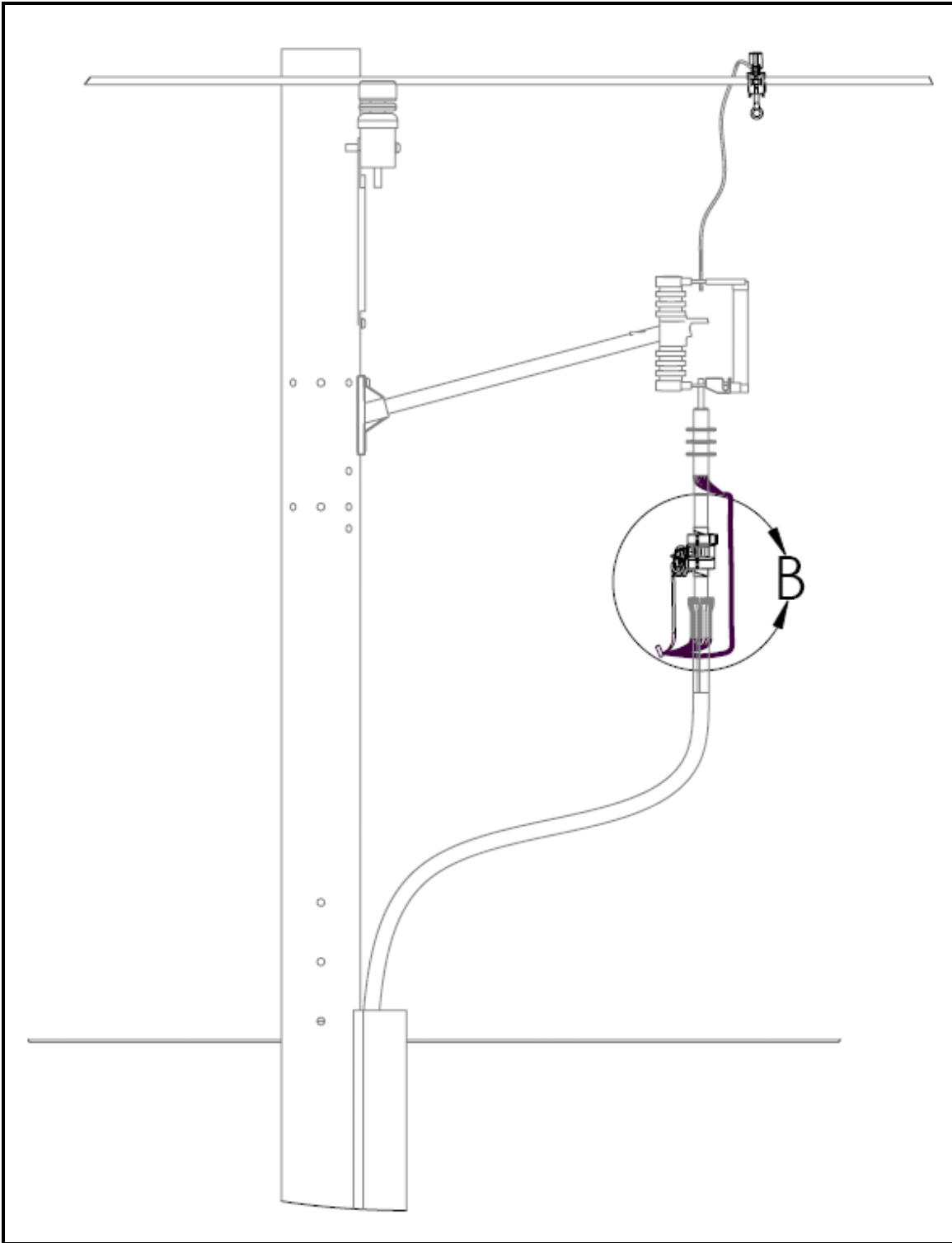
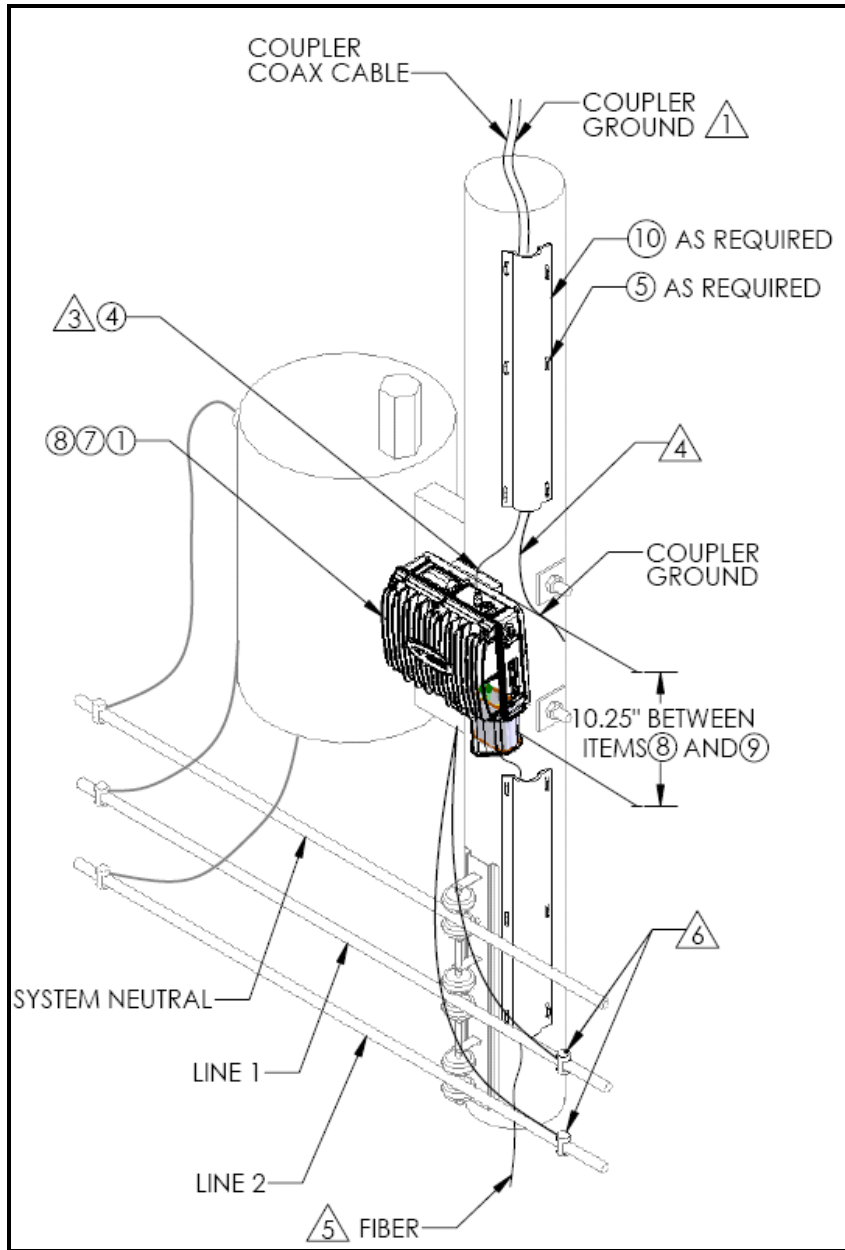


Figure 58 – Riser Pole w/CT Coupler URD 5010rp drawing

CT Backhaul-Point OH 5000g – OH pole install



ITEM	DESCRIPTION
1	CT BACKHAUL-POINT OH 5000g
2	CT BRIDGE OH 5000ML
3	LVR OH 5000
4	CT BACKHAUL-POINT ADAPTOR KIT
5	STAPLES FOR CABLE GUARD
6	12" CABLE TIES
7	WASHER FOR BOLT
8	5/8" X L" BOLT AND NUT
9	4" LAG SCREW
10	PLASTIC CABLE GUARD

Figure 59 – CT Backhaul-Point on OH Pole drawing

CURRENT Bridge OH 6021 – OH pole install

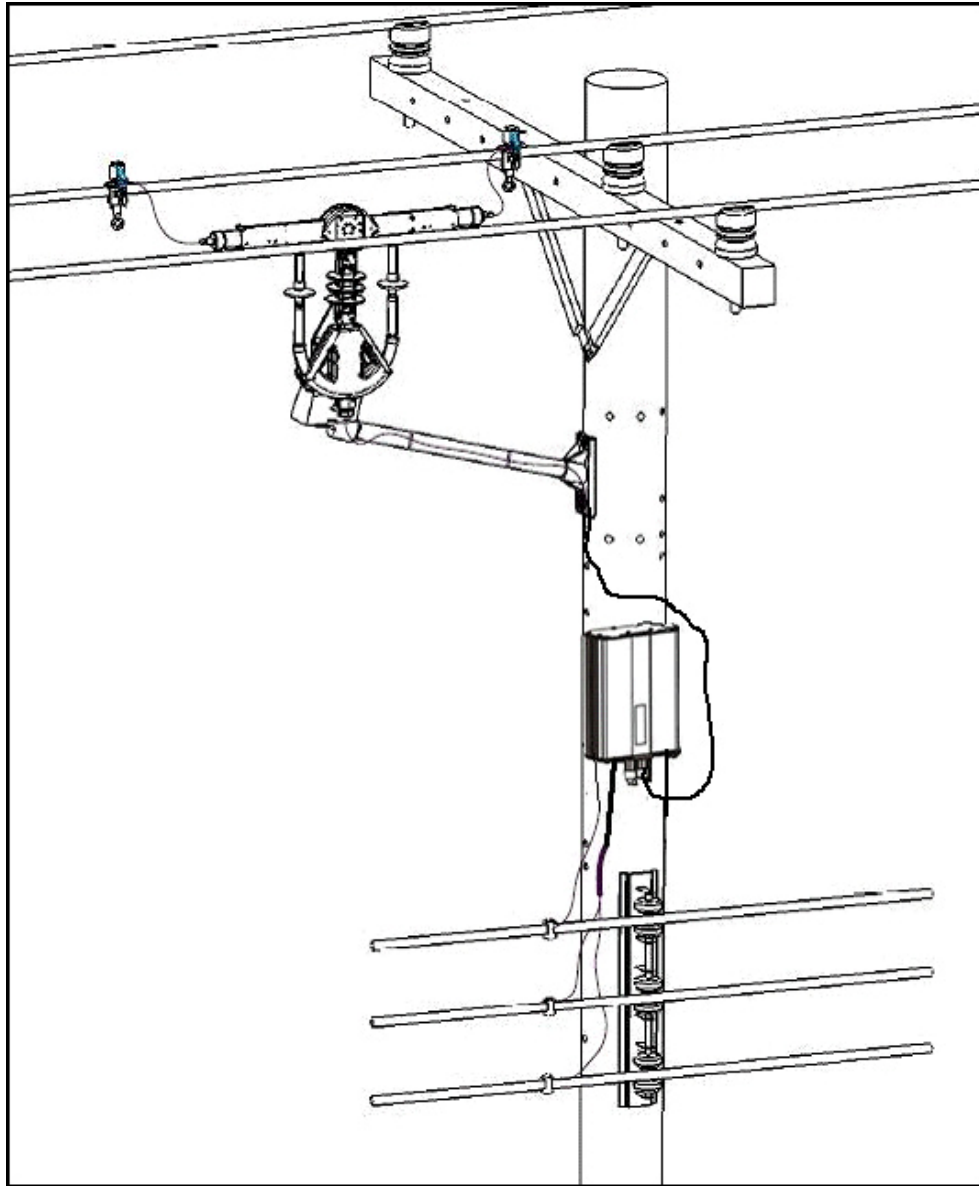


Figure 60 – CURRENT Bridge on OH Pole drawing

- ▶ **Note**
The Coupler's coax cable connecting to the Bridge is to be dressed on the pole (section 3.4.4). It only appears loose for illustration purposes.

CT Coupler URD 5010rp – UG pole installation

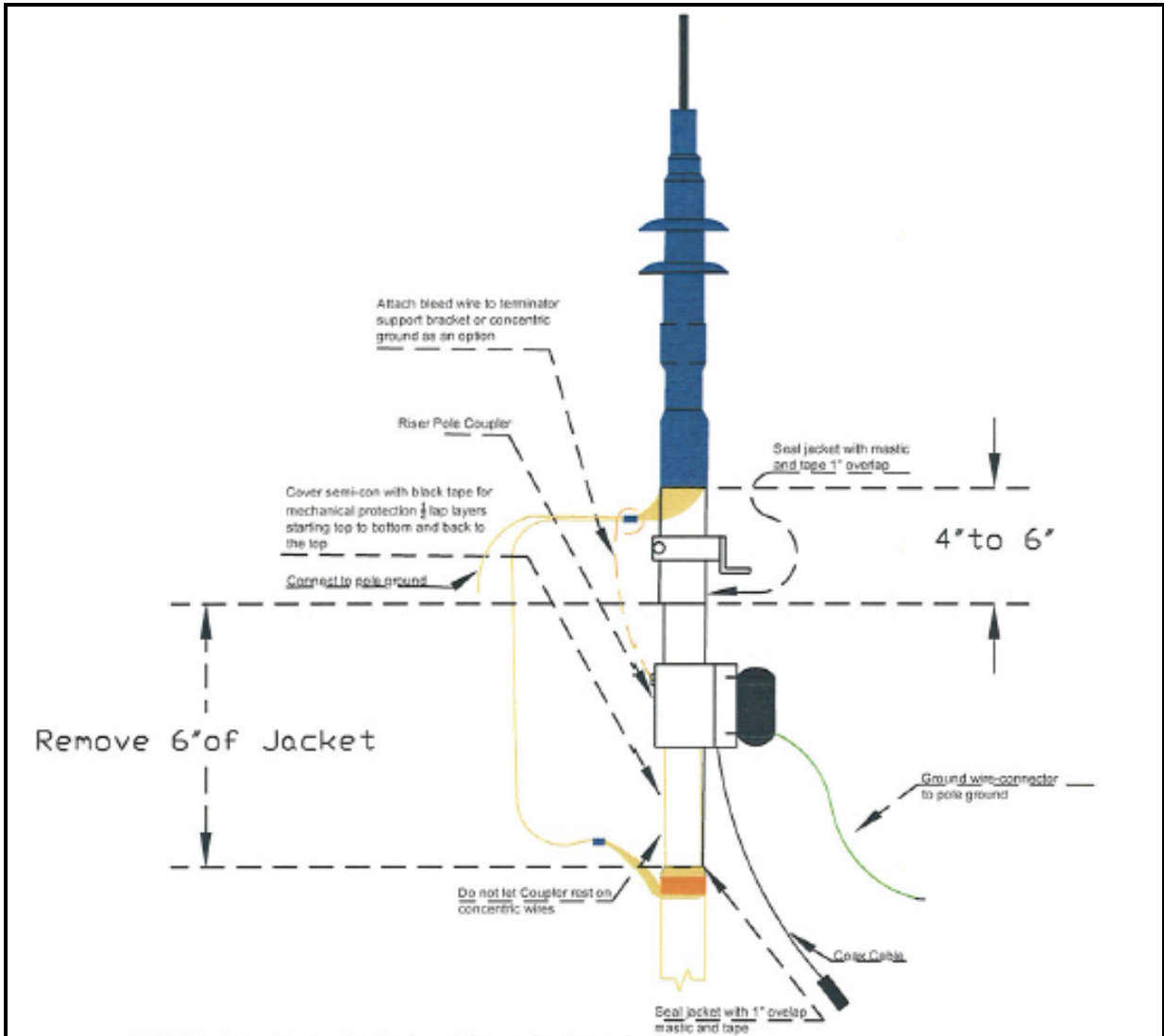


Figure 61 – CT Coupler URD 5010rp on UG pole drawing

- ▶ **Note**
For unjacketed cable, only tape below the Coupler to prevent the Coupler from touching the bare concentric wires.

Appendix C – EMB Mounting Distances

C. EMB Mounting Distances

This appendix provides the distances for each EMB used to mount the CT Coupler to the pole. The distances show the distance between the top of the Coupler to the ground (GND). *Figure 62* shows the basic measurement of the CT Coupler. *Figure 63* and *Figure 54* show what is being measured and relayed in *Table 4* (CT Coupler OH 5000-15) and *Table 5* (CT Coupler OH 5000-25).

Table 6 and *Figure 65* provide the distance between the end of the EMB to the ground on the pole.

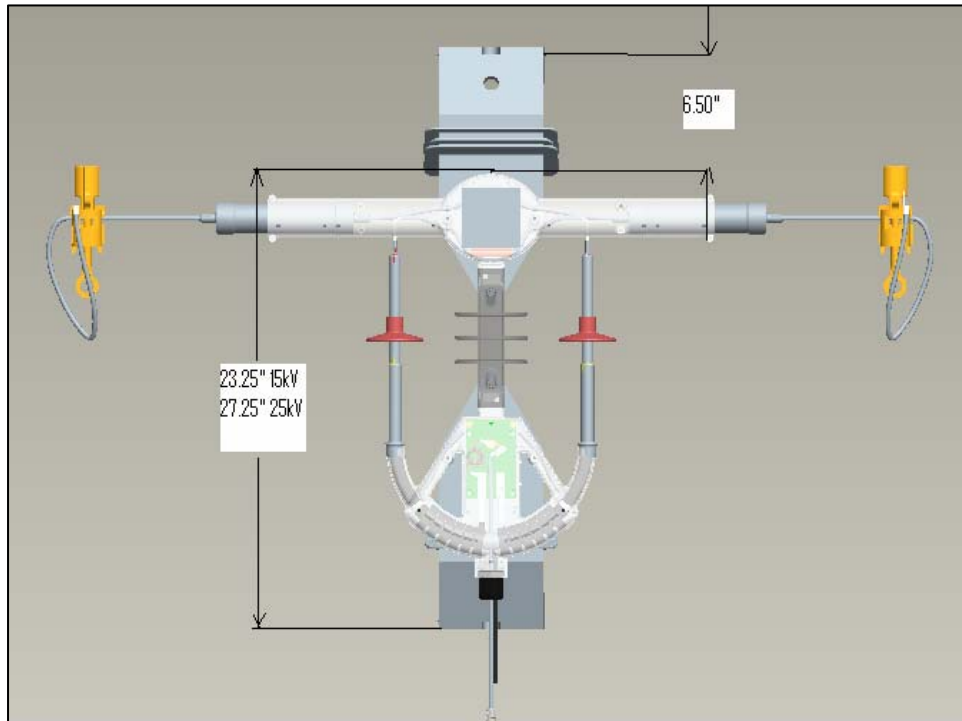


Figure 62 – CT Coupler OH 5000 basic measurements

Arm Length in inches	A	B
12.00	-6.79	22.96
28.00	-2.50	27.25
36.00	-0.35	29.40
42.00	1.25	31.00
58.00	4.96	34.71
72.00	8.58	38.33

Table 4 – CT Coupler OH 5000-15 measurements

Arm Length in inches	A	B
12.00	-6.79	26.96
28.00	-2.50	31.25
36.00	-0.35	33.40
42.00	1.25	35.00
58.00	4.96	38.71
72.00	8.58	42.33

Table 5 –CT Coupler OH 5000-25 measurements

► **Note**

Negative numbers indicate that GND (top of the “T” of the Coupler) is located below the bolt. Positive numbers indicate that GND is located above the bolt.

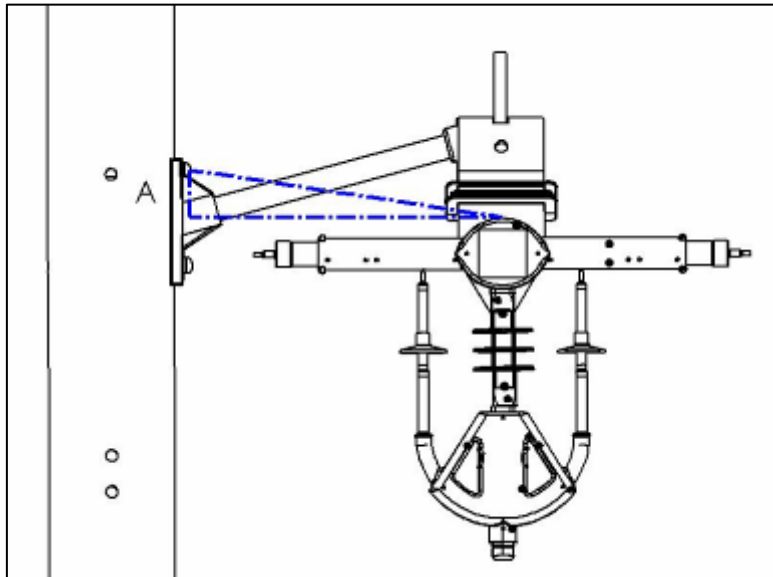


Figure 63 – "A" measurements

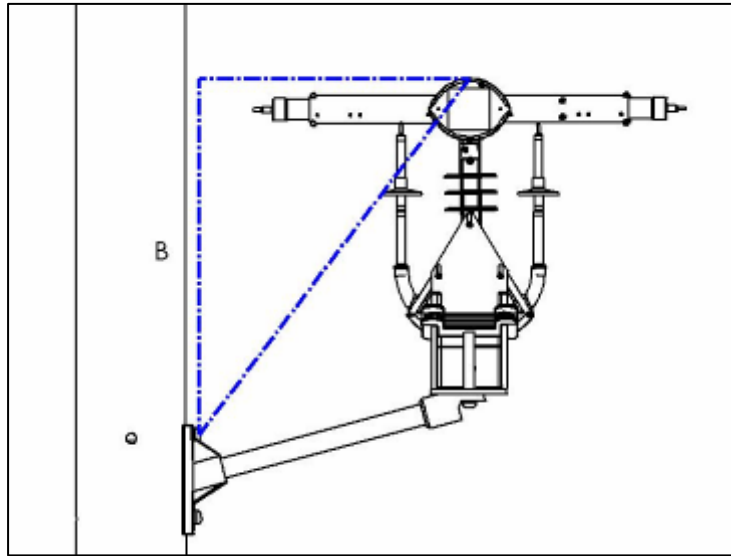


Figure 64 – "B" measurements

Arm Length in inches	V	H
12.00	-0.29	12.00
28.00	4.00	28.00
36.00	6.15	36.00
42.00	7.75	42.00
58.00	11.46	58.00
72.00	15.08	72.00

Table 6 – EMB distance to GND

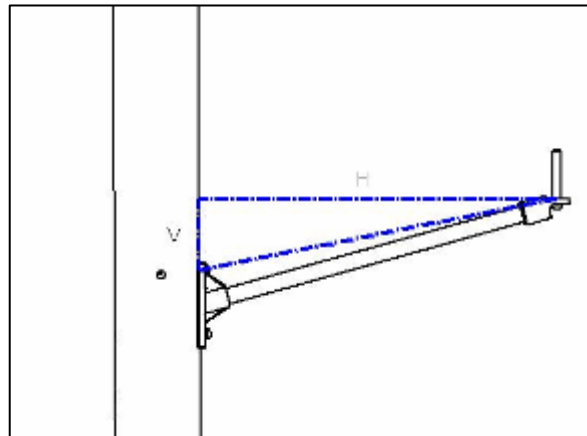


Figure 65 – EMB measurements

Appendix D – Hubbell Installation Specification Sheet

Recommended Installation Procedure for 240-088-0001 Hot Line Clamps on Overhead Main Lines

Step 1: Thoroughly clean aluminum and copper conductor contact surfaces by brushing to remove oxides and other foreign matter.

Step 2: Match the cable range of the main conductor.
Acceptable range for 240-088-0001 is #6 solid thru 795 MC (37 str) AAC. Tin Plated Aluminum body clamps may be used on the following overhead conductor types: AAC, ACSR, or Armor Main to AAC, ACSR, or Copper

Step 3: Immediately after brushing, generously coat the cleaned portion of the conductor with inhibitor. Use a high quality joint compound such as Anderson's HTJC, Fargo GF178 Inhibitor or Chance's ZLN Inhibitor.

Step 4: With the clamp secured in the Grip-All Clampstick, position the main groove of the clamp on the main conductor. For best results, maintain tension by pulling back on the eyestem/eyescrew while tightening. Tighten the eyestem/eyescrew to 200 lb.-in. Hot line clamps are not intended for load break capability.

NOTE: Standard tap and hot line clamps are not intended for load make, load break or safety grounding applications. Their installation and removal should be restricted to charging and magnetizing currents only.

Tap and hot line clamps do not require subsequent re-torquing after proper installation. Should any question of performance or damage arise, the clamp should be removed and thoroughly inspected.

Damaged clamps must not be reused or reapplied if any clamp component exhibits signs of mechanical or electrical damage, such as mechanical deformation, cracks, damaged plating, arcing, pitting or significant corrosion. The conductor should also be inspected and repaired or replaced if any conductor damage has occurred.

⚠ WARNING

Electrical shock or burn.
Can cause severe injury or death.
Use an appropriate live line method when installing hot line clamps.

NOTICE

Hot line clamps are not intended for load break capability.

These instructions do not claim to cover all details or variations in equipment, nor to provide for all possible conditions to be met with concerning installation, operation, or maintenance of this equipment. If further information is desired or if particular problems are encountered which are not sufficiently covered in this guide, contact A. B. Chance/Anderson.

NOTE: Because Hubbell has a policy of continuous product improvement, we reserve the right to change design and specifications without notice.



**ANDERSON
CHANCE**

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240-088-0001
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CH 2006-10

Appendix E – CURRENT Backhaul Point 6420 Install Components

E. CURRENT Backhaul Point 6420 Install Components

This appendix provides a list of the components needed when installing the CURRENT Backhaul Point 6420 (#210-0202-0001) in the overhead or underground environments. Please refer to *CURRENT Backhaul Point 6420 Install Guide* (#520-0043-0001) for the complete installation details.

Since the CURRENT Backhaul Point 6420 is installed with the CURRENT Bridge OH 60xx or the CURRENT Bridge URD 61xx, both of these are included in the second table of install components.

Components	CURRENT P/N	OH Install	URD Install	
			Bridge in Transformer	Bridge in Pedestal
Backhaul Point	210-0202-0001	✓	✓	✓
Pedestal	Utility selected		✓	✓
Pedestal Mounting Bracket	240-0456-0001		✓	✓
Power Extension Cable (20')	240-3126-0003		✓	✓
Ethernet cable	CBL00071 = 1'	✓		
	CBL00074 = 5m		✓	✓

Table 7 – CURRENT Backhaul Point 6420 install components

Components	CURRENT P/N	OH Install	URD Install	
			Bridge in Transformer	Bridge in Pedestal
OH Bridge	210-0181-0003	✓		
URD Bridge	210-0181-0001		✓	✓
Power Extension Cable (20')	240-3126-0003			✓
RF Extension Cable (20')	240-3107-0005			✓

Table 8 – CURRENT Bridge OH or URD install components

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