

Model UC

Underground Cathodic Protection Coupon

Featuring

- Patented 10 sq. cm. concentric coupon removes nearly all soil IR drop error in current-on measurements
- Optional 1 sq. cm. coupon for AC current density measurements
- Easily fitted to the base of a test station riser or used in a stand-alone configuration when fitted with the optional internal zinc reference electrode
- Potential measurements are made through the riser tube with either portable or permanent reference electrodes



Style A (on left) is installed at the base of a test station riser as shown in drawing UC-9. A zinc reference electrode can be installed in the housing as an option.

Style B (on right) can be installed remote from a test station. It is only available with the optional internal zinc reference electrode.

Model UC2 (shown) has an optional AC coupon.

Model UC1 (see drawing UC-7) does not have an AC coupon.

Specifications:

- 10 sq. cm. concentric coupon for IR Drop free potential measurements
- 1 sq. cm. coupon for AC current density measurements (Model UC2 only)
- 2 inch (nom.) PVC pipe construction
- Size - 2 1/2 inches dia. x 10 inches long (6.4 cm x 28 cm long)
- Shipping weight - 6 lb (2.8 kg) plus wire

The **Model UC** Underground Cathodic Protection Coupon is fitted to the base of a test station riser. It is designed to allow essentially IR-Drop free measurements with CP current on. The amount of IR-Drop error included in a current-on measurement is negligible and can therefore be ignored in routine measurements. Refer to NACE paper 05039, available on our web site, for quantitative performance data. Many factors contribute to the magnitude of IR-Drop error at any particular site; therefore it is recommended that each installation be calibrated separately.

U.S. Patent 6,060,877 – Produced under license.

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*U Series
Underground
Reference
Electrodes*



Model UC1

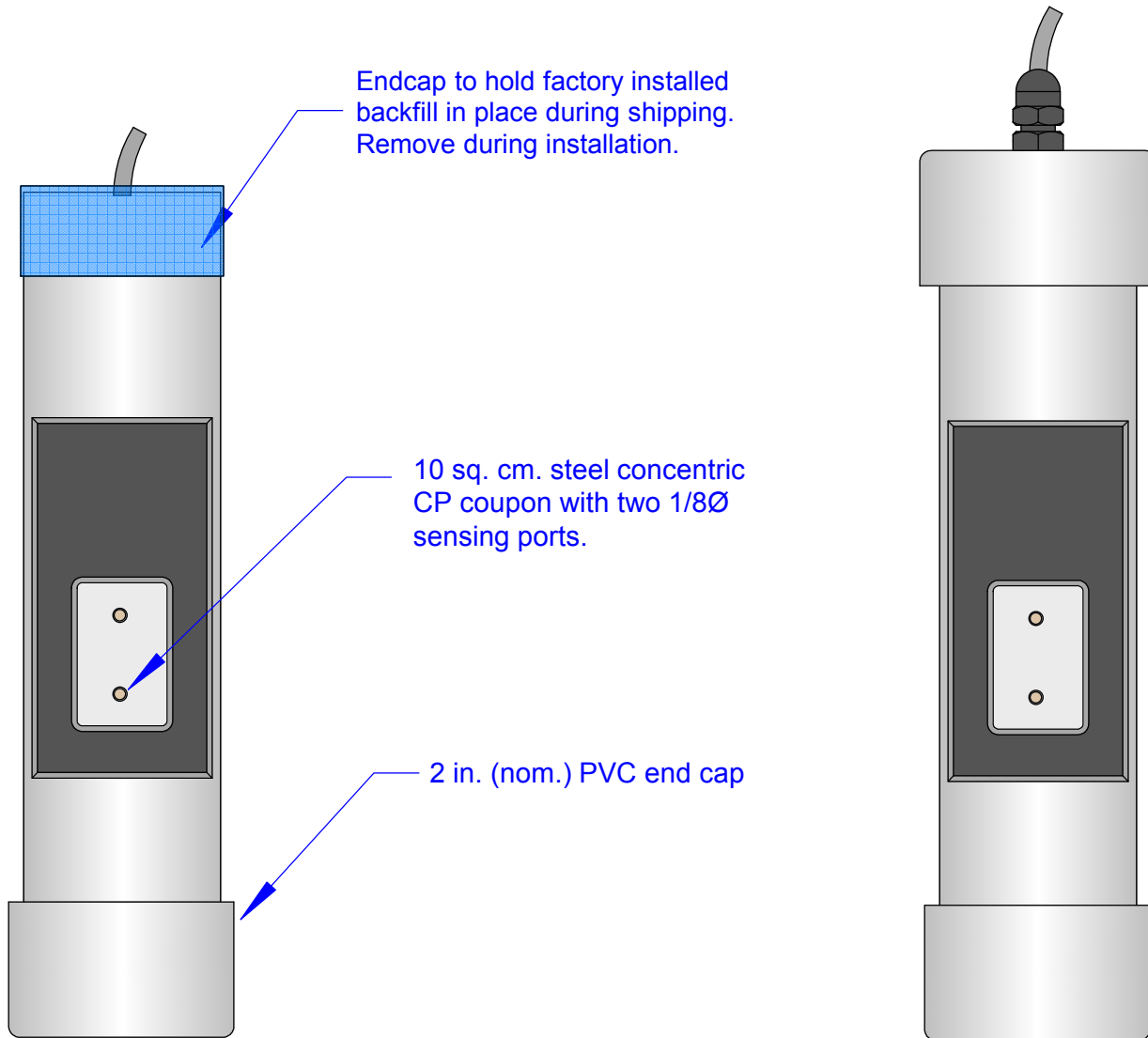
Refer to drawing UC-8 UC2ASY
for version with AC coupon

Style A - Test Station Foot

Use Style A when the coupon is affixed to the base of a test station. This style may be ordered with or without the optional zinc reference.

Style B - Self contained

Use Style B when coupon is to be located remote from a test station. Style B is only available with a zinc reference electrode.



All coupons are internally connected to a 4-conductor 18 ga. cable. The red and black wires are connected to the DC coupon, the blue wire is connected to the optional zinc reference electrode, the orange wire is not connected on Model UC1.

Specify as **EDI Model UC1z-xxx-LWnnn** where
z = **A** for Style A test station foot
z = **B** for Style B self contained
xxx = **BDG** for no internal reference electrode (only on Style A)
xxx = **ZIN** for an internal packaged zinc reference electrode
nnn = lead wire length in feet.
Note: If no lead wire length is specified, 10 feet (3 meters) will be supplied (LW010).

Model UC1 Concentric Coupon Assembly

SCALE	HALF
DRAWN BY	FJA
DATE	04 FEB 2015
DRAWING NUMBER	UC - 7 UC1ASY



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Model UC2

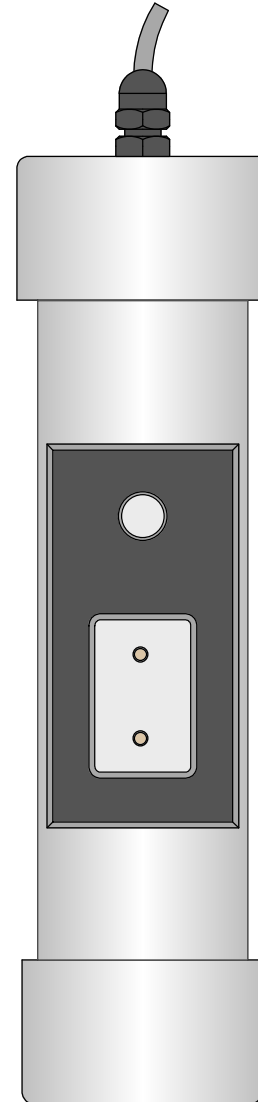
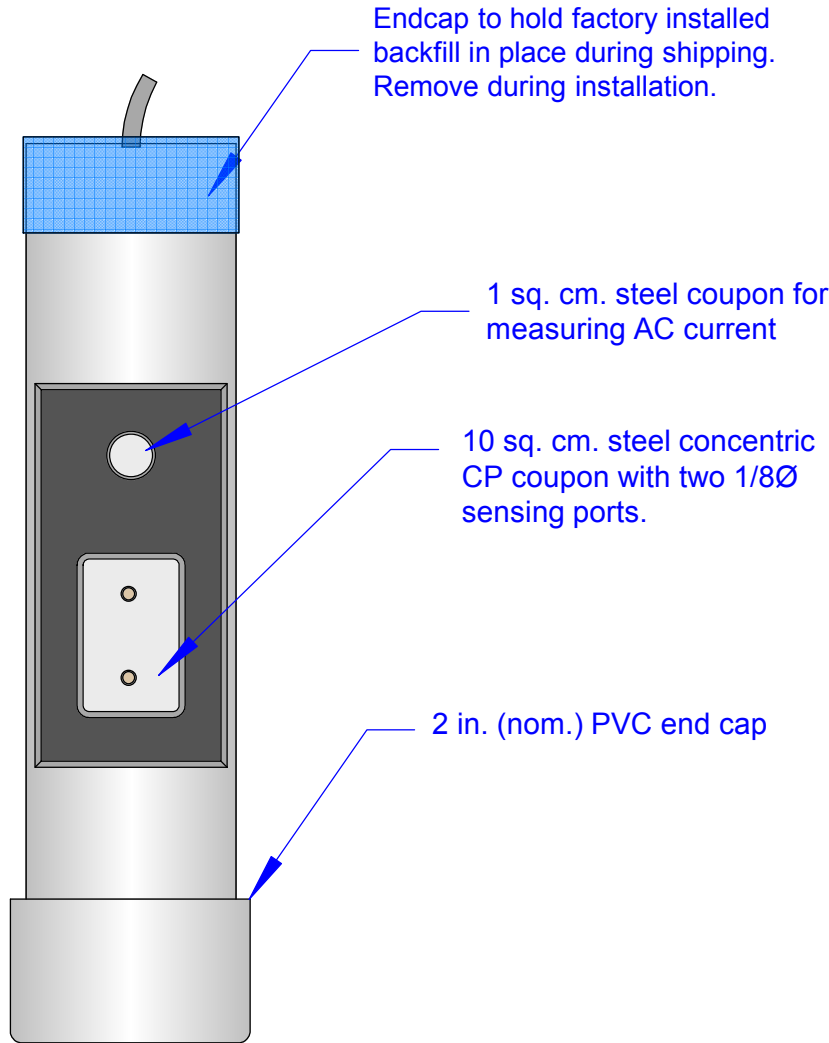
Refer to drawing UC-7 UC1ASY
for version without an AC coupon

Style A - Test Station Foot

Use Style A when the coupon is affixed to the base of a test station. This style may be ordered with or without the optional zinc reference.

Style B - Self contained

Use Style B when coupon is to be located remote from a test station. Style B is only available with a zinc reference electrode.



All coupons are internally connected to a 4-conductor 18 ga. cable. The red and black wires are connected to the DC coupon, the orange wire is connected to the AC coupon, the blue wire is connected to the optional zinc reference electrode.

Specify as **EDI Model UC2z-xxx-LWnnn** where

z = **A** for Style A test station foot

z = **B** for Style B self contained

xxx = **BDG** for no internal reference electrode (only on Style A)

xxx = **ZIN** for an internal packaged zinc reference electrode

nnn = lead wire length in feet.

Note: If no lead wire length is specified, 10 feet (3 meters) will be supplied (LW010).

Model UC2 Concentric Coupon Assembly

SCALE HALF

DRAWN BY FJA

DATE 04 FEB 2015

DRAWING NUMBER UC - 8 UC2ASY



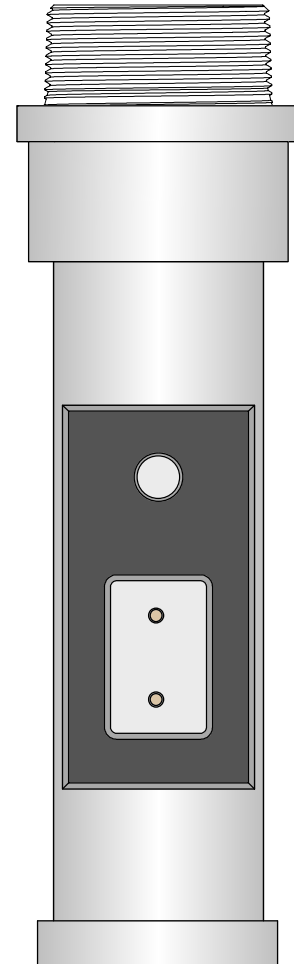
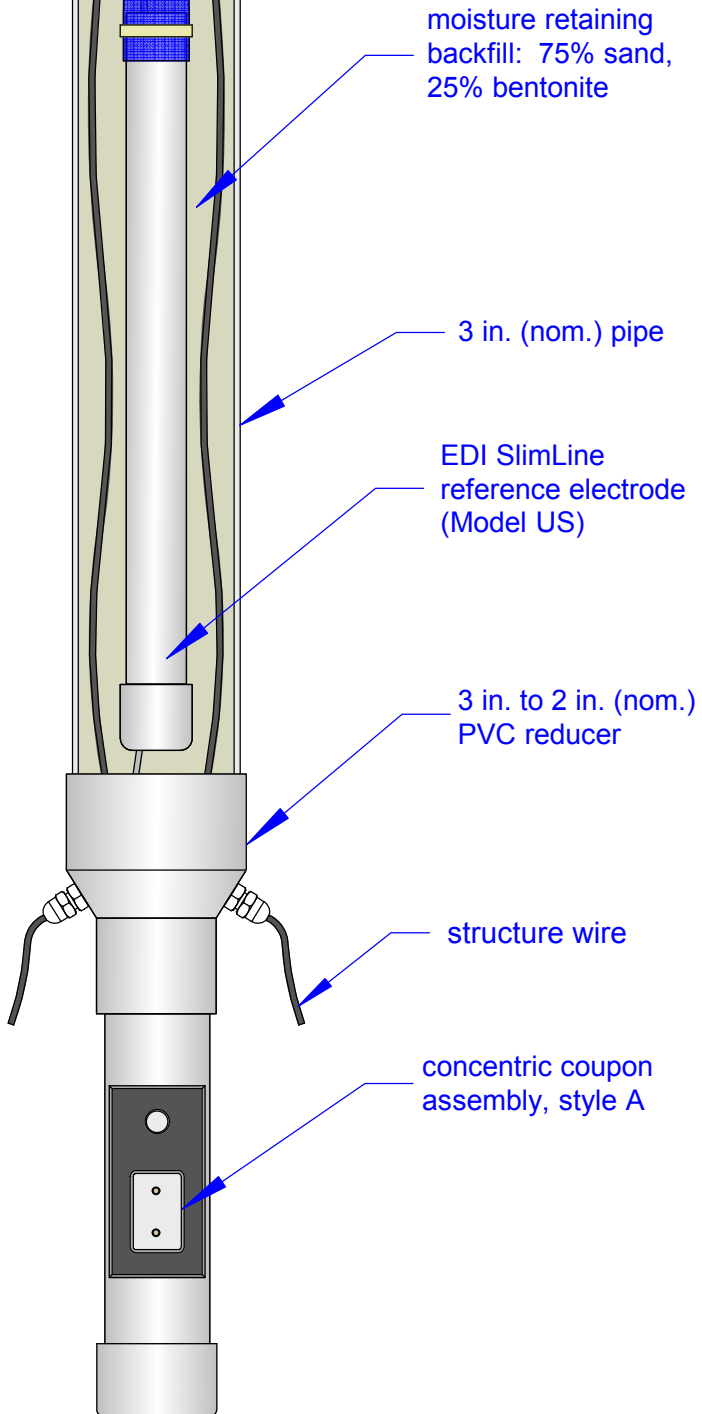
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For PVC Risers:
Cement a PVC reducer coupling and riser tube to coupon housing assembly.

For all other riser materials:
Cement a socket x male PVC fitting to coupon housing assembly as shown below. This fitting can be threaded into any appropriate transition piece.



Installation

Transfer structure wires to inside the riser tube by passing them through strain reliefs on the transition fitting. The riser tube is to be filled with a moisture retaining backfill. A suitable reduced diameter reference electrode may be placed in the riser tube as shown.

Measurements

Measurements may be made with either a permanent reference electrode installed in the riser tube, a portable reference electrode placed on the backfill in the riser tube or the optional internal zinc electrode.

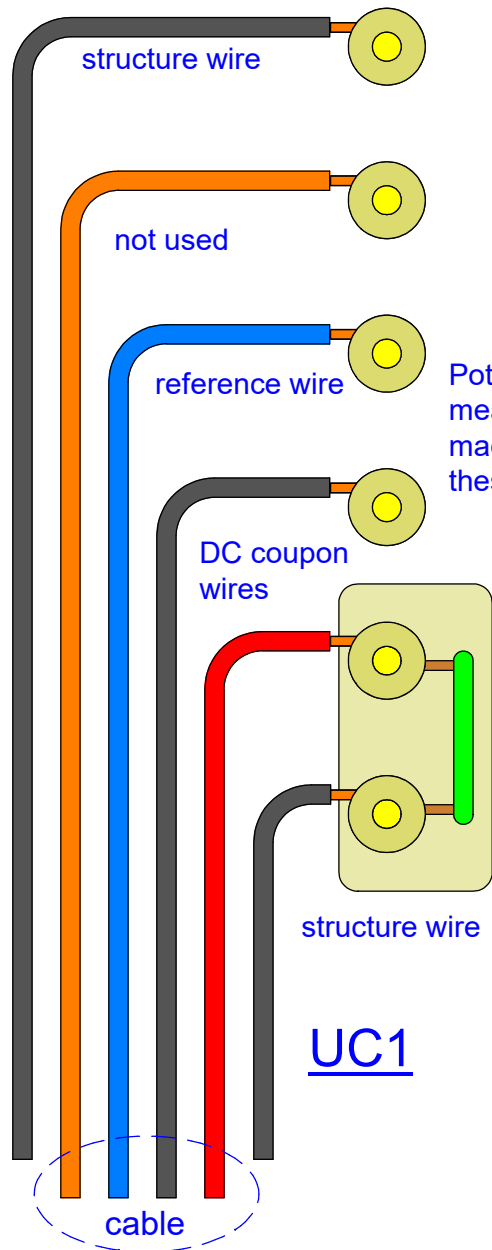
Installing a Permanent Reference in a Test Station Riser

SCALE 1/4 & 1/2

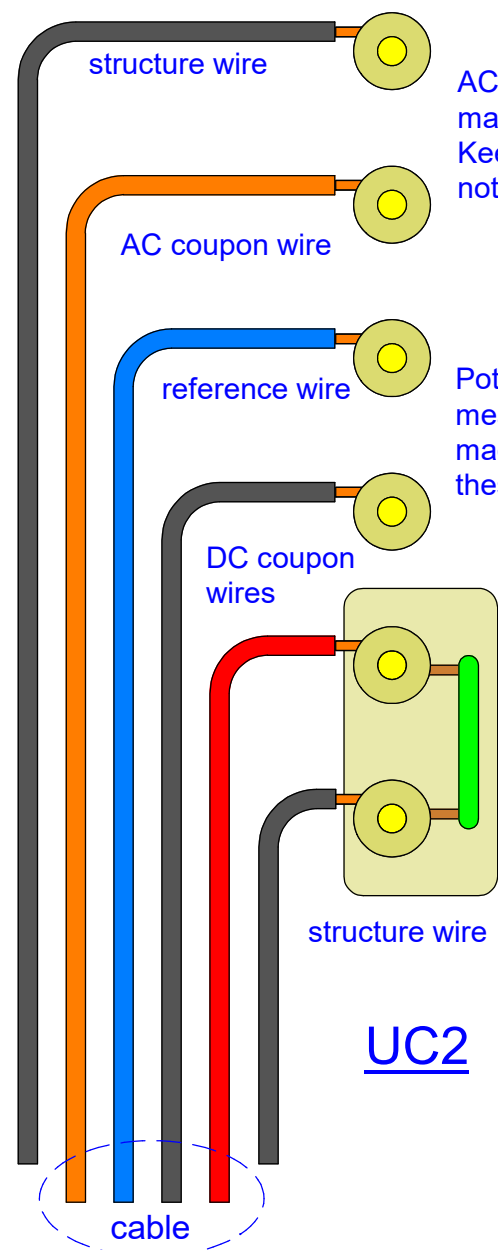
DRAWN BY FJA

DATE 04 FEB 2015

DRAWING NUMBER UC - 9 Riser



Potential measurements made between these terminals



AC current measurements made between these terminals. Keep terminals shunted when not making measurements.

Potential measurements made between these terminals

Wiring - Connect a structure wire and one of the DC coupon wires to a terminal pair that can be shunted through a switch or shorting bar. For convenience, a magnetic switch such as EDI Model UI-MS may be used. Connect the other DC coupon wire, the second structure wire, the AC coupon wire and the reference wire each to their own terminals.

Calibrating - Measure the potential when the switch is closed and the instant-disconnect potential as the switch is opened. The difference between the two is the offset potential which should be recorded. This offset potential will usually be less than 10 millivolts.

Measurements - Measurements can be made with the switch or shorting bar closed. In most cases, the offset potential will be sufficiently small that it can be neglected.



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Installation Instructions

Model UC Underground CP Coupon

The Model UC Underground Cathodic Protection Coupon is designed to minimize IR-Drop error in measurements made with CP current on. With this unit the amount of IR-Drop error included in a current-on measurement is negligible and, therefore, can be ignored in routine measurements. Since many factors contribute to the magnitude of IR-Drop error at any particular site, it is recommended that each installation site be calibrated separately.

Installation – Style A

1. Remove the protective label covering the steel coupons. Next, remove the red stickers covering the sensing ports. Clean the DC and AC coupon surfaces with alcohol to remove corrosion inhibitor. Place the coupon assembly in a position reasonably close to the structure being monitored. Be sure to orient the coupon assembly vertically with the protective plastic cap at the top. Experience and testing indicate that it is best to face the CP coupon directly toward the structure. Place local soil around the coupon as backfill; make sure no rocks larger than a centimeter in diameter are within a centimeter of the metal plates. Tamp the backfill to ensure it is in good contact with the coupons.
2. Remove the protective plastic cap from the top of the coupon assembly; **do not** remove the cotton cloth backfill retainer. Cement a PVC coupling or reducer to the top of the assembly using PVC cement. Cement riser pipe to the coupling.
3. Fill the riser with either screened local soil or a slurry consisting of 25% bentonite and 75% sand or fine fill. A reduced diameter reference electrode, such as an EDI Model US, can be placed in the riser pipe prior to filling. If this is done, then the riser fill must consist of the bentonite slurry.
4. Complete the installation by capping the top of the riser pipe as desired. One of the two wires from the DC coupon is to be connected to the structure through an interruptible shunt, such as EDI Model UI-MS or equivalent. The other DC coupon wire is connected to a meter when making potential measurements. See wiring diagram overside.

Installation – Style B

Style B coupons have a self-contained zinc reference. They can be placed at any orientation and located remote from test stations. Follow the cleaning and backfill instructions in Step 1 above.

Measurements

In order to minimize IR-Drop error in potential measurements, all such measurements on Style A coupons must be made with either a permanent reference electrode contained in the riser pipe or a portable reference electrode contacting the riser fill. In some areas, it may be necessary to moisten the fill to increase its conductivity to an acceptable level. Measurements on Style B coupons are made using the self-contained zinc reference. To determine the amount of IR-Drop error, first measure the potential of the coupon with the shunt wire connected to the structure. Then determine the IR-Drop error by disconnecting the shunt from the structure and note the instantaneous voltage drop. In most installations the instantaneous voltage drop (IR-Drop error) will be sufficiently small that it can be neglected in future measurements.