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Installation

Complete the following steps to install the Triton® coupon test station.

1 Expose the buried pipe or structure that will be tested.

2 Attach the included structure connections (No. 6 AWG Structure 1 and No. 10 AWG Structure 2) to the pipe or structure using either exothermic welding or a pin-brazing process.

3 Remove the plastic packaging from the coupon assembly.
4 Collect the following information before continuing with the coupon installation:

a GPS coordinates

b Location name

c Pipeline mile post

d Backfill type

e Installer’s name

f Installer’s NACE CP certificate number

g Triton® serial number (found on the shipping certificate)

h Buried reference cell potential compared to a freshly prepared portable reference cell at the surface

**NOTE:** Refer to Appendix B, *Recordkeeping Logs* on page 11 for a form that can be used to record the coupon per-installation data.
5 Bury the coupon assembly adjacent to the pipe or structure. The coupon assembly must be installed in the following manner (refer to Figure 1-2 for position and location):

   a In a vertical position

   b 6" to 12" away from the pipe/structure

   c With the mid-point of the coupon reference cell at a depth relative to the pipe’s 5 or 7 o’clock position

   Figure 1-2. Coupon Assembly Buried Position

6 Backfill around the coupon assembly with well-compacted native backfill material to ensure accurate measurements.

7 Set test station where desired; trenching to accommodate lead wires as needed.

8 After a 30-day polarization period, remove the black plastic shock guard from the test station head and connect the Structure 1 terminal lead to the upper switch terminal (Figure 1-3). Replace the shock guard when finished. Refer to Chapter 2, Testing the Triton on page 6 for instructions on taking measurements from the seasoned coupon.
Figure 1-3. Switch Terminal

9 **OPTIONAL:** A zinc anode may be installed in association with an induced AC and lightning mitigation system. If used, the zinc anode should be installed on the opposite side of the pipe, away from the buried coupon (Figure 1-2). Connect the zinc anode to the test head by threading the wire through the cable connection terminal and tightening the holding screw.

Figure 1-4. Cable Connection Terminal for Zinc Anode

**NOTE:** This connection can **only** be used for the zinc anode.
Technical Services

If you need assistance with the installation, contact American Innovations Technical Services in any of the following ways.

**Telephone:**
Local: 512-249-3400
Toll-free: 800-229-3404

**Email:**
bhtechservices@aiworldwide.com

**Address:**
American Innovations, Ltd.
ATTN. Technical Services
12211 Technology Blvd.
Austin, TX 78727

**Fax:**
512-249-3444
Testing the Triton

After a 30-day seasoning period, the Triton® coupon test station is ready for testing. Before testing, ensure that the Structure 1 terminal lead is connected to the upper switch terminal:

Figure 2-1. Switch Connection

The Triton® coupon test station includes both DC and AC measurement terminals. The following measurements can be read from the test station head.

**NOTE:** Both DC and AC measurements can be recorded in the *DC and AC Measurement Log* (page 13).

<table>
<thead>
<tr>
<th>DC</th>
<th>AC</th>
</tr>
</thead>
<tbody>
<tr>
<td>“on” potential</td>
<td>AC potential</td>
</tr>
<tr>
<td>“instant off” (polarized) potential</td>
<td>AC current</td>
</tr>
<tr>
<td>native state (depolarized) potential</td>
<td></td>
</tr>
<tr>
<td>DC current</td>
<td></td>
</tr>
</tbody>
</table>
**NOTE:** All potential testing should be completed using a properly calibrated “True RMS” multimeter with a 10MΩ or greater input impedance. For information on cathodic protection criteria, please refer to the latest version of NACE standard SP0169-2013.

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**DC Testing**

Complete the following steps to measure “on” potential:

1. Set multimeter to mV DC setting.
2. Connect negative lead to **Reference Electrode** terminal (N).
3. Connect positive lead to **Test Coupon** terminal (P).
4. Record the observed “on” potential reading from the multimeter.

Complete the following steps to measure “instant off” (polarized) potential:

1. Set multimeter to mV DC setting.
2. Connect negative lead to **Reference Electrode** terminal (N).
3. Connect positive lead to **Test Coupon** terminal (P).
4. Toggle **Switch** (S) to off position.
5. Record the observed “instant off” potential reading from the multimeter.

Complete the following steps to measure native state (depolarized) potential:

1. Set multimeter to mV DC setting.
2. Connect negative lead to **Reference Electrode** terminal (N).
3. Connect positive lead to **Native Coupon** terminal (P).
4. Record the observed “native state” potential reading from the multimeter.
Complete the following steps to measure DC current:

1. Set multimeter to mA DC setting.
2. Connect negative lead to Structure 1 terminal (N).
3. Connect positive lead to Test Coupon terminal (P).
4. Toggle Switch (S) to off position.
5. Record the observed DC current reading from the multimeter.

**Current Density**

- **For DC Amperage / m²**: Multiply reading by 100. Result is mA / m².
- **For DC Amperage / ft²**: Multiply reading by 9.3. Result is mA / ft².
AC Testing

Complete the following steps to measure AC potential:

1. Set multimeter to V AC setting.
2. Connect negative lead to Reference Electrode terminal (N).
3. Connect positive lead to Test Coupon terminal (P).
4. Record the observed AC potential reading from the multimeter.

Complete the following steps to measure AC current:

1. Set multimeter to mA AC setting.
2. Connect negative lead to AC Coupon terminal (N).
3. Connect positive lead to Structure 1 terminal (P).
4. Toggle Switch (S) to off position.
5. Record the observed AC current reading from the multimeter.

**Current Density**

- **For current / m²**: Multiply reading by 10,000. Result is mA / m².
- **For AC Amperage / ft²**: Multiply reading by 930. Result is mA / ft².
Specifications

The following are physical and technical specifications for the Triton® coupon test station.

- **Dimensions**: 6’ 6” length; 3” diameter
- **Shipping Weight**: 17 lbs.
- **Reference Cell Type**: Copper/Copper Sulphate
- **Switch Type**: Momentary Contact NC SPST Mil Spec
- **DC Coupon Size**: 100 cm²
- **AC Coupon Size**: 1 cm²
- **Structure Primary Lead**: 30 ft. #6 AWG THHN Oil and Gas Resistant
- **Structure Secondary Lead**: 30 ft. #10 AWG THHN Oil and Gas Resistant
- **Probe lead**: 30 feet #16 AWG 5 Conductor

*May be customized to match customer needs.*
Information must be gathered during the installation of the Triton® coupon test station, as well as after the 30-day seasoning period.

The *Installation Information Log* can be used to record the necessary data before the final installing steps. The *DC and AC Measurement Log* can be used after the 30-day seasoning period to record the measurements as described in Chapter 2, *Testing the Triton* on page 6.
### Installation Information Log

<table>
<thead>
<tr>
<th><strong>GPS coordinates:</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Location name:</td>
<td></td>
</tr>
<tr>
<td>Pipeline mile post:</td>
<td></td>
</tr>
<tr>
<td>Backfill type:</td>
<td></td>
</tr>
<tr>
<td>Installer’s name:</td>
<td></td>
</tr>
<tr>
<td>Installer’s NACE CP certificate number:</td>
<td></td>
</tr>
<tr>
<td>Triton® serial number:</td>
<td></td>
</tr>
<tr>
<td>Buried reference cell potential compared to a freshly prepared portable reference cell at the surface:</td>
<td>Buried reference cell</td>
</tr>
</tbody>
</table>
## DC and AC Measurement Log

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Date:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DC “on” potential:</strong></td>
<td></td>
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<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DC “instant off” potential:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Native state (depolarized) potential:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DC current:</strong></td>
<td></td>
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<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>AC potential:</strong></td>
<td></td>
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<td></td>
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</tr>
<tr>
<td><strong>AC current:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### DC Current Density
- **For DC Amperage / m²:** Multiply reading by 100. Result is mA / m².
- **For DC Amperage / ft²:** Multiply reading by 9.3. Result is mA / ft².

### AC Current Density
- **For current / m²:** Multiply reading by 10,000. Result is mA / m².
- **For AC Amperage / ft²:** Multiply reading by 930. Result is mA / ft².