

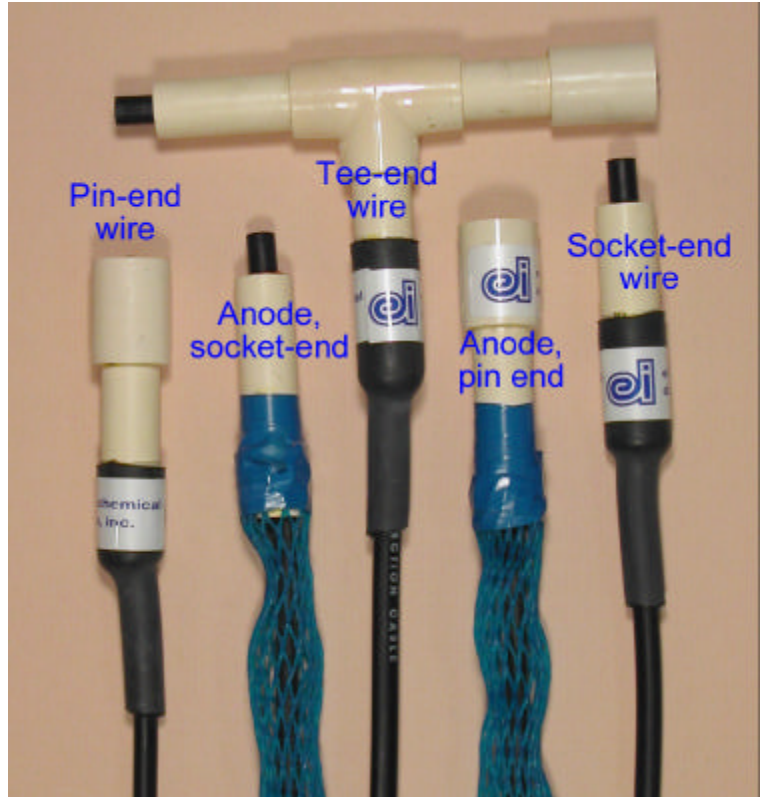
# Model AT – Linear Anode System

## Typical Applications:

- Underground and aboveground storage tanks, buried pipelines, elevator shafts, marine structures

## Featuring:

- Design flexibility - modular design permits multitude of anode configurations
- Rapid installation - no field splices or weldments
- Light weight - very easy to ship and handle



## Design Compatibility

The **Model AT** is an impressed current linear anode system that permits maximum design flexibility. It consists of copper-cored titanium flat wire coated with platinum or mixed metal oxide and attached to a #14 AWG HMW/PE insulated bus wire. A flexible plastic mesh surrounds the wire pair. Individual anodes are 50 feet (15 m) long and are easily connected in the field to form a hermetically sealed joint. This allows the design engineer to choose a layout that is best suited for the application.

Perhaps the most significant feature of the **Model AT** is its unique connector system. Each anode is supplied with a pin connector on one end and a socket connector on the opposite end that can be mated either to another anode section to form a string or to a power feed cable. Specially developed "tee" connectors allow intermediate current feeds on long strings. These connectors are designed for underwater cable connections and are being used successfully on other EDI products in turbulent aqueous solutions. All connections are factory made and sealed so there are no splices or weldments required in the field. Installation can be completed in substantially less time than any other system. For example, an AT anode system can be installed in a 60 foot (18 m) diameter tank in less than 6 man-hr.

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*A Series  
Impressed  
Current Anodes*



# Want to protect your bottom?

**Only the EDI AT anode system offers you speed, safety and redundancy at the lowest installed cost.**

## **It installs quickly**

This anode takes less time to install than any other system, and no special skills are required. Two semi-skilled workers can complete a 40 foot (12 m) diameter tank in less than one hour. Tank construction schedules are minimally affected.

## **There's less material to handle**

All anode sections are identical and are completely pre-assembled in the factory. Order only the number of sections you need and there's no worry about mixing-up the pieces. Each section weighs about 2 lb (1 kg). For a 65 foot (20 m) diameter tank only 35-40 lb (16 – 18 kg) of material is needed.

## **It's highly redundant**

The entire anode array is a single distributed anode, which is fed from both ends and intermediately as necessary. Fewer lead wires are needed with the AT system. Unlike other systems, the entire circuit will continue to perform as designed even if any wire fails. Also, it is inherently self-balancing which eliminates rectifier balancing during commissioning.

## **It's safe**

Since everything is pre-assembled at the factory, you simply place each 50 ft (15 m) section on the sand bed in the desired pattern and snap it together with the next piece using the unique waterproof connector attached to each end. No welding or splicing is required. No special skills, equipment or permits are necessary.

**It's the tops for your bottom!**

# How does the AT system compare?

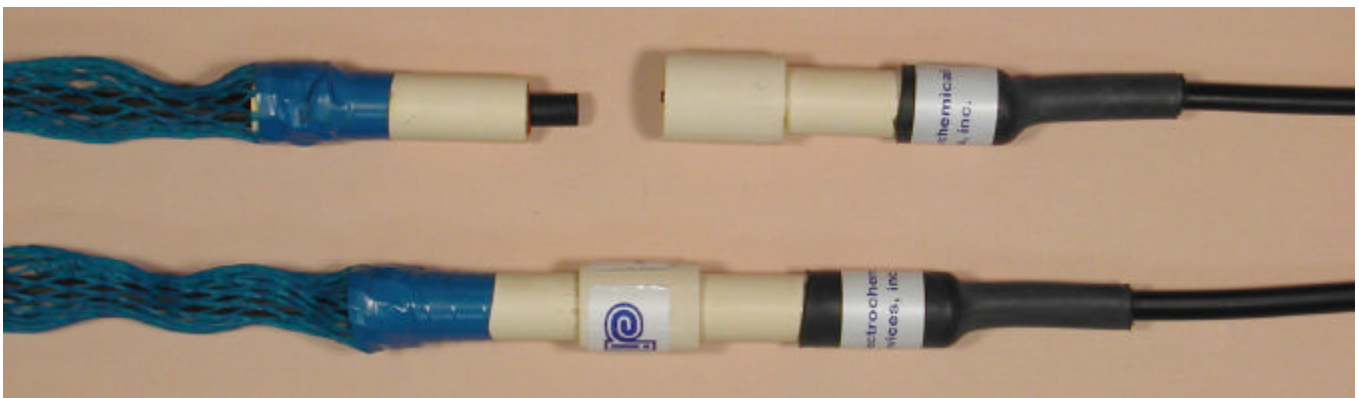
## Advantages over precious metal coated titanium strips field welded to titanium bars and placed in a grid array.

- Since field welding is not required, the AT system can be installed by semi-skilled labor. This substantially lowers installation costs.
- There are no long, unwieldy pieces to handle. This reduces material handling problems and installation time.
- Anode layouts can be easily modified in the field to adapt to unexpected site requirements.
- The AT's negligible anode resistance means less attenuation (more uniform current distribution).
- Installation of a separate non-metallic shield is not necessary; it's factory installed.
- The AT's high conductivity buses mean fewer current feeds are required.

## Advantages over precious metal coated wire or strips spliced into cables and placed in concentric circles.

- All AT anodes are the same length, which eliminates custom design, sizing and ordering.
- There are no long, unwieldy pieces to uncoil. This reduces material handling and mix-up problems.
- Anode layouts can be easily modified in the field to adapt to unexpected site requirements.
- Anodes can be interconnected to form a single circuit with multiple feed points. This eliminates the need for system balancing at the rectifier.
- The AT system has multiple layers of redundancy. Unexpected failures anywhere within the anode system will not affect its operation.

**With the EDI AT system... IT'S A SNAP!**



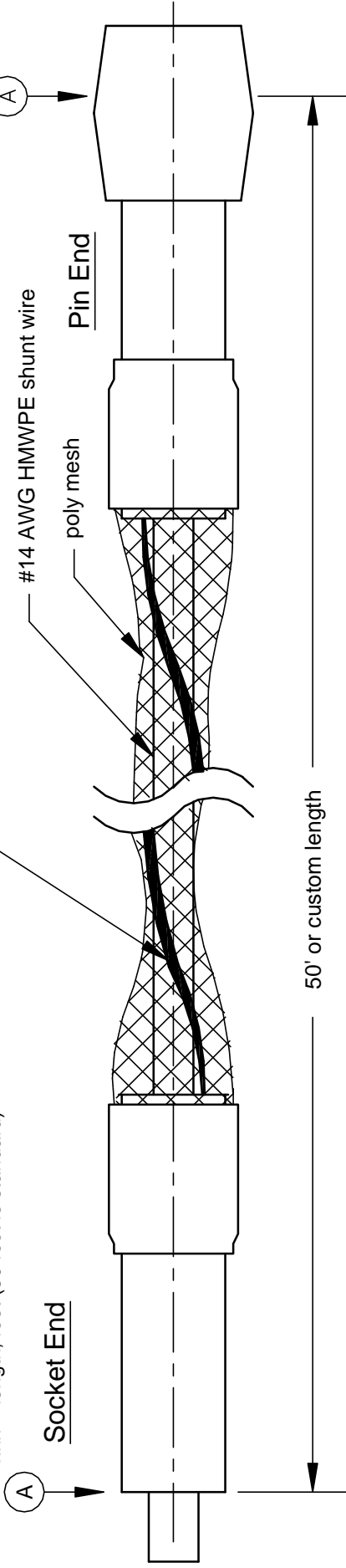
## Anode

Specify as EDI Model AT-aw-nnn where

a = active surface, **P** for platinum or **M** for mixed metal oxide

w = number active anode wires, **1, 2** or **3**

nnn = length, feet (50 feet is standard)



### Internal Connector Specification

Pin and socket are brass Alloy 360

Connector body is Neoprene

Power rating = 15 amps

Insulation rating = 750 volts

Minimum insulation thickness = 0.040 inches

Contact resistance < 0.01 ohm

Insulation resistance > 200 megohm after wet mating

Pressure rating = 20 kpsi

Rated for 500 wet matings

### Notes

1. When connector halves are fully mated, points **(A)** will align.
2. Current output not to exceed 10 mA/ft/wire.  
Use multiple wire anodes for higher current output.
3. Individual anodes may be interconnected to form strings of any desired length.  
Power feeds must be no more than 1,000 feet apart on single wire anodes.
4. Current should be fed into anode strings from both ends.  
Longer strings should have additional intermediate feeds.
5. Assemble individual anodes into strings by pressing pin end fully into socket end.  
The joint can be made permanent by using any solvent cement suitable for use with CPVC.

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## AT Anode String

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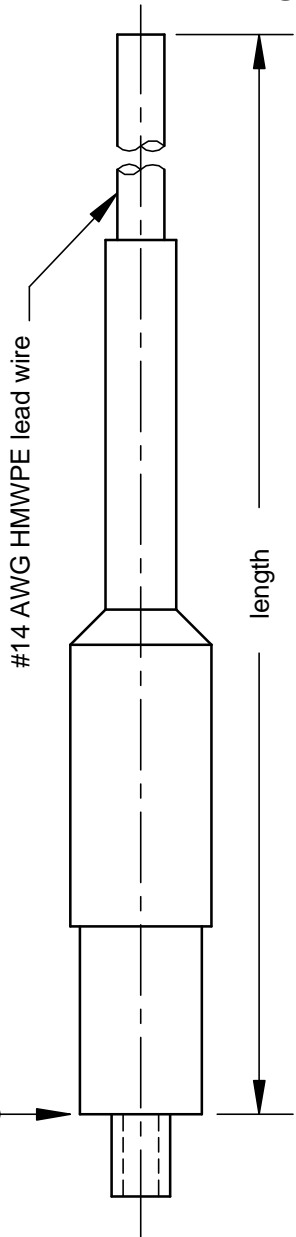
ATASY1

Connector shroud parts are all CPVC.  
The terms Pin and Socket refer to the  
brass connector, not the CPVC shroud.

Note: When connector halves are fully mated, points (A) will align.

**Socket End Lead Wire**

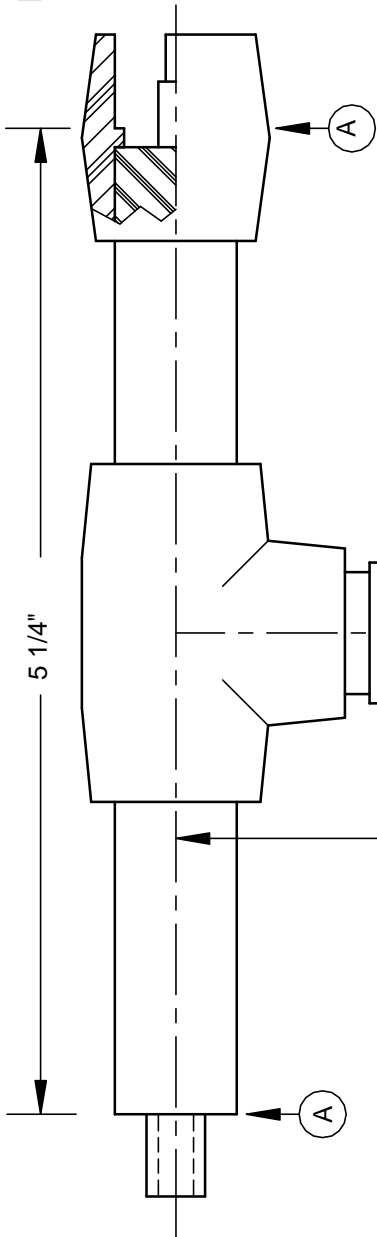
Specify as EDI Model AT-SOC-nnn where nnn = wire length in feet



Connector shroud parts are all CPVC. The terms Pin and Socket refer to the brass connector, not the CPVC shroud.

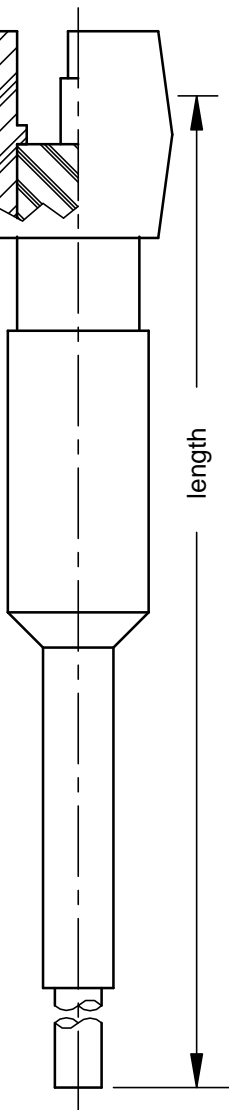
**Tee End Lead Wire**

Specify as EDI Model AT-TEE-nnn where nnn = wire length in feet



**Pin End Lead Wire**

Specify as EDI Model AT-PIN-nnn where nnn = wire length in feet



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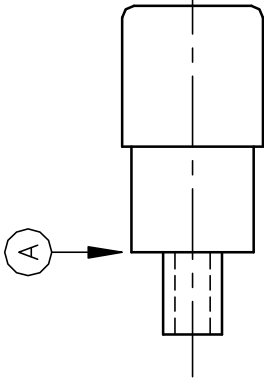
**AT Anode Power Feeds**

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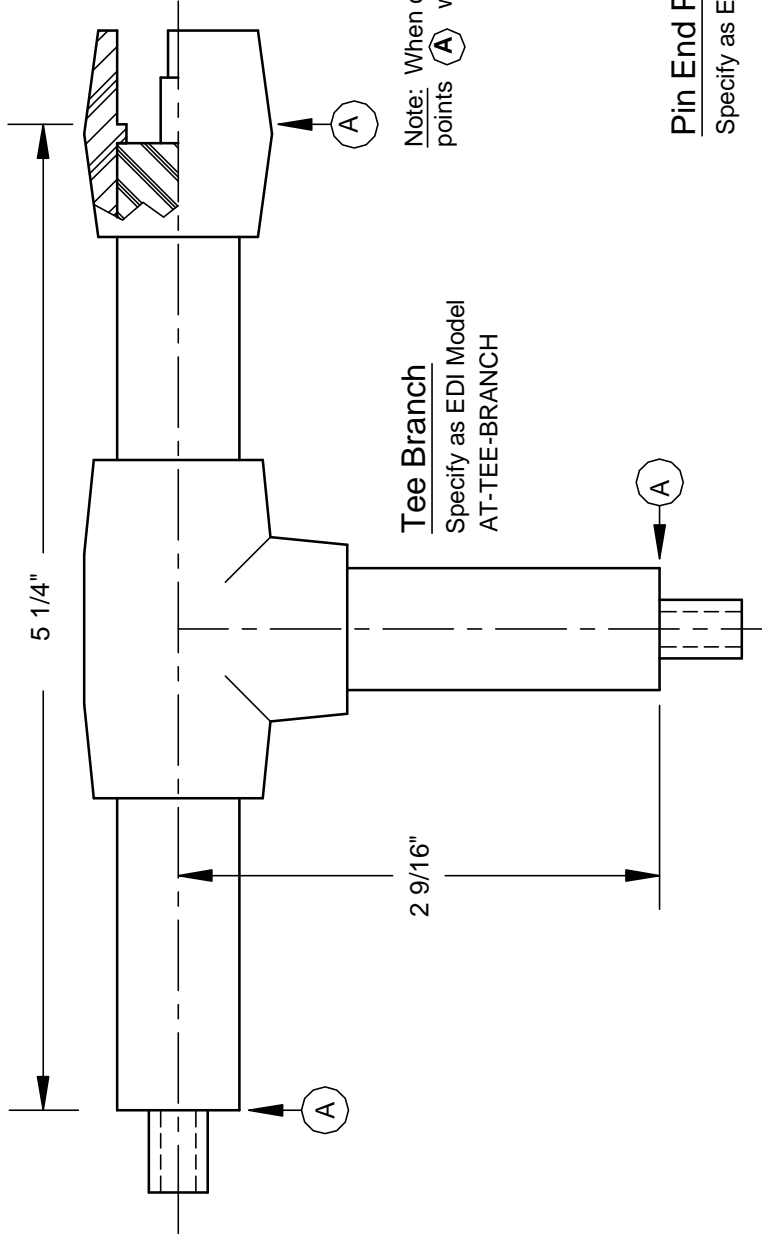
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Socket End Plug

Specify as EDI Model AT-SOC-PLUG

Connector shroud parts are all CPVC.  
The terms Pin and Socket refer to the  
brass connector, not the CPVC shroud.



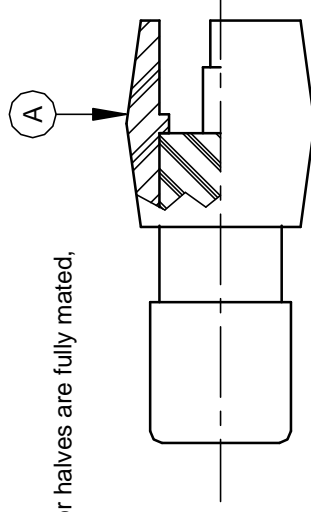
Tee Branch

Specify as EDI Model  
AT-TEE-BRANCH

Note: When connector halves are fully mated,  
points **A** will align.

Pin End Plug

Specify as EDI Model AT-PIN-PLUG



Tee branches and end plugs are used to make  
short side branches in a linear anode array. Use  
an end lead wire rather than an end plug to  
increase linear circuit redundancy. Refer to EDI  
drawing ATAPP5 for linear anode array concepts.

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## AT Anode Branch and End Plugs

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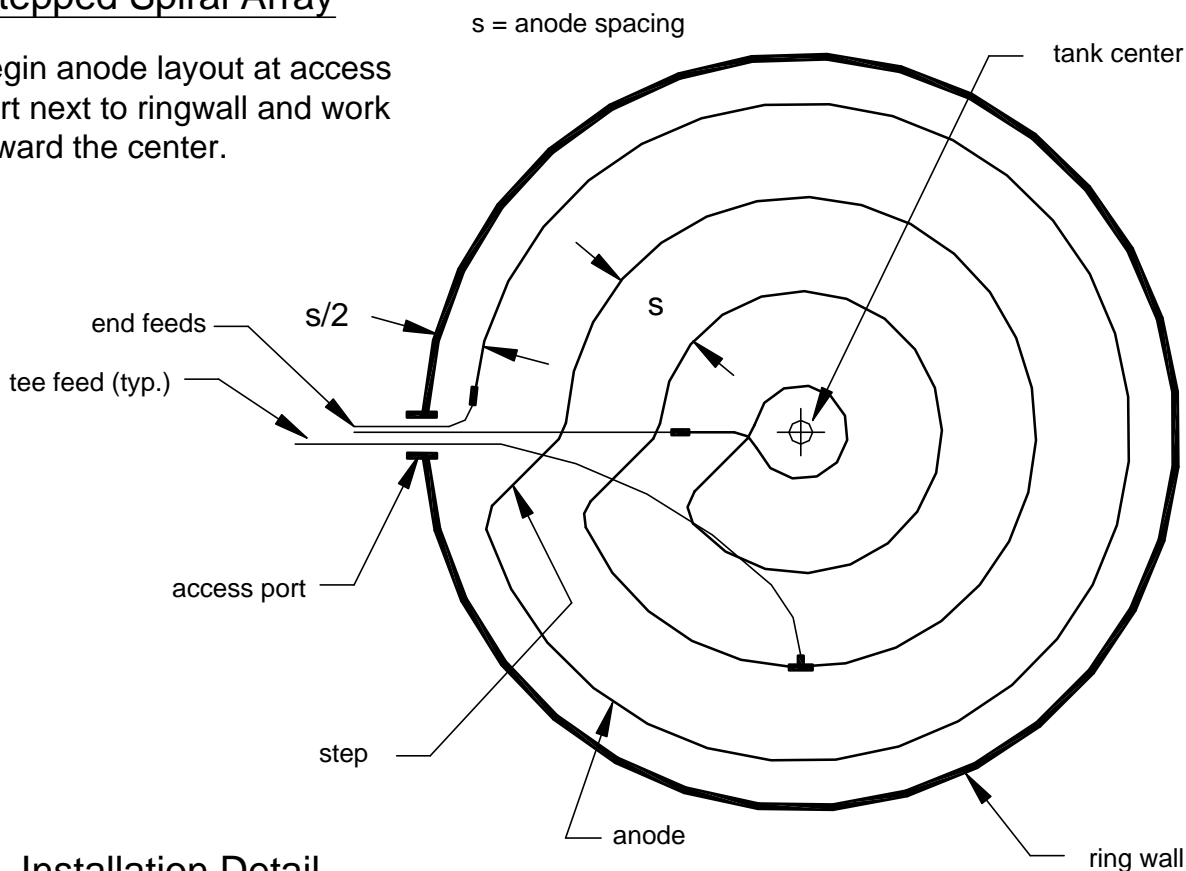
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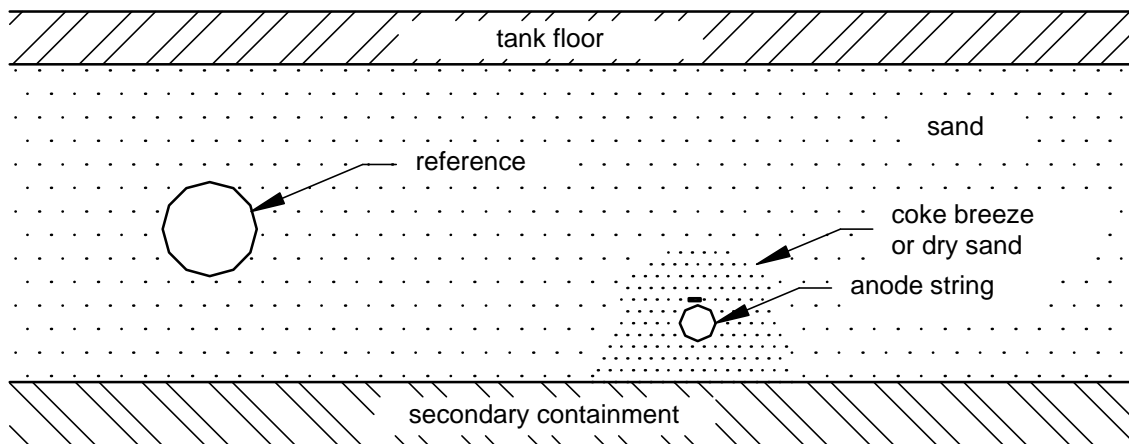
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## Stepped Spiral Array

Begin anode layout at access port next to ring wall and work toward the center.



## Installation Detail



Anodes can be interconnected to form either one continuous string or several discrete strings. Lead wires are to be connected to both ends of anode strings. The Tee End Lead Wire is used to provide intermediate power feeds. Distance between power feeds must not exceed 1,000 feet on single wire anodes.

To ensure optimum anode performance, anode should be covered with calcined petroleum coke or fine dry sand. Make sure the material filters through the poly mesh and completely encapsulates the anode.

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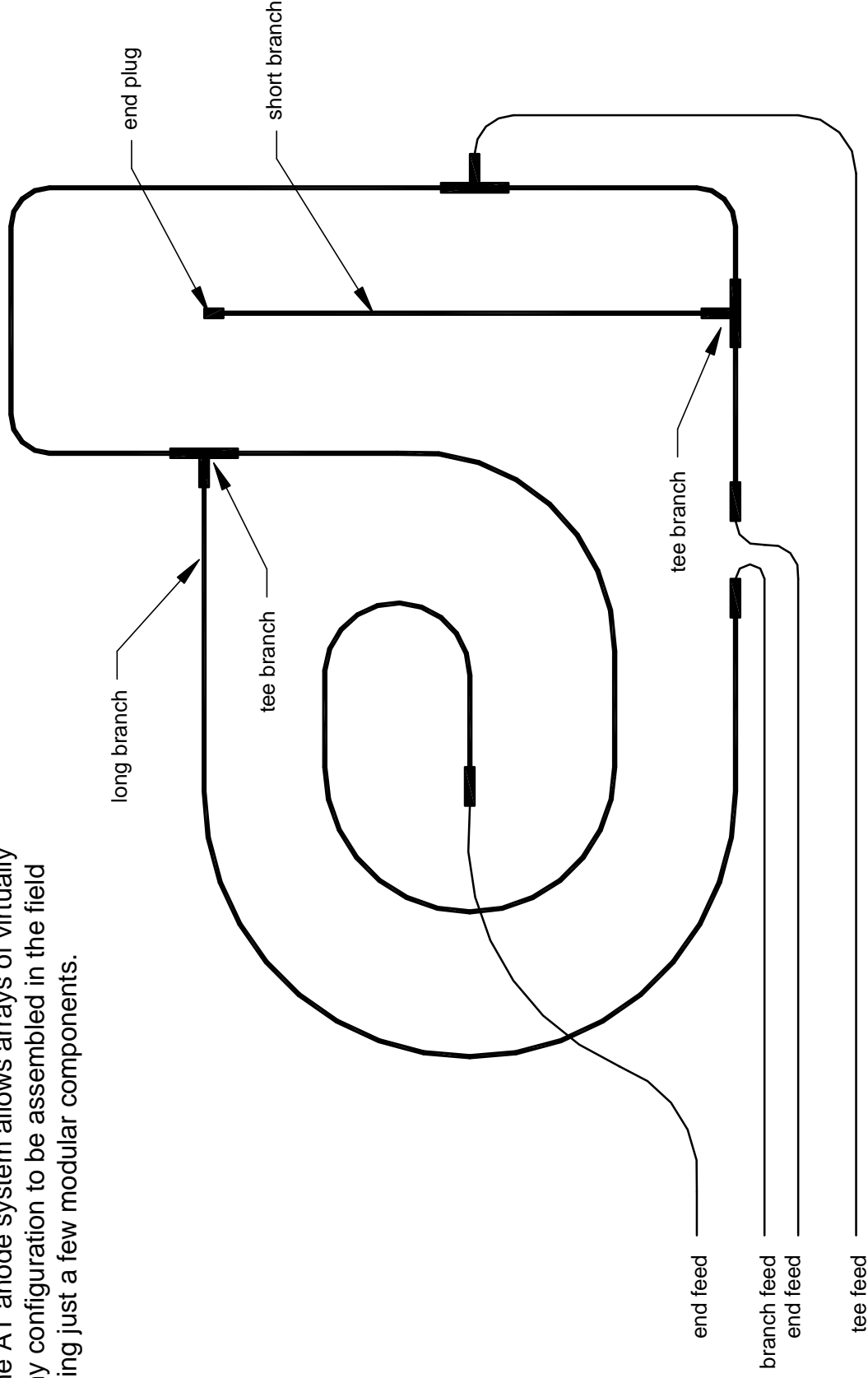
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## Undertank Anode Installation

The AT anode system allows arrays of virtually any configuration to be assembled in the field using just a few modular components.



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## Linear Anode Array Layout Concepts

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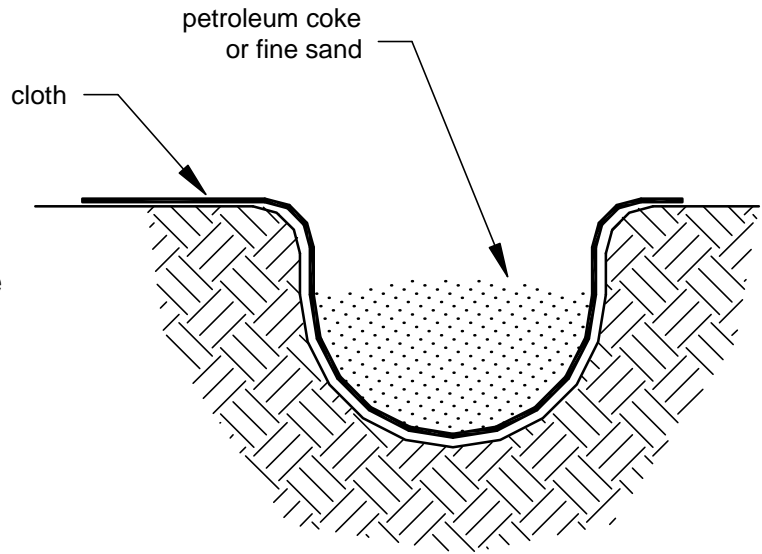


## Caution

When installing a Model AT linear anode in earth, it must be embedded in petroleum coke or fine sand. If this is not done, the anode will not function properly and may fail prematurely. Use of petroleum coke is preferred as it will result in greater anode efficiency.

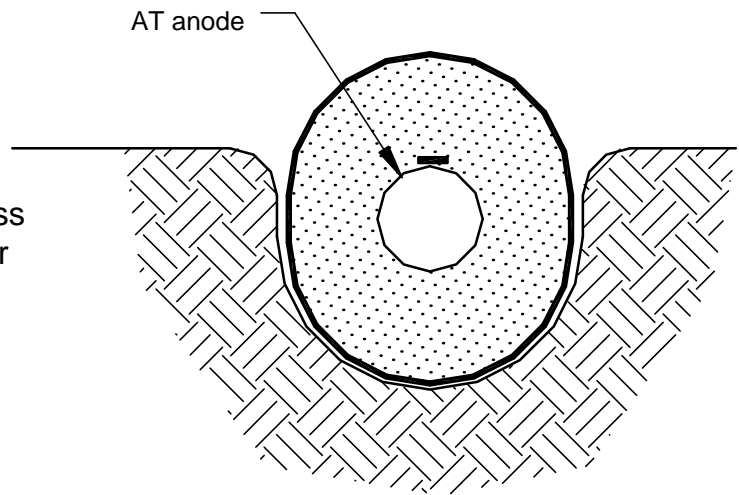
## Preparation

Cut a groove about an inch deep. Line with cloth (optional). Fill groove about half full with petroleum coke (preferred) or fine dry sand.



## Emplacement

Place anode on coke or sand and press in place. Cover with additional coke or sand so that anode is completely encapsulated. Fold over cloth if used. Finish backfilling with earth.



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## Linear Anode Installation