

Underground Well Monitoring System Assembly Instructions

Syscor Controls & Automation's Underground Well Monitoring System uses a combination of sensors and absorption materials to reliably detect liquid hydrocarbon migration underground, even in the most adverse environmental conditions.

The system is engineered for underground or waterlogged applications in or around potential hydrocarbon sources (Figure 1). The Polyfluoro Amplifying Sleeve provides a wicking mechanism to redirect escaping hydrocarbons towards the sensors; specifically, for situations where natural migration paths may be impeded by soil conditions or a high-water table.

A typical well installation is comprised of Syscor's Polyfluoro Amplifying Sleeve Assembly (PASA) and stainless-steel perforated pipes in 2ft segments. This installation procedure describes how to complete the well assembly in the field.

Precautionary Information

- Avoid puncturing or damaging the Polyfluoro Amplifying Sleeve. Migrating water within the sleeve may attenuate hydrocarbon propagation towards the sensor and delay detection.
- It is recommended that the PASA is inserted into the stainless-steel pipe **prior** to placing the pipe underground. Excavation debris may enter the stainless-steel pipe and obstruct the positioning of the PASA.

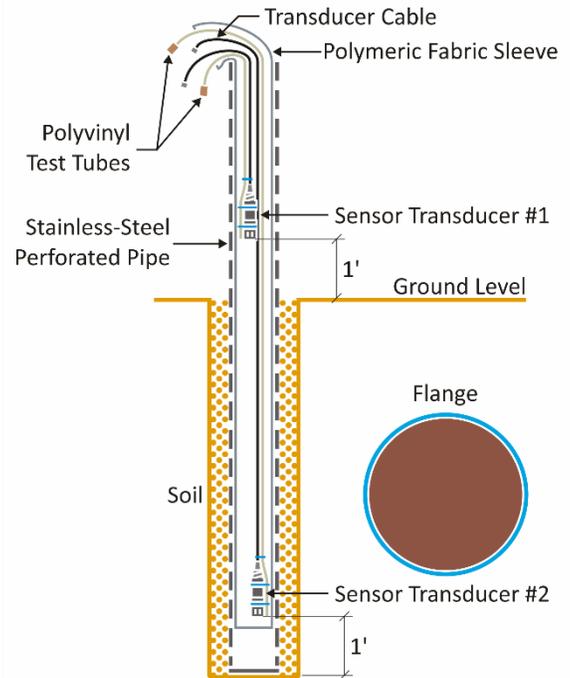


Figure 1: Underground Well Monitoring System Assembly

Stainless-Steel Perforated Pipe and Amplifying Sleeve Assembly Instructions

1. Begin by feeding the PASA through the first stainless-steel perforated pipe segment (Figure 2). **Caution: Make sure the amplifying sleeve is not cut, punctured or snagged on any of the metallic pipe segments.**
2. Pass the long tail of the PASA through the next pipe segment. Thread the pipes together.
3. Continue passing the PASA through the individual segments and threading them together. Repeat until the desired length of the ground monitoring well is reached.
4. Thread the end cap onto the bottom of segment #1 and then confirm that the sleeve is not snagged or damaged.

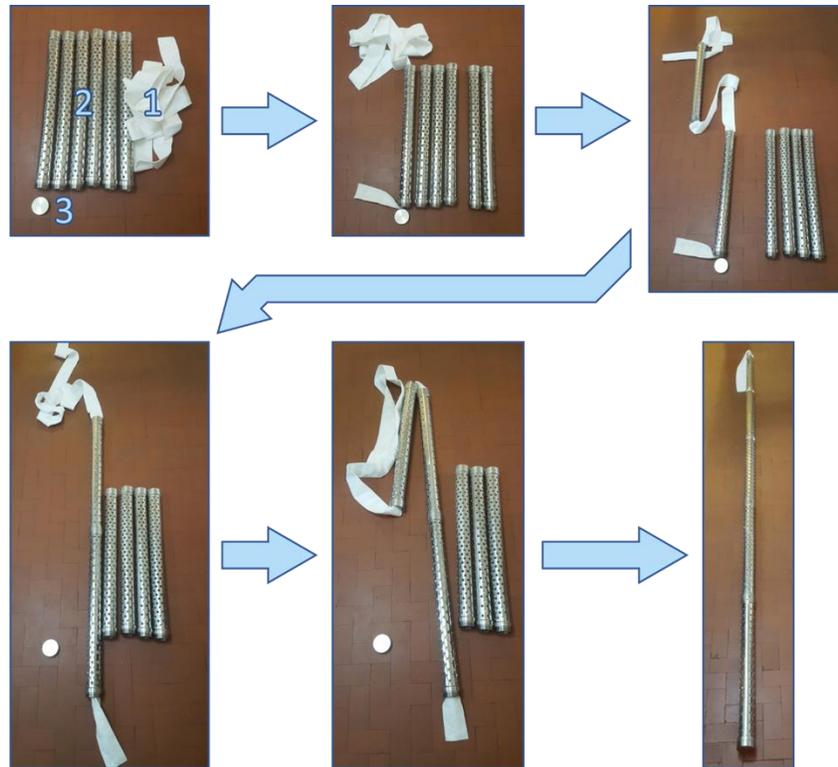


Figure 2: Diagram presenting step-by-step assembly of the Monitoring Well

Polyvinyl Tube Brass Fitting Installation

Install the brass fitting on the end of the polyvinyl tube to facilitate periodic *in-situ* testing of the system as follows:

1. Trim testing polyvinyl tube to desired length.
2. Slide one end of the brass fitting over the tube, followed by the ferrule (Figure 3).
3. Tighten the other end of the brass fitting until it is not able to slide out.

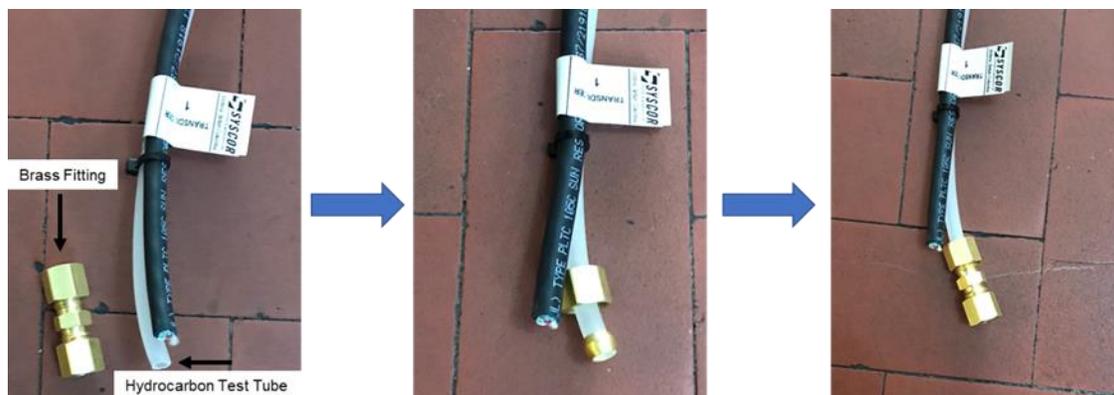


Figure 3: Diagram presenting step-by-step commissioning of the *in-situ* testing tube

Protective Cap Installation

The stainless-steel perforated pipe is fitted with a Protective Cap to avoid damage to the PASA (Figure 4). The PASA is secured to the top of the pipe with a tie-wrap to prevent the PASA from slipping down the stainless-steel pipe.

1. Use a tie-wrap to bind the polyvinyl test tubes and sensor transducer cables together. **Make sure the test tubes are not compressed by the tie-wrap.**
2. Fold the bound cables and tubes over the side of the stainless-steel pipe.
3. Use a tie-wrap to secure the PASA against the stainless-steel pipe. **Ensure that the test tubes are not compressed along the top edge of the stainless-steel pipe.**
4. Place the Protective Cap over the top of the stainless-steel pipe and PASA.
5. Use a tie-wrap to secure the Protective Cap through two holes on the perforated stainless-steel pipe.

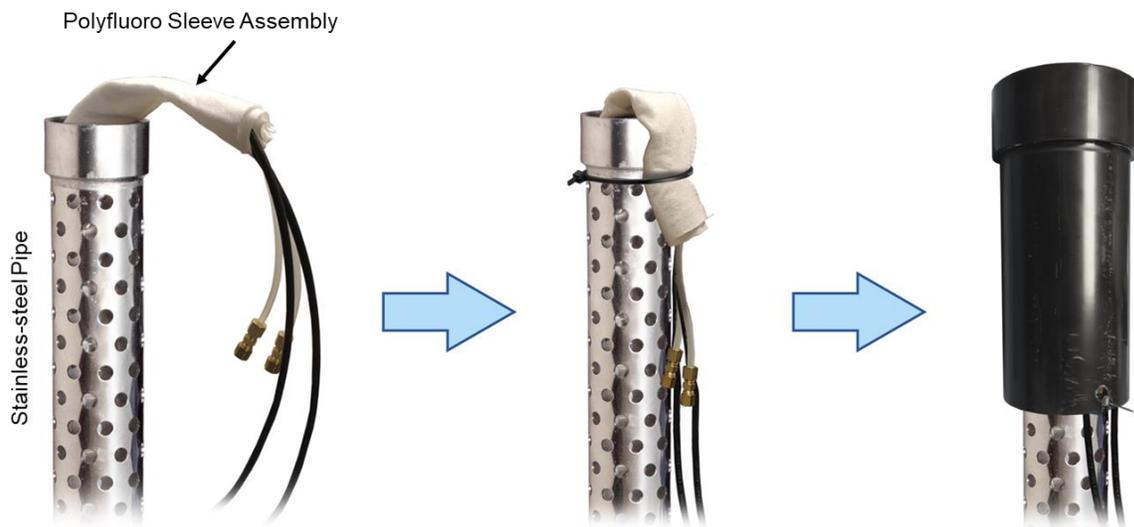


Figure 4: Assembly diagram for the Protective Cap installation

Syscor Controls & Automation Inc.

Suite 201 – 60 Bastion Square
Victoria, BC V8W 1J2 Canada
Phone: +1-250-361-1681
Toll-Free: +1-833-361-1681 (US & Canada Only)
Fax: +1-250-361-1682
Email: contact@syscor.com
Web site: syscor.com