Pressure Spy Quick Install Guide
1: General Instructions

The Pressure Spy is designed for use with the R900® pit meter interface unit (MIU). Before installing, the Pressure Spy unit must be correctly wired to work with the MIU.

2: Safety and Preliminary Checks

- Verify that you are at the location specified on the site Work Order.
- Check that the site is safe for you and your equipment.
- Confirm and/or update the MIU ID number on the Site Work Order.

Follow any guidelines issued by your company in addition to those presented in this guide. Never perform an installation during a lightning storm or under excessively wet conditions.

3: Site Selection

Figure 1 and Figure 2 on the next page show the full Pressure Spy assembly.

Figure 1: Full Pressure Spy Assembly
R900 Pit MIUs

Neptune recommends placing the antenna through a hole in the pit lid so that the dome sits above it.

- Select a location with a direct line-of-sight to the path of the water main valve.
- Avoid installing the MIU behind metal fences or walls.
- Prewire with a standard Nicor male connector as illustrated in Figure 3.

Figure 3: Nicor Male Connector

Neptune recommends use of R900 MIUs prewired with Nicor female connectors. Part numbers are shown in Table 1 on page 3.


<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>13442-600</td>
<td>6' Nicor Connection</td>
</tr>
<tr>
<td>13442-700</td>
<td>25' Nicor Connection</td>
</tr>
</tbody>
</table>

If you currently have an R900 MIU, splice the wires together using the Sensus wiring protocol as shown in Table 2.

Table 2: Sensus Wiring Protocol

<table>
<thead>
<tr>
<th>Pressure Spy</th>
<th>Neptune R900</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>Red</td>
</tr>
<tr>
<td>Black</td>
<td>Green</td>
</tr>
<tr>
<td>Red</td>
<td>Black</td>
</tr>
</tbody>
</table>

4: Preparing the Pressure Spy Unit

After you have the Pressure Spy in the field, complete the following steps.

1. Swipe the Pressure Spy with a Neptune magnet along the top right of the unit.

   The LED in the off position is shown in Figure 4 on the next page. The light turns yellow (see Figure 5 on the next page) and then red (see Figure 6 on the next page).
2. Wait for two minutes.
   The unit is now ready for installation.

4. After completing the magnet swipe, take the Pressure Spy unit and MIU and install at the location you want to monitor. See Figure 7.

5: Connecting the Pressure Spy to the R900 Pit MIU

Complete the following steps.

1. Connect the Pressure Spy and MIU by lining up the connectors with the arrows pointed toward each other.

2. Gently insert the Pressure Spy connector into the MIU connector and press together securely as shown in Figure 8.
Figure 8: Pressure Spy MIU Connectors

The Pressure Spy and MIU are now connected and ready for you to take to the location for installation. See Figure 9.

Figure 9: Pressure Spy MIU Connected

6: Installing the Pressure Spy and the R900 Pit MIU

- For more detailed information and installation instructions, refer to the R900® Wall and Pit Installation and Maintenance Guide (Part No. 12560-001).

- Before installing the Pressure Spy unit, make sure the cable is long enough. This allows you to easily remove the valve box with attached MIU without straining the cable if you ever need to remove the device.
1. Feed the antenna cable and housing through the 1.75-inch hole in the meter valve box. See Figure 10.

Figure 10: Pit Antenna Cable and Housing

2. Slip the large plastic nut over the antenna cable, and thread it onto the antenna assembly to secure it to the pit lid. See Figure 11.

Figure 11: Large Plastic Nut

3. Make sure the smooth side at the top of the threads on the nut is facing upward. See Figure 12.

Figure 12: Securing Plastic Nut

Figure 13 shows the completed installation.

Figure 13: Installation Complete
4. Place the flat black rubber washer on the latch plate around the male coax connection. See Figure 14.

Figure 14: Black Rubber Washer

5. Apply a coating of NovaGuard on the "F" connector, and connect it to the coax cable.

Figure 15: Coax Cable

6. Slide the plastic latch plate cover over the "F" connector.

7. Press down and turn clockwise to secure. See Figure 16.

Figure 16: Coax Connection
7. Slide the connector nut onto the threads and hand tighten. Do not use pliers. See Figure 17.

**Figure 17: Hand Tighten Connection**

8. Use the cable tie to hang the MIU from the antenna tube, if the valve box is in a deep vault installation or a location that can be flooded. See Figure 18.

**Figure 18: Cable Tie**

**Installation of the Pressure Spy Unit**

Due to its compact size and design, the Pressure Spy can be placed in small areas with minimal space requirements.

1. Place the Pressure Spy in small areas over confined valve enclosures, or allow the unit to rest on the pipes or floor of the vault. See Figure 19.

**Figure 19: Example of Confined Space and On Pipes**
Be careful not to lodge the MIU between the valve box and any components inside the box.

2. Position the magnet (Part No. 12287-001) against the left side of the MIU directly in line with the Neptune logo.
3. Swipe it bringing it from the side and around the corner to the top to activate the MIU. See Figure 20.

Figure 20: Activation Magnet

7: Testing the Pressure Spy Unit and R900 MIU Installation

After the R900 MIU has been installed and wired, verify that the MIU is working properly by running the test program.

To start the testing program, power up the handheld unit (HHU) test device.

- If you are using the CE5320 handheld, the receiver is integrated.
- If you are using the Trimble Nomad handheld and the R900® Belt Clip Transceiver (BCT), make sure the R900 BCT is powered on before testing.
- The Neptune NGO™ App can be used with the R900 BCT for pressure readings and to retrieve pressure logging data.
To avoid RF signal saturation of the HHU, position the receiver at least 2 to 3 feet from the MIU. In a densely saturated area, removing the CE5320 antenna from the handheld can assist with readings. You can operate the R900 BCT normally.

When the MIU is installed correctly, the MIU ID and Pressure Spy reading appear on the HHU’s display within one minute.

All Pressure Spy units return six digits as their read, and with Neptune’s R900 MIU you can see two additional zeros (00) at the end of the read which makes it an eight digit read.

The RF Test Read has three leading zeros that are ignored. The fourth, fifth, and sixth positions are the actual pressure read, and the trailing zeros are ignored. Figure 21 is an example of a Pressure Spy Read through RF Test. The read of 00010400 shows a pressure of 104 psi.

Figure 21: RF Test
If a problem still exists, contact your Neptune sales representative.

**NGO Application and Android Device**

After the R900 MIU has been installed and connected to the Pressure Spy, complete the following steps to get a current reading or to retrieve 96 days of hourly pressure data.

**Pressure Data - Current Reading**

1. Power on the R900 BCT and the Android device and pair using Bluetooth.
2. Open the NGO application on the Android device.
3. Click the NGO menu button. See Figure 22.

![NGO Main Menu](image)

*Figure 22: NGO Main Menu*
4. Click Pressure Reading. See Figure 23. The Pressure Reading window appears. See Figure 24 below.

![Image of Pressure Reading window]

Figure 23: Pressure Reading

5. Type the MIU ID.

6. Click Capture.

The reading displays in the form of a gauge. See Figure 24.

![Image of MIU ID]

Figure 24: MIU ID

**Pressure Data - 96 Days**

To retrieve pressure data without current readings, complete the following steps.
1. Click **Pressure Log** from the NGO Main Menu. See Figure 25.

![Figure 25: Pressure Log](image)

2. Click the **MIU input icon**. See Figure 26.

The Pressure Log screen appears. See Figure 27.

![Figure 26: MIU Input Icon](image)
3. Type the **MIU ID**. See Figure 27.

4. Click **Start**. See Figure 28.
The NGO app connects to the MIU. See Figure 29. The R900 BCT captures the data.

Figure 29: Connect to MIU

The captured reads appear on the screen. See Figure 30.

Figure 30: Pressure Log List
You can expand any flag or display graphs from the list of reads while viewing this screen. See Figure 31 and Figure 32.

**Figure 31: Pressure Log Detail**

**Figure 32: Pressure Log Graph**

**8: Checklist**

Before leaving the installation site, be sure to:

- Record the MIU ID for each Pressure Spy unit.
- Verify that you have followed all requirements of this Quick Install Guide.
- Verify that you have recorded all required information.
- Clean up any installation debris.
- Verify that the requirements of the site work order have been completed.
9: Contact Information

Within the United States, Neptune Support is available Monday through Friday, 7:00 AM to 5:00 PM Central Standard Time.

Phone

1. Call (800) 647-4832.
   - Press 1 if you have a Technical Support Personal Identification number (PIN).
   - Press 2 if you do not have a Technical Support PIN.

2. Enter the six digit PIN number and press #.
   - Press 2 for Technical Support.
   - Press 3 for maintenance contracts or renewals.
   - Press 4 for Return Material Authorization (RMA) for Canadian Accounts.

The Customer Support Specialists are dedicated to you until the issue is resolved to your satisfaction.

Be prepared with:
- Your name and utility or company name.
- A description of what occurred and what you were doing at the time.
- A description of any actions taken to correct the issue.

Fax

1. Send a description of your problem to (334) 283-7497.
2. Include the best time to contact you.

Email

Send your message to: hhsupp@neptunetg.com.