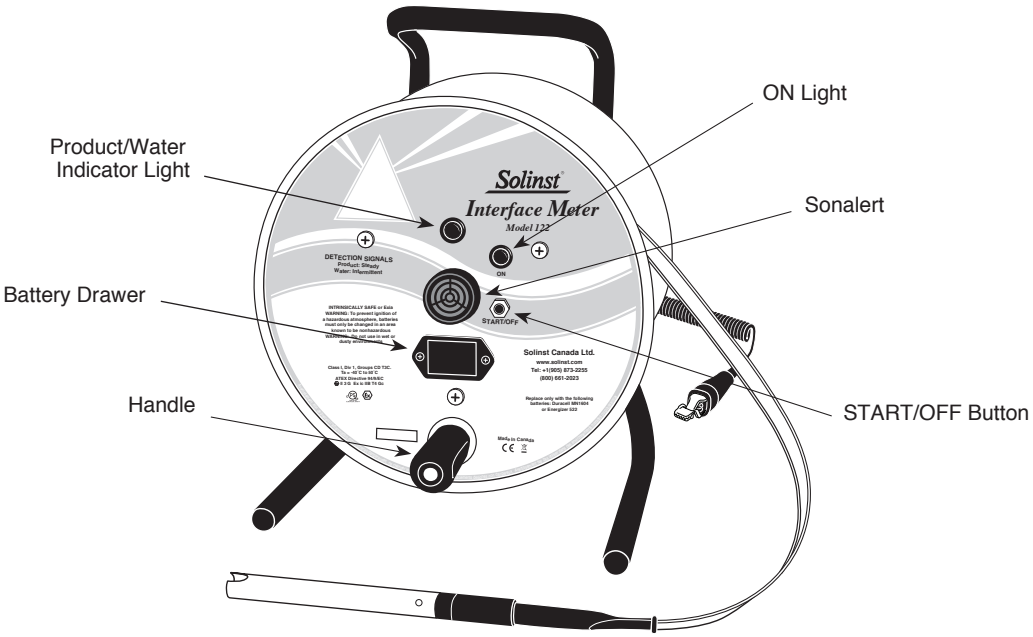
Solinst® Interface Meter Operating Instructions

Model 122



Operating Principle

The Solinst Model 122 Interface Meter has a narrow 5/8" (16 mm) diameter probe and uses laser-marked PVDF flat tape. It is certified to CSA Standards, for use in hazardous locations Class 1, Div. 1, Groups C & D T3C, and is ATEX certified under directive 94/9/EC, as II 3 G Ex ic IIB T4 Gc. It has an infra-red circuit which detects the presence of a liquid. A conductivity circuit differentiates between conductive liquid (water) and non-conductive liquid (LNAPL or DNAPL product).

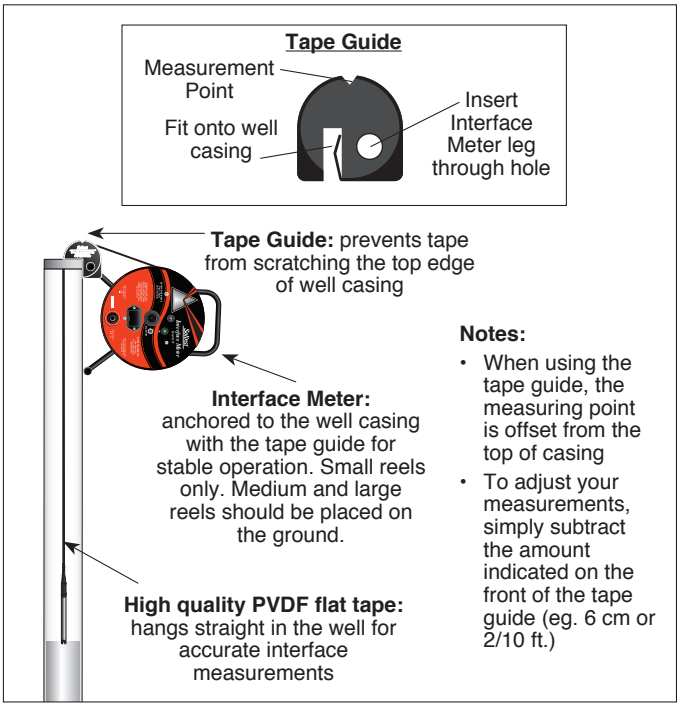
Equipment Check

Before beginning any measurements, check the electronics and battery condition by pushing the 'START/OFF' button. A brief tone and red light indicate that the meter is functional.

A flashing green light indicates the meter is on. It will automatically turn off after 10 minutes to preserve battery life.

Using the Tape Guide

1. The tape guide has been designed to: improve accuracy when reading interface measurements; to prevent the laser-marked PVDF flat tape being cut by well casing; and to allow the tape and probe to hang straight from the side of the well.
2. If interface measurements are being taken in a 2" dia well then simply fit the small end of the tape guide onto the edge of the well casing.
3. The small end must be inserted if the Interface Meter is to be suspended from the tape guide.
4. Insert the leg of the Interface Meter into the hole on the Tape Guide (small reels only).
5. Once inserted, rest the Interface Meter on the side of the well casing.



Field Measurements

IMPORTANT

1. To meet safety requirements and to protect the electronics from damage, always ground the meter by attaching the grounding clip to the metal well casing or to a suitable ground rod.

Continued overleaf...

2. Push the 'START/OFF' button. A brief tone and light indicate that the meter is functional and the flashing green light indicates that the meter is on. The meter automatically turns off after 10 minutes. Press the 'START/OFF' button as necessary during operation to turn the meter back on.
3. Place the slotted part of the tape guide onto the edge of the well casing. Lay the Interface Meter laser-marked PVDF flat tape into the groove on the top of the tape guide. Measurements will be read at the apex of the V-notch on the tape guide.

> **Note:** When using the tape guide, remember to subtract the compensation factor stamped onto the side of the guide from each measurement.

4. A steady tone and light indicates a non-conductive liquid (e.g. product). An intermittent tone and light indicates a conductive liquid (e.g. water).
5. For floating product (LNAPL), take the air/product interface measurement on the way into the liquid, and the water/product interface on the way up. When passing through product into water, some product may adhere to the probe sensors due to surface tension. Therefore, when water is detected below product, the probe should be raised and lowered rapidly in a short vertical motion to remove any product that may have been carried down with the probe.
6. The water/product interface should then be measured as the probe is raised very slowly back up. Once the interface is detected the probe can be raised and lowered in small increments to precisely determine the interface.
7. Repeat measurements to confirm water/product interface.
8. To determine the thickness of product, subtract the water/product interface from the product/air interface.
9. To determine if there is any sinking product (DNAPL) in the well, continue lowering the probe slowly. If steady signals activate, determine the top of the sinking layer by reading directly from the PVDF flat tape. Continue lowering the probe slowly until the tape slackens when the well bottom is reached. Read the level directly from the PVDF flat tape and subtract one from the other to determine thickness.
10. Upon completion of readings clean the tape and probe; as described in the Cleaning and Maintenance section.

Cleaning and Maintenance

After each use, the laster-marked PVDF tape should be wiped clean and carefully rewound onto the reel.

The probe should be cleaned as follows:

- Wash probe thoroughly with a non-abrasive mild detergent. **DO NOT USE ANY SOLVENTS**. Use a soft cloth around the pins on the end of the probe to remove all product. Use the brush provided to remove all product from inner part of the probe.

  USE LUKE-WARM, NOT HOT WATER. DAMAGE TO THE PROBE MAY RESULT.
- Rinse probe thoroughly with distilled water, wipe dry.
- Return the probe to the holder.

Other suitable cleaning method:

- Steam clean the PVDF flat tape only.

Battery Replacement

Push the battery drawer in and up and then release. The battery drawer should eject slightly, allowing it to be pulled out. Replace the 9V alkaline battery.

Other General Tips:

1. The probe should be cleaned after each use.
2. Always use the grounding cable.
3. Do not drop probe: damage to probe tip may result.
4. If battery is weak, the start tone will not sound, and flashing "green" light will be off. Replace the 9V alkaline battery.
5. Before storage, make sure the meter is turned off. If the Interface Meter is going to be stored for longer than two months, the 9V alkaline battery should be removed to avoid potential leakage.
6. The meter can be checked by placing the probe in distilled (non-conductive) water or pure phase product, for example lamp oil (**avoid bright sunlight during testing and resting the probe on the bottom of the container**). A steady tone and light should be observed.

> **Note:** In rare circumstances it is possible that the 122 might sound when directed toward sunlight, and not in a liquid. This is normal and does not affect proper operation in a monitoring well.

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Solinst® Connecting PVDF Laser Replacement Tape to Reel

Model 101 P7/107/122

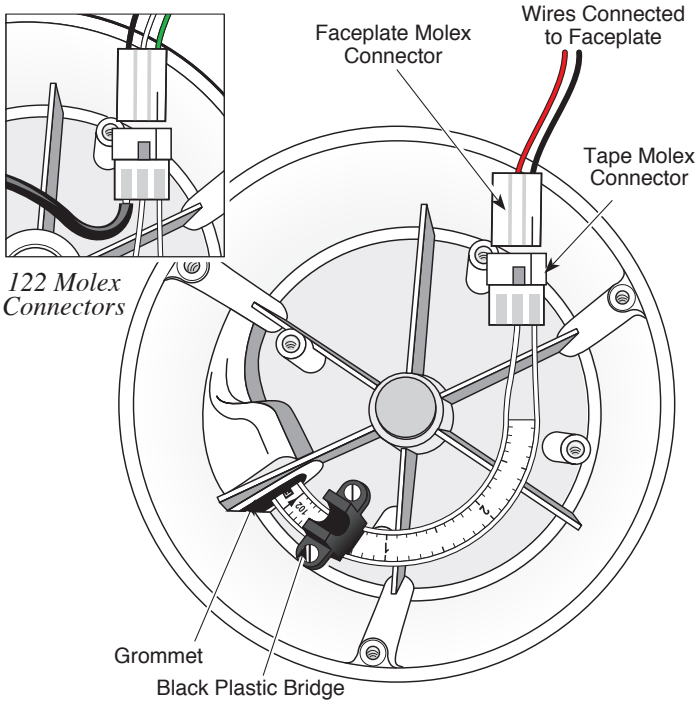
Tools and Materials Needed

1. Model 101 P7/107/122 Replacement Laser Tape Assembly, Includes:
   - Jumper Cable (New Tape - 3 Pin to 2 Pin) (#110508)
   - 3 Pin Molex Connector Housing
   - Grommet
2. Phillips or Robertson Screwdriver
3. Wire Cutters

Note: The Jumper Cable is only required if you are connecting the new Laser Tape to a Model 101 Water Level Meter that previously used polyethylene tape (with red ft/m markings). The Molex Connector from the faceplate electronics will have a 2 pin connection.

Instructions

1. Place the reel on a flat workbench with the faceplate up. Undo the three screws from the faceplate, and slowly remove it from the reel.
2. Disconnect the old Tape Molex Connector from the Faceplate Molex Connector.



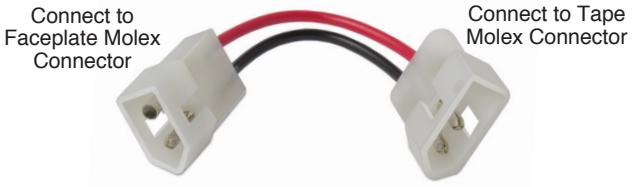
Inside View of 101 P7/107 Reel Hub

3. Undo the two screws from the black plastic bridge holding the tape inside the reel hub, and remove the top piece of the bridge.
4. Use the wire cutters to cut the old Tape Molex Connector from the old tape. Remove the ground wire from the 122 Tape Molex connector by pushing out the pin. Pull the old tape through the grommet and remove it from the reel.
5. Feed the new Laser Tape through the grommet into the reel hub.

   Note: The replacement tape comes with a new grommet. The old grommet may be replaced with the new one, or left in if not damaged.

6. By hand, insert the connector pins into the new Tape Molex Connector housing. The negative connector pin is inserted into the terminal on the pointed side of the Tape Molex Connector, housing and the positive pin into the middle terminal. The negative pin is above the numbers on the tape (see diagram at the bottom of the page). The third terminal is left open for the 107 and 101 P7, the ground wire is inserted for the 122.
7. Position the tape inside the reel hub with black plastic bridge over top and refasten the two screws to secure the tape to the reel.
8. Connect the Tape Molex Connector to the Faceplate Molex Connector.

Note: If you are connecting the Laser Tape to a Model 101 that previously used polyethylene tape, you will need to use the Jumper Cable. Attach the 3 pin connection to the Tape Molex Connector, and the 2 pin connection to the Faceplate Molex Connector.



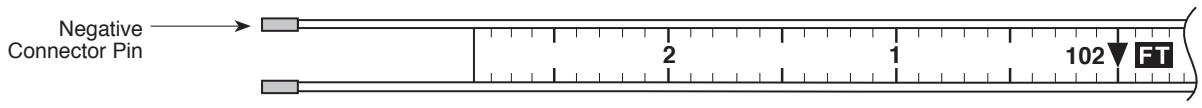
Jumper Cable (New Tape - 3 Pin to 2 Pin) (#110508)

9. Attach the probe to the tape seal (existing or replacement probe). **See separate probe replacement instructions.**

Notes: The Model 107 probe comes factory calibrated, so there is no need to conduct a user calibration. If with time, recalibration is required, please refer to the Model 107 TLC Meter Operating Instructions.

10. **101 P7/107:** With the probe in a glass of tap water, turn the Meter 'ON'. If the buzzer or light do not activate, or the Model 107 LCD does not show temperature or conductivity, check the probe and tape connections.

    122: With the Probe in a glass of tap water and product, turn the Interface Meter to the 'ON' position. A steady tone and light indicates a product, while an intermittent tone indicates water. If the buzzer or light do not activate, check the probe and tape connections
11. Replace the faceplate on the reel and re-secure the three screws.
12. Slowly wind the tape onto the reel, holding to ensure no slack.



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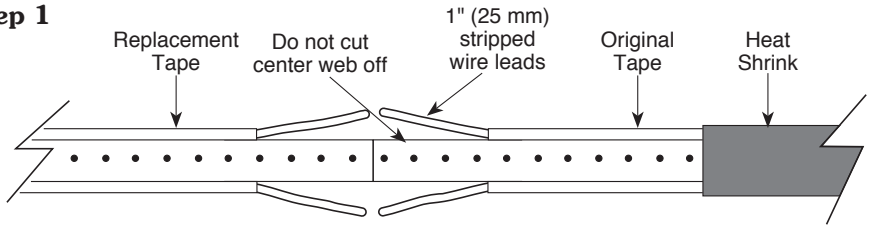
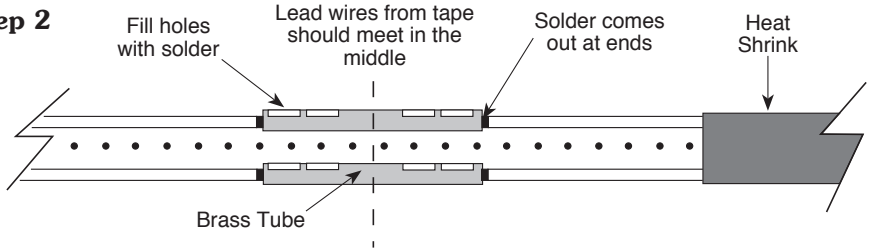
Solinst® Narrow Tape Splice Instructions

Model 101M and 122M

Step 1



Step 2



Tools and Materials Needed

1. 101M Tape Splice Kit (#106123)
2. Tape/Probe on Tape
3. Wire Cutter
4. Wire Stripper
5. Soldering Iron
6. Solder Wire with Liquid Acid Flux
7. Acetone or Lacquer Thinner
8. Heat Gun

Instructions

1. Slip the 2 pieces of heat shrink over the tape and push out of the way. The 3.5" (90 mm) piece of heat shrink goes on first, then the 2.5" (65 mm) piece.
2. Cut tapes along the wire leads approximately 1" (25 mm) and strip the wire leads (both ends of the tapes should be the same). Do not cut the center web material off.
3. Pre-tin the wires by applying a thin layer of acid flux and solder to the wires using tip of soldering iron.
4. Slip the wire leads into the brass tubes. The wire leads from the tapes should meet in the middle.
5. Solder the wire leads into the brass tubes using the holes provided. Use a liquid acid flux to help wires accept solder and create a solid joint. The solder should come out of the tube ends. **After using flux, clean brass tubes with acetone or lacquer thinner.**

> **Note**: Be careful not to melt the tape with the heat gun

6. Push the 2.5" (65 mm) piece of heat shrink centered over the connection, use the heat gun and apply heat onto the heat shrink starting in the middle and smoothing out any air pockets that form under the heat shrink. Press the heat shrink onto the connection with your fingers.
7. Push the 3.5" (90 mm) piece of heat shrink centered over the connection, apply heat and seal as in step 5 above.

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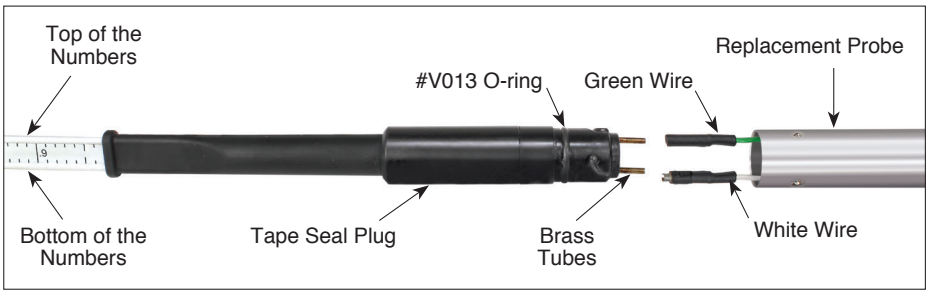
Solinst® 122 P8 Probe Replacement

Model 122/122M



Tools and Materials Needed

1. 122/122M Replacement P8 Probe Assembly (#111260)
   - Includes replacement #V013 O-Ring
2. Silicone-based grease
3. Tweezers

Instructions

Note: Before attempting probe replacement, please make sure the Interface Meter is properly grounded. Attach the grounding cable clip to a metal well casing or other suitable grounding rod.

1. Make sure the Interface Meter is turned off.
2. To remove the old probe, twist the probe counter-clockwise and pull out. This may take some force.
3. Remove the two connectors from the brass tubes.
4. Remove the old V013 O-ring from the tape seal plug, if damaged. Lubricate (e.g. silicon grease) the new V013 O-ring and the slotted area where the O-ring will be installed on the tape seal plug. Install the O-ring.
5. Lay the tape and tape seal plug so the numbers on the tape are facing up.
6. Use tweezers to carefully pull the green and white wire connectors from the replacement probe body.
7. To attach the new probe, connect the green wire to the brass connector on the top of the tape seal plug and the white wire to the bottom brass tube. Ensure the connectors are pushed all the way onto the brass tubes.
8. Line up the indents in the probe with the grooves in the tape seal plug. Push the probe past the O-ring, then twist the probe clockwise until the probe seats on the tape seal plug.

   Note: Make sure the wires are tucked back into the probe body when pushing the probe onto the tape seal plug.

9. With Probe in a glass of tap water and product (i.e. lamp oil), turn the Interface Meter On. A steady tone and light indicates a product, while an intermittent tone indicates water. If the buzzer or light do not activate, check the Probe connections.

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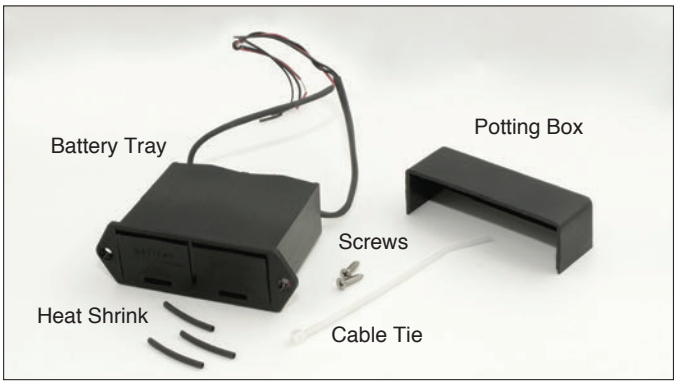
Dual Battery Tray Replacement

Model 122

Tools and Materials Needed

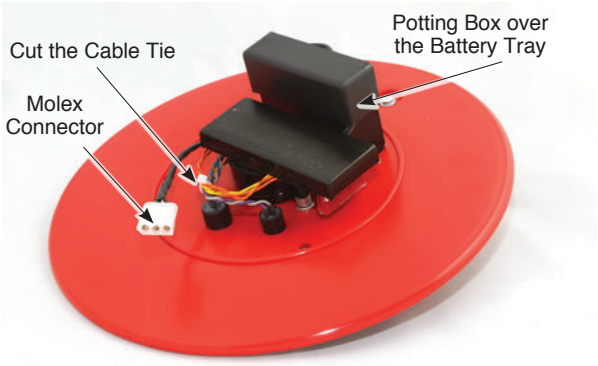
1. 122 Replacement Dual 9 Volt Battery Tray (#110048)
2. Phillips Screwdriver
3. Pliers
4. Wire Cutters and Strippers
5. Soldering Iron and Wire
6. Heat Gun
7. Silicon
8. Masking Tape



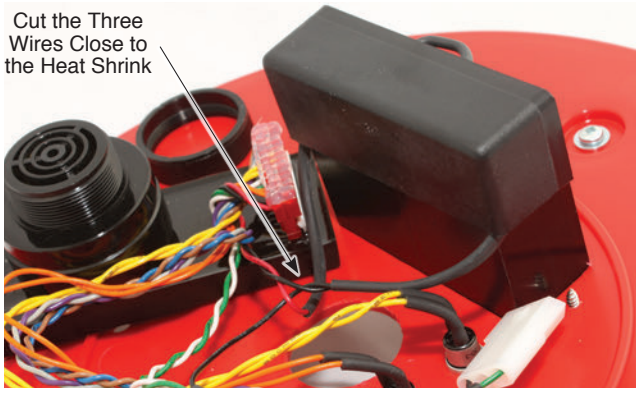
122 Replacement Dual 9 Volt Battery Tray (#110048)

Instructions

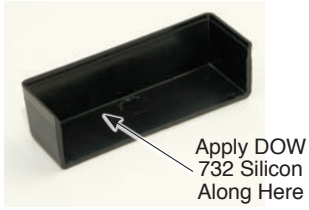
1. Remove the battery drawers and batteries from the faceplate.
2. Undo the three screws from the front of the faceplate and remove the faceplate from the reel.
3. Undo the Molex connector that connects the faceplate electronics to the tape.

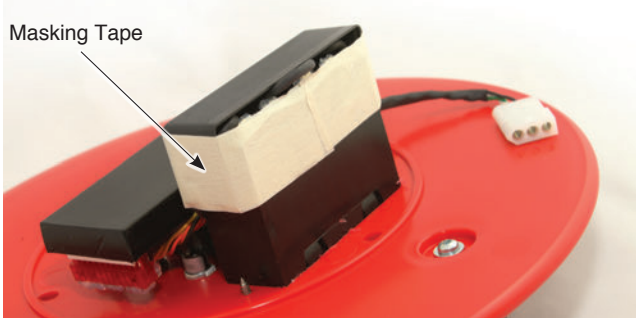


4. Cut the cable tie from around the wires. Unscrew the Sonalert retaining ring from the front of the faceplate, and push the Sonalert out of the faceplate. This will allow better access to the wiring.
5. Cut the three wires (2 black and 1 red) from the battery tray close to the heat shrink. (See below.)



6. Use the pliers to remove the potting box from the battery tray. Unscrew the two screws holding the battery tray in the faceplate, and remove the battery tray.
7. Place the new battery tray through the faceplate, ensure proper orientation, and secure it with the two screws.
8. Strip the wires, cut from the old battery tray, about 1/4".
9. Put a piece of heat shrink over each of the red and black wires from the new battery tray.
10. Solder the wires from the new battery tray to the corresponding wires cut from the old battery tray. The single black wire to the Molex connector, and the red and black wires twisted together to the circuit board connector.
11. Slide the pieces of heat shrink over the soldered connections and apply heat with the heat gun.
12. Reinstall the Sonalert and secure it with the retaining ring. Use the new cable tie to organize the wires if desired.
13. Put a line of silicon on the inside of the new potting box, and install over the new battery tray. Wrap a piece of tape around the battery tray to hold the potting box in place while the silicon sets (approximately 24 hours).





14. Reconnect the Molex connector from the faceplate electronics to the tape.
15. Use the three screws to secure the faceplate on the reel.
16. Slide the battery drawers with batteries into the battery tray.
17. With the Probe in a glass of tap water and product, turn the Interface Meter to the 'ON' position. A steady tone and light indicates a product, while an intermittent tone indicates water. If the buzzer or light do not activate, check the batteries, and the soldered and Molex connections.

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Faceplate Replacement

Model 122 SC1000

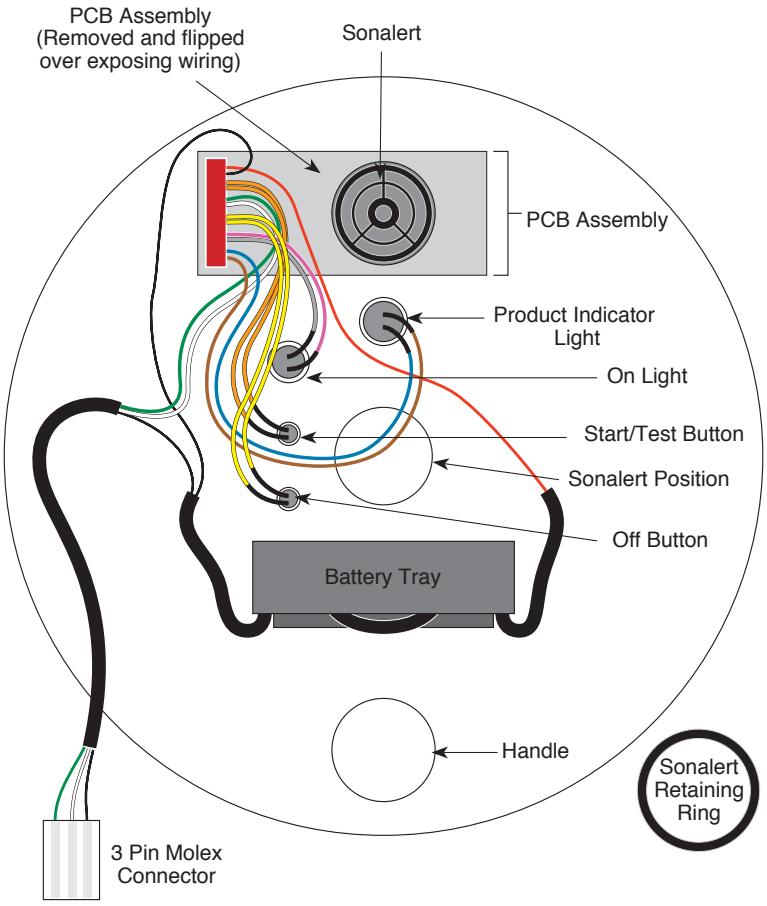
Tools and Materials Needed

1. 122 Replacement Faceplate Assembly (#103573)
2. Phillips or Robertson (Square Head) Screwdriver
3. Small Flat Screwdriver
4. Wrench or Pliers
5. Wire Strippers and Cutters
6. Soldering Iron and Wire
7. Heat Gun

Instructions

1. Place the reel on a flat surface, with the faceplate up. Remove the batteries from the faceplate.
2. Use the Phillips or Robertson screwdriver to undo the three screws holding the faceplate to the hub.
3. Remove the faceplate and disconnect the 3 pin Molex connector that attaches the faceplate electronics to the tape.
4. Unscrew the Sonalert retaining ring from the front of the faceplate and remove the Sonalert and PCB assembly from its position.
5. Unscrew the nuts retaining the Start/Test and OFF buttons on the front of the faceplate and remove the buttons.
6. Cut the wires on the product indicator and ON lights midway down, and push the lights through the faceplate.
7. Cut the three wires (2 black & 1 orange) from the battery tray midway down. Unscrew the two screws holding the battery tray in the faceplate, and remove the battery tray.
8. Place the buttons through the new faceplate in the correct positions and replace the retaining nuts. The OFF button with yellow wires to the bottom position and the Start/Test button with orange wires to the top position.

122 Replacement Faceplate Assembly indicating the location of components (comes with handle attached, heat shrink and 3 Phillips screws)



Back of 122 Faceplate showing wiring connections and component locations

9. Push the lights through the correct positions in the faceplate. The red product indicator light through the top centre position and the green ON light through the position below. Put a piece of heat shrink over each wire and resolder the wires from the PCB assembly to the lights. Apply the heat shrink over the connections.
10. Place the battery tray through the opening in the new faceplate and secure it using the two screws.
11. Put a piece of heat shrink over the two black wires, and one over the orange wire. Resolder the wires from the PCB assembly to the battery tray. Apply the heat shrink over the connections.
12. Place the Sonalert through the new faceplate and reinstall the retaining ring.
13. Connect the 3 pin Molex connector to the tape connector.
14. Replace the faceplate by fastening three screws and replace the batteries.
15. With the Probe in a glass of tap water and product, turn the Interface Meter to the 'ON' position. A steady tone and light indicates a product, while an intermittent tone indicates water. If the buzzer or light do not activate, check the soldered and Molex connections.

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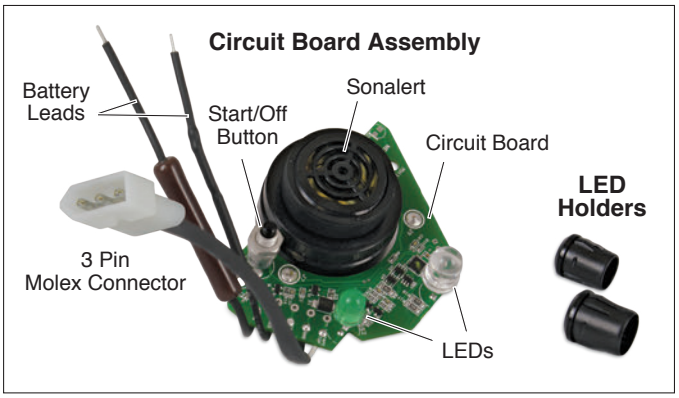
Tools and Materials Needed

1. 122 Complete Electronics Package for Interface Meter (Spare) (#111327)
2. Phillips or Robertson (Square Head) Screwdriver
3. Wrench or Pliers
4. Wire Cutters
5. Small Flat Screwdriver
6. Soldering Iron and Wire
7. RTV Silicone



122 Complete Electronics Package for Interface Meter (Spare) (#111327)

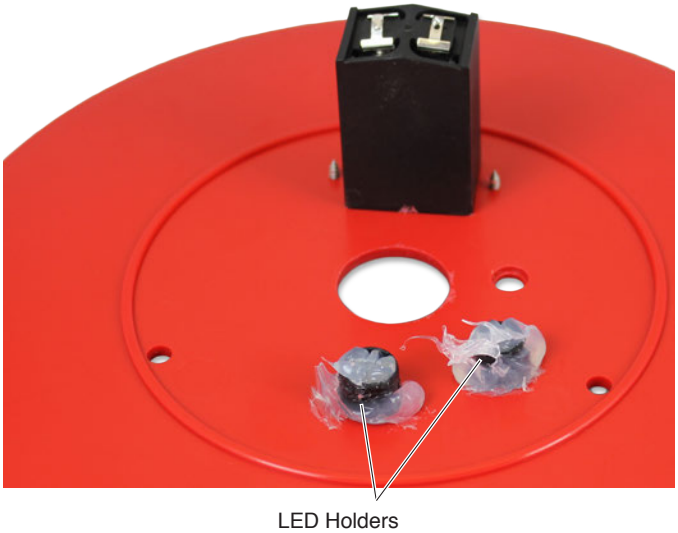
Instructions

1. Place the reel on a flat surface, with the faceplate up. Remove the battery from the faceplate.
2. Use the Phillips or Robertson screwdriver to undo the three screws holding the faceplate to the hub.
3. Remove the faceplate and disconnect the 3 pin Molex connector that attaches the faceplate electronics to the tape.

4. Use a wrench or pliers to undo the retaining nut from the start/off button. Unscrew the Sonalert retaining nut by hand.

5. Flip the faceplate over. Cut/un-solder the wires from the two terminals on the battery holder.

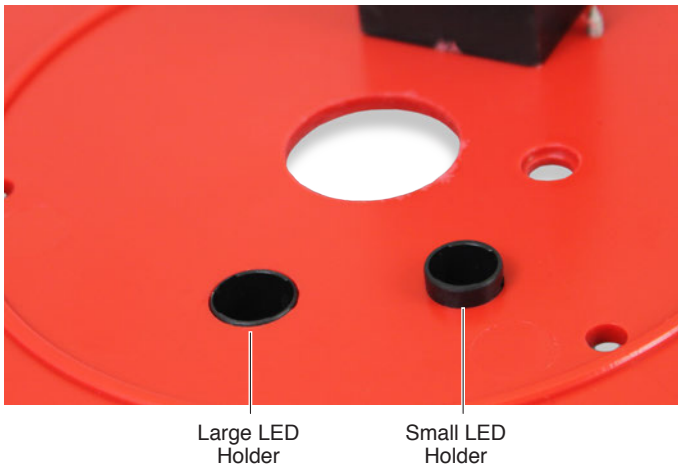
6. Use wire cutters to cut the circuit board from the LEDs/LED holders.
7. Remove the circuit board assembly from the faceplate.



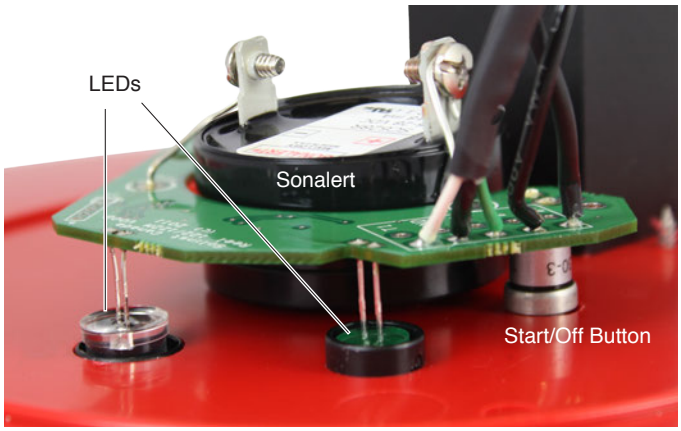
8. Remove the silicone from around the LED holders.
9. Flip the faceplate over and use a hard surface, such as a table, to help push the LEDs and LED holders out of the faceplate.

Continued on page 2.

10. Insert the two new LED holders into the front of the faceplate. Position the LED holders so that the large LED holder is flush with the back of the faceplate, and the small LED holder has about 3 mm showing on the back of the faceplate. See photo below.

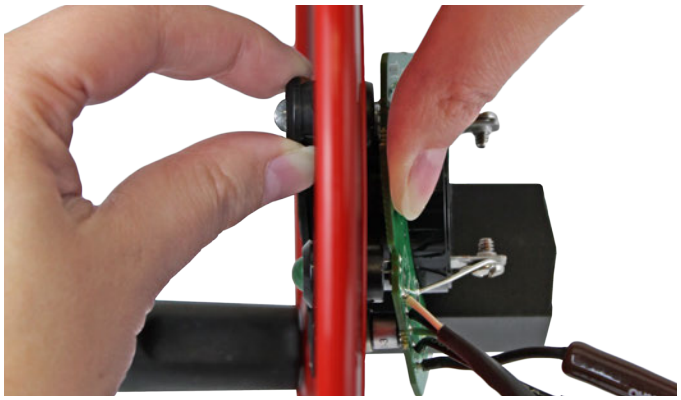


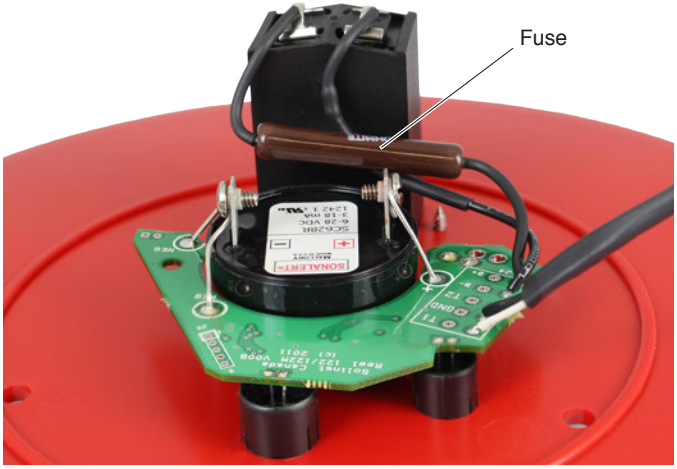
11. Position the new circuit board assembly on the back of the faceplate with the LEDs in the holders and the button and Sonalert through the faceplate, as shown in the photo below. **Ensure you have removed the start/off button and Sonalert retaining nuts from the assembly**.



12. Using a small flat screwdriver, push the LEDs into the holders until they snap into place. **Be careful not to bend the wires connecting the LEDs to the circuit board.**

13. Slowly push the LED holders into the faceplate, making sure to **only push on the LED holders**, and not the LEDs. Ensure the holders snap into place against the front of the faceplate.





14. Solder the two wires to the terminals on the battery holder, as shown in the photo above. **Be careful not to bend or pinch the fuse in the one lead.**
15. Apply the RTV silicone into the LED holders until they overflow, and around the base of the LED holders. The RTV silicone takes about 24 hours to set completely.

16. On the front of the faceplate, install the start/off button and Sonalert retaining nuts.
17. Connect the 3 pin Molex connector to the tape connector.
18. Replace the faceplate by fastening three screws and replace the battery.
19. With the Probe in a glass of tap water and product, turn the Interface Meter on. A steady tone and light indicates a product, while an intermittent tone indicates water. If the buzzer or light do not activate, check all connections.

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Internal Ground Cable Replacement

Model 122

Tools and Materials Needed

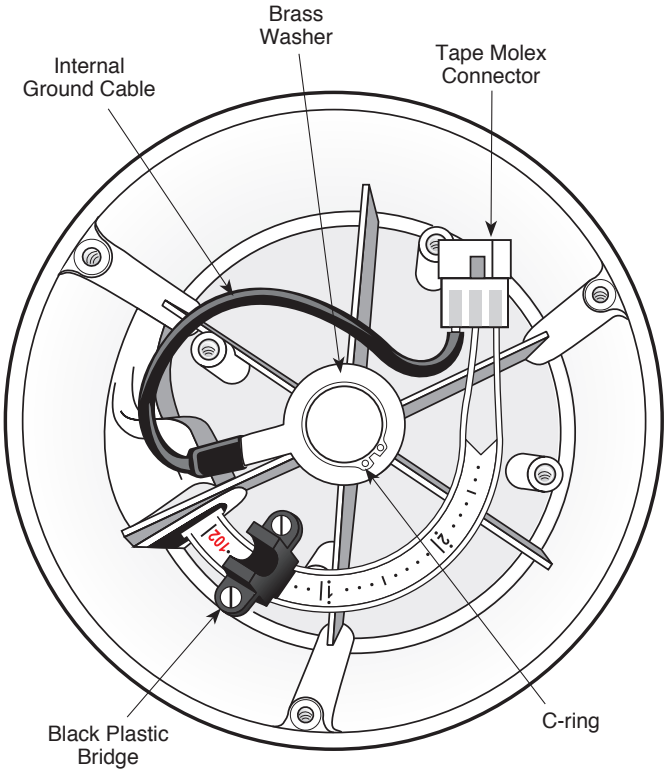
1. Model 122 Internal Ground Cable Assembly (#109054)
2. Phillips or Robertson Screwdriver
3. Molex Pin Extraction Tool (available at most tool outlets)
4. External C-Ring Pliers (available at most tool outlets)

Instructions

1. Place the Reel on a flat workbench with the Faceplate up. Use the screwdriver to undo the three screws from the Faceplate, and slowly remove it from the Reel.
2. Disconnect the Tape Molex Connector from the Faceplate Molex Connector. Set the Faceplate aside.
3. Use the extraction tool to push and remove the two Connector Pins from the tape, out of the Tape Connector.
4. To remove the old Ground Cable Assembly from inside the Reel Hub, use the external C-ring pliers to undo the C-ring that is holding the brass washer of the assembly to the Reel.

Note: The new Ground Cable Assembly comes with a Tape Molex Connector attached; therefore there is no need to remove the Connector from the old Ground Cable Assembly.

5. Place the brass washer of the new Ground Cable Assembly in position in the Reel Hub. Replace the C-ring to secure the new Ground Cable Assembly to the Reel.
6. By hand, insert the Connector Pins from the tape into the new Tape Connector of the Ground Cable Assembly. Hold the tape with numbers facing you, right-side-up. Insert the Connector Pin located above the numbers into the hole at the pointed end of the Connector, and the other Connector Pin in the middle hole. The ground cable is in the bottom position.



Inside View of 122 Reel Hub

Note: Ensure the Connector Pins are pushed and secured into position in the Tape Molex Connector.

7. Connect the Tape Connector to the Faceplate Connector.
8. With the Probe in a glass of tap water and product, turn the Interface Meter to the 'ON' position. A steady tone and light indicates a product, while an intermittent tone indicates water. If the buzzer or light do not activate, check the connections.
9. Replace the Faceplate on the Reel and re-secure the three screws.

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Wiring Connector Kit Instructions

Model 122

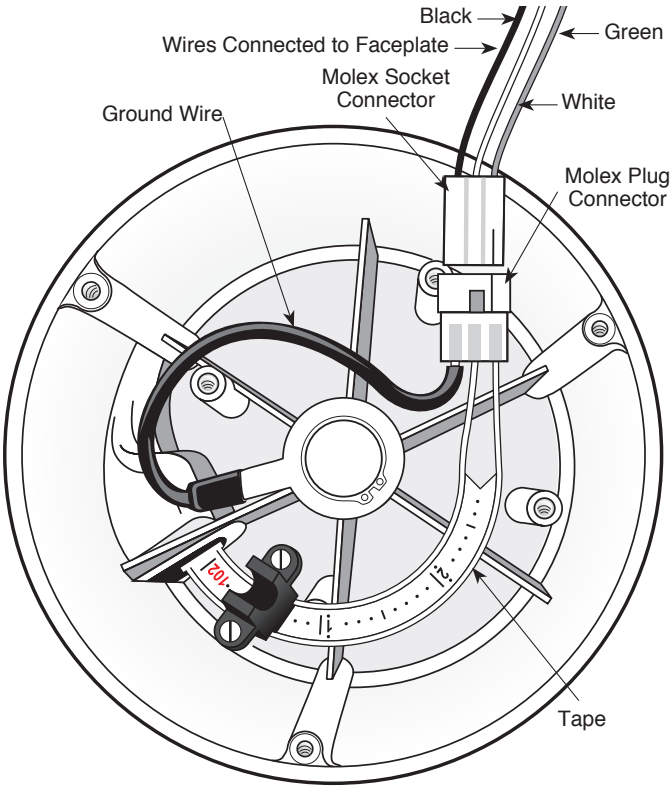
Tools and Materials Needed

1. Model 122 Wiring Connector Kit (#103413), includes:
   - 3 x Molex Pin Contacts (male)
   - 3 x Molex Pin Socket Contacts (female)
   - 3 Pin Molex Plug Connector
   - 3 Pin Molex Socket Connector
2. Phillips or Robertson Screwdriver
3. Wire Cutters
4. Wire Strippers
5. Molex Pin Crimping Tool or Suitable Pliers

Instructions

1. Place reel on a flat workbench with faceplate up and remove the batteries.
2. Undo the three screws from the faceplate, and slowly remove it from the reel.
3. Disconnect the Molex plug connector on the tape from the Molex socket connector of the faceplate.
4. Use the wire cutters to cut each wire connected to the Molex plug connector and the Molex socket connector. Cut wires as close to the connectors as possible.
5. Strip each of the six wires by about 1/4" (6.4 mm).
6. Use the Molex pin crimping tool or pliers to connect the appropriate pin to each wire. Crimp a male contact to the wires on the tape and to the ground wire.
7. By hand, insert the pins into the new Molex plug connector. The negative wire on the tape (see below) is inserted into the terminal on the pointed side of the Molex plug connector, and the positive wire on the tape is inserted into the middle terminal. Insert the ground wire into the third terminal. Ensure pins are pushed as far as possible into the connector.

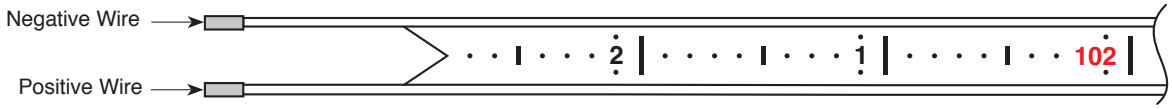
8. Crimp a female socket contact to each of the three wires (black, white, and green) cut from the Molex socket connector of the faceplate.



Inside View of 122 Reel Hub

9. By hand, insert the three pins into the new Molex socket connector. The green wire is inserted into the terminal on the pointed side of the Molex socket connector, the white wire is inserted into the middle terminal, and the black wire in the third terminal. Ensure pins are pushed as far as possible into the connector.

10. Connect the Molex plug connector on the tape to the Molex socket connector from the faceplate. Replace the batteries.
11. With the probe in a glass of tap water and product, turn the Interface Meter to the 'ON' position. A steady tone and light indicates a product, while an intermittent tone indicates water. If the buzzer or light do not activate, check the Molex connections.
12. Replace the faceplate on the reel and re-secure the three screws.



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Tools and Materials Needed

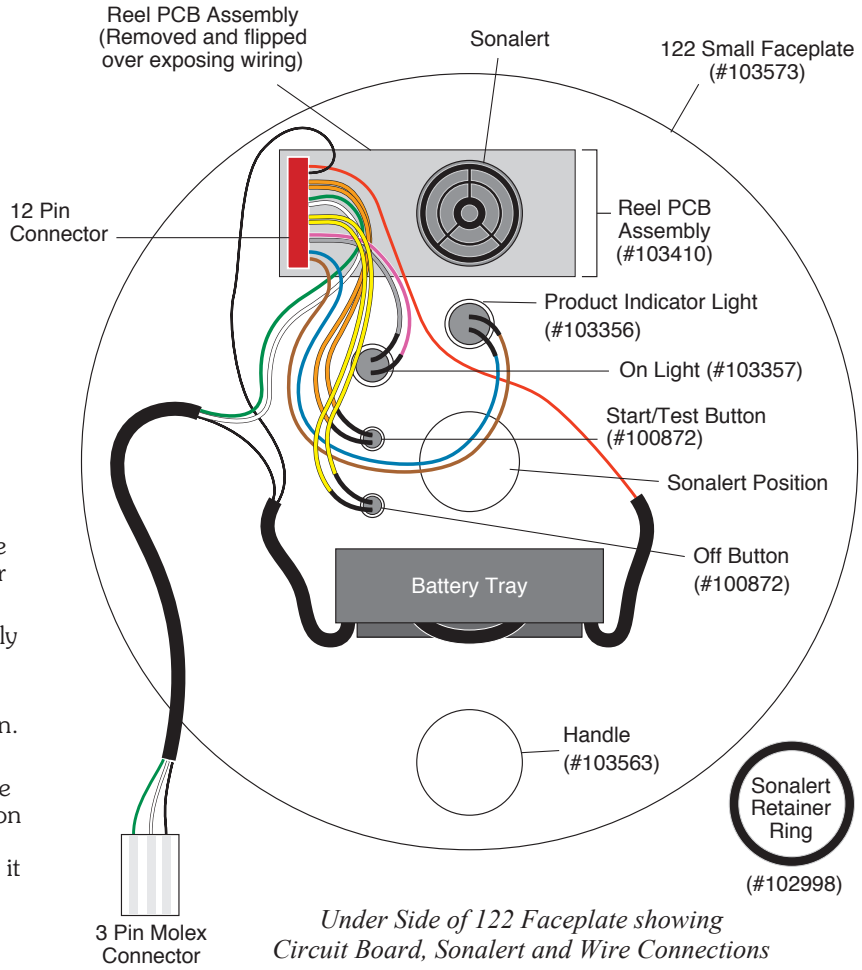
1. Phillips or Robertson Screwdriver
2. Wire Cutter
3. Wire Stripper
4. 1/16" (1.6 mm) Heat Shrink
5. Soldering Iron
6. Heat Gun
7. Pliers or Wrench
8. Replacement Part Required

Replacing a Start/Test or Off Button
(109080)

1. Remove the Faceplate by unfastening the three screws, and unplug the 3 Pin Molex Connector from the 3 Pin Connector on the Tape.
2. Cut the wires to the appropriate Button, directly above the heat shrink.
3. Unscrew the nut retaining the Button on the outside of the Faceplate and remove the Button.
4. Strip the wires and place 1/16" (1.6 mm) of heat shrink onto each wire, and push out of the way. Solder the wires to the correct new Button wires. Push the heat shrink over the soldered connection and apply heat with heat gun until it becomes snug.
5. Place new Button through the Faceplate and replace retaining nut.
6. Connect the 3 Pin Molex Connector from the Faceplate to the Tape Connector.
7. Replace the Faceplate by fastening three screws.

Replacing the Reel PCB Assembly
(Circuit Board and Sonalert)
(103410)

1. Remove the Faceplate by unfastening the three screws, and unplug the 3 Pin Molex Connector from the 3 Pin Connector on the Tape.
2. Unscrew the Sonalert Retainer Ring from the front of the Faceplate and remove Reel PCB Assembly.
3. Disconnect the red female 12 Pin Connector from the male connector on the assembly and remove the assembly.
4. Connect the 12 Pin Connector to the new Reel PCB Assembly with the wires facing toward the Sonalert.
5. Insert the Sonalert through the Faceplate. Screw the Sonalert Retainer Ring back on until finger tight.
6. Connect the 3 Pin Molex Connector from the Faceplate to the Tape Connector.
7. Replace the Faceplate by fastening three screws.



Under Side of 122 Faceplate showing Circuit Board, Sonalert and Wire Connections

Replacing a Light (103357/green or 103356/red)

1. Remove the Faceplate by unfastening the three screws, and unplug the 3 Pin Molex Connector from the 3 Pin Connector on the Tape.
2. Cut the wires connected to the Light close above the heat shrink, and push the Light through from the back of the Faceplate.
3. Push the new Light with wires attached into the Faceplate.
4. Cut the wires to desired length, long enough to connect to the wires hanging off the 12 Pin Connector.
5. Strip the wires and place 1/16" (1.6 mm) heat shrink onto each of the wires, and push out of the way.
6. As polarity is important, connect the same colored wires to the corresponding colored wires, and solder.
7. Slide the heat shrink over the soldered joint and heat with heat gun so that it becomes snug on the wire. Do the same for each wire.
8. Connect the 3 Pin Molex Connector from the Faceplate to the Tape Connector.
9. Replace the Faceplate by fastening three screws.

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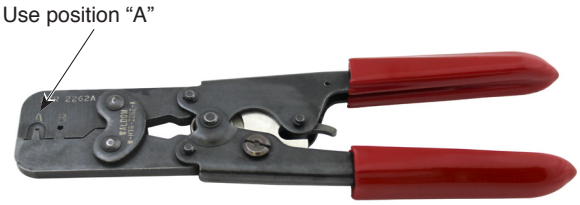
Probe Crimp Terminal Replacement

For Model 122 P1 & 122M P1 Probes

Tools and Materials Needed

1. 122 P1 & 122M P1 Probe Molex Crimp Terminal Set (set of 10) (#111036)
2. 1 ft. of 3/32" Heat Shrink (#102880)
3. Wire Strippers (if required)
4. Scissors
5. Molex Crimp Tool (see photo) or Suitable Pliers
6. Heat Gun

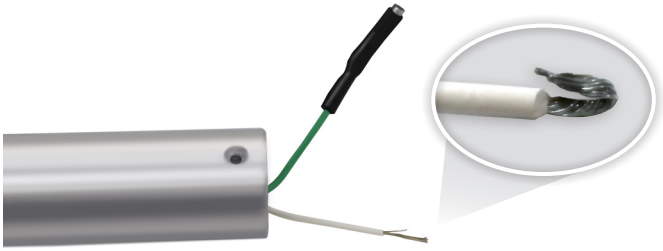
Molex Crimp Terminal
Female and
1" x 3/32" PVC
Heat Shrink



Recommended:
Molex W-HTR-1031-E Crimp Tool

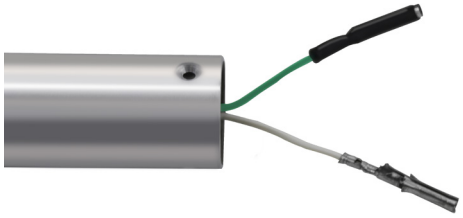
Instructions

1. Ensure the wire you are connecting the new crimp terminal to has been stripped by 1/4" (7 mm).

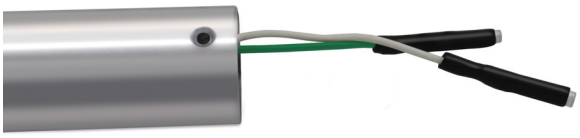


2. Twist, then fold the stripped part of the wire in half. See photo above.
3. Use the Molex Crimp Tool (position "A" - see photo at top) or suitable pliers to connect the crimp terminal to the wire.

> **Note:** Pull the crimp terminal to ensure it is securely attached to the wire.



4. Cut off a 1" (25 mm) length of 3/32" heat shrink.
5. Slide the piece of heat shrink over the crimp terminal so there is only about 1 mm of the crimp showing at the end.
6. Use the heat gun to seal the heat shrink onto the terminal. Ensure a good seal by pressing with your fingers.



7. Lay the tape and tape seal plug so the numbers on the tape are facing up. Connect the terminal on the green wire to the brass connector on the top of the tape seal plug and the white wire terminal to the bottom brass tube. Ensure the connectors are pushed all the way onto the brass tubes.

8. Reconnect the probe to the tape seal plug. See Probe Replacement Instructions (pt#108721) for complete details.
9. Test the Meter in water and product (e.g. lamp oil). If the buzzer or light are not activated, check the probe connections.

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Probe Replacement Instructions

Model 122 P1/122M

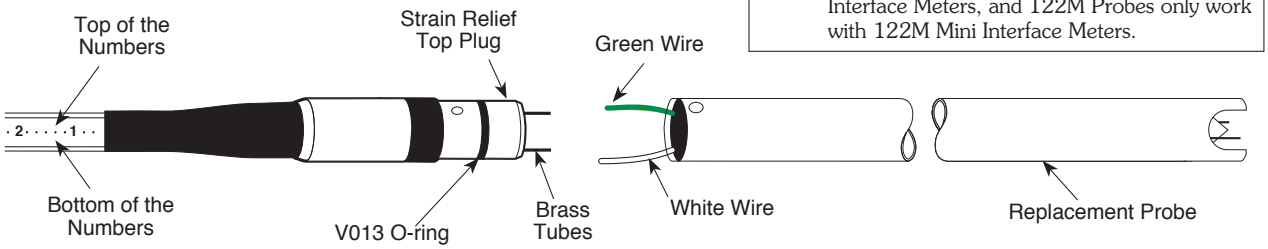
Tools and Materials Needed for 122 P1

1. 122 P1 Replacement Probe Assembly (#106245)
   - 122 P1 Interface Probe
   - 3 Slot-head Screws - 1.6 mm x 4 mm
   - V013 O-ring
2. Small Flat Screwdriver
3. Silicone-based Grease
4. Soldering Iron and Wire (where required)

Tools and Materials Needed for 122M

1. 122M Mini Replacement Probe Assembly (#107040)
   - 122M Mini Interface Probe
   - 3 Slot-head Screws - 1.6 mm x 4mm
   - V013 O-ring
2. Small Flat Screwdriver
3. Silicon-based Grease
4. Soldering Iron and Wire (where required)

Note: Replacement Probes are not interchangeable. 122 P1 Probes only work with Standard 122 Interface Meters, and 122M Probes only work with 122M Mini Interface Meters.



Instructions

Before attempting to do anything to the Probe, please make sure the Interface Meter is properly grounded. Attach the grounding cable clip to a metal well casing or other suitable grounding rod.

Probe Removal

1. Check to make sure the Interface Meter is turned off.
2. Remove the three slot-head countersunk screws from the top of the Probe just below the Strain Relief Top Plug.
3. Carefully and slowly pull the Strain Relief Top Plug out of the Probe, twisting slightly back and forth to break the O-ring friction.
4. Take note of the polarity of the wires on the Strain Relief Top Plug. To ensure that the polarity is correct, place the Probe as shown in the above diagram, with the tape to the left and Probe to the right. You should be able to read the numbers on the tape in the upright position. The green wire attaches to the top brass tube (tube opposite the top of the numbers on the tape) and the white wire attaches to the bottom brass tube (tube opposite the bottom of the numbers on the tape).
5. Remove old Probe from the Strain Relief Top Plug. If your Interface Meter has a Serial No. lower than 1164, unsolder the green and white wires from the brass tubes, using the soldering iron to release the connection. If this is a newer model and brass tubes are covered with black heat shrink connectors, disconnect by gently pulling the connectors.
6. Remove the O-ring from the Strain Relief Top Plug.

Note: If you have received a new Probe with connectors attached to the two wires, and your existing Probe has soldered connections, cut the connectors from the replacement Probe in order to re-solder the connections to attach new Probe.

Probe Replacement

7. Lubricate (e.g. silicon grease) the new V013 O-ring and the slotted area where the O-ring will be installed on the Strain Relief Top Plug. Install O-ring.
8. Making sure polarity is correct, connect the new Probe by pushing the connectors onto their appropriate brass tubes, or solder the contact if required.
9. Lubricate the inside bore of the Probe with Silicone grease.
10. Push the Strain Relief Top Plug into the Probe bore and align the three screw holes.
11. Install the three small screws, securing the attachment of the Probe and Strain Relief Top Plug. **Do not over-tighten the screws.**
12. With Probe in a glass of tap water and product (ie. lamp oil), turn the Interface Meter to the 'ON' position. A steady tone and light indicates a product, while an intermittent tone indicates water. If the buzzer or light do not activate, check the Probe connections.

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Connecting Tape to Reel

Model 122

Tools and Materials Needed

1. Model 122 Replacement Tape Assembly
   - Tape Seal Plug included on Tape
   - Grommet
   - 3 Pin Tape Molex Connector
2. Phillips or Robertson Screwdriver
3. Wire Cutters

Instructions

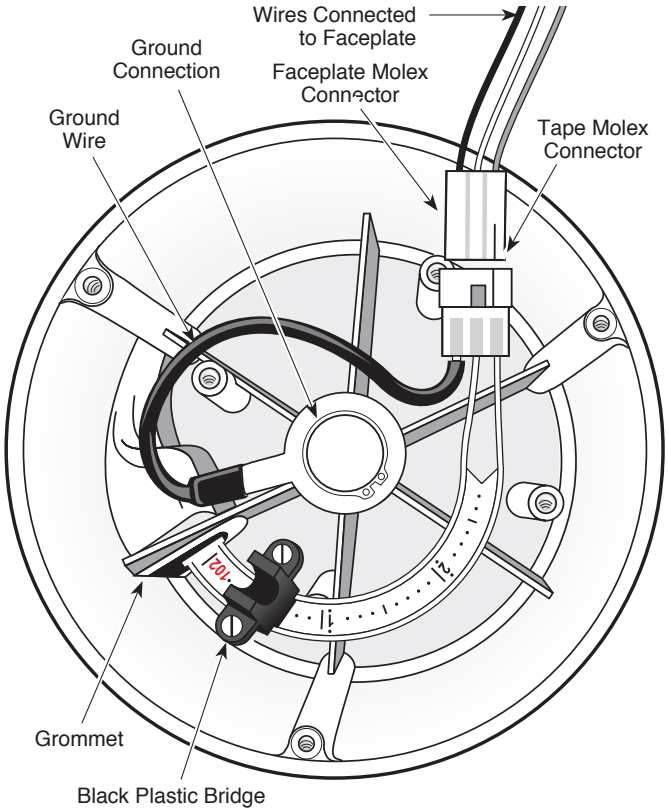
1. Place Reel on a flat workbench with Faceplate up. Undo the three screws from the Faceplate, and slowly remove it from the Reel.
2. Disconnect old Tape Molex Connector from the Faceplate Molex Connector.
3. Undo the two screws from the Black Plastic Bridge holding the Tape inside the Reel Hub, and remove the top piece of the bridge.
4. Use the wire cutters to to cut the old Tape Molex Connector from the old Tape.

Note: The ground wire will be connected to the 3 Pin Tape Molex Connector in the Reel. The Replacement Tape comes with a new Tape Molex Connector, which may be used if old Tape Connector is damaged. Ensure proper wire attachment.

5. Pull the old Tape through the Grommet and remove from the Reel.

Note: The Replacement Tape comes with a new Grommet. The old Grommet may be replaced with the new one, or left in if not damaged.

6. Feed the new Tape with Connector Pins through the Grommet into the Reel Hub.
7. By hand, insert the Connector Pins into the new Tape Molex Connector. The Negative Connector Pin is inserted into the terminal on the pointed side of the Tape Connector, and the Positive Pin into the middle terminal (The ground wire is attached to third terminal). The Negative Pin is above the numbers on the Tape (see below).
8. Position the Tape inside the Reel Hub with Black Plastic Bridge over top and refasten the two screws to secure the Tape to the Reel.



Inside View of 122 Reel Hub Showing Tape Connection Detail

9. Connect the Tape Molex Connector to the Faceplate Molex Connector.
10. Attach the old Probe to the new Tape, or attach a new Probe if the old one is being replaced. Please see separate Probe attachment instructions.
11. With the Probe in a glass of tap water and product, turn the Interface Meter to the 'ON' position. A steady tone and light indicates a product, while an intermittent tone indicates water. If the buzzer or light do not activate, check the Probe and Tape connections.
12. Replace the Faceplate on the Reel and re-secure the three screws.
13. Slowly wind the Tape onto the Reel, holding to ensure no slack. Tape to the Reel.

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