

# H-210 Field Splice Kit

## Installation Instructions

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## Product Overview

The H-210 Field Splice Kit contains hardware and documentation to allow users of the H<sub>2</sub>OFX submersible transducers to add vented cable to existing systems in the field. With a few exceptions, all of the materials required to make the splice are included in the kit. **Due to federal regulations on shipping dangerous materials, we cannot ship the primer and cement or the disposable lighter required to make the splice.**

**Please read and understand these assembly instructions completely before beginning installation of the H-210 Field Splice Kit. Installation of the Field Splice Kit requires basic skills in working with hand tools.**

### WARNINGS:

- 1) If the Field Splice Kit is installed improperly, the transducer will fill up with water and its warranty will be voided! Consult the factory with any and all questions regarding the installation.**
- 2) Minimize the vented cable preparation time to avoid leaving the ends open to the atmosphere and the entrance of humidity into the system.**
- 3) When gluing the end pieces to the housing, use an adequate but not an excessive amount of cement. If too much is used, it can run down the inside of the barrel and cause problems with the wires.**

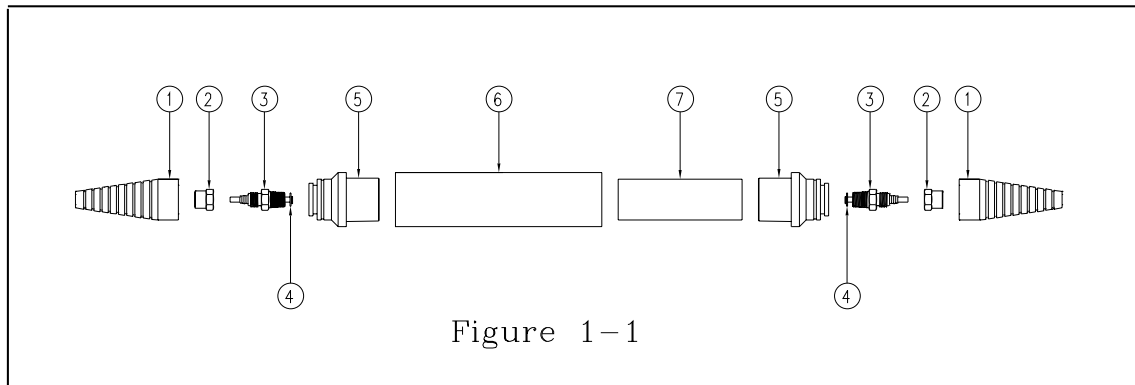
### Required Tools and Materials

- Knife
- Medium Flat Blade Screw Driver
- Small Flat Blade Screw Driver
- 7/16" Open End Wrench
- Small Pair of Side Cutters
- Adjustable Wrench
- Wiping Rag
- IPS Weld-On® PVC\CPVC P-70 or equivalent purple primer
- IPS Weld-On® 705 or equivalent clear, medium-bodied, fast set PVC cement
- Disposable lighter or matches for melting solder sleeves

### Parts and Materials Included

(See Figure 1-1)

- #1 Strain Relief (2)
  - #2 Nut (2)
  - #3 Barbed Fitting (2)
  - #4 Plastic Sleeve and Washer (2)
  - #5 End piece (2)
  - #6 Housing (1)
  - #7 Ballast Weight (1) (Factory Installed)
- (See Figure 1-2)
- 1/16" Solder Sleeve (7)
  - 1/8" Solder Sleeve (3) (Not Pictured)
  - Applicator for Primer and Cement (2)
  - Teasing Needle (1)



### Removing Vented Cable From Junction Box (H-310 only)

- 1) Remove the lid from the junction box. With a small flat blade screw driver, loosen the screws on the sensor side of the terminal block and pull out the four wires (red, black, white and shield). Remove the vented cable from the junction box on the dry air system by undoing the plastic fitting with an adjustable wrench. Untie or cut off the knot in the shielded cable and remove the brass eyelet and plastic fitting from the tube. Replace the brass eyelet and fitting on the end of the new vented cable with the shortest shielded cable. Prepare the wires as follows:

Tie a knot in the shielded cable at the end of the brass eyelet. While holding the three wires inside of the shielded cable, slide the shield down toward the knot. Use the teasing needle provided to widen a hole in the shield near the knot. Then also using the needle, pull all three wires through the hole. **Be very careful not to make a hole in the insulation on the wires.** Straighten shield to its original length.

### Reattaching Vented Cable to Junction Box (H-310 only)

- 2) Insert the cable end through the hole in the junction box and the fitting nut. Screw the fitting into the nut and tighten the fitting.
- 3) Strip the ends of each wire, replace and tighten them in the proper terminals in the junction box. Strip the wires carefully with a pair of side cutters.

### Removing Vented Cable from the 3Well Head Assembly (DH-21 only)

- 1) Unscrew the well head assembly to separate. Remove the battery pack if supplied. Unplug the four pole connector from top portion of assembly. Remove the vented cable from the well head assembly by loosening the strain relief on top of the grey plastic fitting, then unscrewing the grey

plastic fitting from the assembly. Clip off the four wires 2 inches above the knot in the shielded cable preserving the four pole connectors with leads. Untie or cut off the knot in the shielded cable and remove the brass eyelet and plastic fittings from the tube. Replace the brass eyelet and fitting on the end of the new vented cable with the shortest shielded cable.

Prepare the wires as follows:

Tie a knot in the shielded cable at the end of the brass eyelet. While holding the three wires inside of the shielded cable, slide the shield down toward the knot. Use the teasing needle provided to widen a hole in the shield near the knot. Then also using the needle, pull all three wires through the hole. **Be very careful not to make a hole in the insulation on the wires.** Straighten shield to its original length.

### Reattaching Vented Cable to the Well Head Assembly (DH-21 only)

- 1) Prepare wires for splicing: Strip 1/4" of insulation from the ends of the red, black and white wires from the new shielded cable. Strip 1/4" of insulation from the ends of the red, black, white, and brown wires from the preserved four pole connector with leads.

Splice as follows:

- a) Insert the end of the braided shield into one end of a 1/8" solder sleeve provided. Insert the brown wire into the other end of the 1/8" solder sleeve. **Make sure the ends overlap in the solder ring in the center of the sleeve.**
  - b) Heat the solder sleeve with a lighter or match until the solder melts and the sleeve shrinks around the shield on both ends. **Do not keep the flame directly under the sleeve for too long at one time or it will scorch.**
  - c) Repeat steps 2a and 2b using 1/16" solder sleeves to splice the red, black and white wires.
- 2) Insert the four pole connector, wires and shield through the threaded hole in the white plastic end piece of well head assembly and screw the grey plastic fitting into the plastic end piece. Using an adjustable wrench, tighten the strain relief onto the fitting. Plug the four pole connector into the upper portion of the well head assembly. Reinstall the battery pack if supplied. Screw the well head assembly back together.

### Preparing Field Splice End Assemblies (H-310 and DH-21)

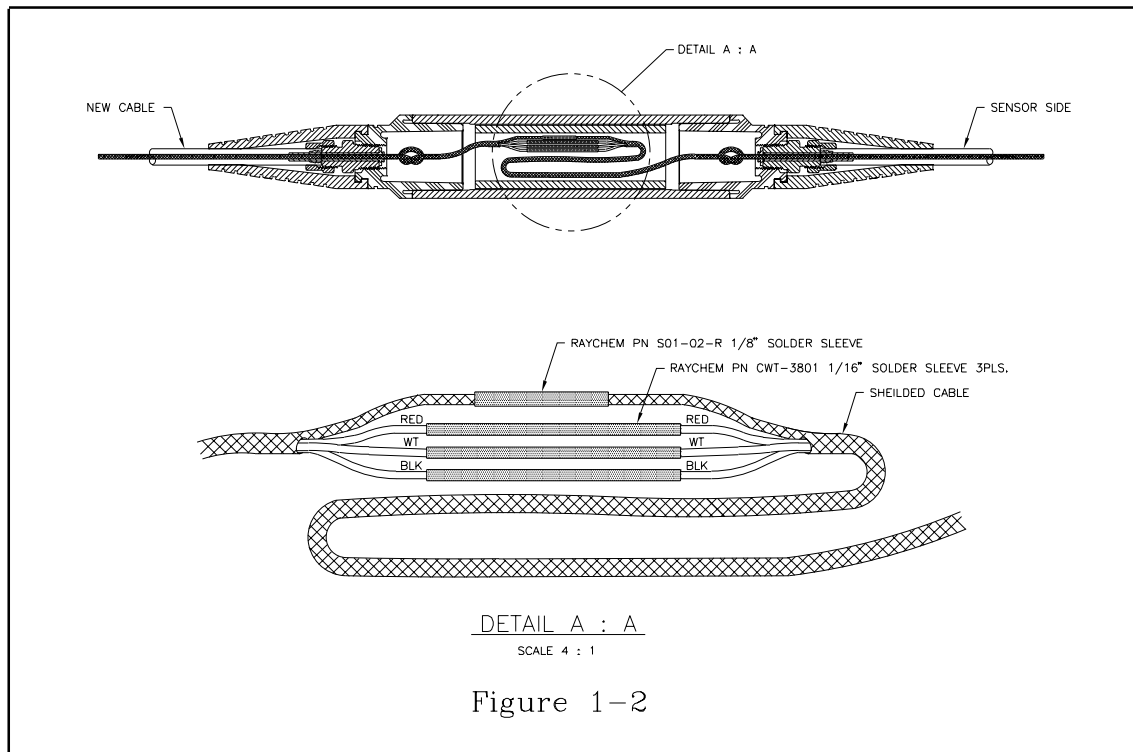
- 3) Refer to Figure 1-1 for part numbers and prepare both ends to be spliced as follows:

- a) Cut the old polyethylene tubing to expose 7 inches of shielded cable. **Be careful not to nick or cut the shielded cable.** The end on the new piece is already cut to length.

- b) Slide strain relief (1) narrow end first, and barbed fitting nut (2) smooth end first, over the vented cable.
- c) Insert shielded cable through the plastic sleeve and barbed fitting (3) and push the barbed fitting into the polyethylene tube.
- d) Tie a knot in the shielded cable at the fittings end and repeat the operation in step 1 to get the wires out of the shield.
- e) Insert wires and shield through the threaded hole in the white plastic end piece (5) and screw the barbed fitting into the plastic end piece. Using a 7/16" wrench, tighten the fitting and then the nut (2) onto the fitting.
- f) Snap the strain relief (1) over the lip on the white plastic end piece (5).
- g) Strip 1/4" of insulation from the ends of the red, black and white wires.

### Splicing the Wires (H-310 and DH-21)

- 4) Once both ends have been prepared, insert the end piece assembly with the new vented cable into the housing (6). **Do not push the end piece in tight.**
- 5) From the opposite end of the housing, slide the ballast (7) over the wires and into the housing.
- 6) Make wire splices as follows:
  - a) Insert the end of each braided shield into one end of a 1/8" solder sleeve provided. **Make sure the ends overlap in the solder ring in the center of the sleeve.**
  - b) Heat the solder sleeve with a lighter or match until the solder melts and the sleeve shrinks around the shield on both ends. **Do not keep the flame directly under the sleeve for too long at one time or it will scorch.**
  - c) Repeat steps 7a and 7b using 1/16" solder sleeves to splice the red, black and white wires.
- 8) Test the operation of the transducer to verify that the splice is correct. **This is CRITICAL!**
- 9) Prepare a service loop in the cable as shown in detail A: A in Figure 1-2 and with a screw driver, gently push the cable into the ballast.



## Gluing End Pieces to Housing (H-310 and DH-21)

- 10) Once operation of the transducer has been verified, prepare to glue the end pieces to the housing one at a time as follows:
  - a) Using one of the applicators, coat the inside surface of the housing (6) and the barrel surface of the white plastic end piece (5) three times with the purple primer. This will soften the plastic for a more effective glue joint.
  - b) After the last coat of primer, quickly apply the clear cement to each surface to be joined. **Again, be thorough with the application of the cement but not excessive.**
  - c) Push the end piece into the housing and hold the two together until the joint is set. The white plastic end piece has a slight taper and will have a tendency to push itself back out of the housing if not held in until the cement is set.
  - d) Wipe off excess cement.
  - e) Allow 4 hours curing time before submersing.