

# Splice Boxes



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## Installation, Operation and Maintenance Model SB\_\_

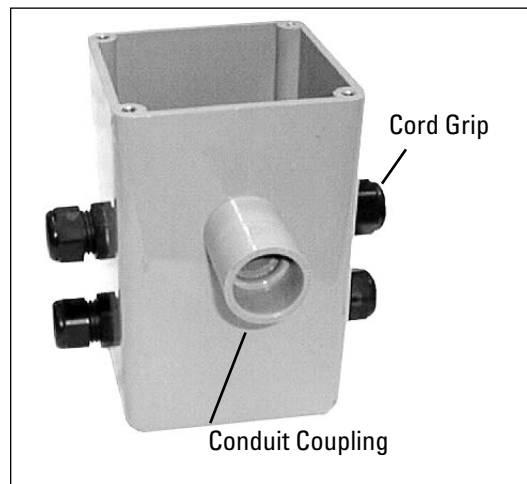
### Installation Instructions:

The electrical splice box provides a safe and legal space for splicing cables, typically from pumps or float switches. It should be mounted inside the access riser, over the pump or filter unit, where the components being spliced are within sight of the installer. For explosion proof (Class 1, Div. 1) splice boxes, please see document EIN-SB-SBX-1.

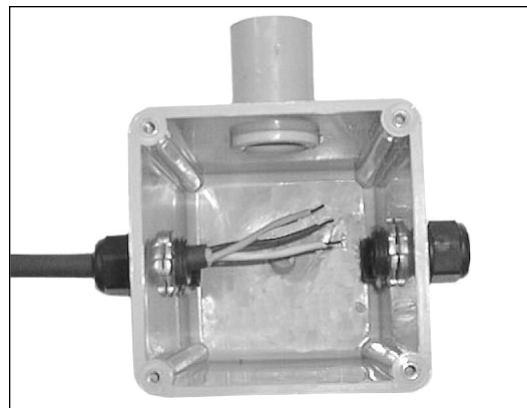
The splice box is provided with heat shrink/ butt connectors and waterproof wire nut(s) necessary to splice the appropriate floats and pumps.

1. The splice box should be mounted inside the access riser. The access riser is typically supplied with a grommet for installation of the splice box. If a grommet is not installed, please refer to riser, lid, and accessory instructions document EIN-RLA-RLA-1 for grommet installation instructions.

Lubricate both the outside of the conduit coupling and the grommet. Slide the coupling through the grommet in the access riser wall. Make sure the box is pushed snug against the wall, allowing for removal of any pumping equipment.



2. Push the appropriate pump and level control wires through the watertight cord grips into the electrical splice box. Leave an adequate length of electrical cable coiled inside the riser to allow for easy removal of the pump and float assembly. **Do not remove the colored markers or the paper tags from the float cables, and do not try to thread the markers and tag through the cord grip.** Tighten the cord grips *by hand, not by tool*, then test the tightness of the cord grips by tugging on each cable. A cable is secure when the cord grip is tight enough to prevent slippage. Adequate lengths of cable should be left within the splice box to allow easy removal for future disconnecting and re-splicing.



# Installation Instructions cont.

- Run properly sized wires from the control panel to the splice box. The wires can be brought through a conduit, or can be direct buried using suitable direct-burial wire. Conduit that enters the splice box must be sealed with a conduit seal or acceptable watertight cord connection, to prevent the infiltration of water into the splice box. The number of wires required depends on the control panel and the number of floats and pumps used. This can be determined by consulting the Splice Box Wiring diagram provided for the control panel and float arrangement being used.

If the floats do not carry direct pump current, the wire should be sized at 14 AWG. Refer to Chart 1 to determine the proper size for the pump wire and any float wire required to carry direct pump current. When calculating wire size, you need to take the length and size of your branch circuit wires from the *service entrance panel to the pump control panel* into account. Wire that is too small can cause an excessive voltage drop and poor pump performance.

**Chart 1. Recommended Breaker & Wire Size**

Pump Motor Size		Breaker size	Wire Size	Max Distance*
115 VAC	1/3 hp	20 amp	12 AWG	210 ft
	1/2 hp	20 amp	12 AWG	160 ft
230 VAC	1/2 hp	15 amp	14 AWG	400 ft
	1 hp	20 amp	12 AWG	400 ft
	1 1/2 hp	20 amp	12 AWG	310 ft

\* load center to motor.

Wires should be color coded or otherwise marked to aid in wiring the control panel. The following chart lists common colors recommended for each of the wires. Colors may refer to either the color of the wire's insulating jacket or the color of an electrical tape marker.

**Chart 2. Recommended Field Wire Colors**

## Float Cables

Float Function	Float Marker	Wire Color
High Water Alarm	Yellow	Yellow
Lag Pump On (Duplex)	Purple	Purple
Lead Pump On (Duplex)	Blue	Blue
Lead Pump Off (Duplex)	Red	Red
On / Off	Green	Blue
Redundant Off / Low Level Alarm	White	Orange
Float Common Wire	-	Brown

## Pump Cable(s)

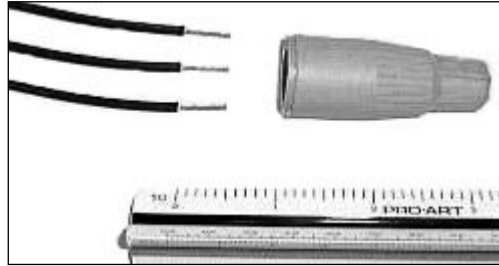
Pump Wire (L1)	Black
Pump Wire (Neutral, 115vpumps)	White
Pump Wire (L2, 230vpumps)	Red
Ground	Green

# Installation Instructions cont.

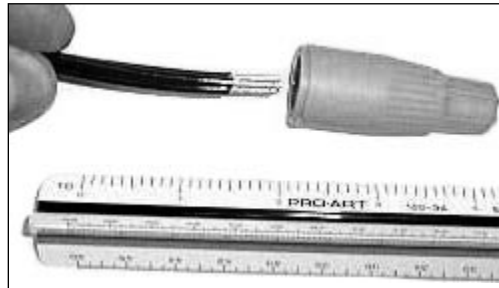
All splices within the splice box shall be made waterproof using wire nuts or butt connectors and heat shrink tubing as shown on the appropriate splice box diagram. The splices must be waterproof! Splices that are not waterproof may cause a malfunction of the pump controls if water should leak into the splice box. Refer to the Splice Box Wiring Diagram(s) provided for instructions on how to connect the floats switches.

## 4. Splicing With Waterproof Wirenuts

- a. Remove approximately 1/2" of insulation from the end of each wire to be connected. Prevent frayed strands as much as possible.



- b. Do not pre-twist entire wire bundle. Only twist individual stranded wires slightly if needed. Hold wire bundle firmly 2 inches from wire ends. Fully insert all the wires together through the sealant into the connector. Continuing to hold wires firmly, twist connector clockwise onto wires.



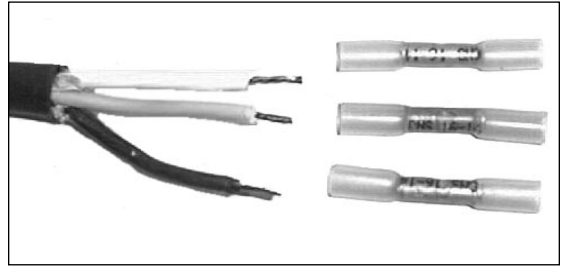
- c. Once a connection is made, tug on each wire entering the connector to check the mechanical connection. **Note: Watertight connectors are not reusable. To change a splice, twist off and replace with a new connector.**



# Installation Instructions cont.

## 5. Splicing With Butt Connectors & Heat Shrink

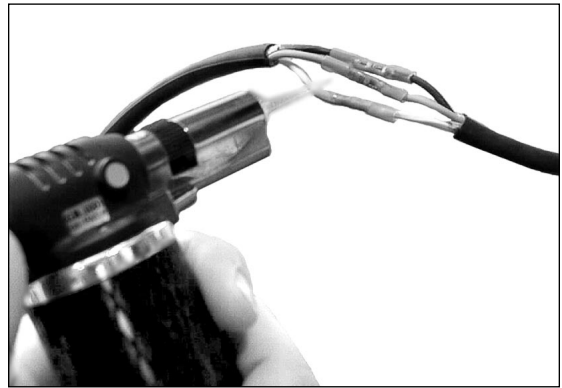
- a. Remove approximately 3/8" of insulation from the end of each motor lead and wire to be connected.



- b. Insert bare lead ends into the butt connector and crimp with a crimping tool designed to crimp insulated connectors. Other types of tools can puncture the heat shrink tubing. Once a connection is crimped, tug on the butt connector to check the connection.



- c. To shrink the insulated heat shrink tubing, apply moderate heat with a propane torch or heat gun (or any tool that will provide adequate heat.) **Caution: Keep the torch moving; too much concentrated heat will damage the tubing.**



- d. When tubing begins to shrink, increase concentration of heat at the edge of the butt connector. As the tube collapses on the wire, work heat out to each end until entire tube has collapsed tightly around the wire. Enough heat should be applied to melt the sealing glue on the inside of the shrink tube. As the tube collapses around the wire, some sealant should ooze out of the end of the tube providing a water tight seal.



6. After all splicing is completed, reattach the lid using the stainless steel screws provided.

## 7. Operation and maintenance

Remove splice box lid and check for moisture. Make repairs as required. Some condensation is normal.