

# Electrical Bonding Requirements for The Infinity 4000™

**BONDING:** All Infinity 4000™ systems require bonding. The electrician should provide an 8 AWG (*American Wire Gauge*) solid copper ground wire from the pool equipment pad to a ground clamp on the electrical conduit inside the housing, with a six foot long tail that will be attached to the mechanism ground lug. Be sure to follow local codes in all instances. **(NOTE: Place bonding wires at each end of the housing.)**

**WIRING A 110 VOLT UNIT:** The electrician should bring 110VAC to the motor end of the housing. Pull a hot wire, a neutral wire, and unbroken ground wire (green) to the housing and terminate them in a UL rated "J" box. The 7/8 Horsepower motor is the standard motor as of 2003. It draws 13 amps under normal running conditions. Wire to the motor should be no smaller than 12 AWG.

**KEY SWITCH:** **(NOTE: When ordering your Infinity 4000™ system you have an option for cover controller: Key Switch or Touch Pad. As of April 2009, the Key Switch is standard.)** Run a separate conduit to the desired location and mount a water-tight single gang extra deep junction box. **(NOTE: ASTM safety requirements mandate that the Key Switch be in full view of the pool not more than thirty feet away and 5' above ground level out of reach of small children.)** The Key Switch requires three wires, 16 - 18 AWG, however, PCS recommends pulling five wires to simplify any future replacements or upgrades. The Key Switch operates on 5 VDC.

**TOUCH PAD:** Run a separate 1/2" conduit to the desired location. A custom Touch Pad enclosure will be provided with the mechanism. This enclosure has been drilled for a 1/2" NPT (*National Pipe Thread*) connector in the bottom side. **NOTE: ASTM safety requirements mandate that the Touch Pad be in full view of the pool not more than thirty feet away and 5' above ground level out of reach of small children.** Pull five wires, 16-18 AWG, for the Touch Pad. The Touch Pad operates on 5 VDC.

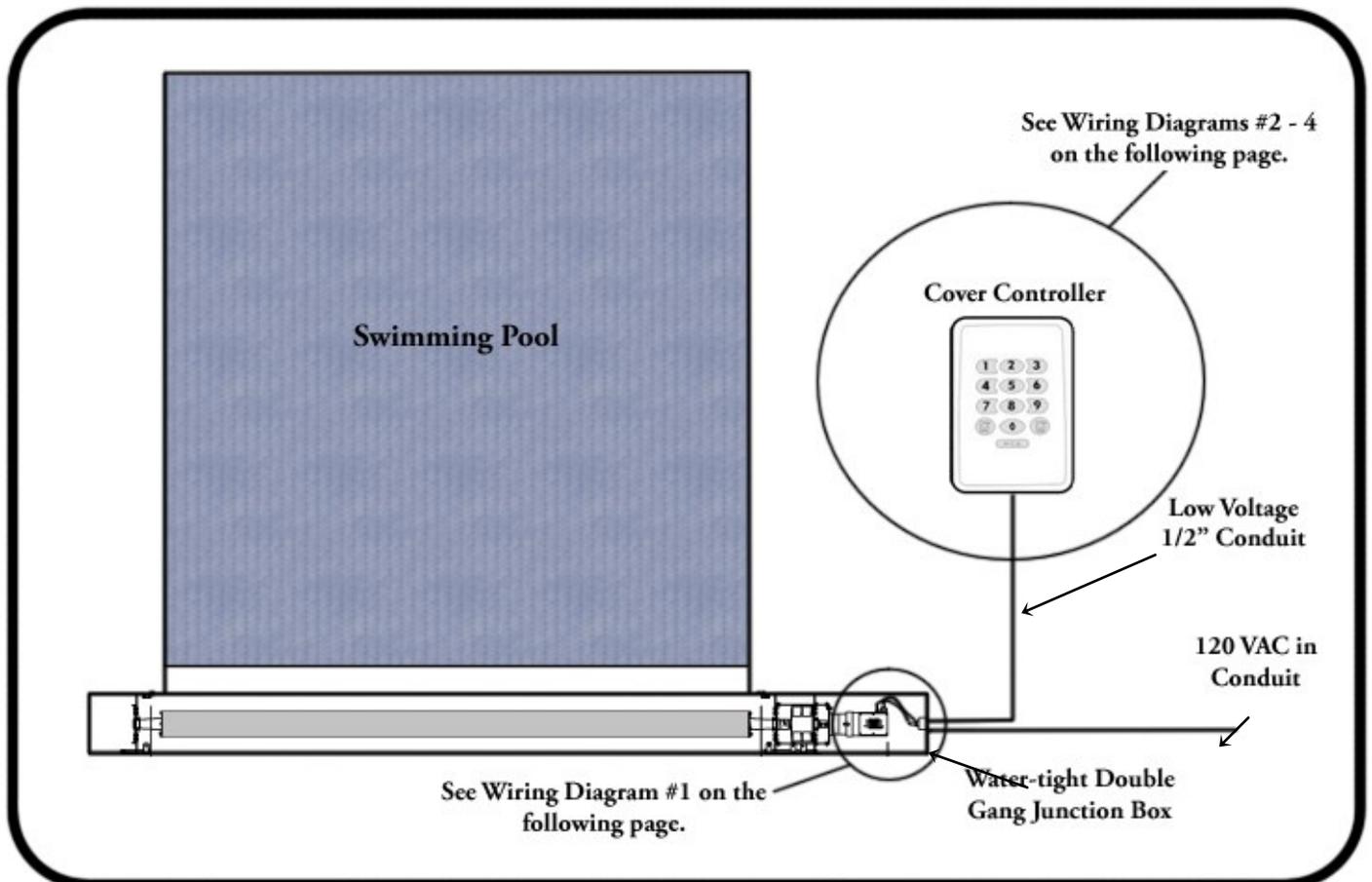
**GROUND FAULT CIRCUIT INTERRUPTER:** A 20 Amp dedicated GFCI must be provided in the electrical supply line for the motor.

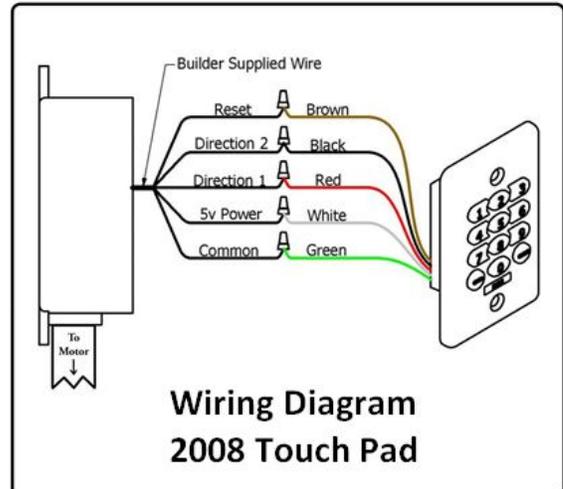
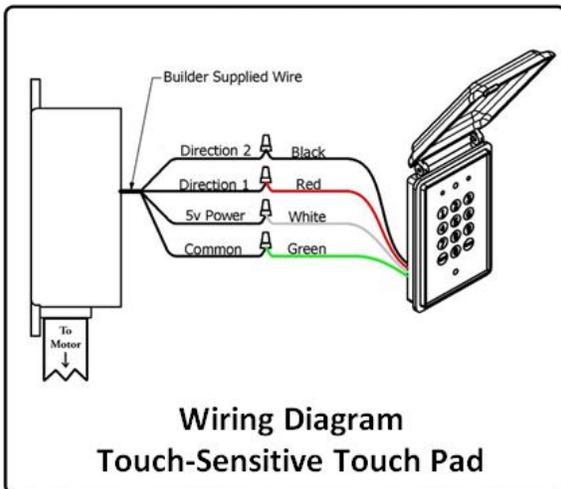
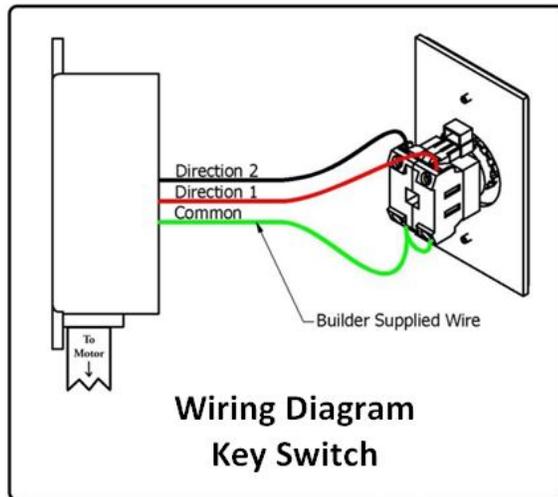
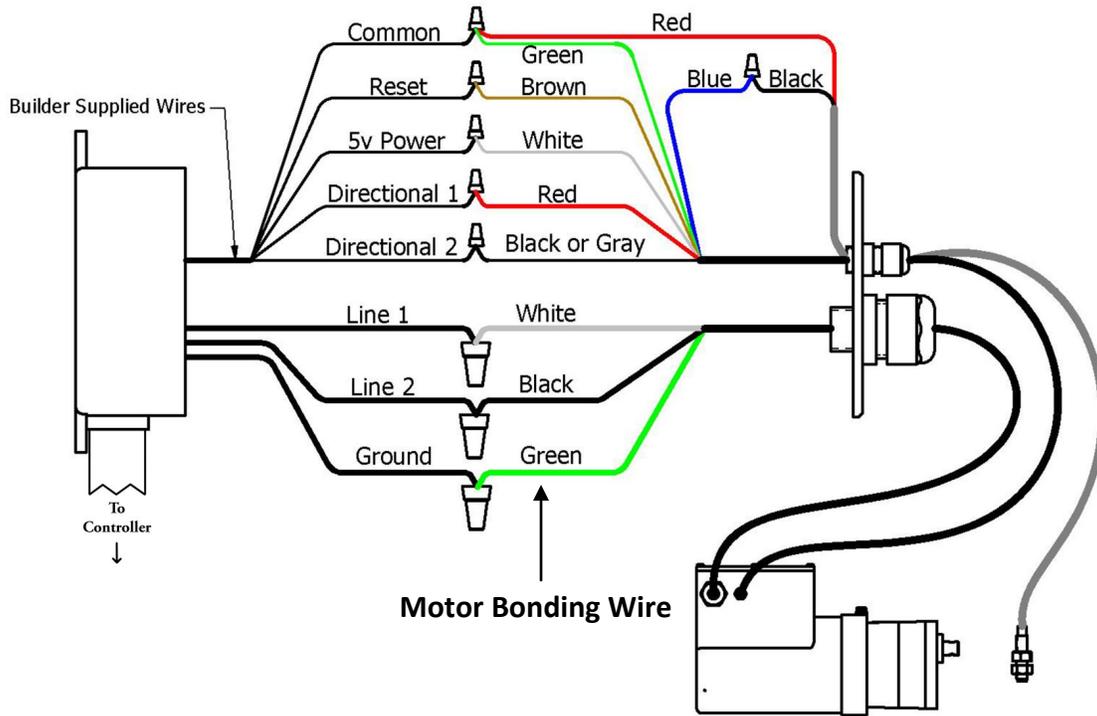
**MOTOR CONTROLLER CIRCUIT BOARD:** The Infinity 4000™ control board is either mounted in a water-tight box which is placed inside the cover housing next to the motor or it is mounted inside the casing of the flood-proof motor itself. It changes motor rotation from forward to reverse and has limit switch capabilities for added safety, stopping the cover in the fully opened and fully closed positions. The control is operated by a momentary Key Switch or Touch Pad.

**TECHNICAL INFORMATION:**

**NOTE:** In most areas, high and low voltage wires can be run in the same conduit if they are rated at a voltage of 600 or greater.

1. Power source should be 110VAC on a 20 Amp GFCI breaker.
2. The power should be brought to the cover housing and connected to a conduit in a water-tight, UL rated, double gang junction box.
3. The junction box must be mounted approximately 2 inches below the top of the cover housing at the motor end.
4. The conduit must be routed so it does not go through the cover housing.
5. 110 VAC lines must be at least 12 AWG and include a ground.
6. A six foot long solid copper bond wire (8 AWG) must be provided at both ends of the cover housing.
7. The Key Switch requires three wires, 16-18 AWG, in 1/2" conduit to the junction box. The Key Switch operates on 5 VDC.
8. The Touch Pad requires five wires, 16-18 AWG, in 1/2" conduit with a 1/2" NPT connector to the desired location. The Touch Pad operates on 5 VDC.
9. The cover controller (Key Switch or Touch Pad) must be installed in full view of the pool and at least 5 feet above ground level.



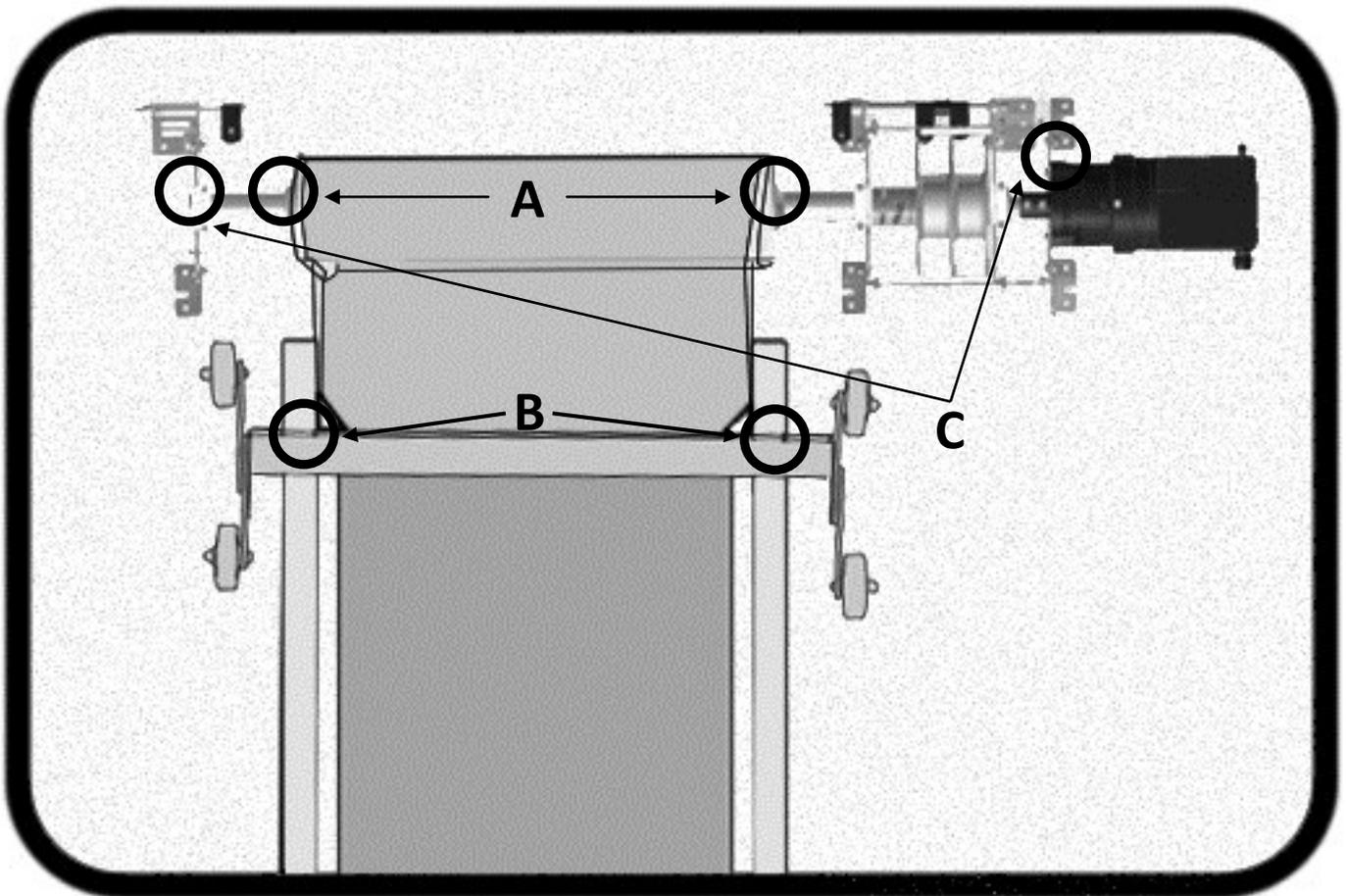


# I. Electrically Bonding The Infinity 4000™

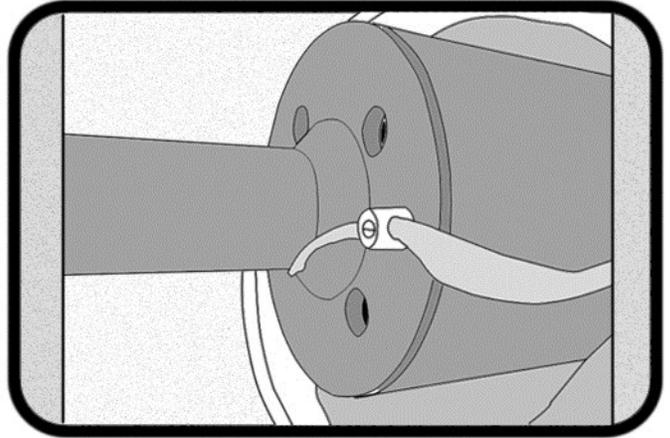
New safety codes (*as of 2007*) require full electrical bonding of all pool cover systems. PCS Bonding Lugs have been included with each system. These must be secured to the system at the points marked in the diagram below. This section also includes more detailed instructions for installing the Bonding Lugs.



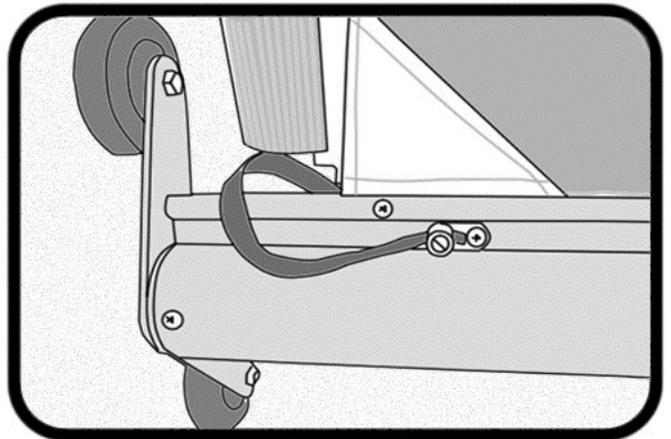
Positions marked ○ require installment of a bonding lug.



**Position A:** Install one Bonding Lug on each end of the Roll-up Tube, as shown at right. Locate the Bonding Ribbon, which extends from the webbing at each end of the Pool Cover. Pull the Ribbon through the Bonding Lug. Repeat on the opposite side of the Tube. The Roll-up Tube is now bonded.



**Position B:** Each end of the Leading Edge requires a Bonding Lug. Secure the Lugs to the flat point extending from the Leading Edge toward the mechanism. Locate the Bonding Ribbon, extending from either end of the Pool Cover, and secure the end to the Bonding Lug. The Leading Edge is now bonded.



**Position C:** These two Bonding Lugs are located on the mounting brackets of The Infinity 4000™ mechanism. 8 AWG solid copper wire that has been tied into the electrically grounded grid for the pool components must be supplied at each end of the pool cover mechanism. These wires attach to the Bonding Lugs supplied on the mechanism mounting brackets.

## II. Procedure for Electrical Bonding of the PCS Standard Lid

### Materials Needed:

- 1/4 - 20 x 5/8" Phillips Flat Head Machine Screw (33313) (6)
- 1/4 - 20 Nylock Nut (H0276) (8)
- 1/4 - 20 x 5/8" Hex Cap Screw (33288) (2)
- Bonding Lug (E1087) (8)
- Bonding Wire (E1056) (5')
- Cable Tie (10815) (5)

### Suggested Tools:

- Cordless Drill w/ Phillips Bit
- Scissors
- 7/16" Wrench
- 5/16" Drill Bit
- 82° Countersink Bit
- Measuring Tape
- Marker or Pencil
- Flathead Screwdriver

**Step 1:** Measure from the motor end of the Lid Hinge. Make a mark exactly 34" from the end, approximately 1" from the "C" Channel. Use the drill with a 5/16" bit to create a hole at the mark. **(Fig. 1)**

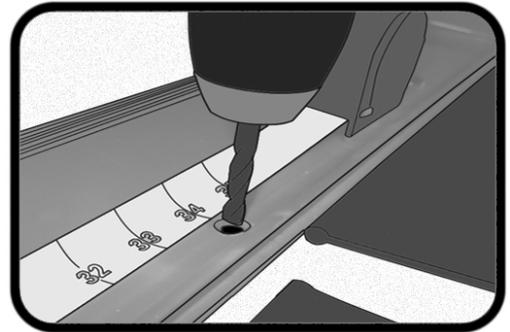


Fig. 1

**Step 2:** Measure from the opposite end of the Lid Hinge. Make a mark exactly 15" from the end, approximately 1" from the "C" Channel. Use the drill with a 5/16" bit to create a hole at the mark. Create holes in the corners of the lid itself, so that three holes create a triangle when the lid is assembled. These holes will need to be drilled in the motor side lid as well. **(Fig. 2)**



Fig. 2

**Step 3:** Use the drill with a countersink bit to countersink all of the holes created in Steps 1 and 2. Make sure to countersink on the top side of the Hinge and Lid pieces *only*, as this will be the visible portion of the Lid. **(Fig. 3)**

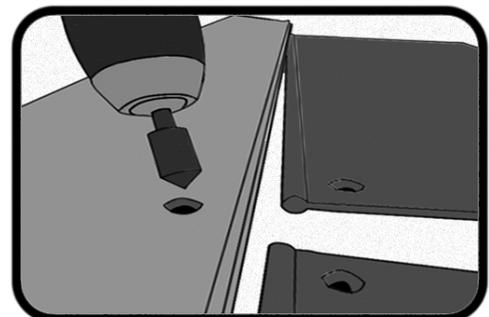
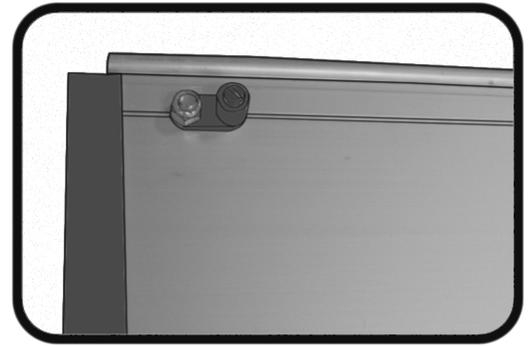


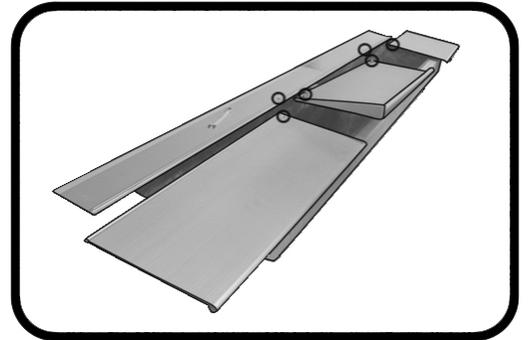
Fig. 3

**Step 4:** Attach Bonding Lugs to each of the holes drilled. These must be attached to the underside of the lid. Secure the Lugs using Flat Head Screws to maintain a sleek look for the finished lid. **(Fig. 4)**



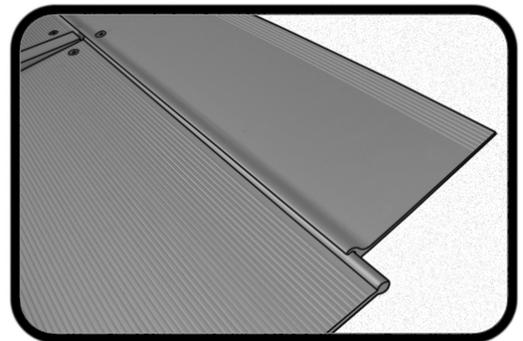
**Fig. 4**

**Step 5:** Fig. 5 shows the locations (circled) of each of the six Bonding Lugs on the lid. **(NOTE: The lid shown is built upon a model and gives only a representation of the actual application.)**



**Fig. 5**

**Step 6:** Slide the Lid pieces into the “C” Channel of the Lid Hinge. Be sure to place them in the correct order, with the motor end lid over the motor end of the Housing. **(Fig. 6)**

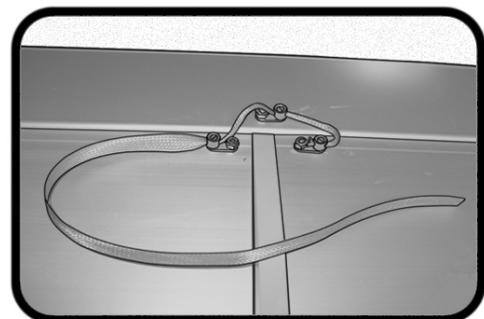


**Fig. 6**

**Step 7:** Now access the attached Bonding Lugs. Fig. 7 shows the motor side lugs attached to the underside of the lid. Locate the braided silver Bonding Wire, cut a 40” piece from it and lace it through the three Lugs. This length of Bonding Wire will be connected to the mechanism motor end, so make sure that enough slack remains. **(Fig. 8)** Repeat these steps to attach the remaining length of Bonding Wire to the opposite end of the Lid.



**Fig. 7**



**Fig. 8**

**Step 8:** Attach the two remaining Bonding Lugs to the ends of the system: one to the outside of the motor end, and one to the outside of the opposite end. *(Fig. 9)*

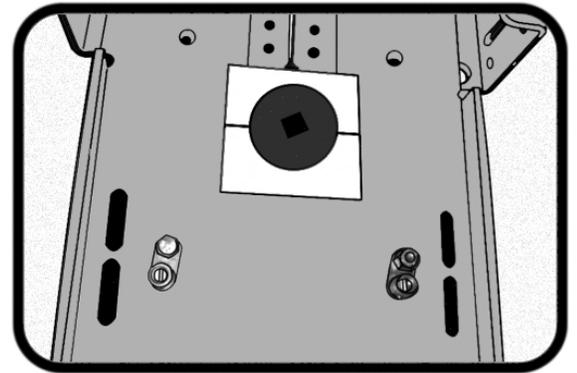


Fig. 9

**Step 9:** Lace the slack Bonding Wire from the lid to the Bonding Lugs attached to the mechanism ends in *Step 8*, as shown at right. *(Fig. 10)* Use a screwdriver to tighten the lugs around the Bonding Wire.

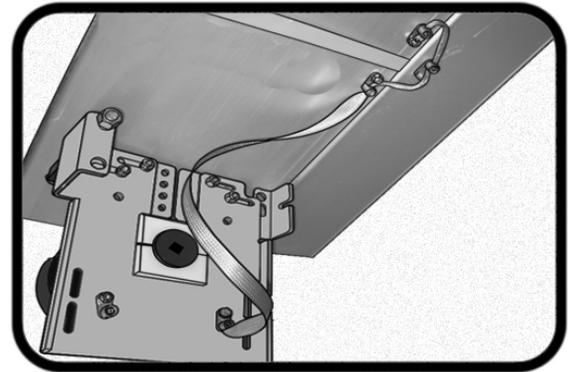


Fig. 10

**Step 10:** In order to keep the slack Bonding Wire out of the way of the mechanism, we've included some Cable Ties. We recommend using them to secure the wire to the system in positions that will restrict its movement and keep it from the active components of the cover system. *(Fig. 11)*

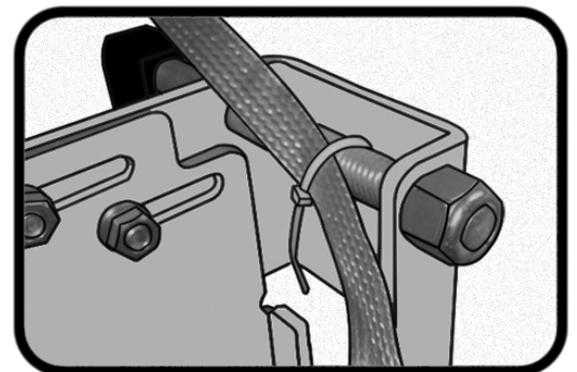


Fig. 11

### III. Additional Electrical Bonding

It may be necessary to bond components such as the track retainers, lid brackets, and metal tray lids. If this is necessary a bonding lug will have to be placed on each component and attached together. The final attachment point must be the Bonding Lug on the mechanism mounting bracket. PCS Item #BL1010 - Bonding Lug Kit can be used for bonding of these items.

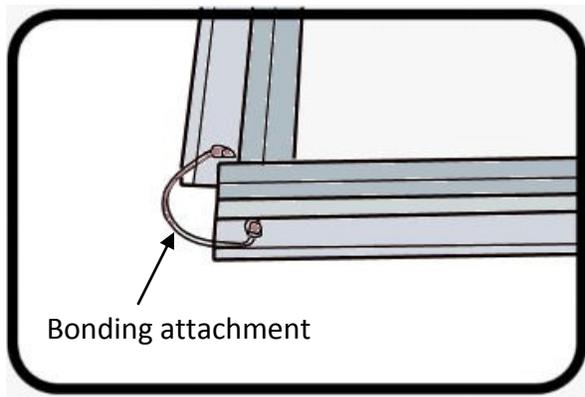


Fig. 12

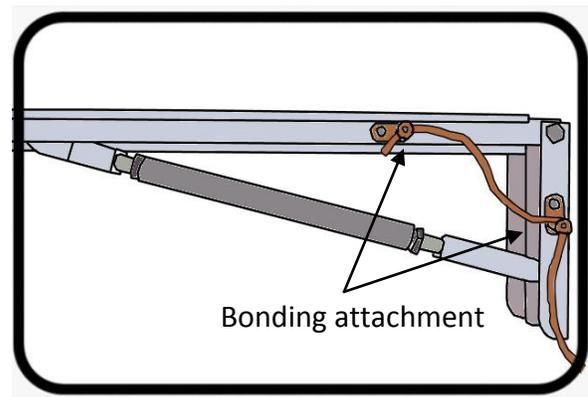


Fig. 13

**Fig. 12** - Two Bonding Lugs and 8 AWG solid copper wire are used to bond two pieces of retainer together. This must be done for all joints.

**Fig. 13** - Bonding Lugs and wire are used to bond each lid bracket together. This must be done for each piece of each bracket.

To bond metal tray lids use the same procedure used to bond a standard aluminum lid. **(See Section II)**