

# **AirBorn, Inc.**

## **Engineering Standard - Georgetown**

### **CONTACT REMOVAL/INSERTION OF RC-SERIES CONNECTORS WITH PRESS-FIT TERMINATIONS**

#### **1. PURPOSE**

This purpose of this application note is to assist customers with the proper removal technique of the insulator cap, along with the removal and subsequent insertion of individual contacts used on AirBorn's press fit termination connectors.

#### **2. SCOPE**

The removal procedure described in this document applies only to AirBorn's RC-Series connectors with press fit terminations. (e.g. RC4X2-XXX-XX1-XX00)

#### **3. SPECIAL TOOLING REQUIRED**

Although these processes can be accomplished without the use of special tooling, it is highly recommended that tools designed specifically for the intended operation be used to minimize the potential of insulator and/or contact damage. Tools for the latch release of the insulator cap (CDG10056) and the removal/insertion of an individual contact (CDG10057) are available from AirBorn. If necessary, AirBorn can provide assistance with design guidelines for customer produced tooling. Contact AirBorn Application Engineering for assistance.

#### **4. STANDARD EQUIPMENT AND FIXTURES**

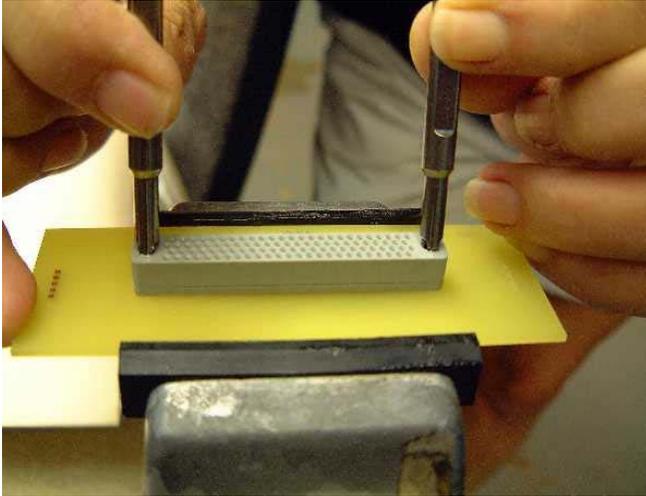
No standard equipment and/or fixtures are necessary.

#### **5. SEQUENCE OF OPERATION**

##### **(INSULATOR CAP REMOVAL)**

- 1) Position the PWB on a solid yet cushioned surface (i.e. anti-static foam) with the pin side of the connector facing down. The PWB should be restrained to minimize any movement.
- 2) **For the low profile connector type (RC442).** Use a small Phillips head screw driver to back out the two mounting screws. Lift the insulator cap from connector and set it aside. Continue with the Contact Removal part of this ESG.
- 3) **For the standard connector type (RC422).** Align one tip of the insulator cap release tool (CDG10056) with a set of insulator latches on the topside of either one of the guide pins.

Slide the other release tool tip so that it is in line with the insulator latches of the remaining guide pin (see Pictures 1A & 1B).



Picture 1A



Picture 1B

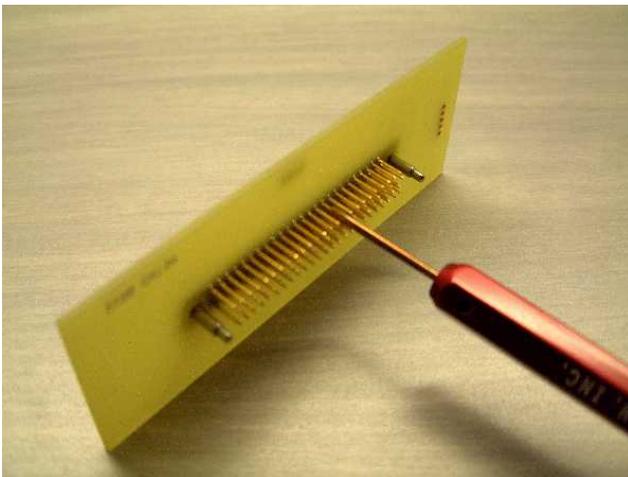
- 4) Press both release tool tips into the insulator latches of the guide pins until they stop.
- 5) While maintaining a constant downward pressure, grasp the insulator cap on both sides of each release tool tip and pull up and away from the PWB just slightly. This should prevent the insulator latches on the guide pins from re-engaging once the release tool tips are removed. Carefully lift and remove the release tool from the top of the insulator cap.
- 6) Once again, grasp the insulator cap (again taking care not to press down on top of it) and rock it front to back while keeping a steady upward force on it. The insulator cap should lift free of the insulator base/PWB.

**Note:** If space is limited, it may be easier to release the insulator cap latch on one end of the connector at a time, and using a pair of pliers having either soft or parallel travel jaws to grip the insulator cap and assist with the initial release. When both ends are free, complete the removal process by performing step 6 above. Continued use of the pliers is acceptable as long as care is taken note to bind and break the insulator cap.

**(CONTACT REMOVAL)**

**Note: The removal and replacement of contacts in any specific PTH (plated through hole) shall be limited to a maximum of three removal/insertion cycles, and each insertion operation must be performed with a new (virgin) contact. This limitation insures continued continuity between the contact and the PTH, and that the minimum retention forces of the contact in the PTH are maintained.**

- 7) While the PWB is still resting on the cushioned surface, grasp one side of it and tilt it up so that the pin end of the connector contacts (bottom side of the PWB) are visible, and easily accessible.
- 8) Align and place the removal bit of the contact removal/insertion tool (CDG10057) over the end of the contact to be removed (see Pictures 2A & 2B).



Picture 2A



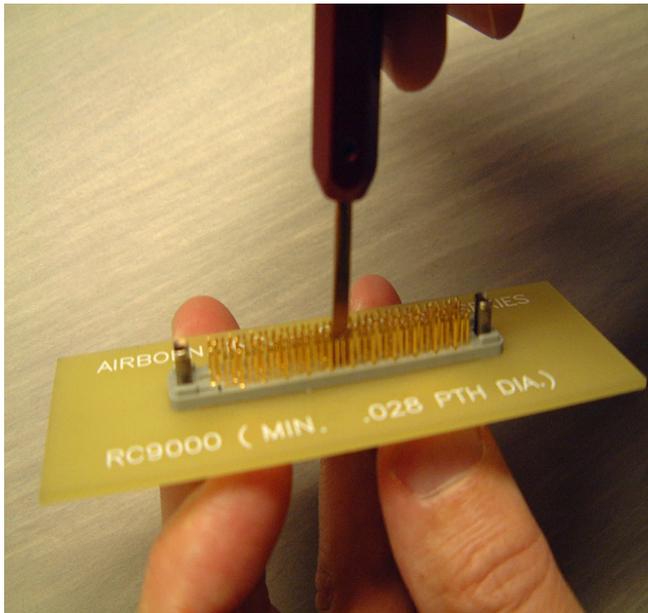
Picture 2B

- 9) Firmly push in on the contact pin (towards the PWB) until the compliant mounting feature of the contact slips free of the PWB. You can then grasp the top (socket end) of the contact using your fingers, tweezers, or needle nose pliers, and lift it perpendicular to the surface of the PWB removing it from the base insulator/PWB.
- 10) Repeat steps 7 - 9 above for any additional contact removal requirements.

**(CONTACT INSERTION)**

**Note: The removal and replacement of contacts in any specific PTH (plated through hole) shall be limited to a maximum of three removal/insertion cycles, and each insertion operation must be performed with a new (virgin) contact. This limitation insures continued continuity between the contact and the PTH, and that the minimum retention forces of the contact in the PTH are maintained.**

- 11) Insert the replacement contact from the topside of the PWB, pin end first, into the contact cavity of the base insulator requiring re-population. Align the contact such that the flat side surfaces are parallel with the receiving contact cavity in the base insulator.
- 12) Using your fingers, push the contact as far as possible into the connector housing/PWB.
- 13) To seat the contact, position the insertion bit of the contact removal/insertion tool (CDG10057) over and behind the socket end of the contact (see Pictures 3A & 3B). When properly positioned, the two bottom legs of the insertion bit should rest on the shoulders located at the base of the socket portion of the contact.



Picture 3A



Picture 3B

- 14) With a motion that is perpendicular to the surface of the PWB, and while maintaining the orientation of the contact, press it into the base insulator/PWB until the contact shoulders are flush with the top surface of the base insulator.
- 15) Repeat steps 11 - 14 above for any additional contact insertion requirements.

**(INSULATOR CAP REPLACEMENT)**

- 16) Upon completion of all required contact repair/change activity, it now becomes necessary to replace the earlier removed insulator cap on the connector.
- 17) Retrieve the insulator cap and orient it as follows;
  - a) the circular holes in the cap face away from the PWB and the rectangular holes face towards the contacts, and
  - b) the smallest boss receiving hole in the bottom of the insulator cap is lined up with the smallest of the four vertical boss' on the insulator base.
- 18) **For the low profile connector type (RC442).** With the insulator cap in the above required orientation, align the two screws with the threaded guide pins and set in place. Use a Phillips head screwdriver to reattach the screws/insulator cap subassembly.
- 19) **For the standard connector type (RC422).** With the insulator cap in the above-required orientation, align the guide pin holes in the cap with the insulator latches of both guide pins located in the insulator base.
- 20) While holding the insulator cap level, apply a uniform downward pressure with your fingers. The initial resistance, although significant (contact quantity dependant), will eventually yield to the pressure and the cap should slide into place with the insulator latches engaging the cap.

**Note: Use caution while installing the insulator cap as it may need to be repositioned ever so slightly to insure contact to cap alignment. Do not force the insulator cap into position if all of the contacts aren't aligned. Contact and/or insulator cap damage may occur.**