Reworking Q Strip® and Q2™ Right Angle Connectors

This document describes the recommended procedure for reworking (connector removal, site cleaning, and connector replacement) Samtec's Q Strip® and Q2™ Right Angle connectors using hot air rework equipment.

**Equipment Used:**
Air-Vac DRS27 BGA/SMT rework machine
Air-Vac NT714EZ2705AS hot air rework nozzle

**Other Materials:**
QFS-052-02-H-D-RA-PC4 connector
Alpha WS-820 Pb-free, water-soluble solder paste
Kester TSF-6522 no-clean rework flux
Mini-stencil
PCB thickness .062

**Thermal Profiling**
Prior to each process, a complete thermal profile study shall be completed. Thermocouples shall be placed directly beneath the center of the component as well as on the insulator body. The ideal process will replicate the temperature gradient and ramp rate as recommended by the solder paste manufacturer.

**Process 1 – Connector Removal**

- Place board to be reworked on hot air rework machine.

  ![Figure 2. Board Placed on Rework Machine](image)

- Align nozzle over component.

- Apply tacky flux to solder joints along the side of the connector.

  ![Figure 3. Flux Application](image)
Run connector removal heating program.

After (removal) heating program is complete, quickly remove connector as nozzle rises.

Process 2 – Site Cleaning

Apply tacky flux to area to be site-cleaned.

Run site cleaning thermal program.
(Once site-cleaning nozzle is lowered, manually adjust table location until all pads have been cleaned, resulting in a flat surface with a thin coating of solder.)

If a site cleaning feature is not available, a manual site cleaning process is required.

Samtec Removal Program Settings*

Pre-heat board to 140°C
- Bottom heater – 325°C

Pre-soak
- Z-axis hot gas heater – 210°C, 60% flow
- Bottom heater – 250°C for 35 seconds

Soak
- Z-axis hot gas heater – 240°C, 60% flow
- Bottom heater – 250°C for 60 seconds

Ramp
- Z-axis hot gas heater – 295°C, 60% flow
- Bottom heater – 250°C for 30 seconds

Reflow
- Z-axis hot gas heater – 350°C, 60% flow
- Bottom heater – 250°C for 75 seconds

* Customer settings may be different

Samtec Site Clean Program Settings*

Pre-heat board to 120°C
- Bottom heater – 300°C

Site Clean
- Z-axis hot gas heater – 425°C, 55% flow
- Bottom heater – 300°C

* Customer settings may be different
Process 3 – Connector Replacement

- Apply solder paste to pads using the Samtec recommended stencil aperture design using either a stencil, mini-stencil, or solder jet printer.

![Figure 8. Solder Paste Application (Mini-Stencil)](image)

- Place printed PCB on rework machine and populate component.

![Figure 9. Populated PCB](image)

- Run connector replacement thermal program.

### Samtec Soldering Program Settings*

<table>
<thead>
<tr>
<th>Step</th>
<th>Setting Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-heat board</td>
<td>140°C</td>
</tr>
<tr>
<td>- Bottom heater</td>
<td>325°C</td>
</tr>
<tr>
<td>Pre-soak</td>
<td>Z-axis hot gas heater – 210°C, 60% flow</td>
</tr>
<tr>
<td>- Bottom heater</td>
<td>250°C for 35 seconds</td>
</tr>
<tr>
<td>Soak</td>
<td>Z-axis hot gas heater – 240°C, 60% flow</td>
</tr>
<tr>
<td>- Bottom heater</td>
<td>250°C for 60 seconds</td>
</tr>
<tr>
<td>Ramp</td>
<td>Z-axis hot gas heater – 295°C, 60% flow</td>
</tr>
<tr>
<td>- Bottom heater</td>
<td>250°C for 30 seconds</td>
</tr>
<tr>
<td>Reflow</td>
<td>Z-axis hot gas heater – 310°C, 60% flow</td>
</tr>
<tr>
<td>- Bottom heater</td>
<td>250°C for 60 seconds</td>
</tr>
</tbody>
</table>

* Customer settings may be different

![Figure 10. Soldering Process - Nozzle in Down Position](image)

For more information regarding reworking Samtec connectors, please contact Samtec’s Interconnect Processing Group at ipg@samtec.com.

For more information on the hot air rework equipment/nozzles used, please contact:

Air-Vac Engineering  
30 Progress Ave., Seymour, CT 06483  
Telephone: 203-888-9900