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Termination Procedure And Inspection Criteria For Discrete Wire Termination Made With Raychem Termapost Devices

1.0 Scope

This standard contains the procedures for terminating a stranded conductor to a solderless wrap post using a Raychem Termapost devices and associated tooling.

2.0 References

2.1 Raychem Specification Control Drawing (SCD) Series D-141. See appendix I for Raychem Part Numbers.

2.2 Raychem application Equipment Instructions
RH-3900-110

2.3 Specification
IPC-DW-425 Design and End product Requirements for Discrete Wiring Boards
(Institute for Interconnecting and Packaging Electronics Circuits, Evanston, II. 60203)

3.0 Application Equipment

3.1 Wire Handling Tools

a) Wire stripper
b) AD-1544 Installation Tool
c) AD-1545 Installation Tool
d) AD-1546 Installation Tool
See Appendix I for appropriate tool for application.

3.2 Heating Tools

a) RH-3900 Resistance heater (115 VAC)
b) RH-3900 Resistance heater (230 VAC)
c) 993554 Electrodes (Supplied with above heaters)

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4.0 General Information

4.1 Terminator Information:

4.1.1 Terminal Length

The post shall be of such length that there is sufficient exposed surface to allow the wire and terminator to be positioned so that the heater electrodes can make full contact with the top of the post.

4.1.2 Solderability of Terminals and Wires

All wires and terminal parts must meet the solderability tests of MIL-STD-454 Requirement 5 or IPC-S-815.

4.1.3 Wire Type

The TermaPost system is designed to be used with wires having tin or silver plated stranded conductors. The temperature rating of the wire insulation is not a factor.

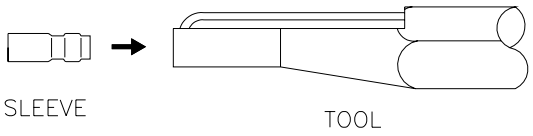
4.1.4 Sleeve Selection

See Appendix I for recommended wire/post/terminator combinations.

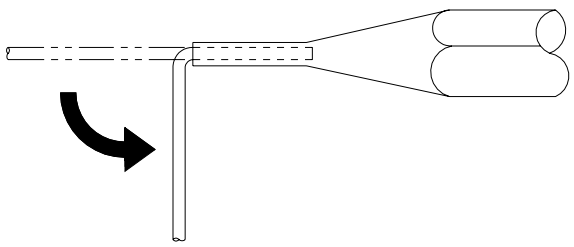
5.0 Procedure

For a condensed, operator useable, set of instructions see Raychem Document H50794.

a) Strip 3.80 ± 0.40 (0.150 ±0.015) of insulation from end of wire to be terminated.
b) Insert TermaPost terminator, small end first, into the end of the application tool which has the built-in clip.



c) Insert the stripped end of the wire into the opposite end of the application tool as far as it will go and bend the wire 90 degrees.



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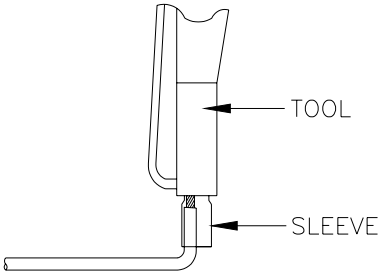
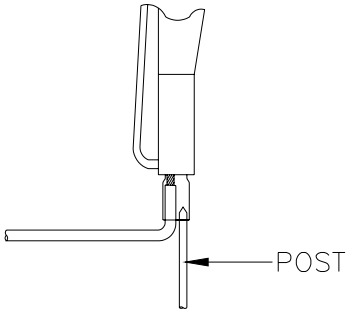
d) Insert the stripped end of the bent wire into the sleeve which is held in the tool.



e) Position sleeve and wire on top of the post.



f) Push sleeve and wire onto post until post "bottoms" inside the tool.

CAUTION
The axis of the application tool must be kept parallel to the axis of the post to avoid bending the post.

g) Remove the application tool. The sleeve and wire should now be fixtured below the top of the post.

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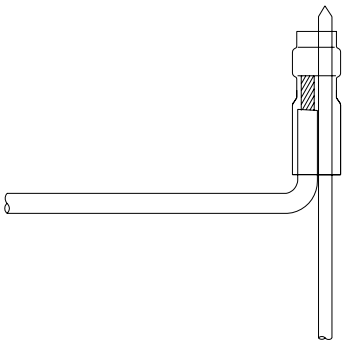
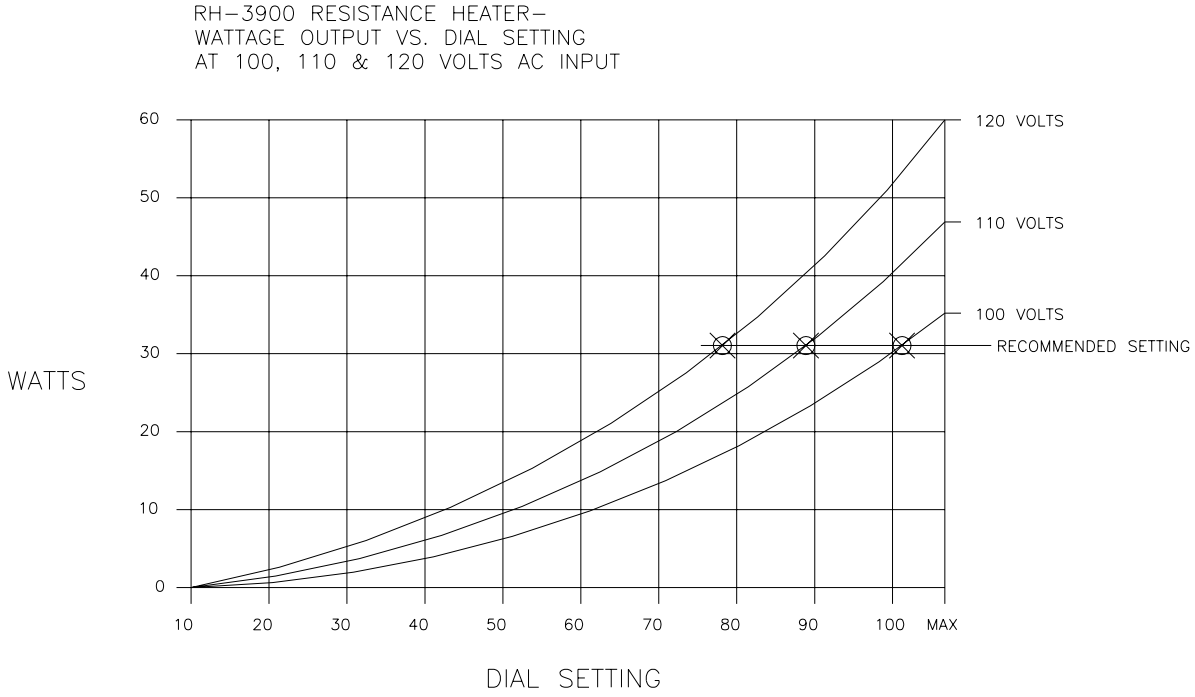


h) Set the "powerstat" of the resistance heater for an output of 30 watts.



i) Heat the assembly. The following steps must be followed to avoid "sparking".
   1. Position electrodes on top of post so that both elements are in contact with the post.

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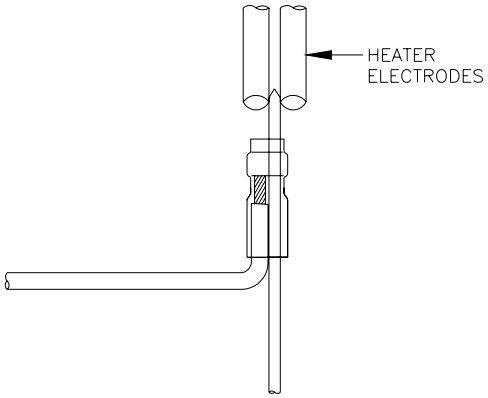

2. Activate the heater by depressing the footswitch.
3. Heating time is controlled by observing the solder preform.
4. Remove pressure from footswitch as soon as the solder preform flows axially along the conductor/post interface. The "normal" heating time at 30 watts is 3 to 5 seconds, depending on size of wire and post.

6.0 Inspection

Full color photograph showing accept/reject criteria are available from Raychem. Also the inspection criteria of MIL-STD-454, Requirement 5 may be used.

6.1 Termination Criteria

All terminations should be visually inspected for conformance to the following criteria.

a) The solder must have been heated properly to form a visible fillet along the conductor/post interface.
b) There should be evidence of solder wetting along the sides of the post adjacent to the terminated wire.
c) The edges of the solder preform shall not be discernable. If they are, this is an indication of an underheated termination.
d) The insulation sleeving of the TermaPost device shall not have darkened to the point where the solder fillet is not visible.

7.0 Rework

7.1 UNDERHEATED TERMINATIONS (Solder preform shape discernable):
Reheat in accordance with Paragraph 5, step (i).

7.2 OVERHEATED TERMINATIONS (Sleeve excessively darkened):
Replace sleeve as described in 7.3.

7.3 Wire Replacement:

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If original termination is either overheated to the point where a fillet is not visible or if original termination was made on the wrong post proceed as follows:

WARNING
Eye damage is possible if safety glasses are not worn during sleeve removal.

a) Reheat termination as described in Paragraph 5, i (1) and (2).
b) As soon as solder melts lift up on wire to remove it and the sleeve from the post.
c) Reterminate as described in Paragraph 5 using a freshly stripped wire end which shows no evidence of solder wicking such as fused strands.

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Appendix I
Termapost Sleeve Selection (a)

Post Size (b) (c) (min)	Wire		TermaPost		Application Tool
	Gauge	Number	Part Number	Color Code	
0.25 x 0.50 x 9.50 (0.010 x 0.020 x 0.375)	26	1	D-141-0122	Black	AD-1545
0.25 x 0.50 x 9.50 (0.010 x 0.020 x 0.375)	24	1	D-141-0123	Violet	AD-1545
0.64 x 0.64 x 7.00 (0.025 x 0.025 x 0.275)	30	1	D-141-0211	Red	AD-1549
0.64 x 0.64 x 7.00 (0.025 x 0.025 x 0.275)	30	2	D-141-0211	Red	AD-1549
0.64 x 0.64 x 7.00 (0.025 x 0.025 x 0.275)	28	1	D-141-0211	Red	AD-1549
0.64 x 0.64 x 7.00 (0.025 x 0.025 x 0.275)	28	2	D-141-0212	Blue	AD-1549
0.64 x 0.64 x 7.00 (0.025 x 0.025 x 0.275)	26	1	D-141-0211	Red	AD-1549
0.64 x 0.64 x 7.00 (0.025 x 0.025 x 0.275)	26	2	D-141-0212	Blue	AD-1549
0.64 x 0.64 x 7.00 (0.025 x 0.025 x 0.275)	24	1	D-141-0212	Blue	AD-1549
0.64 x 0.64 x 9.50 (0.025 x 0.025 x 0.375)	30	1	D-141-0111	Red	AD-1545
0.64 x 0.64 x 9.50 (0.025 x 0.025 x 0.375)	30	2	D-141-0111	Red	AD-1545
0.64 x 0.64 x 9.50 (0.025 x 0.025 x 0.375)	28	1	D-141-0111	Red	AD-1545
0.64 x 0.64 x 9.50 (0.025 x 0.025 x 0.375)	28	2	D-141-0112	Blue	AD-1545
0.64 x 0.64 x 9.50 (0.025 x 0.025 x 0.375)	26	1	D-141-0111	Red	AD-1545
0.64 x 0.64 x 9.50 (0.025 x 0.025 x 0.375)	26	2	D-141-0112	Blue	AD-1545
0.64 x 0.64 x 9.50 (0.025 x 0.025 x 0.375)	24	1	D-141-0112	Blue	AD-1545
0.64 x 0.64 x 9.50 (0.025 x 0.025 x 0.375)	24	2	D-141-0113	Yellow	AD-1546
0.64 x 0.64 x 9.50 (0.025 x 0.025 x 0.375)	22	1	D-141-0112	Blue	AD-1545

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Post Size (min)	Wire		TermaPost		Application Tool
	Gauge	Number	Part Number	Color Code	
0.64 x 0.64 x 9.50 (0.025 x 0.025 x 0.375)	22	2	D-141-0114	Green	AD-1546
0.64 x 0.64 x 9.50 (0.025 x 0.025 x 0.375)	20	1	D-141-0113	Yellow	AD-1546
0.64 x 0.64 x 9.50 (0.025 x 0.025 x 0.375)	18	1	D-141-0114	Green	AD-1546
1.14 x 1.14 x 14.00 (0.045 x 0.045 x 0.550)	20	1	D-141-0129	Violet	AD-1544
1.14 x 1.14 x 15.88 (0.045 x 0.045 x 0.625)	20	1	D-141-0142	Black	AD-1547
1.14 x 1.14 x 15.88 (0.045 x 0.045 x 0.625)	18	1	D-141-0142	Black	AD-1547
1.14 x 1.14 x 15.88 (0.045 x 0.045 x 0.625)	16	1	D-141-0142	Black	AD-1547

(a) Variations in post/wire geometry may require use of different size sleeve in some instances.
(b) Width x thickness x height. Height is the minimum distance between highest wrapped wire and top of post.
(c) For post/wire combinations not listed, consult Raychem for recommendations.