Termination Procedure for "723" Series SolderTacts® Contacts for AWG 24 and AWG 26 Twisted Pair Cable: D-602-0104, D-602-0105

1.0 Scope

This engineering standard contains the termination procedures, inspection requirements, and rework procedures for SolderTacts contacts D-602-0104 and D-602-0105.

2.0 References

2.1 Raychem Specification Control Drawings

1. D-602-0104 Contact, Coaxial Plug, #12, Twisted Pair Inner socket/Outer pin)
2. D-602-0105 Contact, Coaxial Receptacle, #12, Twisted Pair Inner pin/Outer socket)
3. CTA-0006 Sealing sleeve

2.2 Raychem Instructions

1. AA-400 SuperHeater Instructions
2. AD-1319 Holding Fixture Instructions
3. HL1920E/ HL2020E "HeatGun® " Instructions

3.0 Application Equipment and Tools

3.1 Heating Tools

Heating Tool	Reflector	Holding Fixture
AA-400 SuperHeater Compressed air Heating tool	Mini SolderSleeve reflector, 1979663	AD-1319 Holding Fixture with AT-1319-19 adapter or AD-1494 Holding Fixture
HL1920E / HL2020E Steinel Hot Air Gun (1)	EH0600-000 HL-Solder-Sleeve® Reflector	

(1) Steinel HL1920E / HL2020E Replaces CV5300 and CV5700 MiniGun®, But they still can be used.

3.2 Other Tools.
AD-1496 cut-to-length tool for twisted-pair cable.

4.0 General Information

4.1 Description
The D-602-0104 and D-602-0105 contacts covered by this engineering standard are designed for use in the following connectors having size 12 cavities:

- MIL-C-83723 Series 3B

- MIL-C-83733

- Raychem MTCR rectangular connector

These single--piece contacts solder to twisted-pair cable by means of preinstalled. solder preforms in heat-shrinkable insulating sleeves.

4.2 Twisted Pair Cable Accomodation
D-602-0104 and D-602-0105 contacts will accommodate twisted-pair cables of the following construction:

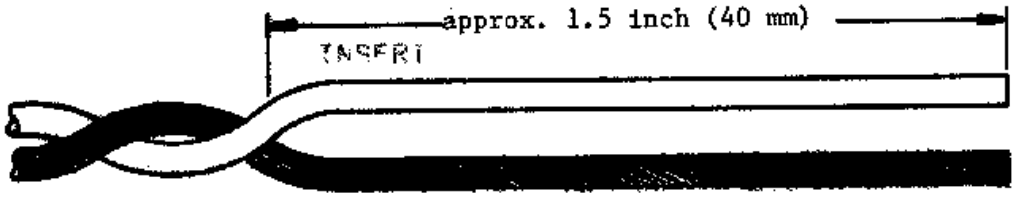
AWG 24 or AWG 26, tin or silver plated, solid or stranded, with insulation diameter of 0.050 inch (1.3 mm) maximum.

Consult Raychem for other wire constructions.

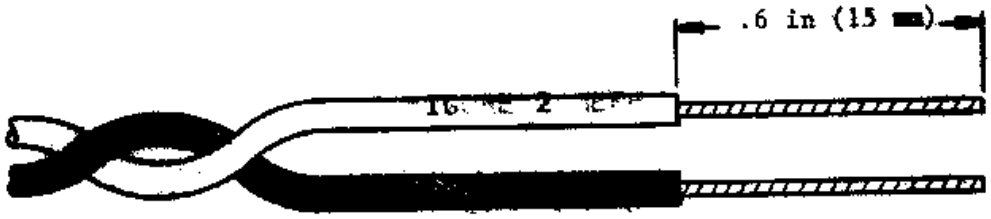
5. Termination Procedures

5.1 Twisted-Pair Cable Preparation

1. Untwist and straighten the wires for a length of approximately 1.5 inches (40 mm).



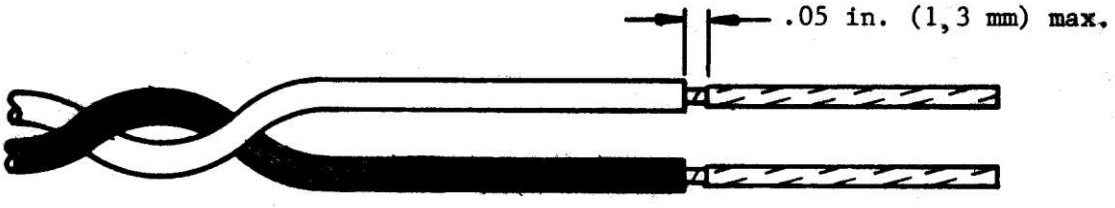
2. Strip both wires approximately 0.6 inch (15 mm) to the same point.



3. Make sure that stranded conductors are twisted into their normal lay.

NOTE
Retwist and smooth the strands with fingers, if necessary.

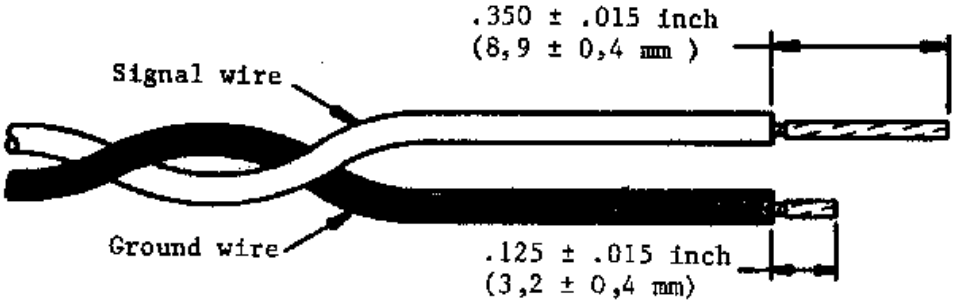
4. Pretin stranded wire and unplated solid wire to within 0.05 inch (1.3 mm) of the insulation, using Sn63 solder per QQ-S-571.



5. Trim the conductors to the lengths shown below. The AD-1496 cutting tool can be used to trim both conductors to the proper lengths.

   a. Signal conductor exposed length: 0.350 ± 0.015 inch (8.9 ± 0.4 mm).

   b. Ground conductor exposed length: 0.125 ± 0.015 inch (3.2 ± 0.4 mm).



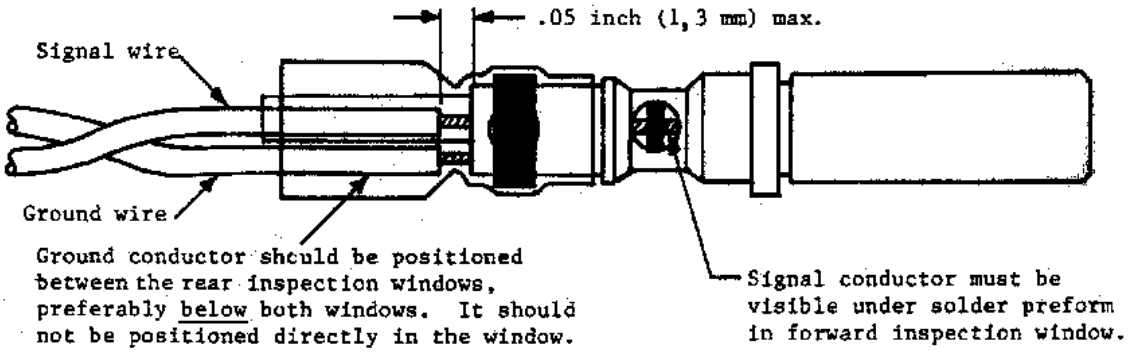
6. Make sure that the ends of both wires are straight.

5.2 Inserting Prepared Cable Into Contact

1. Insert the signal wire into the inner insulating sleeve, and insert the ground wire into the space between the inner sleeve and the outer sleeve at a point between the rear inspection windows.

> **NOTE**
> The ground conductor must not be located in one of the rear inspection windows, but rather between the two rear inspection windows. While pushing wires in, rotate the contact slightly back and forth to ensure that the wires insert fully and easily.

2. Inspect for correct wire insertion according to the figure below.



3. If the wires cannot be positioned correctly, remove them and check for improper strip dimensions, splayed or bent conductors, and excess solder on conductors.

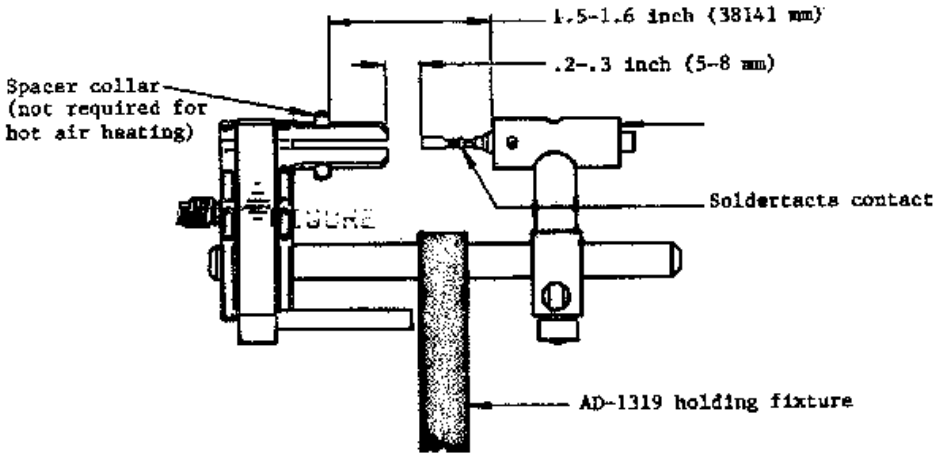
5.3 Heating Procedure: Manually Operated Heating Tools

NOTE
Either the AD-1319 holding fixture and adapter or the AD-1494 repair holding fixture must be used to prevent damage to the contacts.

1. If the AD-1319 holding fixture is to be used, install the AT-1319-19 adapter, insert a contact, and set up the dimensions as shown.

NOTE
Make sure that the contact is inserted in the appropriate end of the adapter: outer pin contact into the "P" end and outer socket contact into the "S" end.

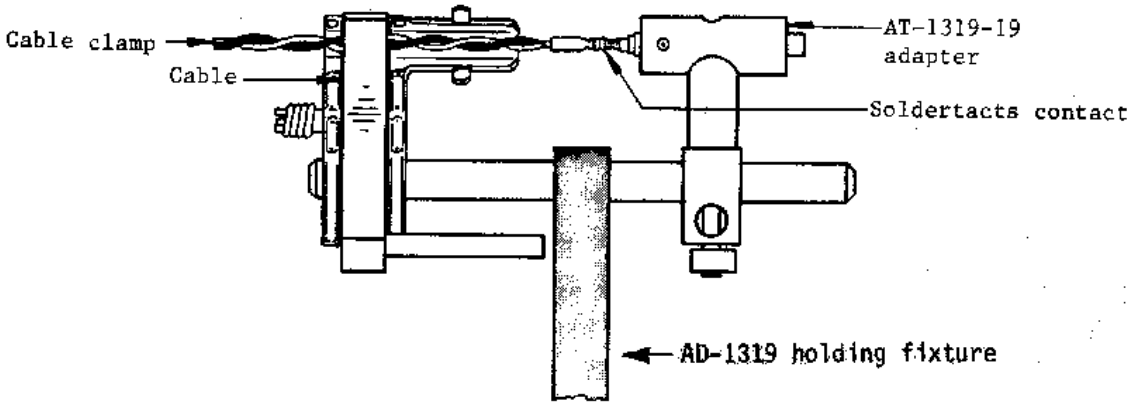
If using a hot-air heating tool, the spacer collar is not needed, but may be left in place.



2. Insert the contact / cable assembly into the appropriate end of the AT-1319-19 adapter or AD-1494 repair holding fixture as shown.

   D-602-0104 contacts (Inner socket/Outer pin): "P" end.

   D-602-0105 contacts (Inner pin/Outer socket):"S" end.



3. Clamp the twisted-pair cable the AD-1319 holding fixture(if used).

NOTE
The cable must be fully inserted into the contact. The contact must be fully inserted into the adapter. (See step 2 of Paragraph 5.2.) The cable must be straight between the contact and the cable clamp. The ground wire should be below both rear inspection windows

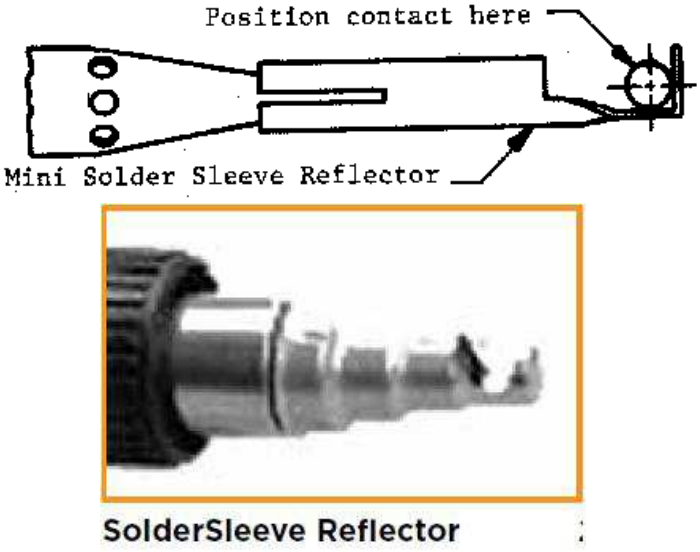
4A. Applying Heat With Hot Air Heating Tool (HeatGun® or Super Heater)

a. Attach the appropriate reflector to the heating tool (See Section 3 for reflector selection).

b. Turn the heating tool on and allow to warm up. (See instructions for tool used).
Steinel settings: 700°F ± 50°F, setting Air Flow Stage II, Duration-20 to 30 Secs

c. Using one of the required holding fixtures, position the contact in the hot air stream within the reflector.

NOTE
Center the forward inspection window in the reflector. For optimum heating, position the contact as shown.



HL SOLDER SLV REFLECTOR

d. Continue to direct hot air around the contact until the small solder preform in the forward inspection window has melted and flowed. The large solder preform in the rear inspection window should have melted and flowed by this time, if it has not, direct hot air around the rear inspection window until it does.

NOTE
Be sure to allow the solder to solidify before removing the contact from the holding fixture

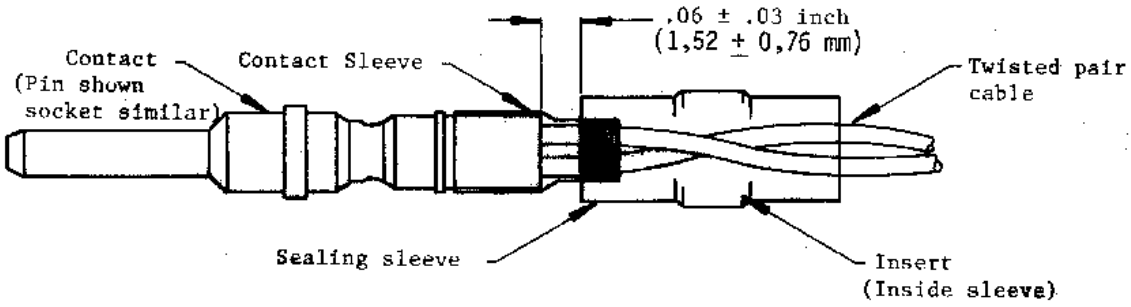
5. After the termination has cooled at least 15 seconds, remove it from the holding fixture.

6. Inspect the completed termination according to Section 6 of this standard.

5.4 Procedures

5.4.1 CTA-006 Sealing Sleeve Installation. A sealing sleeve is required to provide an immersion-resistant seal around twisted pair cable. The sealing sleeve is installed on the terminated contact/cable assembly before the contact is installed in the connector.

1. Slide the sealing sleeve back over the terminated contact and postion as shown in Figure 12.



2. Heat the sealing sleeve using one of the following heating tools:

   a. AA-400 Super Heater with SolderSleeve® or Mini SolderSleeve reflector.

   b. HL1920E/HL2020E Heat gun® with HL solder sleeve reflector

3. Continue heating until the insert melts and flows and-the insulation sleeve has shrunk down onto the contact sleeve and cable.

6. Inspection

6.1 Assembly Inspection. Inspect the completed termination for correct assembly according to the following criteria:

1. The distance from the rear of the contact body to the wire insulation should not exceed 0.05 inch (1, 3 mm) .

2. The signal conductor must be visible through one of the forward inspection windows.

3. The ground conductor should not be positioned in either rear inspection window, but should be soldered to the inside surface of the contact body between the two rear inspection windows.

6.2 Heating Inspection
Visually inspect the completed termination for proper heating according to the following criteria:

1. The small solder preform in the forward inspection window must be melted and flowed so that:

   a. Preform shows no trace of its original form (underheated condition).

   b. Solder fillet is visible between signal conductor and inner contact soldering surface.

NOTE
Insufficient visible solder indicates overheated condition.

2. The large solder preform in the rear inspection window must be melted and flowed, so that:

   a. Preform shows no trace of its original form (underheated condition).

   b. Preform has flowed into the contact through the rear inspection windows

3. The insulating sleeves must be shrunk over the exposed conductor between the wire insulation and the contact.

NOTE
Insulating sleeves may remain flared at end.

4. The insulating sleeves must not be darkened so as to obsure the solder joints or hinder inspection (overheated condition).

5. The twisted-pair cable insulation must not show signs of damage or overheating outside of the insulating sleeve.

7. Repair and Rework

7.1 Underheated Terminations

Reheat as directed in Paragraph 5.3 and reinspect per Section 6.

7.2 Overheated or Improperly Assembled Terminations

1. Remove the contact from the cable as directed in Paragraph 7.3.

2. Check the cable for damage and incorrect stripping. If the cable is damaged, cut off the damaged portion and restrip per Paragraph 5.1.

3. Install a new contact (Paragraphs 5.2 and 5.3).

7.3 Removing Contacts From Cable

1. Use a sharp knife or razor blade to slit the outer insulating sleeve full length on opposite sides of the contact

CAUTION
Avoid cutting into wire insulation.

2. Peel off the outer insulating sleeve.

3. Slit the sealing sleeve in the area outside of the contact body.

4. Holding the contact with pliers, heat the contact until the solder melts, and quickly pull the heated contact off the cable.