



**Termination Procedure for “748” Series SolderTact®, Contacts for
Twisted Pair Cable: D-602-0126, D-602-0127**

1. Scope

1.1 This Engineering Standard contains the termination procedures, inspection requirements, and rework procedures for the SolderTacts® contacts D-621-0126 and D-621-0127.

2. References

2.1 Raychem Specification Control Drawings

D-621-0126: Shielded Contact, Pin, Twisted-Pair (Inner socket/Outer pin)

D-621-0127: Shielded Contact, Socket, Twisted-Pair (Inner pin/Outer socket)

2.2 Other Specification

Federal Standard QQ-S-571

2.3 Raychem Instructions

AA-400 Super Heater Instructions

AD-1319 Holding Fixture Instructions

2.4 Other Instructions


Visual inspection standards: “Verification Photos”

Video Tape: “SolderTacts Contacts Installation Procedures”

3. Application Equipment and Tool

3.1 Heating Tools

Heating Tool.	Reflector	Holding Fixture
AA-400 Superheater (Portable, Compressed Air)	#979663 Mini SolderSleeve Reflector	AD-1319 Holding Fixture with AT-1 319-14 Adapter or
Steinel Hot Air Gun Multi-Purpose Kit HL2020E, (includes nozzle)	EH0600-000 HL-Solder- Sleeve® Reflector	AD-1480 Holding Fixture AD-1480 Repair Holding Fixture

 HL2020E Hot Air Gun replaces CV-5XOO heaters, but they still can be used

3.2 Other Tools

- AD-1297 Trimmer For Twisted Pair, 22 AWG.
- AD-1298 Trimmer For Twisted Pair, 24-25 AWG.
- AD-1480 Repair Holding Fixture.

4. **General Information**

4.1 Description

The contacts D-602-0126 and D-602-0127 are designed for use in the following connectors having size 16 cavities:

MIL-C-28748 rectangular rack and panel connectors, Raychem RD-1 high-density circular connectors and Raychem D-621 series triaxial connectors.

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

4.2 Twisted-Pair Wire Accommodation

D-602-0126 and D-602-0127 contacts will accommodate twisted-pair cables of the following constructions:

- Size: AWG 22 thru 26 AWG
- Plating: Tin or silver
- Stranding: Solid or stranded
- Insulation diameter: .067 inch (1,7 mm) max.

Consult Raychem for other wire constructions.

5. **Termination Procedures**

5.1 Twisted-pair cable Preparation

- 5.1.1 Untwist and straighten the wires for a length of approximately 0.7 inches.

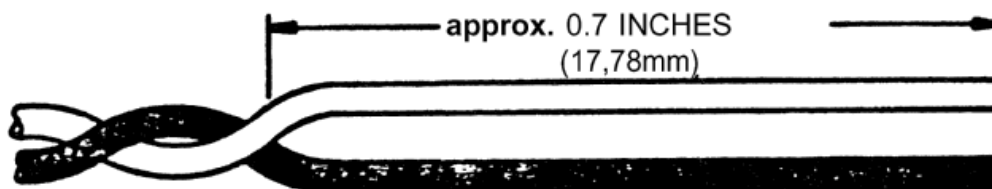


FIGURE 1

NOTE

For ease in straightening the exposed twisted pair wires, warm both wires slightly in the reflector of a heating tool and straighten while warm.

- 5.1.2 Strip wires per Figure 2.

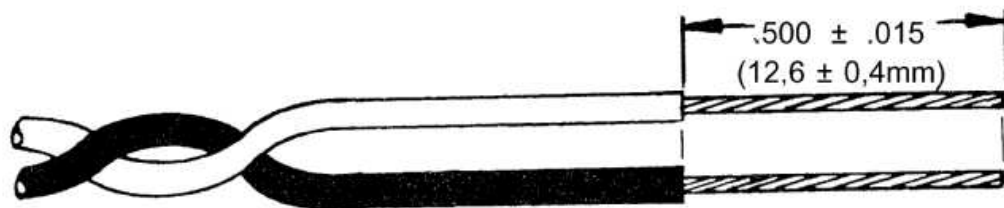


FIGURE 2

- 5.1.3 Make sure that stranded conductors are twisted into their normal lay. Retwist and smooth the strands with fingers, if necessary
- 5.1.4 Pretin stranded wire and unplated solid wire to within 0.05 inch (1,3 mm) of the insulation, using Sn63 solder and RMA flux per QQ-S-571.

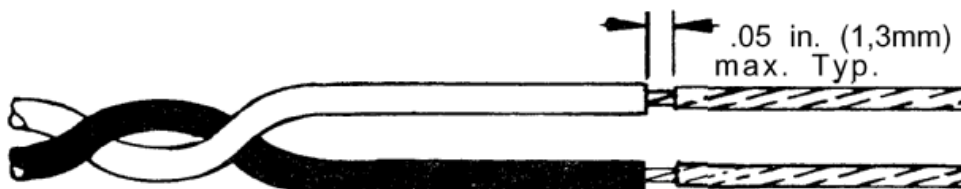


FIGURE 3

- 5.1.5. Trim the signal and ground conductors per Figure 4 using AD-1297 or AD-1298 trim tool.

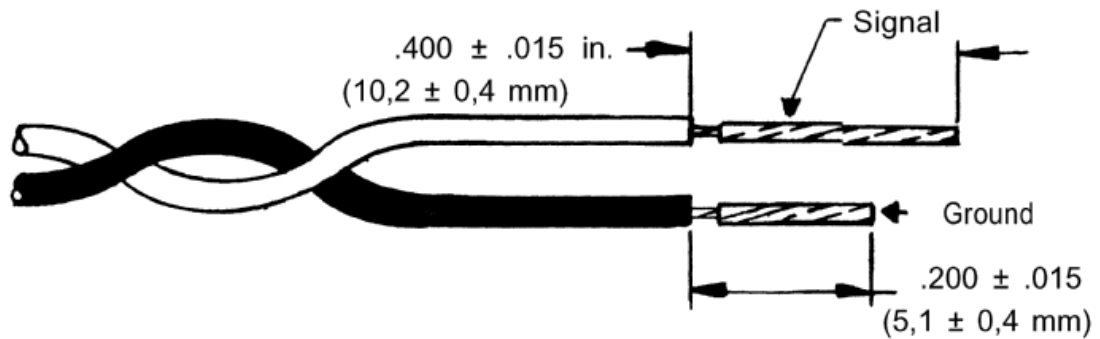


FIGURE 4

5.2 Inserting Prepared cable into contact

5.2.1 Start conductors into the contact as follows:

Signal wire (long strip length) into the inner (smaller diameter) insulating sleeve.

Ground wire (short strip length) between the two insulating sleeves, at a point not in line with either of the rear inspection windows.

5.2.2 Push both wires into the contact until they are fully inserted as shown below.

NOTE

While pushing the wires in, rotate the contact slight back and forth to prevent the wires from catching. Be careful not to force wires too far into the contact. Do not twist contact or wires.

5.2.3 Inspection for Proper Wire Position

5.2.3.1 The signal wire must be visible through the forward inspection window (Figure 5) and must be under (inside) the solder preform.

5.2.3.2 Ground conductor should be positioned BETWEEN the two rear inspection windows (Figure 6B), and not directly IN either window (Figure 6A). It must not extend into the forward inspection windows. The trimmed insulation end should be within the dimensional limits of Figure 5.

NOTE: The ground conductor should be positioned on the side of the contact that will face down during heating (See Figure 9A).

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

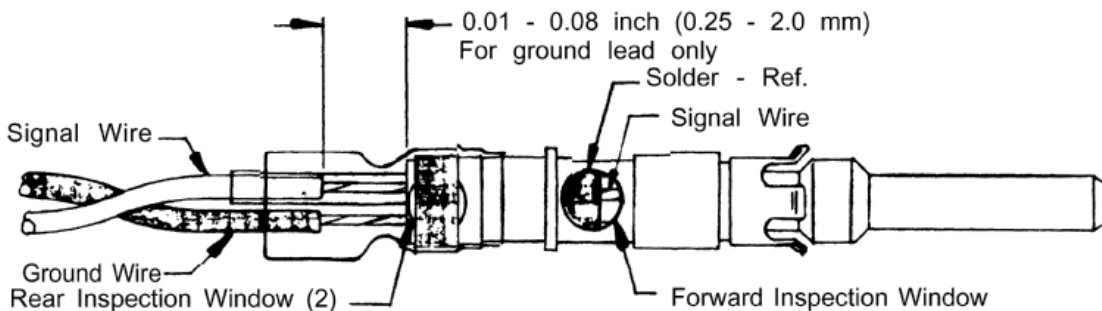


FIGURE 5

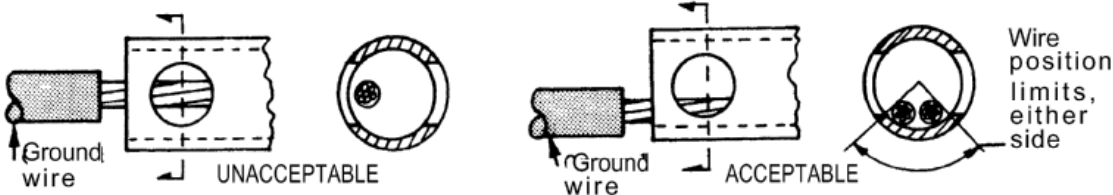


FIGURE 6A

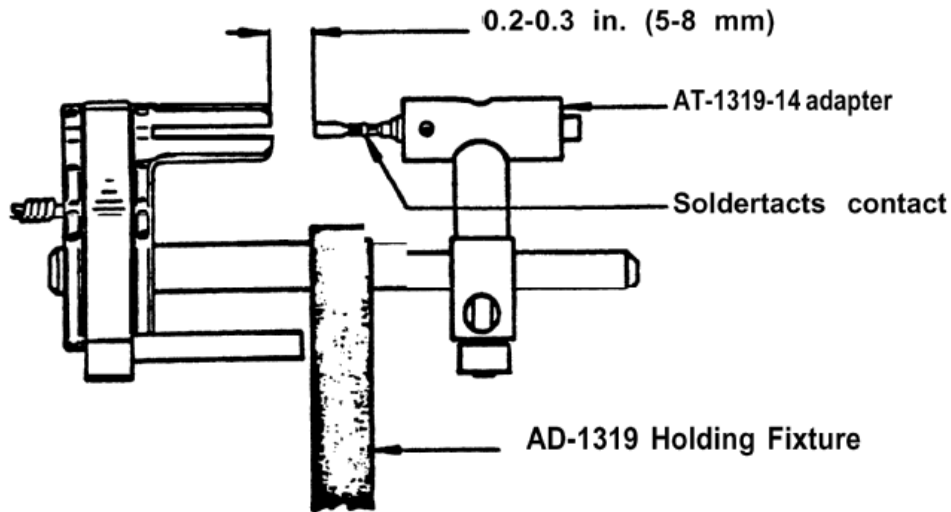
FIGURE 6B

5.3 Heating Procedure: Manually Operated Heating Tools

IMPORTANT: Either the AD-1319 holding fixture and adapter or the AD-1480 repair holding fixture **MUST** be used, to prevent damage to the contacts.

5.3.1 If the AD-1319 holding fixture is to be used, install the AD-1319-14 adapter, insert a contact, and set up the dimensions as shown in Figure 7.

Make sure that the contact is inserted in the appropriate end of the adapter: D-602-0126 pin contact in the “P” end and D-602-0127 socket contact in the “S” end.



SET-UP DIMENSIONS FOR AD-1319 HOLDING FIXTURE

FIGURE 7

5.3.2 Insert the contact/cable assembly into the appropriate end of the AT-1319-14 adapter or AD-1480 repair holding fixture, as shown.

D-602-0126 contacts (Inner socket/Outer pin): "P" end.

D-602-0127 contacts (Inner pin/Outer socket): "S" end.

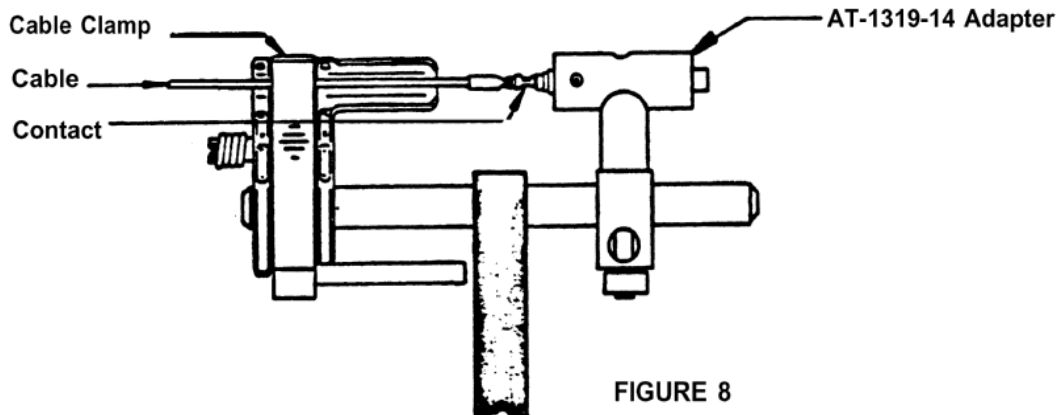


FIGURE 8

AD-1319 HOLDING FIXTURE AND AT-1319-14 ADAPTER WITH CONTACT/CABLE ASSEMBLY



FIGURE 9

AD-1480 REPAIR HOLDING FIXTURE WITH CONTACT/CABLE ASSEMBLY

- 5.3.3 Clamp the twisted-pair cable in the AD-1319 holding fixture (if used).
- The cable must be fully inserted in the contact (see Section 5.2).
 - The contact must be fully inserted in the adapter.
 - The cable must be straight between the contact and the cable clamp.
- 5.3.4 Applying Heat with Hot Air Heating Tool
- 5.3.4.1 Attach the appropriate reflector to the heating tool (see Section 3 for reflector selection).
- 5.3.4.2 Turn the heating tool on and allow it to warm up (see instructions for tool used). Steinel settings: 700°F ± 50°F, setting Air Flow Stage II, Duration-20 to 30 Secs

CAUTION

The heating tools have hot nozzle surfaces and produce hot air that can cause burns. To prevent burns, do not touch the nozzle, and keep hands and fingers away from the hot air stream.

- 5.3.4.3 Using one of the required holding fixtures, position the contact in the hot air stream within the reflector (Figures 9A, 10, and 11).
- Make sure that the ground conductor stays between the rear inspection windows.
 - It is recommended that the ground conductor be positioned against the downward facing side of the contact (Figure 9A).

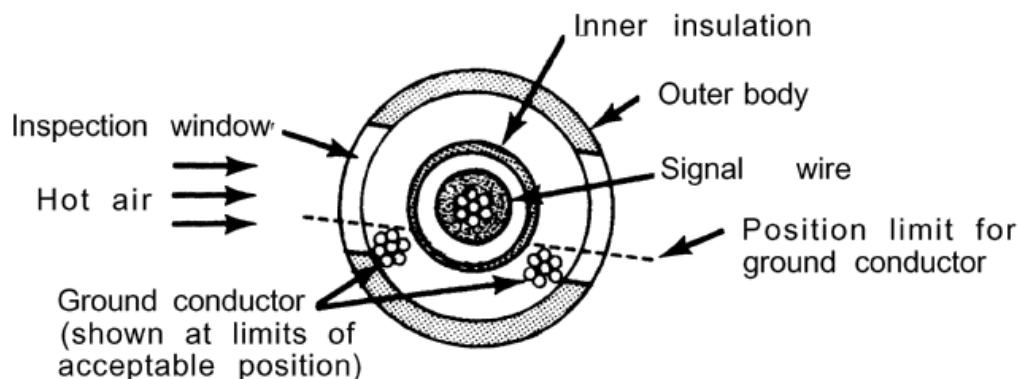
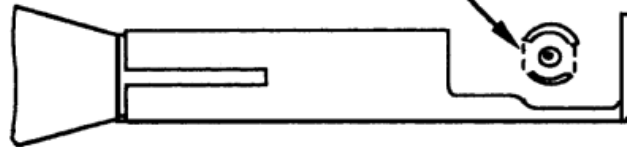


Figure 9A. Positioning of Ground Conductor During Heating

- 5.3.4.4 For best heating, position the contact as shown in Figure 1 or 11. Center the forward inspection window in the reflector. Position the forward inspection window toward the hot air stream such that the inner solder preform can be seen during termination.
- Use of magnification is recommended during termination to aid viewing. The AA-400-140 magnifier and bracket accessory provides suitable magnification with the AA-400 SuperHeater heating tool

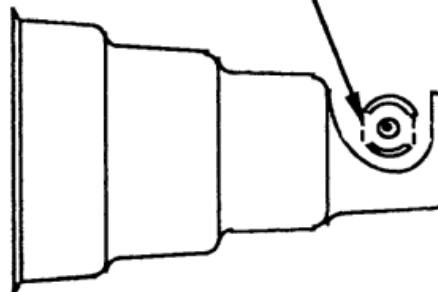
Forward Inspection Window
facing toward hot air



Mini solder Sleeve Reflector
for SuperHeater

FIGURE 10

Forward Inspection Window
facing toward hot air



Steinel Nozzle

FIGURE 11



- 5.3.4.5 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 or disturbing the cable position

6. Inspection**6.1 Assembly Inspection**

Inspect the completed termination for correct assembly according to the following criteria:

- 6.1.1 The distance from the rear end of the contact body to the stripped wire insulation should not exceed 0.13 inch (3.3 mm)
- 6.1.2 The signal conductor must be visible through one of the forward inspection windows.
- 6.1.3 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. See 5.2.3 for details.



6.2 Heating Inspection

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

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

C

Preform shows no trace of its original form (underheated condition). A band of solder trace which is wetted to the substrate is acceptable.

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

NOTE
Insufficient visible solder indicates
overheated condition.

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

C

Preform shows no trace of its original form (underheated condition). A band of solder trace which is wetted to the substrate is acceptable.

The solder has flowed into the contact through the rear inspection windows.

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

NOTE
Insulating sleeves may remain flared at end.

6.2.4 The insulating sleeves must not be darkened so that the solder joints are obscured or inspection hindered (overheated condition).

6.2.5 The twisted-pair cable insulation must not show signs of damage or over-heating outside of the insulating sleeve.

6.3 Visual inspection standards (“Verification Photos”) are available from Raychem.



7. Repair and Rework

7.1 Underheated Terminations

Reheat underheated areas as directed in Section 5.3 and reinspect per Section 6.
Avoid reheating areas that have been properly heated.

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 as described in Section 5.1.
3. If stripping is incorrect, restrip as required (Section 5.1).
4. Install new contact (Sections 5.2 and 5.3).

7.3 Removing Contact From Twisted Pair Cable

1. Use a sharp knife or razor blade to score the outer insulating sleeve full length on two opposite sides of the contact.
 - Avoid cutting into wire insulation.
2. Peel off the outer insulating sleeve.
3. Slit the inner sleeve in the area outside of the contact body.

CAUTION

Safety glasses must be worn during the following operation. Hot solder can fly off the wires and cause burns to unprotected eyes.

4. Holding the contact with pliers, heat the contact until the solder melts then quickly pull the heated contact off of the cable.
 - Use the same heating tool and reflector as for contact termination (See Section 3.1).