BUNKER RAMO®

AMPHENOL®

TERMINATION SYSTEMS

TERMINATION EQUIPMENT INSTRUCTION MANUAL

TELE-PIERCE

P/N 356-246

OPERATION AND SERVICE INSTRUCTIONS

AMPHENOL
157 SERIES TELE-PIERCE™

MULTI-WIRE TERMINATION TOOL
356-246

AMPHENOL TERMINATION SYSTEMS
1830 S. 54TH AVENUE
CICERO, IL 60650
(312) 656-5744

SPECIFICATION NO.
D2-603-356-246
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SECTION I

INTRODUCTION

Figure 1-1. Amphenol Tele-Pierce™ Multi-Wire Termination Tool

1-1. DESCRIPTION (Figure 1-1)

a. The Amphenol Tele-Pierce™ Multi-Wire Termination Tool is a hand-operated device for field or low-volume production insertion of prepared conductors into Amphenol Solderless Micro-Pierce Series-157 telephone cable connectors. The Tool will process 14, 24, 36, 50, and 64-conductor cables (7, 12, 18, 25, and 32 pairs respectively), look under "1-4. Application" for details.

b. The connector is first inserted into the fixture. Then the prepared cable, with the jacket stripped back several inches, is clamped in the fixture. The individual wires are then fanned out and fed into the proper openings in the wire comb. When all wires are in position according to the cable color chart, the crimp handles are pressed together. The tool stuffs the wires, pierces the insulation to make contact with the terminals, and cuts off excess wire. The crimp handles are then opened, the connector released, and the terminated cable assembly removed from the tool.

1-2. INSTALLATION

The Amphenol Tele-Pierce ™ Multi-Wire Tool is portable and self-contained. Install the tool for use as follows:

a. Open the carrying case, lift out the Tele-Pierce™ Tool on its portable base and set the case aside.

b. Locate the Tool with its base on a suitable work location

1-3. CUSTOMER SERVICES

The Tele-Pierce™ Tool has been adjusted and tested for quality reliability before it is shipped.

Inquiries for repairs, field service, and spare parts on termination equipment should be directed to:

Amphenol Termination Systems
1830 S. 54th Ave.
Cicero, Illinois 60650
(312) 656-5744
24 Hour Field Service Number

1-4. APPLICATION

The Amphenol Tele-Pierce™ Multi-Wire Tool (P/N 356-236) is designed to be used with connectors and wire combinations below:

AMPHENOL PART NUMBER	CONNECTOR DESCRIPTION	LOCATING PIN TURRET	NUMBER OF CONTACT	WIRE SIZE
157-12140	Rack and Panel, Plug (Mounting Hole .103)	B	14	24,26
157-12240	Rack and Panel, Plug (Mounting Hole .103)	B	24	24,26
157-12360	Rack and Panel, Plug (Mounting Hole .103)	B	36	24,26
157-12500	Rack and Panel, Plug (Mounting Hole . 103)	B	50	24,26
157-12640	Rack and Panel, Plug (Mounting Hole .103)	B	64	24,26
157-22140	Rack and Panel, Receptacle (Float Bushing)	T	14	24,26
157-22240	Rack and Panel, Receptacle (Float Bushing)	T	24	24,26
157-22360	Rack and Panel, Receptacle (Float Bushing)	T	36	24,26
157-22500	Rack and Panel, Receptacle (Float Bushing)	T	50	24,26
157-22640	Rack and Panel, Receptacle (Float Bushing)	T	64	24,26
157-12500-3	Rack and Panel, Plug (Mounting Hole .185)	A	50	24,26
157-22500-3	Rack and Panel, Receptacle (Mounting Hole .185)	A	50	24,26
157-32140	Top Cable Entry — Plug (Loose Insert)	T	14	24,26
157-32240	Top Cable Entry — Plug (Loose Insert)	T	24	24,26
157-32360	Top Cable Entry - Plug (Loose Insert)	T	36	24,26
157-32500	Top Cable Entry — Plug (Loose Insert)	T	50	24,26
157-42140	Panel Mount Receptacle (Spring Latches)	T(RL)	14	24,26
157-42240	Panel Mount Receptacle (Spring Latches)	T(RL)	24	24,26
157-42360	Panel Mount Receptacle (Spring Latches)	T(RL)	36	24,26
157-42500	Panel Mount Receptacle (Spring Latches)	T(RL)	50	24,26
157-52140	Side Cable Entry - Plug (Loose Insert)	T	14	24,26
157-52240	Side Cable Entry - Plug (Loose Insert)	T	24	24,26
157-52360	Side Cable Entry - Plug (Loose Insert)	T	36	24,26
157-52500	Side Cable Entry - Plug (Loose Insert)	T	50	24,26
157-62140	Top Cable Entry - Receptacle (Spring Latches)	T(RL)	14	24,26
157-62240	Top Cable Entry - Receptacle (Spring Latches)	T(RL)	24	24,26
157-62360	Top Cable Entry — Receptacle (Spring Latches)	T(RL)	36	24,26
157-62500	Top Cable Entry — Receptacle (Spring Latches)	T(RL)	50	24,26
157-72500-3	Running Cable - Plug, Steel Hood	C	50	24,26
157-82500-3	Running Cable - Receptacle, Steel Hood	C	50	24,26
157-72140-8	Running Cable - Plug, Plastic Hood	C	14	24,26
157-72240-8	Running Cable - Plug, Plastic Hood	C	24	24,26
157-72360-8	Running Cable - Plug, Plastic Hood	C	36	24,26
157-72500-8	Running Cable - Plug, Plastic Hood	C	50	24,26
157-72640-8	Running Cable - Plug, Plastic Hood	C	64	24,26
157-82140-8	Running Cable — Receptacle, Plastic Hood	C	14	24,26
157-82240-8	Running Cable - Receptacle, Plastic Hood	C	24	24,26
157-82360-8	Running Cable — Receptacle, Plastic Hood	C	36	24,26
157-82500-8	Running Cable - Receptacle, Plastic Hood	C	50	24,26
157-82640-8	Running Cable - Receptacle, Plastic Hood	C	64	24,26

T(RL) - Top Entry Adapter Kit P/N 357-247 Required (Remove Spring Latch)

SECTION II

SET-UP AND ADJUSTMENTS

2-1. TOOTH CARRIER ARMS

Swing the handles containing the tooth plates back to their rest stops.

2-2. TOOTH PLATES (Figures 2-1 and 2-2)

Check the tooth plates to insure that they are properly set for the connector receptacle or plug to be terminated.

2-3. CHANGEOVER PROCEDURES FOR RECEPTACLE (FEMALE) AND PLUG (MALE) CONNECTORS (Figures 2-1 and 2-2)

a. Loosen the adjustment clamp screw in the center of both tooth carrier arms by turning in a CCW (counter-clockwise) direction.

b. Push the punch adjustment slide on both carrier arms downward so the word FEMALE is visible above the slide. At this time a red line will appear on the arm. The word FEMALE and this red line indicates the tool is set to terminate the receptacle (female) connector.

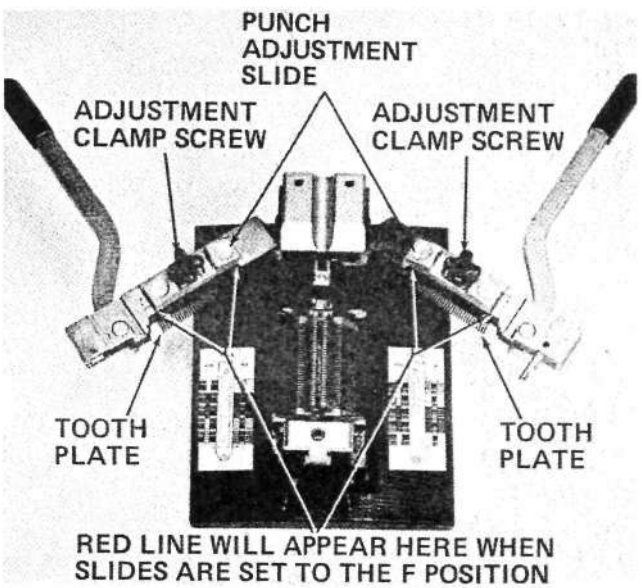

Figure 2-1. Setup for Plug (Male) or Receptacle (Female) Connectors

c. When the two slides (described above) are pushed upward so the word MALE is visible beneath the slides, the tool is set to terminate plug (male) connectors.

d. Push the slide for either FEMALE or MALE so the tooth plates will be set as far forward as they will go. While holding the tooth plates in this position, tighten the adjustment clamp screw on both carrier arms by turning CW (clockwise).

NOTE

Make certain both handles are on same applicable setting (see Figure 2-2).

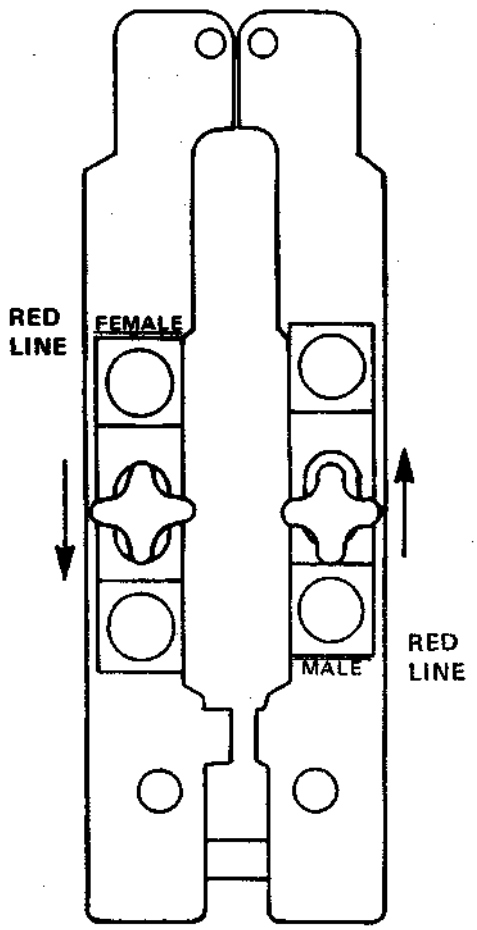

Figure 2-2. Slide Movement for Male or Female Connectors

2-4. SELECTION OF LOCATING PIN (FIGURE 2-3

a. Three locating pins are available to locate connector with hole in connector shell.

b. To accommodate various connectors, turn the locating pin turret so the corresponding letter to a particular type connector is lined up with cable clamp and fanning combs (see 1-4 application).

A	—	.173	—	panel mount
B	—	.100	—	panel mount
C	-	.083	-	running cable

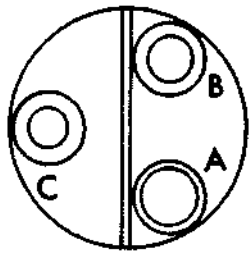

Figure 2-3. Locating Pin Arrangement

SECTION III

OPERATING INSTRUCTIONS

3-1. LOADING THE CONNECTOR (Figure 3-1)

a. Squeeze the comb levers located on the front of the tool inwards to open the combs.

b. When applicable, with the 90-degree cable strain relief end bracket on the connector shell towards the cable clamp of the tool, insert the connector all the way down between the fanning combs, position over the locating pin.

c. Release the comb levers to lock the connector in position. To insure proper seating also close the combs by hand. If the connector remains up between the combs, push it down while closing the combs by hand.

d. Check the line up to insure that the first set of slots on the connector (toward the cable strain relief end bracket) are in line with the first set of slots on the combs. If positioned correctly, locating nibs on each comb will have entered the connector between the first and second barrier on all connector sizes up to 50 contacts. (On the 64-contact size connector locating nibs will also enter between the last two barriers on each side.)

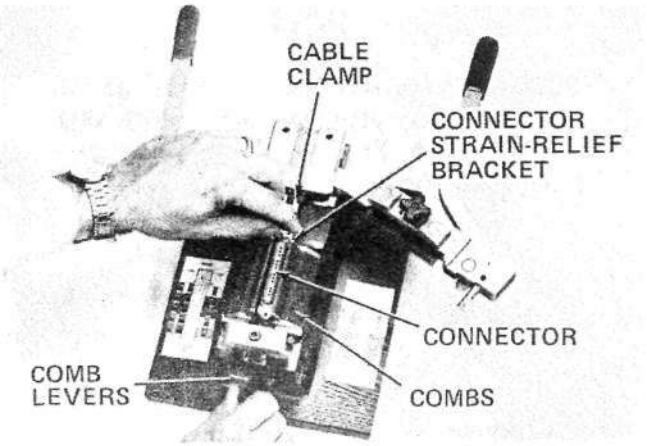

Figure 3-1. Loading the Connector into Termination Tool

3-2. CABLE PREPARATION (Figure 3-2)

a. Prepare the cable according to local practice. Stripping the jacket back six to seven inches and presorting of the wires into the major color groups is recommended.

b. With the cable entering from the rear of the tool, push the cable into the cable clamp lining up the end of the cable jacket approximately half way between the end of the connector block and the 90-degree cable strain relief end bracket. It is advisable to position the first color group of wires to be used downward.

c. Bend the unwanted color groups of wire back, to permit easy access to each pair.

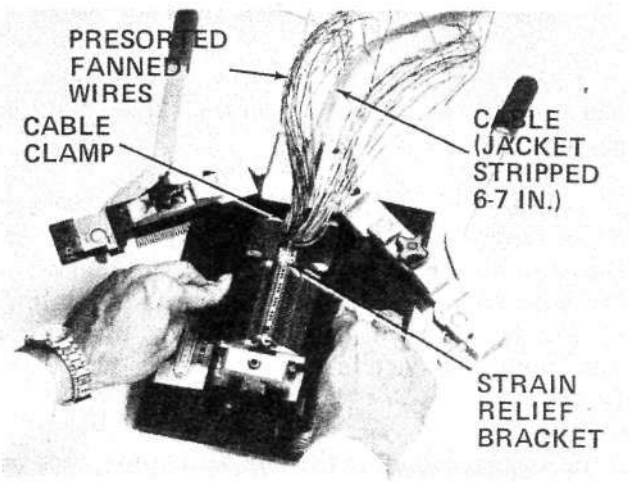

Figure 3-2. Cable Preparation

3-3. WIRE POSITIONING (Figures 3-3 and 3-4)

a. Select and untwist the first pair of wires per the color code chart, one in each hand.

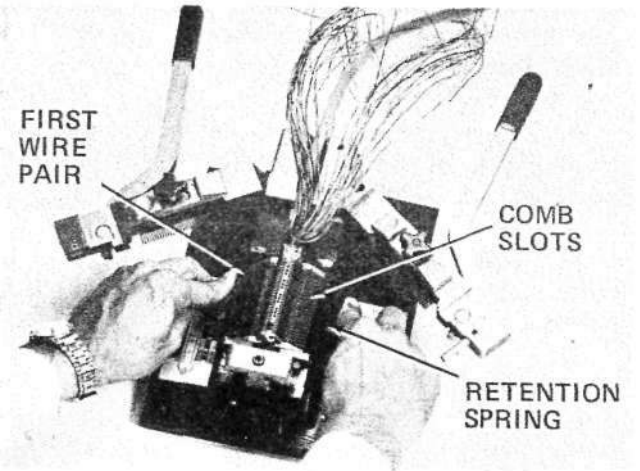

Figure 3-3. Wire Positioning First-Wire Pair

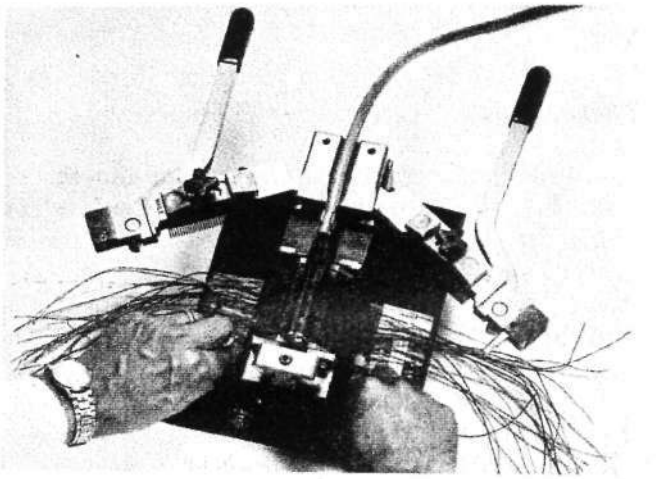

Figure 3-4. Wire Positioning Last Wire Pair

b. Position the wire so that it lays over the top of the index finger and is held taut and guided with the thumb.

c. Keep the wire taut and slide your index finger down the wire to approximately the slot the wire is to be inserted. Relax the tension on the wire and retract the tip of your index finger to the tip of your thumb. Holding the wire at this point, a distinct bend should have been formed.

d. Using a slight backward and down motion, move your hands toward the combs, guiding both wires into their appropriate slots.

e. Pull both wires taut in an outward and down motion, being careful not to exert excessive tension on the wires so that the combs open.

f. Keeping the wires taut allow them to slip thru your fingers while your hands are moving straight out and down guiding the wires thru the lower slots and into the retention springs.

g. Repeat the above procedure for each succeeding pair of wires in the first color group; be sure they are inserted into succeeding slots.

h. Bend the next color group up, per the color code chart, to facilitate sorting as done for the first group.

i. Proceed to fan the wires into their proper slots, and repeat for each color group. As slots farther from the cable are wired, allow the wires to slip thru your hands and over your index finger while keeping the wire taut, stopping at the appropriate slot. This method will straighten any bends in the wire, allow for easier slot selection, and create the desired wire bend near the appropriate slot.

j. When all the wires have been fanned into the comb, inspect them for proper color code, and be sure all the wires run thru their respective slots and are in the retention spring on each side of the tool.

3-4. TERMINATING THE CONNECTOR (Figures 3-5 and 3-6)

a. Swing the tooth carrier arms containing the tooth plates partially into the combs until they touch the first wires.

b. Swing the crimp handles forward making sure the levers engage the pivot pins (9).

c. Continue to swing the crimp handles together until the tooth carrier arms are covered by the edges of the arm retainer "T". At this time both arms should be up against the positive stop and in parallel position. The ratchet should now release.

d. All wires have now been cut and terminated.

NOTE

Ratchet insures that handles must be fully closed against arm retainer before opening. Only in this way will a complete, reliable termination be made.

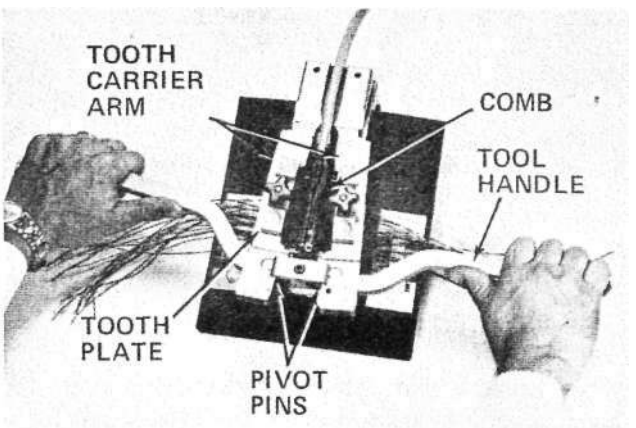

Figure 3-5. Engaging Pivot Pins

SECTION III

OPERATING INSTRUCTIONS

3-1. LOADING THE CONNECTOR (Figure 3-1)

a. Squeeze the comb levers located on the front of the tool inwards to open the combs.

b. When applicable, with the 90-degree cable strain relief end bracket on the connector shell towards the cable clamp of the tool, insert the connector all the way down between the fanning combs, position over the locating pin.

c. Release the comb levers to lock the connector in position. To insure proper seating also close the combs by hand. If the connector remains up between the combs, push it down while closing the combs by hand.

d. Check the line up to insure that the first set of slots on the connector (toward the cable strain relief end bracket) are in line with the first set of slots on the combs. If positioned correctly, locating nibs on each comb will have entered the connector between the first and second barrier on all connector sizes up to 50 contacts. (On the 64-contact size connector locating nibs will also enter between the last two barriers on each side.)

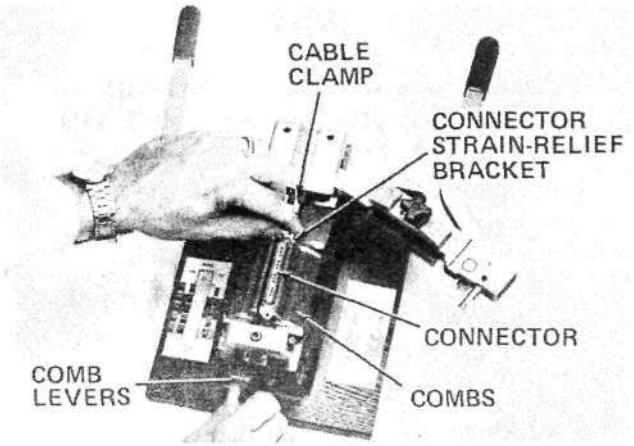

Figure 3-1. Loading the Connector into Termination Tool

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c. Bend the unwanted color groups of wire back, to permit easy access to each pair.

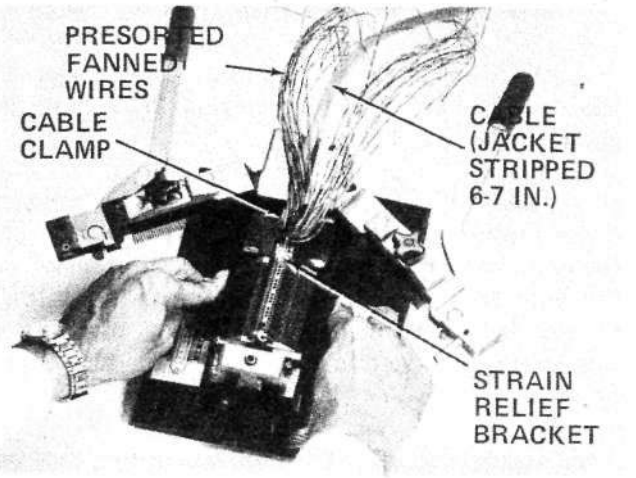

Figure 3-2. Cable Preparation

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a. Select and untwist the first pair of wires per the color code chart, one in each hand.

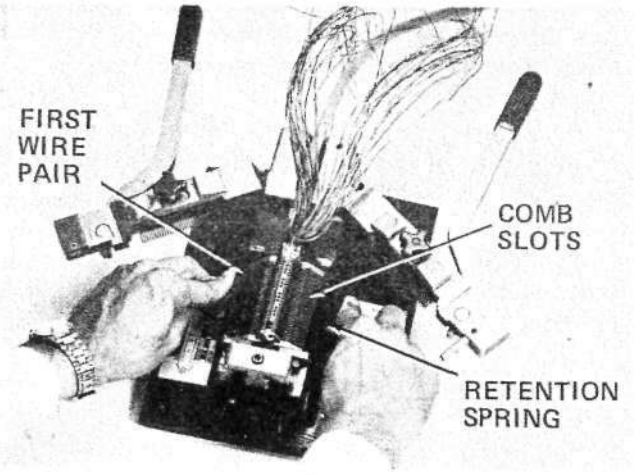

Figure 3-3. Wire Positioning First-Wire Pair

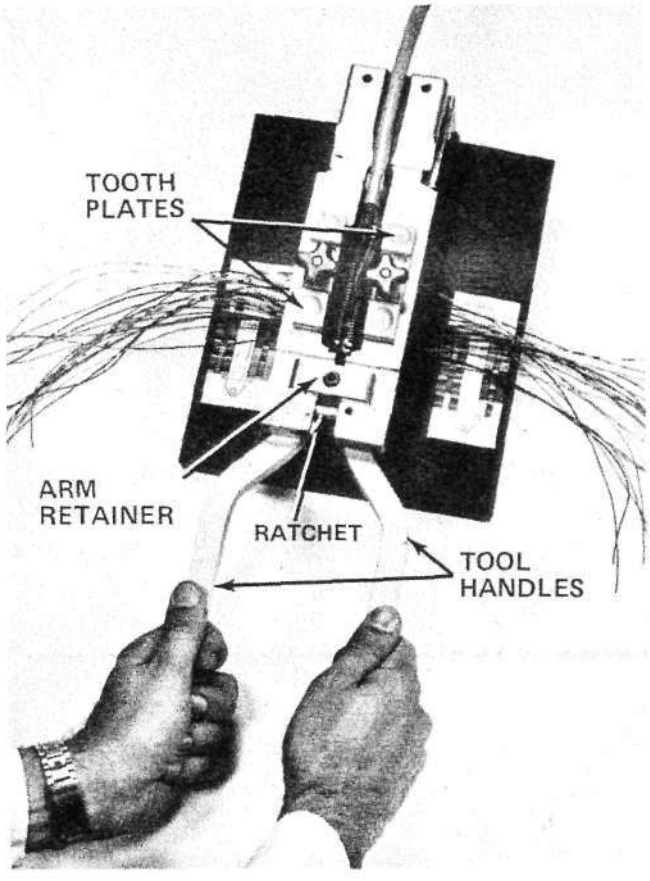

Figure 3-6. Cutting Off the Wires

3-5. REMOVAL OF THE CONNECTOR (Figures 3-7 and 3-8)

a. After ratchet is released, swing the crimp handles all the way back to the tooth carrier arms, bringing the teeth out of the connector block and combs.

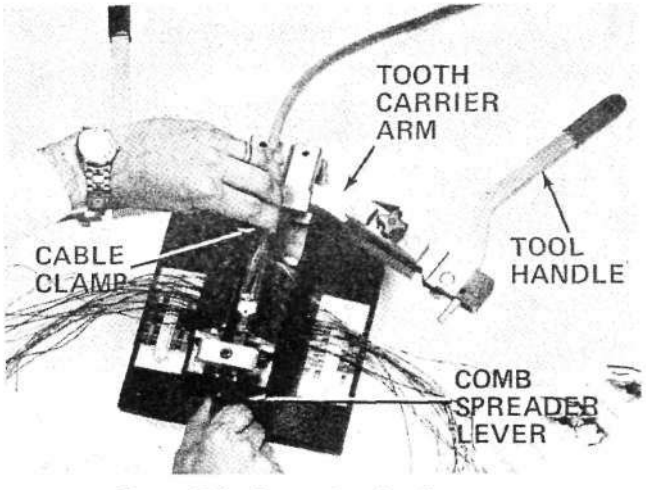

Figure 3-7. Removing the Connector

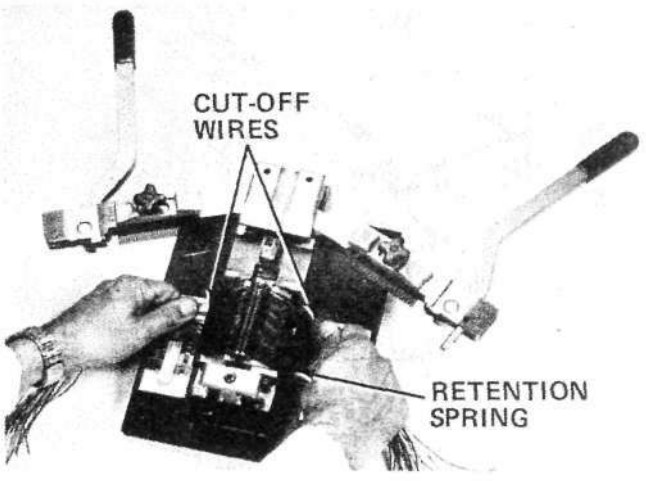

Figure 3-8. Removing Cut-off Wires

b. Swing the tooth carrier arms back to their rest stops.

c. Press the comb levers, located in the front of the tool inward to open the combs.

d. Pull the cable from the clamp and remove the cable and connector assembly out of the termination tool.

e. Remove the cut-off wires from the retention spring and discard.

3-6. INSPECTING WIRE TERMINATION (FIGURES 3-9 AND 3-10)

a. Inspect connector for proper termination. Double dimples ("double-bubble") in the wire pierce area should be clearly visible and uniform on both sides of connectors.

b. End of individual wires should be at least 0.050 inch past the pierce area.

SECTION IV

MAINTENANCE AND REPAIR

4-1. GENERAL

The instructions in the following paragraphs are important for the correct operation of the wire termination tool. Figure 5-1 is an exploded view of the tool and Section V contains the parts list.

4-2. CLEANING

Periodically wipe off all outer surfaces of the termination tool with lightly oiled cloth to remove dust and grit and reduce the possibility of rust. Spaces between comb teeth and tooth plate teeth and crevices should be cleaned using a clean, dry paint brush.

4-3. LUBRICATION

Periodically lubricate all wear areas (see Figure 5-1) on combs (8), comb spreader pin (31), comb levers (22, 23), tooth carriers (26, 32), pivot pins (22, 9) and spring ends (17) by applying a thin coat of Molykote Number 505. Wipe off all excess lubricant.

4-4. ADJUSTMENT OF TOOTH PLATES

NOTE

When adjusting tooth plates (25) be sure that tooth plate is bearing against punch adjustment block (23) before tightening adjustment clamp screw (61).

To insure that wire insertion depth is correct, adjust setscrew (28) on right hand tooth carrier (32) as follows (refer to Figure 5-1):

a. Set sliding punch adjustment to FEMALE position per paragraph 2-3b.

b. Close tool handles together.

c. Check that spacing between tooth plates (25) is 0.095-0.105 inch. If not as specified, loosen nut (29) and adjust setscrew (28) for correct spacing and tighten nut.

d. Set sliding punch adjustment to MALE position per paragraph 2-3c.

e. Check that spacing between tooth plates (25) is 0.185-0.195 inch.

f. Setscrew (28) should come in contact with left hand tooth carrier (26) with tool handles closed together after final adjustment.

NOTE

Above dimensions are pre-set at the factory and should not have to be re-set under normal conditions.

4-5. TROUBLESHOOTING

PROBLEM OR SYMPTOM	POSSIBLE CAUSES AND CORRECTIVE ACTION
Tool does not cut off wires properly	- Make sure that "Arm Retainer" ("T") Figure 3-6 in front of tool is tightened. - Inspect cutting edges on tooth plates and combs. If cutting surfaces are dull, replace parts with new ones. - Make sure that punch adjustment slides holding tooth plates are properly tightened.
Tool does not stuff wires to proper depth (no "double-bubble")	- Make sure that both handles are fully closed when terminating connector. — Make sure that carrier arms are set for proper connector type, male or female (Figure 2-2). - Check for correct spacing between tooth plates (paragraph 4-4).
Difficulties when loading connector between combs	— Screws holding connector pad might have worked loose. Check positioning of connector on pad. Connector should be resting on pad so that combs are closing over connector top. Tip of screws holding connector pad should be approx. flush with top of pad. When adjustment is necessary, remove tool from base, correct the setting with the two socket head cap screws. Check that locator pin is the appropriate pin for the connector.
Combs do not close properly	- Check setting of connector pad (see last paragraph). - Combs might be sticking due to dirt, wire cut-offs in track. - Comb extension spring (underneath tool) stretched or broken, replace with new one.
Tooth plates bind with combs when opening tool after termination	- Make sure that punch adjustment slides holding tooth plates are tightened. - Make sure that combs are properly closed.
Ratchet does not open	- Check that arms are fully closed. - Check that carrier arms are set for proper connector. - Release ratchet pawl by triggering spring release on left carrier arm.

SECTION V
PARTS LIST

5-1. GENERAL

Replacement parts for the Amphenol wire termination tool are shown in the exploded view, Figure 5-1, and in the accompanying parts list.

5-2. RUNNING SPARES

Parts recommended to be stocked by the customer as running spares are indicated by an asterisk (*) in the UNITS PER ASSEMBLY column in the parts list.

FIG.& INDEX NO.	PART NO.	DESCRIPTION	UNITS PER ASSY.
5-1-	356-246	TERMINATION TOOL, 57 SERIES	
1	356-236-7	. BASE	1
2	356-236-44	. PLUNGER, SPRING, VLIER BH54N	2
3	356-236-43	. SCREW, CAP, SOCKET HD, 1/4-20 x 1-3/4	2
'4	356-236-12	. BLOCK, CABLE GUIDE	1
5	356-236-42	. PIN, DOWEL, 0.2500-0.2502 x 1-1/4	2
6	356-236-41	. SCREW, FLAT HD, SOCKET, NO. 10-32 x 3/4	1
7	356-236-27	. SPACER, CABLE CLAMP	1
8	356-236-6	. COMB	2*
9	356-236-40	. PIN, DOWEL, 0.250 x 1	2
10	356-236-15	. RETAINER, ARM	1
11	356-236-39	. SCREW, CAP, SOCKET HD, 1/4-10 x 1-3/4	1
12	356-236-14	. PLATE, LOCATING PAD	1
13	356-236-16	. SPRING, COMPRESSION	2
14	356-236-38	. SCREW, CAP, SOCKET HD, No. 10-24 x 1/2	2
15	356-236-19	. LEVER, COMB, RH	1
16	356-236-37	. SCREW, SHOULDER	2
17	356-236-8	. SPRING, EXTENSION	1*
18	356-236-9	. SPRING, EXTENSION	2
19	356-236-36	. SCREW, CAP, BUTTON HD SOCKET, No. 10-24 x 1/4	4
20	356-236-1	. HANDLE, CRIMP (LH & RH)	2
21	356-236-70	. SLIDE, PUNCH ADJUSTMENT	2
22	356-236-10	. PIN, HANDLE, CARRIER ARM	2
23	356-236-66	. BLOCK, PUNCH ADJUSTMENT	2
24	356-236-69	. PLATE, CLAMP	2
25	356-236-2	. PLATE, TOOTH	2*
26	356-2364	. CARRIER, TOOTH, LH	
27	356-236-60	. TURRET ASSEMBLY	
28	356-236-34	. SETSCREW, SOCKET, FLAT PT, No. 10-24 x 3/4	
29	356-236-33	. NUT, HEX, JAM, No. 10-24	
30	356-236-21	. GRIP, PLASTIC	
31	356-236-3	. PIN, COMB SPREADER	
32	356-236-5	. ARM, TOOTH CARRIER, RH	
33	356-236-30	. NUT, HEX, 1/4-20	
34a	356-236-47-3	. PIN, LOCATING, 0.173 in. dia	
34b	356-236-47-2	. PIN, LOCATING, 0.100 in. dia	
34c	356-236-47-1	. PIN, LOCATING, 0.083 in. dia	
35	356-236-51	. CASE, CARRYING	
36		. INSTRUCTION MANUAL (not shown)	
37	356-23649	. RUBBER PAD	
38	356-236-32	. SCREW, FLAT HD, No. 10-24 x 1-3/4	
39	356-236-22	. LEVER, COMB, LH	
40	356-23648	. BASE, REMOVABLE	
41	356-236-24	. LABEL	
42	356-236-64	. SPRING	
43	356-236-71	. CLAMP, CABLE	
44	356-236-29	. SCREW, DRIVE, RD HD, No. W2, 0.098 x 1/4	
45	356-236-73	. SCREW, PHILLIPS PAN HD, TYPE B, No. 6 x 5/16	
46	356-236-45	. CHART, COLOR, MALE	
47	356-23646	. CHART, COLOR, FEMALE	
48		. INSTRUCTION SHEET	
49	356-236-50	. DIRECTIVE LABEL	
50	356-236-52	. SPACER, FOAM	
51	356-236-63	. DETENT	
52	356-236-65	. RING, RETAINING	
53	356-236-55	. PIN, RETAINING, RATCHET	
54	356-236-62	. SCREW, ADJUSTMENT, RATCHET	
55	356-236-59	. SETSCREW, SHAFT, RATCHET, No. 10-32 x 1/4	
56	356-236-74	. SHAFT, RATCHET	
57	356-236-54	. LEVER, RATCHET	
58	356-236-58	. PLUG, SPRING, RATCHET	
59	356-236-57	. SPRING, LEVER, RATCHET	
60	356-236-56	. SETSCREW, SOCKET, FLAT PT, No. 8-32 x 1/4	
61	356-236-68	. SCREW, CLAMP, ADJUSTMENT	2

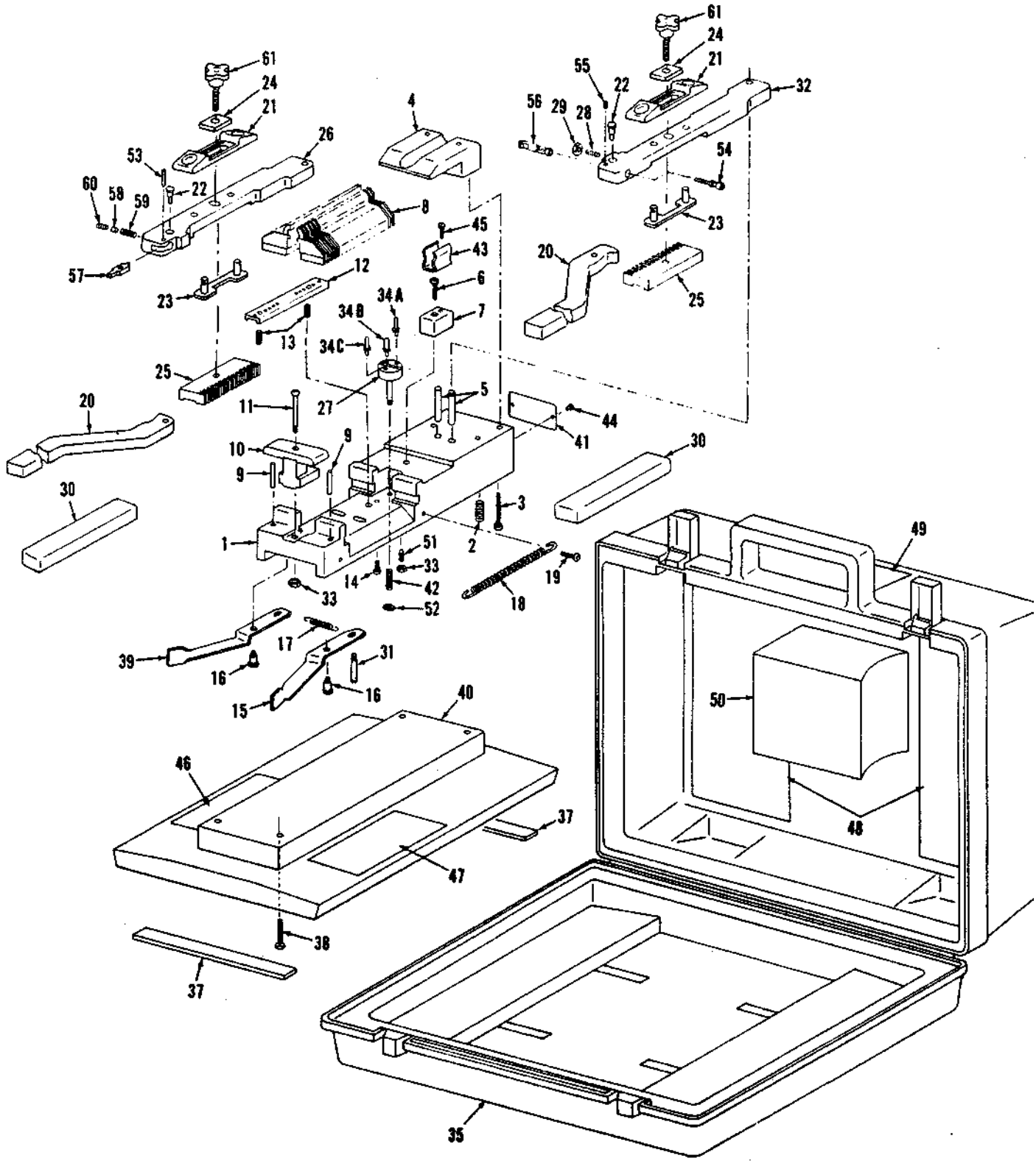

Figure 5-1. Multiwire Termination Tool, Exploded View