

Figure 1

## 1. INTRODUCTION

This instruction sheet covers the setup and operation of AMP\* MTE Tube Feed Assembly 856675-1 designed to be used with AMP Electric Power Unit 931800-1, as shown in Figure 2. The assembly terminates unstripped wire in the shrouded pin and receptacle contacts of AMPMODU MTE housings and then seats the contacts within the housing. For setup and operation procedures of the power unit, refer to AMP customer manual 409-5746.

**NOTE**

Measurements are in metric units [followed by U.S. customary units in brackets]. Illustrations are for identification only and are not drawn to scale.

Reasons for reissue are provided in Section 8, REVISION SUMMARY.

## 2. DESCRIPTION

The tube feed assembly consists of three subassemblies: a feed station assembly, an insertion station assembly, and a seating station assembly. The functional description of each subassembly is as follows:

### 2.1. Feed Station Assembly (PN 854650-1)

**Pusher** – maintains a force against the housing assembly to permit feeding.

**Spring Stops** – position and hold product tube within the tooling assembly.

**Thumbscrews** – hold the spring stops and insert in place, while providing ease in changeover.

**3 Point Pivot** – acts as a housing for the pusher when the product tube is being changed.

**Control Knob** – used to retract the pusher from the tube feed assembly and to ease the pusher against the back end of a new product tube or housing assembly.

## 2.2. Insertion Station Assembly (PN 856674-1)

**Wire Inserter** – forces wire between the two slotted contact beams and provides support for the beams when insertion force is applied to the wire.

**Insertion Rod Adjuster** – is a piston for — and regulates travel of — the wire inserter.

**Wire Guide** – guides wire during insertion so that it is positioned for proper alignment and depth.

**Feed Fingers** – advance the contact carrier strip to the terminating position.

**Feed Arms** – drive the feed fingers, which are driven by the retraction of the wire inserter.

**Contact Drag** – keeps the contact carrier strip in the strip guide and prevents the housing assembly from moving out of position after the feed finger advances it.

**Feed Adjustment Screw** – regulates the position of the contact relative to the wire inserter.

**Feed Index Adjustment Screw** – regulates the index travel of the feed fingers.

**Product Guide** – provides horizontal connector alignment as the connector exits the product tube and enters the insertion station.

## 2.3. Seating Station Assembly (PN 856673-1)

**Pusher Bar** – slide portion of seating station which drives the plastic housing over the contacts.

**Insert** – reversible bar (mounted on the pusher bar) which provides a resting place for the plastic housing when it is positioned in the seating station assembly.

**Tool Handle** – provides the force required to seat the terminated contacts into the housing.

The tube feed assembly terminates unstripped wire (22 through 30 AWG) in the shrouded pin and receptacle contacts which are partially inserted in the .100-in centerline, single-row AMPMODU MTE housings. Both pin and receptacle contacts feature insulation displacement termination for the conductors which ensures a reliable electrical connection between the wire and the contact. Final contact insertion into the housing is done by the tool handle located on the seating station subassembly. For details concerning the selection and assembly of

AMPMODU MTE connectors, refer to 408-6919 and AMP Catalog 65816.

## 3. SETUP, TEST TERMINATION, AND ADJUSTMENTS

### DANGER

*Disconnect power unit from electrical outlet before installing and setting-up tube feed assembly for termination.*

### NOTE

*To properly set up and operate the Electric Power Unit, refer to 409-5746.*

### 3.1. Setup (Figure 2)

Install tube feed assembly into power unit using the setup procedures provided with the power unit. After tube feed assembly is properly installed, it must be set up according to the type of connector being terminated. AMPMODU MTE housings are shipped in product tubes and, because of the size differences in the product line, the product tubes vary in width. Adjust the spring stops (located on the spacer blocks) and the insert (mounted on the pusher bar) according to the size of the product tube.

### NOTE

*Refer to 408-6919 and AMP Catalog 65816 to select the appropriate connector and wire size.*

### NOTE

*After the tube feed assembly is properly installed and setup, perform a test termination to determine if any adjustments are necessary. See Paragraph 3.2, Test Termination.*

### NOTE

*Product guide (PN 679689-1 – see Figure 3) is to be installed when the MTE tube feed assembly is used to terminate connectors that are unloaded from tube PN 661042-1. This guide is to be removed (and saved) when the connectors are unloaded from tube part numbers 112150-1 and 112151-1.*

### A. Receptacle and Nonlatching Pin Housings (Figure 2)

#### 1. Remove spring stops from spacer blocks.

### NOTE

*The retaining tabs on the product tube keep the housing assemblies from falling out of the tube. The tabs MUST be bent down on both ends to allow the housings to be pushed out of the tube. Do NOT let housings slide out of the product tube before installing the tube into the tube feed assembly.*

### CAUTION

*Receptacle and nonlatching pin housing connectors are packaged in either tube part number 112150-1 or 112151-1 and therefore do not require the installation of the product guide. Remove and retain the product guide (see Figure 3). The guide must be removed to prevent damage to the connectors being fed to the insertion station.*

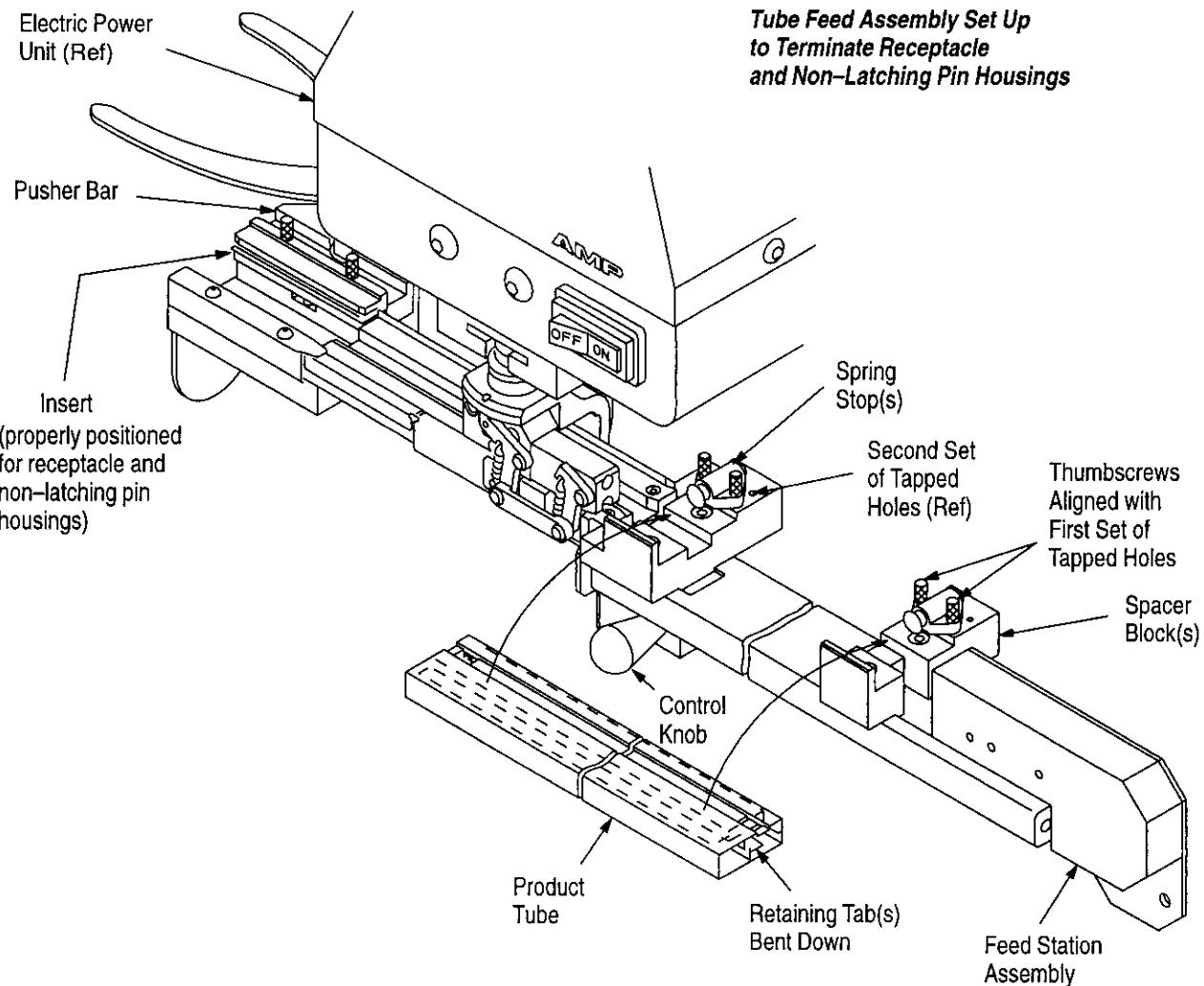


Figure 2

2. Move control knob to the left (toward the seating station) until the latch engages with the sheet metal block at the far end. Place the product tube between the spacer blocks, as shown in Figure 2.
3. Reposition spring stop onto the spacer block, aligning the thumbscrews over the **first** set of tapped holes on the spacer block. See Figure 2.
4. Hold spring stop against product tube to create spring pressure; then re-tighten the thumbscrews. Repeat this procedure for the other spring stop.
5. Check position of insert on pusher bar. The insert must be positioned for the appropriate product, as shown in Figure 2. To re-adjust the insert, remove the thumbscrews, rotate the insert to the proper position; then retighten the thumbscrews.
6. Move control knob to the right so that the pusher is against the back end of the housing assemblies. Refer to Figure 5.

#### B. Shrouded Pin Housings (Figure 1)

1. Remove spring stops from spacer blocks.

##### NOTE

*The retaining tabs on the product tube keep the housing assemblies from falling out of the tube. The tabs **MUST** be bent down on both ends to allow the housings to be pushed out of the tube. Do NOT let housings slide out of the product tube before installing the tube into the tube feed assembly.*

2. Move control knob to the left (toward the seating station) until the latch engages with the sheet metal block at the far end. Place the product tube between the spacer blocks, as shown in Figure 1.
3. Reposition spring stop onto the spacer block, aligning the thumbscrews over the **second** set of tapped holes on the spacer block.
4. Hold spring stop against product tube to create spring pressure; then re-tighten the thumbscrews. Repeat this procedure for the other spring stop.

**NOTE**

Shrouded pin housings are packaged in tube part number 661042-1 and require the installation of the product guide (see Figure 3) for smooth feed operation.

5. Install and adjust the product guide as follows:
  - a. Position the right side (triangular nose) of the guide inside the left end of the tube and install the two screws and flat washers to the pivot block.
  - b. Horizontally orient the guide to place slight downward pressure against the carrier (of the first connector) until the connector sits flat, front to rear. The connectors should freely exit the tube and enter the insertion station when the guide is properly adjusted.
  - c. Secure the guide in place using the two screws.
  - d. Operate machine to verify smooth connector feeding.

6. Check position of insert on pusher bar. The insert must be positioned for the appropriate product, as shown in Figure 1. To re-adjust the insert, remove the thumbscrews, rotate the insert to the proper position; then retighten the thumbscrews.

7. Move control knob to the right so that the pusher is against the back end of the housing assemblies. Refer to Figure 5.

### 3.2. Test Termination

**DANGER**

Reconnect power unit to electrical outlet.

1. Position housing assembly in terminating head so that the first contact is centered and underneath the wire inserter. See Section 4, TERMINATING PROCEDURE for details.
2. Insert unstripped wire into funnel area (located between the contact and the wire inserter) until it bottoms on the wire guide.
3. Depress foot switch to terminate wire to contact. The feed finger will automatically advance the housing to the next contact position. If the housing does not advance to the next contact position, refer to Paragraph 3.3, Feed Adjustment.
4. Repeat Step 3 until all of the contacts in the housing have been terminated.
5. Slide housing to the left and remove it from the track. Inspect the termination according to Section 5, TERMINATION INSPECTION, and Figure 7. The wire insulation should extend beyond the front contact beam by 0.51 mm [.020 in.] minimum. If the wire insertion depth is not correct, adjust the depth of the wire inserter. Refer to Paragraph 3.5, Wire Insertion Depth Adjustment.

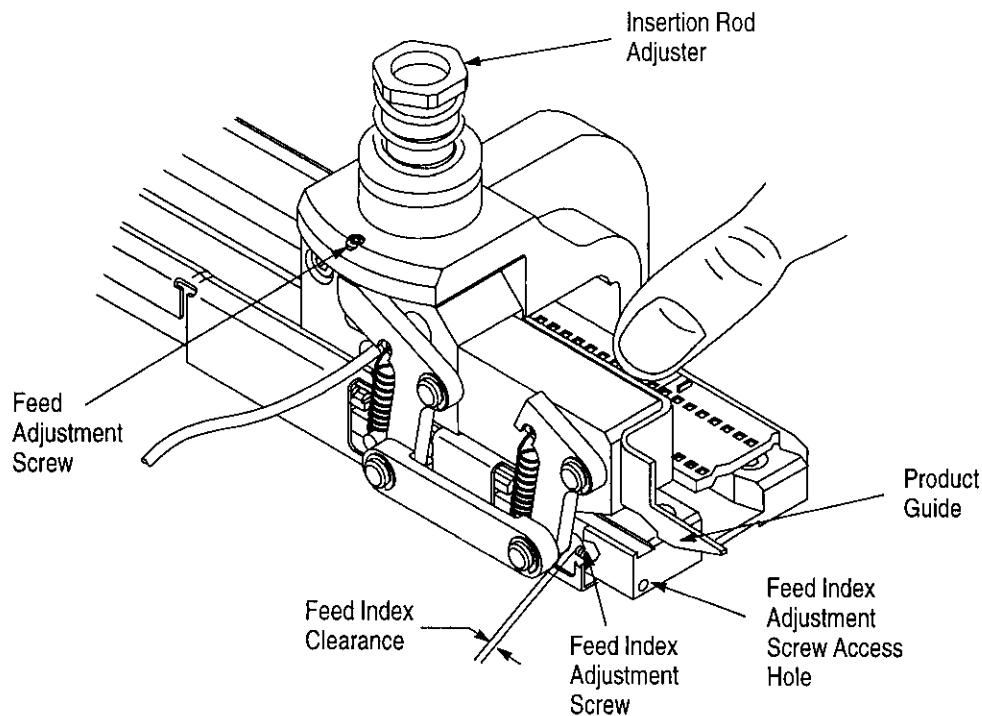


Figure 3

### 3.3. Feed Adjustment (Figure 3)

**DANGER**

*Before performing any adjustments, disconnect power unit from electrical outlet.*

The feed adjustment screw regulates the travel of the feed finger which advances the housing to the next contact position. To adjust the screw, use a hex wrench.

**NOTE**

*Before making any adjustments, make sure the insulation barrel on the contact is aligned with the wire inserter.*

- To advance the contact, turn feed adjustment screw COUNTERCLOCKWISE.
- To retract the contact, turn feed adjustment screw CLOCKWISE and pull back on the housing. See Figure 3.

### 3.4. Feed Index Adjustment (Figure 3)

**DANGER**

*Before performing any adjustments, disconnect power unit from electrical outlet.*

The feed index adjustment screw regulates the index travel of the feed fingers. During the downward movement of the wire inserter, the feed fingers advance to the right for engagement with the next carrier strip hole. Proper feed index adjustment limits the travel of the feed fingers preventing the possibility of a double index.

**NOTE**

*The feed adjustment screw (refer to Paragraph 3.3) must be set before attempting adjustment of the feed index screw.*

**NOTE**

*Adjustment of the feed index adjustment screw requires the removal of feed station assembly 854650-1 (refer to Figure 2). Remove the two screws that secure the feed station assembly to the insertion station assembly and place the feed station assembly to the side.*

To adjust the feed index adjustment screw, use a .050 inch hex wrench entering at right end of the track. A clearance of approximately 3.00 mm [.118 in.] between right feed pawl and the end of the adjustment screw is required when wire inserter is in the up (idle) position (refer to Figure 3). To obtain or to verify this clearance, proceed as follows:

1. Turn the feed index adjustment screw CLOCKWISE until it touches against the right feed pawl.
2. Apply a small amount of removable thread locking compound to the threads of the screw.
3. Turn the screw COUNTERCLOCKWISE 4 3/4 turns and stop. This sets the clearance.
4. Re-install the feed station assembly.

### 3.5. Wire Insertion Depth Adjustment (Figure 3)

**NOTE**

*The tube feed assembly must be removed from the power unit before making any adjustments.*

Wire Too Deep In Contact Slot — Turn adjuster 1/6 revolution CLOCKWISE (see Figure 3) to decrease the wire insertion depth by approximately .20 mm [.008 in.] Make a test termination following the procedures in Paragraph 3.2, Test Termination. Inspect the termination according to the procedures outlined in Section 5, TERMINATION INSPECTION. Re-adjust if necessary.

Wire Not Deep Enough In Contact Slot — Turn adjuster 1/6 revolution COUNTERCLOCKWISE (see Figure 3) to increase the wire insertion depth by approximately .20 mm [.008 in.] Make a test termination following the procedures in Paragraph 3.2, Test Termination. Inspect the termination according to the procedures outlined in Section 5, TERMINATION INSPECTION. Re-adjust if necessary.

## 4. TERMINATING PROCEDURE (Figures 4 and 5)

Discrete wire and jacketed cable (with individual insulated conductors) can be terminated in the tube feed assembly. Keep these things in mind when terminating wire in the contacts:

- Wire with an insulation diameter less than 1.02 mm [.040 in.] must be straight and aligned with the wire inserter.
- Terminating wire with an insulation diameter less than 1.02 mm [.040 in.] will experience lower yields.

**DANGER**

*Be careful when handling the carrier strip. The strip may have sharp edges.*

**CAUTION**

*Individual housing assemblies with less than 13 contact positions cannot be terminated in the tube feed assembly. To terminate a housing assembly with less than 13 positions (for example, when making repairs), use a strip-form housing. Terminate the contacts in the housing; then push the carrier strip through the insertion station assembly and remove the housing from the tube feed assembly. Inspect the contacts to ensure proper termination. Refer to Section 5, TERMINATION INSPECTION. Manually seat the contacts into the housing until the locking lances are seated against the housing window. Grasp the carrier strip and bend it downward in a 90° angle; then bend it upward until it snaps off. See Figure 4.*

**NOTE**

*Before terminating any contacts, make sure the tube feed assembly is properly setup for the type of connector being terminated. Refer to Section 3, SETUP, TEST TERMINATION, AND ADJUSTMENTS.*

1. Move housing assemblies toward the insertion station subassembly by pushing on the control knob until the pressure from the contact drag offers a resistance to motion.
2. Maintain slight pressure on the control knob and cycle the power unit by depressing the foot pedal. The first feed finger should engage the carrier strip on the housing which will automatically advance the housing from this point.
3. Depress foot pedal until the first contact is aligned with the wire inserter. If the housing does not advance, repeat Step 2.
4. Insert unstripped wire into the funnel area (located between the contact and the wire inserter) until it bottoms on the wire guide. See Figure 5.
5. Cycle the power unit and release. The wire inserter will terminate the wire to the contact and the feed finger will automatically advance the housing to the next contact position.
6. Repeat Steps 4 and 5 until all of the contacts are terminated. To push housing assembly through the insertion station subassembly, terminate the first four contacts of the next housing assembly.

**NOTE**

*The seating station subassembly cannot be used unless all of the contacts in the housing are terminated.*

7. Slide terminated housing into the seating station subassembly, as shown in Figure 6. The housing must be centered within the seating station.
8. Inspect the contacts to ensure proper termination. Refer to Section 5, TERMINATION INSPECTION.
9. Squeeze tool handles so that the insert pushes the housing over the contacts, making sure that the contacts are fully seated within the housing.
10. Release the tool handle; then push down on the top of the housing, causing a bend between the housing and the carrier strip.
11. Slide the carrier strip to the left until the housing is out of the tool.
12. Grasp the carrier strip and bend it downward in a 90° angle; then bend it upward until it snaps off. Refer to Figure 4.

**DANGER**

*Be careful when handling the carrier strip. The strip may have sharp edges.*

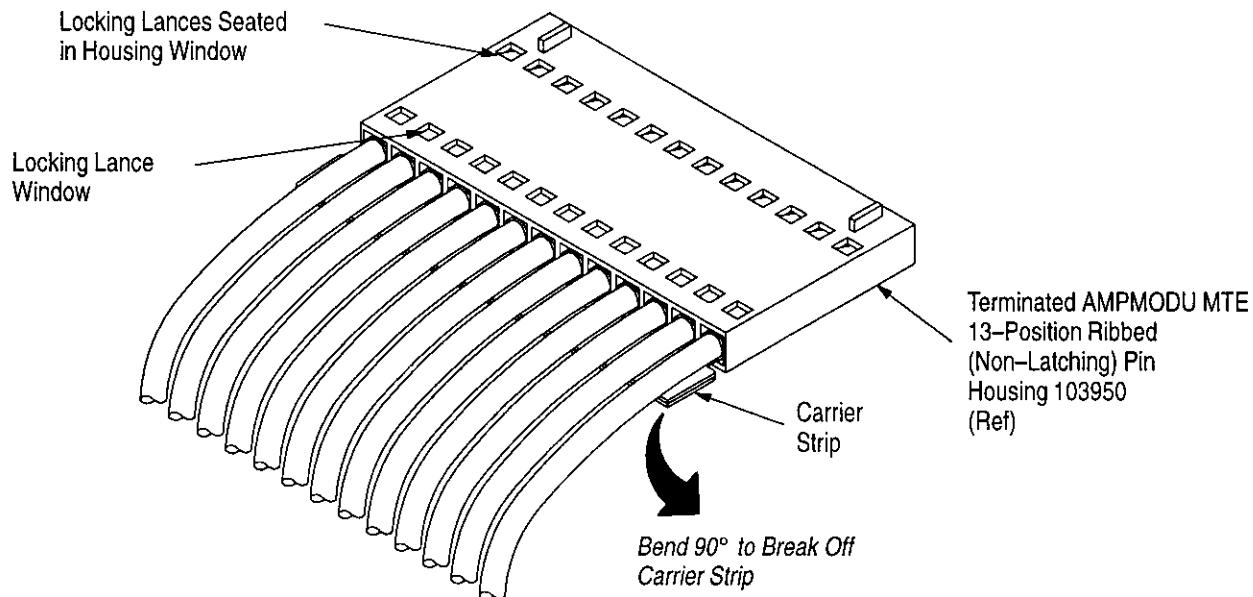


Figure 4

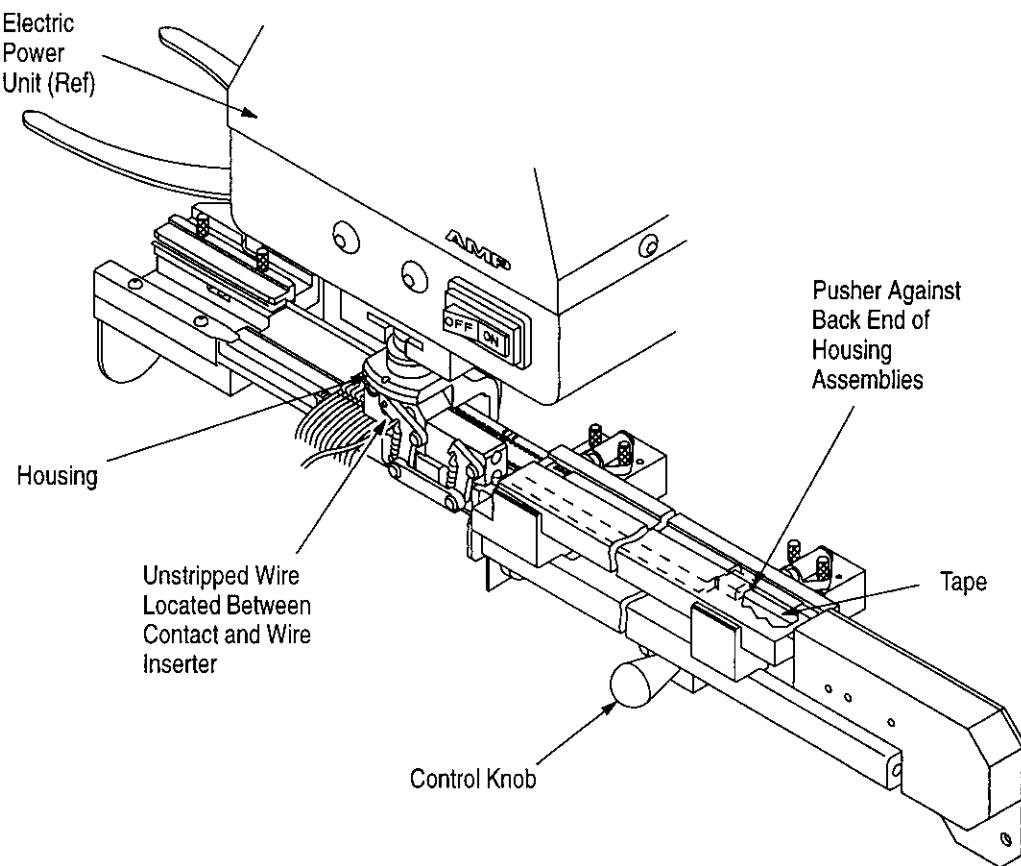


Figure 5

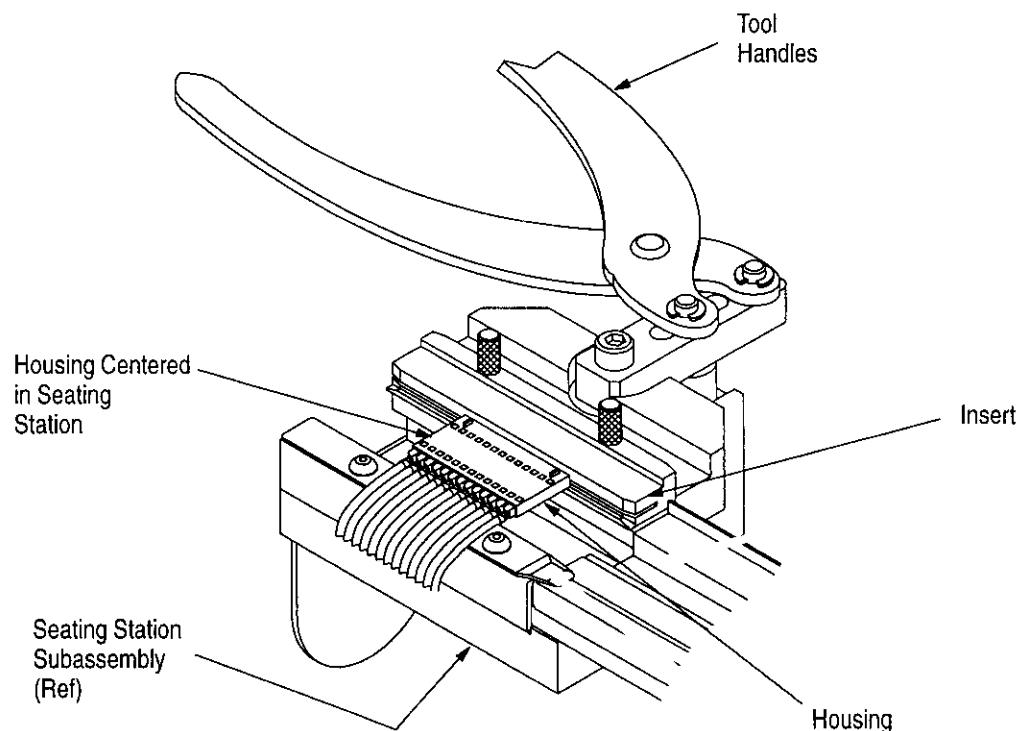


Figure 6

## 5. TERMINATION INSPECTION (Figure 7)

Figure 7 illustrates properly and improperly terminated contacts. Each view provides a brief description of the termination. Inspect each termination as follows:

1. The wire insulation should extend beyond the front contact beam by .51 mm [.020 in.] minimum.
2. The top of the conductor must be below the top of the wire barrel slot.
3. Make sure the wire barrel slots are not deformed and the wire is fully seated within the slot. If damage is evident, replace the contact(s). See 408-6919 packaged with the connector.
4. The insulation barrel supports must be fully closed to secure the wire. It is acceptable if the insulation barrel supports pierce the wire insulation.

**NOTE**

*The insulation barrel supports do not have to be wrapped tightly around the insulation. The purpose of the supports is to prevent the wire from being lifted out of the wire barrel slot. For additional information, refer to AMP Application Specification 114-25026.*

## 6. TOOL INSPECTION

The procedures which follow have been established to ensure the quality and reliability of AMP terminating tools. A brief inspection should be made daily, and a more detailed inspection should be scheduled by your Quality Control group.

### 6.1. Operator Maintenance

Each operator should be made aware of, and responsible for, the following:

1. Remove dust, moisture, and other contaminants using a clean brush or a soft, lint-free cloth. Do not use objects that could damage the tool.
2. Make sure all components are in place and properly secured.

### 6.2. Quality Control Maintenance

Regular inspections should be performed by your Quality Control group and a record of quality control inspections should remain with the person responsible for the tool. AMP recommends one inspection a month; however, operator training and skill, amount of use, ambient working conditions, and your company's standards are all factors to consider when establishing inspection frequency.

These inspections should be performed in the following sequence:

1. Remove any accumulated film with a suitable cleaning agent that will not affect paint or polycarbonate plastic.

2. Make sure all components are in place and tightly secured.

3. Make a few test terminations and inspect the termination as outlined in Section 5, TERMINATION INSPECTION.

## 7. REPLACEMENT AND REPAIR

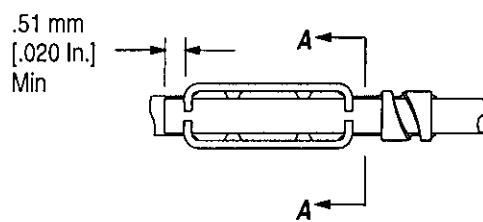
### 7.1. Tape Replacement (Figure 8)

Advancement of the connectors is performed by a thin metal tape (PN 764975-3 – see Figure 5) that is similar to the tape blade of a pocket-size tape measure. This tape may become bent or kinked over time and should be replaced, when necessary, to ensure smooth connector feed operation. Refer to Figure 8 and use the following procedures for tape replacement.

**DANGER**

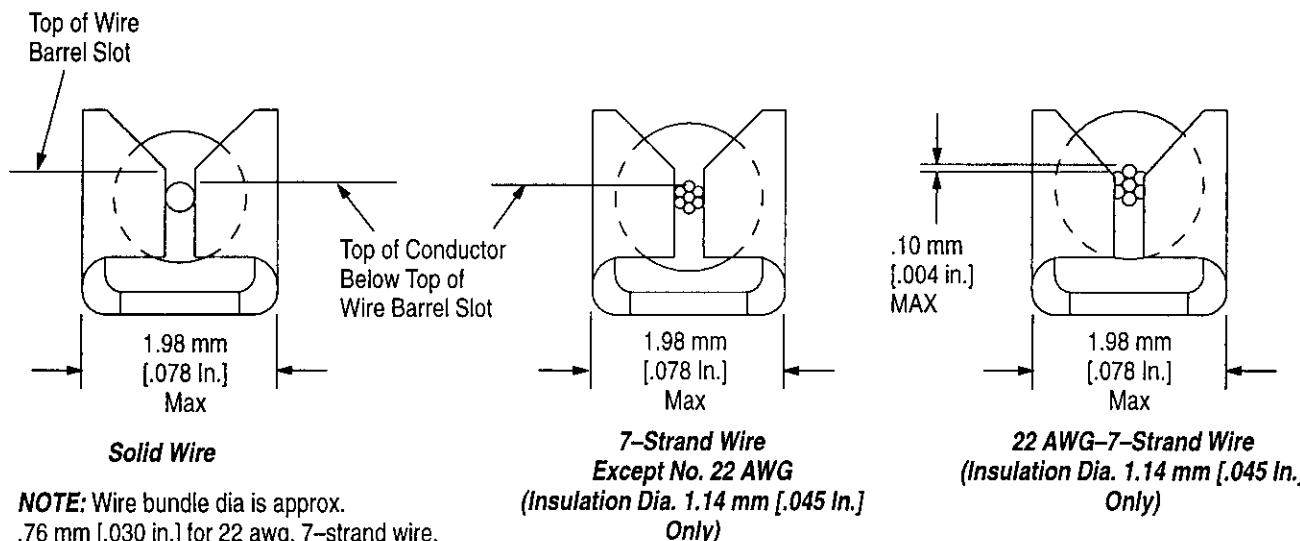
*The tape and constant force spring components contained within the 3 point pivot assembly may have sharp edges and also may unwind suddenly, without warning. To avoid personal injury, be sure to wear approved industrial safety glasses and handle the components with care.*

1. Remove the feed station assembly from the insertion station assembly and place on a work bench.
2. Move control knob to the right (away from the seating station) until the tape is fully exposed.
3. Flip the feed station upside down and remove the single screw that attaches the 3 point pivot to the guide tube. As the 3 point pivot is removed also slide the handle block from the guide tube.
4. With the slide plate facing up, remove the two screws that attach the slide plate to the 3 point pivot and carefully remove the slide plate.
5. Pull handle block away from the 3 point pivot and while holding onto both the tape and the constant force spring, remove the two screws that attach the tape and spring to the handle block.
6. Allow the tape and constant force spring to retract back into the housing.
7. Make note that the concave side of the tape faces to the inside. Then grasp long end of tape and pull tape free from the 3 point pivot.
8. Make note of which way the pusher is installed on the other end of the tape. Then remove the two pins, install the new tape, and replace the pins.
9. Insert free end of tape into 3 point pivot (concave side facing to inside) until tape advances around constant force spring and extends out beyond end of 3 point pivot.

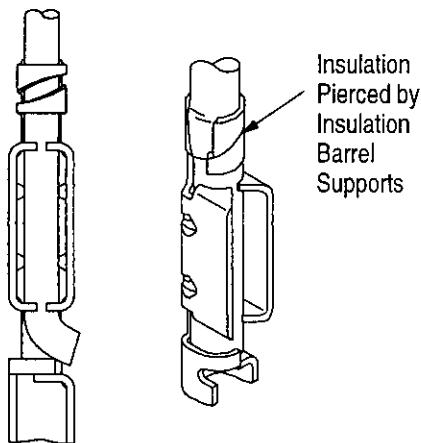
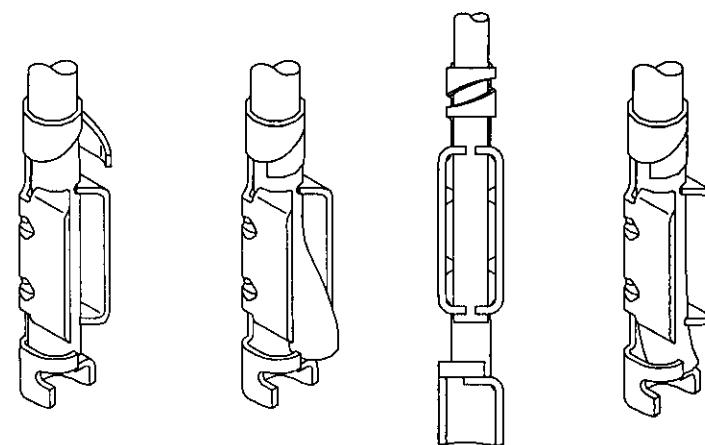


View A - A

Wire Insertion Depth



**NOTE:** Wire bundle dia is approx. .76 mm [.030 in.] for 22 awg, 7-strand wire.

**Acceptable****Unacceptable**

**NOTE:** Protruding wire may not impede contact insertion.

Figure 7

10. Secure tape and constant force spring to handle block using the two screws previously removed. Make certain that handle block is properly oriented.

11. Install slide plate (previously removed) onto 3 point pivot.

12. Install 3 point pivot onto guide tubing.

13. Install feed station onto insertion station.

14. Move control knob to the left and then to the right several times to verify smooth operation. Determine and correct any erratic condition.

## 7.2. Replacement Parts (Figure 9)

Tool specifications are provided in Figure 9. Customer-replaceable parts are listed on the assembly drawings packaged with the tool. A complete inventory can be stocked and controlled to prevent loss of production time when replacement of parts is necessary. Replacement parts can be ordered by contacting:

CUSTOMER SERVICE (38-35)  
AMP INCORPORATED  
P.O. BOX 3608  
HARRISBURG, PA 17105-3608

The tube feed assembly can also be returned to AMP for evaluation and repair. Send the tool with a written description of the problem to:

CUSTOMER REPAIR (01-12)  
AMP INCORPORATED  
1523 NORTH 4TH STREET  
HARRISBURG, PA 17102-1604

## 8. REVISION SUMMARY

Since the previous release, the following changes were made to this document:

Per EC 0990-0410-97:

- Added coverage for the new product guide (PN 679689-1) in Sections 2 and 3 and Figures 1 and 3
- Added coverage for the Feed Index Adjustment Screw in Sections 2 and 3 and Figure 3.
- Added Tape Replacement procedure in Paragraph 7.1 and added new Figure 8.

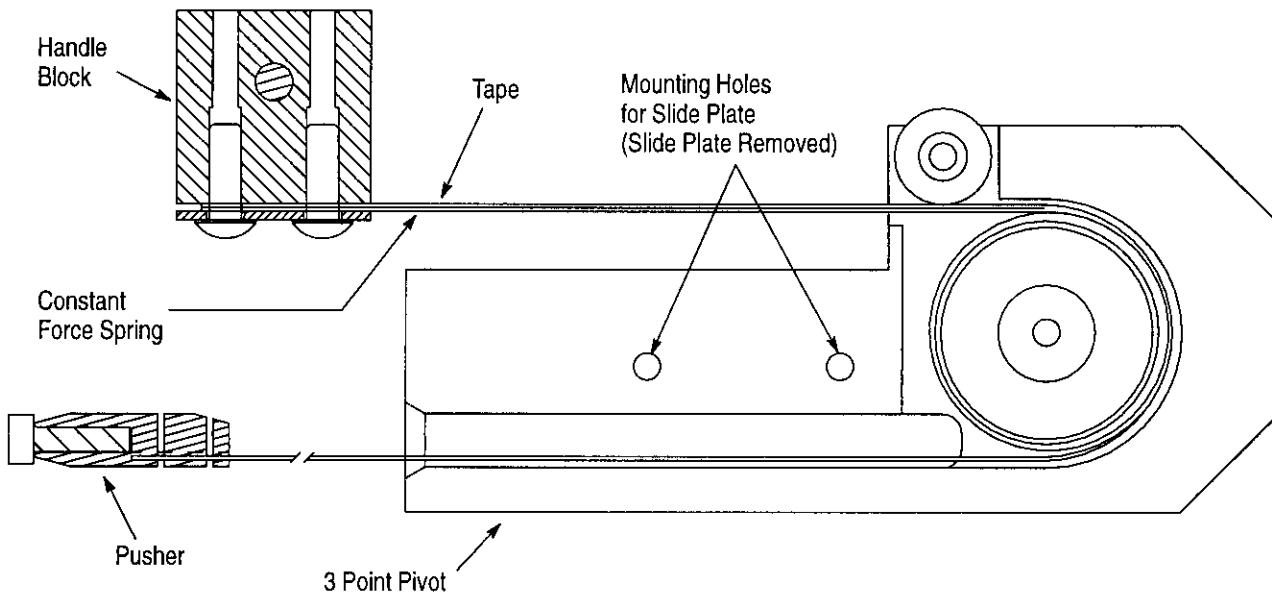
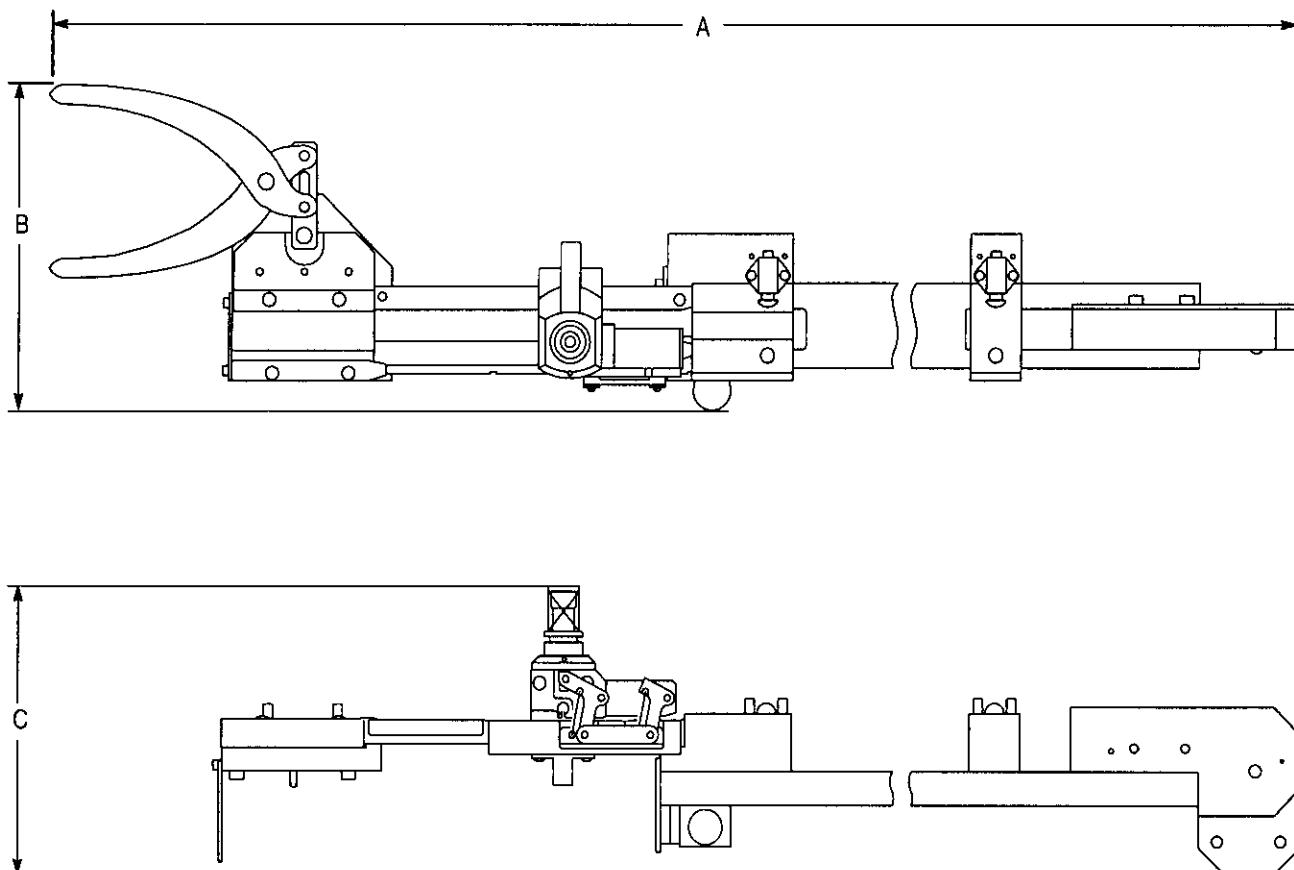


Figure 8



| MTE TUBE FEED ASSEMBLY | TOOL SPECIFICATIONS |                      |                     |
|------------------------|---------------------|----------------------|---------------------|
|                        | DIMENSIONS          |                      | WEIGHT              |
| 856675-1               | A                   | 1.04 m [40.75 in.]   | 2.04 kg<br>[4.5 oz] |
|                        | B                   | 154.43 mm [6.08 in.] |                     |
|                        | C                   | 134.11 mm [5.28 in.] |                     |

Figure 9

# Mouser Electronics

Authorized Distributor

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[856675-1](#)