

FIGURE 1

1. INTRODUCTION

This AMP Miniature Type Applicator is designed for applicator of Tablok Terminals to pre-stripped insulated wire. Although each Applicator is set up to accept a Strip of only one type of Terminal, the Tablok wire crimp can be easily adjusted to as many as four different heights while the insulation crimp height has eight different settings.

This Applicator is used in the Model "K" AMP-O-LECTRIC★ Press (Press No. 565435-5) equipped with a Mechanical Feed Actuating Mechanism that is required to operate the 3-Way Valve — a component of the Applicator — in time with the press cycle. Use this Applicator Instruction Sheet with the Exploded View Drawing and Parts List (packaged with the Applicator) in conjunction with the Customer Manual (CM 5128) for the Press.

2. APPLICATOR DESCRIPTION AND OPERATION

Major components of the Applicator are identified in Figure 1. The Press is ready for operation when the Applicator has been correctly installed as described in Section 3, and loaded with Terminals as described in Section 4.

The Ram Assembly is FULLY raised and the first Terminal is in the "target area" over the Anvil, when the Press is in the standby condition. In this state, air pressure is being applied to the retraction side of the Feed Cylinder through the Sleeve Valve and 3-Way Valve, to hold the Feed Finger in the advanced position. The 3-Way Valve is being actuated by the Valve Lever attached to the Press Feed Mechanism.

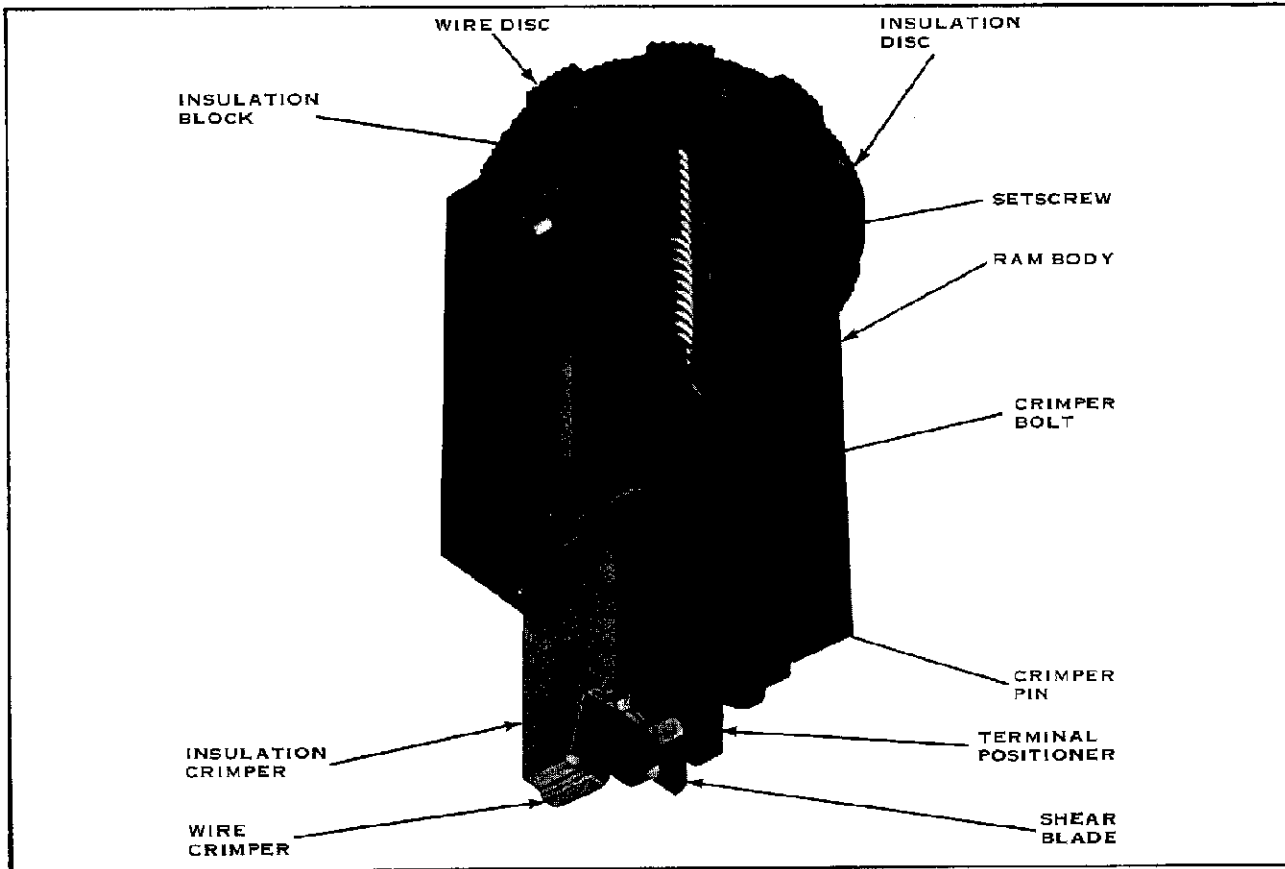


FIGURE 2

A pre-stripped wire is inserted in the open Tablok wire barrel of the Terminal, and the Foot Switch is depressed to start the Press cycle. As the Ram Assembly is driven DOWNWARD, the spring-loaded Terminal Positioner retains the Terminal to prevent movement during the crimping and shearing action that occurs as the Ram Assembly approaches the bottom of its stroke. At the beginning of the Ram's DOWNWARD stroke, the Feed Mechanism of the Press releases the 3-Way Valve and air pressure is transferred to the extension side of the Feed Cylinder, which retracts the Feed Finger to pick up the next Terminal. As the Ram Assembly completes its DOWNWARD travel, the Wire and Insulation Crimpers roll the open Tablok barrels around the wire and insulation and lock them into position at their respective preset crimp heights. At the same time the Shear Blade removes the connecting tab that joins the Terminal being crimped to the next Terminal on the Strip.

As the Ram Assembly begins its UPWARD stroke, the terminated Terminal is released for removal by the

Terminal Positioner. When the Ram approaches the FULLY raised position, the Feed Mechanism of the Press again actuates the 3-Way Valve. This diverts air pressure to the retraction side of the Feed Cylinder, causing the Feed Finger to advance the Terminal Strip ONE position, thus placing the next Terminal over the Anvil for the next cycle. There are two Flow Control Valves between the 3-Way Valve and the Feed Cylinder for the purpose of controlling the extension and retraction speed of the Feed Mechanism.

The Applicator Ram Assembly (See Figure 2) engages with the Press Ram. The top of the Ram Assembly contains a Wire Disc and an Insulation Disc. The Wire Disc has four pair of pads, with each pair being of a different height. By rotating this Disc, each pair in turn aligns with the two bosses on the Post Adapter to vary the Wire Crimper depth of stroke. The Insulation Disc has eight pads, each of a different height, which individually contact the Insulation Adjustment Block to effect a change of insulation crimp height in relation to Wire Crimper stroke.

The Wire Crimper is attached to the bottom of the Ram Assembly, in a preset position, by the Crimper Bolt and Pin. The Insulation Crimper, on the outside of the Wire Crimper, is also retained by the Crimper Bolt and Pin — but is free to move vertically in order to adjust the insulation crimp in relation to the wire crimp. The Crimper Bolt is also used to secure the Shear Blade in a fixed position on the inside of the Wire Crimper.

The Base Plate on the Press serves as a mount for the Applicator and supports the Hinge Bar and Anvil. The Hinge Bar contains the Anvil Insert, Shear Plates, Strip Guides, and Pressure Block. The Pressure Block holds the Anvil end of the Hinge Bar off the Base Plate so that the Hinge Bar deflects against spring tension when the Ram Assembly bottoms during the crimping action. Mounted on the Front Strip Guide is the spring-loaded Strip Drag, which applies drag to the Terminal Strip to prevent overfeed and pullback by the Feed Finger.

3. APPLICATOR INSTALLATION AND REMOVAL

3.1. Installation of Applicator in AMP-O-LECTRIC Press (See Figure 1)

1. Turn "off" and disconnect electrical power to Press to prevent accidental cycling.

NOTE

Refer to Customer Manual CM 5128 for identification of Parts pertaining to the AMP-O-LECTRIC Press.

2. Install Moveable Stop on back of Base Mount of Press if not already installed in this location.
3. Place Applicator on Base Mount, enter Ram Post in Press Ram, then slide Applicator into position against Stops.
4. Secure Applicator with Holddown Bracket and two Screws.
5. Loosen two Screws securing Reel Support to right side of Press enough to slide 3-Way Valve Bracket in between Support and Press Frame, then retighten Screws. Bracket should be vertical and air lines should be free of twists and sharp bends.

CAUTION

Before proceeding, MAKE SURE the Press is in the rest position and the Clutch is disengaged. This can be checked by opening the Flywheel Cover and manually turning the Flywheel in the proper direction.

6. Install the Valve Lever on the Feed Arm Drive Shaft of the Press with the Clamp to the outside. Before tightening the two Screws fully, align Lever with 3-Way Valve, then rotate angled surface of Lever against Valve Actuator enough to fully actuate the Valve. While holding in this position, tighten the two Screws.

7. Connect air supply to the Sleeve Valve. With Sleeve Valve OPEN, Feed Cylinder should be held in the retracted position by air pressure with the Press in the rest (standby) condition.

8. Hand-cycle Press through one complete cycle while closely observing the operation of the Applicator. Feed Finger should retract at the beginning of the DOWNWARD stroke and extend again as the Ram nears the end of the UPWARD stroke.

9. Load Applicator as described in Section 4, then repeat Step 8 while observing crimping action and feeding of Terminal Strip. Make any adjustments deemed necessary to the Applicator as described under Section 5, or to the Press as described in Customer Manual CM 5128.

10. Connect and turn "on" electrical power to the Press, then perform several test cycles under power to assure correct crimping action is taking place. Make any additional adjustments that may be necessary.

11. If Press is not to be used immediately, turn "off" electrical power and air supply.

3.2. Removal of Applicator from AMP-O-LECTRIC Press (See Figure 1)

1. Turn "off" and disconnect electrical power and air supply.
2. Loosen two Screws securing Reel Support and Valve Bracket, then slide Valve Bracket out. Lay Bracket Assembly aside, avoiding sharp twists or bends in air lines.
3. If Applicator is not to be reinstalled, remove Valve Lever from Feed Arm Drive Shaft of Press by removing two Screws.
4. Remove two Screws in Holddown Bracket, then slide Applicator FORWARD until Ram Post is clear of Press Ram, then lift from Base Mount.

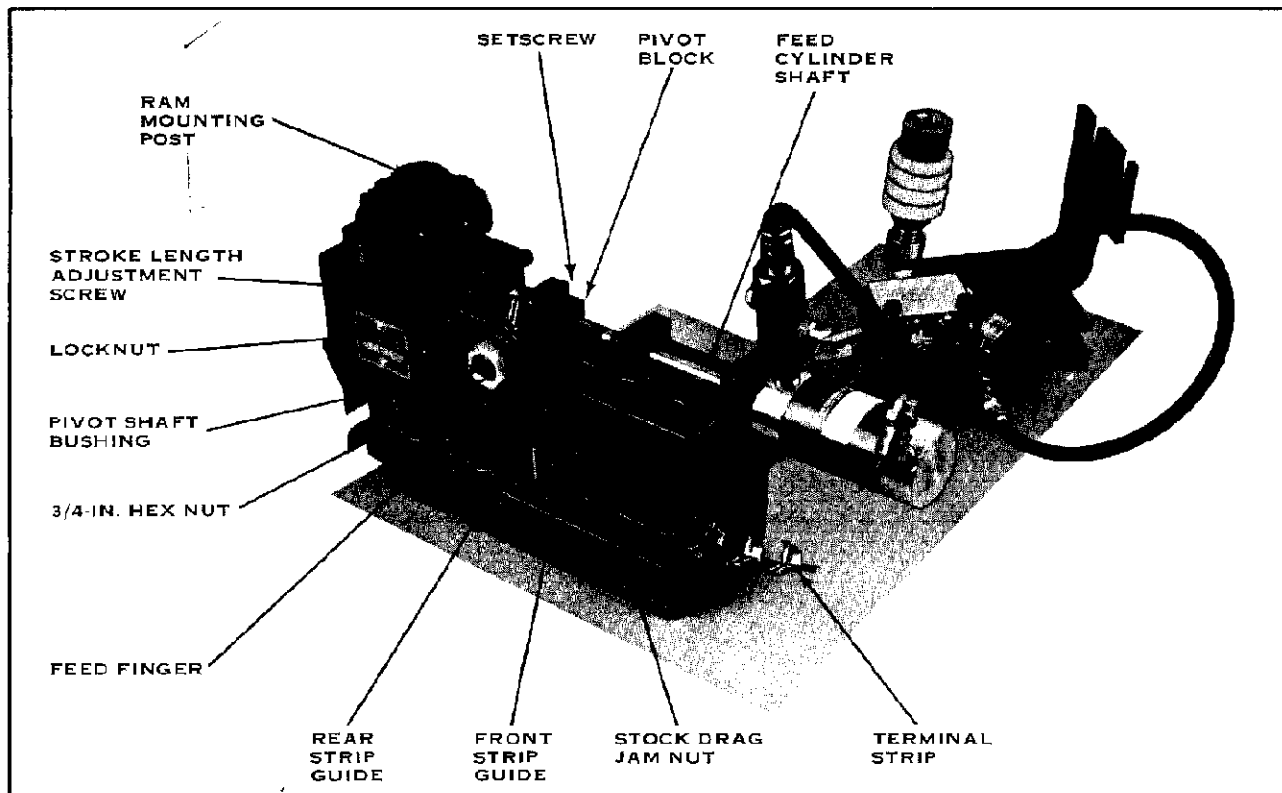


FIGURE 3

4. APPLICATOR LOADING AND UNLOADING

4.1. Terminal Strip Loading

CAUTION

Before attempting to load the Terminal Strip into the Applicator, MAKE CERTAIN the Applicator installed in the Press is for the particular Terminal to be applied. Compare the Terminal Number with the Number specified on the Applicator Data Plate.

1. Turn "off" and disconnect electrical power to the Press.
2. Make certain Ram Assembly is FULLY raised. If necessary, hand-cycle Press to obtain this condition. Refer to Customer Manual CM 5128 for hand-cycling.
3. Install Terminal Strip Reel on Reel Support so Strip will unreel and enter Applicator as shown in Figure 1. As viewed in the "target area", receptacle portion of Terminal must be to the RIGHT and the open Tablok barrel UP and to the LEFT.
4. Feed Terminal Strip into the Applicator, while pulling out on the Drag Release

Handle, until the FIRST (lead) Terminal has passed under the Feed Finger. Pull back slightly on Strip to make certain Feed Finger is properly engaged in Strip.

5. Refer to the Terminal Data Plate on the Applicator and select the pad letter (A, B, C, or D) for AWG (wire size) to be used, then rotate the Wire Disc on Ram Assembly to align pad letter with bosses on Press Ram Adapter. This will produce the correct wire crimp height for the wire size.

NOTE

If, after running several test cycles, wire crimp height is incorrect, then it will be necessary to adjust the Press Base Mount as described in Customer Manual CM 5128.

6. Rotate the Insulation Disc to align the number (1 thru 8) with top of Insulation Adjustment Block on Ram Assembly. Number 1 produces the loosest crimp and number 8 the tightest, a difference of approximately .070-inch which is a wide variation. Starting with number 1, increase one number at a time during test cycles until the desired insulation crimp height is obtained.

7. After making Insulation Crimp Adjustment, perform several test cycles and CLOSELY inspect terminations for the following:

a. Evidence of flashing, deformed crimps, bent terminals, or other defects caused by worn or broken Tooling. If necessary, replace Tooling as described under Paragraph 6.

b. If terminations appear normal, measure crimp height of each termination as described in IS 7424, packaged with the applicator. Crimp heights must agree with measurement specified on the Parts List for the particular wire size being used. Record and retain crimp height dimensions for reference.

c. If crimp heights are INCORRECT, remove applicator from Press and install an applicator that IS KNOWN to produce terminations of the CORRECT crimp height. Make several test cycles and repeat Step b. If crimp heights are INCORRECT for this applicator, the trouble is in the Press shut-height and may be corrected by referring to the appropriate Press Manual. If the crimp heights are CORRECT, then the trouble is in the original applicator. Refer to Crimp Height Repair under Paragraph 6.

8. Periodically during extensive operation, repeat Step 7 above to assure applicator is producing correct terminations.

4.2. Terminal Strip Unloading

1. Turn "off" and disconnect electrical power to the Press.
2. Turn "off" air supply to the 3-Way Valve.
3. Manually raise Feed Finger, then pull Terminal Strip back through Applicator while pulling out on the Drag Release Handle until Strip is clear. Rewind Terminal Strip onto Reel.

5. ADJUSTMENTS

5.1. Terminal Strip Feed Adjustment (See Figure 3)

The Terminal Strip Feed requires two separate adjustments. First, adjust the length of stroke. Second, adjust the advance limit of the Feed Finger. Make these adjustments as follows:

1. Disconnect electrical power to the Press, then turn "on" air supply.

2. With the Terminal Strip properly loaded into the Applicator as described in Paragraph 4.1., hand-cycle the Press several times while observing Feed Finger back-stroke to pick up next Terminal and the advancement of the Terminal Strip to place lead Terminal over the Anvil. The back-stroke must have sufficient, but not excessive, overtravel to assure pickup and the advancement must place Terminal so Shear Blade removes tab between lead Terminal and second Terminal WITHOUT deforming either Terminal.

NOTE

If the back-stroke is incorrect, proceed with Step 3, otherwise continue with Step 7 to correct positioning of Terminal over Anvil.

3. Slightly loosen 3/4-inch Hex Nut to permit movement of Pivot Shaft in slot.

4. Loosen Locknut on Stroke Length Adjustment Screw, then turn Screw IN to shorten stroke or OUT to lengthen stroke. Tighten Locknut to secure Screw.

5. Make certain Pivot Shaft Bushing is UP against Stroke Length Adjustment Screw, then tighten 3/4-inch Hex Nut.

6. Repeat Step 2 above, then Steps 3 thru 5 if necessary, to assure correct back-stroke. Changing stroke length may change position of Terminal advancement in which case continue with Step 7.

7. To adjust advancement limit of Feed Finger, loosen Setscrew on top of Pivot Block. To SHORTEN the forward limit, turn Feed Cylinder Shaft COUNTERCLOCKWISE. To LENGTHEN the forward limit, turn Feed Cylinder Shaft CLOCKWISE. Tighten Setscrew on top of Pivot Block to secure Shaft.

8. Repeat Step 2 above to assure correct advancement of Terminal. If necessary, repeat Step 7.

9. If lances on bottom of Terminal do not center on Anvil after making the above adjustments, adjust Strip Guides as described in Paragraph 5.2.

5.2. Strip Guides Adjustment (See Figure 3)

The Strip Guides must be parallel and allow free movement of Terminal Strip without excessive side clearance. The Strip Guides also control the centering of the Terminal over the Anvil. When necessary, adjust as follows:

1. Loosen Screws securing either or both Strip Guides.
2. Move Guide(s) in the desired direction, then tighten Screws.
3. Check Guides to be parallel and for freedom of movement of Terminal Strip without excessive side clearance.
4. With air supply turned "on", hand-cycle Press several times while checking for centering on Anvil. Repeat Steps 1 thru 3 if necessary.
5. Turn "off" air supply.

5.3. Stock Drag Adjustment (See Figure 3)

Stock Drag must be adjusted to apply enough drag to the Terminal Strip so it will stop at end of Feed Finger stroke and not pull back with Feed Finger. To increase drag, turn Jam Nut DOWN to apply more spring tension or UP to apply less spring tension.

6. APPLICATOR COMPONENTS REPAIR AND/OR REPLACEMENT

The following procedures cover Applicator components most commonly repaired and/or replaced due to wear. It is necessary to remove the Applicator from the Press as described in Section 3, prior to attempting any type of maintenance.

WARNING

ALWAYS MAKE CERTAIN electrical power to the Press is OFF and Electrical Plug is disconnected before attempting any type of maintenance on or around the Press. Disconnect air supply to 3-Way Valve.

6.1. Anvil Replacement

1. Under Applicator Base Plate, remove two Screws securing Anvil Mounting Plate.
2. Slide Anvil DOWN thru Anvil Insert to remove.
3. Install new Anvil using reversed procedure.

6.2. Anvil Insert and Front Shear Plate Replacement

1. Remove Guard from end of Applicator by removing two Screws.
2. Loosen Setscrew in end of Hinge Bar.
3. Lift Anvil Insert and Front Shear Plate up and out of Hinge Bar.
4. Install new Part(s) using reversed procedure.

6.3. Rear Shear Plate and Strip Guides Replacement

1. Remove Stock Drag from Front Strip Guide by removing two Screws.
2. Remove Front Strip Guide from Hinge Bar by removing two Screws and Washers.
3. Remove Rear Strip Guide from Hinge Bar by removing two Screws and Washers.
4. Lift and remove Rear Shear Plate from Hinge Bar.
5. Install new Rear Shear Plate and/or Strip Guide(s) using reversed procedure.
6. Adjust Strip Guides as described in Section 5.

6.4. Wire Crimper, Insulation Crimper, Shear Blade, and/or Terminal Positioner Replacement

1. Remove Ram Assembly from Applicator by pulling UPWARD.
2. To replace Insulation Crimper and/or Shear Blade, remove Crimper Bolt and Crimper Pin. Slide Insulation Crimper and Shear Blade out of Ram Assembly. Note orientation of Parts for installation of new Parts.
3. To replace Wire Crimper, first perform Step 2, then remove Screw at top of Wire Crimper and lift out. Note orientation for installation of new Part.
4. To replace Terminal Positioner, pull it out of Ram Assembly, being careful not to lose or distort Compression Spring. Note orientation for installation of new Part.
5. Install new Part(s) using reversed procedure.

CAUTION

MAKE CERTAIN Parts are oriented properly as noted during removal. Wire Crimper **MUST BE** squarely seated against Stop at top before top Screw is tightened.

NOTE

Rotate Wire Disc and Insulation Disc to other positions and when "click" of Detent Ball in each is heard, check for centering of letter or number on Insulation Adjustment Block.

6.5. Crimp Height Repair (Figures 2 and 3)

Beneath the Insulation Disc is a Laminated Washer which may break and/or compress causing the applicator to produce terminations at a greater crimp height than specified. To repair this situation, perform the following:

1. Subtract the specified crimp height from the average crimp height of those recorded and retained in Wire Crimp Adjustment under Paragraph 4. This will be the thickness of Washer(s) (Part No. 690125-1) to be ADDED under Insulation Disc.
2. Remove Ram Assembly from Applicator. Turn Ram Assembly upside down and secure Ram Mounting Post in a vice to retain in this position.
3. Loosen Setscrew in side of Applicator Ram securing Ram Mounting Post (See Figure 1), then unscrew Ram Body from Ram Mounting Post leaving Wire Disc and Insulation Disc in position.

CAUTION

DO NOT REMOVE Wire Disc and/or Insulation Disc from Ram Mounting Post. There are Detent Balls and Springs installed which will pop out and become lost if Discs are removed.

4. Install the thickness of Washer(s) on Ram Mounting Post as determined in Step 1. If necessary, replace with NEW Laminated Washer of a thickness equal to the OLD Washer plus the additional thickness determined in Step 1.
5. Install Ram Body on Ram Mounting Post and tighten by hand until snug.
6. Check to determine that numbers on Wire Disc and letters on Insulation Disc are properly aligned over Insulation Adjustment Block. The discs are retained in position by Detent Balls. If necessary, turn Ram Body back slightly until proper alignment is obtained then tighten Setscrew to secure Ram Mounting Post.

7. Remove Ram Assembly from vice install in applicator.
8. Install Applicator in Press, then make some test crimps and measure crimp height to assure Applicator is satisfactory before placing in operation.

7. CLEANING AND LUBRICATION

It is highly recommended that the Applicator be cleaned and lubricated after each eight hours of operation and each time it is removed from Press to be placed in storage.

7.1. Cleaning

1. Remove Applicator from the Press as described under Section 3.
2. Remove Ram Assembly from Applicator by pulling UPWARD.
3. Using a clean dry cloth and/or air hose, remove all evidence of dirt, chips, or other foreign matter from components. If desired, the entire Applicator can be submerged in a solvent to flush out chips, then dried with an air hose.

WARNING

An approved eye protection MUST BE worn when using an air hose.

4. Perform lubrication described in Paragraph 7.2. before reassembling.
5. Replace Ram Assembly in Applicator.

7.2. Lubrication

The Applicator components are to be lubricated at the following locations using S.A.E. No. 20 Motor Oil (non-detergent) or light grease, where specified.

CAUTION

DO NOT use an excessive amount of lubricant on Applicator. Any excess MUST BE removed prior to placing Applicator back in service.

1. With Ram Assembly removed, apply a thin film of grease to four sides of Ram and to Feed Cam after it has been thoroughly cleaned.
 2. Apply a few drops of oil to pivot points of Feed Finger.
 3. Apply a few drops of oil to Pivot Block Adjusting Screw and Feed Rod.
 4. When Ram Assembly is reinstalled in Applicator, remove any excess lubricant.
1. If a Terminal Strip is in Applicator, cut Strip just outside the Pressure Block.
 2. Remove Applicator from Press as described under Section 3.

NOTE

If Terminal Strip remains in the Applicator perform Step 3, otherwise perform Step 4.

8. APPLICATOR STORAGE**CAUTION**

When the Applicator is to be placed in storage or removed from the Press for an extended period of time, the following precautions should be carried out to prevent bottoming of the Ram Assembly which may cause damage to the tooling.

3. Bottom Ram Assembly to retain lead Terminal between Crimpers and Anvil. This will also identify the type of Terminal used in Applicator when reinstalled in Press.
4. Place a small block of wood or rubber on Anvil, then lower Ram Assembly to retain block.