

FIGURE 1

1. INTRODUCTION

The AMP Heavy Duty Miniature Quick-Change Dual Applicator (Side Feed Type) crimps two terminals, from two side feed terminal strips, to two pre-stripped wires — simultaneously. Each of these dual applicator units accepts the strip form of certain terminals, and these are identified on the applicator parts list/exploded view drawing (Applicator Log) for each applicator. The terminal number on the data plate is the terminal that was specified when the applicator was ordered. The applicator is capable of handling terminals with either single or dual carrier strips.

This instruction sheet, along with the parts list/exploded view drawing packaged with the applicator, and the appropriate customer manual (CM 5128 for the basic AMP-O-LECTRIC★ Press, or CM 5207 or CM 5289 for the Model "T" Press), provides all the information required to operate and maintain the applicator and press.

2. APPLICATOR DESCRIPTION

These side feed applicators feature a construction that is heavier and more rugged than previous models.

This allows them to withstand the higher crimping pressures required to crimp terminals to the larger wire sizes.

Although each applicator accepts only certain terminals, valuable flexibility is provided for their application. The wire crimp can be easily adjusted for as many as four different wire sizes, and the insulation crimp can be adjusted to accept eight different insulation diameters.

The main components of the applicators with mechanical feed are identified in Figures 1 and 2. The ram assembly is shown in detail in Figure 3.

These applicators apply two terminals, one to each of two wires, during each press cycle. There are two anvils mounted on the applicator, and each of the crimpers on the ram assembly has two crimping surfaces. Two terminal strips are fed into the applicator, one on top of the other, with the terminals of the top strip positioned over the spaces between the terminals of the bottom strip (the first terminal of the top strip must be over the space between the first and second terminals of the bottom strip).

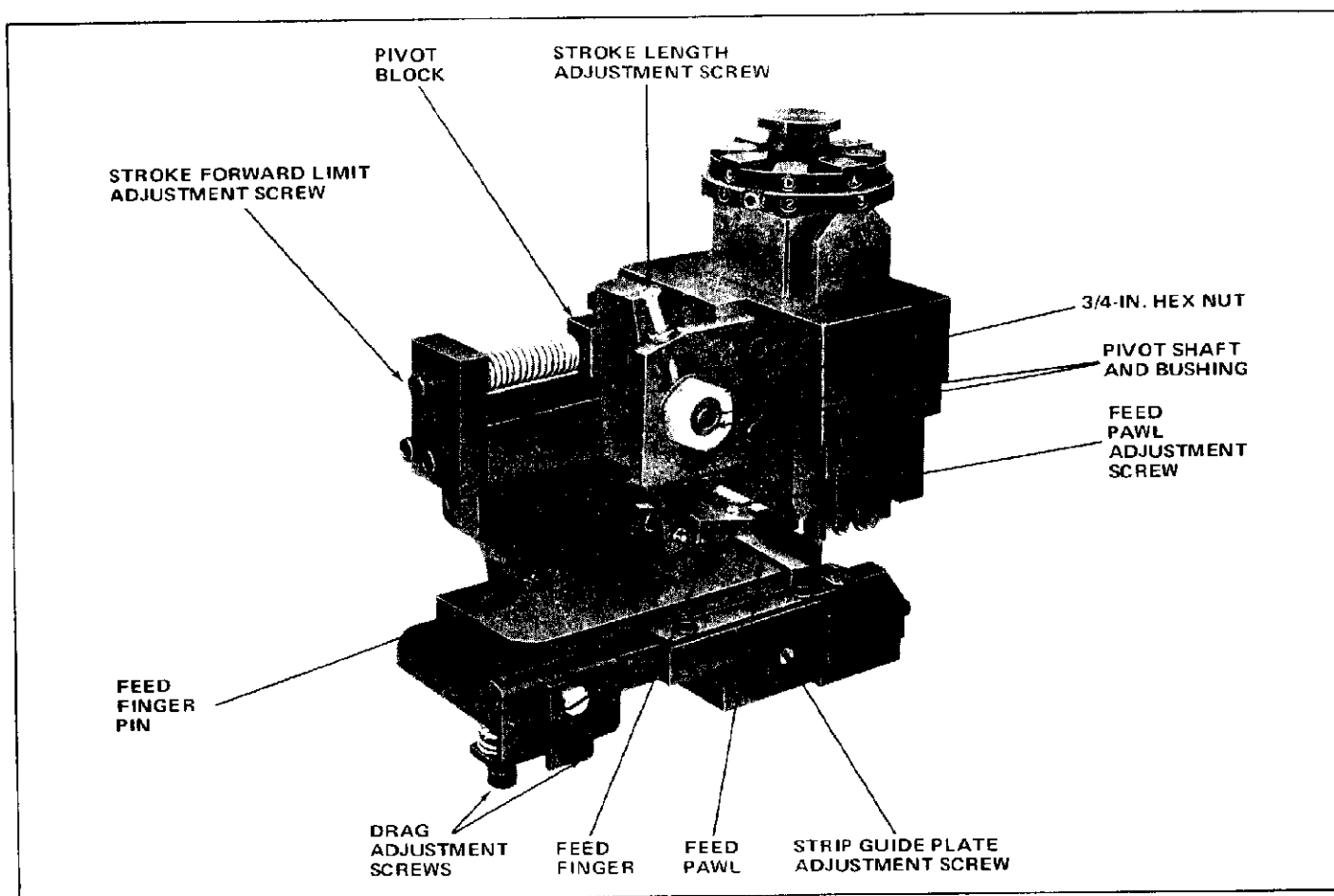


FIGURE 2

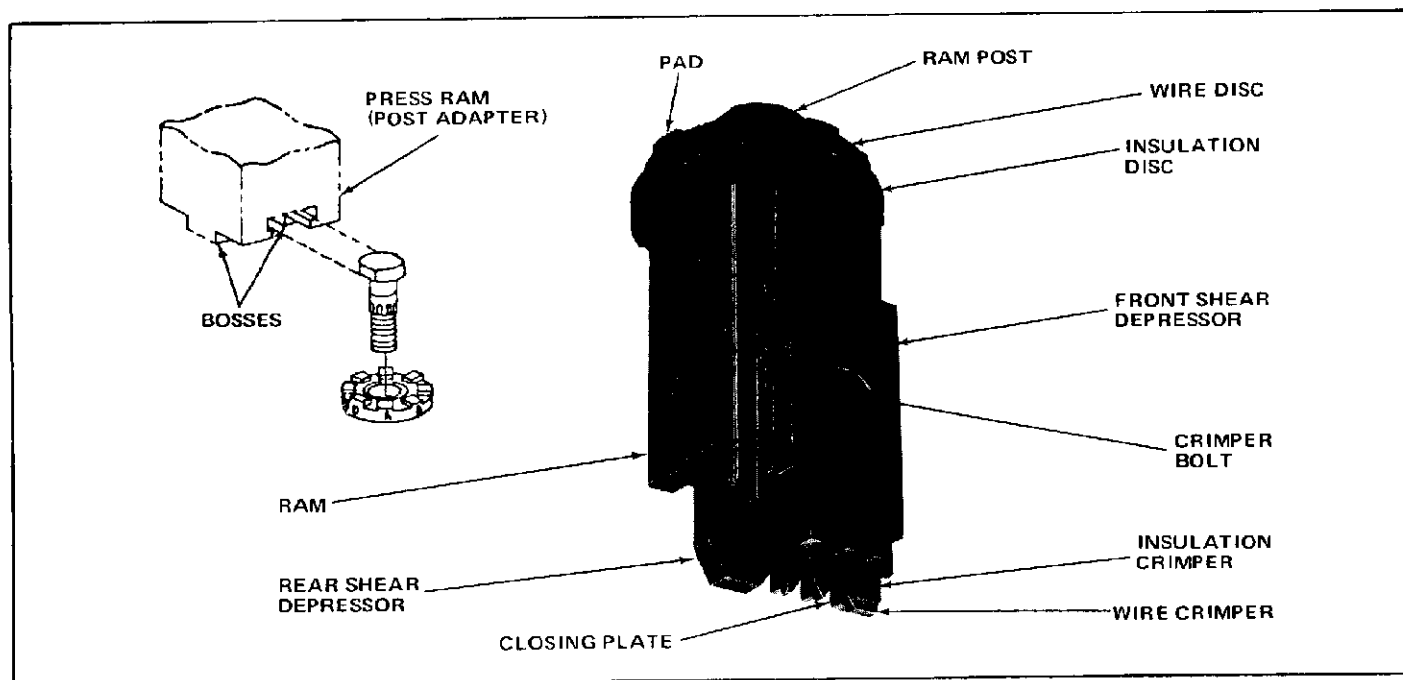


FIGURE 3

The feed holes on the carrier strips are placed so that both strips are advanced at the same time when they are arranged as described. When the press is cycled, the first terminal of the bottom strip is fed over the far (right) anvil, and the first terminal of the top strip is fed over the near (left) anvil.

The terminal strips are fed into the applicator with the "barrel end" (wire end) front and the open side up, between the front (outer) and rear (inner) strip guides. The feed pawl advances one terminal on each strip for each cycle of the press. The terminals are fed through action of the feed cam, and a series of rods and levers, which moves the feed pawl.

The ram post (also referred to as the ram mounting post) engages the post adapter of the press ram, and it is the press ram that actuates the applicator. Just below the ram post are the wire disc and the insulation disc. The wire disc has as many as four pairs of pads depending on the number of different wire sizes the terminals will accept. Each pair of pads has a different height.

By rotating the disc, each pair of pads can be lined up with the two bosses on the press ram post adapter to change the length of stroke of the wire crimper over the anvil. The insulation disc contains eight pads of different heights. When this disc is turned, the pads line up with the top of the insulation crimper to change the insulation crimp height.

The wire crimper is held in a preset position by two pins on the ram assembly and by the crimper bolt. The insulation crimper and the front shear depressor are also held by the crimper bolt. The insulation crimper is free to move up and down so the insulation crimp can be changed. The front shear depressor pushes the front floating shear down to cut the crimped terminal from the strip.

Terminals with dual carrier strips require a rear shear depressor, spacer, and terminal holder. These parts are attached to the feed cam side of the ram assembly. The rear shear depressor pushes the rear floating shear down to cut the terminal from the rear carrier strip, and the terminal holder keeps the terminal from rising during the crimping and shearing process. The rear floating shear and rear shear holder are mounted on the base plate.

The applicator's mounting surface is its base plate. The anvil, the front shear holder, the rear shear holder (if used), the terminal support, the strip guide adjustment block, and the applicator housing are mounted on the base plate. The strip guide plate is fastened to the strip guide adjustment block. The stock drag, the strip guide cover plate, and the front and rear strip guides are mounted on the strip guide plate.

Two lengths of feed cams are available for these applicators. The length of the feed cam to be used is determined by the length of the press stroke.

For example, a press with a 1 1/8-in. stroke **MUST** use an applicator with a **SHORT** feed cam, while a press with a 1 5/8-in. stroke **MUST** use an applicator with a **LONG** feed cam. Only the short cam is available in the **PRE-FEED** type, and only the long cam is available in the **POST-FEED** type. Only the **LONG POST FEED** type can be used in applicators installed in automatic equipment. The **POST-FEED** type cam advances the lead terminals over the anvils on the **DOWNWARD** stroke of the ram assembly, which leaves the anvils clear when the press is at rest. The **PRE-FEED** cam advances the lead terminals over the anvils on the **UPWARD** stroke of the ram assembly, so that terminals are over the anvils when the press is at rest.

3. APPLICATOR INSTALLATION AND REMOVAL

WARNING

Be SURE power to press is turned "off" or power cord is disconnected BEFORE installing or removing applicator.

CAUTION

With applicator in the press, NEVER attempt to cycle the press under power WITHOUT terminals properly loaded, as described in Section 4. The tooling may be damaged if this is done.

3.1. AMP-O-ELECTRIC Press

This press must be equipped with Press Conversion Kit No. 690675-2, to adapt it for use with the miniature applicators. Packaged with the kit is Applicator Instruction sheet AI 8022, which includes procedures for installation and removal of the applicator. Briefly, these procedures are as follows:

A. Installation

1. Turn "off" or disconnect power to press.
2. Install movable stop on left end of base mount for side-feed applicator.
3. Place applicator on base mount, insert ram post in press ram, then slide applicator into position against stops.
4. Secure applicator with holddown bracket and two screws supplied in kit. Location of holddown bracket differs for end-feed and side-feed applicators. Make certain it is located correctly.
5. Load applicator in accordance with Section 4.

6. Set wire disc and insulation disc for the wire gage to be used in accordance with the data plate on the applicator and/or the applicator parts list supplied with the applicator.

7. Adjust base mount for correct crimp height in accordance with the press manual (CM 5128).

8. Install side feed shroud and guard assembly.

B. Removal

1. Turn press "off" or disconnect power cord.

2. Unload the applicator as described in Section 4, remove hold-down bracket, and slide applicator away from stops on base mount until ram post is clear of press ram.

3.2. AMP Model "T" Press

A. Installation

1. Turn "off" or disconnect power to press.

2. Push IN release bar on quick-change base plate. Locking latch will pivot downward.

3. Place applicator on quick-change base plate, then slide it back until two notches engage stops at back of plate. At the same time, guide ram post into press ram post adapter.

4. Flip locking latch UP to secure applicator in place.

B. Removal

1. Turn press "off" or disconnect power cord.

2. Cut terminal strip one or two terminals from end of applicator.

3. Push IN release bar on quick-change base plate. Locking latch will pivot downward.

4. Slide applicator forward until clear of press ram.

4. APPLICATOR LOADING AND UNLOADING

4.1. Terminal Strip Loading

CAUTION

Before loading terminal strips in applicator, be SURE the installed applicator is the right one for the terminals to be applied. Compare terminal number on reels with numbers listed on applicator parts list.

1. Turn "off" or disconnect power to press.

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2. Be sure ram assembly is all the way up. If necessary, hand-cycle press to raise ram (refer to press manual).

3. Raise stock drag by turning drag release lever upward. Remove terminal strips left in applicator by grasping strips at the strip guide entry, raising the feed pawl, and pulling strips straight out of applicator.

4. With two reels of terminals installed on reel support, feed terminal strips into applicator between strip guides. One terminal strip should lay directly on top of the other, with the terminals of the top strip positioned over the spaces between the terminals of the bottom strip (the first terminal of the top strip must be over the space between the first and second terminals of the bottom strip). (See Figure 4). The feed holes of the front carrier strips must be aligned so both terminal strips can be fed at the same time.

CAUTION

Be SURE terminal strips enter strip guides with barrel (wire) end toward the front and the open side up.

5. Raise feed pawl and continue to feed terminal strips until the first terminal of the bottom strip is over the far (right) anvil. The feed pawl MUST engage the holes in BOTH carrier strips.

6. If terminals are POST-FED, lift feed pawl and pull the strips back until both anvils are clear (the first terminal of the bottom strip should be just to the left of the near, or left

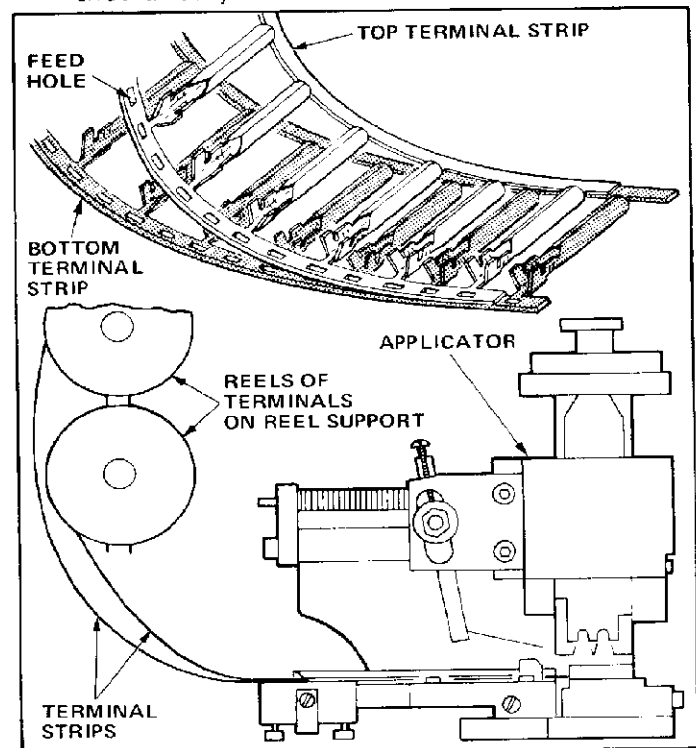


FIGURE 4

anvil). The lead terminals will then be moved over the anvils on the downward stroke of the ram assembly.

7. Turn drag release lever downward to lower the stock drag.

8. Be sure tip of feed pawl is in feed holes of BOTH carrier strips.

NOTE

Some carrier strips have additional holes which are not used for feed purposes.

9. Hand-cycle the press several times to make sure the applicator is properly adjusted as described in Section 5.

4.2. Terminal Strip Unloading

1. Cut terminal strip one or two terminals from end of applicator.

NOTE

Applicator should never be unloaded unnecessarily. Sections of terminal strip should always be left in the unit. Since it is not necessary to remove strip sections for cleaning, lubrication, or repair, they should only be removed as a part of the loading procedure.

2. If terminals are POST-FED, turn drag release lever upward to raise stock drag, lift the feed pawl and move the lead terminals over the anvils.

5. ADJUSTMENTS

5.1. Wire Crimp Adjustment

1. Select pad letter (A, B, C, or D) from data plate for AWG wire size to be used.

2. Turn wire disc (upper disc) to line up selected pad letter with **BOSSSES ON PRESS RAM POST ADAPTER**. This provides the proper crimp height for the given wire size.

3. After making the insulation crimp adjustment described in Paragraph 5.2, make several test cycles and inspect terminations **CLOSELY**.

a. Look for rough or sharp edges (flash) around crimped barrels, deformed crimps, bent terminals, or other defects caused by worn or broken tooling. If necessary, replace tooling as described in Section 6.

b. If terminals appear normal, measure the crimp height of each termination as described in Instruction Sheet IS 7424, packaged with the applicator. Crimp height must agree with measurement specified on parts list for wire size being used. Record crimp height dimensions for reference.

c. If crimp height is **INCORRECT**, remove applicator and install one that is

KNOWN to produce terminations of **CORRECT** crimp height. Make several test cycles and repeat Step b. If crimp height is **INCORRECT** for this applicator, the problem is the press shut height, and corrective information can be found in the appropriate press manual. If crimp height is **CORRECT**, the problem is in the original applicator, and corrective measures are presented in Paragraph 6.5, Adjustable Crimp Height Repair.

4. During extensive operation, periodically repeat Step 3 to make sure the applicator is producing correct terminations.

5.2. Insulation Crimp Adjustment

To adjust insulation crimp height, turn insulation disc (lower disc) to line up the number (1 through 8) with top of insulation crimper on ram assembly. No. 1 makes the loosest crimp and No. 8 the tightest, a difference of approximately .070 in. To find the insulation crimp you want, start with No. 1 and make test crimps. Increase the setting one number at a time until you get the proper insulation crimp height.

5.3. Terminal Strip Feed Adjustment

1. With terminal strips properly loaded, check position of lead terminals over anvils by actuating the applicator to move the feed pawl to the forward limit of its stroke. Lead terminals **MUST** be centered on anvils.

2. If the lead terminals are centered on the anvils, the forward limit adjustment is correct. Go on to Step 5. If **NOT** centered, continue with Step 3.

3. Loosen screw on top of pivot block (see Figure 2). Turn the stroke forward limit adjustment screw **COUNTERCLOCKWISE** to move the forward limit **TOWARD ANVIL**, or **CLOCKWISE** to move the forward limit **AWAY FROM ANVIL**. Tighten screw on top of pivot block.

4. Repeat Steps 1, 2, and 3 as required. When adjustment is correct, go on to Step 5.

5. Watch the feed pawl as the press is hand-cycled several times. It should have enough — but not too much — overtravel on the backstroke to pick up the next terminals.

NOTE

*At the end of its backstroke, the feed pawl should be at the back edge of the feed hole to be used. The backstroke **MUST NOT** be longer than this, or the feed pawl might not drop into the feed hole.*

6. If feed pawl stroke length is satisfactory, feed adjustments are complete. If not, continue with Step 7.

7. Loosen slightly the 3/4-in. hex nut, on side of applicator, to allow pivot shaft to move in slot (see Figure 2).
8. Loosen locknut on stroke length adjustment screw, and turn the screw **CLOCKWISE** to **SHORTEN** the backstroke or **COUNTERCLOCKWISE** to **LENGTHEN** the backstroke. Tighten locknut to secure screw.
9. Be sure pivot shaft bushing is **UP** against the stroke length adjustment screw. Tighten the 3/4-in. hex nut. Repeat Step 5 to check stroke length.
10. Repeat Steps 7 through 9 until stroke length is correct.

5.4. Strip Guide Plate and Feed Pawl Adjustments

This procedure moves the plate the strip guides are mounted on. Since the terminal strips are fed into the applicator between the strip guides, they are moved front and back over the anvil as the strip guides are moved.

The adjustment of the feed pawl to match any change in the position of the front strip guide is also described here.

The applicator need not be removed from the press for strip guide plate adjustment. The press ram should be in the raised position.

1. From bottom side of base plate, loosen the screw that holds the strip guide adjustment block to the strip guide plate.
2. With the **LEAD** terminals centered over anvils, wedge the feed pawl up to clear the front strip guide.
3. Turn strip guide plate adjustment screw **CLOCKWISE** to move strip guide plate **TOWARD REAR**, or **COUNTERCLOCKWISE** to move it **TOWARD FRONT**. The insulation barrels of the lead terminals should be as close as possible to the floating shears. Tighten screw to hold strip guide plate in position.
4. Loosen screw holding feed pawl to feed finger (feed pawl holder). Move feed pawl until its tip drops into slot in front strip guide. Retighten screw.
5. If necessary, reposition shear holder(s) as described in Paragraph 5.6.

5.5. Strip Guide Adjustment

This adjustment isn't used often, because it's only needed when the strip guides are not parallel to each other, or when there is a variation in strip width.

NOTE

The strip guides are correctly positioned on the strip guide plate when the applicator is built, and normally do NOT need adjustment. DO

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NOT use this procedure for front-to-rear positioning of the strip — refer to Paragraph 5.4, Strip Guide Plate and Feed Pawl Adjustments.

1. Wedge feed pawl up to clear the front strip guide, and loosen screws holding strip guides to strip guide plate.
2. Move the guides in the desired direction, and then retighten screws
3. Check the guides to be sure that they are parallel, and to see that the strips can move freely without too much side clearance.
4. Repeat Steps 1 through 3 as necessary.
5. Loosen screw holding feed pawl to feed finger (feed pawl holder). Move feed pawl until its tip drops into slot in front strip guide. Retighten screw.

5.6. Adjustment of Shear(s) and Shear Holder(s)

The applicator must be taken out of the press for this procedure. See Section 3 for removal instructions. The ram should be in the raised position.

NOTE

The front floating shear should be just far enough from the anvil to allow the shear to move freely up and down. If it is in this position, it shouldn't require adjustment. The rear shear is more likely to need adjustment because of possible differences in terminal strip widths.

1. With lead terminal centered over anvil, check to see if floating shear(s) cuts the terminal from the carrier strip(s) correctly. If necessary, make the following adjustment.
2. From bottom side of base plate, loosen two screws that hold shear holder to base plate.
3. Move shear holder and floating shear in the desired direction.
4. Retighten screws, and repeat Step 1.

6. REPAIR AND REPLACEMENT OF PARTS

These procedures cover the applicator parts which most often need repair or replacement because of wear. Remove the applicator from the press before doing any maintenance work. Refer to the parts list and exploded view drawing packaged with the applicator for identification of parts. Order replacements for parts used from spare parts stock, so that they will be available when needed.

WARNING

BEFORE taking the applicator out of the press, be SURE power to press is turned "off" or power cord is disconnected. The press ram should be in the raised position.

NOTE

Wipe parts with a clean, dry cloth as they are removed from the applicator. Then, when putting them back into the applicator, wipe mating surfaces with your fingers to make sure that all lint and other foreign matter have been removed.

6.1. Anvil Replacement

1. From bottom of base plate, remove screw that holds anvil to base plate.
2. Turn drag release lever upward, raise feed pawl, and pull strips back so the lead terminals are between strip guides.
3. Remove anvils from grooves in top of base plate.
4. Install anvils using reversed procedure. If a new anvil is needed, be sure that part number of the new anvil agrees with the number on the applicator parts list.
5. Re-align crimpers as described in Paragraph 6.3.

6.2. Floating Shear Replacement

NOTE

It is not necessary to remove shear holder(s) to replace floating shear(s). Before removing floating shear(s), note orientation for re-installation. The floating shears are spring-loaded, so be careful during removal.

1. Turn drag release lever upward, raise feed pawl and pull strips back so lead terminals are between strip guides.
2. Push down on the floating shear, then remove shear retaining screw from side of shear holder.
3. Slowly release pressure on floating shear. Compression spring will push it out of shear holder.
4. After removing floating shear, lift compression spring out of shear holder.
5. Inspect spring for damage and replace it if necessary. Refer to parts list for correct number.
6. Re-install floating shear(s) using reversed procedure. If installing new shear, be sure part number agrees with the number on the parts list.
7. Raise feed pawl and move lead terminals over anvils. Turn drag release lever down to lower stock drag.
8. Check shear holder adjustment as described in Paragraph 5.6.

6.3. Crimper Replacement

1. Remove ram assembly from applicator by pulling upward. It may be necessary to move feed finger to release ram assembly.
2. Remove crimper bolt which holds the front shear depressor, front shear depressor spacer,

tubular spacer, insulation crimper, crimper spacer, and wire crimper in place on the ram assembly. Note position of parts for re-installation.

3. Re-install parts using reversed procedure. The two holes in the upper end of the wire crimper **MUST** mate with the pins on the ram assembly. Tighten crimper bolt **ONLY** finger tight.

NOTE

*Insulation crimpers with legs of equal lengths, that are identical front and back, may be positioned with either side out. All other insulation crimpers **MUST** be positioned with part number facing the direction noted during removal. If new parts are used, be **SURE** part numbers agree with numbers on parts list.*

4. Put ram assembly back into applicator, and install applicator in press.

5. Lift feed pawl and pull terminal strips back until lead terminals are between strip guides.

6. Form a piece of heavy paper over anvils, then slowly hand-cycle press while watching alignment of crimpers with anvils. When ram assembly has reached bottom of stroke, carefully tighten crimper bolt. Crimpers **MUST** move freely over anvils after paper is removed.

6.4. Feed Pawl Replacement

1. Remove the adjustment screw which holds the feed pawl to the feed finger.
2. Replace feed pawl using reversed procedure. If new pawl is installed, be **SURE** the part number agrees with the number on the parts list.
3. Adjust feed pawl as described in Paragraph 5.4.

6.5. Adjustable Crimp Height Repair

Under the insulation disc is a laminated washer which may break or compress after extensive use. This could cause the applicator to produce terminations with a different crimp height than specified. To correct this problem, use the following procedure.

1. Subtract specified nominal crimp height from average crimp height recorded as a part of Paragraph 5.1, Wire Crimp Adjustment. This difference will be the thickness of washer(s) (No. 690125-1) to be **ADDED** under the insulation disc.

NOTE

Washer No. 690125-1 is a peel type, laminated washer consisting of five layers, with each layer being .002-in. thick.

2. Remove ram assembly from applicator, and loosen ram post locking screw in the side of applicator ram (see Figure 1).

3. Hold ram assembly with ram post pointing down, and unscrew ram from ram post, leaving wire disc and insulation disc in place. If necessary, the end of the ram post may be placed in a vise to free both hands for turning ram.

CAUTION

DO NOT REMOVE wire disc and insulation disc from ram post. Detent balls and springs will pop out and may become lost, if discs are removed.

4. Place washer(s) of thickness determined in Step 1 on ram post. If old washer is broken and must be replaced, measure thickness of broken washer with a micrometer. Add this measurement to amount to be added (determined in Step 1), and select new washer(s) of this thickness. Place new washer(s) on ram post.

5. Hold ram with hole facing downward, screw ram post into ram, and tighten by hand until snug.

6. Be sure letters on wire disc and numbers on insulation disc line up properly over the top of the insulation crimper. Discs are held in position by ball detents. If necessary, turn ram back slightly until the numbers and letters line up, then tighten ram post locking screw to hold ram post in position.

NOTE

Turn wire disc and insulation disc to other positions. When the "click" of the detent ball is heard, check for centering of letter or number over insulation crimper.

7. Put ram assembly back into applicator.

8. Install applicator in press, and make some test crimps. Measure crimp height, and check it against crimp height specified on applicator parts list. If crimp height is within specified tolerances, applicator may be placed in service. If not, repeat this procedure starting with Step 1.

7. CLEANING AND LUBRICATION

For best performance and minimum downtime, applicator should be cleaned, inspected, and lubricated after each eight hours of operation, and each time it is taken out of the press to be placed in storage.

7.1. Cleaning

1. Remove applicator from press.
2. Remove ram assembly from applicator by pulling upward. It may be necessary to move the feed finger to release the ram assembly.

NOTE

It is not necessary to remove the sections of terminal strip to clean the applicator.

3. Using a clean, dry cloth, remove dirt, chips, etc., from applicator. The entire applicator may be immersed in a suitable commercial solvent (one that won't affect paint or plastic) once a month to flush out chips.

4. Lubricate applicator as described in Paragraph 7.2 before re-assembling.

7.2. Lubrication

Lubricate the applicator after each eight hours of service at the following points with SAE No. 20 motor oil (non-detergent), or — where specified — light grease.

CAUTION

Do NOT use too much oil or grease on the applicator. Any excess lubricant MUST be wiped off before placing the applicator back in service. Do not put lubricants between the wire disc and insulation disc.

1. Take ram assembly out of applicator, clean ram and feed cam, and apply a thin coat of grease along each edge of the ram, and to the curved side of the feed cam.

2. Carefully lay the applicator on its side and put one drop of oil on the feed finger pin (see Figure 2). Wipe feed finger pin to remove excess oil.

3. Set the applicator upright and put a drop of oil on each of the following: the stroke forward limit adjustment screw, the feed rod (into which the adjustment screw is turned), and the bushing inside the 3/4-in. hex nut. *Wipe off excess oil.*

4. Put a drop of oil on the floating shear(s) in the shear holder(s).

5. Put the ram assembly back into the applicator, and wipe off excess oil or grease.

8. APPLICATOR STORAGE

CAUTION

When storing the applicator, or taking it out of the press for any reason, use the following procedure to keep the tooling from being damaged by bottoming of the ram assembly.

1. Cut terminal strips one or two terminals from end of applicator.

2. Take applicator out of press as described in Section 3. Clean and lubricate it as presented in Section 7.

3. Lower the ram assembly to hold lead terminals between crimpers and anvils. This will also identify the type of terminals to be used when the applicator is put back in service.