

# AMP

AMP INCORPORATED  
HARRISBURG, PA 17105

CUSTOMER HOTLINE  
1 800 722-1111

## AMP\* HD MINIATURE QUICK-CHANGE APPLICATORS 466516-6 AND 466516-7 FOR AMP 30 SERIES POWER LOCK CONTACTS

Applicator Instruction

# AI 8074

RELEASED  
9-21-89

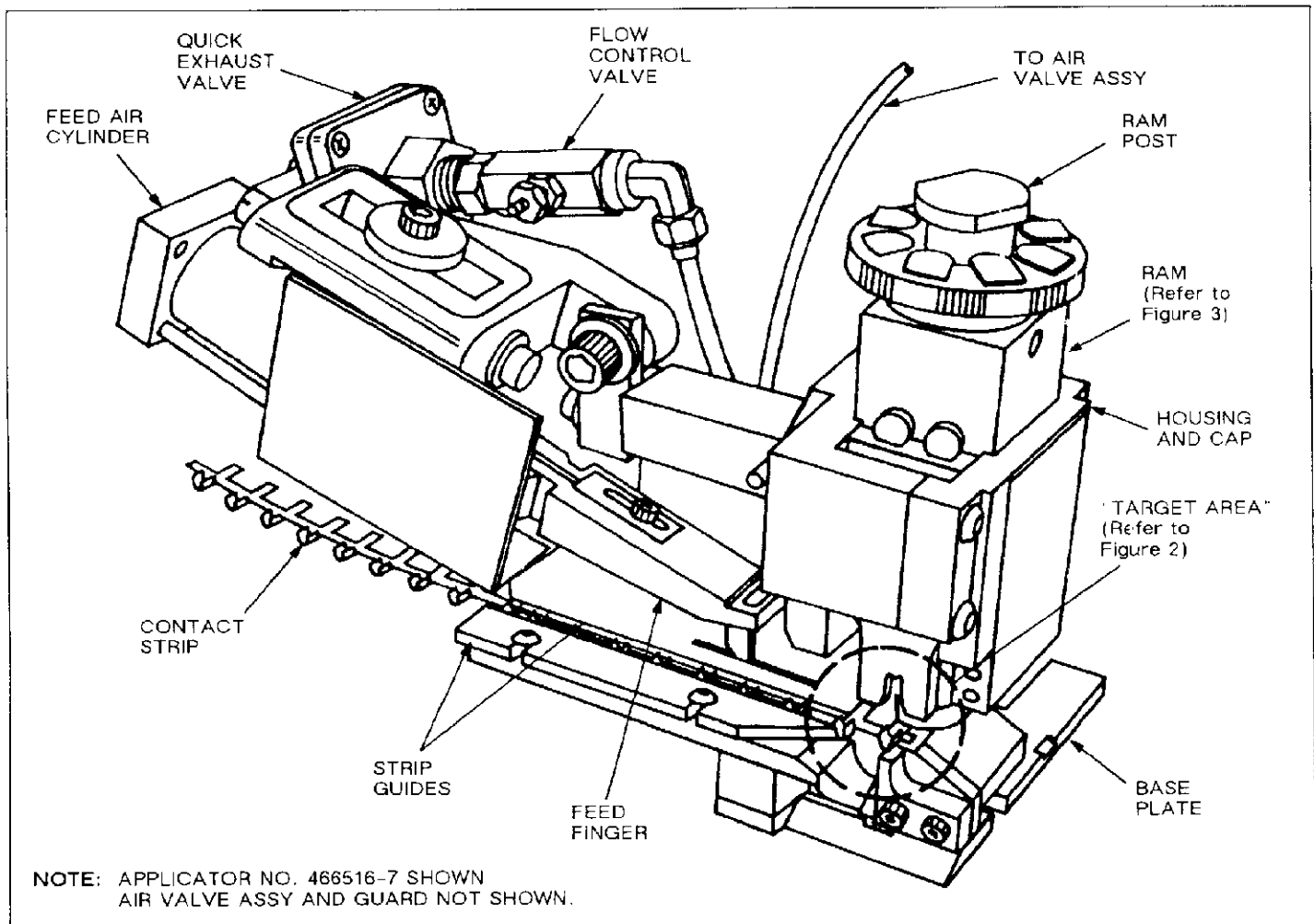


Fig. 1

## 1. INTRODUCTION

These instructions cover applicators that crimp AMP 30 Series Power Lock contacts onto No. 20 through No. 12 AWG stranded wire that has been pre-stripped.

Refer to AMP Instruction Sheet IS 2928 for the inspection requirements for crimped 30 Series contacts.

Contacts are retained on a carrier strip and supplied in reel form for feeding into the applicator "target area" where the carrier strip is sheared from the contacts as they are being crimped to the ends of the inserted wires. Refer to the Applicator Parts List and Exploded View Drawing (Applicator Log) supplied with each

applicator for the contact number(s), wire disc setting (pad letter A through D) per wire size, and the required crimp height.

Applicator No. 466516-6 is used in the AMPOMATOR\* CLS II machine and AMP Mini SELM (single end lead machine). Applicator No. 466516-7 is used in the AMP-O-ELECTRIC\* Model "K" Terminating Machine No. 565435-5 and others converted for miniature quick-change applicators.

This instruction sheet, the parts list and exploded view drawing supplied with the applicator, and the customer manual (CM) supplied with the machine provide all the information necessary to operate and maintain the applicator and the machine in which it is installed.

NOTE: APPLICATOR NO. 466516-7 SHOWN.

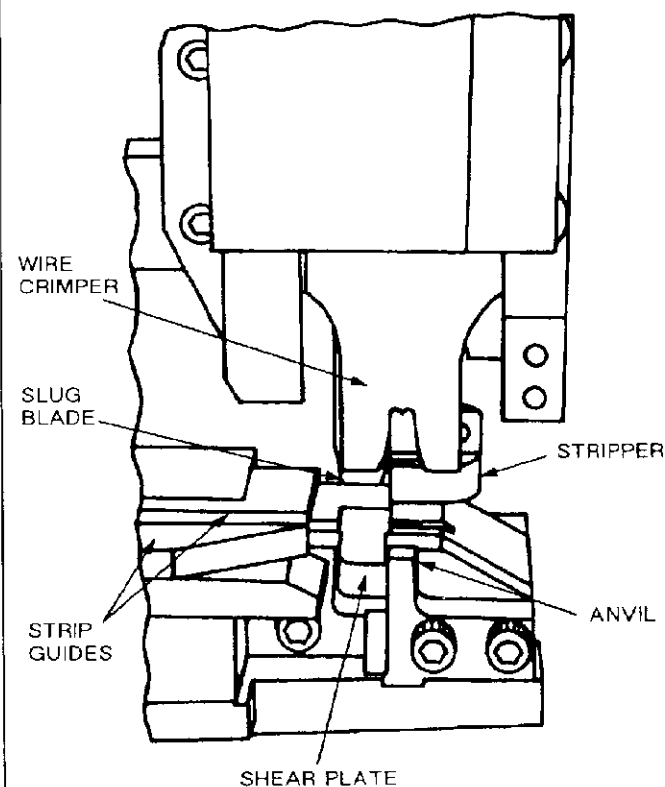


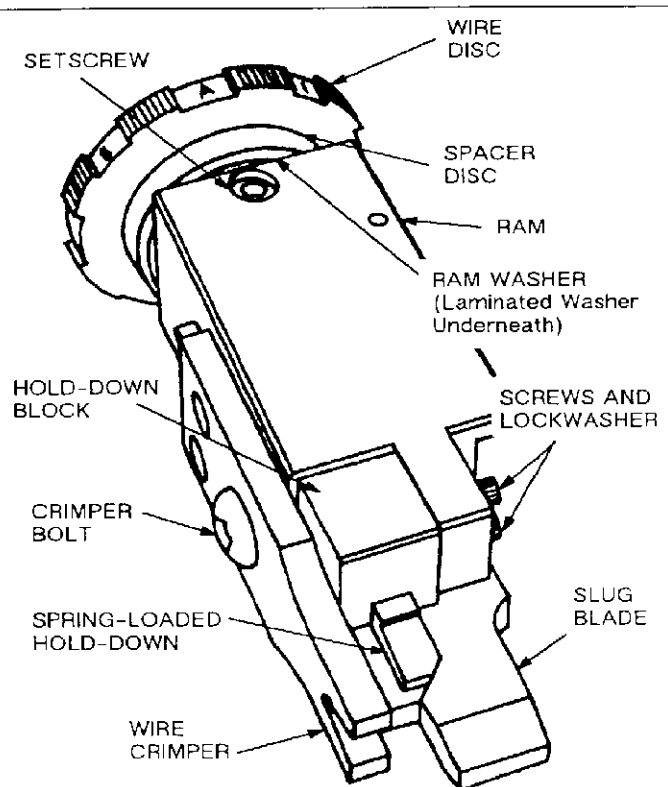
Fig. 2

## 2. DESCRIPTION

Major components of the applicators are identified in Figures 1 through 3. The strip enters the applicator from the left, passing through under the stock drag (see Figure 5) and between the strip guides mounted on the the strip guide plate. The lead contact is always positioned over the anvil at the beginning of each machine cycle. This requires air pressure (90 to 100 psi) to be applied to the extension port of the feed air cylinder.

On the downward stroke of the machine ram, air pressure to the feed cylinder is shut off by the air valve subassembly to allow the feed air cylinder to retract by internal spring pressure, and to exhaust the air within. At this point the feed finger picks up the next feed point in the contact carrier strip.

As the ram fully bottoms, and with the pre-stripped wire inserted in the lead contact in the "target area," the contact is crimped by the crimper to produce the correct crimp height. At the same time, the spring-loaded hold-down retains the contact as the slug blade enters the shear plate to shear a section of the carrier strip between the lead and second contacts.



NOTE: RAM FOR APPLICATOR NO. 466516-7 SHOWN.

Fig. 3

On the upward stroke of the ram the terminated contact is released for removal from the "target area," and the feed air cylinder is again pressurized to advance the feed finger and position the next contact over the anvil to complete the cycle. A stripper ensures that the terminated contact is released from the crimper.

The applicator ram supports the upper tooling, which consists of the wire crimper attached by the crimper bolt, the slug blade, and the spring-loaded hold-down. On Applicator 466516-6, a wire guide is also attached by the crimper bolt. The purpose of the wire guide is to assist in positioning the wire in the contact barrel on automatic machines.

The top of the ram contains the ram post that connects to the machine ram. On the post is the wire disc containing four pair of pads (A through D), each pair of a different height. Rotation of the wire disc to align a pair of pads with the lobes on the machine ram will produce the desired crimp height. Under the wire disc is a disc spacer, ram washer, and a laminated washer. The laminated washer provides a means of fine adjustment (to compensate for machining tolerances within the applicator) to produce the correct crimp height in machines having a fixed or preset shut height.

The applicator mounting surface is the base plate which supports the applicator housing, the base block containing the anvil and shear plate, and the strip guide plate which holds the strip guides and stock drag. The stripper is attached to the applicator housing.

The air feed mechanism is mounted on the left side of the applicator housing. It comprises the feed air cylinder, feed adjustment bracket, feed finger, and related hardware.

Supplied with applicator No. 466516-7 is a valve assembly consisting of a quick exhaust valve, flow control valve, on-off valve, and related hardware for attaching it to the machine. Included is a sleeve valve to shut off the air supply when not in use.

### 3. APPLICATOR INSTALLATION AND REMOVAL

#### **ANGER**

*BEFORE attempting to install or remove applicator, BE SURE that electrical power and air supply are "off."*

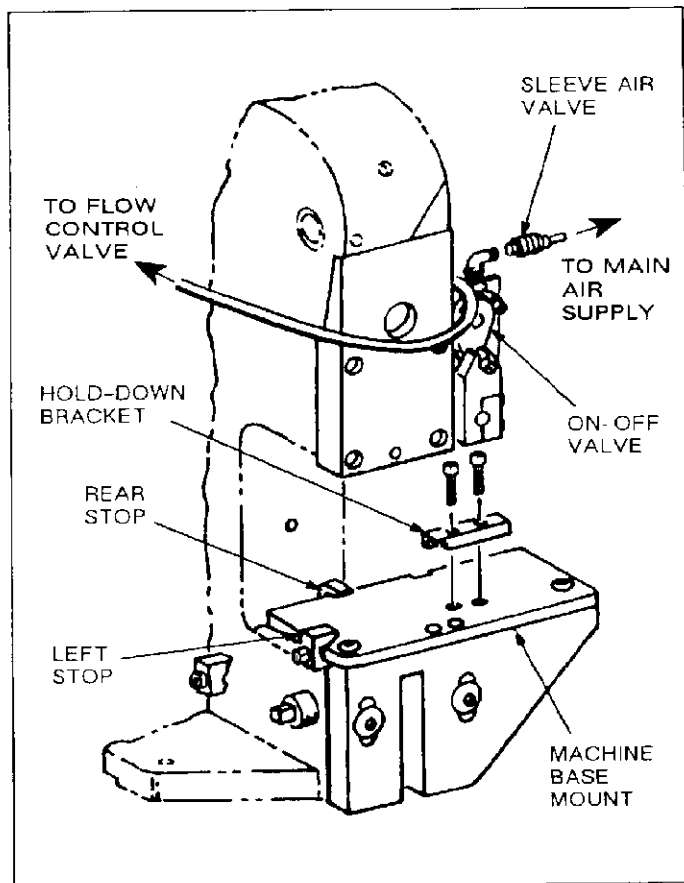


Fig. 4

### 3.1. Installation (Figure 4)

1. Place applicator on machine base mount.

#### **NOTE**

*Machine must be equipped with a base mount for miniature quick-change applicators.*

2. Insert applicator ram post in machine ram while sliding applicator back into position.

#### **NOTE**

*It may be necessary to loosen the stop on the mount during placement.*

3. Secure applicator with hold-down bracket and screws. Tighten stop on base mount if loosened.

4. If applicable, install valve assembly on machine and adjust as described in Customer Manual CM 5128.

#### **NOTE**

*Only Applicator No. 466516-7 has valve assembly and related hardware. CM 5128 is the customer manual for the AMP-O-LECTRIC Model "K" terminating machine.*

5. Load applicator with contact strip as described in Section 4.
6. With machine in rest position (ram at top dead center), and with electrical power "off," turn air supply "on." Feed air cylinder must fully extend and position lead contact in "target area."
7. Make any adjustments necessary as described in Section 5.
8. If applicable, install guard to enclose applicator and valve assembly BEFORE operating machine under power.

### 3.2. Removal (Figure 4)

1. Remove guard enclosing applicator and valve assembly.
2. Unload contact strip from applicator as described in Section 4.
3. Disconnect tubing between on-off valve and flow control valve, or remove valve assembly as described in Customer Manual CM 5128.
4. Remove screws and hold-down bracket securing applicator to machine base mount.
5. Slide applicator toward front of machine until ram post is clear of machine ram, then lift applicator out.

**NOTE**

If applicator is not to be re-installed immediately, prepare it for storage as described in Section 8 of this sheet.

#### 4. CONTACT STRIP LOADING AND UNLOADING

**DANGER**

BEFORE attempting to load or unload contact strip, MAKE SURE that electrical power and air supply are "off."

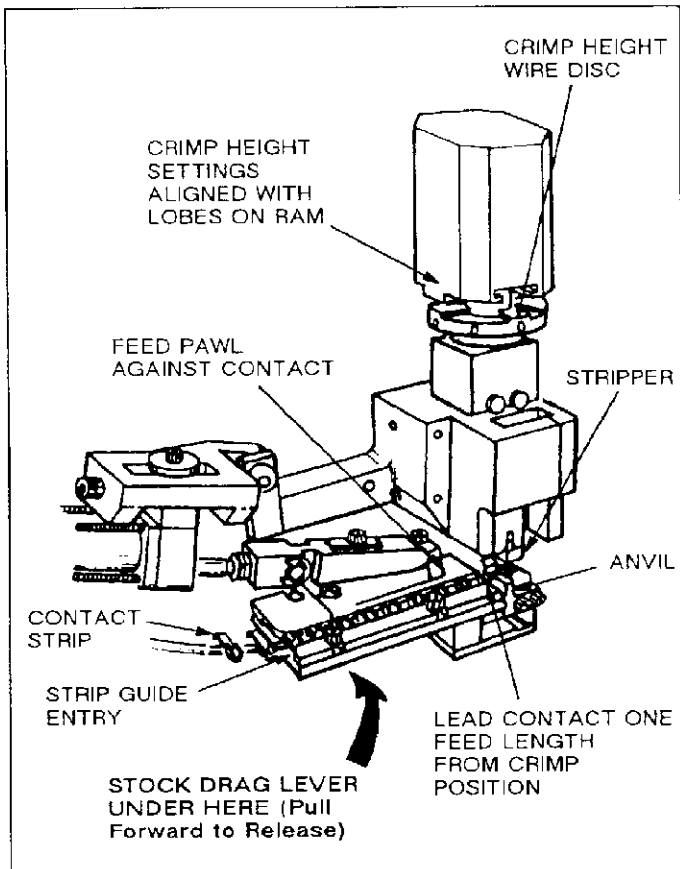


Fig. 5

##### 4.1. Loading (Figure 5)

1. Mount product reel on reel support and secure with reel flange. Strip must unreel and enter applicator with wire barrel toward the front and the open "U" up.
2. Make sure the machine ram is fully raised. If necessary, hand-cycle the machine as described in the customer manual for the machine.
3. Manually raise and hold stock drag while feeding contact strip into applicator between strip guides until lead contact is one increment away

from "target area." After releasing stock drag, pull back slightly on strip to make sure feed finger is engaged in feed point.

4. Turn air supply "on," then make sure lead contact is centered over anvil after being advanced by feed finger. If not, make adjustments as described in Section 5.

5. Adjust wire disc for proper crimp height as indicated in AMP Instruction Sheet IS 2928. Wire disc adjustment settings are also indicated on the metal plate on the applicator. Letters (A through D) must align with lobes on machine ram.

**NOTE**

Crimp height of product, after termination, is measured in accordance with AMP Instruction Sheet IS 7424 packaged with the applicator.

##### 4.2. Unloading (Figure 5)

1. Make sure the machine ram is fully raised. If necessary, hand-cycle the machine as described in the customer manual for the machine.
2. Raise and hold the feed finger while pulling the contact strip back through the strip guides. It may be necessary to manually raise and hold stock drag, too.
3. Rewind contact strip onto reel to prevent distortion.

#### 5. ADJUSTMENTS

**DANGER**

BEFORE attempting to make any adjustments, MAKE SURE electrical power and air supply are "off," unless otherwise specified.

##### 5.1. Contact Strip Feed Adjustment (Figure 6)

If one cutoff leg of the contact is shorter than the other, and contact is not centered on the anvil when advanced, refer to AMP Instruction Sheet IS 2928 (provided with the reel of contacts) and perform the following:

1. With the electrical power "off," remove guard to gain access.
2. With the ram fully raised, turn air supply "on" to fully advance feed finger, and place a contact over anvil.
3. Pull back slightly on contact strip to make sure that feed point is against feed finger.

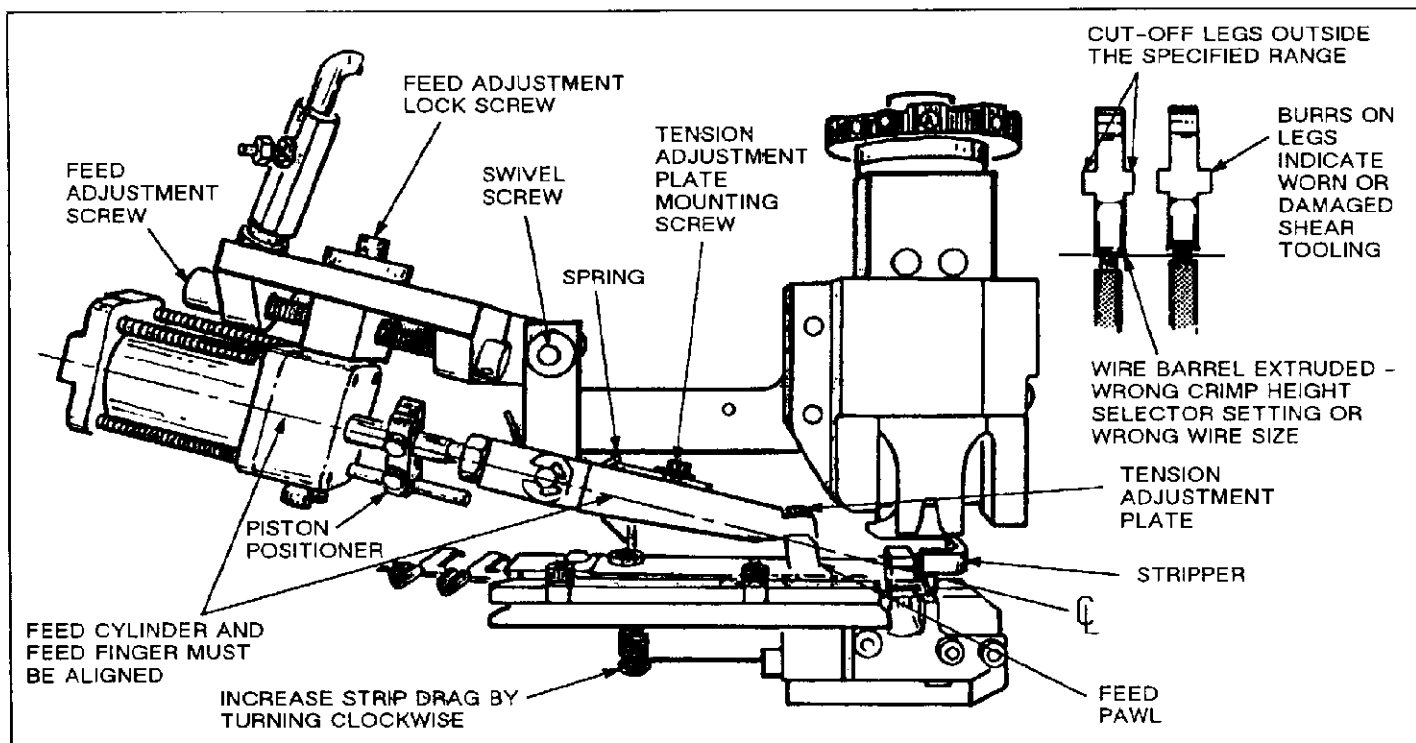


Fig. 6

4. Determine the direction of adjustment required.

5. Slightly loosen feed adjustment lock screw.

6. To advance contact strip, turn feed adjustment screw counterclockwise. To retract contact strip, turn feed adjustment screw clockwise while pulling back on strip. Do not turn screw more than a few degrees between test cycles.

7. Tighten feed adjustment lock screw after each adjustment. Repeat this procedure if cutoff legs on each side of contact are not equal. See detail on IS 2928.

3. Turn the air supply "on" to advance feed finger.

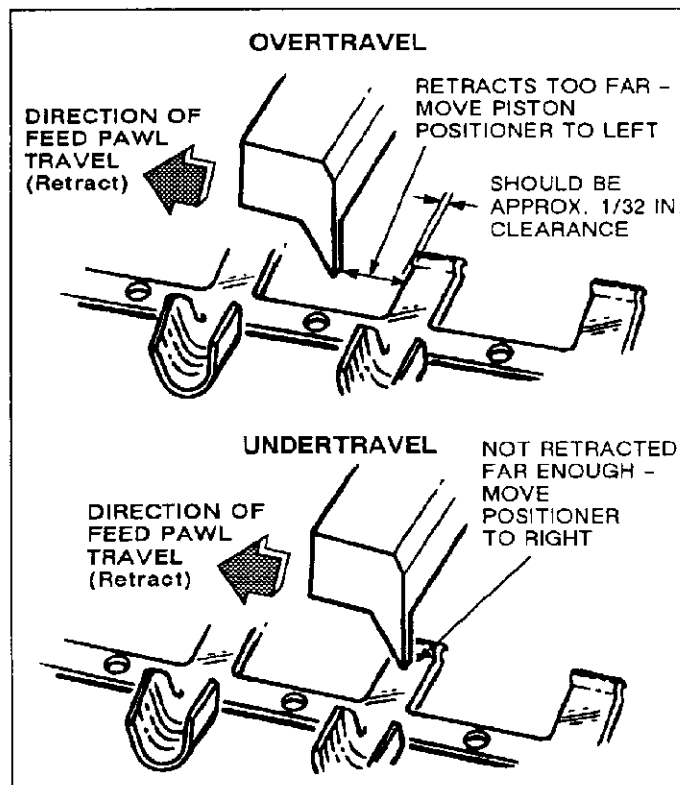


Fig. 7

## 5.2. Feed Stroke Adjustment (Figure 7)

During retraction of feed finger, the feed pawl should have approximately 1/32 in. overtravel from the feed point on the contact strip. If adjustment is required, perform the following:

1. With the electrical power and air supply "off," remove guard to gain access. This will allow the feed finger to retract by internal spring pressure.

2. With lead contact centered over anvil, determine the direction of adjustment required (overtravel or undertravel), and the amount.

4. Loosen the two screws in piston positioner as shown in Figure 6.

5. For overtravel, move the piston positioner toward the cylinder, or for undertravel, move it toward feed finger. The distance should be equal to that determined in Step 2. Tighten screws after making adjustment.

6. Check adjustment by turning air supply "on" and "off." If necessary, repeat this procedure. Replace guard after completing adjustment.

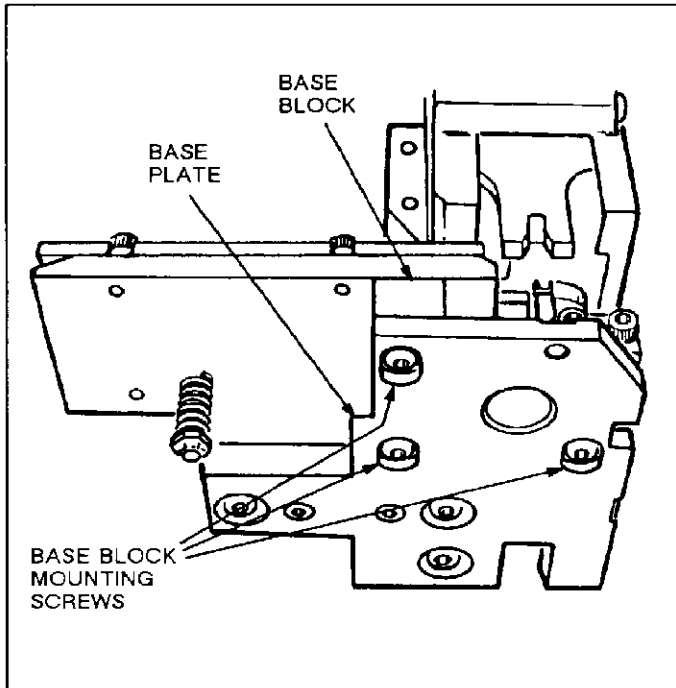


Fig. 8

### 5.3. Contact Bellmouth Adjustment (Figure 8)

No bellmouth should appear at front of contact wire barrel. If necessary, adjust as follows:

1. Remove applicator as described in Section 3.
2. Turn applicator over and loosen the three base block mounting screws securing the base block to the base plate.
3. If bellmouth exists, move base block toward front of applicator on base plate. If crimper overlaps front of wire barrel, move base block back on base plate. Feed pawl should be lifted out of slot while making adjustment.
4. Tighten screws to secure base block to base plate after adjustment.

5. If feed pawl does not freely enter slot in rear strip guide, perform adjustment described in Paragraph 5.4.

6. Install applicator as described in Section 3, then run several test cycles to check bellmouth. Repeat this procedure if necessary.

### 5.4. Feed Pawl Adjustment (Figure 6)

The feed pawl should enter the slot in the rear strip guide freely. If not, loosen the screw securing feed pawl to feed finger and move front or back as required, then tighten screw.

### 5.5. Stripper Adjustment (Figure 6)

The purpose of the stripper is to clear the crimper of the terminated contact before the next contact is advanced over the anvil. The stripper on Applicator No. 466516-6 is not adjustable. Adjust stripper on Applicator No. 466516-7 as follows:

1. With electrical power and air supply "off," remove guard to gain access.
2. Hand-cycle machine to bottom ram as described in the customer manual supplied with the machine.
3. Loosen the screw securing the stripper to the applicator housing.
4. Move the stripper front or back to allow approximately 1/32 in. clearance between it and the crimper. Tighten screw after making adjustment.
5. Continue hand-cycling to return ram to the fully raised position, then install guard.

### 5.6. Feed Air Cylinder Angle Adjustment (Figure 6)

The feed cylinder must be aligned with the feed finger as shown by the centerline. If not, loosen the swivel screw and move cylinder up or down as required, then tighten screw.

### 5.7. Strip Drag Adjustment (Figure 6)

The drag must apply sufficient pressure to the contact strip to prevent strip pull-back when the feed finger is retracted. To increase drag, tighten locknut to increase spring pressure on drag.

## 5.8. Feed Finger Spring Tension Adjustment (Figure 6)

If the spring tension is not great enough on the feed finger, the finger will not drop quickly enough behind the contact strip feed point. Increase tension by loosening screw in adjustment plate, then move plate toward the air cylinder. Tighten screw after making adjustment.

## 5.9. Strip Guide Adjustment (Figure 1)

This adjustment method should never be required unless there is a variation in the width of the contact strip, or strip guides are not parallel. To adjust, perform the following:

1. With electrical power and air supply "off," remove guard to gain access.
2. Wedge feed finger up to clear rear strip guide.
3. Determine if front or rear strip guide should be adjusted. BOTH strip guides MUST BE parallel with the front edge of strip guide plate.
4. Unload contact strip as described in Section 4.
5. Using a piece of contact strip as a gauge, loosen screws securing strip guide to plate, then adjust strip guide as required to be parallel with other guide, and to obtain minimum clearance without binding.
6. After adjustment, tighten screws to secure strip guide to plate.
7. If feed pawl does not enter rear strip guide freely, adjust feed pawl as described in Paragraph 5.4.

## 6. REPAIR AND REPLACEMENT

The following procedures cover applicator parts which most often require repair or replacement because of wear or damage. Recommended spares are the customer's responsibility to stock and replace. Refer to the applicator parts list and exploded view drawing packaged with the applicator.

### CAUTION

*Remove applicator from machine as described in Section 3, BEFORE attempting to make repairs or replace parts. AFTER making repair or replacement, BE SURE all adjustments are correct as described in Section 5, BEFORE attempting operation.*

## 6.1. Crimper Replacement (Figure 3)

1. Remove applicator ram from applicator by pulling upward.
2. Remove crimper bolt securing crimper to ram. On Applicator No. 466516-6, a wire guide is also attached by the crimper bolt. Note orientation of parts for replacement purposes.
3. Install new crimper, as well as other parts removed, by using the reverse of the order of removal as noted in Step 2. BE SURE part number of new crimper agrees with part number on parts list. DO NOT tighten crimper bolt at this time.
4. Insert ram in applicator housing.
5. To align crimper with anvil, form a piece of heavy paper over anvil, then push ram DOWN to force crimper over anvil to align. When ram is bottomed, tighten crimper and related parts. Crimper MUST BE up against the two pins in ram.

## 6.2. Slug Blade Replacement (Figure 3)

1. Remove applicator ram from applicator by pulling upward.
2. Remove two screws securing slug blade to side of ram. Note orientation of slug blade for replacement purposes.
3. Install new slug blade with two screws, and as noted in Step 2. Tighten screws.
4. Insert ram in applicator housing. Push ram down to ensure slug blade enters shear plate without binding.

## 6.3. Anvil and/or Shear Plate Replacement (Figure 3)

1. Remove two screws and lockwashers securing anvil to base block, then lift out.
2. If shear plate is to be replaced, remove screw and lockwasher securing it to base block, then lift out.
3. Install new shear plate and/or anvil using the reverse order of removal. MAKE SURE anvil seats

in groove in base plate, then tighten screws until just snug.

4. Bottom ram to make sure crimper passes down over anvil, and slug blade enters shear plate, then tighten screws securely.

#### 6.4. Hold-down and/or Hold-down Spring Replacement (Figure 3)

1. Remove applicator ram from applicator by pulling upward.
2. Remove hold-down assembly from ram by removing two screws and lockwashers from the back side of ram. Remove spring from top of hold-down.
3. To remove hold-down from hold-down block, drive dowel pin out.
4. Assemble hold-down assembly and install on ram using reverse order of removal.

#### 6.5. Crimp Height Repair (Figure 3)

Under the spring disc is a laminated washer which may break or compress, causing applicator to produce terminations with a different crimp height than specified for setting of the wire disc. To correct the problem, perform the following:

##### NOTE

*The crimp height of the product after termination should be measured with a crimp height comparator as described in AMP Instruction Sheet IS 7424 packaged with the applicator.*

1. Subtract specified nominal crimp height from average crimp height being produced by the applicator. This will be the thickness of washer(s) (No. 690125-1) to be ADDED under the spring 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 housing by pulling upward.
3. Loosen setscrew in side of ram securing ram post, leaving spring disc and wire disc on ram post.
4. Unscrew ram from ram post, leaving spring disc and wire disc on ram post.

##### CAUTION

*If spring and wire discs are removed from ram post, detent balls and springs will pop out and may become lost.*

5. Measure thickness of old laminated washer after removal from ram post, using a micrometer. ADD this thickness to the thickness determined in Step 1. The total is the thickness required for the new washer.

6. Install new washer on ram post, then install ram. Tighten ram until snug, then check that numbers on wire disc align with center of ram sides. If not, turn ram back slightly until they do, then tighten setscrew to secure ram post.

7. Remove ram assembly from vise, then turn wire disc to other positions to check numbers for centering on sides of ram.

8. Install ram assembly in applicator housing, and install applicator in machine. Make some test crimps under power, then measure crimp heights of terminations. If crimp heights are within specified tolerances, applicator may be placed into service. If not, repeat this procedure.

### 7. CLEANING AND LUBRICATION

For optimum performance and minimum downtime, the applicator should be cleaned and lubricated after each eight hours of operation, and each time it is removed from the machine and placed into storage.

#### 7.1. Cleaning

1. Remove applicator from machine as described in Section 3.
2. Remove ram assembly from applicator housing by pulling upward.

##### DANGER

*Compressed air used for cleaning must be reduced to less than 30 psi, and effective chip guarding and personal protective equipment (including eye protection) must be used.*

3. Using a clean cloth (or an appropriate type air hose) remove all evidence of dirt and other foreign matter. If desired, entire applicator may be immersed in a suitable commercial solvent (one that will not affect paint or plastic) to flush out dirt, chips, etc, then dry with an air hose.
4. Inspect tooling as described in Paragraph 7.2.
5. Lubricate applicator, as described in Paragraph 7.3., before installing ram.

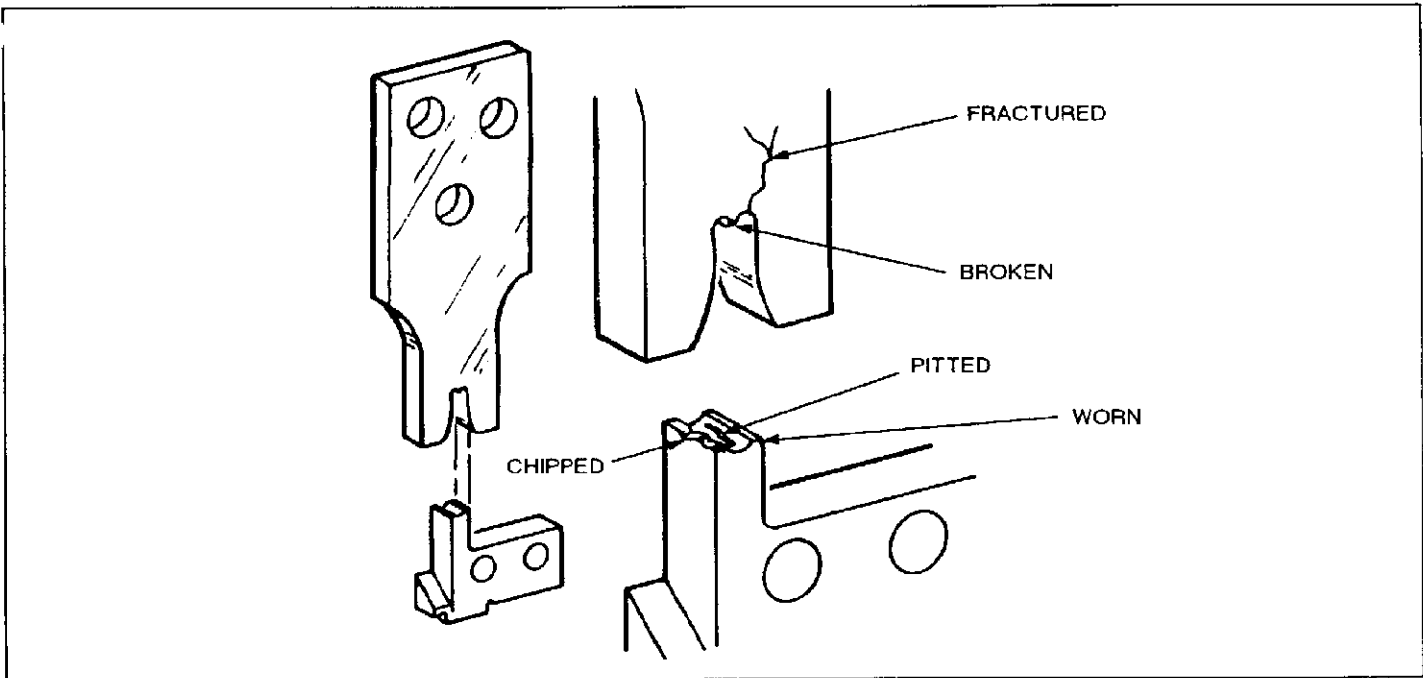


Fig. 9

## 7.2. Inspection

1. Inspect upper and lower tooling (dies) for chips, pits, wear, fractures, and/or broken surfaces as shown in Figure 9. Should any of these conditions appear, tooling should be replaced immediately as described in Section 6.

2. Inspect hold-down for wear, chipping, or breakage. Inspect hold-down spring for weakness or breakage. Should any of these conditions exist, replace immediately as described in Section 6.

## 7.3. Lubrication

The applicator is to be lubricated at the following points using SAE No. 20 motor oil (non-detergent) or light grease.

### CAUTION

*DO NOT use an excessive amount of lubricant. Any excess MUST be removed. Avoid lubricants between discs on top of ram assembly.*

1. Apply a few drops of oil to feed finger pivot point.

2. Apply a thin film of grease to four corners of ram assembly or applicator housing for ram assembly.

3. Install ram assembly in applicator housing, then remove excess grease and oil.

## 8. APPLICATOR STORAGE

1. Rather than removing contact strip from applicator, cut contact strip several contacts away from point of entry into strip guides. This will leave a sample of the type of contacts used in applicator when it is returned to service.

2. Remove applicator from machine as described in Section 3.

3. Clean and lubricate applicator as described in Section 7.

4. Bottom ram assembly to retain lead contact between crimper and anvil.

5. Store in a clean, dry area in an identified container, or with an identifying tag attached to it.