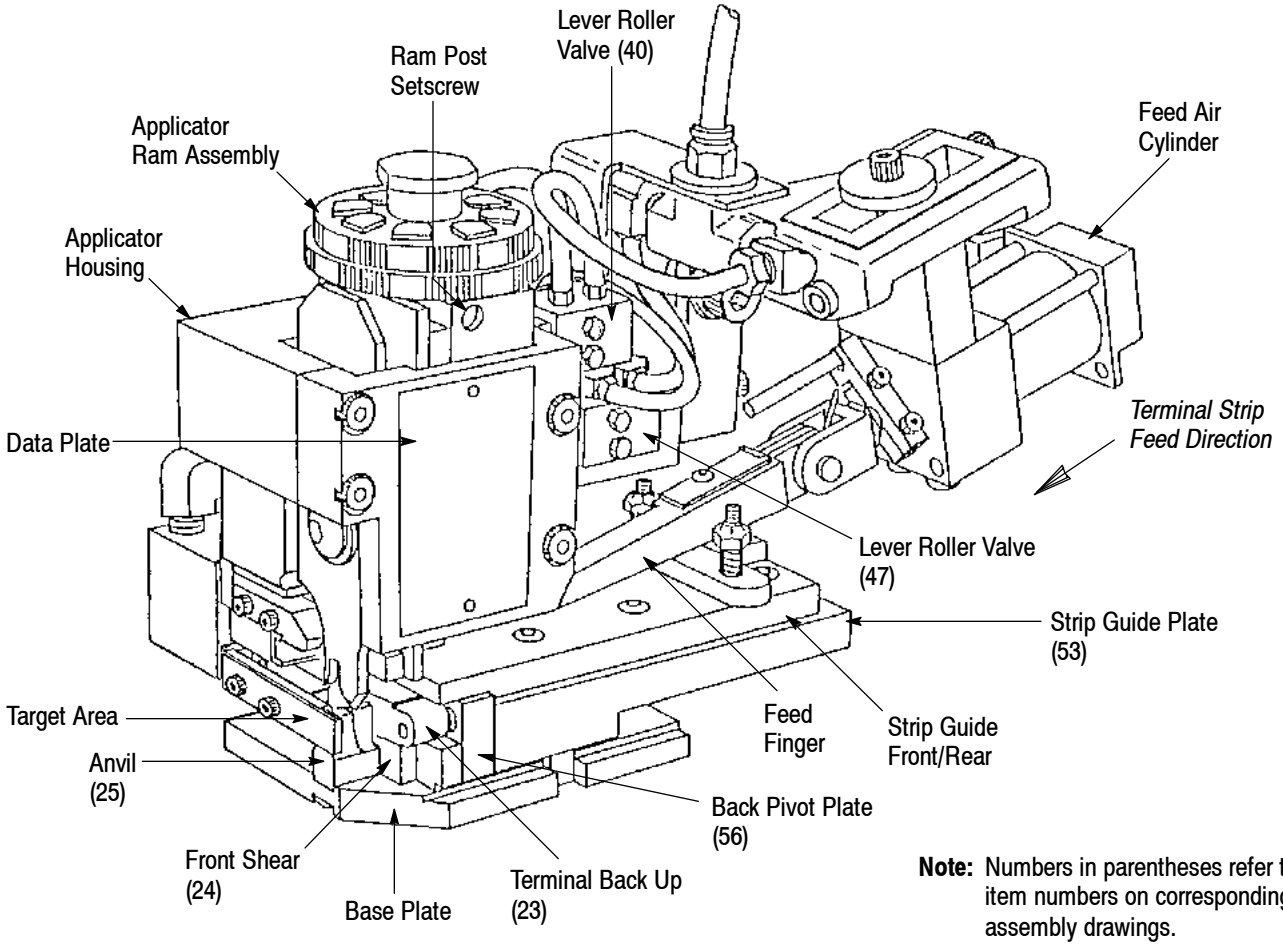

Figure 1

1. INTRODUCTION

These instructions cover Heavy Duty Miniature Quick-Change (End Feed) Applicators 852500-[ ], which crimp Ultra-Pod FASTON* fully insulated flag terminals (includes receptacles and tabs) onto wire that has been pre-stripped.

These applicators are used with (related customer manual 409-series is in parenthesis):

— modified AMP-O-LECTRIC* Model "K" Terminating Machine 565435-5 (409-5128)

NOTE

Model "K" AMP-O-LECTRIC Terminating Machine 565435-5 has been superseded by Model "G" Terminating Machine 354500-1 for new applications. For existing applications, the Model "K" is still recommended.

— AMP-O-LECTRIC Model "G" Terminating Machine 354500-[ ] (409-5842)

— standard Model "T" terminating units (409-5289 for an example)

— split-cycle Model "T" terminating units (409-5579, 409-5563, and 409-5619 respectively, for examples)

The terminals are retained in a plastic housing and are supplied in reel form to be fed into the applicator. The terminals are sheared from the carrier strip before they are crimped to the ends of the pre-stripped wire. Refer to the documentation package supplied with applicator for terminal part number, wire disc setting (A through D) for each wire size, and the required crimp height.

This instruction sheet, Document Package 856401-1, 408-8102 (applicator instruction sheet), the assembly drawing packaged with the applicator, the appropriate machine customer manual, and the machine conversion kit provide all the information required to operate and maintain the applicator and machine.

When reading these instructions, pay particular attention to **DANGER, CAUTION, NOTE** statements.

DANGER *Denotes an imminent hazard which may result in moderate or severe injury.*

CAUTION *Denotes a condition which may result in product or equipment damage.*

NOTE *Highlights special or important information.*

Reasons for reissue of this instruction sheet are provided in Section 8, REVISION SUMMARY.

DANGER *Compressed air used for cleaning the applicator must be reduced to less than 207 kPa [30 psi], and effective chip guarding and personal protective equipment (including eye protection) must be used.*

2. DESCRIPTION

NOTE *Locate the rear keys that locate the applicator to the machine base plate. The socket head cap screw securing the key closest to the front of the machine must be replaced with a button head cap screw (Item 92). This change will not affect any other applicator.*

Major components of the applicator are identified in Figures 1 through 7.

NOTE *Numbers in parentheses next to the components in the figure and text refer to item numbers on corresponding assembly drawings.*

The terminal strip enters the applicator from the right (on most terminating machines), passing under the terminal drag between the strip guides. The lead terminal is always positioned in the “target area,” and centered over the anvil, at the beginning of each cycle. This requires air pressure to be applied to the extension port of the feed air cylinder.

On the downward stroke of the ram, air pressure to the cylinder is stopped, allowing the internal spring pressure within the cylinder to retract the feed finger.

As the ram begins the upward stroke, air pressure to the air cylinder starts to move the feed finger. By the time the ram is completely lifted, the feed finger has moved forward, placing the terminal and carrier strip over the anvil and shear plate, and under the slug blade. The motion of the ram controls a cam, which actuates a pair of valves which control the housing insertion. A simplified description of shearing, crimping, and insertion follows.

Approximately halfway through the downward stroke, the crimper leg pivots the terminal back up down, and the terminal is crimped to the wire by the crimper. When the termination is completed, the ram begins its upward stroke, allowing the crimper to release the terminated wire. During the upward stroke of the ram, the terminal back up swings up and the insulating housing is inserted over the crimped terminal to complete the cycle.

The applicator ram contains the insulation crimper, wire crimper, spacers, and valve cam. The valve cam actuates two roller valves. See Figure 3.

The top of the ram contains the ram post that connects the applicator to the ram post adapter of the machine. On the ram post is a wire disc containing up to four pairs of pads, each pair of a different height. The desired crimp height is produced by rotating the wire disc to align a pair of pads with the lobes on the bottom of the machine ram post adapter. See Figure 7. Directly above the wire disc is a wave spring washer. Directly beneath the wire disc is a ram spacer and a laminated washer or a solid shim. The laminated washer provides a means of fine adjustment to compensate for machining tolerances within the applicator to produce correct crimp height with a preset shut height.

The applicator mounting surface is the base plate which supports the lower tooling and the strip guide plate. See Figures 1 and 4 respectively.

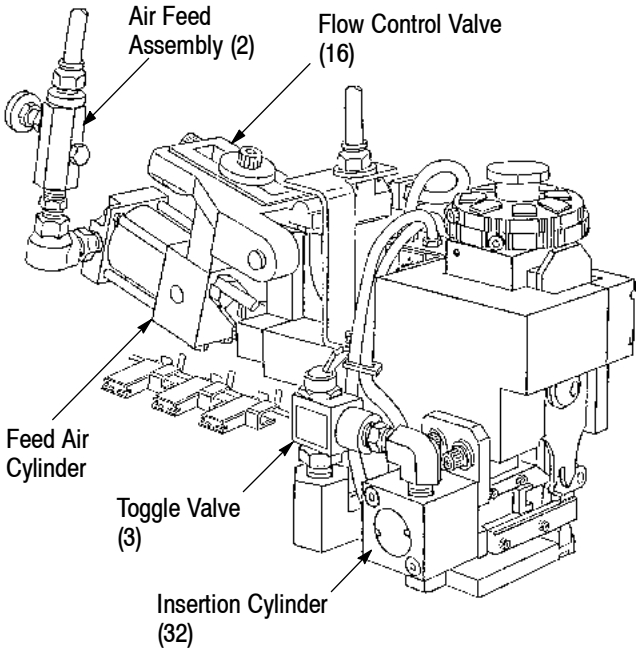

Figure 2

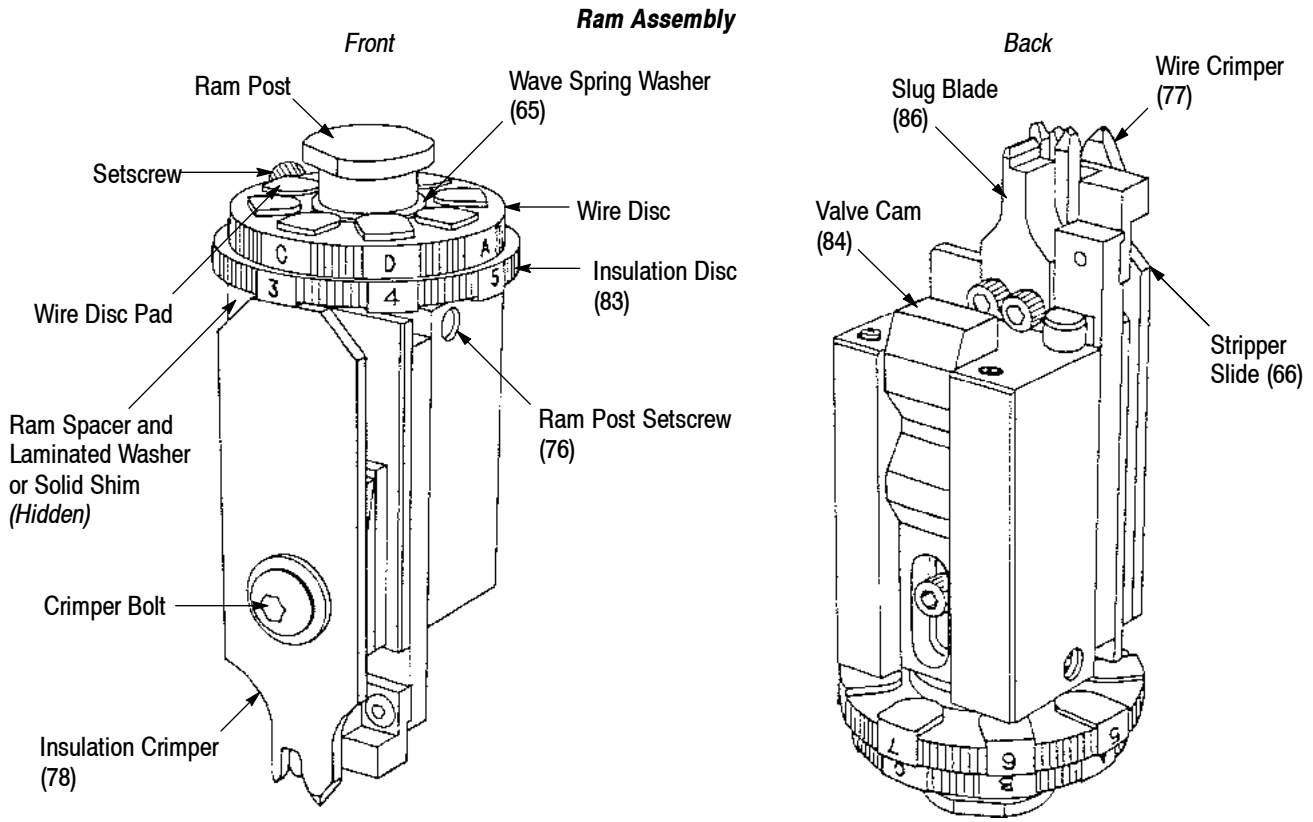

Figure 3

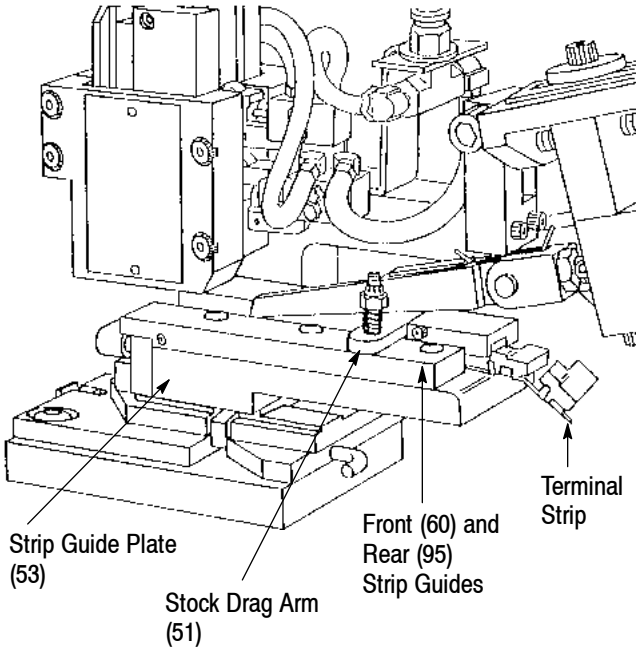

Figure 4

The lower tooling includes shear plates, the inserter, the anvil, stripper stop block, and the terminal back up. See Figure 5.

3. TERMINAL STRIP LOADING AND UNLOADING

BEFORE attempting to load or unload the applicator with a terminal strip, MAKE SURE the electrical power is "OFF". The air supply may remain "ON" to extend the feed cylinder.

3.1. Loading (Figures 4 and 6)

1. Mount terminal reel on reel support. Terminal strip must unreel and enter the right end of applicator with carrier strip down and toward the front.

2. Be sure the machine ram is fully raised. If necessary, hand-cycle the terminating unit as described in applicable customer manual.

3. Raise terminal drag, then feed the terminal strip into the applicator between strip guides (see Figure 6).

4. Lift and hold feed finger and continue to feed terminal strip until the lead terminal is centered over the anvil. Release feed finger to engage behind feed point in terminal strip. Release the terminal drag.

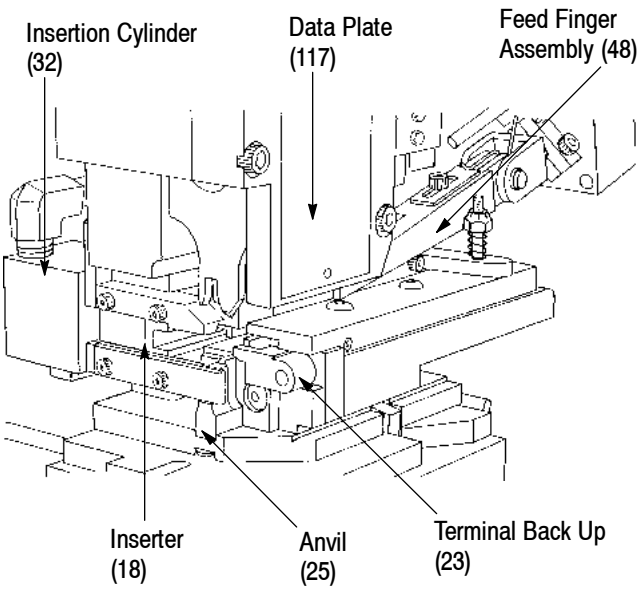

Figure 5

5. With air pressure being applied to the feed air cylinder, pull back on the terminal strip to be sure feed point is against the feed finger.

6. Check to make sure the lead terminal is centered over the anvil. If the terminal is not centered over the anvil, make any necessary adjustments as described in Section 4, ADJUSTMENTS.

7. Adjust the applicator for proper crimp heights as specified in the applicator parts list. Follow the procedure in Paragraph 4.3 to adjust the crimp height.

3.2. Unloading (Figures 4 and 6)

1. Make sure the machine ram is fully raised. If necessary, hand-cycle as described in the appropriate customer manual.

2. Raise the terminal drag by lifting the drag (38) lever upward.

3. Lift and hold the feed finger while pulling the terminal strip back through the strip guides.

4. After the terminal strip is out of the applicator, rewind the terminal strip onto the reel.

4. ADJUSTMENTS

DANGER

STOP

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

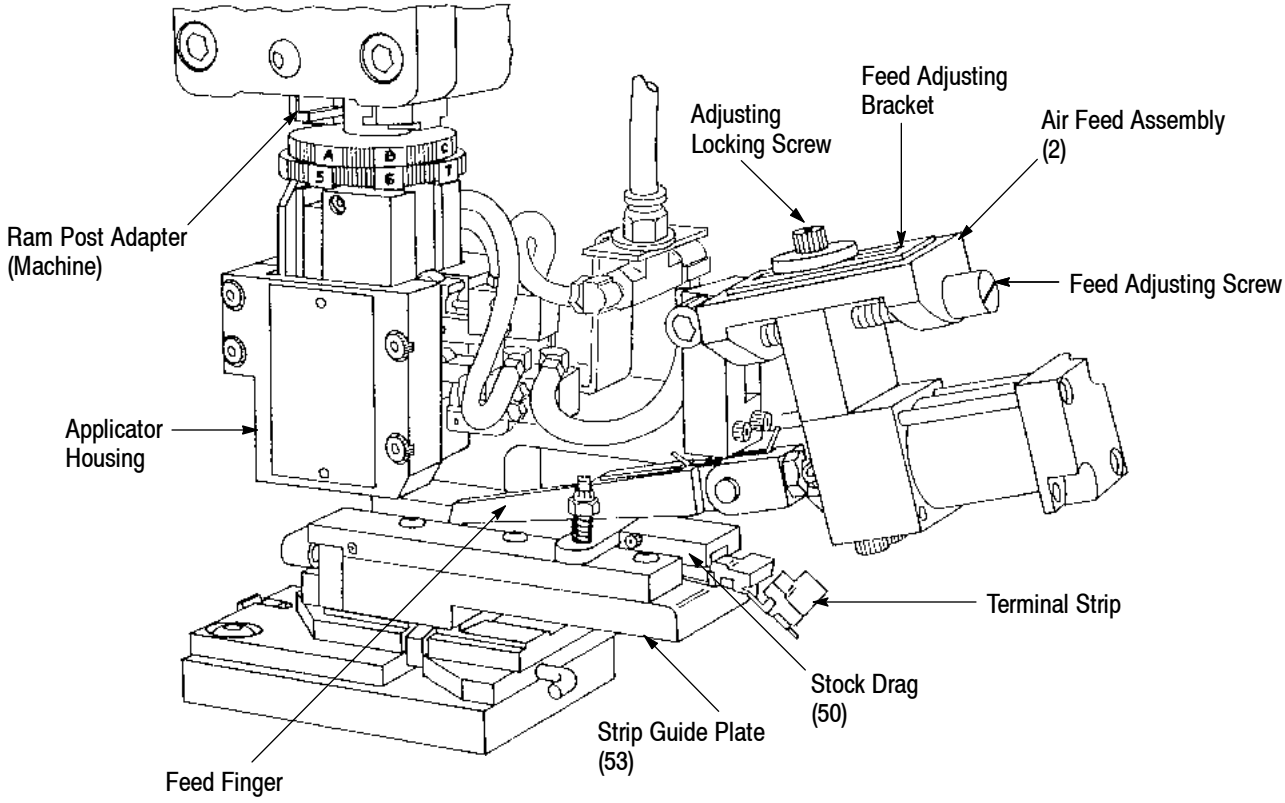

Figure 6

4.1. Insertion Cylinder and Valve Cam Adjustments
(Figures 1 and 3)

A. For Applicator 852500-1 Only

This assembly is used on the standard and split-cycle Model "T" terminators on leadmaker machines. See Section 1 for customer manual references.

NOTE

The air MUST be allowed "ON" in this procedure.

CAUTION

Make sure the cam valve (84) is in the fully "DOWN" position before placing the ram back into the applicator.

NOTE

*Product **MUST NOT** be present in the applicator.*

1. Install the applicator into a terminating unit.

2. Manually cycle the unit, so that the ram is at dead bottom of its stroke.

3. Loosen the four screws securing the two valves (I40 and 47), and slowly raise the ram upward until the insulation crimper leg (78) is in the center of the inserter (18).

4. Adjust the lower valve (47) so it is on the lower lobe of the cam valve (84) and actuated; re-tighten the two mounting screws.

This valve will cause the insertion cylinder (32) to extend, inserting the housing onto the terminated product.

Continue raising the ram, stopping just before top dead-center.

5. Position the upper valve (40) so it is on the upper lobe of the valve cam (84) and actuated; re-tighten the two mounting screws.

This valve will cause the insertion cylinder (32) to retract after the housing is applied. Complete the unit cycle to top dead center.

Check the adjustments just made by putting product into the applicator and cycling the unit under power a few times and verify that the current settings are correct.

CAUTION

When operating under "manual" mode, damage to the housings will occur when insertion is attempted in the applicator, due to timing. This is an engineered interference and when the machine is operated under power, this interference is corrected.

B. For Applicator 852500-2 Only

This assembly is used on Model "K" terminators. See Section 1 for customer manual references.

NOTE

The air MUST be allowed "ON" in this procedure.

CAUTION

Make sure the cam valve (84) is in the fully "DOWN" position before placing the ram back into the applicator.

NOTE

*Product **MAY** be present in the applicator.*

1. Install the applicator into a terminating unit.

2. Manually cycle the unit, so that the ram is at dead bottom of its stroke.

3. Loosen the four screws securing the two valves (40 and 47), and slowly raise the ram upward until the insulation crimper leg (78) clears the inserter (18) by 0.76±0.76 mm [.03±.03 in.].

4. Adjust the lower valve (47) so it is on the lower lobe of the cam valve (84) and actuated; re-tighten the two mounting screws.

This valve will cause the insertion cylinder (32) to extend, inserting the housing into the terminated product.

Continue raising the ram, stopping just before top dead center.

5. Position the upper valve (40) so it is on the upper lobe of the valve cam (84) and actuated; re-tighten the two mounting screws.

This valve will cause the insertion cylinder (32) to retract after the housing is applied. Complete the unit cycle to top dead center.

Check the adjustments just made with a few manual cycles of the press to verify clearances for the tooling, and continue to adjust the valves until these clearances are obtained.

4.2. Cylinder Mount Adjustment (Figures 2 and 9)

The cylinder mount (31) should be adjusted vertically so that the incoming product goes through the strip guides (60 and 95) and into the inserter (18) without any obstructions to dislodge or stub on the housings.

NOTE

The housing should enter the inserter and pass over the anvil with a minimum amount of clearance. If the housing should stub on the anvil, raise the cylinder mount slightly to gain additional clearance.

The transition from the strip guide to the inserter should be smooth. The terminal strip and pod should have minimal change of direction as the product is hand fed through the applicator. Prop up the feed finger and drag arm to allow free, hand-feeding of the product strip.

4.3. Terminal Backup Adjustment

Adjust the height of the terminal backup until the base of the pod clears the backup tab (see Figure 5). The distance between the anvil and the terminal backup tab 1.27 mm+/-0.127 mm [.050 in.+/-.005 in.] should be measured with a feeler gage.

4.4. Crimp Height Adjustment (Figure 3)

1. Refer to applicator log for the settings of the wire disc. The wire disc has lettered settings (A through D) used to set the crimp heights for the different terminals and wire sizes being used.

2. Turn the wire disc to align a pair of pads (A through D) with lobes on the machine ram post adapter.

3. To check for proper height, refer to Paragraph 4.7, Wire Crimp Adjustment.

4.5. Terminal Strip Feed Adjustment (Figure 6)

1. Apply air pressure to the feed cylinder to position the lead terminal over the anvil.

2. Carefully pull back on the terminal strip to be sure the terminal is against the feed finger.

3. If the lead terminal is not centered over the anvil, determine the direction in which the terminal must move to be centered over the anvil.

4. Loosen the adjusting locking screw on top of feed adjusting bracket.

5. Turn the feed adjusting screw until the lead terminal is centered over the anvil. To retract the terminal, carefully pull back on the strip while making the adjustment.

6. After centering the terminal, secure the feed adjusting screw by tightening the adjustment locking screw.

4.6. Strip Guide Adjustment (Figure 4)

This adjustment should not be necessary unless there is a variation in the width of the terminal strip, or the front and rear strip guides are not parallel. If an adjustment must be made, proceed as follows:

1. Wedge or block the feed finger so that it clears the rear strip guide. See Figure 4.

2. Loosen screws securing the right strip guide to the plate.

3. Using a piece of terminal strip as a gage, adjust strip guide as required to be parallel with the other guide, and to obtain minimum clearance without binding.

4. After the adjustment is made, tighten the screws to secure the strip guide to the plate.

4.7. Slug Blade Adjustment (Figure 7)

1. With the ram bottomed, loosen the locking screws holding the slug blade (86) to the ram.

2. Loosen the 4 screws securing the strip guide plate (53), to the base plate and move it forward or backward until the slug blade enters between the front and rear shears. See Figure 6.

3. Adjust the slug blade left to right to engage the terminal.

4. Tighten the locking screws beneath the base plate to re-secure the strip guide plate.

CAUTION

BE SURE the slug blade is not bottoming on the shear plate.

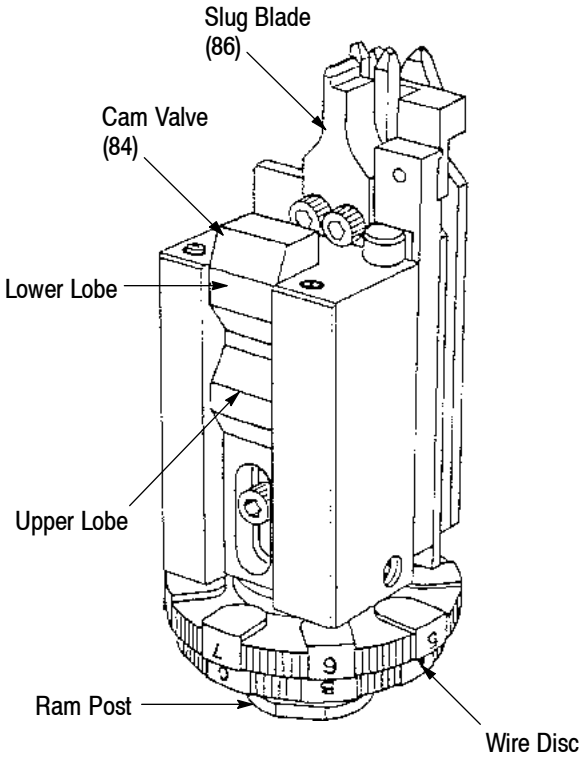

Figure 7

4.8. Wire Crimp Adjustment (Figure 9)

1. Refer to the data plate on the applicator housing (refer to Figure 5), and select the pad letter (A, B, C, or D) for the wire size to be used.

2. Rotate the applicator wire disc (upper disc, see Figure 7) to align selected pad letter with bosses on machine ram post adapter (see Figure 6). This will provide proper crimp height for that wire size.

3. After making Insulation Crimp Adjustment described in Paragraph 4.8, perform several test cycles and inspect the terminations CLOSELY for the following:

   a. Evidence of rough and/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 5.

   b. If terminations appear normal, measure the crimp height of each termination as described in 408-7424, 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 the crimp height dimensions for reference.

   c. If crimp heights are INCORRECT, remove applicator and install an applicator that is KNOWN to produce terminations of CORRECT crimp height. Perform several test crimps and repeat step b. If crimp heights are INCORRECT for this applicator, the problem is the machine shut height, and corrective information may be obtained from the appropriate machine manual. If crimp heights are CORRECT, the problem is in the original applicator, and corrective measures are presented in Paragraph 5.5, Adjustable Crimp Height Repair.

4. During extensive operation, periodically repeat Step 3 to ensure that applicator is producing correct terminations.

4.9. Insulation Crimp Adjustment (Figure 10)

To adjust the insulation crimp height, rotate the applicator insulation disc (lower disc) to align the number (1 through 8) with the top of the insulation adjustment block on the ram assembly. The tightest crimp is made by No. 8, and the loosest by No. 1, a difference of approximately 1.78 mm [.070 in.] providing a wide variation.

To find the desired insulation crimp, start with No. 1 and make test crimps, increasing the setting one number at a time until the proper insulation crimp height is obtained.

4.10. Product Guide

Used (exclusively) on some leadmaker machines,the product guide must be removed when Applicator 852500-1 is NOT being used. Remove the two mounting screws securing the product dereeler and place the product guide (111) in between the mounting bracket and the dereeler. Re-assemble and re-tighten the two mounting screws.

5. REPLACEMENT AND REPAIR

The following procedures cover applicator parts which most often require repair or replacement because of wear. They are recommended spares which are the customer's responsibility to stock and replace. Refer to the Applicator Parts Lists packaged with the applicator.

Remove the applicator from the unit BEFORE making repairs or replacing parts. AFTER repair or replacement, BE SURE all adjustments are correct, as described in Section 4 of this document, before attempting operation.

5.1. Wire Crimper Replacement (Figure 3)

1. Remove the ram assembly by lifting the ram up and out.

2. Remove the crimper bolt holding the insulation crimper, crimper spacers, and wire crimper to the ram. Note the orientation of parts for replacement purposes.

3. Install new wire crimper and/or other parts removed, by reversing the removal procedure. BE SURE part numbers of new parts agree with the part numbers on the parts lists. DO NOT tighten the crimper bolt at this time.

4. To align the wire crimper with the anvil, place a piece of heavy paper over the anvil, install the ram into the applicator housing, and push the ram DOWN over the anvil. This forces the crimper to align with the anvil. When the ram is bottomed, tighten the crimper bolt to secure the wire crimper, spacers, and insulation crimper to the ram.

5.2. Anvil Replacement (Figure 8)

1. From the bottom of the applicator base plate, remove the screw securing the anvil to the base plate.

2. Remove the anvil from the base plate.

3. Install the new anvil using the reversed procedure. Be sure the part number of the anvil agrees with the part number on the parts lists.

4. Check the alignment of the crimper with the anvil as described in Paragraph 5.1, and make any necessary adjustments.

5.3. Slug Blade Replacement (Figure 7)

1. Lift the ram assembly (or remove the ram assembly if it is more convenient).

2. Remove the two screws securing the slug (86) to the ram.

3. Install the new slug blade by reversing the removal procedure. BE SURE the part number agrees with the part numbers on the parts list.

5.4. Shear Plate Replacement (Figure 8)

1. Lift the ram assembly (or remove the ram assembly if it is more convenient).

2. Remove the screws (27) securing the front (24), and rear shear (90 hidden) assembly to strip guide plate (53). See Figures 6 and 8.

3. Slide out the shear plates, (24 and 90).

4. Install the new slug blade (86) by reversing the removal procedure. BE SURE the part number agrees with the part numbers on the parts list. See Figure 7.

NOTE

The front and rear shear plates fit against the strip guide plate and cannot be adjusted.

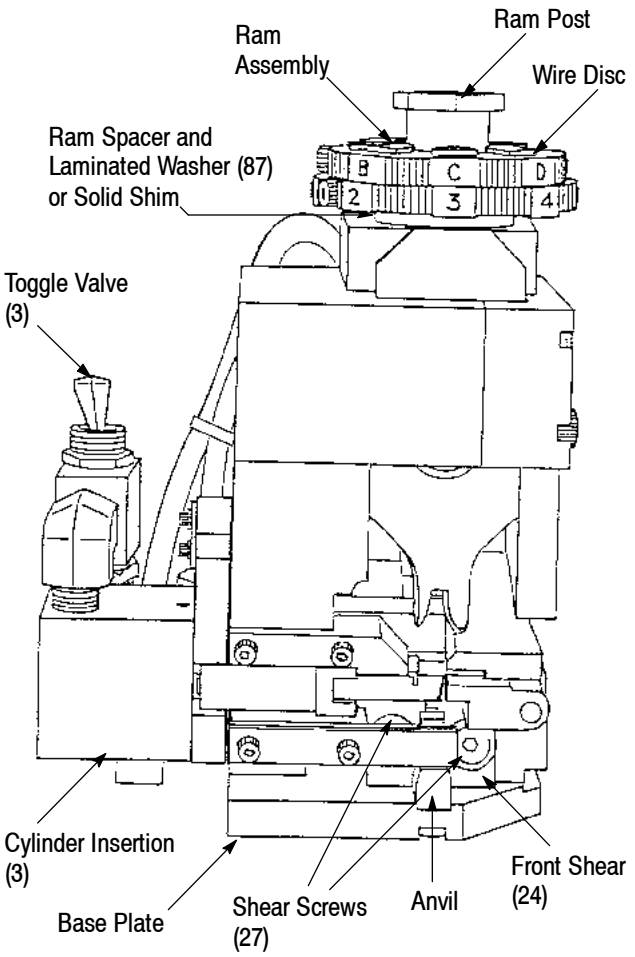

Figure 8

5.5. Adjustable Crimp Height Repair (Figures 8 and 9)

Under the disc and the ram spacer is a laminated washer or a solid shim which may break or compress, causing the applicator to produce terminations with a different crimp height than specified for the setting of the wire disc. To correct this problem, proceed as follows:

1. Subtract the specified crimp height from the average crimp height recorded in Paragraph 4.7. This dimension will be the thickness of washer(s) (PN 690125-1) to be ADDED under the ram spacers.

NOTE

Washer 690125-1 is a peel-type, laminated washer consisting of five layers, each layer being 0.05 mm [.002 in.] thick.

2. Remove the applicator from the unit.

3. Remove the ram assembly from the applicator housing by pulling upward.

4. Loosen the setscrew in side of the ram securing the ram post, then turn the ram upside down and secure the ram post in a vise.

5. Unscrew the ram from the ram post, leaving the ram spacer and wire disc on the ram post.

CAUTION

If ram spacer and wire disc are removed from ram post, detent ball and spring will pop out and may become lost.

6. Measure thickness of old laminated washer or the solid shim 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.

7. 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 align, then tighten setscrew to secure ram post.

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

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

6. CLEANING, LUBRICATION, AND STORAGE

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 unit to be placed in storage.

DANGER

Disconnect electrical power and air supply when performing maintenance, lubrication, inspection, and repairs.

6.1. Cleaning

1. Remove the applicator from the unit.

2. Remove the ram assembly from the applicator as described in Paragraph 5.1.

DANGER

Compressed air used for cleaning must be reduced to less than 207 kPa [30 psi], and effective chip guarding and personal protective equipment (including eye protection) must be used.

3. Using a clean cloth or air hose, remove all evidence of dirt and foreign matter. If desired, the entire ram may be immersed in a suitable commercial solvent (one that will not affect paint or plastic) to flush out dirt, chips, etc., then dried with an air hose or clean cloth.

4. Lubricate the applicator as described in Paragraph 6.2, before installing the ram assembly.

6.2. Lubrication

The applicator is to be lubricated at the following points using SAE 20 motor oil (non-detergent) or light grease.

CAUTION

DO NOT use an excessive amount of lubricant. Any excess MUST be removed. Avoid lubricant around the wire disc.

1. Apply a few drops of oil to all pivot points.

2. Apply a thin film of grease to the four corners of the ram or the applicator housing for the ram assembly, and to the transfer slide tracks.

Ram Assembly

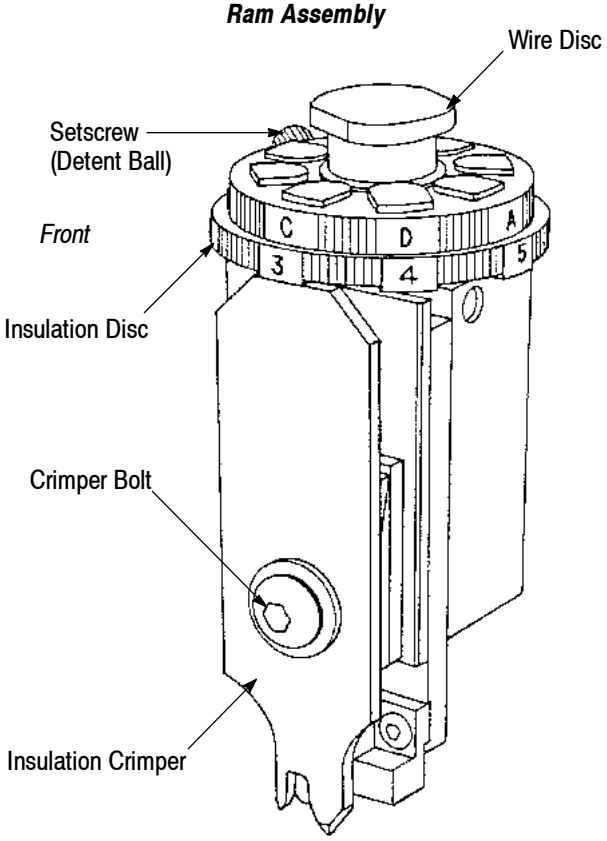

Figure 9

3. Apply a small amount of grease in the cam tracks on the applicator.

4. Install the ram assembly in the applicator housing, then remove any excess grease or oil.

6.3. Storage

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

2. Remove the applicator from the unit.

3. Clean and lubricate the applicator as described in Section 6.

4. Bottom the ram assembly to retain lead terminal between crimpers and anvil. Store in a clean, dry area.

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7. TROUBLESHOOTING GUIDE

FAILURE	POSSIBLE CAUSES	ADJUSTMENT AND/OR SOLUTION
Pod partial or mis-insertion. Terminal bent upon insertion.	1. Terminal back-up adjusted too high or too low.	1. Adjust until the distance between the anvil and the backup tab is 1.27+/-.127 mm [.050+/-.005 in.].
	2. Hold down housing too high and/or bottom retainer plate is too low. The terminal and pod are lifted up by the crimper and pass over the terminal back-up.	2. With a pod in place, adjust the bottom retainer plate until it is even with the anvil top and adjust the hold down housing until it just touches the pod top.
	3. Inserter is tight or binding. The terminal hold down or wire stop is misaligned.	3. Re-align the terminal hold down or wire stop until the inserter moves smoothly.
	4. Cylinder mount is too high and the inserter is pushing the pod above the terminal back-up.	4. Adjust the cylinder mount "down" until the "floor" of the mount is even with, or just above, the strip guide plate—0.125 mm [.005 in.].
Jamming at applicator entrance.	1. The dereeler guides are not aligned with the applicator entrance.	1. Align the product reel and dereeler guides parallel to the applicator. The terminator guide should be parallel within 6.35 mm [.25 in.] of the applicator rear guide.
	2. The product reel is damaged.	2. Straighten or replace the reel.
	3. The product is twisted or bent.	3. Cut out the damaged section and check for cause of bad product.
	4. The applicator rear guide is too low, causing a tight clearance between the pod and applicator.	4. Raise and level the rear guide with reference to the strip guide plate 7 mm [.275 in.] to allow smooth and easy travel of the product.
	5. Latest revision of rear guide (852762-1) is not being used. Chamfers for easier lead-in used.	5. Replace with latest revision of rear guide.
Jamming near termination.		*Cycle without pod insertion to determine if jamming is due to insertion or feed/guide strip problems.*
	1. Bent or twisted product.	1. Remove bad sections of product or replace the reel.
	2. Cylinder mount and inserter too high or too low.	2. Adjust the cylinder mount down until the "floor" of the mount is even with or just above, the strip guide plate—0.125 mm [.005 in.].
	3. Scrap is jammed in shear area.	3. Remove scrap from applicator.
	4. Inserter not retracted entirely or is binding.	4. Re-align the terminal hold down or wire stop until the inserter moves smoothly. Replace cylinder if required. Shim cylinder mount if required.
	5. Cam valve or lever roller valves mis-adjusted.	5. Re-adjust using the Applicator Assembly Drawing.
	6. Rear shear, left shear spacer, or back-up pivot plate not seated on the strip guide plate, causing the terminal carrier strip to catch on the leading edges.	6. Re-align shear area to allow smooth product transitions across the different parts.

8. REVISION SUMMARY

Revisions to this instruction sheet include:

- Updated instruction sheet to corporate requirements
- Added applicator part numbers to title
- Removed applicator part number from Section 7