

Figure 1

1. INTRODUCTION

Ocean side-feed applicators are available with either a mechanical feed, air feed, or servo feed system. Each applicator accepts the end-feed strip-form of terminals identified on the applicator parts list and exploded view drawing (applicator log) to apply to pre-stripped wires.



NOTE

Dimensions in this instruction sheet are in metric units [with U.S. customary units in brackets]. Figures are not drawn to scale.

This instruction sheet, parts list, exploded-view drawing (packaged with applicator), and applicable terminating machine manual provide all the information required to operate and maintain the applicator and machine.



NOTE

Terminating machine manuals are:

409-5128 Basic AMP-O-LECTRIC* machine

409-5207 or 409-5289 Model "T" terminating unit

409-5842 Model "G" machine

409-10047 AMP 3K* machines 1725950-[] and AMP 5K* machines 1725900-[]

409-10099 AMP 3K/40* machines 2119683-[] and AMP 5K/40* machines 2119684-[]



NOTE

The reasons for re-issue of this instruction sheet are provided in Section 8, REVISION SUMMARY.



NOTE

Reference Instruction Sheet 408-35008 for translations of the Safety Warnings specified herein.

2. DESCRIPTION

Main components of the mechanical and air feed applicators are identified in Figures 1 and 2, respectively.

Air Feed Applicator

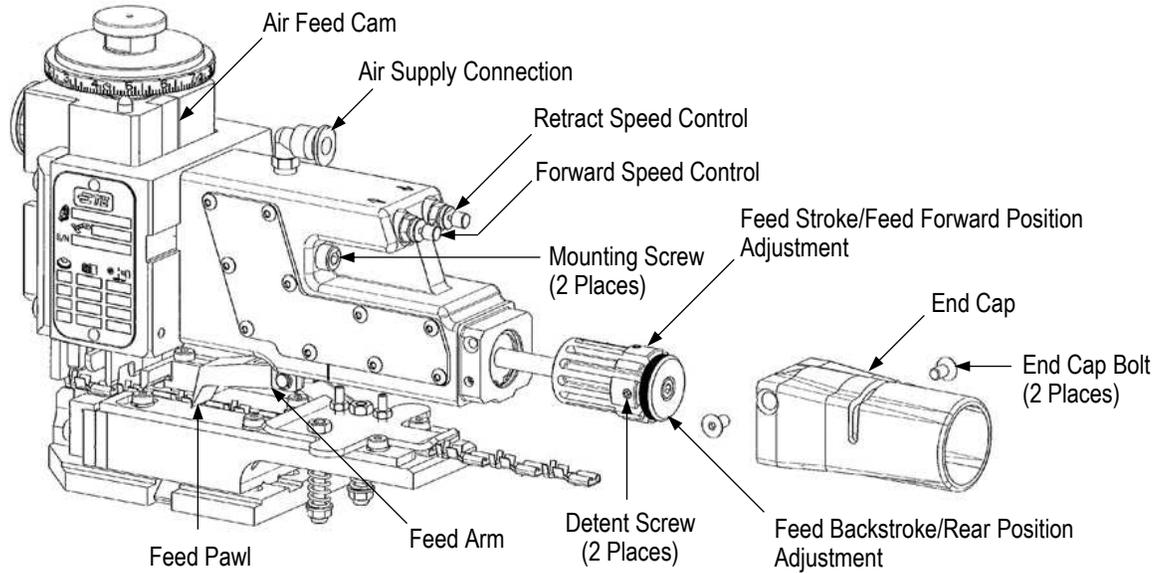


Figure 2

Each applicator is individually designed for specific terminals. The wire crimp height and insulation crimp height can be adjusted to accommodate different wire sizes and insulation ranges, respectively. The applicator is also designed to accept modular-feed packages. The feeder assembly can be removed from the applicator and replaced with any different style; mechanical, air, or servo feed; depending on the requirements (see Figure 3). To change to a different feed type, use retro-fit kit PN 2119949 for the mechanical terminal feeder, retro-fit kit PN 2119950 for the pneumatic terminal feeder, and retro-fit kit PN 2119951 for the servo terminal feeder.

Changing Feeder Assembly

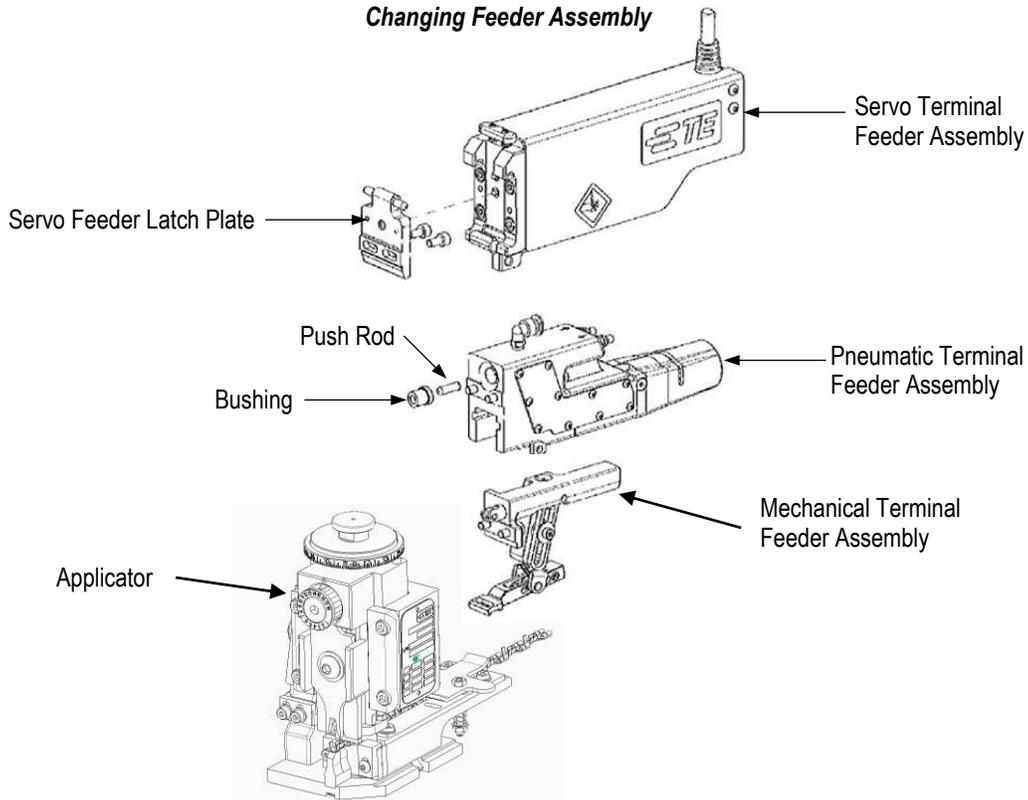


Figure 3

The Ocean applicator can be used in various machines, provided the machine has the proper stroke length and all the necessary equipment.

There are two basic applicator design styles, *Atlantic* and *Pacific*, to meet many of the terminator and leadmaker configurations worldwide (see Figure 4).

Though the applicator ram and base plate interfaces are different, most of the Ocean applicator features and adjustments are the same.

The terminal strip must be fed into the applicator, with the wire barrels facing up and first into the applicator, between the strip guide plates. It will pass the stock drag, and the lead terminal will be positioned over the anvil (for pre-feed applicators) or one terminal length from the anvil (for post-feed applicators). The feed pawl will feed one terminal during each cycle of the machine. The ram post (also referred to as the ram mounting post) will engage the post adapter of the machine ram and the machine ram will actuate the applicator.

The ram post interface is located just below the wire crimp disc, which is designed with a spring-loaded adjustment mechanism for precise crimp height adjustment increments of 0.01 mm [.0004 in.] and a total adjustment range of 1.50 mm [.059 in.]. By rotating the wire crimp disc, the ram interface raises and lowers relative to the applicator housing. The indicator notch of the ram points to the numbers on the outer diameter of the wire crimp disc, indicating a relative crimp height. For proper crimp height, the number on the wire crimp disc must correspond to the number on the applicator identification tag and log sheet.

The wire crimper is held in a pre-set position by the ram and 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 that the insulation crimp height can be adjusted via the insulation crimp dial by pulling the spring-loaded dial out slightly and rotating to a different number.

The slug blade, which cuts the connection tab from the strip between the lead and second terminals, is also attached to the bottom of the ram. The spring-loaded terminal hold-down, located on the ram, holds the terminal in place during the crimping and slugging process.

The applicator mounting surface is the base plate. The anvil, strip guide plate, and applicator housing are mounted on the base plate. The strip guides, stock drag, front and rear shear plates, and strip hold-down plate are all mounted on the strip guide plate. The shear plates are spaced to allow the slug blade to pass between them, removing the connecting tab between the terminals.

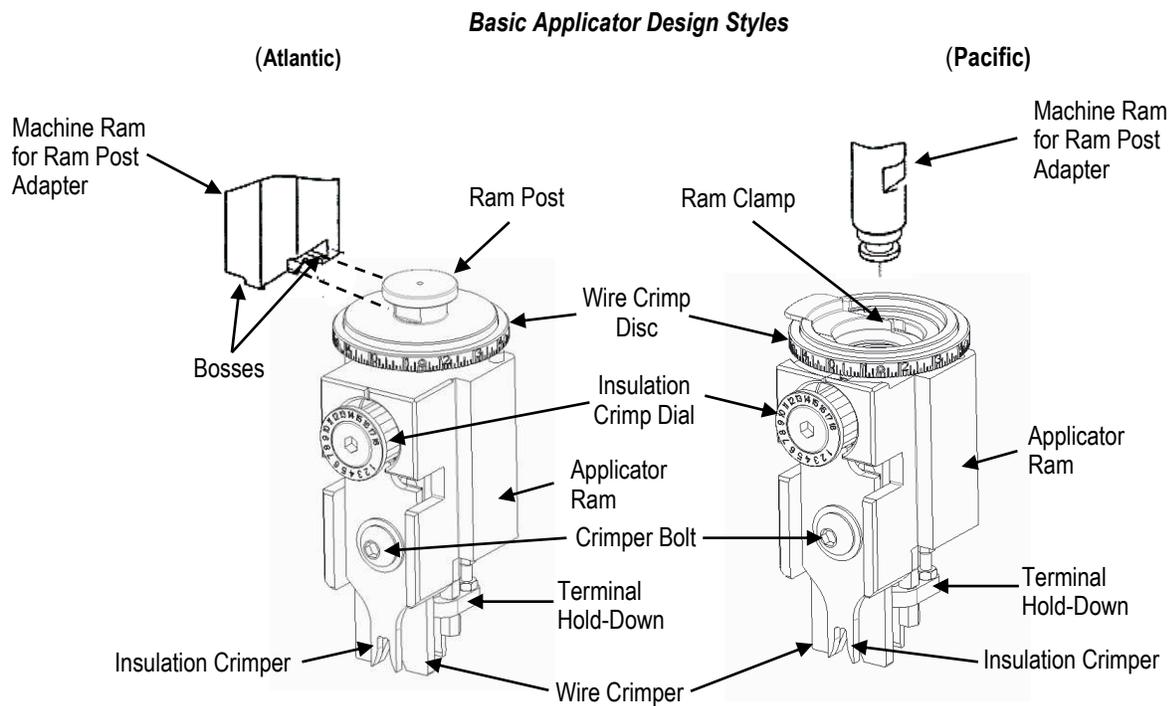


Figure 4

2.1. Applicator with Mechanical Feed System

With this applicator, the terminals are fed by the action of the feed cam and a series of rods and levers, which move the feed pawl. Two feed cams are available and can be mounted in two different mounting holes depending on machine stroke length and feed type (see Figure 5). The spare feed cam, when not in use, can be mounted to the applicator housing in the spare feed cam storage location shown in Figure 6.

i NOTE
Pacific applicators can only be used with 30-mm stroke machines and, therefore, only have the 30-mm feed cam mounting positions on the applicator ram.

The *post-feed* feed cam advances the lead terminal over the anvil on the *downward* stroke of the ram assembly. The post-feed set up is typically used for leadmaker and end-feed bench applications.

The *pre-feed* feed cam advances the lead terminal over the anvil on the *upward* stroke of the ram assembly so that a terminal is over the anvil when the machine is at rest. The pre-feed set up is typically used for side-feed bench applications.

i NOTE
The recommended setup for end-feed applications is post-feed. The applicator can be configured for pre-feed, but may encounter problems with some applications. Feed issues or terminal jamming may occur in the pre-feed configuration.

2.2. Applicator with Air Feed System

With this applicator, the mechanical feed system feed cam and its mechanical system of rods, levers, and springs are replaced by an air cylinder module. In the air feed module, the feed action is started when the applicator ram moves. At the beginning of the ram's *downward* stroke, the ram-mounted cam pushes the push rod. This actuates the valve inside the air feed housing causing the *retract* side of the cylinder (closest to the anvil) to be filled, shifting the feed pawl to the rear of the strip guide.

i NOTE
The air supply connection (shown in Figure 2) must be connected to an air supply line providing continuous pressure of 5.00 to 6.00 bars [72 to 87 psi] at the applicator.

i NOTE
NO oil lubrication of air for the OCEAN Air Feed module is required after receiving and use within a production environment.

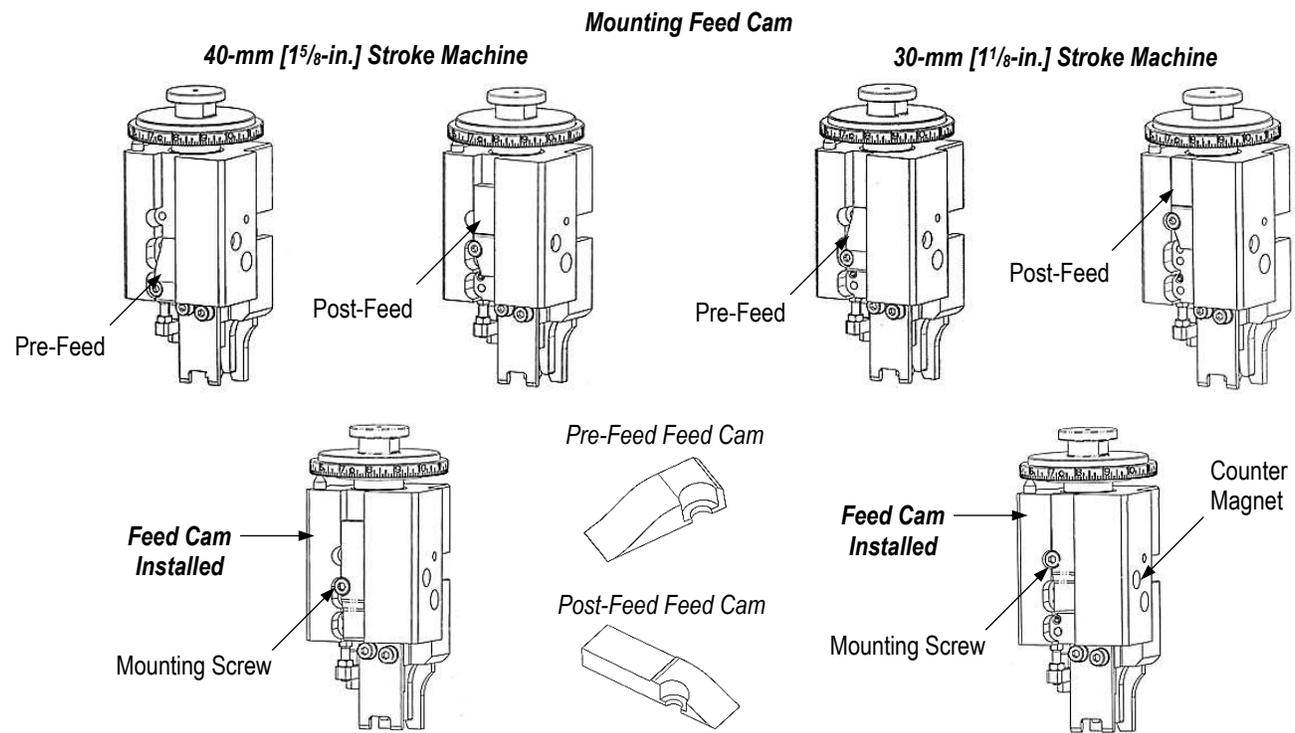


Figure 5

Applicator with Mechanical Feed System

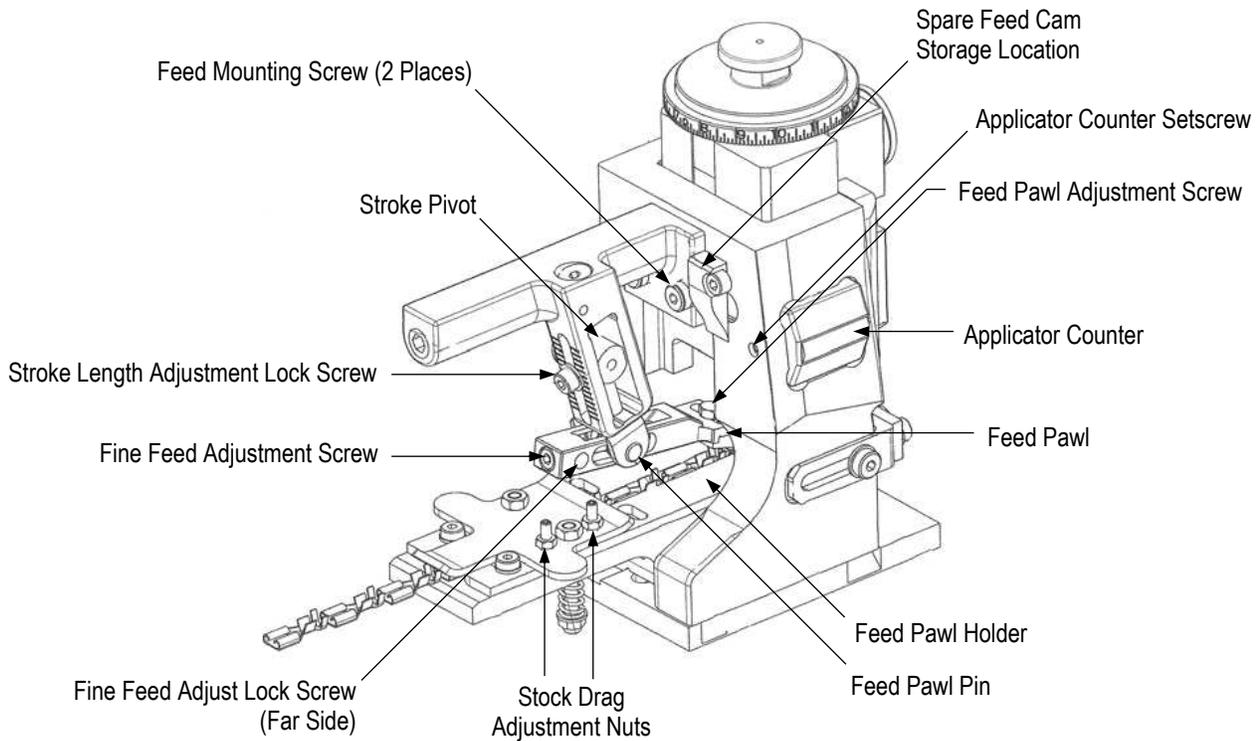


Figure 6



CAUTION

There is a marking (vertical etched line) on the air feed housing (shown in Figure 2) to use as a visual aid to ensure that the piston assembly is located within the limits of the air cylinder position. The feed pawl holder must be positioned to the right of the marking. Incorrect feed pawl positioning relative to the marking may contribute to premature failure of the air feed module.

The ram continues downward, completes the crimping action, and starts back up. As it approaches the fully raised position, the push rod drops off of the high portion of the ram mounted cam, shifting the air feed valve. The *extend* side of the cylinder is then filled, moving the feed pawl and terminal strip over the anvil for the next cycle. The exhaust control valves control the speed of the feed stroke and retract stroke.

Though all air feeds are pre-feed type, the feed cam position can be changed for use in different stroke machines: 40 mm [$1\frac{5}{8}$ -in.] stroke or 30 mm [$1\frac{1}{8}$ -in.] stroke (refer to Figure 5).

Note that the air feed requires a different cam than the mechanical pre-feed or post-feed.



NOTE

The ram collar needs to be installed when changing crimp tooling to prevent the ram from becoming captured. If this does occur, the air feed assembly will need to be removed to release the applicator ram.

2.3. Applicator with Servo Feed System

With this applicator, the wire crimp height and terminal feed are accomplished by the AMP-O-LECTRIC III servo terminator or any machine that incorporates the TE Connectivity (TE) precision controller. Refer to [409-10073](#).



NOTE

Some applicators will not work with the standard feed pawl in the feeder. In these cases, the special feed pawl must be used. If originally ordered with the servo feed, the applicator will be shipped with the special feed pawl mounted to the applicator.

Each servo feed applicator comes equipped with a data chip that is part of the servo feeder latch plate (see Figure 3). For a complete description of the data chip, refer to [409-10073](#). This device allows the storage of key operating parameters that allow easy setup between terminals and also contains reference data that can be useful for other machine setups and crimp inspection.



NOTE

Batteries Directive 2006/66/EC introduces new requirements from September 2008 concerning removability of batteries from waste equipment in EU Member States. To comply with this Directive, this device is designed to allow the data chip to be easily removed by the end-user when it needs to be replaced.



NOTE

Always dispose of the old data chip in an environmentally responsible way in accordance with local waste regulations. Contact local authority for battery recycling locations.

The servo feed applicator works in conjunction with the AMPOMATOR* III servo terminator (or any machine that incorporates the TE precision controller) to form a complete system that allows setup and operation. The information on the data chip is listed in the three separate groups:

- applicator data
- terminal data
- maintenance data

A significant amount of the data is reference data to aid in the setup of the machine and inspection of the final crimp.

2.4. Applicator with Non-Servo Feed System

As with the data chip on the servo feed latch plate, optional data chip kit PN 2161326-[] also allows storage for key operating parameters and contains reference data that can be useful for other machine setup and crimp inspection. It requires compatible terminating equipment. For complete description of the data chip, refer to [409-10073](#).

2.5. Applicator with Non-Adjust Head

With this applicator, all wire crimp height adjustments are made by the machine. When built in the factory, the applicator's non-adjust head is shimmed so that the applicator will crimp its assigned terminal to the largest wire crimp height found on the applicator log while the terminating machine is set to normal shut height.



NOTE

If using an applicator with a fine-adjust head on a machine with a self-adjusting wire crimp height feature, always set the fine-adjust head to the largest wire crimp height called out on the applicator log.

2.6. Applicator with Pacific Head

The Pacific applicator will only work in conjunction with a machine having a ram that falls within the envelope shown in Figure 7.

Note: Dimensions are in millimeters with inches in brackets.

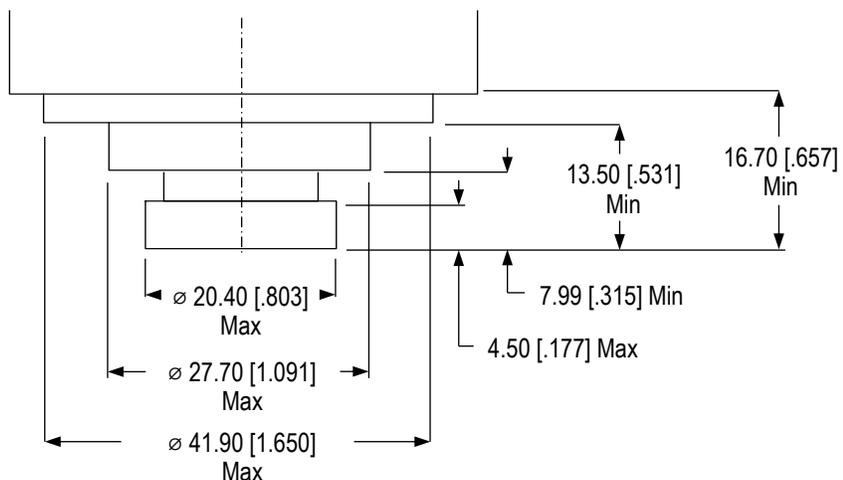


Figure 7

3. APPLICATOR INSTALLATION AND REMOVAL



DANGER

To avoid personal injury, make sure that the power and air source to the machine is turned off and power cord/air supply are disconnected before installing or removing the applicator.



NOTE

Always make sure to remove the ram transportation collar after installing the applicator on a machine and be sure to install the ram transportation collar back onto the applicator ram just prior to removing the applicator from the machine.



NOTE

With the applicator in the machine, never attempt to cycle machine under power without terminals properly loaded, as described in Section 4; otherwise, the tooling may be damaged.



DANGER

To avoid personal injury, the applicator should be used only in an appropriate terminating machine. The pressurized air supply should only be connected after the applicator is properly installed in the terminating machine.

3.1. AMP-O-LECTRIC Machine and Model “K” Machine (with Mini-Applicator Conversion)

A. Installation

This machine must be equipped with machine conversion kit PN 690675-2 to adapt it for use with the miniature applicators. The kit includes applicator instruction sheet [408-8022](#), which explains how an applicator with mechanical feed is installed and removed from the machine.

B. Removal

1. Turn off, and disconnect, the power to the machine.
2. Unload the applicator as described in Section 4.
3. Remove the hold-down bracket and movable stop, then slide the applicator away from the stop on the base mount until the ram post is clear of the machine ram.

3.2. Model “T” Terminating Unit



NOTE

For the Atlantic applicator only.

A. Installation

1. Turn off, and disconnect, the power to the machine.
2. Push in the release bar on the quick-change base plate. The locking latch will pivot *downward*.
3. Place the applicator on the quick-change base plate, then slide it back until two notches engage the stops at the back of the plate. At the same time, guide the ram post into the ram post adapter.
4. Flip the locking latch up to secure the applicator in place.

B. Removal

1. Disconnect the power cord.
2. Cut the terminal strip one or two terminals from the end of the applicator.
3. Push in the release bar on the quick-change base plate. The locking latch will pivot *downward*.
4. Slide the applicator forward until it is clear of the ram post adapter.

3.3. Other Terminating Machines

For installation and removal procedures for the basic AMP-O-LECTRIC machine, Model “G” machine, AMP 3K and AMP 5K machines, and AMP 3K/40 and AMP 5K/40 machines, refer to the appropriate machine manual given in Section 1.

For installation and removal procedures for terminating machines not listed, refer to the customer documentation supplied with the machine.


NOTE

Adjustment of the stripper may be required when moving the applicator between bench and leadmaker applications.

4. APPLICATOR LOADING AND UNLOADING

Some terminal strips require the use of a terminal lubricant. Wick-type lubricators apply lubricant to the terminal strip as it feeds into the applicator. Terminal lubricants reduce tooling wear and help reduce damage to the plating on some terminals. Ocean applicator lubricator assembly PN 2119955-2 is available.


CAUTION

Depending on the final use of the crimped terminal, terminal lubricators are not always recommended. To determine if your applications warrant the use of a terminal lubricator, contact your field representative.

If your application warrants the use of a terminal lubricator, the recommended lubricant is Stoner Mechanical Lubricant E807 available from Stoner, Inc. Call 1-800-227-5538 or visit www.stonersolutions.com.

4.1. Terminal Strip Loading


NOTE

Before loading terminal strip in applicator, make sure that the installed applicator is the right one for the terminal to be applied. Compare the terminal part number on the reel with the numbers listed on the applicator parts list.

1. Turn off, and disconnect, the power to the machine.
2. Make sure that the ram assembly is all the way up. If necessary, hand-cycle the machine to raise the ram. Refer to the machine customer manual.
3. Remove the applicator guard assembly.
4. Raise the stock drag by turning the drag release lever *upward*. Remove a length of the terminal strip left in the applicator by grasping the terminals at the strip guide entry, raising the feed pawl, and pulling the strip straight out of the applicator.
5. With the reel of terminals installed on the reel support, feed the terminal strip into the applicator between the strip guides.


NOTE

Make sure that the terminal strip enters the strip guides with the terminal wire barrel first and the wire barrel open side up.

6. Raise the feed pawl, and continue to feed the terminal strip until the lead terminal is over the anvil and the feed pawl engages the terminal in the proper position.
7. If terminals are post-feed, lift the feed pawl and pull the strip back one terminal length. The lead terminal will then be moved over the anvil on the downward stroke of the ram assembly. Make sure that the tip of the feed pawl is in the feed hole of the carrier strip.


NOTE

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

8. Hand-cycle the machine several times to make sure the applicator is properly adjusted as described in Section 5.
9. Re-install the applicator guard assembly.

4.2. Terminal Strip Unloading

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


NOTE

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

2. If terminals are post-feed, turn the drag release lever *upward* to raise the stock drag, lift the feed pawl, and move the lead terminal over the anvil.

5. ADJUSTMENTS

5.1. Wire Crimp Adjustment

1. Select an increment number from 0 (largest crimp height) to 150 (smallest crimp height) from the data plate for the wire size to be used. Each increment represents a change in crimp height of 0.01 mm [.0004 in.].
2. Turn the wire crimp height adjustment disc *clockwise* to decrease the crimp height and turn the wire crimp disc *counterclockwise* to increase the crimp height.
3. Turn the wire crimp disc to line up with the specified increment number with the indicator notch/cut out on the front of the ram. This provides the right crimp height for that wire (see Figure 8).

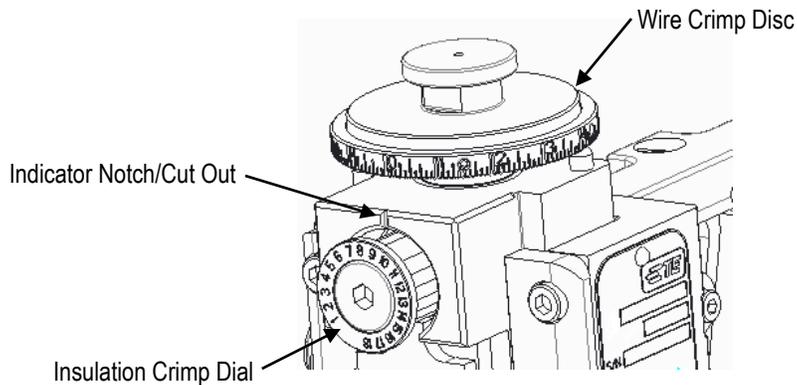


Figure 8

4. Make the insulation crimp adjustment described in paragraph 5.2, then make several test cycles and inspect the terminations closely. Look for rough or sharp edges around the crimped barrels (flash), deformed crimps, bent terminals, or other defects caused by worn or broken tooling. If necessary, replace tooling as described in Section 6.
 - If the terminations appear normal, measure the crimp height of each termination as described in instruction sheet [408-7424](#), packaged with the applicator. The crimp height must agree with the measurement specified on the applicator log for the wire size being used. Record crimp height dimensions for reference.
 - If the crimp height is incorrect, remove the applicator, and install one that is known to produce terminations of correct crimp height. Make several test cycles and repeat the inspection. If the crimp height is incorrect for this applicator, the problem is the machine shut height, and corrective information can be found in the appropriate machine manual. If the crimp height is correct, the problem is in the original applicator, and refer to paragraph 6.6, Adjustable Crimp Height Repair, for corrective measures.
5. During extensive operation, periodically inspect the terminals as described in step 4 to make sure that the applicator is producing correct terminations.

5.2. Insulation Crimp Adjustment

The insulation crimp is adjustable in increments of 0.19 mm [.0075 in.] by pulling the insulation crimp dial out (refer to Figure 4) and turning it to line up with the number (1 through 18) so that it is shown at the indicator notch on the ram: No. 1 makes the loosest crimp and No. 18 makes the tightest crimp. The total range of adjustment is approximately 3.30 mm [.130 in.]. To find the desired insulation crimp, start with No. 1, make test crimps, then increase the setting one number at a time until the proper insulation crimp height is achieved.



NOTE

Some applicators may have a special insulation adjustment dial that differs in range and increments than described. Refer to the marking on the front of the insulation crimp dial for correct increments.

5.3. Terminal Strip Feed Adjustment

A. Mechanical Feed Applicator

**NOTE**

When adjusting a mechanical feed applicator, always start by properly adjusting the stroke length. Then adjust the fine feed adjustment to locate the terminal over the anvil.

1. With the terminal strip properly loaded, check the position of the lead terminal in relation to the slug blade. Locate the feed pawl in the desired position of the terminal (typically the end of the wire barrel). Refer to Figure 6. The slug blade must remove the connecting tab between lead and second terminals—without deforming either terminal.
2. Watch the feed pawl as the machine is hand-cycled (or slowly cycled) several times. It should have enough over-travel on the backstroke to pick up the next terminal, but not so much over-travel that the feed pawl moves up onto the body of the terminal (see Figure 9).

**NOTE**

If the pick-up point is the mating end of the terminal, the backstroke over-travel should be about equal to the distance between the wire barrel and the mating end of the terminal (see Figure 1). For other types of terminals (for example, ring tongue), over-travel should be about the same, depending on the terminal features and configurations (for example, stud hole).

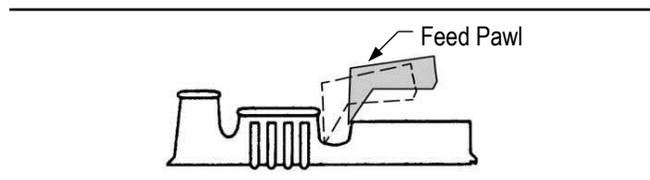


Figure 9

If the backstroke position is correct, the tab is correctly slugged out, and the terminals are not damaged, the feed adjustments are complete. If not, continue with the next step.

**NOTE**

There are two adjustments that work in combination to properly position the lead terminal over the anvil and give the proper backstroke position to pick up the next terminal feed hole. Use one or both adjustment types to properly adjust the applicator.

3. If the slug blade does not shear the terminal in the correct position, make note of the position and continue to cycle the applicator to check the backstroke position. If the lead terminal is not slugged out correctly and the backstroke position is incorrect, both the stroke length and the fine feed position must be adjusted. Stroke length (backstroke position) must be adjusted before final centering of other terminals under the slug blade.
4. Loosen the stroke length adjustment lock screw (see Figure 6).
5. Turn the stroke length adjustment screw *counterclockwise* to reduce the stroke length or *clockwise* to increase the stroke length.
6. Tighten the stroke length adjustment lock screw.
7. Repeat steps 1 through 6 as required until proper stroke length is achieved. The terminal might not be slugged out correctly (or positioned under the slug blade correctly); this will be adjusted in a later step.

If the feed pawl stroke length is satisfactory and the backstroke position is correct, but the lead terminal is not slugged out correctly (or positioned under the slug blade correctly) and the stroke is correct, but the position is incorrect, an adjustment to the fine feed screw is required. Continue with the next step.

8. Adjust the feed pawl position as follows:
 - a. Loosen the fine feed adjust lock screw on the side of the feed pawl holder to allow the fine feed adjustment screw to turn. Refer to Figure 6.

**NOTE**

Do not remove the fine feed adjust lock screw. A nylon plug is captured behind the lock screw. Loss of this plug will cause damage to the fine feed adjustment screw threads when the lock screw is tightened.

- b. Turn the adjustment screw *counterclockwise* to move the feed pawl away from the anvil and *clockwise* to move the feed pawl toward the anvil. Position the terminal under the slug blade.
 - c. Tighten the lock screw to secure the fine feed adjustment screw.
9. Re-check the adjustment for the proper position and stroke as described in step 1. Repeat the adjustment procedure as necessary.

B. Air Feed Applicator

The feed mechanism is actuated by compressed air. Refer to Figure 2.



DANGER

To avoid personal injury, this applicator should be used only in an appropriate terminating machine. The pressurized air supply should only be connected after the applicator is properly installed in the terminating machine.



DANGER

Take extra precautions during adjustments. When the machine is manually cycled, the mechanism will move forward and backward once during each machine stroke, unless the air is disconnected.

The feed stroke is adjustable in a range from 0 to 49.8 mm, depending on the air feed part number, in stepped increments of 0.04 mm [.0016 in.] for the feed forward position and in 0.08-mm [.0031-in.] increments for the rear feed pawl position (backstroke).



NOTE

For ease of adjustment, the end cap can be removed with a 3-mm wrench, exposing the “tool-less” adjustment knobs (recommended procedure). However, air feed module PN 2063440 can be adjusted with the end cap in place using a 3-mm wrench or small screwdriver.

1. Mount the applicator onto the machine.
2. Insert the terminal strip until the lead terminal is located over the anvil.
3. Connect the air supply to the applicator.
4. Cycle the machine manually. The next terminal must now be located exactly over the anvil and the slug blade must remove the connecting tab between the lead and second terminals—without deforming either terminal. If that is *not* the case, proceed with the following.
 - a. Release the strip guide drag, and manually move the strip to the proper position—a rough-position only. The fine adjustment will come in a later step.
 - b. Jog the machine down to the lower-dead-center position. The feed cylinder and pawl will be retracted away from the anvil.
 - c. Using the backstroke adjustment knob (see Figure 2), position the feed pawl to the proper back position, typically the end of the wire barrel (see Figure 9). If the end cap is in place, use a 3-mm hex wrench or small screwdriver to reach through the end cap to rotate the feed adjustment knob. The adjustments are in 0.08-mm [.003-in.] increments or 30 degrees and can be felt as clicks.



NOTE

To facilitate adjustments with certain machines or applications, the feed adjustments can also be made with the air pressure removed. This allows more tactile feel of the detents. This requires manually moving the feed forward and back to check feed positions. The air feed housing marking (shown in Figure 2) indicates the maximum backstroke travel of the feed arm. Make sure that the feed forward and back positions are verified after restoring air pressure.



NOTE

If the pick-up point is the mating end of the terminal, the backstroke over-travel should be about equal to the distance between the wire barrel and the mating end of the terminal (see Figure 1). For other types of terminals (for example, ring tongue), over-travel should be about the same, depending on the terminal features and configurations (for example, stud hole).

- d. Jog the machine to top-dead-center. The feed will move the next terminal over the anvil.
 - e. Check position of the terminal over the anvil, noting if the terminal feed-forward position should be moved.
 - f. Cycle the machine manually until the feed pawl shifts back. This releases the air pressure on the feed adjustment, making the adjustment detent positions easier to feel.

- g. Using the feed-forward adjustment knob, change the feed-forward position based on the direction and amount noted in step 4.d. The adjustments are in 0.04-mm [.0016-in.] increments or 15 degrees and can be felt as clicks during the feed-stroke adjustment knob rotation. Turning the feed forward adjustment knob *clockwise* moves the feed pawl away from the anvil and turning it *counter-clockwise* moves the feed pawl toward the anvil.


NOTE

When adjusting, make sure that only the feed adjustment knob turns, not the entire shaft. The backstroke adjustment knob may have to be held stationary to prevent unintended backstroke adjustments (use a 3-mm wrench when the end cap is in place).

- h. Cycle the machine back to top-dead-center, causing the feed to shift forward and feeding the terminal over the anvil.
- i. Repeat steps 4.d. through 4.h. until the terminal is centered over the slug blade.

5. To adjust the air feed speed, proceed as follows:


NOTE

The air feed speed has been set at the factory and should therefore require re-adjustment only in exceptional circumstances.


NOTE

Take extra precautions during adjustments. When the machine is manually cycled, the mechanism will move forward and backwards once during each press stroke unless the air is disconnected.


CAUTION

Do not tamper with the detent screws on feed adjustments (see Figure 2), which were set up properly by the factory; otherwise, damage will occur.

The feed mechanism has been adjusted at the factory to ensure that the terminal is advanced at the lowest possible speed. In rare occasions, it is possible that the feed speed is not fast enough if the applicator is used on a fully automatic machine. The feed speed can be adjusted by means of the two exhaust restrictors.


NOTE

Excessive feed and/or retract speeds can cause inconsistent feeds and/or air feed module damage.

- a. Open the exhaust restrictors or forward speed control and retract speed control (shown in Figure 2) to increase the feed speed.


NOTE

The speed controls should not be fully opened to maximize feed speed. It is recommended to only open the flow control valves two complete revolutions.

- b. Loosen the locking ring, and turn the adjustment screw *clockwise* to decrease the speed and *counter-clockwise* to increase the speed.
- c. When complete, tighten the locking ring.

C. Servo Feed Applicator

1. With the terminal strip properly loaded, check the position of the lead terminal over the anvil by actuating the feeder to move the feed pawl to the extend position. The slug blade must remove the connecting tab between lead and second terminals—without deforming either terminal.

If the lead terminal is centered on the anvil, the forward limit adjustment is correct. Proceed with step 4. If it is not centered, continue with step 2.

2. Adjust the extend position as described in the feeder instructions in customer manual [409-10073](#).
3. Repeat steps 1 and 2 as required. When the adjustment is correct, continue with step 4.
4. Watch the feed pawl as the machine is cycled several times. It should have *enough, but not too much* over-travel on the retract (stroke) to pick up the next terminal.


NOTE

At the end of the retract stroke, the feed pawl should be at the back edge of the feed hole to be used. The back stroke must not be longer than this; otherwise, the feed pawl might not drop into the feed hole.

If the feed pawl stroke length is satisfactory, feed adjustments are complete.

5.4. Stock Drag Adjustment

The stock drag must be adjusted to apply only enough pressure to the terminal strip so that it will stop at the end of the feed finger stroke.

1. Turn the stock drag adjustment nuts (shown in Figure 6) *down* to *increase* the drag and *up* to *decrease* the drag.
2. Cycle the machine under power to ensure that the stock drag is properly adjusted.

5.5. Strip Guide Adjustment



DANGER

To avoid personal injury, make sure that the power to the machine is turned off and the power cord is disconnected before taking the applicator out of the machine. The machine ram should be in the raised position.

1. Remove the applicator from the machine as described in Section 3, APPLICATOR INSTALLATION AND REMOVAL.
2. Remove the ram assembly from the applicator.
3. Remove the two nuts holding the springs in place on the terminal drag plate. Refer to Figure 10.
4. Remove the drag plate and springs.
5. Loosen (but do not remove) the six screws securing the lower strip guide.
6. With a terminal strip in place, adjust the guides to align and center the strip over the anvil.
7. Securely tighten the four rear-most screws. The strip should slide easily between the guides with a minimum of clearance.
8. If present, adjust the strip hold-down plate (shown in Figure 10) so it is square with the terminal strip and positioned so that it will not interfere with the slug blade tooling on the ram (shown in Figure 4).
9. Tighten the remaining screws on the strip guide.

Adjusting Strip Guide

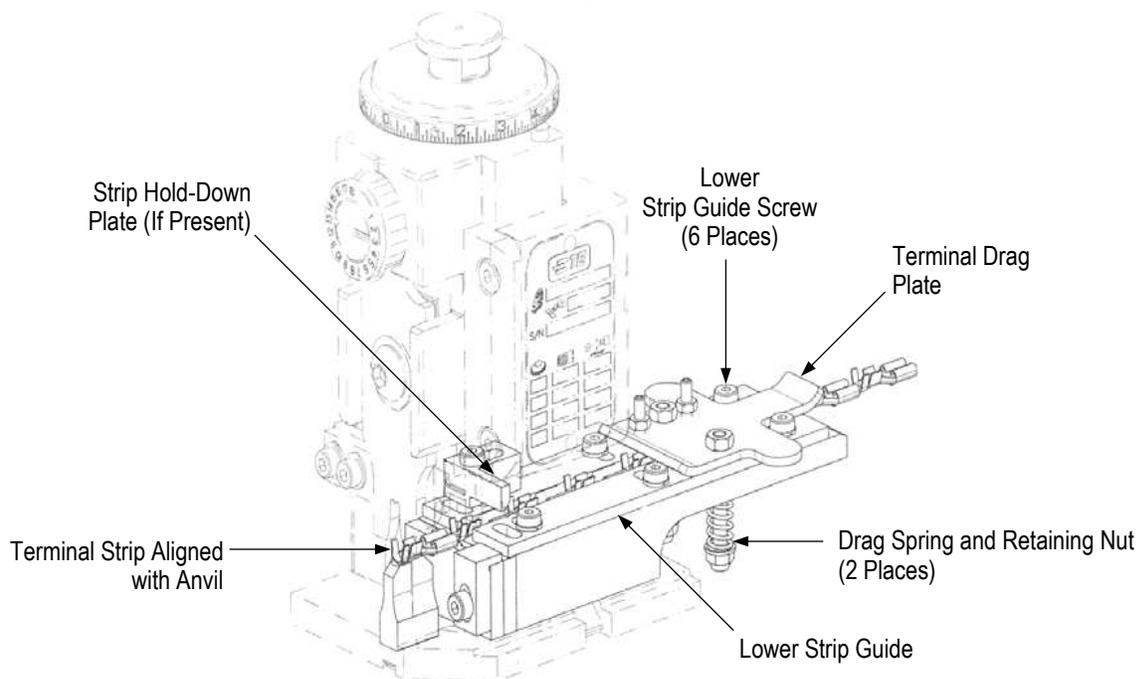


Figure 10

10. Verify the alignment of the terminal strip with the anvil. The strip should be centered over the anvil and in line with the radius nest on top of the anvil.
11. Re-install the drag plate, drag springs, and securing nuts.
12. Adjust the drag.

6. REPLACEMENT AND REPAIR

These procedures cover the applicator parts which most often need replacement or repair because of wear. Proceed with the following:



NOTE

Make sure to order replacements for parts that were used from the spare parts stock so they will be available when needed.

1. Remove the applicator from the machine before performing any maintenance work.



DANGER

Before taking the applicator out of the machine, make sure that the power to machine is turned "off" and the power cord is disconnected. The machine ram should be in the raised position.

2. Refer to the exploded view drawing on the applicator log and the parts list packaged with the applicator for identification of parts.
3. Wipe the parts with a clean, dry cloth as they are removed from the applicator. Then, when putting them back into applicator, wipe the mating surfaces with your fingers to make sure that all lint and other foreign matter have been removed.

6.1. Anvil Replacement

1. From the bottom of the base plate, remove the screw that holds the anvil to the base plate.
2. Remove the anvil from the groove in the top of the base plate.
3. Install the anvil using the reverse of the installation procedure. If a new anvil is needed, be sure the part number of the new anvil agrees with the number on the applicator parts list.

6.2. Shear Plate Replacement

1. Lift the stock drag and feed pawl, then pull the section of the terminal strip back so that the lead terminal is between strip guides.
2. Remove the two screws that fasten the shear plates and spacers (if used) to the strip plates.
3. Remove the parts from the applicator. Note the position of the front and rear shear plates in order to re-install them correctly.
4. Check the worn shear plate(s) to determine if they can be re-positioned to provide another usable shearing edge as follows:
 - Most rear plates are the same at the front and rear. If so, and if the second side is not worn, turn the plate front to the rear, making sure that the widest part of the chip clearance groove is at the bottom.
 - If the front plate is *completely* symmetrical, turn it so that any unused edge is at the top rear. If the front plate does not require spacers and is the same on the top and bottom, turn it top to bottom (if bottom edge is not already worn). Make sure that the grooves are facing the rear shear plate.
5. With the old plates re-positioned or the new plates properly positioned, re-install the shear plates and spacers (if used), and fasten them in place with the two screws.

6. Hold the top of the ram assembly with one hand, while moving the feed pawl with the other hand. Slowly lower the ram assembly to check the alignment of the slug blade with the shear plates.
 - If side-to-side alignment is needed, loosen the two screws holding the shear plates, and move the plates to line them up properly. Re-tighten the screws.
 - If front-to-back alignment is needed, lay the applicator carefully on its side, and slightly loosen the four screws that hold the strip guide plate to the base plate. Move the strip guide plate in the required direction until the slug blade can pass freely between the shear plates. With the slug blade between the shear plates, retighten the four screws.
7. Set the applicator upright, and raise the ram assembly until the slug blade is clear of the shear plates. Then, lower and raise the ram assembly several times to make sure that the slug blade moves in and out of the shear plates freely.
8. Lift the stock drag and feed pawl, and slide the terminal strip section forward until the lead terminal is over the anvil.

6.3. Crimper Replacement

1. Loosen the crimper bolt slightly and remove the ram assembly from applicator by pulling upward. It may be necessary to move the feed pawl forward to release the ram assembly.
2. Remove the crimper bolt that 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 the parts using the reverse of the installation procedure. The upper end of the wire crimper must be up against the shoulder of the ram assembly. Tighten the crimper bolt only finger-tight.



NOTE

Crimpers *must* be positioned with the part number facing up. If new parts are used, make sure that the part numbers agree with the numbers on the applicator parts list.

4. Put the ram assembly back into the applicator, and install the applicator in machine.
5. Lift the feed pawl and pull the terminal strip back until the lead terminal is between the strip guides.
6. Form a piece of heavy paper over the anvil, then slowly hand-cycle the machine while watching alignment of the crimpers with the anvil. When the ram assembly has reached the bottom of the stroke, carefully tighten the crimper bolt to a torque between 10.8 and 13.6 Nm [8 and 10 ft-lb]. The crimpers must move without interference over the anvil after the heavy paper is removed.
7. Before using applicator, set wire disc crimp height reference setting to zero, and then, incrementally adjust toward desired crimp height. **A crimp height reference setting larger than needed may cause damage to the crimp tooling.**

6.4. Air Feed Bushings, Piston Rods, and O-Rings Replacement

Air feed module rebuild kits PN 2217901-[] are available to replace worn air feed bushings, piston rods, and O-rings (call the number at the bottom of page 1 for kit info). For installation procedure, refer to [408-32121](#).

6.5. Applicator Housing to Base Plate Alignment

Each applicator is properly aligned and the base plate bolts are sealed by the factory; however, it is possible to misalign the applicator housing from the base plate due to mishandling or dropping the applicator. If the applicator becomes misaligned, contact a TE field service representative or order end-feed applicator alignment gage PN 2161422-3.

When aligning the applicator, make sure to torque the base plate screws and, if needed, the gib screws to the proper specification. The base plate screws should be torqued to 11.298 Nm [100 in.-lbs] and the gib screws should be torqued to 5.649 Nm [50 in.-lbs].

6.6. Adjustable Crimp Height Repair

The crimp height shim can break or become dislodged under some severe operating conditions or applications. This could cause the applicator to produce terminations with a different crimp height than specified. To correct this, refer to Figure 11, and proceed with the following.

1. Subtract the specified nominal crimp height from the average crimp height recorded under paragraph 5.1, Wire Crimp Adjustment. This difference will be the thickness of the shim(s) (PN 2119957-1) to be added under the spacer.
2. Remove the ram assembly from the applicator, and remove the single revolution limiter bolt.

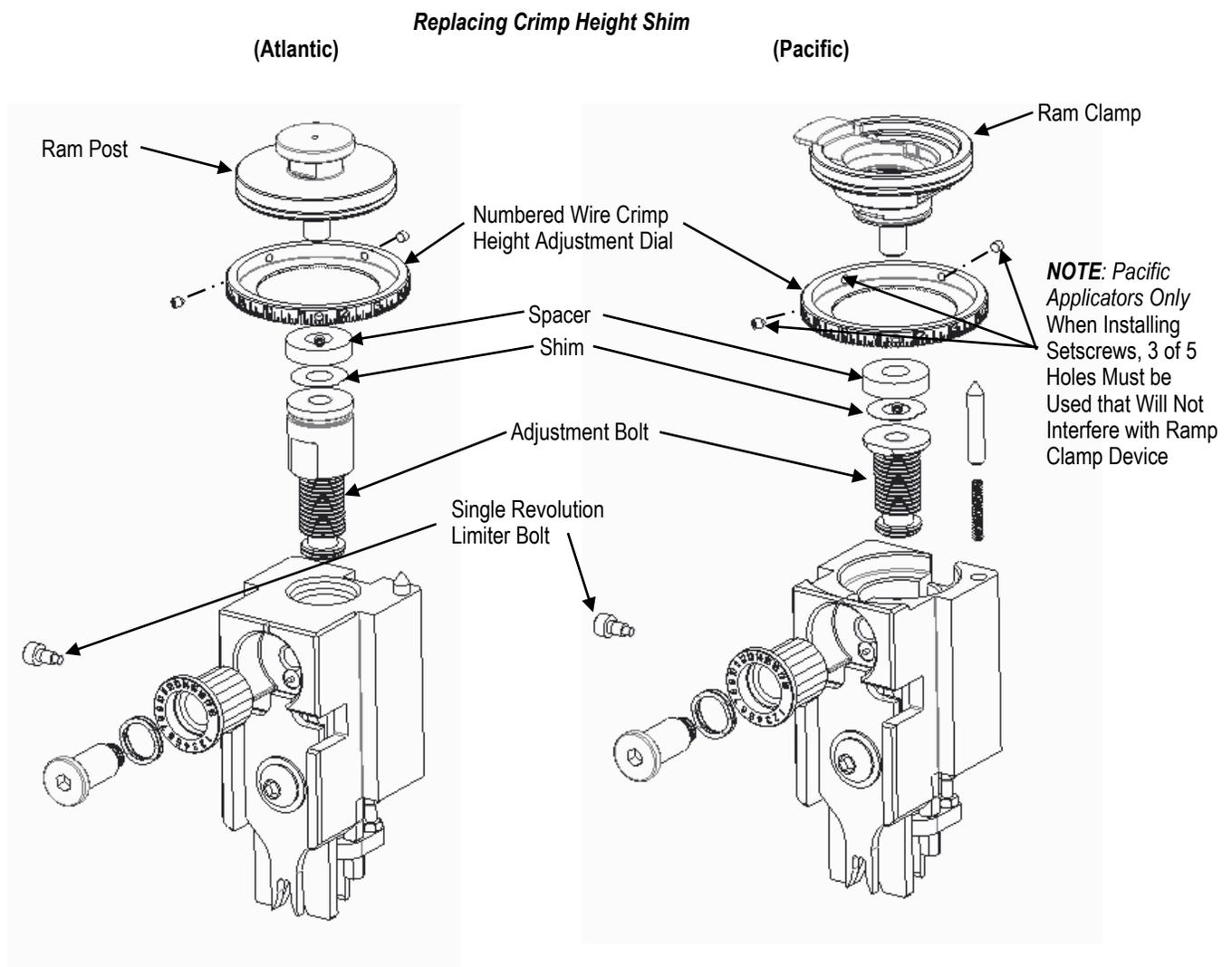


Figure 11

3. Hold the ram assembly with the ram post (or clamp, depending on the applicator style) pointing up. Then unscrew the ram post (or clamp) from the ram, exposing the adjustment screw assembly. If necessary, the ram may be placed in a soft jaw vise to free both hands for turning the ram post (or clamp).
4. Loosen and unscrew the ram post (or clamp) from the adjustment bolt to access the shim(s).
5. Place the shim(s) having the thickness determined in step 1 on the ram post (or clamp). If the old washer is broken and must be replaced, measure the thickness of the broken washer with a micrometer. Add this measurement to the amount to be added (determined in step 1), and select the new shim(s) having this thickness. Place the new shim(s) on the ram post (or clamp).

6. Re-tighten the ram post to the adjustment bolt with the spacer and new shim(s) placed in between.

**NOTE**

Lightly grease the threads of the adjustment bolt with the recommended greases before re-assembling.

7. Hold the ram with the hole facing up, assemble the adjustment screw assembly into the ram, and tighten it by hand until it bottoms in the ram. Make sure not to tighten the adjustment screw assembly. Just turn it in the assembly until it stops.
8. Re-install the single revolution limiter bolt back into the ram. Make sure that the numbered wire crimp height adjustment dial lines up properly with the indicator wedge cut-out pointing to the zero on the numbered wire crimp disc.

**NOTE**

If necessary, loosen the 3 setscrews holding the numbered wire crimp and height adjustment dial to the ram post and turn it until the dial indicates a zero reading, then re-tighten the 3 setscrews against the ram post.

**CAUTION**

When tightening the setscrews, turn each setscrew 60 – 90 degrees after contacting the center hub. Tightening more than 90 degrees can compromise the numbered wire crimp height adjustment dial and cause it to crack. Also, apply Loctite 222 threadlocker to the setscrews before tightening them.

9. Put the ram assembly back into the applicator.
10. Install applicator in machine, and make some test crimps. Measure the crimp heights, and check them against the crimp height specified on the applicator parts list. If the crimp heights are within specified tolerances, the applicator may be placed in service. If not, repeat this procedure, starting with step 1.

6.7. Counter Magnet Orientation

The applicator counter magnet will properly actuate the applicator counter (shown in Figure 5) only if it is installed with the correct side facing out from the ram. If for any reason the magnet is removed, it will need to be determined (before re-installing the magnet in the ram) which side of the magnet actuates the counter by running the magnet behind the counter by hand to see which side of the magnet actuates the counter properly.

6.8. Wire Depressor Accessory

Refer to Figure 12 to determine the parts required to add this accessory if it is not installed on the applicator from the factory.

7. CLEANING, LUBRICATION, AND STORAGE

For best performance and minimum downtime, the applicator should be cleaned (daily and monthly), inspected, lubricated, and stored as indicated in instruction sheet [408-8059](#).

8. REVISION SUMMARY

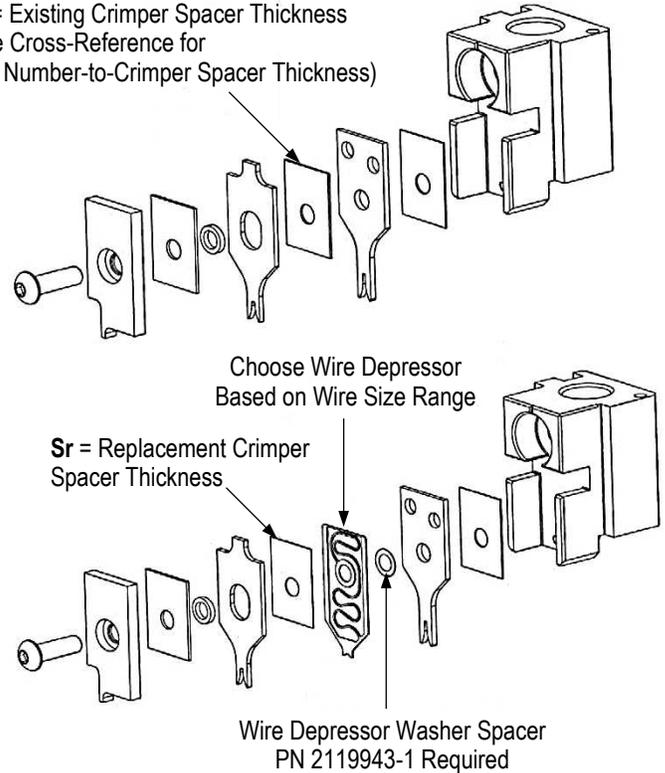
Revisions to this Instruction Sheet include:

- Added paragraph 6.3.7. which says: Before using applicator, set wire disc crimp height reference setting to zero, and then, incrementally adjust toward desired crimp height. **A crimp height reference setting larger than needed may cause damage to the crimp tooling.**

Part Number-to-Crimper Spacer Thickness Cross-Reference

PART NUMBER	THICKNESS mm [in.]
455888-1	0.25 [.010]
455888-2	0.30 [.012]
455888-3	0.38 [.015]
455888-4	0.51 [.020]
455888-5	0.66 [.026]
455888-6	0.79 [.031]
455888-7	0.89 [.035]
455888-8	1.02 [.040]
455888-9	1.14 [.045]
1-455888-0	1.27 [.050]
1-455888-1	1.40 [.055]
1-455888-2	1.52 [.060]
1-455888-3	1.57 [.062]
1-455888-4	1.65 [.065]
1-455888-5	1.78 [.070]
1-455888-6	1.91 [.075]
1-455888-7	2.03 [.080]
1-455888-8	2.16 [.085]
1-455888-9	2.29 [.090]
2-455888-0	2.36 [.093]
2-455888-1	2.41 [.095]
2-455888-2	2.54 [.100]
2-455888-3	2.67 [.105]
2-455888-3	2.67 [.105]
2-455888-4	2.79 [.110]
2-455888-5	2.92 [.115]
2-455888-7	3.18 [.125]
2-455888-8	4.37 [.172]
2-455888-9	5.08 [.200]
3-455888-2	3.63 [.143]
3-455888-7	3.56 [.140]
7-455888-2	4.83 [.190]

Se = Existing Crimper Spacer Thickness
(See Cross-Reference for Part Number-to-Crimper Spacer Thickness)



Step 1

Determine replacement crimper spacer thickness using the following formula:

$$Se - 0.64 \text{ mm [.025 in.]} = Sr$$

Note: Use the table to determine which crimper spacer or combination of crimper spacers is required to achieve proper replacement crimper spacer thickness.

Note: The existing crimper spacer must be at least 0.64 mm [.025 in.] thick in order to add a wire depressor to an existing applicator.

Step 2

Choose a wire depressor based on the wire size range:

PN 2119791-5 0.008-1.305 mm² [38-16 AWG]

PN 2119791-9 0.150-5.270 mm² [20-10 AWG]

Step 3

Order replacement components:

Washer spacer PN 2119943-1

Wire depressor (chosen in Step 2)

Crimper spacer/spacers (chosen in Step 1)

Note: When crimper spacer PN 455888-5 or 455888-6 are fitted to the applicator, ONLY the wire depressor and corresponding spacer need to be used.

Figure 12