customer manual

ORIGINAL INSTRUCTIONS

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SAFETY PRECAUTIONS — AVOID INJURY

Safeguards are designed into this application equipment to protect operators and maintenance personnel from most hazards during equipment operation. However, certain safety precautions must be taken by the operator and repair personnel to avoid personal injury, as well as damage to the equipment. For best results, application equipment must be operated in a dry, dust-free environment. Do not operate equipment in a gaseous or hazardous environment.

Carefully observe the following safety precautions before and during operation of the equipment:

Always wear approved eye protection while operating equipment.

Always wear appropriate ear protection while using equipment.

Moving parts can crush and cut. Always keep guard(s) in place during normal operation.

Electrical shock hazard.

Always turn off the main power switch and disconnect the electrical cord from the power source when performing repair or maintenance on the equipment.

Never insert hands into installed equipment.
Never wear loose clothing or jewelry that may catch in moving parts of the equipment.

Never alter, modify, or misuse the equipment.

TOOLING ASSISTANCE CENTER

CALL TOLL FREE 1-800-722-1111 (CONTINENTAL UNITED STATES AND PUERTO RICO ONLY)

The **Tooling Assistance Center** offers a means of providing technical assistance when required.

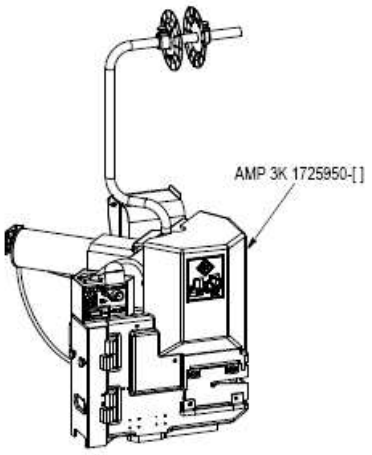
In addition, Field Service Specialists are available to provide assistance in the adjustment or repair of the application equipment when problems arise which your maintenance personnel are unable to correct.

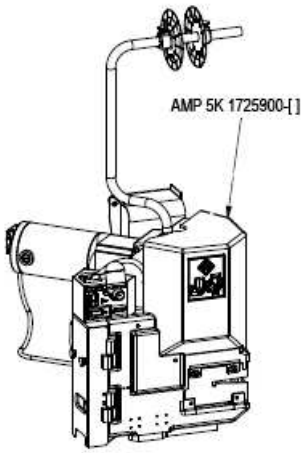
INFORMATION REQUIRED WHEN CONTACTING THE TOOLING ASSISTANCE CENTER

When calling the Tooling Assistance Center regarding service to equipment, it is suggested that a person familiar with the device be present with a copy of the manual (and drawings) to receive instructions. Many difficulties can be avoided in this manner.

When calling the Tooling Assistance Center, be ready with the following information:

1. Customer name
2. Customer address
3. Person to contact (name, title, telephone number, and extension)
4. Person calling
5. Equipment number (and serial number if applicable)
6. Product part number (and serial number if applicable)
7. Urgency of request
8. Nature of problem
9. Description of inoperative component(s)
10. Additional information/comments that may be helpful





PART NUMBER	CAPACITY (lbs)	STROKE LENGTH (mm)	CQM II	APPLICATOR BASE	SHUT HEIGHT (mm)	WORK LIGHT	BATCH COUNTER	SPECIAL
1725950-2	3000	41.25	No	Amp	135.79 ±0.025	Yes	Yes	---
1725950-3	3000	30	No	Amp	135.79 ±0.025	Yes	Yes	---
4-1725950-2	3000	41.25	Yes	Amp	135.79 ±0.025	Yes	Yes	---
4-1725950-3	3000	30	Yes	Amp	135.79 ±0.025	Yes	Yes	---
5-1725950-0	3000	30	No	Universal (Jam)	119.50 ±0.025	Yes	Yes	---
5-1725950-1	3000	30	Yes	Universal (Jam)	119.50 ±0.025	Yes	Yes	---
1725900-2	5000	41.25	No	Amp	135.79 ±0.025	Yes	Yes	---
1725900-3	5000	30	No	Amp	135.79 ±0.025	Yes	Yes	---
1-1725900-0	5000	30	No	Quick (Jam)	119.50 ±0.025	Yes	Yes	---
3-1725900-0	5000	41.25	No	Amp	135.79 ±0.025	Yes	Yes	Air Feed/Overside Guards
4-1725900-2	5000	41.25	Yes	Amp	135.79 ±0.025	Yes	Yes	---
4-1725900-3	5000	30	Yes	Amp	135.79 ±0.025	Yes	Yes	---
5-1725900-0	5000	30	No	Universal (Jam)	119.50 ±0.025	Yes	Yes	---
5-1725900-1	5000	30	Yes	Universal (Jam)	119.50 ±0.025	Yes	Yes	---

Figure 1

1. INTRODUCTION

This manual contains information on operation, preventive maintenance, and adjustments of the AMP 3K and AMP 5K Terminating Machines 1725950-[ ] and 1725900-[ ] respectively. See Figure 1.

Both series machines (AMP 3K and AMP 5K) are equipped with precision crimp height adjustments and a guard interlock.

Descriptions in this manual pertain to the controls and adjustments on the AMP 3K and AMP 5K machines only.

When reading this manual, pay particular attention to DANGER, CAUTION, and NOTE statements.

The specifications and requirements for the AMP 3K and AMP 5K Terminating Machines are as listed below:

Deflection	0.13 mm [.0046 in.] Maximum per 4,448 Newtons [1,000 lb] Crimp Force
Noise (Model 3k Series):	Less than 76 dBa Typical at operator position with standard mechanical feed applicator
Noise (Model 5k Series):	Less than 80 dBa Typical at operator position with standard mechanical feed applicator
Weight	68.86 Kilograms [143 lb]
Height	510 mm [20 in.] without reel supports
Electrical	100-240 Vac, 50/60 Hz, Single-Phase Current
Air	620-760 kPa [90-100 psi], 2.83 liters/sec (6 scfm) When required for use with air-feed applicators
Physical Environment:	Temperature: 4.4° to 40° C [40° to 104° F] Relative Humidity: Less than 95% (non-condensing) Transportation and Storage: Store in a clean, dry environment after coating all surfaces lightly with a rust preventing oil.

Various TE applicators can be used in the AMP 3K and 5K terminating machines. Applicator instructions sheets are packaged with each applicator. The applicator instruction sheets provide information on applicator installation, care, and adjustment.

When reading this manual, pay particular attention to DANGER, CAUTION, and NOTE statements

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

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

NOTE
Highlights special or important information.

NOTE
Dimensions in this customer manual are in metric units [with U.S. customary units in brackets]. Figures are not drawn to scale.

2. DESCRIPTION

The AMP 3K and AMP 5K Terminating Machines were designed to be used as stand-alone semi-automatic bench units. They are assembled with metric hardware.

These machines accept a wide variety of miniature (mini) quick-change applicators (including the TE Ocean Applicator), thus providing a great selection of terminals for many applications.

Older TE applicators use different feed cams depending on the machine stroke. Refer to Figure 2 for changeover cams required to run 1 1/8-in. stroke cams (for AMP-O-LECTRIC* Model "K" terminating machines) and 1 5/8-in. stroke cams (for Model "T" and Model "G" Terminating machines) in the machines.

ORIGINAL APPLICATOR	FEED TYPE	CHANGEOVER CAMS FOR THE MACHINES	
		1 5/8-in. [41.25 mm] Stroke Machines	1 1/8-in. [30 mm] Stroke Machines
1 1/8-in. Stroke Applicator for Model “K" Terminating Machine	Pre-Feed	690602-6	---
	Post-Feed	690501-4	---
1 5/8-in. Stroke Applicator for Model “T" and Model “G" Terminating Machines	Pre-Feed	---	690602-5
	Post-Feed	---	690501-3
Heavy-Duty Industrial (HD-I) Applicator	Pre-Feed/Post-Feed	Refer to the HD-I Applicator customer drawing for part numbers.	

Figure 2

2.1. Functional Description

These machines provide the force required to crimp terminals in the applicator. A terminal is attached to the wire by placing the wire in the crimp area and pressing the footswitch. The machine consists of four functional areas:

1. The ***motor group*** includes a dc motor which drives a crankshaft. The motor is activated each cycle and rotates the crankshaft one full revolution. A 6 mm hex key placed in the recess located on the end of the motor, can be used to cycle the motor manually. See Figure 3.
2. The ***crankshaft-ram group*** converts the motor’s rotational motion into the up-and-down action of the ram for driving the applicator during the crimping cycle.

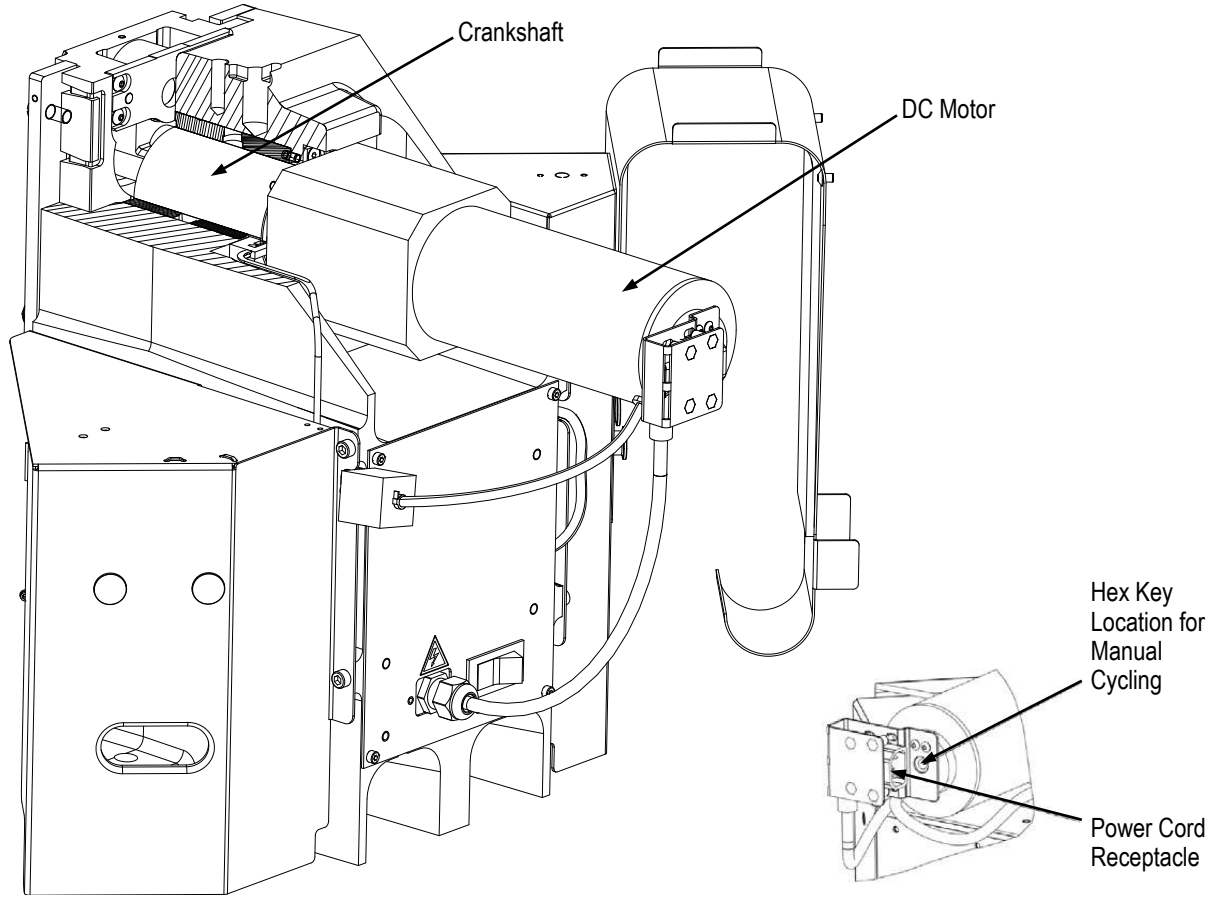


Figure 3

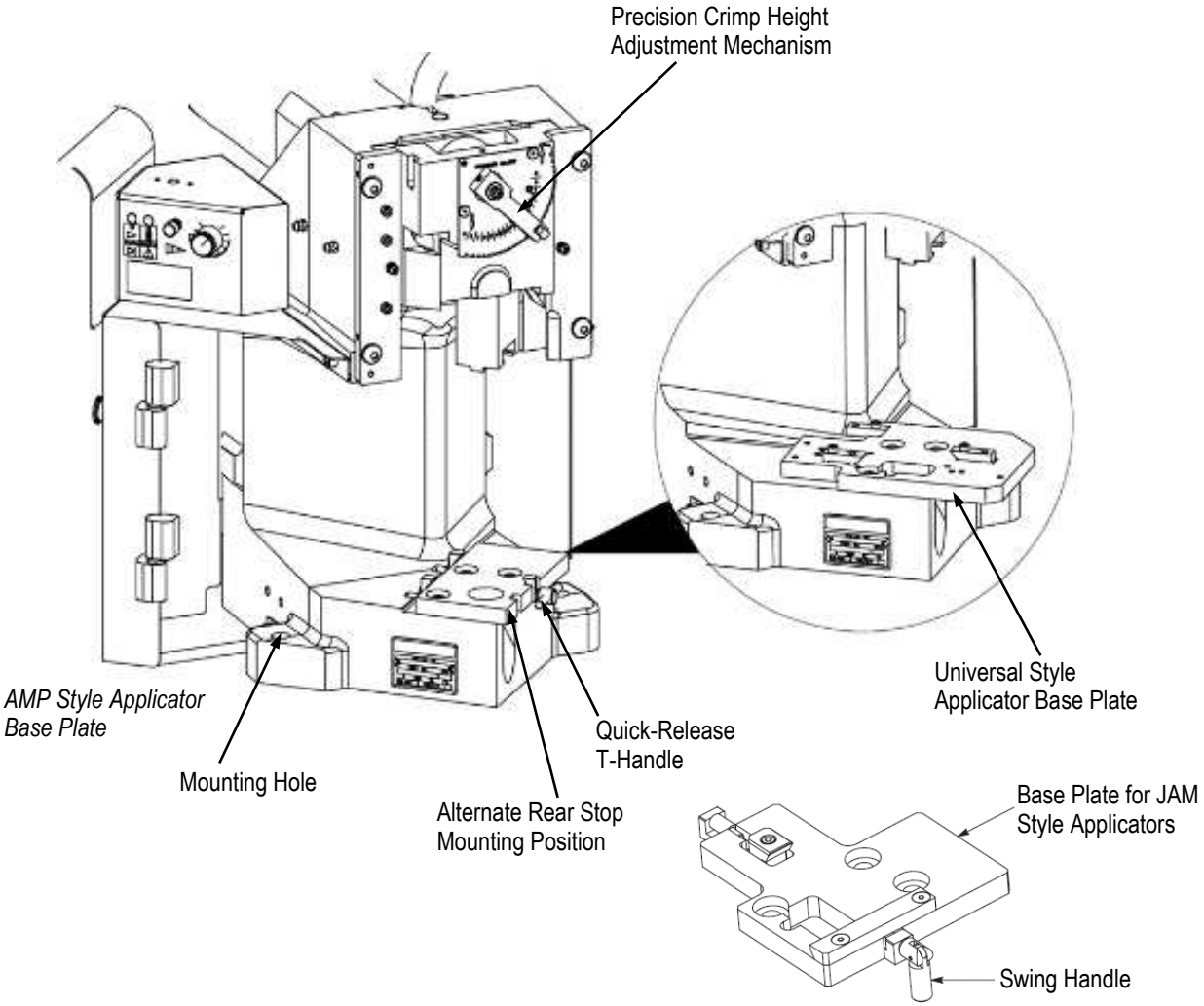


Figure 4

3. The ***base plate*** provides the mounting surface on which the applicator is installed. The quick-release latching feature on machines with the AMP style base plate permits fast, easy installation and removal of the applicator. Machines with the Universal style base plate do not include the quick-release latching feature. See Figure 4.

4. The ***crimp height adjustment*** group uses an eccentric located in the ram linkage, along with detented stops in the mechanism to adjust the crimp height. Indexing the mechanism in either direction will change the crimp height in increments of approximately 0.013 mm [.0005 In.] per step. Refer to Figure 4 for the Precision Crimp Height Adjustment Mechanism.

2.2. Electrical Description

The 1725950-[ ] and 1725900-[ ] machine electrical components consist of the operator control panel, the motor, and the CPU/motor controller package. The machine operates on 100/240 Vac, 50/60 Hz, single-phase current with ground. The machine will automatically detect the supply voltage and adjust the controller accordingly.

The operator control panel (Figure 5) is mounted on the left side of the machine frame. The control panel consists of two indicator lights, one jog button, and one speed control knob, with icons depicting each function. See Figure 9 for control panel operation.

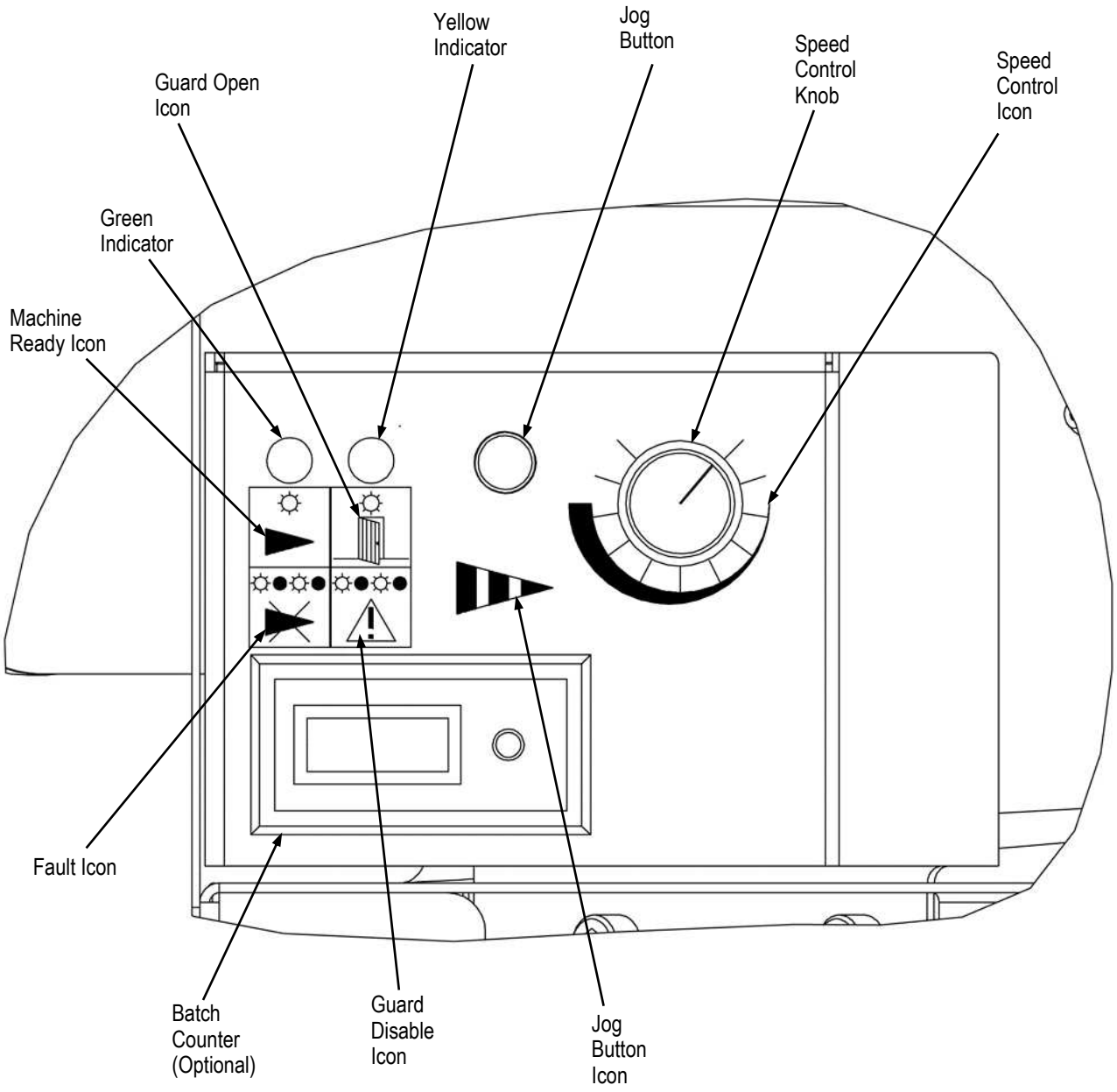


Figure 5

A main power switch/circuit breaker (Figure 6) is located on the back of the machine. This switch connects ac power to the control system. The CPU/motor controller is located behind the back cover of the machine. It is a modular unit that contains all of the electronics necessary to operate the machine. See Figure 6.

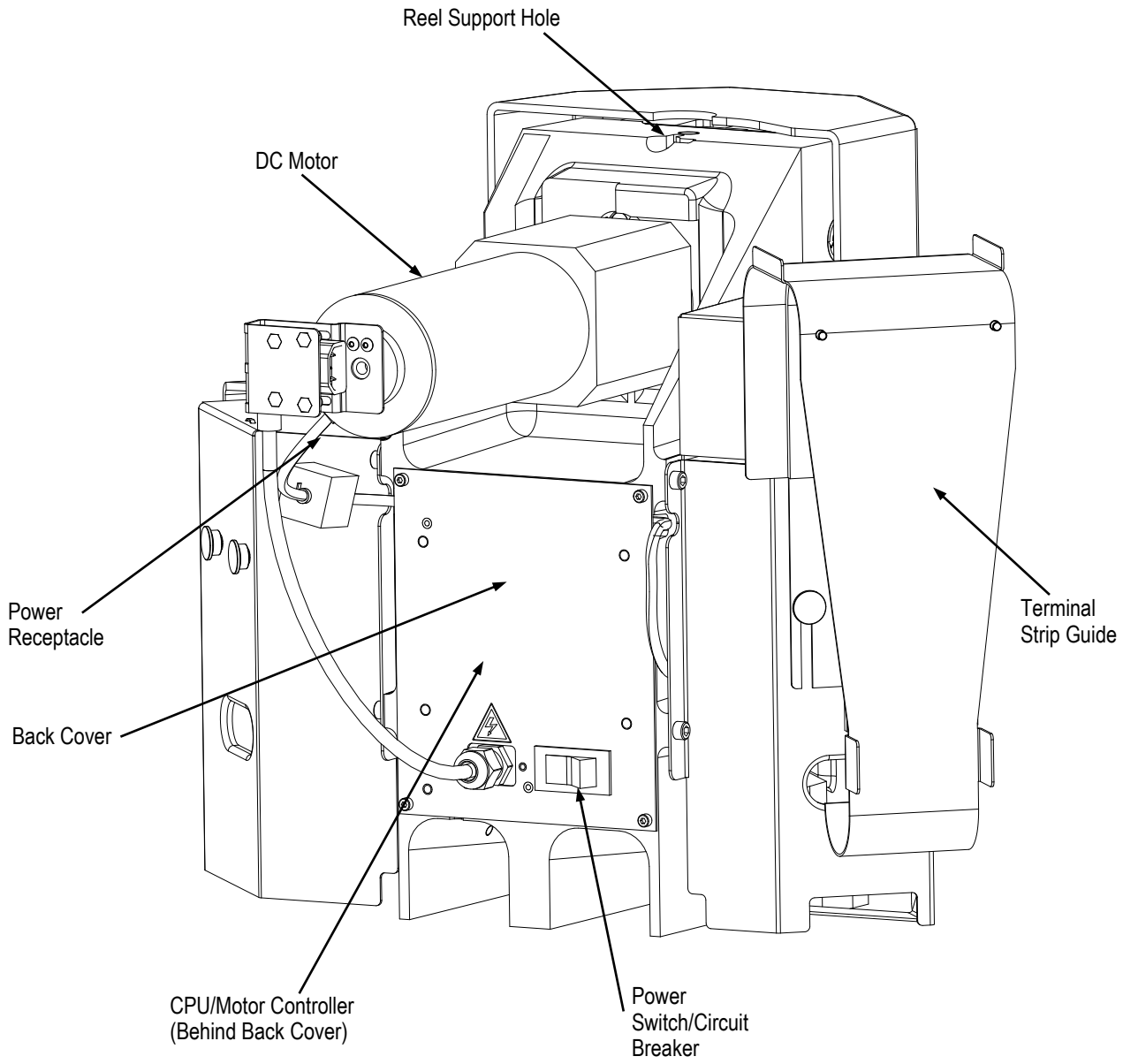


Figure 6

2.3. **Machine Guard** (Figure 7)

A guard is installed to provide protection for the operator while maintaining proper visibility of the work area. The guard swings open to allow easy access for applicator installation and setup. A safety interlock on the guard prevents the machine from cycling if the guard door is open during production operation.

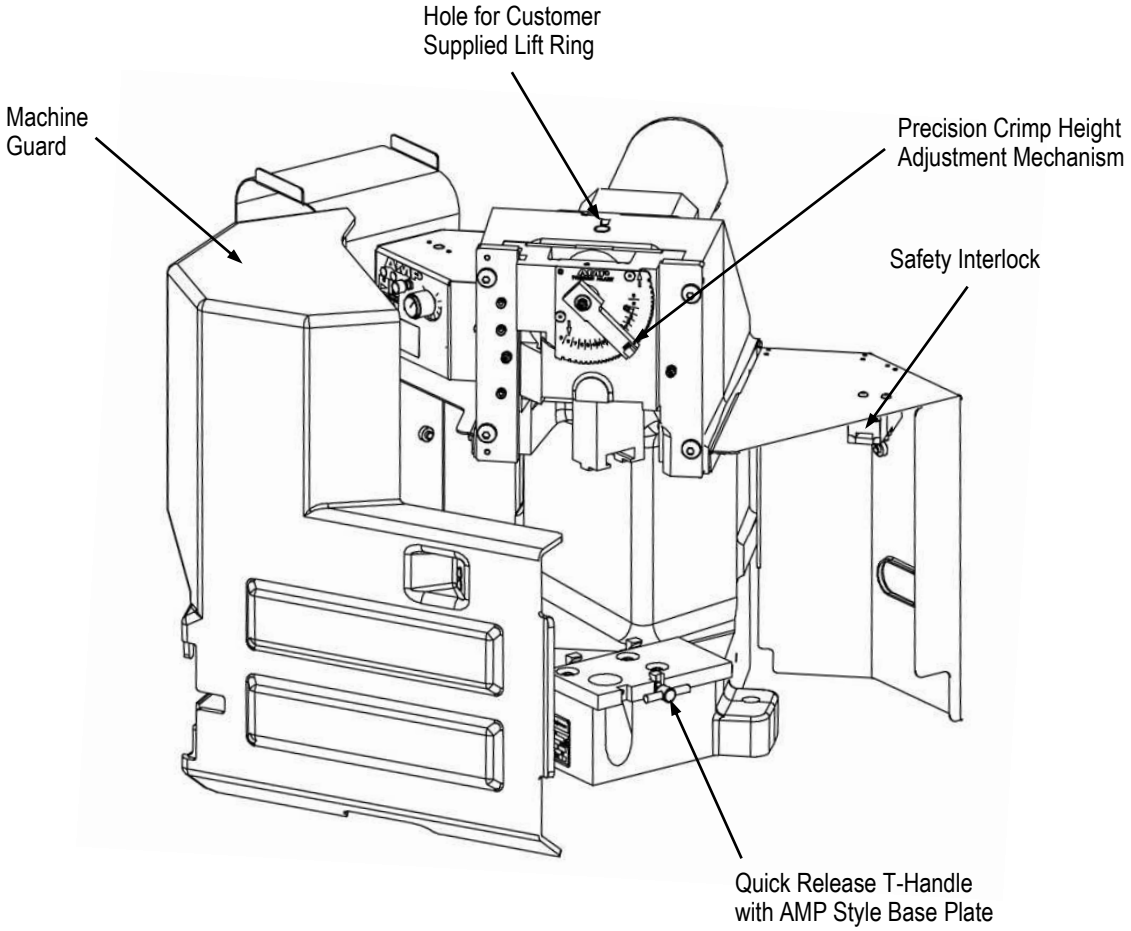


Figure 7

3. RECEIVING INSPECTION AND INSTALLATION

3.1. Receiving Inspection

These machines are thoroughly inspected during and after assembly. A final series of inspections is made to insure the proper machine functioning before packaging and shipping.

To protect against damage that may have occurred during shipment, remove the machine from the crate (Paragraph 3.2.) and carefully inspect the machine for damage. If damage is evident, file a claim against the carrier and notify TE immediately.

3.2. Installation

Remove all mounting bolts securing the machine to the shipping pallet. Install lift ring (see Figure 7) on top of the machine.

NOTE
Lift ring (M1220 eye bolt) is customer supplied.

NOTE
Install the lift ring carefully. A 19.05-mm [.75-in.] thread length engagement is required for the lift ring to support the machine.

Attach a suitable hoist to the lift ring, lift the machine, and place it in the selected operating location.

Insert the reel support post into the appropriate hole on top of the machine (Figure 6) until the roll pin engages a groove in the machine frame.

Attach the terminal strip guide included with the machine with the two thumbscrews supplied. Mount the guide on the left guard for side-feed applicators. Mount the guide on the right guard for end-feed applicators.

Connect the power cord to a suitable electrical supply.

NOTE
The machine will automatically detect the supply voltage and adjust the controller accordingly.

3.3. Considerations Affecting Placement of Bench Machines

The location of the machine in relation to the operator's position is extremely important in terms of both safety and maximum efficiency. Studies have repeatedly shown that operator fatigue will be reduced, and greater efficiency achieved, if:

1. The bench is of appropriate height, preferably with sound-deadening rubber mounts.
2. The machine is properly located on the bench with ample work areas on both sides to facilitate work flow.
3. The operator uses a swivel chair with padded seat and back rest which are independently adjustable; and
4. The footswitch, on machines so equipped, is placed on a rubber mat to maintain its movability, while preventing it from sliding unintentionally.

Figure 8 illustrates proper machine location and operator position and the following:

A. Bench

The bench to be used should be of sturdy construction, preferably with rubber mounts to minimize noise. A height of 762 to 812.8 mm [30 to 32 in.] is the most suitable for operator comfort and convenience. This height allows the operator to rest both feet on the floor, thereby providing for the shifting of weight and leg position.

B. Machine Mounting and Location on Bench

The machine should be located near the front of the bench with the “target area" (tooling area where the product is applied) not more than 152.4 to 203.2 mm [6 to 8 in.] -- minimum 50.8 mm [2 in.] from the front edge. This location will eliminate unnecessary operator motion and help to avoid back strain and fatigue.

Orientation of the machine should be such that the “target area" is facing the front of the bench and is parallel to the front edge (access to the back of the machine MUST also be provided).

DANGER
Machines should be securely bolted to the bench using the machine mounting hole(s) shown in Figure 4. Hardware is customer supplied. Machines should not extend beyond the front of the bench.

C. Operator's Chair

The operator's chair should swivel, and should have independent seat height and back rest adjustments. The seat and back rest should be padded, and the back rest should be large enough to provide support both above and below the waist line.

In use, the chair should be far enough under the bench so that the operator's back is straight and is supported by the back rest.

D. Footswitch

When the operator is correctly positioned in front of a machine equipped with a footswitch, the foot should rest on the switch comfortably. The footswitch should be movable, so that its location can be readily changed when the operator shifts position to minimize fatigue. Placing the switch on a rubber mat keeps it movable while preventing unintentional sliding.

The preferred footswitch location varies to some extent among operators. Some operators prefer the switch located so that their foot rests on the switch when their feet are in the natural sitting position (calf of leg perpendicular to the foot). Others prefer the leg to be slightly in front of the natural position. The important thing to remember is that the foot should be at approximately 90° (right angle) to the calf when resting on the switch. Those operators who prefer the footswitch slightly in front of the natural position may require a wedge-shaped block placed under it.

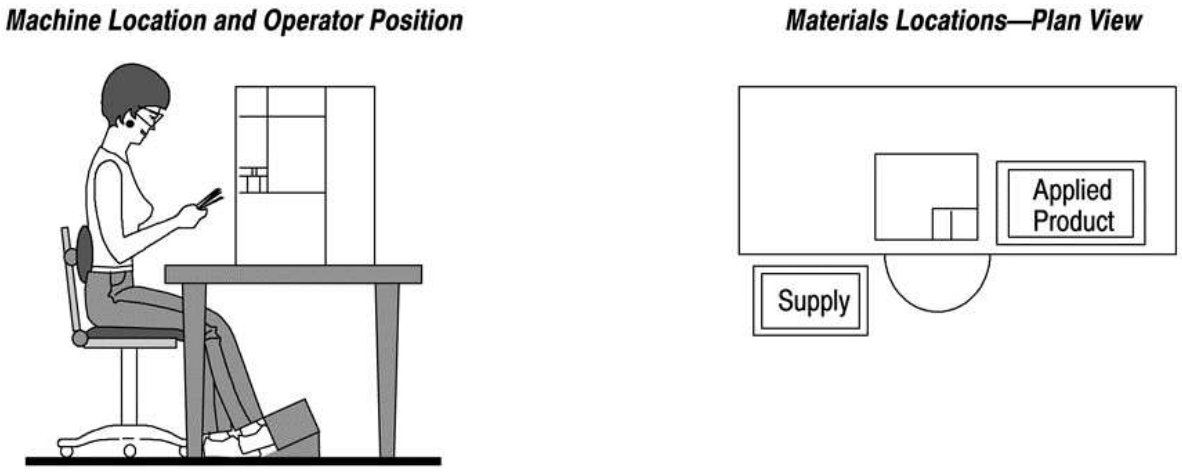


Figure 8

E. Scrap Removal

A suggested method of scrap removal: place a tray on the right side of the machine, under the cast slot in the frame, to capture the scrap chips.

4. OPERATION

4.1. Machine Operation

The machine is operated by the footswitch, the jog button, and the speed control knob. The jog button and the speed control knob are located on the control panel. The control panel features are described in Figure 9.

4.2. Crimp Quality Monitor II (CQM II)

The AMP 3K / AMP 5K machine must have software version 3.2.1 or later to interface with the monitor. The software version can be checked by pressing and holding the footswitch when the green and yellow lights start to blink while the terminator is powering up.

The yellow light will flash three times, and then the green light will flash the software version. For example, three yellow flashes followed by three green flashes, a pause, two green flashes, a pause, and one green flash would indicate version 3.2.1.

Refer to Customer Manual 409-10100 for detailed instructions regarding the use of the CQM II. This manual is included in the machine's documentation package.

A. Machine Power Up

During power up, the machine looks to see if the monitor's interface cable is connected. Specifically, it looks to see if the jumper from J10–3 to J10–4 is installed on the CPU/Motor Controller Board.

If the jumper is seen, the green and yellow lights will alternately flash a couple of times on power up. If the jumper is not detected, the green and yellow lights flash together a couple of times.

After seeing the jumper, the machine looks to see if the monitor is ready to accept a crimp by looking at the monitor's output relay, Relay 2. Relay 2 is a normally open relay that is closed when the monitor is ready for a crimp.

If Relay 2 is not closed when the machine is powered up, it will flash both lights seven times (Monitor Not Detected Fault).

This "fault" can be cleared by holding down the footswitch until the lights stop flashing.

B. Cycling the Machine

When the footswitch is pressed to cycle the machine, the machine looks at the monitor's output relays, Relay 1 and Relay 2. The indicator light, DS2, on the machine's CPU/Motor Controller Board indicates the status of Relay 2. The light will be turned on when Relay 2 is closed.

If Relay 2 is not closed, the green and yellow lights will flash together three times (Monitor Not Ready Fault). If Relay 1 is not OFF (open) the green and yellow light will flash together six times (Good Crimp Signal Fault).

Both of these faults can be cleared by holding down the footswitch until the lights stop flashing.

C. Bad Crimp Fault (After the Machine Cycles)

After the machine has been cycled, the machine looks at the monitor's output relays, Relay 1 and Relay 2. If the Relay 1 is pulsed and Relay 2 remains closed, the machine will be ready for the next crimp cycle.

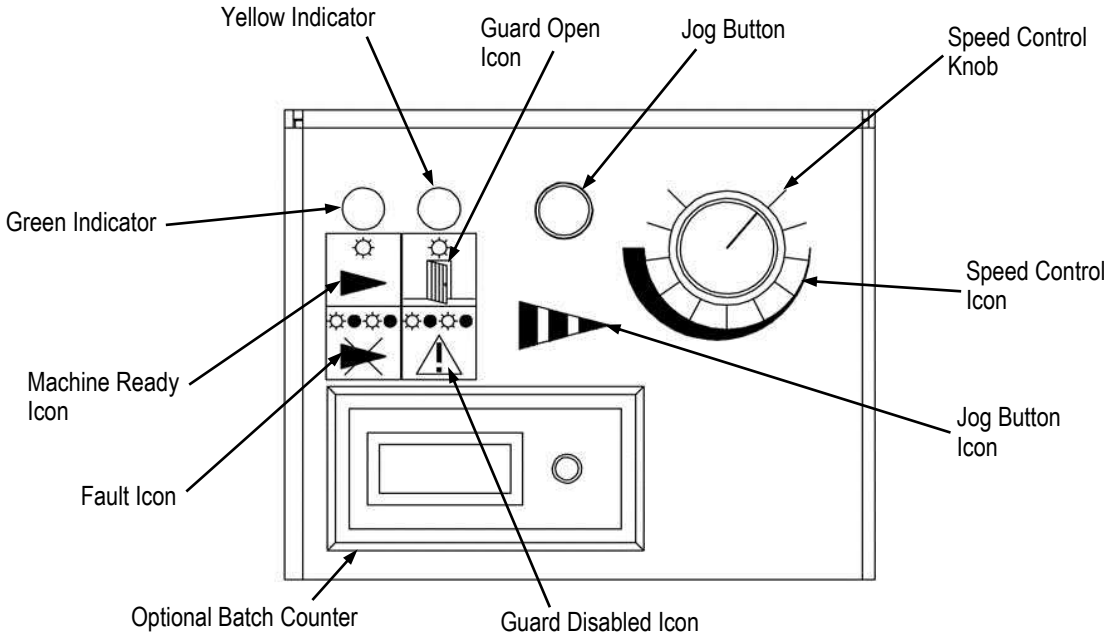
If the Relay 1 is not pulsed and Relay 2 is open, the monitor has detected a BAD crimp and both the green and yellow light will be flashed four times (Bad Crimp Fault).

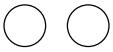
The fault can be cleared by holding down the footswitch until the lights stop flashing.

D. Crimp Analysis Fault (After the Machine Cycles)

If the Relay 1 pulse is not detected and Relay 2 remains closed (after the machine has cycled), the green and yellow light will be flashed five times (Crimp Analysis Fault).

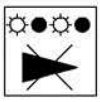
The fault can be cleared by holding down the footswitch until the lights stop flashing.





The green and yellow indicators on top of the control panel indicate the machine status.

When the green indicator is "on" and is ***not*** flashing, the machine is ready for operation.



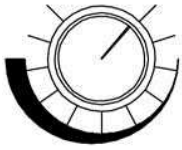
When the green indicator is flashing by itself, a machine fault has been detected. When the green and yellow indicators are flashing together a CQM fault has been detected. See Figure 10. To reset the fault indicator, clear the problem area then hold down the footswitch, for approximately 5 seconds, until the indicator light stops flashing. Some machines faults require AC power to be cycled using the rocker switch on the back panel. Leave the machine powered off for approximately ten seconds before reapplying power.

When the yellow indicator is "on" and ***not*** flashing, the guard is disabled and the machine will only operate with the Jog button.

When the yellow indicator is flashing by itself, the guard interlock switch is disabled and the machine will only operate with the Jog button. When the green and yellow indicators are flashing together a CQM fault has been detected. See Figure 10. To reset the fault indicator, clear the problem area then hold down the footswitch, for approximately 5 seconds, until the indicator light stops flashing. Some machines faults require AC power to be cycled using the rocker switch on the back panel. Leave the machine powered off for approximately ten seconds before reapplying power.

The Jog button allows the operator to cycle through various stages of the machine cycle.

The Jog button icon indicates intermittent operation at a slower speed when using the Jog button.



The Speed Control Knob determines the machine speed (active in both normal operation and Jog operation) Speed increases as the knob is turned *CLOCKWISE*.

Speed Ranges:

From 100% to 60% with the foot pedal
From 60% to 25% with the Jog button

Figure 9

4.3. Applicator Installation

NOTE
These instructions apply to machines that have an AMP style base plate with the quick release feature. Machines with the Universal style base plate, do not have a quick release feature and require a hex wrench to install an applicator. Machines with the JAM style base plate use a swing handle to release applicators. Removal is in the reverse order of installation.

Install the proper applicator in the quick-change mounting base as follows:

CAUTION
Make sure that the precision adjustment lever has been returned to the "0" position before installing the applicator. Be sure that the applicator has the proper feed cam prior to installation.

NOTE
Applicators from AMP-O-LECTRIC Model "K" terminating machine and Model "T" terminating machine can be used in these machines by using a special replacement cam. Refer to Figure 2.

1. Loosen the quick-release T-handle (see Figure 5) and slide the applicator base clamp down.
2. Place the applicator on the quick-change base plate, then slide it back until the two notches in the applicator base engage the stops at the back of the quick-change base plate. At the same time, guide the ram post into the ram post adapter.
3. Slide the applicator base clamp UP and re-tighten the quick-release T-handle to secure the applicator in place.

NOTE
When using Applicator 567200-2 (originally intended for use with AMP-O-LECTRIC Model "K" terminating machine), loosen the quick-release T-handle, slide down the applicator base clamp, and remove the rear stop located on the left side of the base plate. Install the rear stop (PN 354561-1), supplied with the air feed kit, at the alternate mounting position on the base plate. See Figure 4.

4. Set the crimp height and insulation crimp discs so that the letters and numbers on the applicator pad align with the front pad on the ram post adapter.
5. If the applicator is an air-feed type, connect the airlines to the valves located on the back of the machine.

NOTE
Quick Disconnect Coupling 23238-1 is required to run air-feed applicators.

6. Adjust the reel support for side-feed or end-feed product, depending on the applicator being used.
7. Mount the terminal strip guide on the left sheet metal guard for side-feed product, or on the right sheet metal guard for end-feed product, depending on the applicator being used.
8. Mount the terminal reel on the reel support. Thread the terminal strip through the guard and into the applicator according to the instruction sheet included with the applicator. If necessary, adjust the lubricator bowl.
9. Align the product reel to the applicator by adjusting the reel flanges.
10. Close the guard.

NOTE
The guard door must be closed in order to operate the machine, unless you are in the Jog (With Guards Disabled) Mode. See Paragraph 4.4.C.

4.4. Setup

Install a miniature applicator and terminals according to Paragraph 4.3.

1. Turn on the main power using the switch located on the back of the machine.
2. Jog the machine (as described in Paragraph 4.5.B.) through a complete crimp cycle.

NOTE
Machine should be able to jog through the terminal and wire at maximum jog speed.

3. Inspect the crimped terminal to verify that the terminal is being positioned properly within the applicator.
4. Correct for any positioning errors according to the applicator instruction sheet, and repeat Steps 2 and 3 until a terminal is properly positioned.
5. Place a prepared wire in the crimp area and press the footswitch.
6. Inspect the completed crimp and make adjustments as necessary.

4.5. Mode Selection and Operation

The three basic modes of operation for these machines include: Full-Cycle, Jog, and Jog (With Guards Disabled).

A. Full-Cycle Mode

Depressing the footswitch (with the guard closed) causes the crankshaft to be rotated (at a speed defined by the speed control knob), through a complete revolution. This completes one full machine cycle.

The speed control knob in Figure 9 ALSO adjusts the air feed timing. Normally the air feed timing is set at 280 ms. When the speed control is set at less than 50% of its maximum setting (pointing straight down or counterclockwise from pointing straight down, the air feed timing changes to 440 ms. This is done to accomodate applicators that have longer than normal air cylinders.

B. Jog Mode (Figure 9)

Pressing the Jog button causes the crankshaft to be rotated at a default reduced speed in the forward direction until the Jog button is released or the crankshaft completes the machine cycle. If the Jog button is released in mid–cycle, the crankshaft will stop turning. Press the Jog button again and the crankshaft will continue to rotate in the forward direction and complete the machine cycle.

The ram may drift downward if the Jog Button is released in mid-cycle.

If while jogging, the machine stalls and cannot complete a full cycle, release the jog button. Before continuing, verify that there is not an interference problem in the crimping area. To complete the cycle, either press the footswitch or jog at a faster speed. The jog speed can be temporarily increased by following the “Adjusting the Jogging Speed Using the Speed Control Knob” procedure described below.

If the Jog button is held down for longer than five seconds and the machine cycle is not completed, the machine will “err” and the green indicator light will flash a fault code. To clear the error, hold down the footswitch for five seconds. If the machine stalled because of an interference problem, “power down” the machine, clear the problem, and then “power up” the machine again. It may be necessary to manually cycle the machine to clear an interference problem. Refer to the CAUTION and DANGER statement below for the proper manual cycling procedure.

The green flashing status indicator flashes a specific number of times to represent a corresponding fault. For example, the green status indicator will flash two times (each followed by a one second pause) to indicate that the machine guard opened while the machine was running. Refer to Figure 10.

CAUTION
While in the Jog mode, attempting to complete a crimp cycle with terminals and wire in the applicator may cause the motor to stall. Although the machine can terminate some smaller terminals and wire, it may be necessary to turn "off" the machine and manually cycle the machine to the home position. The machine can be manually cycled by turning off the machine, disconnecting the power cord plugged into the receptacle mounted to the motor end plate (Figure 6), and inserting a 6mm hex key into the recess located in end plate of the motor. Rotate the hex key to manually rotate the motor.

DANGER
The hex key must be removed from the recess before the power cord can be plugged back into the receptacle. To avoid personal injury, be sure to remove the hex key before operating the machine under power.

Adjusting the Jogging Speed Using the Speed Control Knob

The default speed of the machine, when jogging, is set to a minimum value which is not defined by the initial position of the speed control knob. Adjusting the speed upward enables jogging at speeds greater than the default in case greater speeds are required to complete a cycle.

To cause the machine to run at a jog speed other than the default speed, perform the following:

1. Rotate the speed control knob completely counterclockwise.
2. Rotate the speed control knob to the desired speed.
3. Within three seconds, press the jog button. The machine will run at the speed set by the speed control knob.
4. If the jog button is released and pressed again within three seconds, the machine will run at the set speed. If the jog button is pressed after three seconds the machine will run at the default speed.
5. If the jog button is released, the speed control knob is adjusted to a different position, and the jog button is pressed within three seconds, the machine will jog at the newly adjusted speed.
6. If the jog button is not pressed for three seconds, repeat Steps 1, 2, and 3 to set the jog speed to a setting other than the default jog speed.

C. Jog (With Guards Disabled) Mode (Figure 9)

NOTE
The footswitch will NOT initiate cycling in this mode.

DANGER
To avoid personal injury, be very careful of moving mechanisms when jogging the machine with the guards open.

This mode allows maintenance and setup personnel to cycle the machine with the guard door open using the jog button. To activate this mode, turn "off" power, and open the guard door. Turn the power back "on" and, immediately after the machine ready and guard disable indicators flash "on", press and hold the Jog button. The guard disable indicator will flash at a rate of two flashes per second, indicating that the guard has been disabled.

Pressing the Jog button causes the crankshaft to be rotated at a default reduced speed in the forward direction until the Jog button is released or the crankshaft completes the machine cycle. If the Jog button is released in mid–cycle, the crankshaft will stop turning. Press the Jog button again and the crankshaft will continue to rotate in the forward direction and complete the machine cycle.

If while jogging, the machine stalls and cannot complete a full cycle, release the jog button. Before continuing, verify that there is not an interference problem in the crimping area. To complete the cycle, either press the footswitch or jog at a faster speed. The jog speed can be temporarily increased by following the “Adjusting the Jogging Speed Using the Speed Control Knob” procedure described below.

If the Jog button is held down for longer than five seconds and the machine cycle is not completed, the machine will “err” and the green indicator light will flash a fault code. To clear the error, hold down the footswitch for five seconds. If the machine stalled because of an interference problem, “power down” the machine, clear the problem, and then “power up” the machine again. It may be necessary to manually cycle the machine to clear an interference problem. Refer to the CAUTION and DANGER statement below for the proper manual cycling procedure.

The machine will exit the Jog (With Guards Disabled) Mode whenever the guards are closed or the power is turned "off."

The ram may drift downward if the Jog Button is released in mid-cycle.

The green flashing status indicator flashes a specific number of times to represent a corresponding fault. For example, the green status indicator will flash two times (each followed by a one second pause) to indicate that the machine guard opened while the machine was running. Refer to Figure 10.

4.6. Crimp Height Adjustment

Refer to Paragraph 7.3. for procedures to adjust the crimp height using the machine precision adjustment feature.

4.7. End-Feed/Side-Feed Applicator Conversion

When changing from an end-feed applicator to a side-feed applicator (or from a side-feed applicator to an end-feed applicator), the reel support assembly must be moved to the opposite side of the machine. With the terminal reel removed, lift and rotate the reel support bar to the opposite side of the machine. Mount the terminal reel on the reel support and load the terminal strip into the applicator. Remove the metal terminal lead-in and thumbscrews and move to the opposite side of the machine. Move the machine lubricator bowl to the opposite side of the machine as required.

NOTE
Lubricator Bowl Assembly 354550-3 is an optional accessory. When using an Ocean Side-Feed or End-Feed applicator, the lubricator assembly part numbers are 2119955-1 and 2119955-2, respectively.

5. MACHINE FAULT CODES

INDICATOR LIGHTS (Number of Consecutive Green Flashes)	INDICATOR LIGHTS (Number of Consecutive Yellow Flashes)	MACHINE FAULT
2	---	Guard switch opened while motor was running.
3	---	Guard switch not closed. Close the guard to close the guard switch.
4	---	Top Dead Center (TDC) switch fault; machine motion not detected. The switch was not unmade within the allotted time, 175 ms.
5	---	Top Dead Center (TDC) switch fault: complete machine cycle not detected. The switch was not made within the allotted time. The allotted time for the Run mode is 1.5 seconds. The allotted time for Jog mode is six seconds.
6	---	Motor control circuit fault. A bad transistor (PWM IGBT) was detected. The CPU/Motor Control Board assembly must be replaced.
7	---	Jog Push Button Fault. During power up, the jog button pressed input was detected.
8	---	Footswitch fault. During power up, the footswitch pressed input was detected.
9	---	Jog button detection circuit fault; DC bus relay turned on during power up. The CPU/Motor Control Board assembly must be replaced
10	---	Jog enable input circuit fault was detected. The CPU/Motor Control Board assembly must be replaced.
11	---	Not applicable to this machine.
12	---	J9 Input fault; Input on during power up. Note that this fault in not applicable to this machine. If it occurs, the CPU/Motor Control Board assembly must be replaced.
3	3	Crimp Quality Monitor Not Ready Fault (Refer to Paragraph 4.2.B.)
4	4	Bad Crimp Fault (Refer to Paragraph 4.2.C.)
5	5	Crimp Analysis Fault (Refer to Paragraph 4.2.D.)
6	6	Good Crimp Signal Fault (Refer to Paragraph 4.2.B.)
7	7	Monitor Not Detected (Refer to Paragraph 4.2.A.)

Figure 10

6. PREVENTIVE MAINTENANCE

Preventive maintenance will keep the machine in good working order and ensure maximum reliability and service from all of its components.

DANGER
To avoid personal injury, electrical and pneumatic power MUST be DISCONNECTED at the source prior to maintenance.

6.1. Cleaning

Clean debris from the applicator area daily.

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.

If an air feed assembly is installed, check and replace the air filter element, if necessary.

Wipe off the guards with a clean, soft cloth.

CAUTION
DO NOT USE A SOLVENT TO CLEAN THE GUARDS. Solvent could damage the guards.

6.2. Lubrication

The moving parts of the machine require regular lubrication to ensure reliable service and long life. The preferred greases are Chevron Ultra-Duty EP NLGI 2, Chevron Ulti-Plex EP NLGI 2, and Caltex Ultra-Duty EP NLGI 2.

NOTE
Contact TE Engineering for 2nd choice alternates.

CAUTION
It is important to only use Lithium-based grease with extreme pressure (EP) additives.

NOTE
For operation in temperatures below 10° C [50° F], it will be necessary to use a No. 1 grease.

Using a grease gun, apply grease every 250,000 cycles to the fittings at the following locations and as shown in Figure 11:

- the left side of the ram assembly;
- the right side of the ram assembly;
- the left side of the frame just behind the ram assembly at two places; and

NOTE
Give one pump of grease while the ram is near the top of its stroke and one pump of grease while the ram is near the bottom of its stroke for best distribution of grease around the bearing.

- the crimp height adjuster pivot pin.

Chevron, Caltex, and Lithium are trademarks of their respective owners. NLGI is the National Lubrication and Grease Institute.

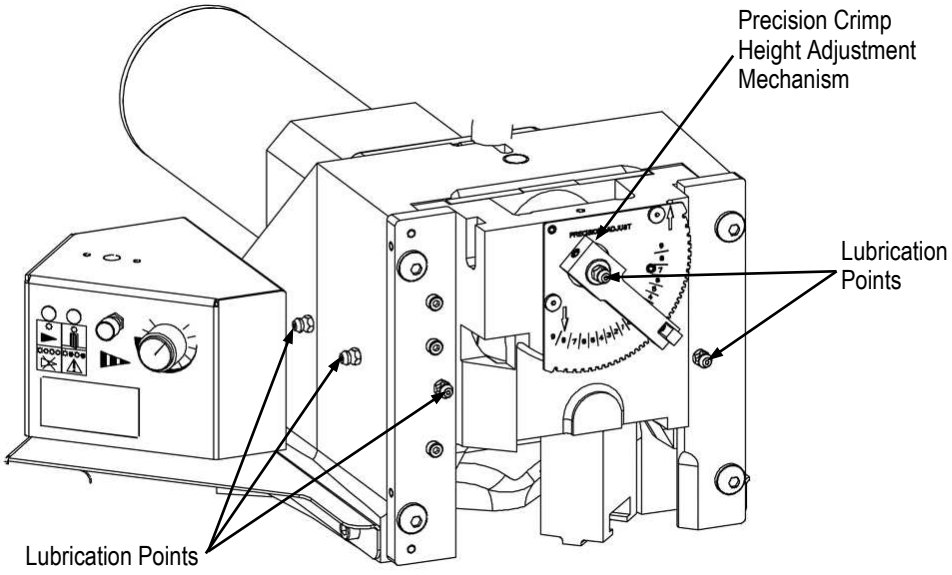


Figure 11

7. ADJUSTMENTS

The following adjustments are necessary to maintain the machine in operating condition, and to set up the machine after replacing parts.

DANGER
To avoid personal injury, ALWAYS disconnect electrical and air supplies before performing adjustments.

7.1. Measuring the Shut Height

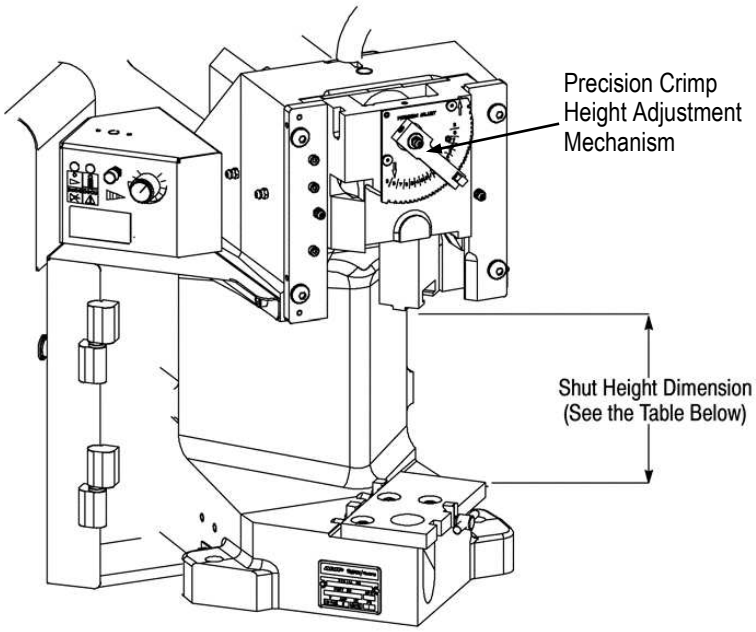
The shut height is the distance between the bottom surface of the ram post adaptor and the top surface of the machine base plate as shown in Figure 12.

NOTE
Shut Height Gage 679655-[ ] (see the table in Figure 12) is recommended for measuring the shut height (refer to 408-8535 for instructions on use of the gage).

1. If installed, adjust the manual precision adjustment lever to the “0” crimp setting.
2. Turn off the machine and disconnect the power cord plugged into the receptacle mounted to the motor end plate (Figure 6).
3. Insert a 6-mm hex wrench into the end of the motor until it completely engages the recess in the end of the motor. Use the hex wrench to manually rotate the motor.

DANGER
Be sure to remove the hex wrench before operating the machine.

4. Follow the procedure for measuring the shut height as described in 408-8535.
5. Remove the hex wrench when finished and plug in the power cord.



SHUT HEIGHT GAGE PART NUMBER	SHUT HEIGHT DIMENSIONS	BASE PLATE STYLE
679655-2	135.79 mm ±0.025 mm [5.346 ±.0010 in.]	AMP UNIVERSAL
679655-3	119.50 ±0.025 mm [4.7047 ±.0010 in.]	JAM

Figure 12

7.2. Shut-Height Adjustment

The shut height is pre-set at the factory and should not require further adjustment unless it is necessary to replace parts. Before you make any changes to the machine, contact your local field service representative, or call the Tooling Assistance Center at 1-800-722-1111.

CAUTION
NEVER attempt to adjust the shut height without FIRST trying an applicator that is known to produce terminations of the correct crimp height. If this applicator produces correct terminations, the trouble is in the original applicator and the shut height MUST NOT BE CHANGED.

If it is determined that the shut height must be adjusted, use the following procedure:

DANGER
To avoid personal injury, ALWAYS turn "off" the machine and disconnect the power supply to the machine before making any adjustments. If applicator is an air-feed type, DISCONNECT air lines to valve located on the right side of the machine.

1. Check shut height as described in Paragraph 7.1.
2. If the shut height is incorrect, refer to Figure 13, and proceed as follows:
   a. Remove the two socket head cap screws which secure the ram post adaptor. Remove the ram post adaptor and shims. Change the shim thickness as required to adjust the shut height. Shims contain .051-mm [.002-in.] peel-type laminations.

NOTE
If additional shims are required, they can be ordered using the numbers 1338618-1 (for 41.25 mm stroke machines) or 1424680-1 (for 30 mm stroke machines).

b. Re-install the ram post adaptor. Insert both screws in the ram post adaptor and place the shims over the screws and onto the adaptor post.

c. Re-install the socket head cap screws into the ram assembly to secure the ram post adaptor. Re-tighten the screws.

3. Repeat Steps 1 and 2 as necessary until the proper shut height is attained.

NOTE
The miniature applicator is an integrated assembly consisting of upper tooling, lower tooling, and adjustment capability. The applicator requires a fixed shut height; that is, the distance between the bottom of the ram and the base mount when the ram is FULLY bottomed. The required adjustments for crimp height are made by using the wire and insulation discs within the applicator. Refer to the instruction sheet supplied with the applicator for adjustment procedures.

7.3. Crimp Height Adjustment Using Precision Adjustment Mechanism

DANGER
To avoid damaging the applicator, ALWAYS return the precision adjustment lever to the "0" position when finished using the applicator.

1. Adjust the manual precision adjustment lever to "0" by pulling the lever away from the pivot pin. Lock the lever in place by releasing it.
2. Install the applicator into the machine as described in Paragraph 4.3.
3. Cycle the machine to crimp three sample terminations. Check the crimp height of the samples. If the crimp heights are not correct, adjust the crimp height according to Step 4.
4. Adjust the crimp height by moving the precision adjustment lever:

   a. to the right to increase the crimp height; or

   b. to the left to decrease the crimp height.

NOTE
Moving the precision adjustment lever in either direction will change the crimp height by approximately 0.013 mm [.0005 in.] per step.

5. Repeat Steps 3 and 4 until the appropriate crimp height is obtained.

DANGER
To avoid damaging the applicator, ALWAYS return the manual precision adjustment lever to the "0" position when finished using the applicator.

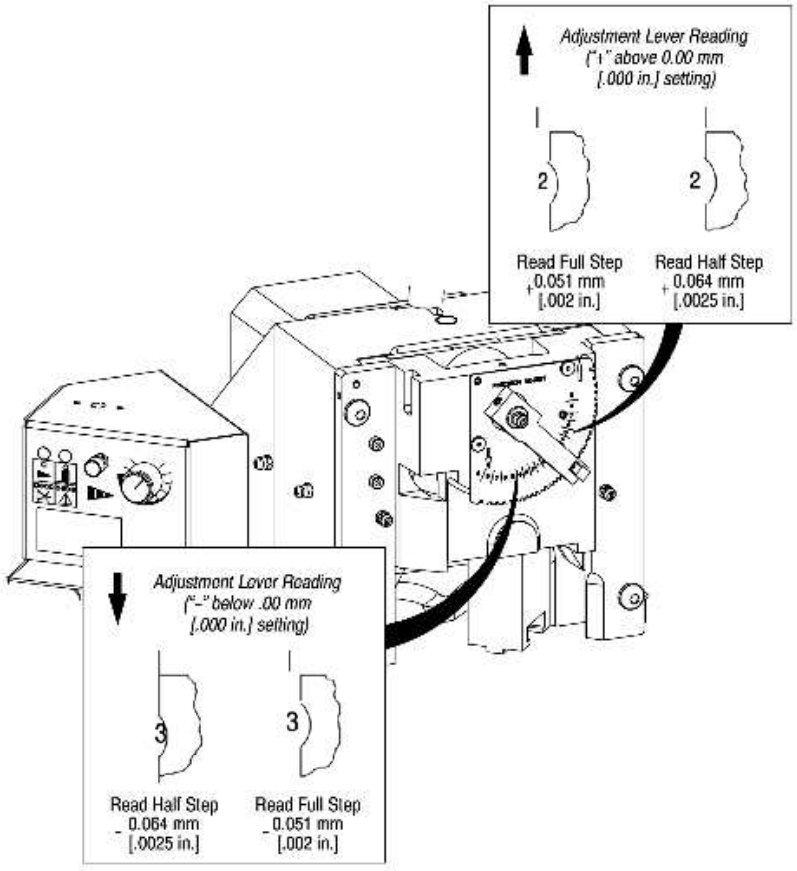


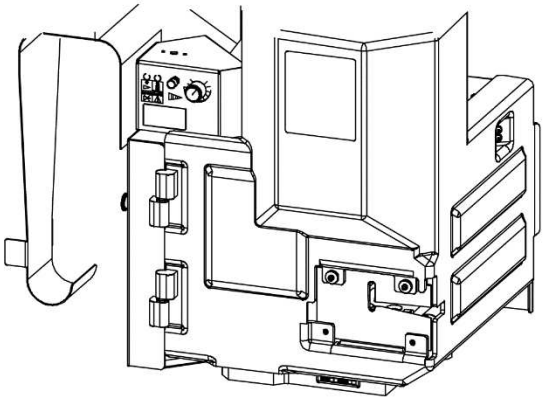
Figure 13

7.4. Guard Insert Adjustment

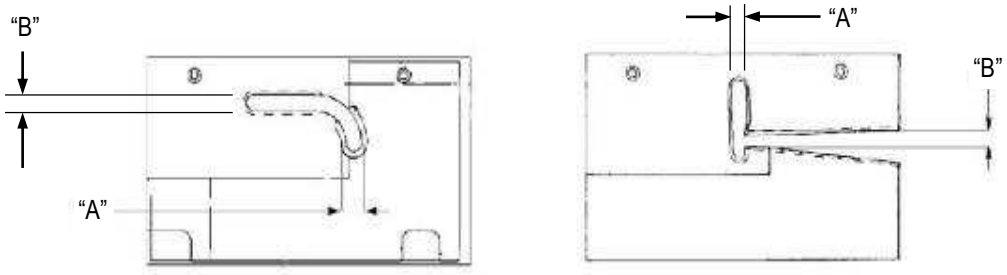
A guard insert is supplied with the machine. Some applications may require a special insert. See Figure 14 for available guard inserts.

The guard contains two slots into which the inserts can be placed: the rear slot places the insert close to the applicator; the front slot places the insert farther away from the applicator. The type of insert used determines which slot is to be used. An insert placed into the wrong slot cannot be secured in place.

NOTE
Some special inserts are designed to mount in the standard insert slot. These inserts have the threaded holes at the top corners and should be installed according to the instructions for the standard insert



Tape Guard Inset *Standard Guard Inset*



GUARD INSERT		DIMENSION	
PART NUMBER	DESCRIPTION	A	B
354529-2	Standard (Away from the Applicator)	7.80 [.307]	6.35 [.250]
1-679532-0	Standard (Close to the Applicator) - Shipped with the Machine	6.22 [.245]	5.08 [.200]
679994-2	Near Tape	6.35 [.250]	6.35 [.250]
679995-2	Away from Tape	8.74 [.344]	6.35 [.250]

Figure 14

A. Standard Guard Insert 1-679532-0 and Guard Insert 679994-2

Slide the insert into the rear slot of the guard door. Secure the insert to the door with two screws placed through the large square holes in the left guard door and into the threaded holes in the top of the insert. Do not tighten the screws.

1. Move the insert horizontally and vertically as needed to align the slot with the crimp area of applicator.
2. Tighten the screws.

B. Guard Insert 354529-2 and Guard Insert 679995-2

1. Slide the insert into the front slot of the guard door. Secure the insert to the door with two screws placed through the large square holes of the insert and into the threaded holes in the bottom of the left guard door. Do not tighten the screws.
2. Move the insert horizontally and vertically as needed to align slot with crimp area of the applicator.
3. Tighten the screws.

8. MACHINE OPTIONS AND INSTALLATION

The following machine options are available for the AMP 3K and AMP 5K machines:

PART NUMBER	DESCRIPTION	PURPOSE
1424264-1	Work Light Kit (64111 Osram/Sylvania)	Provides lighting to the work area
1424266-1	Air Feed Valve Kit with 40-mm [15/8-in.] Stroke	Required to run 40-mm [15/8-in.] stroke applicators
1424266-2	Air Feed Valve Kit with 30-mm [11/8-in.] Stroke	Required to run 30-mm [11/8-in.] stroke applicators
1424267-1	Batch Counter Kit	Counts terminations
354550-3	Lubricator Bowl Assembly	Pre-lubricates the strip
1428156-1	Shoulder Eye Bolt	Provides a lift point for machine installation
▽	TE CQM II	Monitor's Crimping Process

Figure 15

NOTE
▽ Contact TE Engineering (1-800-722-1111) for CQM II part number.

In addition to the previously listed options, the following machine options are available only for Machines that have a universal style base plate:

JAM Applicator Mounting Kit 1424268-1
JST Applicator Mounting Kit 1424269-1

8.1. Installation of Work Light Assembly Kit

DANGER
To avoid personal injury, be sure to turn "off" the machines and disconnect them from the power source.

1. Open the clear guard on the machine to gain access to the two socket head screws securing the user interface to the frame.
2. Remove the two socket head cap screws securing the user interface to the frame. Carefully lift the user interface assembly to clear the sheet metal guard.

CAUTION
Use caution when removing the interface so that the wiring harness to the interface is not damaged.

3. If equipped with Batch Counter Kit 1424267-1, depress the tabs on the side of the batch counter within the user interface assembly and pull the batch counter out of the enclosure.

CAUTION
Do not pull or damage the wiring harness to the batch counter.

4. Disconnect the user interface assembly wiring harness connector from the printed circuit (pc) board inside the user interface assembly.
5. Remove the three work light kit knockout holes (Figure 16, Detail A) from the top of the user interface assembly.

CAUTION
When removing the knockouts, be careful to not damage the pc board inside the assembly.

6. Insert connector end of lighting kit wire into the center knock out hole.
7. Plug the lighting kit connector into the J3 connector on the pc board inside the user interface assembly. See Figure 16, Detail B.

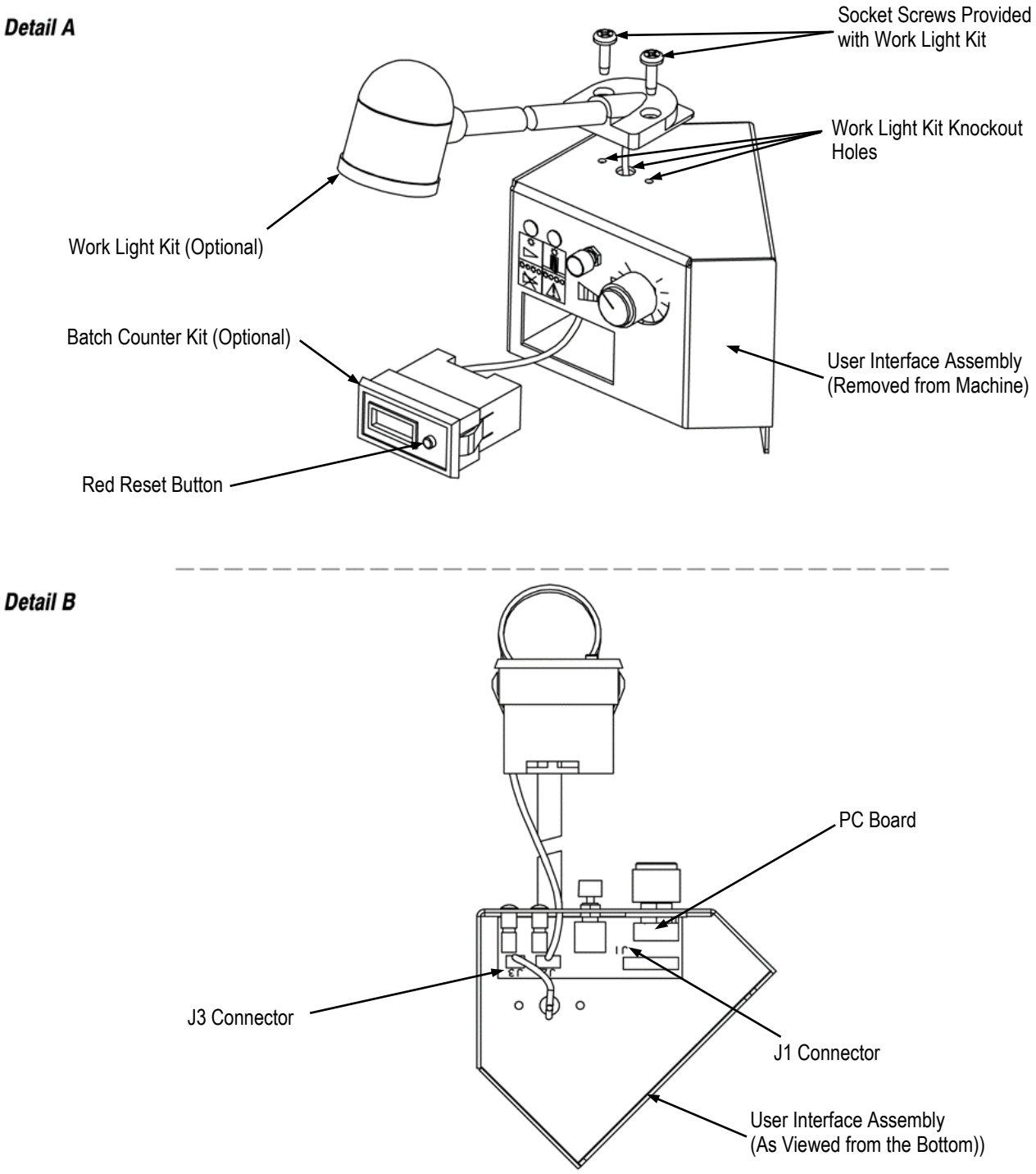


Figure 16

8. Attach the light (as shown in Figure 16, Detail A) to the top of the user interface enclosure using the socket screws provided.
9. If equipped with Batch Counter Kit 1424267-1, insert the batch counter kit into the appropriate knockout opening until it snaps into place. The red reset button should be on the right-hand side.
10. Re-attach the connector from the machine wiring harness to the J1 connector on the pc board in the interface assembly.

11. Install the user interface assembly into the frame and secure using the two socket head screws.

CAUTION
Be sure the interface assembly wiring harness is not pinched or kinked.

12. Close the clear guard on the machine.

13. Connect the machine to the power source and turn the machine "on."

8.2. Installation of the Work Light Assembly Kit

The work light can be located outside -- or inside—the 3 front cover as shown in Figure17 and Figure 18.

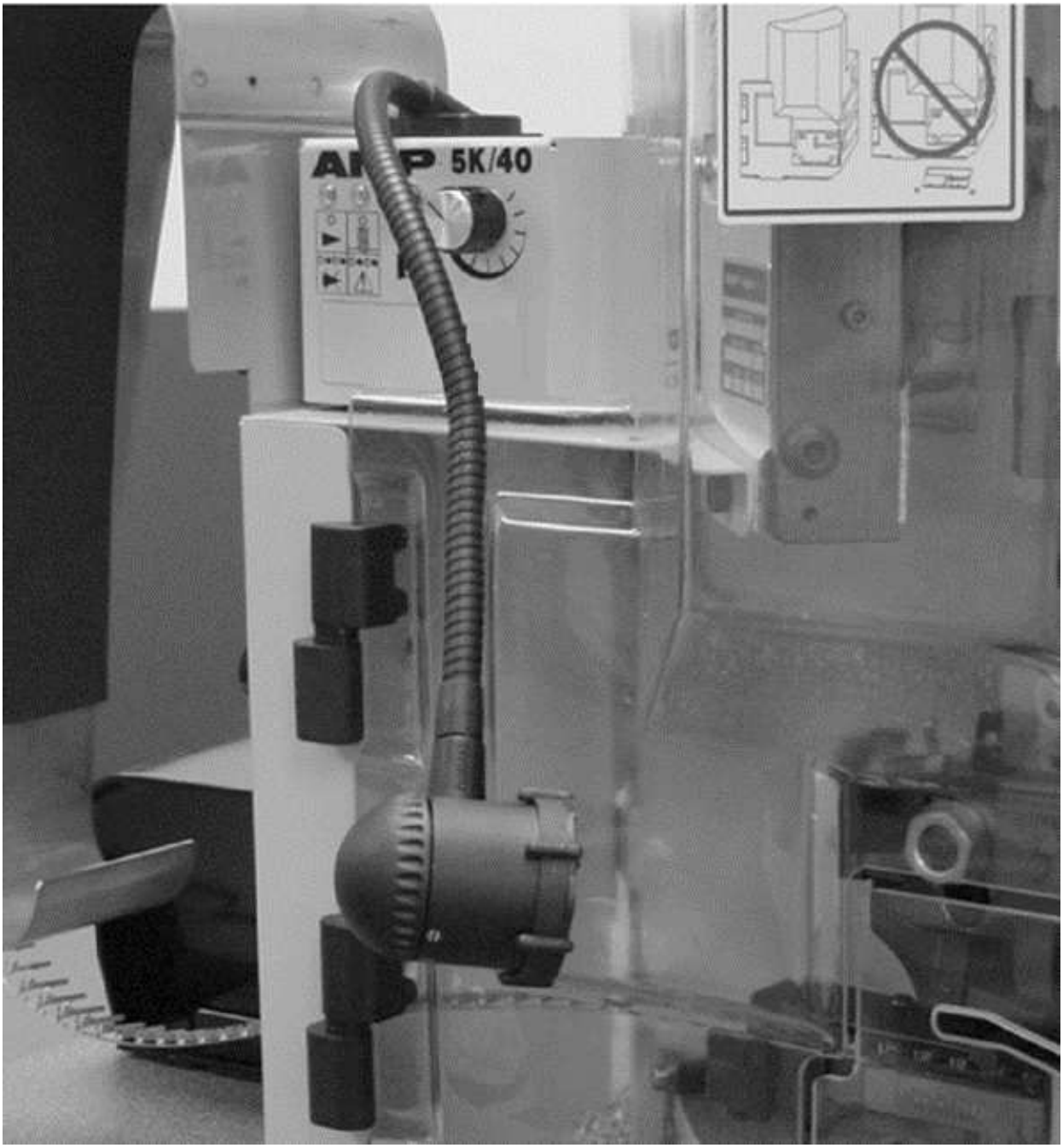


Figure 17

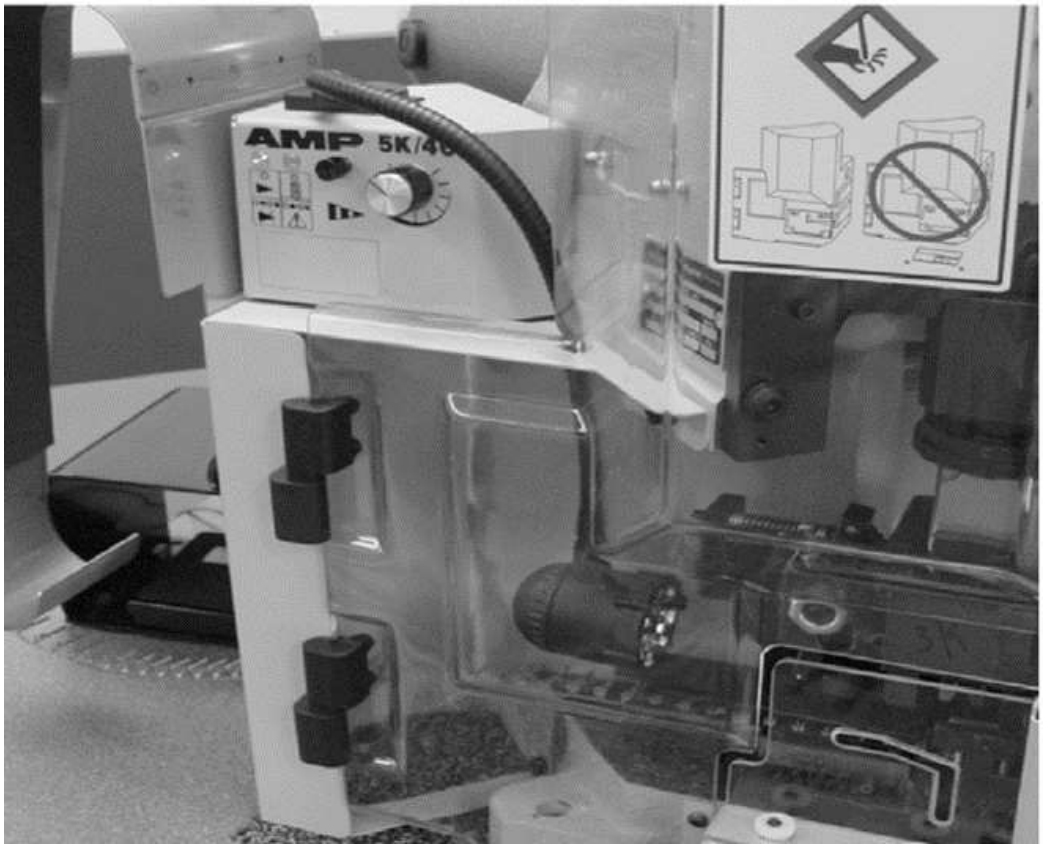


Figure 18

8.3. Installation of Batch Counter Kit 1424267-1

DANGER
To avoid personal injury, be sure to turn "off" the machine, and disconnect it from the power source.

1. Open the clear guard on the machine to gain access to the two socket head screws securing the user interface to the frame.
2. Remove the two socket head cap screws securing the user interface to the frame. Carefully lift the user interface assembly to clear the sheet metal guard.

CAUTION
Use caution when removing the interface so that the wiring harness to the interface is not damaged.

3. Disconnect the wiring harness connector from the pc board inside the user interface assembly.
4. Remove the batch counter kit knockout from the front of the user interface assembly.

CAUTION
Do not damage the pc board inside the interface assembly when removing knockout.

5. Insert the connector end of the batch counter wire through the knockout opening.
6. Plug the batch counter connector into the J2 connector on the user interface assembly pc board. See Figure 19.
7. Insert the batch counter kit into the knockout opening until it snaps into place. The red reset button should be on the right-hand side.
8. Attach the connector from the machine wiring harness to the J1 connector on the user interface assembly pc board.

9. Install the user interface assembly into the frame and secure using the two socket head screws.

CAUTION
Be sure the interface assembly wiring harness is not pinched or kinked.

10. Close the clear guard on the machine.

11. Connect the machine to the power source and turn the machine "on."

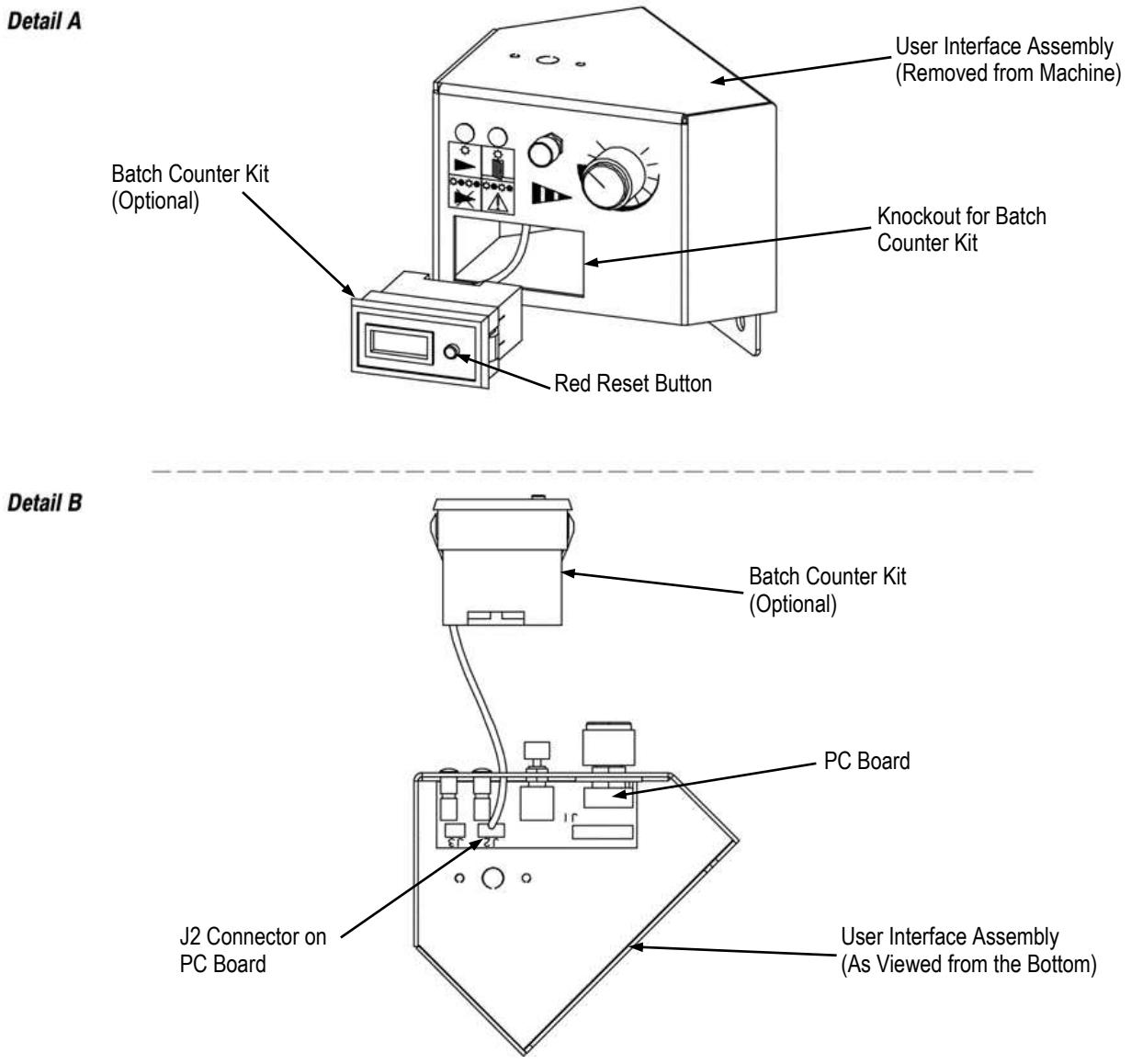


Figure 19

8.4. Installation of Air Feed Kit 1424266-1

DANGER
To avoid personal injury, be sure to turn "off" the machines, and disconnect them from the power source.

NOTE
Some applications require the installation of an Oversized Guard Kit 1976900-1. These applications are primarily ones that use two inch stroke air-feed cylinders.

1. Remove the four bolts securing the rear controller panel to the frame. Refer to Figure 20.

2. Remove the control panel from the machine and pivot it in order to view the control board.
3. Insert the small end of the air feed cable assembly (see Customer Drawing 1424266) into the J7 socket. See Figure 20.
4. Install the control panel into the machine with the air feed cable assembly through the upper right hand slot in the machine frame. See Figure 20.

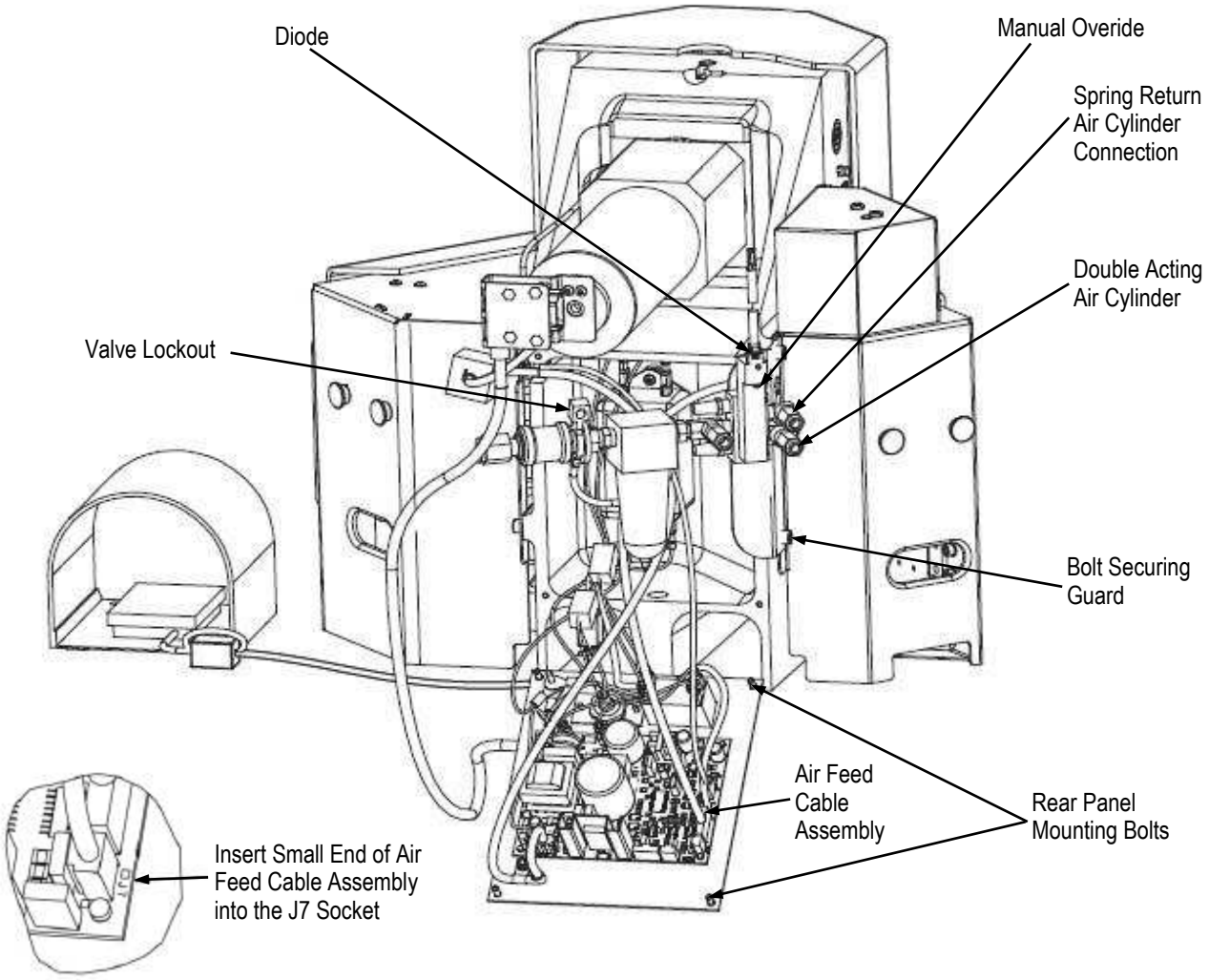


Figure 20

5. Remove the two bolts securing the rear of the left sheet metal guard.
6. Install Air Feed Bracket 1338977-1 to the frame using the two bolts securing the sheet metal guard.
7. Prepare the baseplate assembly as follows:
   a. For Air Feed Kit 1424266-1 (standard machine base plate), install the socket head screw and rear stop to the baseplate as shown. Then remove the back left baseplate clamp.
   b. For Air Feed Kit 1424266-2 (universal machine base plate), install the socket head cap screw and Air Feed Clamp 1338963-1. Then remove the back left baseplate clamp.
8. Install the air feed applicator onto the baseplate.

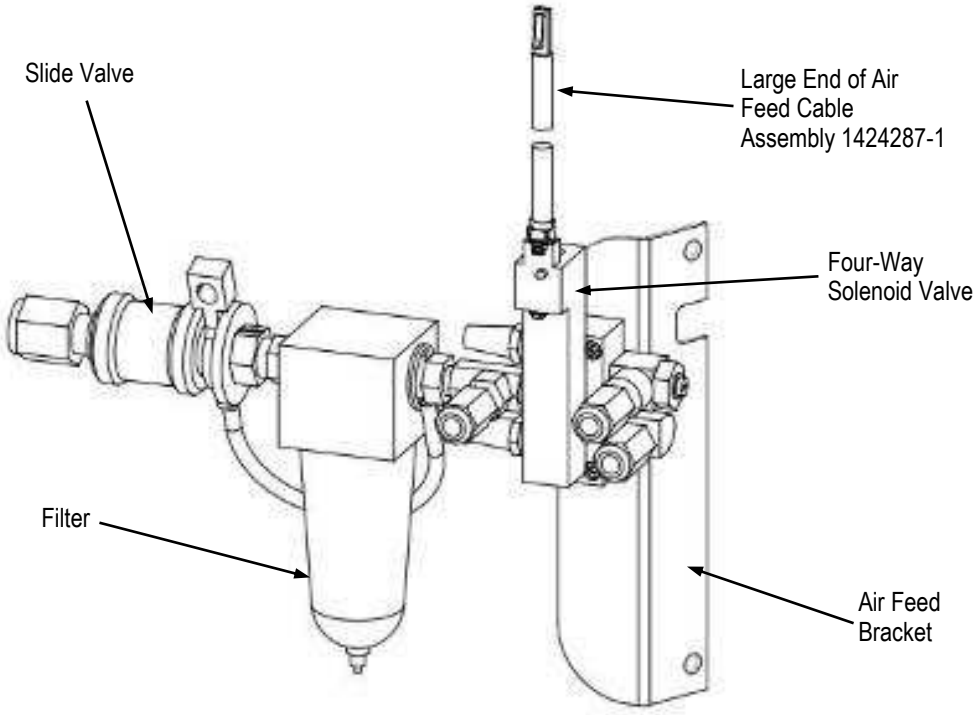


Figure 21

9. Connect the air lines to the applicable ports.
10. Turn the air "on" by moving the slide valve toward the filter.

NOTE
The air can be turned "off "by moving the slide valve away from the filter.

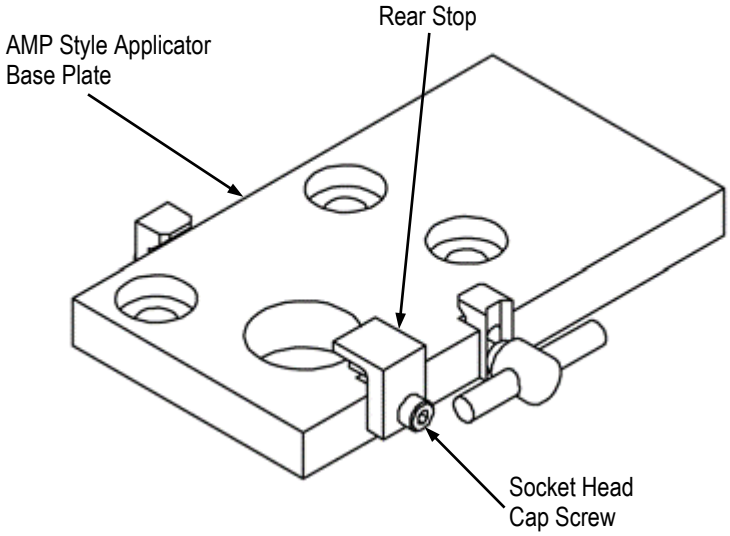


Figure 22

11. Lock the air in the "off" position. Turn the air "off" and clamp the valve lockout in position as shown.

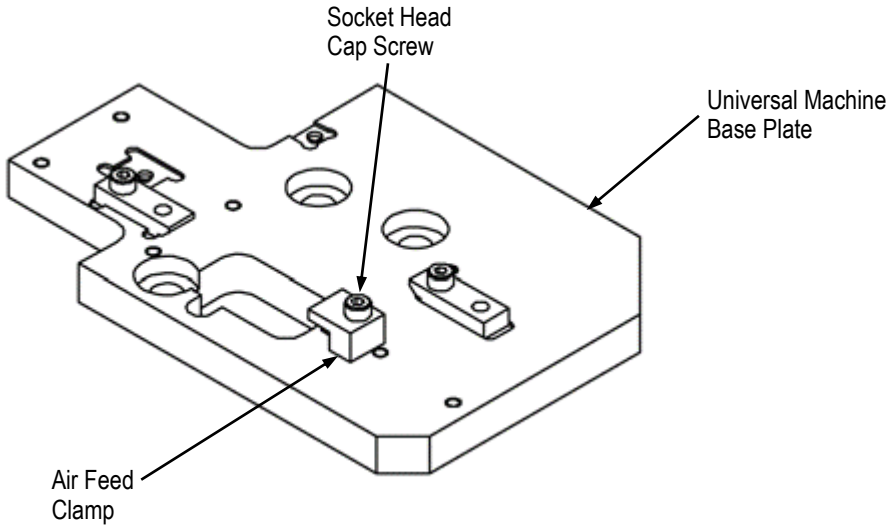


Figure 23

9. TROUBLESHOOTING

Contact the Tooling Assistance Center at 1-800-722-1111.

10. RoHS INFORMATION

Information on the presence and location of any substances subject to RoHS (Restriction on Hazardous Substances) can be found at the following website:

http://www.tycoelectronics.com/customersupport/rohssupportcenter/

Click on "Find Compliance Status" and enter equipment part number.

11. REVISION SUMMARY

Revisions to this customer manual include:

- Updated to most current TE logo (header/footers)
- Changed para 4.7. Note from *Lubricator Bowl Assembly PN 354550-1* to -3, and added “When using an Ocean Side-Feed or End-Feed applicator, the lubricator assembly part numbers are 2119955-1 and 2119955-2, respectively”.
- Created Figure 15 (paragraph 8.) and renumbered all Figures and references that followed
- Revised original Figure 19 (now 20) callouts and replaced original Figure 20 (now 21)