AMP* Horizontal Terminating Machine Model 4, No. 469181–[ ] and No. 463734–[ ] Including CM 5388–2, Rev D, Optional Wire Stuffer Assembly No. 469853–1 & –2

CM 5388
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AMP

customer manual

CM 5388
Rev D

AMP* HORIZONTAL TERMINATING MACHINE MODEL 4, NO. 469181–[ ] and NO. 463734–[ ] INCLUDING CM 5388–2, Rev D OPTIONAL WIRE STUFFER ASSEMBLY NO. 469853–1 & –2

5/90

Also available — CM 5388–1 (Spanish translation)

customer manual

AMP INCORPORATED
Harrisburg, PA 17105

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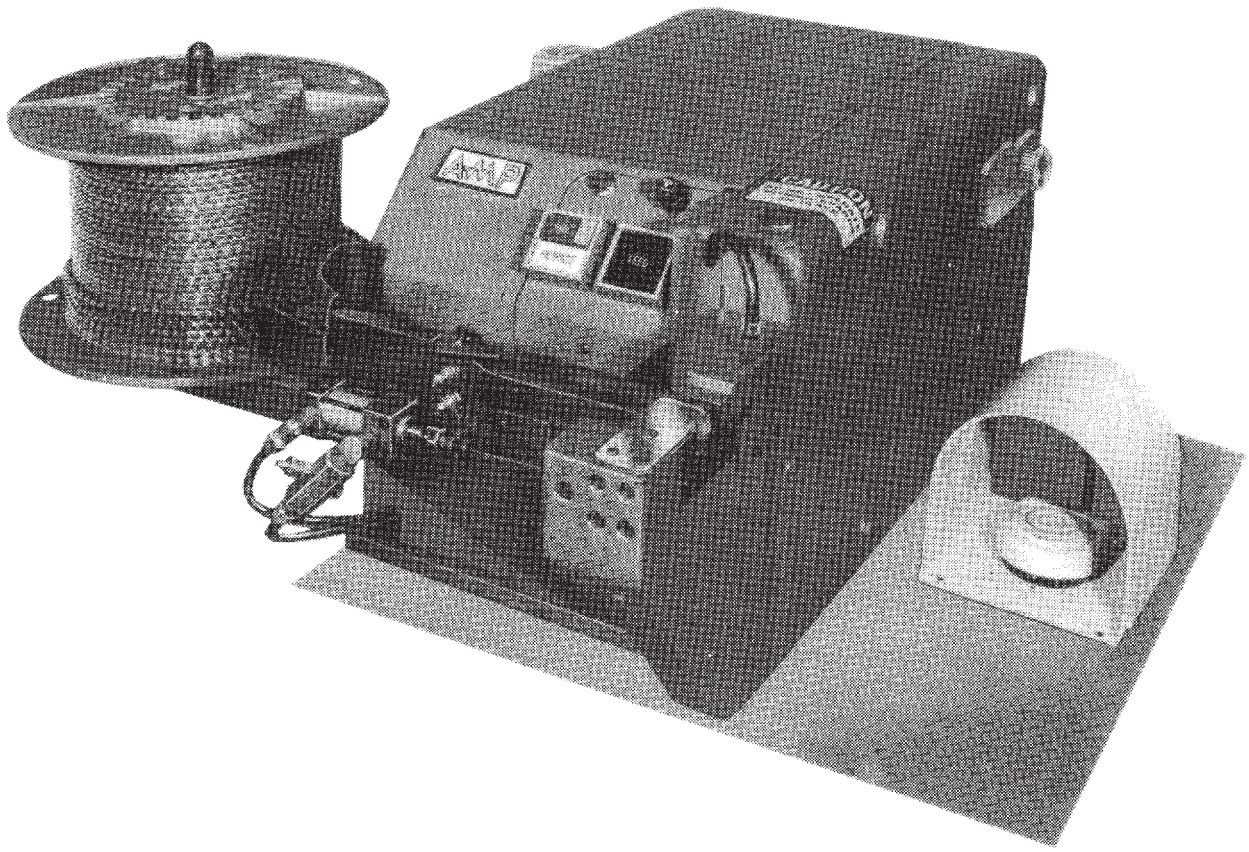
AMP Incorporated



NOTE: Typical Machine Without Wire Stuffer

Frontispiece. AMP Horizontal Terminating Machine Model 4

DANGER

SAFETY PRECAUTIONS PREVENT INJURY

Safeguards are designed into AMP machines to protect operating personnel from most hazards during normal machine operation. However, as with most machinery, certain precautions must be taken by the operator and repairman.

Never insert hands into an installed machine/applicator, or any part of a machine that is operated by electricity or compressed air, without first pulling the machine power cable plug from the outlet receptacle and/or shutting off the compressed air at the line valve and disconnecting the air hose. This will prevent injury in the event that switches or other controls are accidentally activated.

A grounded electrical outlet should always be used to receive the plug on the machine power cable.

To improve clarity, photographs and drawings may not show machine/applicator guards. In some cases, it is impractical to show the variety of guards designed to meet specific safety requirements, as set forth in codes and standards adopted by customers and/or enforced in a given locale.

Though a guard may not be shown, and procedures may not reflect the need for its removal, the guard **must** be in place during normal operation of the machine/applicator.

CUSTOMER HOTLINE
MACHINE/PRODUCT SERVICE
CALL TOLL FREE 1 800 722–1111
(CONTINENTAL UNITED STATES AND PUERTO RICO ONLY)

GENERAL MACHINE POLICY

All machines remain the property of AMP Incorporated. The customer shall have no title to the machine(s) and his interest shall be limited to the use of said machine(s) for the purpose indicated, during the stated term, at the specified plant.

No major change or modification shall be made without written consent of AMP Incorporated. Spare and component parts are available at nominal prices.

A list of component parts is included in the instructional material or drawings supplied with each machine.

The customer shall be fully responsible for the maintenance of the machine(s) including servicing, repair, and replacement of damaged or broken parts. Each machine shall be returned in usable condition — reasonable wear and tear excepted. Before returning the machine, contact AMP Incorporated, Harrisburg, Pennsylvania requesting instructions for shipping and disposition.

AMP Field Engineers are available to provide assistance in the adjustment or repair of the machine when problems arise which your maintenance personnel are unable to correct. Contact AMP Incorporated Field Engineering Services for applicable fees.

INFORMATION REQUIRED WHEN CONTACTING FIELD ENGINEERING SERVICES

AMP Field Engineering Services offers the **Customer Hotline** as a means of providing technical assistance when required.

When contacting AMP Field Engineering Services by telephone regarding service to a machine or tool, 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 corrected in this manner.

When calling the Customer Hotline, 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. Machine or tool 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

RECEIVING INSPECTION AND INSTALLATION

A. Receiving Inspection

The machines are thoroughly inspected during and after assembly. Prior to packaging and shipping, a final series of tests and inspections is made to ensure proper functioning. While the machine should require no adjustments before placing it in operation, the following inspection should be performed as a safeguard against potential problems generated in transit.

1. Carefully uncrate the machine, and place it on a sturdy bench or table where both illumination and height will permit a careful examination.

2. Thoroughly inspect the entire machine for evidence of damage that may have occurred in transit. If the machine is damaged in any way, file a claim against the carrier and notify AMP Incorporated immediately.

3. Check all components and parts to be certain they are secure.

4. Check all wiring (if applicable) for loose connections, cuts, or other possible causes of electrical short circuits.

5. Inspect all pneumatic lines (if applicable) for evidence of loose connections and cuts that may cause leakage.

NOTE

Keep this manual with the machine for the benefit of personnel responsible for installation, operation, and maintenance. In addition, be sure to keep any other documents or samples with the machine.

B. Factors Affecting Machine Placement

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: (A) the bench is of appropriate height, preferably with sound−deadening rubber mounts; (B) the machine is properly located on the bench with ample work areas on both sides to facilitate work flow; (C) the operator uses a swivel chair with padded seat and back rest which are independently adjustable; and (D) the foot switch (or foot valve), on machines so equipped, is placed on a rubber mat to maintain its movability, while preventing it from sliding unintentionally.

— Bench

A sturdy bench 28 to 30 in. high aids comfort by allowing the operator's feet to rest on the floor and the weight and leg position to be easily shifted. The bench should have rubber mounts to reduce noise. An open area under the bench should allow the chair to slide far enough in for the operator's back to be straight and supported by the chair's back rest.

— Machine Location on the Bench

The machine should be located near the front of the bench and securely bolted to remain stationary. The target area (tooling area where the terminal is applied) should be 6 to 8 in. from the front edge. This eliminates unnecessary operator motion and helps prevent back strain and fatigue. The target area should face the front of the bench and be parallel to the edge. (Access to the back of the machine must also be provided.)

NOTE

Some machines have provisions for being bolted to the bench, and must be secured in order to remain stationary.

— 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 the operator's back is straight and supported by the back rest.

— Foot Switch

When the operator is correctly positioned in front of a machine equipped with a foot switch, the foot should rest on the switch comfortably, and with ease. The foot switch 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.

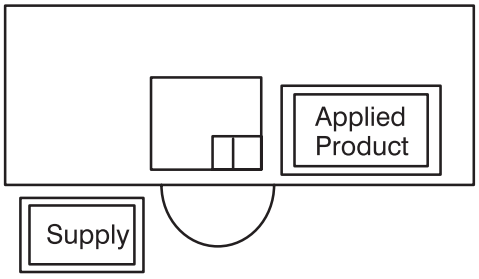
The preferred foot switch location varies to some extent among operators. Some operators like the switch located so that their foot rests on the switch when their feet are in the natural sitting position (calf of leg perpendicular to the floor). Others prefer that it be slightly in front of the natural 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 who prefer the foot switch slightly in front of the natural position may require a wedge–shaped block placed in under it.

DANGER

DO NOT connect electrical or pneumatic power to the machine until called for in the setup procedure, Section 3.

GOOD

The Figure shows the physical considerations as recommended, and the operator in a desirable position. Note that the chair height and back–rest are properly adjusted, and that the chair is properly located in respect to the bench. Thus, the operator's back is straight, and supported by the chair. Note also that the operator's upper arms are in a direct line with the torso.



The plan view identifies typical locations for "supply" and "applied product", and serves as an aid in visualizing the convenience in materials handling afforded by proper setup and correct operator position.

C. Machine Installation

With the considerations outlined in Paragraph B, locate the machine in a well−lighted area with adequate electrical power and air supply.

After positioning the machine on a sturdy bench, it is advisable to secure it with bolts or screws to prevent movement. If more convenient for the operator, and beneficial to production, the machine can be tilted at a 30° angle by mounting it on an inclined plane.

D. Electrical Requirements

The machine requires a 115 Vac, 60 Hz, single−phase, 5 A power source. Machines are also available for 230 Vac, 50 Hz current. The line should be well−regulated so the voltage does not drop excessively under additional line loads. If the electrical receptacle being used does not have a ground connector, connect the frame of the machine to a suitable metallic ground point.

E. Air Requirements

The operating air pressure must be 90 to 110 psi. The supply should have a minimum volume of 3 cfm with sufficient reserve and quick recovery so that the pressure does not fall below 90 psi when additional equipment is operated.

CONTENTS

ILLUSTRATIONS

1. INTRODUCTION

This manual provides information concerning the setup, operation, and maintenance of the AMP Horizontal Terminating Machine (see Frontispiece). This machine applies AMPLIVAR pigtail splices to unstripped magnet wire and prestripped wires of other types. Serrations in the splices cut through the magnet wire insulation to make electrical contact. This eliminates a time−consuming stripping operation. Splices are applied with uniformly high mechanical strength and electrical conductivity, at high−volume production rates.

The Horizontal Terminating Machine weighs approximately 146 lbs, and requires a power source of 115 Vac, 3 A, 60 Hz, or 230 Vac, 1.5 A, 50 Hz, depending on the model of the machine. A minimum of 90 to 100 psi air pressure is also required for the machine.

A wire stuffer assembly can be used with this machine to eliminate the need to change the crimp height adjustment if there is a change in the combined CMA (circular mil area) of the wires to be crimped. A supplement in the back of this manual gives detailed information for the wire stuffer assembly.

Figure 1−1 is a table which provides a listing of machines, the AMPLIVAR splice, and its crimp width.

The eight sections of this manual are arranged in an order convenient for setup and maintenance personnel. Setup personnel should follow carefully the procedures in Section 3, as any attempt to operate the machine without proper setup and checkout could result in damage and unnecessary downtime.

Section 4 contains step−by−step instructions for the machine operator. Maintenance personnel will find, in addition to Section 6, Preventive Maintenance, necessary and helpful information in Section 2 for diagnosing cycling problems, and in Section 5 for making adjustments. For information beyond the scope of this manual contact your local AMP Field Engineer, or

AMP Incorporated
Field Engineering
P.O. Box 3608
Harrisburg, PA 17105−3608
Phone: (717) 564−0100

When reading this manual, pay particular attention to DANGER, CAUTION, and NOTE statements. A DANGER denotes an imminent hazard which may result in moderate or severe injury, a CAUTION denotes a condition which may result in product or equipment damage, and a NOTE highlights special or important information.

2. DESCRIPTION

The AMP Horizontal Terminating Machine is basically rectangular in appearance — approximately 23 in. long, 27 in. wide, and 11 in. deep. The machine performs three functions: automatic feeding of terminals; application (crimping) of terminals; and trimming of scrap wire. The appearance of the machine differs greatly from the standard bench−type machine, mainly because its primary (crimping) motion occurs on a horizontal plane, and not vertically as in other machines.

The crimp tooling is nearly flush with the front surface of the machine, allowing the wire to be held close to the tooling for splicing ease when using very short leads.

The operator places the wires in the “target area” with the magnet wire in the barrel of the terminal, then depresses the foot switch. the machine automatically shears the splice (terminal) from the strip, crimps the splice onto the wires, shears off the excess wire and advances the next terminal into the crimping position. The machine’s electrical circuit design prevents double tripping. This means that the foot switch cannot be actuated while the cycle is in progress, and that the amount of time the foot switch is depressed is not critical. For a detailed functional description of the machine, refer to Paragraph 2.3.

MACHINES WITH BASE NUMBER 469181								
MACHINE NUMBER				AMPLIVAR SPLICE				
(A) 115 VAC 60 HZ		(B) 115 VAC 60 HZ		230 VAC 50 HZ	TERMINAL NUMBER			CRIMP WIDTH (IN.)
●● 469181−4		● 469181−5		2−469181−4	62000	42777	42778	62157	.110
●●	−6	●	−7	2−	−6	62040	42775	42776	62158	.110
	−8	●	−9	2−	−8	62001	42779	61849		.140
1−	−0	——		——		62001	42779	61849		.180
1−	−1	——		3−469181−0		62203	62303			.080
1−	−3	● −469181−5		3−	−1	62304	62305	62200		.110
						62000	42777	42778	62157	
1−	−5	●1−	−6	3−	−3	62306	62307	62204		.110
						62040	42775	42776	62158	
1−	−7	●1−	−8	3−	−5	62308	62346			.140
1−	−9	——		——		62308	62346			.180
2−	−0	——		——		62207	62210			.110
2−	−2	——		——		62342				.110
3−	−7	——		——		62201				.140
4−	−0	——		——		62670				.100
4−	−1	——		——		62306	62307	62204		.140
						62040	42775	42776	62158	

MACHINES WITH BASE NUMBER 463734							
MACHINE NUMBER			AMPLIVAR SPLICE				
(A) 115 VAC 60 HZ	(B) 115 VAC 60 HZ	230 VAC 50 HZ	TERMINAL NUMBER				CRIMP WIDTH (IN.)
463734−2	——	1−463734−4	62002	61850	42780		.180
−4	——	1− −6	62202				.180
−6	——	1− −8	62335				.220
−7	——	1− −9	62295				.250
−8	——	2− −0	62309	62451			.180
1− −0	♦−463734−1	2− −2	62310	62770			.180
1− −2	——	——	62310	62770			.220
2− −6	——	——	62309	62451			.220
2− −9	——	——	62002	61850	42780		.220

● THE MACHINE NUMBERS IN COLUMN (B) HAVE BEEN SUPERSEDED BY THE RESPECTIVE MACHINE NUMBERS IN COLUMN (A).

●● 469181−4 AND −6 HAVE BEEN SUPERSEDED BY 1−469181−3 AND 1−469181−5 RESPECTIVELY. THE ONLY DIFFERENCE BETWEEN THE SUPERSEDED MACHINES AND THE LATER MODELS IS IN THE ANVIL HOLDER.

Fig. 1−1. Terminals Used with the AMP Horizontal Terminating Machine

The very large number of wire combinations that can be joined with AMPLIVAR splices makes some tooling changes necessary. Design features, however, do minimize the number of required changes, and only two different feed plates are needed for the entire range of splices. Two or three wires may be joined in one splice.

The wire stuffer assembly is covered separately in the supplement at the back of this manual. The stuffer assembly is also available in kit form for field installation.

2.1. Major Groups and Subassemblies

The four major groups or subassemblies of the machine are the feed plate group, the crimp tooling group, the ram group, and the valve mounting plate subassembly. These groups are shown in the exploded views (Figure 8−1 through 8−3), and are described in subsequent paragraphs.

A. Feed Plate Group (Figure 8−1)

The feed plate (49) contains a groove that guides the terminal strip to the "target area." Two feed plates are available to accommodate the full range of terminals. The feed finger (43), driven by the air feed cylinder (33), advances the terminal strip one position with each cycle of the machine. The terminal strip drag (26) prevents the strip from being pulled back as the feed finger retracts to pick up the next feed point in the strip.

B. Crimp Tooling Group (Figure 8−1)

The crimper adjustment block (8) is attached to the machine ram with three screws (11) through elongated holes, allowing for adjustment by means of the crimper adjustment screw (10). Two compression springs (9), placed in the grooves of the crimper adjustment block, apply pressure toward the ram when the three screws are loosened, to keep the crimper adjustment screw against the ram during adjustment.

The crimper guide (7), shear blade (6), and crimper (5) form the shear and crimp assembly. The crimper guide is attached to the crimper adjustment block with four screws. The crimper and shear blade are attached to the adjustment block with two screws.

The top of the crimper and the top of the shear blade should be FLUSH with the top of the crimper guide and against the adjustment block to assure proper alignment with the anvil (16) and the anvil holder (17).

The anvil holder is mounted to the machine frame. The anvil is held in place in the anvil holder by the stripper plate (15). The wire positioner (4) is mounted on the anvil holder and helps ensure that the wire is positioned for a perfect crimp. The crimper guide is engaged with the anvil holder at all times and eliminates crimper−anvil adjustment in ONE DIRECTION.

The crimper adjustment screw (10) provides a full range of crimp height adjustment for each terminal. Turning the crimper adjustment screw in either direction from flat−to−flat (1/8 turn) changes the crimp height approximately .004 in. For the convenience of the operator, the flats are numerically identified from one to eight.

When the ram advances, the shear blade trims the scrap wire and at the same time shears the terminal from the strip. As the ram retracts, the stripper plate strips the crimped terminal from the crimper. An air blast tube is attached to the stripper plate, and as the ram reaches the fully retracted position, a preset blast of air is directed at the anvil to clear scrap wire and tab chips from the "target area." When the ram is fully retracted, the cycle is complete.

C. Ram Group (Figure 8−2)

The ram group provides the force to the crimper for crimping the terminals. The main components of this group are the machine frame (11), main air cylinder (33), link (24), ram bellcrank (26), and the ram (19). When the main air cylinder is fully retracted, the ram is also fully retracted by the linkage which connects the two components. Refer to Paragraph 3.3C for further details on checking the ram stroke.

D. Valve Mounting Plate Subassembly (Figure 8−3)

The main components of this subassembly are the base frame (1), main solenoid valve (51), manifold (13), air filter (19), pilot actuators (27), pressure sensitive switches (25), and the feed solenoid valve (29). Refer to Paragraph 2.3 for a functional description of the valve operation in relation to the air cylinders. Air pressure supplied to the machine passes through the air filter to provide clean air for the air valves, pilot actuators, and the air cylinders. For electrical connections to the solenoid valves, refer to Figure 8−4.

2.2. Switches and Controls (Figure 2−1)

All switches and controls for operating the machine are located at the front within easy reach of the operator. Each is described in the following paragraphs:

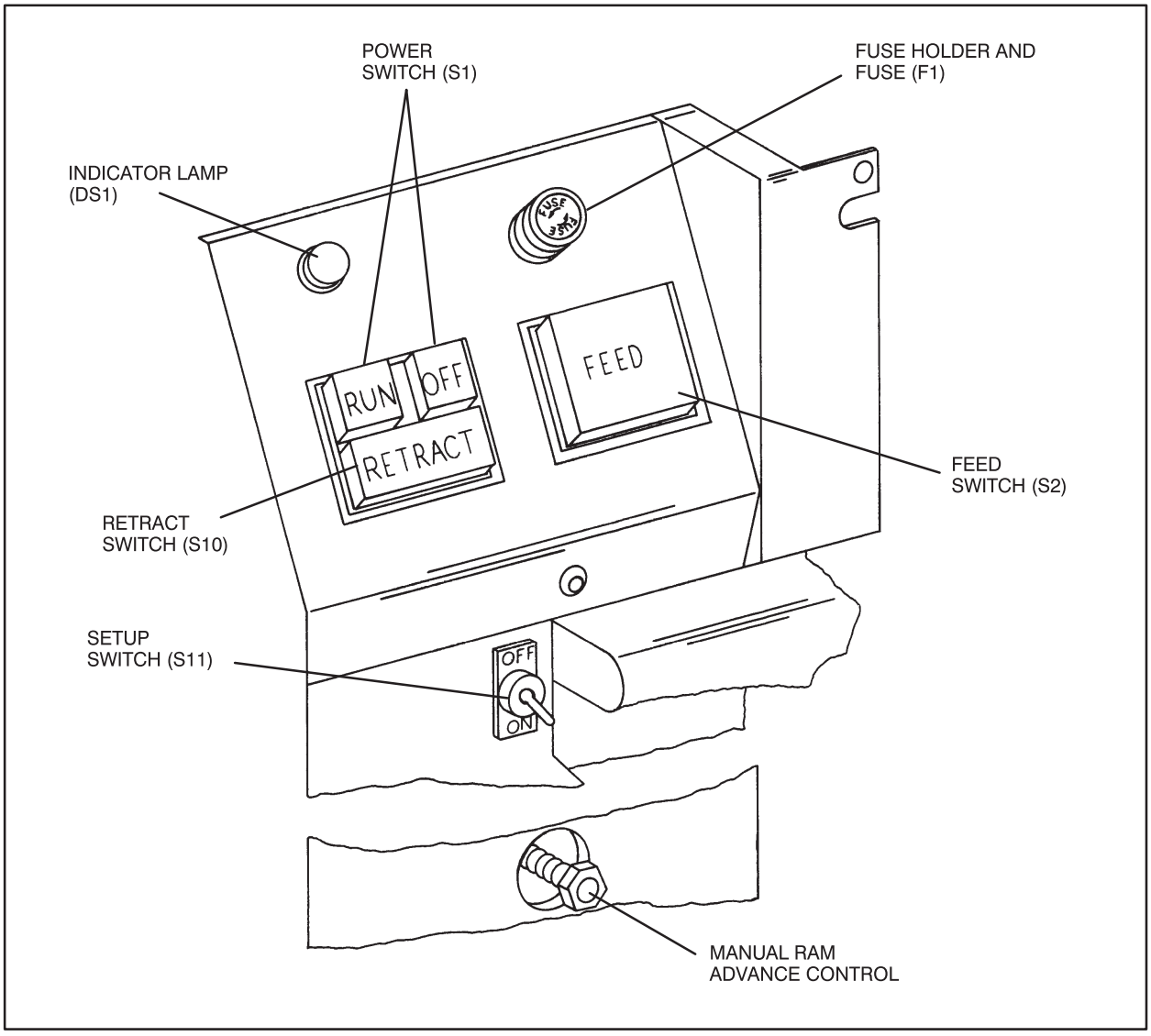


Fig. 2−1. Machine Switches and Controls

A. Power Switch (S1)

The power switch controls the electrical power to the machine. It is operated by two pushbuttons, the RUN pushbutton turns the machine "on," the OFF pushbutton turns it "off."

B. Indicator Lamp (DS1)

The red indicator lamp is connected in series with the power switch and lights when the RUN pushbutton is depressed and latched to indicate power is "on" to the machine.

C. Fuse and Fuse Holder (F1)

The fuse protects the machine circuitry in the event of a “short” within the wiring or one of the electrical components. Should the machine fail to operate and the indicator lamp does not light when the RUN pushbutton is depressed, FIRST check the fuse and replace if necessary.

D. Feed Switch (S2)

The feed switch is operated by depressing the FEED pushbutton. The purpose of the switch is to advance the terminal strip during setup as described in Section 3 and when making adjustments as described in Section 5. When the pushbutton is depressed and released, with the power to the machine “on,” it momentarily energizes the terminal feed solenoid valve (L2) to advance the terminal strip one terminal length, and de−energizes the ram retract solenoid valve (L1).

E. Retract Switch (S10)

The retract switch is operated by depressing the RETRACT pushbutton. This switch retracts the ram in the event a jam should occur that prevents the ram from fully extending, or if pilot actuated switch (S8) fails to close when the ram is fully extended.

F. Setup Switch (S10)

The ON−OFF setup switch is used in conjunction with the manual ram advance control during setup of the machine. During normal operation, the switch MUST be in the ON position. When placed in the OFF position, it prevents the ram from retracting after becoming fully extended, by breaking the circuit to the ram extended switch (S6).

G. Manual Ram Advance Control

The manual ram advance control is located below the switch mounting plate. The purpose of the control is to stop the ram operation at any point during extension stroke as may be required during setup, described in Section 3, or when making adjustments as described in Section 5. Using a screwdriver or 7/16−in. socket wrench, and completely closing the control (CLOCKWISE), prevents the ram from extending when the foot switch (S3) is depressed. To advance the ram with the setup switch (S11) in the OFF position, SLOWLY turn the control COUNTERCLOCKWISE. The ram can be stopped at any point during the extension stroke by completely closing the control (CLOCKWISE). With the ram fully extended, placing the setup switch in the ON position will retract the ram to the rest position.

H. Foot Switch (S3)

The foot switch may be placed at any location that is most convenient for the operator. Depressing the foot switch enables the machine to complete one cycle of operation. The machine cannot be cycled again until the foot switch is released. A cycle in progress must be completed before another cycle can occur.

2.3. Functional Description

The description is keyed to the pneumatic diagram (Figure 2−2) and the electrical schematic (Figure 2−3) to aid maintenance personnel in diagnosing problems within the machine that may arise during operation.

When the RUN pushbutton is depressed and latched, it “closes” switch (S1) to apply power to the control circuitry and light indicator lamp (DS1). In the standby condition, air pressure is supplied through the filter, manifold, terminal feed solenoid valve (L2) (de−energized), to the extension side of the feed cylinder to advance the feed finger, and to the pilot actuator to “close” switch (S4). Air pressure is also being supplied through the ram retract solenoid valve (L1) (de−energized) to the retraction side of the ram cylinder, thus holding it fully retracted and actuating switch (S5) “open” (ram rest position).

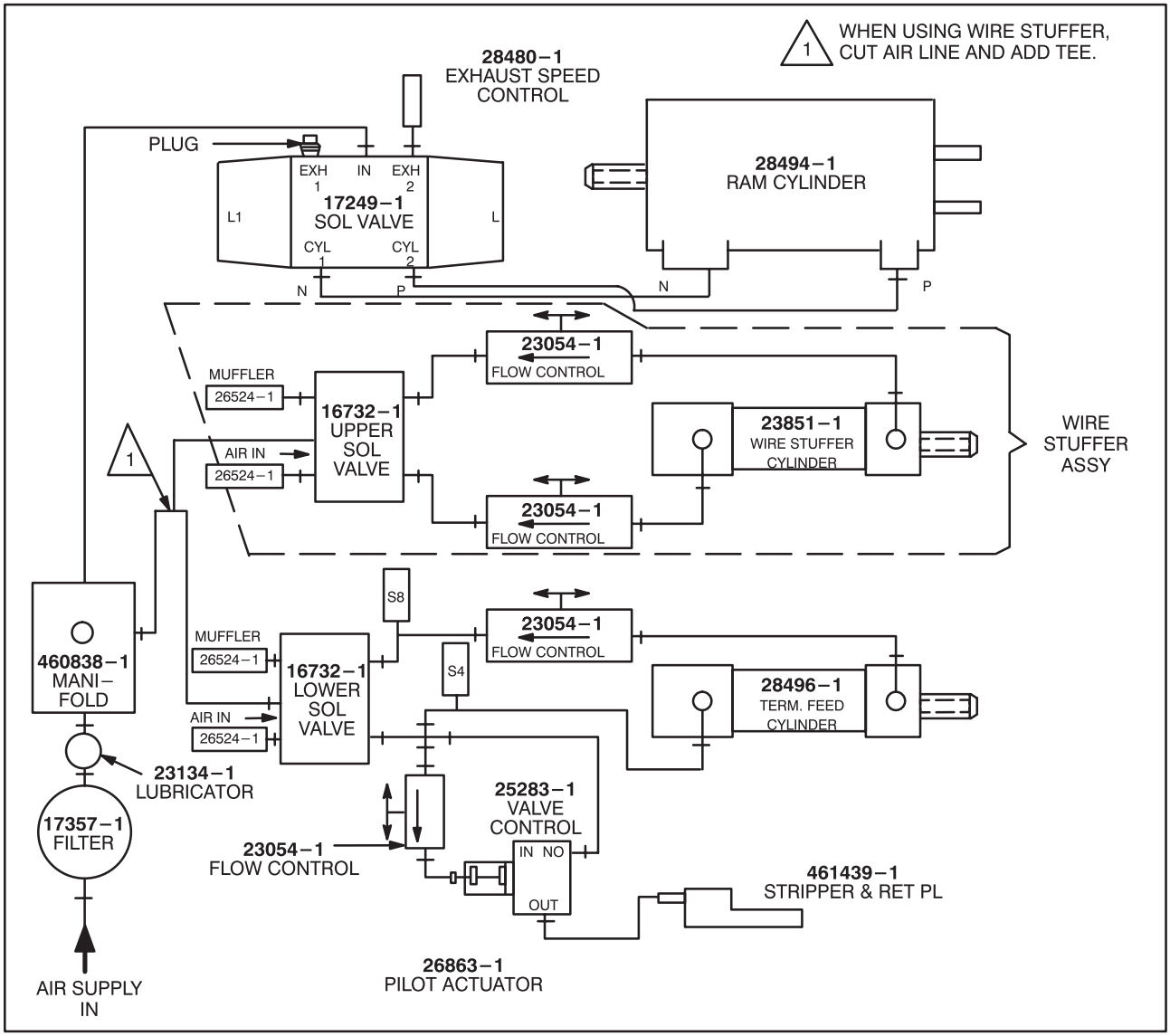
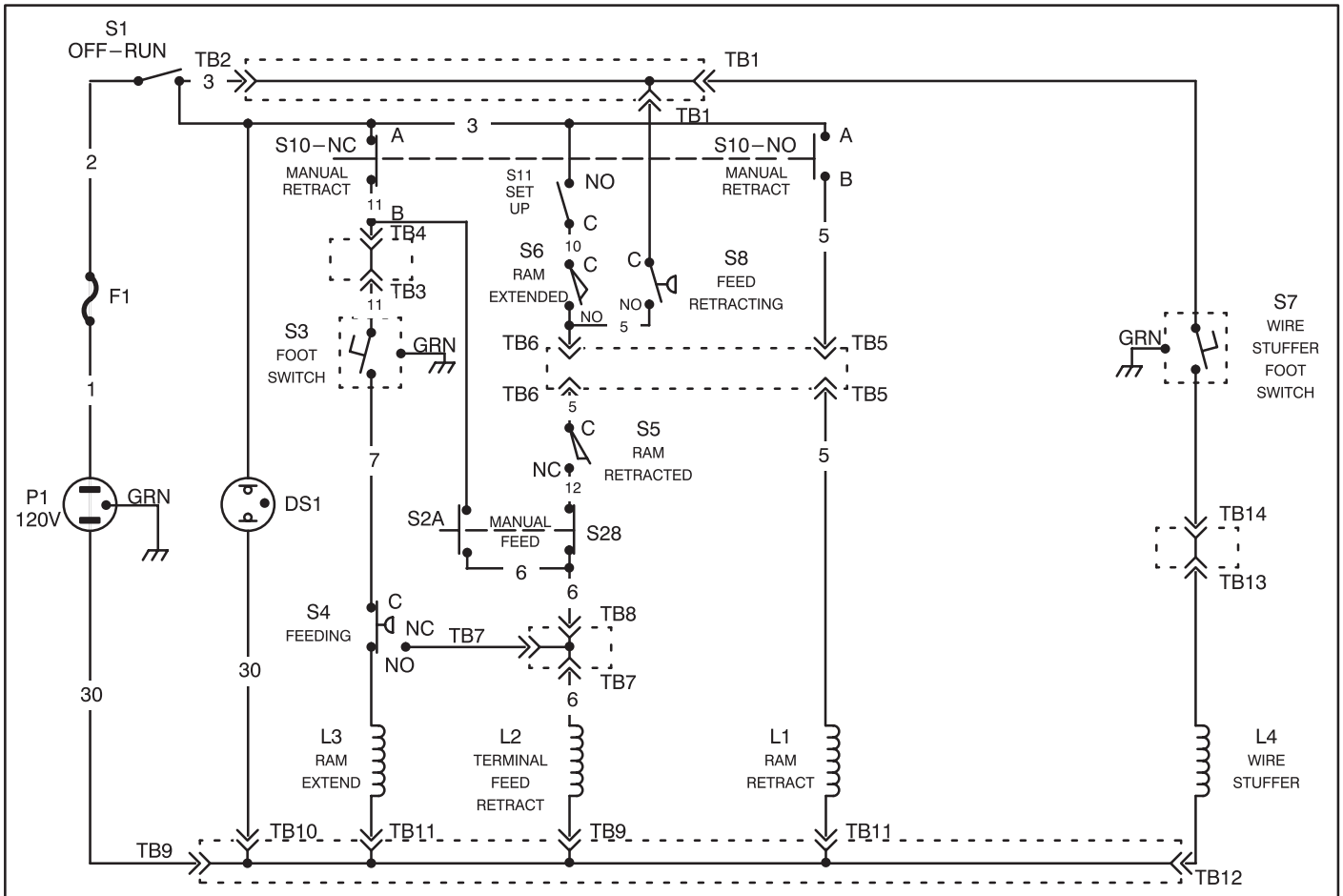


Fig. 2−2. Machine Pneumatic Diagram

When the foot switch (S3) is depressed, power is supplied through the “closed” switch (S4) to energize the ram extend solenoid valve (L3). This diverts air pressure through the valve to the extension side of the ram cylinder. As the cylinder starts to extend, switch (S5) “closes,” then as the cylinder becomes fully extended, it actuates switch (S6) “closed.” At the same time, the tooling shears and crimps the terminal in the “target area.”

With switches (S5 and S6) “closed,” the terminal feed solenoid valve (L2) is energized. This diverts air pressure through the valve to the retraction side of the feed cylinder to retract the feed finger and allow switch (S4) to “open” and break the circuit to the ram extend solenoid valve (L3). This also supplies air pressure to the pilot actuators and ”close” switch (S8) to complete the circuit and energize the ram retract solenoid valve (L1). This diverts air pressure back to the retraction side of the ram cylinder to retract the ram and release the crimped terminal. In the event of an electrical malfunction, or a jam that prevented the ram from fully extending to actuate switch (S6), switch (S10) may be “closed” by depressing the RETRACT pushbutton to energize the ram retract solenoid valve (L1).



OPERATION:

REST, RAM RETRACT, TERMINAL FED. “S1” CLOSED

1. CLOSE “S3” ENERGIZING “L3”.
2. RAM EXTENDS, CLOSING “S5”.
3. RAM EXTENDED CLOSES “S6”, ENERGIZING “L1” AND “L2”.
4. a. FEED RETRACTS CLOSING “S8”, WHICH LATCHES “L2”, AND OPENS “S4”, WHICH DE–ENERGIZES “L3”.
   b. RAM RETRACTS OPENING “S6” WHICH DE–ENERGIZES “L1”.
5. RAM RETRACTED OPENS “S5”, DE–ENERGIZING “L2” IF “S3” IS OPEN (PREVENTS DOUBLE CYCLE).
6. FEED ADVANCES OPENING “S8” AND CLOSING “S4” WHICH RESETS THE CIRCUIT.

Fig. 2–3. Machine Electrical Schematic

As the ram cylinder starts to retract, switch (S6) is allowed to “open” but the terminal feed solenoid valve (L2) remains energized until the ram is fully retracted to actuate switch (S5) ”open.” Should the foot switch (S3) still be depressed, the terminal feed solenoid valve (L2) will remain energized through switch (S4) until the foot switch (S3) is released. With the terminal feed solenoid valve (L2) being de–energized, air pressure is diverted back to the extension side of the feed cylinder and the feed finger advances the next terminal into the “target area.” At the same time, air pressure is stopped to the pilot actuator on switch (S8) and it “opens” to break the circuit to the ram retract solenoid valve (L1).

The machine is now back in the standby condition and all solenoid valves are de−energized. Air pressure is being supplied to the retraction side of the ram cylinder and to the extension side of the feed cylinder and pilot actuator on switch (S4).

With the machine in the standby condition, terminals can be fed into the “target area” without cycling the machine. This is accomplished by depressing and releasing the FEED pushbutton which “closes” switch (S2) to momentarily energize the terminal feed solenoid valve (L2). This will retract and extend the feed cylinder ONLY.

3. MACHINE SETUP PROCEDURES

This section contains procedures for setting up the machine and checking it out prior to performing production operation. This will assure that all alignments and adjustments are correct to produce termination of the proper crimp height for the type of terminal and size wire being used. If procedures are not carried out in detail, especially following the initial installation of the machine, damage may result to the tooling. Also included in this section, to prevent duplication, is the manual cycling procedure which is referred to throughout this manual.

3.1. Manual Cycling Procedure (Figure 2−1)

CAUTION

DO NOT perform this procedure, except when specified within another procedure, then ONLY in the proper sequence. Otherwise, damage to the tooling may result due to misalignment and/or adjustments.

1. COMPLETELY close the manual ram advance control by turning CLOCKWISE. DO NOT force the control after it is closed. Use a 7/16−in. socket wrench or screwdriver to turn control.

2. Connect the electrical plug and air supply.

3. Depress the RUN pushbutton. The indicator lamp will light to indicate power is “on.”

DANGER

KEEP HANDS CLEAR of feed plate and “target area” at all times.

4. Place setup switch (S11) in the OFF position, then depress the foot switch.

5. SLOWLY open the manual ram advance control by turning COUNTERCLOCKWISE. This will allow the ram to advance slowly. DO NOT open the control more than 1/8 turn.

6. CLOSELY OBSERVE the shear and crimper assembly as it nears the anvil. If misalignment is observed, IMMEDIATELY close the control by turning CLOCKWISE. Make necessary adjustments as may be required before proceeding.

7. After ram has become fully extended, fully open manual ram advance control by turning COUNTERCLOCKWISE. Ram will remain fully extended under pressure.

8. To retract ram, place setup switch (S11) in the ON position. Machine will complete the cycle and return to the standby condition.

9. Depress the OFF pushbutton, then disconnect the electrical plug and air supply.

3.2. Preloading Alignment Check (Figure 3−1)

DANGER

BE SURE the electrical and air supply are disconnected before starting this procedure.

1. Remove anvil guard (2) and ram guard (3) by removing screws (1) securing each to the machine frame.

2. Remove the four screws (14) securing the anvil holder (17) to the frame.

3. Remove stripper plate (15) from anvil holder (17) and remove the anvil (16); then slide the anvil holder back over the crimper guide and loosely install four screws (14) to the anvil holder.

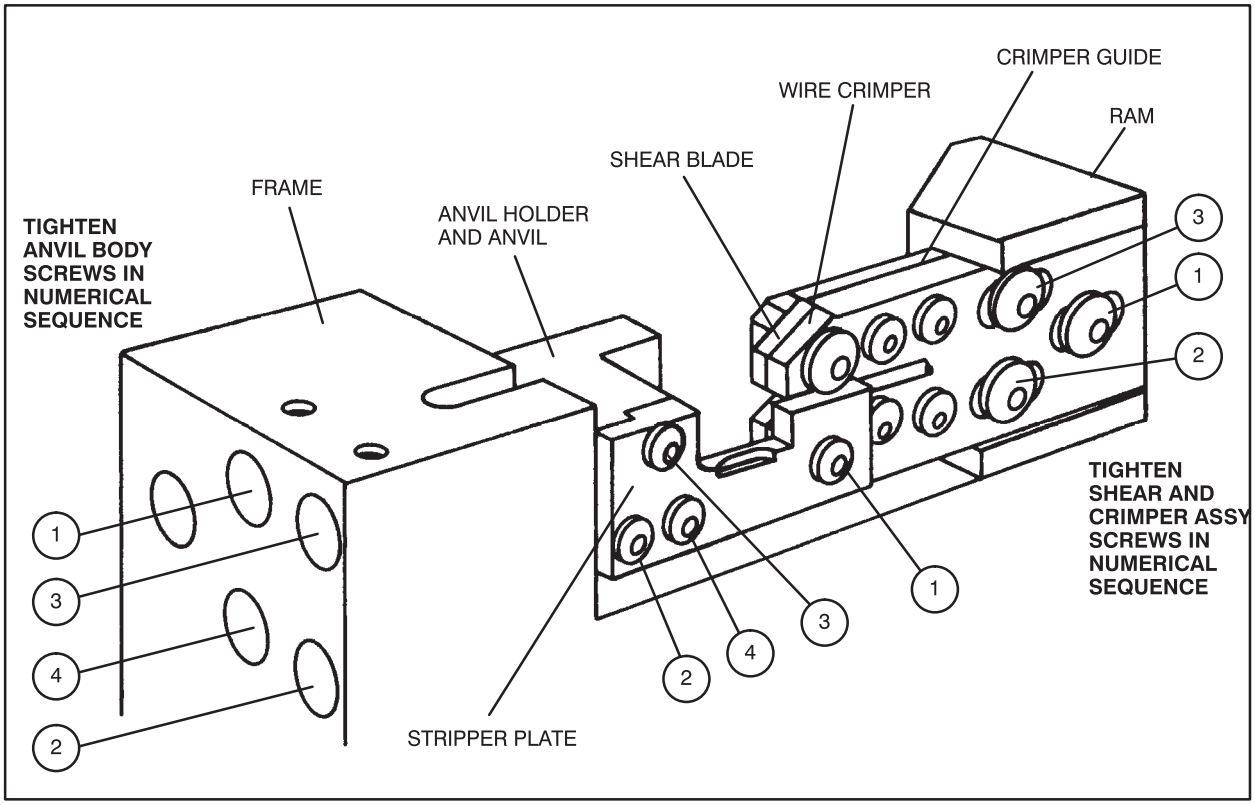


Fig. 3−1. Tooling Alignment Check Points

4. Slowly advance the ram by performing the manual cycling procedure as described in Paragraph 3.1.

CAUTION

Be sure the anvil holder is not hitting the feed plate assembly (49). If it is, loosen the feed plate assembly screws (20) and (21) and move the feed plate away from the anvil holder.

5. With the ram extended, and while holding the anvil holder against the frame, slide the anvil in the crimper opening to make sure the crimp height is not too tight. If it is, loosen screws (14) and adjust screw (10) until clearance is achieved. Remove the anvil after clearance is achieved, place several thicknesses of paper over the anvil, and center it in the crimper.

6. Tighten the four screws (14) to secure the anvil holder to the frame, and tighten the three screws (1) in the stripper plate (15) to secure the stripper plate to the anvil holder. Refer to Figure 3−1 for numerical sequence to tighten the screws.

7. Retract the ram by completing the manual cycling procedure as described in Paragraph 3.1.

8. Replace the anvil guard and ram guard on the machine.

3.3. Terminal Strip Loading (Figure 3−2)

DANGER *MAKE SURE the electrical plug and air supply are disconnected.*

1. Place a reel of the correct type of terminals on the reel support so the terminal strip enters the groove in back of the feed plate with the open “U” toward the back of the machine.

2. Rotate the drag lever to release and hold drag open (back), then feed terminal strip through strip guide, and groove in feed plate until the end reaches the feed finger.

3. Depress and hold feed finger release pin on front of feed plate while feeding terminal strip through until first terminal has passed tip of feed finger, then release pin to engage feed finger. Pull back slightly on terminal strip to assure feed finger is indexed against first terminal.

4. Rotate drag lever to allow drag to contact terminal strip.

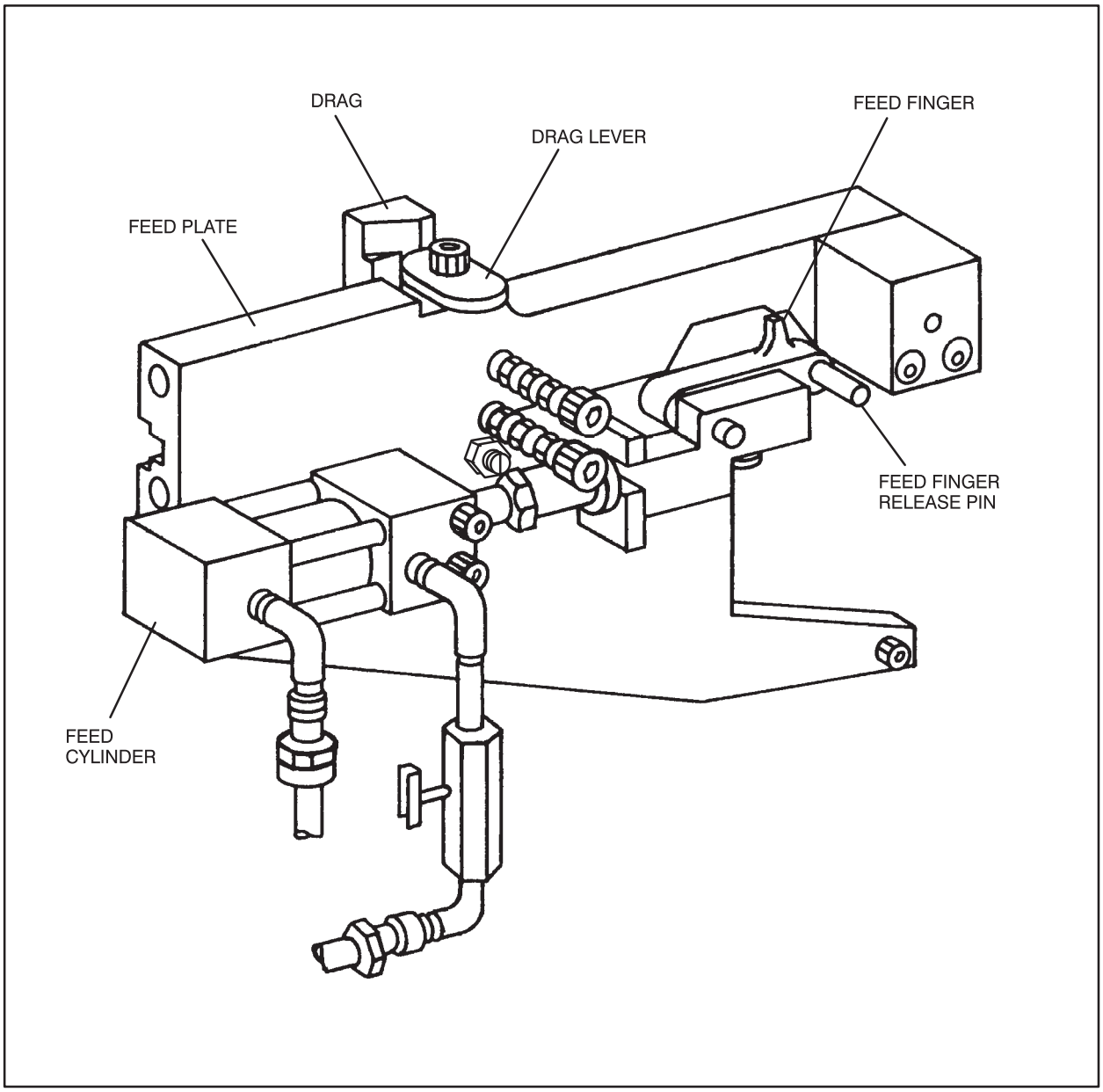


Fig. 3−2. Feed Plate Elements for Terminal Strip Loading

3.4. Machine Checkout

A. Terminal Strip Feed Check

1. With terminal strip loaded into machine, as described in Paragraph 3.3, depress and hold feed finger release pin while checking drag on terminal strip. Drag must be adjusted so that a slight pull is required to move the strip. If adjustment is required, refer to Section 5. After checking the drag, reposition the first terminal ahead of the feed finger as described in Paragraph 3.3.

2. Connect the electrical plug and air supply, then depress the RUN pushbutton. Red indicator lamp will light.

3. Depress and release the FEED pushbutton. The terminal strip should advance one terminal length.

4. Continue to depress and release the FEED pushbutton until the FIRST terminal is centered on the anvil. If the terminal DOES NOT stop directly centered on the anvil, adjust feed as described in Section 5.

5. At completion of this check, perform the ram cylinder/ram linkage check as described in Paragraph 3.4,B.

B. Ram Cylinder/Ram Linkage Check

1. Remove reel support bracket (61, Figure 9−1) by removing four screws (54 and 55).

2. Remove machine cover (65) by removing screws (63) and washers (64).

DANGER *KEEP HANDS CLEAR of machine interior while performing this check.*

3. Connect the electrical plug and air supply. Depress the RUN pushbutton, then the OFF pushbutton to assure the retraction side of the ram cylinder is pressurized.

4. Check clearance between top of ram bellcrank (26, Figure 8−2) and machine frame (11). Clearance must be .005 in. or more with ram cylinder fully retracted under pressure. If necessary, adjust by loosening locknut on cylinder shaft, then turn shaft in bellcrank clevis (27) in the required direction until clearance is within range. Tighten locknut after making adjustment.

5. Check ram rest switch S5, on ram retaining plate (4), to be sure it is actuated “open” by socket head cap screw (13). If necessary, adjust switch as described in Section 5.

6. Manually cycle machine until ram is fully extended, as described in Paragraph 3.1.

7. Check ram extended switch (S6), on ram return switch bracket (5), to be actuated “closed” by bellcrank. If necessary, adjust switch as described in Section 5.

8. Continue to manually cycle machine to return it to the rest position.

9. Replace machine cover and reel support bracket.

10. Perform manual crimping check as described in Paragraph 3.4,C.

C. Manual Crimping Check

1. With the electrical plug and air supply connected, depress the RUN pushbutton.

2. With a terminal in the “target area,” place a combination of stranded wire and magnet wire in position, as shown in Figure 3−3, with the magnet wire toward the terminal (front).

3. Manually cycle the machine as described in Paragraph 3.1. Observe the ram advancement and the shearing and crimping of the terminal in the “target.”

4. After the ram has fully retracted, remove the terminal and inspect it in accordance with Paragraph 3.4. If necessary, make any adjustments that may be required as described in Section 5.

5. At completion of this check, perform automatic crimping check as described in Paragraph 3.4,D.

D. Automatic Crimping Check

NOTE: RIGHT SIDE VIEW

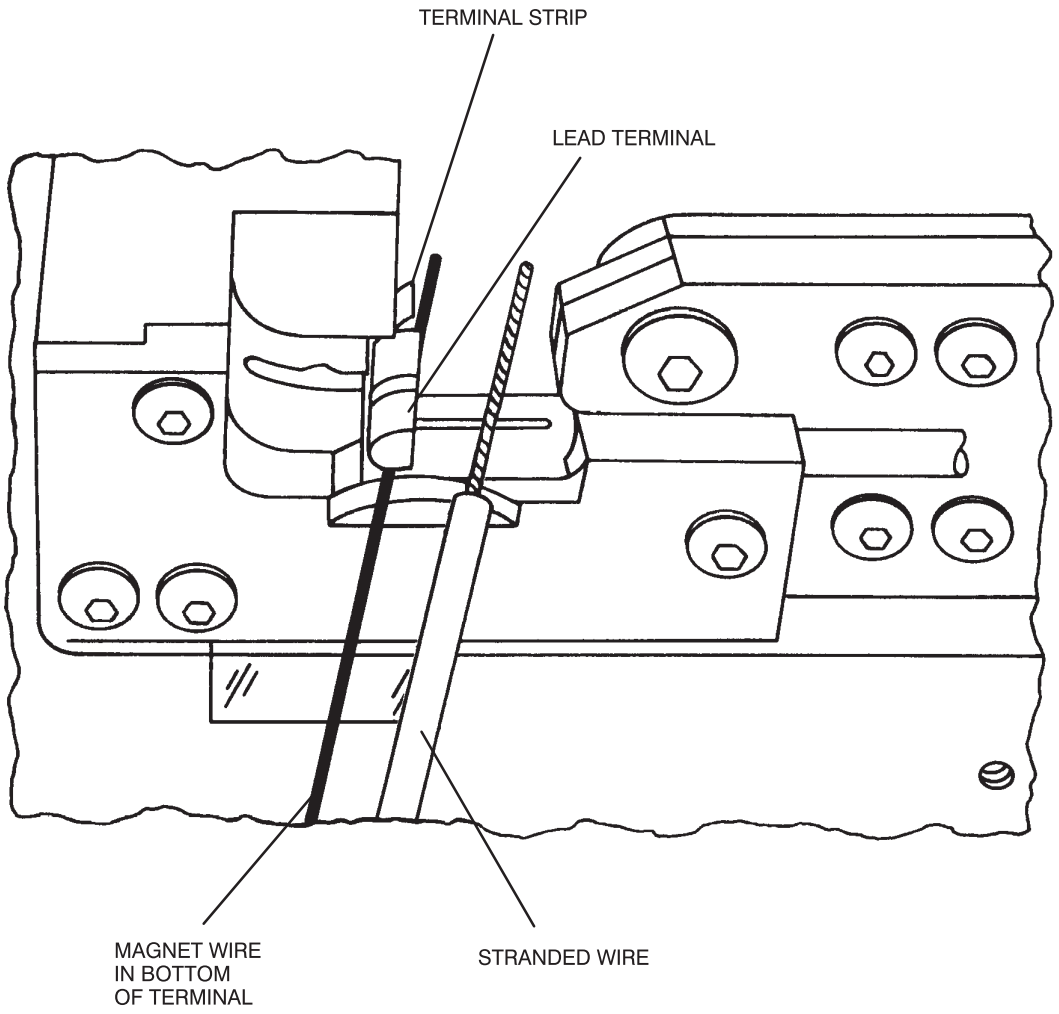


Fig. 3−3. Wire Placement in Target Area

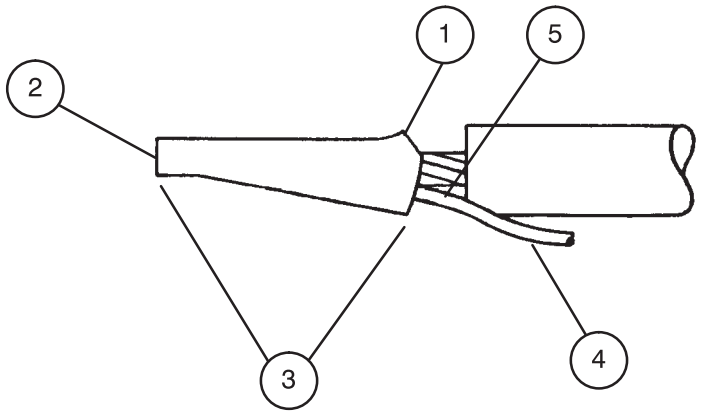
The automatic crimping check is performed in the same manner as the manual crimping check described in Paragraph 3.4,C except that the manual ram advance control must be fully open, the RUN pushbutton depressed, and the foot switch depressed to cycle the machine. Terminations must conform to the requirement set forth in Paragraph 3.5. If necessary, make any adjustments that may be required as described in Section 5.

If the terminations obtained from the manual cycling check and the automatic crimping check conform to all requirements, the machine is ready for production operation as described in Section 4. If machine is not to be operated immediately, depress the OFF pushbutton, then disconnect the electrical plug and air supply.

3.5. Termination Inspection

All terminations produced by the machine must conform for quality and crimp height as follows:

1. Inspect the termination for conformance to the requirements set forth in Figure 3−4.



1. This area must be bellmouth in shape.
2. The sheared end must be cleanly cut off.
3. The wires must extend through the crimped splice.
4. The magnet wire must lie in the bottom of the splice.
5. When two magnet wires are used, they should lie side by side.

Fig. 3−4. Crimped AMPLIVAR Splice

2. Using a crimp height comparator as shown in Figure 3−5, measure the crimp height of the termination as shown in Figure 3−6. The crimp height must be within +/−.003 in. of the measurement specified for the type terminal and size wire being used, as obtained from your AMP Field Engineer. If a common crimp height is used for several different terminal combinations, the crimp height must be +/−.001 in.

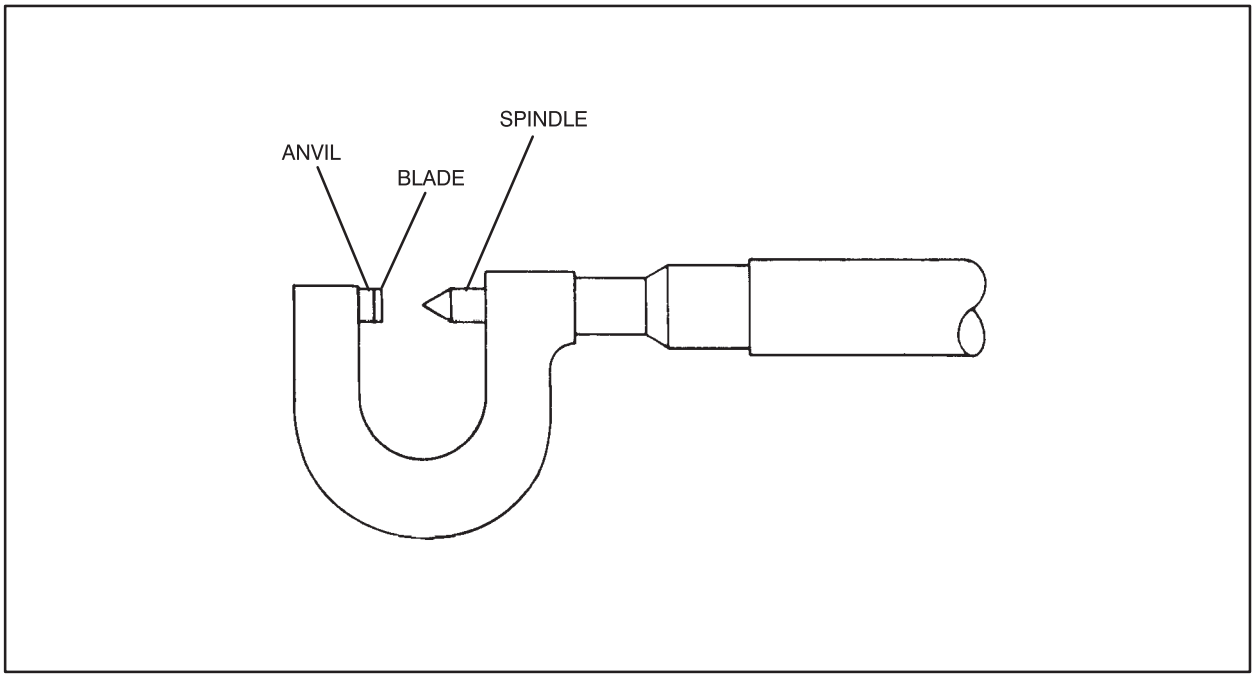


Fig. 3−5. Crimp Height Comparator

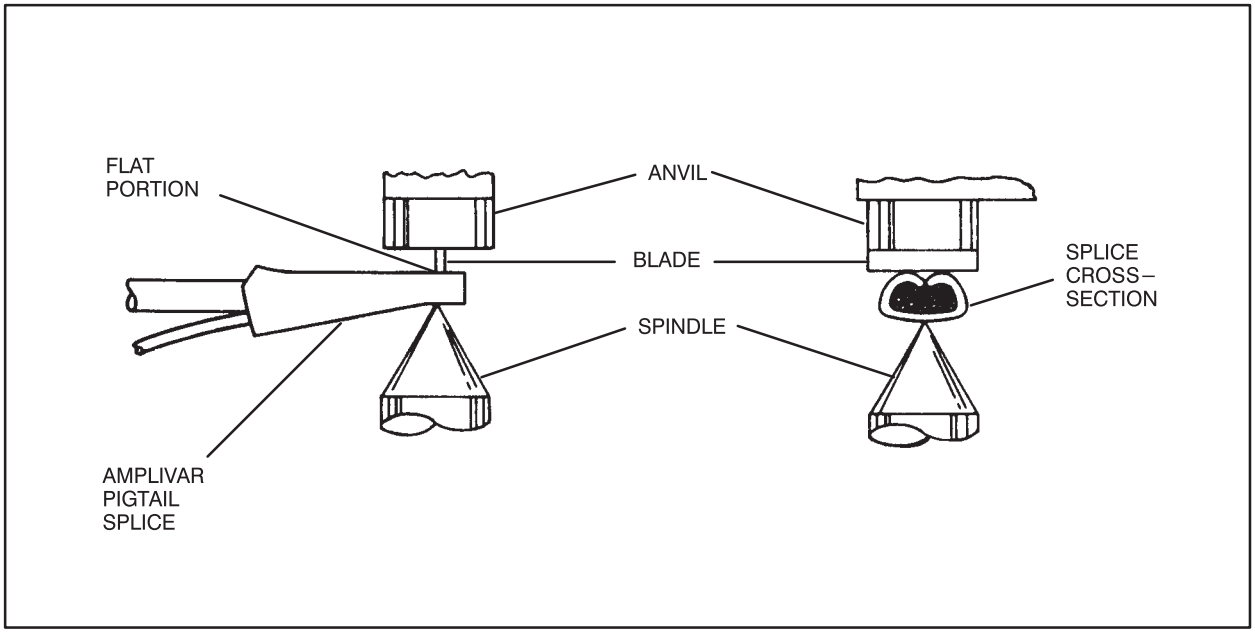


Fig. 3−6. Crimp Height Measurement

AMP Incorporated does not sell crimp height comparators. Please send order for part number RS−1019−5L directly to:

York Machinery & Supply Co.
20 North Penn Street
York, PA 17401

OR

VALCO
P.O. Box 1413
634 Stefko Boulevard
Bethlehem, PA 18017

4. MACHINE PRODUCTION OPERATION

Before placing the machine in production operation, be sure it has been properly setup and checked out according to procedures in Section 3. Perform production operation as follows:

1. Connect the machine to the adequate air supply.

2. Plug the electrical plug into the convenient electrical outlet.

DANGER

Be sure all guards and covers are in place. Never operate the machine without a terminal over the anvil and wires in the "target area."

3. Depress the RUN pushbutton. The red indicator lamp will light.

NOTE

Personnel who have not previously operated the machine should manually cycle it several times, as described in Paragraph 3.1, while observing the operation and travel of the feed finger and ram before proceeding.

4. Place wires in the "target area" in line with the terminal as shown in Figure 3–3. When using magnet wire with a stranded wire, position them as shown. When splicing two magnet wires, they may be in any position with respect to each other. The crimp tooling will automatically position them side by side in the bottom of the terminal as crimping occurs.

5. With the wires in position, depress the foot switch. The machine will cycle only once, regardless of how long the foot switch is held down.

6. At periodic intervals during production operation, perform termination inspection described in Paragraph 3.5.

7. At completion of production operation, depress the OFF pushbutton. Disconnect the electrical plug and air supply.

5. ADJUSTMENTS

The following procedures may be necessary when adjusting the machine, during production operation, or following the replacement of parts.

5.1. Crimp Height Adjustment

CAUTION

Do not attempt adjustment of crimp height until after performing preloading alignment check described in Section 3.

1. Determine if the crimp height is to be GREATER or SMALLER as described in the termination inspection in Section 3.

NOTE

If the machine is equipped with an adjustment knob on the right side and the machine has not been disassembled for the replacement of tooling, perform Step 2. Otherwise, continue with Step 3.

2. Increase or decrease the crimp height by turning the adjustment knob on the right side. The letter “A” produces the minimum crimp height (tightest) and the letter “F” the maximum crimp height (largest), or approximately .005 in. between letters. Refer to Figure 5−1. If, after performing several crimping test cycles manually and under power, the desired crimp height cannot be obtained, set the adjustment knob on the letter “A” and continue with Step 3.

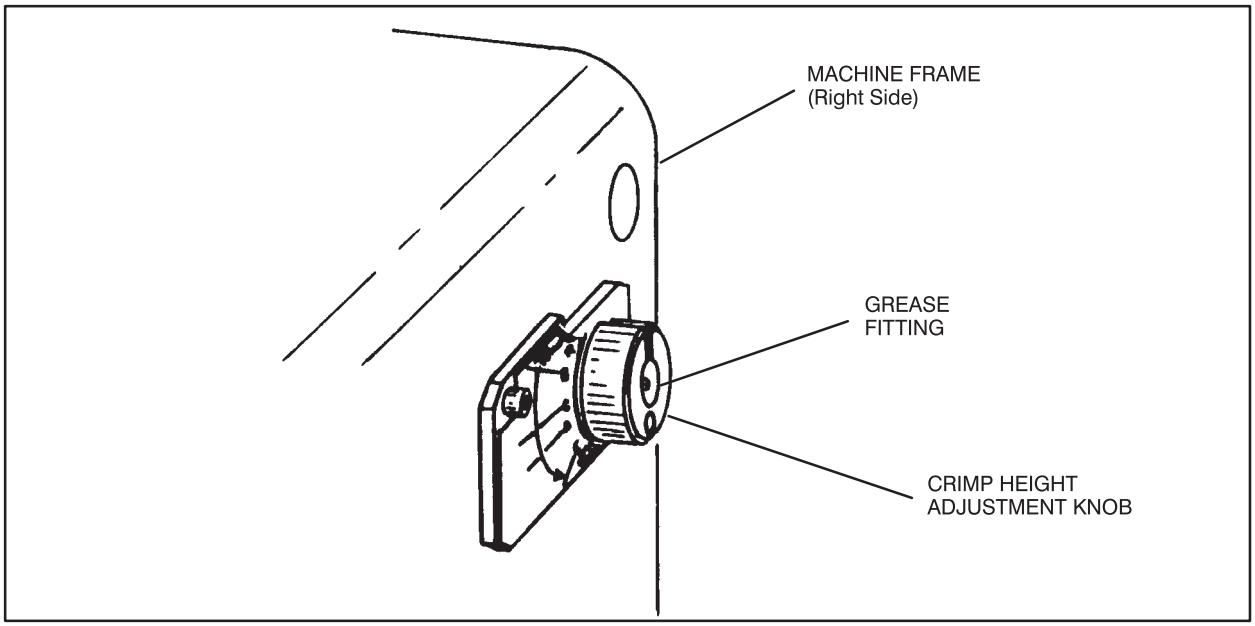


Fig. 5−1. Crimp Height Fine Adjustment

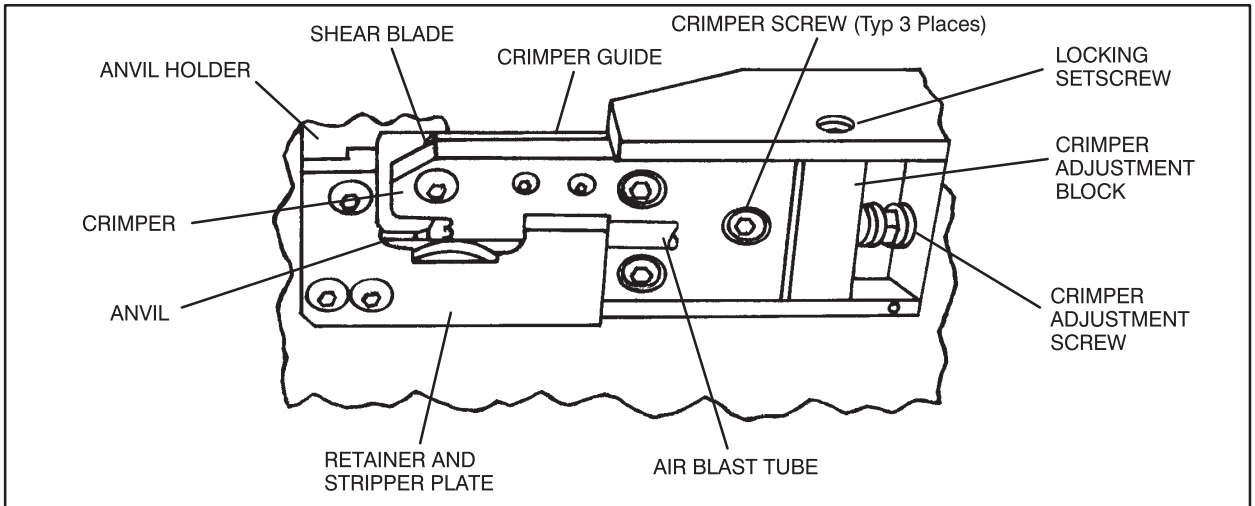
3. Remove the anvil guard and the ram guard by removing the screws.

4. Remove the terminal strip from the “target area” by releasing the drag, using the drag lever. Depress and hold the feed finger release pin while pulling back on the strip until clear.

5. Place a double thickness of paper over the anvil.

6. SLOWLY extend the ram by manually cycling the machine as described in Section 3.

7. With the ram fully extended, loosen the three screws securing the crimper adjustment block to the ram and loosen the locking setscrew. Refer to Figure 5−2.



NOTE:
1. EIGHT FLATS ON CRIMPER ADJUSTMENT SCREW — FLAT−TO−FLAT (1/8 Turn) APPROX .004 IN. CHANGE IN CRIMP HEIGHT.
2. TOP SURFACES OF CRIMPER, CRIMPER GUIDE, SHEAR BLADE, AND CRIMPER ADJUSTMENT BLOCK MUST BE FLUSH.

Fig. 5−2. Crimp Height Adjustment Points

8. To increase crimp height, turn the screw into the crimper adjustment block by turning the wrench up. To decrease the crimp height, turn the crimper adjustment screw out by turning the wrench down. A flat−to−flat turn (1/8 turn, or turn to the next consecutive number) will change crimp height approximately .004 in. Turn crimper adjustment screw the necessary turns to produce a change in crimp height as determined in Step 1.

9. Tighten the three screws securing the crimper adjustment block to the ram and tighten the locking setscrew on the top of the block.

10. Continue to manually cycle the machine to retract the ram to standby position, then remove paper.

11. Load the terminal strip into the machine as described in Section 3.

12. Perform manual and power crimping procedures, and then the termination inspection as described in Section 3 to be sure the crimp height is correct. If not, repeat Steps 4 through 12 until correct crimp height is obtained. Perform Step 2 for fine adjustment.

13. Replace the anvil guard and the ram guard.

5.2. Feed Adjustments (Figure 5−3)

A. Feed Finger Positioning

1. If necessary, load machine with terminal strip as described in Paragraph 3.3.

2. Connect electrical plug and air supply, then depress the RUN pushbutton.

3. Repeatedly depress and release the FEED pushbutton to advance the lead terminal into the “target area” and centered on the anvil.

4. Determine if terminal strip is being over−fed or under−fed by the feed finger.

5. To adjust, loosen locknut on feed cylinder shaft, then turn feed cylinder adapter IN or OUT as required to center terminal on anvil. While making adjustment, pull back on terminal strip to hold feed point against feed finger.

6. At completion of adjustment, tighten locknut to secure cylinder shaft in feed cylinder adapter.

7. Check flow control valve adjustment as described in Paragraph 5.2,B.

B. Flow Control Valve

The flow control valve, located on the retraction side of the feed cylinder, should be adjusted in such a manner as to slow the feed finger advancement and prevent it from “slamming” at the end of stroke. This also prevents over−feeding.

To adjust the speed, turn the valve adjustment IN to slow the cylinder action, turn it OUT for faster action.

NOTE

It is not necessary for the speed to be fast. Normally, the operator cannot remove a completed termination and insert wires for the next termination before another terminal is in position.

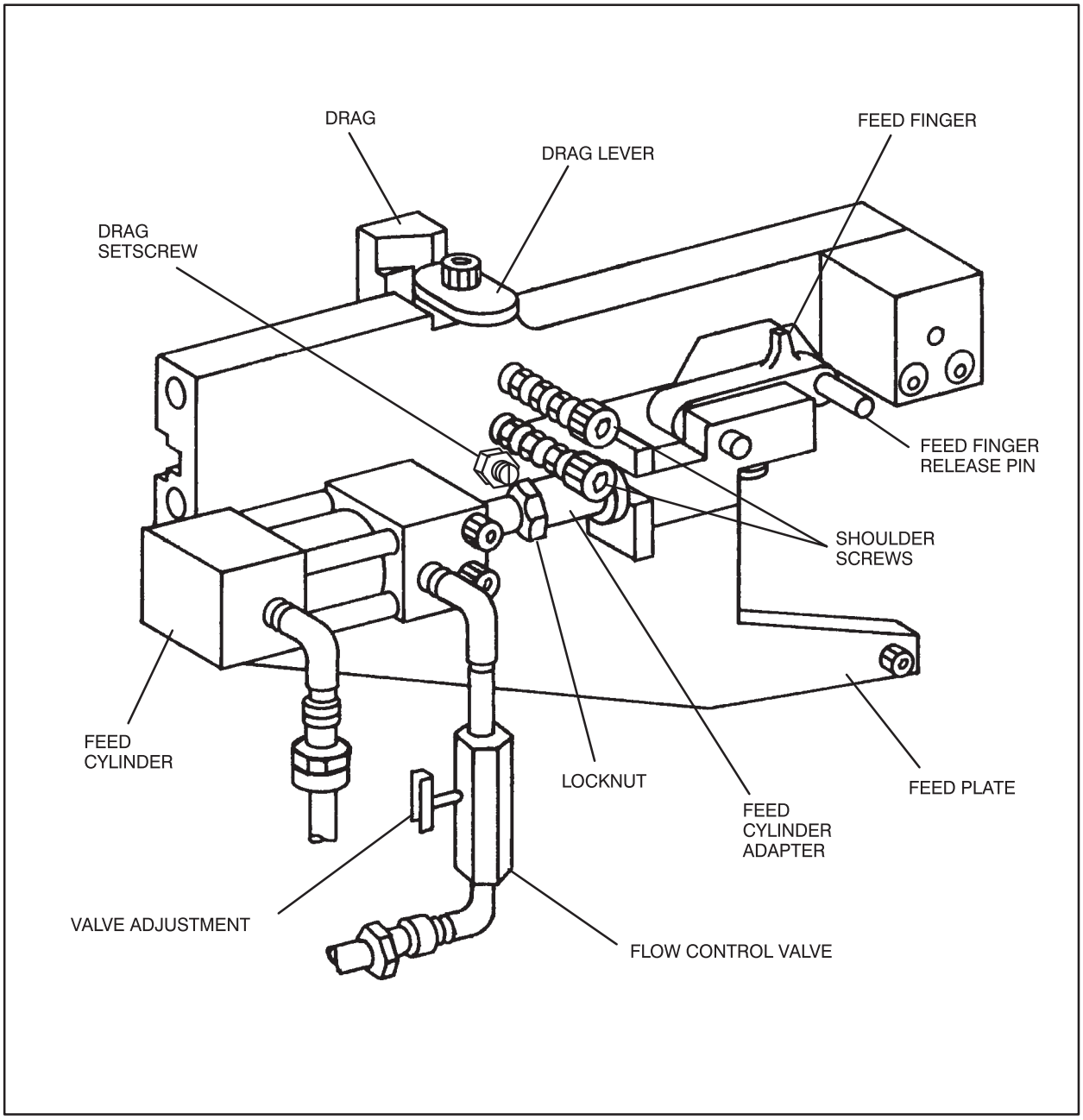


Fig. 5–3. Feed Adjustment Points

C. Terminal Strip Drag

The drag must apply sufficient pressure to the terminal strip to prevent pullback of the strip by the feed finger when it is retracted to pick up the next feed point. If necessary, adjust as follows:

1. Loosen the locknut on the drag setscrew. With the drag lever released, turn the setscrew as required until the drag rests evenly on the terminal strip.

2. While holding the setscrew in the adjusted position, tighten the locknut.

3. Rotate the drag lever to lift the drag from the terminal strip. The drag should pivot on the setscrew.

5.3. Adjustment of Ram Switches (Figure 8−2)

The ram rest switch (S5) and the ram extended switch (S6) MUST BE properly adjusted for the machine to start and/or complete a cycle of operation. To avoid switch breakage, it is necessary for the ram cylinder to be under pressure in its respective direction in relation to the switch when the switches are adjusted. Adjust switches as follows after removing the machine cover.

A. Ram Rest Switch (S5)

1. Connect electrical plug and air supply, then depress the RUN pushbutton. Main air (ram) cylinder (33) must be fully retracted under pressure.

2. Check that switch is actuated “open.” To perform this check, manually actuate the ram extended switch (S6) “closed.” If this energizes the terminal feed solenoid valve (LS), the ram rest switch must be adjusted.

3. To adjust, loosen nut (12); then turn setscrew (13) IN 1/4 turn at a time while repeating Step 2 until switch is “open.”

4. Tighten nut to secure setscrew.

5. Check ram extended switch (S6) as described in Paragraph 5.3,B.

B. Ram Extended Switch (S6)

1. Manually cycle machine to extend ram cylinder under pressure, as described in Paragraph 3.1.

2. With ram cylinder fully extended, the ram extended switch (S6) must be actuated “closed.” This will complete the circuit, through the ram rest switch (S5), to energize the feed solenoid valve (L2). If not, switch must be adjusted.

3. To adjust, slightly loosen screws (3) securing the ram return switch bracket (5); then move bottom of bracket forward until switch is actuated “closed.”

4. Tighten screws to secure bracket in the adjusted position.

5. Continue to manually cycle machine to return it to the rest position.

6. Depress the OFF pushbutton, disconnect the electrical plug and air supply; then replace the machine cover.

6. PREVENTIVE MAINTENANCE

Preventive maintenance consists of cleaning, inspection, and lubrication. A scheduled program should be established which will largely depend on the amount of use. It is very important that the "target area" be kept clean at all times to assure proper termination. Remove machine cover while performing the following procedures.

DANGER *MAKE SURE electrical plug and air supply are disconnected when performing preventive maintenance on the machine.*

6.1. Cleaning

1. Clean the entire machine with a clean, dry cloth.

2. Remove all evidence of metal chips and other contamination using a vacuum cleaner, brush, or air hose.

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

3. Remove any evidence of grease from unlubricated area and non−moving parts by using a solvent or similar cleaning fluid.

6.2. Inspection

1. Inspect machine for security of parts. Make any repairs necessary to prevent a malfunction.

2. Inspect the machine for evidence of excessive wear. Replace any unserviceable parts.

3. Inspect all electrical wiring for evidence of broken insulation, chafing, and/or loose connections. Make any repairs that may be necessary by referring to the electrical schematic in Figure 2−3 and the wiring diagram in Figure 8−4.

4. Inspect all air lines for loose connections. Make any necessary repairs by referring to the machine pneumatic diagram (Figure 2−2).

5. Inspect the filter for excessive condensation. Drain and clean the filter if necessary.

6.3. Lubrication

1. Remove plugs from machine frame.

2. Lubricate grease fittings, through holes in the machine frame, using a grease gun containing a general purpose grease. Also lubricate grease fitting in crimp height adjustment knob.

3. Lubricate the feed finger pivot points with SAE No. 30 oil.

4. Lubricate the threads of the manual ram advance control SPARINGLY with SAE No. 30 oil.

5. Remove all excess lubrication, then replace plugs in the machine frame.

7. REPAIR AND/OR REPLACEMENTS

The machine can be disassembled using the item numbers and exploded view drawings in Section 8 (Figures 8−1 through 8−4).

Procedures within this section primarily pertain to the replacement of parts (listed in Figures 7−1 and 7−2) that are considered to be recommended spares and should be stocked by the customer.

DANGER *Be sure the electrical plug and air supply are disconnected when making repairs or replacements.*

7.1. Shear Blade and/or Crimper Replacement (Figure 8−1)

1. Remove the anvil guard (2) and the ram guard (3) by removing screws (1).

2. Remove the two screws (12) securing the crimper (5) and the shear blade (6) to the crimper guide (7). Note the orientation of parts for replacement purposes.

3. Install new shear blade and crimper using the reversed removal procedure. BE SURE the top of the crimper and the shear blade are FLUSH with the top of the crimper guide and the crimper adjustment block, and that the chamfers are facing UP, before tightening the screws.

4. Before installing the guards, perform the adjustment procedure described in Paragraph 5.1.

7.2. Anvil, Anvil Holder, or Wire Positioner Replacement (Figure 8−1)

1. Remove anvil guard (2) and the ram guard (3) by removing screws (1).

2. Remove the screws (1) securing the stripper plate (15) to the anvil holder (17).

3. Remove the anvil (16) from the anvil holder.

4. If only the anvil is to be replaced, install the new anvil using the reversed removal procedure.

5. If the wire positioner (4) is to be replaced, loosen screw (1) and remove the wire positioner. Install the new wire positioner by using the reversed removal procedure.

6. If the anvil holder (17) is to be replaced, remove the four screws securing it to the frame. Install the new anvil holder and mount the wire positioner by using the reversed removal procedure.

7. Before installing the guards, perform preloading alignment as described in Section 5.

MACHINE NUMBER				AMPLIVAR SPLICE		ITEM NUMBER AND NOMENCLATURE (See Figure 8-1)							FEED PLATE ASSY (Ref)
(A)	(B)•					(5)	(6)	(8)	(15)	(16)	(17)	(23)	(26)	
115 VAC 60 HZ	115 VAC 60 HZ		230 VAC 50 HZ	TERMINAL NUMBER ••	CRIMP WIDTH (IN.)	CRIMPER	SHEAR BLADE	ADJUST. BLOCK	STRIPPER PLATE	ANVIL	ANVIL HOLDER	HOLD DOWN	DRAG	
469181-4	469181-5		2-469181-4	62000	.110	463482-8	463481-3	463486-2	461439-6	455962-1	463480-4	457266-3	457302-1	457370-3
-6	-7		-6	62040	.110	-8	-2	-2	-6	-1	-4	-1	-1	-2
-8	-9		-8	62001	.140	-1	-4	-2	-6	-2	-4	-5	-1	-4
1- -0	—		—	62001	.180	-3	-5	-2	-6	-3	-4	-5	-1	-4
1- -1	—		3-469181-0	62203	.080	-5	-7	-2	-6	-8	-6	-6	-3	1- -1
1- -3	1-469181-4		-1	62304	.110	-8	-3	-2	-6	-1	-6	-3	-1	-3
1- -5	1-	-6	-3	62306	.110	-8	-2	-2	-6	-1	-6	-1	-1	-2
1- -7	1-	-8	-5	62308	.140	-2	-4	-1	-7	1- -1	-7	-1	-1	-4
1- -9	—		—	62308	.180	-4	-5	-1	-7	1- -2	-7	-5	-1	-4
2- -0	—		—	62207	.110	-9	-2	-1	-7	1- -0	-6	-1	-1	-2
2- -2	—		—	62342	.110	-9	-3	-1	-7	1- -0	-6	-3	-1	-3
3- -7	—		—	62201	.140	1- -1	-4	-2	-6	-2	-7	-5	-1	-4
4- -0	—		—	62670	.100	1- -5	-7	-2	-6	2- -3	-6	-3	-2	1- -0
4- -1	—		—	62306	.140	1- -1	-8	-2	-6	-2	-6	-1	-1	-2

• THE MACHINE NUMBERS IN COLUMN (B) HAVE BEEN SUPERSEDED BY THE RESPECTIVE MACHINE NUMBERS IN COLUMN (A).

•• SEE FIGURE 1-1 FOR COMPLETE LISTING OF TERMINALS.

Fig. 7–1. Tooling Chart for Horizontal Terminating Machine, No. 469181–[ ]

MACHINE NUMBER			AMPLIVAR SPLICE		ITEM NUMBER AND NOMENCLATURE (See Figure 8-1)							FEED PLATE ASSY (Ref)
(A)	(B)•	230 VAC 50 HZ	TERMINAL NUMBER ••	CRIMP WIDTH (IN.)	(5) CRIMPER	(6) SHEAR BLADE	(8) ADJUST. BLOCK	(15) STRIPPER PLATE	(16) ANVIL	(17) ANVIL HOLDER	(23) HOLD DOWN	(26) DRAG	
115 VAC 60 HZ	115 VAC 60 HZ												
463734-2	——	1-463734-4	62002	.180	1-463482-3	463481-6	463486-2	461439-4	1-455962-8	463480-5	457266-7	457302-1	457370-5
-4	——	1- -6	62202	.180	1- -3	-6	-2	-4	1- -8	-3	-7	-1	-5
-6	——	1- -8	62335	.220	-3	-1	-2	-4	1- -6	-2	-9	-1	-9
-7	——	1- -9	62295	.250	-4	-1	-2	-4	1- -7	-1	-9	-1	-9
-8	——	2- -0	62309	.180	1- -4	-6	-1	-5	1- -9	-3	-8	-1	-6
1- -0	1-463734-1	2- ▼ -2	62310	.180	1- -4	-6	-1	-5	1- -9	-3	-7	-1	-5
1- -2	——	——	62310	.220	-1	-6	-1	-5	1- -3	-3	-7	-1	-5
2- -6	——	——	62309	.220	-1	-6	-1	-5	1- -3	-3	-8	-1	-6
2- ▼ -9	——	——	62002	.220	▼ -3	-6	▼ -2	▼ -4	1- ▼ -6	▼ -3	▼ -7	▼ -1	-5

• THE MACHINE NUMBERS IN COLUMN (B) HAVE BEEN SUPERSEDED BY THE RESPECTIVE MACHINE NUMBERS IN COLUMN (A).

•• SEE FIGURE 1-1 FOR COMPLETE LISTING OF TERMINALS.

Fig. 7–2. Tooling Chart for Horizontal Terminating Machine, No. 463734–[ ]

7.3. Feed Finger Replacement (Figure 8−1)

1. Remove the two screws (27) securing the feed cylinder (33) to the feed plate (49). Pull the cylinder away from the feed plate to disengage the feed cylinder adapter (28) from the switch actuator (47).

2. Remove the two screws (38) and feed finger holder retainer (39) in back of the feed plate; then remove the feed finger holder (48) from the front.

3. Loosen the self−locking nut (41) and remove the screw (40) and compression spring (45); then remove the feed finger (43) from holder.

4. If necessary, install pin (44) in the new feed finger. Install the feed finger using the reversed removal procedure.

5. Perform the feed adjustments as described in Paragraph 5.2.

7.4. Pneumatic System Repairs

When necessary to make repairs to the pneumatic system, refer to Figure 8−1 through 8−3 for component replacement and to the pneumatic diagram in Section 2 for making the proper corrections.

7.5. Electrical System Repairs

When necessary to make repairs to the electrical system, refer to Figure 8−4 for component replacement and to the electrical schematic in Section 2 for making the proper connections. If the ram switches are replaced, refer to Paragraph 5.3 for making the proper adjustments.

8. PARTS LIST

This section contains parts lists and exploded view drawings covering the entire machine. When necessary to replace any parts, first locate the parts on the illustration, then refer to the corresponding parts lists by the item number assigned, to obtain the AMP part number and description. When ordering parts DO NOT order by the item number. Order parts by the AMP part number AND the description. The quantity (QTY) column on the parts list indicates the number of parts required per machine and/or location.

Items in Figure 8−1 preceded by a bullet (•) are considered to be recommended spares and are the customer's responsibility to stock and replace. Procedures to replace these items are contained in Section 7.

NOTE

Refer to the data plate on the side of the machine for the dash number initially assigned to the machine. The dash number assigned is determined by the terminal that the machine was initially set up to terminate, and by whether the machine operates on 115 Vac, 60 Hz or 230 Vac, 50 Hz current. Part numbers may vary between machines. To replace, obtain the part number from the old part and refer to the procedure in Section 7.

ITEM NO.	AMP PART NUMBER	DESCRIPTION	QTY
——	469181–[ ] or 463734–[ ]	MACHINE ASSEMBLY, Horizontal Terminating	——
1	1– 21002–6	. SCREW, Btn Hd Skt Cap, No. 6–32 x .25” L	4
2	691744–2	. GUARD, Anvil	1
3	461440–1	. GUARD, Ram	1
4	463485–1	. WIRE POSITIONER	1
5	●	. CRIMPER	1
6	●	. SHEAR BLADE	1
7	463483–1	. GUIDE, Crimper	1
8	●	. BLOCK, Adjustment	1
9	8– 22279–3	. SPRING, Compression	2
10	463484–1	. SCREW, Crimper Adjustment	1
11	3– 21002–0	. SCREW, Btn Hd Skt Cap, No. 10–32 x .88” L	3
12	691865–1	. SCREW, Btn Hd Skt Cap, No. 10–32 x .484” L	6
13	1– 21002–7	. SCREW, Btn Hd Skt Cap, No. 6–32 x .88” L	3
14	4– 21000–1	. SCREW, Skt Hd Cap, No. 10–32 x 1.50” L	4
15	●	. PLATE, Stripper	1
16	●	. ANVIL	1
17	●	. ANVIL HOLDER	1
18	3– 21000–6	. SCREW, Skt Hd Cap, No. 8–32 x .38” L	2
18A	21023–6	. WASHER, Flat, No. 8	2
19	691730–2	. GUIDE, Strip	1
20	21001–4	. SCREW, Skt Hd Cap, No. 1/4–20 x .750” L	1
21	21000–8	. SCREW, Skt Hd Cap, No. 1/4–20 x 1.50” L	1
——	See Fig. 7–1 & 7–2	. PLATE ASSEMBLY, Feed	1
22	2– 21002–1	. . SCREW, Btn Hd Skt Cap, No. 8–32 x .375” L	2
23	●	. . HOLDDOWN	1
24	1– 22353–4	. . SCREW, Slotted Hd Shoulder, .187” Dia x 1.00” L	2
25	3– 22281–8	. . SPRING, Compression	2
26	●	. . DRAG	1
27	3– 21000–1	. . SCREW, Skt Hd Cap, No. 8–32 x 1.00” L	2
28	457227–1	. . ADAPTER, Feed Cylinder	1
29	22294–6	. . ELBOW, Male, 1/8” NPT x 1/4” Tube	2
30	23054–1	. . VALVE, Flow Control, 1/8” NPT	1
31	22311–1	. . NIPPLE, Close, 1/8” NPT	1
32	22306–1	. . ELBOW, Street, 1/8” NPT	1
33	28496–1	. . CYLINDER, Air	1
34	22353–1	. . SCREW, Slotted Hd Shoulder, .125” Dia x .125” L	1
35	457305–1	. . LEVER, Drag	1
36	21022–1	. . NUT, Hex, No. 6–32, Slflkg	1
37	3– 21006–5	. . SETSCREW, Skt, No. 6–32 x .750” L	1
38	1– 21000–4	. . SCREW, Skt Hd Cap, No. 4–40 x .375” L	2
39	457271–1	. . RETAINER, Feed Finger Holder	1
40	1– 21000–7	. . SCREW, Skt Hd Cap, No. 4–40 x .750” L	1
41	21021–1	. . NUT, Slflkg, No. 4–40	1
42	4– 21028–0	. . PIN, Slotted Spring, .093” Dia x .750” L	1

● THESE ITEMS ARE RECOMMENDED SPARES AND THE CUSTOMER'S RESPONSIBILITY TO STOCK AND REPLACE. SEE FIGURE 7–1 (Tooling Chart) FOR THE 469181–[ ] MACHINE, AND FIGURE 7–2 (Tooling Chart) FOR THE 463734–[ ] MACHINE.

Fig. 8–1. Exploded View, Horizontal Terminating Machine, Model 4 (Sheet 1 of 3)

ITEM NO.	AMP PART NUMBER	DESCRIPTION	QTY
43	457267−1	. . FINGER, Feed	1
44	21030−2	. . PIN, Dowel, .125” Dia x .500” L	1
45	4− 23470−3	. . SPRING, Compression	1
46	1− 21000−4	. . SCREW, Skt Hd Cap, No. 4−40 x .375” L	2
47	457270−1	. . ACTUATOR, Switch	1
48	457268−1	. . HOLDER, Feed Finger	1
49	457265−1	. . PLATE, Feed (For Machines No. 469181−[ ])	1
	457265−2	. . PLATE, Feed (For Machines No. 463734−[ ])	1
50	3− 21000−1	. SCREW, Skt Hd Cap, No. 8−32 x 1.00” L	2
51	691694−1	. SUPPORT, Feed Plate	1
52	21017−6	. SCREW, Drive	2
53	23902−2	. NAMEPLATE (Identification)	1
54	690191−2	. PLUG, Nylon, .125 Dia x .120” L	1
55	4− 21008−9	. SCREW, Skt Set, 10−32 x .19” L	1
56	1− 22492−7	. CLAMP, Cable	1
57	24147−1	. CLAMP, Hose	1
58	459864−1	. ASSEMBLY, Lubricator Bowl	1
59	3− 21000−3	. SCREW, Skt Hd Cap, No. 8−32 x 1.50” L	2
60	1− 21001−1	. SCREW, Skt Hd Cap, No. 1/4−20 x 2.25” L	1
61	21055−8	. WASHER, Flat, 1/4”	1
62	22014−1	. SYNTHETIC OIL	1
63	1− 21000−8	. SCREW, Skt Hd Cap, No. 6−32 x .25” L	1
——	469757−4	. MACHINE SUBASSY, Horizontal Terminating (115V)	1
——	469757−5	. MACHINE SUBASSY, Horizontal Terminating (220V)	1
64	3− 21002−3	. . SCREW, Btn Hd Skt Cap, 1/4−20 x .500” L	5
65	21001−5	. . SCREW, Skt Hd Cap, 1/4−20 x .88” L	2
66	456235−1	. . BRACKET, Shipping Holddown	1
67	2− 22789−6	. . THUMBSCREW, 1/4−20 x .500” L	1
68	465520−1	. . FLANGE, Reel	1
69	3− 21001−5	. . SCREW, Skt Hd Cap, 3/8−16 x 1.00” L	1
70	465586−3	. . SHAFT, Reel Support	1
71	692702−1	. . BRACKET, Reel Support	1
72	17704−7	. . NAMEPLATE, AMP	1
73	2− 21002−7	. . SCREW, Btn Hd Skt Cap, No. 10−32 x .500” L	3
74	21899−2	. . WASHER, Flat, 1/4”	3
75	461289−1	. . COVER, Machine	1
76	1− 21002−6	. . SCREW, Btn Hd Skt Cap, No. 6−32 x .250” L	6
77	21055−5	. . WASHER, Flat No. 6	2
78	461437−1	. . PLATE, Switch Mounting	1
79	461438−1	. . GUARD, Lower	1
80	462506−1	. . COVER, Grease Hole	1

MACHINE SUBASSEMBLY CONTINUED ON FIG. 8−2

● THESE ITEMS ARE RECOMMENDED SPARES AND THE CUSTOMER'S RESPONSIBILITY TO STOCK AND REPLACE. SEE FIGURE 7−1 (Tooling Chart) FOR THE 469181−[ ] MACHINE, AND FIGURE 7−2 (Tooling Chart) FOR THE 463734−[ ] MACHINE.

Fig. 8−1. Exploded View, Horizontal Terminating Machine, Model 4 (Sheet 2 of 3)

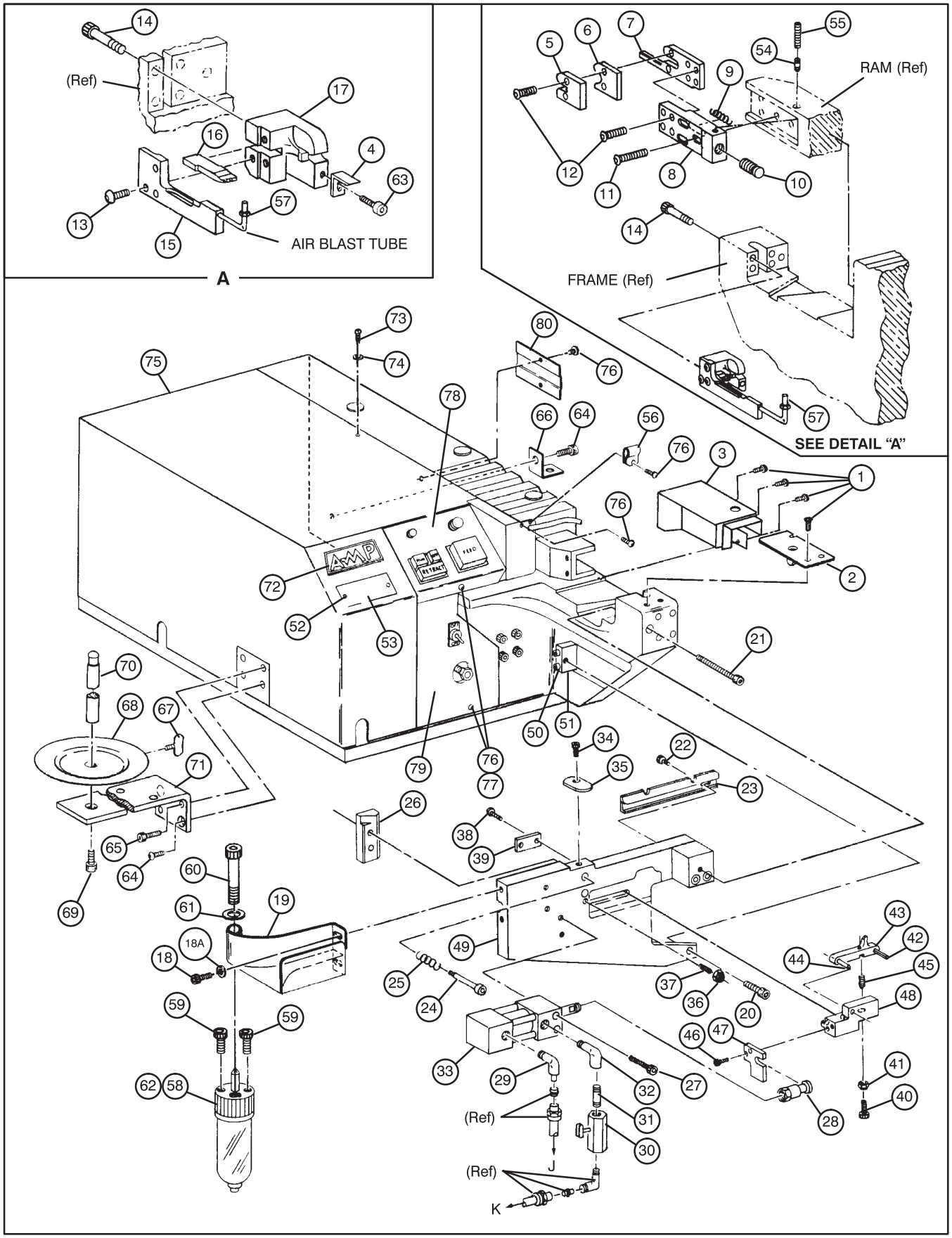


Fig. 8–1. Exploded View, Horizontal Terminating Machine, Model 4 (Sheet 3 of 3)

ITEM NO.	AMP PART NUMBER	DESCRIPTION	QTY
——	Cont. from Fig. 8–1	MACHINE SUBASSY, Horizontal Terminating	——
1	3– 21001–6	. . SCREW, Skt Hd Cap, 3/8–16 x 1.00” L	4
2	1– 21001–7	. . SCREW, Skt Hd Cap, 5/16–18 x .625” L	5
2A	1– 21001–8	. . SCREW, Skt Hd Cap, 5/16–18 x .750” L	1
3	461436–1	. . BRACKET, Switch Plate Mounting	1
4	691726–2	. . PLATE, Ram Retaining	1
5	694938–1	. . BRACKET, Ram Retaining Switch	1
6	5– 21001–1	. . SCREW, Skt Hd Cap, 1/2–13 x 1.00” L	1
7	21001–7	. . SCREW, Skt Hd Cap, 1/4–20 x 1.25” L	4
8	1– 22484–8	. . PLUG, Snap Hole	4
9	23142–5	. . FITTING, Grease	2
10	26508–1	. . EYEBOLT	1
11	460616–1	. . FRAME, Machine	1
12	21022–1	. . NUT, Slflkg Hex, No. 6–32	1
13	2– 21000–4	. . SCREW, Skt Hd Cap, No. 6–32 x 1.00” L	1
——	461433–2	. . LINKAGE ASSY, Bellcrank	1
14	5– 21008–2	. . . SETSCREW, Skt, No. 10–32 x .375” L	1
15	23142–1	. . . FITTING, Lube	3
16	691716–1	. . . PIN, Pivot	1
18	389291–2	. . . PIN, Ram	1
19	691690–3	. . . RAM	1
20	1– 21048–8	. . . RING, Retaining	5
21	22690–1	. . . FITTING, Lube, 90°	1
22	465951–2	. . . PIN, Pivot	1
23	465951–1	. . . PIN, Pivot	1
24	691688–1	. . . LINK, Ram Bellcrank	1
25	815923–1	. . . BLOCK, Bellcrank Pivot	1
26	692475–2	. . . BELLCRANK, Ram	1
27	691722–1	. . . CLEVIS, Bellcrank	1
28	25756–2	. . . COUPLING, Hose, 3/8” NPT	2
29	22306–6	. . . ELBOW, Street, 90°, 3/8” NPT	2
30	22307–6	. . . BUSHING, Pipe, 1/2” NPT x 3/8” NPT	2
31	●	. . . PIN, Cotter	2
32	●	. . . PIN, Cylinder Mounting	1
33	28494–1	. . . CYLINDER, Main Air (Ram)	1
34	459989–1	. . . BRACKET, Air Cylinder Mounting	1
——	See Fig. 8–3	. . PLATE ASSY, Valve Mounting	1
——	See Fig. 8–4	. . ELECTRICAL SYSTEM, Machine	1
35	21019–3	. . NUT, Hex, 3/8–16	1
36	815922–1	. . PIN, Pivot Adjust	1
37	3– 21002–4	. . SCREW, Btn Hd Skt Cap, 1/4–20 x .625” L	2
38	815921–1	. . PLATE, Index	1
39	21899–3	. . WASHER, Flat, 1/4”	2
40	815924–1	. . LABEL	1
41	817210–1	. . PIN, Index	1
42	1– 22282–9	. . SPRING, Comp	1
43	1– 21006–9	. . SETSCREW, 4–40 x .12” L	1
44	817211–1	. . KNOB, Knurled	1

● SUPPLIED WITH ITEM NO. 33.

Fig. 8–2. Exploded View, Machine Subassembly (Sheet 1 of 2)

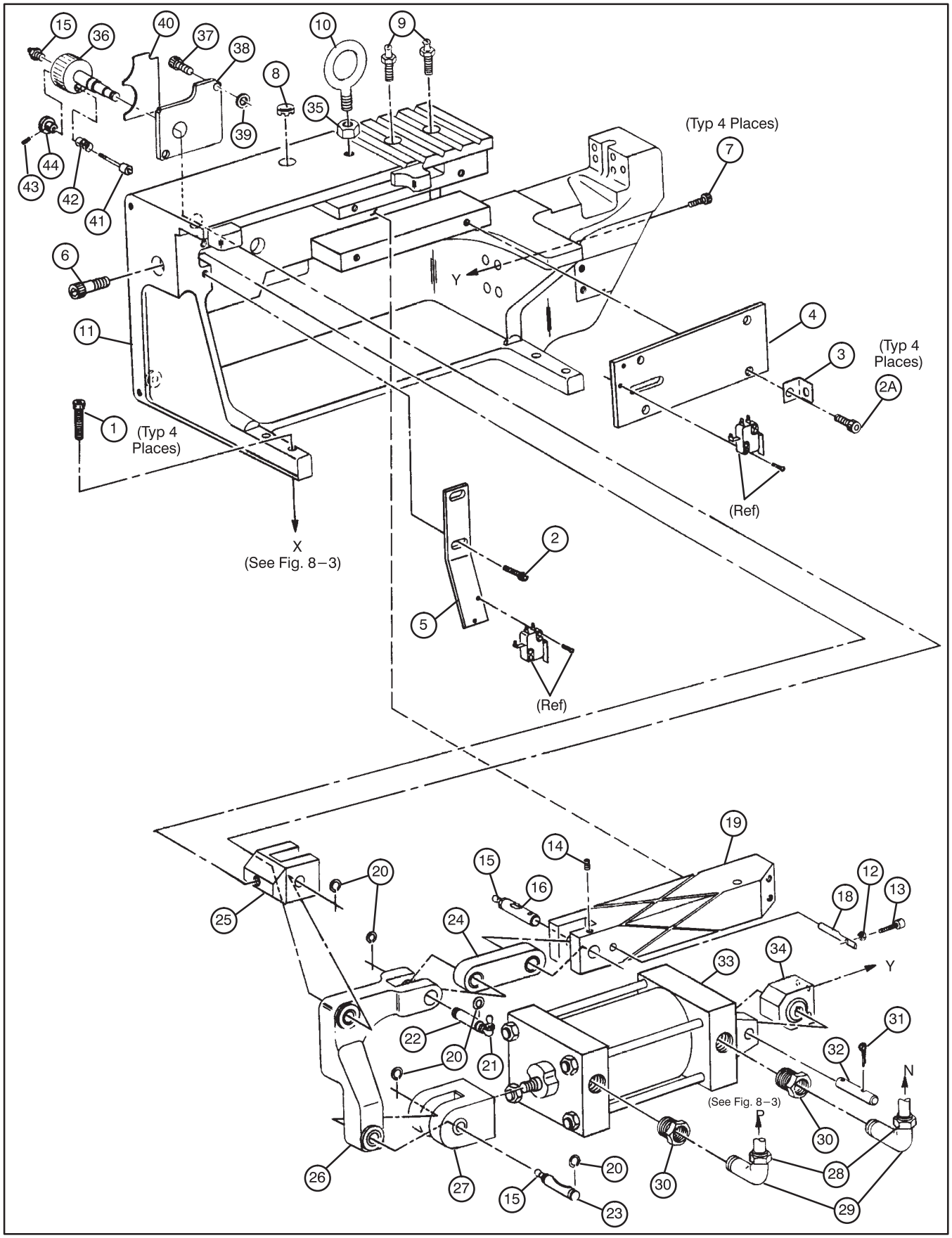


Fig. 8–2. Exploded View, Machine Subassembly (Sheet 2 of 2)

ITEM NO.	AMP PART NUMBER	DESCRIPTION	QTY
——	469756−1	PLATE SUBASSY, Valve Mounting (115 Vac, 60 Hz)	——
——	469756−2	PLATE SUBASSY, Valve Mounting (230 Vac, 50 Hz)	——
1	460114−1	. BASE FRAME	1
2	21001−1	. SCREW, Skt Hd Cap, 1/4−20 x .38” L	4
3	460131−1	. SUPPORT, Reel	1
4	21001−3	. SCREW, Skt Hd Cap, 1/4−20 x .62” L	2
5	22306−6	. ELBOW, Street, 90°, 3/8” NPT	3
6	25756−2	. COUPLING, Hose	4
7	28480−1	. CONTROL, Exhaust Speed	1
8	461441−1	. NUT, Special	1
9	3− 21028−4	. PIN, Slotted Spring, .094 Dia x .38” L	1
11	22313−7	. NIPPLE, Long, 3/8” NPT x 1.50” L	2
12	23795−3	. PLUG, Pipe, 3/8” NPT	Ref
13	460838−1	. MANIFOLD	1
14	1− 22294−1	. ELBOW, 1/4” NPT x .38” Tube	1
15	1− 21001−0	. SCREW, Skt Hd Cap, 1/4−20 x 2.0” L	2
16	1− 22313−1	. NIPPLE, Long, 3/8” NPT x 2.50” L	1
17	2− 22313−1	. NIPPLE, Long, 3/8” NPT x 6.00” L	1
18	22310−3	. ELBOW, Pipe, 90°, 3/8” NPT	4
19	17357−1	. FILTER, Air	1
20	469774−1	. BRACKET	1
21	22547−3	. GROMMET, Rubber, 1/4” ID	2
22	691724−1	. BRACKET, Mounting	1
23	692491−2	. BRACKET, Strain Relief	1
24	21001−2	. SCREW, Skt Hd Cap, 1/4−20 x .50”	2
25	23736−1	. SWITCH, Pressure Sensitive	2
26	6− 23715−5	. SCREW, Machine Pan, 6−32 x 1.50”	2
27	24753−1	. ACTUATOR, Pilot	2
28	22296−3	. TEE, 1/8” NPT x .25” Tube	2
29	16732−1	. VALVE, 115 Vac, Solenoid, 4−Way (KAY) (−4 SubAssy)	1
30	16732−2	. VALVE, 230 Vac, Solenoid, 4−Way (KAY) (−5 SubAssy)	1
30A	19142−1	. . CAPSULE, Valve (KAY)	1
31	1− 22294−0	. ELBOW, Male, 1/8” NPT x 3/8” Tube	2
32	26524−1	. MUFFLER, Exhaust	2
33	22306−3	. ELBOW, Street, 90°, 1/8” NPT	3
34	22311−1	. NIPPLE, Close, 1/8” NPT	3
35	23910−1	. CROSS, Pipe, 1/8” NPT	1
36	23054−1	. VALVE, Flow Control, 1/8” NPT	1
37	1− 22295−2	. CONNECTOR, Male, 1/8” NPT x .38” Tube	1
38	22304−1	. NIPPLE, Hex, 1/8” NPT	2
39	25283−1	. VALVE, Control, 3−Way	1
40	22369−3	. COUPLING, Hose, 1/8” NPT	1
41	23196−1	. CLAMP, Hose	1
42	26863−1	. ACTUATOR, Pilot	1

Fig. 8−3. Exploded View, Valve Mounting Plate Subassembly (Sheet 1 of 3)

ITEM NO.	AMP PART NUMBER	DESCRIPTION	QTY
43	22293−3	. ELBOW, Female, 1/8” NPT x 1/4” Tube	1
44	3− 21000−0	. SCREW, Skt Hd Cap, 8−32 x .88” L	2
45	24892−1	. ELBOW, Street, 45°, 1/8” NPT	1
46	22295−7	. CONNECTOR, Male, 1/8” NPT x 1/4” Tube	1
47	26668−2	. NIPPLE, Chase	3
48	24146−1	. HOSE, Buna−N, 1/4” OD	24”
49	22620−1	. TUBING, 1/4” OD	76”
50	22620−2	. TUBING, 3/8” OD	35”
51	17249−1	. VALVE, 115 Vac, AAA Double Solenoid	1
52	17249−2	. VALVE, 230 Vac, AAA Double Solenoid	1
52A	5− 21085−4	. . O−RING, Repair	6
53	21086−7	. O−RING, .50” ID x .62” OD	Ref
54	17250−1	. SUBPLATE	1
55	5− 21000−6	. SCREW, Skt Hd Cap, 10−24 x .88” L	4
56	21899−3	. WASHER, Flat, 1/4” ID	5
57	3− 21002−0	. SCREW, Btn Hd Cap, 10−32 x .88” L	4
58	27090−2	. HOSE, 3/8” ID	39”
60	24892−3	. ELBOW, Street, 45°, 3/8” NPT	1
61	22302−1	. COUPLING, Female, 3/8” NPT	1
62	22304−6	. NIPPLE, Hex, 3/8” x 1/4” NPT	2
63	23134−1	. LUBRICATOR, Air Line	1

Fig. 8−3. Exploded View, Valve Mounting Plate Subassembly (Sheet 2 of 3)

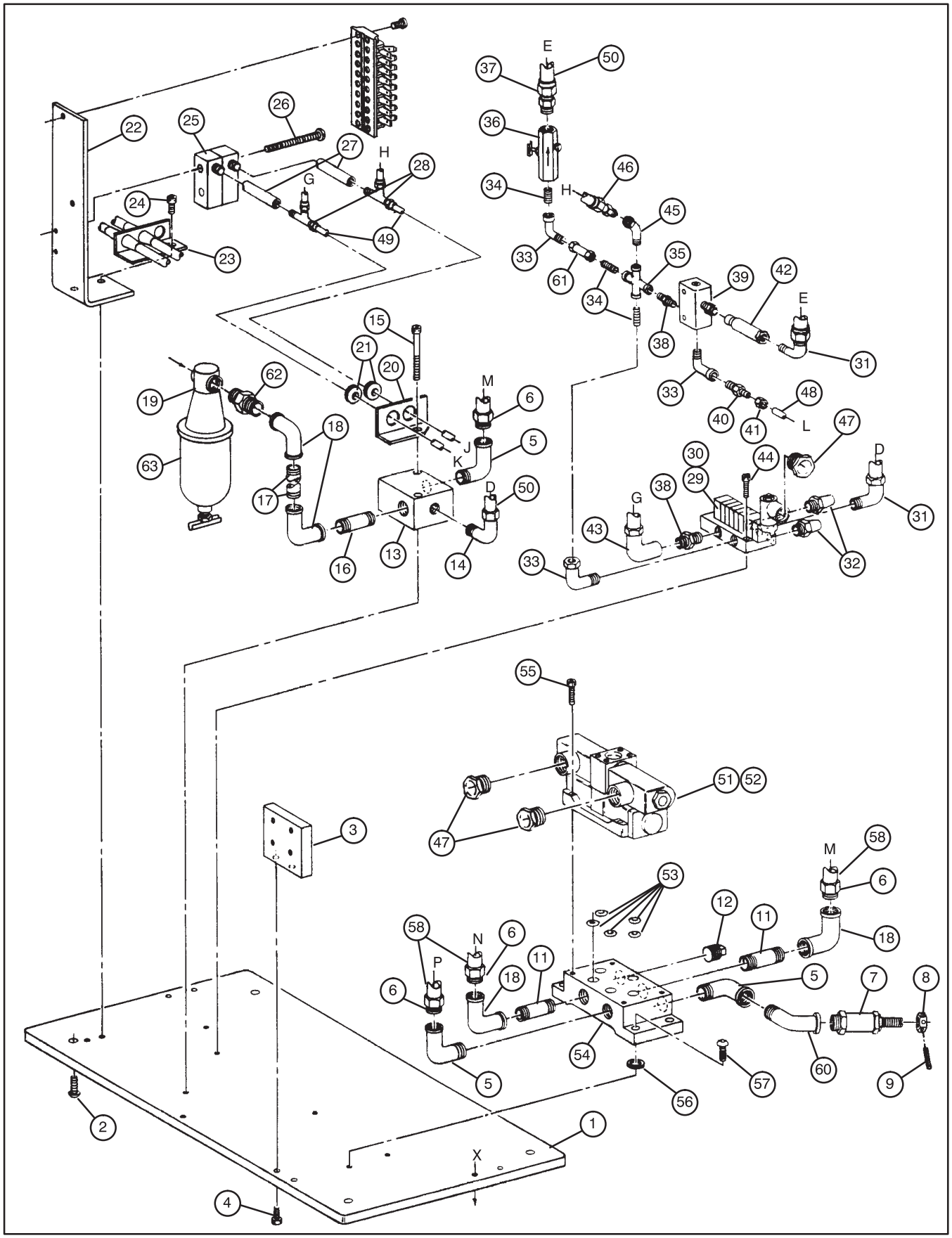


Fig. 8−3. Exploded View, Valve Mounting Plate Subassembly (Sheet 3 of 3)

ITEM NO.	AMP PART NUMBER	DESCRIPTION	QTY
———	———	ELECTRICAL SYSTEM, Machine	———
102	467516−1	. CORD, Line (No. 18)	1
103	811099−1	. SWITCH, Foot	1
	810749−1	. . SWITCH, Replacement (For Foot Switch)	1
104	453866−1	. GUARD, Foot Switch	1
106	1− 22242−9	. BUSHING	1
108	28482−1	. SWITCH, Two Button, (S1 and S10)	1
109	28481−1	. SWITCH, One Button (S2)	1
110	28485−3	. BUTTON, Switch, “RUN”	1
111	28485−2	. BUTTON, Switch, “RETRACT”	1
112	28485−1	. BUTTON, Switch, “FEED”	1
113	28483−1	. BLOCK, Contact (KLB−1)	2
114	28484−1	. SHROUD, Switch	2
115	380627−2	. INDICATOR LIGHT, AMPILLUME*	
		115 Vac, 60 Hz (DS1)	1
116	380628−2	. INDICATOR LIGHT, AMPILLUME, 230 Vac, 50 Hz (DS1)	1
117	22807−3	. HOLDER, Fuse	1
118	24517−4	. FUSE, 115 Vac, 60 Hz (ABC3)	1
119	24517−3	. FUSE, 230 Vac, 50 Hz (ABC2)	1
120	18126−1	. SWITCH, Pressure Sensitive	2
121	4− 23715−5	. SCREW, Pan Hd, No. 4−40 x .50” L	4
122	23485−1	. SWITCH, Toggle	1
123	23426−1	. PLATE, Switch, ON−OFF	1
127	601716−8	. BLOCK, Terminal, 8 Pos., 6−32	1
128	601989−1	. PLATE, Tab, .250, Flat	8
129	601989−2	. PLATE, Tab, .250 45°	8
131	28483−2	. BLOCK, Contact (KLB−3)	2
135	7− 23715−1	. SCREW, Pan Hd, 8−32 x .50” L	2
136	21075−5	. WASHER, Lock, Int Tooth, No. 10	1
137	5− 21063−5	. SCREW, Rhd Mach, No. 10−32 x .375” L	1
139 †	3−520117−2	. TERMINAL, Ultra−Fast, .250, Blue	2
140 †	2−520184−4	. TERMINAL, Ultra−Fast, .250, Red	1
141 †	36152	. TERMINAL, Ring, PIDG*, 6, Red	2
142 †	36154	. TERMINAL, Ring, PIDG, 10, Red	2
143 †	640903−1	. TERMINAL, FASTON*, PIDG, .250, Red	7
144 †	320619	. TERMINAL, Ring, PIDG, 6, Blue	4
145 †	640905−1	. TERMINAL, FASTON, PIDG, .250 Blue	22
146 †	60279−2	. TERMINAL, FASTON, Piggyback, .250	6
147 †	640919−1	. TERMINAL, FASTON, PIDG, .187, Blue	2
148 †	42452−2	. TERMINAL, FASTON, .187, 20−16	4
149 †	360010−1	. HOUSING, Switch	2
151 †	500023−2	. SPIRAP*, .125, Teflon	16”
152 †	500024−1	. SPIRAP, .250, Teflon	85”
153 †	1− 23497−0	. WIRE, Black, No. 16	80”
154 †	23497−9	. WIRE, White, No. 16	20”
155 †	23497−2	. WIRE, Red, No. 16	30”
156 †	23497−4	. WIRE, Yellow, No. 16	60”
157 †	23497−1	. WIRE, Brown, No. 16	50”

† ITEMS NOT BALLOONED

Fig. 8−4. Electrical System Components (Sheet 1 of 3)

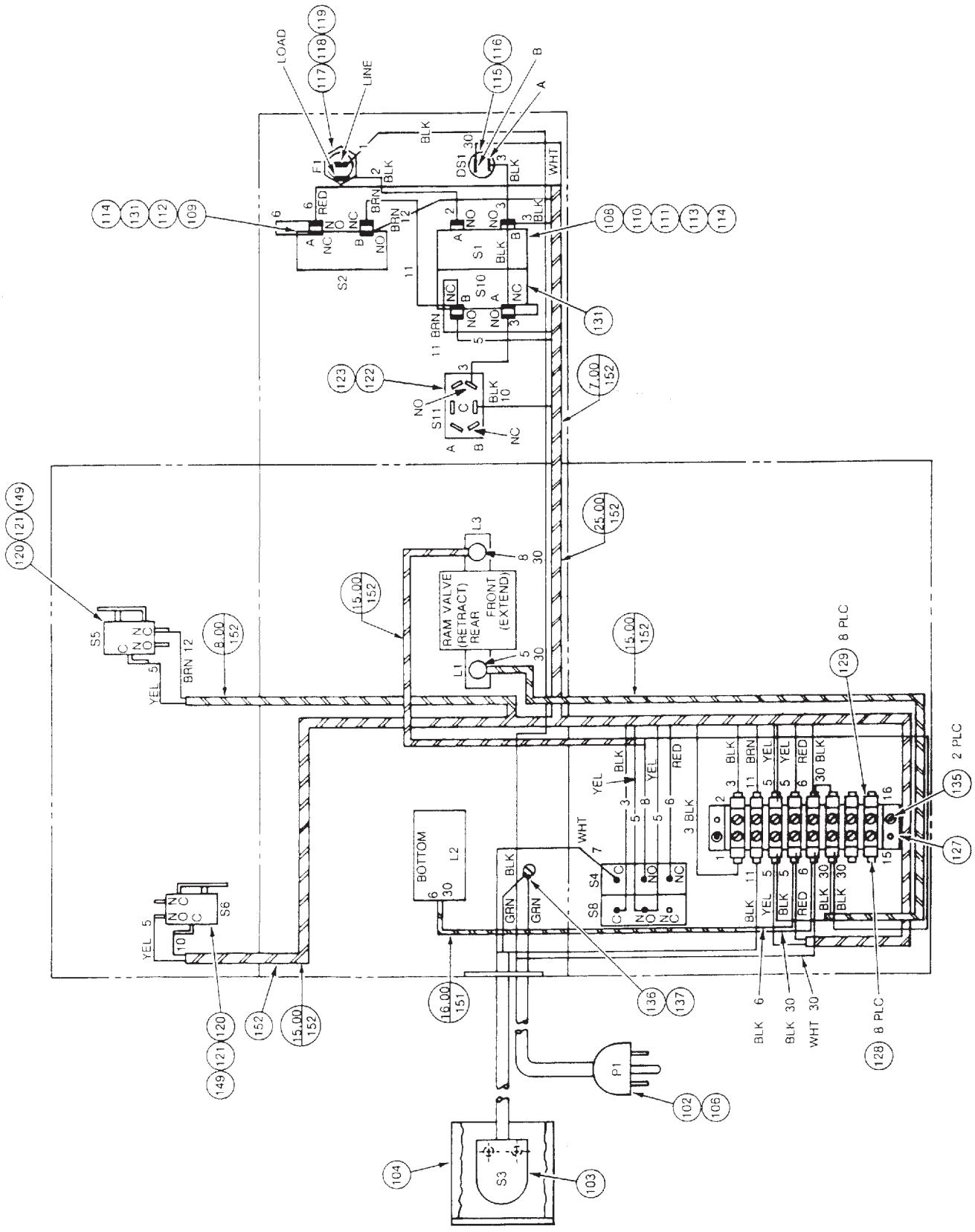


Fig. 8−4. Electrical System Components (Sheet 2 of 3)

WIRE CHART

WIRE NO.	PART NUMBER	WIRE SIZE	COLOR	WIRE LENGTH	ORIGIN			DESTINATION			REMARKS
					COMPONENT TERMINAL	TERMINATOR		COMPONENT TERMINAL	TERMINATOR		
						PART NO.	STRIP		PART NO.	STRIP	
2	1-23497-0	16 AWG	BLK	7.50	F1-LOAD	640905-1	.296-.328	S1-N.O.-A	640905-1	.296-.328	
3	1-23497-0	16 AWG	BLK	5.50	S1-N.O.-B	60279-2	.266-.296	DS1-A	640919-1	.296-.328	
3	↓	↓	↓	8.00	S1-N.O.-B	60279-2	.266-.296	S10-N.O.-A	60279-2	.266-.296	
3	↓	↓	↓	2.00	S10-N.O.-A	640905-1	.296-.328	S10-N.C.-A	60279-2	.266-.296	
3	↓	↓	↓	5.00	S10-N.C.-A	640905-1	.296-.328	S11-N.O.-A	3-520116-2	.250-.280	
3	↓	↓	↓	15.00	S1-N.O.-B	640905-1	.296-.328	TB 2	640905-1	.296-.328	
3	↓	↓	↓	6.00	TB 1	640905-1	.296-.328	S8-COM	320619	.203-.234	
5	23497-4	16 AWG	YEL	18.50	S10-N.O.-B	640905-1	.296-.328	TB 5	640905-1	.296-.328	
5	↓	↓	↓	19.50	TB 6	640905-1	.296-.328	S5-COM	42452-2	.173-.203	
5	↓	↓	↓	5.50	TB 6	640905-1	.296-.328	S8-N.O.	320619	.203-.234	
5	↓	↓	↓	13.50	S8-N.O.	320619	.203-.234	S6-N.O.	42452-2	.173-.203	
6	23497-2	16 AWG	RED	2.00	S2-N.C.-A	640905-1	.296-.328	S2-N.O.-A	60279-2	.266-.296	
6	↓	↓	↓	19.00	S2-N.O.-A	640905-1	.296-.328	TB 8	640905-1	.296-.328	
6	↓	↓	↓	6.50	S4-N.C.	320619	.203-.234	TB 7	640905-1	.296-.328	
10	1-23497-0	16 AWG	BLK	28.00	S6-COM	42452-2	.173-.203	S11-COM	3-520117-2	.250-.280	
11	23497-1	16 AWG	BRN	9.00	S2-N.O.-B	640905-1	.296-.328	S10-N.C.-B	60279-2	.266-.296	
11	↓	↓	↓	18.00	S10-N.C.-B	640905-1	.296-.328	TB 4	640905-1	.296-.328	
12	23497-1	16 AWG	BRN	19.00	S2-N.C.-B	640905-1	.296-.328	S5-N.C.	42452-2	.173-.203	
30	23497-9	16 AWG	WHT	16.50	DS1-B	640919-1	.296-.328	TB 10	640905-1	.296-.328	
30	↓	↓	↓	2.00	TB 10	640905-1	.296-.328	TB 12	640905-1	.296-.328	
1	467516-1	18 AWG	BLK	21.00 ●	P1	—	—	F1-LINE	2-520184-4	.266-.296	POWER-CORD
30	↓	↓	WHT	6.50 ●		—	—	TB 9	640903-1	.296-.328	
GND	↓	↓	GRN	5.00 ●		—	—	GND SCR	36154	.203-.234	
7	811099-1	18 AWG	WHT	5.00 ●	S3	—	—	S4-COM	36152	.203-.234	S3 FOOT-SWITCH
11	↓	↓	BLK	9.00 ●		—	—	TB 3	640903-1	.296-.328	
GND	↓	↓	GRN	5.00 ●		—	—	GND SCR	36154	.203-.234	
5	—	18 AWG	BLK	16.50	L1	—	—	TB 5	640903-1	.296-.328	L1 VALVE SOLENOID
30	—	↓	↓	14.00		—	—	TB 11	640903-1	.296-.328	
6	—	18 AWG	BLK	16.00	L2	—	—	TB 7	640903-1	.296-.328	L2 VALVE SOLENOID
30	—	↓	↓	16.00		—	—	TB 9	640903-1	.296-.328	
8	—	16 AWG	BLK	21.00	L3	—	—	S4-N.O.	36152	.203-.234	L3 VALVE SOLENOID
30	—	↓	↓	20.00		—	—	TB 11	640903-1	.296-.328	

● Length of Wire With Jacket Removed

Fig. 8-4. Wire Chart (Sheet 3 of 3)

CM 5388–2
Rev D

WIRE STUFFER ASSEMBLY NO. 469853–1 & –2 FOR AMP* HORIZONTAL TERMINATING MACHINE MODEL 4 NO. 469181–[ ] AND NO. 463734–[ ]

5/90

SUPPLEMENT

Also available — CM 5388–3 (Spanish translation)

customer manual

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Prepared by
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AMP Incorporated

CONTENTS

ILLUSTRATIONS

S1. INTRODUCTION

This supplement covers the wire stuffer assembly (No. 469853−1 or −2) installed on AMP Horizontal Terminating Machines, or the kits available for installation on machines that were not originally equipped with the wire stuffer assembly.

The stuffer inserts wire into the AMPLIVAR* Pigtail Splice prior to crimping. This increases the CMA when smaller gauge wires under the terminal CMA range are to be crimped.

Information contained in this supplement includes a description of the wire stuffer assembly, installation instructions for the kit, and procedures for setup, adjustments, and parts replacement. Also included are a complete parts list and an exploded view drawing.

S2. DESCRIPTION

The wire stuffer assembly includes all items supplied as a kit for converting the machine in the field, or as installed on a machine when it leaves the factory. Assembly No. 469853−1 is used on machines that operate on 115 Vac, 60 Hz current; Assembly No. 469853−2 is used on machines that operate on 230 Vac, 50 Hz.

The basic components of the wire stuffer assembly are the air cylinder assembly, the foot switch, the flow control valves, the solenoid valve, plumbing, and attaching hardware.

The stuffer portion is mounted adjacent to the terminal feed cylinder in place of the standard strip guide. The wire is fed into the stuffer through a tube in back of the terminal strip guide. From the tube, the wire passes through a fixed gripper which prevents pull−back of the wire, then passes through the feed gripper which is actuated by the air cylinder. This advances the wire through another tube into the “target area.”

The stuffer air cylinder is controlled by solenoid valve (L4), which receives air pressure from the machine manifold. The solenoid valve is de−energized and air pressure is directed to the extension side of the air cylinder until the foot switch is depressed. This energizes the solenoid and air pressure is diverted to the retraction side of the air cylinder to retract the feed gripper. Release of the foot switch diverts air pressure back to the extension side of the air cylinder to move the stuffer wire into the “target area,” placing it in the “U” of the terminal.

After the wires to be spliced have been inserted, the machine is actuated. The stuffer wire is sheared with the ends of the wires being spliced.

S3. WIRE STUFFER KIT INSTALLATION

The wire stuffer kit can be installed on any AMP Model IV Horizontal Terminating Machine, regardless of the terminals the machine is equipped to apply. When the kit is received, items listed under the two assemblies will be pre−assembled as completely as possible for ease of installation.

During installation of the kit, some parts must be removed from the machine. These parts will either be re−installed or retained in the event the wire stuffer is removed and the machine is to be restored to its original configuration.

Refer to Figure S6−1 during installation of the kit in accordance with the following procedure:

1. Disconnect electrical power and air supply to the machine.

2. Remove the terminal strip from the machine.

3. Remove cover from machine and retain parts for re−installation.

4. Remove the existing strip guide from the feed plate by removing two screws. Store the guide and screws if they are serviceable.

5. Install the wire stuffer assembly on the feed plate with two screws (19); then install the terminal strip guide (21) with two screws (20).

6. Remove and retain two screws securing feed solenoid (L2) to frame base. Leave the feed solenoid in place and install two valve spacer posts (11).

7. Place the solenoid valve (L4), with installed parts, on the valve posts with the exhaust muffler (2) to the RIGHT. Secure the solenoid valve to the posts, using the two screws removed in Step 6.

8. Loosen the left screw securing the feed plate holddown to the feed plate (as viewed from the front of the machine). Install the front tube guide (32) behind the screw; then tighten screw to secure in position.

9. Install the rear wire guide (31) with two screws (30) on back of the feed plate using the two existing holes to the left of the terminal strip drag.

10. Insert one end of a 6−in. piece of tubing (22) into the hole in the left end of the drag hitch mounting bracket (28). The other end should hang down between the wire stuffer and the terminal strip drag.

11. Insert one end of another 6−in. piece of tubing (22) through the rear wire guide and front tube guide. Cut the right end of the tube at an angle; then insert it in the opening in the feed plate holddown. Tubing must not be inserted so far that it will interfere with the terminal strip passing through the stuffer. Cut off the other end (left end) just short of the feed gripper when extended so the stuffer wire travels smoothly from the feed gripper into the tube.

CAUTION *When installing tubing, DO NOT permit sharp bends or allow it to rub on moving parts of the machine.*

12. Cut tubing (1) into two equal lengths and attach the tubing to solenoid.

NOTE *When placing tubing in Steps 13 and 14, AVOID sharp bends or kinks in tubing that may restrict air flow.*

13. After placing tubing in the approximate location, cut each piece to length. The tubing is to be connected to the flow control valve (17) on the extension port of the air cylinder (26). Remove nuts and ferrules from connectors (16) and install on the ends of the tubing. Connect tubing to connectors with nuts; then tighten.

14. Thread the wire from the foot switch (12) through the remaining hole in the strain relief bracket on the back of the frame base; then secure ring terminal (13) on green wire to ground screw on the frame base. Connect terminal (9) on black wire to terminal block tab at position 1. Connect terminal on remaining wire to terminal block at position 14. Refer to machine electrical schematic in machine manual when making connections.

15. Connect terminal on one wire from solenoid valve to terminal block tab at position 12. Connect terminal on remaining wire to terminal block tab at position 13.

16. Perform setup procedure of the wire stuffer as described in Section S4.

S4. WIRE STUFFER SETUP PROCEDURE

The following procedure is required to set up the wire stuffer for operation following its initial installation on the machine and when changing to a different size of wire to be spliced. See Figure S6−1.

1. Select a wire of the proper size to increase the combined CMA (circular mil area) as required. Wire size is limited to 18−22 AWG copper and 18 AWG aluminum.

2. Insert stuffer wire through tube (22), fixed and feed grippers (24) and into the “target area.”

3. Perform the set up procedure of the machine as described in the Horizontal Terminating Machine Manual (CM 5388).

S5. ADJUSTMENTS

Several adjustments may be necessary prior to production operation of the wire stuffer following the initial installation or when changing to another stuffer wire size. These adjustments include the wire length into the crimping area, gripping tension on the wire by the grippers, and the flow control valves. Once the flow control valves are set, they should not require further adjustment. Wire length into the crimping area should be to the customer's discretion. The gripping tension may require adjustment each time the stuffer wire size changes.

S5.1. Wire Gripping Tension Adjustment (see Figure S5−1)

NOTE

The fixed and feed grippers must be adjusted by trial and error. The fixed gripper must allow the stuffer to advance smoothly, yet prevent backward movement during retraction of the air cylinder. The feed gripper must grip the stuffer wire firmly enough to pull it through the fixed gripper, but release sufficiently on the retraction stroke to avoid kinking of the wire between the grippers.

1. To INCREASE or DECREASE the gripping tension of the blades, turn the self−locking nut IN or OUT as required to obtain correct tension on the spring.

2. If necessary to increase or decrease the gripper blade angle, loosen the jam nut on top of the gripper. To INCREASE the angle, turn the screw IN. To DECREASE the angle, turn the screw OUT. Tighten the jam nut after the proper angle is obtained.

S5.2. Flow Control Valves Adjustment (see Figure S5−1)

NOTE

The flow control valves in the extension and retraction ports of the air cylinder provide control of the cylinder action. If the cylinder action is too fast, it will cause bending of the stuffer wire, slipping of the grippers, or variation in the wire length.

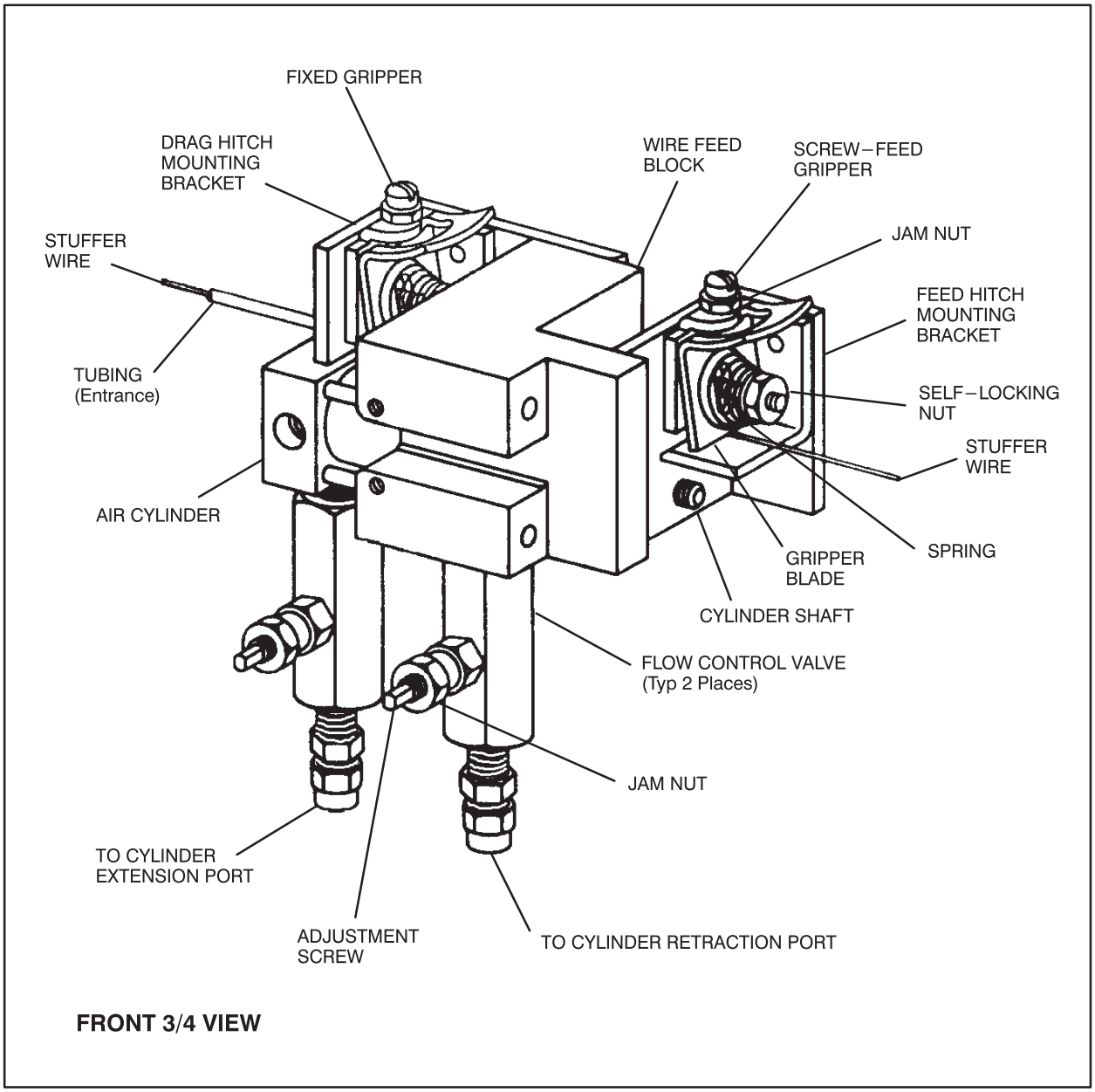
1. Loosen the jam nut securing the adjustment screw in the side of the valve.

2. To SLOW the cylinder action, turn the adjustment screw IN. To SPEED UP the cylinder action, turn the adjustment screw OUT. The adjustment screw should not be turned more than 1/8 turn between test cycles of the cylinder.

3. At completion of adjustment, tighten jam nut to secure a screw.

S6. REPLACEMENT OF PARTS AND PARTS LIST

Due to the simplicity of the wire stuffer, no special instructions are required for the replacement of parts. If replacement of any parts should be required, refer to the exploded view (Figure S6−1) to identify the part by item number; then to the parts list for the AMP Part Number and description. Detail parts are indented under the assembly on which they are used. The QTY (quantity) column indicates the number required per assembly, except for tubing which is indicated by total inches required.

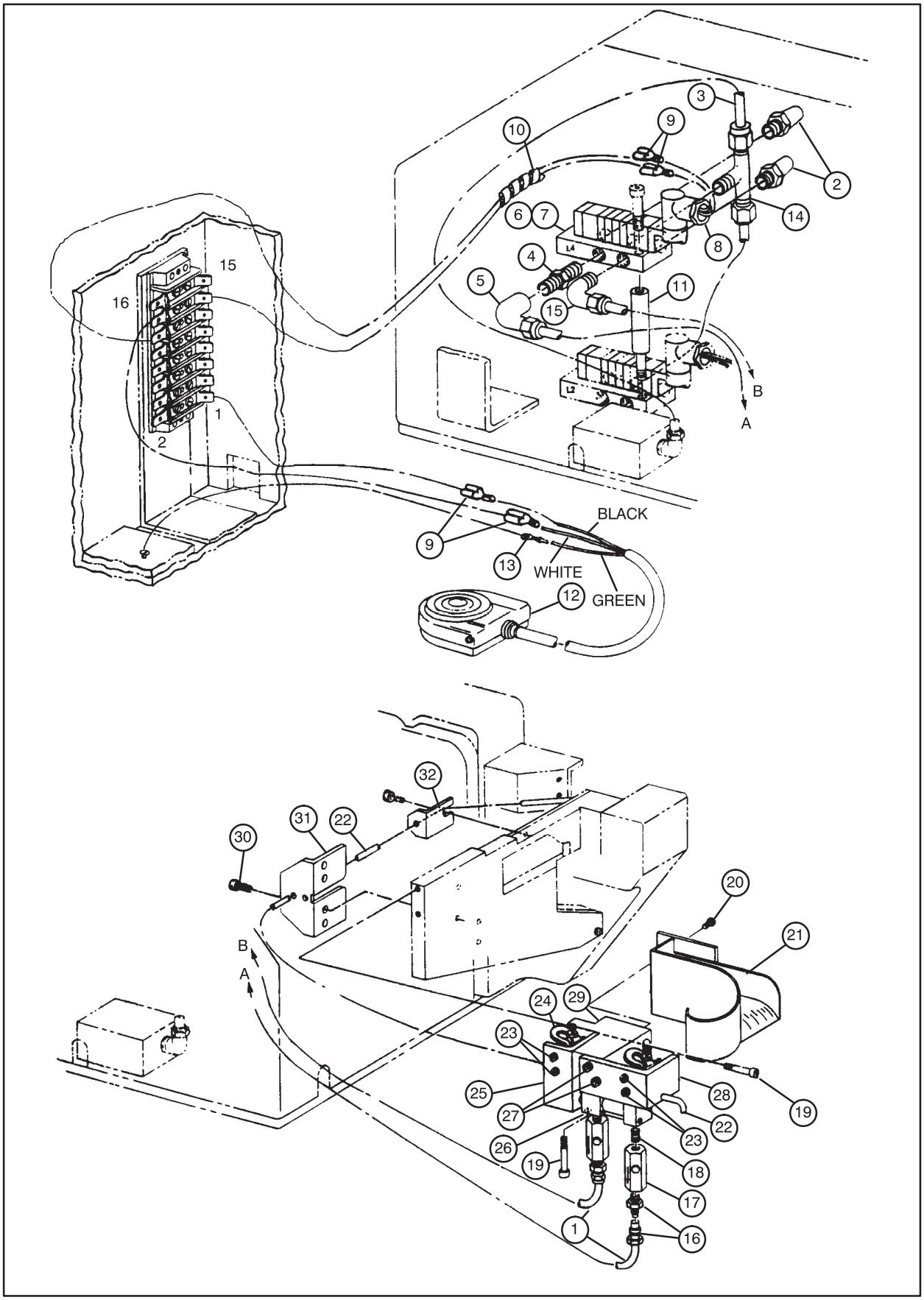


S5–1. Stuffer Adjustments

ITEM NO.	AMP PART NUMBER	DESCRIPTION	QTY
– –	469853–1	STUFFER ASSY, Wire (115 V)	– –
– –	469853–2	STUFFER ASSY, Wire (230 V)	– –
1	27319–4	. TUBING, 1/4” OD	40”
2	26524–1	. MUFFLER, Exhaust, 1/8” NPT	2
3	27319–3	. TUBING, 3/8” OD	3”
4	22304–1	. NIPPLE, 1/8” NPT	1
5	22293–3	. ELBOW, Female, 1/8” NPT x 1/4” Tube	1
6	16732–1	. VALVE, Solenoid, 110 Vac, 4–Way (–1 Assy)	1
7	16732–2	. VALVE, Solenoid, 220 Vac, 4–Way (–2 Assy)	1
8	26668–2	. NIPPLE, Chase	1
9	640903–1	. TERMINAL, FASTON*, PIDG*, .250, Red	4
10	500023–2	. SPIRAP*, .125, Teflon	14”
11	463631–1	. POST, Valve Spacer	2
12	811099–1	. FOOT SWITCH ASSY	1
	810749–1	. . SWITCH, Replacement (For Foot Switch)	1
13	36154	. TERMINAL, Ring No. 10, Red	1
14	1– 22301–1	. TEE, 3/8” Tubing x 1/8” NPT	1
15	22294–6	. ELBOW, Male, 1/8” NPT x 1/4” Tube	1
16	22295–7	. CONNECTOR, Male, 1/8” NPT x 1/4” Tube	2
17	23054–1	. VALVE, Flow Control	2
18	22311–1	. NIPPLE, Close, 1/8” NPT	2
19	3– 21000–2	. SCREW, Skt Hd Cap, No. 8–32 x 1.250” L	4
20	1– 21002–7	. SCREW, Btn Hd Cap, No. 6–32 x .375” L	2
21	691730–2	. GUIDE, Terminal Strip	1
22	24028–1	. TUBING, Nylon, 1/8” OD (Note 2)	12”
23	2– 21000–5	. SCREW, Skt Hd Cap, No. 6–32 x .250” L	4
24A	389572	. GRIPPER ASSY●	2
24B	389599	. SPRING●	2
24C	21022–2	. NUT, Hex, Slfkg, No. 8–32●	2
25	453282–1	. BRACKET, Feed Hitch Mounting	1
26	23851–1	. CYLINDER, Double Acting Air	1
27	2– 21000–6	. SCREW, Skt Hd Cap, No. 8–32 x .375” L	2
28	453283–1	. BRACKET, Drag Hitch Mounting	1
29	453284–1	. BLOCK, Wire Feed	1
30	2– 21000–8	. SCREW, Skt Hd Cap, No. 8–32 x .62” L	2
31	453285–1	. GUIDE, Rear Wire	1
32	457301–1	. GUIDE, Front Tube	1

● Remove existing spring in Item 24A and replace with items 24B and 24C.

S6–1. Exploded View, Wire Stuffer Assembly No. 469853–1 and –2 (Sheet 1 of 2)



S6−1. Exploded View Wire Stuffer Assembly No. 469853−1 and −2 (Sheet 2 of 2)