

customer manual

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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 appropriate ear protection.
- ALWAYS wear approved eye protection when operating powered equipment.
- ALWAYS keep guard(s) in place during normal operation.
- ALWAYS insert power plug into a properly grounded receptacle to avoid electrical shock.
- ALWAYS turn off the main power switch and disconnect electrical cord from the power source when performing maintenance on the equipment.
- NEVER wear loose clothing or jewelry that may catch in moving parts of the application equipment.
- NEVER insert hands into installed application equipment.
- NEVER alter, modify, or misuse the application 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 Engineers 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

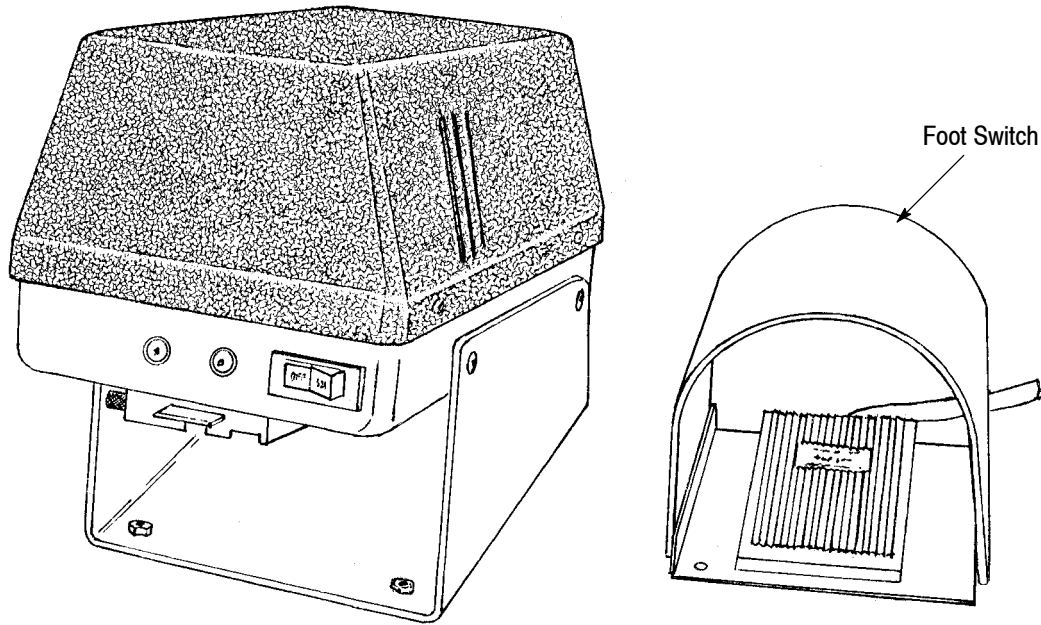


Figure 1

1. INTRODUCTION

Electric Power Unit 931800-1 (shown in Figure 1) is designed to accept interchangeable terminating heads, feed track assemblies, and feed tube assemblies which terminate unstripped wire onto connectors using the insulation displacement contact (IDC) terminating technique. The power unit is foot switch actuated to provide the 534 N [120 lb-force] maximum force necessary for terminating.

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

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



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



NOTE Highlights special or important information.



Read this manual thoroughly before operating the power unit. The performance of the power unit will depend largely upon the intelligent use of the information contained in this manual.

NOTE Dimensions in this manual are in metric units [with U.S. customary units in brackets].



Reasons for reissue of this customer manual are provided in Section 10, REVISION SUMMARY.

The terminating heads, feed track assemblies, and tube feed assembly that the power unit accepts are listed in Figure 2.

| DESCRIPTION | PART NUMBER | INSTRUCTION SHEET |
|---|-------------|-------------------|
| Terminating Head, MTA-156 Card Edge Connectors | 58061-1 | 408-6794 |
| Terminating Head, AMPMODU* Mass Termination (MT) Receptacles | 58062-1 | 408-9085 |
| Terminating Head, AMPLIMITE* High Density (HDE)-20 Connectors | 58063-2 | 408-9414 |
| Terminating Head, MTA-100 Receptacles Using Discrete Wire | 58246-1 | 408-6929 |
| Terminating Head, MTA-100 Receptacles | 58246-2 | 408-9379 |
| Terminating Head, MTA-156 Receptacles Using Discrete Wire | 58247-1 | 480-6930 |
| Terminating Head, MTA-156 Receptacles | 58247-2 | 408-9380 |
| Terminating Head, AMPMODU MTE Connectors | 58336-1 | 408-9359 |
| Terminating Head, 2mm Common Termination (CT) Connectors | 58372-1 | 408-9426 |
| Terminating Head, AMPMODU Level V Connectors | 58395-1 | 408-9472 |
| Terminating Head, Feed Through, MTA-100 Receptacles Using Discrete Wire | 58442-1 | 408-9603 |
| Terminating Head, Feed Through, MTA-156 Receptacles Using Discrete Wire | 58443-1 | 408-9607 |
| Tube Feed Assembly, AMPMODU MTE Connectors | 856675-1 | 408-9759 |
| Feed Track Assembly, MTA-100 Receptacles, Tape | 853546-1 | 408-9636 |
| Feed Track Assembly, MTA-156 Receptacles, Tape | 853547-1 | 408-9637 |
| Feed Track Assembly, MTA-100 Receptacles, Loose Piece | 933567-1 | 408-9435 |
| Feed Track Assembly, MTA-156 Receptacles, Loose Piece | 933568-1 | 408-9466 |

The following heads contain an exposed wire inserter and **should not** be used with the power unit:

Terminating Head 58082-1 for MTA .156 posted connectors

Terminating Heads 58081-[] for Lace-N-Lok connectors (these heads are no longer available)

Figure 2

2. DESCRIPTION

2.1. Physical Description (Figure 3)

The power unit is an electric powered bench mounted machine with the following specifications.

Dimensions 356 mm [14 in.] Long, 254 mm [10 in.] High, 178 mm [7 in.] Deep

Weight 5.4 kg [12 lb]

Operating Rate 7,200 Cycles per Hour (0.5 Seconds per Cycle—NOT Including Operator Loading and Unloading)

Power Requirements 1.6 A Motor Requiring 115 Vac, 50/60 Hz Single-phase Power Source with Separate Ground

Noise Level Between 70 and 75 dB at Operator Position

The eccentric and the ram convert the rotational force of the motor into an up and down motion. This action powers the terminating head during the crimping cycle. The clutch, when released by the solenoid actuator, connects the motor to the ram and eccentric for one operating cycle. Terminating heads are secured to the power unit with a clip. This clip allows fast, easy installation and removal of the terminating heads.

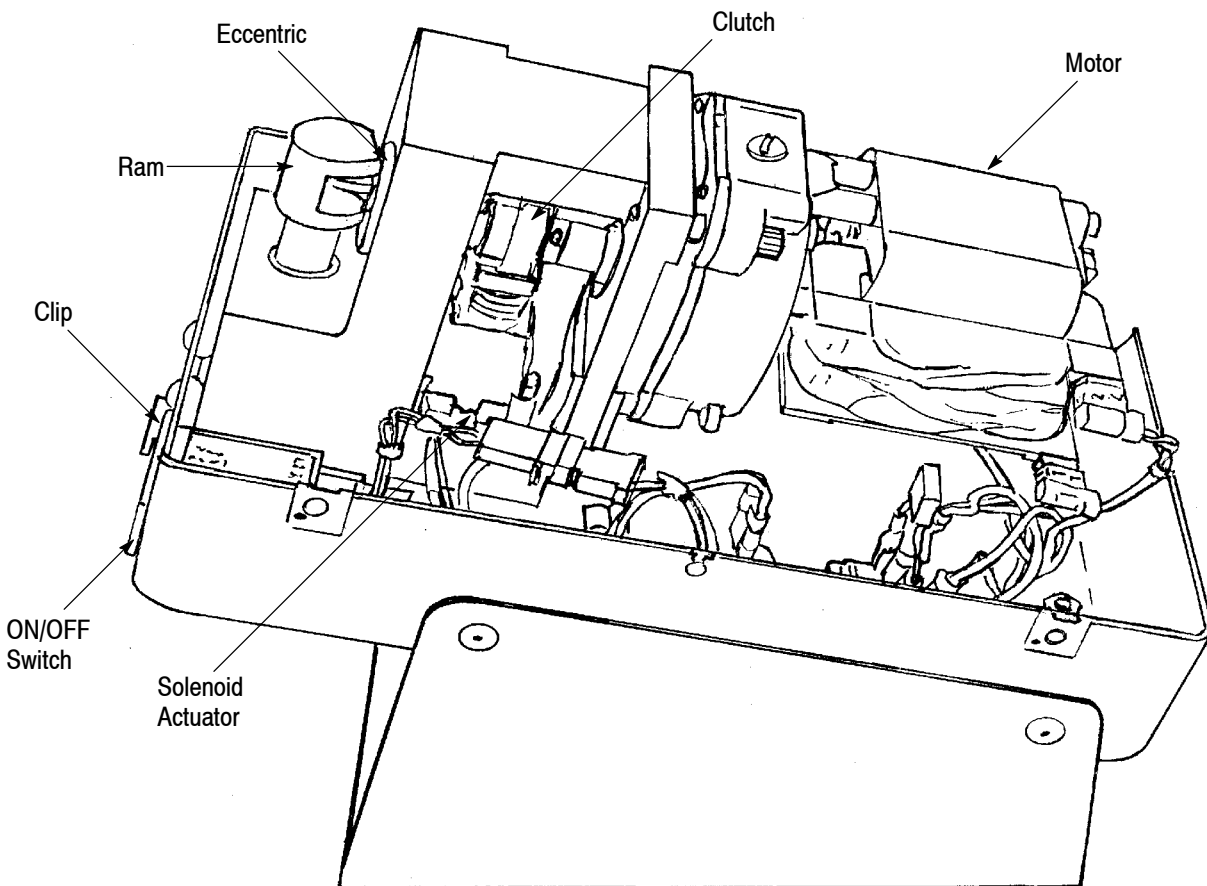


Figure 3

2.2. Functional Description

For this description, it shall be assumed that the power unit has been properly setup, connected to electrical power, the ON/OFF switch is "ON," and the motor is running continuously. Refer to Figure 3.

The operating cycle of the power unit starts when the electrical circuit within the power unit is "closed." Depressing the foot switch closes the electrical circuit and momentarily energizes the clutch assembly which pulls downward on the actuator solenoid. Energizing the clutch assembly allows the power unit to complete one operating cycle.

The movement of the solenoid actuator causes a spring inside the clutch assembly to wrap itself around the input and output areas of the clutch. This movement permits transfer of motion and power to the eccentric and ram. The eccentric and ram convert the rotational motion of the motor into a linear motion for powering the terminating head. The crimping of the wire to the contact occurs during the downward motion of the ram. As the eccentric continues to rotate, the ram moves to an upward position. The clutch assembly comes in contact with the solenoid actuator and disengages the ram-eccentric area of the drive system from the motor.

2.3. Electrical System Description (Figure 4)

When electrical plug (P2) is connected to an electrical outlet with separate ground, 115 Vac power is supplied through the circuit breaker (CB) to the ON/OFF switch (CB1). When the ON/OFF switch (CB1) is depressed "ON," the indicator light in the switch is illuminated, and power is supplied to the motor (B1) which starts and runs continuously.

Depressing the foot switch (S1) closes the electrical circuit and sends a one shot electric pulse of approximately 0.1 seconds to the solenoid actuator (L1). Energizing the solenoid actuator allows the power unit to cycle.

At completion of power unit operation, the ON/OFF switch (CB1) should be depressed, and the electrical plug (P2) should be disconnected.

Electrical Schematic

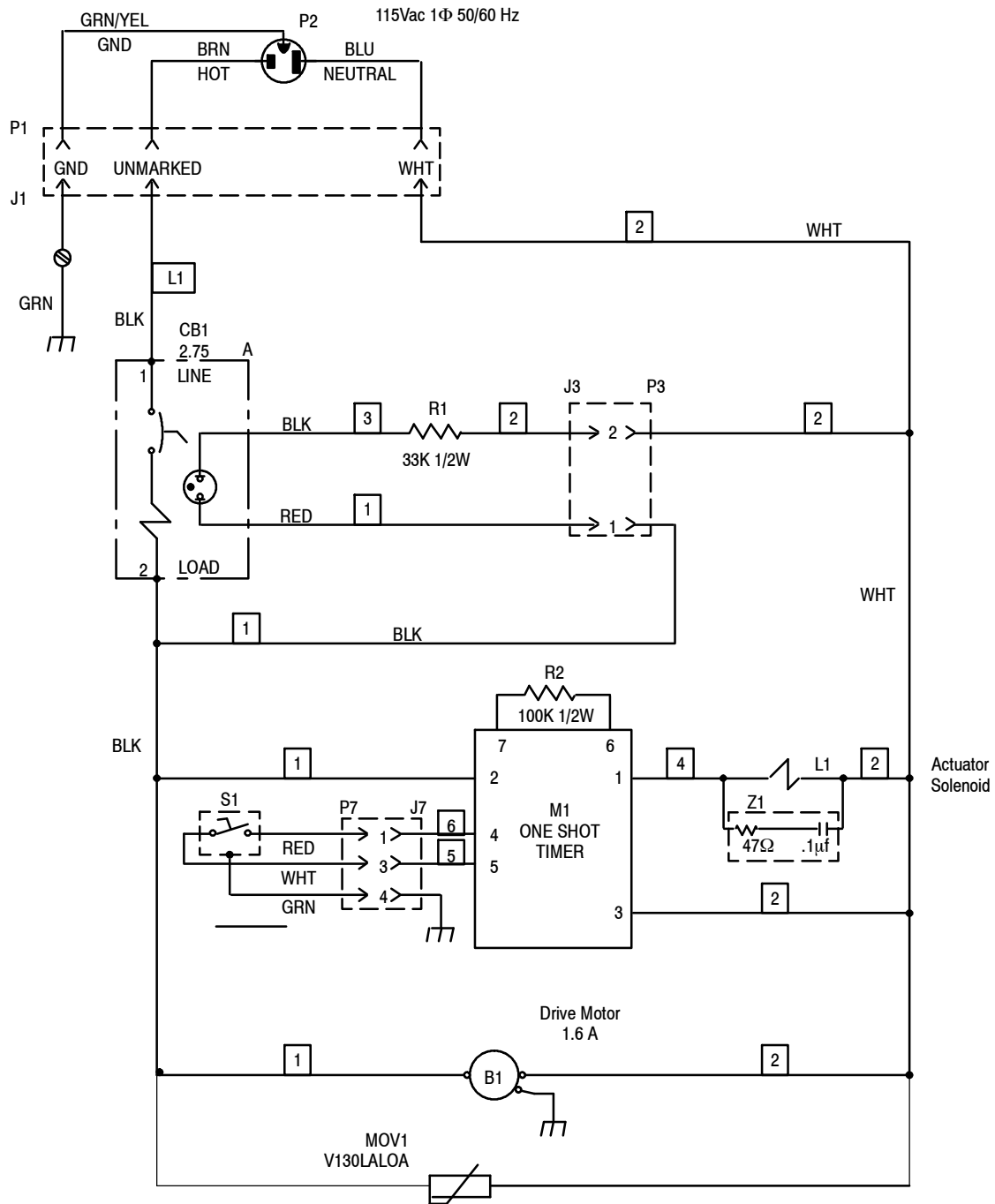


Figure 4

3. RECEIVING INSPECTION AND INSTALLATION

3.1. Receiving Inspection

The power unit is thoroughly inspected during and after assembly. Before it is shipped, a final series of inspections is made to ensure proper functioning of the power unit. Still, the following inspection should be performed as a safeguard against problems generated during shipment.

1. Carefully uncrate the power unit and place it on a sturdy bench where there is enough light to permit a careful inspection.
2. Thoroughly inspect the entire power unit for evidence of damage that may have occurred during transit. If the power unit is damaged, file a claim against the carrier and notify Tyco Electronics Corporation immediately.
3. Check all parts to be sure that they are secure.
4. Check all air lines for evidence of loose connections or leaks.

3.2. Placement

Proper location of the power unit in relation to the operator is essential to both safety and efficiency. Studies have shown that fatigue will be reduced and efficiency increased if particular attention is paid to the bench, the operator's chair, and the placement of the foot switch.

A. Bench

A sturdy bench 686 to 762 mm [27 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. The 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 back rest.

B. Power Unit Location on Bench

The power unit should be located near the front of the bench, and the power unit work area (the area where the product is applied) should be 152 to 203 mm [6 to 8 in.] from the front edge. Access to the back of the power unit must be provided for maintenance purposes, in most cases, and to allow the operator to turn the air to the power unit on and off at the lockout valve.

C. Operator's Chair

The operator's chair should swivel, and the seat and back rest should be padded and independently adjustable. The back rest should be large enough to support the back both above and below the waist. In use, the chair should be far enough under the bench so that the operator's back is straight and supported by the back rest.

D. Foot Switch

When the operator is correctly positioned in front of the power unit, the foot should rest on the switch comfortably and easily. The switch should be placed on a rubber mat; this allows it to be movable and permits the operator to shift position to minimize fatigue, while at the same time the mat prevents the switch from sliding unintentionally.

The preference for locating the switch varies among operators. Some prefer the switch located so that their foot rests on the switch when their legs are in the natural sitting position (calf perpendicular to the floor). Others prefer it slightly in front of the natural position. The important thing is that the foot be about 90° to the calf when resting it on the switch. Those who prefer the switch slightly forward may require a wedge-shaped block placed under it.

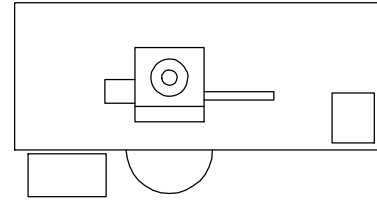
Figure 5 shows recommended location and position of the operator, as well as a typical layout for the efficient handling of materials.

**Recommended Operator Position,
Chair and Table Adjustments, and Power Unit Location**



Note that with the chair height and back rest are properly adjusted. The operator's back must be straight and supported by the chair and the upper arms are in a direct line with the torso.

Materials Location — Plan View



This is a typical plan view to illustrate the convenience of handling materials afforded by the proper setup.

Figure 5

3.3. Installation

After the power unit is removed from the carton:

1. Select a location with adequate lighting and a power source of 115 Vac, 60 Hz, single-phase current with a separate ground.
2. Place the power unit on a bench as shown in Figure 5.
3. **Before** connecting power unit to electrical supply, remove plastic vent plug located under the top cover of the power unit. This plug prevents leakage of gear box lubricant during shipment.
4. To remove cover, loosen the four socket head cap screws which hold the cover in place; then remove the plug from the side case of the motor gear box.
5. Replace cover on power unit.
6. Perform power unit setup and operation as described in Section 4.

4. POWER UNIT SETUP AND OPERATION

The following pertains to setup and operation of the power unit after it has been properly installed and checked out as described in Section 3, RECEIVING INSPECTION AND INSTALLATION.

4.1. Setup (Figure 6)

Refer to the instructions packaged with the terminating head, feed track assembly, or tube feed assembly for specific tooling adjustments. The tooling configurations differ considerably from one to another; however, the following installation procedure is common to all. A terminating head is used in Figure 6 to illustrate setup.

Determine the type of connector to be terminated; then select the appropriate terminating head, feed track assembly, or tube feed assembly (refer to Section 1). Proceed as follows:



DISCONNECT power unit from electrical outlet before installing appropriate tooling head, feed track, or tube feed assembly.

1. Pull the clip away from the power unit.

2. Position the terminating head into the the machined frame as shown in Figure 6.
3. Push the clip in toward the power unit.
4. Turn the thumbscrew CLOCKWISE to secure the terminating head to the power unit.
5. To ensure that the power unit is properly set up, perform a test termination (refer to Paragraph 4.2, Power Unit Operation). Inspect the connector to ensure that the wires are properly terminated. Refer to the termination inspection procedures provided with the terminating head.

NOTE

To ensure proper termination of wires in connectors, refer to the instructions packaged with the tool assemblies for test inspections and setup adjustments.

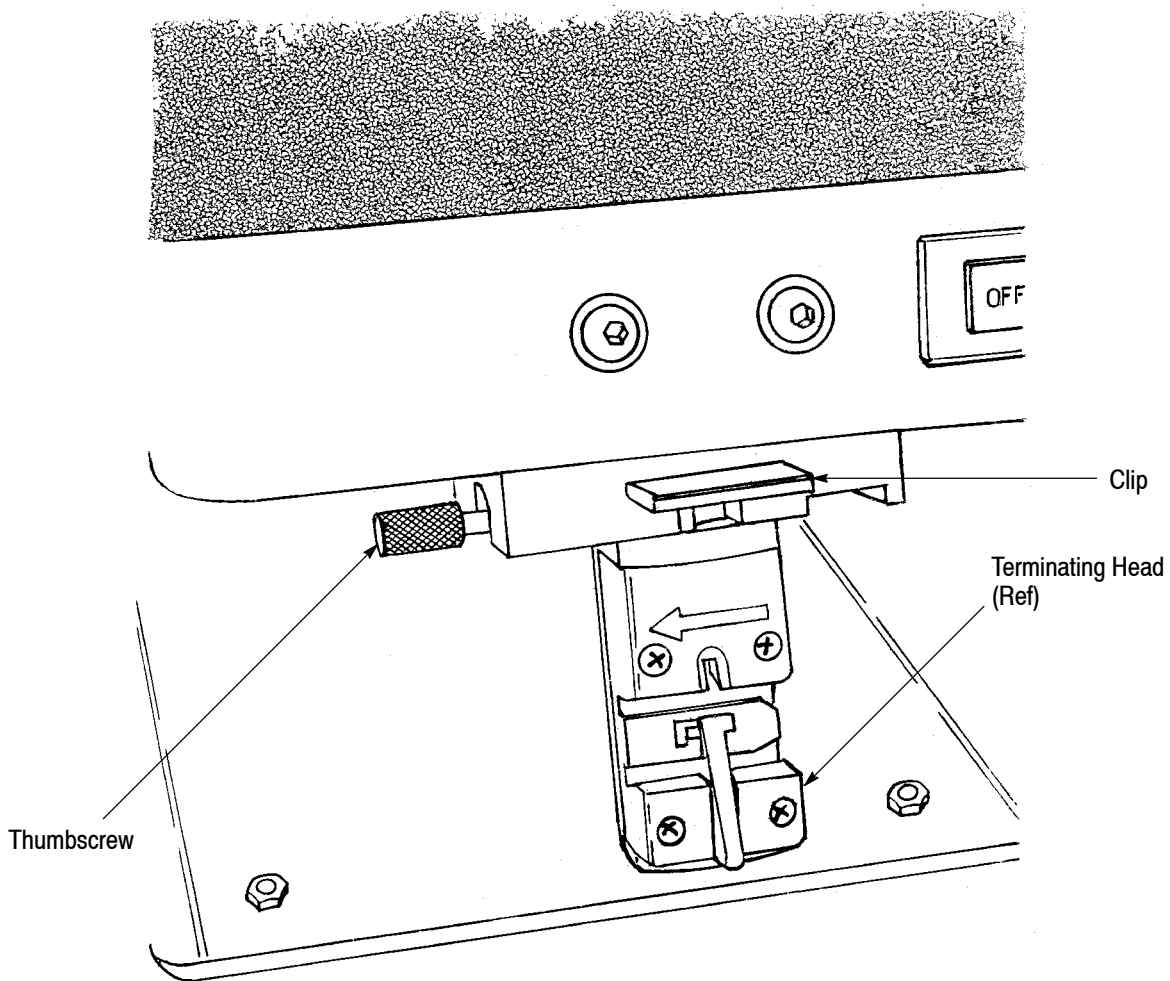
Power Unit Setup

Figure 6

4.2. Operation (Figure 7)

1. Insert the electrical plug into the power outlet.

NOTE

The electrical outlet must meet the power requirements specified in Paragraph 2.1, Physical Description.



2. Place the foot switch in a suitable position on the floor.
3. Depress the ON/OFF switch to "ON".
4. Insert the connector into the right side of head (see Figure 7). Align the contact to be terminated with the wire inserter.
5. Insert an unstripped wire into the funnel area between the contact and wire inserter until it bottoms in the head.
6. Depress the foot switch to crimp the wire to the contact.

NOTE

The feed slide will automatically position the connector to the next contact position.

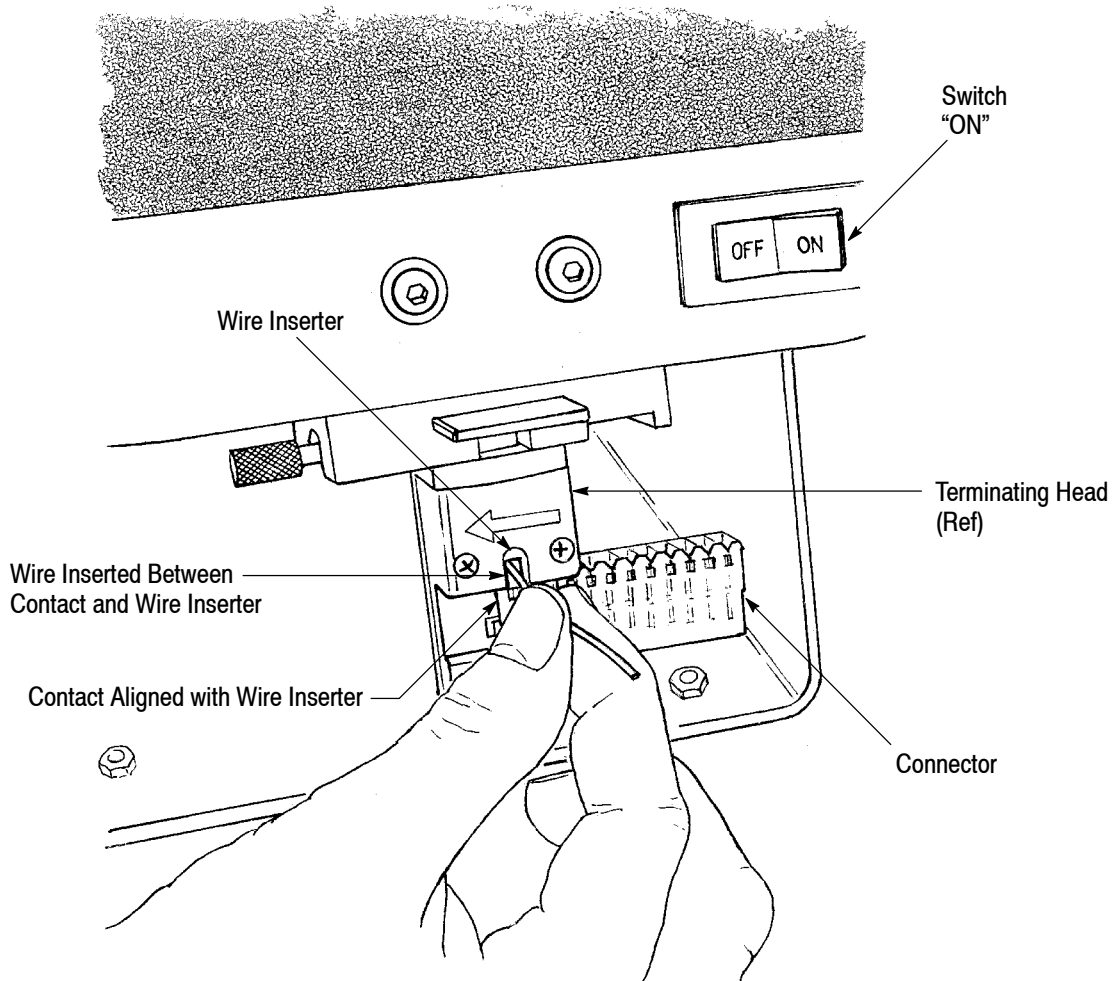
**Operating the Power Unit**

Figure 7

7. Repeat Steps 4 through 6 until all contacts have been terminated.
8. When the terminations are complete, depress the ON/OFF switch to “OFF”; then disconnect the power unit from the electrical outlet.

5. TROUBLESHOOTING

Figure 8 covers the possible troubles that may occur during operation of the power unit along with possible causes and remedies to correct the situation. Refer to Paragraph 2.2, Functional Description, to help determine the cause of the problem. When part replacement is necessary, refer to Sections 7 and 8 for parts replacement instruction.

| TROUBLE | POSSIBLE CAUSE | REMEDY |
|---|---|---|
| Motor does not rotate. | The power cord is not plugged into the appropriate electrical outlet. | Make sure that the power cord is plugged in. |
| | The power (On/Off) switch is not on. | Check leads on motor. Replace motor. |
| Power unit double-cycles. | The solenoid actuator is not operating freely. | Replace timer. |
| Motor rotates but power unit stalls during operation. | The wire is inserted too deep in the connector and is overloading the power unit. | Re-adjust wire inserter according to the instructions packaged with the terminating head, feed track assembly, or tube feed assembly. |
| | The ram is binding on the clutch assembly. | |
| Motor rotates but power unit does not cycle. | The solenoid actuator is not operating freely. | Check solenoid. |
| | | Check timer. |
| | | Check clutch. |

Figure 8

6. INSPECTION AND PREVENTIVE MAINTENANCE



To prevent personal injury, DISCONNECT POWER UNIT from electrical power supply prior to performing maintenance.

6.1. Cleaning

1. Clean the entire power unit with a clean, dry cloth.



Compressed air used for cleaning must be reduced to less than 2.12 kPa [30 psi] and effective chip guarding and personal protective equipment (including eye protection) must be used.

2. Remove any evidence of grease from unlubricated areas and non-moving parts using an approved solvent or cleaning fluid.

6.2. Inspection

1. Be sure all components are secure.
2. Check for evidence of excessive wear.
3. Inspect wiring for evidence of chafing, loose connections, or damage (refer to Figure 4 for electrical schematic).
4. Inspect the power unit for proper lubrication. If necessary, lubricate the power unit as described in Paragraph 6.3.

6.3. Lubrication



Avoid excessive lubrication in all areas. Remove any excess lubricant before starting the power unit.

Approximately once a week, sparingly lubricate the ram and eccentric areas of the power unit using SAE 10 non-detergent motor oil. Remove any excess lubricant to prevent it from entering the tooling area.



CAUTION DO NOT allow oil to enter the clutch area of the power unit.

7. PARTS LIST

Figure 9 consists of the parts list and assembly drawing. The parts list, a complete listing of all parts contained in the power unit, consists of item numbers, part numbers, a description of the parts, and the quantity required. The assembly drawing is used as a means of identifying the parts location.

| PARTS LIST | | | |
|------------|-------------|---|--------------------|
| ITEM | PART NUMBER | DESCRIPTION | QTY PER POWER UNIT |
| 1 | 3-22346-0 | SCREW, Thumb Knurled | 1 |
| 2 | 761096-1 | CLUTCH ASSEMBLY | 1 |
| 3 | 932682-1 | FRAME, Machined | 1 |
| 4 | 4-21000-0 | SCREW, Socket Head Cap, 10-32×1.25 in. Long | 4 |
| 5 | 1804385-1 | GEAR MOTOR | 1 |
| 6 | 932698-1 | TOP COVER | 1 |
| 7 | 852424-4 | LABEL, Logo | 1 |
| 8 | 2-21002-2 | SCREW, Button Head 8-32×.50 in. Long | 4 |
| 9 | 25633-6 | NUT, Speed, Type U | 4 |
| 10 | 933495-1 | ELECTRICAL E.P.U. ASSEMBLY | 1 |
| 11 | 3-21000-0 | SCREW, Socket Head Cap, 8-32×.88 in. Long | 2 |
| 12 | 933489-1 | SUBASSEMBLY, Base | 1 |
| 13 | 453592-6 | SIGN, Caution | 1 |
| 14 | 23902-6 | PLATE, Identification | 1 |
| 15 | 1-21002-6 | SCREW, Button Head Cap, 6-32 UNC×.25 in. Long | 4 |
| 16 | 125854-2 | BUMPER | 4 |
| 17 | 2-22733-1 | SCREW, Button Head, 10-32×.50 in. Long | 5 |
| 19 | 21018-6 | NUT, No. 8 | 2 |
| 20 | 24367-4 | WASHER, Lock, No. 8 | 2 |
| 21 | 27210-8 | SCREW, Socket Head Cap, .187 Dia×.19 in. Long | 1 |
| 22 | 983531-1 | ACTUATOR, Solenoid | 1 |
| 23 | 1-22971-8 | PLUNGER, Ball | 1 |
| 24 | 931797-1 | CLIP | 1 |
| 25 | 931799-1 | RAM | 1 |
| 26 | 5-23507-8 | BEARING, Needle | 1 |
| 27 | 844656-1 | WASHER, SPC | 5 |
| 28 | 21055-7 | WASHER, Flat, No. 10 | 5 |

Figure 9 (Cont'd)

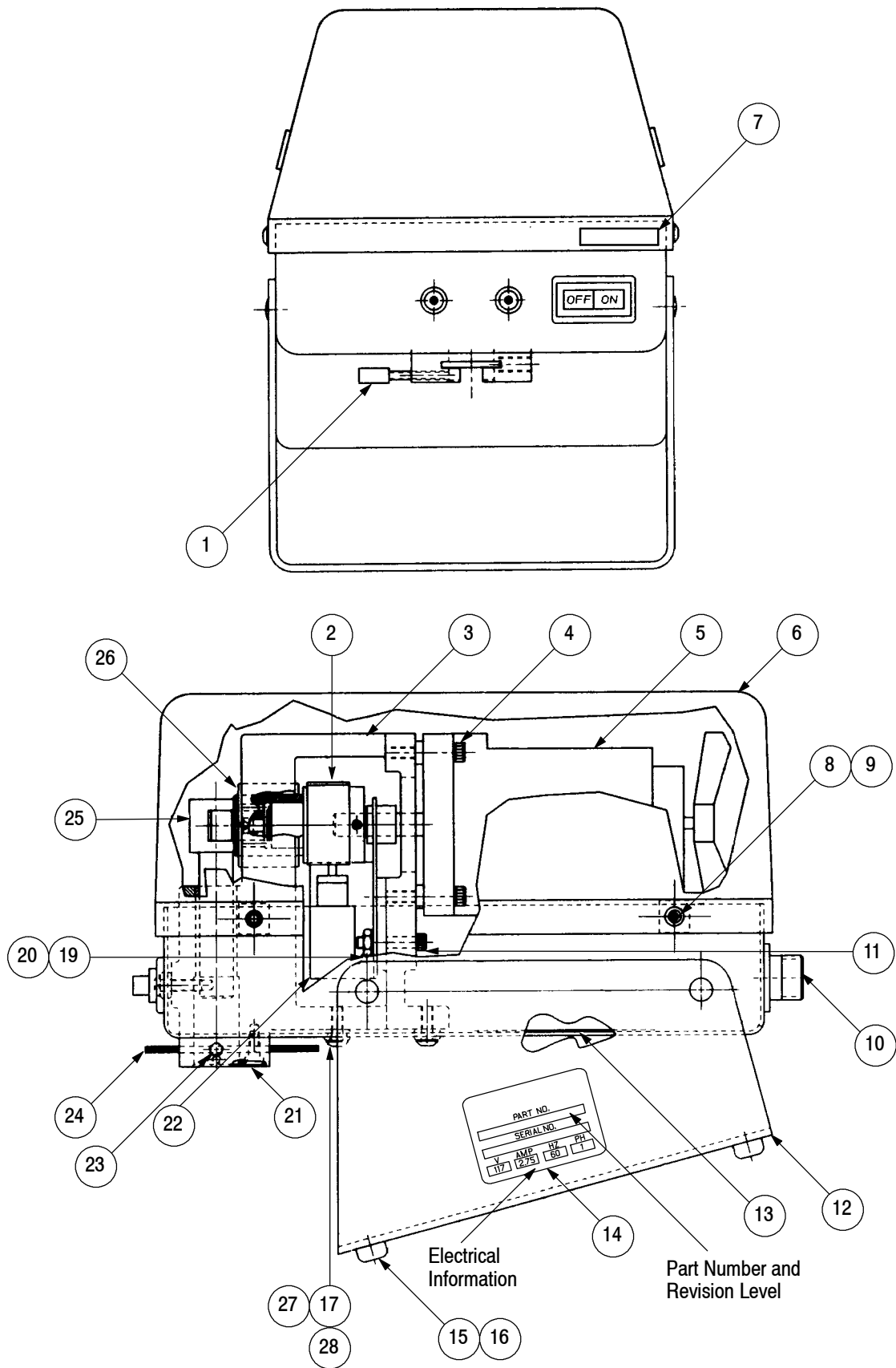


Figure 9 (End)

8. REPLACEMENT AND REPAIR

The following covers special instructions for removing and installing the motor, clutch assembly, and ram. Other parts (listed in Section 7) are easily replaced after careful study of the assembly drawing supplied with the power unit. A complete inventory should be stocked and controlled to prevent lost time when replacement of parts is necessary. For technical assistance, refer to page 2 of this manual.



DISCONNECT the power cord from the electrical outlet before replacing any parts.

Order replacement parts through your representative, or call 1-800-526-5142, or send a facsimile of your purchase order to 717-986-7605, or write to:

CUSTOMER SERVICE (038-035)
TYCO ELECTRONICS CORPORATION
PO BOX 3608
HARRISBURG PA 17105-3608

For customer repair service, call 1-800-526-5136.

8.1. Electrical Components Replacement

No special instructions are required to replace electrical components or wiring. However, to ensure proper installation, carefully note the color coding of all wire and the exact position of components before removal. Refer to the electrical schematic in Figure 4.

8.2. Motor Replacement

1. Remove electrical leads from the motor.
2. Loosen the setscrews on the clutch assembly.
3. Remove the screws holding the motor to the frame.
4. Remove the motor from the power unit.
5. Mount the motor to the frame of the power unit making sure that the flats on the motor shaft align with the setscrews on the clutch assembly.
6. Slide the clutch assembly toward the front of the power unit until it rests against the ram. Tighten the setscrews.



DO NOT apply pressure between the ram and the clutch assembly or binding of the ram may occur.

7. Replace electrical leads on the motor.

8.3. Clutch Assembly Replacement

1. Remove the motor as described in Paragraph 8.2, Motor Replacement.
2. Remove electrical leads from the clutch assembly.
3. Remove the clutch actuator from the power unit.
4. Slide the clutch assembly toward the rear of the power unit and remove.
5. Slide the new clutch assembly through the needle bearing in the frame of the power unit.
6. Install clutch actuator. DO NOT tighten the screws.
7. Replace the motor as described in Paragraph 8.2, Motor Replacement.
8. Tighten the screws of the clutch actuator.

9. Replace electrical leads on clutch actuator.
10. Loosen the adjustment collar on the clutch assembly.
11. With the ram in the up position and the clutch release sleeve against the solenoid plunger, tighten the adjustment collar.
12. Cycle the power unit several times to ensure that the ram stops at the top of each cycle.

8.4. Ram Replacement

Follow the instructions for motor and clutch replacement to replace the ram of the power unit.

9. RoHS INFORMATION

Information on the presence and location of any substances subject to restriction on hazardous substances (RoHS) can be found at the following website (click on “Find Compliance Status,” and enter the terminating module part number):

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

10. REVISION SUMMARY

Revisions to this customer manual include:

- Updated document to corporate requirements
- Changed part number in Item 5 in Figure 9