

*customer manual*

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**DANGER****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

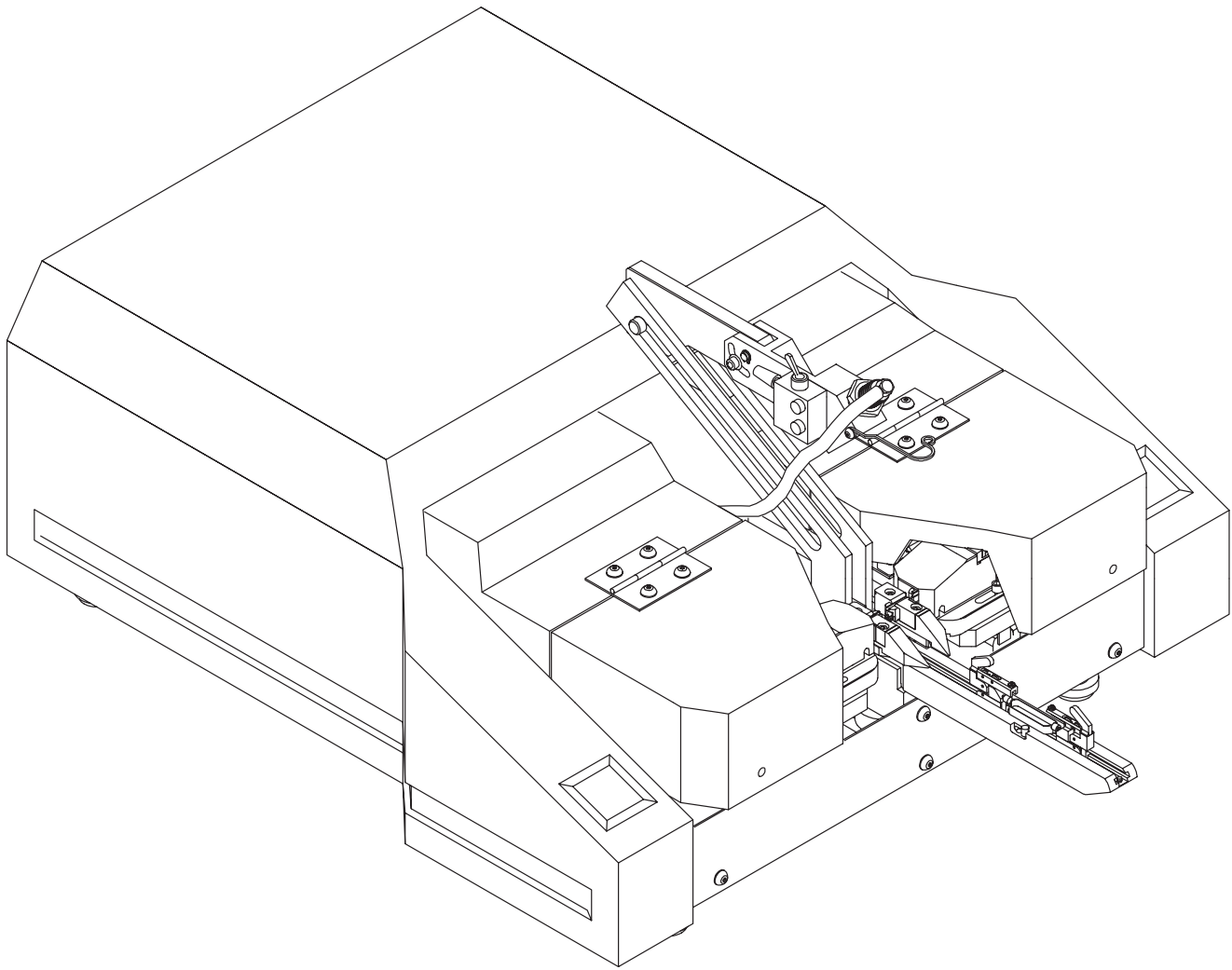


Figure 1

## 1. INTRODUCTION

CHAMPOMATOR 2.5 Bench Terminating Machines 762734-1, 762734-2 (shown in Figure 1) are pneumatically and electrically-powered, microprocessor-controlled units that are used to produce double-ended cable assemblies by applying AMP Insulation Displacement Concept (IDC) connectors. The machines can produce cable assemblies using a variety of cable dress types. The machines' specifications and capabilities are given in Figure 2.

The base machine accepts one of several optional insert packages, each having the tooling required to properly apply the specific IDC connector type to the cable. Refer to the Applicator Instruction sheet supplied with each inserter package for detailed information.

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

The drawings supplied with the machine should be used in conjunction with this manual, and both should remain with the machine for ready reference for the operator and maintenance personnel.

<b>Machine Dimensions (Approximate)</b>	<i>Machine 762734-1</i>	<i>Machine 762734-2</i>
Length	609 mm [2 ft]	609 mm [2 ft]
Width	609 mm [2 ft]	609 mm [2 ft]
Height	304 mm [1 ft]	304 mm [1 ft]
Machine Weight (Approximate)	45 kg [100 lbs]	34 kg [75 lbs]
 <b>Air Requirements</b>		
Pressure (Minimum)	551 kPa (80 psi)	
Volume	.000354 m <sup>3</sup> /sec [.75 cfm]	
 <b>Electrical Requirements – Control Module</b>		
Voltage	120 Vac	
Phase	Single	
 <b>Noise Levels – while machine cycles●</b>		
80 –85 db (at operators' position)		
 <b>Cable Information</b>		
Cable Type	Multi-conductor, jacketed	
Number of Conductors	Up to 120	
Conductor Sizes	Various diameters, gauges	
Insulation Diameter	.558 to 1.524 mm [.022 to .060 in.]	
 <b>Connector Application</b>		
General	IDC Connectors	
Tooling Kits available for†	CHAMP* Connectors AMPLIMITE* HDE Series 20 Connectors AMPLIMITE .050 Series Connectors AMPMODU* Level V Connectors AMPMODU MT Connectors	

● Typical machine cycles occur every 2 to 3 seconds with each cycle lasting approximately 1 second

† Other special applications available; call the Tooling Assistance Center.

Figure 2

The following precautions **MUST** be observed **AT ALL TIMES** to prevent malfunctions of the machine during operation:

1. DO NOT lay tools or objects on top of the machine, especially during operation. Such objects could fall inside, or obstruct the movement of, the carriage and inserter package.
2. Keep the machine clean, especially within the area of the inserters. Pieces of wire, insulation, and other foreign matter can interfere with the proper function of the machine.
3. Perform preventive maintenance in accordance with Section 5 of this manual. Establishment of a firm maintenance schedule will extend the life of the machine and will minimize machine downtime.
4. DO NOT install the machine in a location that has heavy electrical interference or power disruptions. This may affect or destroy the program sequence, making it necessary to re-calibrate and/or reprogram the machine.

**CAUTION**

*Electrostatic Discharge (ESD) damage can occur during the handling of static sensitive components. The ESD damage is usually caused by electrostatic discharge from a human body or an object.*

The following practices are recommended to minimize damage due to ESD:

1. The operator must use an ESD floor mat which is properly grounded.
2. The machine should rest on an ESD bench mat.
3. The machine should be grounded to the bench mat by means of a cable connected from the machine base plate to the socket on the bench mat.
4. The operator should be grounded using a wrist strap.
5. All grounding should be to a common ground point.

**NOTE**

*All ESD equipment is customer supplied.*

Due to ongoing improvement of the CHAMPOMATOR 2.5 machine, procedures or illustrations provided in this manual may conflict with the latest available information. If this manual does not agree with the machine being used, contact the **Tooling Assistance Center**. Refer to Page 2 of this manual for details.

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

Revisions to this manual are provided in Section 8, REVISION SUMMARY.

**NOTE**

*Measurements are in metric units [followed by U.S. customary units in brackets].*

**NOTE**

*For information on the CHAMPOMATOR 2.5 Machine Control Module, refer to Customer Manual 409-5791, which is supplied with the module*

## 2. DESCRIPTION

### 2.1. Physical Description (Figure 3)

The machine is a benchtop unit that is enclosed in guards and covers to protect the operator and other personnel during machine operation. The guards that enclose the unit can be opened for setup, connector and cable placement, and maintenance purposes, but should NEVER be opened or removed while the machine is operating.

The carriage, which is located on the top center of the machine, holds the inserter package for the connector to be terminated. The carriage moves along the axis of the connector, positioning the inserters for proper placement of wire into connector contact.

A control module is used to program and operate the machine. A display window on the control module informs the operator of the machine's status and prompts the operator on specific actions that might be required.

### 2.2. Functional Description

For this description, it shall be assumed that the machine has been properly installed, is set up to apply a particular type and size of connector and cable, and is ready for normal production operation.

With the cable and connector properly placed in the machine, the operator selects the wires according to the user-defined sequence, then prepares the wires and pulls them downward, one on each side of the connector, until each wire reaches the corresponding wire-receiving slot. Refer to Figure 4.

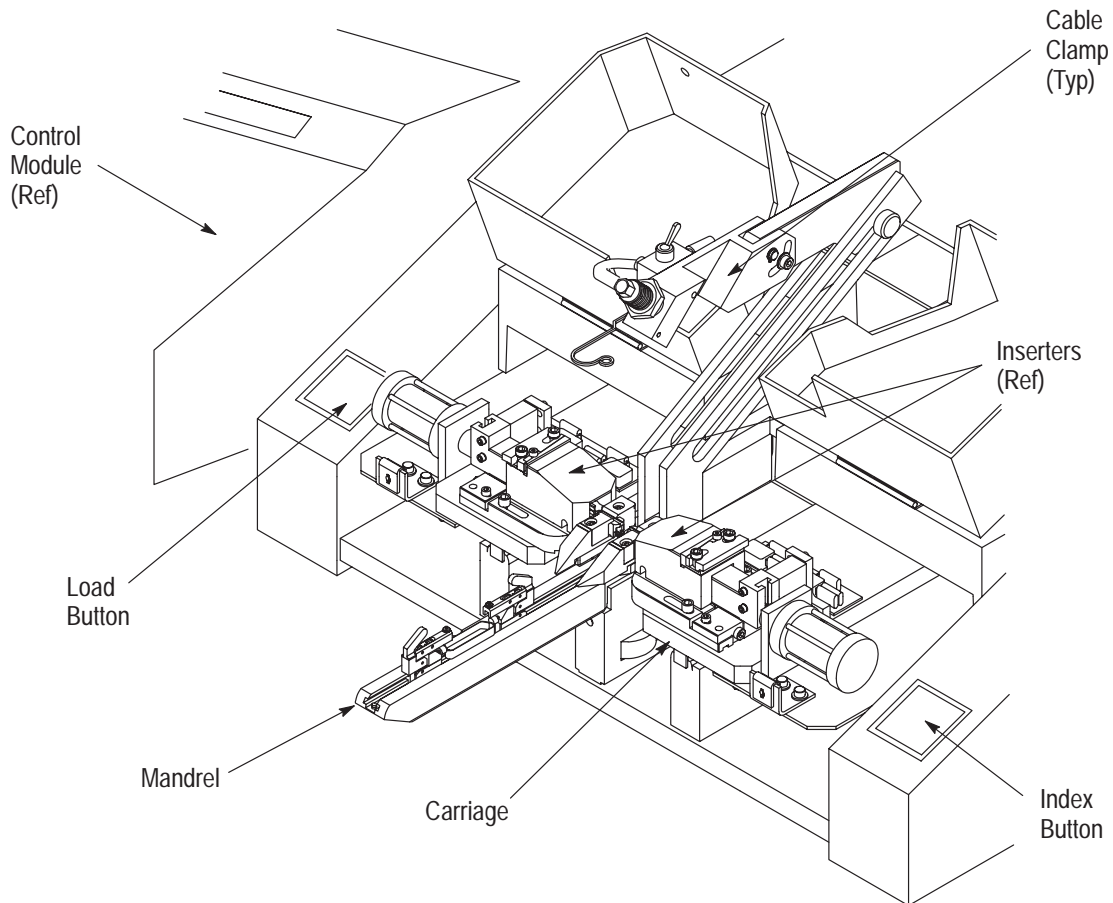


Figure 3

When both wires reach the wire-receiving slots in the inserters, sensors are actuated, causing each inserter's ram to advance.

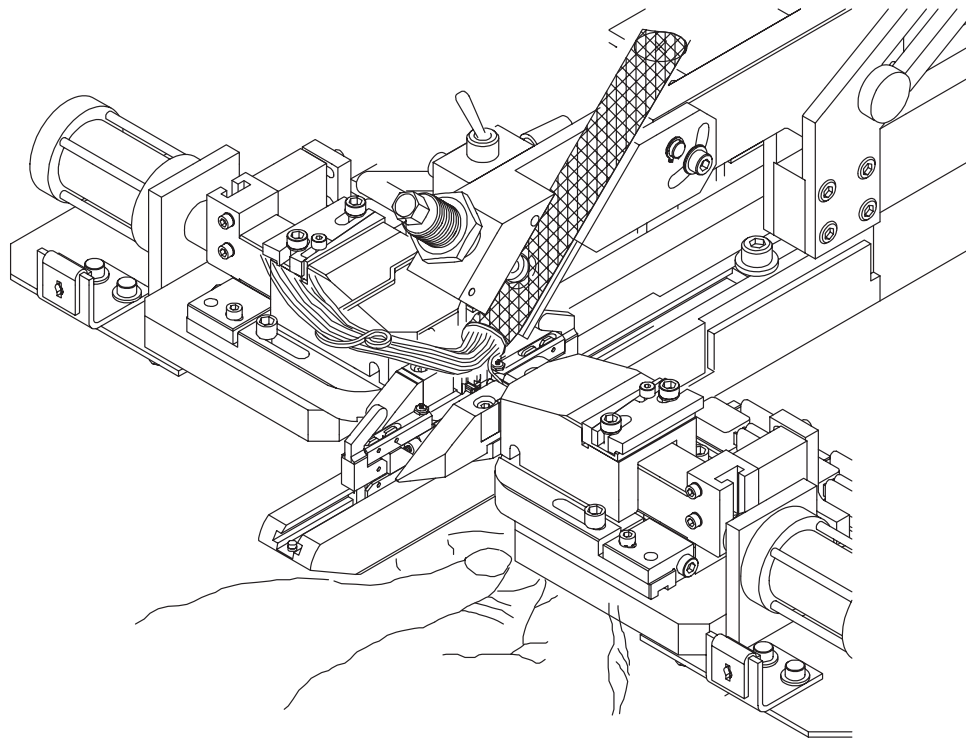
**NOTE**

*If just one wire is being terminated, only the appropriate inserter is actuated.*

As each wire is inserted, it is trimmed to the correct length. After the wire is inserted and trimmed, the operator releases the scrap wire, removing it from the work area, and the carriage moves the inserters to the next connector position, if available.

**NOTE**

*When the 180° clamp is used, the carriage will move to the "forward home" position after the last wire termination. The operator must disengage the clamping cylinder by moving the toggle switch on the clamp's air valve. After the cable is unclamped, pressing the "LOAD" button will cause the carriage to move to the "load/unload" position, where the operator can then remove the connector and cable.*



**DANGER**

*Covers omitted for clarity — do NOT operate without covers.*

Figure 4

### 3. RECEIVING INSPECTION AND INSTALLATION

#### 3.1. Receiving Inspection

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

1. Carefully uncrate the machine and place it in a location that will permit a careful examination of the machine.
2. Thoroughly inspect the entire machine for evidence of damage that may have occurred during transit. If the machine is damaged, 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 air lines for evidence of loose connections or leaks.

#### 3.2. Considerations Affecting Machine Placement

Proper location of the machine in relation to the operator is essential to both safety and efficiency. 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.

**NOTE**

*It is suggested that a scrap wire bin be placed under the insertion area to permit easy disposal of the trimmed wire ends.*

### 3.3. Machine Setup

Proceed as follows:

1. Select an appropriate location for the machine. The location should be well lighted, and should have convenient and adequate air and power supplies. Refer to Figure 2 for machine requirements.
2. Be certain that sufficient cable and connectors for the production run are on hand.
3. Be sure that the proper tooling package is installed in the machine. Refer to Paragraph 3.4, Tooling Installation, for additional information on installing components.

**NOTE**

*For detailed information on setting up these components, refer to the Instruction Sheet enclosed in the documentation package.*

4. Attach the control module to a 120 Vac, single-phase power supply. Make sure that the air supply is connected to the machine and that the interface cable is connected between the machine and the control module.

- 5. Connect the motor (with the five-position connector) to driver board J3, on the inside of the control module.**

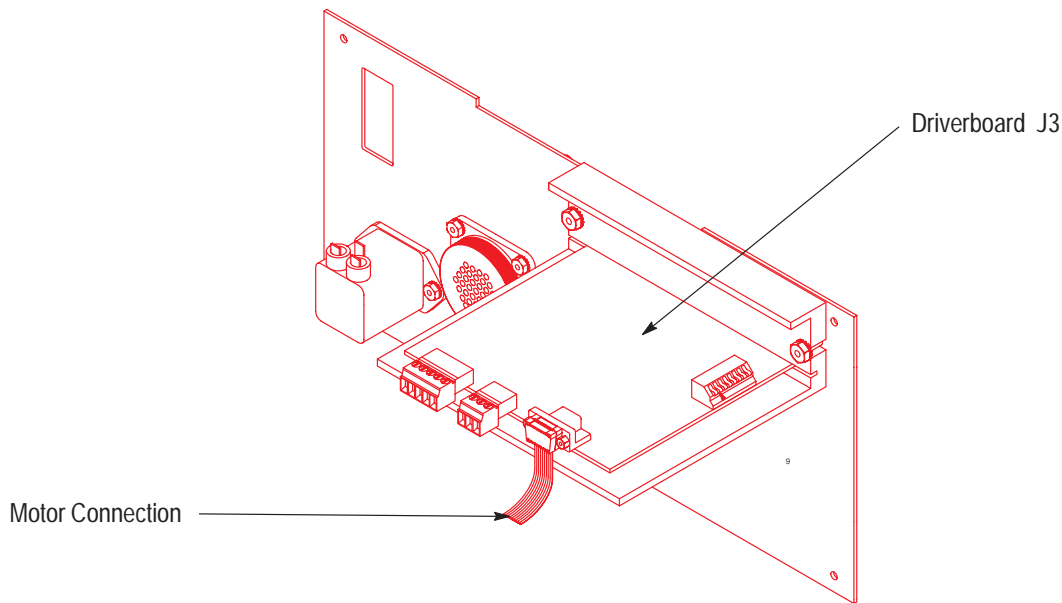


Figure 5

6. Turn on the main air valve. The air pressure should be set at 551 kPa [80 psi].
7. Turn "on" the main power switch (located on the back of the control module).

### 3.4. Tooling Installation (Figures 6 and 7)

The tooling kit consists of the mandrel assembly and right and left inserters. Figure 5 shows the machine without tooling installed.

**NOTE**

*For improved clarity, the figures may show the mounting screws placed in the appropriate holes in the mounting areas. These screws **MUST** be removed before the associated components can be mounted.*

Access to the tooling areas of the machine can be gained by turning the 1/4-turn fasteners on the covers. Once the fasteners are released, the operator can swing the inserter covers upward.

The components are installed as follows:

#### A. Mandrel Assembly

1. Make sure that the mandrel mounting screws are removed from the mandrel mounting area.

2. Place the mandrel assembly onto the mounting area. The holes in the back of the mandrel should align with the holes on the mounting area.
3. Insert and tighten the mounting screws with a 5/32-in. hex wrench. When properly mounted, the mandrel should appear as shown in Figure 7.

### B. Inserters

**NOTE**

*This procedure is for one inserter assembly only. Repeat the procedure for the other inserter.*

1. Make sure that the inserter mounting screws are removed from the inserter mounting area.
2. Locate the end of the inserter housing onto the end of the air cylinder ram.
3. Lower the inserter assembly onto the mounting area, and onto the alignment pins on the inserter mounting area.
4. Insert the two mounting screws and tighten with a 5/32-in. hex wrench.

### C. Cable Clamp

The cable clamp, supplied separately, should be installed to permit the desired cable dress angle for the cable assembly. For detailed information on the cable clamp, refer to the instructions supplied in the documentation package.

To install the clamp, locate the cable clamp so that it slides into the “T” slot in the mandrel assembly. When the clamp is in the desired position, tighten the hold-down screw with a 5/32-in. hex wrench. If using a 180° clamp, mount the back of the clamp assembly to the carriage as described in the instructions supplied with the clamp. Figure 7 shows a properly installed cable clamp.

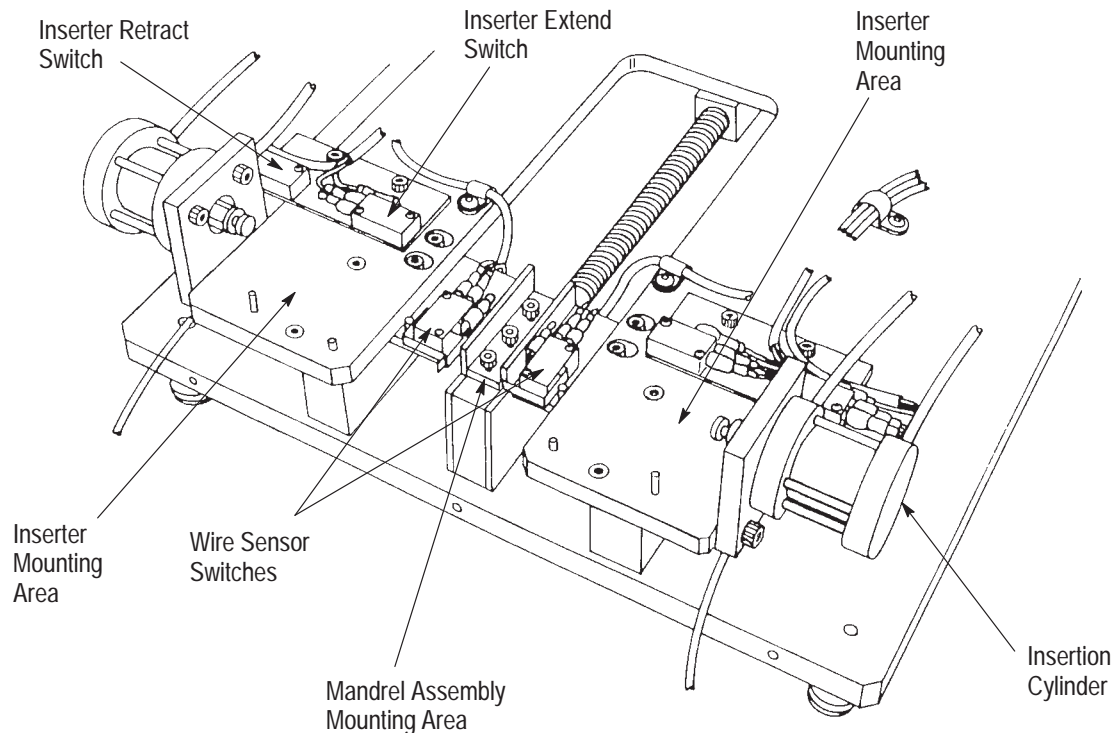


Figure 6

The air switch on the clamp assembly should be attached to the “T” fitting on the machine’s main air line. Refer to Figure 7 and proceed as follows:

1. Turn the air supply for the machine OFF. If the machine is attached to the air supply by a quick-connect fitting, remove the air line.
2. Remove the plug in the “T” fitting and install the proper air line fitting.
3. Attach the air line from the clamp and restore the air supply to the machine.

### 3.5. Mandrel Height Adjustment (Figure 9)

Depending on the connector and inserter configuration, the height of the mandrel and connector fixture may require adjustment. To adjust the mandrel height:

1. Using a 5/32-in. hex wrench, loosen the locking screw on the mandrel mounting area. The locking screw is accessible through a hole in the mandrel, as shown in Figure 9.
2. Turn the height-adjustment wheel until the desired height is reached. Turning the wheel **CLOCKWISE** RAISES the mandrel assembly, and turning the wheel **COUNTERCLOCKWISE** LOWERS the mandrel assembly.
3. Tighten the locking screw with a 5/32-in. hex wrench.

Refer to the instructions supplied with the tooling package for specific mandrel height adjustment procedures.

### 3.6. Insertion Depth and Clearance Adjustment

To compensate for the variety of wire types and insulation diameters used, the insertion depth and inserter-to-connector clearance can each be adjusted. These adjustments position the inserters at the correct distance from the mandrel for optimum termination. Refer to the instructions supplied with the inserters for adjustment procedure.

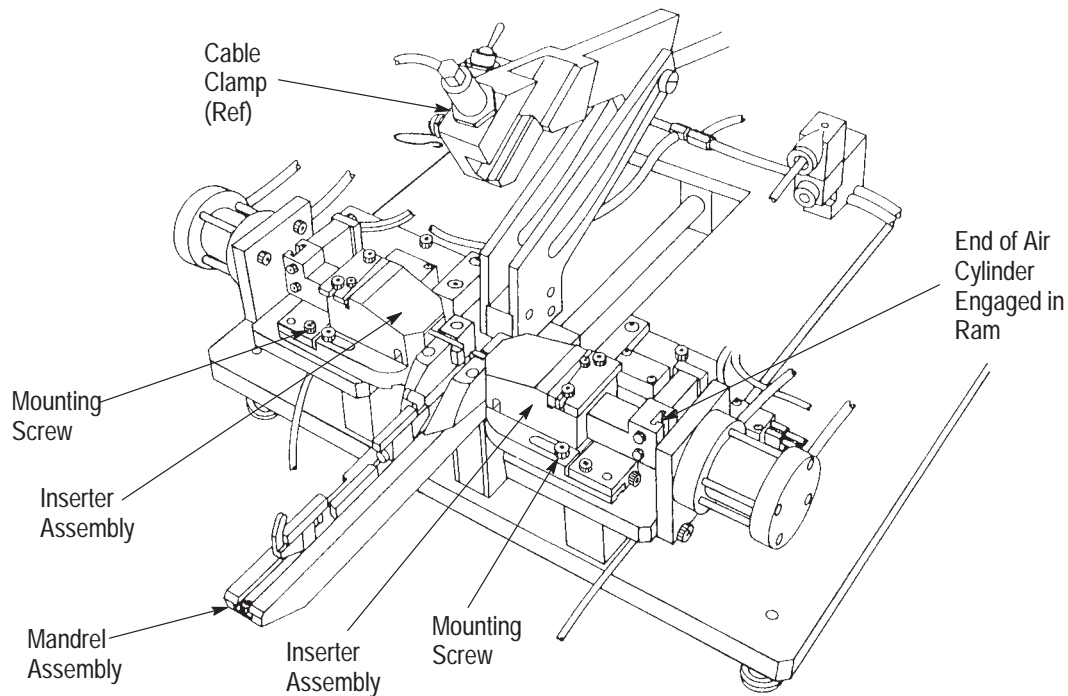


Figure 7

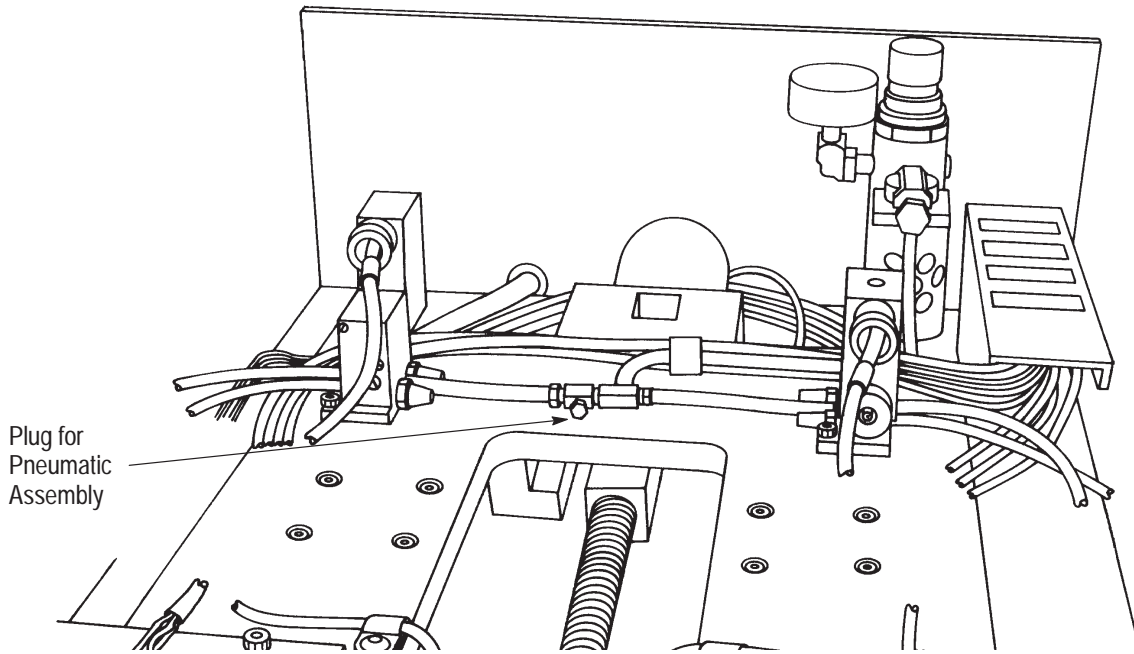


Figure 8

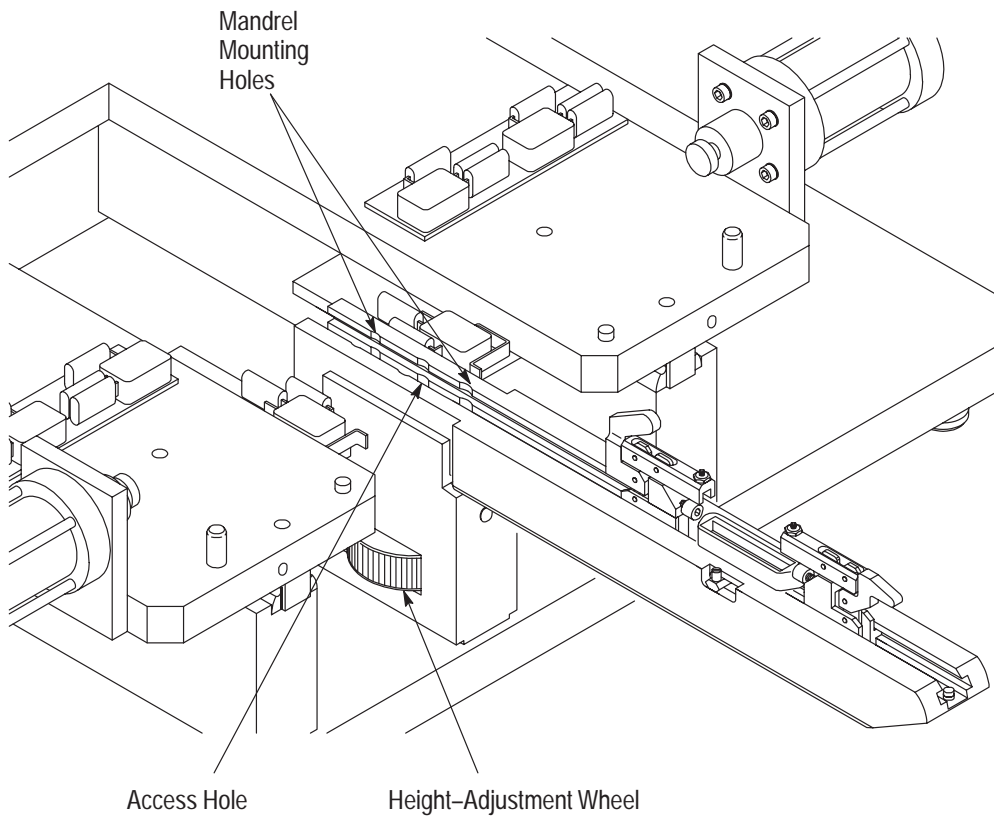


Figure 9

#### 4. OPERATING PROCEDURE

The CHAMPOMATOR 2.5 Machine is operated through a control module, which is used to program the connector-loading sequences and to guide the operator through the machine's functions. An illustration of the module's front panel is shown in Figure 10.

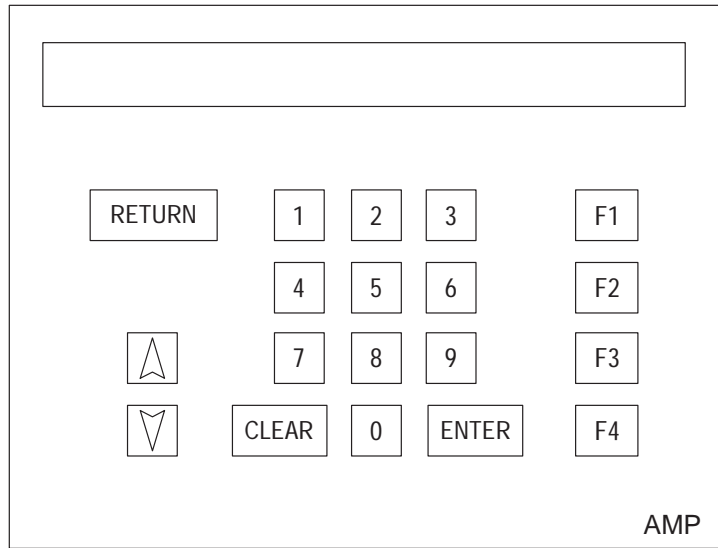
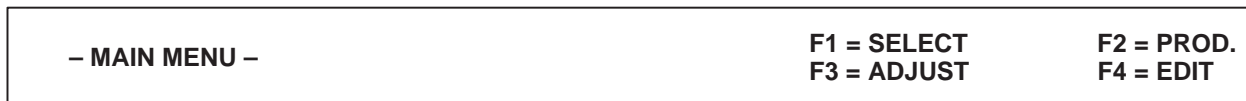


Figure 10

**NOTE** For additional information on the control module used with the CHAMPOMATOR 2.5 Machine, refer to customer manual 409-5791.

Before operating the machine, make sure that the air supply is connected to the machine, that the control module is properly powered and connected to the machine. Turn the control module (and the machine) ON by pushing the switch located on the back of the module.

Once the machine and module have been powered, the module will display the Main Menu:



##### 4.1. Selecting Part Numbers

The operator's first action is to choose a connector part number from the machine's memory. The machine can store up to 350 different operator-programmed part numbers. For additional information on programming part numbers, refer to Paragraph 4.4, Creating/Editing Part Numbers.

To select a part number, press the F1 (SELECT) key on the control module. The module will then display the Part Selection screen:



This screen permits the operator to select a known part number or to view all existing part numbers.

**NOTE** On most screens, the F4 function, labeled "MENU" will be displayed. This function will return the module to the next higher screen level.

To select a known part number, type in the number on the numeric keypad, then press the ENTER key. If a mistake is made while typing in the number, pressing the CLEAR key will clear the field, permitting the operator to re-type the part number. Once the part number is entered, the module will return to the Main Menu.

## 4.2. Viewing Part Numbers

To view the list of part numbers in the machine's memory, start on the Main Menu, then press the F1 (SELECT) key, then the F3 (VIEW) key. The screen will change to indicate the part number and connector type:

<b>P/N = 1</b> <b>TYPE = AMPLTE 050</b>	<b>F1 = NEXT</b> <b>F3 = SELECT</b>	<b>F2 = DATA</b> <b>F4 = MENU</b>
--	--	--------------------------------------

Pressing the F1 (NEXT) key will cause the module to display the information on the next part number in the machine's memory. To view additional information on the part number displayed, press the F2 (DATA) key. The screen will change to show the number of connector–position pairs:

<b>P/N = 1</b> <b>PAIRS = 25</b>	<b>F1 = NEXT</b> <b>F3 = SELECT</b>	<b>F2 = DATA</b> <b>F4 = MENU</b>
-------------------------------------	--	--------------------------------------

For most applications, the display should indicate one–half the number of connector positions. For example, "PAIRS = 25" indicates a 50–position connector.

As in the previous screen, pressing the F1 (NEXT) key will cause the module to display the information on the next part number in the machine's memory. Pressing the F2 (DATA) key will cause the module to display the cable dress information for the part number:

<b>P/N = 1</b> <b>DRESS = 180°</b>	<b>F1 = NEXT</b> <b>F3 = SELECT</b>	<b>F2 = DATA</b> <b>F4 = MENU</b>
---------------------------------------	--	--------------------------------------

The cable dress is given as either 180° or NORMAL. Pressing the F1 (NEXT) key will cause the module to display the cable dress information on the next part number in the machine's memory. Pressing the F2 (DATA) key will cause the module to display information on skipped positions (if any) for the part number:

<b>P/N = 1</b> <b>SKIPS = NONE</b>	<b>F1 = NEXT</b> <b>F3 = SELECT</b>	<b>F2 = DATA</b> <b>F4 = MENU</b>
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In the above display, the connector loading sequence does not make use of skips, so the word "NONE" is displayed in the SKIPS field. If the part number is programmed with skips, the SKIPS field will indicate the position of the skips, along with the proper side of the connector for the skip.

<b>P/N = 1</b> <b>SKIPS = 12LR</b>	<b>F1 = NEXT</b> <b>F3 = SELECT</b>	<b>F2 = DATA</b> <b>F4 = MENU</b>
---------------------------------------	--	--------------------------------------

In the above example, the machine will NOT terminate a wire in either the left or right side of the connector, at the 12th position.

**NOTE**

*The position number indicates the PAIR of connector contacts, relative to the first connector position. The connector side is indicated by an "L" or an "R". In the above example, 12LR indicates the 12th contact, and both the left and right sides.*

As before, pressing F1 (NEXT) will display the skips information for the next part number in the machine's memory. Pressing the F2 (DATA) key will permit viewing of all skips for the part number.

**NOTE**

*A part number can be selected at any time by pressing F3 (SELECT).*

## 4.3. Production Run

Once a part number is selected, the production run may be started. From the Main Screen, touch the F2 (PROD) key. If the machine needs to be homed, the screen will show:

<p style="text-align: center;"><b>&lt;- HOMING CARRIAGE -&gt;</b> <b>INSERTER WILL MOVE</b></p>	<p style="text-align: center;"><b>F1 = CONTINUE</b></p> <p style="text-align: right;"><b>F4 = MENU</b></p>
---	--

If the machine has been previously homed, the screen will display:

<p style="text-align: center;"><b>P/N = 50</b> <b>LOAD TO START</b></p>	<p style="text-align: right;"><b>F4 = MENU</b></p>
---	--

This screen prompts the operator to press the LOAD button on the front of the machine. Once the LOAD button is pressed, the screen will change to make sure that the operator does, indeed, wish to start the procedure.

At this point, the connector is loaded into the connector fixture on the mandrel. Refer to the instructions packaged with the tooling kit for detailed information on placement of the connector in the fixture.

The cable, properly stripped, should also be placed in the cable clamp. Again, refer to the instructions packaged with the cable clamp for details.

Once the connector is placed, the connector clamps are locked, and the cable is placed in the clamp, refer to the control module screen:

<p style="text-align: center;"><b>P/N = 50</b> <b>INDEX TO BEGIN</b></p>	<p style="text-align: right;"><b>F4 = MENU</b></p>
--	--

This screen prompts the operator to press the INDEX and LOAD buttons (simultaneously) on the front of the machine. When the INDEX and LOAD buttons are pressed, the carriage will move, bringing the inserters into line with the first pair of connector contacts. The screen will then show:

<p style="text-align: center;"><b>P/N = 50</b> <b>PAIR = 1LR</b></p>	<p style="text-align: right;"><b>F4 = MENU</b></p>
--	--

At this time, the operator takes the first pair of wires from the cable, and then brings the wires down to the inserters, making sure that the wires engage the wire-receiving slot. When the wires enter the slot and trigger the wire sensor switches, the inserters will extend, terminating the wire.

After the wire is terminated and trimmed, the operator continues pulling the trimmed wire ends downward, and then disposes of them.

**NOTE** *It is suggested that a scrap wire bin be placed under the insertion area to permit easy disposal of the trimmed wire ends.*

When the termination is complete, the carriage will move to the next position. Repeat the above procedure until the connector is fully terminated.

When the connector is completed, and only if the 180° cable dress is used, the machine will prompt the operator to open the cable clamp:

<p style="text-align: center;"><b>P/N = 50</b> <b>REMOVE CLAMP -&gt; LOAD</b></p>	<p style="text-align: right;"><b>F4 = MENU</b></p>
---	--

The operator then moves the cable clamp toggle switch to the "OPEN" position, then presses the LOAD button on the front of the machine.

**CAUTION** *If using the "normal" cable dress in the loading sequence, do NOT press the LOAD button until the cable clamp is opened. Failure to open the cable clamp will result in damaged wires or connector.*

When the LOAD button is pressed, the carriage will return to the "load/unload" position, and the module will display:

<p style="text-align: center;"><b>P/N = 50</b> <b>LOAD CONNECTOR -&gt; INDEX</b></p>	<p style="text-align: right;"><b>F4 = MENU</b></p>
--	--

The operator may then open the connector clamps, remove the completed connector, and load a new connector and cable. Once the connector and cable are placed, pressing the INDEX and LOAD buttons (simultaneously) on the front of the machine will position the carriage and inserters at the first connector position.

#### 4.4. Creating/Editing Part Numbers

When on the Main Menu, pressing the F4 (EDIT) key will permit the operator to create or edit a part number. Before any part numbers can be created or changed, however, the operator must enter the appropriate access code:

<p><b>ENTER ACCESS CODE =</b></p>	<p><b>F4 = MENU</b></p>
---------------------------------------	-------------------------

**NOTE** *If you do not have an access code, check with your supervisor or contact your AMP Representative for assistance.*

The operator types in the correct access code, then presses the ENTER key. No additions or changes to the part number file may be made until the correct access code is entered. When the correct code is entered, the control module will display the Edit Part File screen:

<p><b>EDIT PART FILE</b></p>	<p><b>F1 = ENTER F3 = VIEW</b></p>	<p><b>F2 = DEL. F4 = MENU</b></p>
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#### A. Deleting Part Numbers

Pressing F2 (DEL) permits the operator to delete a part number from the machine's memory. When the F2 key is pressed, the module will display:

<p><b>ENTER P/N P/N =</b></p>	<p><b>F4 = MENU</b></p>
-----------------------------------	-------------------------

The operator types in the part number to be deleted, then presses the ENTER Key. The machine will prompt the operator with:

<p><b>DELETE PART ? P/N =</b></p>	<p><b>F1 = YES</b></p>	<p><b>F2 = NO F4 = MENU</b></p>
---------------------------------------	------------------------	-------------------------------------

To confirm the deletion, the operator presses the F1 (YES) key. To cancel the operation, the operator presses the F2 (NO) key.

#### B. Creating/Editing Part Numbers

With the Edit Part File screen displayed, pressing the F1 (ENTER) key or the F3 (VIEW) key causes the module to display:

<p><b>ENTER P/N P/N =</b></p>	<p><b>F4 = MENU</b></p>
-----------------------------------	-------------------------

**NOTE** *The process for creating and editing part numbers are virtually identical. Once the function is selected for the Edit Part File screen, this procedure may be used for either creating or editing a part number.*

The operator types in the desired part number, then presses the ENTER key. The module then prompts the operator to confirm the connector type:

<p><b>P/N = 310 TYPE =</b></p>	<p><b>F1 = YES</b></p>	<p><b>F2 = NO F4 = MENU</b></p>
------------------------------------	------------------------	-------------------------------------

If the connector type that is displayed is not correct, pressing the F2 (NO) key will cause the next connector type to be displayed. The operator continues scrolling through the connector types until the desired one is reached. When the correct connector type is displayed, the operator presses the F1 (YES) key.

When the F1 (YES) key is pressed, the module will then prompt the operator for the correct number of contact pairs:

<b>P/N = 310</b> <b>ENTER # PAIR</b>	<b>F4 = MENU</b>
---	------------------

The operator types in the correct number of pairs of terminations, then presses the ENTER key. When the number of termination pairs is entered, the module will then display:

<b>P/N = 310</b> <b>END LOCATION TOOLING?</b>	<b>F1 = YES</b>	<b>F2 = NO</b> <b>F4 = MENU</b>
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If applying AMPLIMITE .050 Series connectors, the operator should select F1 (YES), otherwise the operator should select F2 (NO). The module prompts the operator for the correct cable dress:

<b>P/N = 310</b> <b>180° DRESS?</b>	<b>F1 = YES</b>	<b>F2 = NO</b> <b>F4 = MENU</b>
--	-----------------	------------------------------------

If the 180° cable dress is desired, the operator presses the F1 (YES) key. Otherwise, the “normal” cable dress is assumed when the operator presses the F2 (NO) key. Once the F1 (YES) or F2 (NO) key is pressed, the module prompts the operator for skips:

<b>P/N = 310</b> <b>ANY WIRES SKIPPED?</b>	<b>F1 = YES</b>	<b>F2 = NO</b> <b>F4 = MENU</b>
---	-----------------	------------------------------------

If any connector positions are to be skipped, the operator presses the F1 (YES) key. The module will then prompt the operator for the position of the first skip:

<b>P/N = 310</b> <b>SKIPS =</b>	<b>ENTER PAIR</b> <b>F3 = DONE</b>	<b>F4 = MENU</b>
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The operator keys in the termination pair number that is to be skipped, then presses the ENTER key. The module will then prompt for the connector side(s) to skip:

<b>P/N = 310</b> <b>SKIPS = 12</b>	<b>F1 = LEFT</b> <b>F3 = BOTH</b>	<b>F2 = RIGHT</b> <b>F4 = MENU</b>
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If only the left side is to be skipped, the operator presses the F1 (LEFT) key. If only the right side is to be skipped, the operator presses the F2 (RIGHT) key. If both sides are to be skipped, the operator presses the F3 (BOTH) key.

The module then returns to the “ENTER PAIR” screen, shown above. If additional skips are desired, the operator repeats the procedure. If no more skips are to be programmed, pressing the F3 (DONE) key will cause the module to display:

<b>P/N = 310</b> <b>SAVE IN PART FILE?</b>	<b>F1 = YES</b> <b>F3 = REVIEW</b>	<b>F2 = NO</b> <b>F4 = MENU</b>
---	---------------------------------------	------------------------------------

If all information is correct, pressing the F1 (YES) key will cause the part number to be saved in the machine’s memory. If the part number is NOT to be saved, pressing the F2 (NO) key will cancel the edit operation. If desired, the part number information can be reviewed by pressing the F3 (REVIEW) key.

#### 4.5. Adjusting the Machine

From the Main Menu, pressing the F3 (ADJUST) key permits the operator to adjust the relative position of the carriage and inserters to align with the first connector position. When the F3 (ADJUST) key is pressed, the module asks the operator to supply an access code, as described in Section 4.4, Creating/Editing Part Number. Once the proper code is entered, the module displays:

<p><b>&lt; ADJUST POSITION &gt;</b>  <b>STEPS = ± 33    OLD = 33</b></p>	<p><b>F1 = STORE NEW OFFSET</b>  <b>F4 = MENU</b></p>
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**DANGER** *Immediately after the proper ACCESS code is entered (after selecting F3), the machines' carriage will automatically move the inserters to the first connector position. Be sure to keep hands away from the insertion area when performing this step.*

Pressing the arrow keys on the control module permits the operator to move the stepper motor that controls the position of the carriage. The "STEPS" field on the display reports the relative position of the carriage.

Reducing the step number will move the inserter assemblies AWAY from the operator; increasing the step number will move the inserter assemblies TOWARD the operator. Each step is equivalent to moving the inserter assemblies .0254 mm [.001 in.].

When the desired position is reached, pressing the F1 (STORE NEW OFFSET) key returns the module to the Main Menu.

**CAUTION** *Adjustment of the machine must be done with extreme care to avoid damaging the inserters.*

#### 5. PREVENTIVE MAINTENANCE

Preventive maintenance for the CHAMPOMATOR 2.5 Bench Terminating Machine, compared with other machines, is extremely easy. The machine is designed to operate with minimum upkeep.

**DANGER** *To prevent personal injury, ALWAYS turn off electrical power and disconnect the air supply before doing preventive maintenance.*

##### 5.1. Periodic Cleaning

To maintain the proper operation of the machine, it should be checked and cleaned regularly, especially in the areas where tooling or other components may move. Using a brush or soft, lint-free cloth, brush or wipe away dust, dirt, wire scrap, or contaminants that may interfere with correct machine operation. If desired, compressed air may also be used to clear areas of the machine not easily reached by a brush or cloth.

**DANGER** *Compressed air used for cleaning must be reduce to less than 206.8 kPa [30 psi], and effective chip guarding and personal protective equipment (including eye protection) must be used.*

##### 5.2. Lubrication

The drive screw for the carriage should be lubricated with commercially-available, medium-weight white lithium grease. The spring-loaded wire clamp in the inserter packages should also be lubricated with a good-quality light machine oil to ensure optimum service. Be sure to wipe off any excess oil. Refer to the instructions packaged with the tooling package for details on lubrication.

##### 5.3. Air Line Maintenance

The moisture separator, located after the air-line inlet on the machine, should be drained regularly. To drain the separator, open the valve on the bottom of the reservoir. Be sure to close the valve after the separator is drained.

Check that the air pressure is maintained as listed under Air Requirements in Figure 2.

#### 6. SPARE PARTS

Figure 11 lists the customer-replaceable spare parts for the CHAMPOMATOR 2.5 Bench Terminating Machine. The list is broken down into two categories: Expendable Tooling and Recommended Spare Parts.

The first category, Expendable Tooling, lists parts that, given sufficient time, will become worn. It is recommended that sufficient quantities of these parts be stocked to prevent unnecessary machine downtime.

**EXPENDABLE TOOLING**

PART NUMBER	DESCRIPTION
762705-1	Modification, Switch
983300-1	Switch
MTP-95-547‡	Wilerson Filter Element

**RECOMMENDED SPARE PARTS**

PART NUMBER	DESCRIPTION
762196-1	Stepper Motor
980311-3	Watson Air Cylinder
984911-1	C&C Air Cylinder
985111-1	Winfred Berg Needle Bearing
MK3-K1‡	Numatics Mark 3 Valve Repair Kit

‡ Vendor part number. Contact AMP Representative for assistance.

Figure 11

The second category, Recommended Spare Parts, lists items that should be kept on hand. These items, while not wearing parts, may eventually require replacement. Also included are items that may aid in repairing some machine components.

**7. TROUBLESHOOTING**

This section is intended as a guide to help in properly adjusting and maintaining the machine. For problems not covered in this guide, contact your local representative.

PROBLEM	PROBABLE CAUSE	SOLUTION
Marks on insulation from the wire clamp.	Clamp force too great.	Adjust the wire clamp force by using a .050-in hex wrench. Turn the adjustment screw COUNTERCLOCKWISE to decrease the force.
	Insertor set for smaller insulation diameter.	Adjust the insertor using the proper gage for the insulation diameter being used. Refer to the instructions supplied with the tooling kit.  <b>NOTE</b> <i>Re-adjust the insertor assemblies every time the insulation diameter is changed.</i>
Wires too long in the wire window.	Clamp force too weak.	Adjust the wire clamp force by using a .050-in hex wrench. Turn the adjustment screw CLOCKWISE to increase the force.
Wire too short in the wire window.	Operator is placing too much tension on wires as they are placed in the wire slots.	Reduce the tension placed on the wires when inserting into the wire slots.
	Clamp force too weak.	Adjust the wire clamp force by using a .050-in hex wrench. Turn the adjustment screw CLOCKWISE to increase the force.

PROBLEM	PROBABLE CAUSE	SOLUTION
Insulation being nicked by adjacent contact.	Machine offset not properly adjusted.	Re-adjust machine offset as described in Paragraph 4.5 of this manual.
Wire not being retained in contact.	Wire not being inserted deeply enough.	Increase insertion depth as described in instructions supplied with tooling kit.
	Wire being inserted too deeply.	Decrease insertion depth as described in instructions supplied with tooling kit.
Contacts being hit by the inserter.	Mandrel height not properly set.	Adjust mandrel height as described in Paragraph 3.5 of this manual.
	Mandrel is loose.	Tighten set screw in the mandrel support.  <b>NOTE</b> <i>If this condition persists after making the recommended adjustments, check the product for conformance to print.</i>
Contacts being bent sideways.●●	Contacts deflected by tie bar.●●	Adjust the set screws in the connector clamp as described in the instructions supplied with the tooling kit.
Erratic insertions at connector ends.††	Inserter tip hitting connector clamp.††	Adjust 8-32 socket head cap screw on connector clamp. Use semi-permanent thread sealant to secure the screw setting.
Erratic insertion depth.	Inserter is retracting prior to completion of the stroke.	<ol style="list-style-type: none"> <li>Using the controller, enter the diagnostics mode.</li> <li>Disconnect the air supply from the machine, then manually extend the inserter until a .038mm [.015 in.] gap is attained between the inserter housing and the insertion depth adjustment block.</li> <li>Refer to Section 5 (DIAGNOSTICS MODE) of CM 5791. While viewing the Input Test screen (3) on the controller, adjust the inserter vane until the "inserter extended" switch changes from "off" to "on."</li> <li>Retract the inserter(s), exit the diagnostics mode, and reconnect the machine's air supply.</li> </ol>
	Connector clamp not securely holding connector.	Adjust the connector clamps accordingly.

●● Applies only to AMPLIMITE .050 Series Connectors.

†† Applies only to AMPLIMITE and CHAMP .050 Series Connectors.

**NOTE**

*The nominal clearance between the inserter vane and the proximity sensor is 1.524 mm [.060 in.].*

## 8. REVISION SUMMARY

Since the previous release, the following changes and additions were made to this document:

Per EC 0990-0220-04:

- Updated format
- Added Paragraph 3.3, Step 5, and Figure 5