

**PROPER USE GUIDELINES**

Cumulative Trauma Disorders can result from the prolonged use of manually powered hand tools. Hand tools are intended for occasional use and low volume applications. A wide selection of powered application equipment for extended-use, production operations is available.

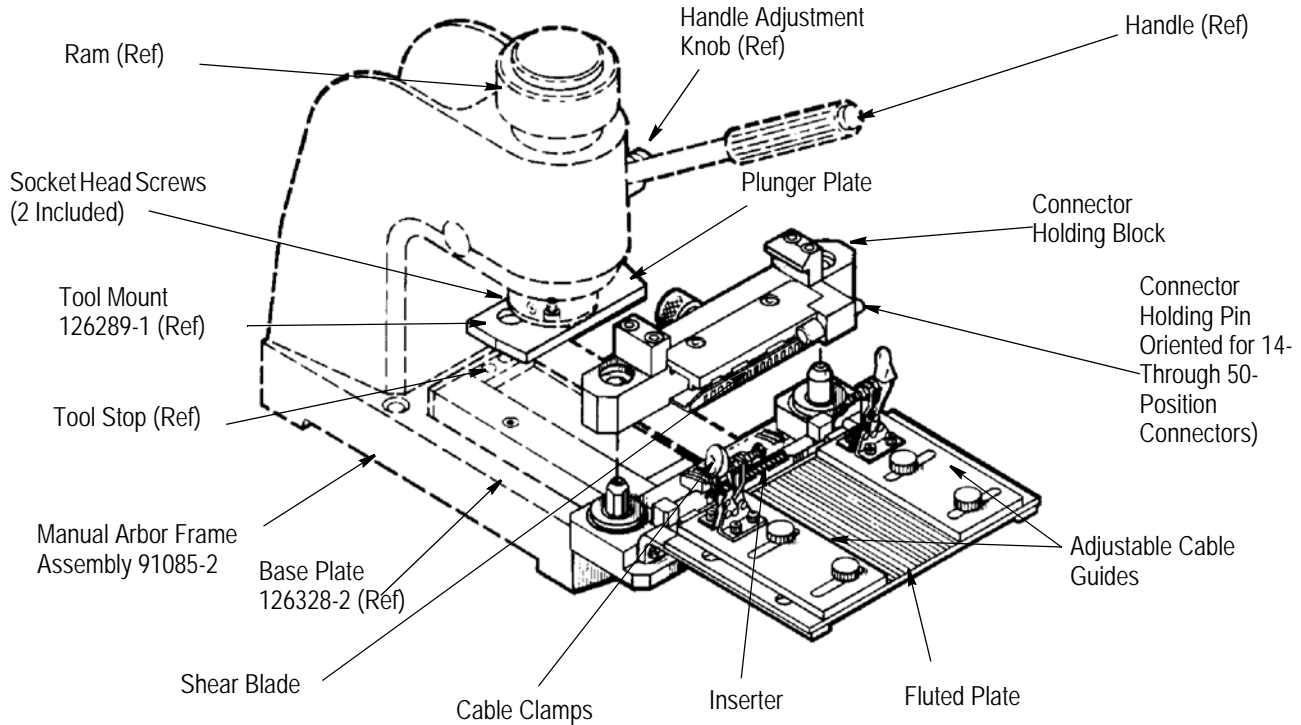
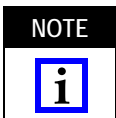


Figure 1

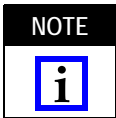
**1. INTRODUCTION**

CHAMP Connector Applicator 231592-2 is designed to terminate unstripped laminated cable to CHAMP cable connectors. The applicator is used with manual arbor frame 91085-2.

Termination is made by using the insulation displacement technique of inserting unstripped wire between two contact beams to displace the insulation and produce a reliable electrical path between the conductor and contact.



*This applicator can be ordered separately or combined with the manual or pneumatic frame assembly as a unit. Refer to the table in Figure 7.*



*All dimensions on this sheet are in millimeters [with inch equivalents in brackets]. Figures and illustrations are for identification only and are not drawn to scale.*

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

**2. DESCRIPTION**

The tooling assembly will accept connector sizes with 14, 24, 36, and 50 positions and, by using the conversion kit included with the tooling, the 64-position connector size will also be accepted. See Figure 1.

The upper tooling includes a plunger plate that is attached to the tool mount with two socket head cap screws. The lower tooling slides into the base plate and features two cable clamps, two adjustable cable guides, a fluted plate, an inserter, an inner comb (used as a cable stop), a removable connector holding block, and a shear blade.

The upper tooling applies even pressure on the housing assembly. The lower tooling maintains alignment of the cable and housing assembly. The inserter stuffs conductors into the contacts and the shear blade cuts off excess cable during termination.

**3. SETUP PROCEDURES (Figure 1)**

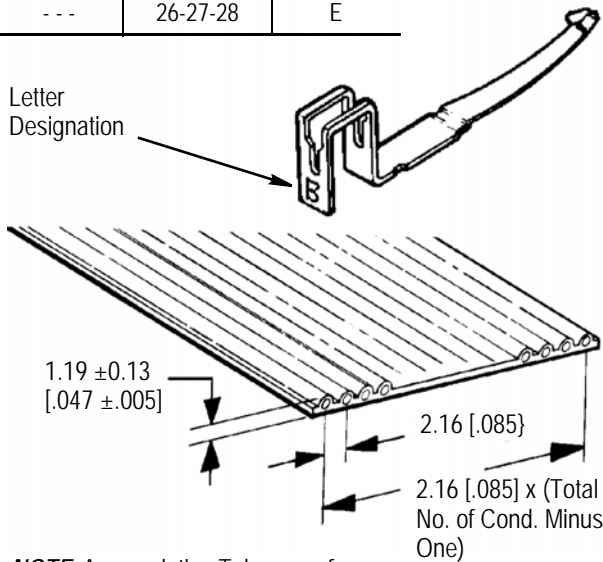
Determine connector size to be terminated and proceed as follows:

1. The 14- through 50-position connector sizes are compatible with the tooling assembly. For 64-position connector size, install conversion kit (packaged with tooling assembly) according to Section 8, TOOL CONVERSION.
2. Secure upper tooling to tool mount and install lower tooling in base plate.
3. For manual applicator, loosen handle adjustment knob and adjust handle to a convenient position, then tighten knob. For pneumatic applicator, connect air hose (ram height adjustment is pre-set).
4. Slide lower tooling away from frame. Remove connector tooling holding block from lower tooling.

**4. CABLE REQUIREMENTS** (Figure 2)

The applicator is designed to terminate laminated cable on 2.16 [.085] centerline spacing in No. 24 through 28 AWG wire size range. Make sure the cable dimensions fall within the tolerances shown in Figure 2. The cable end must be cut 90° to the edge of the cable; otherwise, an improper termination will result.

WIRE SIZE (AWG)		LETTER DES	<i>Cable/Contact Requirements</i>
SOLID	7 STRAND		
24-26	24	B	
- - -	26-27-28	E	



**NOTE:** Accumulative Tolerance for Cable Conductors 7 Through 32 is  $\pm 0.25$  [ $\pm .010$ ]

Figure 2



The materials and manufacturing process used in the production of cable will affect the quality of a finished termination. TE engineering has tested and approved several types. Consult them for a

listing, or send them samples of your cable for evaluation.

Note that CHAMP contacts are designed for specific solid and stranded wire sizes. Refer to the table in Figure 2 for the appropriate wire sizes according to the letter designation stamped on the contact.

**5. INSTALLING CABLE**

Determine the number of contact positions in the housing assembly and divide that number by two (only one side of the housing assembly is terminated at a time).

Refer to the table in Figure 2 and select laminated cable within the specified conductor size and dimensions. Make sure the number of cable conductors is half the number of contact positions in the selected housing assembly.

Refer to Figure 3 and install cable as follows:

1. Raise both cable clamps. Loosen the four cable guide holding screws and slide both cable guides as far away from each other as possible.
2. Place cable on fluted plate with end of cable touching inserter. Check to be sure each cable conductor has entered appropriate flute and each conductor is aligned with a stuffer.
3. Hold cable in position and slide cable guides in until they touch the cable edges. Secure the four holding screws.
4. Slide cable over inserter until cable butts against inner comb.
5. Close both cable clamps to secure cable in place.

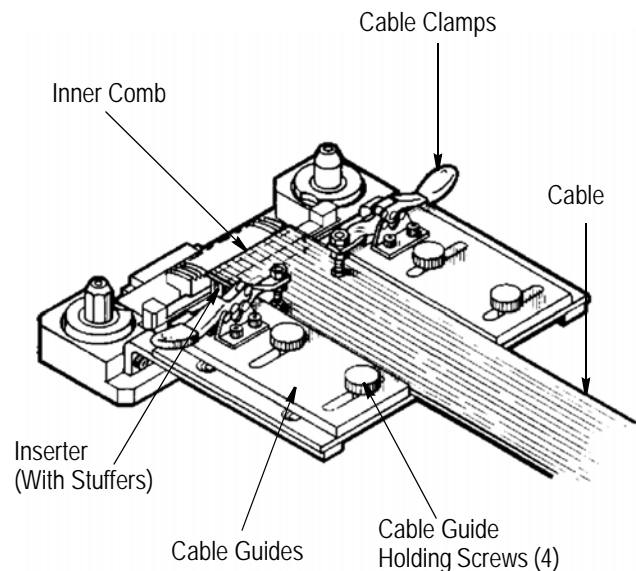


Figure 3

## 6. TERMINATION PROCEDURES

Refer to Figure 4 and terminate housing assembly as follows:

1. Loosen thumb screw in connector holding block and insert a housing assembly (either end first) between upper plate and shear blade until bottomed against connector stop pin.
2. Hold housing assembly in position and tighten thumb screw until torque is apparent.

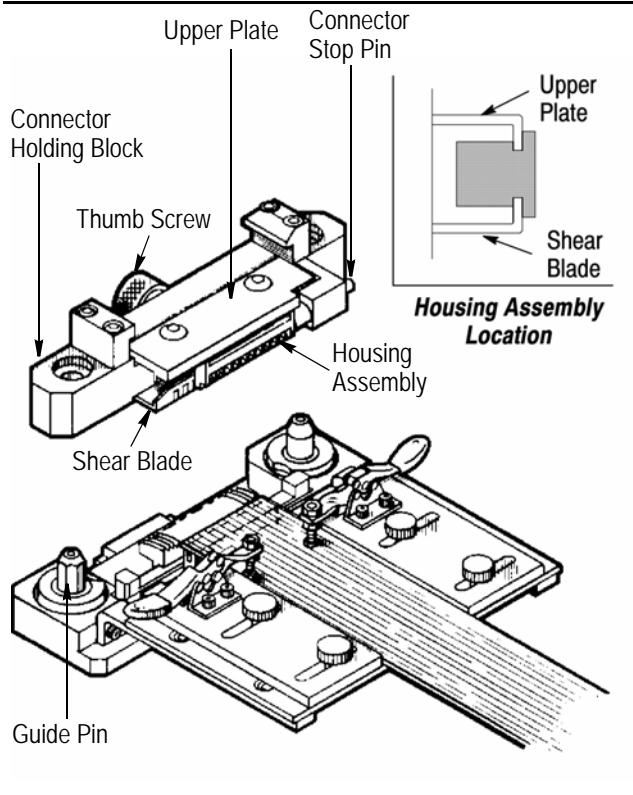


Figure 4

3. Orient connector holding block so shear blade is facing downward and toward cable clamps. Insert connector holding block onto guide posts.
4. Slide lower tooling toward frame until it butts against tool stop in base plate. Upper tooling should enter slots in connector holding block. See Figure 5.
5. Terminate Housing Assembly
  - a. For manual applicator, rotate handle forward until connector holding block bottoms on lower tooling. Return handle to starting position.
  - b. For pneumatic applicator, press and hold the two actuation buttons simultaneously until connector holding block bottoms on lower tooling. Release buttons and the ram will rise.
6. Slide lower tooling away from frame until it butts against stop screw. Release the cable clamps.

7. Remove connector holding block from lower tooling and peel away scrap cable (approx. 6.35 [.250]).

8. Loosen thumb screw and remove housing assembly.
9. Turn housing assembly so that the unterminated contacts are toward the shear blade, then re-insert the housing assembly into the connector holding block until bottomed against connector stop pin.
10. Select and install cable according to Section 5. Repeat steps 2 through 8 of this Section 6, and the connector will be terminated.

## 7. INSPECTION OF TERMINATIONS

Visually inspect the terminations in the housing assembly for the following:

1. Make certain wire is inserted evenly so the insulation is below the V-shaped lead-in on both the contact slot and the strain relief slot.
2. Check that all wires have been sheared to the proper length and no exposed conductor strands are visible.
3. Check that the insulation is NOT cut in any area other than the slot insertion area.
4. Check to be sure the contacts are NOT deformed or crushed.
5. Make certain the conductors have NOT been cut above strain relief slot in the contacts.

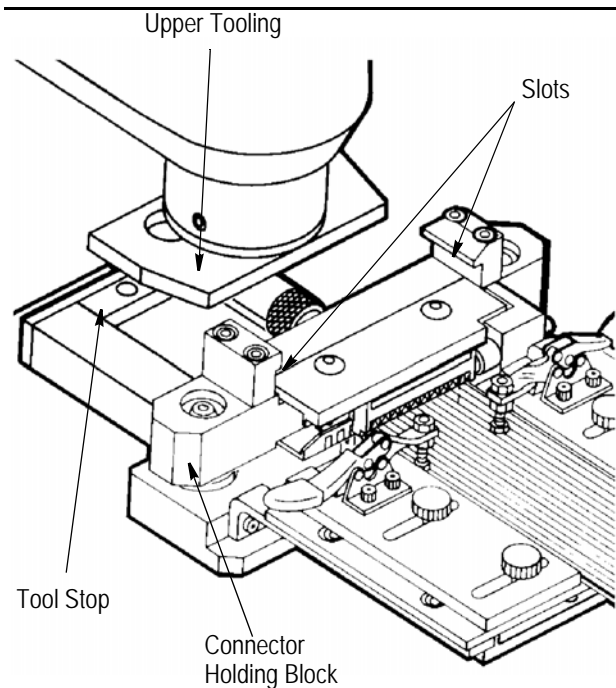


Figure 5



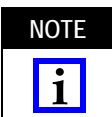
If any of the wires are NOT properly terminated, re-insert them using the T-Handle Insertion Tool 229384-1. The instruction sheet (408-7558) for use of the tool is packaged with the tool.

6. Install strain relief, cover, and/or additional hardware according to Instruction Sheet 408-7564, packaged with the housing assembly.

### 8. TOOL CONVERSION (For 64-Position Connectors)

To convert tooling assembly to terminate the 64-position connector size, proceed as follows:

1. Loosen the two socket head cap screws securing inserter clamp to lower tooling. Lift inserter straight out of tooling; do NOT remove shims when changing the inserter. See Figure 6.



When removing components, retain and identify each so that the components can be used to convert the tool to the original configuration.

2. Align inserter, supplied with conversion kit, with slot between guide base plate and inserter clamp. Make sure polarizing slot is aligned with polarizing pin, and sharp edge of inserter is towards guide pin base plate. See Figure 6.

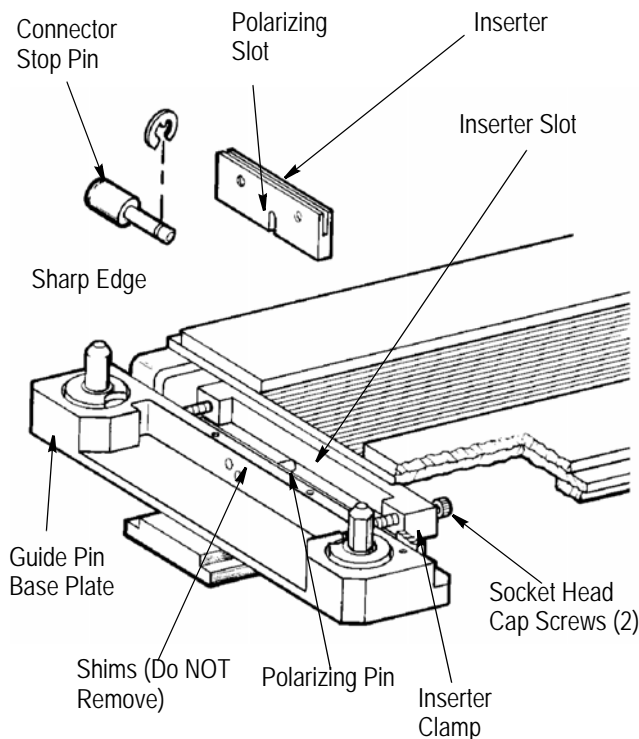
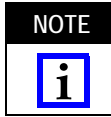


Figure 6

3. Slide inserter into position and secure the two inserter clamp screws.

4. Remove the socket head cap screws and the inner wire comb. Insert the (64-position) inner combs on the lower tooling. Secure with socket head cap screws.



The outer combs included with the conversion kit are not used with this tooling assembly.

5. Remove the retaining ring and the connector stop pin from the connector holding block.

6. Insert the connector stop pin (small end facing toward connector) into the connector holding block until bottomed. Secure in place with retaining ring.

### 9. TOOL CERTIFICATION

CHAMP Applicator 231592-2 for laminated cable has been inspected before shipment and should be certified with the information provided in Figure 7.

The assembly should be inspected upon its arrival at your facility, and at regularly scheduled intervals, to make sure that it has not been damaged through shipment and use.

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

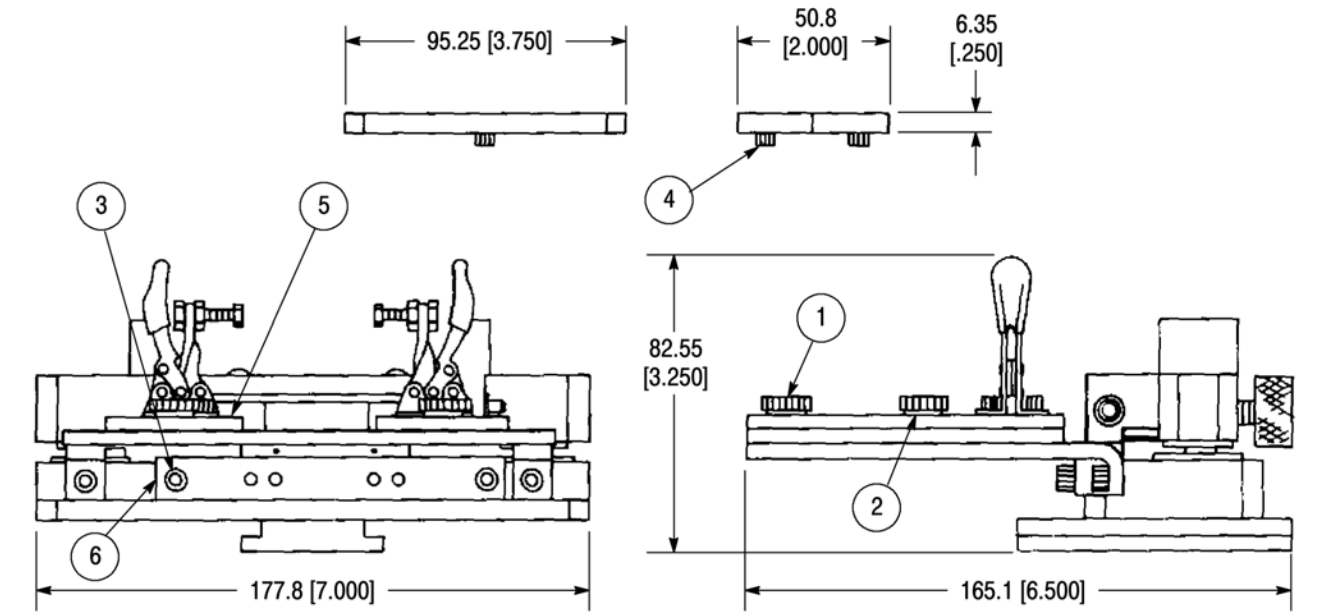
CUSTOMER SERVICE (038-035)  
 TYCO ELECTRONICS CORPORATION  
 PO BOX 3608  
 HARRISBURG PA 17105-3608

Tools may also be returned for evaluation and repair. For tool repair service, contact a Tyco Electronics Representative at 1-800-526-5136.

### 10. REVISION SUMMARY

- Updated document to corporate requirements
- Applied the newest corporate logo





CHAMP APPLICATOR TOOLING		REPLACEMENT PARTS			
DESCRIPTION	PART NUMBER	ITEM	DESCRIPTION	PART NUMBER	QTY PER TOOL
Applicator Only	231592-2	1	SCREW, Thumb	230400-1	4
		2	WASHER	21055-7	4
		3	SCREW, Skt Hd Cap, No. 10-32 x 15.75 [.620]	3-21000-6	2
		4	SCREW, Skt Hd Cap, No. 4-40 x 6.35 [.250]	1-21000-3	2
		5	GUIDE, Cable	230385-1	2
		6	SHIM	230404	As Req
		7	COMB, Inner Wire (14 to 50 posn)	229399-1	1
		8	COMB, Inner Wire (64 posn)	229399-2	1
<i>NOTE:</i> Items 7 and 8 not show.					

Figure 7