

**CAST RESIN TERMINAL STRIPS**  
**PROCEDURES FOR REPLACING BROKEN TERMINALS**  
**USING THE NO. 658B TERMINAL EXTRACTOR**  
**AND THE KS-16748 INSERTER**

**1. GENERAL**

**1.01** This section covers procedures for replacing broken terminals of cast resin terminal strips.

**1.02** This section is reissued to add the P-46F261 and P-46F394 terminals and also to include a method for replacing the terminals.

**1.03** The procedures covered in this section are applicable to most cast resin terminal strips having the following types of terminals: flat punched terminals arranged for soldered connections, Fig. 1(A), and flat punched, Fig. 1(B), (C), and (D), and drawn wire, Fig. 1(E) and (F), terminals arranged for wrapped connections. It is not practicable to apply these procedures to terminal strips having flat punched terminals on which the center spacing of the terminals in either direction is less than 9/32 inch or drawn wire terminals on which this center spacing is less than 3/16 inch.

**1.04** No attempt should be made to replace a terminal of a type not covered in 1.03. Nonreplaceable terminals include terminals which are interconnected within the cast resin block and terminals in blocks having a thickness (dimension along length of terminal) greater than 5/8 inch. Examples of the former are U-shaped terminals (ends of the U appearing on same side of block) and terminals punched in the form of a comb having two terminals projecting from one side of the terminal strip and a number from the other side.

**1.05** All precautions pertaining to the prevention of interference to working circuit must be observed in connection with the replacement of broken terminals.

**1.06** Occasionally, mounting conditions may be encountered which will prevent the application of the procedures as covered herein. In such

cases, it will be necessary to loosen or dismount the terminal strip in order to gain access to the broken terminal.

**2. LIST OF TOOLS AND MATERIALS**

CODE OR SPEC NO.	DESCRIPTION
<b>TOOLS</b>	
658B	Terminal Extractor
KS-8740,	Soldering Copper (or other KS-8740 coppers rated at 95 watts)
List 1	
KS-16748	Insertor
—	4-ounce Riveting Hammer
—	B-Long-nose Pliers
—	All Angle Drill, Albertson and Co, Inc No. 1495-WE (or equivalent)
—	Hand Drill, North Bros Mfg Co No. 1446 (or equivalent)
—	55 Gauge Twist Drill (0.052 inch)
—	1/16-inch Twist Drill
<b>MATERIALS</b>	
P-463179	Terminal (1-3/4 inches long)
P-463180	Terminal (1-9/16 inches long)
P-463181	Terminal (1-3/8 inches long)
P-11A296	Terminal (2 inches long)

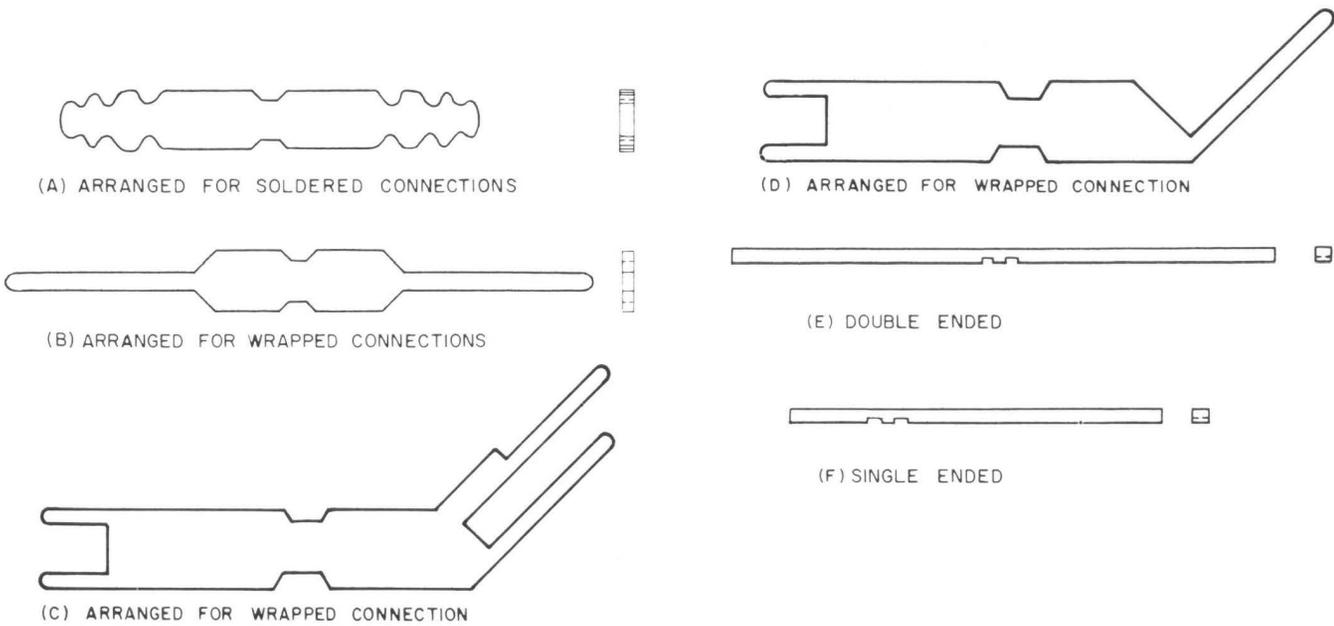


Fig. 1—Replacement Terminals

MATERIALS	DESCRIPTION
P-11A313	Terminal (1-1/2 inches long)
P-11B008	Terminal (1-27/64 inches long)
P-16A200	Terminal (2-5/16 inches long)
P-46F261	Terminal (1-3/4 inches long)
P-46F394	Terminal (1-3/4 inches long)

3. REPLACING BROKEN TERMINAL

General

3.01 Tag and remove the leads from the terminal to be replaced and from the adjacent terminals. Tag and remove any other leads which would interfere with the proper positioning of the extractor (Fig. 2) on the terminals, or which are connected to terminals which might be crossed by the extractor either in removing the broken terminal or in positioning the replacement terminal. After replacing the terminal, reconnect all leads which were removed. When making or removing wrapped

connections, reference should be made to Section 069-132-811.

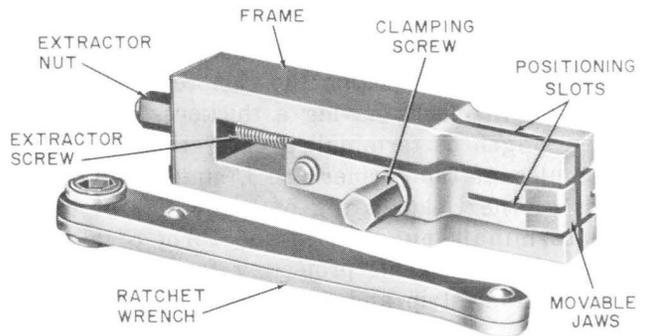
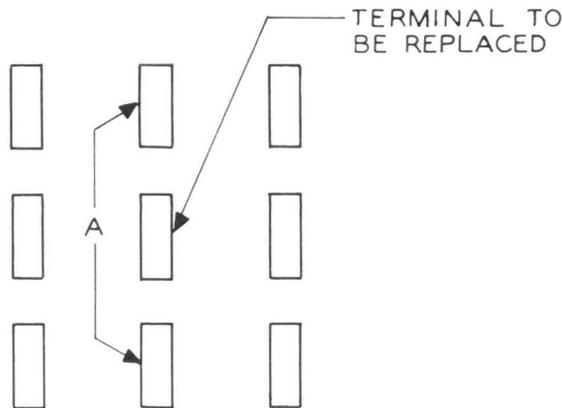


Fig. 2—658B Terminal Extractor

3.02 If soldered connections were made to the terminal to be replaced or to the adjacent terminals, Fig. 3(A), remove all excess solder in order to facilitate proper positioning of the terminal extractor.



**Fig. 3—Terminal To Be Replaced and Adjacent Terminals**

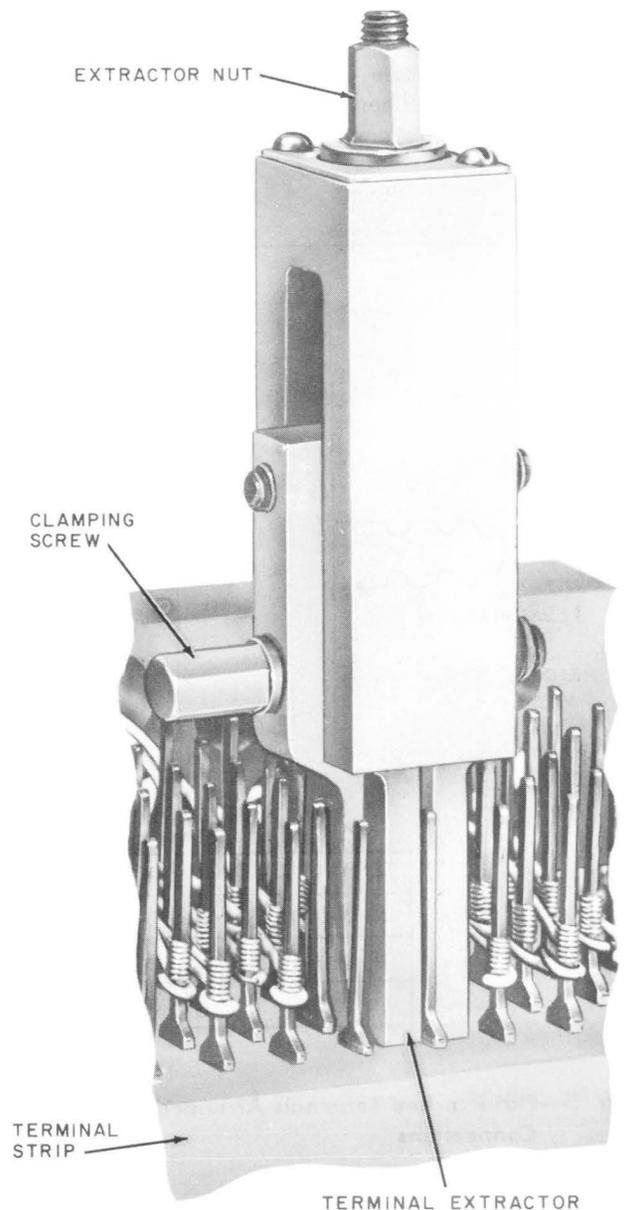
**3.03** If a flat punched terminal is being replaced and the broken end of the terminal to be replaced extends more than about 3/16 inch from the face of the terminal strip, break it off as close as possible to the face of the strip using the B-long-nose pliers. If the stub of the terminal projecting beyond the face of the terminal strip is bent or twisted, straighten it with the B-long-nose pliers to facilitate removal.

#### Removing Broken Terminal

**3.04** Turn the nut on the terminal extractor if necessary to position the jaws so that they project slightly beyond the ends of the legs of the frame. Position the extractor on the terminal strip so that the jaws straddle the undamaged end of the terminal to be replaced and the positioning slots in the legs of the frame engage the adjacent terminals, Fig. 3(A). Press the extractor frame and jaws firmly against the terminal strip, as shown in Fig. 4.

**3.05** Tighten the clamping screw fingertight. Then apply the ratchet wrench to the screw with the side of the wrench marked IN outermost and securely tighten the screw.

**3.06** Tighten the extractor nut fingertight. Then apply the ratchet wrench to the nut with the side marked IN outermost and turn the nut clockwise until the terminal being extracted is free of the terminal strip. If the jaws reach the limit of their travel before the terminal is free of the terminal strip, loosen the jaws and repeat the procedure covered above.



**Fig. 4—Positioning 658B Terminal Extractor**

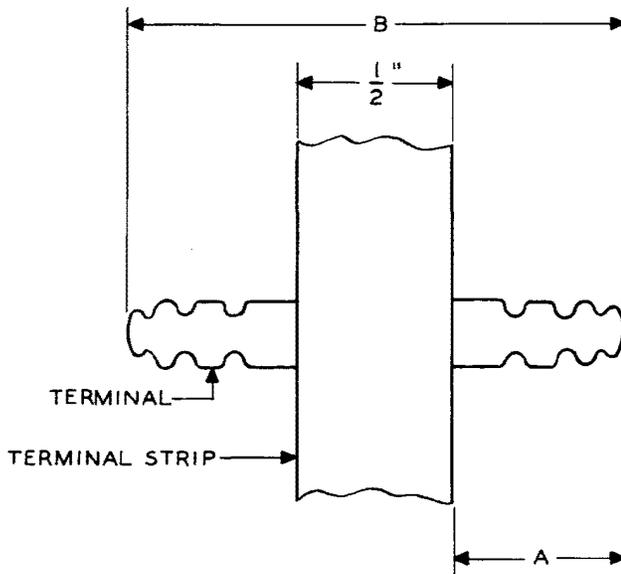
**3.07** Remove the tool from the terminal strip and remove the terminal from the jaws of the extractor.

#### Inserting New Terminal

##### *Flat Punched Terminals Arranged for Soldered Connections*

**3.08** Select the proper replacement terminal as follows. Determine the amount the terminal

should project beyond the terminal strip by measuring the projection of a terminal in the same row, parallel to the base of the strip, as the terminal being replaced. Then refer to Fig. 5 to determine the replacement terminal which will project this distance (DIM A).



TERMINAL	DIM A	DIM B
P-463179	5/8"	1 3/4"
P-463180	17/32"	1 9/16"
P-463181	7/16"	1 3/8"

Fig. 5—Flat Punched Terminals Arranged For Soldered Connections

**3.09** To insert the replacement terminal in the terminal strip, proceed as follows. Grasp one end of the terminal firmly with the B-long-nose pliers. Thoroughly heat the portion of the terminal extending about 1/2 inch from the other end by holding this portion flat against the well-tinned tip of the 95-watt KS-8740 soldering copper for approximately 1 minute. Then immediately insert the heated end of the terminal into the hole from which the broken terminal was removed, inserting the new terminal from the side of the terminal strip at which the other terminal broke. Exerting a steady pressure, push the terminal through the terminal strip until it extends at least 1/8 inch beyond the other side of the strip.

**Caution:** While inserting the new terminal into the terminal strip, take care to keep the heated end away from the insulation of adjacent wires.

**3.10** Grip the 1/8-inch section of the terminal projecting through the terminal strip in the jaws of the 658B terminal extractor following a procedure similar to that covered in 3.04 and 3.05.

**3.11** Using a procedure similar to that covered in 3.06, draw the replacement terminal through the terminal strip until the end of it lines up with the other terminals in the same row parallel to the base of the terminal strip. The use of a piece of paper or other nonconducting material having a straight edge will facilitate proper positioning of the terminal.

**3.12** Loosen the clamping screw on the terminal extractor, using the ratchet wrench applied with the side marked OUT outermost. Occasionally, it may be necessary to loosen the extractor nut to disengage the jaws from the terminal. Remove the tool.

**Flat Punched Terminals Arranged for Wrapped Connections**

**3.13** Using the 1/16-inch twist drill with the hand or electric drill, enlarge the ends of the rectangular hole from which the broken terminal was removed as shown in Fig. 6. To do this, run the twist drill through the hole once at each end of the hole. Take care to hold the drill perpendicular to the face of the block and drill as close to each end of the hole as possible. Insert one end of the replacement terminal, see Fig. 7, into the slotted end of the KS-16748 inserter (Fig. 8) so that the shoulder on the terminal is seated in the slot in the inserter. Insert the free end of the terminal into the hole from which the broken terminal was removed. Push the terminal into the hole until the shoulder of the terminal begins to enter the hole. Then tap the end of the inserter with the 4-ounce riveting hammer until the slotted end of the inserter touches the face of the terminal strip. Remove the inserter from the terminal.

**3.14** Select the proper replacement terminal by referring to Fig. 9 and 10. Using the 0.052-inch twist drill and the hand or electric drill, enlarge the hole from which the broken terminal was removed by running the twist drill through

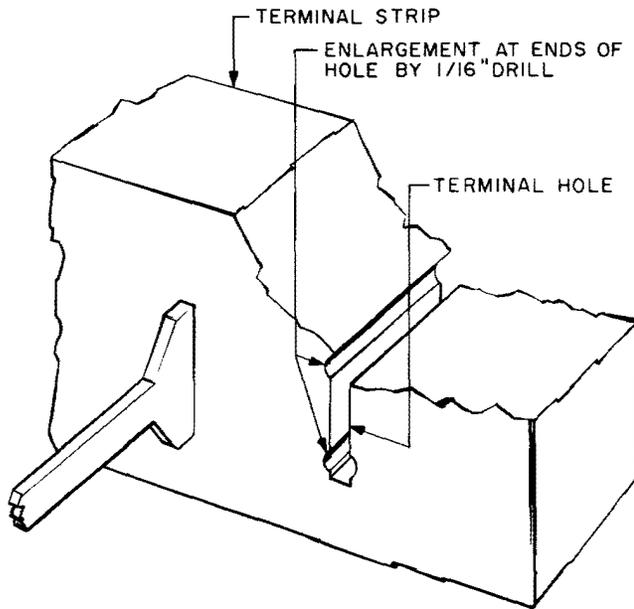


Fig. 6—Enlargement of Ends of Terminal Holes

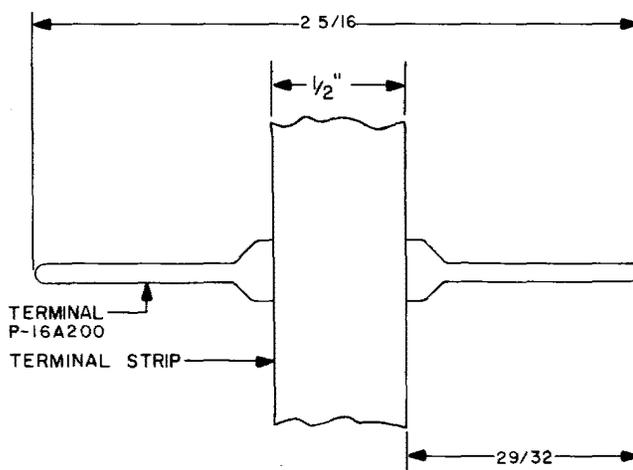


Fig. 7—P-16A200 Flat Punched Terminals Arranged For Wrapped Connection

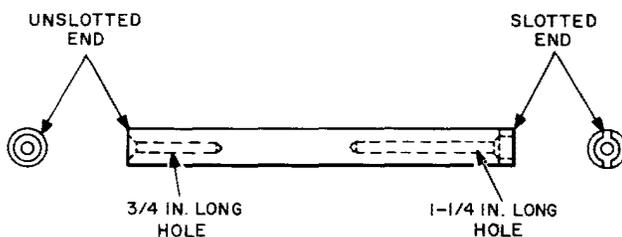


Fig. 8—KS-16748 Inserter

the hole once. Take care to hold the drill perpendicular to the face of the block and drill as close to each end of the hole as possible.

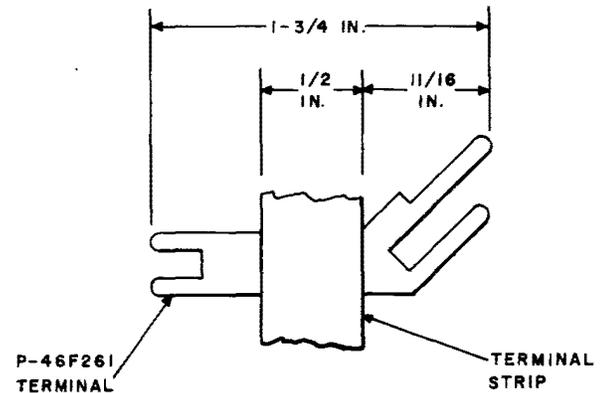


Fig. 9—P-46F261 Flat Punched Terminals Arranged for Wrapped Connections

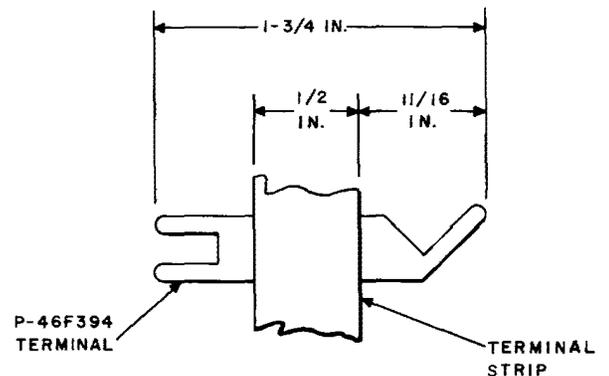


Fig. 10—P-46F394, Flat Punched Terminals Arranged For Wrapped Connections

3.15 To insert the replacement terminal in the terminal strip, proceed as follows. Grasp one end of the terminal firmly with the B-long-nose pliers. Thoroughly heat the portion of the terminal extending about 1/2 inch from the other end by holding this portion flat against the well-tinned tip of the 95-watt KS-8740 soldering copper for approximately 1 minute. Then immediately insert the heated end of the terminal into the hole from which the broken terminal was removed, inserting the new terminal from the side of the terminal strip at which the other terminal broke. Exerting a steady pressure, push the terminal through the

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terminal strip until it extends at least 1/8 inch beyond the other side of the strip.

**Caution:** *While inserting the new terminal into the terminal strip, take care to keep the heated end away from the insulation of adjacent wires.*

**3.16** Grip the 1/8-inch section of the terminal projecting through the terminal strip in the jaws of the 658B terminal extractor following a procedure similar to that covered in 3.04 and 3.05.

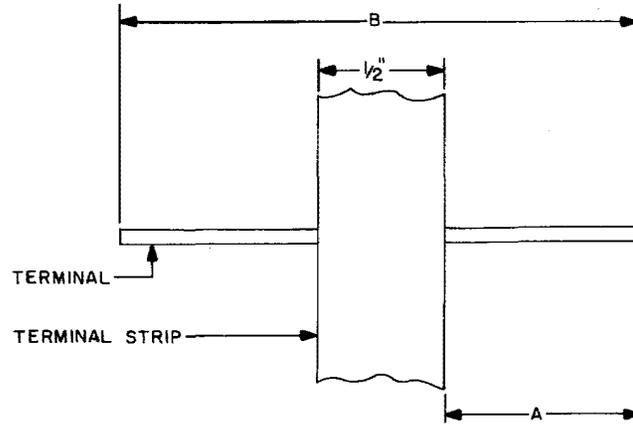
**3.17** Using a procedure similar to that covered in 3.06, draw the replacement terminal through the terminal strip until the end of it lines up with the other terminals in the same row parallel to the base of the terminal strip. The use of a piece of paper or other nonconducting material having a straight edge will facilitate proper positioning of the terminal.

**3.18** Loosen the clamping screw on the terminal extractor, using the ratchet wrench applied with the side marked OUT outermost. Occasionally, it may be necessary to loosen the extractor nut to disengage the jaws from the terminal. Remove the tool.

**Drawn Wire Terminals**

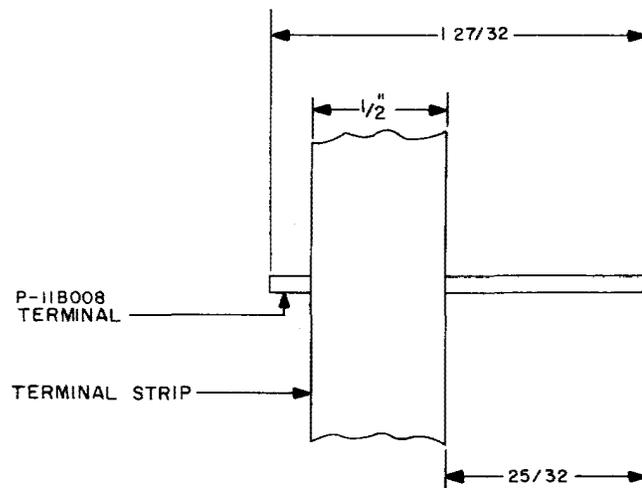
**3.19** Select the proper replacement terminal by referring to Fig. 11 and 12. Using the 0.052-inch twist drill and the hand or electric drill, enlarge the hole from which the broken terminal was removed by running the twist drill through the hole once. Take care to hold the drill perpendicular to the face of the block. Insert one end of the replacement terminal in the slotted end of the KS-16748 inserter. In the case of the single-ended terminal, insert the long end of the terminal (see Fig. 1(F) and Fig. 12) in the tool. Then insert the free end of the terminal into the hole in the terminal strip. (In the case of the single-ended terminal this should be done at the side of the terminal strip from which the long ends of the terminals project.) Tap the end of the inserter with the 4-ounce riveting hammer until the slotted end of the inserter touches the face of the terminal strip. Remove the inserter from the terminal and position the inserter on the terminal so that the terminal is seated in the hole in the unslotted end of the inserter. Tap the slotted end of the inserter with the hammer until the

other end touches the face of the terminal strip. Remove the inserter from the terminal. In the case of the P-11A313 terminal, tap the end of the terminal with the hammer until its ends line up with the ends of the other terminals in the terminal strip.◀



TERMINAL	DIM A	DIM B
P-11A296	3/4"	2"
P-11A313	1/2"	1 1/2"

**Fig. 11—Double-Ended Drawn Wire Terminals Arranged for Wrapped Connections**



**Fig. 12—P-11B008 Single-Ended Drawn Wire Terminals Arranged for Wrapped Connections**