

## CHAPTER 8 GENERAL MAINTENANCE

This chapter contains maintenance procedures for the Model-83 Punch Press. If you encounter a maintenance problem that is not covered in this chapter, contact Spartanics Ltd. or your service representative for help. Spartanics' address and telephone number are listed on the back of the title page of this manual.

There is an Illustrated Dictionary of Tools in Chapter 15 of this manual. It can be used as an aid to identify what tools are required to maintain the press.

### 8.1 POWER CONTROL MAINTENANCE

This section deals with power control problems that the press may have.

#### 8.1.1 RESETTING CIRCUIT BREAKERS

The Model-83 Punch Press is equipped with two circuit breakers -- one on the side of the press and one on the back of the press. See Figure 8.1 A. Wait 30 seconds before resetting a circuit breaker. To reset either breaker, just press on the breaker's button.

#### NOTE

- \* If the circuit breaker on the side of the press cannot be reset, blows again soon after it is reset, or if the press will not work after the breaker is reset, test and (if necessary) replace the breaker according to Section 8.1.2.
- \*
- \* If the circuit breaker on the back of the press blows again soon after it is reset, test and (if necessary) replace the motor according to Section 8.4.

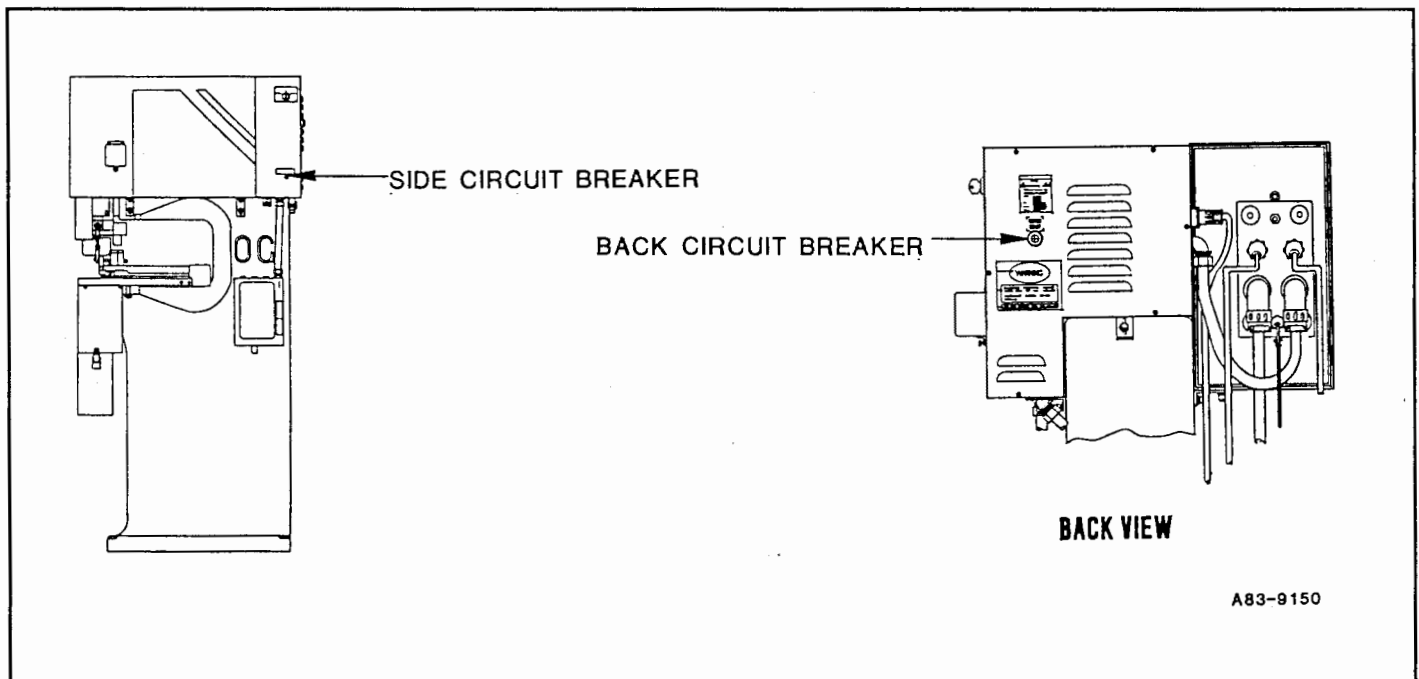


Figure 8.1 A

**8.1.2 ELECTRONICS CIRCUIT BREAKER TEST AND REPLACEMENT**

Test and (if necessary) replace the electronics circuit breaker as follows:

**Tools Needed:**

- > 5/64" hex wrench (Allen wrench)
- > regular pliers
- > volt/ohm meter

1. Turn disconnect switch to "OFF" position. See Section 3.1.5 for location of disconnect switch.
2. Remove back panel screws (201, Fig. 4) with hex wrench and remove back panel (202).
3. Check very carefully for broken or loose wires in the motor starter box. If any broken or loose wires are found, repair them and then recheck the press. See Figure 8.1 B.

**Note**

Be sure reset button is pressed in and stays in by itself before proceeding with this procedure. If reset button will not stay in by itself, go to step 5.

4. Test for 0-5 ohms across the breaker's terminals with volt/ohm meter. See Figure 8.1 B. If 0-5 ohms are not present (breaker is bad), go to step 5. If 0-5 ohms are present (breaker is OK), reattach back panel and replace electronics package according to steps 7-14 in Section 8.1.4.
5. Pull wire lugs off of circuit breaker's terminals. See Figure 8.1 B.
6. Unscrew ring nut (575, Fig. 14) with pliers and pull out circuit breaker (576).
7. Place new circuit breaker in place and secure it in place with ring nut.
8. Push wire lugs on circuit breaker's terminals. It does not matter which lug goes on which terminal.
9. Reattach back panel (202, Fig. 4).



**Note**

Use the Illustrated Parts List in Chapter 11 of this manual as an aid in testing and replacing the circuit breaker. When you see something like "Remove back panel (202, Fig. 4)" in the following procedure, the number (202) refers to a picture of the back panel (and how the back panel is attached to the press) in Figure 4 of the Illustrated Parts List.

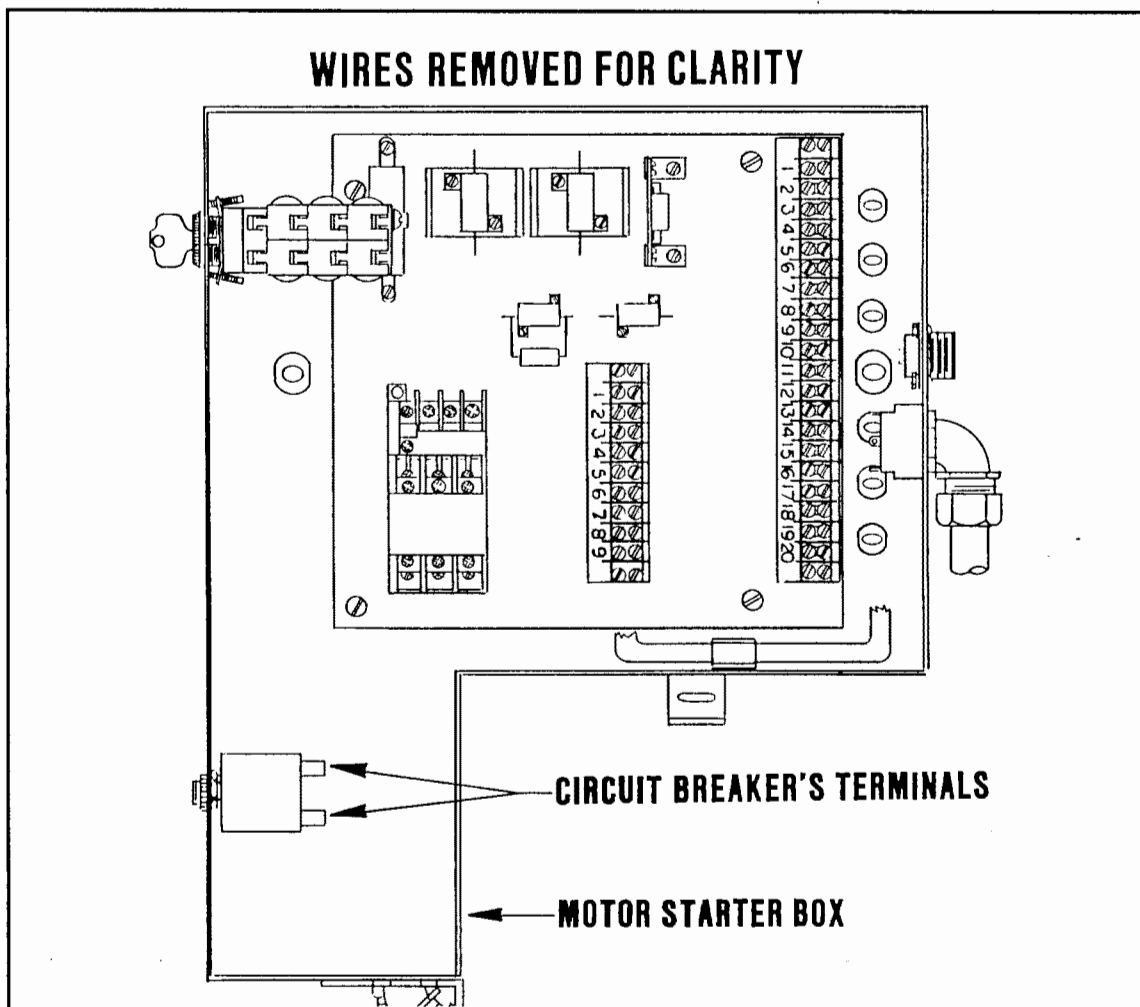
**8.1.2 ELECTRONICS CIRCUIT BREAKER TEST AND REPLACEMENT**

Figure 8.1 B

**8.1.3 SOLA TRANSFORMER TEST AND REPLACEMENT**

Test and (if necessary) replace the Sola transformer as follows:

**Tools Needed:**

- 3/16" hex wrench (Allen wrench)
- 5/64" hex wrench (Allen wrench)
- medium flat-tipped screwdriver
- small Phillips-head screwdriver
- volt/ohm meter
- 400 watt load (i.e. two 200 watt light bulbs connected in series with wires stripped at both ends)

**Note**

Use the Illustrated Parts List in Chapter 11 of this manual as an aid in testing and replacing the Sola Transformer. When you see something like "Remove back panel (202, Fig. 4)" in the following procedure, the number (202) refers to a picture of the back panel (and how the back panel is attached to the press) in Figure 4 of the Illustrated Parts List.

**8.1.3 SOLA TRANSFORMER TEST AND REPLACEMENT**

1. Turn disconnect switch to "OFF" position. See Section 3.1.5 for location of disconnect switch.

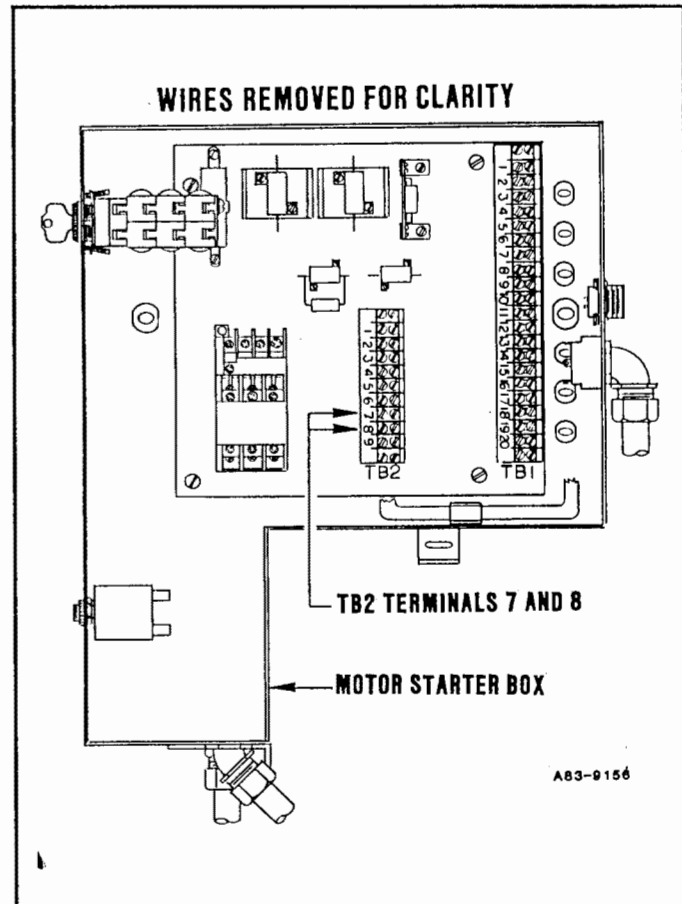
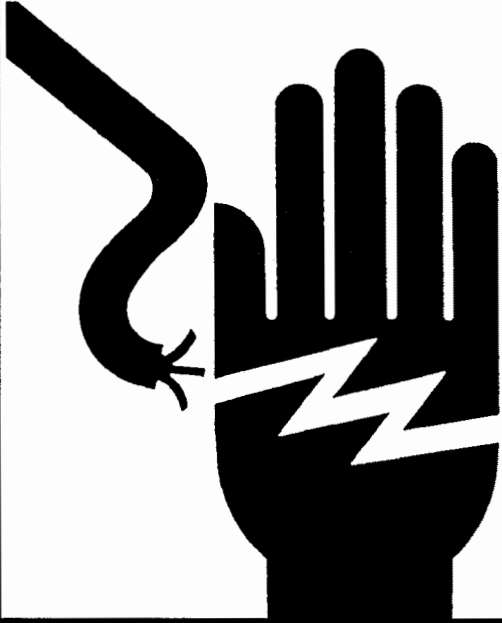


Figure 8.1 C

2. Remove back panel screws (201, Fig. 4) with hex wrench and remove back panel (202).
3. Check very carefully for broken or loose wires in the motor starter box, especially around TB2 terminals 7 and 8. See Figure 8.1 C. If any broken or loose wires are found, repair them and then recheck the press.
4. Loosen screws on TB2 terminals 7 & 8, hook stripped ends of 400-watt load to screws, and tighten screws.
5. Turn disconnect switch on.

8.1.3 SOLA TRANSFORMER TEST AND REPLACEMENT

**! WARNING**



\* Never do live electrical tests when you are alone. Always make sure someone is present to help you in case you get shocked.

\* Do not touch bare electrical terminals when doing live electrical tests. You can get fatally shocked if you do.

**! WARNING**



Turn disconnect switch off and tag switch before doing the following steps. You can get fatally shocked if you do not. See Section 3.1.5 for location of disconnect switch.

6. Test for 120 volts AC ( $\pm 10$  volts) across TB2 terminals 7 and 8 (8 is ground) with volt/ohm meter. See Figure 8.1 C. If 110 volts are present (transformer is OK), remove load and continue to follow troubleshooting chart. If 120 volts are not present, remove load, tighten terminal screws, reattach back panel, and then replace transformer as follows:

7. Turn disconnect switch to "OFF" position.

8. Use Figure 8.1 D as a guide on how to mount sola. Use Figure 8.1 E as a guide on how to wire sola.

**NOTE**

Figures 8.1 D and 8.1 E represent the most recent Sola configuration at the time this manual was published. If your press has a different configuration, contact Spartanics or your service representative for information on how to mount and wire your Sola configuration. In all configurations, the output voltage of the sola transformer must be 120 volts  $\pm 10$  volts.



# Spartanics Ltd. M-83 Punch Press

## 8.1.4 ELECTRONICS PACKAGE TEST AND REPLACEMENT

Test and (if necessary) replace the electronics package as follows:

### Tools Needed:

- > 3/16" hex wrench (Allen wrench)
- > 5/64" hex wrench (Allen wrench)
- > volt/ohm meter

Persons Needed: two

1. Turn disconnect switch to "OFF" position. See Section 3.1.5 for location of disconnect switch.
2. Remove back panel screws (201) with 5/64" hex wrench and remove back panel (202) if installed.
3. Check very carefully for broken or loose wires in the motor starter box, especially around TB2 terminals 3 and 8. See Figure 8.1 F. If any broken or loose wires are found, repair them and then see if the press works.

### Note

Use Figure 4 of the Illustrated Parts List in Chapter 11 of this manual as an aid in testing the electronics package. When you see something like "Remove back panel (202)" in the following procedure, the number (202) refers to a picture of the back back panel (and how the back panel is attached to the press) in Figure 4 of the Illustrated Parts List.

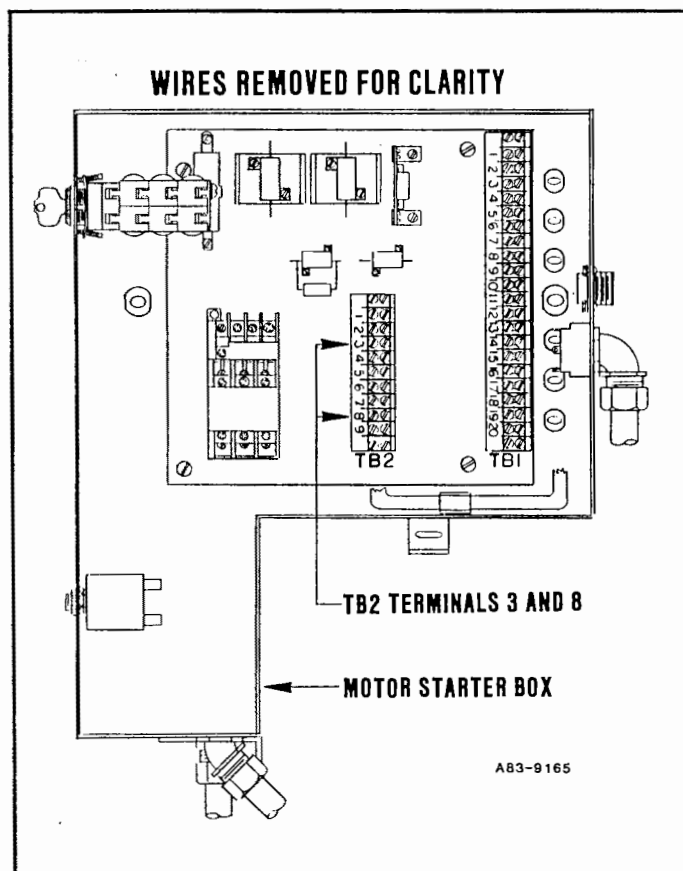


Figure 8.1 F

**8.1.4 ELECTRONICS PACKAGE TEST AND REPLACEMENT**

**! WARNING**



**\* Never do live electrical tests on the press when you are alone. Always make sure someone is present to help you in case you get shocked.**

**\* Do not touch bare electrical terminals when doing live electrical tests. You can get fatally shocked if you do.**

6. Test for 120 volts AC ( $\pm 10$  volts) across TB2 terminals 3 and 8 (8 is ground) with volt/ohm meter while a second person presses and holds the "ON" button on the control panel. See Figure 8.1 F. If 120 volts are present (electronics package is OK), continue to follow troubleshooting chart. If 120 volts are not present, reattach back panel and then replace electronics package according to steps 7-14.

7. Turn disconnect switch to "OFF" position.

8. Disconnect cables from back of electronics package. See Figure 8.1 G.

9. Unscrew electronics package screws with 3/16" hex wrench. See Figure 8.1 G.

10. Slide electronics package out of brake guard. See Figure 8.1 H.

11. Slide loaner/repaired electronics package into brake guard.

12. Secure electronics package in place with screws.

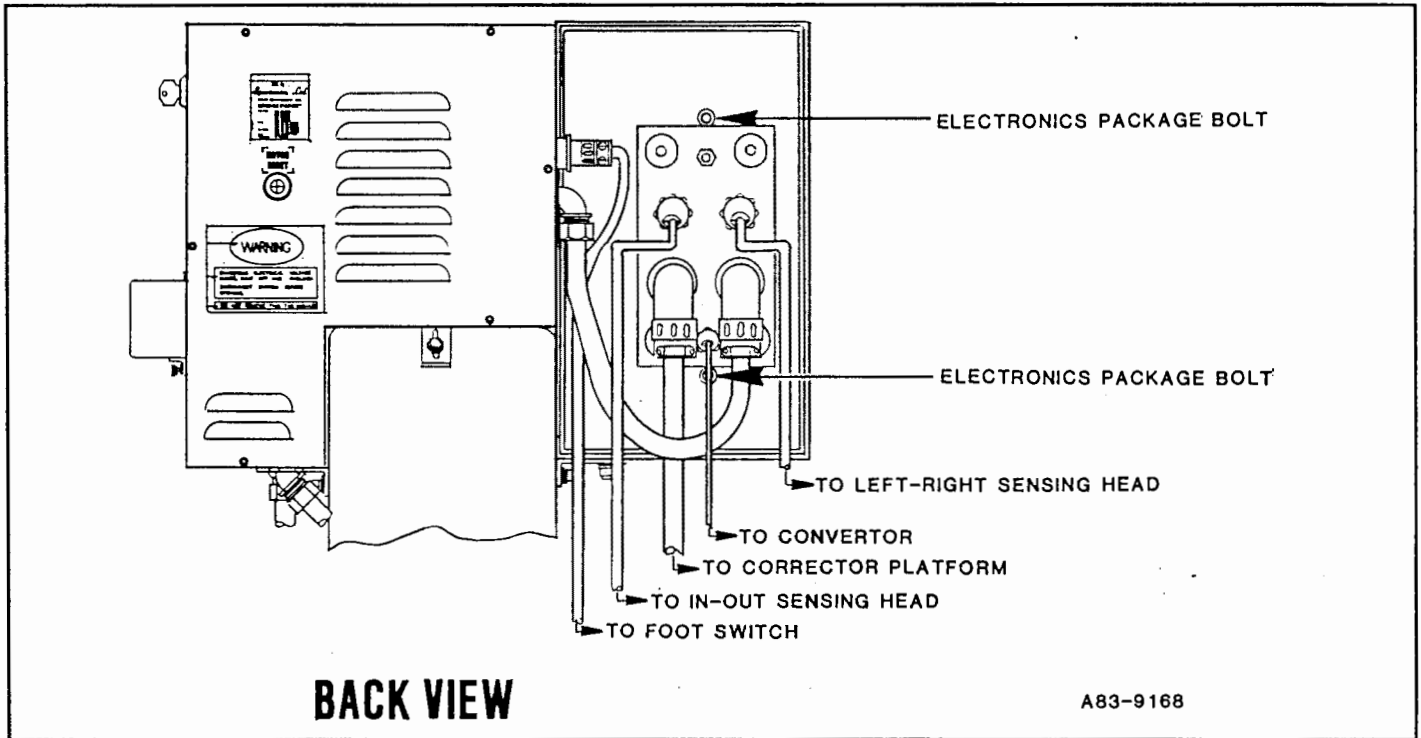
13. Connect cables to electronics package according to Figure 8.1 G.

14. Ship defective/loaner electronics package to Spartanics or service representative according to Chapter 14.

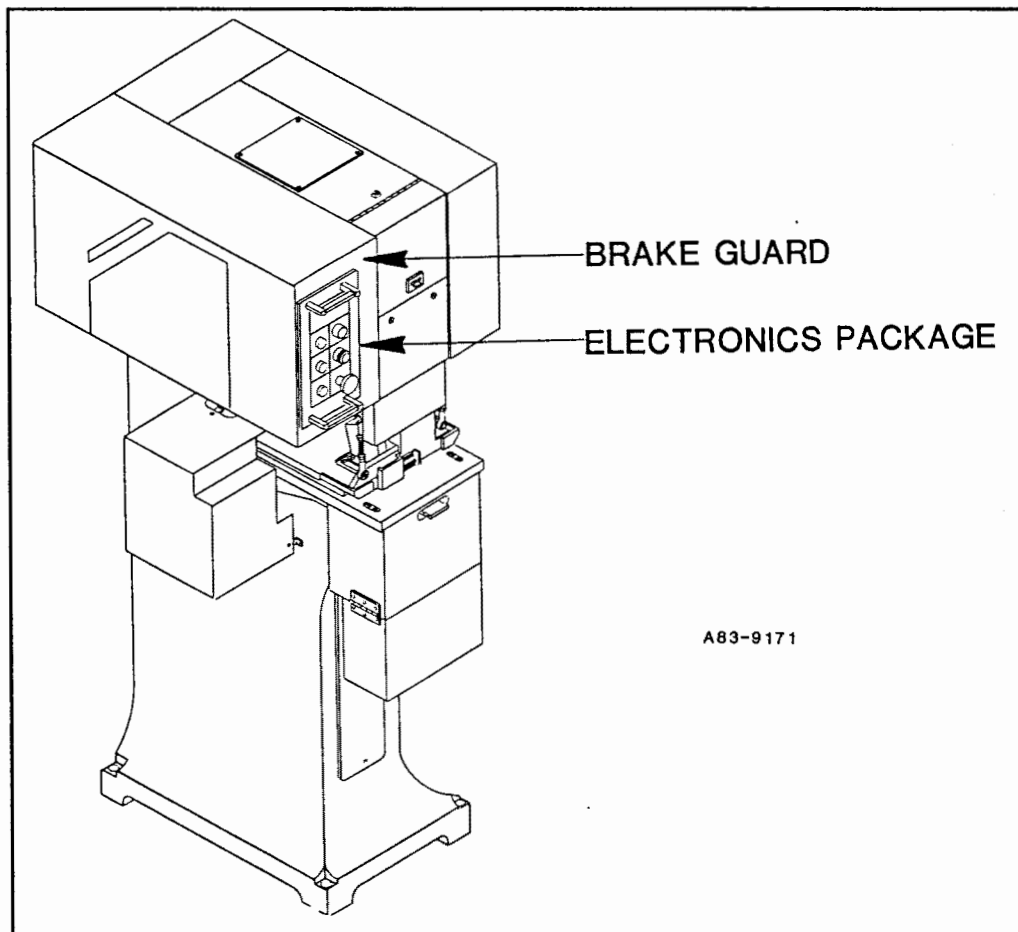
4. Turn disconnect switch to "ON" position.

5. Turn set up switch to "RUN" position. See Section 3.1.2 for location of set up switch.

**8.1.4 ELECTRONICS PACKAGE TEST AND REPLACEMENT**



**Figure 8.1 G**



**Figure 8.1 H**

**8.1.5 SET UP SWITCH TEST AND REPLACEMENT**

Test and (if necessary) replace the set up switch as follows:

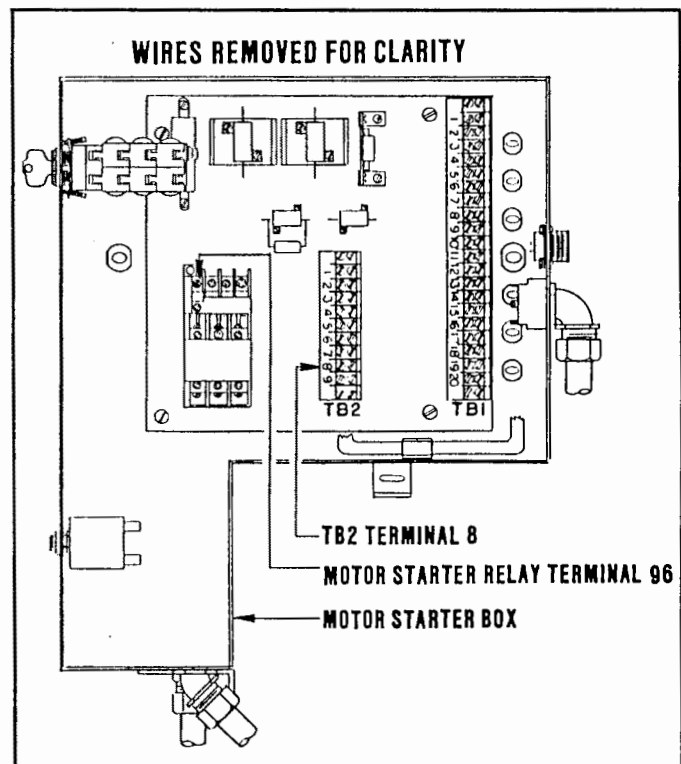
**Tools Needed:**

- 5/64" hex wrench (Allen wrench)
- medium flat-tip screwdriver
- pair of pliers
- volt/ohm meter

**Note**

Use the Illustrated Parts List in Chapter 11 of this manual as an aid in replacing the set up switch. When you see something like "Remove set up switch (573, Fig. 14)" in the following procedure, (573) refers to a picture of the set up switch (and how the switch is attached to the press) in Figure 14 of the Illustrated Parts List.

1. Turn disconnect switch to "OFF" position. See Section 3.1.5 for location of disconnect switch.
2. Remove back panel screws (201, Fig. 4) with hex wrench and remove back panel (202) if not already done so.
3. Check very carefully for broken or loose wires in the motor starter box, especially around TB2 terminal 8 and motor starter relay terminal 96. See Figure 8.1 I. If any broken or loose wires are found, repair them and then see if the press works.

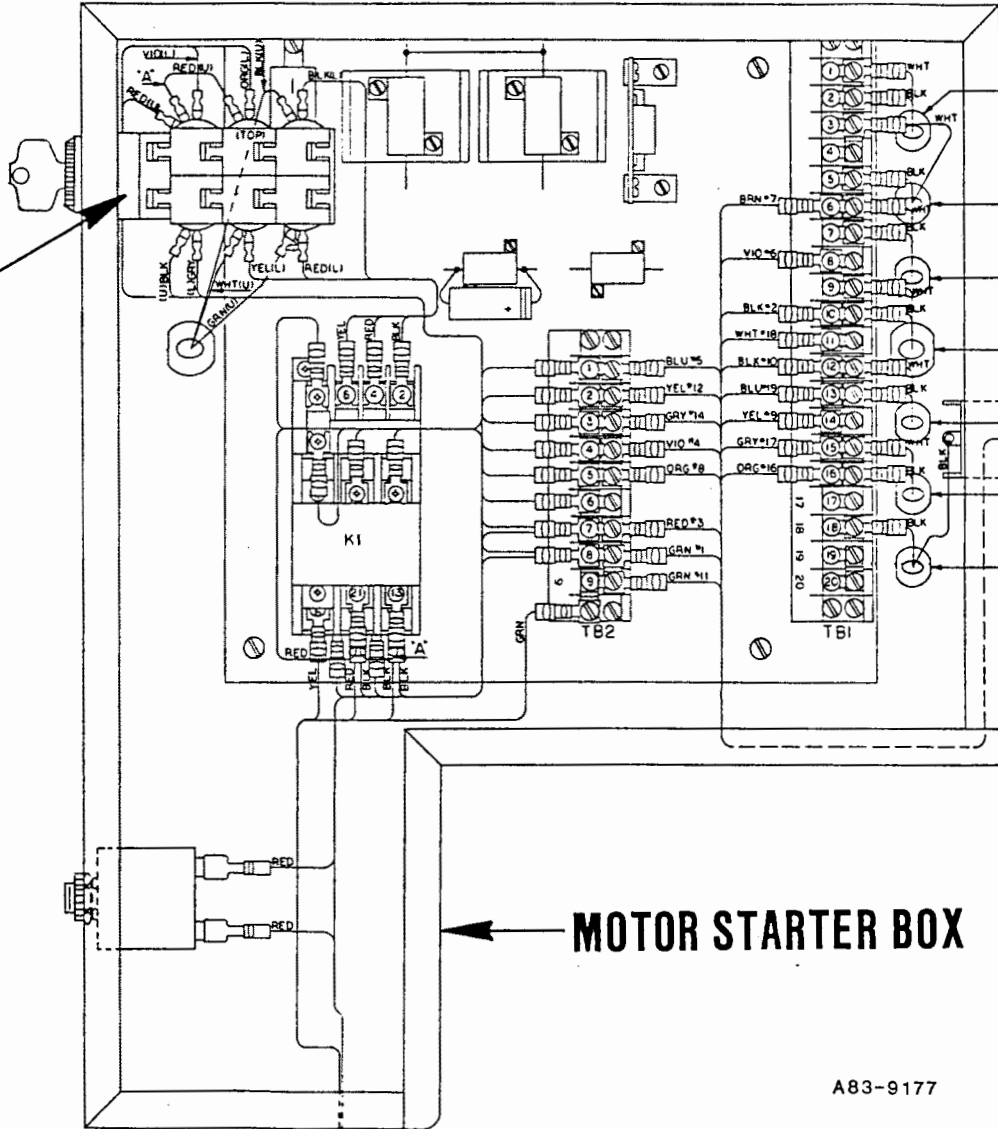


**Figure 8.1 I**

(L) = LOWER WIRE CONNECTORS

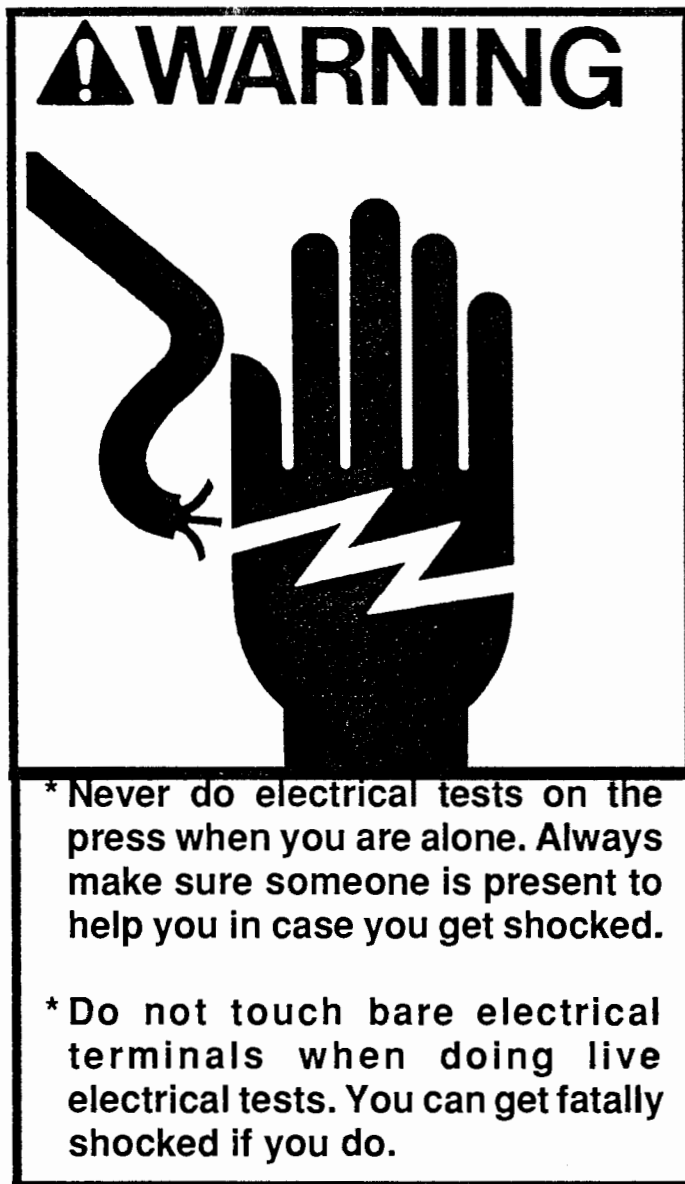
(U) = UPPER WIRE CONNECTORS

SET UP SWITCH



A83-9177

Figure 8.1 J

**8.1.5 SET UP SWITCH TEST AND REPLACEMENT**

4. Turn disconnect switch to "ON" position.
5. Turn set up switch to "RUN" position. See Section 3.1.2 for location of set up switch.
6. Test for 120 volts AC ( $\pm 10$  volts) across TB2 terminal 8 (8 is ground) and motor starter relay terminal 96 with volt/ohm meter while another person presses and holds "ON" button on control panel.. See Figure 8.1 H. If 120 volts are present (set up switch is OK) continue to follow troubleshooting chart. If 120 volts are not present, replace set up switch as follows:
  7. Turn disconnect switch to "OFF" position.
  8. Loosen terminal screws on set up switch. See Figure 8.1 J.
  9. Pull wire lugs off of terminals.
  10. Unscrew ring nut (572, Fig. 14) with pliers and pull out set up switch (573).
  11. Place new set up switch into position and secure in place with ring nut. Make sure that switch is not upside down.
  12. Attach wire lugs to terminals according to Figure 8.1 J.
  13. Reattach back panel.

**8.1.6 MOTOR STARTER RELAY TEST AND REPLACEMENT**

Test and (if necessary) replace the motor starter relay as follows:

**Tools Needed:**

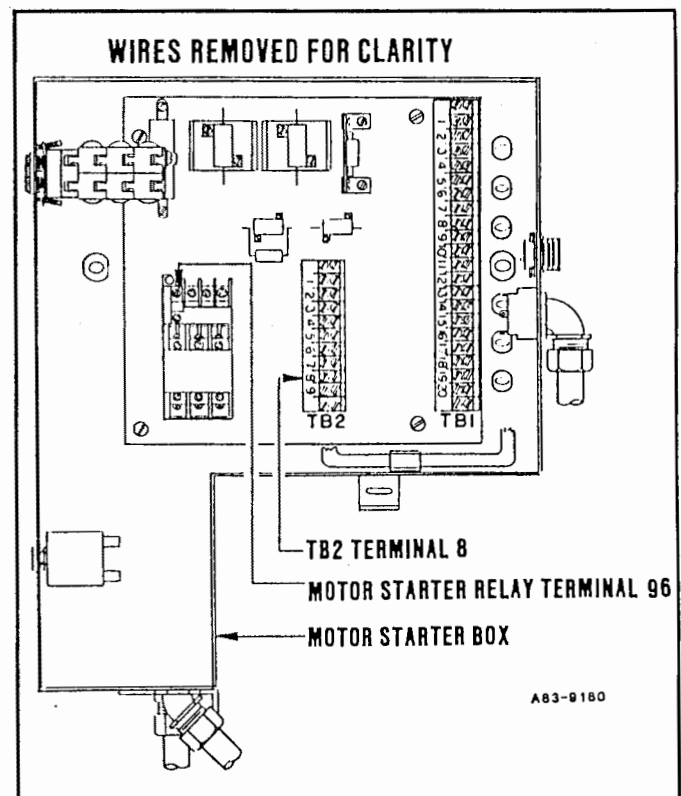
- > 5/64" hex wrench (Allen wrench)
- > medium flat-tip screwdriver
- > volt/ohm meter

1. Turn disconnect switch to "OFF" position. See Section 3.1.5 for location of disconnect switch.
2. Remove back panel screws (201, Fig. 4) with hex wrench and remove back panel (202) if installed.
3. Check very carefully for broken or loose wires in the motor starter box, especially around motor starter relay terminal 96. If any broken or loose wires are found, repair them and then see if the press works. See Figure 8.1 K.
4. Test for 175-225 ohms across TB2 terminal 8 and motor starter relay terminal 96 with volt/ohm meter. See Figure 8.1 K. If 175-225 ohms are not present (relay is bad), go to step 5. If 175-225 ohms are present (relay is OK), recheck the motor starter box for loose or broken wires. There must be a loose or broken wire somewhere in the motor starter box.



**Note**

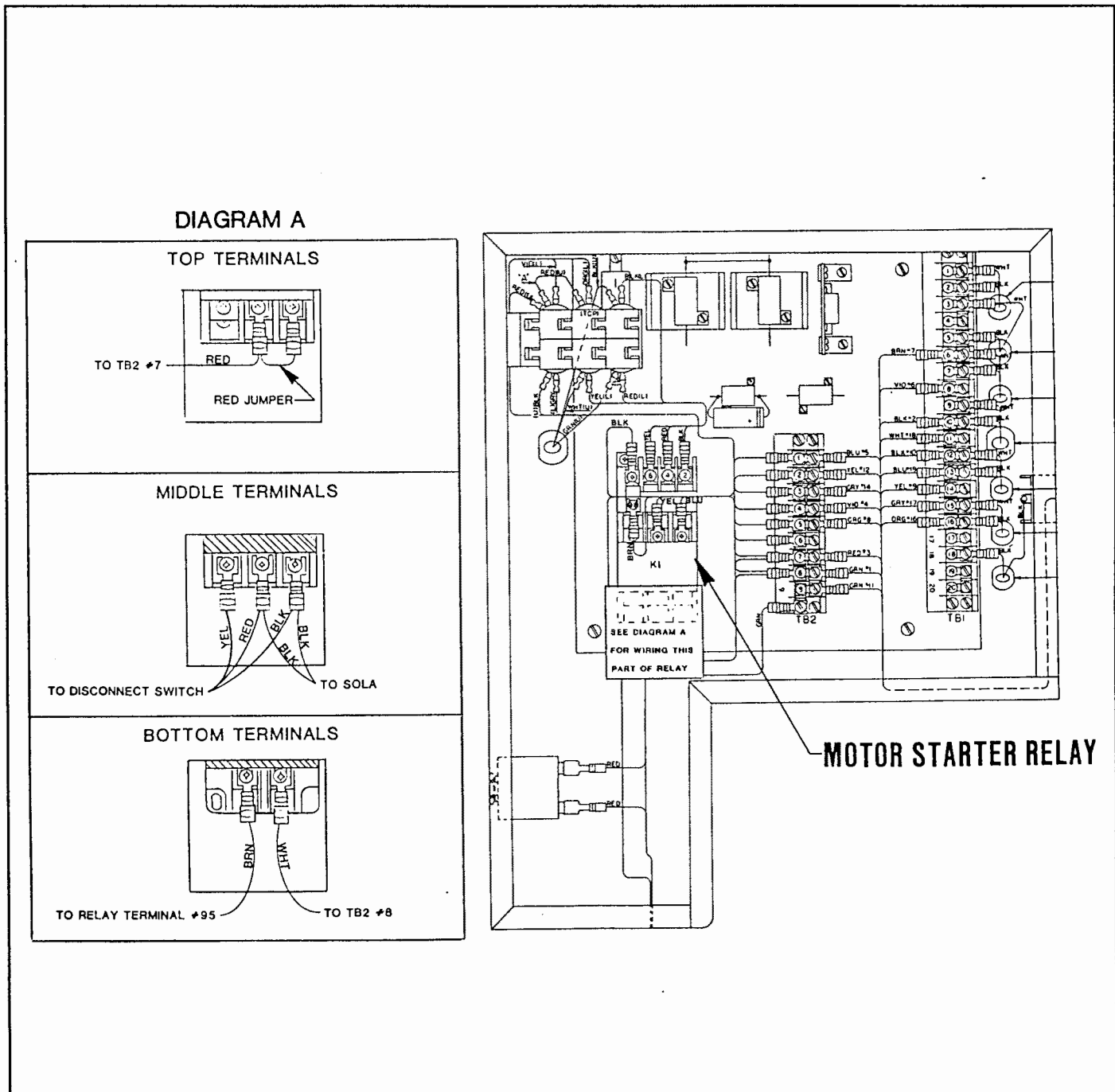
Use the Illustrated Parts List in Chapter 11 of this manual as an aid in replacing the motor starter relay. When you see something like "Remove back panel (202, Fig. 4)" in the following procedure, the number (202) refers to a picture of the back panel (and how the back panel is attached to the press) in Figure 4 of the Illustrated Parts List.



**Figure 8.1 K**

**8.1.6 MOTOR STARTER RELAY TEST AND REPLACEMENT**

5. Loosen wire terminal screws with screwdriver and remove wire lugs from motor starter relay. See Figure 8.1 L.
6. Unscrew mounting screws (595, Fig. 14) from relay (596) and remove washers (594) and relay.
7. Place new relay into position and secure with mounting screws.
8. Connect wires to new relay according to Figure 8.1 L.
9. Reattach back panel (202, Fig. 4).



**Figure 8.1 L**