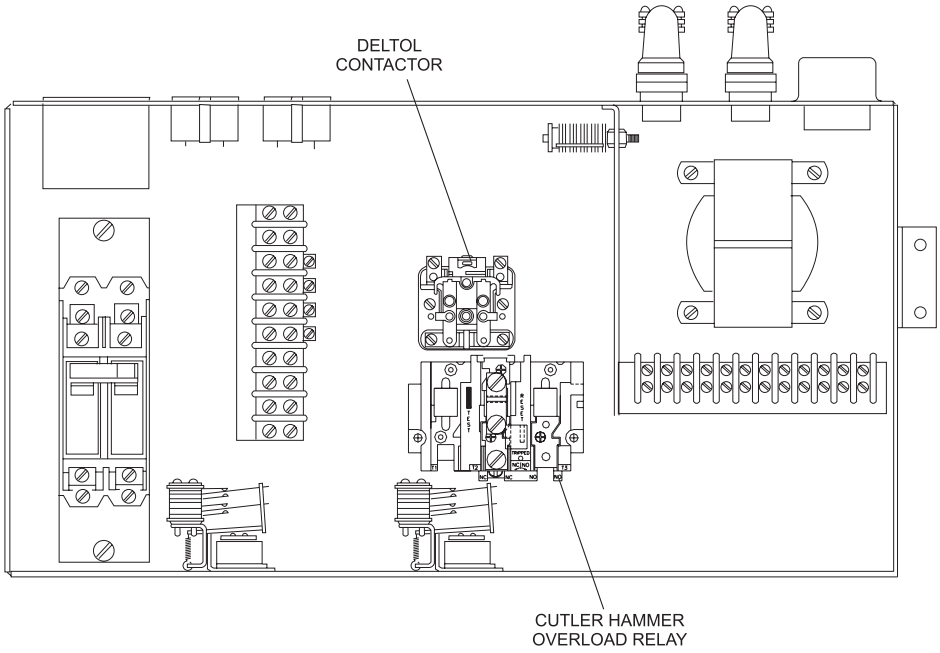
Model "A/A-2" Automatic Pinsetter Contactor Replacement

***NOTE**: Only for Replacement of Obsolete "*Federal Pacific*" and "*Allen Bradley*" contactors with a "*Deltrol*" contactor and a "*Cutler - Hammer*" overload relay.*

***NOTE**: This external motor overload relay is only required for pinsetters that **DO NOT** have motors with internal overload protection. Motors with internal overload protection (identified by the "RESET" button on the end of the motor) do not require this relay.*



CAUTION! These instructions are intended for use by a pinsetter mechanic, who must carefully follow the step-by-step instructions for installation of the new contactor and overload relay. The illustration above shows the relative positions the new parts assume when installed according to the following directions.

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Packaging

(1) 12-860335-000 Kit, Pinsetter Motor Overload Protection (less heater)
- (1) 10-679106-000 Contactor
- (1) 10-679108-000 Motor Overload Relay
- (1) 10-751587-000 12 ga. Wire -Black
- (1) 10-751588-000 16 ga. Wire - Red (coil into 3” diameter roll)
- (2) 11-107068-001 Rd. Hd. Machine Screw 8-32 x 3/4”
- (4) 11-176007-001 Keps Nut 8-32
- (2) 11-612007-000 Terminal Lug for 16 ga. Wire
- (4) 11-612014-000 Terminal Lug for 12 ga. Wire
- (1) 10-679001-000 Shield – Fishpaper
- (2) 11-012312-001 P.H.C.R. Screws 8-32 x 5/8”

TOOLS REQUIRED:

- (1) Heavy Duty Tin Shears
- (1) 3/8” Drill Motor
- (1) 7/32” Drill Bit
- (1) Terminal Lug Crimping Tool
- (1) Wire Stripper
- (1) 11/32” Box End Wrench
- (1) Screwdriver with 6” Blade for slotted head screws
- (1) Light Duty Scissors
- (1) Roll Masking Tape
- (1) Roll Plastic Electrical Tape
- (1) Center Punch

Parts Required:

Order for kit must specify the Brunswick Part Number of the heater required. Heaters are not included in the kit and must be ordered separately.

(1) 12-860335-000 Contactor Replacement Kit
(See Packaging, Page 2)

*(1) Overload Relay Heater Coil

** (See chart below and select heater on basis of motor current requirement stamped on motor identification tag.)*

STANDARD TRIP OVERLOAD RELAY HEATERS			
Brunswick P/N	**Maximum Motor Full Load Amps**	**Cutler Hammer P/N**	**UPC Number**
10-679125-001	4.32A – 4.71A	FH31	78667862980
10-679125-002	4.72A – 5.14A	FH32	78667862983
10-679125-003	5.15A – 5.6A	FH33	78667862986
10-679125-004	5.7A – 6.2A	FH34	78667862989
10-679125-005	6.3A – 6.8A	FH35	78667862992
10-679125-006	6.9A – 7.5A	FH36	78667862995
10-679125-007	7.6A – 8.2A	FH37	78667862998
10-679125-008	8.2A – 9.0A	FH38	78667867000
10-679125-009	9.1A – 9.9A	FH39	78667867003
10-679125-010	10.0A – 10.8A	FH40	78667867006
10-679125-011	10.9A – 11.9A	FH41	78667867009
10-679125-012	12.0A – 13.1A	FH42	78667870012
10-679125-013	13.2A – 14.3A	FH43	78667867015
10-679125-014	14.4A – 15.7A	FH44	78667867018
10-679125-015	15.8A – 17.2A	FH45	78667867021

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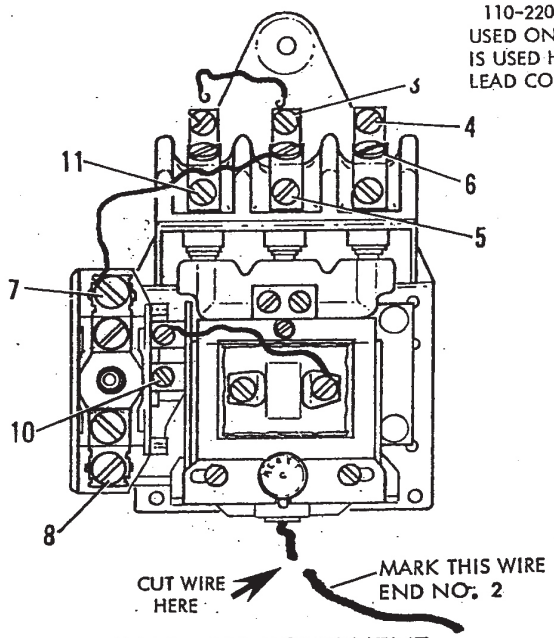
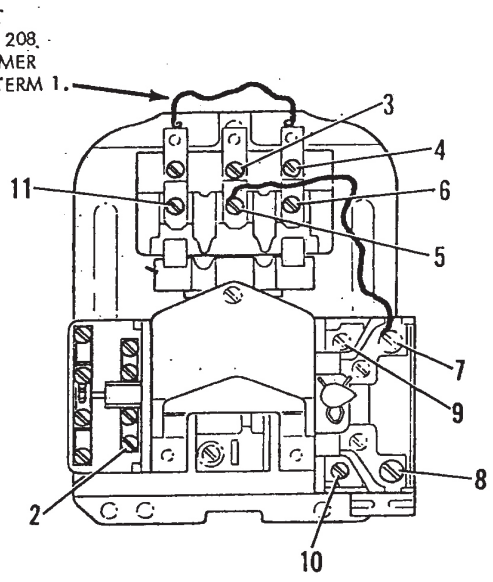


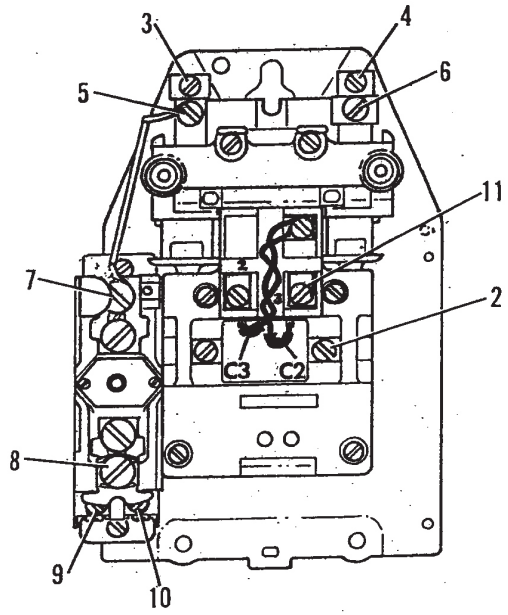
ORIGINAL EQUIPMENT
ALLEN-BRADLEY
CONTACTOR

FIGURE 1



ORIGINAL EQUIPMENT
FEDERAL-PACIFIC
CONTACTOR

FIGURE 2



CUT ALONG
DOTTED LINE

REPLACEMENT
A.B.
CONTACTOR

FIGURE 3

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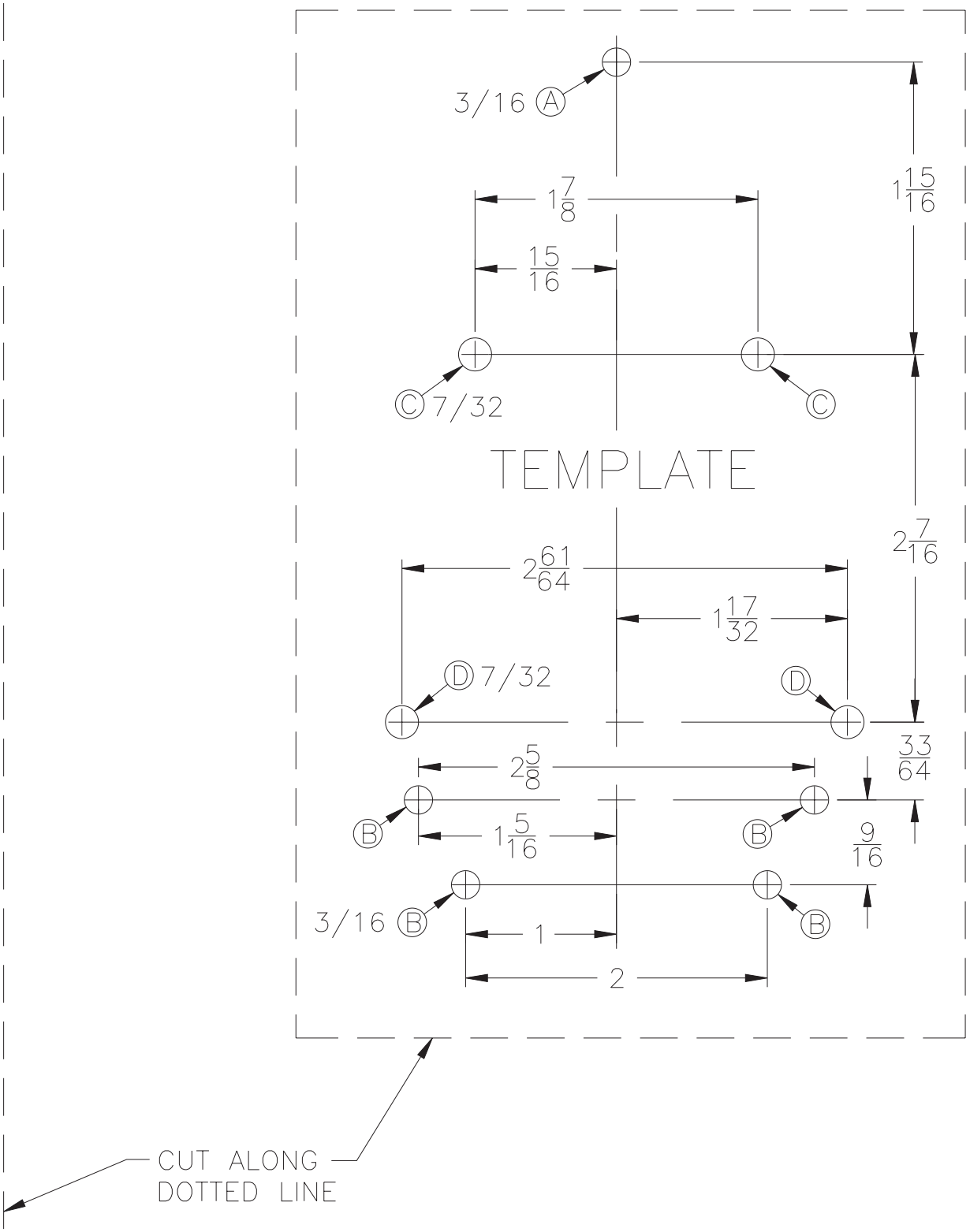
3/16 A
1 7/8
15/16
1 15/16
C 7/32
C
TEMPLATE
2 61/64
1 17/32
2 7/16
D 7/32
D
2 5/8
33/64
B
1 5/16
B
9/16
3/16 B
1
B
2
CUT ALONG
DOTTED LINE

Figure 4

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Instructions

WARNING! Disconnect the input power connector to electrical control box.

1. Cut pages 5 and 7 out of this booklet along the dotted lines.

2. Remove the electrical control box cover from the pinsetter. Tape page 5 over the circuit breaker. Refer to *Figure 5*.

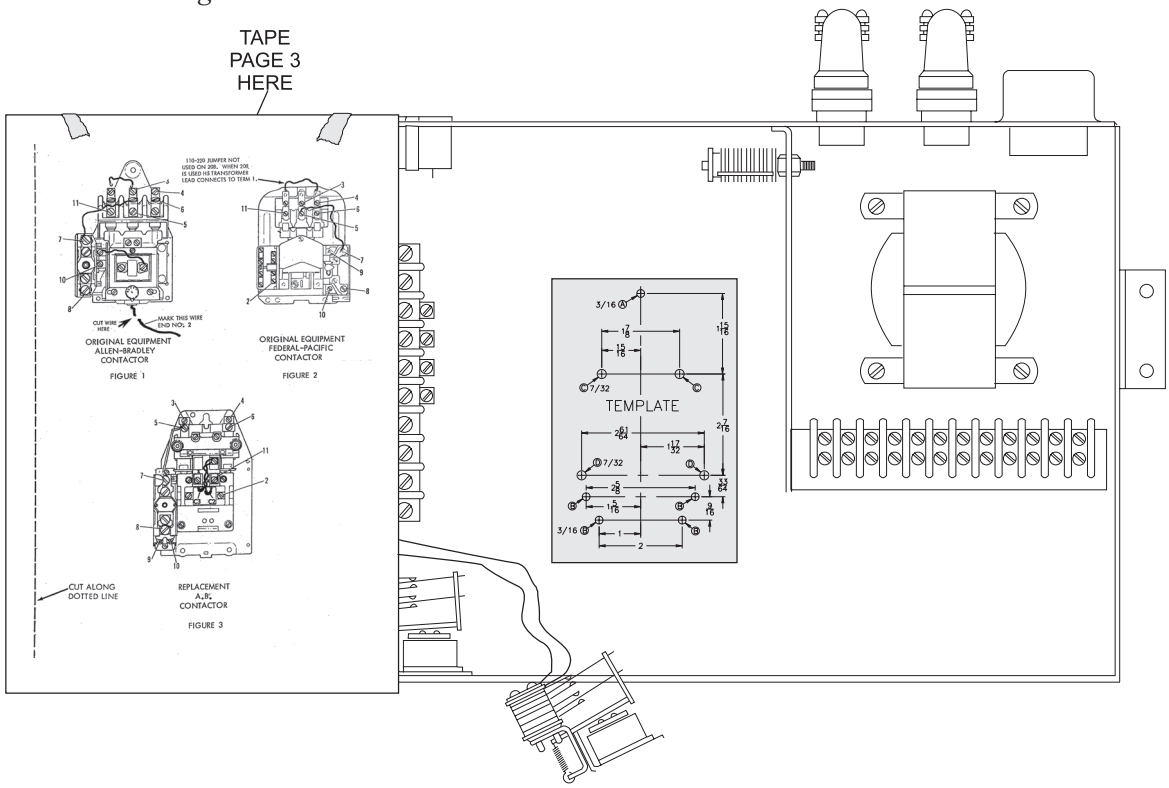

Figure 5

3. Select the illustration of the contactor you wish to replace. Refer to *Figures 1, 2,* and *3*.

4. Disconnect and mark the wire or wires from the terminals of the old contactor.

Important: Mark the wires with the terminal numbers shown in the illustrations on Page 5. Remove the wires from one terminal at a time and remove only the wires that lead to the external circuits. Do not remove any jumper wires that are connected to the contactor terminals only. Mark every wire separately. All loose wires should be tagged before the contactor is removed.

5. Remove the old contactor from the box.

6. Remove the screws that hold the time delay unit or recycle relay and motor start relay and pull them out of the box to the limit the wires will allow. Refer to *Figure 5*.

7. Place the drilling template, (Figure 4, page 7), into the void left by the old contactor and locate holes A and B on the template with holes A and B in the box. Hole A is the top center hole for the old contactor. Hole B is over the motor start relay. Hold template in place with masking tape. Refer to *Figure 5*.

8. Center punch holes C and D in preparation for drilling.

9. Drill holes C and D with 7/32" bit.

10. Brush or use a magnet to remove the drilling shavings from the bottom of the box. Put the time delay unit or recycle relay and motor start relay back in place.

11. Mount the overload relay with the two 8-32 X 5/8" screws and KEPS nuts provided. Refer to *Figure 6* for correct position (use holes D.)

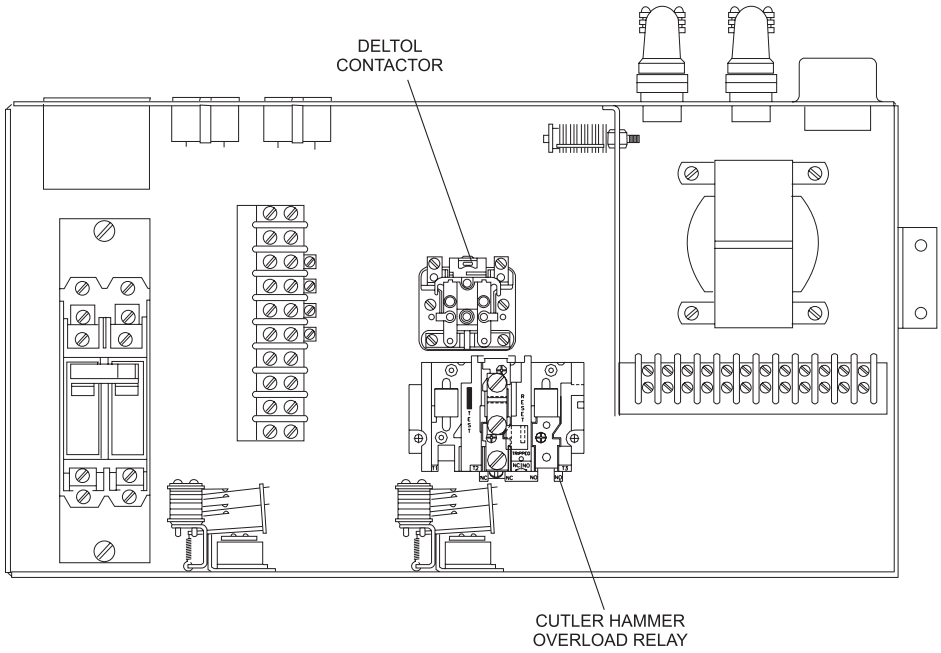

Figure 6

12. Mount the new contactor with the two 8-32 x ¾" long screws and KEPS nuts provided. Refer to *Figure 6* for correct position (use holes C.)

13. Connect a 16 gauge jumper between terminal 9 of the overload relay and terminal 1 on the contactor. Refer to *Figure 7*.

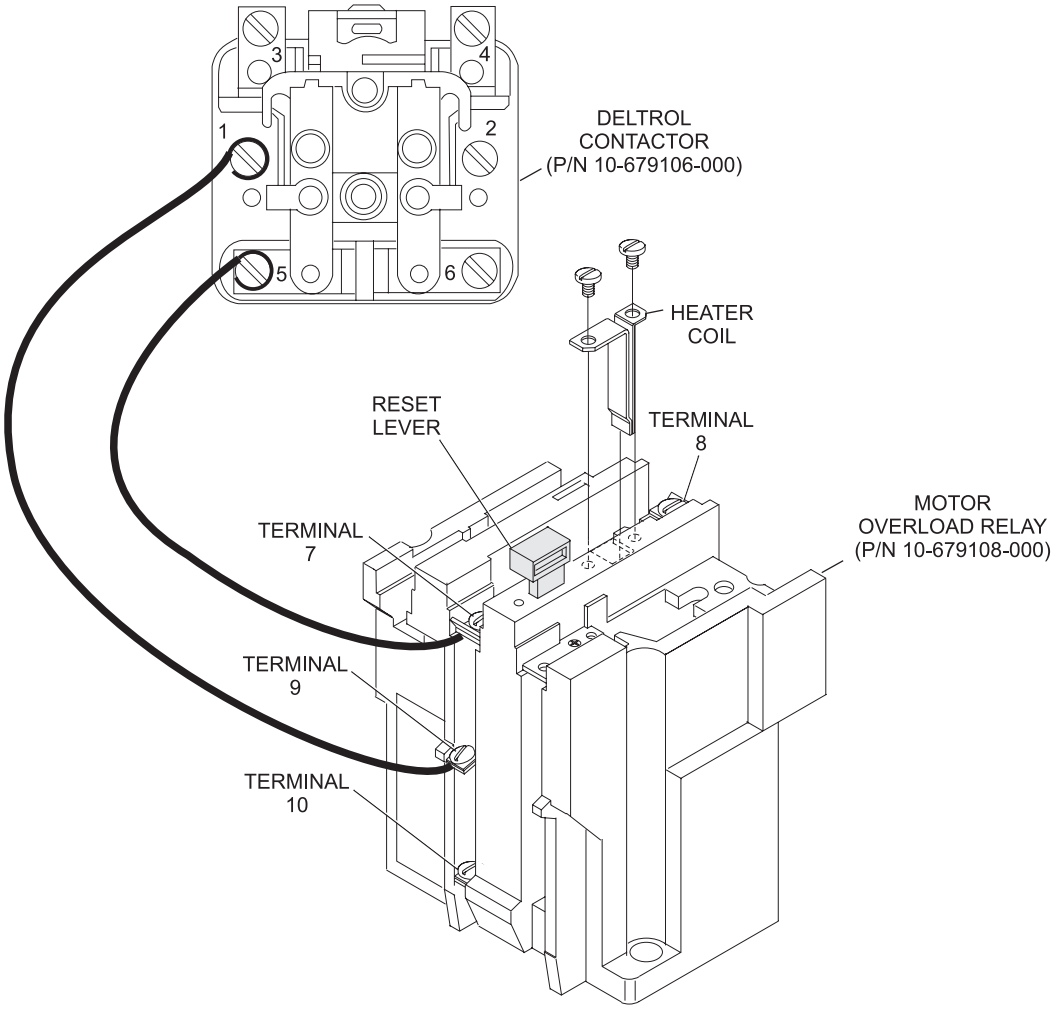

Figure 7

14. Connect a 12 gauge jumper wire between terminal 5 of the contactor and terminal 7 of the overload relay. Refer to *Figure 7*.

15. Connect the remaining numbered wires to the appropriate terminals. Refer to *Figures 12, 13,* or *14.*

16. Do not perform this step for 110 volt machines.

NOTE: *If the pinsetter uses 208 or 230 volts, locate the black 16 gauge wire that runs from TS1-H to the motor start relay. Move this wire from TS 1-H to TS 1-G. Refer to* Figure 8.

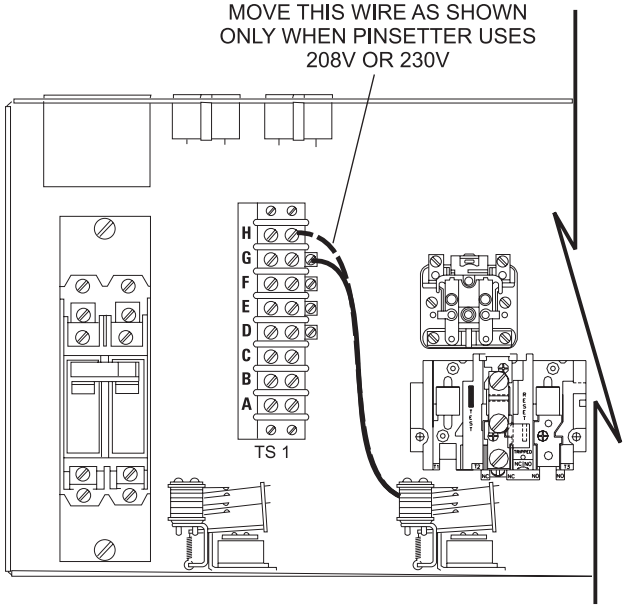

Figure 8

17. Do not perform this step for 110 volt or 230 volt pinsetters, or for any machine that had "*Federal Pacific"* contactors.

NOTE: *If the pinsetter uses 208 volts and had an* "Allen Bradley" *contactor, locate the wire that runs from TS 1-B to the motor start relay. Move this wire to TS 1-F. Locate the wire that runs from the pin light receptacle to TS 1-B. Move this wire to TS 1-F. Refer to* Figure 9.

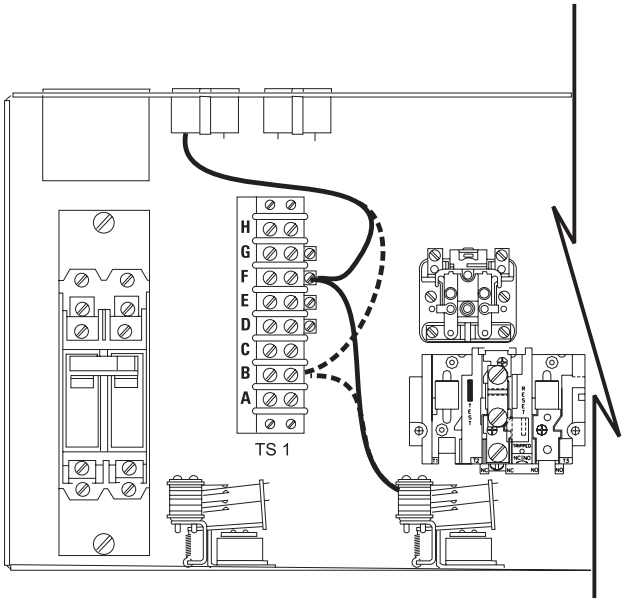

Figure 9

18. On page 3 is a table showing heater coil ratings, (maximum motor full load amps), heater identification numbers, and Brunswick part numbers. Select a heater coil that has a rating that matches as closely as possible the maximum motor full load amps stamped on the pinsetter motor identification plate.

19. Mount the heater coil. Refer to *Figure 10*.

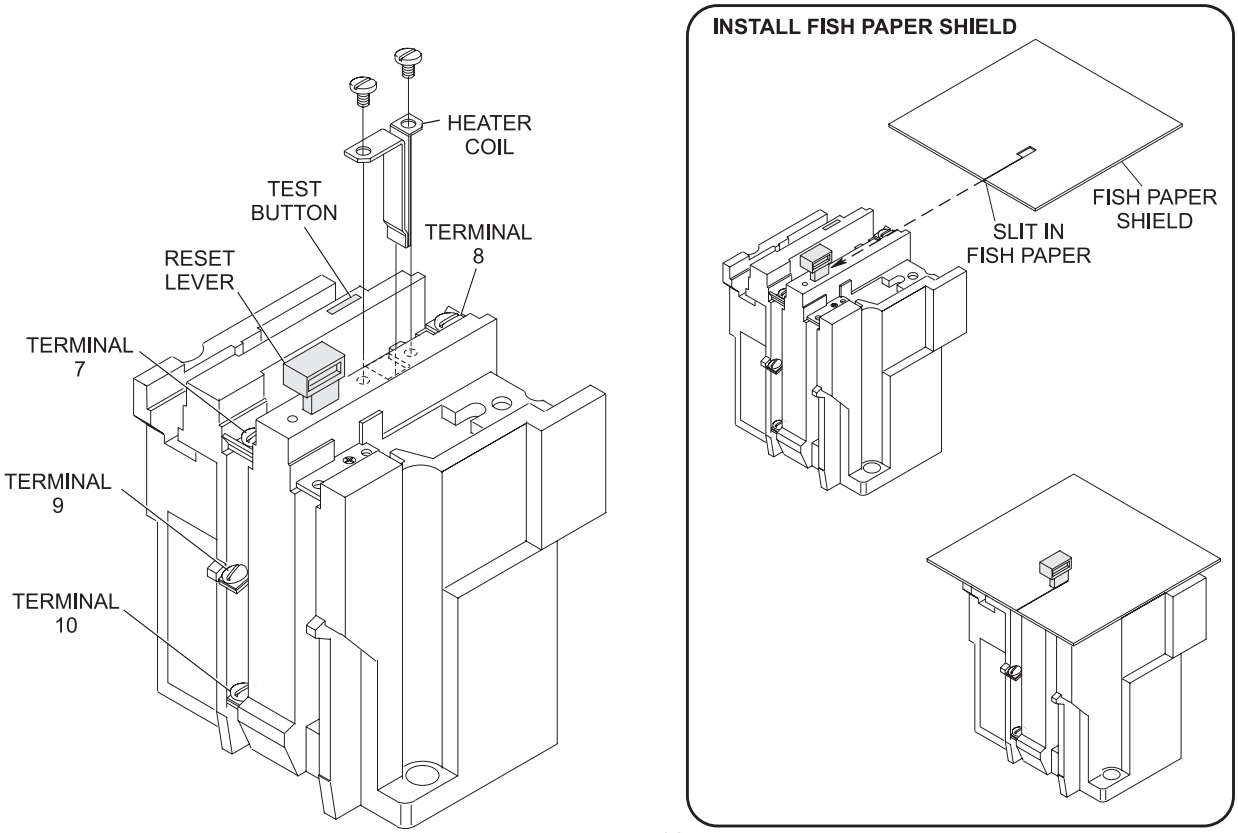

Figure 10

20. Refer to *Figures 12, 13 & 14*, for typical wiring diagrams of the new contactor installations. Refer to *Figures 12 & 13* for installation after replacement of the *"Allen Bradley"* contactor. Refer to *Figure 14* for installation after replacement of the *"Federal Pacific"* contactor. For exceptions, refer to Notes *"A"* and *"B"*. Check wiring before applying power.

21. Connect power and turn on pinsetter.

22. Contactor should be pulled in.

***NOTE**: It may be necessary to push reset lever on overload relay. Refer to* Figure 10.

23. Check functioning of overload relay by pushing the test button. Contactor should drop out when the test button is pressed. Push the reset button to turn the pinsetter motor on again. Check trip indicator.

24. Turn off pinsetter and disconnect power cord.

25. Install fish paper shield on reset lever shaft so that the entire top of the relay is covered. Trim if needed. Refer to *Figure 10.*

26. Before replacing the pinsetter electrical box cover, it will be necessary to make a modification. If the cover has a reset button and spring, it will be necessary to remove it by drilling out the rivets. The new relay's reset switch will stick through the hole in the cover. If there is no reset button, it will be necessary to cut a hole in the electrical box cover. Refer to *Figure 11*.

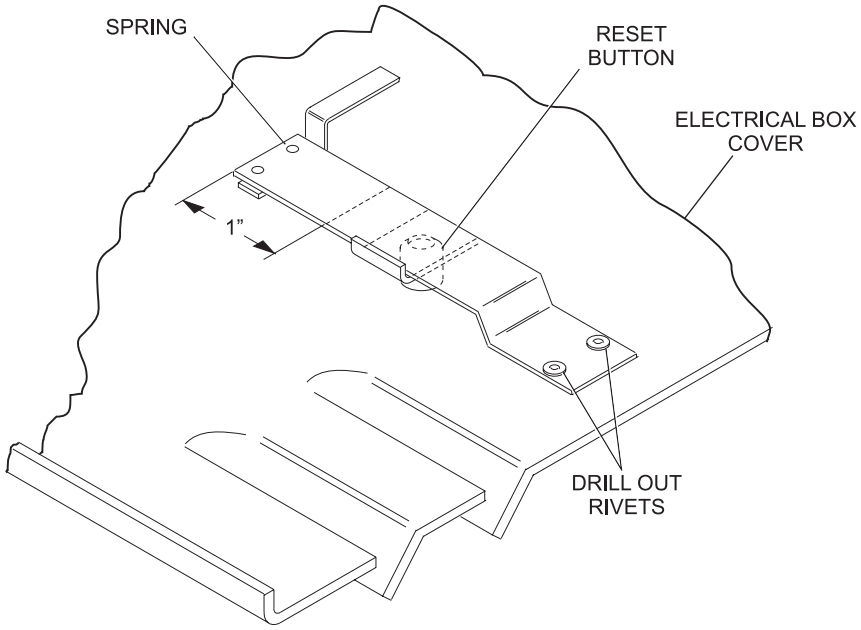

Figure 11

27. Slide the cover onto the electrical box and visually check to insure that the relay's reset button does not bind and works freely. It will be necessary to enlarge the hole in the cover to approximately 3/4" diameter. Refer to *Figure 11*.

208 volt pinsetter with 115 volt pinlight. For 208 volt pin light refer to * *Figure 12.*

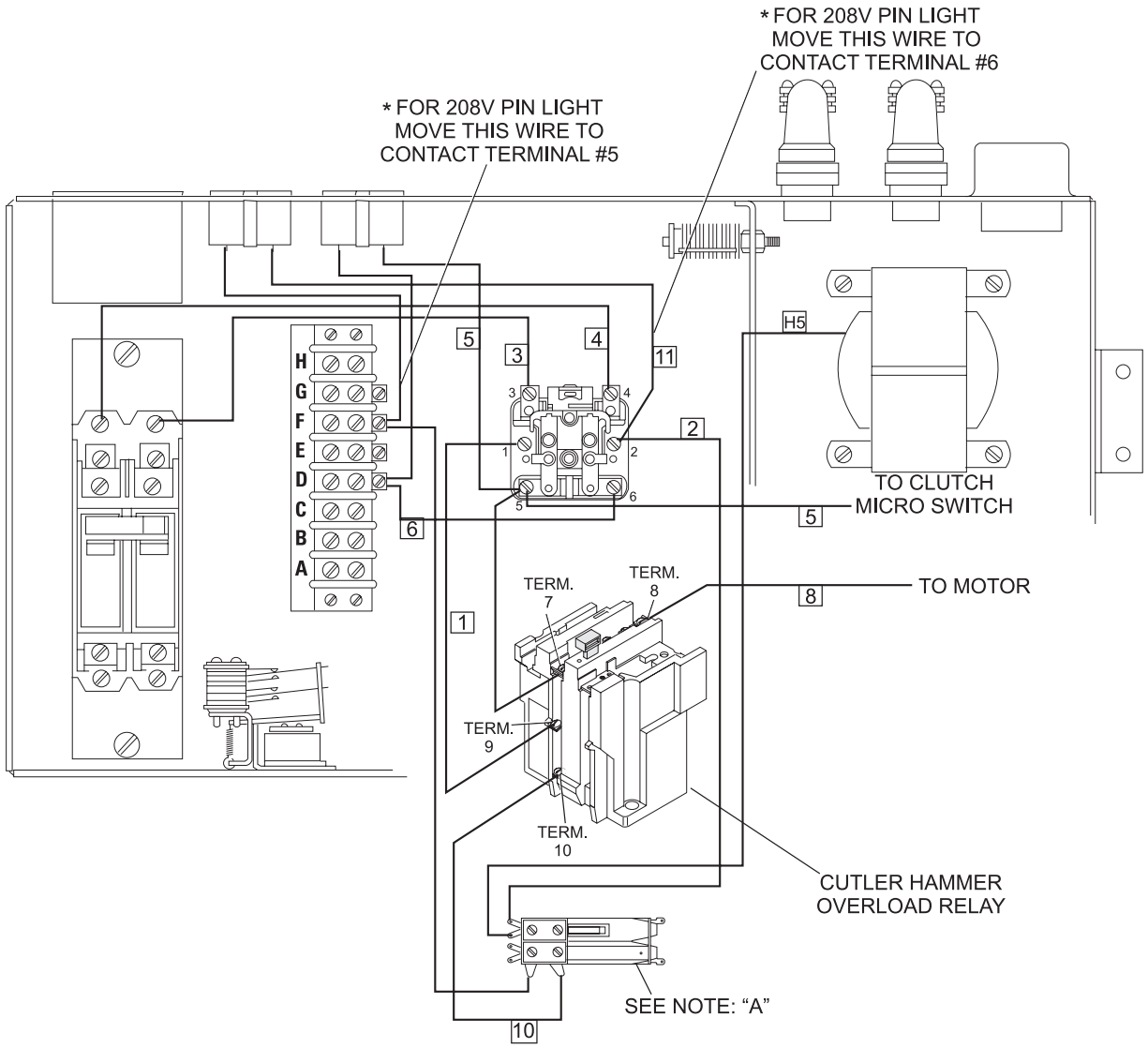

Figure 12

NOTE: *Typical contactor wiring shown after replacing "*Allen Bradley*" contactor. See subsequent notes for exceptions.*

NOTE A: *Three pole M.S. relay, 12-750155-000, shown. (Two pair of contacts in the contactor circuit.) When using two pole relay, 12-750869-000, there is only one pair of contacts provided for the contactor circuit. The pair of wires that would normally connect to a second pair of contacts may be spliced together.*

NOTE B: *If the pinsetter has been converted to use electrical triggering, there will be a wire connected from terminal 5 of the contactor to terminal 19 of the T.D. unit.*

230 volt pinsetter with 115 volt pinlight. For 230 volt pin light refer to * *Figure 13.*

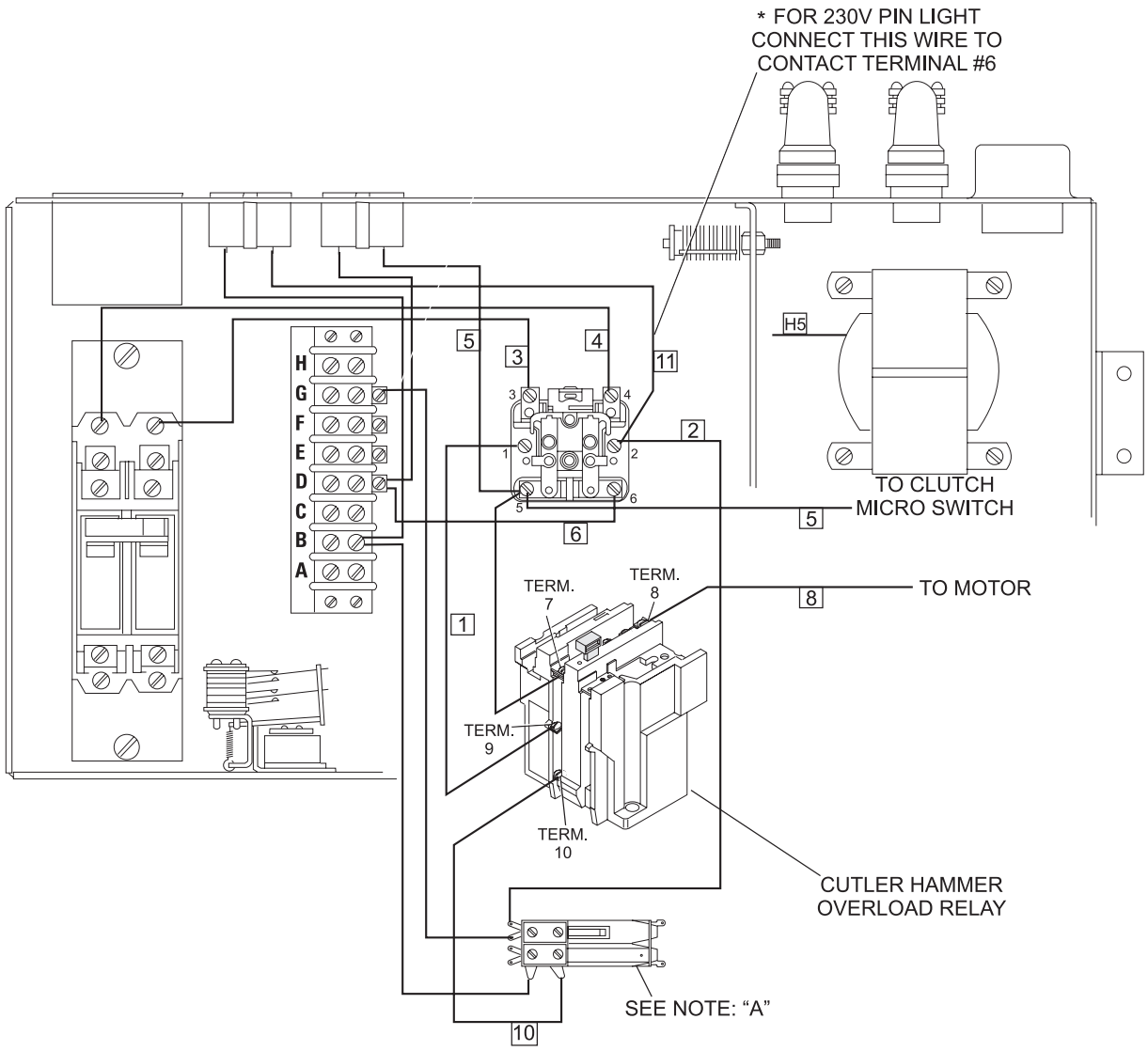

Figure 13

NOTE: *Typical contactor wiring shown after replacing* "Allen Bradley" *contactor. See subsequent notes for exceptions.*

NOTE A: *Three pole M.S. relay, P/N 12-750155-000, shown. (Two pair of contacts in the contactor circuit.) When using two pole relay, 12-750869-000, there is only one pair of contacts provided for the contactor circuit. The pair of wires that would normally connect to a second pair of contacts may be spliced together.*

NOTE: *B: If the pinsetter has been converted to use electrical triggering, there will be a wire connected from terminal 5 of the contactor to terminal 19 of the T.D. unit.*

208 or 230 volt pinsetter with 115 volt pinlight. For 208 or 230 volt pin light refer to * *Figure 14.*

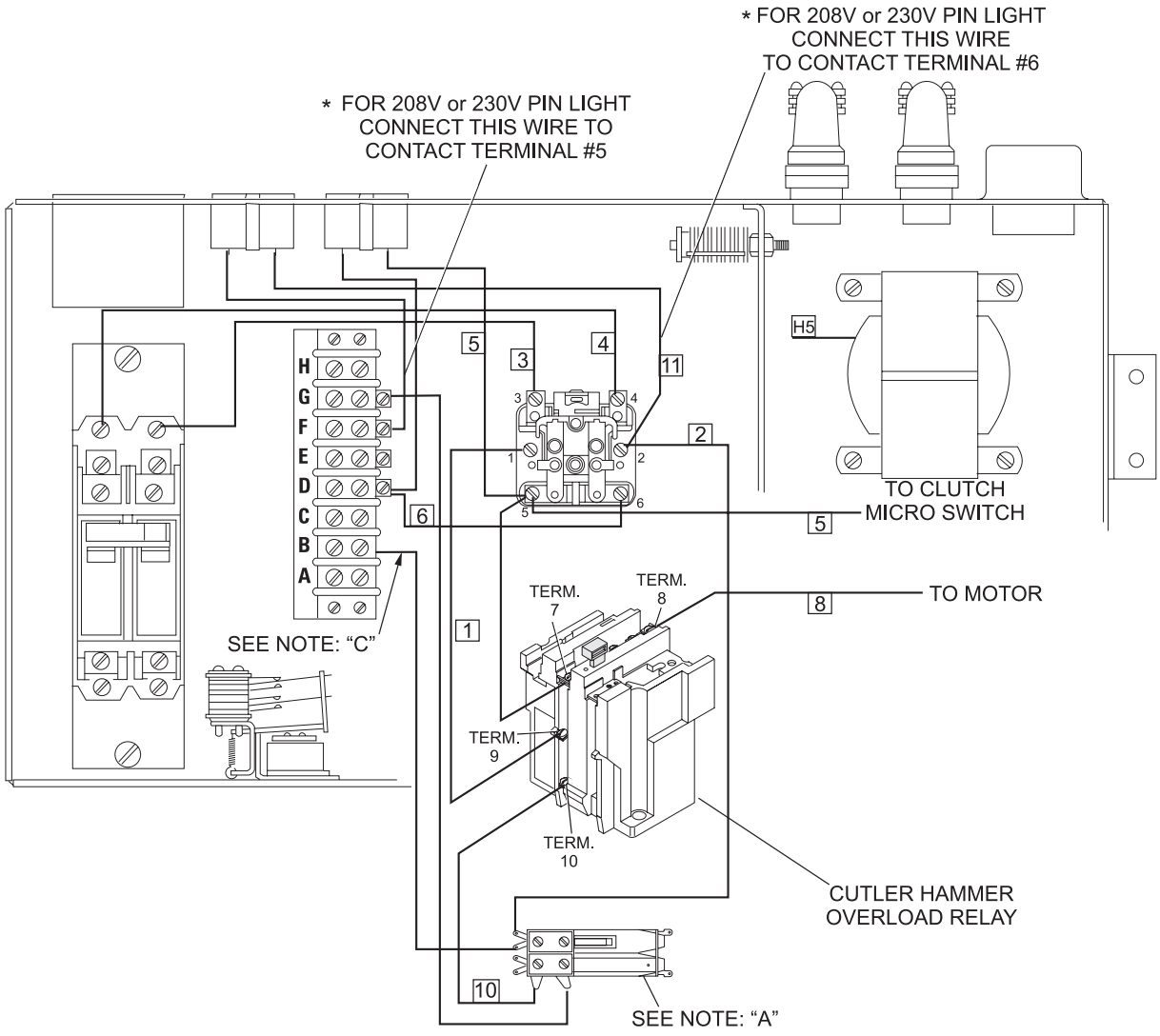

Figure 14

NOTE: *Typical contactor wiring shown after replacing* "Federal Pacific" *contactor. See subsequent notes for exceptions.*

NOTE A: *Three pole M.S. relay, 12-750155-000, shown. (Two pair of contacts in the contactor circuit.) When using two pole relay, 12-750869-000, there is only one pair of contacts provided for the contactor circuit. The pair of wires that would normally connect to a second pair of contacts may be spliced together.*

NOTE B: *If the pinsetter has been converted to use electrical triggering, there will be a wire connected from terminal 5 of the contactor to terminal 19 of the T.D. unit.*

NOTE C: *Connect to transformer lead H5 for 208 volt pinsetter.*