dynaco RCT-5 RELAY ASSEMBLY FOR THE PAT-5 PREAMPLIFIER 56703127

	PARTS LIST	PART #
1	PC-42 Circuit board, bare	957042
1	Relay, 3PDT	539249
1	Resistor, 10,000 ohms, 5% (brown-black-orange)	119103
1	Resistor, 100,000 ohms, 5% (brown-black-yellow)	119104
1	Resistor, 180,000 ohms, 5% (brown-gray-yellow)	119184
1	Resistor, 2,200 ohms, 5% (red-red-red)	119222
1	Resistor, 2,700 ohms, 5% (red-violet-red)	119272
2	Resistor, 560 ohms, 5% (green-blue-brown)	119561
1	Resistor, 330,000 ohms, 5% (orange-orange-yellow)	119334
1	Capacitor, 50 mfd electrolytic	284500
1	Capacitor, 0.1 mfd, 20%, 100V, Ceramic Disc	224104
1	Diode, Zener, 43 v., 5% (1N5260B)	540543
3	Diode, Silicon, 1 A., 200 PRV	544012
2	Transistor, PNP (2N4356)	562356
4	Screw, #4-40 x 3/4"	611205
2	Screw, #4-40 x 1/4"	611245
4	Nut, #4-40 KEP (lockwasher attached)	615244
2	Lockwasher, #4	617205
4	Spacer, 3/8"	660261
1	Wire, black, 8'0"	
1	Wire, blue, 6'0"	
1	Wire, yellow, 7'0"	
1	Instructions	

To build and install this kit, first drill four holes in the chassis under the selector switch, mount the components on the circuit board, make some changes to the wiring in the preamplifier, and finally install the board in the PAT-5.

Once this kit has been installed, the preamplifier will still remain on at all times, irrespective of the position of the POWER switch on the PAT-5. We recommend this type of operation to prolong component life in the preamplifier. The relay will therefore operate only in an emergency situation -- actual loss of electrical power. If you wish to modify the preamplifier for fully off switching, it will *also* be necessary to change the wiring as outlined in the PAT-5 manual under POWER SWITCH, page 29. When the switching is changed, the relay will activate the *audio outputs* of the PAT-5 about 10 seconds after turn on, and will mute the audio quickly at turn off.

DRILLING THE CHASSIS

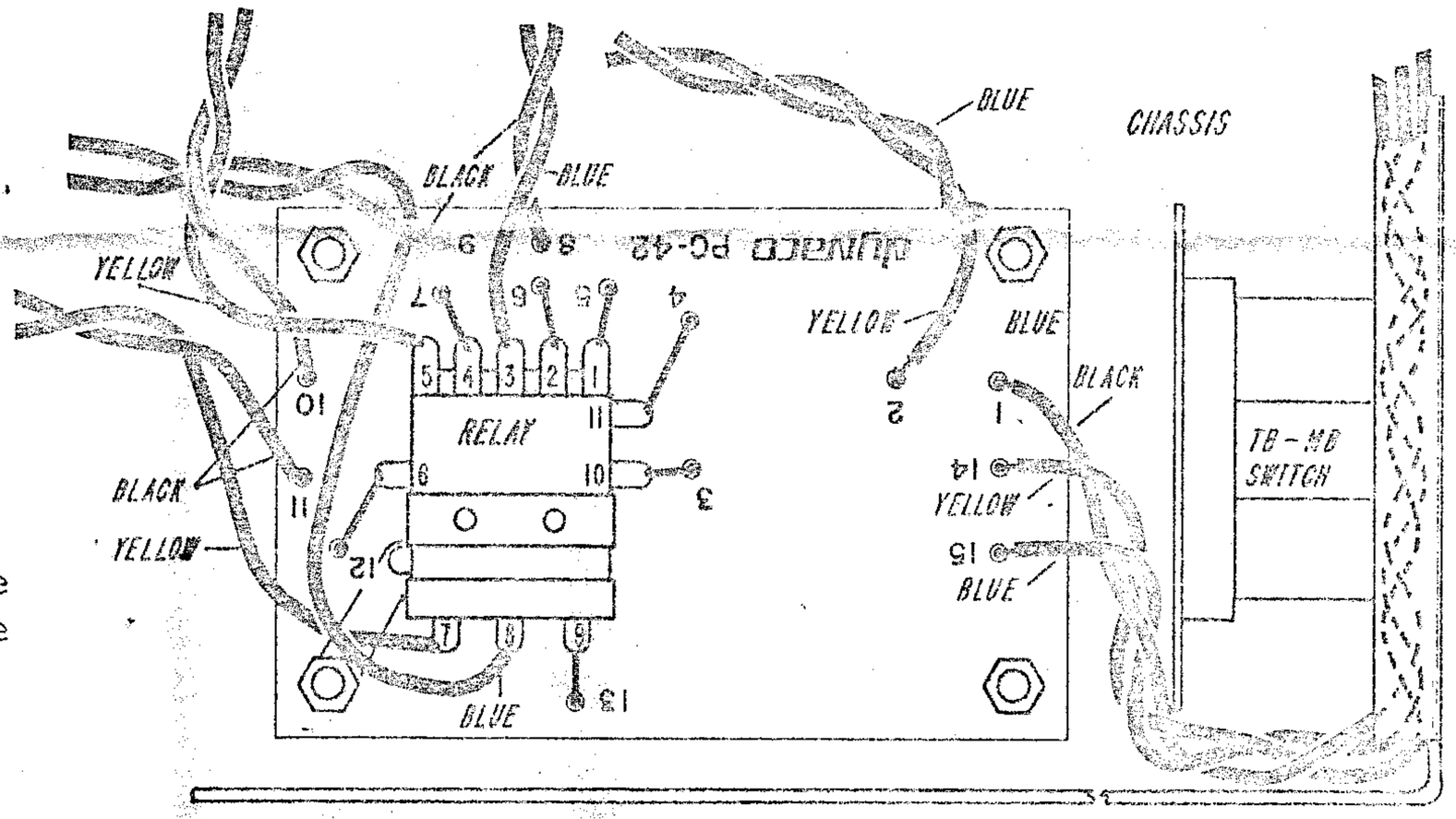
1 ( ) The chassis of the PAT-5 contains a single unused large hole under the selector switch SS. If four unused smaller holes are not already provided under the front portion of SS, it is first necessary to drill them. Mark the outside of the chassis 3/4" to the front of the large hole, and 5/8" in from the near edge of the chassis. The four corner holes of the PC-42 board may be used as a template to mark the center lines of the four holes to be drilled. The just marked location is for one corner, with the others positioned under SS wafers AF-AR and BF-BR. Use a center punch, and an electric or hand drill fitted with a 1/8" metal drill. Drill from the outside, but use care not to nick or otherwise come in contact with the selector switch or wires. Remove any metal burrs.

15 ( ) Strip a 9" piece of black wire bare of insulation, and cut four pieces of the bare wire each 1-1/2" long. Bend a small hook at one end of each wire. Feed the straight end through a hole on the board, until the hook at the other end engages a lug on the relay. Solder the lug on the relay, and the hole on the circuit side of the board, and cut off any excess wire:

a ( ) lug #11 to hole #4
b ( ) lug #1 to hole #5
c ( ) lug #2 to hole #6
d ( ) lug #4 to hole #7

16 ( ) Similarly cut three pieces of bare wire each 1" long. Bend a hook at one end of each wire, feed the straight end through a hole on the board until the hook engages a relay lug. Solder the lug, and the hole on the circuit side. Cut off excess wire:

a ( ) lug #6 to hole #12
b ( ) lug #9 to hole #13
c ( ) lug #10 to hole #3



17 ( ) Prepare a 13" blue wire and an 11" black wire by removing 1/4" of insulation from both ends. Start with two ends even, and twist them uniformly together to within 1/2" of the end of the black wire (the blue wire should be about 2" longer than the end of the black wire). Solder the longer end of the blue wire to *relay lug* #8, and solder the corresponding end of the black wire to hole #9 on the board. The other ends are connected later.

18 ( ) Similarly prepare an 11" yellow wire and a 10" black wire. Start with the two ends even, and twist them together to within 1/2" of the end of the black wire (the yellow wire should be about 1" longer than the end of the black wire). Solder the longer end of the yellow wire to relay lug #7, and solder the corresponding end of the black wire to hole #11 on the board. The other ends are connected later.

19 ( ) Prepare a 26" blue wire, a 26" yellow wire, and a 25" black wire. Start with the three ends even and twist them together uniformly to within 2" of the other end of the black wire. Solder the black wire from the even end to hole #1. Solder the yellow wire from the even end to hole #14. Solder the blue wire from the even end to hole #15. The other ends are connected later.

20 ( ) Prepare a 9-1/4" blue wire and an 8-1/2" black wire, but remove insulation from one end only of the black wire. Start with the prepared ends, the blue 3/4" longer than the black wire, and twist them uniformly together to within 3/4" of the other end of the blue wire. Twist the black around the blue wire to form a circle, and then cut off any excess black wire. (See the diagram in the PAT-5 manual, page 12.) Solder the blue wire from the prepared ends to relay lug #3, and solder the corresponding end of the black wire to hole #8 on the board.

21 ( ) Similarly prepare a 10-1/2" yellow wire and a 9-1/2" black wire, and remove insulation from only one end of the black wire. Start with the two prepared ends, the yellow 1"

longer than the black wire, and twist them uniformly together to within 3/4" of the other end of the yellow wire. Twist the black around the yellow wire to form a circle, and then cut off any black wire. Solder the yellow wire from the prepared ends to relay lug #5, and solder the corresponding end of the black wire to hole #10 on the board.

22 ( ) Prepare a 15" blue wire and a 14" yellow wire. Remove the insulation from only one end of the blue wire. Start with the two prepared ends with the blue wire 1-1/2" longer than the yellow wire. Twist them together uniformly to within 3/4" of the other end of the yellow wire. Twist the blue wire around the yellow wire to form a circle, and cut off any excess blue wire. Connect the yellow wire at this end to hole #2. The other ends are connected later.

This completes connections of wires to the relay and to the PC-42 board. Check that *all* holes and components are soldered on the board, and that the 11 relay lugs are securely soldered. No wires or components should touch other than the intended connection.

INSTALLING THE RELAY ASSEMBLY

23 ( ) With side cutting pliers, snip off the blue wire in the PAT-5 connected to input socket lug #12 and unsolder the other end of the wire from eyelet #23 on the front PC-34 board. Discard wire.

24 ( ) Similarly snip off the yellow wire connected to input socket #24 and unsolder the other end of the wire from eyelet #23 on the rear PC-34 board. Discard wire.

25 ( ) Position the relay assembly under the selector switch on the chassis with the relay toward the rear so that the various twisted wires lie near the chassis and point in the following directions: the twisted pair of blue-black and yellow-black wires with *prepared ends* toward the back panel between SS and the circuit boards, and between the SS brace and the rear PC-33 board, over toward input sockets #12 and #24; the twisted blue-yellow wires between the rear PC-34 and the front PC-33, hooked over the top edge of the front-to-back brace; the yellow-black wires with the cut off black end also between the rear PC-34 and the front PC-33, over toward eyelet #23 on the rear PC-34; the blue-black wires with the cut off black end between the front and rear PC-34 boards, over toward eyelet #23 on the front PC-34. *The positioning of the remaining twisted blue, yellow and black wires is very important.* They should be positioned in a 1" wide "U" to the nearby side of the chassis, underneath the MB and TB switches, along the bottom edge of the front panel, and then along the bottom edge of the front-to-back brace. Immediately behind the rear PC-34 circuit board, bring the wires up and over the front-to-back brace. Avoid needless force on existing wiring.

26 ( ) Select the four each long screws, 3/8" spacers, and nuts with attached lockwashers. Pass the screws through the drilled holes from the outside of the chassis, slip the spacers on the screws from the inside, mount the board over the spacers, and tighten firmly with the nuts. See that no bare wires touch the hardware.

27 ( ) Select the yellow and black twisted pair with the prepared ends. Solder the free end of the yellow wire to input socket lug #24 on the back panel, and the corresponding end of the black wire to the short ground lug located between input socket lugs #23 and #24. It will be easier to connect these wires and those of the next step if the back panel is tilted out. Note that it may not be possible to solder these wires through the holes in the lugs; instead, lay the wire flat against the lug and hold it in position as you solder.

28 ( ) Select the blue and black twisted pair with the prepared ends. Solder the free end of the blue wire to input socket lug #12, and the corresponding end of the black wire to the short ground lug between input sockets #11 and #12.

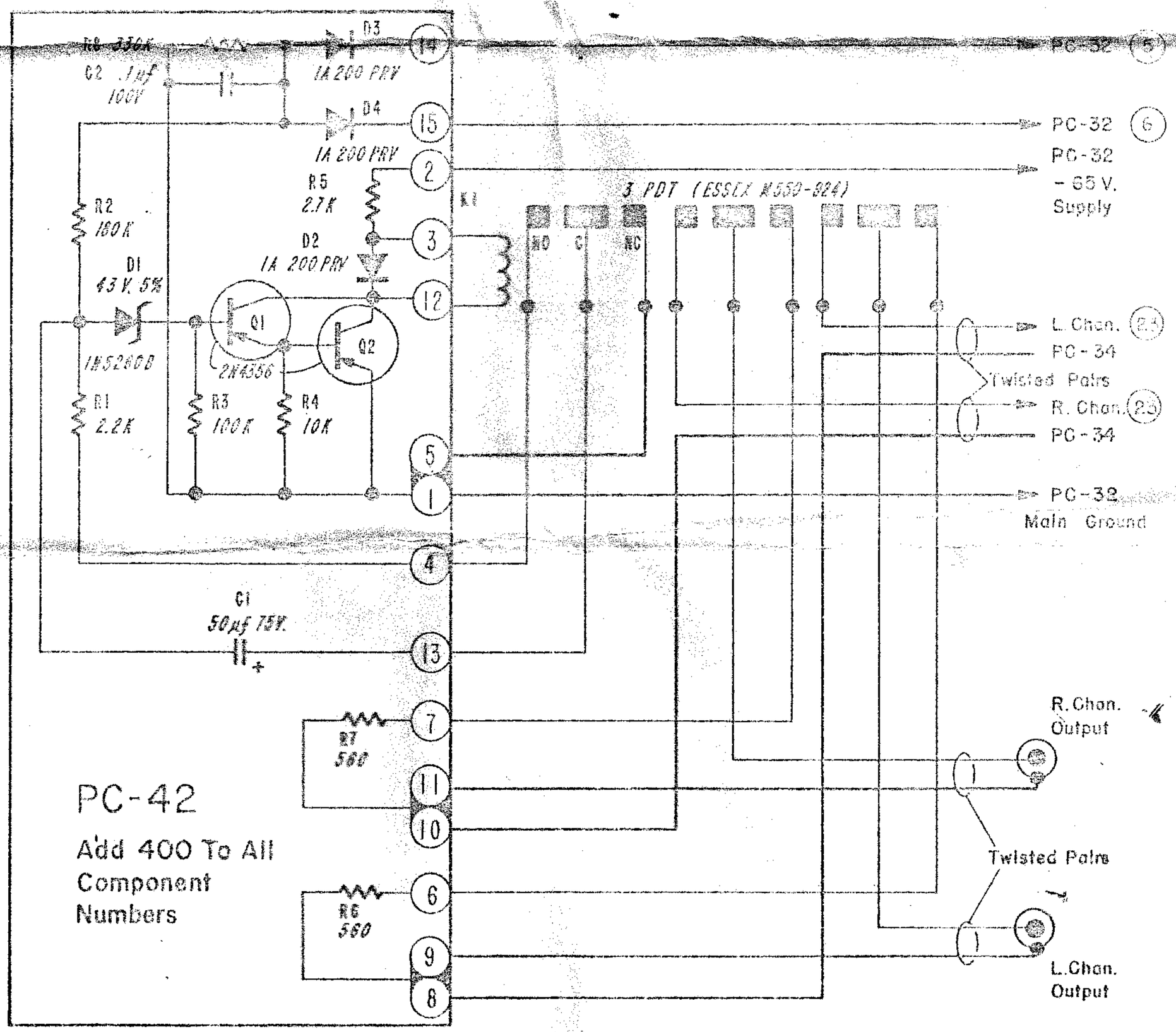
29 ( ) Select the yellow and black twisted pair with the black wire cut off, and solder the free end of the yellow wire to eyelet #23 on the *rear* PC-34 board.

30 ( ) Select the blue and black twisted pair with the black wire cut off, and solder the free end of the blue wire to eyelet #23 on the *front* PC-34 board.

31 ( ) Select the blue and yellow twisted pair. See that these wires lie flat against the chassis between the front PC-33 and the rear PC-34 to the front-to-back brace, up and over the top of the brace to the PC-32 power supply board. Bend a small hook at the end of each wire. Solder the free end of the yellow wire to the negative (-) lead from capacitor C-104 on PC-32. This capacitor lead is directly below eyelets #6 & #7 on PC-32. Hook the remaining end of the blue wire over the top of the PC-32 board, and solder it to the foil pathway at eyelet #8 (the red-yellow lead from the power transformer connects to eyelet #8).

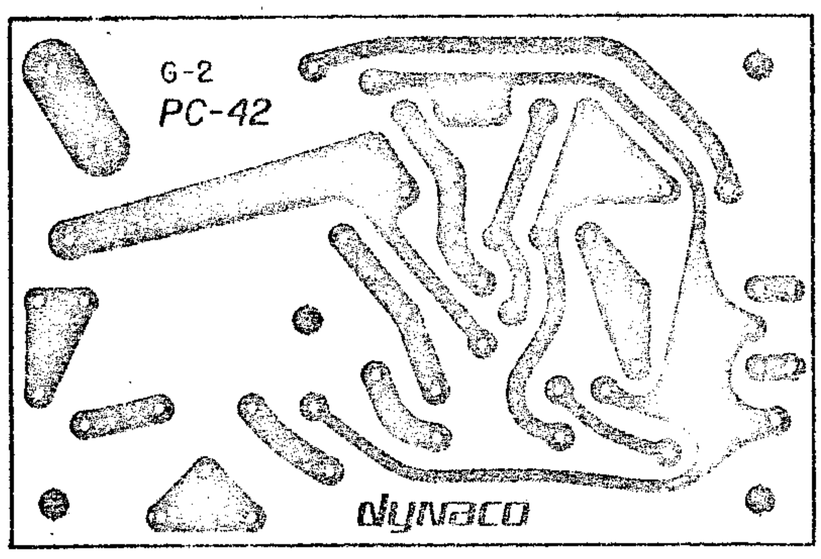
32 ( ) Select the remaining blue, yellow, and black twisted wires. Bend a small hook at the end of each wire. Hook the end of the blue wire over the top of the PC-32 board, and solder it to the foil pathway at eyelet #5 (a red lead from the power transformer connects to eyelet #5). Solder the end of the yellow wire to the foil pathway at eyelet #6 (the other red transformer lead connects here). Solder the end of the black wire to the foil pathway at eyelet #2. Install a small length of electrical tape along the top edge of PC-32 to prevent the wires from shorting against the cover.

The installation of the RCT-5 relay assembly is complete. Double check your work, and see that no wires touch other than the intended connection, and that all wires are clear of the top of the relay.

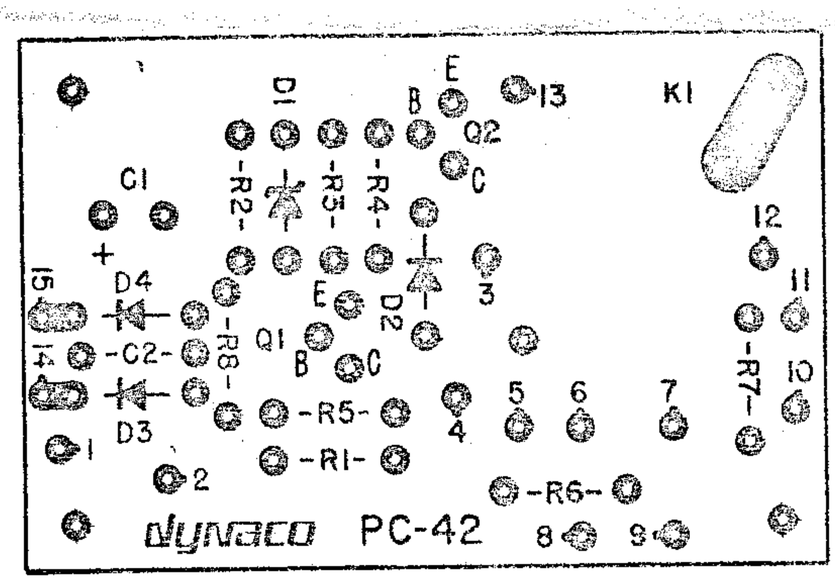


CIRCUIT BOARD ASSEMBLY

All components except the two transistors should be installed flush against the circuit board on the side which carries the identifying markings. Solder each lead to the circuit side (with the foil pathways), and cut off all excess leads close to the board. A complete discussion of this procedure will be found on page 23 in the PAT-5 manual under POWER SUPPLY BOARD WIRING.



Circuit Side



Component Side

2 ( ) Select the PC-42 board and the two 560 ohm (green-blue-brown) resistors. Solder them in positions R6 and R7.

3 ( ) Solder the 2,200 ohm (red-red-red) resistor in position R1.

4 ( ) Solder the 180,000 ohm (brown-gray-yellow) resistor in position R2.

5 ( ) Solder the 100,000 ohm (brown-black-yellow) resistor in position R3.

6 ( ) Solder the 10,000 ohm (brown-black-orange) resistor in position R4.

7 ( ) Solder the 2,700 ohm (red-violet-red) resistor in position R5.

8 ( ) Solder the 330,000 ohm (orange-orange-yellow) resistor in position R8.

9 ( ) Solder the zener diode, Part #540543 (1N5260B) in position D1. All diodes have one end marked with a stripe, an arrow head, or a colored tip. Install the diode so that the arrow head on the board points toward the marked end of the diode. See the diagram in the PAT-5 manual, page 24.

10 ( ) Select the three remaining diodes, part #544012. Install them in positions D2, D3, and D4. Make sure that each diode is correctly positioned on the board.

11 ( ) Solder the two transistors, Part #562356 in positions Q1 and Q2. If the transistors are marked F 2N4356 527, the flat on each transistor faces toward hole #13. If the transistors are marked FPN 4356, the flat on each transistor faces toward hole #15. Check to see that the "E", "B", and "C" leads properly match up with the corresponding holes on the board (see diagram of the component side). Do not place the transistors against the board, but mount them about 1/8" above it. A match stick can be used as a spacer until all 6 leads are soldered.

12 ( ) Solder the 50 mfd capacitor in position C1. The capacitor is marked for polarity with a "+" or a "-" sign. The board shows a "+" sign only for correct orientation. Observe polarity when installing.

13 ( ) Select the 0.1 mfd disc capacitor. Install it in position C2.

14 ( ) Position the relay on the board so that the five closely spaced lugs on the relay lie above holes #8 and #9 on the board. Install lockwashers on the two *short* screws, and pass the screws from the circuit side through two large unmarked holes in the board, which are adjacent to holes #3 and #12. The screws engage the prethreaded holes in the relay. Carefully tighten the hardware firmly.