

RECEIVER ASSEMBLY INSTRUCTIONS

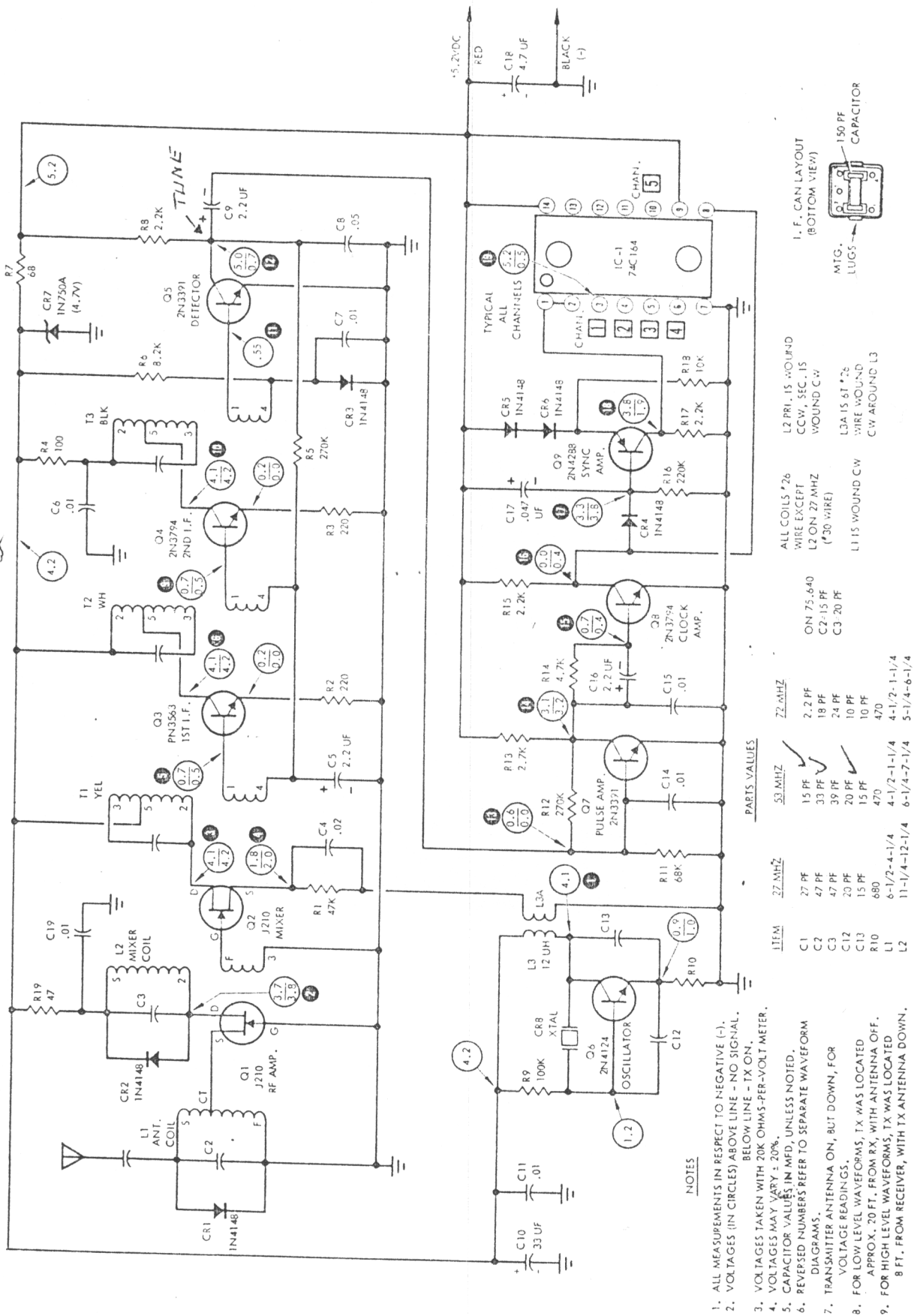


Figure 3. Schematic Diagram of Model 520R(5) Receiver

# RECEIVER ASSEMBLY INSTRUCTIONS

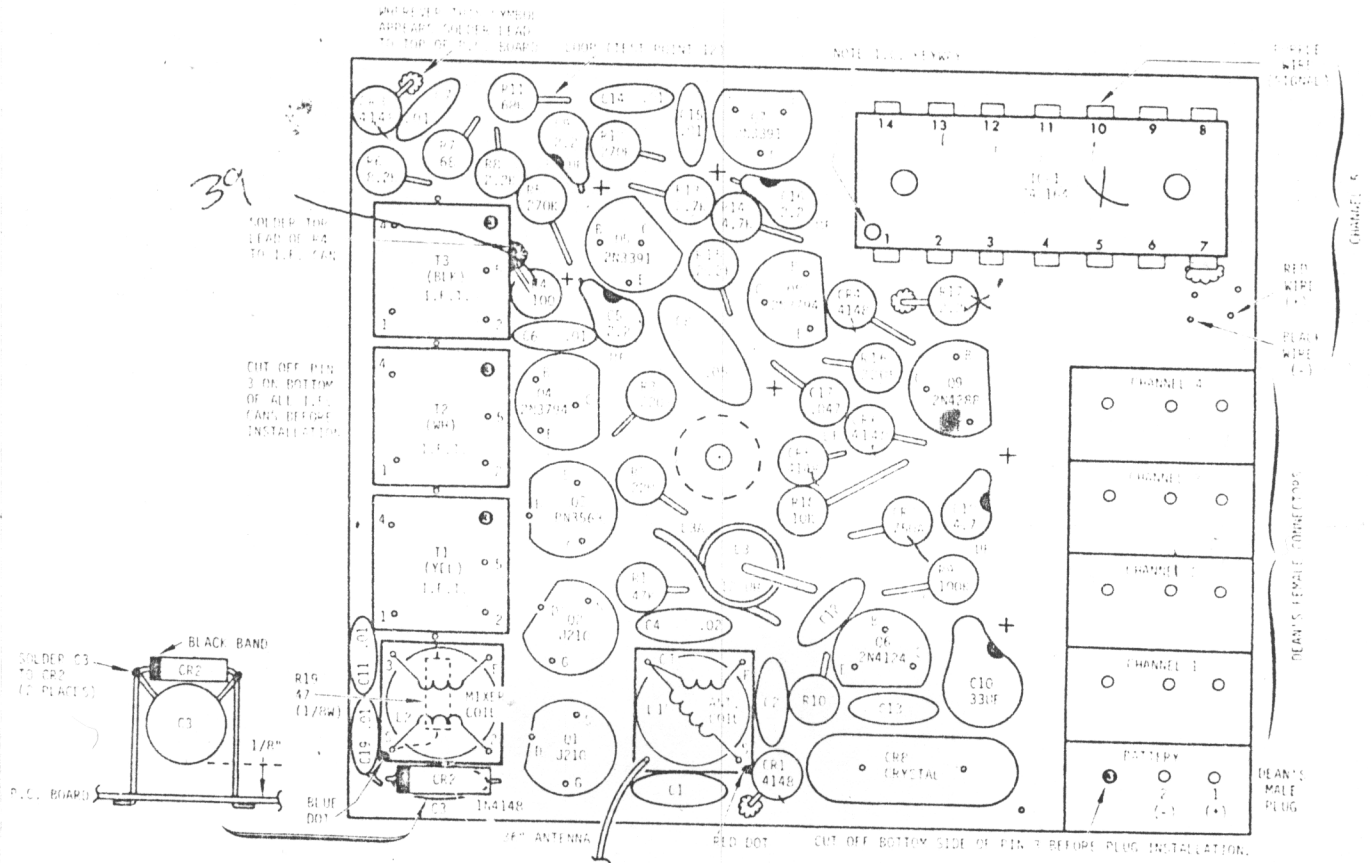


Figure 4. Receiver Component Layout

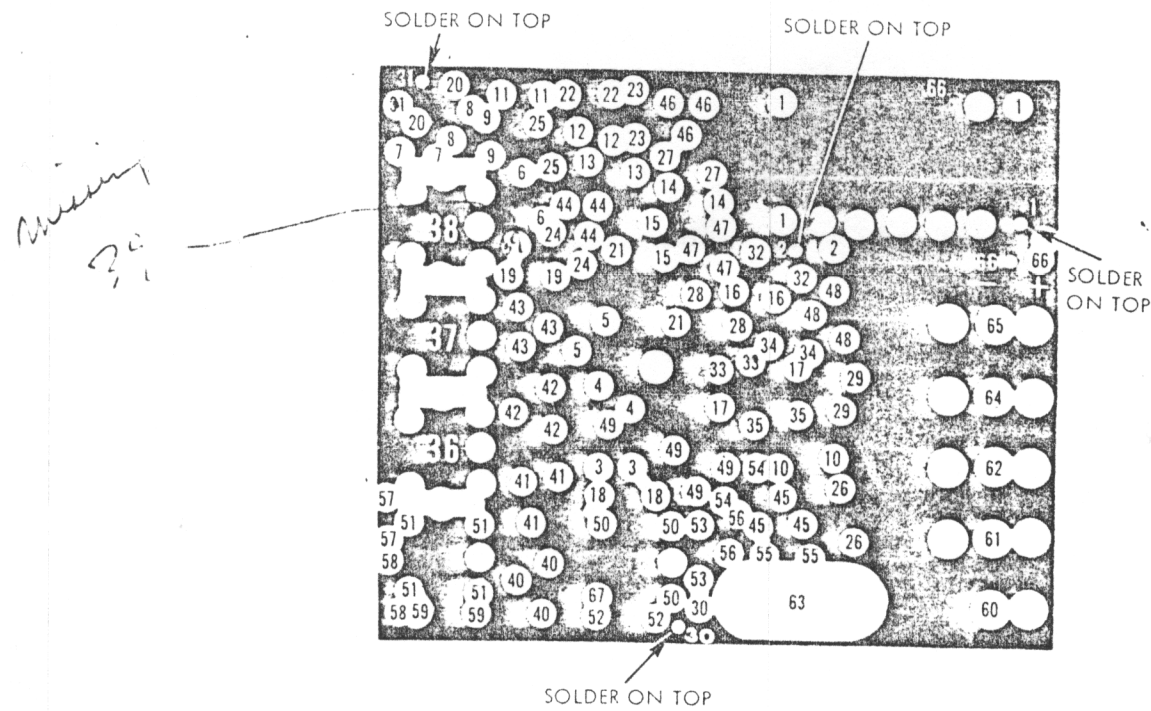
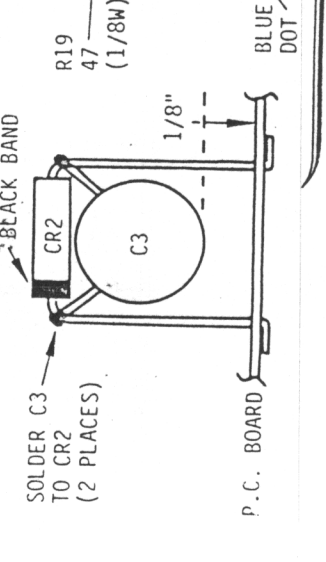
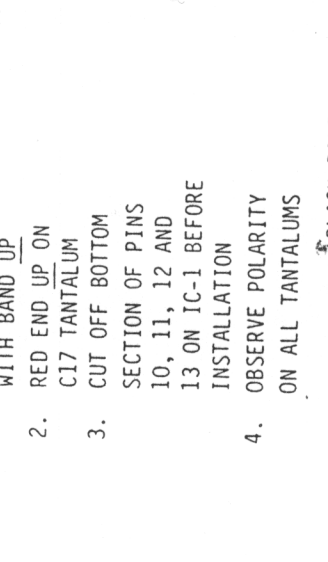
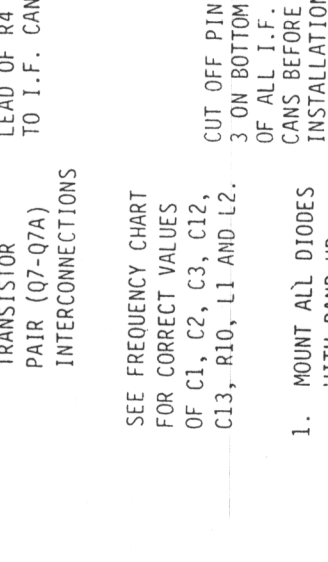
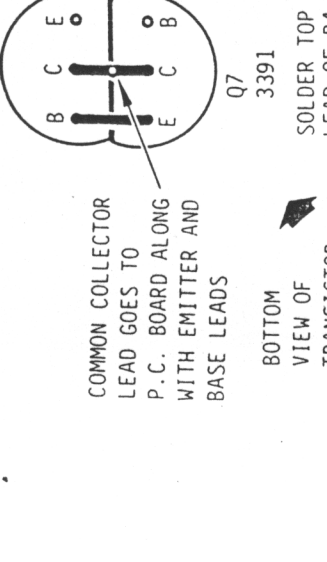
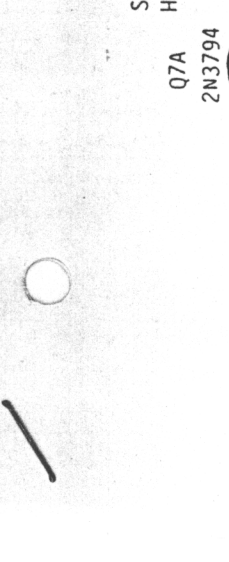
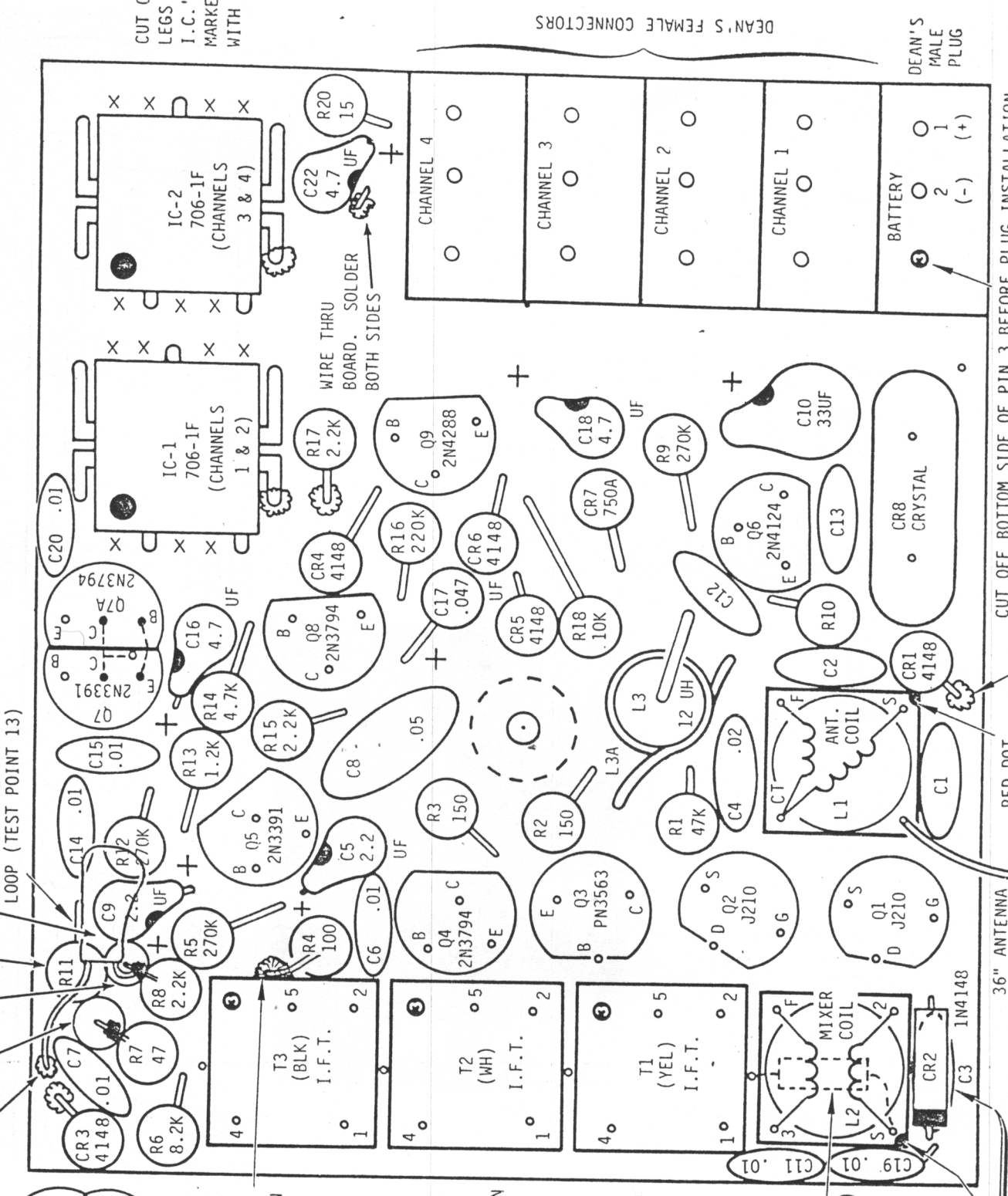


Figure 5. P.C. Board Hole Pattern, Top View



SOLDER HERE L4 10UH RFC  
R8A 68K C21 2.2UF  
R11 100 1/8W  
R7 47  
R8 2.2K  
R5 270K  
R4 100  
R6 8.2K  
R3 4148  
C7 .01  
C9 2.2UF  
C10 33UF  
C11 .01  
C12 .02  
C13  
C14 .01  
C15 .01  
C16 4.7UF  
C17 .047UF  
C18 4.7UF  
C19 .01  
C20 .01  
C22 4.7UF  
C23 4.7UF  
C24 4.7UF



SEE FREQUENCY CHART FOR CORRECT VALUES OF C1, C2, C3, C12, C13, R10, L1 AND L2.

RED DOT  
BLUE DOT

CUT OFF BOTTOM SIDE OF PIN 3 BEFORE PLUG INSTALLATION. WHEREVER THIS SYMBOL APPEARS

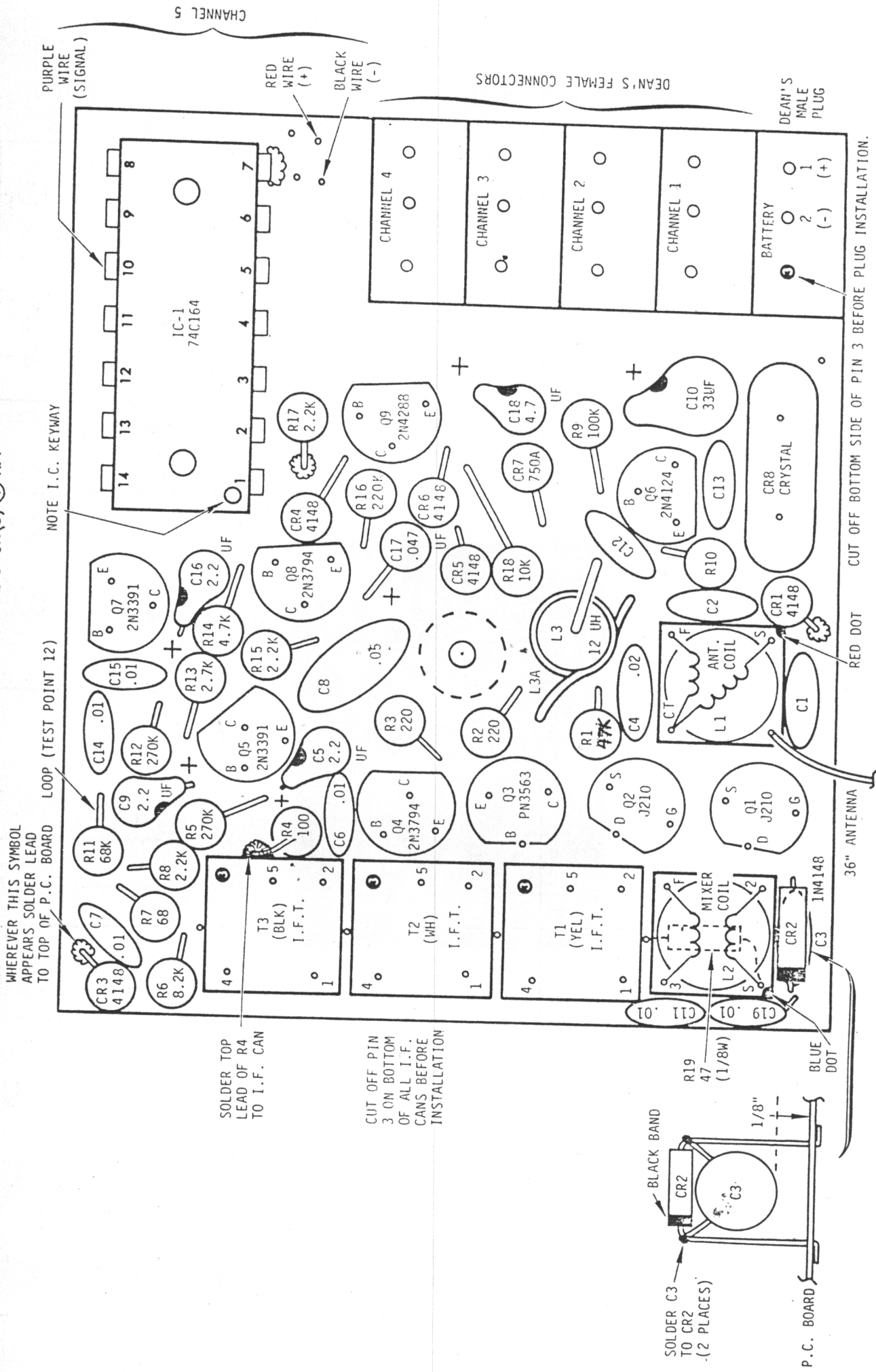
DEAN'S FEMALE CONNECTORS

DEAN'S MALE PLUG

CUT OFF LEGS OF I.C.'S MARKED WITH "

CANNON ELECTRONICS  
PARTS LAYOUT FOR  
MODEL 520R(5) ④ RX

1 APRIL 1978



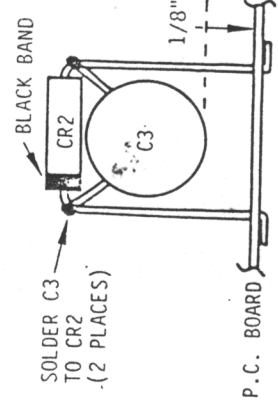
WHEREVER THIS SYMBOL APPEARS SOLDER LEAD TO TOP OF P.C. BOARD

LOOP (TEST POINT 12)

NOTE I.C. KEYWAY

SOLDER TOP LEAD OF R4 TO I.F. CAN

CUT OFF PIN 3 ON BOTTOM OF ALL I.F. CANS BEFORE INSTALLATION



36" ANTENNA

RED DOT

CUT OFF BOTTOM SIDE OF PIN 3 BEFORE PLUG INSTALLATION.

DEAN'S FEMALE CONNECTORS

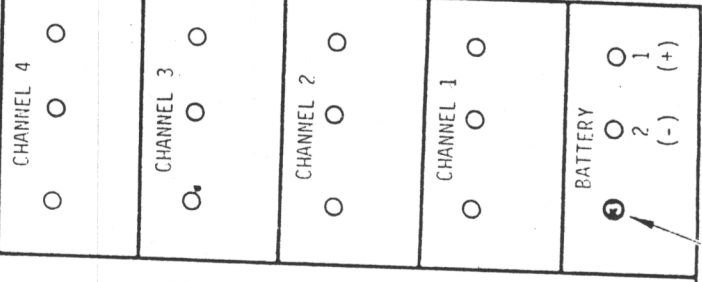
DEAN'S MALE PLUG

PURPLE WIRE (SIGNAL)

RED WIRE (+)

BLACK WIRE (-)

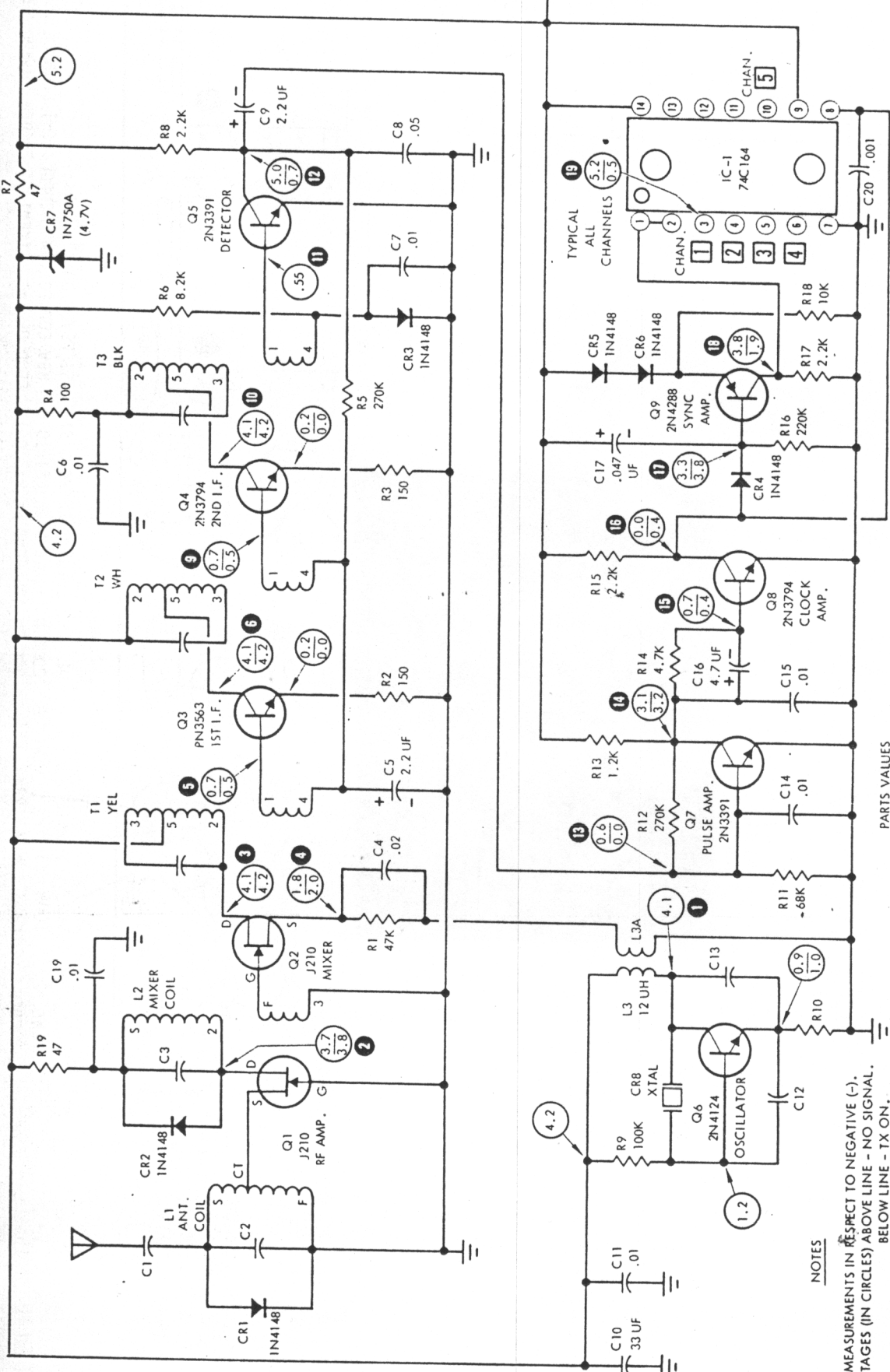
CHANNEL 5



SOLDER C3 TO CR2 (-2 PLACES)

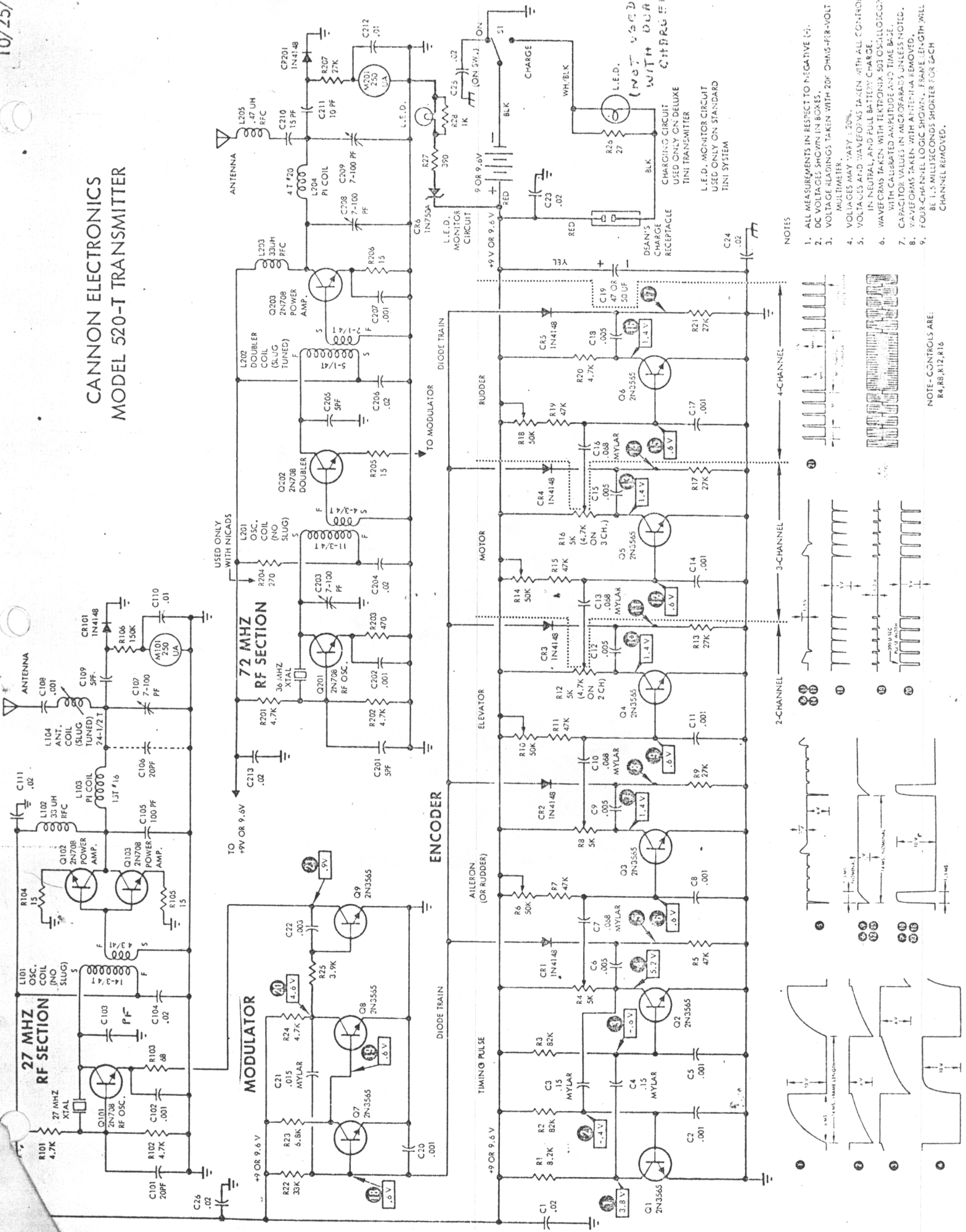
P.C. BOARD

# MODEL 520R(5) RECEIVER SCHEMATIC DIAGRAM

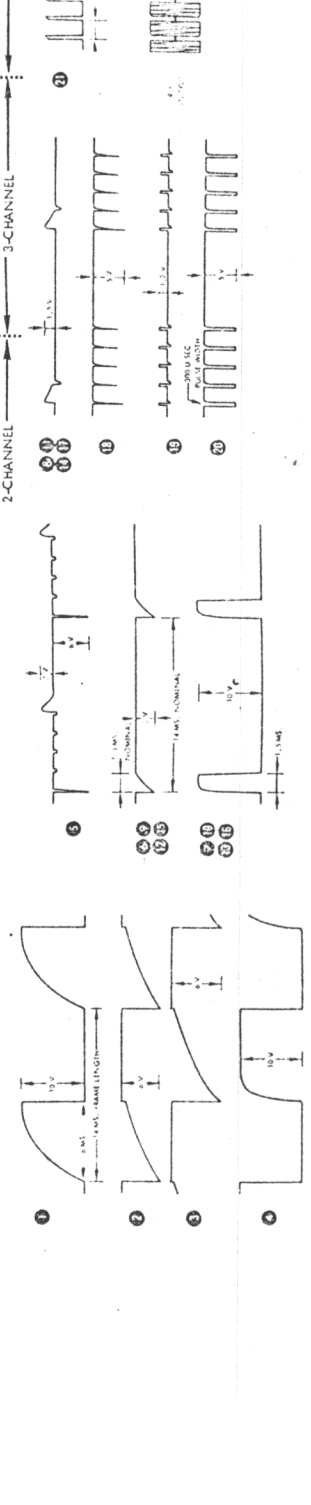


- NOTES**
1. ALL MEASUREMENTS IN RESPECT TO NEGATIVE (-).
  2. VOLTAGES (IN CIRCLES) ABOVE LINE - NO SIGNAL, BELOW LINE - TX ON.
  3. VOLTAGES TAKEN WITH 20K OHMS-PER-VOLT METER.
  4. VOLTAGES MAY VARY  $\pm 20\%$ .
  5. CAPACITOR VALUES IN MFD, UNLESS NOTED.
  6. REVERSED NUMBERS REFER TO SEPARATE WAVEFORM DIAGRAMS.
  7. TRANSMITTER ANTENNA ON, BUT DOWN, FOR VOLTAGE READINGS.
  8. FOR LOW LEVEL WAVEFORMS, TX WAS LOCATED APPROX. 20 FT. FROM RX, WITH ANTENNA OFF.
  9. FOR HIGH LEVEL WAVEFORMS, TX WAS LOCATED 8 FT. FROM RECEIVER, WITH TX ANTENNA DOWN.
- PARTS VALUES**
- | ITEM | 27 MHz        | 53 MHz      | 72 MHz      |
|------|---------------|-------------|-------------|
| C1   | 27 PF         | 15 PF       | 2.2 PF      |
| C2   | 47 PF         | 33 PF       | 18 PF       |
| C3   | 47 PF         | 39 PF       | 24 PF       |
| C12  | 20 PF         | 20 PF       | 10 PF       |
| C13  | 15 PF         | 15 PF       | 10 PF       |
| R10  | 680           | 470         | 470         |
| L1   | 6-1/2 4-1/4   | 4-1/2 1-1/4 | 4-1/2 1-1/4 |
| L2   | 11-1/4 12-1/4 | 6-1/4 7-1/4 | 5-1/4 6-1/4 |
- ALL COILS #26 WIRE EXCEPT L2 ON 27 MHz (#30 WIRE)**
- L1 15 WOUND CW
  - L2 PRI. 15 WOUND CCW, SEC. 15 WOUND CW
  - L3A 15 6T #26 WIRE WOUND CW AROUND L3
- 1. F. CAN LAYOUT (BOTTOM VIEW)**
- 
- M.T.G. LUGS**
- 150 PF CAPACITOR**

# CANNON ELECTRONICS MODEL 520-T TRANSMITTER



- NOTES**
1. ALL MEASUREMENTS IN RESPECT TO NEGATIVE VOLTAGE SHOULD BE TAKEN WITH RESPECT TO THE POSITIVE BATTERY TERMINAL.
  2. DC VOLTAGE SHOULD BE TAKEN WITH 20K OHMS PER VOLT MULTIMETER.
  3. VOLTAGE READINGS TAKEN WITH 20K OHMS PER VOLT MULTIMETER.
  4. VOLTAGES MAY VARY ± 20%.
  5. WAVEFORMS AND VOLTAGES TAKEN WITH ALL CONTROLS IN NEUTRAL, AND FULL BATTERY CHARGE.
  6. WAVEFORMS TAKEN WITH TETRORIX 503 OSCILLOSCOPE WITH CALIBRATED AMPLITUDE AND TIME BASE.
  7. CAPACITOR VALUES IN MICROFARADS UNLESS NOTED.
  8. WAVEFORMS TAKEN WITH ANTENNA REMOVED.
  9. FOUR CHANNEL LOGIC SHOWN. FRAME LENGTH WILL BE 1.5 MILLISECONDS SHORTER FOR EACH CHANNEL REMOVED.



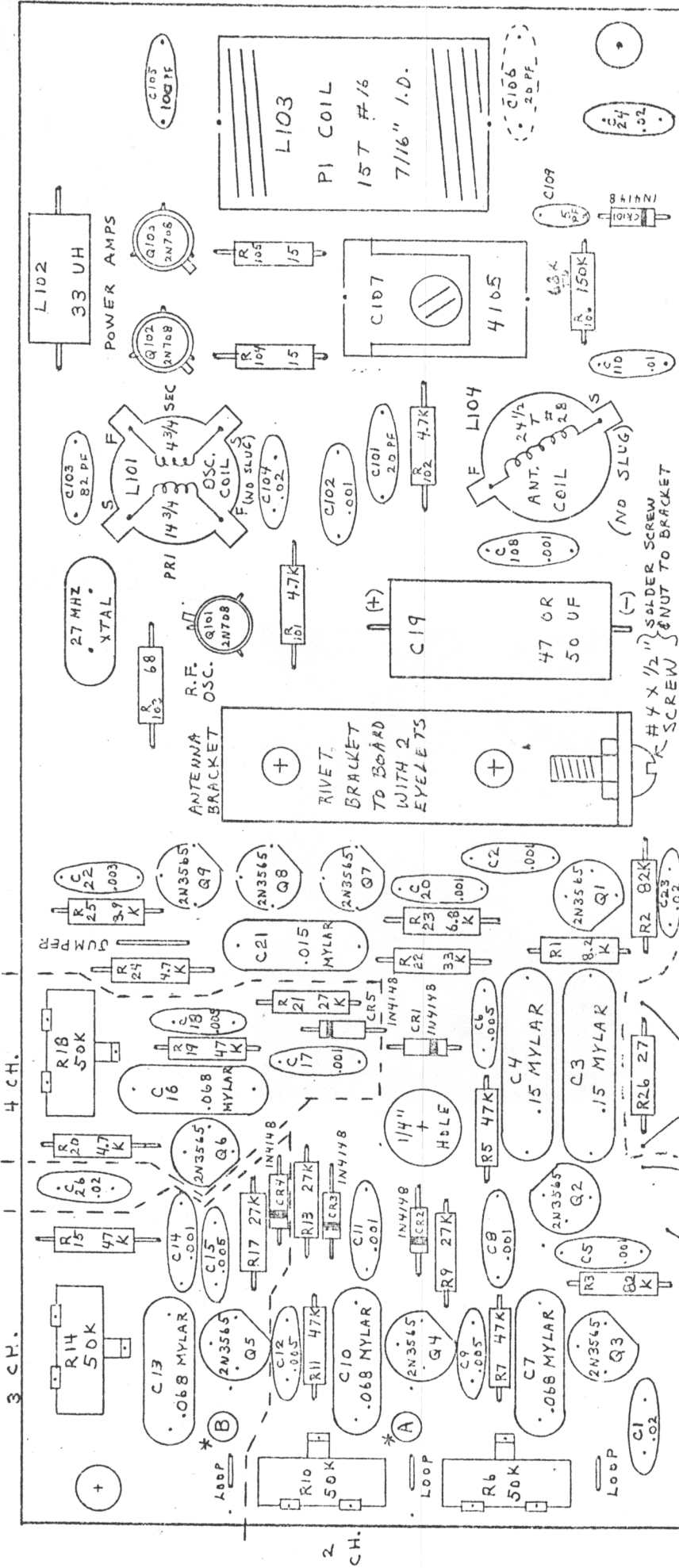
**NOTE - CONTROLS ARE:**  
R4, R8, R12, R16





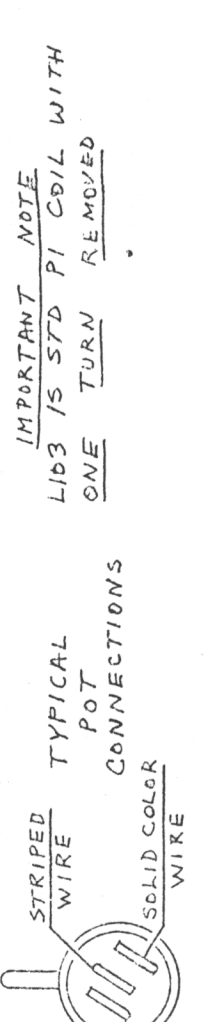
CANNON ELECTRONICS  
1976 520T 2/4 TX (27 MHZ)

10/23/76



CONTROL POTS: R4, R8, R12, R16 (5K)  
C25 ACROSS SWITCH TO CHARGE SOCKET

\* A INSTALL 4.7 K RESISTOR (R12) HERE ON 2-CHANNEL  
\* B INSTALL 4.7 K RESISTOR (R16) HERE ON 3-CHANNEL

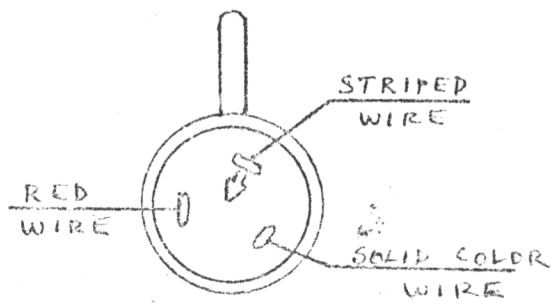
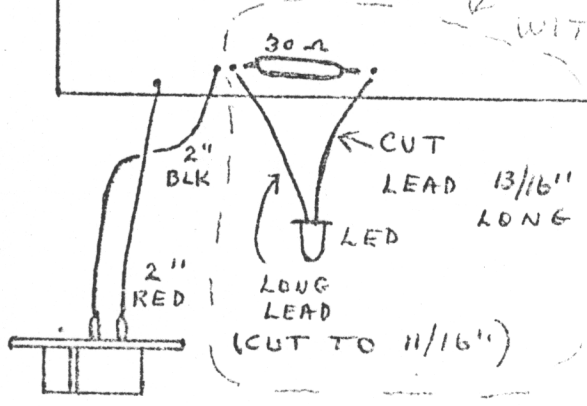
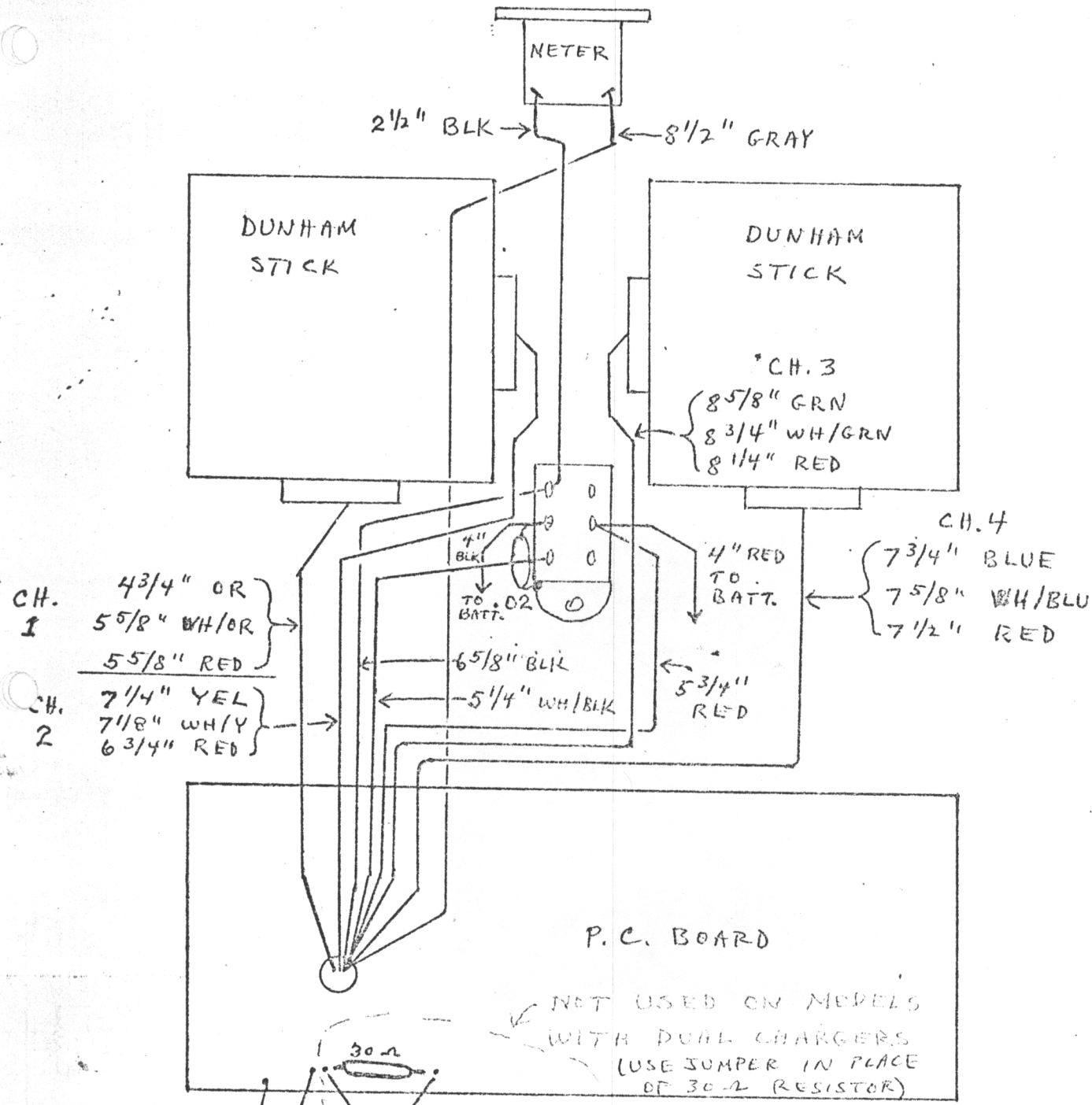


IMPORTANT NOTE  
L103 IS STD PI COIL WITH ONE TURN REMOVED

TYPICAL POT CONNECTIONS

STRIPED WIRE  
SOLDER SCREW  
#4 X 1/2\"/>

NOTE  
PN3565 TRANSISTOR MAY BE SUPPLIED IN PLACE OF 2N3565. PLEASE NOTE REVERSED POSITION OF KEYWAY.



TYPICAL POT CONNECTIONS

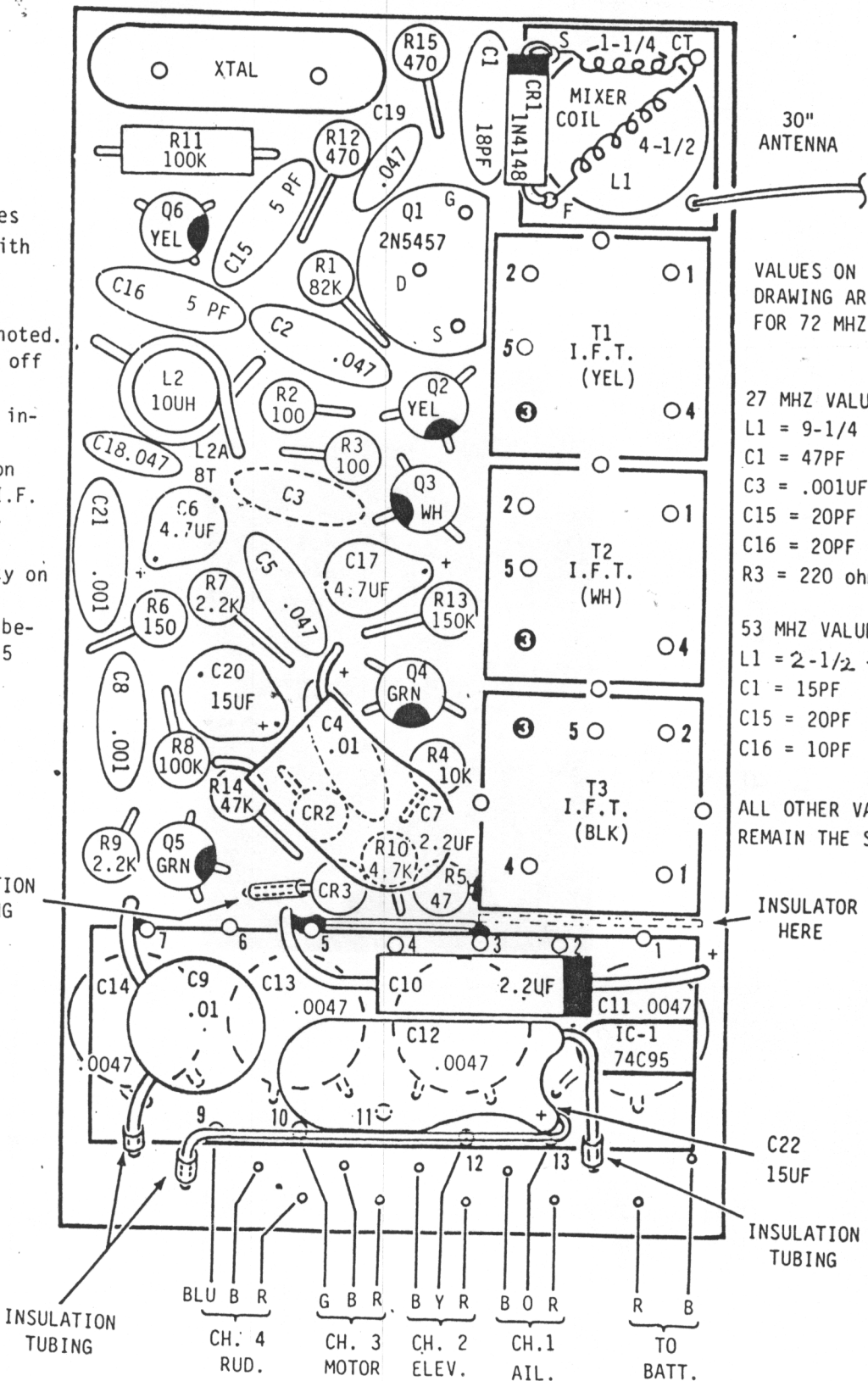
JEAN'S CHARGE RECEPTACLE

CANNON ELECTRONICS  
 1980 SUPER-MICRO RECEIVER  
 520R(5) (6)

5/25/81

NOTES

1. Mount all diodes (except CR1) with band UP.
2. All diodes are 1N4148 unless noted.
3. Completely cut off pins 8 and 14 on IC-1 before installation.
4. Cut off pin 3 on bottom of all I.F. cans before installation.
5. Observe polarity on all tantalums.
6. Install jumper between pins 3 & 5 of IC-1 before installation.



VALUES ON DRAWING ARE FOR 72 MHZ.

27 MHZ VALUES:

- L1 = 9-1/4 - 2-1/2T
- C1 = 47PF
- C3 = .001UF
- C15 = 20PF
- C16 = 20PF
- R3 = 220 ohms

53 MHZ VALUES:

- L1 = 2-1/2 - 6-1/4T
- C1 = 15PF
- C15 = 20PF
- C16 = 10PF

ALL OTHER VALUES REMAIN THE SAME.

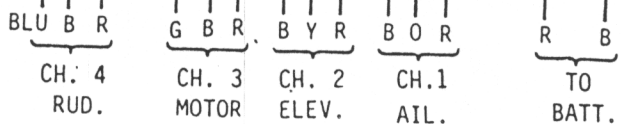
C3 USED ON 27 MHZ UNITS AND FOR GAIN ADJUSTMENT

R10 VALUE TO BE ADJUSTED FOR TIMING OF SPECIFIC TX BEING USED

INSULATION TUBING

C22 15UF

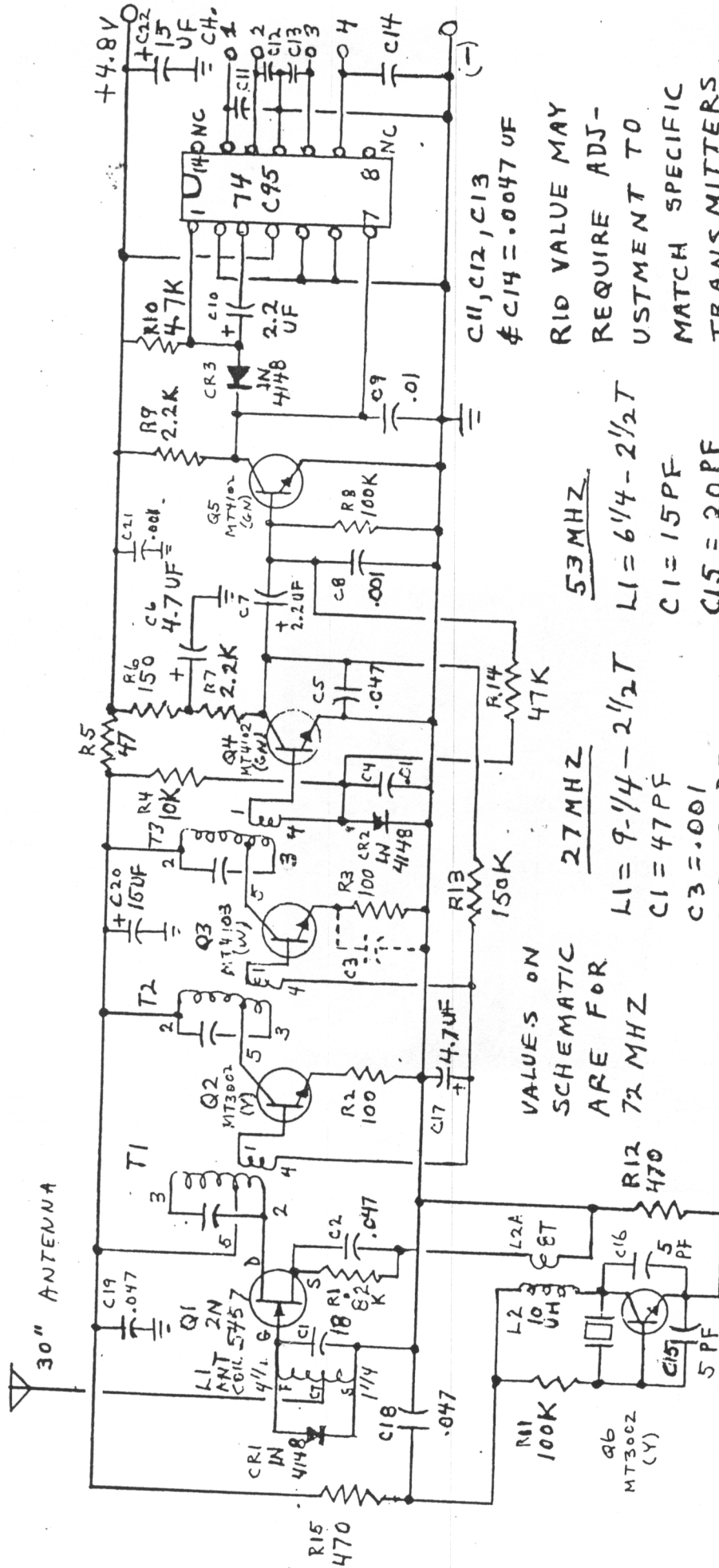
INSULATION TUBING





# CANNON ELECTRONICS 1980 SUPER-MICRO RECEIVER

8/25/80



C11, C12, C13  
C14 = .0047 UF

R10 VALUE MAY  
REQUIRE ADJ-  
USTMENT TO  
MATCH SPECIFIC  
TRANSMITTERS

53 MHZ  
L1 = 6 1/4 - 2 1/2 T  
C1 = 15 PF  
C15 = 20 PF  
C16 = 10 PF

27 MHZ  
L1 = 9 1/4 - 2 1/2 T  
C1 = 47 PF  
C3 = .001  
C15 = 20 PF  
C16 = 20 PF  
R3 = 220 Ω

VALUES ON  
SCHEMATIC  
ARE FOR  
72 MHZ

ALL OTHER VALUES REMAIN THE SAME.

TRANSISTORS:

- Q3 - MT3002 (YEL)
- Q4, Q8 - MT4103 (WH)
- Q5, Q7 - MT4102 (GRN)
- Q9 - MT0404-2. (RED)

ALL COILS #26 WIRE EXCEPT L2 ON 27 MHZ (#28 WIRE)

L1 WOUND CW  
L2 PRI WOUND CCW,  
SEC WOUND CW

\* L3A 15 6T #28 WIRE WOUND CW AROUND L3 ON 75.640 MHZ:  
C2 = 12 PF  
C3 = 20 PF

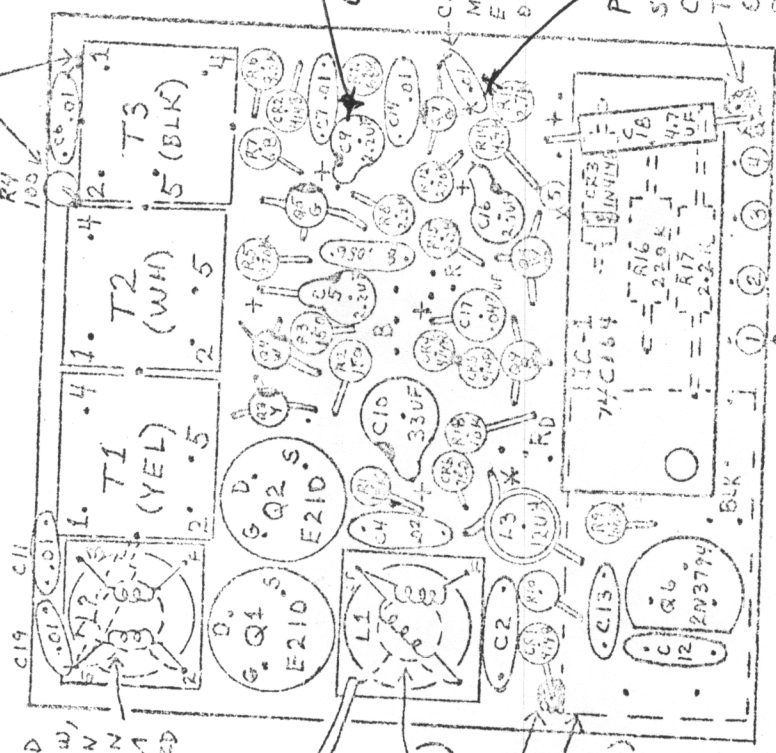
PARTS VALUES

ITEM	27MHZ	53MHZ	72MHZ
C1	27 PF	15 PF	10 PF
C2	47 PF	33 PF	15 PF
C3	47 (OR 68PF)	39 PF	24 PF
C12	20 PF	20 PF	10 PF
C13	15 PF	15 PF	10 PF
R10	680	470	470
L1	6 1/2 - 4 1/4	4 1/2 - 1 1/4	4 1/2 - 1 1/4
L2	10 1/4 - 1 1/4	6 1/4 - 7 1/4	5 1/4 - 6 1/4

520R(5) RECEPTOR (SUPER-MINI)

1. MOUNT DIODES WITH BANDS UP (EXCEPT CR5)
2. MOUNT .047UF TANT. RED END UP
3. OBSERVE POLARITY OF OTHER TANTALUMS
4. INSTALL CR3, R16 & R17 BEFORE I.C. 1
5. CUT OFF PINS 10 THRU 13 ON IC-1 BEFORE INSTALLATION
6. CUT OFF PIN 3 ON ALL I.F. CANS BEFORE INSTALLATION
7. ALL RESISTORS 1/8 W.

SOLDER LEADS TO SIDE OF CAN



SOLDER SERVO SIGNAL WIRES DIRECTLY TO SIDES OF I.C. PINS

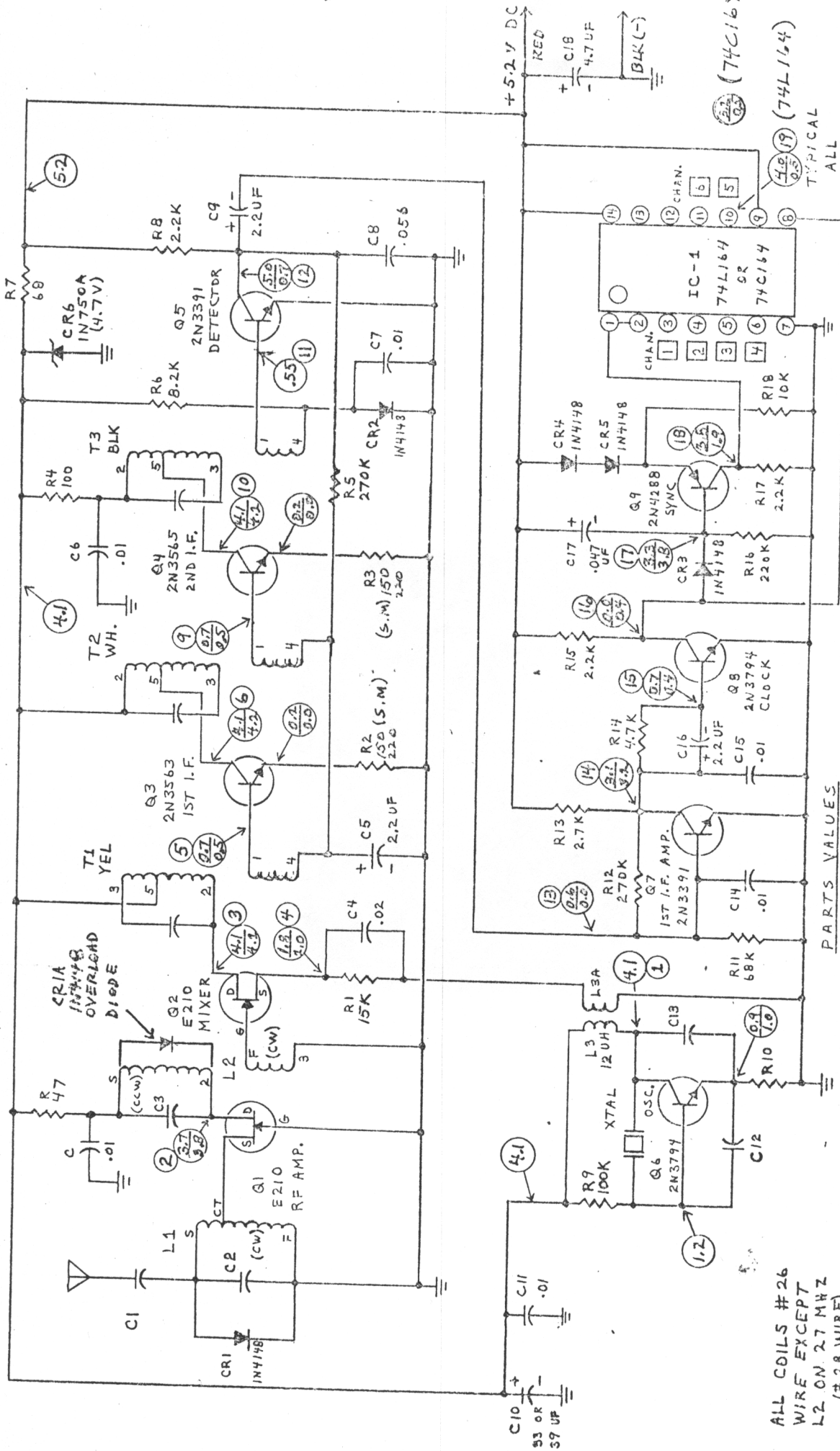
INSTALL 1M4148 DIODE ON BOTTOM OF BEARD IN WELL (SAME AS R19) BETWEEN "S" AND "2" OF L2.

INCREASE VALUES OF R2 AND R3 TO DECREASE GAIN

REFER TO 520R(5)

520R(5) RECEIVE (MINI SERIES)  
 520R(5) (2) RX (SUPER-MINI)  
 520R(5) (3) RX (SPECIAL 520)

10/23/76



ALL COILS #26 WIRE EXCEPT L2 ON 27 MHZ (#28 WIRE)

L1 IS WOUND CW  
 L2 PRI. 15 WOUND CCW, SEC. 15 WOUND CW  
 L3A IS 6T #26 WIRE WOUND CW AROUND L3

ON 75.640:  
 C2 = 12 PF  
 C3 = 20 PF

ON 520R(5) (2) (SUPER-MINI) RX  
 Q3 - MT 3002 (YEL)  
 Q4, Q8 - MT4103 (WH)  
 Q5, Q7 - MT4102 (GRN)

ITEM	27 MHZ	53 MHZ	72 MHZ
C1	27 PF	15 PF	10 PF
C2	47 PF	33 PF	15 PF
C3	47 PF	39 PF	24 PF
C12	20 PF	20 PF	10 PF
C13	15 PF	15 PF	10 PF
R10	680	470	470
L1	6 1/2 - 4 1/4	4 1/2 - 1 1/4	4 1/2 - 1 1/4
L2	10 1/4 - 11 1/4	6 1/4 - 7 1/4	5 1/4 - 6 1/4

PARTS VALUES

RESISTORS: R1 15K, R2 2.2K, R3 150, R4 100, R5 270K, R6 8.2K, R7 69, R8 2.2K, R9 100K, R10 68K, R11 68K, R12 270K, R13 2.7K, R14 4.7K, R15 2.2K, R16 220K, R17 2.2K, R18 10K

CAPACITORS: C1 .01, C2 .01, C3 .01, C4 .02, C5 2.2UF, C6 .01, C7 .01, C8 .056, C9 2.2UF, C10 53 OR 39 UF, C11 .01, C12, C13, C14 .01, C15 .01, C16 2.2UF, C17 .047 UF, C18 2.2UF

INDUCTORS: L1, L2, L3, L3A

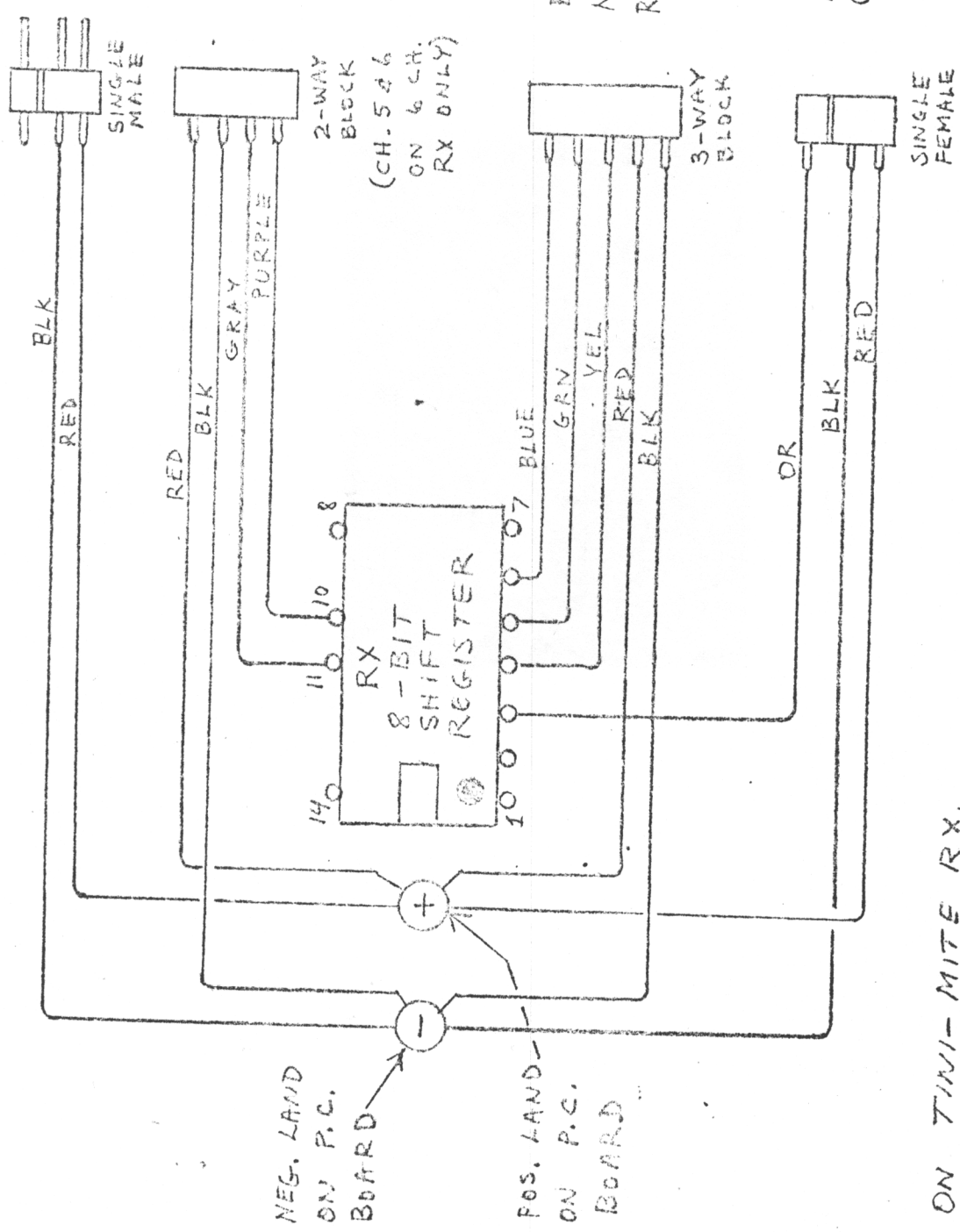
TRANSISTORS: Q1 E210, Q2 E210, Q3 2N3563, Q4 2N3565, Q5 2N3391, Q6 2N3791, Q7 2N3391, Q8 2N3794, Q9 2N4288

DIODES: CR1 IN4148, CR2 IN4148, CR3 IN4148, CR4 IN4148, CR5 IN4148

OTHER: CR1A 1N750A, T1 YEL, T2 WH., T3 BLK, IC-1 74L164

WIRING DIAGRAM  
FOR 4, 5 & 6 CH.

RECEIVERS



BATTERY

TO (+) & (-) ON P.C. BOARD  
TO PIN 10 OF I.C.  
SINGLE FEMALE  
ALTERNATE CABLE CONNECTIONS FOR 5TH CH. ON 6 CH. RX

ELEV. (CH. 2)  
MOTOR (CH. 3)  
RUDDER (CH. 4)

AILERON (CH. 1)

NEG. LAND ON P.C. BOARD

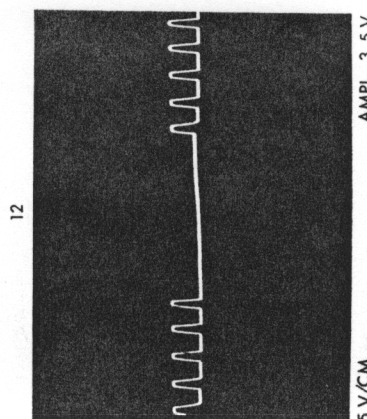
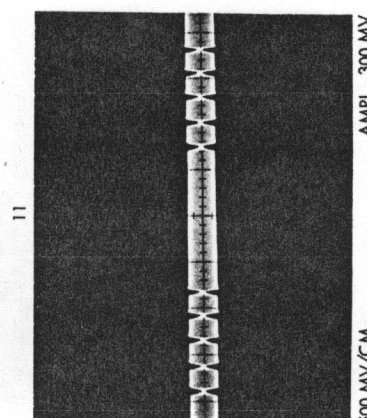
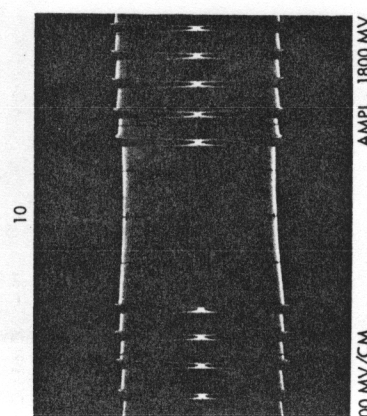
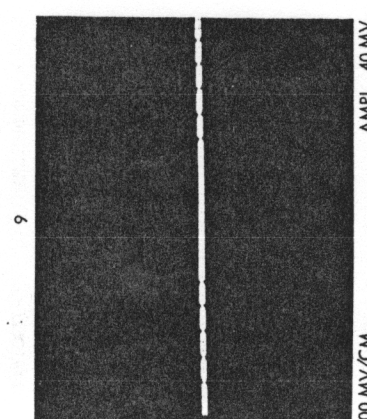
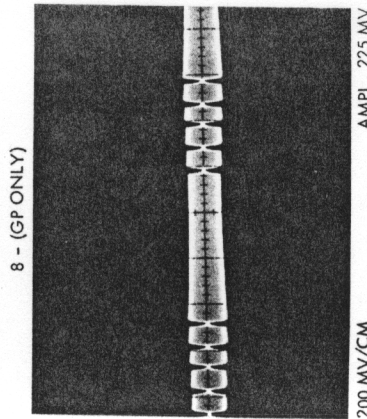
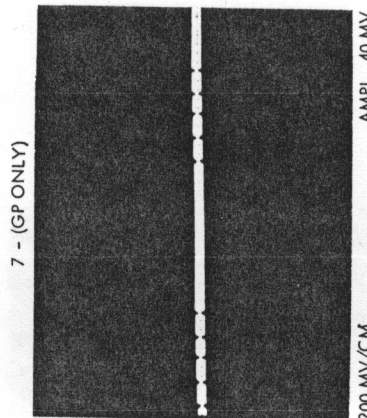
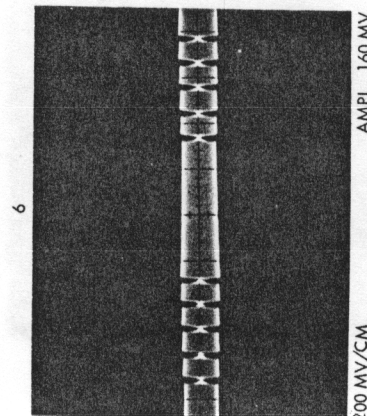
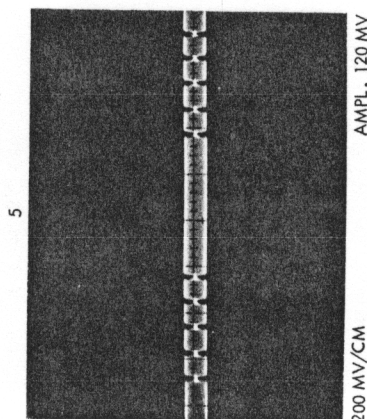
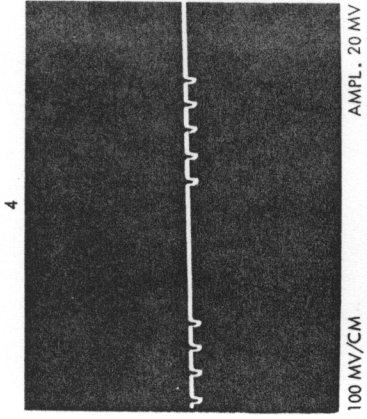
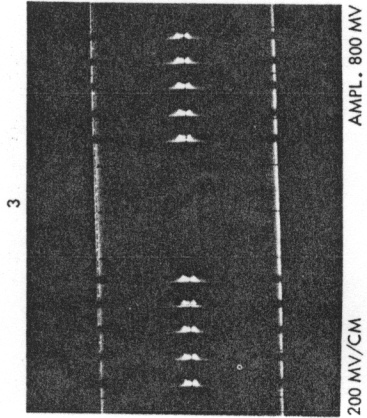
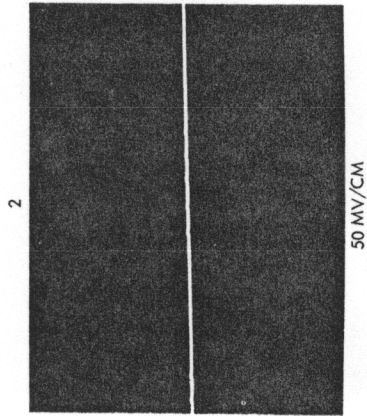
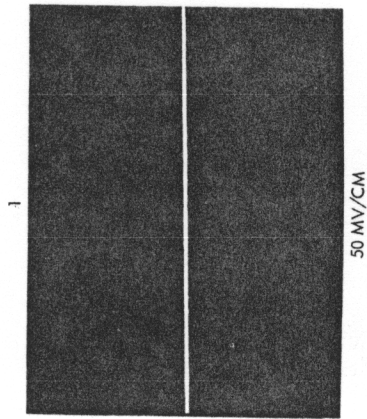
POS. LAND ON P.C. BOARD

SEE RX CABLE DRAWING FOR DETAILS ON CABLE FABRICATION

ON TRIMI-MITE RX, SOLDER 5TH AND 6TH CHANNEL CABLE SIGNAL LEADS TO UPPER SIDE OF I.C. PINS BEFORE INSTALLING I.C. IN BOARD



1977 Receiver Waveforms (Sheet 1 of 2)  
(All Receivers)

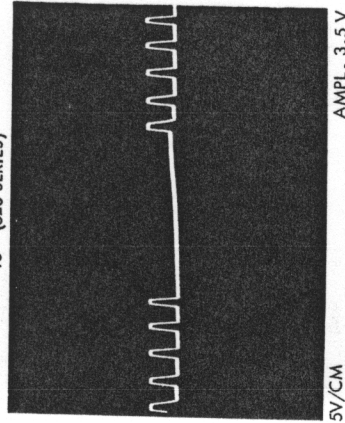


NOTES

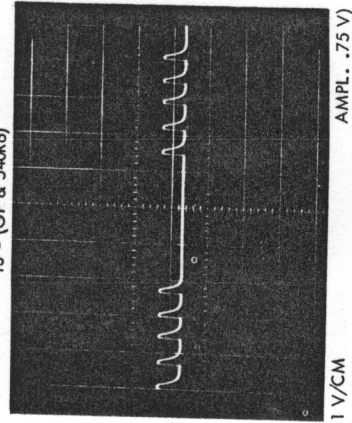
1. Numbers refer to schematic drawing test points.
2. Except where noted, waveforms apply to all models of Cannon Receivers.
3. Oscilloscope vertical sensitivity settings and signal amplitude shown below each waveform.
4. Horizontal sweep settings (all waveforms) approximately 2 M sec/CM.
5. Transmitter (with 3 inch antenna), located 3 feet from receiver, serves as signal generator.
6. Four - Channel logic shown.

1977 Receiver Waveforms (Sheet 2 of 2)  
(All Receivers)

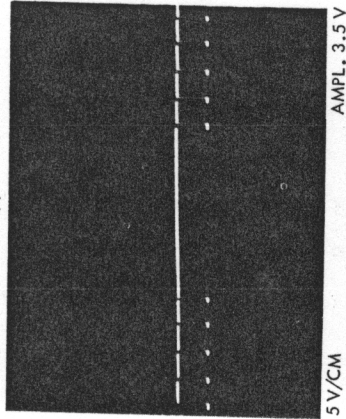
13 - (520 SERIES)



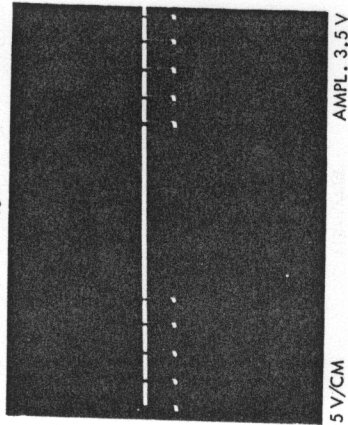
13 - (GP & 540R6)



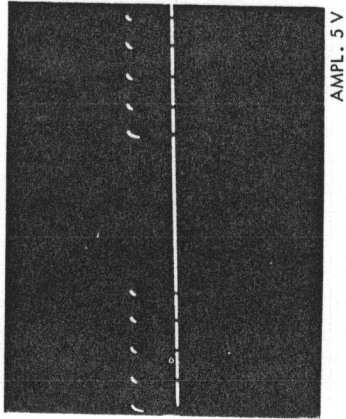
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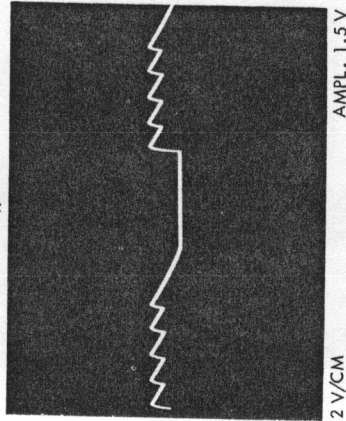
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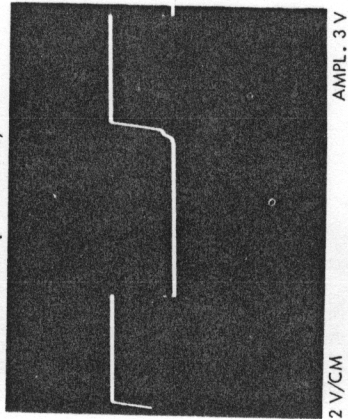
16



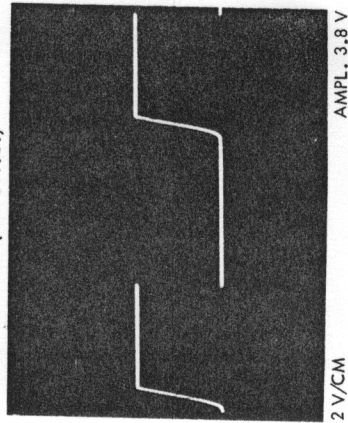
17



18 - (74L164 I.C.)

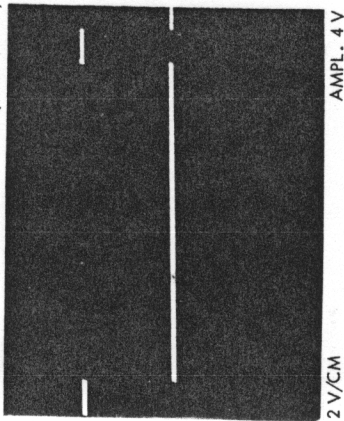


18 - (74C164 I.C.)



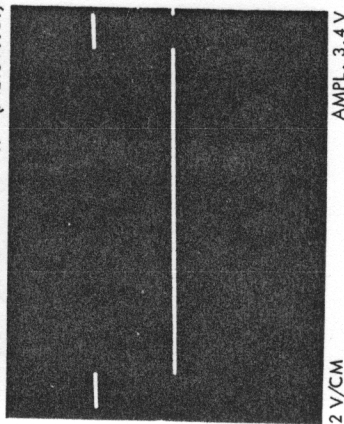
NO SERVO

19 - (74L164 I.C.)



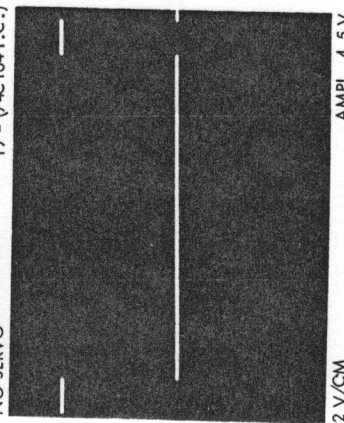
SERVO CONNECTED

19 - (74L164 I.C.)



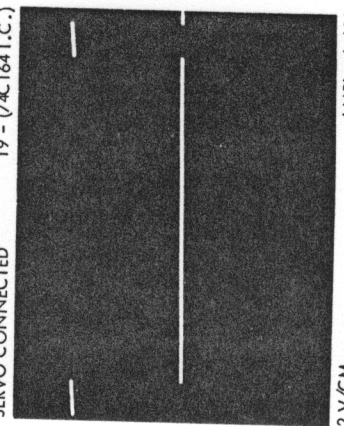
NO SERVO

19 - (74C164 I.C.)



SERVO CONNECTED

19 - (74C164 I.C.)

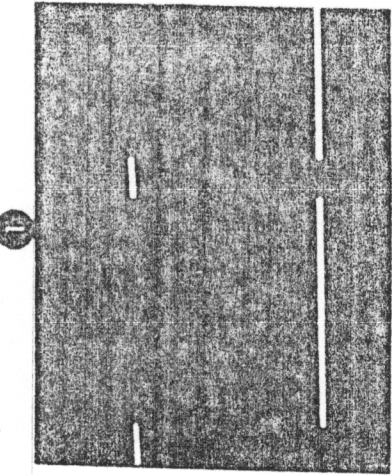


NOTES

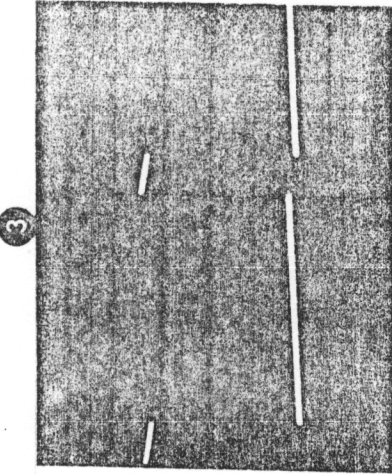
1. Numbers refer to schematic drawing test points.
2. Except where noted, waveforms apply to all models of Cannon Receivers.
3. Oscilloscope vertical sensitivity settings and signal amplitude shown below each waveform.
4. Horizontal sweep settings (all waveforms) approximately 2 M sec/CM.
5. Transmitter (with 3 inch antenna), located 3 feet from receiver, serves as signal generator.
6. Four - Channel logic shown.



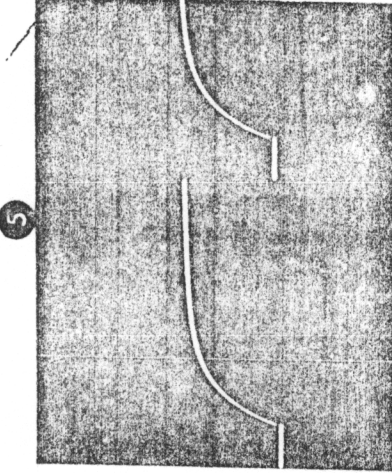
CANNON ELECTRONICS  
SERVO WAVEFORMS  
(CE-4, CE-8 3-WIRE SERVOS)



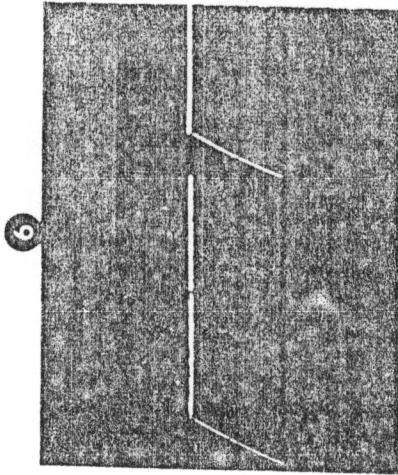
AMPLITUDE 3.6V



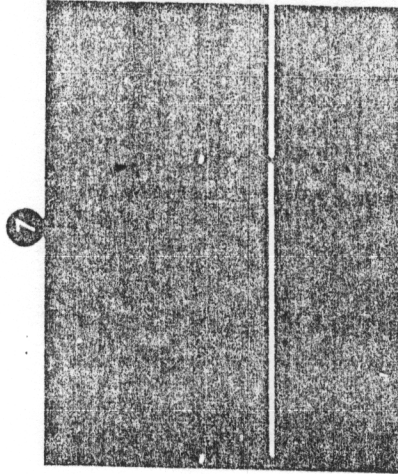
AMPLITUDE 2.9V



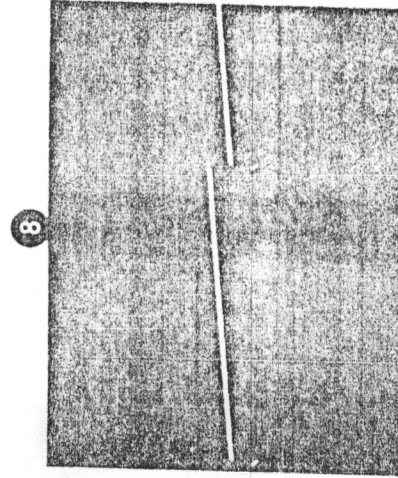
AMPLITUDE 1.8V



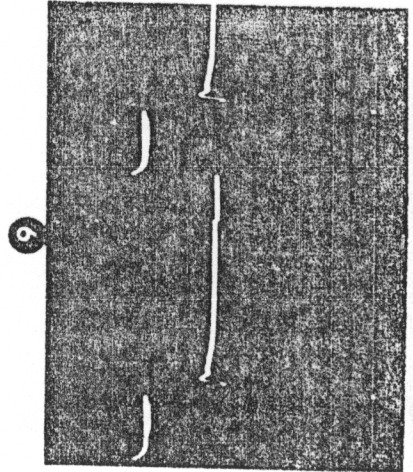
AMPLITUDE 1.8 V



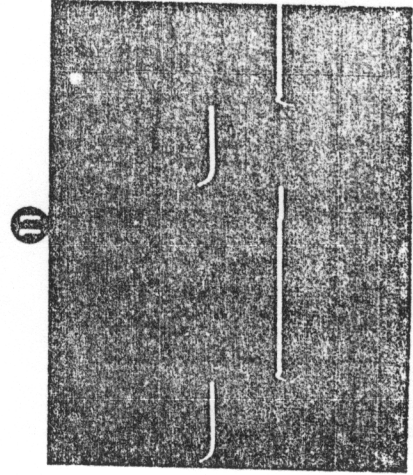
AMPLITUDE 1.4V (ERROR SIGNAL, STALLED CCW)



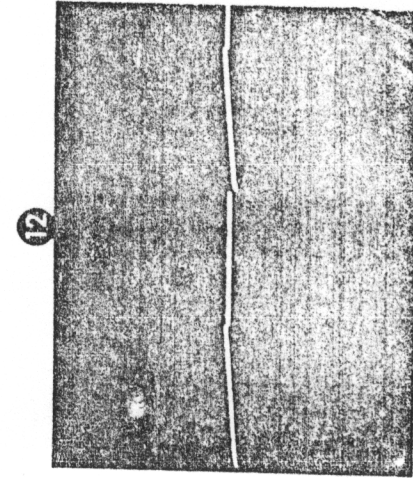
AMPLITUDE 1.0V (ERROR SIGNAL, STALLED CCW)



AMPLITUDE 4.5V (ERROR SIGNAL, STALLED CCW)



AMPLITUDE 1.5V (ERROR SIGNAL, STALLED CW)



AMPLITUDE 1.0V (ERROR SIGNAL, STALLED CW)

ALL WAVEFORMS

VERTICAL: 1V/CM

HORIZONTAL: 2 Sec/CM

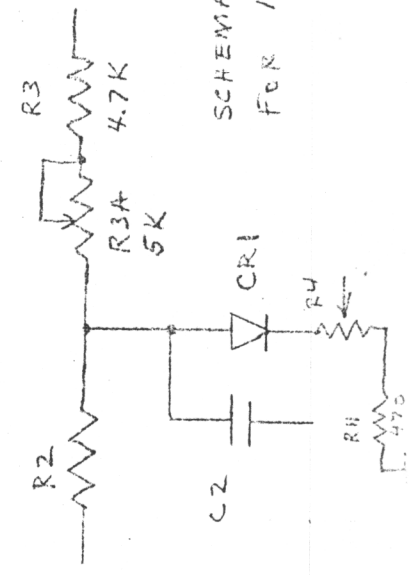
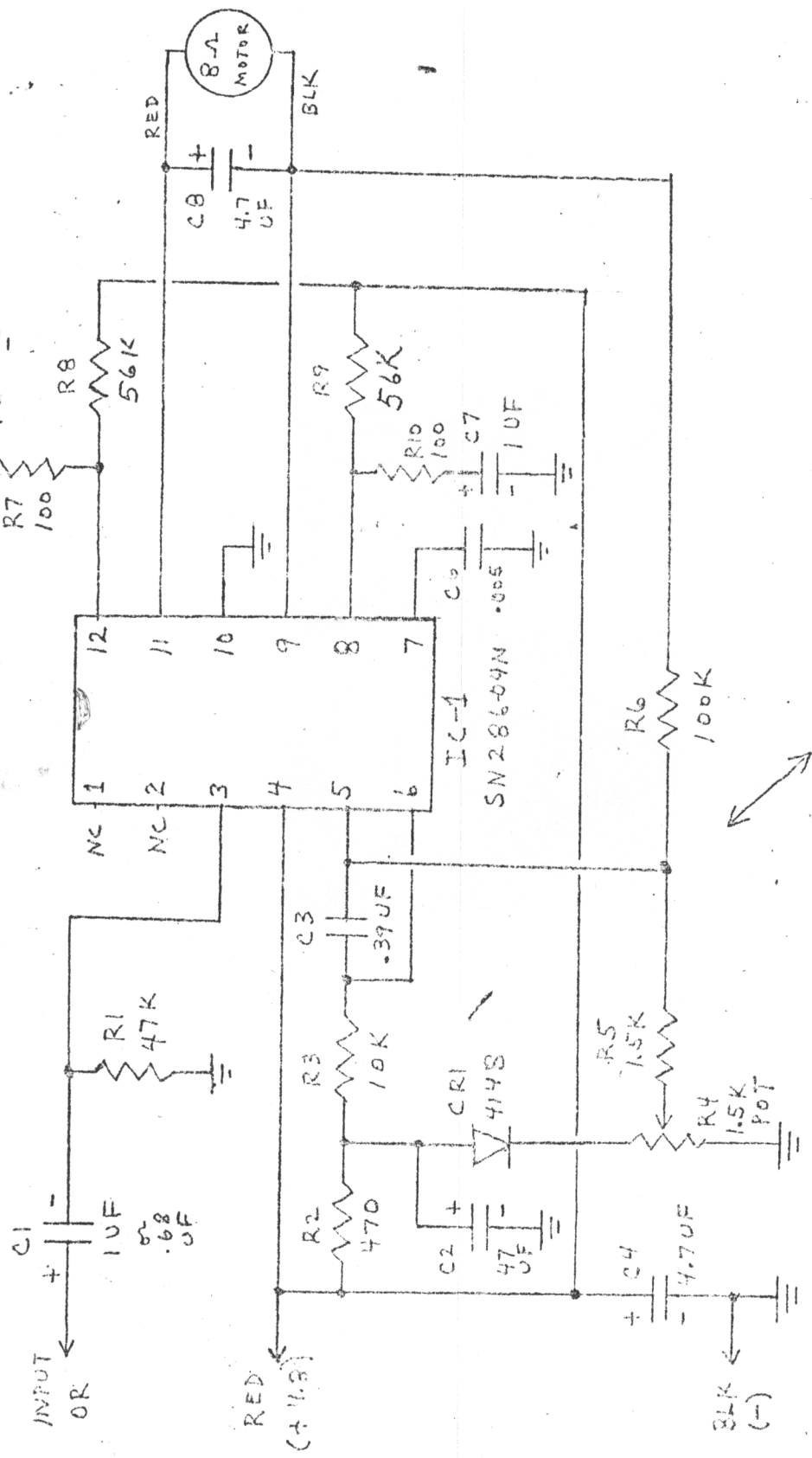
INPUT: 1.5 M Sec

NO WAVEFORMS ON  
POINTS 2, 4, AND  
10

CANNON ELECTRONICS  
1973

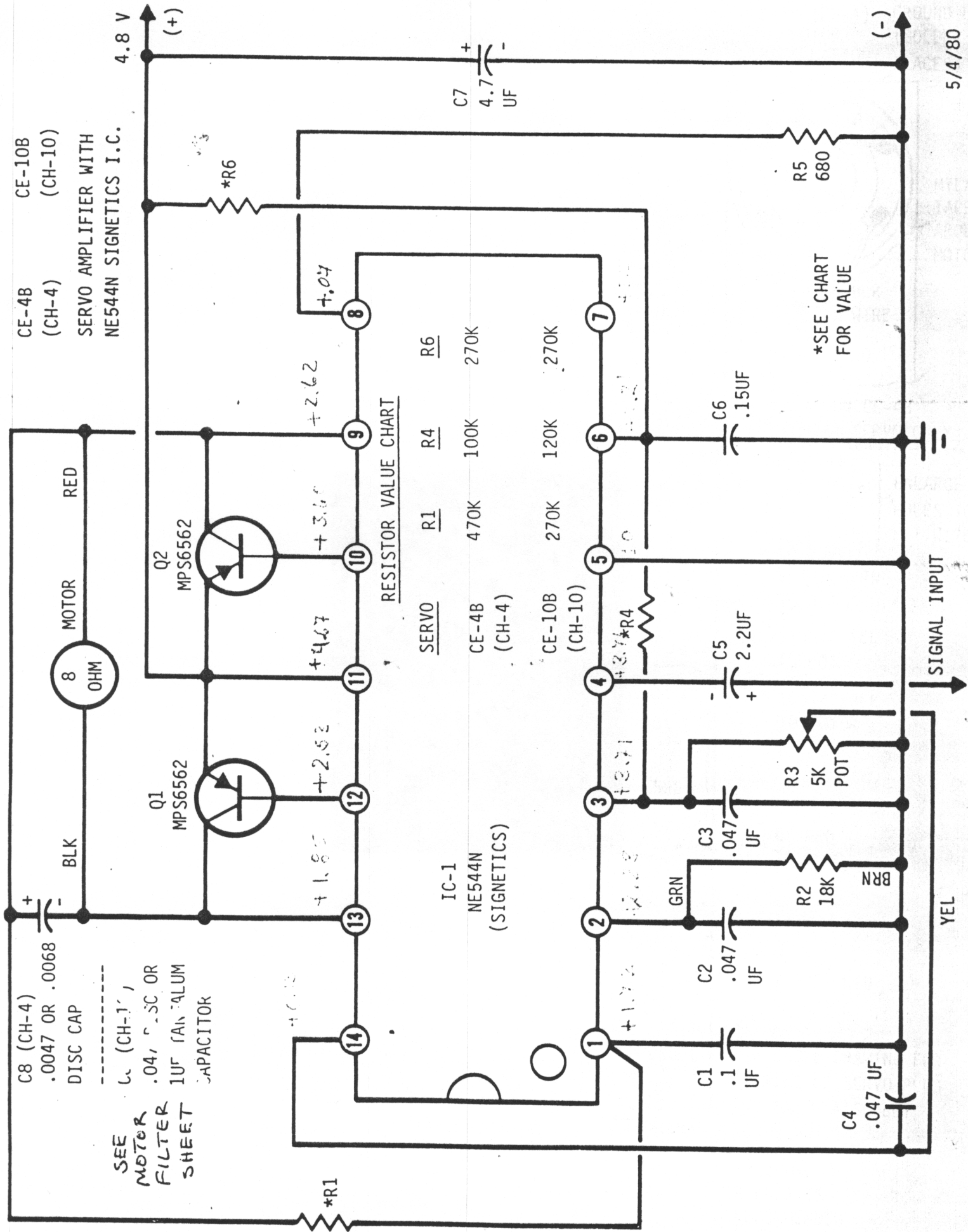
UNIVERSAL SERVO

RECEIVED  
APR 16 1973



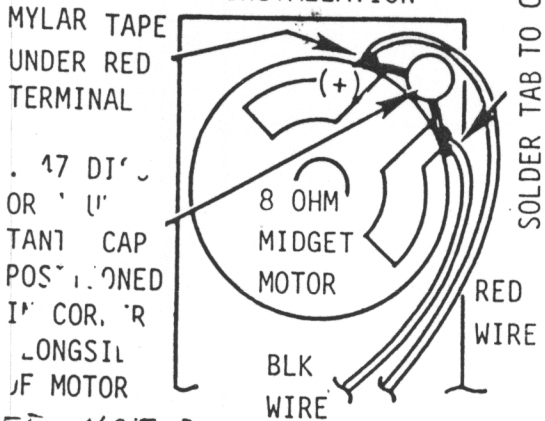
SCHEMATIC VARIATION  
FOR 180° SERVO





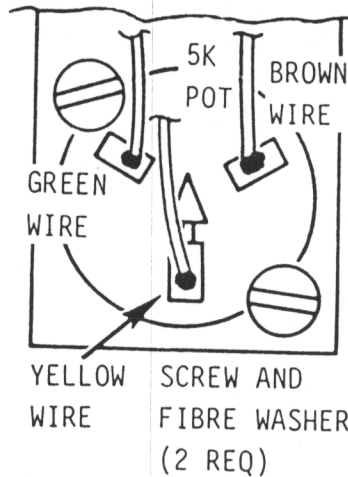
CE-4B (CH-4) AND  
CE-10B (CH-10) SERVOS  
(POSITIVE PULSE INPUT)

CE-10B (CH-10)  
MOTOR  
INSTALLATION

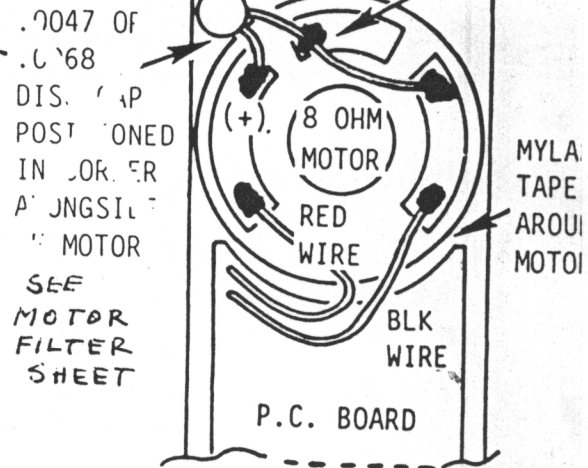


SEE MOTOR  
FILTER SHEET

SERVO POT  
INSTALLATION



CE-4B (CH-4) GROUND LI  
MOTOR (SOLDER ;  
INSTALLATION PLACES)



ON CE-4B  
(CH-4) SERVO ONLY

SEE TEXT FOR METHOD  
OF CENTERING SERVO  
AND REVERSING  
SERVO DIRECTION

DECREASE  
VALUE OF R2  
TO INCREASE  
SERVO THROW

1-1/8" GRN  
TO POT

8" OR.  
TO PLUG

8" BLK.  
TO PLUG

POT  
CONNECTIONS  
TYPICAL  
ALL MODELS

RED WIRE  
THRU HERE } ENLARGE  
BLK WIRE } HOLES TO  
THRU HERE } FIT WIRE!

1-1/8" BRN  
TO POT  
1-1/8" YEL  
TO POT  
1-3/4" BLK  
TO MOTOR

8" RED  
TO PLUG

2-3/8" RED  
TO MOTOR

SEE CABLE DRAWING FOR  
DETAILS OF SERVO PLUG  
AND CABLE ASSEMBLY

1. R1 & R4 INSTALLED UNDER I.C.
2. SOLDER C7 IN PLACE, THEN SOLDER LEADS OF R6 TO SIDE OF I.C. PIN 6 AND (+) LEAD OF C7.
3. INSTALL OTHER PARTS, THEN WIRES.
4. TWO MOTOR WIRES ROUTE THRU HOLES IN END OF BOARD (CE-4 ONLY).

\*SEE CHART FOR CORRECT VALUE.

	CE-4B (CH-4)	CE-10B (CH-10)
R1	470K	270K
R4	100K	120K
R6	270K	270K

USE OF  
SILICONE  
RUBBER IS  
RECOMMENDED  
AT TERMINATIONS  
OF ALL WIRES