CHANGE/ERRATA INFORMATION

ISSUE NO: 4 4/85

This change/errata contains information necessary to ensure the accuracy of the following manual. Enter the corrections in the manual if either one of the following conditions exist:

1. The revision letter stamped on the indicated PCB is equal to or higher than that given with each change.

2. No revision letter is indicated at the beginning of the change/errata.

MANUAL

Title: 1953A
Print Date: January 1975
Rev.- Date: 4-1/79

C/E PAGE EFFECTIVITY

Page No.	Print Date
1	4/85
2	4/85
3	4/85
4	4/85
5	4/85
6	4/85
7	4/85
8	4/85
9	4/85
10	4/85
11	4/85
12	4/85
13	4/85
14	4/85
15	4/85
16	4/85
17	4/85

NOTE

Carbon film resistors may be substituted for all carbon composition, ±5%, 1/4W resistors used in the 1953A. Such substitution may also occur when ordering carbon composition resistors by their Fluke P/N.

ERRATA #1

On page 1-4, Table 1-2, under the heading TIME BASE, in the STANDARD column, make the following change:

CHANGE: $<\pm 2 \times 10^{-8}$
TO: $<\pm 2 \times 10^{-6}$

On page 4-7, paragraph 4-55, change steps a, b, and d to read:

Step a line 5,

FUNCTION switch to FREQ (A/B)

Step b lines 2 and 3,

and the RF Voltmeter Probe to the Channel A input connector through a 50Ω termination.

Step d,

The display should be stable and read 1.000. (Ratio)

On page 602-3, Table 602-1, under the FUNCTION column, change pins 10, R, and 17, respectively, to read:

3SD-BCD 2
5SD-BCD 1
6SD-BCD 8

On page 615-3, paragraph 615-19, change the heading to read:

Trigger Level and Slope Instructions

Add the following step to the end of paragraph 615-24:

615-24a. The character T is a trigger command for the frequency A and C modes. It is an arm command for the period, time, interval, ratio, and A gated by the B modes where the signal to be measured actually does the triggering for the sample after being armed. For these applications where the input signal is to be held off, until the signal is present, and is to be held off until the character T is sent, before the F2, F3, F4, or F5 function command characters are sent, to ensure proper hold-off operation.

ERRATA #2

On page 1-4, Table 1-2, under EXTERNAL TIME BASE INPUT, make the following change:

CHANGE: Impedance . . . . . 1 MΩ, 20 pF.
TO: Impedance . . . . . 1 kΩ, 20 pF.

ERRATA #3

On page 4-4, Table 4-3, under the heading of READOUT*, make the following change:

CHANGE: 1000.0000
TO: 100.0000

On page 4-6, paragraph 4-44, step g, change the first sentence to read:

Turn the CHANNEL B TRIGGER LEVEL control cw until the + TRIG STAT annunciator lights.

ERRATA #4

On page 4-7, add the following step to the end of paragraph 4-55,

m. If Option -15 IEEE-488 Standard Interface is installed, an additional adjustment (Trigger Level Zero Adjustment) must now be performed. See Option -15 IEEE-488 Standard Interface in Section 6 of this manual.

On page 615-5, add the following procedure after paragraph 615-51,

615-51a. TRIGGER LEVEL ZERO ADJUSTMENT
615-51b. This procedure zero adjust the IEEE-488 interface's Digital - To - Analog converters. However, it should not be performed until the Trigger Level Present Adjustments in Section 4 of this manual has been successfully completed. To perform this procedure, you will need the following equipment or their equivalents; IEEE-488 instrument controller (Fluke 1722A), low frequency source (Fluke 6011A), and an oscilloscope with a Z-axis input (Tektronix 465).

1. Set the oscilloscope input coupling to dc and center the trace.

2. Adjust the low frequency (LF) source for 1 kHz and a 50 mV output level.

3. Connect the LF source and the oscilloscope to the 1953A CH. A input through a BNC tee connector. DO NOT USE A TERMINATION. Connect the 1953A MARKER Connector to the oscilloscope's Z-axis (CRT, cathode) input. Connect the IEEE-488 controller GPIB port to the 1953A rear panel IEEE-488 connector.

4. Program the 1953A with the command string:

   CF4S1A+1B-1

   Adjust the oscilloscope for a display of two or three cycles of the input signal.

5. Adjust R16 on the IEEE-488 board to have the beginning of the bright portion of the trace be 0V, and then adjust R22 so that the end of the bright portion of the trace is a 0V.

6. Alternately send the commands:

   A-B+ and A+B-

   While adjusting R16 and R22 so that the beginning and end of the bright portions of the trace on the oscilloscope are equidistant from 0V with either command.

ERRATA #5

On pages 5-8 and 5-12, Table 5-3, make the following changes:

```
CHANGE: C2¦ CAP, TA, 10 UF ±20%, 15V¦ 193623¦ 56289
        ¦ 196D106X0015KA4¦ 26
TO:     C2¦ CAP, TA, 10 UF ±20%, 15V¦ 193623¦ 56289
        ¦ 196D106X0015A1 ¦ 32

ADD: C135-C140¦ CAP, TA, 10 UF ±20%, 15V¦ 193623¦ 56289
     ¦ 196D106X0015A1¦ REF
```

On pages 5-15, 8-4, 8-6, 8-7 and 8-13, Figures 5-3 and 8-2 (2 of 8 and 3 of 8), make the above changes as shown in Figures 3, 4, and 5 of this change/errata.

```
ADD: R148,R149,R151,R152¦ RES. DEP. CAR. 100 ±5%, 1/4W¦ 348771
     ¦ 80031¦ CR251-4-5P100E¦ 4
```

CHANGE #1 - 11811
Rev.-Z, A1A1 Main PCB Assembly (1953A-4001)

On page 5-14, Table 5-3, make the following change:

```
FROM: XU65¦ SOCKET, IC, 40-PIN DIP¦ 386060¦ 89536¦ 386060      ¦ 1
TO:   XU65¦ SOCKET, IC, 40-PIN DIP¦ 429282¦ 09922¦ D1LB40P-108¦ 1
```

CHANGE #2 - 11968
Rev.-H, A13 Remote Control Unit #3 PCB Assembly (1953A-4023)

On page 612-10, Table 612-5, make the following changes:

```
CHANGE: R764,R765¦ RES. COMP, 4.7M ±5%, 1/4W¦ 220046¦ 01121
        ¦ CB4755       ¦ 2
TO:     R764,R765¦ RES. CF, 2.2M ±5%, 1/4W  ¦ 342659¦ 80031
        ¦ CR251-4-5P2M2¦ 2
```

On page 8-39, Figure 8-15, change the values of R764 and R765.

ERRATA #6

On page 5-16, Table 5-4, make the following changes:

CHANGE:	F91	FUSE, 1 AMP	369819	71400	AGC1	1
TO:	F1	FUSE, 1 AMP, FAST, 250V	369819	71400	AGC1	1

CHANGE #3 - 12545
Final Assembly

On page 5-3, Table 5-1, make the following changes:

CHANGE:	U7	TCXO (STANDARD OSCILLATOR)	461871	89536	461871	1
TO:	U7	TCXO (STANDARD OSCILLATOR)	516120	89536	516120	1

On page 604-1/604-2, change paragraph 604-4 to read:

604-4. Parts for Option -04 consist only of the TCXO which replaces the standard oscillator, U7. Replacements can be ordered using the Fluke Part No. 516120. The Manufacturing Federal Supply Code is 89536 and the Manufacturer's Part No. is 516120. See Figure 604-1.

ERRATA #7

On page 612-3, Table 612-1, and page 612-5, paragraphs 612-18c1 and 612-d1:

Change the description of Pin 1 to read:

FROM: EXT - T
TO: EXT - T LEVEL

On page 8-7, Figure 8-2 (3 of 8), change flag note 11 to read:

If U13 is installed for the 1 GHz and 1.3 GHz Options -13 and -14, disable W2 by drilling out the pad and hole-through plating (use a drill bit #52). Short W3 by installing a jumper between both pads of W3 and solder both sides.

CHANGE #4 - 12911

Rev.-J, A13 Remote Control Unit #3 PCB Assembly (1953A-4023)

On pages 612-9 and 612-10, Table 612-5, make the following change:

ADD: C713| CAP, CER, 0.0012 UF ±10%, 500V| 106732| 71590| CF122| 1

CHANGE: R754,R756| RES. COMP, 100K ±5%, 1/4W | 148189| 01121
| CB1045 | 3
TO: R754,R756| RES. DEP. CAR. 100K ±5%, 1/4W| 348920| 80031
| CR251-4-5P100K| 3

CHANGE: R757| RES, COMP, 100K, ±5%, 1/4W| 148189| 01121
| CB1045 | REF
TO: R757| RES. CF. 10Ω ±5%, 1/4W | 340075| 80031|
CR251-4-5P10E| 1

On pages 612-11/612-12, and 8-38, Figures 612-5 and 8-15, add C713 and R757 as shown in Figure 1.

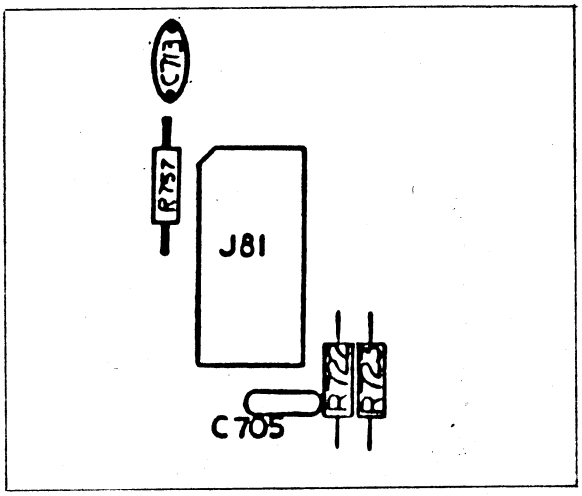

Figure 1.

On page 8-40 (2 or 2), Figure 8-15, add C713 and R757 as shown in Figure 2.

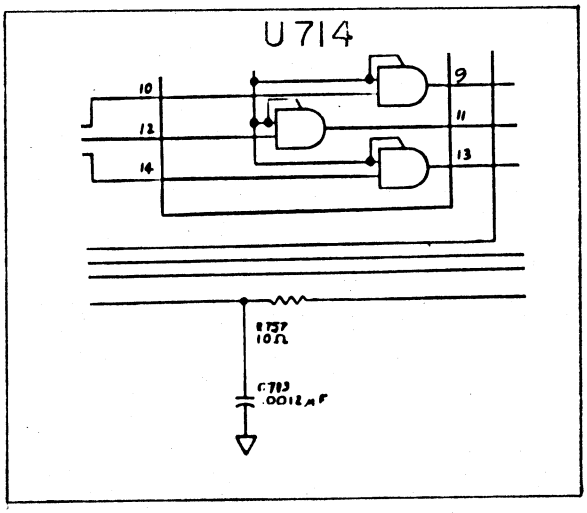

Figure 2.

CHANGE #5 - 13113
Rev.-P, A1A1 Main PCB Assembly (1953A-4001)

On pages 5-8, 5-12, and 5-14, Table 5-3, make the following changes:

Change the TOT QTY of C1, FROM: 4 TO: 2

CHANGE: C56,C57| CAP, CER. 47 PF ±20%, 1000V| 369132| 56289
| C030B102H470J| REF
TO: C56,C57| CAP, CER. 100 PF ±10%, 1KV | 105593| 71590
| DD-101 | 2

DELETE: U4| IC, ECL, TRIPLE 4-3-3 INPUT OR GATE| 402735| 07263
F95106DC| 1| 1

CHANGE: U1,U2,| IC, ECL, TRIPLE DIFF LINE RECEIVER | 402727| 07263
| F95116DC| 2| 1
TO: U1,U2,U4| IC, ECL, TRIPLE LINE RECEIVER 16-PIN DIP| 369702| 18324
| N10116B | 3| 1

CHANGE: XU4,XU6,XU31,XU32 | SOCKET, IC, 16-PIN DIP| 370312| 01295
| C931602 | 4
TO: XU1,XU2,XU4,XU6,XU31,XU32| SOCKET, IC, 16-PIN DIP| 370312| 91506
| 316-AG39D| 6

On pages 5-15, 8-4, 8-6 (2 of 8), and 8-13, Figures 5-3 and 8-2, make the above changes as shown in Figures 3 and 4 of this change/errata.

CHANGE #6 - 13909
Rev.-Z, A1A1 Main PCB Assembly (1953A-4001)

On pages 5-11 and 5-12, Table 5-3, make the following changes:

CHANGE: R59,61| RES. COMP, 240 ±5%, 1/4W| 221895| 01121
| CB1225 | 2
TO: R59,61| RES. CF, 240 ±5%, 1/4W | 573063| 80031
| CR251-4-5P240E| 2

ADD: R150| RES. DEP. CAR. 1.5K ±5%, 1/4W| 343418| 80031
| CR251-4-5P1K5T| 1

On pages 5-15, 8-4, 8-7 (3 of 8), and 8-13, Figures 5-3 and 8-2, make the above changes as shown on Figures 3 and 5 of this change/errata.

CHANGE: R148,R149,R151,R152| RES. DEP. CAR. 100 ±5%, 1/4W | 348771
| 80031| CR251-4-5P100E| 4
TO: R148,R149,R151,R152| RES. DEP. CAR, 51 Ω ±5%, 1/4W| 414540
| 80031 | CR251-4-5P51E| 4

CHANGE #7 - 14037
Rev.-AE, A1A1 Main PCB Assembly (1953A-4001)

On page 5-9, Table 5-3, make the following changes:

Change the TOT QTY of L1, FROM: 1 TO: 3

DELETE: R149,R152¦ RES. DEP. CAR, 51 ±5%, 1/4W¦ 414540¦ 80031
¦ CR251-4-5P51E¦ 2

ADD: L2,L3¦ INDUCTOR, 6-TURN¦ 320911¦ 89356¦ 320911¦ REF

On pages 5-15, 8-4, 8-7 (3 of 8), and 8-13, Figures 5-3 and 8-2, make the above changes as shown on Figures 3 and 5 of this change/errata.

CHANGE #8 - 14936
Rev.-AF, A1A1 Main PCB Assembly (1953A-4001)

On pages 5-11 and 5-12, Table 5-3, make the following changes:

Change the TOT QTY of R29, FROM: 7 TO: 6

CHANGE: R96¦ RES. COMP 5.6K ±5%, 1/4W¦ 148080¦ 01121
¦ CB5625 ¦ REF
TO: R96¦ RES. CF 5.1K ±5%, 1/4W ¦ 573329¦ 80031
¦ CR251-4-5P5K1¦ 1

On pages 5-15, 8-4, and 8-13, replace Figures 5-3 and 8-2 with Figure 3.

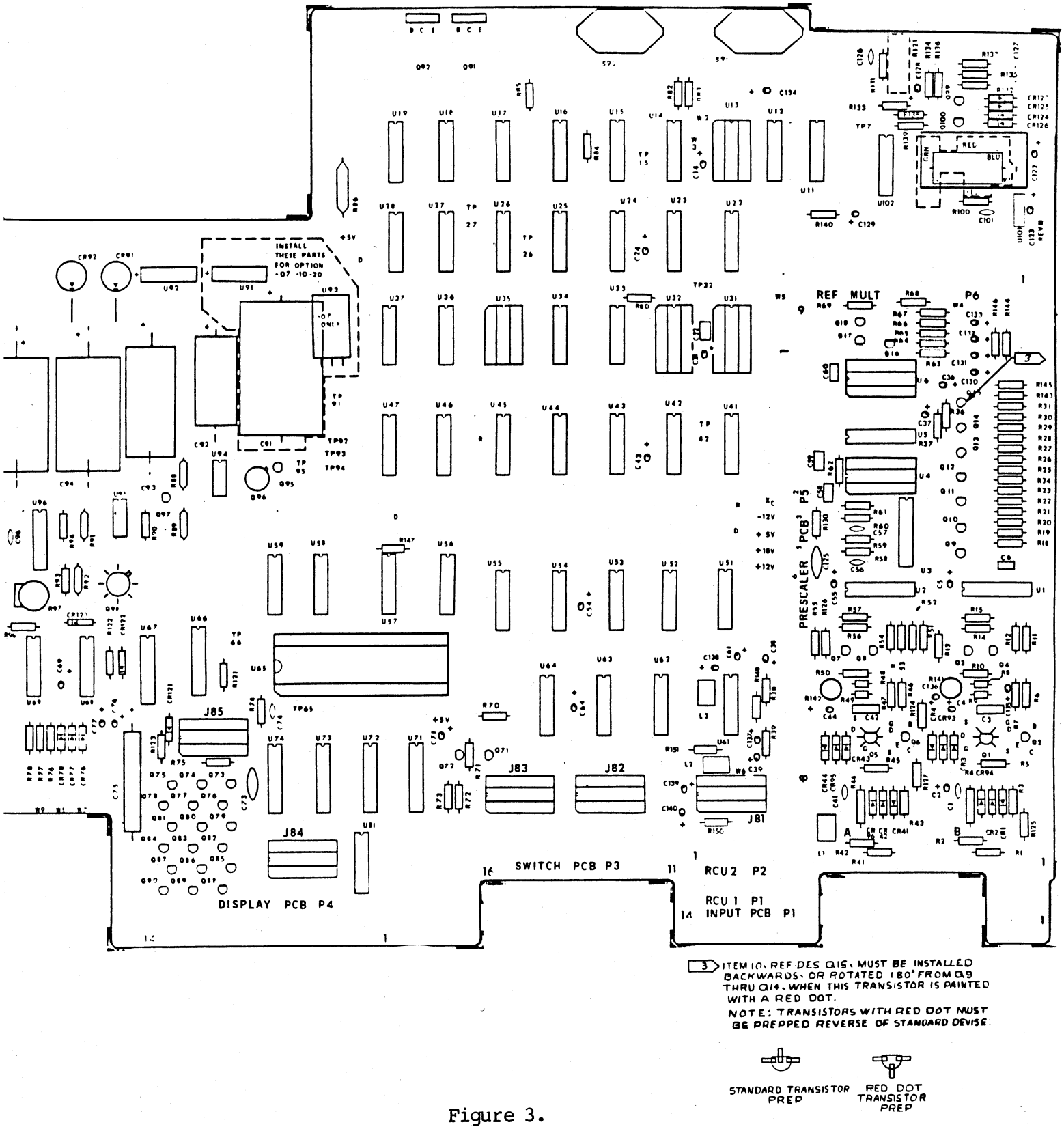

Figure 3.

On pages 8-6 and 8-7, Figure 8-2, replace sheets (2 of 8 and 3 of 8) with Figures 4 and 5.

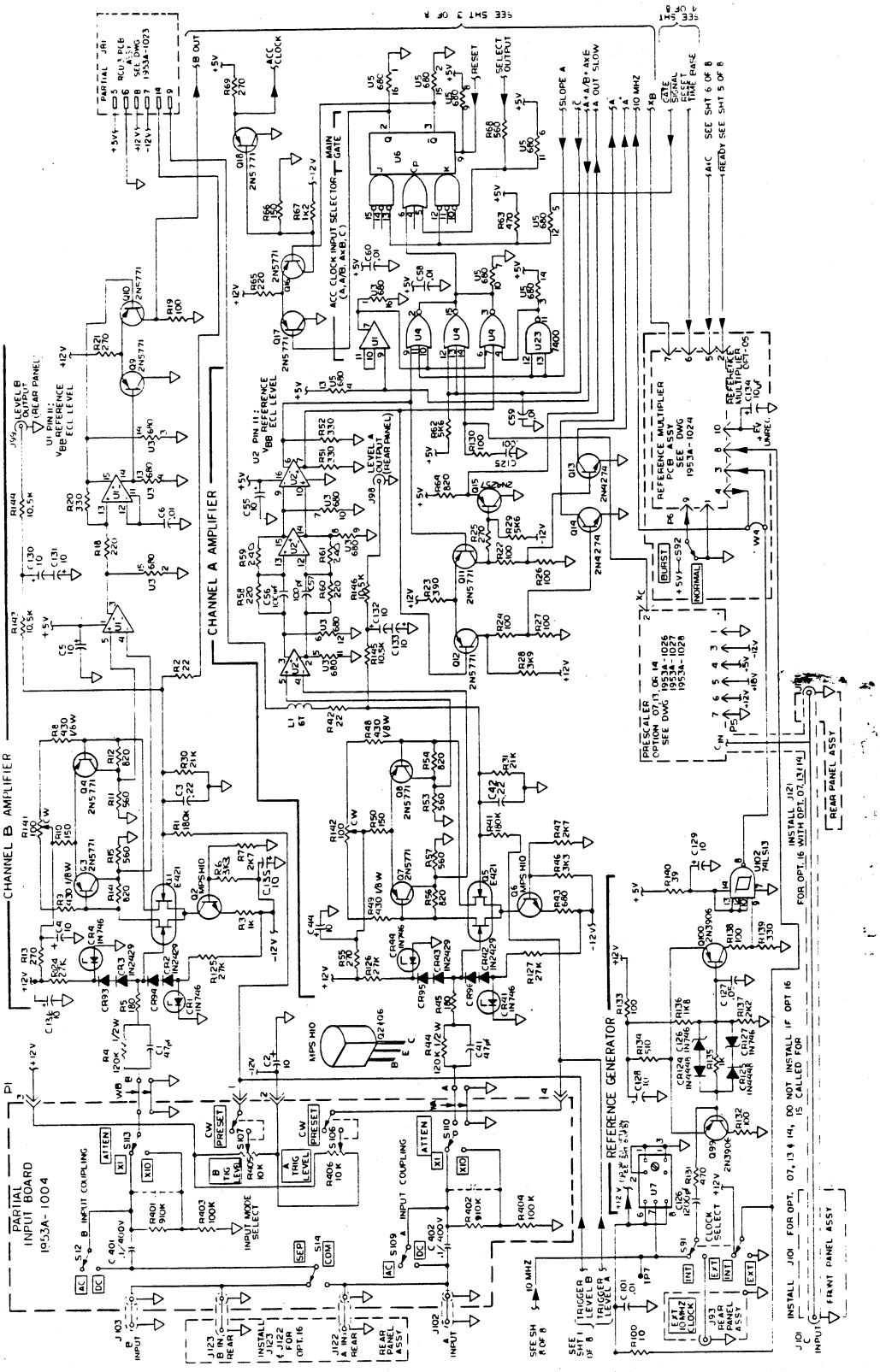

Figure 4.

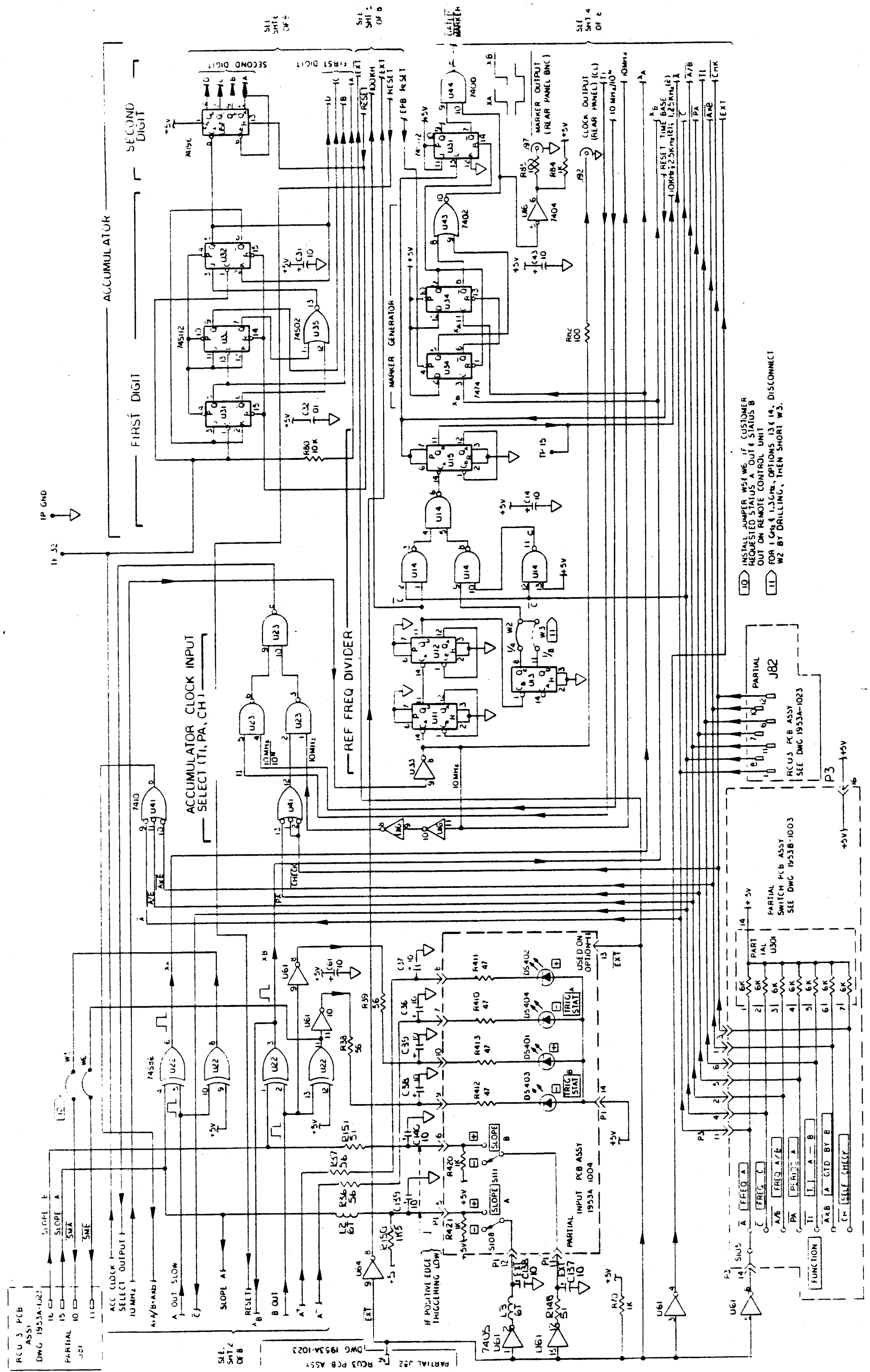
ACCUMULATOR
FIRST DIGIT
SECOND DIGIT
MARKER GENERATOR
REF FREQ DIVIDER
ACCUMULATOR CLOCK INPUT
SELECT (TI, PA, CH)

Figure 5.

CHANGE #9 - 15730

Rev.-K, A9 520 MHz Prescaler PCB Assembly (1953A-4026)

On page 607-4, Table 607-2, make the following changes:

CHANGE: CR6,CR7| DIODE, HOT CARRIER | 369595| 07263
| FH1100 | 2
TO: CR6,CR7| DIODE, SI, SCHOTTKY BARRIER, SMALL SIGNAL| 313247| 28484
| HP5082-6264| 2

Rev.-N, A14 100 MHz Prescaler PCB Assembly (1953A-4027T)

On page 613-4, Table 613-2, make the following changes:

CHANGE: CR1,CR2| DIODE, HOT CARRIER | 369595| 07263
| FH1100 | 2
TO: CR1,CR2| DIODE, SI, SCHOTTKY BARRIER, SMALL SIGNAL| 313247| 28484
| HP5082-6264| 2

Rev.-N, A15 1250 MHz Prescaler PCB Assembly (1953A-4028T)

On page 614-4, Table 614-2, make the following changes:

CHANGE: CR1,CR2| DIODE, HOT CARRIER | 369595| 07263
| FH1100 | 2
TO: CR1,CR2| DIODE, SI, SCHOTTKY BARRIER, SMALL SIGNAL| 313247| 28484
| HP5082-6264| 2

CHANGE #10 - 16460

Rev.-K, A12 Remote Control Unit #2 PCB Assembly (1953A-4022)

On page 612-8, Table 612-4, make the following changes:

ADD: R8,R9| RES, CF, 1K, ±5%, 1/4W| 343426| 80031| CR25l-4-5P1K| 2

On pages 612-8 and 8-36, Figures 612-4 and 8-14, add R8 and R9 as shown in Figure 6.

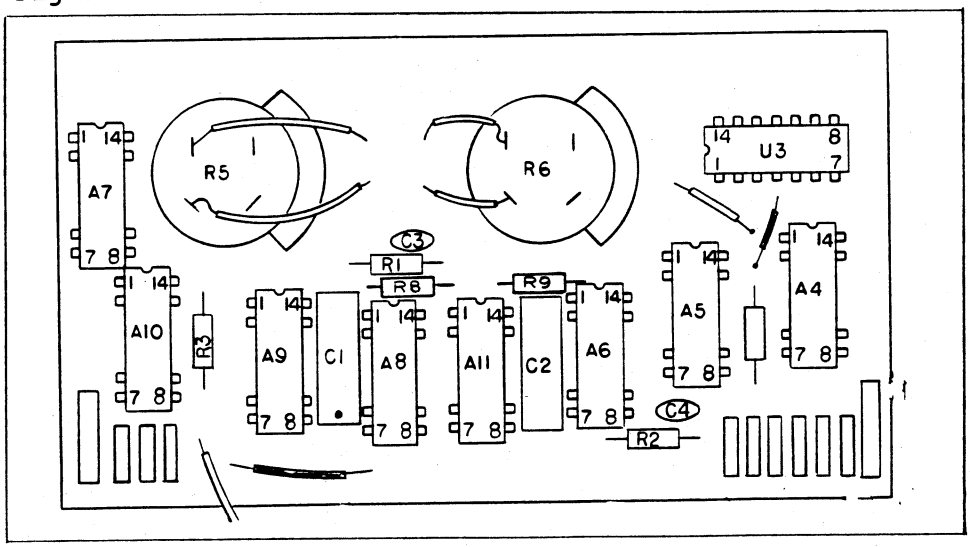

Figure 6.

On page 8-37, Figure 8-14, add R8 and R9 as shown in Figure 7.

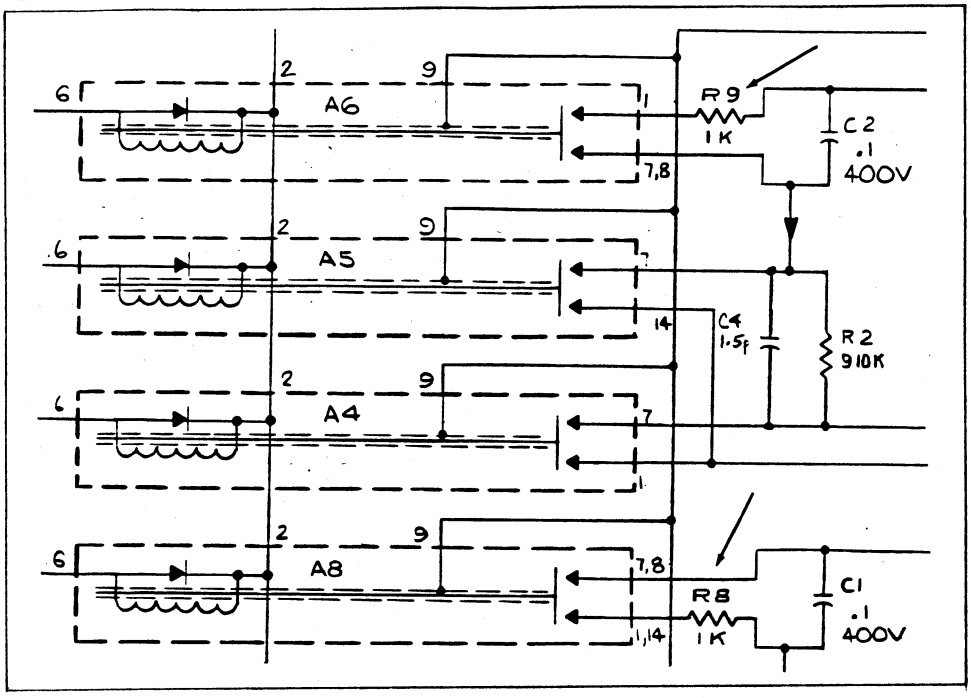

Figure 7.

CHANGE #11 19955

Rev.-N, A13 Remote Control Unit #3 PCB Assembly (1953A-4023)

On page 612-9, Table 612-5, make the following changes:

Change the TOT QTY of CR706, FROM: REF TO: 1

CHANGE: CR701| DIODE, ZENER, 12V, 400MW | 110726
| 07910| 1N964B| 3| | 1
TO: CR701| DIODE, ZENER, UNCOMP, 6.2V, 5%, 20.0MA, 1/4W| 325811
| 07910| 1N753A| 4| | 1

CHANGE: CR707| DIODE, ZENER, 12V, 400MW | 110726
| 07910| 1N964B| 3| | 1
TO: CR707| DIODE, ZENER, UNCOMP, 6.2V, 5%, 20.0MA, 1/4W| 325811
| 07910| 1N753A| 4| | 1

ADD: CR708,CR709| DIODE, ZENER, UNCOMP, 6.2V, 5%, 20.0MA, 1/4W| 325811
| 07910| 1N753A| REF| | 1

On pages 612-11/612-12, and 8-38, Figures 612-5 and 8-15, add CR708 and CR 709 as shown in Figure 8.

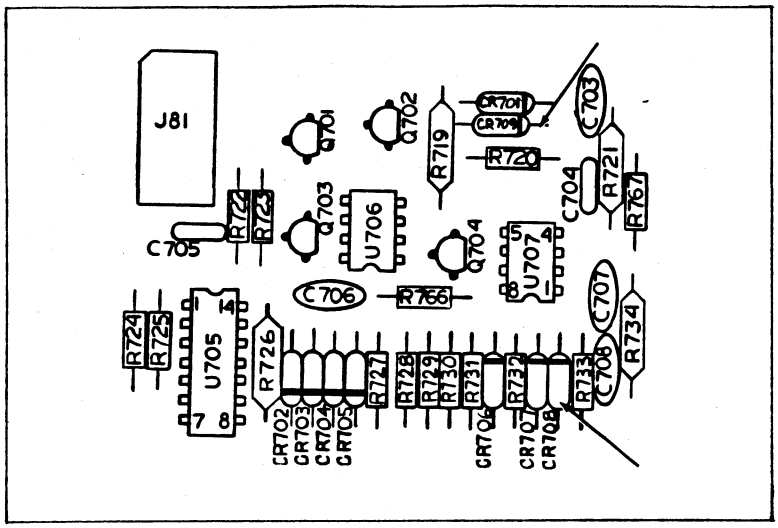

Figure 8.

On page 8-39, Figure 8-15, make the changes listed on the previous page as shown in Figure 9.

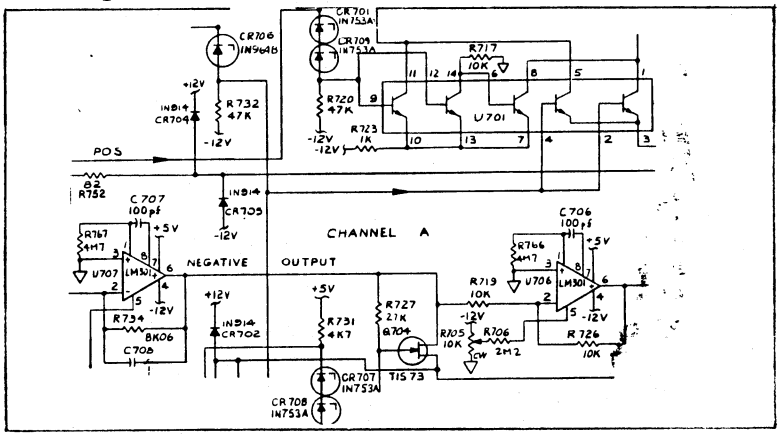

Figure 9.

CHANGE #12 - 19956

Rev.-M, A9 520 MHz Prescaler PCB Assembly (1953A-4026T)

On page 607-5/607-6, Table 607-2, make the following changes:

CHANGE:	XF1,XF2	FUSE SOCKET, SPRING TYPE	403642	00779	
	50863-8	4			
TO:	XF1,XF2	SOCKET 1 ROW, PWB, 0.100 CTR, 2 POS	436055	22526	
	65358-001	2			

ERRATA #9

On page 615-10, Table 615-9, make the following change:

CHANGE:	H1	SCREW, CONNECTOR MOUNTING	423472	89536	2
TO:	H1	SCREW, CONNECTOR MOUNTING	429472	89536	2

CHANGE #13 - 20435
Rev.-H A17 IEEE-488 1975 Processor PCB Assembly (1953A-4041)

Change #13 documents the steps to be taken when replacing U28, P/N 404459, on the 1953A-4041 PCB assembly. When ordering a replacement for U28, order kit 1953A-7015K, P/N 762070. Installation instructions are included in the kit. Complete the following changes in your manual when you have received the replacement kit.

On pages 615-15 and 615-16, Table 615-13, make the following changes:

DELETE: C5¦ CAP, TA, 0.47 UF ±20%, 250V¦ 161349¦ 56289
¦ 196D474X0035HA1¦ 1

DELETE: C6,C7¦ CAP, MICA, 22 PF ±5%, 500V¦ 148551¦ 72136¦ DM15C220J¦ 2

DELETE: CR1¦ DIODE, SI¦ 203323¦ 07910¦ 1N4448¦ 3

Change the TOT QTY of CR2, FROM: REF TO: 2

DELETE: R1¦ RES, COMP, 51 ±5%, 1/4W¦ 221879¦ 01121¦ CB5105¦ 1

DELETE: R2¦ RES, COMP, 680K ±5%, 1/4W¦ 188433¦ 01121¦ CB6845¦ 1

CHANGE: U28¦ IC, CLOCK GENERATOR, MICRO-COMPUTER SET¦ 404459¦ 34649
¦ C4201 ¦ 1¦ 1
TO: U28¦ IC, CLOCK GENERATOR PCB ASSY TESTED ¦ 752279¦ 89356
¦ 752279¦ 1¦ 1

DELETE: Y1¦ CRYSTAL, 5.185 MHZ, ±0.02%, HC-18/U¦ 408518¦ 89536
¦ 408518¦ 1

On page 8-33, Figure 8-12, make the changes previously listed as shown in Figure 10.

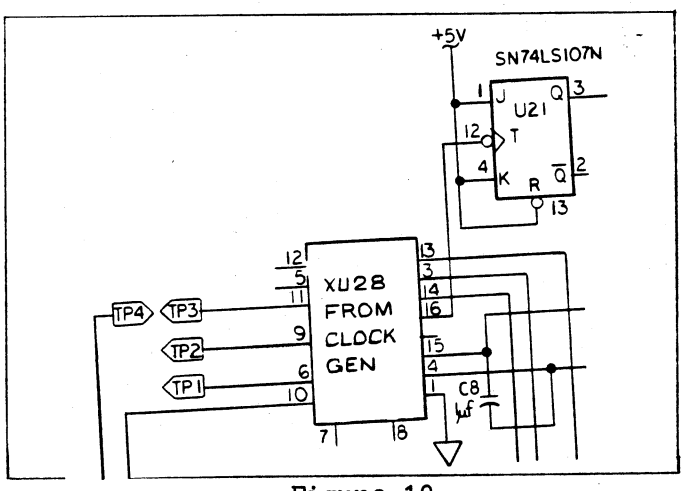

Figure 10.

On page 615-16, add Table 615-13a., Figures 615-10 and 615-11.

Table 615-13a. Clock Generator PCB Assembly

IEEE-488-1975 CLOCK GENERATOR PCB ASSEMBLY (1953A-4043T)				
C1-C3	CAP, CER, 0.01 UF, +80-20% Y5U, 25V	335786	72982	5835-000Y5-U103Z 3
C4	CAP, MICA, 50 PF, ±5%, 500V	277210	14655	CD15ED510J0 1
C5,C6	CAP, TA 2.2 UF, ±10%, 15V	364216	56289	1960225X0015HA1 2
C7	CAP, TA 15 UF, ±20%, 20V	519686	56289	196D156X0020KE4 1
Q1	TRANSISTOR, SI, PNP, SMALL SIGNAL	195974	64713	2N3906 1
Q2	TRANSISTOR, SI, NPN, SMALL SIGNAL	218396	64713	2N3904 1
R1,R2	RES, CC, 820, ±5%, 1/4W	148015	01121	CB8215 2
R3,R4	RES, CC, 110, ±5%, 1/4W	193474	01121	CB1115 2
R5,R6	RES, CC, 5.6K, ±5%, 1/4W	148080	01121	CB5625 2
R7	RES, CF, 1K, 5%, 1/4W	343426	80031	CR251-4-5P1K 1
R8,R10,R11,R12	RES, CC, 10K, 5%, 1/4W	148106	01121	CB1035 4
R9	RES, CC, 680K, 5%,1/4W	188433	01121	CB6845 1
U1	IC, TTL, 4-BIT SYNCHRONOUS COUNTER	340463	01295	SN74163N 1
U2	IC, STTL, QUAD 2 INPUT NAND GATE	363580	01295	SN7400SN 1
U3	IC, STTL, HEX INVERTER	418004	01295	SN74S04N 1
U4	IC, TTL, 5 MHZ 2 PHASE MOS CLOCK DRIVER	408567	12040	M0026CN 1
Y1	CRYSTAL, 5.185 MHZ, ±0.02%, HC-18/U	408518	89536	408518 1

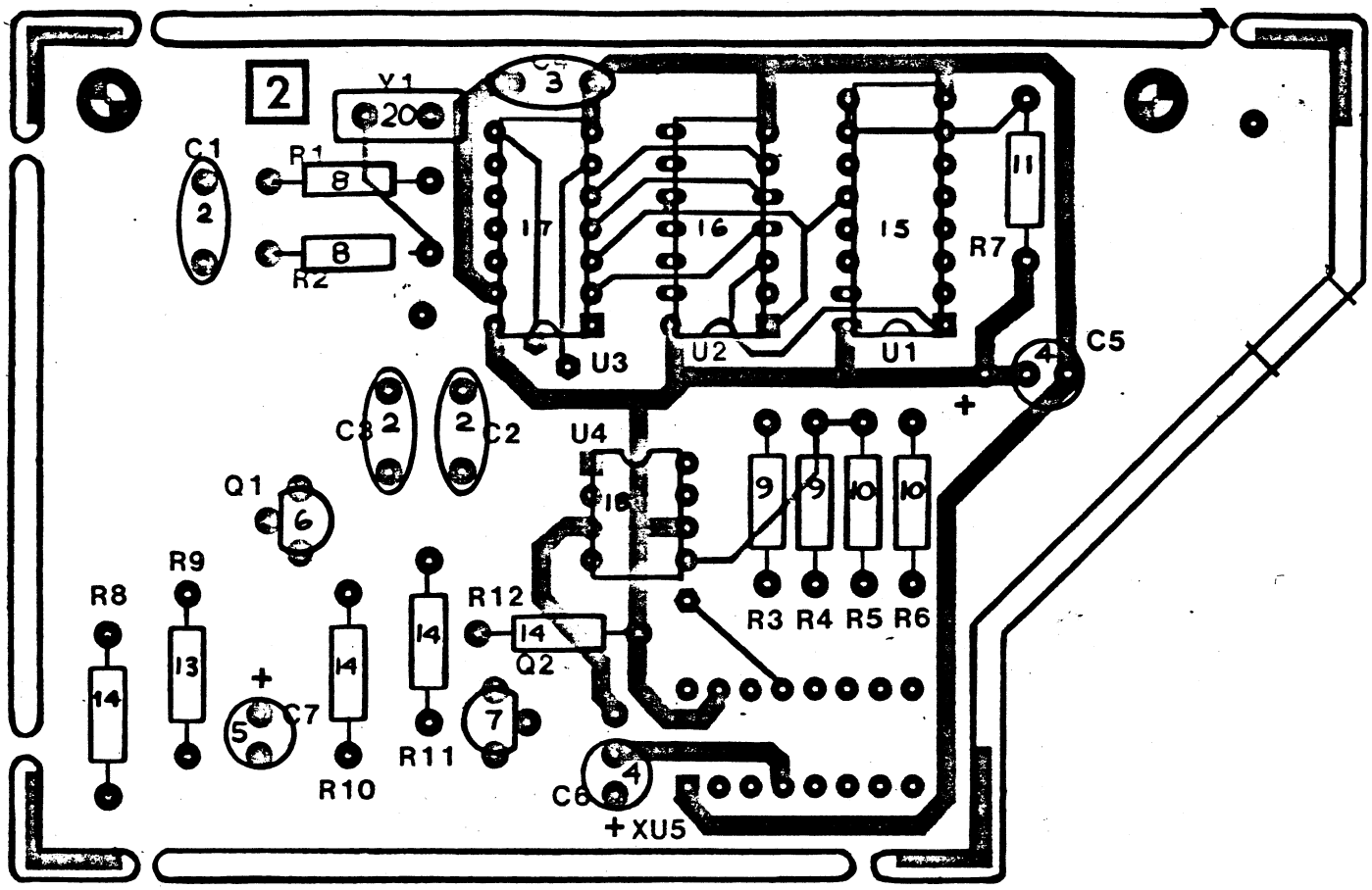

Figure 615-10.

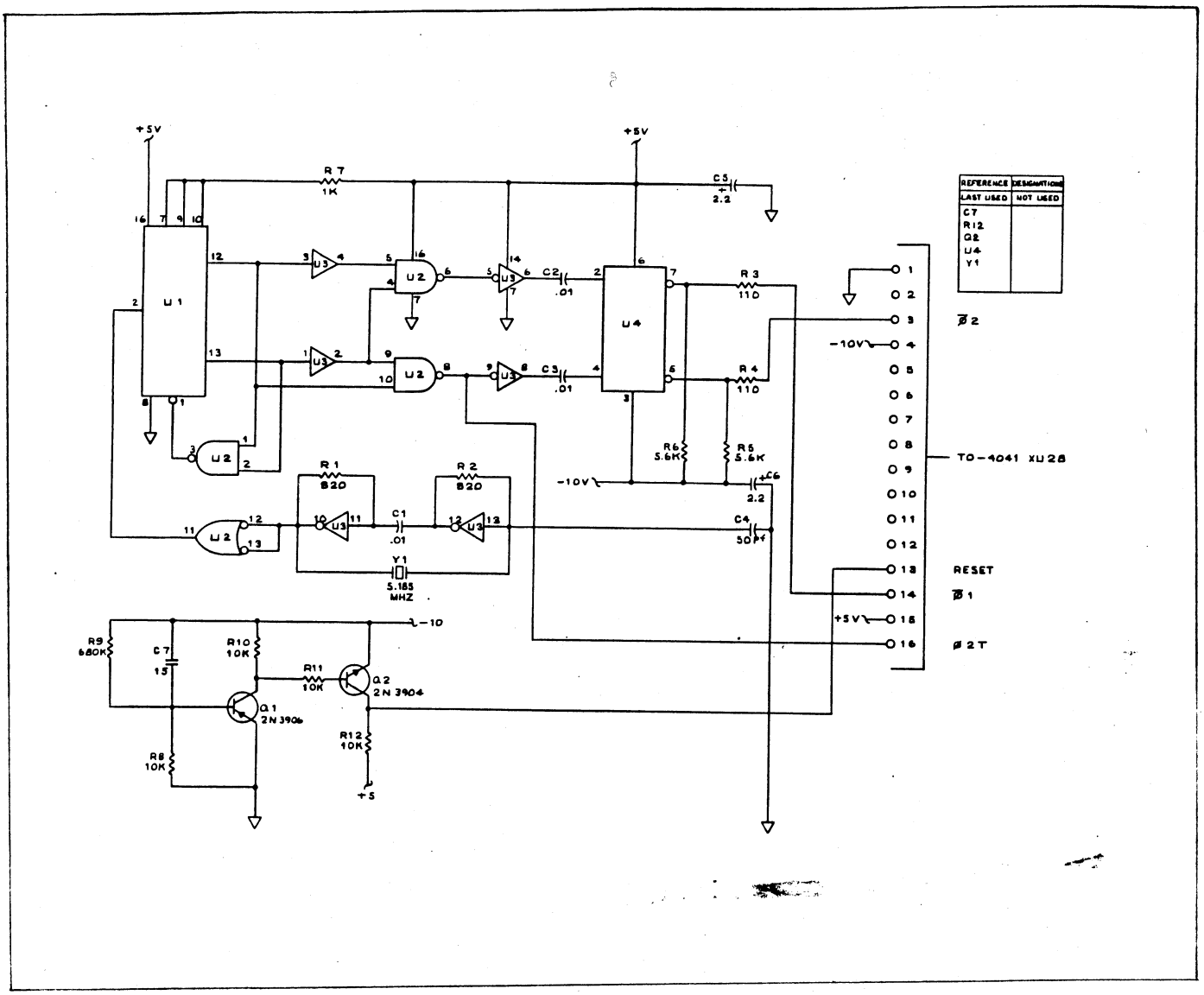

Figure 615-11.

ERRATA #10

On page 620-1, paragraph 620-4, replace step i with the following:

i. Turn on the 1953A and apply 100 MHz (referenced to the house standard). Set the 1953A FUNCTION control to FREQ A and the RESOLUTION control to 1 sec. Verify that the coarse adjustment (the trimmer on the oscillator) and the fine adjustment (R121 on the 1953A rear panel) vary the displayed frequency about the center frequency of 100 MHz. Center R121 and adjust the trimmer on the oscillator for a display of 100000.000 kHz, ± 2 counts. Disconnect the 100 MHz input.