









BASE OF Q106



12V PP

EMITTER OF Q106



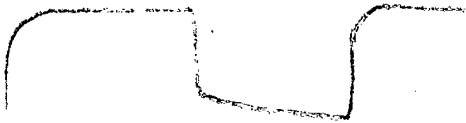
12V PP

COLLECTOR OF Q106



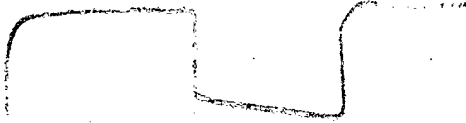
75V PP

BASE OF Q107



75V PP

EMITTER OF Q107



75V PP

COLLECTOR OF Q107



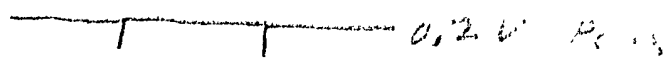
0.75V PP

This document is part of an integrated file. If separated from the file it must be returned to individual systems/office.

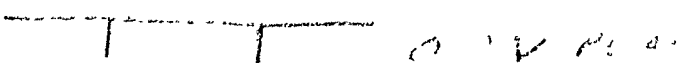
EA:		USED IN			NEVER AMP WAVEFORMS - 3	
MODEL SHOP				REF:	MAT:	
MAKE					FIN:	
DATE:					SK:	DWG:
					K104 5007 12-4	

STAT

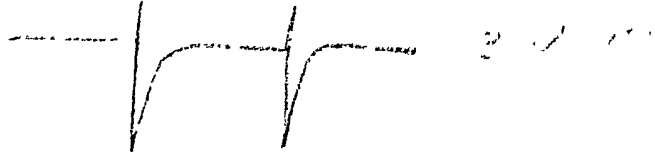
EMITTER OF Q110



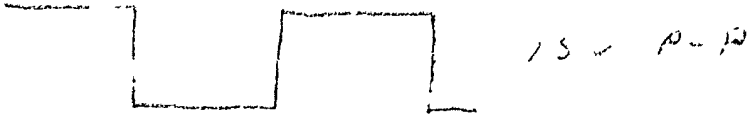
EMITTER OF Q107



BASE OF Q101

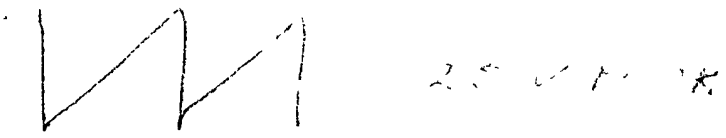


OUTPUT OF C142

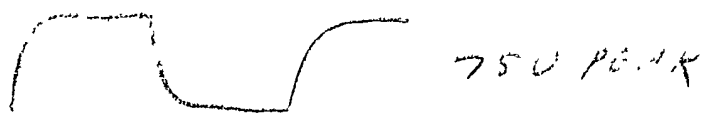


ADDITIONAL TEST USING SAWTOOTH SIG AT TERM 6

INPUT



OUTPUT OF C142



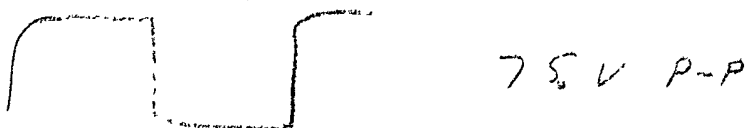
BASE OF Q108



EMITTER OF Q101



OUTPUT OF Q108



EA.		USED IN			K018 SHIP WAVEFORMS - 2	
MODEL SHOP				REF.	MAT: This document is part of an integrated file. If separated from the file it must be subjected to individual systematic review.	
MAKE					FIN:	
DATE					SK:	DWG.
					K018 58410-3	

STAT


INPUT 20 CPS SQUARE WAVE 20MV PP

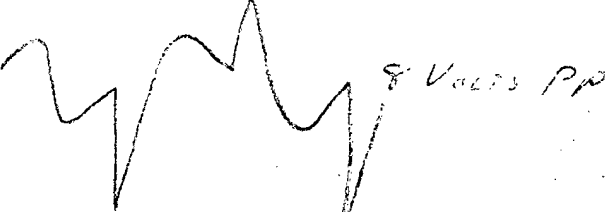
INPUT TO C146  20MV

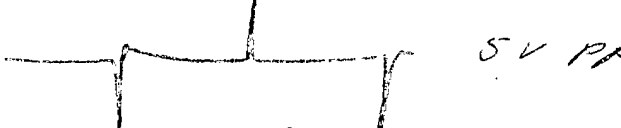
OUTPUT OF C146  20MV PP  
BASE OF Q113


COLLECTOR OF Q113  43 MV PP

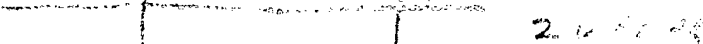
EMITTER OF Q113  40MV PP

COLLECTOR OF Q112  100MV PP

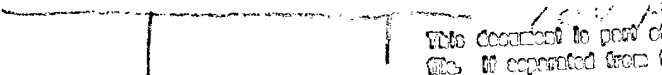
COLLECTOR OF Q111  8 Volts PP.

INPUT TO CR 104  5V PP

COLLECTOR OF Q104  2V PEAK

BASE OF Q110  2.0V PP

COLLECTOR OF Q110  10V PEAK

COLLECTOR OF Q104  10V PP

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EA: —		USED IN			78725 Amp Wave Buffer 2 - 1	
MODEL SHOP				REF:	MAT:	
MAKE					FIN:	
DATE:					SK:	DWG:
					KRM 5809 12-2	

STAT

Q 101

BASE — 1.3  
 EMITTER — 1.2  
 COLLECTOR — 2.0

Q 102

BASE — 2.0  
 EMITTER — 1.9  
 COLLECTOR — 2.2

Q 105

BASE — 0.45  
 EMITTER — 0.13  
 COLLECTOR — 5.2

Q 104

BASE — 0.8  
 EMITTER — 0.2  
 COLLECTOR — +4.2 NO SIG, -1.52 107 SIG.

Q 103

BASE — +4.2 NO SIG, -1.16 107 SIG.  
 EMITTER — 0.2  
 COLLECTOR — 8.5

Q 106

NO SIG SIG  
 BASE — -74 -72  
 EMITTER — -74 -72  
 COLLECTOR — -74 -72

Q 107

BASE — 3.0 NO SIG.  
 +4.2 107 SIG.  
 EMITTER — -2 NO SIG  
 -4.2 107 SIG  
 COLLECTOR — +1.2

Q 108

NO SIG SIG  
 BASE — -77 -72  
 EMITTER — -74 -72  
 COLLECTOR — -3 -42

This document is part of an integrated file. If separated from the file it must be subjected to individual systematic review.

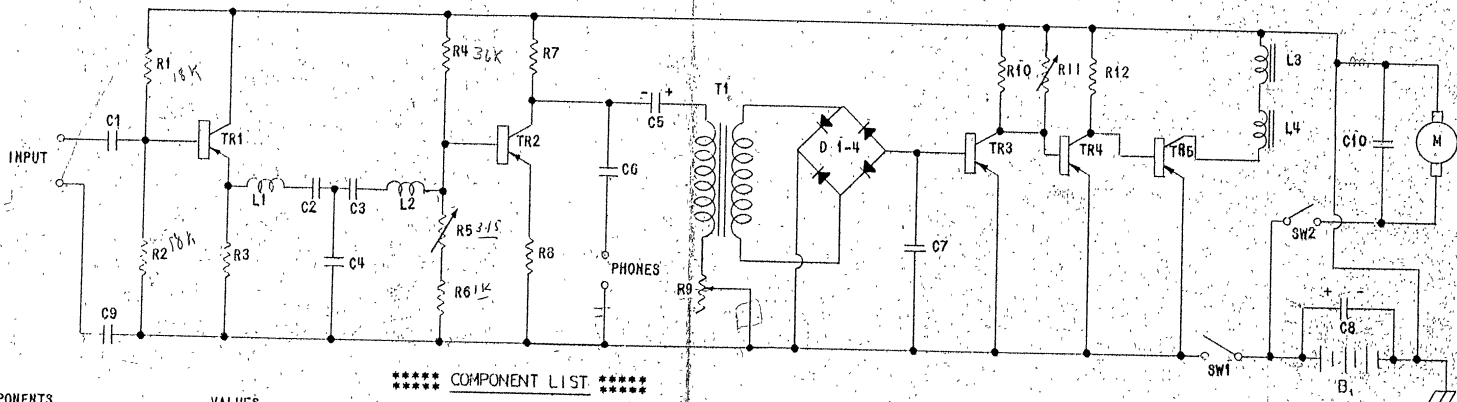
EA:		USED IN			KEYER COMP. VOLTAGES	
MODEL SHOP				REF:	MAT:	
MAKE					FIN:	
DATE:					SK:	DWG:
					K441 5809 12 -1	

STAT









\*\*\*\*\* COMPONENT LIST \*\*\*\*\*

COMPONENTS	VALUES	MANUFACTURER
C1 CAPACITOR	1 $\mu$ fd, 200V PAPER $\pm$ 20%	AEROVOX P123ZNG
C2, C3 CAPACITOR	1 $\mu$ fd, 200V PAPER $\pm$ 5%	AEROVOX P123ZNG
C4 "	.068 $\mu$ fd, 200V PAPER $\pm$ 5%	AEROVOX P123ZNG
C5 "	1.2 $\mu$ fd, TANTALUM, 30V	FANSTEEL STA170
C6 "	.05 $\mu$ fd, CERAMIC, 75V	CL, C-614
C7 "	.4 $\mu$ fd, CERAMIC, DUAL .2 $\mu$ fd, 75V	CL, C-616
C8 "	8 $\mu$ fd, 20V TANTALUM	FANSTEEL STA-265
C9 "	.2 $\mu$ fd, CERAMIC 75V	CL, C-616
C10 "	101 $\mu$ fd, CERAMIC 1000V	CENTRALAB DD-103
R1, R2 RESISTOR	18K, $\pm$ 10%, 1/10W	ALLEN BRADLEY
R3 "	2.2K, $\pm$ 10%, 1/2W	ALLEN BRADLEY
R4 "	36K, $\pm$ 5%, 1/10W	ALLEN BRADLEY
R5 "	3.15K, $\pm$ 10% $\varnothing$ 25 $^{\circ}$ C	THERMISTOR CORP., TYPE 33RR1
R6 "	1K, $\pm$ 10%, 1/2W	ALLEN BRADLEY
R7 "	510 $\Omega$ , $\pm$ 10%, 1/2W	ALLEN BRADLEY
R8 "	20 $\Omega$ , $\pm$ 10%, 1/10W	ALLEN BRADLEY
R9 "	50K, POTENTIOMETER	CHICAGO TELEPHONE, CTS-236
R10 "	22.5K, $\pm$ 1%, 1/2W DEPOSITED CARBON	MALLORY DC 1/2A
R11 "	31.5K, $\pm$ 10% @ 25 $^{\circ}$ C	THERMISTOR CORP., TYPE 43RD1
R12 "	1K, $\pm$ 1%, 1/2W DEPOSITED CARBON	MALLORY DC 1/2A
L1, L2 INDUCTANCE	400mh, TORROID	FREED, T1-16
L3, L4 COIL, PRINTER	1400 TURNS #32 ENAMEL WIRE	ENC. 584

COMPONENTS	VALUES	MANUFACTURER
D 1-4 DIODE	T1G	TRANSITRON
TR1, TR3 TRANSISTOR	2N47	PHILCO
TR2 "	2N43	GENERAL ELECTRIC
TR4 "	2N224	PHILCO
TR5 "	2N156	C. B. S.
T1 TRANSFORMER	600:600 OHMS	MICROTRAN, M471FB
SW1, SW2 SWITCH	SPST	HETHERINGTON T-3103
M MOTOR	12V DC	SPECIAL
B1 BATTERY	12 VOLT MERCURY	ENC. 583

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TITLE		SCALE	
SCHEMATIC DIAGRAM		NONE	
DESIGNED BY	DATE	DWG. NO.	
DRWN BY: <i>RMS</i>	16 OCTOBER 1957	2045	#595
CHECKED BY	APPROVED BY		

AT-3 TRANSMITTER POWER TEST

300-ohm load

<u>Freq (Mc)</u>	<u>RFMA</u>	<u>P in Watts</u>	<u>Crystal I Operating</u>	<u>Max I</u>	<u>Load SW</u>	<u>P.A. Inductor</u>	
3	360	38.9	8 ma	9 ma	9	3	
4	360	38.9	9 ma	10 ma	8	8	
5	365	40.0	12 ma	14 ma	7	11	
6	360	38.9	13 ma	18 ma	7	15	
7	380	43.3	14 ma	16 ma	6	14	
8	380	43.3	14 ma	19 ma	6	18	
9	375	42.2	14 ma	19 ma	6	20	
10	385	44.5	16 ma	18 ma	5	20	
11	5.5x2	390	45.6	12 ma	15 ma	5	22
12		385	44.5	14 ma	16 ma	5	22.5
13	6.5x2	375	42.2	14 ma	17 ma	5	23
14		380	43.3	15 ma	17 ma	5	24
15		385	44.5	16 ma	18 ma	4	24
16		380	43.3	16 ma	18 ma	4	25
18		370	41.1	16 ma	18 ma	4	26
20		360	38.9	10 ma	14 ma	4	26.5
21		355	37.8	16 ma	18 ma	4	27
22	11x2	390	45.6	16 ma	18 ma	3	27
24		360	38.9	16 ma	18 ma	3	27.5
26	8750x3	350	36.8	16 ma	18 ma	3	28
27		350	36.8	16 ma	18 ma	3	28.5
28	14mcx2	380	43.3	13 ma	15 ma	3	29
30		360	38.9	16 ma	18 ma	3	29.5
33		340	34.7	18 ma	20 ma	3	30

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AT-3 TRANSMITTER POWER TEST

Power Supply X1 12.2V

<u>50-ohm Load</u>				710 ma = 25W
<u>Frequency</u>	<u>RFMA</u>	<u>P in Watts</u>	<u>Load SW</u>	<u>P.A.Inductor</u>
3 mc	825	34.0	11	4
6	850	36.1	9	16
12	840	35.3	7	23
18	830	34.5	6	26
24	775	30.0	5	23
30	725	26.3	4	24

<u>75-ohm Load</u>				575 ma = 25W
<u>Frequency</u>	<u>RFMA</u>	<u>P in Watts</u>	<u>Load Sw</u>	<u>P.A.Inductor</u>
3	725 ma	39.4	11	3
6	740 ma	41.0	9	17
12	725	34.4	6	23
18	700	36.8	5	24
24	680	34.7	5	24
30	640	30.7	4	28

<u>150-ohm Load</u>				410 ma = 25W
<u>Frequency</u>	<u>RFMA</u>	<u>P in Watts</u>	<u>Load Sw</u>	<u>P.A.Inductor</u>
3 mc	495	36.7	10	2.5
6	500	37.5	7	15
12	500	37.5	5	23
18	500	37.5	4	26
20	480	34.6	4	23
30	430	28.7	3	24

AT-3 TRANSMITTER TEMPERATURE TEST

Note 710 ma = 25 W.

Load 50 ohm

<u>Crystal</u>	Frequency	<u>-40°C</u>		<u>+25°C</u>		<u>+60°C</u>	
		<u>RFMA</u>	<u>Watts</u>	<u>RFMA</u>	<u>Watts</u>	<u>RFMA</u>	<u>Watts</u>
3 mc	3 mc	850	36.1	810	32.8	825	34.0
6 mc	6 mc	900	40.5	875	37.3	900	40.5
6 mc	12 mc	900	40.5	875	37.3	900	40.5
9 mc	18 mc	850	36.1	860	36.9	875	37.3
8 mc	24 mc	800	32.0	800	32.0	800	32.0
10 mc	30 mc	800	32.0	760	28.9	775	30.0

CRYSTAL CAPACITY TESTCrystal Marking

6.000 KC

Crystal f. checked with 32  $\mu$ f

5999.96

Transmitter f.  
measured H.P. 524C

5999.74

$$2x = y$$

$$12 \left( \frac{14-x}{60} \right) = y$$

$$2x = \frac{14}{5} - 12x$$

$$14x = \frac{14}{5}$$

$$x = \frac{1}{5} \text{ hr.}$$

$$2x \frac{1}{5} = y$$

$$\frac{2}{5} = y$$

AT-3 TRANSMITTER

The following is the recommended procedure for placing the AT-3 Transmitter into operation:

AC OPERATION

1. Transmitter function switch off; power supply switch off.
2. Connect antenna and ground.
3. Plug power supply into transmitter.
4. Turn power supply switch to known line voltage or until meter reads into green.
5. Insert crystal for desired frequency and pull out hand key.
6. Adjust the #1 and #2 thumb wheels until the coil wiper wheels, which are seen through the windows, read approximately the desired frequency. The position of #2 wiper must be estimated as it will vary with loading for a given frequency.
7. Place "tune to max" meter range switch to the "A" position.
8. Place loading switch in the #11 position.
9. Depress key and tune #1 thumb wheel until a maximum reading is observed on meter #1. This reading should be in the upper part of the green region of scale "A"; a deflection into the red area indicates a defective transmitter.
10. With the key still depressed, tune thumb wheel #2 for a dip on meter #1. When a dip is obtained, turn the loading switch to the next lowest position and retune for another dip. This process is repeated until the dip becomes very shallow then the tuning may be finished by observing the "tune to max" meter and obtaining a maximum reading. If the meter runs off scale in the "A" position, it can be brought back on scale by moving the range switch to the "B" position. The transmitter is now ready to operate.

BATTERY OPERATION

1. Transmitter switch in off position.
2. Connect antenna and ground.
3. Plug battery into transmitter.
4. Turn function switch to R. position.
5. Battery may be checked by moving meter range selector switch to the battery position. Meter indicator should deflect into the green region on the "B" scale.

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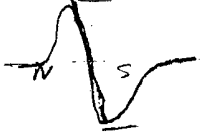


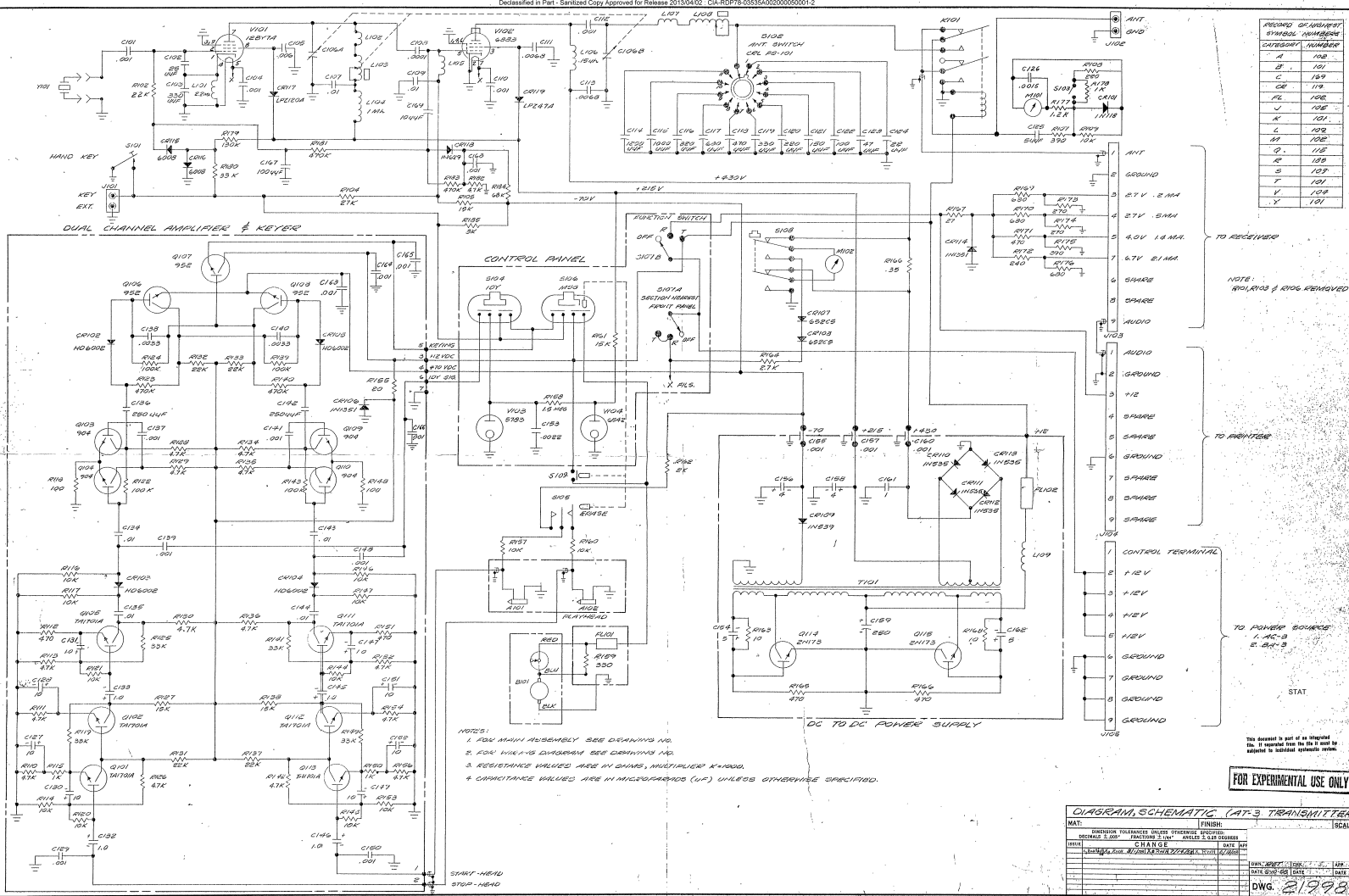
*Considerations*

1) off-position on AT-3 to be rec only - file not on - other two

*positions same as now.*

2) Drop on re wind -





SYMBOL	NUMBER
A	102
B	103
C	104
CE	105
CF	106
CH	107
CI	108
CM	109
CV	110
CA	111
CB	112
CC	113
CD	114
CE	115
CF	116
CG	117
CH	118
CI	119
CM	120

TO RECEIVED

NOTE: R101 & R102 REMOVED

TO TRANSMIT

TO POWER SOURCE

5. 2. 1. 2. 3.

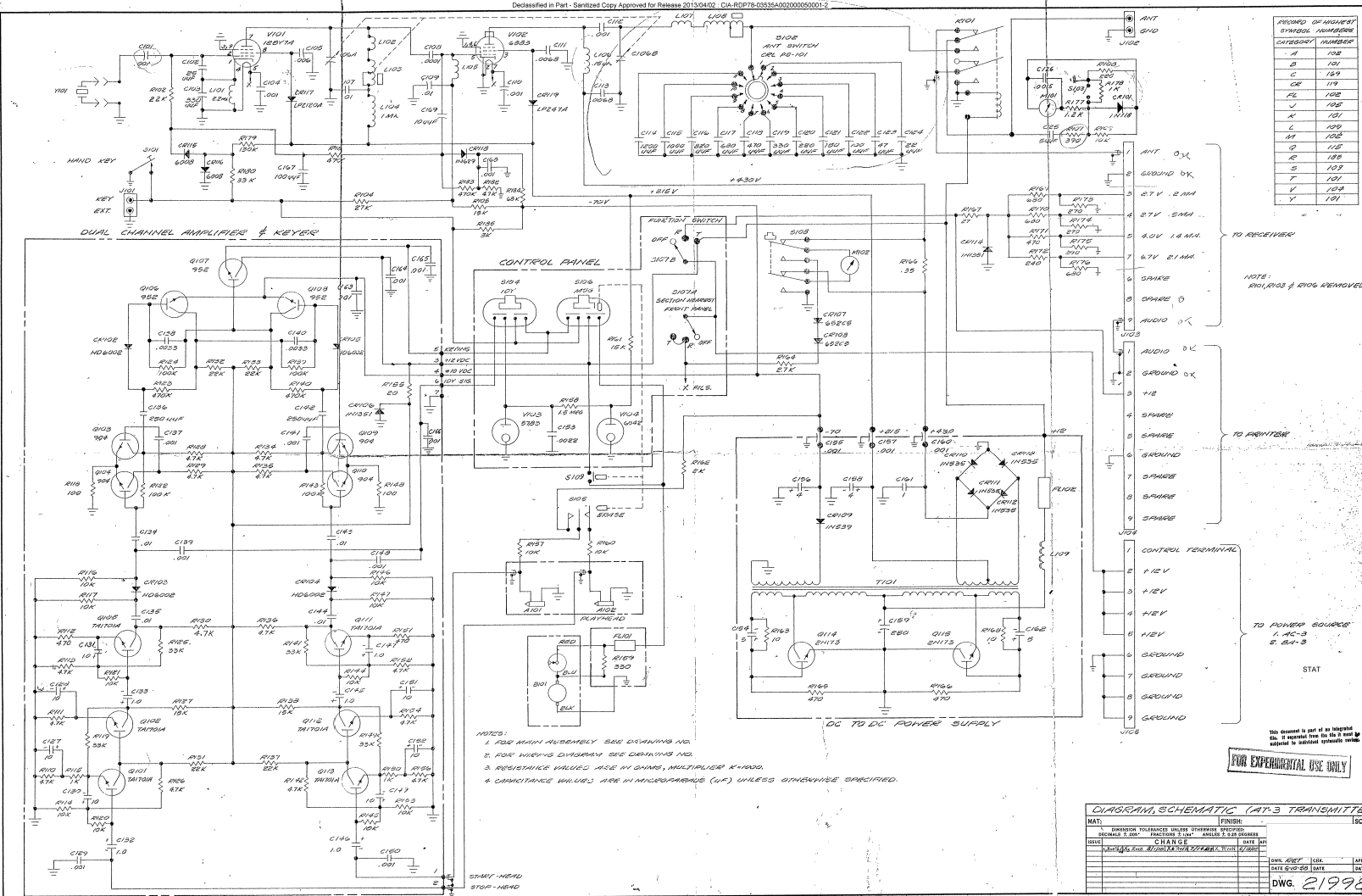
STAT

- NOTES:
1. 6X4, 6X5, 6X6, 6X7, 6X8, 6X9 ASSEMBLY SEE DRAWING NO. 1000
  2. FOR 6X4, 6X5, 6X6, 6X7, 6X8, 6X9 SEE DRAWING NO. 1000
  3. RESISTANCE VALUES ARE IN OHMS, MULTIPLIER K=1000.
  4. CAPACITANCE VALUES ARE IN MICROFARADS (UF) UNLESS OTHERWISE SPECIFIED.

FOR EXPERIMENTAL USE ONLY

DIAGRAM, SCHEMATIC (AT-3 TRANSMITTER)		FINISH	SCALE
MAT. NO.	1000		
DESIGNED BY	1000		
CHECKED BY	1000		
DATE	1000		
REV.	1000		
DATE	1000		
DWG. NO.	1000		
DATE	1000		

ALPHABETIC SYMBOL NUMBER	ALPHABETIC NUMBER
A	102
B	101
C	109
CE	104
CF	100
D	105
E	101
F	102
G	102
H	102
I	102
J	102
K	101
L	100
M	102
N	102
O	102
P	102
Q	102
R	102
S	102
T	101
U	102
V	101
W	101
X	101
Y	101

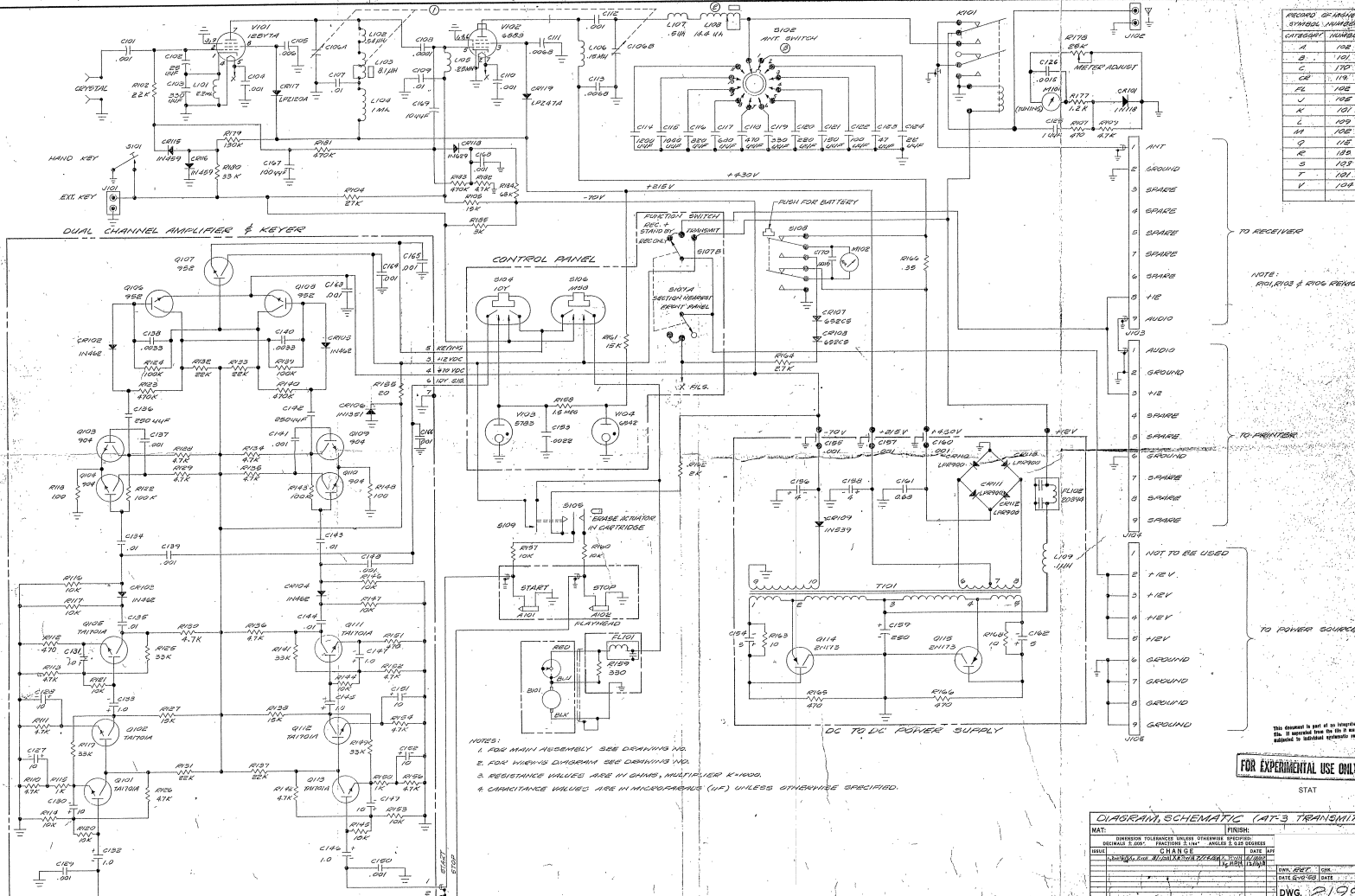


- NOTES:
1. FOR MAIN ASSEMBLY SEE DRAWING NO. 2198
  2. FOR WAVING DIAGRAM SEE DRAWING NO. 2199
  3. RESISTANCE VALUES ARE IN OHMS, MULTIPLIER K=1000.
  4. CAPACITANCE VALUES ARE IN MICROFARADS (UF) UNLESS OTHERWISE SPECIFIED.

FOR EXPERIMENTAL USE ONLY

DIAGRAM, SCHEMATIC (AT-3 TRANSMITTER)	
MAT. NO.	FINISH:
2198	2198
2199	2199
2200	2200
2201	2201
2202	2202
2203	2203
2204	2204
2205	2205
2206	2206
2207	2207
2208	2208
2209	2209
2210	2210
2211	2211
2212	2212
2213	2213
2214	2214
2215	2215
2216	2216
2217	2217
2218	2218
2219	2219
2220	2220
2221	2221
2222	2222
2223	2223
2224	2224
2225	2225
2226	2226
2227	2227
2228	2228
2229	2229
2230	2230
2231	2231
2232	2232
2233	2233
2234	2234
2235	2235
2236	2236
2237	2237
2238	2238
2239	2239
2240	2240
2241	2241
2242	2242
2243	2243
2244	2244
2245	2245
2246	2246
2247	2247
2248	2248
2249	2249
2250	2250

RECORD OF PARTS	SYMBOL	NUMBER	CATEGORY	NUMBER
A	R	101		
B	V	102		
C	CA	103		
D	AE	104		
E	V	105		
F	R	106		
G	S	107		
H	AV	108		
I	D	109		
J	R	110		
K	V	111		
L	K	112		
M	AV	113		
N	S	114		
O	T	115		
P	V	116		



TO RECEIVER  
NOTE: R101AS & R106 REMOVED

TO AMPLIFIER  
TO POWER SOURCE, etc.

- NOTES:
1. SEE MAIN ASSEMBLY SEE DRAWING NO.
  2. FOR WIRING DIAGRAM SEE DRAWING NO.
  3. RESISTANCE VALUES ARE IN OHMS, UNLESS NOTED OTHERWISE.
  4. CAPACITANCE VALUES ARE IN MICROFARADS (UF) UNLESS OTHERWISE SPECIFIED.

FOR EXPERIMENTAL USE ONLY  
STAT

DIAGRAM, SCHEMATIC (CAT-3 TRANSMITTER)		SCALE
MAT. NO.	REV.	DATE
DESIGNED BY	APPROVED BY	DATE
DRAWN BY	CHECKED BY	DATE
INSP. BY	DATE	
DWG. 21983		