

HAM INTERNATIONAL PVBA
BRUSSELE STEENWEG, 428
B-9218 GENT BELGIUM
TEL. : 00-32-91-31 21 11
TELEX : 12521 HAM B

www.cbradio.nl
thanks Homer
for sharing this file

SERVICE MANUAL

VIKING 3



HAM INTERNATIONAL

APRIL 1983

1. Applicable unit uses PC board with KYOCERA 16 code FTBM137A0X.

2. Alignment shall be made under the following conditions unless otherwise noted: ambient temperature 23 ± 2°C, humidity 65 ± 5%. Alignment shall be made under a normal temperature of 10 to 35°C.

3. Power supply voltage shall be 20-LLP 01 LLP for 20-LLP 01 board unless otherwise noted.

4. Special gear shall be exercised to avoid destruction of PLL IC.

5. Testing equipment required are the following:

page 1

Product service information

Alignment procedure

Applicable to model:

HAM INTERNATIONAL
VIKING III

- Standard signal generator, unbalanced 50 ohm
- Dummy load, 5 ohm, 2 W
- Circuit tester, 30 kohm/ohm or more
- 04 lemmah, 2-band
- Linear detector, V 1.04 V 5.0 ref
- Vitry 4.39V 1W

page 2

1 Applicable unit uses PC board with KYOCERA ID code PTBM137A0X.

2 Alignment shall be made under the following conditions:
temperature 25°C
humidity 65 %

Unless otherwise strict accuracy of the alignment is required, alignment shall be made under a normal temperature of 10 to 35°C.

3 Power supply voltage shall be dc 13.8 V \pm 0.1 V unless otherwise noted.

4 Special care shall be exercised to avoid static destruction of PLL IC.

5 Testing equipment required are the following:

Audio oscillator, sine wave 10 to 20,000 hz, attenuator built-in.

VTVM, sensitivity up to 0.1 mV.

dc regulated power supply, dc 1A and greater, current meter built in.

Frequency counter, 0 to 40 MHz, high sensitivity and input Z.

Synchroscope, 0 to 100 MHz, high input sensitivity and input Z.

RF VTVM, thermo-coupled, 50 ohm.

Standard signal generator, unbalanced 50 ohm.

Dummy load, 8 ohm, 5 w.

Circuit tester, 20 kohm/dc or more.

Linear detector.

PLL synthesizer adjustment

Testing equipment hook-up.

Apply 13.8 V dc ± 0.1 V. Connect 1:10 probe to scope input. Connect frequency counter to the output of scope. Use 12 V dc scale on tester. Proceed as follows.

Reference frequency 10.240 MHz.

Turn unit power on. Set CB-PA switch to CB. Connect probe from synchroscope (see above) to #3 terminal of PLL IC PLL-02. Check frequency counter reads 10.240 MHz ± 200 Hz.

Off-set frequency 10.695 MHz.

Connect the probe from synchroscope to C32. Set to transmitting. Adjust CT5 for 10.695 MHz ± 50 Hz.

Band off-set frequency adjustment.

This adjustment is made to align the oscillating frequency of X3 - X6 corresponding to the band to be selected. Set unit to transmit mode. Connect counter to TP2.

- For band A, adjust CT1 to adjust X3 (19.880 MHz) to 19.880 MHz ± 50 Hz;
- for band B, adjust CT2 to adjust X4 (20.105 MHz) to 20.105 MHz ± 50 Hz;
- for band C, refer to above for band B;
- for band D, adjust CT3 to adjust X5 (20.330 MHz) to 20.330 MHz ± 50 Hz;
- and
- for band E, adjust CT4 to adjust X6 (20.555 MHz) to 20.555 MHz ± 50 Hz.

VCO.

Connect tester to TP (+). Select band E, channel 40. Rotate core provided on VCO module for 0.6 V ± 0.1 V. Select band A, channel 80. Check for 4.9V $\pm 0.1V$.

Transmitter adjustment

Testing equipment hook-up.

Apply 13.8 V dc ± 0.1 V. Connect audio oscillator, adjusted to provide 1 kHz 20 mV audio, to mic input of the unit. Connect power meter 15 W to the antenna output of the unit. Connect scope paralleled to it.

Preset.

If the alignment of the unit evidently seems to be upset, preset the following potentiometers, etc. as follows:

T5, core top (but slightly into bobine).

RV6, clockwise fully.

L12, loose winding.

Preadjustment.

Set unit to transmit mode. Select **AM** mode. Select band E, channel 40. Apply test signal to mic input (see above). Adjust T1 - T5 and L10 (in that sequence) for peak reading on watt meter. Select band C, channel 1. Adjust T2 and T4 for maximum RF output.

Transmitter adjustment.

Select band E, channel 40.
Adjust T1 and T3 for maximum RF output.
Select band C, channel 1.
Adjust T2 and T4 for maximum RF output.
Repeat above for several times.
Perform the following:

- 1 - Compare the carrier level (on scope etc.) at channel 40 of band E with at channel 40 of band C. Adjust T2 (if necessary) so that both levels are equal as possible.
- 2 - Compare the carrier level at channel 1 of band E with at channel 1 of band C. Adjust T4 (if necessary) so that both levels are equal as possible.
- 3 - Compare the carrier level at channel 40 of band A with at channel 40 of band B. Adjust CT6 (if necessary) so that both levels are equal as possible.

NEGATIVE CHANNEL				POSITIVE CHANNEL			
CHANNEL NO.	FREQ. (MHz)	CHANNEL NO.	FREQ. (MHz)	CHANNEL NO.	FREQ. (MHz)	CHANNEL NO.	FREQ. (MHz)
41	46.505	1	46.955	41	47.415	1	47.865
42	46.495	2	46.945	42	47.425	2	47.875
43	46.485	3	46.935	43	47.435	3	47.885
44	46.465	4	46.915	44	47.455	4	47.905
45	46.455	5	46.905	45	47.465	5	47.915
46	46.445	6	46.895	46	47.475	6	47.925
47	46.435	7	46.885	47	47.485	7	47.935
48	46.415	8	46.865	48	47.505	8	47.955
49	46.405	9	46.855	49	47.515	9	47.965
50	46.395	10	46.845	50	47.525	10	47.975
51	46.385	11	46.835	51	47.535	11	47.985
52	46.365	12	46.815	52	47.555	12	48.005
53	46.355	13	46.805	53	47.565	13	48.015
54	46.345	14	46.795	54	47.575	14	48.025
55	46.335	15	46.785	55	47.585	15	48.035
56	46.315	16	46.765	56	47.605	16	48.055
57	46.305	17	46.755	57	47.615	17	48.065
58	46.295	18	46.745	58	47.625	18	48.075
59	46.285	19	46.735	59	47.635	19	48.085
60	46.265	20	46.715	60	47.655	20	48.105
61	46.255	21	46.705	61	47.665	21	48.115
62	46.245	22	46.695	62	47.675	22	48.125
63	46.225	23	46.675	63	47.695	23	48.145
64	46.215	24	46.665	64	47.705	24	48.155
65	46.205	25	46.655	65	47.715	25	48.165
66	46.185	26	46.635	66	47.735	26	48.185
67	46.175	27	46.625	67	47.745	27	48.195
68	46.165	28	46.615	68	47.755	28	48.205
69	46.145	29	46.595	69	47.775	29	48.225
70	46.135	30	46.585	70	47.785	30	48.235
71	46.125	31	46.575	71	47.795	31	48.245
72	46.105	32	46.555	72	47.815	32	48.265
73	46.095	33	46.545	73	47.825	33	48.275
74	46.085	34	46.535	74	47.835	34	48.285
75	46.075	35	46.525	75	47.845	35	48.295
76	46.055	36	46.505	76	47.865	36	48.315
77	46.045	37	46.495	77	47.875	37	48.325
78	46.025	38	46.475	78	47.895	38	48.345
79	46.015	39	46.465	79	47.905	39	48.355
80	46.005	40	46.455	80	47.915	40	48.365

AM (FM) RF power.
Adjust RV 6 for the rated RF power.

AM modulation.
Adjust RV 4 for more than 90 % modulation.

RF power meter (in unit).
Adjust RV 2 so that the input meter indicates the same as discrete RF power meter.

FM deviation.
Select FM mode. Connect linear detector to the antenna output.
Apply 1.25 kHz 10 mV audio to mic input. Select the channel on which the deviation is lowest (e.g. channel 80, band A).
Adjust RV1 for 2.0 kHz deviation.
Note. Deviation should be more than 2.0 kHz (up to 3 kHz if no distortion occurs) for all channels and bands.

AM sensitivity

Select AM mode. Apply signal generator output to the antenna input, 1 kHz audio for 30 % modulation. Use attenuator on the generator to keep the procedure made easy and adjust T6 to T12 for maximum audio output at speaker output.

Note. The audio output level should be approximately 2.0 V during the alignment.

Compare output level at the lowest frequency channel with at highest frequency channel. Use T7 and T8 so that both levels are equal as possible.

FM sensitivity

Select FM mode. Apply 1 microV antenna input, deviation 1.5 kHz. Adjust T15 for maximum audio output.

S-meter

Apply 40 dB (100 micro-V) antenna input. Adjust RV2 for 'S9' on the S meter (in-unit).

SQUELCH.

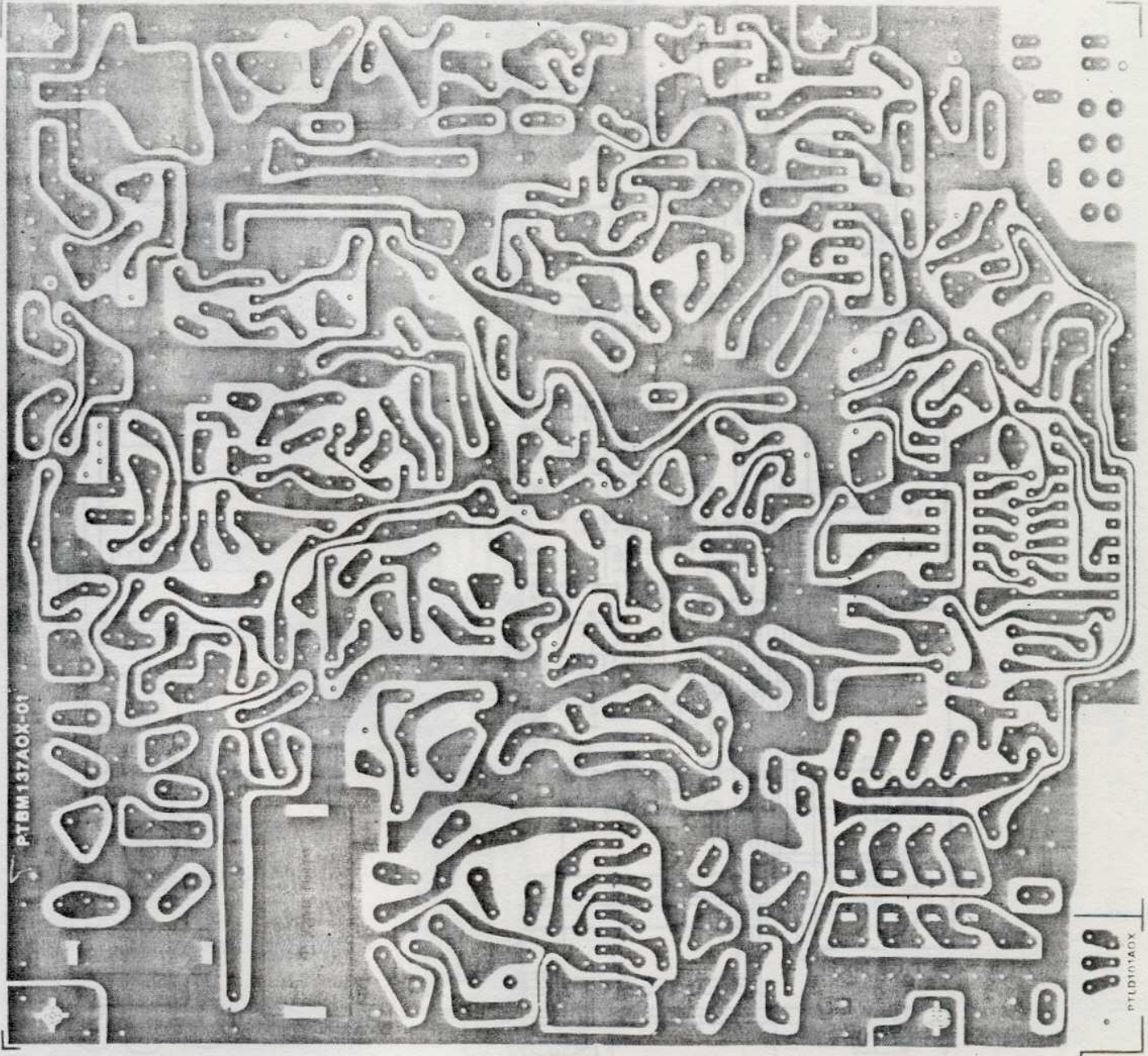
Select AM mode. Apply 50 dB input. Rotate SQUELCH control fully clockwise. Adjust RV5 so that audio just goes off. The squelch opens and closes with 40 to 56 dB antenna input for all modes.

NEGATIVE CHANNEL				POSITIVE CHANNEL				HIGH	
CHANNEL NO.	FREQ. (MHZ)	CHANNEL NO.	FREQ. (MHZ)	CHANNEL NO.	FREQ. (MHZ)	CHANNEL NO.	FREQ. (MHZ)	CHANNEL NO.	FREQ. (MHZ)
41	26.505	1	26.955	1	26.965	41	27.415	1	27.865
42	" .495	2	" .945	2	" .975	42	" .425	2	" .875
43	" .485	3	" .935	3	" .985	43	" .435	3	" .885
44	" .465	4	" .915	4	27.005	44	" .455	4	" .905
45	" .455	5	" .905	5	" .015	45	" .465	5	" .915
46	" .445	6	" .895	6	" .025	46	" .475	6	" .925
47	" .435	7	" .885	7	" .035	47	" .485	7	" .935
48	" .415	8	" .865	8	" .055	48	" .505	8	" .955
49	" .405	9	" .855	9	" .065	49	" .515	9	" .965
50	" .395	10	" .845	10	" .075	50	" .525	10	" .975
51	" .385	11	" .835	11	" .085	51	" .535	11	" .985
52	" .365	12	" .815	12	" .105	52	" .555	12	28.005
53	" .355	13	" .805	13	" .115	53	" .565	13	" .015
54	" .345	14	" .795	14	" .125	54	" .575	14	" .025
55	" .335	15	" .785	15	" .135	55	" .585	15	" .035
56	" .315	16	" .765	16	" .155	56	" .605	16	" .055
57	" .305	17	" .755	17	" .165	57	" .615	17	" .065
58	" .295	18	" .745	18	" .175	58	" .625	18	" .075
59	" .285	19	" .735	19	" .185	59	" .635	19	" .085
60	" .265	20	" .715	20	" .205	60	" .655	20	" .105
61	" .255	21	" .705	21	" .215	61	" .665	21	" .115
62	" .245	22	" .695	22	" .225	62	" .675	22	" .125
63	" .215	23	" .665	23	" .255	63	" .705	23	" .155
64	" .235	24	" .685	24	" .235	64	" .685	24	" .135
65	" .225	25	" .675	25	" .245	65	" .695	25	" .145
66	" .205	26	" .655	26	" .265	66	" .715	26	" .165
67	" .195	27	" .645	27	" .275	67	" .725	27	" .175
68	" .185	28	" .635	28	" .285	68	" .735	28	" .185
69	" .175	29	" .625	29	" .295	69	" .745	29	" .195
70	" .165	30	" .615	30	" .305	70	" .755	30	" .205
71	" .155	31	" .605	31	" .315	71	" .765	31	" .215
72	" .145	32	" .595	32	" .325	72	" .775	32	" .225
73	" .135	33	" .585	33	" .335	73	" .785	33	" .235
74	" .125	34	" .575	34	" .345	74	" .795	34	" .245
75	" .115	35	" .565	35	" .355	75	" .805	35	" .255
76	" .105	36	" .555	36	" .365	76	" .815	36	" .265
77	" .095	37	" .545	37	" .375	77	" .825	37	" .275
78	" .085	38	" .535	38	" .385	78	" .835	38	" .285
79	" .075	39	" .525	39	" .395	79	" .845	39	" .295
80	" .065	40	" .515	40	" .405	80	" .855	40	" .305

Viking 3

PTSV146A0X

PTSV146A0X



PTBM137A0X-01

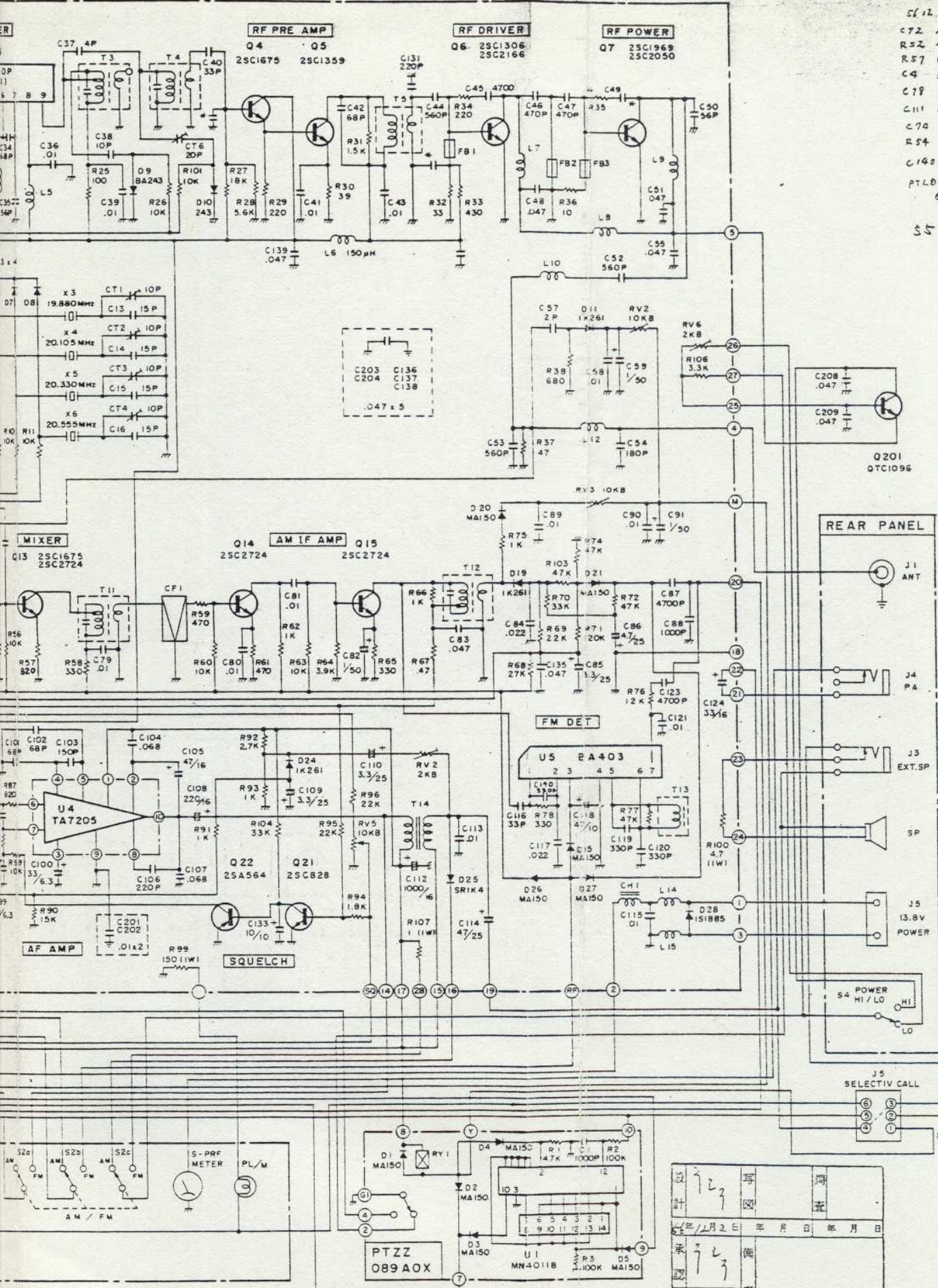
PTLD101A0X

PTVKING2AX-01

8

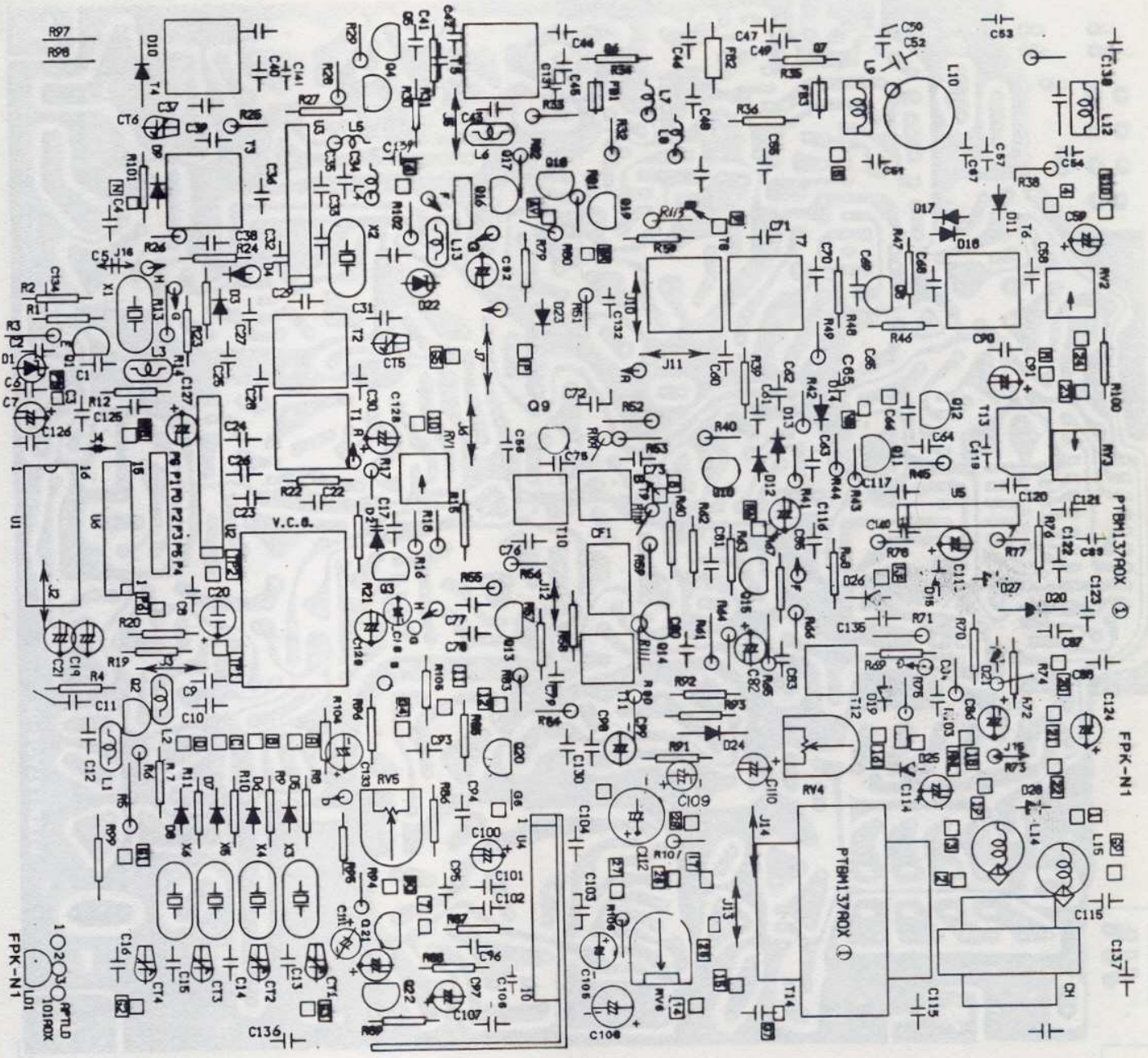
0

0



S/L 2
 C72 100P → 0.01
 R52 470 → 270
 R57 1K → 220Ω
 C4 39P → 37P
 C18 680P 44P
 C11 33/25 44P
 C74 0.01 44P
 R54 33K 44P
 C140 20P 150
 PTLB121 → PTLB101
 Green Rod 1/20
 W89 H1
 S5 -80-4040 47
 50 120

设计	22	写	图	号	22
审核	22	备	案	号	22
批准	22	日期	20	年	2月
SCHEMATIC DIAGRAM MODEL					
VTK NG III					
USD KING 3 EX 01 1981-11-24					

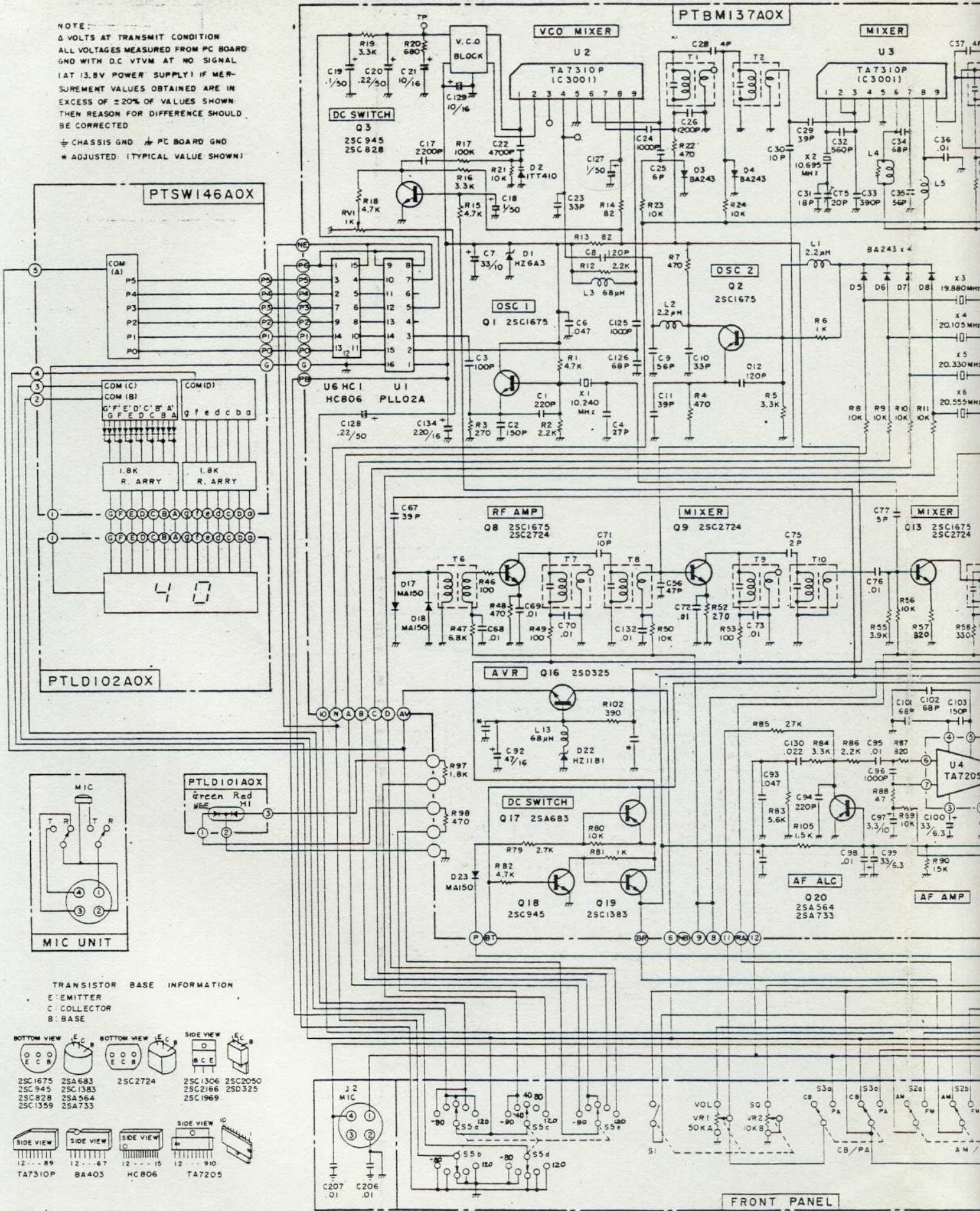


1000µF
 100V
 FPK-N1

NOTE:

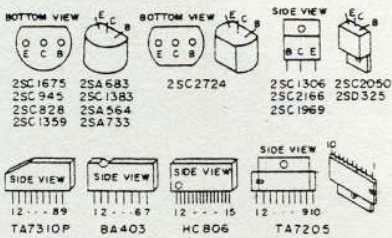
Δ VOLTS AT TRANSMIT CONDITION
 ALL VOLTAGES MEASURED FROM PC BOARD
 GND WITH D.C. VTVM AT NO SIGNAL
 (AT 13.8V POWER SUPPLY) IF MEASUREMENT
 VALUES OBTAINED ARE IN
 EXCESS OF ±20% OF VALUES SHOWN
 THEN REASON FOR DIFFERENCE SHOULD
 BE CORRECTED

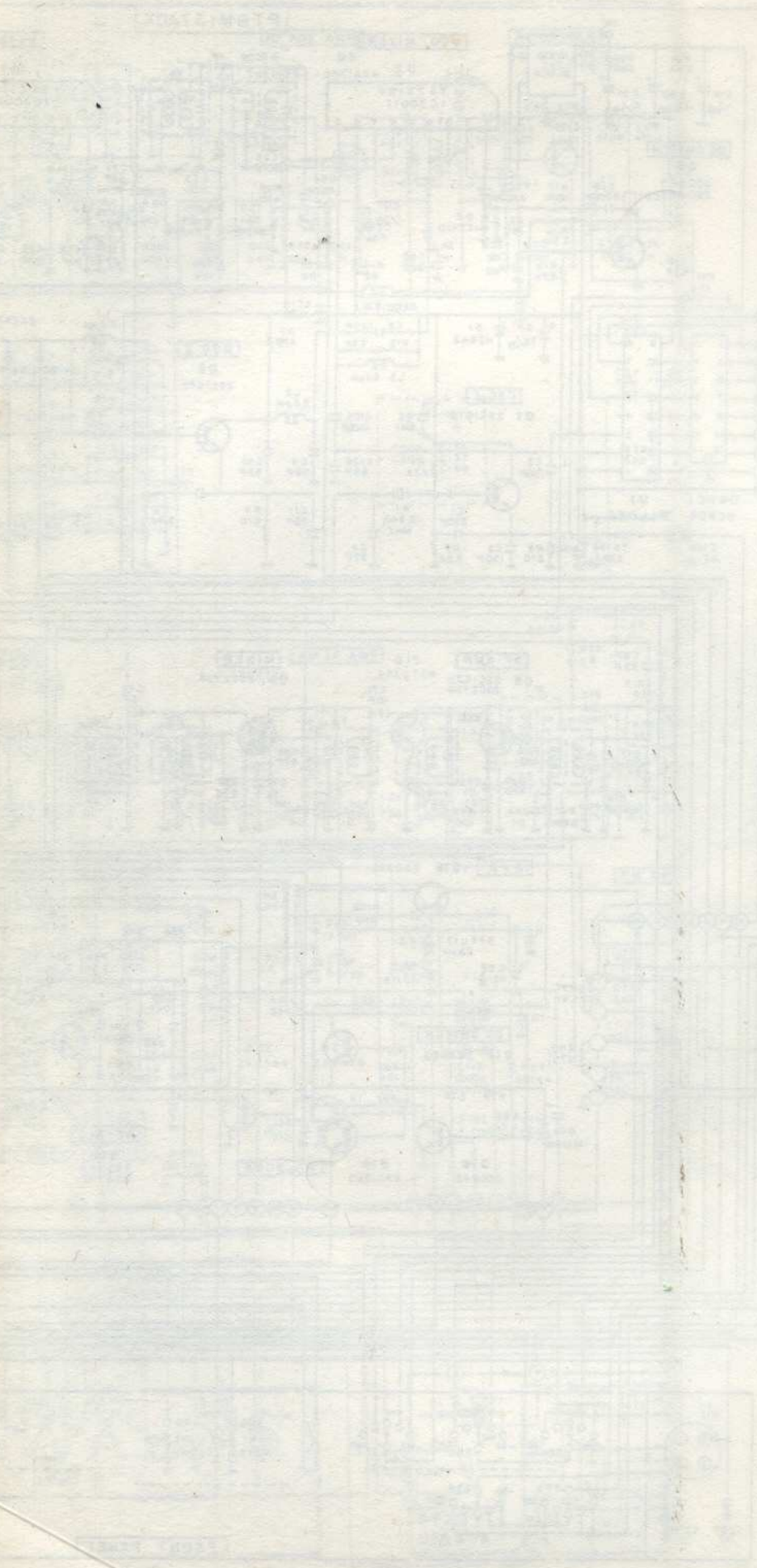
⊥ CHASSIS GND * PC BOARD GND
 * ADJUSTED (TYPICAL VALUE SHOWN)



TRANSISTOR BASE INFORMATION

E: EMITTER
 C: COLLECTOR
 B: BASE





THE FOLLOWING IS A LIST OF THE
 PARTS REQUIRED FOR THE
 CONSTRUCTION OF THE
 SET. THE PARTS LIST IS
 PRINTED IN ITALIC TYPE.
 THE PARTS LIST IS
 PRINTED IN ITALIC TYPE.

