

VOLUME 26

LEJ'S C.B. SHOP
2 BOX 158-B
MASONVILLE IN 47438
PH. 812-665-3837

PUBLISHED OCTOBER 1986

SECRET

CB[®]



TEXAS SESQUICENTENNIAL



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2 BOX 158-B
MASONVILLE IN 47438
PH. 812-665-3837

CONFIDENTIAL
**FACTUAL
REPORT**
SCHEMATICS ETC.

PRICE \$20.00 U.S. FUNDS

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IMPORTANT: READ THIS FIRST

The information in this book is not to be used to exceed F.C.C. specifications, in any case, as applied to power, modulation, frequency spectrum, etc. It is illegal to do this to any CLASS D RADIO.

This book is a factual report of gathered information, and as such is intended for use on radios for EXPORT ONLY.

If you are not familiar with electronics, it is better to check for advice with your local electronics or CB center, as to restrictions, etc., concerning your radio.

More information, on other units will be forthcoming in future issues.

This book will not be found at a book store, but can be obtained through your local CB Dealer or Distributor, or direct from Selman Enterprises.

Secret CB
Volume Twenty-Six
Published October 1986

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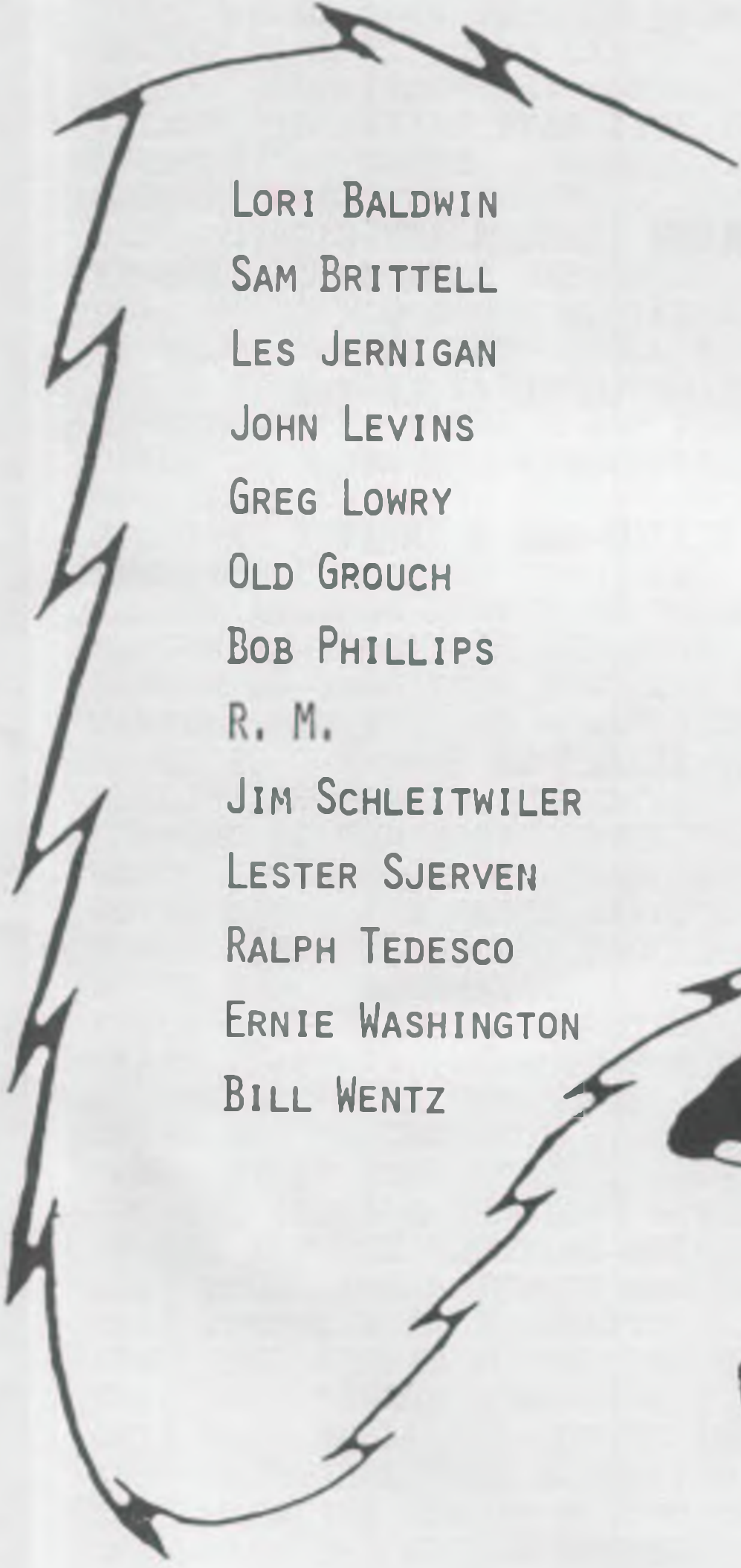
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SECRET CB WISHES TO GRATEFULLY ACKNOWLEDGE THE FOLLOWING PEOPLE FOR THEIR HELP AND CONTRIBUTIONS TOWARD GETTING VOLUME 26 IN PRINT. THEIR ENCOURAGEMENT AND CONTRIBUTION OF MATERIAL HAS BEEN INVALUABLE.



LORI BALDWIN
SAM BRITTELL
LES JERNIGAN
JOHN LEVINS
GREG LOWRY
OLD GROUCH
BOB PHILLIPS
R. M.
JIM SCHLEITWILER
LESTER SJERVEN
RALPH TEDESCO
ERNIE WASHINGTON
BILL WENTZ

WANTED

NEW MODIFICATIONS
NEW CONVERSIONS
TECHNICAL TIPS
PROJECT PLANS
ETC. . ETC. . ETC.



DORIS SAYS "THANKS" AND A FREE BOOK TO THE ABOVE PEOPLE.

INTRODUCTION

WE PROMISED YOU VOLUME 26 AND HERE IT IS FULL OF A LOT OF GOOD INFORMATION. HOPE YOU WILL ENJOY THIS VOLUME OF SECRET CB AS MUCH AS WE ENJOYED GETTING IT READY FOR YOU.

WE DEDICATE THIS VOLUME TO YOU!

THIS WILL BE OUR LAST VOLUME UNTIL AFTER THE HOLIDAYS. WE WILL TAKE THIS OPPORTUNITY TO WISH ALL OF YOU A BLESSED HOLIDAY SEASON AND A TRULY PROSPERIOUS NEW YEAR IN 1987.

THE SECRET CB GANG

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ANOTHER GOOD PRODUCT RECENTLY RELEASED BY DIGALOG TECHNOLOGY.

CRC-100 FREQUENCY COUNTER



DIGALOG TECHNOLOGY, INC.

THE CRC-100

The Model CRC-100 is a six-digit continuous readout frequency counter that allows the user to read an operating frequency without transmitting. It is designed to interface with most frequency synthesized SSB/CB radios, and is field programmable; one model fits all, thus easing installation problems.

When using the CRC-100 counter with an SSB/CB transceiver, the operator should be aware of different modes of operation. While operating the CRC-100 in AM or FM mode, the frequency readout will reflect the carrier frequency only. For example, 27.4050 carrier frequency is displayed as 27.4050 on the counter's LED display. In order to broadcast SSB signals, however, the carrier is nulled, then the frequency is shifted or off-set by a finite amount in the transceiver. This off-set will be the carrier frequency PLUS a given number in the upper sideband (USB), or the carrier frequency MINUS a given number in the lower sideband mode (LSB). That given amount varies according to make and model of the radio, but the two most common are 1.5 KHz and 2.5 KHz. An example of 1.5 KHz off-set would be as follows: at AM = 27.4050, the USB would = 27.4065 and the LSB would = 27.4035. A 2.5 KHz off-set would look like this: at AM = 27.4050, the USB would be 27.4075, and the LSB would be 27.4025. The CRC-100 will accurately display this normal off-set function of your transceiver.

CORRECTIONS

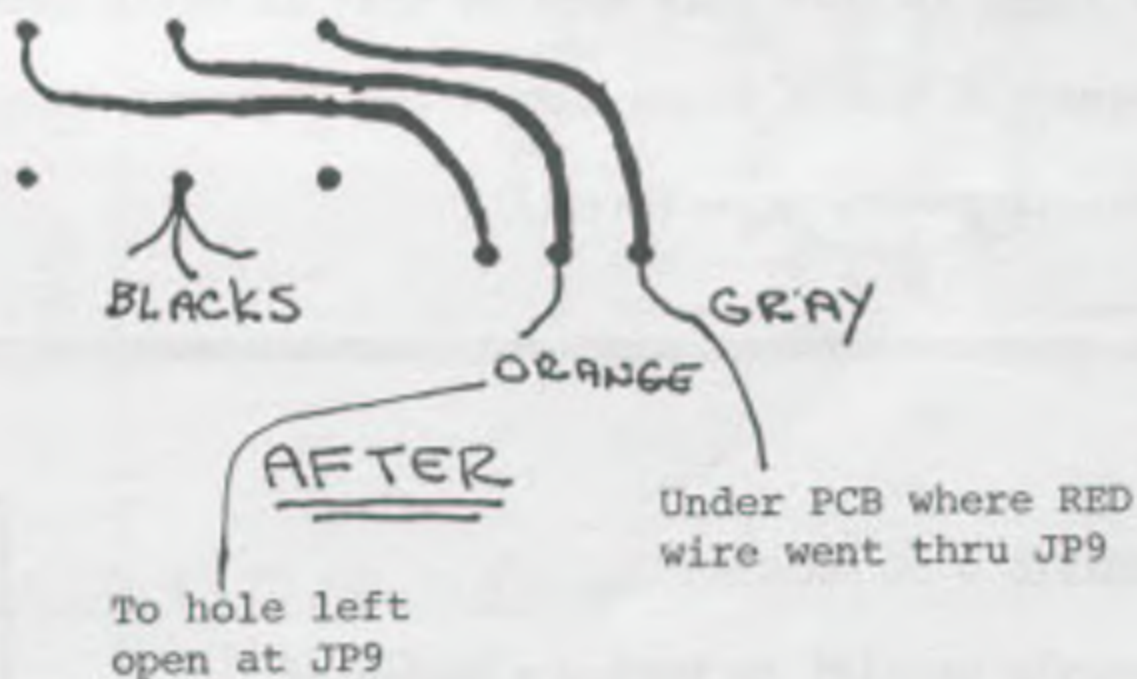
Volume 25, page 6: CHANGE.....headings on alignment procedure,
Receiver to Transmitter,
Transmitter to Receiver.....

Volume 21, page 14: CHANGE.... 6. Remove D31, not D32.....

Volume 19, page 34: CHANGE.... GRANT-DX, 10KHz JUMP MOD; title to now read
GRANT-DX, "MISSING F₀'s MOD".

Volume 25, page 19: We have been informed that instead of R106, it should
read D22 is the AMC disable if needed.

Volume 25, page 28: Galaxy 2100 - Step #7 should read: Remove ORANGE wire
completely and solder ORANGE wire where WHITE wire was,
other end to hole left open at JP9.



PLEASE BE ADVISED THAT THE VOICE SIGNAL BOOSTER "VSB-1", SECRET CB KIT #102,
WILL NOT WORK IN THE TRAM RADIOS. DISREGARD THE INFORMATION IN VOLUME 10,
PAGE 18 and VOLUME 12, PAGE 66.

Are you interested in ANTIQUE RADIOS? If you are, try this address for more
information. A.R.C., 9511-23 Sunrise Blvd., Cleveland, OHio 44133

ED. NOTES:

Seems that the "biggies" (?) are now using SCB for gathering material on "How-To-Do-It". Volume 13/52-56; Modulated Gunn Oscillator article was 'retouched' in August '86 issue of a monthly periodical.

The author didn't expand enough on theory of basic operation! Simply is nothing more than a Radar Transponder, which is used to measure and re-transmit a radar signal. In the supreme configuration used for Electronic Counter Measures for military purposes, ECM.

What the public really needs is a Radar Transponder with I.F.F., (Identify-Friend-Foe). This way will know if 'Smoky' is on your A... or just another person running around with a similar unit.

A RUMOR is that this type of unit is built into a radar detector, and transmits back a false target for whomever is out there hitting on you..... rumor, or.....?

NO SCHEMATIC - NO PURCHASE.....

Why do people persist in buying a piece of electronic equipment without any service information....?

To the left is a prime example of what I mean.....

.....

Ed., I personally had a 'dealer' tell me that he was in business to make money and not worry about the product. This was the same dealer that promised me a schematic on JFK back in July.

J.F.K.
120-Channel 15 Watt AM/FM Mobile

REJECTED
Purchase is a risk due to lack of technical information provided by manufacturer/ "dealer".
...LET THEM SIT ON THE SHELVES AND ROT.

Owner's Manual

PRESIDENT
Equipment for the 1980's

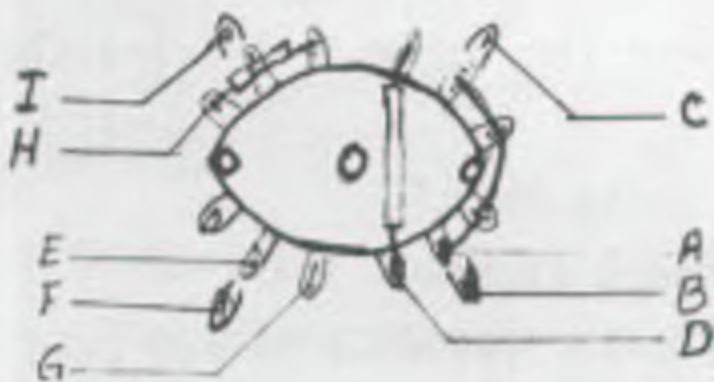
UP-DATES ON "LTD" KITS BY CARD-KIT

There have been improvements on the LTD Kit that allows for better and quicker installations.

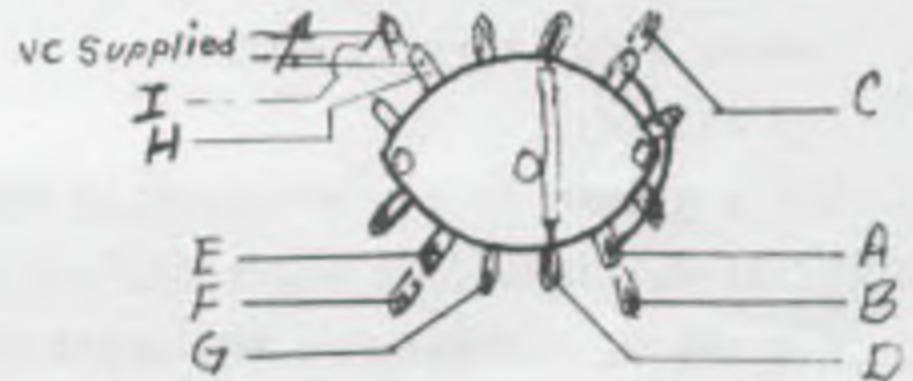
There are now two yellow dots on the epoxy packs. One will be curled and one will be straight. The curled one is capacitive coupled, as was the original, to be used with external amplification. The straight one is to be used when the output is used direct to mixer.

We found that with slight design changes we could feed the regulated 9.1 volt source to the Epoxy Pack and generate a signal of sufficient amplitude. This does eliminate the need for further amplification.

Wiring a 4 Pole 3 Position switch for 1/2 channels.



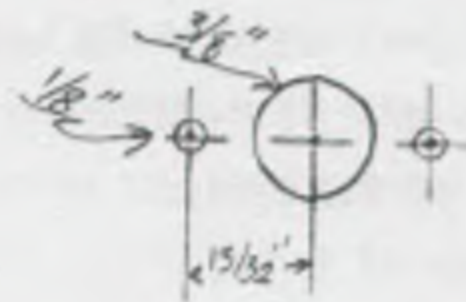
Wiring a 4 Pole 3 Position switch for full channels.



COBRA 21, 25 GTL & LTD AND OTHER SISTER UNITS

MOUNTING SWITCH

1. Punch or drill a 3/8" hole in bottom cover, in line with and 3/4" to the rear of the upper most mike hole on the right side of the unit.
2. Put the cover back in position and mark the center of this hole on the chassis.
3. With cover off mark two more places 13/32" on both sides of this point.
4. Punch or drill a 3/8" hole in the center and 1/8" holes on each side. Mount switch.

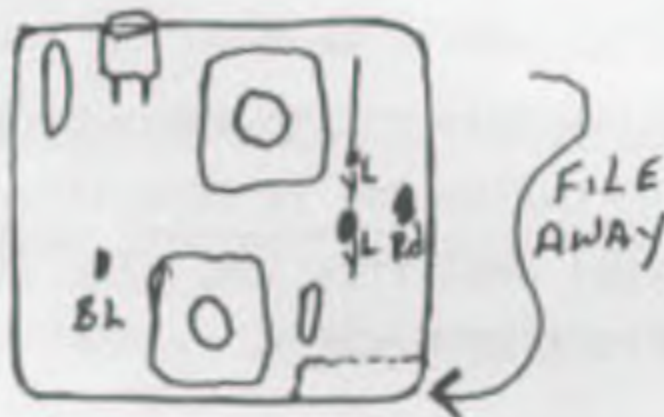


MOUNTING EPOXY PACK

1. With the lower right bevel of the Epoxy Pack filed away, (Do not file closer than 1/8" of adjacent capacitor) and using hot glue, plastic adhesive, or adhesive sealant mount the Epoxy Pack between the bracket mounting hole and L-18.

UPDATE FROM LTD KITS CONTINUED

DO NOT BLOCK THE MOUNTING HOLE OR THE ADJUSTMENT HOLE OF L-18.



PRELIMINARY STEPS

1. Remove JP-14.
2. Cut the PC run on the output of L-16 between where JP-14 was removed and the large hole (TP-3).
3. Remove R-58 turn it around and solder body where the leg was, leaving the leg raised.
4. Run a ground to one of the tank covers on the Epoxy Pack.

NOTE: If full channels are to be used, do these steps also:

1. Cut the PC run between the 10.24 Mhz. Xtal and C-111 (If VC-1 is not used change C-111 to approximately 33 pf. If VC-1 is used remove C-111).
2. Run a jumper from the cathode of D-14 to the red dot on the Epoxy Pack.

CONNECTING 4 POLE 3 POSITION SWITCH FOR HALF CHANNELS

- A. To output of L-16 (Right end of JP-14) via blue dot on the Epoxy Pack.
- B. To TP-3.
- C. To input of TA-7310P chip (Left end of JP-14).
- D. To straight yellow post of Epoxy Pack.
- E. To PTT signal where R-58 was lifted from.
- F. To lifted end of R-58.
- G. To pin 1 of PLL chip.
- H. To cathode of D-14.
- I. To the red dot on the Epoxy Pack.

CONNECTING 4 POLE 3 POSITION SWITCH FOR FULL CHANNELS

Same as above except H & I.

- H. To PC side of board leg of VC-1 that is tied to 10.24 Mhz. Xtal.
- I. To the PC side of board to leg of 10.24 Mhz. Xtal that is tied to VC-1.

UPDATE FROM LTD KITS CONTINUED

COBRA 21, 25 & 29 PLUS AND OTHER SISTER UNITS

MOUNTING SWITCH

1. Punch or drill a 3/8" hole in bottom cover, in line with and 1" to the rear of the front cover screw hole on the right side of unit. NOTE: On the 29 Plus units C-38 will have to be relocated. Extend the legs and glue it on top of the PLL chip.
2. Put the cover back in position and mark the center of this hole on the chassis.
3. With the cover off, mark two more places 13/32" on both sides of this point.
4. Punch or drill a 3/8" hole in the center and 1/8" holes on each side. Mount switch.



MOUNTING EXPOXY PACK

1. Mount the epoxy pack just to the rear of the bracket mounting holes. Use hot glue, plastic adhesive or adhesive sealant.

PRELIMINARY STEPS

1. To have excess to the PC side of board, drill a 1/8" hole (for a 21 or 25 Plus drill on the right side of L-4 close and dead center and for the 29 Plus drill to the rear and slightly left of the 10.7 crystal filter).
2. Cut the PC run at the output of L-9.
3. Cut this same run again just past the first connection on this run.
4. Lift the cathode end of D-15.
5. Ground one of the cases of the tanks on the Epoxy Pack.

NOTE: If full channels are to be used, do these additional steps.

1. Change C-49 (47pf) to a 33pf capacitor leaving the leg normally connected to the 10.24 Mhz. Xtal raised.
2. Run a jumper from the leg of R-69 (82 ohm) to the red dot terminal on the Epoxy Pack.

UPDATE FROM LTD KITS CONTINUED

CONNECTING 4 POLE 3 POSITION SWITCH FOR HALF CHANNELS

- A. To the output leg of L-9, via blue dot on Epoxy Pack.
- B. To TP-2 (bare leg of R-16).
- C. To the point between the two cuts made just off L-9.
- D. To the straight yellow leg on the Epoxy Pack.
- E. To the PTT signal where D-15 was raised from.
- F. To the raised leg of D-15.
- G. To ground.
- H. To the leg of R-69 (82 ohm resistor near D-16).
- I. To the red dot on the Epoxy Pack.

CONNECTING 4 POLE 3 POSITION SWITCH FOR FULL CHANNELS

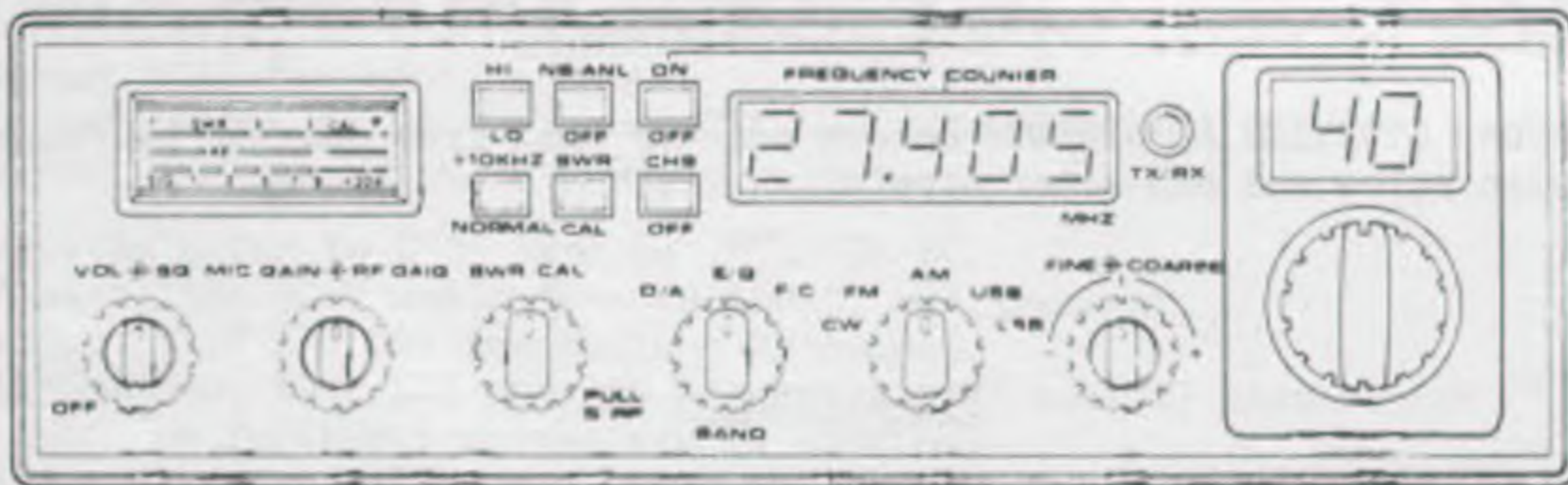
Same as above except for H & I.

- H. To the raised leg of C-49.
- I. To the point the leg of C-49 was raised from.

GALAXY 2100 TEXAS STAR 2100

IDENTICAL UNITS! Only difference is the name.

The 2100 series is nothing more than a Superstar 3900 with Frequency Readout and various updates. The 10KHz jump switching being one.



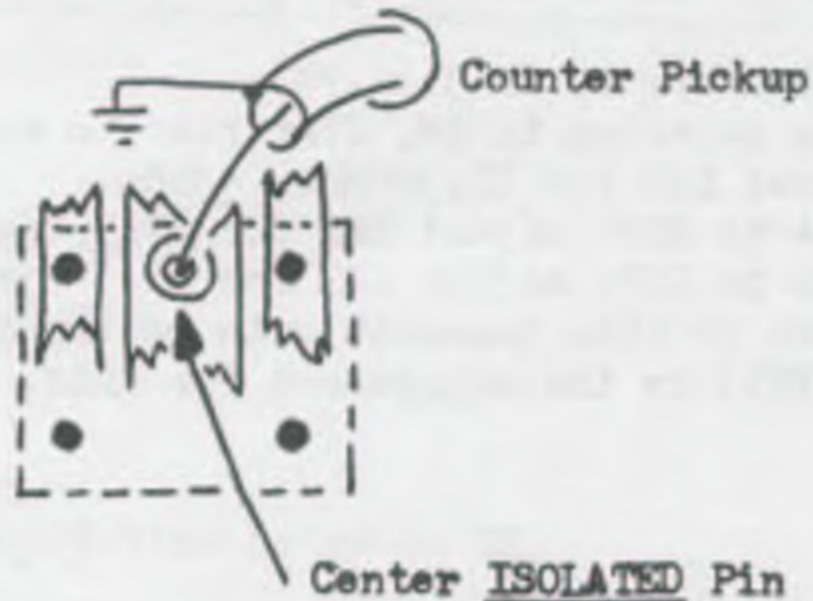
GALAXY 2100, S/N: 003077 (Code Number: 110) Out-of-the-box.

AM/FM RF Pwr - 4.2W across entire band. SSB RF Pwr - 2.2W ? ?
Turned up AM/FM to 5.0W and SSB to 12+ (maximum adjustment).
Modulation was in excess of 100% in AM, backed off to 100% at max mike gain. All frequencies were less than 200Hz off during alignment/calibration. The previous problems with variable resistors has been cleared up, (at least in this unit - note S/N.). The offset is true for sidebands, both upper and lower. Slide specs in this unit was -7.2, +8.9Khz. Also this unit had the thick white insulators on RF Driver and Final. The ONLY REAL DEFICIENCY/ENGINEERING SCREW-UP is NO ROGER BEEP SW...? Instead what did they do! Put a channel 9 switch into the unit...? IF YOU NEED HELP ON A C.B., FORGET GOING TO CHANNEL 9, use 19.

GALAXY 2100 TEXAS STAR 2100

If the offset for Single Side Band is missing, double-check for correct location of the frequency pickup point on the main PCB. Drawing below is of etch side of PCB and L18 modification point used for pickup.

L18 shown with only partial traces.....



Galaxy 2100 Line-Up Procedure

Following is GALAXY 2100 alignment, re-written for the experienced technician. ...Courtesy Custom Conversions...

Equipment Suggested: Audio Generator; RF VTVM; DC Power Supply (*); Freq. Counter; Oscilloscope; RF Wattmeter & Dummy Load (25W minimum); RF Sig Gen (capable of 1KHz at 30% mod-AM, 1.5KHz deviation at 1KHz-FM); VOM-20K ohm/V min... (*) 4A Regulated MINIMUM.

BEFORE STARTING ALIGNMENT: Remove counter unit from chassis by removing nylon screw and connector carefully.....

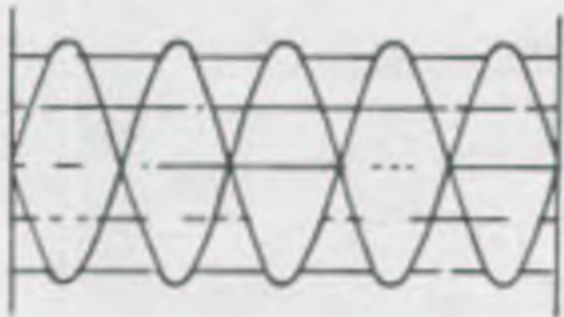
PLL ALIGNMENT

1. Fo Counter to pin terminal between C78 and C79. Should read 10.24000MHz, ± 200 Hz; if out of tolerance change X1.
2. Fo Counter to TP-6 (R102):
Mode selector to CW, adjust L26 for 10.695MHz.
Mode selector to USB, adjust L27 for 10.6925MHz.
Mode selector to LSB, adjust L28 for 10.6975MHz.
(tolerance on above: +0, -100Hz.)
3. Scope to TP-4 (pin terminal between C82 and R107):
Mode selector to AM, Clarifier to center; Band to 'D', Ch. 19.
Adjust L16 for max RF output.
4. Scope to TP-3 (R-74):
Mode selector to AM, Clarifier to center; Band to 'F', Ch. 40.
Adjust L18 for max RF Output.
DC Voltmeter to TP-2 (R-109).
Adjust L17 to 5.0VDC, tolerance .1VDC.
Check 'A' Band Ch 1, must be 2.2VDC approximately.
5. Fo Counter to TP-3 (R-74):
Mode selector to AM, Clarifier to center; Band to 'F', Ch. 19.
Adjust A, for 16.040MHz, ± 50 Hz.
Mode to USB; adjust B, for 16.0425MHz; ± 50 Hz.
Mode to LSB; adjust C, for 16.0375MHz; ± 50 Hz.
Leave in LSB; transmit-no input; adjust VR15 for 16.0375MHz, ± 50 Hz.
(NOTE: Check board layout for 'A', 'B', and 'C' adjustment).
6. Fo Counter to TP-3 (R-74):
Mode selector to AM, Clarifier to center; Band to 'C', Ch. 19.
Adjust L19 for 17.390MHz, ± 50 Hz.
Mode to USB; adjust L20 for 17.3925MHz, ± 50 Hz.
Mode to LSB; adjust L21 for 17.3875MHz, ± 50 Hz.
Leave in LSB; transmit with no input; check for 17.3875MHz, ± 50 Hz.
(VR15 is the adjustment for this, which should not be needed!)

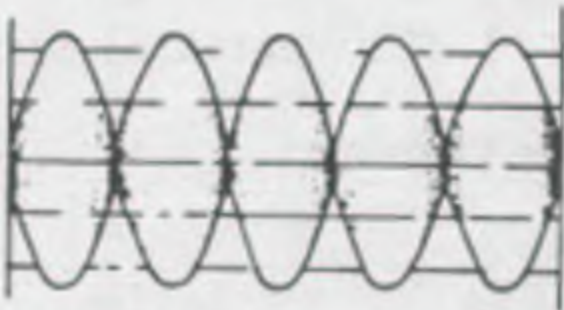
TRANSMIT ALIGNMENT

1. Driver/Final Bias adjustment: Remove small plug-in PCB from TP7, TP8, and TP9.
Mode selector to USB; Band to 'C', Ch. 19.
Current meter to TP9 (+), and TP8 (-). Transmit, NO INPUT.
Adjust VR11 for 10mA, $\pm 0.5mA$
Current meter to TP9 (+), and TP7 (-). Transmit, NO INPUT.
Adjust VR10 to 100mA, $\pm 0.5mA$
2. Mode selector to USB, Band to 'F', Ch 40.
Insert 1KHz 30mV audio to mike input, and transmit.
Adjust VR12 and L42 for maximum RF output.
Adjust L40, L43, L44 and L33 for maximum RF output, then repeat until no further increase can be obtained.
Adjust L42 for balance of RF output power between 'F', band Ch 40, and 'A' band Ch 1.
3. Apply 500Hz and 2.4KHz (30mV) audio tones to mike input, at same time. Use diagram below and adjust input level of 500Hz so that wave 'A' form as indicated below appears on scoped RF output.
Adjust VR12 for 12W peak-to-peak output power.
*WARNING - VR12 should not be rotated clockwise beyond 2 O'clock position, or the RF power transistor will be destroyed.

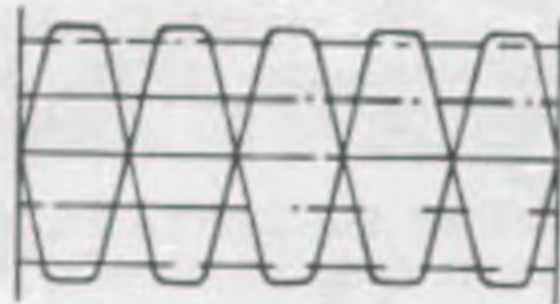
A. Properly adjusted transmitter.



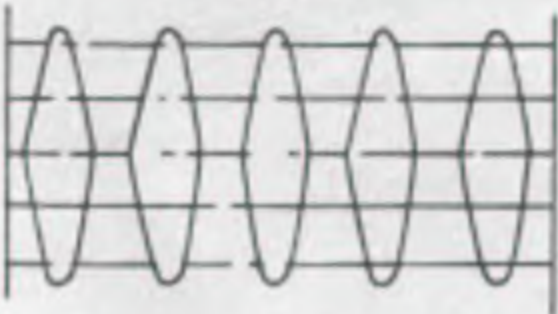
B. Unequal tones-Adjust generator outputs to balance.



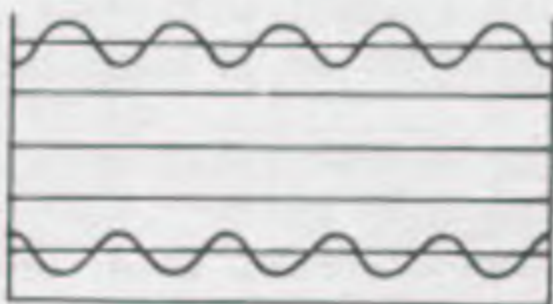
C. Excessive modulation - Adjust RV12 counterclockwise.



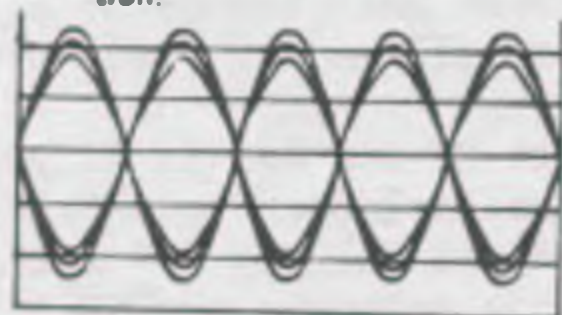
D. Final transistor incorrectly biased - Adjust RV 12.



E. Undermodulation-Adjust RV 12 clockwise.



F. Similar to A but showing hum. Check for proper testing condition.



4. Mode Selector to AM, Band to 'D', Ch 19.
Adjust VR13 to obtain 5W RF power output
Apply 1KHz at 30mV to mike input.
Adjust VR14 for 90% + modulation.
5. Mode selector to FM.
Apply 1KHz at 30mV to mike input.
Adjust VR5 to obtain 2-3KHz on deviation meter on TX.

Galaxy 2100 Alignment (Cont.)

Transmit Alignment - continued..

6. Mode select to USB, maximum mike gain, apply speech to microphones.
Adjust VR8 for maximum indication, without pegging meter movement.
*NOTE: In some units VR8 will need to be changed to higher value.
7. Mode select to CW.
8 ohm dummy load and audio VTVM to ext. Speaker jack.
Connect key switch to key Sw. jack.
Key the switch, and adjust VR16 for 200mV, +10mV signal.
8. USB, minimum mike gain - NO INPUT! Key Xmtr, adjust VR7 for minimum RF power. Repeat in LSB mode.

RECEIVE ALIGNMENT

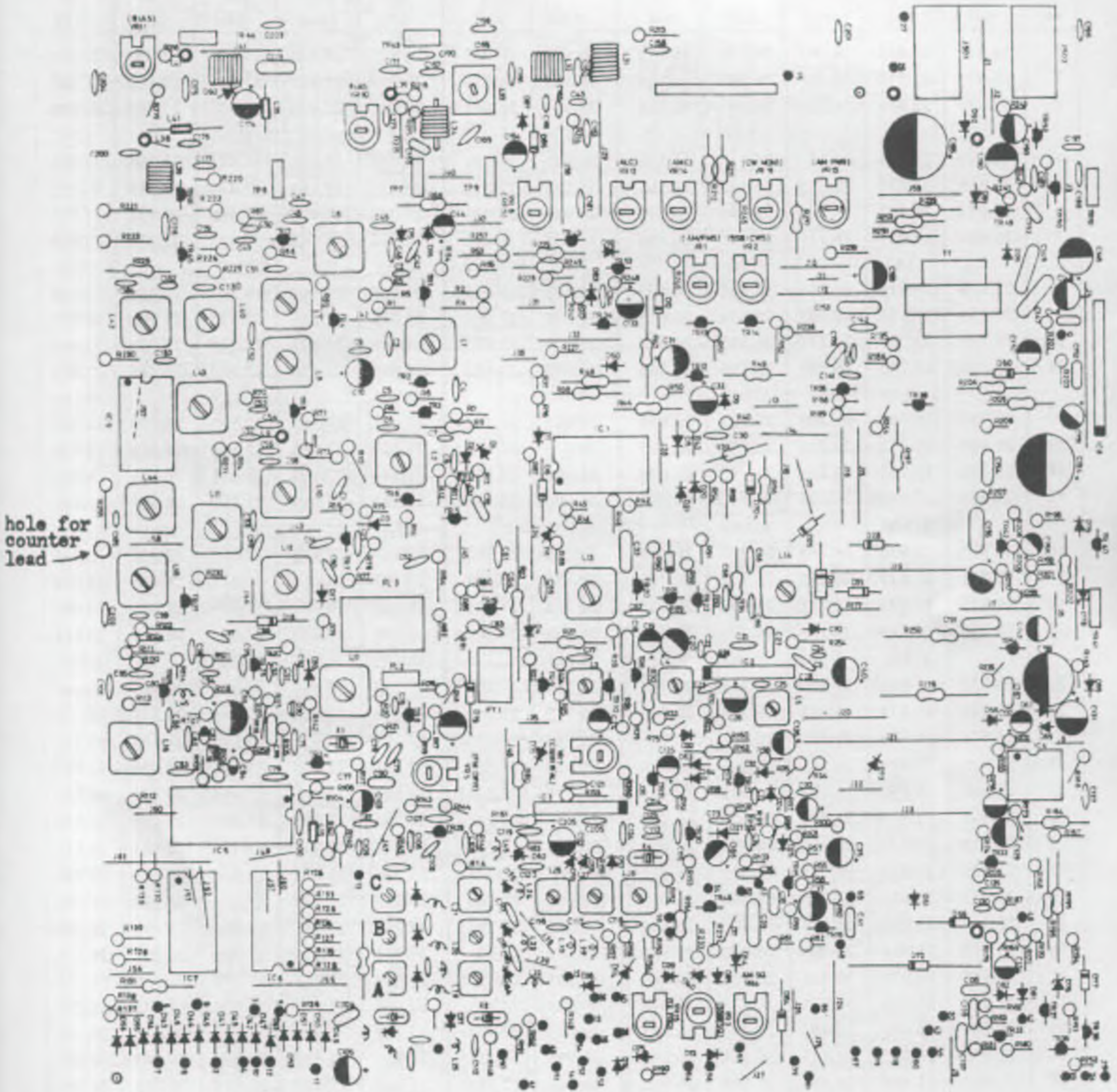
1. Set RF Sig Gen for 27.185MHz 30% modulation.
Mode selector to AM, Band to 'D', Ch 19
Adjust L3, L4, L6, L7, L8, L10, L11, and L12 for maximum audio output.
Audio Output to be measured across dummy load with audio VTVM!
NOTE: Keep Sig Gen output as low as possible to prevent AGC action.
Adjust L8 for balance between 'A' and 'F' bands.
2. Set RF Sig Gen to 27.186MHz, no modulation.
Mode selector to USB, Band to 'D', Ch 19
Adjust L13 and L14 for maximum audio output, with clarifier at center.
3. Set RF Sig Gen to 27.185MHz.
Apply FM signal (1 microV, 1.5KHz deviation with 1KHz audio).
Mode selector to FM; Band to 'D', Ch 19
READJUST L5 for maximum audio output.
4. Set RF Sig Gen to 27.185MHz.
Input 60db (1000 microV) 1KHz 30% modulation.
Mode selector to AM, Band to 'D', Ch 19
Squelch control fully clockwise
Scope the audio output, adjust VR4 until audio disappears.
Check that the front squelch control will 'cut in' between 48-70db on all modes. *VR3 may be adjusted if need be in SSB mode.
5. Set RF Sig Gen to 27.185MHz, output level 40db (100 microV).
Mode selector to AM; Band to 'D', Ch 19
Adjust VR1 for '9' indication on front meter scale.
Mode selector to USB
Adjust VR2 for '9' indication
6. Set Sig Gen to 26.045MHz; no modulation; 40db (100 microV).
Mode selector to AM; Band to 'A', Ch 40
NB/ANL Sw ON
Connect DC Voltmeter to TP1 (D2).
Adjust L1 and L2 for 2-3VDC reading.

COUNTER CALIBRATION

Replace counter unit into chassis. Check against actual transmit Fo. in AM mode. If within 1KHz, no adjustment of trim capacitor is needed.

End of alignment.....

GALAXY 2100 - Board Layout

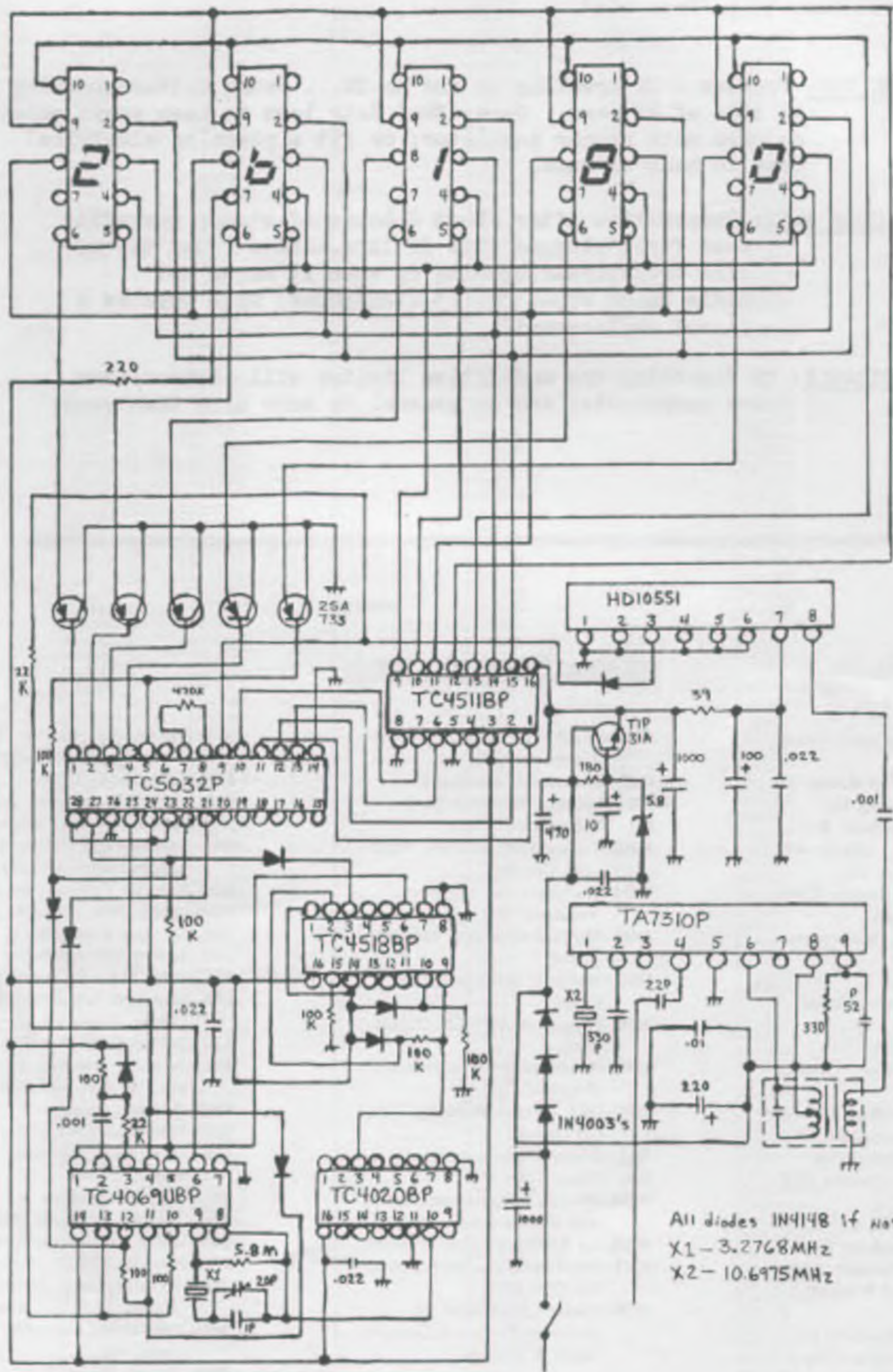


GALAXY 2100, Frequency Chart

(PERMISSION TO COPY)

Chan nel	ANT FREQUENCY (MHz)											
	A BAND		B BAND		C BAND		D BAND		E BAND		F BAND	
	Nor mal	+10 KHz	Nor mal	+10 KHz	Nor mal	+10 KHz	Nor mal	+10 KHz	Nor mal	+10 KHz	Nor mal	+10 KHz
1	25.615	25.625	26.065	26.075	26.515	26.525	26.965	26.975	27.415	27.425	27.865	27.875
2	25.625	25.635	26.075	26.085	26.525	26.535	26.975	26.985	27.425	27.435	27.875	27.885
3	25.635	25.645	26.085	26.095	26.535	26.545	26.985	26.995	27.435	27.445	27.885	27.895
		(3A)		(3A)		(3A)		(3A)		(3A)		(3A)
4	25.655	25.665	26.105	26.115	26.555	26.565	27.005	27.015	27.455	27.465	27.905	27.915
5	25.665	25.675	26.115	26.125	26.565	26.575	27.015	27.025	27.465	27.475	27.915	27.925
6	25.675	25.685	26.125	26.135	26.575	26.585	27.025	27.035	27.475	27.485	27.925	27.935
7	25.685	25.695	26.135	26.145	26.585	26.595	27.035	27.045	27.485	27.495	27.935	27.945
		(7A)		(7A)		(7A)		(7A)		(7A)		(7A)
8	25.705	25.715	26.155	26.165	26.605	26.615	27.055	27.065	27.505	27.515	27.955	27.965
9	25.715	25.725	26.165	26.175	26.615	26.625	27.065	27.075	27.515	27.525	27.965	27.975
10	25.725	25.735	26.175	26.185	26.625	26.635	27.075	27.085	27.525	27.535	27.975	27.985
11	25.735	25.745	26.185	26.195	26.635	26.645	27.085	27.095	27.535	27.545	27.985	27.995
		(11A)		(11A)		(11A)		(11A)		(11A)		(11A)
12	25.755	25.765	26.205	26.215	26.655	26.665	27.105	27.115	27.555	27.565	28.005	28.015
13	25.765	25.775	26.215	26.225	26.665	26.675	27.115	27.125	27.565	27.575	28.015	28.025
14	25.775	25.785	26.225	26.235	26.675	26.685	27.125	27.135	27.575	27.585	28.025	28.035
15	25.785	25.795	26.235	26.245	26.685	26.695	27.135	27.145	27.585	27.595	28.035	28.045
		(15A)		(15A)		(15A)		(15A)		(15A)		(15A)
16	25.805	25.815	26.255	26.265	26.705	26.715	27.155	27.165	27.605	27.615	28.055	28.065
17	25.815	25.825	26.265	26.275	26.715	26.725	27.165	27.175	27.615	27.625	28.065	28.075
18	25.825	25.835	26.275	26.285	26.725	26.735	27.175	27.185	27.625	27.635	28.075	28.085
19	25.835	25.845	26.285	26.295	26.735	26.745	27.185	27.195	27.635	27.645	28.085	28.095
		(19A)		(19A)		(19A)		(19A)		(19A)		(19A)
20	25.855	25.865	26.305	26.315	26.755	26.765	27.205	27.215	27.655	27.665	28.105	28.115
21	25.865	25.875	26.315	26.325	26.765	26.775	27.215	27.225	27.665	27.675	28.115	28.125
22	25.875	25.885	26.325	26.335	26.775	26.785	27.225	27.235	27.675	27.685	28.125	28.135
23	25.905	25.915	26.355	26.365	26.805	26.815	27.255	27.265	27.705	27.715	28.155	28.165
24	25.885	25.895	26.335	26.345	26.785	26.795	27.235	27.245	27.685	27.695	28.135	28.145
25	25.895	25.905	26.345	26.355	26.795	26.805	27.245	27.255	27.695	27.705	28.145	28.155
26	25.915	25.925	26.365	26.375	26.815	26.825	27.265	27.275	27.715	27.725	28.165	28.175
27	25.925	25.935	26.375	26.385	26.825	26.835	27.275	27.285	27.725	27.735	28.175	28.185
28	25.935	25.945	26.385	26.395	26.835	26.845	27.285	27.295	27.735	27.745	28.185	28.195
29	25.945	25.955	26.395	26.405	26.845	26.855	27.295	27.305	27.745	27.755	28.195	28.205
30	25.955	25.965	26.405	26.415	26.855	26.865	27.305	27.315	27.755	27.765	28.205	28.215
31	25.965	25.975	26.415	26.425	26.865	26.875	27.315	27.325	27.765	27.775	28.215	28.225
32	25.975	25.985	26.425	26.435	26.875	26.885	27.325	27.335	27.775	27.785	28.225	28.235
33	25.985	25.995	26.435	26.445	26.885	26.895	27.335	27.345	27.785	27.795	28.235	28.245
34	25.995	26.005	26.445	26.455	26.895	26.905	27.345	27.355	27.795	27.805	28.245	28.255
35	26.005	26.015	26.455	26.465	26.905	26.915	27.355	27.365	27.805	27.815	28.255	28.265
36	26.015	26.025	26.465	26.475	26.915	26.925	27.365	27.375	27.815	27.825	28.265	28.275
37	26.025	26.035	26.475	26.485	26.925	26.935	27.375	27.385	27.825	27.835	28.275	28.285
38	26.035	26.045	26.485	26.495	26.935	26.945	27.385	27.395	27.835	27.845	28.285	28.295
39	26.045	26.055	26.495	26.505	26.945	26.955	27.395	27.405	27.845	27.855	28.295	28.305
40	26.055	26.065	26.505	26.515	26.955	26.965	27.405	27.415	27.855	27.865	28.305	28.315

GALAXY 2100/TEXAS STAR 2100; Frequency Counter Schematic



HINTS/TIPS/GOOFS

Information utilized in this column doesn't receive a free volume. But have reviewed all info and that used other places have entitled the contributors to a 'Free-bie'.....

FORMAC 700: Problem - Tx breaking up and no Tx... Found Driver shorting to side of RF cage. Cure: Bend Istr legs to keep away; mount on cage with proper insulator; or fit a piece of electrical tape to back of cage.

MINI-CODE N-12: Inoperative after about 2 hours of steady operation when first plugged into AC line.—Have found the AC line transformer opening up when it warms up? Radio Shack 273-1386 (25.2VAC/300ma) will work as a direct replacement.

AMC DISABLE: By disabling the modulation limiter will distort/over-drive components; and in general do more harm than good!

MANUFACTURERS KEY CODES

AEI—Associated Electrical Industries (England)
AMC—Amelco Semiconductor Division, Teledyne, Inc.
AMF—American Machine & Foundry Co., Leland Airborne Products Div.
AMP—Amperex Electronics Corp.
ARV—Arvin Industries
BEN—Bendix Corp., Semiconductor Div.
CBS—CBS Electronics
CSF—Compagnie Generale de T.S.F. (France)
CLE—Clevite Transistor Corp.
DEL—Delco Radio Div., General Motors Corp.
EBA—Ebauches S.A. (Switzerland)
ETC—Electronics Transistors Corp.
FSC—Fairchild Semiconductor Div., Fairchild Camera and Instrument Corp.
GEC—General Electric Co., Semiconductor Products Dept.
GIC—General Instrument Corp., Semiconductor Products Group
GPC—Germanium Products Co.
GTC—General Transistor Corp.
HIT—Hitachi Ltd. (Japan)

HUG—Hughes Aircraft Co., Microelectronics Div.
IMG—Intermetall (Germany)
ITC—Industro Transistor Corp.
ITT—ITT Semiconductors
MHR—Honeywell, Military Products Group
MOT—Motorola Semiconductor Products, Inc.
MUL—Mullard Overseas Ltd. (England)
NSC—National Semiconductor Corp.
NEC—Nippon Electric Co. Ltd. (Japan)
NKT—Newmarket Transistors Ltd. (England)
OKI—OKI Electric Industry Co., Ltd. (Japan)
OLS—Olson Electronics, Inc.
PHL—Philco Corp.
PHN—Phillips Gloelampfabrieken (Netherlands)
RAD—La Radiotechnique (France)
RAY—Raytheon Co., Semiconductor Operation
RCA—Radio Corporation of America, Electronic Components & Devices

SEJ—Shindengen Electric Manufacturing Co., Ltd. (Japan)
SEM—Semitronics Corp.
SES—Societe Europeenne des Semiconducteurs (France)
SIH—Siemens and Halske Aktiengesellschaft (Germany)
SOL—Solitron Devices, Inc.
SON—Sony Corp. (Japan)
SPR—Sprague Products Co.
SSD—Sperry Semiconductor
SSP—Solid State Products, Inc.
STB—Standard Telephone & Cables (England)
STC—Silicon Transistor Corp.
SYL—Sylvania Electric Products, Inc., Semiconductor Div.
TAD—Tadiran (Israel)
TEC—Transitron Electronic Corp.
TFK—Telefunken GmbH. (Germany)
TII—Texas Instruments Inc.
TOS—Toshiba America, Inc.
TRW—TRW Semiconductors, Inc.
TSE—Tung-Sol Electric, Inc.
WHE—Westinghouse Electric Corp., Semiconductor Div.
WTV—Workman Electronic Products, Inc.
ZEN—Zenith Radio Corp.

DISCONTINUED	REPLACEMENT	DISCONTINUED	REPLACEMENT	DISCONTINUED	REPLACEMENT	DISCONTINUED	REPLACEMENT
[BIPOlar IC'S]				STK015	STK4019	STK1039	-
LA1111	LA1222	IR1221	-	STK016	STK4021	STK1045	-
LA1111P	LA1222	IR1270	-	STK020	-	STK1049	-
LA1160	LA1170	IR1281	-	STK021	-	STK1050II	-
LA1185	LA1170	IR1282	-	STK022	-	STK1051I	-
LA1201FM	LA1140	IR1283	-	STK023	-	STK1060II	-
LA1201	LA1205	IR1284P	LB1288	STK024	-	STK1070II	-
LA1210	LA1280	IR1286P	LB1287	STK025	STK077	STK1080II	-
LA1221	LA1222	IR1331	-	STK025G	STK077	STK2025	-
LA1230	LA1231N 1232	IR1332	-	STK027	-	STK2029	-
LA1231	LA1231N	LB1470	-	STK029	-	STK2135	STK2230
LA1320	LA1365	LB1500	-	STK030	STK078	STK2139	STK2240
LA1342	-	LB1501	-	STK031	-	STK2145	STK2240
LA1352	LA7507	LB1515	-	STK032	STK078	STK2155	STK2250
LA1353	LA7507	LB1530	-	STK035	-	STK3041	-
LA1354	LA7507	LB1550	-	STK036	STK080	STK3042	-
LA1357	LA1357N	LB1551	-	STK040	STK4773	STK3042II	STK3042M
LA1364	-	LB8016	LB8015	STK041	STK4793	STK3044	-
LA1386N	LA7820	[MOS IC'S. LSI'S]		STK043	STK4913	STK3056	-
LA1387	LA7820	LC5621	-	STK050	-	STK3081	-
LA1388	LA7820	LC5831	-	STK054	STK075	STK3082	-
LA1389	LA7820	LC5832	-	STK055	-	STK3082II	STK3082M
LA1373	-	LC5833	-	STK056	STK077	STK3076	-
LA1374	-	LC5833	-	STK057	STK077	STK3081	-
LA1375	-	LC5645	LC5646	STK058	STK078	STK3082	-
LA1376	-	LC7000	-	STK060	STK080	STK3082II	STK3082M
LA1381	-	LC7112	-	STK067	-	STK3101	-
LA1382	-	LC7122	-	STK070	-	STK3375D	-
LA1383	-	LC7130	-	STK071	-	STK5314	-
LA1384	-	LC7135	-	STK075	-	STK5412	-
LA1387	LA7800	LC7136	-	STK075G	-	STK5418	-
LA1388	LA7800	LC7137	-	STK077G	-	STK5720	-
LA1390	LA7820	LC7180	-	STK078G	-	STK5730	-
LA1460	LA7800 1.2 20	LC7184	-	STK080G	-	STK6801	-
LA1463	LA7800 1.2 20	LC7190	-	STK082G	-	STK6805	-
LA1464	LA7800 1.2 20	LC7200	-	STK083	-	STK6807	-
LA2100	LA2110	LC7201	-	STK084G	-	STK6962	STK6962C
LA2101	LA2110	LC7203	-	STK086G	-	STK6972	STK6972C
LA2210	LA2211	LC7207	-	STK401	-	STK7554	-
LA2300	-	LC7253	LC7268	STK405	-	STK8250	-
LA3020	-	LC7257	LC7265 68	STK413S	-	STK8250II	-
LA3100	-	LC7258	LC7265 66	STK413M	-	STK8260	-
LA3101	-	LC7259	-	STK415S	-	STK8260II	-
LA3110	LA6458D S	LC7533M	LC7534M	STK415M	-	STK8270	-
LA3115	LA6458D S	LC7960	-	STK430	-	STK8270II	-
LA3120	LA6458D S	LM3700	-	STK430M	STK430M	STK8280	-
LA3122	LA6458D S	LM3710	-	STK433 105	STK4332	STK8280II	-
LA3130	LA6458D S	LM8021	-	STK435 105	STK4352	-	-
LA3133	LA6458D S	LM8022	-	STK436 105	STK4362	[TRANSISTORS]	
LA3148	-	LM8061	-	STK441 105	-	2SA182(S)	-
LA3150	LA3160 1	LM8062	-	STK457	STK4111II	2SA182	-
LA3151	LA3160 1	LM8083	-	STK459	STK4121II	2SA198	-
LA32(X)	LA3210 20	LM8084	-	STK460	STK4131II	2SA201	-
LA3201	LA3210 20	LM8085	-	STK461	STK4131II	2SA202	-
LA3300	LA3361	LM8072	-	STK463	STK4141II	2SA203	-
LA3310	(LA3361)	LM8081	-	STK465	STK4151II	2SA218	-
LA3310N	(LA3361)	LM8162	-	STK501	-	2SA220	-
LA3311	(LA3361)	LM8163	-	STK502	-	2SA221	-
LA3380	LA3400 10	LM8184	-	STK503	-	2SA222	-
LA3381	LA3400 10	LM8185	-	STK506	-	2SA223	-
LA4000	-	LM8188	-	STK507	-	2SA227	-
LA4030	-	LM8360	-	STK511	-	2SA263	-
LA4030P	-	LM8369	-	STK521	-	2SA264	-
LA4031	-	LM8521	-	STK522	-	2SA265	-
LA4031P	-	LM8948	-	STK523	-	2SA321	-
LA4032	LA4100Series	[THIN FILM IC'S]		STK531	-	2SA322	-
LA4032P	LA4220Series	LD1020	-	STK532	-	2SA323	-
LA4033	-	LD1041	-	STK533	-	2SA324	-
LA4050P	-	LD1110	-	STK541	-	2SA329	-
LA4051P	-	LD1120	-	STK542	-	2SA330	-
LA4110	LA4180 2	LD3001	-	STK543	-	2SA331	-
LA4112	LA4138 80	LD3030	-	STK809	-	2SA420	-
LA4135	LA4137 38	LD3040	-	STK855	-	2SA421	-
LA4177	LA4520	LD3050	-	STK869	-	2SA422	-
LA4178	LA4520	LD3081	-	STK883	-	2SA440A	-
LA4195	LA4126 4185	LD3070	-	STK0025	-	2SA532	2SB560
LA4195T	LA4126T 4185T	LD3080	-	STK0029	-	2SA532(S)	-
LA4200	LA4260	LD3100	-	STK0030	-	2SA551	-
LA4201	LA4260	LD3110	-	STK0039	-	2SA608IRE 3I	2SA608(SP NPI)
LA4210	-	LD3115	-	STK0040	-	2SA618(S)	-
LA4230	LA4261	LD3120	-	STK0040 II	-	2SA609IRE 3I	2SA608(SP NPI)
LA4250	LA4270	LD3130	-	STK0049	-	2SA609(S)	-
LA4400	LA4422	LD3141	-	STK0050	-	2SA659(FP NPI)	2SA984
LA4410	LA4422	LD3150	-	STK0050 II	-	2SA659(S)	-
LA4420	LA4422	LD3180	-	STK0059	-	2SA701(REF 3I)	-
LA4430	LA4422	LD3200	-	STK0060	-	2SA701(NPI)	-
LA5100	-	LD3210	-	STK0060 II	-	2SA702(REF 3I)	-
LA5110	LA5112N	LD5100	-	STK0070	-	2SA702(NPI)	-
LA5112	LA5112N	LD6010	-	STK0070 II	-	2SA714	-
LA5200	-	LD6040	-	STK0080 II	-	2SA714L	-
LA6800M	-	[THICK FILM IC'S]		STK0100 II	-	2SA1017	2SA1207
LA7600	LA7820	STK011	STK4017	STK0105	-	2SA1019	2SA1208
LA7750	LA7751	STK013K	-	STK0292	-	2SA1047	2SA1209
LA7900	-	STK014	-	STK0352	-	2SB27	-
LB1100	-	-	-	STK0452	-	2SB22(S)	-
LB1101	-	-	-	STK1035	-	2SB185	-

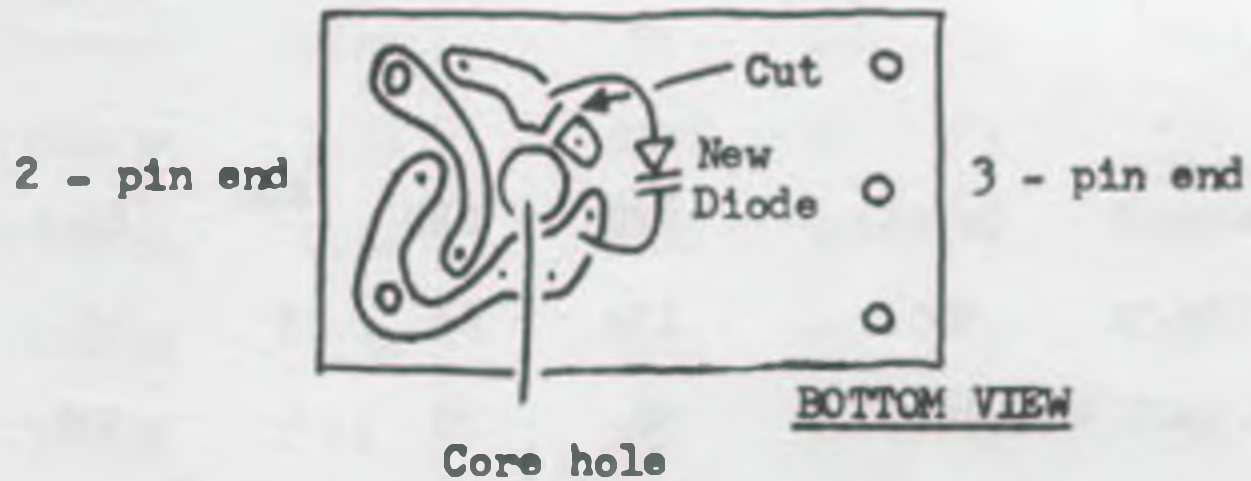
DISCONTINUED SANYO SEMICONDUCTORS

DISCONTINUED	REPLACEMENT	DISCONTINUED	REPLACEMENT	DISCONTINUED	REPLACEMENT	DISCONTINUED	REPLACEMENT
2SB186	-	2SC706	-	2SD332	-	DS113	-
2SB187	-	2SC715	2SC536(SP, NP)	2SD348	2SD1403	DS116	DS150
2SB187(3)	-	2SC715(3)	-	2SD353	2SD386	DS130	DS130T
2SB188	-	2SC716	2SC536(SP, NP)	2SD368	-	DS130N	DS130T
2SB215	-	2SC722	2SC930(SP, NP)	2SD366(ex. T0220)	2SD386(T0220AB)	DS130Y	DS135, DSF10
2SB216	-	2SC723	-	2SD386A(ex. T0220)	2SD386A(T0220AB)	DS130Y	-
2SB216A	-	2SC723(3)	-	2SD387(ex. T0220)	2SD387(T0220AA)	DS131	-
2SB217	-	2SC858(RE, 3)	2SC693(NP)	2SD387A(ex. T0220)	2SD387A(T0220AA)	DS132	-
2SB254	-	2SC858(FP)	2SC693(NP)	2SD400(ex. FP)	2SD400(MP)	DS133	-
2SB256	-	2SC859	-	2SD400(P1)	-	DS140	-
2SB256	-	2SC860	-	2SD400(P2)	-	DS150	DSB15
2SB256	-	2SC875	2SC438	2SD416	-	DS160	-
2SB270	-	2SC875(3)	-	2SD437	-	DS185	-
2SB272	-	2SC876	2SC438	2SD437W	-	DS230	-
2SB273	-	2SC876(3)	-	2SD439(ex. FP)	2SD439(T0126A)	DS330	-
2SB303	-	2SC827	-	2SD575	2SD1400	SV65	-
2SB342	-	2SC828	2SC674(SP)	2SD613P	-	SV75	-
2SB343	-	2SC828(3)	-	2SD616	-	SZ7	-
2SB372	-	2SC829(RE, 3)	2SC829(SP, NP)	2SD621	-	SZ9	-
2SB373	-	2SC829(3)	-	2SD626	2SD979	SZ11	GZA7.5
2SB375A	-	2SC829(SP, NP)	-	2SD627	2SD979	SZ13	GZA9.1
2SB390	-	2SC830(SP, NP)	2SC2839	2SD627	2SD1400	SZ13	GZA11
2SB391	-	2SC830(RE, 3)	2SC330(T0220AB)	2SD732	2SD1046	SZP7	GZA13
2SB400	-	2SC931	2SD330(T0220AB)	2SD732K	2SD1046	SZP8	-
2SB400(3)	-	2SC931Z	2SD330(T0220AB)	2SD733	2SD1047	SZP9	-
2SB405	-	2SC932	2SD330(T0220AB)	2SD733K	2SD1047	SZP10	-
2SB405ST	-	2SC933(104)	2SC833(NP)	2SD761	2SD1459	SZA6	-
2SB405(3)	-	2SC933(FP)	2SC833(NP)	2SD838	-	SZA13	-
2SB407	-	2SC934(104)	2SC833(NP)	2SD803	2SD1398	SVC112	-
2SB407(3)	-	2SC934(FP)	-	2SD904	2SD1398	SVC151	-
2SB408	-	2SC934(NP)	-	2SD978	-	SVC251	-
2SB410	-	2SC972	-	2SD979	-	(THERISTORS)	-
2SB410AF	-	2SC1024	2SD315	2SD993	-	2SF1188	-
2SB410AF	-	2SC1025	-	2SD993	2SD1396	2SF1189	-
2SB410(3)	-	2SC1027	-	2SD984	2SD1399	2SF1418	-
2SB411	-	2SC1035	-	2SD995	-	2SM148	-
2SB411AF	-	2SC1036	-	2SD1059	-	2SM149	-
2SB411(3)	-	2SC1045	-	2SD1231	2SD1229	2SM150	-
2SB412	-	2SC1045(3)	-	2SD1232	2SD1193	-	-
2SB474	-	2SC1046	-	2SD1233	2SD1230	-	-
2SB474(3)	-	2SC1046(3)	-	2SD1234	2SD1197	-	-
2SB482	-	2SC1048	2SC1756	2SD1236	-	-	-
2SB492ST	-	2SC1048(3)	-	2SD1237	-	-	-
2SB492(3)	-	2SC1050	2SD1401	2SD1238	-	-	-
2SB507(ex. T0220)	2SB507(T0220AB)	2SC1051	2SC308B	2SD1371	-	-	-
2SB508(ex. T0220)	2SB508(T0220AA)	2SC1051L	2SC308B	2SD1372	-	-	-
2SB509	-	2SC1175(FP, NP)	2SC2274	2SD1373	-	-	-
2SB511(ex. T0220)	2SB511(T0220AB)	2SC1175(3)	-	2SD1373	-	-	-
2SB511(ex. T0220)	2SB511(T0220AB)	2SC1180	-	2SD1377	2SD1396	-	-
2SB515(ex. T0220)	2SB515(T0220AA)	2SC1181	-	2SD138P	2SD1397	-	-
2SB544(ex. FP)	2SB544(MP)	2SC1182	2SC1293(NP)	2SD139P	2SD1398	-	-
2SB544(P1)	2SB544(MP)	2SC1235	2SC1293(NP)	2SD140P	2SD1399	-	-
2SB544(P2)	2SB544(MP)	2SC1284	2SC1755	2SD141P	2SD1400	-	-
2SB559(ex. FP)	2SB559(T0126)	2SC1285	2SC1293(NP)	2SD142P	2SD1401	-	-
2SB560(FP)	2SB560(MP)	2SC1285(3)	2SC538(SP, NP)	2SD1343P	2SD1402	-	-
2SB598(FP)	2SA598(NP)	2SC1293(SP, NP)	-	2SD1344P	2SD1403	-	-
2SB633P	-	2SC1295	2SD1400	2SD1374	2SD1373	-	-
2SB634	-	2SC1296	2SC1308	2SD1375	2SD1374	-	-
2SB696	2SB816	2SC1308	2SD1402	(FETs)	-	-	-
2SB696K	2SB816	2SC1570(FP)	2SC1570(NP)	2SK24	2SK44(SPI)	-	-
2SB697	2SB817	2SC1571(FP)	2SC1571(NP)	2SK25	2SK41(INP)	-	-
2SB697K	2SB817	2SC1571(FP)	2SC1571(NP)	2SK41(INP)	2SK41(INP)	-	-
2SB823	-	2SC2057	2SC1571L(NP)	2SK44(SPI)	2SK44(SPI)	-	-
2SB914	2SB912	2SC2079	2SC2999	2SK376, 2SK377	2SK376, 2SK377	-	-
2SB915	2SB883	2SC2228	2SC2314	-	-	-	-
2SB916	2SB913	2SC2228	2SC2228A	-	-	-	-
2SB917	2SB887	2SC2363	2SC2909	-	-	-	-
2SB920	-	2SC2375	2SC2910	(DIODES)	-	-	-
2SB921	-	2SC2441	2SC2911	1S187	-	-	-
2SB922	-	2SC3041	2SC3040	1S553	1S553T	-	-
2SB991	-	2SC3043	2SC3042	1S554	1S554T	-	-
2SC60	2SB1037	2SC3084	2SC3083	1S554T	1S553T	-	-
2SC65Y	2SC536(SP, NP)	2SC3091	2SC3088	1S555	1S553T	-	-
2SC423	2SC1766	2SC3092	2SC3089	1S556	1S554T	-	-
2SC423(3)	-	2SC3093	2SC3090	1S557	1S554T	-	-
2SC424	-	2SC3094	-	DS130T	DS130T	-	-
2SC425	-	2SC3154	2SC3151	DS130T	DS130T	-	-
2SC426	-	2SC3155	2SC3152	DS130T	DS130T	-	-
2SC536(RE, 3)	2SC536(SP, NP)	2SC3156	2SC3153	DS130T	DS130T	-	-
2SC536(FP)	2SC536(SP, NP)	2SD24	-	DS130T	DS130T	-	-
2SC536(3)	-	2SD24(3)	-	DS130T	DS130T	-	-
2SC536FPs	-	2SD24Y	-	DS130T	DS130T	-	-
2SC537(RE, 3)	2SC537(SP, NP)	2SD24Y(3)	-	DS130T	DS130T	-	-
2SC537(IEP)	2SC537(SP, NP)	2SD30	-	DS130T	DS130T	-	-
2SC544	2SC536(SP, NP)	2SD30(3)	-	DS130T	DS130T	-	-
2SC545	2SC930(SP, NP)	2SD67	-	DS130T	DS130T	-	-
2SC614	2SC830(SP, NP)	2SD68	2SC1051L	DS130T	DS130T	-	-
2SC614(3)	-	2SD72	2SC1051L	DS130T	DS130T	-	-
2SC615	-	2SD72(3)	-	DS130T	DS130T	-	-
2SC615(3)	-	2SD186	-	DS130T	DS130T	-	-
2SC668(RE, 3)	2SC668(SPI)	2SD187	-	DS130T	DS130T	-	-
2SC674(RE, 3, SP)	2SC2999	2SD187(3)	-	DS130T	DS130T	-	-
2SC674(3)	-	2SD187.5	2SD313(ex. T0220)	DS130T	DS130T	-	-
2SC693(IEP)	2SC693(NP)	2SD315	2SD314(ex. T0220)	DS130T	DS130T	-	-
2SC693(IEP)	2SC693(NP)	2SD320	2SD315	DS130T	DS130T	-	-
2SC693.5	-	2SU325(ex. T0220)	2SD325(ex. T0220AB)	DS130T	DS130T	-	-
2SC694(IE, 3)	2SC694(NP)	2SD330(ex. T0220)	2SD330(T0220AB)	DS130T	DS130T	-	-
2SC705	-	2SD331(ex. T0220)	2SD331(T0220AA)	DS130T	DS130T	-	-

THE C TEAM

ZZ-2017 VCO Module Expansion by B.F.

02A-PLL AM/SSB Chassis



Carefully remove epoxy from between points where the new diode is to be soldered and etch cut.

Install 'Super Diode' in place as shown.

Turn core out slowly to bring in new VCO frequency range.

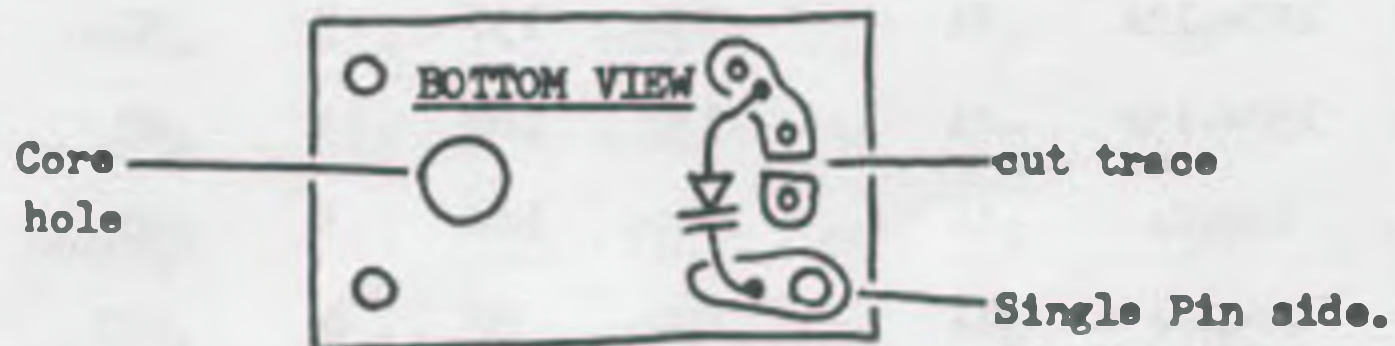
(Broadbands the chassis to over 2MHz without power loss on the ends.)

Dual Board VCO Block Modification - 02A Chassis by B.F.

Following models: U.S. - GE Superbase 3-5875B/SSB Mobile 3-5825B;
Dak Mark I; Midland 78-574, 78-999, 79-891;
SEE LCBS-4.

EXPORT: Ham International Concorde/Jumbo/Multimode II;
Hygain V; Lafayette 1200FM; Major M360/M588.

VCO Block



Install M65 diode
.....epoxy will have to be scraped away.

Note: turn core out to bring in new Fo's sloooowly...

THE C TEAM

RF Power Transistors For Use Up To 30MHz

All of the following have E-B-C lead layout. Only those with a *; will require 're-drilling' of chassis for installation; due to case style.

†	Watts Current	I _c (mA)	h _{FE}	V _{CBO}	V _{EBO}	I _{CBO} (mA)
2SC1678	10W-3A	500	15+	65	5	10
2SC1964	12.5W-3.5A	100	50	80	4	500
2SC1969	20W-6A	10	50	60	5	100
2SC2075	10W-4A	500	25+	80	4	10
2SC2078	10W-3A	500	25-100	80	5	10
2SC2098	20W-6A	4A	100-200	70	4	100
2SC2166	12.5W-4A	100	70	75	5	100
2SC2312	25W-6A	100	50	40	4	500
2SC2315	50W-6A	500	800	80	6	100
2SC2316	50W-6A	500	800	100	6	100
2SC2393	12.5W-4A	2A	50	80	4	15
2SC2394	20W-6A	1A	20-100	45	4	100
2SC2527	60W-10A	1A	110	120	5	50
2SC2562	25W-5A	1A	70-240	60	5	1
2SC2563	80W-8A	1A	120	120	5	50
* 2SC2588A	120W-12A	2A	150	130	5	50
* 2SC2766A	150W-15A	2A	150	180	5	50
2SC2823	70W-7A	1A	15000	120	5	50
2SC2825	70W-6A	1A	800	80	6	100
2SC2837	100W-10A	3A	60	150	5	100
2SC2987A	120W-12A	2A	130	140	5	50
2SC3012	100W-10A	2A	130	130	5	50

THE C TEAM

RF Power Transistors (cont.)...

Part No.	Watts Current	I_C (mA)	h_{FE}	V_{CBO}	V_{EBO}	I_{CBO} (μ A)
2SC3144	20W-3A	1.5A	5000	70	5	100
2SC3145	30W-5A	2.5A	5000	70	5	100
2SC3146	40W-7A	3.5A	5000	70	5	100
2SC3252	30W-3A	1A	170	80	6	100
2SC3253	30W-5A	1A	170	80	5	100
2SC3254	35W-7A	1A	170	80	5	100
2SC3255	40W-10A	1A	170	80	5	100
2SC3256	70W-15A	1A	170	80	6	100
2SC3263	130W-15A	5A	70	230	5	100
2SC3264	200W-17A	5A	70	230	5	100
2SC3519A	130W-15A	5A	80	160	5	100
2SD288	20W-3A	500	100	80	5	10
2SD568	40W-7A	3A	40-200	100	7	10
2SD772	40W-5A	5A	14+	150	6	1 ma.
2SD812	50W-5A	1A	90	80	5	50
2SD866A	40W-7A	3A	60-260	130	7	10
2SD959	30W-4A	500	60-260	130	7	10
2SD960	35W-4A	1A	60-260	130	7	10
2SD961	40W-5A	2A	60-260	130	7	10
2SD1064	80W-2A	1A	110	60	6	100
2SD1235	30W-8A	1A	150	60	6	100
2SD1271A	40W-7A	3A	60-260	130	7	10
2SD1273A	40W-3A				6	100

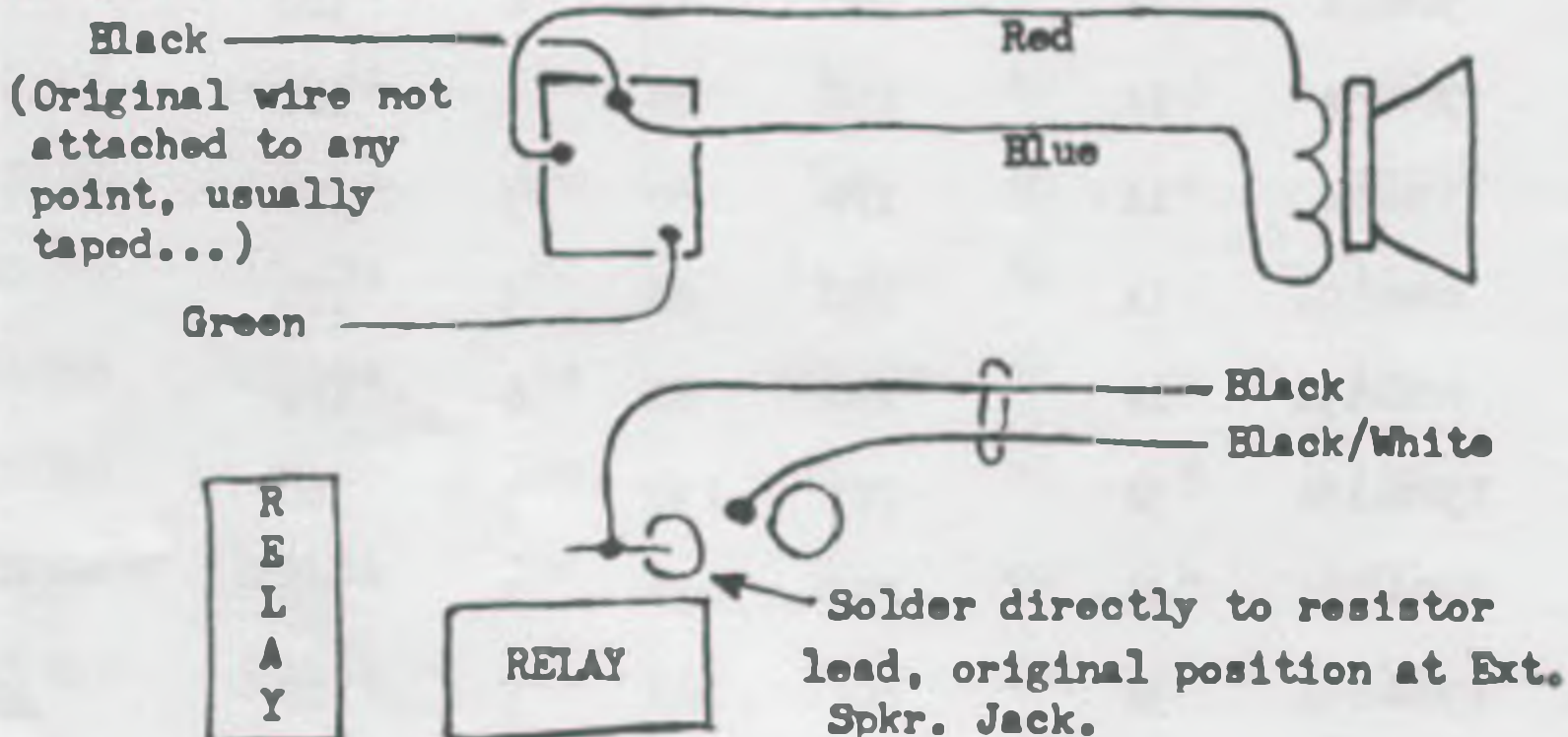
THE C TEAM

SuperStar Mark I Voice Scrambler Modification to 'A'

by Moses Horowitz

1. Remove Black wire at External Speaker Jack.
2. Solder above removed Black wire to lead of resistor as shown in drawing A.
3. Solder Black wire inside unit; not connected to anything (in most will have electrical tape on it; to where the Black wire removed in Step 1.

A.....Drawing for above steps:



4. Rewire the plug at end of cable to below configuration.

Original wiring:

1. Red, audio
2. Shield, Ground
3. White, direct feed thru.
4. Black, Normally open.*

New wiring:

1. Shield
2. Red
3. Black
4. White

*(key line to ground on TX).

5. Reverse wires at the plug of scrambler unit: Pins 1 and 2, 3 and 4.

Original wiring:

1. Center conductor
2. Shield, and - lead of capacitor
3. Blue
4. Orange

New wiring:

1. Shield, and - lead of capacitor.
2. Center conductor
3. Orange
4. Blue

6. Adjust small potentiometer on PCB almost fully clockwise. Ideal condition is to test against unit for desired audio level.

THE C TEAM

MANUFACTURERS: ADDRESS/PHONE #'s

Alaron Inc.
Attn: Service Dept.
PO Box 550, 185 Park Street
Troy, MI 48099
313-585-8400

ARA Manufacturing Co.
PO Box 534002
Grand Prairie, TX 75053
214-647-4111

Arthur Fulmer, Inc.
122 Gayoso
Memphis, TN 38103
901-525-5711

Boman Industries
9300 Hall Rd.
Downey, CA 90241
213-869-4041

Clarion Corp. of America
5500 Rosecrans Ave.
Lewndale, CA 90260
213-973-1100

Craig Corp.
921 W. Artesia Blvd.
Compton, CA. 90220
213-537-1233

Dynascan Corp.
Cobra Consumer Electronics Group
6460 W. Cortland
Chicago, Illinois 60635
312-889-8870

Fanon/Courier Corp.
15300 San Fernando Mission Blvd.
Mission Hills, CA 91345
818-898-2237

General Electric
Parts Distr. Center
13900 West 101st Street
Lenexa, KS 66215
800-742-2211 & 800-742-2241
(above is 24hr #)

JIL Corp.
17120 Edwards Rd.
Cerritos, CA 90701
213-926-6727

E.F. Johnson Co.
PO Box 1249
299 Johnson Ave.
Waseca, MN 56093
507-835-6222

Kraco Enterprises, Inc.
505 E. Euclid Ave.
Compton, CA 90224
800-421-1910

Midland International Corp.
Customer Service (Parts Dept.)
1690 North Topping Ave.
Kansas City, MO 64120
816-241-8500

Nichols Electronics Inc.
School Street Star Route
Tilton, NJ 03276
603-286-4421

Palomar-Pride-Atlas
Suite 16
1320 Grand Avenue
San Marcos, CA 92069
619-744-0720

Pathcom, Inc.
24105 S Frampton Ave.
Harbor City, CA 90710
213-325-1290

J.C. Penny Co. Inc.
1301 Avenue of the Americas
New York, NY 11019

Pioneer Electronics (USA) Inc.
5000 Airport Plaza Dr.
PO Box 1760
Long Beach, CA 90801
213-420-5700

Radio Shack
National Parts Department
900 E. Northside Dr.
Ft. Worth, TX 76106

Ray Jefferson
Main & Cotton Sts.
Philadelphia, PA 19127
215-487-2800

THE C TEAM

MANUFACTURERS: ADDRESS/PHONE #'s...(cont.)

Use remainder of page to keep updated.....

RCA Consumer Electronics
PO Box 1976
Indianapolis, IN 46206
317-267-5000

Regency Electronics, Inc.
7707 Records St.
Indianapolis, IN 46226
317-545-4281

Sanyo Electric, Inc.
PO Box 5177
1200 W. Artesia Blvd.
Compton, CA 90220
213-537-5830

Sharp Electronics Corp.
PO Box 588
10 Sharp Plaza
Paramus, NJ 07652
201-265-5600

Sonar Radio Corp.
3000 Stirling Rd.
Hollywood, FL 33021
305-981-8800

Standard Communications Corp.
PO Box 92151
Los Angeles, CA 90009
213-532-5300

Terryville Electronics
693 Old Town Road
Terryville, NY 11776
516-473-0192

Tram/Diamond Corp.
PO Box 187
Winnisquam, NH 03289
603-524-0622

Uniden Corp of America
6345 Castleway Court
Indianapolis, IN 46250
317-842-0280

SPECIFIC TUNEUPS

Realistic TRC-217; 40 Channel Walkie-Talkie (New for '86), LC7131-PLL. Nothing spectacular, just another W/T with lower retail price (under \$100). Tune-up, etc. as follows:
TX: T7, T8, L9, L12, and L13. R68 (22K) is AMC disable. R83 can be changed to a lower resistance for higher RF output. R84 may also be changed to a higher resistance for a lower RF output. (Note: Do the R83 first or will have to re-work this as is directly proportional.)
RX: L2, T1, T2, T3, and T4. VR3 is Sq. Rng.

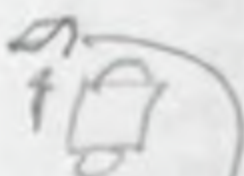
UNIC CB-40; 40 Channel Mobile (PLL-C5121). New type unit with Up/Down channel select switch. Schematic/Block diagram comes with unit! Finally a manufacturer with some marketing sense... "Tune-up" is as follows: RV1-Sq Rng, RV2-Rx Lights, RV3-Tx Lights, RV4-AMC (R65, 10K is disable...IF NEEDED).
RX: T1, T2, T3, T4, and T5. TX: T7, T9, T10, and L11.
R99 - 10 ohm/1W may be lowered in value for higher RF output, the same applies for R100(4.7 ohm). C23(1Mfd/50V) electrolytic may be increased for better noise control; as doubling up C72 will help rejection. Unit does have a 10W/3A RF Final, so don't be afraid to push it!

UNIC CB-50; 40 Channel 'DELUXE' Mobile (PLL-LC7131). This unit has just about everything on it! Schematic is in the owner's manual. "Tune-up".....RV3-Sq Rng, RV4-"Clarifier Alignment in TX mode: TX on channel 19, adjust for 27.185MHz +100Hz".
VR5-Tx Mtr Adj, RV6-AWI Adj. Rx: T1, T2, T3, T4, and T5.
Tx: T7(CAREFULLY), T8, T9, and T10. (You may also try L14, L6, and L17.) AMC disable is D22 if needed.

Cobra 39XLR; "HELP" 40 Channel 'Emergency Mobile Unit' (PLL-LC7131).
Tune-up: RV1-AMC (C47 is defeat, if needed), RV2-Sq Rng.
RX: T5, T6, T7, T8, and T9. C22's value may be increased for better ANL, but will directly affect audio level-careful.
TX: (T10-carefully); T2, T3, T4, and L6. RF final transistor is rated at 10W/3A, so don't be afraid to push unit!

Cobra 40X; 40 Channel Mobile (PLL-LC7131). "Tune-up"; RV101-Sq Rng, RV102-Rx Mtr, RV201-AMC (defeat is C215, if needed), RV202-Tx Mtr. RX: L101, L102, L108, L103, L104, L105, L106, and L107. C124 may be increased in value for better ANL, watch for audio deterioration. TX: (L203-carefully); L301, L302, L303, L304, L305, and L306. R316 and/or R320, may be lowered in value for increased RF output.

Cobra 25 PLUS; 40 Channel mobile (PLL-SM5123A). This is one of the new PLUS Series. From information received the schematic comes in the Owner's Manual now! (It's about time someone woke up at the snake factory). "Tune-up" is as follows:
STAY OUT of L1 unless you are familiar with N.B. alignment.
RX: L2, L3, L4, L5, L6, and L7. VR1-Rx Lights, VR2-Sq Rng, VR3-Tx Lights. TX: (L9-carefully); L18, L17, L16, L15, and L12. (D20 is AMC defeat, IF NEEDED). RF Final is rated at 12.5W/4A, so push it!



SPECIFIC TUNEUPS

Cobra 29 PLUS: 40 Channel 'Deluxe' Mobile (PLL-SM5123A). Identical unit as the 25 PLUS but for the addition of SWR meter and Modulation meter functions. "Tune-up": VR1-Rx lights, VR2-Sq Rng, VR3-Tx lights, VR4-AWI adj, VR5-Modulation lights adj. RX: (stay out of L1 as is N.B. circuitry), L2, L3, L4, L5, L6, and L7. TX: (L9-carefully), L18, L17, L16, L15, and L12.....some units don't have tunable L12! R79 is AMC disable. RF Final rating is 12.5W/4A.

Realistic TRC-474: 40 Channel Mobile (PLL-TC9106BP). New for '86, a sort of deluxe unit. "Tune-up": VR1-Rx lights, VR2-Sq Rng, VR3-Tx lights, VR4-AMC. RX: L1, L2, L3, L4, and L5. C22 may be increased in value for better ANL if needed. TX: L15, L16, L12, and L11. Try removing D21 for additional modulation first if needed, then D20.

Realistic TRC-218: 3 Channel/2 Watt Walkie-Talkie. This is another new unit. Tune-up: VR3-Sq Rng. RX: L9, T1, T2, T3, and T4. C74 (1Mf/50V) may be increased in value for ANL gain. TX: T5, L7, L4, L3, and L6. R52 may be changed to lower value for higher RF output. R70 is AMC defeat.

Realistic TRC-219: 3 Channel/3 Watt Walkie-Talkie. New! Tune-up: VR3-Sq Rng. RX: L9, T1, T2, T3, and T4. C24 may be changed to higher value for ANL improvement. TX: T5, L7 (note on this part, may not be in some production runs), L5, L3, and L4. R62 may be lowered in value for higher RF output.

Cobra 18 PLUS: 40 Channel mobile (PLL-SM5123A). Tune-up: VR1-RX lights, VR2-Sq Rng, VR3-TX lights. RX: L1, L2, and L3. C23, .47Mf at 50VDC may be increased for improved NB'ing. TX: L11, L10, and L7. (R101 is AMC defeat if needed.)

Cobra 19 PLUS: 40 Channel mobile (PLL-IC7131). Tune-up: RV101-Sq Rng, RV102-RX lights, RV301-TX lights, RV501-AMC (Defeat is C511, 1Mf/50V). RX: L101, L102, L103, L104, and L105. C123 may be increased in value for improved NB. TX: CAREFULLY, L301 and L302. L303, L304, L305, and L306. R308, R309, R311, and R312 can be lowered in value for increased RF output - AT YOUR OWN RISK.

Cobra 21 PLUS: 40 Channel mobile (PLL-SM5123A). Another new one! Tune-up: VR1-RX lights, VR2-Sq Rng, VR3-TX lights. RX: L2, L3, L4, L5, L6, and L7. C29, .47Mf/50V can be increased in value for NB improvement. TX: L16, L15, and L12. D20 is AMC defeat if needed.

Cobra 20 PLUS: 40 Channel mobile (PLL-IC7131). Tune-up: RV501-AMC (Defeat is C511, 1Mf/50VDC), RV101-Sq Rng, RV102-RX lights, RV301-TX lights. RX: L101, L102, L103, L104, and L105. C123 (1Mf/50V), may be increased in value for improved NB. TX: Carefully, L301, and L302. L303, L305, and L307. R308, R309, R311, and R312 can be changed to a lower value for increased RF output, Use Caution.

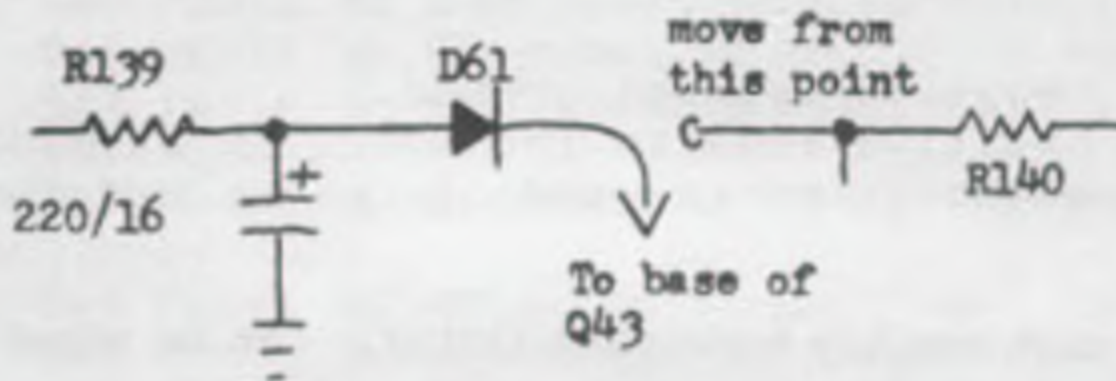
RANGER AR-3300; UPDATE

Tech. Bulletin #1... Re: Vol. 25 SCB.

Again; this is the modification on all units below serial numbers 86020800 only.

1. Remove R139, change to 4.7K ohm 1/4W 10% resistor.
2. Lift cathode side of D61 (banded end); replace cathode to base of Q43.
3. Add a 220Mfd/16VDC electrolytic capacitor from junction of R139/D61 to D.C. ground. (+ to junction)...

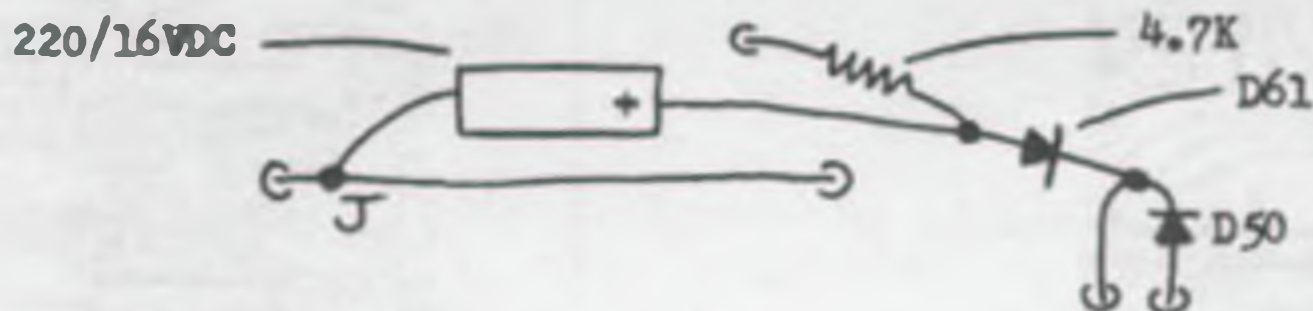
Schematic of change is below:



Editor Note: I have found it next to impossible to modify units by placing the capacitor on etch side of chassis.

Recommend that it be modified as below. Utilized on A/N: 86020436 with no problems.

1. Remove D61 carefully; save diode.
2. Remove R139—discard; cleanout left hole (viewed from component side).
3. The solid buss jumper directly below R139 hole is D.C. ground potential. This will be used as capacitor ground point.
4. Wire all components as shown, "FIT" all parts before soldering.



Do a good job as neatness counts!

AR-3300

HF Mobile All-Mode Amateur Transceiver

AR-3300 TECHNICAL BULLETIN #4

June 12, 1986

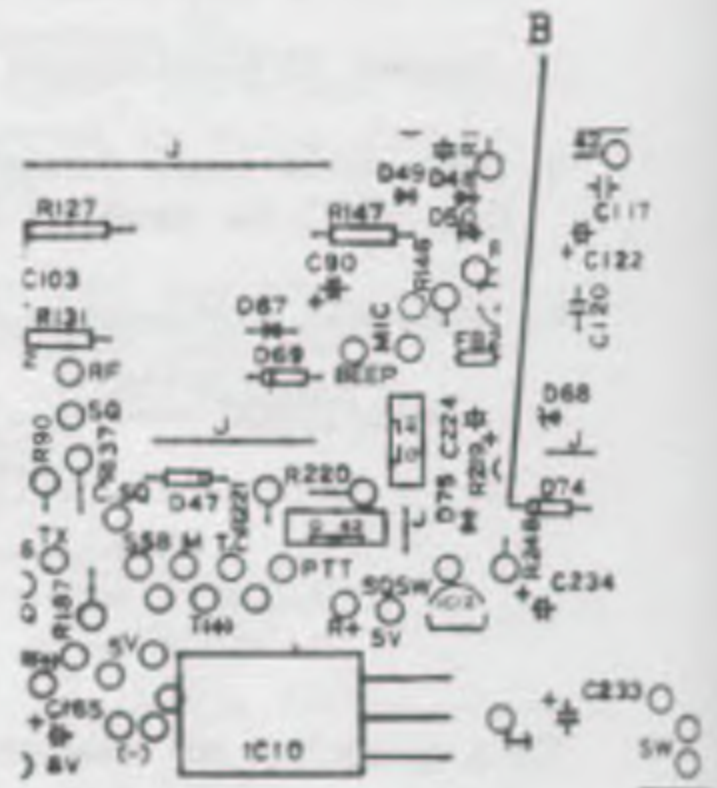
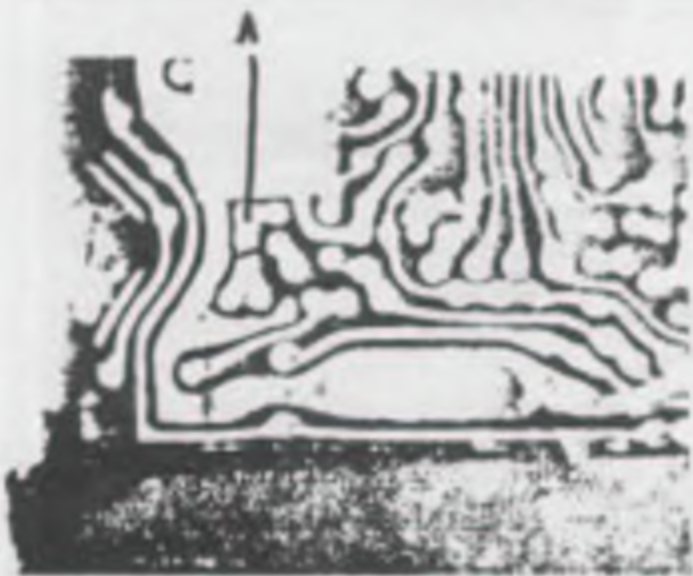
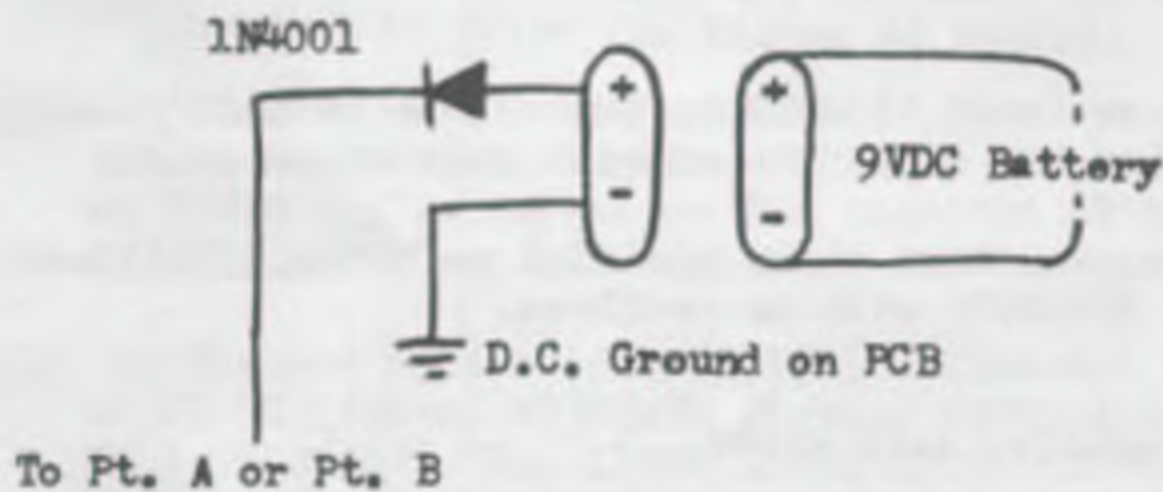
SUBJECT: BATTERY BACK-UP

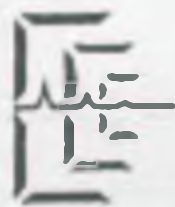
To install a battery back-up obtain the following:

- 9 Volt Battery
- 9 Volt Battery Plug w/leads
- 1N4001 Diode (or equivalent)

Connect the negative lead to ground.
Connect the positive lead to the anode of a 1N4001 diode.
Connect the cathode (stripe end) to point indicated below.

Drawing below will amplify hook-up/building. Can be wired into unit on either the etch or component side.





CLEAR CHANNEL CORPORATION

AR-3300 TECHNICAL BULLETIN #5
June 25, 1986

2.7Kc SSB FILTER

To change from 4.7Kc to 2.7Kc do the following:

1. Replace MCF (4.7) with 2.7 filter.
2. Replace coil T-16 (56-14) with 56-07 coil.
3. Replace D44 (IS1588) with IS585 diode.
4. Replace C-86 (330pF) with 56pF capacitor.
5. Replace R-24 (2.2K) With 1.5K resistor.

Realign radio as follows:

1. Connect frequency counter to TP-3 with high-impedance probe.
 - a. Set radio to USB mode. Adjust T-16 for 10.6935Mhz.
 - b. Set radio to LSB mode. Adjust T-17 for 10.6965Mhz.
 - c. Set radio to CW mode. Adjust T-15 for 10.6943Mhz.
 - d. Set radio to AM(Tx) mode. Adjust T-14 for 10.6935Mhz.
2. Connect frequency counter to TP-2. (Rx frequency 28.0000Mhz)
 - a. Set radio to AM mode. Adjust VR-3 for 17.305Mhz.
 - b. Set radio to USB mode. Adjust VR-1 for 17.3065Mhz.
 - c. Set radio to LSB mode. Adjust VR-2 for 17.3035Mhz.

. W A N T E D

ORIGINAL SCHEMATICS ONLY.....

Audiovox: MCB-20

Fox: CB240, CB340, CB440

Midland: 75-101, 75-719B, 75-764B

76-300,

77-104, 77-112, 77-114, 77-145, 77-202, 77-202M, 77-225, 77-250,
77-805, 77-911, 77-911S,

Connex: 3300, 3900,

Superstar: 3600, 3900, 120FM

Galaxy: 2100

Texas Star: 2100

President: J.F.K.

ORIGINAL SERVICE MANUALS ONLY.....

Midland: 79-260

Concept: CD85CB

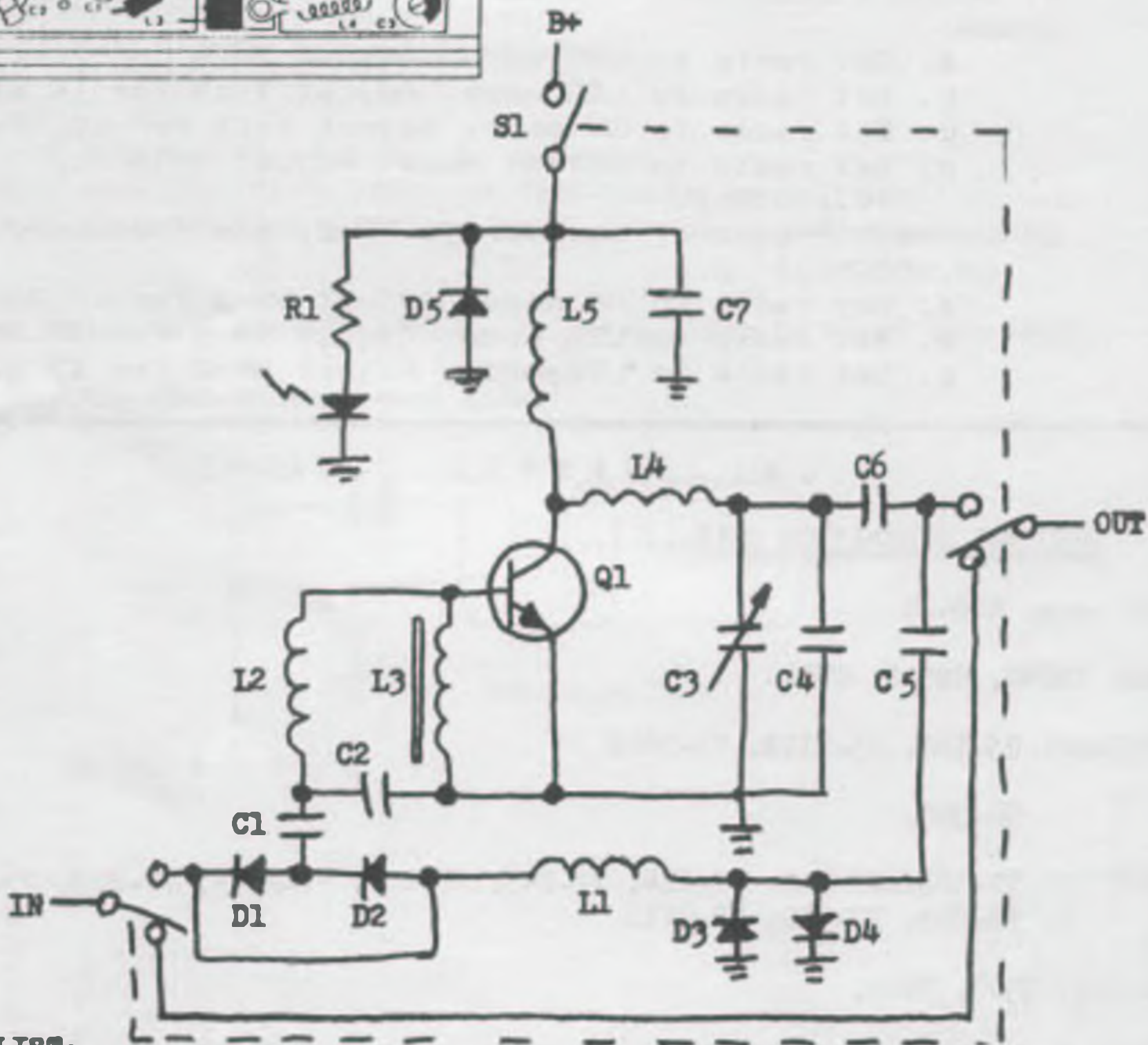
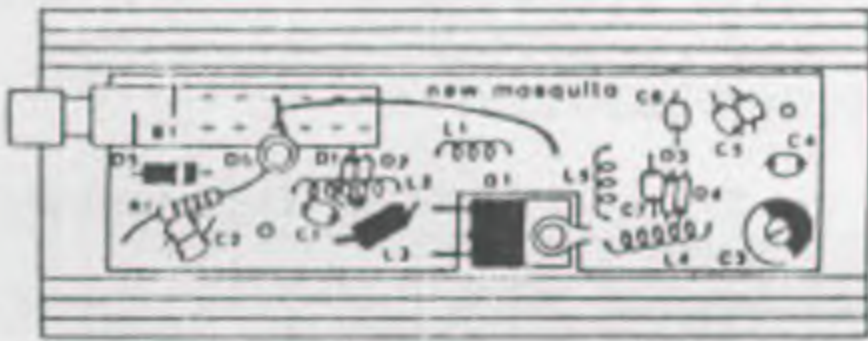
MOSQUITO

By Moses Horowitz

Nice little Amp rated at 50W MAX at 7W input, but don't see it even maintaining 30W for very long. If you happen to purchase/obtain.

Set up radio for giving 20W MAX, out of amp and will probably last forever! (Check R.F. Transistor specs of whichever is found in unit.)

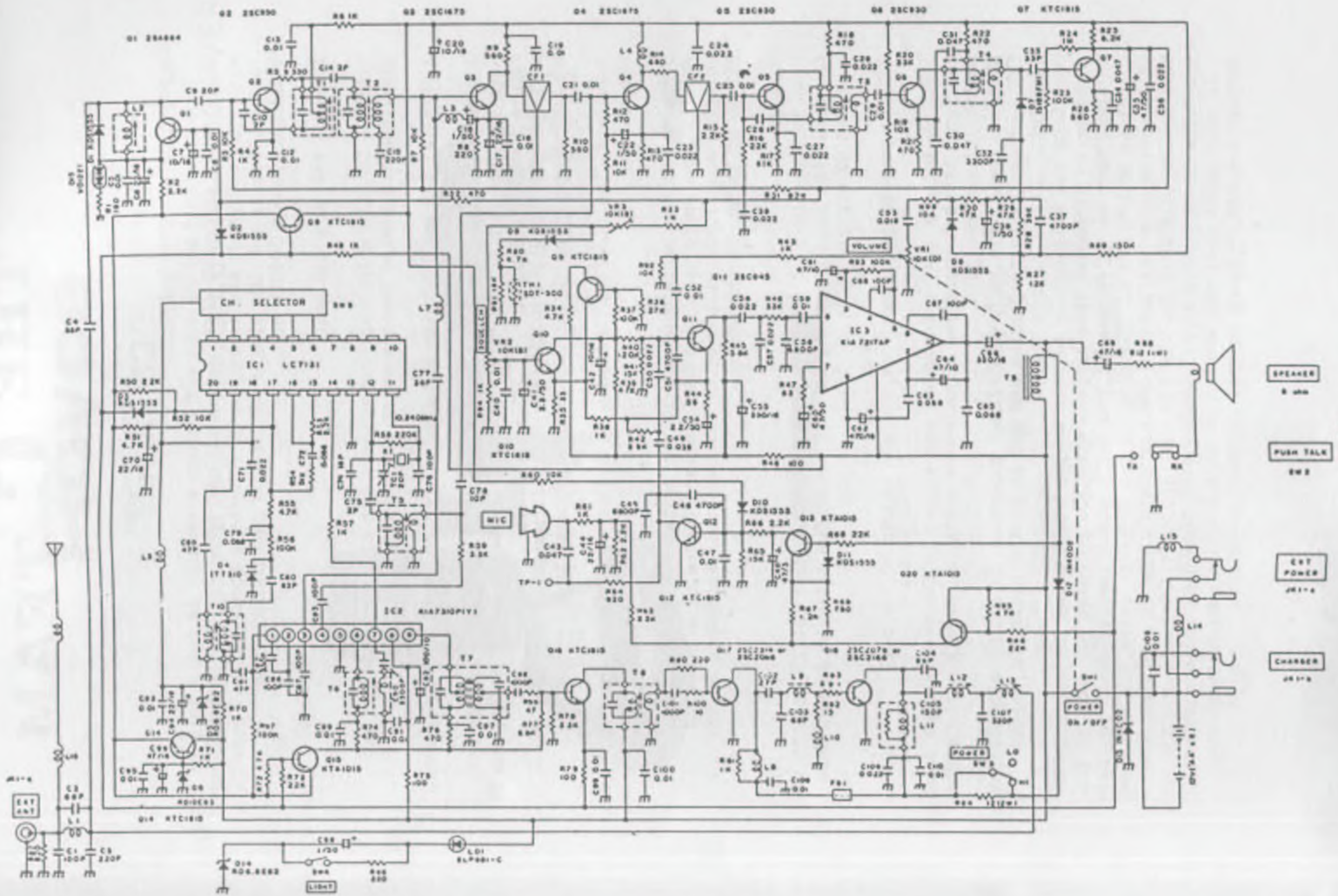
2SC1307 - 25W/8A
 2SC1969 - 20W/6A
 MRF475 - 12W



PARTS LIST:

- | | | |
|----------------------|-------------|------------------------|
| R1 - 820 ohm | C6 - 33pf | D5 - BY255 |
| C1 - 68pf NPO | C7 - 100Mf | D6 - LED, 5mm |
| C2 - 160pf | D1 - 1N4148 | Q1 - 2SC1307, 2SC1969, |
| C3 - 10-60pf trimmer | D2 - 1N4148 | or MRF475 |
| C4 - 100pf | D3 - 1N4148 | |
| C5 - 130pf | D4 - 1N4148 | |

REALISTIC TRC-217 SCHEMATIC



SPEAKER
8 OH

PUSH TALK
SW 2

PTT
POWER
SW 1

POWER
SW 2

THE C TEAM

Les Jernigan

HOPPING UP THE 8719 RECIEVER

Someone stated before that not enough attention is being paid to the reciever of all these multi frequency converted radios. I for One agree with that statement and intend to do something about it. That something follows. This is for the single conversion chassis. Like the Washington, 140 & 142GTL etc.

1. Change R39 to a 330 ohm.

2. BRIDGE L9 with a 1pf cap. From primary hot side to secondary hot side. (Sides opposite power supplys and grounds.)

3. Parallel C42 and C44 with 1pf caps or replace with 3pf caps.

I know whats going through your mind at this point. "Why bother with just 1pf? Why not two or three?"...Well if you do try 2 or 3pf you'll figure it out real quick!

NOTE: DO "NOT" parallel C38 with a 1pf. This actually degrades the broadbanding effect of the cap bridged accross L9.

4. Replace C166 (in FT2s' holes) with a 33pf cap. If unit has FT2, leave FT2 in.

5. Remove R58 and replace with a 10 ohm resistor. Keep the leads short! If the radio goes into oscillations (noted by a repeated chirping sound), you will have to increase the resistance of the new R59. Go up in 50 ohm increments.

TUNE UP

1. Go to the center of your frequency spread. Adjust L10, L7, L6, & L5, here for peak WEAK signal reading on S/RF meter. Don't try to adjust them using an S9 signal!

2. Go to your highest frequency now and adjust L9 for peak.

3. Now go to your lowest frequency and adjust L8 for peak. Bounce back and forth between these two adjustments until you have a satisfactory balance of recieve gain.

NOTE: You don't have to have a signal generator to do the alignment. You can just use background noise and get it pretty close, but, listen closely!

One thing you will notice as soon as you start using the radio is an increase in bleedover. This happens when you increase the gain of the IF stage such as we've done. If you can't stand the bleedover you have 2 choices to get rid of it. First, you can order an extra FT2 and mount it in series with the present one (or install one if radio doesn't have one.) or...#2. Put the old R58 back in. Don't try replacing R58 with a pot. You'll be tuning in all kinds of AM BROADCAST radio stations!

If your radio does not have an RF GAIN, I would suggest that you install one. You're going to need it now!

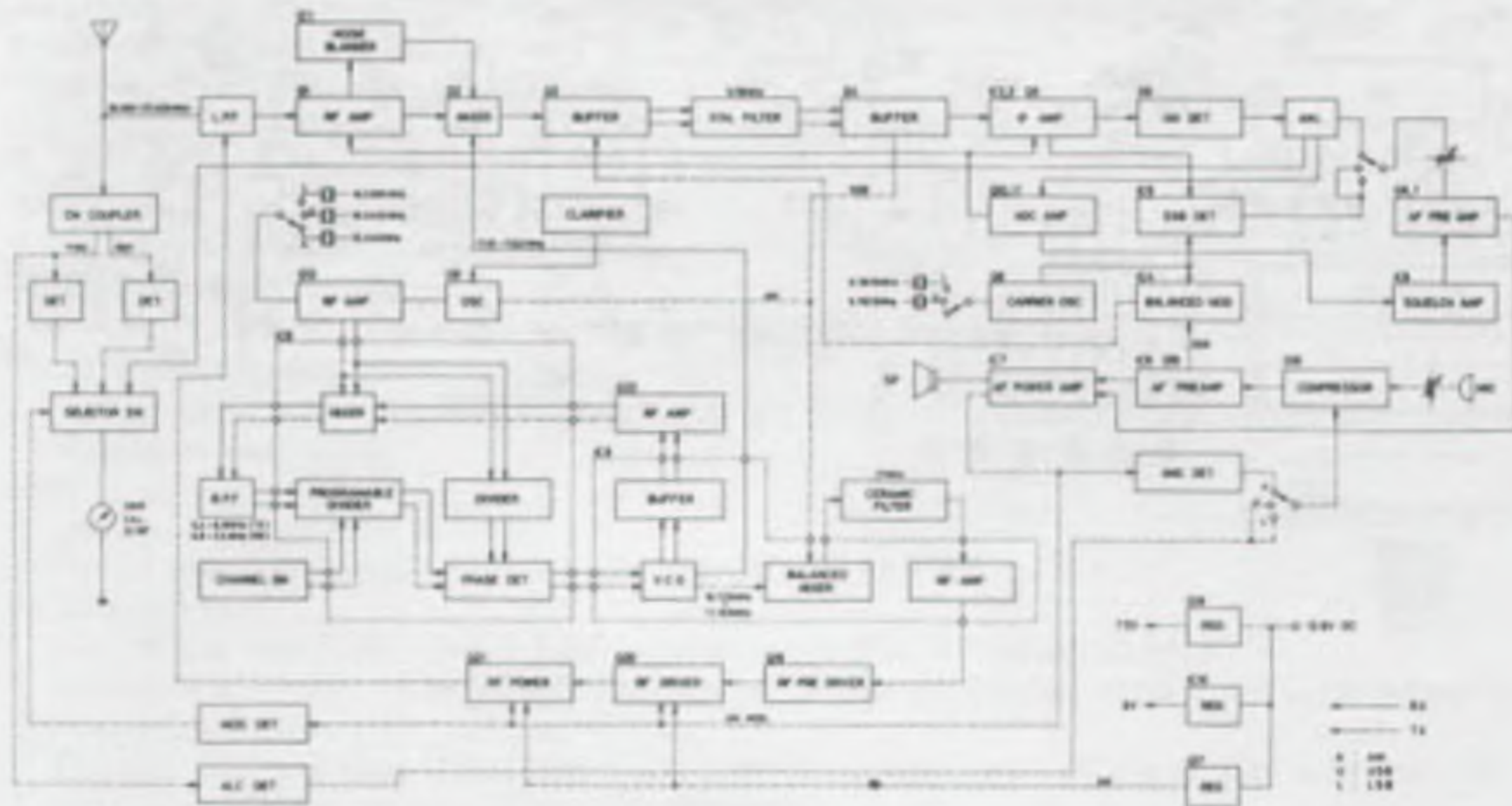
Royce

Model 639

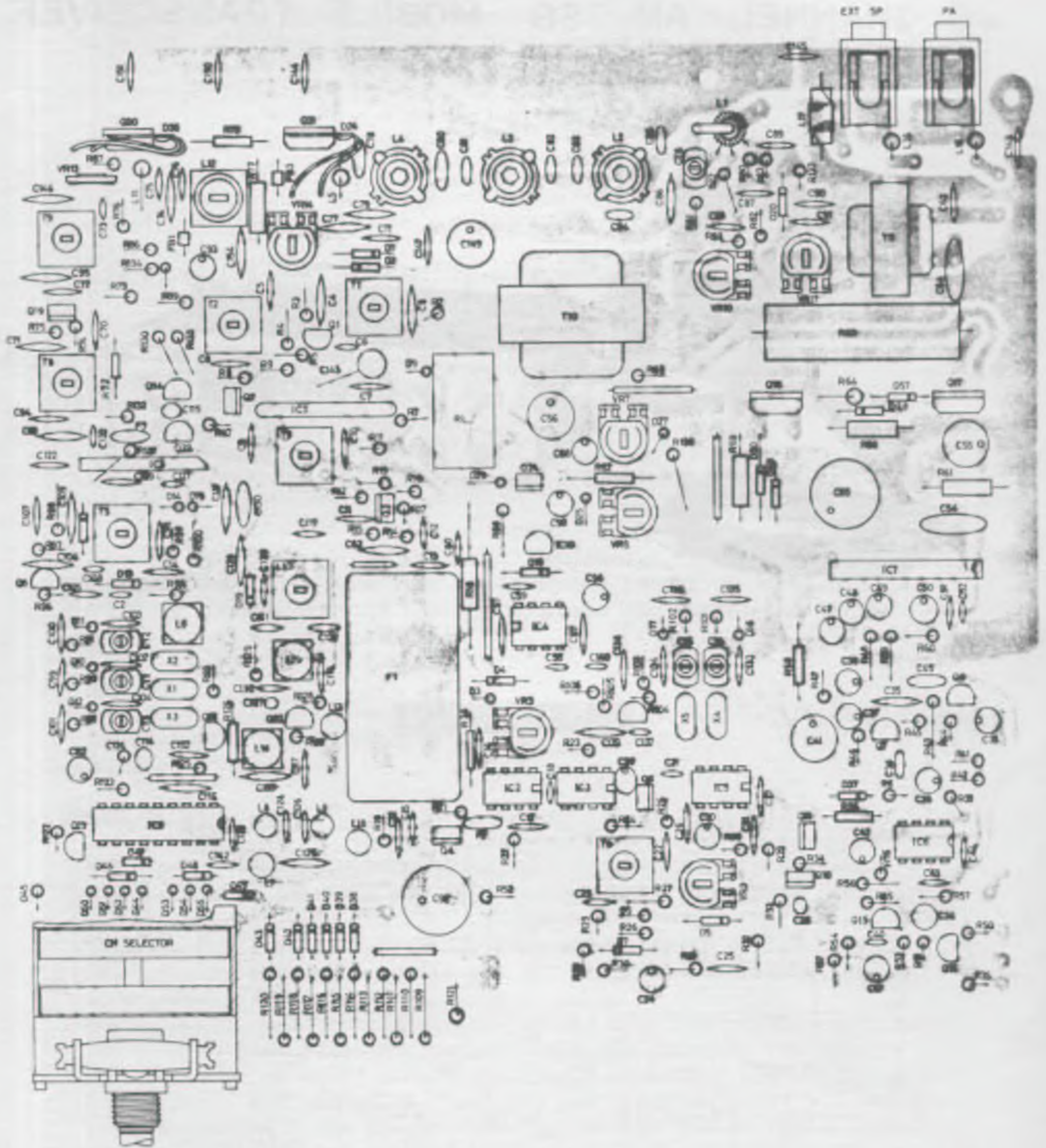
40 CHANNEL AM/SSB MOBILE TRANSCEIVER



BLOCK DIAGRAM



ROYCE 639 - PCB Parts Layout



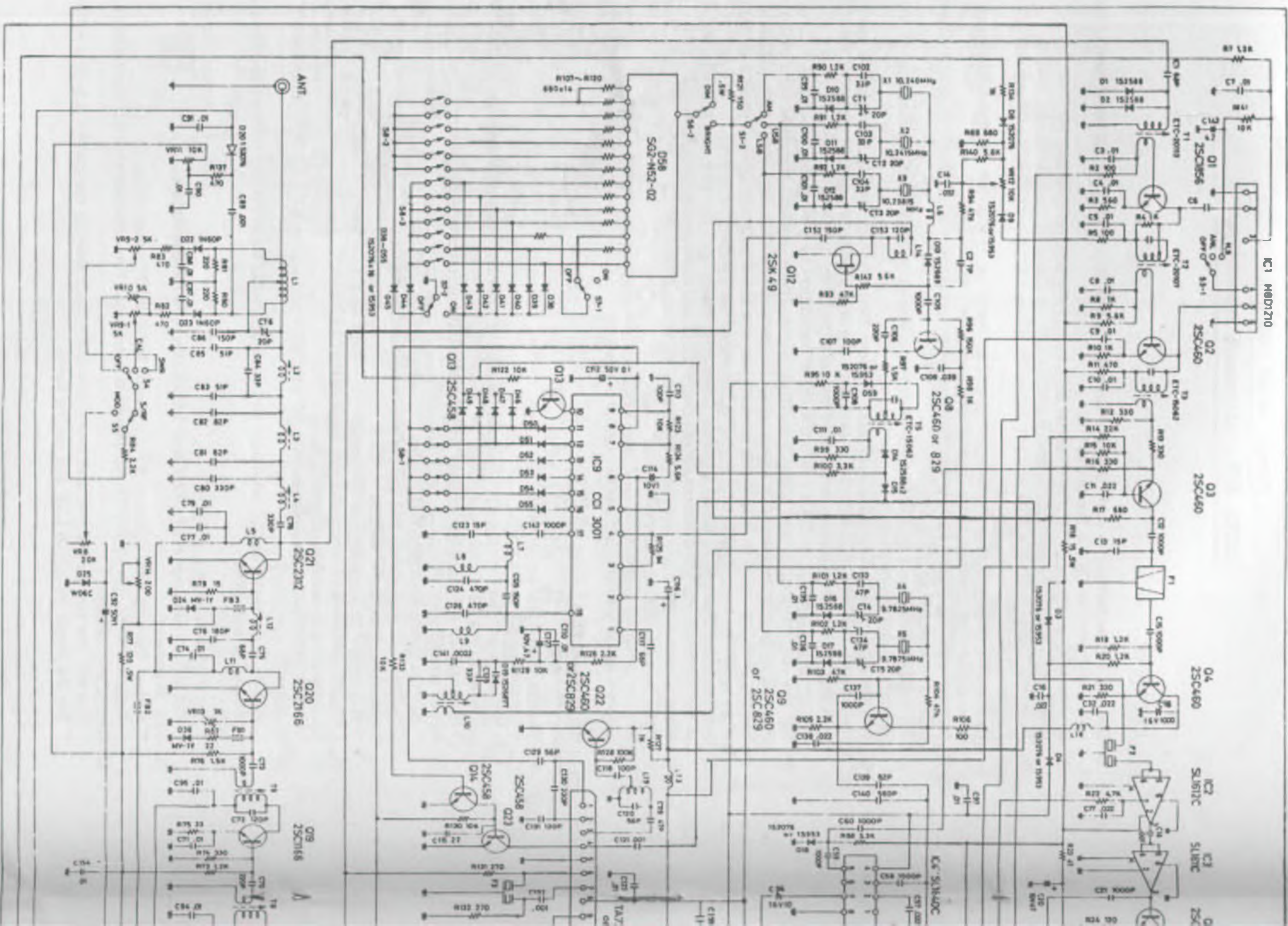
ROYCE 639 - Alignment Procedure

1. RECEIVER

- 1) Set the Mode Switch to AM, Volume Control at maximum, Squelch at minimum, Clarifier in the center and the CB-PA Switch to CB.
- 2) Set the SSG on Channel 19 and Channel Selector of the unit on Channel 19.
Then, connect the Power Supply and 8 ohms Dummy Load to the transceiver unit.
- 3) Feed the signal from the SSG and set the audio output for a peak reading by adjusting T-1, T-2, T-3, and T-4.
In this case be sure that antenna input should be less than $1\mu\text{V}$ at the AF standard output power. Also, make sure that the audio on the oscilloscope is a sine wave.
- 4) Set the antenna input at $1\mu\text{V}$ so that the antenna power may be more than 0.5 Watt at the maximum volume of all channels.
- 5) Set the antenna input at $1,000\mu\text{V}$ so that the output power should be more than 3.0 watts at the maximum volume.
- 6) Set the antenna input to $50,000\mu\text{V}$ and the low frequency output to 0.5 watt by volume control. Then, decrease the antenna input until the low frequency output stays 10 dB lower. Be sure that the antenna input then should be less than $5\mu\text{V}$.
- 7) Set the antenna input to $100\mu\text{V}$ and the meter indication to 9 by VR-2.
- 8) Set the volume control and squelch control at maximum, and set the tight squelch by VR3 so that the output from speaker is heard when the antenna input is increased upto $1,000\mu\text{V}$.
- 9) Set the antenna input to $0.7\mu\text{V}$ and be sure that the low frequency output should be over 10 dB more when the modulation of the SSG is turned off at the normal output.
- 10) Set the Mode Switch to USB, Volume Control at maximum, Squelch at minimum and Clarifier in the center. Tune off the modulation of the SSG and remove the frequency by 1 KHz.
- 11) Make sure that the maximum sensitivity should be less than $1\mu\text{V}$.
- 12) Make sure of AGC like with AM.
- 13) Set the antenna input to $0.2\mu\text{V}$ and keep the AF output to be over 10 dB lower when the antenna input is turned off at the normal output.

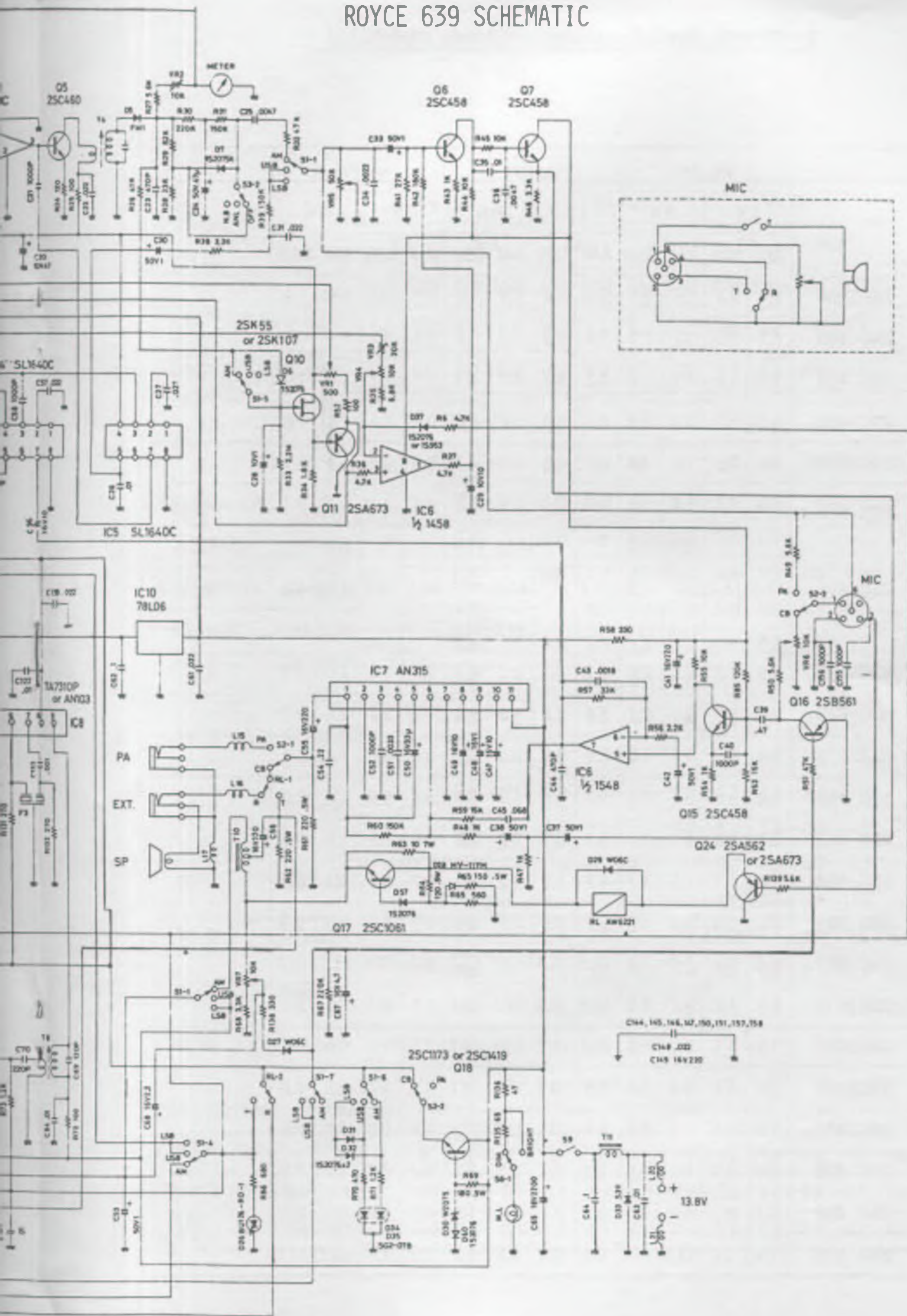
2. TRANSMITTER

- 1) Connection of test equipment.
 - Power supply at 13.8 VDC.
 - Connect a Power meter, oscilloscope frequency counter, spectrum analyzer and P-P RF volt meter to the RF output connector.
 - Connect an AF oscillator and AF volt meter to the microphone connector.
- 2) Power adjustment.
 - Set the mode switch to AM.
 - Adjust T-5, 8, 9, L-12, and L-3 for the maximum point.
 - Adjust L-4 for 3.6W output.
 - Adjust L-2 to increase 2nd harmonic.
- 3) Frequency-Make sure every channel stays within $\pm 800\text{Hz}$.
- 4) Modulation Limiter Adjustment.
 - Put in 1KHz and 20mV signal from AF oscillator and adjust VR7 for 90% modulation
- 5) Modulation capability.
 - Put in 1kHz signal by AF oscillator and get 90% modulation for the minus side. The plus side should be over 80%.
- 6) SSB.
 - Set the mode switch to USB.
 - Put in two-tone signal of 1KHz and 1.6KHz by two AF oscillators.
- 7) ALC alignment.
 - Adjust the two-tone signal of AF oscillator for 3 W RF power output.
 - Adjust VR-11 for 11 W PEP RF power output when the two-tone signal is increased by 20 dB.
- 8) Carrier suppression.
 - Cut off the two-tone signal and make sure the output level of the carrier is below -40 dB.
 - Set the mode switch to LSB and do the same.



IC1 M801210

ROYCE 639 SCHEMATIC



ROYCE 639; Trouble-shooting Voltage Chart

		Vb (V)				Vc (V)				Ve (V)				
		TX		RX		TX		RX		TX		RX		
		AM	SSB	AM	SSB	AM	SSB	AM	SSB	AM	SSB	AM	SSB	
Q 1	2SC1856	0.4	0.4	3.5	3.5	0.4	0.4	7.8	7.8	0.2	0.2	1.9	1.9	
Q 2	2SC 460	0.2	0.2	1.2	1.2	0.4	0.4	7.7	7.7	0.1	0.1	0.8	0.8	
Q 3	2SC 460	1.8	1.8	1.7	1.7	4.2	4.2	4.1	4.1	1.1	1.1	1.0	1.0	
Q 4	2SC 460	0.1	3.7	3.3	3.3	6.1	6.0	6.0	6.0	0.4	3.1	2.6	2.6	
Q 5	2SC 460	0.0	0.0	1.4	1.4	0.0	0.0	4.7	4.7	0.0	0.0	0.7	0.7	
Q 6	2SC 458	0.4	0.4	1.4	1.4	11.2	11.2	4.9	4.9	0.1	0.1	0.7	0.7	NO SQUELCH
				0.3	0.3			11.6	11.6			0.0	0.0	SQUELCH
Q 7	2SC 458	11.2	11.2	4.9	4.9	11.1	11.1	11.6	11.6	10.4	10.4	4.2	4.2	NO SQUELCH
				11.6	11.6			11.6	11.6			10.8	10.8	SQUELCH
Q 8	2SC 829	2.9	2.9	2.8	2.8	6.3	6.3	6.2	6.2	2.8	2.8	2.0	2.0	
Q 9	2SC 829	2.8	2.8	2.7	2.7	6.0	6.0	5.9	5.9	2.2	2.2	2.1	2.1	
Q11	2SA 673	0.0	0.0	1.4	1.4	0.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	
Q13	2SC 458	0.8	0.3	0.3	0.3	0.1	6.0	6.0	6.0	0.0	0.0	0.0	0.0	
Q14	2SC 458	0.8	0.8	0.7	0.7	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	
Q15	2SC 458	1.3	1.3	1.3	1.3	5.2	5.2	5.2	5.2	0.7	0.7	0.7	0.7	
Q16	2SB 561	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Q17	2SC1061	6.8	7.6	7.9	7.9	13.2	13.6	13.7	13.7	6.2	13.6	13.7	13.7	
Q18	2SC1419	8.8	8.8	8.8	8.8	13.2	13.2	13.7	13.7	8.3	8.3	8.1	8.1	
Q19	2SC2003	1.8	1.8	0.0	0.0	13.2	13.2	13.7	13.7	1.3	1.3	0.0	0.0	
Q20	2SC2166	0.6	0.6	0.0	0.0	5.5	13.2	13.7	13.7	0.0	0.0	0.0	0.0	
Q21	2SC2312	0.6	0.6	0.0	0.0	5.5	13.2	13.7	13.7	0.0	0.0	0.0	0.0	
Q22	2SC 829	0.5	0.5	0.5	0.5	3.3	3.3	3.3	3.3	0.0	0.0	0.0	0.0	
Q23	2SC 458	0.1	0.1	0.0	0.0	2.7	2.7	1.6	1.6	0.0	0.0	0.0	0.0	
Q24	2SA 673	1.5	1.5	13.3	13.3	0.0	0.0	0.0	0.0	2.2	2.2	13.7	13.7	

ROYCE 639: Trouble-shooting Voltage Chart

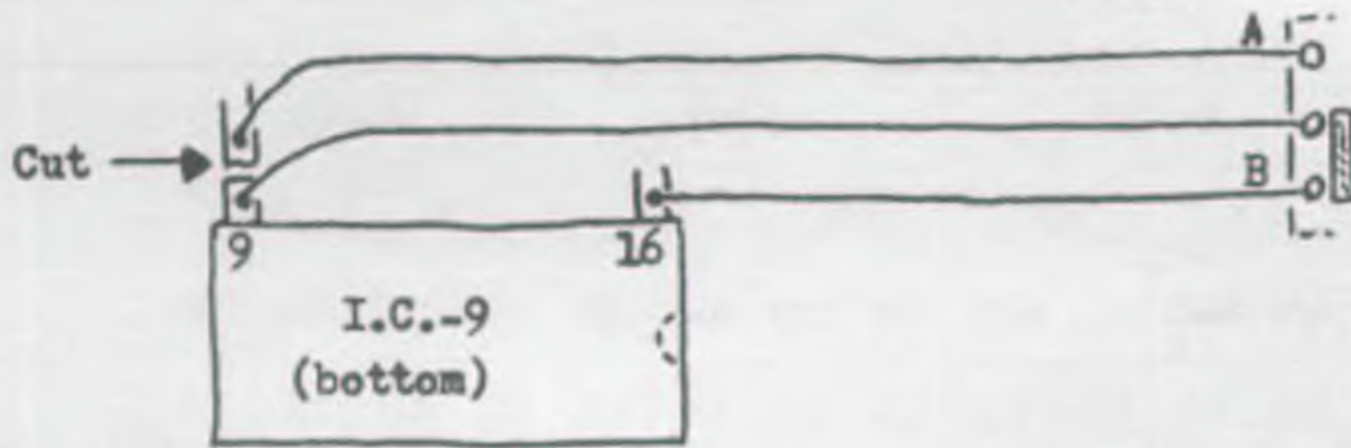
		Vg (V)				Vd (V)				Vs (V)			
		TX		RX		TX		RX		TX		RX	
		AM	SSB	AM	SSB	AM	SSB	AM	SSB	AM	SSB	AM	SSB
Q10	2SK 55	0.0	0.0	0.0	0.0	0.0	0.0	5.4	5.4	0.0	0.0	1.4	1.4
Q12	2SK 49	0.0	0.0	0.0	0.0	6.0	6.0	6.0	6.0	0.0	0.0	0.0	0.0

		PIN NO.	1	2	3	4	5	6	7	8	9	10	11
IC 1	H8D1210	RX	0.0	0.8	7.9	0.4	7.7	0.0	/	/	/	/	/
		TX	0.0	0.0	0.0	0.0	0.0	0.0	/	/	/	/	/
IC 2	SL1612C	RX	0.0	7.3	2.7	0.0	0.9	0.9	2.0	0.0	/	/	/
		TX	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	/	/	/
IC 3	SL1611C	RX	0.0	5.4	1.5	0.0	0.8	0.8	0.8	0.0	/	/	/
		TX	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	/	/	/
IC 4	SL1640C	RX	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	/	/	/
		TX	0.0	3.8	3.8	8.2	7.1	6.9	3.8	0.0	/	/	/
IC 5	SL1640C	RX	0.0	2.5	2.5	5.4	4.8	4.8	2.4	0.0	/	/	/
		TX	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	/	/	/
IC 6	MC1458	NO SQUELCH	11.6	1.7	2.0	0.0	5.2	5.2	5.2	12.3	/	/	/
		SQUELCH	2.1	4.1	2.1	0.0	5.2	5.3	5.3	11.7	/	/	/
IC 7	AN 315		5.8	0.0	1.3	7.1	10.6	5.5	0.0	5.6	5.5	13.4	13.7
IC 8	AN 103	RX	2.5	2.0	1.3	1.6	0.0	0.9	2.2	8.1	0.5	/	/
		TX	2.5	2.0	1.3	1.6	0.0	0.9	8.0	8.1	13.2	/	/
IC10	78L06		13.7	0.0	6.0	/	/	/	/	/	/	/	/

IC9 CCI3001 (CH No. 1)

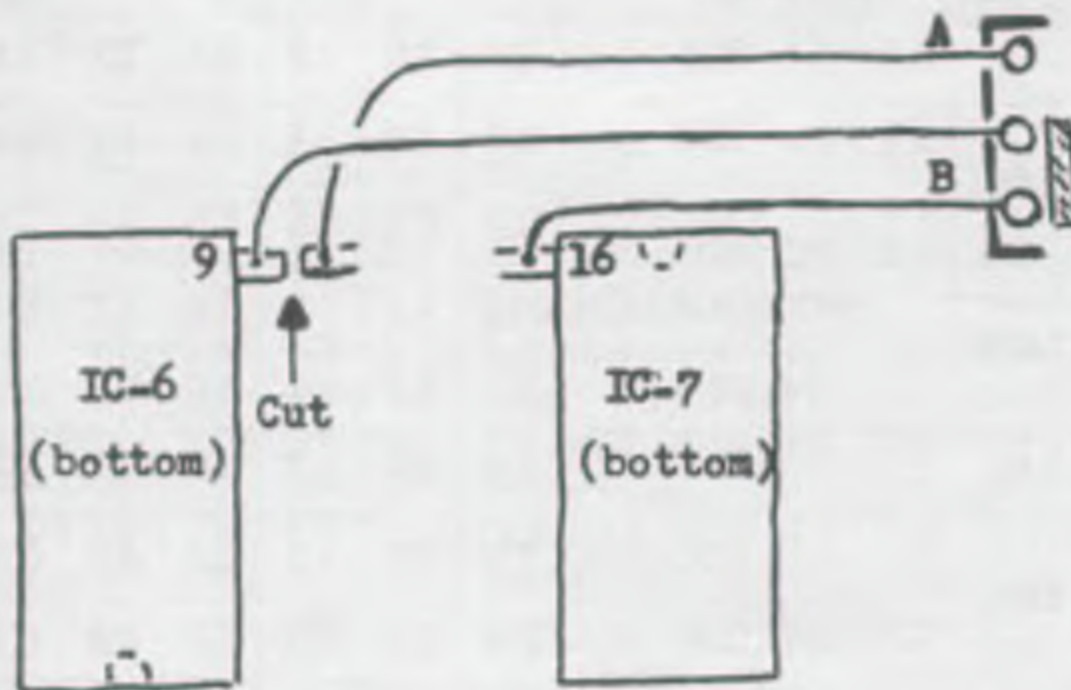
PIN NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
TX AM	0.1	6.0	3.1	3.1	0.0	3.3	3.1	3.4	3.1	0.1	0.6	0.6	0.6	0.6	0.6	0.6	3.1	0.0
SSB RX AM	0.1	6.0	3.1	3.1	0.0	3.3	3.1	3.4	3.1	6.0	0.6	0.6	0.6	0.6	0.6	0.6	3.1	0.0

Grant (Export) 10KHz Jump Mod.
by R.T.

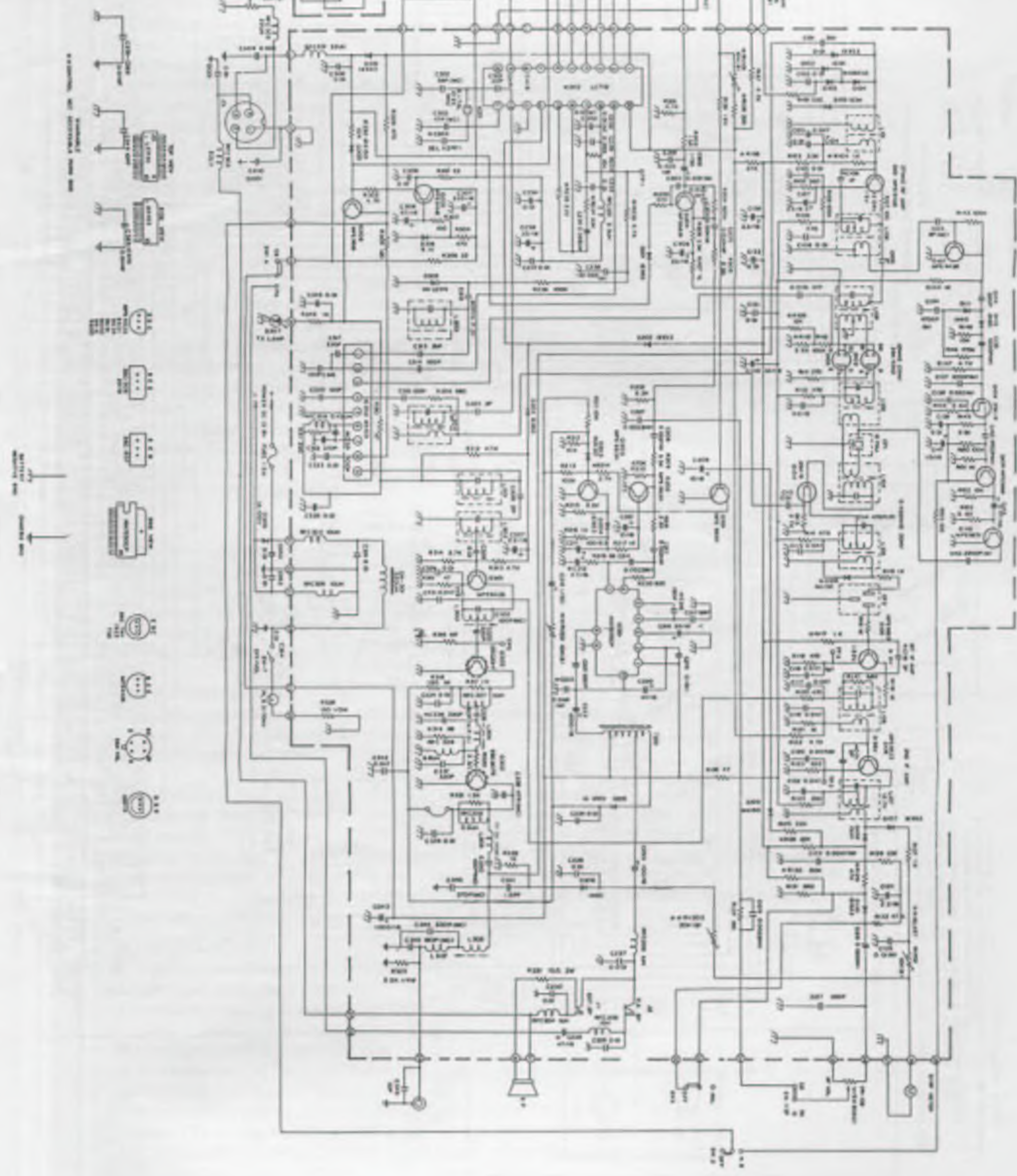


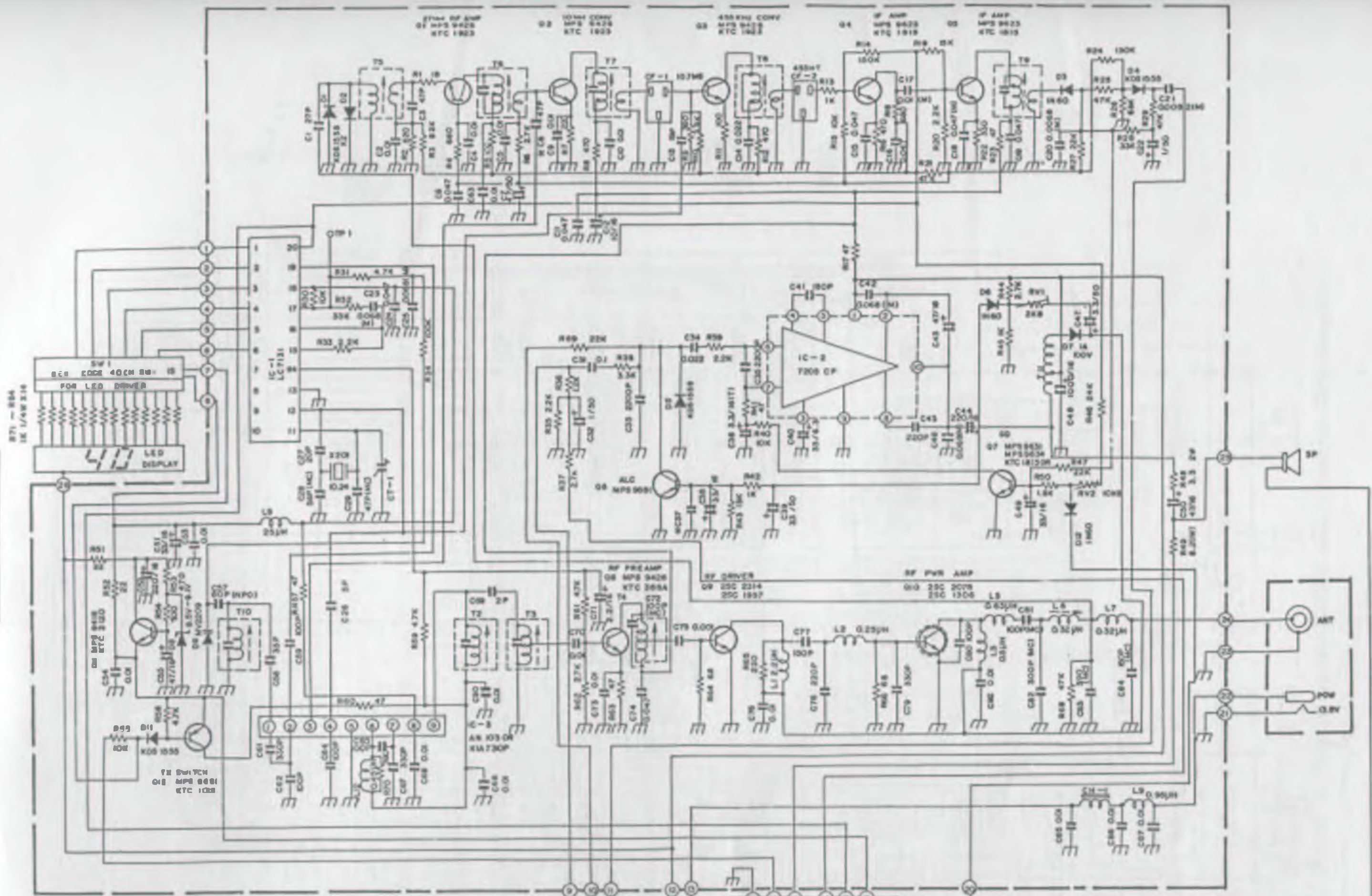
1. Cut etch as shown above and wire up to existing contacts on Mod/S-RF switch.
 2. Pt. A and Pt. B may be reverse wired, just be sure center contact goes to Pin 9.
- (Shown Pin 9 to Logic 1, = +10KHz all channel frequencies.)

Connex 3300 (Export) 10KHz Jump Mod.
by R.T.

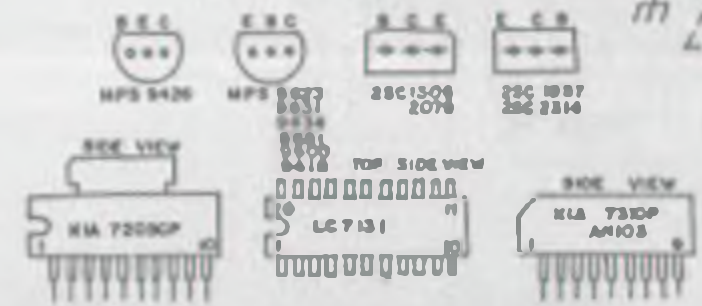


1. Cut etch as shown above and wire up to a switch.
 2. Pt. A and Pt. B may be reversed, just be sure center contact goes to Pin 9.
- (Shown Pin 9 to Logic 1, = +10KHz all channel frequencies.)





CONDENSER & SEMICONDUCTOR TERMINAL CONNECTION BOTTOM SIDE VIEW



- NOTES:
1. RESISTANCE VALUES ARE SHOWN IN OHMS UNLESS OTHERWISE NOTED IN $\times 10^3$ OHMS OR $\times 10^6$ OHMS
 2. RESISTOR VALUES ARE $\frac{1}{2}$ W UNLESS OTHERWISE NOTED
 3. CAPACITANCE VALUES ARE INDICATED IN MICRO-GRAMS UNLESS OTHERWISE NOTED (P-MICRO-MICROGRAMS)
 4. ALL CAPACITORS TEMPERATURE CHARACTERISTICS ARE $\pm 1\%$ (LESS THAN 100PPM) OR $\pm 2\%$ (MORE THAN 100PPM) UNLESS OTHERWISE NOTED.

TRC-453 and PC-122 TROUBLE SHOOTING GUIDE

UNIT WILL NOT TURN ON

1. Broken/defective DC Power cable.
2. Fuse blown. Be sure you check for the cause.
3. Defective power switch.
4. Defective wires or poor soldering in power supply circuit.

NO SOUND RECEIVED

1. Defective RF circuit in receiver.
2. Defective Noise Blanker.
3. Defective audio power IC, IC5.
Check Voltage at pin 6 of IC5; if approximately 6V, problem is not with this IC.
4. Squelch is "ON" all the time.
If voltage at Base of TR12 is approx. 0V with Squelch Control in fully counterclockwise, problem is not with squelch circuit.
Defective TR12.
5. Check whether the transceiver's signal strength meter deflects when a signal (27 MHz carrier with 1 kHz, 30% modulation, 100 μ V level) is applied to antenna.
 - a. The meter indicates "S-9".
You can assume that antenna through IF stage are OK.
NO AM Checks should be made on Detector (D16 and 17) ANL circuit (D18), TR24 and AF stage (TR11, TR12, VR501 and IC5).
NO SSB BUT AM OK Check frequency and level on TP5, if no signal, checks should be made on X-tals and TR24.
NO SSB Checks should be made on Detector, TR11, TR12 and AF stage, VR501 and IC5.
 - b. No deflecting of meter.
Checks should be made on RF stage (TR13 and TR14), IF stage (TR15, TR16, TR17 and TR18) or AGC circuit (TP8, D7, D8 and IC1). Or trouble may be in PLL circuit. Check frequency on TP3; if it is as listed in the Table, problem is not with PLL circuit.
6. Defective AGC circuit.
7. Defective PLL circuit.
8. Defective antenna connector.

NO NOISE

1. Broken or bad contact in microphone connector and/or push-to-talk switch.
2. Defective RX power circuit.
3. Defective RX audio circuit.
4. Defective PLL circuit and/or channel switch.
5. Defective squelch.
6. Defective PA CB switch.

NO TRANSMISSION

1. Broken or bad contact in microphone connector and/or push-to-talk switch.
2. Broken or bad contact in antenna connector.
3. Defect in power supply.
4. Defect in PLL and/or Carrier Oscillator (Improper adjustment).
5. Inoperative microphone amplifier and/or balanced modulator in SSB mode.
6. Check the frequency at TP3; carrier oscillation may have stopped; if no carrier, check TR24, D27, 28, 29 and X2.
7. Carrier is OK, but no TX; check the frequency at TP3. If not same as listed in Frequency Table, PLL circuit defective. If OK, check IC3, 6, TR35, 538 and 539.
8. If no TX on SSB modes and no modulation on AM mode, Mic amplifier or ALC/AMC section is defective. Check TR36, 37, 38 and 544.

NO MODULATION

1. Defective microphone.
2. Defective microphone connector.
3. Inoperative microphone amplifier, (both AM and SSB modes.)

NO NOISE BLANKER OPERATION

With NB Switch ON, apply a 27 MHz carrier signal to antenna. Then check DC voltage at TP1 varying the carrier signal from 1 μ V to 100 μ V.

1. When TR1 voltage stays on and does not vary: Check TR1, 2, 3, 4, 5, D1 and D2.
2. When TP1 voltage varies from 0V to approx. 2V. Check TR6 and 7.
3. If (A) and (B) are alright, L2 may be misaligned; go to alignment procedure for adjusting L2.

CHANNEL LED DOES NOT LIGHT

When a specific segment fails to light, it is probable there is an open-circuit in the LED display or bad contact in the channel selector switch.

KRIS 200 M LINEAR



TUNING PROCEDURES

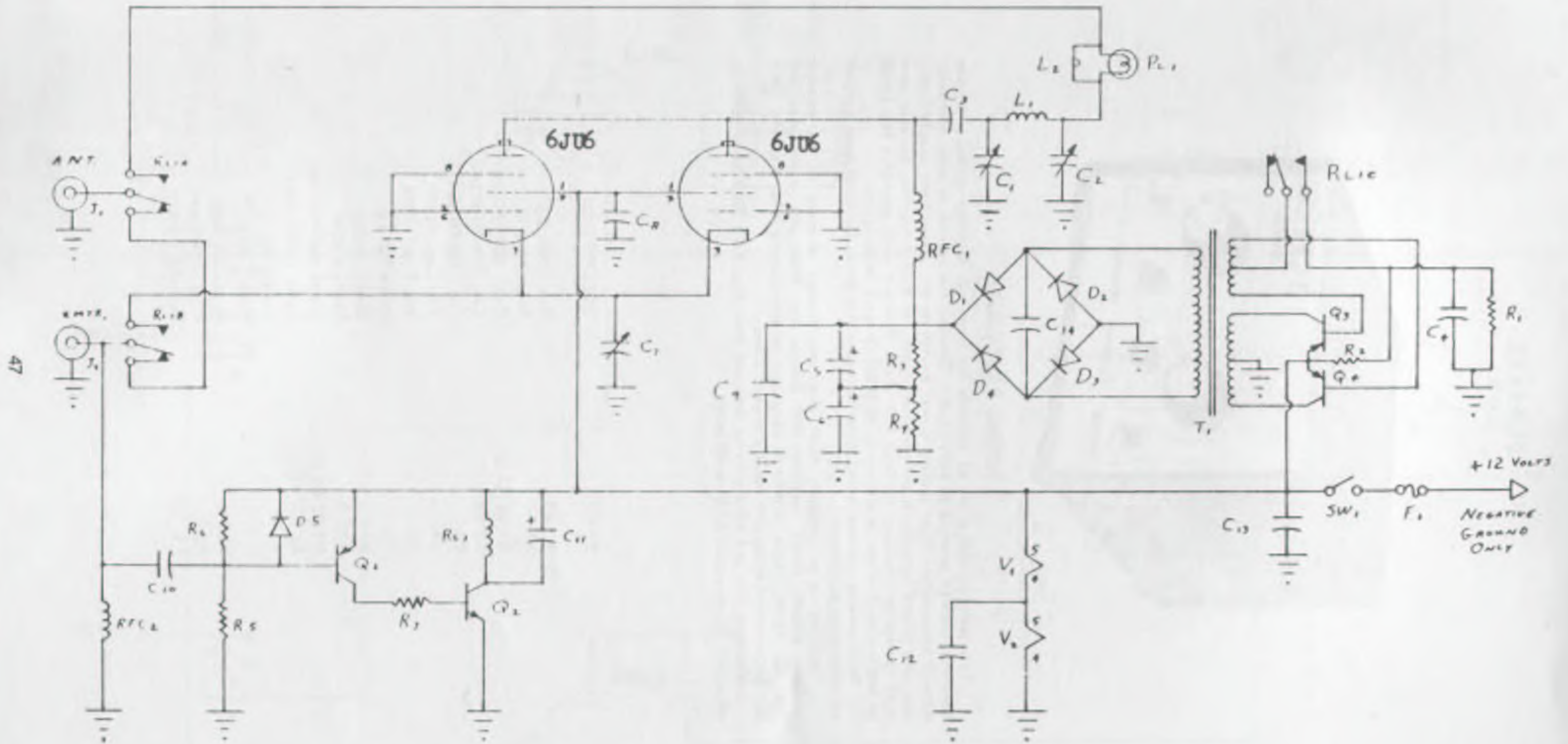
There are 3 tuning controls in the Linear. They are plate tune, antenna load, and input tune. In the center slot of the right side of your Linear, you will notice two screwdriver adjustments. The adjustment toward the front of the Linear is the load control and the adjustment toward the back is the plate tuning.

Turn power switch on, allowing 30 to 45 seconds to warm up. Key the transmitter by depressing the push-to-talk switch. Adjust the plate tune, input tune and load control for maximum brilliance of bulb. Readjust the plate tune for maximum brilliance. Decrease the load control slightly. The amplifier is now ready for operation. You must peak and repeak for maximum brilliance.

This unit (Kris 200M) normally uses a 20 amp fuse. If more than 3 watts of drive are used, it will usually be necessary to replace fuse with a 25 amp or even a 30 amp.

SYMBOL	DESCRIPTION
R5	Resistor, 15K $\frac{1}{2}$ Watt
R6	Res. 330 Ohm $\frac{1}{2}$ Watt
R7	Res. 3.3K $\frac{1}{2}$ Watt
R3 R4	Res. 330K $\frac{1}{2}$ Watt
R2	Res. 3 Ohm 7 Watt
R1	Res. 50 Ohm 10 Watt
C3 C14 C9	Cap. .001MFD 3K
C8 C13	Cap. .001MFD 1K
C10	Cap. 15 UUF 500V
C5 C6	Cap. 10MFD 450V
C11	Cap. 100MFD 15V
C4	Cap. 10MFD 25V
C1	Var. Cap. 156-4-1
C7	Trimmer 463
C2	Trimmer 304
T1	Transformer TW-15-2319
RFC1	Choke 8.2UH
RFC2	Choke 100UH
L1	Tank Coil
Q1	Transistor 2N3702
Q2	Transistor 2N696
Q3 Q4	Transistor 2N277
D5	Diode 1N3064
D1 D2 D3 D4	Diode 1500PIV-1 Amp
RL1	Relay 3PDT 12V
F1	Fuse 20 Amp
PL1	Pilot Light Red

KRIS 200M LINEAR SCHEMATIC



KRIS 200B



TUNING PROCEDURE

Turn unit on and allow 45 seconds for warm up. Connect antenna to coax connector marked antenna on back of unit. Connect transmitter to coax connector marked transmitter. When turning power switch to on, green light should light. Key unit on and tune Drive control for maximum red bulb indication. Quickly tune load control for maximum red bulb indication. Recheck each control a few times to make sure they are at maximum, as there is some interaction.

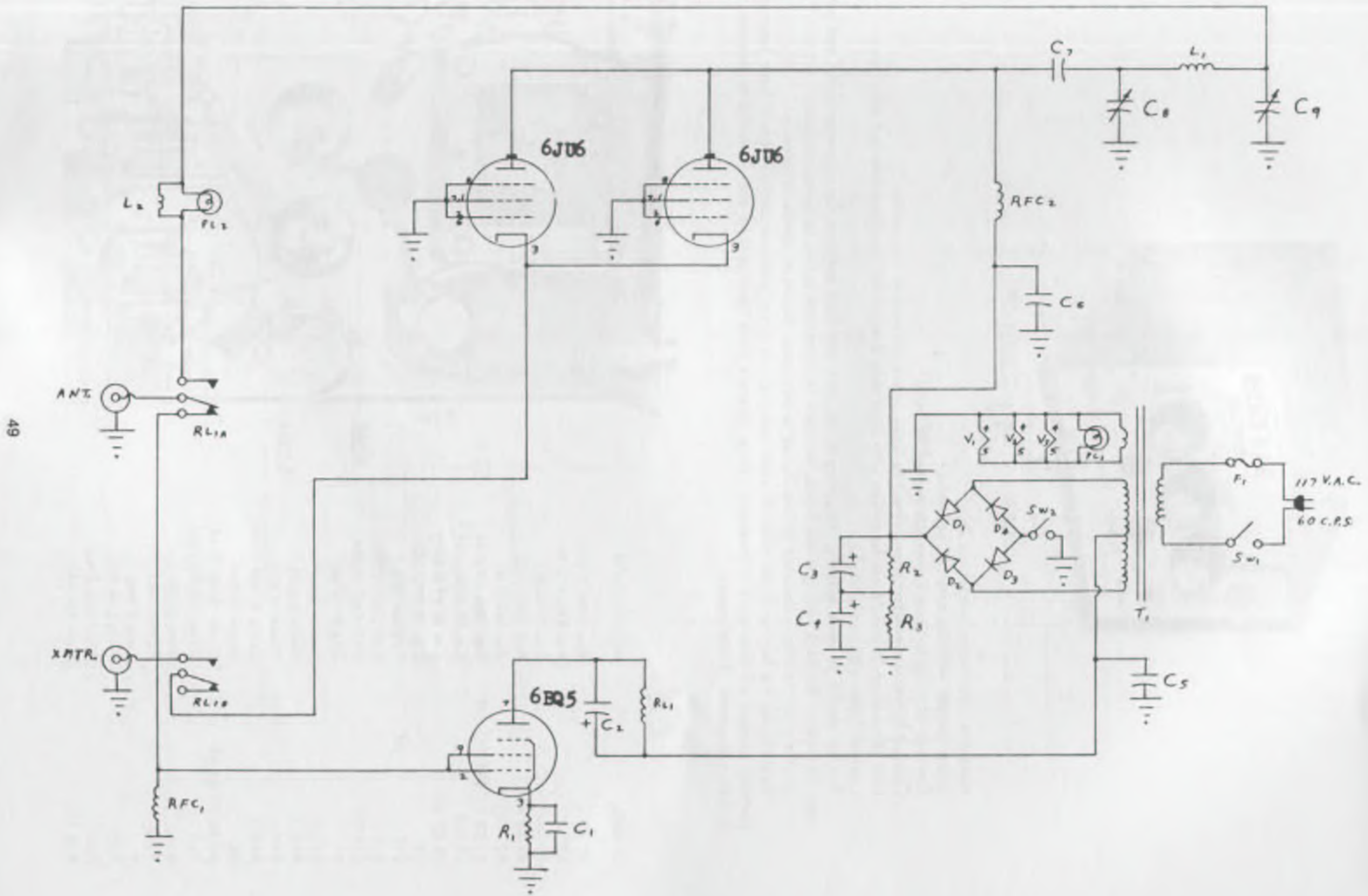
It is wise to recheck tuning often to insure that knobs have not been bumped off resonance accidentally.

Retuning is an absolute must when any change is made in the antenna system, antenna itself, feedline, SWR Bridge, etc. When unit is unpacked and used for the first time, it may be necessary to seat keying relay properly. This can be done by keying unit rapidly several times.

Maximum life and efficiency is obtained from your Kris 200B when drive is adjusted for an output of 60 to 80 watts.

SYMBOL	DESCRIPTION
R2 R3	Res. 100K 2-20
R1	Res. 560-2-10
C1 C6 C7 C5	Cap. .001MFD-3K
C3 C4	Cap. 30MFD 500V
C2	Cap. 10MFD 50V
C9	Var. Cap. V2393
C8	Var. Cap. V2394
T1	XFMR 93P4A
RFC 1	Choke 192UH
RFC 2	Choke 8.3UH
D1 D2 D3 D4	Diode 1500PIV-1A
RL1	Relay DPDT 115V
F1	Fuseholder
F	Fuse 5 Amp
PL2	Pilot Lite Red
PL1	Pilot Lite Green
PB 1-2	Bulb BB 6-8V

KRIS 200B LINEAR SCHEMATIC

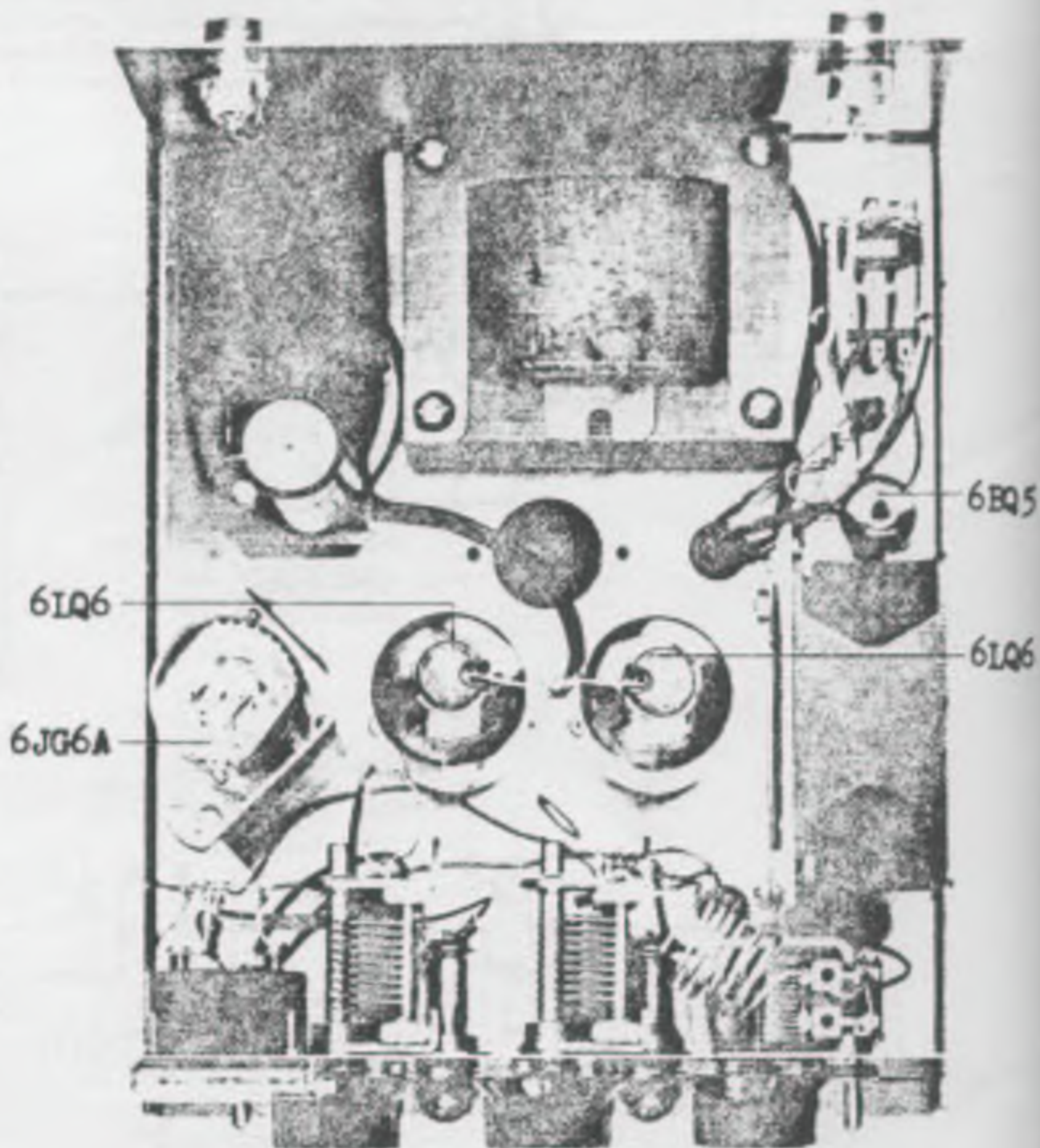




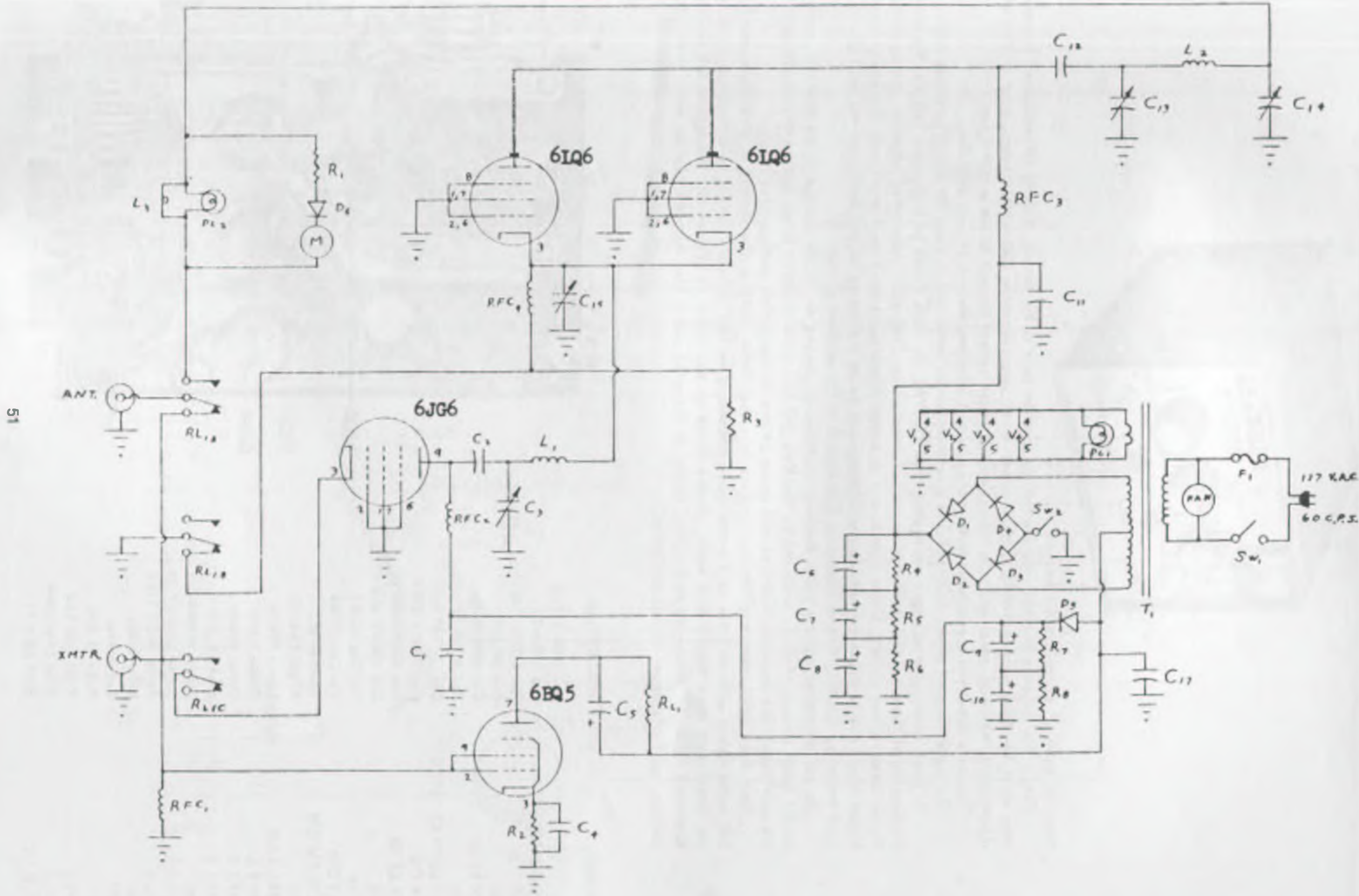
INSTALLATION AND TUNE UP

Adequate ventilation a must.
 Allow proper warm up time (45 seconds)
 Connect antenna to Coax Connector marked Antenna.
 Connect Driver transmitter (transceiver) to Coax connector marked transmitter.
 Unit (Kris Mach 3) should not be driven with more than 3 watts for maximum life and efficiency.
 Load unit into a 50 ohm antenna.
 Tuning should be done quickly, adjusting drive, tune and load controls for maximum meter and output light indication. Recheck tuning a few times, as there is some interaction between controls.
 It is a must that these controls be kept tuned to maximum. Maximum means resonance.
 Rechecking the tuning at the start of each operation is wise, because controls could have been accidentally bumped off resonance or maximum. Once controls have been peaked and re-peaked to maximum, no further adjustment is necessary.

SYMBOL	DESCRIPTION
R7 R8	Res 100K 1/2-20
R1	Res 82K 1/2-10
R3	Res 1K-2-20
R4 R5 R6	Res 100K-2-20
R2	Res 560-2-10
C1 C2 C4 C11 C12 C17	Cap .001 MFD-3K
C9 C10	Cap 10 MFD 450V
C6 C7 C8	Cap 30 MFD 500V
C5	Cap 10 MFD 50V
C15	Trimmer 463
C14	VAR CAP V2393
C13 C3	VAR CAP V2394
T1	XFMR 93P4A
RFC 4	Choke 100UH
RFC 2	Choke 3.6UH
RFC 1	Choke 192UH
RFC 3	Choke 8.3UH
D6	Diode 1N3064
D1 D2 D3 D4 D5	Diode 1500PIV-1A
RL1	Relay 3 PDT-115V
M	Meter 0-500
F1	Fuseholder
F	Fuse 5 Amp
PL2	Pilot Lite Red
PL1	Pilot Lite Green
P.B. 1-2	Bulb BB 6-8V



KRIS MACH 3B LINEAR SCHEMATIC



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SPECIFIC TUNE-UPS

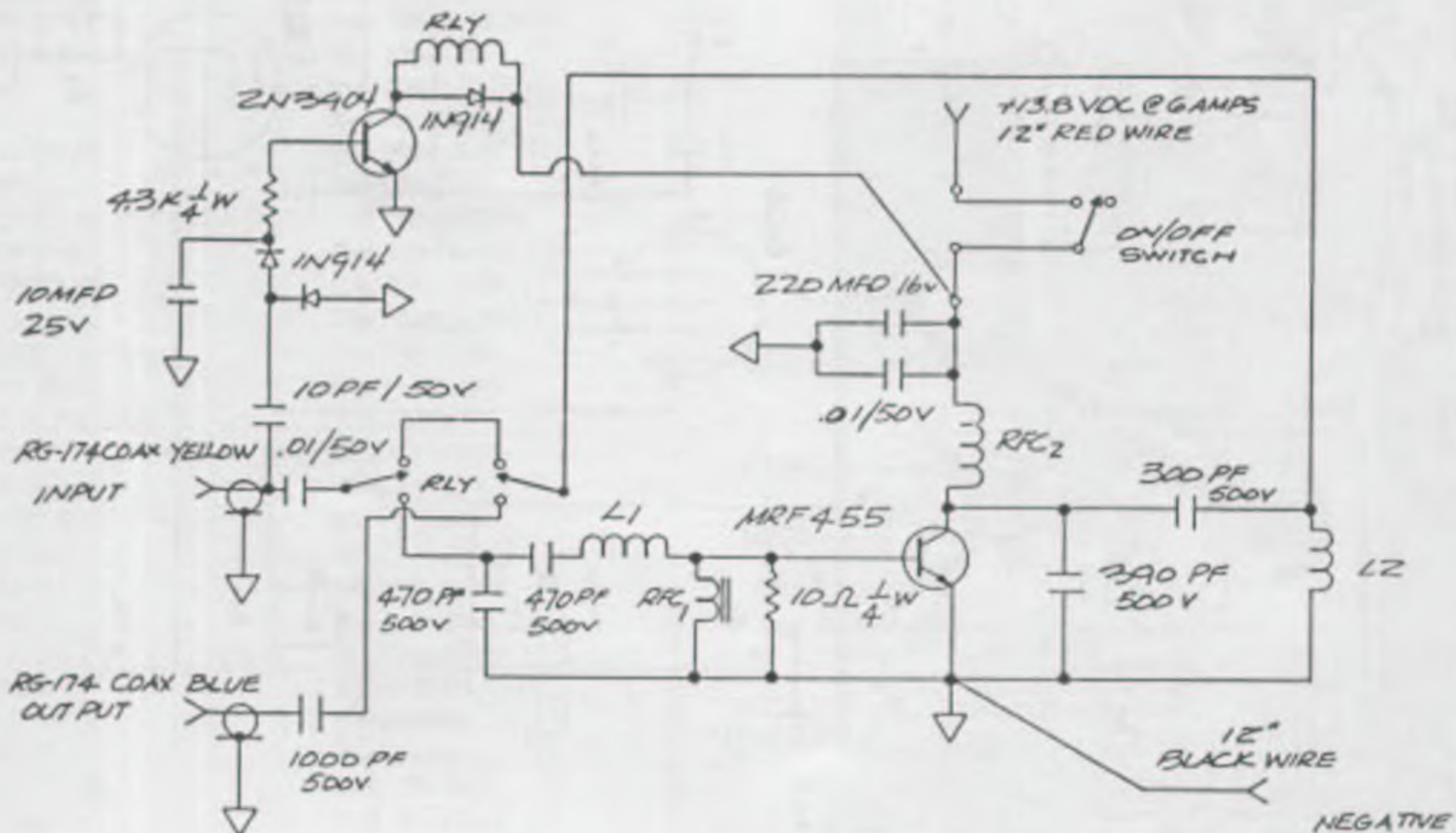
Colt 357; (NOT A HANDGUN!); but a new 40 Channel mobile (PLL-C5121).
Another of the new units that have push button UP/DOWN channel selection.
Tune-up; RV1-RX lights, RV2-Sq Rng, RV3-AMC.
(Defeat for AMC is C61, 3.3Mf/25V). RX: HT101, HT102, HT103, HT104, and HT105. C43, 1Mf/10V can be increased in value for NB performance gain. TX: LX18, LX19, and LX20.

ANTLAFIER

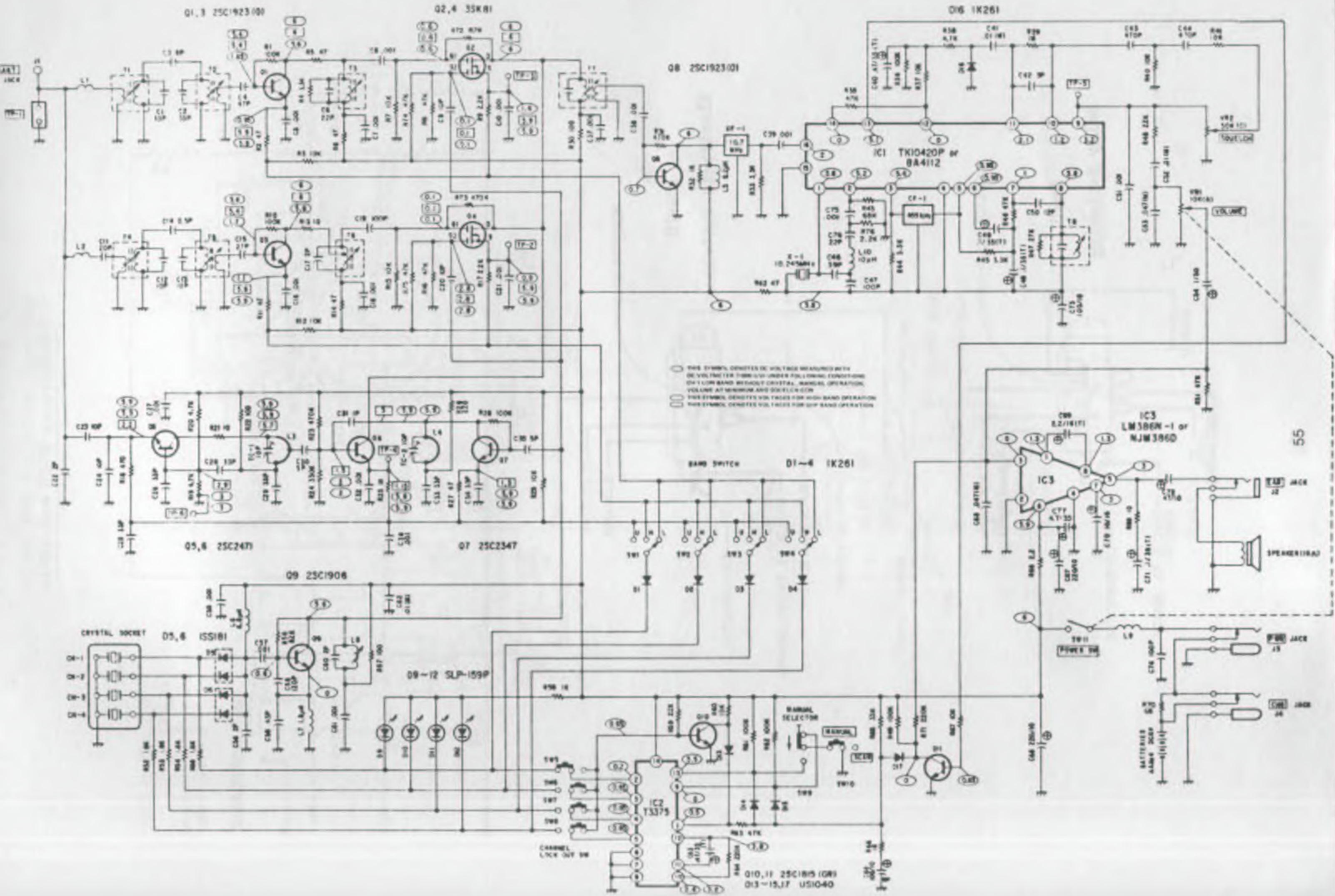
This is a 'NEW' product on the "market". Be WARNED; don't drive with over 5W ----- this includes the swing, not deadkey wattage. It has a habit of smoking if overworked. A good note however is that "source" said, "TVI was exceptional"! (Specifications and Skem. below).

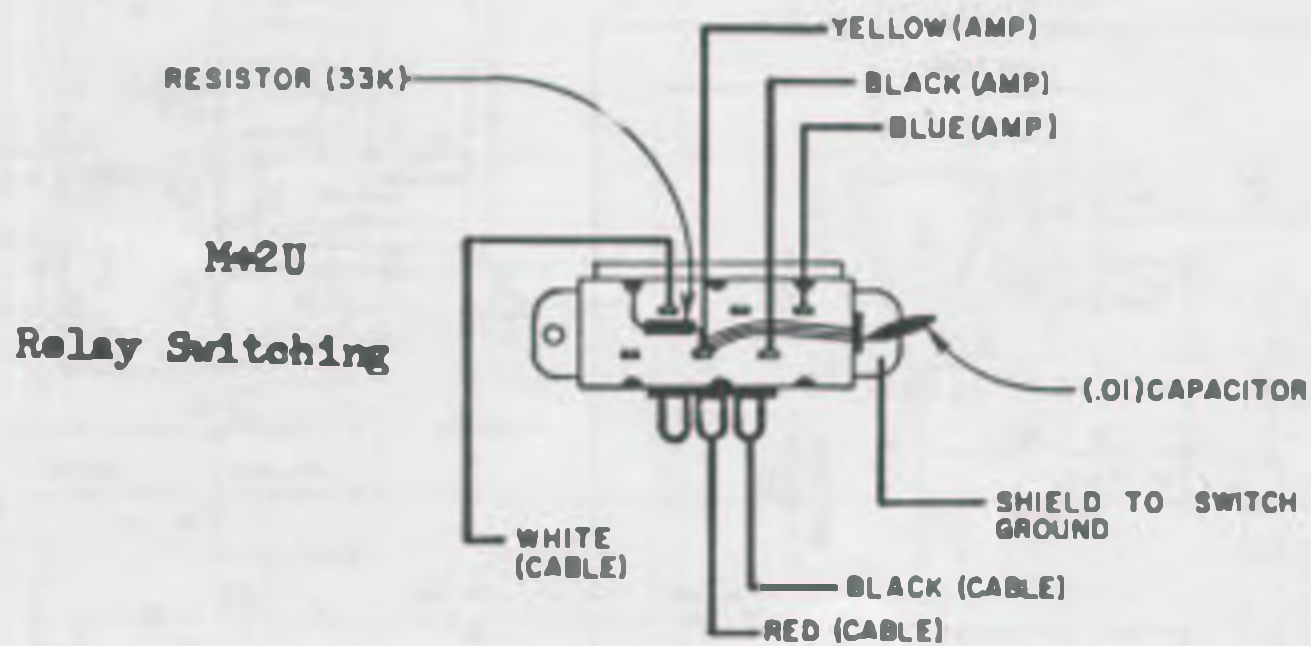
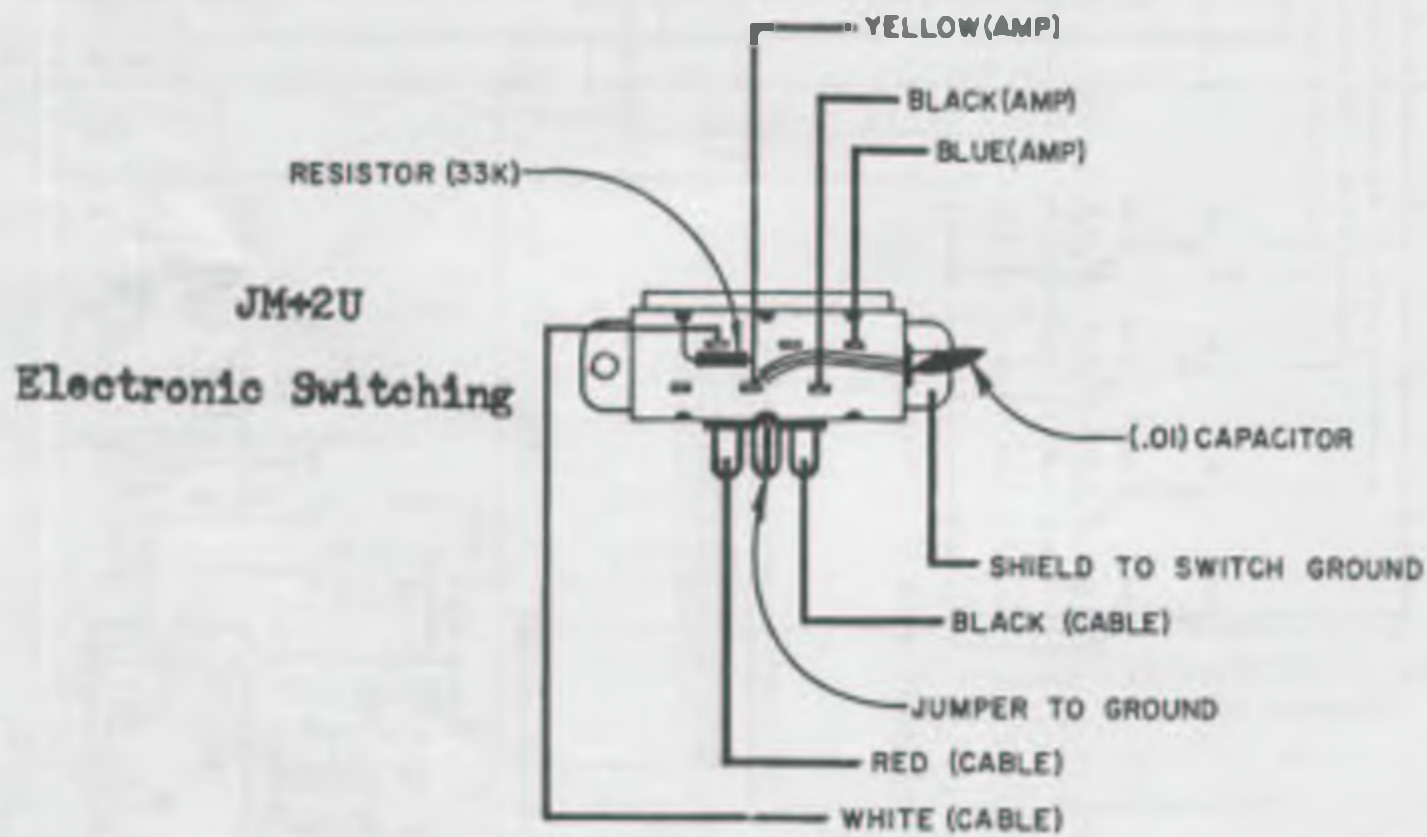
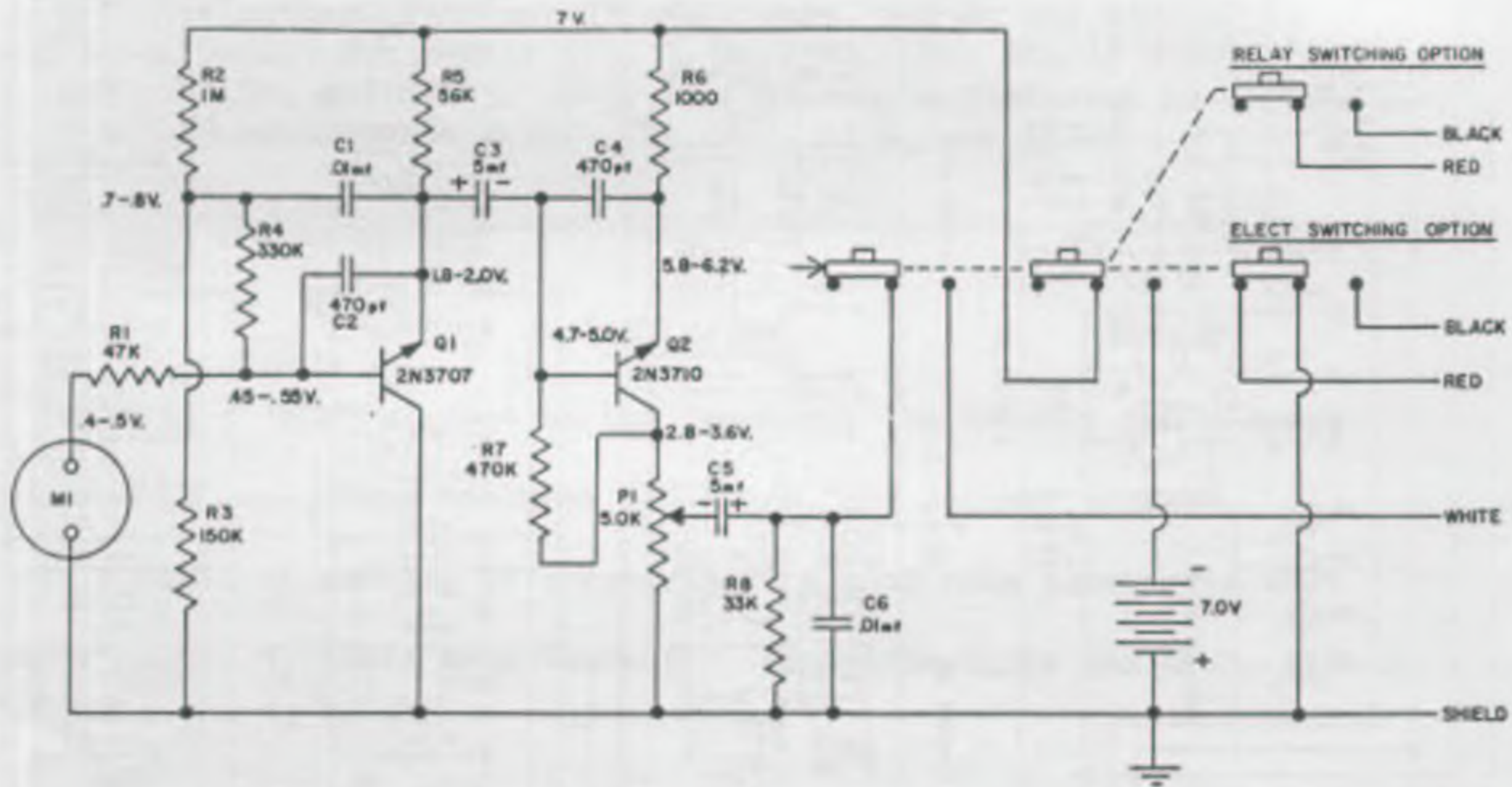
SPECIFICATIONS

POWER OUTPUT:	60-80 Watts / 40-50W Optimum for best AM modulation
DRIVE POWER:	5 Watts Max / 3 Watts AM Optimum 6 Watts SSB Optimum
MODES:	AM/SSB Automatic delay for SSB
RF GAIN:	13DB Min.
EFFICIENCY:	55%
DC POWER REQUIREMENT:	13.8 VDC @ 7 AMPS. 18VDC Max
FREQUENCY RANGE:	26 - 30 MHz adjustable
MAX SWR ALLOWED	3:1

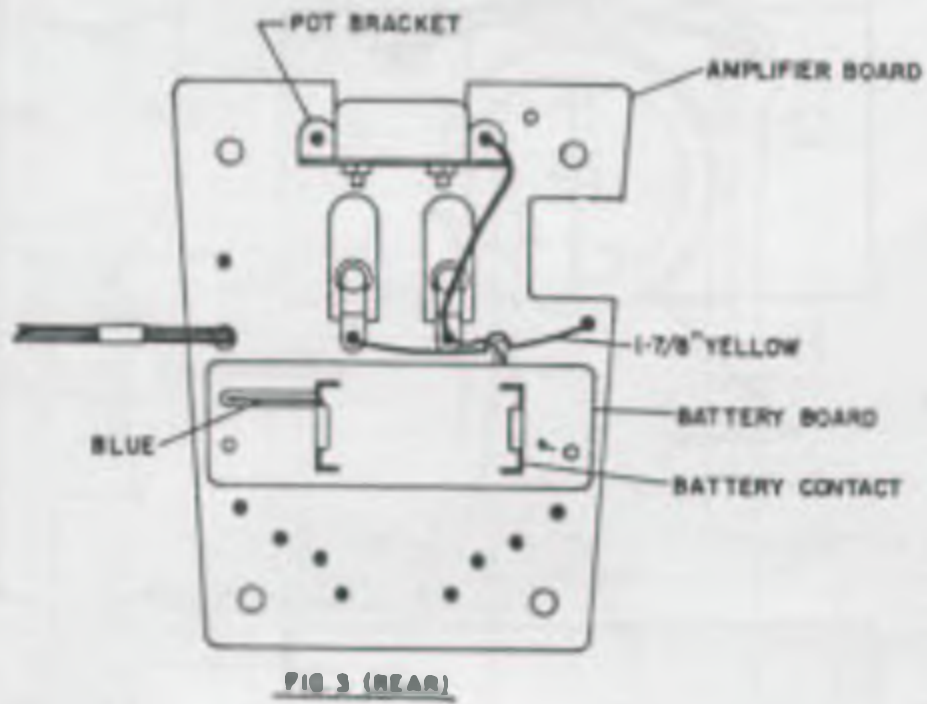
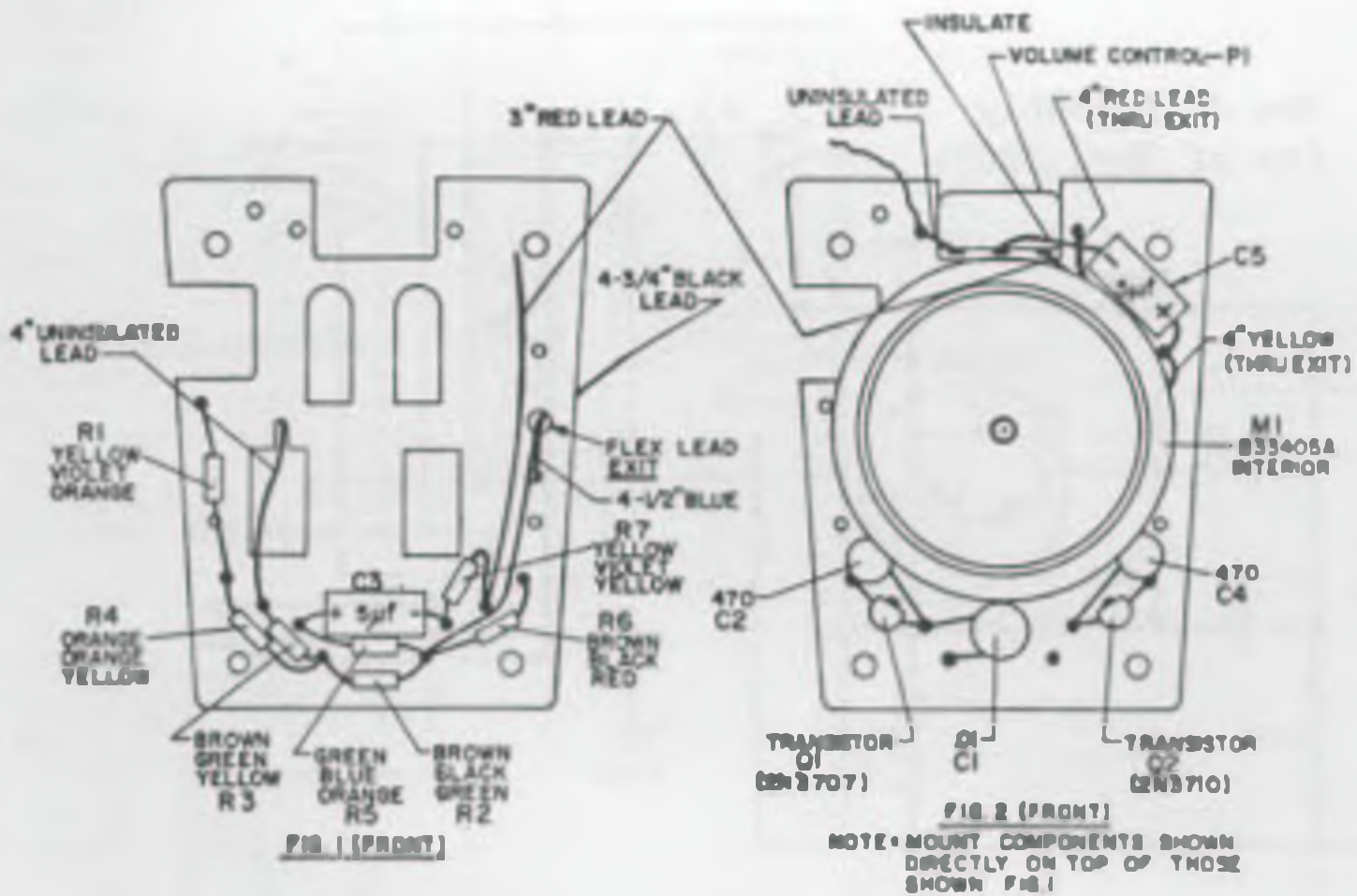


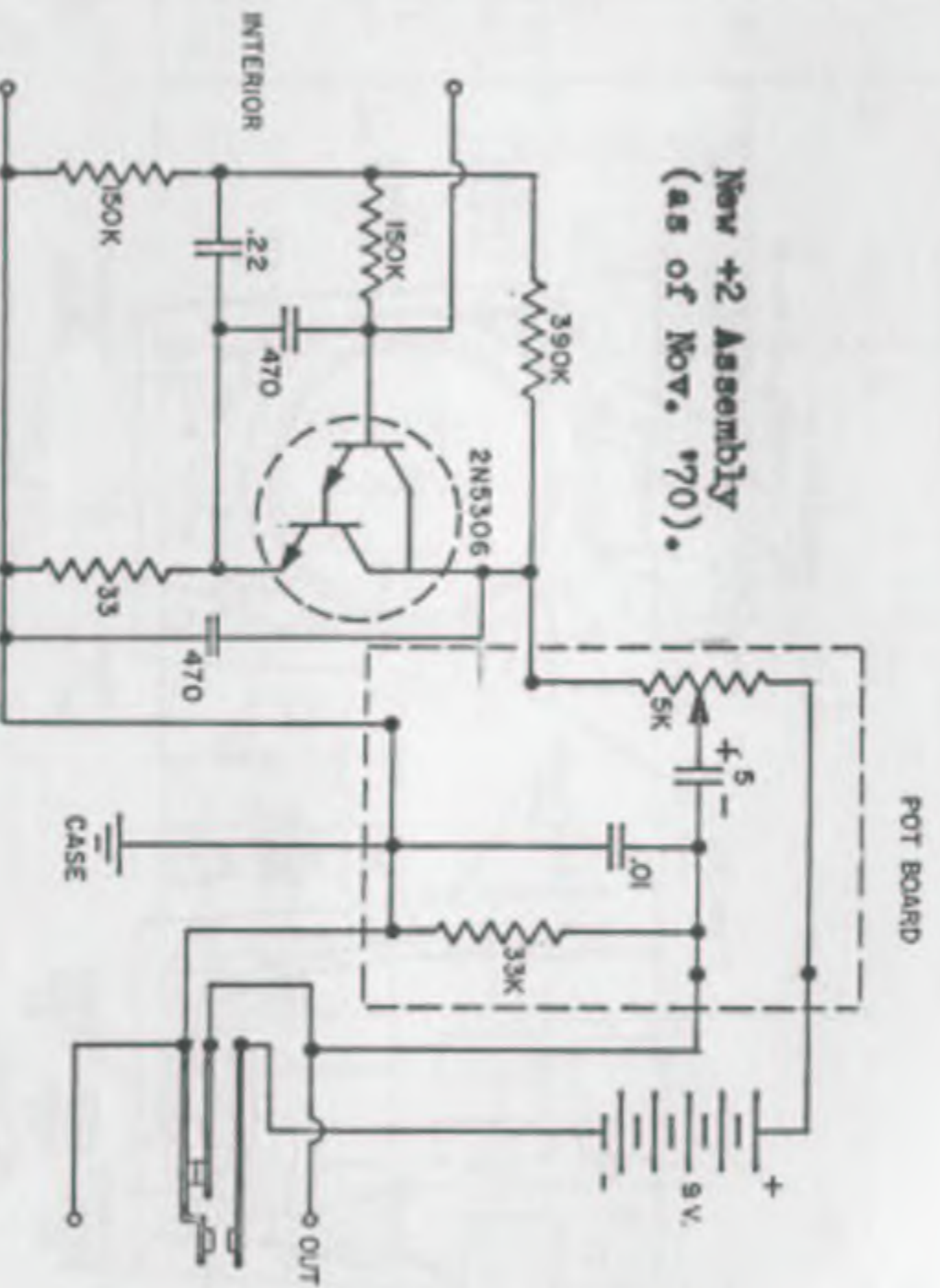
REALISTIC PRO-26 - SCHEMATIC/VOLTAGE READINGS



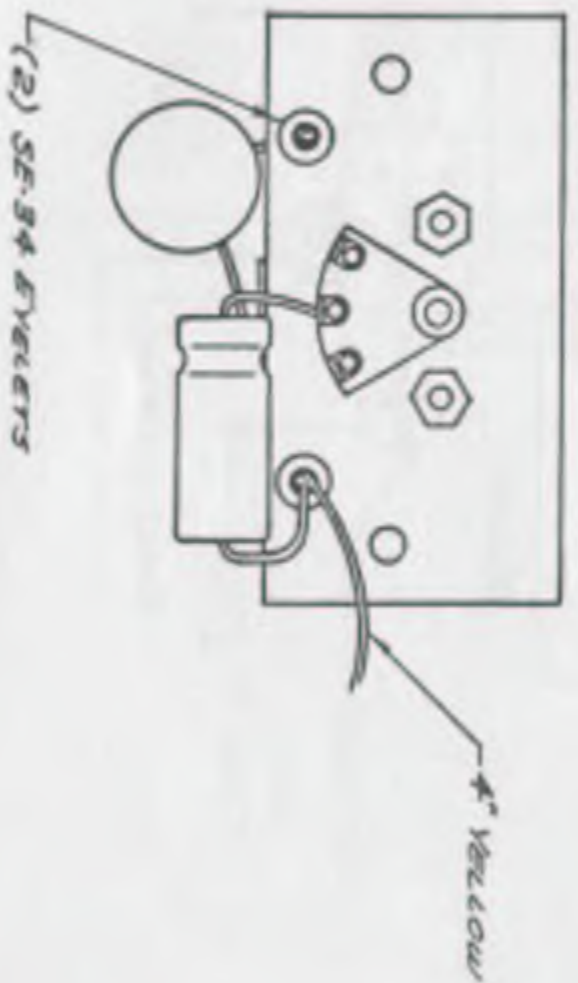
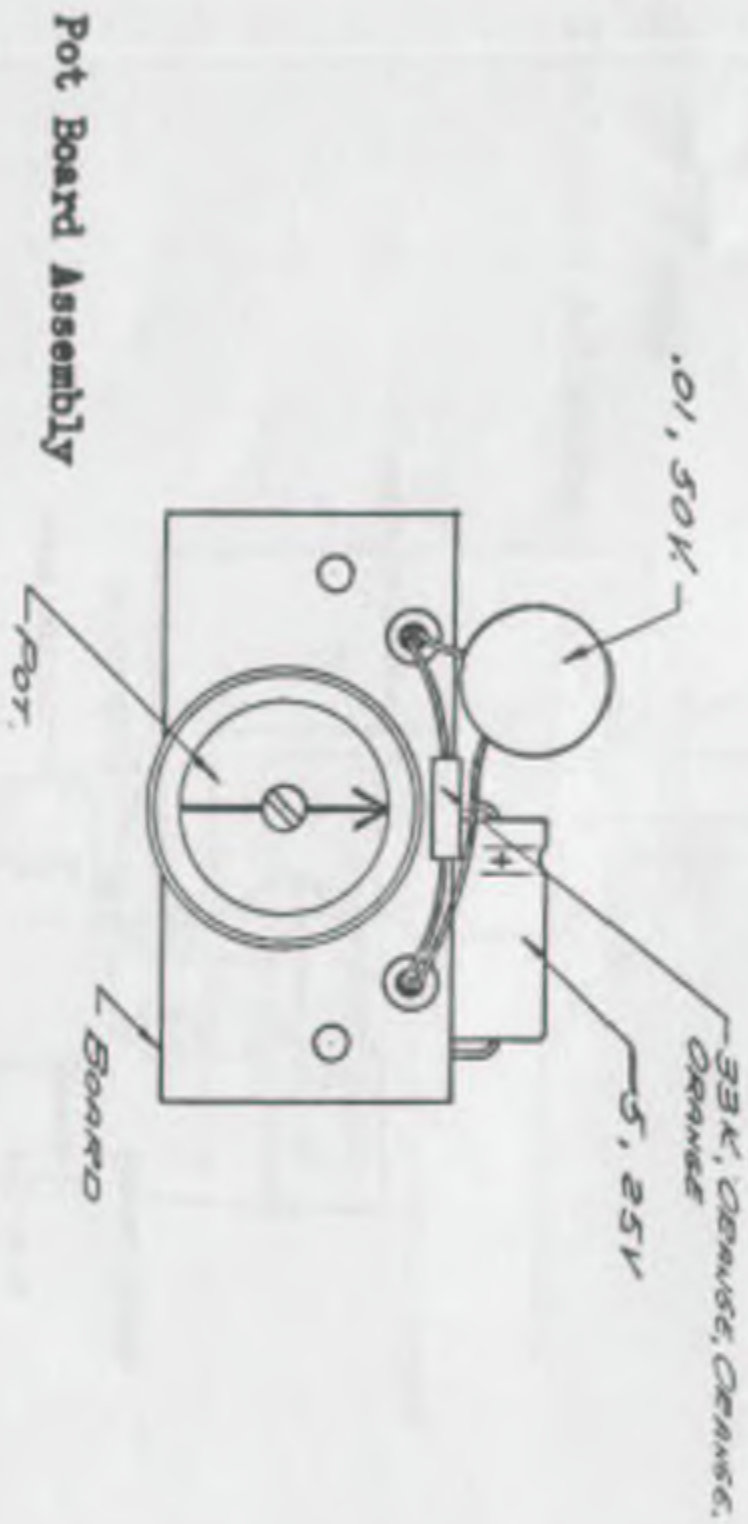


TURNER M+2 Amplifier Assembly

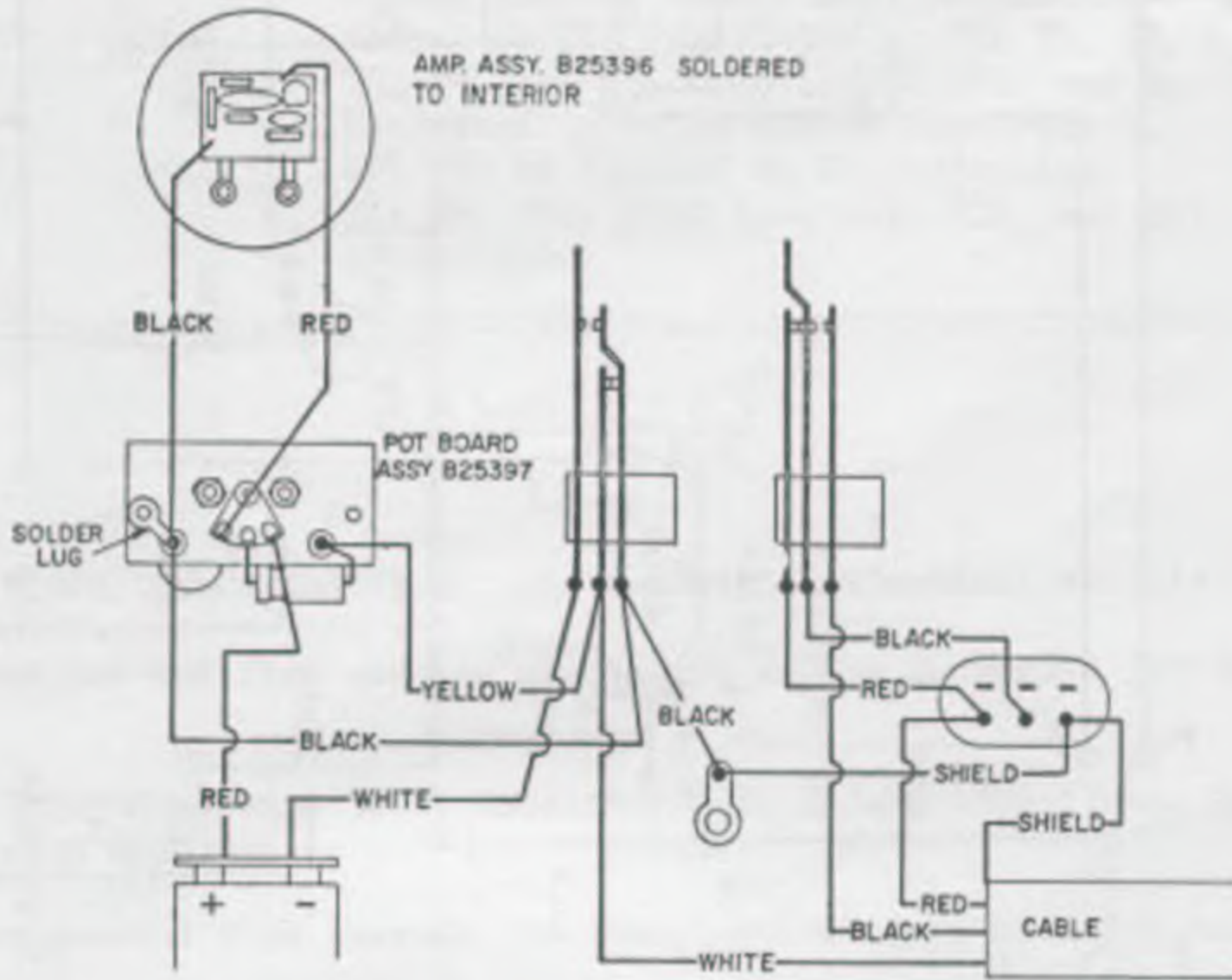
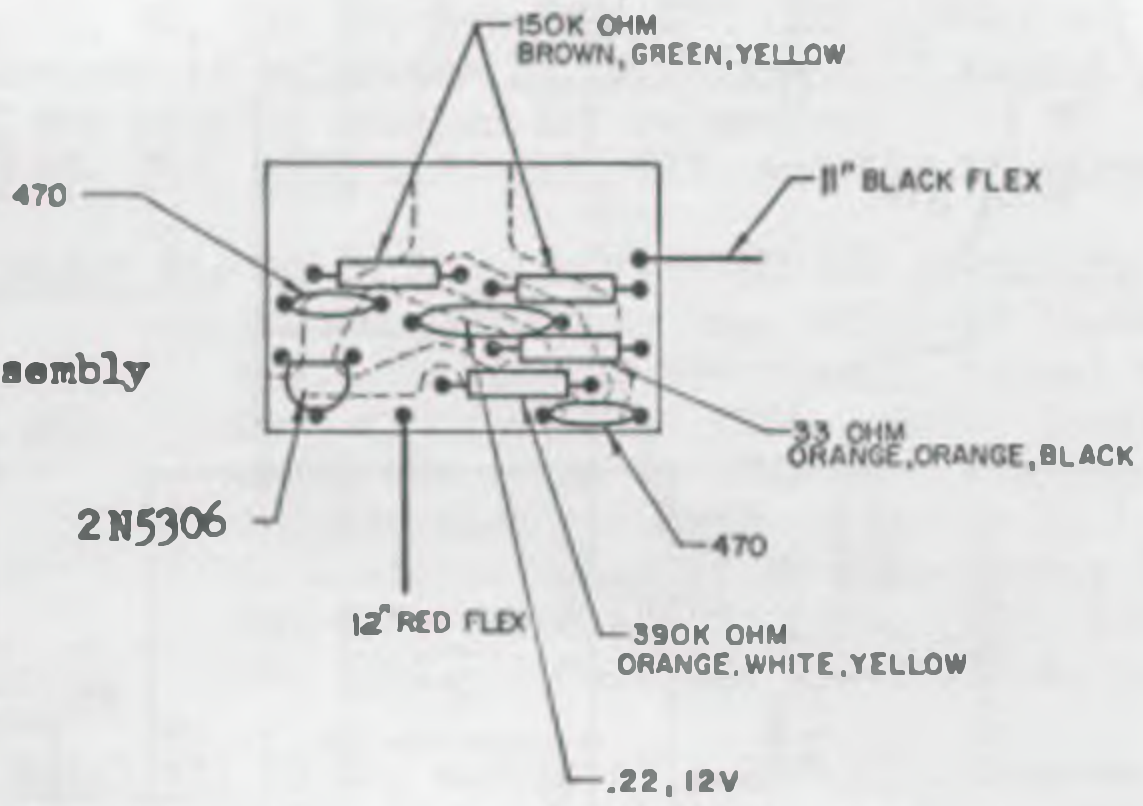




Nov +2 Assembly
(as of Nov. '70).



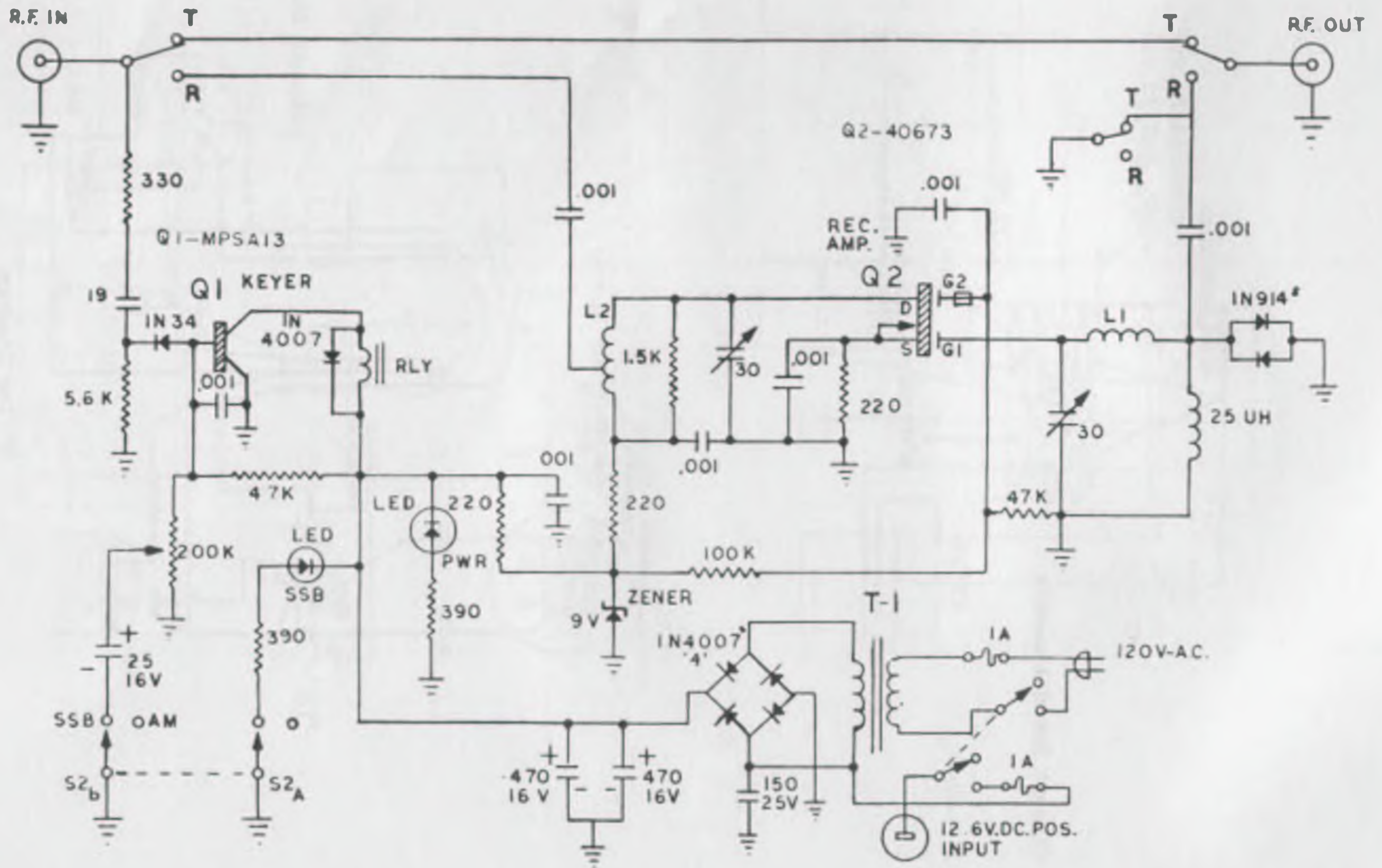
Circuit Board Assembly



Wiring Diagram

ELKHART - RX AMPLIFIER

SCHEMATIC



09

SPECIFIC TUNEUPS

CAUTION: DO NOT MAKE ANY COMPONENT CHANGES IN THE RF TRANSMIT SECTION OF K40 UNITS.....

K40, Model 6; 40 Ch. mobile. (PLL-LC7131). Tune-up; RV1-RX lights, VR2-Sq Rng, VR3-AMC...defeat is C94 (1Mf/16VDC).
RX: T1, T2, T3, T4, and T5. C22 (1Mf/25VDC) may be increased in value for NB improvement if needed.
CF2 can also be doubled for rejection.
TX: T9, T10, ALSO L10, L11, L12, and L13 if variable.

K40, Production Model #1; 40 Ch. mobile (PLL-LC7130 or LC7131).
Tune-up; RT201-Sq Rng, RT202-RX lights, RT203-TX lights, RT401-AMC...defeat is C417 (1Mf/50VDC). C226...NOTE, double-check the value as 47Mf on the schematic doesn't seem correct? Whatever it is change to a higher value if NB improvement is needed.
RX: L201, L202, L203, L204, L205, L206, L207.
TX: L101, L102, L103, L104, TT004, and TT005.

K40, Production Model #2; 40 Ch. mobile (PLL-LC7131). Tune-up;
RV101-Sq Rng, RV102-RX lights, RV201-AMC...defeat is C213 (1Mf/50VDC), RV202-TX lights.
RX: L101, L102, L103, L104, L105, L106, and L107. TX: L303, L304, L305, and L306.

K40, Production Model #3; 40 Ch. mobile (PLL-LC7131). Tune-up;
RV1-RX lights, VR2-Sq Rng, VR3-AMC...defeat is C94 (1Mf/16VDC). RX: T1, T2, T3, T4, and T5. C22 (1Mf/25VDC) may be increased in value for NB improvement.
CF2 can be doubled up for rejection.
TX: T9, T10; ALSO L10, L11, L12, and L13 if variable.

T A L K B A C K

by E.W.

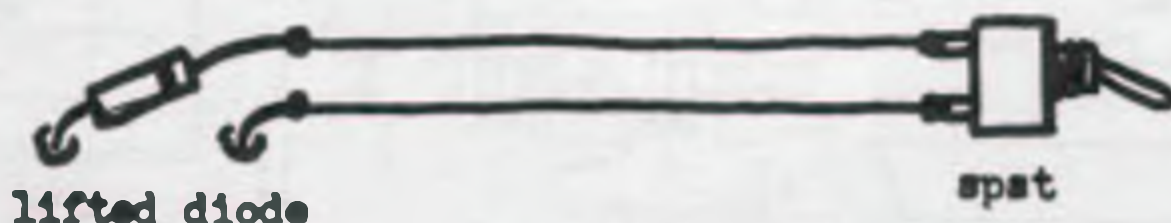
Superstar 360FM, Cobra 148GTL-DX, and associated identical chassis:

D80; remove one end from chassis and insert switch in series for talk back.

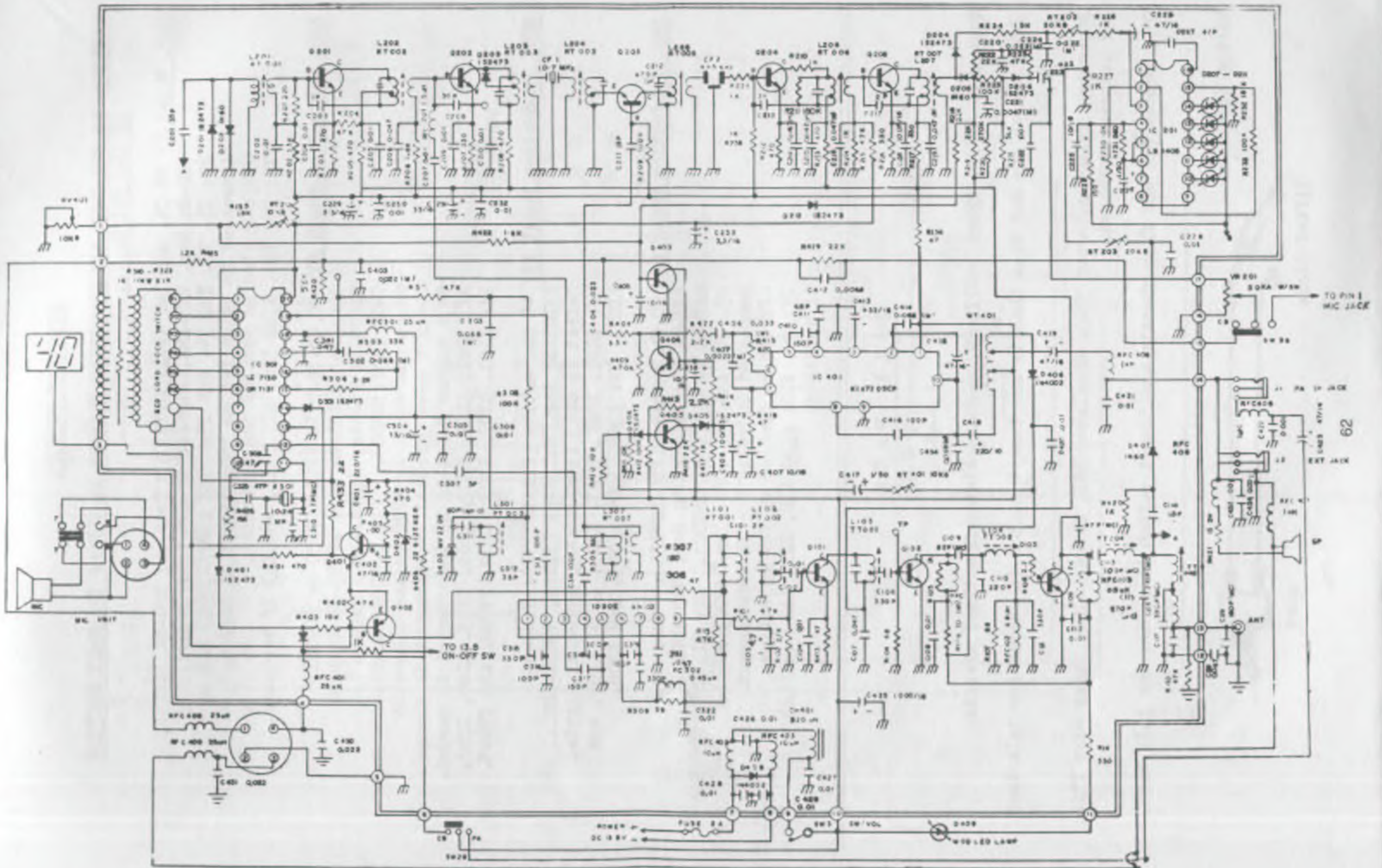
Superstar 3600; Superstar 3900; Excalibur SSB; Galaxy 2100; Texas Star 2100; and associated chassis:

D90; remove one end from chassis and insert switch in series for talk back.

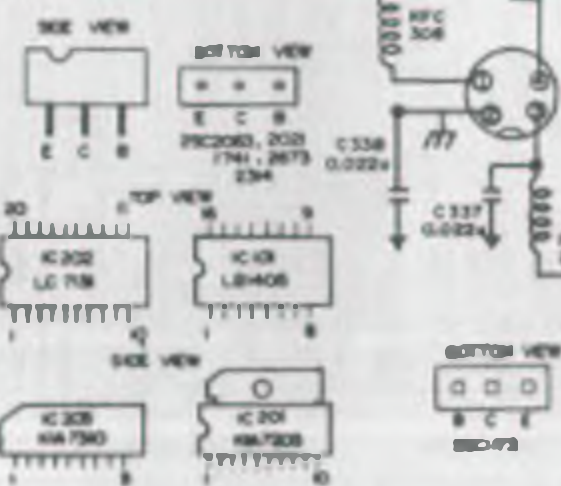
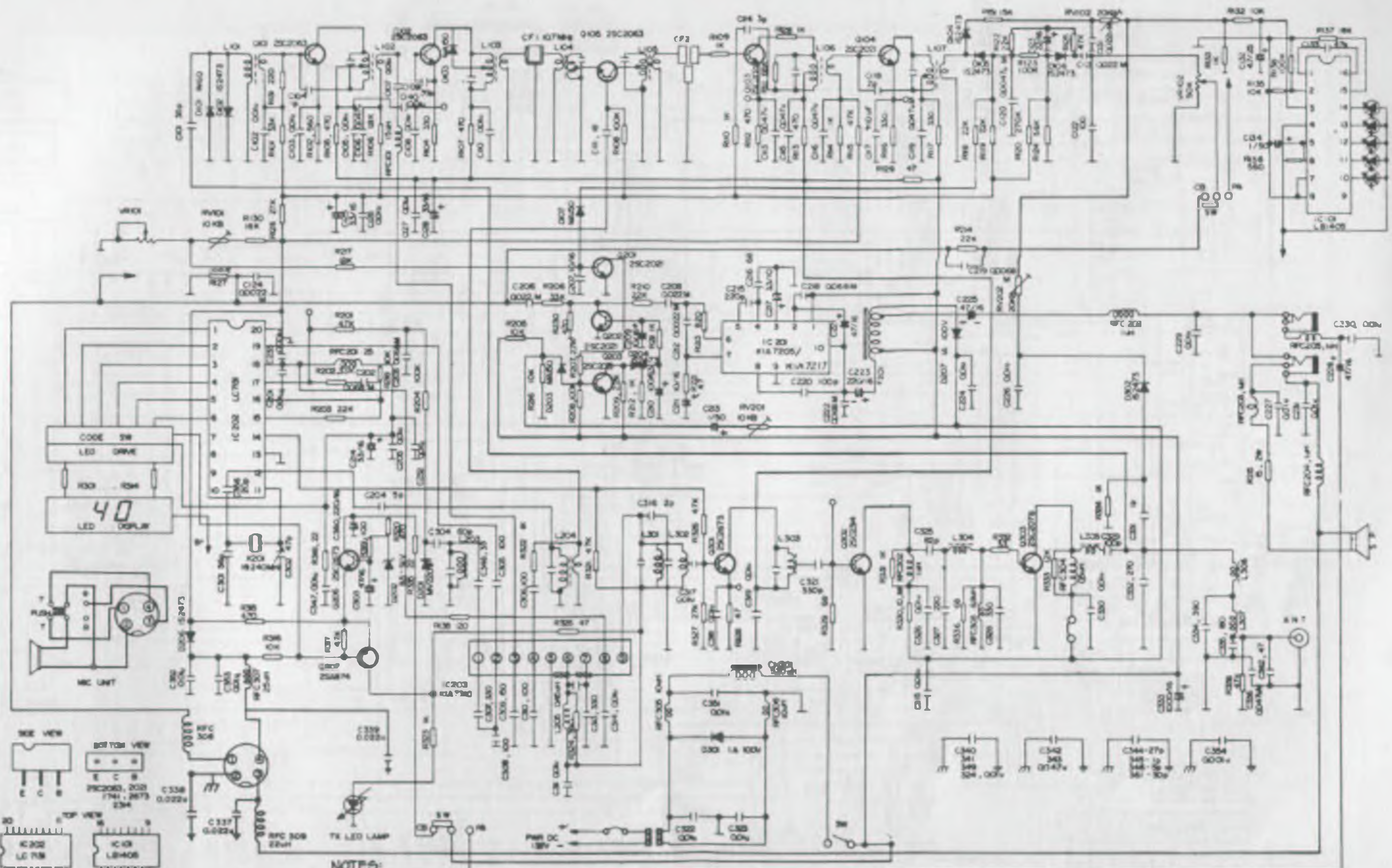
Wiring diagram:



K40; PRODUCTION MODEL #1 SCHEMATIC



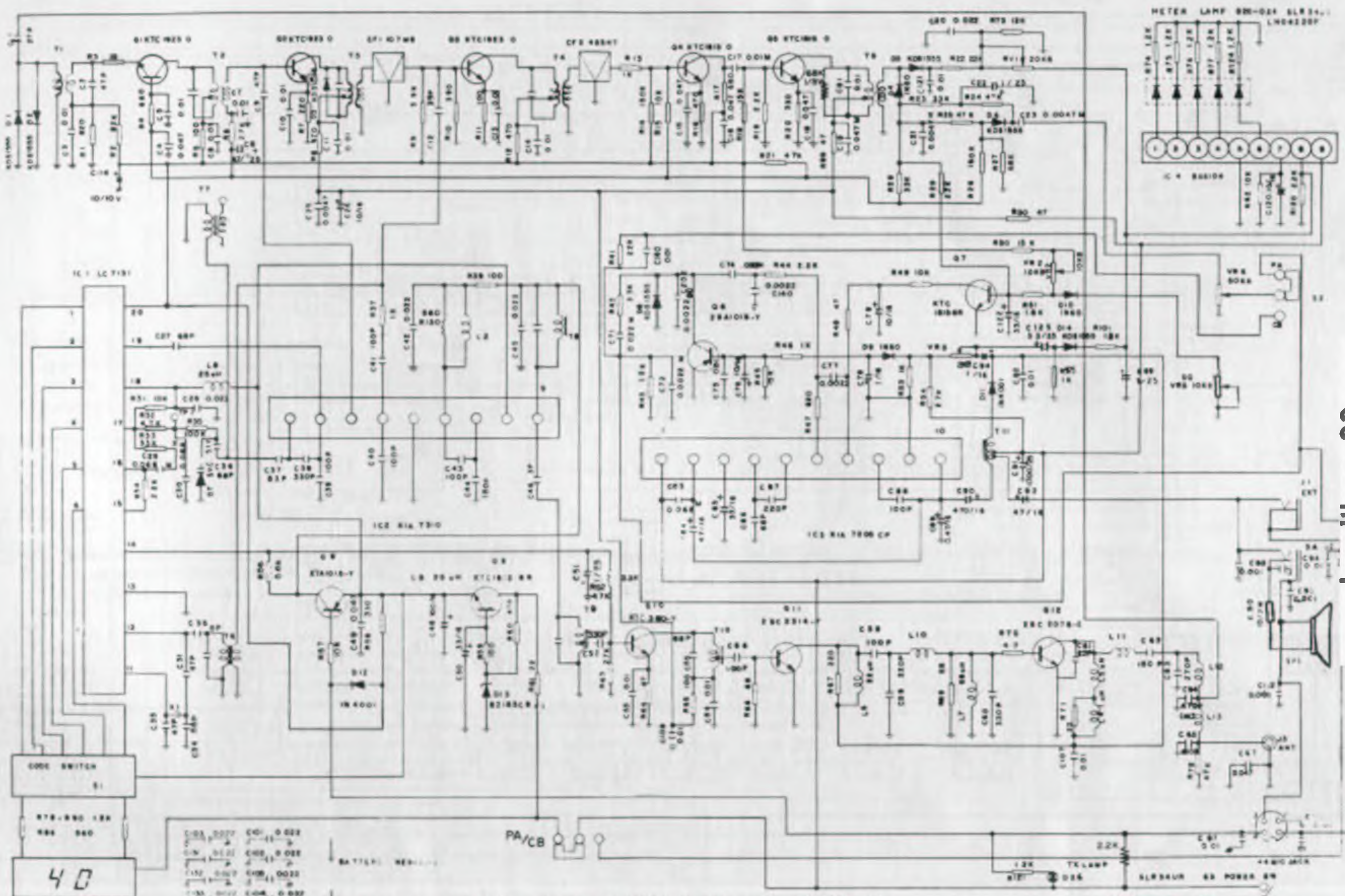
K40; PRODUCTION MODEL #2 SCHEMATIC



- NOTES:**
- R 151 ACROSS L 101 MUST BE 250 OHM FOR RECEIVER LOCK-UP.
 - CHANGE C117 047 UP TO 10 UF FOR RECEIVER LOCK-UP.

- MUST HAVE AT LEAST (2) 022UF CAPS ON BOTTOM OF P.C. BOARD TO FRAME ONE .022UF FROM EMITTER OF Q309 ON P.C. BOARD TO FRAME. ANOTHER FROM GROUND LWR OF L-309 TO FRAME.
- C 219 MUST BE 220PF TO 470PF IF UNIT ONLY HAS 120PF ADD ANOTHER 120PF ON BOTTOM OF P.C. BOARD ON AUDIO IC PINS 4-B OR CHANGE 120PF TO 220PF.

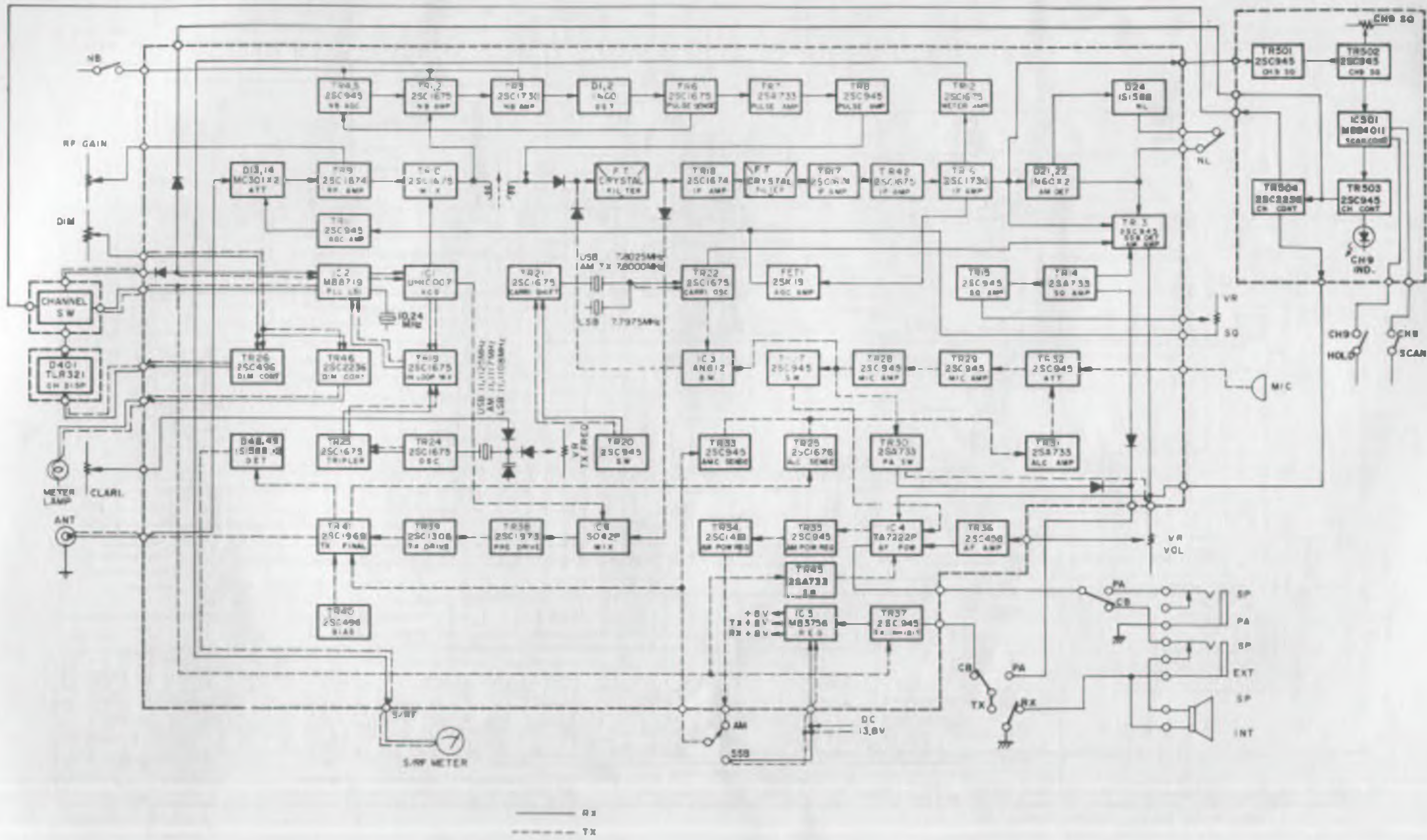
K40; PRODUCTION MODEL #3 SCHEMATIC



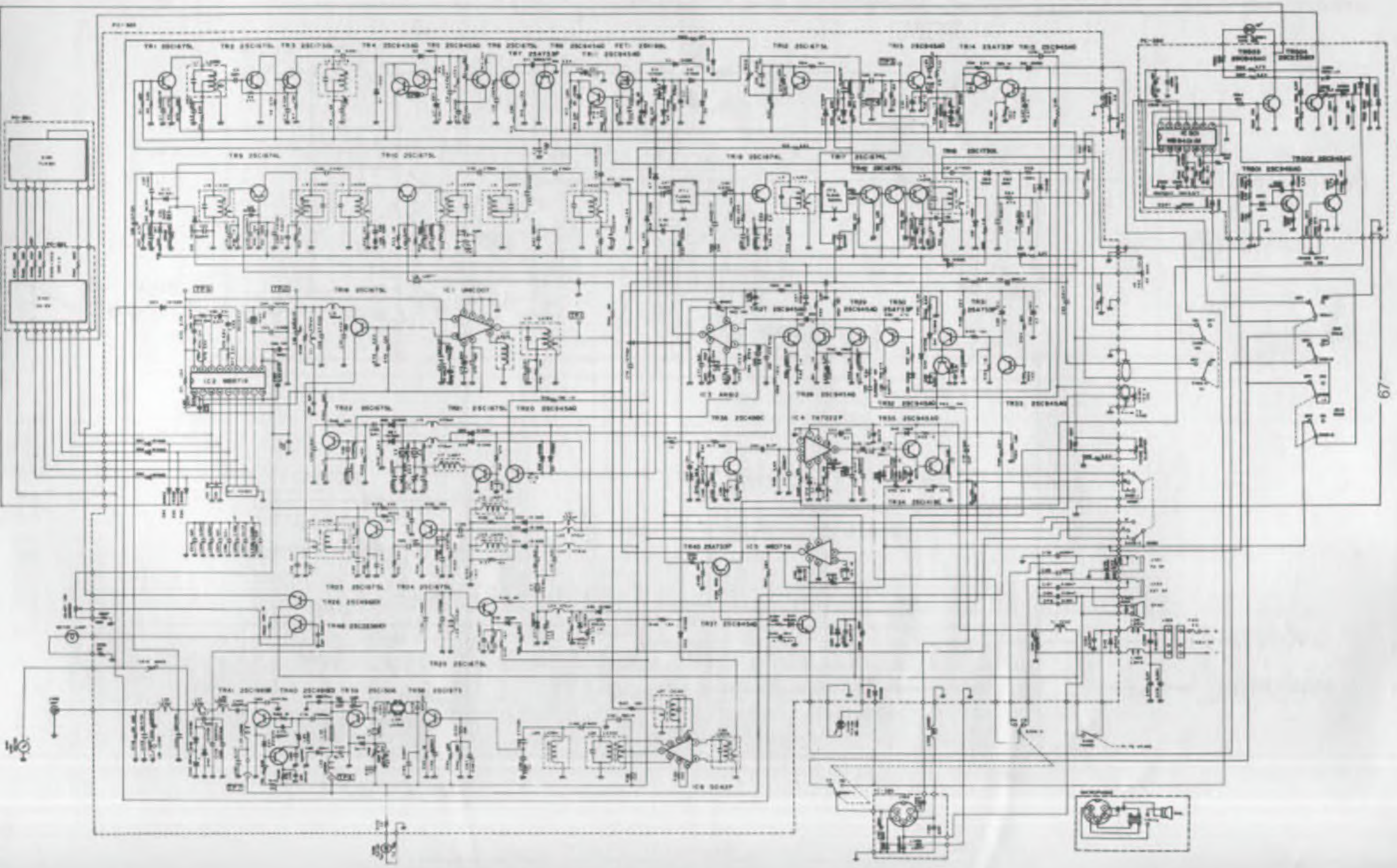
C1	0.001	C11	0.001
C2	0.001	C12	0.001
C3	0.001	C13	0.001
C4	0.001	C14	0.001
C5	0.001	C15	0.001
C6	0.001	C16	0.001
C7	0.001	C17	0.001
C8	0.001	C18	0.001
C9	0.001	C19	0.001
C10	0.001	C20	0.001

RECEIVER LOCK-UP: ADD 68K ACROSS THE PRIMARY OF T5.
 ADD A 100P CAP IN PLACE OF C18 FOR INCREASED AUDIO OUTPUT.

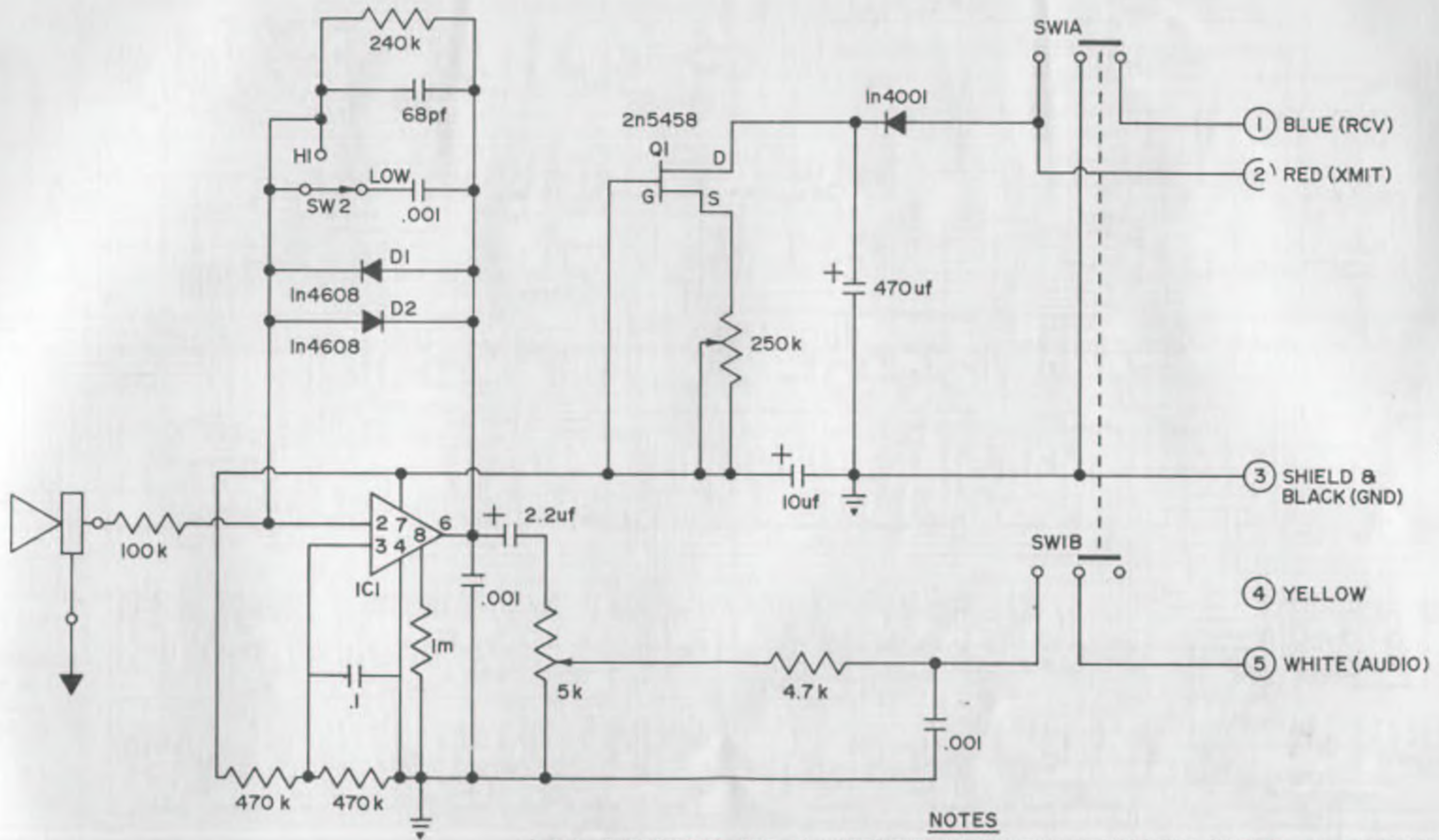
SBE LCMS-8 BLOCK DIAGRAM



SBE LCMS-8 SCHEMATIC



K40 SPEECH PROCESSOR MICROPHONE SCHEMATIC



NOTES

- 1) ALL CAPACITORS ARE IN MICROFARADS UNLESS OTHERWISE STATED ON DIAGRAM.
- 2) CENTER TERMINAL OF THE 250k POT MUST BE SET FOR 4.0 VOLTS D.C.

SECRET CB INDEX - VOLUMES 1 THRU 25

CODES: A - ALIGNMENT PROCEDURE; C - CONVERSION; FC - FREQUENCY CHART; M - MISCELLANEOUS INFORMATION;
S - SLIDE; SC - SCHEMATIC; T - TUNE UP.

	VOL/PG		VOL/PG		VOL/PG
MISCELLANEOUS:		BOWMAN		COBRA (cont.)	
<u>CONVERSION TIPS FOR</u>		CB555.....T-3/44		89GTL.....T-6/18	
ALL SSB RADIOS.....9/7		CB750.....T-2/43		132A-A.....S-1/28	
"A" CH MOD FOR "RC" CHANNEL		CB755.....T-14/44		132-B.....C-1/53	
ON PLL RADIOS.....9/16-17		CBH900.....C&T-3/44		132XLR..C-4/47;T-3/45;16/39	
MB8719 MOD....8/15;10/25-26		CB910.....C-11/41;13/58		C-19/52;S-10/45-46;15/15-17	
MB8719 w/11.1125 MOD..11/15		.....T-1/21;3/44		135-A.....S-1/28	
UPDATE.....14/11-12		CB920..C-14/43;T-1/21;14/43		135-B.....C-1/53;S-1/29	
MB8719 5KC DROP.....18/68		CB930....C-3/21;T-1/21;3/44		135XLR....C&S-4/38;10/43-46	
PLL 01A MOD.....9/15-17		CB950..C-5/39;S-4/49;T-3/43		C-18/40-41;S-8/38;15/15-17	
PLL 02A MOD...3/13-15;18/56		CBH990.....T-5/43		C-16/39;M-19/52;T-3/45;4/38	
BROADBANDING 02A units.4/55		CBR9600....C&T-3/41;T-2/42		138.....S-1/28	
23 CH 02A AM CONV.....12/32		CBR9940.....T-3/44		138XLR.....C&S&T-1/20-23	
TECH TIPS on the 858		CBR9950.....T-10/58		139.....S-1/30;T-1/20	
CHASSIS.10/55;19/59,60,67				139XLR.....C&S&T-1/20-23	
UNIDEN 858 UPDATE....9/8-11		BRISTOL		140GTL....C&S&T-4/50;S-6/64	
How to get on 28 & 29 MHz		ECB-2271.....T-16/41		.....C&T-3/19-20;T-3/58	
w/UPD858 PLL.....11/4-7				.....C&S-10/28-29	
UPD858 AM CONV.....11/35		BROWNING		142GTL....C&S&T-4/50;S-6/64	
Receiver WIDEBANDING for		BARON.....S-15/15-17		..C&S-10/28-29;S-8/35-37	
858 CHASSIS.....13/34		.....M-19/52;21/16		146GTL.C&S11/17-18;SC-21/64	
THUMBWHEEL CONV. for		MARK III.....C-6/28		....C&S-23/45-47;M-23/59	
858 CHASSIS.....13/35-57		MARK IV....C-6/29-30;7/8-14		....C-15/18-19;S&T-10/41	
How to increase ANL		MARK IVA...C-7/8-14;14/5-6		148GTL....C&S-8/16;C-18/29	
efficiency 70%.....11/8		SABRE.C-1/27;T-14/42;M19/52		.....T-6/19	
HAM RADIO CRYSTAL SELECTOR:				148GTL-B...C-17/40-43,19/60	
DRAKE TR4;HEATHKIT HW101		CB MASTER		.....SC-17/43;T-16/55	
& SB104; KENWOOD TS-520		Z080.....M-24/13		148GTL-DX.....C-15/20-24	
& 820S; TEMPO 1 & 2020;				....C-16/50-51;17/47,54	
YAESU FT7B, FT101E, EE,		CHANNEL MASTER		...C-18/13,17,23;19/37,46	
EX, & 901DM.....12/24		CB6830.....C-14/41;T-16/55		....C-21/18-19;S-21/36	
SM5104 AM CHASSIS..18/20-21		CB6834.....T-14/44		...SC-19/27-28;T-16/43-49	
SM5104 SSB..6/26-27;9/20-22		CB6835.....T-6/18		.A-17/55-58;M-18/26;19/68	
For most 23 ch radios				150GTL.....T-17/42;M-19/31	
see CRYSTAL CROSS RED.		CLARICON		1000GTL.....T-6/18;14/42	
GUIDE.....1/6-18;2/5-13		7I200.....T-21/16		2000(C.A.P.).....C-6/23	
PHASE LOCK LOOP CRYSTAL				2000GTL.....C-5/20;7/15-17	
CROSS REF. GUIDE....6/1-2		CLARION		...C-18/29;C&S&T-15/25-28	
'BLACKCAT' LINEAR SCHEMATICS		DMA066.....T-3/45		.....S-13/40	
24/6-8,10-13,27,42,59-60		JC202E.....T-3/45			
DENTRON-CLIPPERTON LINEAR		RCJ003.....T-3/45		COLONEL	
SCHEMATICS.....25/31-32		TC203E.....T-6/18		FR360.....M-23/25	
KICKER LINEAR SCHEMATICS					
.....25/12		COBRA		COLT	
		CAM89....C-14/45-46;T-14/45		SX33.....C-3/4-7	
AIR COMMAND		18LTD.....T-20/36		160DX.....M-21/44	
CB-640.....T-5/38		19.....T-7/51		222.....T-6/20	
		19GTL.....T-12/34		290.....C-3/4-7;T-3/4	
ALARON		19XS.....M-21/16;T-18/51		320FM.....A-19/48-51	
B-4075.....T-9/30		20LTD.....M-20/42;T-24/25		350.....T-14/46	
B-4900.....T-9/30		21 (23 ch).....T-20/36		355.....T-18/19;24/30	
B-5050A.....T-9/30		21GTL.....T-3/41,58		390.....C-3/4-7;T-3/4	
B-5200.....T-3/41		21XLR....C-10/58;21/25-26		480.....C&S&T-3/8-15	
		.....T-1/20;10/58		.....C-5/39;8/18;T-3/58	
AMERICAN MOTORS		25GTL.....T-3/41,58		485.....C&S&T-3/8-15	
32218&7748/49/50....T-12/34		25LTD.....T-17/35		.....C-4/49;8/18;T-6/19	
		29GTL.....S-13/57;19/40		510.....A-18/44-45;SC-17/45	
		.....T-3/45;14/42		.....T-17/42,45	
ARGO		29LTD.....T-13/59		800.....C&T-3/4-7;10/58	
300.A&S&T-21/49-51;T-23/33		29XLR.....T-1/20		870.....SC-21/53	
5000.....M-23/25		32XLR.C-4/47;M-19/52;T-3/58		1000....C&S&T-3/8-15;C-8/18	
		40X.....M-25/16		.....T-3/58	
AUDIOVOX		45XLR....C-18/67;C&T-12/34		1200.C-8/18;T-9/30-31;16/55	
MCB750.....C&T-3/41		46XLR.....T-3/43			
MCB5000.....T-11/42		47XLR.....C&T-3/45		COMMANDO	
MCU6000.....T-6/18;15/60		50XLR..C-16/53;18/22;T-3/43		2340.....T-1/21	
		55XLR..C-16/53,18/22;T-3/43			
AUTOMATIC		66GTL.....T-10/58		COMMTRON	
CB42265.....C&T-3/41		77X.....T-9/30		XII.....A-18/44-45;SC-17/45	
		78X.....T-4/49;6/19;8/44			
AZDEN		85.....T-15/61		CONNEX	
PCS2000.....M-21/39		86.....M-19/52		3300.....M-23/6	
		86XLR.....C&T-3/45		CONVOY	
BETA		87GTL.....T-6/19		CON-400.....C&T-3/58	
23 DELUXE.....T-16/32		87XLR.....M-19/52			
				COURIER	
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				CARAVELLE.....T-18/65	
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 S - SLIDE; SC - SCHEMATIC; T - TUNE UP.

	VOL/PG		VOL/PG		VOL/PG		VOL/PG
ROYCE		SEARS		SURVEYOR		UNIDEN (SEE PRESIDENT)	
580.....	T-16/32	934-3677150..	C&S&T-12/16-17	620.....	T-3/55	UNIMETRIC	
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