REMOVAL OF THE FRONT PANEL

First remove the top. Remove the bandswitch knob using the 6-32 allen wrench provided. Then remove the main tuning knob, dial skirt and remaining knobs using the 4-40 allen wrench. Remove the small control knobs by pulling forward. Using an appropriate wrench or a large pair of pliers, remove the nuts from the PHONES and MIC jacks. Now remove the four screws holding the front to the sub-panel. Be sure to save the black decorative washers that are in front of the 5 toggle switches. Remove the decorative nut around the spot switch. Unplug the meter from the socket on the meter switch.

PILOT LAMP REPLACEMENT

The CORSAIR II uses a single pilot lamp mounted behind the meter. It is a standard 14 volt bayonet type #1892. Access to this bulb is by removing the top cover.

FUSE REPLACEMENT

The fuse is located on the inside of the low pass filter compartment and protects the CORSAIR II from heavy overload and reverse polarity conditions. Replace with a type 3AG fast-blo 20 ampere type.

ROTARY SWITCH CARE

The bandswitch wafers are specially lubricated by their manufacturer for maximum useful life. Brushing on or dipping or spraying the switch with solvents will wash away the special lubricant and dramatically shorten the life of the switch. Cleaning rosin from soldered connections is not recommended since there is a hazard of the desolved resin flowing into the switch causing intermittent problems. Never use commercial contact cleaners on these switches unless proper lubrication is restored. In almost all cases, intermittent switch connection problems can be traced to improper switch shaft alignment or loose shaft couplings.

MAIN CHASSIS

The chassis wiring is color coded wherever possible.

COLOR	FUNCTION	VOLTAGE, RX	VOLTAGE, TX
Black	GND	0	0
Red	+13	13.0	13.0
Orange	+REG	7.9	7.9
Yellow	R	12.0	0
Blue	T	0	12.0

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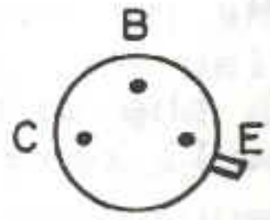
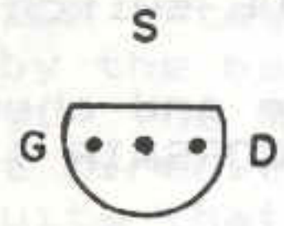
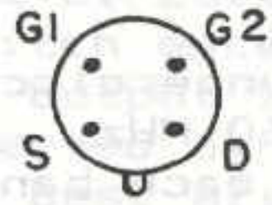
SEMICONDUCTOR PIN IDENTIFICATION



2N3866 2N5109



2N5486

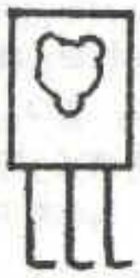


FET 3N201

CA3053

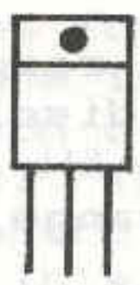
MPN3404
MBD101

B C E
MRF 476

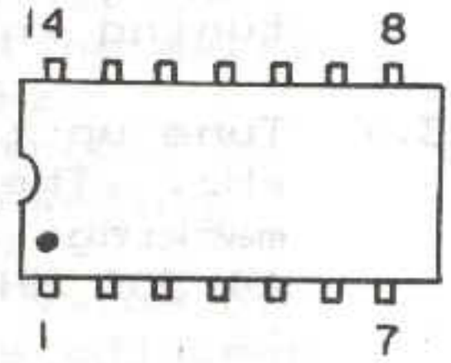


ECB
MJE 520
MJE 370

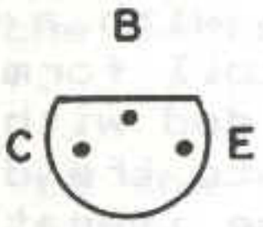
IGO
MC7805CP



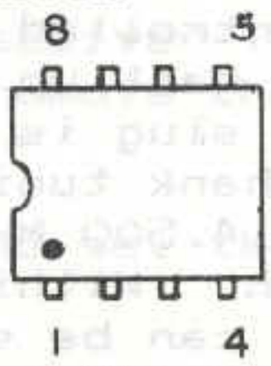
EBC
MPS U01



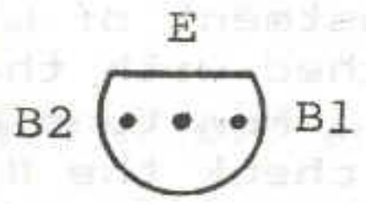
14 PIN IC



MPS 6514 MPS 3693
2N5087
MPS 6512 2N6519



8 PIN IC



2N4870

PINS VIEWED FROM TOP
OF PC BOARD.

PTO__81038

The Permeability Tuned Oscillator (PTO) provides the variable part of the local oscillator signal in both receive and transmit. Its 5.0 to 5.5 MHz output is mixed with a crystal oscillator, selected by the BAND switch, for translation to the proper LO frequency. The PTO is housed in an extruded aluminum housing and mounted to the front sub-panel. The PTO tuning coil, L3, is in series with L1 and in parallel with L2. Adjustment of these two slug-tuned coils, which are both wound on the same coil form, determines the linearity and band edge points.

PTO ALIGNMENT

To test the alignment of the PTO turn the OFFSET function switch OFF, set the BAND switch to 14.0 MHz and set the MODE switch to SBN.

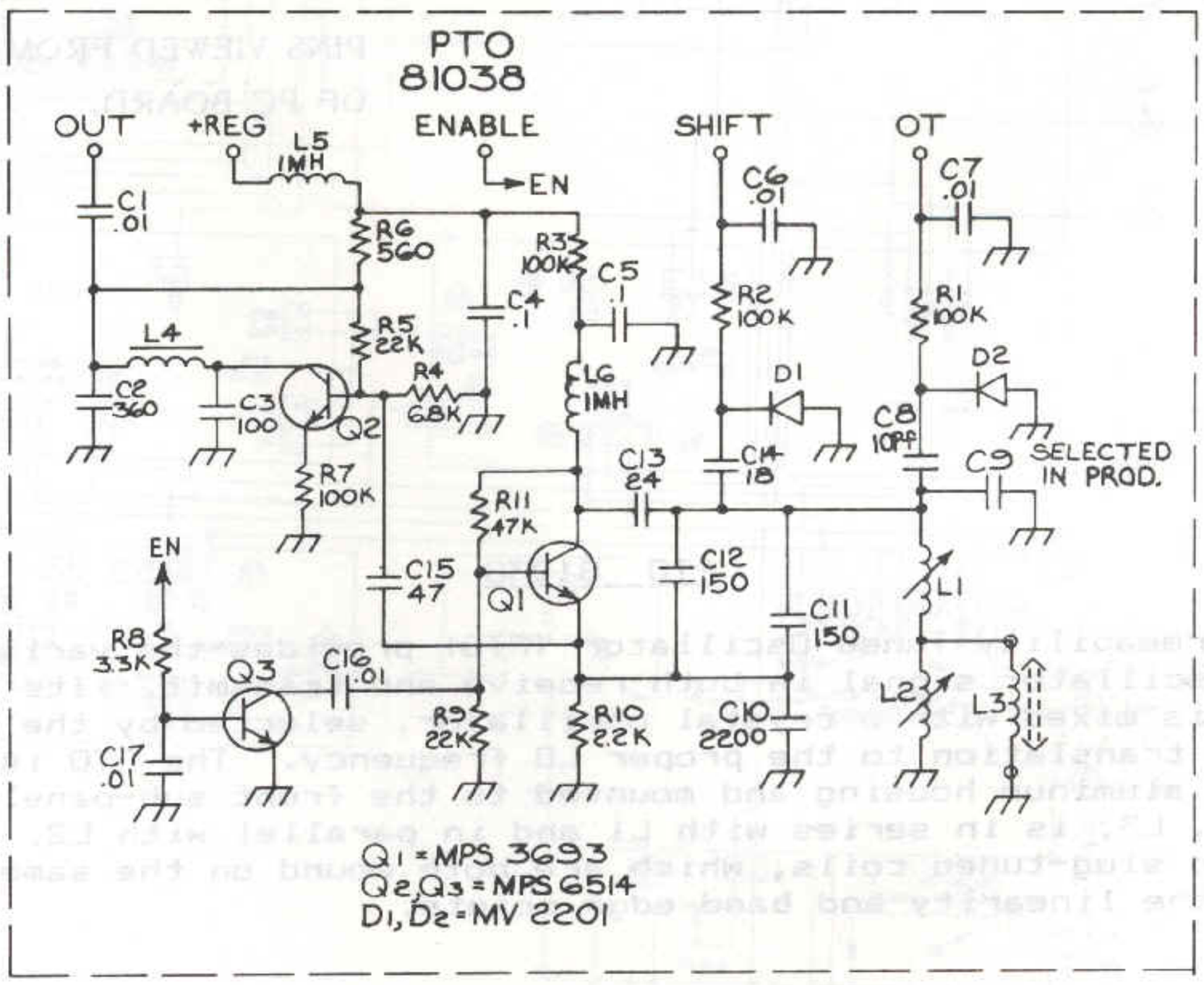
1.) Run the tuning knob fully counterclockwise and check that the display indicates approximately 13.960 MHz. The CORSAIR II PTO will normally tune from 35 to 45 kHz below each band.

2.) Next tune up to exactly 14.000 MHz and align the dial skirt "0" marking with the front panel bezel. The dial skirt is friction mounted on the tuning shaft and can be rotated independently from the tuning knob.

3.) Tune up the band and compare the display to the dial skirt every 100 kHz. The frequency display should correspond to the dial skirt markings within ± 4 kHz. If the final display reads above or below 14.500 MHz the PTO range can be corrected by trimming L1 and L2.

4.) If the PTO range is compressed i.e. the display reads less than 14.500 MHz, tune back to 14.000 MHz and adjust L2 a fraction of a turn clockwise. (L2 is controlled by the slug nearest the PTO cover). Bring the display back up to 14.000 MHz with a clockwise adjustment of L1. (The L1 slug is in the same coil form and can be reached with the reduced shank tuning tool provided with the CORSAIR II.) Now tune back up to 14.500 MHz, according to the dial skirt, and check the display again. Within two or three iterations both upper and lower band edges can be set almost exactly.

5.) If the PTO range is expanded according to the display return to 14.000 MHz as in Step 4 and adjust L1 and L2 counterclockwise.



OSCILLATOR MIXER 80975

This assembly generates the proper local oscillator frequency for each band. The PTO 5.0 to 5.5 MHz signal is mixed with a crystal oscillator in the TL442CN integrated circuit double balanced mixer. Crystals are selected by the bandswitch except on 14.0 MHz where the PTO signal is used directly. The mixer output is filtered for each band with a double-tuned resonant circuit selected by the bandswitch. These are overcoupled tuned circuits that are best aligned using a swept oscillator. Because they are wide band however realignment is seldom necessary except when a tuned circuit component is replaced.

To eliminate band edge birdies on the 10, 21 and 28 MHz bands, the crystal oscillator frequencies are chosen 10 kHz lower than what normally would be needed. The OSC/MIXER board compensates for this 10 kHz deviation by changing the bias on a varactor diode in the PTO circuit by means of switch S1E. As a result, the kHz portion of the dial reading will not change when switching from band to band. The amount of capacitance inserted by the varactor diode is controlled by the value of the dc voltage obtained from potentiometer R3. This resistor is adjacent to connector 88. To set this adjustment, proceed as follows:

1.) With power removed from the transceiver follow the instruction for removal of the bottom cover and remove the cover from the oscillator mixer itself.

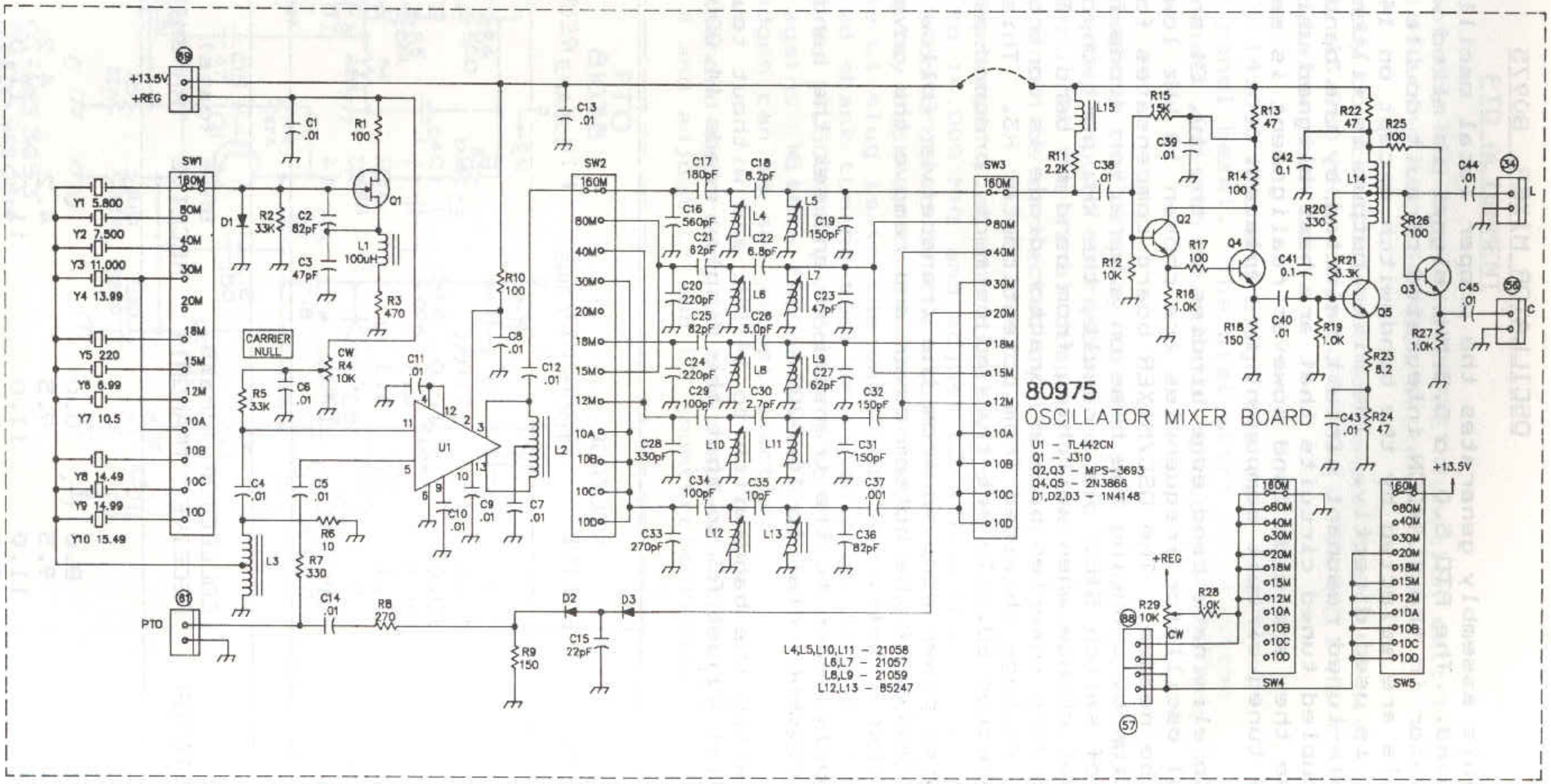
2.) Apply power to the transceiver and set the bandswitch to 10.0 and the frequency dial to 10.0000.

3.) Switch the bandswitch to 14 MHz and without touching the main tuning dial adjust R3 so that the display reads 14.0000.

U1

PIN	VOLTAGE RECEIVE	VOLTAGE TRANSMIT	PIN	VOLTAGE RECEIVE	VOLTAGE TRANSMIT
1	0	0	8	0	0
2	12.5	12.0	9	4.2	4.2
3	10.0	10.0	10	6.2	6.2
4	6.1	6.1	11	6.2	6.2
5	4.1	4.1	12	6.3	6.3
6	0	0	13	10.0	10.0
7	0	0	14	10.0	10.0

TRANSISTOR	COLLECTOR (drain) RECEIVE	COLLECTOR (drain) TRANSMIT	BASE (gate) RECEIVE	BASE (gate) TRANSMIT	EMITTER (source) RECEIVE	EMITTER (source) TRANSMIT
Q1	8.0	8.0	0	0	2.2	2.2
Q2	9.5	9.5	4.2	4.2	3.9	3.9
Q3	11.0	11.0	11.0	11.0	10.0	10.0
Q4	9.5	9.5	3.9	3.9	3.0	3.0
Q5	12.0	12.0	2.4	2.4	1.8	1.8


80975
OSCILLATOR MIXER BOARD
U1 - TL442CN
Q1 - J310
Q2,Q3 - MPS-3693
Q4,Q5 - 2N3866
D1,D2,D3 - 1N4148
L4,L5,L10,L11 - 21058
L6,L7 - 21057
L8,L9 - 21059
L12,L13 - 85247
+13.5V
+REG
CARRIER NULL
PTO
SW1
SW2
SW3
SW4
SW5
Y1 5.800
Y2 7.500
Y3 11.000
Y4 13.99
Y5 220
Y6 6.99
Y7 10.5
Y8 14.49
Y9 14.99
Y10 15.49
160M
80M
40M
30M
20M
18M
15M
12M
10A
10B
10C
10D
C1 .01
R1 100
Q1
D1
R2 33K
C2 82pF
C3 47pF
L1 100uH
R3 470
CW R4 10K
R5 33K
C6 .01
C4 .01
C5 .01
R6 10
L3
R7 330
C14 .01
R8 270
R9 150
C15 22pF
D2
D3
R10 100
C8 .01
C12 .01
C11 .01
U1
L2
C10 .01
C9 .01
C7 .01
C13 .01
C16 560pF
C17 180pF
C18 8.2pF
C19 150pF
C21 82pF
C22 6.8pF
L4
L5
C20 220pF
C23 47pF
L7
C25 82pF
C26 5.0pF
L6
C24 220pF
C27 62pF
L9
L8
C29 100pF
C30 2.7pF
C32 150pF
C28 330pF
L10
L11
C31 150pF
C34 100pF
C35 10pF
C37 .001
C33 270pF
L12
L13
C36 82pF
L15
R11 2.2K
C38 .01
R15 15K
C39 .01
R13 47
R14 100
Q2
R12 10K
R17 100
Q4
R16 1.0K
R18 150
C40 .01
C41 0.1
R20 330
R21 3.3K
Q5
R19 1.0K
C42 0.1
R22 47
R25 100
L14
R26 100
Q3
R27 1.0K
R23 5.2
C43 .01
R24 47
C44 .01
C45 .01
R28 1.0K
R29 10K
CW
+REG
+13.5V

RF_MIXER__80987

This assembly contains the RF amplifier, transmit/receive mixer, first IF amplifier and the low level transmit amplifier. The selection of these amplifiers and the direction in which the signals flow is determined by the R and T voltages applied to pin diode switches D1 through D8. On receive Q1 and Q2 route the bandpassed receive signals through either an attenuator or RF preamp Q3. The signals are mixed with the LO to 9 MHz and amplified again in Q6. Q7 is a buffer for the noise blanker output and Q5 is the noise gate switching transistor. On transmit the 9.0 MHz TX IF is mixed with the LO, amplified by Q4 and applied to the bandpass filters.

The mixer balance controls are adjusted as follows:

1.) Tune in the receiver birdie at 21.320 MHz.

2.) Center the balance controls C18, C19 and R28.

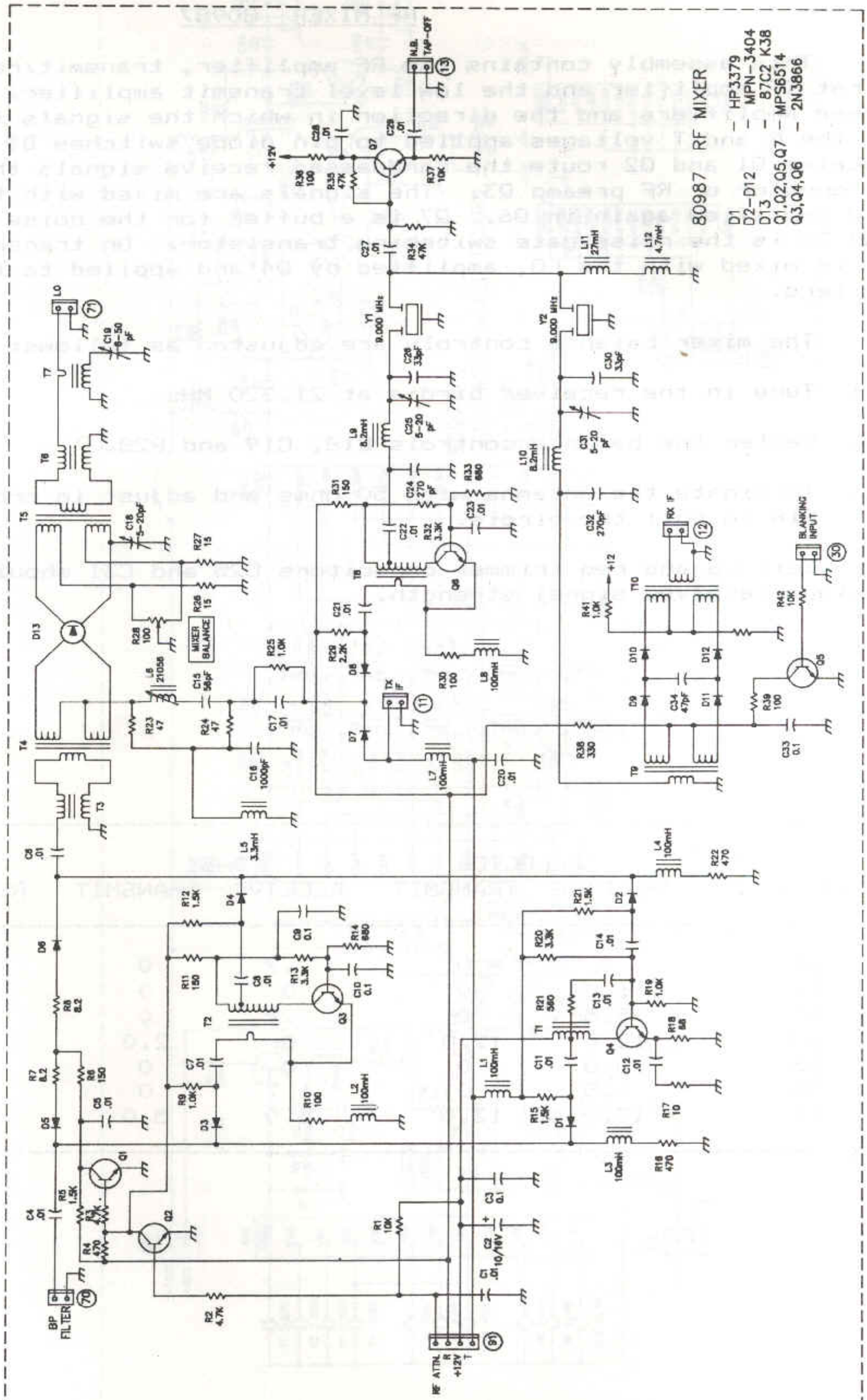
3.) Terminate the antenna with 50 ohms and adjust in order R28, C19 and C18 to null the birdie.

Coil L6 and red trimmer capacitors C25 and C31 should be adjusted for maximum received signal strength.

	COLLECTOR		BASE		EMITTER	
TRANSISTOR	RECEIVE	TRANSMIT	RECEIVE	TRANSMIT	RECEIVE	TRANSMIT
Q1	0	0	.7	0	0	0
Q2	6.0	0	0	0	0	0
Q3	5.5	0	.9	0	.2	0
Q4	12.0	12.0	0	2.0	0	1.5
Q5	10.0	0	0	0	0	0
Q6	9.5	0	1.7	0	.9	0
Q7	13.0	13.0	5.0	5.0	5.0	5.0

80987 RF MIXER

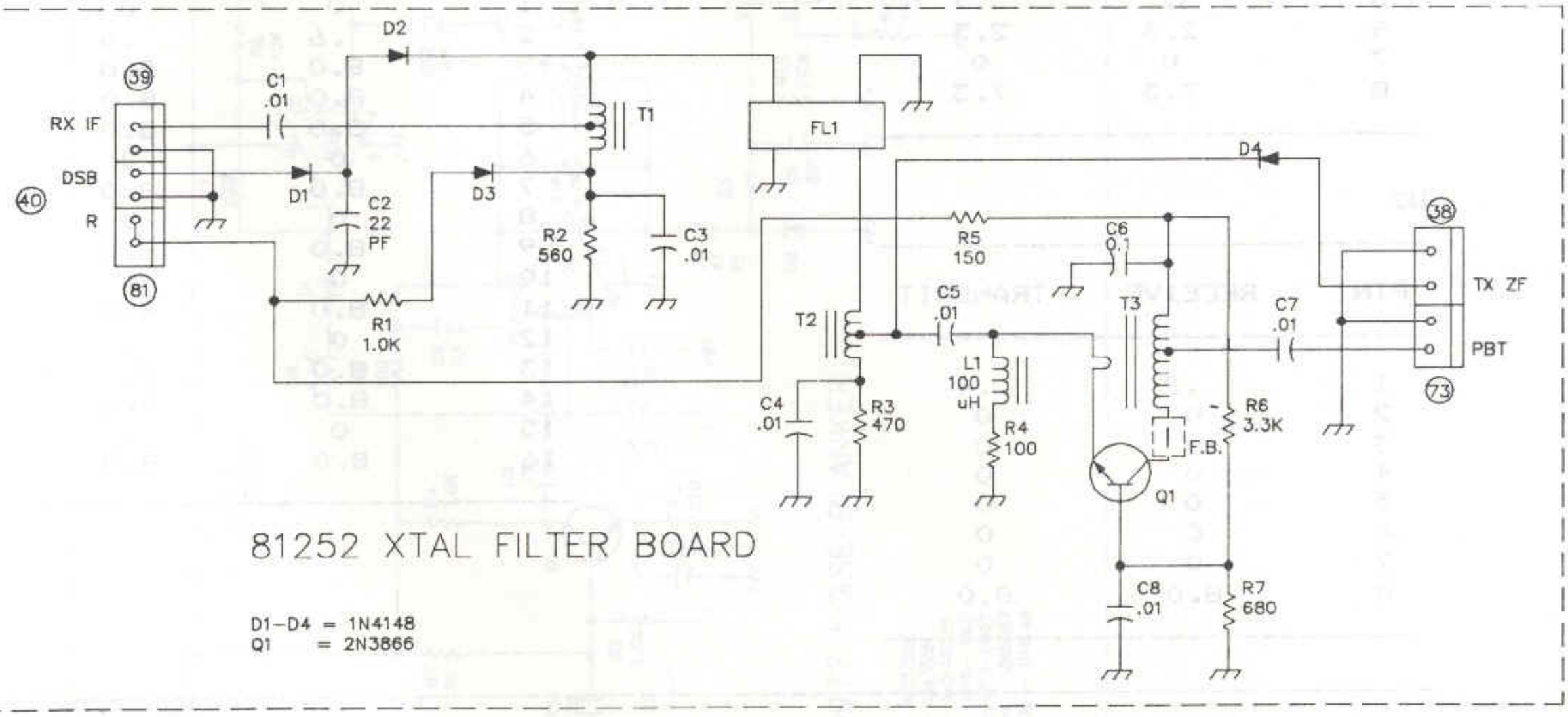
D1 – HP3379
D2–D12 – MPN–3404
D13 – 87C2 K38
Q1,Q2,Q5,Q7 – MPS6514
Q3,Q4,Q6 – 2N3866



XTAL_FILTER_BOARD__81253

The XTAL filter board with its 9.000 MHz 8 pole filter sets the IF bandwidth on receive and removes the undesired sideband on transmit. T/R switching of the IF signals is done with D1 through D4.

TRANSISTOR	COLLECTOR		BASE		EMITTER	
	RECEIVE	TRANSMIT	RECEIVE	TRANSMIT	RECEIVE	TRANSMIT
Q1	9.5	0	1.6	0	.8	0



81252 XTAL FILTER BOARD

D1–D4 = 1N4148
Q1 = 2N3866

NOISE BLANKER 80977

The noise blanker board receives a sample of the 9.0 MHz receiver IF from the RF mixer board. Q1, U1 and U2 make up a 9.0 MHz AGC'ed amplifier which detects noise pulses. Variable sensitivity is obtained by varying the emitter bias on Q2. For every noise pulse which exceeds the front panel N.B. LEVEL setting Q2 triggers one-shot U3B.

With the N.B. WIDTH control off pin 9 of U3 opens the noise gate on the RF mixer board for 400 mS. This blanking period is set by R24 and is sufficient for most types of ignition and line related noise. If the noise pulses are unusually long, for example like those caused by over-the-horizon, OTH, radar broadcasts, the blanking width can be extended for up to 5 mS with the N.B. WIDTH control. Since these long blanking pulses tend to create "holes" in the received signal U3A, R23 and D6 allow only one long pulse every 80 to 100 mS. Not accidentally this is also the repetition rate of the Russian "woodpecker" radar.

U1

PIN	RECEIVE	TRANSMIT
1	7.4	7.4
2	7.4	7.4
3	0	0
4	2.3	2.3
5	3.7	3.7
6	2.3	2.3
7	0	0
8	7.3	7.3

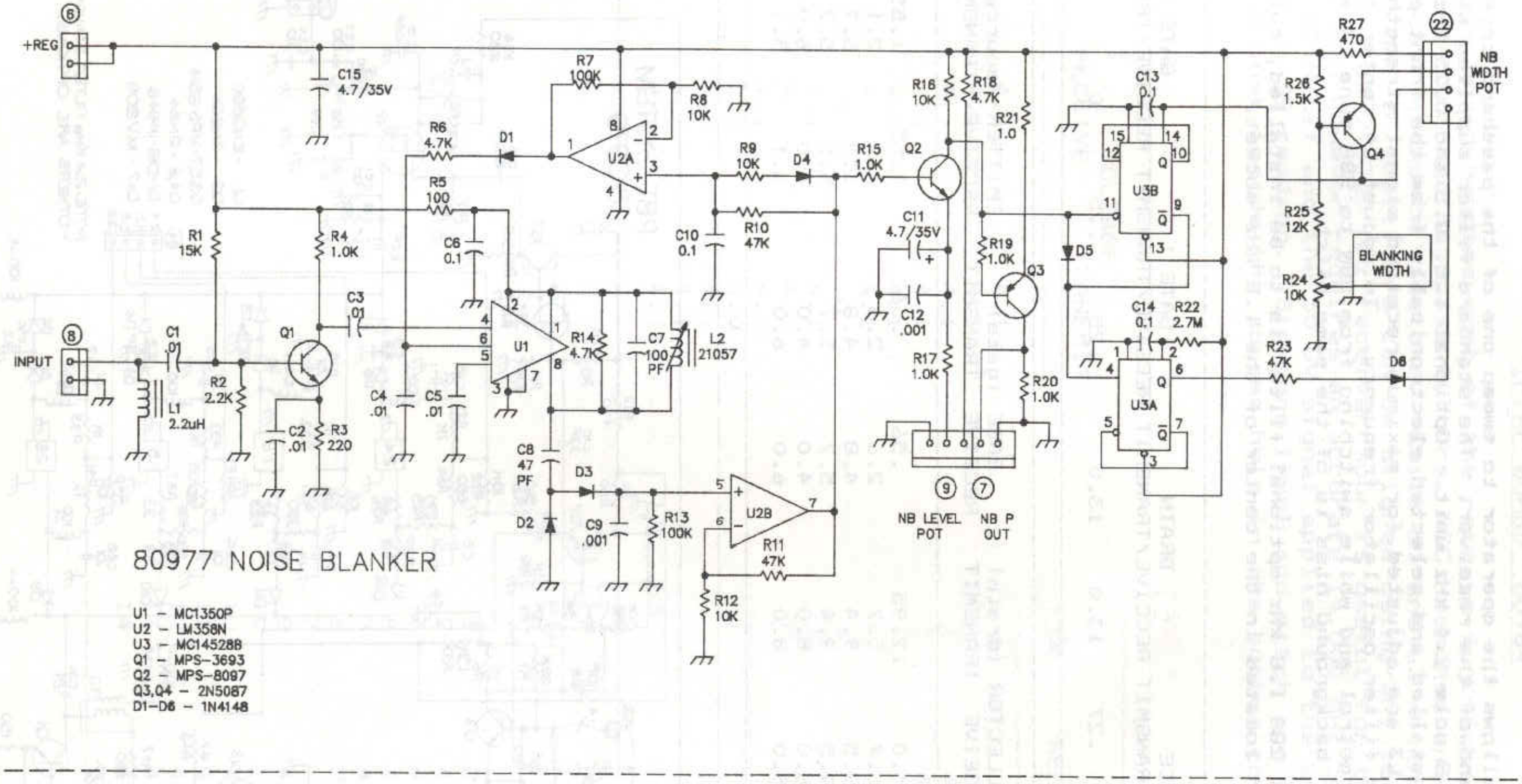
U2

PIN	RECEIVE	TRANSMIT
1	.2	.4
2	0	0
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0
8	8.0	8.0

U3

PIN	RECEIVE	TRANSMIT
1	0	0
2	.6	.6
3	8.0	8.0
4	8.0	8.0
5	8.0	8.0
6	0	0
7	8.0	8.0
8	0	0
9	8.0	8.0
10	0	0
11	8.0	8.0
12	0	0
13	8.0	8.0
14	8.0	8.0
15	0	0
16	8.0	8.0

TRANSISTOR	COLLECTOR RECEIVE	COLLECTOR TRANSMIT	BASE RECEIVE	BASE TRANSMIT	EMITTER RECEIVE	EMITTER TRANSMIT
Q1	6.9	6.9	1.0	1.0	.3	.3
Q2	8.0	8.0	0	0	8.0	8.0
Q3	0	0	7.8	7.8	8.0	8.0
Q4	8.0	8.0	7.8	7.8	8.0	8.0



80977 NOISE BLANKER

U1 – MC1350P
U2 – LM358N
U3 – MC145288
Q1 – MPS–3693
Q2 – MPS–8097
Q3,Q4 – 2N5087
D1–D6 – 1N4148

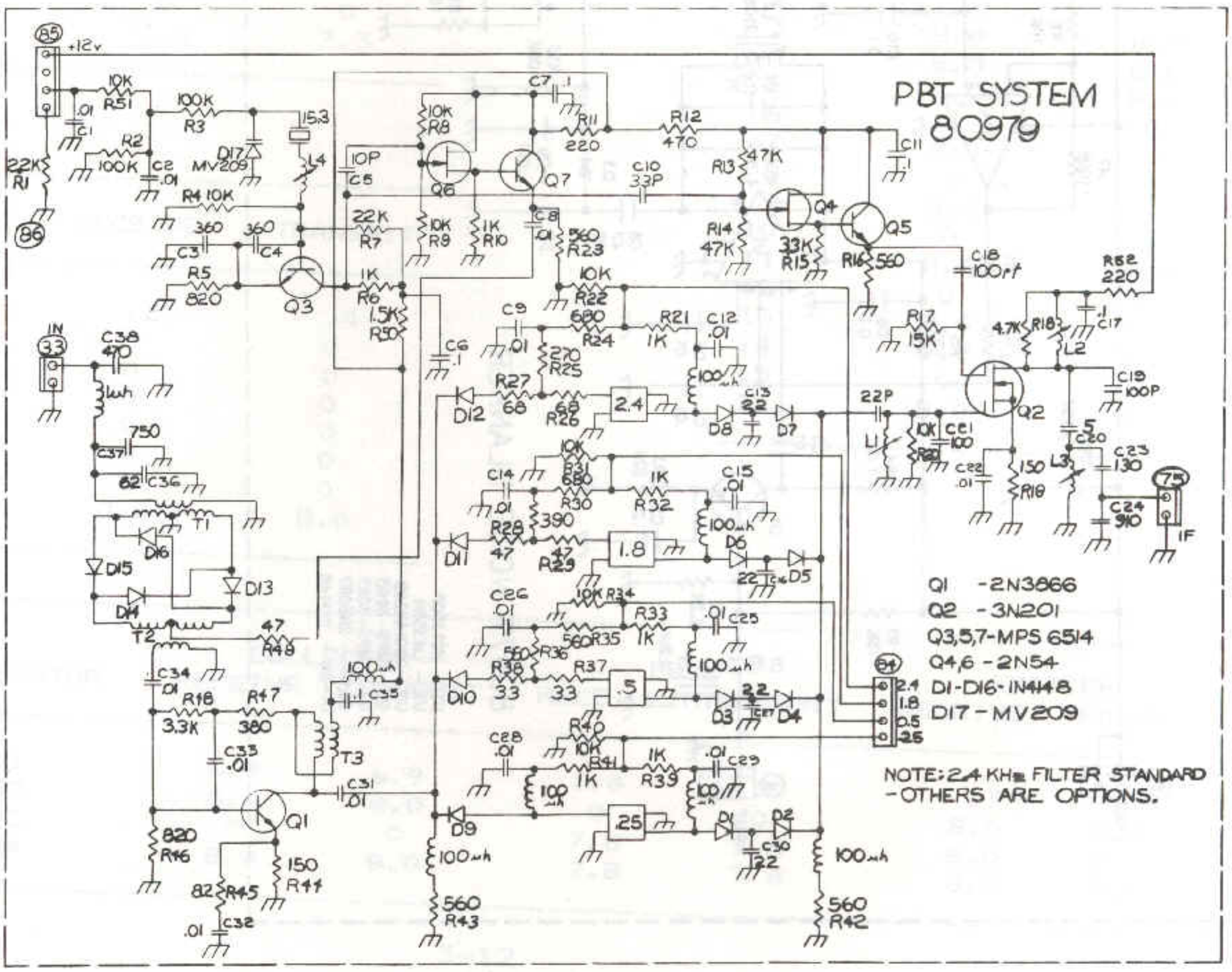
PBT, PASS BAND TUNING 80979

This board allows the operator to sweep one of the passband crystals across the passband of the receiver. The standard filter supplied with this board is an 8 pole 2.4 kHz unit. Optional 1.8, 0.5 and 0.25 kHz filters can be installed and selected electronically from the front panel. Coils L1, L2 and L3 are adjusted for maximum received signal strength. L4 sets the passband filter oscillator frequency. To adjust L4 center the front panel PBT control and while switching from SBN to SBR tune L4 such that the receiver background hiss is of the same pitch.

If the Model 288 1.8 kHz optional filter is to be installed, cut or remove the jumper located in the center of the 1.8 kHz socket.

TRANSISTOR	SOURCE RECEIVE/TRANSMIT		DRAIN RECEIVE/TRANSMIT		GATE 1 RECEIVE/TRANSMIT		GATE 2 RECEIVE/TRANSMIT	
Q2	.27	.27	13.0	13.0	.25	.25	0	0

TRANSISTOR	COLLECTOR (drain) RECEIVE	TRANSMIT	BASE (gate) RECEIVE	TRANSMIT	EMITTER (source) RECEIVE	TRANSMIT
Q1	13.0	12.95	.56	.56	1.55	1.55
Q3	5.7	5.7	2.6	2.6	2.1	2.1
Q4	9.5	9.4	4.8	4.8	5.7	5.7
Q5	9.5	9.4	5.7	5.7	5.2	5.2
Q6	8.0	8.0	4.0	4.0	6.0	6.0
Q7	8.0	8.0	6.0	6.0	5.1	5.1



IF/AF BOARD 80984

This board handles most of the receive functions including RF gain control, notch and bandpass filters, AGC response and S-meter, audio amplification and CW sidetone. Coils L1 and L2 which peak the gain in the two 9.0 MHz IF amplifiers can be aligned using any low level received signal. The 21.320 MHz receiver spur is useful for this. The S-meter calibration however requires an accurate 14.000 MHz 50 uV signal. With the RF ATTN off and the 50 uV signal applied to the antenna jack adjust R59 for an S9 reading. Sidetone level and pitch are set by two controls centered just inside the access hole in the bottom cover.

U1

PIN	VOLTAGE RECEIVE	TRANSMIT
1	4.1	4.1
2	4.1	4.1
3	4.1	4.1
4	4.1	4.1
5	4.1	4.1
6	4.1	4.1
7	0	0
8	4.1	4.1
9	4.0	4.0
10	4.1	4.1
11	8.0	8.0
12	4.1	4.1
13	4.1	4.1
14	4.1	4.1

U2

PIN	VOLTAGE RECEIVE	TRANSMIT
1	4.0	4.0
2	4.0	4.0
3	4.0	4.0
4	0	0
5	0	0
6	0	0
7	0	0
8	8.0	8.0

U3

PIN	VOLTAGE RECEIVE	TRANSMIT
1	2.2	2.2
2	4.1	4.1
3	4.0	4.0
4	4.0	4.0
5	4.0	4.0
6	2.2	2.2
7	0	0
8	4.2	4.2
9	1.0	1.0
10	4.2	4.2
11	8.0	8.0
12	4.0	4.0
13	4.0	4.0
14	4.0	4.0

U4

PIN	VOLTAGE RECEIVE	TRANSMIT
1	2.4	2.4
2	4.1	4.1
3	4.0	4.0
4	4.0	4.0
5	4.0	4.0
6	2.5	2.5
7	0	0
8	4.0	4.0
9	4.0	4.0
10	4.0	4.0
11	8.0	8.0
12	4.5	4.5
13	1.0	1.0
14	4.5	4.5

U5

PIN	VOLTAGE RECEIVE	TRANSMIT
1	6.2	6.2
2	0	0
3	0	0
4	0	0
5	0	0
6	0	0
7	0	0
8	6.2	6.2
9	0	0
10	0	0
11	0	0
12	0	0
13	0	0
14	12.5	12.5

TRANSISTOR	SOURCE RECEIVE/TRANSMIT		DRAIN RECEIVE/TRANSMIT		GATE 1 RECEIVE/TRANSMIT		GATE 2 RECEIVE/TRANSMIT	
Q4	.6	.6	3.4	3.4	.1	.1	0	0

TRANSISTOR	EMITTER RECEIVE	TRANSMIT	BASE 1 RECEIVE	TRANSMIT	BASE 2 RECEIVE	TRANSMIT
Q12	3.0	3.0	0	0	8.0	8.0

TRANSISTOR	COLLECTOR RECEIVE	TRANSMIT	BASE RECEIVE	TRANSMIT	EMITTER RECEIVE	TRANSMIT
Q1	12.0	12.0	2.2	0	1.5	0
Q2	10.0	12.0	2.1	4.6	1.4	0
Q3	10.0	12.0	4.3	4.6	3.6	4.2
Q5	8.0	8.0	8.7	0	8.0	0
Q6	8.0	8.0	0	0	0	0
Q7	0	0	0	.7	0	0
Q8	12.0	12.0	.4	.4	0	0
Q9	0	0	12.0	12.0	13.0	13.0
Q10	0	0	0	.7	0	0
Q11	0	0	0	0	0	0

80984 IF/AF BOARD

D1,D2,D3 – 1N5767
D4–D11 – 1N4148
Q1,Q2,Q3 – MPS3693
Q4 – 3N201
Q5–Q8,Q11 – MPS6514
Q9 – 2N5087
Q10 – MPSU01
Q12 – 2N4870

+12V
+REG
T
+12 TO U5
RX IF
S METER
RF GAIN
AGC OFF
AGC TC
BFO
+REG
QSK
SPOT
ST
S.T. PITCH
S.T. LEVEL

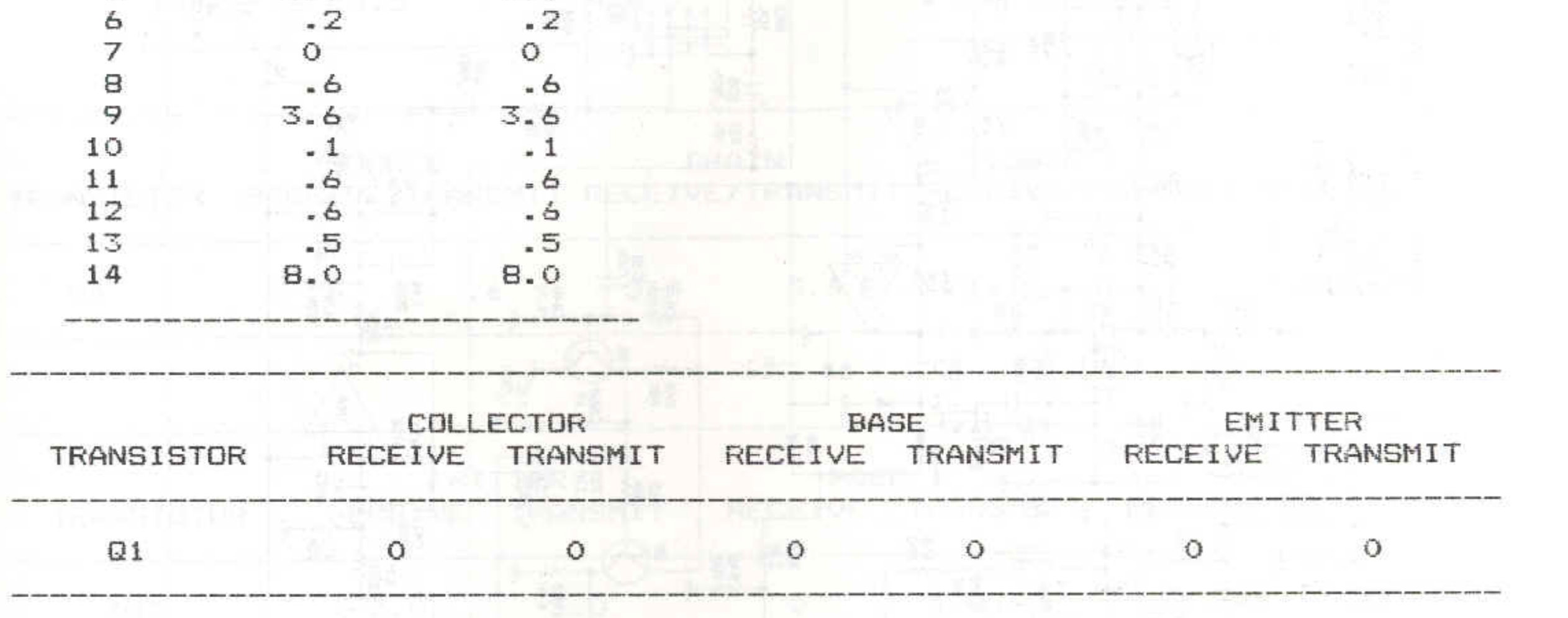
VOX BOARD 81249

The VOX board mounted on the back panel samples microphone and speaker signals and produces the VOX keying signal for the transmitter. Positive and negative voltages corresponding to microphone and speaker levels are summed and compared by U1D. When the sum exceeds a preset level the vox is activated. VOX GAIN, ANTI-VOX and DELAY adjustments are available at the back panel.

U1

PIN	RECEIVE	TRANSMIT
1	.4	.4
2	.4	.4
3	.6	.6
4	3.4	3.4
5	4.9	4.9
6	.2	.2
7	0	0
8	.6	.6
9	3.6	3.6
10	.1	.1
11	.6	.6
12	.6	.6
13	.5	.5
14	8.0	8.0

	COLLECTOR		BASE		EMITTER	
TRANSISTOR	RECEIVE	TRANSMIT	RECEIVE	TRANSMIT	RECEIVE	TRANSMIT
Q1	0	0	0	0	0	0



AUDIO PROCESSOR 81255

The audio processor amplifies and conditions microphone and patch/TU signals for the transmitter. Diodes D1 and D2 select either an amplified audio signal from U2A or a peak clipped and compressed version from U2B. Transistor Q1 is the compressor shunt element, D3 and D4 are the clipping elements. Also resident on the board is a CMOS oscillator for setting the built-in keyer speed. U1 receives +5 v from the counter/display assembly and returns a clock signal related to the KEYER SPEED front panel control.

U1

PIN	RECEIVE	TRANSMIT
1	2.6	2.6
2	2.6	2.6
3	2.8	2.8
4	2.8	2.8
5	0	0
6	2.2	2.2
7	0	0
8	0	0
9	0	0
10	5.0	5.0
11	2.2	2.2
12	2.8	2.8
13	2.8	2.8
14	5.0	5.0

U2

PIN	RECEIVE	TRANSMIT
1	4.2	4.2
2	4.2	4.2
3	.9	.9
4	0	0
5	.9	.9
6	1.0	1.0
7	4.3	4.3
8	8.0	8.0

U3

PIN	RECEIVE	TRANSMIT
1	4.2	4.2
2	4.2	4.2
3	4.0	4.0
4	0	0
5	4.2	4.2
6	4.2	4.2
7	4.2	4.2
8	8.0	8.0

TRANSISTOR	COLLECTOR		BASE		EMITTER	
	RECEIVE	TRANSMIT	RECEIVE	TRANSMIT	RECEIVE	TRANSMIT
Q1	0	0	0	0	0	0
Q2	0	0	.7	.7	0	0
Q3	12	0	0	.7	0	0
Q4	0	12	.8	0	0	0

AUDIO PROCESSOR 81255

U1– MC14011B
U2,U3– RC4558P
Q1 – MPS–U01
Q2–Q4 – MPS–6514
D1–D10 – 1N4148

AUDIO IN MIC
R1 100 K
R2 100 K
C1 330 pF
C2 1/50 V
R3 10 K
R4 15 K
C3 1/50 V
U2A
C4 4.7/35 V
C5 1/50 V
R5 1.0 M
R6 10 K
R9 10 K
C7 1/50 V
R10 1.5 M
U2B
C6 1/50 V
R7 10 K
R8 1.0 M
C8 1/50 V
C9 1/50 V
R11 10 K
R13 15 K
R17 100 K
Q1
C18 4.7/35 V
R12 10 K
R16 6.8 K
D5
R14 22 K
U3B
C17 4.7/35 V
R15 10 K
C16 4.7/35 V
C15 4.7/35 V
D7
D1
JUMPER
C11 1/50 V
R33 10 K
R18 10 K
D2
R32 10 K
C10 1/50 V
C12 .01
A
B
R19 8.2 K
CW
D3
D4
LEVEL ADJ.
R22 15 K
C13 1/50 V
R23 47 K
C14 330pF
U3A
R24 470
R21 6.8 K
DRIVE POT.
AUDIO OUT
PROCESSOR METER
C22 0.1
+5 V KEYER OSC.
U1A
U1D
U1B
C21 .0033
R34 4.7 K
R35 4.7 K
KEYER SPEED POT.
D6
PROCESSOR METER ADJ.
R27 10 K
D8
C20 4.7/35 V
R26 10 K
R25 10 K
C19 33/10 V
R28 100 K
R29 2.2 K
R31 2.2 K
R30 33 K
Q2
R39 4.7 K
R38 4.7 K
SPOT
QSK SLOW
SIDE TONE
PTT VOX
AGC SLOW
AGC OFF
8.4 KHz
1.8 KHz
.50 KHz
.25 KHz
SIDE TONE
SB+
CW+
SB TR
T
+12 V
OT LIGHT
OFFSET POT.
+REG GND
PROC. SWITCH
D10
R37 10 K
R36 10 K
D9
JUMPER
Q3
Q4
R40 33 K
R1 4.7 K

SWITCH BOARD 81253

QSK
VOX
FAST
SLOW
SW1
AGC
FAST
SLOW
OFF
SW2
FILTER
3
2
1
SW3
OFFSET
RX
TRX
TX
SW4
OT MODE
MAX
MIN
OFF
SW5

5-20

DOUBLE SIDEBAND GENERATOR 80980

This assembly contains the carrier/BFO crystal oscillator Q1 and a balanced modulator U1 for double sideband generation. The exact frequency of the 9.0 MHz oscillator is determined by which combination of the three trimmer capacitors C1, C2 and C3 are placed in series with the crystal.

In the SBR mode only C1 is in series with the crystal and sets the oscillator frequency to 9.003 MHz. This positions the lower sideband of the modulator output just inside the passband of the XTAL FILTER board's 9.000 MHz crystal. In SBN, C2 and C3 are switched in and pull the oscillator on down to 9.000 MHz. Now only the upper sideband passes through the XTAL FILTER board. In CW and LOCK modes C1 and C2 set the oscillator to 9.00750 MHz, while Q2 upsets the balance in the balanced modulator. The level from the modulator is a function of the voltage at pin 7 which comes from the DRIVE control.

Carrier Oscillator Alignment: Proper alignment of C1, C2 and C3 requires the use of a frequency counter. These capacitors should not be readjusted on general principles but only after it has been determined that the carrier is not where it should be on the passband curve, or the cw frequency is not 750 Hz up from the sideband normal carrier position. To make these adjustments proceed as follows:

1.) Connect the counter to the junction R3 and R4 in the emitter of Q1.

2.) Set the MODE switch to the SB-R position and DRIVE control fully counterclockwise. Adjust C1 for a frequency reading of 9.00300.

3.) Set the MODE switch to the LOCK position and adjust C2 so that the frequency is 9.000750.

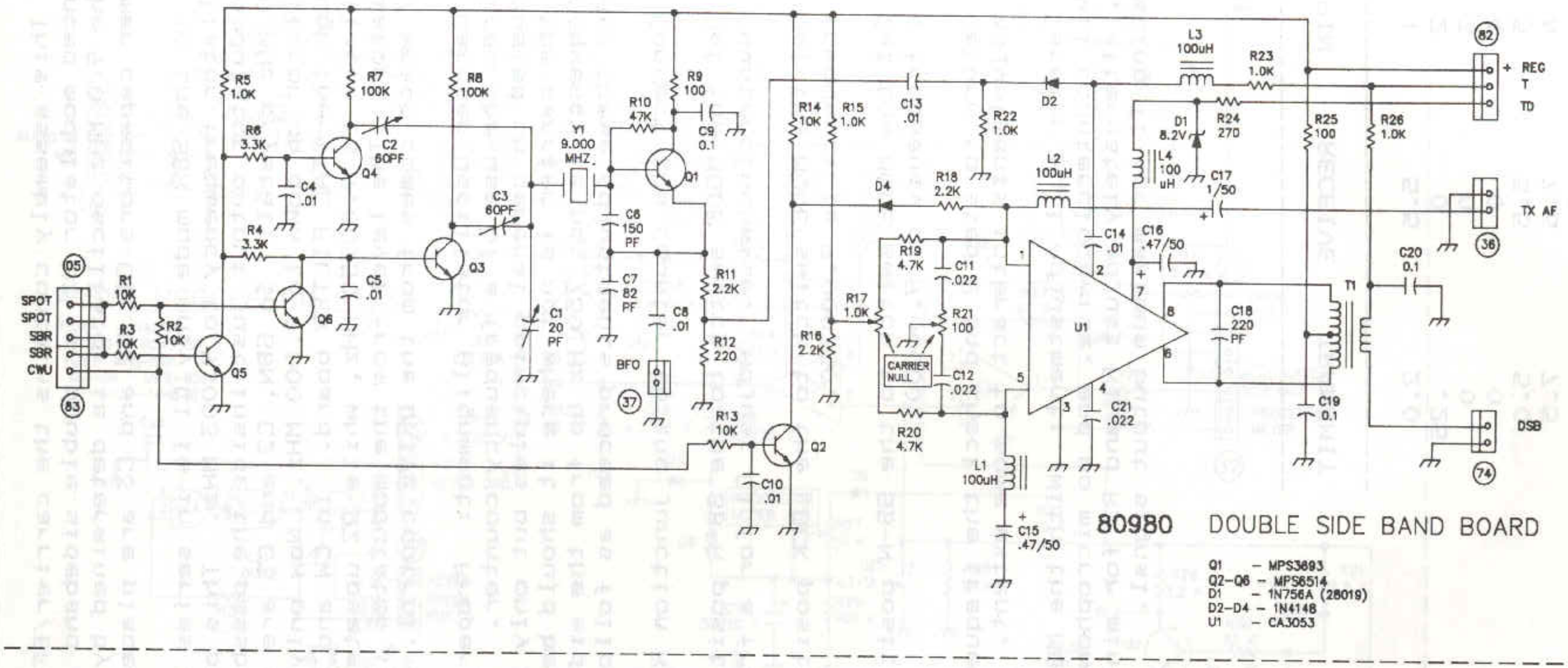
4.) Set the MODE switch to the SB-N position and adjust capacitor C3 for a frequency of 9.00000.

5.) Return to step 2 and check the frequencies again because the adjustments interact to some extent.

Carrier Null Adjustment: With the MODE switch in SB-N, DRIVE control at full counterclockwise, and no microphone inserted in the microphone jack, alternately adjust R1 and R2 for minimum transmitted carrier, after adjusting T1 for maximum output signal.

U1

PIN	RECEIVE	TRANSMIT
1	5.5	2.0
2	0	.25
3	0	0
4	0	0
5	5.5	5.0
6	7.5	7.5
7	0	.7
8	8.0	8.0



80980 DOUBLE SIDE BAND BOARD

Q1 – MPS3693
Q2–Q6 – MPS6514
D1 – 1N756A (28019)
D2–D4 – 1N4148
U1 – CA3053

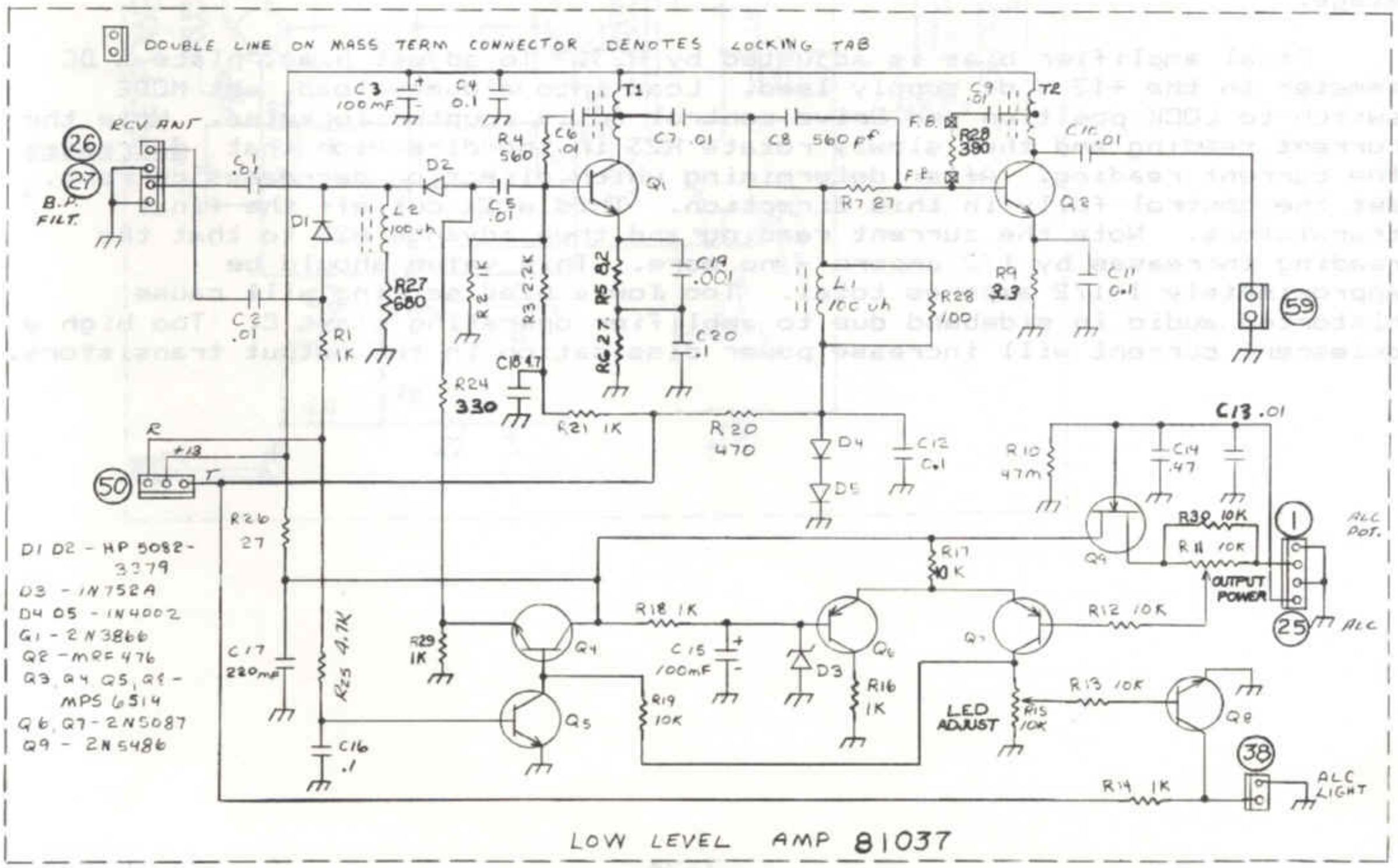
C-22

TRANSISTOR	COLLECTOR		BASE		EMITTER	
	RECEIVE	TRANSMIT	RECEIVE	TRANSMIT	RECEIVE	TRANSMIT
Q1	8.0	8.0	6.0	6.0	6.8	6.8
Q2	8.0	0	0	.8	0	0
Q3	0	0	.8	.8	0	0
Q4	0	5.5	.8	0	0	0
Q5	5.5	5.5	0	0	0	0
Q6	.8	0	0	.8	0	0

LOW LEVEL DRIVER — 81037

This assembly contains the transmit low level amplifier and the ALC circuit. Also, the signal into the bandpass filter is determined by the switching of PIN diodes D1 and D2. To adjust the action of the ALC LED indicator, place the MODE switch in the LOCK position and DRIVE control at full counterclockwise. Adjust R15 to a point just below where the LED begins to light. Using a wattmeter and dummy load, advance the DRIVE control until 100 watts is indicated on 14.05 MHz. Adjust the front panel ALC control for full clockwise rotation and then adjust R11 so that the LED is fully bright with 100 watts output.

TRANSISTOR	COIL (drain) RECEIVE	COIL (drain) TRANSMIT	BASE (gate) RECEIVE	BASE (gate) TRANSMIT	EMITTER (source) RECEIVE	EMITTER (source) TRANSMIT
Q1	13.0	13.0	0	2.0	0	1.4
Q2	13.0	13.0	0	1.27	0	.6
Q4	13.0	13.0	0	4.2	0	4.5
Q5	0	4.5	.75	0	0	0
Q6	0	0	5.4	5.4	3.8	5.1
Q7	3.8	5.1	3.2	4.4	3.6	5.1
Q8	0	.25	.61	.54	0	0
Q9	2.5	2.6	0	0	13.0	13.0

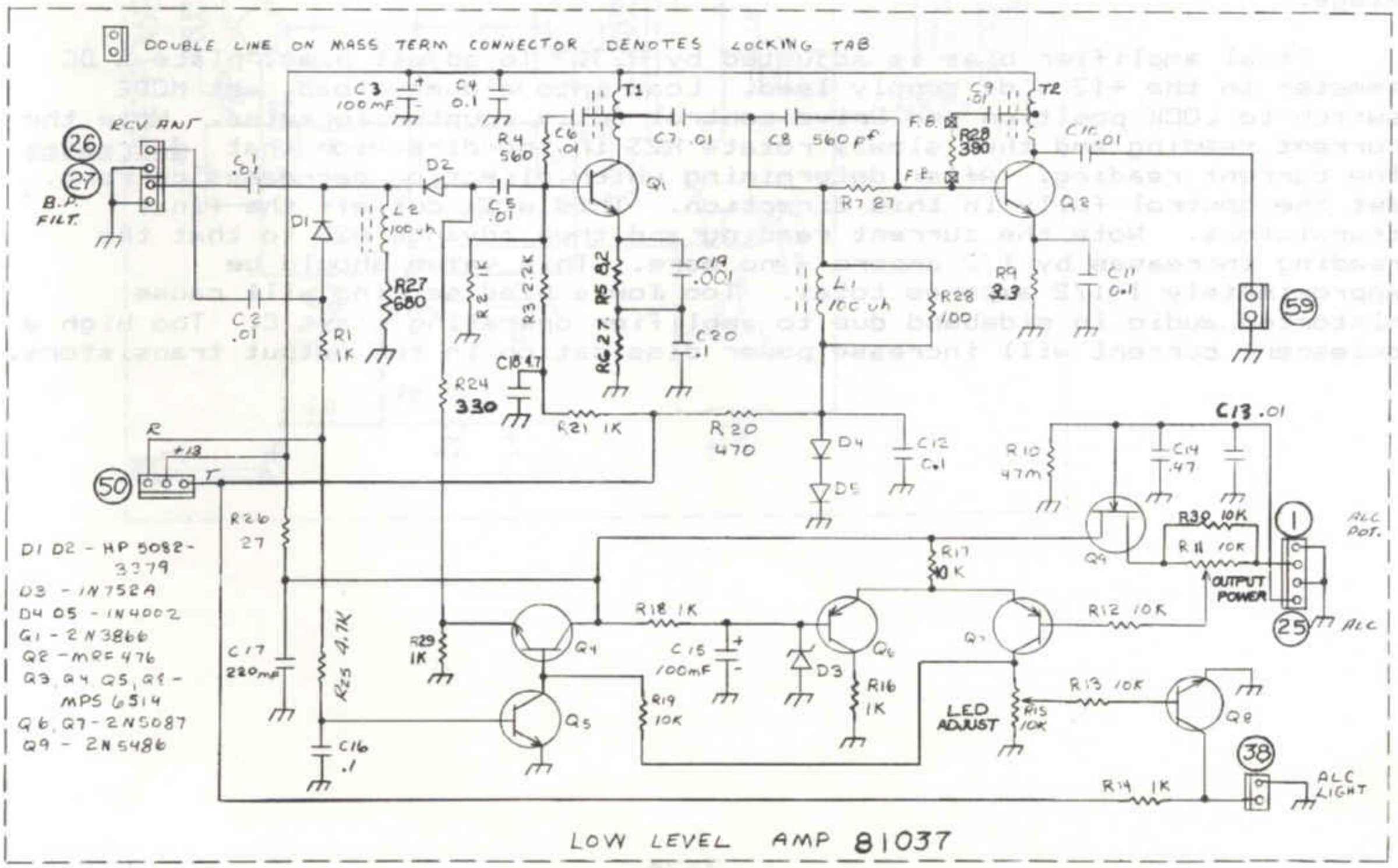


LOW LEVEL AMP 81037

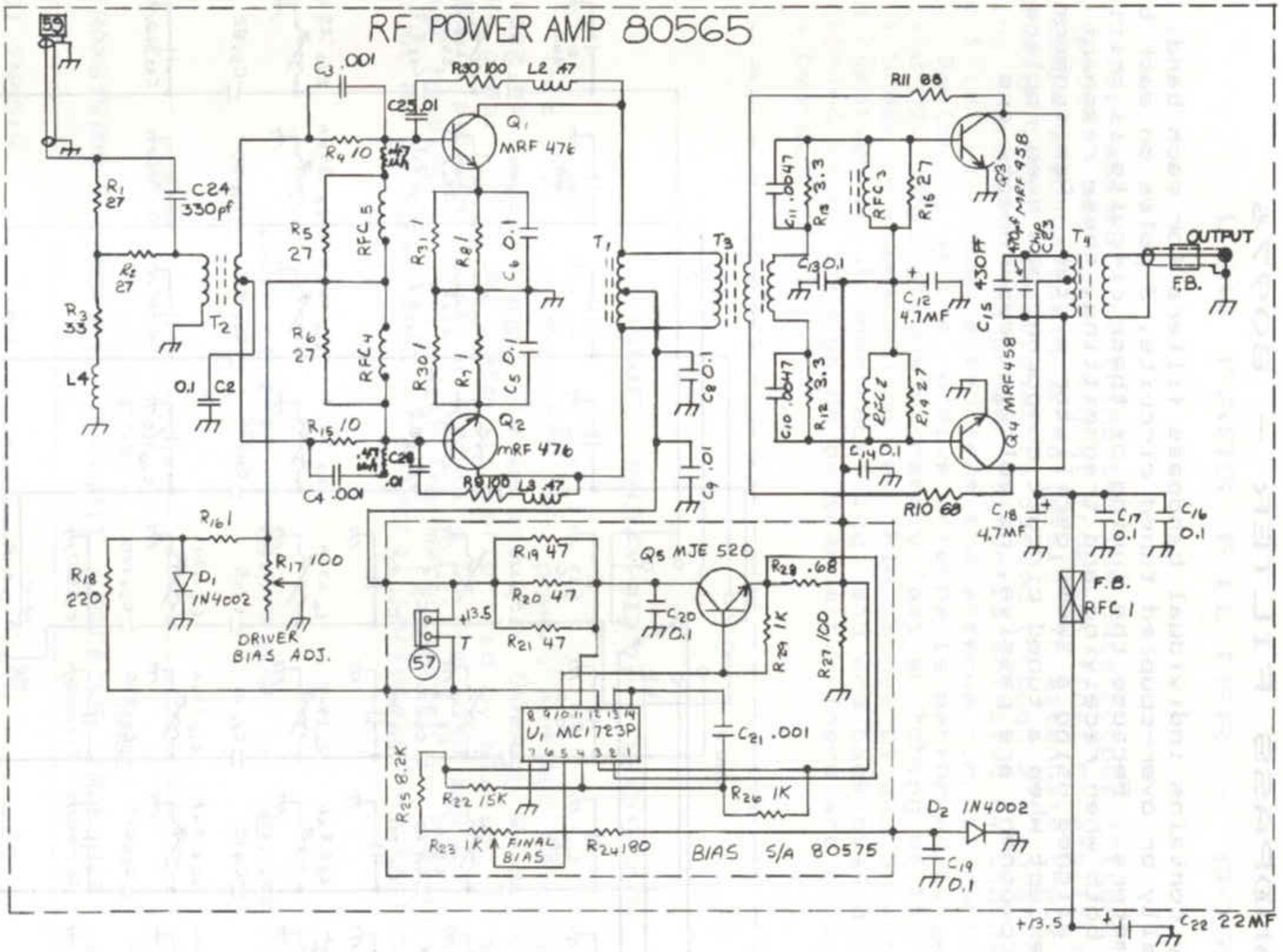
LOW LEVEL DRIVER — 81037

This assembly contains the transmit low level amplifier and the ALC circuit. Also, the signal into the bandpass filter is determined by the switching of PIN diodes D1 and D2. To adjust the action of the ALC LED indicator, place the MODE switch in the LOCK position and DRIVE control at full counterclockwise. Adjust R15 to a point just below where the LED begins to light. Using a wattmeter and dummy load, advance the DRIVE control until 100 watts is indicated on 14.05 MHz. Adjust the front panel ALC control for full clockwise rotation and then adjust R11 so that the LED is fully bright with 100 watts output.

TRANSISTOR	COIL (drain) RECEIVE	COIL (drain) TRANSMIT	BASE (gate) RECEIVE	BASE (gate) TRANSMIT	EMITTER (source) RECEIVE	EMITTER (source) TRANSMIT
Q1	13.0	13.0	0	2.0	0	1.4
Q2	13.0	13.0	0	1.27	0	.6
Q4	13.0	13.0	0	4.2	0	4.5
Q5	0	4.5	.75	0	0	0
Q6	0	0	5.4	5.4	3.8	5.1
Q7	3.8	5.1	3.2	4.4	3.6	5.1
Q8	0	.25	.61	.54	0	0
Q9	2.5	2.6	0	0	13.0	13.0

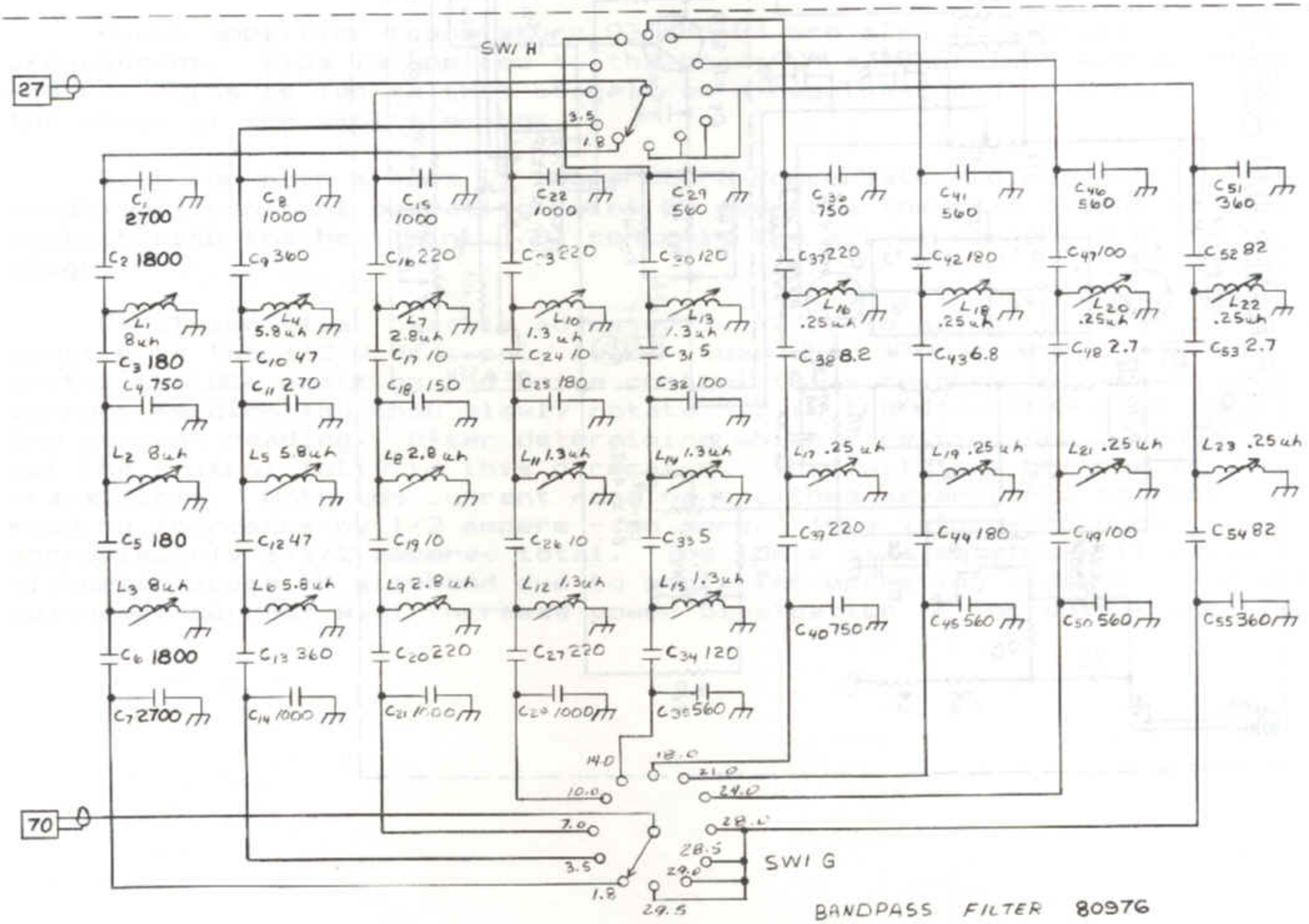


LOW LEVEL AMP 81037


RF POWER AMP 80565
C3 .001
R30 100
L2 .47
C25 .01
Q1 MRF 476
R4 10
R1 27
C24 330pf
R2 27
R5 27
RFC 5
R6 27
RFC 4
R31
R8
C6 0.1
R30
R7
C5 0.1
T1
T3
T2
L4
0.1 C2
R15 10
C28 .01
Q2 MRF 476
C4 .001
R29 100
L3 .47
C8 0.1
C9 .01
R11 68
C11 .0047
R13 3.3
RFC 3
R16 27
Q3 MRF 458
C13 0.1
C12 4.7MF
C15 430PF
470pf MRF 458
C23
T4
OUTPUT
F.B.
C10 .0047
R12 3.3
RFC 2
R14 27
Q4 MRF 458
C14 0.1
R10 68
C18 4.7MF
C17 0.1
C16 0.1
F.B.
RFC 1
R16 1
R17 100
R18 220
D1 IN4002
DRIVER BIAS ADJ.
R19 47
R20 47
R21 47
Q5 MJE 520
C20 0.1
R28 .68
R29 1K
R27 100
+13.5
T
57
U1 MC1723P
C21 .001
R25 8.2K
R22 15K
R26 1K
R23 1K
FINAL BIAS
R24 180
BIAS S/A 80575
D2 IN4002
C19 0.1
+13.5
C22 22MF

BANDPASS FILTER — 80976

This assembly contains individual bandpass filters for each band. They consist of critically or over-coupled tuned circuits, 3 poles on each band except 10 and 15 meters. Because the tuning of these circuits is critical and they are used both when receiving and transmitting, these resonant circuits are best aligned using a sweep oscillator system. Realignment is seldom necessary except when a tuned circuit component has been replaced. Since all of the component are passive, no voltage measurements are required.



LOW PASS FILTER - 80969

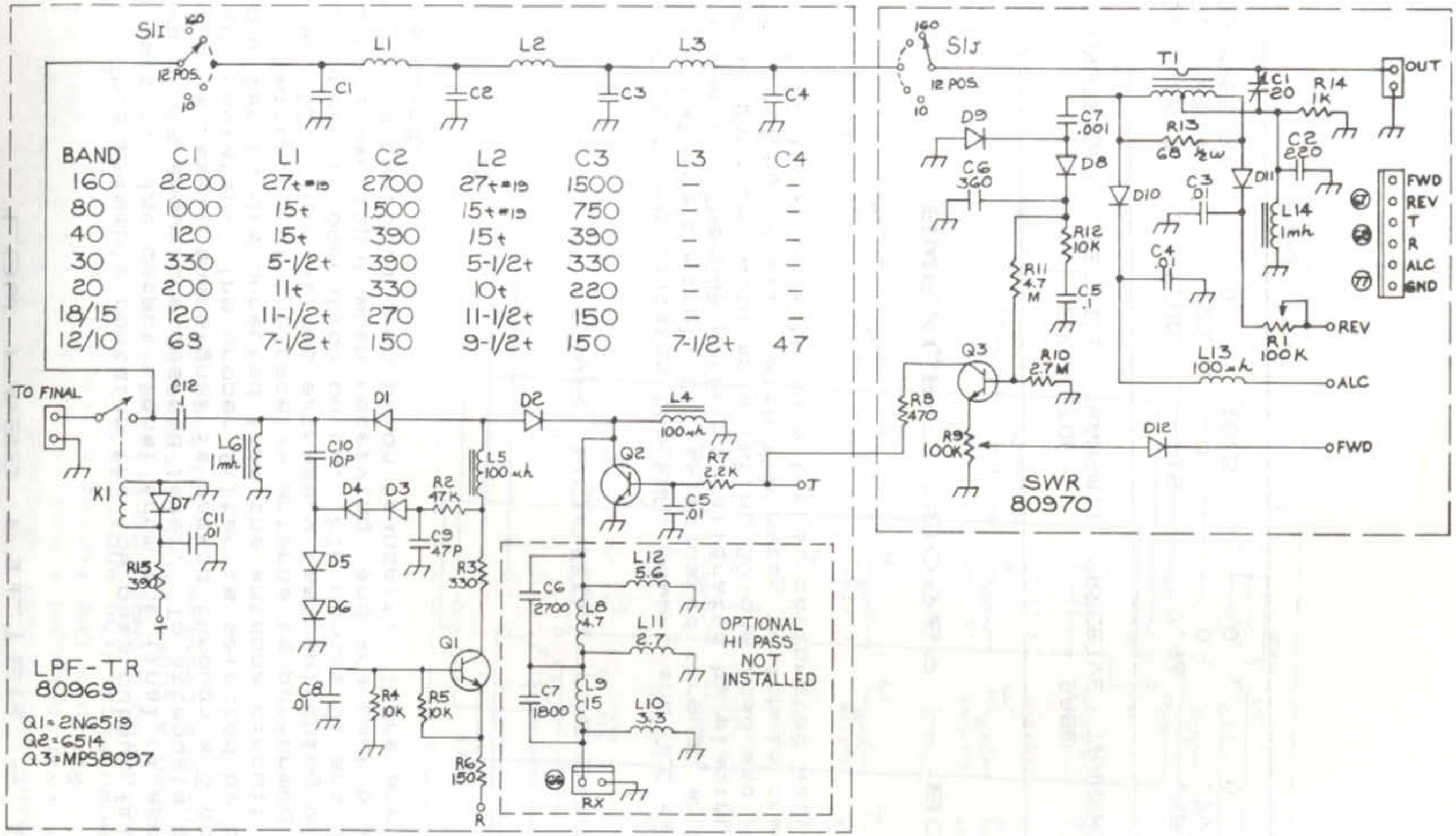
This assembly contains the low pass output filters and the electronic TR switch. The output signal from the final rf amplifier contains harmonic components above the desired level. To attenuate these harmonics to a suitable level, the signal is passed through a 5 pole low pass filter before being radiated. The proper filter is selected by the bandswitch. The final amplifier is disconnected from the antenna circuit during receive by relay K1. Switching of the receive antenna is performed by switch Q1 and diodes D1 and D2. This allows extremely fast switching of the antenna and permits full break-in operation on cw. PIN diodes D1 and D2 connect the antenna to the receiver input when receiving, and are back biased by a voltage rectified by D3 through D6 on transmit. There are no user adjustments on this board.

SWR BOARD - 80970

This board contains the SWR, power, and ALC sensing circuits. The bridge balance control, C1, is adjusted through an access hole on the right side panel. The SWR meter is calibrated by placing an additional 50 ohm load in parallel with an existing 50 ohm load and adjusting R1 for an SWR meter reading of 2:1. With the meter switch in the forward power setting, adjust R2 to agree with an external calibrated wattmeter.

SWR/LPF 80969 - 80970

	COLLECTOR		BASE		EMITTER	
TRANSISTOR	RECEIVE	TRANSMIT	RECEIVE	TRANSMIT	RECEIVE	TRANSMIT
Q1 2N6519	7.80	-.15	7.96	.35	8.71	.72
Q2 2N6514	.05	0	0	.79	0	0
Q3 MPS8097	0	10.5	0	0	0	0


S1I
160
12 POS.
10
L1
L2
L3
C1
C2
C3
C4
BAND C1 L1 C2 L2 C3 L3 C4
160 2200 27t #19 2700 27t #19 1500 — —
80 1000 15t 1500 15t #19 750 — —
40 120 15t 390 15t 390 — —
30 330 5-1/2t 390 5-1/2t 330 — —
20 200 11t 330 10t 220 — —
18/15 120 11-1/2t 270 11-1/2t 150 — —
12/10 68 7-1/2t 150 9-1/2t 150 7-1/2t 47
TO FINAL
C12 .1
K1
D7
C11 .01
R15 390
T
LPF-TR
80969
Q1=2N6519
Q2=6514
Q3=MPS8097
LG 1mh
C10 10P
D1
D2
L4 100mh
L5 100mh
D4
D3
R2 47K
C9 47P
D5
D6
R3 330
Q1
C8 .01
R4 10K
R5 10K
R6 150
R
Q2
R7 2.2K
C5 .01
T
C6 2700
L8 4.7
L12 5.6
L11 2.7
C7 1800
L9 15
L10 3.3
OPTIONAL
HI PASS
NOT
INSTALLED
RX
S1J
160
12 POS.
10
T1
C1 20
R14 1K
OUT
D9
C7 .001
D8
C6 360
R13 68 ½w
D10
C3 .01
D11
C2 220
L14 1mh
FWD
REV
T
R
ALC
GND
R12 10K
R11 4.7 M
C5 .1
C4 .01
REV
R1 100K
Q3
R10 2.7M
L13 100mh
ALC
R8 470
R9 100K
D12
FWD
SWR
80970

DIGITAL READOUT

The frequency counter and digital display section of the CORSAIR II consists of two interconnected printed circuit assemblies located in an aluminum enclosure which is secured to the front subpanel. The large scale integrated circuit, display interface circuitry, a 10-1 prescaler, and a 5 volt regulator are mounted on the counter logic board 80973. The remaining circuits for the counter timebase and pre-amp are mounted on the pre-amp board 80974.

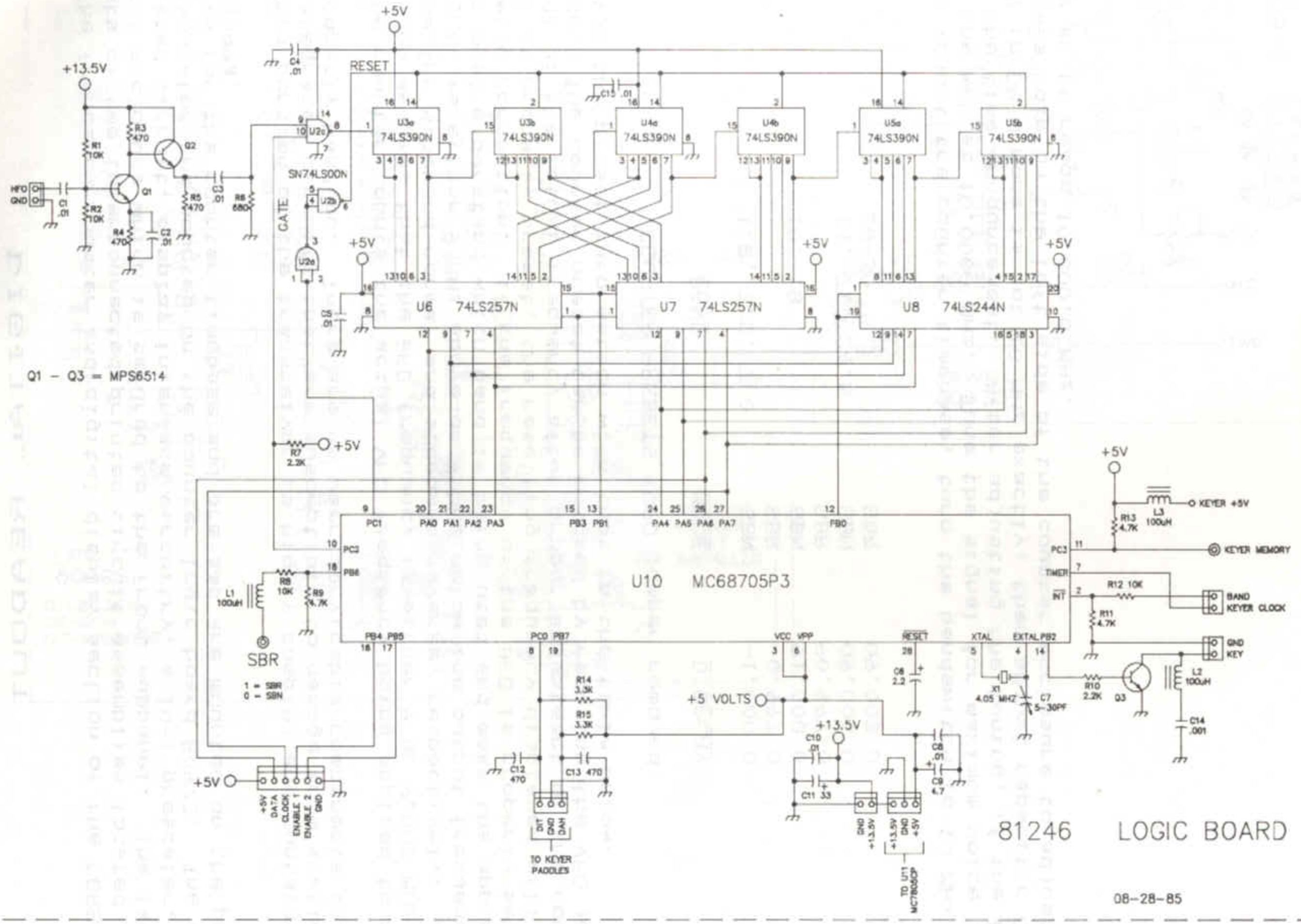
This portion of the transceiver is highly complex and contains MOS and CMOS integrated circuits that are susceptible to damage from static burnout if improperly handled. There are no user servicable components inside.

The counter counts the actual VFO frequency being applied to the first mixer, and assumes that the BFO frequency is either 9 or 9.003 MHz. This is the case for sideband normal and sideband reverse, respectively. Since the VFO signal is either 9 MHz above or 9 MHz below the output frequency, the counter must understand which band is being used and make the appropriate arithmetic correction. If the frequency of the BFO is properly set, and the counter is properly preset, the resulting frequency displayed will be within ± 100 Hz of the actual frequency after proper adjustment of the counter timebase. The counter preset can be checked by removing the VFO jumper and comparing the preset information with that in the table below.

COUNTER PRESETS (VFO jumper removed)

BAND	MODE	DISPLAY
1.8, 3.5, 7.0	SBN	-1.000 0
	SBR	-0.997 0
10, 18	SBN	91.000 0
	SBR	90.997 0
14, 21, 24.5	SBN	09.000 0
28-30	SBR	09.003 0

To adjust the counter timebase, turn the bandswitch to 10 MHz and adjust the WWV at 10.0000 MHz. Tune the signal for maximum voice clarity during the time announcement. After adjusting the tuning, if the frequency display in SB-N mode is not 10 MHz exactly, then adjust capacitor C1 through the access hole on the left side of the counter enclosure to adjust the display so it reads 10.000.0 MHz.


+5V
+13.5V
RESET
SN74LS00N
GATE
U3a 74LS390N
U3b 74LS390N
U4a 74LS390N
U4b 74LS390N
U5a 74LS390N
U5b 74LS390N
U6 74LS257N
U7 74LS257N
U8 74LS244N
Q1 – Q3 = MPS6514
R1 10K
R2 10K
R3 470
R4 470
R5 470
R6 680
R7 2.2K
HFO
GND
PC1
PA0 PA1 PA2 PA3
PB3 PB1
PA4 PA5 PA6 PA7
PB0
PC2
PB6
U10 MC68705P3
PC3
TIMER
INT
L1 100uH
R8 10K
R9 4.7K
SBR
1 = SBR
0 = SBN
PB4 PB5
PC0 PB7
VCC VPP
RESET
XTAL
EXTAL PB2
R14 3.3K
R15 3.3K
+5 VOLTS
X1 4.05 MHZ
C7 5–30PF
R10 2.2K
Q3
L2 100uH
C14 .001
R12 10K
R11 4.7K
R13 4.7K
L3 100uH
KEYER +5V
KEYER MEMORY
BAND KEYER CLOCK
GND KEY
+5V DATA CLOCK ENABLE 1 ENABLE 2 GND
DIT GND DAH
TO KEYER PADDLES
GND +13.5V
+13.5V GND +5V
TO U11 MC7805/CP
81246 LOGIC BOARD
08–28–85

CONTROL BOARD — 80978

This assembly contains a set of synchronous transistor switches for controlling the "T" and "R" voltages that switch the unit from transmit to receive mode. It also contains an integrated circuit voltage regulator which powers the frequency and voltage sensitive circuits in the VFO, sideband generator, product detector, and offset control circuits.

Transistors Q1 through Q5 and Q11 generate the T and R voltages. Transistor Q9 and IC U1 are the voltage regulator. Transistors Q13 and Q14 plus diodes D3 and D4 perform the offset tuning switch functions.

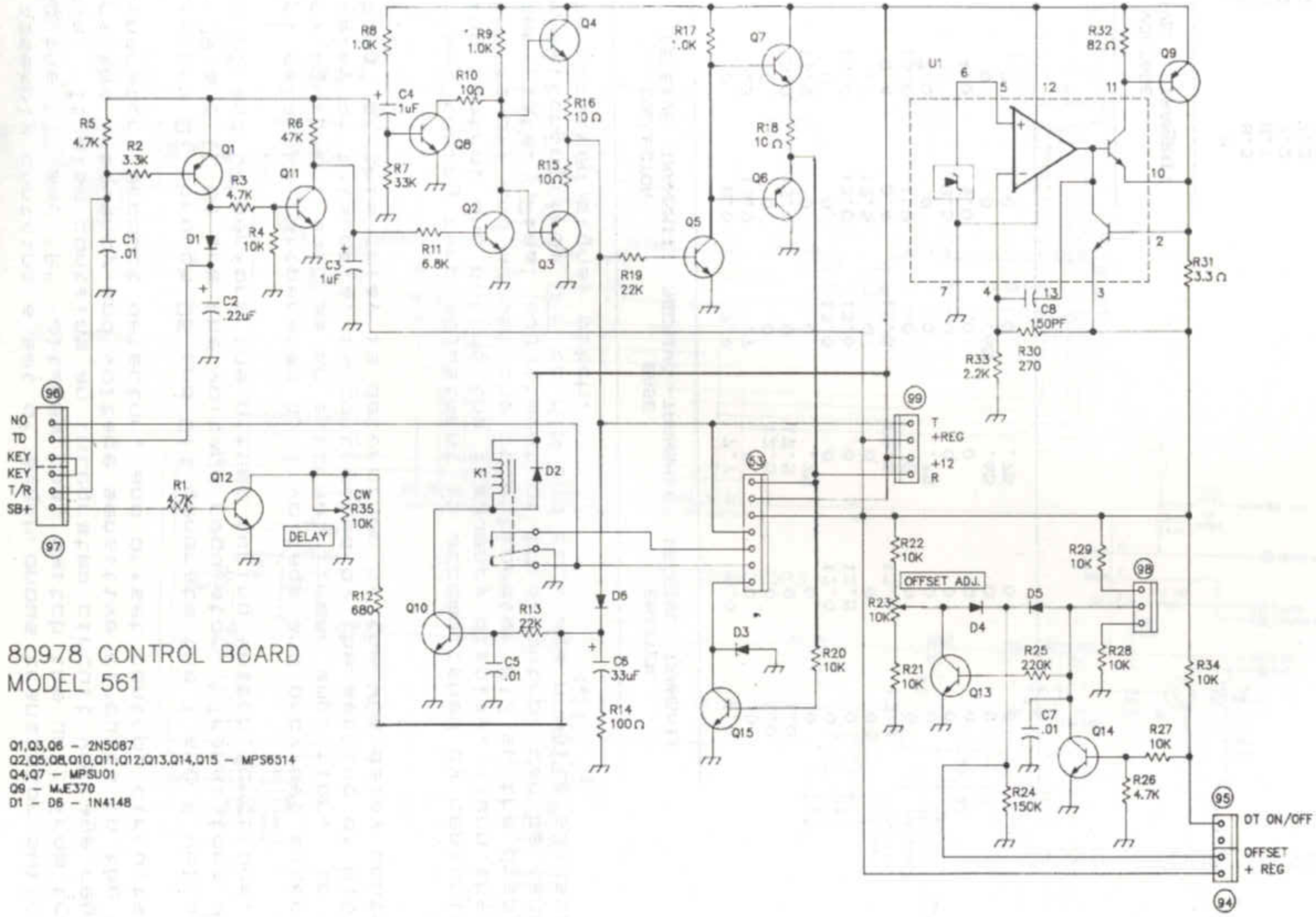
Control relay K1 is operated by T voltage and provides external control of accessory equipment such as an external linear amplifier. In the cw mode only, the delay of this relay is controlled by the setting of R10. In ssb mode the "hang" of this relay is determined by the VOX delay control on the front panel.

The offset tuning zero adjustment is accomplished by centering the offset tuning control and noting the frequency display. Turn the offset select switch to off and adjust the potentiometer R12 so the display returns to its former state. Final adjustment of this control can be made by alternately switching from OFF to MIN and back again while adjusting R12 for no change in received signal pitch.

TRANSISTOR	COLLECTOR		BASE		EMITTER	
	RECEIVE	TRANSMIT	RECEIVE	TRANSMIT	RECEIVE	TRANSMIT
Q1	0	8.0	7.9	7.7	8.0	8.0
Q2	.2	13.0	.7	0	0	0
Q3	0	0	0	12.5	0	1.0
Q4	13.0	13.0	0	12.5	0	1.0
Q5	13.0	0	0	.75	0	0
Q6	0	0	13.0	0	12.0	0
Q7	13.0	13.0	13.0	0	12.5	0
Q8	.2	12.5	0	0	0	0
Q9	8.4	8.4	12.5	12.5	13.0	13.0
Q10	13.0	1.8	0	.8	0	0
Q11	2.0	0	0	.75	0	0
Q12	0	8.5	0	0	0	0
Q13	4.0	4.0	0	0	0	0
Q14	0	0	.65	.65	0	0
Q15	0	0	0	.75	0	0

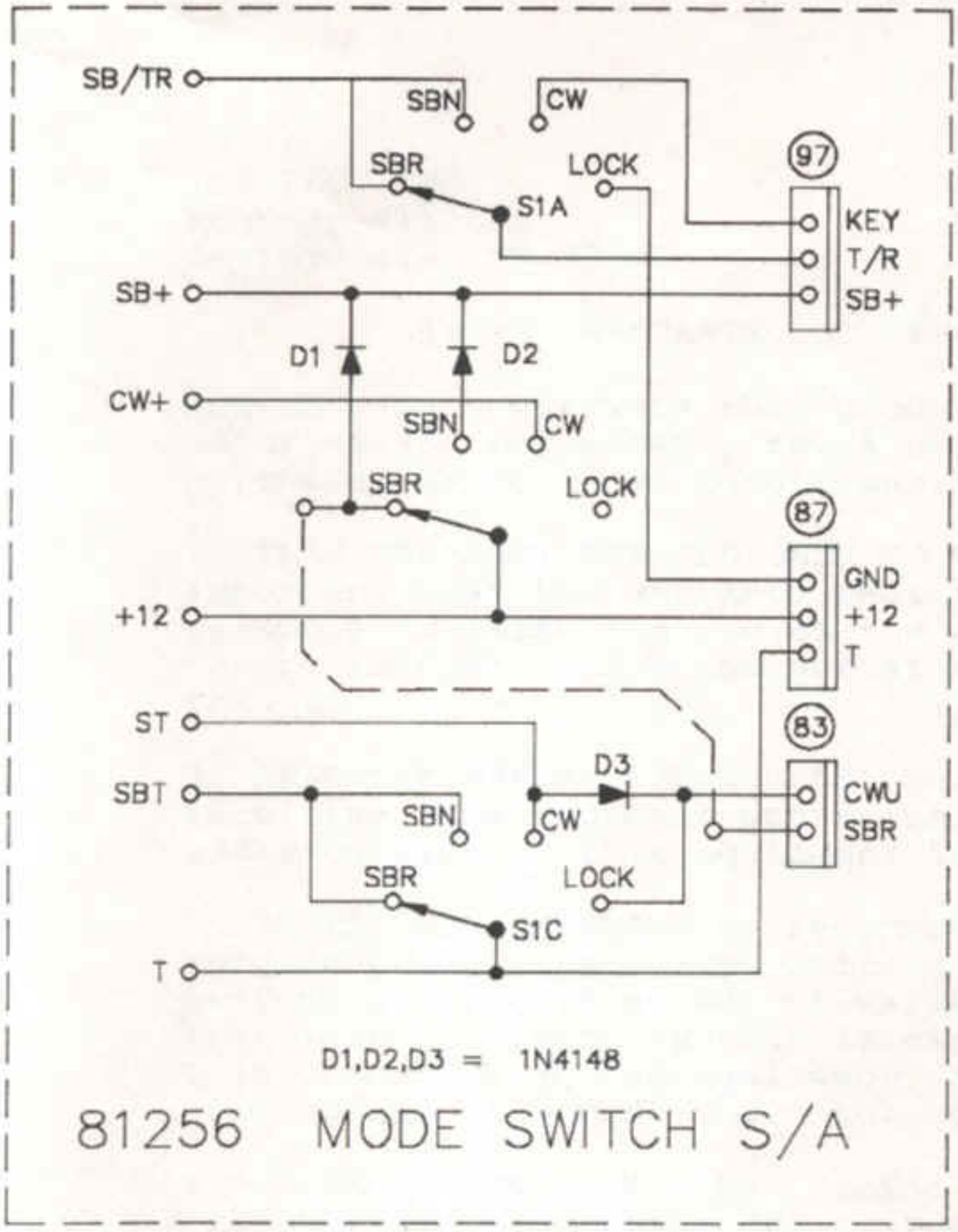
U1

PIN	VOLTAGE	
	RECEIVE	TRANSMIT
1	0	0
2	8.5	8.5
3	8.2	8.2
4	7.2	7.2
5	7.2	7.2
6	7.2	7.2
7	0	0
8	0	0
9	1.65	1.65
10	8.4	8.4
11	13.0	13.0
12	13.0	13.0
13	9.8	9.8
14	0	0

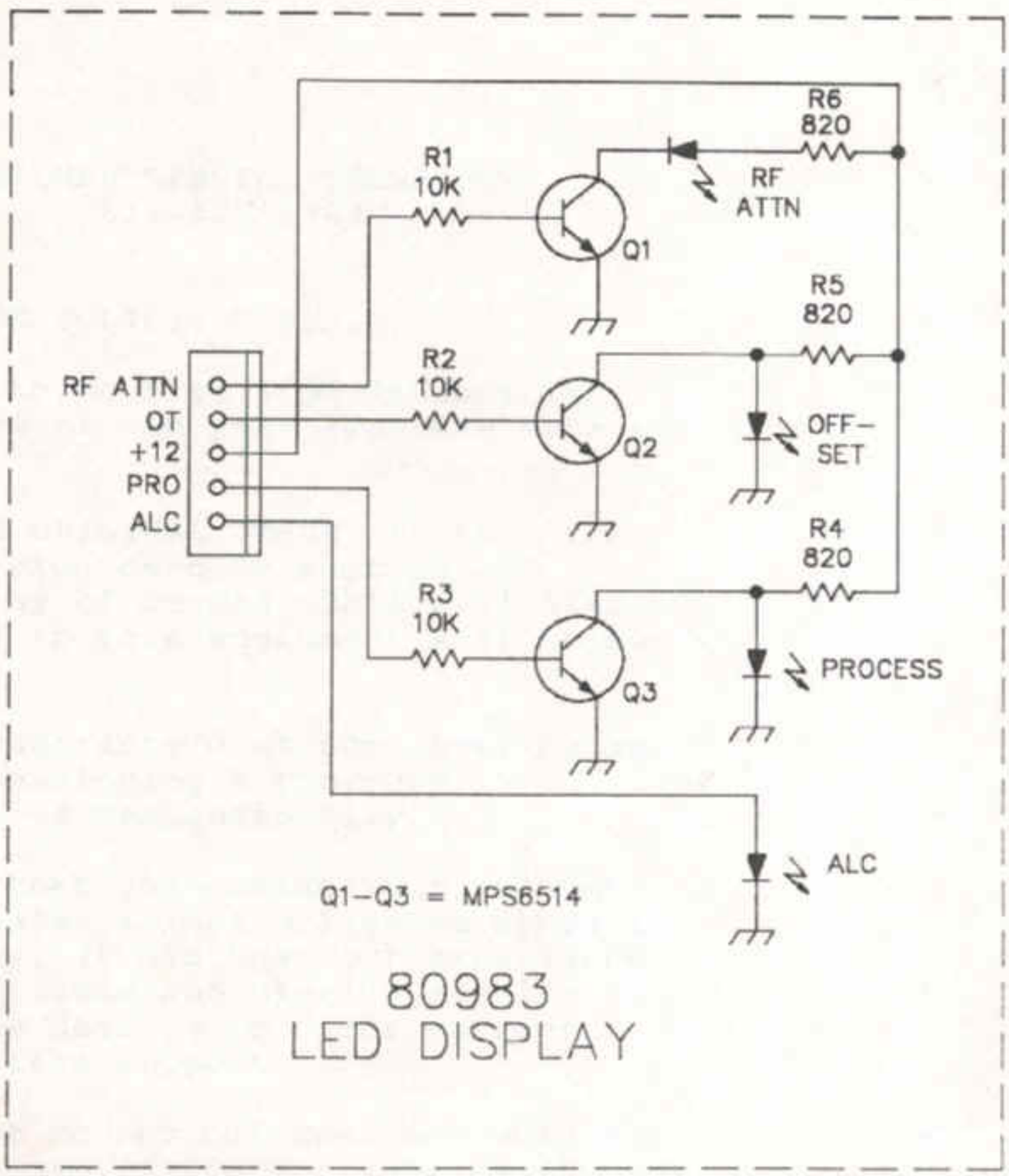


80978 CONTROL BOARD
MODEL 561

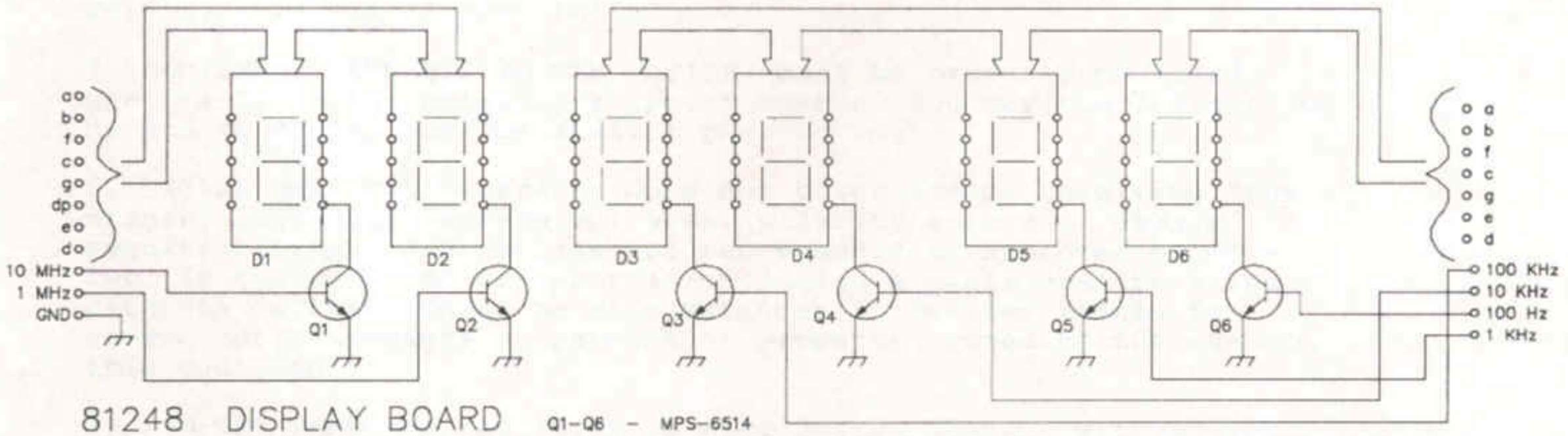
Q1,Q3,Q6 – 2N5087
Q2,Q5,Q8,Q10,Q11,Q12,Q13,Q14,Q15 – MPS6514
Q4,Q7 – MPSU01
Q9 – MJE370
D1 – D6 – 1N4148



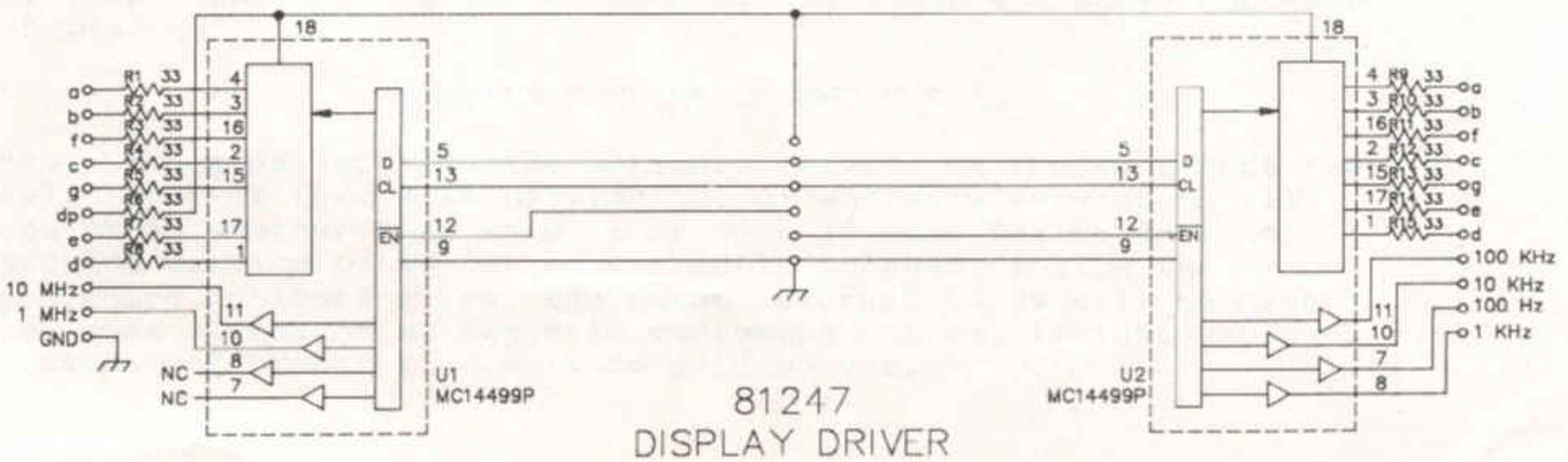
81256 MODE SWITCH S/A



80983
LED DISPLAY



81248 DISPLAY BOARD Q1-Q6 - MPS-6514

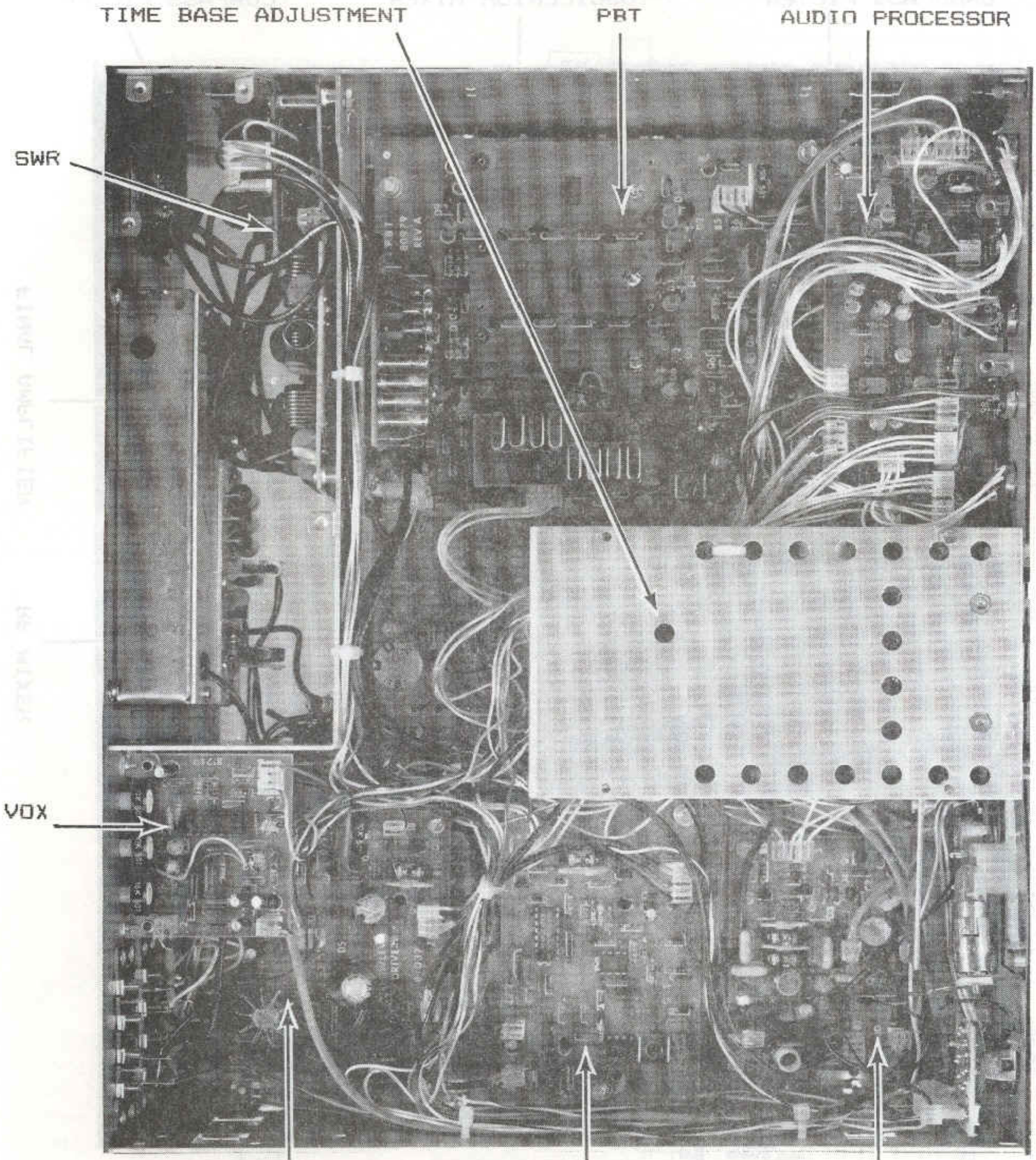


81247
DISPLAY DRIVER

CONTENTS

Part No. 74171 Printed in USA

MODEL 561 TOP VIEW



TEN-TEC, Inc.
Highway 411 East
Sevierville, TN 37862

CUSTOMER SERVICE TELEPHONE
615-428-0364

LIMITED WARRANTY AND SERVICE POLICY, U.S.A.

TEN-TEC, Inc. warrants this product to be free from defects in material and workmanship for a period of one year from the date of purchase, under these conditions:

1. THIS WARRANTY APPLIES ONLY TO THE ORIGINAL OWNER. It is important that the warranty registration card be sent to us promptly to establish you as the owner of record. This will also insure that any bulletins pertaining to this equipment will be sent to you.

2. READ THE MANUAL THOROUGHLY. This warranty does not cover damage resulting from improper operation. Developing a thorough understanding of this equipment is your responsibility.

3. IF TROUBLE DEVELOPS we recommend that you contact our customer service group direct. The selling dealer is not obligated by us to perform service in or out of warranty. It has been our experience that factory direct service is expeditious and usually results in less down-time on the equipment. Some dealers do offer warranty service and of course, have our complete support.

4. WE ENCOURAGE SELF HELP. Taking the covers off does not void the warranty. In many cases our customer service technicians, with your help, can identify a faulty circuit board. In these cases we will send you a replacement board which you can change out. This will be shipped on a 30 day memo billing and when the defective board is returned, we will issue credit.

5. EQUIPMENT RETURNED TO THE FACTORY must be properly packaged, preferably in the original shipping carton. You pay the freight to us and we prepay surface freight back to you.

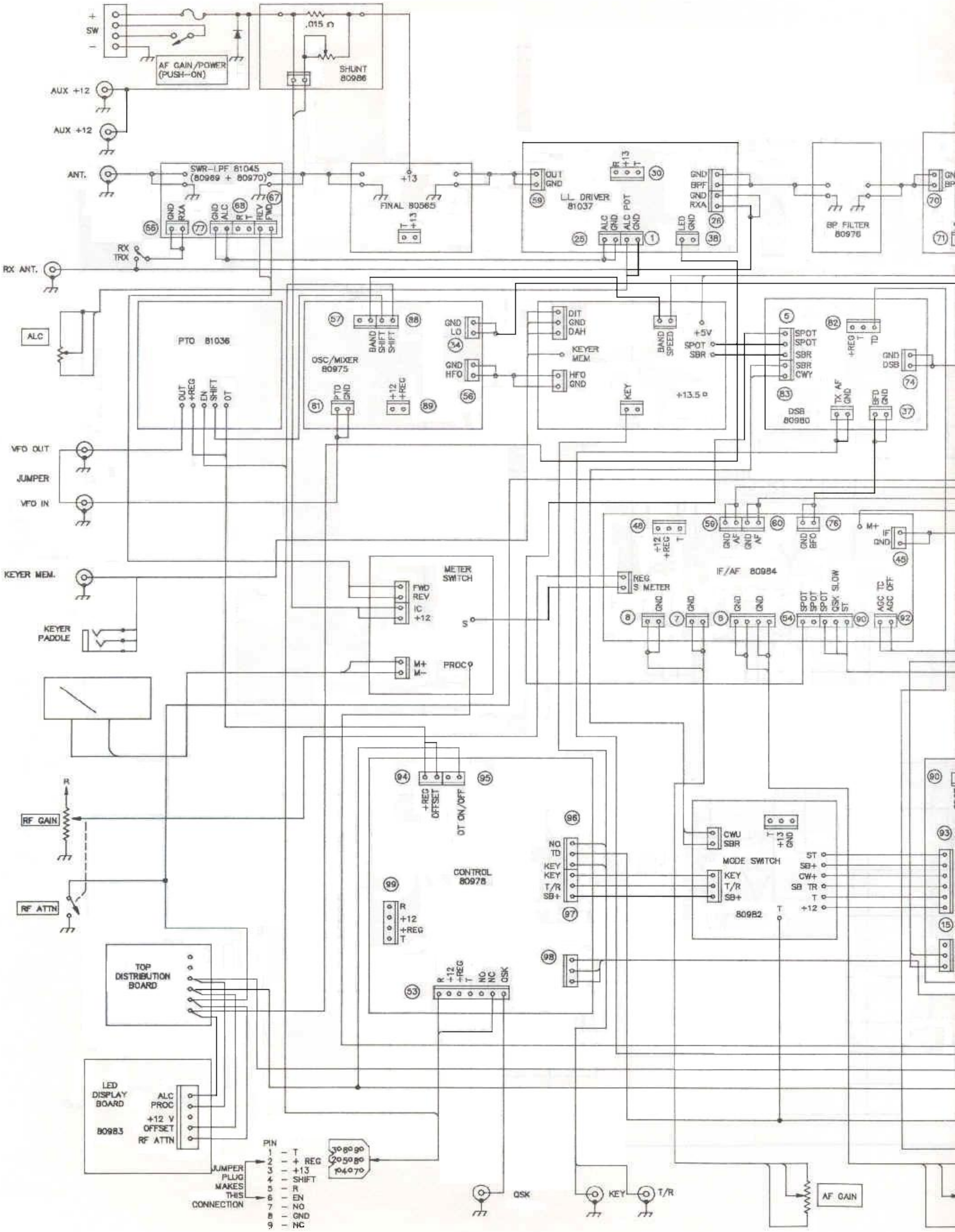
5. EXCLUSIONS. This warranty does not cover damage resulting from misuse, lightning, excess voltages, polarity errors or damage resulting from modifications not recommended or approved by Ten-Tec. In the event of transportation damage a claim must be filed with the carrier. Under no circumstances is Ten-Tec liable for consequential damages to persons or property caused by the use of this equipment.

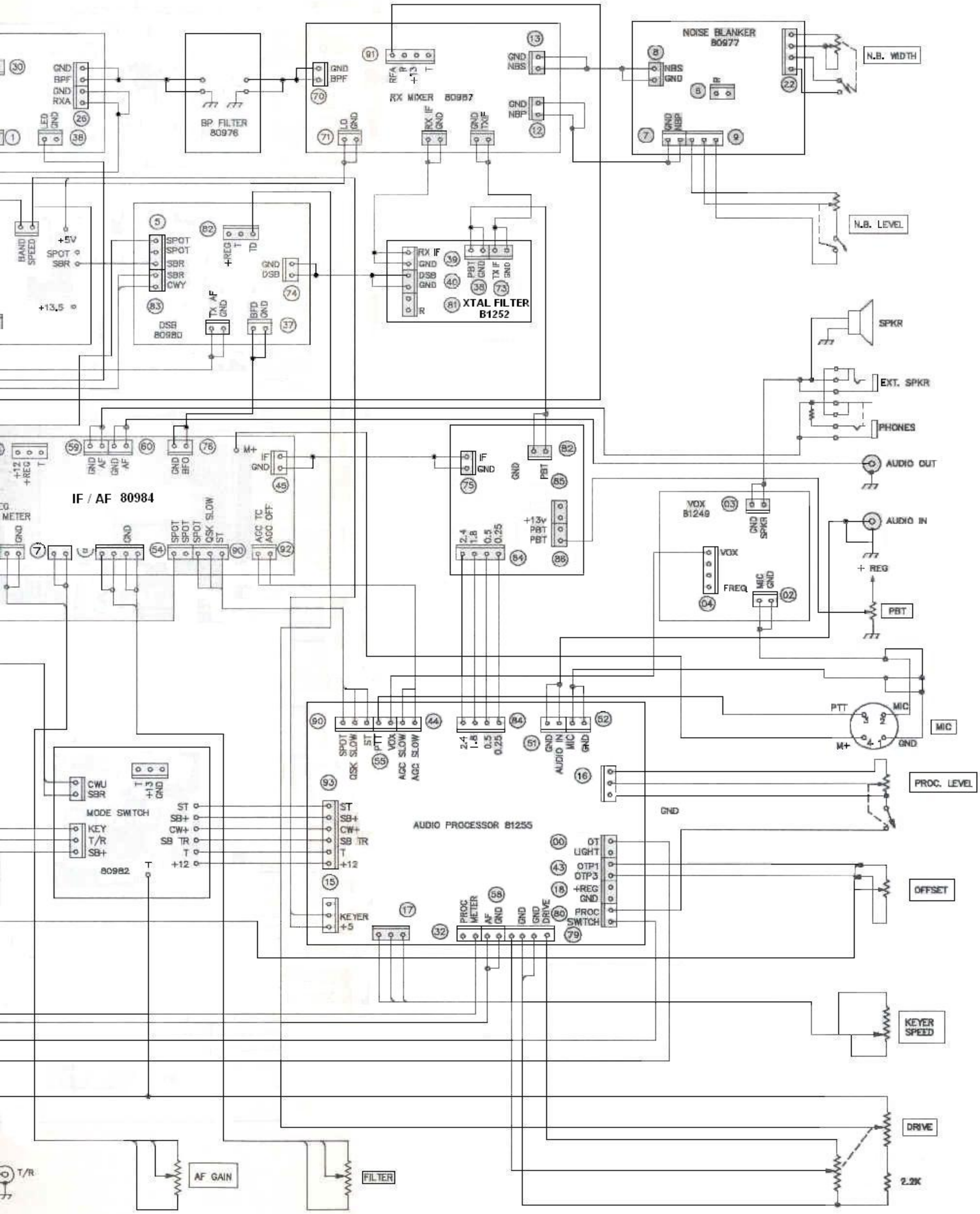
6. TEN-TEC RESERVES the right to make design changes without any obligation to modify equipment previously manufactured.

7. THIS WARRANTY is given in lieu of any other warranty, expressed or implied.

SERVICE OUTSIDE OF THE U.S.A.

Many of our dealers provide warranty service on the equipment they sell. Many of them also provide out of warranty service on all equipment whether they sold it or not. If your dealer does not provide service or is not conveniently located, follow the procedure outlined above. Equipment returned to us will be given the same attention as domestic customers but all freight expense, customs and broker fees will be paid by you.


SW
AF GAIN/POWER (PUSH-ON)
.015 Ω
SHUNT 80986
AUX +12
AUX +12
ANT.
SWR-LPF 81045 (80969 + 80970)
GND RXA
GND ALC
RT
REV FWD
+13
FINAL 80565
OUT GND
DRIVER 81037
IR +13 T
GND BPF GND RXA
ALC GND ALC GND
LED GND
POT
BP FILTER 80976
RX
TRX
RX ANT.
ALC
PTO 81036
OUT +REG EN SHIFT OT
OSC/MIXER 80975
BAND SHIFT SHIFT
GND LO
GND HFO
PTO GND
+12 +REG
DIT GND DAH
KEYER MEM
HFO GND
KEY
BAND SPEED
+5V
SPOT SBR
+13.5
SPOT SPOT SBR SBR CWY
+REG T
TD
GND DSB
DSB 80980
TX AF GND
BFO GND
VFO OUT
JUMPER
VFO IN
KEYER MEM.
KEYER PADDLE
METER SWITCH
FWD REV IC +12
S
M+ M-
PROC
+12 +REG T
GND AF GND AF
GND BFO
M+
IF GND
IF/AF 80984
REG S METER
GND GND GND GND
SPOT SPOT SPOT QSK SLOW ST
AGC TC AGC OFF
+REG OFFSET
DT ON/OFF
CONTROL 80978
R +12 +REG T
R +12 +REG T NO NC QSK
NO TD KEY KEY T/R SB+
CWU SBR
T +13 GND
MODE SWITCH
KEY T/R SB+
ST SB+ CW+ SB TR T +12
80982
RF GAIN
RF ATTN
TOP DISTRIBUTION BOARD
LED DISPLAY BOARD
80983
ALC
PROC
+12 V
OFFSET
RF ATTN
JUMPER PLUG MAKES THIS CONNECTION
PIN
1 – T
2 – + REG
3 – +13
4 – SHIFT
5 – R
6 – EN
7 – NO
8 – GND
9 – NC
QSK
KEY
T/R
AF GAIN


GND
BPF
GND
RXA
LED
GND
BP FILTER
80976
GND
BPF
RX MIXER 80987
RFA
R
+13
T
LO
GND
RX IF
GND
GND
TXIF
GND
NBS
GND
NBP
NOISE BLANKER
80977
NBS
GND
R
GND
NBP
N.B. WIDTH
N.B. LEVEL
BAND
SPEED
+5V
SPOT
SBR
+13.5
SPOT
SPOT
SBR
SBR
CWY
+REG
T
TD
GND
DSB
DSB
80980
TX AF
GND
BFO
GND
RX IF
GND
DSB
GND
R
PBT
GND
TX IF
GND
XTAL FILTER
B1252
SPKR
EXT. SPKR
PHONES
AUDIO OUT
AUDIO IN
+12
+REG
T
GND
AF
GND
AF
GND
BFO
M+
IF
GND
IF / AF 80984
METER
GND
GND
SPOT
SPOT
SPOT
QSK
SLOW
ST
AGC
TC
AGC
OFF
IF
GND
GND
PBT
+13v
PBT
PBT
2.4
1.8
0.5
0.25
VOX
81249
GND
SPKR
VOX
FREQ
MIC
GND
+ REG
PBT
PTT
MIC
M+
GND
MIC
SPOT
QSK
SLOW
ST
PTT
VOX
AGC
SLOW
AGC
SLOW
2.4
1.8
0.5
0.25
GND
AUDIO IN
MIC
GND
PROC. LEVEL
CWU
SBR
+13
GND
MODE SWITCH
KEY
T/R
SB+
80982
ST
SB+
CW+
SB TR
T
+12
AUDIO PROCESSOR 81255
ST
SB+
CW+
SB TR
T
+12
KEYER
+5
OT
LIGHT
OTP1
OTP3
+REG
GND
PROC
SWITCH
GND
OFFSET
PROC
METER
AF
GND
GND
GND
DRIVE
KEYER
SPEED
DRIVE
2.2K
T/R
AF GAIN
FILTER