INSTRUCTION MANUAL



MODEL FS-2340

40 CHANNEL

Citizens Band Transceiver

SONAR RADIO CORPORATION

73 Wortman Avenue • Brooklyn, N. Y. 11207

44-010-118

MODEL FS-2340

40 CHANNEL

CITIZENS BAND TRANSCEIVER

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SECTION 1 - WARRANTY AND SERVICE

1 - 1. LIMITED 90 DAY WARRANTY

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE. THE LIABILITY OF SONAR FOR BREACH OF ANY WARRANTY, EXPRESS OR IMPLIED, SHALL BE LIMITED AS HEREINAFTER SET FORTH. IN NO EVENT SHALL SONAR HAVE ANY OBLIGATION OR LIABILITY FOR DAMAGES, INCLUDING BUT NOT LIMITED TO CONSEQUENTIAL DAMAGES, ARISING OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THE EQUIPMENT. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

Sonar Radio Corporation ("Sonar"), having a place of business at 73 Wortman Avenue, Brooklyn, New York 11207, hereby warrants the Sonar equipment sold pursuant hereto to be free from defects in material and workmanship. During the period of the Warranty, Sonar will repair any such defect within a reasonable time and without charge.

The period of the Warranty shall be ninety (90) days from the date of acquisition of the equipment by the Original End User. As used herein, "Original End User" shall mean the person who first acquires the equipment other than for purposes of resale or lease to others.

The obligations of Sonar hereunder shall be dependent on the following:

(a) The defect has not been caused by damage sustained by the equipment while in the possession of the Original End User or subsequent thereto (unless such damage was caused by a defect covered by this Warranty), from unreasonable use or from the failure to provide reasonable and necessary maintenance.

(b) The Original End User shall have filed with Sonar the Sonar Warranty Registration Card (a copy of which may be obtained from Sonar upon request), with Part 1 accurately completed. Failure to file the card will not affect rights under the Warranty provided the person seeking relief under the Warranty establishes the date the Original End User acquired the equipment.

(c) The person seeking relief under the Warranty shall give to Sonar written notice of any defect, and shall comply with the service instructions given by Sonar in response thereto, including the return at his expense of the equipment to Sonar at its factory.

1 - 2. SERVICE POLICY

Should it become necessary to repair any equipment, send a letter to Sonar at the address above, describing the basic problem. We will let you know if an authorized service agency near you can correct the problem. Otherwise you will be instructed to return the unit to the factory. Do not return the unit without factory authorization.

When returning equipment to Sonar, enclose a letter, again describing the basic problem. If the equipment is under warranty, state so, and mention the date of purchase. If the Sonar Warranty Registration Card has not been filed, enclose a copy of your purchase receipt. The equipment should be very carefully packed, adequately insured and shipping charges prepaid.

1 - 3. CHANGES

Sonar reserves the right to modify or change the design of any equipment, mechanically or electrically, to any degree without Sonar being liable to modify, change or exchange any previously delivered equipment.

SECTION 2 - FCC RULES AND REGULATIONS

The FCC Regulations require that Form 505, "Application for Station License in the R/C or CB Service", Form 555-B, "Temporary Permit, in the CB Service", and a copy of Subpart D of Part 95 of the Commission's Rules and Regulations, each to be current at the time of packing, shall be furnished with each FS-2340. Each licensee shall maintain as a part of his station records a current copy of Subpart D of Part 95, Personal Radio Services. An operator must have a temporary permit or a license from the FCC to operate the transmitter.

The Sonar FS-2340 has been FCC Type Accepted for use under Part 95 (Equipment Type Number FS-2340).

The FS-2340 has been tested prior to shipment to comply with the FCC Rules and Regulations regarding power input, receiver radiation, spurious signal attenuation and frequency stability.

WARNING

Certain repairs and adjustments to the FS-2340 may be made legally only by a person in possession of a valid First or Second Class FCC Radio Telephone Operator License, or by a person under the direct supervision of a holder of such a license. This applies particularly to those repairs or adjustments such as replacement or substitution of crystals, tubes or other components which might affect the transmitter's ability to comply with the FCC Technical Regulations of Part 95.

SECTION 3 - DESCRIPTION

3 - 1A. GENERAL

The FS-2340 is a 40 channel crystal-controlled transmitter and receiver unit with a self-contained AC power supply. A phase locked frequency synthesizer determines the frequency of operation of both transmitter and receiver. Output of the synthesizer is mixed with a 6 MHz oscillator output for transmitting or with a 5.545 MHz oscillator output for receiving. Fine tuning control is provided on the front panel so that the frequency of the 5.545 MHz oscillator may be shifted to accommodate the reception of transmitters operating within the tolerances provided by the FCC.

A channel indicator and meter are illuminated for better visibility. A large front-mounted speaker provides an ample amount of audio. A rear speaker jack is provided for an external speaker. The meter reads both relative power output and received signal strength. Zero adjustment of the "S" meter is provided on the rear panel.

The FS-2340 is constructed of heavy gauge aluminum for heavy-duty operation. The cabinet is adequately ventilated. The perforated top and bottom are easily removed for servicing when so required.

The transmitter is fully modulated by a Class "AB" push-pull audio amplifier. The audio amplifiers are designed to restrict the audio to 300 - 3000 Hertz. This provides maximum intelligibility under poor operating conditions.

3 - 1B. SPECIFICATIONS

1. RECEIVER

Sensitivity	0.4 microvolt for 10 db $\frac{S+N}{N}$ 1.0 microvolt for 20 db " N "
Selectivity	±2.5 KHz @ -6 db ±7.5 KHz @ -60 db
AGC	Output varies only 10 db @ inputs of 10 uv to 1 volt
Squelch	Adjustable to open @ 0.5 to 300 microvolts
"S" Meter	S9 denotes approximately 100 microvolts signal input
Noise Limiter.....	Gated series type (switched)
Audio Output	At least 2.5 watts @ 10% distortion
Audio Response	300 to 3000 Hertz @ -6 db
Hum & Noise	At least -60 db below full output
Image & Spurious....	Better than -60 db
Adjacent Channel	Better than -80 db

2. TRANSMITTER

RF Output Power	4 watts max. (FCC Regulations)
Modulation	Not in excess of 100%
RF Output Impedance.	35 - 70 Ohms
Stability	Better than .003% from -30 to +70°C and ±10% input voltage variation

3. GENERAL

Primary Power.....	120 VAC @ 96 watts
Size	11-3/4"W x 5-3/4"H x 11-3/4"D
Weight	14 lbs.

NOTE: (1) All audio measurements are made with noise limiter off.

(2) Sensitivity measurements are made with a 30% modulated signal source. The modulating frequency is 1000 Hertz.

(3) Sensitivity measurements can vary 4-6 db due to production tolerances.

3 - 2. FRONT PANEL CONTROLS

a. Channel selector switches to any one of 40 channels.
b. Fine tuning allows the operator to "peak up" any received signal that is not exactly on frequency.
c. Microphone jack accepts any ceramic or carbon polarized microphone with a push-to-talk switch. (See 3-4.)
d. Volume controls the amount of audio output at the speaker. In the fully counter-clockwise position, the set is turned off.
e. Squelch restricts the background noise until a signal is received. Maximum squelch requires a large signal to open the threshold.
f. RF Gain adjusts the overall sensitivity of the receiver. This is necessary for reception of very strong signals that may have a tendency to distort.
g. ANL (Automatic Noise Limiter): This switch controls the noise limiter circuit which has been designed to reduce excessive electrical interference, ignition noise, etc. and can turn the noise limiter on and off, depending upon the need to do so.

3 - 3. REAR PANEL CONTROLS

a. External Speaker Jack: This jack allows an external permanent magnet speaker of 4 ohms impedance to be plugged in.
b. Antenna: A UHF type connector is used. Any antenna system of 50 ohms impedance may be used.
c. "S" Meter Zero: Adjusts "S" Meter to zero when antenna is disconnected.

3 - 4. MICROPHONE

The microphone supplied with the FS-2340 is the ceramic type with the ceramic element connected directly to the plug. It is switched into the circuit by the "push-to-talk" button.

Do not use "Power Mic" because of the built-in limiter circuitry.

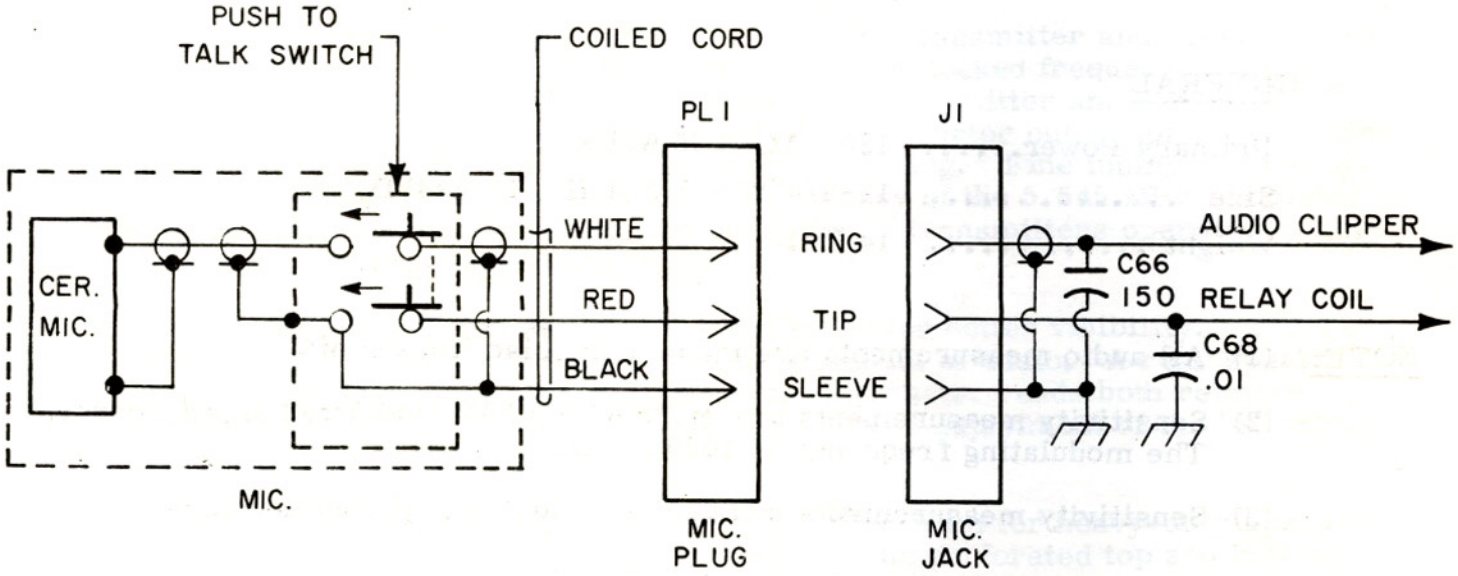


FIG. 1 MICROPHONE CIRCUIT

SECTION 4 - INSTALLATION

4 - 1. BASE ANTENNA

The transmission line (antenna lead) of a base installation may be lengthy even though the antenna is only 20' off a roof. In such an installation RG-8U cable (heavier than RG-58A/U) should be used to minimize the transmission line losses.

Base antennas fall into two categories:

(a) Ground Plane types
(b) Beam antenna types

Ground plane antennas are omni-directional. Beam antennas are uni-directional. If the FS-2340 is used in a restricted direction, a Beam will have a greater advantage since the antenna response will be concentrated in only one direction. The antenna should have an impedance of 50 ohms regardless of the type chosen.

SECTION 5 - OPERATION

After the FS-2340 has been unpacked, inspected and connected to a 120 VAC power source, a suitable antenna of 50 ohm impedance should be connected through either RG-58 or RG-8 coaxial cable. RG-8 coaxial cable provides the least loss when a long antenna cable is necessary. (These cables and antennas may be ordered as accessories from Sonar Radio Corporation.)

Apply power to the radio and allow approximately 3 minutes warm-up. Depress the microphone button. The meter should indicate RF output.

The receiver should have controls set as follows:

Volume	1/2 cw (clockwise)
Squelch	full ccw (min) (counterclockwise)
RF Gain	full cw (max)
Fine Tuning	1/2 cw

When a signal is received, conditions may be such that more than one station is transmitting on a channel. Reception can be improved by using the Fine Tuning and RF Gain controls.

The setting of the Squelch control will vary, depending upon the noise conditions and location. Set the Squelch CW when no signals are present until the background noise disappears. The Squelch threshold will open when a signal is received.

Rotation of the Channel selector is continuous with no end stops from Channel 40 to 1 or from Channel 1 directly to 40. Signals from adjacent channels might be heard, but this is due to "sideband splatter" and is in no way a deficiency of the FS-2340. In such cases the fault lies with the transmitter to which the operator is listening.

SECTION 6 - CIRCUITRY

6 - 1. RECEIVER

The received signal is fed through relay RY-1 to the RF Input coil L1. V1 (6DS4) is a low-noise neutralized triode amplifier. V1 is impedance coupled to V2-A (6EA8) where the signal is mixed with the output of the Frequency Synthesizer. F.S. injection is at pin 8 of V2-A from R43 thru C11A. The resultant 6.0 MHz IF signal is transformer coupled to V3-A (6EA8) where the output of V3-B (6EA8) mixes to produce the 455 KHz IF. V3-B is a 5.545 MHz crystal-controlled oscillator that is varied by the fine tuning control. CR1 and CR2 are diodes that act as variable capacitors when variable voltage is applied from the Fine Tuning control R12. Mixing takes place in the capacity coupled grids of V3. The 455 KHz signal passes through a selective high gain amplifier system consisting of T2A, T2B, V4, T3, V5 and T4. The RF Gain controls the cathodes of V1 and V4. The amplified 455 KHz signal is demodulated by V6-A while V6-B is a Gated Noise Limiter for the audio output that will appear at Volume Control R31.

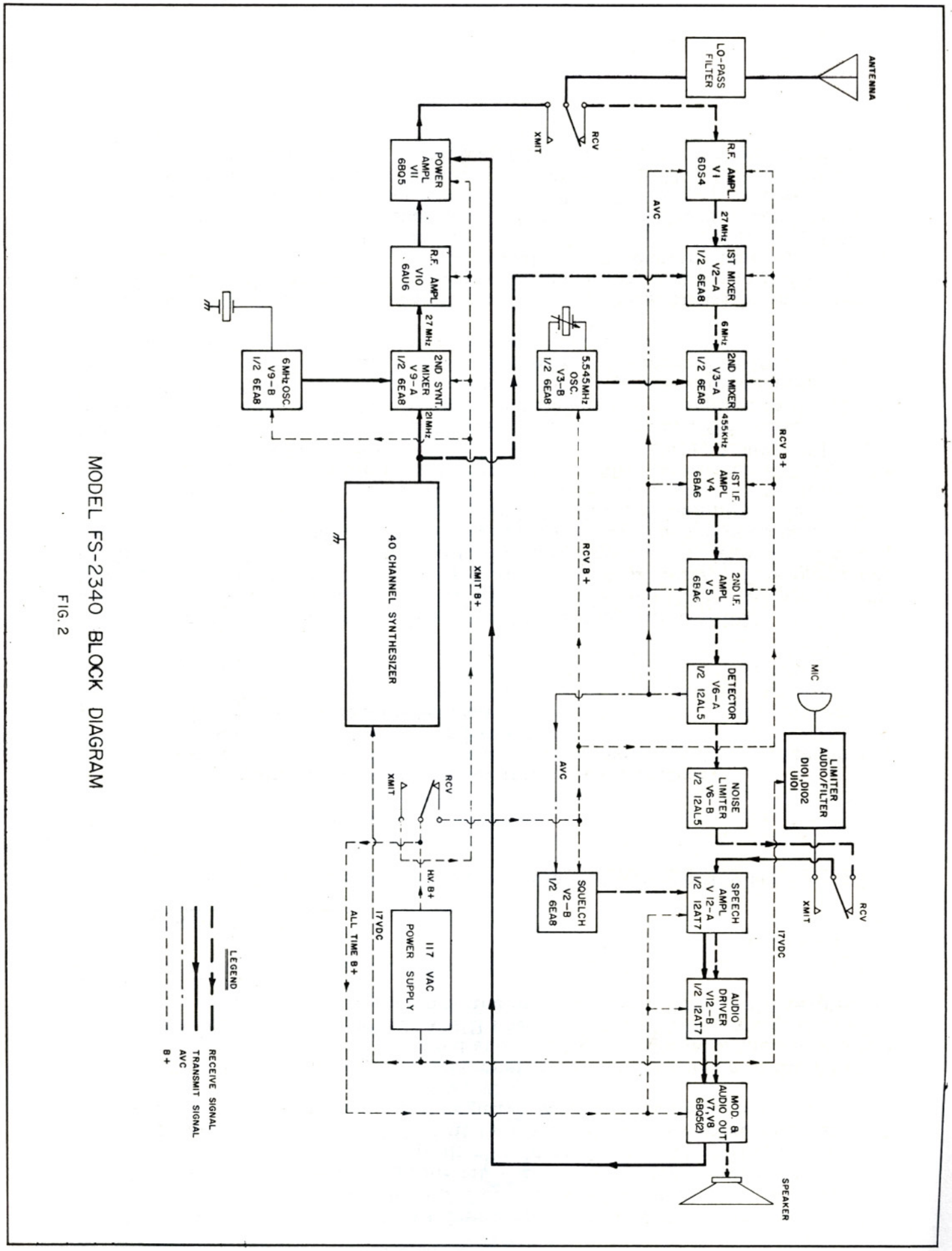
6 - 2. TRANSMITTER

The output of the 40-channel synthesizer is coupled to the 2nd synthesizer mixer V9-A (6EA8). The output of T5 is 21 MHz (as an example). V9-B is a 6 MHz crystal-controlled oscillator that mixes in V9-A for a resultant signal of 27 MHz (as an example). T6, L4 and L5 are tuned for 27 MHz. V10 (6AU6) is an RF Amplifier which raises the level of the 27 MHz signal at T6 to drive the RF Power Amplifier V11 (6BQ5) to full output. V11 is neutralized by C55. Neutralizing voltage is fed back from the plate of V11 via C55 to present an out-of-phase voltage at junction of L4, C54 and R51. L5 and C62 tune the plate of V11, while C63 matches the impedance of the antenna network for maximum transfer of power.

L6A suppresses harmonics and transfers a minute amount of power to L6B. CR3 rectifies this RF energy and indicates relative power on M1.

In order to reduce the harmonic output of a Class "C" amplifier, a Low-Pass Filter (consisting of L201, C201, L202, C202, C202A, L203, C203, and C204) is placed before the antenna connector SO1.

R54 controls the screen voltage so that a plate input of 5 watts to V11 can be maintained. (FCC Regulations)



MODEL FS-2340 BLOCK DIAGRAM

FIG. 2

6 - 3. AUDIO OUTPUT AND MODULATOR

V12-A (12AT7) is a combination microphone amplifier and receiver speech amplifier. V12-B is a speech amplifier which drives modulator V7 and V8 (6BQ5's). V7 and V8 is a push-pull Class AB1 power amplifier with output either to drive a 4 ohm speaker or to modulate V11 to 100%. An Audio Clipper/Filter Printed Circuit Board is added to prevent modulation in excess of 100% on positive and negative peaks. (See Section 6 - 6.)

V2-B (6EA8) is an audio squelch tube operating with reference to the AVC voltage. When no signal is received and no AVC voltage is present, R68 can be adjusted clockwise until V12-A will not pass audio. When a signal is received and AVC voltage is applied to the grid of V2-B, V12-A will then pass audio to V12-B.

6 - 4. CONTROL CIRCUITS

RY-1 is operated by grounding one side of the coil through the push-to-talk microphone switch.

The contacts of RY-1 switch:

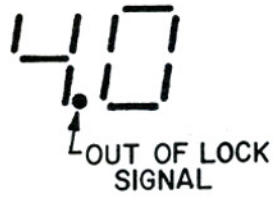
(1) High voltage B+ between transmitter and receiver.
(2) Speech amplifier (V12-A) between receiver output and microphone.
(3) Speaker out during transmitting periods.
(4) Antenna from receive to transmit.

6 - 5. SYNTHESIZER

The channel is selected by the 40-channel program switch (S401). This switch also controls the LED channel display. Voltage Controlled Oscillator (VCO), Q501, generates a frequency in the range of 21 MHz. This frequency is always 6.0 MHz below the actual CB channel frequency. The output of the VCO is amplified by Q505. The output of Q505 is impedance coupled to the grid of V9-A and also to the cathode of V2-A. A small sample of the VCO is amplified by Q502 and applied as one input to mixer, Q503. The other input to mixer, Q503, is the output of the 18.925 MHz oscillator (Q508). The output of mixer Q503 is applied to the low pass filter (C511, L502, C512, L503, C513) where the difference frequency is extracted. This difference frequency is further amplified by Q504 and Q504A and is applied to the clock input of U401. U401 and U402 comprise a 2-stage presettable decade divider, whose division ratio is controlled by the 40-channel switch. The output of U402 is applied to phase detector U403.

Oscillator Q506 supplies a 10.24 MHz reference. This signal is amplified by Q507 and applied to the clock input of U406. U406, U405 and U404 comprise a divide-by-1024 counter. The output of this counter, that is, 10 KHz, is applied as the other input to phase detector U403. Phase detector, U403, generates an error voltage proportional to the phase difference between the 10 KHz reference and the output of divider U402. This error voltage is integrated by Q401 and further filtered by loop filter (R412, C502, R501, C501 and C503) and is applied to varicap CR501 to control the frequency of the VCO.

U407 generates an "out of lock"signal, which disables the synthesizer output, lights the "out of lock" LED located on the channel number display



and disables both the receiver and transmitter, if, for some reason, the synthesizer is not properly phase locked.

U408 and U409 are IC voltage regulators which supply +5 volts and +8 volts respectively.

6 - 6. AUDIO CLIPPER/FILTER

The Audio Clipper/Filter assembly limits modulation to 100% and subsequently removes harmonics generated by the clipping process to ensure that the FS-2340 meets applicable FCC requirements.

Audio from the microphone is applied to the clipper network (R102, CR101, R103, CR102 and R104). This network forms a series clipper circuit which produces symmetrical clipping of the audio to minimize distortion products. MODULATION PERCENT ADJUST potentiometer (R105) varies the bias to diodes CR101 and CR102, thereby setting their clipping level and effectively controlling the modulation percentage.

The Active Filter (R109, C104, R110, C105, R111, U101, C108, R112 and C109) attenuates all frequencies above 3 KHz to virtually eliminate adjacent channel splatter. This state-of-the-art filter provides a full 3 KHz audio bandwidth (necessary for good, crisp communications-quality audio), while providing more than 23 dB/octave attenuation above 3 KHz to ensure compliance with stringent FCC requirements.

SECTION 7 - MAINTENANCE

7 - 1. ALIGNMENT

A. RECEIVER

(1) Connect audio output meter to external speaker jack or connect VTVM to AVC line of V6-A to measure negative AVC voltage (or use "S" meter).
(2) Connect signal generator set at 6.0 MHz to Pin 2 of V3. The 6.0 MHz signal should be checked for exact frequency using some standard.
(3) Set controls.

Volume	1/2 cw
Squelch	ccw
RF Gain	cw
Fine Tuning	1/2 cw
Channel Selector	Channel 20

(4) Using just enough signal to give a reading of audio or AVC, align T2A, T2B, T3 and T4 for maximum indication. Always reduce signal input to that minimum which will give an indication.
(5) Inject signal at Pin 9 of V2-A. Adjust T1 for maximum indication.
(6) Connect Signal Generator to antenna input and adjust to Channel 20 such that maximum audio or AVC indication is observed.
(7) Adjust C1A, L1 and L2 for further maximum indication.
(8) Neutralization of V1: Unsolder B+ end of R4. Increase signal generator output for AVC indication. Adjust C4 for minimum AVC. Readjust L1 and L2 for maximum AVC. Resolder B+ end of R4. Decrease signal generator output to about 1 microvolt. Readjust C1A, L1 and L2. V1 is now neutralized.

B. TRANSMITTER TUNE-UP PROCEDURE

(1) Before any attempt is made to align the transmitter, it must be assumed that no adjustments have been indiscriminately changed from those done at the factory.
(2) Connect a VOM or VTVM to the junction of R52 and R53 using a scale reading between 3 and 5 volts VDC and tune L504 on the synthesizer for maximum output.
(3) Adjust T6 and L4 for maximum (approximately minus 2 V) indication at R52 and R53.
(4) Adjust plate tuning control (C62) and antenna loading control (C63) for maximum indication on front panel RF Indicator.
(5) If any of the oscillators are disabled by shorting the grid to ground, both the P.A. grid current and the power output should fall almost to zero. If either the grid current or power output drops to only half, it is an indication that the transmitter is improperly neutralized.
(6) The 6.0 MHz oscillator trimmer, C47A, should not be adjusted unless a very accurate means is available to check the oscillator frequencies. If an accurate method is available, then the output frequency on all channels should be checked first.
(7) Neutralization of V11: This operation should not be necessary unless V11 oscillates without any drive applied or C55 has been tampered with. (Also see 7 - 2B.)

If neutralization is necessary, proceed as follows:

Disconnect the yellow lead of the modulation transformer (T8) from the terminal strip. Disconnect the antenna from SO1. Connect a VOM to junction of R53, R52 and C57 to measure minus 2 VDC. Connect an RF Probe and VTVM or H.F. Oscilloscope to SO1. Energize the transmitter and adjust C55 for minimum indication at SO1. L4 and C62 should be peaked for maximum indication at SO1. Continue adjustment for C55 for minimum indication and adjustment of L4 and C62 for maximum until no further change is noted. Voltage at R53 should be about minus 2 VDC. V11 is now neutralized.

(8) Measurement of V11 plate current: Insert 0-50 milliameter between yellow lead of T8 and terminal to which it was connected as in (7). This measures both plate and screen current. To compute plate power input, first subtract the screen current from the reading on the 0-50 milliameter. Screen current is computed by dividing the voltage drop across the screen resistor by the value of the screen resistor. This is about 2 ma.

(9) Adjustment of relative power meter: In the event that the relative power meter reading is too high or low, it can be adjusted in the following manner. Remove the top cover of the FS-2340. L6A is located on the rear panel center. By moving link L6B closer to the center of L6A, a higher reading can be obtained. Moving the link further away from the center will give a lower reading. A drop of Duco cement will secure the link.

C. SYNTHESIZER

(1) Connect a frequency counter to Pin 1 of U406 through a high impedance probe. Adjust C518 for a frequency of 10.240 MHz.
(2) Couple the frequency counter by means of a 1-turn pickup loop in the vicinity of Q508 until a stable reading of approximately 18.925 MHz is obtained on the frequency counter. Adjust C525 for a frequency reading of 18.925 MHz.
(3) Set the channel selector to Channel 20. Connect a 20,000 ohm/volt VOM to Pin 8 of U403. Adjust L501 for a meter indication of 2.0 volts $\pm$ .1 volt. Connect a VTVM to V9 Pin 2. Adjust L504 for maximum (negative) voltage. When tuning is complete voltage should be between -8 and -15 volts.
(4) Set the channel selector to Channel 1. The VOM indication should be greater than 1.2 volts at Pin 8 of U403.
(5) Set the channel selector to Channel 40. Meter indication should be less than 3.0 volts.
(6) Cycle the channel selector from Channel 1 to Channel 40, pausing on each channel. The meter reading should remain between 1.2 and 3.0 volts.

7 - 2. REPAIRS AND REPLACEMENT

A. FREQUENCY SYNTHESIZER

In the event that neither the transmitter nor the receiver is operative and the "out of lock" LED is lit, then trouble in the synthesizer should be suspected.

Frequency checks and adjustment of C518, C525 and C47A should not be undertaken unless an accurate Frequency Meter is available. The trimmers C518 and C525 adjust the frequency of the respective crystals Y501 (10.240 MHz) and Y502 (18.925 MHz). C47A is adjusted so that V9-B oscillates at 6.000 MHz.

Although the transmitter is permitted plus or minus 1300 Hertz from the assigned channel frequency, the FS-2340 should not (as a safety factor) fall beyond plus or minus 750 Hertz.

B. TUBE REPLACEMENT

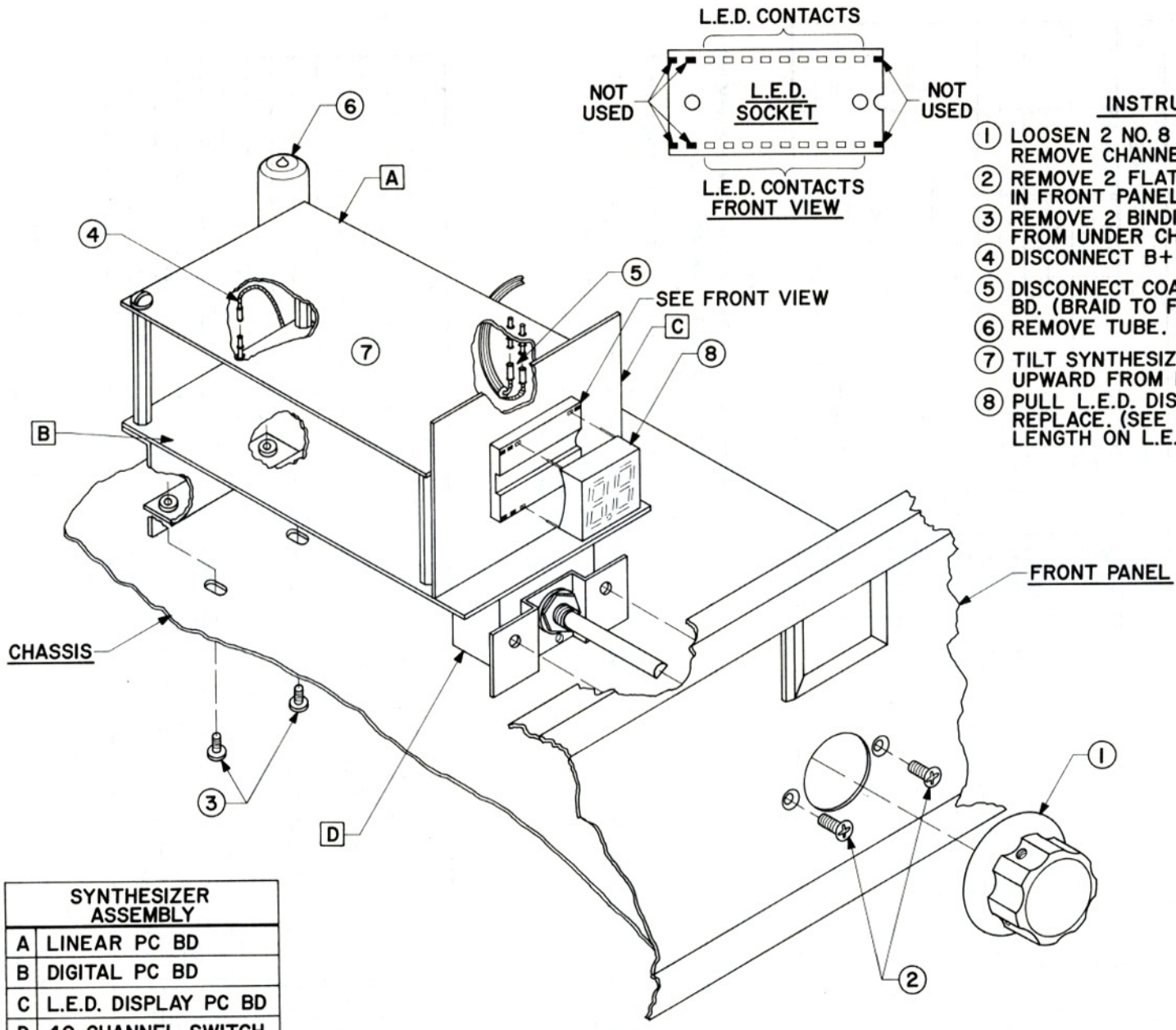
All of the tubes in the FS-2340 may be replaced without readjustment of the associated circuits except for the RF Power Amplifier V11 (6BQ5). If V11 is replaced, re-neutralization may be required. Neutralization is necessary when V11 will oscillate with no grid drive applied and the antenna disconnected. (See Section 7B - 7.)

CHANNEL NUMBER VS. FREQUENCY AND CHANNEL SWITCH PROGRAMMING

Channel Number	Frequency	Switch Program B	A	D'	C'	B'	A'
1	26.965 MHz	0	0	1	1	0	0
2	26.975 MHz	0	0	1	1	0	1
3	26.985 MHz	0	0	1	1	1	0
4	27.005 MHz	0	1	0	0	0	0
5	27.015 MHz	0	1	0	0	0	1
6	27.025 MHz	0	1	0	0	1	0
7	27.035 MHz	0	1	0	0	1	1
8	27.055 MHz	0	1	0	1	0	1
9	27.065 MHz	0	1	0	1	1	0
10	27.075 MHz	0	1	0	1	1	1
11	27.085 MHz	0	1	1	0	0	0
12	27.105 MHz	0	1	1	0	1	0
13	27.115 MHz	0	1	1	0	1	1
14	27.125 MHz	0	1	1	1	0	0
15	27.135 MHz	0	1	1	1	0	1
16	27.155 MHz	0	1	1	1	1	1
17	27.165 MHz	1	0	0	0	0	0
18	27.175 MHz	1	0	0	0	0	1
19	27.185 MHz	1	0	0	0	1	0
20	27.205 MHz	1	0	0	1	0	0
21	27.215 MHz	1	0	0	1	0	1
22	27.225 MHz	1	0	0	1	1	0
23	27.255 MHz	1	0	1	0	0	1
24	27.235 MHz	1	0	0	1	1	1
25	27.245 MHz	1	0	1	0	0	0
26	27.265 MHz	1	0	1	0	1	0
27	27.275 MHz	1	0	1	0	1	1
28	27.285 MHz	1	0	1	1	0	0
29	27.295 MHz	1	0	1	1	0	1
30	27.305 MHz	1	0	1	1	1	0
31	27.315 MHz	1	0	1	1	1	1
32	27.325 MHz	1	1	0	0	0	0
33	27.335 MHz	1	1	0	0	0	1
34	27.345 MHz	1	1	0	0	1	0
35	27.355 MHz	1	1	0	0	1	1
36	27.365 MHz	1	1	0	1	0	0
37	27.375 MHz	1	1	0	1	0	1
38	27.385 MHz	1	1	0	1	1	0
39	27.395 MHz	1	1	0	1	1	1
40	27.405 MHz	1	1	1	0	0	0

NOTE: "0" is Line Grounded

"1" is Greater than 2 volts



SYNTHESIZER ASSEMBLY	
A	LINEAR PC BD
B	DIGITAL PC BD
C	L.E.D. DISPLAY PC BD
D	40 CHANNEL SWITCH

FIG. 3 L.E.D. DISPLAY INSTALLATION

VOLTAGE CHART

NO.	TUBE	**	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8	PIN 9	PIN 10	PIN 12
V1	6DS4	T		—		—				—	—	—	6.3 VAC
		R		+100		−0.8				0	—	0	6.3 VAC
V2	6EA8	T	—	—	—	12.6VAC	6.3VAC	—	—	—	−1.4		
		R	+190	−0.8	+25	12.6VAC	6.3 VAC	+0.3	0	+6.0	0		
V3	6EA8	T	—	-.75	—	6.3 VAC	12.6 VAC	—	—	—	—		
		R	+33	−0.7	+59	6.3 VAC	12.6 VAC	+60	0	0	−0.8		
V4	6BA6	T	—	—	6.3 VAC	—	—	—	—				
		R	−0.6	0	6.3 VAC	0	+260	+88	+0.7				
V5	6BA6	T	—	—	6.3 VAC	—	—	—	—				
		R	−0.6	0	6.3 VAC	0	+260	+87	+0.6				
V6	12AL5	T	—	—	12.6 VAC	—	—	—	—				
		R	+0.5	+0.2	12.6 VAC	0	+0.8	0	-.04				
V7	6BQ5	T	—	0	+10	0	6.3VAC	0	270	—	270		
		R	—	0	+10	0	6.3VAC	0	270	—	270		
V8	6BQ5	T	—	0	+10	0	6.3VAC	0	270	—	270		
		R	—	0	+10	0	6.3VAC	0	270	—	270		
V9	6EA8	T	75 *	−10 *	+90	6.3VAC	12.6 VAC	230 *	+0.7 *	+0.9 *	−7 *		
		R	—	−10 *	—	6.3VAC	12.6 VAC	—	—	—	—		
V10	6AU6	T	−2.4 *	0	12.6 VAC	6.3VAC	225 *	+150	0				
		R	—	—	12.6 VAC	6.3VAC	—	—	—				
V11	6BQ5	T	—	−22 *	0	6.3VAC	12.6 VAC	—	220 *	—	+180		
		R	—	—	—	6.3 VAC	12.6 VAC	—	—	—	—		
V12	12AT7	T	+260	0.1	+3.8	0	0	+95	2.5	+4.5	6.3VAC		
		R	+260	0.1	+3.8	0	0	+255	+0.4	+23.5	6.3VAC		
		T											
		R											

LEGEND

* R.F. VOLTAGE

** POSITION : T- TRANSMIT, R-RECEIVE

NOTES

1. VOLUME, SQUELCH AND R.F. GAIN AT FULL CW ROTATION.
2. FINE TUNING AT MID RANGE (KNOB POINTER ALIGNED WITH DOT ON PANEL)
3. VOLTAGE MEASUREMENTS MADE WITH A VTVM (11 MEGOHM INPUT)
4. R.F. VOLTAGE MEASUREMENTS MADE WITH A R.F. PROBE ACCURATE TO AT LEAST 30 MC.
5. ALL VOLTAGE MEASUREMENTS MADE FROM SOCKET PIN TO GROUND (CHASSIS)
6. OPERATING PRIMARY VOLTAGE IS 117 VAC.
7. ALL VOLTAGES DC UNLESS OTHERWISE INDICATED.
8. VOLTAGE MAY VARY. ± 15%
9. CHANNEL SWITCH ON 20.

RESISTANCE CHART

NO	TUBE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8	PIN 9	PIN 10	PIN 12
V1	6DS4	—	54 K	—	3.6 MEG	—	—	—	0	—	FIL.	FIL.
V2	6EA8	57 K	3.7 MEG	110 K	FIL.	FIL.	430 K	0	2.4 K	100 K		
V3	6EA8	85 K	110 K	60 K	FIL.	FIL.	60 K	0	0	12 K		
V4	6BA6	2.6 MEG.	0	FIL.	FIL.	26 K	95 K	62				
V5	6BA6	2.6 MEG.	0	FIL.	FIL.	26 K	50 K	62				
V6	12AL5	1.2 MEG.	1.3 MEG.	FIL.	FIL.	1.1 MEG.	0	43 K				
V7	6BQ5	—	120	220	FIL.	FIL.	—	26 K	—	25 K		
V8	6BQ5	—	120	220	FIL.	FIL.	—	26 K	—	25 K		
V9	6EA8	INF.	450 K	INF.	FIL.	FIL.	INF.	220	220	100 K		
V10	6AU6	100 K	0	FIL.	FIL.	INF.	INF.	0				
V11	6BQ5	I.C.	13 K	0	FIL.	FIL.	INF.	INF.	INF.	INF.		
V12	12AT7	26 K	220K	1K	FIL.	FIL.	540 K	2.5 MEG.	15 K	FIL.		

NOTES

1. POWER SWITCH - "OFF".
2. VOLUME, SQUELCH, R.F. GAIN AND "S" METER ZERO AT FULL CW ROTATION.
3. FINE TUNING AT MID RANGE
4. ALL RESISTANCE MEASUREMENTS MADE FROM SOCKET PIN TO GROUND (CHASSIS)
5. ALL RESISTANCE VALUES ARE IN OHMS.
6. RESISTANCE MAY VARY ± 15%

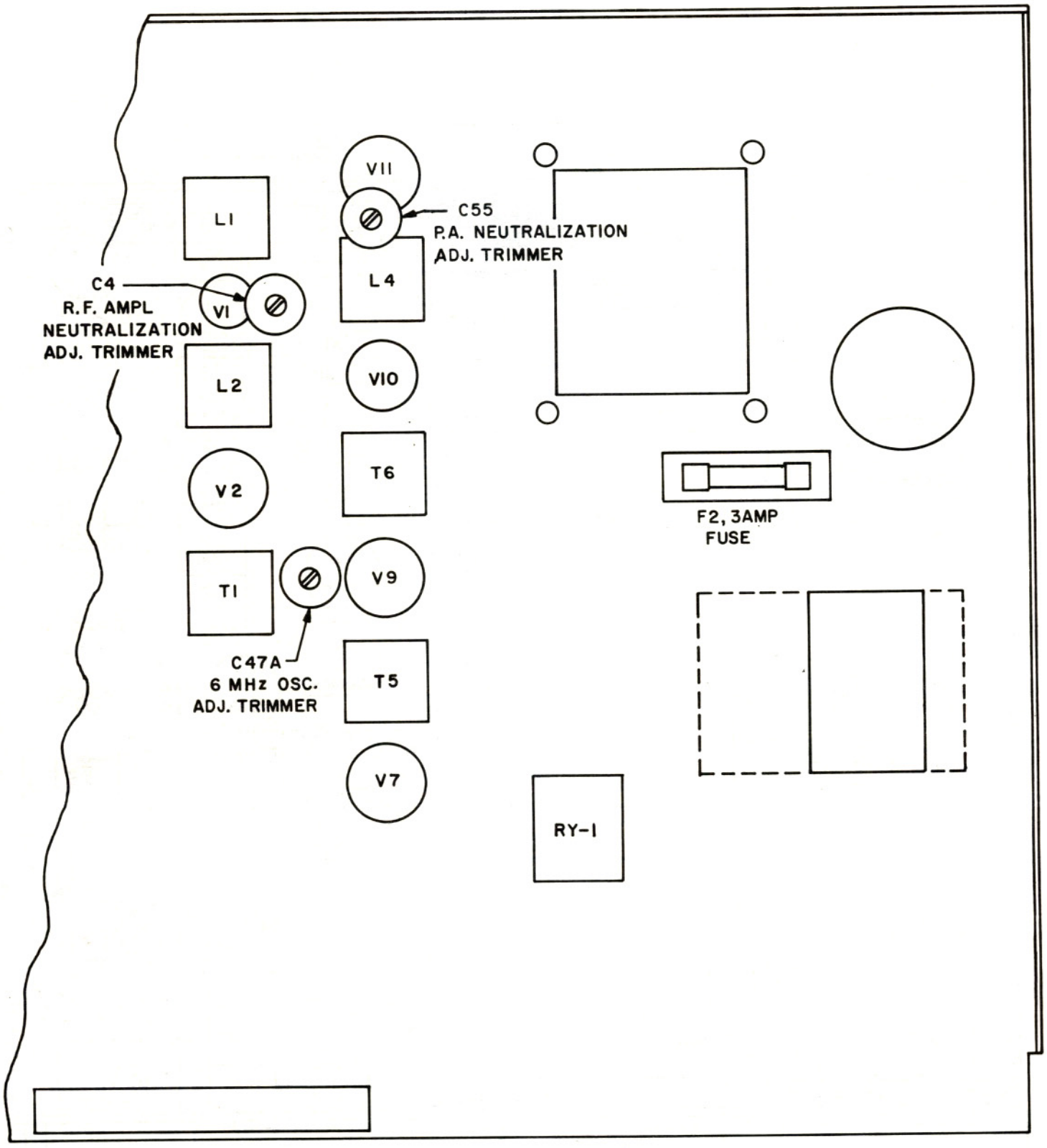


FIG. 4 NEUTRALIZATION & FREQUENCY ADJUSTMENT

BOTTOM VIEW

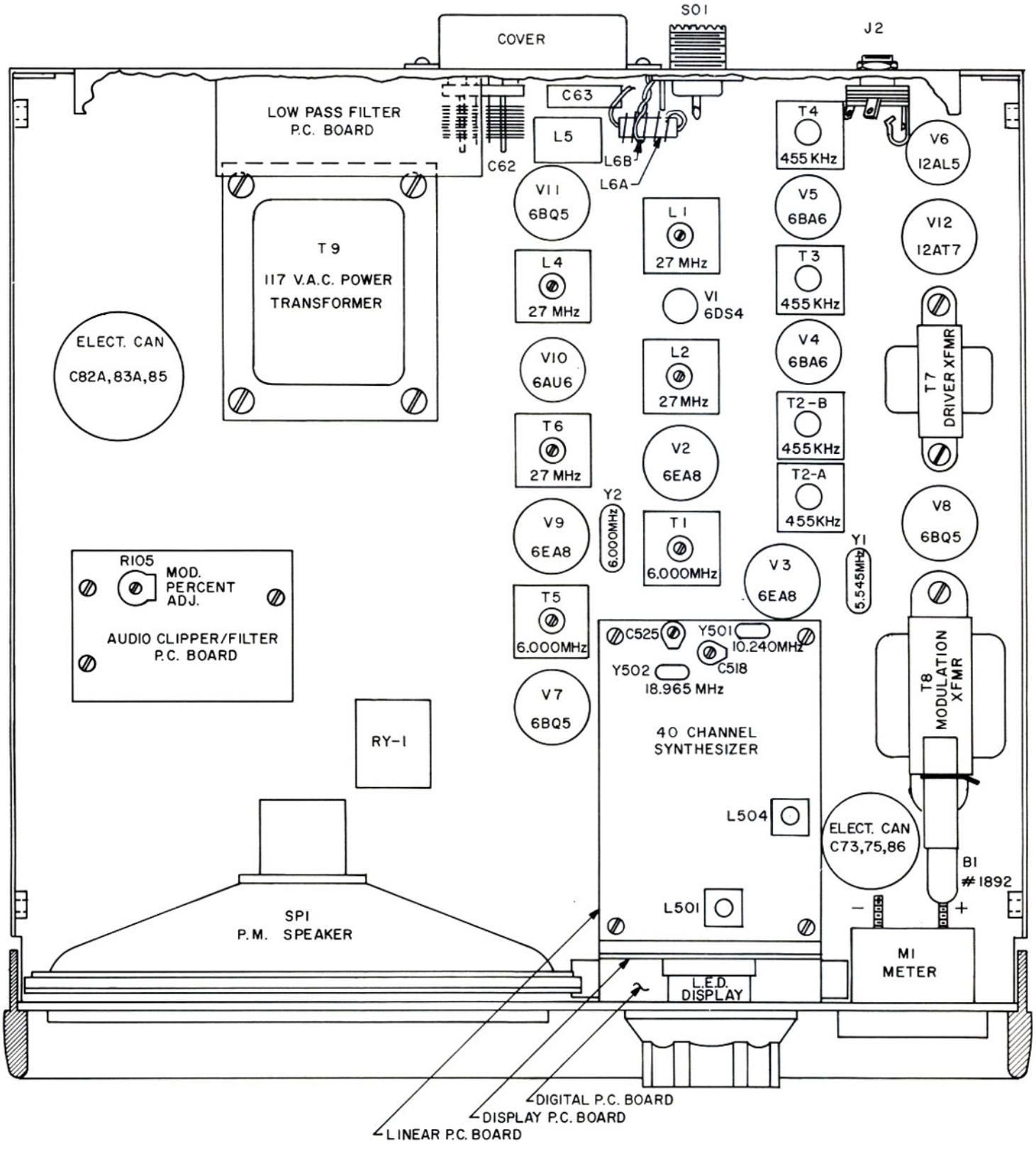


FIG. 5 MODEL FS-2340 PARTS IDENTIFICATION

TOP VIEW

MODEL FS-2340 PARTS LIST

DIAGRAM NO.	DESCRIPTION	SONAR PART NO.	* LIST PRICE
	RESISTORS, FIXED, COMPOSITION		
R49	10 Ohm, 1/2 W, 10%	01-100-531	$0.25
R17, 23	62 Ohm, 1/2 W, 5%	01-620-521	0.25
R412A, 506, 512A, 514B	100 Ohm, 1/4 W, 10%	01-101-331	0.25
R301 thru 315	180 Ohm, 1/4 W, 10%	01-181-331	0.35
R44A, 45A	220 Ohm, 1/2 W, 10%	01-221-531	0.25
R73	220 Ohm, 2 W, 10%	01-221-731	0.50
R113, 502B, 503	270 Ohm, 1/4 W, 10%	01-271-331	0.25
R504	470 Ohm, 1/4 W, 10%	01-471-331	0.25
R408, 409, 410, 411, 501, 509, 510, 511A, 513, 521A	1 K Ohm, 1/4 W, 10%	01-102-331	0.25
R3, 21, 25, 47, 51, 53, 71	1 K Ohm, 1/2 W, 10%	01-102-531	0.25
R517, 521	1.5 K Ohm, 1/4 W, 10%	01-152-331	0.25
R401 thru 407, 413, 414, 415	2.2 K Ohm, 1/4 W, 10%	01-222-331	0.25
R6A	2.2 K Ohm, 1/2 W, 10%	01-222-531	0.25
R416, 502A, 505	4.7 K Ohm, 1/4 W, 10%	01-472-331	0.25
R12A, 64	4.7 K Ohm, 1/2 W, 10%	01-472-531	0.25
R101, 412, 502, 507, 512, 514A	10 K Ohm, 1/4 W, 10%	01-103-331	0.25
R42, 63, 65	10 K Ohm, 1/2 W, 10%	01-103-531	0.25
R112	12 K Ohm, 1/4 W, 10%	01-123-331	0.25
R10, 52	12 K Ohm, 1/2 W, 10%	01-123-531	0.25
R514, 518	15 K Ohm, 1/4 W, 10%	01-153-331	0.25
R54	22 K Ohm, 1 W, 10%	01-223-631	0.35
R58	27 K Ohm, 1/2 W, 10%	01-273-531	0.25
R4	27 K Ohm, 2 W, 10%	01-273-731	0.35
R106, 513A, 516, 520	33 K Ohm, 1/4 W, 10%	01-333-331	0.25
R50, 57	33 K Ohm, 1 W, 10%	01-333-631	0.35
R7, 15	33 K Ohm, 2 W, 10%	01-333-731	0.35

MODEL FS-2340 PARTS LIST

DIAGRAM NO.	DESCRIPTION	SONAR PART NO.	* LIST PRICE
	RESISTORS, FIXED, COMPOSITION		
R511	39 K Ohm, 1/4 W, 10%	01-393-331	$0.25
R515, 519	47 K Ohm, 1/4 W, 10%	01-473-331	0.25
R1, 31A, 72, 80	47 K Ohm, 1/2 W, 10%	01-473-531	0.25
R45, 55	47 K Ohm, 1 W, 10%	01-473-631	0.35
R27	56 K Ohm, 1/2 W, 10%	01-563-531	0.25
R13A	56 K Ohm, 2 W, 10%	01-563-731	0.35
R508	68 K Ohm, 1/4 W, 10%	01-683-331	0.25
R19, 24	68 K Ohm, 1 W, 10%	01-683-631	0.35
R29	100 K Ohm, 1/2 W, 5%	01-104-521	0.25
R2, 5, 8, 11, 14, 16, 22, 46, 48, 79	100 K Ohm, 1/2 W, 10%	01-104-531	0.25
R20, 81	100 K Ohm, 1 W, 10%	01-104-631	0.35
R66	100 K Ohm, 2 W, 10%	01-104-731	0.35
R102, 104, 109, 110, 111	150 K Ohm, 1/4 W, 10%	01-154-331	0.25
R30	180 K Ohm, 1/2 W, 5%	01-184-521	0.25
R13, 44, 59, 67, 70	220 K Ohm, 1/2 W, 10%	01-224-531	0.25
R107, 108, 518A	330 K Ohm, 1/4 W, 10%	01-334-331	0.25
R43, 62, 68A	390 K Ohm, 1/2 W, 10%	01-394-531	0.25
R103	470 K Ohm, 1/4 W, 10%	01-474-331	0.25
R69	470 K Ohm, 1/2 W, 10%	01-474-531	0.25
R28, 60, 61	1 Meg Ohm, 1/2 W, 10%	01-105-531	0.25
R26	2.2 Meg Ohm, 1/2 W, 10%	01-225-531	0.25
	RESISTOR, FIXED, WIREWOUND		
R77	2.2 K Ohm, 3 W, 10%	02-222-322	0.50
	RESISTORS, VARIABLE, COMPOSITION		
R18	5 K Ohm, (RF Gain Control)	03-502-036	1.50
R105	10 K Ohm, (Modulation Adj.)	03-103-105	0.75
R56	100 K Ohm, ("S" Meter Zero Adj.)	03-104-026	1.50

MODEL FS-2340 PARTS LIST

DIAGRAM NO.	DESCRIPTION	SONAR PART NO.	* LIST PRICE
RESISTORS, VARIABLE, COMPOSITION			
R68	500 K Ohm, (Squelch Control)	03-504-003A	$1.50
R12	500 K Ohm, (Fine Tuning Control)	03-504-003B	1.50
R31, SW2	500 K Ohm, (Volume Control with Power On-Off Switch)	03-504-037	2.50
CAPACITORS, FIXED, CERAMIC			
C19, 25A	2.2 PF, Gimmick	04-226-007	0.35
C14	3.9 PF, 1 KV, NPO	04-396-001	0.35
C524, 529	5.6 PF, 500 V, 5%, NPO	04-566-028P	0.35
C53	10 PF, 1 KV, NPO	04-105-001	0.35
C7, 47	16 PF, 1 KV, NPO	04-165-001A	0.35
C516	16 PF, 500 V, 10%	04-165-027	0.25
C514	22 PF, 50 V, 5%	04-225-029	0.35
C1, 2, 12, 523	25 PF, 1 KV, NPO	04-255-001A	0.35
C48, 50	30 PF, 1 KV, NPO	04-305-001	0.35
C508B, 511	30 PF, 500 V, NPO	04-305-027	0.25
C11A	33 PF, 50 V, 5%, NPO	04-335-029A	0.35
C513, 517	50 PF, 1 KV, N 750	04-505-011	0.35
C512	65 PF, 1 KV, NPO	04-655-019	0.35
C66	150 PF, 1 KV, JL	04-154-002	0.35
C9A	330 PF, 500 V, JE	04-334-034	0.35
C102, 104	800 PF, 1 KV, JE	04-804-029	0.35
C3, 27A, 49A, 51, 58, 59, 64, 67, 74, 79, 80, 83, 108	.001 MF, 500 V	04-103-004	0.25
C60, 76, 77	.001 MF, 1400 V	04-103-016	0.50
C513B	.001 MF, 500 V	04-103-034	0.35
C26A	.002 MF, 1 KV	04-203-016	0.35
C57, 105	.005 MF, 100 V	04-503-003	0.35
C503	.005 MF, 100 V	04-503-003P	0.35
C5, 20, 23, 69A, 78, 80A	.01 MF, 100 V	04-102-003	0.35
C101, 103, 109, 403, 508, 509, 510, 510A 513C, 515, 517A, 522, 530	.01 MF, 100 V	04-102-033	0.35

MODEL FS-2340 PARTS LIST

DIAGRAM NO.	DESCRIPTION	SONAR PART NO.	* LIST PRICE
CAPACITORS, FIXED, CERAMIC			
C6, 11, 14A, 17, 18, 21, 22, 24, 25, 45, 46, 49, 52, 68, 69, 71, 77A	.01 MF, 600 V	04-102-021	$0.35
C89, 90	.01 MF, 1 KV	04-102-008	0.35
C26	.05 MF, 100 V	04-502-003	0.50
C401, 401A, 404, 405, 408, 515A	.1 MF, 50 V	04-101-043	1.00
C81, 82, 406	.1 MF, 100 V	04-101-003	0.50
CAPACITORS, FIXED, ELECTROLYTIC			
C502	.47 MF, 16 V, Tant.	06-570-125	1.50
C20A, 72	5 MF, 50 VDC	06-530-043	0.50
C402	22 MF, 6.3 V, 20%, Tant.	06-570-144	0.50
C407	22 MF, 25 V	06-530-118	0.35
C84	40 MF, 450 VDC	06-130-027	2.50
C508A	50 MF, 15 V	06-530-064	0.35
C75 C73 C86	Can, 3-Section 5 MF, 50 VDC 10 MF, 350 VDC 40 MF, 250 VDC (Used in Pwr Sup)	06-950-038	3.00
C82A C83A C85	Can, 3-Section 30 MF, 350 VDC 30 MF, 350 VDC 20 MF, 200 VDC	06-950-142	4.00
C87, 107	1000 MF, 25 V	06-130-143	1.50
CAPACITORS, FIXED			
C505	10 PF, 100 V, 5%, Dur-Mica	07-105-009	0.50
C504	12 PF, 100 V, 5%, Dur-Mica	07-125-009	0.50
C106	20 PF, 500 V, 10%, Dur-Mica	07-205-002A	0.35
C526	30 PF, 100 V, 5%, Dur-Mica	07-305-009	0.75
C519	36 PF, 500 V, 5%, Dur-Mica	07-365-008	0.35
C202A	39 PF, 500 V, 5%, Dur-Mica	07-395-009A	0.50
C8, 56	50 PF, 500 V, 10%, Dur-Mica	07-505-002	0.35

MODEL FS-2340 PARTS LIST

DIAGRAM NO.	DESCRIPTION	SONAR PART NO.	* LIST PRICE
	CAPACITORS, FIXED		
C201, 204, 507	85 PF, 500 V 5%, Dur-Mica	07-855-007A	$0.25
C506, 521, 528	100 PF, 100 V, 5%, Dur-Mica	07-104-009A	0.50
C44	120 PF, 500 V, 10%, Dur-Mica	07-124-002	0.35
C9, 13, 15, 16, 27, 42	200 PF, 500 V, 10%, Dur-Mica	07-204-002	0.50
C71A, 202, 203	220 PF, 100 V, 5%, Dur-Mica	07-224-009	0.50
C10, 43	260 PF, 500 V, 10%, Dur-Mica	07-264-002A	0.50
C54	340 PF, 500 V, 5%, Dur-Mica	07-344-008	0.50
C520, 527	400 PF, 500 V, 10%, Dur-Mica	07-404-002A	0.50
C41	550 PF, 100 V, 5%, Dur-Mica	07-554-009A	0.50
C70	.1 MF, 250 VDC, Mylar	05-101-025	0.75
C501	.18 MF, 100 V, Poly.	05-181-066	0.75
	CAPACITORS, VARIABLE		
C1A	1.7-10 PF, NPO	09-310-033	0.75
C518, 525	2-20 PF	09-310-032	1.00
C4, 47A, 55	3-12 PF, Ceramic, NPO	09-610-017	1.50
C62	3.9-31.9 PF, Air (Plate Tuning)	08-150-012	5.50
C63	180-690 PF, Comp, (Antenna Loading)	09-210-022	4.00
	ELECTRON TUBES		
V1	6DS4, Nuvistor	19-010-053	11.00
V2, 3, 9	6EA8	19-010-026	3.00
V4, 5	6BA6	19-010-010	3.00
V6	12AL5	19-010-022	2.50
V7, 8, 11	6BQ5	19-010-052	3.50
V10	6AU6A	19-010-012	2.50
V12	12AT7A	19-010-005	6.00
	SEMICONDUCTORS		
CR1, 2, 2A	Diode, (Special Set)	19-040-008A	1.00
CR3	Diode, Germanium, 1N295	19-050-004	0.50

MODEL FS-2340 PARTS LIST

DIAGRAM NO.	DESCRIPTION	SONAR PART NO.	* LIST PRICE
	SEMICONDUCTORS		
CR4, 5, 6, 7, 8	Diode, Silicon, CER-71	19-040-002	$0.50
CR101, 102	Diode, Silicon, 1N3064	19-080-001	0.25
CR501	Diode, Variactor, MV2104	19-120-005	2.00
Q401, 402, 501, 503, 504, 504A, 506, 507, 508	Transistor, 2N3904	19-020-133	0.50
Q502	Transistor, 2N4126	19-020-137	0.75
Q505	Transistor, 2N5770	19-020-141	1.00
U101	IC, 741TC (MC1741CP1)	19-130-022	2.00
U401, 402	IC, 74193	19-130-017	3.00
U403	IC, MC4044	19-130-020	6.50
U404, 405, 406	IC, 7493	19-130-018	2.00
U407	IC, 7401	19-130-019	1.50
U408	IC, LM340-T-5.0 (Regulator)	19-130-021	4.00
U409	IC, LM340-T-8.0 (Regulator)	19-130-014	6.50
	L.E.D. Display	19-170-005	18.00
	CHOKES, COILS, TRANSFORMERS		
CH1	Choke, Filter, 0.5 HY	14-100-001	3.00
L1	Coil, Antenna	22-030-013	4.00
L2	Coil, RF (Plate Tuning)	22-070-006	4.00
L4	Coil, RF (Plate Tuning)	22-070-008	4.00
L5	Coil, RF (Plate Tuning)	22-070-001	3.00
L6A	Coil, Low-Pass Filter	22-090-003	0.50
L6B	Coil, RF Link (1 Turn on L6A)		
L201, 202, 203	Coil, Low-Pass Filter	22-090-033	1.50
L501	Coil, Synthesizer, VCO	22-020-153	3.00
L502, 503	Choke, RF, 68 UH	22-060-065	0.50
L504	Coil, Synthesizer, Output	22-020-154	4.00
RFC1	Choke, Toroidal, 5.2 UH	14-120-011	5.00
RFC2	Choke, RF, 1 UH	22-060-023	0.50
RFC3	Choke, RF, 21 UH	22-060-005	0.50

MODEL FS-2340 PARTS LIST

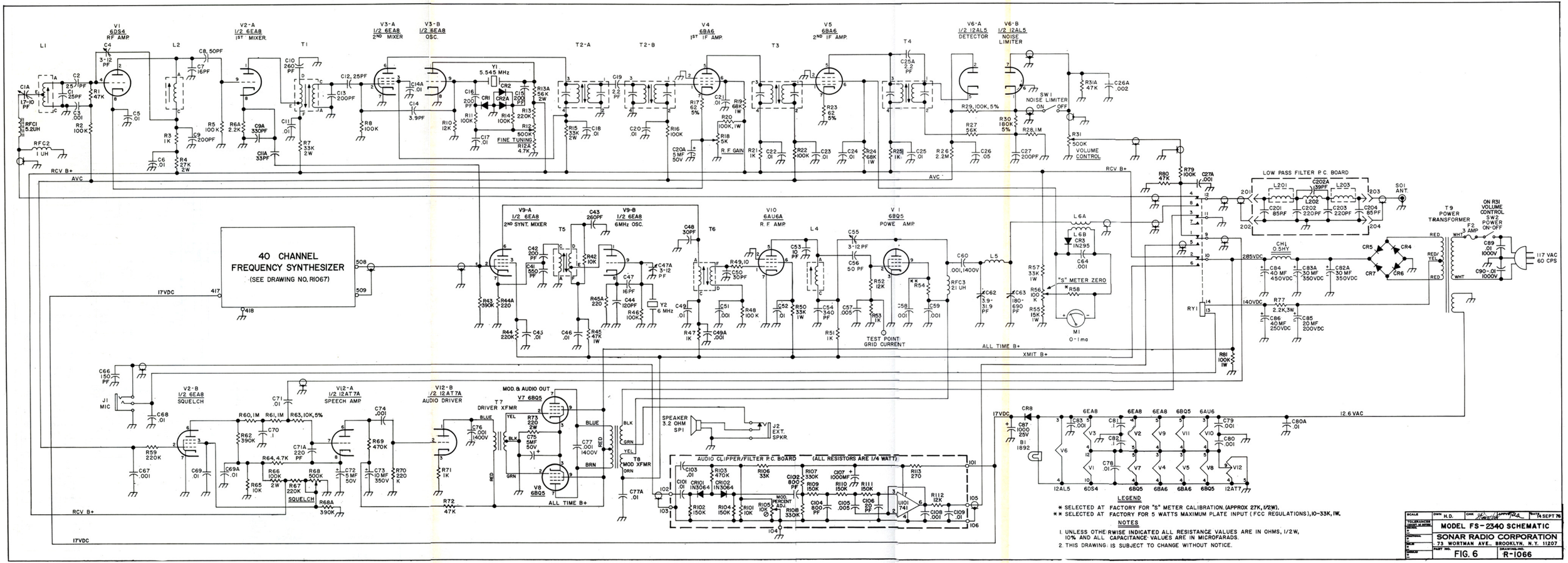
DIAGRAM NO.	DESCRIPTION	SONAR PART NO.	* LIST PRICE
	CHOKES, COILS, TRANSFORMERS		
T1, 5	Transformer, Mixer, 6 MHz	22-050-018	$4.50
T2A, 2B, 3, 4	Transformer, IF, 455 KHz	22-010-020	3.50
T6	Transformer, Mixer, 27 MHz	22-050-016	4.50
T7	Transformer, Driver	14-020-001	4.50
T8	Transformer, Modulation	14-050-009	8.00
T9	Transformer, Power	14-010-032A	17.00
	CRYSTALS		
Y1	Crystal, 5.545 MHz	40-003-008	7.50
Y2	Crystal, 6.000 MHz	40-003-007	7.50
Y501	Crystal, 10.240 MHz	40-340-045	7.50
Y502	Crystal, 18.925 MHz	40-340-046	7.50
	GENERAL		
B1	Lamp, Pilot, #1892	19-060-002	0.50
J1	Jack, Microphone (3-Conductor)	15-010-007	2.00
J2	Jack, External Speaker	15-010-003	1.50
M1	Meter, 0-1 ma	32-010-010	20.00
RY1	Relay, 4PDT, 110 VDC	16-010-011B	14.00
S1	Switch, Slide, SPST (Noise Limiter)	10-020-012	0.75
S401	Switch, 40 Channel Selector	10-030-031A	15.00
SO1	Connector, Antenna, SO-239	15-120-001	1.50
SP1	Speaker, Oval, 3.2 Ohms	36-042-521	8.00
	Front Panel	11-020-043C	11.50
	Front Panel Assembly (With Speaker Grill and L.E.D. Bezel)	51-010-106	15.00
	Rear Panel	11-020-044C	9.50
	Cover, Top or Bottom	11-080-006	9.50
	Cover, Side (Left or Right)	11-080-066	8.50
	Adapter, 3-Wire Line Cord	15-140-001	0.50
	Knob, Control	33-010-010	1.50

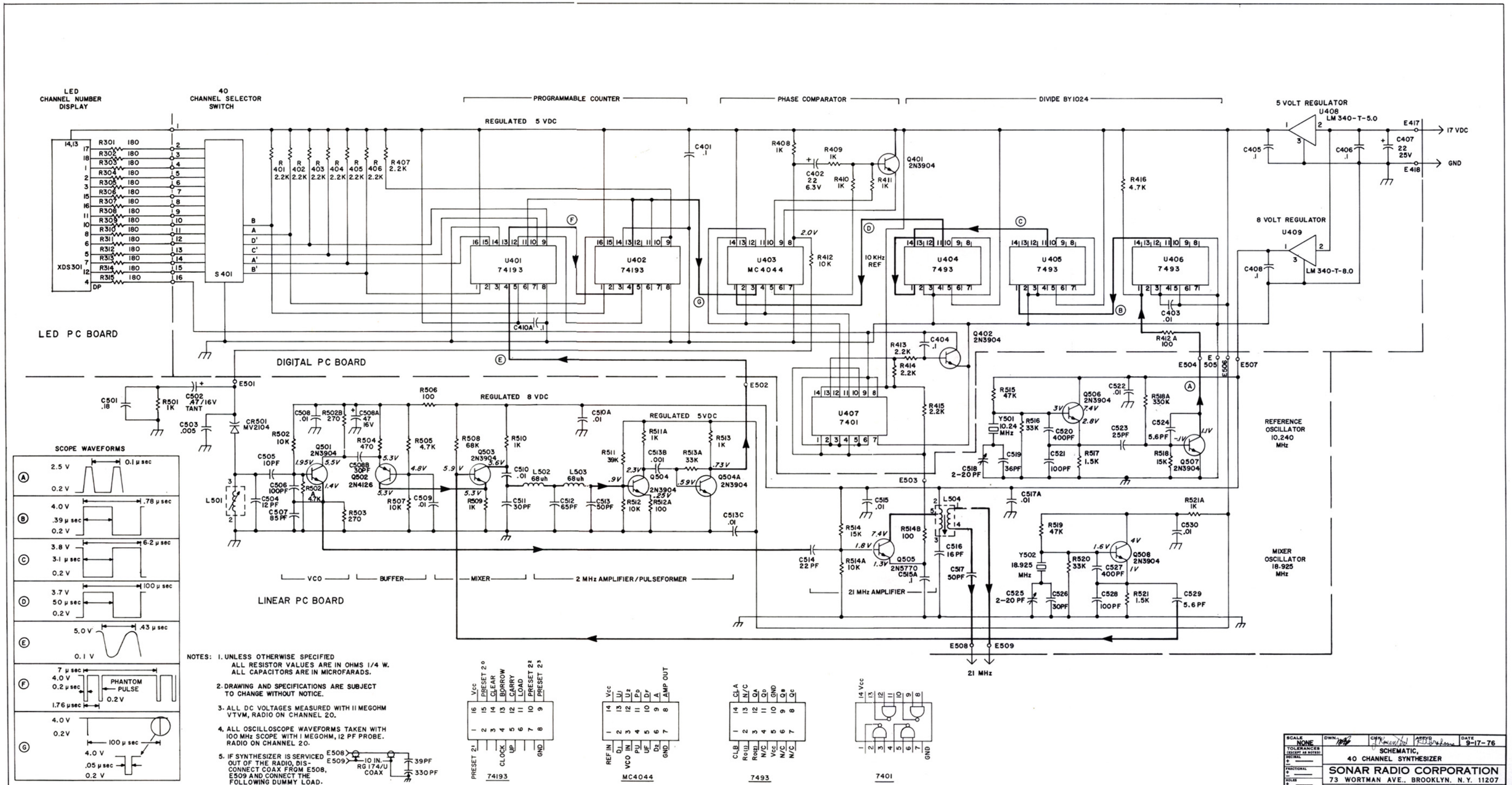
MODEL FS-2340 PARTS LIST

DIAGRAM NO.	DESCRIPTION	SONAR PART NO.	* LIST PRICE
	GENERAL		
	Knob, Channel Selector	33-020-005	$4.00
	3-Wire AC Line Cord With Plug	38-150-016	2.50
F2	Fuse, 3AG, 3 A, 250 V	42-010-012	0.35
	Holder, Fuse (Open Type)	42-020-003	0.75
	Instruction Manual	44-010-118	5.00
	Microphone, M-2B	57-010-006	30.00
	Filter, Viewing Screen	35-020-065	2.00
	Bezel, L.E.D. Display	39-010-008	1.50
	P.C. Board Assembly, Low-Pass Filter	55-030-029	20.00
	P.C. Board Assembly, Digital	55-030-030	100.00
	P.C. Board Assembly, L.E.D. Display (Less L.E.D.)	55-030-031	20.00
	P.C. Board Assembly, Linear	55-030-032	80.00
	P.C. Board Assembly, Audio Clipper/Filter	55-030-033	30.00
	Synthesizer, Complete Assembly, (With L.E.D. Display)	51-010-105	175.00

* List prices were those in effect for each item just prior to printing, and they are subject to change without notice. All prices are F.O.B. Sonar's factory, Brooklyn, New York or Hollywood, Florida with a minimum shipping and handling charge of $2.00.

WHEN ORDERING REPLACEMENT PARTS, IT IS ESSENTIAL TO SPECIFY MODEL, SERIAL NUMBER, PART NUMBER AND DESCRIPTION AS INDICATED IN THE PARTS LIST.


V1 6DS4 RF AMP
V2-A 1/2 6EA8 1ST MIXER
V3-A 1/2 6EA8 2ND MIXER
V3-B 1/2 6EA8 OSC.
V4 6BA6 1ST IF AMP.
V5 6BA6 2ND IF AMP.
V6-A 1/2 12AL5 DETECTOR
V6-B 1/2 12AL5 NOISE LIMITER
L1
L2
T1
T2-A
T2-B
T3
T4
Y1 5.545 MHz
FINE TUNING
R29, 100K, 5%
SW1 NOISE LIMITER ON OFF
R31 500K VOLUME CONTROL
R27 56K
R30 180K 5%
R26 1M
R28 2.2M
RCV B+
AVC
AVC
RCV B+
LOW PASS FILTER P.C. BOARD
L201 C201 85PF C202 220PF C202A 39PF L203 C203 220PF C204 85PF L204
201
202
203
204
SO1 ANT.
40 CHANNEL FREQUENCY SYNTHESIZER
(SEE DRAWING NO. R1067)
508
509
17VDC
417
418
V9-A 1/2 6EA8 2ND SYNT. MIXER
V9-B 1/2 6EA8 6MHz OSC.
T5
T6
V10 6AU6A R.F. AMP.
V1 6BQ5 POWE AMP.
L4
L5
L6A
L6B CR3 IN295
C64 .001
"S" METER ZERO
M1 0-1ma
TEST POINT GRID CURRENT
ALL TIME B+
XMIT B+
T9 POWER TRANSFORMER
F2 3 AMP.
RED
RED/YEL
RED
WHT
WHT
ON R31 VOLUME CONTROL SW2 POWER ON-OFF
117 VAC 60 CPS
285VDC
140VDC
CH1 0.5HY
CR4
CR5
CR6
CR7
RY1
R81 100K 1W
J1 MIC
V2-B 1/2 6EA8 SQUELCH
V12-A 1/2 12AT7A SPEECH AMP
V12-B 1/2 12AT7A AUDIO DRIVER
T7 DRIVER XFMR
MOD. & AUDIO OUT
V7 6BQ5
V8 6BQ5
T8 MOD XFMR
SPEAKER 3.2 OHM SP1
J2 EXT. SPKR.
AUDIO CLIPPER/FILTER P.C. BOARD (ALL RESISTORS ARE 1/4 WATT)
SQUELCH
ALL TIME B+
17VDC
CR8
B1 1892
6EA8
6EA8
6EA8
6BQ5
6AU6
12.6 VAC
12AL5
6DS4
6BQ5
6BA6
6BA6
6BQ5
12AT7
LEGEND
* SELECTED AT FACTORY FOR "S" METER CALIBRATION. (APPROX 27K, 1/2W).
** SELECTED AT FACTORY FOR 5 WATTS MAXIMUM PLATE INPUT (FCC REGULATIONS), 10-33K, 1W.
NOTES
1. UNLESS OTHERWISE INDICATED ALL RESISTANCE VALUES ARE IN OHMS, 1/2W, 10% AND ALL CAPACITANCE VALUES ARE IN MICROFARADS.
2. THIS DRAWING IS SUBJECT TO CHANGE WITHOUT NOTICE.
SCALE
DWN. H.D.
CHK.
APPROVED
DATE 4 SEPT 76
TOLERANCES UNLESS OTHERWISE SPECIFIED
MODEL FS-2340 SCHEMATIC
SONAR RADIO CORPORATION
73 WORTMAN AVE., BROOKLYN, N.Y. 11207
PART NO.
FIG. 6
DRAWING NO.
R-1066



SCALE NONE	DWN.	CHK.	APPVD. DATE 9-17-76
TOLERANCES (EXCEPT AS NOTED) DECIMAL ± FRACTIONAL ± HOLES ± ANGULAR ±	SCHEMATIC, 40 CHANNEL SYNTHESIZER		
	SONAR RADIO CORPORATION 73 WORTMAN AVE., BROOKLYN, N.Y. 11207		
	PART NO. FIG. 7	DRAWING NO. R-1067	