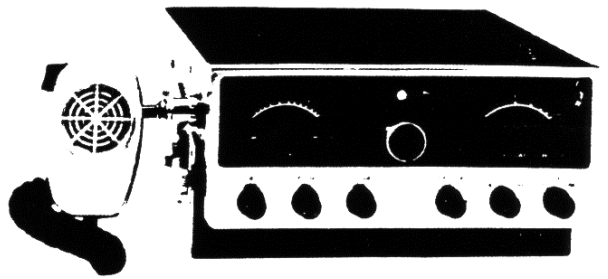


23 CHANNEL AM-SSB
FREQUENCY SYNTHESIZED
CB TRANSCEIVER



SERVICE MANUAL

TELSAT SSB-25

(99-32377)



LAFAYETTE RADIO ELECTRONICS CORPORATION

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FOREWORD

This Service manual contains voltage data, adjustment procedures and parts location on the printed circuit boards. All information was prepared for use by trained and qualified personnel only, having enough knowledge and experience in the repair of solid state equipment.

Before attempting any service, read the instructions carefully so that you understand them completely.

GENERAL INSTRUCTIONS

The Lafayette Telsat SSB-25 is a combination transmitter and receiver designed for use in Class "D" operation in the 27 MHz Citizens Radio Service. It is designed to meet the Federal Communications Commission requirements applicable to equipment in this service under Class D emission, and is not to be used for any other purpose. Rules Part 95 of the FCC regulations defines operation in this service and the licensee is required to read and understand these regulations prior to operating a CB transmitter. Copies of Manual VI [covering the FCC regulations for the Citizens Band Radio Service] include Part 95 and are available from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. A station license must be obtained by submitting a properly completed Station License Application, Form 505, as directed.

It is illegal to operate the transmitter section of this transceiver prior to receiving a valid station license and "call sign". NOTE: It is the transmitter that is licensed, NOT the operator. Anyone may operate a properly licensed CB transmitter but the licensee will be held responsible for any violations incurred during use. A properly completed Identification Card FCC Form 452-C must be attached to the transmitter.

The Telsat SSB-25 will provide efficient and reliable radio communication in its intended application if installed and operated in accordance with instructions contained herein.

CAUTION: Please follow the procedures outlined -- do not attempt short-cuts.

- * Do not use an ohmmeter to test transistors. In some instances the voltage across the test probes of an ohmmeter may exceed the base to emitter breakdown voltage. Therefore, do not use an ohmmeter for testing transistors unless you are certain of the transistor's capability.

- * Do not replace a defective output transistor, until you have determined the cause of its failure. To assume it was a defective transistor only may result in further damage not only to the replacement, but to other transistors in that channel.
- * When installing a power transistor, make sure that the bottom of its mounting flange, surface of the heat sink and the insulator between them are free of dust and dirt particles. Failure to observe this precaution will prevent proper heat transfer and may even puncture the insulator, causing a short circuit to ground. Also, for proper heat transfer, both side of the insulator should be coated with silicone grease.
- * To prevent damage to the printed circuit boards and components, use the correct soldering iron; small diameter tip for single connection, large areas and special de-soldering tip for multiple connection component removal.

GENERAL DESCRIPTION

The Telsat SSB-25 is all-transistor transceiver employing a frequency synthesizer circuit to provide 23 crystal-controlled transmit and receive channels in the 27 MHz Citizens Band. The transceiver can be operated over all 23 channels in the conventional AM mode, or in suppressed carrier Single Sideband mode using either the upper or lower sideband, as desired. This increases the effective number of operating channels from 23 to 69, but also increases the effective range of transmission because all legal power is concentrated in one sideband to provide 100% talk power. On receive, the Single Sideband mode offers greatly improved sensitivity and selectivity, this also contributing to an effective increase in operating range.

The transceiver has been carefully designed for ease of operation in the SSB mode. Selection of AM, upper sideband, or lower sideband, is achieved by a 3-position switch. To transmit on SSB, you just press the microphone button and talk -- exactly as for AM, except that your SSB signal will reach farther and be heard more clearly than an AM signal. SSB reception on the selected sideband is simple too -- you just adjust the Fine Tune control for clarity of the received voice transmission. Also included is every needed feature for optimum communications -- variable squelch, RF Gain control, full-time

automatic noise limiter, and a special RF Noise Silencer to combat ignition noise, plus individual "S" and RF Power meters.

The transceiver is designed to operate from 12 volts DC in a negative or positive ground system, or from 117 volts 50/60 Hz AC. Operation on either AC or DC is achieved through the use of the proper power cable [AC and negative ground DC cables are supplied with the transceiver].

TELSAT SSB-25 TRANSCEIVER ALIGNMENT PROCEDURE

1. SYNTHESIZER ALIGNMENT

A. Q1 and Q2 Oscillator Adjustment

- [1] Set Channel Selector Switch to CH-13 position.
- [2] Set MODE Switch [AM/USB/LSB] to AM position.
- [3] Set NS/ANL/PA Switch to ANL position.
- [4] Connect DC VTVM and Frequency Counter between TP11 and PC Board Ground.
- [5] Supply 13.8V DC through the power socket of the unit.
- [6] Rotate core of L1 and L2 for maximum reading on VTVM.
- [7] Rotate Trimmer Capacitor TC-4 until Frequency Counter indicates the proper frequency [see Table 1].

TABLE 1.
Crystal Frequencies for TELSAT SSB-25

CHANNEL	TRIMMER CAPACITOR	READING ON FREQUENCY COUNTER	
CH-1	TC-1	23.330MHZ	±0.1KHZ
CH-5	TC-2	23.380MHZ	±0.1KHZ
CH-9	TC-3	23.430MHZ	±0.1KHZ
CH-13	TC-4	23.480MHZ	±0.1KHZ
CH-17	TC-5	23.530MHZ	±0.1KHZ
CH-21	TC-6	23.580MHZ	±0.1KHZ
CH-1	TC-7	14.910MHZ	±0.1KHZ
CH-2	TC-8	14.920MHZ	±0.1KHZ
CH-3	TC-9	14.930MHZ	±0.1KHZ
CH-4	TC-10	14.950MHZ	±0.1KHZ
CH-1	TC-11	14.907MHZ	±0.1KHZ
CH-2	TC-12	14.917MHZ	±0.1KHZ
CH-3	TC-13	14.927MHZ	±0.1KHZ
CH-4	TC-14	14.947MHZ	±0.1KHZ

- [8] Set Channel Selector Switch to each of the following channels [CH-1, CH-5, CH-9, CH-17, CH-21], and adjust each frequency by rotating the appropriate Trimmer Capacitor until the Frequency Counter indicates the proper frequency [see Table 1].
- [9] Rotate FINE TUNE control to the 12 o'clock position.
- [10] Make sure that the Frequency Counter readings are approximately the same as the readings in Step 8.
- [11] Rotate the FINE TUNE control from the 12 o'clock position to the 4 o'clock position. The Frequency Counter reading should be +1.8KHz ±100Hz.
- [12] Rotate the FINE TUNE control from the 12 o'clock position to the 8 o'clock position. The Frequency Counter reading should be -1.7KHz ±100Hz.

B. Q3 Oscillator Adjustment

- [1] Set Channel Selector Switch to CH-1 position.
- [2] Set MODE Switch to AM position.
- [3] Set NS/ANL/PA Switch to ANL position.
- [4] Connect DC VTVM to TP4 and PC Board ground; and Frequency Counter to L3 by means of loose coupling.
- [5] Rotate core of L3 for maximum indication on VTVM.
- [6] Rotate Trimmer Capacitor TC-7 until Frequency Counter indicates from 14.910MHz ±200Hz.
- [7] Set Channel Selector Switch to each of the following channels [CH-2, CH-3, CH-4], and adjust each frequency by rotating Trimmer Capacitor TC-8, TC-9, TC-10 until the Frequency Counter indicates the proper frequency [see Table 1].

C. Q4 Oscillator Adjustment

- [1] Set Channel Selector Switch to CH-1 position.
- [2] Set MODE Switch to LSB position.
- [3] Set NS/ANL/PA Switch to NAL position.
- [4] Connect DC VTVM to TP5 and PC Board ground and Frequency Counter to L4 by means of loose coupling.
- [5] Rotate core of L4 for maximum indication on VTVM.
- [6] Set Channel Selector Switch from CH-1 to CH-2, CH-3, CH-4 and adjust each frequency by rotating Trimmer Capacitors TC-11, TC-12, TC-13 and TC-14 until the Frequency Counter indicates the proper frequency [see Table 1].

D. Q6 and Q7 Oscillator Adjustment

- [1] Set MODE Switch to USB position.
- [2] Connect Frequency Counter High Impedance Input between Q8 [TP-8] and PC Board Ground.
- [3] Connect RF VTVM High Impedance Input between Q8 [TP-8] and PC Board Ground.
- [4] Rotate Trimmer Capacitor TC-15 until Frequency Counter indicates from 11.275 to 11.2752MHz.
- [5] Adjust potentiometer RV-1 for an output voltage reading of 0.7V on VTVM.
- [6] Set MODE Switch to LSB position.
- [7] Rotate Trimmer Capacitor TC-16 until Frequency Counter indicates from 11.2718 to 11.2720MHz.
- [8] Adjust potentiometer RV-2 for an output voltage reading of 0.7V on VTVM.

2. TRANSMITTER ALIGNMENT

NOTE: The following adjustment has already been made at the factory in SSB and AM Modes. Unauthorized personnel should not perform Step A, otherwise serious damage to the equipment may occur.

A. RF POWER OUTPUT ADJUSTMENT

WARNING: Personnel must have 2nd Class FCC License.

- [1] Connect 50 ohm Dummy Load and Watt Meter to ANT Connector.
- [2] Set MODE Switch to AM position.
- [3] Adjust the power source voltage to 13.8 volts.
- [4] Set Channel Selector Switch to CH-13.
- [5] Depress Microphone PUSH-TO-TALK button and adjust L5, L6, L7, L8, L11, L12, L13, L14, L15, L16 and L17 and L19 for maximum indication on Watt Meter.

NOTE: The adjustment of L10 is very critical if low output or no output is obtained after the above alignment, then L10 must be adjusted for maximum output.

- [6] Using Channel Selector Switch, select other channels and read the power output of each. Adjust L11 thru L14 so that power output is approximately the same on all channels.
- [7] Set Channel Selector Switch to CH-13 and adjust L18 and L19 [bottom side] and TC-18 for a maximum indication on the Watt Meter.

B. SSB Transmission Adjustment

- [1] Driver [Q12] and Final [Q13] Stage Adjustment.
 - [a] Adjust DC power source to 13.8V and connect 50 ohm Dummy Load to ANT Connector.
 - [b] Set MODE Switch to USB position.

- [c] Connect DC VTVM between Q12 Emitter [TP-14] and PC Board Ground.
 - [d] Open jumper wire TP-15 located on power source side of Q13 and connect DC Ammeter between them.
 - [e] Depress microphone PUSH-TO-TALK button but do not talk [modulate] into it.
 - [f] Adjust variable resistor RV-4 for a 0.02V indication on VTVM.
 - [g] Adjust variable resistor RV-5 for a 10mA indication on DC Ammeter.

CAUTION: If the Carrier Balance Adjustment which follows is not performed exactly as specified, the DC Ammeter may malfunction. In order to avoid this trouble, remove bottom cover of transceiver and connect a 0.047MFD capacitor between the Q12 collector and PC Board Ground before starting this adjustment.

[2] Carrier Balance Adjustment.

- [a] Adjust DC power source to 13.8V.
 - [b] Connect 50 ohm Dummy Load to ANT Connector and then connect RF Probe of VTVM between both ends of Dummy Load.
 - [c] Set MODE Switch to LSB position.
 - [d] Depress Microphone PUSH-TO-TALK button, but do not talk [modulate] into it.
 - [e] Adjust variable resistor RV-3 and Trimmer Capacitor TC-17 and L9 for a minimum indication on VTVM. An average reading is 0.3V or less.
 - [f] Set MODE Switch to the LSB position. The reading should be the same as that found in Step 2[e]

NOTE: The following adjustment has already been adjusted in the factory. Unauthorized personnel should not perform this step.

[3] SSB Modulation Adjustment

- [a] Set MODE Switch to LSB position.
 - [b] Connect 50 ohm Dummy Load to ANT Connector.
 - [c] Connect oscilloscope as shown in Figure 1.
 - [d] Connect a Two-Tone Generator to the input of C-122 [center pin of J-3 microphone jack].
 - [e] Set output of Two-Tone Generator to 10mV.
 - [f] Adjust variable resistor RV-9 for 100% modulation on oscilloscope [see Figure 2 for proper wave shape].

C. RF METER ADJUSTMENT

- [1] Set MODE Switch to AM position.

- [2] Adjust variable resistor RV-6 [looking at RF Meter mounted on Front Frame], in order to obtain the same reading as on Watt Meter.

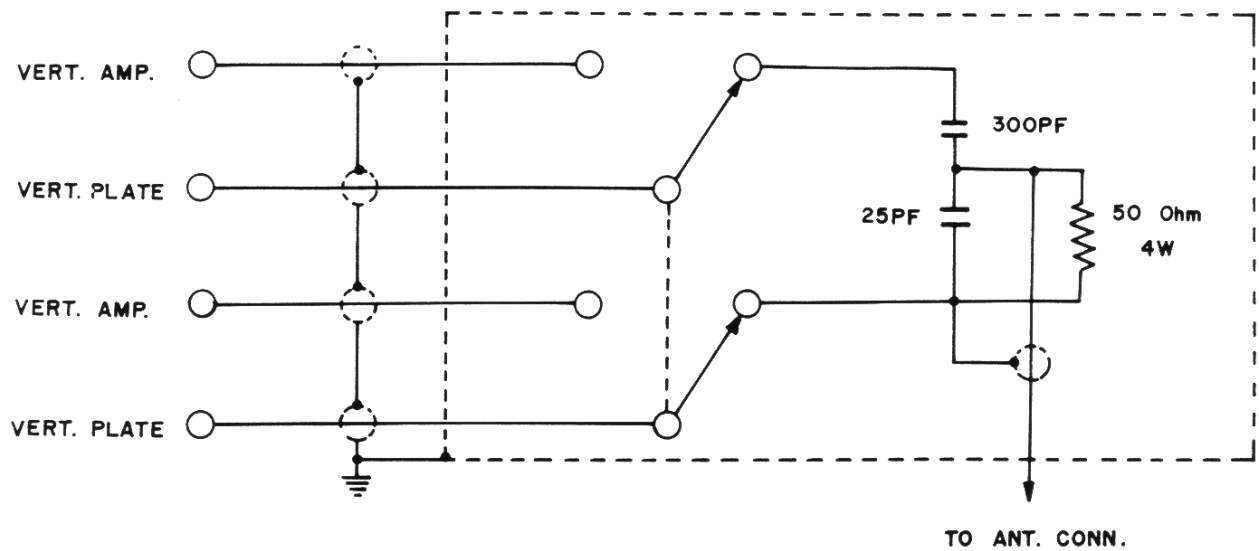


Fig. 1A

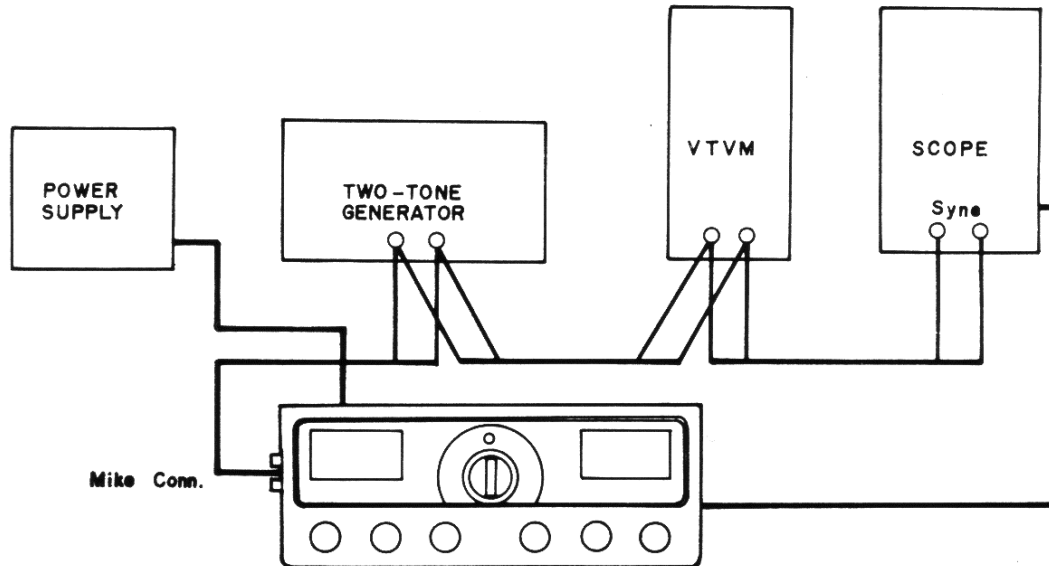


Fig. 1B

Figure 1 Circuit and equipment connections required to make SSB Modulation and Transmitter adjustment. (A) Circuit required to modify oscilloscope. (B) Instrument connection to perform the test.

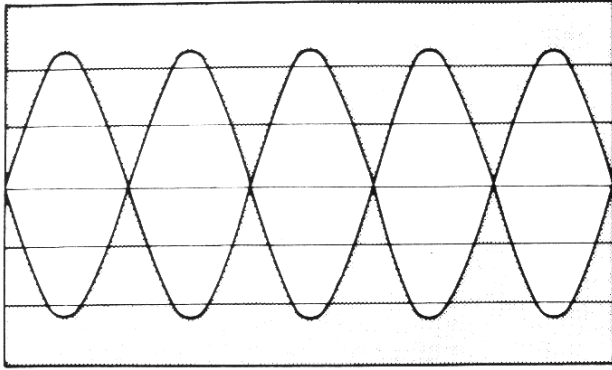


Fig. 2A

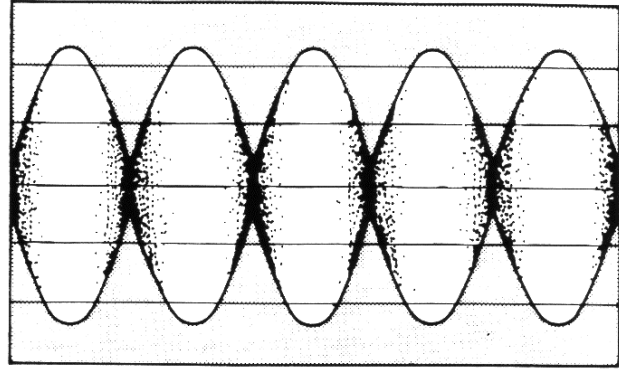


Fig. 2B

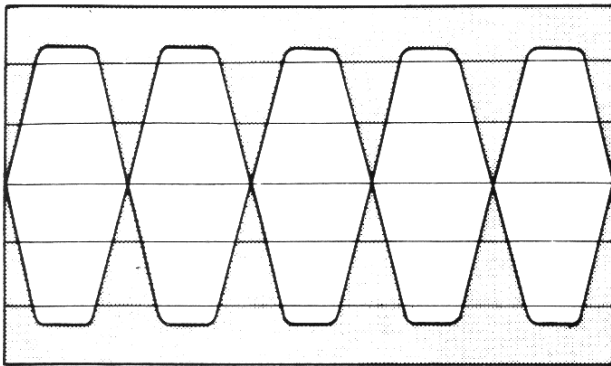


Fig. 2C

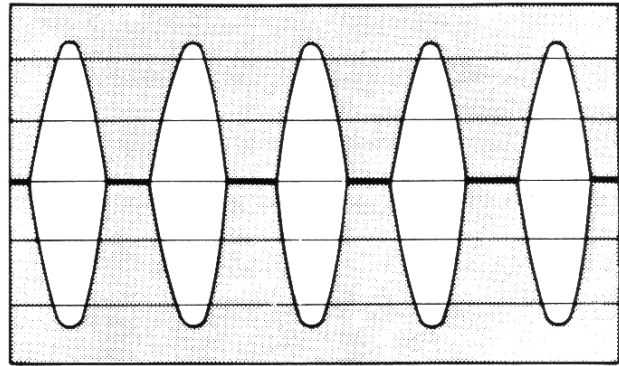


Fig. 2D

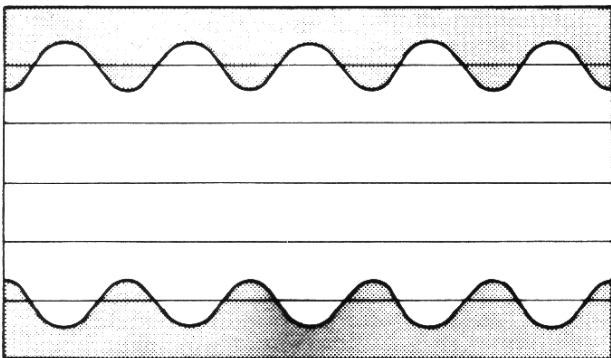


Fig. 2E

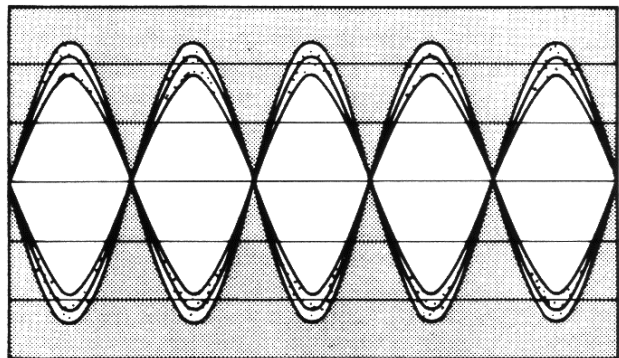


Fig. 2F

Figure 2 SSB Modulation Envelopes. (A) Properly adjusted transmitter. (B) Unequal tones. (C) Excessive drive, causing flattopping and distortion. (D) Final amplifier incorrectly biased. (E) Single tone showing modulation pattern caused by partially suppressed carrier.

D. RANGE BOOST ADJUSTMENT ON AM TRANSMISSION

- [1] Connect Modulation Monitor to the Transceiver.
- [2] Connect an Audio Generator between PC Board Ground and the center pin of the Microphone Connector on the Transceiver.
- [3] Set Audio Generator to 1KHz and adjust output level to 10mV.
- [4] Apply power to the Transceiver and depress microphone PUSH-TO-TALK button.
- [5] Adjust Potentiometer RV-8 for 80% modulation indication on Modulation Monitor.

NOTE: The above steps will produce 100% modulation on voice signals. In no case shall the modulation exceed 100%.

E. TVI ADJUSTMENT

- [1] Use a TV Receiver set to Channel 2 as an indicator.
- [2] Depress the Microphone PUSH-TO-TALK button and adjust L20 which is marked TVI [located at the rear of the Transceiver] for minimum interference on TV receiver.

3. RECEIVER ADJUSTMENT

A. AM Reception Adjustment.

Second Local Oscillator [Q34] Adjustment.

- [a] Set MODE Switch to AM position.
 - [b] Connect DC VTVM between Q34 Emitter [TP-26] and PC Board Ground.
 - [c] Move the L33 core to the top end of bobbin. Then screw down the core slowly, the VTVM reading will increase rapidly. Turn down the core 1/8 turn after reaching the maximum indication on VTVM.
- [2] RF and IF Alignment.
- [a] Connect an RF Signal Generator to the ANT Connector.
 - [b] Connect an AC VTVM across Speaker Terminals.
 - [c] Rotate VOLUME control to the 12 o'clock position.
 - [d] Set NS/ANL/PA Switch to ANL position.
 - [e] Rotate FINE TUNE control to 12 o'clock position.
 - [f] Rotate RF GAIN control fully clockwise.
 - [g] Rotate SQUELCH control fully counter-clockwise.
 - [h] Set RF Signal Generator to 27.115MHz [CH-13] for 30% modulation with 1KHz tone and adjust its output level to 10 μ V.

- [i] Set Channel Selector switch to CH-13 and Signal Generator frequency to approximately 27.115MHz for a maximum indication on AC VTVM.
- [j] Adjust L22, L23 and L24 for a maximum output indication on AC VTVM.
- [k] Decrease RF Signal Generator output to approximately 1 μ V.
- [l] Adjust L22, L23, L24, L25, L26, Mechanical Filter [MF], L27, L28 and L29 for a maximum indication on AC VTVM. Re-adjust all coils until no further improvement is obtainable.
- [m] Increase RF Signal Generator output level to 100 μ V.
- [n] Adjust variable resistor RV-14 until S-Meter scale indicates S-9.
- [o] Rotate SQUELCH control fully clockwise.
- [p] Increase RF Signal Generator output level to 10mV.
- [q] Adjust variable resistor RV-16 in order to get AF output on AC VTVM.

B. SSB Reception Adjustment

[1] IF Alignment

NOTE: IF Alignment has already been performed at the factory. These steps should not be performed by Unauthorized Personnel.

There are no adjustments in SSB Mode. If the IF alignment in AM Mode is performed properly, the IF will automatically be aligned in SSB [see Step 3A2, RECEIVER ADJUSTMENT].

[2] Sensitivity check for SSB Reception.

- [a] Connect RF Signal Generator to ANT Connector.
- [b] Connect AC VTVM across Speaker Terminals.
- [c] Set MODE Switch to either the USB or LSB position.
- [d] Set NS/ANL/PA Switch to ANL position.
- [e] Rotate VOLUME control to 12 o'clock position.
- [f] Rotate FINE TUNE control to 12 o'clock position.
- [g] Rotate RF GAIN control fully clockwise.
- [h] Rotate SQUELCH control fully counter-clockwise.
- [i] Set RF Signal Generator for 27.115MHz [CH-13] and No Modulation. Set RF Signal Generator output level at 10 μ V.
- [j] Set Transceiver to CH-13 and vary RF Signal Generator frequency of approximately 27.115 MHz for maximum indication on AC VTVM.
- [k] Decrease output of RF Signal Generator to hear NOISE only from speaker. Then read

Noise Level on AC VTVM.

- [1] Increase the output of Signal Generator again and when the reading on AC VTVM becomes 3.2 times of the Noise Level, read the output on Signal Generator. This output should be less than $0.2\mu\text{V}$.

NOTE: The following adjustment has already been done in the factory. Therefore, Unauthorized Personnel should not perform this step.

[3] AGC Alignment.

- [a] Connect RF Signal Generator to ANT Connector.
- [b] Connect AC VTVM to Speaker Terminals.
- [c] Rotate RF GAIN control fully clockwise.
- [d] Connect DC VTVM between TP-19 and PC Board Ground.
- [e] Decrease the RF Signal Generator output so that only speaker noise is heard.
- [f] Adjust variable resistor RV-11 located on the sub-printed circuit board for an indication of 1.2V on DC VTVM.
- [g] Adjust RF Signal Generator output to $10\mu\text{V}$ and read the indication on AC VTVM.
- [h] Increase RF Signal Generator output to 100mA and adjust variable resistor RV-10 for an indication of two times the value found in Step [g] above.

[4] S-Meter Alignment.

- [a] Upon completion of the above steps, adjust the RF Signal Generator output [two-tone modulated] to $100\mu\text{V}$.
- [b] Adjust variable resistor RV-12 for an indication of S-9 on S-Meter.

[5] Squelch Alignment.

- [a] Upon completion of the above steps, rotate SQUELCH control fully clockwise and adjust the RF Signal Generator [two-tone modulated] output to $10\mu\text{V}$.
- [b] Adjust variable resistor RV-13 until you are able to hear sound from speaker.

C. Noise Silencer Alignment

- [1] Set NS/ANL/PA switch to NS position.
- [2] Set MODE switch to AM position.
- [3] Set Channel Selector switch to CH-1 position.
- [4] Connect DC VTVM [—DC reading] between output side of D-41 and negative side of EXTERNAL JACK [PC Board Ground].
- [5] Connect RF Signal Generator to ANT Connector.
- [6] Set RF Signal Generator for 26.965MHz [CH-1], No-Modulation and increase output level until a —DC reading is obtained on DC VTVM. Then,

adjust L-30 and TC-19 for minimum indication on DC VTVM.

- [7] Set RF Signal Generator for 25 MHz and adjust L-31 and L-32 for a maximum —DC indication on DC VTVM.
- [8] Connect Oscilloscope across speaker terminals.
- [9] Connect Square Wave Generator, V.T.V.M., Signal Generator, and Transceiver to test fixture as shown in Figure 3.
- [10] Set selector switch on test fixture to "Square Wave Generator" position.
- [11] Adjust the output of the Square Wave Generator to approximately 1.0 volt. At this point set the NS/ANL/PA switch to the ANL position and see the pulse at the output, then reset the NS/ANL/PA switch to the NS position.
- [12] Set selector switch on test fixture to the "Signal Generator" position and adjust the signal generator output to $1\mu\text{V}$.
- [13] Set selector switch on test fixture to the "BOTH" position. If the Noise Silencer is properly adjusted, only the signal from the Signal Generator will be heard.
- [14] If the Noise Silencer is not properly adjusted, noise will still be present. If this is the case, realign TC-19, TC-20, L-31, L-32, and L-33 to eliminate or reduce as much as possible the noise pulse.

NOTE: When the selector switch on the test fixture is set to the "BOTH" position a condition could exist where neither the signal or noise is heard. In this case, set the NS/ANL/PA switch to the "ANL" position. If the signal and the noise are both heard, then the gain of the Noise Silencer Amplifier is too high, therefore even the normal background noise will cut-off the I.F. If this condition occurs set the NS/ANL/PA switch to the NS position and realign L-31 very slightly to bring in the signal without the noise.

- [15] Reduce the output of the Square Wave Generator. If at a lower noise level the noise pulses reappear, repeat steps 13 and 14.

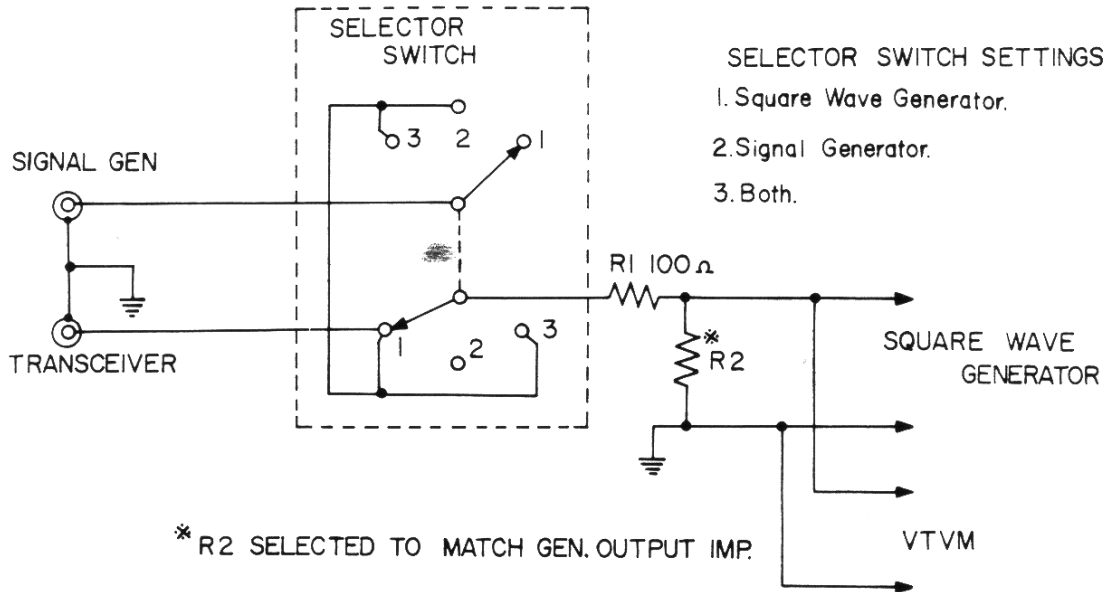
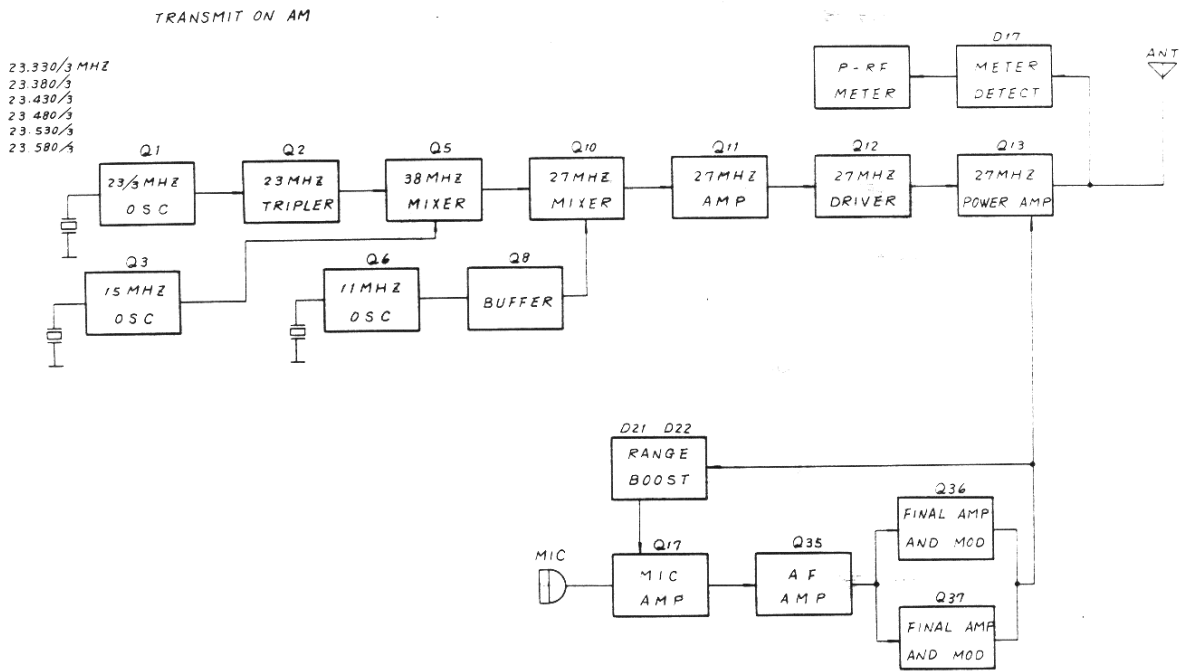


Figure 3. NOISE SILENCER ADJ TEST FIXTURE

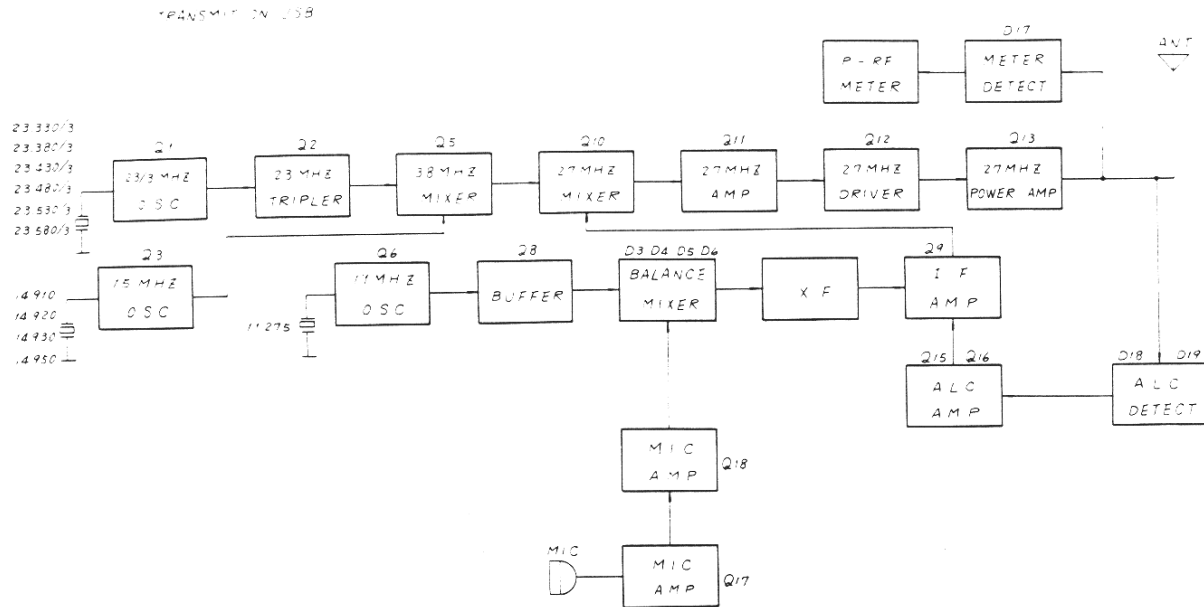
BLOCK DIAGRAM

Six block diagrams corresponding to functional operations are given in Block Diagram A through F. Use of them with the circuit diagram may help your quick understanding of the circuit operation.

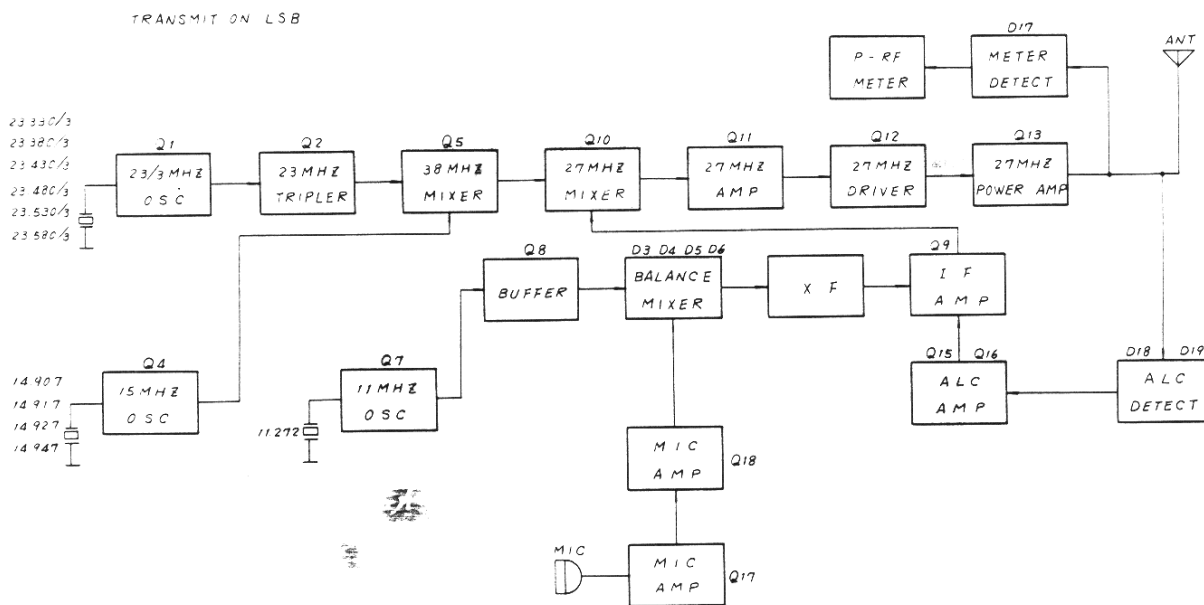


BLOCK DIAGRAM

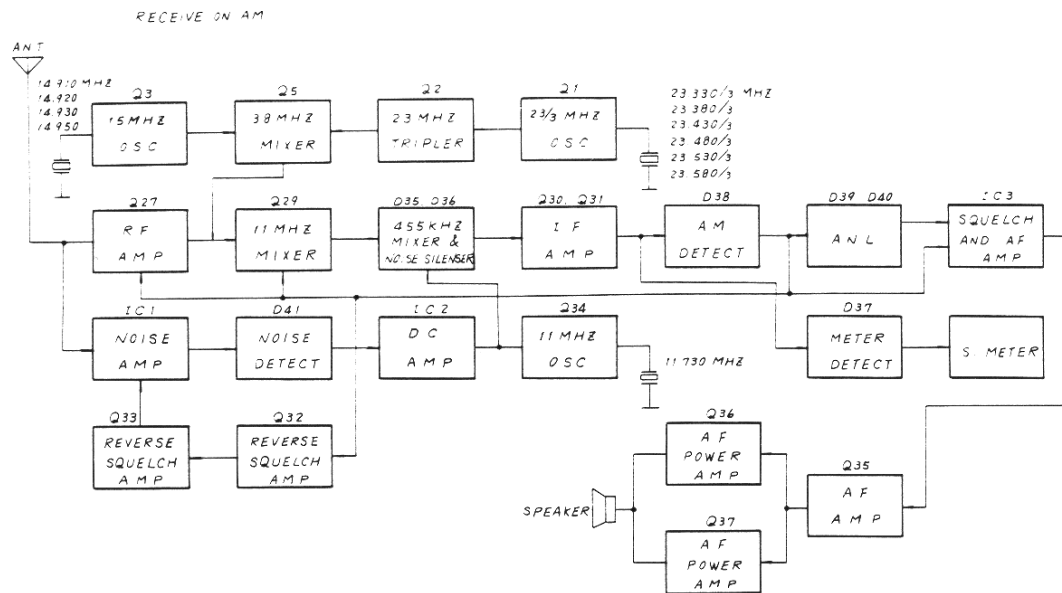
A



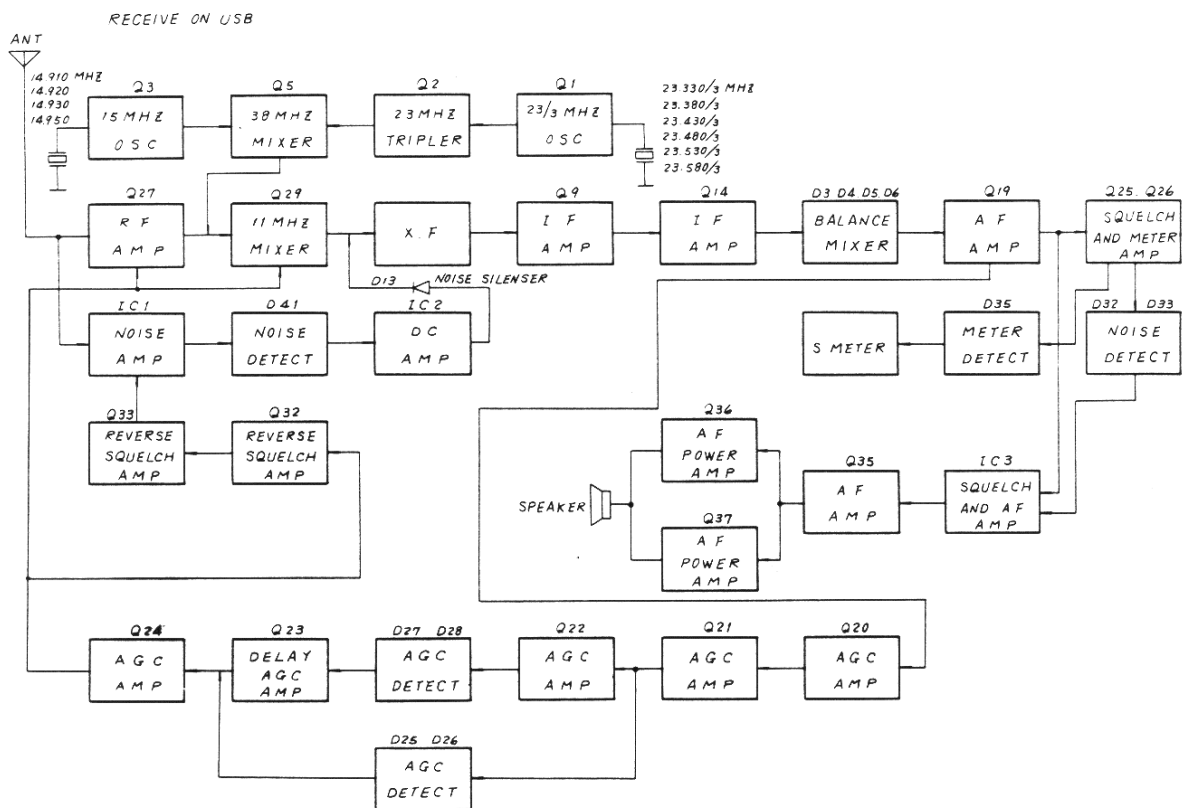
BLOCK DIAGRAM B



BLOCK DIAGRAM C



BLOCK DIAGRAM D



BLOCK DIAGRAM E

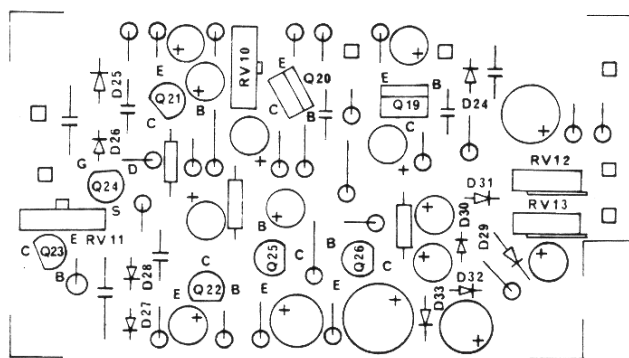


Figure 5. AGC PC Board Assembly EPO-539

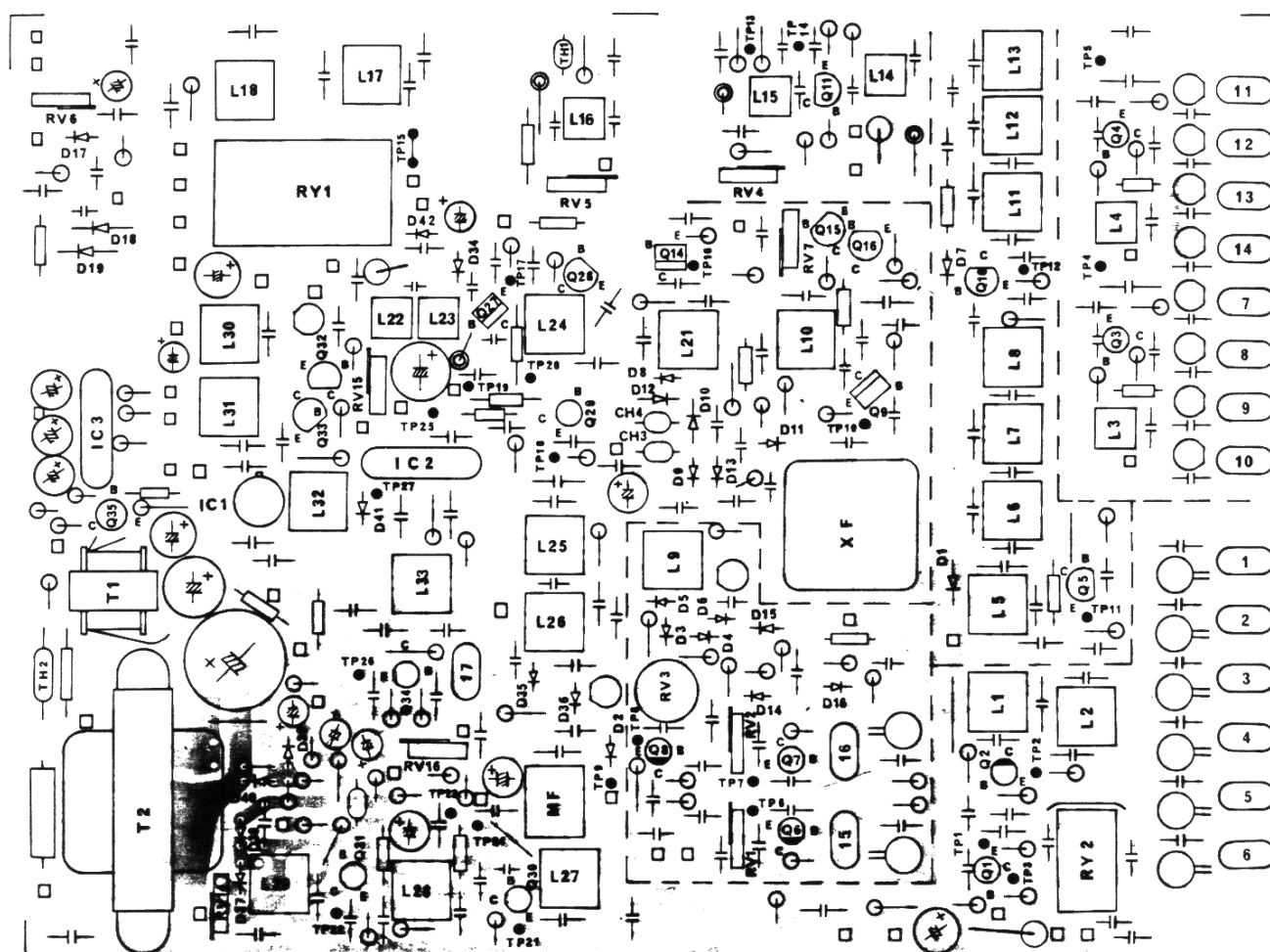


Figure 6. Transmitter/Receiver PC Board Assembly EPO-534

MECHANICAL PARTS LOCATION

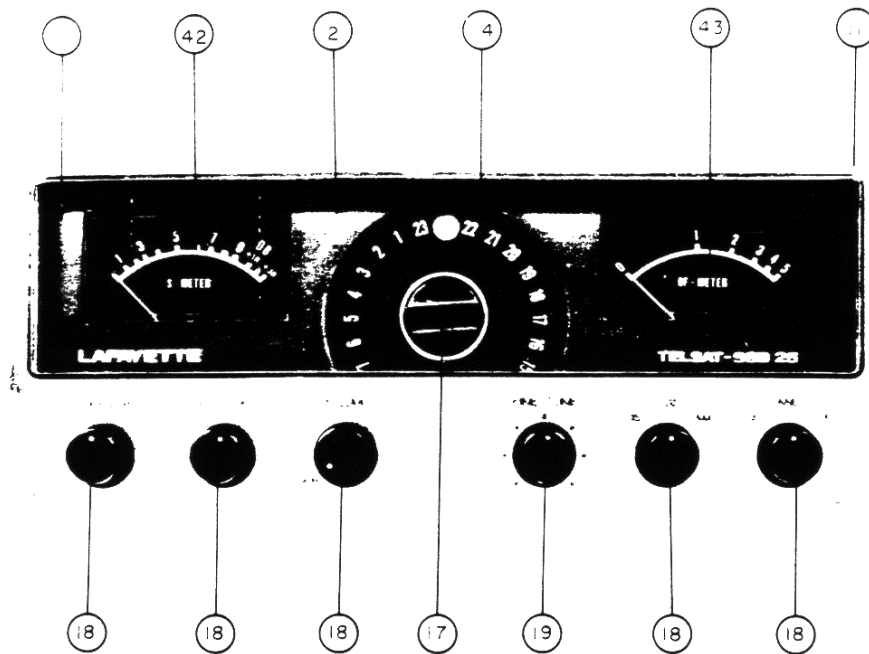


Figure 7. Front Panel Mechanical Parts Locations

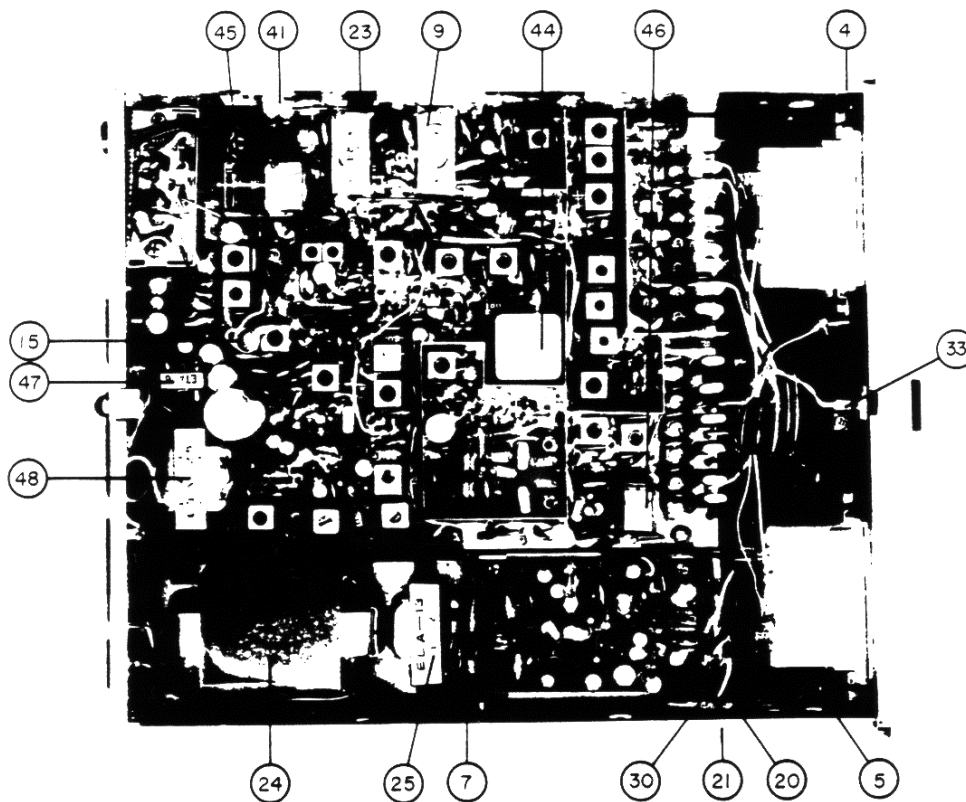


Figure 8. Main Chassis Component Mechanical Parts Locations (Top View)

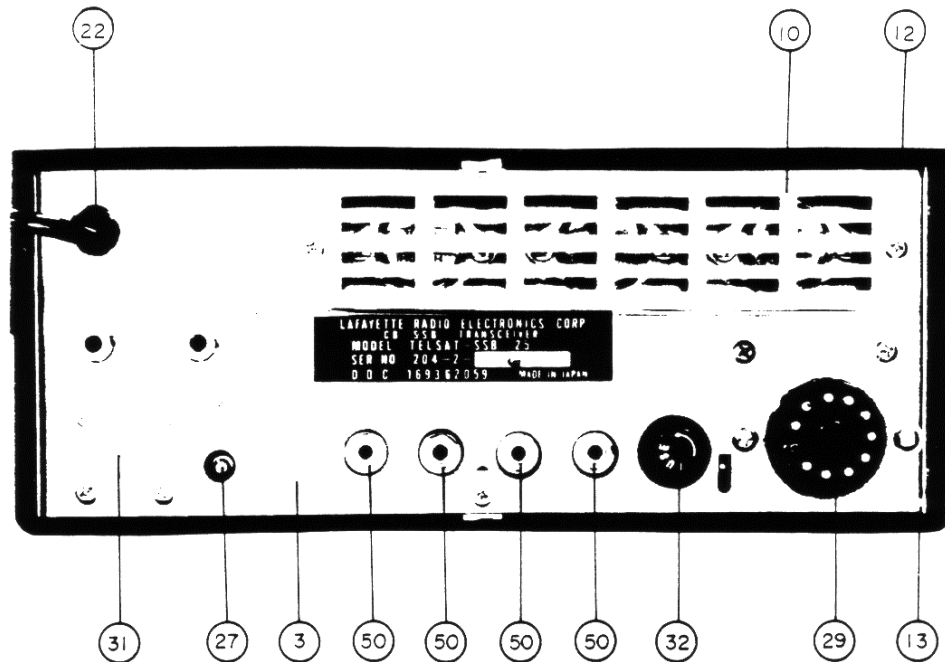


Figure 9. Rear Panel Mechanical Parts Locations

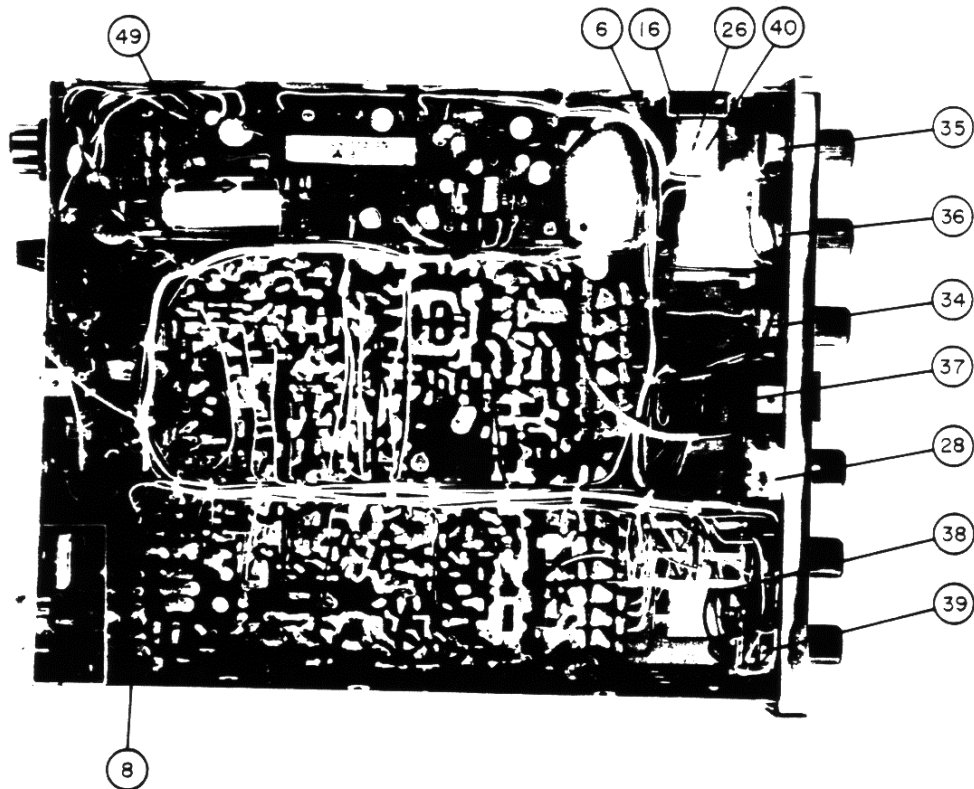


Figure 10. Main Chassis Component Mechanical Parts Locations (Bottom View)

COMPLETE PARTS LIST

Symbol No.	Description	Lafayette Stock No.
(2)	Chassis (Front)	7496-10
(3)	Chassis (Rear)	7497-10
(4)	Chassis (Right)	7498-10
(5)	Chassis (Left)	7499-10
(6)	Pw. Transformer Mounting Bracket	7500-10
(7)	Magnetic Shield Plate	7501-10
(8)	Shield Case	7502-10
	Thermistor Mounting Bracket	7503-10
(9)	Heat Sink (Q-12-13)	7504-10
	Cage Mounting Bracket	7505-10
(10)	Transistor Cover	7506-10
	Shield Plate A (L-Small)	7507-10
	Shield Plate B (L-Large)	7508-10
	Shield Plate C (L-Middle)	7509-10
	Shield Plate D (L-Small)	7510-10
	Shield Plate E (Z-Shape)	7511-10
(11)	Front Escutcheon Trim	7512-10
(12)	Upper Cage	7513-10
(13)	Lower Cage	7514-10
	Mobile Mounting Bracket	6620-10
	Stud	6622-10
	Meter Mounting Bracket	6623-10
(14)	Channel Indicator	6624-10
	Bushing (Channel Dial)	6625-10
	Cusion (Channel Dial P.)	6629-10
(15)	Shield Cylinder (IC)	7515-10
	Flange	7516-10
(16)	Audio Transformer Mounting Bracket	7516-10
	Serial Number Plate	7517-10
	Stiffner (Power Transformer)	5763-10
	Heat Sink (Q-12)	6432-10
	Lamp Holder	5831-10
	Mic. Mounting Clip	2260-10
(21)	Mic. Guide	4221-10
	Trimmer Capacitor Mounting Bracket	5832-10
(20)	Mic. Jack Mounting Bracket	7518-10
	Insulating Bushing (Jack)	6639-10
	Insulating Washer (Jack)	6640-10
	Mylar Sheet	6331-10
(40)	Shield Case	7495-10
	Knurled Screw	2701-10
	Relay Holding Spring	5834-10

Symbol No.	Description	Lafayette Stock No.
(34)	Volume Control (VR1K)	1580-11
(35)	Squelch Control (10K) (VR2)	1648-11
(36)	RF Gain Control (VR3)	1581-11
RV9	Potentiometer (10K)	1587-11
(27)	Trimmer Condenser (TC18)	2930-12
(28)	Variable Condenser (VC)	3432-12
C98	22 PF Ceramic	3312-12
C99	100 PF Ceramic	1110-12
C100	15 PF Ceramic	1230-12
C222, 224	.047 μ F Ceramic	3187-12
C223	.001 μ F Ceramic	3081-12
C47,71,72	.022 μ F Ceramic	3063-12
C94,108,109	.047 μ F Ceramic	3187-12
C186,187	.1 μ F Ceramic	3348-12
C1-6 & C41	47 PF Ceramic	3061-12
C7	3 PF Ceramic	3040-12
C8	43 PF Ceramic	3436-12
C10,69,85	100 PF Ceramic	3197-12
C11	220 PF Ceramic	3021-12
C12,14,28	.01 μ F Ceramic	3047-12
C13,17,76	150 PF Ceramic	3071-12
C15,59,77	6 PF Ceramic	2361-12
C16, 166	15 PF Ceramic	2996-12
C20,21,22	27 PF Ceramic	3256-12
C24,25,33	68 PF Ceramic	2995-12
C66	10 PF Ceramic	3370-12
C79,154	5 PF Ceramic	1949-12
C81	8 PF Ceramic	3361-12
C82	56 PF Ceramic	3313-12
C88	330 PF Ceramic	2897-12
C97,197	270 PF Ceramic	1303-12
C152	2 PF Ceramic	3393-12
C192	180 PF Ceramic	3362-12
C199	39 PF Ceramic	3353-12
C122	.2 μ F Ceramic	3333-12
C141	.5 μ F Ceramic	3438-12
C225	CR Module	3188-12
C65	CR Module	3435-12
C19,204	33 μ F 16V Elyt.	3104-12
C62,184	10 μ F 16V Elyt.	2986-12
C182,203	33 μ F 10V Elyt.	3089-12
C183,214	3.3 μ F 25V Elyt.	1811-12
C178	10 μ F 10V Elyt.	3102-12
C180,202	1 μ F 50V Elyt.	2300-12

Symbol No.	Description	Lafayette Stock No.
C200	100 μ F 10V Elyt.	3004-12
C207	100 μ F 16V Elyt.	3078-12
C210	2200 μ F 16V Elyt.	3433-12
C120,121	4.7 μ F 25V Elyt.	3090-12
C215	470 μ F 6V Elyt.	3437-12
C142	47 μ F 10V Elyt.	3235-12
C9,153	220 PF Styroflex	3192-12
C26,35	820 PF Styroflex	3193-12
C49,54	180 PF Styroflex	3434-12
C50,55	510 PF Styroflex	3195-12
C228	1000 PF Styroflex	3194-12
C126	.1 μ F Mylar	2699-12
C227	Mylar Condenser	3117-12
	50 PF Trimmer	3190-12
	20 PF Trimmer	3189-12
C101	Ceramic Condenser	1948-12
C104	Ceramic Condenser	1484-12
	Posistor	2305-13
R162	Wirewound Resistor	2473-13
R164	3.3 1 W Incombustible	2571-13
R166	8.2 1 W Solid Resistor	2572-13
RV11	Variable Resistor (5K)	2339-13
RV1,2,4	1 K Ohm B Pot.	2564-13
RV3	300 Ohm B. Pot.	2570-13
RV5	500 Ohm B. Pot.	2294-13
RV16	10K Ohm B Pot.	2474-13
RV7	2K Ohm B Pot.	2507-13
RV14	5K Ohm B Pot.	2492-13
RV15	100K Ohm B Pot.	2297-13
(37)	Rotary Switch (SW 1)	1730-14
(38)	Function Selector Sw. (SW 2)	1731-14
(39)	NS-ANL-PA Switch (SW 3)	1732-14
(41)	Leaf Switch (SW 4)	1733-14
(24)	Power Transformer (PT)	1705-15
(26)	Audio Transformer (CH2)	1637-15
(47)	Input Transformer (T 1)	1636-15
(48)	Output Transformer (T 2)	1706-15
PT-1	P.C. Board	1546-16
PT-2	P.C. Board	1547-16
PT-3	P.C. Board	1548-16
PT-4	P.C. Board	1549-16
Q12	2SC-777	2062-17
Q13	2SC-F8	1068-17

Symbol No.	Description	Lafayette Stock No.
Q36,37	2SB-337A	1559-17
Q39	2SB-337B	2149-17
Q1,3,4,6	2SC-183R	1210-17
Q2,29	2SC-184	1634-17
Q5,10,11	2SC-815	1879-17
Q9,14	2SC-458	1374-17
Q15,16,28	2SC-900	2132-17
Q17	2SB-77	1060-17
Q27	2SC-460 A	1373-17
Q32,33	2SC-945 R	2063-17
D1	AW-01-09 Diode	2150-17
D2, 42	AW-01-08 Diode	2064-17
D3,4,5,6	IN-60 P Diode	2151-17
D7,14,16	MI-301 Diode	2065-17
D8,9,10,11	IS-953 Diode	2066-17
D37,38,39	IN-60 Diode	1000-17
TH 1	Thermistor (19D-27)	2038-17
TH 2	14D47 Thermistor	1638-17
D43	RD13AN Diode	2021-17
D44,47	VO-6 Diode	2031-17
(17)	Selector Knob	1735-18
(18)	Serration Knob	1736-18
(19)	Round Knob	1737-18
(31)	Antenna Jack (J 1)	1019-19
(29)	11 P Plug (J 2)	1920-19
(30)	Microphone Jack (J 3)	1229-19
(50)	Earphone Jack (J 4,5,6)	1411-19
(32)	Fuse Holder (FH 1)	1417-19
	Fasten Receptacle	1924-19
	Lug Terminal	2008-19
	Lug (M-3)	1888-19
	Terminal Chip	1891-19
(49)	Fuse Holder (FH 2)	1859-19
F	½ Amp. Fuse	3791-20
(33)	Pilot Lamp (PL 1)	1003-20
(1)	Plastic Panel	4315-20
	Sponge (Relay)	4316-20
	Insulator (Leaf Switch)	4317-20
	Insulator (Large)	4318-20
	Insulator (Small)	4319-20
	Insulator (Middle)	4320-20
	Front Cover Glass	4321-20
	Plastic Grommet	3559-20

Symbol No.	Description	Lafayette Stock No.
	Cap (Ant.-Jack)	4055-20
	Plastic Washer (Mtg. Screw)	4322-20
	Speaker Cap	3602-20
(22)	Cord Stopper	3945-20
	White Window Sheet	4323-20
(23)	Cap (Leaf Switch)	
	Test Point	4279-20
	Crystal Spacer	4314-20
F2	2 A Fuse	3755-20
(25)	Audio Choke Coil (CH 1)	2488-23
L19	RF Choke Coil	2489-23
L20	RF Choke Coil	2216-23
RFC1,2,3,4	RF Choke Coil	2240-23
CH3,4	RF Choke Coil	2490-23
L1,L2	RF Transformer	2491-23
L3,L4	RF Transformer	2219-23
L5,11,12	RF Transformer	2220-23
L6,7	RF Transformer	2221-23
L8	RF Transformer	2222-23
L9	RF Transformer	2492-23
L10,21	RF Transformer	2493-23
L14	RF Transformer	2494-23
L15,16	RF Transformer	2028-24
L17	RF Transformer	2029-24
L18	RF Transformer	2030-24
L22,23	RF Transformer	2032-24
L24	RF Transformer	2033-24
L25	RF Transformer	2072-24
L26	RF Transformer	2017-24
L27	RF Transformer	2036-24
L28	RF Transformer	2008-24
L29	RF Transformer	1949-24
L30	RF Transformer	2039-24
L31	RF Transformer	2040-24
L32	RF Transformer	2042-24
L33	RF Transformer	2041-24
M.F.	Mechanical Filter	2043-24
IC-1	CA-3011	1002-25
IC-2	Integrated Circuit	1009-25
IC-3	Integrated Circuit	1007-35
(42)	Meter (M-1)	1153-27
(43)	RF Meter (M-2)	1154-27

Symbol No.	Description	Lafayette Stock No.
	Manual	1746-30
MIC	Microphone	1010-34
(44)	Crystal Filter (X.F.)	1263-35
Xtal-1	Crystal Osc. (7.776666 MHz)	1264-35
Xtal-2	Crystal Osc. (7.793333 MHz)	1265-35
Xtal-3	Crystal Osc. (7.810000 MHz)	1266-35
Xtal-4	Crystal Osc. (7.826666 MHz)	1267-35
Xtal-5	Crystal Osc. (7.843333 MHz)	1268-35
Xtal-6	Crystal Osc. (7.860000 MHz)	1269-35
Xtal-7	Crystal Osc. (14.907 MHz)	1270-35
Xtal-8	Crystal Osc. (14.917 MHz)	1271-35
Xtal-9	Crystal Osc. (14.927 MHz)	1272-35
Xtal-10	Crystal Osc. (14.947 MHz)	1273-35
Xtal-11	Crystal Osc. (14.904 MHz)	1274-35
Xtal-12	Crystal Osc. (14.914 MHz)	1275-35
Xtal-13	Crystal Osc. (14.924 MHz)	1276-35
Xtal-14	Crystal Osc. (14.944 MHz)	1277-35
Xtal-15	Crystal Osc. (11.275 MHz)	1096-35
Xtal-16	Crystal Osc. (11.272 MHz)	1278-35
Xtal-17	Crystal Osc. (11.730 MHz)	1097-35
SP	Speaker	1203-36
(45)	Relay (RY2)	1064-37
(46)	Relay (RY1)	1052-37
	A.C. Cord	1221-38
	D.C. Cord	1222-38

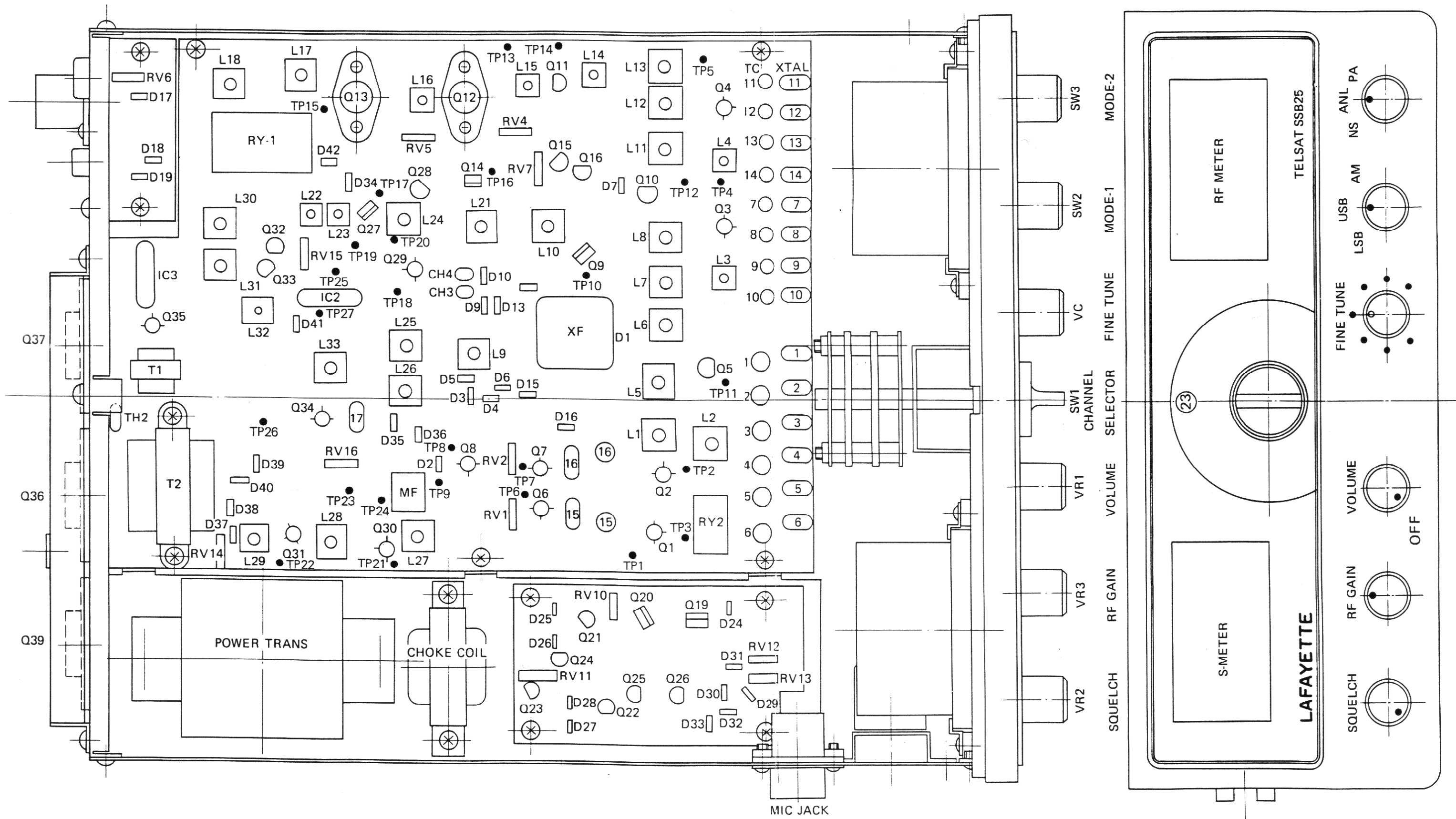


Diagram of the rear panel of the TSC-1000 receiver, showing various ports and controls:

- ALARM SW**: A switch with two positions, indicated by a circle with an 'X'.
- ANT TUNING**: A control knob with a circle and 'X' above it.
- TVI**: A small circular port.
- ANT**: A large circular port with four mounting screws, indicated by circles with 'X'.
- EXT. SP**: A speaker output port.
- REC**: A recording output port.
- EX**: An external antenna port.
- PA**: A power amplifier output port.
- 125V-1/2A**: A power input port.
- FUSE**: A fuse holder.
- POWER**: A power input port.
- MADE IN JAPAN**: Text indicating the origin of the device.
- LOADING**: A control knob with a circle and 'X' above it.
- ANT**: A small circular port.

