

SERVICE MANUAL

23 - CHANNEL AM TRANSCEIVER



SPECIFICATION

GENERAL

Channels	:	23
Frequency Range	:	26.965 to 27.255 MHz
Frequency Control	:	Crystal Synthesizer
Frequency Tolerance	:	0.005 %
Operating Temperature Range	:	- 30°C to +50°C
Microphone	:	Plug in type; Dynamic with Switch and curly cord
Input Voltage	:	13.8 V DC nom. (Reversible Ground)
Current Drain – Transmit	:	AM full mod. 1.5A
– Receive	:	Squelched, 0.3A, full audio output, 0.65A
Dimensions	:	8- $\frac{1}{2}$ " L. \times 5- $\frac{7}{8}$ " W. \times 2- $\frac{1}{2}$ " H.
Weight	:	3- $\frac{1}{2}$ pounds
Antenna Connector	:	Type SO 239
Semiconductors	:	20 Transistors, 11 Diodes
Meter	:	Illuminated, indicates relative power output and received signal strength

TRANSMITTER

Power Input	:	AM 5 Watts
Modulation	:	High and low level class B
Modulation Capability	:	100 % – Adjustable with Microphone Gain Control
Frequency Response	:	300 – 2500 Hz
Output Impedance	:	50 Ohms, unbalanced

RECEIVER

Sensitivity	:	Less than 1 μ V for 10 DB (S+N)/N
Selectivity	:	6db@ 4KHz, 40db@ 20KHz.
Image Rejection	:	30db
I.F. Frequencies	:	Double conversion, 1st: 11.275MHz 2nd: 455 KHz
Automatic Gain Control (AGC)	:	Less than 10db change in audio output for inputs from 10 to 50,000 microvolts
Squelch	:	Adjustable; threshold less than 1 μ V.
Audio Output Power	:	2.5 Watts into 8 Ohms
Frequency Response	:	300 – 3000Hz
Distortion	:	Less than 10 % @ 2.5 Watts @ 1000 Hz
Built-in Speaker	:	8 Ohms, round
External Speaker (Not Supplied)	:	8 Ohms; disables internal speaker when connected

PA SYSTEM

Power Output : 3 Watts into external speaker
External Speaker for PA : 8 Ohms; When PA – CB switch is PA,
(Not Supplied) the PA speaker also monitors the receiver

WARNING; YOU ARE NOT ALLOWED TO TRANSMIT UNTIL YOU HAVE RECEIVED YOUR LICENSE FROM THE FCC.

GENERAL DESCRIPTION

This transceiver is a miniaturized, all transistor 2– way radio transceiver for mobile operation.

It employs a frequency synthesiser circuit to provide 23 crystalcontrolled transmit and receive channels in the 27 MHz Citizens Band. Designed and built for reliable, trouble– free performance, the transceiver uses rugged heat resistant transistors in all critical areas. Current drain on 12 volts DC is exceptionally low, permitting continuous mobile operation for long periods of time.

RECEIVER SECTION

The circuit is a highly sensitive and selective dual– conversion superheterodyne type offering fully crystal– controlled operation on all 23 CB channels by means of crystal frequency synthesis. The circuit incorporates designed to provide optimum reception under virtually any conditions. The receiver incorporates an effective full– time Automatic Noise Limiter in the audio stages. A CERAMIC filter provides razorsharp selectivity and assures high adjacent channel rejection. As a result, transmissions on adjacent channels rarely cause interference– even at close range. A variable squelch control is incorporated which can be used to “silence” the receiver when no signals are being received. Being variable, the squelch circuit can be adjusted to provide varying degrees of sensitivity to incoming signals.

TRANSMITTER SECTION

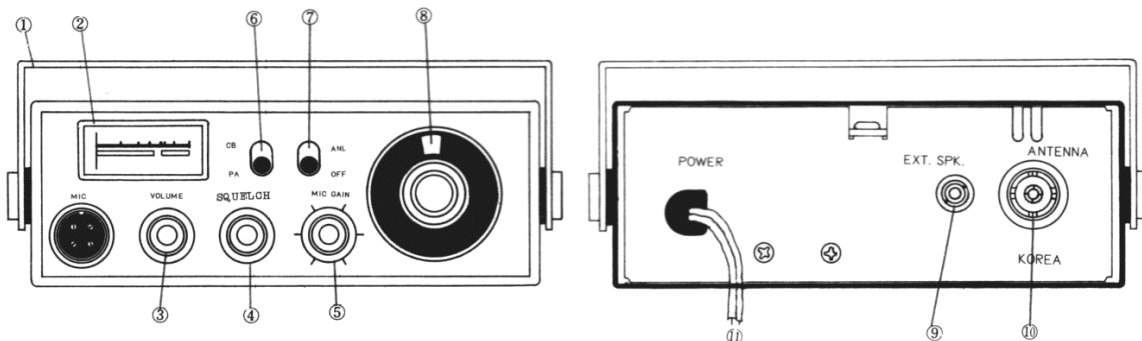
The transmitter offers fully crystal– controlled operation on all 23 CB channels and uses a highly efficient circuit to develop 5 watts DC power input to the final RF with high average modulation capabilities. A special feature in the transmitter is the full– time “Range Boost” circuit which concentrates more audio power into the sidebands and provides high average modulation. This feature provides an increase in the effective range of your transmitted signal.

POWER SUPPLY SECTION

As supplied, the transceiver is ready for connection to a 12 volt DC, negative or positive ground system. DC power is fed to the transceiver by means of a fused power lead.

OPERATING CONTROLS AND FEATURES

- (1) MOUNTING BRACKET.....Specially designed bracket simplifies mobile installation-has “quick-release feature for fast removal of transceiver.
- (2) S/P-RF METER..... Illuminated meter indicates relative incoming signal strength (top scale) when receiving, and relative RF power output (bottom scale) when transmitting.
- (3) VOLUME/ON-OFF SWITCH...Varies the sound output from the built-in speaker, or any external speaker connected to the “EXT SP” (at the rear of the transceiver). Also incorporates an “ON-OFF” power switch at the extreme counterclockwise position.
- (4) SQUELCH CONTROL.....This control is used to “quiet” the receiver during “no-signal” conditions. Degree of sensitivity to incoming signals is adjustable. Full clockwise provides maximum squelch; full counterclockwise provides minimum squelch.
- (5) MIC GAIN CONTROL.....This control is used to vary the amount of modulation in transmit. In PA operation this control sets the PA volume.
- (6) PA/CB MODE SELECTOR...Selects CB operation in upper position, or PA operation in LOWER position.
- (7) ANL-OFF SWITCH.....An Automatic Noise Limiter (ANL) circuit is provided for reducing undesirable noise. To operate the ANL circuit place the switch in the ANL position. To cut off the circuit, place it in the OFF position.
- (8) CHANNEL SELECTOR SWITCH...Rotary switch selects one of 23 channels for transmit and receive operation. Illuminated window above shows channel selected.
- (9) PA SPEAKER JACK.....Used for connection of 8-16 ohm speaker for Public Address (PA) operation.
- (10) ANTENNA SOCKET....for antenna lead, in cable (RG-58/U or RG-8/U) with matching PL-259 type coaxial connector.
- (11) DC POWER CORD..... 12 volts DC power the transceiver supplied through DC power Cable.



MOBIL INSTALLATION

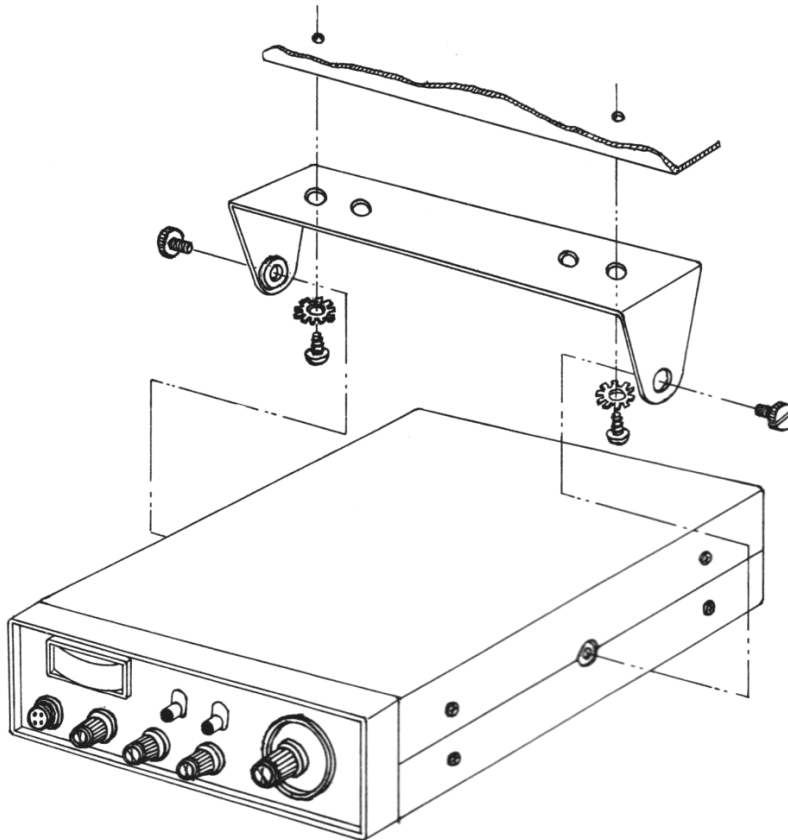
TRANSCEIVER MOUNTING

Before installing the transceiver in a car, truck, boat, etc., be sure to choose a location which is convenient to the operating controls, and will not interfere with the normal function of the driver. The transceiver may be mounted to the underside of the instrument panel or dashboard of a car, truck, etc., by means of the special MOUNTING BRACKET that is supplied with the transceiver.

Attach the bracket to the underside of the instrument panel or dashboard of the vehicle using the screws supplied, then attach the transceiver to the bracket by means of the two screws at the sides.

TILT THE UNIT UPWARD OR DOWNWARD TO THE DESIRED ANGLE BEFORE TIGHTENING THE SECURING SCREWS.

figure



DC POWER CONNECTIONS

The transceiver is designed to operate from a battery source of 11.5 to 14.5 volts DC, in vehicles (or boats) employing either negative or positive ground electrical systems. The fused DC POWER cable attached is used to make the necessary power connection to the transceiver. The red (fused) lead is connected to the positive (+) side of the electrical system in the vehicle, and the black lead is connected to the negative (-) side of the system.

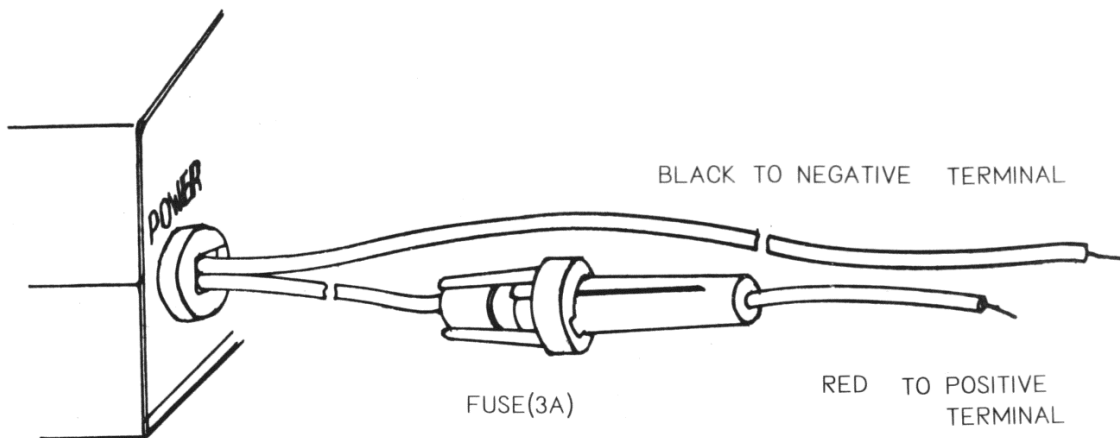
In a negative ground vehicle, connect the Red lead to the "hot" point in the electrical system (battery positive), and the Black lead to the metal firewall or any other point that is connected to the vehicle chassis (battery negative).

In a positive ground vehicle, connect the Black lead to the "hot" point in the electrical system (battery negative), and the Red lead to the metal firewall or any other point that is connected to the vehicle chassis (battery positive).

A suitable point in the vehicle for connection to the "hot" battery side can usually be found on the fuse block.

Since the transceiver draws a maximum of only 1.3 ampere of current, you can use a terminal which supplies power to the Radio or other accessory (use the unfused input side since the DC power cable is equipped with its own fuse). To simplify connection to this terminal attach an alligator (spring)clip to the power lead first and then clamp it onto the terminal selected. Note that connection to this point will ensure that DC power to the transceiver is automatically cut off when the vehicle ignition is turned off.

IMPORTANT: The DC voltage available at the terminal selected on the fuse block must be at least 11.5 volts for proper operation of the transceiver.



ANTENNA CONNECTION

The lead-in cable from the CB antenna should be terminated with a PL-259 type male connector. Attach to the matching antenna input connector at the rear of the transceiver.

MICROPHONE BRACKET

The small size of the transceiver prohibits mounting a microphone bracket directly to the chassis. We recommend, therefore, that the microphone bracket be attached to the dashboard of the automobile or in any other convenient location. If one desires to do this without drilling holes, a magnetic mounting plate may be used and the microphone bracket attached to it.

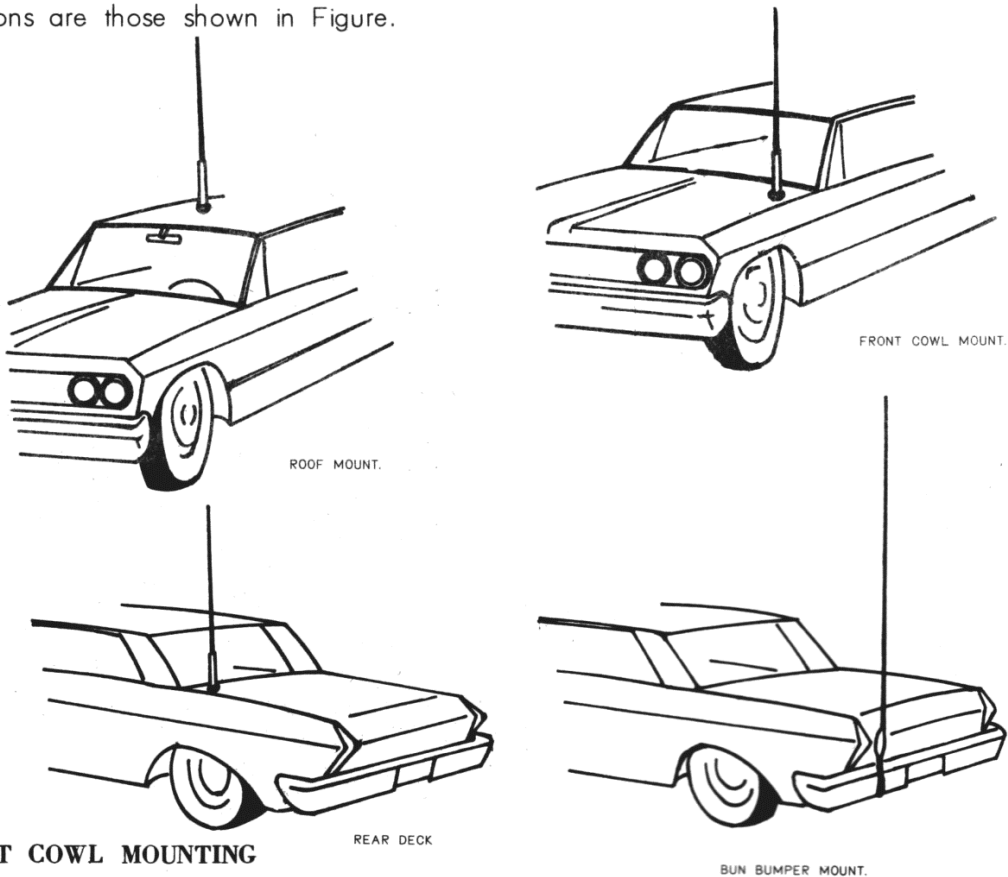
MICROPHONE CONNECTION

Insert the 5 pin plug at the end of the coiled cord into the microphone socket at the left front side of the transceiver.

IMPORTANT: NEVER ATTEMPT TO TRANSMIT WITHOUT AN ANTENNA CONNECTED TO THE TRANSCEIVER.

MOBILE ANTENNAS

The type antenna best suited for mobile service is a vertically polarized whip antenna. The vertical whip is non-directional and can be of the loaded type (top, center or base loaded), or a full quarter-wave, the latter usually being more efficient. Both types use the metal body of the vehicle as a "ground plane". There are a number of locations that may be used for the installation of an antenna on a car. Four of the most popular locations are those shown in Figure.



FRONT COWL MOUNTING

Front cowl mounting offers a number of advantages. The CB antenna can be mounted in place of the regular auto radio antenna and will thus provide the minimum of installation problems. The antenna can be used for both the CB and standard auto radio by employing any of the commercially made two-way couplers available. In this location you can install a short loaded whip, with only a small loss of efficiency.

The horizontal radiation pattern in such a location is slightly irregular, radiation being slightly greater in the direction of the rear fender opposite to the side on which the front cowl antenna is mounted.

ROOF MOUNTING

Roof mounting is usually the best location because it provides an almost perfect omnidirectional radiation pattern. However, the use of a full 108-inch quarter-wave antenna on the roof of a vehicle is fairly impractical and a shorter, loaded whip is usually installed in this location, even though this type offers lower efficiency.

REAR DECK MOUNTING

Rear deck mounting permits the use of a full quarter-wave antenna or a shorter, loaded whip. The radiation pattern in such a location is somewhat irregular, radiation being slightly greater in the direction of the front fender opposite to the side on which the rear deck antenna is mounted.

BUMPER MOUNTING

This arrangement uses the rear bumper of the car and is by far the most practical for use with full 108-inch quarter-wave whips. Another advantage is that removal of the antenna is simple and leaves no holes in the car body. The radiation pattern produced by an antenna mounted on the left rear bumper is fairly irregular, with greatest radiation being in two directions—one to the right and forward slightly, the other to the rear and left slightly.

IGNITION INTERFERENCE

AUTO

The suppression carried out on vehicles equipped with a standard broadcast radio will usually prevent any serious ignition interference from occurring. However, because of the high sensitivity of the receiver, sufficient noise may be picked up from your own vehicle to make reception of weaker stations difficult. In such a case, additional suppression is recommended. Several noise suppressor kits are available which include all necessary parts and instructions for effectively suppressing ignition noise. Alternatively, you can take the vehicle to a skilled auto radio technician who will be able to carry out the suppression for you.

OPERATING INSTRUCTIONS

1. Insert the MIC plug in the MIC connector (Front panel).
2. Make sure your Antenna is securely connected to the antenna connector.
3. Turn the Power on and Adjust the VOLUME control for proper sound level.
4. Turn the SQUELCH control knob counter-clockwise fully.
5. Place the CB-PA switch in the CB position.
6. Place the Channel Selector switch to a desired channel.
7. To transmit press the Push-to-Talk button on the microphone and to receive release the button.

IMPORTANT: Do not short circuit the antenna or do not try to transmit without an antenna connected to the Antenna connector on the rear panel. This may cause damage to the output power transistors.
Transmit only after careful checking the installation of connector and coaxial cable.

PUBLIC ADDRESS OPERATION

Special provision has been made for Public Address (PA) operation utilizing the microphone and audio stages in the transceiver. For PA operation, you should use an external 8-16 ohm speaker connected to the "EXT.SP" jack (located at the rear of the transceiver). Set the PA-CB mode button to the "PA" position, press the push-to-talk button on the microphone and talk into it — your voice will be heard from the external speaker (which may be mounted on the exterior of a car or building). The recommended plug for the "EXT.SP" jack is a 3.5 ϕ subminiature phone plug.

NOTE; During PA operation, the "VOLUME" control can be used to adjust the speaker output level.

CITIZEN BAND FREQUENCIES

YOUR transceiver is capable of operation on all available U.S. and Canadian Citizens Band channels, frequencies for which are listed as follow:

CHANNEL	CHANNEL FREQUENCY	CHANNEL	CHANNEL FREQUENCY	CHANNEL	CHANNEL FREQUENCY
1	26.965	9	27.065	17	27.165
2	26.975	10	27.075	18	27.175
3	26.985	11	27.085	19	27.185
4	27.005	12	27.105	20	27.205
5	27.015	13	27.115	21	27.215
6	27.025	14	27.125	22	27.225
7	27.035	15	27.135	23	27.255
8	27.055	16	27.155		

* Channel 23 is shared with Class C Radio Control. This channel is not available in Canada.

SERVICING THE TRANSCEIVER

The transceiver has been fully aligned at the factory before shipment and will not usually require any further adjustments.

WARNING

As prescribed in Part 95.58, paragraph (e) of the FCC Rules and Regulations, the manufacturer of the transceiver is required to issue the following warnings.

1. Certain repairs and adjustments to this transceiver may be made legally only by a person in possession of a valid First or Second Class FCC Radiotelephone Operators License (or equivalent in Canada), 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 of crystals and transmitter oscillator components, which might affect the transmitter's ability to comply with FCC regulations.
2. Use only approved replacement parts when servicing the transmitter. The use of a component (such as a crystal, semiconductor, capacitor, etc.) having different electrical characteristics and ratings than that originally used could result in a violation of the FCC Regulations and is therefore prohibited.

CRYSTAL SYNTHESIZING SYSTEM

This transceiver incorporates a frequency synthesizing system which employs 12 crystals to produce 23 transmitting channels and 23 receiving channels.

Refer to the following table which shows the operating mode (Transmit or Receive) and number of channels for which each of the 12 crystals is used. By using this table, you will be able to pinpoint the failure of a crystal.

For example, failure of crystal 14.950 will cause the transmitter to be inoperative on channels 1, 5, 9, 13, 17, 21, although the receiver will function normally on these same channels. When malfunctions occur on a should be suspected initially.

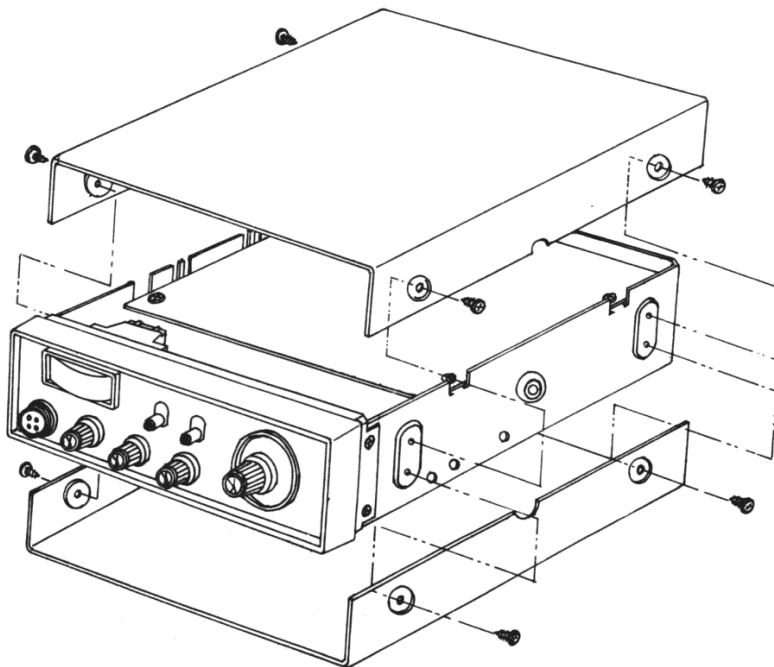
X-TAL FREQUENCY (MHz)	CHANNELS FOR WHICH USED	
	TRANSMIT	RECEIVE
23.290	1. 2. 3. 4	1. 2. 3. 4
23.340	5. 6. 7. 8	5. 6. 7. 8
23.390	9.10.11.12.	9.10.11.12
23.440	13.14.15.16	13.14.15.16
23.490	17.18.19.20	17.18.19.20
23.540	21.22.23	21.22.23
14.950	1.5. 9.13.17.21	1.5. 9.13.17.21
14.960	2.6.10.14.18.22	2.6.10.14.18.22
14.970	3.7.11.15.19	3.7.11.15.19
14.990	4.8.12.16.20.23	4.8.12.16.20.23
11.275	all channels
11.730	all channels

ALIGNMENT INSTRUCTIONS

TRANSMITTER ADJUSTMENTS

COVER REMOVAL

Remove the uppermost chassis cover (2 screws each side). Remove cover with care -- the speaker is connected by two leads to the main chassis.



NOTE

CAUTION: All coil cores in this unit have been sealed with wax. Before attempting to adjust each core, be sure to melt or loosen the wax so as to permit free movement. Failure to do this may result in damaged cores.

The power supply to the transceiver should be adjusted to 12.6 volts DC. Connect an RF wattmeter (50 ohms) to the antenna connector and set the transceiver to channel 13. Refer to the diagram showing the transceiver interior Parts Location for the following adjustments.

37 MHz OSCILLATOR Q301

This oscillator is used for both receive and transmit functions of the transceiver.

- a: Connect VHF milivoltmeter between in TPI and ground.
- b: Press the mic button.
- c: Rotate the core of T12, T13, T14 for maximum VHF. milivoltmeter deflection.

27MHz MIXER STAGES

- a: Connect VHF milivoltmeter between TP2 and ground.
- b: Press mic button.
- c: Rotate the core of T15, T16, T17, for maximum VHF voltmeter deflection.

27MHz TRANSMITTER STAGE

- a: Press mic button.
- b: Connect RF power meter with dummy load to antenna terminal.
- c: Rotate the core of L13 and L12 for maximum output.
- d: Rotate the core of L12 and L13 clock wise one and Half turns.
- e: Adjust the core of L9 for optimum output power.

TRANSMITTER OUTPUT LEVEL

LOCATION	RF VOLTAGE
ANT. JACK	45 V P-P
TR18 collector	37.5V
TR19 collector	30.5V
TR20 collector	8.4V

MODULATOR TROUBLE SHOOTING

Modulator trouble shooting can be effectively carried out by careful use of the table 2

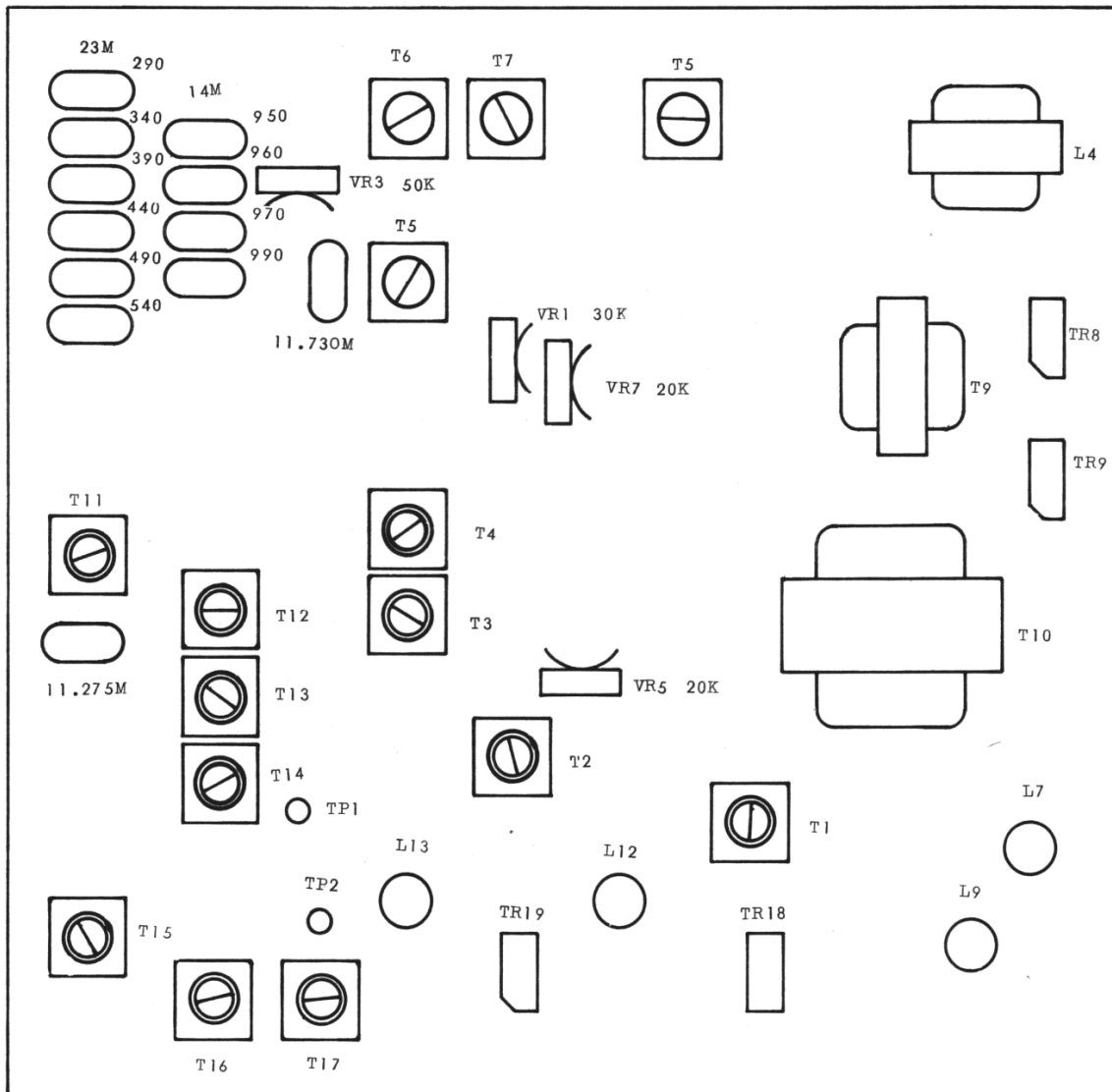
LOCATION	LEVEL
MIC JACK	1 mV R.M.S
TR7 base	3mV
TR7 collector	0.62V

RECEIVER TROUBLE SHOOTING

Set volume control for minimum and SQ control for min position. Receiver trouble shooting can be effectively carried out by careful use of Table 2

STAGE		INPUT SIGNAL $0\mu\text{V}$	STAGE		INPUT SIGNAL $0\mu\text{V}$
TR 1	B	0.95	TR 8	B	0.5
	C	4.7		C	13.5
	E	0.4		E	0.05
TR 2	B	0.95	TR 9	B	0.5
	C	8.6		C	13.5
	E	0.5		E	0.05
TR 3	B	0.95	TR 10	B	1.0
	C	8.6		C	8.5
	E	0.5		E	0.6
TR 4	B	0.7	TR 11	B	0.75
	C	8.7		C	8.7
	E	0.1		E	0.75
TR 5	B	0.8	TR 12	B	1.3
	C	8.7		C	4.7
	E	0.3		E	0.7
TR 6	B	0.8	TR 13	B	0
	C	7.1		C	4.2
	E	0.3		E	0
TR 7	B	2.0	TR 15	B	1.7
	C	10.5		C	8.0
	E	1.4		E	1.45

INTERIOR ADJUSTMENTS



RECEIVER ADJUSTMENT

1. Connect standard signal generator to Antenna terminal and frequency 27.125MHz mod. 30% signal input 1mV.
2. Connect AC VTVM to speaker terminal.
3. Set channel selector to channel 14.
4. Set volume control for maximum and SQ control for minimum.
5. Set PA-CB switch to CB position.
6. Adjust T1, T2, T3, T4, T5, T6, T7, T8 for maximum output.

SIGNAL METER ADJUSTMENT

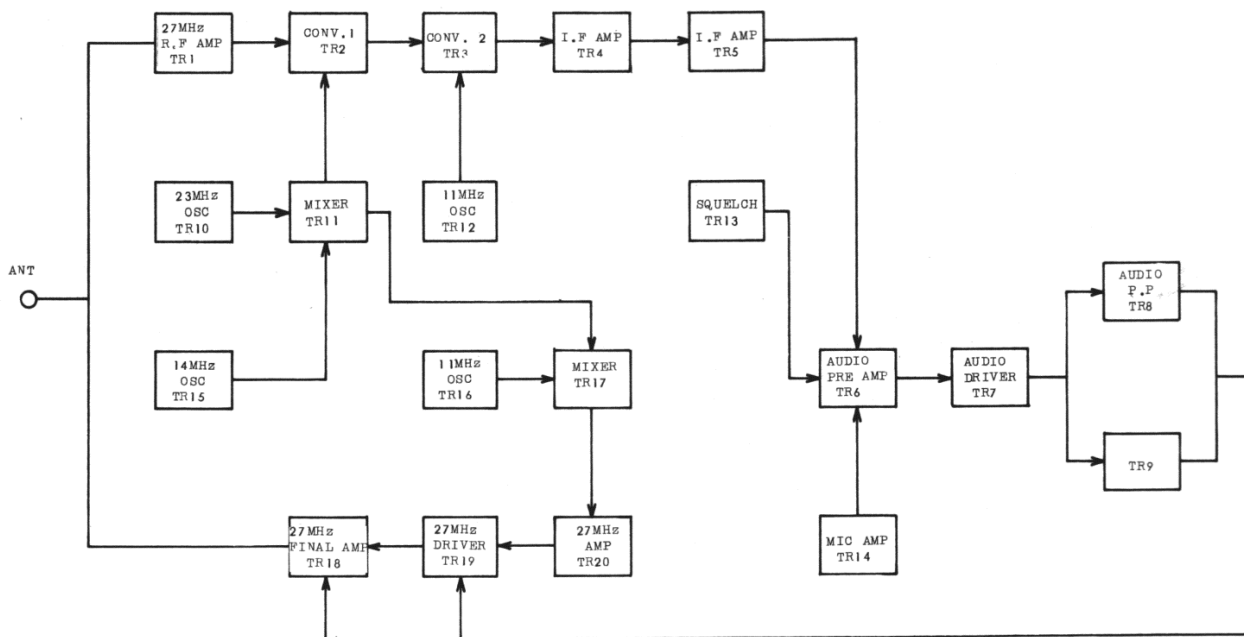
1. Set as RECEIVER ADJUSTMENT
2. SSG(open loop) output signal 200 μ V.
3. Adjust semi fix resistor VR7 for setting S-9 position on meter scale.

MAXIMUM SENSITIVITY SETTING

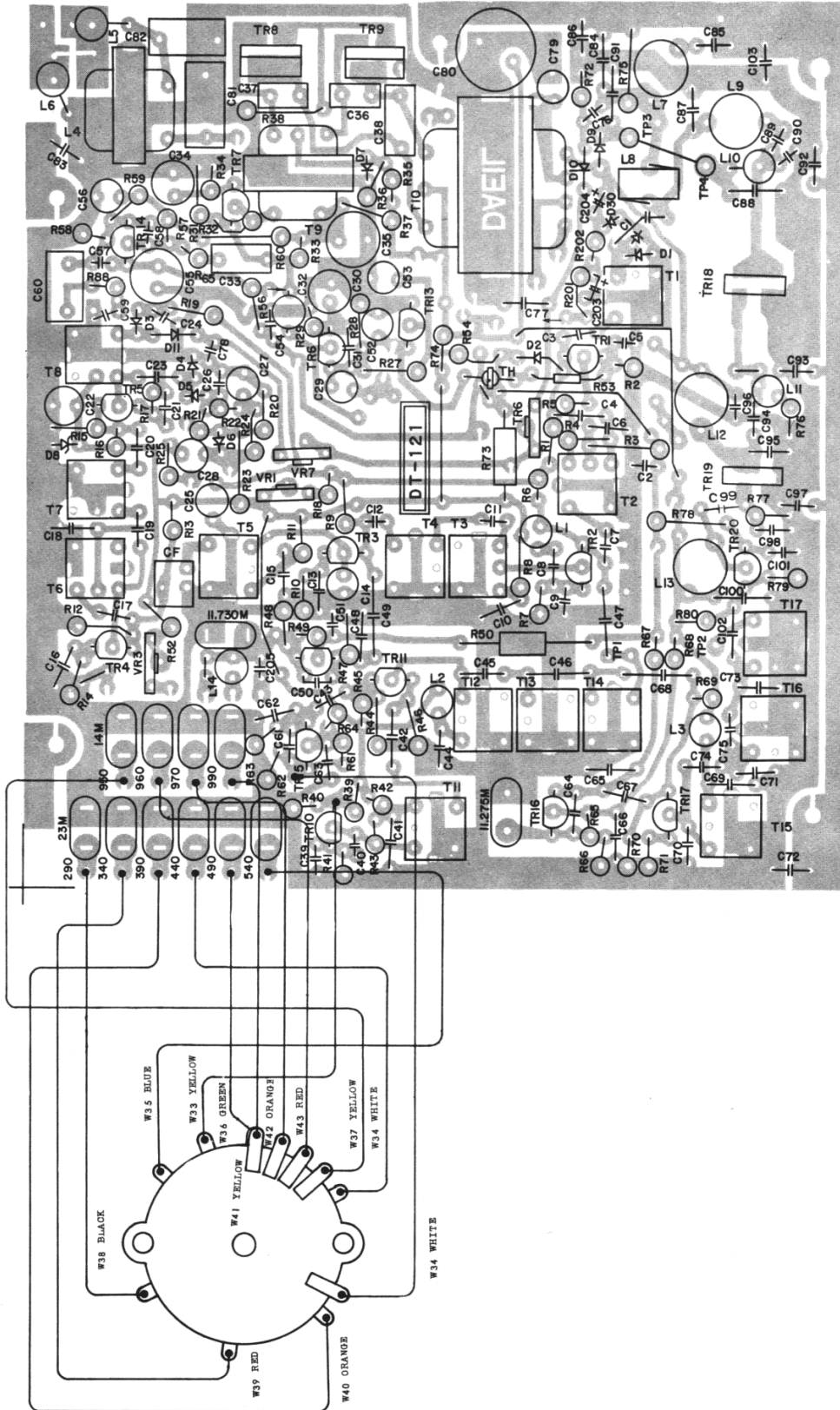
1. Set as RECEIVER ADJUSTMENT.
2. SSG output : $1 \mu V$.
3. Adjust semifix Resistor VR1 for audio output 2V (RMS).

SQUELCH ADJUSTMENT

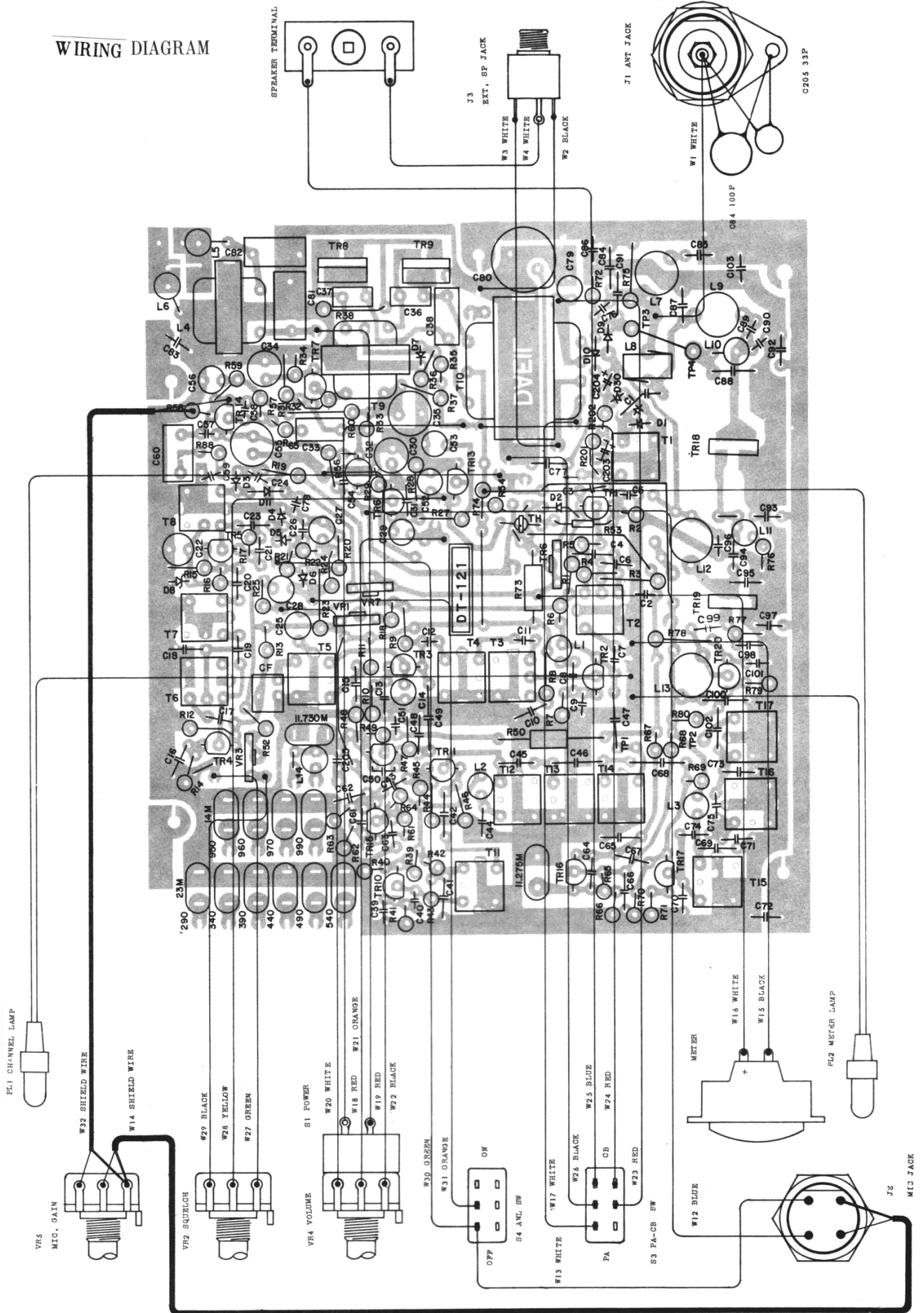
1. Set as SIGNAL METER ADJUSTMENT.
 2. Turn squelch control till clockwise, SSG output $40 \mu V$.
 3. Adjust semifix Resistor VR 3 for audio output 1 V (RMS).
- * Repeat from first to end.



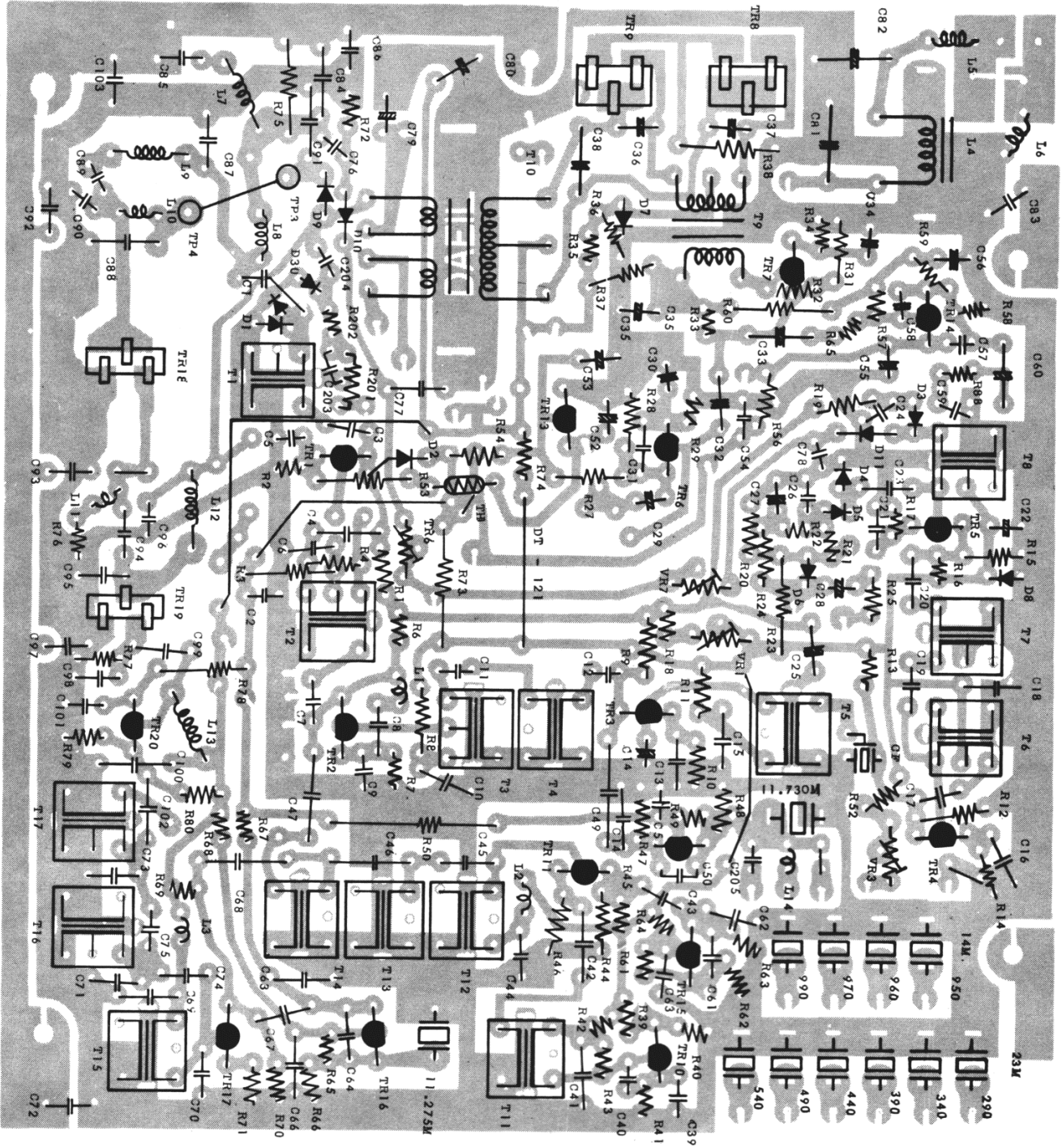
WIRING DIAGRAM



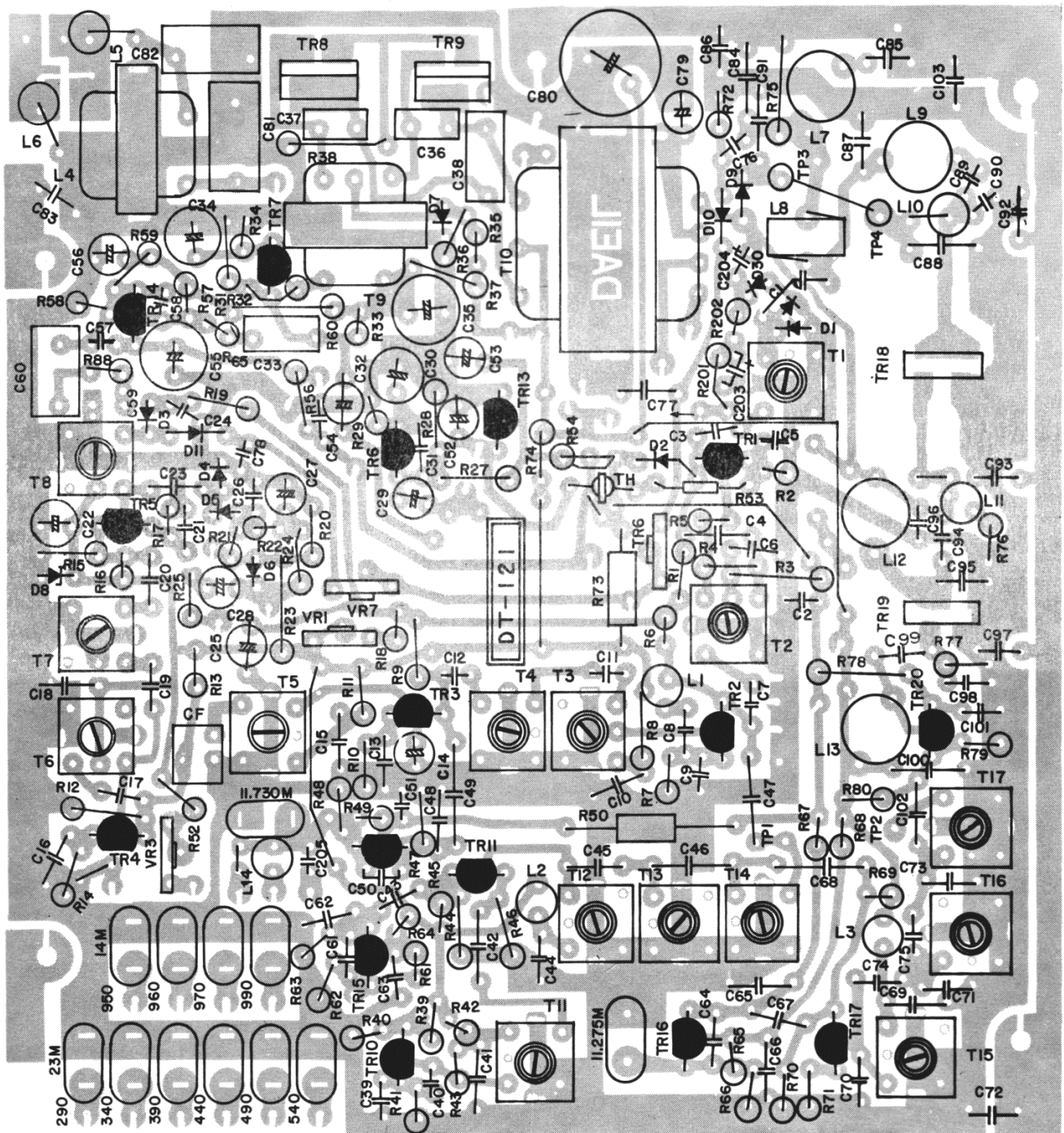
WIRING DIAGRAM



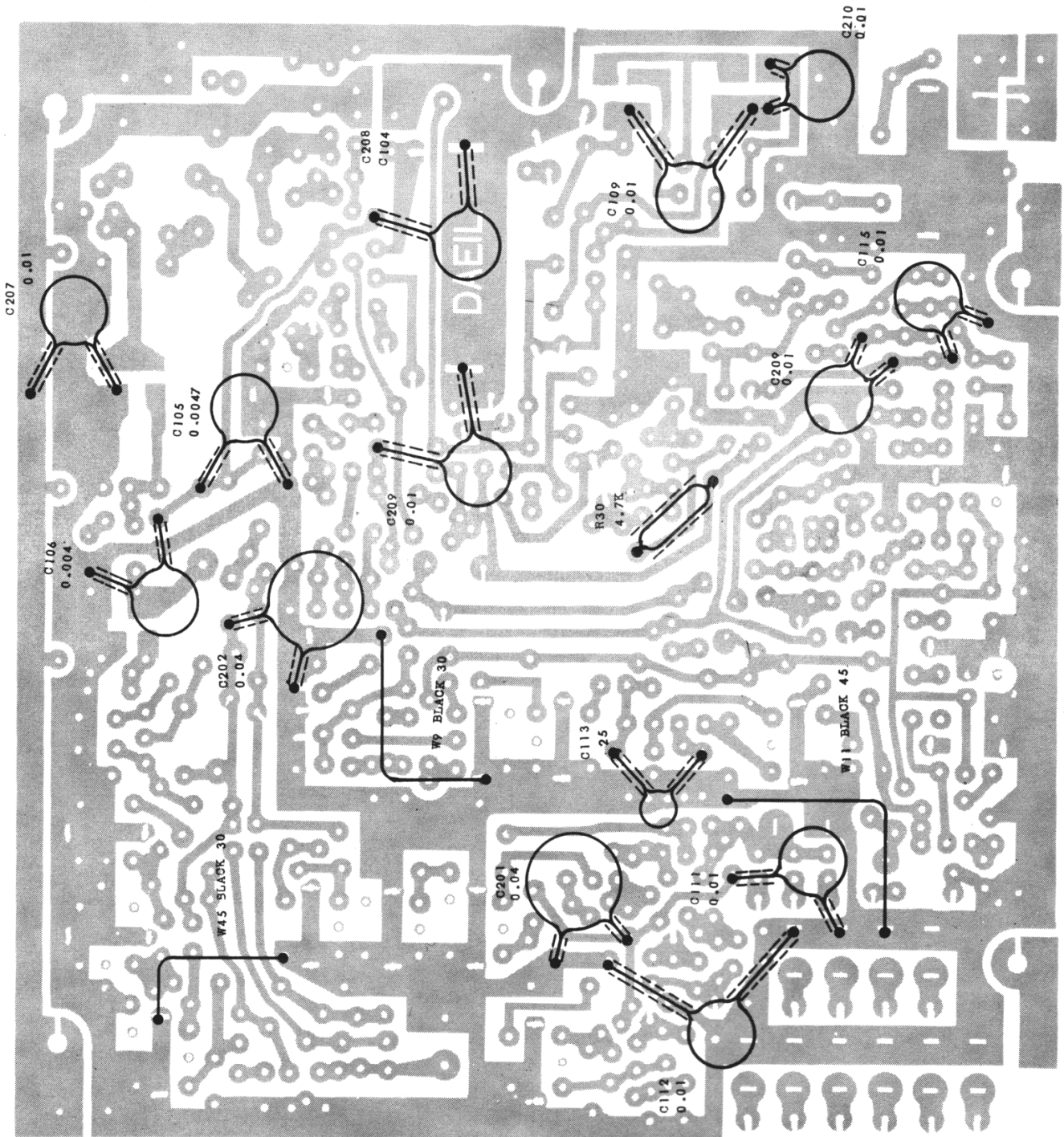
PARTS LAYOUT(BACK)



PARTS LAYOUT(FRONT)



BACK MOUNT PARTS



PARTS LIST

CAPACITOR

Symbol No	Description	Parts No	Symbol No	Description	Parts No
C 1	Ceramic, 33pf	730 024 339	C 39	Ceramic, 100pf	730 024 101
C 2	Ceramic, 0.01 μ f	700 056 103	C 40	Ceramic, 5pf	730 022 508
C 3	Ceramic, 0.01 μ f	700 056 103	C 41	Ceramic, 0.01 μ f	700 056 103
C 4	Ceramic, 3pf	730 022 308	C 42	Ceramic, 0.01 μ f	700 056 103
C 5	Ceramic, 0.01 μ f	700 056 103	C 43	Ceramic, 47pf	730 033 479
C 6	Ceramic, 0.01 μ f	700 056 103	C 44	Ceramic, 0.01 μ f	700 056 103
C 7	Mylar-film, 0.01 μ f	760 012 103	C 45	Ceramic, 2pf	730 011 208
C 8	Ceramic, 240pf	730 024 241	C 46	Ceramic, 2pf	730 011 208
C 10	Ceramic, 0.04 μ f	700 056 393	C 47	Ceramic, 3pf	730 022 308
C 11	Ceramic, 1pf	730 011 108	C 48	Ceramic, 220pf	730 024 221
C 12	Mylar-film, 0.01 μ f	760 012 103	C 49	Ceramic, 2pf	730 011 208
C 13	Mylar-film, 0.01 μ f	760 012 103	C 50	Ceramic, 470pf	700 044 471
C 14	Ceramic, 500pf	730 064 501	C 51	Ceramic, 0.01 μ f	700 056 103
C 15	Ceramic, 0.04 μ f	700 056 393	C 52	Electrolytic, 1 μ f	820 011 108
C 16	Mylar-film, 0.04 μ f	760 012 393	C 53	Electrolytic, 10 μ f	820 031 109
C 17	Ceramic, 3pf	730 022 308	C 54	Ceramic, 0.01 μ f	700 056 103
C 18	Ceramic, 0.04 μ f	700 056 393	C 55	Electrolytic, 100 μ f	820 041 101
C 19	Ceramic, 2pf	730 011 208	C 56	Electrolytic, 10 μ f	820 031 109
C 20	Mylar-film, 0.01 μ f	760 012 103	C 57	Ceramic, 0.005 μ f	700 045 472
C 21	Mylar-film, 0.04 μ f	760 012 393	C 58	Ceramic, 0.001 μ f	700 044 102
C 22	Electrolytic, 47 μ f	820 031 479	C 59	Ceramic, 0.005 μ f	700 045 472
C 23	Ceramic, 100pf	730 024 101	C 60	Mylar, 0.1 μ f	760 012 104
C 24	Ceramic, 0.01 μ f	700 056 103	C 61	Ceramic, 470pf	700 044 471
C 25	Electrolytic, 10 μ f	820 031 109	C 62	Ceramic, 220pf	730 024 221
C 26	Ceramic, 0.002 μ f	700 044 222	C 63	Ceramic, 0.01 μ f	700 056 103
C 27	Electrolytic, 0.47 μ f	820 011 477	C 64	Ceramic, 470pf	700 044 471
C 28	Electrolytic, 1 μ f	820 011 108	C 65	Ceramic, 220pf	730 024 221
C 29	Electrolytic, 1 μ f	820 011 108	C 66	Ceramic, 0.01 μ f	700 056 103
C 30	Electrolytic, 100 μ f	820 031 101	C 67	Ceramic, 47pf	730 033 479
C 31	Ceramic, 0.005 μ f	700 045 472	C 68	Ceramic, 25pf	730 024 249
C 32	Electrolytic, 10 μ f	820 031 109	C 69	Ceramic, 0.01 μ f	700 056 103
C 33	Mylar, 0.1 μ f	760 012 104	C 70	Ceramic, 100pf	730 024 101
C 34	Electrolytic, 100 μ f	820 031 101	C 71	Ceramic, 150pf	730 024 151
C 35	Electrolytic, 100 μ f	820 041 101	C 72	Ceramic, 0.01 μ f	700 056 103
C 36	Mylar-film, 0.04 μ f	760 012 393	C 73	Ceramic, 100pf	730 024 101
C 37	Mylar-film, 0.04 μ f	760 012 393	C 74	Ceramic, 3pf	730 022 308
C 38	Mylar, 0.1 μ f	760 012 104	C 75	Ceramic, 5pf	730 022 508

RESISTOR

Symbol No	Descriptio	Parts No	Symbo No	Description	Parts No
C 76	Ceramic, 2pf	730 011 208	VR-1	Semi-fixed, 30k ohms	960 000 002
C 77	Ceramic, 0.1 μ f	700 056 104	VR-2	Variable, 50k	960 000 005
C 78	Ceramic, 0.01 μ f	700 056 103	VR-3	Semi-fixed, 50k	960 000 001
C 79	Electrolytic, 1 μ f	820 011 108	VR-4/S-1	Variable, 10k	960 000 006
C 80	Electrolytic, 470 μ f	820 041 471	VR-5	Variable, 10k	960 000 004
C 81	Ceramic, 0.04 μ f	700 056 393	VR-6	Semi-fixed, 20k	960 000 003
C 82	Ceramic, 0.04 μ f	700 056 393	VR-7	Semi-fixed, 20k	960 000 003
C 83	Ceramic, 0.01 μ f	700 056 103	R 1	Carbon Fixed, 2.2k	800 723 222
C 84	Ceramic, 100pf	730 024 101	R 2	Carbon Fixed, 330	800 723 331
C 85	Ceramic, 47pf	730 033 479	R 3	Carbon Fixed, 150	800 723 151
C 86	Ceramic, 0.04 μ f	700 056 393	R 4	Carbon Fixed, 10k	800 723 103
C 87	Ceramic, 220pf	730 024 221	R 5	Carbon Fixed, 56	800 723 569
C 88	Ceramic, 0.04 μ f	700 056 393	R 6	Carbon Fixed, 5.6k	800 723 562
C 89	Ceramic, 0.01 μ f	700 056 103	R 7	Carbon Fixed, 1k	800 723 102
C 90	Ceramic, 33pf	730 024 339	R 8	Carbon Fixed, 150	800 723 151
C 91	Ceramic, 0.01 μ f	700 056 103	R 9	Carbon Fixed, 6.8k	800 723 682
C 92	Ceramic, 0.04 μ f	700 056 393	R 10	Carbon Fixed, 1k	800 723 102
C 93	Ceramic, 0.04 μ f	700 056 393	R 11	Carbon Fixed, 150	800 723 151
C 94	Ceramic, 150pf	730 024 151	R 12	Carbon Fixed, 2.2k	800 723 222
C 95	Ceramic, 100pf	730 024 101	R 13	Carbon Fixed, 27k	800 723 273
C 96	Ceramic, 0.04 μ f	700 056 393	R 14	Carbon Fixed, 680	800 723 681
C 97	Ceramic, 0.04 μ f	700 056 393	R 15	Carbon Fixed, 8.2k	800 724 822
C 98	Ceramic, 47pf	730 033 479	R 16	Carbon Fixed, 47k	800 723 473
C 99	Ceramic, 150pf	730 024 151	R 17	Carbon Fixed, 680	800 723 681
C 100	Ceramic, 0.04 μ f	700 056 393	R 18	Carbon Fixed, 22k	800 723 223
C 101	Ceramic, 0.01 μ f	700 056 103	R 19	Carbon Fixed, 6.8k	800 723 682
C 102	Ceramic, 47pf	730 033 479	R 20	Carbon Fixed, 33k	800 723 333
C 103	Ceramic, 0.04 μ f	700 056 393	R 21	Carbon Fixed, 39k	800 723 393
C 104	Ceramic, 0.005 μ f	700 045 472	R 22	Carbon Fixed, 100k	800 723 104
C 105	Ceramic, 0.005 μ f	700 045 472	R 23	Carbon Fixed, 470k	800 723 474
C 106	Ceramic, 0.005 μ f	700 045 472	R 24	Carbon Fixed, 100k	800 723 104
C 109	Ceramic, 0.01 μ f	700 056 103	R 25	Carbon Fixed, 100k	800 723 104
C 115	Ceramic, 0.01 μ f	700 056 103	R 27	Carbon Fixed, 22k	800 723 223
C 203	Electrolytic, 10 μ f	820 041 109	R 28	Carbon Fixed, 5.6k	800 723 562
C 204	Electrolytic, 1 μ f	820 011 108	R 29	Carbon Fixed, 1k	800 723 102
C 206	Electrolytic, 10 μ f	820 041 109	R 30	Carbon Fixed, 4.7k	800 724 472
C 207	Ceramic, 0.01 μ f	700 056 103	R 31	Carbon Fixed, 5.6k	800 723 562
C 209	Ceramic, 0.01 μ f	700 056 103	R 32	Carbon Fixed, 220k	800 724 224
C 9	Ceramic, 0.01 μ f	700 056 103	R 33	Carbon Fixed, 22k	800 723 223

COIL, TRANSFORMERS

Symbol No	Description	Parts No	Symbol No	Description	Parts No
R 34	Carbon Fixed, 100	800 724 101	L-1	14 MHz Trap Coil	501 000 001
R 35	Carbon Fixed, 1k	800 723 102	L-2	Micro Inductor	501 000 005
R 36	Carbon Fixed, 68	800 724 689	L-3	Micro Inductor	501 000 005
R 37	Carbon Fixed, 150	800 723 151	L-4	Line Filter Choke	502 000 001
R 38	Metal Fixed, 0.5	800 963 507	L-5	Power RF Choke	501 000 002
R 39	Carbon Fixed, 33k	800 723 333	L-6	Power RF Choke	501 000 002
R 40	Carbon Fixed, 5.6k	800 723 562	L-7	TVI Trap Coil	500 000 001
R 41	Carbon Fixed, 100	800 724 101	L-8	Antenna Filter	501 000 004
R 42	Carbon Fixed, 100	800 724 101	L-9	TX Matching	500 000 002
R 44	Carbon Fixed, 10k	800 723 103	L-10	TX Final	501 000 003
R 45	Carbon Fixed, 47k	800 723 473	L-11	Micro Inductor	501 000 005
R 46	Carbon Fixed, 100	800 724 101	L-12	TX Driver	500 000 003
R 47	Carbon Fixed, 220	800 724 221	L-13	TX Pre-driver	500 000 004
R 48	Carbon Fixed, 5.6k	800 723 562	T-1	RX Antenna	537 000 001
R 49	Carbon Fixed, 10k	800 723 103	T-2	RX RF Amplifier	537 000 002
R 50	Carbon Fixed, 100	800 724 101	T-3	1st IFT	534 000 001
R 52	Carbon Fixed, 33k	800 723 333	T-4	1st IFT	534 000 002
R 53	Carbon Fixed, 3.9k	800 724 392	T-5	2nd IFT	534 000 003
R 55	Carbon Fixed, 1.5k	800 724 152	T-6	2nd IFT	534 000 004
R 56	Carbon Fixed, 820	800 724 821	T-7	2nd IFT	534 000 004
R 58	Carbon Fixed, 5.6k	800 723 562	T-8	2nd IFT	534 000 005
R 59	Carbon Fixed, 22k	800 723 223	T-9	AF Input Transformer	530 000 001
R 61	Carbon Fixed, 15k	800 724 153	T-10	AF Output Transformer	532 000 001
R 62	Carbon Fixed, 5.6k	800 723 562	T-11	23 MHz. OSC	537 000 003
R 64	Carbon Fixed, 100	800 724 101	T-12	38 MHz. Filter	537 000 004
R 65	Carbon Fixed, 15k	800 724 153	T-13	38 MHz. Filter	537 000 004
R 66	Carbon Fixed, 5.6k	800 723 562	T-14	38 MHz. Filter	537 000 005
R 68	Carbon Fixed, 100	800 724 101	T-15	TX 27 MHz. Filter	537 000 006
R 69	Carbon Fixed, 47k	800 723 473	T-16	TX 27 MHz. Filter	537 000 006
R 70	Carbon Fixed, 10k	800 723 103	T-17	TX 27 MHz. Filter	537 000 007
R 71	Carbon Fixed, 47	800 724 479	TRANSISTOR, DIODE		
R 73	Carbon Fixed, 330	800 723 331			
R 76	Carbon Fixed, 56	800 723 569			
R 77	Carbon Fixed, 680	800 723 681			
R 78	Carbon Fixed, 100	800 724 101			
R 79	Carbon Fixed, 10k	800 723 103			
R 80	Carbon Fixed, 39k	800 723 393			
R 201	Carbon Fixed, 1k	800 723 102			
Symbol No	Description	Parts No	Symbol No	Description	Parts No
TR-1	2SC394(Y)	632 039 418			
TR-2	2SC394(Y)	632 039 418			
TR-3	2SC372(O)	632 037 210			
TR-4	2SC372(O)	632 037 210			
TR-5	2SC372(O)	632 037 210			

Symbol No	Description	Parts No	Description	Part No	
TR-6	2SC372(Y)	632 037 218	Crystal, 14.970 MHz. HC-25/U	413 000 006	
TR-7	2SC733(Y)	632 037 300	Crystal, 14.990 MHz. HC-25/U	413 000 007	
TR-8	2SC1096(L)	632 037 318	Crystal, 11.275 MHz. HC-25/U	413 000 002	
TR-9	2SC1096(L)	632 037 318	Crystal, 11.730 MHz. HC-25/U	413 000 003	
TR-10	2SC372(O)	632 037 210	MISCELLANEOUS		
TR-11	2SC372(O)	632 037 210			
TR-12	2SC372(O)	632 037 210			
TR-13	2SC373	632 109 612			
TR-14	2SC372(Y)	632 037 218		Rotary Switch, Channel Selector	420 000 001
TR-15	2SC372(O)	632 037 210		Slide Switch, P. A./A. N. L.	420 000 002
TR-16	2SC372(O)	632 037 210		Ceramic Filter, L455K40A	413 000 001
TR-17	2SC372(O)	632 037 210		Crystal Socket,	422 000 001
TR-18	2SC1306(K)	632 130 619		Antenna Connector	424 000 001
TR-19	2SC1957(K)	632 195 719		Microphone Jack, (4-P)	424 000 002
TR-20	2SC735(O)	632 073 510	Speaker, 8 ohms 2W	403 000 001	
D -1	1S953	600 000 953	Meter	411 000 001	
D -2	1S953	600 000 953	Microphone	404 000 001	
D -3	1N60	600 000 060	Fuse, 1.5 amp	421 000 001	
D -4	1N60	600 000 060	Printed Circuit Board	415 000 001	
D -5	1N60	600 000 060	Pilot Lamp, 14V 30 mA Meter/Channel	426 000 001	
D -6	1S953	600 000 953	Heat sink, (2SC1306)	325 000 002	
D -7	FV-1	661 000 001	Jack, 3.5ϕ	424 000 003	
D -8	WZ-090,	601 000 090	Metal Cabinet(top)	374 000 001	
D -9	SR1K-1	602 000 001	Metal Cabinet(bottom)	374 000 002	
D -10	1N60	600 000 060	Mounting Bracket	301 000 001	
D -11	1N60	600 000 060	Front Panel (ABS)	377 000 001	
D -12	1S953	600 000 953	Heat-sink (2SC1096)	325 000 001	
D -30	1N60	600 000 060	Heat-sink (2SC1957)	325 000 003	
TH	TD5-A-130	660 000 001	Screw for Bracket	260 805 008	
CRYSTAL			Front Plate	382 000 001	
			Channel Indicator	379 000 001	
			Channel Knob	383 000 001	
			Volume, Squelch & Mike gain Knob	383 000 002	
			FCC Plate	382 000 003	
			Instruction Booklet	331 000 002	
			Display Box	390 000 001	
			Styrofoam Box	384 000 001	
			FCC Application Form	331 000 008	
			Schematic & Parts List	331 000 005	
Description		Parts No			
Crystal. 23.290 MHz. HC-25/U		413 000 008			
Crystal. 23.340 MHz. HC-25/U		413 000 009			
Crystal. 23.390 MHz. HC-25/U		413 000 010			
Crystal. 23.440 MHz. HC-25/U		413 000 011			
Crystal. 23.490 MHz. HC-25/U		413 000 012			
Crystal. 23.540 MHz. HC-25/U		413 000 013			
Crystal. 14.950 MHz. HC-25/U		413 000 004			
Crystal. 14.960 MHz. HC-25/U		413 000 005			