

SERVICE MANUAL Model TS-520 VFO-520 SP-520

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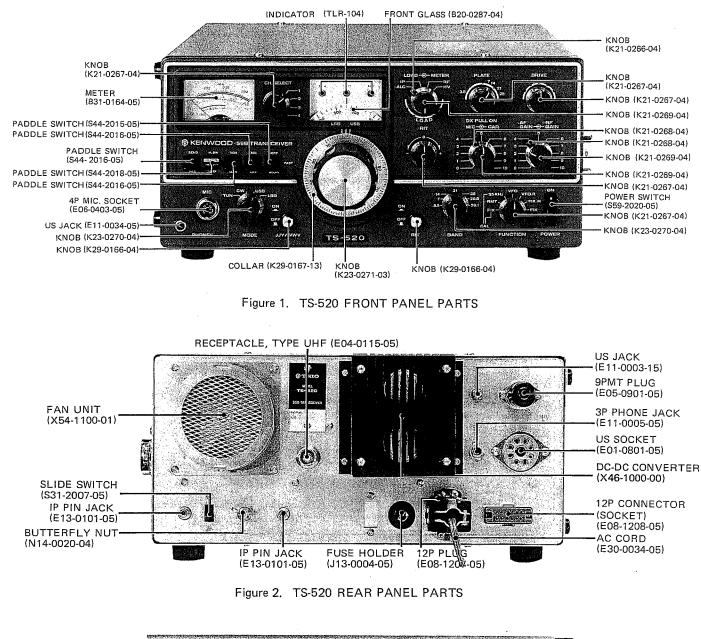


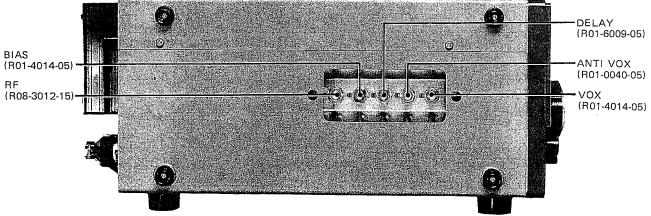
SSB TRANSCEIVER

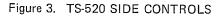
CONTENTS

•	
EXTERNAL VIEW 1	•
PARTS ALIGNMENT 2	2
SECTION 1. INTRODUCTION	3
SECTION 2. TROUBLE-SHOOTING	3
SECTION 3. MAINTENANCE AND ALIGNMENT	
PARTS LIST	3
PC BOARD 27	7
VFO-520	
EXTERNAL VIEW 36	
SPECIFICATION	5
PARTS LIST	
SCHEMATIC DIAGRAM 38	8
SP-520	
EXTERNAL VIEW	9
PARTS LIST	9
SPECIFICATION	9
SCHEMATIC DIAGRAM (RF UNIT) 40	0
SCHEMATIC DIAGRAM 4	
SCHEMATIC DIAGRAM (RF UNIT)4	2
SCHEMATIC DIAGRAM 4	3

EXTERNAL VIEW







PARTS ALIGNMENT

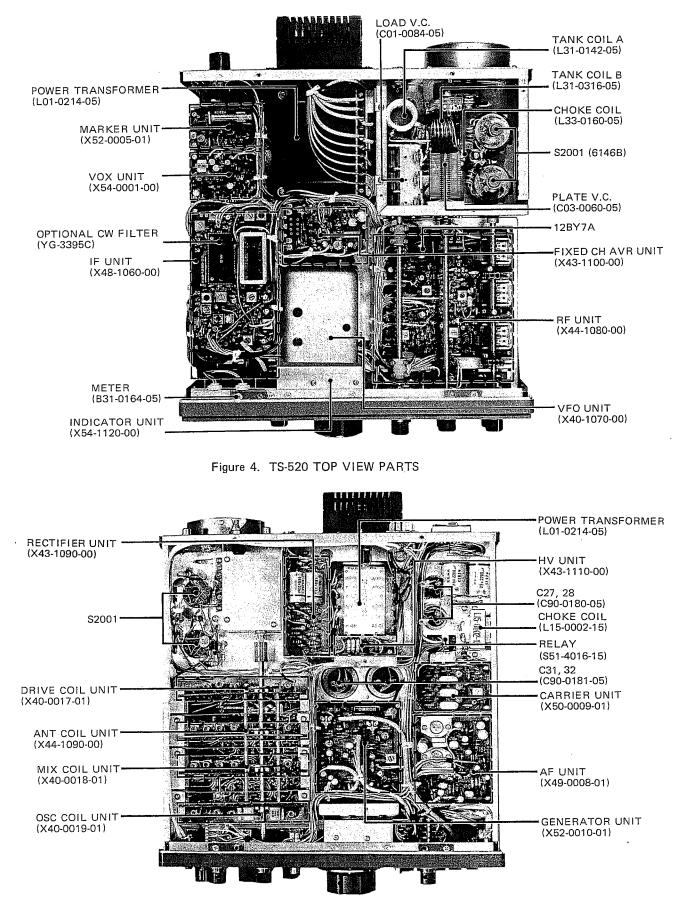


Figure 5. TS-520 BOTTOM VIEW PARTS

SECTION 1. INTRODUCTION

Kenwood's TS-520 is a solid-state, amateur band single side band transceiver which uses only three vacuum tubes in the exciter and final stages. The TS-520 incorporates many sophisticated and modern features which make it a very useful transceiver. The information included in this service manual is intended to complement the technical data supplied in the operator's manual. For example the operator's manual includes pictorial parts displays, voltage tables, operating instructions, a troubleshooting chart, and the block diagram. This service manual includes technical service procedures, a parts list, circuit board layouts and full schematics. Together, the two publications provide full technical information. TS-520 was completely adjusted and inspected at the factory prior to shipment. The most common causes of service problems are shipping damage, improper operation, or component ageing. When shipping damage is the cause of trouble, check for loose connectors, disconnected wires, damaged or open circuits, or mechanical damage to relays, crystals, or other parts vulnerable to vibrations. When component ageing or improper operation is the cause of service problems, check for deteriorated or burned out parts. The troubleshooting table is useful for pin-pointing some problems.

Be certain to check in the operating manual for a detailed circuit description and the block diagram.

SECTION 2. TROUBLE-SHOOTING

The following table describes possible causes of different malfunctions which might occur when the transceiver is connected and operated as described in the operating manual. When problems are caused by defective components, replace the part only with its exact replacement or a close equivalent.

2-1. RECEIVER SECTION

SYMPTOM	CAUSE	REMEDY
1. No power from power supply.	1. Blown fuse.	Replace the fuse with a fuse of the same value.
	2. Defective POWER switch.	Check and replace the switch.
	3. Defective power cord.	Check and replace the power cord.
2. Blown fuse.	 Defective transistors on the AUDIO board - Q3 and/or Q4. 	Check and replace the transistors.
	2. B + circuit shorted to chassis.	Locate and repair the short.
3. No noise can be heard from the speaker.	 Defective speaker or disconnected speaker plug. 	Check and replace or reattach the speaker.
	 Defective transistors on the AUDIO board - Q3 and/or Q4. 	Check and replace the defective transistors.
	 PHONES or SPEAKER jack contacts are broken. 	Check and replace the defective jack.
 Noise, but no signals, can be heard from the speaker. 	 AF GAIN or RF GAIN controls are defective. 	Check and replace the defective controls.
	2. TC1 on the CARRIER board requires tuning.	See Section 3.26.
	3. Defective diode switching on	Check and replace defective diodes.
	the CARRIER board.	Check the continuity of the MODE switch.
	 Output from the AVR board may be unregulated. 	Check and repair the AVR board.
	5. EXT VFO jumper plug is not inserted.	Be certain this jumpered plug is in the socket.
	6. FUNCTION switch is set to a fixed channel position.	Set the switch to the proper position.

SYMPTOM	CAUSE	REMEDY
	 The coaxial VFO output cable is disconnected. 	Reconnect the cable.
	8. Defective transistor on the VFO board.	Check and repair the VFO board.
	9. The coils on the OSC COIL board require tuning.	See Section 3-13.
	10. A defective switch on the OSC COIL board.	Check and replace the switch wafer.
	11. Q1 and/or Q2 on the RF board are defective.	Check and replace the defective transistors.
	12. Q1, Q3, Q4 and/or Q9 on the IF board are defective.	Check and replace the defective transistors per Figure.
	 IF transformers T1, T2, T5, T6, and/or T9 may be misaligned or defective. 	See Section 3-15.
	14. Band pass filter requires alignment.	See Section 3-12.
	15. Bias circuit on IF board not normal.	Check voltages at terminals RB, 14V and AGC.
	16. Filter diode switch on IF board defective.	Check voltages and operation by Figure 14.
	17. ANT or RF coils require alignment.	See Section 3-13.
	18. Defective switch wafer in the RF section.	Check and replace the defective switch.
	19. Disconnected coax on ANT board or at the 8.6 MHz trap.	Reconnect the coax.
	20. Defective relay in the final section.	See Section 3-2.
	21. Defective tuning capacitor.	Check the capacitor after disconnecting the leads at terminals MVC and DVC of the DRIVE board.
	22. Defective Q4 and/or Q5 on the RF board.	Check the transistors per Figure.
	23. Carrier unbalanced on GENERATOR board.	See Section 3-17.
5. S-meter does not read correctly.	1. Zero adjust VR1 on IF board requires calibration.	See Section 3-18.
	 S-meter sensitivity adjust, VR2 on the IF board, requires calibration. 	See Section 3-18.
	3. Defective AGC circuit (Q5 or Q6) on IF board.	Check the circuit and replace the defective transistors.
	. 4. Open circuit at L4, L6, or terminal RFC of the IF board.	Repair as necessary.
	5. Defective relay in final section.	Replace the relay.
6. S-meter does not return to zero.	 Reference voltage for RF1 on the FIX. AVR board requires adjustment. 	See Section 3-18.
	2. Carrier requires balancing.	See Section 3-17.
7. Calibrator inoperative.	 Defective FUNCTION switch at wafer S2-4 on MARKER board. 	Check continuity at terminal 9.

SYMPTOM	CAUSE	REMEDY
	 Coax cable disconnected from terminal MO on MARKER board. 	Check the connection.
	3. Open circuit L1 on the MARKER board.	Check and repair the circuit.
	4. Defective Q1 on MARKER board.	Check and replace the defective transistor.
	Defective crystal on the MAKER board.	Replace the crystal.
8. No WWV reception.	1. Defective WWV switch, S9.	Check and replace the defective switch.
	2. Coil T3 on RF board misaligned.	See Section 3-14.
	3. Defective Q7 on the RF board.	Check and replace the defective transistor.
	 Defective or misaligned T5 on the RF board. 	Check and replace the defective coil.

2-2. TRANSMITTER SECTION

SYMPTOM	CAUSE	REMEDY
1. No ouptut or low output.	1. Defective final tubes. S2001 (6146A)	Replace the tubes.
	2. Defective switch, S5, in final section.	Check and replace the defective switch.
	3. Defective relay in final section.	Check and replace the defective relay.
	4. Loading capacitor shorted.	Check the conduction of the capacitor and replace if defective.
	5. Carrier, VFO, or heterodyne oscillator boards may be defective.	See Sections 3-13, 3-21, or 3-26.
	6. Defective driver tube (12BY7A).	Replace the tube.
	7. Defective relay RL1 on GENERATOR board.	Check the conduction of the coil and contacts.
	8. Defective MODE switch wafer (S3-7) on GENERATOR board.	Check the continuity of the switch contacts.
	9. Defective Q4 on the GENERATOR board.	Check and replace the transistor.
	10. Defective MIC GAIN control.	Check and replace the defective control.
	11. SG switch is off or defective.	Check the continuity of the rear panel SG switch.
 Output is normal but the meter shows no output. 	 The RF VOLT control is improper adjusted. 	Adjust the RF VOLT control.
	2. Defective meter.	Check the meter and replace if necessary.
3. No ALC meter reading.	1. Q10 on RF board is defective.	Check and replace the transistor.
	2. Insufficient drive.	See Section 2-2-1.
	3. Shorted ALC circuit.	Trace the circuit and repair as necessary.
	4. Defective RL1.	Check and replace the defective relay.

SYMPTOM	CAUSE	REMEDY
4. No HV meter reading.	 Defective components in power supply section. 	Troubleshoot the power supply.
	2. Defective or disconnected meter circuit.	Troubleshoot the meter circuit.
5. Stand-by switch is inoperative.	1. Microphone wired incorrectly.	Rewire the MIC plug.
	2. Disconnected leads at terminal VS or SS on the VOX board.	Check the continuity of the leads.
	3. Q8 or D8 on VOX board defective.	Check and replace the defective parts.
	4. Defective stand-by switch.	Check and replace the defective switch.

2-3. OTHER CIRCUITS

SYMPTOM	CAUSE	REMEDY
1. 9 volt supply is not regulated.	 Transistor or diode on AVR board defective. 	Check and replace the defective part.
2. The noise blanket is ineffective.	1. NB board requires adjustment.	See Section 3-15.
	2. NB switch defective.	Check and replace the defective switch.
	 Transistors Q1 through Q6 on the NB board are defective. 	Check the voltages and replace the part.
	 Diodes D1 through D6 on NB board are defective. 	Check the voltages and replace the defective part.
	 Disconnected or defective L1 or L2 on NB board. 	Check the circuit.

SECTION 3. MAINTENANCE AND ALIGNMENT

3-1. GENERAL INFORMATION

Refer to the operating manual for information on how to remove the transceiver's case.

CAUTION: DANGEROUS HIGH VOLTAGES ARE PRE-SENT WITHIN THE CASE OF THE TS-520 WHEN THE TRANSCEIVER IS TURNED ON. EXERCISE EXTREME CAUTION TO AVOID ELECTRIC SHOCK.

3-2. REPLACING THE RELAYS (See Figure 6.)

ANTENNA RELAY

RL2 is enclosed on the bottom of the final section. Remove the bottom of the TS-520's case and then remove the cover of the relay shield box as shown in Figure 6A. The standard relay has large contacts and the coil is rated at 300 ohms. Be sure to replace the relay with an exact equivalent.

VOX RELAY:

RL1 is located below the VOX board, as shown in Figure 6B, next to the power transformer. Remove the top cover

of the transceiver and then remove the VOX board. Replace the relay with an exact equivalent.

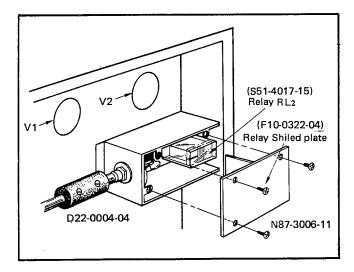


Figure 6A. Replacing the Antenna Relay.

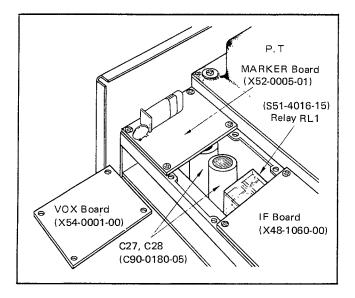


Figure 6B. Replacing the VOX Relay.

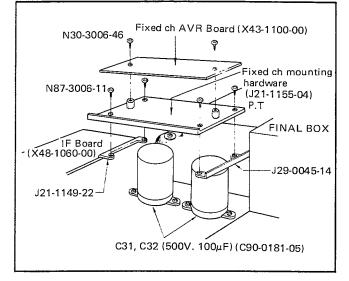


Figure 7A. Replacing C31 and C32

3-3. REPLACING THE ELECTROLYTIC POWER SUPPLY CAPACITORS

See Figure 7. C31 and C32 are reached by removing the TS-520's top cover and then the FIXCH-AVR board as shown in Figure 7A. C27 and C28 are reached by removing the transceiver's top case and then the MARK-ER and VOX boards as shown in Figure 7B.

3-4. DISASSEMBLY OF THE COIL PACK

When service is required on the RF board or on any of the coil boards the coil pack must be taken apart as shown in Figure 8. The assembly includes the RF board, the OSCILLATOR COIL board, the MIXER COIL board, the ANTENNA COIL board, and the DRIVER COIL board.

PURPOSE: To remove the RF section coil pack. **PROCEDURE:**

- 1. Remove the top and bottom cover of the transceiver.
- From the top, disconnect the lead between the square wrapping-terminal on the RF board and the COIL board to be removed.
- 3. Remove all of the front panel knobs and the front glass as shown in Figure 9.
- 4. Use a small hex nut driver to loosen the nuts at the front and/or back of the coil pack. The front nuts are reached through two holes in the front sub-panel on either side of the band switch. The front nuts must be loosened to remove the OSCILLATOR or MIXER COIL boards. The back nuts must be loosened to remove the ANTENNA or DRIVER coil boards.
- 5. The OSCILLATOR COIL board can be removed by pulling the screw bars towards the rear panel. For the other boards, pull the screw bars out towards the front panel.

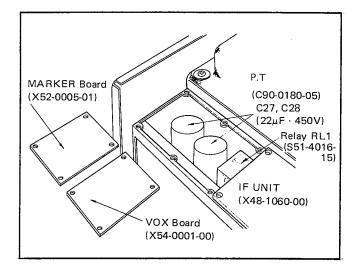


Figure 7B. Replacing C27 and C28

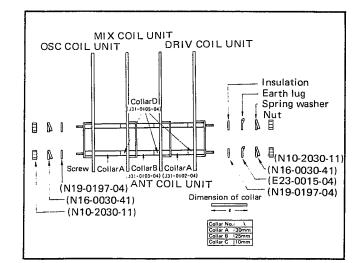


Figure 8. Coil Pack Assembly

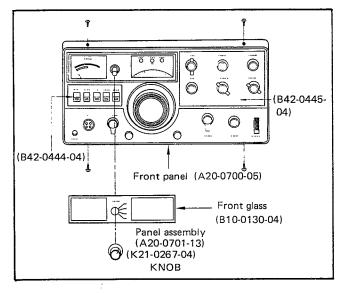


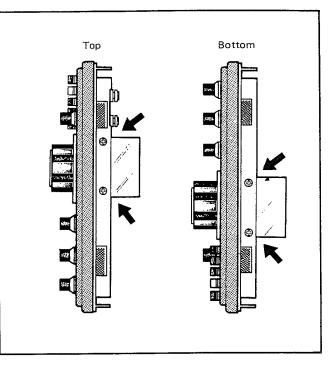
Figure 9. Removing the Front Panel

3-5. REMOVING THE VFO SECTION

PURPOSE: To remove the VFO assembly. **PROCEDURE:**

- 1. Remove the front panel knobs, take off the transceiver's case, remove the front glass and pull off the front panel as shown in Figure 9.
- 2. Remove the FIXED CHANNEL-AVR board as shown in Figure 7A.
- 3. Unplug the VFO output coax and the 2-pin power plug from the rear of the VFO case.

- 4. Unscrew the four countersunk screws (two on the top and two on the bottom) which hold the VFO to the front sub-panel (see Figure 10).
- 5. Gently lift and pull the VFO assembly from the chassis being very careful not to damage the sub-dial. Figure 11 shows the entire assembly.



Figuire 10. VFO Assembly Chassis Screws.

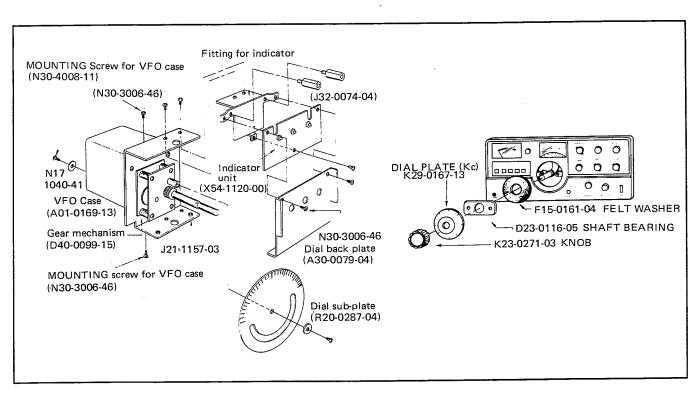


Figure 11. VFO Assembly

3-6. CHANGING THE PILOT LIGHTS

METER LIGHTS:

Remove the top cover of the transceiver. Remove the two countersunk screws holding the meter and light bracket to the top of the front sub-panel. Pull the meter back to gain access to the meter lights. Replace the light and refasten the bracket.

DIAL LIGHT:

Some early model TS-520's had no dial light. On later models the light can be replaced by removing the main tuning knob and the tuning dial. Reach in with long nose pliars to remove the bulb. After replacing the tuning dial, recalibrate the transceiver.

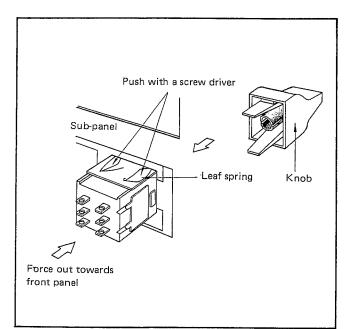
3-7. REPLACING THE METER

Remove the top cover of the transceiver. Remove the two countersunk screws holding the meter and light bracket to the top of the front sub-panel. Remove the six screws securing the IF board (behind the meter) and tilt the board up about 60° from its normal position. Lift the meter back and away being very careful not to scratch the meter face on the sub-panel.

3-8. CHANGING THE PADDLE SWITCHES

Remove the TS-520's case. Remove all the knobs from the front panel and then remove the front glass and front panel. Take out the meter, as described in Section 3-7. Pull the switch out towards the front of the transceiver while holding down the securing spring as shown in Figure 12.

Push in a new switch from the front. The switch will secure itself with a leaf spring. The paddle itself can be replaced by levering off the old paddle with a screwdriver. Then push on the new paddle.



3-9. LEVEL DIAGRAMS

RECEIVER SECTION:

Refer to Figure 13 for a level diagram of the receiver section to aid in service work. The following notes apply to that diagram.

NOTES:

- Figure 13 shows a curve formed by plotting the signal generator output required for a constant audio output with a constant AF gain control setting. Set the AF gain control for a .63v/8 ohm audio output for a 0 db signal generator input at 14.175 MHz.
- 2. Measure the AF output at the ring detector on the GENERATOR board.
- 3. All voltage measurements are read from an RF VTVM.
- 4. To measure the output of the signal generator, connect a .01 mf, 500 volt capacitor between the signal generator and the voltmeter.

TRANSMITTER SECTION:

Refer to Figure 14 for a level diagram of the transmitter section. The following notes apply to the diagram.

NOTES:

- 1. The voltage measurements in Figure 14 are measured with an RF VTVM having an input capacitance of less than 3 pf.
- 2. All the voltages at and before the first gird of the final tubes are measured with the rear panel SG switch turned off.

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Figure 12. Replacing the Paddle Switches

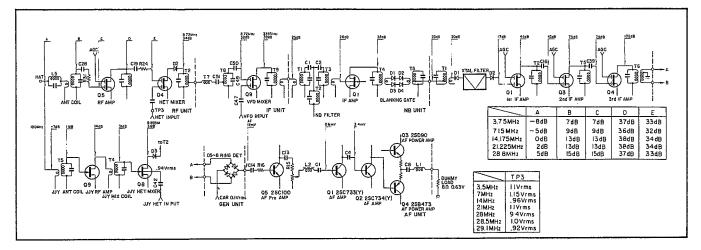


Figure 13. Receiver Section Level Diagram

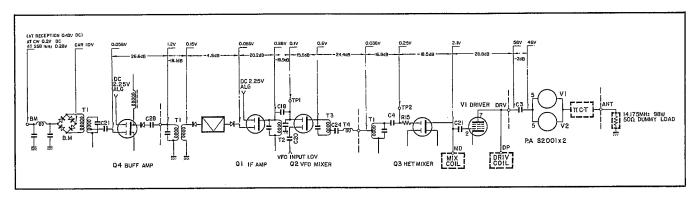


Figure 14. Transmitter Section Level Diagram

3-10. SERVICE INFORMATION

Be certain to see the operating manual for directions on removing the transceiver's case and information on the proper service position. Be certain that the air supply to the final tubes is not blocked.

INITIAL SWITCH SETTINGS:

LOCATION	SWITCH	POSITION
Front Panel:	MODE Switch	USB
	FUNCTION Switch	FIX
	RF Gain Control	Maximum
	H. SW Switch	OFF
	VOX Switch	MAN
	AGC Switch	FAST
	NB Switch	OFF
	JJY/WWV Switch	OFF
	RIT Switch	OFF
	Standby Switch	REC
	POWER Switch	ON
Rear Panel:	SG Switch	OFF
	EXT. SPEAKER Jack	8 ohm dummy Ioad
	ANTENNA Connector	200 watt, 50 ohm dummy Ioad

3-11. AVR ADJUSTMENT

PURPOSE: To adjust the output of the automatic voltage regulator board.

TEST EQUIPMENT: Voltmeter.

PROCEDURE: Connect the voltmeter to terminal 9 on the FIX. CH-AVR board. Adjust VR1 for a voltage reading of 9 volts \pm 0.2 volts. Next connect the voltmeter to terminal RF1 on the FIX. CH-AVR board. Adjust VR3 for a meter reading of 3.3 volts \pm 0.1 volt.

3-12. BAND PASS FILTER ADJUSTMENT

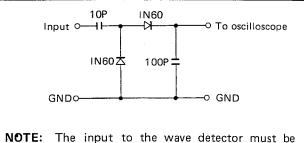
PURPOSE: To adjust the receive and transmit B.P.F.

TEST EQUIPMENT: A sweep signal generator (require frequencies at 8.295, 8.595, and 8.895 MHz), a B.P.F. wave detector (as shown in Figure 15), and an oscilloscope.

PROCEDURE: See Figure 16 for the test setup After all of the connections described in Figure 16 have been made for the receiver adjustment, tune T2 on the RF board, and T7 and T8 on the IF board for the waveform shown in Figure 17.

Now make the connections for transmission as shown in Figure 16. Set the standby switch to SEND and adjust T3 and T4 on the IF board and T1 on the RF board for the waveform shown in Figure 17. Return the standby switch to REC.

NOTE: The FUNCTION switch is set to the FIX position to turn off the VFO. However if an accessory crystal is installed in the fixed channel oscillator, the waveform may be disturbed.



NOTE: The input to the wave detector must be connected to terminal TP by as short a cable as possible. If coax is used the measured waveform may be different because of the capacitive component of the coax.



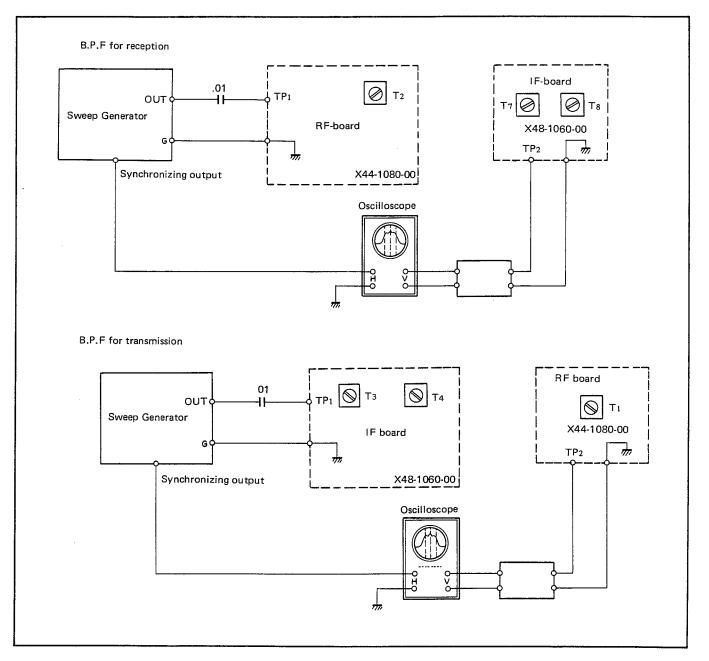


Figure 16. Band Pass Filter Test Circuit

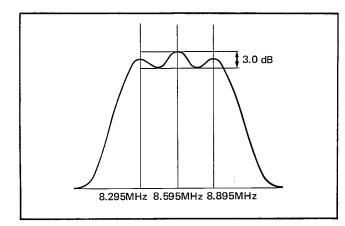


Figure 17. B.P.F. Waveform

3-12. CARRIER BOARD (X50-0009-01) ADJUSTMENT

PURPOSE: To adjust the output from the CARRIER board.

TEST EQUIPMENT: RF VTVM.

PROCEDURE: Connect the VTVM to terminal OUT on the CARRIER board. Set the FUNCTION switch to VFO and adjust T1 on the CARRIER board for a maximum voltage at the output.

NOTE: The carrier can not be adjusted when the FUNC-TION switch is turned to CAL-FIX or CAL-RMT.

3-13. COIL PACK ALIGNMENT

PURPOSE: To align the OSCILLATOR, MIXER, ANTEN-NA, and DRIVER coils of the transceiver.

TEST EQUIPMENT: An RF VTVM and a signal generator. **PROCEDURE:**

HETERODYNE OSCILLATOR COILS:

Connect the RF VTVM to terminal TP3 on the RF board. For the 3.5 MHz band adjust the 3.5 MHz oscillator coil for a maximum reading on the VTVM. Then turn the core counterclockwise for a voltage reading 1 db lower than the maximum. Repeat the same procedure for the 7, 14, 21, and 28.5 MHz bands.

ANTENNA AND MIXER COILS:

Set the FUNCTION switch to VFO, remove the VTVM, and connect the signal generator to the ANTENNA connector. Turn the DRIVE control to the 12 o'clock position. Table 1 below describes the adjustment order and frequencies for this alignment. Receive the signal generator output at the designated frequency and carefully adjust the appropriate ANTENNA then MIXER coil for a maximum S-meter reading. The signal generator output should start at 60 db and be reduced as the circuit sensitivity increases.

NOTE: The coil cores are fragile. Tune them carefully from straight above. Be certain to tune the correct coil for each band.

DRIVER COILS:

Turn the H.SW switch to ON, turn the MODE switch to CW, set the METER switch to ALC, adjust the CAR control

to maximum, and set the standby switch to SEND. The SG switch should be OFF whenever the signal generator is connected to the transceiver. Adjust each coil, in the order of and at the frequencies described in Table 1, for maximum ALC deflection. Reduce the CAR control as necessary.

TABLE 1. ANTENNA, MIXER, and DRIVER Coil Adjustment

ORDER	BAND	FREQUENCY
1	3.5	3.750 MHz
2	28.5	28.800 MHz
3	21.0	21.225 MHz
4	14.0	14.175 MHz
5	7.0	7.150 MHz

3-14. WWV CIRCUIT ALIGNMENT

PURPOSE: To align the WWV circuit for maximum sensitivity.

TEST EQUIPMENT: Signal Generator.

PROCEDURE: Insert a 10 MHz, 60 db signal into the ANTENNA connector and push the WWV switch on. Set the main tuning dial to zero to receive the signal. Adjust coils T4 and T5 on the RF board for a maximum S-meter reading. Reduce the signal input as necessary. Adjust coil T3 for a maximum S-meter reading and then turn the core 1/4 turn counterclockwise.

3-15. IF TRANSFORMER ADJUSTMENT

PURPOSE: IF board and NB board alignment.

TEST EQUIPMENT: A signal generator and a voltmeter.

PROCEDURE: Insert a 40 db signal into the transceiver and receive it on USB at 14.175 MHz. Tune IF transformers T2, T5, T6, and T9 on the IF board (X48-1060-00) for a maximum S-meter reading. Then adjust IF transformers T1, T2, and T3 on the NB board (X54-1080-10) for a maximum S-meter reading. Figure 19 shows the coil locations.

Disconnect the coax from terminal OUT on the NB board and insert a 47 pf capacitor (as shown in Figure 18). Adjust T1 on the IF board and T4 and T5 on the NB board alternately for a maximum S-meter reading.

Remove the capacitor and reconnect the coax.

NOTE: Always repeat the adjustments several times because the coils affect each other.

Set the signal generator to 60 db and connect a voltmeter to the collector of $\Omega6$ on the NB board. Adjust NB IF coils T6 and T7 to minimize the voltage at the collector of $\Omega6$.

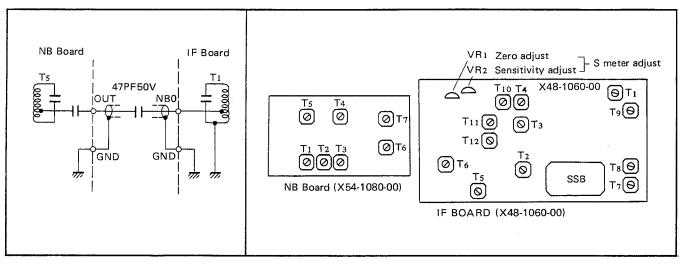


Figure 18. IF Transformer Test Circuit

Figure 19. IF Transformer Adjustment Diagram

3-16. TRAP COIL ADJUSTMENT

PURPOSE: To align the trap coils.

TEST EQUIPMENT: Signal generator, an AF VTVM, and an 8 ohm dummy load.

PROCEDURE: Set the BAND switch to 7 MHz and insert an 8.895 MHz signal (70 db) at the ANTENNA connector. Tune the receiver to 7.0 MHz and adjust L11 on the RF board (X44-1080-00) for a minimum S-meter reading.

Set the signal generator to 8.395 MHz and tune the receiver to 7.5 MHz. Adjust L5 on the RF board to minimize the S-meter reading.

Turn the BAND switch to 3.5, turn the receiver to 3.7 MHz and adjust the DRIVE control for maximum sensitivity. Connect an AF VTVM and an 8 ohm dummy load to the EXT. SPEAKER jack of the TS-520. Insert a 3.736 MHz signal from the signal generator to the ANTENNA connector, tune it in on the VFO, and adjust trap coil L2 on the RF board for a minimum voltage reading on the AF VTVM.

3-17. CARRIER BALANCE

PURPOSE: To adjust the carrier balance.

TEST EQUIPMENT: A Signal generator, an 8 ohm dummy load, and an AF VTVM.

PROCEDURE: Tune the TS-520 to receive the signal generator input (20 db) at 14.175 MHz and adjust the DRIVE control for maximum sensitivity. Connect the AF VTVM and an 8 ohm dummy load to the EXT. SPEAKER jack. Adjust TC2 and VR3 (on the GENERATOR board) alternately for maximum voltage on the AF VTVM.

3-18. S-METER ADJUSTMENT

PURPOSE: To adjust the S-meter zero and sensitivity. **TEST EQUIPMENT:** Signal generator.

PROCEDURE: Turn the RF gain control fully clockwise, receive the signal generator input at 14.175 MHz (40 db), and tune the DRIVE control for maximum sensitivity.

With no signal, adjust VR1 on the IF board (X48-1060-00) to zero the S-meter. Then with a 40 db signal to the ANTENNA connector at 14.175 MHz, adjust VR2 on the IF board for an S9 meter reading.

3-19. RIT ADJUSTMENT

PURPOSE: To adjust the RIT zero to the VFO frequency. **TEST EQUIPMENT:** None required.

PROCEDURE: Set the RIT control to zero and push the RIT switch on. Turn the FUNCTION switch to CAL-25 KHz and receive a calibrator signal at any frequency. Adjust the VFO to receive the calibrator signal as a 1000 Hz tone.

Push the RIT switch off and adjust VR2 on the FIXED CH.-AVR board (X43-1100-00) for the same 1000 Hz tone established with the RIT on. Switch the RIT on and off several times to be certain that the two tones are identical.

3-20. CALIBRATOR FREQUENCY ADJUSTMENT

PURPOSE: To adjust the frequency of the built-in crystal calibrating circuit.

TEST EQUIPMENT: A frequency counter (or alternately use WWV as a frequency standard).

PROCEDURE: Connect a frequency counter to terminal MO of the MARKER board. Set the FUNCTION switch to CAL-25 KHz and adjust TC1 on the MARKER board for a frequency counter reading of an even 25 KHz (±2 Hz).

Alternately, connect an antenna to the transceiver and receive WWV at 10 MHz. Set the FUNCTION switch to CAL-25 KHz to turn on the calibrator. Adjust TC1, as above, to bring the calibrator; and WWV into a single beat note.

3-21. VFO ADJUSTMENT

PURPOSE: To adjust the frequency and output of the VFO circuit.

TEST EQUIPMENT: An RF VTVM and a frequency counter.

PROCEDURE: Set the FUNCTION switch to VFO and connect a frequency counter to terminal VFO on the IF board (X48-1060-00). With the VFO tuned to zero the frequency counter should read 5.5 MHz. If the frequency is not correct, adjust TC1 (inside the VFO section) as shown in Figure 20 for a correct frequency output. Tune the VFO to the 600 marking and check that the frequency counter shows 4.9 MHz. If the frequency is incorrect, adjust L1 in the VFO section for a proper frequency. Repeat the adjustment of TC1 and L1 alternately several times to insure proper operation.

To adjust the VFO output, set the VFO to 300, connect an RF VTVM to terminal V on the IF board, and adjust TC2 in the VFO section for a 0.9 volt reading.

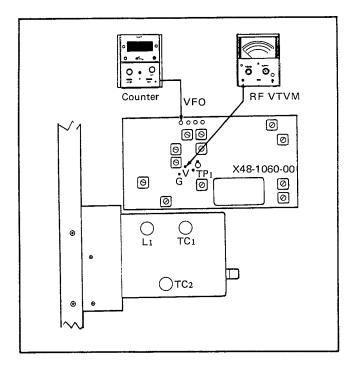


Figure 20. VFO Adjustment Diagram.

3-22. BIAS ADJUSTMENT

See the operating manual for instructions on setting the bias current to 60 ma. The bias requires readjustment if the AC line voltage is changed.

3-23. GENERATOR BOARD IF TRANSFORMER ADJUSTMENT

PURPOSE: To adjust the IF transformers on the GENERATOR board.

TEST EQUIPMENT: A 100 watt dummy load.

PROCEDURE: Slide the SG switch to off, turn the MODE switch to CW, set the METER switch to ALC, and

turn the CAR control fully clockwise. Tune the transmitter section at 14.175 MHz into the dummy load. The DRIVE control should be about 12 o'clock. Set the standby switch to SEND and adjust T1 on the GENE-RATOR board for a maximum ALC meter reading. Reduce the CAR control as necessary.

3-24. RF METER ADJUSTMENT

PURPOSE: To align the RF output meter reading and to verify the RF output level.

TEST EQUIPMENT: A 200 watt, 50 ohm RF dummy load, and a 200 watt, 3-30 MHz accurate RF wattmeter.

PROCEDURE: Tune the TS-520 for operation at 14.175 MHz into a dummy load through a wattmeter with the SG switch on. Set the meter switch to ALC and the CAR control to about 12 o'clock. With the MODE switch at TUN, transmit at 14.175 MHz and adjust the DRIVE control for a maximum ALC meter reading. Turn the METER switch to IP and tune the PLATE control to minimize the meter reading. Set the MODE switch to CW, turn the METER switch to RF, and tune the PLATE and LOAD controls alternately for maximum output power as indicated on the wattmeter. After the transceiver is tuned, adjust the side panel RF VOLT control for an RF meter reading of about 200 ma (on the IP scale). The RF meter position does not have a separate scale. Return the standby switch to REC.

Tune the TS-520 now for maximum CW output with the SG switch on. Check the power output at 3.75 MHz, 7.15 MHz, 14.175 MHz, 21.225 MHz, 28.3 MHz, 28.8 MHz, and 29.4 MHz. Verify with the wattmeter on each band that the output power meets specifications.

3-25. FINAL SECTION NEUTRALIZATION

PURPOSE: The TS-520 does not require matched final tubes, however when new finals are installed in the transceiver the final section must be reneutralized.

TEST EQUIPMENT: An RF VTVM and a dummy load.

PROCEDURE: Tune the TS-520 for maximum output on CW at 21.3 MHz with the SG switch on. Set the standby switch to REC and slide the SG switch off. Connect the RF VTVM to the ANTENNA connector along with the dummy load, and flip the standby switch to SEND. With an insulated tuning tool, tune TC1 in the final section for a minimum reading on the VTVM.

3-26. BALANCED MODULATOR AND CARRIER ADJUSTMENT

PURPOSE: To adjust the balanced modulator and the carrier.

TEST EQUIPMENT: An RF wattmeter, an AF VTVM, an AF signal generator, an RF VTVM, and a frequency counter, and a dummy load.

PROCEDURE: Tune the TS-520 for maximum CW output at 14.175 MHz through the wattmeter into a dummy load. Set the MODE switch to LSB, connect an RF VTVM to the ANTENNA connector and adjust TC1 and VR2 alternately on the GENERATOR board for a minimum reading on the RF VTVM. Switch the MODE switch to USB and readjust TC1 and VR2 for an RF VTVM reading equal to the reading for LSB.

Disconnect the RF VTVM, set the MODE switch to LSB, and insert a 1500 Hz (5 mv) signal at the MIC connector. Adjust the MIC control for an output power of 50 watts. Switch the AF input to 400 Hz and, if necessary, adjust TC3 (on the CARRIER board) for an output power within 5 watts of the output for 1500 Hz. Switch the AF input to 2600 Hz and, if necessary, adjust TC3 for an output power within 5 watts of the output power for 1500 Hz.

Turn off the rear panel SG switch and connect a frequency counter to terminal OUT on the CARRIER board and set

the MODE switch to CW. Set the standby switch to SEND and adjust TC1 on the CARRIER board to obtain an oscillator frequency of 3.395 MHz.

3-27. SIDETONE OUTPUT ADJUSTMENT

PURPOSE: To adjust the volume of the CW sidetone output to the speaker.

TEST EQUIPMENT: An AF VTVM and a telegraph key. **PROCEDURE:** Slide the SG switch off and connect the key to the TS-520. Set the MODE switch to CW and the AF gain control to about 12 o'clock. Connect the AF VTVM to the EXT. SPEAKER jack, key the transceiver, and adjust VR2 on the AF board for a reading of about 50 mW (0.63 V/8 ohms).

PARTS LIST

■ PARTS LIST OF TS-520 (Y54-1110-00)

CC2 CC2+ACTTOR MISCELLAREOUS VC2 CC3-0084-05 Variable searcher (A) (FINAL) - A108370-01 Case VC2 CC4-0024-05 Variable searcher (A) (FINAL) - A20-090-015 Final asy (US.A, Europe) C3 CC49CH211010 Correntic 1006F 45% - A20-070-013 Final asy (US.A, Europe) C4 CK49F2H103P Cerrinic 0.01,F +100%-0% - A20-070-013 Band asy (US.A, Europe) C16 CC40188-05 Cerrinic 0.01,F +100%-0% - A20-070-013 Bettion plate C16 CC40188-05 Cerrinic 0.01,F +100%-0% - A40-0120-11 Buttion plate C16 CC40188-05 Cerrinic 0.01,F +100%-0% - E30-007-05 Bittion plate C18 CC4018-05 Cerrinic 0.01,F +45% - B30-007-05 Hittion plate A40-0120-11 Mare plate Mare plate Mare plate Mare plate Mare plate Mare plate Mare pl	Circuit No.	Parts No.	Description	Circuit No.	Parts No.	Description
VC2 C01-008-06 Variable capacitor (B) (LOAD)		CAF	ACITOR		MISCE	ELLANEOUS
VC2 C01-008-06 Variable capacitor (B) (LOAD)	VC1	C03-0060-05	Variable capacitor (A) (FINAL)	_	A01-0211-02	Case
C3 CC48CH210101J Ceramic 1000F #198	VC2	C01-0084-05	Variable capacitor (B) (LOAD)	_		
C3 CC46CC42H02H Ceramic 1000F ±5%	TC1	C03-0002-05	Neutralizing trimmer	_		
C4 CK48E2H102P Ceramic 0.001 µF +100% -0% - A20-0730-13 Panel asy (U.S.A., Europel Sub panel C14 CK45F1E403Z Ceramic 0.04 µF +000% -0% - A22-0135-10 Batton plate C15 C90-018-06 Ceramic 0.04 µF +000% -0% - A20-0120-11 Batton plate C16 C90-018-06 Ceramic 305 F ±5% - B10-0130-04 Frenta Speaker net C17 C455L2H30J Ceramic 305 F ±5% - B30-083-06 Piotamp 12V, 40mA) x.4 C18 C90-018-06 Ceramic 470 F ±5% - B30-018-06 Piotamp 12V, 40mA) x.4 C21 C045L2H210 Ceramic 0.01 µF +00% -00% - B40-0380-04 Name plate (U.S.A., Europel C22-26 C445F1H105Z Ceramic 0.01 µF +00% -00% - B41-0180-04 Vatage plate 1120 - 2201V1 Europel 200 V1 - B42-0399-04 Vatage plate 1120 - 2201V1 Europel 200 V1 - B42-039			-			
C7 CK45F2H103P Ceramic 0.01 µF +100% -0% - A220135-12 Stute and Automatication C14 CK45F2H03P Ceramic 0.00 µF +100% -0% - A2304230-01 Barr panel C15 C00-0187-05 Ceramic 0.00 µF +100% -0% - A2304230-01 Speaker net C16 C00-0184-05 Ceramic 859F ±5% - 830-077-00-01 Diabard C18 C00-0184-05 Ceramic 879F ±5% - 830-0078-05 Diabard			· · ·	i		
CB CK46F1E302 Caramic 0.04µF +00% A23.022.02 Resmanl C14 CK45E2H103F Ceramic 0.00µF +10% Ad00120-11 Botton plus C15 C90.0187.05 Ceramic 335F ±3% B100139.04 From (13%, 40mA) x.4 C17 C455L2H33U Ceramic 375F ±3% B20.0287/04 From (13%, 40mA) x.4 C18 C90.0184.05 Ceramic 75F ±5% B30.0164.06 Name (13%, 40mA) x.4 C21 CM0103A681J Mice B40.0188-04 Name (13%, 40mA) x.4 C22-20 CK45F1H103Z Ceramic 0.04µF +00% -00% B40.0188-04 Voitage bits (12.0 - 20(v) (Euro Saitage) C23.0 CK45F1H03Z Ceramic 0.04µF +00% -00% B42.0038-04 Voitage bits (12.0 - 20(v) (Euro Saitage) C23.0 CK45F1H03Z Ceramic 0.04µF +00% -00%	C7		· ·	1		
C145 C0408605 Caramic 0.01µF +100%-0% - A40-0120-11 Betton plate C165 C090.0189-05 Caramic 2700pF +100%-0% - B0-0130-04 Front grass C17 C455L2H330 Caramic 680p ±35% - B0-0130-04 Front grass C18 C900184-05 Caramic 690p ±35% - B30-0070-05 Pliot tamp (12V, 40mA) x 4 C21 CV6152.24271J Caramic 0.01µF #60% -20% - B40-0080-04 Name plate (England) C22 CX45F141032 Caramic 0.01µF #60% -20% - B40-0080-04 Name plate (England) C23 C445F141032 Caramic 0.01µF #60% -20% - B42-0446-04 Name plate (England) C33 C4507H152032 Caramic 0.01µF #60% -20% - B42-0446-04 Name plate (England) C33 C456F142032 Caramic 0.01µF #60% -20% - B42-0446-04 Name plate (England)			· · · ·			
C16 C90-018-05 Caramic 1000pF ±100k- E005-0211-04 Speker nat C17 C455L2H33U Caramic 336F ±53% - B00-0130-04 Finat pass C18 C90-0184-05 Caramic 470F ±53% - B30-0130-04 Finat pass C19 C90-0184-05 Caramic 470F ±55% - B30-0136-05 Dial board C21 C455L2H37J Mica 6806F ±55% - B30-0184-05 Mare plate IL30 Aurap plate IL30 Auraplate IL30 Auraplate IL30 Aura			· · ·	1		
C16 C90-0187-06 Caramic 230p F 45% - B10-0130-04 Front press C17 C458L2H320L Caramic 680p F 55% - B30-073-06 Dilbard C18 C90-018-05 Caramic 680p F 55% - B30-073-06 Pilot tamo (12V, 40mA) x 4 C21 CV6152.A4271J Caramic 270p F 55% - B30-073-06 Pilot tamo (12V, 40mA) x 4 C22 CX45F141032 Caramic 0.01# F 480% -20% - B40-0890-04 Norme plate [LS.A., Europil C22 CX45F141032 Caramic 0.01# F 480% -20% - B41-0180-04 Vortage plate [120 ~-240V) C23.32 C00018-06 Electrolytic 10:00-2400F - B42-0446-04 Norme plate [120 ~-220V) Europ C33.32 C002018-022 Caramic 0.01# F 490% -20% - B42-0446-04 Norme plate 120 ~-220V) Europ C33 CX45F1H103Z Caramic 0.01# F 490% -20% - B42-0447-04 <					A40-0120-11	Botton plate
C17 C455L2H30U Caramic 33.pf ±5% - B100130.04 Front grass C18 C500186.06 Caramic 83.pf ±5% - B20.027.04 Dial board C19 C500186.06 Caramic 470F ±5% - B20.0130.04 Mare C21 C05615L2H271J Mica 6800F ±5% - B20.0180.06 Mare Auropeon C22 ~26 C456111032 Caramic 0.01±F +00% -0% - B40.080.04 Name plate IL20220VI E00 20VI C23, 02 C45621103P Caramic 0.01±F 500WV - B42.0446.44 Switch name plate (Fagland) U.S.A., England) C33, 34 C50201F 20WV - B42.0446.44 Paral name plate (Fagland) U.S.A., England) C33, 34 C50201F 20WV - B42.0446.40 Paral name plate (Fagland) U.S.A., England) C33, 34 C50201F 20WV - B42.0446.40 Paral name plate (Augluttment C33, 42						Creation not
C19 CS0-018-05 Ceramic 68pF ±5% - B20.0287-04 Dial bard C21 CM3102A691 Ceramic 77pF ±5% - B31.0164.05 Miter C22 CM3102A691 Misa 680.0F ±5% - B30.0164.05 Miter C22 CK45F141032 Ceramic 0.01.µF +80.05 - B40.0890.04 Name piste [10.2.5.A., Europe] C22.7.28 CS0-0180-05 Ceramic 0.01.µF +80.05 - B40.0890.04 Vortage piste [1.2.2.4., Europe] C23.32 CS0-0181-05 Ceramic 0.01.µF +100500% - B42.0464-04 Name piste [England] C33.32 CS0-0181-05 Ceramic 0.01.µF +80M20% - B42.0445-04 Name piste [1.0.2.4., England] C35 CK45F114032 Ceramic 0.01.µF +80M20% - B42.0445-04 Name piste [1.0.2.4., England] C36 C90-1187.05 Caramic 0.01.µF +80M20% - B42.0457-04 Name piste [1.0.						
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C20 CC45SL2H271J Ceramic 270pF ±5%			· · ·			
C22 CK48104A891J Mica BB0pF 45% - B40,089.04 Name piste (LS AL, Europe) C22 CK48F1H1032 Ceramic 0.01µF +60% ~20% - B40,089.04 Name piste (LS AL, Europe) C22,30 CK48F1H1032 Ceramic 0.01µF +100% ~0% - B41,0189.04 VL SAL, England C33,32 C90-018:0-05 Electrolytic block 100µF 500WV - B42,0445.04 Name piste (LS AL, Europe) C33,64 C602WHE222 Ceramic 0.01µF +80% ~20% - B42,0445.04 Name piste (LS AL, Europe) C36 C60.0187.05 Ceramic 0.01µF +60% ~20% - B42,0447.04 Name piste of adjustment C38 CK45F1H1032 Ceramic 0.01µF +60% ~20% - B42,0420.04 Name piste of adjustment C38 CK45F1H1032 Ceramic 0.01µF +60% ~20% - B42,0420.04 Name piste (US AL, Europe) C44 CK45F1H1032 Ceramic 0.01µF +60% ~20% - B42,0420.04 <t< td=""><td></td><td></td><td>· · · ·</td><td></td><td></td><td></td></t<>			· · · ·			
C22 22 CK45F1H1032 Ceramic 0.01µF +80% – 20% = PA0.0980.04 Name pisse (Empland) C27.38 C00-180.05 Electrolytic block 22µF 440% = B41-0189.04 Vuitage pinse (Empland) 20.01 C33.32 C90-181.05 Electrolytic 2200µF 200µF Electrolytic 2200µF 200µ = B42-0485.04 Pesse sticker (Europe, England) C35.36 CK45F1H032 Ceramic 0.01µF +80% – 20% = B42-0445.04 Penen name piste England) C37 CK45F1H032 Ceramic 0.01µF +80% – 20% = B42-0445.04 Name piste (Empland) C38 CS45F1H032 Ceramic 0.01µF +80% – 20% = B42-0445.04 Name piste (Empland) C40 CS45F1H032 Ceramic 0.01µF +80% – 20% = B42-047.04 VF Iname piste (Empland) C42 CE04W1C471 Electrolytic 470% – 20% = B42-047.04 Witch name piste of adjustment C43, 44 CK5F1H1032 Carbon 100x 100% – 20% = B42-						
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C229.30 CK45E2H103P Ceramic 0.01µF +100% – 0% U.S.A. England1 U.S.A. England1 C33.32 C600181.05 Electrolytic 2200µF 2500W – B42-0190-04 Pesed sticker (Europe, England) C35.36 CK45F1H032 Ceramic 0.01µF #80% – 20% – B42-0440-04 Pesed sticker (Europe, England) C37 CK45F1H1032 Ceramic 0.01µF #80% – 20% – B42-0445.04 Pane name plate 6 adjustment C38 CK45F1H1032 Ceramic 0.01µF #80% – 20% – B42-045.04 Name plate of adjustment C40 CK45F1H1032 Ceramic 0.01µF #80% – 20% – B42-045.04 Determinal plate C42 CE04W1C471 Electrolytic 4700F #100% – 20% – B42-0287.04 Switch name plate of adjustment R3, 4 RC05GF3A1001 Carbon 100, 1 5% 1/4W B501107.00 Operating manual (U.S.A.) R1 RC05GF3A103K Carbon 10kG ±10% 1/4W B501107.00 Operating manual (
C31.32 C30-0181-05 Electrolytic block 100µF 500W/ - B41-0190-04 Voltage plate (120 ~ 220V) (Europer Clarope, figural) C33.34 C602W1 E22 Electrolytic 2200µ E 220% - B42-0049-04 Passd sticker (Europe, figural) C35.36 CK45F1 E103Z Caramic 0.01µF +80% - 20% - B42-0445-04 Panel name plate Falsd of adjustment C38 CG0-0187-05 Caramic 0.01µF +80% - 20% - B42-0445-04 Viname plate of adjustment C34 CK45F1H103Z Caramic 0.01µF +80% - 20% - B42-0447-04 Viname plate of adjustment C41 CK45F1H103Z Caramic 0.01µF +80% - 20% - B42-042-042 DC terminal plate C42 CK45F1H103Z Caramic 0.01µF +80% - 20% - B42-042-047 Winame plate of adjustment C43 CK45F1H103Z Caramic 0.01µF +80% - 20% - B42-042-047-04 Warnary card (U.S.A) C43 CK45F1H103Z Caramic 0.01µF +80% - 20% <t< td=""><td></td><td></td><td></td><td></td><td>B41-0189-04</td><td></td></t<>					B41-0189-04	
C33. 34 CE02W1E222 Electrolytic 220WF 25WV - B42.0040-44 Passed sticker (Europe, England) C35. 65 CK48FT1H1032 Caramic 0.04µF +80% -20% - B42.0044-14 Switch name plate Gagand C38 CK48FT1H1032 Caramic 0.01µF +80% -20% - B42.0044-04 Name plate 6 adjustment C38 CK48FT1H1032 Caramic 0.01µF +80% -20% - B42.0044-04 Name plate 6 adjustment C40 CS0-0187-05 Caramic 0.01µF +80% -20% - B42.0047-04 V Is name plate 6 adjustment C42 CS0-WIC471 Electrolytic 470µF 16WV - B42.0047-04 Waranty card (U.S.A. Europia plate C42 CS6WIC47110 K Carbon 100Ω ±5% 1/W - B50-110-00 Operating manual (Europe) - B43.0020-00 Operating manual (Europe) - B43.0020-00 Operating manual (Europe) - B56.0110-00 Operating manual (Europe) <			· · · ·			
C35, 86 CK48F1E4032 Caramic 0.04 µF +80% - 20% - 842.0441-14 Switch name plate (England) C37 CK48F1H1032 Caramic 0.01 µF +80% - 20% - 842.0445-04 Panel name plate Panel name plate C38 CS0-0187-05 Caramic 0.01 µF +80% - 20% - 842.0447-04 VR name plate of adjustment C40 CS0-0187-05 Caramic 0.01 µF +80% - 20% - 842.0447-04 VR name plate of adjustment C41 CK48F1H1032 Caramic 0.01 µF +80% - 20% - 842.0474-14 Switch name plate (Dista), Europa C42 CK48F1H1032 Caramic 0.01 µF +80% - 20% - 842.0474-14 Switch name plate (Dista), Europa Carutin site////////////////////////////////////						
C37 CK45F1H1032 Ceramic 0.01µF +400% - 20% - 842-0445-04 Panel name plate C38 C60-0187-05 Ceramic 0.01µF +400% - 20% - 842-0445-04 VR name plate of adjustment C40 C26-0187-05 Ceramic 0.01µF +400% - 20% - 842-0445-04 VR name plate of adjustment C41 CK45F1H103Z Ceramic 0.01µF +400% - 20% - 842-0452-04 Ditac channel plate C42 CEGAW1C471 Electrolytic 470µF 16W/V - 842-0452-04 Ditac channel plate Custion sticker (HIGH VOLTAGE C42.44 CK45F1H103Z Ceramic 0.01µF +400% - 20% - 842-0245-04 Ditac channel plate Custion sticker (HIGH VOLTAGE C43.44 CK45F1H103Z Carbon 10kΩ ±5% 1/4W - 850-110-00 Operating manual (U.S.A.) R2 PD148Y2E103J Carbon 10kΩ ±10% W - 850-110-00 Operating manual (U.S.A.) R3 PD148Y				-		
C39 C400187-05 Ceramic 4700pF +100%-0% - B420447-04 Name plate of adjustment C40 C90-0187-05 Ceramic 0.01µF +80%-20% - B420451-04 Fixed channel plate C41 CK45F11H103Z Ceramic 0.01µF +80%-20% - B420451-04 Fixed channel plate C42 CEdW11C471 Electrolytic 470upF +100%-0% - B420452-04 DC terminal plate C43, 44 CK45F11H103Z Ceramic 0.01µF +80%-20% - B420474-14 Switch name plate (0.5.A, Europe C43, 44 CK45F1H103Z Carbon 1000 ±10% 1/4W - B50-1102-00 Operating manual (U.S.A.) R5 PD148Y2E103J Carbon 1000 ±5% 1/4W - B58-0110-00 Operating manual (England) R6 RC056F2A101K Carbon 10kΩ ±5% 1/4W - B13-0032-04 Sprocket R7 RC056F2H101K Carbon 10kΩ ±5% 1/4W - D13-0032-04 Sha	C35, 36	CK45F1E403Z	Ceramic 0.04µF +80% –20%	-	B42-0444-14	Switch name plate (England)
C3B CK45F1H103Z Ceremic 0.01µF +40%-20% - B42.0451-04 VR name plate of adjustment C40 C90-0187-05 Ceramic 0.01µF +40%-20% - B42.0451-04 Fixed channel plate C41 CK45F1H103Z Ceramic 0.01µF +40%-20% - B42.0451-04 DC terminal plate C42 CG04W1C471 Electrolytic 470µF 16W/ - B42.047-14 Switch name plate of adjustment C43.44 CK45F1H103Z Carbon 10.01µF +40%-20% - B42.0287-04 Caution sticker (HIGM VLTAGE R3.4 RC05GF2A110K Carbon 10.02 ±10% 1/4W - B50-1101-00 Operating manual (Bland) R5 P0148Y2E32J Carbon 10.02 ±10% 1/4W - B50-1107-00 Operating manual (Cland) 1/4W - B50-1107-00 Operating manual (Bland) R7 RC05GF2A103K Carbon 10.80 ±10% W - D13-0032-04 Sprocket R14 </td <td>C37</td> <td>CK45F1H103Z</td> <td>Ceramic 0.01µF +80% -20%</td> <td>-</td> <td>B42-0445-04</td> <td>Panel name plate</td>	C37	CK45F1H103Z	Ceramic 0.01µF +80% -20%	-	B42-0445-04	Panel name plate
C40 C90-0187-05 Caramic 4700pF +100%-0% B42-0451-04 Fixed channel plate C42 CEdW1C471 Electrolitic 4700pF +100%-0% B42-0452-04 Dc terminal plate C42 CEdW1C471 Electrolitic 4700pF +80%-20% B42-047-14 Switch name plate U.S.A., Europe C43, 44 CK45F1H1032 Ceramic 0.01µF +80%-20% B42-047-14 Switch name plate U.S.A., Europe R5 PD14BY2E103J Carbon 100.0 ±5% 1/4W B50-1101-00 Operating manual (U.S.A.) R6 RC05GF2H101K Carbon 100.0 ±5% 1/4W B50-1107-00 Operating manual (England) R6 RC05GF2H101K Carbon 100.0 ±5% 1/4W B50-1107-00 Operating manual (England) R7 RC05GF2H147J Carbon 100.0 ±5% 1/4W D13-0032-04 Spracket R8 PD14BY2E32J <t< td=""><td>C38</td><td>C90-0187-05</td><td>Ceramic 4700pF +100% 0%</td><td>-</td><td>B42-0446-04</td><td>Name plate of adjustment</td></t<>	C38	C90-0187-05	Ceramic 4700pF +100% 0%	-	B42-0446-04	Name plate of adjustment
C41 CK45F1H103Z Ceramic 0.01μF +80% -20% B42-042-04 DC terminal plate C42 CK45F1H103Z Ceramic 0.01μF +80% -20% B42-047-14 Switch name plate (U.S.A., Europe C43,44 CK45F1H103Z Carbon 10kΩ ±5% 1/4W B42-047-14 Switch name plate (U.S.A.) R2 PD05G72H101K Carbon 10kΩ ±5% 1/4W B50-1102-00 Operating manual (England) R3 RC05G72A100J Carbon 10kΩ ±5% 1/4W B50-1102-00 Operating manual (England) R5 PD14BY2E332J Carbon 10kΩ ±10% 1/2W D1-0032-04 Sprocket R8 PD14BY2E103J Carbon 10kΩ ±10% 1/2W D21-0320-04 Shaft (A) DRIVE R10 R05GF2H47AJ Carbon 3.8kΩ ±5% 1/4W D21-0320-04 Shaft (A) DRIVE R11 PD14BY2E103J	C39	CK45F1H103Z	Ceramic 0.01µF +80% -20%	_	B42-0447-04	VR name plate of adjustment
C41 CK45F1H103Z Ceramic 0.01μF +80% -20% B42-042-04 DC terminal plate C42 CK45F1H103Z Ceramic 0.01μF +80% -20% B42-047-14 Switch name plate (U.S.A., Europe C43,44 CK45F1H103Z Carbon 10kΩ ±5% 1/4W B42-047-14 Switch name plate (U.S.A.) R2 PD05G72H101K Carbon 10kΩ ±5% 1/4W B50-1102-00 Operating manual (England) R3 RC05G72A100J Carbon 10kΩ ±5% 1/4W B50-1102-00 Operating manual (England) R5 PD14BY2E332J Carbon 10kΩ ±10% 1/2W D1-0032-04 Sprocket R8 PD14BY2E103J Carbon 10kΩ ±10% 1/2W D21-0320-04 Shaft (A) DRIVE R10 R05GF2H47AJ Carbon 3.8kΩ ±5% 1/4W D21-0320-04 Shaft (A) DRIVE R11 PD14BY2E103J	C40	C90-0187-05	Ceramic 4700pF +100% 0%	- 1	B42-0451-04	Fixed channel plate
C42 CE04W1C471 Electrolytic 470µF 16WV	C41	CK45F1H103Z	Ceramic 0.01µF +80% -20%	_	B42-0452-04	
C43,44 CK45F1H103Z Ceramic 0.01μF +80% – 20%	C42	CE04W1C471	· · · ·	-	B42-0474-14	Switch name plate (U.S.A., Europe)
RESISTOR				_	B42-0287-04	
HESISTOR - B460047-00 Warranty card (U.S.A.) R1 PD05GF2H101K Carbon 1000 $\pm 10\%$ - B50-1101-00 Operating manual (Europe) R3, 4 RC05GF3A100J Carbon 1000 $\pm 10\%$ 1/4W - B50-1102-00 Operating manual (Europe) R5 PD148Y2E32J Carbon 3.8.0 $\pm 5\%$ 1/4W - B50-1107-00 Operating manual (Europe) R6 RC05GF2H101K Carbon 10k0 $\pm 10\%$ - B58-0181-00 Transmitter caution plate R7 RC05GF2H502J Carbon 10k0 $\pm 10\%$ - D13-0032-04 Sprocket R10, 11 RC05GF2H47J Carbon 32k0 $\pm 5\%$ 1/2W - D21-0328-04 Shaft (A) DRIVE R13 PD148Y2E101J Carbon 32k0 $\pm 5\%$ 1/4W - D21-0328-04 Shaft (C) LOAD R16 RC05GF2H47J Carbon 100k0 $\pm 5\%$ 1/4W - D22-0005-04				-		
File PD1489/2E103J Carbon 10kΩ \pm 5% 1/4W B50-1101-00 Operating manual (U.S.A.) R2 PD056F2H101K Carbon 10Ω \pm 5% 1/4W B50-1101-00 Operating manual (Europe) R3,4 RC05GF3A100J Carbon 10Ω \pm 5% 1/4W B50-1107-00 Operating manual (Europe) R6 RC05GF2A101K Carbon 10kΩ \pm 10% 1/W B50-1107-00 Operating manual (Europe) R6 RC05GF2A47AU Carbon 10kΩ \pm 10% - D13-0032-04 Sprocket R7 RC05GF2H650J Carbon 16Ω \pm 5% 1/2W - D1-0032-04 Shaft (A) DRIVE R13 PD148722E102J Carbon 32KΩ \pm 5% 1/2W - D21-0322-04 Shaft (B) PLATE R14 PD14872E10J Carbon 100KΩ \pm 5% 1/2W - D22-001-04 Shaft (C) LOAD R16 RC05		RE	SISTOR	-		
A2 PD05GF2H101K Carbon 100Ω ±10% 1/4W B50-1102-00 Operating manual (Europe) R3,4 RC05GF3A100J Carbon 10Ω ±5% 1W B50-1102-00 Operating manual (Europe) R6 RC05GF3A103K Carbon 10Ω ±10% 1/W B58-01107-00 Operating manual (Europe) R6 RC05GF3A103K Carbon 10kΩ ±10% 1/W D13-0032-04 Sprocket R7 RC05GF2H560J Carbon 56Ω ±5% 1/2W D16-0033-04 Chain ass'y R8 PD148Y2E3JJ Carbon 56Ω ±5% 1/2W D21-0328-04 Shaft (A) DR1VE R13 PD148Y2E3JJ Carbon 100Ω ±5% 1/4W D22-0327-04 Shaft (C) LOAD R16,17 PD148Y2E10JJ Carbon 100Ω ±5% 1/4W D22-0005-04 Shaft coupling VR1,2 R08-3012-05 Potentiometer (R1	PD14BY2E103J	Carbon 10kΩ ±5% 1/4W	_		
R3.4 RC05GF3A100J Carbon 10Ω ±5% 1W B50-1107-00 Operating manual (England) R5 RC05GF2H101K Carbon 3.3kΩ ±5% 1/4W B50-1107-00 Operating manual (England) R6 RC05GF2H101K Carbon 10kΩ ±10% 1/W D13-0032-04 Sprocket R8 PD148Y2E102J Carbon 10kΩ ±5% 1/2W D13-0032-04 Sprocket R10,11 RC05GF2H47AJ Carbon 50.2 ±5% 1/2W D21-0322-04 Shaft (A) DRIVE R13 PD148Y2E32J Carbon 3.3kΩ ±5% 1/2W D21-0322-04 Shaft (C) LOAD R14 PD148Y2E101J Carbon 100L2 ±5% 1/4W D22-0012-04 Shaft coupling R16,17 P0148Y2E104J Carbon 100L2 ±5% 1/4W D22-0011-05 Shaft coupling VR1,2 R08-3012-05 Potentiometer (RF10K(B))				1		
R5 PD14BY2E332J Carbon 3.3 kΩ ±5% 1/4W - B58-0181.00 Transmitter caution plate R6 RC05GF2H101K Carbon 10 kΩ ±10% 1/2W - D13-0032-04 Sprocket R8 PD14BY2E102J Carbon 1kΩ ±5% 1/2W - D13-0032-04 Sprocket R9 RC05GF2H560J Carbon 56Ω ±5% 1/2W - D1402324-05 Band shaft R10,11 RC05GF2H474J Carbon 3.3 kΩ ±5% 1/2W - D21-0328-04 Shaft (A) DRIVE R13 PD14BY2E332J Carbon 3.3 kΩ ±5% 1/4W - D21-0328-04 Shaft (B) PLATE R14 PD14BY2E104J Carbon 1.00 kΩ ±5% 1/4W - D21-0328-04 Shaft coupling R15 RC05GF2H474J Carbon 1.00 kΩ ±5% 1/4W - D22-0011-05 Shaft coupling R16,17 PD14BY2E104J Carbon						
R6 RC05GF2H101K Carbon 10kΩ ±10% 1/2W - D13-0032-04 Sproket R7 RC05GF3A103K Carbon 10kΩ ±10% 1/2W - D13-0032-04 Sproket R9 RC05GF2H560J Carbon 1kΩ ±5% 1/2W - D16-0033-04 Chain ass'y R10 11 RC05GF2H474J Carbon 3.kΩ ±5% 1/2W - D21-0322+05 Band shaft R14 PD14BY2E101J Carbon 3.kΩ ±5% 1/4W - D21-0322+04 Shaft (A) DRIVE R14 PD14BY2E101J Carbon 3.kΩ ±5% 1/4W - D21-0322+04 Shaft (B) PLATE R14 PD14BY2E101J Carbon 100Ω ±5% 1/4W - D22-0004-04 Shaft Coupling Shaft Coupling R14 PD14BY2E104J Carbon 100kΩ ±5% 1/4W - D22-001-05 Shaft coupling R16,17 PD14BY2E104J Carbon 100kΩ ±5% 1/4W - D22-0016-04 Bearin						
R7 RC05GF3A103K Carbon 10kΩ ±10% 1W D13-0032-04 Sprocket R8 PD14BV2E102J Carbon 1kΩ ±5% 1/4W D16-0033-04 Chain ass'y R9 RC05GF2H47JJ Carbon 560 ±5% 1/2W D21-0324-05 Band shaft R13 PD14BV2E332J Carbon 3.3kΩ ±5% 1/2W D21-0328-04 Shaft (A) DALVE R14 PD14BV2E104J Carbon 100kΩ ±5% 1/4W D21-0328-04 Shaft Coupling R15 RC05GF2H474J Carbon 100kΩ ±5% 1/4W D22-0005-04 Shaft coupling R16, 17 PD14BV2E104J Carbon 100kΩ ±5% 1/4W D22-001-05 Shaft coupling VR1, 2 R08-3012-05 Potentiometer (MIC, CAR 10K(A)) - D23-0014-04 Bearing (mold) VR5 R03-012-05 Potentiometer (RF10K(B)) D23-0116-05				_	000101-00	Transmitter caution plate
R8 PD14BY2E102J Carbon $1k\Omega$ $\pm 5\%$ $1/4W$ - D16-0033.04 Chain ass'y R9 RC05GF2H474J Carbon 56Ω $\pm 5\%$ $1/2W$ - D21-0324.05 Band shaft R10,11 RC05GF2H474J Carbon $470k\Omega$ $\pm 5\%$ $1/2W$ - D21-0326.04 Shaft (A) DRIVE R14 PD14BY2E332J Carbon 100Ω $\pm 5\%$ $1/4W$ - D21-0328-04 Shaft (C) LOAD R15 RC05GF2H474J Carbon 100Ω $\pm 5\%$ $1/4W$ - D22-0005-04 Shaft coupling R16,17 P014BY2E104J Carbon 100Ω $\pm 5\%$ $1/4W$ - D22-0005-04 Shaft coupling VR1,2 R08-3012-15 Potentiometer Potentiometer = D23-0014-04 Bearing (mold) VR4 R01-4014-05 Potentiometer (RF10K(A)) - D23-0116-05 Ball bearing as'y VR7 R01-000-05 Potentiometer (AVX 300(B)) -		1			D12 0022 04	Conselvet
R9 R10,11RC05GF2H560J RC05GF2H474JCarbon 470kΩ $56Ω$ $\pm 5\%$ $1/2W$ -D21-0324-05 				1		
R10,11 RC05GF2H474J Carbon 470kΩ ±5% 1/2W - D21-0326-04 Shaft (A) DRIVE R14 PD14BY2E332J Carbon 3.3kΩ ±5% 1/4W - D21-0326-04 Shaft (A) DRIVE R14 PD14BY2E101J Carbon 100Ω ±5% 1/4W - D21-0326-04 Shaft (A) DRIVE R15 RC05GF2H474J Carbon 470kΩ ±5% 1/4W - D22-0004-04 Shaft (C) LOAD R16,17 PD14BY2E104J Carbon 100kΩ ±5% 1/4W - D22-0005-04 Shaft coupling VR1,2 R08-3012-05 Potentiometer (MIC, CAR 10K(A) 10K(B)) - D23-0016-05 Ball bearing Mold VR3 R01-4014-05 Potentiometer (AF 10K(B)) - D23-0018-04 Shaft stopper Shaft stopper VR6 R01-4014-05 Potentiometer (AVX 300(B)) - D32-0018-04 Shaft stopper Shaft stopper VR7 R01-0040-05 Potenti				1		· ·
R13 PD14BY2E332J Carbon 3.3kΩ ±5% 1/4W - D21-0327-04 Shaft (B) PLATE R14 PD14BY2E101J Carbon 100Ω ±5% 1/4W - D21-0327-04 Shaft (B) PLATE R15 RC05GF2H474J Carbon 470kΩ ±5% 1/4W - D22-0004-04 Shaft coupling R16,17 PD14BY2E104J Carbon 100kΩ ±5% 1/4W - D22-0005-04 Shaft coupling VR1,2 R08-3012-15 Potentiometer (M1C, CAR 10K(A) 10K(B)) - D22-0011-05 Shaft coupling VR3 R08-3012-05 Potentiometer (RF10K(B)) - D23-0061-04 Bearing (mold) VR4 R01-4014-05 Potentiometer (BF10K(B)) - D23-0116-05 Ball bearing as'y VR5 R08-3012-05 Potentiometer (AF 10K(A)) - D23-0116-05 Ball bearing as'y VR4 R01-4014-05 Potentiometer (AF 10K(A)) - D23-0116-05 Ball bearing as'y VR6 R01-4004-05 Potentiometer (AVX 300(B)) - D32-0051-04 Shaft stopper				1		
R14 PD14BY2E101J Carbon 100Ω ±5% 1/4W - D21-0328-04 Shaft (C) LOAD R15 RC05GF2H474J Carbon 470kΩ ±5% 1/4W - D21-0328-04 Shaft (C) LOAD R16,17 PD14BY2E104J Carbon 100kΩ ±5% 1/4W - D22-0005-04 Shaft coupling VR1,2 R08-3012-15 Potentiometer (MIC, CAR 10K(A) 10K(B)) - D23-0048-04 Bearing (metal) VR3 R08-3012-15 Potentiometer (RF10K(B)) - D23-0068-04 Bearing (metal) VR4 R01-4014-05 Potentiometer (RF10K(A)) - D23-0116-05 Ball bearing sx'y VR5 R08-3012-05 Potentiometer (RF10K(A)) - D23-0116-05 Ball bearing sx'y VR6 R01-4014-05 Potentiometer (AVX 300(B)) - D32-0018-04 Shaft stopper VR8 R01-6009-05 Potentiometer (RF10K(B)) - D32-0018-04 Shaft stopper VR9 R03-2004-05 Potentiometer (RF10K(B)) - <td></td> <td></td> <td></td> <td>1</td> <td>1</td> <td></td>				1	1	
R15RC05GF2H474J P014BY2E104JCarbon470k $\Omega \pm 5\%$ 1/2W 1/2W-D22-001-04Shaft couplingR16, 17P014BY2E104JCarbon100k $\Omega \pm 5\%$ 1/4W-D22-0005-04Shaft couplingVR1, 2R08-3013-05Potentiometer(MIC, CAR 10K(A) 10K(B))-D22-0005-04Shaft couplingVR3R08-3012-15Potentiometer (RF10K(B))-D23-004-04Shaft couplingVR4R01-4014-05Potentiometer (RF10K(B))-D23-004-04Bearing (mold)VR5R08-3012-05Potentiometer (AF 10K(A))-D23-00116-05Ball bearing ass'yVR6R01-4014-05Potentiometer (AF 10K(A))-D23-00116-05Ball bearing ass'yVR7R01-0040-05Potentiometer (AX 300(B))-D32-0018-04Shaft stopperVR8R01-6009-05Potentiometer (RIT 5K(B))-D32-001-04Shaft stopperVR9R03-2004-05Potentiometer (RIT 5K(B))-D32-0051-04Shaft stopperVR10R01-3014-05Potentiometer (RIT 5K(B))-E01-0801-05US socketVR10R01-3014-05Potentiometer-E04-0115-05Receptacle, type-MD3Diode 1N60-E05-0901-059P, MT socketD4, 5Diode V06B-E06-0403-0514P mike socketD6Zener diode WZ-061-E08-1202-0512P pingD7, 8V1, 2Vacuum-tube S2001-E08-1202-0512P pingV1, 2-E0	1					
R16, 17 PD14BY2E104J Carbon 100kΩ ±5% 1/4W - D220005-04 Shaft coupling VR1, 2 R08-3013-05 Potentiometer (MIC, CAR 10K(A) 10K(B)) - D22-0015-04 Shaft coupling VR3 R08-3012-15 Potentiometer (RF10K(B)) - D23-0048-04 Bearing (mold) VR4 R01-4014-05 Potentiometer (BIS 50K(B)) - D23-0011-05 Ball bearing VR5 R08-3012-05 Potentiometer (AF 10K(A)) - D23-0016-04 Bearing (mold) VR6 R01-4014-05 Potentiometer (VOX, 50K(B)) - D23-0018-04 Shaft stopper VR7 R01-0040-05 Potentiometer (AVX 300(B)) - D32-0051-04 Shaft stopper VR7 R01-0040-05 Potentiometer (RIT 5K(B)) - D32-0051-04 Shaft stopper VR8 R01-6009-055 Potentiometer (RIT 5K(B)) - D32-0051-04 Shaft stopper VR10 R01-3014-05 Potentiometer (RIT 5K(B)) - E01-0801-05 US socket VR10 R01-3014-05 Potentiometer (RIT 5K(B)) - E01-0903-05 9P, MT socket <td>I</td> <td></td> <td></td> <td>-</td> <td></td> <td></td>	I			-		
VR1, 2 R08-3013-05 Potentiometer (MIC, CAR 10K(A) 10K(B)) Diate Solar Diate Coupling VR3 R08-3012-15 Potentiometer (RF10K(B)) - D23-0011-05 Shaft coupling VR4 R01-4014-05 Potentiometer (RF10K(B)) - D23-0011-05 Ball bearing (mold) VR5 R08-3012-05 Potentiometer (AF 10K(A)) - D23-0015-05 Ball bearing VR6 R01-4014-05 Potentiometer (AF 10K(A)) - D23-0018-04 Shaft stopper VR7 R01-0040-05 Potentiometer (AVX 300(B)) - D23-0018-04 Shaft stopper VR9 R03-2004-05 Potentiometer (RIT 5K(B)) - D32-0051-04 Shaft stopper VR10 R01-3014-05 Potentiometer (RF, METER 10kΩM (B)) - E01-0801-05 US socket VR10 R01-3014-05 Potentiometer (RF, METER 10kΩM (B)) - E03-0301-05 3P plug (Europe) D10de 1N60 Diode 1N60 E04-0115-05 Receptacle, type-M D10de 1S1555 Zener diode WZ-061 - E08-0204-05 14P mike socket				-		. 5
VR3 R08-3012-15 Potentiometer (RF10K(B)) - D23-0048-04 Bearing (metal) VR4 R01-4014-05 Potentiometer (RF10K(B)) - D23-00115-05 Ball bearing VR5 R08-3012-05 Potentiometer (AF 10K(A)) - D23-0018-04 Bearing (moid) VR6 R01-4014-05 Potentiometer (AVX 300(B)) - D23-0116-05 Ball bearing ass'y VR7 R01-0040-05 Potentiometer (AVX 300(B)) - D32-0018-04 Shaft stopper VR8 R01-6009-05 Potentiometer (AVX 300(B)) - D32-0018-04 Shaft stopper VR9 R03-2004-05 Potentiometer (DELAY 250K(B)) - D32-0018-04 Shaft stopper VR10 R01-3014-05 Potentiometer (RIT 5K(B)) - E01-0801-05 US socket VR10 R01-3014-05 Potentiometer (RIT 5K(B)) - E01-0903-05 9P, MT socket D3 Diode 1N60 - E03-0301-05 3P plug (Europe) D4, 5 Diode V06B - E06-0403-05 14P mike socket				1 -		
VR3 R08-3012-15 Potentiometer (RF10K(B)) - D23-0046-04 Bearing (metal) VR4 R01-4014-05 Potentiometer (BIS 50K(B)) - D23-0016-04 Bearing (metal) VR5 R08-3012-05 Potentiometer (AF 10K(A)) - D23-0115-05 Ball bearing ass'y VR6 R01-4014-05 Potentiometer (VOX, 50K(B)) - D23-0018-04 Shaft stopper VR7 R01-0040-05 Potentiometer (AVX 300(B)) - D32-0051-04 Shaft stopper VR8 R01-6009-05 Potentiometer (RIT 5K(B)) - D32-0051-04 Shaft stopper VR9 R03-2004-05 Potentiometer (RIT 5K(B)) - E01-0801-05 US socket VR10 R01-3014-05 Potentiometer (RIT 5K(B)) - E01-0903-05 9P, MT socket VR10 R01-3014-05 Potentiometer (RIT 5K(B)) - E03-0301-05 3P plug (Europe) D3 Diode 1N60 - E05-0901-05 9P, MT plug D4, 5 Diode 1N60 - E06-0403-05 14P mike socket D7, 8 Diode 1S1555 - E08-1202-05 12P jack <td>vmi,Z</td> <td>100-3013-00</td> <td></td> <td> -</td> <td></td> <td></td>	vmi,Z	100-3013-00		-		
VR4 R01-4014-05 Potentiometer (BIS 50K(B)) - D23-0081-04 Bearing (Mold) VR5 R08-3012-05 Potentiometer (AF 10K(A)) - D23-0115-05 Ball bearing ass'y VR6 R01-4014-05 Potentiometer (VOX, 50K(B)) - D23-0116-05 Ball bearing ass'y VR7 R01-0040-05 Potentiometer (AVX 300(B)) - D32-0018-04 Shaft stopper VR8 R01-6009-05 Potentiometer (BIT 5K(B)) - D32-0051-04 Shaft stopper VR10 R01-3014-05 Potentiometer (RIT 5K(B)) - E01-0801-05 US socket VR10 R01-3014-05 Potentiometer (RIT 5K(B)) - E01-0903-05 9P, MT socket D3 Diode 1N60 - E03-0301-05 3P plug (Europe) D4, 5 Diode 1N60 - E06-001-05 9P, MT plug D4, 5 Diode 1N60 - E06-001-05 9P, MT plug D7, 8 Diode 1S1555 - E08-0204-05 14P mike socket V1, 2 Vacuum-tube S2001 - E	VB3	B08 3012 15		-		-
VR5 R08-3012-05 Potentiometer (AF 10K(A)) - D23-0116-05 Ball bearing VR6 R01-4014-05 Potentiometer (VOX, 50K(B)) - D23-0116-05 Ball bearing ass'y VR7 R01-0040-05 Potentiometer (AVX 300(B)) - D32-0018-04 Shaft stopper VR8 R01-6009-05 Potentiometer (DELAY 250K(B)) - D32-0051-04 Shaft stopper VR9 R03-2004-05 Potentiometer (RIT 5K(B)) - E01-0801-05 US socket VR10 R01-3014-05 Potentiometer (RIT 5K(B)) - E01-0903-05 9P, MT socket VR10 R01-3014-05 Potentiometer (RIT 5K(B)) - E03-0301-05 3P plug (Europe) VR10 R01-3014-05 Potentiometer (RIT 5K(B)) - E03-0301-05 3P plug (Europe) VR10 R01-3014-05 Diode 1N60 - E03-0301-05 3P plug (Europe) D3 Diode 1N60 - E06-0403-05 14P mike socket D4, 5 Zener diode WZ-061 - E08-0204-05 2P jack D7, 8 Diode 1S1555 - E08-1202-05 12P jack				-		-
VR6 R01-4014-05 Potentiometer (VOX, 50K(B)) - D23-0116-03 Bail bearing ass y VR7 R01-0040-05 Potentiometer (AVX 300(B)) - D32-0018-04 Shaft stopper VR8 R01-6009-05 Potentiometer (DELAY 250K(B)) - D32-0051-04 Shaft stopper VR9 R03-2004-05 Potentiometer (RIT 5K(B)) - E01-0801-05 US socket VR10 R01-3014-05 Potentiometer (RIT 5K(B)) - E01-0903-05 9P, MT socket VR10 R01-3014-05 Diode 1N60 - E03-0311-05 3P plug (Europe) D3 Diode 1N60 - E04-0115-05 Receptacle, type-M D3 Diode 1N60 - E06-0403-05 14P mike socket D4, 5 Diode 1S1555 - E08-0204-05 2P jack V1, 2 Vacuum-tube S2001 - E08-1207-05 12P jack V1, 2 Vacuum-tube S2001 - E08-1208-05 12P plug				-		-
VR7 R01-0040-05 Potentiometer (AVX 300(B)) - D32-001-04 Shaft stopper VR8 R01-6009-05 Potentiometer (DELAY 250K(B)) - D32-0051-04 Shaft stopper VR9 R03-2004-05 Potentiometer (RIT 5K(B)) - E01-0801-05 US socket VR10 R01-3014-05 Potentiometer (RIT 5K(B)) - E01-0903-05 9P, MT socket VR10 R01-3014-05 Potentiometer (RF, METER 10kΩM (B)) - E01-0903-05 9P, MT socket D3 Diode IN60 - E05-0901-05 9P, MT plug D4, 5 Diode 1N60 - E06-0403-05 14P mike socket D6 Zener diode WZ-061 - E07-0403-05 14P mike plug D7, 8 Diode 1S1555 - E08-1202-05 12P jack V1, 2 Vacuum-tube S2001 - E08-1207-05 12P plug - E08-1208-05 12P plug - E08-1208-05 12P plug				-		Ball bearing ass'y
VR8 R01-6009-05 Potentiometer (DELAY 250K(B)) D32-0051-04 Shaft stopper VR9 R03-2004-05 Potentiometer (RIT 5K(B)) E01-0801-05 US socket VR10 R01-3014-05 Potentiometer (RF, METER 10k ΩM (B)) E01-0903-05 9P, MT socket D3 Diode 1N60 E04-0115-05 Receptacle, type-M D4, 5 Diode 1N60 E06-0403-05 14P mike socket D6 Zener diode WZ-061 E08-0204-05 2P jack V1, 2 Vacuum-tube S2001 E08-1202-05 12P jack E08-1208-05 12P plug				-	D32-0018-04	Shaft stopper
VR9 VR10 R03-2004-05 R01-3014-05 Potentiometer (RIT 5K(B)) Potentiometer (RF, METER 10kΩM (B)) E01-0801-05 E01-0903-05 US socket E01-0903-05 9P, MT socket E03-0301-05 3P plug (Europe) E04-0115-05 Receptacle, type-M D3 Diode 1N60 E06-0403-05 14P mike socket D4, 5 Diode V06B E07-0403-05 14P mike socket D6 Zener diode WZ-061 E08-0204-05 2P jack V1, 2 Vacuum-tube S2001 E08-1202-05 12P jack V1, 2 E08-1208-05 12P plug E08-1208-05 12P connector (Socket)				-	D32-0051-04	Shaft stopper
VR10 R01-3014-05 Potentiometer (RF, METER 10kΩM (B)) E01-0801-05 OS socket E01-0801-05 9P, MT socket E03-0301-05 3P plug (Europe) E03-0301-05 3P plug (Europe) E04-0115-05 Receptacle, type-M D3 Diode 1N60 E05-0901-05 9P, MT plug D4, 5 Diode V06B E06-0403-05 14P mike socket D6 Zener diode WZ-061 E08-0204-05 2P jack V1, 2 Vacuum-tube S2001 E08-1202-05 12P jack V1, 2 Vacuum-tube S2001 E08-1208-05 12P plug			4 I			
VR10 R01-3014-05 Potentiometer (RF, METER 10kΩM (B)) E01-0903-05 9P, MT socket E03-0301-05 3P plug (Europe) E04-0115-05 Receptacle, type-M D3 Diode 1N60 E05-0901-05 9P, MT plug D4, 5 Diode V06B E06-0403-05 14P mike socket D7, 8 Zener diode WZ-061 E08-0204-05 2P jack V1, 2 Vacuum-tube S2001 E08-1202-05 12P jack E08-1208-05 12P plug				-	E01-0801-05	US socket
TUBE/SEMICONDUCTOR = E03-0301-05 3P plug (Europe) D3 Diode 1N60 = E04-0115-05 Receptacle, type-M D4, 5 Diode V06B = E06-0403-05 14P mike socket D6 Zener diode WZ-061 = E08-0204-05 2P jack V1, 2 Vacuum-tube S2001 = E08-1202-05 12P jack V1, 2 Vacuum-tube S2001 = E08-1208-05 12P plug	VH10	H01-3014-05		-		
TUBE/SEMICONDUCTOR – E04-0115-05 Receptacle, type-M D3 Diode 1N60 – E05-0901-05 9P, MT plug D4, 5 Diode V06B – E06-0403-05 14P mike socket D6 Zener diode WZ-061 – E07-0403-05 14P mike plug D7, 8 Diode 1S1555 – E08-0204-05 2P jack V1, 2 Vacuum-tube S2001 – E08-1207-05 12P jack – E08-1208-05 12P plug 12P connector (Socket)			(TU, WEIER IUKSZIVI(B))	-		
D3 Diode 1N60 - E05-0901-05 9P, MT plug D4, 5 Diode V06B - E06-0403-05 14P mike socket D6 Zener diode WZ-061 - E07-0403-05 14P mike plug D7, 8 Diode 1S1555 - E08-0204-05 2P jack V1, 2 Vacuum-tube S2001 - E08-1202-05 12P jack - E08-1208-05 12P plug - E08-1208-05 12P connector (Socket)		TUBE/SEM	ICONDUCTOR	_		
D4, 5 Diode V06B E06-0403-05 14P mike socket D6 Zener diode WZ-061 E07-0403-05 14P mike plug D7, 8 Diode 1S1555 E08-0204-05 2P jack V1, 2 Vacuum-tube S2001 E08-1202-05 12P jack E08-1207-05 12P plug E08-1208-05 12P connector (Socket)	50		Diode 1N60	_	-	
D6 Zener diode WZ-061 – E07-0403-05 14P mike plug D7, 8 Diode 1S1555 – E08-0204-05 2P jack V1, 2 Vacuum-tube S2001 – E08-1202-05 12P jack – E08-1207-05 12P plug – E08-1208-05 12P connector (Socket)			i i i i i i i i i i i i i i i i i i i			
D7,8 Diode 1S1555 - E08-0204-05 2P jack V1,2 Vacuum-tube S2001 - E08-1202-05 12P jack - E08-1207-05 12P plug - E08-1208-05 12P connector (Socket)				_		
V1,2 Vacuum-tube S2001 - E08-1202-05 12P jack - E08-1207-05 12P plug - E08-1208-05 12P connector (Socket)				_	(
- E08-1207-05 12P plug - E08-1208-05 12P connector (Socket)						
– E08-1208-05 12P connector (Socket)	V1,2		Vacuum-tube S2001			
				-	LU9-UZU4-U9	z, plug

Circuit No.	Parts No.	Description	Circuit No.	Parts No.	Description
	E11-0003-15	US jack		J21-1202-04	Speaker mounting hardware ass'y
	E110005-05	3P phone jack	-	J29-0045-14	VR mounting reinforcement
-	E11-0034-05	US jack	- 1	J32-0074-04	Hexagonal boss x 8
	E12-0001-05	Phone plug	-	J32-0081-04	Hexagonal boss x 4
-	E13-0101-05	1P pin jack	- 1	J32-0127-04	Hexagonal boss
	E14-0101-05	1P pin plug	_	J32-0182-04	Hexagonal boss x 4
_	E14-0801-05	US plug	_	J32-0183-04	Hexagonal boss
	E20-0512-05	5P terminal strips	 _	J32-1030-14	Round boss
—	E20-0513-05	5P terminal strips	_	J41-0020-04	Knob bushing
_	E20-1003-05	10P terminal strips	_	J41-0024-15	Cord bushing
_	E22-0206-05	Lug board	_	J59-0001-05	Grommet
	E22-0207-05	Lug board		J59-0002-05	Plunger
_	E22-0214-05	Lug board			
_	E22-0214-03	, - 1		J61-0018-05	Beaded band
		Lug board	-	J61-0019-05	Wire wrapping band
_	E22-0603-04	Lug board	-	J61-0036-05	Free-up belt
-	E23-0016-04	Lug board			
-	E23-0037-04	Shaft grounding hardware	-	K01-0049-05	Knob
-	E30-0181-05	AC cord (U.S.A,)	-	K21-0266-04	Knob
-	E30-0214-05	Co-axial cable ass'y	-	K21-0267-04	Knob x 5
	E90-0004-15	Plate cap x 2	_	K21-0268-04	Knob x 2
			_	K21-0269-04	Knob x 3
- ;	F05-2032-05	Fuse (20A)	_	K23-0270-04	Knob x 2
_ !	F05-4022-05	Fuse (4A)	_	K23-0271-03	Knob
_	F05-6021-05	Fuse (6A)	-	K29-0166-04	Knob x 2
_	F07-0315-13	Final cover		K29-0167-23	Knob wafer
_	F10-0321-04	Coil pack shield plate	_	K29-0107-23	Knob water
_ !	F10-0322-04	Relay shield plat		1.01.0014.05	
_	F11-0186-13		-	L01-0214-05	Power transformer
		Final shield case	-	L15-0002-15	Choke coil
-	F15-0161-04	Shading plate	L3	L33-0098-05	Ferri-inductor
-	F19-0134-04	Side cover	L4	L33-0101-05	Ferri-inductor
			L5	L33-0032-05	Choke coil
-	G11-0008-04	Cushion	L6	L33-0160-05	Final choke
-	G11-0044-04	Cushion	L7	L31-0316-05	Final coil (B)
			L8	L31-0142-05	Final coil (A)
-	H01-1014-04	Carton case (Inside) (England)	L9	L33-0032-05	Choke coil
-	H01-1042-04	Carton case (Inside) (U.S.A., Europe)	L10	L33-0101-05	Ferri-inductor
- 1	H03-0283-04	Carton case (Outside)(U.S.A.,Europe)	L11	L33-0110-05	Ferri-inductor
-	H03-0304-04	Carton case (Outside) (England)	L12	L33-0098-05	Ferri-inductor
_ i	H10-0570-04	Retainer	Ps1, 3	L33-0010-05	Parasitic suppressor
_	H10-0931-02	Polystyrene foamed fixture	Ps3, 4	L39-0046-04	Parasitic suppressor
	H10-0932-02	Polystyrene foamed fixture	1 30, 4	L38-0040-04	
1	H10-0934-04	Protection board		000 1000 05	
1			S1	S06-1006-05	Rotary switch (METER)
	H10-0964-04	Retainer	S2	S01-4017-05	Rotary switch (FUNCTION)
-	H20-0371-04	Protection cover	S3	S04-5016-05	Rotary switch (MODE)
			S4	S29-1006-05	Rotary switch (CH SELECT)
1	J02-0049-14	Leg (big)	S5	S10-1101-05	Rotary switch (FINAL)
	J02-0022-05	Leg (small)	S7	S31-2007-05	Slide switch
	J13-0004-05	Fuse holder	-	S40-2023-05	Push switch (RIT, WWV)
-	J13-0037-05	Fuse holder (DC cord)	S10	S44-2018-05	Paddle switch
	J19-0006-04	Switch stopper	S11,13,14	S44-2016-05	Paddle switch
	J19-0360-04	Coupling holder	S15	S44-2015-05	Paddle switch
1	J21-0392-04	Lead holder	S16	S59-2020-05	See-saw switch (POWER)
	J21-0468-05	Angle (tank coil)	S10 S17	S59-2020-05	
1	J21-0934-14	Handle holder	RL1		See-saw switch (VOLTAGE SELEC
				S51-4016-15	Relay
	J21-1142-04	Meter mounting	RL2	S51-4017-15	Relay (FINAL)
	J21-1143-04	VR mounting	I		
1	J21-1144-04	Speaker mounting	1 - 1	W01-0005-04	Adjusting ber
	J21-1145-04	Lamp stopper	l İ		
	J21-1146-04	Coil pack fixture	 –	X40-0017-01	DRIVE coil unit
	J21-1148-04	VC mounting fixture		X40-0018-01	MIX coil unit
	J21-1149-22	IF board holding fixture	_	X40-0019-01	OSC coil unit
1	J21-1150-04	Indicator mounting fixture	_	X40-1070-00	VFO unit
	J21-1151-04	Terminal strip retainer	_	X40-1070-00 X43-1090-00	1
		Fixed-channel mounting fixture	1 1		Rectifier unit
— I.	J21-1155-04	I Eixed-channel mounting fixture		X43-1100-00	Fixed-channel, AVR unit

Circuit No.	Parts No.	Description	Circuit No.	Parts No.	Description
	X43-1110-00	HV unit	L7	L33-0025-05	Choke coil
	X44-1080-00	RF unit		MIS	CELLANEOUS
	X44-1090-00	ANT coil unit			CELEANEOUS
_	X46-1000-00	DC-DC converter unit	S3-1	S29-1005-05	Rotary wafer
-	X48-1060-00	IF unit	S3-2	S29-1005-05	Rotary wafer
_	X49-0008-01	AF unit			
	X50-0009-01	Carrier unit	X1	L77-0141-05	Crystal oscillator (12,395MHz)
	X52-0005-01	, Marker unit	X2	L77-0142-05	Crystal oscillator (15,895MHz)
_	X52-0010-01	Generator unit	X3	L77-0143-05	Crystal oscillator (22,895MHz)
	X54-0001-00	VOX unit	X4	L77-0144-05	Crystal oscillator (29,895MHz)
	X54-1080-10	NB unit	X5	L77-0145-05	Crystal oscillator (36,895MHz)
-	X54-1100-01	FAN unit	X6	L77-0146-15	Crystal oscillator (37,395MHz)
_	X54-1120-00	Indicator unit	X7	L77-0147-05	Crystal oscillator (37,995MHz)

PARTS LIST OF DRIVER COIL PACK (X40-0017-01)

Circuit No.	Parts No.		Descript	ion			
	САР	ACITOR					
C1	CC45CH2H100J	Ceramic	10pF	±5%			
C2	CC45CH2H330J	Ceramic	33pF	±5%			
C3	CM93D2H151J(DM)	Mica	150pF	±5%			
C4	CC45CH2H330J	Ceramic	33pF	±5%			
C5,6	CK45E2H103P	Ceramic	0.01µF	+100%	6 —0%		
RESISTOR							
R1,2	PD14BY2E151J	Carbon	150 Ω	±5%	1/4W		
<u> </u>	<u></u>	COIL					
L1	L31-0031-04	Tuning co	il (3.5 MHz	z) (A)			
L2	L31-0032-04	, Tuning co	il (7 MHz)				
L3	L31-0033-04	Tuning co	il (14 MHz)			
L4	L31-0034-04	Tuning co	il (21 MHz	}			
L5	L31-0209-04	Tuning co	il				
L6	∟33-0097-05	Ferri-indu	ctor				
	MISCE	LLANEOU	S				
S1-1,1-2	S29-1052-05	Rotary wa	afer				

PARTS LIST OF MIX COIL UNIT (X40-0018-01)

Circuit No.	Parts No.	Description						
CAPACITOR								
C1	CC45CH1H220J	Ceramic	22pF	±5%				
C2	CC45CH1H330J	Ceramic	33pF	±5%				
C3	CC45CH1H151J	Ceramic	150pF	5%				
C4	CC45CH1H330J	Ceramic	33pF	±5%				
C5,6	CK45E1H103P	Ceramic	0.01µF	+100%0%				
COIL								
L1	L31-0036-04	Tuning coi	I (3.5MHz)	(B)				
L2	L31-0032-04	Tuning coi	F(7MHz)					
L3	L31-0033-04	Tuning coi	l (14MHz)					
L4	L31-0034-04	Tuning (21	MHz)					
L5	L31-0209-04	Tuning (28	3MHz)					
L6	L33-0095-05	Ferri-induc	tor					
	MISCE	LLANEOUS	5					
S2-1, 2-2	\$29-1052-05	Rotary wa	Rotary wafer					

PARTS LIST OF OSC COIL UNIT (X40-0019-00)

Circuit No.	Parts No.	1	Description					
CAPACITOR								
C1 C2 C3 C4 C5~7	CC45CH1H121J CC45CH1H680J CC45CH1H560J CC45CH1H560J CC45CH1H100J CK94YG1E403Z	Ceramic Ceramic Ceramic Ceramic Ceramic	120pF 68pF 56pF 10pF 0.04µF	士5% 士5% 士5% 士5% +80%	-20%			
RESISTOR								
R1	PD14BY2E102J	Carbon	1kΩ	±5%	1/4W			
		COIL						
L1,2 L3 L4 L5a,b L6	L31-0032-04 L31-0033-04 L32-0011-04 L32-0138-15 L32-0012-04	Oscillator coil (3.5, 7MHz) Oscillator coil (14MHz) Oscillator coil (21MHz) Oscillator coil (28MHz(A)) Oscillator coil (28MHz(A))						

PARTS LIST OF VFO UNIT (X40-1070-00)

Circuit No.	Parts No.	Description					
	CAPACITOR						
C1 C2,3 C3 C3 C4 C5 C6	CC45PG1H470J CC45LG1H150J CC45CG1H150J CC45PG1H150J CC45SG1H070J CC45LG1H470J CC45LG1H470J CC45LG1H420J	Ceramic 470pF Ceramic 15pF Ceramic 15pF Ceramic 15pF Ceramic 7pF Ceramic 47pF Ceramic 22pF	15% 15% 15% Adjustment 15% Adjustment 15% 15% 15%				
C7,8 C9 C10 C11,12	CM93F2A151J(DM) CC45CH1H030D CK45F1H203Z CK45F1E403Z	Mica 150pF Ceramic 3pF Ceramic 0.02µF Ceramic 0.04µF	±5% ±0.5pF +80% –20% +80% –20%				

Circuit No	. Parts No.	Deusiation				
		Description				
C13	CK45F1H203Z	Ceramic 0.02µF +80% -20%				
C14	CC45SL1H330J	Ceramic 33pF ±5%				
C15	CC45SL1H050J	Ceramic 5pF ±0.5pF				
C16	CC45SL1H100D	Ceramic 10pF ±0.5pF				
C17	CC45SL1H050J	Ceramic 5pF ±0.5pF				
C18	CK45F1H103Z	Ceramic 0.01µF +80% -20%				
C19	CK45F1E403Z	Ceramic 0.04µF +80% -20%				
C20	CC45CG1H100D	Ceramic 10pF ±0.5pF				
-	C01-0001-25	Variable capacitor				
TC1	C03-0001-05	Variable capacitor				
TC2	C05-0013-15	Ceramic trimmer				
	RE	SISTOR				
R1	PD14BY2E274J	Carbon 270kΩ ±5% 1/4W				
R2	PD14BY2E101J	Carbon 100Ω ±5% 1/4W				
R3,4	PD14BY2E105J	Carbon 1 MΩ ±5% 1/4W				
R5	PD14BY2E331J	Carbon 330Ω ±5% 1/4W				
R6	PD14BY2E333J	Carbon 33kΩ ±5% 1/4W				
R7	PD14BY2E473J	Carbon 47kΩ ±5% 1/4W				
R8	PD14BY2E102J	Carbon $1k\Omega$ ±5% $1/4W$				
R9	PD14BY2E101J	Carbon 100Ω ±5% 1/4W				
	SEMIC	ONDUCTOR				
Q1		FET 3SK22(Y)				
Q2		FET 2SK19(Y)				
Q3, 4		Transistor 2SC460 (B)				
D1		Diode SD111				
D1, 2		Diode 1N60				
	MISCE	LLANEOUS				
_	A01-0169-13	VFO case				
	B42-0010-04	Name plate				
	D22-0011-05	Shaft coupling				
_	D40-0099-25	Gear mechanism				
_	E13-0101-05	1P pin jack				
_	E08-0204-05	2P receptacle				
-	E08-0204-05 E22-0207-05	•				
-	E22-0207-05	Lug board				
_	LZ3-00Z1-04	Terminal				
	F07-0231-14	VEO sover				
_		VFO cover				
	F10-0249-04	VFO shield plate				
	F11-0010-04	VFO box				
_	J21-1157-03	VFO variable capacitor mounting				
		hardware				
-	J21-0895-03	VFO mounting hardware				
1.1		Oscillating coil				
L1	L32-0098-05	Oscillating coil				
L2~4	L33-0104-05	Ferri-inductor				
		- 1				

PARTS LIST OF FIXED-CHANNEL AVR UNIT (X43-1100-00)

Circuit N	o. Parts No.	Description				
CAPACITOR						
C1	CC45SL1H151J	Ceramic	150pF	±5%		

	Circuit No.	Parts No.	Description			
	C2	CK45F1E403Z	Ceramic	0.04µF	+80% -	-20%
	СЗ	CC45CH1H820J	Ceramic	82pF	±5%	
	C4	CC45CH1H100J	Ceramic	10pF	±5%	
	C5	CC45CH1H330J	Ceramic	33pF	±5%	
	C6	CK45F1H103Z	Ceramic	0.01µF	+80% -	-20%
	C7	CK45F1E403Z	Ceramic	0.04µF	+80% -	
	C8	CE04W1C100(RL)	Electrolytic	10µF	16WV	
	C9	CE04W1C470(RL)	Electrolytic	47μF	16WV	
	C10	CE04W1HR47(RL)	Electrolytic	0.47µF	50WV	
	C11	CE04W1C101(RL)	Electrolytic	100µF	16WV	
	C12	CK45F1H103Z	Ceramic	0.01µF	+80% -	-20%
		RE	SISTOR			·
	R1	PD14CY2E222J	Carbon	2.2kΩ	±5%	1/4W
	R2	PD14CY2E473J	Carbon	47kΩ	±5%	1/4W
	R3	PD14CY2E102J	Carbon	1kΩ	±5%	1/4W
	R4	PD14CY2E333J	Carbon	33kΩ	±5%	1/4W
	R5	PD14CY2E473J	Carbon	47kΩ	±5%	1/4W
	R6	PD14CY2E102J	Carbon	1kΩ	±5%	1/4W
	R7	PD14CY2E101J	Carbon	100Ω	±5%	1/4W
	R8	PD14CY2E103J	Carbon	10kΩ	±5%	1/4W
	R9	PD14CY2E683J	Carbon	68kΩ	±5%	1/4W
	R10	PD14CY2E331J	Carbon	330Ω	±5%	1/4W
	R11	PD14CY2E471J	Carbon	470Ω	±5%	1/4W
	R12	PD14CY2E821J	Carbon	820Ω	±5%	1/4W
	R13	PD14CY2E222J	Carbon	2.2kΩ	±5%	1/4W
	R14	PD14CY2E272.'	Carbon	2.7kΩ	±5%	1/4W
	R15	PD14CY2E222J	Carbon	2.2kΩ	±5%	1/4W
	R16	PD14CY2E471J	Carbon	470Ω	±5%	1/4W
	R17	PD14CY2E102J	Carbon	1kΩ	±5%	1/4W
	R18	PD14CY2E392J	Carbon	3:9kΩ	±5%	1/4W
	R19	PD14CY2E472J	Carbon	4.7kΩ	±5%	1/4W
	R20	PD14CY2E103J	Carbon	10kΩ	±5%	1/4W
	R21	PD14CY2E471J	Carbon	470Ω	±5%	1/4W
	R22	PD14CY2E151J	Carbon	150Ω	±5%	1/4W
		SEMIC	ONDUCTOR		•	·
	Q1~3		Transistor 2S	C460 (B)		
	Q4		Transistor 2S	A606 (L)		
	Q5~7		Transistor 2S	C372		
	Q8		Transistor 2S	C735 (Y)		
	54.0					
	D1,2		Diode 1N60			
	D3		Zener diode V			
	D4~7		Diode 1S1558	-		
	D8		Zener diode V	v∠-061		
			LLANEOUS			
		E18-0401-05 E23-0047-04	Crystal socke	t		
	_	L23-004/-04	Terminal			
	L1	L33-0089-05	Ferri-inductor			
	L2~4	L33-0104-05	Ferri-inductor			
	T1	L12-0013-05	Oscillating tra			
		00,000	comaing da			
	VR1	R12-0042-05	Trimmer pote	ntiometer		
J		R12-3036-05	Trimmer pote			
	VR2		1			
	VR2 VR3	R12-4020-05	Trimmer pote	ntiometer		
			Trimmer pote	ntiometer		
			Trimmer pote Ceramic trimm			
	VR3	R12-4020-05	·	ner 20pF		
	VR3 TC1 ~4	R12-4020-05 C05-0030-15	Ceramic trimr	ner 20pF		
	VR3 TC1 ~4	R12-4020-05 C05-0030-15	Ceramic trimr	ner 20pF		
	VR3 TC1 ~4	R12-4020-05 C05-0030-15	Ceramic trimr	ner 20pF		
	VR3 TC1 ~4	R12-4020-05 C05-0030-15	Ceramic trimr	ner 20pF		

■ PARTS LIST OF RECTIFIER UNIT (X43-1090-00)

Circuit No.	Parts No.		Description				
CAPACITOR							
C1,2	CE02W2C330	Electrolytic	Electrolytic tubler 33µF 160WV				
RESISTOR							
D1 ~ 6 D7 D8 ~ 11		Diode (V08J) Diode (V06E) Diode (V06B)					
R1 ~4 R5,6 R7 R8	RC05GF2H474J RN14AB3D471J RC05FG2H102J RC05FG2H104	Carbon Metal film Carbon Carbon	470kΩ 470Ω 1kΩ 100kΩ	±5% ±5% ±5% ±5%	1/2W 2W 1/2W 1/2W		

PARTS LIST OF HV UNIT (X43-1110-00)

Circuit No	Parts No.	Description					
CAPACITOR							
C1	CK45E2H103P	Ceramic	0.01µF	+1009	% —0%		
	RESISTOR						
R1 R2∼4 R5,6	RC05GF2H104J PD14BY2H684J RC05GF2H563J	Carbon Carbon Carbon	100kΩ 680kΩ 56kΩ	±5% ±5% ±5%	1/2W 1/2W 1/2W		

PARTS LIST OF RF UNIT (X44-1080-00)

Circuit No.	Parts No.	ts No. Description			
	CAF	ACITOR			
C1	CE04W1H010(RL)	Electrolytic	1µF	50W	
C2	CE04W1HR47(RL)	Electrolytic	0.47µF	50WV	
C3	CC45CH1H101J	Ceramic	100pF	±5%	
C4	CC45SL1H101J	Ceramic	100pF	±5%	
C5	CK45F1H103Z	Ceramic	0.01µF	+80%20%	
C6	CC45CH1H030D	Ceramic	ЗрF	±0.5pF	
C7	CC45SL1H330J	Ceramic	33pF	±5%	
C8,9	CK45D1H102M	Ceramic	0.001µF	±20%	
C10, 11	CK45F1E403Z	Ceramic	0.04µF	+80% -20%	
C12	CM93D2H561J	Mica	560pF	±5%	
C13	CC45CH1H050D	Ceramic	5pF	±0.5pF	
C14	CK45F1E403Z	Ceramic	0.04µF	+80% -20%	
C15	CC45CH1H050D	Ceramic	5pF	±0.5pF	
C16	CC45CH1H101J	Ceramic	100pF	±5%	
C17, 18	CK45F1H103Z	Ceramic	0.01µF	+80%20%	
C19	CC45SL1H220J	Ceramic	22pF	±5%	
C20	CK45F1H103Z	Ceramic	0:01µF	+80% –20%	
C21	CC45SL2H151J	Ceramic	150pF	±5%	
C22	CQ92M1H473K	Mylar	0.047µF	±10%	
C23, 24	CK45D1H102M	Ceramic	0.001µF	±20%	
C25	CK45F1E403Z	Ceramic	0.04µF	+80% -20%	
C26	CC45CH1H100D	Ceramic	10pF	±0.5pF	
C27	CK45F1E403Z	Ceramic	0.04µF	+80% -20%	
C28	CC45SL1H101J	Ceramic	100pF	±5%	
C29~31	CK45E2H103P	Ceramic	0.01 <i>µ</i> F	+100%0%	
C32, 33	CM93D2H561J	Mica	560pF	±5%	
C34	CK45B1H102K	Ceramic	0.001µF	±10%	
C35	CK45F1E403Z	Ceramic	0.04µF	+80% -20%	
C36	CK45F1H103Z	Ceramic	0.01µF	+80%20%	

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Circuit No.	Parts No.	Description				
C37	CK45E2H103P	Ceramic	0.01 <i>µ</i> F	+100% –0%		
C38	C90-0156-05	Metalized pol	yester film 0.047µF	າ 250WV		
C39	CK45E2H103P	Ceramic	0.047µF 0.01µF	+100%0%		
C40	CC45SL1H330J	Ceramic	33pF	±5%		
C41	CK45F1H103Z	Ceramic	0.01µF	+80% -20%		
C42	CC45CH1H020D	Ceramic	2pF	±0.5pF		
C43	CK45F1H103Z	Ceramic	0.01µF	+80% -20%		
C44~46	CK45F1F403Z	Ceramic	0.04µF	+80% –20%		
C48	C90-0154-05	Metalized pol				
			0.22µF	250WV		
C49	CK45D1H102M	Ceramic	0.001µF			
C50 C51	CQ93M1H473K CC45CH1H101J	Electrolytic r Ceramic	100pF	47μF ±10% ±5%		
C52	CK45E2H103P	Ceramic	0.01µF	0% +100%0%		
C53	CK45F1H103Z	Ceramic	0.01µF	+80% -20%		
C54	CC45CH1H101J	Ceramic	100pF	±5%		
C55	CC45CH1H050D	Ceramic	5pF	±0.5pF		
				·		
VC1 ~ 3	C01-0127-05	Variable capa	citor			
	RE	SISTOR				
R1	PD14CY2E274J	Carbon	270kΩ	±5% 1/4W		
R2	PD14CY2E103J	Carbon	10kΩ	±5% 1/4W		
R3	RC05GF2H225J	Carbon	2.2MΩ	±5% 1/2W		
R4	PC14CY2E333J	Carbon	33kΩ	±5% 1/4W		
R5	PD14CY2E471J	Carbon	470Ω	±5% 1/4W		
R6	PD14CY2E333J	Carbon	33kΩ	±5%1 1/4W		
R7	PD14CY2E472J	Carbon	4.7kΩ	±5% 1/4W		
R8.	PD14CY2E102J	Carbon	1kΩ 1000	±5% 1/4W ±5% 1/4W		
R9 R10	PD14CY2E101J PD14CY2E104J	Carbon Carbon	100Ω 100kΩ	±5% 1/4W ±5% 1/4W		
R11	PD14CY2E474J	Carbon	470kΩ	±5% 1/4₩		
R12	PD14CY2E124J	Carbon	120kΩ	±5% 1/4W		
R13	PD14CY2E274J	Carbon	270kΩ	±5% 1/4W		
814	PD14CY2E104J	Carbon	100kΩ	±5% 1/4W		
R15, 16	PD14CY2E560J	Carbon	56Ω	±5% 1/4W		
R17	PD14CY2E181J	Carbon	180Ω	. 4 5% 1/4W		
R18, 19	PD14CY2E682J	Carbon	6.8kΩ	±5% 1/4W		
R20	PD14CY2E101J	Carbon	100Ω	±5% 1/4W		
R21	PD14CY2E271J	Carbon	270Ω	±5% 1/4W		
R22	PD14CY2E184J	Carbon	180kΩ 100kΩ	±5% 1/4W ±5% 1/4W		
R23 R24, 25	PD14CY2E104J PD14CY2E560J	Carbon Carbon	100k22 56Ω	±5% 1/4W ±5% 1/4W		
R26	PD14CY2E101J	Carbon	100Ω	±5% 1/4W		
R27, 28	PD14CY2E104J	Carbon	100kΩ	±5% 1/4W		
R29	PD14CY2E561J	Carbon	560Ω	±5% 1/4W		
R30	PD14CY2E182J	Carbon	1.8kΩ	±5% 1/4W		
R31	PD14CY2E560J	Carbon	56Ω	±5% 1/4W		
R32	PD14CY2E105J	Carbon	1 MΩ	±5% 1/4W		
R33	RC05GF2H820J	Carbon	82Ω	±5% 1/2W		
R34, 35	RC05GF2H330J	Carbon	33Ω	±5% 1/2W		
R35	RC05GF2H330J	Carbon	33Ω 470kΩ	±5% 1/2W		
R36 R37,28	PD14CY2E474J PD14CY2E102J	Carbon Carbon	470kΩ 1kΩ	±5% 1/4W ±5% 1/4W		
R37, 28 R39, 40	PD14CY2E102J	Carbon	10kΩ	±5% 1/4W		
R41	PD14CY2E472J	Carbon	4.7kΩ	±5% 1/4W		
R42, 43	PD14CY2E392J	Carbon	3.9kΩ	±5% 1/4W		
R44	PD14CY2E103J	Carbon	10kΩ	±5% 1/4W		
R45	PD14CY2E392J	Carbon	3.9kΩ	±5% 1/4W		
R46	PD14CY2E472J	Carbon	4.7kΩ	±5% 1/4W		
R47	PD14CY2E392J	Carbon	3.9kΩ	±5% 1/4W		
R48	PD14CY2E682J	Carbon	6.8kΩ	±5% 1/4W		
R49	PD14CY2E563J	Carbon	56kΩ 100kΩ	±5% 1/4W		
R50	PD14CY2E104J	Carbon	100kΩ	±5% 1/4W		

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Circuit No.	Parts No.		Descript	tion	
R51	PD14CY2E153J	Carbon	15kΩ	±5%	1/4W
R52	PD14CY2E683J	Carbon	68kΩ	±5%	1/4W
R53 R54	PD14CY2E123J PD14CY2E473J	Carbon Carbon	12kΩ 47kΩ	±5% ±5%	1/4W 1/4W
R55	PD14CY2E472J	Carbon	47k32 4.7kΩ	±5%	1/4W
R56	PD14CY2E273J	Carbon	27kΩ	±5%	1/4W
R57	PD14CY2E822J	Carbon	8.2kΩ	±5%	1/4W
R59	PD14CY2E333J	Carbon	33kΩ	±5%	1/4W
R60	PD14CY2E104J	Carbon	100kΩ	±5%	1/4W
R61 R62	PD14CY2E102J PD14CY2E471J	Carbon	1kΩ	±5%	1/4W
R63	PD14CY2E104J	Carbon Carbon	470Ω 100kΩ	±5% ±5%	1/4W 1/4W
R64	PD14CY2E332J	Carbon	3.3kΩ	±5%	1/4W
R65~67	PD14CY2E101J	Carbon	100Ω	±5%	1/4W
R68	PD14CY2E103J	Carbon	10kΩ	±5%	1/4W
R69	PD14CY2E331J	Carbon	330Ω	±5%	1/4W
R70 R71	RC05GF2H823J RC05GF2H392J	Carbon Carbon	82kΩ	±5%	1/2W
R72	PD14BY2B563J	Carbon	3.9kΩ 56kΩ	±5% ±5%	1/2W 1/8W
					1/000
01	SEMI			201	
Q1 Q2		FET Transistor	2SK19(0 2SC460)		
03		FET	3SK41(I		
Q4		FET	3SK35(0		
Q5		FET	35K35()	Y)	
Q6		Transistor	2SC733	(Y)	
07		Transistor	2SC535(
08		FET	3SK22(0		
Q9 Q10		FET	2SK19(0	GR)	
Q10		Transistor FET	2SC856 3SK35(0	SB)	
D1		Zener diode			
D2~4		Diode	1S73A		
D5,6		Diode	V06B		
D7,8 D9	-	Zener diode Diode	1S1555		
	MISCE	LLANEOUS			
	D13-0032-03	Sprocket x	3		
-	D16-0033-04	Chain ass'y			
-	E06-0406-05	FET socket			
-	E10-1902-05	Vacuum-tuk	be socket		
	E23-0046-04 E23-0047-04	Terminal Terminal			
	220-0047-04	161111101			
	F11-0020-05	Shield case			
Т1,2	L30-0008-05	B.P.F. coil			
Т3	L32-0165-05	OSC coil			
T4, 5	L31-0317-05	Tuning coil			
L1	L33-0104-05	Ferri-induct	or		
L2	L31-0012-05	Trap coil (1		-lz)	
L3	L33-0104-05	Ferri-induct		•	
L4	L33-0098-05	Ferri-induct	or		
L5	L31-0010-05	Trap coil (8	.6 MHz)		
L6	L33-0098-05	Ferri-induct			
L7	L33-0074-05	Heater chok			
L8	L33-0104-05	Ferri-Induct			
L10 L11	L33-0131-05 L31-0011-05	Ferri-induct			
	231-0011-05	Trap coil (8	.u ivimz)		
X1	L77-0013-35	Crystal osci	lator		

PARTS LIST OF ANT COIL UNIT (X44-1090-00)

Circuit No.	Parts No.		Description				
V1		Vacuum-tub	Vacuum-tube 12BY7A				
CAPACITOR							
C1	CC45CH1H270J	Ceramic	27pF	±5%			
C2	CC45CH1H151J	Ceramic	150pF	±5%			
C3	CC45CH1H330J	Ceramic	33pF	±5%			
C4	CC45CH1H220J	Ceramic	22pF	±5%			
		COIL					
L1	L31-0031-04	Tuning coil	3.5 MHz				
L2	L31-0032-04	Tuning coil	7 MHz				
L3	L31-0033-04	Tuning coil	14 MHz				
L4	L31-0034-04	Tuning coil	21 MHz				
L5	L31-0209-04	Tuning coil	28 MHz				
	MISCE	LLANEOUS					
	E23-0015-04	Grounding lu	g				
_	J31-0102-04	Collar A		1			
_	J31-0103-04	Collar B					
_	J31-0105-04	Collar D					
-	J32-0184-04	Screw rod					
_	S29-1052-05	Rotary wafer					

PARTS LIST OF DC-DC CONVERTER UNIT (X46-1000-00)

Circuit No.	Parts No.	Description					
	CAPACITOR						
C1	CE02W1E221	Electrolytic 220µF 25WV					
	SEMICONDUCTOR						
Q1,2		Transistor 2N4049					
R1 R2	R92-0121-05 R92-0120-05	Cement 2.4Ω 5W Cement 220Ω 2W					
	MISCE	LLANEOUS					
_	E20-0510-05	5P terminal strips					
_ _ _	F01-0170-04 F01-0171-04 F11-0195-04	Heat sink (A) Heat sink (B) Heat sink cover					

PARTS LIST OF IF UNIT (X48-1060-00)

Circuit No.	Parts No.	Description					
CAPACITOR							
C1	CC45SL1H330J	Ceramic	33pF	±5%			
C2	CQ92M1H473K	Mylar	0.047µF	±10%			
СЗ	CK45F1H103Z	Ceramic	0.01µF	+80% -20%			
C4	CQ92M1H473K	Mylar	0.047µF	±10%			
C5	CK45F1H103Z	Ceramic	0.01µF	+80%20%			
C6	CQ92M1H473K	Mylar	0.047µF	±10%			
C7,8	CK45F1H103Z	Ceramic	0.01µF	+80% –20%			
C9	CQ92M1H473K	Mylar	0.047µF	±10%			
C10	CK45F1H103Z	Ceramic	0.01µF	+80% –20%			

Circuit No.	. Parts No.		Descriptio	n		Circuit No.	Parts No.		Descriptio	n	
C11	CK45D1H102M	Ceramic	0.001µF	±20%		R23	PD14CY2E102J	Carbon	lkΩ ·	±5%	1/4W
C12	CC45SL1H220J	Ceramic	22pF	±5%		R24	PD14CY2E332J	Carbon	3.3kΩ	±5%	1/4W
C13	CQ92M1H473K	Mylar	0.047µF	±10%		R25, 26	PD14CY2E471J	Carbon	470Ω	±5%	1/4W
C14	CK45F1H103Z	Ceramic	0.01µF	+80%	-20%	R27	PD14CY2E103J	Carbon	10kΩ	±5%	1/4W
C15	CQ92M1H473K	Mylar	0.047µF	±10%		R28	RC05GF2H225J	Carbon	2.2MΩ	±5%	1/2W
C16	CC45SL1H101J	Ceramic	100pF	±5%		R29	PD14CY2E222J	Carbon	2.2kΩ	±5%	1/4W
C17	CQ92M1H473K	Mylar	0.047µF	±10%		R30	PD14CY2E101J	Carbon	100Ω	±5%	1/4W
C18	CC45SL1H050D	Ceramic	5pF	±0.5p1	F	R31	PD14CY2E224J	Carbon	220kΩ	±5%	1/4W
C19	CQ92M1H473K	Mylar	0.047µF	±10%		R32	PD14CY2E101J	Carbon	100Ω	±5%	1/4W
C20	CK45F1H103Z	Ceramic	0.01µF	+80%	-20%	R33	PD14CY2E471J	Carbon	470Ω	±5%	1/4W
C21	CQ92M1H473K	Mylar	0.047µF	±10%	1	R34	PD14CY2E473J	Carbon	47kΩ	±5%	1/4W
C22	CC45CH1H121J	Ceramic	120pF	±5%		R35	PD14CY2E103J	Carbon	10kΩ	±5%	1/4W
C23	CQ92M1H473K	Mylar	0.047µF	±10%		R36	PD14CY2E101J	Carbon	100Ω	±5%	1/4W
C24	CC45CH1H330J	Ceramic	33pF	±5%		R37	PD14CY2E473J	Carbon	47kΩ	±5%	1/4W
C25	CC45SL1H151J	Ceramic	150pF	±5%		R38	PD14CY2E103J	Carbon	10kΩ	±5%	1/4W
C27	CE04W1H010(RL)	Electrolytic		50WV		R 39	PD14BY2B471J	Carbon	470Ω	±5%	1/8W
C28	CQ92M1H473K	Mylar	0.047µF	±10%	0.001	R40	PD14CY2E821J	Carbon	820Ω	±5%	1/4W
C29	CK45F1H103Z	Ceramic	0.01µF	+80%	-20%	R41	PD14CY2E273J	Carbon	27kΩ	±5%	1/4W
C30	CK45D1H102M	Ceramic	0.001µF	±20%		R42	PD14CY2E102J	Carbon	1kΩ	±5%	1/4W
C31	CC45SL1H221J	Ceramic	220pF	±5%		R43, 44	PD14CY2E104J	Carbon	100kΩ	±5%	1/4W
C32	CQ92M1H473K	Mylar	0.047µF	±10%		R45	PD14CY2E103J	Carbon	10kΩ	±5%	1/4W
C33	CC45SL1H470J	Ceramic	47pF	±5%		R46	PD14CY2E152J	Carbon	1.5kΩ	±5%	1/4W
C34	CQ92M1H473K	Mylar	0.047µF	±10%	_	R47	PD14CY2E104J	Carbon	100kΩ	±5%	1/4W
C35 C36	CC45SL1H100D CQ92M1H473K	Ceramic	10pF 0.047µF	±0.5pl ±10%		R48	PD14CY2E472J	Carbon	4.7kΩ	±5%	1/4W
C30 C37	CK45F1H103Z	Mylar Ceramic	0.047µ⊢ 0.01µF	+80%	200/	R49	PD14CY2E471J	Carbon	470Ω	±5%	1/4W
C38	CQ92M1H473K	Mylar	0.01µF 0.047µF	±10%	-20%	R50	PD14CY2E331J	Carbon	330Ω	±5%	1/4W
C39	CC45SL1H101J	Ceramic	0.047μF 100pF	±10%		R51 R52	PD14CY2E472J	Carbon	4.7kΩ	±5%	1/4W
C40	CK45F1H103Z	Ceramic	0.01µF	+80%	20%	R52	PD14CY2E561J	Carbon	560Ω	±5%	1/4W
C40 C41, 42	CQ92M1H473K	Mylar	0.01µF 0.047µF	+80% ±10%	-20%		SEMI	CONDUCTOR	1		
C43, 44	CK45F1H103Z	Ceramic	0.047μF 0.01μF	+80%	-20%	D1~4		Diode	1S73A		
C45, 46	CQ92M1H473K	Mylar	0.047µF	±10%	2070	D5,6		Diode	1N60		
C43, 40 C47, 48	CK45F1H103Z	Ceramic	0.01µF	+80% -	-20%	D3, 0		Diode	1S1555		
C49	CC45CH1H101J	Ceramic	100pF	±5%		D9,10		Diode	1S1555		
C50	CC45SL1H101J	Ceramic	100pF	±5%		D11		Diode	WZ-090		
C51	CC45CH1H330J	Ceramic	33pF	±5%		U.I.		Diodo			
C53	CQ92M1H473K	Mylar	0.047µF	±10%		Q1		FET	3SK35((GR)	
C54	CK45F1H103Z	Ceramic	0.01µF	+80%	-20%	02		FET	3SK41(
C55, 56	CC45SL1H101J	Ceramic	100pF	±5%		Q3,4		FET	3SK35((GR)	
C57, 58	CC45SL1H331J	Ceramic	330pF	±5%		Q5,6		Transistor	2SC733	(Y)	
C59,60	CC45SL1H330J	Ceramic	33pF	±5%		07		FET	2SK19(0	GR)	
	B	ESISTOR				08		Transistor	2SA495	(Y)	
	L					Q9		FET	3SK35(0	GR)	
R1	PD14CY2E222J	Carbon	2.2kΩ	±5%	1/4W		J	COIL			
R2	PD14CY2E221J	Carbon	220Ω		1/4W	·		1			
R3	PD14CY2E472J	Carbon	4.7kΩ		1/4W	T1	L30-0263-05	IFT			
R4	PD14CY2E221J	Carbon	220Ω	±5%	1/4W	T2	L30-0010-05	IFT			
R5	PD14CY2E472J	Carbon	4.7kΩ		1/4W	Т3	L30-0008-05	B.P.F. coil			
R6	PD14CY2E223J	Carbon	22kΩ		1/4W	Τ4	L30-0009-05	B.P.F. coil			
R7	PD14CY2E221J	Carbon	220Ω	±5%	1/4W	T5	L30-0010-05	IFT			
R8	PD14CY2E472J	Carbon	4.7kΩ		1/4W	Т6	L30-0021-05	IFT			
R9	PD14CY2E221J	Carbon	220Ω		1/4W	T7	L30-0009-05	B.P.F. coil			
			4.7kΩ	±5%	1/4W	T8	L30-0008-05	B.P.F. coil	ı		
R10	PD14CY2E472J	Carbon	221.0		1/4W	Т9	L30-0010-05	IFT			
R11	PD14CY2E223J	Carbon	22kΩ		1 / 4141		1 04 000 1 00	- C11			
R11 R12	PD14CY2E223J PD14CY2E222J	Carbon Carbon	2.2Ω	±5%	1/4W	T10	L31-0284-05	Filter coil (
R11 R12 R13	PD14CY2E223J PD14CY2E222J PD14CY2E473J	Carbon Carbon Carbon	2.2Ω 47kΩ	±5% ±5%	1/4W	T11	L31-0252-05	Filter coil (GRN)		
R11 R12 R13 R14	PD14CY2E223J PD14CY2E222J PD14CY2E473J PD14CY2E123J	Carbon Carbon Carbon Carbon	2.2Ω 47kΩ 12kΩ	±5% ±5% ±5%	1/4W 1/4W		1		GRN)		
R11 R12 R13 R14 R15	PD14CY2E223J PD14CY2E222J PD14CY2E473J PD14CY2E123J PD14CY2E473J	Carbon Carbon Carbon Carbon Carbon	2.2Ω 47kΩ 12kΩ 47kΩ	±5% ±5% ±5% ±5%	1/4W 1/4W 1/4W	T11 T12	L31-0252-05 L31-0251-05	Filter coil ((Filter coil ()	GRN) WHT)		
R11 R12 R13 R14 R15 R16	PD14CY2E223J PD14CY2E222J PD14CY2E473J PD14CY2E123J PD14CY2E473J PD14CY2E473J PD14CY2E102J	Carbon Carbon Carbon Carbon Carbon Carbon	2.2Ω 47kΩ 12kΩ 47kΩ 1kΩ	5% 5% 5% 5% 5% 5%	1/4W 1/4W 1/4W 1/4W	T11 T12 L1 ~6	L31-0252-05 L31-0251-05 L33-0104-05	Filter coil ((Filter coil () Ferri-induct	GRN) WHT) or		
R11 R12 R13 R14 R15 R16 R17	PD14CY2E223J PD14CY2E222J PD14CY2E473J PD14CY2E123J PD14CY2E473J PD14CY2E473J PD14CY2E102J PD14CY2E101J	Carbon Carbon Carbon Carbon Carbon Carbon Carbon	2.2Ω 47kΩ 12kΩ 47kΩ 1kΩ 100Ω	5% 5% 5% 5% 5% 5%	1/4W 1/4W 1/4W 1/4W 1/4W	T11 T12	L31-0252-05 L31-0251-05	Filter coil ((Filter coil ()	GRN) WHT) or		
R11 R12 R13 R14 R15 R16 R17 R18	PD14CY2E223J PD14CY2E222J PD14CY2E473J PD14CY2E123J PD14CY2E473J PD14CY2E473J PD14CY2E102J PD14CY2E101J PD14CY2E474J	Carbon Carbon Carbon Carbon Carbon Carbon Carbon Carbon	2.2Ω 47kΩ 12kΩ 47kΩ 1kΩ 100Ω 470kΩ	±5% ±5% ±5% ±5% ±5% ±5%	1/4W 1/4W 1/4W 1/4W 1/4W 1/4W	T11 T12 L1 ~6	L31-0252-05 L31-0251-05 L33-0104-05 L71-0018-05	Filter coil ((Filter coil (\ Ferri-induct Crystal oscil	GRN) WHT) or llator		
R11 R12 R13 R14 R15 R16 R17 R18 R19	PD14CY2E223J PD14CY2E222J PD14CY2E473J PD14CY2E123J PD14CY2E473J PD14CY2E473J PD14CY2E102J PD14CY2E101J PD14CY2E474J PD14CY2E473J	Carbon Carbon Carbon Carbon Carbon Carbon Carbon Carbon Carbon	2.2Ω 47kΩ 12kΩ 47kΩ 1kΩ 100Ω 470kΩ 47kΩ	55555555555555555555555555555555555555	1/4W 1/4W 1/4W 1/4W 1/4W 1/4W 1/4W	T11 T12 L1 ~6 XF1	L31-0252-05 L31-0251-05 L33-0104-05 L71-0018-05 MISC	Filter coil ((Filter coil () Ferri-induct Crystal oscil	GRN) WHT) or Ilator	- 101/15	
R11 R12 R13 R14 R15 R16 R17 R18 R19 R20	PD14CY2E223J PD14CY2E222J PD14CY2E473J PD14CY2E123J PD14CY2E473J PD14CY2E102J PD14CY2E101J PD14CY2E474J PD14CY2E473J PD14CY2E822J	Carbon Carbon Carbon Carbon Carbon Carbon Carbon Carbon Carbon	2.2Ω 47kΩ 12kΩ 47kΩ 1kΩ 100Ω 470kΩ 470kΩ 8.2kΩ	57555555555555555555555555555555555555	1/4W 1/4W 1/4W 1/4W 1/4W 1/4W 1/4W 1/4W	T11 T12 L1~6 XF1	L31-0252-05 L31-0251-05 L33-0104-05 L71-0018-05 MISC R12-3025-05	Filter coil ((Filter coil () Ferri-induct Crystal oscil ELLANEOUS Trimmer pc	GRN) WHT) or llator		
R11 R12 R13 R14 R15 R16 R17 R18 R19	PD14CY2E223J PD14CY2E222J PD14CY2E473J PD14CY2E123J PD14CY2E473J PD14CY2E473J PD14CY2E102J PD14CY2E101J PD14CY2E474J PD14CY2E473J	Carbon Carbon Carbon Carbon Carbon Carbon Carbon Carbon Carbon	2.2Ω 47kΩ 12kΩ 47kΩ 1kΩ 100Ω 470kΩ 47kΩ	57 55 55 55 55 55 55 55 55 55 55 55 55 5	1/4W 1/4W 1/4W 1/4W 1/4W 1/4W 1/4W	T11 T12 L1 ~6 XF1	L31-0252-05 L31-0251-05 L33-0104-05 L71-0018-05 MISC	Filter coil ((Filter coil () Ferri-induct Crystal oscil	GRN) WHT) or llator		

PARTS LIST AF UNIT (X49-0008-01)

CAPACITOR C1 CE04W0101(RL) C2 Electrolytic Electrolytic 10 μ F 50WV C3 CE04W1C10(RL) C4 Electrolytic C5 10 μ F 6.3WV C4 CE04W1C10(RL) C5 Electrolytic C093M1H472K Mylar 0.0047 μ F 10%V C5 CO93M1H472K Mylar 0.0047 μ F 15%V C6 CE04W1C221(RL) C204X1C30(RL) Electrolytic Electrolytic C204X1C230(RL) Electrolytic C204X1F 16WV C9 CK45F1E103Z Ceramic C010 μ F 100 μ F 460% -20% C11 CK45F1E103Z Ceramic C101 μ F 50WV 104 μ F 50WV C12 CE04W1H010(RL) Electrolytic C10 μ F 25WV 104 μ F 105 μ F 10% C13 CC45B1H331K Ceramic Caramic 30 μ F 10% 25WV 104 μ F 105 μ C C16 CC44W1E100(RL) Electrolytic 10 μ F 25WV 25WV 22 25WV 25WV 22 25WV 22 25WV 22 25WV 25WV 22 <th>Circuit No</th> <th>Parts No.</th> <th></th> <th>Descriptior</th> <th>ו</th>	Circuit No	Parts No.		Descriptior	ו
C1 CE04W01101(RL) C3 Electrolytic C4 1 μ F 50WV C3 CE04W1C101(RL) C4 Electrolytic C4 10 μ F 6.3WV C4 CE04W1E100(RL) C5 Electrolytic C4 10 μ F 25WV C5 C093M1H472K Mylar 0.0047 μ F 16WV C6 CE04W1C21(RL) Electrolytic Electrolytic 3 μ F 16WV C7 CE04W1C221(RL) Electrolytic Electrolytic 2 3μ F 16WV C9 CK45F1E103Z Ceramic 0.01 μ F +80% –20% C11 CK45F1E103Z Ceramic 0.01 μ F +80% –20% C12 CE04W1H01(RL) Electrolytic 10 μ F ±0% C13 C092M1H473K Mylar 0.01 μ F ±0% C14 CE04W1E100(RL) Electrolytic 10 μ F 25WV C15 CO92M1H473K Mylar 0.01 μ F 25WV C14 CE04W1E100(RL) Electrolytic 3 3μ F 25WV C21 CE04W1E100(RL) Electrolytic 3 2μ F		CAP			
C2 CE04W0J101(RL) Electrolytic 100 μ F 6.3WV C3 CE04W1E100(RL) Electrolytic 100 μ F 16WV C4 CE04W1E100(RL) Electrolytic 3.15WV C5 C093M1H472K Mylar 0.0047 μ F 10WV C6 CE04W1C30(RL) Electrolytic 3.15WV C7 CE04W1C30(RL) Electrolytic 2.0 μ F 16WV C8 CE04W1C221(RL) Electrolytic 2.0 μ F 10W C9 CK45F1E103Z Caramic 0.01 μ F +80% -20% C12 CE04W1H010(RL) Electrolytic 0.47 μ F 50WV C13 C092M1H03K Mylar 0.047 μ F 50WV C14 CE04W1E100(RL) Electrolytic 10 μ F 25WV C15 CO92M1H47X Wylar 0.01 μ F 25WV C13 CA48H1331 K Caramic 3.00 μ F 25WV C20 CE04W1E100(RL) Electrolytic 1.0 μ F 25WV C21 CE04W1	C1	I	·····	1 <i>u</i> E	50\\/\/
C3 CE04W1C101(RL) Electrolytic 100µF 16WV C4 CE04W1C101(RL) Electrolytic 10µF 25WV C5 C093M1H472K Mylar 0.0047µF 110% C6 CE04W1C320(RL) Electrolytic 3µF 16WV C7 CE04W1C22(RL) Electrolytic 2µF 16WV C9 CK45F1E103Z Ceramic 0.01µF +80% –20% C11 CK45F1E103Z Ceramic 0.01µF +80% –20% C12 CE04W1H010(RL) Electrolytic 0.47µF ±10% C13 C092M1H473K Mylar 0.01µF ±10% C14 CE04W1E100(RL) Electrolytic 10µF 25WV C18 CK45B1H331K Ceramic 0.01µF ±5WV C19 CE04W1E100(RL) Electrolytic 10µF 25WV C21 CE04W1E100(RL) Electrolytic 10µF 25WV C22 Ce3M1H123K Mylar 0.01µF ±60% –20% C22					
C5 CQ93M1H472K C6 Mylar 0.0047 μ F ±10% S15WV C6 CE04W0C30(RL) C604W1C221(RL) Electrolytic 47μ F 3.15WV C8 CE04W1C221(RL) Electrolytic 220μ F 16WV C9 CK455F1E103Z Ceramic 0.01μ F +80% -20% C10 CC94SL1H101K Ceramic 0.01μ F +80% -20% C11 CK45F1E103Z Ceramic 0.01μ F $\pm00\%$ -20% C13 CO92M1H473K Mylar 0.047μ F $\pm00\%$ -20% C14 CE04W1E100(RL) Electrolytic 10μ F $25WV$ $25WV$ C15 CO2QW1E100(RL) Electrolytic 30μ F $25WV$ $25WV$ C20 CE04W1E100(RL) Electrolytic 10μ F $25WV$ $22k\Omega$ $25WV$ C21 CE04W1E100(RL) Electrolytic 10μ F $25WV$ $22k\Omega$ 25% $1/4W$ C22 CC93M1H123K Mylar 0.012μ F $\pm10\%$	СЗ	•	· ·	•	
C6 CE04W0F470(RL) Electrolytic $3_{\mu}F$ $3.15WV$ C7 CE04W1C330(RL) Electrolytic $3_{\mu}F$ $16WV$ C8 CE04W1C232(RL) Ceramic $0.01_{\mu}F$ $+80\%20\%$ C10 CC945L1H101K Ceramic $0.01_{\mu}F$ $+80\%20\%$ C11 CK45F1E103Z Ceramic $0.01_{\mu}F$ $+80\%20\%$ C12 CE04W1H010(RL) Electrolytic $1\mu^{F}$ $50WV$ C13 CO92M1H13K Mylar $0.01_{\mu}F$ $\pm10\%$ C14 CE04W1F100(RL) Electrolytic $10\mu^{F}$ $25WV$ C18 CK45B11331K Caramic $3.30F^{F}$ $\pm10\%$ C21 CE04W1E100(RL) Electrolytic $10\mu^{F}$ $\pm5W^{V}$ C22 CO93M1H123K Mylar $0.01_{\mu}F$ $\pm80\% - 20\%$ C22 CO33M1H123K Garbon $10LF$ $\pm5W^{V}$ C21 CE04W1E100(RL) Electrolytic $10\mu^{F}$ $\pm0\%^{V}$ C22 C3 CK45F1E10	C4	CE04W1E100(RL)	Electrolytic	10µF	25WV
C7 CE04W1C330(RL) CE04W1C221(RL) Electrolytic Electrolytic 33μ F 16WV C9 CK45F1E103Z Ceramic 0.01μ F $+80\%20\%$ C10 CC94SL1H101K Ceramic 0.01μ F $+80\%20\%$ C11 CK45F1E103Z Ceramic 0.01μ F $+80\%20\%$ C12 CE04W1H01(RL) Electrolytic 0.47μ F $\pm10\%$ C13 CO92M1H473K Mylar 0.01μ F $\pm10\%$ C14 CE04W1F100(RL) Electrolytic 10μ F $25WV$ C18 CK45F1E103K Geramic 33μ F $25WV$ C20 CE04W1E100(RL) Electrolytic 10μ F $25WV$ C21 CE04W1E100(RL) Electrolytic 0.2μ F $\pm80\% - 20\%$ C22 C25 CQ93M1H23X Mylar 0.012μ F $\pm10\%$ C22 C45F1E103Z Carbon 12μ F $\pm80\% - 20\%$ C27 28 CK45F1E203Z Carbon 15% $1/4W$ R1 PD14BY2E102J			Mylar	0.0047µF	±10%
C8 CE04W1C221(RL) Electrolytic 220μ F 18WV C9 CK45F1E103Z Ceramic 0.01μ F $+80\% - 20\%$ C11 CC45E1E103Z Ceramic 0.01μ F $+80\% - 20\%$ C12 CE04W1H010(RL) Electrolytic 1μ F $50WV$ C13 CO92M1H473K Mylar 0.047μ F $50WV$ C14 CE04W1E100(RL) Electrolytic 10μ F $25WV$ C18 CK45B1H331K Ceramic $330F$ $25WV$ C19 CE04W1E100(RL) Electrolytic 10μ F $25WV$ C21 CE04W1E100(RL) Electrolytic 10μ F $25WV$ C22 CO93M1H123K Mylar 0.01μ F $480\% - 20\%$ C21 CE04W1E100(RL) Electrolytic 10μ F $480\% - 20\%$ C22 C033M1H123K Caramic 0.02μ F $480\% - 20\%$ C22 C033M1H123K Mylar 0.01μ F $480\% - 20\%$ R2 P014BY2E103Z Carbon 16χ		1		•	
C9 CK45F1E103Z Ceramic 0.01μ F $+80\% - 20\%$ C10 CC948L1H101K Ceramic 0.01μ F $+80\% - 20\%$ C11 CK45F1E103Z Ceramic 0.01μ F $+80\% - 20\%$ C12 CE04W1H010(RL) Electrolytic 0.47μ F $50WV$ C14 CE04W1H2X Mylar 0.01μ F $\pm10\%$ C15 CO92M1H473K Mylar 0.01μ F $\pm10\%$ C16 CC94W1E100(RL) Electrolytic 10μ F $25WV$ C19 CE04W1E100(RL) Electrolytic 3.3μ F $25WV$ C22 C093M1H123K Ceramic 0.02μ F $\pm80\% - 20\%$ C22 C03M1H123K Ceramic 0.02μ F $\pm80\% - 20\%$ C22 C03M1H123K Ceramic 0.02μ F $\pm80\% - 20\%$ C22 C30 C45F1E203Z Ceramic 0.02μ F $\pm80\% - 20\%$ C22 C445F1E103Z Carbon $1k\Omega \pm 5\% + 1/4W$ $A14W$ R3 PD148Y2E103J Carbon					
C10 CC94SL1H101K Ceramic 100pF \pm 10% C12 CE04W1H010(RL) Ceramic 0.01µF \pm 80% -20% C13 CO92M1H473K Mylar 0.047µF \pm 10% C14 CE04W1HR47 Electrolytic 0.47µF $50WV$ C15 CO92M1H103K Mylar 0.01µF \pm 10% C16, 17 CE04W1E100(RL) Electrolytic 10µF 25WV C20 CE04W1E13R3(RL) Electrolytic 10µF 25WV C21 CE04W1E13R3(RL) Electrolytic 10µF 25WV C22 CC03M1H123K Mylar 0.01µF \pm 10% -20% C22,7 28 CC435F1E103Z Ceramic 0.01µF \pm 10% -20% C27, 28 CC435F1E103Z Carbon 10kΩ \pm 5% $1/4W$ R1 PD148Y2E223J Carbon 10kΩ \pm 5% $1/4W$ R3 PD148Y2E102J Carbon 16kΩ \pm 5% $1/4W$ R4			· ·	-	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$					
$\begin{array}{cccccccccccccccccccccccccccccccccccc$					
C13 C092M1H473K Mylar 0.047μ F $\pm 10\%$ C14 CE04W1HR47 Electrolytic 0.01μ F $\pm 10\%$ C15 CQ92M1H103K Mylar 0.01μ F $\pm 10\%$ C16, 17 CE04W1E100(RL) Electrolytic 10μ F $25WV$ C18 CE04W1E100(RL) Electrolytic 33μ F $25WV$ C20 CE04W1E100(RL) Electrolytic 3.3μ F $25WV$ C21 CE04W1E100(RL) Electrolytic 0.02μ F $\pm 0\%$ -20% C22 CC93M1H123K Mylar 0.012μ F $\pm 0\%$ -20% C27, 28 CK45F1E103Z Carbon 0.01μ F $\pm 0\%$ -20% R1 PD14BY2E102J Carbon $1k\Omega$ $\pm 5\%$ $1/4W$ R3 PD14BY2E102J Carbon $1k\Omega$ $\pm 5\%$ $1/4W$ R4 PD14BY2E102J Carbon $1k\Omega$ $\pm 5\%$ $1/4W$ R5 PD14BY2E32J Carbon $3\Omega\Omega$ $\pm 5\%$ $1/4$				•	
C15 CO92M1H103K Mylar 0.01 μ F ±10% C16, 17 CE04W1E100(RL) Electrolytic 10 μ F 25WV C19 CE04W1E100(RL) Electrolytic 330pF ±10% C20 CE04W1E100(RL) Electrolytic 3.3 μ F 25WV C21 CE04W1E100(RL) Electrolytic 0.01 μ F ±80% -20% C22 C25 CQ93M1H123K Mylar 0.01 μ F ±80% -20% C26 CK45F1E203Z Caramic 0.01 μ F ±80% -20% C27, 28 CK45F1E103Z Carbon 1k Ω ±5% 1/4W R1 PD14BY2E102J Carbon 1k Ω ±5% 1/4W R3 PD14BY2E102J Carbon 1k Ω ±5% 1/4W R6 PD14BY2E15ZJ Carbon 1.5k Ω ±5% 1/4W R7 PD14BY2E33QJ Carbon 33 Ω ±5% 1/4W R8 PD14BY2E33QJ Carbon 3.3k Ω ±5%	C13		· ·	-	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	C14	CE04W1HR47	Electrolytic	0.47µF	50WV
C18 CK45B1H331 K Ceramic 330pF $\pm 10\%$ C19 CE04W1E100(RL) Electrolytic 10μ F 25WV C21 CE04W1E100(RL) Electrolytic 10μ F 25WV C22 ~ 25 CQ93M1H123K Mylar 0.012μ F $\pm 10\%$ C22 ~ 25 CQ93M1H123K Mylar 0.012μ F $\pm 80\%$ - 20% C27, 28 CK45F1E203Z Caramic 0.02μ F $\pm 80\%$ - 20% C27, 28 CK45F1E103Z Carbon $10\kappa\Omega$ $\pm 5\%$ $1/4W$ R1 PD14BY2E203J Carbon $10\kappa\Omega$ $\pm 5\%$ $1/4W$ R3 PD14BY2E102J Carbon $1k\Omega$ $\pm 5\%$ $1/4W$ R4 PD14BY2E102J Carbon 1.8Ω $\pm 5\%$ $1/4W$ R6 PD14BY2E30J Carbon 1.8Ω $\pm 5\%$ $1/4W$ R7 PD14BY2E30J Carbon 33Ω $\pm 5\%$ $1/4W$ R1 PD14BY2E32J Carbon $1.6\kappa\Omega$ $\pm 5\%$ $1/4W$		4	Mylar	0.01µF	±10%
C19 CE04W1E100(RL) Electrolytic 10μ F $25WV$ C21 CE04W1E3R3(RL) Electrolytic 3.3μ F $25WV$ C22 CE04W1E100(RL) Electrolytic 10μ F $25WV$ C22 C25 CC93M1H123K Mylar 0.012μ F $\pm10\%$ C22 CK45F1E203Z Ceramic 0.01μ F $\pm80\%$ -20% C27, 28 CK45F1E103Z Carbon $10k\Omega$ $\pm5\%$ $1/4W$ R1 PD14BY2E103J Carbon $10k\Omega$ $\pm5\%$ $1/4W$ R3 PD14BY2E102J Carbon $1k\Omega$ $\pm5\%$ $1/4W$ R4 PD14CY2E471J Carbon $1k\Omega$ $\pm5\%$ $1/4W$ R5 PD14BY2E102J Carbon $15k\Omega$ $\pm5\%$ $1/4W$ R6 PD14BY2E30J Carbon 33Ω $\pm5\%$ $1/4W$ R7 PD14BY2E30J Carbon 33Ω $\pm5\%$ $1/4W$ R8 PD14BY2E30J Carbon 33Ω $\pm5\%$				•	
C20 CE04W1E3R3(RL) CE04W1E100(RL) Electrolytic Electrolytic 3.3μ F $25WV$ C22 ~ 25 CQ93M1H123K CA5F1E203Z Mylar 0.012μ F $\pm10\%$ C27, 28 CK45F1E103Z Caramic 0.02μ F $\pm80\%$ - 20% C27, 28 CK45F1E103Z Carbon $22k\Omega$ $\pm5\%$ $1/4W$ R1 PD14BY2E103J Carbon $10k\Omega$ $\pm5\%$ $1/4W$ R3 PD14BY2E102J Carbon $1k\Omega$ $\pm5\%$ $1/4W$ R4 PD14BY2E102J Carbon $1k\Omega$ $\pm5\%$ $1/4W$ R5 PD14BY2E12J Carbon $1k\Omega$ $\pm5\%$ $1/4W$ R6 PD14BY2E12J Carbon 33Ω $\pm5\%$ $1/4W$ R9 PD14BY2E30J Carbon 33Ω $\pm5\%$ $1/4W$ R11 PD14BY2E30J Carbon 47Ω 10% $14W$ R17 PD14BY2E30J Carbon 58Λ $1/4W$ R10 PD14BY2E32J Carbon $6.8k\Omega$ <td></td> <td></td> <td></td> <td></td> <td></td>					
C21 CE04W1E100(RL) Electrolytic 10μ F $25WV$ C22 ~ 25: CO93M1H123K Mylar 0.012μ F $\pm 10\%$ C26 CK45F1E203Z Ceramic 0.02μ F $\pm 80\%$ - 20% C27, 28 CK45F1E103Z Ceramic 0.01μ F $\pm 80\%$ - 20% RESISTOR R1 PD14BY2E103J Carbon $10k\Omega$ $\pm 5\%$ $1/4W$ R2 PD14BY2E102J Carbon $1k\Omega$ $\pm 5\%$ $1/4W$ R4 PD14CY2E471J Carbon $1k\Omega$ $\pm 5\%$ $1/4W$ R6 PD14BY2E102J Carbon $1.5k\Omega$ $\pm 5\%$ $1/4W$ R6 PD14BY2E21J Carbon 20Ω $\pm 5\%$ $1/4W$ R1 PD14BY2E30J Carbon 33Ω $\pm 5\%$ $1/4W$ R7 PD14BY2E30J Carbon 33Ω $\pm 5\%$ $1/4W$ R11 PD14BY2E682J Carbon $6.8k\Omega$ $\pm 5\%$ $1/4W$ R11 PD14BY2E32J					
$\begin{array}{ccccc} C22 & -25 \\ C435F1E203Z \\ C445F1E203Z \\ C445F1E203Z \\ C445F1E203Z \\ C445F1E203Z \\ C47mic \\ 0.02\muF \\ +80\% -20\% \\ -20\% $				•	
C26 CK45F1E203Z Ceramic 0.02μ F $+80\% - 20\%$ C27,28 CK45F1E103Z Ceramic 0.01μ F $+80\% - 20\%$ RESISTOR R1 PD14BY2E223J Carbon $22k\Omega$ $\pm5\%$ $1/4W$ R3 PD14BY2E102J Carbon $1k\Omega$ $\pm5\%$ $1/4W$ R4 PD14BY2E102J Carbon $1k\Omega$ $\pm5\%$ $1/4W$ R6 PD14BY2E102J Carbon $1.5k\Omega$ $\pm5\%$ $1/4W$ R6 PD14BY2E271J Carbon 220Ω $\pm5\%$ $1/4W$ R7 PD14BY2E30J Carbon 220Ω $\pm5\%$ $1/4W$ R8 PD14BY2E30J Carbon 33Ω $\pm5\%$ $1/4W$ R10 PD14BY2E682J Carbon $6.8k\Omega$ $\pm5\%$ $1/4W$ R14 PD14CY2E473J Carbon $6.8k\Omega$ $\pm5\%$ $1/4W$ R14 PD14BY2E682J Carbon $5.6k\Omega$ $\pm5\%$ $1/4W$ R15 <td< td=""><td></td><td></td><td></td><td>•</td><td></td></td<>				•	
C27, 28 CK45F1E103Z Ceramic 0.01μ F $+80\% - 20\%$ RESISTOR R1 PD14BY2E103J Carbon 22k \Omega $\pm5\%$ $1/4W$ R2 PD14BY2E102J Carbon $10k \Omega$ $\pm5\%$ $1/4W$ R3 PD14BY2E102J Carbon $1k\Omega$ $\pm5\%$ $1/4W$ R4 PD14CY2E471J Carbon 15Ω $\pm5\%$ $1/4W$ R6 PD14BY2E152J Carbon 15Ω $\pm5\%$ $1/4W$ R6 PD14BY2E32J Carbon 20Ω $\pm5\%$ $1/4W$ R7 PD14BY2E32J Carbon 33Ω $\pm5\%$ $1/4W$ R9 PD14BY2E32J Carbon 33Ω $\pm5\%$ $1/4W$ R10 PD14BY2E682J Carbon $6.8k\Omega$ $\pm5\%$ $1/4W$ R11 PD14CY2E473J Carbon $2.8k\Omega$ $\pm5\%$ $1/4W$ R14 PD14CY2E32J Carbon $2.8k\Omega$ $\pm5\%$ $1/4W$ R15				•	
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R19PD14BY2E221JCarbon220Ω $\pm5\%$ $1/4W$ R20PD14BY2E392JCarbon $3.9k\Omega$ $\pm5\%$ $1/4W$ R21PD14BY2E22JCarbon $2.2k\Omega$ $\pm5\%$ $1/4W$ R22PD14BY2E821JCarbon 820Ω $\pm5\%$ $1/4W$ R23PD14BY2E102JCarbon $1k\Omega$ $\pm5\%$ $1/4W$ R24PD14CY2E562JCarbon $5.6k\Omega$ $\pm5\%$ $1/4W$ R25PD14CY2E104JCarbon $470k\Omega$ $\pm5\%$ $1/4W$ R26PD14CY2E104JCarbon $100k\Omega$ $\pm5\%$ $1/4W$ R27PD14BY2E22JCarbon $22k\Omega$ $\pm5\%$ $1/4W$ R28PD14BY2E24JCarbon $20k\Omega$ $\pm5\%$ $1/4W$ R29PD14BY2E104JCarbon $100k\Omega$ $\pm5\%$ $1/4W$ R30PD14BY2E332JCarbon $3.3k\Omega$ $\pm5\%$ $1/4W$ R31PD14BY2E103JCarbon $10k\Omega$ $\pm5\%$ $1/4W$ R35PD14BY2E105JCarbon $10k\Omega$ $\pm5\%$ $1/4W$ R36PD14BY2E24JCarbon $20k\Omega$ $\pm5\%$ $1/4W$ R37PD14CY2E22JCarbon $22k\Omega$ $\pm5\%$ $1/4W$ R38PD14CY2E120JCarbon 12Ω $\pm5^{c}$ $1/4W$ R38PD14CY2E120JCarbon 12Ω $\pm5^{c}$ $1/4W$ R38PD14CY2E120JCarbon 12Ω $\pm5^{c}$ $1/4W$ R38PD14CY2E120JCarbon 12Ω $\pm5^{c}$ $1/4W$ <					
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R21 PD14BY2E222J Carbon 2.2kΩ ±5% 1/4W R22 PD14BY2E821J Carbon 820Ω ±5% 1/4W R23 PD14BY2E102J Carbon 1kΩ ±5% 1/4W R24 PD14CY2E562J Carbon 5.6kΩ ±5% 1/4W R25 PD14CY2E562J Carbon 470kΩ ±5% 1/4W R26 PD14CY2E104J Carbon 470kΩ ±5% 1/4W R26 PD14CY2E104J Carbon 100kΩ ±5% 1/4W R27 PD14BY2E223J Carbon 22kΩ ±5% 1/4W R28 PD14BY2E104J Carbon 20kΩ ±5% 1/4W R30 PD14BY2E332J Carbon 100kΩ ±5% 1/4W R31 PD14BY2E103J Carbon 10kΩ ±5% 1/4W R35 PD14BY2E104J Carbon 10kΩ ±5% 1/4W R36 PD14CY2E103J Carbon 10kΩ ±5% 1/4W R36 PD14BY2E224J Carbon 220kΩ ±5%					
R22 PD14BY2E821J Carbon 820Ω ±5% 1/4W R23 PD14BY2E102J Carbon 1kΩ ±5% 1/4W R24 PD14CY2E562J Carbon 5.6kΩ ±5% 1/4W R25 PD14CY2E562J Carbon 470kΩ ±5% 1/4W R26 PD14CY2E104J Carbon 470kΩ ±5% 1/4W R26 PD14CY2E104J Carbon 100kΩ ±5% 1/4W R27 PD14BY2E223J Carbon 22kΩ ±5% 1/4W R28 PD14BY2E224J Carbon 220kΩ ±5% 1/4W R29 PD14BY2E104J Carbon 100kΩ ±5% 1/4W R30 PD14BY2E332J Carbon 10kΩ ±5% 1/4W R31 PD14BY2E103J Carbon 10kΩ ±5% 1/4W R35 PD14BY2E105J Carbon 10kΩ ±5% 1/4W R36 PD14CY2E22J Carbon 220kΩ ±5%					
R24 PD14CY2E562J Carbon 5.6k Ω ±5% 1/4W R25 PD14CY2E474J Carbon 470k Ω ±5% 1/4W R26 PD14CY2E104J Carbon 100k Ω ±5% 1/4W R26 PD14CY2E104J Carbon 100k Ω ±5% 1/4W R27 PD14BY2E223J Carbon 22k Ω ±5% 1/4W R28 PD14BY2E224J Carbon 220k Ω ±5% 1/4W R29 PD14BY2E104J Carbon 100k Ω ±5% 1/4W R30 PD14BY2E332J Carbon 100k Ω ±5% 1/4W R31 PD14BY2E103J Carbon 10k Ω ±5% 1/4W R35 PD14CY2E103J Carbon 10k Ω ±5% 1/4W R36 PD14BY2E224J Carbon 10k Ω ±5% 1/4W R37 PD14CY2E22J Carbon 220k Ω ±5% 1/4W R38 PD14CY2E120J Carbon	R22				
R25 PD14CY2E474J Carbon 470kΩ ±5% 1/4W R26 PD14CY2E104J Carbon 100kΩ ±5% 1/4W R27 PD14BY2E223J Carbon 22kΩ ±5% 1/4W R28 PD14BY2E224J Carbon 22kΩ ±5% 1/4W R29 PD14BY2E104J Carbon 20kΩ ±5% 1/4W R30 PD14BY2E332J Carbon 100kΩ ±5% 1/4W R31 PD14BY2E103J Carbon 10kΩ ±5% 1/4W R32 ~ 34 PD14CY2E103J Carbon 10kΩ ±5% 1/4W R35 PD14BY2E105J Carbon 10kΩ ±5% 1/4W R36 PD14BY2E224J Carbon 1MΩ ±5% 1/4W R37 PD14CY2E22J Carbon 220kΩ ±5* 1/4W R38 PD14CY2E120J Carbon 12Ω ±5* 1/4W R38 PD14CY2E120J Carbon 12Ω ±5*	R23	PD14BY2E102J	Carbon	1kΩ	±5% 1/4W
R26 PD14CY2E104J Carbon 100kΩ ±5% 1/4W R27 PD14BY2E223J Carbon 22kΩ ±5% 1/4W R28 PD14BY2E224J Carbon 22kΩ ±5% 1/4W R29 PD14BY2E104J Carbon 20kΩ ±5% 1/4W R30 PD14BY2E332J Carbon 100kΩ ±5% 1/4W R31 PD14BY2E103J Carbon 10kΩ ±5% 1/4W R32 ~34 PD14CY2E103J Carbon 10kΩ ±5% 1/4W R35 PD14BY2E105J Carbon 10kΩ ±5% 1/4W R36 PD14BY2E224J Carbon 1MΩ ±5% 1/4W R37 PD14CY2E22J Carbon 220kΩ ±5° 1/4W R38 PD14CY2E120J Carbon 12Ω ±5° 1/4W R38 PD14CY2E120J Carbon 12Ω ±5° 1/4W R38 PD14CY2E120J Carbon 12Ω ±5°					
R27 PD14BY2E223J Carbon 22kΩ ±5% 1/4W R28 PD14BY2E224J Carbon 220kΩ ±5% 1/4W R29 PD14BY2E104J Carbon 100kΩ ±5% 1/4W R30 PD14BY2E332J Carbon 100kΩ ±5% 1/4W R31 PD14BY2E103J Carbon 10kΩ ±5% 1/4W R32 ~ 34 PD14CY2E103J Carbon 10kΩ ±5% 1/4W R35 PD14BY2E105J Carbon 10kΩ ±5% 1/4W R36 PD14BY2E224J Carbon 1MΩ ±5% 1/4W R37 PD14CY2E22J Carbon 20kΩ ±5* 1/4W R38 PD14CY2E120J Carbon 220kΩ ±5* 1/4W R38 PD14CY2E120J Carbon 12Ω ±5* 1/4W R38 PD14CY2E120J Carbon 12Ω ±5* 1/4W B1, 2 Diode 1N60 5* 1/4W <					
R28 PD14BY2E224J Carbon 220kΩ ±5% 1/4W R29 PD14BY2E104J Carbon 100kΩ ±5% 1/4W R30 PD14BY2E332J Carbon 3.3kΩ ±5% 1/4W R31 PD14BY2E103J Carbon 10kΩ ±5% 1/4W R32 ~ 34 PD14CY2E103J Carbon 10kΩ ±5% 1/4W R35 PD14BY2E105J Carbon 10kΩ ±5% 1/4W R36 PD14BY2E224J Carbon 1MΩ ±5% 1/4W R37 PD14CY2E22J Carbon 220kΩ ±5% 1/4W R38 PD14CY2E120J Carbon 12Ω ±5° 1/4W R38 PD14CY2E120J Carbon 12Ω ±5° 1/4W R38 PD14CY2E120J Carbon 12Ω ±5° 1/4W R37 PD14CY2E120J Carbon 12Ω ±5° 1/4W R38 PD14CY2E120J Carbon 12Ω ±5°					
R29 PD14BY2E104J Carbon 100kΩ ±5% 1/4W R30 PD14BY2E332J Carbon 3.3kΩ ±5% 1/4W R31 PD14BY2E103J Carbon 10kΩ ±5% 1/4W R32 ~34 PD14CY2E103J Carbon 10kΩ ±5% 1/4W R35 PD14CY2E103J Carbon 10kΩ ±5% 1/4W R36 PD14BY2E105J Carbon 1MΩ ±5% 1/4W R36 PD14BY2E224J Carbon 20kΩ ±5% 1/4W R37 PD14CY2E120J Carbon 2.2kΩ ±5* 1/4W R38 PD14CY2E120J Carbon 12Ω ±5* 1/4W R38 PD14CY2E120J Carbon 12Ω ±5* 1/4W SEMICUTOR					
R30 PD14BY2E332J Carbon 3.3kΩ ±5% 1/4W R31 PD14BY2E103J Carbon 10kΩ ±5% 1/4W R32 ~ 34 PD14CY2E103J Carbon 10kΩ ±5% 1/4W R35 PD14CY2E103J Carbon 10kΩ ±5% 1/4W R36 PD14BY2E105J Carbon 1MΩ ±5% 1/4W R36 PD14BY2E224J Carbon 20kΩ ±5% 1/4W R37 PD14CY2E22J Carbon 2.2kΩ ±5° 1/4W R38 PD14CY2E120J Carbon 12Ω ±5° 1/4W R38 PD14CY2E120J Carbon 12Ω ±5° 1/4W R38 PD14CY2E120J Carbon 12Ω ±5° 1/4W D1, 2 Diode 1N60 L L					
R31 PD14BY2E103J Carbon 10kΩ ±5% 1/4W R32 ~ 34 PD14CY2E103J Carbon 10kΩ ±5% 1/4W R35 PD14BY2E105J Carbon 10kΩ ±5% 1/4W R36 PD14BY2E224J Carbon 1MΩ ±5% 1/4W R37 PD14CY2E22J Carbon 220kΩ ±5% 1/4W R38 PD14CY2E120J Carbon 2.2kΩ ±5° 1/4W R38 PD14CY2E120J Carbon 12Ω ±5° 1/4W SEMICONDUCTOR D1, 2 Diode 1N60		-			
R32 ~ 34 PD14CY2E103J Carbon 10kΩ ±5% 1/4W R35 PD14BY2E105J Carbon 1MΩ ±5% 1/4W R36 PD14BY2E224J Carbon 220kΩ ±5% 1/4W R37 PD14CY2E22J Carbon 220kΩ ±5% 1/4W R38 PD14CY2E120J Carbon 2.2kΩ ±5° 1/4W R38 PD14CY2E120J Carbon 12Ω ±5° 1/4W SEMICONDUCTOR D1, 2 Diode 1N60 1N60					
R35 PD14BY2E105J Carbon 1MΩ ±5% 1/4W R36 PD14BY2E224J Carbon 220kΩ ±5% 1/4W R37 PD14CY2E22J Carbon 220kΩ ±5% 1/4W R38 PD14CY2E120J Carbon 2.2kΩ ±5° 1/4W R38 PD14CY2E120J Carbon 12Ω ±5° 1/4W SEMICONDUCTOR D1, 2 Diode 1N60					
R37 R38 PD14CY2E22J PD14CY2E120J Carbon Carbon 2.2kΩ 12Ω ±5 ^c ±5 ^c 1/4W SEMICONDUCTOR D1, 2 Diode 1N60	R35				1
R38 PD14CY2E120J Carbon 12Ω ±5' 1/4W SEMICONDUCTOR D1, 2 Diode 1N60		PD14BY2E224J	Carbon	220kΩ	
SEMICONDUCTOR D1, 2 Diode 1N60					
D1, 2 Diode 1N60	R38	PD14CY2E120J	Carbon	12Ω	±5' 1/4W
		SEMIC	ONDUCTOR		
D3 Diode 1S1555					
	D3	·····	Diode	1S1555	

Circuit No.	Parts No.		Description		
D4		Zener diode	WZ130		
D5		Diode	V06B		
Q1		Transistor	2SC733(Y)		
Q2		Transistor	2SC734(Y)		
Q3		Transistor	2SD90(0) red		
Q4		Transistor	2SB473(C.D.N)		
Q5		Transistor	2SC1000(GR)		
Q6		Transistor	2SC733(Y)		
	MISCE	LLANEOUS			
-	F01-0074-24	Heat sink x 2			
L					
L1	L33-0032-05	Choke coil			
-	L33-0088-05	Ferri-inductor			
VR1	R12-4015-05	Trimmer pote	entiometer		

PARTS LISTS OF CARRIER UNIT (X50-009-01)

Circuit No.	Parts No.		Descripti	on	
·····	CA	PACITOR			
C1	CK94YG1E102Z	Ceramic	0.001µF	+80%	-20%
C2	CC45CH1H220J	Ceramic	22pF	±5%	
C3	CK94YG1E102Z	Ceramic	0.001µF	+80%	-20%
C4	CC45CH1H220J	Ceramic	22pF	±5%	
C5	CK94YG1E102Z	Ceramic	0.001µF	+80%	-20%
C6 [,]	CC45CH1H220J	Ceramic	22pF	±5%	
C7	CK94YG1E102Z	Ceramic	0.001µF	+80%	-20%
C8	CK94YX1H471K	Ceramic	470pF	±10%	
C9	CC94TH1H221J	Ceramic	220pF	±5%	
C10	CC94SL1H101K	Ceramic	100pF	±10%	
C11	CC45CH1H100J	Ceramic	10pF	±5%	
C12	CK94YG1E403Z	Ceramic	0.04µF	+80%	-20%
C13	CC45CH1H220J	Ceramic	22pF	±5%	
C14	CK94YG1E103Z	Ceramic	0.01µF	+80%	-20%
	RI	SISTOR			
R1~4	PD14BY2E682J	Carbon	6.8kΩ	±5%	1/4
R5	PD14BY2E333J	Carbon	33k Ω	±5%	1/4\
R6	PD14BY2E682J	Carbon	6.8kΩ	±5%	1/4\
R7	PD14BY2E102J	Carbon	1kΩ	±5%	1/4\
R8	PD14BY2E683J	Carbon	68kΩ	±5%	1/4\
R9	PD14BY2E101J	Carbon	100Ω	±5%	1/4
	SEMIC	ONDUCTOR			
D1~4		Diode	1S1555		
Q1, 2		Transistor	2SC460(8	3)	
	MISCE	LLANEOUS			
L1~6	L33-0104-05	Ferri-induct	or		
Т1	L32-0003-05	Oscillating c	oil		
TC1~3	C05-0013-15	Ceramic trin	nmer		
X1	L77-0123-05	Crystal oscil			
X2	L77-0122-05	Crystal oscil			
X3	L77-0120-05	Crystal oscil	lator		
		1			

PARTS LIST OF MARKER UNIT (X52-0005-01)

Circuit No.	Parts No.		Descriptio	n	
	САР	ACITOR			
C1	CO93M1H103K	Mylar	0.01µF	±10%	
C2	CC45CH1H151J	Ceramic	150pF	±5%	
C3	CC94TH2H101J	Ceramic	100pF	±5%	
C4	CC45CH1H330J	Ceramic	33pF	±5%	
C5	CK94YG1E403Z	Ceramic	0.04µF	+80% -	-20%
C6	CC45CH1H390J	Ceramic	39pF	±5%	
C7	CC45CH1H330J	Ceramic	33pF	±5%	
C8	CC45CH1H820J	Ceramic	82pF	±5%	
C9	CC45CH1H201J	Ceramic	200pF	±10%	
C10	CC94SL1H470K	Ceramic	47pF	±10%	
C11	CC94SL2H050D	Ceramic	5pF	±0.5pF	
C12	CK94YG1E403Z	Ceramic	0.04µF	+80% -	-20%
C13	CC45CH1H470J	Ceramic	47pF	±5%	
	RE	SISTOR			
R1	PD14CY2E473J	Carbon	47kΩ	±5%	1/4W
R2	PD14CY2E103J	Carbon	10kΩ	±5%	1/4W
R3	PD14CY2E101J	Carbon	100 <i>Ω</i>	±5%	1/4W
R4	PD14CY2E473J	Carbon	47kΩ	±5%	1/4W
R5	PD14CY2E472J	Carbon	4.7kΩ	±5%	1/4W
R6	PD14CY2E224J	Carbon	220kΩ	±5%	1/4W
R7	RC05GF2H105J	Carbon	1MΩ	±5%	1/2W
R8~10	PD14CY2E472J	Carbon	4.7kΩ	±5%	1/4W
	SEMIC	CONDUCTOR	3		
Q1		Transistor 2		2SC458	(B)
02,3		Transistor 2			
Q4		Transistor 2	2SC373 or	2SC458	(B)
D1		Diode	1N60		
L1	L33-0118-05	Ferri-induct	or		
X1	L77-0009-05	Crystal osci	llator		
-	J19-0013-04	Crystal osci	llator hold	er	
-	C05-0029-15	Ceramic trir	nmer		

PARTS LISTS OF GENERATOR UNIT (X52-0010-01)

Circuit No.	Parts No.	Description					
CAPACITOR							
C1,2	CC94SL1H101K	Ceramic	100pF	±10%			
C3	CK45F1E103Z	Ceramic	0.01µF	+80% -20%			
C4	CE04W1E4R7	Electrolytic	4.7µF	25WV			
C5	CE04W1H010	Electrolytic	1μF	50WV			
C6	CK45F1E502Z	Ceramic	0.005µF	+80%20%			
C7	CE04W1C470(RL)	Electrolytic	47µF	16W∨			
C8	CQ92M1H473K	Mylar	0.047µF	±10%			
C9	CE04W1H010	Electrolytic	1μF	50WV			
C10	CE04W1E100	Electrolytic	10µF	25WV			
C11	CE04W1E4R7	Electrolytic	4.7µF	25WV			
C12	CE04W1E3R3	Electrolytic	3.3µF	25WV			
C13, 14	CK45F1E102Z	Ceramic	0.001µF	+80% -20%			
C15	CC94SL1H220K	Ceramic	22pF	±10%			
C16	CK45F1E103Z	Ceramic	0.01 <i>µ</i> F	+80% -20%			
C17	CQ92M1H473K	Mylar	0.047µF	±10%			
C18	CK45F1E103Z	Ceramic	0.01 <i>µ</i> F	+80% -20%			

Gircuit No.	Parts No.		Descriptio	on
		0		
C19	CC94SL1H220K	Ceramic	22pF	±10%
C20	CE04W1C470(RL)	Electrolytic		16WV
C21	CC94SL1H101K	Ceramic	100pF	±10%
C22	CE04W1E3R3	Electrolytic		25WV
C23	CK45F1E103Z	Ceramic	0.01µF	
C24	CQ92M1H473K	Mylar	0.047µf	
C25	CK45F1E103Z	Ceramic	0.01µF	
C26	CC94SL1H271K	Ceramic	270pF	±10%
C29	CK45F1E403Z	Ceramic	0.04µF	+80% -20%
	RI	SISTOR	<u> </u>	
R1	PD14BY2E332J	Carbon		±5% 1/4W
R2	PD14BY2E473J	Carbon		5% 1/4W
R3	PD14BY2E101J	Carbon		5% 1/4W
R4	PD14BY2E222J	Carbon		5% 1/4W
R5	PD14BY2E123J	Carbon		5% 1/4W
R6	PD14BY2E102J	Carbon		5% 1/4W
R7,8	PD14BY2E223J	Carbon		5% 1/4W
R9	PD14BY2E154J	Carbon	150kΩ ±	
R10	PD14BY2E221J	Carbon		5% 1/4W
R11	PD14BY2E102J	Carbon		5% 1/4W
R12	PD14BY2E821J	Carbon		5% 1/4W
R13,14	PD14BY2E221J	Carbon		5% 1/4W
R15	PD14BY2E331J	Carbon		5% 1/4W
R16	PD14BY2E474J	Carbon		:5% 1/4W
R17	PD14CY2E221J	Carbon		5% 1/4W
R18	PD14CY2E681J	Carbon		5% 1/4W
R20	PD14BY2E472J	Carbon		5% 1/4W
R21	PD14BY2E183J	Carbon		:5% 1/4W
R22	PD14CY2E474J	Carbon	470kΩ ±	
R23	PD14CY2E152J	Carbon		5% 1/4W
R24	PD14CY2E102J	Carbon	1kΩ ±	5% 1/4W
	SEMIC	ONDUCTOR		
D1~8		Diode 1N60)	
D9~11		Diode 1S15	55	
			-	
Q1		FET 2SK24		
02,3		Transistor 2		
Q4		FET 3SK35		
L1	L33-0104-05	Ferri-induct		
L3	L33-0101-05	Ferri-induct	or	
Т1	L30-0021-05	Balanced m	odulator co	oil (3.395 MHz)
!		LLANEOUS		
RL1	\$51-1002-05	Reed relay		· · · · · ·
	301-1002-05	i iccu i ciay		
TC1,2	C05-0015-15	Ceramic trir	nmer	
VR2	R12-0054-05	Trimmer or	tentiomet	er 100Ω (B)
1 *				
VR3	R12-1012-05	Trimmer po	otentiomet	er 1k32 (B)

PARTS LISTS OF VOX UNIT (X54-0001-00)

Circuit No.	Parts No.	Description					
CAPACITOR							
C1	CK45F1E103Z	Ceramic	0.01µF	+80% -20%			
C2	CE04W0F470	Electrolytic	47µF	3.15WV			
C3	CK94YG1E403Z	Ceramic	0.04µF	+80% -20%			

Circuit No.	No. Parts No. Description							
C4	CK94YG1E203Z	Ceramic	0.02µF	+80%	-20%			
C5	CE04W1H3R3	Electrolytic	3.3µF	50WV				
C6	CE04W1H010	Electrolytic		50WV				
C7	CK94YY1H472M	Ceramic	0.0047µ	F ±20%				
C8	CK94YG1E403Z	Ceramic	0.04µF	+80%	-20%			
C9,10	CE04W1H3R3	Electrolytic	3.3µF	50WV				
C24	CC45SL1H331K	Ceramic	330pF	±10%				
C25	CK45F1E103Z	Ceramic	0.01µF	+80%	-20%			
RESISTOR								
R1	PD14CY2E104J	Carbon	100kΩ	±5%	1/4W			
R2	PD14CY2E223J	Carbon	22kΩ	±5%	1/4W			
R3	PD14CY2E334J	Carbon	330kΩ	±5%	1/4W			
R4	PD14CY2E472J	Carbon	4.7kΩ	±5%	1/4W			
R5	PD14CY2E334J	Carbon	330kΩ	±5%	1/4W			
R6	PD14CY2E563J	Carbon	$56k\Omega$	±5%	1/4W			
R7	PD14CY2E562J	Carbon	5.6kΩ	±5%	1/4W			
R8	PD14CY2E102J	Carbon	1kΩ	±5%	1/4W			
R9	PD14CY2E222J	Carbon	2.2kΩ	±5%	1/4W			
R10	PD14CY2E102J	Carbon	1kΩ	±5%	1/4W			
R11	PD14CY2E103J	Carbon	10kΩ	±5%	1/4W			
R12	PD14CY2E153J	Carbon	15kΩ	±5%	1/4W			
R13, 14	PD14CY2E472J	Carbon	4.7kΩ	±5%	1/4W			
R15	PD14CY2E471J	Carbon	470Ω	±5%	1/4W			
R16	PD14CY2E4R7J	Carbon	4.7Ω	±5%	1/4W			
R17	PD14CY2E473J	Carbon	47kΩ	±5%	1/4W			
R18	PD14BY2B102J	Carbon	1kΩ	±5%	1/8W			
	SEMIC	ONDUCTOR	۱ <u></u>					
D1~4		Diode	IN60					
D5		Diode S	S-1.5-01					
D6~8		Diode 1	IN60					
Q1~4		Transistor 2	250373					
05		Transistor 2						
Q6,7		Transistor 2						
Q8		Transistor 2						
	MISCE	LLANEOUS		· · · ·				
Т1	T1 L13-0001-05 Input transformer							

Circuit No.	Parts No.		Descrip	tion	
RESISTOR					
R1	PD14CY2E151J	Carbon	150Ω	±5%	1/4W
R2	PD14CY2E221J	Carbon	220 Ω	±5%	1/4W
R3	PD14CY2E102J	Carbon	1kΩ	±5%	1/4W
R4	PD14CY2E472J	Carbon	4.7kΩ	±5%	1/4W
R5	PD14CY2E102J	Carbon	1kΩ	±5%	1/4W
R6	PD14CY2E472J	Carbon	4.7kΩ	±5%	1/4W
R7	PD14CY2E682J	Carbon	6.8kΩ	±5%	1/4W
R8	PD14CY2E221J	Carbon	220Ω	±5%	1/4W
R9	PD14CY2E223J	Carbon	22k Ω	±5%	1/4W
R10	PD14CY2E333J	Carbon	33k Ω	±5%	1/4W
R11	PD14CY2E683J	Carbon	68kΩ	±5%	1/4W
R12	PD14CY2E102J	Carbon	1kΩ	±5%	1/4W
R13	PD14CY2E471J	Carbon	470 Ω	±5%	1/4W
R14, 15	PD14CY2E103J	Carbon	10kΩ	±5%	1/4W
R16	PD14CY2E333J	Carbon	33kΩ	±5%	1/4W
R17	PD14CY2E103J	Carbon	10k Ω	±5%	1/4W
R18	PD14CY2E222J	Carbon	2.2kΩ	±5%	1/4W
	SEMIC	ONDUCTOR			
Q1		FET	3SK22(GR)	
Q2		FET	2SK19(GR)	
Q3		IC	TA7049	5M(R)	
Q4		Transistor	2SC460		
Q5,6		Transistor	2SC733	3(Y)	
D1~4		Diode	1S73A		
D5,6		Diode	1N60		
D7		Varistor	MV-13		
COIL					
T1~3	L30-0010-05	IFT	3395KI	Ηz	
T4	L31-0286-05	NB coil (A)			
Т5	L31-0287-05	NB coil (B)	3395Kł	Ηz	
T6	L30-0010-05	IFT	3395Kł	Ηz	
T7	L30-0021-05	IFT	3395KI	٦z	
L1,2	L33-0104-05	Ferri-induc	tor		

PARTS LISTS OF NB UNIT (X54-1080-10)

Circuit No.	Parts No.	Description			
	CAPACITOR				
C1,2	CC45SL1H020D	Ceramic	2pF	±0.5pF	
СЗ	CK45F1H203Z	Ceramic	0.02µF	+80% –20%	
C4	CK45F1H103Z	Ceramic	0.01µF	+80% -20%	
C5,6	CC45SL1H101J	Ceramic	100pF	±5%	
C7	CE04W1E100(RL)	Electrolytic	10µF	25WV	
C8,9	CK45F1H103Z	Ceramic	0.01µF	+80% –20%	
C10, 11	CK45F1H203Z	Ceramic	0.02µF	+80% –20%	
C12	CK45D1H102M	Ceramic	0.001µF	±20%	
C13, 14	CK45F1H103Z	Ceramic	0.01µF	+80% –20%	
C15	CE04W1H010(RL)	Electrolytic	1μF	50WV	
C16	CK45F1H203Z	Ceramic	0.02µF	+80% –20%	
C17	CK45F1H103Z	Ceramic	0.01µF	+80%20%	
C18	CK45D1H102M	Ceramic	0.001µF	±20%	
C19	CC45SL1H331J	Ceramic	330pF	±5%	
C20	CK45F1H103Z	Ceramic	0.01µF	+80%20%	
C21	CK45F1E403Z	Ceramic	0.04µF	+80%20%	
C22	CK45F1H203Z	Ceramic	0.02µF	+80%20%	
C23, 24	CK45F1H103Z	Ceramic	0.01µF	+80% -20%	

PARTS LISTS OF FAN UNIT (X54-1100-01)

Circuit No.	Parts No.	Description
MISCELLANEOUS		
_	E22-0207-05	Lug board x 2
—		
<u> </u>	F07-0316-04	Fan cover
_	F09-0020-05	Fan 75¢
-		
-	J21-1153=-4	Fan motor mounting hardware
_	J32-0117-04	Hexagon boss
<u> </u>	L33-0025-05	Heater choke (1 μ H) x 2
_	T40-0012-05	Motor 100V
	l	

PARTS LISTS OF INDICATOR UNIT (X54-1120-00)

Olaresta Al		· · · · · · · · · · · · · · · · · · ·			
Circuit No.	A	· · · · · · · · · · · · · · · · · · ·	Descriptio	on	
	RESISTOR				
R1	PD14BY2E681J	Carbon	680Ω	±5%	1/4W
R2 R3	PD14BY2E471J PD14BY2E681J	Carbon Carbon	470Ω 680Ω	±5% ±5%	1/4W 1/4W
110		ONDUCTOR	00002		
D1 a 2	SEIVITO		TID 10	14	
D1~3		LED	TLR-10)4	
	1 · · · · · · · · · · · · · · · · · · ·	LLANEOUS			
_	A30-0079-14	Dial back boa	ard		
_	E23-0046-04	Terminal			
	J21-1150-14	Indicator mou	unting ha	irdware	
-	J32-0074-04	Hexagon boss			
					l
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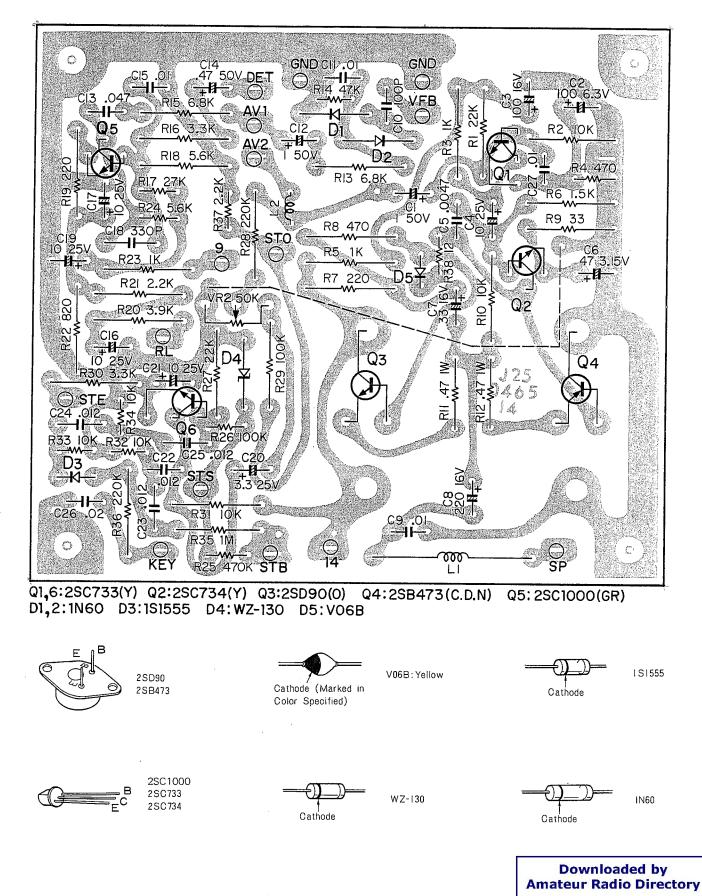


Figure 21. AF Board (X49-0008-01) Diagram

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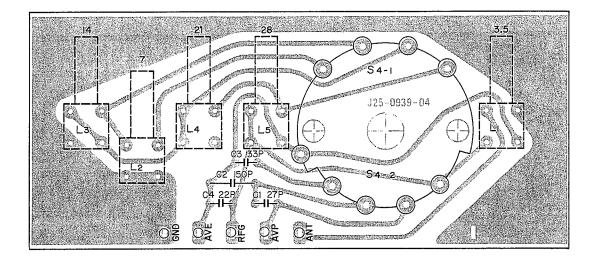
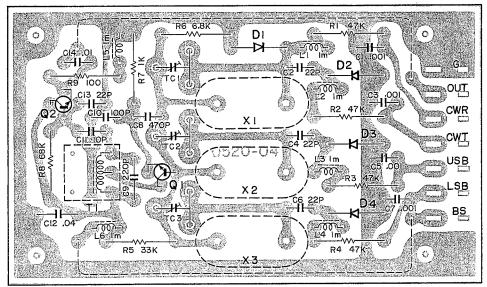


Figure 22. ANTENNA COIL Board (X44-1090-00) Diagram



Q1,2:250460(B), D1~4:151555



Figure 23. CARRIER Board (X50-0009-01) Diagram

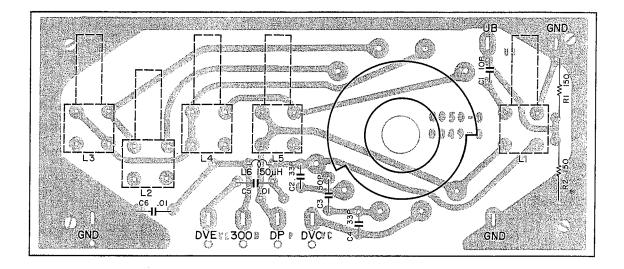
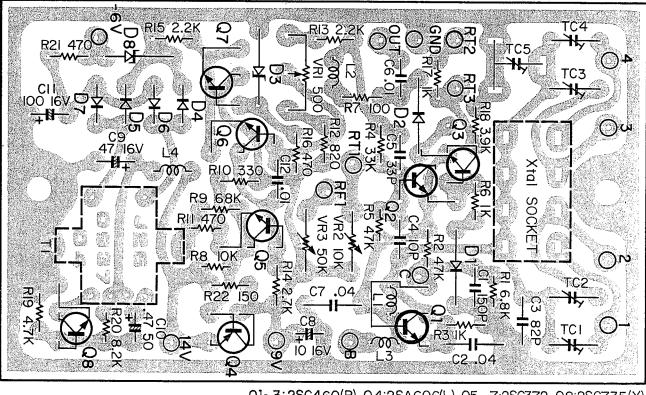


Figure 24. DRIVER COIL Board (X40-0017-01) Diagram



Q1~3:2SC460(B) Q4:2SA606(L) Q5~7:2SC372 Q8:2SC735(Y) D1,2:1N60 D3,8:WZ-061 D4~7:1S1555

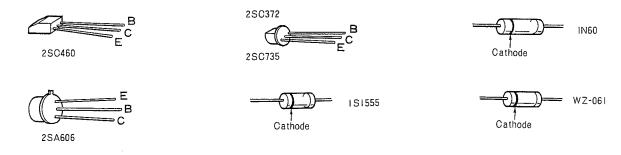
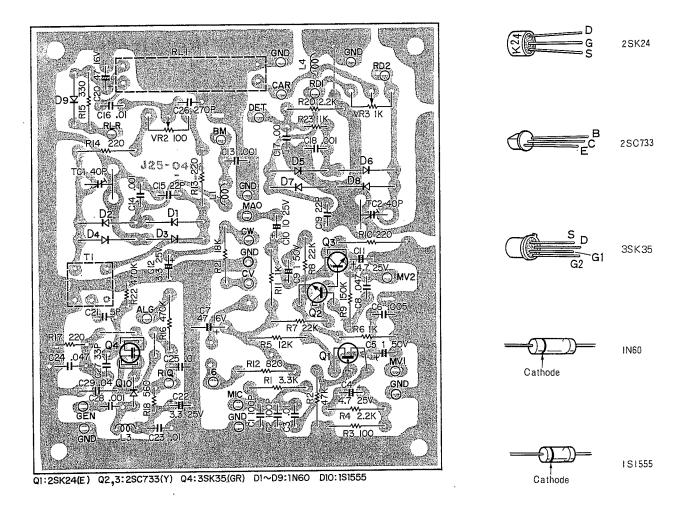
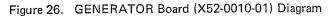


Figure 25. FIXED CHANNEL-AVR Board (X43-1100-00) Diagram





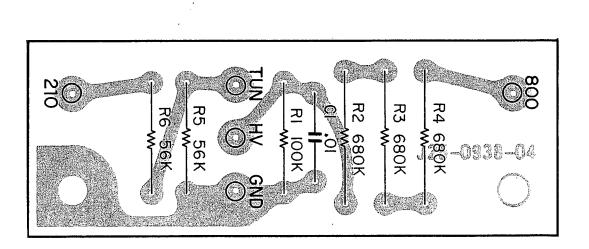
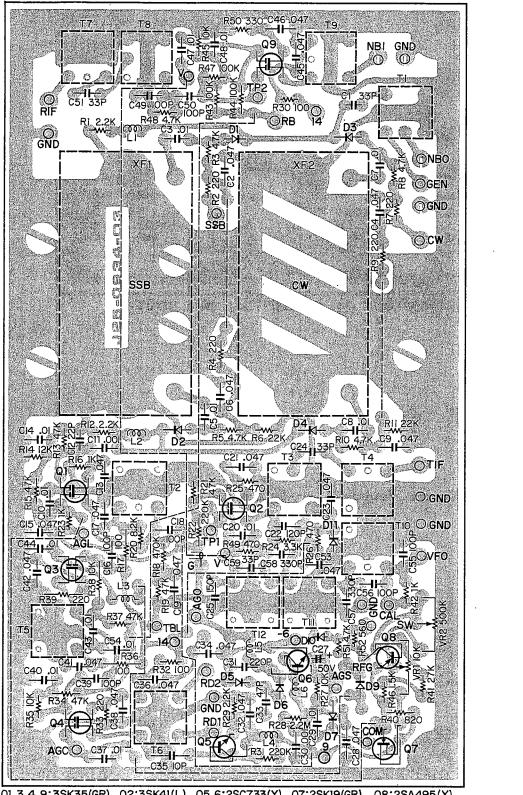


Figure 27. HV Board (X43-1110-00) Diagram



3SK35 <u>s</u> D G2 -G1

3SK41

2SA495



2SK19



I S93A



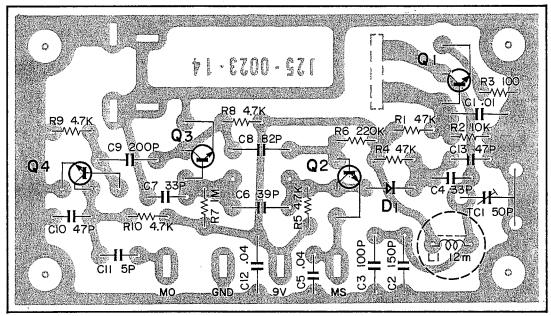
Cathode

WZ-090



Q1,3,4,9:3SK35(GR) Q2:3SK41(L) Q5,6:2SC733(Y) Q7:2SK19(GR) Q8:2SA495(Y) D1~4:1S73A D5,6:1N60 D7,9,10:1S1555 D11:WZ-090

Figure 28. IF Board (X48-1060-00) Diagram



Q1,4:2SC373 or 2SC458(B), Q2,3:2SC373, D1:1N60



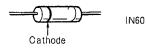


Figure 29. MARKER Board (X52-0005-01) Diagram

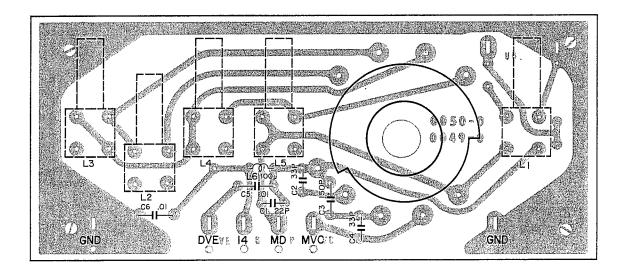
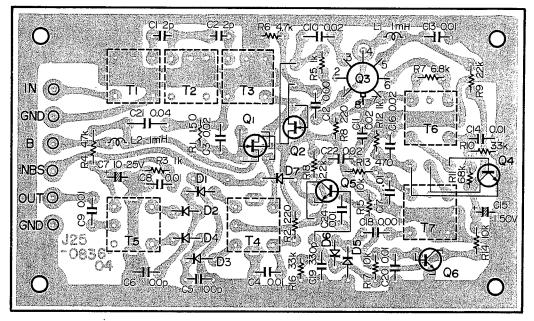


Figure 30. MIXER COIL Board (X40-0018-01) Diagram



DI~4 : IS73A D5,6 : IN60 D7 : MV-I3 QI : 3SK22(GR) Q2 : 2SKI9(GR) Q3 : TA7045M(R) Q4 : 2SC460 B Q5,6 : 2SC733(Y)

3SK22

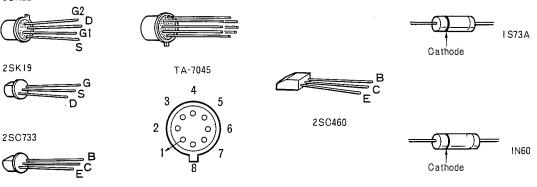


Figure 31. NB BOARD (X54-1080-10) Board

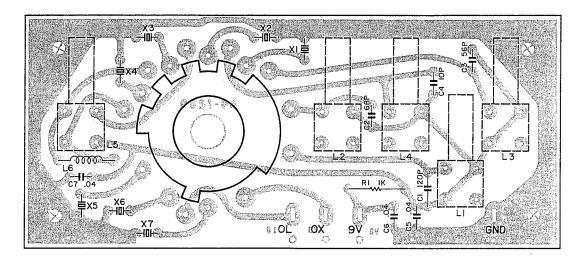
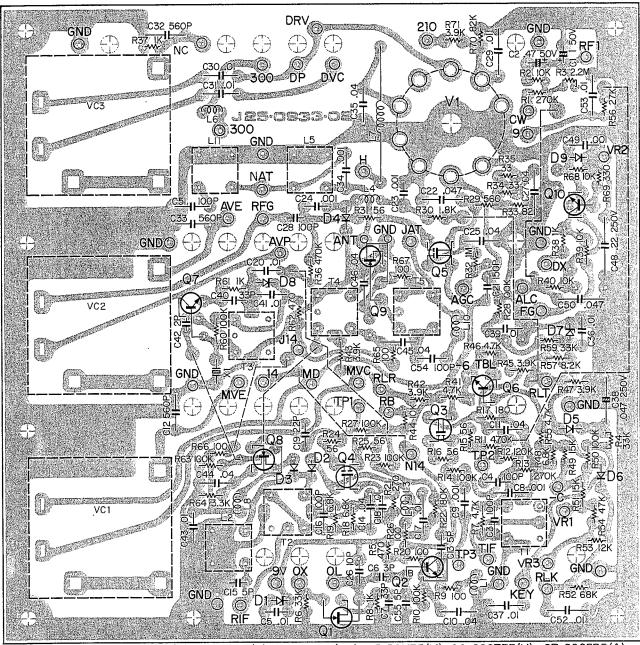


Figure 32. OSCILLATOR COIL Board (X40-0019-01) Diagram



Q1,9:2SK19(GR) Q2:2SC460(B) Q3:3SK41(L) Q4:3SK35(GR) Q5:3SK35(Y) Q6:2SC733(Y) Q7:2SC535(A) Q8:3SK22(GR) Q10:2SC856 V1:12BY7A D1,7,8:WZ-090 D2~4:1S73A D5,6:V06B D9:1S1555

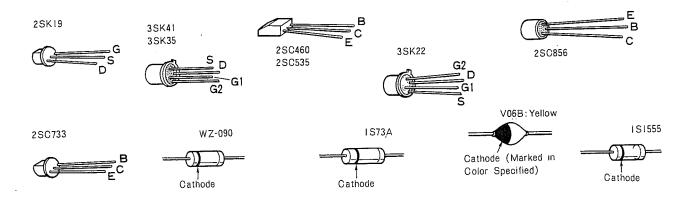
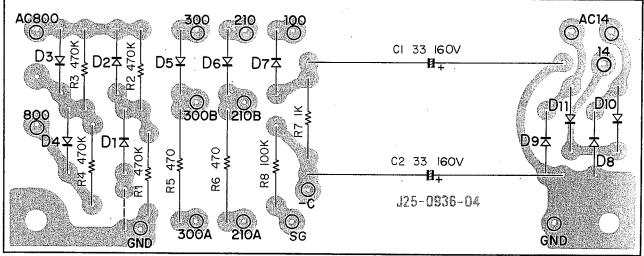


Figure 33. RF Board (X44-1080-00) Diagram

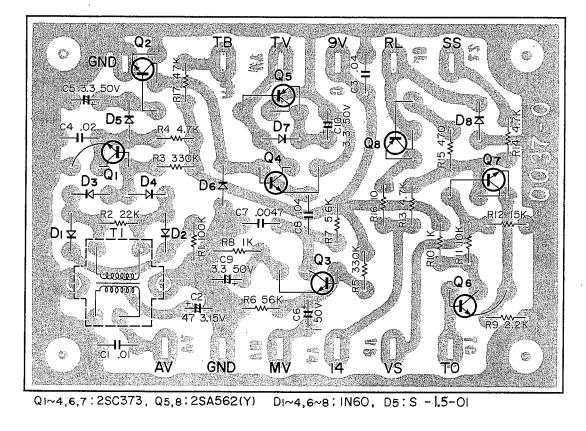


D1~6:V08J D7:V06E D8~11:V06B

Figure 34. RECTIFIER Board (X43-1090-00) Diagram



V06B:Yellow V08J:Green V06E:Red



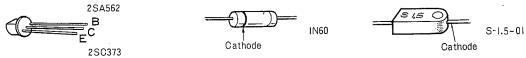
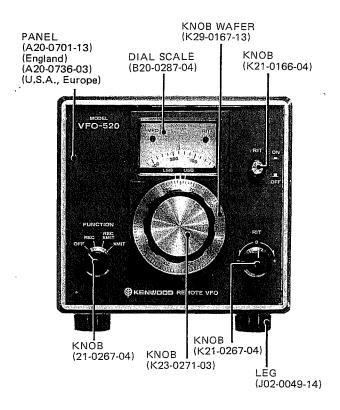


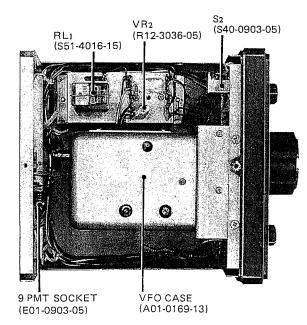
Figure 35. VOX Board (X54-0001-00) Diagram

VFO-520

EXTERNAL VIEW



TOP VIEW PARTS



SPECIFICATION

FREQUENCY RANGE:

80 meter band		3.5 to 4.0 MHz.
40 meter band		7.0 to 7.5 MHz.
20 meter band		14.0 to 14.5 MHz.
15 meter band		21.0 to 21.5 MHz.
10 meter band	А	28.0 to 28.5 MHz.
	В	28.5 to 29.1 MHz.
	С	29.1 to 29.7 MHz.

OSCILLATION FREQUENCY:

4.9 to 5.5 MHz.

OSCILLATION CIRCUIT:

VFO: Clapp Oscillator.

OUTPUT VOLTAGE:

1 volt ±3 db (across a 470 ohm load).

FREQUENCY STABILITY:

Within $\pm 100 \text{ Hz}$ per 30 minutes after 3 minutes of warm-up

SOLID STATE COMPLEMENT:

2 transistors. 2 FET's 6 diodes.

POWER REQUIREMENTS:

The VFO-520 receives power from the TS-520. 12.6 VAC, 80 ma. 12.6 VDC, 40 ma. 9.0 VDC, 25 ma.

DIMENSIONS:

6.5" wide x 5.9" high x 7.5" (excluding feet).

WEIGHT:

6.6 lbs. (shipping weight 8.36 lbs.)



VFO-520

PARTS LISTS OF VFO-520 (Y57-1020-00)

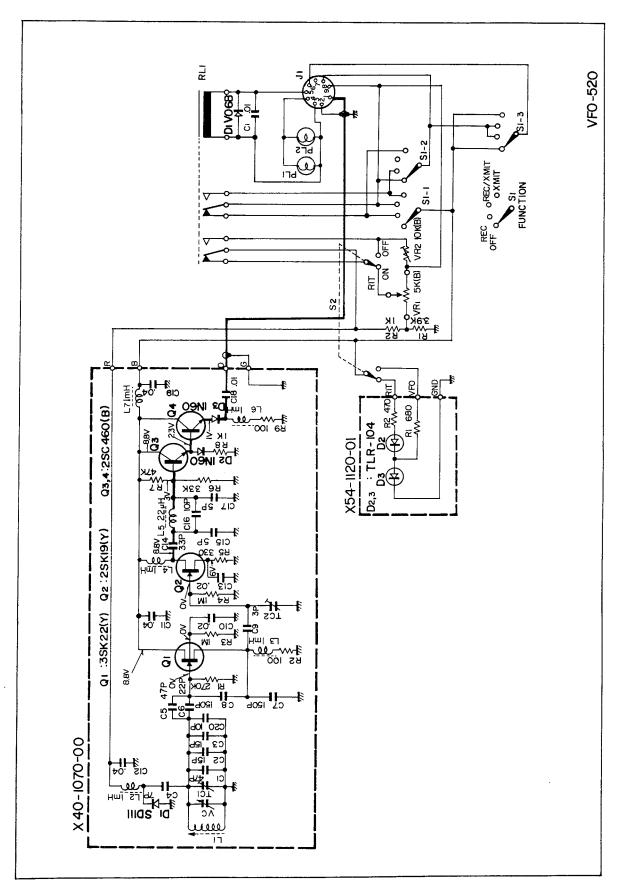
Circuit No.	Parts No.	Description		
CAPACITOR				
C2	CK45F1H103Z	Ceramic 0.01µF +80% -20%		
	F	LESISTOR		
R1	PD14BY2E102J	Carbon 1kΩ ±5% 1/4W		
R2	PD14BY2E392J	Carbon 3.9kΩ ±5% 1/4W		
	SEMI	CONDUCTOR		
D2		Diode V06B		
	MISC	ELLANEOUS		
_	A01-0212-13	Case (A)		
-	A01-0213-03	Case (B)		
	A20-0701-13	Panel (England)		
	A20-0736-03	Panel (U.S.A., Europe)		
-	A22-0136-23	Sub panel		
-	A23-0430-03	Rear panel		
_	B01-0078-23	Escutcheon		
	B10-0131-04	Front glass		
_	B20-0287-14	Dial scale		
PL1, 2	B30-0079-05	Pilot lamp (12V 40mA)		
_	B40-0855-04	Name plate (serial)		
_	B42-0009-04	Passed sticker (Europe, England)		
_	B46-0047-00	WARRANTY card (U.S.A.)		
-	B50-1108-00	Operating manual (U.S.A., Europe)		
	B50-1109-00	Operating manual (England)		
_	D23-0115-05	Ball bearing		
_	D23-0116-05	Ball bearing ass'y		
J1	E01-0903-05	9P MT socket		
	E05-0901-05	9P MT socket 9P MT plug		
_	E09-0204-05	2P plug		
_	E14-0101-05	1P plug		
-	E22-0405-04	Lug board		
_	F15-0161-04	Shading plate		
_	H01-1015-04	Carton case (Inside) (England)		
_	H01-1044-04	Carton case (Inside) (U.S.A., Europe)		
_	H03-0285-04	Carton case (Outside) (U.S.A., Europe)		
_	H03-0303-04	Carton case (Outside) (England)		
_	H10-0933-03	Polystyrene foamed fixture		
	H10-0935-04	Protection Board		
	H10-0968-03	Polystyrene foamed fixture		
_	H20-0372-04	Protection cover		
	H25-0002-04	Accessory bag		
-	H25-0029-04	Accessory bag		
	H25-0078-00	Instruction bag		

Circuit No.	Parts No.	Description
_	J01-0025-04	Sub let
_	J02-0049-14	Leg x 4
	J19-0360-04	Coupling clamp
-	J21-1145-04	Pilot lamp
-	J21-1147-04	Coupling mounting hardware
	J21-1152-04	Relay mounting hardware
-	J32-1030-14	Round boss x 2
_	J32-0185-04	Hexagonal boss x 2
_	J41-0020-04	Knob bushing
-	J61-0019-05	Cable wrapping band
_	K21-0267-04	Knob (BIT) x 2
_	K23-0271-03	Knob (MAIN)
_	K29-0166-04	Knob (Push)
-	K29-0167-23	Knob wafer
VR1	R03-2020-05	Variable resistor $5k\Omega$ (B)
VR2	R12-3036-05	Variable resistor $10k\Omega$ (B)
S1	S10-1102-05	Rotary switch (FUNCTION)
S2	S40-2023-05	Push switch (RIT)
RL1	S51-4016-15	Relay
_	×40-1070-00	VFO unit
_	X54-1120-01	Indicator unit

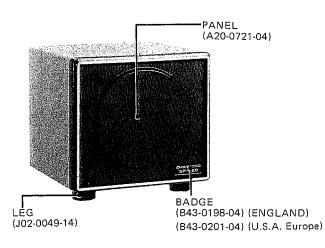
PARTS LIST OF INDICATOR UNIT (X54-1120-01)

Circuit No.	Parts No.	Description
– R1 R2	E23-0046-04 PD14BY2E681J PD14BY2E471J	Terminal Carbon 680Ω ±5% 1/4W Carbon 470Ω ±5% 1/4W
D2, 3		LED (TLR-104)

SCHEMATIC DIAGRAM



EXTERNAL VIEW



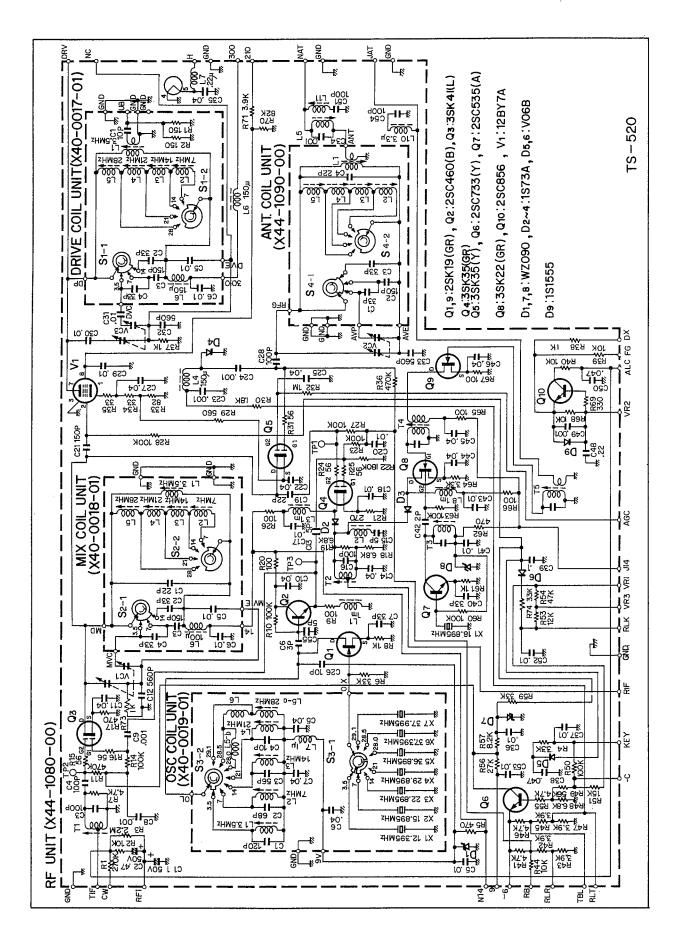
SPECIFICATION

Speaker size Maximum input Impedance Frequency response Dimensions Weight 4.75" 2 watts 8 ohms 100 Hz to 5 kHz 6.5" wide x 6.0" high x 7.5" deep (excluding feet) 3.0 lbs. 5.28 lbs. (shipping weight)

■ PARTS LISTS OF SP-520 (Y59-1000-00)

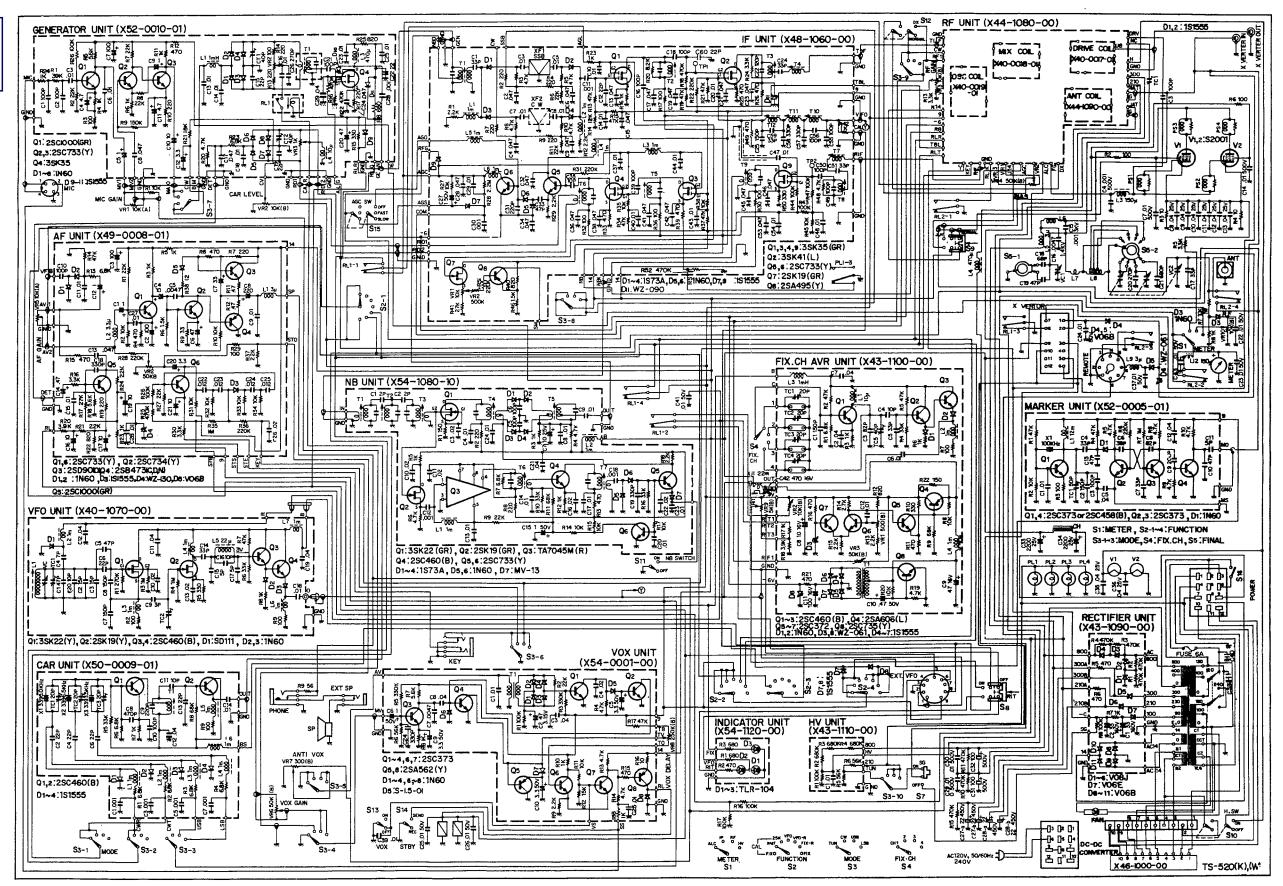
Circuit No.	Parts No.	Description		
MISCELLANEOUS				
_	A01-0221-12	Case		
—	A20-0721-04	Panel		
_	A22-0142-13	Sub panel		
-	A47-0007-04	Rear plate		
_	B01-0078-23	Escutcheon		
-	B05-0205-04	Speaker net		
	B43-0198-04	Badge (England)		
	B43-0201-04	Badge (U.S.A., Europe)		
	B42-0009-04	Passed sticker		
_	B50-1111-00	Operating manual (U.S.A., Europe)		
-	B50-1120-00	Operating manual (England)		
_	E12-0001-05	Phone plug		
	E20-0208-04	Terminal strips		
	E29-0005-04	Y lug x 2		
_	H01-1032-14	Carton case (Inside) (England)		
_	H01-1068-04	Carton case (Inside) (U.S.A., Europe)		
	H03-0301-04	Carton case (Outside) (England)		
_	H03-0302-04	Carton case (Outside) (England) Carton case (Outside)(U.S.A., Europe)		
_	H10-0933-03	Polystyrene foamed fixture		
	H10-0935-04	Protection board		
_	H10-0968-03	Polystyrene foamed fixture		
_	H20-0372-04	Protection cover		
_	H25-0016-00	Accessory bag		
		Accessory bag		
	J01-0025-04	Sub leg		
_	J02-0049-14	Leg x 2		
-	J32-1030-14	Round boss x 2		
_	T06-0011-05	Speaker		

SCHEMATIC DIAGRAM(RF UNIT)





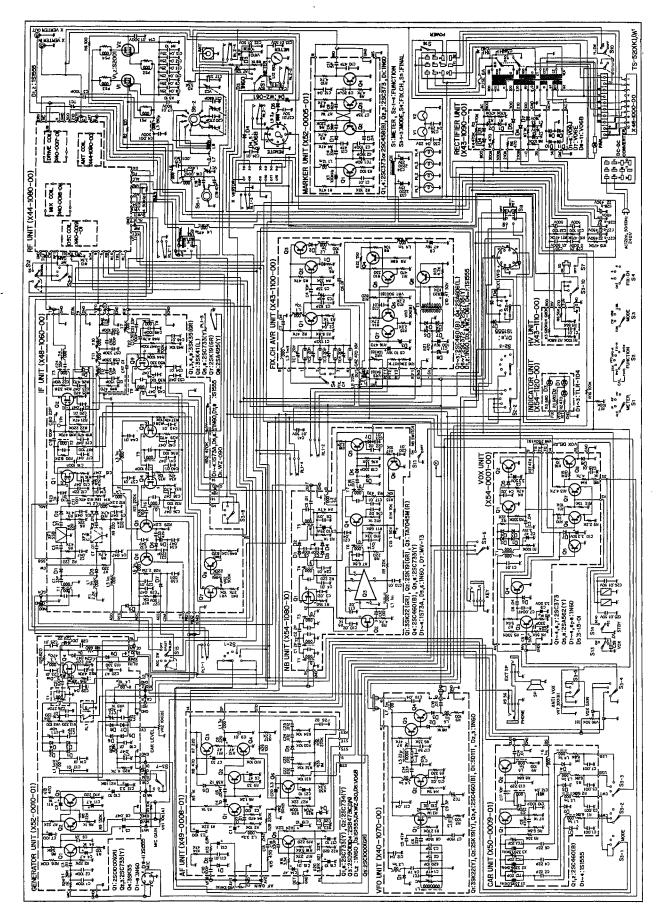
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SCHEMATIC DIAGRAM (TS-520)



SCHEMATIC DIAGRAM (RF UNIT)

THE SCHEMATIC DIAGRAMS ON THE PAGE 42, 43 ARE APPLIED FROM SERIAL NO. 15xxxx.

