

FT-102

TECHNICAL SUPPLEMENT

YAESU MUSEN CO., LTD.

C.P.O. BOX 1500

TOKYO, JAPAN

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FT-102

HF ALL MODE TRANSCEIVER



PREFACE

The purpose of this manual is to provide a technical supplement to the Instruction Manual supplied with the FT-102 from the factory. Detailed information regarding installation, operation and alignment, as well as the circuit description, has been provided in the Instruction Manual, and is not reprinted here. Therefore, this Technical Supplement is not intended to serve as an independent reference, but to be used in conjunction with the information provided in the Instruction Manual.

Every effort has been made to include all of the modifications and updates that have been developed during production of the FT-102. However, certain custom modifications that are not of general interest have not been included, and Yaesu reserves the right to carry out additional modifications without notifying owners.

So far, the FT-102 has proven to be extremely reliable in the field, with only a few common problems having required modifications. These have all been incorporated into the later production lots, but details of the modifications are included here for those who may need to update earlier models.

We trust that technically-minded owners and service technicians of the FT-102 will find this manual useful as a supplement to the FT-102 Instruction Manual. Although Yaesu can not assume liability for any damages that may occur because of possible errors in this Supplement or the Instruction Manual, we do invite readers to call our attention to errors or inconsistencies that we might have overlooked.

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Pages 17-25 have been deleted from the Supplement, as they describe procedures for band conversions that are not authorized in certain countries. This material is available from Yaesu representatives in those countries where such operation and modification of the FT-102 is legal. Contact you nearest authorized Yaesu dealer for details.

ERRATA

FOR THE FT-102 INSTRUCTION MANUAL

These errata apply to early printings of the Instruction Manual, up to the present. Only those of possible technical significance are listed here, although there were a few other minor typographical errors. The following pages 3 and 4 are completely updated replacements for pages 15 and 44, respectively, in all early editions of the FT-102 Instruction Manual.

Page 30, line 4:

Q2011 should be noted as a type 2SC1815Y transistor.

— Page 30, fifth paragraph:

Only D6004 should be mentioned as a noise detector. Also, the DC squelch control signal from the SQL control is passed to the squelch control section of Q6008, and not to Q6010 and Q6011. D6004, Q6010 and Q6011 have been deleted from the AM/FM Unit.

Page 35, FT-102 FREQUENCY RELATIONSHIPS

The frequency of the carrier signal input to the Balanced Modulator (at the upper right corner of the diagram) should show LSB as 456.6 kHz and USB as 453.4 kHz. This was reversed in the first printing of the manual.

— Also in the same diagram, the small table at the upper left should show the IF as 8.2134 MHz for LSB, and 8.2166 MHz for USB. LSB was not mentioned in the original printing.

Page 36, line 2:

Q4026 is a fixed crystal oscillator, and not a VCXO.

Page 38, TOP VIEW:

Later printings of the manual include an indication of the location of PO ADJ potentiometer VR5 in the labelling of this photo. The location of this potentiometer is also indicated in the rear panel photograph on page 10, as the upper lefthand control in the dashed box numbered 12.

Page 40, Upper left photo:

The title of this photo, RECT. A UNIT, was inadvertently omitted from earlier printings of the manual.

Also on this page, in step 2 of the PO Meter Adjustment, VR7 appeared as the adjustment potentiometer number. This should read VR5, indicating the PO ADJ potentiometer.

Page 41, Carrier Balance Procedure:

Step 3 should read, "Press the MOX switch." (only).

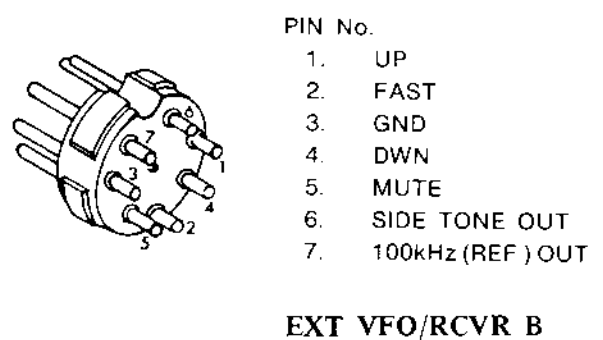
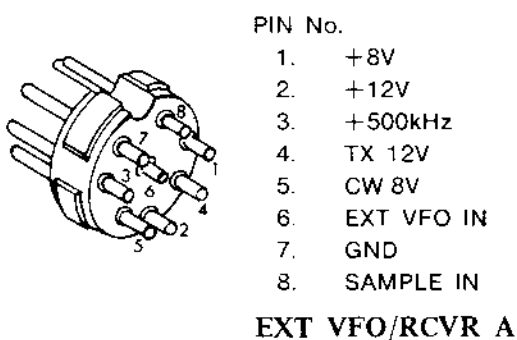
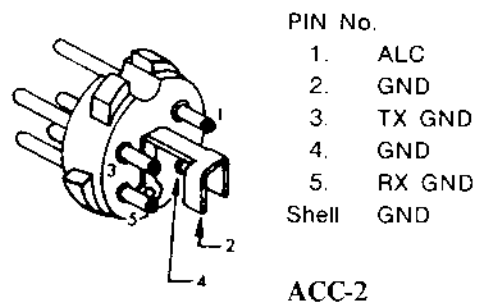
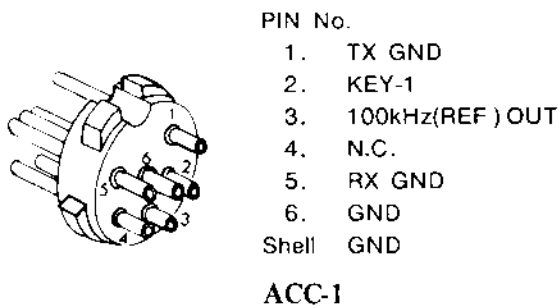
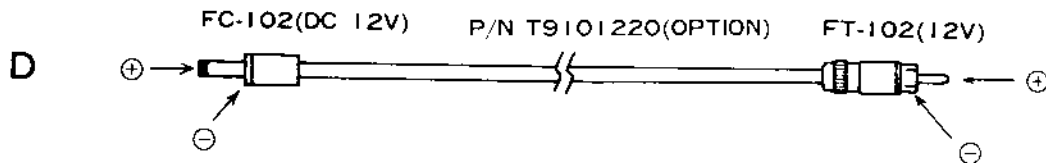
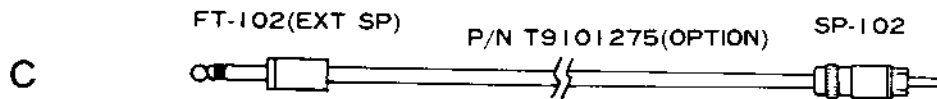
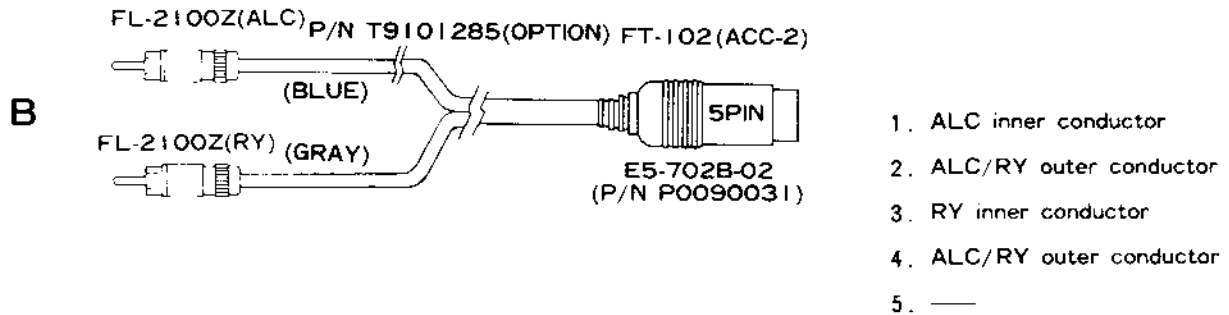
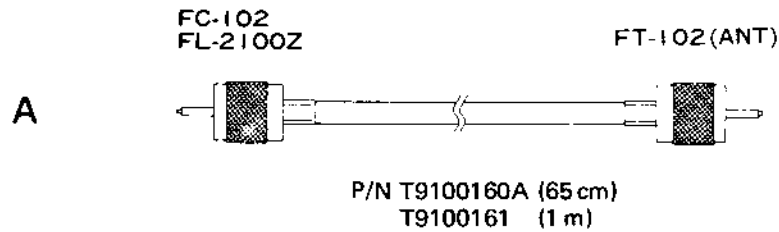
Pages 42 and 43, SSB Carrier Point Procedure:

This procedure has been revised from that appearing in early editions of the Instruction Manual, and should read as follows:

SSB Carrier Point

1. Set the MODE selector to USB, and connect the frequency counter to TP₄₀₀₇.
2. Key the transmitter and adjust potentiometer VR₄₀₀₃ for 10.5466 MHz on the counter.
3. Now connect the frequency counter to TP₄₀₀₆, key the transmitter, and adjust potentiometer VR₄₀₀₂ for 19.2166 MHz on the counter.
4. Set the MODE selector to LSB and check TP₄₀₀₇ for 10.5434 MHz and TP₄₀₀₆ for 19.2134 MHz with the counter during transmission.
5. Connect the audio signal generator to pin 8 of the MIC jack (pin 7 is ground), and connect the oscilloscope to the TP₃₀₀₅ on AF Unit. Set the AG for 1 kHz @ 2 mV, MIC gain to 9 o'clock, and HEATER off. Key the transmitter and note the amplitude of the scope display. Now change the AG frequency to 300 Hz (2 mV) and adjust VR₃₀₀₂ for the same amplitude on the scope.

INTERCONNECTION CABLE INFORMATION



RF UNIT ALIGNMENT (PB-2342)

Bandpass Filters

1. Connect the sweep generator output to J₁₀₀₁ (TX IN), and connect the oscilloscope to RF OUT jack J₅ on the rear panel. Turn the HEATER switch OFF.
2. Key the transmitter and adjust the appropriate transformer for each band according to the following chart to obtain the correct 3 dB bandwidth with minimum ripple, as displayed on the scope. Ripple should not exceed 3 dB.

Band	Adjust	Passband (-3 dB)
1.8	T ₁₀₁₁ , T ₁₀₂₂	1.8- 2.0 MHz
3.5	T ₁₀₁₃ , T ₁₀₁₄	3.5- 4.0 MHz
7.0	T ₁₀₁₅ , T ₁₀₁₆	7.0- 7.3 MHz
10.0	T ₁₀₁₇ , T ₁₀₁₈	10.0-10.5 MHz
14.0	T ₁₀₁₉ , T ₁₀₂₀	14.0-14.5 MHz
18.0	T ₁₀₂₁ , T ₁₀₂₂	18.0-18.5 MHz
21.0	T ₁₀₂₃ , T ₁₀₂₄	21.0-21.5 MHz
24.5	T ₁₀₂₅ , T ₁₀₂₆	24.5-25.5 MHz
28/29	T ₁₀₂₇ , T ₁₀₂₈	28.0-29.9 MHz

Preselector

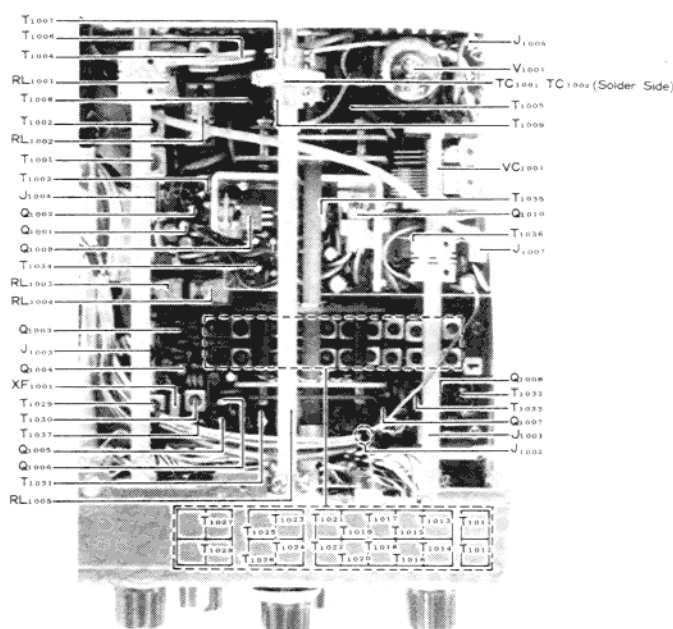
1. Connect the SSG to the ANT terminal, or alternatively, switch the MARK signal ON (rear panel switch).
2. Set the FT-102 to the band and frequency shown in the following chart, and set the

PRESELECT control to the position indicated. Switch the RF AMP ON.

3. Adjust the transformer indicated in the chart for maximum S-meter reading.

Band	Frequency	Preselect	Transformer	S-meter Reading
3.5	4.000 MHz	8	T ₁₀₀₄	Maximum
7.0	7.000 MHz	5	T ₁₀₀₅	
10.0	10.000 MHz	6	T ₁₀₀₆	
14.0	14.500 MHz	8	T ₁₀₀₇	
21.0	21.500 MHz	8	T ₁₀₀₈	

4. Remove the SSG and connect the dummy load to the ANT terminal. Set to 29.5 MHz band, 30.000 MHz, PRESELECT to 8, key the transmitter and adjust T₁₀₀₉ for maximum power output.
5. Reconnect the SSG to the ANT terminal and adjust TC₁₀₀₁ for maximum RX S-meter indication.
6. Remove the SSG and connect the dummy load to the ANT terminal. Set to 28.5 MHz band, 28.500 MHz, and key the transmitter. Adjust the PRESELECT control for maximum power output, and leave at this setting for the next step.
7. Repeat step 5, adjusting TC₁₀₀₂.



RF UNIT

SOLDERING AND DESOLDERING TECHNIQUE ON PRINTED CIRCUIT BOARDS

The FT-102 circuit boards are tough, but mishandling during soldering can cause circuit traces to "lift." While this does not cause permanent damage to the board, much servicing trouble can result, because of the tendency for this lifted trace to break. A few simple precautions will keep your circuit boards in A-1 condition.

1. Use only a 12 to 30-watt chisel-tip soldering iron, with the tip rounded or isolated from AC and DC potential. Voltage at the tip can easily destroy CMOS components.
2. Use only the minimum amount of heat necessary to remove a component, or to cause the solder to "flow" when installing a new component.
3. USE ONLY 60/40 ROSIN CORE SOLDER.
4. Use solder removing braid and flux to absorb excess solder before installing a new component. A solder sucker can also be used, but must be handled with care to avoid lifting traces.
5. Do not attempt to remove DIP ICs without first cutting all of the pins on the component side of the board, unless you have the correct desoldering equipment (spring-loaded clamp and all-pin desoldering tip).

If you do lift a trace, don't worry! Read on to find out how to repair traces like a pro.

NOTES ON USE OF CMOS COMPONENTS:

As CMOS devices are extremely sensitive to damage from static electricity, special precautions must be observed.

In storage, use only conductive sponge specially designed for CMOS components.

When installing a CMOS part in a socket, or on a circuit board, be certain that the power is off. In addition, the technician should rest his hand on the chassis as the component is inserted, so as to place his hand at the same potential as the chassis (better to discharge small amounts of static electricity through your fingers than through a \$5 IC!).

When soldering a CMOS part onto a circuit board, use a low-wattage iron, and be sure to ground the tip with a clip lead, if the tip is not grounded through a three-wire power cord.

INSERTION OF PARTS ON CIRCUIT BOARDS

All of the below are acceptable ways of inserting components into circuit board mounting holes.



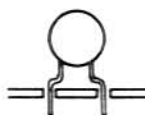
(a) Bend leads slightly



(b) Straight-in mounting



(c) Vertical mounting

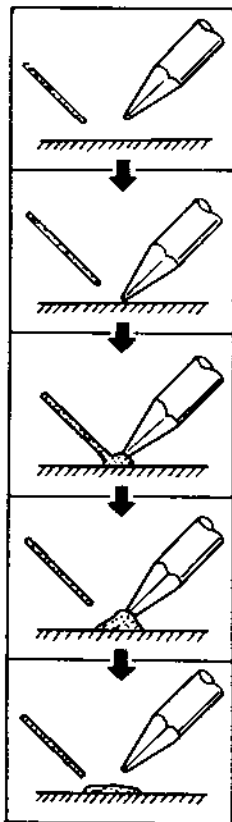


(d) Preformed disc ceramic capacitor



(e) Preformed resistor, diode, etc.

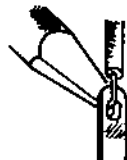
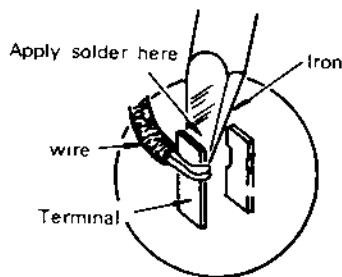
BASIC SOLDERING PRACTICE



- (1) Prepare soldering iron and solder. The tip of the iron should be thoroughly tinned and wiped clean of excess solder.
- (2) Apply soldering iron to surface to be soldered. Do not press the iron into the surface.
- (3) Apply solder to junction of iron and heated surface.
- (4) When enough solder is applied, remove solder. Continue to apply heat just until solder flows cleanly.
- (5) Remove iron from work. Do not apply more heat than necessary for good solder flow.

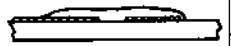
Soldering to terminal posts:

(Be certain to apply heat to both post and wire.)

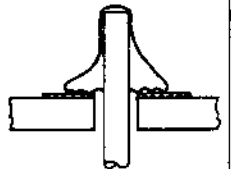


EXAMPLES OF POOR SOLDERING PRACTICE

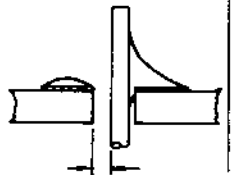
Unwanted solder bridge connecting two tracks (caused by use of too much solder)



"Cold joint" (caused by insufficient heat to part of work, resulting in poor solder flow)

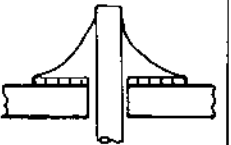


Unstable joint (caused by insufficient heat or solder)

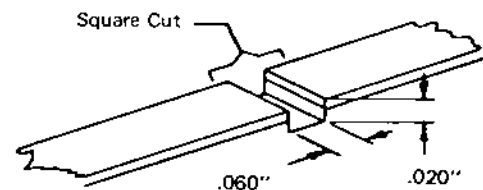
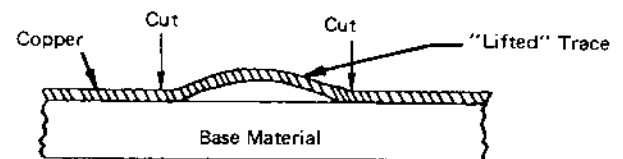


Proper soldering:

A smooth fillet of solder surrounds the lead and just covers the foil pad.



If you have previously lifted a trace, make an etch cut on each side of the lifted trace as shown in the drawing, and install a wire bridge.



Coat Cut Area With Eastman 910
After Soldering Wire Bridge

TYPICAL PART FAILURES, CAUSES AND SYMPTOMS

PARTS	CAUSE OF TROUBLE	SYMPTOMS
Semiconductors (IC, FET, TR)	High supply voltage Open circuit Excessive drive High temperature	Short or open circuit Output decreases to 1/2 at 80°C Internal noise Instability
MOS FET MOS IC	Static electricity	Total failure Short or open circuit
Crystal Crystal filter	Shock High temperature Aging	No oscillation Off frequency Frequency drift Filter bandpass change
Resistor	Excessive power High temperature	Component burned Value changed Open circuit
Potentiometer	Excessive power Shock Dust or oil Wear	Component burned Open circuit Noise Unsmooth rotation
Capacitor	Excess voltage High temperature Aging	Shorted Leakage Open/decreased capacitance
Variable capacitor Trimmer capacitor	Ratings exceeded Dust between plates Shock, forced rotation	Shorted Leakage Unsmooth rotation
Coils	Ratings exceeded Misadjusted Core or bobbin broken	Open or short circuit Leakage or shorted turns Detuned
Switch	Ratings exceeded Aging Dust or oil	Poor contact Unsmooth operation Open circuit
Relay	Ratings exceeded Humidity Dust or oil on contacts	Coil open Poor or intermittent contact Noise

MODIFICATION PROCEDURES

This section includes modifications that were developed for the FT-102 for special operating requirements, as well as for improved transceiver performance. Also included are modifications that must be made in accessory equipment for use with the FT-102.

Modifications to improve transceiver performance have been incorporated into the production line at some point in time, so that those transceivers produced after that time do not require the modification. Each procedure indicates the range of serial numbers that were not modified when they left the factory. Serial numbers are composed of a letter and a number, indicating the date of manufacture, followed by six digits. The first two digits (closest to the date code) are the Production Lot number. So, for example, serial number 0C123456 is from Production Lot 12, set number 3456. Before making any modification, make sure that the procedure to be followed applies to the Lot number of the particular transceiver being modified.

In some cases, the need for a modification did not exist originally, but became necessary later due to other changes in the transceiver circuitry made during the course of production. In such situations, the modification procedures which follow indicate a certain production lot prior to which the modification should not be performed. If any of the modifications are carried out on sets from production lots other than those specified, performance may be degraded.

Also, before making any modification, check to see if the intended modification has already been carried out by a Yaesu agent, dealer or previous owner.

Most of the following modifications require removal of the transceiver covers, and some require access to the RF Unit. These procedures are detailed here:

Cover Removal

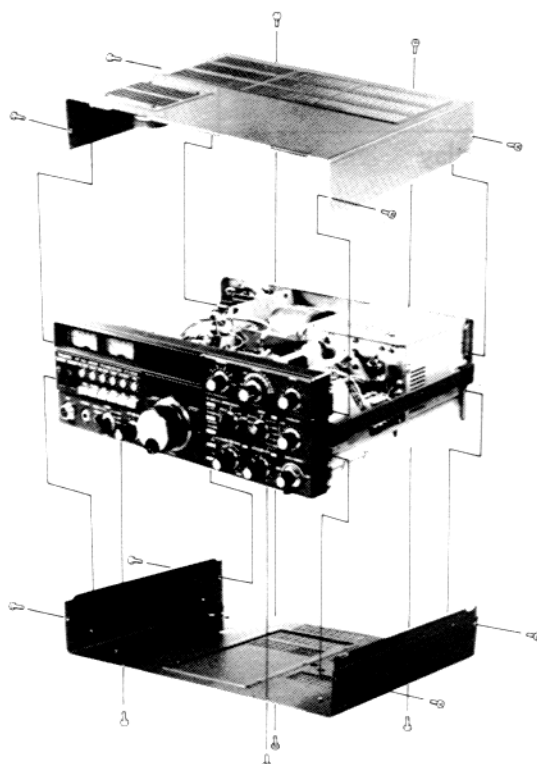
Disconnect the transceiver from the power source. Remove the two screws affixing the carrying handle, and then the fourteen screws affixing the top and bottom covers, as shown on this page. Remove the handle and covers, and stand the transceiver on its left side.

RF Unit Access (Solder side)

Disconnect and remove the optional AM/FM Unit, if installed. Referring to page 38 of the Instruction Manual for Unit locations, remove the four screws from the AF Unit (PB-2344), and gently fold it over the VFO. Then remove the two machine screws affixing the shield panel that was behind the AF Unit, and remove the panel from the main chassis, using care to avoid bending the 7-lug terminal strip that also mounts under one of the panel screws. The solder side of the RF Unit is now accessible.

WARNING

HIGH VOLTAGE IS PRESENT INSIDE THE TRANSCEIVER, AND IS RETAINED IN THE HIGH VOLTAGE CAPACITORS EVEN WHEN THE POWER IS OFF AND THE POWER SOURCE DISCONNECTED. BEFORE REMOVING THE COVERS TO WORK ON THE TRANSCEIVER, ALWAYS DISCONNECT THE POWER CORD AND ALLOW A FEW MINUTES FOR THE CAPACITORS TO DISCHARGE. DURING ALIGNMENT, USE EXTREME CAUTION TO AVOID TOUCHING ANY METAL PARTS INSIDE THE CHASSIS WITH FINGERS OR METAL TOOLS.



Keyclick

This modification is provided to remedy possible keyclick trouble with FT-102s having serial numbers between XX030001 and XX069999. Keyclicks were not a problem in the first two production lots, but appeared after certain other modifications were carried out in production. This modification has already been incorporated in later production lots (after Lot 6).

1. On the component side of the RF Unit, install a 1 μ F, 50 WV electrolytic capacitor, as shown in Figures 1 and 2. The positive lead of the capacitor is soldered to the lead of R1045, and the negative lead to the TEST PIN (G1).
2. Referring to Figures 3 and 4, cut the white wire connected to J4017 on the Local Unit, and wrap the end of the white wire with insulating tape to prevent it from shorting to other parts.

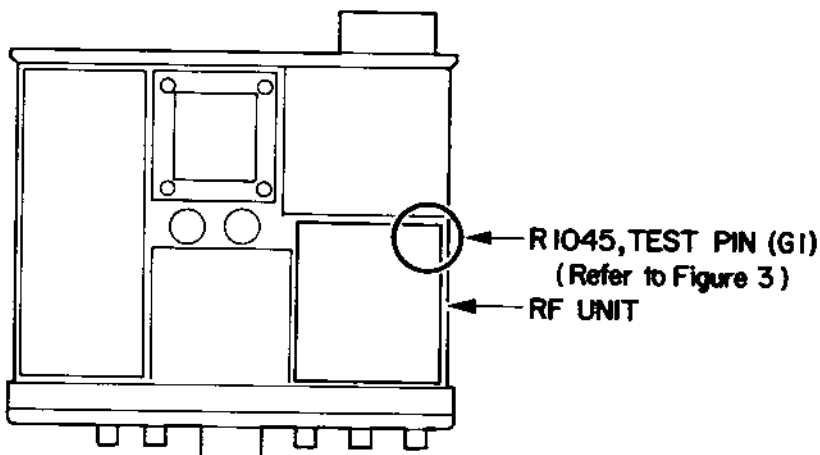


Figure 1

TOP VIEW

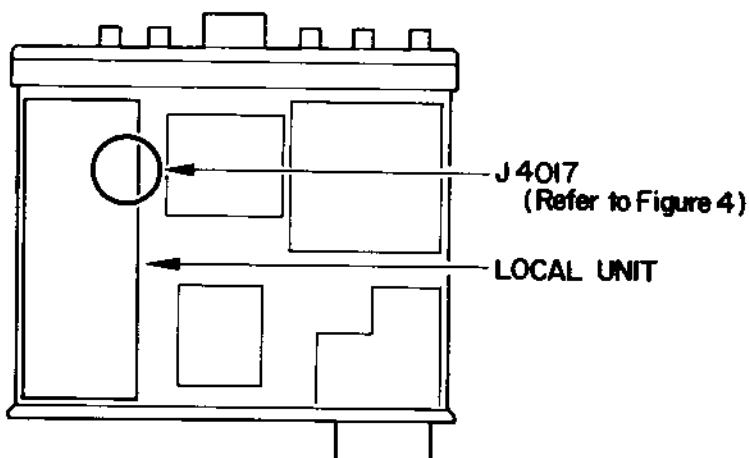


Figure 3

BOTTOM VIEW

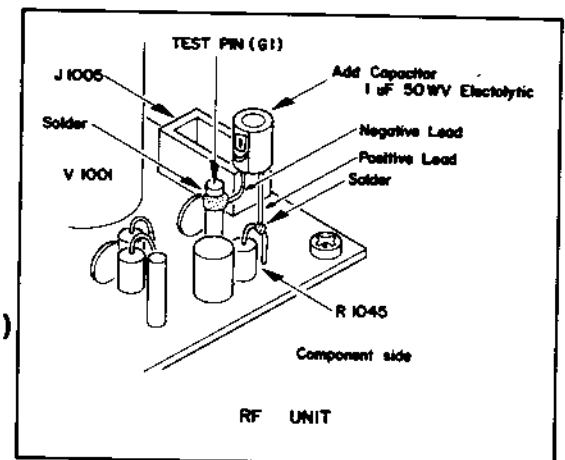


Figure 2

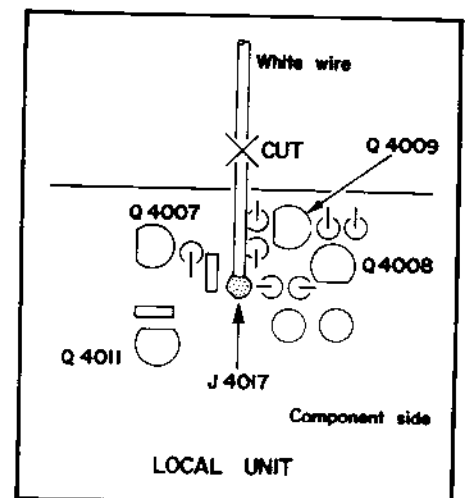
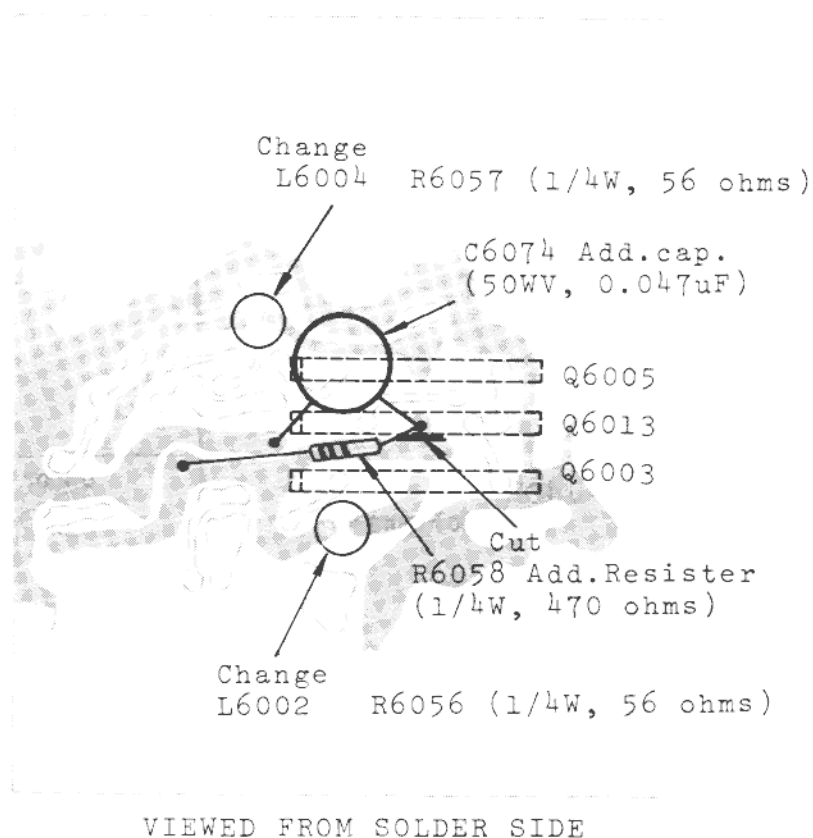
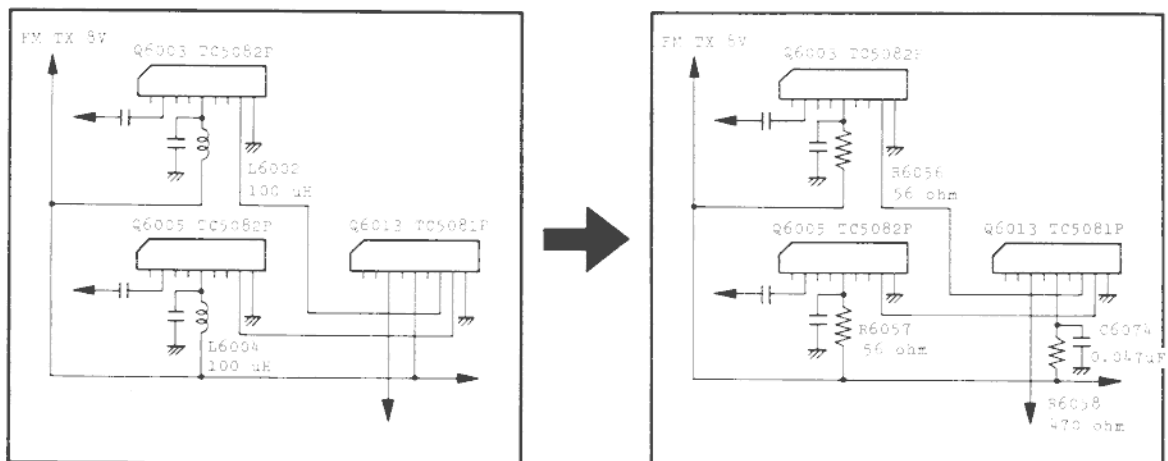


Figure 4

FM Unit Protection

This modification can be adopted in the early models of the FM Unit in the FT-102, in order to prevent damage to the TC5081AP used in the Unit.

1. Remove the FM Unit from the transceiver, and L6002 and L6004 from the Unit.
2. Install 56-ohm resistors in the same locations where L6002 and L6004 were installed.
3. On the solder side of the Unit, cut the copper pattern connected to pin 5 of Q6013, and solder a 470-ohm resistor across the cut.
4. Solder a 0.047 μ F disc ceramic capacitor between pin 5 of Q6013 and ground.
5. Replace the FM Unit in the transceiver and reconnect all plugs.

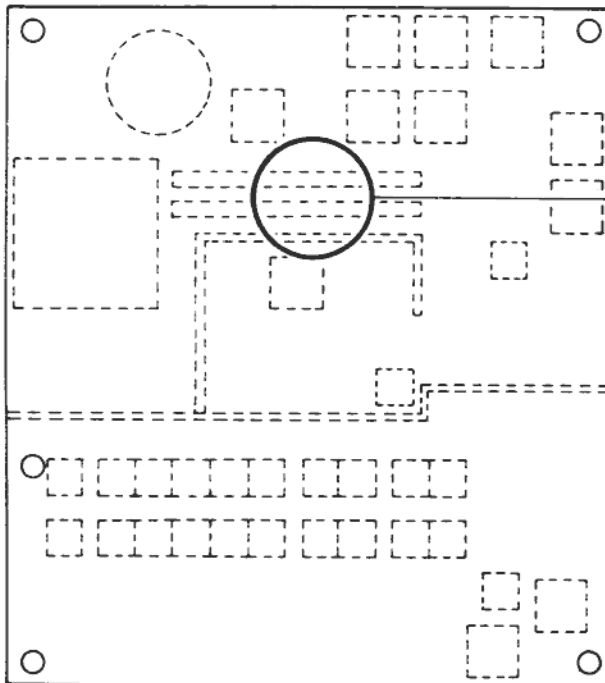


24.5 MHz ALC Reduction

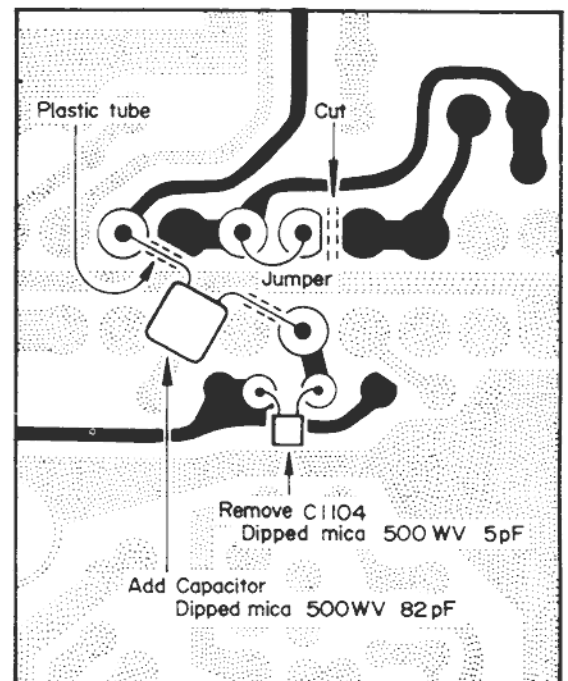
This modification increases the drive level during transmission on the 24.5 MHz band in those transceivers having serial numbers under XX-080001. Later sets have this modification already incorporated.

1. Referring to the diagrams below, locate the places on the solder side of the RF Unit where the terminals from the stationary contacts of bandswitch wafers S11b-3 and S11b-4 are soldered to the RF Unit. Carefully cut the foil pattern to isolate the 24.5 MHz pad of wafer S11b-3 as shown. Make sure it is the right place before cutting.
2. Install a small jumper between the 24.5 MHz pad isolated in the previous step and the 21 MHz pad on the opposite side from the cut.
3. Now locate C1015 on the component side of the board, and C1104 on the solder side (connected in parallel to the same pads). Remove both of these capacitors to isolate the 24.5 MHz pad of wafer S11b-4.
4. Install plastic insulating sleeves over both leads of an 82 pF, 500 WV dipped mica capacitor, and connect from the 14 MHz pad of S11b-3 to the 24.5 MHz pad of S11b-4 on the solder side of the RF Unit, as shown in the diagram. This new capacitor is designated C1108.

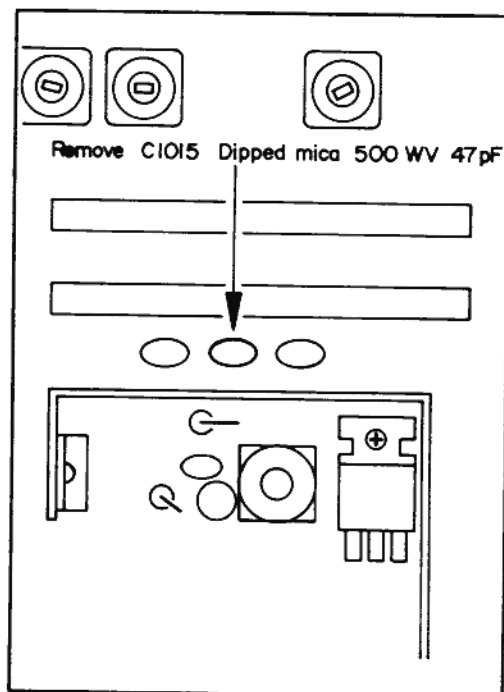
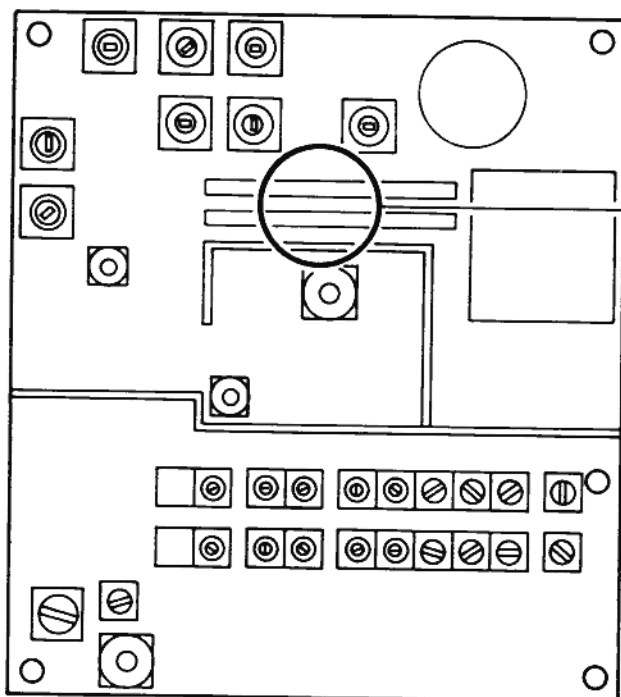
This completes the modification.



RF UNIT

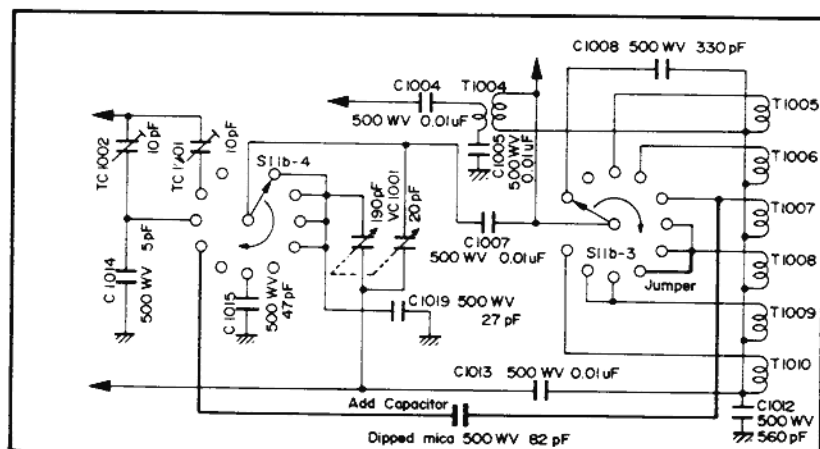
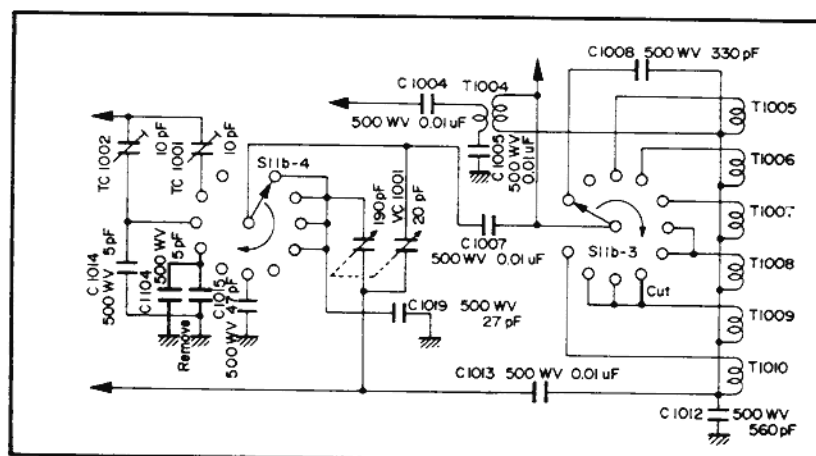


Solder side



Component side

RF UNIT

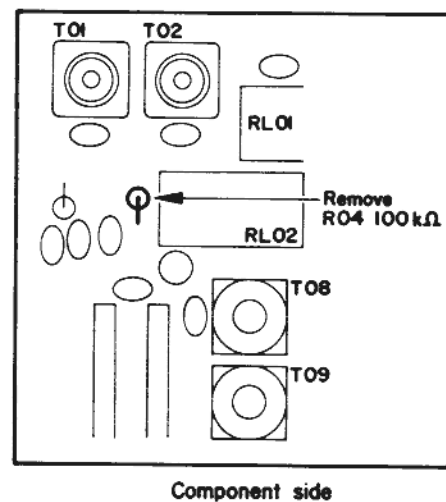
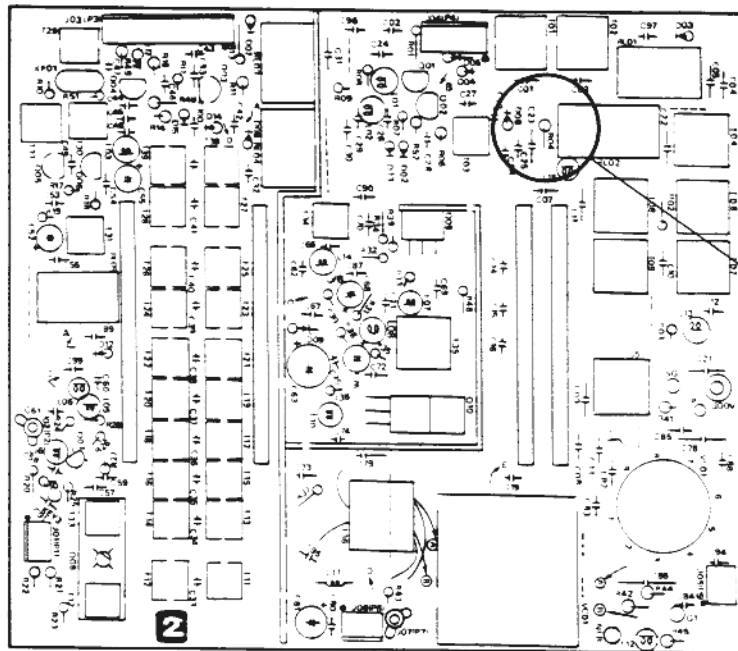


After modification

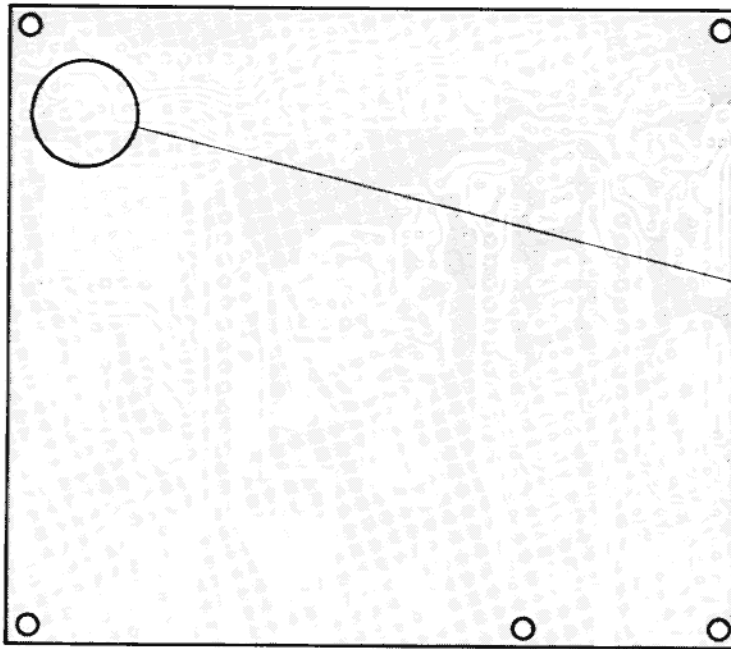
Receiver RF Amplifier Protection

This modification provides better protection for the RF amplifier FETs from spikes that may appear at the input for those FT-102s having serial numbers below XX040000. It has been incorporated in all transceivers from Lot 4.

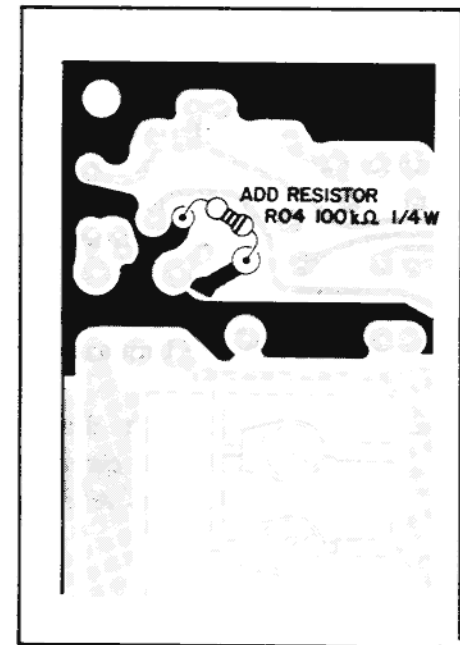
1. Remove the covers and expose the solder side of the RF Unit as described on page 8.
2. Referring to the drawings below, locate resistor R04, and carefully remove the indicated end of this resistor. Reconnect it as shown.
3. Replace the shield cover and AF Unit, the AM/FM Unit, and the covers and associated screws.



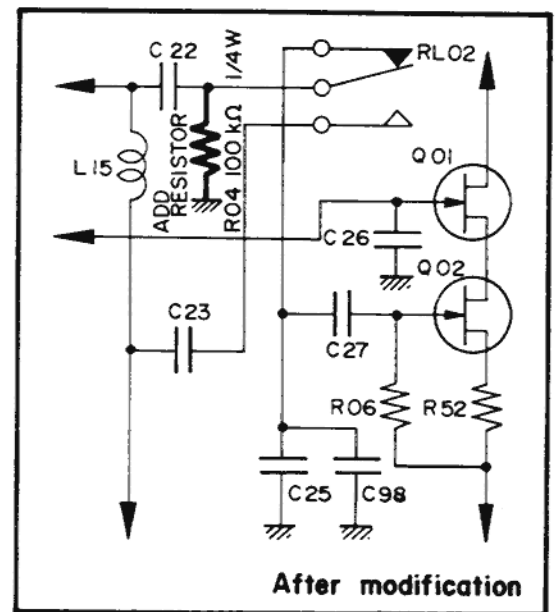
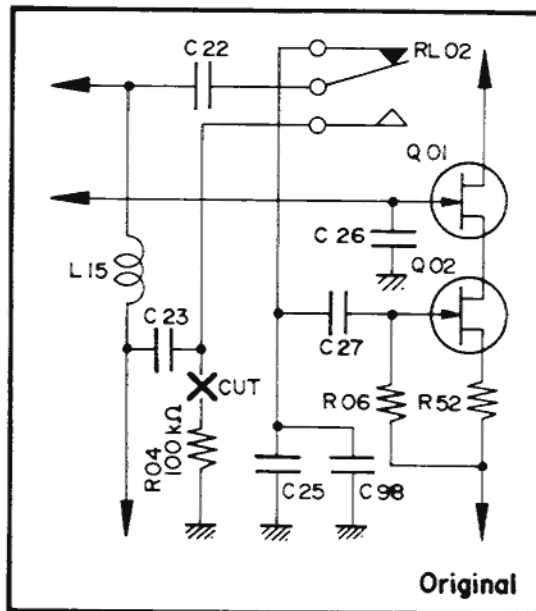
RF UNIT



RF UNIT



Solder side

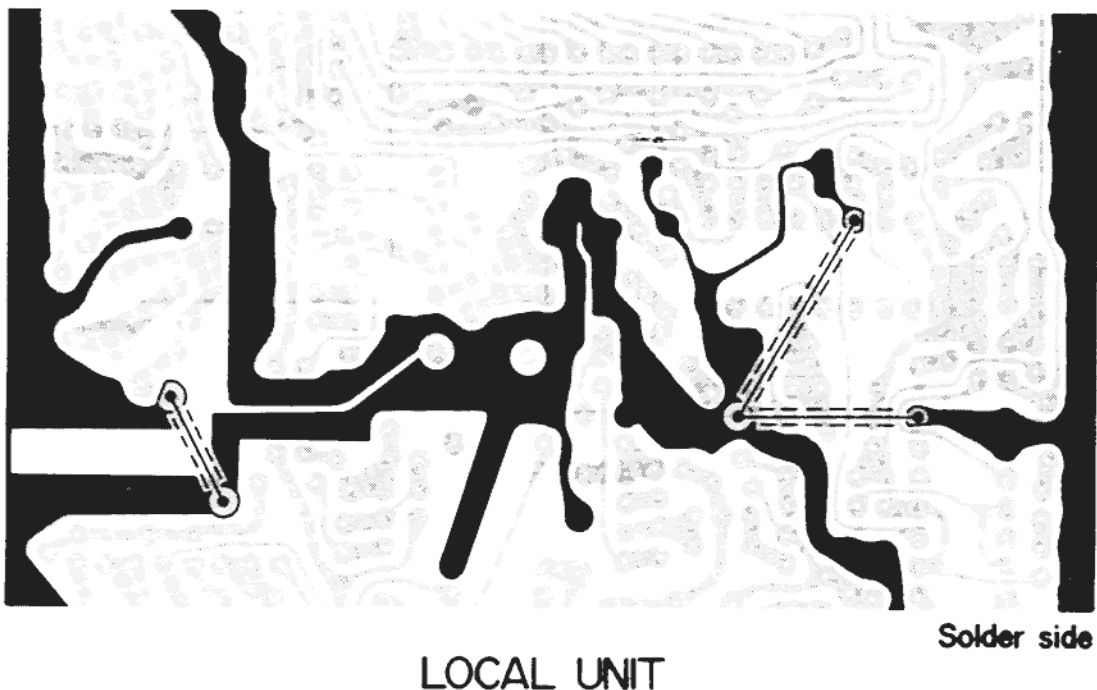
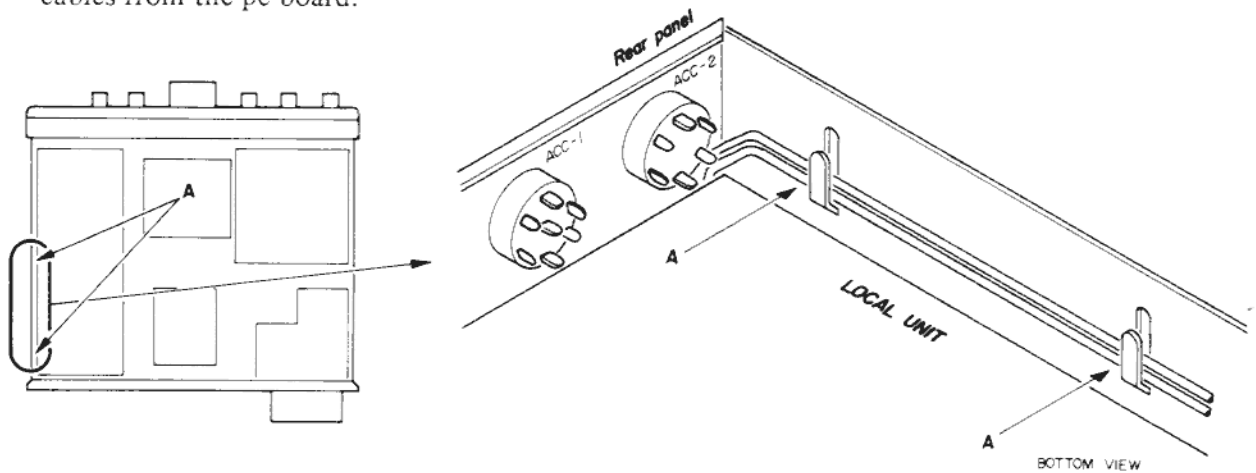


Receiver Spurious Reduction

This modification serves to reduce the spurious signals of the receiver in the amateur bands in those FT-102s having serial numbers below XX040000.

1. Lay the transceiver upside down on the work surface, and remove the bottom cover.
2. Referring to the diagrams below, carefully bend the two chassis clips (marked A) slightly inwards about 5 mm, so that the two gray shielded cables can be removed from the clips. It is not necessary to disconnect these cables from the pc-board.

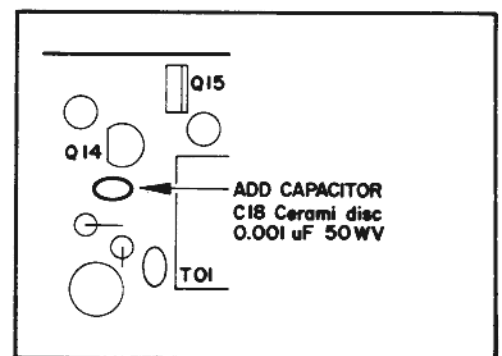
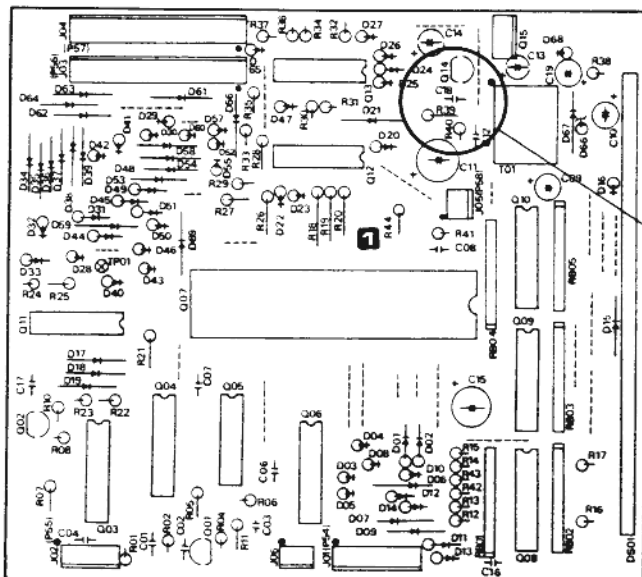
3. Remove the seven screws affixing the Local Unit (PB-2345), and carefully lift the outer edge of the board, folding it towards the middle of the transceiver so that the solder side is exposed.
4. Referring to the local unit diagram below, install heavy wire or copper straps insulated with plastic sleeving in the three locations shown, connecting the ground patterns on the Local Unit.
5. Replace the Local Unit and its screws, reinstall the gray cables in the chassis clips and bend them back into place, and replace the cover.



Counter Noise Reduction

This modification will reduce drifting counter noise that may appear on the lower frequency bands in those FT-102s having serial numbers below XX040000. It has been incorporated into production from Lot 4.

1. Remove the top cover, and without pulling on the wires, remove P57, the 13-pin connector plug nearest the edge of the Counter Unit (PB-2346A). Then remove the four screws affixing the Unit, and slide the pc-board back so that it can be tipped up to expose the solder side.
2. Referring to the drawing below, install a $0.001\mu\text{F}$, 50 WV ceramic capacitor between the collector of Q14 and ground.
3. Gently replace the pc-board in its original position. Replace the display-backing bracket with the two front mounting screws, and then replace the two rear screws. Reconnect P57 to J04, and replace the top cover.



Component side

COUNTER UNIT

B. 10-meter Band Modification

The procedure for this modification is the same for all models. DO NOT perform this modification if Modification A has been performed.

It requires the sacrifice of all but one existing 10-meter 500 kHz segment. The new segment will be selected when the BAND selector and switch are set to the same position as used for the 10-meter segment being replaced.

1. Perform steps 1, 2 and 3 of the previous modification procedure.
2. Install 1SS53 diodes (white band) on the solder side of the Local Unit at the locations shown in Figure 5, making sure that the banded ends of the diodes are aligned as indicated. Install D_D for 28.0–28.5 MHz, or D_E for 28.5–29.0 MHz (DO NOT INSTALL BOTH). Then perform step 5 of the previous modification procedure.

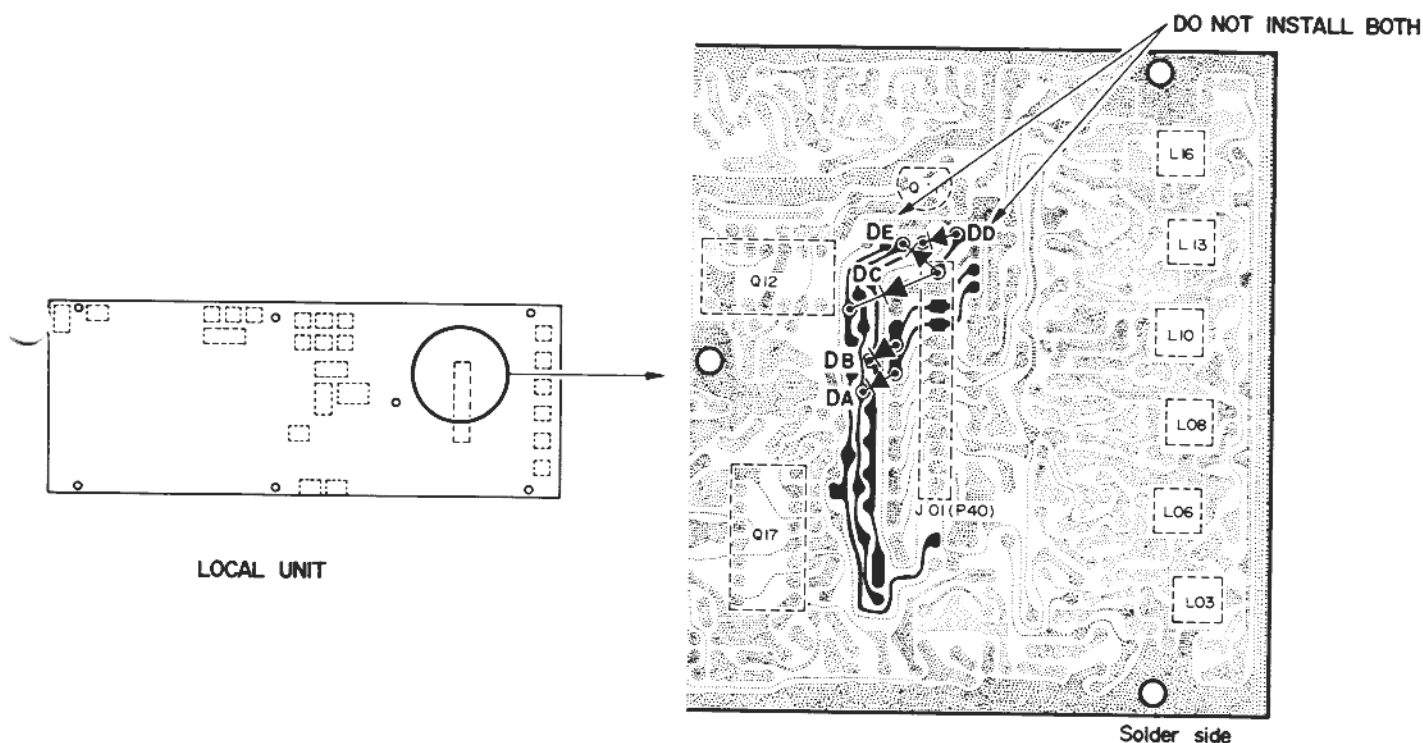


Figure 5

MEMO

— MEMO —

MODIFICATION OF THE FTV-901R TRANSVERTER FOR USE WITH THE FT-102 TRANSCEIVER

This modification enables the FTV-901R to be used with those FT-102s having serial numbers above 030000 for VHF and/or UHF operation. Earlier FT-102s should first be modified by an authorized Yaesu agent.

Parts required:

- One ALC AMP Unit, Part No. C022940
- One Connection Cable E, Part No. T9101282, shown in Fig.
- One 24-centimeter length of hookup wire

1. Remove the twelve screws affixing the top and bottom covers of the FTV-901R, and remove the covers (Figure 1).

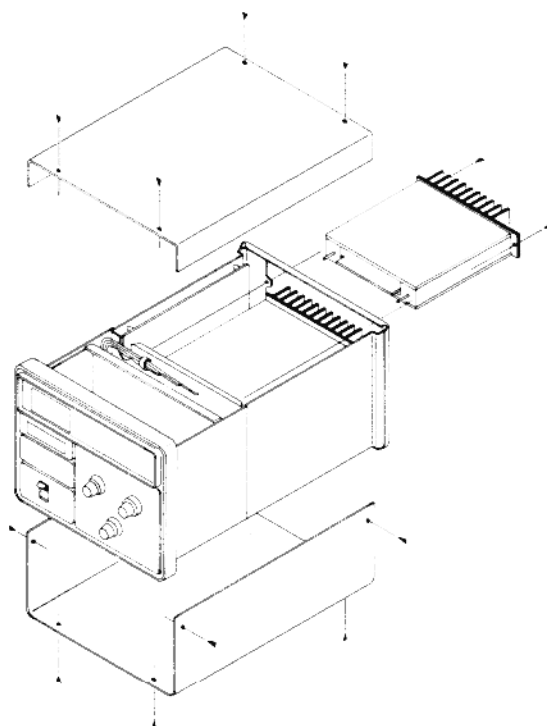


Figure 1

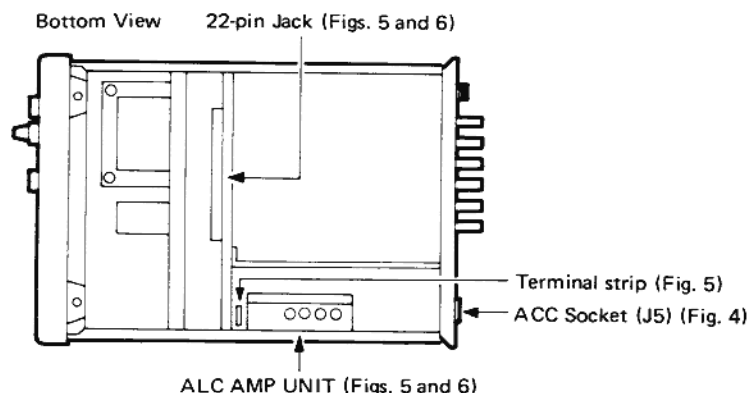


Figure 2

2. On POWER switch S2a, disconnect the blue wire from the OFF terminal, and reconnect this wire to the ON terminal, as shown in Figure 3.

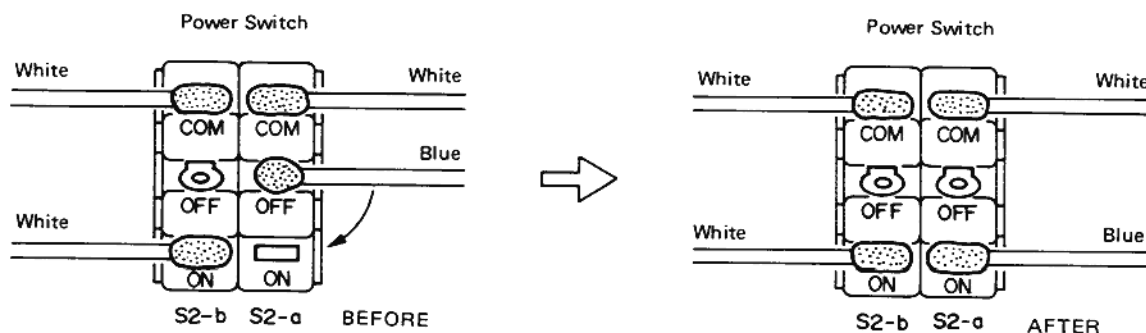


Figure 3

3. On the ACC socket (J5), disconnect the large white wire from pins 2 and 5, and reconnect this wire to the ground terminal at the socket, as shown in Figure 4. Also, if a diode is connected to pins 1 and 4 of the ACC socket (early models), remove this diode from the transverter.

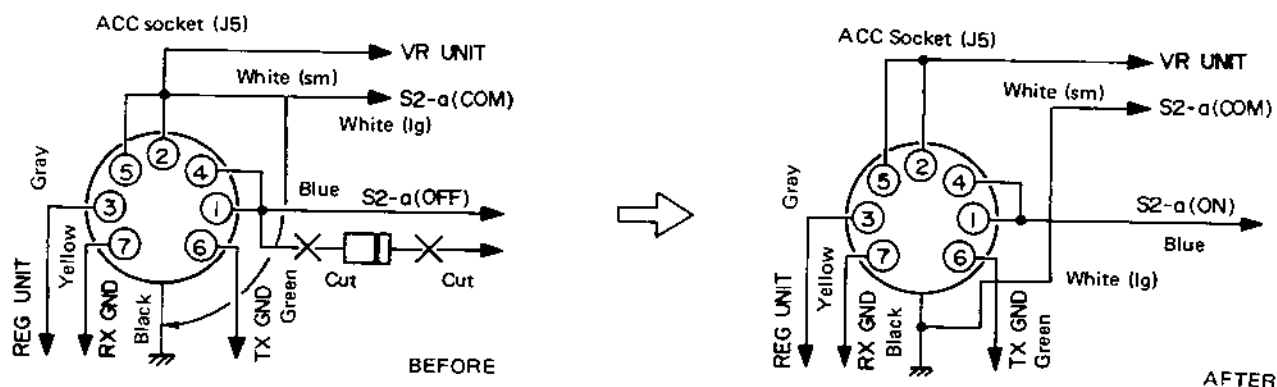


Figure 4

4. If the serial number of the FTV-901R is below 030000, perform the following procedure and skip part 5. Otherwise, skip this part and proceed directly to part 5.
 - a. Note on tags the connection point of each red wire connecting to the ALC AMP Unit and tape a tag to each of these wires. Then disconnect all wires (two shielded, three red, and one each orange, white/green and white/red).
 - b. Remove the four screws in the side of the chassis affixing the ALC AMP Unit, and replace the original Unit with the new ALC AMP Unit (Part No. C022940).
 - c. Reconnect the wires to the new Unit as shown in Figure 5 and described below:
 1. Connect the input shielded wire to the input terminal, and the output shielded wire to the output terminal of the ALC AMP Unit.
 2. Disconnect the brown wire from the terminal strip, and connect this wire to pin 4 of the ALC AMP Unit. Now remove the terminal strip, together with its components and red wire, from the transverter.
 3. Splice the red wire removed from pin 2 of the old ALC AMP Unit directly to the white/green wire, and carefully insulate the splice with plastic tape.
4. Disconnect the white/blue wire from pin 18 of the blue 22-pin connector jack, and connect this wire to pin 1 of the ALC AMP Unit.
5. Connect the 24-centimeter length of hookup wire from pin 18 of the blue 22-pin connector jack to pin 2 of the ALC AMP Unit.
6. Connect the orange wire, removed from pin 1 of the old ALC AMP Unit, to pin 3 of the new Unit. Then connect the red wire removed from pin 3 of the old Unit to pin 5 of the new Unit. Finally, connect the white/red wire, removed from pin 4 of the old Unit, to pin 6 of the new ALC AMP Unit. Skip the next part and proceed to part 6.

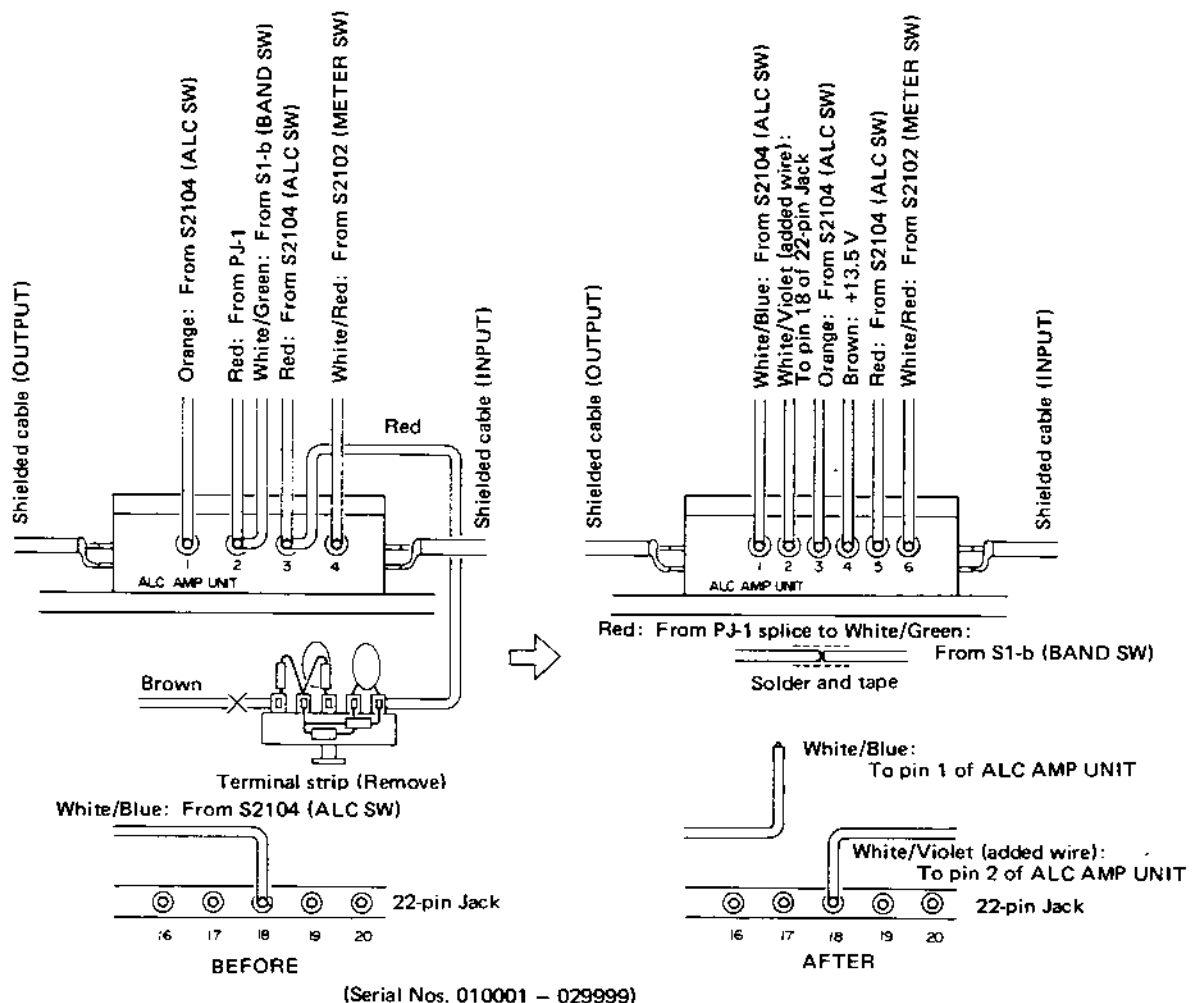
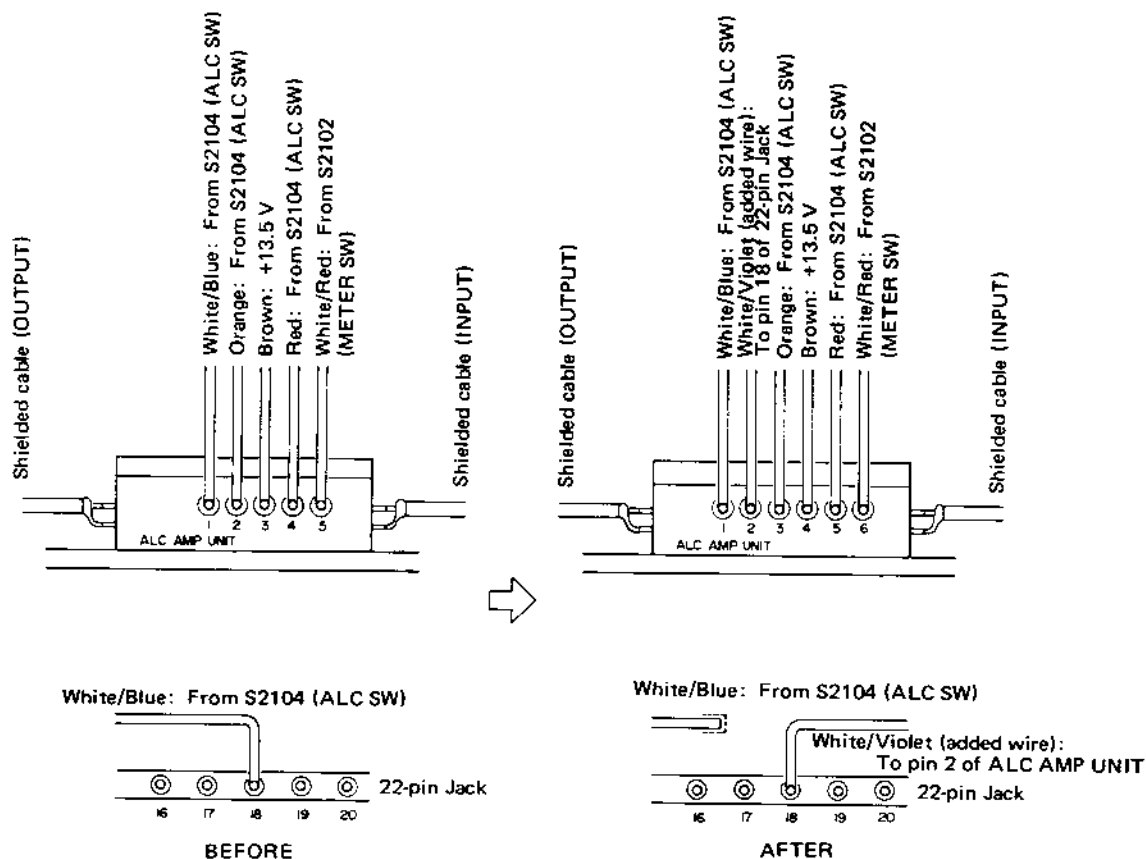


Figure 5

5. For those FTV-901Rs with serial number above 030000, perform the following procedure.
 - a. Disconnect all wires from the ALC AMP Unit (two shielded, and one each orange, red, white/blue and white/red).
 - b. Remove the four screws in the side of the chassis affixing the ALC AMP Unit, and replace the original Unit with the new ALC AMP Unit (Part No. C022940).
 - c. Reconnect the wires to the new Unit as shown in Figure 6 and described below:
 1. Connect the input shielded wire to the input terminal, and the output shielded wire to the output terminal of the ALC AMP Unit.
 2. Connect the wires removed from the old ALC AMP Unit to the new Unit: white/blue to pin 1, orange to pin 3, brown to pin 4, red to pin 5, and white/red to pin 6.
 3. Disconnect the white/blue wire from pin 18 of the blue 22-pin connector jack, and carefully insulate the end of this wire with plastic tape.
 4. Connect the 24-centimeter piece of hookup wire from pin 18 of the 22-pin jack to pin 2 of the new ALC AMP Unit.
6. Modification is now complete. Replace the top and bottom covers of the FTV-901R and their twelve screws, and connect the transverter to the FT-102 as shown in Figure 7.



(Serial No. 030001 & UP)

Figure 6

CAUTION

ONCE THE FTV-901R HAS BEEN MODIFIED IT MUST NOT BE USED WITH ANY MODEL TRANSCEIVER OTHER THAN THE FT-102, OR SEVERE DAMAGE TO THE EQUIPMENT MAY RESULT.

WHENEVER USING THE FTV-901R WITH THE FT-102 BE ABSOLUTELY CERTAIN THAT THE HEATER SWITCH ON THE FT-102 IS OFF, AND THAT THE TUBES HAVE HAD AT LEAST 30 SECONDS TO COOL.

WHEN USING THE FTV-901R WITH THE FT-102, THE IF MONITOR OF THE FT-102 WILL NOT FUNCTION NORMALLY. ALTHOUGH IT MAY SOUND DISTORTED, THIS IS NOT AN INDICATION OF DISTORTION OF THE OUTPUT OF THE FTV-901R.

ALSO, WHEN TRANSMITTING WITH THE FT-102 AND FTV-901R, THE IC, PO AND ALC METER FUNCTIONS IN THE FT-102 ARE DISABLED, AS WELL AS THE PLATE AND LOAD CONTROLS.

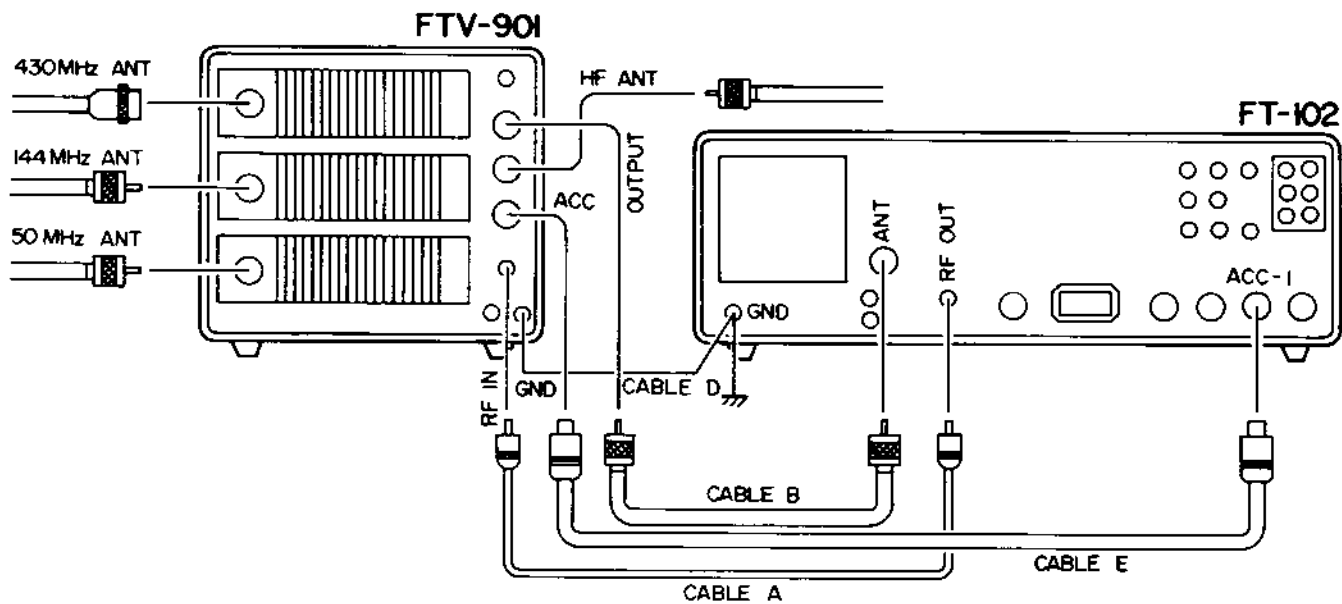


Figure 7

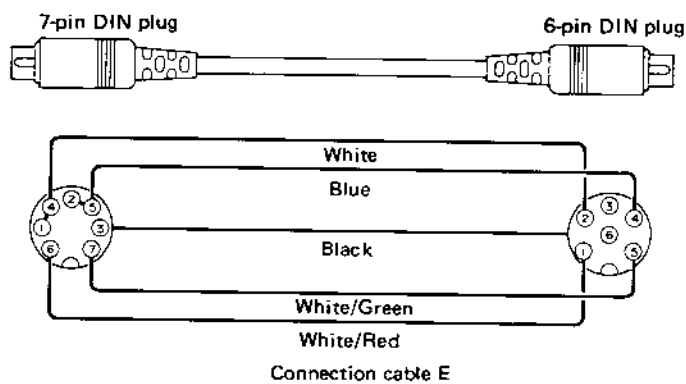


Figure 8

MODIFICATION OF THE FTV-107 TRANSVERTER FOR USE WITH THE FT-102 TRANSCEIVER

This modification enables the FTV-107 to be used with those FT-102s having serial numbers above 030000 for VHF and/or UHF operation. Earlier FT-102s should first be modified by an authorized Yaesu agent.

Parts required:

One Connection Cable E, Part No. T9101283, shown in Fig. 4

One 47-ohm, 2-watt wire-wound resistor, part No. J31336470

One piece of hookup wire, approximately 20 centimeters long

One piece of vinyl insulation sleeve

1. Remove the fourteen screws affixing the top and bottom covers of the FTV-107, and remove the covers. (Figure 1.)
2. Rewire POWER switch S02 as described below and shown in Figure 2.
 - a. Disconnect the yellow wire from the COM terminal of switch section S02-b and insulate the end of this wire with plastic tape.
 - b. Connect the 20 cm piece of hookup wire from this COM terminal to the ground terminal of the meter.
 - c. Disconnect the yellow wire from the ON terminal of the switch, and also insulate the end of this wire with plastic tape.
 - d. Disconnect the red wire from the ON terminal of the S02-a section of the switch, and connect this wire to the ON terminal of the S02-b section, as shown in the Figure.
 - e. Cut the insulation sleeve in half, and install over each lead of the 47-ohm resistor. Then connect the resistor from the ON terminal of S02-a to the meter lamp.
3. Replace the top and bottom covers and their screws, and connect the FT-102 to the FTV-107 as shown in Figure 3. This completes the modification.

CAUTION

ONCE THE FTV-107 HAS BEEN MODIFIED IT MUST NOT BE USED WITH THE FT-107, FT-ONE, OR ANY TRANSCEIVER OTHER THAN THE FT-102, OR SEVERE DAMAGE TO THE EQUIPMENT MAY RESULT.

WHENEVER USING THE FTV-107 WITH THE FT-102 BE ABSOLUTELY CERTAIN THAT THE HEATER SWITCH ON THE FT-102 IS OFF, AND THAT THE TUBES HAVE HAD AT LEAST 30 SECONDS TO COOL.

WHEN USING THE FTV-107 WITH THE FT-102, THE IF MONITOR OF THE FT-102 WILL NOT FUNCTION NORMALLY. ALTHOUGH IT MAY SOUND DISTORTED, THIS IS NOT AN INDICATION OF DISTORTION OF THE OUTPUT OF THE FTV-107. ALSO, WHEN TRANSMITTING WITH THE FT-102 AND FTV-107, THE IC, PO AND ALC METER FUNCTIONS IN THE FT-102 ARE DISABLED, AS WELL AS THE PLATE AND LOAD CONTROLS.

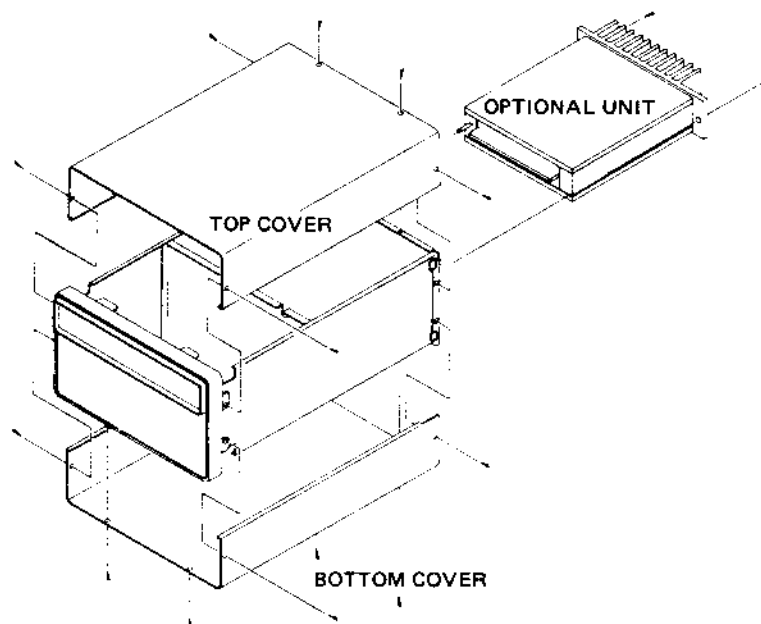


Figure 1

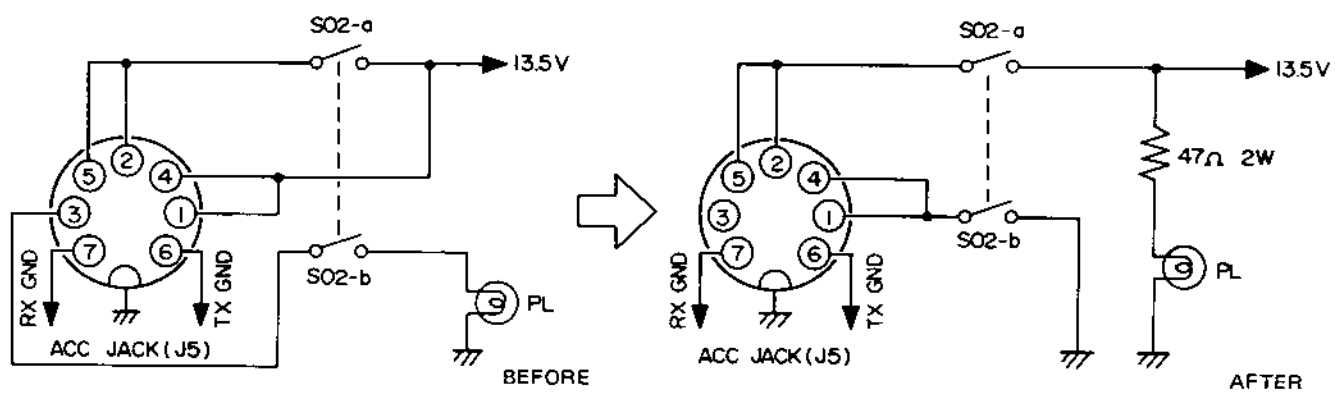
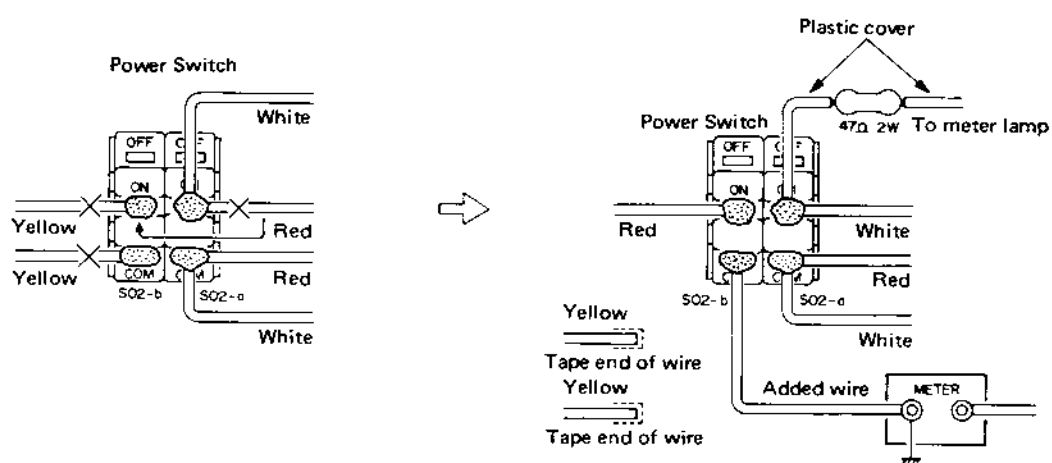


Figure 2

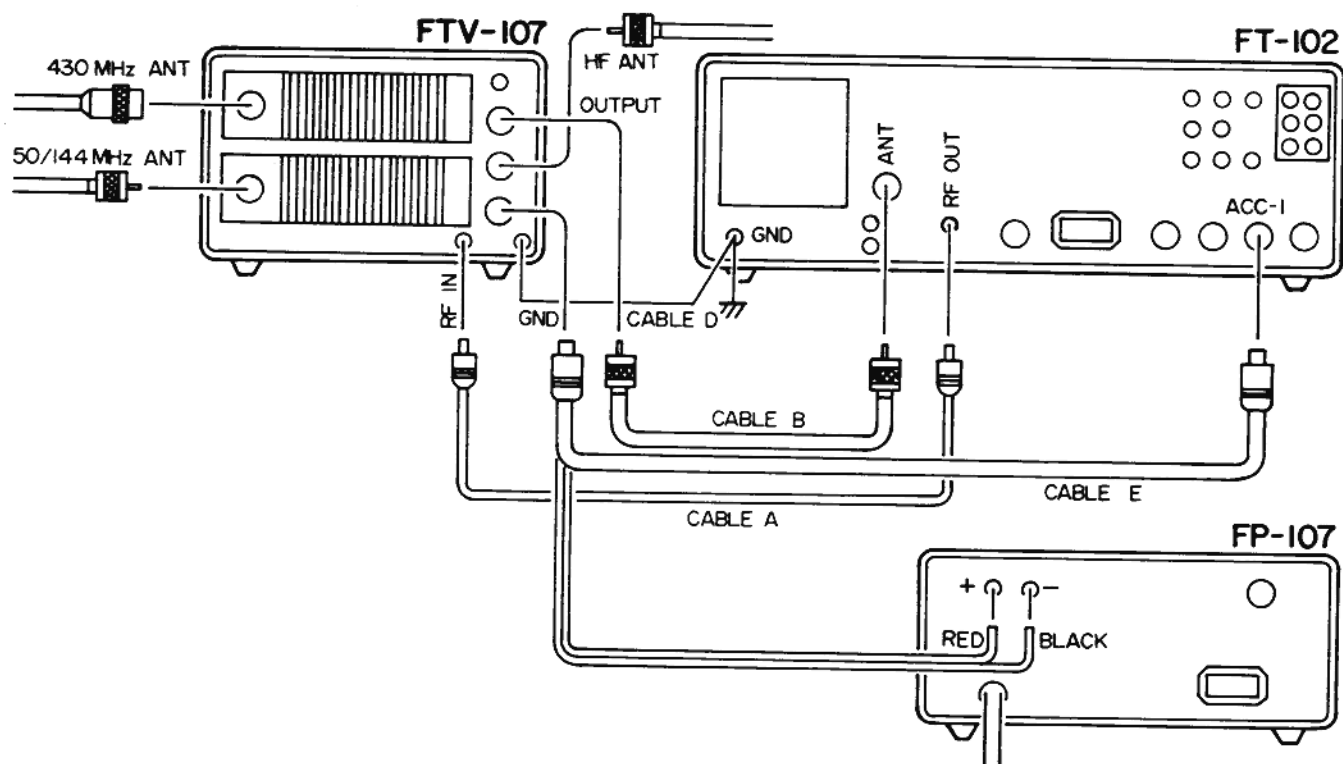


Figure 3

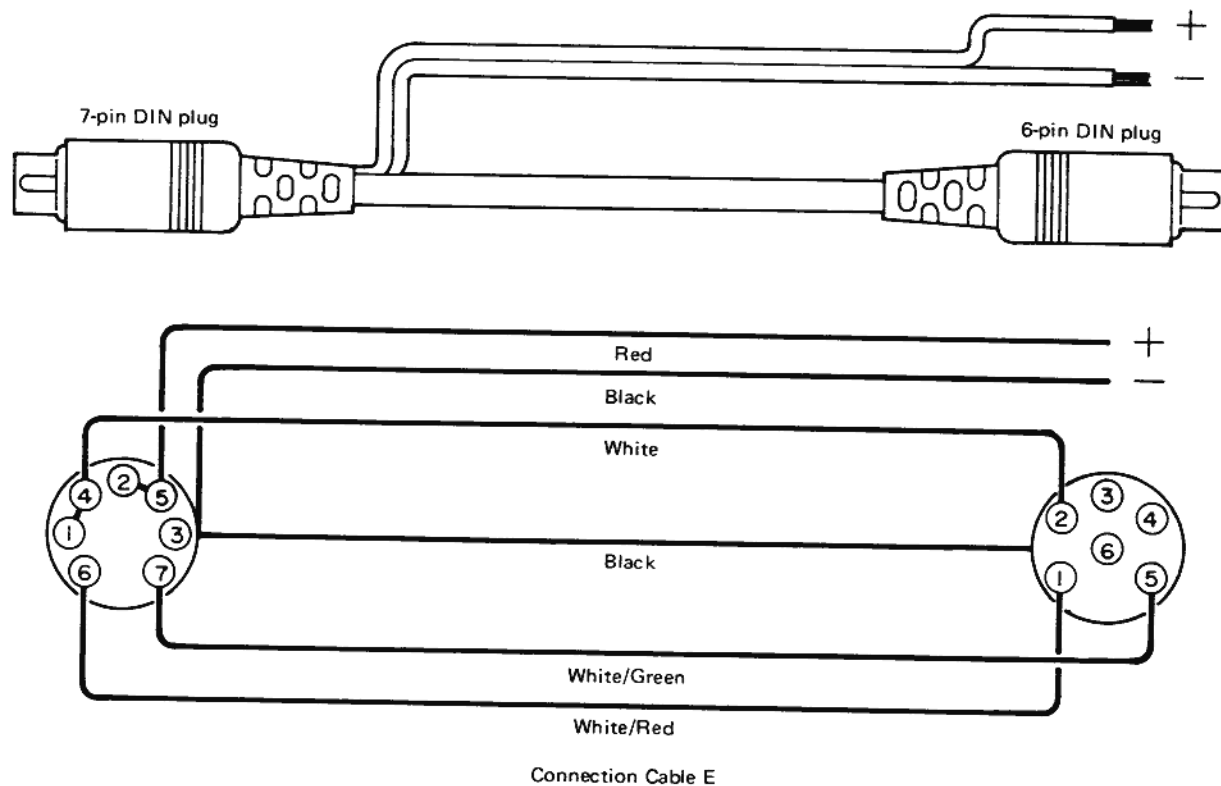


Figure 4

MODIFICATION OF THE FTV-707 TRANSVERTER FOR USE WITH THE FT-102 TRANSCEIVER

This modification enables the FTV-707 to be used with those FT-102s having serial numbers above 030000 for VHF or UHF operation. Earlier FT-102s should first be modified by an authorized Yaesu dealer.

Parts required:

One 6-pin DIN plug, Part No. P0090032

One Power Cord (1 meter), (Figure 7, not needed if FP-707 is used)

1. Remove the eight screws affixing the top cover of the FTV-707, and remove the cover (Figure 1).

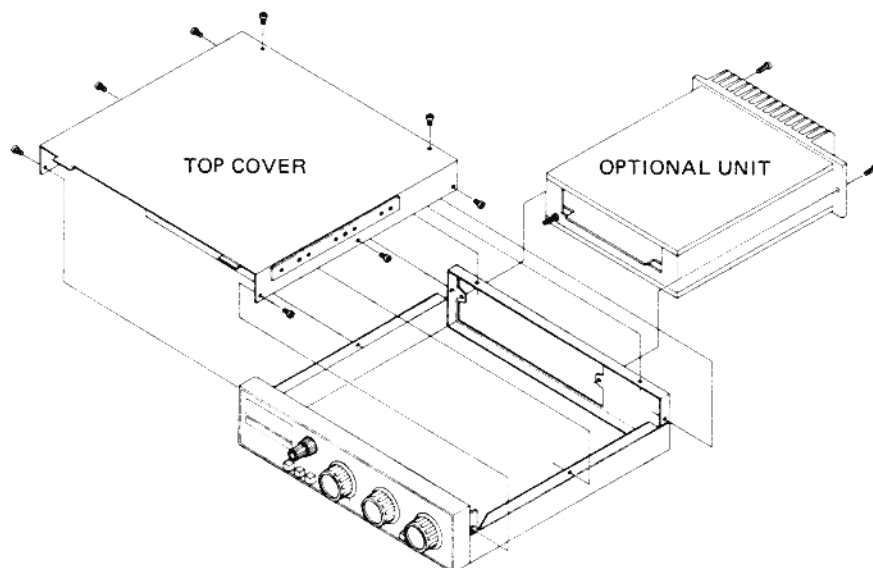


Figure 1

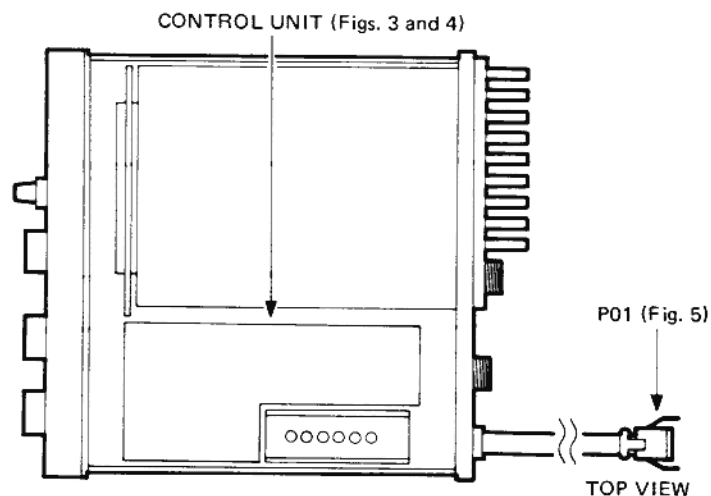


Figure 2

2. Referring to Figures 2 and 3, disconnect all wires and connectors from the Control Unit as described in the following steps:

- a. Disconnect 8-pin connector P02 from J01, and 9-pin connector P03 from J02.
- b. Disconnect the following wires by carefully sliding their connectors off of the contact pins on the Control Unit:
 1. the orange wire at the DC 13.5 V OUT terminal
 2. the small red wire at the S3 terminal
 3. the large red wire at pin 3
 4. the white/brown wire at the PO SW terminal
 5. the brown wire at the S1a terminal
 6. the white/orange wire at the RX HF terminal

c. Disconnect the next set of wires by unsoldering their connections at the Control Unit:

1. the white/brown wire at the TX 13.5 V IN terminal
2. the yellow wire at the TX 13.5 V OUT terminal
3. the center conductor of the coax at the RX OUT terminal
4. the bare solid wire at the 10 m OUT terminal
5. the bare solid wire at the HF ANT terminal

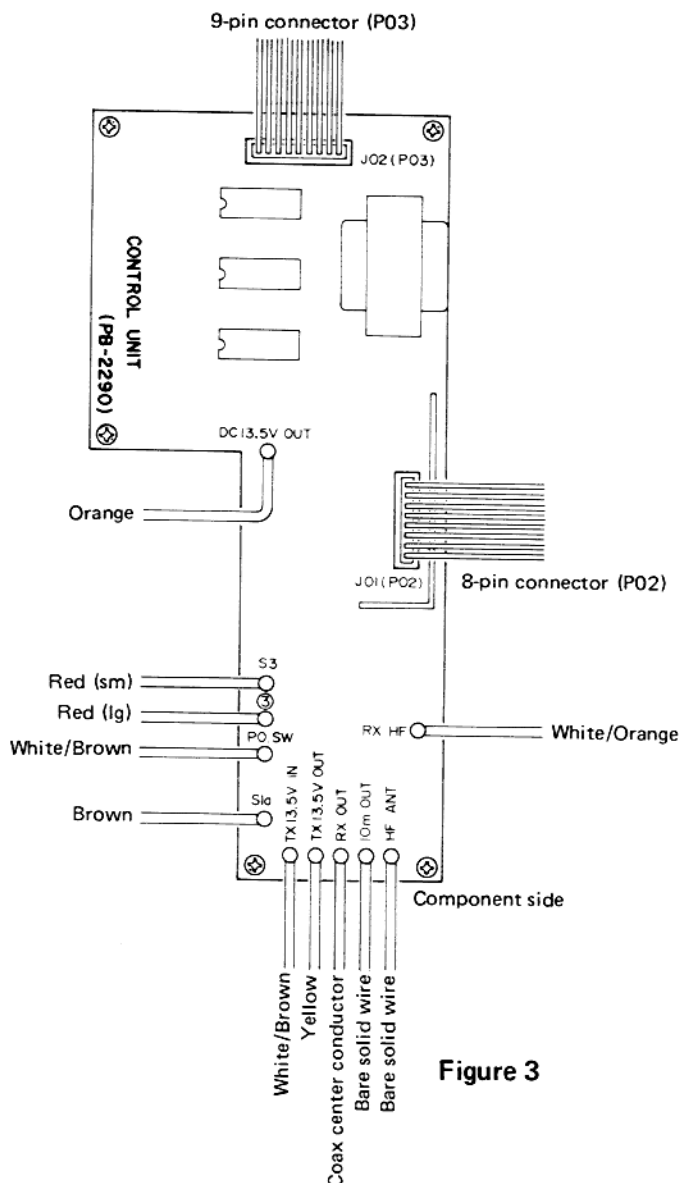


Figure 3

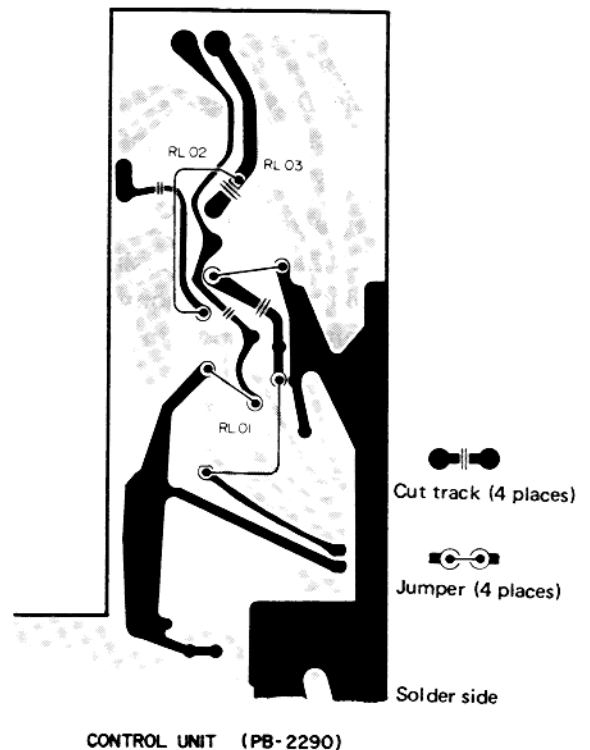


Figure 4

3. Now remove the five screws from the Control Unit, and remove the Unit from the transverter.
4. Referring to Figure 4, carefully cut the four tracks on the solder side of the Control Unit, and install four jumpers as illustrated.
5. Replace the Control Unit and its five screws, and reconnect each connector and wire in the same order that they were removed in part 2, above; i.e. connect P02 to J01 first, and solder the bare wire to the HF ANT terminal last.
6. Replace the top cover of the transverter, and replace the eight screws.
7. Replace the 4-pin connector (P01) at the end of the connection cable on the FTV-707 with the 6-pin DIN plug as shown in Figure 5 and described below:
 - a. Remove the four screws on the 4-pin connector, and slide the black metal cover back to expose the wire connections to the pins. Unsolder the wires and remove the 4-pin connector parts.
 - b. Slide the shell of the DIN connector over the cable, and connect the white/brown wire to pin 2 of the DIN plug. Connect the black wire to the case (ground) of the DIN plug, and the yellow wire to pin 1 of the DIN plug.
 - c. Carefully insulate the end of the red wire with plastic tape, and then slide the shell of the DIN plug over the connections. Schematic diagrams are shown in Figure 8.

Connect the FTV-707 to the FT-102 as shown in Figure 6. If the FP-707 supply is not being used, connect 12 V DC to the FTV-707 using the Power Cord mentioned under "Parts required", after connecting the 4-pin connector left from part 7, as shown in Figure 7.

CAUTION

ONCE THE FTV-707 HAS BEEN MODIFIED IT MUST NOT BE USED WITH ANY MODEL TRANSCEIVER OTHER THAN THE FT-102, OR SEVERE DAMAGE TO THE EQUIPMENT MAY RESULT.

WHENEVER USING THE FTV-707 WITH THE FT-102, BE ABSOLUTELY CERTAIN THAT THE HEATER SWITCH ON THE FT-102 IS OFF, AND THAT THE TUBES HAVE HAD AT LEAST 30 SECONDS TO COOL.

WHEN USING THE FTV-707 WITH THE FT-102, THE IF MONITOR OF THE FT-102 WILL NOT FUNCTION NORMALLY. ALTHOUGH IT MAY SOUND DISTORTED, THIS IS NOT AN INDICATION OF DISTORTION OF THE OUTPUT OF THE FTV-707.

ALSO, WHEN TRANSMITTING WITH THE FT-102 AND FTV-707, THE IC, PO AND ALC METER FUNCTIONS IN THE FT-102 ARE DISABLED, AS WELL AS THE PLATE AND LOAD CONTROLS.

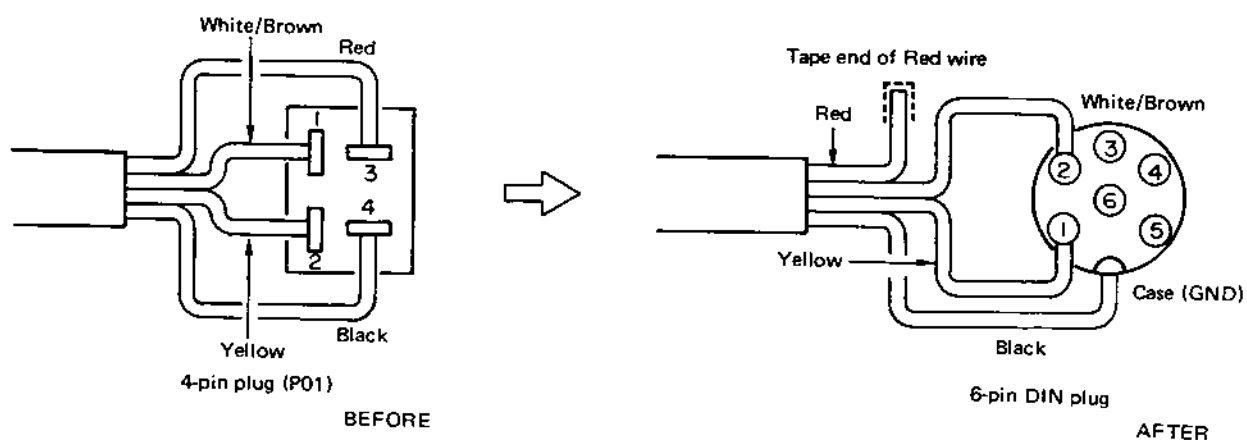


Figure 5

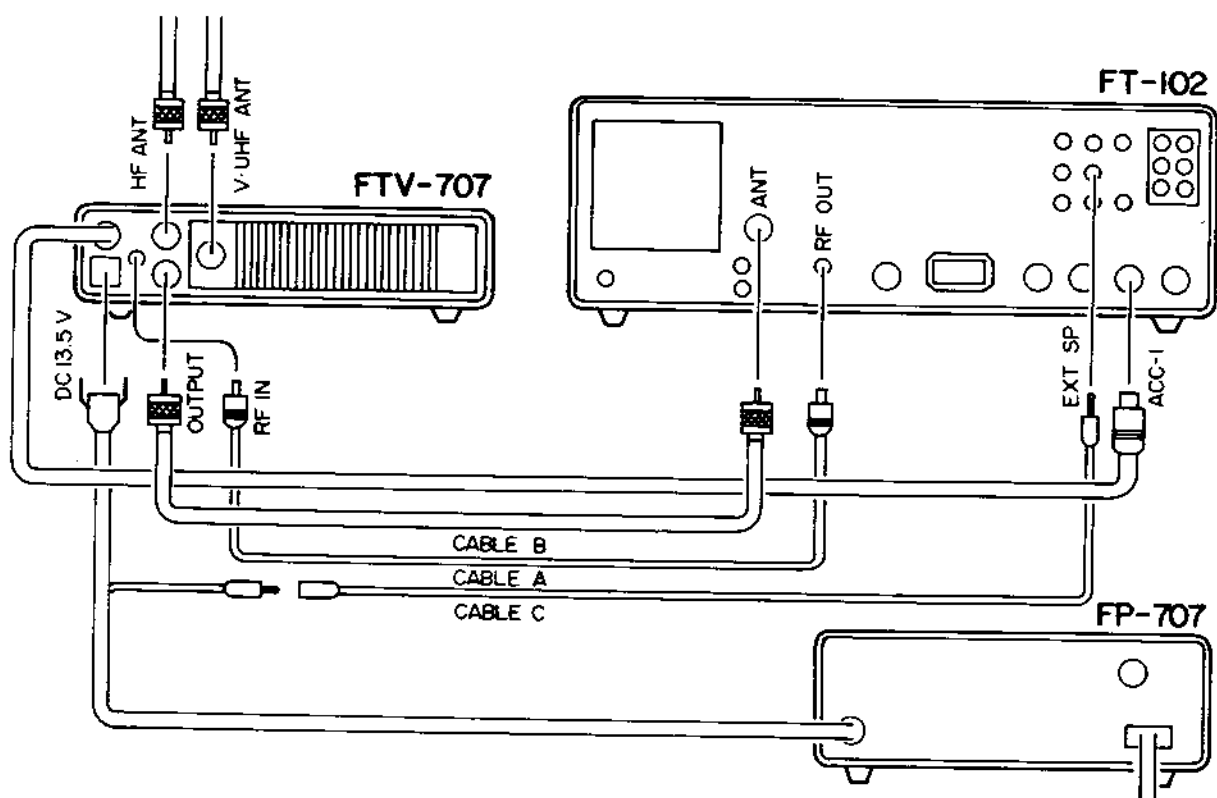


Figure 6

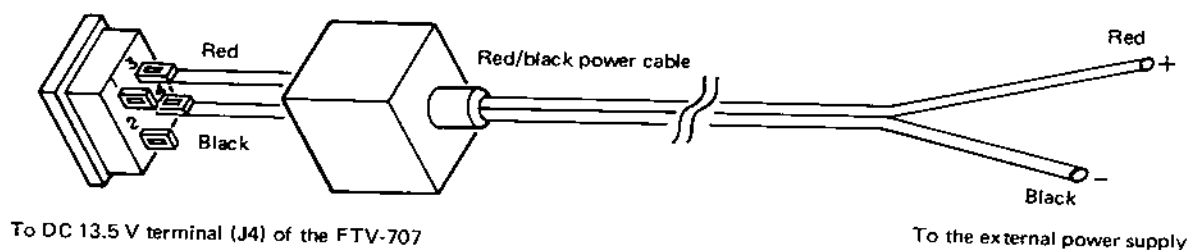


Figure 7

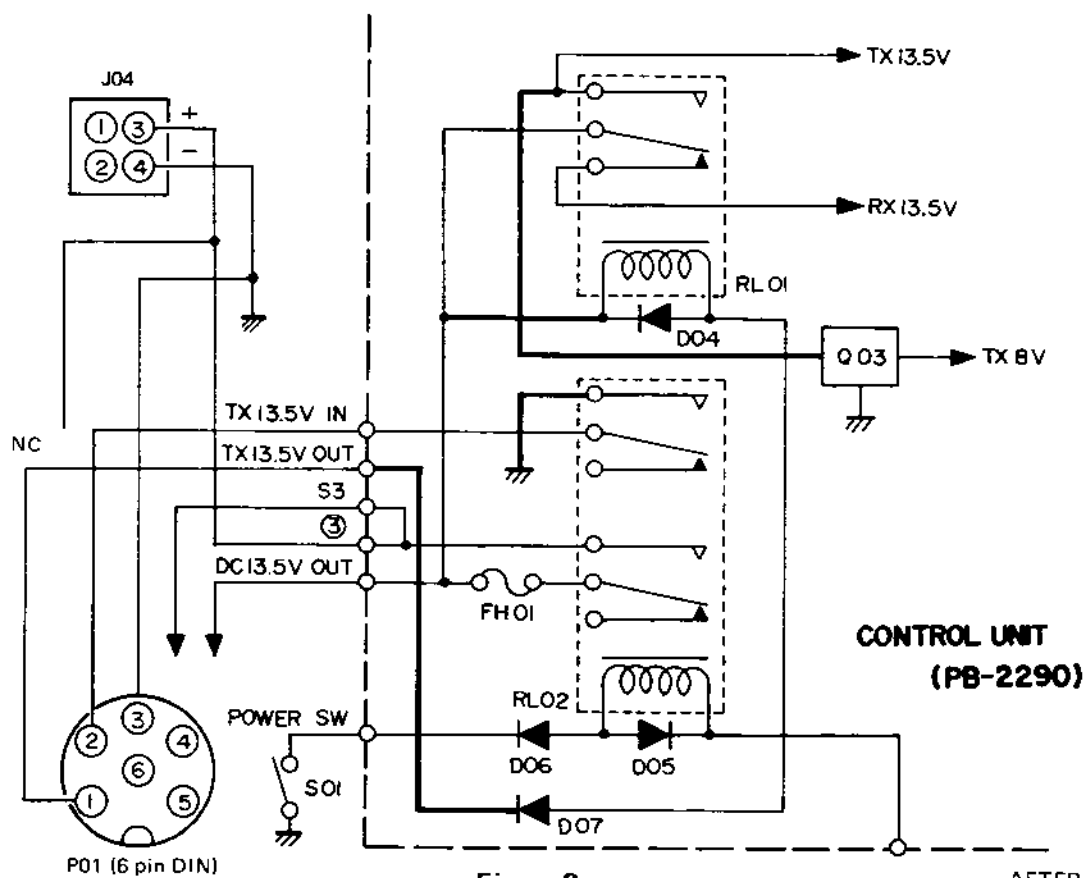
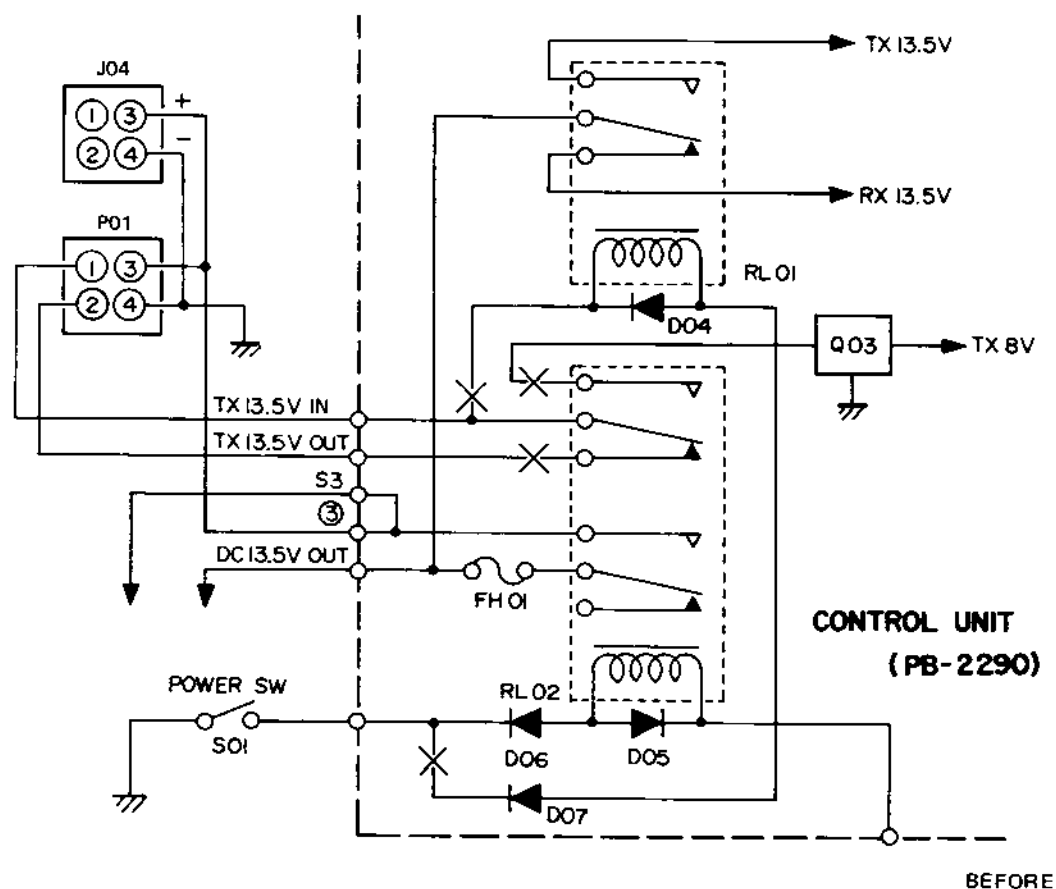


Figure 8

AFTER

COMPONENT APPLICATIONS

MAIN CHASSIS

PART NO.	DEVICE	TYPE	FUNCTION	V1001	12BY7A	Vacuum Tube	TX Driver Amplifier
Q1	2SB705R	Transistor	Regulator	XF1001	8.2M20A	Monolithic Filter	RX 1st IF Filter
Q2	μPC7808H	IC	"				
Q3	μPC7812H	"	"				
Q4	"	"	"				
D1	S4V10	Si Diode Bridge	Rectifier				
D2	1S1555	Si Diode	Switch				
D5	1S1555	Si Diode	Switch				
D6	Not Used						
D7	"						
D8	1S1555	Si Diode	Switch				
D9	"	"	"				
D10	Not Used						
D11	1S1555	Si Diode	Switch				
D12	"	"	"				
D13	"	"	"				
D14	10D1	"	Back Pulse Canceling Diode				
D15	1S1555	Si Diode	Switch				
D19	1S1555	Si Diode	Switch				
D20	10D1	"	"				
D21	1S1555	"	"				

IF UNIT

PART NO.	DEVICE	TYPE	FUNCTION
Q2001	2SK125Y	Junction FET	RX 1st IF Amplifier
Q2002	"	"	"
Q2003	3SK73GR	Dual Gate MOS FET	RX 1st IF Amplifier TX 2nd IF Amplifier (for CW, AM, FM) RX 2nd Mixer
Q2004	"	"	"
Q2005	2SK19TM-GR	Junction FET	TX 1st IF Buffer Amplifier (for SSB) RX Q Multiplier
Q2006	2SC1815Y	Transistor	"
Q2007	"	"	"
Q2008	"	"	RX 2nd IF Buffer Amplifier
Q2009	"	"	Regulator
Q2010	3SK73GR	Dual Gate MOS FET	RX 2nd IF Amplifier TX 1st IF Amplifier (@ Processor ON)
Q2011	2SC1815Y	Transistor	RX 2nd IF Buffer Amplifier (for IF OUT-1)
Q2012	2SC1815GR	"	RX AGC Amplifier
Q2013	2SK19TM-GR	Junction FET	RX S-Meter Amplifier
Q2014	2SA564AR	Transistor	"
Q2015	2SC1815Y	"	TX 1st IF Amplifier (@ Processor ON) TX RF Speech Processor Amplifier TX 1st Mixer
Q2016	TA7060AP	IC	"
Q2017	3SK73GR	Dual Gate MOS FET	"
Q2018	2SC1815GR	Transistor	RX N.B. Controller
Q2019	2SC1583	"	RX N.B. Amplifier
Q2020	"	"	"
Q2021	2SC380Y	"	"
Q2022	2SC1815GR	"	RX N.B. AGC Amplifier
Q2023	"	"	TX COMP. Meter Amplifier
Q2024	2SC380Y	"	TX MONI. Buffer Amplifier (for CW, SSB, AM)
Q2025	2SK19TMY	Junction FET	TX MONI. Mixer (for CW, SSB)
Q2026	"	"	TX MONI. Demodulator (for CW, SSB)
Q2027	2SC380Y	Transistor	TX MONI. Buffer Amplifier (for AM)
Q2028	"	"	TX MONI. Amplifier
Q2029	2SK19BL	Junction FET	TX ALC Meter Amplifier
Q2030	2SC1815Y	Transistor	TX ALC Meter Peak Hold Controller
Q2031	2SK19TM-GR	Junction FET	TX ALC Meter Amplifier
Q2032	2SA564AR	Transistor	"
Q2033	2SC1815Y	"	TX ALC Meter Peak Hold Controller
Q2034	2SA564AR	"	"
Q2035	"	"	"

RF UNIT

PART NO.	DEVICE	TYPE	FUNCTION
Q1001	2SK125Y	Junction FET	RX RF Amplifier
Q1002	"	"	"
Q1003	2SC1815Y	Transistor	RX Buffer Amplifier (for IF OUT-2)
Q1004	2SK125Y	Junction FET	RX Buffer Amplifier (for FM, N.B)
Q1005	"	"	RX 1st Mixer
Q1006	"	"	"
Q1007	2SC2407	Transistor	TX RF Amplifier
Q1008	ND487C2-3R	IC (Ring Module)	TX 2nd Mixer
Q1009	2SC1589	Transistor	TX RF Amplifier
Q1010	2SC1971	"	"
D1001	Not Used		
D1002	1S1555	Si Diode	Regulator
D1003	"	"	Back Pulse Canceling Diode
D1004	"	"	Switch
D1005	"	"	"
D1006	"	"	Back Pulse Canceling Diode
D1007	"	"	"
D1008	"	"	"
D1009	HZ3C1	Zener Diode	Regulator
D1010	10D10	Si Diode	Temperature Compensator
D1011	"	"	"
D1012	1S1555	"	Back Pulse Canceling Diode
D1013	"	"	Regulator
D1014	"	"	Switch
D1015	"	"	"

D2001	1SS97	Schottky Barrier Di.	RX N.B. GATE	D2067	1S1555	Si Diode	Switch
D2002	"	"	"	D2068	"	"	Threshold Level Compensator
D2003	FC63	Varactor Diode	"	D2069	Not Used		
D2004	1S1555	Si Diode	Switch	D2070	"		
				D2071	1S1555	Si Diode	Switch
				D2072	"	"	"
				D2073	BZ090	Zener Diode	Regulator
				D2074	"	"	"
D2010	1S1555	Si Diode	Switch	D2075	1S1555	Si Diode	Switch
D2011	1SS97	Schottky Barrier Di.	Switch	D2076	1S1555	Si Diode	Switch
D2020	1SS97	Schottky Barrier Di.	Switch	D2078	1S1555	Si Diode	Switch
D2021	1S1555	Si Diode	"	D2079	Not Used		
D2022	1SS97	Schottky Barrier Di.	"	D2080	1N60	Ge Diode	RX AM Detector
				D2081	1S1555	Si Diode	Switch
D2023	1S1555	Si Diode	"	D2082	"	"	"
D2024	1SS97	Schottky Barrier Di.	Switch	TH2001	D33A	Thermistor	Temperature Compensator
				XF2001	XF-8.2HS	Crystal Filter	RX 1st IF Filter (for SSB, CW) TX SSB Filter
D2028	1SS97	Schottky Barrier Di.	Switch	XF2002	XF-8.2GA	"	RX 1st IF Filter (for AM; Option)
D2029	1S1555	Si Diode	"	XF2003	XF-8.2HC	"	RX 1st IF Filter (for CW(W); Option)
D2030	"	"	"	XF2003	XF-8.2HCN	"	RX 1st IF Filter (for CW(N); Option)
D2031	FC-53M-4	Varactor Diode	RX Notch Filter Rejection Frequency Controller	XF2004	XF-8.2HSN	"	RX 1st IF Filter (for SSB(N); Option)
D2032	1S1555	Si Diode	Switch	XF2005	XF-455C	"	RX 2nd IF Filter (for CW(W); Option)
				XF2005	XF-455CN	"	RX 2nd IF Filter (for CW(N); Option)
D2036	1S1555	Si Diode	Switch	CF2001	CFM-455J1	Ceramic Filter	RX 2nd IF Filter (for SSB(W), (N), CW(W)) TX SSB Filter
D2037	Not Used						
D2038	1N60	Ge diode	RX AM Detector				
D2039	1N270	"	RX AGC Detector				
D2040	"	"	"				
D2041	1S1555	Si Diode	Switch				
D2045	1S1555	Si Diode	Switch				
D2046	1SS97	Schottky Barrier Di.	TX ALC Detector				
D2047	1S1555	Si Diode	Back Pulse Canceling Diode				
D2048	HZ9C1	Zener Diode	"				
D2049	1S1555	Si Diode	Switch				
D2050	"	"	"				
D2051	"	"	"				
D2052	"	"	"				
D2053	1N60	Ge Diode	RX N.B. Noise Detector				
D2054	"	"	"				
D2055	"	"	RX N.B. AGC Detector				
D2056	"	"	"				
D2057	1S1555	Si Diode	TX COMP M Detector				
D2058	"	"	"				
D2059	1SS97	Schottky Barrier Di.	Logarithmic Compensator				
D2060	1S1555	Si Diode	Switch				
D2061	"	"	"				
D2062	1N60	Ge Diode	TX MONI. AM Detector				
D2063	Not Used						
D2064	1S1555	Si Diode	Back Pulse Canceling Diode				
D2065	Not Used						
D2066	1S1555	Si Diode	Switch				

AF UNIT

PART NO.	DEVICE	TYPE	FUNCTION
Q3001	2SC732TM-GR	Transistor	TX MIC Amplifier
Q3002	2SC1815GR	"	"
Q3003	2SC1815BL	"	"
Q3004	2SC732TM-GR	"	TX MIC Tone Controller
Q3005	2SC1815Y	"	TX CW Side Tone Oscillator
Q3006	"	"	TX ANTI-TRIP Amplifier
Q3007	"	"	TX ANTI-TRIP DC Amplifier
Q3008	2SA733AQ	"	"
Q3009	"	"	Switch
Q3010	2SC1815Y	"	TX VOX Amplifier
Q3011	"	"	TX VOX DC Amplifier
Q3012	2SA733AQ	"	Switch
Q3013	2SC1815Y	"	Relay Driver
Q3014	"	"	"
Q3015	2SA496Y	"	Relay Controller
Q3016	2SC1815Y	"	TX AF OUT Buffer Amplifier
Q3017	"	"	TX Carrier Buffer Amplifier
Q3018	"	"	RX Carrier Buffer Amplifier

				LOCAL UNIT			
				PART NO.	DEVICE	TYPE	FUNCTION
Q3019	MC14066B	IC	Switch				
Q3020	2SC1815Y	Transistor	RX AF Active L.P.F. (for CW)				
Q3021	"	"	RX AF Buffer Amplifier (for CW)	Q4001	2SC945AQ	Transistor	RX 1st Local VCO. TX 2nd Local VCO. (for 1.9, 3.5 MHz)
Q3022	2SC1815GR	"	RX AF Active L.P.F. (for AM, SSB)				
Q3023	"	"	RX AF Buffer Amplifier (for AM, SSB)	Q4002	"	"	RX 1st Local VCO. TX 2nd Local VCO. (for 7, 10 MHz)
Q3024	AN6551	IC	RX AF A.P.F.				
Q3025	μPC2002V	"	RX Audio Amplifier	Q4003	"	"	RX 1st Local VCO. TX 2nd Local VCO. (for 14 MHz)
Q3026	2SK19TMY	Junction FET	Carrier Oscillator (for CW, AM, FM)				
Q3027	2SC380Y	Transistor	Carrier Buffer Amplifier (for CW)	Q4004	"	"	RX 1st Local VCO. TX 2nd Local VCO. (for 18 MHz)
Q3028	"	"	Carrier Frequency Controller	Q4005	"	"	RX 1st Local VCO. TX 2nd Local VCO. (for 21, 24.5 MHz)
Q3029	"	"	Carrier Buffer Amplifier (for AM, FM)				
Q3030	2SC1815Y	"	MUTE Switch	Q4006	"	"	RX 1st Local VCO. TX 2nd Local VCO. (for 28 MHz, AUX)
D3001	1S1555	Si Diode	Switch				
D3002	1SS97	Schottky Barrier Di.	TX Balanced Modulator	Q4007	2SC535B	"	RX 1st Local Buffer Amplifier, TX 2nd Local Buffer Amplifier
				Q4008	2SC2407	"	"
				Q4009	2SC945AQ	"	PLL UNLOCK Switch
D3005	1SS97	Schottky Barrier Di.	TX Balanced Modulator	Q4010	"	"	"
				Q4011	2SC535B	"	RX 1st Local Buffer Amplifier, TX 2nd Local Buffer Amplifier
D3006	1S1555	Si Diode	Switch				
D3007	1N270	Ge Diode	"				
D3008	HZ3C1	Zener Diode	"	Q4012	SN76514N	IC	PLL Mixer
D3009	1N270	Ge Diode	"	Q4013	2SC535B	Transistor	PLL IF Buffer Amplifier
D3010	1S1555	Si Diode	"	Q4014	"	"	"
D3011	1N60	Ge Diode	TX ANTI-TRIP Detector	Q4015	"	"	"
D3012	1S1555	Si Diode	Switch	Q4016	2SA733AQ	"	PLL UNLOCK Amplifier
D3013	"	"	"	Q4017	SN74LS192	IC	PLL Programmable Divider
D3014	1N60	Ge Diode	TX VOX Detector				
D3015	10D1	Si Diode	Back Pulse Canceling Diode	Q4018	MC4044	"	PLL Phase Detector
				Q4019	SN74LS90	"	PLL Reference 1/5, 1/10 Divider
D3016	1S1555	Si Diode	Switch				
				Q4020	MC14518BCP	"	PLL Reference 1/2, 1/40 Divider
				Q4021	2SC945AQ	Transistor	PLL Reference Buffer Amplifier
D3020	1S1555	Si Diode	Switch	Q4022	2SC732GR	"	PLL Active L.P.F.
D3021	1N60	Ge Diode	RX Balanced Demodulator	Q4023	"	"	"
				Q4024	SN76514N	IC	PLL Mixer
				Q4025	3SK73GR	Dual Gate MOS FET	"
D3024	1N60	Ge Diode	RX Balanced Demodulator	Q4026	2SC945AQ	Transistor	PLL Reference Oscillator
D3025	1S1555	Si Diode	Switch	Q4027	"	"	PLL Reference Buffer Amplifier
				Q4028	"	"	"
				Q4029	"	"	PLL Reference Doubler
D3028	1S1555	Si Diode	Switch	Q4030	3SK73GR	Dual Gate MOS FET	PLL Mixer
D3029	Not Used						
D3030	1S1555	Si Diode	Switch	Q4031	2SC945AQ	Transistor	PLL Buffer Amplifier
D3031	"	"	"	Q4032	"	"	RX 2nd, TX 1st Local Frequency Controller
D3032	"	"	"	Q4033	"	"	RX 2nd, TX 1st Local VCO
D3033	Not Used			Q4034	"	"	RX 2nd, TX 1st Local Buffer Amplifier
D3034	"						
D3035	1S1555	Si Diode	Switch	Q4035	"	"	"
				Q4036	"	"	Carrier VCXO (for CW, SSB)
X 3001	8.2159 MHz	Crystal	Carrier Oscillator (for CW, AM, FM)	Q4037	"	"	VCXO Buffer Amplifier
				Q4038	3SK73GR	Dual Gate MOS FET	RX 2nd, TX 1st Local Mixe
				Q4039	2SC945AQ	Transistor	RX 2nd, TX 1st Local Buffer Amplifier
				Q4040	3SK73GR	Dual Gate MOS FET	Carrier Mixer
				Q4041	2SC945AQ	Transistor	Carrier Buffer Amplifier
				Q4042	"	"	Switch

D4001	1SS53	Si Diode	Switch
D4041	1SS53	Si Diode	Switch
D4042	FC-52M	Varactor Diode	RX 1st Local VCO. TX 2nd Local VCO. (for 1.9, 3.5 MHz)
D4043	1SS53	Si Diode	Switch
D4044	"	"	"
D4045	"	"	"
D4046	FC-52M	Varactor Diode	RX 1st Local VCO. TX 2nd Local VCO. (for 7, 10 MHz)
D4047	1SS53	Si Diode	Switch
D4048	FC-52M	Varactor Diode	RX 1st Local VCO. TX 2nd Local VCO. (for 14 MHz)
D4049	1SS53	Si Diode	Switch
D4050	FC-52M	Varactor Diode	RX 1st Local VCO. TX 2nd Local VCO. (for 18 MHz)
D4051	1SS53	Si Diode	Switch
D4052	"	"	"
D4053	"	"	"
D4054	FC-52M	Varactor Diode	RX 1st Local VCO. TX 2nd Local VCO. (for 2L, 24.5 MHz)
D4055	1SS53	Si Diode	Switch
D4056	"	"	"
D4057	"	"	"
D4058	FC-52M	Varactor Diode	RX 1st Local VCO. TX 2nd Local VCO. (for 28 MHz, AUX)
D4059	1SS53	Si Diode	Switch
D4060	"	"	"
D4061	"	"	"
D4062	HZ5C2	Zener Diode	Regulator
D4063	1SS53	Si Diode	Switch
D4074	1SS53	Si Diode	Switch
D4075	1SS97	Schottky Barrier Di.	Switch
D4076	Not Used		
D4077	1SS53	Si Diode	Switch
D4078	"	"	"
D4079	1SV50	Varactor Diode	RX 2nd, TX 1st Local VCO
D4080	1SS53	Si Diode	Switch
D4081	"	"	"
D4082	1SV50	Varactor Diode	Carrier VCO (for CW, SSB)
D4083	10D1	Si Diode	Back Pulse Canceling Diode
D4084	1SS97	Schottky Barrier Di.	Switch
D4085	1SS53	Si Diode	"
D4086	1S1555	Si Diode	Switch
D4089	1S1555	Si Diode	Switch
X4001	10.0 MHz	Crystal	PLL Reference Oscillator
X4002	19.215 MHz	"	RX 2nd, TX 1st Local VCO
X4003	10.5434 MHz	"	Carrier VCO (for LSB)
X4004	10.5466 MHz	"	Carrier VCO (for USB)

COUNTER UNIT

PART NO.	DEVICE	TYPE	FUNCTION
Q5001	2SC1815Y	Transistor	Counter Buffer Amplifier
Q5002	"	"	"
Q5003	MC14518B	IC	Counter Divider
Q5004	"	"	"
Q5005	MC14011B	"	Counter Mixer
Q5006	MC14022	"	Counter Divider
Q5007	TC5070	"	Counter
Q5008	TC5066	"	Frequency Display Driver
Q5009	"	"	Frequency Display Digit Driver
Q5010	"	"	Frequency Display Segment Driver
Q5011	MC14011	"	Counter Encoder
Q5012	MC14081B	"	"
Q5013	"	"	"
Q5014	2SC1815GR	Transistor	Oscillator (for DC-DC Converter)
Q5015	78L05	IC	Regulator
D5001	1S1555	Si Diode	Switch
D5065	1S1555	Si Diode	Switch
D5066	HZ5C2	Zener Diode	Regulator
D5067	1S1554	Si Diode	Switch
D5068	Not Used		
D5069	1S1555	Si Diode	Switch
DS5001	FIP9E8	Fluorescent Tube	Frequency Display

FM/AM UNIT (OPTION)

PART NO.	DEVICE	TYPE	FUNCTION
Q6001	TA7069P	IC	TX AM Modulator
Q6002	2SK19TM-GR	Junction FET	TX 2nd IF Buffer Amplifier
Q6003	TC5082P	IC	TX 2nd IF 1/2 ⁸ Divider
Q6004	2SK19TM-GR	Junction FET	VCO Buffer Amplifier
Q6005	TC5082P	IC	VCO 1/2 ⁸ Divider
Q6006	2SK19TM-BL	Junction FET	VCO (for FM TX Carrier)
Q6007	2SC380Y	Transistor	VCO Buffer Amplifier
Q6008	MC3359	IC	RX FM Mixer, Limiter Amplifier, Discriminator, Noise Amplifier, Squelch Switch
Q6009	Not Used		
Q6010	2SC1815GR	Transistor	RX Squelch Switch
Q6011	"	"	"
Q6012	"	"	RX Mute Switch
Q6013	TC5081P	IC	Phase Detector
Q6014	μPC577H	"	TX MIC Limiter Amplifier (for FM)
Q6015	2SC1815GR	Transistor	Active L.P.F.
D6001	1S1555	Si Diode	Switch
D6002	"	"	"
D6003	MV104	Varactor Diode	TX FM Modulator
D6004	1N60	Ge Diode	RX FM Noise Detector
D6005	"	"	"

D6006	1S1555	Si Diode	TX IDC.
D6007	"	"	"
XF6001	8.2M20A	Crystal Filter	RX FM 1st IF Filter
CF6001	CFX455D	Ceramic Filter	RX FM Discriminator
TH6001	Not Used		
TH6002	D33A	Thermistor	Temperature Compensator

D8501	10D10	Si Diode	Rectifier
D8504	10D10	Si Diode	Rectifier
D8505	V06B	"	"
D8506	HZ6C1	Zener Diode	Regulator
D8507	AW01-24	"	"

VFO UNIT

PART NO.	DEVICE	TYPE	FUNCTION
Q7001	VFO-01	IC	Oscillator, Buffer Amplifier
D7001	1S2236	Varactor Di	Clarifier Frequency Controller

RECT A UNIT

PART NO.	DEVICE	TYPE	FUNCTION
Q8001	2SA733AQ	Transistor	KEY Switch
Q8002	2SC1815Y	"	"
Q8003	2SA639Q	"	"
Q8004	2SC2229	"	TX ALC DC Amplifier
D8001	SM1-12	Si Diode	Rectifier
D8002	10D10	"	"
D8003	"	"	"
D8004	"	"	Back Pulse Canceling Diode
D8005	"	"	"
D8006	"	"	Rectifier
D8007	1S1555	"	Switch
D8008	"	"	"
D8009	Not Used		
D8010	"		
D8011	1S1555	Si Diode	Temperature Compensator
D8012	"	"	"
D8013	"	"	KEY Switch
D8014	"	"	"
D8015	"	"	TX ALC Detector
D8016	"	"	Switch
D8017	"	"	Temperature Compensator
D8018	"	"	Switch

RECT B UNIT

PART NO.	DEVICE	TYPE	FUNCTION
Q8501	2SA733AQ	Transistor	Regulator
Q8502	μPC78L12	IC	"
Q8503	2SC496Y	Transistor	"
Q8504	2SC1815Y	"	Switch
Q8505	μPC78L15	IC	Regulator

VR UNIT

PART NO.	DEVICE	TYPE	FUNCTION
D9001	1S1555	Si Diode	Switch

SW UNIT A

PART NO.	DEVICE	TYPE	FUNCTION
D9201	1S1555	Si Diode	Switch
D9202	"	"	"
D9203	GD4-203SRD	LED	Clarifier Indicator
D9204	"	"	"

SW UNIT B

PART NO.	DEVICE	TYPE	FUNCTION
D9401	1S1555	Si Diode	Switch
D9405	1S1555	Si Diode	Switch

RELAY UNIT A

PART NO.	DEVICE	TYPE	FUNCTION
D9601	1S1555	Si Diode	Back Pulse Canceling Diode
D9602	1N60	Ge Diode	TX PO. Meter Voltage Detector

FINAL BOARD

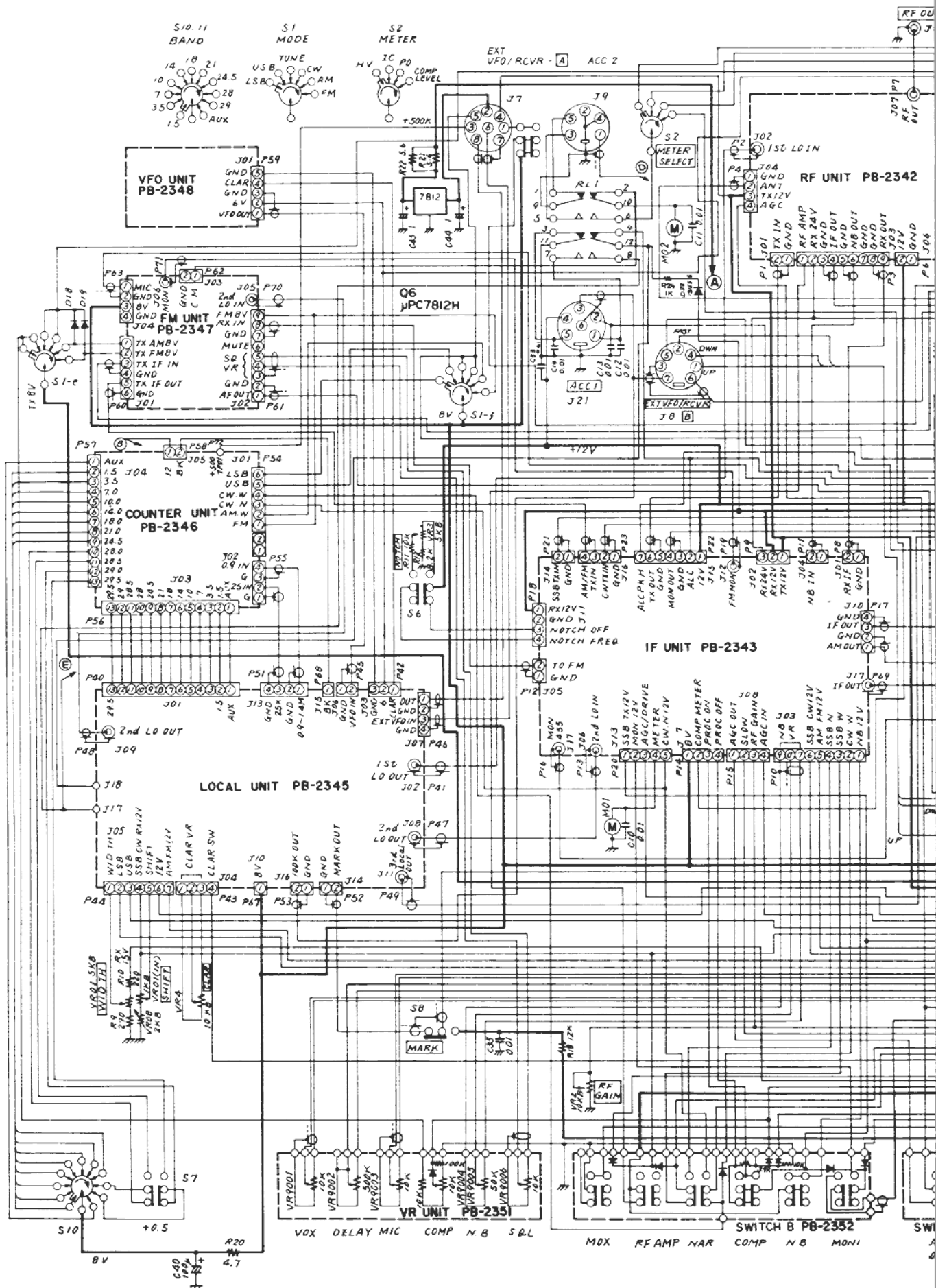
PART NO.	DEVICE	TYPE	FUNCTION
V9801	6146B	Vacuum Tube	TX Final Amplifier
V9802	"	"	"
V9803	"	"	"

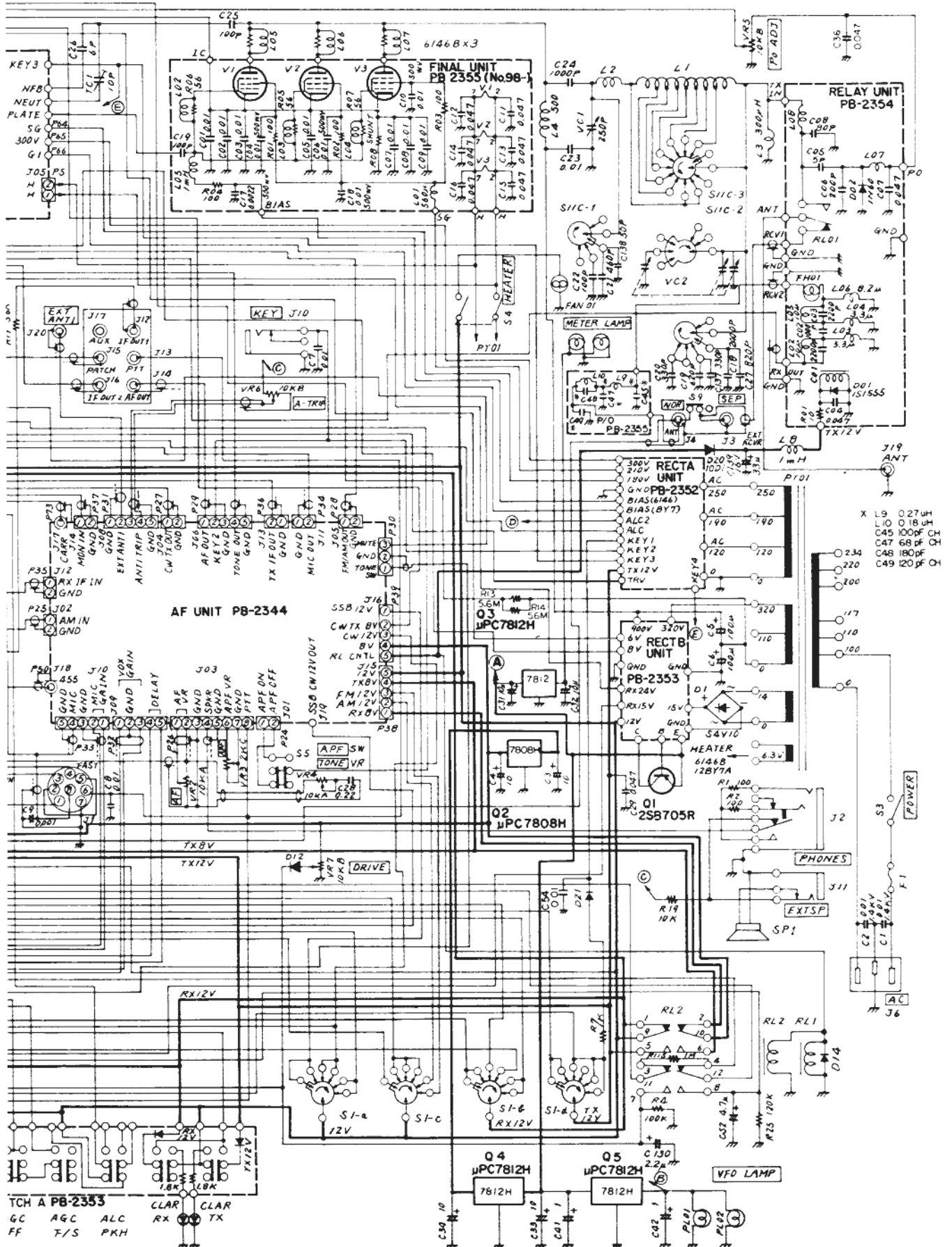
(V9801, V9803: 100W Type)

RELAY UNIT B

PART NO.	DEVICE	TYPE	FUNCTION
D9901	1S1555	Si Diode	Switch
D9902	10D10	"	Back Pulse Canceling Diode

— MEMO —





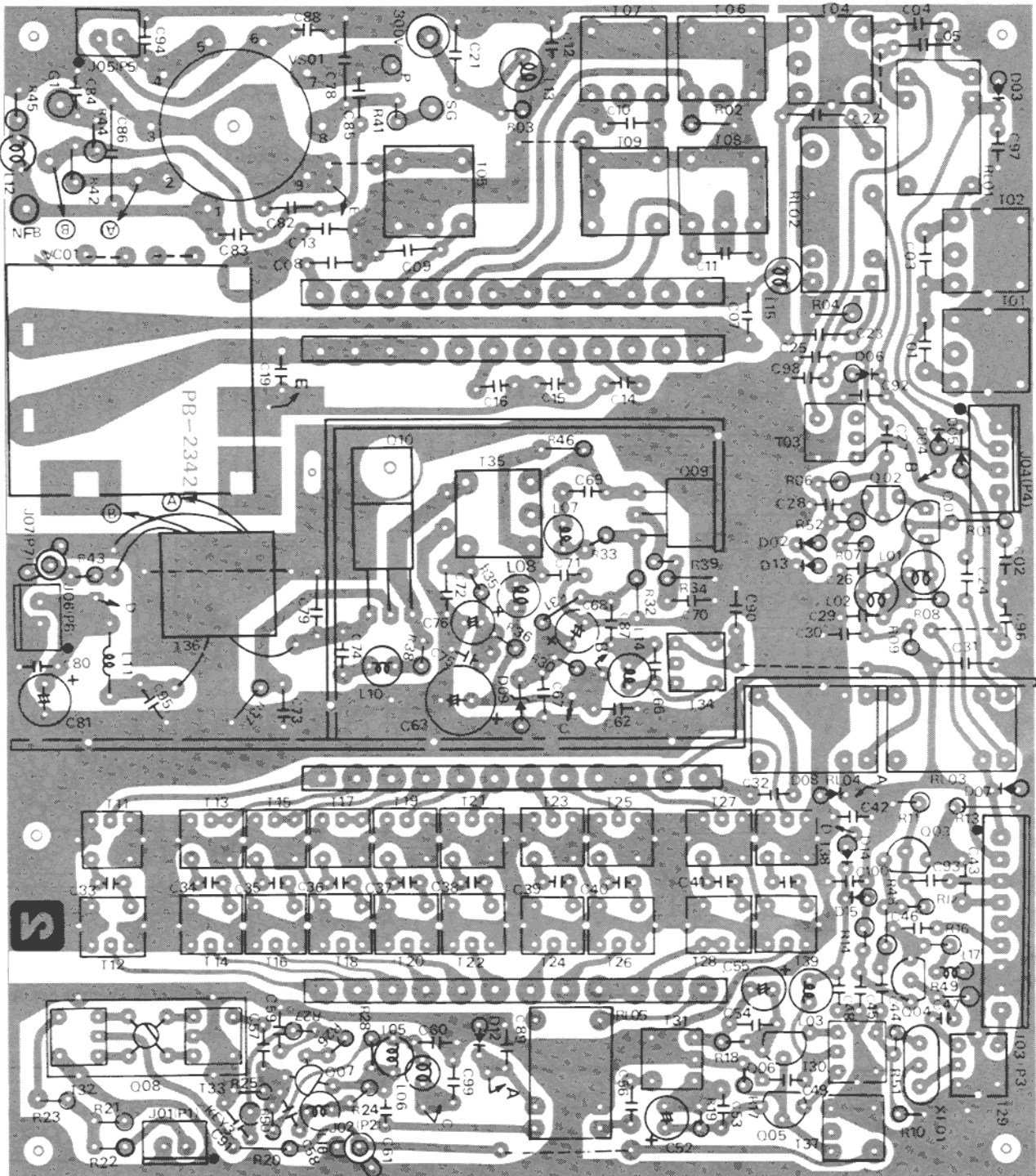
FT-102
WIRING DIAGRAM

Diagram of the 2SC1589 transistor package. The package is a small, rectangular component with three pins extending from one side. The pins are labeled: EMITTER (top pin), BASE (middle pin), and COLLECTOR (bottom pin). The package is also labeled 2SC1589.

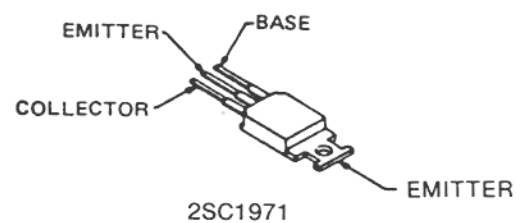
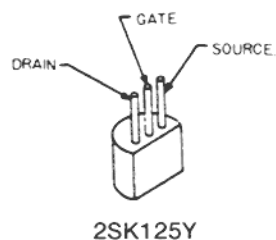
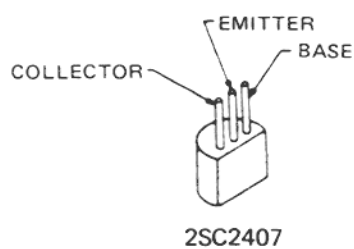
A diagram of a transistor package with three pins. The pins are labeled: 'BASE' for the leftmost pin, 'COLLECTOR' for the middle pin, and 'EMITTER' for the rightmost pin.

2SC1815Y

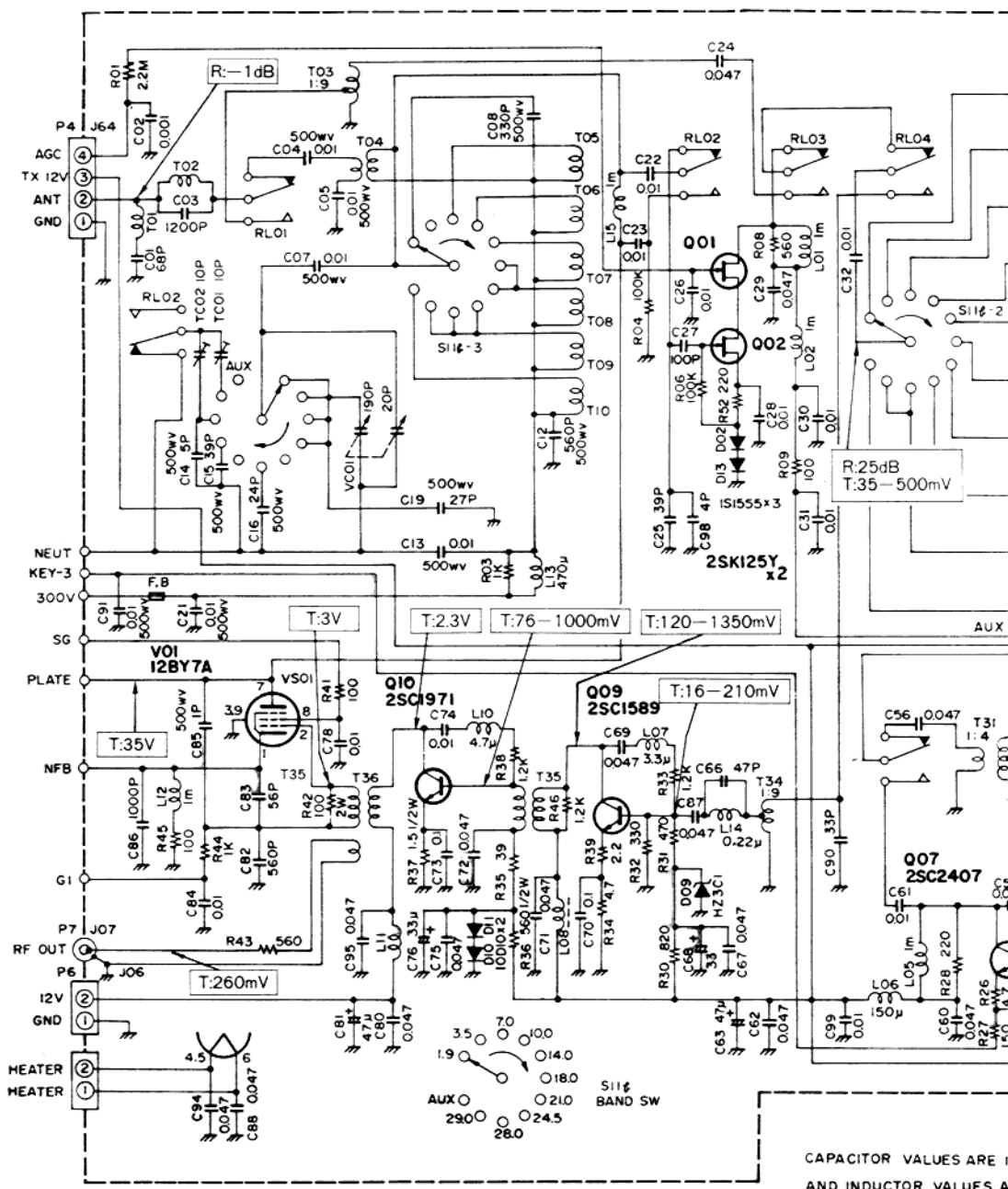
RF UNIT PARTS LAYOUT



Viewed from Solder Side

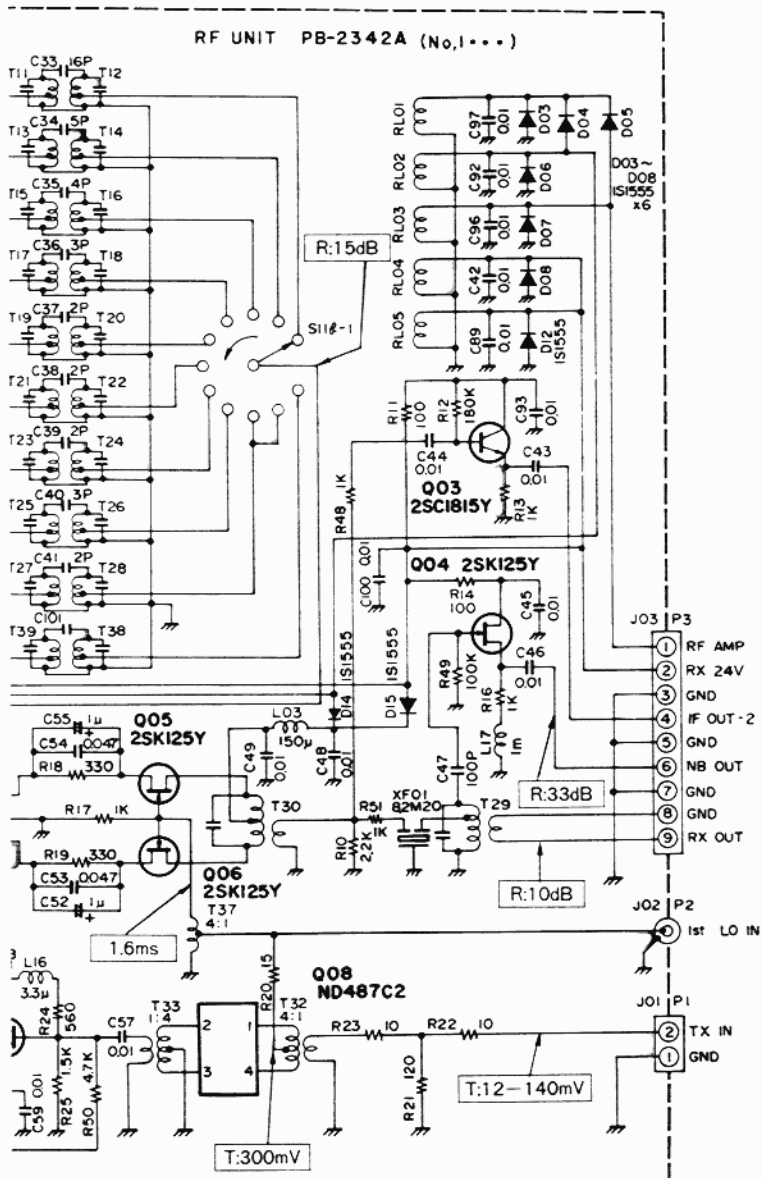


RF UNIT



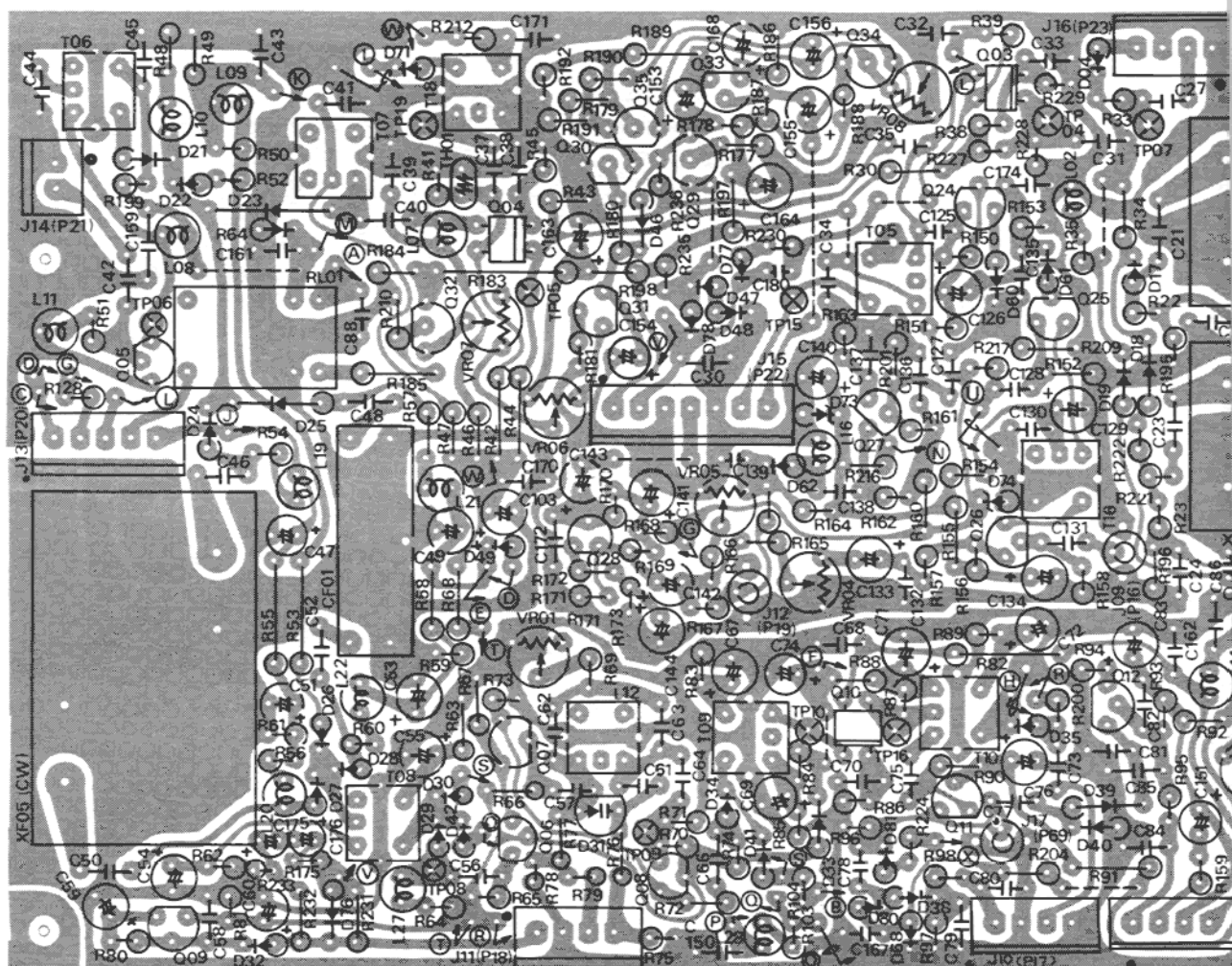
	E/S (V)	C/D (V)	B/G (V)	G ₂ (V)	REM
Q1001	7.5	24.0	4.1		
Q1002	4.0	7.5	1.6		
Q1003	12.0	24.0	12.8		
Q1004	3.4	24.0	0		
Q1005	2.8	23.5	0		
Q1006	2.8	23.5	0		
Q1007	5.9	12.0	6.4		TX
Q1009	0.4	12.0	1.2		
Q1010	0.3	12.0	1.2		

V100



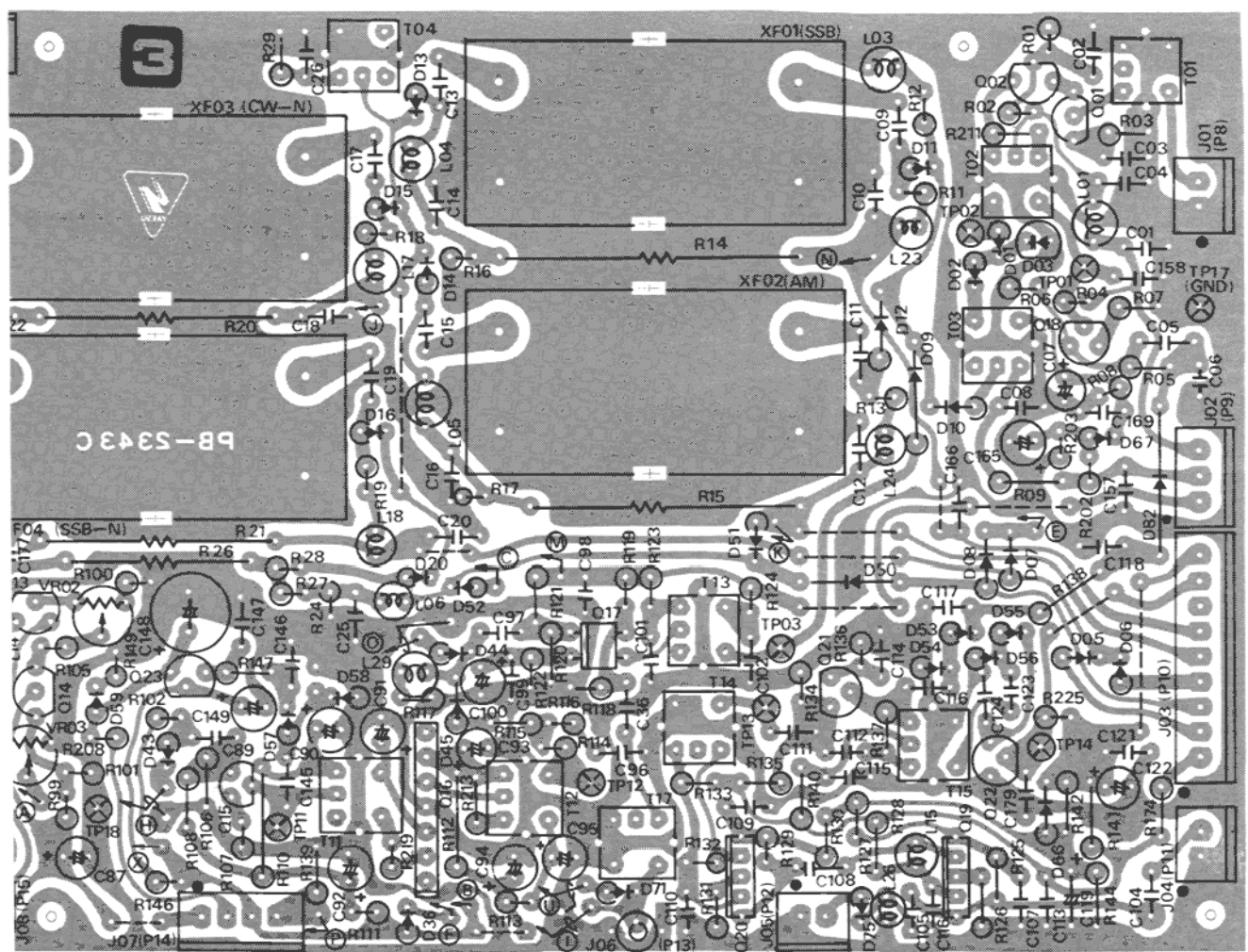
1 μ F, 50wv; RESISTOR VALUES ARE IN Ω , 1/4W;
RE IN HENRIES UNLESS OTHERWISE NOTED.

	1	2	3	4	5	6	7	8	9
1	0	-19/0	0	H	H	H	300	235/180	0



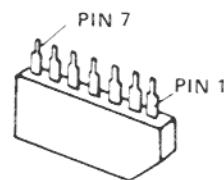
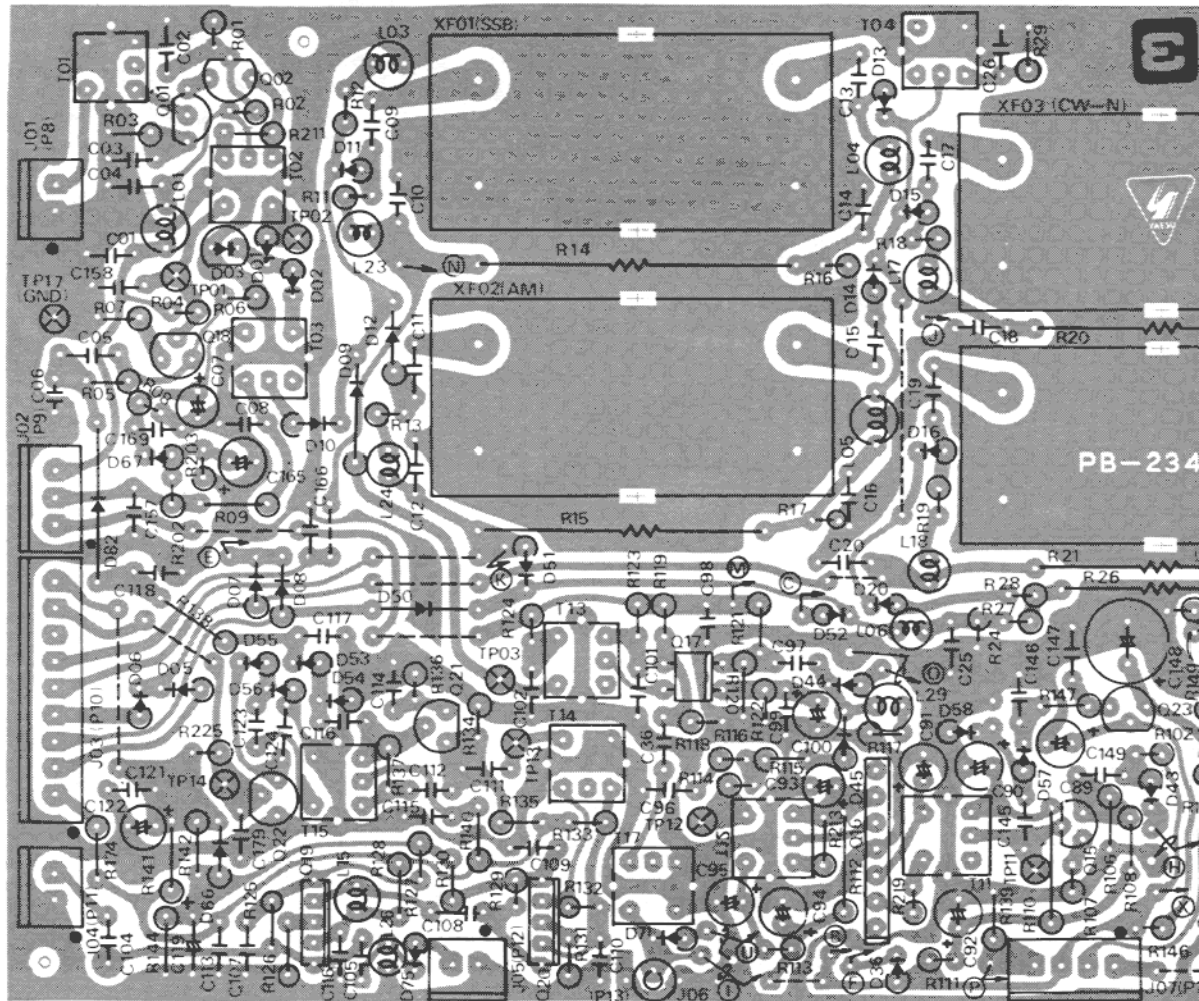
	E / S	C / D	B / G	G ₂	REM		E / S	C
Q2001	2.2	9.6	0			Q2019	1.0	C ₁
Q2002	9.6	24.0	7.5			Q2020	1.0	C ₁ C ₂
Q2003	1.0	12.0	1.4	4.6		Q2021	2.0	1
Q2004	2.3	8.6	2.0	3.6		Q2022	0	
Q2005	0.4	12.0	0		T	Q2023	0	1
Q2006	3.0	9.8	3.6			Q2024	5.3	
Q2007	3.0	9.7	3.7			Q2025	1.1	
Q2008	3.7	9.8	4.3			Q2026	7.0	
Q2009	9.8	11.5	10.3			Q2027	1.2	
Q2010	2.3	8.3	2.2	5.3		Q2028	1.1	
Q2011	4.0	7.8	4.6			Q2029	1.6	
Q2012	0	4.8	0			Q2030	0	
Q2013	7.0	8.0	5.2			Q2031	4.2	1
Q2014	4.8	0	5.0			Q2032	11.5	
Q2015	2.2	12.0	2.8		T COMP ON	Q2033	0.3	
Q2016	③ 0	④⑤ 12.0			T	Q2034	11.8	
Q2017	2.0	11.8	2.4	4.2	T	Q2035	4.3	
Q2018	0	8.2	0					

ARTS LAYOUT

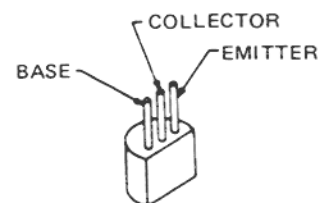


Viewed from Component Side

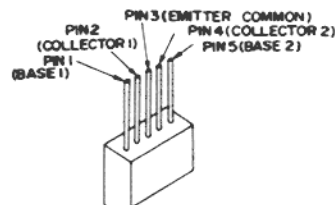
/D	B / G	G ₂	REM
7.8	B 2.2	B 1.2	
7.8	B 1.6	B 1.5	
1.8	2.6		NB ON
3.0	0		NB ON
2.0	0		T COMP ON
9.0	6.0		T MONI ON
9.2	0		T MONI ON
2.5	0		T MONI ON
3.5	2.0		T MONI ON
4.8	1.6		T MONI ON
3.1	0.7		T
0.1	0.5		T
0.0	3.0		T
0	11.0		T
3.3	0.7		T
3.7	11.5		T
4.2	3.7		T



TA7060AP

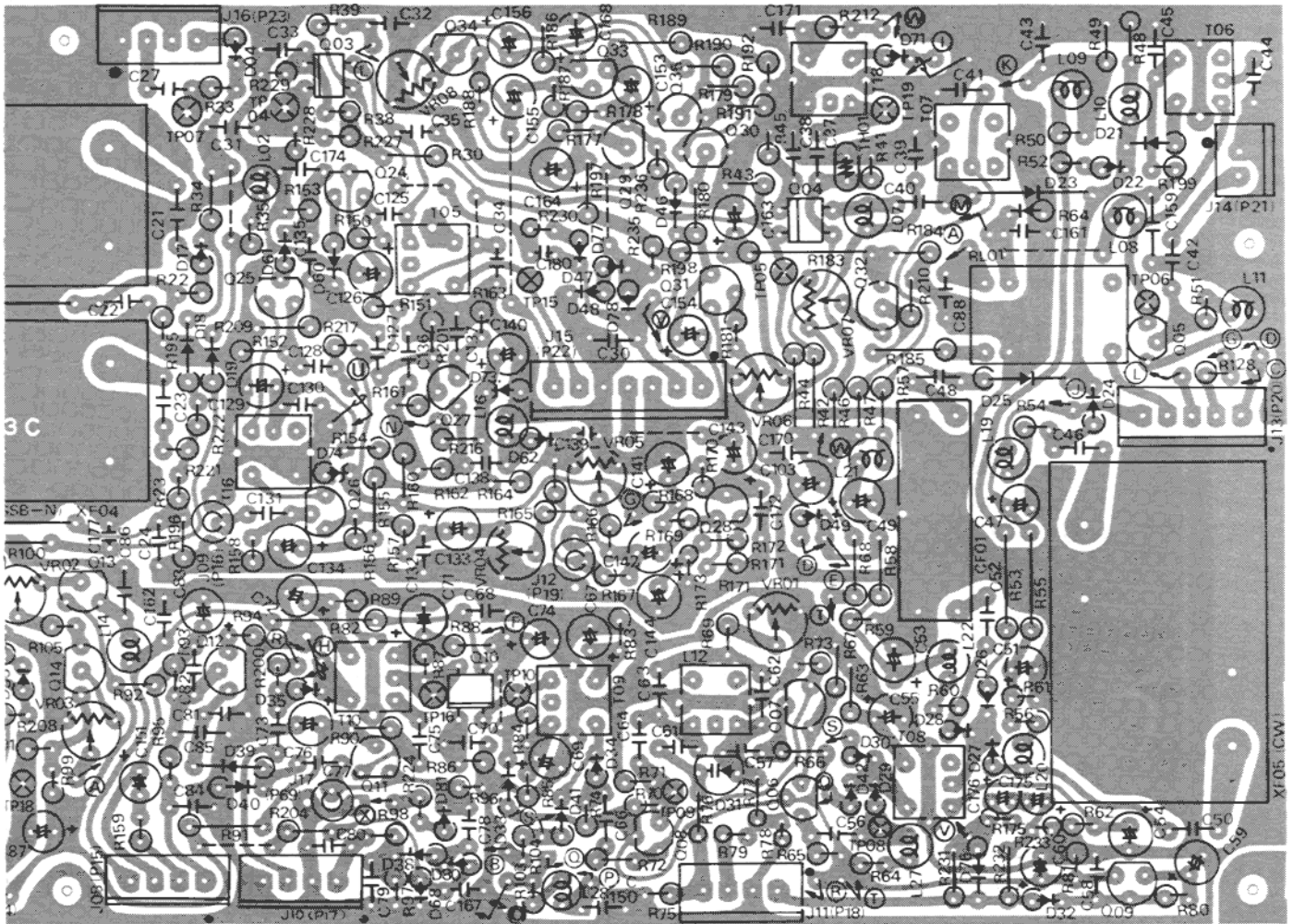


2SA564AR
2SC380Y
2SC1815GR
2SC1815Y

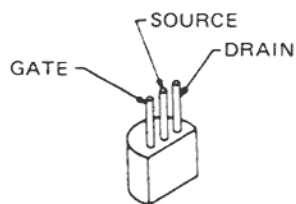


2SC1583

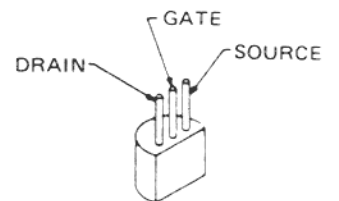
PARTS LAYOUT



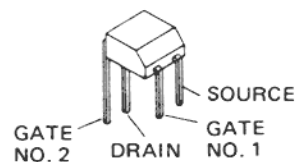
Viewed from Solder Side



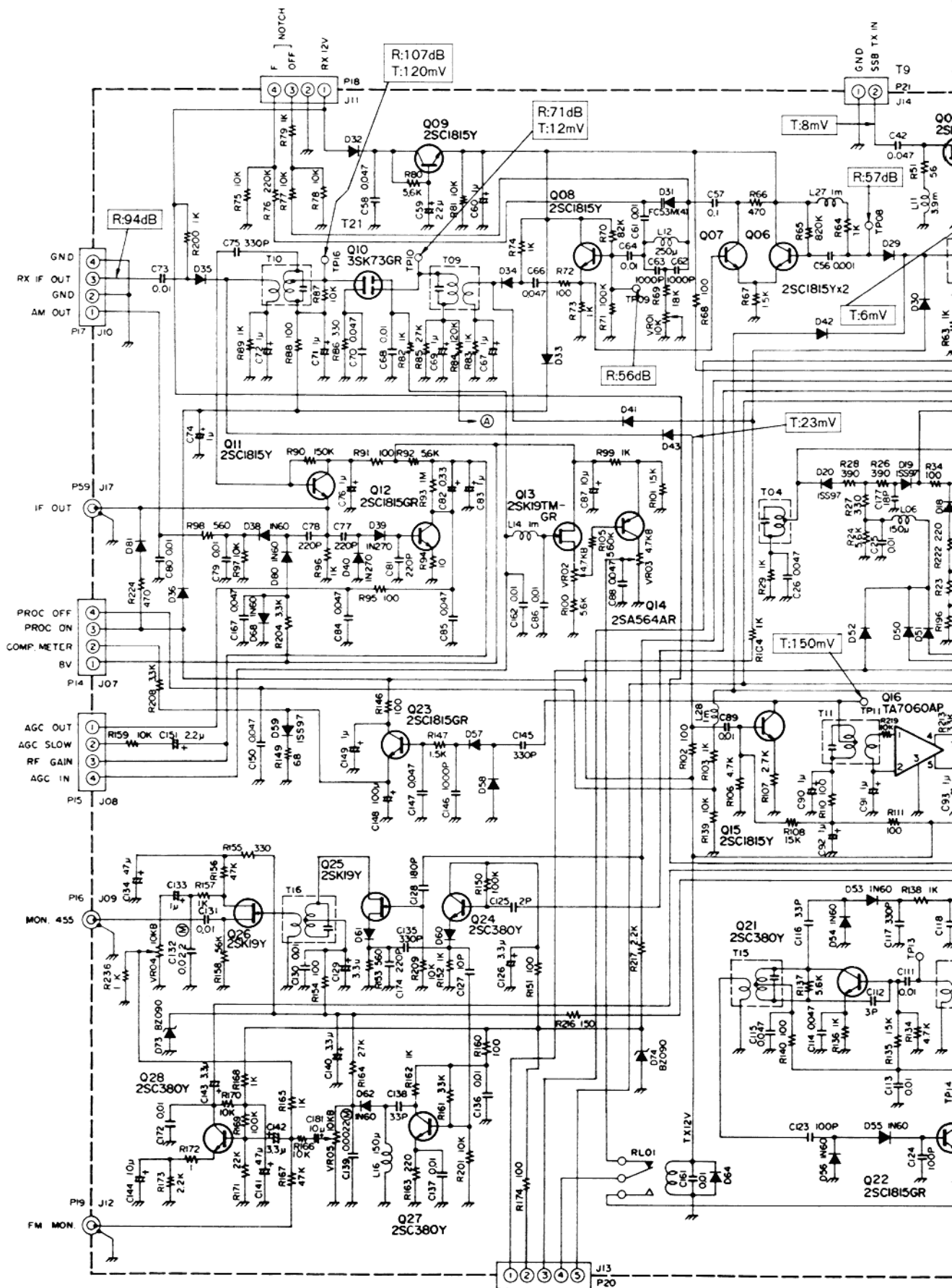
2SK19BL
2SK19GR
2SK19Y



2SK125Y

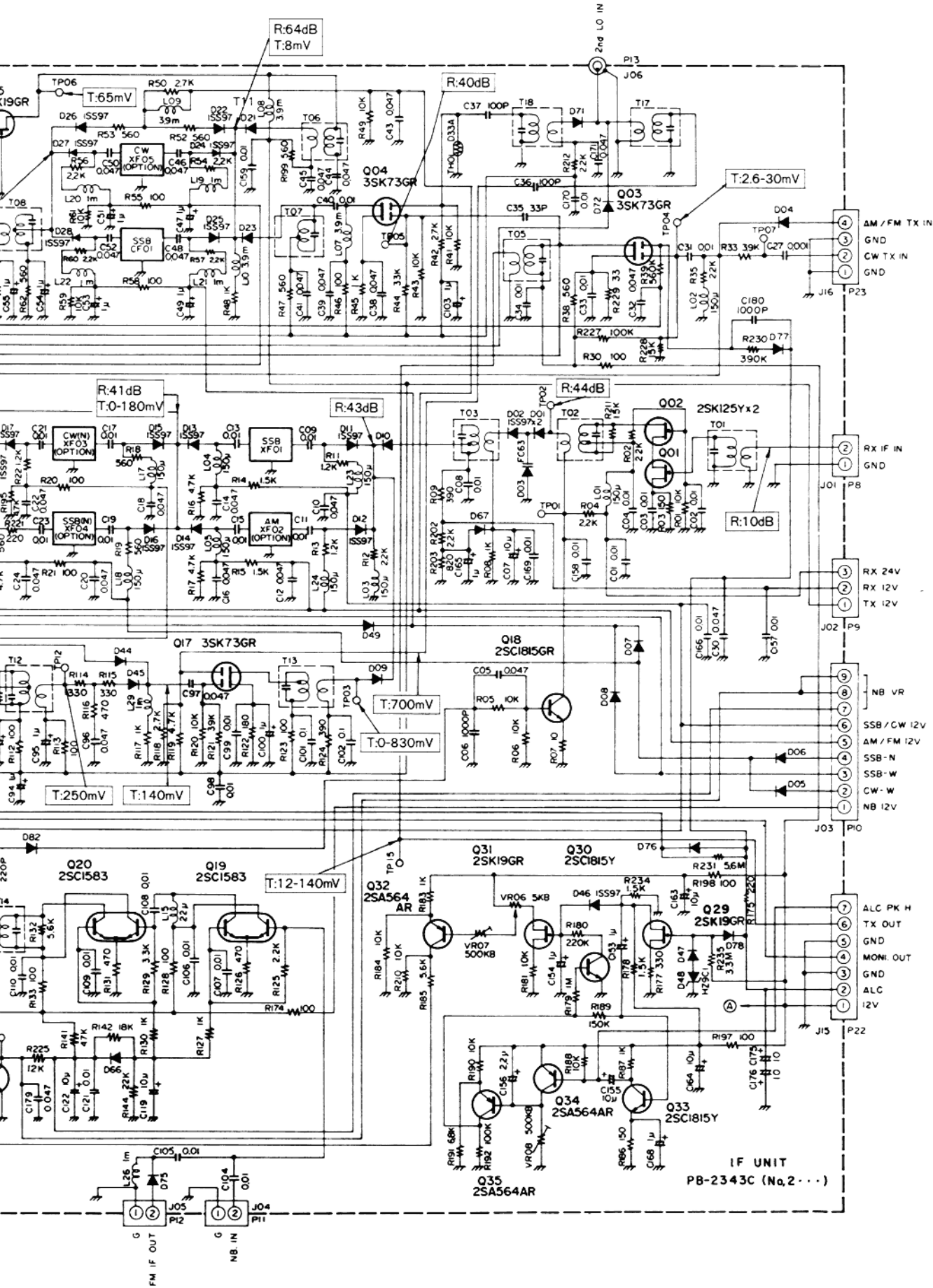


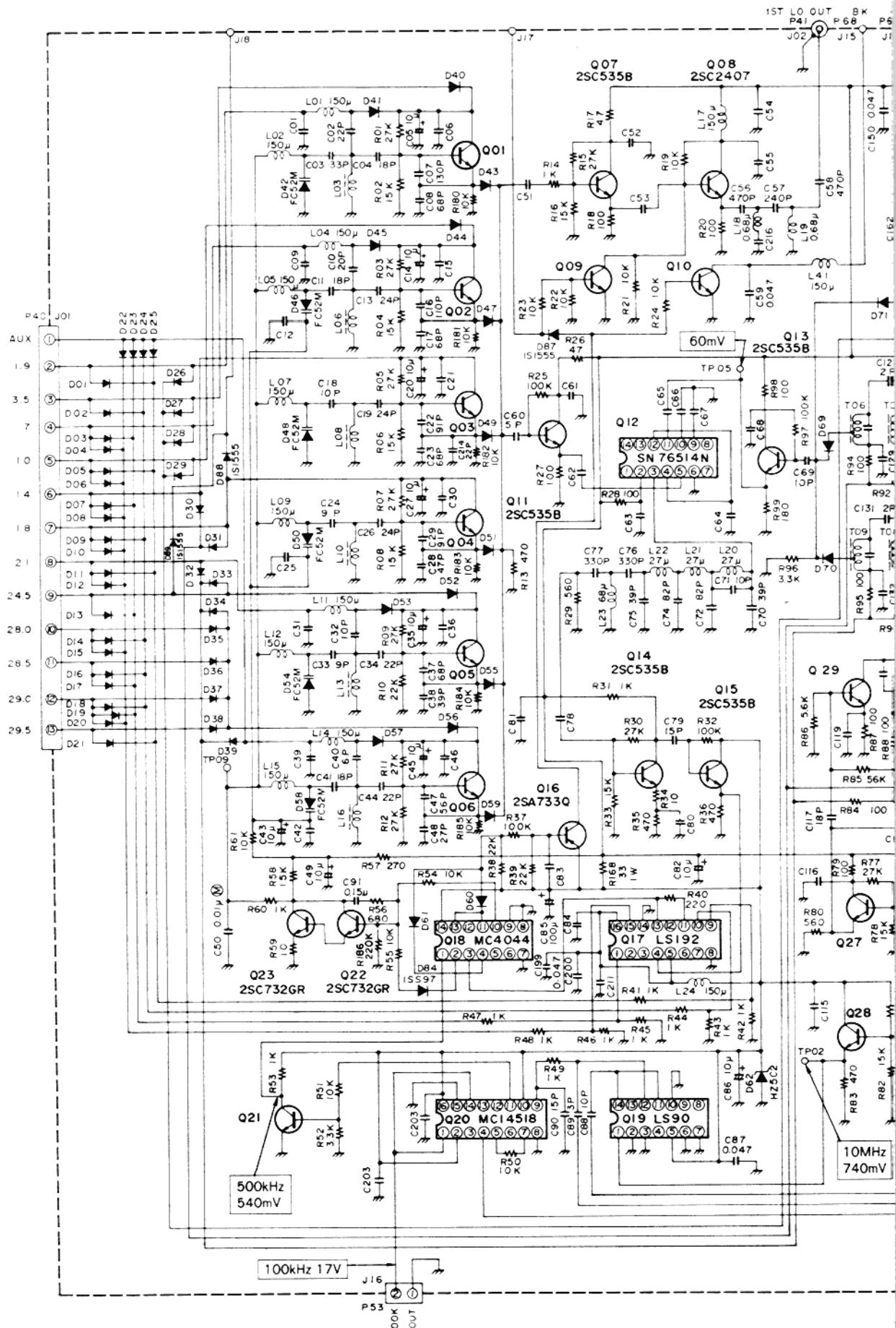
3SK73GR



CAPACITOR VALUES ARE IN μ F 50WV; RESISTOR VALUES ARE IN Ω ,
1/4W AND INDUCTOR VALUES ARE IN HENRIES UNLESS OTHERWISE
NOTED.

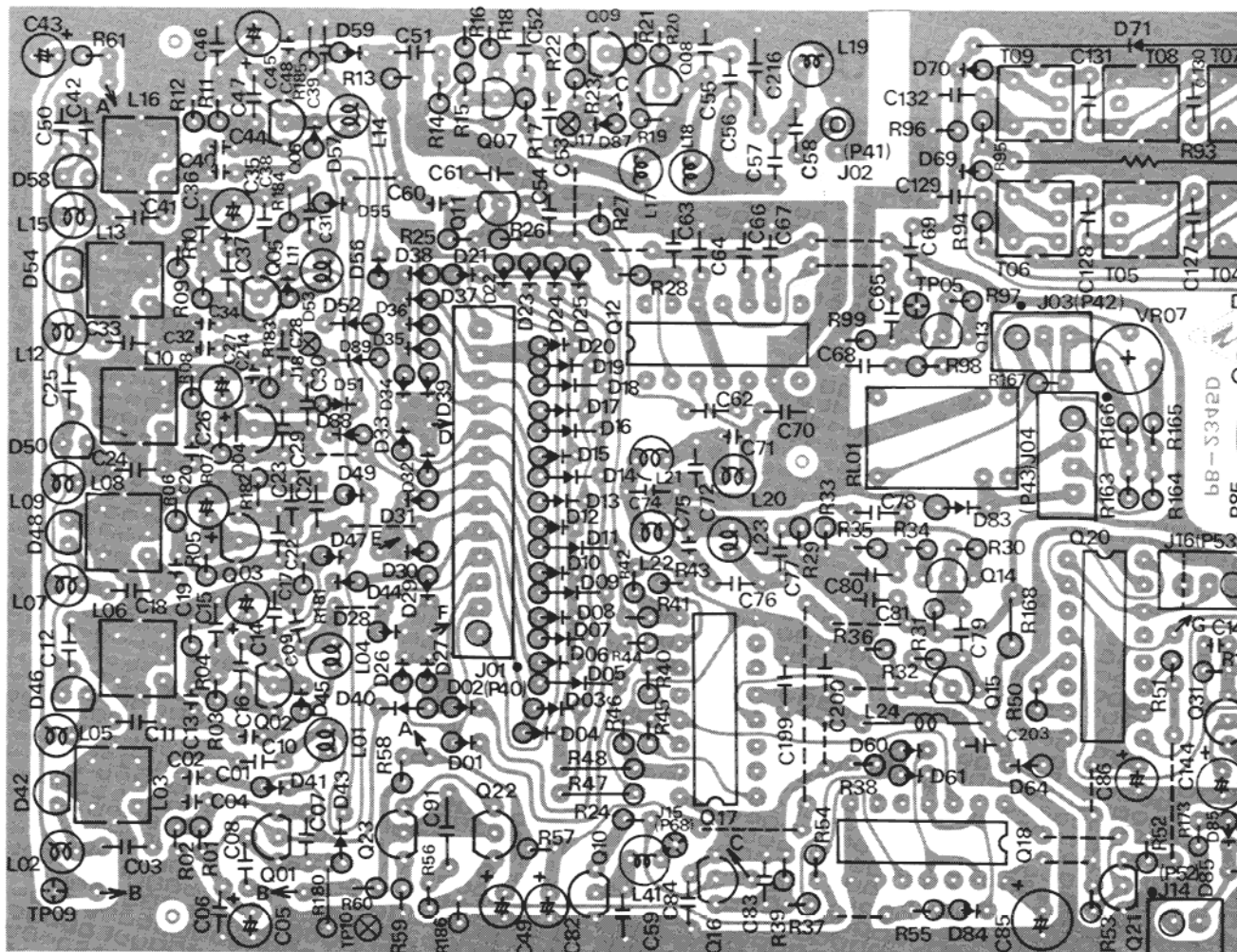
DIODES ARE 1S1555 UNLESS OTHERWISE NOTED.



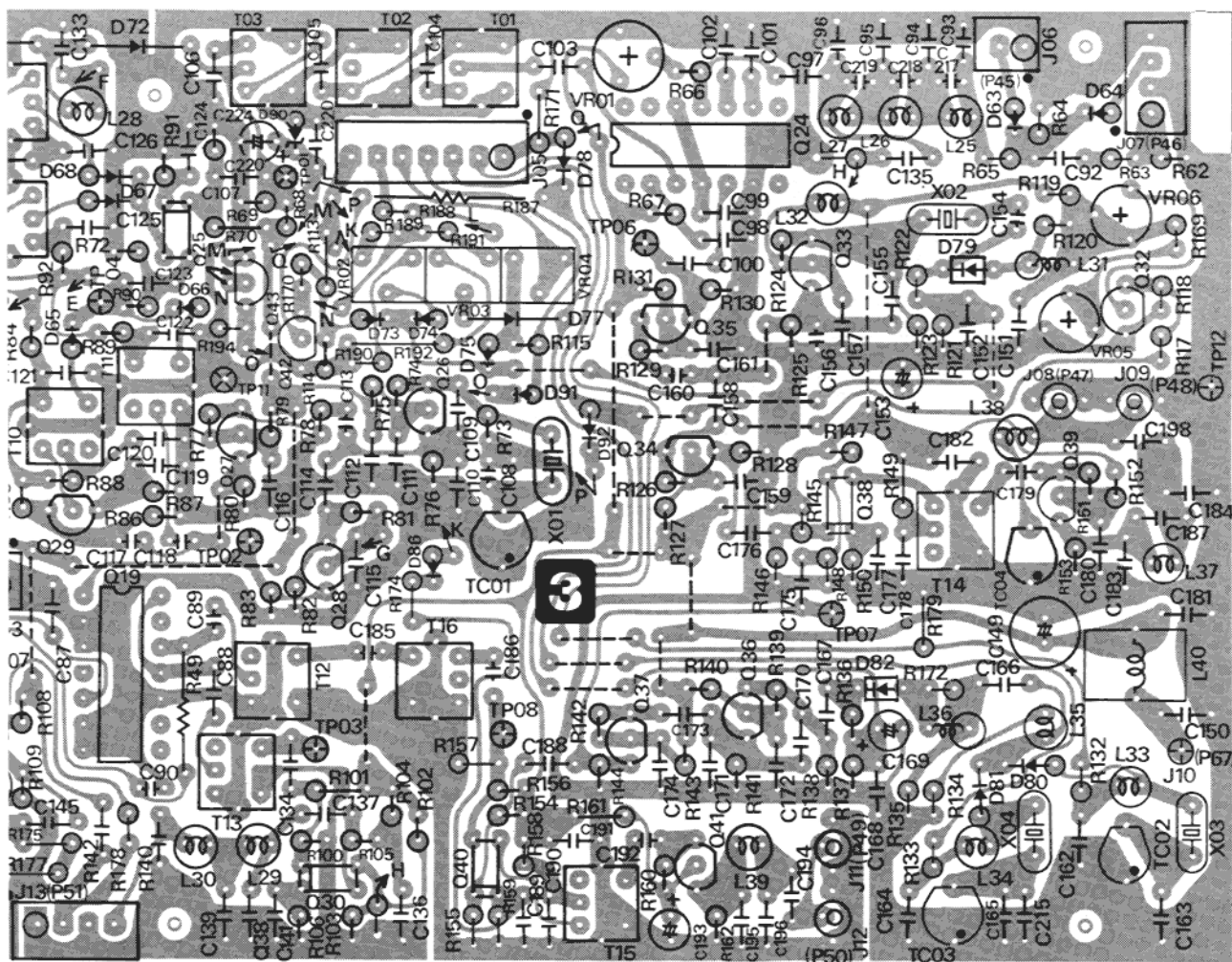


TRANSISTORS ARE 2SC945Q UNLESS OTHERWISE NOTED.
DIODES ARE 1S553 UNLESS OTHERWISE NOTED.
CAPACITORS ARE IN 0.01 μ F UNLESS OTHERWISE NOTED.
CAPACITOR VALUES ARE IN μ F, 50WV; RESISTOR VALUES
ARE IN Ω , 1/4W, AND INDUCTOR VALUES ARE IN HENRIES
UNLESS OTHERWISE NOTED.

LOCAL UNIT PARTS LAYOUT

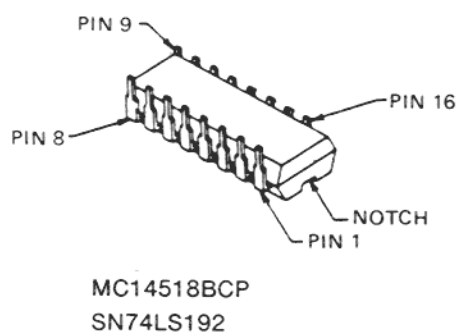
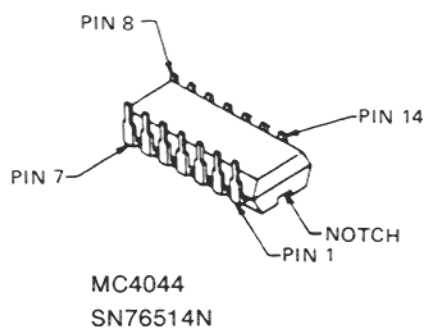
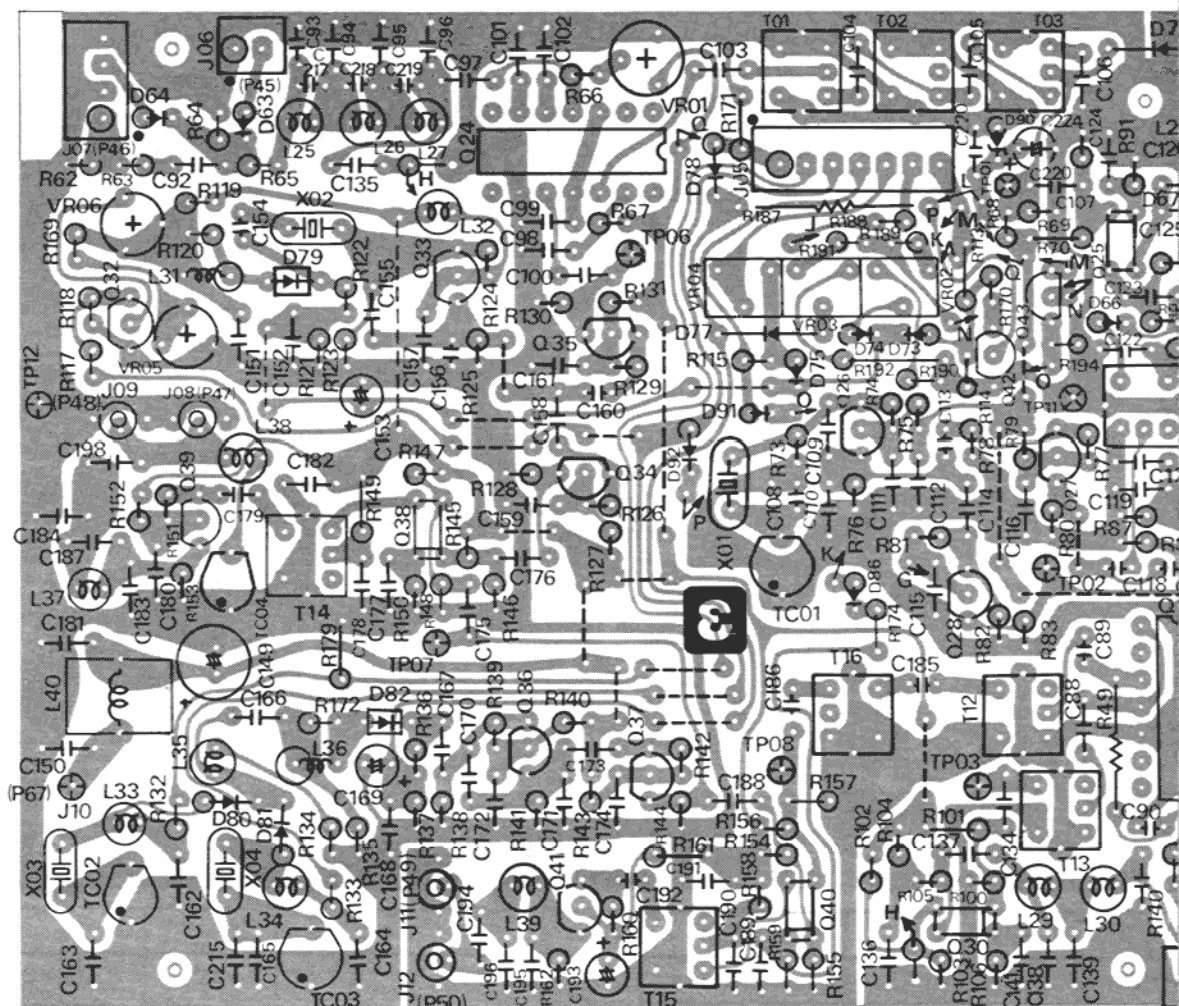


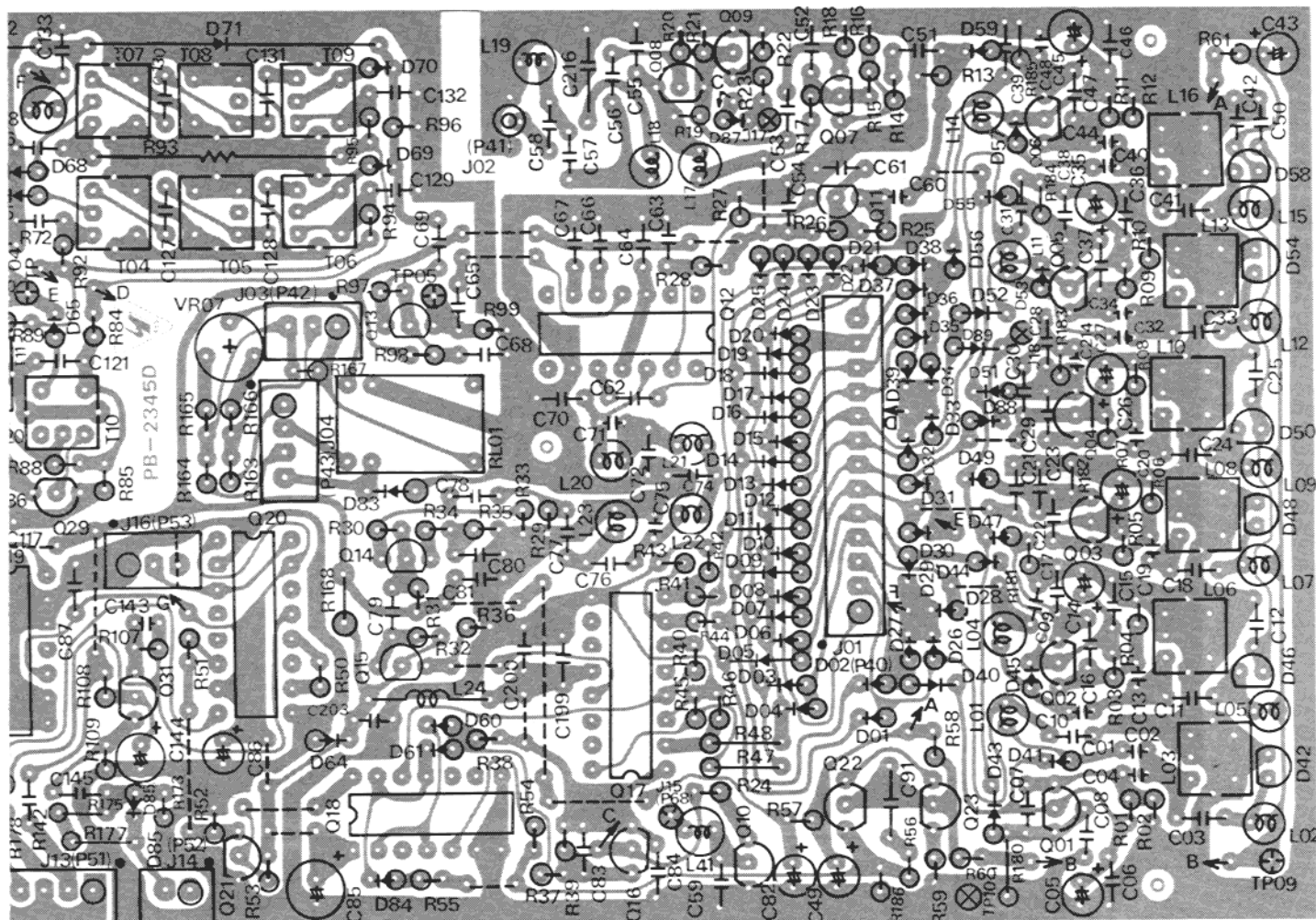
	E / S	C / D	B / G	G ₂	REM		E / S
Q4001	2.3	7.2	2.6		1.8MHz	Q4022	0.8
Q4002	2.3	7.2	2.6		7 MHz	Q4023	0
Q4003	2.3	7.2	2.6		14 MHz	Q4024	⑥ 0
Q4004	2.3	7.2	2.6		18 MHz	Q4025	1.7
Q4005	3.0	7.2	3.0		21 MHz	Q4026	2.5
Q4006	2.7	6.5	3.1		28 MHz	Q4027	2.2
Q4007	0.9	7.8	1.8			Q4028	1.7
Q4008	2.0	7.8	2.6			Q4029	0.3
Q4009	0	2.6	0			Q4030	2.2
Q4010	0/0	5.2/0	0/0.7		UNLOCK	Q4031	2.0/4.0
Q4011	0.7	7.8	1.5			Q4032	0/0
Q4012	⑥ 0	② 7.8				Q4033	2.1
Q4013	1.0	7.8	1.8			Q2034	3.5
Q4014	1.1	5.2	1.8			Q2035	1.0
Q4015	2.0	5.2	2.7			Q2036	2.2
Q4016	5.2	5.5	4.7			Q2037	3.5
Q4017	⑧ ④ 0	⑤ ⑤ 5.2				Q2038	4.2
Q4018	⑦ ⑧ ⑨ 0	④ 5.2				Q2039	1.3
Q4019	② ③ ⑥ ⑦ ⑧ 0	⑤ 5.2				Q2040	4.2
Q4020	⑧ ⑤ 0	② ④ ⑤ 5.2				Q2041	1.1
Q4021	0	2.0/5.2	0.5/0.9		∕ ∟ ∟ ∟ 29MHz	Q2042	0/0



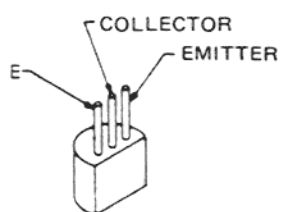
C / D	B / G	G _z	REM
(VCV)	(VCV)		21MHz
(VCV)	(0.8)		
8.0			
5.7	1.8	3.0	
7.8	2.6		
7.8	2.6		
5.2	1.8		
6.5	2.5		21MHz
4.0	0.6	2.5	
7.8/-	1.8/4.5		- / 25kHz
5.8/0	0/0.7		LSB/USB
8.0	2.3		
7.3	3.6		
7.8	1.7		
7.8	2.7		
7.8	4.2		
7.8	4.3	5.1	
7.8	1.8		
7.8	4.3	5.1	
7.8	1.8		
4.8/0	0/0.7		SSB/AM

Viewed from Component Side

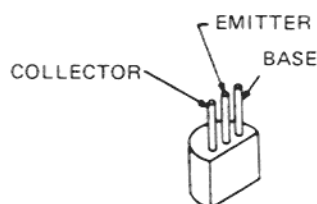




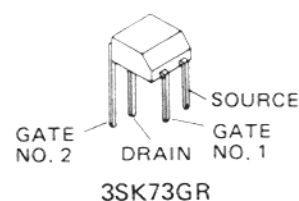
Viewed from Solder Side



2SA733Q
2SC535B
2SC732GR
2SC945Q

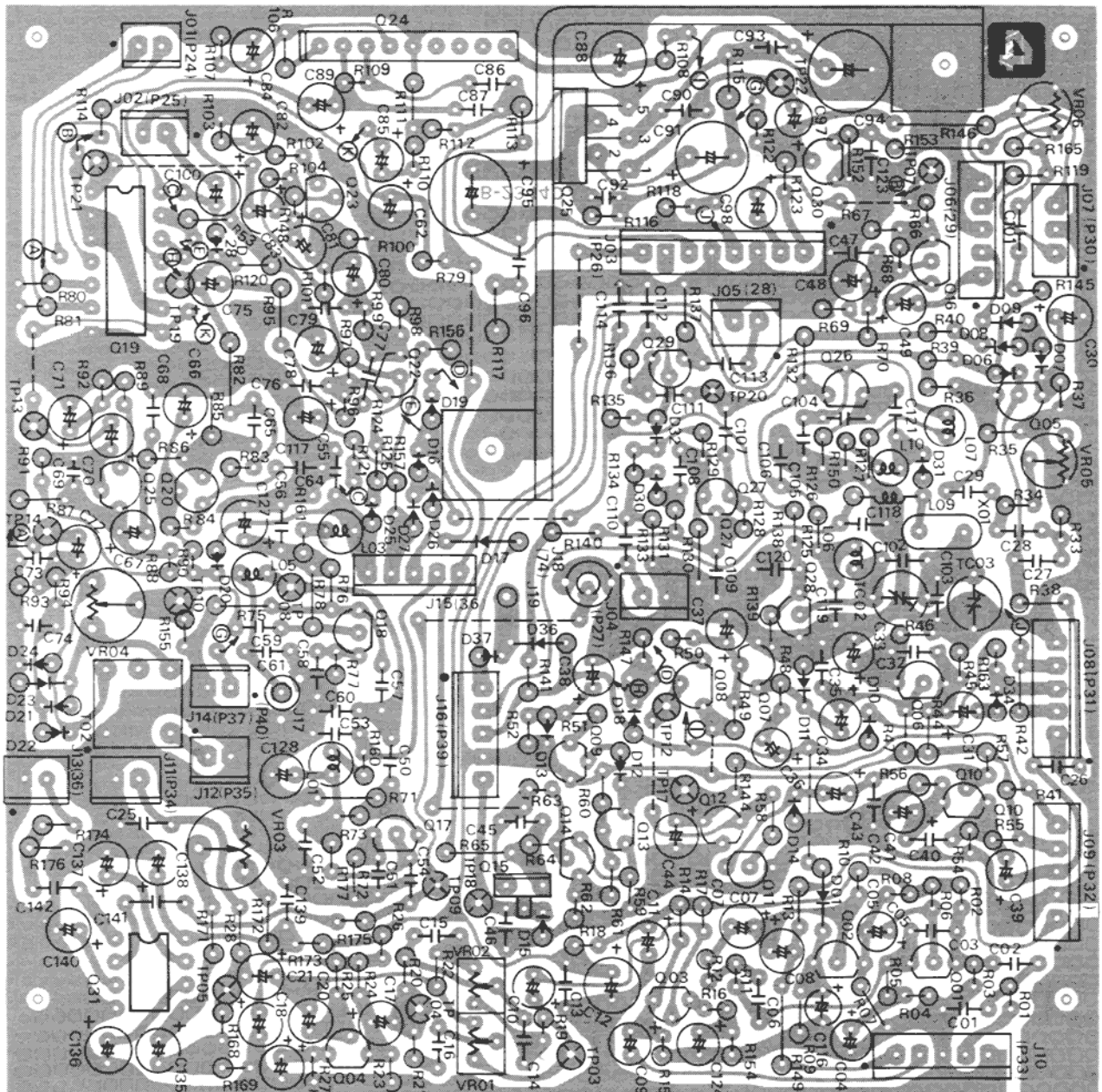


2SC2407

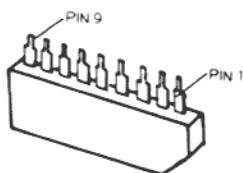


3SK73GR

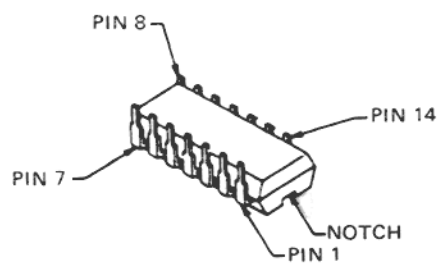
AF UNIT PARTS LAYOUT



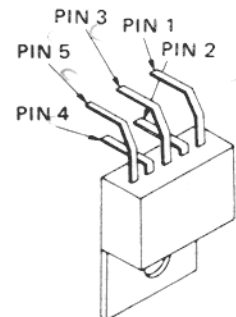
Viewed from Component Side



AN6551

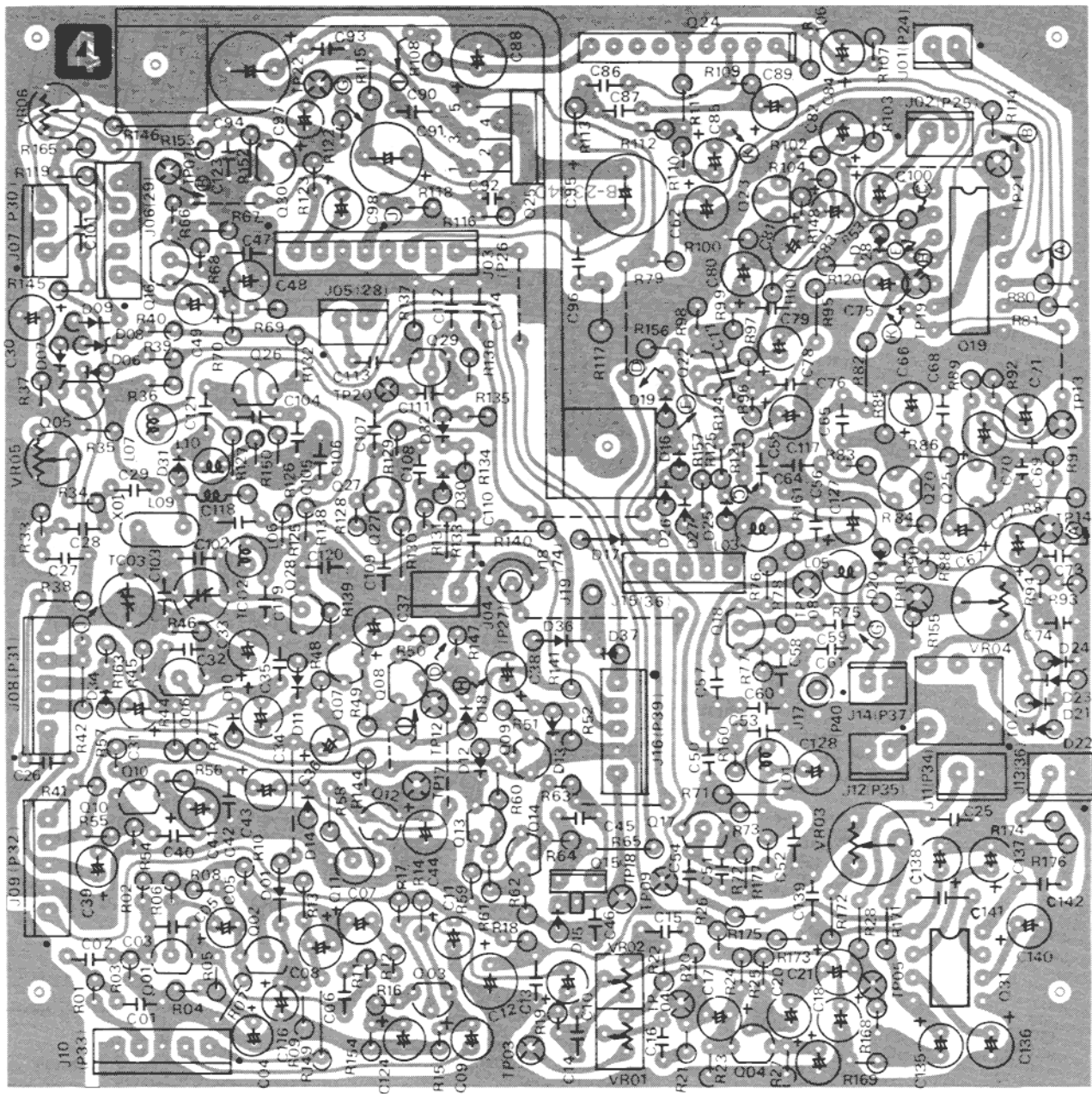


MC14066B

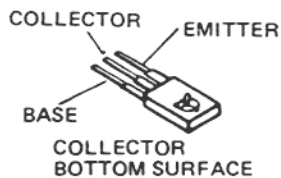


μPC2002V

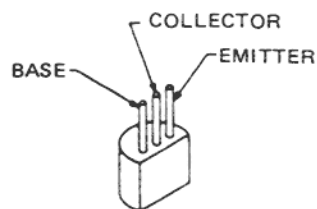
AF UNIT PARTS LAYOUT



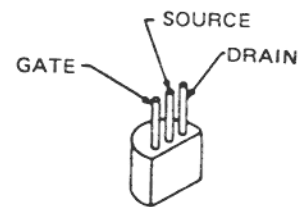
Viewed from Solder Side



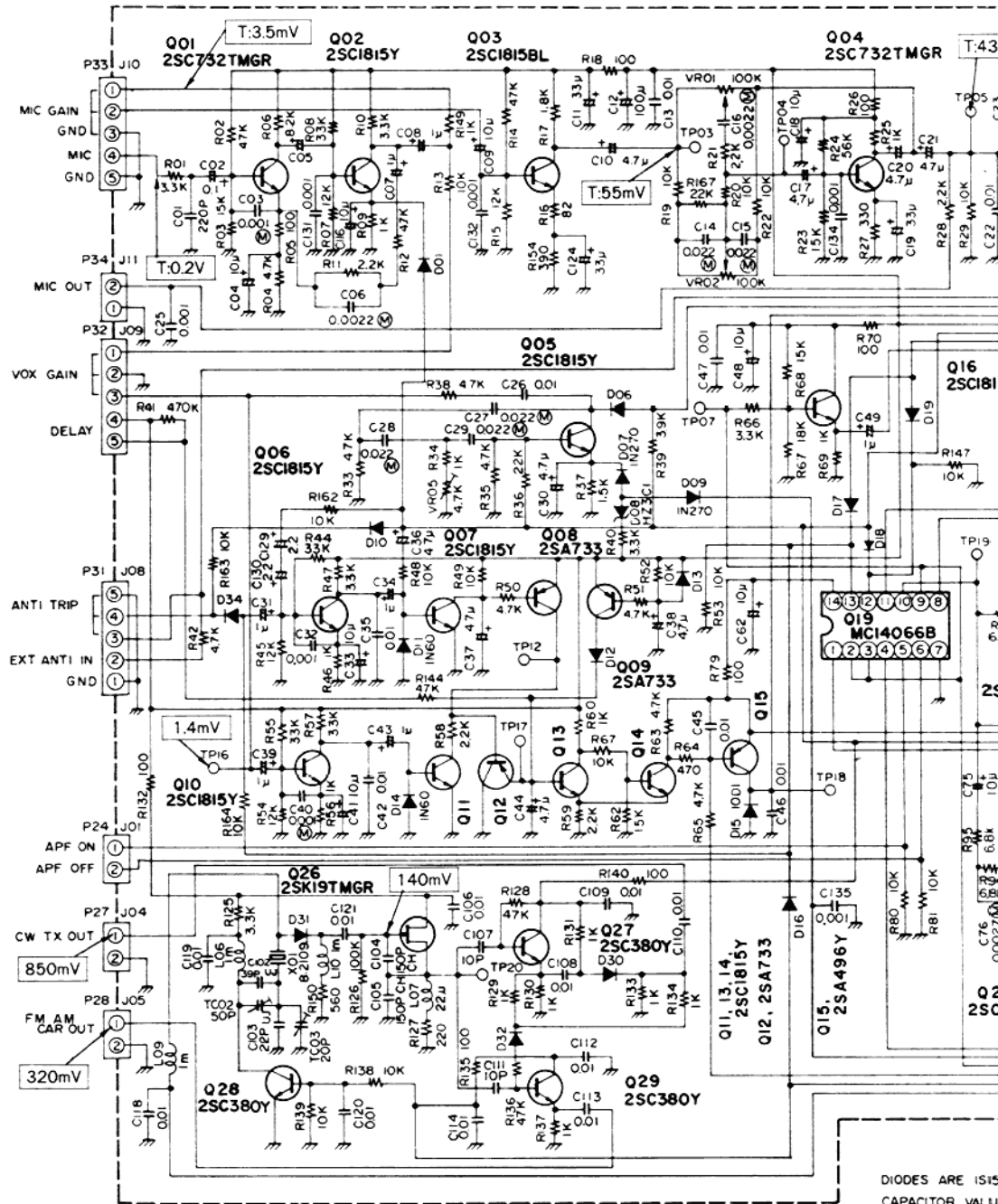
2SA496Y



2SA733Q
2SC380Y
2SC732TM-GR
2SC1815BL
2SC1815GR
2SC1815Y

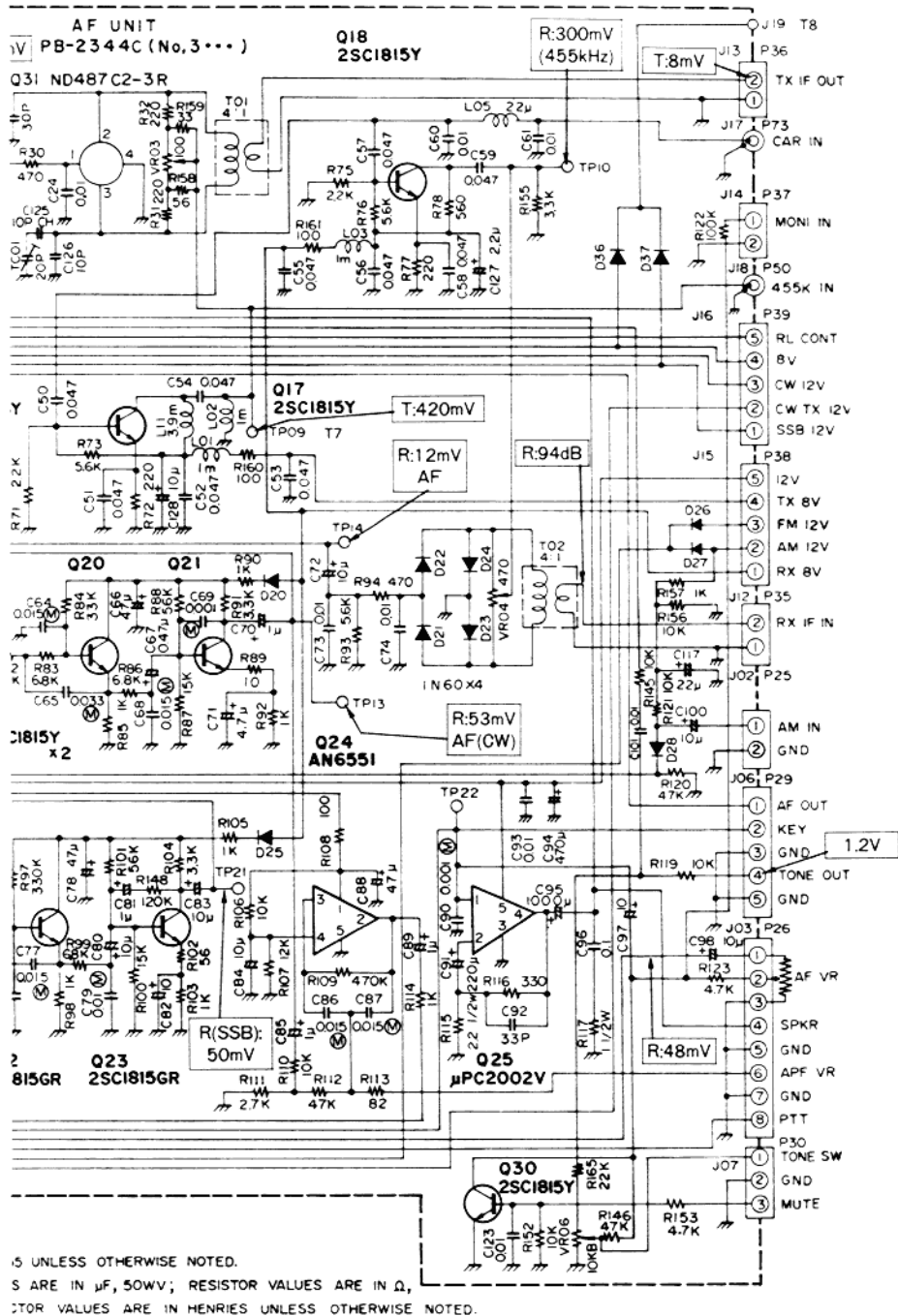


2SK19Y



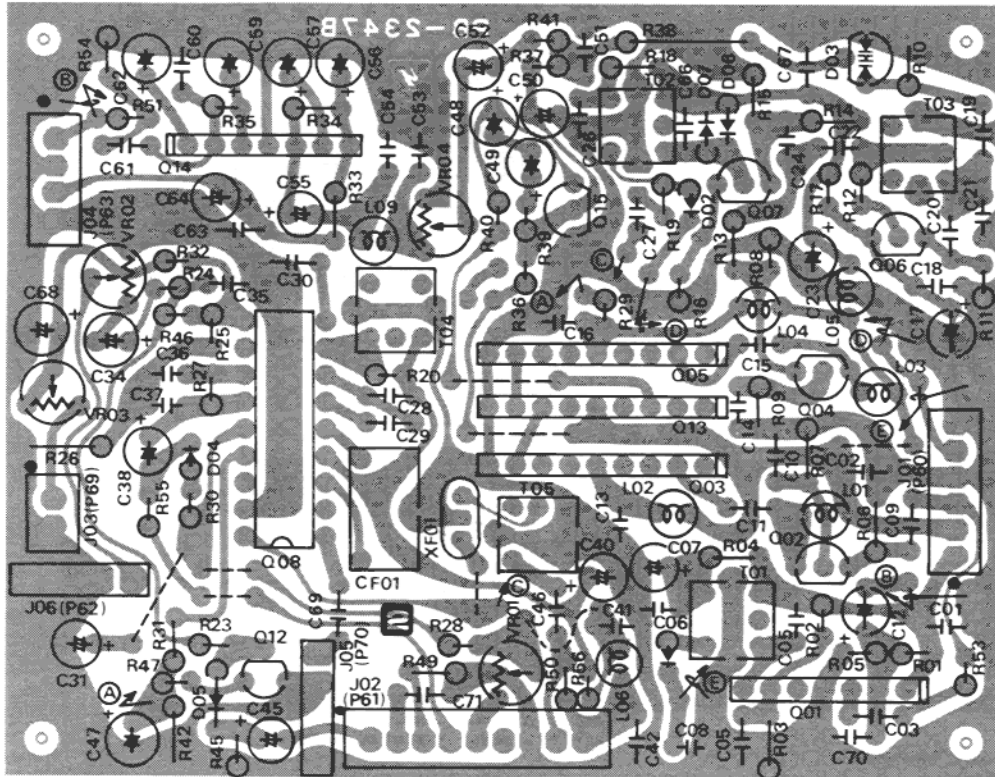
DIODES ARE 1S15
CAPACITOR VALU
1/4 W; AND IND

	E/S	C/D	B/G ₁	REM		E/S	C/D
Q3001	1.2	4.5	1.8		Q3011	0	7.8
Q3002	2.0	3.3	1.3		Q3012	6.2	0
Q3003	0.9	4.3	1.5		Q3013	5.6	5.6
Q3004	0.8	5.2	1.3		Q3014	5.6	12.0
Q3005	1.7	11.2	2.2	CW	Q3015	0/11.5	12.0/1
Q3006	1.3	3.2	2.1		Q3016	3.5	7.8
Q3007	0	7.8	0		Q3017	1.5	7.5
Q3008	8.0	0	7.5		Q3018	1.5	4.2
Q3009	8.0	0	7.8		Q3019	⑦ 0	⑭ 12.0
Q3010	1.3	3.2	2.1		Q3020	1.3	5.7

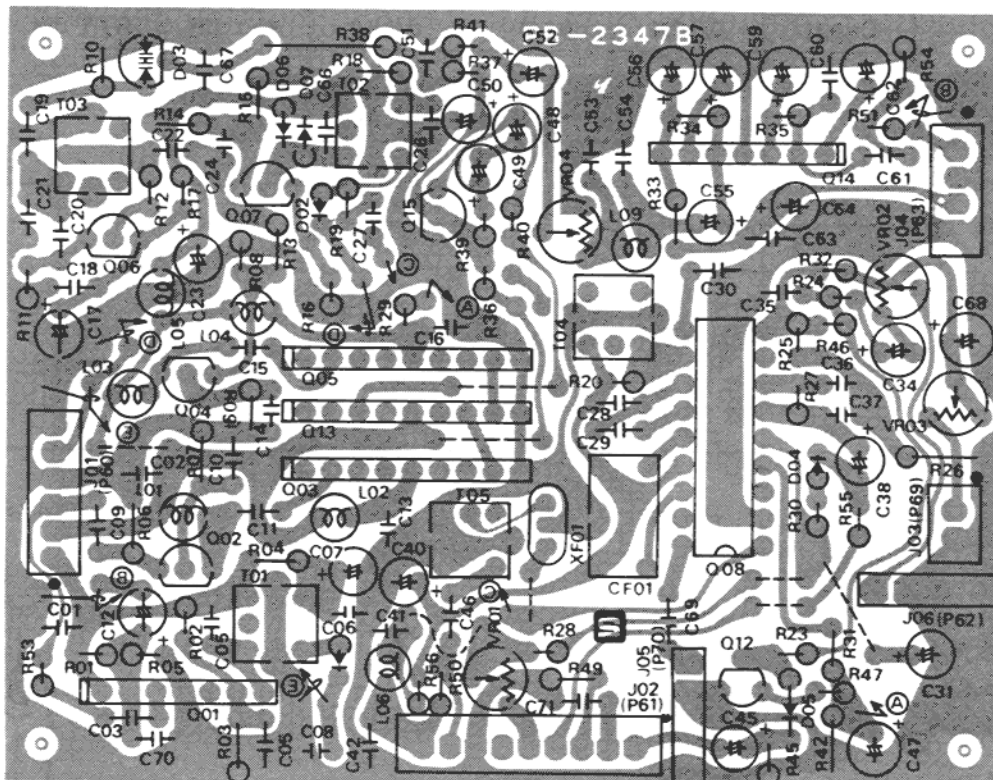


	B/G ₁	REM		E/S	C/D	B/G ₁	REM
	0		Q3021	0.7	3.9	1.3	
	0		Q3022	1.8	5.3	2.5	
	6.2		Q3023	0.6	3.9	1.3	
	1.8		Q3024	⑤ 0	①⑨ 12.0	④ 6.2	CW
2.0	12.0/11.3	R/T	Q3025	③ 0	⑤ 12.0		
	4.2		Q3026	0.8	7.8	0	CW
	2.3	T	Q3027	8.4	12.0	9.5	CW
	2.2		Q3028	0	8.0	0.7	AM
			Q3029	7.2	10.5	7.8	AM
	2.0		Q3030	0	0	0	

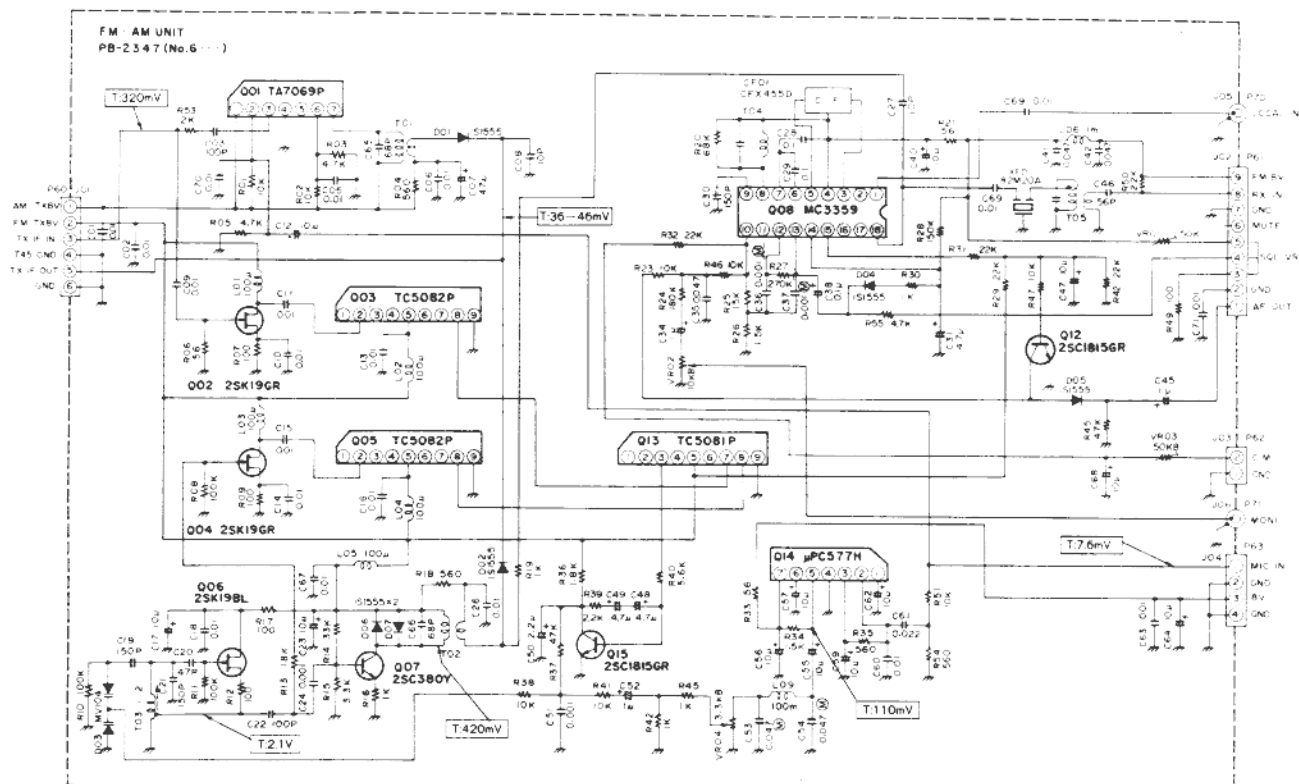
AM/FM UNIT PARTS LAYOUT



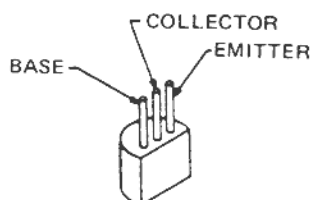
Viewed from Component Side



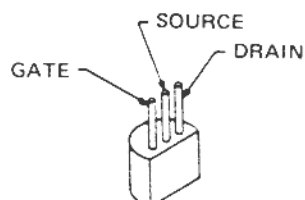
Viewed from Solder Side



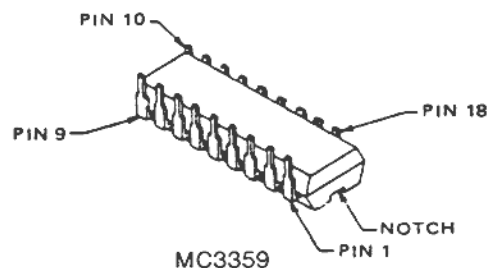
CAPACITOR VALUES ARE IN μ F, 50WV; RESISTOR VALUES ARE IN Ω , 1/4W;
AND INDUCTOR VALUES ARE IN HENRIES UNLESS OTHERWISE NOTED.



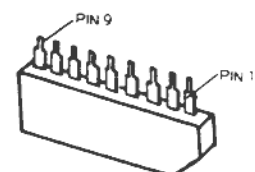
2SC380Y
2SC1815GR



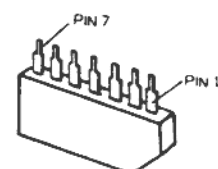
2SK19BL
2SK19TMGR



	E / S	C / D	B / G	G ₂	REM
Q6001	④ 0	①⑦ 8.0			AM - T
Q6002	0.5	8.0	0		FM - T
Q6003	⑨ 0	⑤ 8.0			FM - T
Q6004	0.7	8.0	0		FM - T
Q6005	⑨ 0	⑤ 8.0			FM - T
Q6006	1.0	7.2	0		FM - T
Q6007	0.8	8.0	0.7		FM - T
Q6008		④⑧ 8.0			FM
Q6012	0	0	0/0.7		R / T
Q6013	⑨ 0	⑤ 8.0			FM - T
Q6014	④ 0	⑦ 8.0			
Q6015	0	(VCV)	(VCV)		
Q6016					
Q6017					

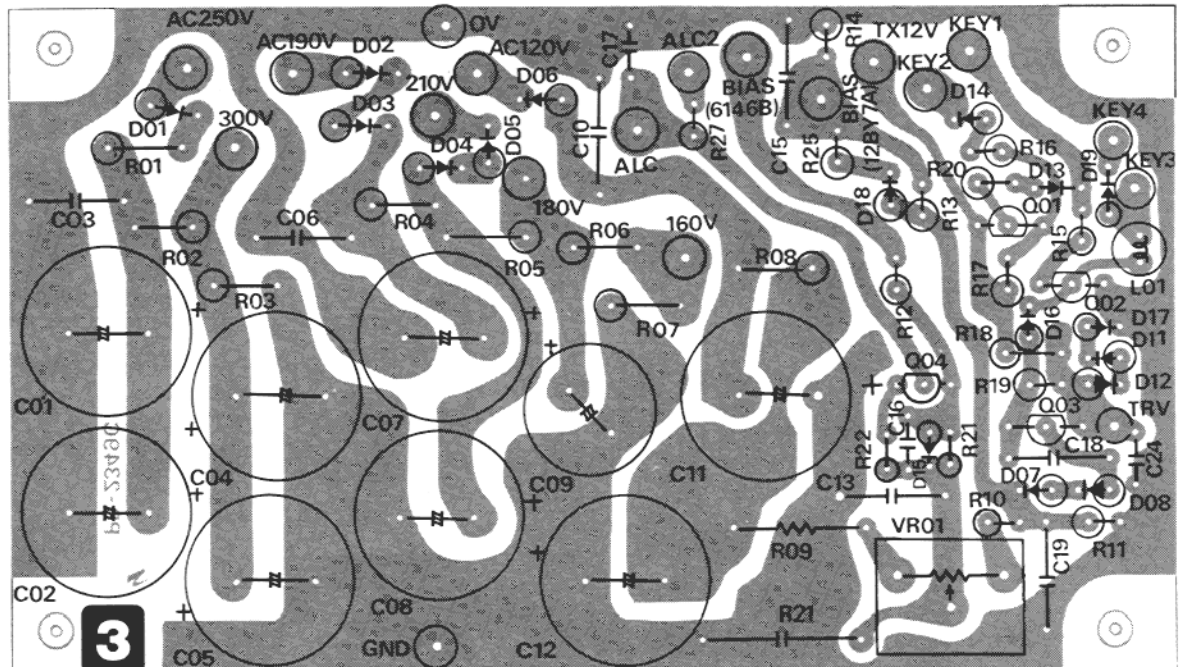


TC5081P
TC5082P

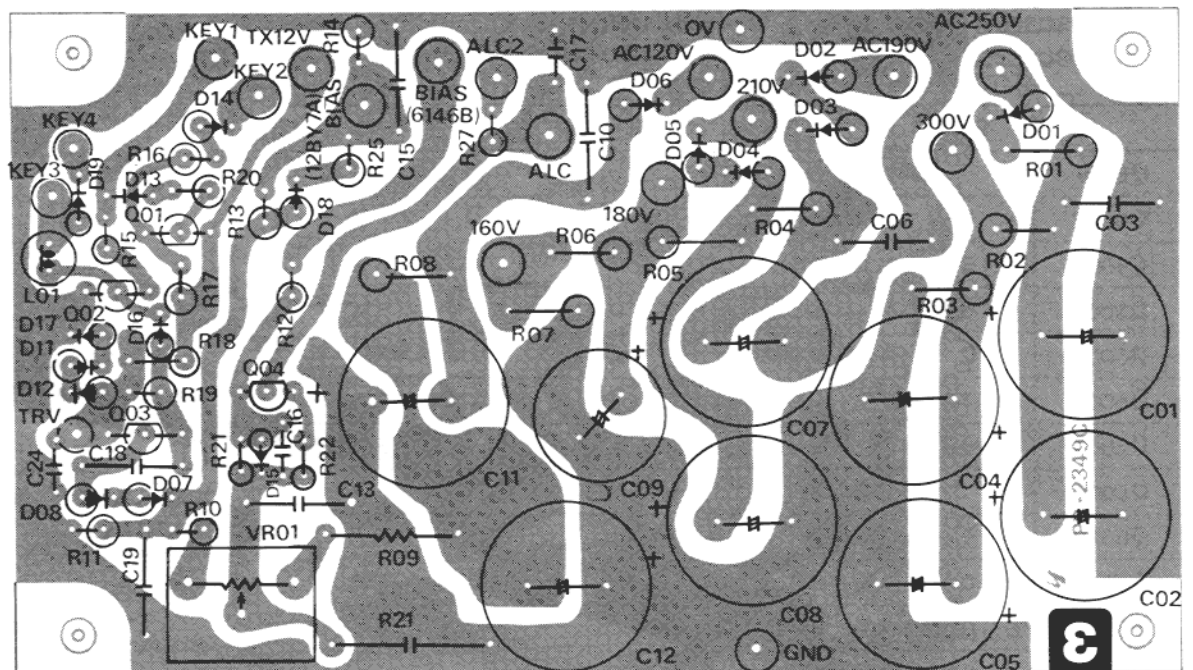


TA7069P
μPC577H

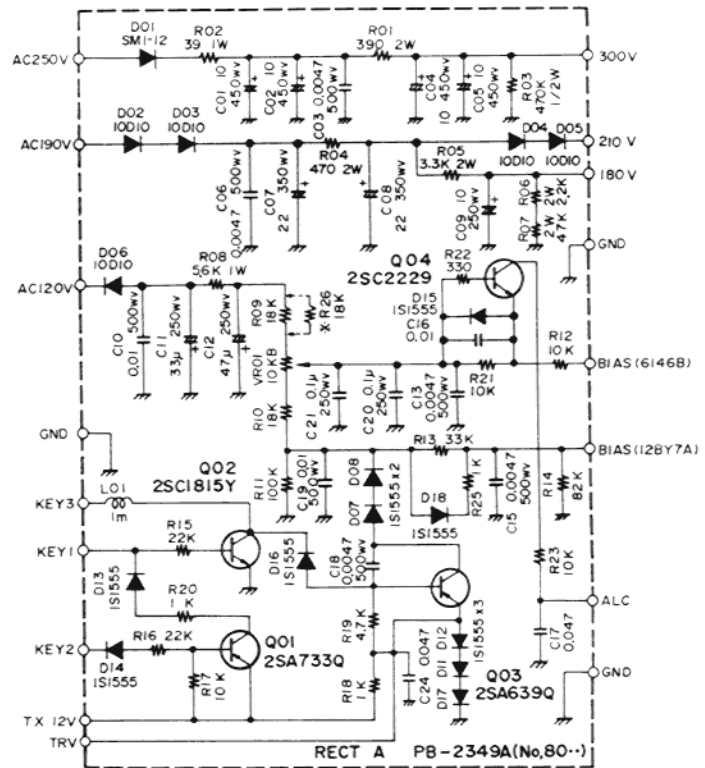
RECT A UNIT PARTS LAYOUT



Viewed from Component Side



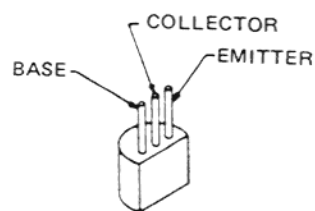
Viewed from Solder Side



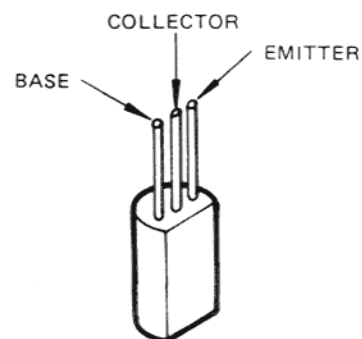
CAPACITOR VALUES ARE IN μF , 50WV; RESISTOR VALUES ARE IN Ω , 1/4W; AND INDUCTOR VALUES ARE IN HENRIES UNLESS OTHERWISE NOTED.

	E / S	C / D	B / G	REM	
Q8001	0/12.0	0/ 0	0/12.0	KEY UP	R / T CW
Q8002	0/ 0	0/10.5	0/ 0	"	"
Q8003	0/ 2.0	-65/-65	0/ 2.0	"	"
Q8004	-100/-100	11.5/11.5	-100/-100	"	"

	E / S	C / D	B / G	REM	
Q8001	12.0	11.7	11.3	KEY DOWN	T CW
Q8002	0	0	0.7	"	"
Q8003	2.0	2.0	1.3	"	"
Q8004	-60	0.3	-60	"	"

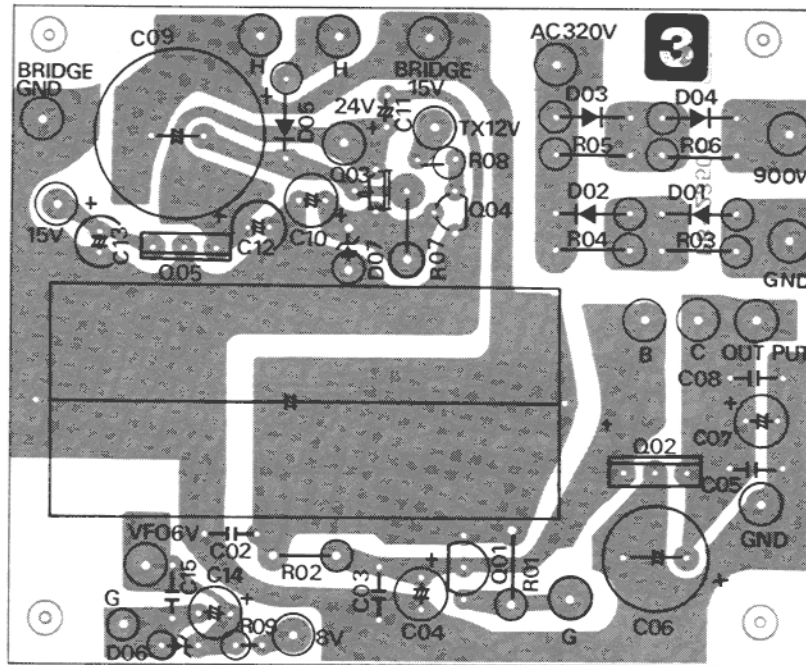


2SA639Q
2SA733Q
2SC1815Y

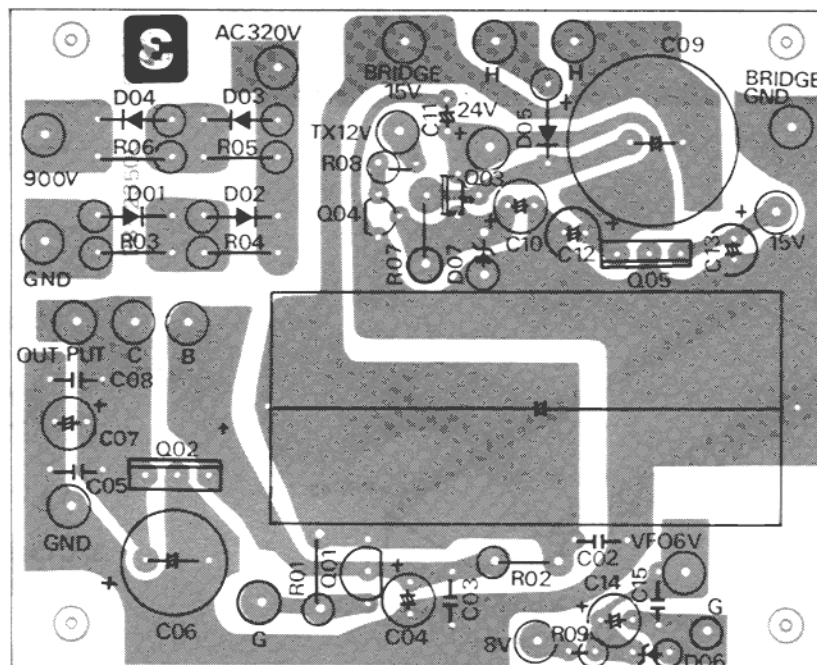


2SC2229

RECT B UNIT PARTS LAYOUT

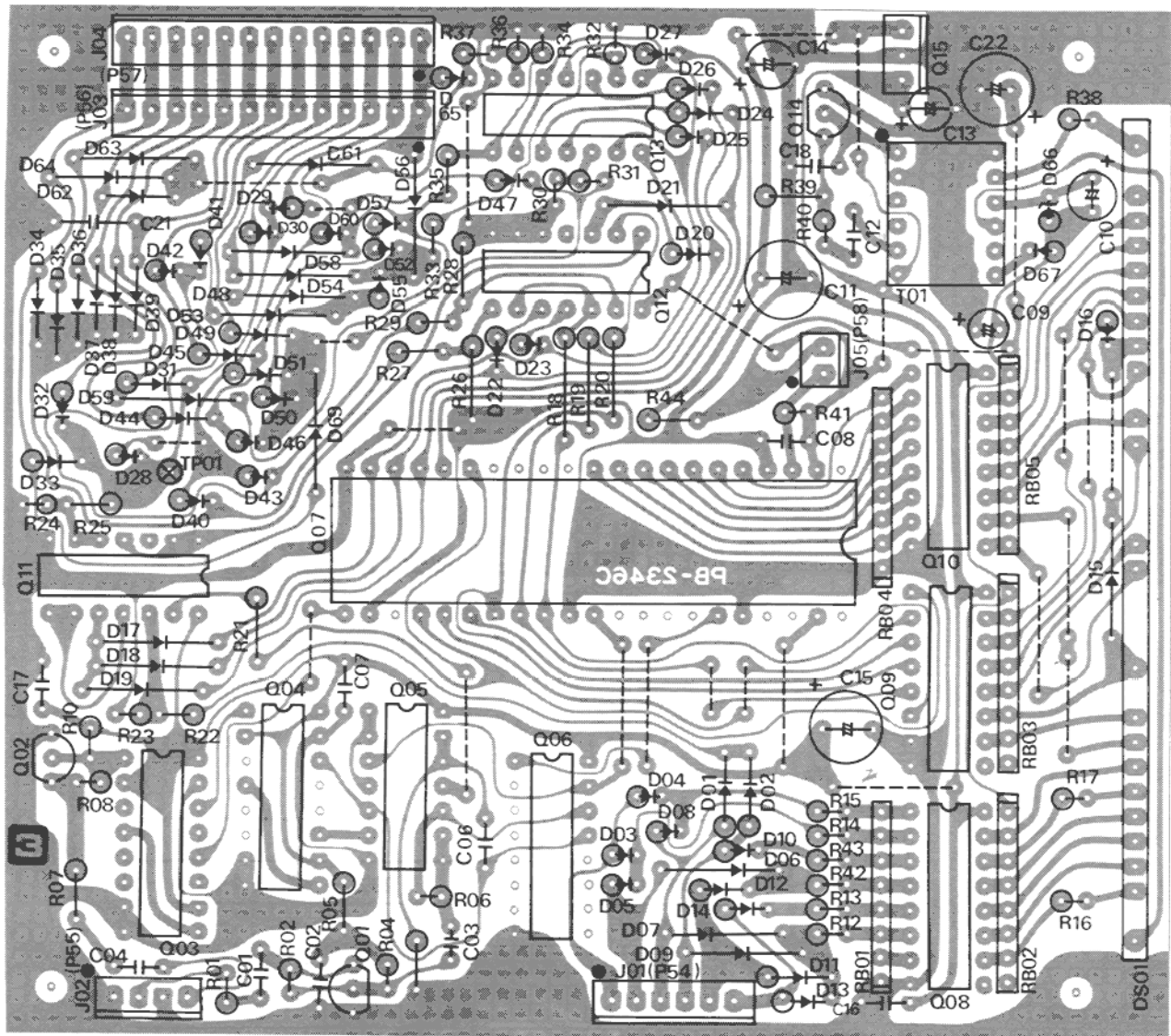


Viewed from Component Side

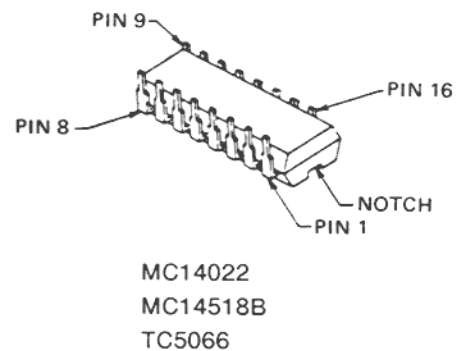
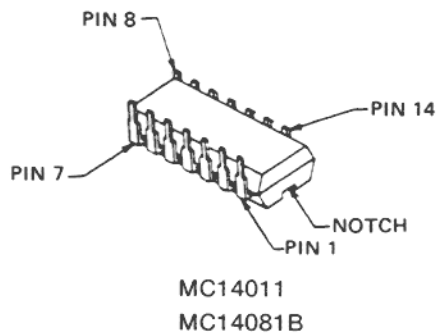
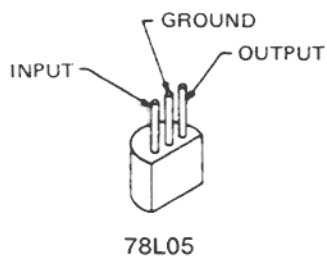


Viewed from Solder Side

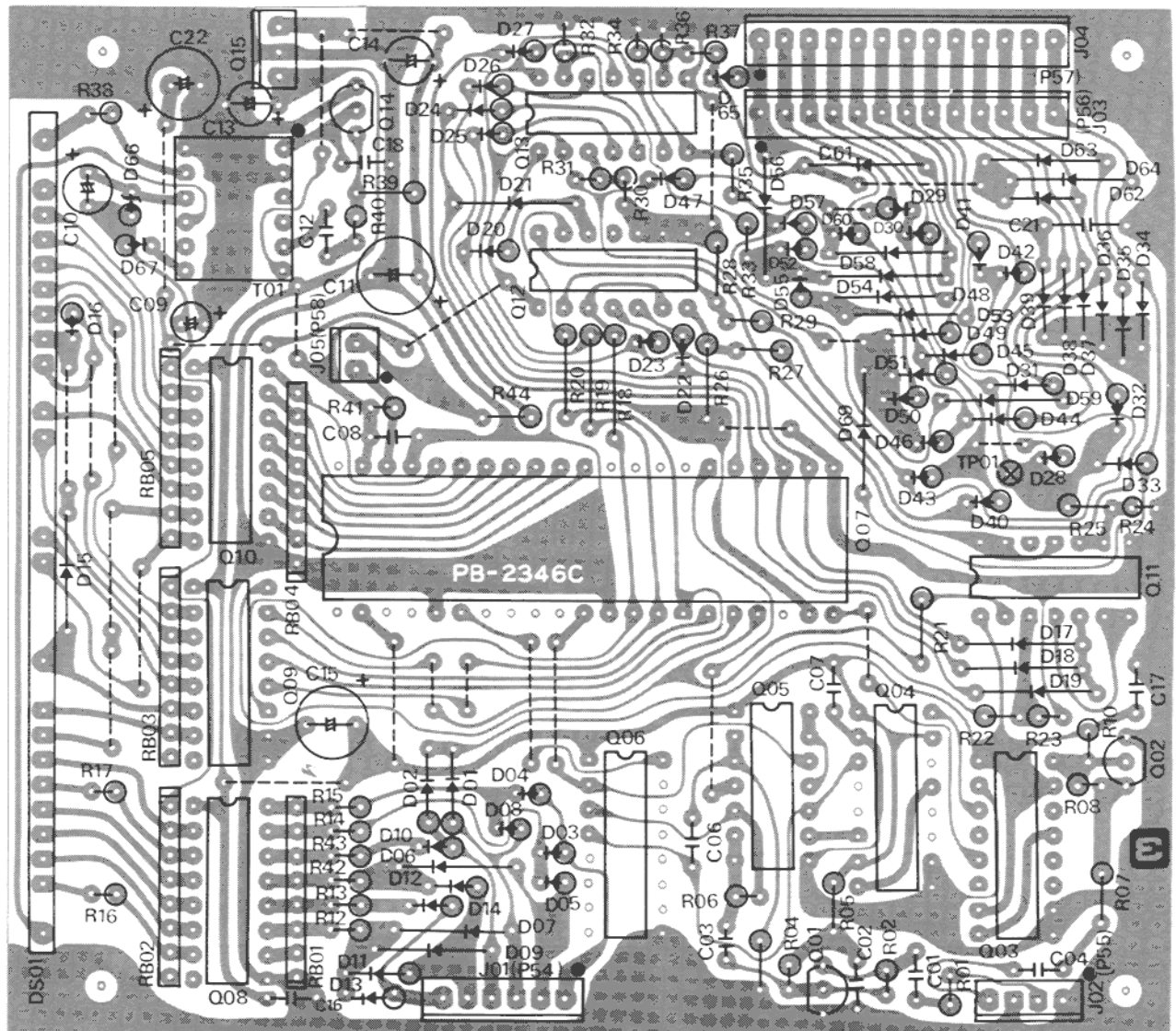
COUNTER UNIT PARTS LAYOUT



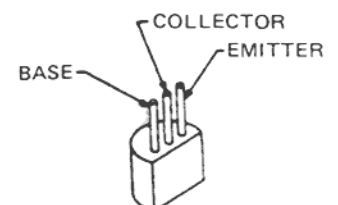
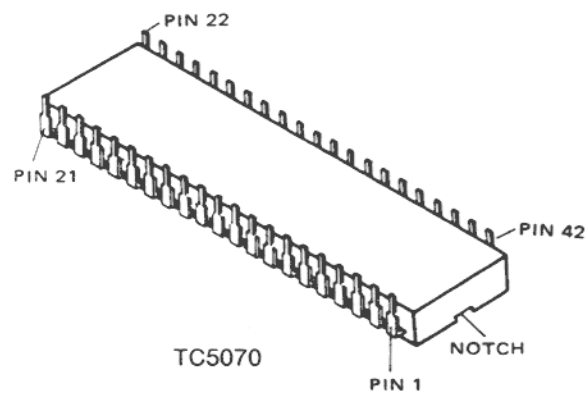
Viewed from Component Side



COUNTER UNIT PARTS LAYOUT

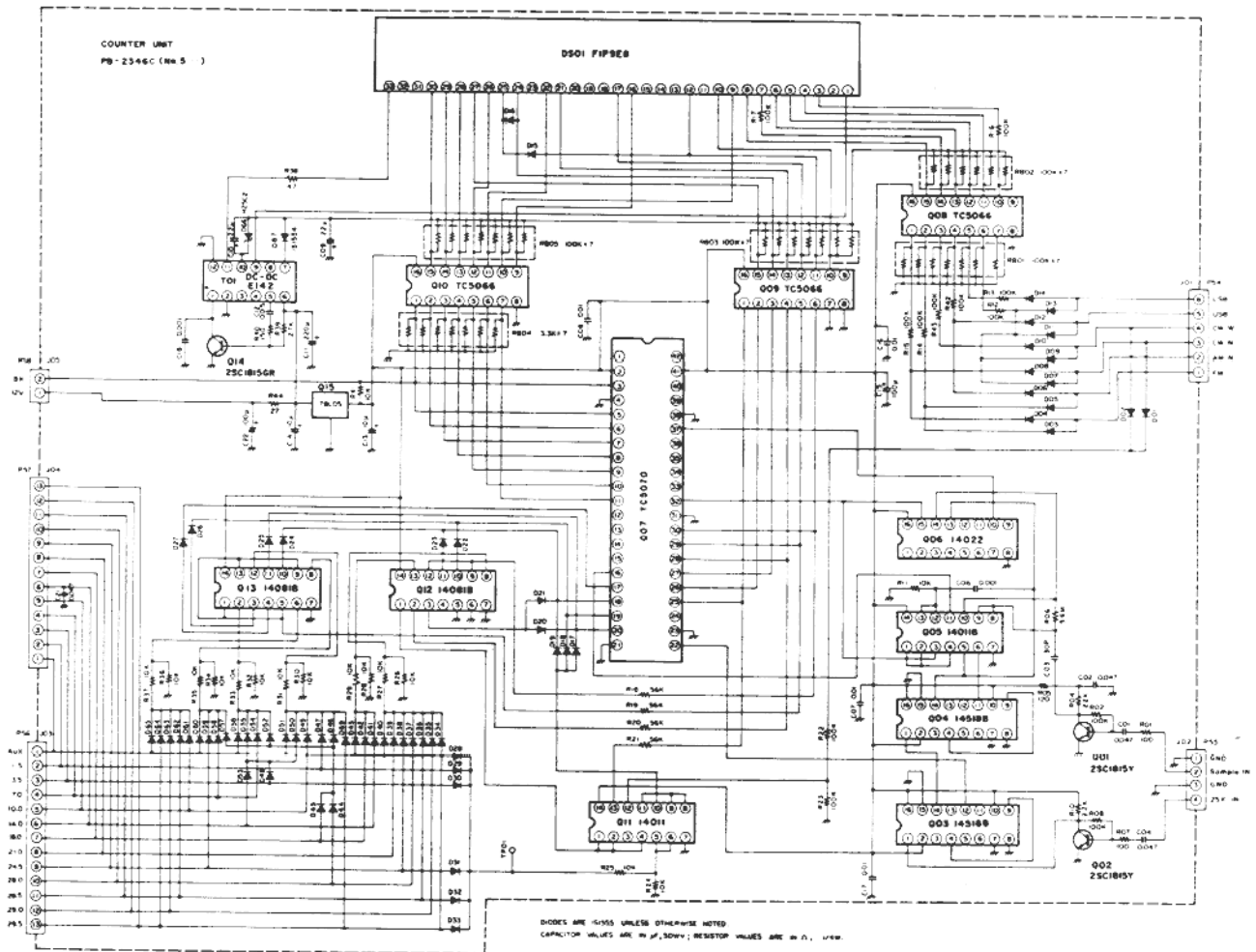


Viewed from Solder Side



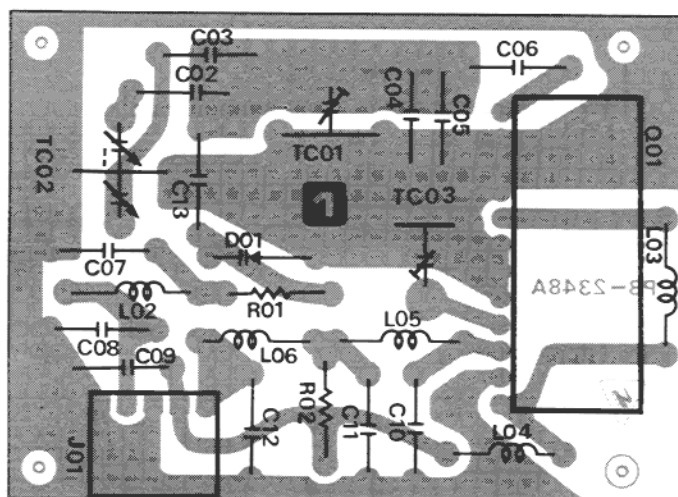
2SC1815GR
2SC1815Y

COUNTER UNIT

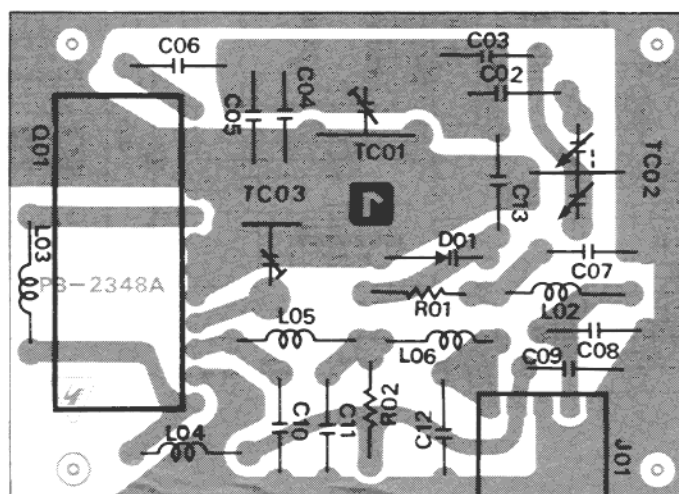


	E/S	C/D	B/G
Q5001	0	1.8	0.6
Q5002	0	1.8	0.6
Q5014	0	—	—
Q5015	IN 10.5	OUT 5.0	

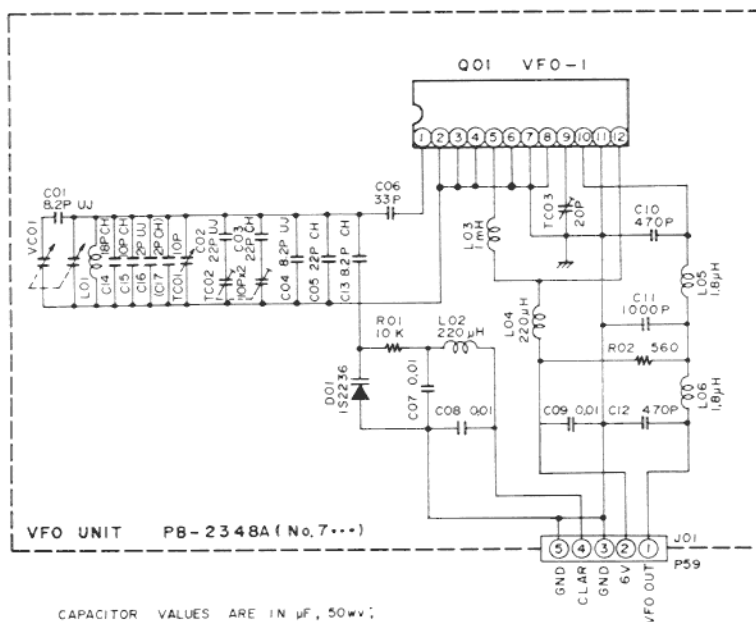
VFO UNIT PARTS LAYOUT



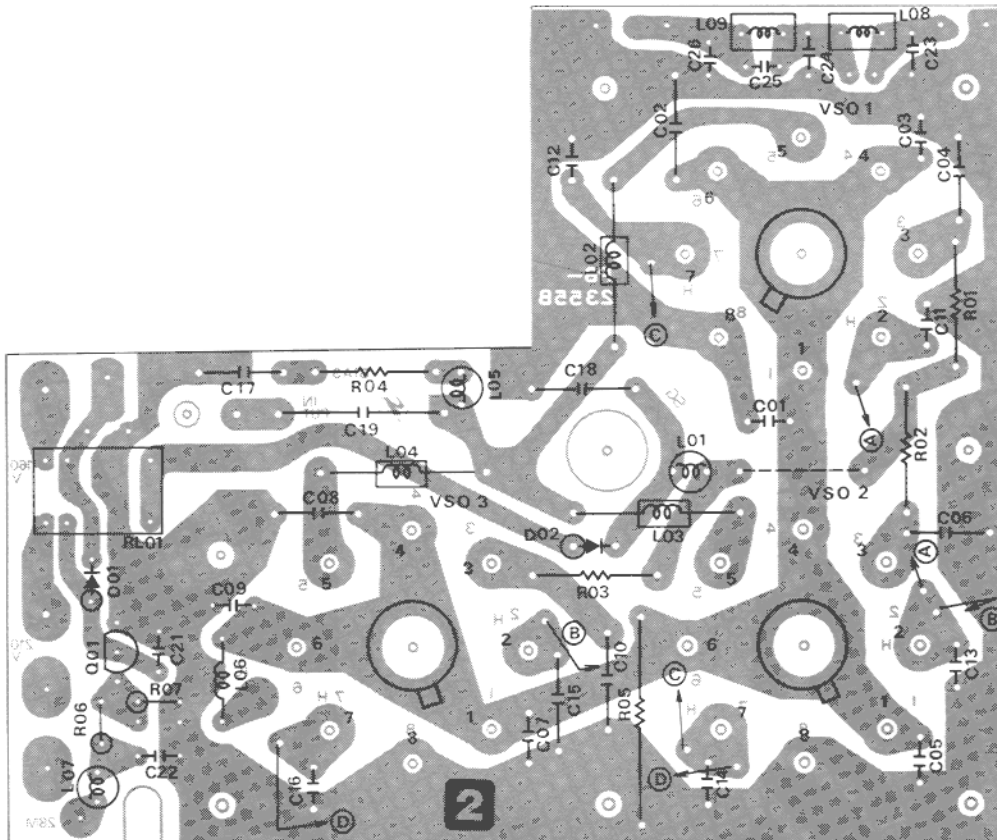
Viewed from Component Side



Viewed from Solder Side

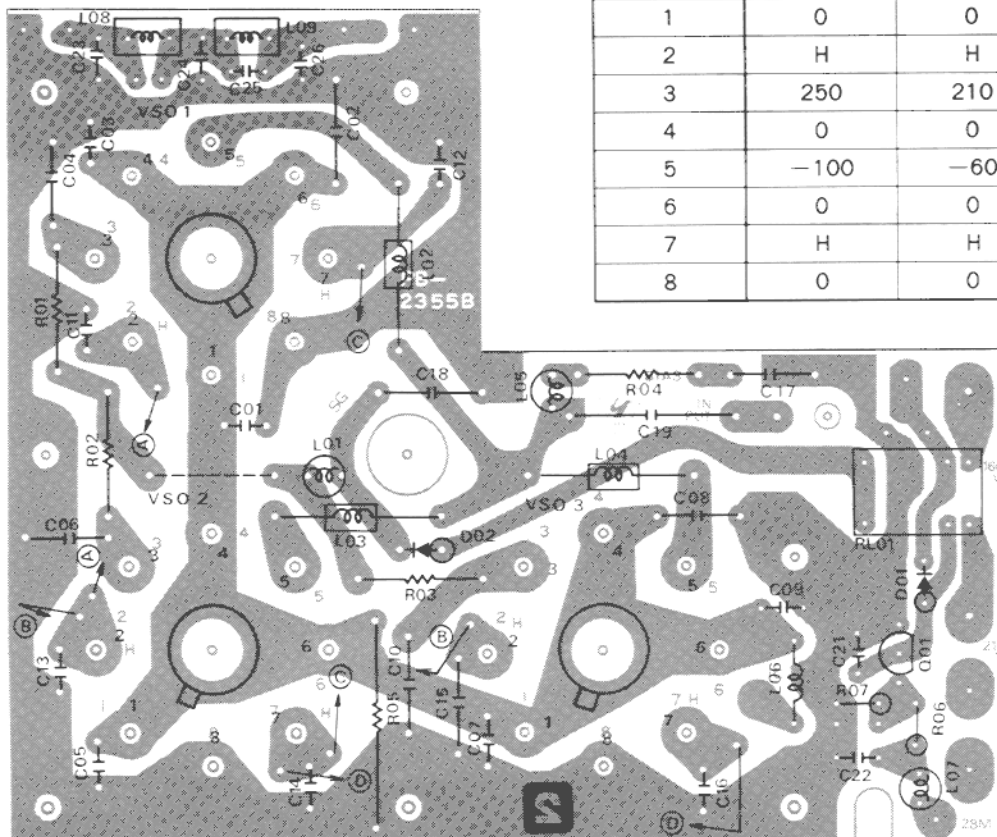


FINAL UNIT PARTS LAYOUT



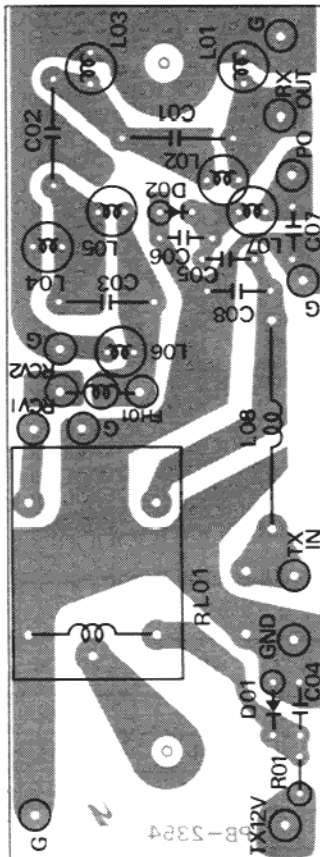
Viewed from Component Side

V01, 02	RX	TX
1	0	0
2	H	H
3	250	210
4	0	0
5	-100	-60
6	0	0
7	H	H
8	0	0

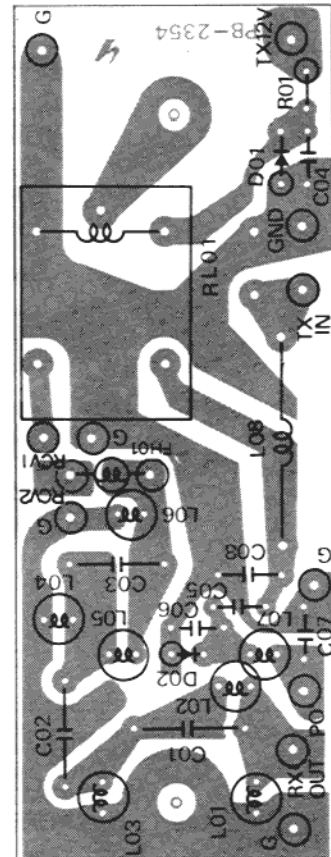


Viewed from Solder Side

RELAY UNIT PARTS LAYOUT



Viewed from Component Side

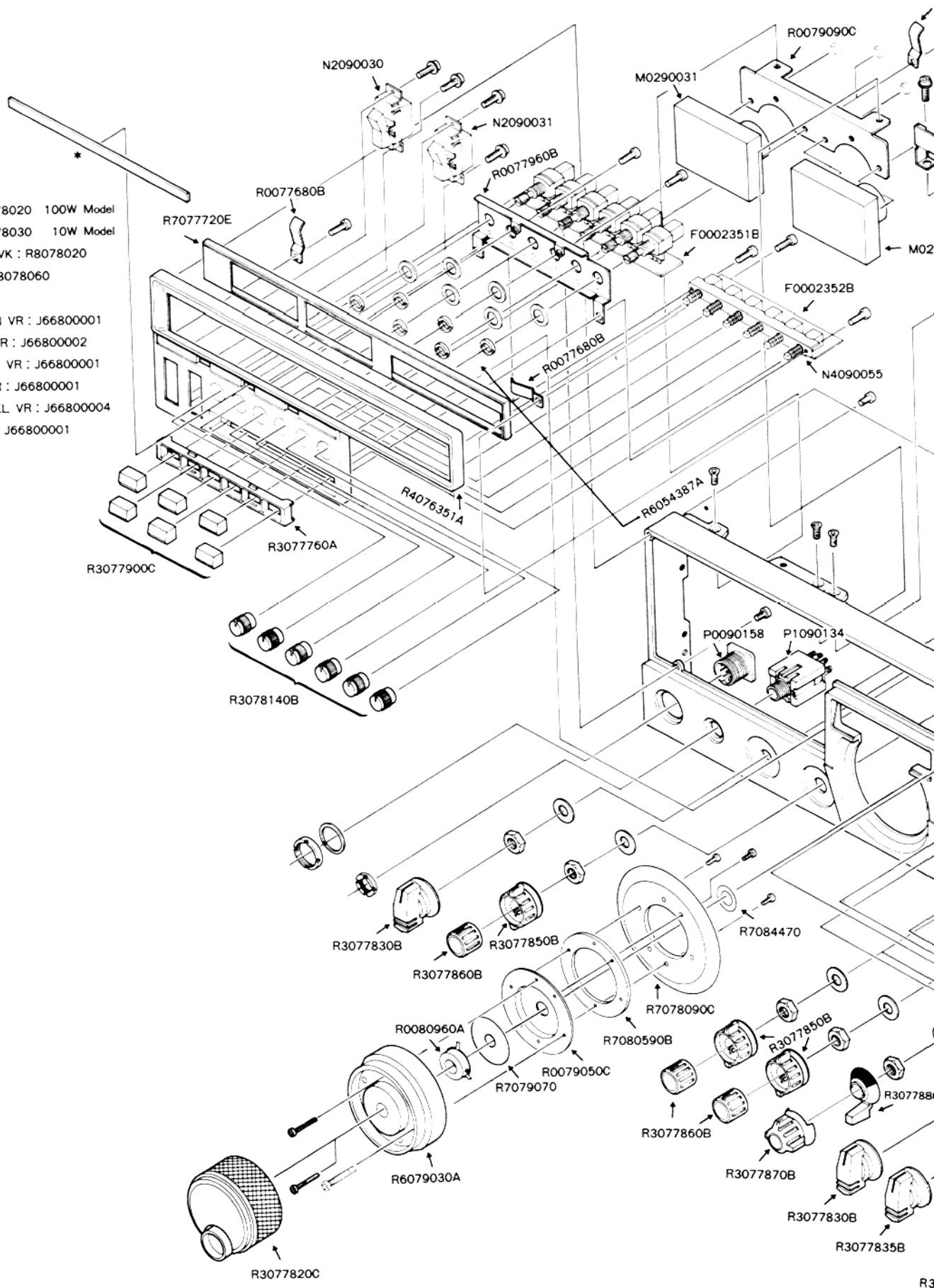


Viewed from Solder Side

FRONT PANEL

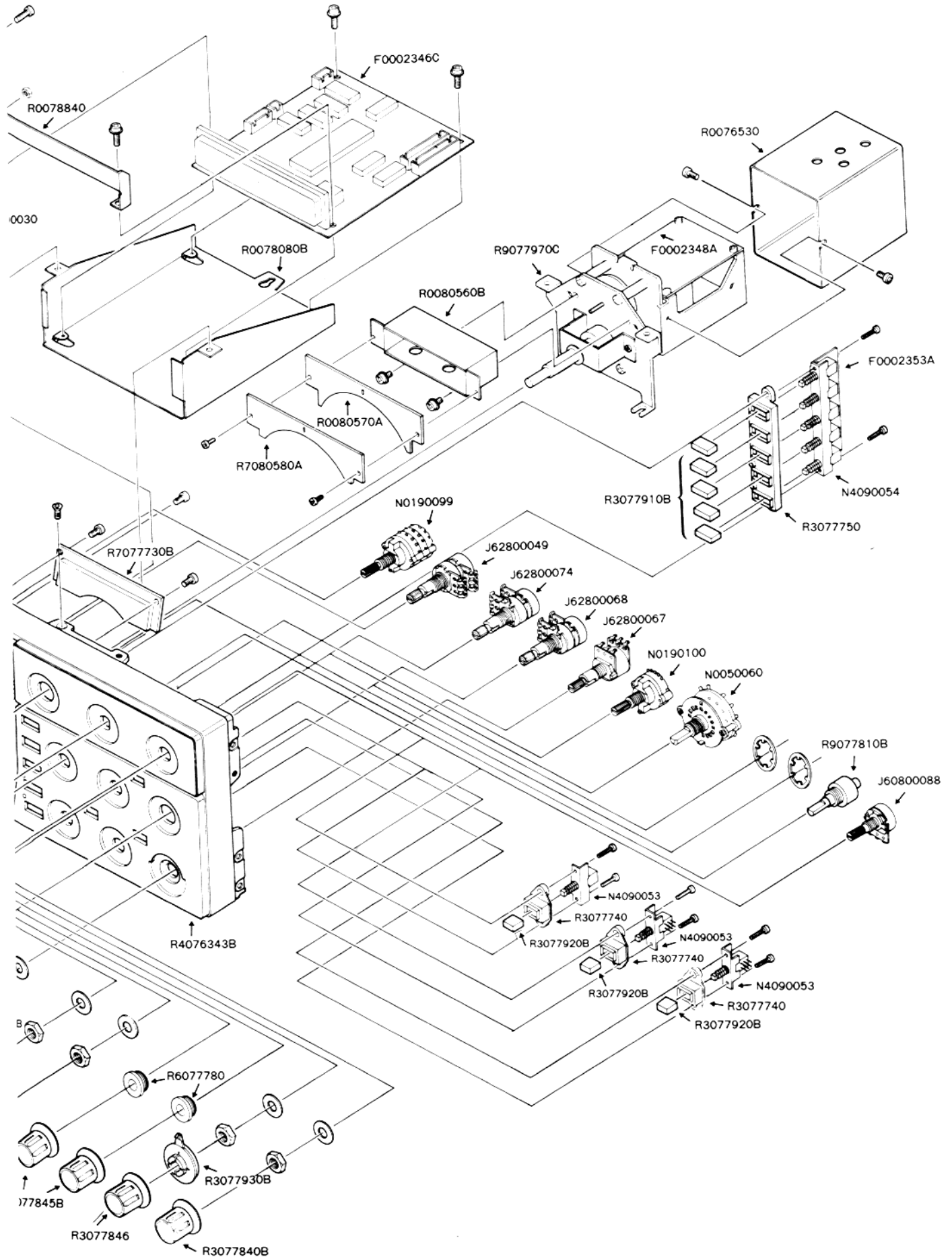
*
JA : R8078020 100W Model
R8078030 10W Model
USA/EU/VK : R8078020
SOKA : R8078060

VOX GAIN VR : J66800001
DELAY VR : J66800002
MIC GAIN VR : J66800001
COMP VR : J66800001
NB LEVEL VR : J66800004
SQL VR : J66800001



EL REMOVAL

R0077680B



PARTS LIST

MAIN CHASSIS				C22, 25	K00359001	Ceramic Disc 3KWV 100 pF (CC45SL3F101KY)
Symbol No.	Part No.	Name & Description				
		VACUUM TUBE				
V1, 2, 3	G6090001	6146B		C21	K00329002	" " 1.5KWV 460 pF (MD25WK461J1.5KV)
		IC		C24	K12359001	" " 3KWV 1000 pF (CK45E3F102KY)
Q2	G1090294	μPC7808H		C20	K30279039	Dipped Mica 500WV 330 pF (DM19D331K5)
Q3, 4, 5, 6	G1090301	μPC7812H		C37	K30276331	" " " 330 pF (LCQ17331K5)
		TRANSISTOR		C19	K30279046	" " " 620 pF (DM19D621K5)
Q1	G3207050R	2SB705R		C27	K30279049	" " " 820 pF (DM19D821K5)
		DIODE		C18	K30279127	" " " 2400 pF (DM19D242K5)
D12(9701), 18, 19, 21(9702), 22(9703)	G2015550	Si 1S1555		C9, 51	K12171102	Ceramic Disc 50WV 0.001μF (DD104E102P50V)
D14, 20	G2090001	" 10D1		C1, 2, 23	K12329001	" " 1.4kV 0.01μF (ECK DAL 103)
D1	G2090031	" S4V10		C7, 8, 10-15, 35, 50, 53, 54 (9703)	K13179008	" " 50WV 0.01μF (DD106F103Z50V)
		RESISTOR		C29, 36	K13179009	" " " 0.047μF (DD110F473Z50V)
R1, 2	J01275101	Carbon Film 1/2W TJ 100Ω		C28	K50177224	Mylar 50WV 0.22μF (50F2U224M)
R20(R9703)	J01245479	" " 1/4W " 4.7Ω		C31, 34, 41-43	K40179013	Electrolytic " 1μF (50RE1R0)
R10	J01245221	" " " " 220Ω		C30(9704)	K40170225	" " " 2.2μF (50RL2R2)
R9	J01245271	" " " " 270Ω		C52(9702)	K40140475	" 25WV 4.7μF (25RL4R7)
R7(9702), R23(9704)	J01245102	" " " " 1kΩ		C3, 4	K40149008	" " " 10μF (25RE10)
R13, 17	J01245562	" " " " 5.6kΩ		C39	K40129008	" 16WV 33μF (16RE33)
R12	J01245822	" " " " 8.2kΩ		C5, 6	K43270002	" 500WV 100μF (CE62L500L100)
R11, 19	J01245103	" " " " 10kΩ		C40(9701), 55	K40129007	" 16WV 100μF (16RE100)
R16	J02245103	" " " SJ 10kΩ				VARIABLE CAPACITOR
R18	J01245123	" " " TJ 12kΩ		VC1	K90000026	YB-250 250 pF
R4(9705)	J01245104	" " " " 100kΩ		VC2	K90000016	C134E12
R25(9701)	J01245124	" " " " 120kΩ				TRIMMER CAPACITOR
R15	J02245104	" " " SJ 1MΩ				INDUCTOR
R13, 14	J01245563	" " " TJ 5.6MΩ		L1	L0021167C	
R21	J20336569	Metallic Film 2W 5.6Ω		L2	L0021168A	
		POTENTIOMETER		L3	L1020064	
VR1	J62800067	K16B2-5KB/1KB		L4	L1020690	500μH
VR2	J62800049	DM10A638A10KB/10KA		L5-7	L1020308B	
VR3	J62800068	K16BA-2KC/5KB		L8	L1190017	FL5H102K 1 mH
VR4	J62800074	K16BA004C 10KA/10KB			L0190032	RF3855-R27K
VR5, 6	J60800084	UM10A654A-10KB			L0190030	RF3855-R18K
VR7	J60800088	K1611 10KB				POWER TRANSFORMER
VR8(9701)	J51724202	PN822H 202KH 2kΩB		PT1	L3030100	
		CAPACITOR				
	K02179009	Ceramic Disc 50WV 22 pF (DD104CH220J50V02)		TC1	K91000007	TSN120C10PX2
	K02175680	" " " 68 pF (DD107CH680J50V02)				INDUCTOR
	K02175101	" " " 100 pF (DD107CH101J50V02)				
	K02175121	" " " 120 pF (DD107CH121J50V02)				
	K30175181	Dipped Mica " 180 pF (LCQ17181J05)				
C26	K00359005	Ceramic Disc 3KWV 9 pF (CC45SL3F090DY)				
C38	K00329005	" " 1.5KWV 51 pF (DE0707SL510J)				

		METER	P24 (with wire)	T9204377	
M1	M0290030	Y38-01	P26 (")	T9204382B	
M2	M0290031	Y38-02	P29 (")	T9204378A	
			P30 (")	T9204401	
			P34 (")	T9204390	
		SPEAKER	P40 (")	T9204380	
SP1	M4090044	SE-92BYM2 8Ω 2W	P41 (")	T9302301A	
			P42 (")	T9204381B	
			P46 (")	T9204383A	
		RELAY	P51 (")	T9204384A	
RL1, 2	M1190004	FRC-203D012/04CS01 DC 12V	P52 (")	T9204385	
			P53 (")	T9204386A	
			P54 (")	T9204393	
		RELAY SOCKET	P57 (")	T9204387	
RLS1, 2	M1490010	263H204	P58 (")	T9204388B	
			P62 (")	T9024389	
		TERMINAL BOARD			
	Q6000003	1L2PS (0-1-0)			CONNECTION CABLES
	Q6000012	1L4PS (3-0-1)		T9302200B	
	Q6000006	1L3PS (1-0-2)		T9302300C	
		SWITCH			
S1	N0190099	SRN-3066			FUSE
S2	N0190100	SRN-1034	F1	Q0000012	6A (100V-117V)
S3	N2090030	EST-159R		Q0000004	3A (200V-234V)
S4	N2090031	EST-157R			
S5, 7	N4090053	SUJ 12A			
S8	N6090004	SSF-22-08b			DC FUSE HOLDER
S9	N6090043	SSF-12-045	FHI	P2000012	SN2059
S10	N0050060	BAND SW A			
S11	N0050061A	BAND SW C			
		JACK			COOLING FAN
J9	P1090031	D5-701B-00	FAN1	M2090003	FB-08B12LY
J21	P1090033	D6-701B-00			
J8	P1090034	D7-701B-00			*** CONNECTION UNIT ***
J7	P1090152	D8-703B-11		F0002476	Printed Circuit Board
J1	P0090158	FM214-8SS		C024760A	PCB with D9701-9703, R9701-
J2	P1090134	SG-7627			9705, VR9701, C9701-9704
J10	P1090004	SG-7814		R3077830B	FT-22VK MODE, METER SELECT
J11	P1090230	SG-8022		R3077835B	FT-22VF BAND
J6	P0090094	NC-174-PA125		R3077840B	FT-22WK DRIVE
J3-5, 20, 24	P1090133	STR-01-H		R3077845B	FT-22WF (W/WHITE LINE)
J12-17	Q9000195	JACK BOARD ASSY			LOADING, PRESELECT
J19	P1090194	FM-MR-M2		R3077850B	FT-22WDNS RF, TONE, APF
		CONNECTOR		R3077860B	FT-15WK AF, CLAR, NOTCH
P1 (with wire)	T9204376A			R3077870B	FT-22WNAK SHIFT/WIDTH
P2 (")	T9302301A			R3077880B	FT-22WS (Lever) "
P3 (")	T9204367			R3078140B	FT-10SAK VOX, DELAY, MIC, COMP, NB, SQL
P4 (")	T9204368B			R3077846	FT-22WF (W/O WHITE LINE) PLATE
P5 (")	T9204369A				
P6 (")	T9204370			R3077900C	Push knob A MDX, RF AMP, NAR, MONI, NB, PROC
P9 (")	T9204371A				
P10 (")	T9204372B			R3077910B	Push knob G AGC, FAST/SLOW, ALC M, RX, TX
P12 (")	T9204379B				
P17 (")	T9204373A			R3077920B	Push knob H +0.5, APF, NOTCH
P18 (")	T9204374A				
P21 (")	T9204375				

RF UNIT								
Symbol No.	Part No.	Name & Description						
PB-2342D	F0002342D C0023420	Printed Circuit board		R1033, 1038 1050	J02245122	" "	" SJ	1.2k Ω
		PCB with Components		R1025	J02245152	" "	" "	1.5k Ω
				R1010, 1054	J02245222	" "	" "	2.2k Ω
				R1046	J02245472	" "	" "	4.7k Ω
V1001	G6090002	VACUUM TUBE		R1053	J01215103	" "	1/8W TJ	10k Ω
		12BY7A		R1006, 1049	J02245104	" "	1/4W SJ	100k Ω
				R1004	J01215104	" "	1/8W TJ	100k Ω
				R1012	J02245184	" "	1/4W SJ	180k Ω
VS1001	P3090022	VACUUM TUBE SOCKET		R1001	J02245225	" "	" "	2.2M Ω
		SB-9403						
Q1008	G2090135	IC		C1037-1040	K02179003	CAPACITOR		
		ND487C2-3R				Ceramic Disc	50WV CH	2 pF
				C1036, 1041 1102	K02179004	" "	" "	3 pF
						(DD104CH020C50V02)		
Q1009	G3315890	TRANSISTOR		C1035	K02172040	" "	" "	4 pF
		2SC1589				(DD104CH040C50V02)		
		2SC1815Y		C1098	K00172040	" "	" SL	4 pF
		2SC1971				(DD104SL040C50V02)		
Q1007	G3324070	2SC2407		C1101	K02172050	" "	" CH	5 pF
						(DD104CH050C50V02)		
		FET		C1034	K02173070	" "	" "	7 pF
		2SK125Y				(DD104CH070D50V02)		
Q1001, 1002 1004-1006	G3801250Y	DIODE		C1033	K02173160	" "	" "	16 pF
						(DD104CH160J50V02)		
		Si 1S1555		C1090	K02173330	" "	" SL	33 pF
						(DD104SL330J50V02)		
D1002-1008 1112-1115	G2015550	10D10		C1025	K02175390	" "	" CH	39 pF
		Zener HZ3C1				(DD105CH390J50)		
		CRYSTAL FILTER		C1027, 1047	K00175101	" "	" SL	100 pF
						(DD105SL101J50V02)		
XF1001	H1102050	8.2M20A		C1085	K30273010	Dipped Mica 500WV		
						(LCQ11010D5)		1 pF
		RESISTOR		C1106	K30173010	" "	" "	1 pF
						(LCQ11010D05)		
R1037	J01275159	Carbon Film	1/2W TJ	1.5 Ω	C1107	K30173020	" "	2 pF
R1039	J02245229	" "	1/4W SJ	2.2 Ω			(LCQ11020D05)	
R1026, 1034	J02245479	" "	" "	4.7 Ω	C1014	K30273050	" "	5 pF
R1022, 1023	J02245100	" "	" "	10 Ω			500WV	
R1020	J02245150	" "	" "	15 Ω			(LCQ11050D5)	
R1035	J02245390	" "	" "	39 Ω			" "	24 pF
R1007, 1011 1014, 1041 1042, 1045	J02245101	" "	" "	100 Ω	C1019	K30276270	" "	27 pF
R1021	J02245121	" "	" "	120 Ω			(LCQ12270K5)	
R1027	J02245151	" "	" "	150 Ω	C1016	K30276390	" "	33 pF
R1028, 1052	J02245221	" "	" "	220 Ω			(LCQ12330K5)	
R1018, 1019 1032	J02245331	" "	" "	330 Ω	C1066	K30176470	" "	47 pF
R1031	J02245471	" "	" "	470 Ω			(Z11C470K05)	
R1008, 1024 1043	J02245561	" "	" "	560 Ω	C1083	K30276560	" "	56 pF
R1036	J01275561	" "	1/2W TJ	560 Ω			(LCQ12560K5)	
R1030	J02245821	" "	1/4W SJ	820 Ω	C1001	K30176680	" "	68 pF
R1003, 1013 1016, 1017 1044, 1048 1051	J01215102	" "	1/8W TJ	1k Ω			50WV	
					C1108	K30276820	" "	82 pF
							(Z11D680K05)	
					C1008	K30276331	" "	330 pF
							(LCQ12820K5)	
					C1026, 1082	K30276561	" "	560 pF
							(LCQ18331K5)	
							" "	
							(LCQ18561K5)	

C1086	K30276102	Dipped Mica 500WV 1000 pF (LCQ21102K5)	T1001	L0020294	TRANSFORMER
C1003	K30279095	" " " 1200 pF (DM19D122J5)	T1002	L0020418	
C1002	K10179016	Ceramic Disc 50WV 0.001μF (DB201YB102K5L5)	T1003	L0020789A	
C1004, 1005 1007, 1013 1021, 1022 1023, 1077 1078, 1084	K12279007	" " 500WV 0.01μF (CD110E103P500)	T1004	L0020170	
			T1005	L0021169A	
C1026, 1028 1030-1032 1042, 1043 1045, 1046 1048, 1049 1057, 1058 1059, 1061 1074, 1092-1094 1096, 1097 1099, 1100	K13179008	" " 50WV 0.01μF (DD106F103Z50V)	T1006, 1007	L0021170A	
			T1008	L0021172A	
			T1009	L0021173A	
			T1011	L0021175	BPF 160B
			T1012	L0021174	BPF 160A
			T1013	L0021177	BPF 80B
			T1014	L0021176	BPF 80A
			T1015	L0021179	BPF 40B
			T1016	L0021178	BPF 40A
			T1017	L0021181	BPF 30B
			T1018	L0021180	BPF 30A
			T1019	L0021183	BPF 20B
			T1020	L0021182	BPF 20A
			T1021	L0021185	BPF 17B
			T1022	L0021184	BPF 17A
			T1023	L0021187	BPF 15B
C1024, 1029 1044, 1053 1054, 1056 1060, 1062 1069, 1071 1072, 1075 1087, 1088	K13179009	" " " 0.047μF (DD110F473Z50V)	T1024	L0021186	BPF 15A
			T1025	L0021189	BPF 12B
			T1026	L0021188	BPF 12A
			T1027	L0021191	BPF 10B
			T1028	L0021190	BPF 10A
			T1029	L0021192	
			T1030	L0021193	
C1103	K19149001	Semiconductor Ceramic 25WV 0.01μF (UAT04X102K-L05AE)	T1031-1034	L0020788A	
C1070	K19149005	" " " 0.0022μF (UAT04X222K-L05AE)	T1035	L0021194	
C1067, 1080 1095	K19149021	" " " 0.047μF (UAT08X473L45AE)	T1036	L0021195	
C1073, 1089	K19149025	" " " 0.1μF (UAT13X104K-L46AE)	T1037	L0020788A	
C1068, 1076	K40129008	Electrolytic 16WV 33μF (16RE33)			
C1063, 1081	K40129002	" " 47μF (16RE47)	RL1001, 1003	M1190002	FBR211AD012
			RL1004, 1005	M1190037	FBR211AD024
C1105	K70120003	Tantalum 16WV 47μF (489D476X0016F1)	RL1002	M1190006	FBR221D012M
		VARIABLE CAPACITOR			
VC1001	K90000038	20P/190P C121D113			
		TRIMMER CAPACITOR			
TC1001, 1002	K91000028	ECV-1ZW10X53		L9190024	FERRITE BEADS FB-101
		INDUCTOR			
LI001, 1002 1005, 1015	LI190017	FL5H102K 1 mH			
LI003, 1006	LI190020	FL5H151K 150μH			
LI007, 1016	LI190009	FL4H3R3M 3.3μH			
LI010	LI190011	FL4H4R7M 4.7μH			
LI012, 1017 1018	LI190090	LAL04102K-NA 1 mH	S1001	N0050062A	SWITCH CSP4-4-11
LI013	LI190120	FL5H471K 470μH			
LI008	L0021214A			Q5000025	Wrapping terminal A
LI011	LI020032			Q5000011	" " C

IF UNIT					CRYSTAL FILTER
Symbol No.	Part No.	Name & Description	XF2001	H1102051	XF-8.2HS
PB-2343C	F0002343C C00023430	Printed Circuit Board PCB with Components			
					CERAMIC FILTER
			CF2001	H3900290	CFJ-455K13
		IC			
Q2016	G1090381	TA7060AP			
					RESISTOR
			R2172	J02245010	Carbon Film 1/4W SJ 1Ω
		TRANSISTOR	R2007, 2094	J02245100	" " " " 10Ω
Q2014, 2032 2034, 2035	G3105641R	2SA564 AR	R2226, 2229	J02245330	" " " " 33Ω
			R2003	J02245470	" " " " 47Ω
Q2021, 2024 2027, 2028	G3303800Y	2SC380Y	R2051	J02245560	" " " " 56Ω
			R2149	J02245680	" " " " 68Ω
Q2019, 2020	G3315830	2SC1583	R2020, 2021 2055, 2218	J01245101	" " " TJ 100Ω
Q2012, 1018 2022, 2023	G3318150G	2SC1815GR	R2030, 2034	J02245101	" " " SJ 100Ω
Q2006-2009 2011, 2015 2030, 2033	G3318150Y	2SC1815Y	2046, 2058 2068, 2072 2088, 2091 2095, 2102 2110-2113 2123, 2028 2133, 2140 2151, 2154 2160, 2174 2197, 2198		
		FET			
Q2029	G3800190G	2SK19GR	R2216	J01245151	" " " TJ 150Ω
Q2005, 2013 2031	G3090035	2SK19GR-1	R2186	J02245151	" " " SJ 150Ω
Q2025, 2026	G3090034	2SK19Y	R2122, 2221	J02245181	" " " " 180Ω
Q2001, 2002	G3801250Y	2SK125Y	R2163, 2222	J02245221	" " " " 220Ω
Q2003, 2004 2010, 2017	G4800730G	3SK73GR	R2175	J01245221	" " " TJ 220Ω
		THERMISTOR	R2114, 2115 2117, 2155	J02245331	" " " SJ 330Ω
TH2001	G9090003	D-33A	R3026	J01245391	" " " TJ 390Ω
			R2009, 2028 2124	J02245391	" " " SJ 390Ω
		DIODE			
D2038, 2053-2056 2062, 2080	G2090029	Ge 1N60	R2066, 2166 2126, 2131 2177, 2224 2038, 2047 2052, 2062 2098, 2153 2199	J02245471	" " " " 470Ω
D2039, 2040	G2090093	" 1N270			
D2004, 2010 2021, 2023 2029, 2030 2032-2036 2041-2045 2047, 2049- 2052, 2057 2058, 2060 2061, 2064 2066-2069 2071, 2072 2075-2078 2081, 2082	G2015550	Si 1S1555	R2053	J01245561	" " " TJ 560Ω
			R2203	J02245821	" " " SJ 820Ω
D2026-2028 2046, 2059	G2090118	Schottky 1SS97	R2008, 2029 2045, 2048 2063, 2064 2073, 2074 2079, 2082 2083, 2089 2096, 2099 2103-2104 2117, 2127 2130, 2136 2138, 2146 2152, 2157 2162	J02245102	" " " " 1kΩ
D2031	G2090179	Varactor FC-53M-(S)			
D2073, 2074	G2090030	Zener BZ090			
D2048	G2090218	" HZ9C1			

2168, 2187 2200				2150, 2169 2192, 2227		
R2236	J01245102	Carbon Film	1/4W TJ	1kΩ	R2084	J02245124 Carbon Film 1/4W SJ 120kΩ
R2011, 2013 2022	J02245122	" "	" SJ	1.2kΩ	R2090, 2189	J02245154 " " " " 150kΩ
R2014, 2015 2067, 2101 2147, 2178 2234	J01245152	" "	" TJ	1.5kΩ	R2076, 2180	J02245224 " " " " 220kΩ
					R2230	J02245394 " " " " 390kΩ
					R2039, 2105	J02245564 " " " " 560kΩ
					R2065	J02245824 " " " " 820kΩ
					R2039, 2179	J02245105 " " " " 1MΩ
R2004, 2012 2035, 2054 2056, 2057 2060, 2125 2173, 2202	J02245222	" "	" SJ	2.2kΩ	R2235	J02245335 " " " " 3.3MΩ
					R2231	J02245565 " " " " 5.6MΩ
						POTENTIOMETER
R2212, 2217	J01215222	" "	1/8W TJ	2.2kΩ	VR2002, 2003 2006	J51752502 RGS6-FAN 5KB 5kΩB
R2042, 2050 2107, 2118	J02245272	" "	1/4W SJ	2.7kΩ	VR2001, 2004 2005	J51752103 RGS6-FAN 10KB 10kΩB
R2129, 2204 2208	J02245332	" "	" "	3.3kΩ	VR2007, 2008	J51752504 RGS6-FAN 500KB 500kΩB
R2213	J01215332	" "	1/8W TJ	3.3kΩ		
R2033	J02245392	" "	1/4W SJ	3.9kΩ		CAPACITOR
R2016, 2017 2106, 2119 2134, 2195 2196	J02245472	" "	" "	4.7kΩ	C2125	K00175180 Ceramic Disc 50WV SL 2 pF (DD104SL020C50V02)
					C2112	K00172030 " " " " 3 pF (DD104SL030C50V02)
R2024, 2080 2092, 2100 2132, 2137 2185	J02245562	" "	" "	5.6kΩ	C2127	K10176102 " " " " 10 pF (DD104SL100D50V02)
					C2177	K00175180 " " " " 18 pF (DD104SL180J50V02)
R2192	J02245682	" "	" "	6.8kΩ	C2035, 2116 2138	K00175330 " " " " 33 pF (DD104SL330J50V02)
R2001, 2005 2006, 2041 2043, 2049 2059, 2061 2075, 2077 2078, 2081 2087, 2097 2120, 2139 2159, 2165 2166, 2170 2181, 2183 2184, 2188 2190, 2101 2209, 2210	J02245103	" "	" "	10kΩ	C2036, 2037 2123, 2124	K00175101 " " " " 100 pF (DD105SL101J50V02)
					C2128	K00175181 " " " " 180 pF (DD104SL181D50V02)
					C2077, 2078 2081, 2118 2174	K00175221 " " " " 220 pF (DD107SL221J50V02)
					C2075, 2117 2135, 2145	K00175331 " " " " 330 pF (DD107SL331J50V02)
					C2062, 2063	K51176102 Styrol 1000 pF (50SU102K)
					C2006, 2027 2056, 2146 2180	K10176102 Ceramic Disc 50WV 0.001μF (DD104B102K50V02)
R2219	J01215103	" "	1/8W TJ	10kΩ	C2001-2004 2008, 2009 2011, 2013 2015, 2017 2019, 2021 2023, 2025 2031, 2033 2034, 2040 2061, 2064 2068, 2073 2079, 2080 2086, 2089 2098, 2099 2104-2111 2113, 2121	K13179008 " " " " 0.01μF (DD106F103Z50V)
R2225	J02245123	" "	1/4W SJ	12kΩ		
R2108, 2135 2228	J02245153	" "	" "	15kΩ		
R2211	J01215153	" "	1/8W TJ	15kΩ		
R2069, 2142	J02245183	" "	1/4W SJ	18kΩ		
R2002, 2144 2171	J02245223	" "	" "	22kΩ		
R2085, 2164	J02245273	" "	" "	27kΩ		
R2044, 2101	J02245333	" "	" "	33kΩ		
R2121	J02245393	" "	" "	39kΩ		
R2141, 2156 2167	J02245473	" "	" "	47kΩ		
R2158	J02245563	" "	" "	56kΩ		
R2070	J02245823	" "	" "	82kΩ		
R2071	J02245104	" "	" "	100kΩ		

3021, 3030			R3017	J02245182	" "	" "	1.8k Ω
			R3011, 3021	J02245222	" "	" "	2.2k Ω
			3059, 3071				
			3075, 3121				
		FET	R3111	J02245272	Carbon Film	1/4W SJ	2.7k Ω
Q3026	G3090034	2SK19Y	R3001, 3010	J02245332	" "	" "	3.3k Ω
			3040, 3047				
			3057, 3066				
			3091, 3104				
		DIODE	3125, 3155				
D3015	G2090001	Si 10D1	R3039	J02245392	" "	" "	3.9k Ω
D3011, 3014	G2090029	Ge 1N60	R3004, 3012	J02245472	" "	" "	4.7k Ω
3021, 3024			3033, 3035				
D3007, 3009	G2090093	" 1N270	3038, 3042				
D3001, 3006	G2015550	Si 1S1555	3050, 3051				
3010, 3012			3063, 3065				
3013, 3016			3120, 3123				
3020, 3025			R3153	J01245472	" "	" TJ	4.7k Ω
3028, 3030			R3073, 3076	J02245562	" "	" SJ	5.6k Ω
3032, 3034			3093				
3036, 3037			R3082, 3083	J02245682	" "	" "	6.8k Ω
	G2090118	Schottky 1SS97	3086, 3095				
D3008	G2090217	Zener HZ3C1	3096, 3099				
		CRYSTAL	R3006	J02245822	" "	" "	8.2k Ω
X3001	H0102449	8.2159MHz	R3013, 3019	J02245103	" "	" "	10k Ω
			3020, 3022				
			3028, 3048				
			3052, 3053				
		RESISTOR	3061, 3080				
R3115	J01275229	Carbon Film 1/2W TJ	3081, 3082				
	J00245330	" " 1/4W VJ	3106, 3110				
R3102	J02245560	" " " SJ	3119, 3121				
R3016, 3113	J02245820	" " " "	3138, 3139				
R3005, 3018	J02245101	" " " "	3145, 3147				
3026, 3070			3152, 3162				
3079, 3089			3164, 3172				
3108, 3132			R3156	J00215103	" "	1/8W VJ	10k Ω
3135, 3140			R3007, 3015	J02245123	" "	1/4W SJ	12k Ω
3160, 3161			3045, 3054				
3173			3107				
R3072, 3077	J02245221	" " " "	R3003, 3023	J02245153	" "	" "	15k Ω
3127			3062, 3068				
R3027, 3116	J02245331	" " " "	3087, 3100				
R3154	J02245391	" " " "	R3067	J02245183	" "	" "	18k Ω
R3064, 3094	J02245471	" " " "	R3036, 3165	J02245223	" "	" "	22k Ω
R3078, 3150	J02245561	" " " "	3167				
3174, 3177			R3008, 3044	J02245333	" "	" "	33k Ω
R3009, 3025	J02245102	" " " "	3055, 3084				
3034, 3046			R3002, 3014	J02245473	" "	" "	47k Ω
3056, 3060			3112, 3128				
3069, 3085			3136, 3144				
3090, 3092			3146				
3098, 3103			R3024, 3088	J02245563	" "	" "	56k Ω
3105, 3114			3101				
3129-3131			R3122, 3126	J02245104	" "	" "	100k Ω
3133, 3134			3171				
3137, 3149			R3097	J02245334	" "	" "	330k Ω
3168			R3041, 3109	J02245474	" "	" "	470k Ω
R3157	J00215102	" " 1/8W VJ	R3117	J31276010	Wire Wound	1/2W	1 Ω
R3175	J02245122	" " 1/4W SJ					
R3037	J02245152	" " 1/4W SJ					

		POTENTIOMETER				(50F2U103M)	
VR3003	J51727103	CR19R101	10k Ω	C3064, 3068	K50177153	"	0.015 μ F
VR3004	J51723471	SR19R471	470 Ω	3077, 3086		(50F2U153M)	
VR3005	J51752502	RGS6FAN	5k Ω	3087			
VR3006	J51752103	RGS6FAN	10k Ω	C3014, 3015	K50177223	Mylar 50WV	0.022 μ F
VR3001, 3002	J51752104	RGS6FAN	100k Ω	3027-3029		(50F2U223)	
		CAPACITOR		C3065	K50177333	"	0.033 μ F
C3107, 3111	K02173100	Ceramic Disc 50WV CH	10 pF (DD104CH100D50V02)	C3002	K40179002	Electrolytic	0.1 μ F
	K06175120	" " " UJ	12 pF (DD104UJ120J50V02)	C3067	K40179010	"	0.47 μ F
	K02173180	" " " CH	18 pF (DD104CH180J50V02)	C3005, 3007	K40179013	"	1 μ F
C3103	K06175220	" " " UJ	22 pF (DD105UJ220J50V02)	3008, 3031		(50RE1)	
C3144	K02175270	" " " CH	27 pF (DD105CH270J50V)	3034, 3039			
C3092	K00175330	" " " SL	33 pF (DD104SL330J50V02)	3043, 3049			
C3102	K06175390	" " " UJ	39 pF (DD105UJ390J50V02)	3070, 3081			
	K06175510	" " " " "	51 pF (DD106UJ510J50V02)	3085, 3089			
C3104, 3105	K02175151	" " " CH	150 pF (DD109CH151J50V02)	3136, 3137			
C3001	K00175221	" " " SL	220 pF (DD107SL221J50V02)	3140			
	K23170002	Ceramic Chip	0.001 μ F (GR43Y5V103Z)	C3127	K40179009	"	2.2 μ F
C3025	K12171102	Ceramic Disc	0.001 μ F (DD104E102P50V)	C3010, 3017	K40149001	" 25WV	4.7 μ F
C3131-3134	K10176102	" " "	0.001 μ F (DD104B102K50V02)	3020, 3021		(25RE4R7)	
3143				3030,			
C3013, 3026	K13179008	" " "	0.01 μ F (DD106F103Z50V)	3036, 3037			
3035, 3042				3044, 3071			
3045-3047				C3004, 3009	K40129004	" 16WV	10 μ F
3073, 3074				3018, 3033		(16RE10)	
3093, 3101				3041, 3048			
3106, 3108-				3062, 3072			
3110, 3112-				3075, 3080			
3114, 3118-				3082-3084			
3121, 3123				3097, 3100			
3139				3116, 3128			
C3060, 3061	K19149013	Semiconductor Ceramic	0.01 μ F 50WV (UAT05X103K-L05AE)	3135-3138			
C3050-3059	K19149021	"	0.047 μ F (UAT08X473-L45AE)	C3117	K40129016	"	22 μ F
3141, 3142						(16RE22)	
C3096	K19149025	"	0.1 μ F (UAT13X104K-L46AE)	C3011, 3019	K40129008	"	33 μ F
				3124		(16RE33)	
C3003, 3032	K50177102	Mylar	0.001 μ F (50F2U102M)	C3066, 3067	K40109002	" 10WV	47 μ F
3040, 3069						(10RE47)	
3090				C3088, 3138	K40129002	" 16WV	47 μ F
C3006, 3016	K50177222	"	0.0022 μ F (50F2U222M)			(16RE47)	
				C3012	K40129020	"	100 μ F
C3076	K50177272	"	0.0027 μ F (50F2U272M)	C3091	K40129033	"	220 μ F
C3079	K50177103	"	0.01 μ F	C3094	K40129006	"	470 μ F
						(16RE470)	
				C3095	K40129021	"	1000 μ F
						(16R102S)	
				C3129, 3130	K70127225	Tantalum	2.2 μ F
						(CS15E1C2R2M)	
				C3098	K70120002	"	10 μ F
						(489D106X0016C1)	
						TRIMMER CAPACITOR	
				TC3003	K9100086	CTZ51E 20P	
				TC3002	K9100089	CTZ51G 50P	
					K9100091	CT81E 20p	

		INDUCTOR				DIODE	
L3001, 3003 3006, 3010	L1190017	FL5H102K	1 mH	D4083	G2090001	Si	10D1
L3005, 3007	L1190023	FL5H220	22μH	D4086-4089 4093, 4094	G2015550	"	1S1555
	L1190035	FL7H392J	3.9 mH	D4001-4041 4043-4045 4047, 4049 4051-4053 4055-4057 4059-4061 4063-4074 4077, 4078 4080, 4081 4085, 4092	G2090027	"	1SS53
L3002	L1190040	S-4	1 mH				
L3009	L1190090	LAL04-102K	1 mH				
		TRANSFORMER					
T3002	L0020883						
		CONNECTOR					
	P0090191	B2B-XH-A	2P				
	P0090194	B5B-XH-A	5P				
	P0090197	B8B-XH-A	8P	D4075, 4084	G2090118	Schottky	1SS97
	P0090192	B3B-XH-A	3P	D4079, 4082 D4042, 4046 4048, 4050 4054, 4058	G2090023	Varactor	1SV50
					G2090073	"	FCS2M
		TP TERMINAL					
	Q50000037	TP-H		D4062	G2090185	Zener	HZ5C2
				D4090	G2090240	"	WZ105
						CRYSTAL	
				X4001	H0102450		10.0MHz
				X4003	H0102452		10.5434MHz
				X4004	H0102453		10.5466MHz
				X4002	H0102451		19.5434MHz
LOCAL UNIT				RESISTOR			
Symbol No.	Part No.	Name & Description					
PB-2345 D	F0002345 D	Printed Circuit Board		R4034, 4059 4166	J02245100	Carbon Film	1/4W SJ 10Ω
	C0023450	PCB with Components		R4017, 4026 4131, 4152 4161	J02245470	" " " "	47Ω
		IC		R4062, 4063	J02245560	" " " "	56Ω
Q4018	G1090087	MC4044		R4018, 4020	J02245101	" " " "	100Ω
Q4020	G1090108	MC14518BCP		4027, 4028			
Q4017	G1090019	SN74LS192N		4064, 4067			
Q4012, 4024	G1090062	SN76514N		4075, 4079 4084, 4087- 4089, 4092 4094, 4095 4098, 4104 4127, 4130 4132, 4133 4140, 4143 4149, 4153 4158, 4162 4163			
		TRANSISTOR					
Q4016, 4043	G3107331Q	2SA733AQ					
Q4007, 4011 4013-4015	G3305350B	2SC535B					
Q4022, 4023	G3307320G	2SC732GR					
Q4001, 4006 4009, 4010 4021, 4026- 4029, 4031- 4037, 4039 4041, 4042	G3309451Q	2SC945Q					
				R4093	J01245101	" " " TJ	100Ω
					J01245151	" " " "	150Ω
				R4065	J02245151	" " " SJ	150Ω
Q4008	G3324070	2SC2407		R4099	J02245181	" " " "	180Ω
				R4040, 4091 4108	J02245221	" " " "	220Ω
				R4057, 4188	J02245271	" " " "	270Ω
				R4013, 4035 4036, 4083 4174	J02245471	" " " "	470Ω
		FET					
Q4025, 4030 4038, 4040	G4800730G	3SK73GR		R4029, 4072 4080, 4090	J02245561	" " " "	560Ω

4106, 4128 4144, 4150 4159					R4121	J02245823	" " " " 82kΩ
R4056	J02245681	Carbon Film	1/4W SJ	680Ω	R4025, 4037 4071, 4097	J02245104	" " " " 100kΩ
R4187	J01245821	" "	" TJ	820Ω	4100, 4103		
R4014, 4022 4031, 4041- 4048, 4053 4060, 4068 4069, 4076 4105, 4109 4125, 4141 4165, 4172	J02245102	" "	" SJ	1kΩ	4122, 4126 4129, 4136 4142, 4145 4146, 4148 4151, 4154 4155, 4157 4160		
R4049	J01245102	" "	" TJ	1kΩ	R4101, 4102	J02245224	Carbon Film 1/4W SJ 220kΩ
R4058	J02245152	" "	" SJ	1.5kΩ	R4186	J00215224	" " 1/8W VJ 220kΩ
	J00215222	" "	1/8W VJ	2.2kΩ	R4070	J02245334	" " 1/4W SJ 330kΩ
R4134	J02245272	" "	1/4W SJ	2.7kΩ	R4168	J20306330	Metallic Film 1W 33Ω
R4052, 4096	J02245332	" "	" "	3.3kΩ			POTENTIOMETER
	J02245472	" "	" "	4.7kΩ	VR4006, 4007	J51724502	PN822H502H 5kΩB
R4023, 4086 4119	J02245562	" "	" "	5.6kΩ	VR4002-4005	J51724103	PN822H103H 10kΩB
R4191	J00215682	" "	1/8W VJ	6.8kΩ	VR4001	J51752104	RGS6FAN 100KB 100kΩB
R4019, 4021, 4024, 4050 4051, 4054 4055, 4061 4113, 4117 4118, 4120 4123, 4169 4171, 4173 4199	J02245103	" "	1/4W SJ	10kΩ			CAPACITOR
R4179, 4180-4185	J00215103	" "	1/8W VJ	10kΩ	C4217	K02182059	Ceramic Disc 50WV CH 0.5 pF (RD870-1CG0R5C)
R4175, 4193	J01215103	" "	" TJ	10kΩ	C4101, 4105 4127, 4128 4130, 4131 4185, 4221	K13170103	Ceramic Disc 50WV SL 2 pF (DD104SL020C50V02)
R4073	J02245123	" "	1/4W SJ	12kΩ	C4089, 4160 4186	K00172030	" " " " 3 pF (DD104SL030C50V02)
R4002, 4004 4006, 4008 4016, 4033 4078, 4082 4138	J02245153	" "	" "	15kΩ	C4060, 4158	K00172050	" " " " 5 pF (DD104SL050C50V02)
R4192	J00215153	" "	1/8W VJ	15kΩ	C4040	K02173060	" " " CH 6 pF (DD104CH060D50V02)
R4164, 4170	J02245183	" "	1/4W SJ	18kΩ	C4024, 4033	K02173090	" " " " 9 pF (DD104CH090D50V02)
	J01215223	" "	1/8W TJ	22kΩ	C4018, 4032 4108, 4163 4215	K02173100	" " " " 10 pF (DD104CH100D50V02)
R4010, 4038 4039, 4107 4115, 4177 4178	J02245223	" "	1/4W SJ	22kΩ	C4069, 4071 4088, 4220	K00173100	" " " SL 10 pF (DD104SL100D50V02)
R4001, 4003 4005, 4007 4009, 4011 4012, 4015 4030, 4074 4077, 4081 4124, 4139	J02245273	" "	" "	27kΩ	C4143	K00175120	" " " " 12 pF (DD104SL120J50V02)
R4190	J00215393	" "	1/8W VJ	39kΩ	C4090, 4118 4175, 4188	K00175150	" " " " 15 pF (DD104SL150J50V02)
R4135	J02245473	" "	1/4W SJ	47kΩ	C4226	K00189012	" " " " 63WV 15 pF (RD870-2SL150J63V)
R4066, 4085 4137, 4167	J02245563	" "	" "	56kΩ	C4004, 4011	K02175180	" " " CH 18 pF (DD104CH180J50V02)
R4032, 4147 4156	J02245683	" "	" "	68kΩ	C4041	K06175180	" " " UJ 18 pF (DD104UJ180J50V02)
					C4117	K00175180	" " " SL 18 pF (DD104SL180J50V02)
					C4010	K02179008	" " " CH 20 pF (DD104CH200J50V02)
					C4219	K00179005	" " " SL 20 pF (DD104SL200J50V02)
					C4002, 4034 4044	K06179009	" " " UJ 22 pF (DD104UJ220J50V02)
					C4154	K02179009	" " " CH 22 pF (DD104CH220J50V02)

C4173, 4214	K00175220	" " " SL 22 pF (DD104SL220J50V02)	C4183, 4184	K00175271	" " " " 270 pF (DD107SL271J50V02)
C4093	K00179006	Ceramic Disc 50WV SL 24 pF (DD104SL240J50V02)	C4076, 4070 4139	K00175331	" " " " 330 pF (DD107SL331J50V02)
C4019	K02179010	" " " CH 24 pF (DD104CH240J50V02)	C4056, 4058	K00175471	Ceramic Disc 50WV SL 470 pF (DD109SL471J50V02)
C4013, 4026	K06179010	" " " UJ 24 pF (DD104UJ240J50V02)	C4109	K30176331	Dipped Mica 50WV 330 pF (LCQ17331K05)
C4048, 4156	K02179011	" " " CH 27 pF (DD105CH270J50V02)	C4216	K30176681	" " " " 680 pF (LCQ18681K05)
C4113, 4114	K00175270	" " " SL 27 pF (DD104SL270J50V02)	C4001, 4006 4009, 4012 4015, 4021 4025, 4030 4031, 4036 4039, 4042 4046, 4051- 4055, 4061- 4068, 4078 4080, 4081 4083, 4092 4097-4103 4106, 4107 4111, 4112 4115, 4116 4119-4126 4129, 4132- 4134, 4136 4137, 4141 4142, 4151 4152, 4157 4159, 4161 4162, 4164 4166, 4168 4172, 4174 4177, 4178 4180, 4182 4198, 4200 4203	K13179008	Ceramic Disc " 0.01μF (DD106F103Z50V)
C4003	K02179013	" " " CH 33 pF (DD105CH330J50V02)			
C4079, 4176	K00175330	" " " SL 33 pF (DD107SL330J50V02)			
C4038	K02175390	" " " CH 39 pF (DD105-257CH390J50V02)			
C4070, 4075	K00175390	" " " SL 39 pF (DD104SL390J50V02)			
C4028, 4155	K02175470	" " " CH 47 pF (DD106CH470J50V02)			
C4165, 4223	K06175470	" " " UJ 47 pF (DD104UJ470J50V02)			
C4187	K00175470	" " " SL 47 pF (DD104SL470J50V02)			
C4047	K02175560	" " " CH 56 pF (DD106CH560J50V02)			
C4096	K00179008	" " " SL 36 pF (DD104SL360J50V02)			
C4094	K00179011	" " " " 62 pF (DD104SL620J50V02)			
C4095	K00175560	" " " " 56 pF (DD104SL560J50V02)			
C4008, 4037 4171	K02175680	" " " CH 68 pF (DD107CH680J50V02)			
C4017, 4023	K06175680	" " " UJ 68 pF (DD105-257UJ680J50V02)			
C4135	K00175680	" " " SL 68 pF (DD104SL680J50V)			
C4072	K00175820	" " " SL 82 pF (DD105SL820J50V02)	C4201, 4202-4208	K23140001	MKH Chip 25WV 0.01μF (GR42Y5V103Z25V)
C4022	K06179019	" " " UJ 91 pF (DD106UJ910J50V02)	C4211	K14189002	Ceramic Disc 63WV 0.01μF (RD871-2FZ-103Z63V)
C4029	K02179019	" " " CH 91 pF (DD107CH910J50V02)	C4059, 4087 4150, 4189- 4191, 4194 4199	K13179009	" " 50WV 0.047μF (DD110F473Z50V)
C4167	K02175101	" " " " 100 pF (DD107CH101J50V02)			
C4145, 4179 4192	K00175101	" " " SL 100 pF (DD104SL101D50V02)	C4195, 4196	K50177332	Mylar " 0.0033μF (50F2U332M)
C4016	K06179020	" " " UJ 110 pF (DD106UJ111J50V02)	C4050	K50177103	" " 0.01μF (50F2U103M)
C4007	K02179021	" " " CH 130 pF (DD109CH131J50V02)	C4153	K40179013	Electrolytic 50WV 1μF (50RE1)
C4110	K02175151	" " " " 150 pF (DD109CH151J50V02)	C4169	K40179011	Electrolytic " 3.3μF (50RE3.3)
C4138, 4040	K00175181	" " " SL 180 pF (DD106SL181J50V02)	C4005, 4014 4020, 4027 4035, 4043 4045, 4049 4082, 4086	K40129004	" 16WV 10μF (16RE10)
C4057	K00179020	" " " " 240 pF (DD107SL241J50V02)			

4193				COUNTER UNIT		
C4224	K40129008	" "	33 μ F	Symbol No.	Part No.	Name & Description
		(16RE33)		PB-2346C	F0002346C	Printed Circuit Board
C4144, 4149	K40129002	" "	47 μ F		C0023460	PCB with Components
		(16RE47)				
C4085	K40129007	Electrolytic 16WV	100 μ F			
		(16RE100)				IC
C4091	K5420000	MKH 100WV	0.15 μ F	Q5015	G1090084	78L05
		((32560A1154K)		Q5005, 5011	G1090068	MC14011
C4225	K70127225	Tantalum 16WV	2.2 μ F	Q5006	G1090385	MC14022
		(CS15E1C2R2M)		Q5012, 5013	G1090053	MC14081B
		TRIMMER CAPACITOR		Q5003	G1090476	TC4518BP or μ PC4518C
	T91000075	TZ03R200E	20 pF	Q5004	G1090108	MC14518B
TC4001-4003	K91000081	TZ03R300E	30 pF	Q5008-5010	G1090387	TC5066
		INDUCTOR		Q5007	G1090386	TC5070
L4001, 4002	L1190020	FL5H151K	150 μ H			TRANSISTOR
4004, 4005				Q5014	G3318150G	2SC1815GR
4007, 4009				Q5001, 5002	G3318150Y	2SC1815Y
4011, 4012						
4014, 4015						
4017, 4024						
4028,						DIODE
4032-4034				D5067	G2015540	Si 1S1554
L4018, 4019	L1190004	FL4HR68M	0.68 μ H	D5061-5064	G2015550	" 1S1555
L4020-4022	L1190073	FL5H270K	27 μ H	5069		
L4023	L1190031	FL5H680K	68 μ H	D5066	G2090185	Zener HZ5C2
L4026, 4027	L1190013	FL4H6R8K	6.8 μ H			
L4029, 4030	L1190018	FL5H121K	120 μ H			
L4035	L1190016	FL5H101K	100 μ H			FCD
L4037, 4038	L1190006	FL4H1R2M	1.2 μ H	DS5001	G6090027	FIP9E8
L4039, 4026	L1190021	FL5H180K	18 μ H			
4027						
L4041	L1190096	LAL04151K-NA	150 μ H			TRANSFORMER
L4003	L0021200			T5001	L3030077	E-142
L4006	L0021201					
L4008	L0021202					
L4010	L0021203					RESISTOR
L4016	L0021205			R5038	J02245479	Carbon Film 1/4W SJ 4.7 Ω
L4031	L0020145			R5044	J02245270	" " " " 27 Ω
L4036	L0021206B			R5001	J02215101	" " 1/8W " 100 Ω
L4040	L2190001			R5007	J02245101	" " 1/4W " 100 Ω
		TRANSFORMER		R5005	J02245121	" " " " 120 Ω
T4001-4003	L0021207			R4040	J02245151	" " " " 150 Ω
T4004-4006	L0021208			R4004, 4010	J02245222	" " " " 2.2k Ω
T4007-4009	L0021209			R4039	J02245272	" " " " 2.7k Ω
T4010	L0020801			R5011, 5024	J02245103	" " " " 10k Ω
T4011	L0021295			5037, 5041		
T4012, 4016	L0020638			R5018-5021	J02245563	" " " " 56k Ω
T4013	L0021210			R5002, 5008	J02245104	" " " " 100k Ω
T4014	L0021197			5012-5017		
T4015	L0020421			5022, 5023		
		RELAY		5042, 5043		
RL4001	M1190002	FBR211AD012				
		TERMINAL				
	Q5000029	Terminal A				BLOCK RESISTOR
	Q5000037	TP-H		RB5004	J40900028	RK1/16B-7E 3.3k Ω x 7
				RB5001-5003	J4090003	RK1/16B-7E 100k Ω x 7
				5005		

		CAPACITOR				CRYSTAL FILTER	
CS003	K06179006	Ceramic Disc	50WV UJ 30 pF (DD104UJ300J50V02)	XF6001	H1102050	8.2M20A	
CS007, 5008 5016, 5017	K13179008	" "	" " 0.01μF (DD106F103Z50V)			CERAMIC FILTER	
CS001, 5002 5004, 5021	K13179009	" "	" " 0.047μF (DD110F473Z50V)	CF6001	H3900270	CFX455D 455kHz	
				RESISTOR			
CS006, 5018	K50177102	Mylar	" " 0.001μF (50F2U102M)	R6006, 6021 6033, 6056 6057	J02245560	Carbon Film	1/4W SJ 56Ω
CS012	K50177153	" "	" " 0.015μF (50F2U153M)	R6007, 6009 6012, 6017 6049	J02245101	" "	" " 100Ω
CS010	K40179009	Electrolytic	" " 2.2μF (50RE2R2)	R6058	J02245471	" "	" " 470Ω
CS013, 5014	K40129004	" "	16WV 10μF (16RE10)	R6004, 6018 6035	J02245561	" "	" " 560Ω
CS009	K40129016	" "	" " 22μF (16RE22)	R6054	J02245561	" "	" " 560Ω
CS015, 5022	K40129007	" "	" " 100μF (16RE100)	R6016, 6019 6030, 6034	J02245102	" "	" " 1kΩ
CS011	K40129009	" "	" " 220μF (16RE220)	R6026	J01245102	" "	" TJ 1kΩ
				R6013, 6036	J02245182	" "	" " 1.8kΩ
				R6039, 6050	J02245222	" "	" " 2.2kΩ
				R6015	J02245332	" "	" " 3.3kΩ
	Q5000036	TP TERMINAL		R6003, 6005 6055	J02245472	" "	" " 4.7kΩ
				R6040	J02245562	" "	" " 5.6kΩ
				R6001, 6002 6023, 6041 6046, 6047 6051	J02245103	" "	" " 10kΩ
AM/FM UNIT (OPTION)				R6038	J01245103	" "	1/8W TJ 10kΩ
Symbol No.	Part No.	Name & Description		R6053	J02245123	" "	" SJ 12kΩ
PB-2347 B	F0002347 B	Printed Circuit Board		R6025	J02245153	" "	" " 15kΩ
	C0023470	PCB with Components		R6029, 6031 6032	J02245223	" "	1/4W " 22kΩ
				R6042	J02215223	" "	1/8W " 22kΩ
Q6001	G1090388	TA7069P		R6014	J02245333	" "	1/4W " 33kΩ
Q6008	G1090389	MC3359		R6024, 6037 6045	J02245473	" "	" " 47kΩ
Q6013	G1090048	TCS081P			J01215473	" "	1/8W TJ 47kΩ
Q6003, 6005	G1090239	TCS082P		R6020	J02245683	" "	1/4W SJ 68kΩ
Q6014	G1090072	μPC577H		R6008, 6010 6011	J02245104	" "	" " 100kΩ
				R6028	J02245154	" "	" " 150kΩ
Q6007	G3303800Y	2SC380Y		R6027	J02245274	" "	" " 270kΩ
Q6012, 6015	G3318150G	2SC1815GR					
				POTENTIOMETER			
		FET		VR6004	J51752102	RGS6-FAN1KB 1KB	
Q6006	G3090036	2SK19BL		VR6001, 6003	J51752503	RGS6-FAN50KB 50KB	
Q6002, 6004	G3090035	2SK19TMGR		VR6002	J51752103	RGS6-FAN10KB 10KB	
				CAPACITOR			
D6001, 6002 6004-6007	G2015550	Si	1S1555	C6008, 6027	K00173100	Ceramic Disc	50WV SL 10 pF (DD104SL100D50V02)
				C6020	K05185470	" "	63WV " 47 pF (RD871-1N220-470J63V)

C6046	K02175560	Ceramic Disc 63WV CH 56 pF (DD106CH560J50V02)			TRANSFORMER
			T6001, 6002	L0020892	
C6065, 6066	K00175680	" " " " 68 pF (DD104SL680J50V02)	T6003	L0021212	
			T6004	L0020422	R12-7947
C6003, 6022	K00175101	" " " " 100 pF (DD105SL101J50V02)	T6005	L0021199	
C6030	K02175151	" " " " 150 pF (DD109CH151J50V02)			
C6019, 6021	K05185151	" " " RH 150 pF (RD8742N220151J63V)			
C6024, 6051	K10176102	" " " " 0.001μF (DD104B102K50V02)	VFO UNIT		
			Symbol No.	Part No.	Name & Description
C6001, 6002	K13179008	" " " " 0.01μF (DD106F103Z50V)	PB-2348 A	F0002348 A	Printed Circuit Board
6005, 6006				C0023480	PCB with Components
6009-6011					
6013-6016					
6018, 6026					
6060, 6063					
6067,					
6069-6071					
					IC
			Q7001	G1090390	VFO-1
C6041, 6074	K13179009	" " " " 0.047μF (DD110F473Z50V)			DIODE
			D7001	G2022360	Varactor 1S2236
C6061	K19149017	Semiconductor Ceramic 25WV0.022μF (UAT06X223K)			RESISTOR
			R7002	J01245561	Carbon Film 1/4W TJ 560Ω
C6035, 6042	K19149021	" " " " 0.047μF (UAT08X473-L45AE)	R7001	J01245103	" " " " 10KΩ
					CAPACITOR
C6028, 6029	K19149025	" " " 50WV 0.1μF (UAT13X104I46AE)	C7017	K6172020	Ceramic Disc 50WV UJ 2 pF (DD104UF020C50V02)
C6036, 6037	K50177102	Mylar 50WV 0.001μF (50F2U102M)	C7016	K06172040	" " " " 4 pF (DD104UJ040C50V)
	K23140001	Ceramic Chip 25WV 0.01μF (GR42Y5V103Z25V)	C7001, 7004	K06179052	" " " " 8.2 pF (UP125UJ8R2K-NA)
	K50177223	Mylar 50WV 0.022μF (50F2U223)	C7013	K02179062	" " " CH 8.2 pF (UP125CH8R2-NA)
C6053, 6054	K50177473	" " " 0.047μF (50F2U473)	C7015	K02173080	" " " " 8 pF (DD104CH080D50V02)
C6038	K40179002	Electrolytic " 0.1μF (50RC2-R1)	C7014	K02179065	" " " " 18 pF (UP125CH180-NA)
C6048, 6049	K40179010	" " " 0.47μF (50RER47)	C7002	K06179053	" " " UJ 22 pF (UP125UJ220K-NA)
C6034, 6045	K40179013	" " " 1μF (50RE1)	C7003, 7005	K02179063	" " " CH 22 pF (UP125CH220J-NA)
6052					
C6050	K40179009	" " " 2.2μF (50RE2.2)	C7006	K02179064	" " " " 33 pF (UP125CH330J-NA)
C6031, 6059	K40149001	" " 25WV 4.7μF (25RE4R7)	C7010, 7012	K10179034	" " " " 470 pF (UP125B471K-NA)
C6012, 6017	K40129004	" " 16WV 10μF (16RE10)	C7011	K10179035	" " " " 1000 pF (UP125SB102K-NA)
6023, 6040					
6047, 6055-			C7007-7009	K15179001	" " " " 0.01μF (TP125X103N-NA)
6057, 6062					
6024, 6068					
C6007	K40129002	" " " 47μF (16RE47)			
					VARIABLE CAPACITOR
			VC7001	K90000024	C521R112
		INDUCTOR			TRIMMER CAPACITOR
L6001, 6003-6005	L1190016	FL5H101K 100μH	TC7002	K91000090	PS100 10 pF x 2
			TC7001	K91000103	PSS-100-10P 10 pF
L6006	L1190017	FL5H102K 1 mH	TC7003	K91000116	CTZ81F 30 pF
L6009	L1190102	S-104K			

		INDUCTOR				POTENTIOMETER	
L7002, 7004	L1190132	LAL04NA221K	220 μ H	VR8001	J50753103	EVTJ6A505B14	10k Ω B
L7003	L1190090	LAL04NA102K	1 mH				
L7005, 7006	L1190131	LAL04NA1R8M	1.8 mH				
				CAPACITOR			
				C8003, 8006 8013, 8018	K12279004	Ceramic Disc 500WV (ECK-D-2H-472-PE)	0.0047 μ F
	P0090149	PI021-05M	5 pF	C8010, 8016 8019	K12279002	" " "	0.01 μ F (ECK-D-2H-103-PE)
				C8017, 8024	K19149021	Semiconductor Ceramic "	0.047 μ F (UAT08X473K-L45AE)
PL7001, 7002	Q1000049	K0320.Z.1	12V 100 mA	C8001, 8002 8004, 8005	K40270106	Electrolytic 450WV (450RH10)	10 μ F
				C8009	K40240106	" 250WV (250RH10)	10 μ F
				C8007, 8008	K40260226	" 350WV (350RH22)	22 μ F
RECT A UNIT				C8011	K40240336	" 250WV (250RH33)	33 μ F
Symbol No.	Part No.	Name & Description		C8015	K40179009	" 50WV (50RE2R2)	2.2 μ F
PB-2349C	F0002349C	Printed Circuit Board			K52240002	Metallized Film 250WV (MD1-2E104M)	0.1 μ F
	C0023490	PCB with Components			K52240003	" " " (MD1-2E224M)	0.22 μ F
		TRANSISTOR					
Q8003	G3106390Q	2SA639Q		C8021			
Q8001	G3107331Q	2SA733AQ					
Q8002	G3318150Y	2SC1815Y					
Q8004	G3322290	2SC2229					
				L8001	L1190090	LAL04-102K	1 mH
		DIODE					
D8002-8006	G2090002	Si 10D10					
D8007, 8008 8011-8019	G2015550	" 1S1555				TP TERMINAL	
D8001	G2090081	" SM1-12			Q5000038	TP-1	
		RESISTOR					
R8022	J02245331	Carbon Film 1/4W SJ 300 Ω					
R8017, 8018 8020, 8025 8027	J02245102	" " " " 1k Ω					
R8028	J01245222	" " " TJ 2.2k Ω		RECT B UNIT			
R8016	J02245332	" " " SJ 3.3k Ω		Symbol No.	Part No.	Name & Description	
R8019	J02245472	" " " " 4.7k Ω		PB-2350C	F0002350C	Printed Circuit Board	
R8012, 8021	J02245103	" " " " 10k Ω			C0023500	PCB with Components	
R8014	J02245153	" " " " 15k Ω					
R8009	J01245183	" " " TJ 18k Ω				IC	
R8010	J02245183	" " " SJ 18k Ω		Q8502	G1090507	μ PC78L12A	
R8015	J02245223	" " " " 22k Ω		Q8505	G1090391	μ PC78L15	
R8013	J02245393	" " " " 39k Ω					
R8011	J02245274	" " " " 270k Ω					
R8003	J10276474	Carbon Composition 1/2W GK 470k Ω				TRANSISTOR	
R8001	J20306390	Metallic Film 1W 39 Ω		Q8501	G3107331Q	2SA733AQ	
R8002	J20336391	" " 2W 390 Ω		Q8503	G3304960Y	2SC496Y	
R8004	J20336471	" " 2W 470 Ω		Q8504	G3318150Y	2SC1815Y	
R8006	J20336222	" " 2W 2.2k Ω					
R8005	J20336332	" " " 3.3k Ω					
R8008	J20336562	" " " 5.6k Ω					
R8007	J20336473	" " " 47k Ω					

		DIODE				POTENTIOMETER	
D8501-8504	G2090002	Si	10D10	VR9001, 9003	J66800001	K1213000310KB 10KB	
D8505	G2090003	"	V06B	9004			
D8507	G2090224	Zener	AW01-24	VR9005	J66800003	K12130004-10KA 10KA	
D8506	G2090111	"	HZ6C1	VR9002	J66800002	K12130003500KB 500KB	
		RESISTOR					
R8509	J02245560	Carbon Film	1/4W SJ	56Ω			
R8508	J02245103	" "	" "	10kΩ			
R8503-8506	J10276474	Carbon Composition	1/2W GK470kΩ			SW UNIT A	
R8502	J20336220	Metallic Film	2W	22Ω	Symbol No.	Part No.	Name & Description
R8507	J20336122	" "	" "	1.2kΩ	PB-2353A	F0002353A	Printed Circuit Board
R8501	J31336019	Wire Wound	"	0.1Ω		C0023530	PCB with Components
		CAPACITOR				DIODE	
C8502, 8503	K13179008	Ceramic Disc	50WV	0.01μF	D9201, 9202	G2015550	Si 1S1555
8505, 8508		(DD106F103Z50V)			D9203, 9204	G2090060	LED GD-4-203SR-D
8515							
C8510	K40179011	Electrolytic	"	3.3μF			
		(50RE3R3)					RESISTOR
C8504, 8507	K40149008	"	25WV	10μF	R9201, 9202	J02245182	Carbon Film 1/4W SJ 1.8kΩ
		(25RL10)					
C8514	K40129004	"	16WV	10μF			SWITCH
		(16RE10)					
C8506	K40149003	"	25WV	100μF	S9201	N4090053	SUJ52A
		(25RL100)					TP TERMINAL
C8509	K40129021	"	16WV	1000μF		Q5000020	MS60121
		(16R102S)					SW UNIT B
C8501	K41160478	"	35WV	4700μF	Symbol No.	Part No.	Name & Description
		(35TL4700)			PB-2352C	F0002352C	Printed Circuit Board
C8512, 8513	K70160003	Tantalum	"	0.1μF		C0023520	PCB with Components
		(35SC0.1μF)					
		TP-TERMINAL				DIODE	
	Q5000038	TP-I		D9401, 9403-9407	G2015550	Si	1S1555
						RESISTOR	
				R9403	J02245392	Carbon Film	1/4W SJ 3.9kΩ
				R9401, 9402	J02245103	" "	" " 10kΩ
		VR UNIT				SWITCH	
Symbol No.	Part No.	Name & Description					
PB-2351B	F0002351B	Printed Circuit Board		S9401	N4090055	SUJ62A	
	C0023510	PCB with Components					
						RELAY UNIT	
				Symbol No.	Part No.	Name & Description	
		DIODE		PB-2354	F0002354	Printed Circuit Board	
D9001	G2015550	Si	1S1555		C0023540	PCB with Components	
		RESISTOR				DIODE	
R9002	J02245223	Carbon Film	1/4W SJ	22kΩ	D9602	G2090029	Ge 1N60
R9001	J02245104	" "	" "	100kΩ	D9601	G2015550	Si 1S1555

		RESISTOR			CAPACITOR		
R9601	J02245100	Carbon Film	1/4W SJ	10Ω	C9820	K30275270	Dipped Mica 500WV 27 pF (LCQ12270J5)
					C9823	K02175121	" " 50WV CH 120 pF (DD109CH121J50V02)
		CAPACITOR					
C9605	K30273050	Dipped Mica	500WV	5 pF	C9824	K30175181	" " " 180 pF (LCQ17181J05)
C9608	K31306800	Mica	1KV	80 pF	C9819	K02309003	Ceramic Disc 3KWV 100 pF (CC45CH3F101KY)
C9606	K00179019	Ceramic Disc	50WV SL	200 pF	C9825	K02175680	" " 50WV CH 68 pF (DD107CH680J50V02)
C9602	K30279051	" "	500WV	1000 pF	C9826	K02175101	" " " 100 pF (DD107CH101J50V02)
C9601, 9603	K30279058	" "	"	2000 pF	C9817	K12279003	" " 500WV 0.0022μF (ECKD2H222PE)
C9604, 9607	K13179009	" "	50WV	0.047μF	C9804, 9806 9810	K12279002	" " " 0.01μF (ECKD2H103PE)
					C9801, 9802 9803, 9805 9807, 9808 9809, 9821 9822	K13179008	" " 50WV 0.01μF (DD106F103Z50V)
		INDUCTOR					
L9602, 9605	L1190014	FL5H100		10μH	C9811, 9812	K13179009	" " " 0.047μF (DD110F473Z50V)
L9603, 9604	L1190009	FL5H3R3		3.3μH	9813, 9814 9815, 9816		
L9606	L1190070	FL4H8R2		8.2μH			
L9607	L1190024	FL5H221		220μH			
L9608	L0021293						INDUCTOR
		RELAY			L9807	L1190020	FL5H151K 150μH
RL9601	M1190043	G2U112P-14 10V			L9805	L1190024	FL5H221K 220μH
					L9801	L1190039	FL5H561K 560μH
					L9802, 9803 9804	L1020307	
		LAMP FUSE					
FH9601	Q1000010	BQ041-22803A			L1190017	FL5H102K	1 mH
					L9806	L1190090	LA104102K 1 mH
					L9808	L0190032	RF3855-R27K
	Q5000021	Wrapping Terminal C			L9809	L0190030	RF3855-R18K
							RELAY
					RL9801	M1190002	FBR211AD012
FINAL BOARD					ACCESSORIES		
Symbol No.	Part No.	Name & Description			Symbol No.	Part No.	Name & Description
PB-2355 B	F0002355 B	Printed Circuit Board					AC POWER CORD
	C0023550	PCB with Components				T9000482	YFC-03K 3 wire, 3 prong plug (UL)
						T9013284	EC-4007-007 3 wire, 2 prong EU plug
		TRANSISTOR				T9013283	SC4111-001 3 wire, 3 prong Australian plug
Q9801	G3318150Y	2SC1815Y					
		DIODE					
D9802	G2090002	Si 10D10					FUSE
D9801	G2015550	1S1555				Q0000012	6A (100V-117V) 100W
						Q0000004	3A (200V-234V) "
		VACUUM TUBE SOCKET				Q0000004	3A (100V-117V) 10W
VS9801, 9802 9803	P3090024	SB3606				Q0000003	2A (200V-234V) "
							PLUG
		RESISTOR				P0090018	STP-58 RCA PLUG
R9801, 9802 9803, 9804	J01275101	Carbon Film	1/2W TJ	100Ω		P0090007	SH3001 KEY PLUG
R9806, 9807	J02245103	" "	1/4W SJ	10kΩ		P0090034	P2240 SP PLUG
R9805	J32009014	Meter Shunt		0.67Ω		P0090031	E5-702B-02 DIN PLUG (5P)
						P0090032	E6-701B-02 DIN PLUG (6P)