JVC

SERVICE MANUAL

MODEL

3090EN

B/W PORTABLE TV WITH
STEREOPHONIC RADIO
AND CASSETTER

No. 3304
March 1979

Index

Specifications

TV standard:	Inter-carrier system CCIR TV standard (625 lines)
TV channels:	CCIR VHF channels 2–12 and UHF channels 21–69
Radio frequency ranges:	FM 88 – 108MHz SW 6 – 18MHz MW 510 – 1600MHz LW 150 – 350 KHz
Antenna:	Built-in rod antennas for TV & FM, SW radio Built-in ferrite core antenna for MW & LW radio
TV tuner:	Contactless electronic tuner
Picture tube:	4.5-inch, picture measured diagonally, 55 degree deflection
Semi-conductors:	8 ICs, 60 Transistors, 63 Diodes
Speakers:	12 cm round type 6Ω 2 pcs, 5 cm round type 6Ω 2 pcs.
Built-in microphones:	condenser microphone 2 pcs.
Tape:	Philips type cassette
Track system:	4 track, 2 channel/stereophonic
Monitor system:	Variable sound monitor
Rewind/Fast forward time:	Within 100 sec. (with C-60 cassette)
Wow & flutter:	less than 0.09% (WRMS)
Recording system:	AC bias system
Erasing system:	AC erasing system
S/N ratio:	50 dB
Stop system:	full-Auto-stop system
Frequency characteristics:	45–12,000Hz (with normal tape) 40–13,000Hz (with chrome tape)
Input jacks:	• Microphone jack x 2 Minimum input level 0.8mV, matching load impedance 50KΩ or more. • LINE IN jack x 2 Minimum input level 110mV, input impedance 50KΩ or more • PHONO IN jack x 2 Minimum input level 3mV, input impedance 50KΩ or more
Output jacks:	• External speaker jack x 2 6 – 8Ω • Headphone jack x 2 8Ω • LINE OUT jack x 2 Output level 300mV, output impedance 10KΩ or less
REC/PB jack:	• Input impedance 1.5KΩ input level 0.5V Output impedance 10KΩ or less, output level 0.5V
Audio output:	6.0W (3.0W + 3.0W) EIAJ/DC
Power Input:	AC110/220V, 50Hz, DC 13.5V (9 "R20" cells) or DC 12V with car battery cord (AP-23E)
Power consumption:	22W on AC
Battery life:	Approx. 6 hours on super type batteries Approx. 11 hours on ultra-super type batteries Approx. 21 hours on Alkaline type batteries (in the either case, the time is on continuous TV operation)
Dimensions:	29.4 cm(H) without handle height x 49.7 cm (W) x 20.5 cm (D)
Weight:	8.5kg (without cells) 9.4kg (with cells)

Note: Design and specifications subject to change without notice.

Accessories

power cord 1
head cleaning stick 2
blank cassette tape 1

Servicing in the Field

Cleaning the Cabinet

Clean the external appearance of Cabinet body when necessary, with a clean soft cloth with mild soap. Don't use any solution which contains benzine or petroleum.

Raster Centering

The centering device is 2 magnetic rings located on yoke rear cover. By alternately rotating those 2 magnetic rings, the picture can be properly centered on the screen.

Deflection Yoke Adjustments

If the lines of the raster are not horizontal or corner shadows appear, loose the yoke clamp screw and rotate deflection yoke, push yoke snug up against bell of picture tube.

Vertical Height and Vertical Linearity Adjustments

When the upper or lower part of picture extends or shrinks, adjust the vertical height and vertical linearity controls alternately to fill the screen ¼ inch beyond the mask until the picture on test pattern is symmetrical from top to bottom. The height control extends (or shinks) mainly a lower part of raster, and the linearity control an upper part.

AGC Adjustment

Adjust the AGC control when picture is a very slight bend as it's top, or excessive snow.
AGC may be adjusted by tuning the control fully counterclockwise when there is a very slight bend, and clockwise when snow.

How to Fit the Dial Cords

1. TV dial cord fitting

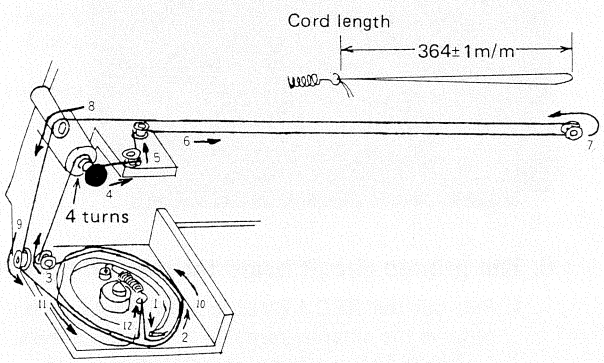


Fig. 1

1. Insert the drum in the shaft of variable resistor and turn it to left fully.
2. Fit the dial cord in order of above numbers.

2. Radio dial cord fitting

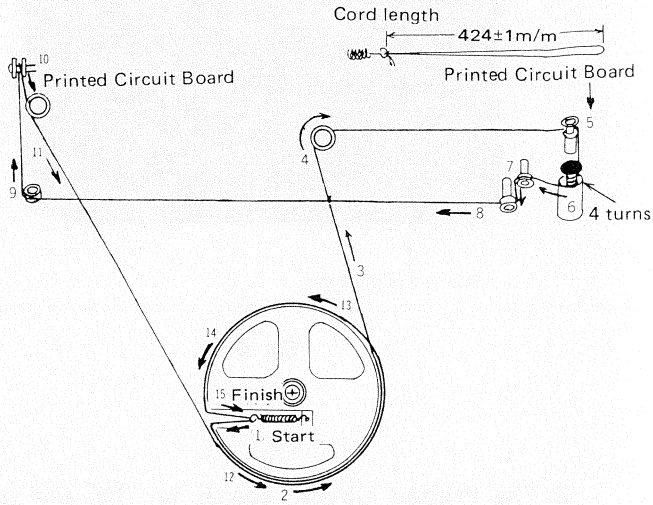


Fig. 2

Disassembly Instructions

1. Rear Cover Removal

1. Unfasten 12 screws fastening the rear cover indicated in Fig. 3.
2. Remove the rear cover.

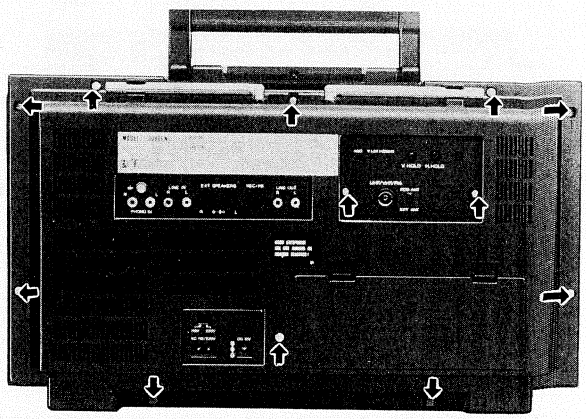


Fig. 3

2. Power Supply Block Removal

1. Remove the rear cover.
2. Unfasten 3 screws fastening the power supply block indicated in Fig. 4.
3. Pull the power supply block to this side.

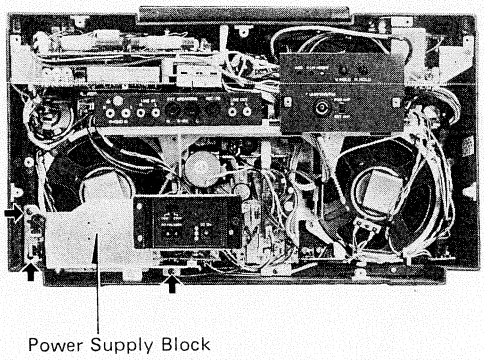


Fig. 4

3. The Printed Circuit Boards for TV and radio Removal

1. Pull out the TV tuning, Radio tuning, TV Band and Radio Band Knobs.
2. Remove the rear cover.
3. Unlock two clampers located on the low side of the antenna terminal board and pull out the antenna terminal board to this side.
4. Unfasten a screw indicated in Fig. 5 and pull out the printed circuit boards for TV and radio.

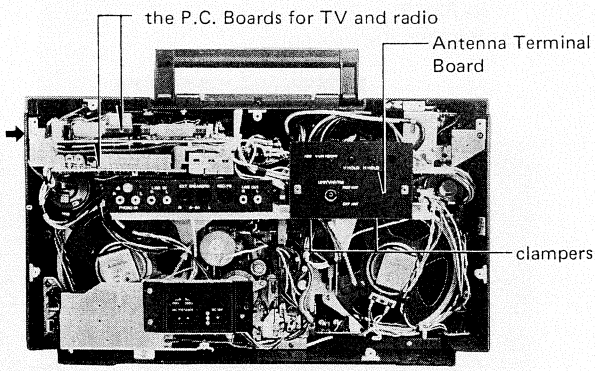


Fig. 5

4. Separating the printed circuit boards for TV and radio

1. Remove the printed circuit boards for TV and radio from the set as described in abovementioned.
2. Unfasten 2 screws from the face of the radio board, A screw fastened with a wire clamp from the back of the TV board and a screw fastened the shaft of TV Band switch.
3. Pull out the TV printed circuit board to the opposite direction against the dial scales.

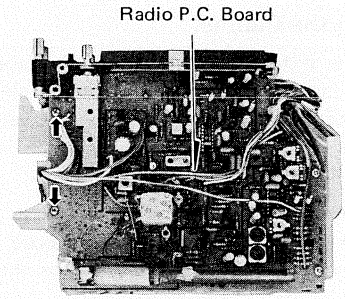


Fig. 6

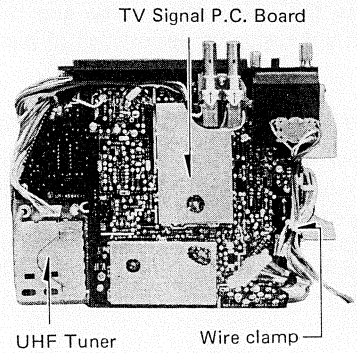


Fig. 7

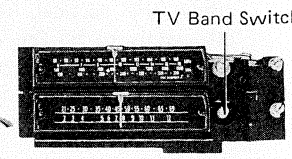


Fig.8

5. The printed circuit board for TV Deflection Removal

1. To remove the antenna terminal board, unlock two clampers located on the low side of the board and pull out the board to this side.
2. Unfasten a screw indicated in Fig. 9 and pull out the printed circuit board for TV deflection to this side.

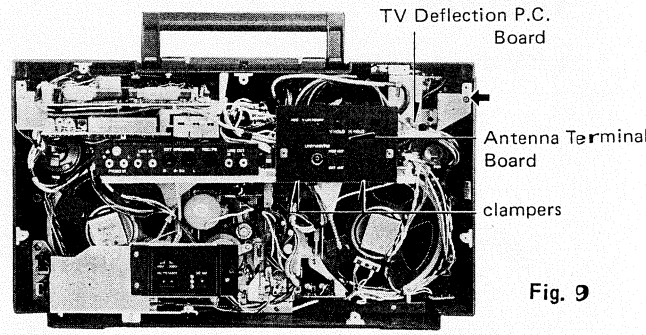


Fig. 9

6. The printed circuit board for Amplifier Removal

1. Pull out the REC LEVEL control knobs (L & R) and remove the antenna terminal boards from the set.
2. Unfasten 4 screws fasted the amplifier board.
3. Pull out the amplifier board and stop to pull out it on the way.
4. Unplug 3 connectors from the face of the amplifier board, pull out it again and then the amplifier board will be removed from the set.

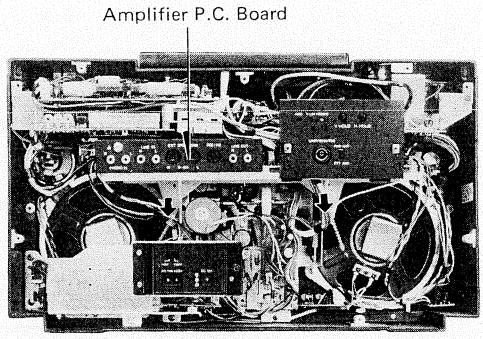


Fig. 10

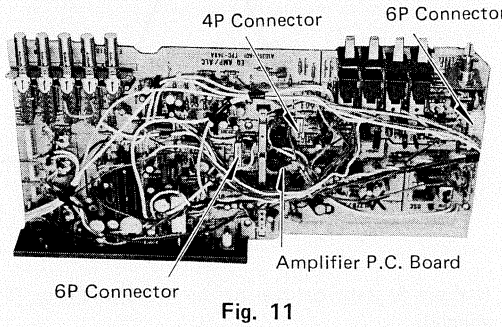


Fig. 11

7. The Cassette Mechanism Removal

1. Remove the power supply block and the printed circuit board for amplifier from the set.
2. Open the cassette door and remove a fastener joined the cassette door and lever with a (-) type screw-driver.
3. Unfasten 5 screws fastened the cassette mecha.

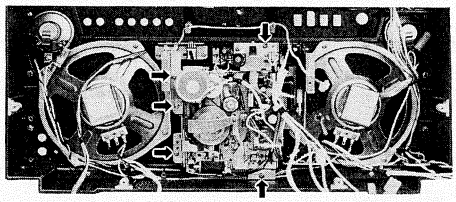


Fig. 12

8. The Meter Holder Removal

1. Pull out the Vol, Balance, Treble and Bass Control Knobs.
2. Remove the printed circuit board for TV deflection from the set.
3. Unfasten 3 screws fastened the meter holder.

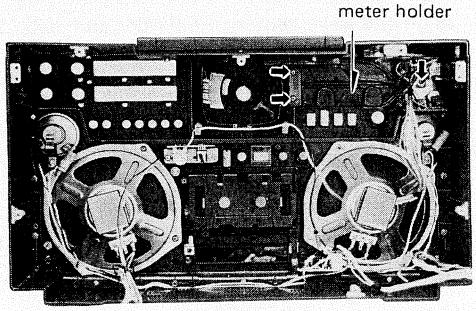


Fig. 13

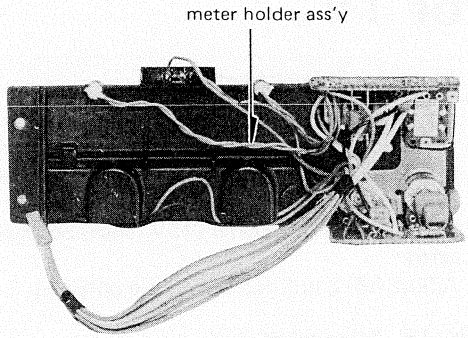


Fig. 14

9. The Picture Tube Removal

1. Remove the printed circuit boards for TV, radio and amplifier from the set.
2. Unfasten 2 screws fastened the CRT holder and then the picture tube will be removed from the set.

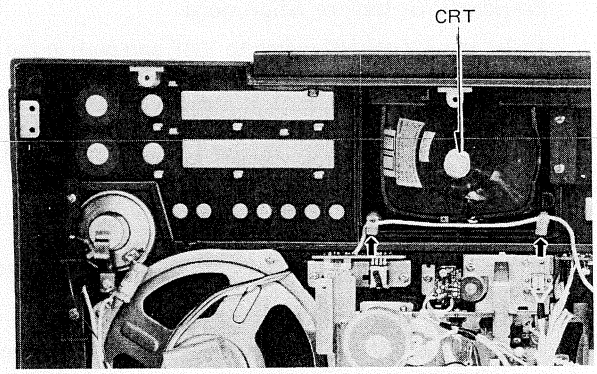


Fig. 15

10. The Protector Glass for Picture Tube Removal

1. Remove the picture tube from the set.
2. Push out 6 fasteners of the protector ring to the outside with a pliers and then the protector glass will be removed together with the plotector ring from the set.

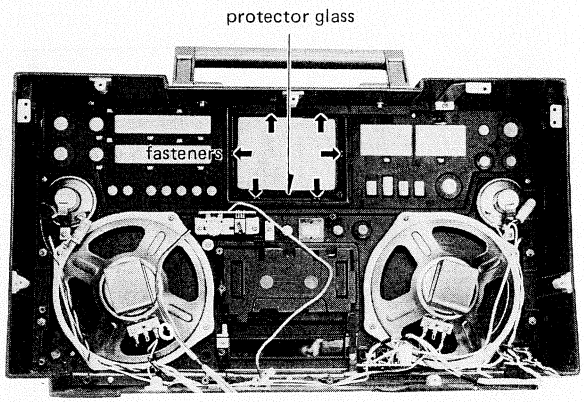


Fig. 16

Alignment Instructions For TV.

B Voltage Adjustment

1. Apply the rated AC power supply.
2. Set the TV BAND switch to VHF, push in the TV of the SELECTOR switchs and turn the volume control to left fully.
3. Connect a DC voltmeter (15V range) between TP-91 and earth.
4. Adjust R512 until +5.9 volts are obtained.

PIX IF Alignment

Test Equipments

Sweep generator with markers
- Sweep frequency range: 30~45 MHz
- Marker generator frequencies: 38.9, 36.8, 34.7, 33.4 MHz

Oscilloscope
Power Source
- DC10.5V and 0.7V for AGC

Preparations before Alignment

1. Set the TV BAND switch to VHF and push in the TV of the SELECTOR switch.
2. Connect the capacitor and resistor (2200PF & 560Ω) in series between TP-7 and output of the sweep generator.
3. Connect the resistor (10KΩ) between TP-12 and input of the oscilloscope.
4. Supply DC +0.7V for AGC to TP-14 and DC +10.5V to TP-91.
5. Connect the base of X401 transistor to earth to stop the working of the horizontal oscillator circuit.
6. Connect a DC voltmeter between TP-4 and earth and adjust the TV tuning control until VT (tuning voltage) +8.0 volts are obtained.

Alignment procedures

1. Align the wave center to 36.8 MHz and also for maximum gain with L102.
2. Align T102 and T103 to obtain equal height of 38.9 MHz and 34.7 MHz markers.
   T102 adjustment is marker position and T103 adjustment is slant on top of the response curve.

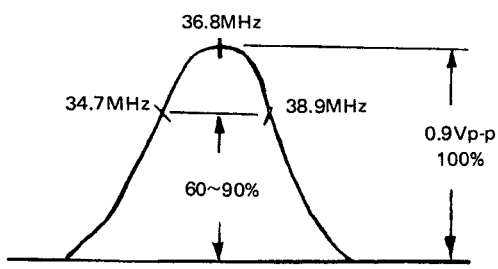


Fig. 17

Over-all Adjustment

Change the connection of the sweep generator only to TP-3 on PIX IF alignment above-mentioned.

Alignment Procedures

Align T4, T101, L101 to obtain the response curve illustrated in Fig. 18.

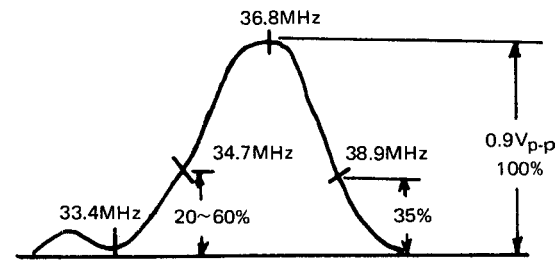


Fig. 18

If there is slant on top of the response curve, T102 may be aligned.

Sound IF Alignment

Test Equipments

Sweep generator with marker
- Sweep frequency range: 5.5 MHz ± 500 KHz.
- Marker generator frequency: 5.5 MHz.

Oscilloscope

Preparations before Alignment

1. Connect the resistor (10KΩ) between TP-21 and input of the oscilloscope.
2. Connect the capacitor and resistor (10000 PF & 1 KΩ) in series between TP-12 and Output of the sweep generator.
3. Connect the electrolytic capacitor (3.3 μF) between TP-22 and earth.

Alignment procedures

1. Set the TV TUNING control to any non-signal position.
2. Make strongly output of the sweep generator within suppressing the limitter.
3. Align the wave center to 5.5 MHz with L202.
4. Make weakly output of the sweep generator.
5. Align the wave center to 5.5 MHz and also for maximum gain with T201.

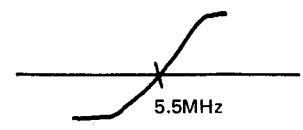


Fig. 19

VHF Tuner Alignment

Test Equipments

Sweep generator
  Sweep frequency range: 40 MHz~250MHz
Oscilloscope
Power Source
  DC10.5V and 0.7V for AGC
V.T.V.M

Preparations before Alignment

1. Connect the vertical and horizontal terminals of the oscilloscope to the correspondings of the sweep generator.
2. Align the vertical gain of oscilloscope to easy reading of 0.9 V_{p-p} on the screen of the oscilloscope.
3. Supply DC + 0.7 volts for AGC to TP-14 and DC + 10.5 volts to TP-91.
4. Set the antenna switch S1 to Ext ANT position and the TV BAND switch to VHF position.
5. Connect the V.T.V.M. to the center PIN of the TV TUNING control R37 to observe the tuning voltage (V_T).
6. Turn the RF AGC control R136 to right fully.

Alignment procedures

1) IF Trap Alignment
   1. Set the TV TUNING control to low channel.
   2. Connect IF signal (38.9MHz) of the sweep generator to TP-2.
   3. Align L1 to obtain minimum gain for 38.9 MHz and also equal height for double humps on the top of the response curve.

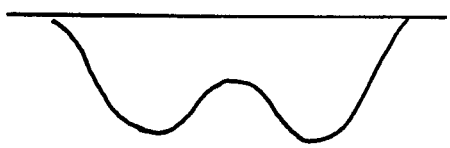


Fig. 20

2) Low Channel Alignment
   1. Connect RF output of the sweep generator to TP-2.
   2. Set the TV TUNING control R37 to low channel and adjust it to obtain DC + 5.6 volts (V_T). At this time confirm that the collector voltage of X5 transistor is approx. DC–10V.
   3. Set RF output of the sweep generator to 3CH.
   4. Align the wave center to 55.2 MHz with L11 and also for maximum gain with L3 and L9.
3) High Channel Alignment
   1. Set the TV TUNING control R37 to high channel and adjust it to obtain DC + 8.10 volts (V_T). At this time confirm that the collector voltage of X5 transistor is approx. DC + 5.7 V.
   2. Set RF output of the sweep generator to 9CH.
   3. Align the wave center to 203.25 MHz with L12 and also for maximum gain with L5 and L8.

Start Point Alignment for RF AGC

After Turning AGC control (R136) to left fully, turn it slowly to right until noises on screen of picture tube is disappeared.

The Position Adjustment for TV Channel Indicating Pointer

1. Connect a tester on resistance mode between a and b pin of J6 connector.
2. Adjust the TV TUNING control R37 to obtain the position that the tester reading is changed to maximum from OΩ or to OΩ from maximum.
3. Under the intactness of the TV TUNING control, set the TV channel indicating pointer to the center position of 4ch and 5ch on the TV channel indicating plate and supply a rock binding to it.

TV Channel Indicator Position Adjustments

1. Set the TV channel indicating pointer to 2 CH with the TV TUNING control.
2. Receive 2 CH broadcasting program by adjusting the resistor R30.
3. Set the pointer to 12 CH and receive 12 CH broadcasting by adjusting the resistor R32.
4. Set the pointer to 5 CH and receive 5 CH broadcasting by adjusting the resistor R29.
5. Set the pointer to 69 CH and receive 69 CH broadcasting by adjusting the resistor R31.
6. Set the pointer to 21 CH and receive 21 CH broadcasting by adjusting the resistor R34.

Alignment Instructions For Radio

MW IF Alignment

Test Equipments

Sweep generator with marker
  Marker generator frequency 445, 455, 465kHz
Oscilloscope
Power supply DC 10.5V

Preparations before Alignment

1. Set "Selector" switch to Radio position, "Radio Band" switch to MW position and MW SENS/AFC switch to LOCAL/OFF position.
2. Set the variable capacitor to near the minimum capacity where no signal comes in.
3. Connect output of the sweep generator between TP-802 and earth of the variable capacitor.
4. Connect input of the oscilloscope to TP-804.
5. Supply DC +10.5V to J11.

Alignment procedure

Align the wave center to 455kHz and for symmetrize "A" and "B" shown in below and also for maximum gain with T805 and T806.

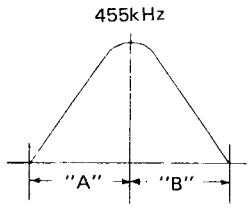


Fig. 21

FM IF Alignment

Test Equipments

Sweep generator with marker
Marker generator frequency 10.55, 10.625, 10.7, 10.775, 10.85MHz
Oscilloscope
Power supply DC-10.5V

Preparations before Alignment

1. Set "Selector" switch to Radio position, "Radio Band" switch to FM position and MW SENS/AFC switch to Local/OFF position.
2. Set the variable capacitor to near the minimum capacity where no signal comes in.
3. Connect the capacitor and resistor (33pF & 33kΩ) in series between TP-801 and RF output of sweep generator.
4. Connect input of the oscilloscope to TP-805.
5. Supply DC +10.5V to J11.

Alignment procedures

1. Keep the output of sweep generator to 34dB (50μV)
2. Adjust the wave center to 10.7MHz with T801 (Fig. 22).
3. Change input of the oscilloscope from TP-805 to TP-808.
4. Adjust L804 to obtain maximum gain and also for symmetrize to left and right on S curve characteristics. (Fig. 23)

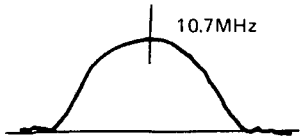


Fig. 22

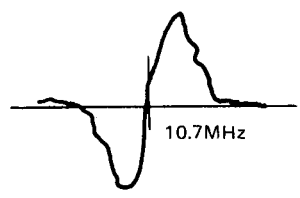


Fig. 23

MW/SW/LW RF Alignment

Preparations before Alignment

1. Set "Selector" switch to radio position and "Radio Band" switch to MW, SW or LW position according with chart below.
2. Set MW SENS/AFC switch to DX/ON position.
3. Connect output of the standard signal generator (AM modulation 400Hz, 30%) to test loop antenna.
   Keep the distance between the test loop antenna and built-in ferrite bar antenna to 60cm.
4. Connect V.T.V.M. to speaker terminals.

Alignment Procedure

Align according to the chart below.

Step	Band	Frequency of marker	Variable capacitor Setting	Adjust	V.T.V.M. Reading
1	MW	500kHz	Maximum	T802	Maximum
2		1650kHz	Minimum	C842	
3		Repeat the steps 1~2.			
4		620kHz	tune to 620kHz	T803 (MW)	Maximum
5		1400kHz	tune to 1400kHz	C832	
6		Repeat the steps 4~5.			
7	SW	5.8MHz	Maximum	T809	Maximum
8		18.6MHz	Minimum	C8118	
9		Repeat the steps 7~8.			
10		6MHz	tune to 6MHz	T811 (SW)	Maximum
11		18MHz	tune to 18MHz	C8126	
12		Repeat the steps 10~11.			
13	LW	145kHz	Maximum	T808	Maximum
14		360kHz	Minimum	C8111	
15		Repeat the steps 13~14			
16		160kHz	tune to 160kHz	T810 (LW)	Maximum
17		350kHz	tune to 350kHz	C8124	
18		Repeat the steps 16~17			

Chart 1

FM RF Alignment

Preparations before Alignment

1. Set "Selector" switch to radio position, "Radio Band" switch to FM position and MW SENS/AFC switch to "LOCAL/OFF" position.
2. Connect a capacitor (1000pF) between output of the standard signal generator (FM modulation 400Hz, 30%) and P9.
3. Connect V.T.V.M. to speaker terminals.

Alignment Procedures

Adjust according to the chart below.

Step	Frequency of marker	Variable capacitor Setting	Adjust	V.T.V.M. Reading
1	87.5MHz	Maximum	L803	Maximum
2	109MHz	Minimum	C822	Maximum
3	Repeat the steps 1. 2			
4	90MHz	tune to 90MHz	L801	Maximum
5	106MHz	tune to 106MHz	C806	Maximum
6	Repeat the steps 4. 5			

Chart 2

Parts Arrangement For Radio Alignment

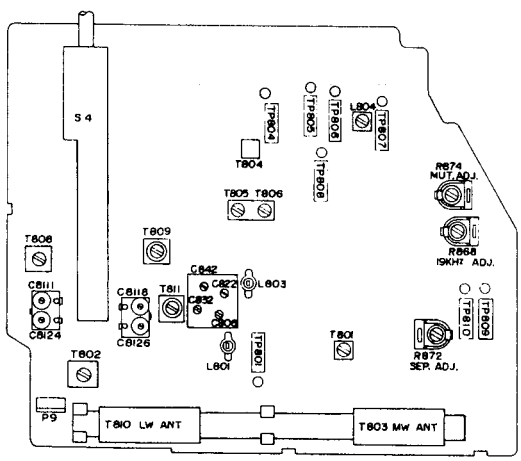


Fig. 24

Adjustment Instructions For Amplifier

Before making the amplifier alignments, be sure to set the controls to the following position in the absence of any indication.

VOLUME control	→	Mimimum
LOUDNESS switch	→	OFF
BASS control	→	Center position
TREBLE control	→	Center position
REC MODE switch	→	MANUAL
MODE switch	→	STEREO
METER switch	→	LEVEL
REC LEVEL control	→	MAX.
TAPE SELECT switch	→	NORMAL

1. Azimuth Adjustment

After replacing the heads, be sure to make the head azimuth adjustment.

1. Connect a V T.V.M. to the speaker terminals.
2. Make playing with the cassette tape for the azimuth adjustment (Model VTT-658, 10 KHz) or the equivalent good.
3. Adjust the azimus adjusting screw so that the V.T.V.M. reading is Max.
4. After adjusting, supply a lock paint to the screw.

2. Tape Speed Adjustment

1. Connect a frequency counter to the LINE OUT jack.
2. Make Playing with the cassette tape for tape speed adjustment (Model VTT-656, 3 KHz) or the equivalent good.
3. Adjust the resistor located into the motor to tune to 2985 Hz ~ 3030 Hz through the opening on the motor top.

3. Tape recording level adjustment

1. Connect the resistor (22KΩ) between the LINE OUT jacks of each channel (R.L) and earth.
2. Make playing with the cassette tape for tape recording level adjustment (Model VTT-664, 1 KHz) or the equivalent good.
3. Adjust the resistors (R612 for L CH and R712 for R CH) so that the voltages on the LINE OUT jacks of each channel are −8.2 dBs (300mV)

4. Phono Input Level Adjustment

1. Connect the resistor (22KΩ) between the LINE OUT jacks of each channel (R.L) and earth.
2. Push in the PHONO switch of the selector.
3. Add the signal (−45 dBs / 4.36mV, 1KHz) to the PHONO IN jacks of each channel.
4. Adjust the resistors (R607 for L ch and R707 for Rch) so.tha the voltage on the LINE OUT jacks of each channel are -8.2dBs (300mV).

5. Recording Current Adjustment

1. Push in the LINE IN switch of the selector.
2. Add the signal (−20dBs/77.5 mV, 1KHz) to the LINE IN jacks of each channel.
3. Disconnect the connection of TP-901.
4. Connect the high sensitive V.T.V.M. between TP-601 and TP-602 for L channel and, TP-701 and TP-702 for R channel.
5. Adjust the resistor (R637 for L ch and R737 for Rch) so that the V.T.V.M. readings are 0.32 mV (32μA x 10Ω).

6. Meter Balance Adjustment

Make the following adjustments under intact connections of the item 5. "Recording Current Adjustment".

1. Adjust the resistors (R629, 729) so that the L channel level meter pointer of this unit is indicated −3 dB.
2. Adjust the resistor (R738) so that R channel level meter pointer of this unit is indicated −3dB.

7. Bias OSC frequency and Bias Current Adjustment

Make the following adjustments under intact connections of the item 5 "Recording Current Adjustment".

1. Connect the disconnection of TP-901.
2. Connect the frequency counter between TP-601 and TP-602 for L channel and, TP-701 and TP-702 for R channel.
3. Set the BEAT CUT switch to "2" position.
4. Adjust the OSC. transformer (T901) to tune to 71.5 KHz.
5. Adjust the resistors (R625 for Lch and R725 for Rch) so that the V.T.V.M. readings are 5,0mV (500μA x 10Ω).

Cassette Mechanism Adjustment

1. Flywheel Thrust Adjustment

Loosen and adjust the adjusting screw to keep the clearance between the flywheel and the flywheel bracket within 0.2~0.4mm.
After the adjustment, apply lock paint to the adjusting screw. (Fig. 25)

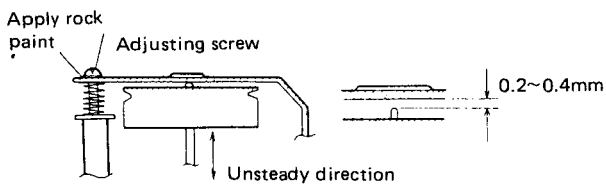


Fig. 25

2. Pause Operation & The Timing Check

1) Pause Operation & the Timing Check

In the playback mode, check that the running of the cassette tape is temporarily stopped when depressing the PAUSE button and then when pressing the PAUSE button again the button is unlocked, the playback mode is restored and the running of the cassette tape is restarted.

Note: Be sure to use a C-30 type cassette tape in this checking.

2) Pause Operation & the Timing Adjustment

a. Adjust the pinch arm lever to keep the clearance between the pinch roller and the capstan more than 0.5mm while depressing the PAUSE button.
Bend the portion Ⓒ of the pinch arm lever to the direction A in shorter clearance and the direction B in longer (Fig. 26).

b. Adjust the pinch arm lever by bending the portion Ⓒ to the direction A, if the rotation of reel disc is stopped or the cassette tape is pulled out from the cassetter by the pinch roller rotation while depressing the PAUSE button in the playing mode (Fig. 26).

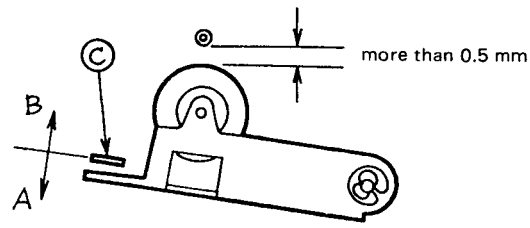


Fig. 26

3. Cue, Review Operations Check & Adjustment

1) Cue, review operation check

a. Check that the rotation of the pinch roller is stopped and then the rotation of rewind reel base is stopped, when depressing slowly the CUE button in the play mode.
Nextly check that the rotation of the rewind reel base is started and then the pinch roller is rotated, when unlocking the depressing of the cue button.

b. Check that the rotation of the pinch roller is stopped and then the rotation of the rewind reel base is stopped, when depressing slowly the Rewind button in the playback mode.
Nextly check that the rotation of the rewind reel base is started and then the pinch roller is rotated when unlocking the depressing of the REVIEW button.
Note: If these operations are made in the contrary order, the cassette tape will be drawn out from cassetter and tangled to the pinch roller.

2) Review timing Adjustment

a. Bend the portion Ⓒ of the pinch arm lever to direction A if cassette tape is drawn out from the cassetter on starting of the review operation. (Fig. 27)

b. Bend the portion Ⓒ of the pinch arm lever to the direction B, if the mechanism is made in fast forward mode on starting of the review operation. (Fig. 26)

3) Cue timing Adjustment

a. Bend the portion Ⓒ of the pinch arm lever to the direction A, if the cassette tape is drawn out from the cassette on starting of the review operation.

b. Bend the portion Ⓒ of the pinch arm lever to the direction-B, if the mechanism is made in fast forward mode on starting of the cue operation.

* After making the Review and Cue timing adjustments, be sure to make "pause operation & the timing check" of the section 2.

* Check that the clearance between the pinch roller arm and the pinch arm lever is more than 0.2mm, when depressing the REVIEW button in the recording mode (Fig. 27).

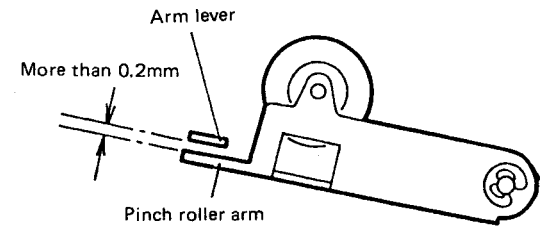


Fig. 27

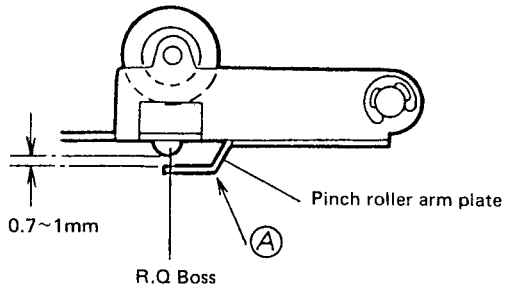


Fig. 28

* Bend the portion A of the pinch roller arm to keep the clearance between the RQ boss and the pinch roller arm plate within 0.7~1mm. (Fig. 28)

4. Head Position Adjustment

Loosen 4 adjusting screws and then adjust the position of the REC/PB and erasing heads as shown in Fig. 29.

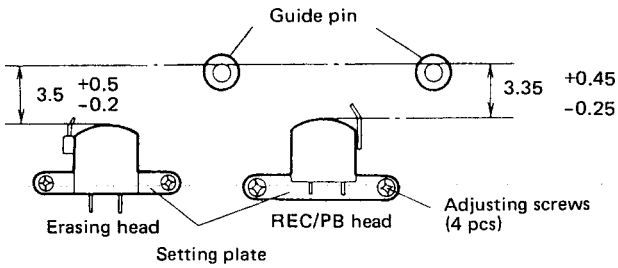


Fig. 29

5. Clearance adjustment between Recording slide lever and Recording safety lever

Bend the portion Ⓐ of the recording slide lever to keep the clearance between the recording slide lever and the recording safety lever within 0.5~0.8mm. (Fig. 30)
If the clearance is more than 0.8mm, the recorded cassette tape may be erased by operating of recording slide switch, when depressing the record button in the playback mode.

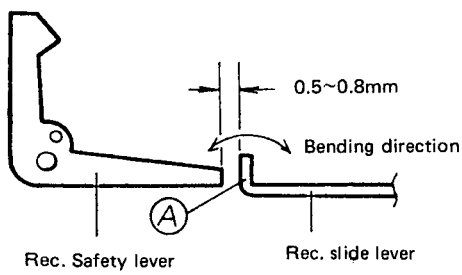


Fig. 30

6. Recording torque Adjustment

Adjust the playing torque within 40~70g-cm with the crutch plate. After cleaning the dirt on the rubber parts and the rotating portions, change the crutch spring plate to "3" position of the crutch pully in lighter torque, and to "1" position in heavier. (Fig. 31)

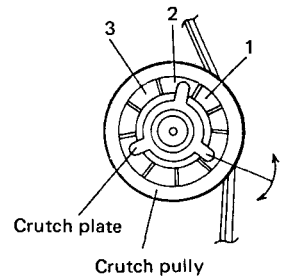


Fig. 31

7. FF & REWIND Torque Adjustment

1) FF Torque Adjustment

Depress the Cue button and then suspend the torque gauge on reel disc from "take up" side.
Check that the reading is more than 60g-cm, when pulling out the gauge. If lighter, bend the portion C of the FF button lever located on reverse side of the chassis base to the direction A shown in Fig. 31.

2) REW Torque Adjustment

Depress the Review button and then suspend the torque gauge on reel disc from "supply" side. Check that the reading is more than 60g-cm, when pulling out the gauge. If lighter, bend the portion Ⓓ of the REW button lever located on reverse side of the chassis base to the direction Ⓑ shown in Fig. 32.

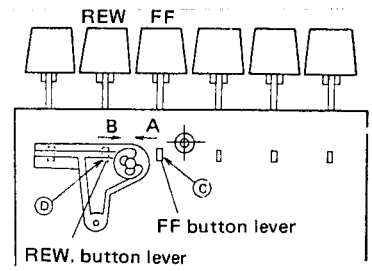


Fig. 32

Note: The Cue & Review mechanisms may be made inferior, if the levers are excessively bent in the adjustments above.

Servicing Guide

A. Deteriorating sound in playing

1. Check the REC/PB head if it is attached to dirt or dust.
2. Check the REC/PB head if it is weared off.
   If so, the response will be bad in high frequency range.
3. Check that the wirings are cut or all transistors are correctly operating.

B. Crash Sound in Recording

When you make playing the recorded Demo cassette tape, the tone quality is clear.
But when you make playing the cassette tape which recorded with normal blank tape, the tone quality is bad.
In this case check as following.

1. Make monitoring the recording sound with an earphone.
2. If bad on step 1, make the checking of the broken wirings and all the transistors.
3. If OK on step 2, make the checking of the recording bias oscillator circuit.

C. WOW-FLUTTER

Check as following in increased wow and flutter.

Causes	Symptoms	Servicing
Capstan or Flywheel	• The capstan shaft deflection • Heavy rotation of the flywheel	• Replace the flywheel • Adjust the flywheel thrust • Oiling to or cleaning the flywheel
Pinch-roller	• Rough rotation • Inaccuracy angle for the capstan • Non-sticking pressure to the tape	• Replace the pinch-roller • Clean the pinch-roller • Make the pinch roller in parallel with the capstan • Replace or adjust the spring
Belt	• Dirty belt • Slipping belt	• Replace or clean the belt
Back-Tension	• Rough back-tension	• Replace or oil to the back-tension spring.
Motor	• The motor shaft deflection • The motor pully dirt • The pully swing	• Replace or clean the motor shaft • Replace the take-up idler ass'y

Chart 3

D. Rewinding Faults

Causes	Symptoms	Servicing
In the playback Mode	• Slipping between the take-up idler and the reel base • The take-up idler • Slipping between the take-up idler and the capstan belt	• Replace or adjust the take-up idler spring • Clean rubber portion of the reel base • Replace or clean the capstan belt
In the Cue Mode	• The FF idler slipping • The FF idler • The capstan belt slipping	• Clean rubber portion of the idler • Replace or adjust the spring • Replace the idler • Replace or clean the capstan belt
In the review Mode	• The REW idler or the FF idler slipping • The FF idler • Capstan belt slipping	• Clean rubber portion of the idler • Replace or adjust the spring • Replace the idler • Replace or clean the capstan belt

Chart 4

E. Noises

Causes	Symptoms	Servicing
Noises in the playback Mode	• Noises from the take-up idler • Noises from the rotating portions	• Replace the take-up idler • Lubricate to the rotating parts
Noises in the Cue or REW Mode	• Noises from the FF idler • Noise from the REW idler	• Lubricate or replace the idler
Motor Noises	• Noises from the motor	• Replace the motor

Chart 5

F. Cleaning

Be sure to clean the heads, capstan, pinch roller and other parts which come into contact with the tape with cotton stick in a little alcohol.
The dirty heads will deteriolate the sound quality and cannot erase.

G. Oiling

Make oiling 1~2 drops to the reel disc, pinch roller and rewind idler bearings 1~3 times in a year.
If oiling to too much, it will scatter the oil to the parts near and cause the rough rotating.

Mechanical Parts Diagram

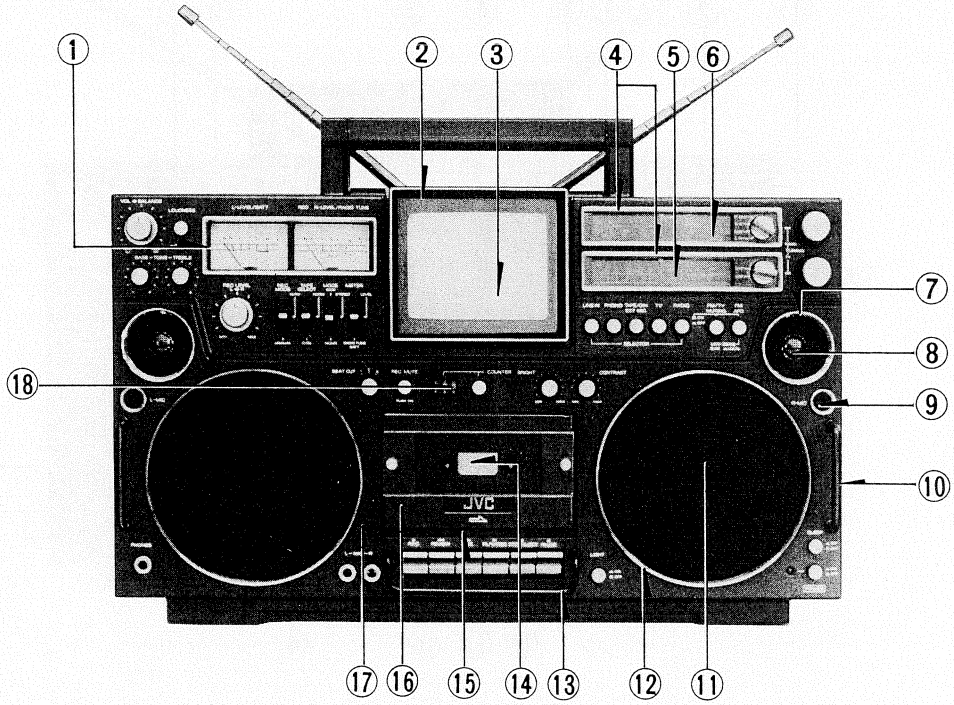


Fig. 33

No.	Parts Name	Parts No.	Q'ty
1	Meter Ring	A60007-001	1
2	Protector Ring	A32100-001	1
3	Protector Glass	A60010-001	1
4	Indicator Ring	A60008-001	2
5	Indicator Glass (TV)	A60009-002	1
6	Indicator Glass (RA)	A60009-003	1
7	Speaker Ring (Right & Left Rocated)	A60004-001	2
8	Speaker Net (Right & Left Rocated)	A60005-001	2
9	Mic Cap (Right & Left Rocated)	A60002-001	2
10-1	Guard Bar (Right & Left Rocated)	A45998-001	2
-2	Cap	A45999-001	4
-3	Nut	NFZ4000ZS	4
11	Speaker Net (Right & Left Rocated)	A32099-001	2
12	Speaker Ring (Right & Left Rocated)	A32098-001	2
13-1	Guard Bar	A45997-001	1
-2	Cap	A60001-001	2
-3	Door Stopper	A60019-001	2
-4	Nut	NNZ3000ZS	2
14	Reflection Label	A45551-003	1
15	Cap	A60018-001	1
16	Cassette Door Ass'y	A20935-00B	1
17	Front Panel	A10384-00B	1
18	Counter Glass	A60012-001	1

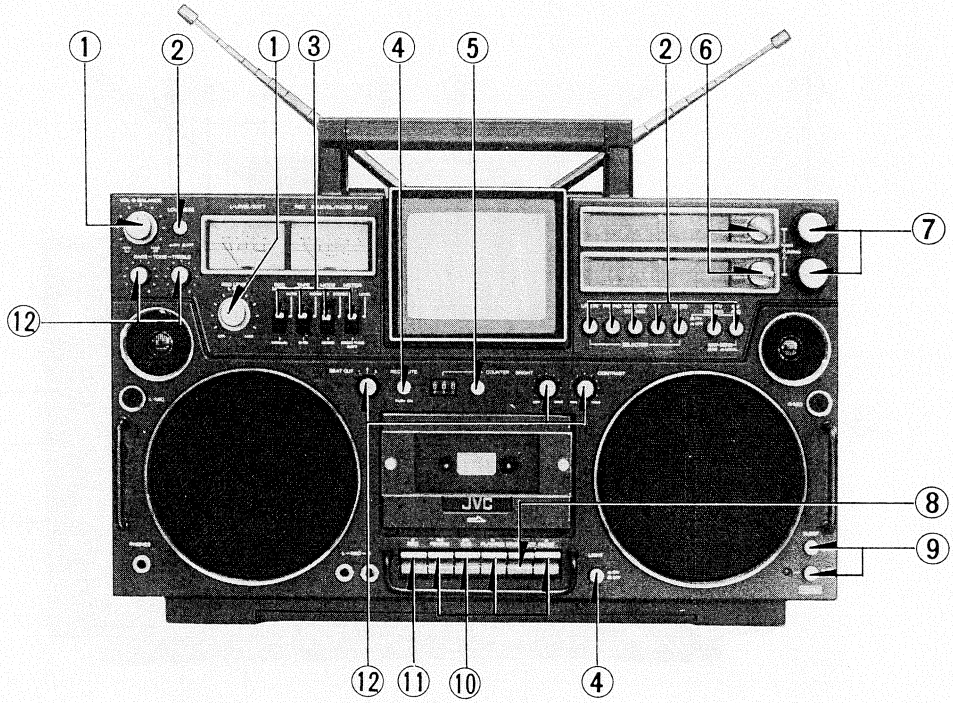


Fig. 34

No.	Parts Name	Parts No.	Q'ty
1-1	VR. Knob	A32114-001	2
-2	VR. Knob	A32113-001	2
2	Push Knob	A60048-001	8
3-1	Lever Knob	A32112-001	4
-2	SW. Washer	A60052-001	4
4	Push Knob	A60049-001	2
5	Counter Knob	A60051-001	1
6	Select Knob	AXKP0015-30111	2
7	Tuning Knob	AXKP020-30121	2
8	Cassette Knob	A32109-003	1
9	Push Knob	A60050-001	2
10	Cassette Knob	A32109-001	4
11	Cassette Knob	A32109-002	1
12	Knob	AXKP012-30131	5

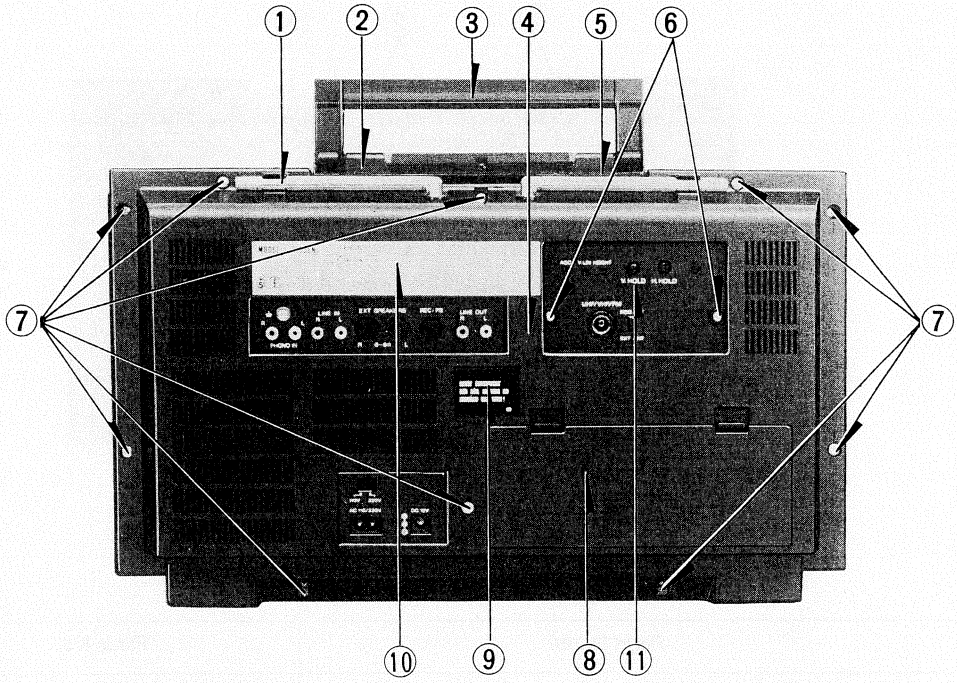


Fig. 35

No.	Parts Name	Parts No.	Q'ty
1	Rod Antenna	QZR2110-001	2
2-1	Handle Holder	A60014-001	1
-2	Handle Bushing	A60015-001	1
-3	Washer	A60092-001	1
-4	Washer	Q03091-110	1
-5	Ass'y Screw	LPSP4012ZS	1
3	Handle Ass'y	A32117-00A	1
4	Rear Cover	A10386-001	1
5-1	Handle Holder	A60014-001	1
-2	Handle Bushing	A60015-001	1
-3	Washer	Q03091-110	1
-4	Ass'y Screw	LPSP4012ZS	1
6	Screw	SDSP3012RS	2
7	Tap. Screw	SDSA4016R	10
8-1	Battery Cover	A20923-001	1
-2	Cushion (attached to reverse side)	A41455-042	1
9	Label	A31694-127	1
10	Label	A31694-126	1
11	Antenna Terminal Ass'y	A20939-00A	1

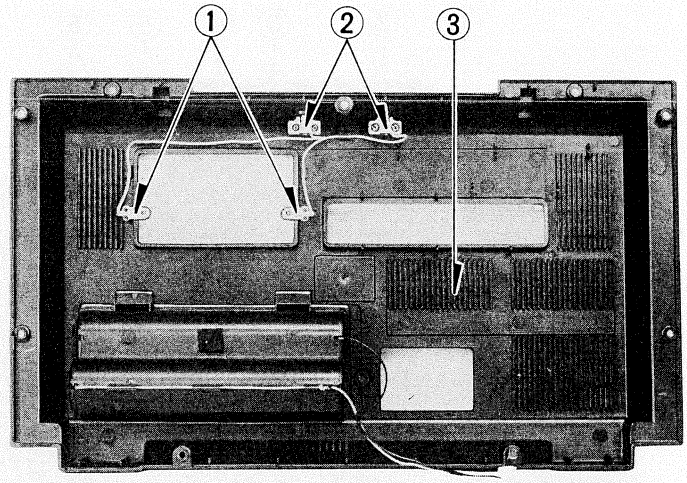


Fig. 36

No.	Parts Name	Parts No.	Q'ty
1	Relay Plate	A60045-001	2
2-1	Spring	A45507-001	2
-2	Ant. Holder	A60046-001	2
-3	Tap. Screw	SDSA3012Z	4
3	Rear Cover	A10386-001	1

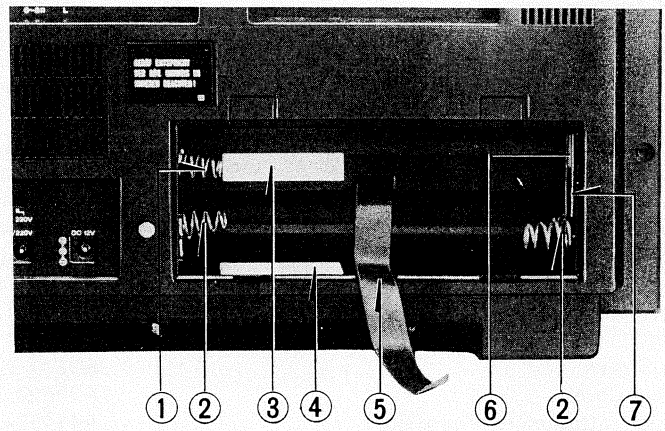


Fig. 37

No.	Parts Name	Parts No.	Q'ty
1	Contact Spring	A45377-001	1
2	Contact Spring	A60047-001	2
3	Label	A31694-109	
4	Label	A31694-109	1
5	Ribbon	A4555-002	1
6	Stick Sheet	A41545-088	1
7	Battery Plate	A45375-001	1

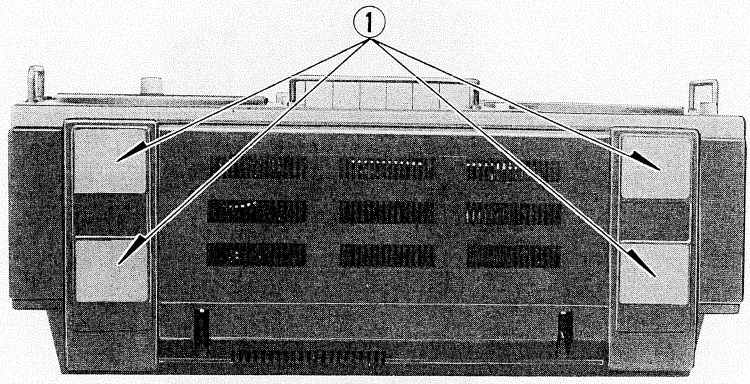


Fig. 38

No.	Parts Name	Parts No.	Q'ty
1	Cushion	A60017-001	4

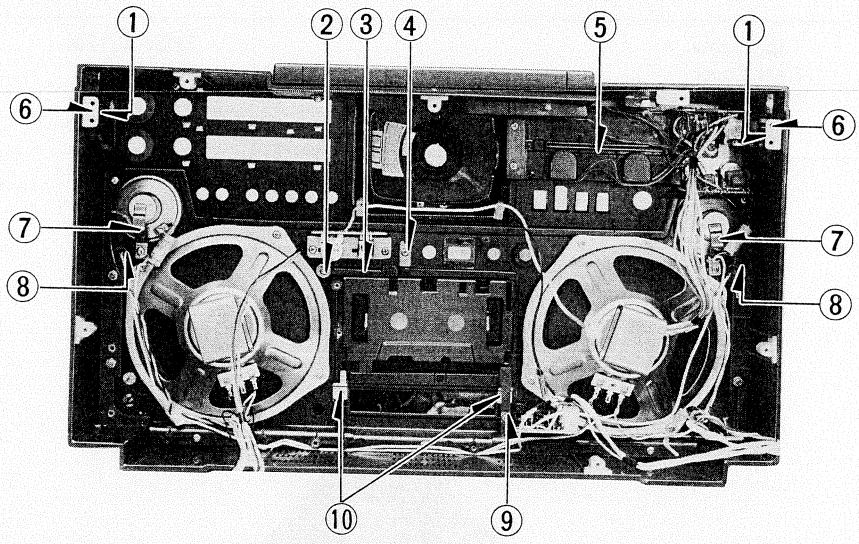


Fig. 39

No.	Parts Name	Parts No.	Q'ty
1	MIC Stand Holder	A32103-001	2
2-1	Washer	Q03091-105	1
-2	Tap. Screw	SDSA3012Z	1
3	Eject Hook	A32104-001	1
4-1	Stopper	A60026-001	1
-2	Tap. Screw	SDSA3012Z	1
5	Meter Holder	A20927-001	1
6	MIC Stand Frame	A60016-001	2
7	Speaker Spring	A60006-001	2
8	MIC Holder	A60003-001	2
9	Door Spring	A60024-001	1
10-1	Door Stopper	A60019-001	2
-2	Nut	NNZ3000ZS	2

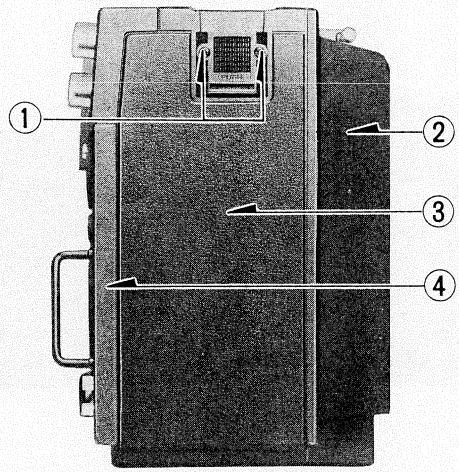


Fig. 40

No.	Parts Name	Parts No.	Q'ty
1	Tap. Screw	SHSA3012M	2
2	Rear Cover	A10386-001	1
3	Body	A10385-00A	1
4	Front Panel	A10384-00B	1

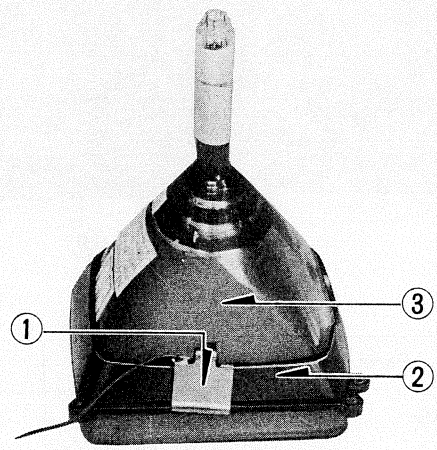


Fig. 41

No.	Parts Name	Parts No.	Q'ty
1	Earth Spring	A45929-001	1
2	CRT Holder	A32101-001	1
3	CRT	120ANB4	1

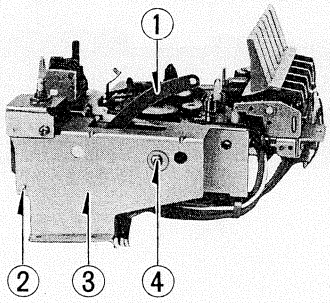


Fig. 42

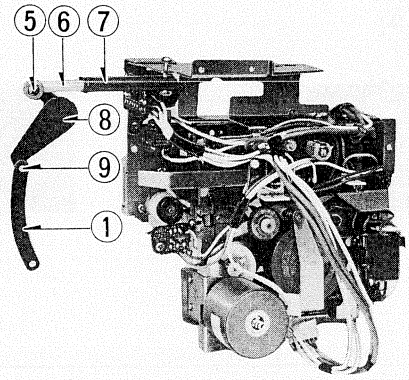


Fig. 43

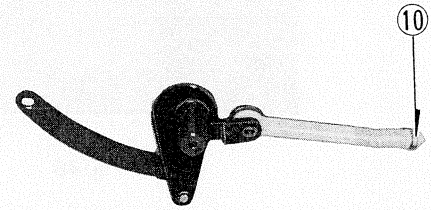


Fig. 44

No.	Parts Name	Parts No.	Q'ty
1	Cassette Door Arm	A60028-001	1
2	Screw	A60031-001	1
3	Damper Bracket	A32105-001	1
4-1	Washer	Q03091-105	1
-2	Tap. Screw	SDSA3012Z	1
5-1	Washer	Q03091-105	1
-2	Tap. Screw	SBSB3005Z	1
6	Brake Shaft	V44808-001	1
7	Brake Pipe Ass'y	V44830-00A	1
8	Damper Holder	A60029-001	1
9-1	Shaft	A60030-001	1
-2	E. Ring	REE2000	1
1	Cassette Door Arm	A60028-001	(1)
10	"O" Ring	TER267508-02	1

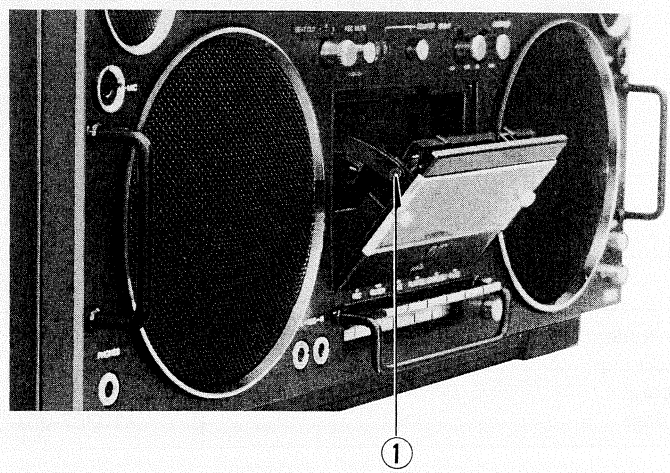


Fig. 45

No.	Parts Name	Parts No.	Q'ty
1	Plastics Rivet	A60020-00A	1

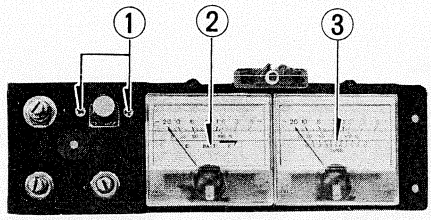


Fig. 46

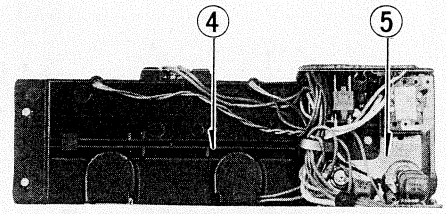


Fig. 47

No.	Parts Name	Parts No.	Q'ty
1	Ass'y Screw	LPSP3010ZS	2
2	Meter	A03092-001	1
3-1	Meter	A03092-002	1
-2	Meter Cushion	A60025-001	1
4	Meter Holder	A20927-001	1
5	Earth Plate	A60032-001	1

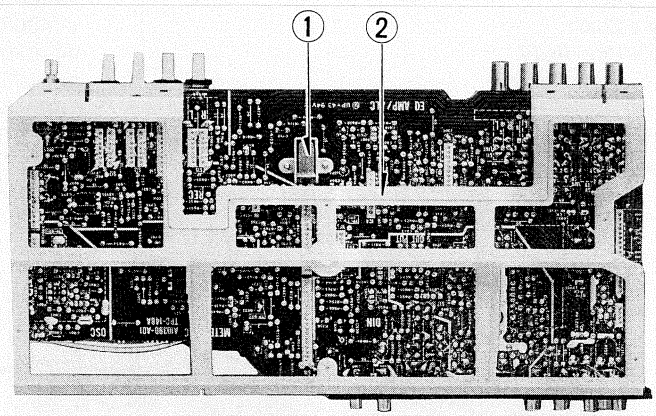


Fig. 48

No.	Parts Name	Parts No.	Q'ty
1-1	Record Holder	A60043-001	1
-2	Record Spring	A60042-001	1
-3	Ass'y Screw	LPSP3008ZS	2
2	Chassis Base	A10387-001	1

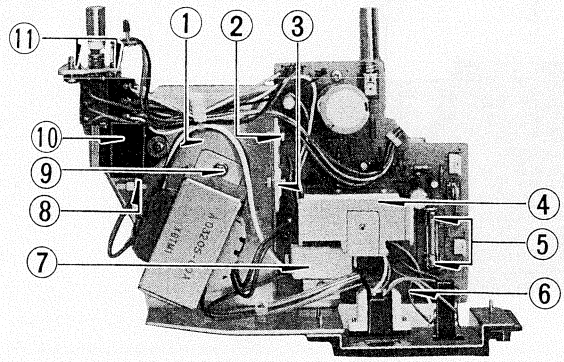


Fig. 49

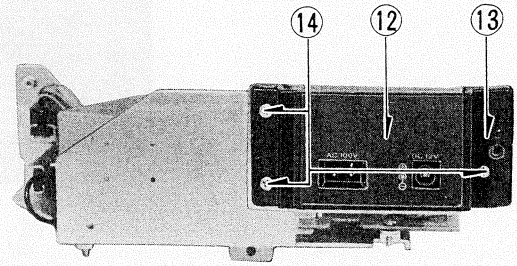


Fig. 50

No.	Parts Name	Parts No.	Q'ty
1	Heat Sink	A20932-001	1
2-1	Transistor (X503)	2SB566(C)	1
-2	Spacer	IS-313	1
-3	Ass'y Screw	LPSP3010ZS	1
-4	Washer	WNS3000Z	1
-5	Nut	NNZ3000ZS	1
3-1	Transistor (X501)	2SD727 (P, Q)	1
-2	Spacer	N018P	1
-3	Ass'y Screw	LPSP3010ZS	1
-4	Washer	WNS3000Z	1
-5	Nut	NNZ3000ZS	1
4	Heat Sink (D501)	A45751-00A	1
5	Fuse Clip	A44594-001	2
6	Cap. Ass'y	V44399-00D	1
7	Fuse Cover	A32127-001	1
8	Binder	PU43192-1	1
9-1	Ass'y Screw	LPSP4010ZS	2
-2	Washer	WNS4000Z	2
-3	Nut	NNZ4000ZS	2
10	AC Cover	A32126-001	1
11	Ass'y Screw	LPSP3010ZS	2
12	Power Plate	A32110-002	1
13	Power Board	A20933-001	1
14	Tap. Screw	SBSB3010Z	3

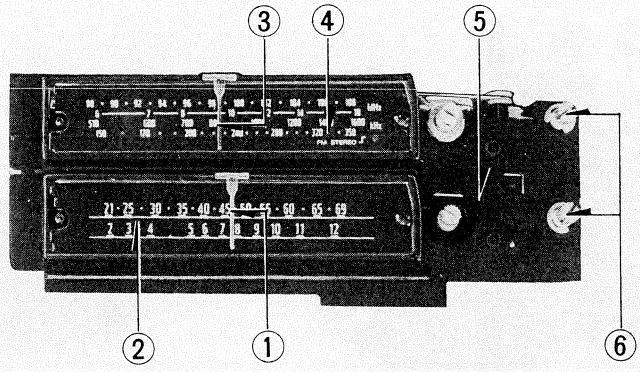


Fig. 51

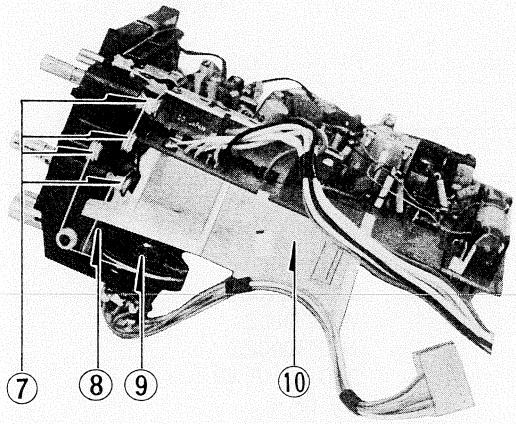


Fig. 52

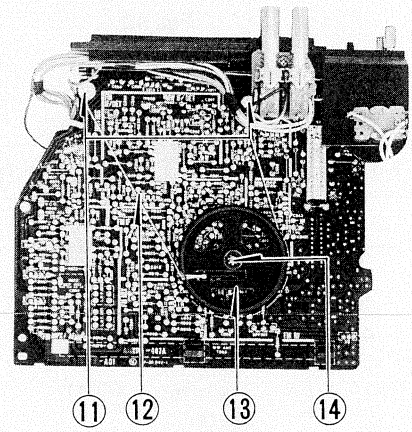


Fig. 53

No.	Parts Name	Parts No.	Q'ty
1	Needle	A60036-001	1
2-1	Dial Plate	A20929-004	1
-2	Plate	A60039-002	1
3	Needle	A60036-001	1
4-1	Dial Plate	A20929-003	1
-2	Plate	A60039-001	1
5	Tuning Holder	A20928-002	1
6-1	Tuning Shaft	A60034-001	2
-2	E. Ring	REE4000	2
7-1	Roller	V40409-3	11
-2	S. Washer	V42562-1	11
8	Roller Holder	A60035-001	1
9-1	Tuning Drum	A32084-001	1
-2	Spring	53498-3	1
-3	Dial Cord (76cm)	A45773-001	1
10	P.W.B. Holder	A32107-001	1
11	Pulley Ass'y	A60037-00A	2
12	Dial Cord (89cm)	A45773-001	1
13-1	Tuning Drum	A32069-001	1
-2	Spring	53498-3	1
14-1	Screw	SPSP2608Z	1
-2	T. Lock Washer	WBS2600W	1

Exploded View of Cassette Mechanism

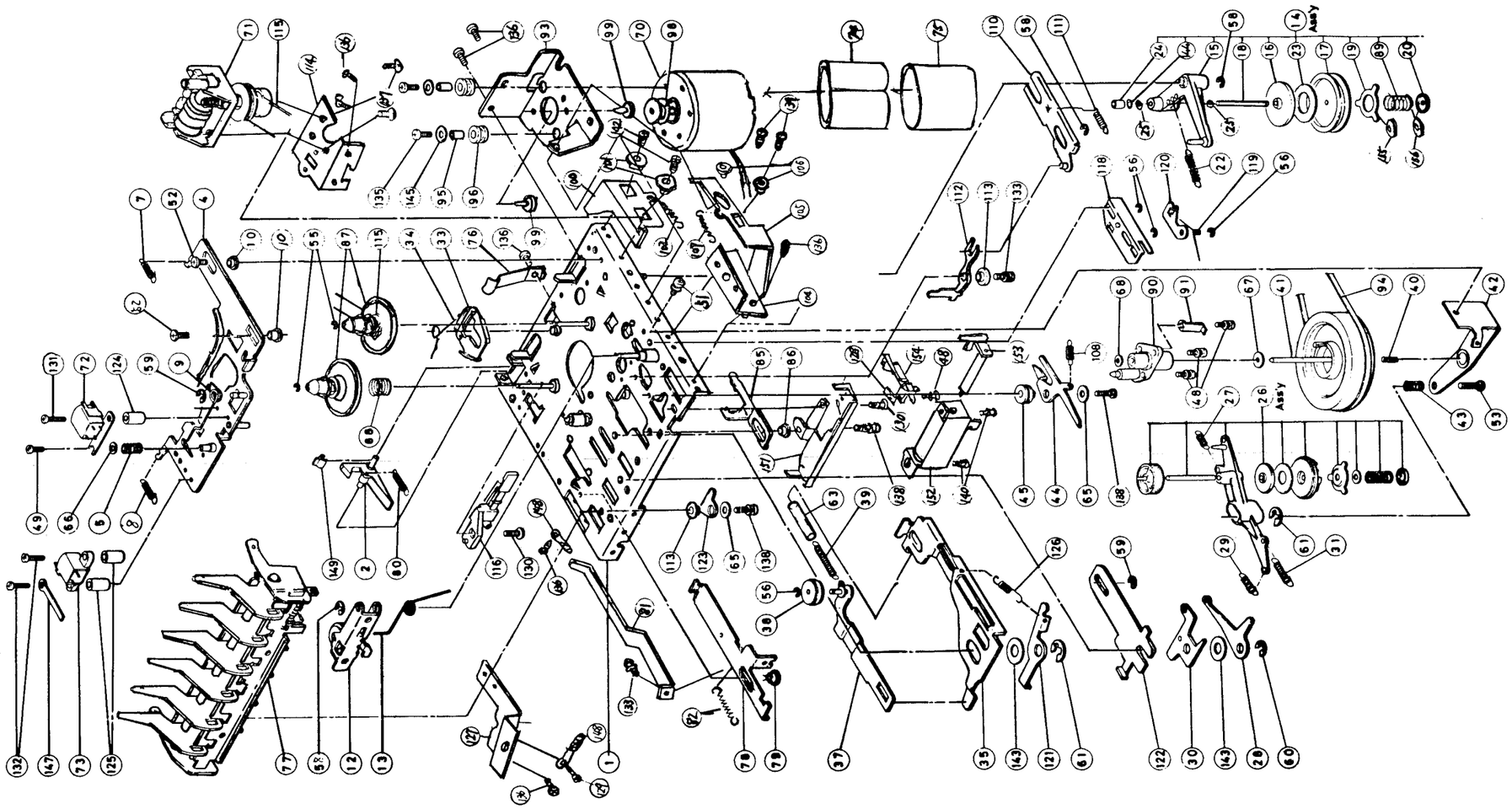


Fig. 54

Cassette Mechanism Parts List

Symbol No.	Parts No.	Parts Name
1	1312 0181	Chassis Ass'y
2	268 0503	Record Safety Lever
3	———	———
4	713 0482	Head Panel Ass'y
5	48 0408	Head Spring
6	———	———
7	408 0413	Panel Spring
8	18 0606	Panel Spring
9	408 0405	Review/Cue Spring
10	408 0411	Head Panel Collar
11	———	———
12	829 0481	Pinch Roller Ass'y
13	668 0501	Pinch Roller Spring
14	1238 0791	Clutch Sub Ass'y
15	408 0792B	Clutch Arm Ass'y
16	408 0704	Clutch Plate
17	973 0701	Clutch Pulley
18	542 0705	Clutch Shaft
19	408 0706	Clutch Spring Holder
20	408 0712	Clutch Spring Stopper
21	———	———
22	238 0406	Arm Spring
23	58 0503	Clutch Felt
24	03 0601	Take-Up Idler
25	970 0701	Washer
26	668 0891	FF Idler Arm Ass'y
27	58 1316	Center Spring
28	408 0804	FF Plate
29	408 0810	FF Spring
30	408 0815	Rewind Actuator
31	408 0810	Rewind Spring
32	———	———
33	408 0901	Brake Arm
34	408 0902	Arm Spring
35	408 0903	Arm Actuator
36	———	———
37	970 1081	Rewind Arm Ass'y
38	211 0902	Rewind Idler
39	02 0905B	Idler Spring
40	878 0902	LE Spring
41	1191 1105	FL Capstan
42	408 1195	FL Holder Ass'y
43	06 0405	Thrust Spring
44	408 1405	Auto Lever
45	542 1401	Auto Lever Collar
46	———	———
47	———	———
48	LPSP2005Z	Screw (M2 x 5)
49	SPSX2006Z	Screw (M2 x 6)
50	———	———
51	LPSP2604Z	Screw (M2.6 x 4)
52	SDSP2604Z	Screw (M2.6 x 4)
53	SPSP2610Z	Screw (M2.6 x 10)
54	———	Tapping Screw (M3 x 5)
55	REE1200	E Ring (ϕ1.2)
56	REE1500	E Ring (ϕ1.5)
57	REE1900	E Ring (ϕ1.9)
58	REE2000	E Ring (ϕ2)
59	REE2500	E Ring (ϕ2.5)
60	REE3200	E Ring (ϕ3.2)
61	REE4000	E Ring (ϕ4)
62	———	———
63	———	Vinyle Tube (ϕ3.5 x 24)
64	———	———
65	706 1501	Washer
66	———	Washer (M2)
67	878 0920	Oil Washer
68	03 1503	FL Washer
69	———	———
70	EG-510AD-TZ	Motor
71	MP-390356	Counter
72	THC00487-0B	R/P Head
73	V03078-044	Erasing Head
74	1312 1202	Shield Plate
75	1247 1211	Tube
76	1019 0102	Pack Holder Spring
77	1312 0291	Push Button Ass'y
78	1279 0301	Slide Lever
79	1105 0202	Slide Lever Collar
80	132 0303	Safety Spring
81	1312 0301	Slide Lever
82	238 1305	Slide Spring
83	———	———
84	———	———
85	542 0408	Slide Lever
86	09 0302	Slide Lever Collar
87	572 0695	Reel Disk Ass'y
88	04 0508	Tension Spring
89	408 0720	Clutch Spring
90	369 0701	FL Block
91	446 0701	Earth Plate
92	———	———
93	10501201	Motor Bracket
94	1045 1202	Main Belt
95	58 1009	Motor Collar
96	58 1006	Motor Rubber
97	———	———
98	973 1202M	Motor Pulley
99	58 1011	Rubber
100	1312 1303	Lock Lever
101	1312 1304	Lock Collar
102	96 0805	Lock Spring
103	———	———
104	1312 1301	Eject Bracket
105	1312 1302	Slide Lever
106	408 0411	Eject Collar
107	96 0806	Slide Spring
108	408 1407	Lever Spring
109	———	———
110	408 1581	Slide Lever Ass'y

Symbol No.	Parts No.	Parts Name
111	408 1515	Lever Spring
112	408 1503	Arm Lever
113	238 1304	Lever Collar
114	1312 1601	Counter Bracket
115	1239 1408	Counter Belt
116	MSW-0086	Leaf Switch
117	———	———
118	542 1881	Pause Lever Ass'y
119	542 1803	Lever Spring
120	542 1801	Pause Lever
121	408 0807	RQ. Lever
122	408 0806	RQ. Plate
123	408 0305	Stopper B
124	89 0401	R/P Head Collar
125	463 0402	E.H. Stud
126	408 0811	Lever Spring
127	1312 1401	Switch Bracket
128	1312 1402	Insulator
129	SPST26005Z	Tapping (2.6 x 5)
130	SDSP2606Z	Screw (M2.6 x 6)
131	SPSP2011Z	Screw (M2 x 11)
132	SPSP2012Z	Screw (M2 x 12)
133	LPSP2605Z	Screw (M2.6 x 5)
134	———	———
135	SPSP2606Z	Screw (M2.6 x 6)
136	SPST2604Z	T. Screw (M2.6 x 4)
137	———	FH. Screw (M3 x 5)
138	LPSP2608Z	Screw (M2.6 x 8)
139	SPST2606Z	T. Screw (2.6 x 6)
140	SPSP2003Z	Screw (M2 x 3)
141	———	———
142	SPST3006Z	G. Tapping (3 x 6)
143	11 0505	Nylon Washer
144	048 0713	Nylon Washer
145	03 1501	Washer (ϕ2.6 x ϕ7.5 x 0.5t)
146	———	———
147	03 1307	Cord Clamp
148	446 0901	Cord Clamp
149	268 0515	Stopper
150	———	———
151	668 1408	RP. Bracket
152	668 1485	Solenoid Coil Ass'y
153	668 1481	Solenoid Lever Ass'y
154	973 1401	Pause Switch
155	408 0715	Nylon Washer
156	408 0716	Nylon Washer

Electronic Parts List For TV.

Symbol No.	Parts No.	Description
	Transistor	
X1	2SC1779-A	RF. Amp.
X2	2SC1215	Mixer
X3	2SC1730	VHF OSC.
X4	2SD468(C)	Vol. Reg.
X5	2SA844(C)	VHF (Low-High) SW
X101	2SC1674(L,M)	1st. Pix. IF Amp.
X102	2SC1674(L,M)	2nd. Pix. IF Amp.
X103	2SC1906	3rd. Pix. IF Amp.
X104	2SC454(C)	Video Amp.
X105	2SD637(Q,R)	AGC Amp.
X106	2SD637(Q,R)	AGC Amp.
X107	2SD637(Q,R)	RF. AGC Amp.
X108	2SC1890(E)	Video Out.
X201	2SD637(Q,R)	Muting Drive
X202	2SD637(Q,R)	Muting Drive
X203	2SD787(C,D)	Muting SW
X301	2SB642(R)	Sync. Sep.
X302	2SC458(C)	Vert. OSC.
X303	2SD637(S)	Vert. Drive
X304	2SD787(E)01	Vert. Out.
X305	2SB738(C)	Vert. Out.
X306	2SD637(Q,R)	CRT Protector
X401	2SC458(C)	Hor. OSC.
X402	2SC945L(P,Q)	Hor. Drive
X403	2SC2556A	Hor. Out.
	ICs	
IC1	MPC574J	Vol. Reg.
IC8	HA11229	S. IF Amp. & Det.
	Diodes	
D1,2,4,5,7, 8,10,17,18 19,20	1S2222	Band Switch Diode
D6,9,11	MA320G2V	Variable Capacitance Diode
D12	1S188AM	Diode
D13	HZ7A2L	Zener Diode
D14,15,203, 204	1S2076V	Diode
D16	1S2076	Diode
D101	1N60TF1	Diode
D102,103,21	HV23GBLV	Diode
D301,304, 401~405	1N34ATF1	Diode
D302	HV23G-13	Diode
D303	HV70-02	Diode
D406,408	10E2(V)	Silicon Power Diode
D407	RH1ALF	Silicon Power Diode
	CRT	
V1	120ANB4	Picture Tube
	Coils & Transformers	
L1	A44900-13-5	RF Coil
L2	A44900-11-1	RF Coil
L3,7,9,13	A44900-49-5	RF Coil
L5	A44899-5-5	RF Coil
L6	A44899-3-1	RF Coil
L8	A44899-7-2	RF Coil
L10	A44900-9-2	RF Coil
L11	A44900-25-5	RF Coil
L12	A44900-5-1	RF Coil

Symbol No.	Parts No.	Description
L101	A45742-00B	S. Trap Coil Ass'y
L102	A45412-00B	2nd. Pix. IF Coil
L103	A04725-15	Peaking Coil
L104	A04872-82	Peaking Coil
L105	A04376-151A	Peaking Coil
L106	A04376-181A	Peaking Coil
L107	A04376-271A	Peaking Coil
L201	A04376-470A	Peaking Coil
L202	A60090-00B	Sound Det. Coil Ass'y
L401	A44897-00C	Hor. OSC. Coil Ass'y
L402,404	A04359-500	Choke Coil
L403	A04368-001	Linearity Coil
L301,302, 404,405	A32124-00A	Def. Yoke Ass'y
T4	A45379-00C	Conv. Trans. Ass'y
T101	A45380-00B	1st. Pix. IF Trans. Ass'y
T102	A45314-00A	3rd. Pix. IF Trans. Ass'y
T103	A45315-00A	4th. Pix. IF Trans. Ass'y
T201	A44586-A	Sound IF Trans. Ass'y
T401	A32123-00A	HV Trans. Ass'y
	Variable Resistors	
R29,30	QVP2A0B-024	Sub-Tuning 20kΩB
R31	QVP2A0B-014	Sub-Tuning 10kΩB
R32,34	QVP2A0B-025	Sub-Tuning 200kΩB
R136	QVP2A0B-053	AGC 5kΩB
R153	QVG0A3B-025Z	Bright 200kΩB
R155	QVG0A3C-013Z	Contrast 1kΩC
R208	QVP5A0B-054	50kΩB
R313	QVF4A2B-025	V. Hold 200kΩB
R321	QVP2A0B-054	V. Height 50kΩB
R326	QVP2A0B-053	V. Lin 5kΩB
R435	QVZ3504-017	Focus 10MΩB
	Resistors	
R315	A04383-001	P. Thermistor
R328	A04292-107	N. Thermistor
R412	A04292-102	N. Thermistor
	Electrolytic Capacitors	
C48	QET61AR-476	47μF 10WV
C125	QET61AR-107	100μF 10WV
C132,135,209	QET61HR-475	4.7μF 50WV
C134,411	QET61CR-227	220μF 16WV
C139	QET61AR-227	220μF 10WV
C211,318	QET61CR-336	33μF 16WV
C213,303,313	QET61HR-105	1μF 50WV
C215,405,407	QET61HR-335	3.3μF 50WV
C301,316,414	QET61CR-477	470μF 16WV
C309,311	QEE51AK-106	10μF 10WV
C312,413,418	QET61HR-106	10μF 50WV
C314	QET61CR-107	100μF 16WV
C404	QET62AR-105	1μF 100WV
C419	QET61HR-476	47μF 50WV
C423	QET61JR-335	3.3μF 63WV
C425,428	QET61CR-108	1000μF 16WV
	Capacitors	
C416	QFP32XK-332	Polypropylene Capacitor
C417	QFP32XK-822	Polypropylene Capacitor
	C.R. Blocks	
CR1	A03008-017	C18, R8
CR2	A03008-013	C27, R19
CR101	A03008-013	C106, R104

Symbol No.	Parts No.	Description
CR102	A03008-013	C111, R108
	Speakers	
	EAS-16P51SC	6Ω Woofer 16 cm
	EAS-5PH50SU	6Ω Tweeter 5 cm
	Sockets & Plug (Connector)	
J5	A03085-00C	5P Connector Ass'y
J7	A03085-00F	5P Connector Ass'y
J9	A03083-00H	3P Connector Ass'y
J10	A03085-00G	5P Connector Ass'y
P4	A41267-B	Plug Ass'y
P6	QMV5003-008	Connector
P7	QMV5002-005	Connector
	A31989-00D	CRT Socket Ass'y
	Switch	
S1	QSS2201-031	Slide Switch
S2	QSR6082-202	Rotary Switch
	Miscellaneous	
CF101	A04306-B	Ceramic Filter
CF201	A04355-00B	Ceramic Filter
SEP1	A45743-00A	U-V Separator
	QMP3950-183	Power Cord with Plug
	QZR2110-001	Rod Antenna

Electronic Parts List For Radio

Symbol No.	Parts No.	Description
	Transistor	
X801	2SC461(B)	FM RF Amp.
X802	2SC1675(L)	FM OSC.
X803	2SC1674(L)	FM Mixer
X804	2SC929(D)	FM IF Amp.
X805	2SC929(D)	LW/MW/SW Mixer
X806	2SC929(D)	MW OSC.
X807	2SD637(R)	MW Meter Drive
X808	2SD637(R)	Muting Drive/Stereo SW.
X809	2SA844(C)	AF Amp. & Muting SW.
X810	2SA844(C)	AF Amp. & Muting SW.
X811	2SD637(R)	Muting SW.
X812	2SD637(R)	Muting SW.
X813	2SD637(R)	Muting Drive
X814	2SD468(C)	Vol. Reg.
X815	2SC929(D)	LW OSC.
X816	2SC929(D)	SW OSC.
	ICs	
IC2	HA11227	FM MPX Demodulator
IC3	HA11251	FM/MW IF Amp. FM Det.
	Diodes	
D801	SD113V	Variable Capacitance Diode
D802,804,805, 808	1S2076V	Diode
D803	1N60TF1	Diode
D806	GL-3PR1	L.E.D.
D807	HZ7B2L	Zener Diode
	Coils & Transformers	
L801	A45973-00B	RF Coil
L802,806	A04376-R68A	Peaking Coil
L803	A60097-00A	RF Coil
L804	A45986-00A	FM Det. Coil
L805	A04376-180A	Peaking Coil
T801	A45958-00A	IF. Trans.
T802	VQM1T03-201	OSC. Trans.
T803,810	A32047-00C	Bar Ant. Ass'y
T804	V03067-25	Det. Trans.
T808	A45823-00A	OSC. Trans.
T809	V03101-025	OSC. Trans.
T811	A60108-00A	Ant. Trans.
	Variable Resistors	
R868	QVP5A0B-014	14kHz Adj. 10kΩB
R872	QVP5A0B-052	Separation 500ΩB
R874	QVP5A0B-054	Muting Level 50kΩB
R37	A04392-001	Tuning 200kΩB
	Electrolytic Capacitors	
C816,881,882	QET61HR-475	4.7μF 50WV
C853,858,869 871,893	QET61AR-476	47μF 10WV
C854,864,873 879,885,886	QET61HR-105	1μF 50WV
C862,863	QET61HR-335	3.3μF 50WV
C867	QEE51VK-104	0.1μF 35WV
C872,887,888	QET61HR-474	0.47μF 50WV
C876	QEE51EK-105	1μF 25WV
C877	QEE51VK-334	0.33μF 35WV
C878,880	QEE51CK-225	2.2μF 16WV
C889	QET61CR-477	470μF 16WV
C890	QET61CR-107	100μF 16WV
C894	QET61AR-227	220μF 10WV
C895,896	QET61HR-106	10μF 50WV
C897	QEE51EK-105	1μF 25WV

Symbol No.	Parts No.	Description
	Capacitors	
C805,806,821, 822,831,832, 841,842	QAP1224-504	Variable Capacitor
C875	QFS41HJ-471	Polystyrol Capacitor
C8119	QFS41HJ-332	Polystyrol Capacitor
C8111,8124	QAT2002-001	Trimmer Capacitor
C8118,8126	QAT2002-001	Trimmer Capacitor
	C.R. Block	
CR801	03126-15	C865, 866, R858
	Filters	
CF801,802	A04384-001	Ceramic Filter
CF803	V03067-026	Ceramic Filter
BPF801	A45961-00B	Band Pass Filter
LPF801,802	A04385-00A	Low Pass Filter

Symbol No.	Parts No.	Description
	Switch	
S4	QSR60A4-20A	Rotary Switch
S5,6	QSP0210-015	Push Switch
	Socket & Jacks	
J6	A03088-00A	8P Connector Ass'y
J11	A03088-00B	8P Connector Ass'y
J13	A03086-00C	6P Connector Ass'y
J16	A03084-00E	4P Connector Ass'y
P9	QMV5002-003	Connector
	Miscellaneous	
PL1,2	QLP3101-319	Pilot Lamp
	A04382-001	E.C. MIC (Pair)
	V04041-1	Test Point

Electronic Parts List For Amplifier

Symbol No.	Parts No.	Description
	Transistors	
X601,701	2SD661(R,S)	Pri. Amp.
X602,702	2SD637(Q,R)	Vol. Drive
X603,703	2SD637(Q,R)	Meter Drive
X604,704	2SD637(Q,R)	Rec. Amp.
X605,705	2SD637(Q,R)	Rec. Out.
X901,902	2SC536(F) AUD	Bias OSC.
	ICs	
IC4,5	TA7137P-ST	Equalizer Amp. (Pair)
IC6	AN7145M	Audio Out.
	Diodes	
D601,701	1S2076V	Diode
D602,702	1N34ATF1	Diode
D603,703	1N34ATF1	Diode
D604,704	DS430	Diode
	Coils & Transformers	
L601,701	03226-19	Inductor
L602,702	A04391-103	Inductor
L603,703	03226-17	Inductor
L604,704	A04359-100	Choke Coil
L901	03226-17	Inductor
L902	A04359-100	Choke Coil
T901	V03083-019	Bias OSC. Coil
	Variable Resistors	
R607,707	QVP5A0B-015	Phono Level 100kΩB
R612,712	QVP5A0B-054	Tape PB Level 50kΩB
R625,725	QVP2A0B-054	Bias Adj. 50kΩB

Symbol No.	Parts No.	Description
R629,729	QVL8A3B-054	Rec. Level 50kΩB
R637,737	QVP5A0B-024	Rec. Level 20kΩB
R738	QVP5A0B-053	Meter Balance 5kΩB
	Resistor	
R913	QRX029J-IRO	Metal Film Resistor
	Electrolytic Capacitors	
C601,701,603, 703,619,719, 627,727,630, 730,631,731, 638,738,639, 739	QET61HR-475	4.7μF 50WV
C604,704,608, 708,905	QET61AR-107	100μF 10WV
C605,705,635, 735,643,743, 912	QET61CR-336	33μF 16WV
C609,709,611, 711	QET61HR-106	10μF 50WV
C616,716,622, 722,623,723, 642,742,651, 751	QET61HR-474	0.47μF 50WV
C621,721,914	QET61CR-477	470μF 16WV
C646,746	QET61AR-108	1000μF 10WV
C647,747	QET61AR-476	47μF 10WV
C652,752	QEZ0046-335	33μF 50WV
C911	QET61CR-227	220μF 16WV
C913	QET61CR-228	2200μF 16WV

Symbol No.	Parts No.	Description
	Capacitors	
C633,733	QFS41HJ-501	Polystyrol Capacitor
	Switch	
S7,8,9,10,11	QSP0251-003	Push Switch
S12,13,15	QSL4210-202	Lever Switch
S14	QSL4310-012	Lever Switch
S16	QSSC201-107	Slide Switch
S17	QSP4210-061	Push Switch
	Sockets & Jacks	
J15L	QMS6303-006	Jack Ass'y (L. Ext. MIC)
J15R	QMS6303-006	Jack Ass'y (R. Ext. MIC)
J17,18,19,32	A20931-00B	Jack Board Ass'y
J20	QMC9014-006	DIN Socket
J21L,21R	QMC0289-003	DIN Socket
J22	QMS6312-002	Jack Ass'y
J24	A03084-00G	4P Connector Ass'y
P10	QMV5003-005	Connector
P11	QMV5003-008	Connector
P12	QMV5003-012	Connector
P13	QMV5002-006	Connector
P14	QMV5003-003	Connector
P16,31	QMV5002-004	Connector
P23	QMV5003-004	Connector

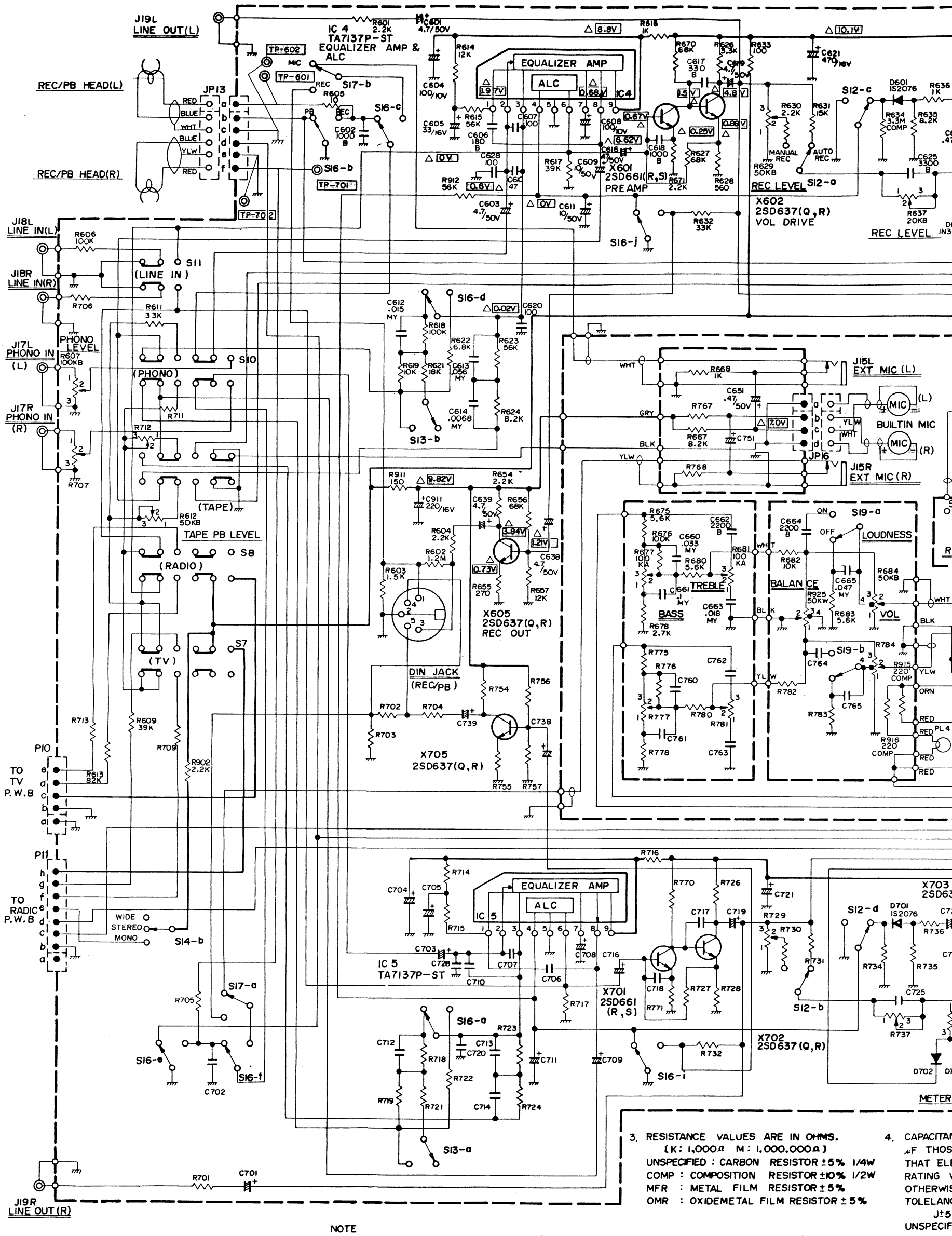
Electronic Parts List For Power Supply

Symbol No.	Parts No.	Description
	Transistors	
X501	2SD727(P,Q)	Vol. Reg.
X502	2SC1213(C)	Vol. Drive
X503	2SB566(C)	Vol. Reg.
X504	2SC458(C)	Error Amp.
X505	2SA844(C,D)	Active Filter
X506	2SC458(C)	Active Filter
	Diodes	
D501	S4VB20(V)	Si. Diode Stack
D502	HZ151L	Zener Diode
D503	RD6.8EV	Zener Diode
D504	GL-4PR2	L.E.D.
D505	1SS55(V)	Diode
	Variable Resistor	
R512	QVP2A0B-013	B. Voltage Adj. 1kΩB
	Electrolytic Capacitors	
C505	QEW81EA-478	4700μF 25WV
C506	QET61ER-227	220μF 25WV
C507	QET61HR-106	10μF 50WV
C508,510	QET61CR-476	47μF 16WV
C509,511	QET61HR-475	4.7μF 50WV
	C.R. Blocks	
CR501,502	A03008-006	C.R. Block
	Miscellaneous	
S26	QSP2210-057	Push Switch
S27	QSP1210-123	Push Switch
S28	QSP3110-003	Push Switch
S29,P27	QMA1221-003	Ext. Batt. Jack Ass'y
S30, P28	QMC0263-001	AC Socket Ass'y
S31	QSS0037-004	Slide Switch
P24	QMV5002-004	Connector
P26	QMV5002-003	Connector
J25	A03084-00H	4P Connector Ass'y
Fuse 1	QMF51A2-R63	Fuse T630mA
Fuse 2	QMF51A2-1R6	Fuse 1.6A
T501	A03205-00B	Power Trans. Ass'y

Electronic Parts List For UHF Tuner

Symbol No.	Parts No.	Description
	Transistors	
X001	2SC1070(B)V	RF Amp.
X002	2SC1070(B)V	Mixer
X003	2SC288A(5B)	UHF OSC.
	Diodes	
D001,002,003	1S2208	Variable Capacitance Diode
	Coils	
L001,002,016	A44899-15-1	RF Coil
L004,008	A44900-7-5	RF Coil
L010	A04378-1RO	Choke Coil
L015	A44899-23-5	RF Coil
	Electrolytic Capacitors	
C023,026	A04364-001	1000μF 10WV
C024	QET61AR-476	47μF 10WV
	Miscellaneous	
J4	QMC0131-002	Jack Ass'y
P5	QMV5002-005	Plug Ass'y

TELEVISION SCHEMA
(Power Supply & Au



NOTE

1. VOLTAGE VALUES SHOW READINGS BY CIRCUIT TESTER(20K /V) ON NORMAL RECEPTION.
   △[ ] SHOWS READINGS ON PLAY POSITION.
   △( ) SHOWS READINGS ON REC POSITION.
2. ALIGNMENT ═══ OPERATION FOR USER
   ——— OPERATION FOR SERVICE

3. RESISTANCE VALUES ARE IN OHMS.
   (K: 1,000Ω M: 1,000,000Ω)
   UNSPECIFIED : CARBON RESISTOR ±5% 1/4W
   COMP : COMPOSITION RESISTOR ±10% 1/2W
   MFR : METAL FILM RESISTOR ±5%
   OMR : OXIDEMETAL FILM RESISTOR ±5%

4. CAPACITAN
   μF THOS
   THAT ELE
   RATING V
   OTHERWIS
   TOLELANC
   J±5
   UNSPECIF

   B: CE
   DE
   MY: MY
   NP: NO
   PS: PO
   ELECT C
   LE
   4.
   CA

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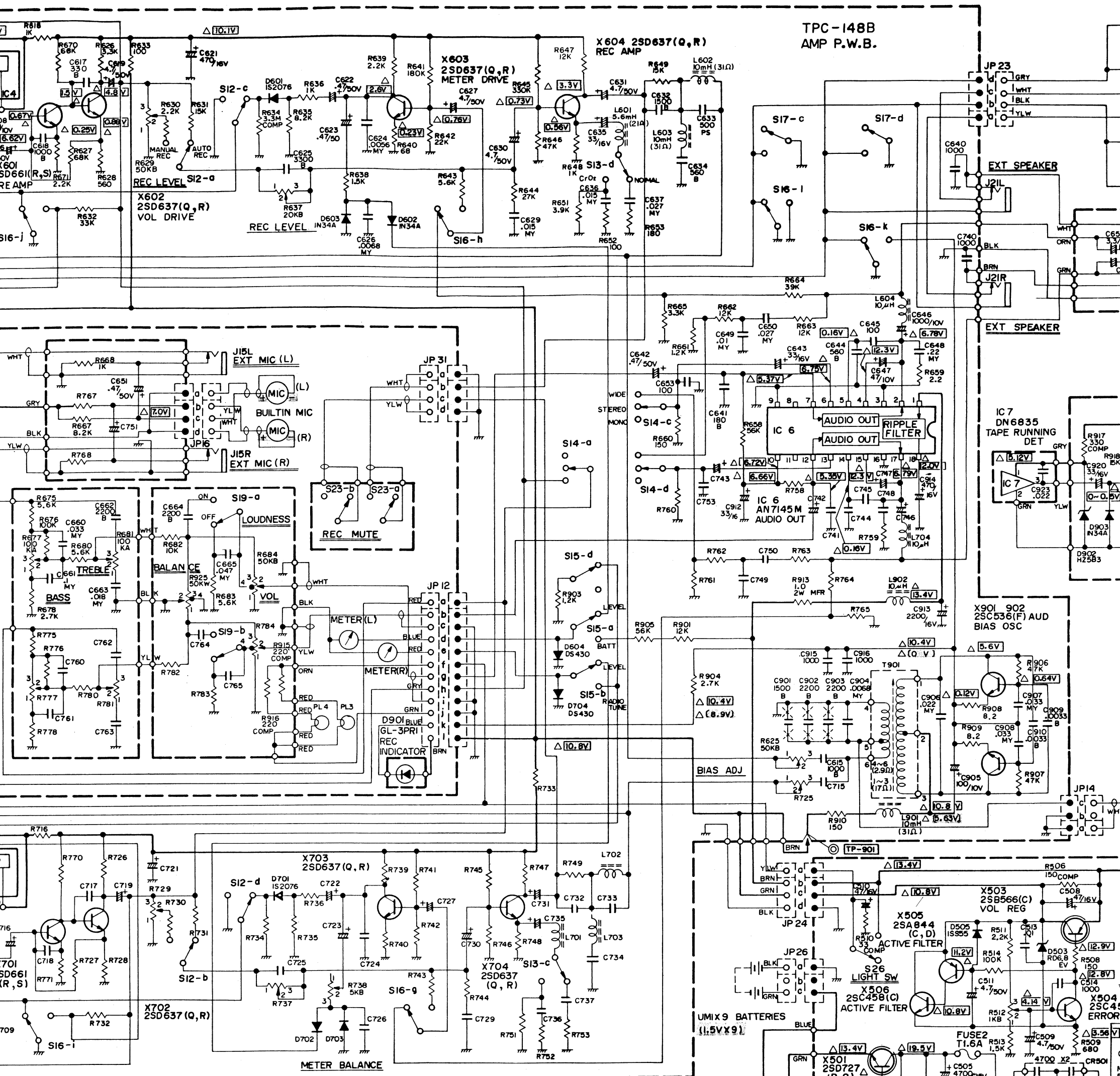
B/W TELEVISION DIVISION

TELEVISION SCHEMATIC DIAGRAM MODEL 3090EN

(Power Supply & Audio Amplifier Sections Diagram)



3. RESISTANCE VALUES ARE IN OHMS.
(K: 1,000Ω M: 1,000,000Ω)
UNSPECIFIED : CARBON RESISTOR ±5% 1/4W
COMP : COMPOSITION RESISTOR ±10% 1/2W
MFR : METAL FILM RESISTOR ±5%
OMR : OXIDEMETAL FILM RESISTOR ±5%

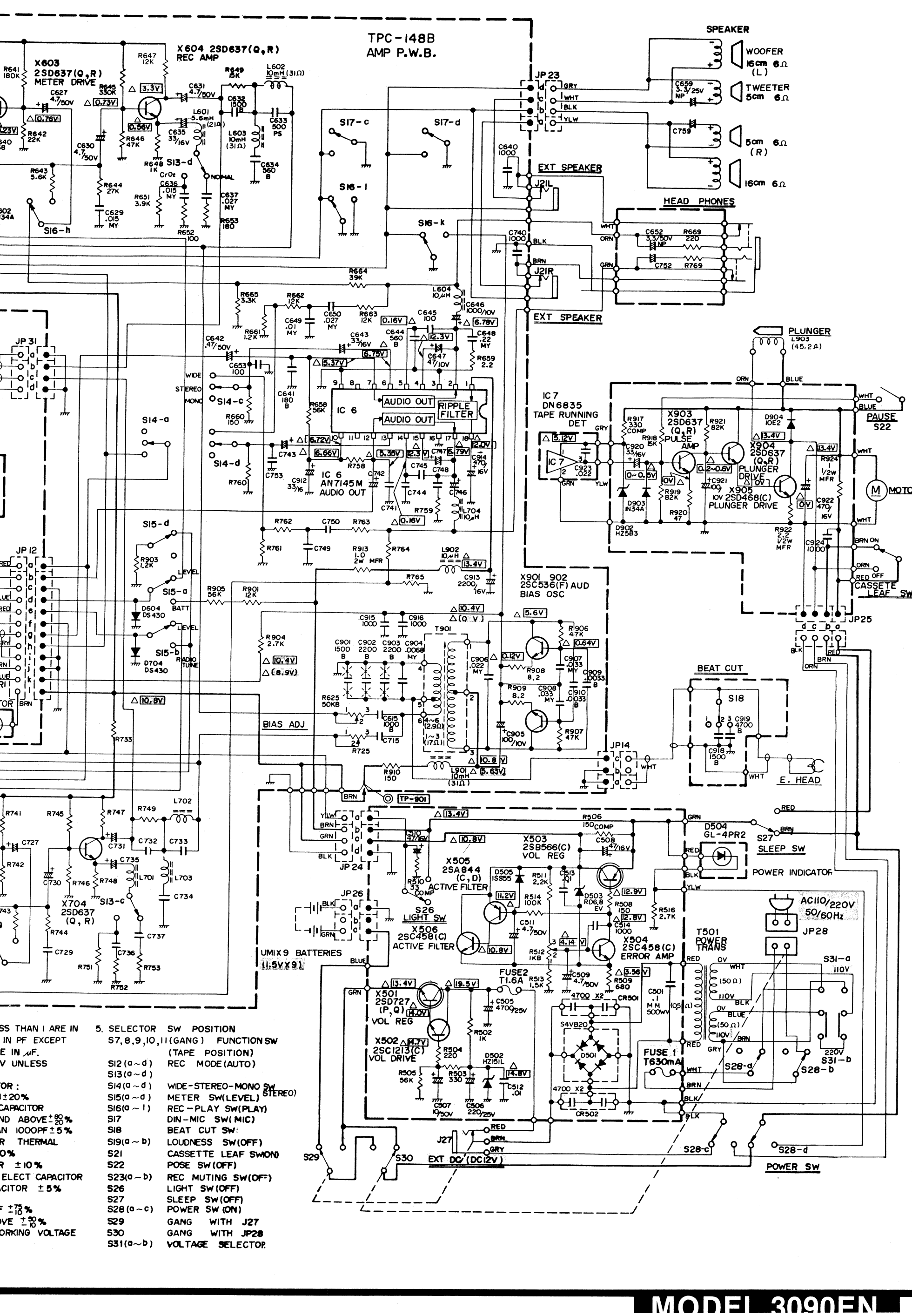
4. CAPACITANCE VALUES LESS THAN 1 ARE IN μF THOSE 1 AND ABOVE IN PF EXCEPT THAT ELECTROLYTICS ARE IN μF.
RATING VOLTAGE IS 50WV UNLESS OTHERWISE INDICATED.
TOLELANCE FOR CAPACITOR:
J±5% K±10% M±20%
UNSPECIFIED : CERAMIC CAPACITOR
1000PF AND ABOVE $^{+80}_{-20}$%
LESS THAN 1000PF ±5%
B: CERAMIC CAPACITOR THERMAL DEVIATION IS ±10%
MY: MYLAR CAPACITOR ±10%
NP: NON POLARIZED ELECT CAPACITOR
PS: POLYSTYROL CAPACITOR ±5%
ELECT CAPACITOR:
LESS THAN 4.7μF $^{+75}_{-10}$%
4.7μF AND ABOVE $^{+50}_{-10}$%
CAPACITANCE / WORKING VOLTAGE

5. SELECTOR SW POSITION

		S7,8,9,10,11(GANG) FUNCTION SW (TAPE POSITION)
S12 (a~d)	REC MODE(AUTO)	
S13 (a~d)		
S14 (a~d)	WIDE-STEREO-MONO SW	STEREO
S15 (a~d)	METER SW(LEVEL)	
S16 (a~l)	REC-PLAY SW(PLAY)	
S17	DIN-MIC SW(MIC)	
S18	BEAT CUT SW:	
S19 (a~b)	LOUDNESS SW(OFF)	
S21	CASSETTE LEAF SW(ON)	
S22	POSE SW(OFF)	
S23 (a~b)	REC MUTING SW(OFF)	
S26	LIGHT SW(OFF)	
S27	SLEEP SW(OFF)	
S28 (a~c)	POWER SW(ON)	
S29	GANG WITH J27	
S30	GANG WITH JP28	
S31 (a~b)	VOLTAGE SELECTOR	

DIAGRAM MODEL 3090EN

mplifier Sections Diagram)



SS THAN 1 ARE IN
IN PF EXCEPT
E IN μF.
V UNLESS

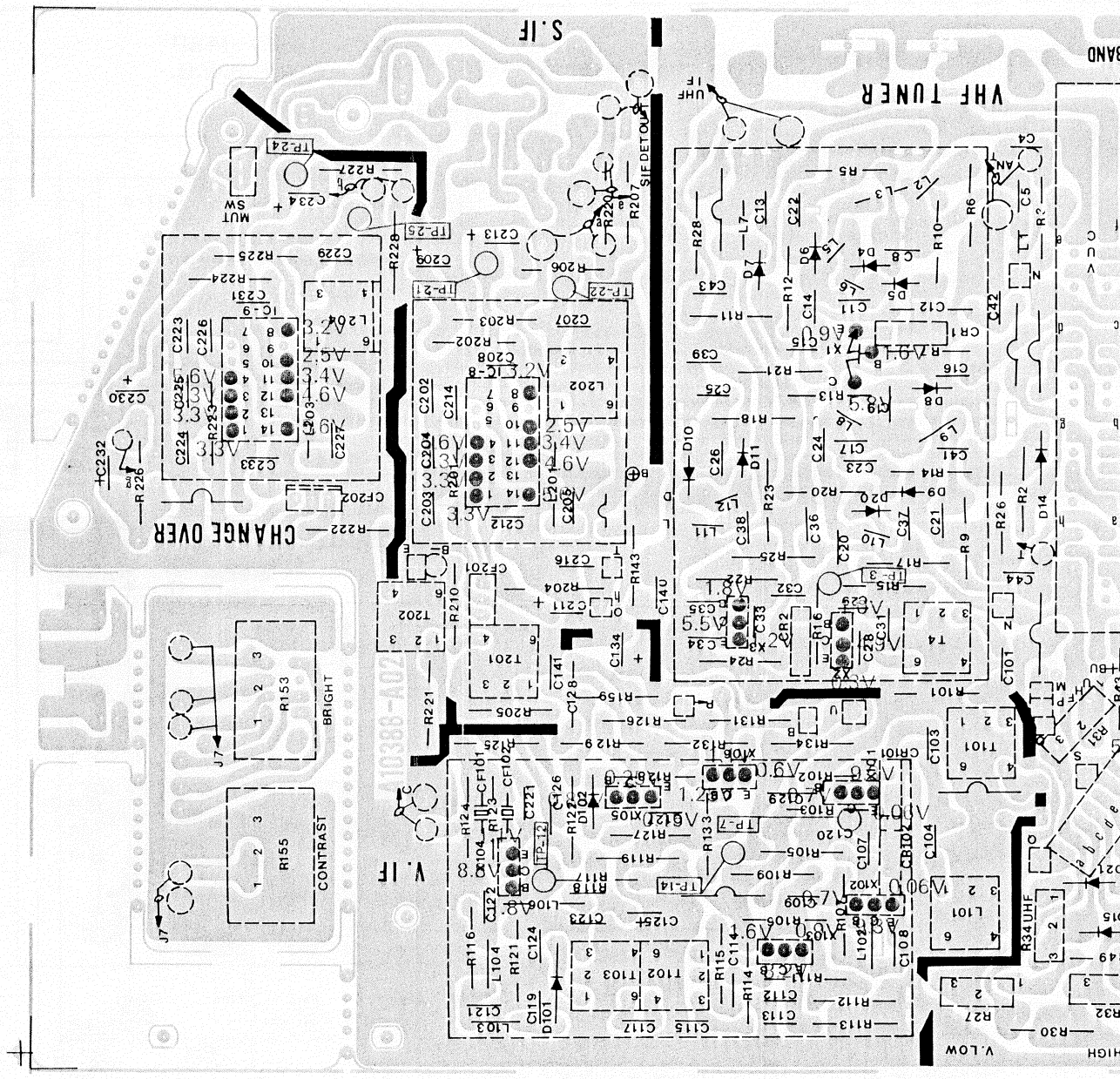
OR :
±20%
CAPACITOR
ND ABOVE +80 -20 %
N 1000PF ±5%
R THERMAL
0%
R ±10%
ELECT CAPACITOR
CITOR ±5%

F +75 -10 %
OVE +50 -10 %
ORKING VOLTAGE

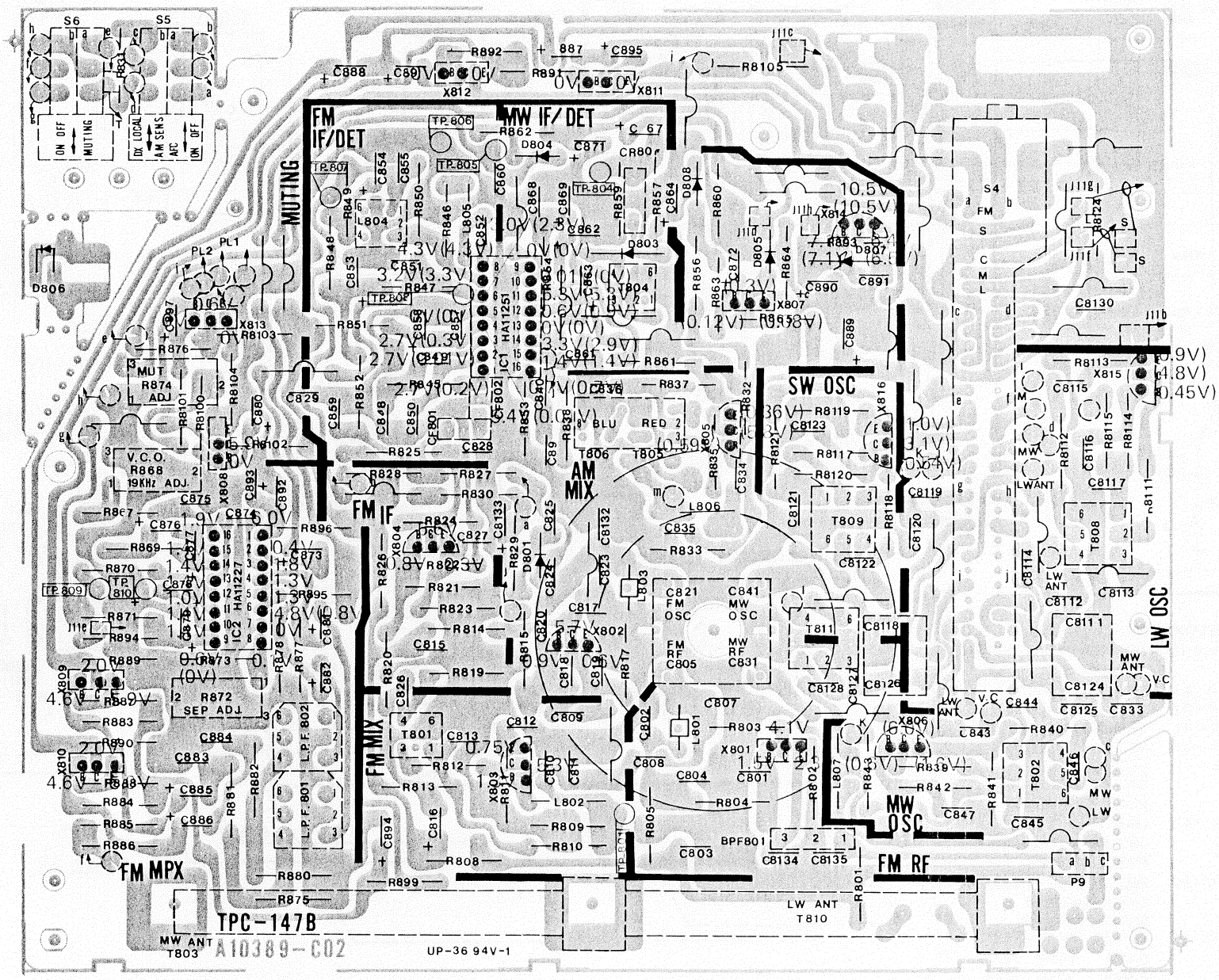
5. SELECTOR SW POSITION

S7,8,9,10,11 (GANG)	FUNCTION SW (TAPE POSITION)
S12 (a~d)	REC MODE (AUTO)
S13 (a~d)	
S14 (a~d)	WIDE-STEREO-MONO SW (STEREO)
S15 (a~d)	METER SW (LEVEL)
S16 (a~l)	REC-PLAY SW (PLAY)
S17	DIN-MIC SW (MIC)
S18	BEAT CUT SW
S19 (a~b)	LOUDNESS SW (OFF)
S21	CASSETTE LEAF SW (ON)
S22	POSE SW (OFF)
S23 (a~b)	REC MUTING SW (OFF)
S26	LIGHT SW (OFF)
S27	SLEEP SW (OFF)
S28 (a~c)	POWER SW (ON)
S29	GANG WITH J27
S30	GANG WITH JP28
S31 (a~b)	VOLTAGE SELECTOR

Reverse Patterns of Printe



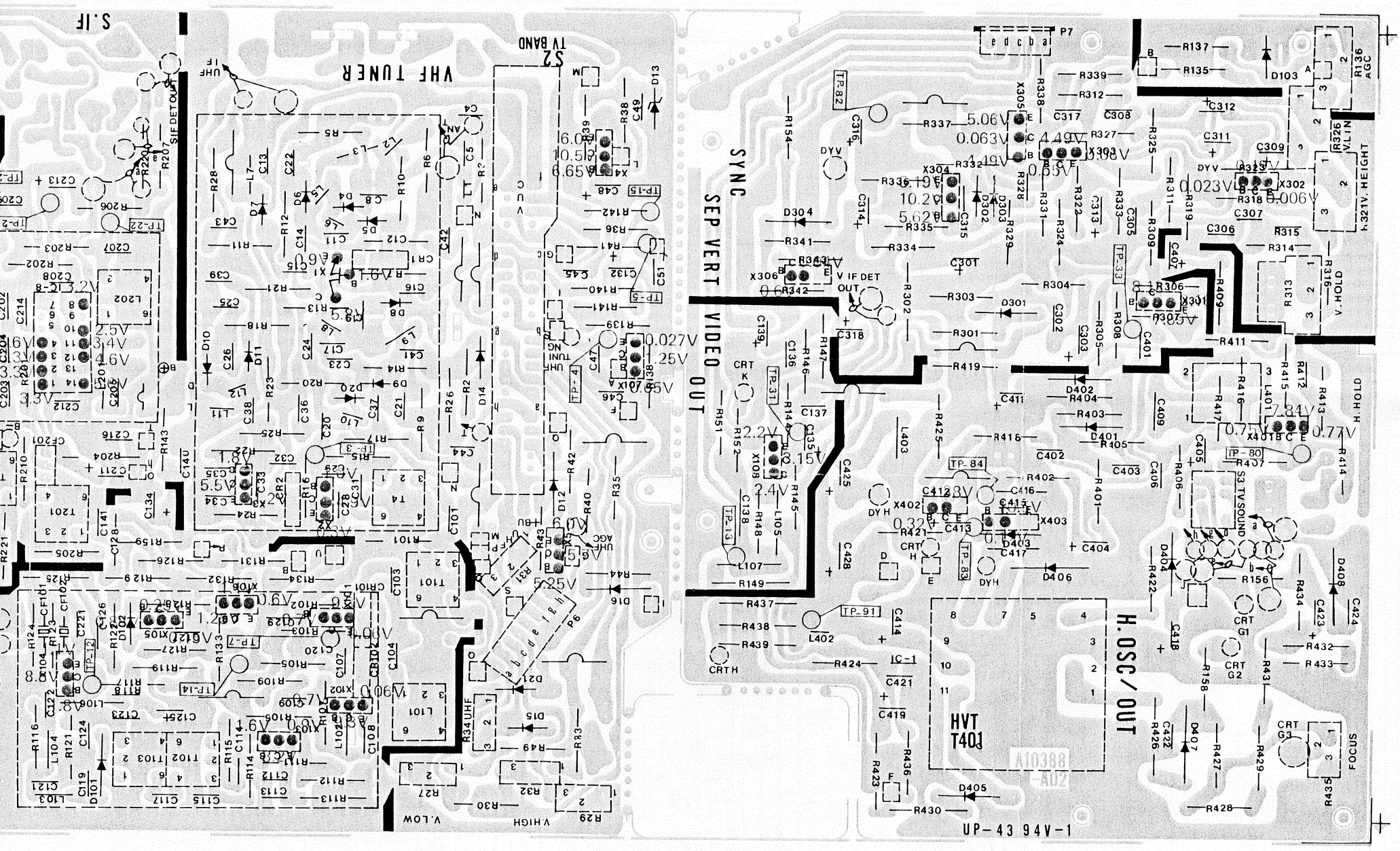
Printed Bo



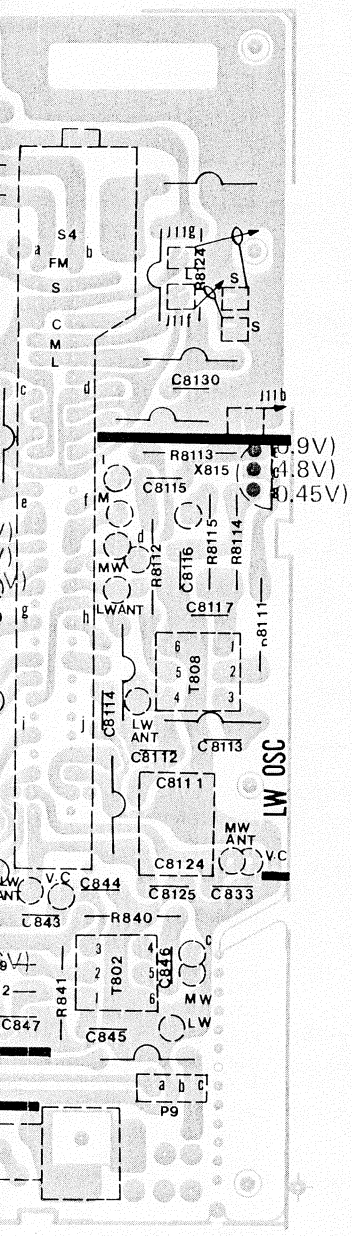
Printed Board for Radio

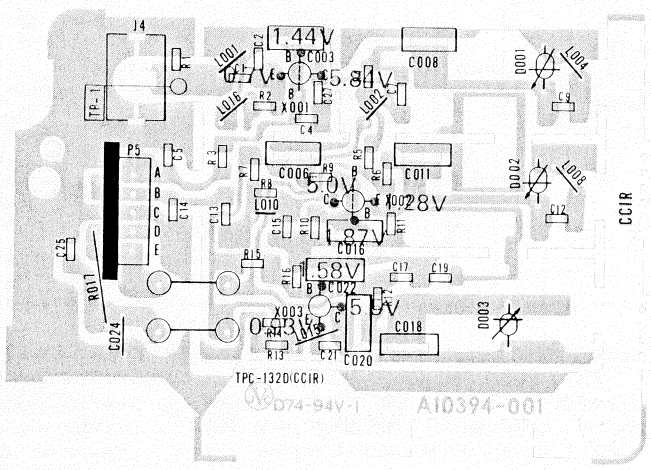
Pr

Reverse Patterns of Printed Board for Model 3090EN

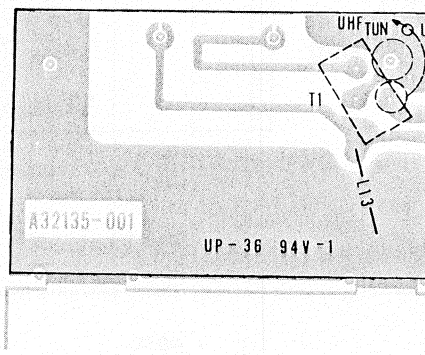


Printed Board for TV



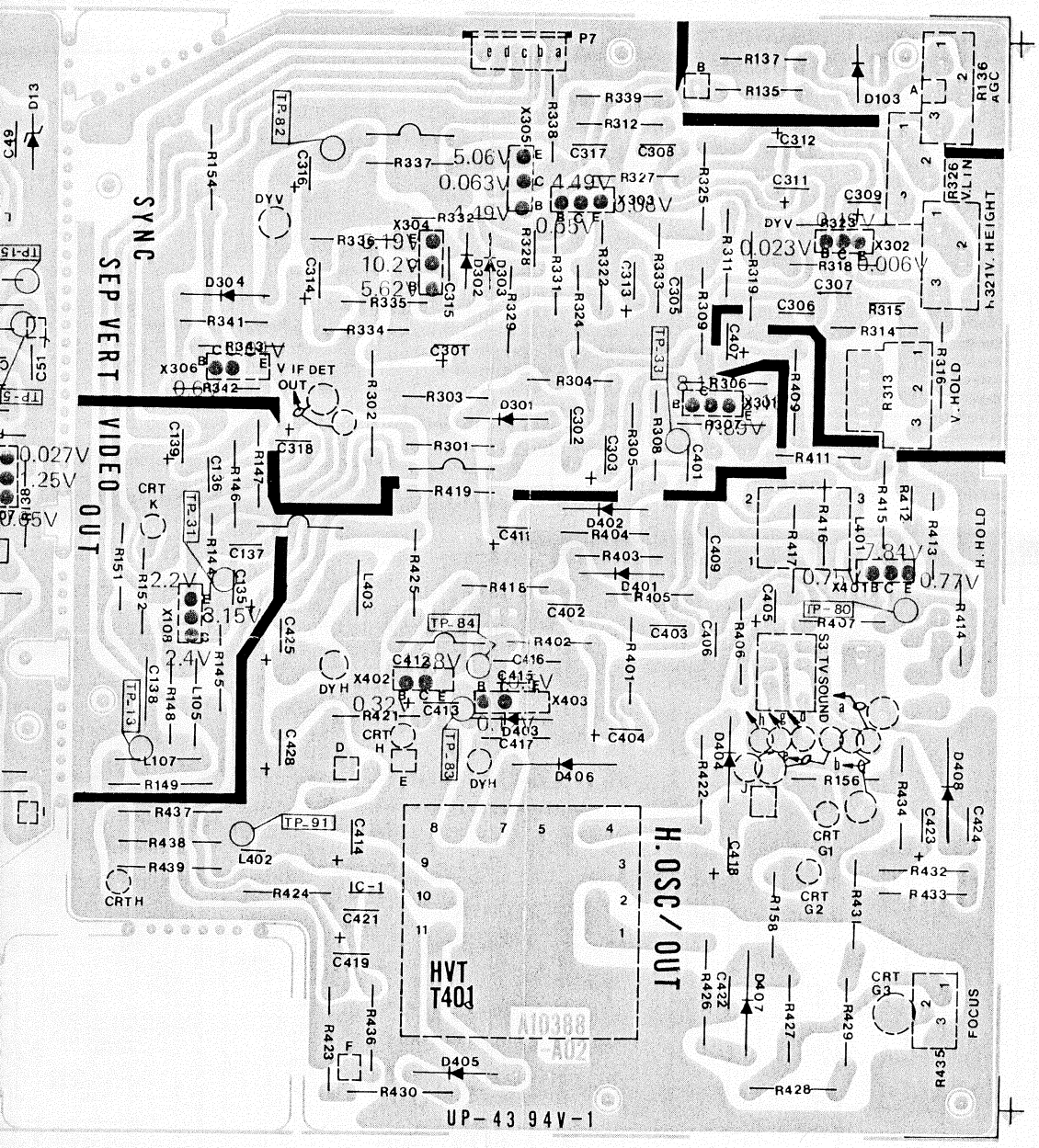


Printed Board for UHF Tuner

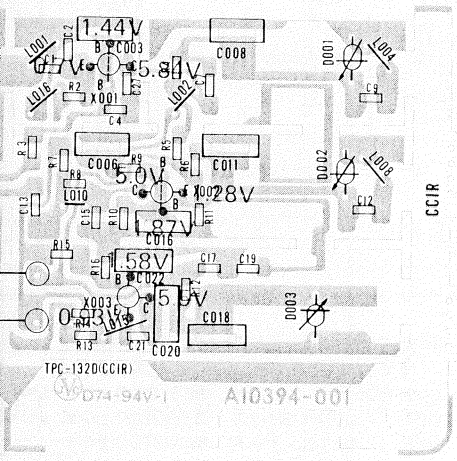


Printed Boa

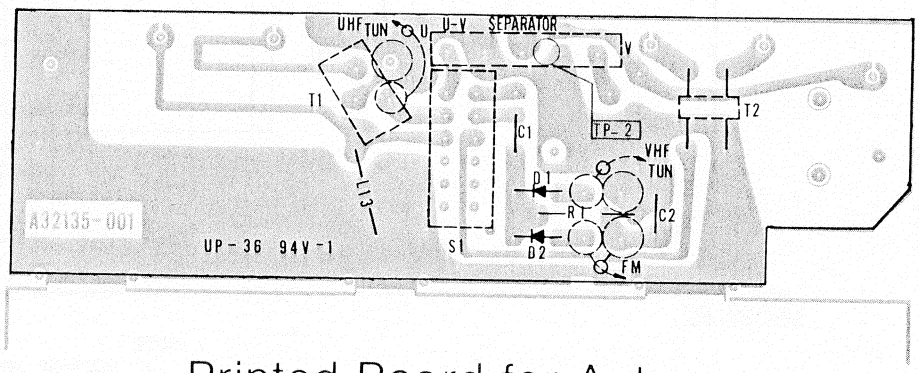
ard for Model 3090EN



r TV



Board for UHF Tuner



Printed Board for Antenna

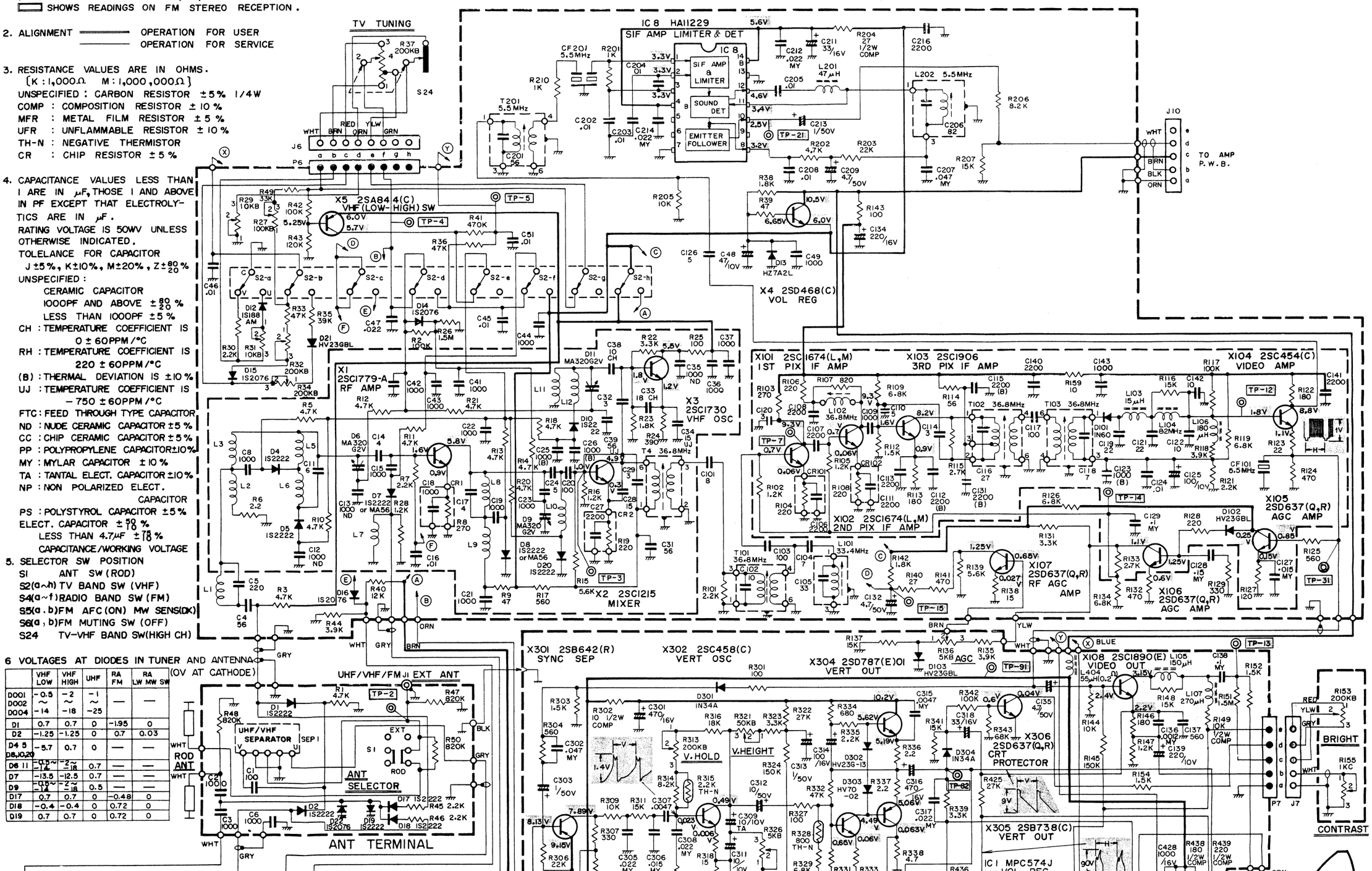
TELEVISION SCHEMATIC DIAGRAM MODEL 3090EN

(TV & Radio Sections Diagram)

NOTE

1. VOLTAGE VALUES SHOW READINGS BY CIRCUIT TESTER (20KΩ/V) ON NORMAL RECEPTION.
   - TV IS ON UHF RECEPTION, EXCEPT FOR THOSE AT X3 AND X5 ON VHF(HIGH CH) (FOR THOSE AT DIODES IN TUNER, SEE NOTE .)
   - RADIO SECTION
     - ▭ SHOWS READINGS ON FM POSITION WITH NO SIGNAL.
     - ( ) SHOWS READINGS ON LW,MW,SW POSITION WITH NO SIGNAL.
     - ▭ SHOWS READINGS ON FM STEREO RECEPTION.
2. ALIGNMENT ═══ OPERATION FOR USER
   ─── OPERATION FOR SERVICE
3. RESISTANCE VALUES ARE IN OHMS.
   [K : 1,000Ω M : 1,000,000Ω]
   UNSPECIFIED : CARBON RESISTOR ±5% 1/4W
   COMP : COMPOSITION RESISTOR ±10%
   MFR : METAL FILM RESISTOR ±5%
   UFR : UNFLAMMABLE RESISTOR ±10%
   TH-N : NEGATIVE THERMISTOR
   CR : CHIP RESISTOR ±5%
4. CAPACITANCE VALUES LESS THAN 1 ARE IN μF, THOSE 1 AND ABOVE IN PF EXCEPT THAT ELECTROLYTICS ARE IN μF.
   RATING VOLTAGE IS 50WV UNLESS OTHERWISE INDICATED.
   TOLELANCE FOR CAPACITOR
   J ±5%, K±10%, M±20%, Z$^{+80}_{-20}$%
   UNSPECIFIED :
   CERAMIC CAPACITOR
   1000PF AND ABOVE $^{+80}_{-20}$%
   LESS THAN 1000PF ±5%
   CH : TEMPERATURE COEFFICIENT IS 0 ± 60PPM/°C
   RH : TEMPERATURE COEFFICIENT IS 220 ± 60PPM/°C
   (B) : THERMAL DEVIATION IS ±10%
   UJ : TEMPERATURE COEFFICIENT IS −750 ± 60PPM/°C
   FTC : FEED THROUGH TYPE CAPACITOR
   ND : NUDE CERAMIC CAPACITOR ±5%
   CC : CHIP CERAMIC CAPACITOR ±5%
   PP : POLYPROPYLENE CAPACITOR ±10%
   MY : MYLAR CAPACITOR ±10%
   TA : TANTAL ELECT. CAPACITOR ±10%
   NP : NON POLARIZED ELECT. CAPACITOR
   PS : POLYSTYROL CAPACITOR ±5%
   ELECT. CAPACITOR ±$^{50}_{10}$%
   LESS THAN 4.7μF ±$^{75}_{10}$%
   CAPACITANCE/WORKING VOLTAGE
5. SELECTOR SW POSITION
   S1 ANT SW (ROD)
   S2(a~h) TV BAND SW (VHF)
   S4(a~f) RADIO BAND SW (FM)
   S5(a.b) FM AFC (ON) MW SENS(DX)
   S6(a.b) FM MUTING SW (OFF)
   S24 TV-VHF BAND SW (HIGH CH)
6. VOLTAGES AT DIODES IN TUNER AND ANTENNA (0V AT CATHODE)

	VHF LOW	VHF HIGH	UHF	RA FM	RA LW MW SW
D001	−0.5 ~ −14	−2 ~ −18	−1 ~ −25	—	—
D002					
D004					
D1	0.7	0.7	0	−1.95	0
D2	−1.25	−1.25	0	0.7	0.03
D4 5 D8,10,20	−5.7	0.7	0	—	—
D6 11	−0.5 ~ −14	−2 ~ −18	0.7	—	—
D7	−13.5	−12.5	0.7	—	—
D9	−0.5 ~ −14	−2 ~ −18	0.5	—	—
D17	0.7	0.7	0	−0.48	0
D18	−0.4	−0.4	0	0.72	0
D19	0.7	0.7	0	0.72	0



CAPACITOR

PS : POLYSTYROL CAPACITOR ±5%

ELECT. CAPACITOR $\pm^{50}_{10}$ %

LESS THAN 4.7μF $\pm^{75}_{10}$ %

CAPACITANCE/WORKING VOLTAGE

5. SELECTOR SW POSITION

S1 ANT SW (ROD)

S2(a~h) TV BAND SW (VHF)

S4(a~f) RADIO BAND SW (FM)

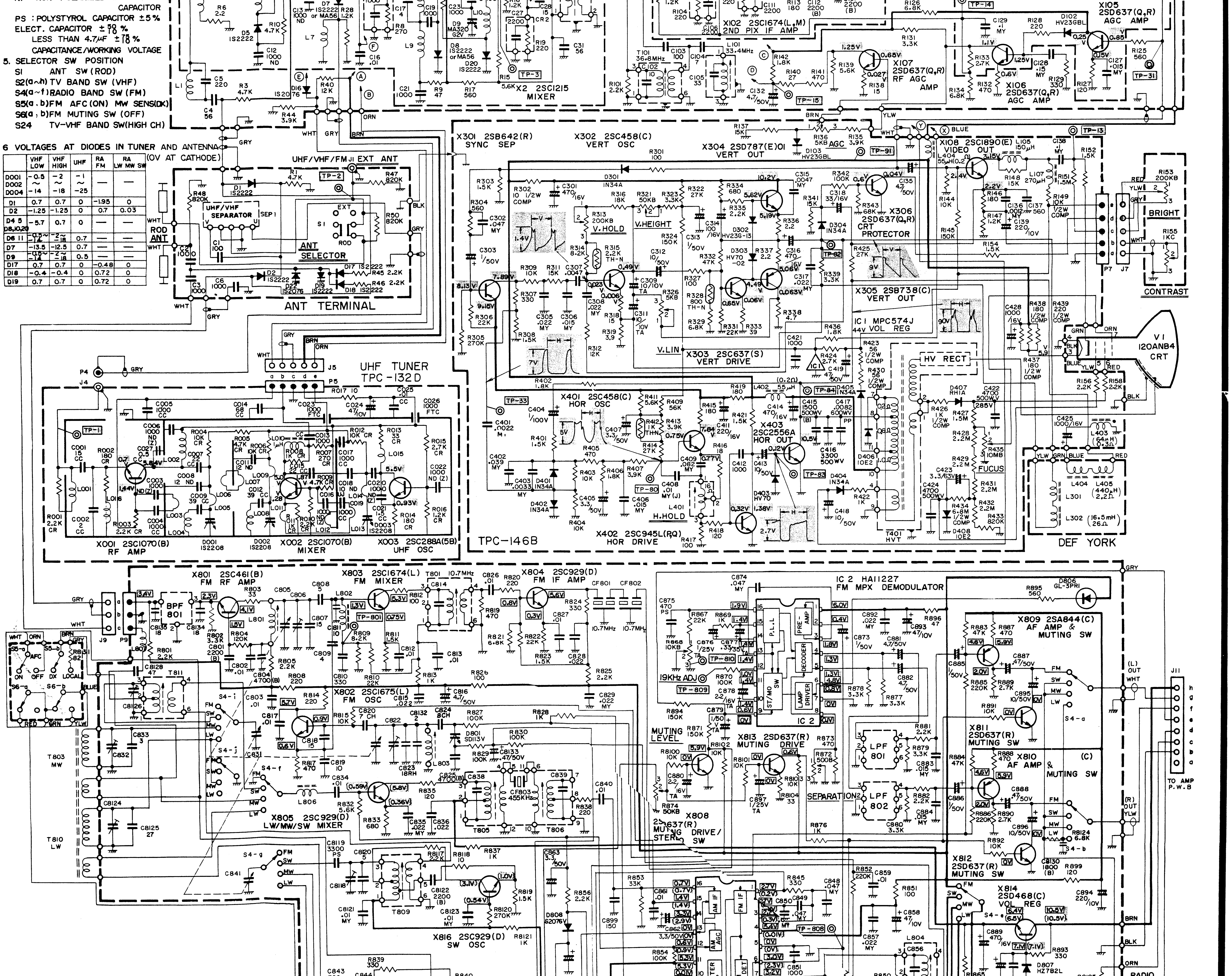
S5(a, b) FM AFC (ON) MW SENS(DX)

S6(a, b) FM MUTING SW (OFF)

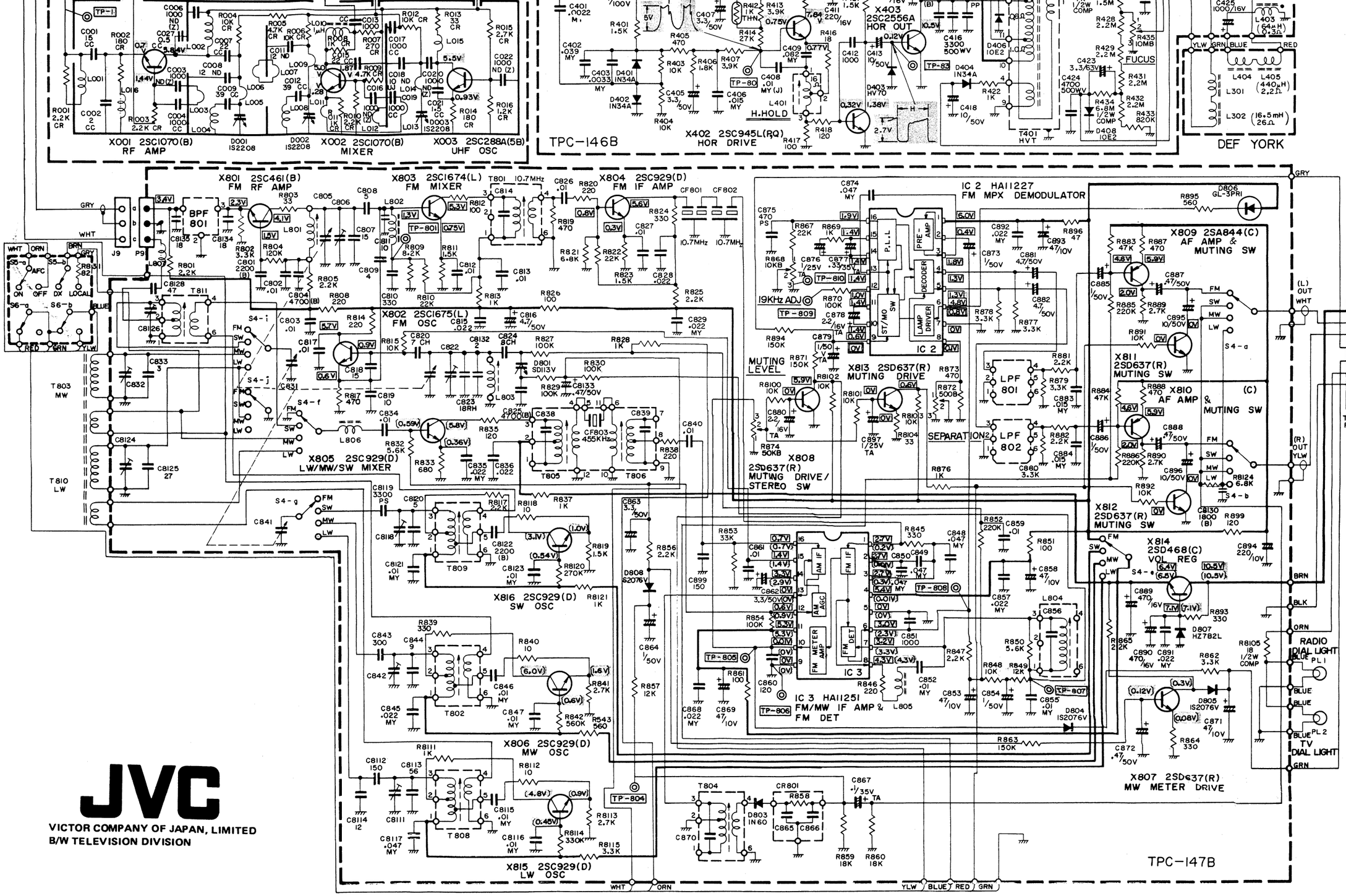
S24 TV-VHF BAND SW (HIGH CH)

6 VOLTAGES AT DIODES IN TUNER AND ANTENNA (0V AT CATHODE)

	VHF LOW	VHF HIGH	UHF	RA FM	RA LW MW SW
D001 D002 D004	-0.5 ~ -14	-2 ~ -18	-1 ~ -25	—	—
D1	0.7	0.7	0	-1.95	0
D2	-1.25	-1.25	0	0.7	0.03
D4 5 D8,10,20	-5.7	0.7	0	—	—
D6 11	-0.5 ~ -14	-2 ~ -18	0.7	—	—
D7	-13.5	-12.5	0.7	—	—
D9	-0.5 ~ -14	-2 ~ -18	0.5	—	—
D17	0.7	0.7	0	-0.48	0
D18	-0.4	-0.4	0	0.72	0
D19	0.7	0.7	0	0.72	0



UHF/VHF/FM J1 EXT ANT
ANT TERMINAL
UHF TUNER TPC-132D
X001 2SC1070(B) RF AMP
X002 2SC1070(B) MIXER
X003 2SC288A(5B) UHF OSC
X2 2SC1215 MIXER
X102 2SC1674(L,M) 2ND PIX IF AMP
X107 2SD637(Q,R) RF AGC AMP
X105 2SD637(Q,R) AGC AMP
X106 2SD637(Q,R) AGC AMP
X301 2SB642(R) SYNC SEP
X302 2SC458(C) VERT OSC
X304 2SD787(E)01 VERT OUT
X108 2SC1890(E) VIDEO OUT
X306 2SD637(Q,R) CRT PROTECTOR
X305 2SB738(C) VERT OUT
IC1 MPC574J VOL REG
X303 2SC637(S) VERT DRIVE
X401 2SC458(C) HOR OSC
X403 2SC2556A HOR OUT
X402 2SC945L(RQ) HOR DRIVE
TPC-146B
HV RECT
FUCUS
DEF YORK
V1 120ANB4 CRT
BRIGHT
CONTRAST
X801 2SC461(B) FM RF AMP
X803 2SC1674(L) FM MIXER
X804 2SC929(D) FM IF AMP
IC2 HA11227 FM MPX DEMODULATOR
X809 2SA844(C) AF AMP & MUTING SW
X802 2SC1675(L) FM OSC
X811 2SD637(R) MUTING SW
X810 AF AMP & MUTING SW
X813 2SD637(R) MUTING DRIVE
X805 2SC929(D) LW/MW/SW MIXER
X808 2SC637(R) MUTING DRIVE/STEREO SW
X812 2SD637(R) MUTING SW
X814 2SD468(C) VOL REG
X816 2SC929(D) SW OSC
T803 MW
T810 LW
TO AMP P.W.B



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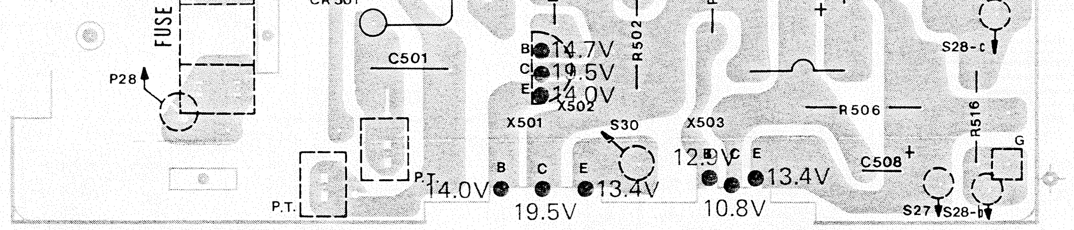
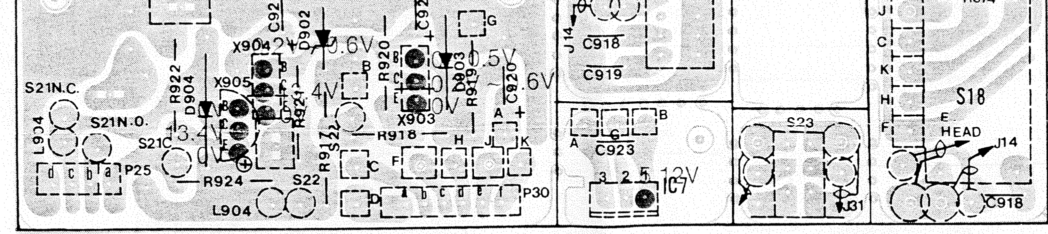
B/W TELEVISION DIVISION

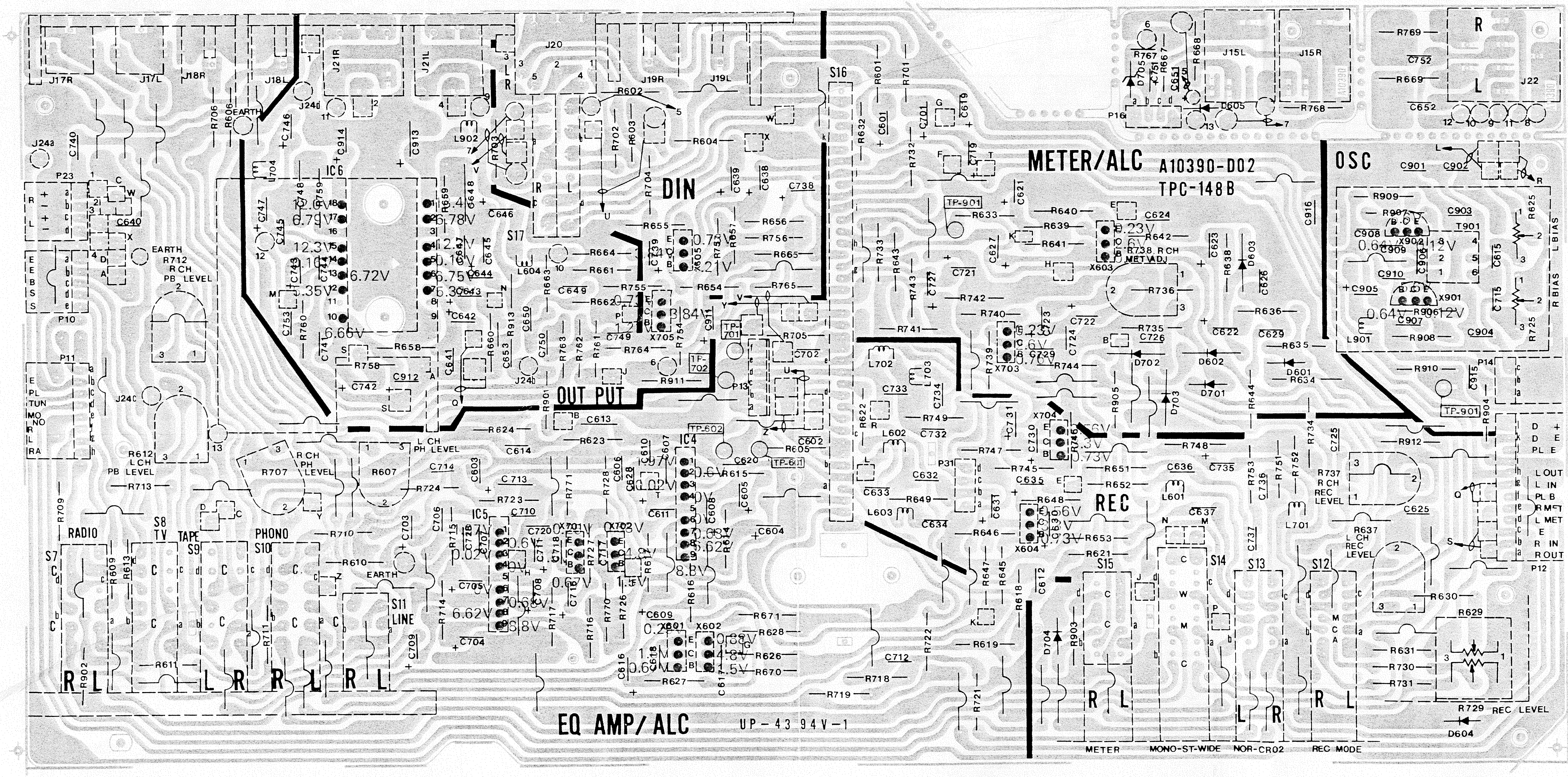
MODEL 3090EN



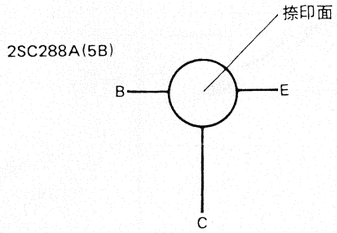
Printed Board for Power Supply

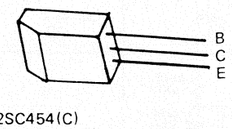


Printed Board for Controls

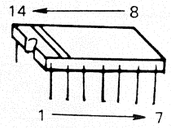


Printed Board for Amplifier



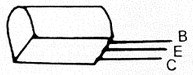


2SC454(C)
2SA844(C,D)

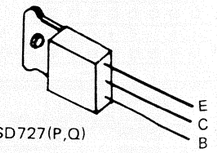


HA11229
AN5820
AN5821
AN5822

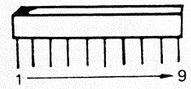
2SC1779A



2SD637
2SD661

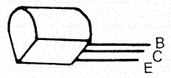


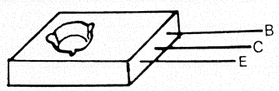
2SD727(P,Q)



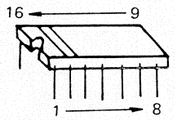
TA7137P-ST

2SA844(C,D)
2SC454(C)
2SC458(C)
2SC458(C)
2SC1215
2SC1674(L,M)
2SC1890(E)
2SC945L(P,Q)
2SC929(D)
2SC536(F)AUD
2SC1730
2SC1906
2SC461(B)
2SC1675(L)
2SD787(C,D,E)



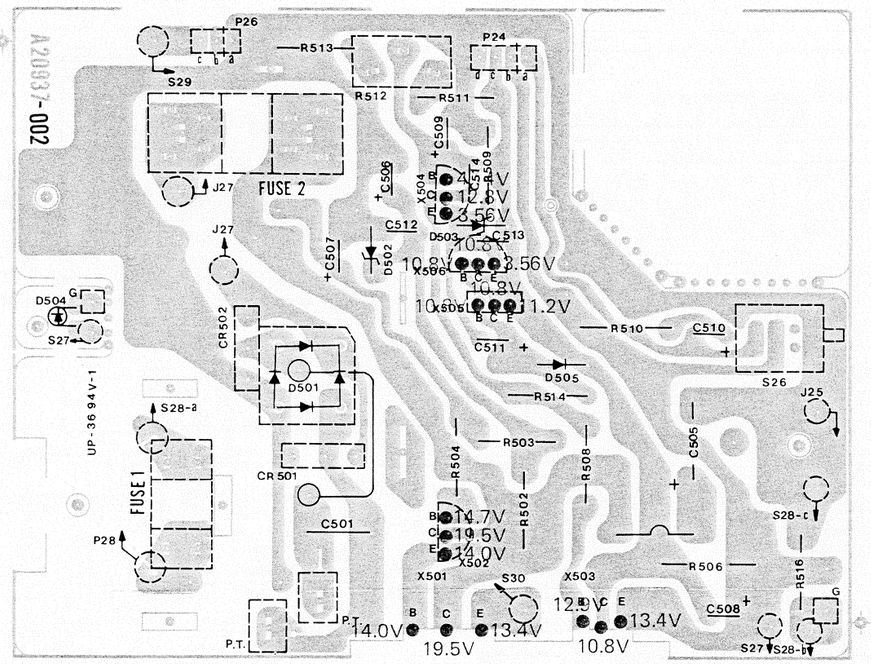


2SC2256

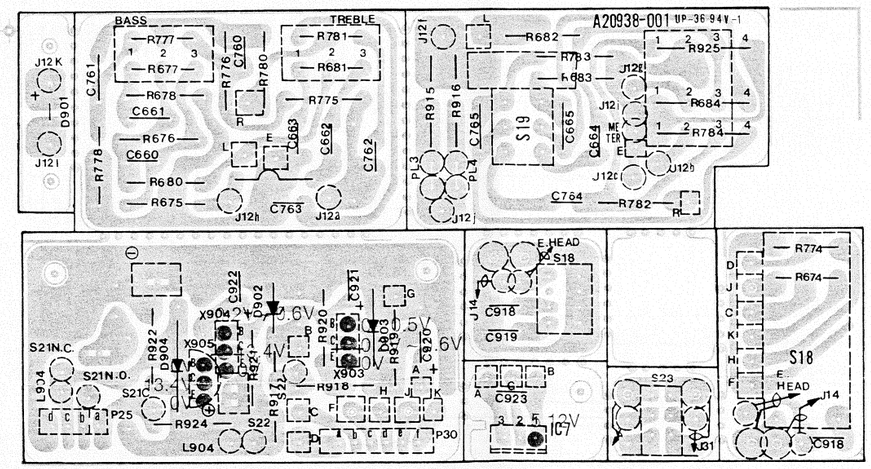


HA11251
HA11227

Reverse Patterns of Printed Board for Model 3090EN



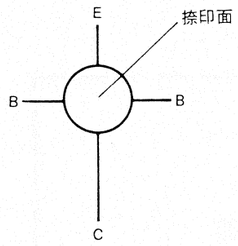
Printed Board for Power Supply

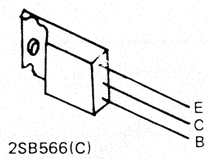


Printed Board for Controls

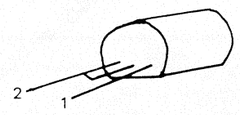
Transistor & IC Basing

2SC1070(B)



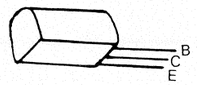


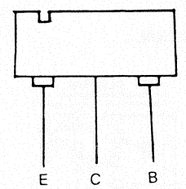
2SB566(C)



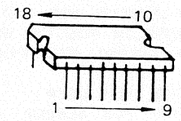
μPC574J

2SB738(C)
2SD468(C)



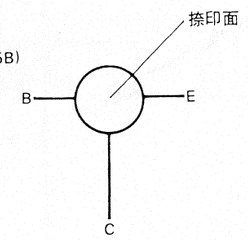


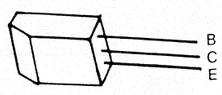
2SB642(R)
2SD637
2SD661



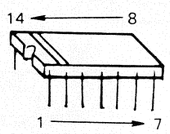
AN7145M

2SC288A(5B)



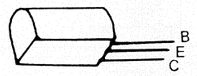


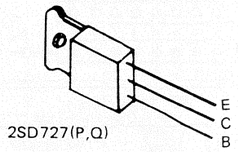
2SC454(C)
2SA844(C,D)



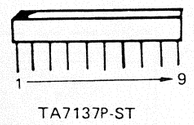
HA11229
AN5820
AN5821
AN5822

2SC1779A



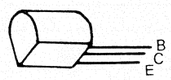


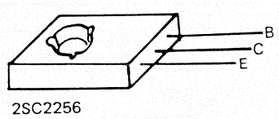
2SD727(P,Q)



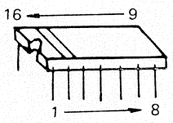
TA7137P-ST

2SA844(C,D)
2SC454(C)
2SC458(C)
2SC458(C)
2SC1215
2SC1674(L,M)
2SC1890(E)
2SC945L(P,Q)
2SC929(D)
2SC536(F)AUD
2SC1730
2SC1906
2SC461(B)
2SC1675(L)
2SD787(C,D,E)



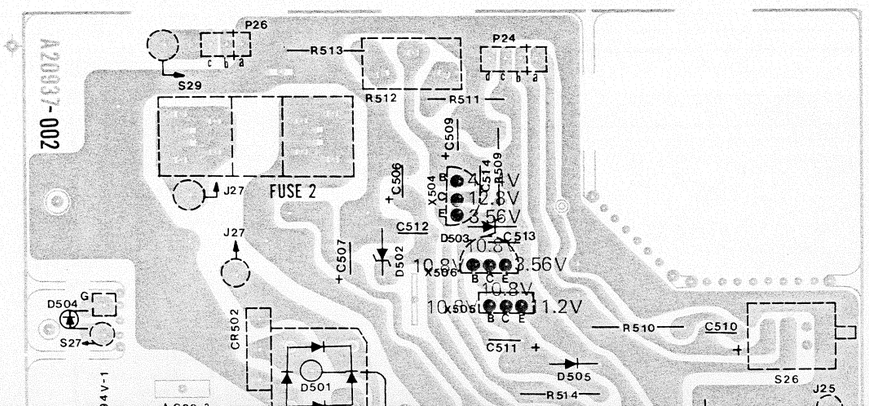


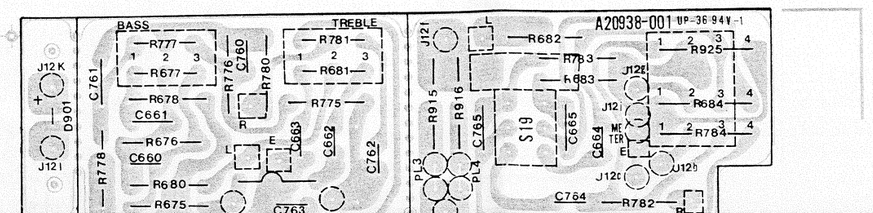
2SC2256



HA11251
HA11227

Reverse Patterns of Printed Board for Model 3090EN





Electronic Parts List For TV. Control Panel

Symbol No.	Parts No.	Description
	Transistors	
X903	2SD637(Q,R)	Pulse Amp.
X904	2SD637(Q,R)	Plunger Drive
X905	2SD468(C)	Plunger Drive
	IC	
IC7	DN6835	Tape Running Det.
	Diodes	
D901	GL-3PR1	L.E.D
D902	HZ5B3	Zener Diode
D903	1N34ATF1	Diode
D904	10E2(V)	Silicon Power Diode
	Variable Resistors	
R677,777	QVD8A3A-115	Bass 100kΩA
R681,781	QVD8A3A-115	Treble 100kΩA
R684,784	QVZ1710-001	Vol. Balance 50kΩB
	Resistors	
R922	QRX129J-2R2	Metal Film Resistor
R924	QRX129J-1R0	Metal Film Resistor

Symbol No.	Parts No.	Description
	Electrolytic Capacitors	
C920	QET61CR-336	33μF 16WV
C921	QET61AR-107	100μF 10WV
C922	QET61CR-477	470μF 16WV
	Miscellaneous	
S18	QSR4523-302	Rotary Switch
S19	QSP0210-014	Push Switch
S23	QSP2210-058	Push Switch
J12	A03091-00A	12P Connector Ass'y
J14	A03083-00J	3P Connector Ass'y
J31	A03084-00J	4P Connector Ass'y
P25	QMV5002-004	Connector
PL3	QLP3104-215	Pilot Lamp
PL4	QLP3104-214	Pilot Lamp
	A03092-001	Meter (L CH)
	A03092-002	Meter (R CH)