643

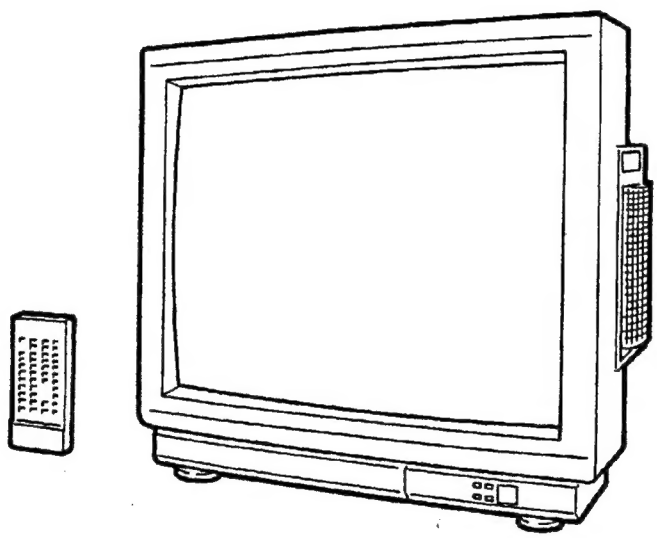
JVC

SERVICE MANUAL

73cm COLOUR TV

AV-S290M

BASIC CHASSIS
BY-Ⅰ



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Khan 643

No.50245
Jun.1989

SPECIFICATIONS

Item	Content
Dimension	68.5cm (W) × 48.3cm (D) × 58.4cm (H)
Weight	39.8kg
TV RF System	CCIR (B, G, D, K, K1, I & M)
Colour System	PAL/SECAM/NTSC
Receiving Channel & Frequency	
VHF Ch. (V_L)	47MHz ~ 99MHz
(V_H)	174MHz ~ 230MHz
UHF Ch. (U)	470MHz ~ 862MHz
Intermediate Frequency	
V. IF Carrier	38.9MHz
S. IF Carrier	33.4MHz (5.5MHz), 32.4MHz (6.5MHz)
	34.4MHz (4.5MHz), 32.9MHz (6.0MHz)
Colour Sub Carrier	PAL (4.43MHz), SECAM (4.40625MHz, 4.25MHz)
	NTSC (3.58MHz,4.43MHz)
ANT Input Impedance	75Ω Unbalanced
Power Input	
Rated Voltage	120V to 240V AC50Hz / 60Hz
Operating Voltage	90V to 260V ~ 50Hz / 60Hz
Power Consumption	160W (Max.)/135W (Avg.)
Picture Tube	73cm In-Line Type (Flat Square Tube)
Viewable Picture Size	54.1cm (W) × 40.6cm (H)
High Voltage	31kV ± 1kV (at zero beam current)
Speaker	8 × 12cm Oval Type 8Ω × 2
Audio Power Output	5W + 5W
Audio Music Power	7W + 7W
Video (1, 2) Input	1Vp-p, 75Ω (BNC Connector)
Audio (1, 2) Input	390mV rms (−6dBs), High Impedance (RCA Pinjack)
Video Line Output	1Vp-p, 75Ω (BNC Connector)
Audio Line Output	300mV rms (−8dBs), Low Impedance (400Hz, 100% modu)
	(RCA Pinjack)
S-VHS Video Input (4 Pin)	Y: 1Vp-p Positive, 75Ω (Negative sync. provided)
	C: 0.3Vp-p (Burst signal), 75Ω
S-VHS Audio Input	390mV rms (−6dBs), High Impedance (RCA Pinjack)
Tube	1
IC	18 (In TV), 1 (In REMOCON)
Transistor	112 (In TV), 2 (In REMOCON)

Design & specifications subject to change without notice.

SAFETY PRECAUTIONS

1. The design of this product contains special hardware, many circuits and components specially for safety purposes.
   For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Service should be performed by qualified personnel only.
2. Alterations of the design or circuitry of the products should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.
3. Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the parts list of Service manual. **Electrical components having such features are identified by shading on the schematics and by (⚠)on the parts list in Service manual.** The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the parts list of Service manual many create shock, fire, or other hazards.
4. **Don't short between the LIVE side ground and NEUTRAL side grounding or EARTH side ground when repairing.**
   Some model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE (⊥) side GND, the NEUTRAL(⏚) side GND and EARTH (⏚) side GND. Don't short between the LIVE side GND and NEUTRAL side GND or EARTH side GND and never measure with a measuring apparatus (oscilloscope etc.) the LIVE side GND and NEUTRAL side GND or EARTH side GND at the same time.
   If above note will not be kept, a fuse or any parts will be broken.
5. If any repair has been made to the chassis, it is recommended that the B1 setting should be checked or adjusted (See ADJUSTMENT OF B_1 POWER SUPPLY).
6. The high voltage applied to the picture tube must conform with that specified in Service manual. Excessive high voltage can cause an increase in X-Ray emission, arcing and possible component damage, therefore operation under excessive high voltage conditions should be kept to a minimum, or should be prevented. If severe arcing occurs, remove the AC power immediately and determine the cause by visual inspection (incorrect installation, cracked or melted high voltage harness, poor soldering, etc.). To maintain the proper minimum level of soft X-Ray emission, components in the high voltage circuitry including the picture tube must be the exact replacements or alternatives approvided by the manufacturer of the complete product.
7. Do not check high voltage by drawing an arc. Use a high voltage meter or a high voltage probe with a VTVM. Discharge the picture tube before attempting meter connection, by connecting a clip lead to the ground frame and connecting the other end of the lead through a 10kΩ 2W resistor to the anode button.
8. When service is required, observe the original lead dress. Extra precaution should be given to assure correct lead dress in the high voltage circuit area. Where a short circuit has occurred, those components that indicate evidence of overheating should be replaced. Always use the manufacturer's replacement components.
9. **Isolation Check**
   (Safety for Electrical Shock Hazard)
   After re-assembling the product, always perform an isolation check on the exposed metal parts of the cabinet (antenna terminals, video/audio input and output terminals, Control knobs, metal cabinet, screwheads, earphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.

(1) **Dielectric Strength Test**
The isolation between the AC primary circuit and all metal parts exposed to the user, particularly any exposed metal part having a return path to the chassis should withstand a voltage of 3000V AC (r.m.s.) for a period of one second.
(. . . . Withstand a voltage of 1100V AC (r.m.s.) to an appliance rated up to 120V, and 3000V AC (r.m.s.) to an appliance rated 200V or more, for a period of one second.)
This method of test requires a test equipment not generally found in the service trade.

(2) **Leakage Current Check**
Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.) Using a "Leakage Current Tester", measure the leakage current from each exposed metal part of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground (water pipe, etc.). Any leakage current must not exceed 0.5mA AC (r.m.s.).

• Alternate Check Method
Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Use an AC voltmeter having 1,000 ohms per volt or more sensitivity in the following manner. Connect a 1,500Ω 10W resistor paralleled by a 0.15μF AC-type capacitor between an exposed metal part and a known good earth ground (water pipe, etc.). Measure the AC voltage across the resistor with the AC voltmeter. Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement, Any voltage measured must not exceed 0.35V AC (r.m.s.). This corresponds to 0.5mA AC (r.m.s.).

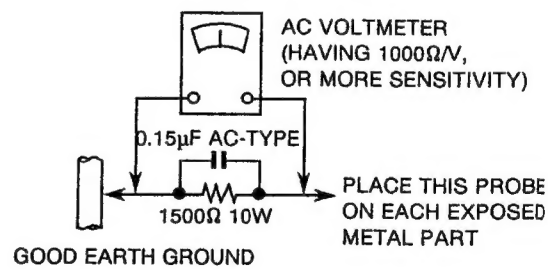


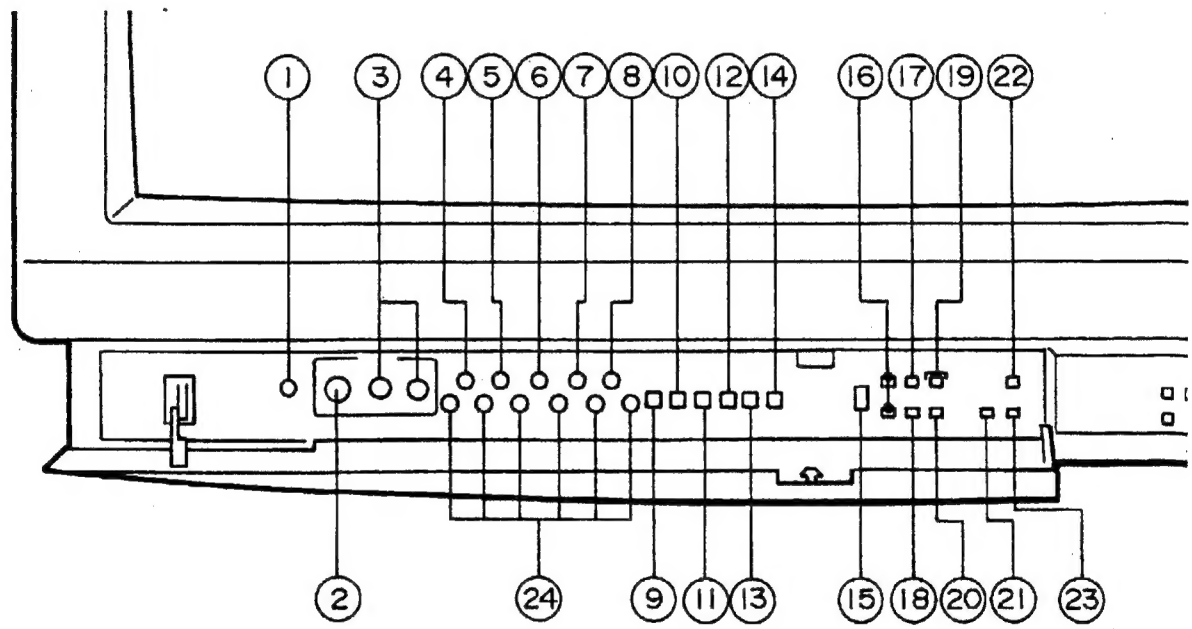
Fig.A

FEATURES

- Sub power supply circuit has been eliminated by using the main switch circuit of power-source circuit to supply power to 12 V power source for microcomputer and −30 V power source for memory.
- V. HOLD and H. HOLD are deleted as a result of employment of IC with built-in deflection circuit that adopts the count-down method for V./H. OSC.
- Newly incorporated is an off-timer with functions of max. 2-hour time setting in 30-min. units and of time remaining indication.
- An on-timer also offers max. 24-hour time setting in 1-hour units plus time remaining indication function.
- Multifunctional remote control system enables control Via the hand held remote commander, of many of the receiver's functions.
- 4-Pin S-VIDEO (separated video) input terminal for direct connection to a Super VHS video recorder, taking full advantage of the new, superior-quality Super VHS video format.

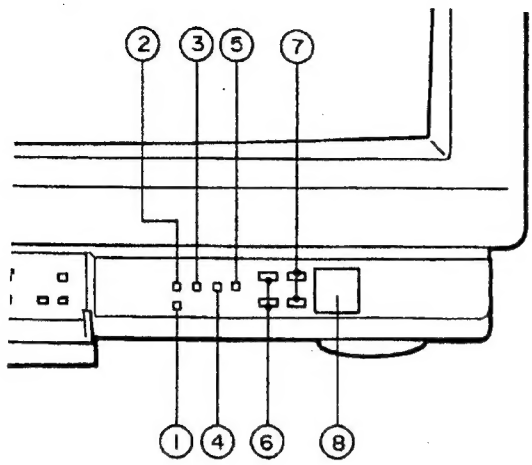
FUNCTIONS

FRONT VIEW-①



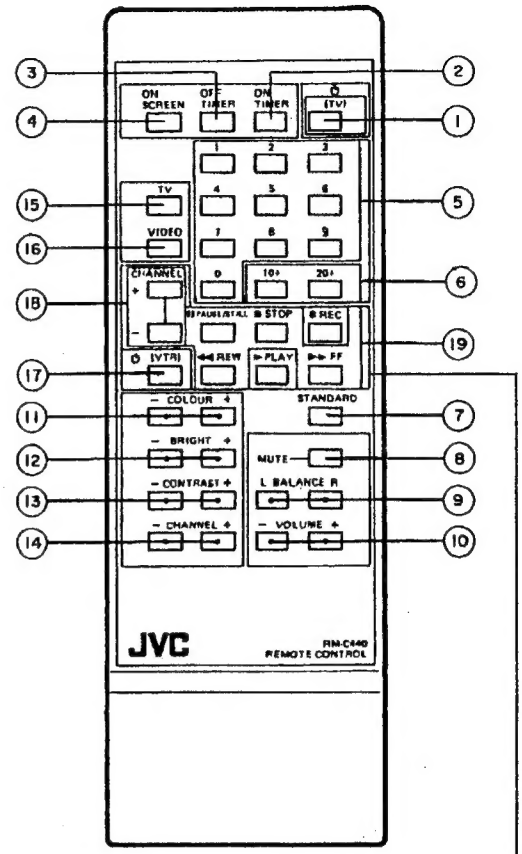
① HEADPHONE JACK
② S-VHS VIDEO (4 PIN) DIN
③ S-VHS AUDIO RCA PIN JACK
④ TINT CONTROL
⑤ COLOUR CONTROL
⑥ BRIGHT CONTROL
⑦ SHARPNESS CONTROL
⑧ TONE CONTROL
⑨ AUTO (P/S) BUTTON
⑩ SECAM BUTTON
⑪ NTSC (3.58) BUTTON
⑫ NTSC (4.43) BUTTON
⑬ SKEW BUTTON
⑭ DISC BUTTON
⑮ SURROUND BUTTON
⑯ TUNING (+/−) BUTTON
⑰ SPEED BUTTON
⑱ BAND BUTTON
⑲ PRESET BUTTON
⑳ MEMORY BUTTON
㉑ VIDEO 1 (S-VHS)/VIDEO 2 BUTTON
㉒ POWER BUTTON
㉓ TV/VIDEO BUTTON
㉔ SERVICE ADJ. VRs

FRONT VIEW-②



① VIDEO 2 INDICATOR
② VIDEO 1 INDICATOR
③ ON TIMER INDICATOR
④ OFF TIMER INDICATOR
⑤ POWER INDICATOR
⑥ CHANNEL (+/−) BUTTON
⑦ VOLUME (+/−) BUTTON
⑧ POWER BUTTON

REMOTE CONTROL



PAUSE/ STILL	STOP	REC
REW	PLAY	FF

① POWER (TV) BUTTON
② ON-TIMER BUTTON
③ OFF-TIMER BUTTON
④ ON-SCREEN BUTTON
⑤ DIRECT CH. BUTTON
⑥ CH. (10+ & 20+) BUTTON
⑦ STANDARD BUTTON
⑧ MUTE BUTTON
⑨ BALANCE BUTTON
⑩ VOLUME BUTTON
⑪ COLOUR BUTTON
⑫ BRIGHT BUTTON
⑬ CONTRAST BUTTON
⑭ CHANNEL (TV) BUTTON
⑮ TV BUTTON
⑯ VIDEO BUTTON
⑰ POWER (VTR) BUTTON
⑱ CHANNEL (VTR) BUTTON
⑲ VTR CONTROL BUTTON

CHANNEL MEMORY PRESETTING

1. Press PRESET button to "ON" to engage the Channel Preset mode.
2. Set the colour system button to P/S AUTO, SECAM or NTSC as required.
3. Select the Channel Position number from "0" to "29" using CH (−/+) buttons on the front panel or Numerical Keypad on the Remote Control.
4. Tune to the broadcast station to be stored on the selected Channel Position.
   (A) Using TUNING (−/+) buttons.
   - Press the TUNING (−/+) buttons to manually tune to a broadcast station. Pressing the "+" button advances to higher frequency stations, and "−" to lower-frequency stations.
5. Press MEMORY button to store the station in memory (Channel Position). The Channel Position number blinks once to show that the station has been memorized in the Channel Position.
6. Repeat steps 2. through 5. to store broadcast stations for up to 30 Channel Positions.
7. Press the PRESET button to "OFF" to disengage the Channel Preset mode.

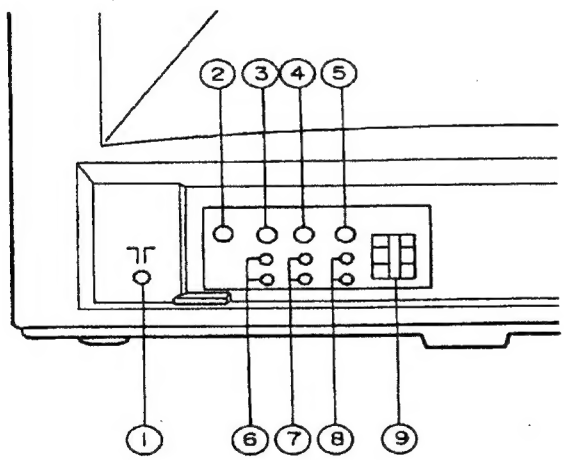
OPERABLE VTRs

With the supplied Remote control unit, some of the functions of the following VTRs can be remotely controlled.
Before start operation, be sure to turn the power of the VTR on.
For detailed operation, refer to the VTR instruction Book.
Note: Place the VTR so that it is within the operation range of the Remote control unit.
: Suffix of each model designate specific areas and specifications.

- OPERABLE VTRs (JVC)

HR-D455
HR-D565
HR-D725
HR-D158MS
HR-D170
HR-D370
HR-D755
HR-D250
HR-D566
HR-D157MS
HR-D257MS
HR-D180
HR-D470
HR-S5000

BACK VIEW

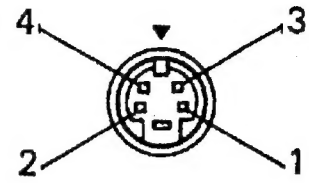


① ANTENNA TERMINAL
② S-VHS (4 Pin) DIN CONNECTOR
③ VIDEO 1 INPUT TERMINAL (S-VHS)
④ VIDEO 2 INPUT TERMINAL
⑤ LINE OUT TERMINAL
⑥ AUDIO INPUT TERMINAL 1 (S-VHS)
⑦ AUDIO INPUT TERMINAL 2
⑧ AUDIO LINE OUT TERMINAL
⑨ EXT SPEAKER TERMINAL

VIDEO INPUT TERMINAL

(4-pin Y/C separate video input connector)

PIN ASSIGNMENT



Pin No.	Signal
1	GND
2	GND
3	Y (luminance)/1 Vp-p 75 Ω
4	C (chrominance)/0.3 Vp-p (burst level), 75 Ω

- Connecting to an S-VHS VTR (for playback)
This TV set is equipped to accept the separated Y (luminance) and C (chrominance) video signals, conforming to an S-VHS (Super VHS) Euro System, ideal for connection of an S-VHS VTR.

1. Connect the VTR's S-VIDEO OUT connector (4-pin) to TV set's S-VIDEO connector (4-pin).
2. Connect the VTR's AUDIO OUT connectors to the TV set's S-AUDIO connectors while making sure that the left and right channels are correctly connected.
3. Press the VIDEO button on the Remote Control or the TV/VIDEO button on the front panel to engage the VIDEO mode.
4. Set the colour system button to either P/S AUTO or SECAM S-VHS VTR as required.
5. Engage the S-VHS VTR's playback mode.

SPECIFIC SERVICE INSTRUCTIONS

DISASSEMBLY PROCEDURE

REMOVING THE REAR COVER

1. Unplug the power supply cord and remove the eighteen screws marked Ⓐ shown in Fig. A.

* When reinstalling the rear cover, carefully push it inward after inserting the main PC board into the rear cover groove.

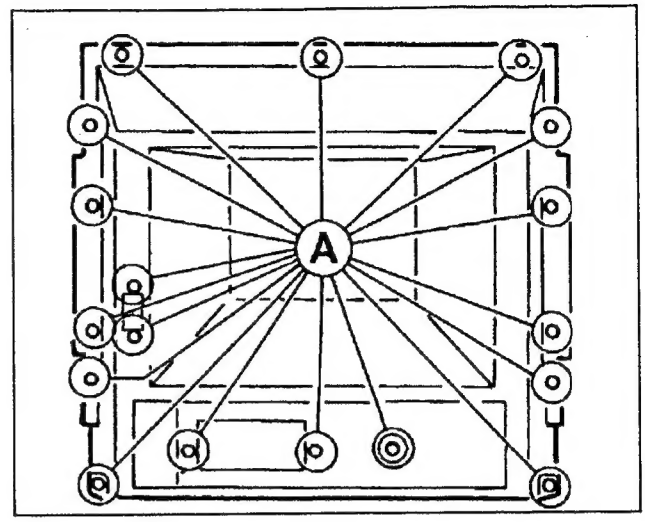


Fig. A

REMOVING THE LINE FILTER & RECT PC BOARD

* After removing the rear cover,

1. Remove the two screws marked Ⓐ shown in Fig. B.
2. Then, while pressing the claw marked Ⓑ shown in Fig. B, remove the LINE FILTER & RECT PC BOARD by sliding it in the arrow direction (upward) marked Ⓒ.

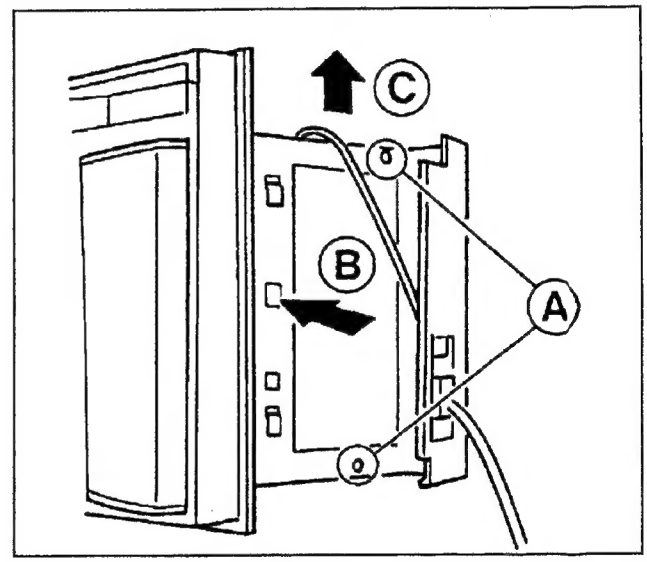


Fig. B

REMOVING THE SPEAKER GRILLE

* After removing the rear cover,

1. As shown in Fig. C, after removing the claw marked Ⓐ by pressing it in the arrow mark (Ⓐ / ⬇), remove the SPEAKER GRILLE by withdrawing it backward.
   (In the same manner as per the right SPEAKER GRILLE, the left one can also be removed.)

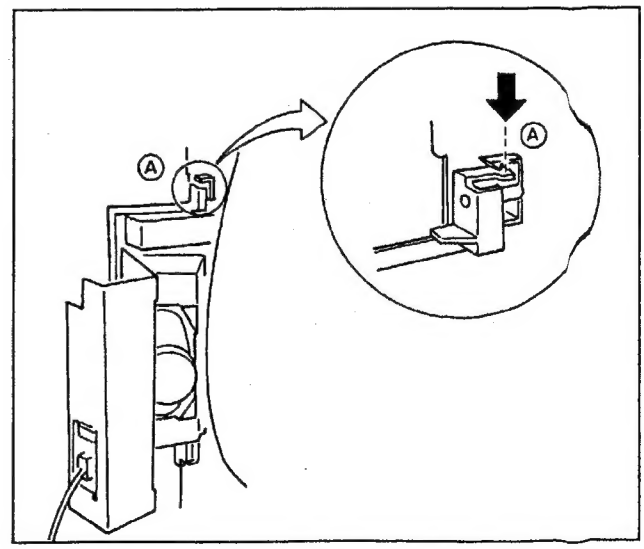


Fig. C

REMOVING THE CHASSIS

* After removing the rear cover,

1. As shown in Fig. D, hold the CHASSI from both sides (➡ ⬅) with both hands and, while raising it upward, remove the CHASSI by withdrawing it backward.
   (If necessary, take off the wire clamp and connectors, etc.)

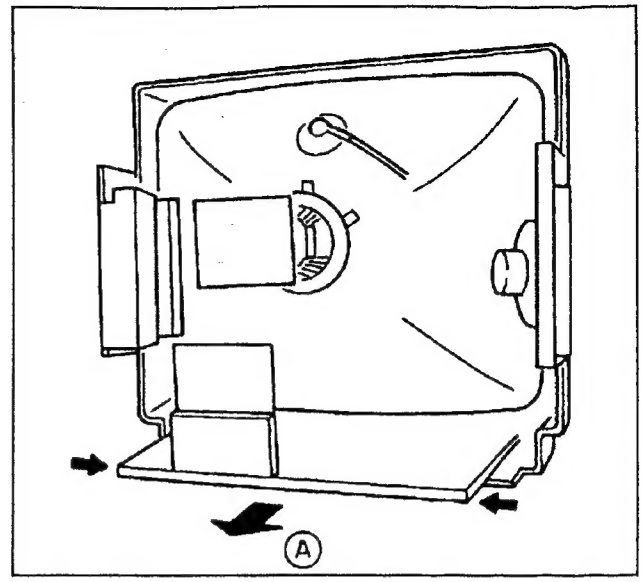


Fig. D

REMOVING THE AV TERMINAL

* After removing the rear cover,

1. As shown in Fig. E, while expanding the claw of the AV TERMINAL's legs in the arrow directions (Ⓐ /⬅ ➡), remove the AV TERMINAL by raising it upward (Ⓑ / ⬆).

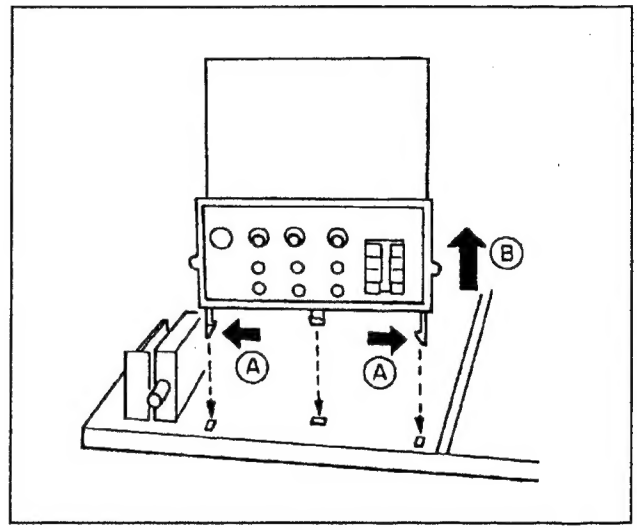


Fig. E

AN EXAMPLE OF PLACEMENT FOR SERVICE

1. As shown in Fig. F, place the unit for service.
2. When the chassis, sub P.C board, etc, have been removed, the wire clamp, connector, earth wire, etc, which were also detached together must be reattached to their original places in order to make preparations for service.
3. While taking care that there is no short circuit with the conductor section, etc., place the unit.
   Insulate the unit with a cardbord, or the like, if necessary.
4. After making sure that there is no short circuit and other obstructive matters with the unit, turn on electricity for service.

* When conducting a check with power supplied, be sure to confirm that the CRT earth wire is connected to the CRT socket board and the CHASSIS.

WIRE CLAMPING AND CABLE TIES

1. Be sure to clamp the wire.
2. Never remove the cable tie used for tying the wires together. Should it be inadvertently removed, be sure to tie the wires with a new cable tie.

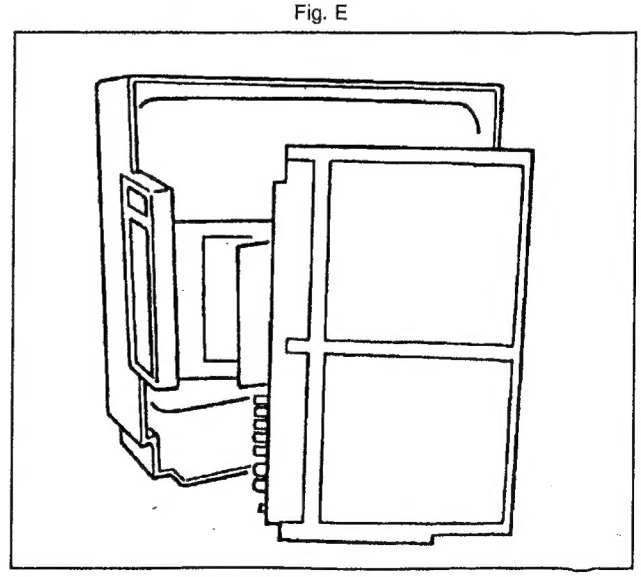


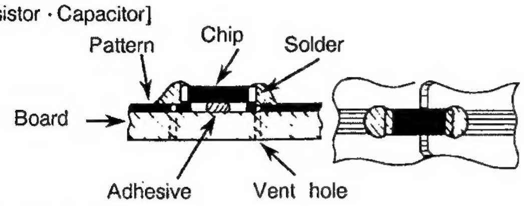
Fig. F

REPLACEMENT OF CHIP COMPONENTS

- **CHIPS ARE NOT USED ON CERTAIN MODELS. REFER TO THE DESCRIPTIONS ON THIS PAGE ONLY WHEN WORKING ON MODELS ON WHICH CHIPS ARE EMPLOYED.**
  Replacement of the chip on printed circuit board can be performed easily as follows.

1 **When mounted**

[Resistor · Capacitor]

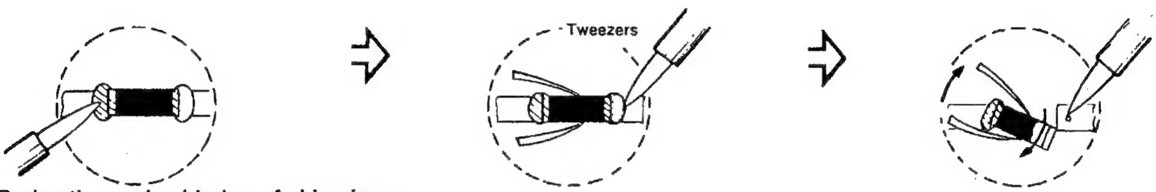


2 **Removal of the chip**

(1) Remove either of the soldered contacts.

(2) Hold the chip with tweezers and remove the other contact.

(3) Work the chip free from the adhesive with tweezers.

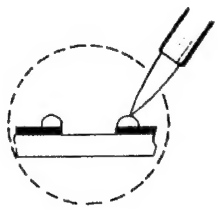


3 **Preheating and soldering of chip pieces**

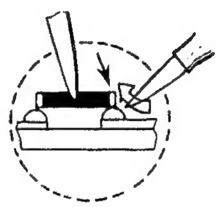
Be sure to preheat chip pieces (except the transistor) especially the capacitor before soldering with hot air, about 150°C (hair dryer or such can be used) for about 2 minutes. Then, immediately solder with an iron of about 30W.

4 **Replacing the chip pieces**

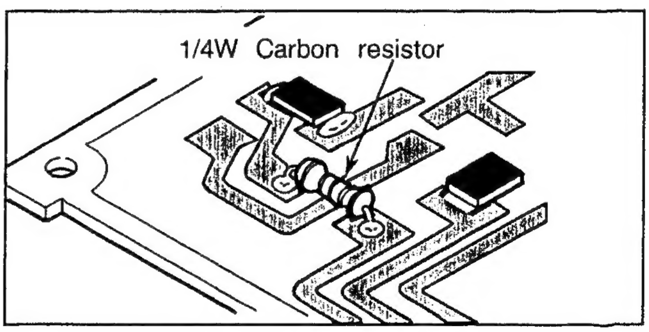
(1) Apply the solder to the board first.



(2) Hold the chip with tweezers and solder it in place, hold the iron at a 45° angle when soldering.

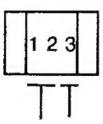


- Discrete parts can be substitutionally mounted as shown in the figure on the right.
  Mounting is also possible by passing the wires from the board front side (parts side) through the chip soldering hole (vent hole of registration part).
  Substitute parts are as follows.
  - Chip Metal Glaze Resistor
    →Carbon Resistor 1/4W ±5%
  - Chip Ceramic Capacitor
    →Ceramic Capacitor 50V ±5%



- Decoding of chip parts constant terms

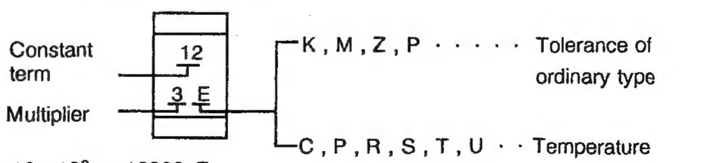
<Chip Metal Glaze Resistor>



Constant term Multiplier

12×10³ = 12000Ω
= 12kΩ

<Chip Ceramic Capacitor>



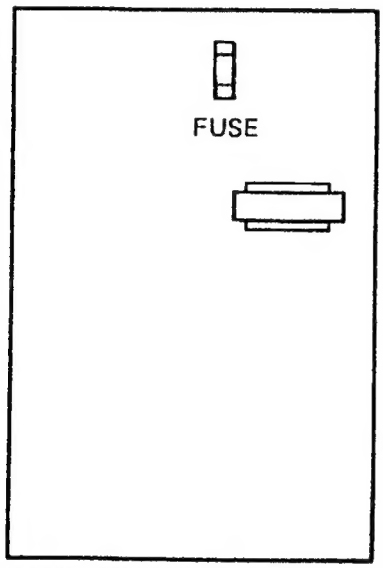
12×10³ = 12000pF
= 0.012μF

SERVICE ADJUSTMENT

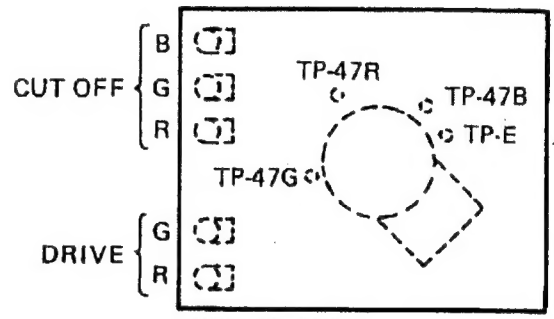
TOOLS AND FIXTURES FOR ADJUSTMENT

- DC VOLTMETER
- OSCILLOSCOPE
- PATTERN GENERATOR (PAL / SECAM / NTSC)

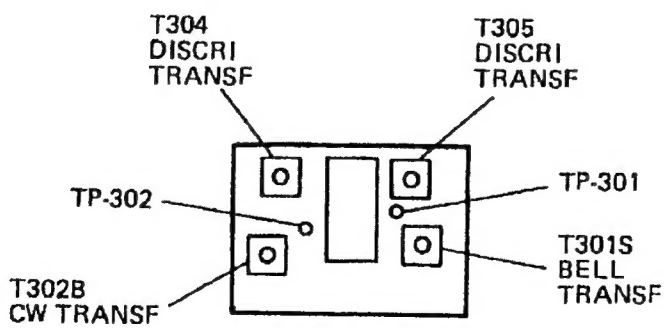
ADJUSTMENT LOCATION-(1)



LINE FILTOR & RECT
PC BOARD ASS'Y

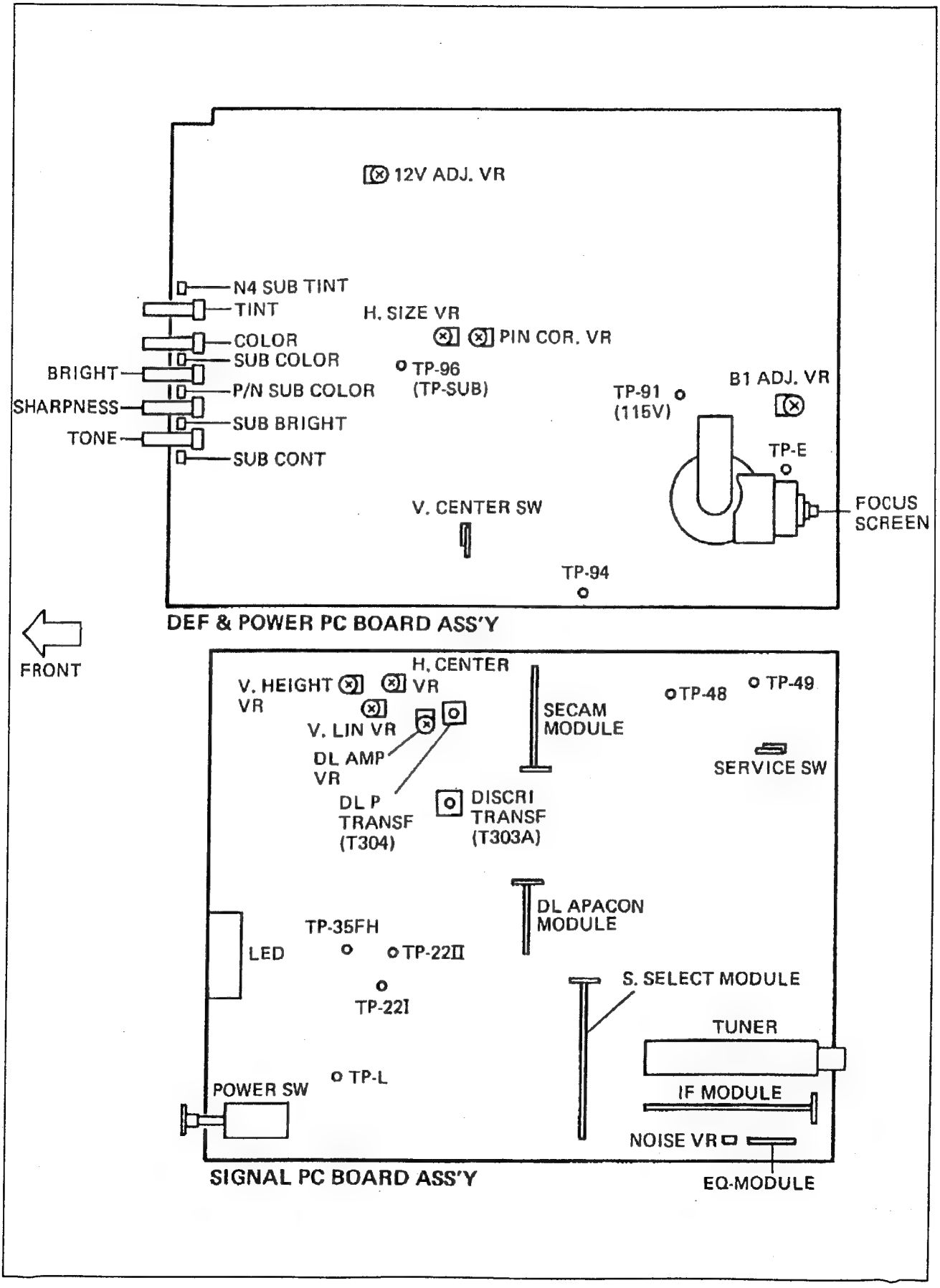


CRT SOCKET
PC BOARD ASS'Y



SECAM MODULE
PC BOARD ASS'Y

ADJUSTMENT LOCATION-(2)



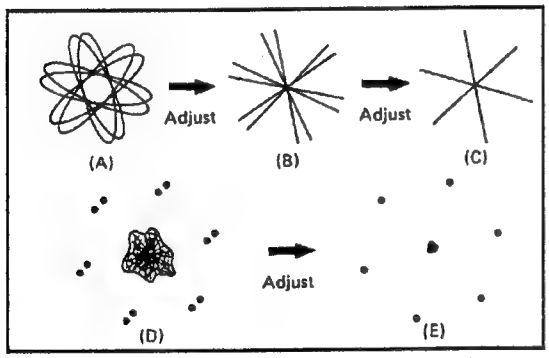
ADJUSTMENT

DEF & POWER CIRCUIT

Item	Measuring instrument	Test point	Adjustment part	Description
B1 POWER SUPPLY	DC Voltmeter	TP-91	B1 ADJ. VR	Connect a tester to TP-91 and TP-E (⏚) to check that the voltage is DC 115V. * The tester must have an internal resistance of 20kΩ / V or above.
SUB POWER VOLTAGE	DC Voltmeter	TP-96	12 V ADJ. VR	Adjust the 12 V ADJ VR to obtain 12 V DC between TP-96 (+ side of C618) and TP-E (⏚).
SUB BRIGHT & SUB CONTRAST			SUB BRIGHT SUB CONTRAST	Obtain optimum pictures by adjusting SUB BRIGHT VR & SUB CONTRAST VR. * Avoid excessive brightness.
SUB COLOUR & PAL/NTSC SUB COLOUR			SUB COLOUR VR PAL/NTSC SUB COLOUR VR	1. Receive a SECAM (System SW: SECAM) colour bar signal. 2. Adjust the SUB COLOUR VR to obtain natural colour density. 3. Adjust the colour control knob to obtain natural colour density. 4. Receive a PAL (System SW: AUTO) colour bar signal. 5. Adjust the PAL/NTSC SUB COLOUR VR unitl natural colour density is obtained.
N_4 SUB TINT (Only NTSC)			N_4 SUB TINT VR	1. Receive an NTSC (3.58 MHz) colour bar signal. (System SW: 3.58) 2. Adjust COLOUR and TINT knobs to obtain natural colour density. 3. Receive an NTSC (4.43 MHz) colour bar signal. (System SW: 4.43) 4. Adjust the N_4 SUB TINT VR until natural tint is obtained.
H SIZE & PIN CORRECTION			PIN CORRECTION VR H SIZE VR	1. Adjust the PIN CORRECTION VR to obtain the least deformation of the screen. 2. Adjust the H SIZE VR to move the screen horizontally and obtain the optimum screen with the whole image.
V CENTER			V CENTER SWITCH	The screen can be scrolled upward or downward by changing over the V. CENTER switch.
FOCUS			FOCUS VR	1. Adjust the FOCUS VR to obtain clear pictures. 2. Check that pictures have been adjusted to optimum appearance in both central and peripheral areas of the screen.

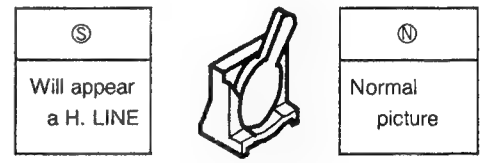
SIGNAL CIRCUIT

Item	Measuring instrument	Test point	Adjustment part	Description
NOISE (RF AGC)			NOISE VR	1. Turn the NOISE VR fully counter clockwise (or clockwise) so that noise is synchronized with the pictures. 2. Then slowly turn the NOISE VR clockwise (or counter clockwise) and stop it when noise disappears. 3. Change the channel, and check that no trouble is encountered. * This adjustment should be made when noise is annoying, when such symptons are detected as stripe-pattern interference in weak field areas, inter modulation noise in strong field areas, and horizontal strethcing of pictures.
CHROMA CIRCUIT	· Oscilloscope · Pattern Generator (PAL)	TP-48 (Y-axis) TP-49 (X-axis)	DL AMP VR DL P TRANSF. DISCRI TRANSF.	· PAL 1. Receive a PAL colour bar signal and set the oscilloscope at the X-Y mode and then connect CH-1 (X-axis) to TP-49 and CH-2 (Y-axis) to TP-48 respectively. 2. Short the C318 capacitor with a jumper wire and connect pin ㉔ and ㉘ of IC201 with 5.6kΩ resistor. See Lissajous' Fig. (A). 3. Adjust the PAL/NTSC SUB COLOUR VR so that the figure is not saturated. 4. Adjust the DL AMP VR so that the figure is altered to (B) from (A). 5. Adjust the DL P TRANSF (T304) so that the figure is altered to (C) from (B). 6. Repeat adjustments 4. and 5. more than twice. 7. Remove the shorted jumper wire and 5.6kΩ resistor from pin ㉔ and pin ㉘ of IC201. 8. Then adjust the DISCRI TRANSF (T303A: Burst cleaning) so that the figure is minimized to (E) from (D).
V. HEIGHT & V. LINEARITY			V. HEIGHT VR V. LINEARITY VR	1. Set colour bar signal to crosshatch or a pattern with which symmetry can be checked. 2. Reduce the vertical size with the V. HEIGHT VR. 3. Adjust the vertical symmetry with the V. LINEARITY VR. 4. Readjust the V. HEIGHT so that the picture expands to normal size. * Pictures that enable vertical symmetry to be checked should be circles and crosshatches.



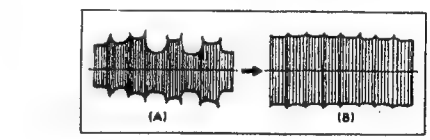
SIGNAL CIRCUIT

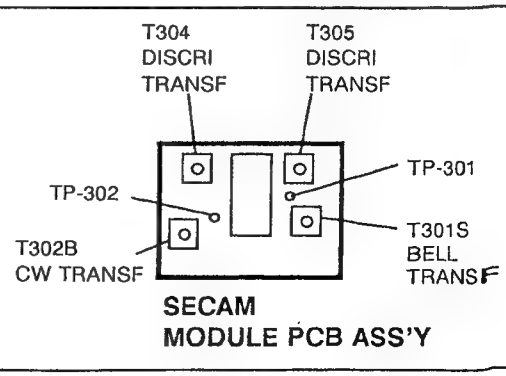
Item	Measuring instrument	Test point	Adjustment part	Description
H CENTER			H CENTER VR	1. The screen can be scrolled leftward or rightward by adjusting the H. CENTER VR.
HORIZONTAL LINE			SERVICE SWITCH	1. Turning the SERVICE SWITCH from the N side to the S side will bring the horizontal line display to the screen.



SECAM MODULE CIRCUIT

Item	Measuring instrument	Test point	Adjustment part	Description
CHROMA CIRCUIT	Oscilloscope DC Voltmeter	TP-301 TP-302	BELL TRANSF. (T301S) CW TRANSF (T302B) DISCRI TRANSF (T304/T305)	· SECAM 1. Receive a SECAM colour bar signal (System SW: SECAM). 2. Connect an oscilloscope to pin ⑮ (or TP-301) of IC301. 3. Adjust the BELL TRANSF (T301S) for flat waveform as altered to figure (B) from (A). 4. Connect a voltmeter to pin ⑫ (or TP-302) of IC301. 5. Adjust CW TRANSF (T302B) for minimum DC voltage. 6. Adjust the DISCRI TRANSF (T304 & T305) until colours are eliminated from the black-and white (or white) sections of colour bars on the screen.





SECAM MODULE PCB ASS'Y

PURITY, CONVERGENCE AND WHITE BALANCE

* The locations of SERVICE SWITCH, SCREEN VR, CUT-OFF VR and DRIVE VR are described in the ALIGNMENT LOCATION of SERVICE ADJUSTMENT or the SCHEMATIC DIAGRAM.

PICTURE TUBE

The picture tube is a precision in-line gun type. For this picture tube, dynamic convergence is carried out by a precision deflection yoke which eliminated the use of convergence yoke and convergence circuit. The adjustment of picture tube is therefore made easier as only the adjustment of static convergence by using a magnetic is enough. The deflection yoke and purity/convergency magnets assembly has been set at the factory and requires no field adjustments. However, should the assembly be accidentally jarred or tampered with, some or all adjustments may by necessary.

COLOR PURITY & VERTICAL CENTER

Loosen yoke retaining screw (Fig. B-1) . With a sharp knife cut between the picture tube and the wedge. Remove wedges completely and clean off dried adhesive from the picture tube. PAINT is used to lock the tabs of the purity/convergence magnet assembly in place (Fig. B-1) . The paint must be removed with the end of a screwdriver before any adjustments are attempted.

(As to models equipped with a magnet locking ring, beforehand loosen it.)

1. Select no signal UHF channel. (or Display a monochrome pattern)
2. Let the purity tabs come in line horizontally as is shown in Fig. B-2. A long tab should be in the same direction as the other short tab.
3. Move the yoke slowly backward.
4. Turn the GREEN CUT-OFF VR to maximum and the RED and BLUE CUT-OFF VRs to minimum. Then adjust the SCREEN VR so that the green band can be seen best. (Fig. B-3)
5. Rotate the two tabs in the opposite directions and with them kept at an angle, together in either direction so that the green band is centered on the picture tube.
6. Check the vertical center position by displaying a horizontal line. (Select the CUT-OFF SERVICE SWITCH from N to S and a HORIZONTAL LINE will appear.) Unless correct, bring it to the nearest center by rotating the two tabs, kept at an angle, together in either direction. (Fig. B-4)
7. Repeat steps 5 and 6 alternately until the green band and the vertical center come to the center.
8. Move the yoke slowly towards the bell of the tube so that the whole surface of the picture tube is filled with a green pure raster.
9. Turning RED or BLUE CUT-OFF VR to maximum and GREEN CUT-OFF VR to minimum, make sure of a red or blue pure raster.
10. Secure yoke retaining screw (do not install wedges at this time) .

(As to models equipped with a magnet locking ring, secure it and keep six magnets from moving even if it is touched slightly.)

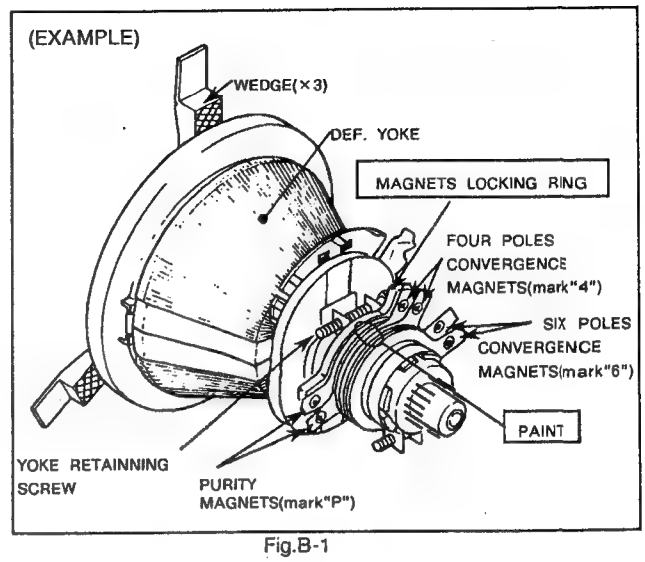


Fig.B-1

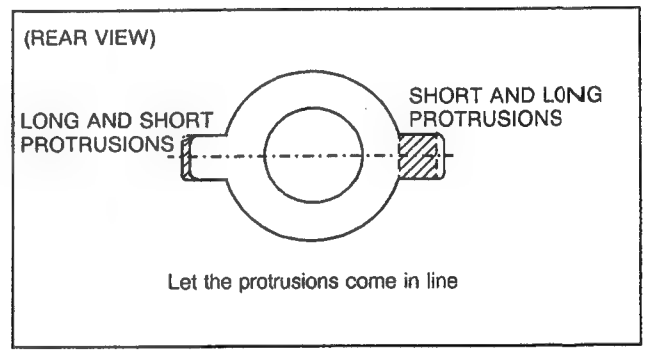


Fig.B-2

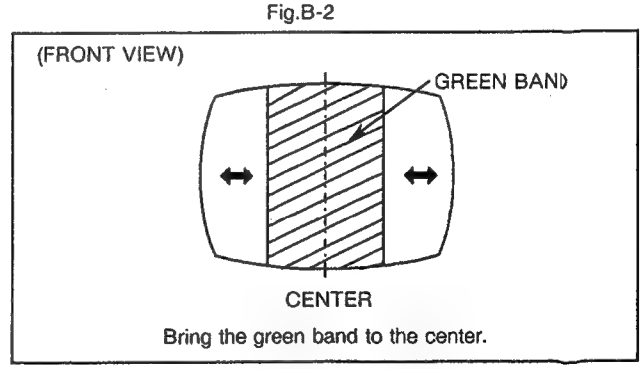


Fig.B-3

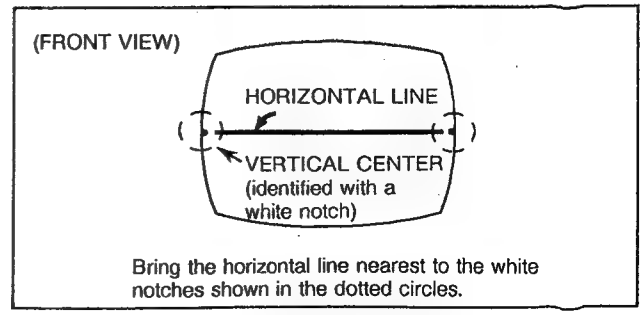


Fig.B-4

STATIC CONVERGENCE & DYNAMIC CONVERGENCE

1. Connect a crosshatch generator to the input terminals and adjust BRIGHTNESS and CONTRAST control for a distinct pattern.
2. Adjust the convergence around the edges of the picture tube by tilting the yoke, up-down and left-right, and temporarily install one wedge at the top of the yoke. (Fig. B-7, 8, 9)
3. Rotate the front pair of tabs (four pole convergence magnet) as a unit to minimize the separation of the red and blue lines around the center of the screen. To adjust the convergence of red and blue, vary the angle between the tabs (Fig. B-5)
4. Rotate the rear pair of tabs (six pole convergence magnets) as a unit to minimize the separation of the magenta (R/B) and green lines. (Fig. B-6)
5. Adjust the spacing of the rear tabs to converge the magenta and green lines.
6. Apply paint to fix six magnets.
   (As to models equipped with a magnet locking ring, tighten it.)
7. Remove the wedge installed temporarily on the yoke.
8. Tilting the angle of the yoke up, down and sideways, and adjust the yoke so as to obtain the circumference convergence. (Fig. B-8, 9)
9. Insert wedges to the position as shown in Fig. B-10 to obtain the best circumference convergence.
10. Wedge has a backing of double sided adhesive tape. Therefor, tear off one side of adhesive tape, and fix the wedges.
11. White balance adjustment (Black & White tracking) can now be performed.

WHITE BALANCE ADJUSTMENT

(Black and White Tracking)

1. Display a monochrome pattern.
2. Set the RED and GREEN DRIVE VRs for their mechanical center.
3. Turn the RED, GREEN and BLUE CUT-OFF VRs and the SCREEN VR fully counterclockwise.
4. Display a horizontal line. (Select the CUT-OFF SERVICE SWITCH from N to S and a HORIZONTAL LINE will appear.)
5. Turn SCREEN VR slowly clockwise until a very faint horizontal line appears.
6. Turn the CUT-OFF VR of the color which has appeared first, clockwise by about 10°and then adjust the SCREEN VR again so that the color may shine faintly.
7. Turn the other color CUT-OFF VRs slowly clockwise until a reasonable white line appears.
8. Return the monochrome pattern. (When returning a monochrome pattern select the CUT-OFF SERVICE SWITCH from S to N and a monochrome pattern will appear.)
9. Adjust the RED and GREEN DRIVE VRs for best white highlights.

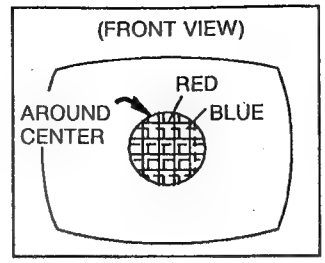


Fig.B-5

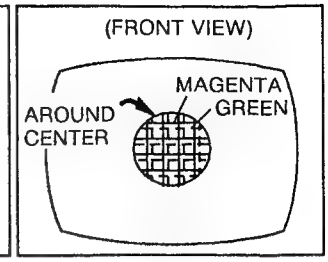


Fig.B-6

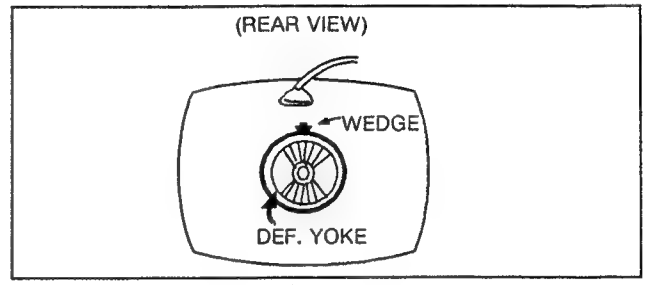
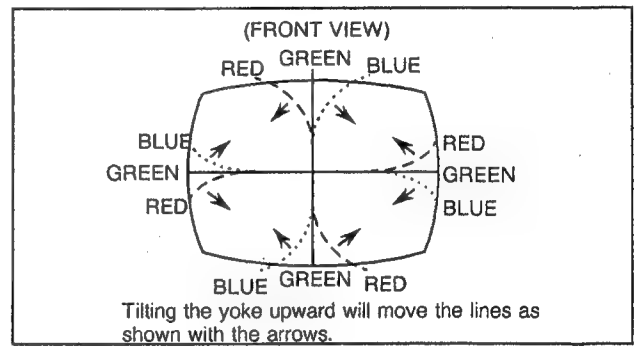
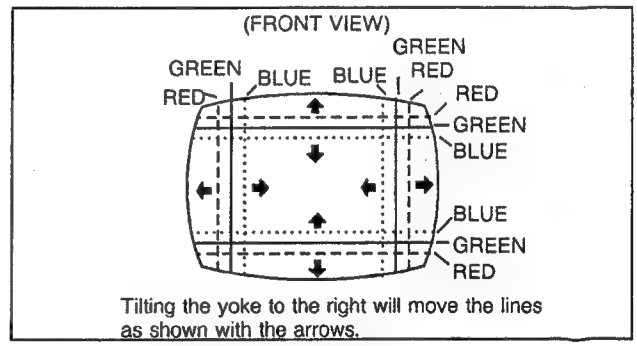


Fig.B-7



Tilting the yoke upward will move the lines as shown with the arrows.

Fig.B-8



Tilting the yoke to the right will move the lines as shown with the arrows.

Fig.B-9

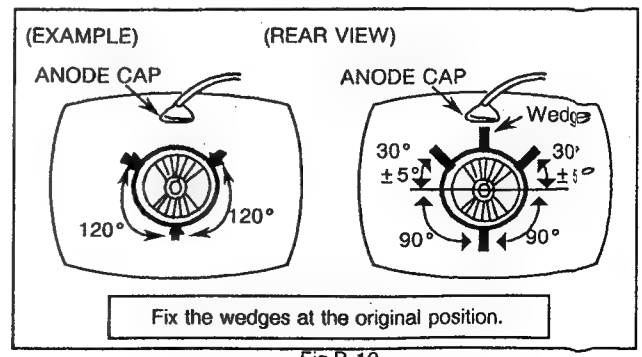


Fig.B-10

PARTS LIST

CAUTION

- The parts marked ⚠ are very important for the safety. When replacing these parts, be sure to use specified ones to secure the safety and performance.
- The module circuit board is supplied together with the assembly, but the parts which do not have the drawing in this Parts List, P. C. Board Ass'y and the Parts No. columns of which are filled with lines —— . will not be supplied.
- As a rule, the resistors and capacitors which are indicated as shown in (NOTE 2) "HOW TO EXPRESS PARTS NUMBERS OF STANDARD PARTS" are not shown in the list of the parts on the board.
  When ordering the service parts, confirm the resistance/rated power, capacitance/rated voltage, and type of the parts, then order by the part No. indicated according to (NOTE 2).

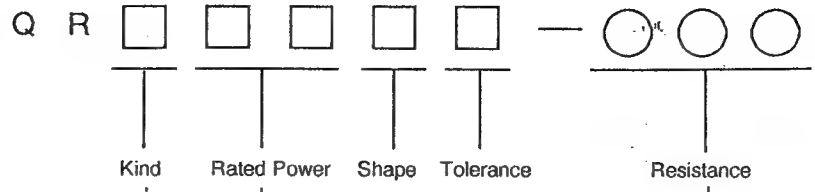
(NOTE 1) ABBREVIATIONS OF RESISTORS, CAPACITORS AND TOLERANCES

RESISTORS		CAPACITORS	
C R	Carbon Resistor	C CAP.	Ceramic Capacitor
F R	Fusible Resistor	E CAP.	Electrolytic Capacitor
P R	Plate Resistor	M CAP.	Mylar Capacitor
V R	Variable Resistor	HV CAP.	High Voltage Capacitor
HV R	High Voltage Resistor	MF CAP.	Metalized Film Capacitor
MF R	Metal Film Resistor	MM CAP.	Metalized Mylar Capacitor
MG R	Metal Glazed Resistor	MP CAP.	Metalized Polystyrol Capacitor
MP R	Metal Plate Resistor	PP CAP.	Polypropylene Capacitor
OM R	Metal Oxide Film Resistor	PS CAP.	Polystyrol Capacitor
CMF R	Coating Metal Film Resistor	TF CAP.	Thin Film Capacitor
UNF R	Non-Flammable Resistor	MPP CAP.	Metalized Polypropylene Capacitor
CH V R	Chip Variable Resistor	TAN. CAP.	Tantalum Capacitor
CH MG R	Chip Metal Glazed Resistor	CH C CAP.	Chip Ceramic Capacitor
COMP. R	Composition Resistor	BP E CAP.	Bi-Polar Electrolytic Capacitor
LPTC R	Linear Positive Temperature Coefficient Resistor	CH AL E CAP.	Chip Aluminum Electrolytic Capacitor
		CH AL BP CAP.	Chip Aluminum Bi-Polar Capacitor
		CH TAN. E CAP.	Chip Tantalum Electrolytic Capacitor
		CH AL BP E CAP.	Chip Tantalum Bi-Polar Electrolytic Capacitor

TOLERANCES									
F	G	J	K	M	N	R	H	Z	P
±1%	±2%	±5%	±10%	±20%	±30%	+30% - 10%	+50% - 10%	+80% - 20%	+100% - 0%

(NOTE 2) HOW TO EXPRESS PARTS NUMBERS OF STANDARD PARTS

■ RESISTOR



Symbol	Part Name
C	COMP.R
D	C R
S	CH MG R

Symbol	Rated Power
0 1	1 w
1 2	1/2 w
1 4	1/4 w
1 6	1/6 w
1 8	1/8 w

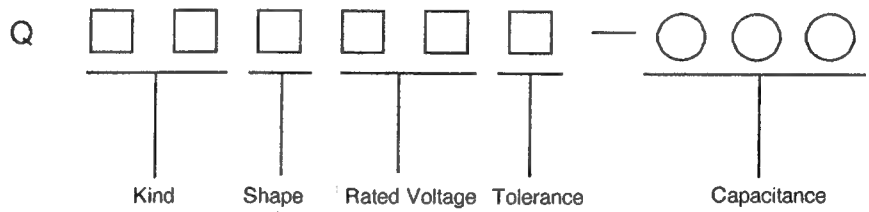
Symbol	Shape
1	Straight lead
8	Chip

Indicate with first two-figure expressed by Ω and following 0.
please note that,in case of resistance less than 10 Ω, a letter "R"will be effective as point.

EX.

2.2 Ω	=			2R2
470 Ω	=	47×10^{1}	→	471
150kΩ	=	15×10^{4}	→	154

■ CAPACITOR



Symbol	Part Name
CS	C CAP.
CS	CH C CAP.
ET	E CAP.
FM	M CAP.

5Figure / 6Figure	0	1	2
A		10V	100V
C		16V	160V
D			200V
E		25V	250V
H		50V	500V
J	6.3V	63V	
V		35V	

Indicate with first two-figure expressed by pF and following 0.
Please note that,in case of capacitance less than 10 pF a letter "R" will be effective as point.

EX

5pF	=			5R0
1000pF	=	10×10^{2}	→	102
47μF	=	47×10^{6}	→	476

Symbol	Shape
1	Straight lead
1	Leads in the same direction
8	Chip
A	Leads in the same direction (compact part)

MAIN PARTS LIST

SYMBOL NO.	⚠	PART NO.	PART NAME	REMARKS
CRT & TUNER				
		A75034-B	P&C MAGNET	
		CE40764-00A	WEDGE ASSY	(×4)
	⚠	CE20118-B0C	DEFLECTION YOKE	DY01
	⚠	CE41747-002	DEG COIL	L01
TU1001		EM7351ES-B03	UHF/VHF TUNER	
	⚠	M68JUA95X-AO	PICTURE TUBE	V01
VARIABLE R				
R1105		QVPA601-223A	V R (NOISE)	20kΩ B
R1387		QVPA601-102A	V. R (DL AMP)	10kΩ B
R1403		QVPA801-203M	V. R (H. CENTER)	20kΩ B
R1407		QVPA801-201M	TRIM R (V. HEIGHT)	200 Ω B
R1414		QVPA801-104M	TRIM R (V. LIN)	100kΩ B
R2002		QVAA010-CB14A	V. R (TONE)	10kΩ B
R2003		QVAA009-CB14A	V. R (DETAIL)	10kΩ B
R2004		QVPA603-103A	V. R (SUB CONT)	10kΩ B
R2006		QVPA603-223A	V. R (SUB BRIGHT)	22kΩ B
R2007		QVAA010-CB14A	V. R (BRIGHT)	10kΩ B
R2008		QVPA603-103A	V. R (P/N SUB COLOR)	10kΩ B
R2009		QVAA009-CC14A	V. R (COLOR)	10kΩ C
R2010		QVPA603-223A	V. R (SUB COLOR)	22kΩ B
R2011		QVAA010-CB14A	V. R (TINT)	10kΩ B
R2013		QVPA603-103A	V. R (NTSC TINT)	10kΩ B
R2447		QVPA804-203M	V. R (PIN COR.)	20kΩ B
R2449		QVPA804-502M	V. R (H. SIZE)	5kΩ B
R2630		QVPA803-201M	V. R (12V ADJ)	200 Ω B
R2954		QVPE804-102H	V. R (B1 ADJ)	1kΩ B
R3113		QVPA803-502M	V. R (R. CUT OFF)	5kΩ B
R3114		QVPA803-502M	V. R (G. CUT OFF)	5kΩ B
R3115		QVPA803-502M	V. R (B. CUT OFF)	5kΩ B
R3119		QVPA803-201M	V. R (R. DRIVE)	200 Ω B
R3120		QVPA803-201M	V. R (G. DRIVE)	200 Ω B
TRANSFORMER				
	⚠	CE41320-00C	H. V. TRANSF.	T2551
T2601	⚠	CE41291-00D	SW TRANSF	
T2901	⚠	CE41288-00B	SW. TRANSF.	
T2902	⚠	CE40361-00J	DRIVE TRANSF.	
DIODE				
D1402		MA4120 (M) -Y	ZENER DIODE	
D1504		MA4075 (H) -Y	ZENER DIODE	
D1506		MA4030 (M) -Y	ZENER DIODE	
D1610		RD27E (B4)	ZENER DIODE	
D1611		RD27E (B4)	ZENER DIODE	
D1671		MA4130-Y	ZENER DIODE	
D1701		SLR-54VR5F	L. E. D.	POWER IND.
D1702		GL5HS8T	L. E. D.	OFF TIMER IND.
D1703		SLR-54MG5F-V1	L. E. D.	ON TIMER IND.
D1735		SLR-54MG5F-V1	L. E. D.	VIDEO 1
D1736		SLR-54MG5F-V1	L. E. D.	VIDEO 2
D1781		PD49PI	PHOTO DIODE	
D2402		MA4270 (M) -Y	ZENER DIODE	
D2403		MA4200 (M) -Y	ZENER DIODE	
D2406		RD20E (B)	ZENER DIODE	
D2407		RD36E (B)	ZENER DIODE	
D2531		MA4056 (M) -Y	ZENER DIODE	
D2532		MA4062 (H) -Y	ZENER DIODE	
D2572		MA4068 (N) V1-Y	ZENER DIODE	
D2573		MA4091 (M) -Y	ZENER DIODE	
D2575		MA4062 (M) -Y	ZENER DIODE	

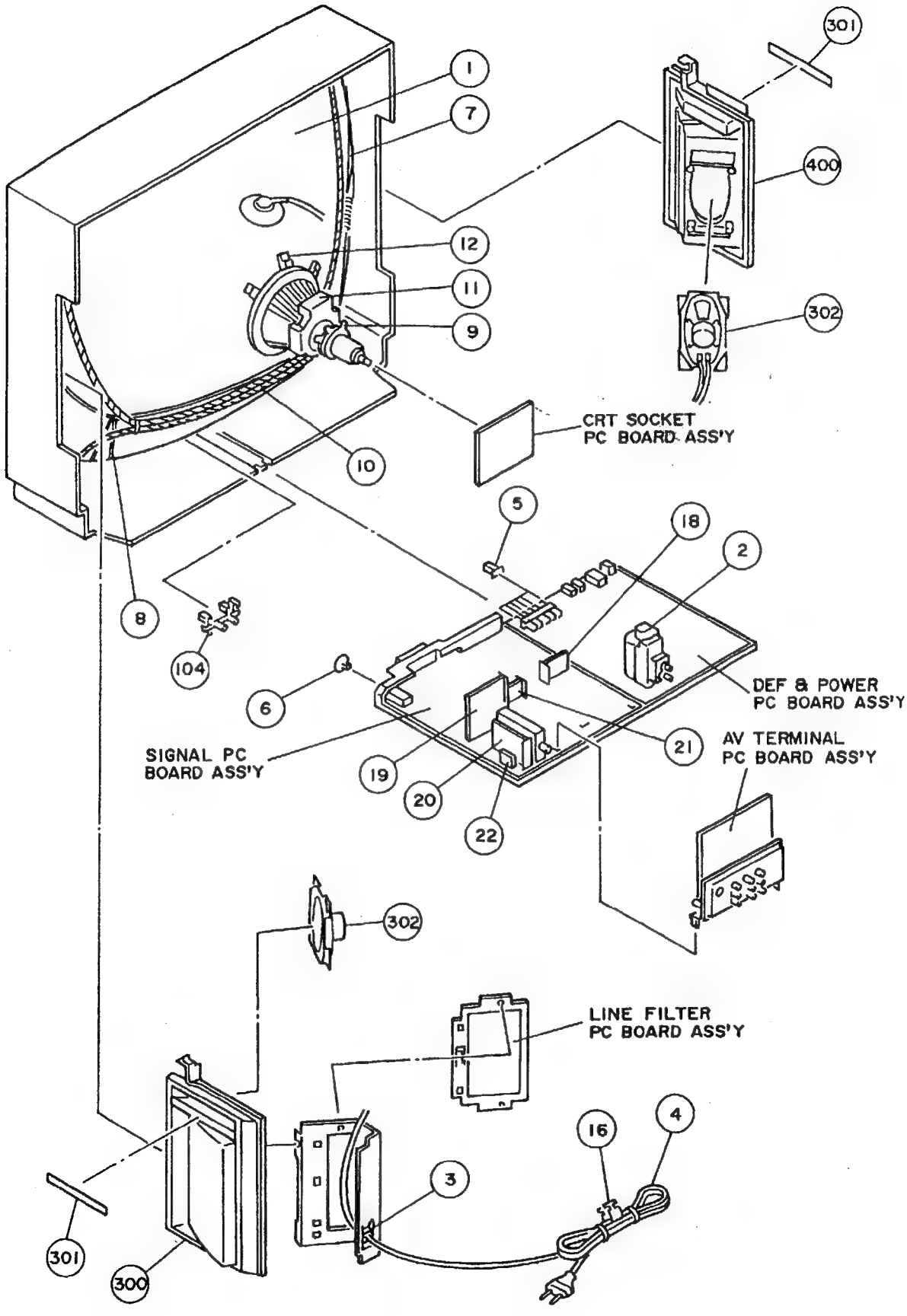
SYMBOL NO.	⚠	PART NO.	PART NAME	REMARKS
DIODE				
D2607		RD9.1E(B)	ZENER DIODE	
D2609		RD30E(B2)	ZENER DIODE	
D2614		RD36E(B)	ZENER DIODE	
D2958		MA4150(M)-Y	ZENER DIODE	
D2959		RD6.2E(B2)	ZENER DIODE	
D7101		RD15E(B)	ZENER DIODE	
D9901	⚠	S4VB60	DIODE BRIDGE	
TRANSISTOR				
Q2502	⚠	2SD2148-C1	TRANSISTOR	H. OUT
IC				
IC1201		M52016SP	I. C. (M)	
IC1301		AN6558	I. C. (M)	
IC1651		TA7630P	I. C. (M)	
IC1652		TA8200AH	I. C. (M)	
IC1721		AN78L05	I. C. (M)	
IC1722		UPC574J	I. C.	
IC1781		UPC1373HA(MS)	I. C. (M)	
IC2551	⚠	TA78012AP	I. C. (M)	
IC2601		STR10006-A	I. C. (H)	
IC2951	⚠	AN5900	I. C. (M)	
IC7001		TC4066BP	I. C. (M)	
IC7002		TC4066BP	I. C. (M)	
IC7101		TC4066BP	I. C. (M)	
IC7102		TC4066BP	I. C. (M)	
IC7201		TC4066BP	I. C. (M)	
IC7202		TC4066BP	I. C. (M)	
IC9901	⚠	STR81145A-A	IC	
OTHERS				
		SBY-S001A	SECAM MODULE	
		SBY-M003A	S. SELECT MODULE	
		SBY-F501A	IF MODULE	
		SBY-D002A	DL APACON MODULE	
		SBX-E001A	EQUALIZER MODULE	
		CM21902-C0A	AV TERMINAL ASSY	
	⚠	QMP4090-200K	POWER CORD	
		CM41678-B01	PUSH KNOB	(×6)
		CM11183-D0C	FRONT CABI. ASSY	
		CM33910-A01	KNOB	
		CM33911-001	POWER KNOB	
		CM33866-C01	CONTROL KNOB	
		CM32813-00L	SP GRILLE ASSY R	
		CM32813-00M	SP GRILLE ASSY L	
		CM11185-B02	REAR COVER	
		CM42758-003	KNOB	(×2)
CF1101		TPS5.5MW	C TRAP	
CP2601	⚠	ICP-F38	IC PROTECTOR	
CP2602	⚠	ICP-N75	IC PROTECTER	
CP2603	⚠	ICP-N15	IC PROTECTOR	
CP2901	⚠	ICP-N38	IC PROTECTOR	
DL1201		CE41639-001	DELAY LINE	
DL7001		CE41042-002	DELAY LINE	
FR2404	⚠	QRH127J-2R2M	F R	2.2Ω 1/2W J
FR2409	⚠	QRH127J-152M	F R	1.5kΩ 1/2W J
F9091	⚠	QMF51E2-4R0S	FUSE	4.0A
J2001		AX49607-004	HEADPHONE JACK	
J2002		QMD2B04-001	MINI CONNECTOR	
J2003		CEMN011-002	JACK	

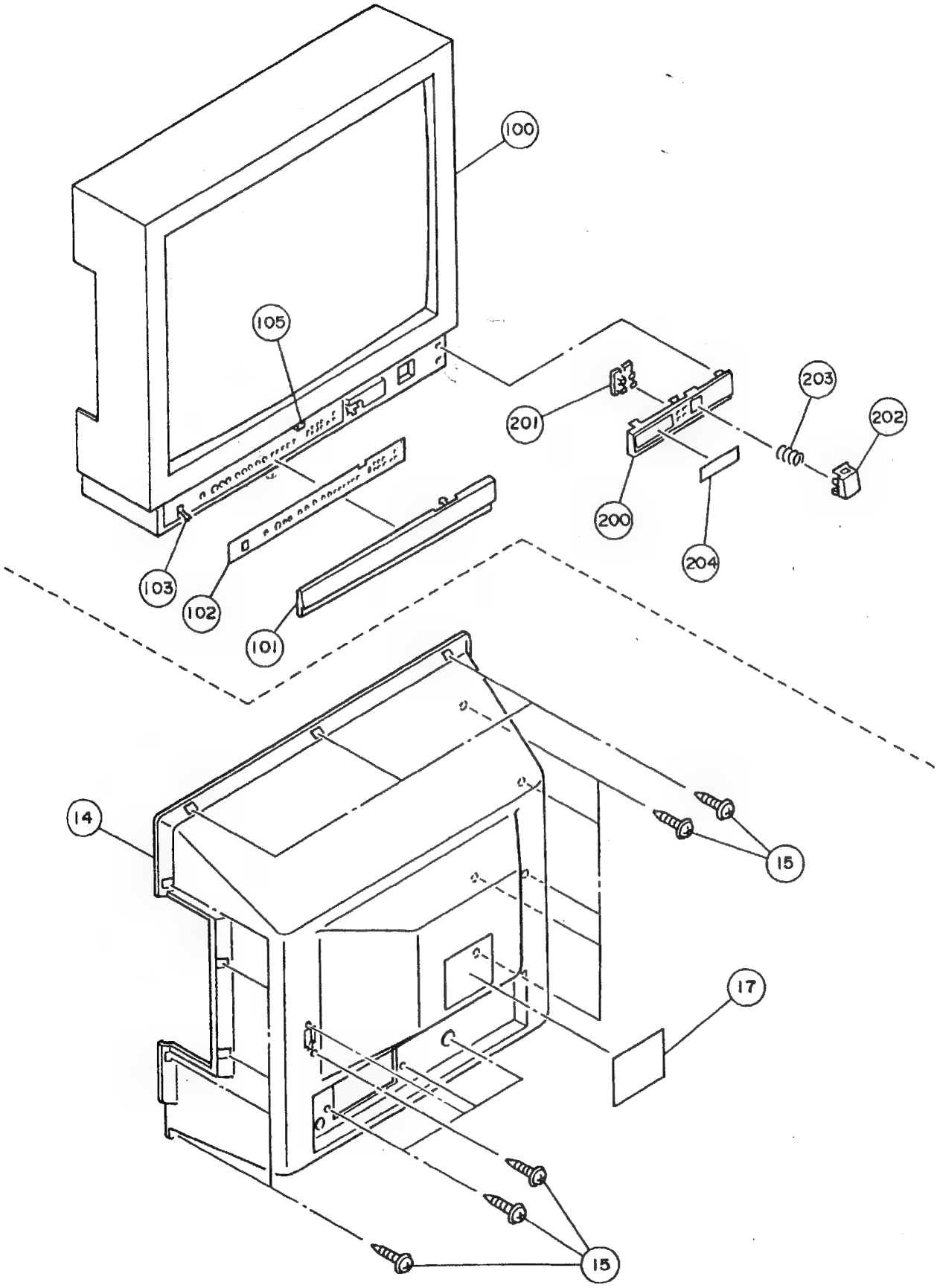
SYMBOL NO.	⚠	PART NO.	PART NAME	REMARKS
OTHERS				
J2004		CEMN011-003	JACK	
J7001		QMD6A04-001	DIN JACK	
J7006		CEMT005-001	SP TERMINAL	
LF9091	⚠	CE41405-00A	LINE FILTER	
LF9092	⚠	CE40719-00A	LINE FILTER	
RY9091	⚠	CE40134-001	RELAY	
R1677	⚠	QRZ0054-470M	F R	47 Ω 1/4W J
R2551	⚠	QRH017J-470M	F R	47 Ω 1W J
R2552	⚠	QRZ0085-5R1M	F R	5.1 Ω 1/2W J
R2553	⚠	QRH027J-3R3M	F R	3.3 Ω 2W J
R2571	⚠	QRH017J-4R7M	F R	4.7 Ω 1W J
R2611	⚠	QRZ0054-8R2M	F R	8.2 Ω 1/4W J
R2623	⚠	QRZ0054-2R2M	F R	2.2 Ω 1/4W J
S1603		QSS4C22-C02	SLIDE SWITCH	SPEAKER
S1701		QSP2C22-C01	PUSH SWITCH	PRESET
S1702		QSP4H11-C04Z	PUSH SWITCH	SPEED
S1703		QSP4H11-C04Z	PUSH SWITCH	TV/VIDEO
S1704		QSP4H11-C04Z	PUSH SWITCH	CH△
S1705		QSP4H11-C04Z	PUSH SWITCH	CH▽
S1706		QSP4H11-C04Z	PUSH SWITCH	VOL△
S1707		QSP4H11-C04Z	PUSH SWITCH	VOL▽
S1708		QSP4H11-C04Z	PUSH SWITCH	POWER
S1710		QSP4H11-C04Z	PUSH SWITCH	TUNING△
S1711		QSP4H11-C04Z	PUSH SWITCH	TUNING▽
S1712		QSP4H11-C04Z	PUSH SWITCH	MEMORY
S1713		QSP4H11-C04Z	PUSH SWITCH	BAND
S1801		QSL4A13-C02	LEVER SWITCH	SERVICE
S1901	⚠	QSP4D21-C06	PUSH SWITCH	MAIN POWER
S2001		QST3621-C01	PUSH SWITCH	SECAM, N3, N4, SKEW
S2401		QSL4A13-C02	LEVER SWITCH	
TH2441		ERT-D2ZHL503S	THERMISTOR	
TH9091	⚠	A76038-T	POSISTOR	or A76038
X1301		CE41092-00A	CRYSTAL	
X1302		CE41115-001	CRYSTAL	
X1501		CSB500F9	CERAMIC RESO	

EXPLODED VIEW PARTS LIST

SYMBOL NO.	PART NO.	PART NAME	REMARKS
⚠ 1	M68JUA95X-AO	PICTURE TUBE	V01
⚠ 2	CE41320-00C	H. V. TRANSF.	T2551
3	CM21165-001-V0	POWER CORD CLAMP	
⚠ 4	QMP4090-200K	POWER CORD	
5	CM41678-B01	PUSH KNOB	(×6)
6	CM41677-A01	KNOB CAP	
7	CH30342-00J	BRAIDED ASSY	
8	CH41987-00C	BRAIDED SUB ASSY	(×2)
9	A75034-B	P&C MAGNET	
⚠ 10	CE41747-002	DEG COIL	L01
⚠ 11	CE20118-B0C	DEFLECTION YOKE	DY01
12	CE40764-00A	WEDGE ASSY	(×4)
14	CM11185-B02	REAR COVER	
15	GBSA4016M	TAP SCREW	(×18)
16	N47971	CORD CLAMP	
17	CM20162-032 (R)	ROLL R LABEL	
18	SBY-S001A	SECAM MODULE	
19	SBY-M003A	S. SELECT MODULE	
20	SBY-F501A	IF MODULE	
21	SBY-D002A	DL APACON MODULE	
22	SBX-E001A	EQUALIZER MODULE	
100	CM11183-D0C	FRONT CABI. ASSY	Include No. 101~204
101	CM11191-A03	DOOR	
102	CM21901-D01	OPERATION SHEET	
103	CM32812-A0A	DUMPER ASSY	
104	CM33866-C01	CONTROL KNOB	
105	CM45436-00A	DOOR LATCH	
200	CM34042-A0A	PANEL ASSY	Include No. 201~204
201	CM33910-A01	KNOB	
202	CM33911-001	POWER KNOB	
203	CM30861-051	SPRING	
204	CM32811-A02	INDICATOR WINDOW	
300	CM32813-00L	SP GRILLE ASSY R	Include No. 301-302
301	CM32815-001	PLATE	(×2)
302	FF1277-11	SPEAKER	(×2)
400	CM32813-00M	SP GRILLE ASSY L	Include No. 301-302

EXPLODED VIEW




100
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PRINTED CIRCUIT BOARD PARTS LIST

SIGNAL PC BOARD ASS'Y (SBY-1252A)

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SYMBOL NO.	PART NO.	PART NAME	REMARKS
VARIABLE R			
R1105	QVPA601-223A	V R (NOISE)	20kΩ B
R1387	QVPA601-102A	V. R (DL AMP)	10kΩ B
R1403	QVPA801-203M	V. R (H. CENTER)	20kΩ B
R1407	QVPA801-201M	TRIM R (V. HEIGHT)	200 Ω B
R1414	QVPA801-104M	TRIM R (V. LIN)	100kΩ B
CAPACITOR			
C1001	QEM61EK-106MZ	E CAP.	10μF 25V K
C1004	QEM61EK-106MZ	E CAP.	10μF 25V K
C1231	QEN61HM-335Z	BP E CAP.	3.3μF 50V M
C1314	QFV71HJ-104MZ	TF CAP.	0.1μF 50V J
C1315	QEN61HM-105Z	BP E CAP.	1μF 50V M
C1318	QEN61HM-105Z	BP E CAP.	1μF 50V M
C1401	QFV71HJ-394MZ	TF CAP.	0.39μF 50V J
C1402	QEE61CK-225BZ	TAN. CAP.	2.2μF 16V K
C1404	QEB61HM-224MZ	E CAP.	0.22μF 50V M
C1405	QEM61HK-475MZ	E CAP.	4.7μF 50V K
C1413	QEM51CM-477M	E CAP.	470μF 16V M
C1414	QFV71HJ-224MZ	TF CAP.	0.22μF 50V J
C1415	QEM61HK-475MZ	E CAP.	4.7μF 50V K
C1521	QFV71HJ-104MZ	TF CAP.	0.1μF 50V J
C1662	QFV71HJ-224MZ	TF CAP.	0.22μF 50V J
C1669	QFV71HJ-224MZ	TF CAP.	0.22μF 50V J
C1685	QFV71HJ-124MZ	TF CAP.	0.12μF 50V J
C1686	QFV71HJ-124MZ	TF CAP.	0.12μF 50V J
C1781	QFV71HJ-333MZ	TF CAP.	0.033μF 50V J
C1782	QEKC1CM-106GMZ	E CAP.	10μF 16V M
C1783	QEK51EM-475M	E CAP.	4.7μF 25V M
C1784	QEKC1CM-106GMZ	E CAP.	10μF 16V M
C1785	QEKC1CM-336MZ	E CAP.	33μF 16V M
TRANSFORMER			
T1302	CE41178-001	3.58 BP TRANS	
T1303A	CE40359	IDENT TRANSF	
T1304	CE40396-A01	DL P TRANSF	
T1781	CELT010-001	BP TRANSF.	
COIL			
L1008	CELP006-120Z	PEAKING COIL	12μH
L1101	CELP006-8R2Z	PEAKING COIL	8.2μH
L1103	A76186-5.6Z	PEAKING COIL	5.6μH
L1201	CELP006-180Z	PEAKING COIL	18μH
L1202	CE40041-390Z	PEAKING COIL	39μH
L1203	CE40041-390Z	PEAKING COIL	39μH
L1301	CELP006-120Z	PEAKING COIL	12μH
L1302	CELP005-2R7Z	PEAKING COIL	2.7μH
L1303	CELP006-8R2Z	PEAKING COIL	8.2μH
DIODE			
DL1301	CE41082-001	1H DELAY LINE	
D1201	1SS133-Y	SI. DIODE	
D1301	1SS133-Y	SI. DIODE	
D1302	1SS133-Y	SI. DIODE	
D1303	1SS133-Y	SI. DIODE	
D1304	1SS133-Y	SI. DIODE	
D1305	1SS133-Y	SI. DIODE	
D1306	1SS133-Y	SI. DIODE	
D1307	1SS133-Y	SI. DIODE	
D1308	1SS133-Y	SI. DIODE	
D1311	1SS133-Y	SI. DIODE	
D1312	1SS133-Y	SI. DIODE	
D1320	1SS133-Y	SI. DIODE	

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SYMBOL NO.	PART NO.	PART NAME	REMARKS
DIODE			
D1321	1SS133-Y	SI. DIODE	
D1322	1SS133-Y	SI. DIODE	
D1324	1SS133-Y	SI. DIODE	
D1370	1SS133-Y	SI. DIODE	
D1371	1SS133-Y	SI. DIODE	
D1372	1SS133-Y	SI. DIODE	
D1402	MA4120 (M) -Y	ZENER DIODE	
D1403	1SS133-Y	SI. DIODE	
D1501	1SS133-Y	SI. DIODE	
D1502	1SS133-Y	SI. DIODE	
D1503	1SS133-Y	SI. DIODE	
D1504	MA4075 (H) -Y	ZENER DIODE	
D1505	1SS133-Y	SI. DIODE	
D1506	MA4030 (M) -Y	ZENER DIODE	
D1508	1SS133-Y	SI. DIODE	
D1509	1SS133-Y	SI. DIODE	
D1607	1SS133-Y	SI. DIODE	
D1608	1SS133-Y	SI. DIODE	
D1610	RD27E (B4)	ZENER DIODE	
D1611	RD27E (B4)	ZENER DIODE	
D1670	1SS133-Y	SI. DIODE	
D1671	MA4130-Y	ZENER DIODE	
D1701	SLR-54VR5F	L. E. D.	POWER IND.
D1702	GL5HS8T	L. E. D.	OFF TIMER IND.
D1703	SLR-54MG5F-V1	L. E. D.	ON TIMER IND.
D1709	1SS133-Y	SI. DIODE	
D1710	1SS133-Y	SI. DIODE	
D1711	1SS133-Y	SI. DIODE	
D1712	1SS133-Y	SI. DIODE	
D1715	1SS133-Y	SI. DIODE	
D1721	1SS133-Y	SI. DIODE	
D1722	1SS133-Y	SI. DIODE	
D1723	1SS133-Y	SI. DIODE	
D1724	1SS133-Y	SI. DIODE	
D1725	1SS133-Y	SI. DIODE	
D1726	1SS133-Y	SI. DIODE	
D1735	SLR-54MG5F-V1	L. E. D.	VIDEO 1
D1736	SLR-54MG5F-V1	L. E. D.	VIDEO 2
D1781	PD49P1	PHOTO DIODE	
D1801	W06A-4	SI. DIODE	
D1804	1SS133-Y	SI. DIODE	
D1806	1SS133-Y	SI. DIODE	
D1807	1SS133-Y	SI. DIODE	
D1808	1SS133-Y	SI. DIODE	
TRANSISTOR			
Q1101	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q1102	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q1201	2SA1015 (Y, GR) Y	SI. TRANSISTOR	
Q1202	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q1203	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q1204	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q1205	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q1206	2SC2878 (B) -Y	SI. TRANSISTER	
Q1207	2SC2878 (B) -Y	SI. TRANSISTER	
Q1301	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q1302	2SA1015 (Y, GR) Y	SI. TRANSISTOR	
Q1303	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q1304	2SC1815 (GR) -Y	SI. TRANSISTOR	

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SYMBOL NO.	PART NO.	PART NAME	REMARKS
TRANSISTOR			
Q1305	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q1306	2SC1815 (BL) -Y	TRANSISTOR	
Q1310	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q1311	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q1401	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q1403	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q1501	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q1502	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q1503	2SA1015 (Y, GR) Y	SI. TRANSISTOR	
Q1505	2SK105 (F)	F E T	
Q1506	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q1507	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q1602	2SA1015 (Y, GR) Y	SI. TRANSISTOR	
Q1606	2SA1015 (Y, GR) Y	SI. TRANSISTOR	
Q1609	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q1701	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q1707	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q1708	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q1709	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q1801	2SA673 (C) -Y	TRANSISTOR	
Q1802	2SA1015 (Y, GR) Y	SI. TRANSISTOR	
Q1803	2SC1815 (Y) -Y	SI. TRANSISTOR	
Q1804	2SC1815 (Y) -Y	SI. TRANSISTOR	
Q1805	2SC1815 (Y) -Y	SI. TRANSISTOR	
Q1807	2SA1015 (Y, GR) Y	SI. TRANSISTOR	
Q1808	2SA1015 (Y, GR) Y	SI. TRANSISTOR	
Q1809	2SA1015 (Y, GR) Y	SI. TRANSISTOR	
Q1810	2SA1015 (Y, GR) Y	SI. TRANSISTOR	
IC			
IC1201	M52016SP	I. C. (M)	
IC1301	AN6558	I. C. (M)	
IC1651	TA7630P	I. C. (M)	
IC1652	TA8200AH	I. C. (M)	
IC1721	AN78L05	I. C. (M)	
IC1722	UPC574J	I. C.	
IC1781	UPC1373HA (MS)	I. C. (M)	
OTHERS			
	CM42758-003	KNOB	(×2)
CF1101	TPS5.5MW	C TRAP	
DL1201	CE41639-001	DELAY LINE	
⚠ R1677	QRZ0054-470M	F R	47 Ω 1/4W J
S1603	QSS4C22-C02	SLIDE SWITCH	SPEAKER
S1701	QSP2C22-C01	PUSH SWITCH	PRESET
S1702	QSP4H11-C04Z	PUSH SWITCH	SPEED
S1703	QSP4H11-C04Z	PUSH SWITCH	TV/VIDEO
S1704	QSP4H11-C04Z	PUSH SWITCH	CH△
S1705	QSP4H11-C04Z	PUSH SWITCH	CH▽
S1706	QSP4H11-C04Z	PUSH SWITCH	VOL△
S1707	QSP4H11-C04Z	PUSH SWITCH	VOL▽
S1708	QSP4H11-C04Z	PUSH SWITCH	POWER
S1710	QSP4H11-C04Z	PUSH SWITCH	TUNING△
S1711	QSP4H11-C04Z	PUSH SWITCH	TUNING▽
S1712	QSP4H11-C04Z	PUSH SWITCH	MEMORY
S1713	QSP4H11-C04Z	PUSH SWITCH	BAND
S1714	QSP2C22-C01	PUSH SWITCH	VIDEO1/2
S1801	QSL4A13-C02	LEVER SWITCH	SERVICE
⚠ S1901	QSP4D21-C06	PUSH SWITCH	MAIN POWER
TU1001	EM7351ES-B03	UHF/VHF TUNER	
X1301	CE41092-00A	CRYSTAL	
X1302	CE41115-001	CRYSTAL	
X1501	CSB500F9	CERAMIC RESO	

DEF & POWER PC BOARD ASS'Y (SBY-2252A)

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	SYMBOL NO.	PART NO.	PART NAME	REMARKS		
	VARIABLE R					
	R2002	QVAA010-CB14A	V. R (TONE)	10kΩ	B	
	R2003	QVAA009-CB14A	V. R (DETAIL)	10kΩ	B	
	R2004	QVPA603-103A	V. R (SUB CONT)	10kΩ	B	
	R2006	QVPA603-223A	V. R (SUB BRIGHT)	22kΩ	B	
	R2007	QVAA010-CB14A	V. R (BRIGHT)	10kΩ	B	
	R2008	QVPA603-103A	V. R (P/N SUB COLOR)	10kΩ	B	
	R2009	QVAA009-CC14A	V. R (COLOR)	10kΩ	C	
	R2010	QVPA603-223A	V. R (SUB COLOR)	22kΩ	B	
	R2011	QVAA010-CB14A	V. R (TINT)	10kΩ	B	
	R2013	QVPA603-103A	V. R (NTSC TINT)	10kΩ	B	
	R2447	QVPA804-203M	V. R (PIN COR.)	20kΩ	B	
	R2449	QVPA804-502M	V. R (H. SIZE)	5kΩ	B	
	R2630	QVPA803-201M	V. R (12V ADJ)	200Ω	B	
	R2954	QVPE804-102H	V. R (B1 ADJ)	1kΩ	B	
	RESISTOR					
	R2402	QRG029J-561A	OM R	560Ω	2W	J
	R2403	QRG029J-471A	OM R	470Ω	2W	J
	R2414	QRG019J-222S	OM R	2.2kΩ	1W	J
	R2416	QRG019J-471S	OM R	470Ω	1W	J
	R2455	QRG029J-100	OM R	10Ω	2W	J
	R2504	QRG029J-221A	OM R	220Ω	2W	J
	R2506	QRG019J-471S	OM R	470Ω	1W	J
	R2531	QRG029J-391A	OM R	390Ω	2W	J
	R2554	QRX029J-1R5	MF R	1.5Ω	2W	J
	R2556	QRG029J-100	OM R	10Ω	2W	J
⚠	R2572	QRV141F-7501AY	MF R	7.5kΩ	1/4W	F
⚠	R2573	QRV141F-2491AY	MF R	2.49kΩ	1/4W	F
	R2605	QRG039J-563	OM R	56kΩ	3W	J
	R2607	QRG019J-680S	OM R	68Ω	1W	J
	R2609	QRM055K-R56	MP R	0.56Ω	5W	J
	R2612	QRG029J-331	OM R	330Ω	2W	J
	R2613	QRG029J-560	OM R	56Ω	2W	J
	R2616	QRG029J-152	OM R	1.5kΩ	2W	J
	R2626	QRG029J-152	OM R	1.5kΩ	2W	J
	R2903	QRF104J-100	UNF R	10Ω	10W	J
	R2906	QRG029J-223A	OM R	22kΩ	2W	J
	R2907	QRG029J-223A	OM R	22kΩ	2W	J
	R2910	QRM055K-R22	MP R	0.22Ω	5W	J
	R2912	QRF056J-681C	UNF R	680Ω	5W	J
	R2913	QRF076J-102	UNF R	1kΩ	7W	J
	R2951	QRG029J-122A	OM R	1.2kΩ	2W	J
	R2957	QRG019J-331S	OM R	330Ω	1W	J
	R2967	QRV141F-1692AY	MF R	16.9kΩ	1/4W	F
	R2971	QRG029J-561	OM R	560Ω	2W	J
	R2972	QRG029J-561	OM R	560Ω	2W	J
	R2974	QRG029J-103	OM R	10kΩ	2W	J
	R2981	QRM055K-R68	MP R	0.68Ω	5W	J
⚠	R2991	QRZ0057-825	C R	8.2MΩ	1W	J
	CAPACITOR					
	C2401	QEHC1HM-336MZ	E CAP.	33μF	50V	M
	C2441	QFV71HJ-124MZ	TF CAP.	0.12μF	50V	J
	C2442	QFV71HJ-124MZ	TF CAP.	0.12μF	50V	J
	C2444	QEHC1CM-108MZ	E CAP.	1000μF	16V	M
	C2445	QEHC1HM-106MZ	E CAP.	10μF	50V	M
	C2503	QEHC1HM-105MZ	E CAP.	1μF	50V	M
⚠	C2505	QFZ0081-3801S	MPP CAP.	3800pF	1600V	±3%
⚠	C2506	QFZ0081-1202S	MPP CAP.	0.012μF	1600V	±3%
	C2507	QFP32GJ-183M	PP CAP.	0.018μF	400V	J

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	SYMBOL NO.	PART NO.	PART NAME	REMARKS
	CAPACITOR			
	C2509	QFZ0089-304S	MPP CAP.	0.3μF 200V J
	C2510	QFZ0089-354S	MPP CAP.	0.35μF 200V J
	C2574	QFV71HJ-104MZ	TF CAP.	0.1μF 50V J
	C2608	QEH52AM-106M	E CAP.	10μF 100V M
	C2609	QCZ0122-152A	C CAP.	1500pF 2000V K
	C2611	QEM61HK-225MZ	E CAP.	2.2μF 50V K
	C2613	QEM61EK-106MZ	E CAP.	10μF 25V K
	C2627	QEN61CM-106Z	BP E CAP.	10μF 16V M
	C2906	QEZ0111-337R	E CAP.	330μF 400V M
	C2907	QEZ0111-337R	E CAP.	330μF 400V M
	C2910	QCZ0122-561A	C CAP.	560pF 2000V K
	C2912	QCZ0122-821U	C CAP.	820pF 2000V K
	C2916	QEHC1EM-476MZ	E CAP.	47μF 25V M
	C2917	QEHC1EM-476MZ	E CAP.	47μF 25V M
	C2918	QCZ0122-271U	C CAP.	270pF 2000V K
	C2962	QFV71HJ-333MZ	TF CAP.	0.033μF 50V J
	C2966	QFP31HG-302SZ	PP CAP.	3000pF 50V G
	C2967	QEM51CK-107M	E CAP.	100μF 16V K
	C2969	QEM61EK-106MZ	E CAP.	10μF 25V K
	C2979	QFZ0083-683MZ	M CAP.	0.068μF 50V K
	C2980	QFV71HJ-124MZ	TF CAP.	0.12μF 50V J
	C2982	QFV71HJ-474MZ	TF CAP.	0.47μF 50V J
⚠	C2991	QCZ9036-332M	C CAP.	3300pF AC400V M
	TRANSFORMER			
	T2501	CE40361-00E	DRIVE TRANSF.	
⚠	T2601	CE41291-00D	SW TRANSF.	
⚠	T2901	CE41288-00B	SW. TRANSF.	
⚠	T2902	CE40361-00J	DRIVE TRANSF.	
	COIL			
	L2441	CELC009-001	WIDTH COIL	
	L2501	CE41242-00B	LINEARITY COIL	
	L2502	CELP006-120Z	PEAKING COIL	12μH
	L2551	CJ30030-041	HEATER CHOKE	
	L2602	CJ30030-046	HEATER CHOKE	
	L2603	CELC002-470	CHOKE COIL	
	L2604	CELC002-470	CHOKE COIL	
	L2952	CJ30030-046	HEATER CHOKE	
	DIODE			
	D2103	1SS133-Y	SI. DIODE	
	D2401	1SS81-R	SI. DIODE	
	D2402	MA4270 (M) -Y	ZENER DIODE	
	D2403	MA4200 (M) -Y	ZENER DIODE	
	D2404	1N4003-Z	SI. DIODE	
	D2405	1N4003-Z	SI. DIODE	
	D2406	RD20E (B)	ZENER DIODE	
	D2407	RD36E (B)	ZENER DIODE	
	D2408	1SS81-R	SI. DIODE	
	D2409	1SS133-Y	SI. DIODE	
	D2501	1SS146-Y	SI. DIODE	
	D2502	CTU-G3DR	DUMP DIODE	
	D2503	U19E-FK	SI. DIODE	
	D2504	1SS133-Y	SI. DIODE	
	D2531	MA4056 (M) -Y	ZENER DIODE	
	D2532	MA4062 (H) -Y	ZENER DIODE	
	D2535	1SS146-Y	SI. DIODE	
	D2551	V19G-Z	SI. DIODE	
	D2552	RU3BLF-B1	SI. DIODE	
	D2553	DFA1A4-Z	SI. DIODE	

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SYMBOL NO.	PART NO.	PART NAME	REMARKS
DIODE			
D2554	U19E-FK	SI. DIODE	
D2559	1SS133-Y	SI. DIODE	
D2560	1N4003-Z	SI. DIODE	
D2571	1SR35-100-Z	SI. DIODE	
⚠ D2572	MA4068 (N) V1-Y	ZENER DIODE	
D2573	MA4091 (M) -Y	ZENER DIODE	
D2574	1SS133-Y	SI. DIODE	
D2575	MA4062 (M) -Y	ZENER DIODE	
D2602	RU1C-LFA1	SI. DIODE	
D2603	EG1Z-Z	SI. DIODE	
D2604	EG1Z-Z	SI. DIODE	
D2605	EU2A-Z	SI. DIODE	
D2606	RL2Z	SI DIODE	
D2607	RD9. 1E (B)	ZENER DIODE	
D2608	EU2A-Z	SI. DIODE	
D2609	RD30E (B2)	ZENER DIODE	
D2610	EU2A-Z	SI. DIODE	
D2611	1SS133-Y	SI. DIODE	
D2612	1SS133-Y	SI. DIODE	
D2614	RD36E (B)	ZENER DIODE	
D2615	1SS133-Y	SI. DIODE	
D2902	SF5J42	THYRISTOR	
D2904	RG1C-LFA1	SI. DIODE	
D2905	RG1C-LFA1	SI. DIODE	
D2908	1SS81-R	SI. DIODE	
D2909	1SS81-R	SI. DIODE	
D2951	RG4C-LFK2	SI DIODE	
D2952	EU2A-Z	SI. DIODE	
D2955	1SS133-Y	SI. DIODE	
D2956	1SS81-R	SI. DIODE	
D2958	MA4150 (M) -Y	ZENER DIODE	
D2959	RD6. 2E (B2)	ZENER DIODE	
D2961	1SS146-Y	SI. DIODE	
D2962	1SS146-Y	SI. DIODE	
D2963	1SS146-Y	SI. DIODE	
D2965	EU2A-Z	SI. DIODE	
D2966	1SS146-Y	SI. DIODE	
D2967	EU2A-Z	SI. DIODE	
D2968	1SS81-R	SI. DIODE	
D2969	1SS81-R	SI. DIODE	
TRANSISTOR			
Q2101	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q2102	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q2103	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q2401	2SD1271A (P)	SI. TRANSISTOR	
Q2402	2SA1304	SI. TRANSISTOR	
Q2403	2SC1890A (E, F) Y	SI. TRANSISTOR	
Q2404	2SA1013 (O) -Y	TRANSISTOR	
Q2405	2SA1015 (Y, GR) Y	SI. TRANSISTOR	
Q2406	2SC2371 (K-M)	SI. TRANSISTOR	
Q2420	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q2421	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q2422	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q2423	2SA1015 (Y, GR) Y	SI. TRANSISTOR	
Q2441	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q2442	2SA1015 (Y, GR) Y	SI. TRANSISTOR	
Q2443	2SD1266A (P, Q)	SI. TRANSISTOR	
Q2501	2SC3669 (O, Y) Y	SI. TRANSISTOR	

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	SYMBOL NO.	PART NO.	PART NAME	REMARKS
	TRANSISTOR			
⚠	Q2502	2SD2148-C1	TRANSISTOR	H. OUT
	Q2503	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
	Q2571	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
	Q2572	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
	Q2573	2SA1015 (Y, GR) Y	SI. TRANSISTOR	
	Q2601	2SD1133 (C, D)	SI. TRANSISTOR	
	Q2603	2SA966-Y	SI. TRANSISTOR	
	Q2604	2SC1815 (GR) -Y	SI. TRANSISTOR	
	Q2605	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
⚠	Q2901	2SC4237	SI. TRANSISTOR	
	Q2951	2SC3669 (O, Y)	SI. TRANSISTOR	
	Q2952	2SC2655 (Y) -Y	SI. TRANSISTOR	
	Q2953	2SA966-Y	SI. TRANSISTOR	
	Q2954	2SC2655 (Y) -Y	SI. TRANSISTOR	
	IC			
⚠	IC2551	TA78012AP	I. C. (M)	
	IC2601	STR10006-A	I. C. (H)	
⚠	IC2951	AN5900	I. C. (M)	
	OTHERS			
⚠	CP2601	ICP-F38	IC PROTECTOR	
⚠	CP2602	ICP-N75	IC PROTECTER	
⚠	CP2603	ICP-N15	IC PROTECTOR	
⚠	CP2901	ICP-N38	IC PROTECTOR	
⚠	FR2404	QRH127J-2R2M	F R	2.2 Ω 1/2W J
⚠	FR2409	QRH127J-152M	F R	1.5kΩ 1/2W J
	J2001	AX49607-004	HEADPHONE JACK	
	J2002	QMD2B04-001	MINI CONNECTOR	
	J2003	CEMN011-002	JACK	
	J2004	CEMN011-003	JACK	
⚠	R2551	QRH017J-470M	F R	47 Ω 1W J
⚠	R2552	QRZ0085-5R1M	F R	5.1 Ω 1/2W J
⚠	R2553	QRH027J-3R3M	F R	3.3 Ω 2W J
⚠	R2571	QRH017J-4R7M	F R	4.7 Ω 1W J
⚠	R2611	QRZ0054-8R2M	F R	8.2 Ω 1/4W J
⚠	R2623	QRZ0054-2R2M	F R	2.2 Ω 1/4W J
	S2001	QST3621-C01	PUSH SWITCH	SECAM, N3, N4, SKEW
	S2401	QSL4A13-C02	LEVER SWITCH	
	TH2441	ERT-D2ZHL503S	THERMISTOR	

CRT SOCKET PC BOARD ASS'Y (SBY-3057A)

SYMBOL NO.	PART NO.	PART NAME	REMARKS
VARIABLE R			
R3113	QVPA803-502M	V. R (R. CUT OFF)	5kΩ B
R3114	QVPA803-502M	V. R (G. CUT OFF)	5kΩ B
R3115	QVPA803-502M	V. R (B. CUT OFF)	5kΩ B
R3119	QVPA803-201M	V. R (R. DRIVE)	200Ω B
R3120	QVPA803-201M	V. R (G. DRIVE)	200Ω B
RESISTOR			
R3104	QRG029J-153A	OM R	15kΩ 2W J
R3105	QRG029J-153A	OM R	15kΩ 2W J
R3106	QRG029J-153A	OM R	15kΩ 2W J
R3107	QRG029J-183A	OM R	18kΩ 2W J
R3108	QRG029J-183A	OM R	18kΩ 2W J
R3109	QRG029J-183A	OM R	18kΩ 2W J
R3125	QRZ0056-332Z	COMP. R	3.3kΩ 1/2W K
R3126	QRZ0056-332Z	COMP. R	3.3kΩ 1/2W K
R3127	QRZ0056-332Z	COMP. R	3.3kΩ 1/2W K
R3128	QRZ0056-332Z	COMP. R	3.3kΩ 1/2W K
R3129	QRZ0056-332Z	COMP. R	3.3kΩ 1/2W K
R3130	QRZ0056-332Z	COMP. R	3.3kΩ 1/2W K
CAPACITOR			
C3101	QQL043K-101	PEAKING COIL	100μH
C3103	QQL043K-101	PEAKING COIL	100μH
C3104	A76186-47Z	PEAKING COIL	47μH
C3161	QFH53BK-223M	MM CAP.	0.022μF 1250V K
COIL			
L3102	QQL043K-101	PEAKING COIL	100μH
L3105	A76186-47Z	PEAKING COIL	47μH
L3106	A76186-47Z	PEAKING COIL	47μH
DIODE			
D3101	1SS133-Y	SI. DIODE	
D3102	1SS133-Y	SI. DIODE	
D3103	1SS133-Y	SI. DIODE	
D3104	1SS133-Y	SI. DIODE	
D3105	1SS133-Y	SI. DIODE	
TRANSISTOR			
Q3101	2SC1360	SI. TRANSISTOR	
Q3102	2SC1360	SI. TRANSISTOR	
Q3103	2SC1360	SI. TRANSISTOR	
Q3104	2SC2068-LB	SI. TRANSISTOR	
Q3105	2SC2068-LB	SI. TRANSISTOR	
Q3106	2SC2068-LB	SI. TRANSISTOR	
Q3151	2SC1360	SI. TRANSISTOR	
Q3152	2SC1360	SI. TRANSISTOR	
Q3153	2SC1360	SI. TRANSISTOR	
OTHERS			
⚠	A75522-C	CRT SOCKET	

A/V TERMINAL PC BOARD ASS'Y (SBY-7007A)

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SYMBOL NO.	PART NO.	PART NAME	REMARKS
RESISTOR			
R7227	QRG019J-680S	OM R	68 Ω 1W J
R7232	QRG019J-680S	OM R	68 Ω 1W J
CAPACITOR			
C7003	QEKC1CM-336MZ	E CAP.	33μF 16V M
C7004	QEKC1CM-476MZ	E CAP.	47μF 16V M
C7005	QEKC1CM-476MZ	E CAP.	47μF 16V M
C7101	QEU40JM-477M	E CAP.	470μF 6.3V M
C7102	QEKC1CM-336MZ	E CAP.	33μF 16V M
C7104	QEKC1CM-476MZ	E CAP.	47μF 16V M
C7105	QEU40JM-477M	E CAP.	470μF 6.3V M
C7106	QEKC1CM-336MZ	E CAP.	33μF 16V M
C7109	QEKC1CM-476MZ	E CAP.	47μF 16V M
C7110	QEN61CM-336Z	BP E CAP.	33μF 16V M
C7111	QEKC1CM-107MZ	E CAP.	100μF 16V M
C7201	QEKC1CM-476MZ	E CAP.	47μF 16V M
C7202	QEKC1CM-107MZ	E CAP.	100μF 16V M
C7203	QEKC1CM-476MZ	E CAP.	47μF 16V M
C7204	QEKC1CM-107MZ	E CAP.	100μF 16V M
C7205	QEKC1CM-476MZ	E CAP.	47μF 16V M
C7206	QEKC1CM-107MZ	E CAP.	100μF 16V M
C7207	QEKC1CM-476MZ	E CAP.	47μF 16V M
C7208	QEKC1CM-107MZ	E CAP.	100μF 16V M
C7209	QEKC1CM-107MZ	E CAP.	100μF 16V M
C7211	QEKC1CM-107MZ	E CAP.	100μF 16V M
C7213	QEN51HM-335	BP E CAP.	3.3μF 50V M
C7214	QEN51HM-335	BP E CAP.	3.3μF 50V M
C7215	QEN51HM-335	BP E CAP.	3.3μF 50V M
C7216	QEN51HM-335	BP E CAP.	3.3μF 50V M
C7217	QEN51HM-335	BP E CAP.	3.3μF 50V M
C7218	QEN51HM-335	BP E CAP.	3.3μF 50V M
DIODE			
D7001	RD13JS-Y	SI DIODE	
D7004	RD13JS-Y	SI DIODE	
D7007	RD13JS-Y	SI DIODE	
D7008	RD13JS-Y	SI DIODE	
D7101	RD15E (B)	ZENER DIODE	
D7201	RD13JS-Y	SI DIODE	
D7202	RD13JS-Y	SI DIODE	
D7203	RD13JS-Y	SI DIODE	
D7204	RD13JS-Y	SI DIODE	
TRANSISTOR			
Q7001	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q7002	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q7003	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q7004	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q7005	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q7006	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q7007	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q7008	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q7009	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q7010	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q7011	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q7012	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q7013	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q7014	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q7015	2SC1815 (Y, GR) Y	SI. TRANSISTOR	

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SYMBOL NO.	PART NO.	PART NAME	REMARKS
TRANSISTOR			
Q7101	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q7102	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q7103	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q7104	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q7105	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q7106	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q7107	2SA1015 (Y, GR) Y	SI. TRANSISTOR	
Q7108	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q7201	2SA1015 (Y, GR) Y	SI. TRANSISTOR	
Q7202	2SA1015 (Y, GR) Y	SI. TRANSISTOR	
Q7203	2SA1015 (Y, GR) Y	SI. TRANSISTOR	
Q7204	2SA1015 (Y, GR) Y	SI. TRANSISTOR	
Q7205	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q7206	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q7301	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q7302	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q7303	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
Q7304	2SC1815 (Y, GR) Y	SI. TRANSISTOR	
IC			
IC7001	TC4066BP	I. C. (M)	
IC7002	TC4066BP	I. C. (M)	
IC7101	TC4066BP	I. C. (M)	
IC7102	TC4066BP	I. C. (M)	
IC7201	TC4066BP	I. C. (M)	
IC7202	TC4066BP	I. C. (M)	
OTHERS			
	CM21902-C0A	AV TERMINAL ASSY	
DL7001	CE41042-002	DELAY LINE	
J7001	QMD6A04-001	DIN JACK	
J7006	CEMT005-001	SP TERMINAL	

LINE FILTER & RECT PC BOARD ASS'Y (SBY-9011A)

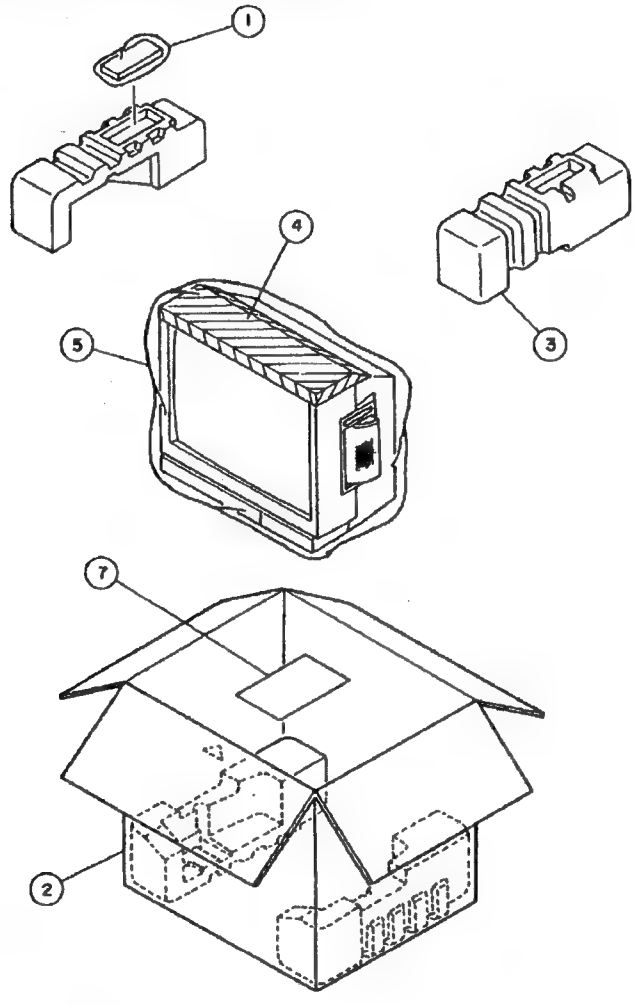
	SYMBOL NO.	PART NO.	PART NAME	REMARKS
	CAPACITOR			
⚠	C9091	QFZ9022-473M	MF CAP.	
⚠	C9092	QFZ9022-473M	MF CAP.	
⚠	C9093	QFZ9022-473M	MF CAP.	
⚠	C9901	QCZ9034-472A	C CAP.	
⚠	C9902	QCZ9034-472A	C CAP.	
⚠	C9903	QCZ9034-472A	C CAP.	
⚠	C9904	QCZ9034-472A	C CAP.	
⚠	C9994	QCZ9036-471M	C CAP.	
⚠	C9995	QCZ9036-471M	C CAP.	
	DIODE			
⚠	D9901	S4VB60	DIODE BRIDGE	
	D9902	RM1C	SI DIODE	
	IC			
⚠	IC9901	STR81145A-A	IC	
	OTHERS			
⚠	F9091	QMF51E2-4R0S	FUSE	4.0A
⚠	LF9091	CE41405-00A	LINE FILTER	
⚠	LF9092	CE40719-00A	LINE FILTER	
⚠	RY9091	CE40134-001	RELAY	
⚠	TH9091	A76038-T	POSISTOR	or A76038

MODULE P.C BOARD PARTS LIST

The following module pc boards are supplied as assemblies.
The component parts on the module PC boards are available only when the parts are listed in the "MODULE PRINTED CIRCUIT BOARD PARTS LIST."

SECAM MODULE PC BOARD Ass'y (SBY-S001A)
S.SELECT MODULE PC BOARD Ass'y (SBY-M003A)
IF MODULE PC BOARD Ass'y (SBY-F501A)
DL APACON MODULE PC BOARD Ass'y (SBY-D002A)
EQUALIZER MODULE PC BOARD Ass'y (SBX-E001A)

PACKING



PACKING PARTS LIST

SYMBOL NO.	PART NO.	PART NAME	REMARKS
1	RM-C440	RC HAND PIECE	
2	CP10891-007	PACKING CASE	
3	CP10719-00B	CUSHION ASSY	4pcs in 1set
4	AP3755-44	TOP COVER	
5	AP3756-44	POLY. BAG	
7	AV-S290M-IB-A	INST BOOK	

JVC AV-S290M SCHEMATIC DIAGRAM

■ NOTICE

○ Voltage values and waveforms are measured by respectively receiving and displaying on the screen the colour bars signals of the PAL, SECAM, and NTSC (3.58MHz/4.43MHz).
The voltage values indicated within the circuits denote those obtained when PAL colour bar signals are received and displayed on the screen. However, as for those points where the voltage values are caused to vary by input signals (SECAM, NTSC); discrimination is effected by indicating as per an example [Example: (4.2V)].

○ The voltage values when receiving and displaying the PAL signal on the screen and the each mode values of the VSM & AUDIO STATUS are varied is shown in the LIST on page ② (⇨Difference voltage list).
Multimeter used.
DC 20kΩ/V
Given figures are all DC voltages.
Sweep speed of oscilloscope
H→20μS/div. V→5mS/div.
Others—sweep speed specified

○ Since the schematic diagram is a standard one, the circuit and circuit constants may be subject to change for improvement without any notice.

■ SAFETY

FR (–WV–FR) denotes a fusible resistor which operates as a fuse. When replacing fusible resistors and parts indicated with black shading (▬) in the circuit diagrams, be sure to ensure safety by using designated parts.
As to other parts too, use designated parts to maintain safety and performance.

NOTE FOR SERVICE

This model's power circuit is partly different in the GND. The difference of the GND is shown by the LIVE (primary: ⊥) side GND and the NEUTRAL (secondary: ⏚) side GND.
Don't short between the LIVE side GND and NEUTRAL side GND or never measure with a measuring apparatus (oscilloscope etc.) the LIVE side GND and NEUTRAL side GND at the same time.
If above note will not be kept, a fuse or any parts will be broken.

■ INDICATION OF PARTS SYMBOL

Inside board (Example) SBY- 1252A: R1209→R209
Outside board (Example) R0001→R01

■ SCHEMATIC DIAGRAM INDICATION

Resistor

○ Resistance value
Without unit : [Ω] K : [kΩ] M : [MΩ]
○ Rated allowable power
Without indication : 1/6W
* Others Indicated
○ Type
Without indication : Carbon resistor
OMR : Oxide metal film resistor
UNFR : Unflammable resistor
MFR : Metal film resistor
MPR : Metal plate resistor
FR : Fusible resistor
* Composition resistor 1/2 [W] is indicated as 1/2S or Comp.

Capacitor

○ Capacitance
Above 1 [pF] Below 1 [μF]
○ Withstnad voltage
Without indication : DC 50 [V]
Others : DC withstand voltage [V]
AC indicated : AC withstand voltage [V]
○ Indications for electrolitic capacitors are as follows.
(Example)
47/50→capacitance [μF] /withstand voltage [V]
○ Type
Without indication : Ceramic capacitor
MY : Mylar capacitor
MM : Metalized mylar capacitor
PP : Polypropylene capacitor
MPP : Metalized polypropylene capacitor
MF : Metalized film capacitor
BP : Bipolar electrolytic capacitor
TAN. : Tantalum capacitor

Coil

Without unit : [μH]

Connection method

▭ : Connector
→⊣ : Receptacle
○ ○ : Wrapping or soldering

Power Supply

▬▬ : B_1(115V) ▬▬ : B_2(12V)
▬▭▬▭ : 9V ▭▭▭ : 5V

* Each voltage reading specified

Test point & GND. symbol.

◉ : Test point by miniature GT pin
○ : Only test point display
⊥ : Live (Primary) side ground
⏚ : Neutral (Secondary) side ground

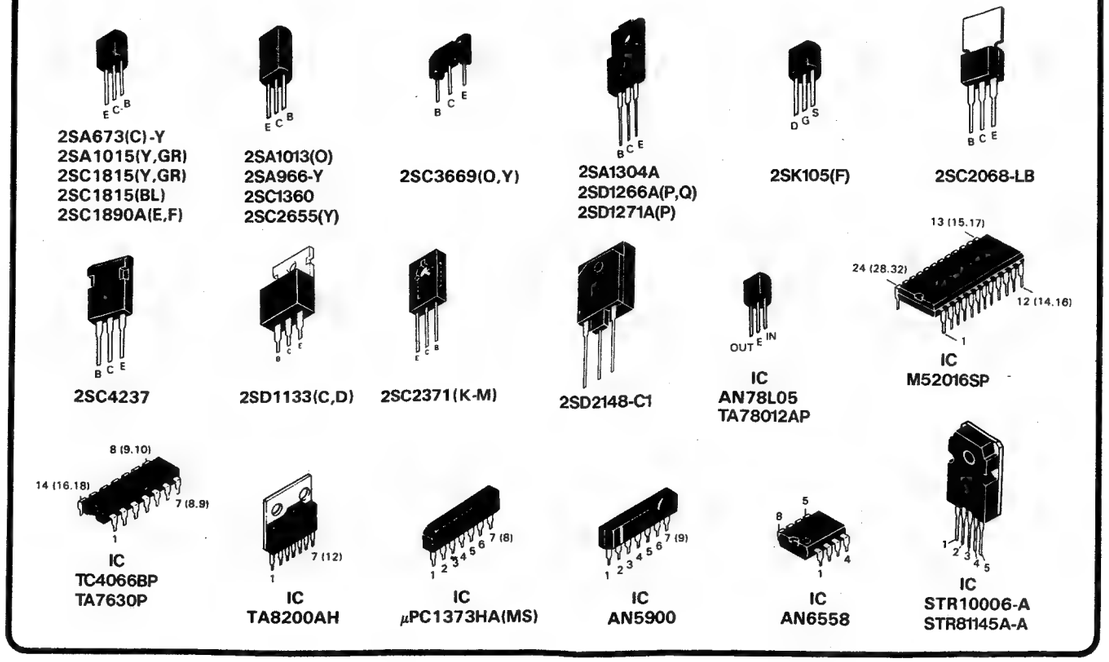
DIFFERENT VOLTAGE LIST

Symbol / Pin No / System SW Position	IC201						SBX-M003A			SBX-F501A	SBX-S001A		
	17	23	29	30	31	32	34	36	38	13	8	10	17
PAL	5.7V	4.6V	8.8V	3.5V	7.4V	3.5V	0V	11.4V	0.1V	0V	0.1V	3.9V	7.2V
SECAM	5.7V	0V	7.7V	3.5V	7.4V	3.5V	0V	0.1V	8.2V	0V	8.2V	0V	7.2V
NTSC (3.58MHz)	0.1V	0.3V	2.1V	1.9V	2V	1.9V	11.5V	0.1V	0.1V	11.5V	0.1V	2.7V	2.0V
NTSC (4.43MHz)	0.1V	0.3V	2.1V	1.9V	2V	1.9V	11.5V	0V	0V	0V	0.1V	3.8V	2.0V

Symbol / Electrode / System SW Position	Q202		Q207	
	B	C	B	C
PAL	0V	5.7V	0.7V	0.1V
SECAM	0V	5.7V	0.7V	0.1V
NTSC (3.58MHz)	0.7V	0V	0V	0.5V
NTSC (4.43MHz)	0.7V	0V	0.7V	0.1V

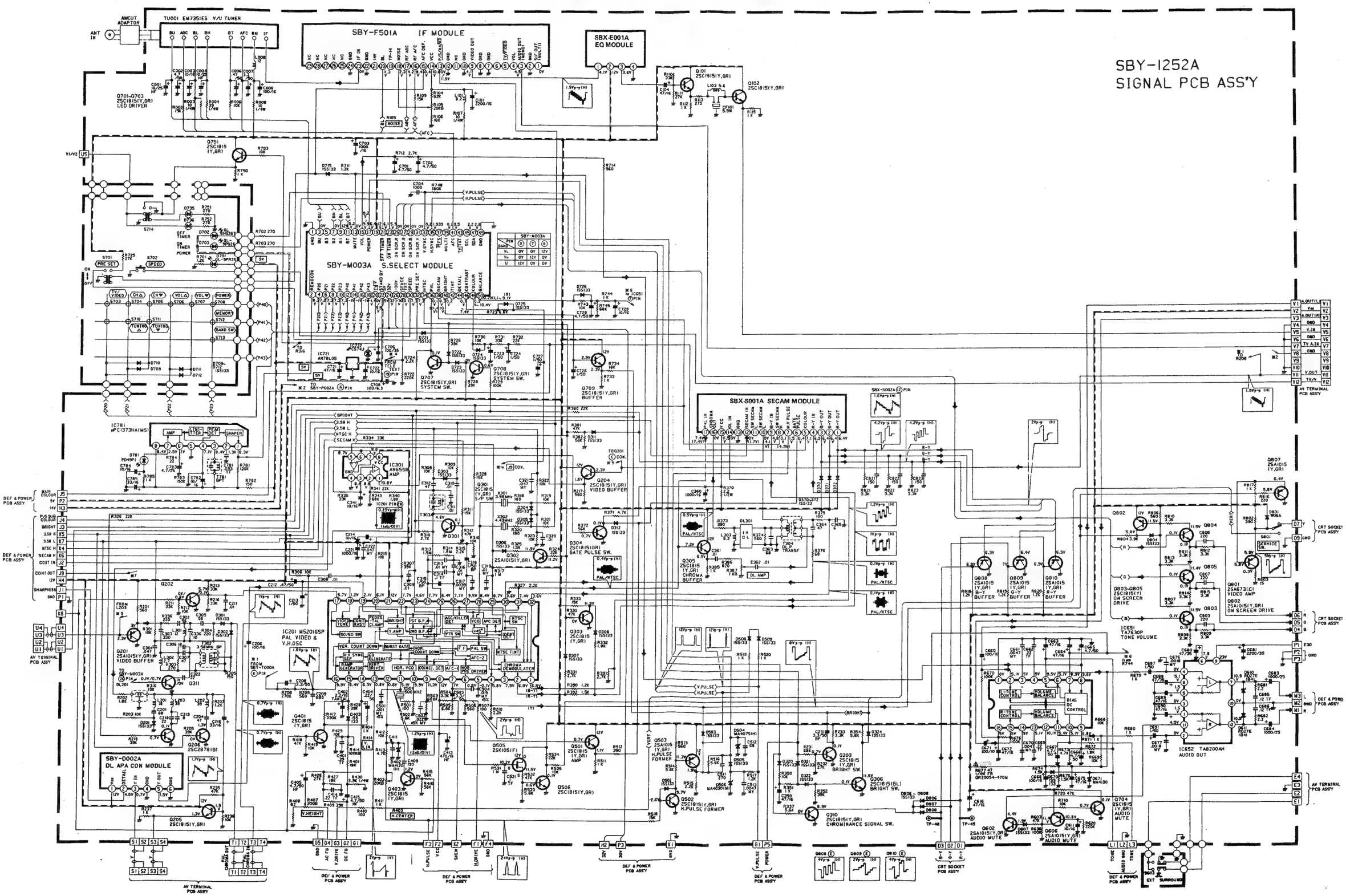
Symbol / Electrode / System SW Position	Q301		Q302		Q303		Q304		Q305		Q306			Q401		Q707		Q708	
	B	C	B	C	B	C	B	C	B	C	B	C	E	B	C	B	C	B	C
PAL	0.1V	4.6V	11.3V	12V	0V	11.9V	0.7V	0.1V	7.2V	11.4V	0.1V	11.5V	6.5V	0V	6.2V	0V	11.1V	0.6V	0V
SECAM	0.7V	0.1V	11.3V	12V	0V	11.9V	0.6V	1.7V	7.2V	11.4V	0.1V	11.5V	6.5V	0V	6.2V	0.7V	0.1V	0.1V	1.2V
NTSC (3.58MHz)	0.1V	0.3V	11.5V	1.7V	0.7V	0.1V	0.6V	1.1V	2.0V	11.5V	2V	1.4V	1.4V	0.6V	0.1V	0.7V	0.1V	0V	1.2V
NTSC (4.43MHz)	0.1V	0.3V	11.5V	1.7V	0.7V	0.1V	0.6V	1.1V	2.0V	11.5V	2V	1.4V	1.4V	0.6V	0.1V	0.7V	0.1V	0V	1.2V

Basing of Transistor & ICs

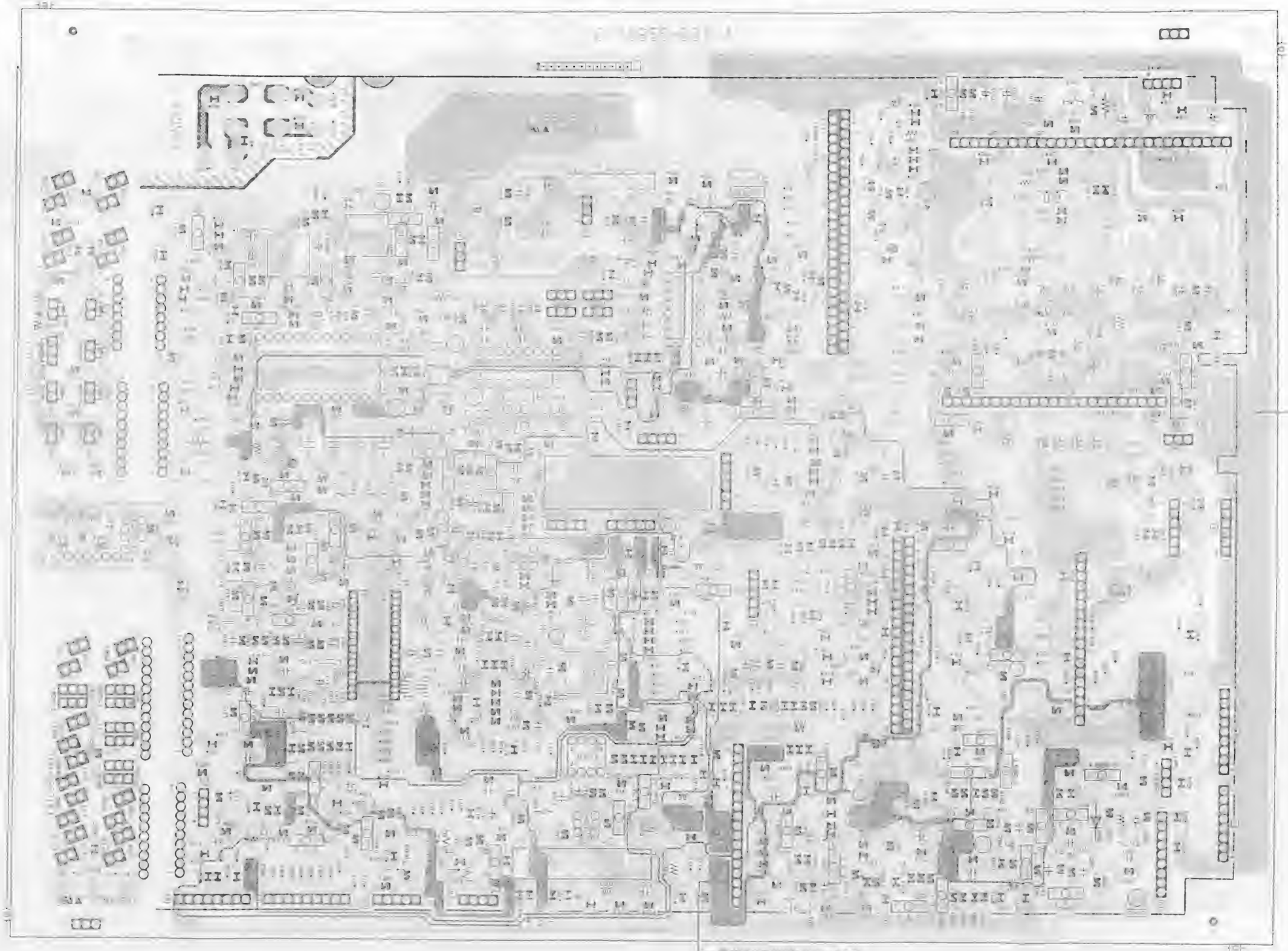


SIGNAL SCHEMATIC DIAGRAM

SBY-1252A
SIGNAL PCB ASS'Y

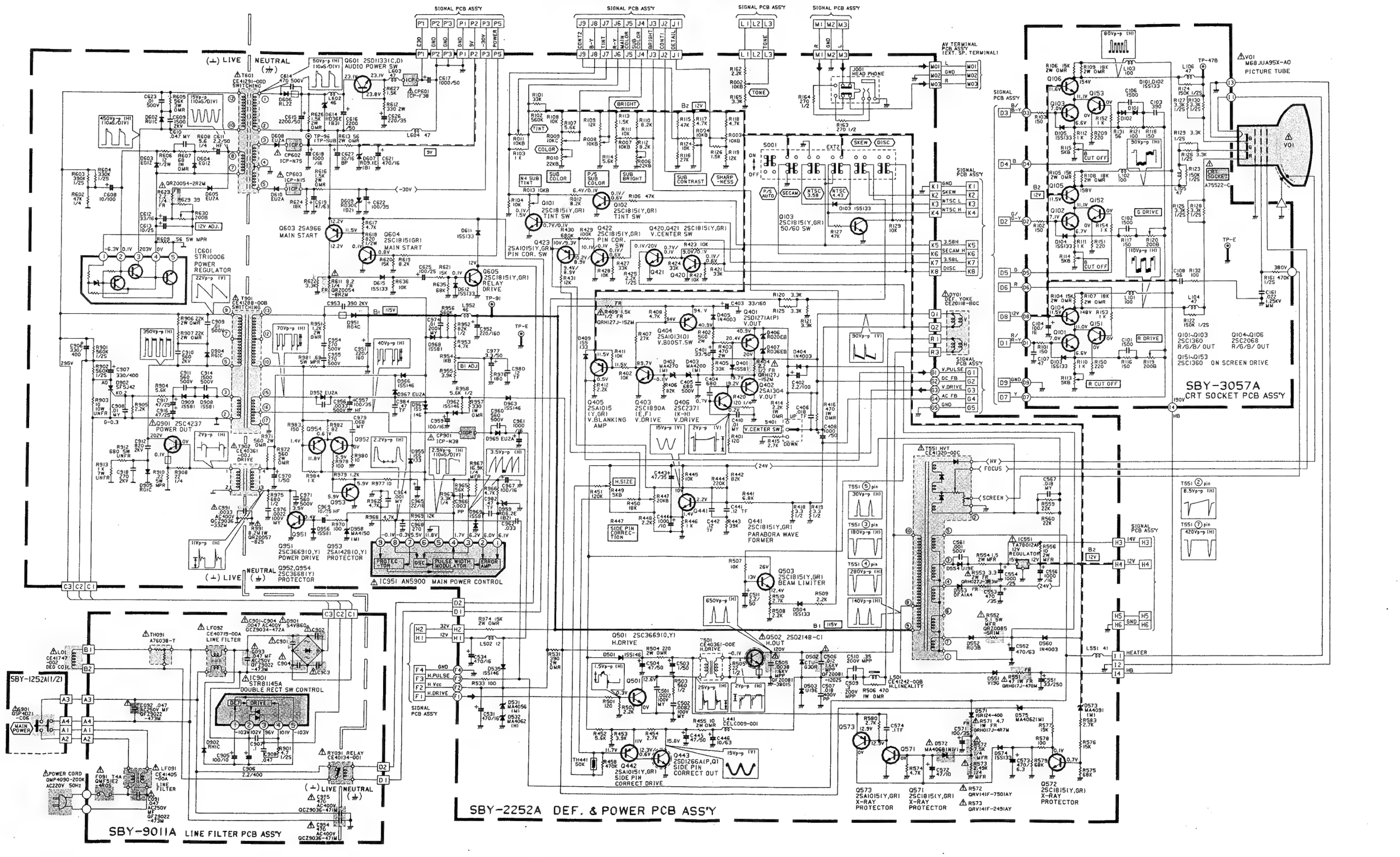


SIGNAL PCB BACK PATTERN



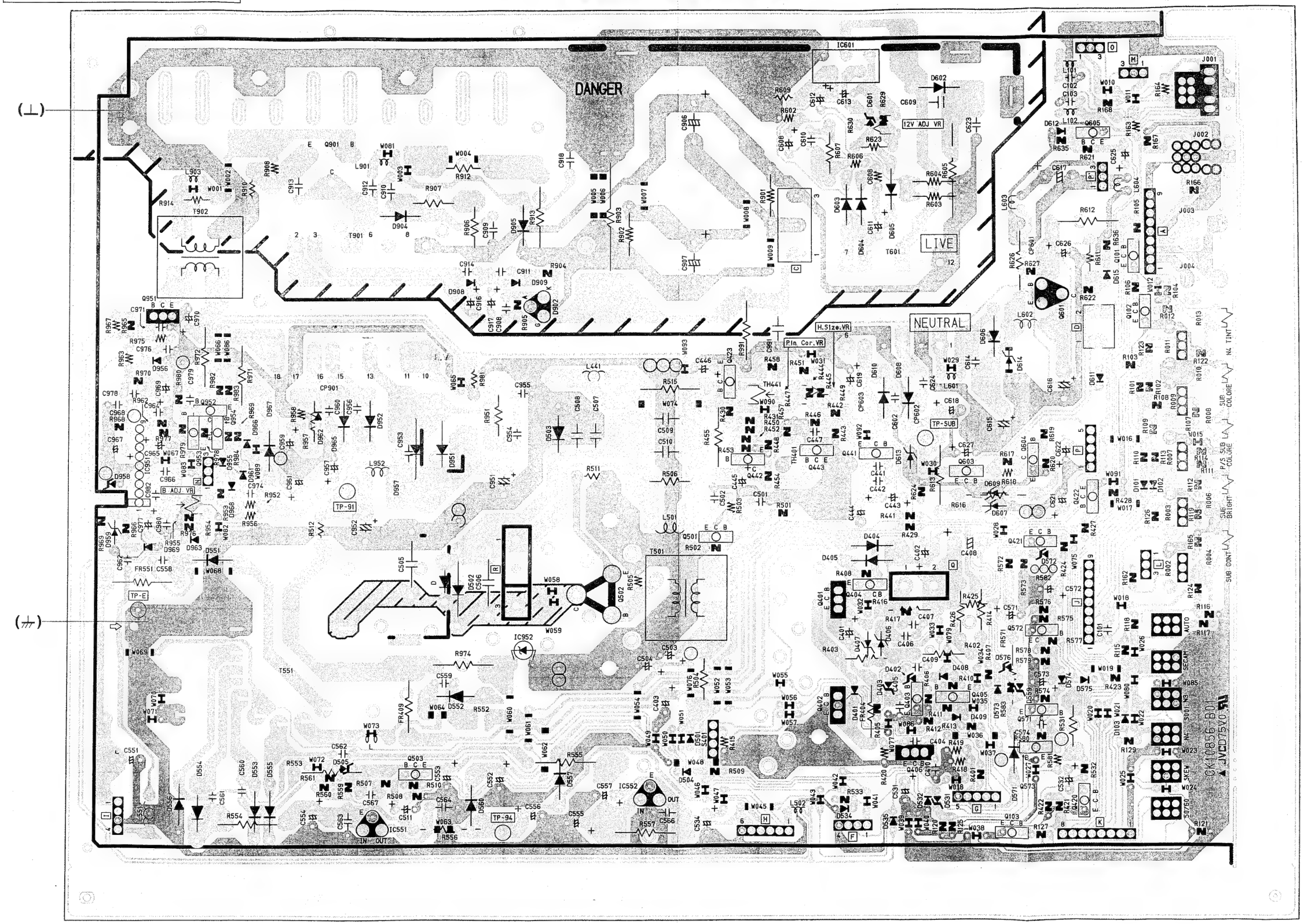
(PART SIDE PATTERN)

DEF & POWER SCHEMATIC DIAGRAM

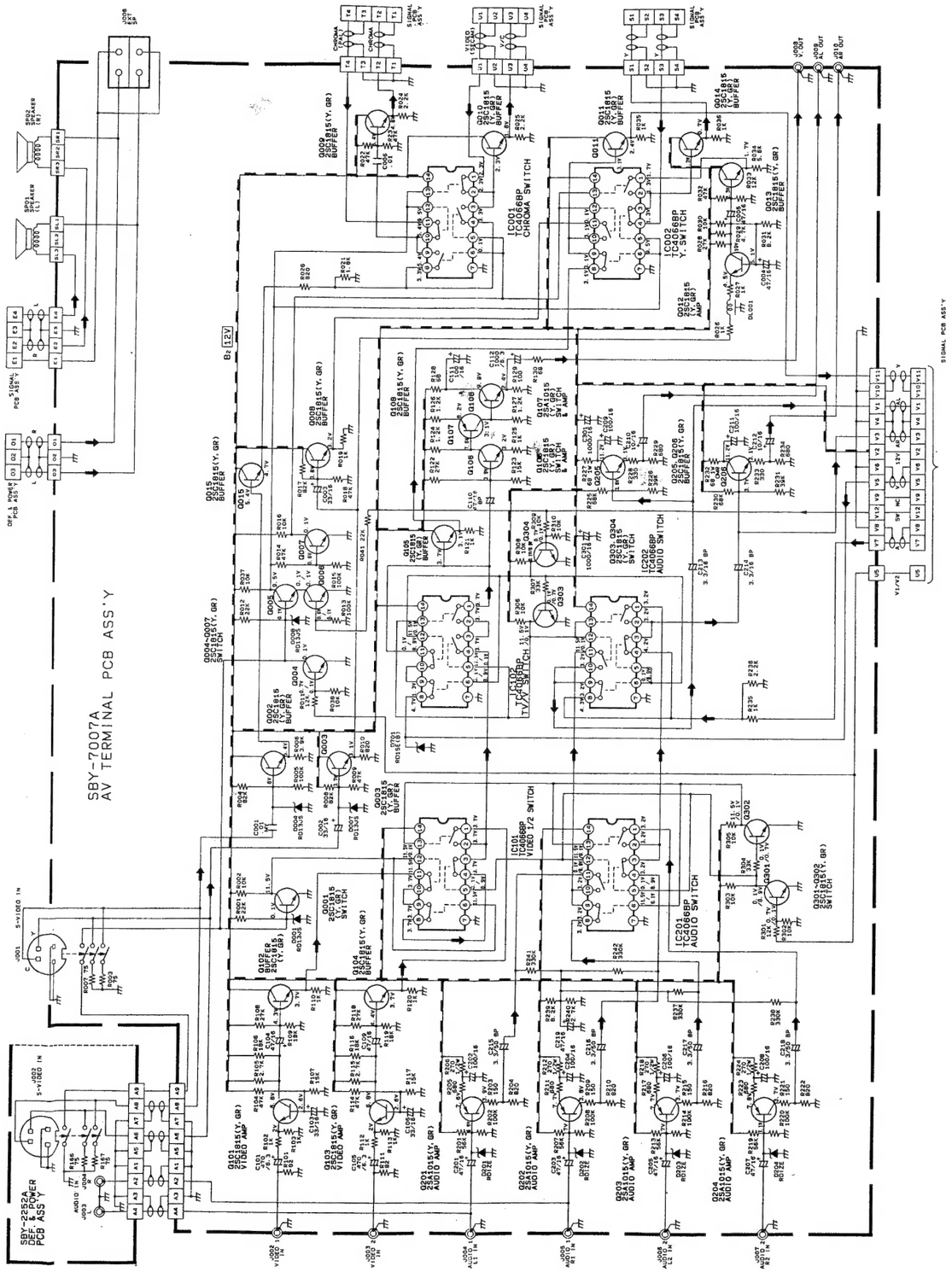


Ⓐ **AV-S290M** **AV-S290M** Ⓐ

DEF & POWER PCB BACK PATTERN

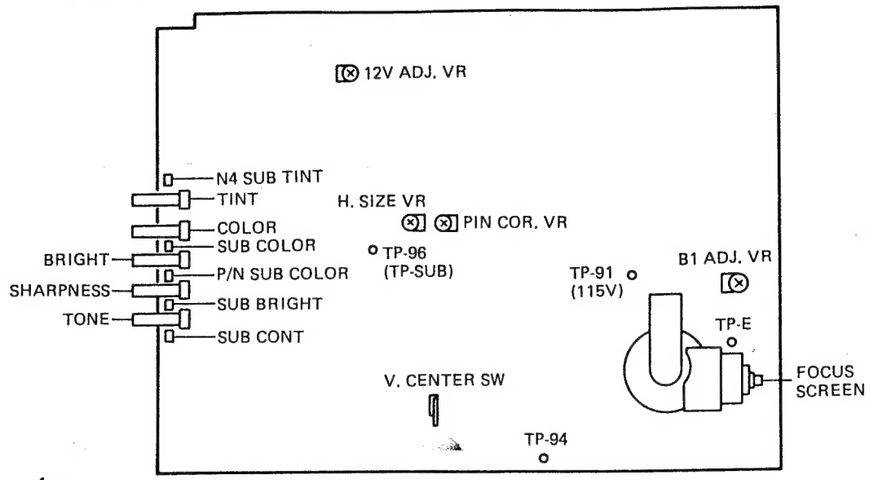


AV TERMINAL SCHEMATIC DIAGRAM

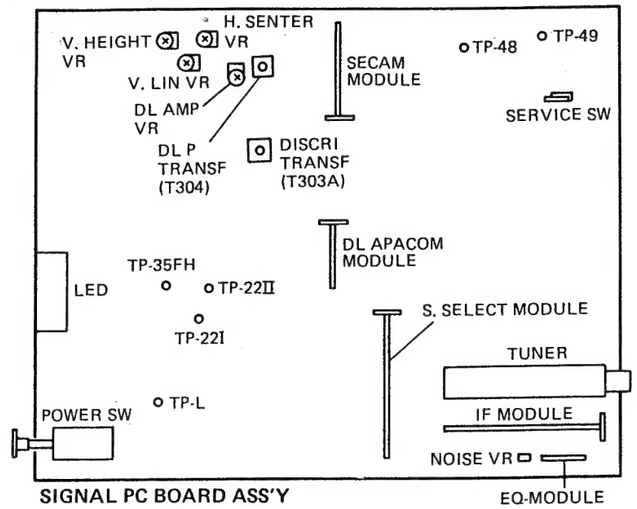


890626NP/VP(1/4)

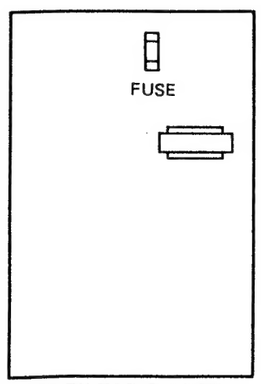
■ ADJUSTMENT LOCATION



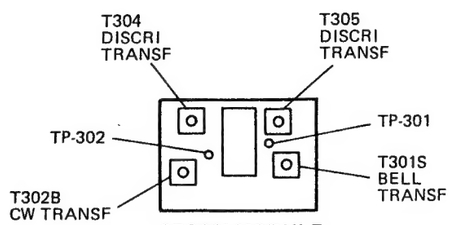
DEF & POWER PC BOARD ASS'Y



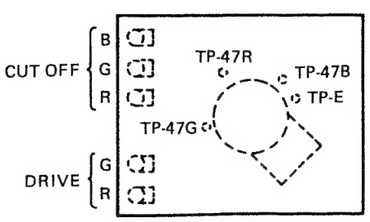
SIGNAL PC BOARD ASS'Y



LINE FILTOR & RECT PC BOARD ASS'Y

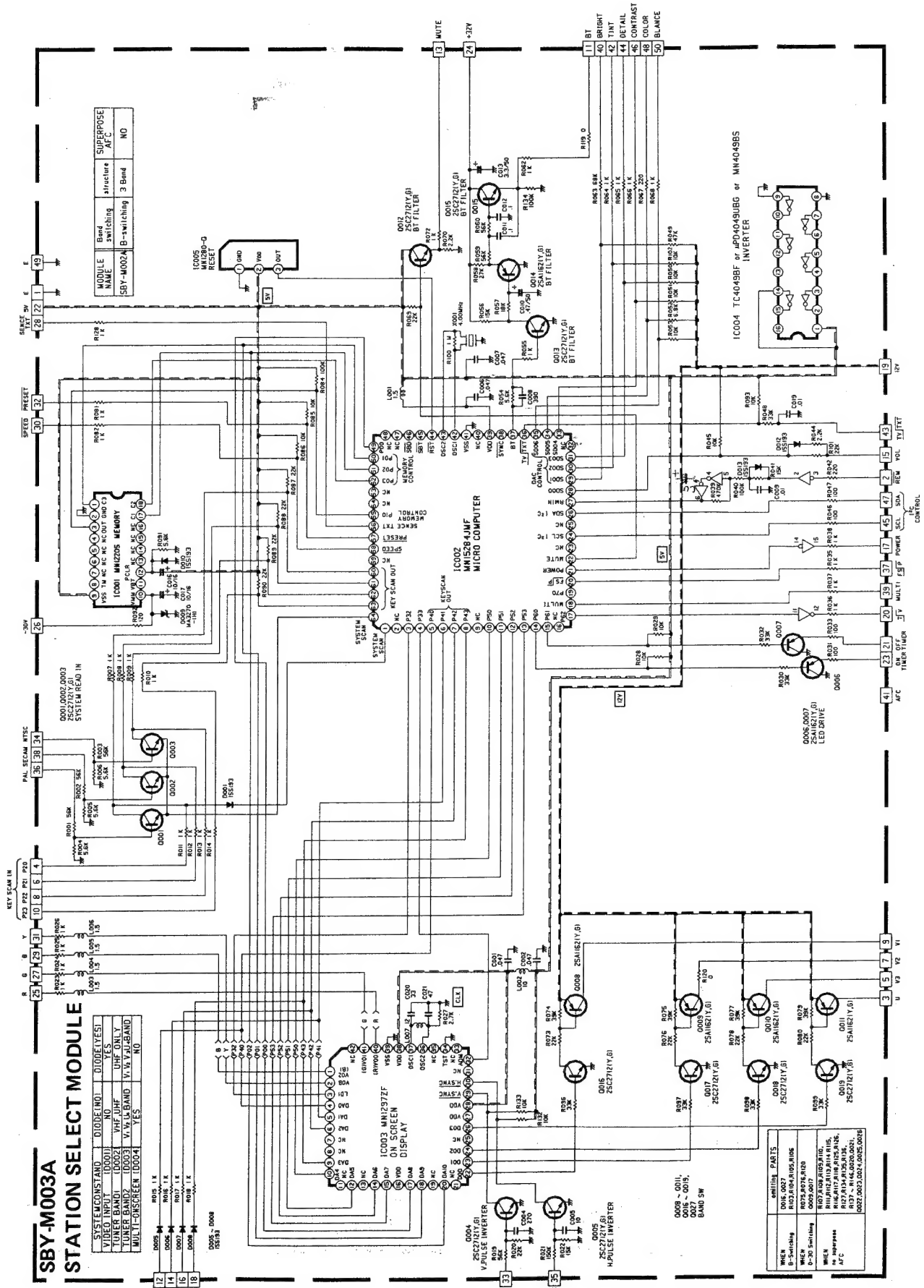


SECAM MODULE PC BOARD ASS'Y

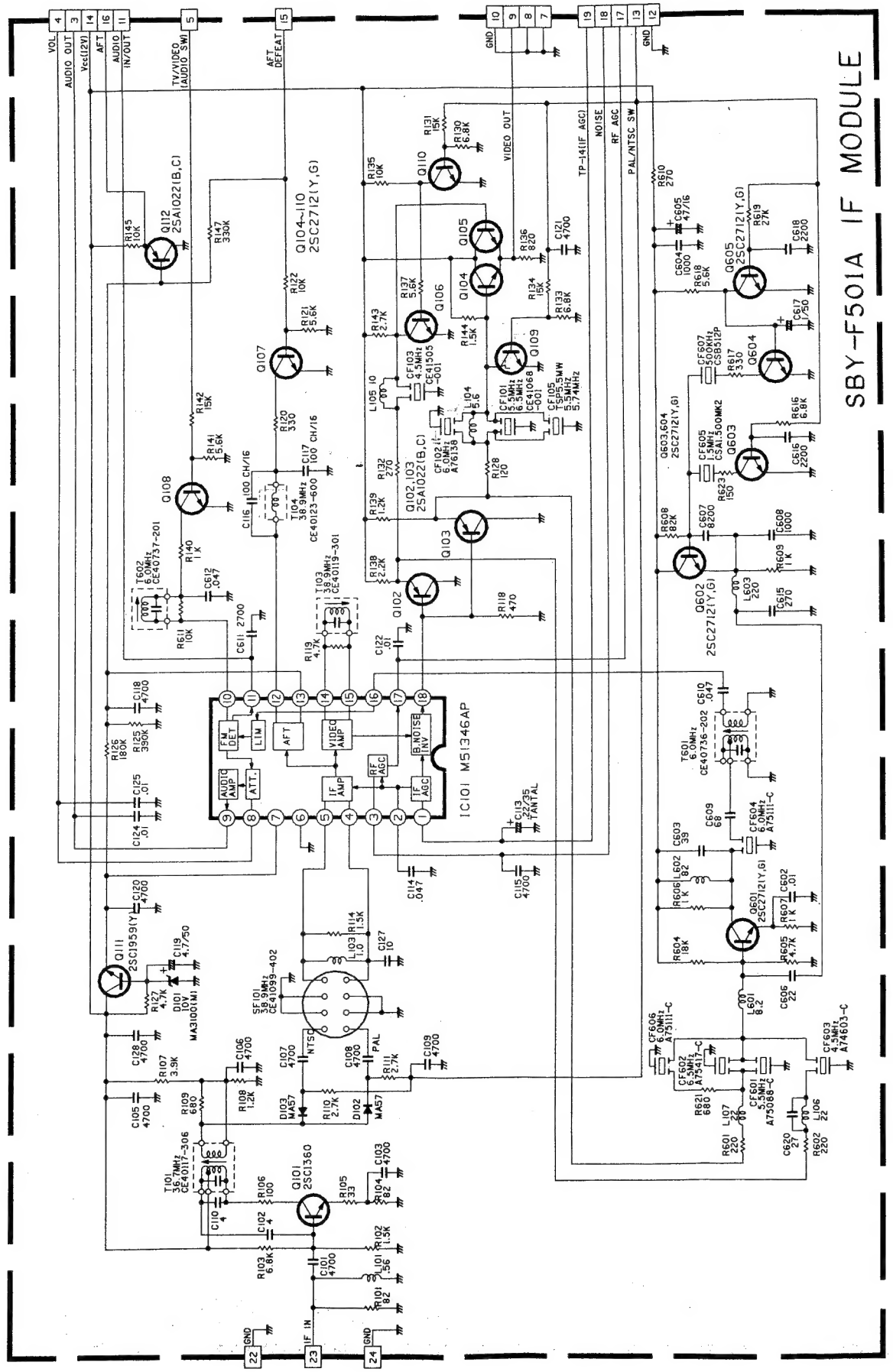


CRT SOCKET PC BOARD ASS'Y

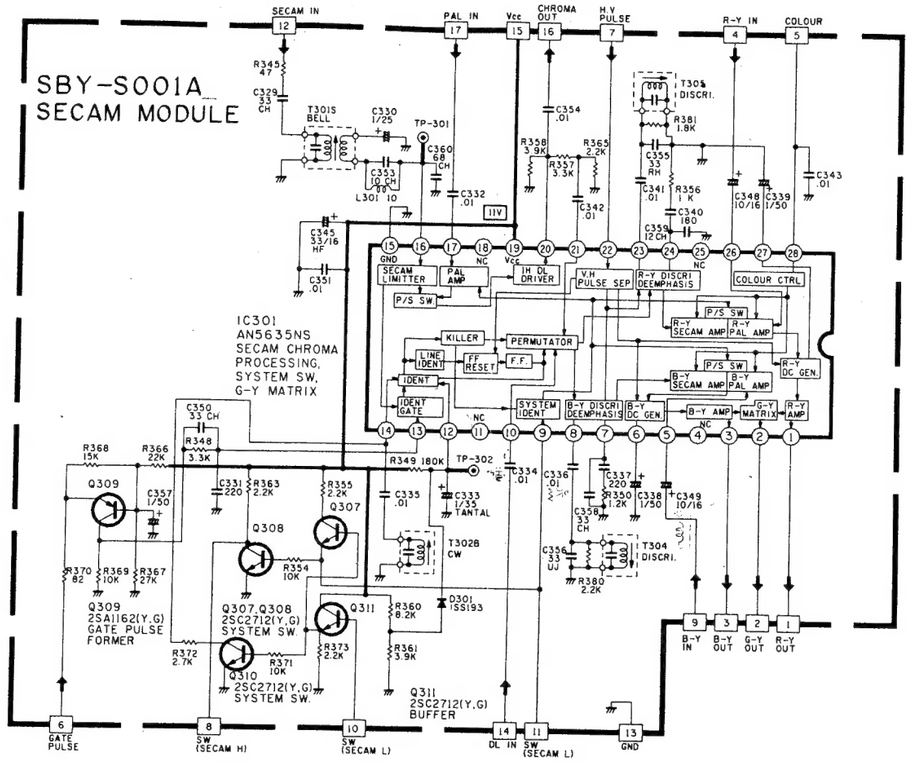
S. SELECT MODULE SCHEMATIC DIAGRAM



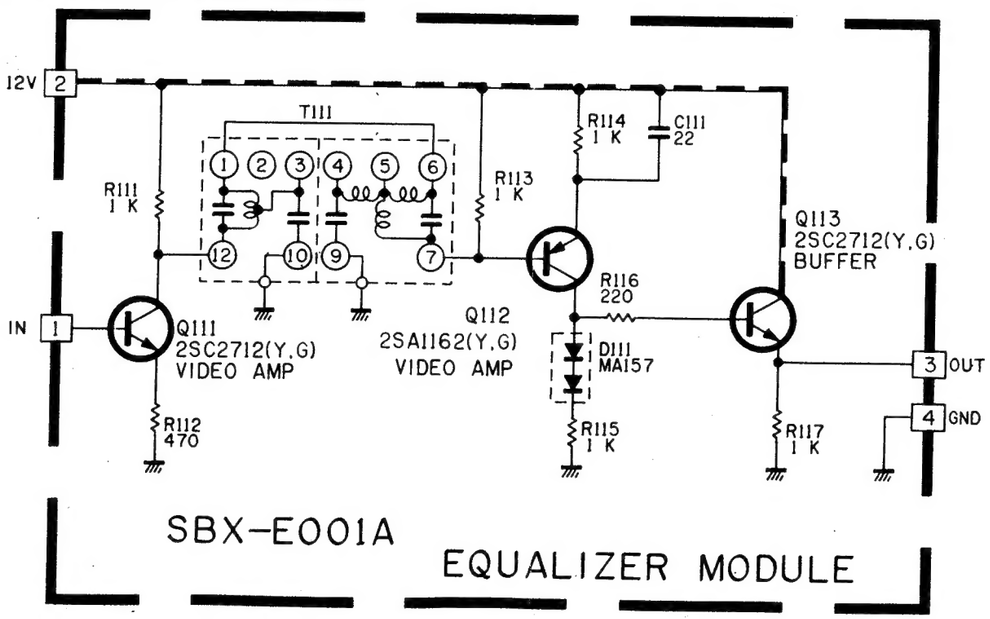
IF MODULE SCHEMATIC DIAGRAM



SECAM MODULE SCHEMATIC DIAGRAM

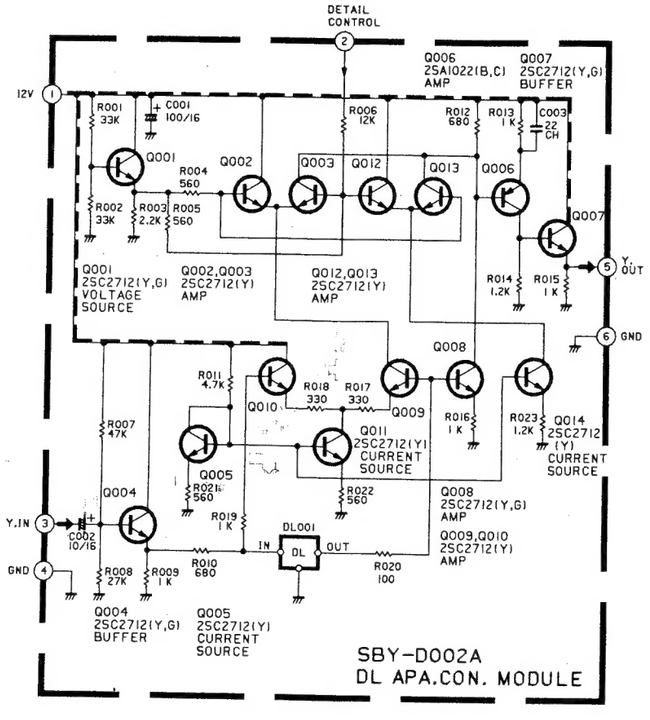


EQ. MODULE SCHEMATIC DIAGRAM

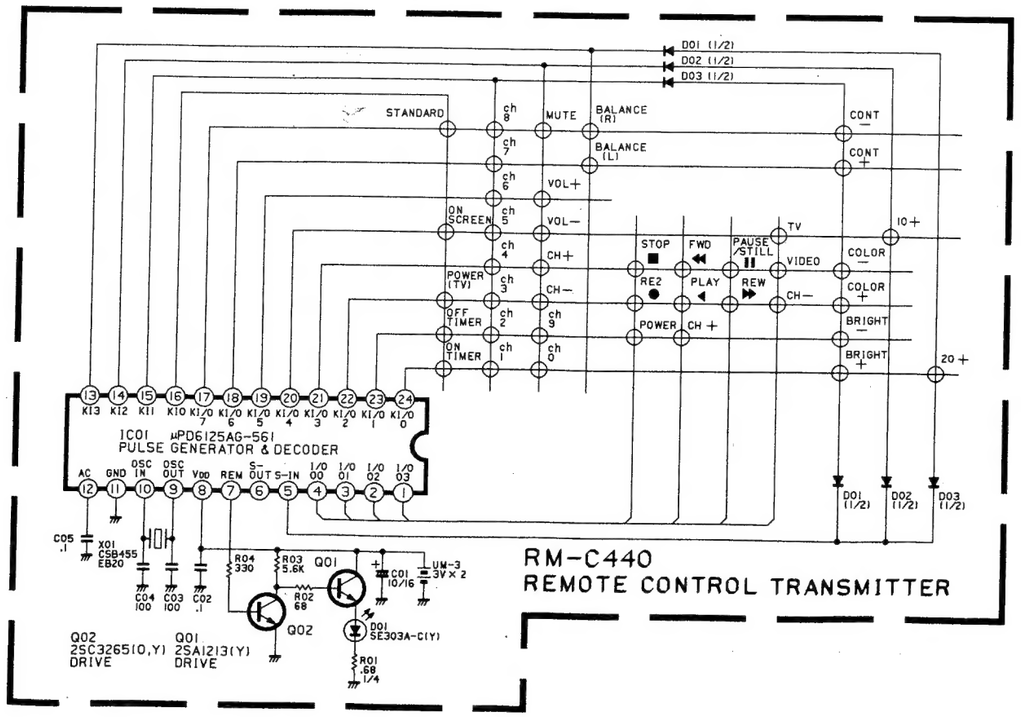


890626NP/VP(4/4)

DL APACON MODULE SCHEMATIC DIAGRAM



REMOTE CONTROL TRANSMITTER SCHEMATIC DIAGRAM



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