

JVC

AV-27BM5



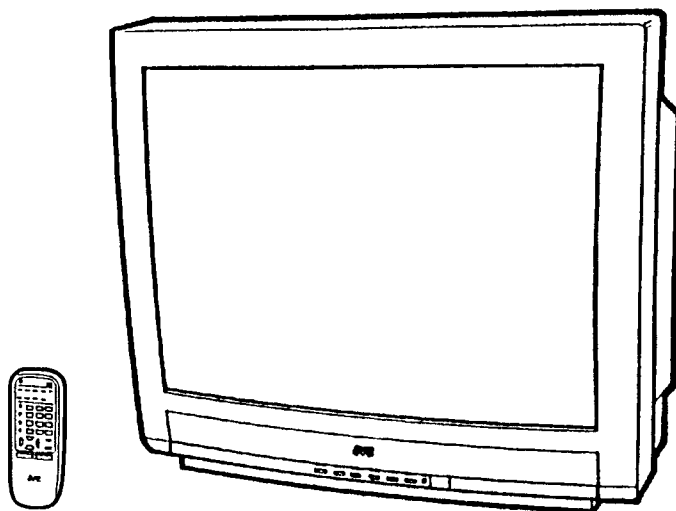
SERVICE MANUAL

COLOR TELEVISION

AV-27BM5 (US/CA)

BASIC CHASSIS

GY IV



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SPECIFICATIONS

Item	Content
Dimensions (W×H×D)	25-3/4" × 23-1/16" × 20-1/2" / 65.5cm × 58.6cm × 52.0cm
Weight	82.7 lbs / 37.6kg
Type	Color television
TV System and Color, Sound system	
TV RF System	CCIR (M)
Color, System	NTSC system,BTSC system (Multi-channel sound)
TV Receiving Channels and Frequency	
V_L Band	(02 ~ 06) 54.00MHz ~ 88MHz
V_H Band	(07 ~ 13) 174MHz ~ 216MHz
UHF Band	(14 ~ 69) 470MHz ~ 806.00MHz
CATV Receiving Channels and Frequency (Frequency Synthesizer system)	
Low Band	(02 ~ 06) by (02 ~ 06)
High Band	(07 ~ 13) by (07 ~ 13)
Mid Band	(A ~ 1) by (14 ~ 22)
Super Band	(J ~ W) by (23 ~ 36)
Hyper Band	(W + 1 ~ W + 28) by (37 ~ 64)
ULTRA Band	(W + 29 ~ W + 84) by (65 ~ 94 ,100 ~ 125)
Sub Mid Band	(A-8,A-4 ~ A-1) by (01,96 ~ 99)
TV/CATV Total Channel	180 Channels
Intermediate Frequency	
Video IF Carrier	45.75MHz
Sound IF Carrier	41.25MHz (4.5MHz)
SC IF Carrier	42.17MHz
Color Sub Carrier	3.58MHz
Antenna Input Impedance	75Ω (VHF/UHF) Terminal,F-Type Connector
Power Input	120V AC,60Hz
Power Consumption	MAX. 147W / AVG. 103W [US]
Input Current	1.9A [CA]
Picture Tube	27"(73cm) diagonally measured,In-Line type, Full-square Dark Tint tube
Viewable Picture Size (W×H)	21-5/16" × 16" / 54.1cm × 40.6cm
High Voltage	29.0kV ± 1kV (at zero beam current)
Speaker	2" × 4-3/4" / 5 × 12cm ellipse × 2
External speaker terminals	Impedance 6~8Ω
Audio Power Output	1.2W + 1.2W
Video External Input	1 Vp-p 75Ω,RCA-Pin connector
Audio External input	500 mV rms (-4dBs), High Impedance,RCA-Pin connector
S-VIDEO IN	Y:1 Vp-p Positive (Negative sync provided ,when terminated with 75Ω) C:0.286 Vp-p (burst signal ,when terminated with 75Ω)
Variable Audio Output	More than 0~1550mV rms (+ 6dBs) Low Impedance (400Hz, 100% modu.),RCA-Pin connector
IC	20 (In TV), 1 (In Remote Control unit)
Transistor	49 (In TV), 2 (In Remote Control unit)
Tube	1
Accessories	Remote Control Unit (RM-C676) × 1

Design & specification 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 (Δ) 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 may cause create shock, fire, or other hazards.
4. **Use isolation transformer when hot chassis.**
The chassis and any sub-chassis contained in some products are connected to one side of the AC power line. An isolation transformer of adequate capacity should be inserted between the product and the AC power supply point while performing any service on some products when the HOT chassis is exposed.
5. **Don't short between the LIVE side ground and ISOLATED (NEUTRAL) side ground 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 ISOLATED [NEUTRAL (Δ)] side GND and EARTH (⊕) side GND. Don't short between the LIVE side GND and ISOLATED (NEUTRAL) side GND or EARTH side GND and never measure with a measuring apparatus (oscilloscope etc.) the LIVE side GND and ISOLATED (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.
6. If any repair has been made to the chassis, it is recommended that the B₁ setting should be checked or adjusted (See ADJUSTMENT OF B₁ POWER SUPPLY).
7. 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 approved by the manufacturer of the complete product.
8. 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.
9. 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.
10. **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, vid

eo/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 1100V 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.)

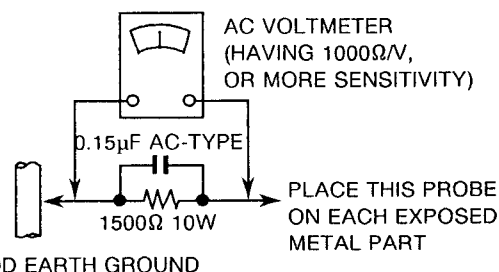
This method of test requires a test equipment not generally found in the service trade.

(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.).



11. High voltage hold down circuit check.

After repair of the high voltage hold down circuit, this circuit shall be checked to operate correctly.

See item "How to check the high voltage hold down circuit".

■ ONLY CANADA

This mark shows a fast operating fuse, the letters indicated below show the rating.



FEATURES

- With new type chassis comprised of five circuit boards ; Main, CRT socket, MTS module, AV control, Closed caption module.
- One-chip IC construction : IF, picture and sound detectors, video (luminance), horizontal and vertical deflection circuits are contained in a single chip 56 pin IC.
- Provided with miniature tuner (TV / CATV) : PLL synthesizer system TV/CATV totaling 180 channels.
- Built-in MTSC system and CLOSED CAPTION system.
- S-VIDEO input terminal for taking best advantage of Super VHS with comb filter circuit.
- Detection of user VR by MASTER COMMAND and increased features possible simultaneously (Multifunctional remote control permits picture and sound adjustment = AV STATUS).
- By pressing the MENU Button can be displayed with instructional words available either in English or Spanish. (AV-27BM5 (US) Only)
- By setting SERVICE MODE, SUB ADJUSTMENT (for TINT, COLOR, PICTURE, BRIGHT and DETAIL) can be accomplished using the keypad on the remote control unit.
- AV input, variable audio output and external speaker terminals are provided.

TECHNICAL INFORMATION

■ AUTO DEMO FUNCTION

The MASTER COMMAND has AUTO DEMO function which allows the TV set to introduce its major functions automatically without attendance of a shop clerk. Thus, this function will excite consumer's interest at the shop. AUTO DEMO can perform a sequential on-screen display automatically to explain the major functions of the TV set.

It takes about 4 minutes to complete a cycle of AUTO DEMO performance.

When the plug is removed from an outlet during AUTO DEMO performance, AUTO DEMO is restarted automatically from the beginning when the power is turned on again.

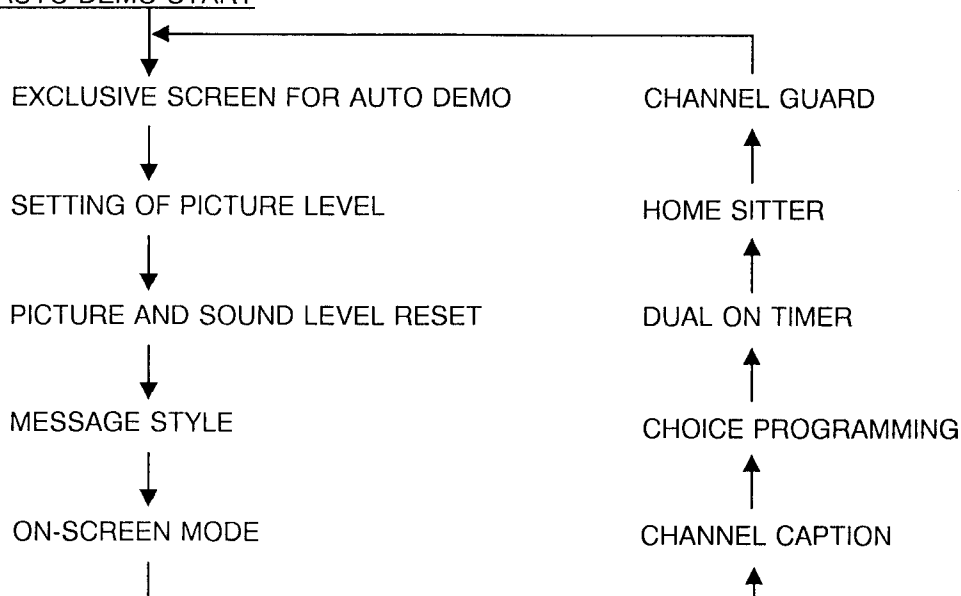
● Operating procedure

When MENU is displayed, press "O" key twice to start AUTO DEMO.

(Alternatively , AUTO DEMO can be started by pressing FUNCTION KEY and VOLUME KEY of the local keys simultaneously.)

To stop AUTO DEMO, press an optional key (FRONT KEY or REMOCON KEY)

● AUTO DEMO START



NOTE : In order produce demonstrational effect, the preset channels and time (in the built-in clock), etc. will be changed by the performance of AUTO DEMO.

Therefore, this must be taken into consideration when performing AUTO DEMO.

OPERATING INSTRUCTIONS

NOTE : The on-screen display in CANADA model is shown in English only, no Spanish text is available.

JVC

AV-20CM5
AV-20TP5 / AV-27BM5

USER GUIDE

Thank you for purchasing this JVC color television.
To ensure your complete understanding, please read this manual thoroughly before operation.

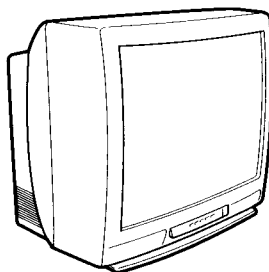
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(This illustration above is of AV-20CM5.)

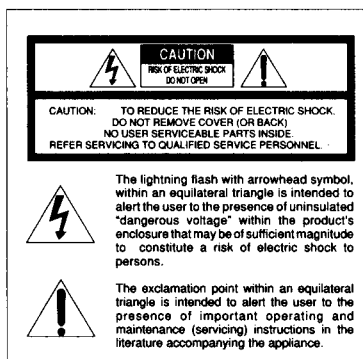
For Customer Use:

Enter below the Model No. and Serial No. which are located on the rear of the cabinet. Retain this information for future reference.

Model No. _____

Serial No. _____

SAFETY PRECAUTIONS



WARNING:

TO PREVENT FIRE OR SHOCK HAZARDS, DO NOT EXPOSE THIS TV SET TO RAIN OR MOISTURE.

Caution:

Changes or modifications not approved by JVC could void the warranty.

CAUTION: TO INSURE PERSONAL SAFETY, OBSERVE THE FOLLOWING RULES REGARDING THE USE OF THIS UNIT.

1. Operate only from the power source specified on the unit.
2. Avoid damaging the AC plug and power cord.
3. Avoid improper installation and never position the unit where good ventilation is unattainable.
4. Do not allow objects or liquid into the cabinet openings.
5. In the event of trouble, unplug the unit and call a service technician. Do not attempt to repair it yourself or remove the rear cover.

Caution:

When you don't use this TV set for a long period of time, be sure to disconnect both the power plug from the AC outlet and antenna for your safety.

IMPORTANT SAFEGUARDS

CAUTION: Please read and retain for your safety.

Electrical energy can perform many useful functions. This TV set has been engineered and manufactured to assure your personal safety. But improper use can result in potential electrical shock or fire hazards. In order not to defeat the safeguards incorporated in this TV set, observe the following basic rules for its installation, use and servicing. And also follow all warnings and instructions marked on your TV set.

INSTALLATION

- 1 Your TV set is equipped with a polarized AC line plug (one blade of the plug is wider than the other).

(POLARIZED-TYPE)

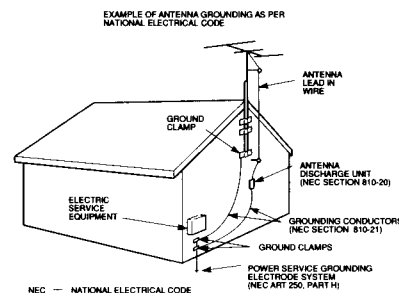


This safety feature allows the plug to fit into the power outlet only one way. Should you be unable to insert the plug fully into the outlet, try reversing the plug. Should it still fail to fit, contact your electrician.

- 2 Operate the TV set only from a power source as indicated on the TV set or refer to the operating instructions for this information. If you are not sure of the type of power supply to your home, consult your TV set dealer or local power company. For battery operation, refer to the operating instructions.
- 3 Overloaded AC outlets and extension cords are dangerous, and so are frayed power cords and broken plugs. They may result in a shock or fire hazard. Call your service technician for replacement.
- 4 Do not allow anything to rest on or roll over the power cord, and do not place the TV set where power cord is subject to traffic or abuse. This may result in a shock or fire hazard.
- 5 Do not use this TV set near water — for example, near a bathtub, washbowl, kitchen sink, or laundry tub, in a wet basement, or near swimming pool, etc.

- 6 If an outside antenna is connected to the TV set, be sure the antenna system is grounded so as to provide some protection against voltage surges and built-up static charges. Section 810 of the National Electrical Code provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna discharge unit, connection requirements for the grounding electrode.

- 7 An outside antenna system should not be located in the vicinity of overhead power lines or other electric light or power circuits, or where it can fall into such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits as contact with them might be fatal.



- 8 TV sets are provided with ventilation openings in the cabinet to allow heat generated during operation to be released. Therefore:

- Never block the bottom ventilation slots of a portable TV set by placing it on a bed, sofa, rug, etc.
- Never place a TV set in a "built-in" enclosure unless proper ventilation is provided.
- Never cover the openings with a cloth or other material.
- Never place the TV set near or over a radiator or heat register.

- 9 To avoid personal injury:

- Do not place a TV set on a sloping shelf unless properly secured.
- Use only a cart or stand recommended by the TV set manufacturer.
- Do not try to roll a cart with small casters across thresholds or deep pile carpets.
- Wall or shelf mounting should follow the manufacturer's instructions, and should use a mounting kit approved by the manufacturer.

USE

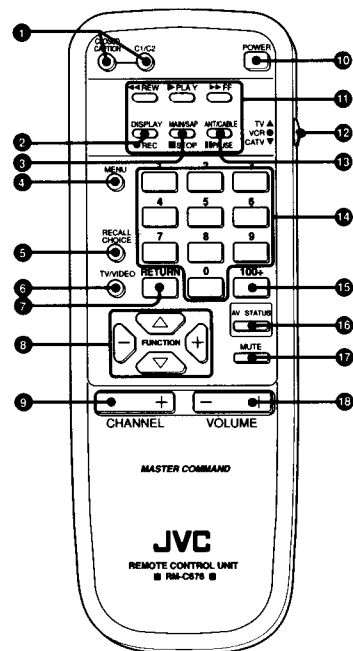
- 10 Caution children about dropping or pushing objects into the TV set through cabinet openings. Some internal parts carry hazardous voltages and contact can result in a fire or electrical shock.
- 11 Unplug the TV set from the wall outlet before cleaning. Do not use liquid or an aerosol cleaner.
- 12 Never add accessories to a TV set that has not been designed for this purpose. Such additions may result in a hazard.
- 13 For added protection of the TV set during a lightning storm or when the TV set is to be left unattended for an extended period of time, unplug it from the wall outlet and disconnect the antenna. This will prevent damage to product due to lightning storms or power line surges.
- 14 A TV set and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the TV set and cart combination to overturn.



SERVICE

- 15 Unplug this TV set from the wall outlet and refer servicing to qualified service personnel under the following conditions:
 - A. When the power cord or plug is damaged or frayed.
 - B. If liquid has been spilled into the TV set.
 - C. If the TV set has been exposed to rain or water.
 - D. If the TV set does not operate normally by following the operating instructions. Adjust only those controls that are covered in the operating instructions as improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the TV set to normal operation.
 - E. If the TV set has been dropped or damaged in any way.
 - F. When the TV set exhibits a distinct change in performance — this indicates a need for service.
- 16 Do not attempt to service this TV set yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
- 17 When replacement parts are required, have the service technician verify in writing that the replacement parts he uses have the same safety characteristics as the original parts. Use of manufacturer's specified replacement parts can prevent fire, shock, or other hazards.
- 18 Upon completion of any service or repairs to this TV set, please ask the service technician to perform the safety check described in the manufacturer's service literature.
- 19 When a TV set reaches the end of its useful life, improper disposal could result in a picture tube implosion. Ask a qualified service technician to dispose of the TV set.
- 20 Note to CATV system installer. This reminder is provided to call the CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

Locations of Remote Control Buttons



1	CLOSED CAPTION button	p. 17
2	DISPLAY button	p. 16
3	MAIN/SAP button	p. 11
4	MENU button	p. 4
5	RECALL CHOICE button	p. 13
6	TV/VIDEO button	p. 9
7	RETURN button	p. 12
8	FUNCTION (V/A -/+) buttons	p. 10
9	CHANNEL (-/+) buttons	p. 9
10	POWER button	p. 7
11	VCR operating buttons	p. 18
12	3-way mode selector	p. 18
13	ANT/CABLE button	p. 9
14	Number keys	p. 9
15	100+ button	p. 9
16	AV STATUS button	p. 10
17	MUTE button	p. 11
18	VOLUME (-/+) buttons	p. 9

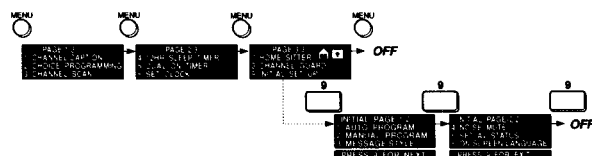
MENU Selection

Most of the TV's functions can be selected with the remote control unit.

1. Press MENU. The function list will appear.
2. Press the corresponding number key to select a function.
3. A function can be set on the screen.

Note :

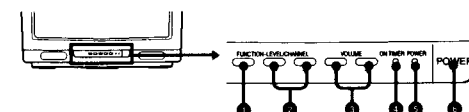
- When "9. INITIAL SET-UP" is selected, another function list will be displayed. Use the number keys to select a function.



Locations of TV Buttons and Parts

FRONT PANEL

AV-20CM5



AV-20TP5/AV-27BM5



How to use the FUNCTION button:

- Press this button to display a list of functions. While the list is being displayed, press the button again to select the desired function; then change the level or setting with LEVEL/CHANNEL (-/+).
- Other buttons may be used by referring to the respective page of this user guide for their description.

Note:

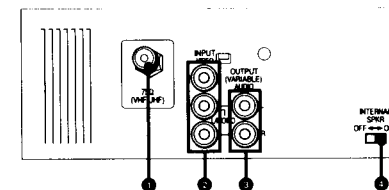
- Illustrations for front panel and rear panel used in this user guide are of the AV-20CM5 and the AV-20TP5. The buttons of the AV-27BM5 are the same in layout and function, but different in size and shape from the AV-20TP5.

- 1 FUNCTION button
- 2 LEVEL/CHANNEL (-/+) buttons
- 3 VOLUME (-/+) buttons

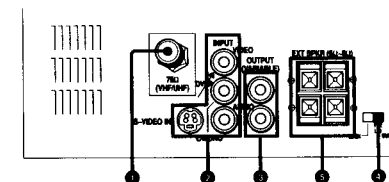
- 4 ON TIMER lamp (AV-20CM5)
- 5 POWER lamp (AV-20CM5)
- 6 POWER button
- 7 POWER/ON TIMER lamp (AV-20TP5/AV-27BM5)

REAR PANEL

AV-20CM5



AV-20TP5/AV-27BM5



INPUT jacks:

- Audio output of monaural equipment is connected to the L/MONO jack.
- Connect a S-VHS output jack on the VCR to the S-VIDEO in jack on this TV.
- Connect nothing to the S-VIDEO in jack, when using the VIDEO jack of INPUT jacks.

OUTPUT (VARIABLE) jacks:

- Outputs the sound of the picture appearing on the TV.
- The output sound level can be adjusted with VOLUME (-/+) on the TV.

Antenna terminal : Refer to page 6.

EXT SPKR terminals : Refer to page 20.

- Do not connect the audio output of any other device to the speakers connected to this TV. It may damage the TV or the other devices.

- 1 Antenna terminal
- 2 INPUT jacks
- 3 OUTPUT (VARIABLE) jacks
- 4 Speaker switch
- 5 EXT SPKR jacks (AV-20TP5/AV-27BM5)

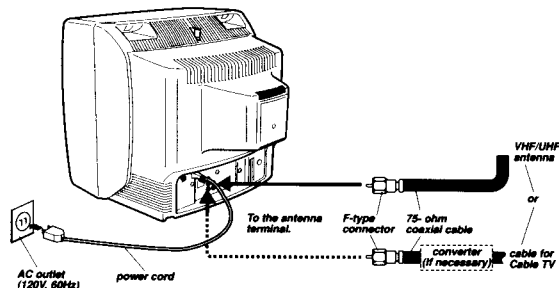
PREPARATION

1. Connecting antenna and power cord

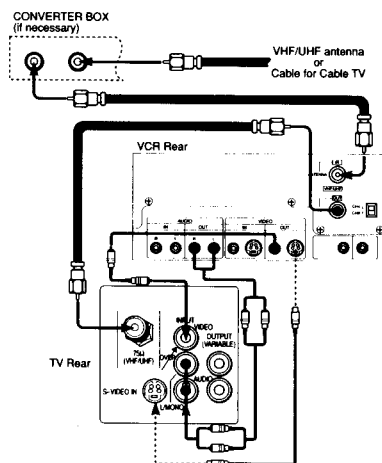
Conditions:

- Before connecting external devices, be sure to disconnect the TV from the AC outlet.
- When you want to view from a connected device such as VCR, change the TV input mode with TV/VIDEO. Refer to step 2 on page 9.

(Example) When not connecting to a VCR



(Example) When connecting to a VCR



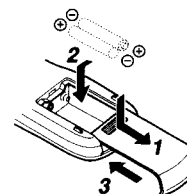
Notes:

- When connecting both a cable (75-ohm coaxial) and a UHF antenna (300-ohm feeder), use an optional antenna mixer (CE41467) to make a signal connection. With this antenna mixer, reception of cable channels higher than "Channel W+17" is not possible.
- The power cord is supplied with a polarized plug. Therefore, it will only insert one way into the wall outlet. DO NOT DEFEAT THE POLARIZED PLUG. If you have difficulty consult your local dealer.
- Some cable companies require a converter box to receive all available programs. Others may require it for subscription or "premium" programming. Consult your local cable company for correct installation.

Notes:

- Refer to the "Notes" on page 5 and to the manuals provided with the other devices.
- Interference from connected devices may cause the picture quality to deteriorate. If picture noise occurs, turn off devices that you are not using or move them further apart.
- Connect the video signal of S-VHS VCR to S-VIDEO jack. (In the case of AV-20CM5 there is no S-VIDEO jack, connect to the VIDEO INPUT jack.)

2. Inserting batteries into your remote control



1. Press down and slide off the cover.
2. Insert 2 batteries into the battery compartment.
3. Replace the cover.

Condition:

- Use two AA/R6 dry cell batteries.

Caution:

- Follow the cautions printed on the batteries.

Notes:

- Battery life is approximately 6 months to 1 year depending on the frequency of use.
- If the remote control operates erratically, replace the batteries.
- Insert batteries correctly observing + and - polarities.
- If a manufacturer's VCR or CATV converter code has been set, removal of the batteries returns the code to the setting at the time of shipment; reenter the settings to be able to control this other equipment again. Refer to page 18.

3. Turning the power ON/OFF

1. Press POWER.



AV-20CM5:

The POWER lamp lights up.

AV-20TP5/AV-27BM5:

The POWER/ON TIMER lamp lights up.



To turn off the TV, press POWER once again.

AV-20CM5:

The POWER lamp lights up.

AV-20TP5/AV-27BM5:

The POWER/ON TIMER lamp lights up.

Condition:

- When controlling with the remote control, set the 3-way mode selector to TV.

Note:

- On the AV-20TP5 and AV-27BM5 models the POWER/ON TIMER lamp dims but does not go off entirely, while the DUAL ON TIMER or HOME SITTER is in operation.

4. Presetting the channels

You can preset the channels you want to watch. The preset channel can be selected with CHANNEL (-/+).

To set all the channels which can be received

—AUTO PROGRAM

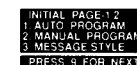
1. Turn on the TV, and press MENU (3 times).

The menu (PAGE-3/3) appears.



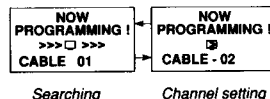
2. Press 9.

The INITIAL menu (PAGE-1/2) appears.



3. Press 1.

The setting is done automatically.



- This completes the setting. The on-screen display disappears in a few seconds.

PROGRAMMING OVER 1

To set one channel at a time

—MANUAL PROGRAM

1. Press MENU (3 times), then 9, then 2.

The MANUAL PROGRAM menu appears.

Channels already set will have a dash.



2. Press 4 or 5 to change the channel to be set.

3. Press 1 to add the channel.

Set other channels one at a time by repeating steps 2 and 3 above.

4. Press 3 to complete the setting.

The menu disappears.

- This completes the setting.

To delete the channels set with AUTO PROGRAM

1. Display the channel to be deleted in step 2 of the above title "To set one channel at a time".

2. Press 2 to delete that channel.
Delete other channels by repeating steps 1 and 2.

- Complete the setting by pressing 3. The menu disappears.

1. **AUTO PROGRAM:**
To set all the channels
2. **MANUAL PROGRAM:**
To set or delete one channel at a time

Note:
• Refer to "CABLE TV CHANNEL CONVERSION CHART" on page 21.

- 4: The channel decreases by one.
- 5: The channel increases by one.

To switch to the broadcast mode:
Press ANT/CABLE. Each time the button is pressed, it will switch between CHANNEL and CABLE.

Note:
• Pressing CHANNEL (-/+) only selects channels set with AUTO PROGRAM or MANUAL PROGRAM.

WATCHING A TV PROGRAM

1. Press POWER.

AV-20CM5:
The POWER lamp lights up.
AV-20TP5/AV-27BM5:
The POWER /ON TIMER lamp lights up.

CHANNEL-02

2. If video mode has been selected, press TV/VIDEO repeatedly to switch it to CHANNEL (or CABLE).

TV/VIDEO
CHANNEL (CABLE) ↔ VIDEO

CHANNEL-02

3. Press ANT/CABLE repeatedly to select the broadcast mode depending on the input source.

ANT/CABLE
CHANNEL ↔ CABLE

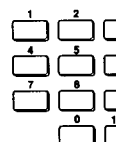
4. Select a channel.

Scan selection



1. Press CHANNEL (-/+).
- + : to scan UP a channel number.
- : to scan DOWN a channel number.

Direct selection



1. Press a number key.
Example: To select channel 5 (single-digit channel), press 0 and 5.
Example: To select channel 35 (two-digit channel), press 3 and 5.
Example: To select channel 115 (three-digit channel), press 100+, 1 and 5.

CHANNEL:
To view TV broadcast
CABLE will be displayed if you have turned off TV after watching cable TV broadcast.

VIDEO:
To view the video being input to the INPUT jacks. Refer to page 4.

CHANNEL:
To view TV over the air broadcast.

CABLE:
To view CABLE stations.

Notes:
• Only a channel which has been already preset can be selected.
Refer to page 7.
• This operation can also be done with LEVEL/CHANNEL (-/+) on the front panel.

Note:
• To select a channel, refer to "CABLE TV CHANNEL CONVERSION CHART" on page 21.

5. Press VOLUME (-/+).

The level indicator appears.



- + : The bars move right and the volume increases.
- : The bars move left and the volume decreases.

VOLUME 30

Note:
• This operation can also be done with VOLUME (-/+) on the front panel.

6. Press POWER to turn the power off.

AV-20CM5:
The POWER lamp turns off.
AV-20TP5/AV-27BM5:
The POWER /ON TIMER lamp turns off.

Note:
• The POWER/ON TIMER lamp glows faintly without turning off, while the DUAL ON TIMER or HOME SITTER is in operation. Refer to pages 14 and 15. (AV-20TP5/AV-27BM5)

SOUND AND PICTURE

AV STATUS

You can get the ideal picture and sound differ according to the program and the room brightness. You may need to adjust the picture and sound to suit the current conditions.

1. Press ▼.

```
TINT ..... II .....
COLOR ..... II .....
PICTURE ..... II .....
BRIGHT ..... II .....
DETAIL ..... II .....
```

2. Press ▼ or ▲ to select an item, then press – or + to set the level.

```
TINT ..... II .....
COLOR ..... II .....
PICTURE ..... II .....
BRIGHT ..... II .....
DETAIL ..... II .....
BASS ..... II .....
TREBLE ..... II .....
BALANCE ..... II .....
```

Note:

- Pressing ▼ while all DETAIL position displays the sound adjusting menu. Pressing ▼ while at BALANCE position displays the picture adjusting menu.

Resetting picture/sound adjustments to factory settings:

- Press AV STATUS.
- Press 3.

To memorize the adjusted picture/sound settings

You can memorize up to 2 picture and sound adjustment settings. You can easily recall the settings, so that picture and sound settings can be switched over to enhance the program being watched.

1. Press MENU (3 times), then 9, then 9, then 5.

```
TINT ..... II .....
COLOR ..... II .....
PICTURE ..... II .....
BRIGHT ..... II .....
DETAIL ..... II .....
1 NEXT PAGE 2 FINISH
```

2. Press ▼ or ▲ to select an item, then press – or + to set the level.

3. Press 2.

```
PLEASE SELECT 1 2
1 AV STATUS A
2 AV STATUS B
```

Note:

- Pressing 1 switches the display between the picture and sound adjustment menus without entering the ID number.

4. Press 1 or 2.

- To memorize in AV STATUS A.
- To memorize in AV STATUS B.

To recall the stored picture/sound settings

1. Press AV STATUS.

```
RECALL AV STATUS
1 AV STATUS A
2 AV STATUS B
3 RESET
```

2. Press 1 or 2.

1:
To recall the setting in AV STATUS A.

2:
To recall the setting in AV STATUS B.

Note:

- When recalling the stored picture and sound settings, these settings are automatically applied to the picture and sound adjustments.

MTS

You can enjoy music and sports programs in stereo as well as listen to bilingual broadcasts in either language.

1. Press MAIN/SAP.

← ON AIR* is displayed for the sound currently being broadcasted.

2. Select the mode by pressing MAIN/SAP again.

Display of the selected mode will be highlighted.

MTS:

Multichannel Television Sound

```
MTS STATUS
STEREO * ON AIR
SAP
MONO
```

STEREO:

Stereo audio program

SAP:

Second Audio Program

MONO:

Monaural audio program

Note:

- Sound not broadcasted in stereo or bilingually will not have these effects.
- For some cable TV Programs proper MTS sound might not be attained.

MUTE

You can mute the sound instantly.

1. Press MUTE.

```
MUTING
```

- Pressing it again restores the regular volume.

Note:

- Muting can also be canceled by pressing VOLUME(–/+).

Item	FUNCTION (–) button	FUNCTION (+) button
TINT	Reddish	Greenish
COLOR	Subdued	Vivid
PICTURE	Light	Strong
BRIGHT	Dark	Bright
DETAIL	Soft	Sharp
BASS	Soft	Strong
TREBLE	Soft	Stron
BALANCE	Left	Right

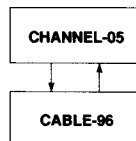
HANDY CHANNEL SELECTION

CHANNEL RETURN

You can return to the previous channel quickly and simply. For example, if you are watching a football game, but want to check the news during time outs and commercials, just tune in the football channel then use the number keys to change to the news channel. Now with RETURN you can jump from one to the other and back again quickly and simply.

1. Press RETURN.

Channels alternate between the previous channel and original channel.

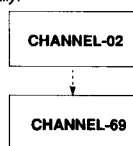


CHANNEL SCAN

You can check and see all programs one by one. All programs being broadcast appear for a few seconds each in sequence, and the scanning stops at the original channel. In this way, a channel can be selected while watching the programs being broadcast.

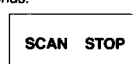
1. Press MENU, then 3.

The channels change automatically.



2. Press any button on the remote control unit.

Channel scanning stops, the displayed channel is selected, and "SCAN STOP" appears for a few seconds.



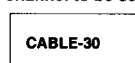
- Notes :**
- Only the preset channels are displayed. Refer to page 7.
 - To switch over while in broadcast mode (CHANNEL or CABLE), press ANT/CABLE.
 - At the end of channel scanning, "SCAN STOP" is displayed for a few seconds.

CHOICE PROGRAMING

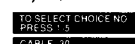
You can easily select channels you watch regularly by setting them on the "CHOICE LIST". Up to 5 channels can be set. You can directly select your favorite channels while each one is displayed in sequence for a few seconds.

To set procedure

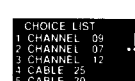
1. Tune the channel to be set.



2. Press MENU, then 2.

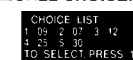


3. Press a number key (from 1 to 5) to select the position.



To select a set channel

1. Press RECALL CHOICE.



2. Press a number key (from 1 to 5) to select the desired channel.

- The channel changes and the CHOICE LIST disappears automatically.

Notes:

- You can watch each channel for a few seconds. The channel number (or station ID, refer to page 13) of the channel shown will blink.
- A channel which has been set in CHANNEL GUARD cannot be set. Refer to page 16.

CHANNEL CAPTION

You can assign station ID names up to 12 channels.

These station IDs help you identify a channel by giving it a descriptive abbreviation, such as "CART" for "cartoon" or "NEWS".

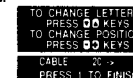
Once the station IDs are set, they are displayed with the channel numbers.

1. Tune to the channel to be set.



2. Press MENU, then 1.

The Channel Caption menu is displayed.



▼▲:

To select a character (A to Z, 0 to 9, punctuation marks).

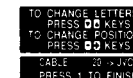
←→:

To move the cursor.

Note:

- If 12 station IDs have been already set, the on-screen display will be like the one shown to the right.

3. Press ▼ or ▲ and ← or → to set the station ID.



4. Press 1.



Note:

- On this screen, "CH" displayed stands for CHANNEL, and "CA" stands for CABLE.

To cancel a set channel:

- Tune the channel to be canceled.
- Press MENU, then 1.
- Press 1.

If 12 station IDs have been already set

The menu below appears in step 2 above.



You must make room for the new station ID by cancelling one of those already set.

Pressing 1 displays the CAPTION LIST. Enter the channel number whose station ID you wish to cancel by pressing ANT/CABLE to select the broadcast mode if necessary, then using the number keys and/or 100+ to enter the channel number. The Channel Caption menu in step 2 is displayed, and now you proceed with the remaining steps to add the new station ID.

Pressing 2 ends the CHANNEL CAPTION setting mode.

TIMER OPERATION

SET CLOCK

You can see the current time on the TV screen displayed by a built-in clock. The timer functions won't work, and cannot be set, if this clock stops.

1. Press MENU (2 times), then 6.

CLOCK 11:30

2. Use the number keys to set the current time.

Example: To set 11:30 AM
1. Press 1, 1, 3, 0.
2. Press 1.

CLOCK 11:30
1 AM 2 PM
11:30 AM

1. AM: To set the morning time.
2. PM: To set the afternoon and evening time.

- Notes:**
- If there is a power interruption, the clock will stop. However, if the power interruption lasts only a few minutes, the clock will be slow by the number of minutes when the power was cut off. In these cases, you need to set the clock again.
 - The time is given in 12-hour format.

If a timer function is selected without setting the clock:
"POWER INTERRUPTED/WOULD YOU SET CLOCK FIRST?" appears on the screen.

Pressing 1 displays the Set Clock menu. Set the clock. Once the clock is set, the display returns to timer setting mode and you are able to set the timer.
Pressing 2 ends the timer setting mode, and a message appears telling you that the timer cannot be set.

12HR SLEEP TIMER

You can set to turn off the TV even after you fall asleep while watching it.

- Condition:**
- Before setting this timer, the built-in clock must be set.

1. Press MENU (2 times), then 4.

NOW 8:00 PM
SLEEP 11:30 PM

2. Press the number keys to enter the time for the TV to turn off.

Example: To enter 11:30
Press 1, 1, 3, 0.

SLEEP 11:30 PM

- Notes:**
- Once the SLEEP TIMER operates, its setting will be canceled.
 - If the TV is turned off or if there is a power interruption, the SLEEP TIMER will be canceled.
 - The SLEEP TIMER can be set to turn off up to 11 hours and 59 minutes after the current time.
 - If the clock is not working, the SLEEP TIMER cannot be set.
 - One minute before the TV is set to turn off, "GOOD NIGHT!" appears on the screen for a few seconds.

DUAL ON TIMER

You can set to turn on the TV and watch a TV program on the channel at your desired time. If you are watching TV when the set time comes, the channel will be changed to the set one. Up to 2 programs can be set.

- Condition:**
- Before setting this timer, the built-in clock must be set.

1. Press MENU (2 times), then 5.

DUAL ON TIMER
PLEASE SELECT
1 7:00 AM
CABLE 125 NO
2 12:30 PM
CHANNEL 05 NO

2. Press 1 or 2.

- 1: DUAL ON TIMER 1
- 2: DUAL ON TIMER 2

PLEASE SELECT
1 SET 2 CANCEL
3 CHANGE
7:00 AM
CABLE 125 NO

3. Press 3.

1. SET:
For restarting the deactivated timer. ("YES" will be displayed in the brackets.)
2. CANCEL:
For canceling the timer. ("NO" will be displayed in the brackets.)
3. CHANGE:
For setting the timer or changing the timer setting.

Current setting
ON TIME 7:00

4. Press the number keys to enter the scheduled time.

Example: To schedule the TV to come on at 7:30 AM. Press 0, 7, 3, 0, and then press 1.

1. AM: To set the time for the morning.
2. PM: To set the time for the afternoon and evening.

CABLE 125
CHANNEL 7

5. Press ANT/CABLE if necessary to select the broad cast mode, then use the number keys and/or 100+ to select the channel to be set.

PLEASE SELECT
1 SET 2 CANCEL
3 CHANGE
7:30 AM
CHANNEL 08 YES

"YES" will be displayed in the brackets

- AV-20CM5:
When the setting is done the ON TIMER lamp lights up.
- AV-20TP5/AV-27BM5:
When TV is turned off, the POWER/ON TIMER lamp lights up dimly.

- Notes:**
- Once the DUAL ON TIMER operates its setting will be canceled.
 - If there is a power interruption, the DUAL ON TIMER will be canceled.
 - If no operation is done within two hours after the TV turns on by the DUAL ON TIMER, the TV will turn off automatically.
 - If the clock is not working, the DUAL ON TIMER cannot be set.
 - The DUAL ON TIMER cannot be set for channels set under the CHANNEL GUARD. Refer to page 16.

HOME SITTER

You can turn on the TV to a set channel at a set time, and then turn it off at a set time. This function is convenient for controlling the time when the television is available for viewing or for giving a vacant house a lived-in look.

- Condition:**
- Before setting this function the built-in clock must be set.

1. Press MENU (3 times), then 7.

HOME SITTER
1 SET 2 CANCEL
3 CHANGE
ON 6:00 PM
OFF 8:00 PM
CHANNEL 02 NO

2. Press 3.

1. SET:
For restarting the deactivated timer. ("YES" will be displayed in the brackets.)
2. CANCEL:
For canceling the timer. ("NO" will be displayed in the brackets.)
3. CHANGE:
For setting the timer or changing the timer setting.

Current setting
ON TIME 6:00

3. Press the number keys to enter the time for the TV to turn on.

Example: To enter 8:15 AM
Press 0, 8, 1, 5,
and then press 1.

1. AM: To set the time for the morning.
2. PM: To set the time for the afternoon and evening.

OFF TIME 8:00

4. Press the number keys to enter the scheduled time.

Example: To enter 10:30 AM
Press 1, 0, 3, 0,
and then press 1.

CHANNEL 02
CHANNEL 1

5. Press ANT/CABLE if necessary to select the broad cast mode, then use the number keys and/or 100+ to select the channel to be set.

HOME SITTER
1 SET 2 CANCEL
3 CHANGE
ON 8:15 AM
OFF 10:30 AM
CHANNEL 02 YES

"YES" will be displayed in the brackets

- AV-20CM5:
When the setting is done the ON TIMER lamp lights up.
- AV-20TP5/AV-27BM5:
When TV is turned off, the POWER/ON TIMER lamp lights up dimly.

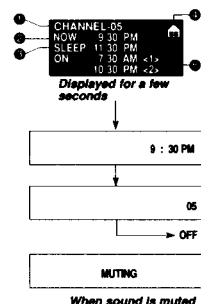
- Notes:**
- If there is a power interruption, the HOME SITTER setting will be canceled.
 - If the clock is not working, the HOME SITTER cannot be set.
 - The HOME SITTER cannot be set for channels set under the CHANNEL GUARD. Refer to page 16.

OTHER FEATURES

DISPLAY MESSAGES

You can display the timer settings, current time, and channel number.

1. Press **DISPLAY** repeatedly.



- 1 Channel being received or the input mode
- 2 Current time
- 3 Set status of the 12HR SLEEP TIMER
- 4 Appears when the HOME SITTER is operating
- 5 Set status of the DUAL ON TIMER

Note:
• While the clock is not working, "CLOCK NOT SET" is displayed instead of the current time.

MESSAGE STYLE

You can add or remove a background for the menu and on-screen display as you choose.

1. Press **MENU** (3 times), then 9, then 3.

PLEASE SELECT
1 BLACK BACKGROUND
2 NO. BACKGROUND

2. Press 1 or 2.

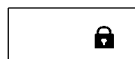
- 1: For adding the background.
- 2: For removing the background.

CHANNEL GUARD

A channel which has been set in channel guard cannot be watched unless an ID number is entered. You can restrict access to up to 3 channels with channel guard.

Condition:
• Tune the channel you want to guard.

1. Press **MENU** (3 times), then 8.



2. Press 0 before the lock symbol disappears.



3. Press 1.



1. SET:
To set the channel guard.

2. CANCEL:
To cancel the channel guard.

3. SET ID NO.:
To set the ID number.

4. Select a position by pressing 1, 2 or 3.



Note:
• A guarded channel cannot be assigned in DUAL ON TIMER or HOME SITTER. However, if a channel has been assigned to one of these functions, prior to CHANNEL GUARD setting, HOME SITTER or ON TIMER operation will have the priority over the CHANNEL GUARD.

To set the ID number

1. Press 3 in step 3 above.

SET ID NO. ...

2. Press the number keys to enter any 3-digit number.

SET ID NO. 121 ENTERED

Notes:
• As shipped from the factory and after a power interruption, the ID number will be "000". If this is acceptable as the ID number, the ID number need not be set.
• The ID number will be the same for all guarded channels.

To watch a guarded channel

1. Press the number keys to select the channel number.

2. Press the number keys to enter the ID number.

ENTER ID NO. ...

Note:
• A channel which has been set in channel guard cannot be selected with CHANNEL (-/+).

If the wrong ID number is entered:
"INVALID ID NO." is displayed and the channel remains unchanged.

If the ID number has been forgotten:
Set another ID number.

NOISE MUTE

You can turn the picture noise, which appears for channels not receiving broadcast signals, into a quiet solid blue screen.

1. Press **MENU** (3 times), then 9, then 9, then 4.

The current setting appears inside the brackets.

2. Press 1 or 2.

PLEASE SELECT <OFF>
1 ON 2 OFF

1. ON:
To set Noise Mute.

2. OFF:
Not to set Noise Mute.

CLOSED CAPTION

You can watch the closed captions of a TV broadcast, a video tape or a video disc.

Condition:
• To view closed captions, tune the TV to a program or video source which contains a closed caption.

1. Press **CLOSED CAPTION** repeatedly.

→ CLOSED CAPTION → TEXT → OFF →

CLOSED CAPTION:
To view the caption

TEXT:
To view teletext
(If a black background appears while watching video tapes and discs without closed caption, set this function to OFF).

OFF:
Not to display either one.

Note:
• The closed caption may not be correctly displayed for cable TV or a video source with copy guard.

To switch the data channels

1. Press **C1/C2** after completing step 1.

C1 ↔ C2

C1:
To display No.1 data channel.

C2:
To display No.2 data channel.

DEMONSTRATION

This TV can demonstrate the major functions on screen.

1. Press **MENU**, 0, 0.
(or press **FUNCTION** and **VOLUME (-)** on the TV simultaneously.)

The demonstration begins.

2. To stop the demonstration, press any button.

Note:
• When the demonstration is finished, a few settings will have been changed to the demonstration settings. Reenter those settings as necessary.

ON-SCREEN LANGUAGE

You can change the language of the menus into Spanish. Most of the functions of this TV are selected while watching the menus.

1. Press **MENU** (3 times), then 9, then 9, then 6.

ON-SCREEN LANGUAGE
1 ENGLISH 2 SPANISH

2. Press 1 or 2.

IDIOMA EN PANTALLA
1 INGLÉS 2 ESPAÑOL

1:
To set menu language to English.

2:
To set menu language to Spanish.

3-WAY MODE SELECTOR

The remote control unit can be used to operate a VCR and a CATV converter.

Condition:

- Before setting the 3-way mode selector, enter the code of the VCR and CATV converter manufacturer into the remote control unit.

1. Set the 3-way mode selector to VCR or CATV.

VCR-controllable buttons:

CHANNEL (←/→)
PAUSE (ANT/CABLE)
STOP (MAIN/SAP)
REC (DISPLAY)
(press simultaneously with
PLAY)
REW
PLAY
FF
POWER
Number keys

CATV converter-controllable buttons:

POWER
MENU
Number keys
CHANNEL (←/→)
RETURN (Functions as an
ENTER key when a ZENITH
CATV converter is used.)

Notes:

- Upon factory shipment, the remote control unit has been set to operate a JVC VCR and OAK CATV converter.
- When the batteries are replaced, the manufacturer's code is reset to the factory setting.

VCR:

Allows the remote control unit to operate the VCR.

CATV:

Allows the remote control unit to operate the CATV converter.

Note:

- Depending on the VCR or CATV converter a few buttons may not work.

To set the Manufacturer's Code

1. The table on page 19 shows the manufacturer's codes for the VCR and CATV converter.

Note:

- In the manufacturer's code table, if a manufacturer has multiple manufacturer's codes, set and try each one until you find the one that works.

2. Set 3-way mode selector to VCR or CATV.

VCR:

For setting the VCR manufacturer's code.

CATV:

For setting the CATV converter's manufacturer's code.

3. While pressing MENU, press the number keys to enter the manufacturer's code (two-digit number).

- When the MENU button is released, the setting is completed. Test the remote control operation.

Manufacturer's Code Table

VCR

Manufacturer	Manufacturer's Code	Manufacturer	Manufacturer's Code
AKAI	24 26 27	PHILIPS	08 09 39
BROKSONIC	32	PIONEER	22
CANON	08	QUASAR	08
CITIZEN	18	RCA	09 22 35 38
CURTIS-MATHES	08 35	REALISTIC	08 17 20 33
EMERSON	05 15 16 30 31 32 34	SAMSUNG	25 38
FISHER	19 20 21	SANYO	17 20
FUNAI	33	SCOTT	03 05 11 30
GENERAL ELECTRIC	08 35 38	SEARS	17 18 19 21 22
GOLDSTAR	09	SHARP	36 37
HITACHI	22	SHINTOM	29
JVC	01 02	SONY BETA	10 12
J.C.PENNEY	08 22 23	SONY SUPER VHS	11 12 13
KENWOOD	02	SYLVANIA	08 09 39 41
MAGNAVOX	08 39	SYMPHONIC	33
MARTA	18	TASHIKO	18
MARANTZ	23	TEAC	33
MITSUBISHI/MGA	03 04 05 06 07	TEKNIKA	28
MONTGOMERY WARD	36	TOSHIBA	14 22
NEC	01 02 17 23	VECTOR RESEARCH	23
PANASONIC	08	WARDS	36 37
PENTAX	22	ZENITH BETA	10
PHILCO	08 39	ZENITH VHS	40

CATV

Manufacturer	Manufacturer's Code	Manufacturer	Manufacturer's Code
GEMINI	14 27	PIONEER	23 29
G.I.	14 15	REGENCY	08
HAMLIN	03 04 24	SCIENTIFIC ATLANTA	12 36 41
JERROLD	05 06 07 16 17	TEXSCAN	26
MACON	30	TOCOM	02 25
MAGNAVOX	09	UNIKA	22
OAK	01 28 35	VID TECH	36
PANASONIC	11 13	VIEWSTAR	20 21
PARAGON	10	ZENITH	10
PHILIPS	19 20 21 32 33		

OUTPUT SPEAKERS

AV-20CM5

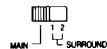
1. Set the speaker switch to ON.



INTERNAL SPKR switch:
Set INTERNAL SPKR switch to ON/OFF for turning the sound from the TV's built-in speakers on or off.
ON: Sound can be heard from the built-in speakers.
OFF: Sound cannot be heard from the built-in speakers. Sound can be heard from an audio component connected to the OUTPUT (VARIABLE) jacks.

AV-20TP5/AV-27BM5

2. Set the speaker switch to MAIN.



To set the speaker switch:
The output sound differs depending on the switch setting.

Switch setting	Built-in speakers	Sound output
MAIN	No sound	Speakers connected to the EXT SPKR jacks
SURROUND 1	No sound	Normal sound
SURROUND 2	Normal sound	Surround effect sound

SURROUND (AV-20TP5/AV-27BM5)

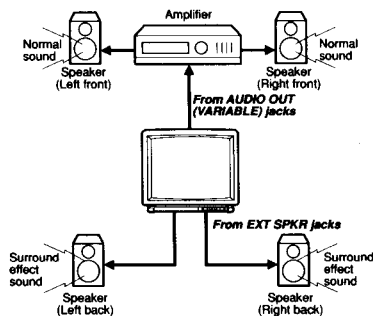
You can enjoy stereophonic live sound. The surround effect is produced by the rear side left/right external speakers. The AV-20TP5 and AV-27BM5 have this surround function but not the AV-20CM5.

Conditions:

- The effect is produced only from stereo sound. If the sound source is monaural, no sound will come from the external speakers.
- When you use the effect, adjust the balance of sound to the center. Refer to page 10.

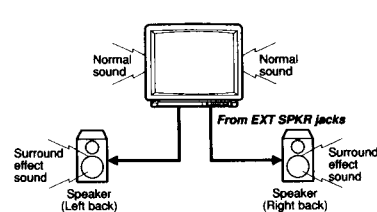
When an audio component is connected

Set the speaker switch to "SURROUND 1"



When an audio component is not connected

Set the speaker switch to "SURROUND 2"



TROUBLESHOOTING

Be sure review all the instructions written in this user guide. Then try to check according to the following chart.

TRY THIS	Is the power cord plugged in?	Check antenna connections and wires.	Try another channel. If OK, also check the product problem.	Move antenna in different direction.	Is it a black-and-white program?	Adjust COLOR control.	Adjust TINT control.
PROBLEMS							
Picture rolls vertically.	NO	NO	NO				
Noise bars on screen.	NO	NO	NO				
Picture blurred.	NO	NO	NO				
Lines or streaks in picture.	NO	NO	NO				
Weak picture.	NO	NO	NO				
Wrong colors.	NO	NO	NO	NO	NO	NO	
No color.	NO	NO	NO	NO	NO	NO	
Sound OK but picture poor.	NO	NO	NO				
Picture OK but sound poor.	NO	NO	NO				
Neither picture nor sound.	NO	NO	NO				
Sound OK but no picture.	NO	NO	NO				
Weak or inoperable Remote Control.	NO	NO	NO				
	Press the POWER button on the front panel to switch the TV on and off, then check whether or not the Remote Control is working. After replacing the batteries with new ones, check whether or not the Remote Control operates.						
	THEN, CALL FOR SERVICE PERSONNEL. Be sure to disconnect the power plug, and never try to service the TV yourself. Important: An outdoor antenna system of good quality and condition is recommended to eliminate many service problems.						

CABLE TV CHANNEL CONVERSION CHART

In addition to normal TV reception from an antenna for VHF (Channels 2 to 13) and UHF (Channels 14 to 69), your TV set is equipped to receive non-scrambled cable TV channels. Sub-Mid band (A-8, A-4 to A-1), Mid band (A to I), Super band (J to W), Hyper band (W+1 to W+28) and Ultra band (W+29 to W+84) can be received by using the channel selections as shown in the following chart.

A-8	A-4	A-3	A-2	A-1	A	B	C	D	E	F	G	H	I	J	K	L	M	N
01	05	07	08	09	14	15	16	17	18	19	20	21	22	23	24	25	26	27
28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46
47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65
66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84
85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103
104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122
123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141

Note:
* Reception of channel A-5 ("95") of the TV set's on-screen CABLE channel numbers is not recommended for your TV set.

*: Regular cable channel designations
*: Your TV set's corresponding on-screen CABLE channel numbers

SPECIFICATIONS

Model	AV-20CM5	AV-20TP5	AV-27BM5
Type	COLOR TELEVISION		
Reception format	NTSC,BTSC(Multichannel Sound)		
Reception range	VHF 2 to 13, UHF 14 to 69; Sub Mid, Mid, Super, Hyper and Ultra bands (180-channel frequency synthesizer system)		
Power source	AC 120 V, 60 Hz		
Power consumption	Max. 120 W Avg. 90 W	Max. 120 W Avg. 90 W	Max. 147 W Avg. 103 W
Screen size	20" measured diagonally, Full Square		27" measured diagonally, Full Square
Audio output	1.2 W + 1.2 W		
Speakers	2" x 4-3/4" oblong type x 2		
Antenna terminal	75-ohms (VHF/UHF) terminal (F-type connector)		
External input jacks	Video: 1 Vp-p, 75-ohms Audio: 500mV rms (-4dBs), high impedance		
S-Video input jack	Y: 1 Vp-p positive, 75-ohms (negative sync provided) C: 0.286 Vp-p (burst signal), 75-ohms		
Variable audio output jacks	More than 0 to 1550 mV rms (+6 dBs), low impedance (400 Hz when modulated 100%)		
Speaker output jacks	Impedance 6 to 8 ohms		
External dimensions (W x H x D)	19-7/8" x 17-7/8" x 19-3/8"	21-1/4" x 18" x 18-3/4"	25-3/4" x 23-1/8" x 20-1/2"
Weight	47.3 lbs	50.2 lbs	82.7 lbs
Accessories	Remote control unit (RM-C676) x1 AA-size dry cell battery x2		

Design and specifications subject to change without notice.

HOW TO LOCATE YOUR JVC SERVICE CENTER

TOLL FREE: 1-800-537-5722

Dear customer:

In order to receive the most satisfaction from your purchase, read the instruction booklet before operating the unit. In the event that repair is necessary, or for the address nearest your location, please refer to the factory service center list below or within the Continental United States, call 1-800-537-5722 for your authorized servicer. Remember to retain your Bill of Sale for Warranty Service.

—JVC

JVC SERVICE & ENGINEERING COMPANY OF AMERICA DIVISION OF US JVC CORP.

FACTORY SERVICE CENTER LOCATIONS

107 Little Falls Road
Fairfield, NJ 07004-2105
(201) 808-9279

1500 Lakes Parkway
Lawrenceville, GA 30243-5357
(404) 339-2522

705 Enterprise Street
Aurora, IL 60504-8149
(708) 851-7855

5665 Corporate Avenue
Cypress, CA 90630-0024
(714) 229-8011

10700 Hammerly Suite 110
Houston, TX 77043
(713) 935-9331

2969 Mapunapuna Place
Honolulu, HA 96819-2040
(808) 833-5828

230 Elliot Street
Ashland, MA 0172-2377
(508) 881-5923

14505 Commerce Way
Miami Lakes, FL 33016-1512
(305) 362-6252

890 Dubuque Avenue
South San Francisco, CA
94080-1804
(415) 871-2666

Sophisticated electronic products may require occasional service. Just as quality is a keyword in the engineering and production of the wide array of JVC products, service is the key to maintaining the high level of performance for which JVC is world famous. The JVC service and engineering organization stands behind our products.

NATIONAL HEADQUARTERS
JVC SERVICE & ENGINEERING COMPANY OF AMERICA
DIVISION OF US JVC CORP.
107 Little Falls Road
Fairfield, NJ 07004-2105

If you ship the product...

Pack your JVC unit in the original carton or one of equivalent size and strength. Enclose, with the unit, a letter stating the problem or symptom that exists and also a copy of the receipt or bill of sale you received when you purchased your JVC unit. Print your home return address on the outside and the inside of the carton. Send to the appropriate JVC Factory Service Center as listed above.

Don't service it yourself.

CAUTION

To prevent electrical shock, do not open the cabinet. No user serviceable parts inside. Refer servicing to qualified service personnel.

ACCESSORIES

To purchase accessories for your JVC product, you may contact your local JVC Dealer. Or from the 48 Continental United States call toll free: 800-882-2345.

■ MICRO PROCESSING CONTROL UNIT (IC701 : MN1872013JGU4)

A newly developed IC701 (sensor control micro processor), which corresponds to the JVC MASTER COMMAND is employed in the AV-27BM5. Thanks to the IC701, channel selecting speed, mute function , SUB VOLUME (for TINT, COLOR, PICTURE and BRIGHT) and AUTO DEMO function have been remarkably improved.

●IN / OUT put Port and System constant

PIN No.	Port Name	FUNCTION	
		IN / OUT	
4	ADINO	IN	AFC S curve
5	ADIN1	IN	SUB ADJ (Service mode GND)
6	ADIN2	IN	LOCK (Tuner serial control)
7	P50	OUT	System constant A
8	P51	OUT	System constant B
9	P52	OUT	System constant C
10	P53	OUT	System constant D
11	P54	OUT	CLOCK (Tuner serial control)
12	P55	OUT	DATA (Tuner serial control)
13	P56	OUT	ENABLE (Tuner serial control)
14	P57	OUT	Key scanning
17	DACO	OUT	VOLUME control
18	DAC1	OUT	TINT control
19	DAC2	OUT	COLOR control
20	DAC3	OUT	PICTURE control
21	DAC4	OUT	BRIGHT control
22	DAC5	OUT	DETAIL control
23	DAC6	OUT	BASS control
24	DAC7	OUT	TREBLE control
25	DAC8	OUT	BALANCE control
27	DAC10	OUT	AUDIO MUTE (5V)
30	P46	OUT	TV /VIDEO input switching
31	P45	OUT	MTS mode switching MONO / STEREO
32	P44	OUT	MTS mode switching MAIN / SAP
33	P43	IN	Key scanning
34	P42	IN	Key scanning
35	P41	IN	Key scanning
36	P40	IN	Key scanning
37	P17 (ACIN)	IN	60Hz AC input (for timer)
38	P16 (SD)	IN	SYNC. detection
39	P15 (VOB)	OUT	On-screen (background)
40	P14 (VOW3)	OUT	On-screen (B)
41	P13 (VOW2)	OUT	On-screen (G)
42	P12 (VOW1)	OUT	On-screen (R)
43	P11 (TCIO)	IN	COMPULINK
45	P66	OUT	AGC MUTE
46	P65	OUT	CATV A/B
47	P64	OUT	POWER ON / OFF
49	P62	OUT	Memory C3
50	P61	OUT	Memory C2
51	P60	OUT	Memory C1
52	RST	IN	RESET
53	P06, RMIN	IN	Remote control signal
54	H. SYNC	IN	H. sync. signal
55	V. SYNC	IN	V. sync. signal
56	P04, IRQ0	IN	Power suspension detection
58	P02 (SBT1)	IN	COMPULINK detection

•FRONT AND REMOCON KEY

Key groups which are operable on either the remote control unit or front panel of the TV set are listed below.

FUNCTION	FRONT KEY	REMOTE CONTROL KEY
TEN KEY	x	○
CHANNEL UP / DOWN (+/-)	○	○
VOLUME UP / DOWN (+/-)	○	○
POWER ON / OFF	○	○
MUTE ON / OFF	x	○
TV / VIDEO	○	○
MAIN / SAP	○	○
DISPLAY	x	○
RETURN	x	○
CLOSED CAPTION C1/C2	x	○
ANT / CABLE	○	○
CHOICE LIST	x	○
AV STATUS / RESET	x	○
MENU	x	○
FUNCTION FORWARD / BACK	○	○
LEVEL + / -	○	○
100 +	x	○
FRONT FUNCTION	○	x
FRONT LEVEL + / -	○	x

○ : Operable

x : Inoperable

•REQUIREMENTS FOR OPERABILITY OF KEYS

KEY \ MODE	POWER OFF	TV MODE	VIDEO MODE
TEN KEY	x	○	○
100 +	x	○	○
CHANNEL UP / DOWN (+/-)	x	○	△
VOLUME UP / DOWN (+/-)	x	○	○
MUTE ON / OFF	x	○	○
POWER ON / OFF	○	○	○
TV / VIDEO	x	○	○
MAIN / SAP	x	○	x
DISPLAY	x	○	○
RETURN	x	○	△
CLOSED CAPTION C1/C2	x	○	x
ANT / CABLE	x	○	△
CHOICE LIST	x	○	○
AV STATUS / RESET	x	○	○
MENU	x	○	○
FUNCTION FORWARD / BACK	x	○	○
LEVEL + / -	x	○	○
FRONT FUNCTION	x	○	○
FRONT LEVEL + / -	x	○	○

○ : Operable

x : Inoperable

△ : The same operable as TV / VIDEO KEY

SPECIFIC SERVICE INSTRUCTIONS

DISASSEMBLY PROCEDURE

■ REMOVING THE REAR COVER

1. Unplug the power supply cord and remove the eight screws marked **A** as shown in Fig. 1
- * When reinstalling the rear cover, carefully push it inward after inserting the main board into the rear cover groove.

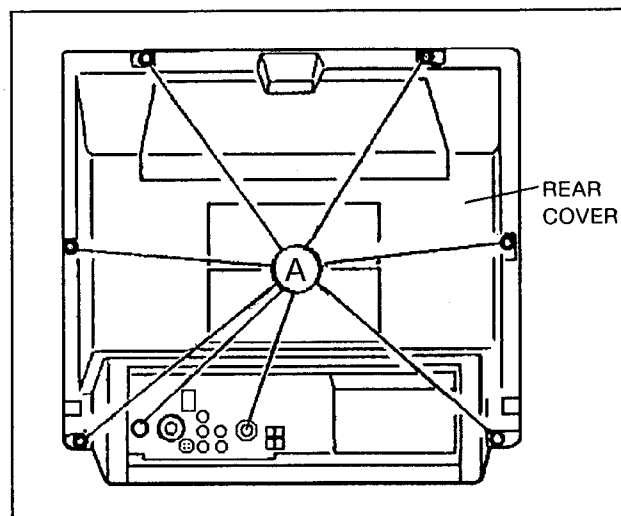


Fig. 1

■ REMOVING THE MAIN PW BOARD ASS'Y

1. As shown in Fig. 2, slide and pull out the MAIN PWB Ass'y in the direction of arrow. (If necessary, take off the wire clamp and connectors.)
- * When conducting a check with power supplied, be sure to confirm that the CRT earth wire is connected to the CRT SOCKET PWB Ass'y and the MAIN PWB Ass'y.

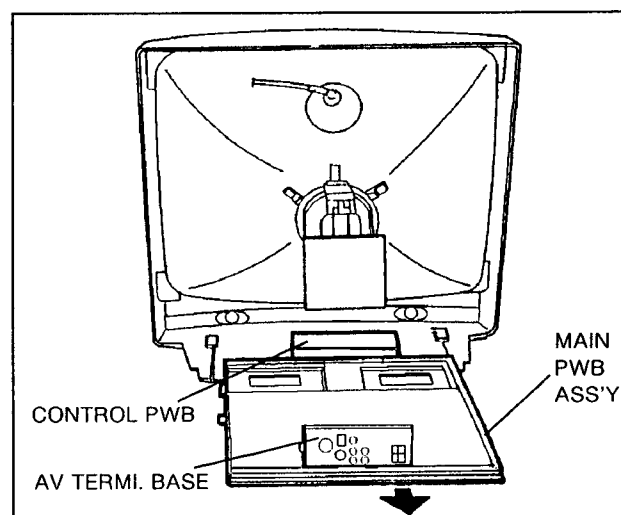


Fig. 2

■ AN EXAMPLE OF PLACEMENT FOR SERVICE

1. As shown in Fig. 3, place the unit for service.
 2. When the chassis, standing PWB Ass'y, 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 cardboard, 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 PWB Ass'y 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

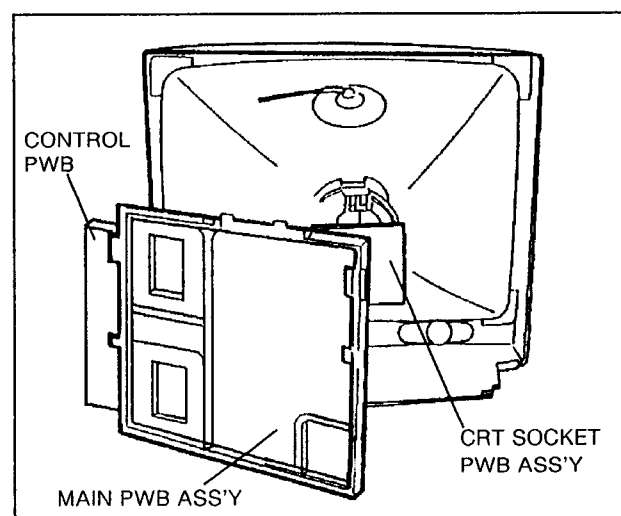


Fig. 3

SERVICE ADJUSTMENTS

■ PRIOR TO STARTING ADJUSTMENT

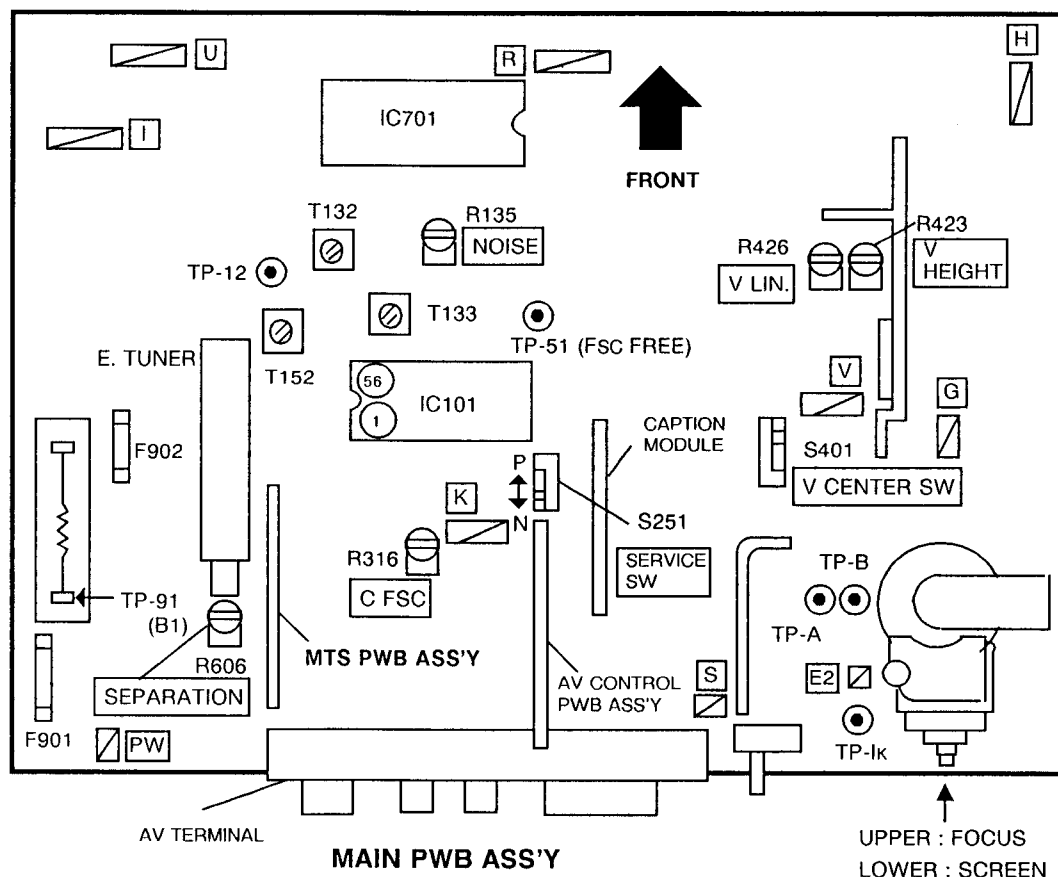
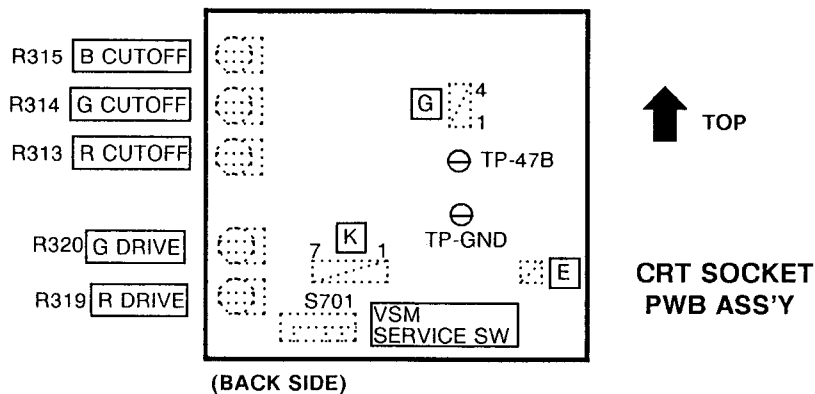
- Allow set and test equipment to warm up fully before adjusting.
- Confirm proper AC 120V power supply input.
- Set BRIGHT, PICTURE, COLOR, etc. AV STATUS to standard settings.
- Use care not to disturb controls other than those mentioned in the adjustment steps.
- Unless otherwise mentioned, use a reception signal that provides the optimum picture for adjustment.

■ TOOLS AND FIXTURES FOR ADJUSTMENT

● MEASURING INSTRUMENTS

1. DC voltmeter (Digital DC voltmeter)
2. Oscilloscope
3. Pattern generator (NTSC type)
4. TV multichannel sound generator
5. Remote control unit (RM-C676)

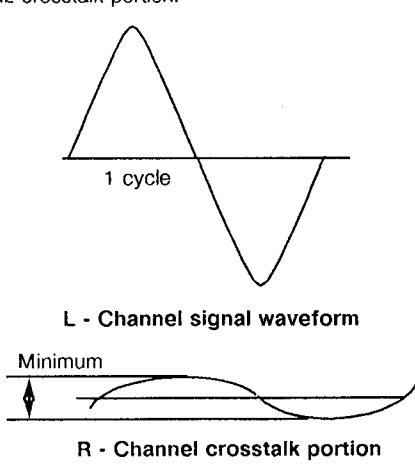
■ ADJUSTMENT LOCATIONS

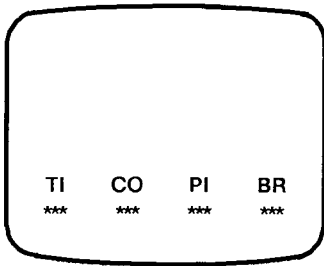
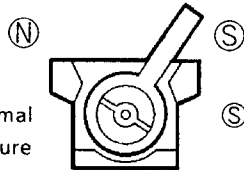


■ ADJUSTMENT PROCEDURE

Item	Measuring instrument	Test point	Adjustment part	Description
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● MAIN CIRCUIT

B1 POWER SUPPLY	● DC voltmeter	● TP-91 (B1) ● TP-E (⊥)		1. Confirm that the voltage between TP-91 and TP-E (⊥) is DC 129.3V \pm 1.5V.
NOISE (RF AGC) adjustment			● NOISE VR (R135)	1. Adjust the NOISE VR so that the noise appears in the picture. 2. Next the NOISE VR in a direction that the noise disappears from the picture and stop at the point where the noise has disappeared from the picture. 3. Turn to another channel and confirm that there are no abnormalities.
COLOR SYNC. adjustment	● Pattern generator ● Oscilloscope	● TP-51A (FSC FREE) ● ④ pin of IC101 (9V line)	● C FSC. VR (R316)	1. Receive the color bar signal. 2. Use a shorting clip or other means to connect TP-51A and ④ pin (9V line) of IC101. 3. Adjust the C FSC. VR to change the picture from color stripes to still color bar. 4. Remove the connections and check that the color synchronization does not deteriorate on any of the channels.
SEPARATION adjustment	● TV multi-channel sound generator ● Oscilloscope	● VARIABLE AUDIO OUTPUT L & R	● SEPARATION VR (R606)	1. Set the TV multi-channel sound signal generator for generating stereo signal and output signal of about 3kHz from the left channel. 2. Connect an oscilloscope to the "L" output and obtain a clear view of 1-cycle portion of 3kHz waveforms. 3. Change connection of the oscilloscope to the "R" output and expand the voltage axis. 4. Adjust the SEPARATION VR and minimize the 3kHz crosstalk portion.  <p>L - Channel signal waveform</p> <p>Minimum</p> <p>R - Channel crosstalk portion</p>
FOCUS adjustment			● FOCUS VR (built in FBT)	1. Adjust the FOCUS VR to obtain clear pictures. 2. Check that pictures have been adjusted to optimum appearance in both center and peripheral areas of the screen.

Item	Measuring instrument	Test point	Adjustment part	Description
BRIGHT adjustment	• Remote control unit 		• SUB BRIGHT (BR)	<ol style="list-style-type: none"> 1. By pressing AV STATUS / RESET button of the remote control unit, reset the respective functions (TINT, COLOR, PICTURE, BRIGHT&DETAIL) 2. Turn VSM SERVICE SW (S701 on CRT SOCKET PWB) to the S side. 3. Select BR(BRIGHT) adjustment mode using FUNCTION KEY of the remote control unit and obtain an optimum brightness using the adjusting (+/-) key. 4. After adjustment, return VSM SERVICE SW (S701 on CRT SOCKET PWB) to the N side. • Avoid excessive brightness.
PICTURE adjustment	• Remote control unit		• SUB PICTURE (PI)	<ol style="list-style-type: none"> 1. By pressing AV STATUS / RESET button of the remote control unit, reset the respective functions (TINT, COLOR, PICTURE, BRIGHT&DETAIL) 2. Turn VSM SERVICE SW(S701 on CRT SOCKET PWB) to the S side. 3. Select PI(PICTURE) adjustment mode using FUNCTION KEY of the remote control unit and obtain an optimum contrast using the adjusting (+/-) key. 4. After adjustment, return VSM SERVICE SW (S701 on CRT SOCKET PWB) to the N side.
TINT & COLOR adjustment	• Remote control unit		• SUB TINT (TI) • SUB COLOR (CO)	<ol style="list-style-type: none"> 1. By pressing AV STATUS / RESET button of the remote control unit, reset the respective functions (TINT, COLOR, PICTURE, BRIGHT, DETAIL) 2. Turn VSM SERVICE SW (S701 on CRT SOCKET PWB) to the S side. 3. Select the TINT and COLOR controls with the remote control unit function keys. Use the +/- keys to adjust for the most natural color. 4. After adjustment, return VSM SERVICE SW (S701 on CRT SOCKET PWB) to the N side.
VERTICAL HEIGHT & LINEARITY adjustment	• Pattern generator		• V. HEIGHT VR (R423) • V. LIN. VR (R426)	<ol style="list-style-type: none"> 1. Receive a picture that enable vertical symmetry to be checked. 2. Turn the V HEIGHT VR to compress the picture vertically. 3. Adjust the V LIN. VR to where the picture is symmetrical top and bottom. 4. Again adjust the V HEIGHT VR to return the normal height.
HORIZONTAL LINE display			• SERVICE SW (S251)	<ol style="list-style-type: none"> 1. Turning the SERVICE SW from the N side to the S side will bring the horizontal line display to the screen. <div style="text-align: center;">  <p>(N) : normal picture (S) : will appear a H line</p> <p>< Rear cover side ></p> </div>

•MTS PWB CIRCUIT

• Do not touch the VRs inside the MTS PWB ASS'Y.

●HOW TO CHECK THE HIGH VOLTAGE HOLD DOWN CIRCUIT

1. High voltage hold down circuit

After repair of the high voltage hold down circuit shown in Fig. 1, this circuit shall be checked to operate correctly.

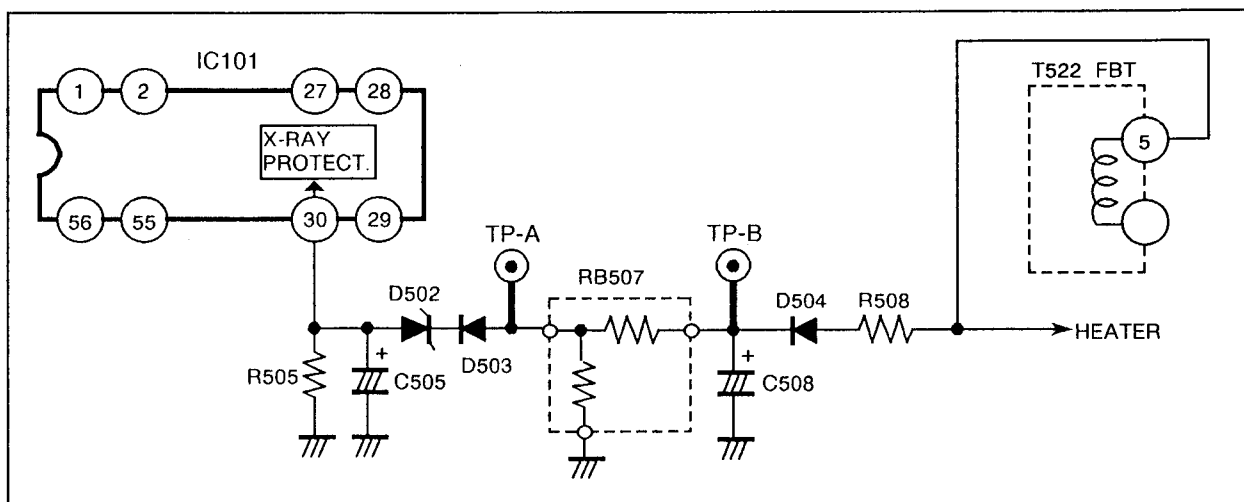


Fig. 1

2. Checking method of the high voltage hold down circuit

- (1) Make sure that the POWER switch is at OFF.
- (2) Shown in Fig. 2, set the resistor 16.4k Ω 1/4W to RB507 (between TP-A and TP-B).
- (3) Turn the POWER switch ON.
- (4) Make sure that the screen picture disappears.
- (5) Turn the POWER switch OFF.
- (6) Remove the resistor 16.4k Ω 1/4W from RB507 (between TP-A and TP-B).

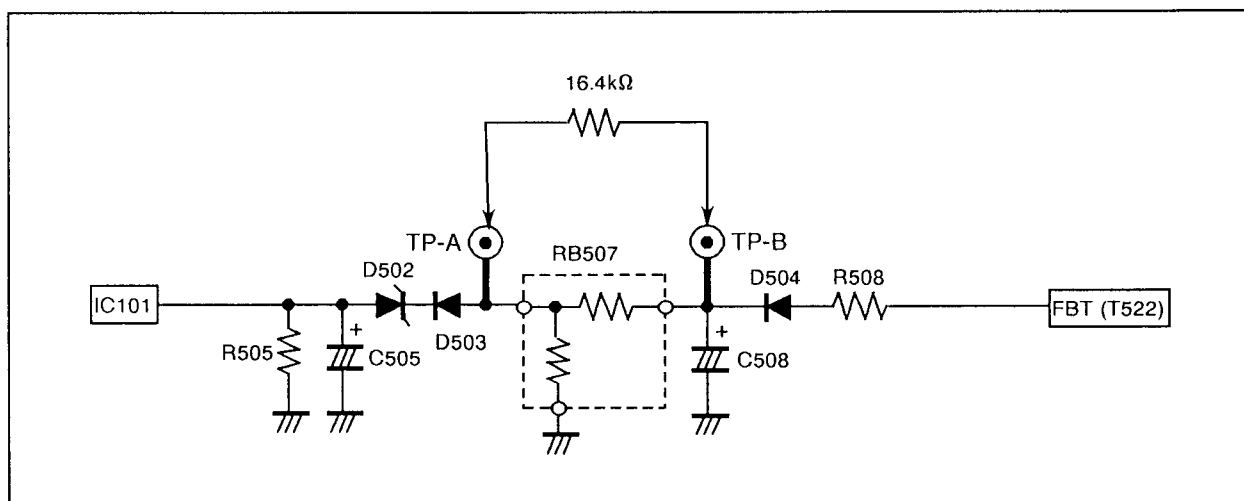


Fig. 2

■ PURITY, CONVERGENCE AND WHITE BALANCE ADJUSTMENTS

* 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/convergence 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 be 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.)

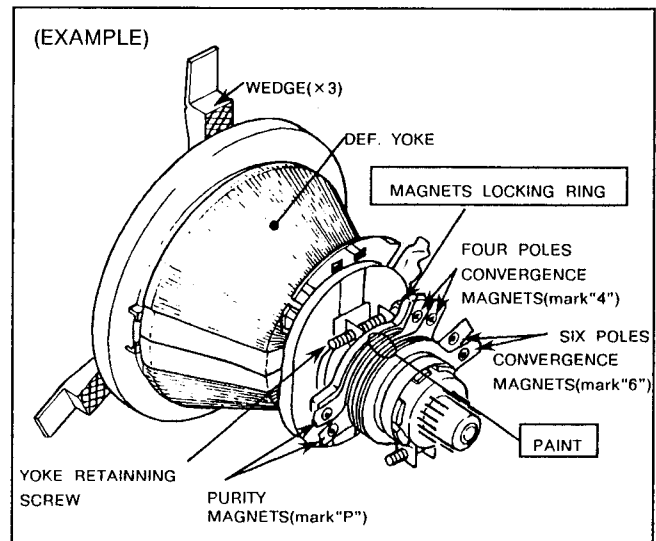


Fig.B-1

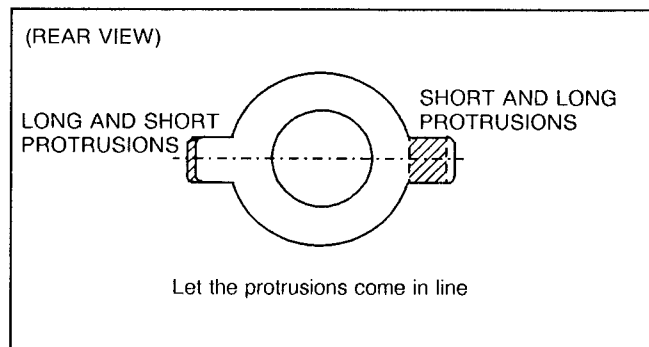


Fig.B-2

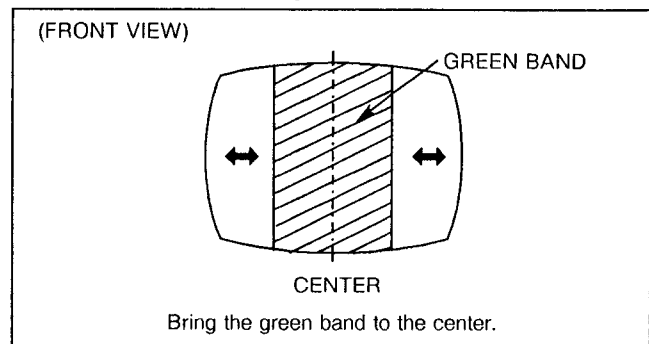


Fig.B-3

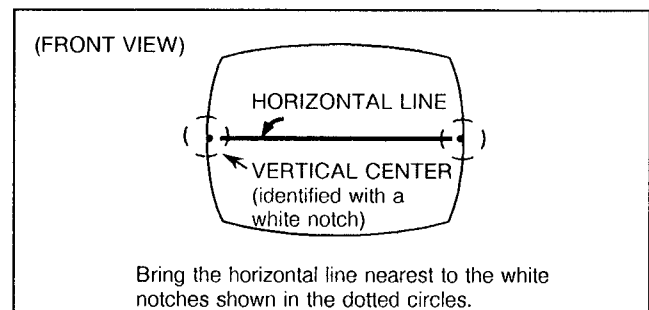


Fig.B-4

•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.
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. Therefore, 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.

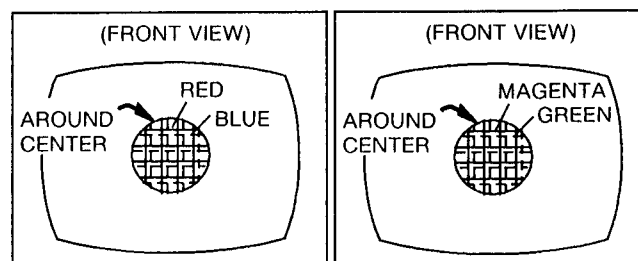


Fig. B-5

Fig. B-6

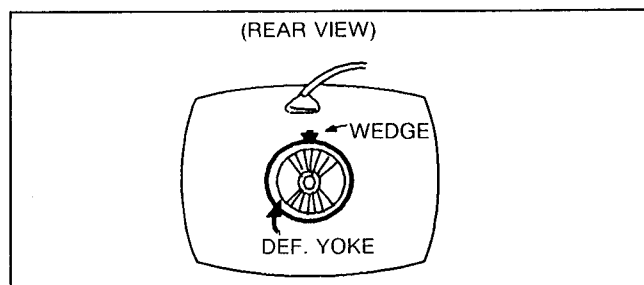


Fig. B-7

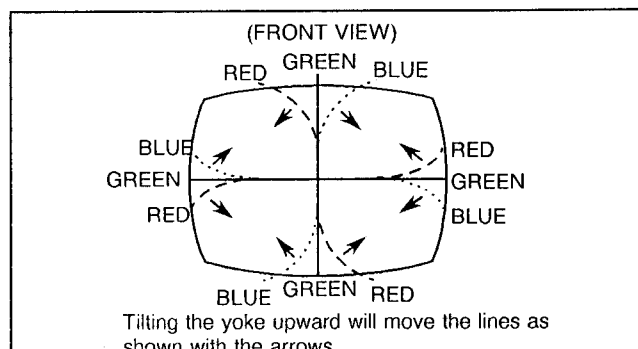


Fig. B-8

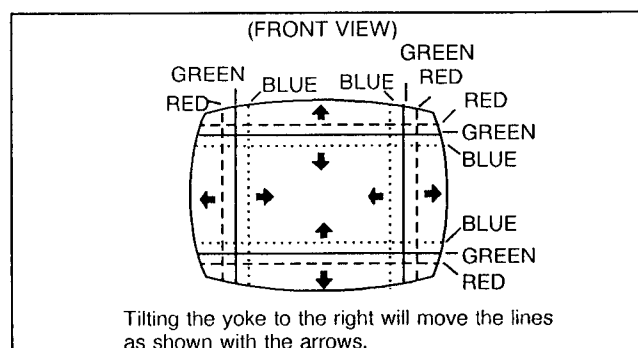


Fig. B-9

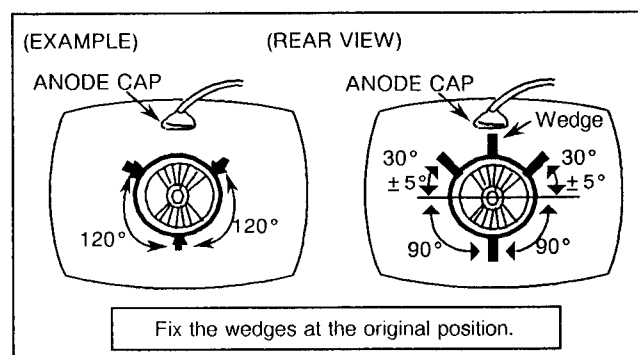



Fig. B-10

AV-27BM5(US&CA) STANDARD CIRCUIT DIAGRAM

■ NOTE ON USING CIRCUIT DIAGRAMS

1. SAFETY

The components identified by the  symbol and shading are critical for safety. For continued safety replace safety critical components only with manufactures recommended parts.

2. SPECIFIED VOLTAGE AND WAVEFORM VALUES

The voltage and waveform values have been measured under the following conditions.

- | | |
|---|---|
| (1) Input signal | : Color bar signal |
| (2) Setting positions
of each knob/button
and variable resistor | : Original setting position
when shipped |
| (3) Internal resistance of tester | : DC 20k Ω /V |
| (4) Oscilloscope sweeping time | : H \Rightarrow 20 μ S/div
: V \Rightarrow 5mS/div
: Others \Rightarrow Sweeping time is
specified |
| (5) Voltage values | : All DC voltage values |
- * Since the voltage values of signal circuit vary to some extent according to adjustments, use them as reference values.

3. INDICATION OF PARTS SYMBOL[EXAMPLE]

- In the P.W.board : R1209 \rightarrow R209

4. INDICATIONS ON THE CIRCUIT DIAGRAM

(1) Resistors

● Resistance value

- | | |
|---------|-----------------|
| No unit | : [Ω] |
| K | : [K Ω] |
| M | : [M Ω] |

● Rated allowable power

- | | |
|---------------|----------------|
| No indication | : 1/6[W] |
| Others | : As specified |

● Type

- | | |
|---------------|-----------------------------|
| No indication | : Carbon resistor |
| OMR | : Oxide metal film resistor |
| MFR | : Metal film resistor |
| MPR | : Metal plate resistor |
| UNFR | : Unflammable resistor |
| FR | : Fusible resistor |

* Composition resistor 1/2 [W] is specified as 1/2S or Comp.

(2) Capacitors

● Capacitance value

- | | |
|-------------|--------------|
| 1 or higher | : [pF] |
| less than 1 | : [μ F] |

● Withstand voltage

- | | |
|---------------|---------------------------|
| No indication | : DC50[V] |
| Others | : DC withstand voltage[V] |
| AC indicated | : AC withstand voltage[V] |

* Electrolytic Capacitors

47/50[Example]: Capacitance value[μ F]/withstand voltage[V]





● Type

- | | |
|---------------|-------------------------------------|
| No indication | : Ceramic capacitor |
| MY | : Mylar capacitor |
| MM | : Metalized mylar capacitor |
| PP | : Polypropylene capacitor |
| MPP | : Metalized polypropylene capacitor |
| MF | : Metalized film capacitor |
| TF | : Thin film capacitor |
| BP | : Bipolar electrolytic capacitor |
| TAN | : Tantalum capacitor |

(3) Coils



- | | |
|---------|----------------|
| No unit | : [μ H] |
| Others | : As specified |

(4) Power Supply



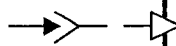
- | | |
|--|--------------|
|  | : B1(129.3V) |
|  | : B2(12V) |
|  | : 9V |
|  | : 5V |

* Respective voltage values are indicated.





(5) Test Point

- | | |
|--|---------------------------|
|  | : Test point |
|  | : Only test point display |



(6) Connecting method

- | | |
|--|-------------------------|
|  | : Connector |
|  | : Wrapping or soldering |
|  | : Receptacle |

(7) Ground symbol

- | | |
|---|----------------------------------|
|  | : LIVE side ground |
|  | : ISOLATED (NEUTRAL) side ground |
|  | : EARTH ground |
|  | : DIGITAL ground |

5. NOTE FOR REPAIRING 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 ISOLATED [NEUTRAL : ] side GND.

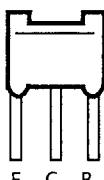
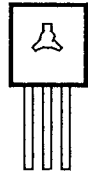
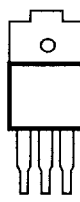
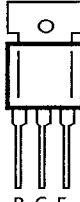

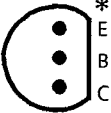
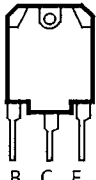

Therefore, care must be taken for the following points.

- (1) Do not touch the LIVE side GND or the LIVE side GND and the ISOLATED (NEUTRAL) side GND simultaneously. If the above caution is not respected, an electric shock may be caused. Therefore, make sure that the power cord is surely removed from the receptacle when, for example, the chassis is pulled out.
- (2) Do not short between the LIVE side GND and ISOLATED (NEUTRAL) side GND or never measure with a measuring apparatus (oscilloscope, etc.) the LIVE side GND and ISOLATED (NEUTRAL) side GND at the same time. If the above precaution is not respected, a fuse or any parts will be broken.

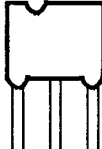

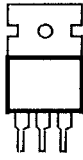
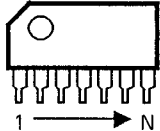
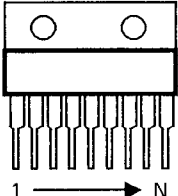
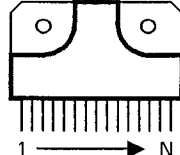
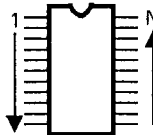
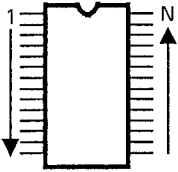
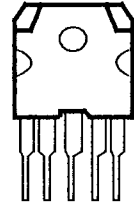
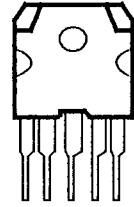

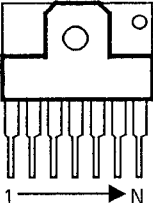

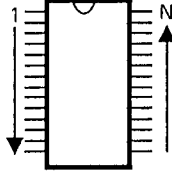
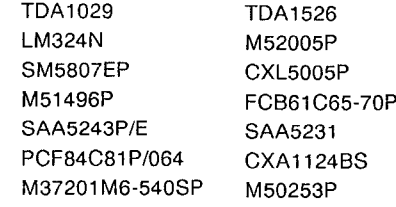
◇ Since the circuit diagram is a standard one, the circuit and circuit constants may be subject to change for improvement without any notice.

SEMICONDUCTOR SHAPES (* = Bottom view)

TRANSISTORS

 <p>2SC3619 2SC4502-T</p> <p>E C B</p>	 <p>2SC3271(NP)</p> <p>E C B</p>	 <p>2SD1408(OY) 2SA1306(Y) 2SC3298(Y)</p> <p>B C E</p>
 <p>2SC2068-LB 2SD1133(CD) 2SC4256</p> <p>B C E</p>	 <p>* E C B</p> <p>2SC1815(YG) 2SA1015(YG) 2SA966(OY) 2SC2655(Y) 2SC1360</p> <p>2SC1959(Y) 2SC2878(B) 2SA673(C) 2SB774(RS) 2SC2482(C1)</p>	 <p>2SC3811(R)</p> <p>* E B C</p>
 <p>2SC4589-C1 2SD1555-C1</p> <p>B C E</p>	 <p>2SA933(QR) 2SA933S(QR) 2SA1309A(QR) DTC124ES DTC323TS</p> <p>E C B</p>	<p>2SC2785(JH) 2SC1740S(QR) 2SC1740(QR) 2SC3311A(QR)</p>

ICs

 <p>MN1280-K</p> <p>Vss Vcc OUT</p>	 <p>* OUT E IN</p> <p>RC78L05A-Y TA78L005AP TA78L012AP</p>	 <p>IN E OUT</p> <p>TA78005AP TA78012AP AN7805 UPC2412HF UPC2405HF TA78L009AP</p>	 <p>LA7952</p> <p>1 → N</p>
 <p>LA4261</p> <p>1 → N</p>	 <p>TA8216H MC13516T2</p> <p>1 → N</p>	 <p>AN5352N TC4066BP UPD6326C VUC2003 MN12C261D TA7630P</p>	
 <p>VC2024Z MN1873221JGJ5 MN1872013JGU4 TA8759AN TA7825AN TA8720AN</p> <p>1 → N</p>	 <p>M65109BSP M51365SP TA8662N</p> <p>1 → N</p>	 <p>STR30130</p> <p>1 → N</p>	 <p>SE120N</p> <p>1 2 3</p>
 <p>LA7838</p> <p>1 → N</p>	 <p>JCC1002</p> <p>1 8</p>	 <p>TDA1029 LM324N SM5807EP M51496P SAA5243P/E PCF84C81P/064 M37201M6-540SP TDA3810</p> <p>1 → N</p>	 <p>TDA1526 M52005P CXL5005P FCB61C65-70P SAA5231 CXA1124BS M50253P</p>

CHANNEL CHART (US)

MODE		BAND	CHANNEL		TUNER BAND
TV	CATV		REAL	DISP.	
○	○	VL	02		I
			03		
			04		
			05		
			06		
		VH	07		II
			08		
			09		
			10		
			11		
			12		
			13		
X	○	MID	A	14	I
			B	15	
			C	16	
			D	17	
			E	18	
			F	19	
			G	20	
			H	21	
			I	22	
		SUPER	J	23	II
			K	24	
			L	25	
			M	26	
			N	27	
			O	28	
			P	29	
			Q	30	
			R	31	
			S	32	
			T	33	
			U	34	
		HYPER	V	35	IV
			W	36	
			W+1	37	
			W+2	38	
			W+3	39	
			W+4	40	
			W+5	41	
			W+6	42	
			W+7	43	
			W+8	44	
			W+9	45	
			W+10	46	
			W+11	47	
			W+12	48	
			W+13	49	
			W+14	50	
			W+15	51	
			W+16	52	
			W+17	53	
			W+18	54	
			W+19	55	
			W+20	56	
			W+21	57	
			W+22	58	
			W+23	59	
			W+24	60	
			W+25	61	
			W+26	62	
			W+27	63	
			W+28	64	
		ULTRA	W+29	65	
			W+30	66	
			W+31	67	
			W+32	68	
			W+33	69	
			W+34	70	
			W+35	71	

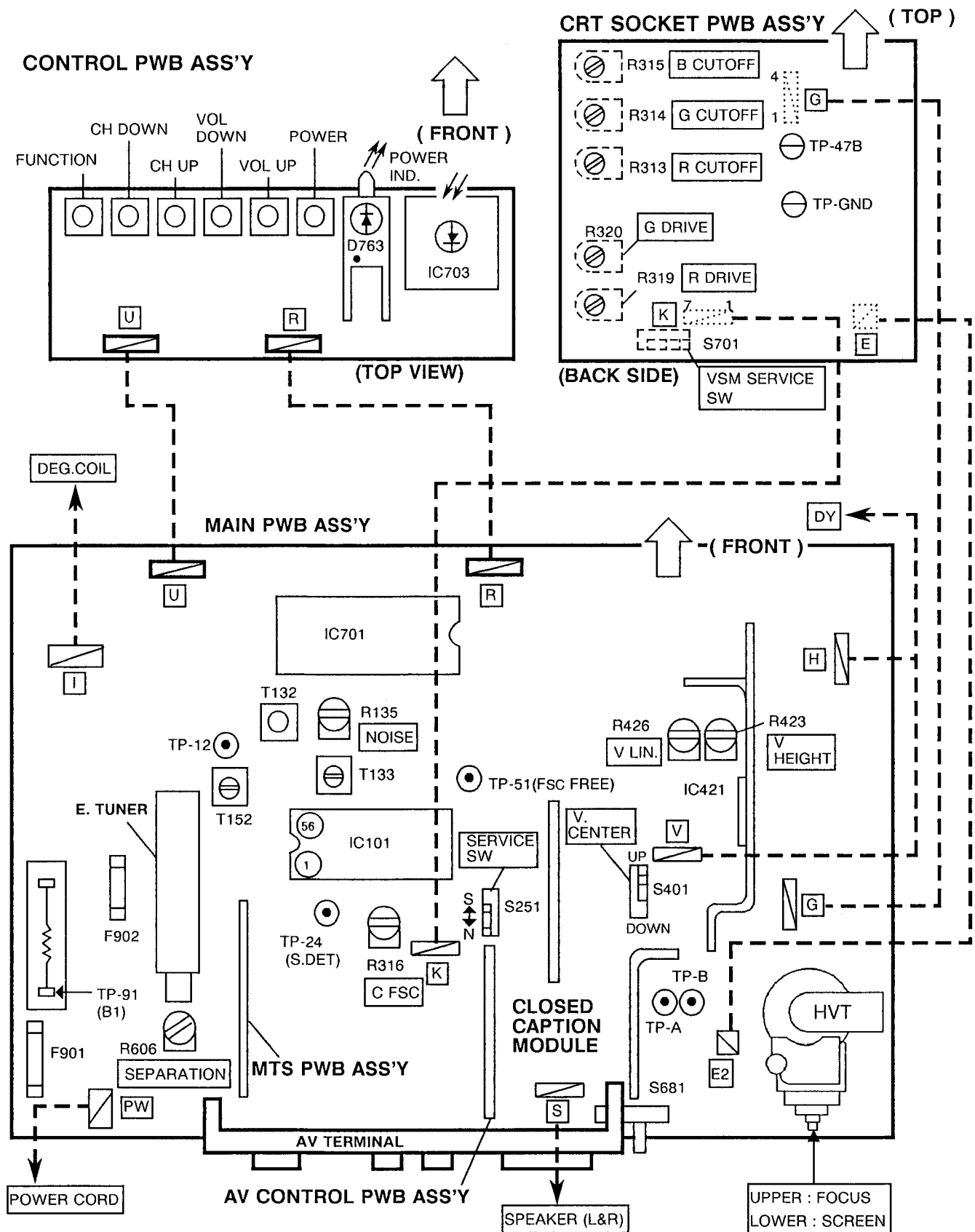
MODE		BAND	CHANNEL		TUNER BAND
TV	CATV		REAL	DISP.	
X	○	ULTRA	W+36	72	IV
			W+37	73	
			W+38	74	
			W+39	75	
			W+40	76	
			W+41	77	
			W+42	78	
			W+43	79	
			W+44	80	
			W+45	81	
			W+46	82	
			W+47	83	
			W+48	84	
			W+49	85	
			W+50	86	
			W+51	87	
			W+52	88	
			W+53	89	
			W+54	90	
			W+55	91	
			W+56	92	
			W+57	93	
			W+58	94	
			W+59	100	
			W+60	101	
			W+61	102	
			W+62	103	
			W+63	104	
			W+64	105	
			W+65	106	
			W+66	107	
			W+67	108	
			W+68	109	
			W+69	110	
			W+70	111	
			W+71	112	
			W+72	113	
			W+73	114	
			W+74	115	
			W+75	116	
			W+76	117	
			W+77	118	
			W+78	119	
			W+79	120	
			W+80	121	
			W+81	122	
			W+82	123	
			W+83	124	
			W+84	125	
		SUB MID	A-8	01	I
			A-4	96	
			A-3	97	
			A-2	98	
			A-1	99	
○	X	UHF	14	§	IV
TOTAL 180CH VHF 124CH UHF 56CH					
NOTE: TO RECEIVE THE SUBSCRIPTION OR PREMIUM PROGRAMMING FROM CERTAIN CABLE COMPANIES. SPECIAL ADAPTERS MAY BE REQUIRED.					

CHANNEL CHART (CA)

MODE		BAND	CHANNEL		TUNER BAND
TV	CATV		REAL	DISP.	
○	○	VL	02		I
			03		
			04		
			05		
			06		
		VH	07		
			08		
			09		
			10		
			11		
			12		
			13		
×	○	MID	A	14	II
			B	15	
			C	16	
			D	17	
			E	18	
			F	19	
			G	20	
			H	21	
			I	22	
		SUPER	J	23	
			K	24	
			L	25	
			M	26	
			N	27	
			O	28	
			P	29	
			Q	30	
			R	31	
		HYPER	S	32	III
			T	33	
			U	34	
			V	35	
			W	36	
			W+1	37	
			W+2	38	
			W+3	39	
			W+4	40	
			W+5	41	
			W+6	42	
			W+7	43	
			W+8	44	
			W+9	45	
			W+10	46	
			W+11	47	
			W+12	48	
			W+13	49	
			W+14	50	
			W+15	51	
			W+16	52	
			W+17	53	
			W+18	54	
			W+19	55	
			W+20	56	
			W+21	57	
			W+22	58	
			W+23	59	
			W+24	60	
			W+25	61	
			W+26	62	
			W+27	63	
			W+28	64	
		ULTRA	W+29	65	IV
			W+30	66	
			W+31	67	
			W+32	68	
			W+33	69	
			W+34	70	
			W+35	71	

MODE		BAND	CHANNEL		TUNER BAND
TV	CATV		REAL	DISP.	
×	○	ULTRA	W+36	72	IV
			W+37	73	
			W+38	74	
			W+39	75	
			W+40	76	
			W+41	77	
			W+42	78	
			W+43	79	
			W+44	80	
			W+45	81	
			W+46	82	
			W+47	83	
			W+48	84	
			W+49	85	
			W+50	86	
			W+51	87	
			W+52	88	
			W+53	89	
			W+54	90	
			W+55	91	
			W+56	92	
			W+57	93	
			W+58	94	
			W+59	100	
			W+60	101	
			W+61	102	
			W+62	103	
			W+63	104	
			W+64	105	
			W+65	106	
			W+66	107	
			W+67	108	
			W+68	109	
			W+69	110	
			W+70	111	
			W+71	112	
			W+72	113	
			W+73	114	
			W+74	115	
			W+75	116	
			W+76	117	
			W+77	118	
			W+78	119	
			W+79	120	
			W+80	121	
			W+81	122	
			W+82	123	
			W+83	124	
			W+84	125	
		SUB MID	A-8	01	I
			A-4	96	
			A-3	97	II
			A-2	98	
			A-1	99	
○	×	UHF	14	5	IV
TOTAL 180CH { VHF 124CH UHF 56CH					
NOTE: TO RECEIVE THE SUBSCRIPTION OR PREMIUM PROGRAMMING FROM CERTAIN CABLE COMPANIES. SPECIAL ADAPTERS MAY BE REQUIRED.					

MAIN PARTS AND ALIGNMENTS LOCATION

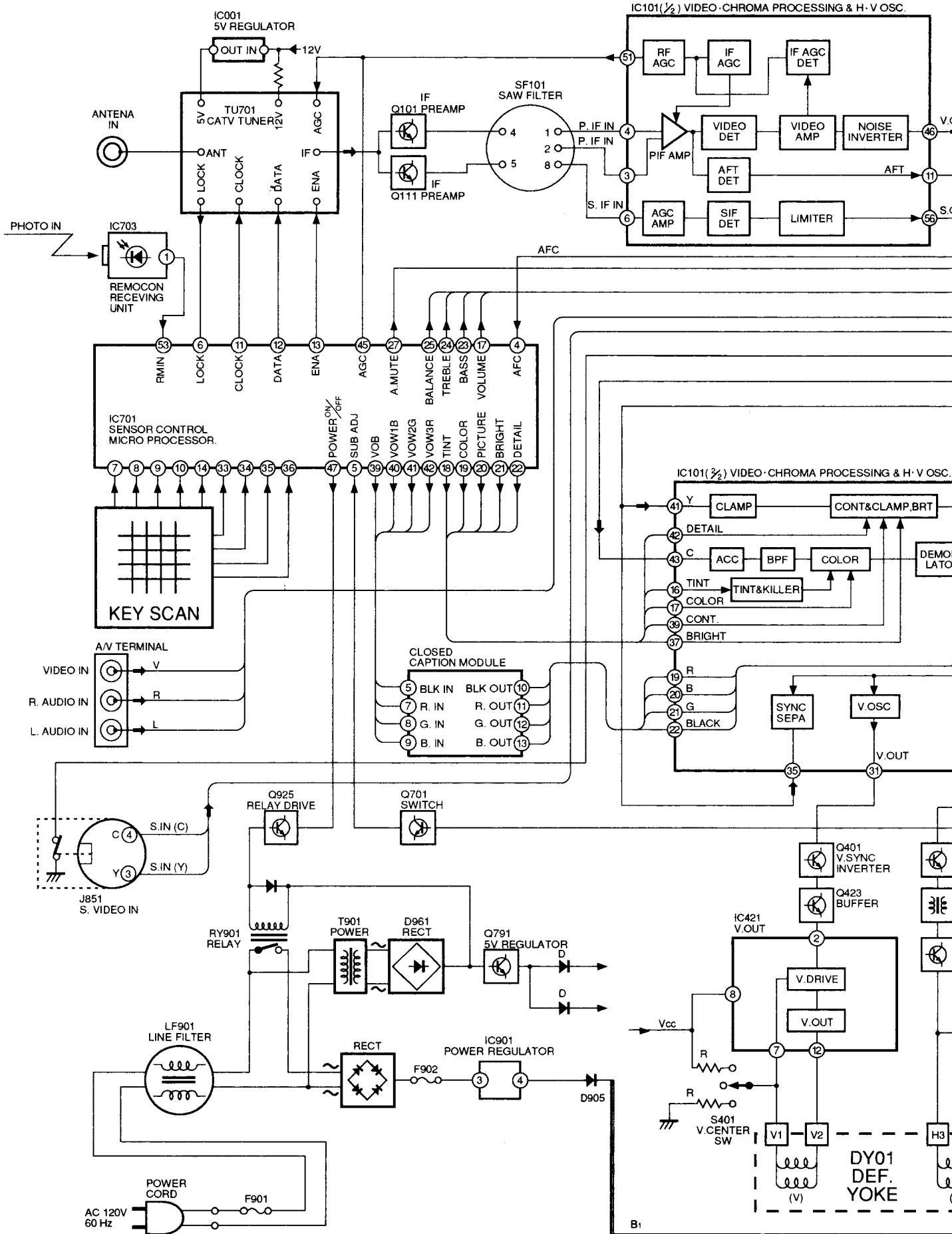


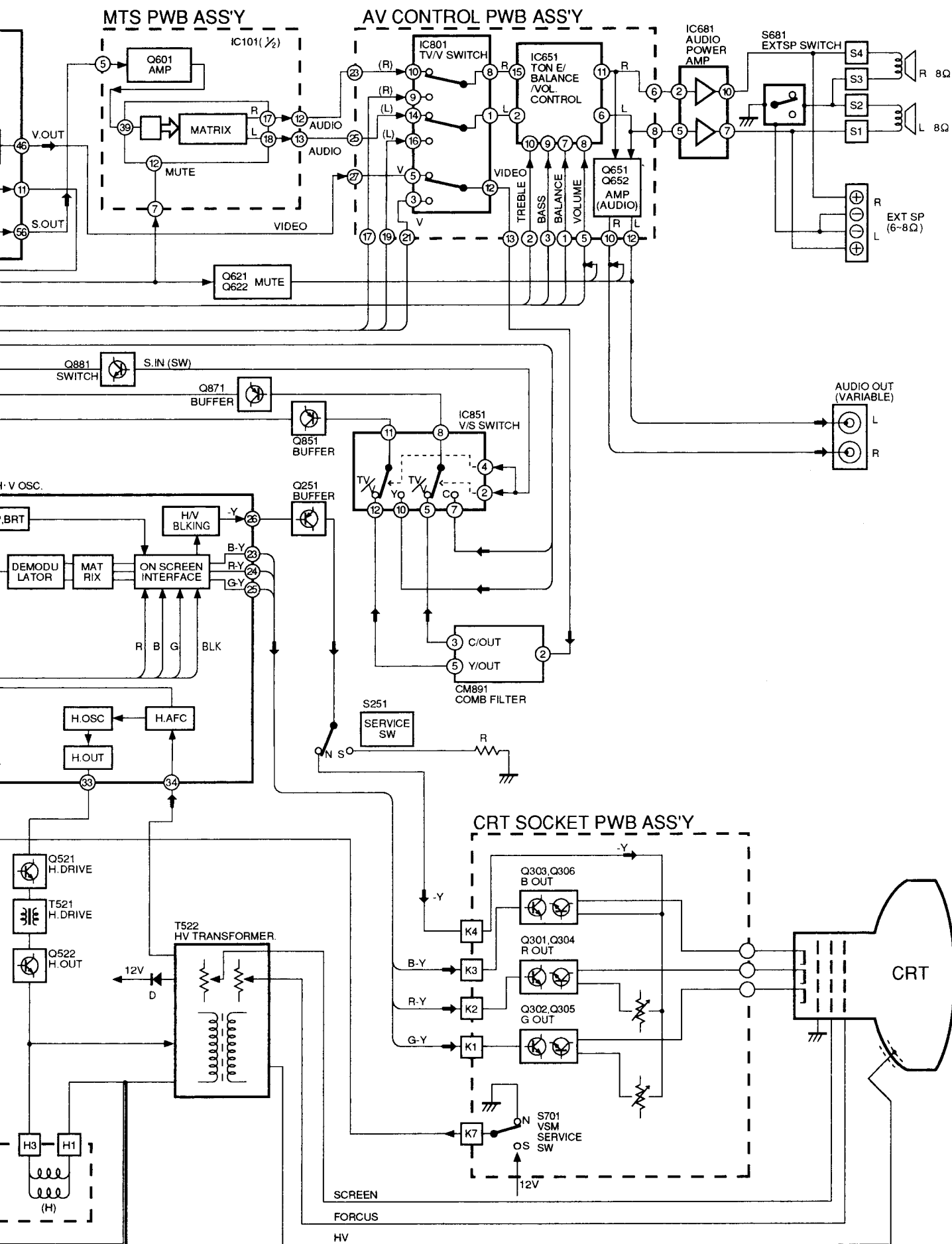
WIRING LIST

P.W.B. or PART NAME	CONNECTOR NAME	WIRE	CONNECTOR NAME	P.W.B. or PART NAME
MAIN PWB ASS'Y	G	↔	G	CRT SOCKET PWB ASS'Y
MAIN PWB ASS'Y	H	↔	WIRE	DEF.YOKE
MAIN PWB ASS'Y	I	↔	WIRE	DEG.COIL
MAIN PWB ASS'Y	K	↔	K	CRT SOCKET PWB ASS'Y
MAIN PWB ASS'Y	PW	↔	WIRE	POWER CORD PLUG
MAIN PWB ASS'Y	S(1,2)	↔	+ -	SPEAKER(L)
MAIN PWB ASS'Y	S(3,4)	↔	- +	SPEAKER(R)
MAIN PWB ASS'Y	E2	↔	E	CRT
MAIN PWB ASS'Y	R	↔	R	FRONT CONTROL PWB ASS'Y
MAIN PWB ASS'Y	U	↔	U	FRONT CONTROL PWB ASS'Y
MAIN PWB ASS'Y	V	↔	WIRE	DEF.YOKE

●NOTE:Refer to Main Parts and Alignment Locations (Page 2-5) for detailed connector positions.

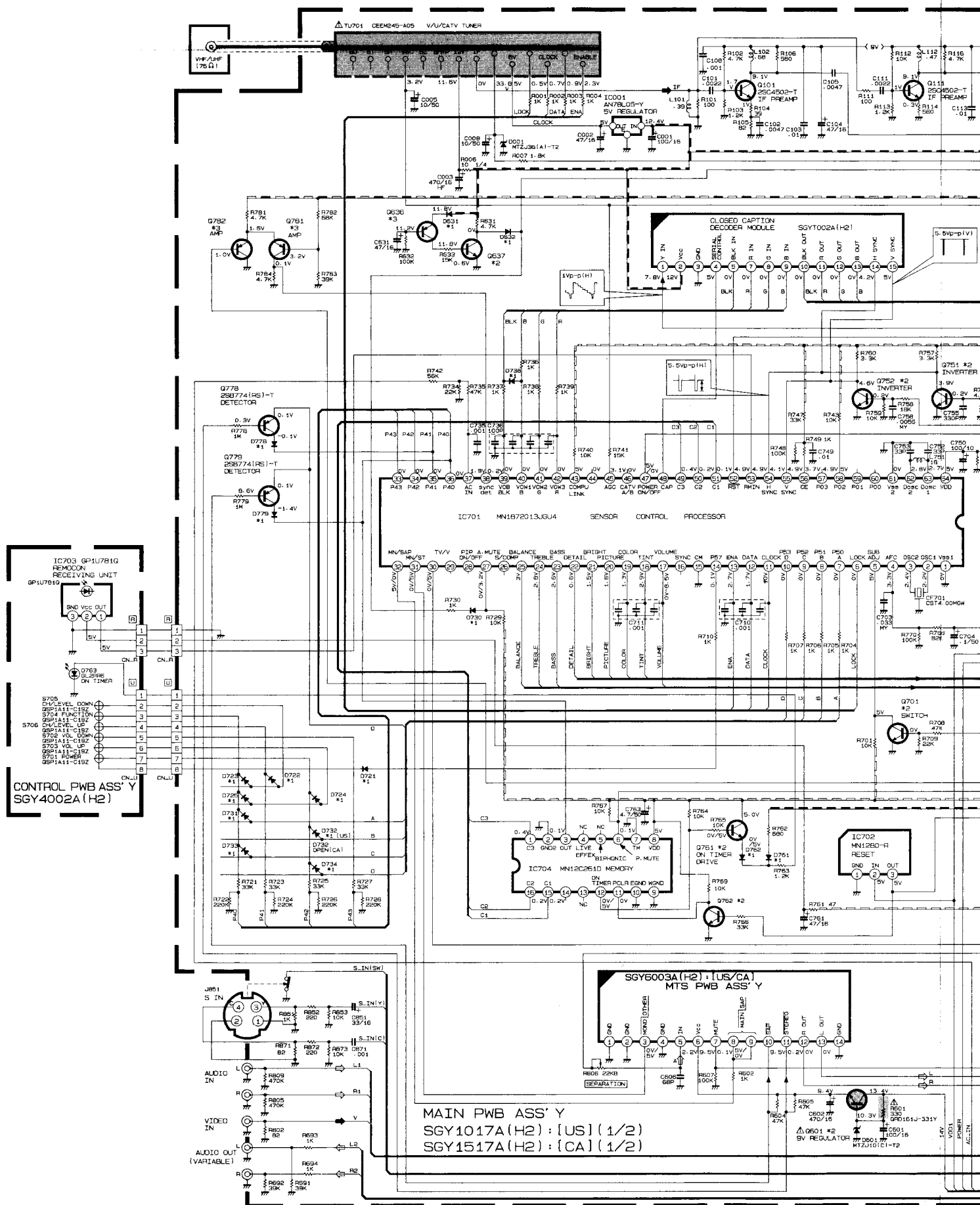
BLOCK DIAGRAM



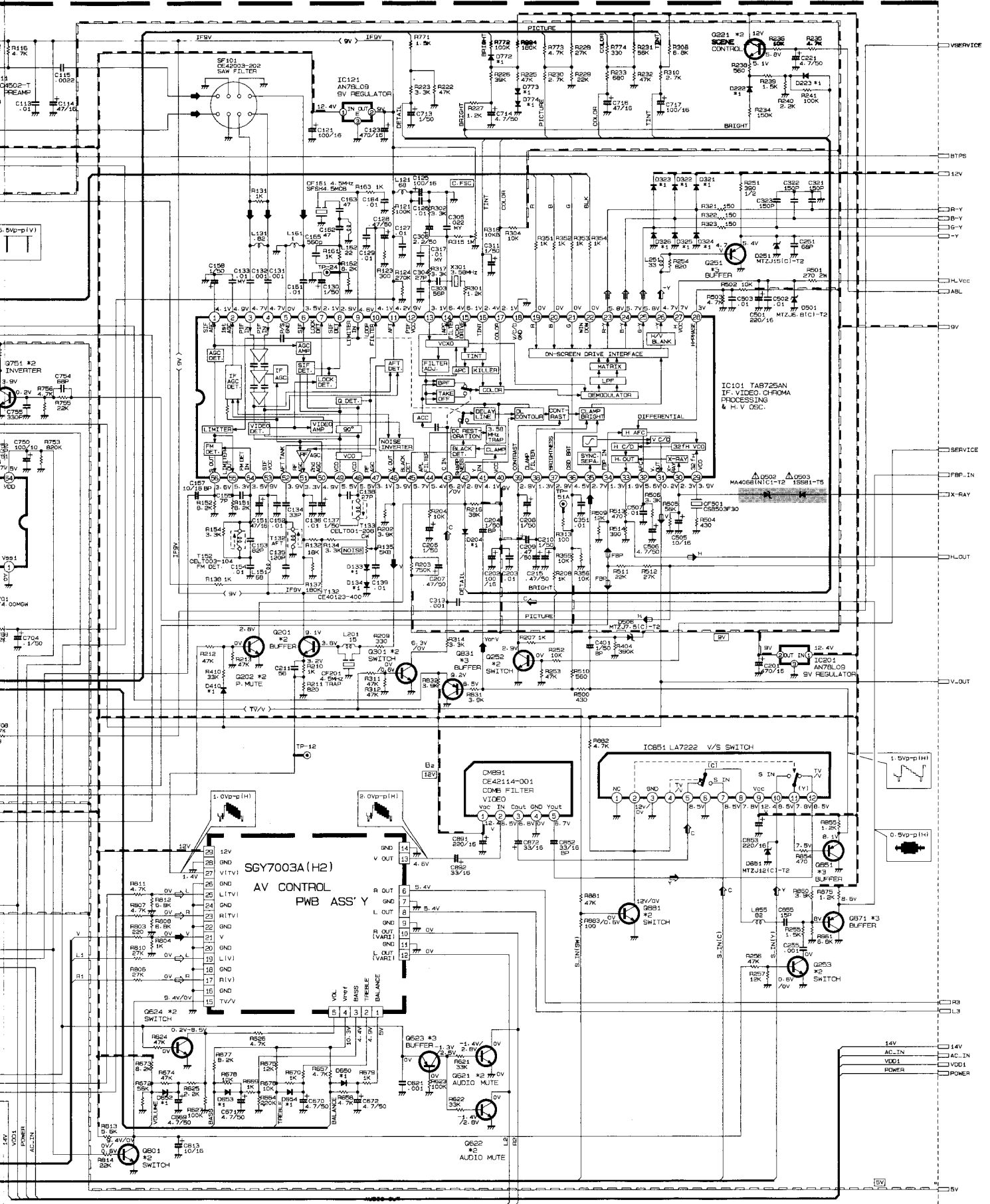


CIRCUIT DIAGRAMS AND PWB PATTERNS

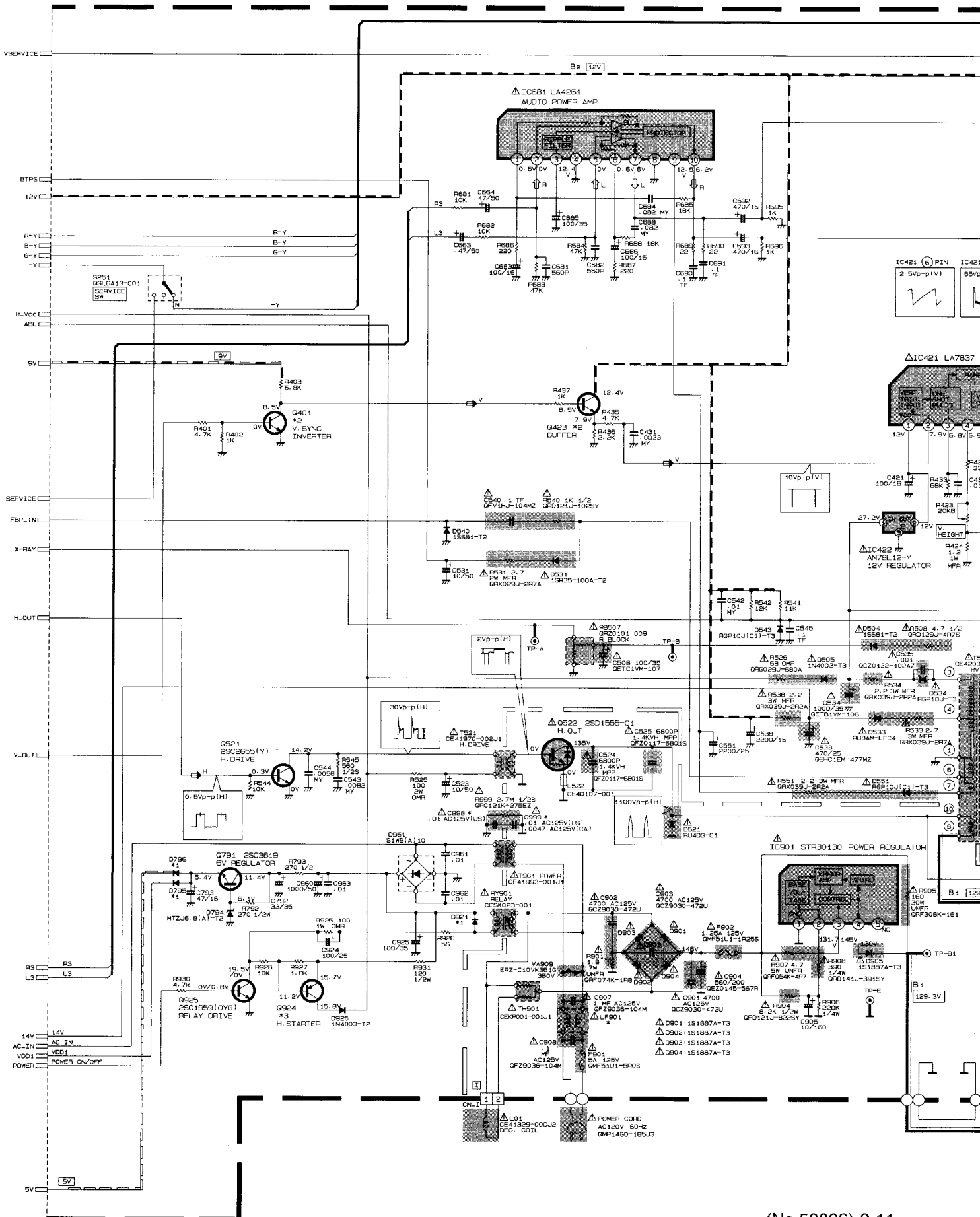
MAIN PWB CIRCUIT DIAGRAMS



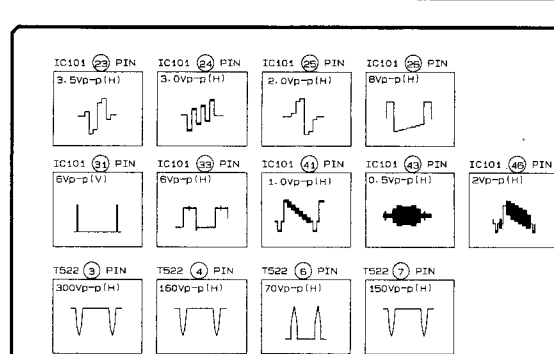
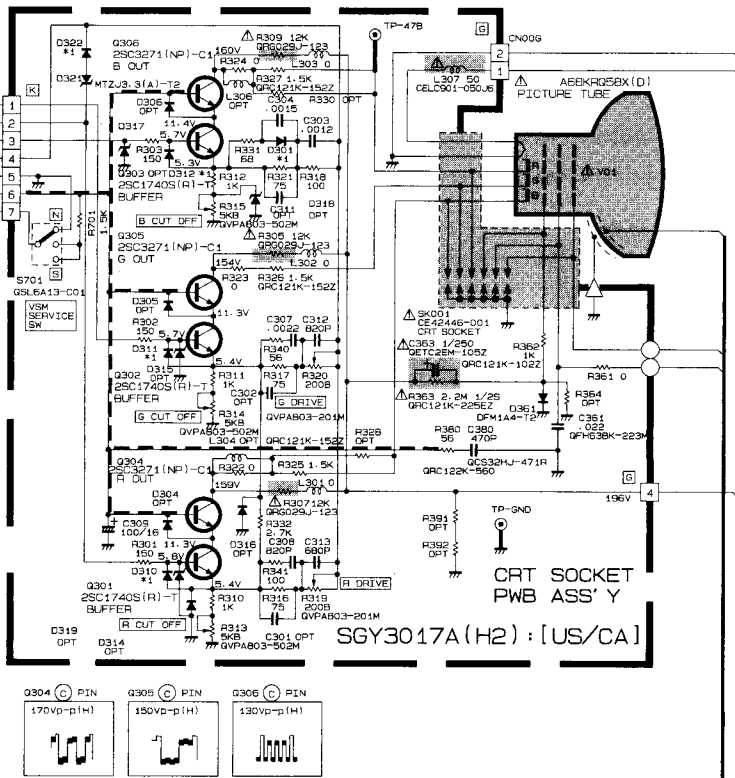
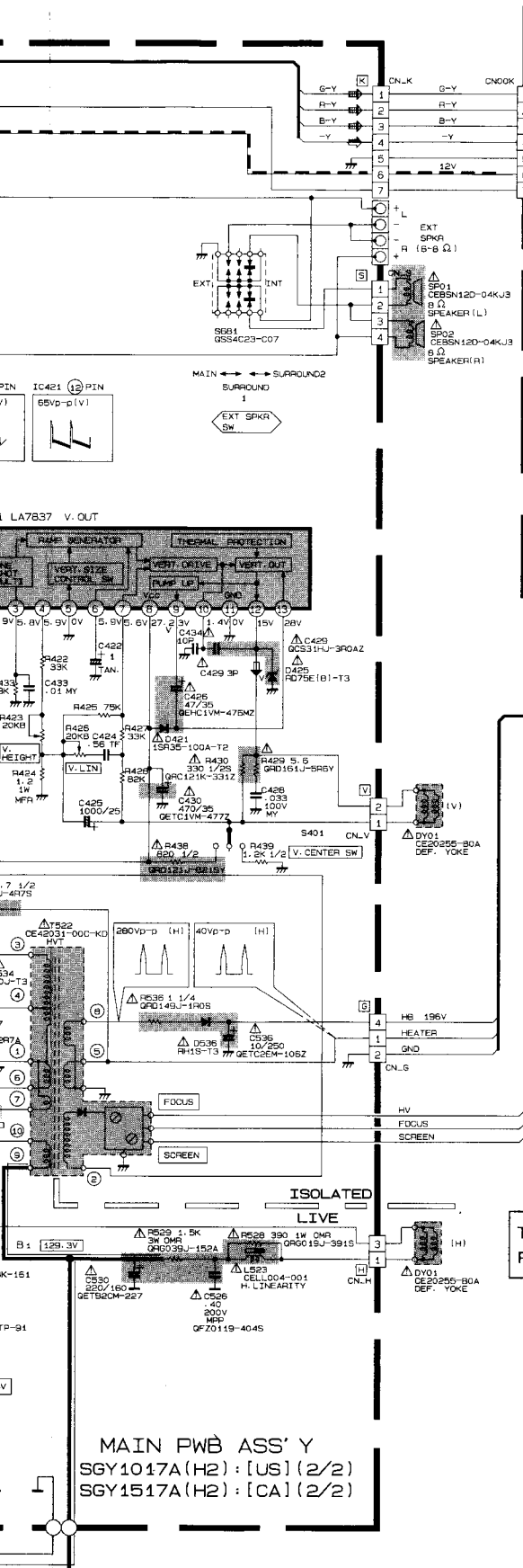
Refer to the following PW Board pattern : MAIN PWB PATTERN page 2-17~2-18.



MAIN & CRT SOCKET PWB CIRCUIT DIAGRAMS



Refer to the following PW Board pattern : MAIN PWB PATTERN page 2-17~2-18, CRT SOCKET PWB PATTERN page 2-19.



This circuit diagram applies to both (US) and (CA) models.
Refer to the difference list in the diagram regarding the differing points between the models.

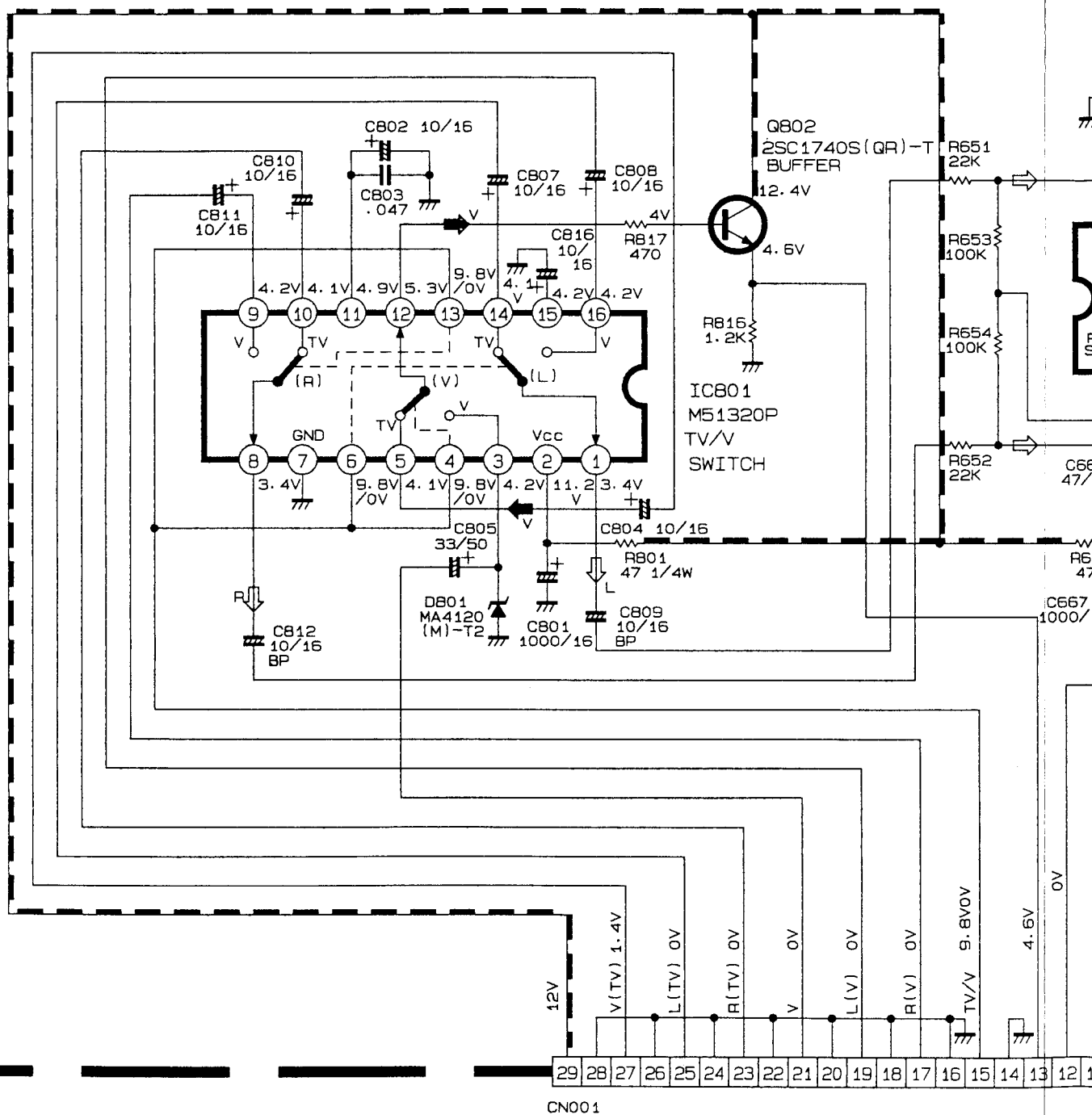
* DIFFERENCES LIST

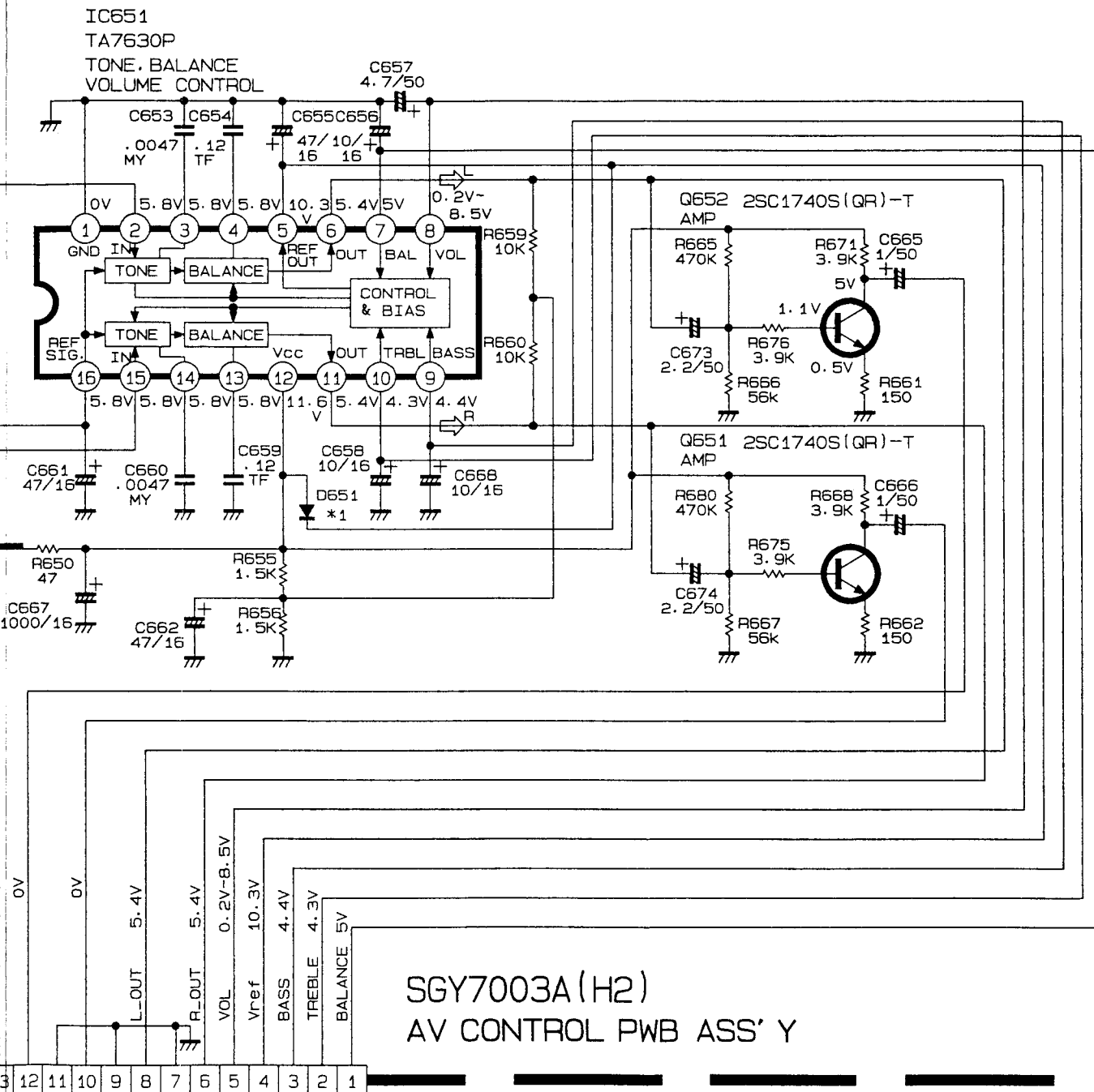
	MODEL NAME	MAIN PWB ASS'Y	△ C998	△ C999	D732	△ LF901
America Models	AV27BM5(US)	SGY1017A(H2)	GC29029-103M	GC29029-103M	ISS133-T2	CE42022-001J1
Canada Models	AV27BM5(CA)	SGY1517A(H2)	SHORT	GC29029-472M	OPEN	CE41506-00AJ1

NOTICE

- *1 : DIODE=1SS133-T2
- *2 : NPN TRANSISTOR=2SC1740S(QR)-T
- *3 : PNP TRANSISTOR=2SA933S(QR)-T

AV CONTROL PWB CIRCUIT DIAGRAMS

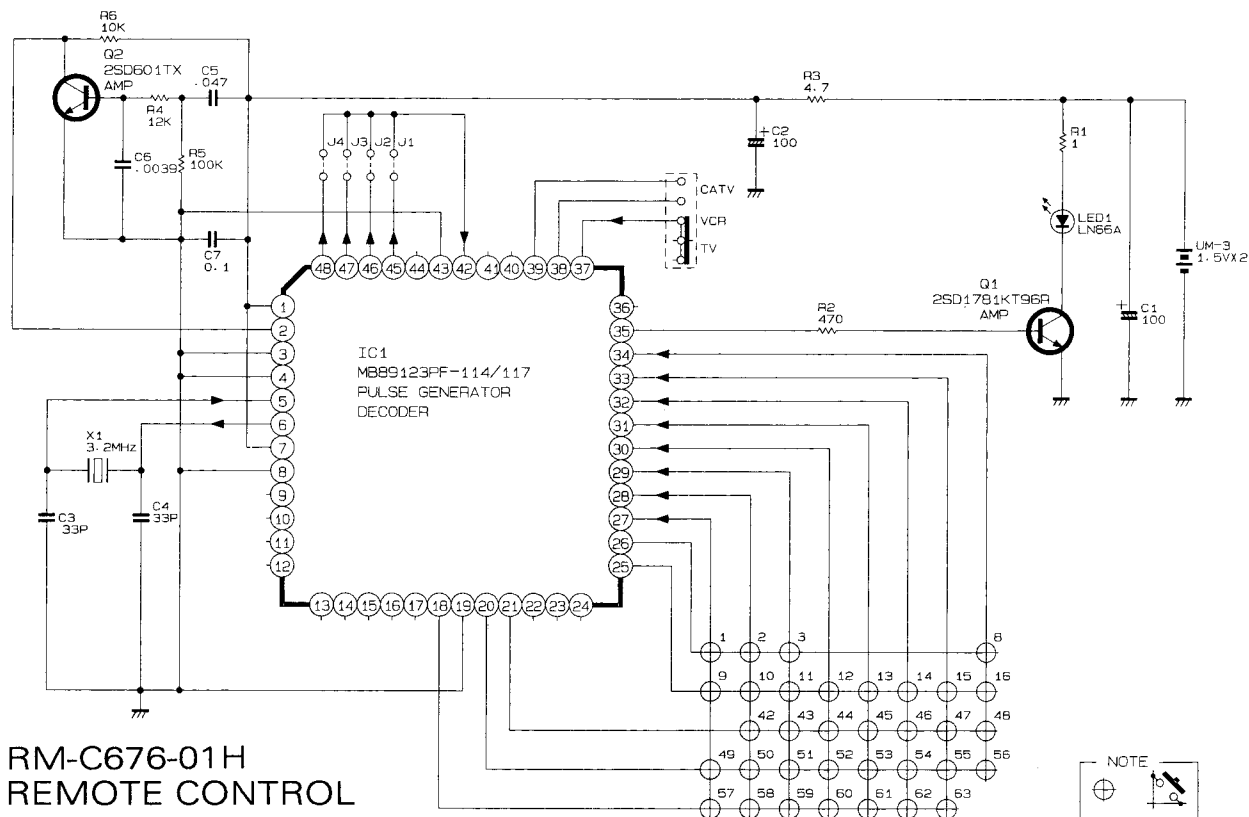






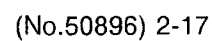
SGY6003A (H2)
MTS PWB ASS'Y

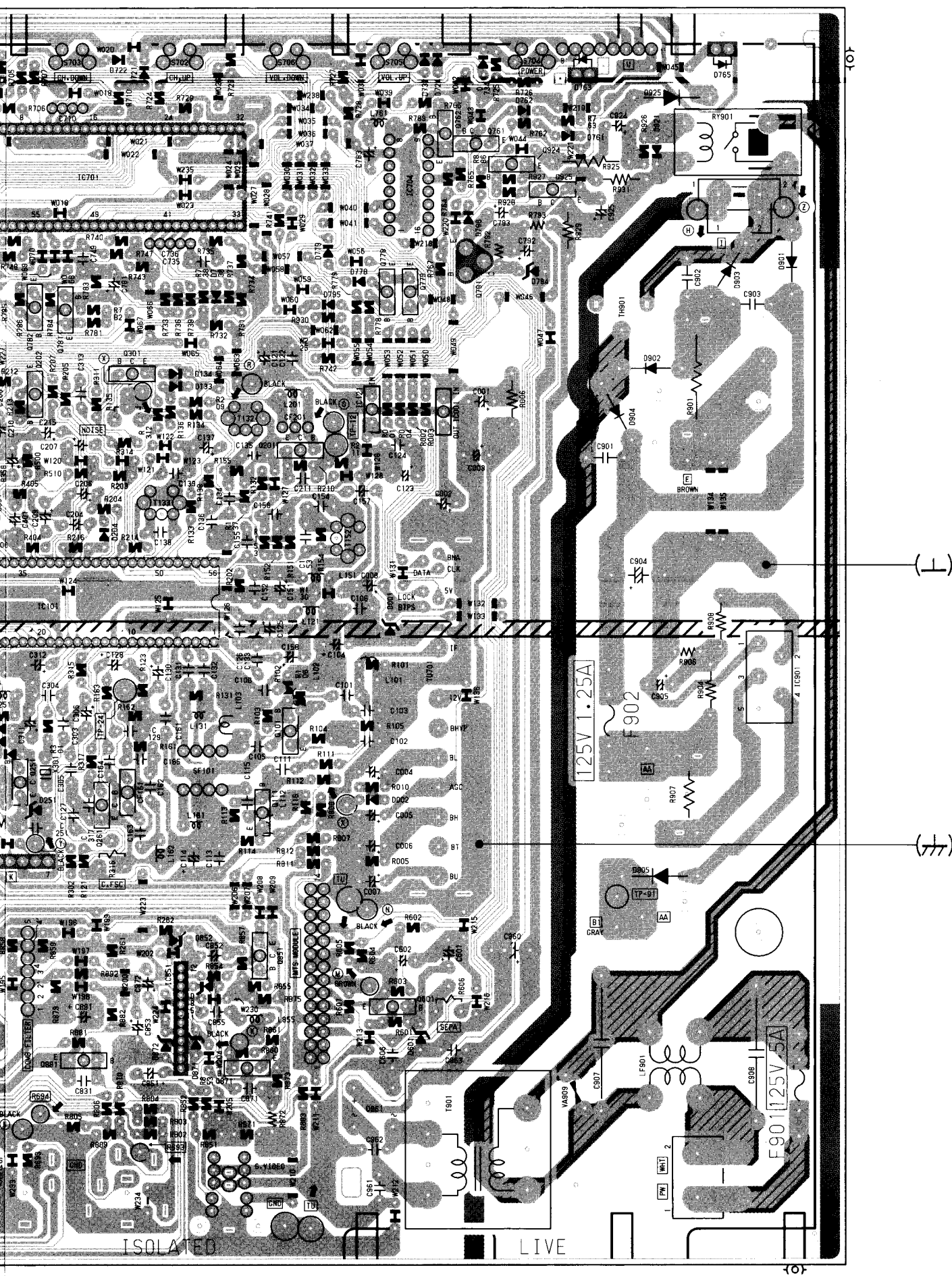
The diagram illustrates the internal circuitry of the SGT6003A (H2) MTS PWB ASS'Y. It features a central IC601 (CX1124BS MTS DECODER) which processes incoming signals. The circuit includes multiple stages of amplification and filtering, such as the NR (Noise Reduction) stage, DE-EMPHASIS stage, and VARIABLE EMPHASIS stage. A STEREO INDICATOR section provides feedback for stereo processing. The MODE & DISPLAY CONTROL section manages the system's operating mode, while the SAP INDICATOR section handles the Secondary Audio Program (SAP) signal. The LOOP FILTER and VCO (Voltage-Controlled Oscillator) sections are responsible for frequency control and signal processing. The circuit is powered by a combination of 4.7V and 5.1V sources, with various resistors (R601-R629) and capacitors (C601-C619) used for biasing and timing. The output section includes an amplifier (Q601), a buffer (Q602), and an inverter (Q603). The diagram also shows a GND pin and a VCC pin.



● KEY FUNCTION (RM-C676-01-H)

No.	Key NAME	No.	Key NAME	No.	Key NAME	No.	Key NAME
1	MENU	14	MUTE	48	6	57	DISPLAY
2	CLOSED CAPTION	15	VOLUME —	49	7	58	PLAY
3	C1 / C2	16	VOLUME +	50	8	59	ANT / CABLE
8	TV / VIDEO	42	0	51	9	60	REW
9	THEATER / AV STATUS	43	1	52	RETURN	61	FF
10	FUNCTION —	44	2	53	100 +	62	MAIN / SAP
11	FUNCTION ▲	45	3	54	POWER	63	RECALL / CHOICE
12	FUNCTION ▼	46	4	55	CHANNEL —		
13	FUNCTION +	47	5	56	CHANNEL +		



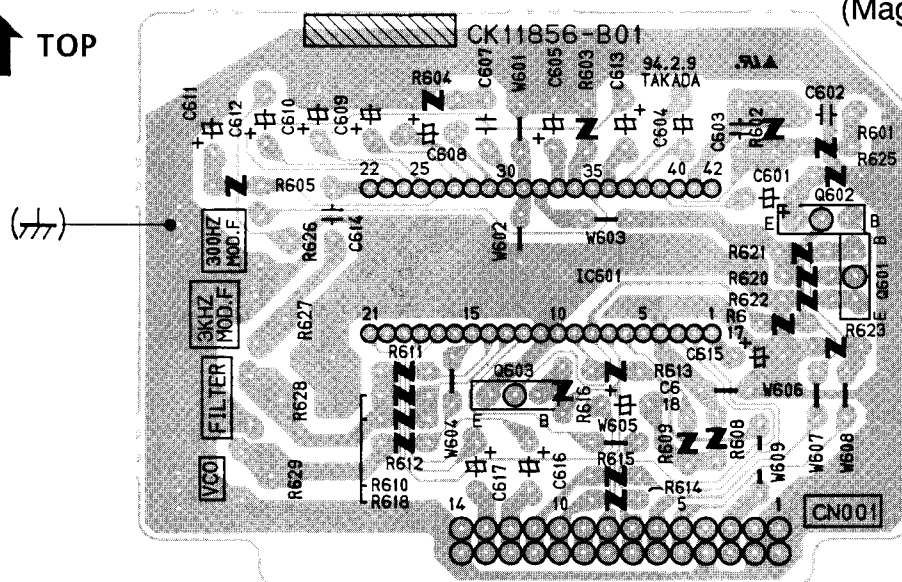


MTS PWB PATTERN

[SGY6003A(H2) (US/CA)]

(Magnification Rate 126%)

↑ TOP



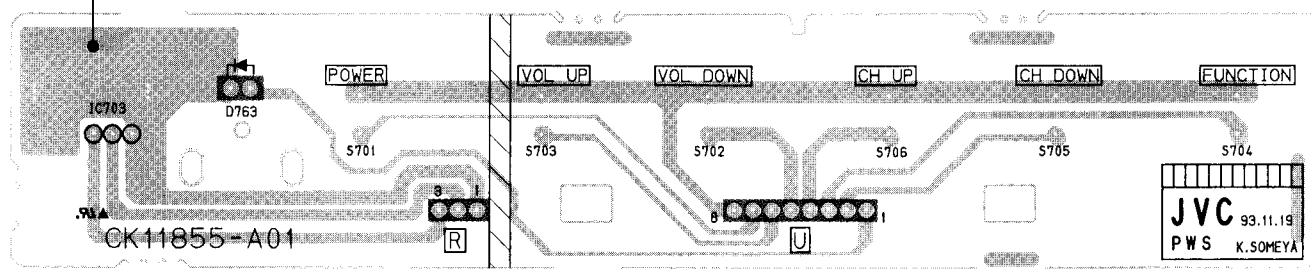
CONTROL PWB PATTERN

[SGY4002A(H2) (US/CA)]

(Magnification Rate 100%)

(TTT)

↑ TOP

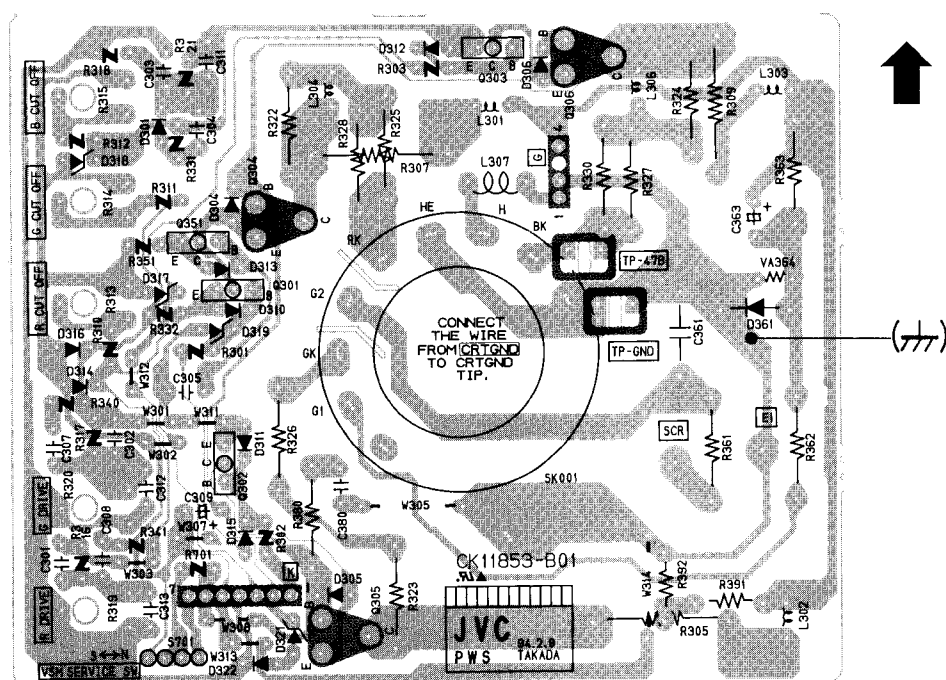


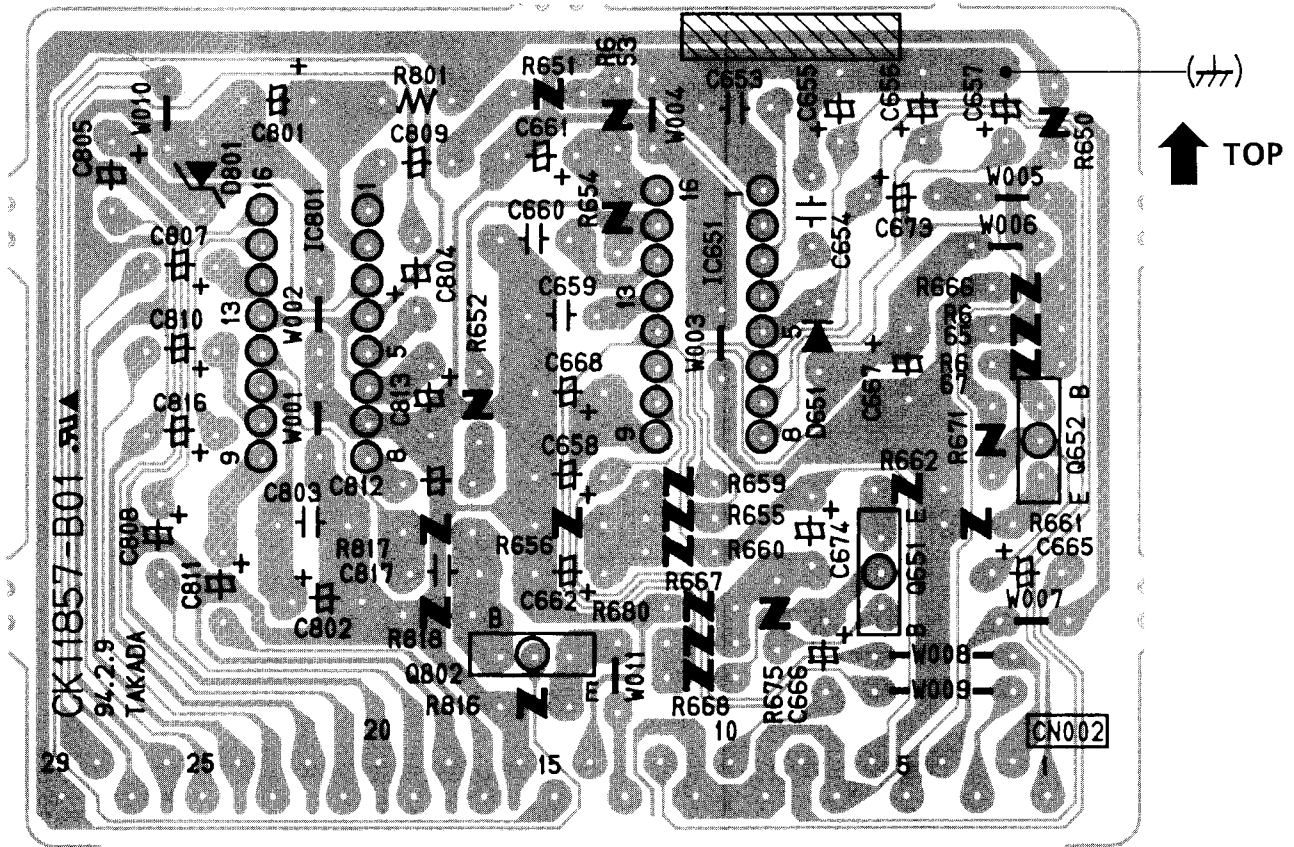
CRT SOCKET PWB PATTERN

[SGY3017A(H2) (US/CA)]

(Magnification Rate 90%)

↑ TOP





PARTS LIST

CAUTION

- The parts identified by the \triangle symbol are important for the safety . Whenever replacing these parts, be sure to use specified ones to secure the safety .
- The parts not indicated in this Parts List and those which are filled with lines — in the Parts No. columns will not be supplied .
- P. W. Board Ass'y will not be supplied, but those which are filled with the Parts No. in the Parts No. columns will be supplied .
- As a rule, the resistors and capacitors which are indicated as shown in "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 "HOW TO EXPRESS PARTS NUMBERS OF STANDARD PARTS" .

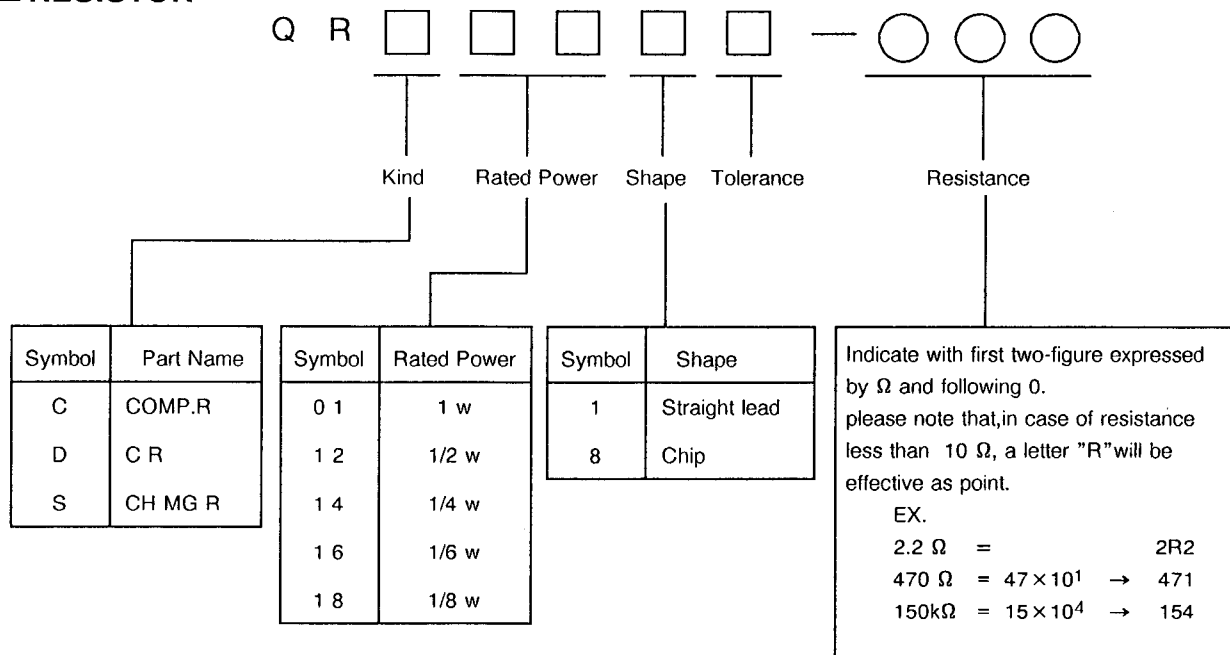
ABBREVIATIONS OF RESISTORS, CAPACITORS AND TOLERANCES

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

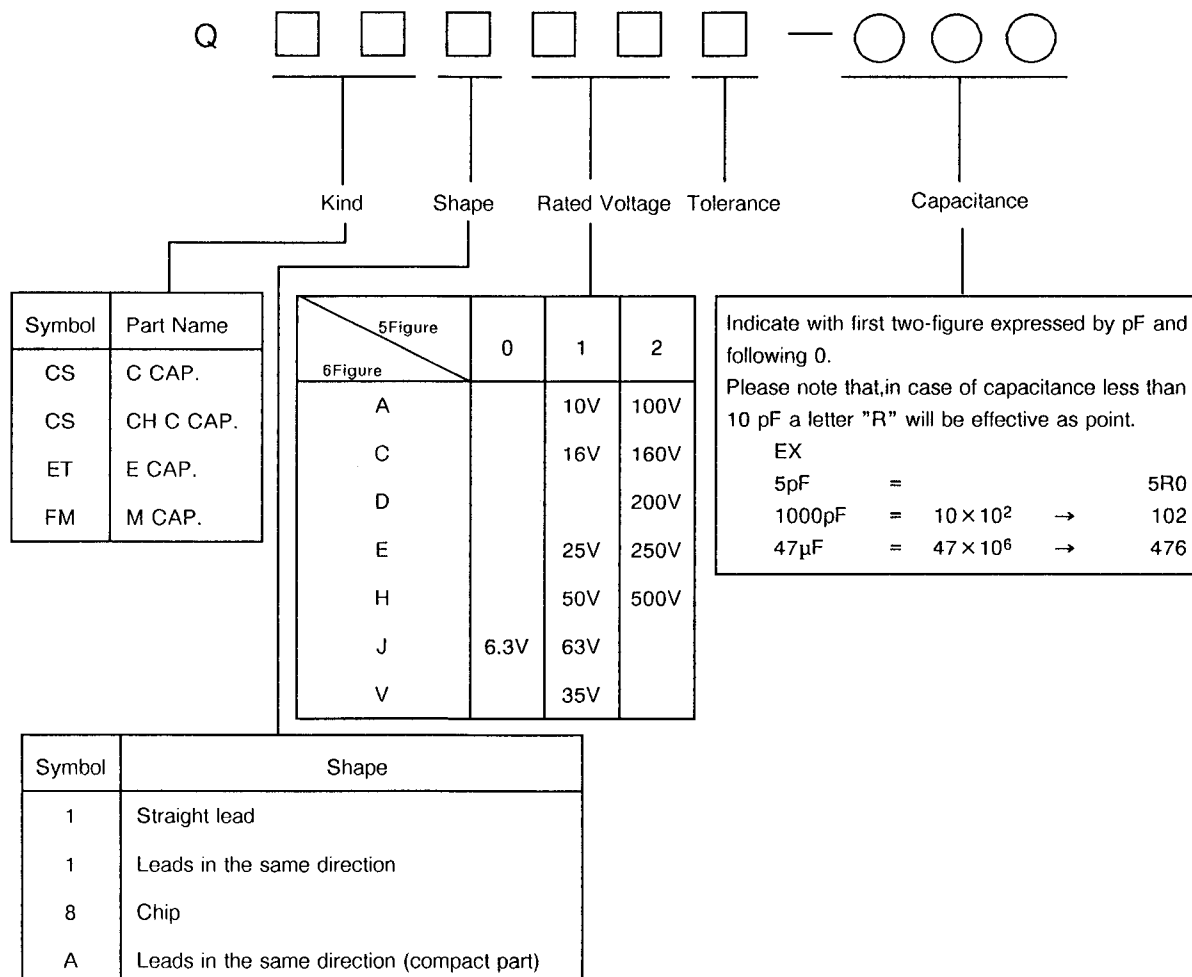
TOLERANCES									
F	G	J	K	M	N	R	H	Z	P
$\pm 1\%$	$\pm 2\%$	$\pm 5\%$	$\pm 10\%$	$\pm 20\%$	$\pm 30\%$	+ 30% - 10%	+ 50% - 10%	+ 80% - 20%	+ 100% - 0%

HOW TO EXPRESS PARTS NUMBERS OF STANDARD PARTS

■ RESISTOR



■ CAPACITOR



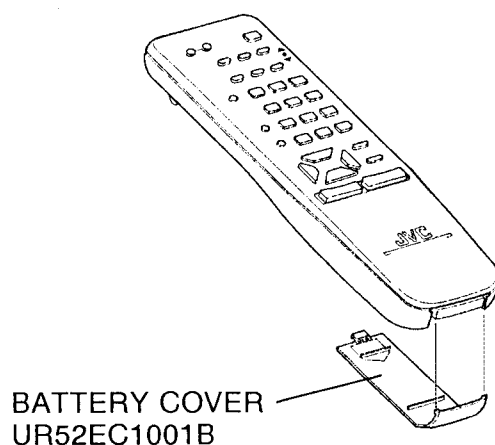
USING PW BOARD ASS'Y No.

Model PWB ASS'Y	America Models (US)	Canada Models (CA)
	AV-27BM5 (US)	AV-27BM5 (CA)
MAIN PWB ASS'Y	SGY1017A (H2)	SGY1517A (H2)
CRT SOCKET PWB ASS'Y	SGY3017A (H2)	SGY3017A (H2)
CONTROL PWB ASS'Y	SGY4002A (H2)	SGY4002A (H2)
MTS PWB ASS'Y	SGY6003A (H2)	SGY6003A (H2)
AV CONTROL PWB ASS'Y	SGY7003A (H2)	SGY7003A (H2)
CLOSED CAPTION MODULE	SGYT002A (H2)	SGYT002A (H2)

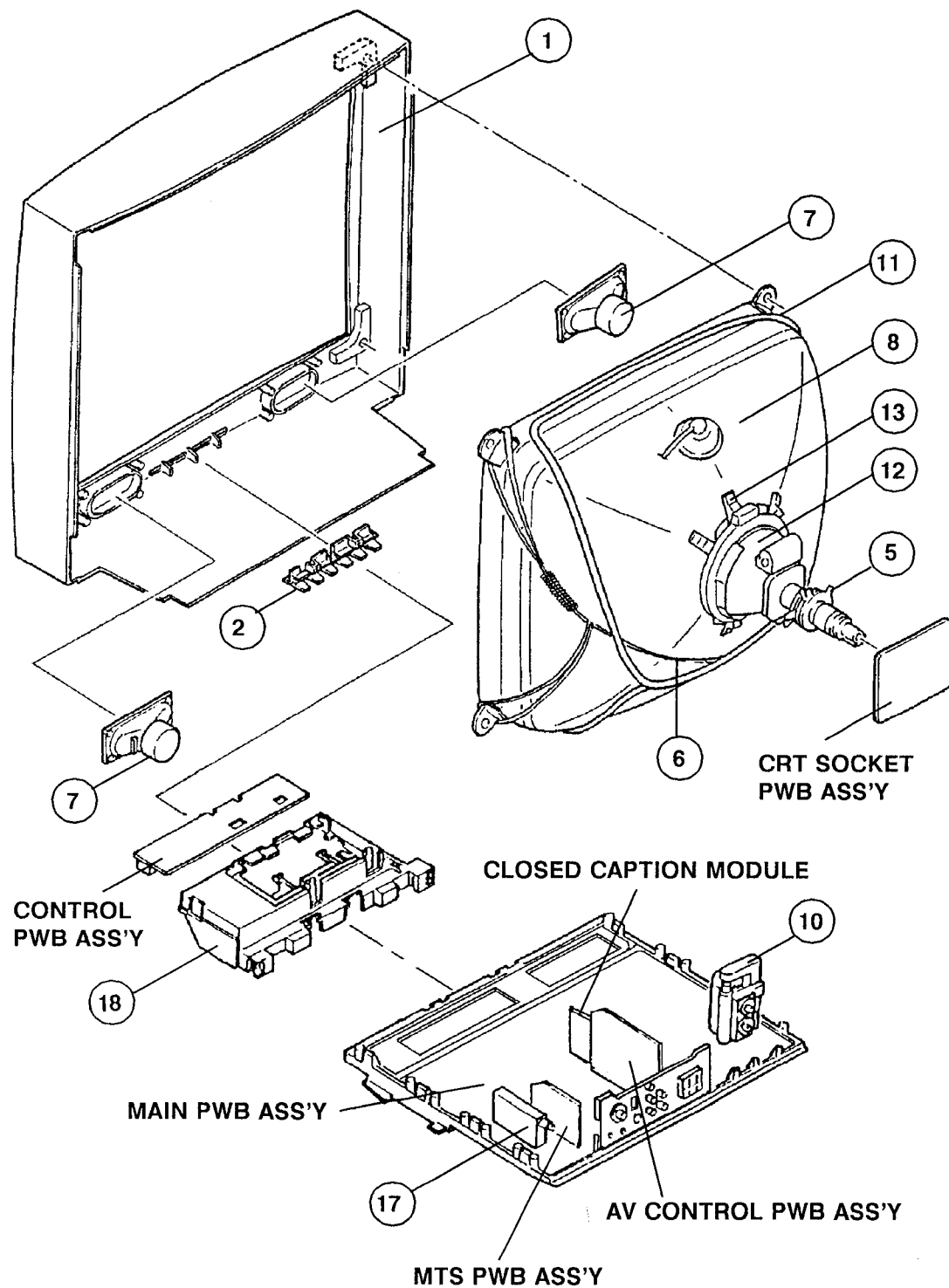
EXPLODED VIEW PARTS LIST

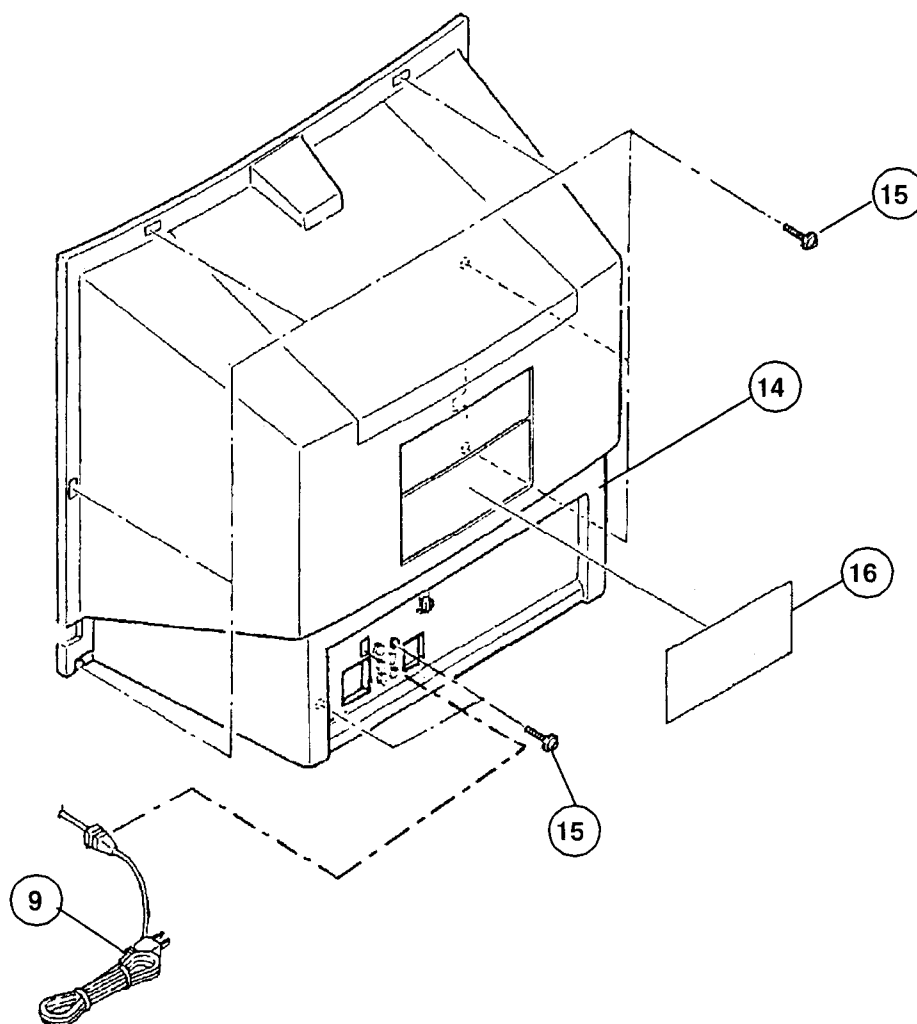
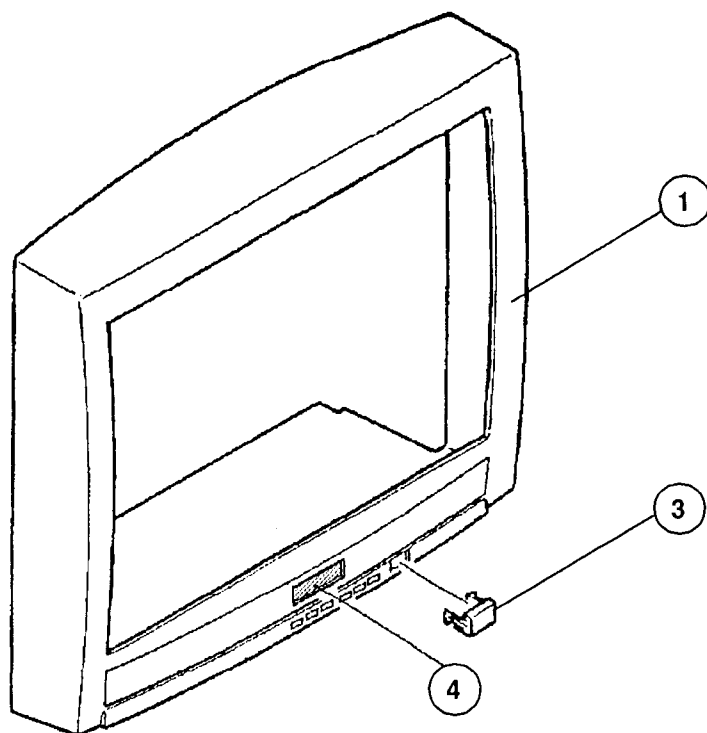
△ Ref.No.	Part No.	Part Name	Description	Local
1	CM12619-00C-MA	FRONT CABI ASSY		*
2	CM35776-001-H	PUSH KNOB		*
3	CM35775-A01-H	REMOCON WINDOW		*
4	CM43094-006-H	JVC MARK		*
5	A75034-B	PC.MAGNET		
6	CHGB0015-0D-FA	BRAIDED ASSY		*
△ 7	CEBSN12D-04KJ3	SPEAKER	× 2 SP01,SP02	*
△ 8	A68KRQ58X(D)	PICTURE TUBE	V01	*
△ 9	QMP14G0-185J3	POWER CORD		*
△ 10	CE42031-00C-KD	HVT	T1522	*
△ 11	CE41329-00CJ2	DEG.COIL	L01	*
△ 12	CE20255-B0A	DEF YOKE	DY01	*
13	AAM4003-00A-C	WEDGE ASSY	× 4	*
14	CM12415-033-MA	REAR COVER		*
15	GBSB4016N	TAPPING SCREW	× 8	*
16	CM44889-003-A	RATING LABEL	(US)	*
16	CM20925-012-A	RATING LABEL	(CA)	*
△ 17	CEEM245-A05	TUNER	TU1701	*
18	CM22670-001-A	CONTROL BASE		*

REMOTE CONTROL UNIT (RM-C676-01-H)



EXPLODED VIEW





PRINTED WIRING BOARD PARTS LIST

Regarding the Main P.W.Board Ass'y [SGY1517A(H2)] of the model for Canada, refer to Page 25.

MAIN PW BOARD ASS'Y [SGY1017A(H2)] [US]

△ Symbol No.	Part No.	Part Name	Description	Local
VARIABLE RESISTOR				
R1135	QVPE610-502H	TRIM.R(NOISE)	5k Ω B	
R1316	QVPE610-103H	TRIM.R(C FSC)	10k Ω B	
R1423	QVPE610-203H	TRIM.R(V.HEIGHT)	20k Ω B	
R1426	QVPE610-203H	TRIM.R(V LINE.)	50k Ω B	
R1606	QVPA601-223J5	V R(SEPARATION)	22k Ω B	
RESISTOR				
R1251	QRD123J-391SX	C R	390 Ω 1/2W	J
R1355-56	QRV141F-1002AY	MF R	10k Ω 1/4W	F
R1424	QRX019J-1R2S	MF R	1.2 Ω 1W	J
△ R1429	QRD161J-5R6Y	C R	5.6 Ω 1/6W	J
△ R1430	QRC121K-331Z	COMP.R	330 Ω 1/2W	K
△ R1438	QRD121J-821SY	C R	820 Ω 1/2W	J
R1501	QRG029J-271A	OM R	270 Ω 2W	J
△ R1508	QRD129J-4R7S	C R	4.7 Ω 1/2W	J
R1525	QRG029J-101A	OM R	100 Ω 2W	J
△ R1526	QRG029J-680A	OM R	68 Ω 2W	J
△ R1528	QRG019J-391S	OM R	390 Ω 1W	J
△ R1529	QRG039J-152A	OM R	1.5k Ω 3W	J
△ R1531	QRX029J-2R7A	MF R	2.7 Ω 2W	J
△ R1533	QRX039J-2R7A	MF R	2.7 Ω 3W	J
△ R1534	QRX039J-2R2A	MF R	2.2 Ω 3W	J
△ R1536	QRD149J-1R0S	C R	1.0 Ω 1/4W	J
△ R1538	QRX039J-2R2A	MF R	2.2 Ω 3W	J
△ R1540	QRD121J-102SY	C R	1k Ω 1/2W	J
△ R1551	QRX039J-2R2A	MF R	2.2 Ω 3W	J
△ R1601	QRD161J-331Y	C R	330 Ω 1/6W	J
R1792-93	QRD123J-271SX	C R	270 Ω 1/2W	J
△ R1901	QRF074K-1R8	UNF R	1.8 Ω 7W	J
△ R1904	QRD121J-822SY	C R	8.2k Ω 1/2W	J
△ R1905	QRF308K-161	UNF R	160 Ω 30W	K
△ R1907	QRF054K-4R7	UNF R	4.7 Ω 5W	K
△ R1908	QRD141J-391SY	C R	390 Ω 1/4W	J
R1925	QRG019J-101S	OM R	100 Ω 1W	J
△ R1999	QRC121K-275EZ	COMP.R	2.7M Ω 1/2W	K
CAPACITOR				
C1003	QEM51CM-477M	E CAP.	470 μ F 16V	M
C1133	QFLC1HJ-103MZ	M CAP.	0.01 μ F 50V	J
C1134	QCT25CH-330AZ	C CAP.	33 p F 50V	J
C1135	QCT32CH-121Y	C CAP.	120 p F 160V	H
C1138	QCT25RH-270Z	C CAP.	27 p F 50V	H
C1157	QEN61CM-106Z	BP E CAP.	10 μ F 16V	M
C1204	QEN61HM-105Z	BP E CAP.	1 μ F 50V	M
C1305	QFLC1HK-223MZ	M CAP.	0.022 μ F 50V	K
C1317	QFLC1HK-103MZ	M CAP.	0.01 μ F 50V	K
C1401	QEN61HM-105Z	BP E CAP.	1 μ F 50V	M
C1422	QEE61VK-105BZ	TAN.CAP.	1 μ F 35V	K
C1424	QFV71HJ-564MZ	TF CAP.	0.56 μ F 50V	J
△ C1426	QEHC1VM-476MZ	E CAP.	47 μ F 35V	M
C1428	QFLC2AK-333MZ	M CAP.	0.033 μ F 100V	K
△ C1429	QCS31HJ-3R0AZ	CH C CAP.	3 p F 50V	J
△ C1430	QETC1VM-477Z	E CAP.	470 μ F 35V	M
C1431	QFN31HK-332ZJ1	M CAP.	3300 p F 50V	K
C1433	QFLC1HK-103MZ	M CAP.	0.01 μ F 50V	K
△ C1508	QETC1VM-107Z	E CAP.	100 μ F 35V	M
C1523	QEHC1HM-106MZ	E CAP.	10 μ F 50V	M
△ C1524	QFZ0117-6801S	MPP CAP.	6800 p F 1.4KVH±2.5%	

△ Symbol No.	Part No.	Part Name	Description	Local
CAPACITOR				
△ C1525	QFZ0117-6801S	MPP CAP.	6800 p F 1.4KVH±2.5%	
△ C1526	QFZ0119-404S	MPP CAP.	0.4 μ F 200V ±3%	
△ C1530	QETB2CM-227	E CAP.	220 μ F 160V	M
△ C1533	QEHC1EM-477MZ	E CAP.	470 μ F 25V	M
△ C1534	QETB1VM-108	E CAP.	1000 μ F 35V	M
△ C1535	QCZ0132-102AZ	C CAP.	1000 p F 500V	K
△ C1536	QETC2EM-106Z	E CAP.	10 μ F 250V	M
△ C1540	QFV71HJ-104MZ	TF CAP.	0.1 μ F 50V	J
C1542	QFLC1HK-103MZ	M CAP.	0.01 μ F 50V	K
C1543	QFN31HK-822ZJ1	M CAP.	8200 p F 50V	K
C1544	QFN31HK-562ZJ1	M CAP.	5600 p F 50V	K
C1545	QFV71HJ-104MZ	TF CAP.	0.1 μ F 50V	J
C1551	QETB1EM-228	E CAP.	2200 μ F 25V	M
C1684	QFLC1HJ-823MZ	M CAP.	0.082 μ F 50V	J
C1688	QFLC1HJ-823MZ	M CAP.	0.082 μ F 50V	J
C1690-91	QFV71HJ-104MZ	TF CAP.	0.1 μ F 50V	J
C1703	QFLC1HJ-333MZ	M CAP.	0.033 μ F 50V	J
C1704	QKCC1HM-104GMZ	E CAP.	0.1 μ F 50V	M
C1710-11	CECN004-102	NET CAP.	1000 p F 50V	K
C1736	CECN003-101	NET CAP.	100 p F 50V	K
C1758	QFN31HK-562ZJ1	M CAP.	5600 p F 50V	K
C1792	QEHC1VM-336MZ	E CAP.	33 μ F 35V	M
C1852	QEN61CM-336Z	BP E CAP.	33 μ F 16V	M
△ C1901	QCZ9030-472U	C CAP.	4700 p FAC125V	Z
△ C1902	QCZ9030-472U	C CAP.	4200 p FAC125V	Z
△ C1903	QCZ9030-472U	C CAP.	4700 p FAC125V	Z
△ C1904	QEZO145-567R	E CAP.	560 μ F 200V	M
C1905	QEHC2CM-106MZ	E CAP.	10 μ F 160V	M
△ C1907	QFZ9036-104M	MF CAP.	0.1 μ FAC250V	M
△ C1908	QFZ9036-104M	MF CAP.	0.1 μ FAC250V	M
△ C1998	QCZ9029-103M	C CAP.	0.01 μ FAC125V	M
△ C1999	QCZ9029-103M	C CAP.	0.01 μ FAC125V	M
TRANSFORMER				
T1132	CE40123-400J1	AFC TRANSF		
T1133	CELT001-208J1	CW TRANSF		
T1152	CELT003-104J1	SIF TRANSF		
△ T1521	CE41970-002J1	H.DRIVE TRANSF		
△ T1901	CE41993-001J1	POWER TRANSF		
COIL				
L1101	CELP043-R39	PEAKING COIL	0.39 μ H	
L1102	CELP043-R68	PEAKING COIL	0.68 μ H	
L1112	CELP043-R47	PEAKING COIL	0.47 μ H	
L1121	CELP055-680Z	PEAKING COIL	68 μ H	
L1131	CELP041-R82	PEAKING COIL	0.82 μ H	
L1151	CELP055-680Z	PEAKING COIL	68 μ H	
L1161	CELP042-1R0	PEAKING COIL	1 μ H	
L1162	CELP055-220Z	PEAKING COIL	22 μ H	
L1201	CELP055-150Z	PEAKING COIL	15 μ H	
L1251	CELP055-330Z	PEAKING COIL	33 μ H	
L1522	CE40107-001	CORD SLEEVE		
△ L1523	CELL004-001	LINEARITY COIL		
L1751	CELP055-180Z	PEAKING COIL	18 μ H	
L1855	CELP055-820Z	PEAKING COIL	82 μ H	
DIODE				
D1001	MTZJ36(A)-T2	ZENER DIODE		
D1133-34	1SS133-T2	SI.DIODE		
D1204	1SS133-T2	SI.DIODE		
D1222-23	1SS133-T2	SI.DIODE		
D1251	MTZJ15(C)-T2	ZENER DIODE		

△ Symbol No.	Part No.	Part Name	Description	Local
D I O D E				
	D1321-26	1SS133-T2	SI.DIODE	
	D1410	1SS133-T2	SI.DIODE	
△	D1421	1SR35-100A-T2	SI.DIODE	
△	D1425	RD75E(B)-T5	ZENER DIODE	
	D1501	MTZJ6.8(C)-T2	ZENER DIODE	
△	D1502	MA4068(N)C1-T2	ZENER DIODE	
△	D1503	1SS81-T5	SI.DIODE	
△	D1504	1SS81-T2	SI.DIODE	
△	D1505	1N4003-T3	SI.DIODE	
	D1506	MTZJ7.5(C)-T2	ZENER DIODE	
△	D1521	RU4DS-C1	SI.DIODE	
△	D1531	1SR35-100A-T2	SI.DIODE	
△	D1533	RU3AM-LFC4	SI.DIODE	
△	D1534	RGP10J-T3	SI.DIODE	
△	D1536	RH1S-T3	SI.DIODE	
	D1540	1SS81-T2	SI.DIODE	
	D1543	RGP10J(C1)-T3	SI.DIODE	
△	D1551	RGP10J(C1)-T3	SI.DIODE	
	D1601	MTZJ10(C)-T2	ZENER DIODE	
	D1631-32	1SS133-T2	SI.DIODE	
	D1650	1SS133-T2	SI.DIODE	
	D1652-54	1SS133-T2	SI.DIODE	
	D1721-25	1SS133-T2	SI.DIODE	
	D1730-34	1SS133-T2	SI.DIODE	
	D1738	1SS133-T2	SI.DIODE	
	D1761-62	1SS133-T2	SI.DIODE	
	D1772-74	1SS133-T2	SI.DIODE	
	D1778-79	1SS133-T2	SI.DIODE	
	D1794	MTZJ6.8(A)-T2	ZENER DIODE	
	D1795-96	1SS133-T2	SI.DIODE	
	D1851	MTZJ12(C)-T2	ZENER DIODE	
△	D1901	1S1887A-T3	SI.DIODE	
△	D1902	1S1887A-T3	SI.DIODE	
△	D1903	1S1887A-T3	SI.DIODE	
△	D1904	1S1887A-T3	SI.DIODE	
△	D1905	1S1887A-T3	SI.DIODE	
	D1921	1SS133-T2	SI.DIODE	
	D1925	1N4003-T3	SI.DIODE	
	D1961	S1WB(A)20	SI.DIODE	
T R A N S I S T O R				
	Q1101	2SC4502-T	SI.TRANSISTOR	
	Q1111	2SC4502-T	SI.TRANSISTOR	
	Q1201-02	2SC1740S(QR)-T	SI.TRANSISTOR	
	Q1221	2SC1740S(QR)-T	SI.TRANSISTOR	
	Q1251	2SA933S(QR)-T	SI.TRANSISTOR	
	Q1252-53	2SC1740S(QR)-T	SI.TRANSISTOR	
	Q1301	2SC1740S(QR)-T	SI.TRANSISTOR	
	Q1401	2SC1740S(QR)-T	SI.TRANSISTOR	
	Q1423	2SC1740S(QR)-T	SI.TRANSISTOR	
	Q1521	2SC2655(Y)-T	SI.TRANSISTOR	
△	Q1522	2SD1555-C1	POWER TRANSISTOR	H.OUT
△	Q1601	2SC1740S(QR)-T	SI.TRANSISTOR	
	Q1621-22	2SC1740S(QR)-T	SI.TRANSISTOR	
	Q1623	2SA933S(QR)-T	SI.TRANSISTOR	
	Q1624	2SC1740S(QR)-T	SI.TRANSISTOR	
	Q1636	2SA933S(QR)-T	SI.TRANSISTOR	
	Q1637	2SC1740S(QR)-T	SI.TRANSISTOR	
	Q1701	2SC1740S(QR)-T	SI.TRANSISTOR	
	Q1751-52	2SC1740S(QR)-T	SI.TRANSISTOR	
	Q1761-62	2SC1740S(QR)-T	SI.TRANSISTOR	
	Q1778-79	2SB774(RS)-T	SI.TRANSISTOR	

△ Symbol No.	Part No.	Part Name	Description	Local
TRANSISTOR				
Q1781-82	2SA933S(QR)-T	SI.TRANSISTOR		
Q1791	2SC3619	SI.TRANSISTOR		
Q1801	2SC1740S(QR)-T	SI.TRANSISTOR		
Q1831	2SA933S(QR)-T	SI.TRANSISTOR		
Q1851	2SA933S(QR)-T	SI.TRANSISTOR		
Q1871	2SA933S(QR)-T	SI.TRANSISTOR		
Q1881	2SC1740S(QR)-T	SI.TRANSISTOR		
Q1924	2SA933S(QR)-T	SI.TRANSISTOR		
Q1925	2SC1959(Y)-T	SI.TRANSISTOR		
IC				
IC1001	AN78L05-Y	I.C.		
IC1101	TA8725AN	I.C.		
IC1121	AN78L09-Y	IC		
IC1201	AN78L09-Y	IC		
△ IC1421	LA7837	I.C.(MONO-ANA)		
△ IC1422	AN78L12-Y	I.C.		
△ IC1681	LA4261	I.C.(MONO-ANA)		
IC1701	MN1872013JGU4	I.C.		
IC1702	MN1280-R	I.C.(DIGI-MOS)		
IC1704	MN12C261D	I.C.(MEMORY-OTH)		
IC1851	LA7222	I.C.		
△ IC1901	STR30130	I.C.(H)		
OTHERS				
	CM34947-A0A-VH	AV TERMINAL ASSY		
CF1161	SFSH4.5MCB	CERAMIC FILTER		
CF1201	CE41505-001	CERAMIC FILTER		
CF1501	CSB503F30-T2	C RESONATOR		
CF1701	CST4.00MGW-Z	C RESONATOR		
CM1891	CE42114-001	COMB FILTER MOD.		
△ F1901	QMF51U1-5R0S	FUSE	5A	
△ F1902	QMF51U1-1R25S	FUSE	1.25A 125V	
FC1902	CEMG002-001Z	FUSE CLIP		
△ LF1901	CE42022-001J1	LINE FILTER		
△ RB1507	QRZ0101-009	R D BLOCK		
△ RY1901	CESK023-001	RELAY		
S1251	QSL6A13-C01	LEVER SWITCH	SERVICE SW	
S1401	QSL6A13-C01	LEVER SWITCH	V.CENTER SW	
S1681	QSS1F23-C07	SLIDE SWITCH	EXT SPKR SW	
SF1101	CE42003-202	SAW FILTER		
△ TH1901	CEKP001-001J1	P.THERMISTOR		
△ VA1909	ERZ-C10VK361G	VARISTOR		
X1301	CE41651-001Z	X-TAL		
		MTS MODULE	As follows	
		AV CONTROL PB	As follows	
		CLOSED CAPTION MODULE	As follows	

CLOSED CAPTION MODULE PW BOARD ASS'Y [SGYT002A(H2) (US/CA)]

This P.W.Board Ass'y is included in the above main P.W.Board Ass'y.

△ Symbol No.	Part No.	Part Name	Description	Local
	SGYT002A(H2)	CAPTION MODULE		

MTS PW BOARD ASS'Y [SGY6003A(H2) (US/CA)]

This P.W.Board Ass'y is included in the above main P.W.Board Ass'y.

△ Symbol No.	Part No.	Part Name	Description	Local
V A R I A B L E R E S I S T O R				
R6626	QVPE604-103J4	V R(MOD.F 300Hz)	10k Ω B	
R6627	QVPE604-502J4	V R(MOD.F 3KHz)	5k Ω B	
R6628	QVPC609-303H	V R(FILTER)	30k Ω B	
R6629	QVPC609-503H	V R(VCO)	50k Ω B	
R E S I S T O R				
R6603	QRV141F-4302AY	MF R	43k Ω 1/4W F	
R6608	QRV141F-6201AY	MF R	6.2k Ω 1/4W F	
R6609	QRV141F-3901AY	MF R	3.9k Ω 1/4W F	
R6610-11	QRV141F-4702AY	MF R	47k Ω 1/4W F	
C A P A C I T O R				
C6601	QEK1HM-475GMZ	E CAP.	4.7 μ F 50V M	
C6602	QFLC1HK-123MZ	M CAP.	0.012 μ F 50V K	
C6603	QFN31HK-562ZJ1	M CAP.	5600 p F 50V K	
C6604	QEP61HM-474GMZ	BP E CAP.	0.47 μ F 50V M	
C6605	QEK1CM-476MZ	E CAP.	47 μ F 16V M	
C6607	QFN31HK-272ZJ1	M CAP.	2700 p F 50V K	
C6608	QEK1HM-475GMZ	E CAP.	4.7 μ F 50V M	
C6609	QEE61CK-106BZ	TAN.CAP.	10 μ F 16V K	
C6610	QEE61CK-335BZ	TAN.CAP.	3.3 μ F 16V K	
C6611	QEK1HM-105GMZ	E CAP.	1 μ F 50V M	
C6612-13	QEK1HM-475GMZ	E CAP.	4.7 μ F 50V M	
C6614	QFLC1HK-473MZ	M CAP.	0.047 μ F 50V K	
C6615-18	QEK1HM-475GMZ	E CAP.	4.7 μ F 50V M	
T R A N S I S T O R				
Q6601-03	2SC2785(JH)-T	SI.TRANSISTOR		
I C				
IC6601	CXA1124BS	IC		

AV CONTROL PW BOARD ASS'Y [SGY7003A(H2) (US/CA)]

This P.W.Board Ass'y is included in the above main P.W.Board Ass'y.

△ Symbol No.	Part No.	Part Name	Description	Local
C A P A C I T O R				
C7653	QFN31HK-472ZJ1	M CAP.	4700 p F 50V	K
C7654	QFV71HJ-124MZ	TF CAP.	0.12 μ F 50V	J
C7659	QFV71HJ-124MZ	TF CAP.	0.12 μ F 50V	J
C7660	QFN31HK-472ZJ1	M CAP.	4700 p F 50V	K
C7809	QEN61CM-106Z	BP E CAP.	10 μ F 16V	M
C7812	QEN61CM-106Z	BP E CAP.	10 μ F 16V	M
D I O D E				
D1801	MA4120(M)-T2	ZENER DIODE		
D7651	1SS133-T2	SI.DIODE		
T R A N S I S T O R				
Q7651-52	2SC1815(YG)-T	SI.TRANSISTOR		
Q7802	2SC1815(YG)-T	SI.TRANSISTOR		
I C				
IC7651	TA7630P	I.C.(M)		
IC7801	M51320P	I.C.		

MAIN PW BOARD ASS'Y [SGY1517A(H2)] [CA]

Regarding the parts list for the main P.W.Board Ass'y [SGY1517A(H2)] of the model for Canada , only the different parts from those of the model [SGY1017A(H2)] are described.

For further details regarding the other parts, refer to the parts list of the model [SGY1017A(H2)] described on Page 20 through Page 23.

△	SYMBOL No.	PART No.		PARTS NAME	REMARKS
		America Models SGY1017A(H2) [US]	Canada Models SGY1517A(H2) [CA]		
	D1732	1SS133-T2	OPEN	SI.DIODE	Deleted (CA)
△	LF1901	CE42022-001J1	CE41506-00AJ1	LINE FILTER	
△	C1998	QCZ9029-103M	BW	C CAP.	Deleted (CA)
△	C1999	QCZ9029-103M	QCZ9029-472M	C CAP.	.01(US) / .0047(CA)

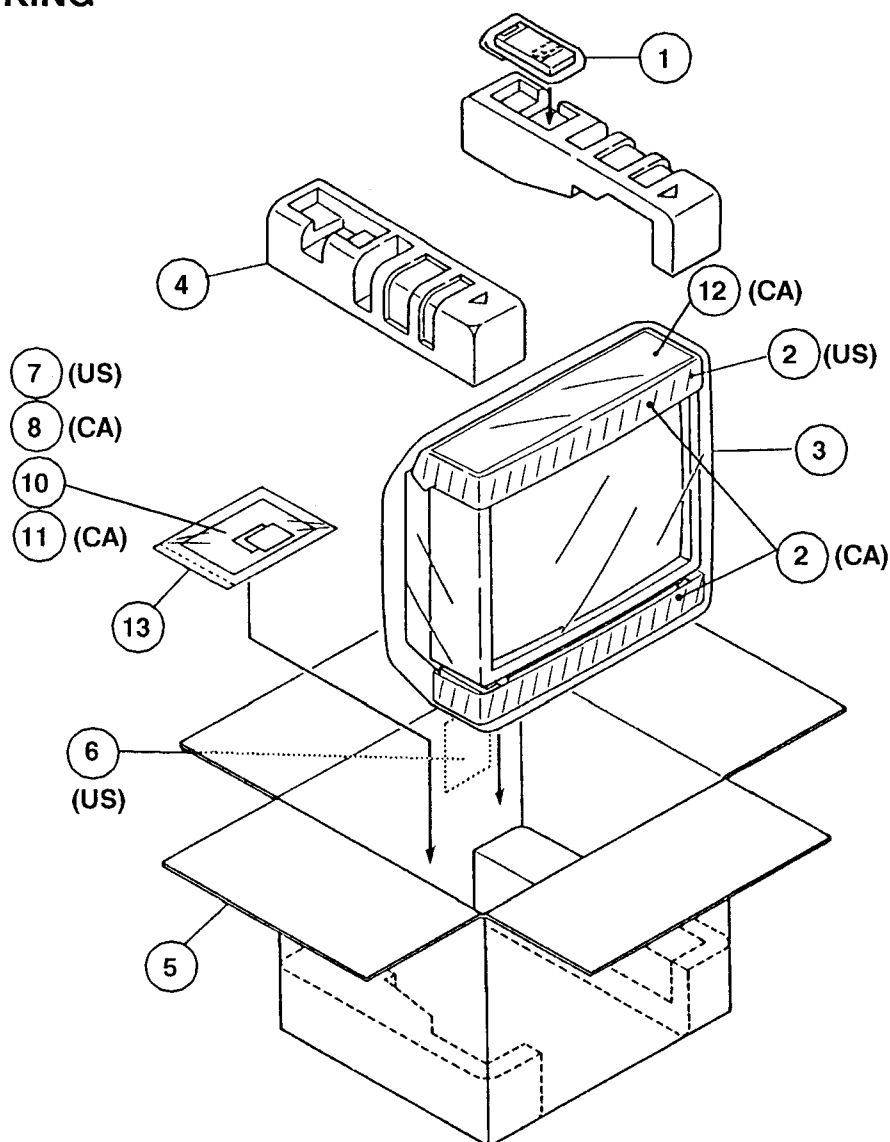
CRT SOCKET PW BOARD ASS'Y [SGY3017A(H2) (US/CA)]

△ Symbol No.	Part No.	Part Name	Description	Local
VARIABLE RESISTOR				
R3313	QVPA803-502M	V R(R CUT OFF)	5kΩ B	
R3314	QVPA803-502M	V R(G CUT OFF)	5kΩ B	
R3315	QVPA803-502M	V R(B CUT OFF)	5kΩ B	
R3319	QVPA803-201M	V R(R DRIVE)	200 Ω B	
R3320	QVPA803-201M	V R(G DRIVE)	200 Ω B	
RESISTOR				
△ R3305	QRG029J-123	OM R	12kΩ 2W J	
△ R3307	QRG029J-123	OM R	12kΩ 2W J	
△ R3309	QRG029J-123	OM R	12kΩ 2W J	
R3325	QRC121K-152Z	COMP.R	1.5kΩ 1/2W K	
△ R3363	QRC121K-225EZ	COMP.R	2.2MΩ 1/2W K	
CAPACITOR				
C3361	QFH63BK-223M	MM CAP.	0.022 μF 1250V K	
△ C3363	QETC2EM-105Z	E CAP.	1 μF 250V M	
COIL				
△ L3307	CELC901-050J6	HEATER CHOKE		
DIODE				
D3301	1SS133-T2	SI.DIODE		
D3310-12	1SS133-T2	SI.DIODE		
D3321	MTZJ3.3(A)-T2	ZENER DIODE		
D3322	1SS133-T2	SI.DIODE		
D3361	DFM1A4-T2	SI.DIODE		
TRANSISTOR				
Q3301-03	2SC1740S(R)-T	SI.TRANSISTOR		
Q3304	2SC3271(NP)-C1	SI.TRANSISTOR	R OUT	
Q3305	2SC3271(NP)-C1	SI.TRANSISTOR	G OUT	
Q3306	2SC3271(NP)-C1	SI.TRANSISTOR	B OUT	
OTHERS				
S3701	QSL6A13-C01	LEVER SWITCH	VSM SERVICE SW	
△ SK3001	CE42446-001	CRT SOCKET		

CONTROL PW BOARD ASS'Y [SGY4002A(H2) (US/CA)]

△ Symbol No.	Part No.	Part Name	Description	Local
DIODE				
D4763	GL2PR6	L.E.D.(RED)	POWER IND.	
IC				
IC4703	GP1U781Q	IFR DETECT UNIT		
OTHERS				
S4701	QSP1A11-C19Z	PUSH SWITCH	POWER	
S4702	QSP1A11-C19Z	PUSH SWITCH	VOL DOWN	
S4703	QSP1A11-C19Z	PUSH SWITCH	VOL UP	
S4704	QSP1A11-C19Z	PUSH SWITCH	FUNCTION	
S4705	QSP1A11-C19Z	PUSH SWITCH	CH DOWN	
S4706	QSP1A11-C19Z	PUSH SWITCH	CH UP	

PACKING



PACKING PARTS LIST

Ref.No.	Part No.	Part Name	Description	Local
1	RM-C676-01-H	REMOCON UNIT		*
2	CP30055-001-A	TOP COVER	(US)	*
2	CP30055-001-A	TOP COVER	(CA)(× 2)	*
3	CP30056-002-A	POLY BAG		*
4	CP11242-A0B-A	CUSHION ASSY	4pcs in 1set	*
5	CP10972-070-A	PACKING CASE		*
6	CM31900-00A-A	REC KEEPING CARD	(US)	*
7	BT-51006-2-A	REGIST. CARD	(US)	*
8	BT-20025L-A	WARRANTY CARD	(CA)	*
10	27M20T,MUIBA-A	INST BOOK	(US)	*
10	27M20T,MCIBA-A	INST BOOK	(CA)	*
11	BT-20071B-A	SVC CENTER LIST	(CA)	*
12	CP30341-001-A	PROTECT SHEET	(CA)	*
13	CM30751-010	POLY BAG		

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