JVC

SERVICE MANUAL

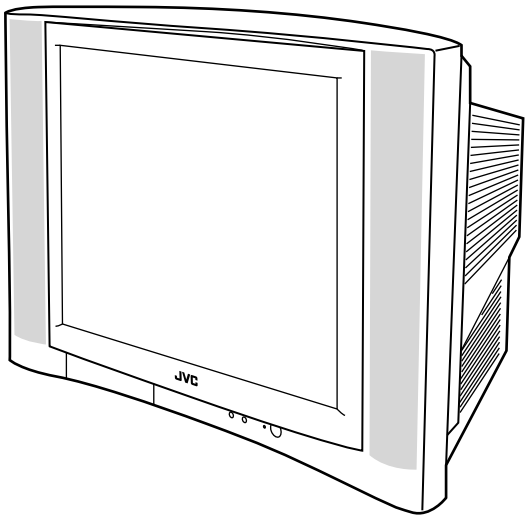
FLAT COLOUR TELEVISION

BASIC CHASSIS
CH3

AV-29WX11 /G
AV-29WX11 /S
AV-29WX11 /U
AV-2932W1 /E

RM-C1306-1H
[AV-29WX11/G]
[AV-29WX11/S]
[AV-29WX11/U]

RM-C1309-1H
[AV-2932W1/E]



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No.52197
2003/9

SPECIFICATION

Items		Contents	
		AV-29WX11/G, AV-29WX11/S, AV-29WX11/U	AV-2932W1/E
Dimensions (W × H × D)		81.2cm x 58.4cm x 51.8cm	
Mass		43kg	
TV RF System		B, G, I, D, K, M	
Colour System	TV Mode	PAL / SECAM / NTSC3.58 / NTSC4.43	
	Video Mode	PAL / SECAM / NTSC3.58 / NTSC4.43	
Stereo System		Playback only	
Teletext system		None	FLOF (Fastext), WST (World Standard Text)
Receiving Frequency	VHF Low	46.25MHz – 140.25MHz (AS0 – S6)	
	VHF High	147.25MHz – 423.25MHz (S7 – S36)	
	UHF	431.25MHz – 863.25MHz (S37 – CHINA 57)	
	CATV	Mid : X-Z, S1-S10	
		Super : S11-S20	
		Hyper : S21-S41	
Intermediate Frequency	VIF	38.0MHz	
	SIF	31.5MHz (6.5MHz), 32.0MHz (6.0MHz), 32.5MHz (5.5MHz), 33.5MHz (4.5MHz)	
Colour Sub Carrier Frequency		4.43MHz (PAL), 4.40MHz/4.25MHz (SECAM), 3.58MHz/4.43MHz (NTSC)	
Aerial Input Terminal		75Ω unbalanced	
Power Input		AC110V – AC240V, 50Hz / 60Hz	
Power Consumption		177W (Max.) / 145W (Avg.)	
Picture Tube		Visible size : 67.6cm (Diagonal) / 54.1cm x 40.6cm (H x V)	
High Voltage		32kV -1.5kV / +1.0kV (at zero beam current)	
Speaker		6.5cm × 13cm, Oval type × 2	
Audio Output		7W + 7W	
Video / Audio Input (1 / 2 / 3)	S-Video (1)	Mini-DIN 4 pin × 1	
		Y : 1V(p-p), positive (negative sync provided), 75Ω	
		C : 0.286V(p-p) (Burst signal), 75Ω	
	Video (1/2/3)	1V(p-p), negative sync, 75Ω, RCA pin jack × 3	
	Audio (1/2/3)	500mV(rms) (-4dBs), high impedance, RCA pin jack × 6	
	Component (2)	RCA pin jack × 3	
		Y : 1V(p-p), positive (negative sync), 75Ω	
		C_B/C_R: 0.7V(p-p), 75Ω	
Video / Audio Output	Video	1V(p-p), 75Ω, RCA pin jack × 1	
	Audio	500mV(rms)(-4dBs), Low impedance (400Hz when modulated 100%), RCA pin jack × 2	
Headphone		3.5mm stereo mini jack × 1	
Remote Control Unit		RM-C1306-1H (AA/R06/UM-3 battery × 2)	RM-C1309-1H (AA/R06/UM-3 battery × 2)

Design & specifications are subject to change without notice.

SECTION 1
PRECAUTION

1.1 SAFETY PRECAUTIONS

(1) The design of this product contains special hardware, many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Service should be performed by qualified personnel only.

(2) Alterations of the design or circuitry of the products should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.

(3) Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the parts list of Service manual. **Electrical components having such features are identified by shading on the schematics and by (⚠) on the parts list in Service manual.** The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the parts list of Service manual may cause shock, fire, or other hazards.

(4) **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) : (⏚) 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 the LIVE side GND and ISOLATED (NEUTRAL) side GND or EARTH side GND at the same time with a measuring apparatus (oscilloscope etc.).
If above note will not be kept, a fuse or any parts will be broken.

(5) If any repair has been made to the chassis, it is recommended that the B1 setting should be checked or adjusted (See ADJUSTMENT OF B1 POWER SUPPLY).

(6) The high voltage applied to the picture tube must conform with that specified in Service manual. Excessive high voltage can cause an increase in X-Ray emission, arcing and possible component damage, therefore operation under excessive high voltage conditions should be kept to a minimum, or should be prevented. If severe arcing occurs, remove the AC power immediately and determine the cause by visual inspection (incorrect installation, cracked or melted high voltage harness, poor soldering, etc.). To maintain the proper minimum level of soft X-Ray emission, components in the high voltage circuitry including the picture tube must be the exact replacements or alternatives approved by the manufacturer of the complete product.

(7) Do not check high voltage by drawing an arc. Use a high voltage meter or a high voltage probe with a VTVM. Discharge the picture tube before attempting meter connection, by connecting a clip lead to the ground frame and connecting the other end of the lead through a 10kΩ 2W resistor to the anode button.

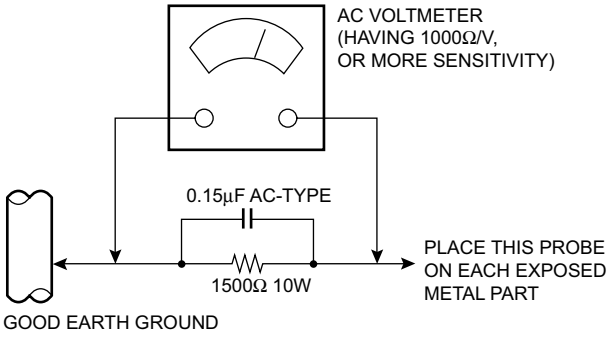
(8) When service is required, observe the original lead dress. Extra precaution should be given to assure correct lead dress in the high voltage circuit area. Where a short circuit has occurred, those components that indicate evidence of overheating should be replaced. Always use the manufacturer's replacement components.

(9) **Isolation Check**
(Safety for Electrical Shock Hazard)
After re-assembling the product, always perform an isolation check on the exposed metal parts of the cabinet (antenna terminals, video/audio input and output terminals, Control knobs, metal cabinet, screw heads, earphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.

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

b) 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.).
However, in tropical area, this must not exceed 0.2mA 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 1000 ohms per volt or more sensitivity in the following manner. Connect a 1500Ω 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 0.75V AC (r.m.s.). This corresponds to 0.5mA AC (r.m.s.).
However, in tropical area, this must not exceed 0.3V AC (r.m.s.). This corresponds to 0.2mA AC (r.m.s.).

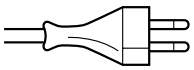
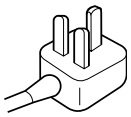
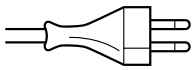


SECTION 2
SPECIFIC SERVICE INSTRUCTIONS

2.1 FEATURES

- New chassis design enables use of an interactive on-screen control.
- Pure flat CRT produces fine textured picture in every detail.
- Wide range voltage (110V ~ 240V) for AC power input.
- With AUDIO/VIDEO/S-VIDEO/COMPONENT input terminals.
- I^2C bus control utilizes single chip ICs.
- By means of AUTO PROGRAM, the TV stations can be selected automatically and the TV channels can also be rearranged automatically.
- Built-in DIGITAL ECO MODE (ECONOMY, ECOLOGY).
  In accordance with the brightness in a room, the brightness and/or contrast of the picture can be adjusted automatically to make the optimum picture which is easy on the eye.
- Built-in OFF TIMER & RETURN +.

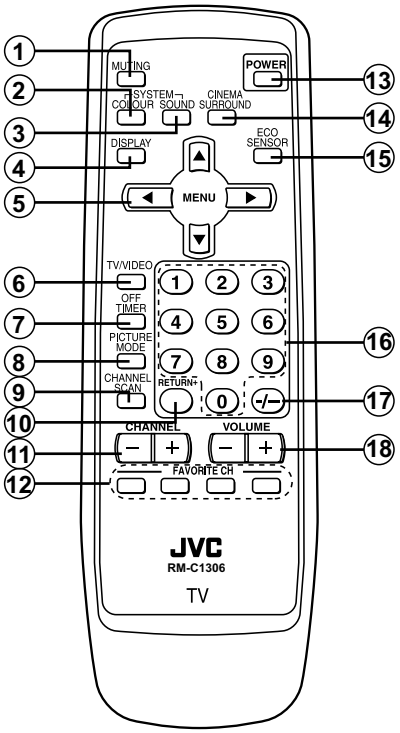
2.2 MAIN DIFFERENCE LIST

⚠	Items	AV-29WX11/G	AV-29WX11/S	AV-29WX11/U	AV-2932W1/E
⚠	MAIN PWB ASS'Y	SCH-1182A-H2	ACH-1183A-H2	SCH-1185A-H2	SCH-1184A-H2
⚠	FRONT CABINET ASS'Y	GG10189-002A-H	←	←	GG10189-006A-H
	REMOTE CONTROL UNIT	RM-C1306-1H	←	←	RM-C1309-1H
⚠	POWER CORD	QMPR340-165-K2 	QRPR370-165-E2 	QMPR340-165-K2 	←
	TELETEXT	None	←	←	FLOF, WST

2.3 FUNCTIONS

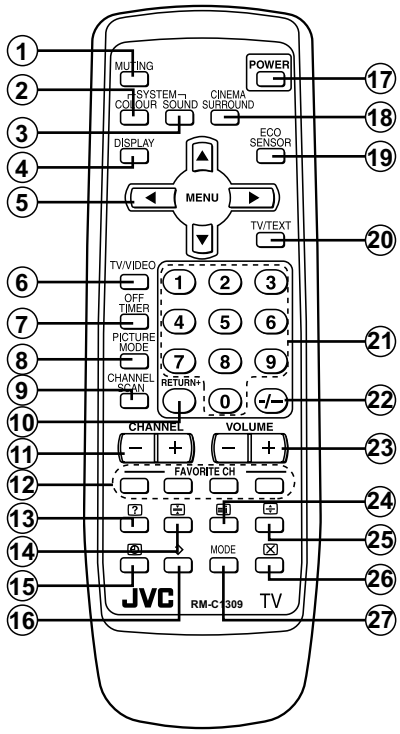
■ REMOTE CONTROL UNIT

RM-C1306-1H [AV-29WX11/G, AV-29WX11/S, AV-29WX11/U]



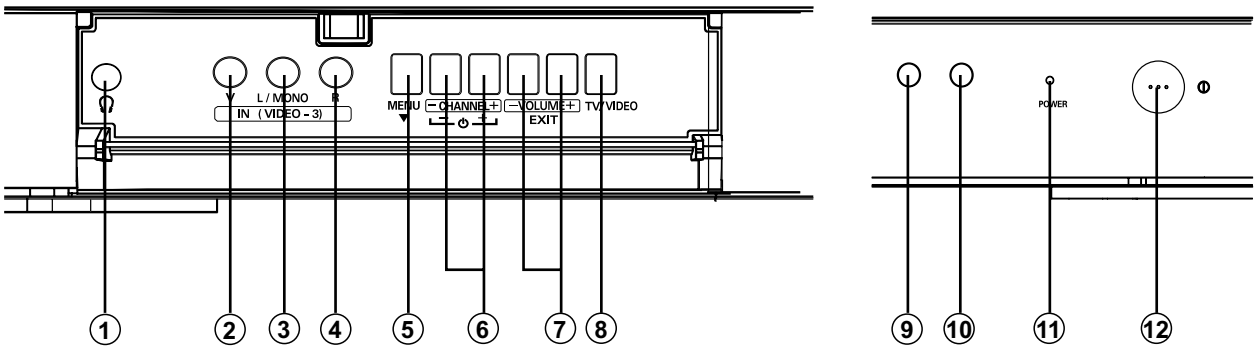
①	MUTING key	⑭	CINEMA SURROUND key
②	COLOUR SYSTEM key	⑮	ECO SENSOR key
③	SOUND SYSTEM key	⑯	Number keys
④	DISPLAY key	⑰	-/-- key
⑤	MENU (▲/▼, ◀/▶) keys	⑱	VOLUME (-/+) keys
⑥	TV/VIDEO key		
⑦	OFF TIMER key		
⑧	PICTURE MODE key		
⑨	CHANNEL SCAN key		
⑩	RETERN + key		
⑪	CHANNEL (-/+) keys		
⑫	FAVORITE CH keys		
⑬	POWER key		

RM-C1309-1H [AV-2932W1/E]



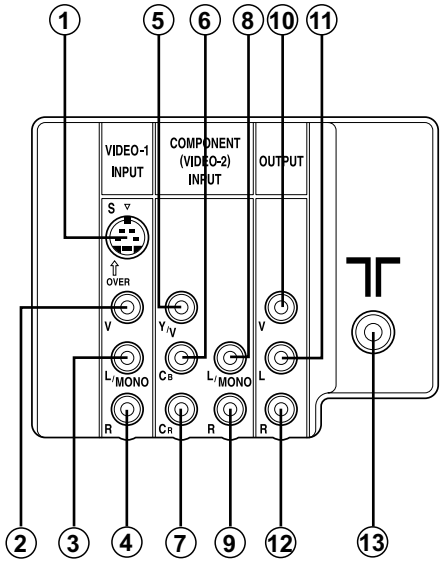
①	MUTING key	⑮	SUB PAGE key
②	COLOUR SYSTEM key	⑯	STORE key
③	SOUND SYSTEM key	⑰	POWER key
④	DISPLAY key	⑱	CINEMA SURROUND key
⑤	MENU (▲/▼, ◀/▶) keys	⑲	ECO SENSOR key
⑥	TV/VIDEO key	⑳	TV/TEXT key
⑦	OFF TIMER key	㉑	Number keys
⑧	PICTURE MODE key	㉒	-/-- key
⑨	CHANNEL SCAN key	㉓	VOLUME (-/+) keys
⑩	RETERN + key	㉔	INDEX key
⑪	CHANNEL (-/+) keys	㉕	SIZE key
⑫	FAVORITE CH keys	㉖	CANCEL key
⑬	REVEAL key	㉗	MODE key
⑭	HOLD key		

■ FRONT PANEL CONTROLS



① HEADPHONE jack	⑦ VOLUME (-/+) buttons
② IN (VIDEO-3) : VIDEO	⑧ TV/VIDEO buttons
③ IN (VIDEO-3) : AUDIO L/MONO	⑨ Remote control sensor
④ IN (VIDEO-3) : AUDIO R	⑩ ECO sensor
⑤ MENU (▼) button	⑪ POWER lamp
⑥ CHANNEL (-/+) buttons	⑫ MAIN POWER button

■ REAR TERMINAL



VIDEO-1 INPUT TERMINAL

① S-VIDEO
② VIDEO
③ AUDIO L/MONO
④ AUDIO R

COMPONENT (VIDEO-2) INPUT TERMINAL

⑤ Y/VIDEO
⑥ C_B
⑦ C_R
⑧ AUDIO L/MONO
⑨ AUDIO R

OUTPUT TERMINAL

⑩ VIDEO
⑪ AUDIO L
⑫ AUDIO R

⑬ Aerial input terminal

SECTION 3
DISASSEMBLY

3.1 DISASSEMBLY PROCEDURE

3.1.1 REMOVING THE REAR COVER

- Unplug the power cord.
  (1) Remove the 16 screws **[A]** as shown in Fig.1.
  (2) Withdraw the REAR COVER toward you.

CAUTION:

When reinstalling the rear cover, carefully push it inward after inserting the MAIN PWB into the REAR COVER groove.

3.1.2 REMOVING THE CHASSIS (CHASSIS BASE AND CONTROL BASE)

- Remove the REAR COVER.
  (1) Slightly raise the both sides of the CHASSIS by hand and remove the 2 claws **[B]** under the CHASSIS from the front cabinet as shown in Fig.1.
  (2) Withdraw the CHASSIS backward.
  (If necessary, take off the wire clamp, connector's etc.)

NOTE:

When conducting a check with power supplied, be sure to confirm that the CRT earth wire is connected to the CRT SOCKET PWB and the MAIN PWB.

3.1.3 REMOVING THE AV TERMINAL BOARD

- Remove the REAR COVER.
  (1) Remove the 4 screws **[C]** as shown in Fig.1.
  (2) When you pull out the AV TERMINAL BOARD in the direction of arrow **[D]** as shown in Fig.1, it can be removed.

3.1.4 REMOVING THE CONTROL BASE

- Remove the REAR COVER.
- Remove the CHASSIS.
  (1) While pushing down the 2 claws **[E]** as shown in Fig. 2 and pull out the CONTROL BASE in the direction of arrow **[F]** as shown in Fig. 2, the control base can be removed.
  (If necessary, take off the wire, connector's etc.)

3.1.5 REMOVING THE SPEAKER

- Remove the REAR COVER.
  (1) Remove the 2 screws **[G]** as shown in Fig.1.
  (2) Withdraw the SPEAKER backward.
  (3) Follow the same steps when removing the other hand SPEAKER.

3.1.6 CHECKING THE MAIN PW BOARD

- To check the back side of the MAIN PWB.
  (1) Pull out the CHASSIS. (Refer to REMOVING THE CHASSIS).
  (2) Erect the CHASSIS vertically so that you can easily check the back side of the MAIN PWB.

CAUTIONS:

- When erecting the chassis, be careful so that there will be no contacting with other PW Board.
- Before turning on power, make sure that the CRT earth wire and other connectors are properly connected.
- When repairing, connect the DEG. COIL to the DEG. connector on the MAIN PWB.

3.1.7 WIRE CLAMPING AND CABLE TYING

(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.

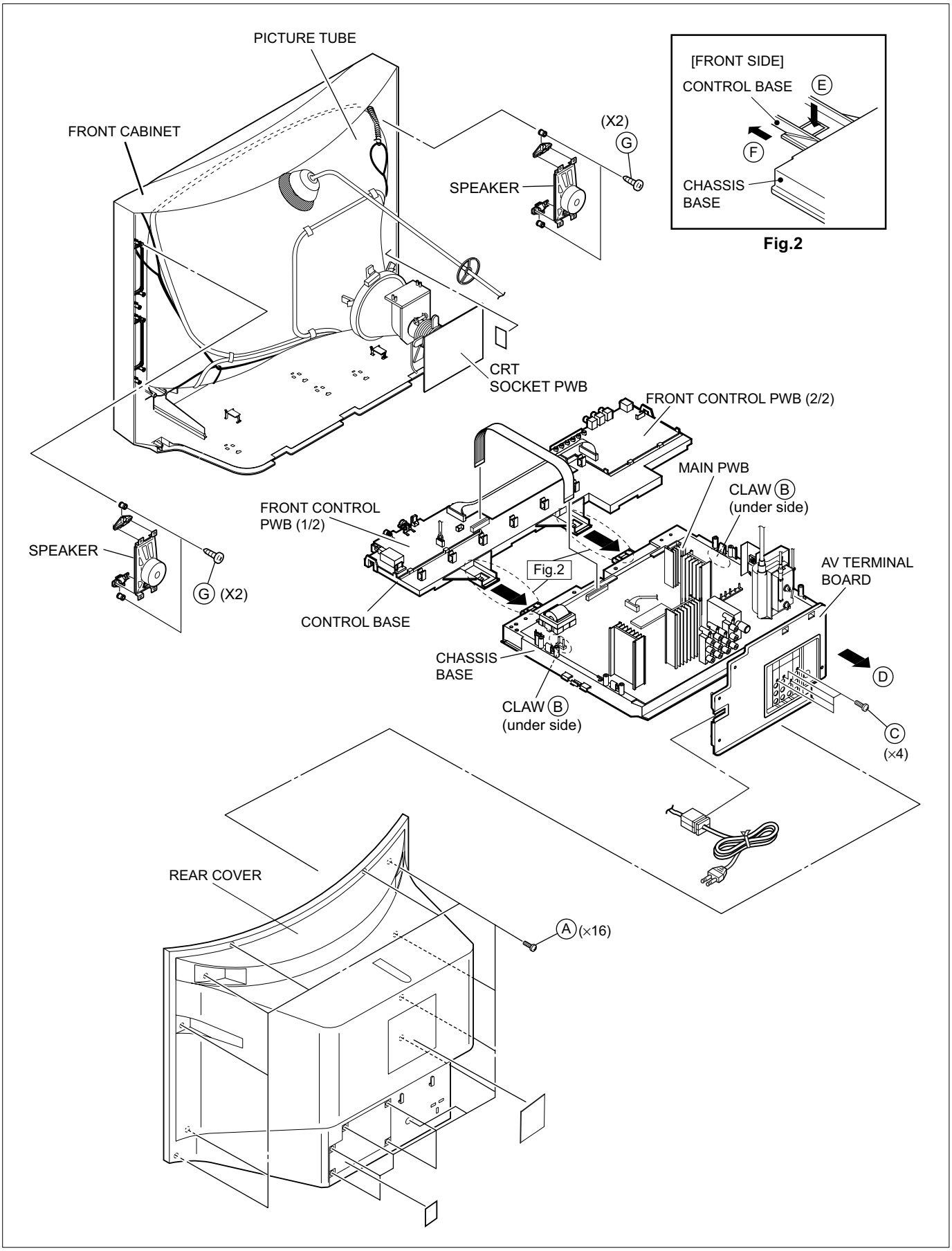

PICTURE TUBE
FRONT CABINET
(X2)
G
SPEAKER
CRT
SOCKET PWB
FRONT CONTROL PWB (2/2)
MAIN PWB
CLAW B
(under side)
FRONT CONTROL
PWB (1/2)
SPEAKER
G (X2)
Fig.2
AV TERMINAL
BOARD
CONTROL BASE
CHASSIS
BASE
D
CLAW B
(under side)
C
(×4)
REAR COVER
A (×16)
[FRONT SIDE]
CONTROL BASE
E
F
CHASSIS
BASE

Fig.2

Fig. 1

3.2 REPLACEMENT OF MEMORY IC

3.2.1 MEMORY IC

This TV uses the following memory IC.

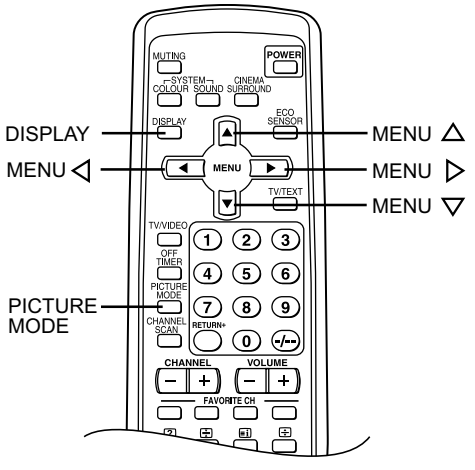
Memory IC: IC1702 on MAIN PW Board

The memory IC memorizes data for correctly operating the video and deflection circuits. When replacing the memory IC, be sure to use the same type IC written with the initial values of data. In other words, use the specific IC listed in "PRINTED WIRING BOARD PARTS LIST". For its mounting location, refer to "ADJUSTMENT LOCATIONS".

3.2.2 PROCEDURE FOR REPLACING MEMORY IC

1. **Power off**
   Switch the power off and unplug the power cord from the wall outlet.
2. **Replacing the memory IC**
   Replace the memory IC with new one. Be sure to use the memory IC written with the initial data values.
3. **Power on**
   Plug the power cord into the wall outlet and switch the power on.
4. **Check and setting of SYSTEM CONSTANT SET:**
   (1) Press the [DISPLAY] key and the [PICTURE MODE] key on the remote control unit simultaneously.
   The SERVICE MENU screen will be displayed.(See Fig.1.)
   (2) In the SERVICE MENU, press the [DISPLAY] key and [PICTURE MODE] key simultaneously. Then, the SYSTEM CONSTANT SET screen will be displayed.(See Fig.2.)
   (3) Check whether the setting values of the SYSTEM CONSTANT SET are the same as those indicated in Table1.
   If the value is different, select the setting item with the MENU [△]/[▽] key, and set the correct value with the MENU [◁]/[▷] key.
   (4) Press the [DISPLAY] key twice to return to the normal screen.
5. **Receive channel setting**
   Refer to the **OPERATING INSTRUCTIONS** and set the receive channels (channels preset).
6. **User setting**
   Check the user setting values in Table 2 and Table 3. If setting value is different, set the correct value.
   For setting, refer to the **OPERATING INSTRUCTIONS**.
7. **Setting of SERVICE MENU**
   Verify the setting for each setting item in the SERVICE MENU.(See Table 4.) If readjustment is necessary, perform adjustment referring to "ADJUSTMENTS PROCEDURE".

NAME OF REMOTE CONTROL KEYS



SERVICE MENU

```
SERVICE MENU

1. IF              2. VC
3. DEF             4. VSM PRESET
5. PRESET
6. PLUG & PLAY (ON)
1-6 : SELECT       DISPLAY : EXIT

******* **** ***** *****
     **** **** *** ***
```

Fig. 1

SYSTEM CONSTANT-Ⅰ

```
SYSTEM CONSTANT  SET 1

SYSTEM              MULTI
COMB                YES
TILT                YES
SUPER BASS          NO
TEXT                ERAPU
LANGUAGE            E/R/A/P/U

△▽: SEL  −+ : OPE  DISP : EXIT
```

SYSTEM CONSTANT-Ⅱ

```
SYSTEM CONSTANT  SET 2

MSP                 NO
BILINGUAL           NO
B / B SOUND         NO
TUNER               MU
COLOUR AUTO         NO

△▽: SEL  −+ : OPE  DISP : EXIT
```

SYSTEM CONSTANT-Ⅲ

```
SYSTEM CONSTANT  SET 3

LOCK          1 MHz    : 040
            500 KHz    : 040
            250 KHz    : 040
         156. 25 KHz   : 030
           31.25 KHz   : 030

△▽: SEL  −+ : OPE  DISP : EXIT
```

SYSTEM CONSTANT-Ⅳ

```
SYSTEM CONSTANT  SET 4

3D SURROUND         YES
AMP TUNER           NO
COMPONENT           YES
PIP                 NO
16 : 9              YES
M.L. delete         ON

△▽: SEL  −+ : OPE  DISP : EXIT
```

Fig. 2

3.2.3 FACTORY SETTING VALUE

■ SETTING OF SYSTEM CONSTANT SET

Setting item	Setting content	Setting value			
		AV-29WX11/G	AV-29WX11/S	AV-29WX11/U	AV-2932W1/E
SYSTEM	MULTI → TRIPLE → PAL → SINGLE → VIET	MULTI	←	←	←
COMB	YES → NO	YES	←	←	←
TILT	YES → NO	YES	←	←	←
SUPER BASS	YES → NO	NO	←	←	←
TEXT	ERCMI → ERAPU → NO	NO	←	←	ERAPU
LANGUAGE	E/R/A/P/U → E/R/A/P → E/R/U	E/R/A/P	←	←	E/R/A/P/U
MSP	YES → NO	NO	←	←	←
BILINGUAL	YES → NO	NO	←	←	←
B/B SOUND	YES → NO	NO	YES	NO	←
TUNER	MU → MA	MU	←	←	←
COLOUR AUTO	YES → NO	NO	YES	NO	←
LOCK 1MHz	000 → 240	040	←	←	←
500KHz	000 → 240	040	←	←	←
250KHz	000 → 240	040	←	←	←
156.25KHz	000 → 240	030	←	←	←
31.25KHz	000 → 240	030	←	←	←
3D SURROUND	YES → NO	YES	←	←	←
AMP TUNER	YES → NO	NO	←	←	←
COMPONENT	YES → NO	YES	←	←	←
PIP	YES → NO	NO	←	←	←
16 : 9	YES → NO	YES	←	←	←
M.L. delete	ON → OFF	ON	←	←	←

Table 1

■ **SETTING OF SWITCHES ON FRONT PANEL AND REMOTE CONTROL UNIT**

Setting item	Setting value
POWER	Off
SUB POWER	On
VOLUME	15
COLOR SYSTEM	PAL
SOUND SYSTEM	B/G
PICTURE MODE (VSM)	BRIGHT
CINEMA SURROUND	OFF
OFF TIMER	00
STEREO MODE	STEREO
CHANNEL POSITION	PRESET 1

Table 2

■ **SETTING OF MENU SCREEN**

Setting item	Setting value
INPUT	TV
VNR	OFF
COMPRESS (16:9)	OFF
PICTURE TILT	00
AUTO SHUTOFF	OFF
CHILD LOCK	OFF
BLUE BACK	ON
VIDEO-2 SET	VIDEO
AUTO CH PRESET	Refer to OPERATING INSTRUCTIONS
MANUAL CH PRESET	Refer to OPERATING INSTRUCTIONS
LANGUAGE	ENG
TEXT LANGUAGE	GROUP-3 [AV-2932W1/E]
TINT	Center
COLOUR	Center
BRIGHT	Center
CONT	Maximum
SHARP	Center
BASS	Center
TREBLE	Center
BALANCE	Center
AI VOLUME	ON
FAVORITE CH RED	PR1
FAVORITE CH GREEN	PR2
FAVORITE CH YELLOW	PR3
FAVORITE CH BLUE	PR4
AI ECO SENSOR	OFF
AI ECO DISPLAY	ON

Table 3

■ **SERVICE MENU SETTING ITEMS**

Service menu	Setting item
1. IF	1. VCO 2. DELAY POINT
2. VC	1. CUTOFF(R/G) 2. DRIVE(R/G/B) 3. BRIGHT 4. CONT 5. COLOUR 6. TINT 7. SHARP 8. YDELAY **[Do not adjust]** 9. AMP T. SHARP
3. DEF	1. VER. SLOPE 2. VER. HEIGHT 3. VER. POSITION 4. VER. SCURVE 5. HOR. POSITION 6. HOR. WIDTH 7. EW-PIN 8. EW-TRAPEZ 9. UP CORNER 10. DW CORNER 11. HOR. PARALL 12. HOR. BOW 13. V. ZOOM
4. VSM PRESET **(BRIGHT/STANDARD/SOFT)** **[Do not adjust]**	TINT COLOUR BRIGHT PICTURE DETAIL

Service menu	Setting item
5. PRESET **[Do not adjust]**	1. PSNS 2. ACL 3. MUS 4. MAT 5. FCO 6. BPS 7. IFLH 8. VID 9. STM 10. AFCW 11. VSW 12. FFI 13. AGC 14. CL 15. AKB 16. HBL 17. BKS 18. READ STATUS 19. VNR 20. PEAK 21. IVG 22. WPL 23. SOFT CLIPPER 24. IF PLL OFFSET 25. OVERSHOOT 26. HCO 27. HP2 28. AI VOLUME ADN 29. SUB BASS 30. SUB TREBLE 31. SUB TRIMMER 32. CCCLOOP 33. OSD BRIGHTNESS
6. PLUG & PLAY(ON) **[Do not adjust]**	

Table 4

3.3 REPLACEMENT OF CHIP COMPONENT

3.3.1 CAUTIONS

(1) Avoid heating for more than 3 seconds.
(2) Do not rub the electrodes and the resist parts of the pattern.
(3) When removing a chip part, melt the solder adequately.
(4) Do not reuse a chip part after removing it.

3.3.2 SOLDERING IRON

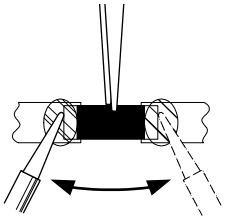
(1) Use a high insulation soldering iron with a thin pointed end of it.
(2) A 30w soldering iron is recommended for easily removing parts.

3.3.3 REPLACEMENT STEPS

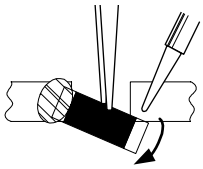
1. How to remove Chip parts

[Resistors, capacitors, etc.]

(1) As shown in the figure, push the part with tweezers and alternately melt the solder at each end.

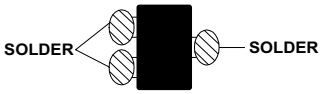


(2) Shift with tweezers and remove the chip part.

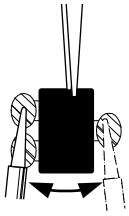


[Transistors, diodes, variable resistors, etc.]

(1) Apply extra solder to each lead.



(2) As shown in the figure, push the part with tweezers and alternately melt the solder at each lead. Shift and remove the chip part.

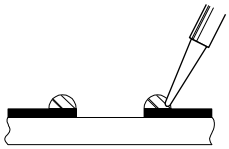


Note :
After removing the part, remove remaining solder from the pattern.

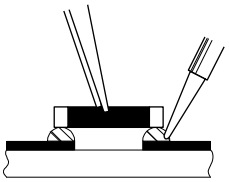
2. How to install Chip parts

[Resistors, capacitors, etc.]

(1) Apply solder to the pattern as indicated in the figure.

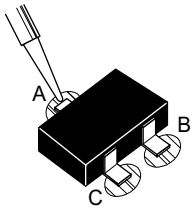


(2) Grasp the chip part with tweezers and place it on the solder. Then heat and melt the solder at both ends of the chip part.

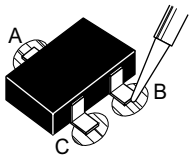


[Transistors, diodes, variable resistors, etc.]

(1) Apply solder to the pattern as indicated in the figure.
(2) Grasp the chip part with tweezers and place it on the solder.
(3) First solder lead A as indicated in the figure.



(4) Then solder leads B and C.



SECTION 4
ADJUSTMENT

4.1 ADJUSTMENT PREPARATION

(1) **You can make the necessary adjustments for this unit with either the remote control unit or with the adjustment equipment and parts as given below.**
(2) **Adjustment with the remote control unit is made on the basis of the initial setting values, however, the new setting values which set the screen to its optimum condition may differ from the initial settings.**
(3) Make sure that AC power is turned on correctly.
(4) Turn on the power for the set and test equipment before use, and start the adjustment procedures after waiting at least 30 minutes.
(5) Unless otherwise specified, prepare the most suitable reception or input signal for adjustment.
(6) Never touch any adjustment parts, which are not specified in the list for this variable resistors, transformers, trimmer capacitors, etc.
(7) Presetting before adjustment.
Unless otherwise specified in the adjustment instructions, preset the following functions with the remote control unit.

■ User mode setting position

Setting item	Setting value
PICTURE MODE (VSM)	BRIGHT
TINT, COLOUR, BRIGHT,SHARP	Center
CONT	Maximum
VNR	OFF
AI ECO SENSOR	OFF
BASS, TREBLE, BALANCE	Center

4.2 MEASURING INSTRUMENT AND FIXTURES

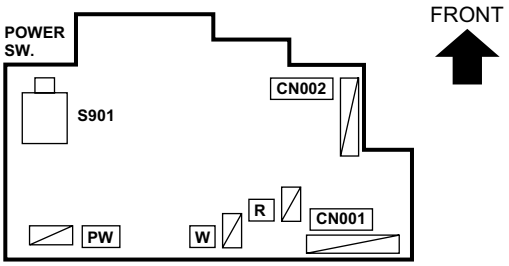
(1) DC voltmeter (or Digital voltmeter)
(2) Oscilloscope
(3) Signal generator (Pattern generator) [PAL/SECAM/NTSC]
(4) Remote control unit

4.3 ADJUSTMENT ITEMS

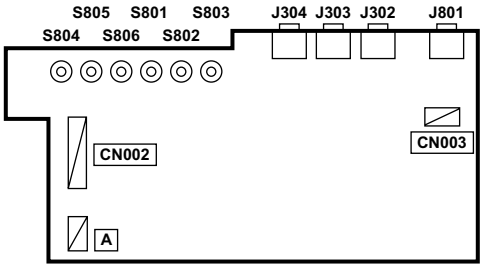
- ■ B1 POWER SUPPLY
- ■ FOCUS ADJUSTMENT
- ■ IF CIRCUIT ADJUSTMENTS
  - • IF VCO adjustment
  - • DELAY POINT (AGC TAKE-OVER) adjustment
- ■ VIDEO CIRCUIT ADJUSTMENTS
  - • WHITE BALANCE (Low light) adjustment
  - • WHITE BALANCE (High light) adjustment
  - • SUB BRIGHT adjustment
  - • SUB CONTRAST adjustment
  - • SUB COLOUR I adjustment
  - • SUB COLOUR II adjustment
  - • SUB TINT I adjustment
  - • SUB TINT II adjustment
- ■ DEFLECTION CIRCUIT ADJUSTMENTS
  - • V.SLOPE adjustment
  - • V.POSITION adjustment
  - • V.HEIGHT adjustment
  - • H.POSITION adjustment
  - • H. WIDTH adjustment
  - • SIDE PIN adjustment
  - • TRAPEZIUM adjustment
  - • V.S-CURVE adjustment
  - • CORNER adjustment
  - • H. PARALLEL adjustment
  - • H.BOW adjustment
- ■ VSM PRESET SETTING
- ■ PRESET SETTING

4.4 ADJUSTMENT LOCATIONS

FRONT CONTROL PWB ASS'Y (1/2)

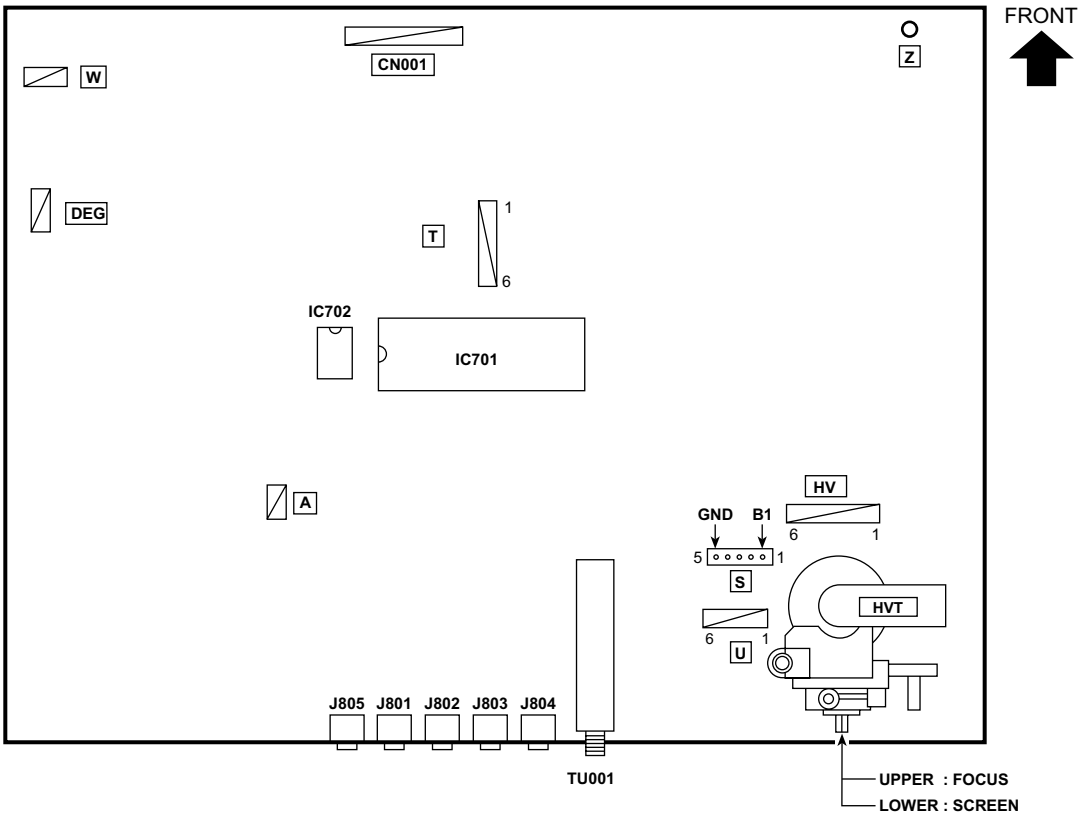


FRONT CONTROL PWB ASS'Y (2/2)

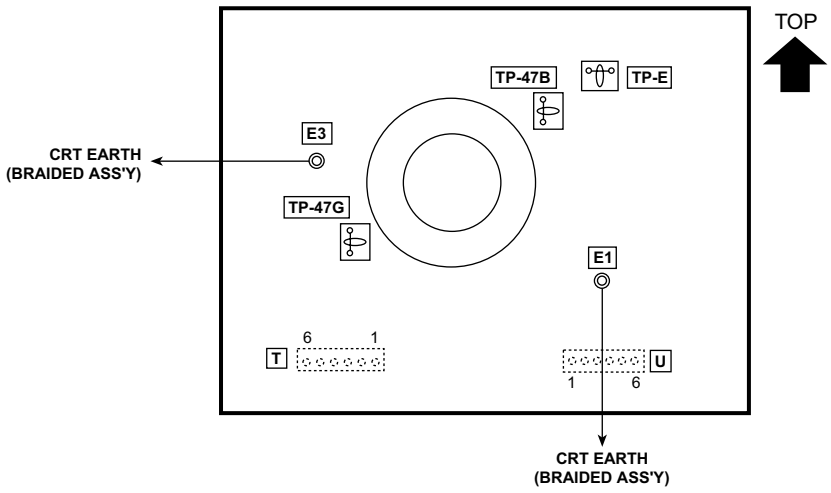


S801 : CH UP +
S802 : CH DOWN –
S803 : MENU
S804 : TV/VIDEO
S805 : VOL UP+
S806 : VOL DOWN –

MAIN PWB ASS'Y



CRT SOCKET PWB ASS'Y (SOLDER SIDE)



4.5 BASIC OPERATION IN SERVICE MENU

4.5.1 TOOL OF SERVICE MENU OPERATION

Operate the SERVICE MENU with the remote control unit.

4.5.2 SERVICE MENU ITEMS

With the SERVICE MENU,various settings (adjustments) can be made, and they are broadly classified in the following items of settings:

1. IF	For entering/adjusting the setting values (adjustment values) of the IF circuit.
2. VC	For entering/adjusting the setting values (adjustment values) of the VIDEO circuit.
3. DEF	For entering/adjusting the setting values (adjustment values) of the DEFLECTION circuit.
4. VSM PRESET	For setting the values of STANDARD,SOFT and BRIGHT. (VSM:video status memory)
5. PRESET	For setting the values of the preset.
6. PLUG & PLAY (ON)	This is not used for service.

4.5.3 BASIC OPERATION IN SERVICE MENU

1. HOW TO ENTER SERVICE MENU

Press the [DISPLAY] key and the [PICTURE MODE] key on the remote control unit simultaneously.
The SERVICE MENU screen will be displayed. (See Fig. 1 on the next page.)

2. SELECTION OF SUB MENU SCREEN

Press one of the keys 1 to 6 on the remote control unit,and select the SUB MENU SCREEN from the SERVICE MENU. (See Fig.1 on the next page.)

SERVICE MENU → SUB MENU
1. IF
2. VC
3. DEF
4. VSM PRESET
5. PRESET
6. PLUG & PLAY (ON)

3. METHOD OF SETTING

NOTES:
- Once the setting values are set,they are memorized automatically.
- It must not adjust without inputting a signal.

(1) 1. IF

[1.VCO] : Under normal conditions, no adjustment is required.

(a) [1] key	Select **1. IF**.
(b) [1] key	Select **1. VCO**.
(c) [DISPLAY] key	When this is pressed twice, you will return to the SERVICE MENU.

[2.DELAY POINT]

(a) [1] key	Select **1. IF**.
(b) [2] key	Select **2. DELAY POINT**.
(c) MENU [◁]/[▷] key	Adjust the setting value.
(d) [DISPLAY] key	When this is pressed twice, you will return to the SERVICE MENU.

(2) 2. VC, 3. DEF, 4. VSM PRESET and 5. PRESET

(a) [2] ~[5] keys	Select one from **2. VC**, **3. DEF**, **4. VSM PRESET** and **5. PRESET**
(b) MENU [▽]/[△] key	Select setting items.
(c) MENU [◁]/[▷] key	Adjust the setting values of the setting items. Use the number keys on the remote control unit for setting of WHITE BALANCE. For the setting, refer to each item concerned.
(d) [DISPLAY] key	When this is pressed, you will return to the SERVICE MENU.

(3) 6. PLUG & PLAY (ON)

This is not used for service.

4. Release of SERVICE MENU

After completing the setting, return to the SERVICE MENU by pressing the [DISPLAY] key, then again press the [DISPLAY] key to return to the normal screen.

4.5.4 SERVICE MENU FLOW CHART

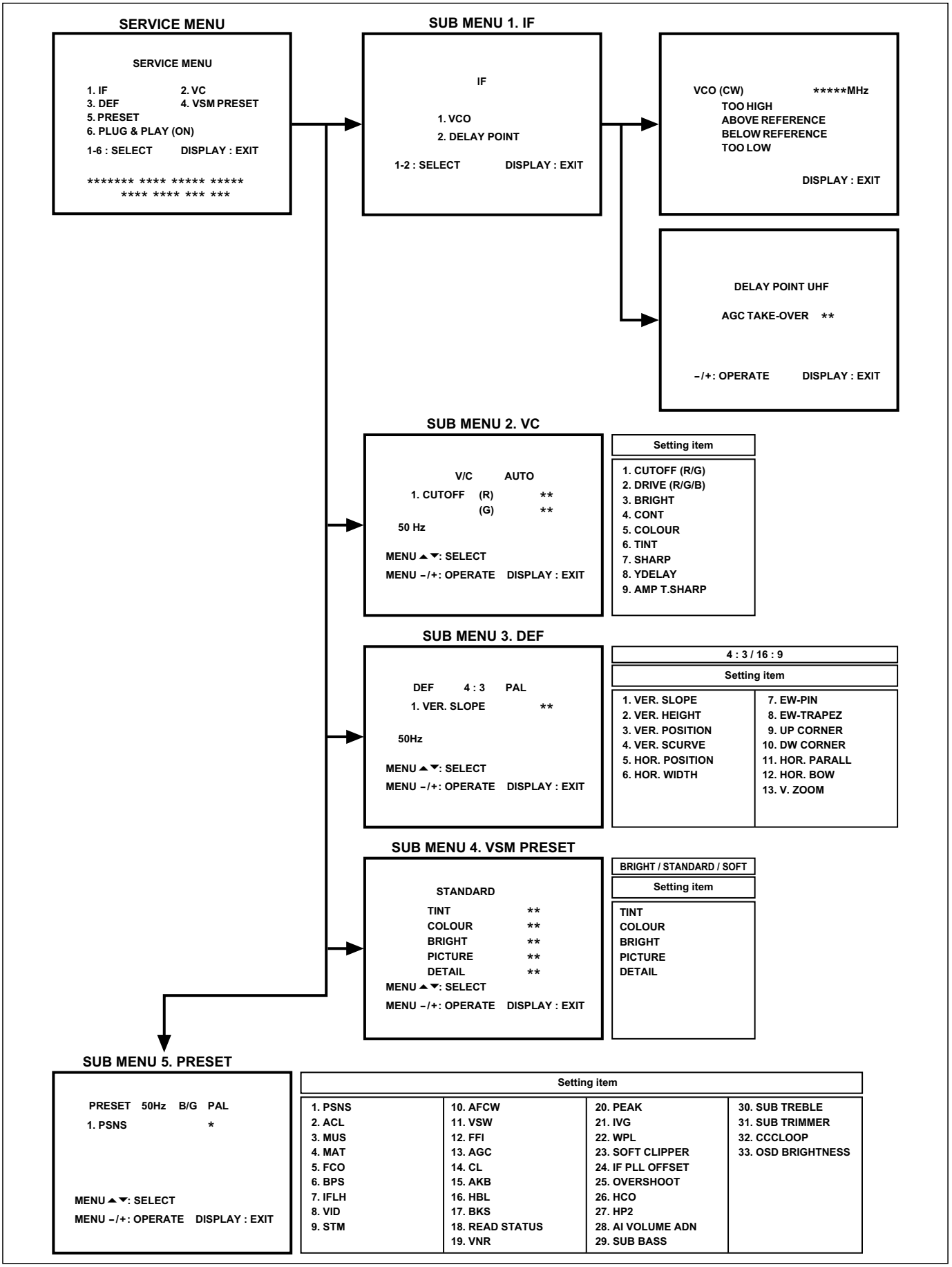


Fig. 1

4.6 ADJUSTMENT PROCEDURE

4.6.1 B1 POWER SUPPLY

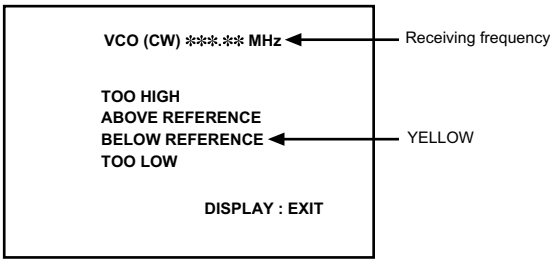
Item	Measuring instrument	Test point	Adjustment part	Description
B1 POWER SUPPLY check	**Signal generator** **DC voltmeter**	**B1 (pin 1) GND (pin 5) [CN00S connector in MAIN PWB]**		(1) Receive a black and white signal. (2) Connect a DC voltmeter between B1 and GND (between pins 1 and 5 of the connector CN00S). (3) Make sure that the voltage is **DC134.5V ± 2V**.

4.6.2 FOCUS ADJUSTMENT

Item	Measuring instrument	Test point	Adjustment part	Description
FOCUS adjustment	**Signal generator**		**FOCUS VR [In HVT]**	**Notes:** • Set PICTURE MODE (VSM) to "BRIGHT". • The final adjustment of CONVERGENCE must be done after the FOCUS adjustment. (CONVERGENCE is changed by FOCUS adjustment.) When makes difference by FOCUS adjustment, should be reconfirming PURITY adjustment. (1) Receive a cross-hatch signal. (2) While looking at the screen centre, adjust the **FOCUS VR** so that the vertical and horizontal lines will be clear and in fine detail. (3) Make sure that the picture is in focus even when the screen gets darkened.

4.6.3 IF CIRCUIT ADJUSTMENTS

Item	Measuring instrument	Test point	Adjustment part	Description
IF VCO adjustment	**Remote control unit**		**[1. IF]** **1. VCO (CW)**	**Note:** • Under normal conditions, no adjustment is required. (1) Select **1. IF** from the SERVICE MENU. (2) Select **1. VCO**. (3) Receive a broadcast signal. (4) Check the characters colour of the **BELOW REFERENCE** displayed to **yellow**. (5) Press the [DISPLAY] key three times to return to normal screen.
DELAY POINT (AGC TAKE-OVER) adjustment	**Remote control unit**		**[1. IF]** **2. DELAY POINT**	(1) Receive a black and white broadcast signal (colour off). (2) Select **1. IF** from the SERVICE MENU. (3) Select **2. DELAY POINT**. (4) Adjust in order to eliminate any noise or beat from the image. Any increase above the initial value produces noise and any decrease below it produces beat. (5) Press the [DISPLAY] key three times to return to the normal screen. (6) Turn to other channels and make sure that there are no irregularities.



Adjustment item	Initial setting value			
	NTSC 3.58		OTHERS	
	VHF	UHF	VHF	UHF
2. DELAY POINT (AGC TAKE-OVER)	28	22	28	28

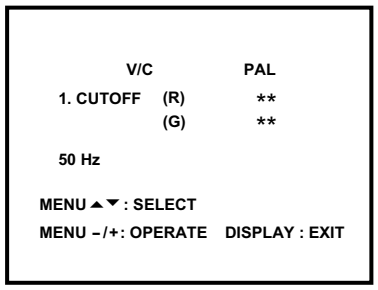
4.6.4 VIDEO CIRCUIT ADJUSTMENTS

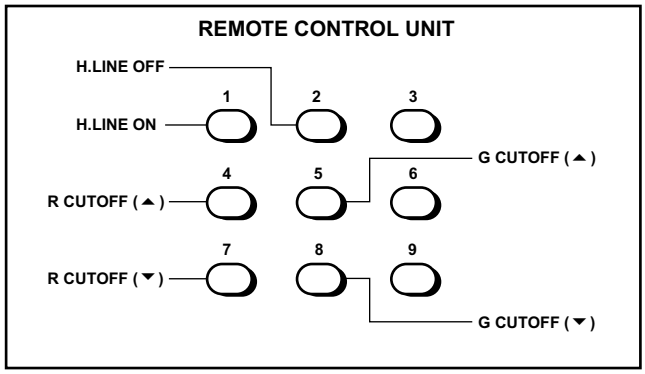
- The setting (adjustment) using the remote control unit is made on the basis of the initial setting values.
- The setting values which adjust the screen to the optimum condition can be different from the initial setting values.
- Do not change the initial setting values of the setting (adjustment) items not listed in “ADJUSTMENT PROCEDURE”.

[SUB MENU 2. VC]

Adjustment item	Variable range	Initial setting value				
		PAL	SECAM	NTSC3.58	NTSC4.43	COMPONENT(V-2)
1. CUT OFF (R/G)	-32 – +31	0/0	←	←	←	-2/+14
2. DRIVE (R/G/B)	-32 – +31	0/0/0	←	←	←	←
3. BRIGHT (TV/V-1/V-2/V-3)	-32 – +31	-13/0/0/0	←	←	←	– / – /-4/ –
4. CONT	-32 – +31	-10	←	←	←	–
5. COLOUR	-32 – +31	-4	-13	-11	+1	+2
6. TINT (TV/VIDEO)	-32 – +31	–	–	-15/+6	– /+1	–
7. SHARP (TV/VIDEO) **[Do not adjust]**	-32 – +31	-15/-5	←	←	←	–/0
8. Y DELAY (TV/VIDEO/S-VIDEO) **[Do not adjust]**	-8 – +7	-7/+1/0	-7/+1/+1	+5/+5/+1	-7/0/+1	– /+1/ –
9. AMP T. SHARP **[Do not adjust]**	-32 – +31	0	←	←	←	←

Item	Measuring instrument	Test point	Adjustment part	Description
WHITE BALANCE (Low light) adjustment	**Signal generator** **Remote control unit**		**[2. VC]** **1.CUTOFF (R)** **1.CUTOFF (G)** **SCREEN VR [In HVT]**	**Note:** • Set PICTURE MODE (VSM) to “BRIGHT”. (1) Receive a PAL black and white signal (colour off). (2) Select **2. VC** from the SERVICE MENU. (3) Select **1. CUTOFF (R)** and **(G)**, and set each value to initial setting value with the **[4]** and **[7]** keys, or **[5]** and **[8]** keys. (4) Press the **[1]** key to produce a single horizontal line. (5) Turn the **SCREEN VR** fully counterclockwise, then slowly turn it clockwise to where a red, blue or green colour is faintly visible. (6) Use the **[4]** and **[7]** or **[5]** and **[8]** keys and adjust the other 2 colours to where the single horizontal line appears white. (7) Turn the **SCREEN VR** to where the single horizontal line glows faintly. (8) Press the **[2]** key to return to **1. CUTOFF** screen. (9) Press the [DISPLAY] key twice to return to the normal screen.



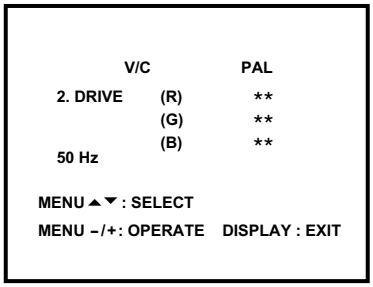


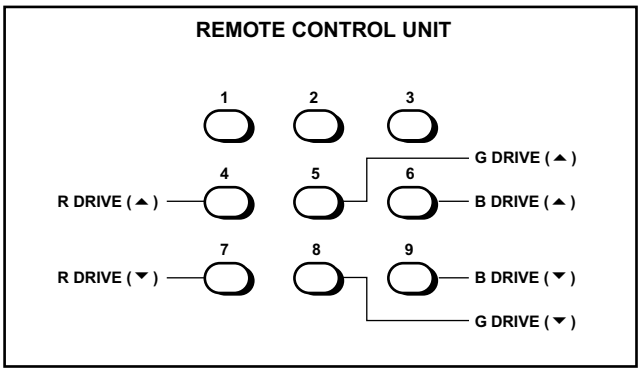
Adjustment Item		Variable range	Initial setting value
1. CUT OFF	R	–32 — +31	0
	G	–32 — +31	0

<table>
<tr><th>Item</th><th>Measuring instrument</th><th>Test point</th><th>Adjustment part</th><th>Description</th></tr>
<tr><td>WHITE BALANCE (High light) adjustment</td><td>Signal generator

Remote control unit</td><td></td><td>[2. VC]
2. DRIVE (R)
2. DRIVE (G)
2. DRIVE (B)</td><td>Notes:
• Proceed to the following adjustment after having completed the WHITE BALANCE (Low light) adjustment.
• Set PICTURE MODE (VSM) to “BRIGHT”.

(1) Receive a PAL black and white signal (colour off).
(2) Select 2. VC from the SERVICE MENU.
(3) Select 2. DRIVE (R), (G) and (B), and set each value to initial setting value with the [4] to [9] keys.
(4) Use the [4] to [9] keys to produce a white screen.
(5) Press the [DISPLAY] key twice to return to the normal screen.

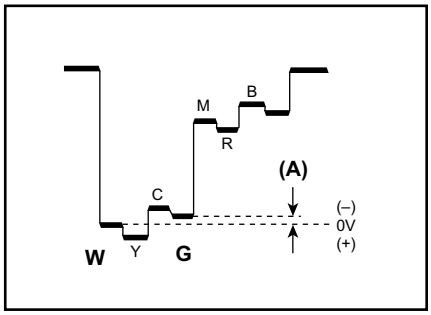
 

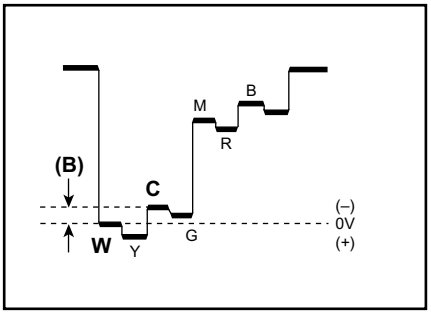
 

<table>
<tr><th colspan="2">Adjustment Item</th><th>Variable range</th><th>Initial setting value</th></tr>
<tr><td rowspan="3">2. DRIVE</td><td>R</td><td>–32 — +31</td><td>0</td></tr>
<tr><td>G</td><td>–32 — +31</td><td>0</td></tr>
<tr><td>B</td><td>–32 — +31</td><td>0</td></tr>
</table></td></tr>
<tr><td>SUB BRIGHT adjustment</td><td>Remote control unit</td><td></td><td>[2. VC]
3. BRIGHT</td><td>Notes:
• Proceed to the following adjustment after having completed the WHITE BALANCE (Low light) and WHITE BALANCE (High light) adjustment.
• Set PICTURE MODE (VSM) to “BRIGHT”.

(1) Receive a broadcast.
(2) Select 2. VC from the SERVICE MENU.
(3) Select 3. BRIGHT.
(4) Set the initial setting value.
(5) If the brightness is not best with the initial setting value, make fine adjustment until you get the best brightness.
(6) Press the [DISPLAY] key twice to return to the normal screen.</td></tr>
<tr><td>SUB CONTRAST adjustment</td><td>Remote control unit</td><td></td><td>[2. VC]
4. CONT</td><td>Notes:
• Proceed to the following adjustment after having completed the SUB BRIGHT adjustment.
• Set PICTURE MODE (VSM) to “BRIGHT”.

(1) Receive a broadcast.
(2) Select 2. VC from the SERVICE MENU.
(3) Select 4. CONT.
(4) Set the initial setting value.
(5) If the contrast is not best with the initial setting value, make fine adjustment until you get the best contrast.
(6) Press the [DISPLAY] key twice to return to the normal screen.</td></tr>
</table>

Item	Measuring instrument	Test point	Adjustment part	Description
SUB COLOUR Ⅰ adjustment	**Remote control unit**		**[2. VC]** **5. COLOUR**	**[Method of adjustment without measuring instrument]** **Notes:** • Proceed to the following adjustment after having completed the SUB CONTRAST adjustment. • Set PICTURE MODE (VSM) to “BRIGHT”. **– PAL COLOUR –** (1) Receive a PAL broadcast. (2) Select **2. VC** from the SERVICE MENU. (3) Select **5. COLOUR**. (4) Set the initial setting value for PAL COLOUR. (5) If the colour is not best with the initial setting value, make fine adjustment until you get the best colour. (6) Press the [DISPLAY] key twice to return to the normal screen. **– SECAM COLOUR –** (1) Receive a SECAM broadcast. (2) Press the [COLOUR SYSTEM] key to select the SECAM colour system. (3) Make fine adjustment of SECAM COLOUR in the same way as for “PAL COLOUR”. **– NTSC 3.58 COLOUR –** (1) Receive a NTSC 3.58MHz broadcast. (2) Press the [COLOUR SYSTEM] key to select the NTSC 3.58 colour system. (3) Make similar fine adjustment of NTSC 3.58 COLOUR in the same way as for “PAL COLOUR”. **– NTSC 4.43 COLOUR –** When adjustment is done for NTSC 3.58 COLOUR, appropriate values are automatically set for NTSC 4.43 COLOUR.
SUB COLOUR Ⅱ adjustment	**Signal generator** **Oscilloscope** **Remote control unit**	**TP-47G** **TP-E (⏚)** **[CRT SOCKET PWB]**	**[2. VC]** **5. COLOUR**	**[Method of adjustment using measuring instrument]** **Notes:** • Proceed to the following adjustment after having completed the SUB CONTRAST adjustment. • Set PICTURE MODE (VSM) to “BRIGHT”. **– PAL COLOUR –** (1) Receive a PAL colour bar signal (full field colour bar 75% white). (2) Select **2. VC** from the SERVICE MENU. (3) Select **5. COLOUR**. (4) Set the initial setting value of PAL COLOUR. (5) Connect the oscilloscope between TP-47G and TP-E. (6) Adjust PAL COLOUR to set the value **(A)** in the figure to **+16V (V_{W-G})**. **– SECAM COLOUR –** (1) Receive a SECAM colour bar signal (full field colour bar 75% white). (2) Press the [COLOUR SYSTEM] key to select the SECAM colour system. (3) Set the initial setting value of SECAM COLOUR. (4) Adjust SECAM COLOUR to set the value **(A)** in the figure to **+2V (V_{W-G})**. **– NTSC 3.58 COLOUR –** (1) Receive a NTSC 3.58 colour bar signal (full field colour bar 75% white). (2) Press the [COLOUR SYSTEM] key to select the NTSC 3.58 colour system. (3) Set the initial setting value of NTSC 3.58 COLOUR. (4) Adjust NTSC 3.58 COLOUR to set the value **(A)** in the figure to **+8V (V_{W-G})**. **– NTSC 4.43 COLOUR –** When adjustment is done for NTSC 3.58 COLOUR, appropriate values are automatically set for NTSC 4.43 COLOUR.
				

Item	Measuring instrument	Test point	Adjustment part	Description
SUB TINT Ⅰ adjustment	**Signal generator** **Remote control unit**		**[2. VC]** **6. TINT**	**[Method of adjustment without measuring instrument]** **Notes:** • Proceed to the following adjustment after having completed the SUB CONTRAST adjustment. • Set PICTURE MODE (VSM) to “BRIGHT”. **– NTSC 3.58 TINT –** (1) Receive a NTSC 3.58 colour bar signal (full field colour bar 75% white). (2) Press the [COLOUR SYSTEM] key to select the NTSC 3.58 colour system. (3) Select **2. VC** from the SERVICE MENU. (4) Select **6. TINT**. (5) Set the initial setting value of NTSC 3.58. (6) If you cannot get the best tint with the initial setting value, make fine adjustment until you get the best tint. (7) Press the [DISPLAY] key twice to return to the normal screen. **– NTSC 4.43 TINT –** When adjustment is done for NTSC 3.58 TINT, appropriate values are automatically set for NTSC 4.43 TINT.
SUB TINT Ⅱ adjustment	**Signal generator** **Oscilloscope** **Remote control unit**	**TP-47G** **TP-E (⏚)** **[CRT SOCKET PWB]**	**[2. VC]** **6. TINT**	**[Method of adjustment using measuring instrument]** **Notes:** • Proceed to the following adjustment after having completed the SUB CONTRAST adjustment. • Set PICTURE MODE (VSM) to “BRIGHT”. **– NTSC 3.58 TINT –** (1) Receive a NTSC 3.58 colour bar signal (full field colour bar 75% white). (2) Press the [COLOUR SYSTEM] key to select the NTSC 3.58 colour system. (3) Select **2. VC** from the SERVICE MENU. (4) Select **6. TINT**. (5) Set the initial setting value of NTSC 3.58. (6) Connect the oscilloscope between TP-47G and TP-E. (7) Adjust NTSC 3.58 TINT to set the value **(B)** in the figure to **+6V (V_{W-C})**. (8) Press the [DISPLAY] key twice to return to the normal screen. **– NTSC 4.43 TINT –** When adjustment is done for NTSC 3.58 TINT, appropriate values are automatically set for NTSC 4.43 TINT.
				

4.6.5 DEFLECTION CIRCUIT ADJUSTMENTS

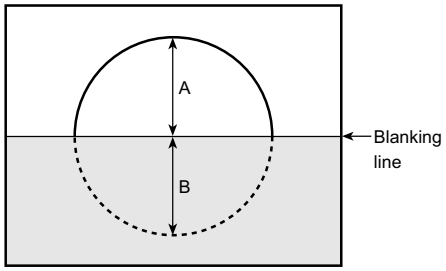
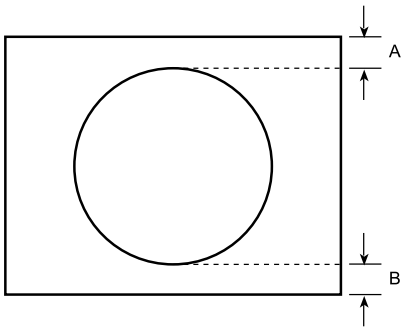
- The setting (adjustment) using the remote control unit is made on the basis of the initial setting values.
- The setting values which adjust the screen to the optimum condition can be different from the initial setting values.
- When performing deflection circuit adjustment, adjusts PAL signal (fv: 50 Hz) in 4:3 mode and 16:9 mode respectively, and adjust the NTSC signal (fv: 60 Hz) similarly.

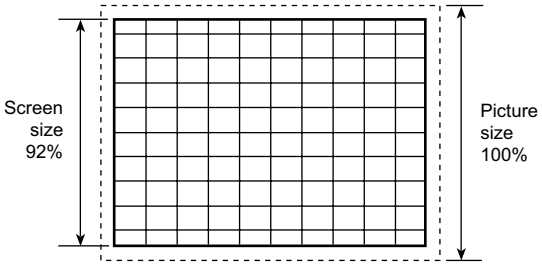
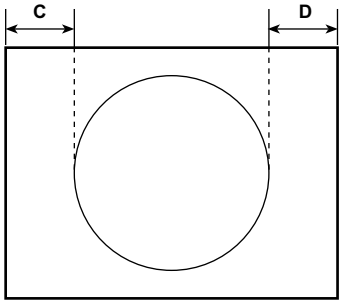
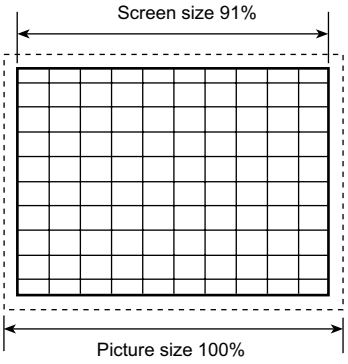
Note:
Proceed to the following adjustment after having completed the adjustments of SUB BRIGHT and SUB PICTURE.

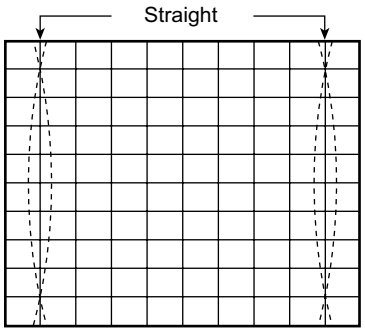
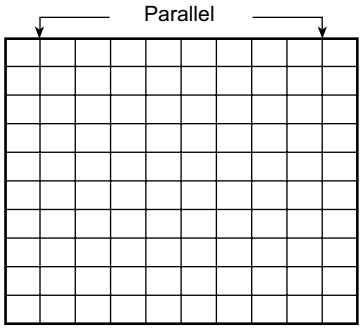
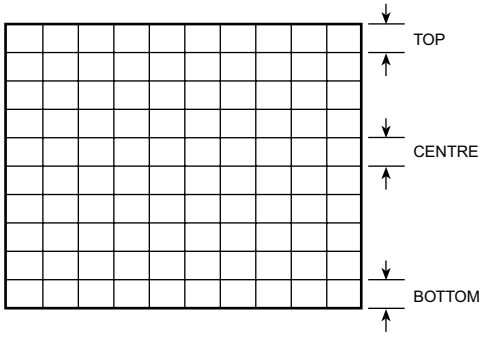
■ SUB MENU 3. DEF

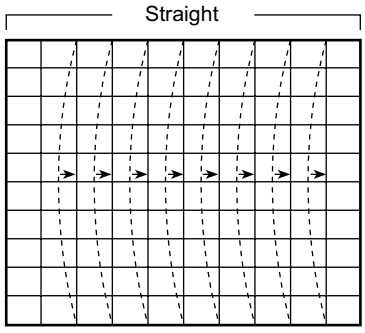
Adjustment item	Variable range	Initial setting value				
		4:3		COMPRESS (16:9)		COMPONENT (50Hz)
		50Hz	60Hz	50Hz	60Hz	
1. VER. SLOPE	–32 — +31	+2	–0	0	–0	—
2. VER. HEIGHT	–32 — +31	0	0	+31	+31	—
3. VER. POSITION	–32 — +31	–3	–1	—	—	—
4. VER. SCURVE	–32 — +31	–10	0	—	—	—
5. HOR. POSITION	–32 — +31	0	+7	—	—	+7
6. HOR. WIDTH	–32 — +31	+11	–1	+11	–1	—
7. EW-PIN	–32 — +31	–12	–1	–13	–12	—
8. EW-TRAPEZ	–32 — +31	–4	–0	–0	–1	—
9. UP CORNER	–32 — +31	–20	–0	–0	–0	—
10. DW CORNER	–32 — +31	–19	–0	–0	–0	—
11. HOR. PARALL	–32 — +31	–0	–0	—	—	—
12. HOR. BOW	–32 — +31	–0	–0	—	—	—
13. V.ZOOM	–32 — +31	0	0	–25	–25	—

■ COMPRESS : OFF (4:3), fv: 50Hz/60Hz mode

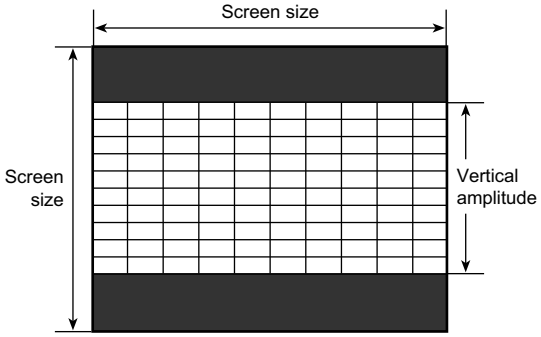
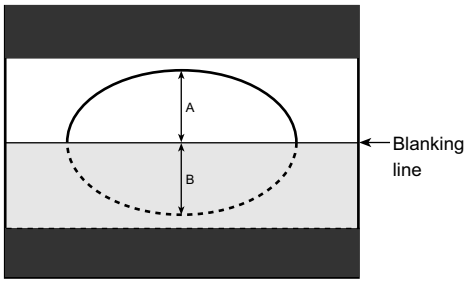
Item	Measuring instrument	Test point	Adjustment part	Description
V. SLOPE adjustment	**Signal generator** **Remote control unit**		**[3. DEF]** **1. VER. SLOPE**	**– PAL V. SLOPE –** (1) Receive a PAL circle pattern signal of vertical frequency 50Hz. (2) Select **3. DEF** from the SERVICE MENU. (3) Select **1. VER. SLOPE**. (4) Set the initial setting value of **1. VER. SLOPE**. (5) Adjust **1. VER. SLOPE** to make "**A = B**". (6) Press the [DISPLAY] key to refurn to SERVICE MENU screen. **– NTSC V. SLOPE –** (1) Receive a NTSC circle pattern signal of vertical frequency 60Hz. (2) Make similar adjustment of NTSC V. SLOPE in the same way as for "PAL V. SLOPE".
				
V. POSITION adjustment	**Signal generator** **Remote control unit**		**[3. DEF]** **3. VER. POSITION**	**– PAL V. POSITION –** (1) Receive a PAL circle pattern signal of vertical frequency 50Hz. (2) Select **3. VER. POSITION**. (3) Set the initial setting value of **3. VER. POSITION**. (4) Adjust **3. VER. POSITION** to make "**A = B**". **– NTSC V. POSITION –** (1) Receive a NTSC circle pattern signal of vertical frequency 60Hz. (2) Make similar adjustment of NTSC V. POSITION in the same way as for "PAL V. POSITION".
				

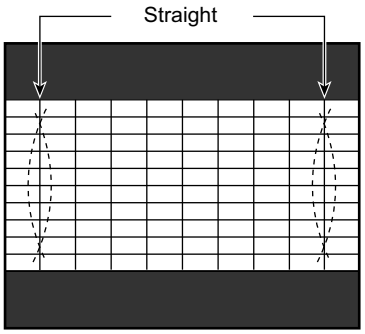
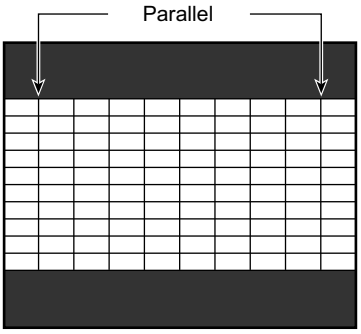
Item	Measuring instrument	Test point	Adjustment part	Description
V. HEIGHT adjustment	**Signal generator** **Remote control unit**		**[3. DEF]** **2. VER. HEIGHT** **13. V. ZOOM**	**– PAL V. HEIGHT –** (1) Receive a PAL cross-hatch signal. (2) Select **2. VER. HEIGHT**. (3) Set the initial setting value of **2. VER. HEIGHT**. (4) Select **13. V. ZOOM**. (5) Set the initial setting value of **13. V. ZOOM**. (6) Adjust **13. V. ZOOM** and make the vertical screen size 92% of the picture size. **– NTSC V. HEIGHT –** (1) Receive a NTSC cross-hatch signal. (2) Make similar adjustment of NTSC V. HEIGHT in the same way as for “PAL V. HEIGHT”.
				
H. POSITION adjustment	**Signal generator** **Remote control unit**		**[3. DEF]** **5. HOR. POSITION**	**– PAL H. POSITION –** (1) Receive a PAL circle pattern signal. (2) Select **5. HOR. POSITION**. (3) Set the initial setting value of **5. HOR. POSITION**. (4) Adjust **5. HOR. POSITION** to make “**C = D**”. **– NTSC H. POSITION –** (1) Receive a NTSC circle pattern signal. (2) Make similar adjustment of NTSC H. POSITION in the same way as for “PAL H. POSITION”.
				
H. WIDTH adjustment	**Signal generator** **Remote control unit**		**[3.DEF]** **6. HOR. WIDTH**	**– PAL H. WIDTH –** (1) Receive a PAL cross-hatch signal. (2) Select **6. HOR. WIDTH**. (3) Set the initial setting value of **6. HOR. WIDTH**. (4) Adjust **6. HOR. WIDTH** and make the horizontal screen size 91% of the picture size. **– NTSC H. WIDTH –** (1) Receive a NTSC cross-hatch signal. (2) Make similar adjustment of NTSC H. WIDTH in the same way as for “PAL H. WIDTH”.
				

Item	Measuring instrument	Test point	Adjustment part	Description
SIDE PIN adjustment	**Signal generator** **Remote control unit**		**[3. DEF]** **7. EW-PIN**	**– PAL SIDE PIN –** (1) Receive a PAL cross-hatch signal. (2) Select **7. EW-PIN**. (3) Set the initial setting value of **7. EW-PIN**. (4) Adjust **7. EW-PIN** so that the first vertical lines at the left and right edges on the screen are straight. **– NTSC SIDE PIN –** (1) Receive a NTSC cross-hatch signal. (2) Make similar adjustment of NTSC SIDE PIN in the same way as for “PAL SIDE PIN”.
				
TRAPEZIUM adjustment	**Signal generator** **Remote control unit**		**[3.DEF]** **8. EW-TRAPEZ**	**– PAL TRAPEZIUM –** (1) Receive a PAL cross-hatch signal. (2) Select **8. EW-TRAPEZ**. (3) Set the initial setting value of **8. EW-TRAPEZ**. (4) Adjust **8. EW-TRAPEZ** so that the vertical lines at the left and right edges on the screen are in parallel. **– NTSC TRAPEZIUM –** (1) Receive a NTSC cross-hatch signal. (2) Make similar adjustment of NTSC TRAPEZIUM in the same way as for “PAL TRAPEZIUM”.
				
V.S-CURVE adjustment	**Signal generator** **Remote control unit**		**[3. DEF]** **4. VER. SCURVE**	**– PAL V. S-CURVE –** (1) Receive a PAL cross-hatch signal. (2) Select **4. VER. SCURVE**. (3) Set the initial setting value of **4. VER. SCURVE**. (4) Adjust **4. VER. SCURVE** so that the spaces of each line on TOP, CENTRE and BOTTOM become uniform. **– NTSC V. S-CURVE –** (1) Receive a NTSC cross-hatch signal. (2) Make similar adjustment of NTSC V. S-CURVE in the same way as for “PAL V. S-CURVE”.
				

Item	Measuring instrument	Test point	Adjustment part	Description
CORNER adjustment	**Signal generator** **Remote control unit**		**[3. DEF]** **9. UP CORNER** **10. DW CORNER**	**– PAL CORNER –** (1) Receive a PAL cross-hatch signal. (2) Select **9. UP CORNER**. (3) Set the initial setting value of **9. UP CORNER**. (4) Select **10. DW CORNER**. (5) Set the initial setting value of **10. DW CORNER**. (6) Adjust **9. UP CORNER** and **10. DW CORNER** so that the vertical lines at the four corners on the screen are straight. **– NTSC CORNER –** (1) Receive a NTSC cross-hatch signal. (2) Make similar adjustment of NTSC CORNER in the same way as for “PAL CORNER”.
H. PARALLEL adjustment	**Signal generator** **Remote control unit**		**[3.DEF]** **11. HOR. PARALL**	**– PAL H. PARALLEL –** (1) Receive a PAL cross-hatch signal. (2) Select **11. HOR. PARALL**. (3) Set the initial setting value of **11. HOR. PARALL**. (4) Adjust **11. HOR. PARALL** to optimize the parallelogram distortion. **– NTSC H. PARALLEL –** (1) Receive a NTSC cross-hatch signal. (2) Make similar adjustment of NTSC H. PARALLEL in the same way as for “PAL H. PARALLEL”.
H. BOW adjustment	**Signal generator** **Remote control unit**		**[3.DEF]** **12. HOR. BOW**	**– PAL H. BOW –** (1) Receive a PAL cross-hatch signal. (2) Select **12. HOR. BOW**. (3) Set the initial setting value of **12. HOR. BOW**. (4) Adjust **12. HOR. BOW** to optimize the horizontal arc distortion. **– NTSC H. BOW –** (1) Receive a NTSC cross-hatch signal. (2) Make similar adjustment of NTSC H. BOW in the same way as for “PAL H. BOW”. (3) Press the [DISPLAY] key twice to return to the normal screen.
				

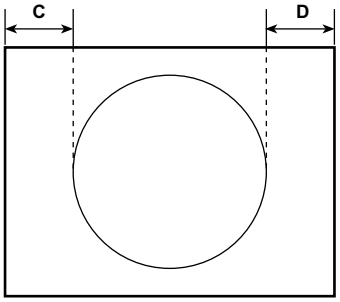
■ **COMPRESS : ON (16:9), fv: 50Hz/60Hz mode**

Item	Measuring instrument	Test point	Adjustment part	Description
V. HEIGHT adjustment	**Signal generator** **Remote control unit**		**[3.DEF]** **13. V. ZOOM** **2. VER. HEIGHT**	**– PAL V. HEIGHT –** (1) Receive a PAL cross-hatch signal of vertical frequency 50Hz. (2) Select COMPRESS from the MENU and set COMPRESS to ON. (3) Select **3. DEF** from the SERVICE MENU. (4) Set the initial setting value of **13. V. ZOOM**. (5) Select **2. VER. HEIGHT**. (6) Set the initial setting value of **2. VER. HEIGHT**. (7) Adjust **2. VER. HEIGHT** to set the vertical amplitude of the image to 305mm. **– NTSC V. HEIGHT –** (1) Receive a NTSC cross-hatch signal of vertical frequency 60Hz. (2) Make similar adjustment of NTSC V. HEIGHT in the same way as for “PAL V. HEIGHT”.
				
V. SLOPE adjustment	**Signal generator** **Remote control unit**		**[3.DEF]** **1. VER. SLOPE**	**– PAL V. SLOPE –** (1) Receive a PAL circle pattern signal of vertical frequency 50Hz. (2) Select **3. DEF** from the SERVICE MENU. (3) Select **1. VER. SLOPE**. (4) Set the initial setting value of **1. VER. SLOPE**. (5) Adjust **1. VER. SLOPE** to make “**A = B**”. (6) Press the [DISPLAY] key to return to SERVICE MENU screen. **– NTSC V. SLOPE –** (1) Receive a NTSC circle pattern signal of vertical frequency 60Hz. (2) Make similar adjustment of NTSC V. SLOPE in the same way as for “PAL V. SLOPE”.
				

Item	Measuring instrument	Test point	Adjustment part	Description
SIDE PIN adjustment	**Signal generator** **Remote control unit**		**[3. DEF]** **7. EW-PIN**	**– PAL SIDE PIN –** (1) Receive a PAL cross-hatch signal. (2) Select **7. EW-PIN**. (3) Set the initial setting value of **7. EW-PIN**. (4) Adjust **7. EW-PIN** so that the first vertical lines at the left and right edges on the screen are straight. **– NTSC SIDE PIN –** (1) Receive a NTSC cross-hatch signal. (2) Make similar adjustment of NTSC SIDE PIN in the same way as for “PAL SIDE PIN”.
				
TRAPEZIUM adjustment	**Signal generator** **Remote control unit**		**[3. DEF]** **8. EW-TRAPEZ**	**– PAL TRAPEZIUM –** (1) Receive a PAL cross-hatch signal. (2) Select **8. EW-TRAPEZ**. (3) Set the initial setting value of **8. EW-TRAPEZ**. (4) Adjust **8. EW-TRAPEZ** so that the vertical lines at the left and right edges on the screen are in parallel. **– NTSC TRAPEZIUM –** (1) Receive a NTSC cross-hatch signal. (2) Make similar adjustment of NTSC TRAPEZIUM in the same way as for “PAL TRAPEZIUM”.
				
CORNER adjustment	**Signal generator** **Remote control unit**		**[3. DEF]** **9. UP CORNER** **10. DW CORNER**	**– PAL CORNER –** (1) Receive a PAL cross-hatch signal. (2) Select **9. UP CORNER**. (3) Set the initial setting value of **9. UP CORNER**. (4) Select **10. DW CORNER**. (5) Set the initial setting value of **10. DW CORNER**. (6) Adjust **9. UP CORNER** and **10. DW CORNER** so that the vertical lines at the four corners on the screen are straight. **– NTSC CORNER –** (1) Receive a NTSC cross-hatch signal. (2) Make similar adjustment of NTSC CORNER in the same way as for “PAL CORNER”. (3) Press the [DISPLAY] key twice to return to the normal screen.

■ **VIDEO - 2 SET : COMPONENT, fv: 50/60Hz mode**

Item	Measuring instrument	Test point	Adjustment part	Description
H. POSITION adjustment	**Signal generator** **Remote control unit**		**[3. DEF]** **5. HOR. POSITION**	(1) Receive a PAL circle pattern signal to VIDEO-2 terminal. (2) Select VIDEO-2 SET from the MENU and set VIDEO-2 SET to COMPONENT. (3) Select **3. DEF** from the SERVICE MENU. (4) Select **5. HOR. POSITION**. (5) Set the initial setting value of **5. HOR. POSITION**. (6) Adjust **5. HOR POSITION** to make "**C=D**". (7) Press the [DISPLAY] key twice to return to the normal screen.



4.6.6 VSM PRESET SETTING

Item	Measuring instrument	Test point	Adjustment part	Description
VSM PRESET setting	**Remote control unit**		**[4. VSM PRESET]** **TINT** **COLOUR** **BRIGHT** **PICTURE** **DETAIL**	(1) Select **4. VSM PRESET** from the SERVICE MENU. (2) Select BRIGHT with the [PICTURE MODE] key. (3) Adjust to reset the set values of **TINT** – **DETAIL** to the values shown in the table. (4) Respectively select the VSM PRESET mode for SOFT and STANDARD, and make similar adjustment as in 3 above. (5) Press the [DISPLAY] key twice to return to the normal screen.

SUB MENU 4. VSM PRESET

```
BRIGHT
TINT        **
COLOUR      **
BRIGHT      **
PICTURE     **
DETAIL      **

MENU ▲▼: SELECT
MENU –/+: OPERATE   DISPLAY : EXIT
```

[Setting Values for SUB 4. VSM PRESET]

VSM setting item \ VSM preset mode	BRIGHT	STANDARD	SOFT
TINT	+15	←	←
COLOUR	+15	←	←
BRIGHT	+15	←	←
PICTURE	+30	+15	+11
DETAIL	+15	←	+7

4.6.7 PRESET SETTING

• Do not adjust **5. PRESET** in the SERVICE MENU as it requires no adjustment.

[SUB MENU 5. PRESET]

Setting item	Variable range	Initial setting value
1. PSNS	0/1	0
2. ACL	0/1	0
3. MUS	0/1	0
4. MAT	0/1	0
5. FCO	0/1	0
6. BPS	0/1	0
7. IFLH	0/1	0
8. VID	0/1	0
9. STM	0/1	0
10. AFCW	0/1	0
11. VSW	0/1	0
12. FFI	0/1	0
13. AGC	00/01/10/11	01
14. CL	50 – 95	50
15. AKB	0/1	0
16. HBL	0/1	0
17. BKS	0/1	1
18. READ STATUS	–	–
19. VNR	00 – 63	10
20. PEAK	0 – 3	3
21. IVG	0/1	1
22. WPL	0 – F	5
23. SOFT CLIPPER	0 – 3	3
24. IF PLL OFFSET	0 – 63	32
25. OVERSHOOT	0 – 3	3
26. HCO	0/1	0
27. HP2	0/1	0
28. AI VOLUME ADN	00/01/10/11	10
29. SUB BASS	-6 – +6	0
30. SUB TREBLE	-6 – +6	-4
31. SUB TRIMMER	0 – 6	0
32. CCCLOOP	0 – 4	0
33. OSD BRIGHTNESS	0 – 15	0

SECTION 5
TROUBLESHOOTING

5.1 SELF CHECK FUNCTIONS

5.1.1 OUTLINE

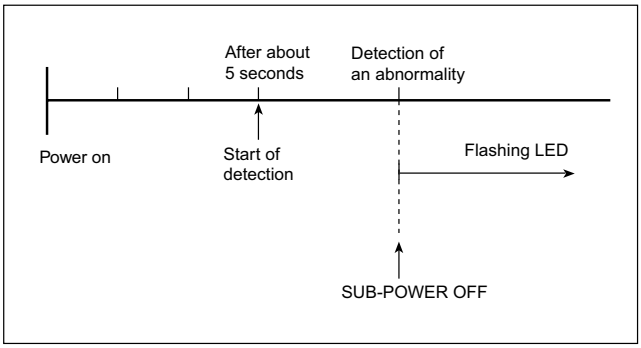
This model has self check functions given below.When an abnormality has been detected, the SUB POWER is turned off and POWER LED flash to inform of the failure. An abnormality is detected by the signal input state of the control line connected to the microcomputer.

5.1.2 SELF CHECK ITEMS

Check item	Details of detection	Method of detection	State of abnormality
B1 over-current protection	An over-current on the low B1 line is detected.	The main microcomputer detects the possible abnormality at 30-msec. intervals and judges the results in every 16 time. Of the 16 times, if NG is detected more than 9 times, it is judged that there is an abnormality.	When an abnormality has been detected, the SUB-POWER is turned off. While the SUB-POWER is being turned off, the POWER key on the remote control unit is not operational until the power cord is taken out and put in again.
CRT neck protection	Operation of CRT neck protection circuit	DITTO	DITTO

5.1.3 SELF CHECK INDICATING FUNCTION

When an abnormality has been detected at about 5 seconds after the power is turned on, the SUB POWER is turned off immediately and the LED flash.



[INDICATION BY THE POWER LED]

Item	LED flashing intervals	Priority of detection
[1] B1 over-current protection	At 0.2-second intervals	1
[2] CRT neck protection	At 1-second intervals	2

Note: In case of [1] + [2], the item [1] is indicated.

AV-29WX11/G, AV-29WX11/S, AV-29WX11/U, AV-2932W1/E
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 : Colour bar signal
(2) Setting positions of each knob/button and variable resistor : Original setting position when shipped
(3) Internal resistance of tester : DC 20kΩ/V
(4) Oscilloscope sweeping time : H ⇒ 20μs/div
: V ⇒ 5ms/div
: Others ⇒ 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 PW board : R1209 → R209

4. INDICATIONS ON THE CIRCUIT DIAGRAM

(1) Resistors

● Resistance value

No unit	: [Ω]
k	: [kΩ]
M	: [MΩ]

● Rated allowable power

No indication	: 1/16 [W]
Others	: As specified

● Type

No indication	: Carbon resistor
OMR	: Oxide metal film resistor
MFR	: Metal film resistor
MPR	: Metal plate resistor
UNFR	: Uninflammable 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	: [μF]

● Withstand voltage

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

∗Electrolytic Capacitors
47/50[Example] : Capacitance value [μF]/withstand voltage[V]

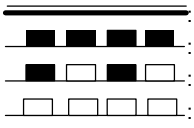
● Type

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	: [μH]
Others	: As specified

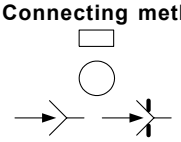
(4) Power Supply



∗Respective voltage values are indicated

(5) Test point

(6) Connecting method



(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 : (⊥) 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 the LIVE side GND and ISOLATED(NEUTRAL) side GND at the same time with a measuring apparatus (oscilloscope, etc.). 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.

NOTE

◆ Due improvement in performance, some part numbers show in the circuit diagram may not agree with those indicated in the part list.
When ordering parts, please use the numbers that appear in the Parts List.

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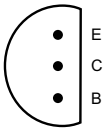
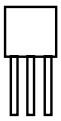
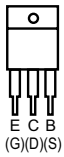
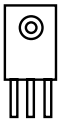
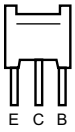
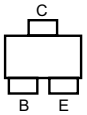
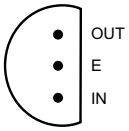
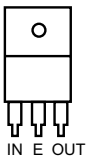
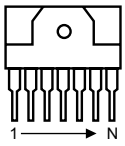
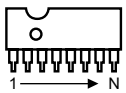
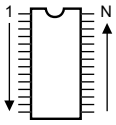
SEMICONDUCTOR SHAPES

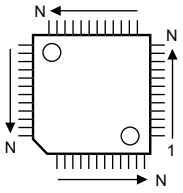
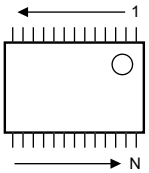
TRANSISTOR

BOTTOM VIEW	FRONT VIEW				TOP VIEW
					CHIP TR 

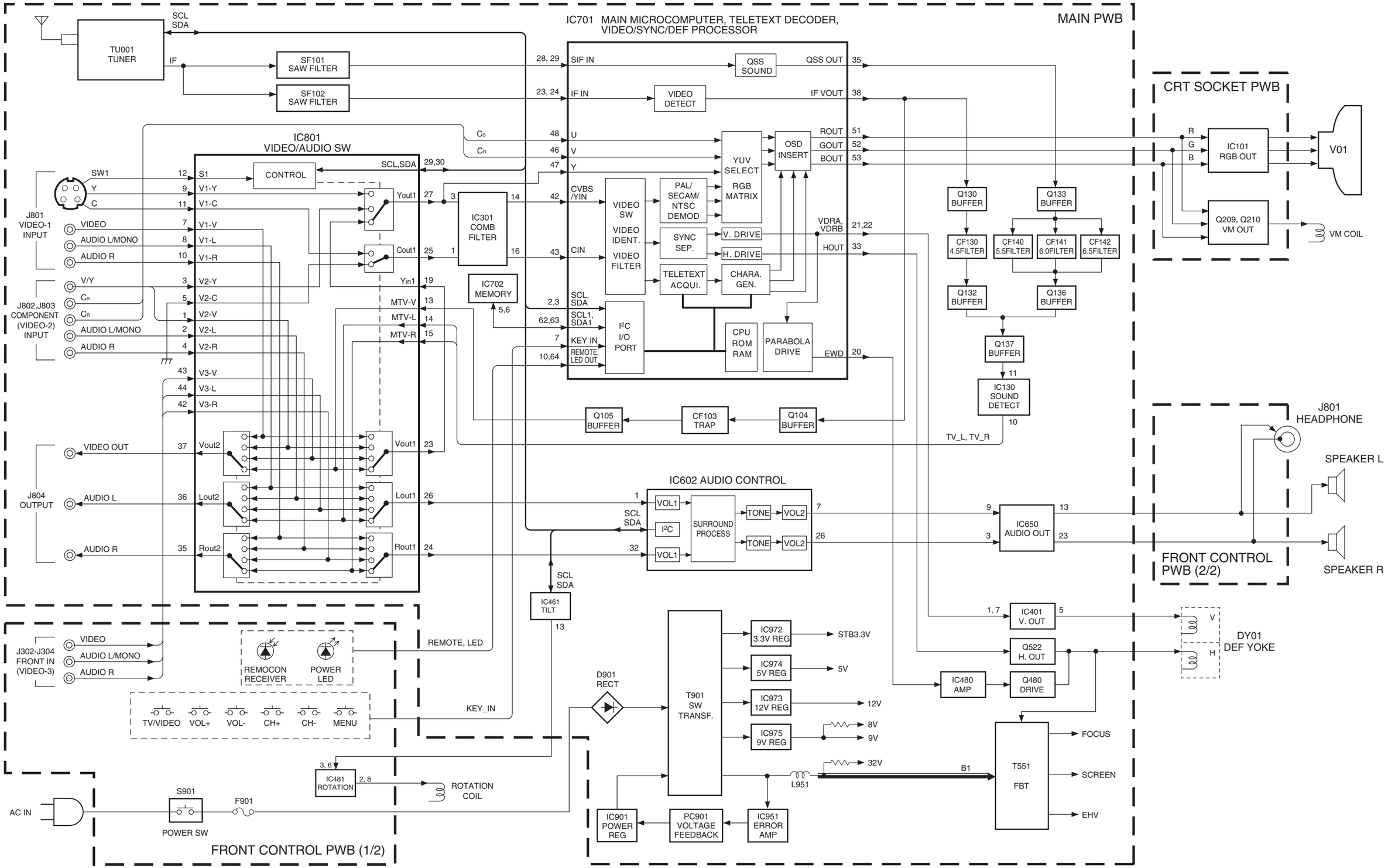
IC

BOTTOM VIEW	FRONT VIEW			TOP VIEW
				

CHIP IC

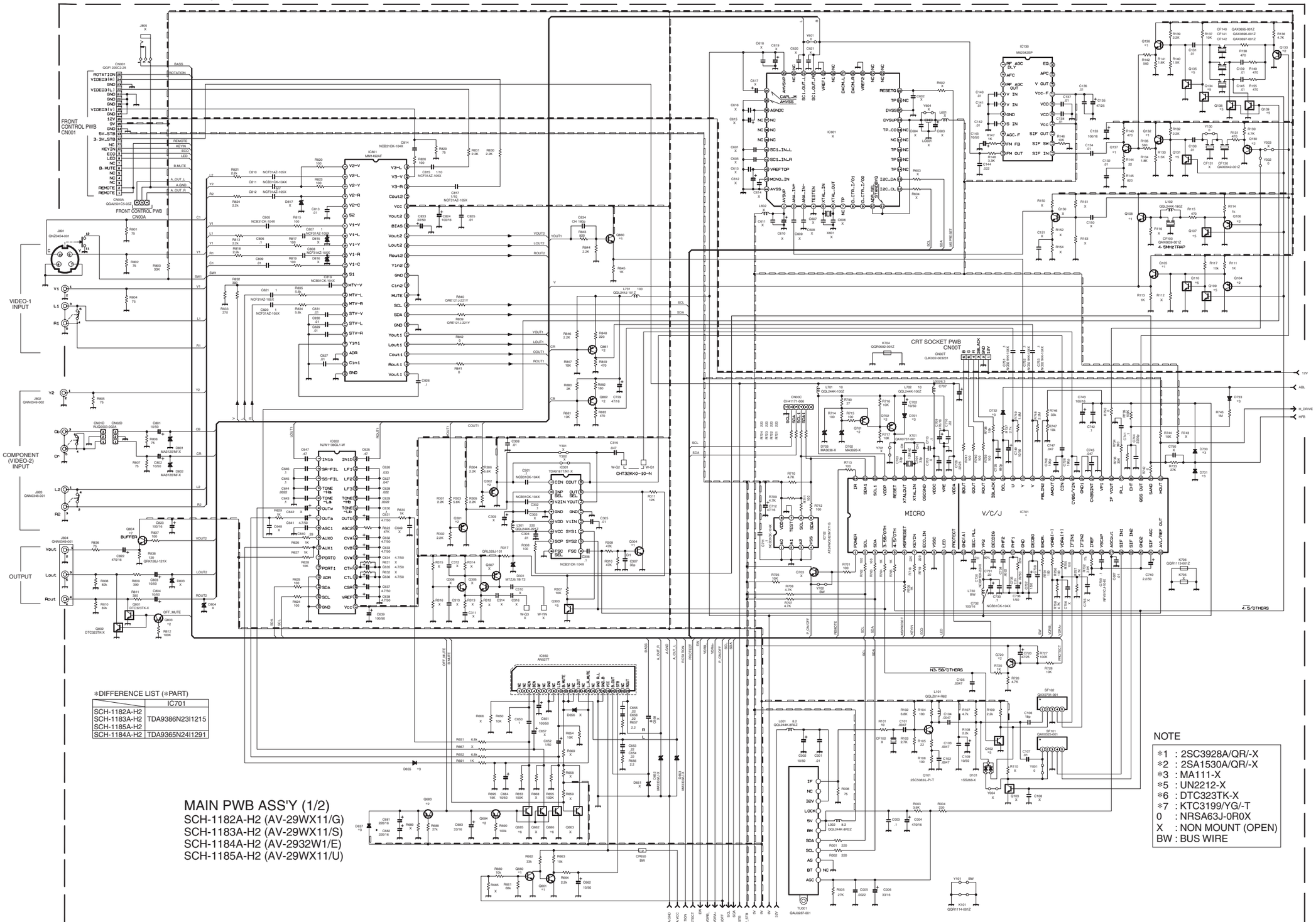
TOP VIEW		
		

BLOCK DIAGRAM



CIRCUIT DIAGRAMS

MAIN PWB CIRCUIT DIAGRAM (1/2)



*DIFFERENCE LIST (*PART)

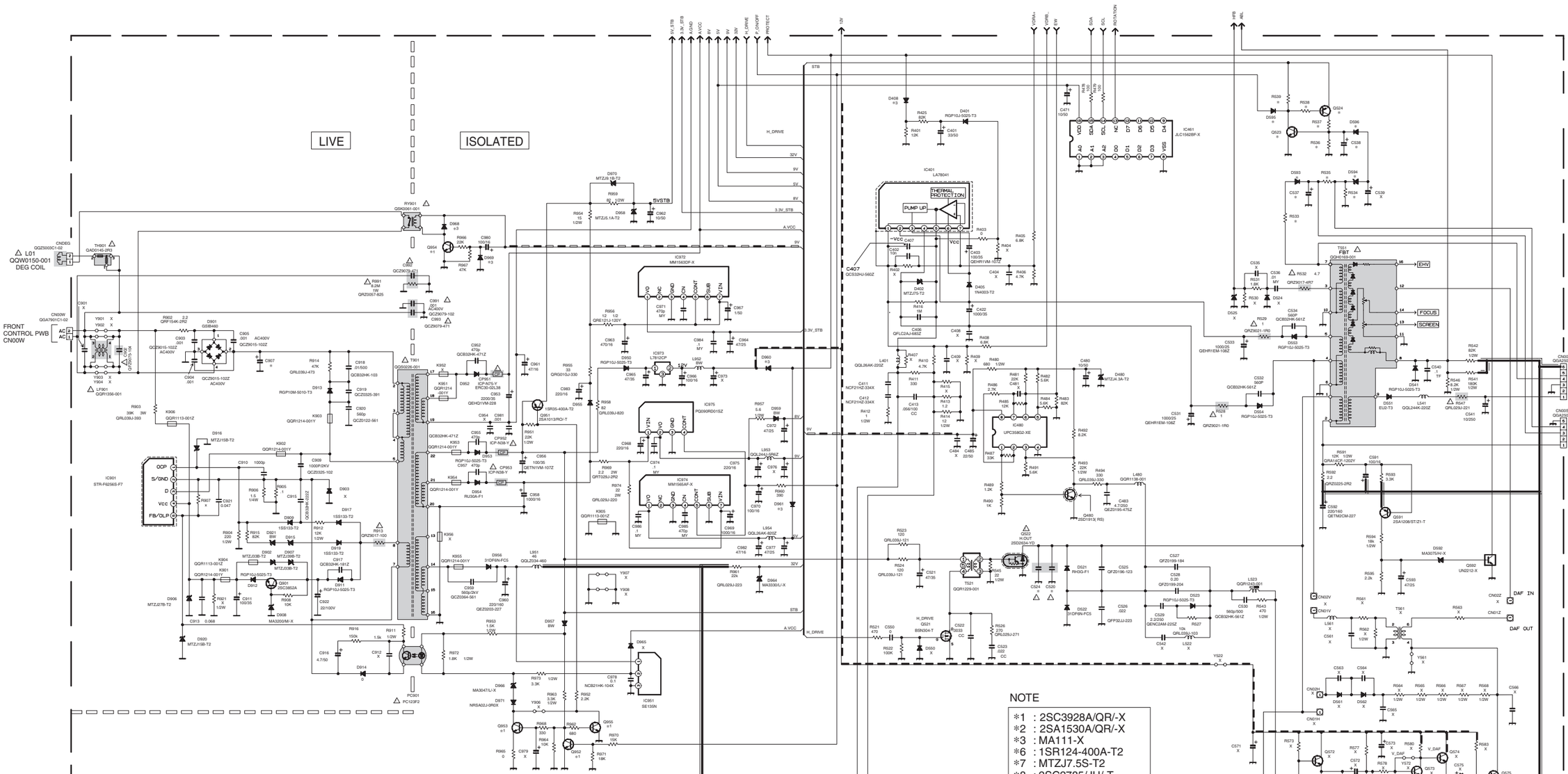
	IC701
SCH-1182A-H2	TDA9386N23I1215
SCH-1183A-H2	
SCH-1185A-H2	
SCH-1184A-H2	TDA9365N24I1291

MAIN PWB ASS'Y (1/2)

SCH-1182A-H2 (AV-29WX11/G)
SCH-1183A-H2 (AV-29WX11/S)
SCH-1184A-H2 (AV-2932W1/E)
SCH-1185A-H2 (AV-29WX11/U)

NOTES) 1. Please refer to page 2-17 for voltages of this circuit diagram.
2. Please refer to page 2-18 for waveforms of this circuit diagram.

MAIN PWB CIRCUIT DIAGRAM (2/2)



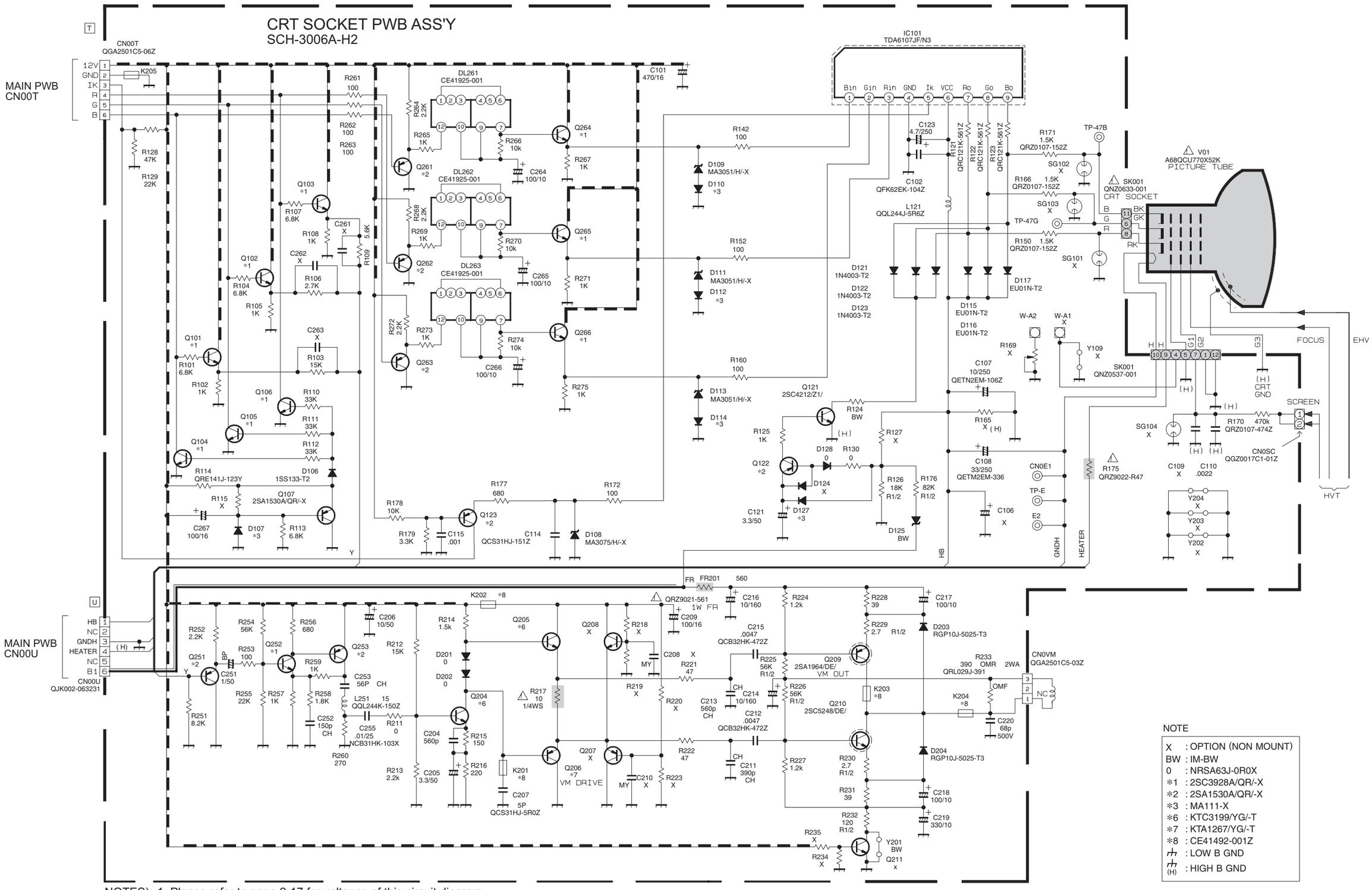
MAIN PWB ASS'Y (2/2)
SCH-1182A-H2 (AV-29WX11/G)
SCH-1183A-H2 (AV-29WX11/S)
SCH-1184A-H2 (AV-2932W1/E)
SCH-1185A-H2 (AV-29WX11/U)

∗DIFFERENCE LIST (∗PARTS)

	C907	C520	C524	R533	R534	R535	R536	R537	R538	R539	C537	C538	D593	D594	D595	D596	Q523	Q524
SCH-1182A-H2 SCH-1183A-H2	QEZ0649-337	QFZ0196-282	QFZ0196-282	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
SCH-1184A-H2	QEZ0633-337																	
SCH-1185A-H2	QEZ0649-337	X	QFZ0196-562	QRZ9017-4R7	NRSA02F-362X	NRSA02F-6341X	10K	18K	120K	27K	47/35	4.7/50	∗6	∗7	∗3	∗3	∗8	∗2

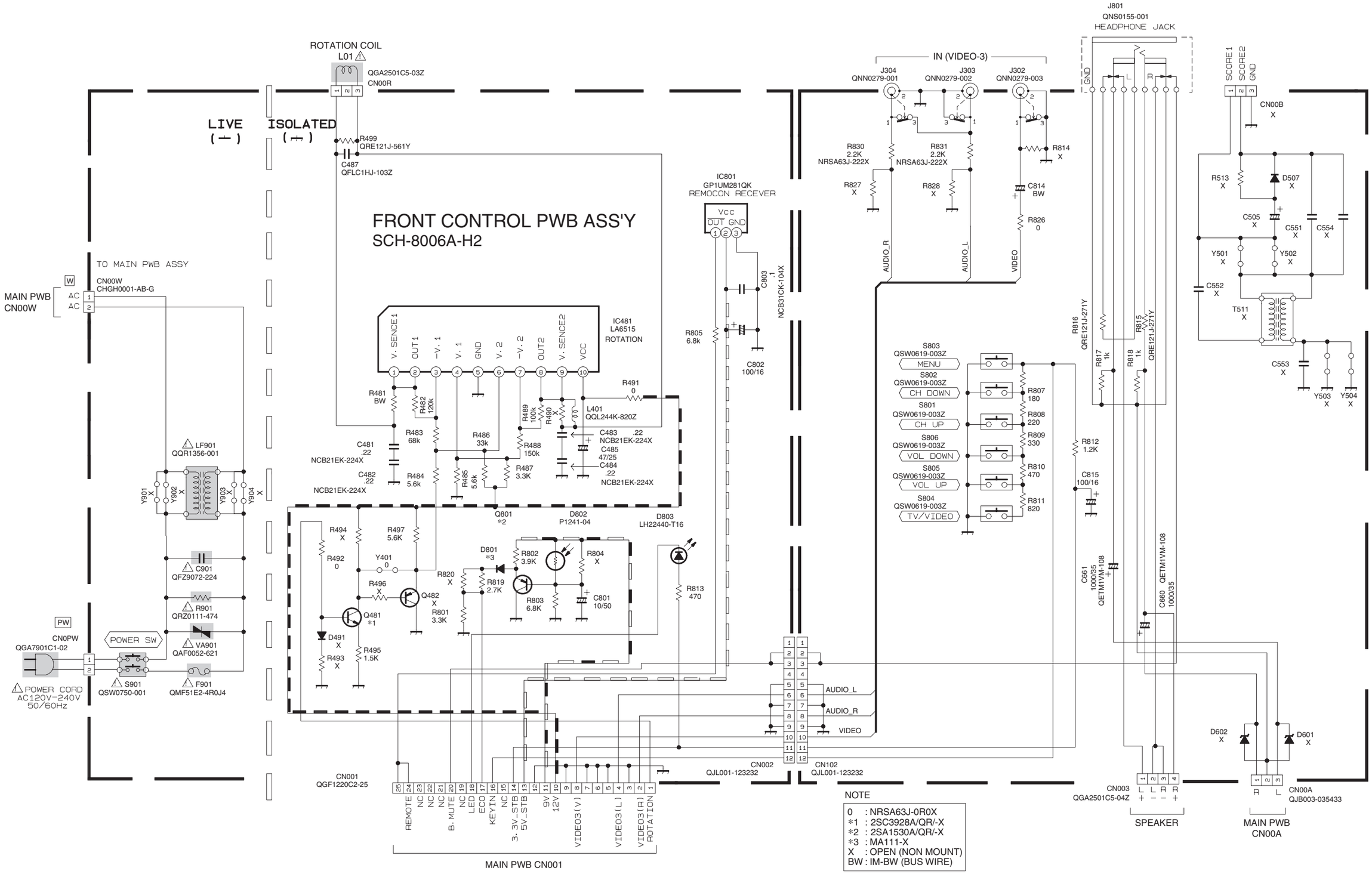
NOTES) 1. Please refer to page 2-17 for voltages of this circuit diagram.
2. Please refer to page 2-18 for waveforms of this circuit diagram.

CRT SOCKET PWB CIRCUIT DIAGRAM



NOTES) 1. Please refer to page 2-17 for voltages of this circuit diagram.
2. Please refer to page 2-18 for waveforms of this circuit diagram.

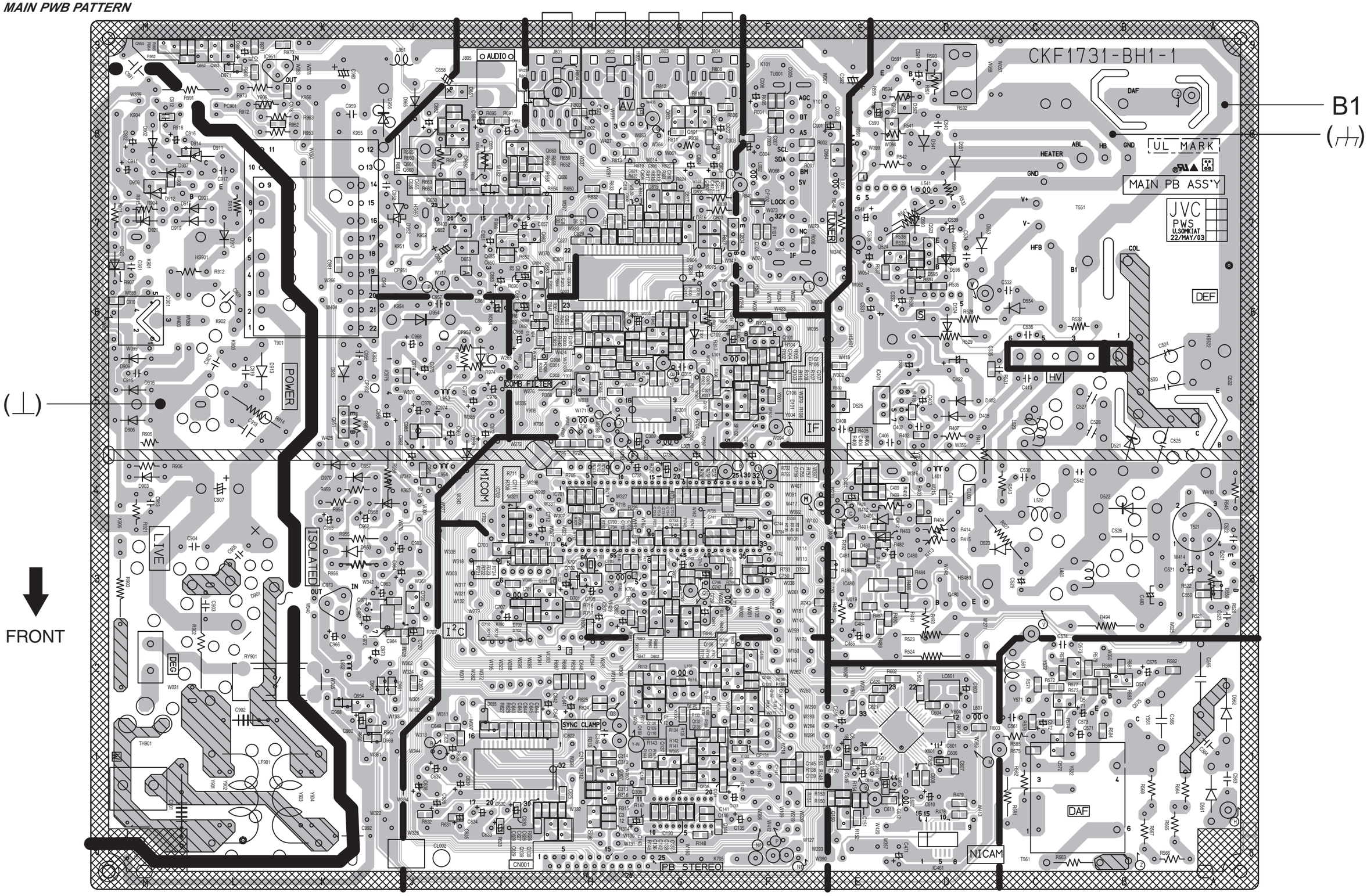
FRONT CONTROL PWB CIRCUIT DIAGRAM



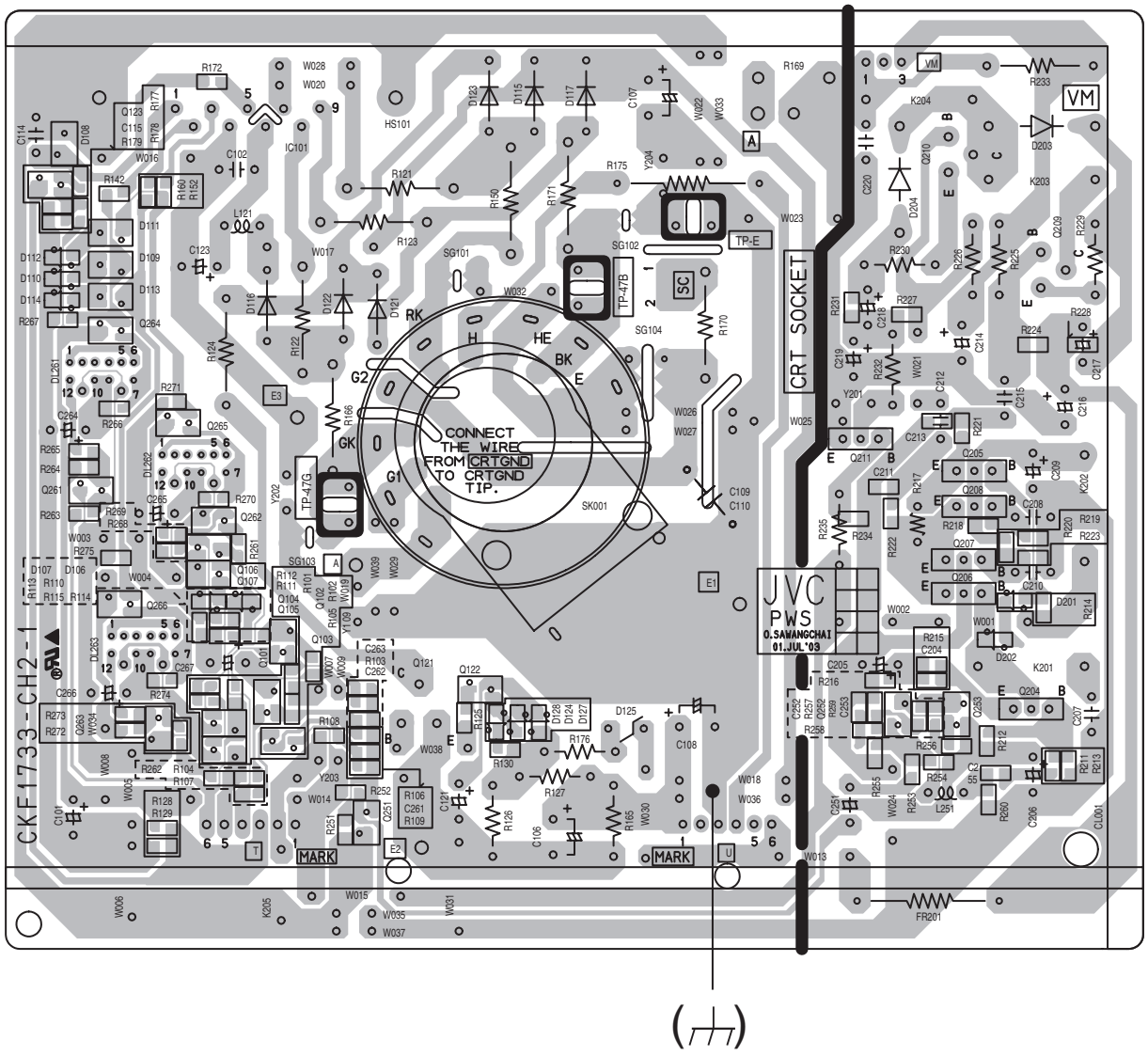
NOTE) Please refer to page 2-17 for voltages of this circuit diagram.

PATTERN DIAGRAM

MAIN PWB PATTERN

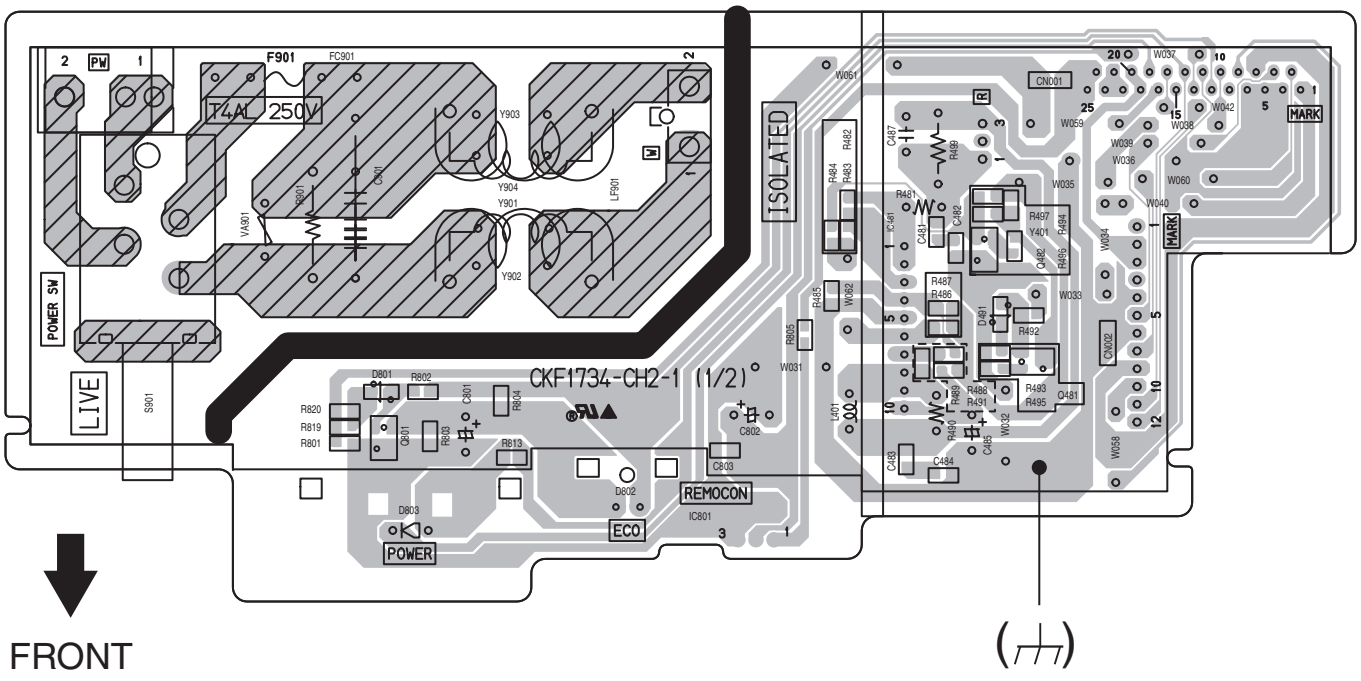


CRT SOCKET PWB PATTERN

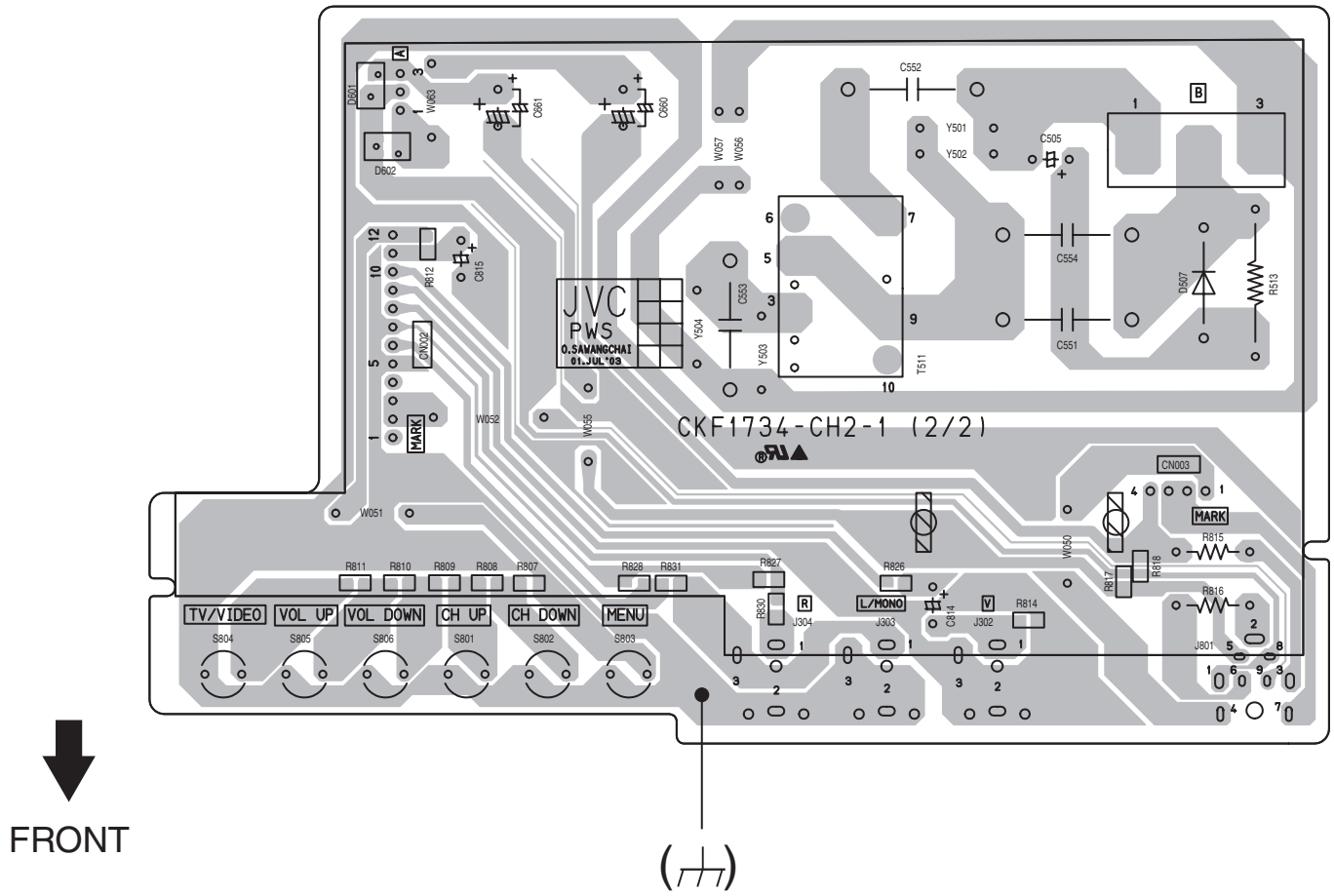


FRONT CONTROL PWB PATTERNS

-FRONT CONTROL (1/2)-



-FRONT CONTROL (2/2)-



VOLTAGE CHART

Note : • Mark * expresses the portion into which a voltage value is changed.

<MAIN PWB>

PIN NO.	VOLTAGE(V)
IC1130	
1	0.5
2	0.3
3	0.3
4	1.4
5	1.4
6	0.0
7	2.4
8	4.4
9	1.9
10	2.3
11	2.2
12	0.0
13	2.3
14	4.9
15	4.3
16	3.6
17	5.0
18	3.5
19	3.4
20	2.4
IC1301	
1	0.9
2	0.0
3	1.6
4	0.0
5	4.9
6	5.0
7	0.4
8	0.0
9	0.6
10	3.0
11	0.0
12	1.5
13	0.0
14	1.7
15	0.0
16	1.5
IC1461	
1	0.0
2	0.0
3	0.0
4	0.0
5	0.0
6	0.0
7	0.0
8	0.0
9	0.0
10	0.0
11	0.0
12	0.0
13	2.2
14	3.0
15	3.0
16	5.0
IC1401	
1	0.5
2	13.5
3	-10.9
4	-13.2
5	0.1
6	13.4
7	0.5
IC1480	
1	1.9
2	3.2
3	3.2
4	0.0
5	2.1
6	2.1
7	3.3
8	8.8
IC1602	
1	4.4
2	4.4
3	4.4
4	4.4
5	4.4
6	4.4
7	4.4
8	1.5
9	4.9
10	0.0
11	0.3
12	0.3
13	0.0
14	3.0
15	3.0
16	0.0
17	8.8
18	4.4
19	0.5
20	3.7
21	3.7
22	0.7
23	2.6
24	2.6
25	0.1
26	4.4
27	4.4
28	4.4
29	5.2
30	5.2
31	4.4
32	4.4
IC1650	
1	0.0
2	0.0
3	0.0
4	0.0
5	25.6
6	0.0
7	0.0
8	0.0
9	0.0
10	0.0
11	0.0
12	0.0
13	12.8
14	0.0
15	0.9
16	0.0
17	0.0
18	0.0
19	26.8
20	0.0
21	16.9
22	0.0
23	12.8
IC1701	
1	3.3
2	2.9
3	3.0
4	3.3
5	3.3
6	5.1
7	3.3
8	2.7
9	0.0
10	0.0
11	0.0
12	0.0
13	2.3
14	8.0
15	5.0
16	2.9
17	3.9
18	0.0
19	4.0
20	2.1
21	1.3
22	1.4
23	1.8
24	1.8
25	3.8
26	3.8
27	3.4
28	1.8
29	1.8
30	0.0
31	2.1
32	2.4
33	1.5
34	0.5
35	2.5
36	2.0
37	2.3
38	3.1
39	8.1
40	3.3
41	0.0
42	3.7
43	1.5
44	3.4
45	1.8
46	2.5
47	2.5
48	2.5
49	2.2
50	4.4
51	2.5
52	2.4
53	2.2
54	3.3
55	0.0
56	3.3
57	0.0
58	1.6
59	1.6
60	0.0
61	3.3
62	4.5
63	4.7
64	5.1
IC1702	
1	0.0
2	0.0
3	0.0
4	0.0
5	4.6
6	4.5
7	0.0
8	5.1
IC1801	
1	4.8
2	4.2
3	4.8
4	4.2
5	4.7
6	0.0
7	5.2
8	4.2
9	4.6
10	4.2
11	4.7
12	6.9
13	5.1
14	4.2
15	4.2
16	4.7
17	4.2
18	4.2
19	5.5
20	0.0
21	4.7
22	0.0
23	4.8
24	4.1
25	3.3
26	4.1
27	3.9
28	0.0
29	3.1
30	3.0
31	0.0
32	4.7
33	0.0
34	4.4
35	4.1
36	4.0
37	4.8
38	4.2
39	3.4
40	8.7
41	3.4
42	4.2
43	4.8
44	4.2
IC1901	
1	3.0
2	0.0
3	297.3
4	19.4
5	0.6
IC1951	
1	135.1
2	24.1
3	0.0
IC1972	
1	3.3
2	0.0
3	0.0
4	1.9
5	7.6
6	0.0
7	7.6
IC1973	
1	24.9
2	11.8
3	0.0
IC1974	
1	5.0
2	0.0
3	0.0
4	3.4
5	3.2
6	0.0
7	7.3
IC1975	
1	10.2
2	8.9
3	0.0
4	3.2
TU1001	
1(IF)	0.0
2(NC)	0.0
3(32V)	34.2
4(LOCK)	0.0
5(5V)	4.9
6(BM)	4.9
7(SDA)	3.0
8(SCL)	3.0
9(AS)	0.0
10(BT)	3.5
11(AGC)	3.5
Q1101	
E	3.3
C	0.0
B	3.4
Q1102	
E	0.0
C	0.0
B	3.0
Q1103	
E	0.0
C	2.8
B	0.0
Q1104	
E	3.7
C	0.0
B	3.1
Q1105	
E	3.1
C	8.8
B	3.7
Q1106	
E	0.0
C	0.0
B	3.1
Q1107	
E	0.0
C	0.0
B	2.9
Q1108	
E	3.1
C	8.8
B	0.0
Q1109	
E	2.8
C	0.0
B	0.0
Q1110	
E	0.0
C	3.7
B	0.0
Q1130	
E	0.0
C	0.0
B	3.0
Q1131	
E	0.0
C	0.0
B	2.8
Q1132	
E	2.9
C	8.8
B	3.6
Q1133	
E	3.1
C	0.0
B	2.5
Q1134	
E	0.0
C	0.0
B	2.9
Q1135	
E	0.0
C	3.5
B	0.0
Q1136	
E	2.9
C	8.8
B	3.5
Q1137	
E	2.3
C	7.5
B	2.9
Q1138	
E	0.0
C	0.0
B	4.5
Q1139	
E	0.0
C	0.0
B	4.5
Q1301	
E	2.6
C	0.0
B	2.0
Q1302	
E	2.2
C	0.0
B	1.7
Q1303	
E	0.0
C	0.0
B	3.0
Q1304	
E	0.0
C	0.0
B	0.6
Q1480	
E	0.6
C	12.9
B	0.0
Q1521	
S	0.0
G	24.4
D	1.5
Q1522	
E	0.0
C	131
B	-0.1
Q1591	
E	135.0
C	0.0
B	134.7
Q1592	
E	0.0
C	5.1
B	0.0
Q1660	
E	0.0
C	18.7
B	0.0
Q1661	
E	0.0
C	0.0
B	0.6
Q1683	
E	8.8
C	0.2
B	8.8
Q1684	
E	0.2
C	-0.2
B	0.0
Q1685	
E	0.0
C	0.0
B	-0.2
Q1686	
E	0.0
C	0.0
B	-0.3
Q1701	
E	3.0
C	3.0
B	2.3
Q1702	
E	3.3
C	0.0
B	2.9
Q1720	
E	5.1
C	0.0
B	5.1
Q1801	
E	0.0
C	0.0
B	-0.2
Q1802	
E	0.0
C	0.0
B	-0.2
Q1803	
E	0.2
C	-0.2
B	0.0
Q1804	
E	4.1
C	8.8
B	4.8
Q1860	
E	2.3
C	8.7
B	2.8

<CRT SOCKET PWB>

PIN NO.	VOLTAGE(V)
Q1861	
E	7.3
C	1.7
B	6.6
Q1862	
E	7.3
C	1.8
B	6.7
Q1901	
E	20.1
C	65.1
B	20.5
Q1951	
E	30.0
C	7.8
B	29.9
Q1952	
E	0.0
C	0.0
B	0.6
Q1953	
E	0.0
C	25.7
B	0.0
Q1954	
E	0.0
C	8.8
B	0.0
Q1955	
E	0.0
C	29.9
B	0.0
IC3101	
1	2.4
2	2.4
3	2.5
4	0.0
5	5.6
6	214.6
7	128.3
8	130.5
9	134.5
Q3101	
E	1.7
C	11.8
B	2.3
Q3102	
E	1.8
C	11.9
B	2.4
Q3103	
E	1.8
C	11.8
B	2.4
Q3104	
E	0.0
C	2.3
B	0.0
Q3105	
E	0.0
C	2.3
B	0.0
Q3106	
E	0.0
C	2.5
B	0.0
Q3121	
E	0.0
C	181.8
B	-0.6
Q3122	
E	23.8
C	-0.7
B	24.1
Q3123	
E	5.0
C	5.0
B	4.5
Q3204	
E	0.9
C	7.8
B	1.5
Q3205	
E	7.8
C	11.8
B	7.8
Q3206	
E	7.8
C	0.0
B	7.8
Q3209	
E	124.2
C	64.3
B	123.6
Q3210	
E	2.8
C	64.3
B	3.3
Q3251	
E	2.1
C	0.0
B	1.5
Q3252	
E	2.6
C	11.2
B	3.2
Q3253	
E	11.8
C	4.3
B	11.2
Q3261	
E	3.0
C	0.0
B	2.3
Q3262	
E	3.1
C	0.0
B	2.3
Q3263	
E	3.1
C	0.0
B	2.4
Q3264	
E	2.3
C	11.8
B	3.0

PIN NO.	VOLTAGE(V)
Q3265	
E	2.5
C	11.8
B	3.1
Q3266	
E	2.4
C	11.8
B	3.1

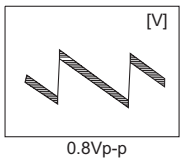
<FRONT PWB>

PIN NO.	VOLTAGE(V)
IC8481	
1	7.6
2	7.6
3	7.5
4	7.5
5	0.0
6	7.4
7	7.4
8	7.4
9	7.4
10	11.8
IC8801	
1	4.9
2	5.1
3	0.0
Q8481	
E	1.6
C	6.7
B	2.1
Q8801	
E	5.5
C	7.0
B	0.0

WAVEFORMS

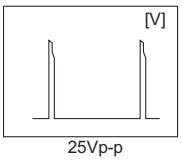
-MAIN PWB-

IC401-1



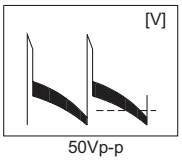
0.8Vp-p

IC401-3



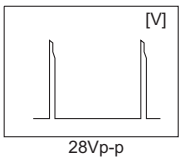
25Vp-p

IC401-5



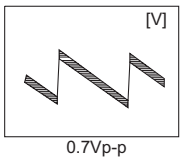
50Vp-p

IC401-6



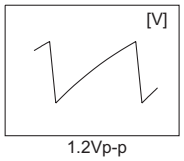
28Vp-p

IC401-7



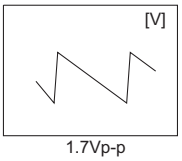
0.7Vp-p

IC701-21



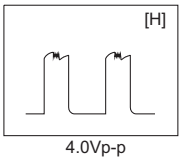
1.2Vp-p

IC701-22



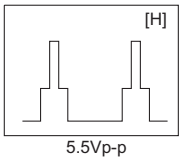
1.7Vp-p

IC701-33



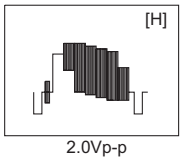
4.0Vp-p

IC701-34



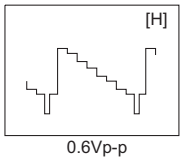
5.5Vp-p

IC701-38



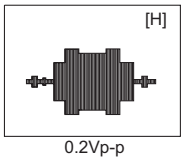
2.0Vp-p

IC701-42



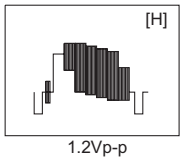
0.6Vp-p

IC701-43



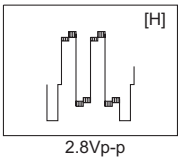
0.2Vp-p

IC701-47



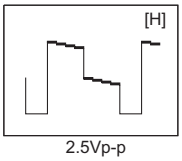
1.2Vp-p

IC701-51



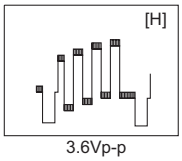
2.8Vp-p

IC701-52



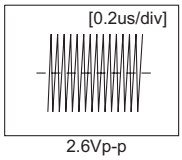
2.5Vp-p

IC701-53



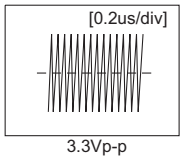
3.6Vp-p

IC701-58



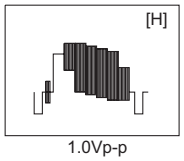
2.6Vp-p

IC701-59



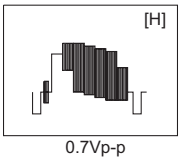
3.3Vp-p

IC801-7



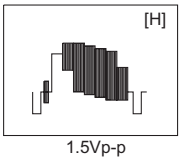
1.0Vp-p

IC801-13



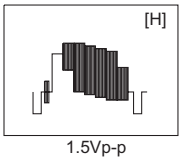
0.7Vp-p

IC801-23



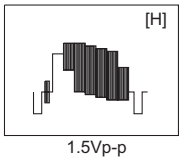
1.5Vp-p

IC801-27



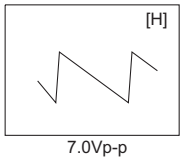
1.5Vp-p

IC801-37



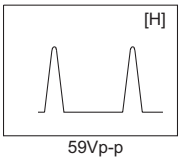
1.5Vp-p

T551-2



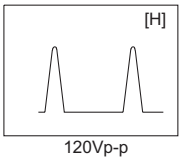
7.0Vp-p

T551-3



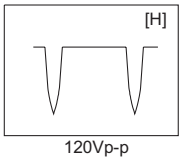
59Vp-p

T551-4



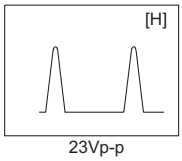
120Vp-p

T551-5



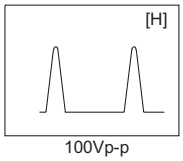
120Vp-p

T551-7



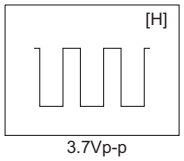
23Vp-p

T551-9



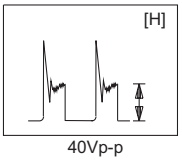
100Vp-p

Q521-B



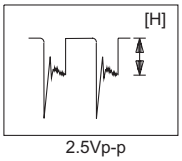
3.7Vp-p

Q521-C



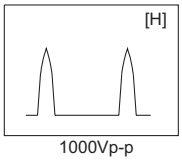
40Vp-p

Q522-B



2.5Vp-p

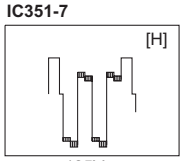
Q522-C



1000Vp-p

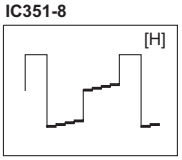
-CRT SOCKET PWB-

IC351-7



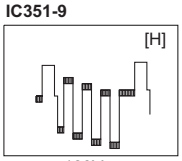
125Vp-p

IC351-8



120Vp-p

IC351-9



160Vp-p

JVC

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