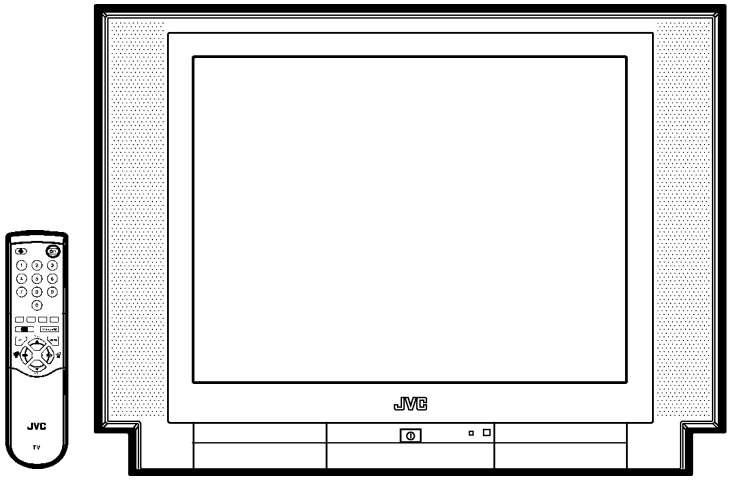
AV-29BH11ENS
AV-29BH11EPS
AV-29BH11EES

JVC

SERVICE MANUAL

COLOUR TELEVISION

AV-29BH11ENS
AV-29BH11EPS
AV-29BH11EES



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No.52085
Sep. 2002

AV-29BH11ENS
AV-29BH11EPS
AV-29BH11EES

SPECIFICATIONS

ITEM		Content		
		AV-29BH11ENS	**AV-29BH11EPS**	**AV-29BH11EES**
Dimensions (WxHxD)		78.4 × 58.2 × 49.3 cm		
Mass		46.2 kg		
TV RF System		B/G	B/G, L	B/G, D/K, K1
Colour System	**TV Mode**	PAL	PAL / SECAM	←
	Video Mode	PAL / NTSC 3.58 / NTSC 4.43	PAL / SECAM / NTSC 3.58 / NTSC 4.43	←
Teletext System		Fastext / Toptext		
Stereo System		German + NICAM		
Tuning System		Frequency Synthesizer Tuning System		
Number Of CH memory position		200 ch		
Receiving Frequency	**VHF (VL)**	46.25MHZ ~ 168.25MHz		
	VHF (VH)	175.25MHz ~ 463.25MHz		
	UHF	471.25MHz ~ 863.25MHz		
	CATV	B/G : S1-S41 & S75-S79	B/G : S1-S41 & S75-S79 L : S1-S41&S75-S77	B/G : S1-S41 & S75-S79 D/K : S1-S41
Intermediate Frequency	**VIF Carrier**	38.9MHz		
	SIF Carrier	32.4MHz (6.5MHz)		
		32.9MHz (6.0MHz)		
		33.4MHz (5.5MHz)		
Colour Sub Carrier Frequency		PAL (4.43MHz), SECAM (4.43MHz), NTSC (3.58MHz/4.43MHz)		
Aerial Input Terminal		75 Ohm Unbalanced		
Power Input		AC 220 ~ 240V, 50Hz		
Power Consumption		135W(Max.) <4W(Stand-by)		
Picture Tube		68cm measured diagonally		
High Voltage		28.55kV (in cut-off service mode)		
Speaker		(77 ×128 mm Oval type + Tweeter) ×2		
Audio Output		12W + 12W		
Input	**Video**	1V(p-p), 75 Ohm		
	Audio (L/R)	500 mV(rms), High Impedance		
Output	**Video**	1 V(p-p), 75 Ohm		
	Audio (L/R)	500 mV(rms), Low Impedance		
Input Terminal	**Rear Side**	AV 1 (Video/Audio/RGB)		
		AV 2 (Video/Audio/S-VHS)		
	Front Side	AV 3 (Video/Audio)		
Output Terminal	**Front Side**	Headphone jack (Stereo mini jack 3.5∅)		
	Rear Side	AV 1 (Video/Audio)		
		AV 2 (Video/Audio) (Selected TV, AV1 or AV3)		
Remote Control Unit		VE-30015781 (RM-C85) , Battery size:AAA/R03 x 2		

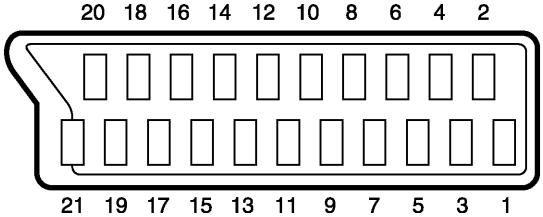
Design & specifications are subject to change without notice.

■21-pin Euro connector (SCART socket) : AV 1 / AV 2

(P-P= Peak to Peak, S-W= Sync tip to white peak, B-W= Blanking to white peak)

Pin No.	Signal Designation	Matching Value	AV 1	AV 2
1	AUDIO R output	500mV(rms) (Nominal),Low impedance	○ (TV OUT)	○ (TV/LINE OUT)
2	AUDIO R input	500mV(rms) (Nominal),High impedance	○	○
3	AUDIO L output	500mV(rms) (Nominal),Low impedance	○ (TV OUT)	○ (TV/LINE OUT)
4	AUDIO GND		○	○
5	GND (B)		○	○
6	AUDIO L input	500mV(rms) (Nominal), High impedance	○	○
7	B input	700mV$_{B-W}$, 75Ω	○	NC
8	FUNCTON SW (SLOW SW)	Low : 0-3V, High : 8-12V, High impedance	○	NC
9	GND (G)		○	○
10	-		NC	-
11	G input	700mV$_{B-W}$, 75Ω	○	NC
12	-		NC	-
13	GND (R)		○	○
14	GND (YS)		○	NC
15	R / C input	R : 700mV$_{B-W}$, 75Ω C : 300mV $_{(P-P)}$, 75Ω	○ (R/C)	○ (only C)
16	Ys input	Low : 0 – 0.4, High : 1 - 3V, 75Ω	○	NC
17	GND(VIDEO output)		○	○
18	GND(VIDEO input)		○	○
19	VIDEO output	1V$_{S-W}$(Negative going sync), 75Ω	○ (TV)	○ (TV/LINE OUT)
20	VIDEO / Y input	1V$_{S-W}$(Negative going sync), 75Ω	○	○
21	COMMON GND		○	○

[Pin assignment]



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 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.

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.

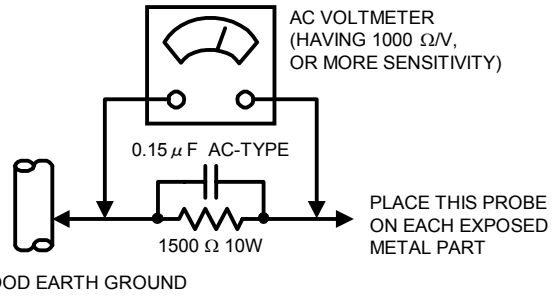
8. When service is required, observe the original lead dress. Extra precaution should be given to assure correct lead dress in the high voltage circuit area. Where a short circuit has occurred, those components that indicate evidence of overheating should be replaced. Always use the manufacturer's replacement 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, screwheads, earphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.

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

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



FEATURES

1. It is a remote controlled color television.
2. 200 programs from VHF, UHF bands or cable channels can be preset.
3. It can tune cable channels.
4. Controlling the TV is very easy by its menu driven system.
5. It has two Euroconnector sockets for external device (such as video recorder, video games, audio set, etc.)
6. Front AV Input available.
7. Stereo sound systems (German + Nicam) are available.
8. Full function Teletext (Fastext, Toptext).
9. It is possible to connect headphone.
10. Direct channel access.
11. APS (Automatic Programming System).
12. All programs can be named.
13. Forward or backward automatic tuning.
14. Automatic sound mute when no transmission.
15. 5 minutes after the broadcasting (closedown), the TV switches itself automatically to stand-by mode.

MAIN DIFFERENCE LIST

MODEL No. / Parts Name	AV-29BH11ENS	AV-29BH11EPS	AV-29BH11EES
MAIN PWB	VE-20101060	VE-20101082	VE-20101061
LABEL	VE-20102005 VE-20101990 (Only ITA)	VE-20101971	VE-20101987 VE-20101985 (Only POL)
F CARTON BOX	VE-50028449 VE-50028445 (Only ITA)	VE-50028438	VE-50028443 VE-50028442 (Only POL)
INST BOOK	VE-50028435	VE-50028433	VE-50028434

SPECIFIC SERVICE INSTRUCTIONS

DISASSEMBLY PROCEDURE

REMOVING THE REAR COVER

1. Remove the **8** screws marked **A**.
2. Remove the **4** screws marked **B**.
3. Withdraw the rear cover toward you.

REMOVING THE MAIN PWB

- Removing the rear cover.

1. Slightly raise the both sides of the chassis by hand and withdraw MAIN PWB back ward.

[CAUTIONS]
If necessary, take off the wire clamp, connectors etc.
Be careful enough when developing a main chassis.

REMOVING THE FRONT AV & HEADPHONE BOARD ASS'Y

- Removing the rear cover.
- Removing the MAIN PWB.

1. Remove the **2** screws marked **C**, and remove the FRONT AV & HEADPHONE BOARD ASS'Y.

REMOVING THE FRONT CONTROL PWB

- Removing the rear cover.
- Removing the MAIN PWB.

1. Remove the **3** screws marked **D**, and remove the FRONT CONTROL PWB.

REMOVING THE WOOFER and TWEETER

- Removing the rear cover.

1. Remove the **4** screws marked **E**, and remove the WOOFER.
2. Remove the **2** screws marked **F**, and remove the TWEETER.
3. Remove an opposite side similarly.

REMOVING THE MAIN SWITCH

- Removing the rear cover.
- Removing MAIN PWB.

1. Remove the **2** screws marked **G**, and remove the MAIN SWITCH.

CHECKING THE PW BOARD

To check the back side of the PW Board.

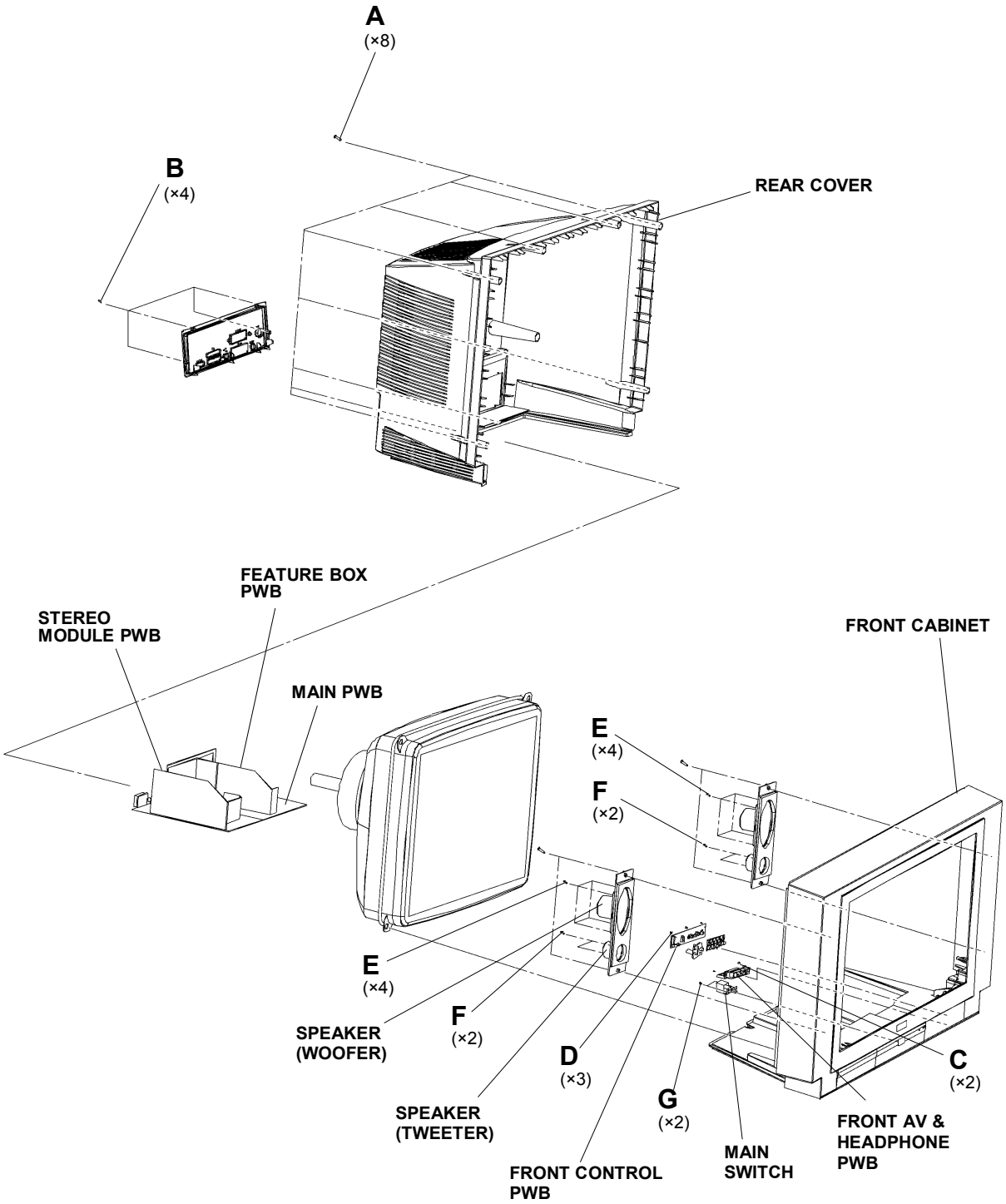
1) Pull out the PW Board. (Refer to REMOVING THE MAIN PWB).
2) Erect the PW Board vertically so that you can easily check the back side of the PW Board.

[CAUTION]

- When erecting the PW Board, be careful so that there will be no contacting with other PW Board.
- Before turning on power, make sure that the wire connector is properly connected.
- When conducting a check with power supplied, be sure to confirm that the CRT EARTH WIRE (BRAIDED ASS'Y) is connected to the CRT SOCKET PW board.

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.


A
(×8)
B
(×4)
REAR COVER
FEATURE BOX PWB
STEREO MODULE PWB
MAIN PWB
FRONT CABINET
E
(×4)
F
(×2)
E
(×4)
F
(×2)
SPEAKER (WOOFER)
D
(×3)
C
(×2)
SPEAKER (TWEETER)
G
(×2)
FRONT AV & HEADPHONE PWB
MAIN SWITCH
FRONT CONTROL PWB

SETTING OF THE LAST MEMORY FOR SHIPMENT

■ USER SETTING VALUES

<table>
<tr><th>Setting Item</th><th>Setting Value</th><th>Setting Item</th><th>Setting Value</th></tr>
<tr><td colspan="2">SOUND MENU</td><td colspan="2">FEATURE MENU</td></tr>
<tr><td>BASS</td><td>CENTER</td><td>SLEEP TIMER</td><td>OFF</td></tr>
<tr><td>TREBLE</td><td>↑</td><td>CHILD LOCK</td><td>OFF</td></tr>
<tr><td>BALANCE</td><td>↑</td><td colspan="2" rowspan="2"></td></tr>
<tr><td>EFFECT</td><td>OFF</td></tr>
<tr><td colspan="2">PICTURE MENU</td><td colspan="2">INSTALL</td></tr>
<tr><td>BRIGHTNESS</td><td rowspan="5">These adjust are automatically restored when APS bit in Service menu is set.
The procedure for setting APS bit is described bellow.</td><td>LANGUAGE</td><td>ENGLISH</td></tr>
<tr><td>COLOUR</td><td>COUNTRY</td><td>Other</td></tr>
<tr><td>CONTRAST</td><td>AV-2 OUTPUT</td><td>TV</td></tr>
<tr><td>SHARPNESS</td><td colspan="2" rowspan="2"></td></tr>
<tr><td>HUE (only NTSC)</td></tr>
</table>

■ SETTING APS BIT IN SERVICE MENU

1) Enter service menu in TV mode by pressing “INFO” and “MUTING” keys simultaneously. Service Menu will appear.
2) Select VIDEO by pressing “GREEN” key on the remote control unit.
3) Select APS items by pressing the Up/Down keys on the remote control unit.
4) Change the value to “ON” by pressing LEFT/RIGHT keys on the remote control unit.
5) Store the change by pressing “INFO” key.
6) Press “STANDARD” key on remote control unit to exit service mode.

SERVICE ADJUSTMENTS

ADJUSTMENT PREPARATION

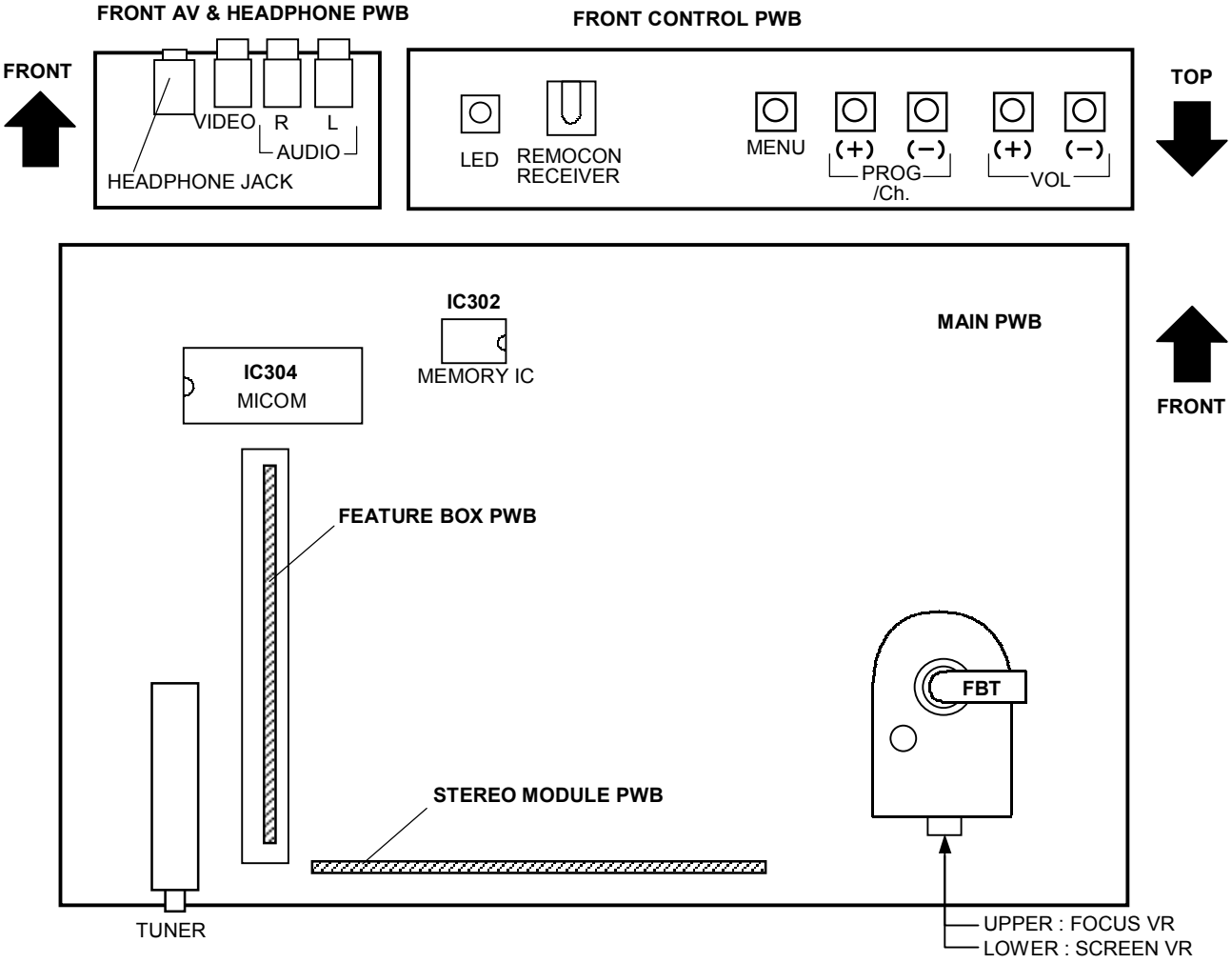
1. **You can make the necessary adjustments for this unit with either the Remote Control Unit or with the adjustment tools and parts as given below.**
2. **Adjustment with the Remote Control Unit is made on the basis of the initial setting values, however, the new setting values which set the screen 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 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 adjustment - variable resistors, transformers, condensers, etc.
7. Presetting before adjustment.
   Unless otherwise specified in the adjustment instructions, preset the following functions with the remote control unit:

TINT / COLOUR	CENTER
PICTURE/BRIGHT	

ADJUSTMENT EQUIPMENT

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

MAIN PARTS LOCATIONS



BASIC OPERATION SERVICE MENU

■ HOW TO ENTER THE SERVICE MODE

1) Press the **INFORMATION** key and **MUTING** key of REMOTE CONTROL UNIT simultaneously, and the SERVICE MENU screen of Fig.1 will be displayed.

SERVICE MENU (1/2)

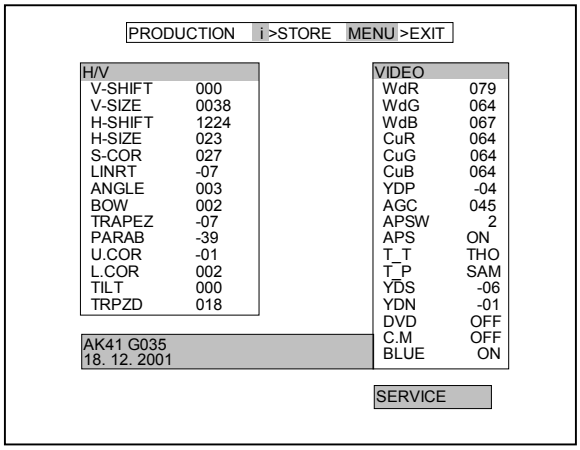


Fig.1

2) While the Fig.1 is displayed, press the **BLUE** key for access to the SERVICE MENU (2/2) (Fig.2).

SERVICE MENU (2/2)

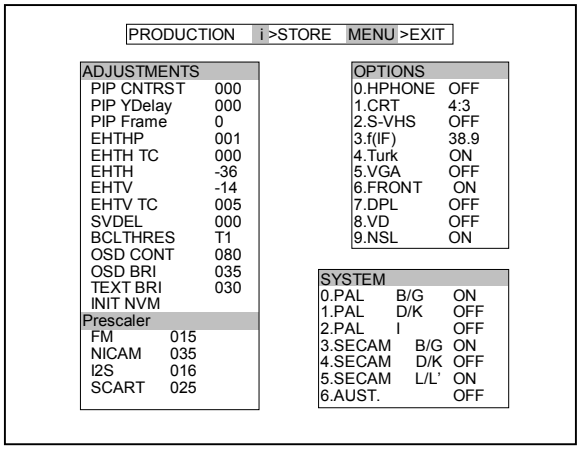
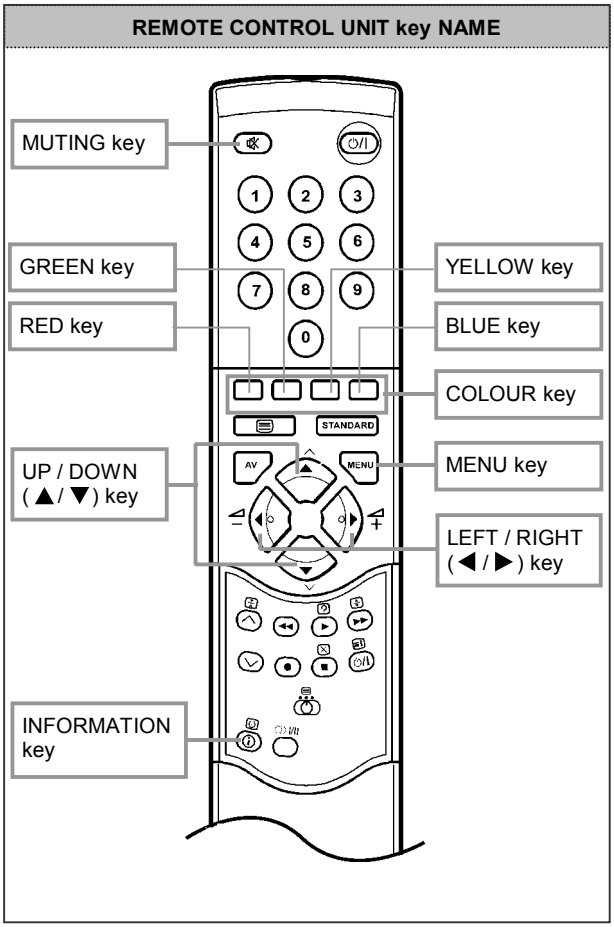


Fig.2

REMOTE CONTROL UNIT key NAME

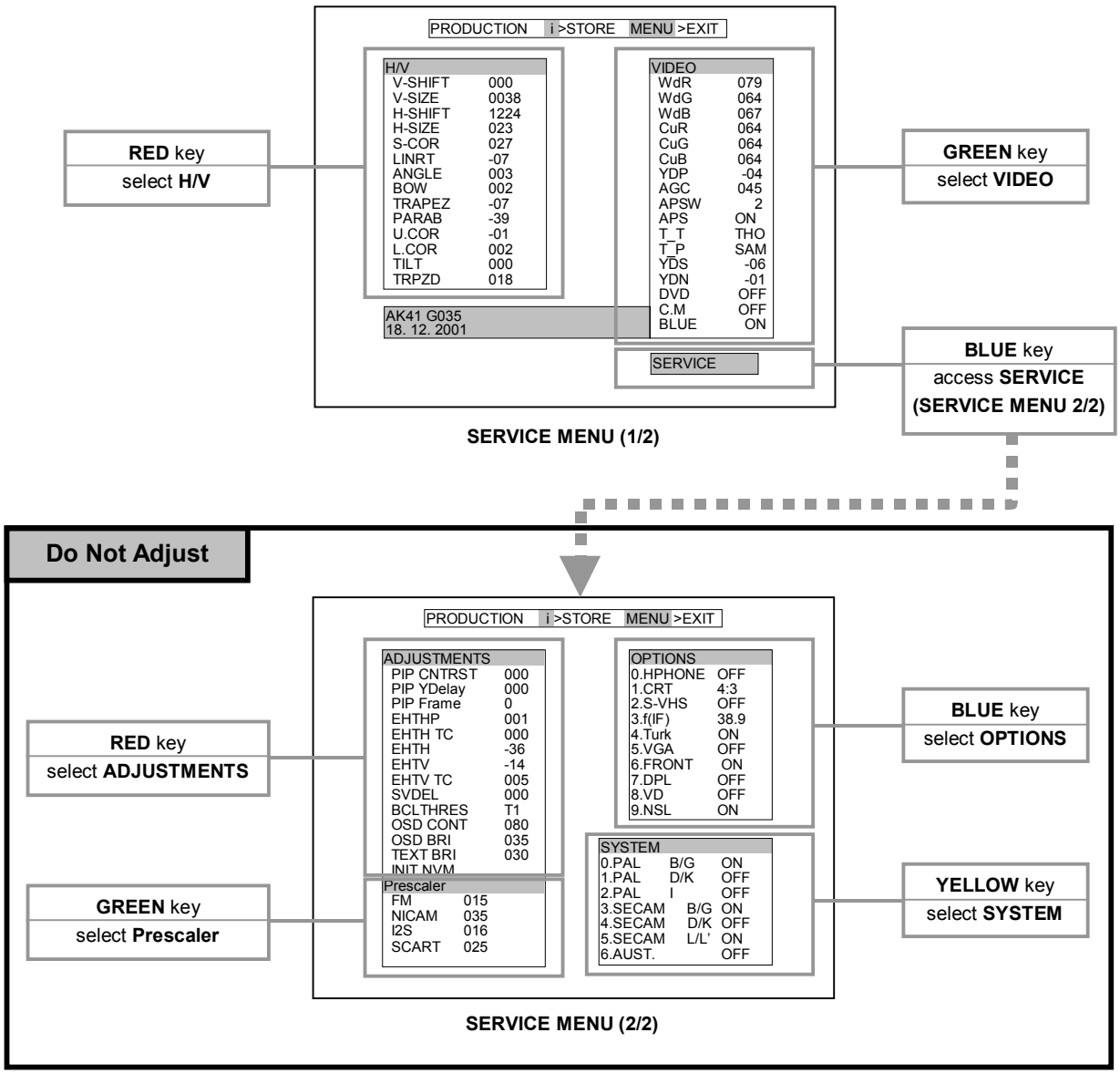


■ HOW TO EXIT SERVICE MODE

1) Press the **MENU** Key on REMOTE CONTROL UNIT.

■ SELECTION OF ADJUSTMENT ITEMS

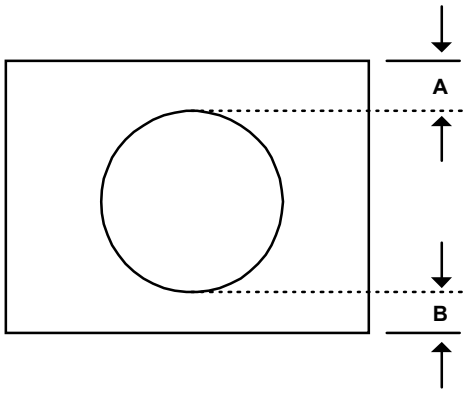
1) Press the **COLOUR** key and select the service menu section.
2) Select the ADJUST Item, use **UP** (▲) / **DOWN**(▼) key of remote control unit.
3) To change the selected parameter, use **LEFT** (◀) and **RIGHT** (▶) key.
4) Press the **INFORMATION** key to STORE.

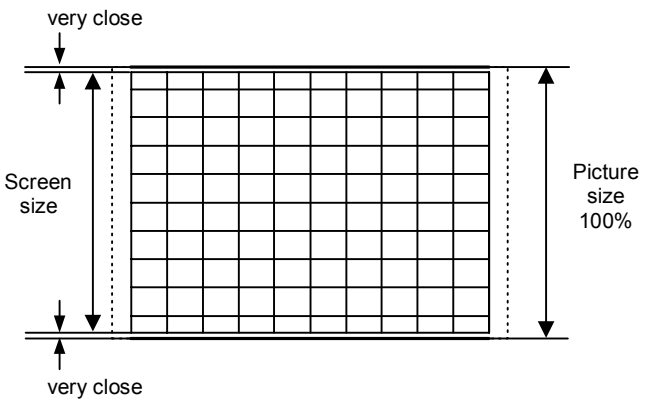


ADJUSTMENTS

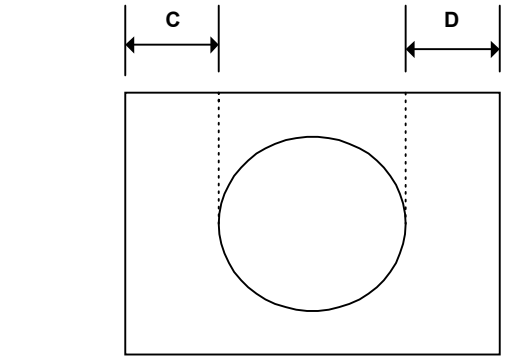
■ DEFLECTION CIRCUIT

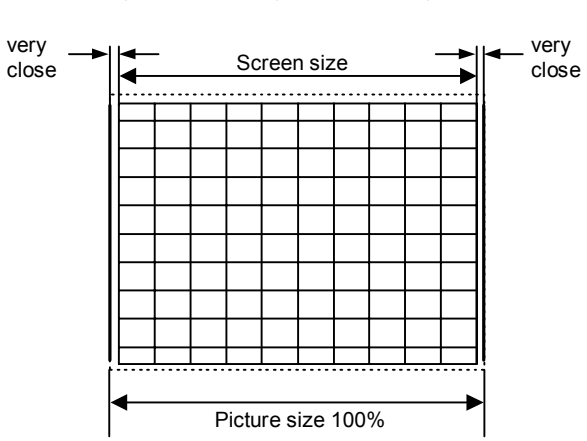
Item	Measuring instrument	Test point	Adjustment part	Description
V-SHIFT adjustment	**Signal generator** **Remote control unit**		**V- SHIFT**	1. Receive a circle pattern signal of vertical frequency 50Hz. 2. Enter the SERVICE MENU. 3. Press the RED key on the remote control unit, then enter the H/V adjustment group. 4. Select V-SHIFT with the UP/DOWN (▲/▼) key. 5. Adjust V-SHIFT with the LEFT/RIGHT (◀/▶) key to make **A = B**. 6. Check and readjust V-SHIFT item if the adjustment becomes improper after some other geometric adjustments are done. 7. Press the INFORMATION key and memorize the set value.
V-SIZE adjustment	**Signal generator** **Remote control unit**		**V-SIZE**	1. Receive a cross-hatch signal. 2. Enter the SERVICE MENU. 3. Press the RED key on the remote control unit, then enter the H/V adjustment group. 4. Select V-SIZE with the UP/DOWN (▲/▼) key. 5. Adjust V-SIZE with the LEFT/RIGHT (◀/▶) key until horizontal black lines on both the upper and lower part of the cross-hatch pattern become very close to the upper and lower horizontal sides of picture size and nearly about to disappear. 6. Check and readjust V-SIZE item if the adjustment becomes improper after some other geometric adjustments are done. 7. Press the INFORMATION key and memorize the set value.



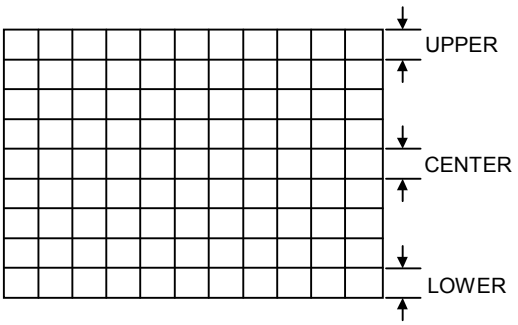


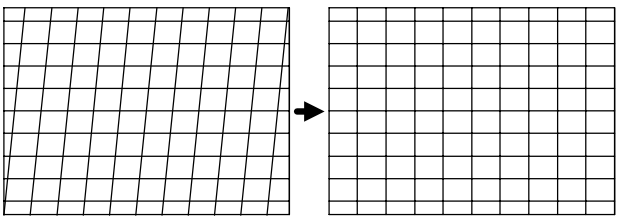
Item	Measuring instruments	Test point	Adjustment part	Description
H-SHIFT adjustment	**Signal generator** **Remote control unit**		**H-SHIFT**	1. Receive a circle pattern signal. 2. Enter the SERVICE MENU. 3. Press the RED key on the remote control unit, then enter the H/V adjustment group. 4. Select H-SHIFT with the UP/DOWN (▲/▼) key. 5. Adjust H-SHIFT with the LEFT/RIGHT (◀/▶) key to make **C= D**. 6. Check and readjust H-SHIFT item if the adjustment becomes improper after some other geometric adjustments are done. 7. Press the INFORMATION key and memorize the set value.
H-SIZE adjustment	**Signal generator** **Remote control unit**		**H-SIZE**	1. Receive a cross-hatch signal. 2. Enter the SERVICE MENU. 3. Press the RED key on the remote control unit, then enter the H/V adjustment group. 4. Select H-SIZE with the UP/DOWN (▲/▼) key. 5. Adjust H-SIZE with the LEFT/RIGHT (◀/▶) key till vertical lines on both the left and right part of the cross-hatch will be visible nor screen will be so wide. 6. Check and readjust H-SIZE item if the adjustment becomes improper after some other geometric adjustments are done. 7. Press the INFORMATION key and memorize the set value.



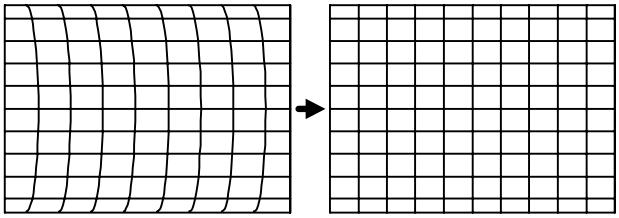


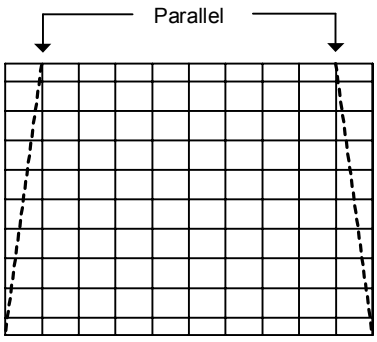
Item	Measuring instruments	Test point	Adjustment part	Description
V. S-CORRECT. & LINEARITY adjustment	**Signal generator** **Remote control unit**		**S-COR** **LINRT**	1. Receive a cross-hatch signal. 2. Enter the SERVICE MENU. 3. Press the RED key on the remote control unit, then enter the H/V adjustment group. 4. Select S-COR with the UP/DOWN (▲/▼) key. 5. Adjust S-COR with the LEFT/RIGHT (◀/▶) key till the size of squares on both the upper and lower part of cross-hatch pattern become equal to the square laying on the vertical center of the cross-hatch pattern. 6. Check and readjust S-COR item if the adjustment becomes improper after some other geometric adjustments are done. 7. Press the INFORMATION key and memorize the set value. 8. Select LINRT with the UP/DOWN (▲/▼) key. 9. Adjust LINRT with the LEFT/RIGHT (◀/▶) key till all the size of squares of the cross-hatch pattern become in equal size from the top of the screen to its bottom of the whole screen. 10. Check and readjust LINRT item if the adjustment becomes improper after some other geometric adjustments (especially after than S-COR adjustment) are done. 11. Press the INFORMATION key and memorize the set value.
ANGLE adjustment	**Signal generator** **Remote control unit**		**ANGLE**	1. Receive a cross-hatch signal. 2. Enter the SERVICE MENU. 3. Press the RED key on the remote control unit, then enter the H/V adjustment group. 4. Select ANGLE with the UP/DOWN (▲/▼) key. 5. Adjust ANGLE with the LEFT/RIGHT (◀/▶) key till the vertical lines of the crosshatch pattern become straight. 6. Check and readjust ANGLE item if the adjustment becomes improper after some other geometric adjustments are done. 7. Press the INFORMATION key and memorize the set value.



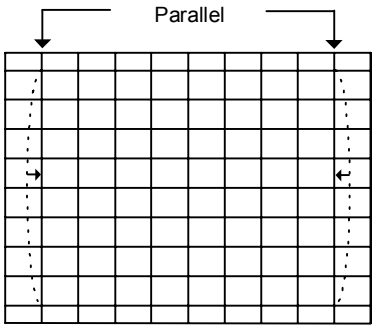


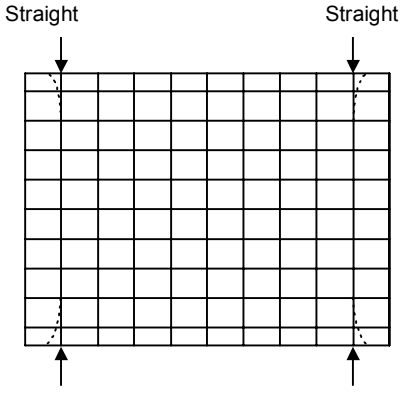
Item	Measuring instruments	Test point	Adjustment part	Description
BOW adjustment	**Signal generator** **Remote control unit**		**BOW**	1. Receive a cross-hatch signal. 2. Enter the SERVICE MENU. 3. Press the RED key on the remote control unit, then enter the H/V adjustment group. 4. Select BOW with the UP/DOWN (▲/▼) key. 5. Adjust BOW with the LEFT/RIGHT (◄/►) key and the vertical line straight. 6. Check and readjust BOW item if the adjustment becomes improper after some other geometric adjustments are done. 7. Press the INFORMATION key and memorize the set value. **NOTE :** **In case where there is a bow-shaped distortion of images on the screen. (Figure)**
TRAPEZIUM adjustment	**Signal generator** **Remote control unit**		**TRAPEZ**	1. Receive a cross-hatch signal. 2. Enter the SERVICE MENU. 3. Press the RED key on the remote control unit, then enter the H/V adjustment group. 4. Select TRAPEZ with the UP/DOWN (▲/▼) key. 5. Adjust TRAPEZ with the LEFT/RIGHT (◄/►) key till vertical lines, especially lines at the sides of the picture frame became parallel to the both sides of picture tube as close as possible. 6. Check and readjust TRPEZ item if the adjustment becomes improper after some other geometric adjustments are done. 7. Press the INFORMATION key and memorize the set value.





Item	Measuring instrument	Test point	Adjustment part	Description
SIDE PIN adjustment	**Signal generator** **Remote control unit**		**PARAB**	1. Receive a cross-hatch signal. 2. Enter the SERVICE MENU. 3. Press the RED key on the remote control unit, then enter the H/V adjustment group. 4. Select PARAB with the UP/DOWN (▲/▼) key. 5. Adjust PARAB with the LEFT/RIGHT (◀/▶) key till vertical lines close to the both sides of the picture frame become parallel to vertical sides of picture tube without any bending to left or to right side of the screen. 6. Check and readjust PARAB item if the adjustment becomes improper after some other geometric adjustments are done. 7. Press the INFORMATION key and memorize the set value.
CORNER adjustment	**Signal generator** **Remote control unit**		**U.COR** **L.COR**	1. Receive a cross-hatch signal. 2. Enter the SERVICE MENU. 3. Press the RED key on the remote control unit, then enter the H/V adjustment group. 4. Select U.COR with the UP/DOWN (▲/▼) key. 5. Adjust U.COR with the LEFT/RIGHT (◀/▶) key till vertical lines at the upper corners of the picture frame become vertical and parallel to vertical corner sides of picture tube. 6. Check and readjust U.COR item if the adjustment becomes improper after some other geometric adjustments are done. 7. Press the INFORMATION key and memorize the set value. 8. Select L.COR with the UP/DOWN (▲/▼) key. 9. Adjust L.COR with the LEFT/RIGHT (◀/▶) key till vertical lines at the lower corners of the picture frame become vertical and parallel to vertical corner sides of picture tube. 10. Check and readjust L.COR item if the adjustment becomes improper after some other geometric adjustments are done. 11. Press the INFORMATION key and memorize the set value.





■ VIDEO CIRCUIT

Item	Measuring instrument	Test point	Adjustment part	Description
WHITE BALANCE adjustment	**Signal generator** **Remote control unit**		**WdR** **WdG** **WdB**	1. Receive a black & white signal. 2. Enter the SERVICE MENU. 3. Press the GREEN key on the remote control unit, then enter the VIDEO adjustment group. 4. Select WdR, WdG and WdB with the UP/DOWN (▲/▼) key respectively. 5. Adjust WdR, WdG and WdB with the LEFT/RIGHT (◀/▶) key respectively, until the white part turns to pure white without any other colour. 6. Press the INFORMATION key and memorize the set value.
COLOUR CUTOFF LEVEL adjustment	**Signal generator** **Remote control unit**		**CuR** **CuG** **CuB**	1. Receive a cross-hatch signal. 2. Enter the SERVICE MENU. 3. Press the GREEN key on the remote control unit, then enter the VIDEO adjustment group. 4. Select CuR, CuG and CuB with the UP/DOWN (▲/▼) key respectively. 5. Adjust CuR, CuG and CuB with the LEFT/RIGHT (◀/▶) key respectively and set the values of these items as **64** (constant). 6. Press the INFORMATION key and memorize the set value.
PAL Y DELAY adjustment	**Signal generator** **Remote control unit**		**YDP**	1. Receive a PAL COLOUR BAR signal. 2. Enter the SERVICE MENU. 3. Press the GREEN key on the remote control unit, then enter the VIDEO adjustment group. 4. Select YDP with the UP/DOWN (▲/▼) key. 5. Adjust YDP by pressing with the LEFT/RIGHT (◀/▶) key till the colour transients on the colour bar pattern becomes as sharper and possible as colours between transients do not mix with each other. 6. Press the INFORMATION key and memorize the set value.
AGC adjustment	**Signal generator** **Remote control unit**		**AGC**	1. Receive a PAL BG signal at 60dB μ V RF signal level. 2. Enter the SERVICE MENU. 3. Press the GREEN key on the remote control unit, then enter the VIDEO adjustment group. 4. Select AGC with the UP/DOWN (▲/▼) key. 5. Adjust AGC by pressing with the LEFT/RIGHT (◀/▶) key till voltage at pin9 of PL202 is equal to 3.0V 6. Press the INFORMATION key and memorize the set value.

Item	Measuring instrument	Test point	Adjustment part	Description
SECAM Y DELAY adjustment	**Signal generator** **Remote control unit**		**YDS**	1. Receive a SECAM COLOUR BAR signal. 2. Enter the SERVICE MENU. 3. Press the GREEN key on the remote control unit, then enter the VIDEO adjustment group. 4. Select YDS with the UP/DOWN (▲/▼) key. 5. Adjust YDS by pressing with the LEFT/RIGHT (◀/▶) key till the colour transients on the colour bar pattern becomes as sharper and possible as colours between transients do not mix with each other. 6. Press the INFORMATION key and memorize the set value.
NTSC Y DELAY adjustment	**Signal generator** **Remote control unit**		**YDN**	1. Receive a NTSC COLOUR BAR signal from an external source (e.g. AV 1). 2. Enter the SERVICE MENU. 3. Press the GREEN key on the remote control unit, then enter the VIDEO adjustment group. 4. Select YDN with the UP/DOWN (▲/▼) key. 5. Adjust YDN by pressing with the LEFT/RIGHT (◀/▶) key till the colour transients on the colour bar pattern becomes as sharper and possible as colours between transients do not mix with each other. 6. Press the INFORMATION key and memorize the set value.