

Preliminary

JVC

SERVICE MANUAL

COLOUR TELEVISION

**AV-2186ME, AV-21MS16_{/H},
AV-21MS26, AV-21MX16_{/G},
AV-21MX16_{/S}, AV-21MX56_{/S},
AV-21MX76_{/G}**

BASIC CHASSIS

CW3

InterArt
MaxxBass®

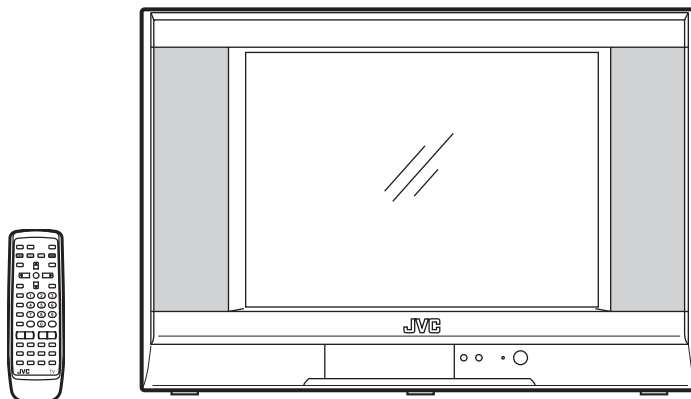


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SPECIFICATION

Items		Contents		
		AV-2186ME	AV-21MS16/H	AV-21MS26
Dimensions (W × H × D)		64.9 cm × 46.5 cm × 46.9 cm		
Mass		23.5 kg		
TV RF System		B, G, I, D, K, M		
Colour System		PAL / SECAM / NTSC 3.58 / NTSC 4.43		
Stereo System		A2 (B/G) / NICAM (B/G, I, D/K)		
Teletext System		FLOF (Fastext) WST (World Standard System)	---	FLOF (Fastext) WST (World Standard System)
Receiving Frequency	VHF Low	46.25MHz - 140.25MHz (AS0 - S6)		
	VHF High	147.25MHz - 423.25MHz (S7 - S36)		
	UHF	431.25MHz - 863.25MHz (S37 - C57)		
	CATV	Mid (X - Z+2, S1 - S10) / Super (S11 - S20) / Hyper (S21 - S41) bands		
Intermediate Frequency	VIF	38.0MHz (B, G, I, D, K, M)		
	SIF	32.26 MHz (5.74 MHz: B), 32.15MHz (5.85 MHz: G), 31.45 MHz (6.55 MHz: I) 31.75 MHz (6.5 MHz: D), 32.15MHz (5.85 MHz: K), 33.5MHz (4.5MHz : M)		
Colour Sub Carrier	PAL	4.43 MHz		
	SECAM	4.40625 MHz / 4.25 MHz		
	NTSC	3.58 MHz / 4.43 MHz		
Power Input		AC110 V - AC240 V, 50 Hz/60 Hz		
Power Consumption		105W (Max) / 73W (Avg)		105W (Max) / 87W (Avg)
Picture Tube		Visible size : 52.1 cm, Measured diagonally H: 41.6 cm × V: 31.5 cm		
High Voltage		28.5 kV ±1.5 kV (at zero beam current)		
Speaker		6.5 cm × 13 cm, oval type × 2		
Audio Power Output		7 W + 7 W (Rated power output)		
Aerial Input		75 Ω unbalanced, coaxial		
Video / Audio Input-1/2/3	Component Video [VIDEO-2]	RCA pin jack × 3 Y:1V(p-p), positive (negative sync), 75Ω Cb/Cr:0.7V(p-p), 75Ω		
	S-Video [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	1V(p-p), negative sync, 75Ω, RCA pin jack × 3		
	Audio	500mV(rms) (-4dBs), high impedance, RCA pin jack × 6		
Video / Audio Output	Video	1V(p-p), 75Ω, RCA pin jack × 1		
	Audio	500mV(rms)(-4dBs), Low impedance, RCA pin jack × 2		
Headphone jack		3.5 mm stereo mini jack × 1		
Remote Control Unit		RM-C1285 (UM-3/AA/R6 dry cell battery × 2)	RM-C1286 (UM-3/AA/R6 dry cell battery × 2)	

Design and specifications subject to change without notice.

Items		Contents			
		AV-21MX16/G	AV-21MX16/S	AV-21MX56/S	AV-21MX76/G
Dimensions (W × H × D)		64.9 cm × 46.5 cm × 46.9 cm			
Mass		23.5 kg			
TV RF System		B, G, I, D, K, M			
Colour System		PAL / SECAM / NTSC 3.58 / NTSC 4.43			
Stereo System		PB STEREO			
Teletext System		---			FLOF (Fastext) WST (World Standard System)
Receiving Frequency	VHF Low	46.25MHz - 140.25MHz (AS0 - S6)			
	VHF High	147.25MHz - 423.25MHz (S7 - S36)			
	UHF	431.25MHz - 863.25MHz (S37 - C57)			
	CATV	Mid (X - Z+2, S1 - S10) / Super (S11 - S20) / Hyper (S21 - S41) bands			
Intermediate Frequency	VIF	38.0MHz (B, G, I, D, K, M)			
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Power Input		AC110 V - AC240 V, 50 Hz/60 Hz			
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Picture Tube		Visible size : 52.1 cm, Measured diagonally H: 41.6 cm × V: 31.5 cm			
High Voltage		28.5 kV ±1.5 kV (at zero beam current)			
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Audio Power Output		7 W + 7 W (Rated power output)			
Aerial Input		75 Ω unbalanced, coaxial			
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	Audio	500mV(rms)(-4dBs), Low impedance, RCA pin jack × 2			
Headphone jack		3.5 mm stereo mini jack × 1			
Remote Control Unit		RM-C1286 (UM-3/AA/R6 dry cell battery × 2)		RM-C1285 (UM-3/AA/R6 dry cell battery × 2)	

Design and specifications 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 (Δ) on the parts list in Service manual.** The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the parts list of Service 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 : (\perp) side GND, the ISOLATED (NEUTRAL) : (\equiv) side GND and EARTH : (\oplus) 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 B1 VOLTAGE).
- (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 10k Ω 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.

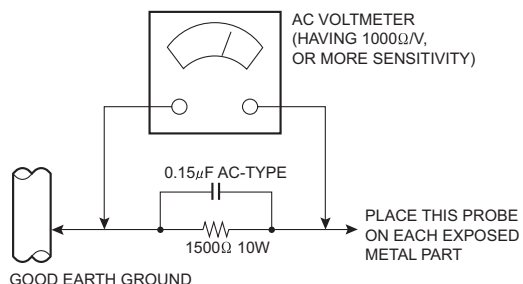
b) Leakage Current Check

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 Ω /V or more sensitivity in the following manner. Connect a 1500 Ω 10W resistor paralleled by a 0.15 μ F 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

DVD PICTURE MODE

This function can enhance the picture quality of DVD. The screen can be made sharp or soft by this setting.

AUTO SIGNAL DETECT

When input DVD signal to VIDEO-2, detect the input signal and change the input mode to VIDEO-2 automatically.

CINEMA SURROUND

This function can enjoy an enhanced sound for wider audience.

PICTURE MODE

This function can adjust the picture settings automatically. There are BRIGHT, STANDARD and SOFT in the PICTURE MODE.

RETURN +

This function can set a channel frequently view to the Return Channel and you can view that channel at any time with one-touch.

AI ECO SENSOR

This function can adjust TV screen contrast according to the brightness of your room.

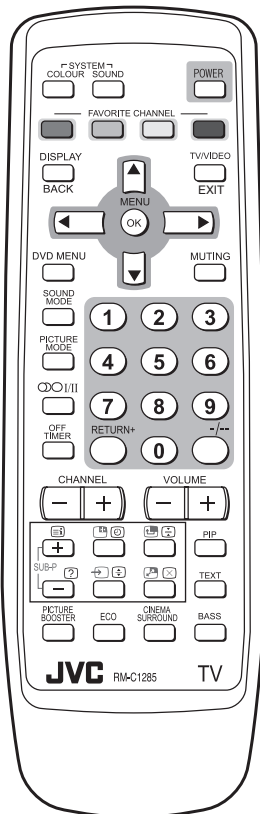
MaxxBass

MaxxBass enhances bass sound that cannot be reproduced by normal speakers to be heard by our ears.

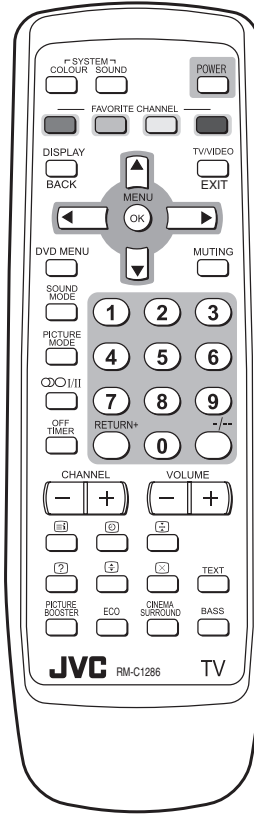
2.2 MAIN DIFFERENCE LIST

Item	AV-2186ME	AV-21MS16/H	AV-21MS26	AV-21MX16/G	AV-21MX16/S	AV-21MX56/S	AV-21MX76/G
Teletext	YES	NO	YES	NO	←	←	YES
OSD Language	Eng, Rus, Ukr	Eng, Chi	Eng, Chi, Rus, Mal, Ind	Eng, Ara, Fre, Per, Rus	←	←	←
POWER CORD	Round pin type	UK pin type	Round pin type	←	UK pin type	←	Round pin type
PIP Function	YES	NO	←	←	←	YES	←
MAIN PWB	SCW-1901A-H2	SCW-1903A-H2	SCW-1902A-H2	SCW-1910A-H2	SCW-1912A-H2	SCW-1911A-H2	SCW-1908A-H2
REMOTE CONTROL UNIT	RM-C1285	RM-C1286	←	←	←	RM-C1285	←

2.3 REMOTE CONTROL UNIT



<RM-C1285>



<RM-C1286>

2.4 TECHNICAL INFORMATION

2.4.1 MAIN MI-COM (CPU) PIN FUNCTION

Pin No.	Pin name	I/O	Function	Pin No.	Pin name	I/O	Function
1	VssP2	-	GND	65	SVM	O	Not used
2	VssC4	-	GND	66	FbiSo	I	Flyback input/sandcastle output
3	V1.8C4	I	1.8V (Digital)	67	Hout	O	Horizontal output
4	V3.3A3	I	3.3V	68	VssComb	-	GND
5	VrefP_Sdac	I	3.3V (Positive)	69	V5Comb	I	5V
6	VrefN_Sdac	-	GND	70	Vin/R2/Pr	I	PIP R input
7	VrefP_Sdac	I	3.3V (Negative)	71	Uin/B2/Pb	I	PIP B input
8	VrefN_Sdac	-	GND	72	Yin/G2/Y	I	PIP G input
9	VrefP_Sdac	I	3.3V (Positive)	73	Ysync	I	Not used
10	XtalIn	I	24.576MHz for system clock	74	Yout	O	Not used
11	XtalOut	O	24.576MHz for system clock	75	Uout/INSSW2	I	YUV insertion input
12	VssA1	-	GND	76	NC	O	Not used
13	NECK	I	V-guard input/ I/O switch	77	INSSW3	I	YUV insertion input
14	CONT	I	1.8V regulator control	78	R3/Pr	I	Component PR input (Video-2)
15	V5P1	I	+5V	79	G3/Y	I	Component Y input (Video-2)
16	Ph2	-	Phase-2 filter	80	B3/Pb	I	Component PB input (Video-2)
17	Ph1	-	Phase-1 filter	81	Gnd3	-	GND
18	Gnd1	-	GND	82	V5P3	I	5V
19	SecPll	-	SECAM PLL decoupling	83	BCL	I	Beam current limiter input
20	Dec8G	-	Bandgap decoupling	84	BLKIN	I	Black current input
21	EW	O	East-West drive output	85	Rout	O	R output
22	VDRB-	O	Vertical drive B output	86	Gout	O	G output
23	VDRA+	O	Vertical drive A output	87	Bout	O	B output
24	Vif1	I	Video IF input 1	88	V3.3A1	I	3.3V
25	Vif2	I	Video IF input 2	89	RefAdN	-	GND
26	Vsc	I	Vertical sawtooth capacitor	90	V3.3RefAdP	I	3.3V (Positive)
27	Iref	I	Reference current input	91	RefAd	I	3.3/2V
28	GndIF	-	GND	92	GndA	-	GND
29	Sif1	I	Sound IF input 1	93	V1.8A	I	1.8V
30	Sif2	I	Sound IF input 2	94	V3.3A2	I	3.3V
31	AGC	O	Tuner AGC output	95	VssADC	-	GND
32	EHT	I	EHT/overvoltage protection input	96	V1.8ADC	I	1.8V
33	Ssif/RefIn/Avl/ RefOut	O	Automatic Volume Levelling/ sound IF input / subcarrier reference output / external reference signal input for I signalmixer for DVB operation	97	REMOTE	I	Remote control
34	L3	I	Audio-L3 input (left signal)	98	PW_LED	I	POWER LED control
35	R3	I	Audio-R3 input (right signal)	99	PW_LED	I	POWER LED control
36	L-OUT	O	Audio L output	100	V1.8C2	I	1.8V
37	R-OUT	O	Audio R output	101	VssC2	-	GND
38	DecsDem	-	Decoupling sound demodulator	102	TIMER	-	Not used
39	QssO/AmO/ AudeEm	O	QSS intercarrier output / AM output / deemphasis / (front-end audio out)	103	TIMER	-	Not used
40	Gnd2	-	GND	104	VER_PROTECT	O	X-ray protect
41	PllIf	-	IF-PLL loop filter	105	S_REDUCE	O	Sound control
42	SifAgc	-	AGC sound IF	106	P00/I2SDI1	O	Not used
43	IfVo/FmRo/DvbO	O	Not used	107	POWER	O	SUB POWER control
44	NC	O	Not used	108	SCL1	I	I2C bus clock
45	V8AudioSwitches	I	8V	109	SDA1	I/O	I2C bus data
46	AgcSsif	-	AGC capacitor second sound IF	110	V3.3P	I	3.3V
47	V5P2	I	5V	111	ROTATION	O	Rotation
48	V-OUT	O	Video output	112	3.58/OTHER	O	NTSC 3.58 detection
49	L1	I	Audio-L1 input	113	A_MUTE	O	Audio muting
50	R1	I	Audio-R1 input	114	4.5/OTHER	O	NTSC 4.43 detection
51	V3	I	Video V3 input	115	PROT	I	Protect
52	C4	I	Not used	116	ECO_IN	I	ECO sensor level detection
53	Audio2InL	I	Not used	117	V1.8C1	I	1.8V (Digital)
54	Audio2InR	I	Not used	118	DecV1V8	I	1.8V
55	V2/Y	I	Video V2 input	119	KEY_IN	I	Key scan data
56	L2	I	Audio L2 input (Left signal)	120	VDO-DET	I	Video DET input
57	R2	I	Audio R2 input (right signal)	121	VSSC1+P1	-	Digital GND
58	Y3/Cvbs	I	S-Video Y1 input	122	S_V_DET	I	S-Video DET input
59	C1	I	S-Video C1 input	123	P25/PWM4	O	GTVA_reset
60	AudioLsL	O	Audio L output for audio power amplifier	124	V1.8C3	I	1.8V (Digital)
61	AudioLsR	O	Audio R output for audio power amplifier	125	VssC3	-	GND
62	HP-L	O	Not used	126	P12/Int2	I	External interrupt
63	HP-R	O	Not used	127	SDA0	I/O	I2C bus data (for memory)
64	CVBSO/PIP	O	CVBS / PIP output	128	SCL0	I	I2C bus clock (for memory)

SECTION 3 DISASSEMBLY

3.1 DISASSEMBLY PROCEDURE

3.1.1 REMOVING THE REAR COVER

- Unplug the power cord.
 - (1) Remove the 2 screws [A], 7 screws [B] and 4 screws [C].
 - (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 MAIN PW BOARD

- Remove the REAR COVER.
 - (1) Slightly raise the both sides of the MAIN PWB (with BASS PWB connected) by hand.
 - (2) Withdraw the MAIN PWB backward.
(If necessary, take off the wire clamp and connectors, etc.)

3.1.3 REMOVING THE SPEAKER

- Remove the REAR COVER.
 - (1) Remove the 2 screws [D].
 - (2) Follow the same steps when removing the other hand SPEAKER.

3.1.4 CHECKING THE MAIN PW BOARD

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

CAUTIONS:

- 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.

3.1.5 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.

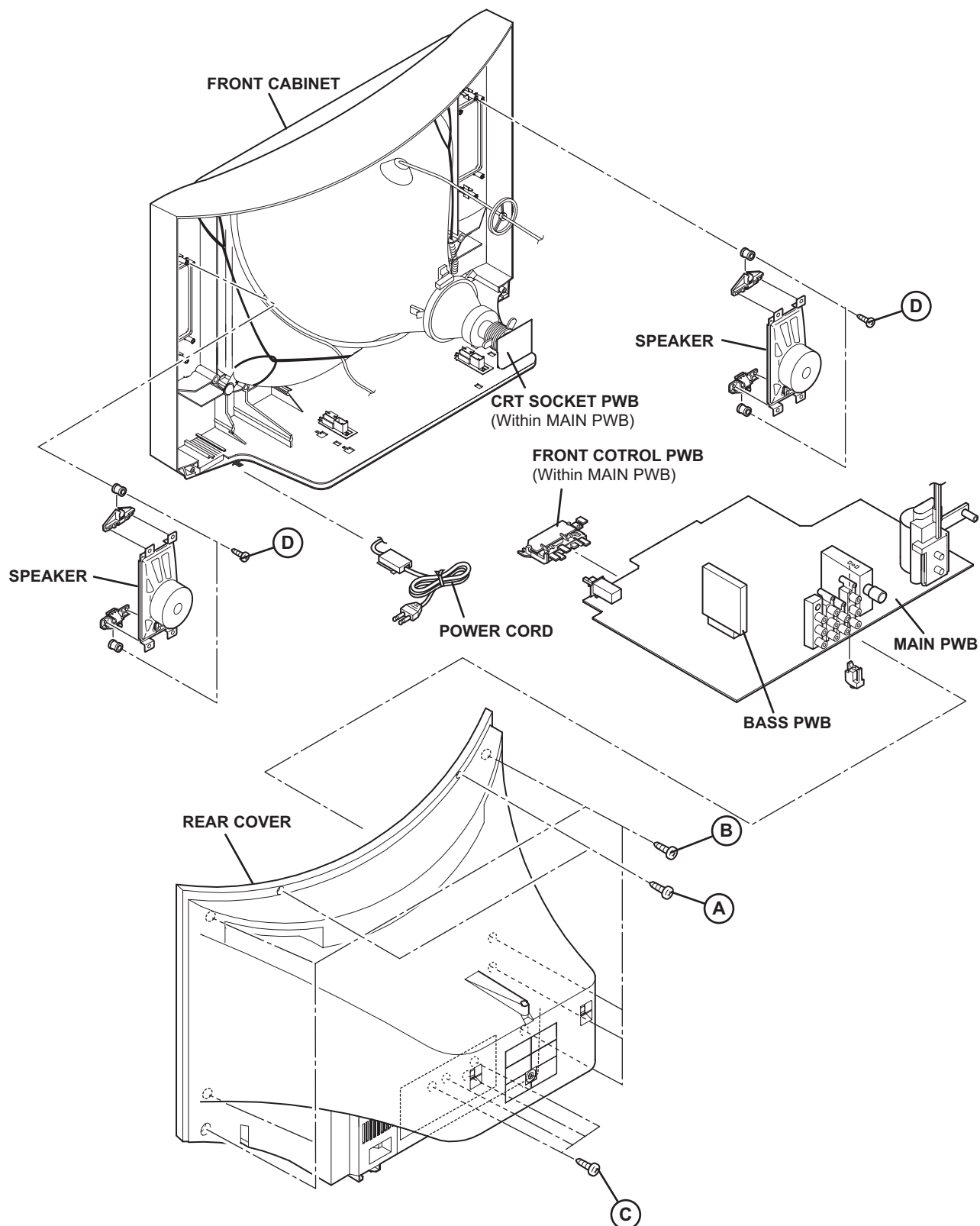


Fig.1

3.2 MEMORY IC REPLACEMENT

- This model uses the memory IC.

Memory IC: IC702 on MAIN PWB

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".

3.2.1 MEMORY IC REPLACEMENT PROCEDURE

1. Power off

Switch off the power and disconnect the power plug from the AC outlet.

2. Replace the memory IC

Be sure to use the memory IC written with the initial setting values.

3. Power on

Connect the power plug to the AC outlet and switch on the power.

4. System constant check and setting

* It must not adjust without signal.

- (1) Press the **[DISPLAY]** key and the **[PICTURE MODE]** key of the REMOTE CONTROL UNIT simultaneously.
- (2) The SERVICE MODE screen of Fig. 1 will be displayed.
- (3) While the SERVICE MODE is displayed, press the **[DISPLAY]** key and the **[PICTURE MODE]** key simultaneously, and the SYSTEM CONSTANT SET screen of Fig. 2 will be displayed.
- (4) Check the setting values of the SYSTEM CONSTANT SET. If the value is different, select the setting item with the **[MENU ▲/▼]** key, and set the correct value with the **[MENU ◀/▶]** key.
- (5) Press the **[OK]** key to memorize the setting value.
- (6) Press the **[DISPLAY]** key twice, and return to the normal screen.

5. Receiving channel setting

Refer to the OPERATING INSTRUCTIONS and set the receive channels (Channels Preset) as described.

6. User settings

Check the user setting items according to the given in page later.

Where these do not agree, refer to the OPERATING INSTRUCTIONS and set the items as described.

7. SERVICE MODE setting

Verify what to set in the SERVICE MODE, and set whatever is necessary (Fig.1).

Refer to the SERVICE ADJUSTMENT for setting.

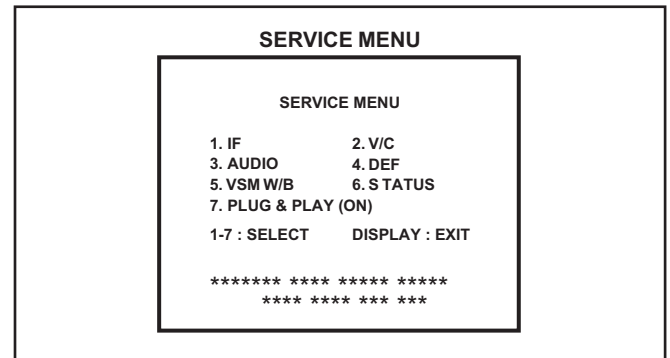


Fig.1

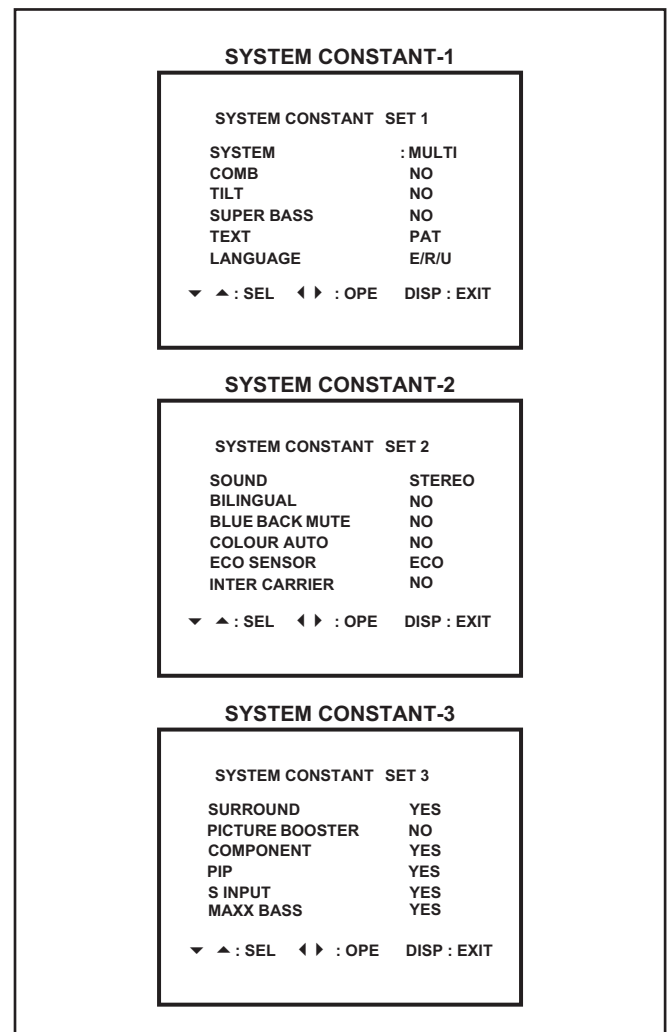
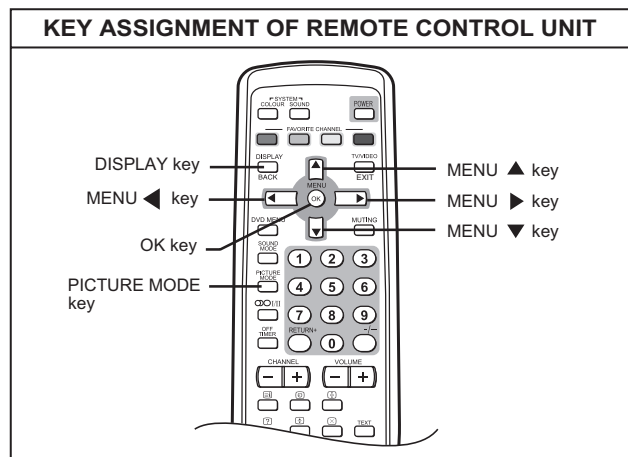


Fig.2



3.2.2 SYSTEM CONSTANT SETTING

Setting item	Setting value						
	AV-2186ME	AV-21MS26	AV-21MS16/H	AV-21MX16/G	AV-21MX16/S	AV-21MX56/S	AV-21MX76/G
SYSTEM	MULTI	←	←	←	←	←	←
COMB	NO	←	←	←	←	←	←
TILT	NO	←	←	←	←	←	←
SUPER BASS	NO	←	←	←	←	←	←
TEXT	PAT	←	NO	←	←	←	PAT
LANGUAGE	E/R/U	E/R/C/M/I	E/C	E/R/A/P/F	←	←	←
SOUND	STEREO	←	←	PB	←	←	←
BILINGUAL	NO	←	←	←	←	←	←
BLUE BACK MUTE	NO	←	←	←	YES	←	NO
COLOUR AUTO	NO	←	←	YES	←	←	←
ECO SENSOR	ECO	←	←	←	←	←	←
INTER CARRIER	NO	←	←	←	←	←	←
SURROUND	YES	←	←	←	←	←	←
PICTURE BOOSTER	NO	←	←	←	←	←	←
COMPONENT	YES	←	←	←	←	←	←
PIP	YES	NO	←	←	←	YES	←
S INPUT	YES	←	←	←	←	←	←
MAXX BASS	YES	←	←	←	←	←	←

3.2.3 SETTINGS OF FACTORY SHIPMENT

3.2.3.1 BUTTON OPERATION

Setting item	Setting position
POWER	Off
CHANNEL	PR 1
VOLUME	15

3.2.3.2 REMOTE CONTROL DIRECT OPERATION

Setting item	Setting position
CHANNEL	PR1
VOLUME	15
PICTURE MODE	BRIGHT
DISPLAY	Indicated
TV/VIDEO	TV
CINEMA SURROUND	OFF

3.2.3.3 REMOTE CONTROL MENU OPERATION

(1) PICTURE SETTING

Setting item	Setting position
PICTURE MODE	BRIGHT
CONTRAST / BRIGHT / SHARP / COLOUR / TINT	Centre
WHITE BALANCE	COOL
VNR	AUTO

(2) SOUND SETTING

Setting item	Setting position
STEREO I/II	STEREO SOUND
AI VOLUME	OFF
SOUND MODE	MUSIC
BALANCE	Centre
CINEMA SURROUND	OFF
MAXX BASS	OFF

(3) FEATURE SETTING

Setting item	Setting position
DVD MENU	
AUTO SIGNAL DETECT	ON
DVD PICTURE MODE	OFF
DVD THEATER STATUS	OFF
DVD SOUND MODE	THEATER
ON TIMER	OFF
OFF TIMER	OFF
CHILD LOCK	OFF
COMPRESS (16:9)	OFF
AI ECO SENSOR	OFF

(4) INSTALL SETTING

Setting item	Setting position
AUTO PROGRAM	TV channel automatically set
EDIT/MANUAL	PRESET CH only
COLOUR SYSTEM	PAL
LANGUAGE	ENGLISH
TEXT LANGUAGE	GROUP1 [AV-21MS26] GROUP3 [AV-2186ME] GROUP4 [AV-21MX76/G]
VIDEO-2 SETTING	COMPONENT
BLUE BACK	ON
BEEP	ON

3.2.4 SERVICE MODE SETTING ITEMS

Setting item	Setting value
1. IF	1. VCO 2. DELAY POINT
2. V / C	1. SCREEN 2. CUTOFF(B/G) 3. WDR(R/G/B) 4. BRIGHT(TV/VDO 1/2/3) 5. CONT(TV/VDO 1/2/3) 6. COLOUR (TV/VDO1/2/3) 7. TINT(TV/VDO 1/2/3) 8. SHARP [Do not adjust] 9. Y DELAY [Do not adjust] 10. TINT DVD [Do not adjust] 11. AMP T. SHARP 12. TWIN CONT.
3. AUDIO [Do not adjust]	1. DCXO ADJ 2. NICAM lower ERR LIM 3. NICAM upper ERR LIM 4. A2 ID THR 5. MENU EQUALIZER
4. DEF	1. V-SHIFT 2. V-SLOPE 3. V-SIZE 4. H-CENT 5. H-SIZE 6. TRAPEZ 7. EW-PIN 8. COR-UP 9. COR-LO 10. ANGLE 11. BOW 12. V-S.CR 13. V-LIN 14. V-ZOOM
5. VSM PRESET	1. BRIGHT 2. CONT 3. COLOUR 4. SHARP 5. HUE 1. R DRIVE 2. G DRIVE 3. B DRIVE
6. STATUS [Display only]	---
7. PLUG & PLAY(ON) [Display only]	---

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

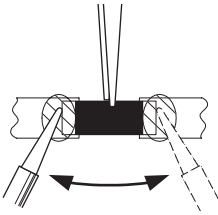
- (1) Use a high insulation soldering iron with a thin pointed end of it.
- (2) A 30w soldering iron is recommended for easily removing parts.

3.3.3 REPLACEMENT STEPS

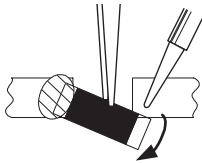
1. How to remove Chip parts

[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 the tweezers and remove the chip part.

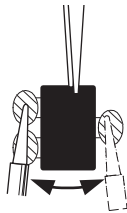


[Transistors, diodes, variable resistors, etc.]

- (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.



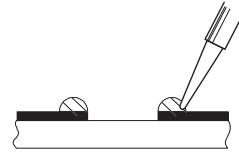
NOTE :

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

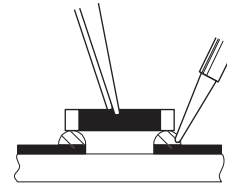
2. How to install Chip parts

[Resistors, capacitors, etc.]

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

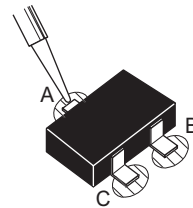


- (2) Grasp the chip part with tweezers and place it on the solder. Then heat and melt the solder at both ends of the chip part.

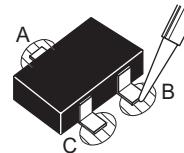


[Transistors, diodes, variable resistors, etc.]

- (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) There are 2 ways of adjusting this TV : One is with the **REMOTE CONTROL UNIT** and the other is the conventional method using adjustment parts and components.
- (2) The 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.
- (3) Make sure that connection is correctly made AC to AC power source.
- (4) Turn on the power of the TV and measuring instruments for warming up for at least 30 minutes before starting adjustments.
- (5) If the receive or input signal is not specified, use the most appropriate signal for adjustment.
- (6) Never touch the parts (such as variable resistors, transformers and condensers) not shown in the adjustment items of this service adjustment.

4.2 PRESET SETTING BEFORE ADJUSTMENT

Unless otherwise specified in the adjustment items, preset the following functions with the **REMOTE CONTROL UNIT**.

Item	Preset value
PICTURE MODE(VSM)	BRIGHT
VNR	OFF
AI ECO SENSOR	OFF
BALANCE	Centre
BASS / TREBLE / BALANCE	Centre
CINEMA SURROUND	OFF

4.3 MEASURING INSTRUMENT AND FIXTURES

- (1) DC voltmeter (or digital voltmeter)
- (2) Oscilloscope
- (3) HV voltmeter
- (4) Signal generator
(Pattern generator : PAL/NTSC)
- (5) Remote control unit

4.4 ADJUSTMENT ITEMS

■ CHECK ITEMS

- B1 VOLTAGE check
- HIGH VOLTAGE check
- IF VCO check

■ TUNER / IF CIRCUIT

- DELAY POINT (AGC) adjustment

■ FOCUS

- FOCUS adjustment

■ DEFLECTION CIRCUIT

- V.SLOPE adjustment
- V.POSITION adjustment
- V.SIZE adjustment
- H.POSITION adjustment
- H.SIZE adjustment
- SIDE PIN adjustment
- TRAPEZIUM adjustment
- V. LINEARITY adjustment
- CORNER adjustment
- H. PARALLEL adjustment
- H.BOW adjustment

■ VIDEO CIRCUIT

- WHITE BALANCE adjustment
- SUB BRIGHT adjustment
- SUB CONTRAST adjustment
- SUB COLOUR adjustment
- SUB TINT adjustment

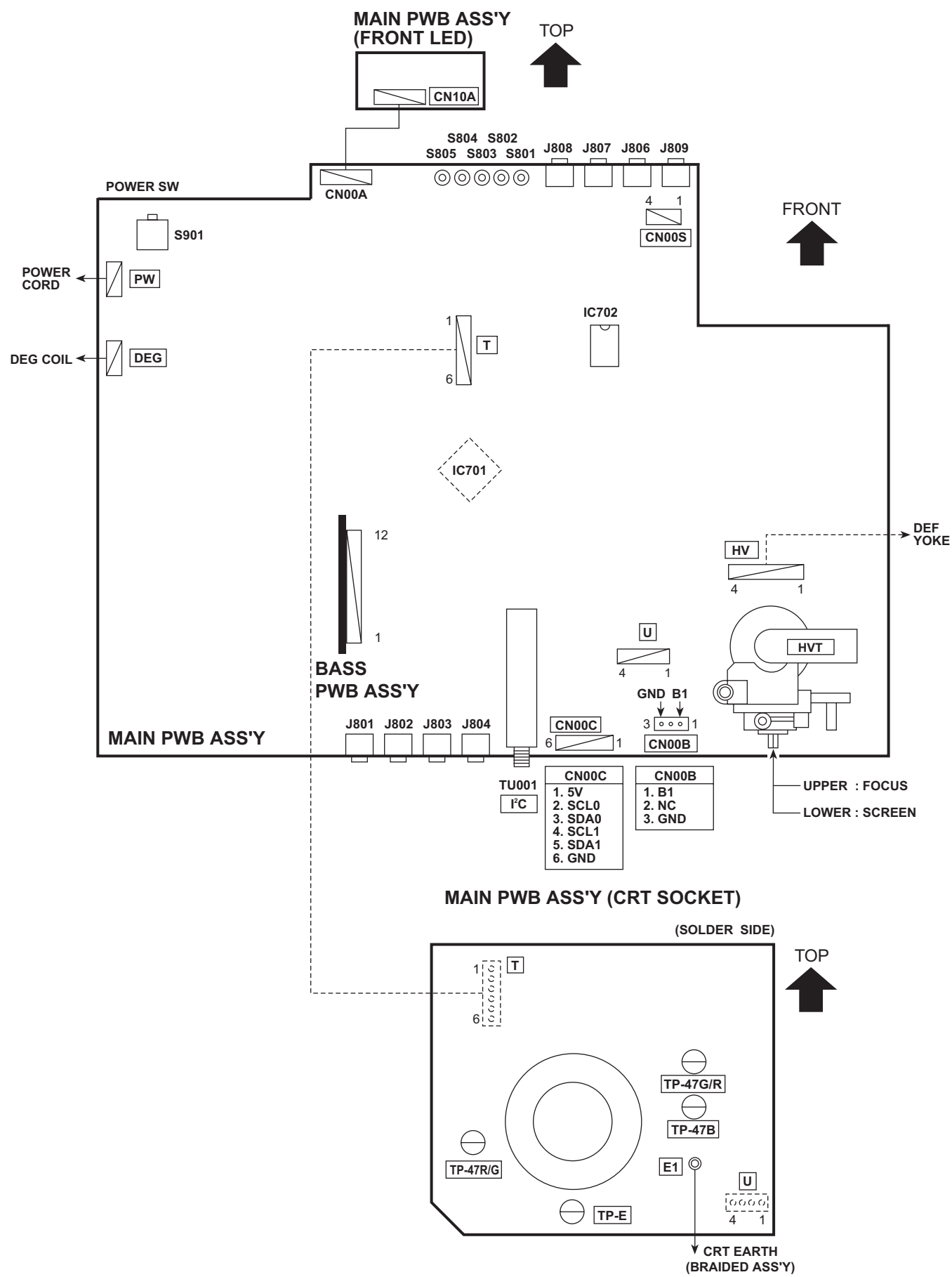
■ VSM PRESET SETTING

- VSM PRESET

■ PURITY AND CONVERGENCE

- PURITY adjustment
- STATIC CONVERGENCE adjustment
- DYNAMIC CONVERGENCE adjustment

4.5 ADJUSTMENT LOCATION



4.6 BASIC OPERATION OF SERVICE MODE

4.6.1 TOOL OF SERVICE MODE OPERATION

Operate the SERVICE MODE with the REMOTE CONTROL UNIT.

4.6.2 SERVICE MODE ITEMS

With the SERVICE MODE, various adjustments can be made, and they are broadly classified in the following items of settings.

1.IF	This mode adjusts the setting values of the IF circuit.
2. V/C	This mode adjusts the setting values of the VIDEO circuit.
3.AUDIO	This mode adjusts the setting values of the multiplicity AUDIO circuit. [Do not adjust]
4. DEF	This mode adjusts the setting values of the DEFLECTION circuit for each aspect mode given below.
5.VSM PRESET	This mode adjusts the initial setting values of BRIGHT, STANDARD and SOFT. (VSM : Video Status Memory)
6.STATUS	It is no requirement to adjustment. [Do not adjust]
7.PLUG & PLAY (ON)	This mode adjusts the setting values of the PIP circuit. [Do not adjust]

4.6.3 BASIC OPERATION IN SERVICE MODE

4.6.3.1 HOW TO ENTER THE SERVICE MODE

- (1) Press the **[DISPLAY]** key and the **[PICTURE MODE]** key simultaneously, then enter the SERVICE MODE.
- (2) When the main menu is displayed, press any key of the [7] to [9] key to enter the corresponding sub menu mode.

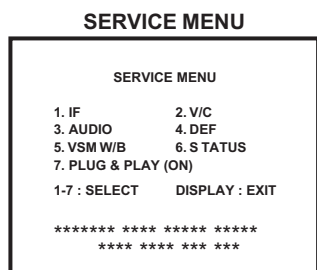


Fig.1

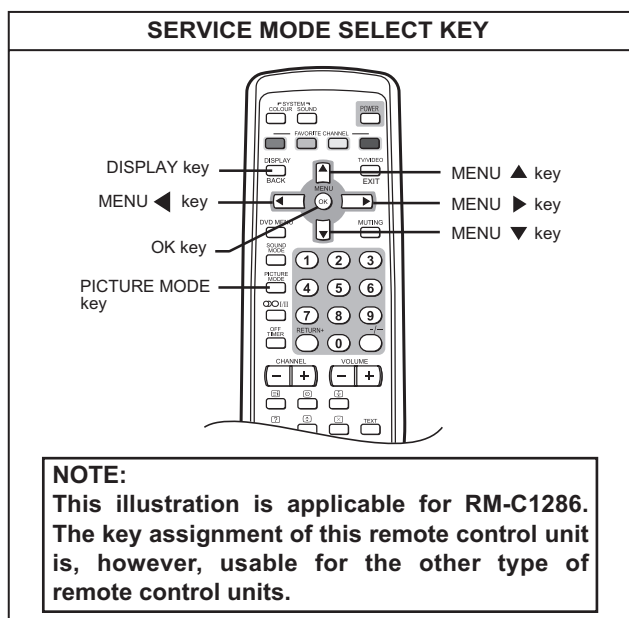


Fig.2

4.6.3.2 SETTING METHOD

■ 1.IF

[1. VCO] : It must not adjust without signal

- (1) **[1]** key
Select 1.IF.
- (2) **[1]** key
Select 1.VCO(CW).
Check the arrow position between the ABOVE REF. and BELOW REF.
- (3) **[DISPLAY]** key
Return to the SERVICE MODE main manu screen.

■ 2. V/C, 4. DEF

- (1) **[2], [4]** key
Select one from 2. V/C, 4. DEF.
- (2) **[MENU ▲/▼]** key
Select setting items.
- (3) **[MENU ◀/▶]** key
Set the setting values of the setting items.

■ 5.VSM W/B

- (1) **[5]** key
Select 5.VSM W/B.
- (2) **[OK]** key
Select setting items.
- (3) **[MENU ▲/▼]** key
Set the setting values of the setting items.

4.6.3.3 MEMORIZE THE ADJUSTMENT DATA

When adjustment is completed, press the **[OK]** key to memorize the adjustment value. If not to do it, adjustment data is not memorized to the memory IC. And if exit the adjustment mode before memorize the data, the adjustment value which you change is canceled.

4.6.3.4 RELEASE OF SERVICE MODE

After completing the setting, return to the SERVICE MODE, then again press the **[DISPLAY]** key.

4.6.4 SERVICE MODE FLOW CHART

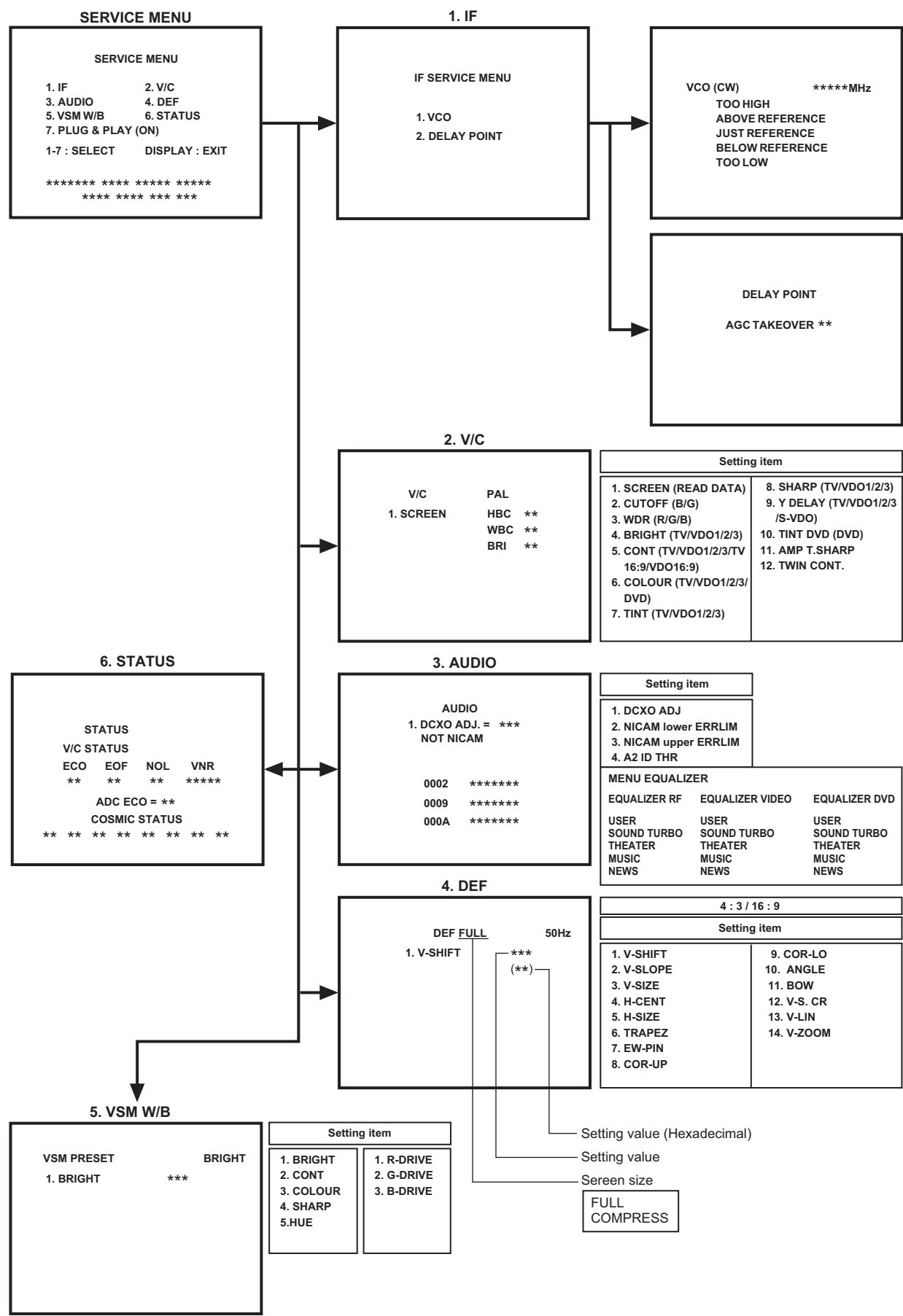


Fig.3

4.7 INITIAL SETTING VALUE OF SERVICE MODE

- (1) Adjustment of the SERVICE MODE is made on the basis of the initial setting values:however, the new setting values which set the screen in its optimum condition may differ from the initial setting value.
- (2) Do not change the initial setting values of the setting items not listed in "ADJUSTMENT PROCEDURE".
- (3) " --- " is impossible to adjustment.
- (4) " 12.TWIN CONT " is displayed only in the models with PIP function.

[2. V/C] * is variable values for adjustment.

[AV-2186ME, AV-21MS26]

Adjustment item		Variable range	Initial setting value						
			PAL	SECAM	NTSC3.58	NTSC4.43	VIDEO 2	COMPONENT(V-2)	
								525i	625i
1. SCREEN	BRI	0 ~ 63	31*	31*	31*	31*	---	32*	32*
2. CUT OFF	B	0 ~ 63(-32 ~ +31)	43*	43*	43*	43*	---	(+0)*	(+0)*
	G	0 ~ 63(-32 ~ +31)	28*	28*	28*	28*	---	(-3)*	(-3)*
	CUT	0 ~ 63(-32 ~ +31)	---	---	---	---	-17	(-15)	(-15)
	OFFTHEATER	0 ~ 63(-32 ~ +31)	---	---	---	---	-7	(0)	(0)
3. WDR	R	0 ~ 63(-32 ~ +31)	35*	35*	35*	35*	---	(0)	(0)
	G	0 ~ 63(-32 ~ +31)	32	32	32	32	---	(0)	(0)
	B	0 ~ 63(-32 ~ +31)	40*	40*	40*	40*	---	(0)	(0)
4. BRIGHT	RF	0 ~ 63	34*	34*	34*	34*	---	---	---
	VIDEO-1(COMPOSITE/S)	(-32 ~ +31)	(-1)	(-1)	(-1)	(-1)	---	---	---
	VIDEO-2(COMPONENT)	(-32 ~ +31)	(-1)	(-1)	(-1)	(-1)	---	(+0)	(+0)
	VIDEO-3(COMPOSITE)	(-32 ~ +31)	(-1)	(-1)	(-1)	(-1)	---	---	---
5. CONT.	RF	0 ~ 63	18*	18*	18*	18*	---	---	---
	VIDEO-1(COMPOSITE/S)	(-32 ~ +31)	(+0)	(+0)	(+0)	(+0)	---	---	---
	VIDEO-2(COMPONENT)	(-32 ~ +31)	(+0)	(+0)	(+0)	(+0)	---	(+0)	(+0)
	VIDEO-3(COMPOSITE)	(-32 ~ +31)	(+0)	(+0)	(+0)	(+0)	---	---	---
6. COLOUR	RF	0 ~ 63(-32 ~ +31)	42*	29*	31*	+1	---	---	---
	VIDEO-1(COMPOSITE/S)	(-32 ~ +31)	+0	+2	+1	+0	---	---	---
	VIDEO-2(COMPONENT)	(-32 ~ +31)	+0	+2	+1	+0	---	(+2)	(+4)
	VIDEO-3(COMPOSITE)	(-32 ~ +31)	+0	+2	+1	+0	---	---	---
7. TINT	RF	0 ~ 63(-32 ~ +31)	---	---	32*	+3	---	---	---
	VIDEO	(-32 ~ +31)	---	---	(+4)	(+3)	---	---	---
	THEATER	(-32 ~ +31)	---	---	(+4)	(+4)	---	---	---
8. SHARP	RF	0 ~ 63	48	48	48	48	---	40	40
	VIDEO	0 ~ 63	48	48	48	48	---	40	40
9. Y DELAY	RF	0 ~ 15	7	7	5	5	---	---	---
	VIDEO	0 ~ 15	6	9	7	7	---	---	---
	S-VIDEO	0 ~ 15	7	9	9	9	---	---	---
10. TINT DVD	RF	0 ~ 63(-32 ~ +31)	37*	-1	+0	+0	---	+3	+1
	VIDEO	(-32 ~ +31)	+0	+0	+1	+1	---	+3	+1
	THEATER	(-32 ~ +31)	+0	+0	---	---	---	+3	+1
11. AMP T.SHARP	RF VIDEO	0 ~ 63	0	0	0	0	---	0	0
12. TWIN CONT.	TWIN (RF)	(-32 ~ +31)	-15	-15	-15	-15	---	---	---
	TWIN (VIDEO)	(-32 ~ +31)	---	---	---	---	---	---	---

[AV-21MS16/H, AV-21MX16/G, AV-21MX56/S, AV-21MX16/S]

Adjustment item			Variable range	Initial setting value						
				PAL	SECAM	NTSC3.58	NTSC4.43	VIDEO 2	COMPONENT(V-2)	
									525i	625i
1. SCREEN	BRI		0 ~ 63	31*	31*	31*	31*	---	32*	32*
2. CUT OFF	B		0 ~ 63(-32 ~ +31)	43*	43*	43*	43*	---	(+0)*	(+0)*
		G	0 ~ 63(-32 ~ +31)	28*	28*	28*	28*	---	(-3)*	(-3)*
	CUT OFF THEATER	B	0 ~ 63(-32 ~ +31)	---	---	---	---	-17	(-15)	(-15)
		G	0 ~ 63(-32 ~ +31)	---	---	---	---	-7	(0)	(0)
3. WDR	R		0 ~ 63(-32 ~ +31)	35*	35*	35*	35*	---	(0)	(0)
	G		0 ~ 63(-32 ~ +31)	32	32	32	32	---	(0)	(0)
	B		0 ~ 63(-32 ~ +31)	40*	40*	40*	40*	---	(0)	(0)
4. BRIGHT	RF		0 ~ 63	34*	34*	34*	34*	---	---	---
	VIDEO-1(COMPOSITE/S)		(-32 ~ +31)	(-1)	(-1)	(-1)	(-1)	---	---	---
	VIDEO-2(COMPONENT)		(-32 ~ +31)	(-1)	(-1)	(-1)	(-1)	---	(+0)	(+0)
	VIDEO-3(COMPOSITE)		(-32 ~ +31)	(-1)	(-1)	(-1)	(-1)	---	---	---
5. CONT.	RF		0 ~ 63	18*	18*	18*	18*	---	---	---
	VIDEO-1(COMPOSITE/S)		(-32 ~ +31)	(+0)	(+0)	(+0)	(+0)	---	---	---
	VIDEO-2(COMPONENT)		(-32 ~ +31)	(+0)	(+0)	(+0)	(+0)	---	(+0)	(+0)
	VIDEO-3(COMPOSITE)		(-32 ~ +31)	(+0)	(+0)	(+0)	(+0)	---	---	---
6. COLOUR	RF		0 ~ 63(-32 ~ +31)	42*	29*	31*	+1	---	---	---
	VIDEO-1(COMPOSITE/S)		(-32 ~ +31)	+0	+2	+1	+0	---	---	---
	VIDEO-2(COMPONENT)		(-32 ~ +31)	+0	+2	+1	+0	---	(+2)	(+4)
	VIDEO-3(COMPOSITE)		(-32 ~ +31)	+0	+2	+1	+0	---	---	---
7. TINT	RF		0 ~ 63(-32 ~ +31)	---	---	32*	+3	---	---	---
	VIDEO		(-32 ~ +31)	---	---	(+4)	(+3)	---	---	---
	THEATER		(-32 ~ +31)	---	---	(+4)	(+4)	---	---	---
8. SHARP	RF		0 ~ 63	48	48	48	48	---	40	40
	VIDEO		0 ~ 63	48	48	48	48	---	40	40
9. Y DELAY	RF		0 ~ 15	7	7	5	5	---	---	---
	VIDEO		0 ~ 15	6	9	7	7	---	---	---
	S-VIDEO		0 ~ 15	7	9	9	9	---	---	---
10. TINT DVD	RF		0 ~ 63(-32 ~ +31)	37*	-1	+0	+0	---	+3	+1
	VIDEO		(-32 ~ +31)	+0	+0	+1	+1	---	+3	+1
	THEATER		(-32 ~ +31)	+0	+0	---	---	---	+3	+1
11. AMP T.SHARP	RF VIDEO		0 ~ 63	0	0	0	0	---	0	0
12. TWIN CONT.	TWIN (RF)		(-32 ~ +31)	---	---	---	---	---	---	---
	TWIN (VIDEO)		(-32 ~ +31)	---	---	---	---	---	---	---

Adjustment item		Variable range	Initial setting value					
			PAL	SECAM	NTSC3.58	NTSC4.43	VIDEO 2	COMPONENT(V-2)
								525i
1. SCREEN	BRI	0 ~ 63	31*	31*	31*	31*	31*	31*
2. CUT OFF	B	0 ~ 63(-32 ~ +31)	43*	43*	43*	43*	(+0)*	(+0)*
	G	0 ~ 63(-32 ~ +31)	28*	28*	28*	28*	(-3)*	(-3)*
3. WDR	R	0 ~ 63(-32 ~ +31)	35*	35*	35*	35*	(0)	(0)
	G	0 ~ 63(-32 ~ +31)	32	32	32	32	(0)	(0)
	B	0 ~ 63(-32 ~ +31)	40*	40*	40*	40*	(0)	(0)
4. BRIGHT	RF	0 ~ 63	34*	34*	34*	34*	---	---
	VIDEO-1(COMPOSITE/S)	(-32 ~ +31)	(+4)	(+4)	(+4)	(+4)	---	---
	VIDEO-2(COMPONENT)	(-32 ~ +31)	(+1)	(+1)	(+1)	(+1)	(+2)	(+2)
	VIDEO-3(COMPOSITE)	(-32 ~ +31)	(-1)	(-1)	(-1)	(-1)	---	---
5. CONT.	RF	0 ~ 63	18*	18*	18*	18*	---	---
	VIDEO-1(COMPOSITE/S)	(-32 ~ +31)	(+0)	(+0)	(+0)	(+0)	---	---
	VIDEO-2(COMPONENT)	(-32 ~ +31)	(+0)	(+0)	(+0)	(+0)	(-2)	(-2)
	VIDEO-3(COMPOSITE)	(-32 ~ +31)	(+0)	(+0)	(+0)	(+0)	---	---
6. COLOUR	RF	0 ~ 63(-32 ~ +31)	42*	29*	31*	0	---	---
	VIDEO-1(COMPOSITE/S)	(-32 ~ +31)	+1	+0	+1	+1	---	---
	VIDEO-2(COMPONENT)	(-32 ~ +31)	+1	+0	+1	+1	(+0)	(-2)
	VIDEO-3(COMPOSITE)	(-32 ~ +31)	+1	+0	+1	+1	---	---
7. TINT	RF	0 ~ 63(-32 ~ +31)	---	---	32*	+3	---	---
	VIDEO	(-32 ~ +31)	---	---	(+1)	(+3)	---	---
	THEATER	(-32 ~ +31)	---	---	(+4)	(+4)	---	---
8. SHARP	RF	0 ~ 63	48	48	48	48	---	---
	VIDEO	0 ~ 63	48	48	48	48	40	40
9. Y DELAY	RF	0 ~ 15	5	7	5	7	---	---
	VIDEO	0 ~ 15	6	9	7	7	---	---
	S-VIDEO	0 ~ 15	7	9	9	9	---	---
10. TINT DVD	RF	0 ~ 63(-32 ~ +31)	37*	-1	+1	+1	+1	-3
	VIDEO	(-32 ~ +31)	+1	-3	+1	+1	+1	-3
	THEATER	(-32 ~ +31)	+0	+0	---	---	+3	+1
11. AMP T.SHARP	RF VIDEO	0 ~ 63	0	0	0	0	0	0
12. TWIN CONT.	TWIN (RF)	(-32 ~ +31)	-15	-15	-15	-15	---	---
	TWIN (VIDEO)	(-32 ~ +31)	---	---	---	---	---	---

[3. AUDIO] *This submenu is for display only, no adjustment is required.

[AV-2186ME, AV-21MS26, AV-21MS16/H]

Function	Item	Setting value
AUDIO	1. DC XO ADJ	12H
	2. NICAM LOWER ERR LIM	6FH
	3. NICAM UPPER ERR LIM	B0H
	4. A2 ID THR	00H

Function	MODE	Item	100Hz	300Hz	1kHz	3kHz	8kHz
MENU EQUALIZER	RF	SOUND TURBO	+11	+5	+3	+8	+9
		THEATER	+6	+4	-6	+5	+6
		MUSIC	+8	+1	+1	+3	+6
		NEWS	+1	+3	+6	+3	-4
		USER	+0	+0	+0	+0	+0
	VIDEO	SOUND TURBO	+11	+5	+3	+8	+12
		THEATER	+6	+4	-6	+5	+6
		MUSIC	+8	+1	+1	+3	+6
		NEWS	+1	+3	+6	+3	-4
		USER	+0	+0	+0	+0	+0
	DVD	THEATER	+6	+4	-6	+5	+6
		MUSIC	+8	+1	+1	+3	+6
		DRAMA	+3	+4	+6	+4	-1
		USER	+0	+0	+0	+0	+0

[4. DEF]

Adjustment item	Variable range		Initial setting value			
			4:3		COMPRESS (16:9)	
	4:3 50Hz	Others	50Hz	60Hz	50Hz	60Hz
1. V-SHIFT	0 ~ 63	-32 ~ +31	+32*	0*	0*	0*
2. V-SLOPE	0 ~ 63	-32 ~ +31	+32*	0*	0*	0*
3. V-SIZE	0 ~ 63	-32 ~ +31	+38*	0*	-14*	0*
4. H-CENT	0 ~ 63	-32 ~ +31	+32*	0*	0*	0*
5. H-SIZE	0 ~ 63	-32 ~ +31	0*	0*	0*	0*
6. TRAPEZ	0 ~ 63	-32 ~ +31	0*	0*	0*	0*
7. EW-PIN	0 ~ 63	-32 ~ +31	0*	0*	0*	0*
8. COR-UP	0 ~ 63	-32 ~ +31	0*	0*	0*	0*
9. COR-LO	0 ~ 63	-32 ~ +31	0*	0*	0*	0*
10. ANGLE	0 ~ 63	-32 ~ +31	+32*	0*	0*	0*
11. BOW	0 ~ 63	-32 ~ +31	+32*	0*	0*	0*
12. V-S.CR	0 ~ 63	-32 ~ +31	+32*	0*	0*	0*
13. V-LIN	0 ~ 63	-32 ~ +31	+32*	0*	0*	0*
14. V-ZOOM	0 ~ 63	-32 ~ +31	(+25 ~+32)	(0)	-13*	+3*

NOTE: The value with an asterisk * is variable for adjustment. The values in parenthesis () are fixed values.

V-ZOOM DATA can adjust follow data range in case measurement line power on is appeared.

[5. VSM W/B]

Setting item	Variable range	Setting value			
		BRIGHT	SOFT	STANDARD	THEATER
1. BRIGHT	-16 - 16	0	0	0	+2
2. CONT	-16 - 16	+15	+5	+10	-3
3. COLOUR	-16 - 16	0	0	-4	-7
4. SHARP	-16 - 16	0	-10	-5	0
5. HUE	-16 - 16	0	0	0	-1

Setting item	Variable range	Setting value			
		COOL	WARM	NAORMAL	THEATER
1. R DRIVE	-64 - 63	0	10	0	+15
2. G DRIVE	-64 - 63	0	-4	+2	+7
3. B DRIVE	-64 - 63	0	-12	-10	-22

4.8 ADJUSTMENT PROCEDURE

4.8.1 CHECK ITEM

Item	Measuring instrument	Test point	Adjustment part	Description
B1 VOLTAGE	DC voltmeter Remote control unit	CN00B connector 1-pin:TP-B1 3-pin:TP-E [MAIN PWB]		(1) Receive any broadcast. (2) Connect a DC voltmeter to 1-pin and 3-pin of CN00B connector. (3) Make sure that the voltage is DC134.5V ±2.0V .
HIGH VOLTAGE	HV voltmeter Remote control unit	CRT anode Chassis GND		(1) Receive any broadcast. (2) Connect the earth clip of HV voltmeter to chassis GND. (3) Connect the probe of HV voltmeter to CRT anode. (4) Make sure that the voltage is DC28.5kV ±1.5kV . NOTE: <ul style="list-style-type: none"> Remove the probe before removing the earth clip.
IF VCO	Remote control unit		[1.IF] 1.VCO	<ul style="list-style-type: none"> Under normal conditions, no adjustment is required. Confirmation adjustment. <ol style="list-style-type: none"> Select 1.IF from the SERVICE MODE. Select <1.VCO> Receive any broadcast. Check the ←(Arrow) posspition between the ABOVE REF. and BELOW REF.
<div style="display: flex; align-items: center; justify-content: center;"> <div style="border: 1px solid black; padding: 10px; margin-right: 20px;"> <p style="text-align: center;">IF SERVICE MENU</p> <p>1. VCO 2. DELAY POINT</p> <p style="text-align: center;">1 : SELECT DISPLAY : EXIT</p> </div> <div style="display: flex; align-items: center;"> <div style="font-size: 2em; margin-right: 10px;">→</div> <div style="border: 1px solid black; padding: 10px; flex: 1;"> <p style="text-align: center;">Receiving frequency ↓ VCO (CW) ***.*** MHz</p> <p style="text-align: center;">TOO HIGH ABOVE REFERENCE JUST REFERENCE ← BELOW REFERENCE TOO LOW</p> <p style="text-align: center;">DISPLAY : EXIT</p> <p style="text-align: right; color: yellow;">YELLOW</p> </div> </div> </div>				

4.8.2 TUNER / IF CIRCUIT

Item	Measuring instrument	Test point	Adjustment part	Description										
DELAY POINT (AGC)	Signal generator		[1. IF] 2. DELAY POINT (AGC TAKE-OVER)	(1) Receive a black and white signal (colour off). (2) Select 1. IF. (3) Select <2. DELAY POINT>. (4) Set the setting values of the setting items as shown below table. (5) Then adjust the [MENU - / +] keys until video noise disappears. (6) Turn to other channels and make sure that there are no irregularities.										
	Remote control unit													
<table><tr><th colspan="2">Setting Item</th><th>Variable range</th><th>Initial setting value</th></tr><tr><td rowspan="2">DELAY POINT (AGC TAKE-OVER)</td><td>NTSC3.58</td><td rowspan="2">0 - 127</td><td>35</td></tr><tr><td>OTHER</td><td>35</td></tr></table>				Setting Item		Variable range	Initial setting value	DELAY POINT (AGC TAKE-OVER)	NTSC3.58	0 - 127	35	OTHER	35	
Setting Item		Variable range	Initial setting value											
DELAY POINT (AGC TAKE-OVER)	NTSC3.58	0 - 127	35											
	OTHER		35											

4.8.3 FOCUS

Item	Measuring instrument	Test point	Adjustment part	Description
FOCUS	Signal generator		FOCUS VR [In HVT]	(1) Receive the cross hatch signal. (2) While looking at the screen, adjust the FOCUS VR to the vertical and horizontal lines will be thinnest and sharpest. (3) Make sure that the picture is in focus even when the screen gets darkened.

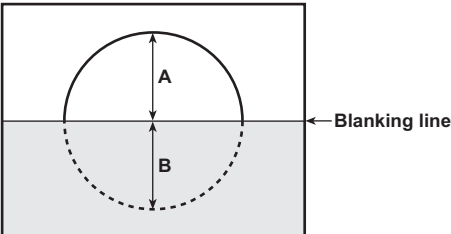
4.8.4 DEFLECTION CIRCUIT

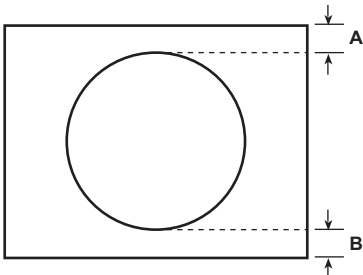
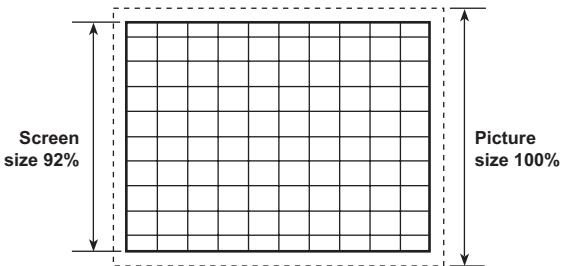
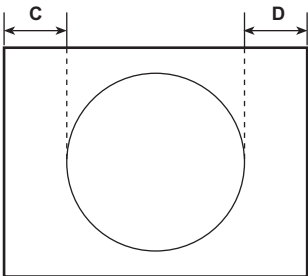
- The setting (adjustment) using the remote control unit is made on the basis of the initial setting values.
- The setting values which adjust the screen to the optimum condition can be different from the initial setting values.
- When performing deflection circuit adjustment, adjusts PAL signal (fv: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

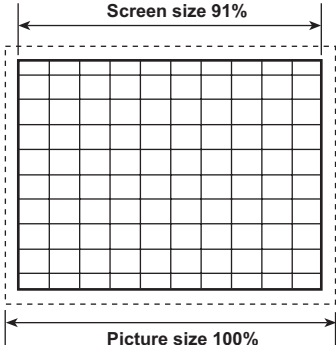
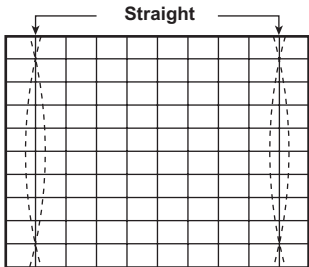
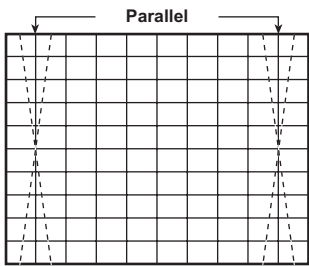
NOTE:

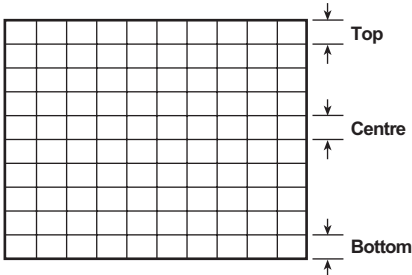
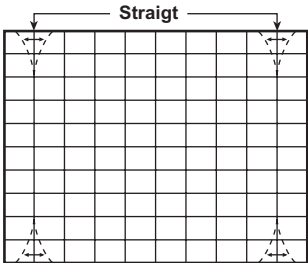
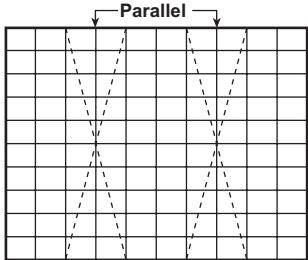
Proceed to the following adjustment after having completed the adjustments of SUB BRIGHT and SUB PICTURE.

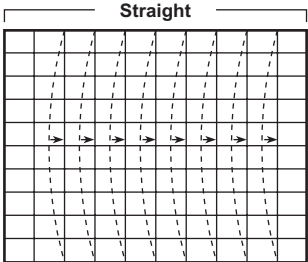
■ COMPRESS: OFF (4:3)

Item	Measuring instrument	Test point	Adjustment part	Description
V. SLOPE	Signal generator Remote control unit		[4. DEF] 2. V-SLOPE	PAL V. SLOPE (1) Receive a circle pattern signal of vertical frequency 50Hz (PAL). (2) Select 4. DEF from the SERVICE MODE. (3) Select <2. V-SLOPE>. (4) Set the initial setting value of <2. V-SLOPE>. (5) Adjust <2. V-SLOPE> to make "A = B". (6) Press the [OK] key to memorize the set values. NTSC V. SLOPE (1) Receive a circle pattern signal of vertical frequency 60Hz (NTSC). (2) Follow the same step 2 to 6 as in PAL V. SLOPE.
				

Item	Measuring instrument	Test point	Adjustment part	Description
V. POSITION	Signal generator Remote control unit		[4. DEF] 1. V-SHIFT	PAL V. POSITION (1) Receive a circle pattern signal of vertical frequency 50Hz (PAL). (2) Select 4. DEF from the SERVICE MODE. (3) Select <1. V-SHIFT> . (4) Set the initial setting value of <1. V-SHIFT> . (5) Adjust <1. V-SHIFT> to make " A = B ". (6) Press the [OK] key to memorize the set values. NTSC V. POSITION (1) Receive a circle pattern signal of vertical frequency 60Hz (NTSC). (2) Follow the same step 2 to 6 as in PAL V. POSITION.
				
V. SIZE	Signal generator Remote control unit		[4. DEF] 3. V-SIZE	PAL V. SIZE (1) Receive a PAL crosshatch signal. (2) Select 4. DEF from the SERVICE MODE. (3) Select <3. V-SIZE> . (4) Set the initial setting value of <3. V-SIZE> . (5) Adjust <3. V-SIZE> to make the vertical screen size to 92% of the picture size. (6) Press the [OK] key to memorize the set values. NTSC V. SIZE (1) Receive a NTSC crosshatch signal. (2) Follow the same step 2 to 6 as in PAL V. SIZE.
				
H. POSITION	Signal generator Remote control unit		[4. DEF] 4. H-CENT	PAL H. POSITION (1) Receive a PAL circle pattern signal. (2) Select 4. DEF from the SERVICE MODE. (3) Select <4. H-CENT> . (4) Set the initial setting value of <4. H-CENT> . (5) Adjust <4. H-CENT> to make " C = D ". (6) Press the [OK] key to memorize the set values. NTSC H. POSITION (1) Receive a NTSC circle pattern signal. (2) Follow the same step 2 to 6 as in PAL H. POSITION.
				

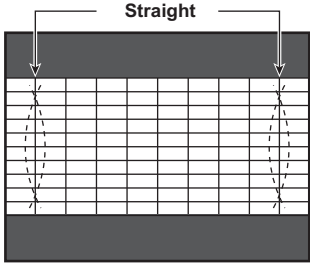
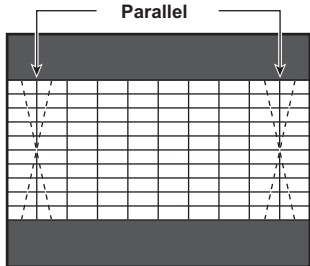
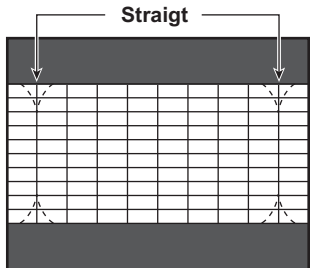
Item	Measuring instrument	Test point	Adjustment part	Description
H. SIZE	Signal generator		[4.DEF] 5. H-SIZE	PAL H. SIZE (1) Receive a PAL crosshatch signal. (2) Select 4. DEF from the SERVICE MODE. (3) Select <5. H-SIZE> . (4) Set the initial setting value of <5. H-SIZE> . (5) Adjust <5. H-SIZE> to make the horizontal screen size to 91% of the picture size. (6) Press the [OK] key to memorize the set values. NTSC H. SIZE (1) Receive a NTSC crosshatch signal. (2) Follow the same step 2 to 6 as in PAL H. SIZE.
	Remote control unit			
				
SIDE PIN	Signal generator		[4. DEF] 7. EW-PIN	PAL SIDE PIN (1) Receive a PAL crosshatch signal. (2) Select 4. DEF from the SERVICE MODE. (3) Select <7. EW-PIN> . (4) Set the initial setting value of <7. EW-PIN> . (5) Adjust <7. EW-PIN> so that the first vertical lines at the left and right edges on the screen are straight. (6) Press the [OK] key to memorize the set values. NTSC SIDE PIN (1) Receive a NTSC crosshatch signal. (2) Follow the same step 2 to 6 as in PAL SIDE PIN.
	Remote control unit			
				
TRAPEZIUM	Signal generator		[4.DEF] 6. TRAPEZ	PAL TRAPEZIUM (1) Receive a PAL crosshatch signal. (2) Select 4. DEF from the SERVICE MODE. (3) Select <6. TRAPEZ> . (4) Set the initial setting value of 6. TRAPEZ . (5) Adjust <6. TRAPEZ> so that the vertical lines at the left and right edges on the screen are in parallel. (6) Press the [OK] key to memorize the set values. NTSC TRAPEZIUM (1) Receive a NTSC crosshatch signal. (2) Follow the same step 2 to 6 as in PAL TRAPEZIUM.
	Remote control unit			
				

Item	Measuring instrument	Test point	Adjustment part	Description
V.LINEARITY	Signal generator Remote control unit		[4. DEF] 12. V-S. CR 13. V-LIN	PAL V. LINEARITY <ol style="list-style-type: none"> (1) Receive a PAL crosshatch signal. (2) Select 4. DEF from the SERVICE MODE. (3) Select <12. V-S.CR>. (4) Set the initial setting value of <12. V-S. CR>. (5) Select <13. V-LIN>. (6) Set the initial setting value of <13. V-LIN>. (7) Adjust <12. V-S. CR> and <13. V-LIN> so that the spaces of each line on TOP, CENTRE and BOTTOM become uniform. (8) Press the [OK] key to memorize the set values. NTSC V. LINEARITY <ol style="list-style-type: none"> (1) Receive a NTSC crosshatch signal. (2) Follow the same step 2 to 8 as in PAL V-S. CR.
				
CORNER PIN	Signal generator Remote control unit		[4. DEF] 8. COR-UP 9. COR-LO	PAL CORNER PIN <ol style="list-style-type: none"> (1) Receive a PAL crosshatch signal. (2) Select 4. DEF from the SERVICE MODE. (3) Select <8. COR-UP>. (4) Set the initial setting value of <8. COR-UP>. (5) Select <9. COR-LO>. (6) Set the initial setting value of <9. COR-LO>. (7) Adjust <8. COR-UP> and <9. COR-LO> so that the vertical lines at the four corners on the screen are straight. (8) Press the [OK] key to memorize the set values. NTSC CORNER PIN <ol style="list-style-type: none"> (1) Receive a NTSC crosshatch signal. (2) Follow the same step 2 to 8 as in PAL CORNER.
				
H. PARALLEL	Signal generator Remote control unit		[4.DEF] 10. ANGLE	PAL H. PARALLEL <ol style="list-style-type: none"> (1) Receive a PAL crosshatch signal. (2) Select 4. DEF from the SERVICE MODE. (3) Select <10. ANGLE>. (4) Set the initial setting value of <10. ANGLE>. (5) Adjust <10. ANGLE> to optimize the trapezium distortion at the centre of the screen. (6) Press the [OK] key to memorize the set values. NTSC H. PARALLEL <ol style="list-style-type: none"> (1) Receive a NTSC crosshatch signal. (2) Follow the same step 2 to 6 as in PAL H. PARALLEL.
				

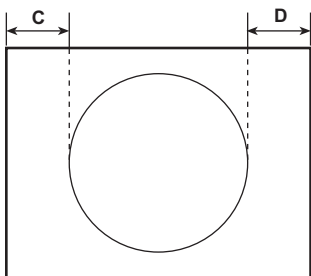
Item	Measuring instrument	Test point	Adjustment part	Description
H. BOW	Signal generator Remote control unit		[4.DEF] 11. BOW	PAL H. BOW (1) Receive a PAL crosshatch signal. (2) Select 4. DEF from the SERVICE MODE. (3) Select <11. BOW> . (4) Set the initial setting value of <11. BOW> . (5) Adjust <11. BOW> to optimize the horizontal arc distortion. (6) Press the [OK] key to memorize the set values. NTSC H. BOW (1) Receive a NTSC crosshatch signal. (2) Follow the same step 2 to 6 as in PAL H. BOW.
				

■ COMPRESS : ON (16:9)

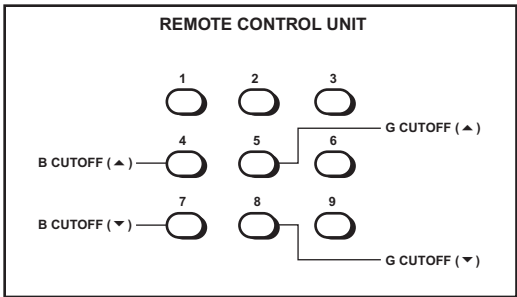
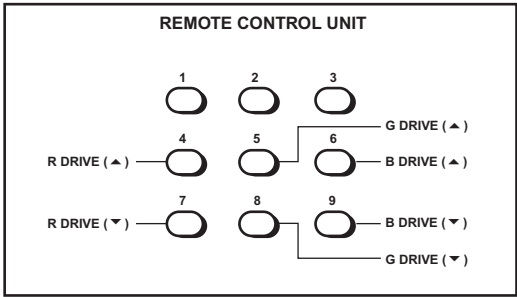
Item	Measuring instrument	Test point	Adjustment part	Description						
V. SIZE	Signal generator Remote control unit		[4.DEF] 14. V. ZOOM 3. V-SIZE	PAL V. SIZE (1) Receive a circle pattern signal of vertical frequency 50Hz (PAL). (2) Set the COMPRESS(16 : 9) to ON. (3) Select 4. DEF from the SERVICE MODE. (4) Set the initial setting value of <14. V. ZOOM> . (5) Select <3. V-SIZE> . (6) Set the initial setting value of <3. V-SIZE> . (7) Adjust <3. V-SIZE> to set the vertical amplitude of the image to the value shown in the left hand side list. (8) Press the [OK] key to memorize the set values. NTSC V. SIZE (1) Receive a crosshatch signal of vertical frequency 60Hz (NTSC). (2) Follow the same step 2 to 8 as in PAL V. SIZE.						
<div></div> <table><tr><td></td><td>AV-2186ME AV-21MS16/H AV-21MS26 AV-21MX16/G AV-21MX16/S AV-21MX56/S</td><td>AV-21MX76/G</td></tr><tr><td>Vertical amplitude</td><td>235mm</td><td>240mm</td></tr></table>					AV-2186ME AV-21MS16/H AV-21MS26 AV-21MX16/G AV-21MX16/S AV-21MX56/S	AV-21MX76/G	Vertical amplitude	235mm	240mm	
	AV-2186ME AV-21MS16/H AV-21MS26 AV-21MX16/G AV-21MX16/S AV-21MX56/S	AV-21MX76/G								
Vertical amplitude	235mm	240mm								
V. SLOPE	Signal generator Remote control unit		[4.DEF] 2. V-SLOPE	PAL V. SLOPE (1) Receive a circle pattern signal of vertical frequency 50Hz (PAL). (2) Set the COMPRESS(16 : 9) to ON. (3) Select 4. DEF from the SERVICE MODE. (4) Select <2. V-SLOPE> . (5) Set the initial setting value of <2. V-SLOPE> . (6) Adjust <2. V-SLOPE> to make "A = B". (7) Press the [OK] key to memorize the set values. NTSC V. SLOPE (1) Receive a circle pattern signal of vertical frequency 60Hz (NTSC). (2) Follow the same step 2 to 7 as in PAL V-SLOPE.						
<div></div>										

Item	Measuring instrument	Test point	Adjustment part	Description
SIDE PIN	Signal generator Remote control unit		[4. DEF] 7. EW-PIN	PAL SIDE PIN <ol style="list-style-type: none"> (1) Receive a PAL crosshatch signal. (2) Set the COMPRESS(16 : 9) to ON. (3) Select 4. DEF from the SERVICE MODE. (4) Select <7. EW-PIN>. (5) Set the initial setting value of <7. EW-PIN>. (6) Adjust <7. EW-PIN> so that the first vertical lines at the left and right edges on the screen are straight. (7) Press the [OK] key to memorize the set values. NTSC SIDE PIN <ol style="list-style-type: none"> (1) Receive a NTSC crosshatch signal. (2) Follow the same step 2 to 7 as in PAL SIDE PIN.
				
TRAPEZIUM	Signal generator Remote control unit		[4. DEF] 6. TRAPEZ	PAL TRAPEZIUM PIN <ol style="list-style-type: none"> (1) Receive a PAL crosshatch signal. (2) Set the COMPRESS(16 : 9) to ON. (3) Select 4. DEF from the SERVICE MODE. (4) Select <6. TRAPEZ>. (5) Set the initial setting value of <6. TRAPEZ>. (6) Adjust <6. TRAPEZ> so that the vertical lines at the left and right edges on the screen are in parallel. (7) Press the [OK] key to memorize the set values. NTSC TRAPEZIUM PIN <ol style="list-style-type: none"> (1) Receive a NTSC crosshatch signal. (2) Follow the same step 2 to 7 as in PAL TRAPEZIUM.
				
CORNER PIN	Signal generator Remote control unit		[4. DEF] 8. COR-UP 9. COR-LO	PAL CORNER PIN <ol style="list-style-type: none"> (1) Receive a PAL crosshatch signal. (2) Set the COMPRESS(16 : 9) to ON. (3) Select 4. DEF from the SERVICE MODE. (4) Select <8. COR-UP>. (5) Set the initial setting value of <8. COR-UP>. (6) Select <9. COR-LO>. (7) Set the initial setting value of <9. COR-LO>. (8) Adjust <8. COR-UP> and <9. COR-LO> so that the vertical lines at the four corners on the screen are straight. (9) Press the [OK] key to memorize the set values. NTSC CORNER PIN <ol style="list-style-type: none"> (1) Receive a NTSC crosshatch signal. (2) Follow the same step 2 to 9 as in PAL CORNER PIN.
				

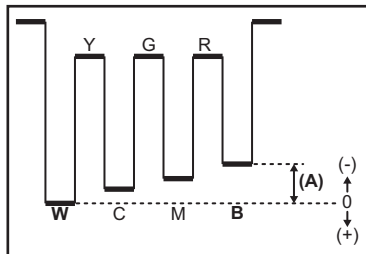
■ VIDEO - 2 SET: COMPONENT

Item	Measuring instrument	Test point	Adjustment part	Description
H. POSITION	Signal generator Remote control unit		[4. DEF] 4. H-CENT	(1) Receive a PAL circle pattern signal to VIDEO-2 component terminal. (2) Select VIDEO-2 SET from the MENU and set VIDEO-2 SET to COMPONENT. (3) Select 4. DEF from the SERVICE MODE. (4) Select <4. H-CENT> . (5) Set the initial setting value of <4. H-CENT> . (6) Adjust <4. H-CENT> to make "C=D". (7) Press the [OK] key to memorize the set values.
				

4.8.5 VIDEO CIRCUIT

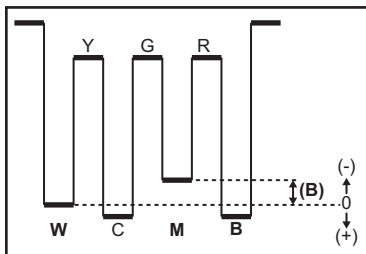
Item	Measuring instrument	Test point	Adjustment part	Description
WHITE BALANCE (Low light)	Signal generator Remote control unit		[2. V/C] 2. CUTOFF (B) 2. CUTOFF (G) SCREEN VR [In HVT]	COMPOSITE WHITE BALANCE (1) Receive a PAL black and white signal (colour off). (2) Set the PICTURE MODE to BRIGHT . (3) Select 2. V/C from the SERVICE MODE. (4) Select <2. CUTOFF> (B) and (G) . (5) Set each value to initial setting value with the [4] / [7] keys and [5] / [8] keys. (6) Turn the SCREEN VR fully counterclockwise, then slowly turn it clockwise to where a red, blue or green colour is faintly visible. (7) Use the [4] / [7] and [5] / [8] keys to adjust so that the other 2 colours appear white. (8) Turn the SCREEN VR to where the single horizontal line glows faintly. (9) Press the [OK] key to memorize the set values. COMPONENT WHITE BALANCE (1) Receive a PAL component black and white signal (colour off). (2) Select VIDEO-2 SET from the MENU and set VIDEO-2 SET to COMPONENT. (3) Adjust COMPONENT WHITE BALANCE in the same way as "COMPOSITE WHITE BALANCE".
WHITE BALANCE (High light)	Signal generator Remote control unit		[2. V/C] 3. WDR (R) 3. WDR (G) 3. WDR (B)	(1) Receive a PAL black and white signal (colour off). (2) Set the PICTURE MODE to BRIGHT . (3) Select 2. V/C from the SERVICE MODE. (4) Select <3. WDR> (R), (G) and (B) . (5) Set each value to initial setting value with the [4] to [9] keys. (6) Use the [4] to [9] keys to produce a white screen. (7) Press the [OK] key to memorize the set values.
<div style="text-align: center;">REMOTE CONTROL UNIT</div> 				
<div style="text-align: center;">REMOTE CONTROL UNIT</div> 				

Item	Measuring instrument	Test point	Adjustment part	Description
SUB BRIGHT	Remote control unit		[2. V/C] 4. BRIGHT	(1) Receive a NTSC broadcast. (2) Set the PICTURE MODE to BRIGHT . (3) Select 2. V/C from the SERVICE MODE. (4) Select <4. BRIGHT> . (5) Set the initial setting value of <4. BRIGHT> . (6) If the brightness is not best with the initial setting value, make fine adjustment until you get the best brightness. (7) Press the [OK] key to memorize the set values.
SUB CONTRAST	Remote control unit		[2. V/C] 5. CONT	(1) Receive a NTSC broadcast. (2) Set the PICTURE MODE to BRIGHT . (3) Select 2. V/C from the SERVICE MODE. (4) Select <5. CONT> . (5) Set the initial setting value of <5. CONT> . (6) If the contrast is not best with the initial setting value, make fine adjustment until you get the best contrast. (7) Press the [OK] key to memorize the set values.
SUB COLOUR	Remote control unit		[2. V/C] 6. COLOUR	[Method of adjustment without measuring instrument] PAL COLOUR (1) Receive a PAL M broadcast. (2) Set the PICTURE MODE to BRIGHT . (3) Select 2. V/C from the SERVICE MODE. (4) Select <6. COLOUR> . (5) Set the initial setting value of <6. COLOUR> . (6) If the colour is not best with the initial set value, make fine adjustment until you get the best colour. (7) Press the [OK] key to memorize the set values. SECAM COLOUR (1) Receive a SECAM broadcast. (2) Follow the same step 2 to 7 as in PAL COLOUR. NTSC 3.58 COLOUR (1) Receive a NTSC 3.58MHz broadcast. (2) Follow the same step 2 to 7 as in PAL COLOUR. NTSC 4.43 COLOUR • When NTSC 3.58 COLOUR is set, NTSC 4.43 COLOUR will be automatically set.
	Signal generator Oscilloscope Remote control unit	TP-47B TP-E [CRT SOCKET PWB]	[2. V/C] 6. COLOUR	[Method of adjustment using measuring instrument] PAL COLOUR (1) Receive a PAL M colour bar signal (full field colour bar 75% white). (2) Connect the oscilloscope between TP-47B and TP-E. (3) Set the PICTURE MODE to BRIGHT . (4) Select 2. V/C from the SERVICE MODE. (5) Select <6. COLOUR> . (6) Set the initial setting value of <6. COLOUR> . (7) Adjust the value of (A) to the value in the voltage table in the left. (8) Press the [OK] key to memorize the set values. SECAM COLOUR (1) Receive a SECAM colour bar signal (full field colour bar 75% white) (2) Follow the same step 2 to 8 as in PAL COLOUR. NTSC 3.58 COLOUR (1) Receive a NTSC 3.58MHz broadcast. (2) Follow the same step 2 to 8 as in PAL COLOUR. NTSC 4.43 COLOUR • When NTSC 3.58 COLOUR is set, NTSC 4.43 COLOUR will be automatically set.



	Voltage setting	
	PAL	NTSC
VOLTAGE (W-B)	+28V	+20V

Item	Measuring instrument	Test point	Adjustment part	Description
SUB TINT	Remote control unit		[2. V/C] 7. TINT	[Method of adjustment without measuring instrument] NTSC 3.58 TINT (1) Receive a NTSC 3.58 broadcast. (2) Set the PICTURE MODE to BRIGHT. (3) Select 2. V/C from the SERVICE MODE. (4) Select <7. TINT> . (5) Set the initial setting value of <7. TINT> (6) If you cannot get the best HUE with the initial setting value, make fine adjustment until you get the best TINT. (7) Press the [OK] key to memorize the set values. NTSC 4.43 TINT • When NTSC 3.58 TINT is set, NTSC 4.43 TINT will be automatically set.
	Signal generator Oscilloscope Remote control unit	TP-47B TP-E [CRT SOCKET PWB]	[2. V/C] 7. TINT	[Method of adjustment using measuring instrument] NTSC 3.58 TINT (1) Receive a NTSC 3.58 colour bar signal (full field colour bar 75% white). (2) Connect the oscilloscope to TP-47B and TP-E. (3) Set the PICTURE MODE to BRIGHT. (4) Select 2. V/C from the SERVICE MODE. (5) Select <7. TINT> . (6) Set the initial setting value of <7. TINT> . (7) Adjust the value of (B) to the value in the voltage table in the left. (8) Press the [OK] key to memorize the set values. NTSC 4.43 TINT • When NTSC 3.58 TINT is set, NTSC 4.43 TINT will be automatically set.



	Voltage setting
VOLTAGE (W-B)	+9V

4.8.6 VSM PRESET SETTING

Item	Measuring instrument	Test point	Adjustment part	Description																																																		
VSM PRESET	Remote control unit		[5.VSM W/B] 1. BRIGHT 2. CONT 3. COLOUR 4. SHARP 5. HUE 1. R-DRIVE 2. G-DRIVE 3. B-DRIVE	(1) Select 5.VSM W/B from the SERVICE MODE. (2) Select the BRIGHT with the [OK] key. (3) Adjust the [MENU ◀ / ▶] key to bring the set values of <1. BRIGHT> - <5. HUE> to the values shown in the table. (4) Press the [OK] key to memorize the set values. (5) Respectively select the VSM PRESET mode for STANDARD, SOFT and THEATER . (6) Select COOL with the [OK] key. (7) Adjust the [MENU ◀ / ▶] key to bring the set values of <1. R DRIVE> to <3. B DRIVE> to the values shown in the table. (8) Press the [OK] key to memorize the set values. (9) Respectively select the WWHITE BALANCE mode for WARM and NORMAL .																																																		
<table border="1"> <thead> <tr> <th>VSM preset Setting item</th><th>BRIGHT</th><th>STANDARD</th><th>SOFT</th><th>THEATER</th></tr> </thead> <tbody> <tr> <td>1. BRIGHT</td><td>0</td><td>0</td><td>0</td><td>+2</td></tr> <tr> <td>2. CONT</td><td>+15</td><td>+10</td><td>+5</td><td>-3</td></tr> <tr> <td>3. COLOUR</td><td>0</td><td>-4</td><td>0</td><td>-7</td></tr> <tr> <td>4. SHARP</td><td>0</td><td>-5</td><td>-10</td><td>0</td></tr> <tr> <td>5. HUE</td><td>0</td><td>0</td><td>0</td><td>-1</td></tr> </tbody> </table> <table border="1"> <thead> <tr> <th>W/B preset Setting item</th><th>COOL</th><th>NORMAL</th><th>WARM</th><th>THEATER</th></tr> </thead> <tbody> <tr> <td>1. R DRIVE</td><td>0</td><td>0</td><td>+10</td><td>+15</td></tr> <tr> <td>2. G DRIVE</td><td>0</td><td>+2</td><td>-4</td><td>+7</td></tr> <tr> <td>3. B DRIVE</td><td>0</td><td>-10</td><td>-12</td><td>-22</td></tr> </tbody> </table>					VSM preset Setting item	BRIGHT	STANDARD	SOFT	THEATER	1. BRIGHT	0	0	0	+2	2. CONT	+15	+10	+5	-3	3. COLOUR	0	-4	0	-7	4. SHARP	0	-5	-10	0	5. HUE	0	0	0	-1	W/B preset Setting item	COOL	NORMAL	WARM	THEATER	1. R DRIVE	0	0	+10	+15	2. G DRIVE	0	+2	-4	+7	3. B DRIVE	0	-10	-12	-22
VSM preset Setting item	BRIGHT	STANDARD	SOFT	THEATER																																																		
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4. SHARP	0	-5	-10	0																																																		
5. HUE	0	0	0	-1																																																		
W/B preset Setting item	COOL	NORMAL	WARM	THEATER																																																		
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2. G DRIVE	0	+2	-4	+7																																																		
3. B DRIVE	0	-10	-12	-22																																																		

4.8.7 PURITY AND CONVERGENCE

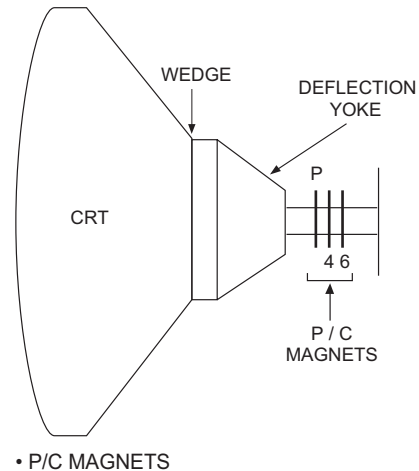
■ PURITY ADJUSTMENT

NOTE:

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) Demagnetize CRT with the demagnetizer.
- (2) Loosen the retainer screw of the deflection yoke.
- (3) Remove the wedges.
- (4) Input a green raster signal from the signal generator, and turn the screen to green raster.
- (5) Move the deflection yoke backward.
- (6) Bring the long lug of the purity magnets on the short lug and position them horizontally. (Fig.2)
- (7) Adjust the gap between two lugs so that the GREEN RASTER will come into the centre of the screen. (Fig.3)
- (8) Move the deflection yoke forward, and fix the position of the deflection yoke so that the whole screen will become green.
- (9) Insert the wedge to the top side of the deflection yoke so that it will not move.
- (10) Input a crosshatch signal.
- (11) Verify that the screen is horizontal.
- (12) Input red and blue raster signals, and make sure that purity is properly adjusted.



• P/C MAGNETS

P : PURITY MAGNET
4 : 4 POLES (convergence magnets)
6 : 6 POLES (convergence magnets)

Fig.1

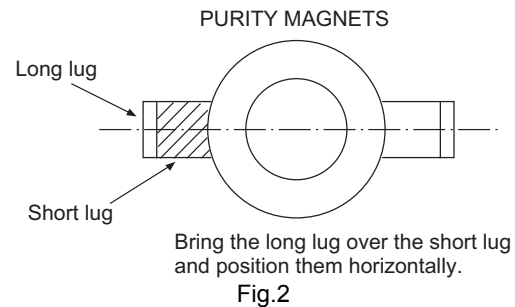


Fig.2

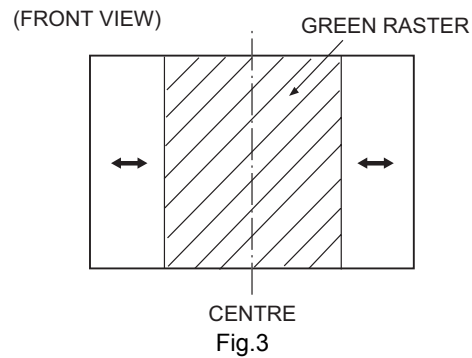


Fig.3

■ STATIC CONVERGENCE ADJUSTMENT

- (1) Input a crosshatch signal.
- (2) Using 4-pole convergence magnets, overlap the red and blue lines in the centre of the screen (Fig.1) and turn them to magenta (red/blue).
- (3) Using 6-pole convergence magnets, overlap the magenta (red/blue) and green lines in the centre of the screen and turn them to white.
- (4) Repeat 2 and 3 above, and make best convergence.

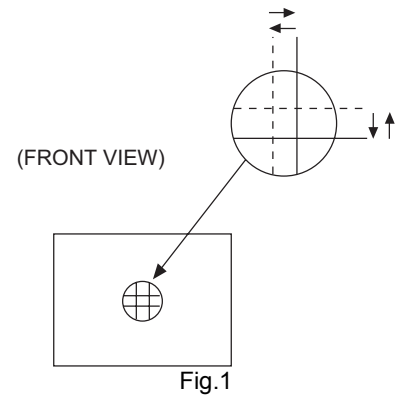


Fig.1

■ DYNAMIC CONVERGENCE ADJUSTMENT

- (1) Move the deflection yoke up and down and overlap the lines in the periphery. (Fig. 2)
 - (2) Move the deflection yoke left to right and overlap the lines in the periphery. (Fig. 3)
 - (3) Repeat 1 and 2 above, and make best convergence.
 - (4) Adjust XV by XV coil. (Fig.4)
- After adjustment, fix the wedge at the original position. Fasten the retainer screw of the deflection yoke. Fix the P/C magnets with glue.

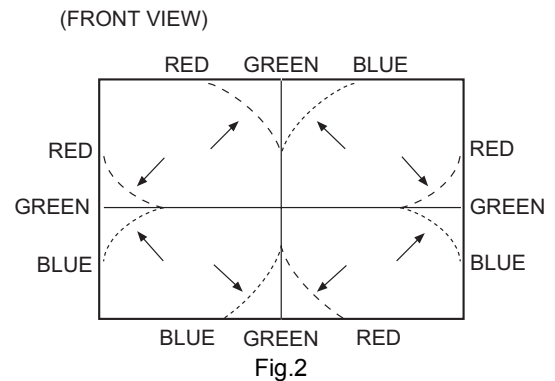


Fig.2

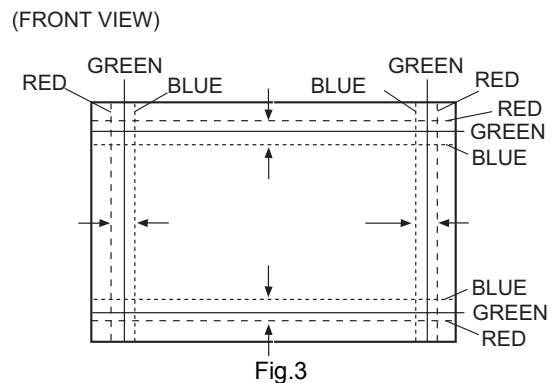


Fig.3

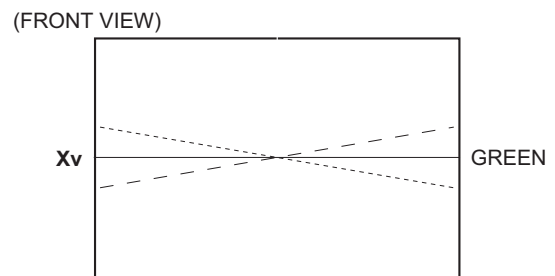


Fig.4

SECTION 5 TROUBLESHOOTING

5.1 SELF CHECK FUNCTIONS

5.1.1 OUTLINE

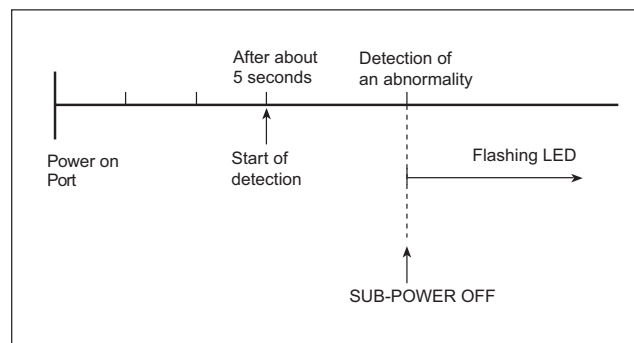
This model has self check functions given below. When an abnormality has been detected, the SUB POWER is turned off and POWER LED flashes to inform of the failure. An abnormality is detected by the signal input state of the control line connected to the microcomputer.

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 24-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 disconnected and connected again.
CRT neck broken protection	Operation of CRT neck protection circuit.		

5.1.3 SELF CHECK INDICATING FUNCTION

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



[INDICATION BY THE POWER LED]

Item	LED flashing intervals
B1 over-current protection / CRT neck broken protection	0.3 seconds



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