
2. Alignment and Adjustments

2-1 General Alignment Instructions

1. Usually, a color TV-VCR needs only slight touch-up adjustment upon installation. Check the basic characteristics such as height, horizontal and vertical sync and focus.
2. Observe the picture for good black and white details. There should be objectionable color shading; if color shading is present, demagnetize, perform purity and convergence adjustments described below.
3. Use the specified test equipment or its equivalent.
4. Correct impedance matching is essential.
5. Avoid overload. Excessive signal from a sweep generator might overload the front-end of the TV. When inserting signal markers, do not allow the marker generator to distort test results.
6. Connect the TV only to an AC power source with voltage and frequency as specified on the backcover nameplate.
7. Do not attempt to connect or disconnect any wires while the TV is turned on. Make sure that the power cord is disconnected before replacing any parts.
8. To protect against shock hazard, use an isolation transformer.

2-2 Automatic Degaussing

A degaussing coil is mounted around the picture tube, so that external degaussing after moving the TV should be unnecessary. But the receiver must be properly degaussed upon installation.

The degaussing coil operates for about 1 second after the power is switched ON. If the set is moved or turned in a different direction, the power should be OFF for at least 10 minutes.

If the chassis or parts of the cabinet become magnetized, poor color purity will result. If this happens, use an external degaussing coil. Slowly move the degaussing coil around the faceplate of the picture tube and the sides and front of the receiver. Slowly withdraw the coil to a distance of about 6 feet before turning power OFF.

If color shading persists, perform the following Color purity and Convergence adjustments.

2-3 High Voltage Check

CAUTION : There is no high voltage adjustment on this chassis. The B+ power supply should be +135 volts (with full color- bar input and normal picture level).

1. Connect a digital voltmeter to the second anode of the picture tube.
2. Turn on the TV. Set the Brightness and Contrast controls to minimum (zero beam current).
3. Adjust the Brightness and contrast controls to both extremes. Ensure that the high voltage does not exceed 30 KV under any conditions.

2-4 FOCUS Adjustment

1. Input a crosshatch pattern.
2. Adjust the tuning control for the clearest picture.
3. Adjust the FOCUS control for well defined scanning lines in the center area of the screen.

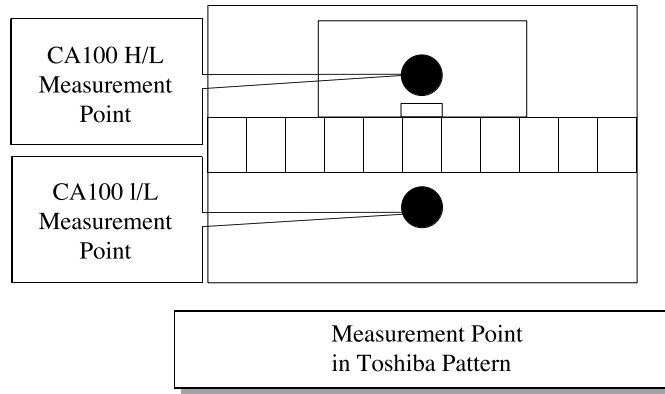
2-5 SCREEN Adjustment

1. Input Toshiba Pattern
If a Toshiba pattern is not available,
Enter "Service Mode" and
select "Test pattern 2" (Toshiba pattern)
2. Enter "Service Mode".
3. Select "G2-Adjust".
4. Set the values as example
5. Turn the SCREEN VR until "Read Cutoff" and "Read Drive" are green.
(The incorrect SCREEN Voltage may result that "Read Cutoff" and "Read Drive" should be red)

ex) **IBRM = 175**
WDRV = 110
CDL = 250
COLR G B = 110 110 110

2-6 White Balance Adjustment

1. Warm up the TV set for at least 30 minutes.
2. Enter the Service Mode by pressing the remote control keys in the following sequence:
Power Off → Info → Menu → Mute → Power On
3. Initialize all set data.
4. Input a Toshiba pattern.
5. Using a probe(CA100), do the White Balance adjustments.
 - (1) Adjust Low-Light.
 - Adjust Sub Brightness to set Y.
 - Adjust B Cutoff to set y.
 - Adjust R Cutoff to set x.
 - (2) Adjust High-Light.
 - Adjust Sub Contrast to set Y.
 - Adjust B Drive to set y.
 - Adjust R Drive to set x.
 - (3) Check the value of Low-Light. If necessary, readjust Low-Light.
 - (4) Check the value of High-Light. If necessary, readjust High-Light.



2-7 When adjusting Screen Voltage and White Balance

1. Screen Voltage and White Balance are related each other. Make sure both adjustments are correct.
2. Adjust Screen Voltage before White Balance Adjustments. Make sure Screen Voltage is correct.
3. If White Balance has been readjusted, re-check Screen Voltage.
4. After adjustments are complete, check the following.
 - If spots appear on the screen after pressing the Power On/Off key, readjust Screen Voltage.
 - If flyback lines appear on the screen, readjust Screen Voltage.

2-8 Factory Adjustment

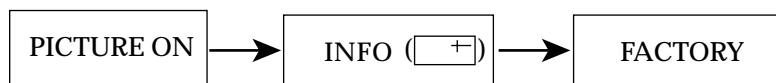
2-8-1 Service Mode

1. To enter the "Service Mode", Press the remote-control keys in this sequence :

- If you do not have Factory remote-control



- If you have Factory remote-control



2-8-2 Factory Mode OSD

2-8-2(A) ADJUST

SERVICE / T - ETPAS0 - 10XX
Deflection
Video Adjust1
Video Adjust2
Video Adjust3
Option : D2 16 04 02
YC Delay
Test Pattern : 0
EEPROM
Bus Stop
Check Sum : 0000
Reset / 2004-03-08
G2 Adujust


DEFLECTION : PAL

Item	Min	Max	ET	G/R	Remark
V Amp	-128	127	24	12	Adjust
V Shift	-128	127	-35	-59	Adjust
H EW	-128	127	25	5	Adjust
H Shift	32	180	124	105	Adjust
V Linearity	-128	127	0	0	Adjust
V SC	-128	127	43	43	FIX(Depend on the inch)
H Parabolra	-128	127	62	80	Adjust
Upper Corner	-128	127	-5	-19	Adjust
Lower Corner	-128	127	-5	-39	Adjust
Upper Corner 6	-128	127	-4	0	FIX(Depend on the inch)
Lower Corner 6	-128	127	-4	0	FIX(Depend on the inch)
H Trapezium	-128	127	-3	1	Adjust
Bow	-128	127	3	3	Adjust
Angle	-128	127	1	-2	Adjust
EHT Time	0	255	20	20	FIX(Depend on the inch&CRT Drive)
EHT Threshold	0	255	1	1	FIX(Depend on the inch&CRT Drive)
EHT Vertical	-128	127	-12	-12	FIX(Depend on the inch&CRT Drive)
EHT Horizontal	-128	127	5	5	FIX(Depend on the inch&CRT Drive)
EHT Vertical2	-128	127	-19	-19	FIX(Depend on the inch&CRT Drive)
EHT Horizontal2	-128	127	10	10	FIX(Depend on the inch&CRT Drive)

**DEFLECTION : NTSC OFFSET**

Item	Min	Max	ET	G/R	Remark
V Amp	-128	127	-2	-2	FIX
V Shift	-128	127	6	6	FIX
H EW	-128	127	0	0	FIX
H Shift	32	180	14	14	FIX
V Linearity	-128	127	-3	-3	FIX
V SC	-128	127	0	0	FIX
H Parabolra	-128	127	0	0	FIX
Upper Corner	-128	127	0	0	FIX
Lower Corner	-128	127	0	0	FIX
Upper Corner 6	-128	127	0	0	FIX
Lower Corner 6	-128	127	0	0	FIX
H Trapezium	-128	127	0	0	FIX
Bow	-128	127	0	0	FIX
Angle	-128	127	0	0	FIX


Video Adjust 1

Item	Min	Max	ET	G/R	Remark
R Cutoff	0	255	127	127	Adjust
G Cutoff	0	255	127	127	FIX
B Cutoff	0	255	127	127	Adjust
R Drive	0	255	127	127	Adjust
G Drive	0	255	127	127	FIX
B Drive	0	255	127	127	Adjust
Sub Bright	0	100	50	50	Adjust
Sub Contrast	0	63	55	55	Adjust
Sub Color	0	23	10	2	FIX(Depend on the country&CRT Drive)
Sub Tint	0	63	42	52	FIX
AKB Option	0	1	1	1	FIX
BCL Threshold	-128	127	16	22	FIX(Depend on the inch)
BCL Gain	0	255	240	240	FIX
BCL Time	0	255	255	255	FIX
Sub Sharpness	0	15	8	13	FIX(Depend on the inch&CRT Drive)
DVD R Cutoff	-10	10	-5	-5	Inch(Depend on the CRT)
DVD B Cutoff	-10	10	-4	-4	Inch(Depend on the CRT)
BCL BCUT	0	255	65	55	FIX
Pilot Low(NTSC ONLY)	10	127	-	-	FIX
Pilot High(NTSC ONLY)	10	127	-	-	FIX
V-Mute(X100ms,NTSC ONLY)	0	15	-	-	FIX


Video Adjust 2

Item	Min	Max	ET	G/R	Remark
VSU	0	115	2	2	FIX
Melody Volume	0	20	10	10	FIX
HB Start	0	255	159	159	FIX
HB Stop	0	255	159	159	FIX
RF AGC	0	15	1	4	FIX(Depend the Tuner)
VM Gain	0	63	6	0	FIX(Depend on the CRT Drive AMP)
VM Delay	0	15	4	0	FIX(Depend on the CRT Drive AMP)
V_Peaking	0	15	6	0	FIX
BLE Tilt	0	15	7	6	FIX
BLE Gain	0	3	3	1	FIX
BLE Mode	0	3	3	2	FIX
BLE Break	0	7	7	1	FIX
CTI Gain	0	15	15	0	FIX(Depend on the mode)
CTI Coring	0	15	15	0	FIX(Depend on the mode)
LTI Gain	0	15	15	0	FIX(Depend on the mode)
D-EHT Time	0	255	255	5	FIX(Depend on the mode)
DCT Ratio	0	255	255	50	FIX
LTI Enable	0	1	1	0	FIX
VSP Comb	0	3	3	0	FIX


Video Adjust 3

Item	Min	Max	ET	G/R	Remark
NR Off Value	0	31	0	3	FIX
Gamma Mode	0	1	1	1	FIX
Gamma Correction	-128	127	30	75	FIX
BST StartPoint	0	255	140	140	FIX
BST GAIN(B)	-128	127	50	50	FIX
DPWL Gain	0	255	30	30	FIX
DPWL Start	0	255	145	145	FIX
PIP Contrast	0	15	10	10	FIX
PIP Tint	0	63	63	63	FIX
PIP Color	0	15	10	10	FIX
PIP PAL V.Pos	0	255	24	24	FIX
PIP NTSC V.Pos	0	255	23	23	FIX
PIP H.Pos	0	255	39	39	FIX
PIP R Cutoff	0	15	5	5	FIX(Depend on the CRT)
PIP B Cutoff	0	15	4	4	FIX(Depend on the CRT)
PIP R Drive	0	255	125	125	FIX(Depend on the CRT)
PIP B Drive	0	255	122	122	FIX(Depend on the CRT)

Option

NO.	ITEM	<i>Initial Asia Version</i>	<i>CS29M6PQ Singapore</i>	<i>CS25M20EQ Cis</i>	<i>CS29M20EQ TSE</i>	REMARK
1	System	CS	CS	CS	CS	CS / CZ / CW
2	Sound	NICAM	NICAM	NICAM	NICAM	Line Stereo / A2 / NICAM / V-Dolby
3	CRT	4:3	4:3	4:3	4:3	4:3 / Wide
4	AV Jack	2RCA+S+DVD	2RCA+S+DVD	SCART+S	2RCA+S+DVD	2RCA / 2RCA+S / 2RCA+DVD / 2RCA+S+DVD / 2Scart / 2Scart+S
5	Auto FM	On	On	On	On	On / Off
6	PIP	Off	2-Tuner	1-Tuner	1-Tuner	Off / 1-Tuner / 2-Tuner
7	Txt Language	West Europe	West Europe	Russian	West Europe	West Europe / East Europe / Russian / Greek-Turkey Arabic / Farsi / Arab-Hebrew
8	LNA	Off	On	On	Off	On / Off
9	High Deviate	Off	Off	Off	Off	On / Off
10	TTX On/Off	On	On	On	On	On / Off
11	Double TTX	Off	Off	Off	Off	On / Off
12	Tilt	Off	On	Off	On	On / Off
13	Hotel Mode	Off	Off	Off	Off	On / Off
14	Volume Curve	Large Curve	Large Curve	Large Curve	Large Curve	Large Curve / Small Curve
15	FM Radio	Off	Off	Off	Off	On / Off
16	Antenna Disp	On	On	On	On	On / Off
17	Osd Language	East-Asia	East-Asia	Russian	East-Asia	East-Asia / Middle-Asia / CIS
18	TTX List Pri	Off	Off	Off	Off	On / Off
19	DN1e Jr	On	On	On	On	On / Off

Test pattern

- 0 : Current RF Signal
- 1 : White + Crosshatch
- 2 : ABL pattern
- 3 : Black to White (4 pattern)
- 4 : Black to White
- 5 : Green + Magenta
- 6 : Color bar
- 7 : Crosshatch

YC DELAY

Item	Min	Max	ET	G/R	Remark
PAL DELAY	-8	7	-3	-3	FIX
SECAM DELAY	-8	7	-3	-3	FIX
NTSC DELAY	-8	7	-3	-3	FIX
PAL AV DELAY	-8	7	-1	-1	FIX
SECAM AV DELAY	-8	7	-3	-3	FIX
NTSC AV DELAY	-8	7	-3	-3	FIX



EEPROM SubAddress	Factory Control ↗	Remark	MIN	MAX	INITIAL	
0	Dynamic Contrast	FIX	0	255	100	100
1	Dynamic Brightness	FIX	0	255	45	45
2	Dynamic Sharpness	FIX	0	255	75	75
3	Dynamic Color	FIX	0	255	55	55
4	Dynamic Tint	FIX	0	255	50	50
5	Standard Contrast	FIX	0	255	80	80
6	Standard Brightness	FIX	0	255	50	50
7	Standard Sharpness	FIX	0	255	50	50
8	Standard Color	FIX	0	255	50	50
9	Standard Tint	FIX	0	255	50	50
10	Movie Contrast	FIX	0	255	50	50
11	Movie Brightness	FIX	0	255	55	55
12	Movie Sharpness	FIX	0	255	25	25
13	Movie Color	FIX	0	255	40	40
14	Movie Tint	FIX	0	255	50	50
15					255	255
16					255	255
17					255	255
18					255	255
19	DVD SUB TINT	FIX	0	255	17	17
20	16:9 V-SHIFT	FIX	0	255	15	15
21	16:9 PARAVOLA	FIX	0	255	5	5
22	PIP BRIGHTNESS	FIX	0	255	0	0
23	Double TTX Contrast	FIX		255	60	60
24	TTX V Position	FIX	0	255	35	35
25	TTX H Position	FIX	0	255	125	125
26	TTX Contrast	FIX	0	255	100	115
27	TTX Brightness	FIX	0	255	20	20
28	OSD/PIP CONTRAST	FIX	0	255	120	120
29	OSD/PIP BRIGHT	FIX	0	255	15	15
30	Double TTX H Position	FIX	0	255	225	225
31	Standard Equ100 (Std BASS)	FIX	0	255	8	8
32	Standard Equ300 (Std TREBLE)	FIX	0	255	13	13
33	Standard Equ1K (Music BASS)	FIX	0	255	14	14
34	Standard Equ3K (Music TREBLE)	FIX	0	255	13	13
35	Standard 10K (Movie BASS)	FIX	0	255	12	12
36	Music Equ100 (Movie TREBLE)	FIX	0	255	18	18
37	Music Equ300 (Speech BASS)	FIX	0	255	14	14
38	Music Equ1K (Speech TREBLE)	FIX	0	255	11	11
39	Music Equ3K	FIX	0	255	14	14
40	Music 10K	FIX	0	255	18	18
41	Movie Equ100	FIX	0	255	22	22
42	Movie Equ300	FIX	0	255	15	15
43	Movie Equ1K	FIX	0	255	11	11
44	Movie Equ3K	FIX	0	255	12	12
45	Movie 10K	FIX	0	255	13	13
46	Speech Equ100	FIX	0	255	6	6
47	Speech Equ300	FIX	0	255	11	11
48	Speech Equ1K	FIX	0	255	14	14
49	Speech Equ3K	FIX	0	255	13	13
50	Speech 10K	FIX	0	255	11	11
51	Brightness(RGB/DVD)	FIX	0	255	13	13
52	Contrast(RGB/DVD)	FIX	0	255	38	38
53	U Saturation(RGB/DVD)	FIX	0	255	44	44
54	V saturation(RGB/DVD)	FIX	0	255	43	43
55	V/FBL Delay	FIX	0	255	85	85
56	CrCb Delay	FIX	0	255	84	84
57	d/w h-position	FIX	0	255	58	58
58	d/w -blanking 1	FIX	0	255	129	129

59	d/w -blanking 2	FIX	0	255	150	150
60	PIP G CUTOFF	FIX	0	255	2	2
61	PIP G DRIVE	FIX	0	255	125	125
62	OSD BRIGHT OFFSET	FIX	0	255	31	31
63	OSD/PIP BRIGHT OFFSET	FIX	0	255	85	85
64	MDB_STRENGTH	FIX	0	255	68	68
65	MDB_HARMONIC	FIX	0	255	37	37
66	MDB_HP	FIX	0	255	9	9
67	MDB_LP	FIX	0	255	11	11
68	MDB_LIM	FIX	0	255	252	252
69	MDB_CUTOFF	FIX	0	255	12	12
70	EHT POSITION 1	FIX	0	255	5	5
71	EHT POSITION 2	FIX	0	255	249	249
72	3.4CH SLLTHD (TV-NO NOISE)	FIX	0	255	0	0
73	7.7CH SLLTHD (TV-NO NOISE)	FIX	0	255	1	1
74	LNA	FIX	0	255	110	110
75	SLLTHDV(TV NO NOISE)	FIX	0	255	6	6
76	VCR/TV Noise Level Offset	FIX	0	255	0	55
77	LNA SW	FIX	0	255	1	1
78	LMIXOFS	FIX	0	255	6	31
79	HOUTDEL	FIX	0	255	70	70
80	Over Modulation Detect	FIX	0	255	64	64
81	Over Mod.<-> Normal return	FIX	0	255	100	100
82	VCR mode detect counter	FIX	0	255	5	5
83	SUB MATRIX Tint	FIX	0	15	4	4
84	VIDEO SUB SHARPNESS	FIX	0	15	15	15
85	S VIDEO SUB SHARPNESS	FIX	0	15	8	13
86	DVD SUB SHARPNESS	FIX	0	15	8	13
87	Standard Bass					50
88	Standrad Treble					50
89	Music Bass					85
90	Music Treble					70
91	Movie Bass					95
92	Movie Treble					50
93	Speech Bass					40
94	Speech Terble					

G2 Adjust

G2-Adjust	IBRM	FIX	0	255	175	175
	WDRM	FIX	0	255	110	110
	CDL	FIX	0	255	250	250
	COLR G B	FIX	0, 0, 0	255,255,255	110,110,110	150,150,150