

SERVICE ADJUSTMENTS

The adjustment values are set to their optimum at the factory before shipping. If by any chance a value should become improper or a readjustment is required due to part replacement, make an adjustment according to the following procedure.

1. Entering and exiting the adjustment process mode

- 1- Unplug the AC power cord of TV set to force power off.
- 2- While holding down the "VOL (—)" and "INPUT" keys on the set at once, plug in the AC power cord to turn on the set. The letter K appears on the screen. (Factory mode)
- 3- Next, hold down the "VOL (—)" and "P (V)" keys on the set at once. Multiple lines of orange characters appearing on the screen indicate that the set is now in the adjustment process mode. If you fail to enter the adjustment process mode (the display is the same as normal start up), retry the procedure.
- 4- To exit the adjustment process mode after the adjustment is done, unplug the AC power cord to force off the power. (When the power is turned off by the remote controller, unplug also the AC power cord and wait for 10 seconds before plug it in again.)
- 5- To remove "K" mode, just repeat steps 1 and 2. This time the letter K disappears from screen.

Caution: Use due care in handling the information described here lest the users should know how to enter the adjustment process mode. If the settings tampered with in this mode, unrecoverable system damage may result.

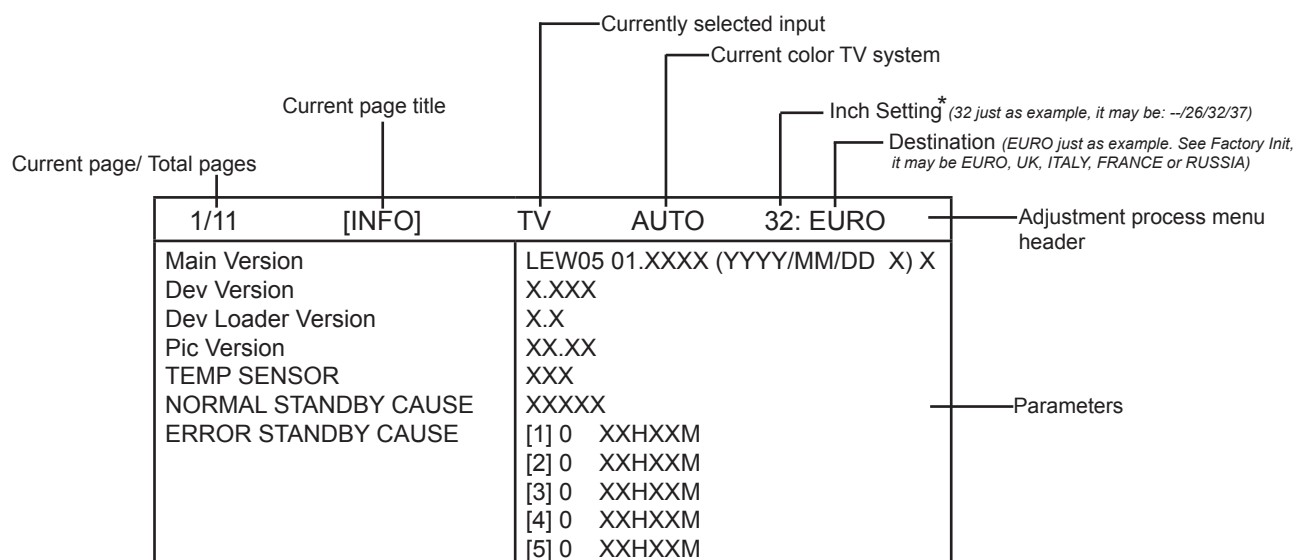
2. Remote Controller Key Operation and Description of Display in Adjustment Process Mode

2.1 Key operation

Remote controller key	Main unit key	Function
P (Λ / V)	P (Λ / V)	Moving an item (line) by one (UP/DOWN)
VOL (+/-)	VOL (+/-)	Changing a selected item setting (+1/-1)
Cursor (UP / DOWN)	————	Turning a page (PREVIOUS / NEXT)
Cursor (LEFT / RIGHT)	————	Changing a selected line setting (+10/-10)
INPUT SOURCE on remote controller	INPUT button	Input source switching (toggle switching) (TV→DTV→EXT1→EXT2→EXT3→EXT4→EXT5) (Not Operative)
OK	————	Executing a function

Input mode is switched automatically when relevant adjustment is started so far as the necessary input signal available.

2.2 Description of display



*Available from Main Version 1.042 or upper.

3. Adjustment process mode menu

The character string in brackets [] will appear as a page title in the adjustment process menu header.

Page	Line	Item	Description	Remarks (Adjustment detail, etc.)
1/11		[INFO]		
	1	Main Version	1.xxx (xx/xx/xxxx) x	Main microprocessor version (VCTP)
	2	Dev Version	x.xxx	Digital Module version
	3	Dev Loader Version	x.x	Digital Module loader version
	4	PIC Version	xx.xx	PIC version
	5	TEMP SENSOR	xxx	Temp inside cabinet (near panel)
	6	NORMAL STANDBY CAUSE	[X]0	Last status which cause standby
	7	ERROR STANDBY CAUSE	xxHxxM (X5)	Error standby cause Total operating time before error
2/11		[INIT]		
	1	Factory Init	(--EURO/UK/ITALY/France/RUSSIA)ENTER	Initialization to factory settings
	2	Inch Setting *	(--/26/32/37/45)	Initialization data for different panel sizes
	3	PUBLIC MODE	OFF/ON	PUBLIC MODE flag setting
	4	Center Acutime	XxH xxM	Main operating hours (Not Operative)
	5	RESET	OFF/ON	Main operating hours reset
	6	Backlight Acutime	XxH xxM	Backlight operating hours
	7	RESET	OFF/ON	Backlight operating hours reset
	8	Picture Read Pos X	0	x-axis setting of picture data
	9	Picture Read Pos Y	0	y-axis setting of picture data
	10	Picture Read	ON/OFF	Start/stop of picture data
3/11		[PAL. SECAM. N358]		
	1	RF-AGC ADJ	ENTER	RF AGC auto adjustment
	2	PAL+TUNER ADJ	ENTER	PALTUNER auto adjustment
	3	PAL ADJ	ENTER	PAL auto adjustment
	4	TUNER ADJ	ENTER	TUNER auto adjustment
	5	CONTRAST SD	32	SD contrast adjustment
	6	SECAM CB OFFSET	1	SECAM contrast adjustment
	7	SECAM CR OFFSET	1	SECAM contrast adjustment
	8	TUNER A DAC	32	TUNER DAC adjustment
	9	RF AGC	20	RF AGC adjustment
4/11		[COMP 15K]		
	1	COMP 15K ADJ	ENTER	COMP 15K auto adjustment
	2	COMP 15K CONTRAST	32	Contrast adjustment
5/11		[HDTV]		
	1	HDTV CONTRAST	32	Contrast adjustment
6/11		[SMPTE]		
	1	RF-AGC ADJ	ENTER	RF AGC auto adjustment
	2	PAL+TUNER ADJ	ENTER	PALTUNER auto adjustment
	3	PAL ADJ	ENTER	PAL auto adjustment
	4	TUNER ADJ	ENTER	TUNER auto adjustment
	5	CONTRAST SD	32	SD contrast adjustment
	6	SECAM CB OFFSET	1	SECAM contrast adjustment
	7	SECAM CR OFFSET	1	SECAM contrast adjustment
	8	TUNER A DAC	32	TUNER DAC adjustment
	9	RF AGC	20	RF AGC adjustment
7/11		[M GAMMA INFO]		
	1	MGAMMA IN 1	160	W/B adjustment, gradation 1 input setting
	2	MGAMMA IN 2	320	W/B adjustment, gradation 2 input setting
	3	MGAMMA IN 3	480	W/B adjustment, gradation 3 input setting
	4	MGAMMA IN 4	640	W/B adjustment, gradation 4 input setting
	5	MGAMMA IN 5	800	W/B adjustment, gradation 5 input setting
	6	MGAMMA IN 6	960	W/B adjustment, gradation 6 input setting
	7	MGAMMA WRITE	OFF/ON	EEP writing of adjustment values
	8	MGAMMA RESET	OFF/ON	Initialization of adjustment values
8/11		[M GAMMA 1-3]		
	1	MGAMMA R 1	0	W/B adjustment, gradation 1R adjustment value
	2	MGAMMA G 1	0	W/B adjustment, gradation 1G adjustment value
	3	MGAMMA B 1	0	W/B adjustment, gradation 1B adjustment value
	4	MGAMMA R 2	0	W/B adjustment, gradation 2R adjustment value
	5	MGAMMA G 2	0	W/B adjustment, gradation 2G adjustment value
	6	MGAMMA B 2	0	W/B adjustment, gradation 2B adjustment value
	7	MGAMMA R 3	0	W/B adjustment, gradation 3R adjustment value
	8	MGAMMA G 3	0	W/B adjustment, gradation 3G adjustment value
	9	MGAMMA B 3	0	W/B adjustment, gradation 3B adjustment value
	10	MGAMMA WRITE	OFF/ON	EEP writing of adjustment values
9/11		[M GAMMA 4-6]		
	1	MGAMMA R 4	0	W/B adjustment, gradation 4R adjustment value
	2	MGAMMA G 4	0	W/B adjustment, gradation 4G adjustment value
	3	MGAMMA B 4	0	W/B adjustment, gradation 4B adjustment value
	4	MGAMMA R 5	0	W/B adjustment, gradation 5R adjustment value
	5	MGAMMA G 5	0	W/B adjustment, gradation 5G adjustment value

*Available from Main Version 1.042 or upper.

Page	Line	Item	Description	Remarks (Adjustment detail, etc.)
9/11 (Continued)		[M GAMMA 4-6]		
	6	MGAMMA B 5	0	W/B adjustment, gradation 5B adjustment value
	7	MGAMMA R 6	0	W/B adjustment, gradation 6R adjustment value
	8	MGAMMA G 6	0	W/B adjustment, gradation 6G adjustment value
	9	MGAMMA B 6	0	W/B adjustment, gradation 6B adjustment value
	10	MGAMMA WRITE	OFF/ON	EEP writing of adjustment values
10/11		[ETC]		
	1	EEP CLEAR	OFF/ON	Restore NVM data to default values
	2	EEP CLEAR B	OFF/ON	Restore NVM data to default values except adjustment data
	3	STAND BY CAUSE RESET	OFF/ON	Clearing of standby cause error list
	4	AUTO INSTALLATION SW	0/1	0: unfinished 1: finish (The setting takes effect the next time the power is turned on.)
	5	OPTION	0	
	6	COUNTRY	(-/EURO/UK/ITALY/France/RUSSIA)	Selected country
	7	L ERR RESET	0	Lamp error counter
	8	L ERR STOP	0/1	Stops Lamp Error feature
	9	DTV CLR	0/1	Restore Digital Module NVM to default values
	10	I2C-OFF	ENTER	BUS STOP
11/11		LCD		
	1	OSC FREQ 50	144	
	2	OSC FREQ 60	144	
	3	PWM FREQ 50	1	
	4	PWM FREQ 60	1	
	5	PWM FREQ	424	
	6	PWM DUTY	227	
	7	PWM CTRL	0	

4. Special Features

- ERROR STAND-BY CAUSE (Page 1/11)

When the unit enters standby due to operational error, total time before the error and the cause of error is recorded on EEPROM, if possible. The values can be used to locate the fault for repair.

- EEP CLEAR (Page 10/11)

Restore NVM data to default values.

- EEP CLEAR B (Page 10/11)

Restore NVM data to default values except adjustment data.

5. Video Signal Adjustment Procedure

The adjustment process mode menu is listed in Section 3.

5.1. Signal check

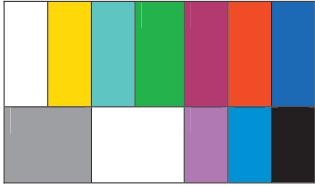
Signal generator level adjustment check (Adjustment to the specified level).

- Composite signal PAL : 0.7Vp-p \pm 0.02Vp-p (Pedestal to white level)
- 15K Component signal : Y level 0.7Vp-p \pm 0.02Vp-p (Pedestal to white level)
(50Hz) (576i/50Hz) PB, PR level 0.7Vp-p \pm 0.02Vp-p

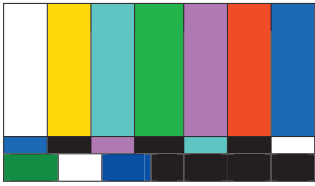
5.2. Entering the adjustment process mode

Enter the adjustment process mode according to Section 1.

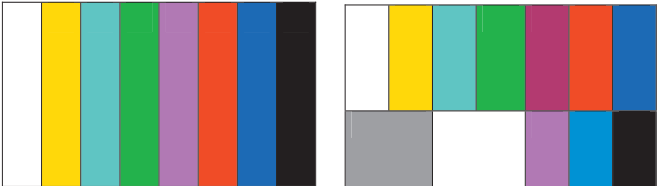
5.3. RF AGC Adjustment

	Adjustment Point	Adjustment conditions	Adjustment procedure
1	Setting	[Signal] PAL Field Color Bar RF signal [Terminal] TUNER	<p>• Feed the PAL color bar signal (E-12ch) to TUNER. Signal level: 50 \pm1dB μV (75Ω LOAD)</p> <p>[TUNER]</p>  <p>↑ 100% white</p>
2	Auto adjustment performance	Adjustment process page 3.	Bring the cursor on [•RF AGC ADJ] and press [OK]. [•RF AGC ADJ OK] appears when finished.

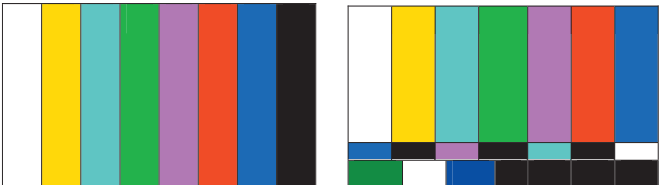
5.4. RF AGC Adjustment (SMPTE RF SIGNAL- Alternative Method)*

	Adjustment Point	Adjustment conditions	Adjustment procedure
1	Setting	[Signal] PAL SMPTE Field Color Bar RF signal [Terminal] TUNER	<ul style="list-style-type: none"> Feed the PAL SMPTE color bar signal (E-12ch) to TUNER. Signal level: 50 ±1dB μV (75Ω LOAD) <p>[TUNER]</p>  <p>↑ 100% white</p>
2	Auto adjustment performance	Adjustment process page 6.	Bring the cursor on [•RF AGC ADJ] and press [OK]. [•RF AGC ADJ OK] appears when finished.

5.5. PAL Signal & Tuner Adjustment


	Adjustment Point	Adjustment conditions	Adjustment procedure
1	Setting	[Signal] PAL FULL Field Color Bar Composite or RF signal [Terminal] EXT3 VIDEO IN TUNER	<ul style="list-style-type: none"> Feed the PAL full field color bar signal (75% color saturation) to EXT3 VIDEO IN. Feed the RF signal PAL color bar (E-12) to TUNER. Make sure the PAL color bar pattern (E-12) has the sync level of 7:3 with the picture level. <p>[EXT 3] [TUNER]</p>  <p>↑ 100% white ↑ 100% white</p>
2	Auto adjustment performance	Adjustment process page 3.	Bring the cursor on [•PAL +TUNER ADJ] and press [OK]. [•PAL+ TUNER ADJ OK] appears when finished.

5.6. PAL Signal & Tuner Adjustment (SMPTE RF SIGNAL-Alternative Method)

	Adjustment Point	Adjustment conditions	Adjustment procedure
1	Setting	[Signal] PAL FULL Field Color Bar Composite or RF SMPTE signal [Terminal] EXT3 VIDEO IN TUNER	<ul style="list-style-type: none"> Feed the PAL full field color bar signal (75% color saturation) to EXT3 VIDEO IN. Feed the RF signal SMPTE color bar (E-12) to TUNER. Make sure the SMPTE color bar pattern (E-12) has the sync level of 7:3 with the picture level. <p>[EXT 3] [TUNER]</p>  <p>↑ 100% white ↑ 100% white</p>
2	Auto adjustment performance	Adjustment process page 6.	Bring the cursor on [•PAL +TUNER ADJ] and press [OK]. [•PAL+ TUNER ADJ OK] appears when finished.

*Available from Main Version 1.042 or upper.

5.7. ADC Adjustment (Component 15K)

	Adjustment Point	Adjustment conditions	Adjustment procedure
1	Setting	[Signal] (576i/50) COMP 15K, 50Hz 100% Full Field Color Bar [Terminal] EXT4 [COMPONENT]	<ul style="list-style-type: none"> • Feed the COMPONENT 15K 100% full field color bar signal (100% color saturation) to EXT4 COMPONENT IN. <p>[EXT 4]</p> 
2	Auto adjustment performance	Adjustment process page 4.	Bring the cursor on [•COMP15K ADJ] and press [OK]. [•COMP15 ADJ OK] appears when finished.

6. White Balance Adjustment

Adjustment procedure Page 7/11 shows the value of adjustment gradation (IN value) and Adjustment procedure Page 8/11 & 9/11 show adj. offset value (initial value : 0). White balance adjustment is executed adjusting the adj. offset value, indicated on Page 8/11 & 9/11.

Condition of the inspection:

- Backlight: MAX (+8) [DYNAMIC]
- Colorimeter at screen centre

Adjustment reference device: Minolta CA-210

Tolerance adjustment spec. ± 0.004 , Inspection spec. : ± 0.006 (GAMMA 1)

Tolerance adjustment spec. ± 0.002 , Inspection spec. : ± 0.004 (GAMMA 2...6)

Adjustment: Check that the values on page 7/11 of process adjustment are set as below. If not, change them accordingly.

M GAMMA IN 1	160	M GAMMA IN 2	320
M GAMMA IN 3	480	M GAMMA IN 4	640
M GAMMA IN 5	800	M GAMMA IN 6	960

1- Display the current adjustment status at point 6. (Page 9/11 of process adjustment)

The pattern for checking the adjustment status is toggled by pressing the “6” button on the remote control. (Normal OSD display -> “6” -> pattern for check (OSD disappears) -> “6” -> normal OSD display -> ...)

2- Read the value of the luminance meter.

3- Change M GAMMA R6/M GAMMA B6 (adjustment offset value) on page 9/11 of process adjustment so that the values of the luminance meter approach $x = 0.272$ and $y = 0.277$.

(Basically, G is not changed. If adjustment fails only with R and B, then G should be reduced. In this case, the weaker of R and B must be fixed.)

4- If G is changed in step “3”, change the values of M GAMMA G1 - M GAMMA G5 on pages 8/11 and 9/11 of process adjustment as follows. When not changed, go to step “5”.

Offset value of M GAMMA G1 = (Offset value of M GAMMA G6)*(160/960)

Offset value of M GAMMA G2 = (Offset value of M GAMMA G6)*(320/960)

Offset value of M GAMMA G3 = (Offset value of M GAMMA G6)*(480/960)

Offset value of M GAMMA G4 = (Offset value of M GAMMA G6)*(640/960)

Offset value of M GAMMA G5 = (Offset value of M GAMMA G6)*(800/960)

5- Display the adjustment status of the current point 5. (Each time the “5” button on the remote control is pressed, the adjustment status check pattern is toggled.)
(Normal OSD display -> “5” -> Pattern display (OSD disappears) -> “5” -> Normal OSD display ->...)

Change M GAMMA R5/M GAMMA B5 (adjustment offset value) on page 9/11 of process adjustment so that the values of the luminance meter approach $x = 0.272$ and $y = 0.277$.

6- Repeat step “5” for GAMMA points 4, 3, 2, and 1.

7. QS Temperature NVM Data Confirmation *

During servicing of the LCD TV set , by software upgrading or by any cleaning NVM, it's mandatory select the “Inch Setting” in Service Mode, Page 2, according to the size of the TV set.

02/11	[INIT]	INPUT 4	PAL	--:--
	Factory Init	--		
	Inch Setting	--		
	Public Mode	OFF		
	Center Acutime	00H		
	RESET	OFF		
	Backlight Acutime	00H		
	RESET	OFF		
	Picture Read Pos X	0		
	Picture Read Pos Y	0		
	Picture Read	OFF		

Default picture after cleaning NVM.

02/11	[INIT]	INPUT 4	PAL	32:--
	Factory Init	--		
	Inch Setting	32		
	Public Mode	OFF		
	Center Acutime	00H		
	RESET	OFF		
	Backlight Acutime	00H		
	RESET	OFF		
	Picture Read Pos X	0		
	Picture Read Pos Y	0		
	Picture Read	OFF		

Picture with [Inch Setting] to 32.

8. Initialization to factory settings

Caution: When the factory settings have been made, all user setting data, including the channel settings, are initialized. (The adjustments done in the adjustment process mode are not initialized.) Keep this in mind when initializing these settings.

	Adjustment item	Adjustment conditions	Adjustment procedure
1	Factory settings	See to below caution	<ul style="list-style-type: none"> Enter the adjustment process mode. Bring the cursor on to [FACTORY INIT] on page 2/11. Use the [Volume + -] key to select a region from [EURO/UK/ITALY/FRANCE/RUSSIA] and press [ENTER]. “EXECUTING” appears and initialization starts.After a while, “***OK***” appears and the setting is complete. <p>Note: Never turn the power off during initialization.</p>
			<p>The following settings will be back to their factory ones.</p> <ol style="list-style-type: none"> User settings Channel data (e.g. broadcast frequencies) Password data

After adjustments, exit the adjustment process mode.
To exit the adjustment process mode, unplug the AC power cord from the outlet to forcibly turn off the power.
When the power is turned off with the remote control, unplug the AC power cord and plug it back in (wait approximately 10 seconds before plugging in the AC power cord).

*Available from Main Version 1.042 or upper.

9. Lamp error detection

9.1. Functional description

This LCD colour television has a function (lamp error detection) to be turned OFF automatically for safety when the lamp or lamp circuit is abnormal.

If the lamp or lamp circuit is abnormal, or some other errors happen, and the lamp error detection is executed, the following occur.

1- The main unit of television is turned OFF 5 seconds after it is turned ON. (The power LED on the front side of TV turns from green to red.)

2 - If the situation "1" happens 5 times sequentially, television can not be turned ON. (The power LED remains red.)

9.2. Countermeasures

When television is turned OFF by the lamp error detection mentioned above, it enters the adjustment process with the power LED red. Entering the adjustment process turns OFF the error detection and turns ON TV. This enables the operation check to detect errors in the lamp or lamp circuit.

Check whether "L ERROR RESET" on point 7, page 10/11 of the adjustment process is 1 or more. If it is 1 or more, it indicates the lamp error detection was executed. After confirming that the lamp or lamp circuit is normal, reset the lamp error counter pushing "OK" in the R/C. After resetting counter the label "***OK***" appears on Screen.

9.3. Reset standby cause error list

After confirming that the lamp error counter has been erased, select "STAND BY CAUSE RESET" on point 3, page 10/11 of the adjustment process and select ON using the right cursor. For execute press "OK" in the R/C and the label "***OK***" appears on Screen.

10. Public Mode (Hotel Mode)

10.1 How to Enter in the Public Mode (Hotel Mode).

Turn on the power in analog TV mode and enter in the Adjustment Process mode (ADJ1 or Service Mode) as usual.

In the [INIT], Page 2/11 of Service, turns ON the Public Mode option.

Turn off TV by pressing Main Power switch.

While pressing "VOL+" and "P^" keys at the same time, press Main Power switch for more than 2 seconds.

After this sequence the TV will turn on showing the Public Mode setting screen as follows:

Public Mode	
POWER ON FIXED	[VARIABLE]
MAXIMUM VOLUME	[60]
VOLUME FIXED	[VARIABLE]
VOLUME FIXED LEVEL	[0]
RC BUTTON	[RESPOND]
PANEL BUTTON	[RESPOND]
MENU BUTTON	[RESPOND]
ON SCREEN DISPLAY	[YES]
INPUT MODE START	[NORMAL]
INPUT MODE FIXED	[VARIABLE]
RESET	
EXECUTE	

Is possible to select each item of function by pressing cursor UP/DOWN keys on the remote control or CH(^)(v) keys on the LCD TV.

The setting position of each item of functions is made by pressing cursor RIGHT/LEFT keys on the remote control or VOL(+)(-) keys on the LCD TV.

Select EXECUTE position after you set all function, and press OK button on the remote control. Then all positions that have been selected will be set.

10.2. Public Mode Settings.

1. POWER ON FIXED [VARIABLE ⇄ FIXED]

When it is set to "FIXED" the TV is impossible to be switch off by Main Switch or Remote Control.

2. MAXIMUM VOLUME [0 ⇄ 60]

Is possible to set the maximum volume at limited level.

3. VOLUME FIXED [VARIABLE ⇄ FIXED]

Is possible to fix the sound volume at limited level.

When "FIXED" is selected the sound volume before limited is fixed.

4. VOLUME FIXED LEVEL [0 ⇄ 60]

If "FIXED" has been selected, is possible to set a fixed volume at the level that is choosen.

5. RC BUTTON [RESPOND ⇄ NO RESPOND]

If "NO RESPOND" is selected, the remote control keys are inoperative.

6. PANEL BUTTON [RESPOND ⇄ NO RESPOND]

If "NO RESPOND" has been selected, the set's keys remain deactivated (Except POWER key).

7. MENU BUTTON [RESPOND ⇄ NO RESPOND]

If "NO RESPOND" has been selected, "MENU" keys on the remote control, is inoperative.

8. ON SCREEN DISPLAY [YES ⇄ NO]

If "NO" has been selected, the On Screen Display does not appear.

9. INPUT MODE START [NORMAL ⇄ TV (X) ⇄ DTV ⇄ INPUT1 ⇄ INPUT2 ⇄ INPUT3 ⇄ INPUT4 ⇄ INPUT5 ⇄]

When any other item than "NORMAL" has been selected, the sets will start in a selected input mode at the next power-on.

10. INPUT MODE FIXED [VARIABLE ⇄ FIXED]

If "FIXED" has been selected, any channels and input modes other than those selected at the start mode cannot be picked up.

11. RESET

Cancel all Public Mode settings. (It returns to the factory settings)

12. EXECUTE

After select this item, all positions that has been selected will be set.