

4. Alignment and Adjustments

4-1 Preadjustment

4-1-1 Factory Mode

1. Do not attempt these adjustments in the Video Mode.
2. The Factory Mode adjustments are necessary when either the EEPROM (IC902) or the CRT is replaced.
3. Do not tamper with the "Adjustment" screen of the Factory Mode menu. This screen is intended only for factory use.

4-1-2 When EEPROM (IC902) Is Replaced

1. When IC902 is replaced all adjustment data revert to initial values. It is necessary to re-program this data.
2. After IC902 is replaced, warm up the TV for 10 seconds.

4-1-3 When CRT Is Replaced

1. Make the following adjustments AFTER setting up after setting up purity and convergence :
 - White Balance
 - Sub-Brightness
 - Vertical Center
 - Vertical Size
 - Horizontal Size
 - Fail Safe (This adjustment must be the last step).
2. If the EEPROM or CRT is replaced, set SC and PVA to 10 and 45 (Factory mode).
 - SC : 14, 16 Inch : 0
 - 20, 21 Inch : 10

4-2 Factory/Service Mode

4-2-1 Procedure for the "Adjustment" Mode

1. This mode uses the standard remote control. The Service Mode is activated by entering the following remote-control sequence :
 - (1) SLEEP→FACTORY.
 - (2) STAND-BY→P.STD→HELP→SLEEP→POWER ON.
2. The "SERVICE (FACTORY)" message will be displayed. The Service Mode has four components: Adjustment, Test Pattern, Option Bytes and Reset.
3. Access the Adjustment Mode by pressing the "VOLUME" keys (Up or Down). The adjustment parameters are listed in the accompanying table, and selected by pressing the CHANNEL keys (▲, ▼).
4. Selection sequences for the PAL system:
 - DOWN or UP key:
 - AGC>VCO>SBT>SCT>SCR>SC>RG>GG>BG>CDL>BLU>PSL>PVS>PVA>PHS
5. Selection sequences for the NTSC system:
 - DOWN or UP key:
 - AGC>VCO>SBT>SCT>SCR>SC>RG>GG>BG>CDL>BLU>NSL>NVS>NVA>NHS
6. The VOLUME keys increase or decrease the adjustment values, (stored in the non-volatile memory when Adjustment Mode is cancelled).
7. Cancel the Adjustment Mode by re-pressing the "FACTORY" or Power OFF.

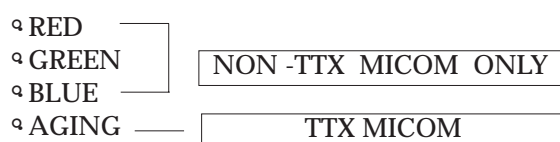
4-2-2 Main Adjustment Parameter

Table 4-1 Main Adjustment Parameter (Zilog, Philips μ -com)				
FUNCTION	OSD ABBREVIATION	RANGE	INITIAL DATA	REMARKS
AUTO GAIN CONTROL	AGC	0 ~ 63 STEP	32	TDA8374
SUB BRIGHT	SBT	0 ~ 23 STEP	7	
SUB CONTRAST	SCT	0 ~ 23 STEP	7	
SUB COLOR	SCR	0 ~ 23 STEP	13	
RED DRIVE GAIN	RG	0 ~ 63 STEP	32	
GREEN DRIVE GAIN	GG	0 ~ 63 STEP	32	
BLUE DRIVE GAIN	BG	0 ~ 63 STEP	32	
PAL VERTICAL SLOPE	PSL	0 ~ 63 STEP	20	
PAL VERTICAL SHIFT	PVS	0 ~ 63 STEP	32	
PAL VERTICAL AMPLITUDE	PVA	0 ~ 63 STEP	45	
PAL HORIZONTAL SHIFT	PHS	0 ~ 63 STEP	32	
NTSC VERTICAL SLOPE	NSL	0 ~ 63 STEP	20	
NTSC VERTICAL SHIFT	NVS	0 ~ 63 STEP	32	
NTSC VERTICAL AMPLITUDE	NVA	0 ~ 63 STEP	45	
NTSC HORIZONTAL SHIFT	NHS	0 ~ 63 STEP	32	
VOLTAGE CONTROL OSCILLATOR	VCO	0 ~ 128 STEP	64	
S-CORRECTION	SC	0 ~ 63 STEP	32	
TTX SUB-CONTRAST	TSS	0 ~ 63 STEP	16	
CATHODE DRIVE LEVEL	CDL	0 ~ 7 STEP	3	TDA8842
BLUE STRETCH MODE	BLU	0 ~ 3 STEP	2	

NOTE : PVS,PVA, PHS, NVS, NVA,NHS parameters must be aligned using both the 50Hz and 60Hz vertical-field rates.

4-2-3 Test Pattern (Aging Mode)

1. This mode can be used during servicing, or for confirming that the convergence and purity adjustments are correct.
2. Access the Test Pattern parameters by pressing a CHANNEL keys (▲, ▼) while the Service Mode is on. The cursor will move to the test pattern. Press the VOLUME keys. On-screen display:



3. AGING Mode (Reference Only)

This pattern is used for pre-heating the CRT during manufacturing—it is accessed in the factory by twice pressing the “SLEEP → FACTORY→FACTORY” key, then white pattern will be displayed.

Even if the TV power is cut off, the Aging Mode is not cancelled. The aging mode is cancelled by repressing the “FACTORY” key or pressing the local “CH UP/DOWN” key.

The patterns are displayed at 5 sec intervals : NON-TTX Micom only.

4-2-4 Option Bytes

In the Service Mode, various can be selected via the Option Bytes (8 bits each). Example:

SYSTEM OSD DISPLAY		BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
BYTE 0 : 8	-			L (BIT : 0)	H (BIT : 8)	L (BIT : 0)	L (BIT : 0)	L (BIT : 0)
BYTE 1 : 0	-	L (BIT : 0)	L (BIT : 0)	L (BIT : 0)	L (BIT : 0)	L (BIT : 0)	L (BIT : 0)	L (BIT : 0)

TDA8374, CK SYSTEM, RCA JACK SYSTEM OSD DISPLAY

BYTE 0 : 11	—————	L (BIT : 1)	H (BIT : 0)	L (BIT : 0)	H (BIT : 0)	L (BIT : 1)
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4-2-4 (A) OPTION BYTE TABLE

BYTE	BIT	LOW (0)		HIGH (1)		Application MICOM			
B Y T E 0	D7	-				-			
	D6	16:9 not functional during “Zoom” in the A/V Mode		16:9 functional during “Zoom” in the A/V Mode					
	D5	No Child Lock		Child Lock					
	D4	CH Up/down functional in the A/V mode (SCART Jack)		CH Up/down not functional in the A/V mode (RCA Jack)					
	D3	SOUND-I SYSTEM USED		SOUND-I SYSTEM NOT USED					
	D2	D2	D1	COLOR SYSTEM		SOUND SYSTEM			
		0	0	CK : PAL ONLY (NO OSD)		B/G→D/K → I			
		0	1	CW : -. RF : AUTO→PAL →SECAM→NT4.43 -. A/V : AUTO→PAL→SECAM →NT4.43 →NT3.58		B/G→D/K → I			
		1	0	CB : -RF : PAL ONLY -A/V : AUTO→PAL →NT4.43→NT3.58		B/G ONLY (No OSD)			
		1	1	CS : - RF : AUTO→PAL →SECAM →NT4.43→NT 3.58 -A/V : AUTO→PAL →SECAM →NT4.43 →NT3.58		B/G→D/K →I→ NT →M			
D0	TDA8374		TDA8842		Onechip				
B Y T E 1	D7	D7	D6	Southeast/Middle East Asia /Africa	Vietnam/India	Thailand/Malaysia	CIS	China	
		0	0	English Only	English Only	English Only	English Only	English only	
		0	1	English/Arabian	English/Vietnamese	English/Thai	English/CIS	English /Chinese	
		D6	1	0	English/Arabian/French	English/Indonesian	English/Malay		
			1	1	English Only	English/Vietnamese /Indonesian	English/Thai /Malay		
	D5	AFT ON (always)		AFT OFF (after fine tuning)					
	D4	Existing sharpness level		Sharpness level Up		March 12, 1997			
	D3	No Auto Power On		Auto Power ON		Last State Memory			
	D2	NTSC : 25KHz (NTSC Table) PAL : 50KHz (PAL Table)		NTSC : 25KHz (NTSC Table) PAL : 50KHZ (PAL Table)		PAL Table always used in the A/V Mode (March 12, 1997)			
	D1			D1	D0	System		Sound system during the auto search (All should be set for the system which is selected during the Factory Reset.)	
				0	0	DIG			
	D0			0	1	D/K			
				1	0	I			
				1	1	NT-M			

4-2-4 (B) TTX MICOM (SPM-197EE/ER/EG) OPTION TABLE (FOR EUROPE)

BYTE	BIT	LOW (0)		HIGH (1)		Application MICOM	
B Y T E 0	D7	3 BAND		UHF ONLY		ALL	
	D6	16:9 not functional during zoom in the A/V mode (NORMAL-ZOOM)		16:9 functional during zoom in the A/V mode (NORMAL-ZOOM-16:9)		ALL (BASIC : LOW)	
	D5	LED RED AT STAND-BY		LED GREEN AT STAND-BY (POLAND)		ALL (J900 DELETE AT H)	
	D4	CH Up/down functional in the A/V mode (SCART Jack)		CH Up/down not functional in the A/V mode (RCA Jack)		ALL	
	D3	P-STD MAX		P-STD NORMAL		ALL (BASIC : HIGH)	
	D2	D2	D1	SOUND SYSTEM		COLOR SYSTEM	ALL
	D1	0	0	B/G ↔ D/K : CK MODEL		AUTO (NO OSD)	
		0	1	I ONLY (NO OSD) : CI, CII MODEL			
		1	0	B/G ONLY (NO OSD) : CB, CX MODEL			
		1	1	NOT USED			
D0	TDA8374A		TDA8842		ALL		
B Y T E 1	D7	NOT USED				ALL (FIX : LOW)	
	D6						
	D5	Western OSD :English/German/French/Dutch/ Italian/Spanish/Swedish		Eastern OSD :English/Croatian/Rumanian/ Hungarian/Hungarian/Polish/Czech		SPM- 197EE ONLY used * SPM-197ER : English/Russian/ Bulgarian *SPM-197EG: English/Greek/ Yugosiavian	
	D4	Existing sharpness level (when using TDA6108 RGB AMP)		Sharpness level up (when using TDA6107Q AMP)		ALL (BASIC : HIGH)	
	D3	No Auto Power On		Auto Power On		ALL (BASIC : HIGH)	
	D2	NTSC : 25KHz (NTSC TABLE) PAL : 50KHz (PAL TABLE)		NTSC : 25KHz (NTSC TABLE) PAL : 27KHz (PAL TABLE)		ALL (RF VOL. CURVE) BASIC : LOW (AV VOL. CURVE : PAL CURVE)	
	D1	NOT USED (FIX : LOW)				Sound system during the auto search (All should be set for the system which is selected during the Factory Reset.) Note : Available when the sound is B/G ↔ D/K in the Byte 0	
	D0	B/G SOUND		D/K SOUND			

● P-STD Classification (CON./BRI./SHRP.COL.)

D3 BIT	STANDARD MODE	DYAMIC MODE	MOVIE MODE	MILD MODE	CUSTOM MODE
0	100/50/50/50	100/50/75/50	90/50/75/50	60/50/75/50	100/50/50/50
1	90/50/50/50	100/50/50/50	75/55/50/50	60/50/50/50	90/55/25/50

- Function Required : 1. PICTURE OFF (after 15 minutes) during no signal 2. AUDIO MUTE (during no signal)
3. No BLUE SCREEN 4. NO TIMER (CLOCK ON/OFF)

4-2-4 (C) TTX MICOM (SPM-197EP/EPR/EA) OPTION TABLE (FOR MIDDLE EAST)

BYTE	BIT	LOW (0)		HIGH (1)		Application MICOM	
B Y T E 0	D7	NOT USED				ALL (FIX : LOW)	
	D6	16:9 not functional during zoom (NORMAL-ZOOM)		16:9 functional during zoom (NORMAL-ZOOM-16:9)		EP is an OPTION during A/V (BASIC : LOW)	
	D5	NOT USED				ALL (FIX : LOW)	
	D4	CH Up/down functional in the A/V mode (SCART Jack)		CH Up/down not functional in the A/V mode (RCA Jack)		ALL	
	D3	SOUND-I SYSTEM USED		SOUND-I SYSTEM NOT USED		ALL	
	D2	D2	D1	COLOR SYSTEM		SOUND SYSTEM	
		0	0	CK : AUTO (No OSD)		(?)→B/G→D/K →	
		0	1	CW : -. RF : AUTO→PAL →SECAM→NT4.43 -. A/V : AUTO→PAL→SECAM →NT4.43 →NT3.58		(?)→B/G→D/K → I→	
	D1	1	0	CB : -RF : PAL ONLY (No OSD) -A/V : AUTO→PAL →NT4.43→NT3.58		B/G ONLY (No OSD)	
		1	1	CS : - RF : AUTO→PAL →SECAM →NT4.43→NT 3.58 -A/V : AUTO→PAL →SECAM →NT4.43 →NT3.58		(?)→B/G→D/K → I→ NT → M →	
	D0	TDA8374A		TDA8842		EP VERSION : TDA8374A ONLY	
B Y T E 1	D7	NOT USED				ALL (FIX : LOW)	
	D6						
	D5						
	D4	Existing Sharpness level (when using the TDA6108 RGB AMP)		Sharpness level up (when using the TDA6107Q RGB AMP)		ALL (BASIC : HIGH)	
	D3	No Auto Power On		Auto Power On		ALL (BASIC : HIGH)	
	D2	NTSC : 25KHz (NTSC TABLE) PAL : 50KHz (PAL TABLE)		NTSC : 25KHz (NTSC TABLE) PAL : 27KHz (PAL TABLE)		ALL (RF VOL. CURVE) BASIC : LOW (AV VOL. CURVE : PAL CURVE)	
	D1	D1	D0	SYSTEM		Sound system during the auto search (All should be set for the system which is selected during the Factory Reset.) Note : A single sound in the Byte 0 is unavailable	
		0	0	B/G			
		0	1	D/K			
	D0	1	0	I			
	1	1	?(B/G & D/K OR M) /EP VER. : M				

● OSD Language by MiCOM

1. Persian (for Iran) : English/Persian (Iranian)
2. Arab (Middle East, Africa) : English/French/Arabian

- Function Required : 1. PICTURE OFF (after 15 minutes) during no signal
3. No BLUE SCREEN

2. AUDIO MUTE (during no signal)
4. No TIMER (CLOCK ON/OFF)

4-2-4 (D) TTX MICOM (SPM-193EE/EER) OPTION TABLE (FOR EUROPE)

BYTE	BIT	LOW (0)		HIGH (1)		REMARK	
B Y T E 0	D7	3 BAND		UHF ONLY		SZM-193EE : H NOT functional SZM-193EER :	
	D6	16:9 not functional during zoom in the A/V mode (NORMAL-ZOOM)		16:9 functional during zoom in the A/V mode (NORMAL-ZOOM-16:9)		Basic Specification : LOW	
	D5	LED RED AT STAND-BY		LED GREEN AT STAND-BY		POLAND (J900 DELETE AT H)	
	D4	CH Up/down functional in the A/V mode (SCART Jack)		CH Up/down not functional in the A/V mode (RCA Jack)		BASIC : LOW	
	D3	P-STD MAX		P-STD NORMAL		ALL (BASIC : HIGH)	
	D2	D2	D1	SOUND SYSTEM		COLOR SYSTEM	SOUND SYSTEM OPTION
	D1	0	0	B/G ↔ D/K : CK MODEL		AUTO (NO OSD)	
		0	1	I ONLY (NO OSD) : CI, CII MODEL			
		1	0	B/G ONLY (NO OSD) : CB, CX MODEL			
		1	1	NOT USED			
D0	TDA8374A		TDA8842		IC201 (ONE-CHIP) OPTION		
B Y T E 1	D7	D7	D6	OSD Language		Language Option	
	D6	0	0	English/German/French/Dutch/ Italian/Spanish/Swedish			
		0	1				
		1	0	English/Romanian/Hungarian/ Croatian/Polish/Czech/Russian			
		1	1				English/Bulgarian/Greek/Yugo
	D5	AFT ON (always)		AFT OFF (after fine tuning)		BASIC : LOW	
	D4	Existing Sharpness level (when using TDA6108 RGB AMP)		Sharpness level up (when using TDA6107Q AMP)		BASIC : HIGH	
	D3	No Auto Power On		Auto Power On		BASIC: HIGH	
	D2	NTSC : 25KHz (NTSC TABLE) PAL : 50KHz (PAL TABLE)		NTSC : 25KHz (NTSC TABLE) PAL : 27KHz (NTSC TABLE)		RF VOL. : CURVE, BASIC : LOW (AV VOL. CURVE:PAL CURVE)	
	D1	NOT USED (FIX : LOW)					Sound system during the Auto search (All should be set for the system which is selected during the Factory Reset.)
D0	SOUND B/G		SOUND D/K		Note: Only available during the specification of CK model in the Byte 0		

● P-STD Classification (CON./BRI./SHRP./COL.)

D3 BIT	STANDARD MODE	DYAMIC MODE	MOVIE MODE	MILD MODE	CUSTOM MODE
0	100/50/50/50	100/50/75/50	90/50/75/50	60/50/75/50	100/50/50/50
1	90/50/50/50	100/50/50/50	75/55/50/50	60/50/50/50	90/55/25/50

- Function Required : 1. PICTURE OFF (after 15 minutes) during no signal 2. AUDIO MUTE (during no signal)
 3. No BLUE SCREEN during no RF signal (Blue screen during A/V) 4. NO TIMER

4-2-4 (E) TTX MICOM (SZM-193EA/EAR/EV) OPTION TABLE

BYTE	BIT	LOW (0)		HIGH (1)		Application MICOM																
B Y T E 0	D7	LINE STEREO OFF		LINE STEREO ON		ALL																
	D6	16:9 not function during zoom in the A/V mode (Normal-ZOOM)		16:9 functional during zoom in the A/V mode (NORMAL-ZOOM-16:9)		BASIC : LOW																
	D5	CHILD LOCK OFF		CHILD LOCK ON		ALL (No SZM193EA)																
	D4	CH Up/down functional in the A/V mode (SCART Jack)		CH Up/down not functional in the A/V mode (RCA Jack)		ALL																
	D3	SOUND-I SYSTEM USED		SOUND-I SYSTEM NOT USED		ALL																
	D2	D2	D1	COLOR SYSTEM		SOUND SYSTEM																
		0	0	CK : AUTO (No OSD)		B/G→D/K																
		0	1	CW : -. RF : AUTO→PAL →SECAM→NT4.43 -. A/V : AUTO→PAL→SECAM →NT4.43 →NT3.58		B/G→D/K → I																
	D1	1	0	CB : -RF : PAL ONLY -A/V : AUTO→PAL →NT4.43→NT3.58		B/G ONLY (No OSD)																
		1	1	CS : - RF : AUTO→PAL →SECAM →NT4.43→NT 3.58 -A/V : AUTO→PAL →SECAM →NT4.43 →NT3.58		B/G→D/K → I→ NT → M →																
D0	TDA8374A			TDA8842		ALL (No SZM193EA)																
B Y T E 1	D7	D7	D6	Middle East/Africa Version	Asia Version (SZM193EV)																	
		0	0	English ONLY	English only																	
		0	1	English/Arabian	English/Indonesian/Malay/Thai/Vietnamese																	
		D6	1	0	English/Arabian/French		English/Vietnamese/Indonesian															
			1	1	English ONLY		English/Thai/Malay															
	D5	AFT ON (always)			AFT OFF after fine tuning (for India)		ALL (No SZM-193EA)															
	D4	Existing Sharpness level (when using TDA6108 RGB AMP)			Sharpness level up (when using TDA6107Q RGB AMP)		ALL (BASIC : HIGH)															
	D3	No Auto Power On			Auto Power On		ALL (BASIC : HIGH)															
	D2	NTSC : 25KHz(NTSC TABLE) PAL : 50 KHz (PAL TABLE)			NTSC : 25KHz (NTSC TABLE) PAL : 27KHz (NTSC TABLE)		ALL (RF VOL.: HIGH) BASIC : LOW (AV VOL. CURVE : PAL CURVE)															
	D1	<table><tr><td>D1</td><td>D0</td><td>SYSTEM</td></tr><tr><td>0</td><td>0</td><td>B/G</td></tr><tr><td>0</td><td>1</td><td>D/K</td></tr><tr><td>1</td><td>0</td><td>I</td></tr><tr><td>1</td><td>1</td><td>NT-M</td></tr></table>					D1	D0	SYSTEM	0	0	B/G	0	1	D/K	1	0	I	1	1	NT-M	Initial sound system during the auto search (All should be for the system which is selected during the Factory Reset.) Note : Unavailable during the CB model in the byte 0
							D1	D0	SYSTEM													
	0						0	B/G														
	0						1	D/K														
1	0						I															
1	1	NT-M																				
D0																						

- Function Required : 1. PICTURE OFF (after 15 minutes) during no signal
2. AUDIO MUTE (during no signal)
3. No BLUE SCREEN
4. TIMER (CLOCK ON/OFF)

4-2-4 (F) TTX MICOM (SZM-191ER) OPTION TABLE (FOR RUSSIA, OCEANIA)

BYTE	BIT	LOW (0)		HIGH (1)	Application MICOM		
B Y T E 0	D7	NOT USED			FIX : LOW		
	D6	16:9 not functional during zoom in the A/V mode (NORMAL-ZOOM)		16:9 functional during zoom in the A/V mode (NORMAL-ZOOM-16:9)	BASIC : LOW		
	D5	NOT USED			FIX : LOW		
	D4	CH Up/down functional in the A/V mode (SCART Jack)		CH Up/down not functional in the A/V mode (RCA Jack)			
	D3	SOUND-I SYSTEM USED		SOUND-I SYSTEM NOT USED	BASIC : LOW		
	D2	D2	D1	COLOR SYSTEM	SOUND SYSTEM		
		0	0	CK : AUTO (No OSD)	B/G→D/K		
		0	1	CW : -. RF : AUTO→PAL →SECAM→NT4.43 -. A/V : AUTO→PAL→SECAM →NT4.43 →NT3.58	B/G→D/K → I		
D1		1	0	CB : -RF : PAL ONLY (No OSD) -A/V : AUTO→PAL →NT4.43→NT3.58	B/G OSD		
	1	1	CS : - RF : AUTO→PAL →SECAM →NT4.43→NT 3.58 -A/V : AUTO→PAL →SECAM →NT4.43 →NT3.58	B/G→D/K → I→ NT → M			
D0	TDA8374A		TDA8842		IC201(ONE-CHIP) OPTION		
B Y T E 1	D7	NOT USED			FIX : LOW		
	D6	English ONLY		English/Russian	Language option		
	D5	AFT ON (always)		AFT OFF (after fine tuning)	BASIC : LOW		
	D4	Existing Sharpness level (when using TDA6108 RGB AMP)		Sharpness level up (when using the TDA6107Q RGB AMP)	BASIC : HIGH		
	D3	No Auto Power On		Auto Power On	BASIC : HIGH		
	D2	NTSC : 25KHz (NTSC TABLE) PAL : 50KHz (PAL TABLE)		NTSC : 25KHz (NTSC TABLE) PAL : 27KHz (PAL TABLE)	ALL (RF VOL. CURVE) , BASIC :LOW (AV VOL. CURVE: PAL CURVE)		
	D1			D1	D0	System	Initial sound system during the auto search (All should be set for the system which is selected during the Factory Reset.) Note : Unavailable during the CB model in the Byte 0
				0	0	DIG	
0	1			D/K			
D0	1			0	I		
	1			1	NT-M		

- Function Required : 1. PICTURE OFF (after 15 minutes) during no signal 2. AUDIO MUTE during no signal
3. BLUE SCREEN ON/OFF 4. No TIMER CLOCK

- The SZM191ER is to be diverted to Australia/New Zealand because of the non-functionality of RGB (of pin 21).
(OPTION BYTE : 55/1C)→ When using TDA8842 N1, the BLOOMING check is required.

4-2-4 (G) TTX MICOM (SZM-193EVR) OPTION TABLE (FOR ASIA)

BYTE	BIT	LOW (0)		HIGH (1)		Application MICOM
B Y T E 0	D7	LINE STEREO OFF		LINE STEREO ON		
	D6	16:9 not function during zoom in the A/V mode (Normal-ZOOM)		16:9 functional during zoom in the A/V mode (NORMAL-ZOOM-16:9)		BASIC : LOW
	D5	CHILD LOCK OFF		CHILD LOCK ON		
	D4	CH Up/down functional in the A/V mode (SCART Jack)		CH Up/down not functional in the A/V mode (RCA Jack)		BASIC : HIGH
	D3	SOUND-I SYSTEM USED		SOUND-I SYSTEM NOT USED		
	D2	D2	D1	COLOR SYSTEM		SOUND SYSTEM
		0	0	CK : AUTO (No OSD)		B/G→D/K
		0	1	CW : -. RF : AUTO→PAL →SECAM→NT4.43 -. A/V : AUTO→PAL→SECAM →NT4.43 →NT3.58		B/G→D/K → I
	D1	1	0	CB : -RF : PAL ONLY -A/V : AUTO→PAL →NT4.43→NT3.58		B/G ONLY (No OSD)
		1	1	CS : - RF : AUTO→PAL →SECAM →NT4.43→NT 3.58 -A/V : AUTO→PAL →SECAM →NT4.43 →NT3.58		B/G→D/K → I→ NT → M →
D0	TDA8374A		TDA8842		IC201 (ONE-CHIP) OPTION	
B Y T E 1	D7	D7	D6	OSD Language		Language option
		0	0	English ONLY		
		0	1	English/Indonesian/Malay/Thai/Vietnamese		
		1	0	English/Vietnamese/Indonesian		
		1	1	English/Thai/Malay		
	D6					
	D5	AFT ON (always)		AFT OFF (after fine tuning)		BASIC : LOW(India : HIGH)
	D4	CLOCK DISPLAY OFF		CLOCK DISPLAY ON		BASIC : LOW Indonesia : HIGH
	D3	No Auto Power On		Auto Power On		BASIC : HIGH
	D2	NTSC : 25KHz(NTSC TABLE) PAL : 50 KHz (PAL TABLE)		NTSC : 25KHz (NTSC TABLE) PAL : 27KHz (NTSC TABLE)		ALL (RF VOL.: HIGH) BASIC : LOW (AV VOL. CURVE : PAL CURVE)
D1			D1	D0	SYSTEM	Initial sound system during the auto search (All should be set for the system which is selected during the Factory Reset.) Note : Unavailable during the CB model in the Byte 0
			0	0	B/G	
D0			0	1	D/K	
			1	0	I	
			1	1	NT-M	

- Function Required : 1. PICTURE OFF (after 15 minutes) during no signal
2. AUDIO MUTE during no signal
3. BLUE SCREEN On/off

4. TIMER CLOCK ON/OFF

4-2-4 (H) NON TTX MICOM (SZM-193EV2) OPTION TABLE (FOR ASIA)

BYTE	BIT	LOW (0)		HIGH (1)		Application MICOM		
B Y T E 0	D7	LINE STEREO OFF		LINE STEREO ON				
	D6	16:9 not function during zoom (Normal-ZOOM)		16:9 functional during zoom (NORMAL-ZOOM-16:9)		BASIC : LOW		
	D5	CHILD LOCK OFF		CHILD LOCK ON				
	D4	CH Up/down functional in the A/V mode (SCART Jack)		CH Up/down not functional in the A/V mode (RCA Jack)		BASIC : HIGH		
	D3	SOUND-I SYSTEM USED		SOUND-I SYSTEM NOT USED				
	D2	D2	D1	COLOR SYSTEM		SOUND SYSTEM		
		0	0	CK : AUTO (No OSD)		(?)→B/G→D/K →		
		0	1	CW : -. RF : AUTO→PAL →SECAM→NT4.43 -. A/V : AUTO→PAL→SECAM →NT4.43 →NT3.58		(?)→B/G→D/K → I→		
	D1	1	0	CB : -RF : PAL ONLY (No OSD) -A/V : AUTO→PAL →NT4.43→NT3.58		B/G ONLY (No OSD)		
		1	1	CS : - RF : AUTO→PAL →SECAM →NT4.43→NT 3.58 -A/V : AUTO→PAL →SECAM →NT4.43 →NT3.58		(?)→B/G→D/K → I→ NT → M →		
D0	TDA8374A		TDA8842		IC201 (ONE-CHIP) OPTION			
B Y T E 1	D7	D7	D6	OSD Language		Language option		
		0	0	English ONLY				
		0	1	English/Indonesian/Malay/Thai/Vietnamese				
		1	0	English/Vietnamese/Indonesian				
		1	1	English/Thai/Malay				
	D6							
	D5	AFT ON (always)		AFT OFF (after fine tuning)		BASIC : LOW(India : HIGH)		
	D4	CLOCK DISPLAY OFF		CLOCK DISPLAY ON		BASIC : LOW Indonesia : HIGH		
	D3	No Auto Power On		Auto Power On		BASIC : HIGH		
	D2	NTSC : 25KHz(NTSC TABLE) PAL : 50 KHz (PAL TABLE)		NTSC : 25KHz (NTSC TABLE) PAL : 27KHz (NTSC TABLE)		RF VOL.CURVE BASIC : LOW (AV VOL. CURVE : PAL CURVE)		
	D1			D1	D0	SYSTEM		Initial sound system during the auto search (All should be set for the system which is selected dur- ing the Factory Reset.) Note: Unavailable during the CB model in the Byte 0
				0	0	B/G		
D0			0	1	D/K			
			1	0	I			
			1	1	?) B/G & D/K OR M			

- Function Required : 1. PICTURE OFF (after 15 minutes) during no signal
2. AUDIO MUTE during no signal
3. BLUE SCREEN On/off
4. TIMER Clock On/Off

4-2-4 (I) TTX MICOM (SPM-193EA2) OPTION TABLE (FOR MIDDLE EAST ASIA/AFRICA)

BYTE	BIT	LOW (0)		HIGH (1)		Application MICOM	
B Y T E 0	D7	LINE STEREO OFF		LINE STEREO ON			
	D6	16:9 not functional during zoom in the A/V mode (NORMAL-ZOOM)		16:9 functional during zoom in the A/V mode (NORMAL-ZOOM-16:9)		BASIC : LOW	
	D5	CHILD LOCK OFF		CHILD LOCK ON			
	D4	CH Up/down functional in the A/V mode (SCART Jack)		CH Up/down not functional in the A/V mode (RCA Jack)			
	D3	SOUND-I SYSTEM USED		SOUND-I SYSTEM NOT USED			
	D2	D2	D1	COLOR SYSTEM		SOUND SYSTEM	
		0	0	CK : AUTO (No OSD)		(?)→B/G→D/K →	
	D1	0	1	CW : -. RF : AUTO→PAL →SECAM→NT4.43 -. A/V : AUTO→PAL→SECAM →NT4.43 →NT3.58		(?)→B/G→D/K → I→	
		1	0	CB : -RF : PAL ONLY (No OSD) -A/V : AUTO→PAL →NT4.43→NT3.58		B/G ONLY (No OSD)	
		1	1	CS : - RF : AUTO→PAL →SECAM →NT4.43→NT 3.58 -A/V : AUTO→PAL →SECAM →NT4.43 →NT3.58		(?)→B/G→D/K → I→ NT → M →	
D0	TDA8374A		TDA8842		IC201 (ONE-CHIP) OPTION		
B Y T E 1	D7	NOT USED				FIX : LOW	
	D6						
	D5	AFT ON (always)		AFT OFF (after fine tuning)		BASIC : LOW	
	D4	Existing Sharpness level (when using the TDA6108 RGB AMP)		Sharpness level up (when using the TDA6107Q RGB AMP)		BASIC : HIGH	
	D3	No Auto Power On		Auto Power On		BASIC : HIGH	
	D2	NTSC : 25KHz (NTSC TABLE) PAL : 50KHz (PAL TABLE)		NTSC : 25KHz (NTSC TABLE) PAL : 27KHz (PAL TABLE)		ALL (RF VOL. CURVE) BASIC : LOW (AV VOL. CURVE : PAL CURVE)	
	D1	D1	D0	SYSTEM		Initial sound system during the auto search (All should be set for the system which is selected during the Factory Reset.) Note : Unavailable during the CB model in the Byte 0	
		0	0	B/G			
	D0	0	1	D/K			
		1	0	I			
1		1	? B/G & D/K OR M				

- Function Required : 1. PICTURE OFF (after 15 minutes) during no signal 2. AUDIO MUTE (during no signal)
3. BLUE SCREEN On/Off 4. No Timer Clock On/Off

4-2-4 (J) TTX MICOM (SZM-193EC) OPTION TABLE (FOR CHINA)

BYTE	BIT	LOW (0)		HIGH (1)		Remark	
B Y T E 0	D7	LINE STEREO OFF		LINE STEREO ON		BASIC : LOW	
	D6	16:9 not functional during zoom in the A/V mode (NORMAL-ZOOM)		16:9 functional during zoom in the A/V mode (NORMAL-ZOOM-16:9)		BASIC : LOW	
	D5	CHILD LOCK OFF		CHILD LOCK ON			
	D4	CH Up/down functional in the A/V mode (SCART Jack)		CH Up/down not functional in the A/V mode (RCA Jack)		BASIC : LOW	
	D3	SOUND-I SYSTEM USED		SOUND-I SYSTEM NOT USED		BASIC : HIGH	
	D2	D2	D1	COLOR SYSTEM		SOUND SYSTEM	
		0	0	CK : AUTO (No OSD)		B/G→D/K	
		0	1	CW : -. RF : AUTO→PAL →SECAM→NT4.43 -. A/V : AUTO→PAL→SECAM →NT4.43 →NT3.58		B/G→D/K → I	
		D1	1	0	CB : -RF : PAL ONLY (No OSD) -A/V : AUTO→PAL →NT4.43→NT3.58		
	1		1	CS : -RF : AUTO→PAL →SECAM →NT4.43→NT 3.58 -A/V : AUTO→PAL →SECAM →NT4.43 →NT3.58		B/G→D/K → I→ NT → M	
D0	TDA8374A		TDA8842		IC201(ONE-CHIP) OPTION		
B Y T E 1	D7	NOT USED				FIX : LOW	
	D6	English ONLY		English/Russian		Language option	
	D5	AFT ON (always)		AFT OFF (after fine tuning)		BASIC : LOW	
	D4	Existing Sharpness level (when using TDA6108 RGB AMP)		Sharpness level up (when using the TDA6107Q RGB AMP)		BASIC : HIGH	
	D3	No Auto Power On		Auto Power On		BASIC : HIGH	
	D2	NTSC : 25KHz (NTSC TABLE) PAL : 50KHz (PAL TABLE)		NTSC : 25KHz (NTSC TABLE) PAL : 27KHz (PAL TABLE)		ALL (RF VOL. CURVE) , BASIC:LOW (AV VOL. CURVE: PAL CURVE)	
	D1			D1	D0	System	Initial sound system during the auto search (All should be set for the system which is selected during the Factory Reset.) Note : Unavailable during the CD model in the Byte 0
				0	0	DIG	
	0			1	D/K		
	D0			1	0	I	
1				1	NT-M		

- Function Required : 1. PICTURE OFF (after 15 minutes) during no signal
2. AUDIO MUTE during no signal
3. BLUE SCREEN On/Off
4. TIMER CLOCK On/Off

4-2-4 (K) NON TTX MICOM (SZM-191EC) OPTION TABLE (FOR CHINA)

BYTE	BIT	LOW (0)		HIGH (1)		Application MICOM	
B Y T E 0	D7	NOT USED				FIX : LOW	
	D6	16:9 not functional during zoom (NORMAL-ZOOM)		16:9 functional during zoom (NORMAL-ZOOM-16:9)		BASIC : LOW	
	D5	NOT USED				FIX : LOW	
	D4	CH Up/down functional in the A/V mode (SCART Jack)		CH Up/down not functional in the A/V mode (RCA Jack)			
	D3	SOUND-I SYSTEM USED		SOUND-I SYSTEM NOT USED		BASIC : LOW	
	D2	D2	D1	COLOR SYSTEM		SOUND SYSTEM	
		0	0	CK : AUTO (No OSD)		B/G→D/K	
		0	1	CW : -. RF : AUTO→PAL →SECAM→NT4.43 -. A/V : AUTO→PAL→SECAM →NT4.43 →NT3.58		B/G→D/K → I	
	D1	1	0	CB : -RF : PAL ONLY (No OSD) -A/V : AUTO→PAL →NT4.43→NT3.58		B/G OSD	
		1	1	CS : - RF : AUTO→PAL →SECAM →NT4.43→NT 3.58 -A/V : AUTO→PAL →SECAM →NT4.43 →NT3.58		B/G→D/K → I→ NT → M	
D0	TDA8374A		TDA8842		IC201(ONE-CHIP) OPTION		
B Y T E 1	D7	NOT USED				FIX : LOW	
	D6	English ONLY		English/Russian		Language option	
	D5	AFT ON (always)		AFT OFF (after fine tuning)		BASIC : LOW	
	D4	Existing Sharpness level (when using TDA6108 RGB AMP)		Sharpness level up (when using the TDA6107Q RGB AMP)		BASIC : HIGH	
	D3	No Auto Power On		Auto Power On		BASIC : HIGH	
	D2	NTSC : 25KHz (NTSC TABLE) PAL : 50KHz (PAL TABLE)		NTSC : 25KHz (NTSC TABLE) PAL : 27KHz (PAL TABLE)		ALL (RF VOL. CURVE) , BASIC :LOW (AV VOL. CURVE: PAL CURVE)	
	D1			D1	D0	System	Initial sound system during the auto search (All should be set for the system which is selected dur- ing the Factory Reset.) Note : Unavailable during the CD model in the Byte 0
				0	0	DIG	
				0	1	D/K	
	D0			1	0	I	
1				1	NT-M		

- Function Required : 1. PICTURE OFF (after 15 minutes) during no signal 2. AUDIO MUTE during no signal
3. BLUE SCREEN ON/OFF 4. No TIMER CLOCK

4-2-5 RESET

The Reset Mode is used during factory inspection.
Function Reset:

1. Channels	Add/Erase
2. Sort	Non
3. System	Auto
4. Timer	off
5. Blue Screen	off
6. Child Lock	off
7. Picture	standard
8. Volume	26
9. CH. Skip	Erased

4-3 Other Adjustments

4-3-1 General

1. Usually, a color TV needs only slight touch-up adjustment upon installation. Check the basic characteristics such as height, horizontal and vertical sync and focus.
2. The picture should have good black and white details. There should be no objectionable color shading; if color shading is present, perform the 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.

4-3-2 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 has been moved or turned in a different direction, disconnect its AC power 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 removing power.

4-3-3 High Voltage Check

CAUTION: There is no high voltage adjustment on this chassis. The B+ power supply must be set to +125 volts (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. The high voltage should not exceed 27.5KV.
4. Adjust the Brightness and contrast controls to both extremes. Ensure that the high voltage does not exceed 27.5KV under any conditions.

4-3-4 FOCUS Adjustment

1. Input a black and white signal.
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.

4-3-5 Cathode Voltage Adjustment (Screen Adjustment)

1. Connect CRT socket pin GK to an oscilloscope probe.
2. Input a gray scale pattern. (Use a pattern generator, PM5518)
3. Use the P mode key (on the remote control) for the STANDARD picture.
4. Adjust the Screen VR (on the FBT) so that the voltage on the oscilloscope becomes $130 \pm 2.5V$ (See Fig. 4-1).

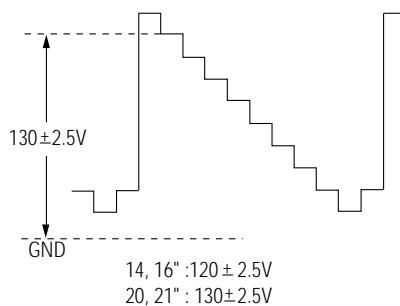


Fig. 4-1

4-3-6 Purity Adjustment

1. Warm up the receiver for at least 20 minutes.
2. Plug in the CRT deflection yoke and tighten the clamp screw.
3. Plug the convergence yoke into the CRT and set in as shown in Fig. 4-2.
4. Input a black and white signal.
5. Fully demagnetize the receive by applying an external degaussing coil.
6. Turn the CONTRAST and BRIGHTNESS controls to maximum.
7. Loosen the clamp screw holding the yoke. Slide the yoke backward or forward to provide vertical green belt. (Fig. 4-3).
8. Tighten the convergence yoke.
9. Slowly move the deflection yoke forward, and adjust for the best overall green screen.
10. Temporarily tighten the deflection yoke.
11. Produce blue and red rasters by adjusting the low-light controls. Check for good purity in each field.
12. Tighten the deflection yoke.

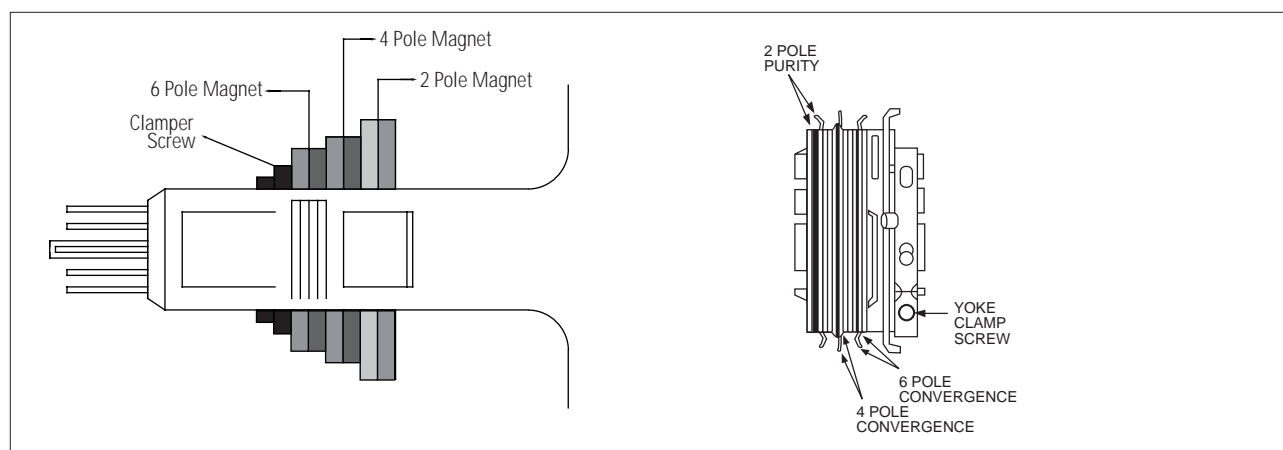


Fig. 4-2 Convergence Magnet Assembly

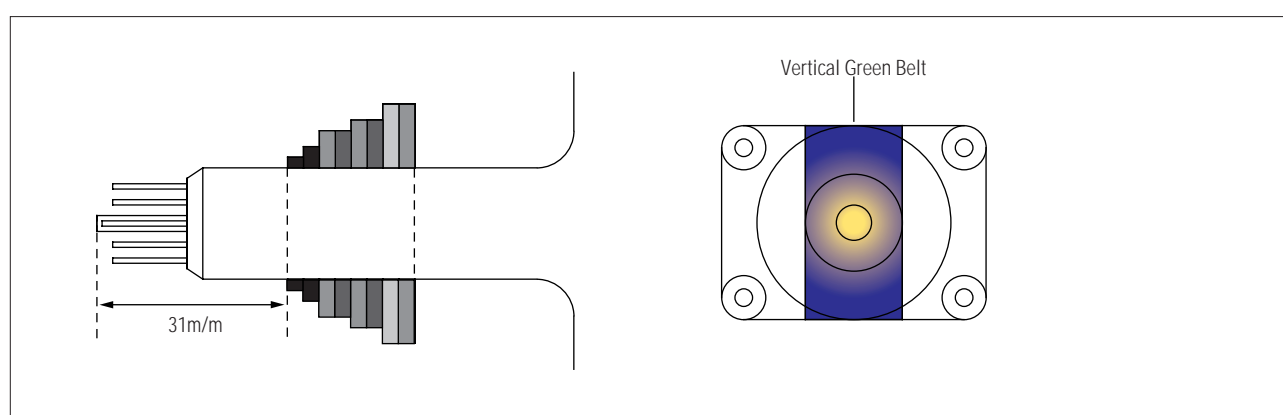


Fig. 4-3 Center Convergence Adjustment

4-3-7 White Balance Adjustment

(a) Set up

1. Warm up the TV for at least 30 minutes in the Aging Mode (OSD White). This mode is displayed by entering the following sequence:

SLEEP → FACTORY → FACTORY

2. Input a Toshiba pattern.

(b) High-Light Adjustment

1. Set SBT to 2.0 fL in the Factory Service Mode with using CA100. See Fig. 4-4 ②.
2. Adjust RG,BG so that the levels are suitable to each local area.

(c) Low-Light Adjustment

1. Set SCT to 50.0 fL in the Factory Service Mode with using CA100. See Fig. 4-4 ①.

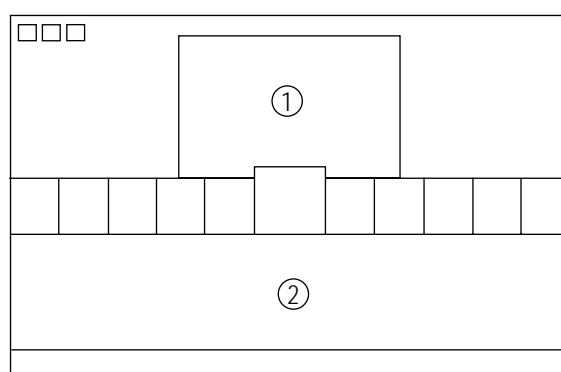


Fig. 4-4

4-3-8 Center Convergence Adjustment

1. Warm up the receiver for at least 20 minutes.
2. Adjust the two tabs of the 4 pole magnets to change the angle between them. Superimpose the red and blue vertical lines in the center area of the screen.
3. Adjust the Brightness and Contrast controls for a well defined picture.
4. Adjust the two-tab pairs of the 4 pole magnets, and change the angle between them. Superimpose the red and the blue vertical lines in the center area of the screen.
5. Turn the both tabs at the same time, keeping the angle constant, and superimpose the red and blue horizontal line in the center of the screen.
6. Adjust the two-tab pairs of the 6-pole magnets to superimpose the red and blue line onto the green. (Changing the angle affects the vertical lines, and rotating both magnets affects the horizontal lines.)
7. Repeat adjustments 2~6, if necessary.
8. Since the 4-pole magnets and 6-pole magnets interact, the dot movement is complex (Fig. 4-5).



Fig. 4-5 Center Convergence Adjustment

4-3-9 VCO Adjustment

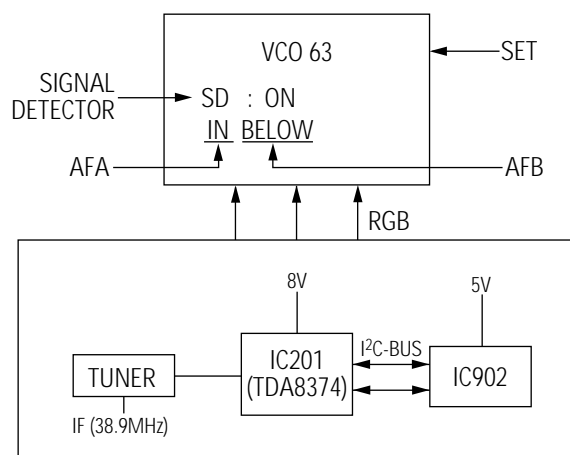


Fig. 4-6

1. Turn on the TV.
2. Set IF port of tuner to 38.9MHz. (Use a pattern generator).
3. Input a color bar pattern (PAL-B/G system).
4. In the Factory Service Mode, select "Adjustment → VCO" and set VCO data to 63.
5. Ensure "SD On" (Signal Input) and "SD Off" (No Signal).
6. Adjust T201 (connected to TDA8374A pins 3,4) so that AFA Bit is "INSIDE WINDOW" (the AFB Bit is above~below).

4-3-10 RF AGC Adjustment

1. Connect a pattern generator (PM5418) RF signal to tuner RF.
2. Select a gray scale pattern and PAL-B/G system. Set to 479.25MHz.
3. Connect IC201 (ONECHIP) pin 53 to a digital multimeter.
4. Adjust AGC (using volume keys) in the Factory Service Mode. Set IC201 (ONECHIP) pin 54 to $3.7 \pm 0.05V$ (DC).
5. Adjust AGC within 20 seconds after power ON.

4-3-11 Sub-Color Adjustment

Set the SCR data steps to 15 in the Factory Mode.

4-3-12 Geometry Adjustment

(SC → PVA → PVS → PSL → PHS)

1. Input a lion head pattern (in the PAL channel).
2. Set the SC (S-Correction) 10 data steps and PSL 20 data steps so that the lion head circle becomes oval.
3. Adjust with PVS (Vertical-shift) : Lion head pattern and mechanical centers must be aligned.
4. Adjust with PVA (Vertical-Amplitude) : Top margin of the picture is 4.

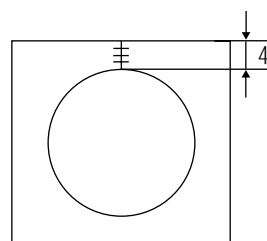


Fig. 4-7

5. Adjust with PSL (Vertical-Slope) : Bottom margin of the picture is 4.

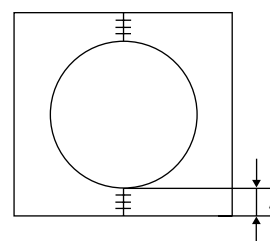


Fig. 4-8

6. Adjust with PHS (Horizontal Shift) : Lion head pattern and CRT centers are aligned.

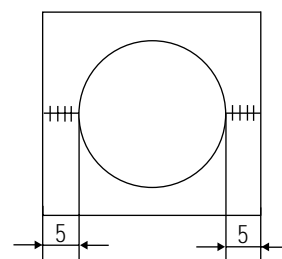


Fig. 4-9

7. Adjust PHS (using the width coil) so that left and right margins of the picture are 5.

MEMO