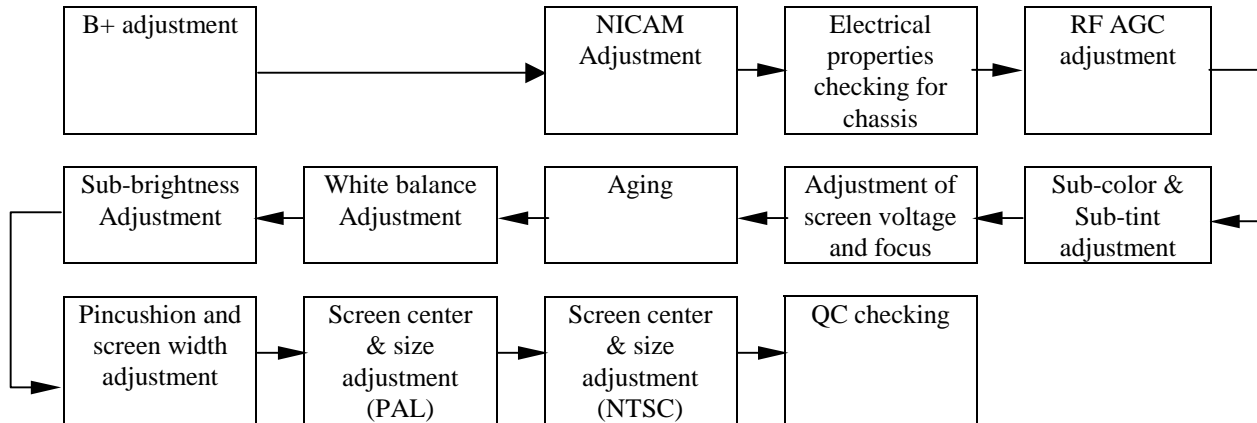


## Flowchart chart of alignment procedure for M28B chassis:



### How to enter the D-Mode

1. press D-Mode ON/OFF key, and then you can enter the D-mode.
2. press VOLUME DOWN key on the unit until the volume decrease to minimum level, then press the DISPLAY key on the remote handset (don't release the volume key) and you can enter D- mode.

## ALIGNMENT PROCEDURE FOR M28B CHASSIS:

### I) Adjustment of B+ voltage

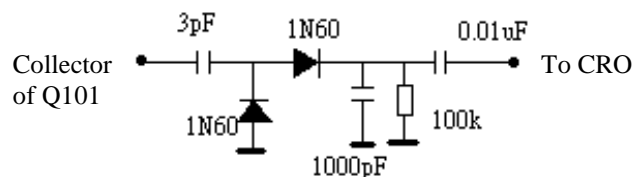
1. Apply 150-260VAC( $\pm 5V$ ) to mains power input, and Philips standard testing pattern to RF input.
2. Adjust VR801 in STANDARD mode until voltage at TP2 (B+) is  $112V \pm 0.5V$ .

### II) NICAM Adjustment (for NICAM model only)

1. Apply a 38.9MHz color bar with NICAM signal to the IF input.
2. Monitor the DC voltage at pin 15 of IC1101.
3. Adjust T1101 until the voltage at pin 15 of IC1101 becomes  $2.5 \pm 0.1V$ .
4. Then check the waveform at pin 4 and 6 of P1103 and it must show correct audio signal.

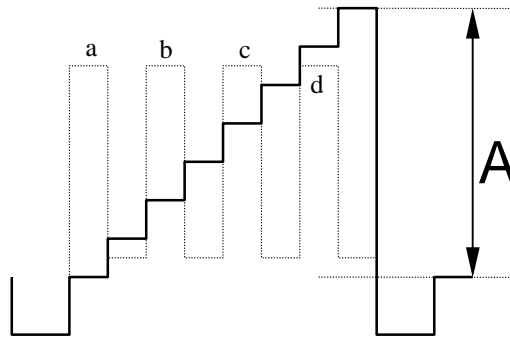
### III) The alignment of RFAGC

1. Connect the detector shown below to collector of Q101.
2. Receive a grey scale signal with  $70dB \mu V$  amplitude.
3. Adjust RFAGC item until the output of the detector becomes  $0.8V_{pp}$



#### **IV) Adjustment of Sub-contrast, Sub-tint and Sub-colour for NSTC and PAL signal.**

1. Enter D-mode, and connect the probe of Oscilloscope to the conjunction between R201 and P201 (B-out).
2. Apply the Grey-scale/Colour-bar (NTSC signal) to the AV input, in STANDARD status.
3. Select CNTC to adjust the sub-contrast, until that the amplitude "A" is  $2.5V_{p-p}$  as shown below.
4. Select COLC to adjust the sub-colour by tuning the amplitude of "a" and "d" to the same.
5. Select TNTC to adjust the sub-tint by tuning the amplitude of "b" and "c" to the same.
6. Apply the Grey-scale/Colour-bar (PAL signal) to the AV input, in STANDARD status.
7. Select COLP to adjust the sub-colour by tuning the amplitude of "a", "b", "c" and "d" to the same.



#### **V) Adjustment of Focus, Screen Voltage and Sub-brightness**

1. Receive a crosshatch pattern.
2. Adjust the "FOCUS" VR on the flyback the make the picture clear.
3. Enter D-mode and press "MUTE" key and the screen will become a horizontal line. Then adjust the "SCREEN" VR on the flyback transformer to set the intensity of the line to a minimum visible level (the line can just be seen).
4. Press "MUTE" key again and the TV will become full raster.
5. Select BRTC to adjust the sub-brightness, until that the 2<sup>nd</sup> dark bar of 8 level grey scales just can be seen.

#### **VI) Adjustment of White balance**

1. Receive a black and white pattern at STANDARD status.
2. Use a color analyzer to measure the black side of the screen. By changing the value of BB and GB, set the reading of the color analyzer to  $x=284, y=299$ .
3. Then measure the white side of the screen. By changing the value of BD and GD, set the reading of the color analyzer to  $x=284, y=299$ .
4. Repeat step 2&3 until you can get the correct reading for both black and white sides.

#### **VII) Adjustment of Pincushion and Picture Width (for pure flat model only)**

1. Receive a crosshatch pattern.
2. Adjust VR302 until the vertical line become straight.
3. Adjust VR303 for horizontal size.

### **VIII) Adjustment of Picture Geometry (PAL)**

1. Apply the crosshatch pattern (PAL signal) to the RF input, in STANDARD status.
2. Select HPOS to adjust the Horizontal center.
3. Select VP50 to adjust the Vertical center.
4. Select HIT to adjust the Vertical amplitude.
5. Select VLIN to adjust the vertical linearity.
6. Select VSC to adjust the vertical S-correction.

### **IX) Adjustment of Picture Geometry (NTSC)**

1. Apply the crosshatch pattern (NTSC signal) to the RF input, in STANDARD status.
2. Select HPS to adjust the Horizontal center.
3. Select VP60 to adjust the Vertical center.
4. Select HITS to adjust the Vertical amplitude.
5. Select VLIS to adjust the vertical linearity.
6. Select VSS to adjust the vertical S-correction.

### **X) Adjustment of OSD position**

1. Enter D-mode and press key "1", then choose OSDH(OSDHS) item and adjust the OSD vertical position 50HZ(60HZ).
2. Enter D-mode and press key "NOTE", then choose the OSD1 item and adjust the OSD horizontal position(Volume bar,Picture bar,Half blue panel OSD).
3. Enter D-mode and press key "NOTE", then choose the OSD2 item and adjust the OSD horizontal position except OSD1 item.

After enter D-mode you can adjust the setting according to the following procedure,

ITEM	Description	Initial
GROUP1	KEY 0	
RB	R CUT OFF	
GB	G CUT OFF	
BB	B CUT OFF	
GD	G DRIVE	
BD	B DRIVE	

GROUP2	KEY 1	
HPOS/	Horizontal Position 50HZ	
HPS	Horizontal Position 60HZ	
HIT/	Hight 50Hz	
HITS	hight 60 hz	
VP50	Vertical Position 50Hz	
VP60	Vertical Position 60HZ	
VLIN	V Linearity 50Hz	
VLIS	V Linearity 60hz	
VSC	VS Correction 50Hz	
VSS	VS Correction 60HZ	
VBK	V BLK Start / Stop	
VCEN	V CENTERING	
OSDH	OSD vertical position 50HZ	
OSDHS	OSD vertical position 60HZ	

GROUP 3	KEY 3	
CNTX	CONTRAST MAX.	
CNTN	CONTRAST MIN.	
BRTX	BRIGHT MAX.(difference from center)	
BRTN	BRIGHT MIN.(difference from center)	
COLX	COLOR MAX.(difference from center)	
COLN	COLOR MIN.	
TNTX	TINT MAX.(difference from center)	
TNTN	TINT MIN.(difference from center)	

GROUP 4	KEY 4	
BRTC	BRIGHT CENTER	
COLC	COLOR CENTER NTSC	
COLS	COLOR CENTER SECAM	
COLP	COLOR CENTER PAL(shift data from COLC)	
SCOL	SUB COLOR ( Cr input (#21) gain up)	
SCNT	SUB CONTRAST	
CNTC	CONTRAST CENTER	
TNTC	TINT CENTER	

GROUP 5	KEY 5	
ST3	SHARP CENTER 3.58NTSC TV	
SV3	SHARP CENTER 3.58NTSC VIDEO	
ST4	SHARP CENTER OTHER TV	
SV4	SHARP CENTER OTHER VIDEO	
SVD	SHARP CENTER DVD	
ASSH	ASYMMETRY-SHARPNESS	
SHPX	SHARP MAX.(difference from center)	

SHPN	SHARP MIN.(difference from center)	
GROUP 6	KEY 6	
OPT	OPTION DATA	
	0D mode key 0: No use 1 :use	
	10:normal 1: mute sound when no sync in TV	
	20:NORMAL 1: mute video during change channle	
	3au gain 0:50khz 1: 25khz	
	4when no sync 1: AFT 0: no AFT	
	5AV change 1: mute 0: no mute sound	
	6Korea PAL50 BLINK function 1:enable 0:disable	
	7standby state 0: high standby 1: low standby	
FLG0		
	0OVER MOD	
	1N Buzz Cancel	
	2	
	3SLO f0 shift	
	4hotel mode TV mode enter	
	5hotel mode av mode enter	
	6hotel mode	
	7vco readjust when position select 0:enable 1:disable	
FLG1		
	01: 7 key 0: 6 key	
	1Secam 0:disable 1:enable	
	2LOGO 0:disable 1:enable	
	3TINT por	
	4PIF SELECT 01:45.75 MHZ	
	5011 :38.9MHZ	
	6100 :38MHZ	
	7APC 1:AUTO 0:PRESET	
STBY		
	0	
	1	
	2hd kill timer set *40us	
	3	
	4when STBY.5=0 ,after AC on 0: standby 1: power on	
	5after AC power on, 0: ref STBY.4 1: last state	
	6auto sleep function	
	7	
MODE0		
	0NICAM 0:DISABLE 1:ENABLE	
	1English language select	
	2Russia language select	
	3vietnam language select	
	4mute type 0: y mute 1: RGB mute	
	5when mode0.7 = 1 ; preset sound system after ASM	
	600: BG 01 :I 10:DK 11: M	
	7preset sound system after ASM 0:disable 1:enable	
MODE1		
	0BG system enable	
	1I system enable	
	2DK system enable	

	3	M system enable	
	4	VIDEO2 enable	
	5	video3 enable	
	6	YUV enable	
	7	Thailand Dual language 0:Disable 1:Enable	
MUTT		standby -->wake time	
STAT		contrast up timer afer standby off	

GROUP 7	KEY 7	
RF AGC	RF AGC	
SBY	SECAM B-Y BLACK ADJUST	
SRY	SECAM R-Y BLACK ADJUST	
BRTS	SUB BRIGHT shift data of BRTC	
TXCX	TEXT RGB CONTRAST MAX.	
RGCN	TEXT RGB CONTRAST MIN.	
SECD	SECAM MODE	

GROUP 9	KEY 8	
V25	VOLUME 25	
V50	VOLUME 50	
V100	VOLUME 100	

GROUP 10	KEY 9	
SVM	SVM	
PYNX	Normal H.SYNC max	
PYNN	Normal H.SYNC min	
PYXS	Search H.SYNC max	
PYNS	Search H.SYNC min	

GROUP 11	KEY CALENDAR	
CLTO	TV mode & SOUND SYS != M	
CLTM	TV mode & SOUND SYS = M	
CLVO	VIDEO	
CLVD	YUV MODE	
CLTO CLTM CLVO CLVD bit setting		
	7	KILLER OFF
	6	P/N ID
	5	C GAMMA
	4	NTSC-MATRIX
	3	
	2	
	1	Y DL
	0	
ABL	ABL SETUP	
	5	TB1254N RGB ABL
	4	TB1254N WPS
	3	ABLpoint setup
	2	
	1	
	0	
DCBS	VIDEO DATA SETUP	

	0~3	Y GAMMA BLACK STRETCH	
	4~5	OSD LEVEL	
DEF		V AGC SELECT	
	0	V AGC reference, 0:depends on YC Vcc	
	1	Depends on integrated regulator	

GROUP 14	KEY NOTE-BOOK		
OSD1	OSD Horizontal Position(volume bar, Picture bar,Half blue panel OSD)		
OSDF1	OSD PLL DATA(volume bar, Picture bar,Half blue panel OSD)		
OSD2	OSD Horizontal Position except OSD1 items		
OSDF2	OSD PLL DATA except OSDF1 items		
HAFC			
	0	when nois.2 = 1 ; TV hafc gain	
	1	if nois.2 = 0 TV hafc gain depend on noise(0~1)	
	2	in video mode hafc gain	
	3		
NOIS	HAFC DATA		
	0	noise det	
	1		
	2	fix the hafc gain	
UCOM	MCU DATA		

\*Reset EEPROM Data: Press D-mode and Press 0752.