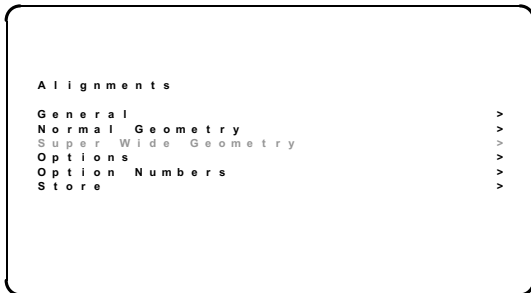


8.3 Software Alignments

8.3.1 Introduction

With the software alignments, it is possible to align the Geometry, White Tone and Tuner IF settings. Put the set in the SAM (see chapter 5.2.2). The SAM menu will now appear on the screen. Select, via 'Alignments', one of the following submenus:



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Figure 8-3

- **General:** Select this sub-menu to perform general software alignments.
- **Normal Geometry:** Select this sub-menu to perform standard geometry alignments.
- **Super Wide Geometry:** Select this sub-menu to perform geometry alignments for the 'Panorama' position in 16:9 sets (only valid for wide screen sets). Alignments can be performed; however, it is better to set values as mentioned below.
- **Options:** Select this sub-menu to set the initialisation codes of the set via text menu's.
- **Option Numbers:** Select this sub-menu to set all options at once (expressed in two long numbers). The original factory settings are printed on a sticker that is placed on the CRT (inside the set).
- **Store:** Select this sub-menu to store the performed alignments.

The alignments are explained below in the sequence of the sub-menu.

Note:

- Once all alignments/settings have been completed the item 'Store' must be selected to record all the values in the permanent memory of the set.
- If the Option codes have been changed and stored, the set has to be switched 'OFF' and 'ON' using the mains switch to activate the new settings (when switching via Standby, the option code settings are NOT read by the microprocessor).
- If an empty EAROM (permanent memory) is detected, all settings are set to pre-programmed default values.
- A built-in test pattern can be called up in various sub-menus. The test pattern generator can be switched on using the item 'Test pattern on/off'. The test pattern only appears AFTER the specific alignment has been selected. The test patterns are generated by the Teletext-IC (OTC).

8.3.2 'General' alignments

Drive

Method 1 (with colour analyser):

1. Select 'Test pattern' and turn it 'On'. You will get a white block in middle of the image now.
2. Select 'Cathode' and adjust the set to the correct light output. This setting depends on the picture tube size and

brand. See table 'Cathode parameter' for the colour analyser readings.

3. Select 'Tint' and set it to one of the three colour temperatures ('Cool', 'Normal' or 'Warm')
4. Set the white levels according to the values in the table 'White levels'.

Cathode parameter	
CRT	Light output (cd/m ²)
28" RF WS	400
32" RF WS	350

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Figure 8-4

White levels			
	Cool	Normal	Warm
X	280	289	313
Y	287	299	329
Temp. (K)	10200	8700	6500

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Figure 8-5

Method 2 (without colour analyser):

1. Without having a colour-analyser one can set some parameters. This is the next best solution. The setting-parameters are average values coming from production (statistics).
2. Select 'Cathode' and enter the value '15' (for all picture tubes).
3. Select 'Tint' and set it to one of the three colour temperatures ('Cool', 'Normal' or 'Warm').
4. Set the 'Red', 'Green' and 'Blue' parameters according to the values in table 'Tint settings'.
5. 'Red BL offset': herewith the Black Level can be aligned very precise. Default value is 7.
6. 'Green BL offset': herewith the Black Level can be aligned very precise. Default value is 6.

Tint settings			
	δ Cool	Normal	δ Warm
R	-1	37	+ 4
G	0	30	0
B	+ 4	31	- 8

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Figure 8-6

Luminance delays

With this alignment you place the luminance information exactly on the chrominance information (brightness is pushed onto the colour). Use a colour bar/grey scale pattern as test signal.

- **Lum. Delay Pal:** Apply a PAL colour bar/grey scale pattern as a test signal. Adjust this parameter until the transients of the colour part and black and white part of the test pattern are at the same position.
- **Lum. Delay Secam:** Apply a SECAM colour bar/grey scale pattern as a test signal. Adjust this parameter until the transients of the colour part and black and white part of the test pattern are at the same position.
- **Lum. Delay Bypass:** apply a NTSC colour bar/greyscale pattern as a test signal. Adjust this value until the transients of the colour and black & white part of the test area are at the same position.

EHT compensation

Fixed setting: 5

Soft clipper

Fixed setting: Pwl + 0%

Luma gain

Fixed setting: 1

IF AFC

Supply, via an external video generator (e.g. PM5518), a TV signal with a signal strength of at least 1 mV and a frequency of 475.25 MHz. Use system BG if possible, otherwise match the system of your generator with the received signal in the set.

Alignment procedure:

1. Go to the 'Installation' menu.
2. Select 'Manual installation'.
3. Tune the TV-set to the system and frequency described above via 'Search' - '475' - 'OK'.
4. If the frequency, showed in the line 'Fine tune', is between 475.18 MHz and 475.31 MHz, you don't need to re-adjust the 'IF AFC'.
5. If not, adjust the frequency in the 'Fine tune' line to 475.25 MHz and 'Store' the program (this is **very important** because this will disable the AFC algorithm).
6. Now go to the SAM and select 'Alignments' - 'General' - 'IF AFC'.
7. During the 'IF AFC'-parameter adjustment, one can see OSD feedback in the top of the screen. This OSD feedback can give 4 kind of messages:

AFC-window	AFC-frequency vs. reference
Out	High
In	High
In	Low
Out	Low

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Figure 8-7

The first item ('In' or 'Out') informs you whether you are in or out the AFC-window.

The second item ('High' or 'Low') informs you about whether the AFC-frequency is too high or too low.

1. First you must align the 'IF AFC'-parameter such that you come into the AFC-window (= 'In')
2. Then you must look for the point where the 'IF AFC'-parameter changes from 'High' to 'Low'. This level is the value you are looking for.
3. After adjustment, 'Store' the value.
4. Now return to the 'Installation' menu.
5. Select 'Manual Installation' - 'Search' - '475' - 'OK' and 'Store'. This will set the AFC 'on' again.

Service tip: If you do not trust the frequency accuracy of your service generator, connect it to a 'good' TV set and check it with the 'Fine tune'-line.

Tuner AGC

1. Set the external pattern generator to a colour bar video signal and connect the RF output to the aerial input. Set the amplitude to 10 mV and set the frequency to 475.25 MHz.
2. Connect a DC multimeter between pin 1 and the shielding of the Tuner (item 1200 on the LSP).
3. Adjust the 'TUNER AGC' value (default value is 25) with the LEFT/RIGHT cursor keys until the voltage at pin 1 of the tuner lies between 3.8 and 2.3 V.
4. 'Store' the alignment.

Blend intensity

Use this alignment when you replace the microcontroller or the HOP. It aligns the level of transparency of the menu-picture blended into the main-picture.

1. Position the BRIGHTNESS, CONTRAST and COLOUR setting in the middle position (picture-menu).
2. Apply a signal with a 100 % white video-pattern.
3. Connect an oscilloscope to pin 8 of connector 1298 of the CRT panel and measure the Red output level.
4. Align the 'Blend intensity' parameter such, that the blended signal is 65 % of the black-white amplitude. In practice this is about 1.3 V (blended signal) versus 2 V (full white signal).
5. The parameter can be adjusted in between 0 and 31.

Adjust Peak White Limiter

Enter value '4' for all picture tubes.

Vg2 Test Pattern

In this sub-menu, you can turn 'On' the OSD feedback for the Vg2 alignment (see chapter 8.2.1).

8.3.3 'Normal Geometry' alignments**Introduction**

Use for all geometry alignments, an external pattern generator with a geometry pattern (e.g. crosshatch). See figure below for the correct alignments.

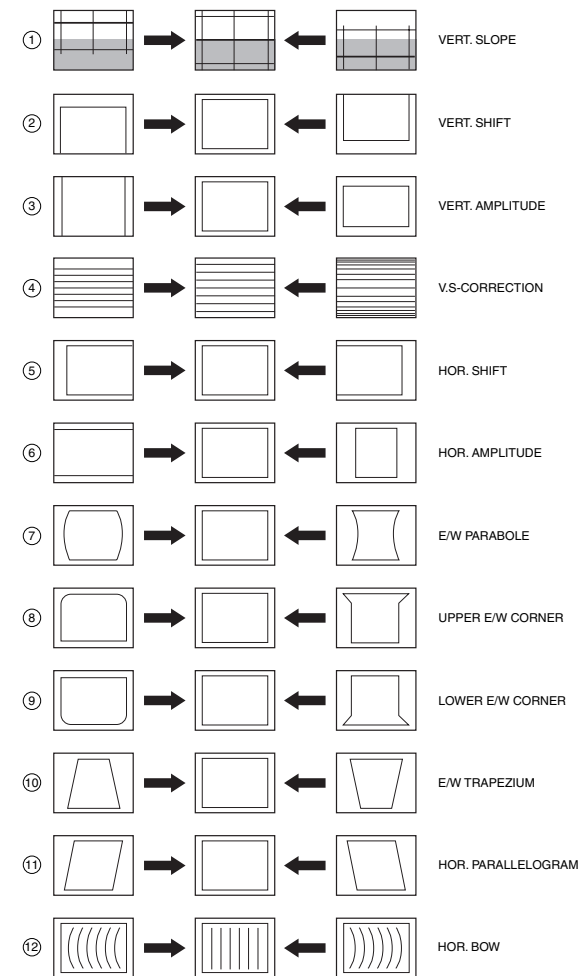
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140501

Figure 8-8

Warning: The use of the 'Internal Test Pattern' will, at this moment, lead to a mis-alignment of the picture geometry. So use an external generator with a geometry pattern (e.g.

crosshatch) for a correct geometry alignment. Use the 'Internal Test Pattern' only for the 'Vertical slope' alignment.

V. slope

This alignment is meant to align the zero crossing of the frame deflection to the mechanical middle of the picture tube.

1. Set 'Test Pattern' to 'On' (read warning above).
2. Set the 'V. S-correction' value to '0' all sets (the boundary-stripes of the test pattern should be positioned on the edge of the picture tube).
3. Align 'V. slope' (when aligning, the lower half of the picture is blanked) such, that the middle line of the test pattern is matched with the edge of the pattern transient in the middle of the picture.
4. Push the 'MENU' button to return to the previous menu.

Vertical alignment

1. Use 'V. amplitude' to align the vertical amplitude so that the entire test pattern is visible.
2. Set 'V. shift' to value '32'.
3. Connect a voltmeter (V_{DC}) between R3624 and 'hot' ground.
4. Adjust the DC voltage to '0' with potmeter R3642.
5. Use 'V. shift' again to align the test pattern vertically in the middle.
6. Repeat the the alignment if necessary.

Horizontal alignment

1. Use 'H. amplitude' to align the horizontal amplitude so that the entire test pattern is visible.
2. Use 'H. shift' to align the picture horizontally in the middle.
3. Repeat the 'H. amplitude' alignment if necessary.

Note: In case the horizontal linearity in wide-screen mode is out of tolerance, add a 'DC-shift correction' panel (3104 328 06230) to connector 1419 of the DAF-panel [I]. Be sure to switch 'off' the set first.

On the DC-shift panel, cut diode 6433 for correction to the right or diode 6432 for correction to the left.

Caution: never plug in a *not pre-aligned* module in a set !!!

East/west alignment

1. Use 'East/West Parabola' to align the vertical lines until straight.
2. Use 'Upper East/West corner' to align the vertical lines in the upper corners until straight.
3. Use 'Lower East/West corner' to align the vertical lines in the lower corners until straight.
4. Use 'East/West Trapezium' to align for a rectangular.
5. Use 'Horizontal Parallelogram' to align for straight vertical lines if necessary.
6. Use 'Horizontal Bow' to correct the E/W parabola such, that it becomes symmetrical. Default value is '31'.
7. Repeat steps 1 to 6 if necessary.

8.3.4 'Super wide geometry' alignments (only for widescreen sets)

Note: The header of this paragraph and also the menu's are somewhat misleading. We only need to set the following values (if the normal geometry alignment has been performed correctly):

1. For 'V. shift' use the default value 33.
2. For 'V. amplitude' use the default value 25.
3. 'V. S-Correction', enter value of 'normal geometry' alignment.
4. 'H. amplitude', enter value of 'normal geometry' alignment subtracted by 1.
5. 'East/west Parabola', enter value of 'normal geometry' alignment.

8.4 Option Settings

8.4.1 Introduction

The microprocessor communicates with a large number of I²C ICs in the set. To ensure good communication and to make digital diagnosis possible, the microprocessor has to know which ICs to address. The presence / absence of these specific ICs (or functions) is made known via the option codes.

You can set the 'hardware related' options via the SAM - 'Alignments' - 'Options' or 'Option Numbers' menu.

You can set the 'software related' options via the SAM - 'Dealer Options' menu .

After you have changed the option(s), save them via the 'Store' command.

The new option setting is only active after the TV is switched OFF and ON again via the mains switch (the EAROM is then read out again).