

# PHILIPS AA5 (AA) Chassis

## Recommended Safety Parts

Item	Part No.	Description
	4822 256 92053	Fuse holder
	4822 276 12597	Mains switch
	4822 265 30389	2 pins male for degaussing
	4822 265 40596	2 pins male for mains
	4822 267 60243	21 pins euroconnector
1001	4822 210 10448	UV915E/IEC
1001	4822 210 10459	UV913/IEC
1001	4822 210 10464	U943C/IEC
1001	4822 210 10554	UV917/IEC
1500	4822 070 33152	3.15 A fuse
1540	4822 071 58001	800 mA fuse
1710	4822 071 52501	250 mA fuse
2015	4822 124 41525	100uF 20% 25V
2041	5322 126 10223	4.7nF 10% 63V
2043	5322 126 10223	4.7nF 10% 63V
2044	5322 126 10223	4.7nF 10% 63V
2080	5322 122 32654	22nF 10% 63V
2101	5322 126 10223	4.7nF 10% 63V
2117	5322 126 10223	4.7nF 10% 63V
2125	5322 122 32654	22nF 10% 63V
2151	4822 122 33177	10nF 20% 50V
2157	4822 124 41525	100uF 20% 25V
2157	5322 122 34123	1nF 10% 50V
2158	5322 126 10223	4.7nF 10% 63V
2170	4822 122 33177	10nF 20% 50V
2171	5322 126 10223	4.7nF 10% 63V
2261	4822 122 33177	10nF 20% 50V
2263	5322 122 32654	22nF 10% 63V
2264	4822 122 33177	10nF 20% 50V
2271	5322 122 32654	22nF 10% 63V
2272	5322 122 34123	1nF 10% 50V
2273	5322 122 34123	1nF 10% 50V
2291	4822 122 33177	10nF 20% 50V
2292	4822 122 33177	10nF 20% 50V
2293	4822 122 33177	10nF 20% 50V
2350	5322 126 10223	4.7nF 10% 63V
2354	4822 122 33177	10nF 20% 50V
2366	5322 126 10223	4.7nF 10% 63V
2371	5322 122 32654	22nF 10% 63V
2445	4822 126 11503	820pF 10% 2KV
2445	4822 126 13435	1.2nF 10% 2KV
2446	4822 121 70457	8.2nF 5% 1.6KV
2446	4822 121 70523	12uF 5% 1.6KV
2448	4822 124 80096	47uF 200V
2450	4822 121 42365	330nF 5% 250V
2450	5322 121 44128	680nF 10% 250V
2500	4822 121 70285	470nF 10% 250V
2502	4822 126 11141	2.2nF 10% 1KV
2504	4822 126 11141	2.2nF 10% 1KV
2505	4822 124 42104	68kF 20% 385V
2506	4822 126 13503	3.3nF 20% 400V
2509	4822 126 11141	2.2nF 10% 1KV
2524	4822 126 11382	1nF 10% 1KV
2526	4822 122 32442	10nF 50V
2530	4822 124 80096	47kF 200V
2534	4822 126 11524	1.5nF 10% 1KV
2552	4822 126 11382	1nF 10% 1KV
2660	5322 122 34123	1nF 10% 50V
2662	5322 126 10223	4.7nF 10% 63V
2663	5322 126 10223	4.7nF 10% 63V
2685	4822 124 41525	100uF 20% 25V
2686	5322 122 32654	22nF 10% 63V
2689	4822 122 33177	10nF 20% 50V
2750	4822 124 40433	47uF 20% 25V
2752	4822 124 40433	47uF 20% 25V
2860	5322 126 10223	4.7nF 10% 63V
3001	4822 052 10109	10 ohms 5% 0.33W
3001	4822 052 10229	22 ohms 5% 0.33W
3001	4822 052 10338	3 ohms 5% 0.33W
3007	4822 116 83953	75 ohms 5% 0.125W
3019	4822 051 20008	Jumper
3032	4822 051 20121	120 ohms 5% 0.1W
3124	4822 052 10109	10 ohms 5% 0.33W
3141	4822 051 10472	4k7 2% 0.25W
3257	4822 116 83953	75 ohms 35% 0.125W
3292	4822 051 10103	10k 2% 0.25W
3295	4822 051 10103	10k 2% 0.25W
3306	4822 051 20008	Jumper
3345	4822 052 11229	22 ohms 5% 0.5W
3345	4822 052 11471	47 ohms 5% 0.5W
3401	4822 052 11109	10 ohms 5% 0.5W
3408	4822 052 10222	2k2 5% 0.33W
3408	4822 053 10681	68 ohms 5% 1W
3411	4822 052 10228	2 ohms 2 5% 0.33W
3411	4822 052 10278	2 ohms 7 5% 0.33W
3411	4822 052 10338	3 ohms 3 5% 0.33W
3411	4822 052 10478	4 ohms 7 5% 0.33W
3412	4822 052 10228	2 ohms 2 5% 0.33W
3412	4822 052 10338	3 ohms 3 5% 0.33W
3415	4822 050 21802	1k8 1% 0.6W
3416	4822 050 21802	1k8 1% 0.6W
3419	4822 051 20008	Jumper

## Recommended Safety Parts

Item	Part No.	Description
3448	4822 052 10108	10hm 5% 0.33W
3448	4822 052 10109	10 ohms 5% 0.33W
3448	4822 052 11568	5 ohms 6 5% 0.5W
3449	4822 052 10108	10hm 5% 0.33W
3452	4822 052 10108	10hm 5% 0.33W
3452	4822 052 10478	4 ohms 7 5% 0.33W
3452	4822 052 11109	10 ohms 5% 0.5W
3454	4822 052 11102	1k 5% 0.5W
3470	4822 052 10478	4 ohms 7 5% 0.33W
3470	4822 052 10828	8 ohms 2 5% 0.33W
3501	4822 116 40137	PTC/PTC/36 ohms / 265V
3503	4822 053 21475	4M7 5% 0.5W
3504	4822 053 21475	4M7 5% 0.5W
3523	4822 050 24708	4 ohms 7 1% 0.6W
3533	4822 050 24703	47k 1% 0.6W
3544	4822 052 10108	1 ohm 5% 0.33W
3547	4822 050 21802	1k8 1% 0.6W
3554	4822 053 11689	68 ohm 5% 2W
3557	4822 053 11271	270 ohms 5% 2W
3617	4822 051 20472	4k7 5% 0.1W
3623	4822 051 10103	10k 2% 0.25W
5443	4822 157 51462	10uH10%
5445	4822 140 10406	Line output transformer AT2079/40
5453	4822 157 51462	10uH 10%
5454	4822 157 52688	Linearity coil AT4042/92
5470	4822 157 51462	10uH 10%
5500	4822 212 22978	Mains filter
5515	4822 157 50963	2.2kH 20%
5560	4822 157 51462	10uH 10%
5601	4822 157 51462	10uH 10%
6053	4822 130 30621	1N4148
6113	4822 130 30621	1N4148
6141	4822 130 30621	1N4148
6502	4822 130 31933	1N5061
6503	4822 130 31933	1N5061
6504	4822 130 31933	1N5061
6505	4822 130 31933	1N5061
6522	4822 130 30621	1N4148
6561	4822 130 81175	BYD74G
6658	4822 130 30621	1N4148
6663	4822 209 30563	TLXR5400 LED
6849	4822 130 30621	1N4148
7030	5322 130 41982	BC848B
7126	5322 130 41982	BC848B
7127	5322 130 41982	BC848B
7141	5322 130 41982	BC848B
7142	5322 130 41982	BC848B
7143	5322 130 41982	BC848B
7170	5322 130 41982	BC848B
7242	5322 130 41982	BC848B
7243	5322 130 41982	BC848B
7514	4822 130 91451	CQY80NG
7550	4822 130 41344	BC337
7561	4822 130 44197	BC558B
7571	5322 130 41982	BC848B
7640	5322 130 41982	BC848B
7654	5322 130 41982	BC848B
7665	5322 130 41982	BC848B
7670	5322 130 41982	BC848B
7672	5322 130 41982	BC848B
7674	5322 130 41982	BC848B
7686	5322 130 41982	BC848B
7710	5322 130 41982	BC848B
7711	5322 130 41982	BC848B
7713	5322 130 41982	BC848B
7715	5322 130 41982	BC848B
7732	5322 130 41982	BC848B
7750	4822 130 41344	BC337
7751	4822 130 41344	BC337
7754	5322 130 41982	BC848B
7755	5322 130 41982	BC848B
7856	5322 130 41982	BC848B
7858	5322 130 41982	BC848B
7875	5322 130 41982	BC848B
7876	5322 130 41982	BC848B
	4822 255 70306	Holder valve mini neck
2282	5322 122 32654	22nF 10% 63V
3200	4822 052 10101	100 ohm 5% 0.33W
3235	4822 052 10108	10hm 5% 0.33W
7206	5322 130 41982	BC848B
7219	5322 130 41982	BC848B
7228	5322 130 41982	BC848B
	4822 255 70305	Holder valve narrow neck
1236	4822 071 55001	500mA fuse
1236	4822 071 51002	1 A fuse
3241	4822 052 10101	100 ohm 5% 0.33W
7235	5322 130 41982	BC848B
7240	4822 130 44197	BC558B
7245	5322 130 41982	BC848B
7255	5322 130 41982	BC848B

## Teletext Adjustments

### Description diagram E Teletext

There are 2 different executions for teletext processing; a 1 page TXT execution by teletext decoder IC7700 only or a 4 page TXT execution by teletext decoder 107700 and extra micro-processor IC7702:

#### \* 1 page TXT by teletext decoder IC7700;

For the 1 page teletext execution a 40 pins SAA5254 VT 1.1 (VIP + ECCT + 1 k RAM memory) teletext decoder is used with built-in 1k RAM memory. This teletext decoder makes use of the central microprocessor 107600 and is controlled via the 120 bus (at pins 24-25 107700).

#### \* 4 page TXT by teletext decoder IC7700 and extra microprocessor IC7702;

For the 4 page teletext execution a 48 pins SAA5281 VT 1.8 (VIP + ECOT +4k RAM memory) teletext decoder with 4k built-in RAM and an extra  $\mu$ C IC7702 is used. This  $\mu$ C is a slave of the master  $\mu$ C IC7600 and controls the extra featurig of WST, TOP and FLOE.

In both cases:

\*CVBS-TXT signal is coming from the CVBS-INT or CVBS-EXT (see IC7140 source select), so teletext from both the antenna-signal and from pin 20 of the scart can be displayed.

\* Peaking filter C2736, L5734, R3734 and R3755 is only present in scandinavian sets and is used for peaking filter.

\* RGB teletext info (R-TXT, B-TXT and G-TXT) is directly fed to the video controller IC7015-60 on diagram D).

\* The fast blanking signal from teletext (FBL TXT) is added to all other fast blanking signals (see diagram A). The total FAST BLANKING signal is used for blanking and source select control of IC7015-6D.

\* NIL (Non Inter Lace) signal is fed to the frame amplifier to switch the frame to 25Hz non interlaced mode which is needed for teletext displaying.

\* CONTRAST signal is used to set a minimal level of contrast in TXT mode.

\* Supply voltages +50 and +50 supply the teletext processing. These supply voltages are derived from the +8T coming from the LOT.

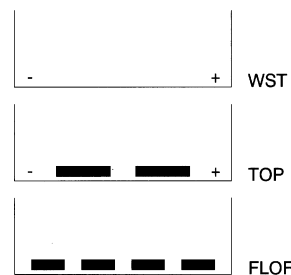
In both cases 1 page and 4 page execution, the teletext concept is of the so called VT type; this means that the VIP and CCT are combined in one VT teletext decoder.

### General specification for both IVT decoders:

- Suitable for processing the following teletext signals:
  - the "World System Teletext" (WST)
  - the 'UK' page choice system; FLOF (Full Level One Feature)

The teletext page is extended with a status line which gives information about pages coupled by the transmitter to the coloured RO-buttons (FastText)

- the "german" choice system; TOP (Table Of Pages) the teletext page is extended with a status line which gives information about the next information block and group.



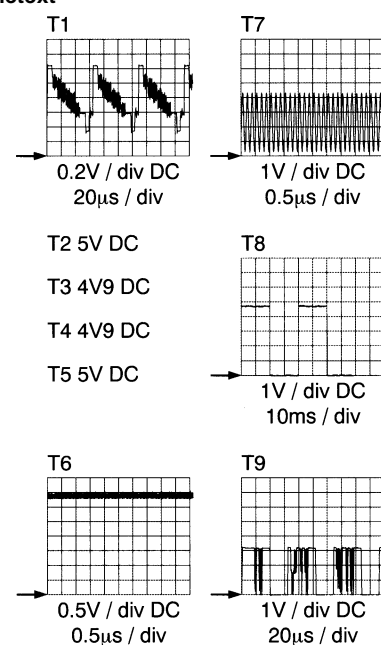
2. For 4 page teletext execution the possibility to store 4 pages:

- 1 display memory; for the page displayed on the TV screen
- 3 background memories; for reducing the waiting time
- the content of the 3 background memories depends on the teletext system. Depending on the transmission the teletext decoder selects one of the following possibilities:
  - \* WST: page -1, page +1, page +2
  - \* FLOF: 3 pages coupled to the coloured RO-buttons (red/green/yellow)
  - \* TOP: next group, next page and basic top table

### The main functions of both IVT teletext decoders:

- Analogue part for:
  - \* Sync-separation
  - \* Teletext data extraction
  - \* Data clock regeneration
  - \* Transfer of clock, data and composite sync signals to the digital part
- The sync-separator slicing level is adaptive so that it can operate with a range of video amplitudes and signal distortions
- The data-slicer uses an adaptive signal recognition and clock-phasing algorithm so that it can operate with a wide range of clock run-in amplitudes
- Digital part for decoding of the world teletext standards
  - \* On board 4 pages memory (for 4 page teletext execution only)
  - \* Automatic detection of WST, FLOF or TOP
  - \* Packet 26 flicker free character processing

### Teletext



## Electrical Adjustments

### 1. Adjustments on the main panel (Fig. 7.1)

#### 1.1 +100V power supply voltage

Connect a voltmeter (DC) across C2530. Adjust R3535 for a voltage of +100V (14 to 17") or +92V5 for 20-21" at a black picture (beam current 0 mA).

#### 1.2 Horizontal centring

Is adjusted with potentiometer R3354.

#### 1.3 Picture height

Is adjusted with potentiometer R3410.

### 1.4 Vertical centring

Can be adjusted by eventually mounting one of the resistors R3401 and/or R3408.

### 1.5 Focusing

Is adjusted with the focusing potentiometer in the line output transformer.

### 1.6 IF filter (only for sets with SECAM LL' reception possibility):

Connect a signal generator (e.g. PM5326) via a capacitor of 5p6 to pin 17 of the tuner and adjust the frequency for 40.4 MHz. Connect an oscilloscope to pin 1 of filter 1015. Switch on the set and select system Europe (BG/L is "low" for BGIDK reception). Adjust L5012 for a minimum amplitude.

### 1.7 AFC

- For sets with SECAM LL' reception possibility:
  - Connect a signal generator (e.g. PM5326) as indicated in point 1.6. Connect a voltmeter to pin 44 of IC7015/6A. Adjust the frequency for 33.9 MHz and select system France (L/L' is "high" for L' reception). Adjust L5040 for 3V5 (DC). Next adjust the frequency for 38.9 MHz and select system Europe (L/L' is "low" for BGIDK reception). Adjust L5043 for 3V5 (DC).

- For sets without SECAM LL' reception possibility:
  - Connect a signal generator (e.g. PM5326) as indicated above and adjust the frequency for 38.9 MHz (for PAL I at 39.5 MHz). Connect a voltmeter



## Repair facilities Cont'd

### Service default mode (SDM)

The service default mode is a pre-defined mode which can be used when for faultfinding (especially when the TV gives no picture at all). All oscillograms and DC voltages in this service manual are measured in the service default mode.

Entering the service default mode can be done in 2 ways:

1. By short-circuiting the service pins Si and S2 of the microcomputer (pin 7 of 107600) while switching on the set with the mains switch
2. From normal operation mode by pressing the button "DEFAULT" on the DST (Dealer Service Tool) RC7150.

Leaving the service default mode to normal operation can only be done by the stand-by on the remote control (so not via mains switch "off"; after mains switch "off" and then "on" again the set will start up in the Service Default Mode again to enable easy faultfinding).

### Functions of the service default mode (see Fig 8.1):

1. All analog settings (volume, contrast, brightness and saturation) are in the mid position (in iC with Vi .0 the volume in the SDM is set at 25%, from Vi .1 onwards the volume in the SDM is set at 50%).
2. For VST sets are to program number 1 indicated in the right top corner
3. For PLL sets are tuned to 475.25 MHz
4. Delta volume settings are not used (delta volume setting per program in reference with the PP volume setting which is valid for all programs)
5. OSD error message (present available error code) is displayed continuously
6. Store open and store close commands will act as search and auto store
7. Automatic switch off function (set switches "off" after 15 minutes no DENT) will be switched off
8. Hotel mode will be disabled
9. All other functions remain normal controllable
10. A counter in the middle of the screen indicate the normal operation hours of the set in a hexadecimal code (every time the set is switched "on" the counter is incremented by 1 hour, so +i at the counter).
11. An "S" in the middle of the screen (next to the counter) indicate that the set is in the service default mode

Counter + "5" for SDM active + prog nr. →

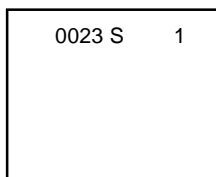


Fig. 8.1

### Service Menu (SM)

Entering the service menu can be done in 2 ways:

1. From service default mode by simultaneously pressing the buttons "-" and "+" buttons on the local keyboard.
2. From normal operation mode by pressing the button "ALIGN" on the DST RC7150.

Leaving the service menu to normal operation can be done in 2 ways:

1. Via the stand-by on the remote control
2. Via mains switch "off"

For reading a new option setting, the set must be switched "on" by the mains switch (so not by stand-by as by then the EEPROM settings are not read).

### Functions of the service menu (see Fig 8.2):

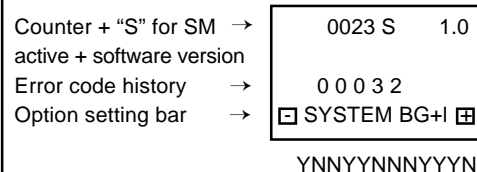
1. Software version of the microprocessor used in that typical set is displayed in the right top corner
2. A counter in the middle of the screen indicate the normal operation hours of the set in a hexadecimal code (every time the set is switched "on" the counter is incremented by i hour, so+i at the counter).
3. The "S" in the middle of the screen next to the counter indicate that the set is in the service default mode
4. Error code history: The 5 last different error codes occurred are stored in the EEPROM memory; last error code detected will be displayed on the right side (see for an overview of all possible error codes Fig. 8.4), 50 e.g.:

00000 means no error codes present in the buffer

00003 means one error code present in the buffer; error code 3

00032 means two error codes present in the buffer; last detected error code is error code 2, previous detected error code is error code 3

The error code history buffer is cleared as soon as the Service Menu is left by the stand-by command. In case the Service Menu is left by the mains switch "off" the error code history buffer will not be cleared.



YNNYNNNNYYYYN

Fig. 8.2

### 5. Option setting:

The options of the set can be changed in the service menu. In the 2 bottom lines the options are given. Control of the options is with the following keys on the remote control:

\* PROGRAM +/-

### Select the option to be changed:

Via the "PROGRAM +/-" button to option to be changed can be selected by scrolling through the possible options in the upper row from left to right (via the "PROGRAM +" button) or from right to left (via the "PROGRAM -" button). The selected option will be displayed in the upper row, the present "Y" or "N" status of that option (see table 8.3) will be blinking in the bottom row (when arrived at the end of the row the scrolling will be continued at the other side).

\* MENU +/-

Change the selected option via "MENU +/-" buttons the selected option can be changed. The selected Y (yes) or N (no) blinks and via either "MENU +" or the "MENU" you toggle through the "Y" or "N" possibility.

The options (both the changed and the not-changed options) are stored in the EEPROM as soon as the service menu is left (by stand-by or mains switch "off"). The new option settings are only read after mains switch "on" (so not after

switching on the set from stand-by mode).

The following table indicates the possible options and there technical consequences:

Text displayed in the upper option row in the service menu	In case the "N" or "Y" blinks, it can be changed	The technical consequence for the selected option
SINGLE SYSTEM I	→ NN	→ For a PAL BG only set
SYSTEM BG+L	→ NY	→ For a PAL I only set
SYSTEM BG+L+L	→ YN	→ For a PAL BG + SECAM LL' set
SYSTEM BG+L+L+L	→ YY	→ For a PAL BGL or PAL EGOKI + SECAM LL' set
PLL TUNER	N	→ For a VST tuner set
	Y	→ For a PLL tuner set
NO TXT	→ NN	→ For a set without teletext
1P TXT	→ NY	→ For a set with 1 page WST teletext
4P TXT	→ YN	→ For a set with 4 page FLOF teletext
16/9 SWITCH	N	→ Disable 16/9 switching possibility
	Y	→ Enable 16/9 switching possibility
S-VIDEO	N	→ For a set without SVHS connectors
	Y	→ For a set with SVHS connectors
SCART	N	→ For a set without a scart connector
	Y	→ For a set with a scart connector
		Note: The SCART option can only be changed when the S-VIDEO option is "N"
SHARPNESS	N	→ Disable sharpness control
	Y	→ Enable sharpness control
LOCAL MENU	N	→ No ring menu after pressing "MENU" on the local keyboard
	Y	→ Ring menu after pressing "MENU" on the local keyboard
40 PROGRAMS	N	→ 70 programs can be stored
	Y	→ 40 programs can be stored
SLEEPTIMER	N	→ Disable sleeptimer function
	Y	→ Enable sleeptimer function
FOR GERMANY ONLY	N	→ Disable ATS function
	Y	→ Enable ATS function only works when ATS software is present

Fig. 8.3

### Error messages

The microcomputer also detects errors in circuits connected to the I ~ (Inter IC) bus. These error messages are communicated via OSD (On Screen Display) and a flashing LED both in normal operation and in the service menu (error code history buffer):

#### 1. In normal operation:

In normal operation both the "OSD error message" and the "LED error" indication will display the present detected error. The displaying of both the OSD and the LED error indication will only take a limited time.

#### 2. In the service default mode:

In the service default mode both the "OSD error message" and the "LED error" indication will display the present detected error. In the service default mode both the OSD and the LED error indication will be displayed permanently.

#### 3. In the service menu:

In the service menu both the "OSD error number" (in the error code history) and the "LED error" indication will display the present detected error. In the service default mode both the OSD and the LED error indication will be displayed continuously.

"OSD error message" normal operation)	"OSD error number" (service menu)	"LED error" "on/off" in SEC	Error description	Possible defective component
No indication	0	No blinking LED	No error	—
ERROR: RAM	1	1 sec on / 1 sec off	kC error	1C7600
ERROR: BUS	2	2 sec on / 2 sec off	General 1°C	1°C bus is blocked
ERROR: EEPROM	3	3 sec on / 3 sec off	EEPROM error	1C7655
ERROR: TELETXT	4	4 sec on / 4 sec off	Teletext error	1C770017702 or option wrong
ERROR: TUNER	5	5 sec on / 5 sec off	PLL tuner error	PLL tuner or option wrong

Fig. 8.4

### Reset volume/program (delta volume) for all programs at once

It is also possible to leave the service menu with the MENU button. After one time pressing the MENU button in the service menu, a new menu is entered (see Fig. 8.5) in which the volume/programs-settings (also called delta volume settings) of nil. programs can be deleted. In case YES is selected via the MENU+ button, all volume/program-settings are deleted at once. After another time pressing the MENU button the TV will switch to normal operation (when the service menu is entered via the pins Si and S2) or service default mode (when the service menu is entered with the DST).



Fig. 8.5

### Hotel mode

#### \* Hotel mode "on"

The hotel is activated when pressing simultaneously the "MENU" button on the local keyboard and the "SLEEPTIMER or OSD" button on the remote control while program 38 is selected for at least 3 seconds. When the hotel mode is activated, this is indicated by a "H+" on the OSD (this will be displayed until the set is switched of by the mains switch or via stand-by).

#### \* Hotel mode "off"

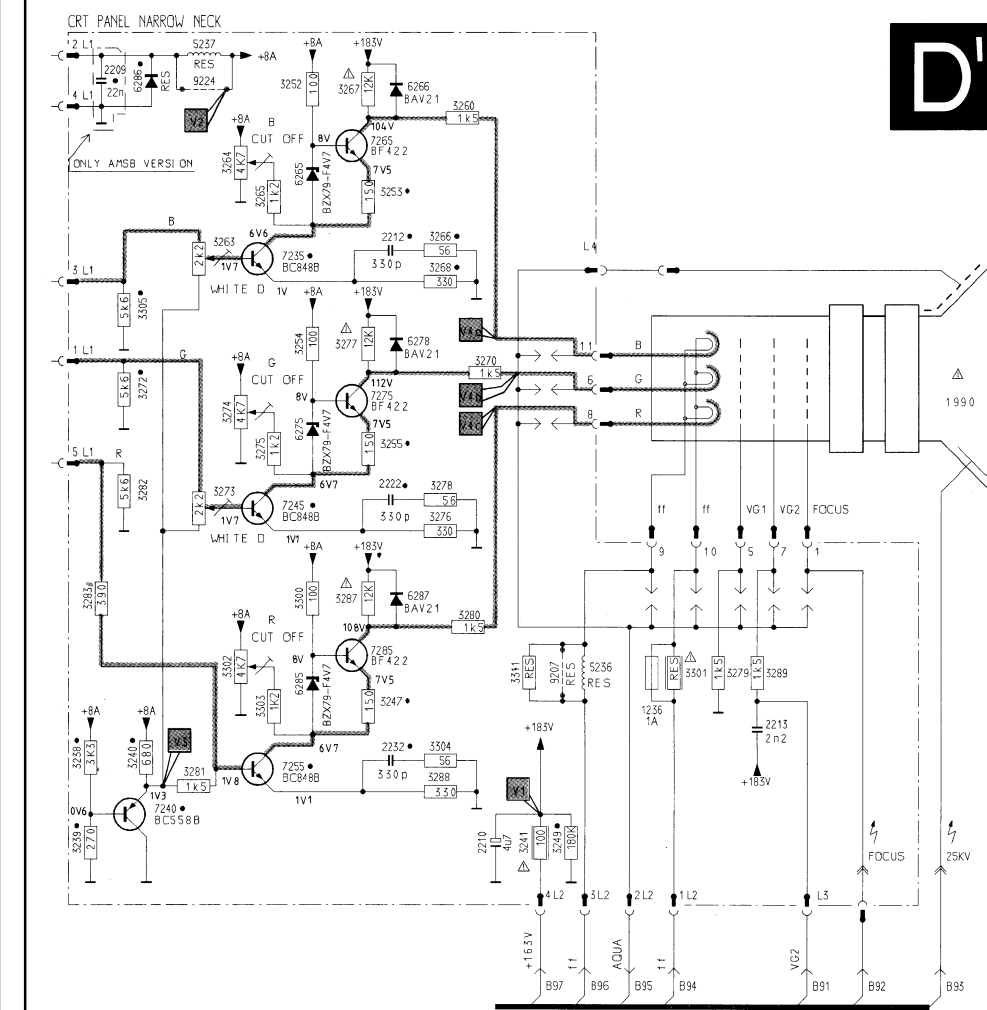
Repeat above mentioned procedure once again. When the hotel mode is de-activated, this is indicated by a "H-" on the OSD (this will

be displayed until the set is switched of by the mains switch or via stand-by).

#### \* Functions of the hotel mode

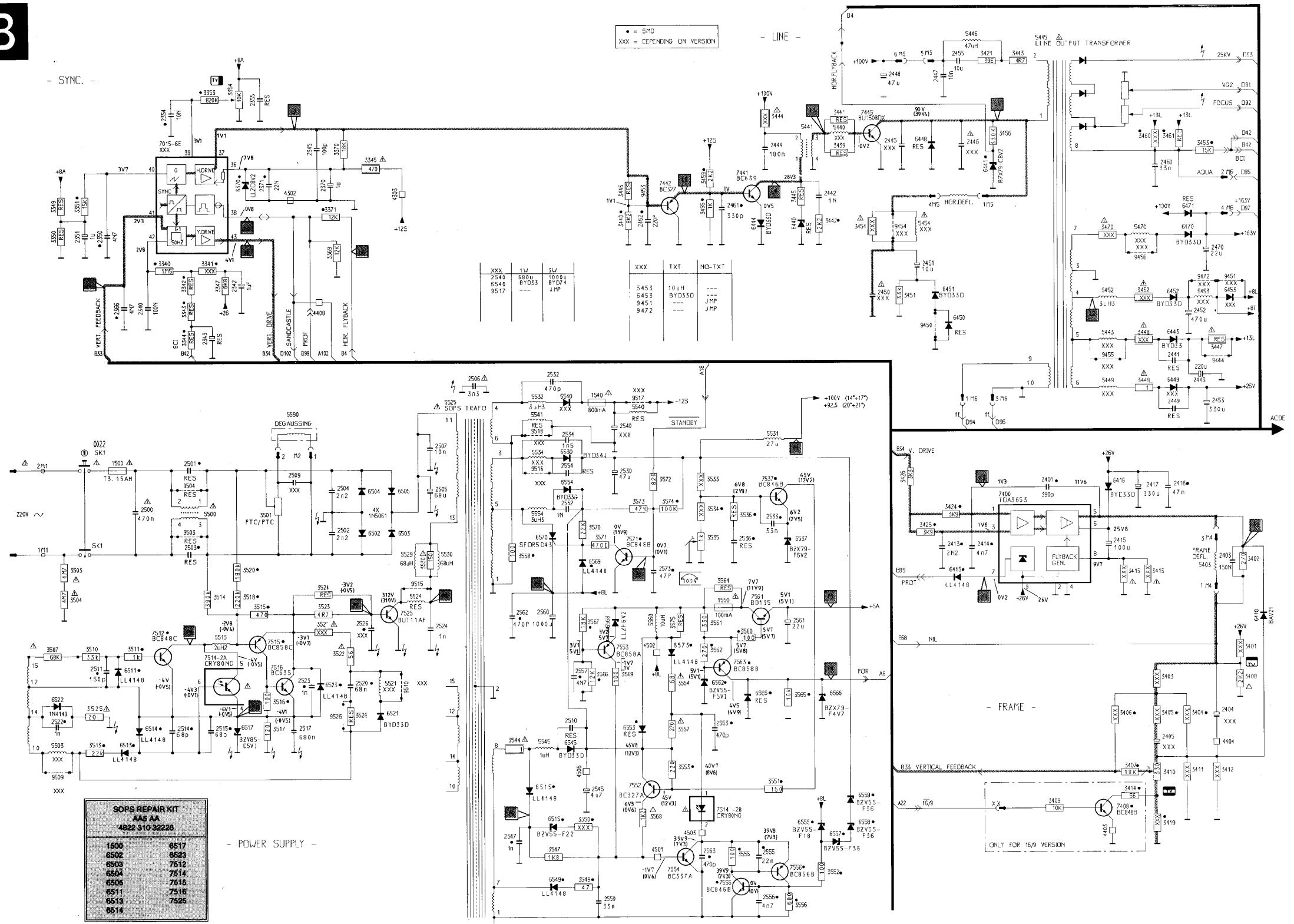
- The volume present on the moment the hotel mode was switched "on" is the maximum volume level in the hotel mode.
- The install mode can not be opened (the message "LOCKED" will be displayed for 3 seconds if a store open command is given).
- PP (personal preference) can not be stored (the message "LOCKED" will be displayed for 3 seconds if a PP-store command is given).
- At switch "on" (by mains switch or remote control) program number 1 will always be selected.

## CRT PCB (20" narrow neck) Diagram



## Power Supply Diagram

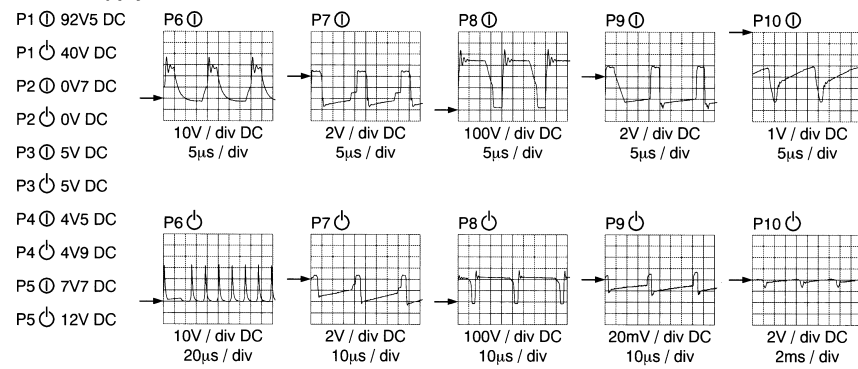
# B



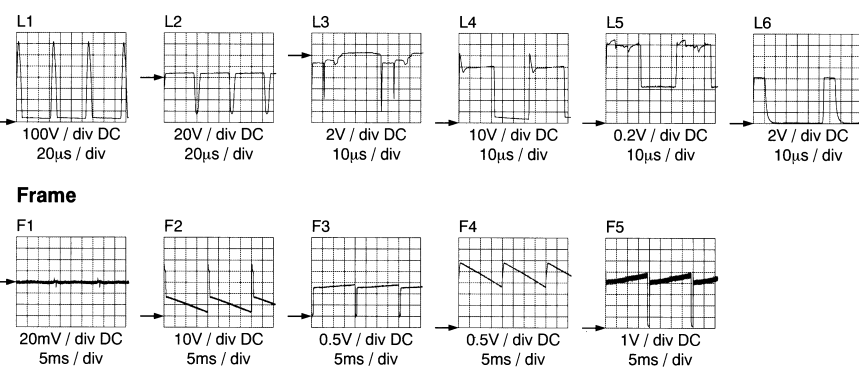
SOPS REPAIR KIT AA5 AA 4822 310-32226	
1500	8517
6502	8523
6503	7612
6504	7614
6505	7615
6511	7516
6513	7518
6514	7526

(...) MEASURED IN STANDBY

### Power supply



### Line



### Frame



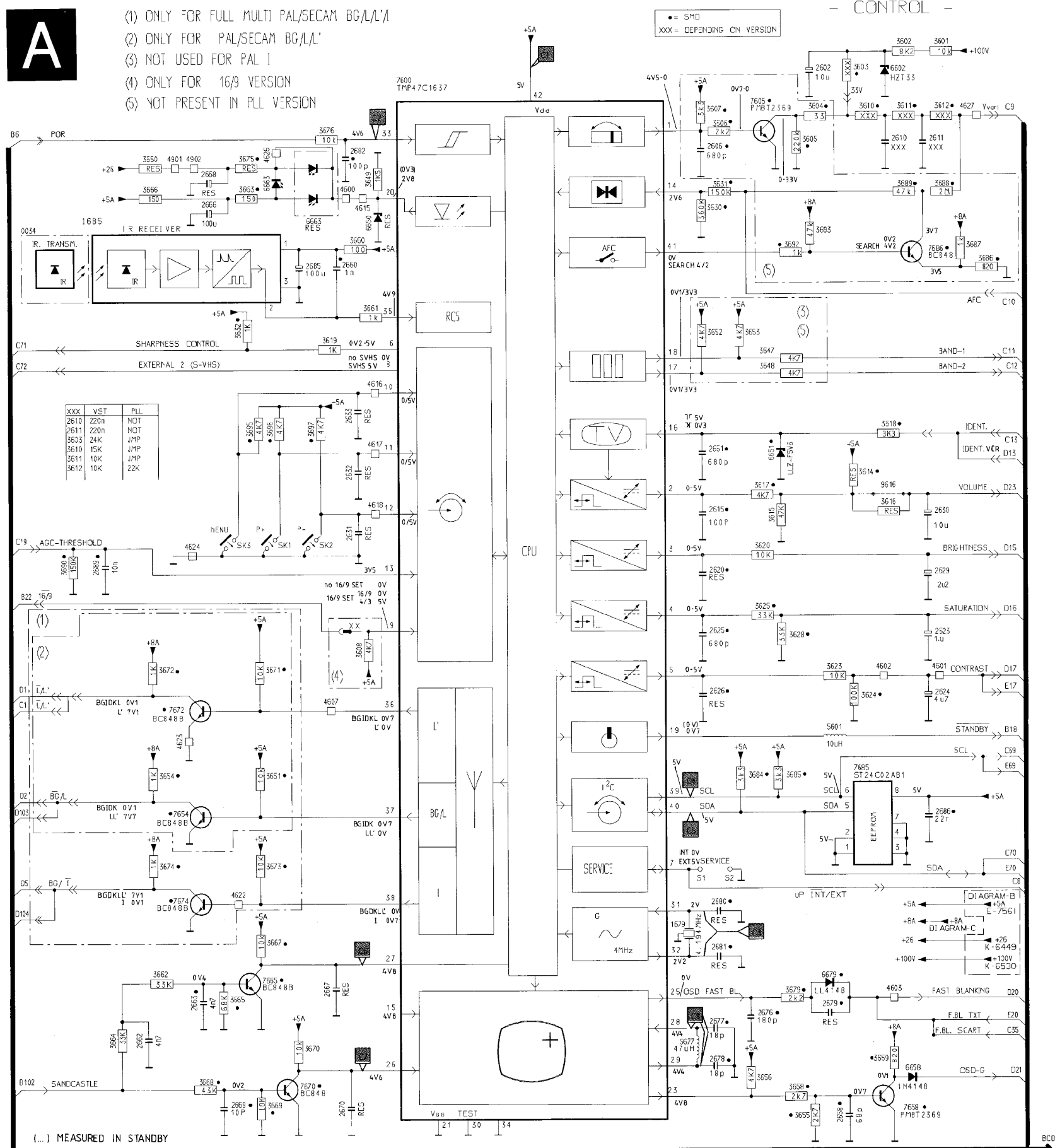
### Sync.



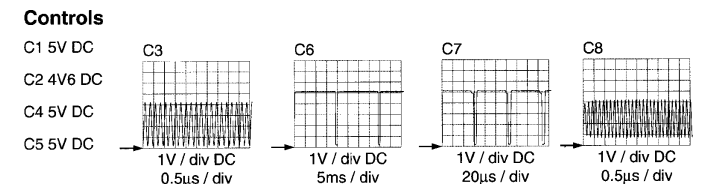
## Control PCB Diagram

# A

- (1) ONLY FOR FULL MULTI PAL/SECAM BG/L/L'
- (2) ONLY FOR PAL/SECAM BG/L/L'
- (3) NOT USED FOR PAL 1
- (4) ONLY FOR 16/9 VERSION
- (5) NOT PRESENT IN PLL VERSION

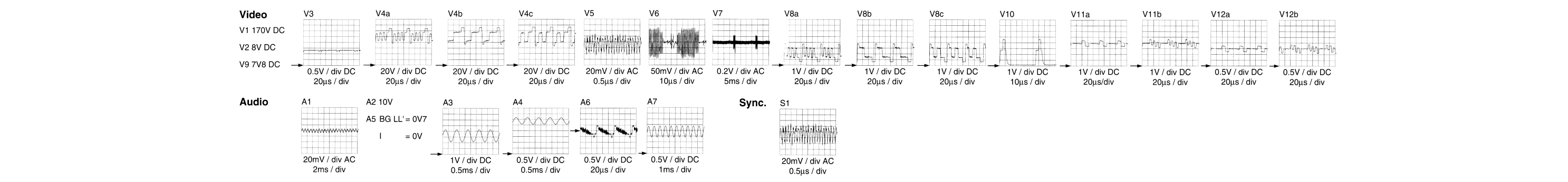
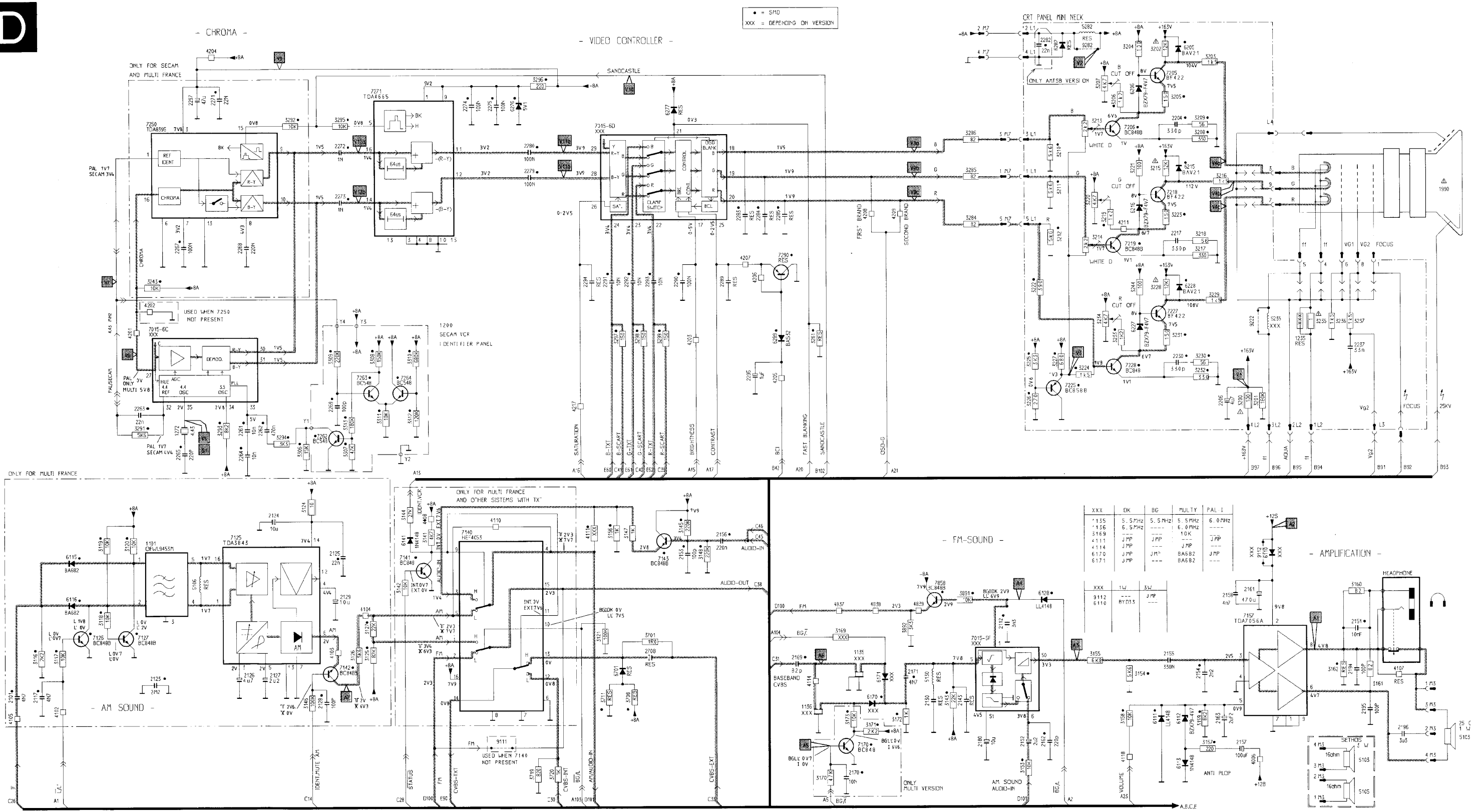


XXX	VST	PLL
2610	220n	NOT
2611	220n	NOT
3523	24K	JMP
3610	15K	JMP
3611	10K	JMP
3612	10K	Z2K

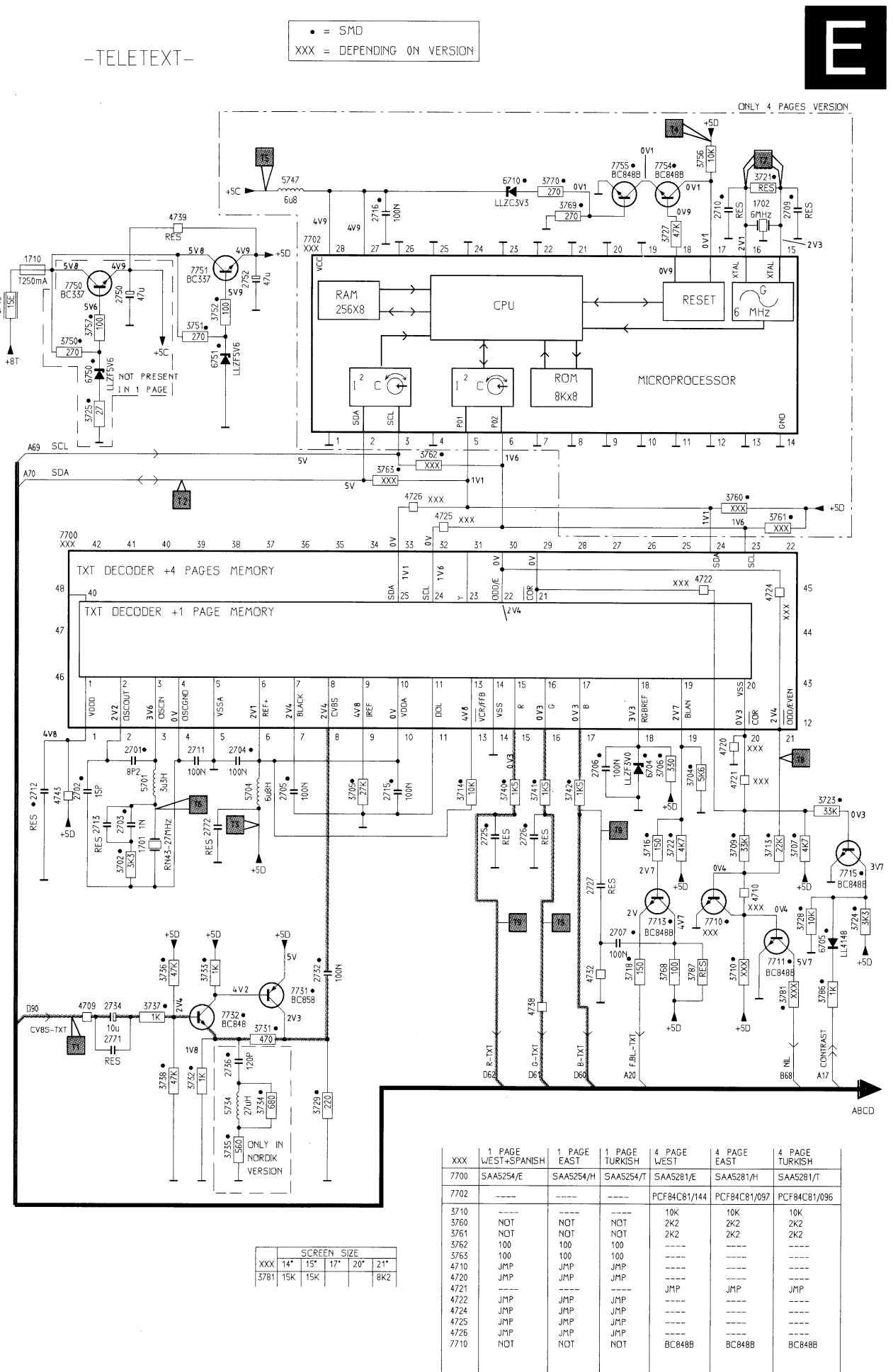




## Video & Audio CRT PCB (14", 15", 17", 21" mini neck) Diagram



## Teletext Diagram



## Tuner IF Diagram

