

**STEREO PLUS 2
SN / SW-CHASSIS
(50 Hz, 4:3 / 16:9)**

TV
3 / 1999

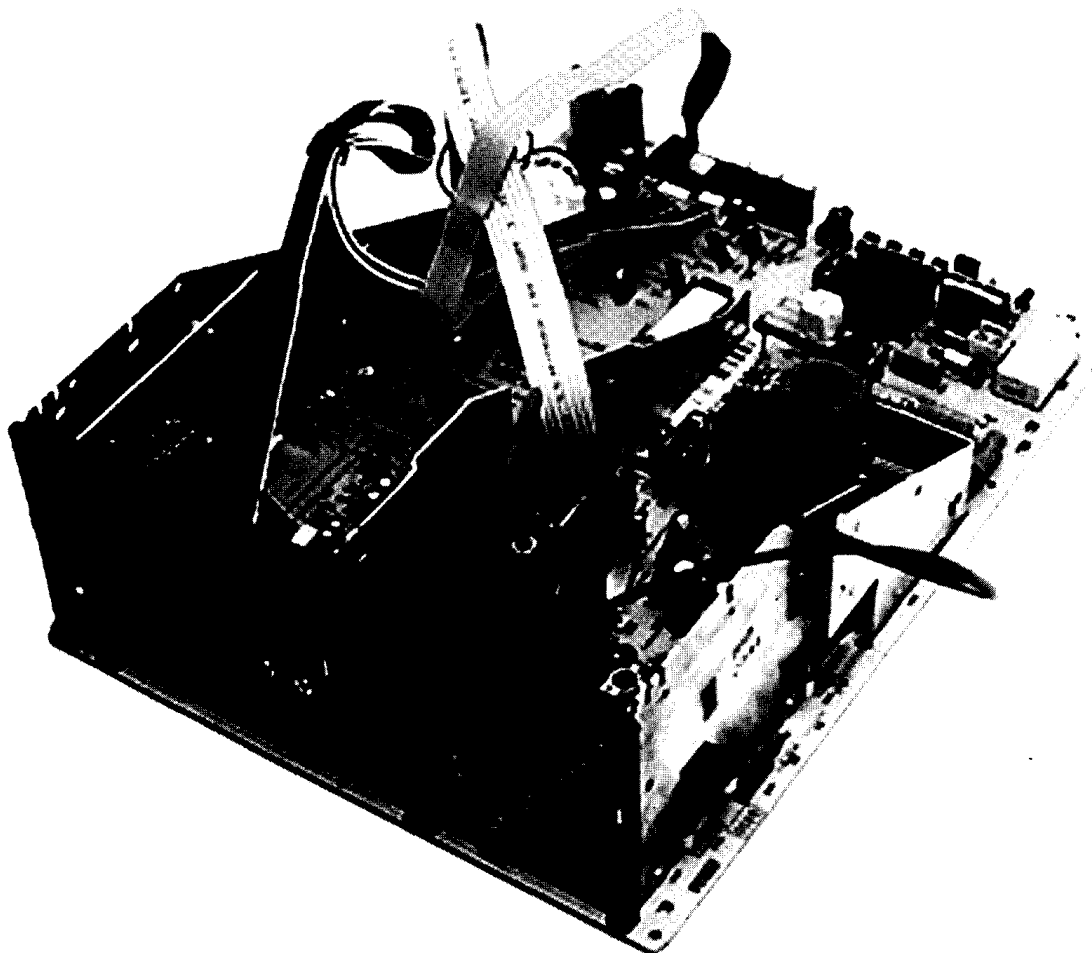
- Ⓒ **Service manual**
- Ⓓ **Service-Manual**
- Ⓔ **Serviceanvisning**

- Ⓕ **Manuel de service**
- Ⓖ **Manuale di servizio**

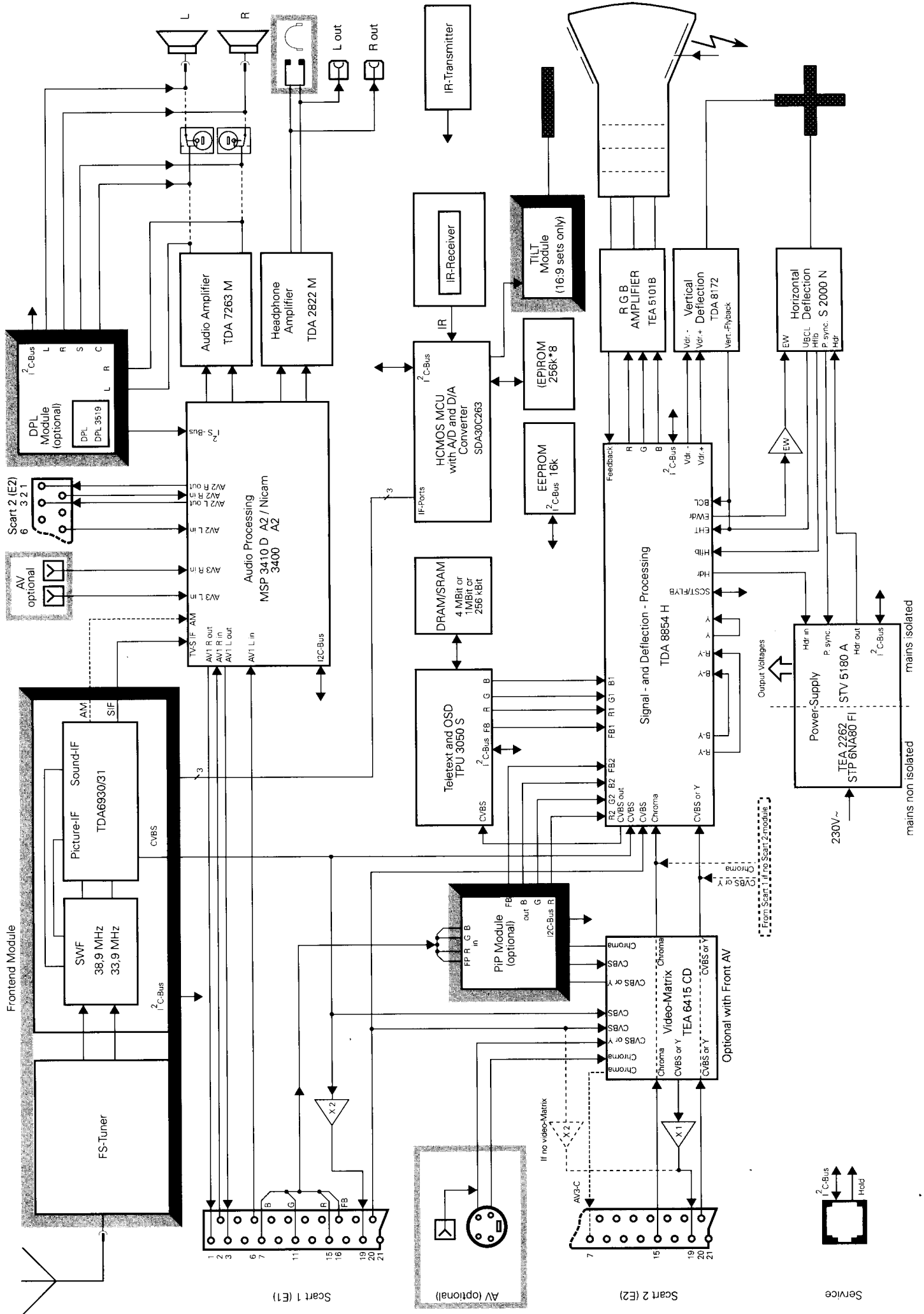
AKAI

TV 2550-TN
TV 2550-T Multi
TV 2551-TN
TV 2551-TN UK
TV 2551-TN Multi
TV 2850-TN
TV 2850-T Multi
TV 2851-T Multi

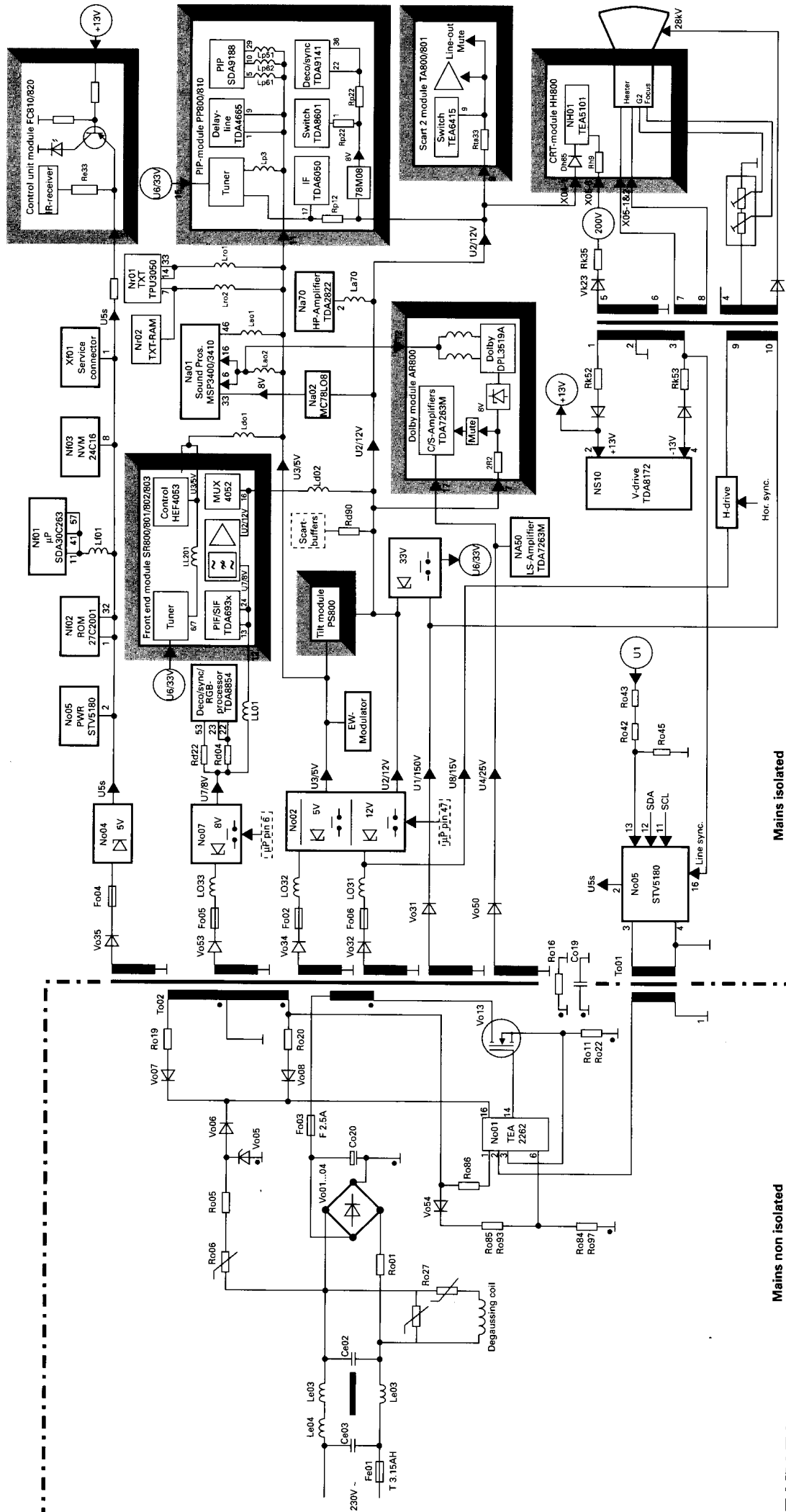
TV 2851-T Multi White
TV 2852-T
TV 2852-T Multi
TV 2852-TN UK
TV 2881-T Multi
TV 2881-T Multi UK
TV 3451-T Multi



Block diagram, signal routes



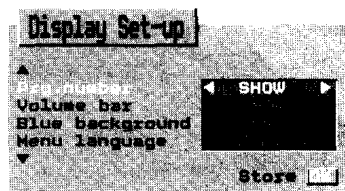
Block diagram, power supply



Operating instructions

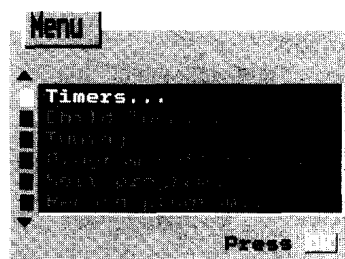
Changing the menu language

1. Press the yellow button to select the Vision menu.
2. Press the red button to select the Display set-up menu.
3. Change the menu language with cursor buttons.
4. Press the OK button to store the changes.
5. Press the TV button to exit.



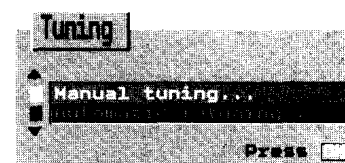
Manual tuning

1. Select the programme number you want to tune.
2. Press the MENU button.
3. Select "Tuning" with the cursor buttons and press the OK button.
4. Select "Manual tuning" and press the OK button.
5. Select "Channel"-line with the cursor buttons and select the channel you want to watch with 3 digits.
6. Press the OK button to store.
7. Press the TV button to exit.



APSi (Automatic Programming System)

1. Press the MENU button.
2. Select "Tuning" with the cursor buttons and press the OK button.
3. Select "Automatic retuning" and press the OK button.
4. To retune the channels, press the red button.



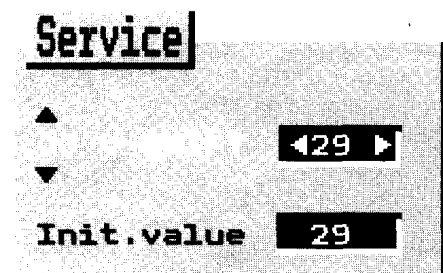
Service adjustments

Service mode activation

Service mode can be enabled whenever the receiver is switched ON or is in stand-by mode.

- 1a) If the receiver is switched ON, press the \blacktriangleleft - (volume minus) button on local control unit and at the same time start entering password: MENU and TV. Release the \blacktriangleleft - button after the MENU button has been pressed.
 - 1b) If the receiver is in stand-by mode, press the \blacktriangleleft - button on local control unit and at the same time start entering password: MENU and TV. Release the \blacktriangleleft - button after the MENU button has been pressed. Switch ON the receiver by pressing the TV button.
2. Activate the service mode by pressing the \mathbf{i} button and exit the service mode by pressing the TV button.
 3. Disable the service mode by switching off the receiver with the mains switch.

Note! Service mode activation stays enabled until the receiver is switched off with the mains button.



In service mode an adjustment menu is shown on the screen. The adjustment number and name, initializing (bottom) and adjustment (top) values are shown in the menu.

Initialization of NVRAM

Initialization of NVRAM

If the NVRAM is replaced, it must be initialized and configured.

Note! The receiver doesn't start with uninitialized NVRAM, but stays in stand-by mode.

1. Activate the service mode as described in "Service mode activation".
2. Initialize the NVRAM by entering the key code: BLUE, 2, 5, 4 and OK. Wait approx. 15 seconds and then press the OK button again.
3. Exit the service mode by pressing the TV-button.
4. Start the receiver and tune in one or more TV channels with the "manual tuning" method.

Note! The channel search doesn't work before the reference adjustments (code 12 and 13) have been made, see page 10.

5. Enter the service mode again and configure the TV set as described in "Configuration and fault diagnosis". (Check that the automatic configuration results in IIC DEV 1&2, AUTO OPT and IF OPT bytes are corresponding to the actual configuration of the TV set.)
6. Set the manual option bytes (TEXT OPT, HW OPT and SW OPT) to correspond the actual configuration of the TV set.
7. Make all necessary service adjustments (see section "SERVICE ADJUSTMENTS VIA IIC BUS, page 9)

Note! U1 VALU adjustment must be done first.

8. Disable the service mode by switching off the receiver with the mains switch.

Service adjustments

Configuration and fault diagnosis

The set must be configured after adding or removing any option. By pressing the RED button in service mode, the processor checks the configuration of the TV set and shows the settings on the screen. The configuration can be stored by pressing the OK button.

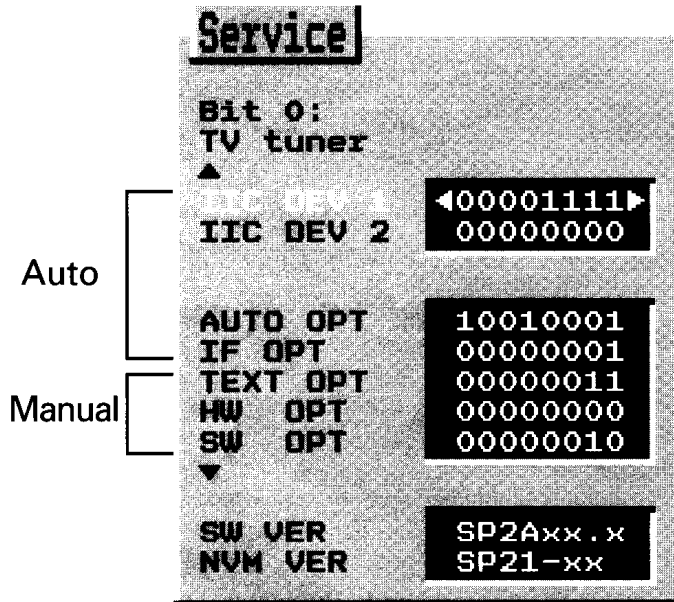
This feature can also be used in fault diagnosis. If an option bit is not '1' when it should be, the IC (or feature) is either not present or faulty.

Note! IIC DEV 1, IIC DEV 2, AUTO OPT and IF OPT bytes are configured automatically every time the RED-button is pressed.

TEXT OPT, HW OPT and SW OPT bytes must be set manually.

Changing the option bytes

1. Select the configuration mode by pressing the RED button in the service mode.



SW VER = μ P software version.

NVM VER = NVRAM software version.

2. Select IIC Device byte 1 - 2 or Option byte 1 - 5 with cursor buttons (up/down). The selected byte is shown highlighted.
The name of a responding bit can be seen by using cursor buttons (left/right).
3. Set / clear the bits with number buttons (0 ... 7).
4. Store the settings by pressing the OK button.
5. Return to the normal service mode by pressing the RED button.

Option byte description

Bit	Description	Setting	'1'	'0'
7 6 5 4 3 2 1 0				
IIC DEV 1		00001111		
0	TV tuner 5002PH5		Yes	No
1	Decoder/sync processor TDA8854		Yes	No
2	Teletext processor TPU3050		Yes	No
3	Sound processor MSP34x0		Yes	No
4	Video matrix switch TEA6415		Yes	No
5	PIP processor		Yes	No
6	PIP tuner		Yes	No
7	3D virtual sound processor		Yes	No
IIC DEV 2		00000000		
5	Power controller STV5180		Yes	No
6	Sound processor MSP3410		Yes	No
7	Reserved for production use		Yes	No
AUTO OPT		10010001		
0	Scart 2		Yes	No
1	16:9 picture tube		Yes	No
3	Text memory 4 Mb DRAM		Yes	No
4	Text memory 1 Mb SRAM		Yes	No
5	Text memory 256 kb SRAM		Yes	No
6	Tilt adjustment		Yes	No
7	NICAM identification enabled		Yes	No
IF OPT		00000001		
0	B/G system in IF		Yes	No
1	I system in IF		Yes	No
2	D/K system in IF		Yes	No
3, 4	L/L' system in IF		Yes	No
5	HEF4094B in IF		Yes	No
TEXT OPT		00000011		
1	FLOF function enabled		Yes	No
7,6,5	Text character set selected 000 = West Europe / Czech 001 = East Europe 010 = West Europe / USA 011 = West Europe / Turkish 100 = East Europe 2			
HW OPT		00000000		
0	A/V connector installed		Yes	No
1	SVHS input in AV		Yes	No
2	3.58 MHz xtal installed		Yes	No
SW OPT		00000010		
1	Carrier mute enabled		Yes	No
2	Stand-by prevent		Yes	No
3	Autostart enabled (Special use only!)		Yes	No
4	Pal + helper blanking 4:3		Yes	No
5	E1 FB enabled (USER)		Yes	No
7	Hotel TV enabled		Yes	No
SW VER		SP2Axx.x		
SW VER = μ P software version				
NVM VER		SP21-xx		
NVM VER = NVRAM software version				

Service adjustments via IIC bus

Remote control buttons in service mode

When the receiver is in the service mode you can select normal TV mode by pressing the TV button and return to the service mode by pressing the i button.

Number and cursor buttons are used for service adjustments. The OK button stores the settings. The yellow button hides/shows the service menu to simplify the picture adjustments.

Making adjustments for different picture formats

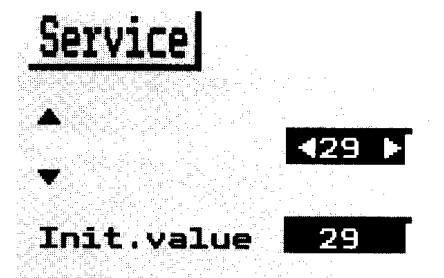
Make all adjustments with PAL signal unless otherwise mentioned. Make 4:3 set adjustments with normal 4:3(CLASSIC) picture format and 16:9 set adjustments with wide picture format. Then make the necessary adjustments with other picture formats/signals. The required adjustments are shown in the table below.

Note! Check the configuration of the TV set before making the adjustments and make only the necessary adjustments.

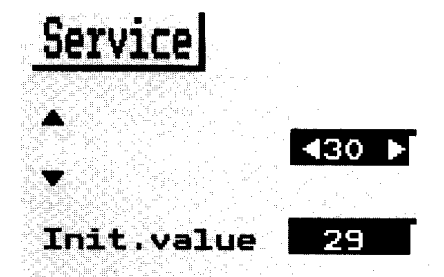
Making a service adjustment

1. Give a two digit code which determines an adjustment (e.g. 00 = vertical shift, see the following tables) with the number buttons. You can also select the adjustment with cursor buttons (up-/down).

Note! Power supply and UG2 adjustments must be done before picture geometry adjustments.



2. Adjust with the cursor buttons (left/right).



3. Store the new value by pressing the OK button.

Note!

- To avoid incomplete adjustments store each adjustment in the memory immediately after an adjustment has been made.
- If an adjustment has to be made separately for different picture format/signal, select first the normal mode by pressing the TV button and select then the desired picture format/signal. Return to service mode by pressing the i button.

Picture geometry adjustments

Adjustment	Code	OSD name	4:3 sets				16:9 sets				RGB	60 Hz signal	Note!	
			CLASSIC (4:3)	MOVIE (4:3)	MOVIE LIFTED (4:3)	WIDE (4:3)	CLASSIC (16:9)	IDEAL (16:9)	FULL (16:9)	FULL LIFTED (16:9)				WIDE (16:9)
Vertical off-centre shift	00	V-SHIFT	X											Center line
Vertical amplitude	01	V-AMPL.	X									X		Adjust upper side
Vertical slope	02	V SLOPE	X										X	Adjust lower part
Vertical S-correction	03	S-CORR.	X				X						X	
Vertical zoom	04	VER ZOOM	(X)	X		X	X	X					(X)	Recommended to use init value first!
Vertical scrolling	05	V SCROLL	(X)			X							(X)	Recommended to use init value first!
Width	06	WIDTH	X	X			X						X	
Horizontal shift deflection	07	H-SHIFT	X									X	X	
Parabola	08	PARABOLA	X										X	
Corner	09	CORNER	X										X	
Trapezium	10	TRAPEZ	X										X	

Service adjustments

O Power supply block

Supply voltage and protection circuit

1. Set the brightness and the contrast to the normal level. Connect a universal voltmeter to the cathode of Vo31.
2. Adjust the U1 voltage with U1 VALU in the service mode. (The voltage depends on the picture tube type, refer to the section "Variable components").
3. Check the over-current protection after making any service operations in the primary circuit of the power supply. Switch the set to stand-by mode. Short circuit the cathode of Vo50 to the ground and keep the short circuit connected. When the over-current protection works correctly, the power supply stops permanently. Switch off the receiver by pressing the mains button. Remove the short circuit and then switch on the receiver by pressing the mains button.

AFC adjustments (code 12 and 13)

- 1) The right value is found when while changing the value, the AFC display changes from 0 to 1.
- 2) Adjust with a channel sent with L'-standard. Needed only in multinorm TV sets.

Note! Use the right channel frequency. Tune the channel with "manual tuning method" (see page 7).

K Horizontal deflection block

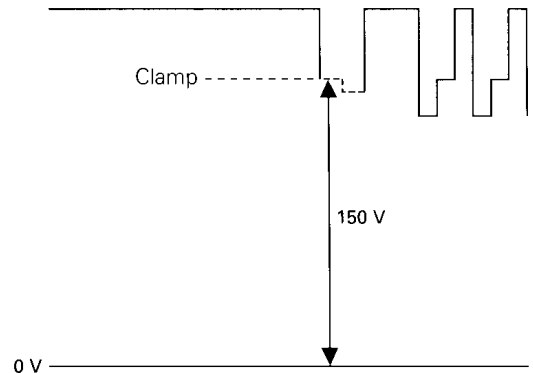
Focusing

Set the brightness and the contrast to the normal level. Use the crosshatch pattern and adjust the picture for optimum resolution.

(Screen grid voltage) Ug2 voltage

1. Set the brightness and the colour saturation to the normal level and the contrast to minimum.
2. At the end of the vertical blanking, there is a black current measurement pulse (clamp pulse) at pin 9, 12 and 15 of NH01. Use an oscilloscope and find the output stage with the highest cut-off (i.e. the highest voltage during the black current measurement pulse).
3. Adjust the voltage of the upper clamp pulse to +150 V with Ug2 (see figure).

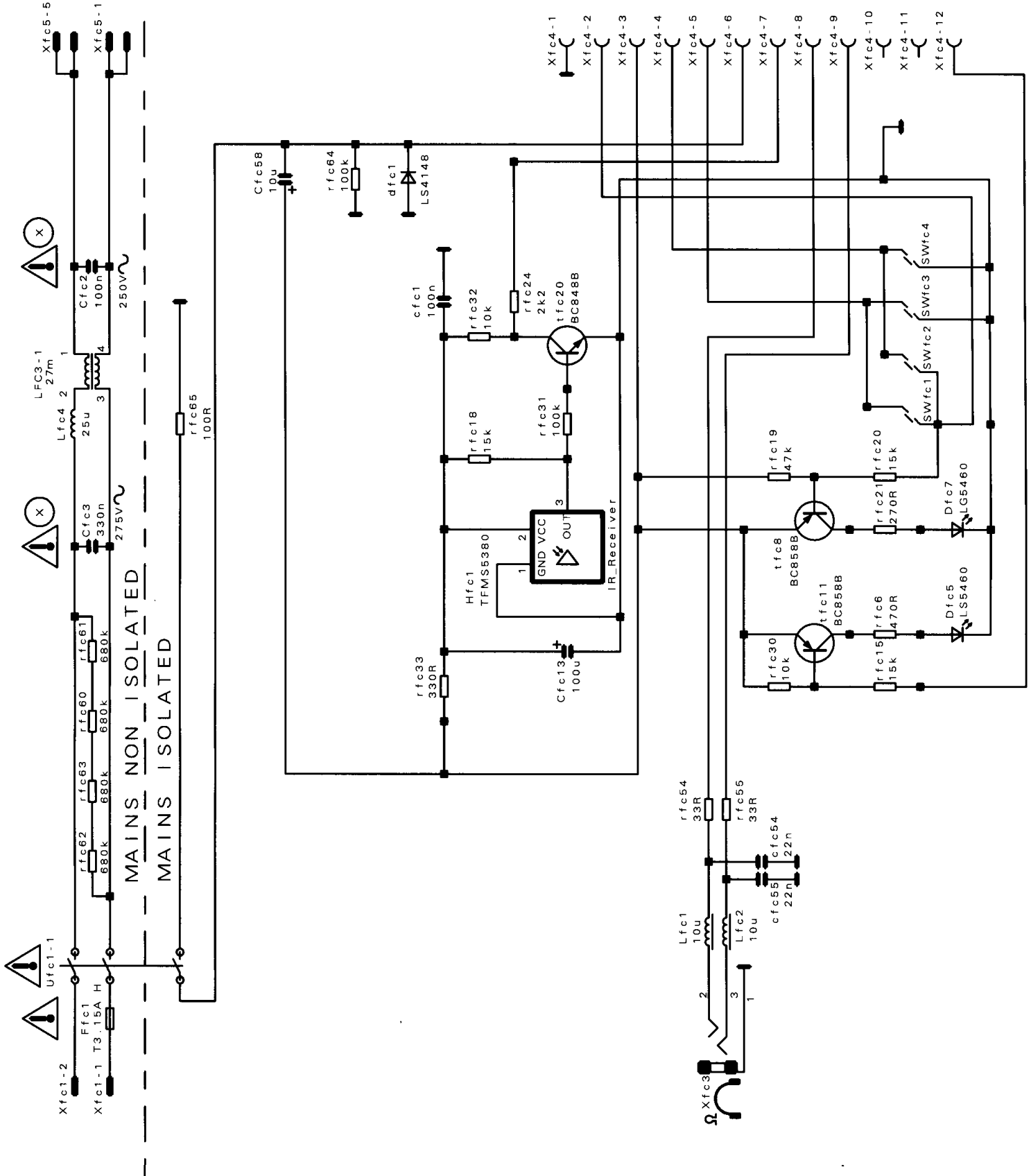
Note! Adjust the voltage with a clamp pulse.



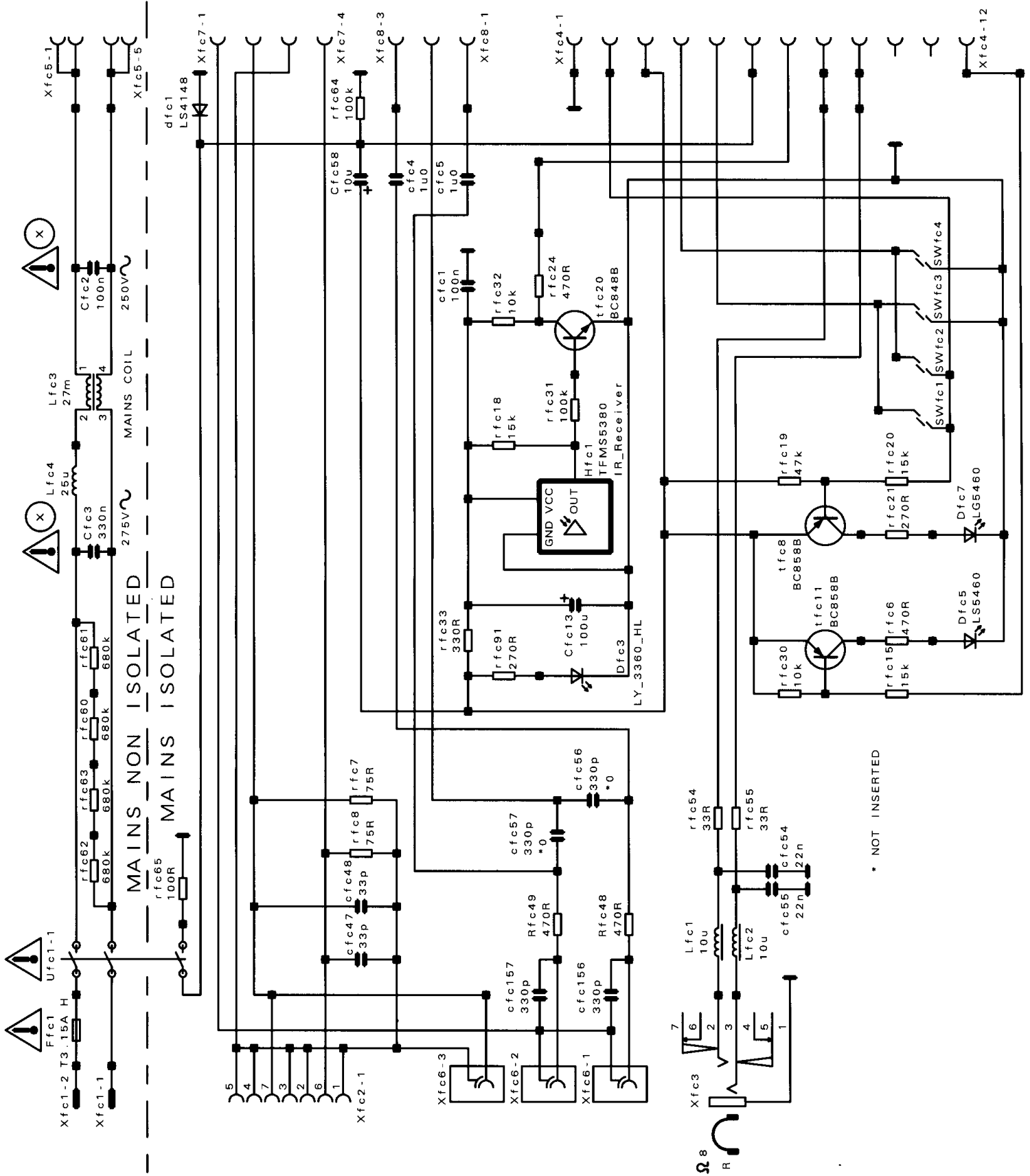
Other adjustments

Adjustment	Code	OSD name	RF OTHER	RF SECAM L	SCART	Note!
Luma delay	11	Y-DELAY	X	X	X	
IF 33.9 reference voltage for AFC	12	REF 339				1), 2)
IF 38.9 reference voltage for AFC	13	REF 389				1)
STV5180 DAC value for U1 control	14	U1 VALU				Must be done before other adjustments!
Red gain	15	R GAIN				
Green gain	16	G GAIN				
Blue gain	17	B GAIN				

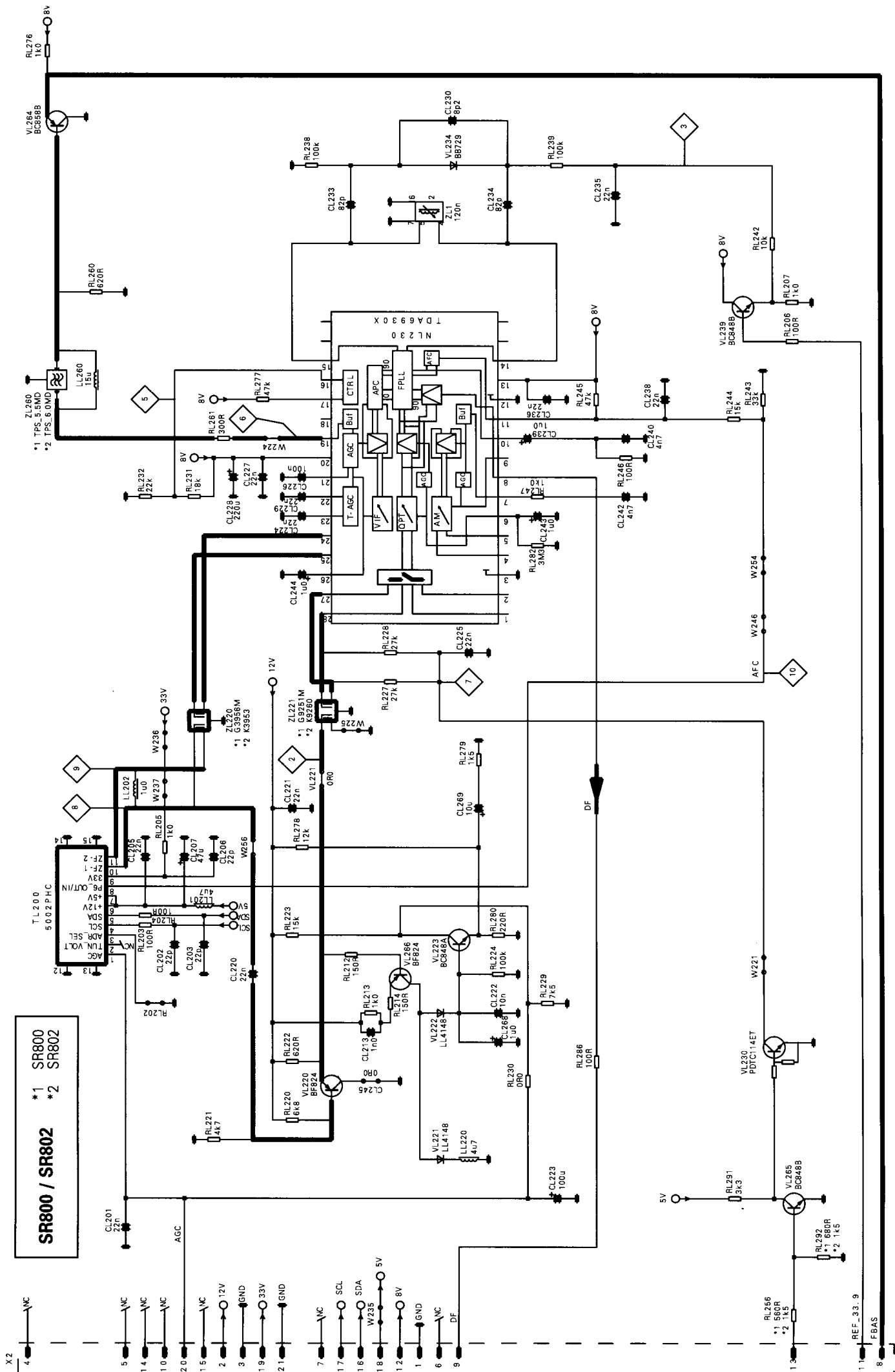
FC810 Control unit module



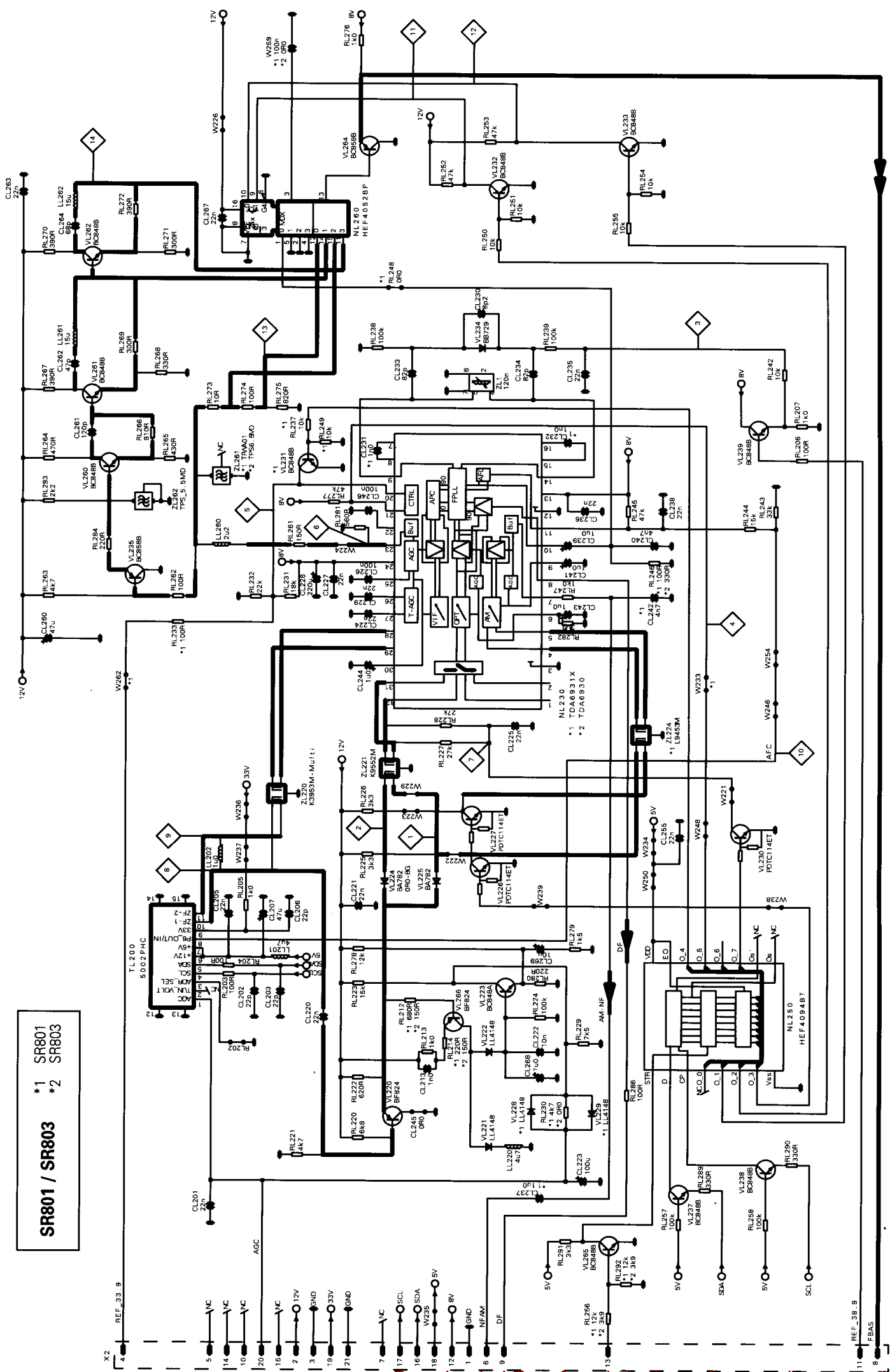
FC820 Control unit module



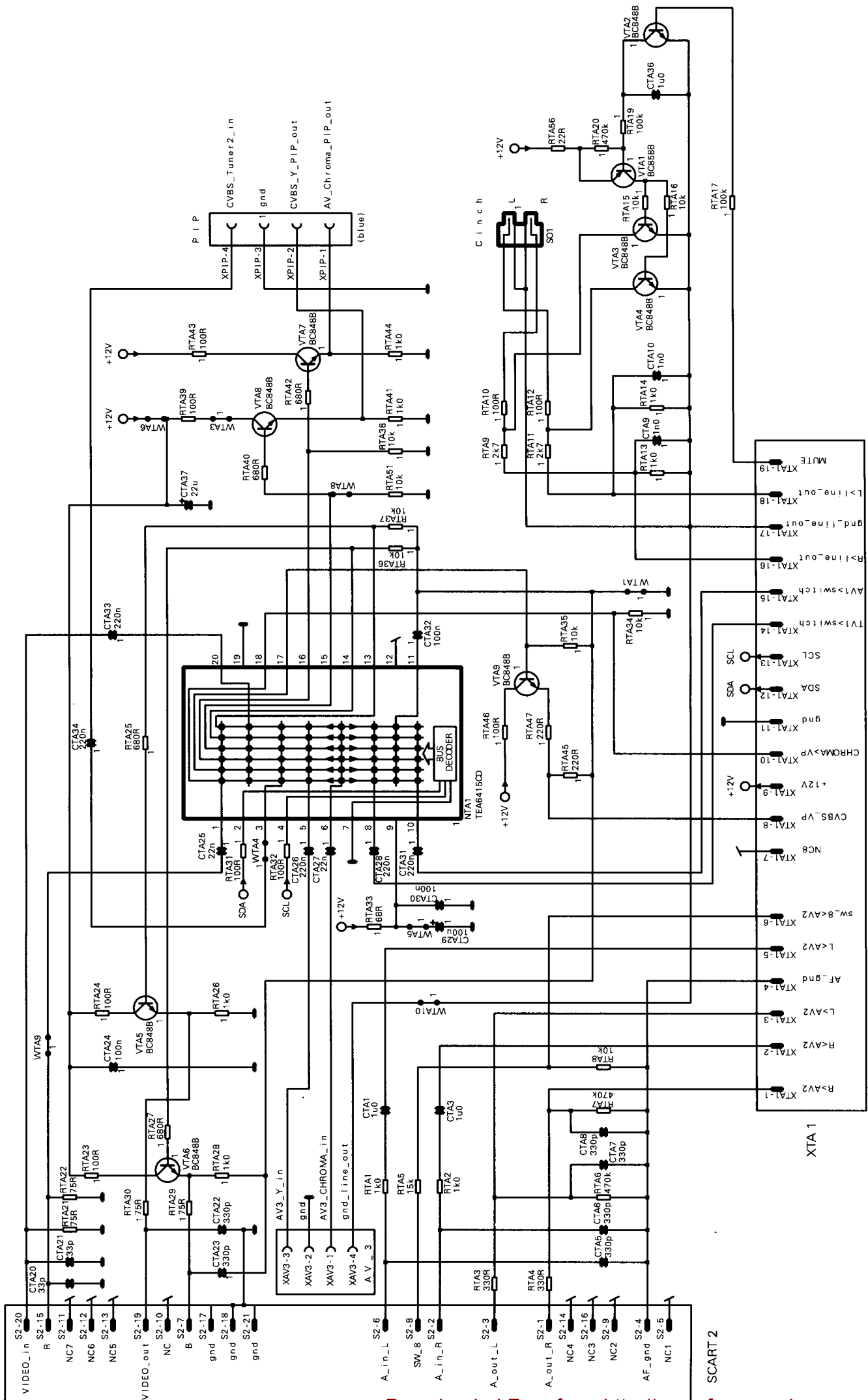
SR800/802 Frontend module (BG/I)



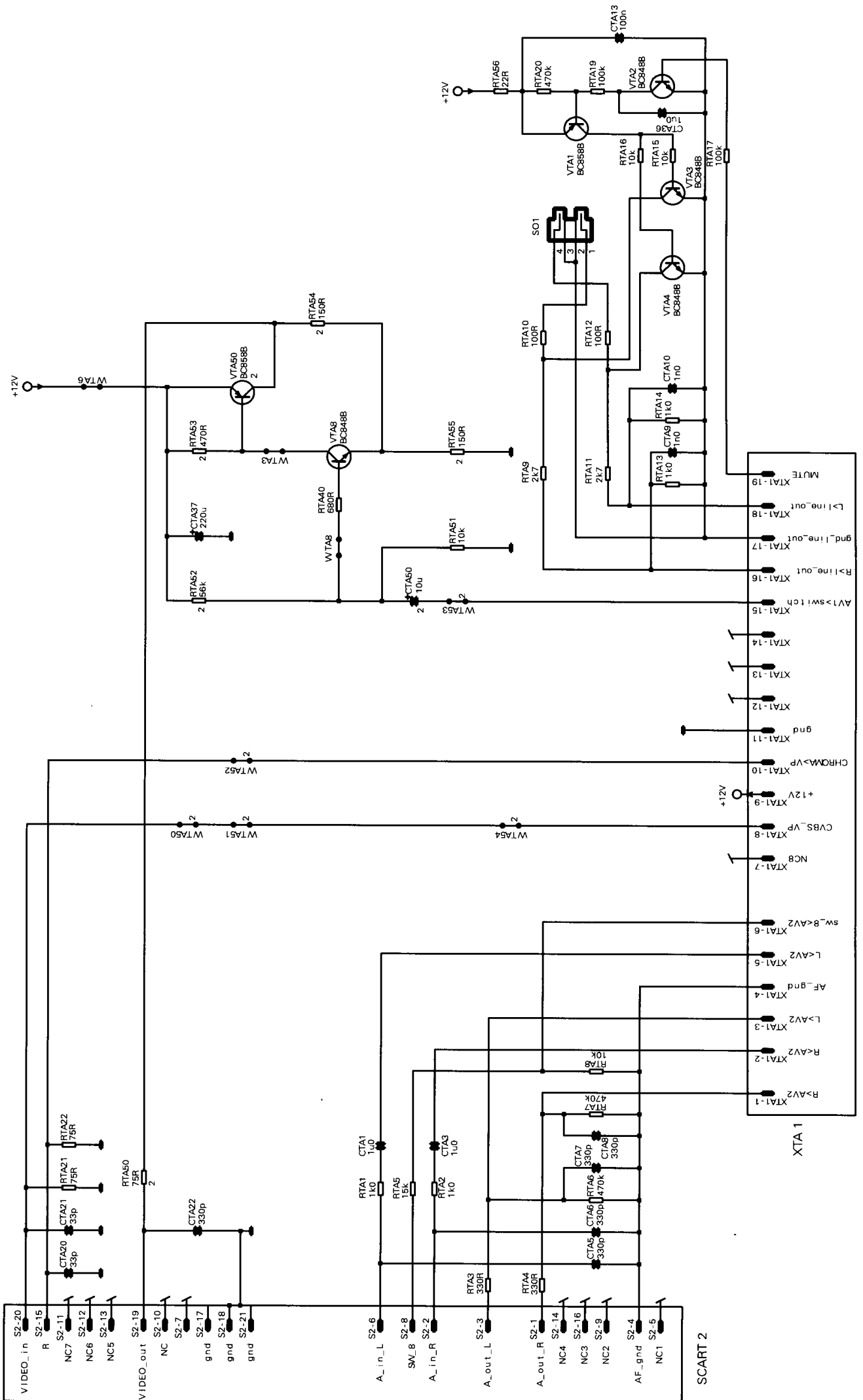
SR801 Frontend module (Multinorm)

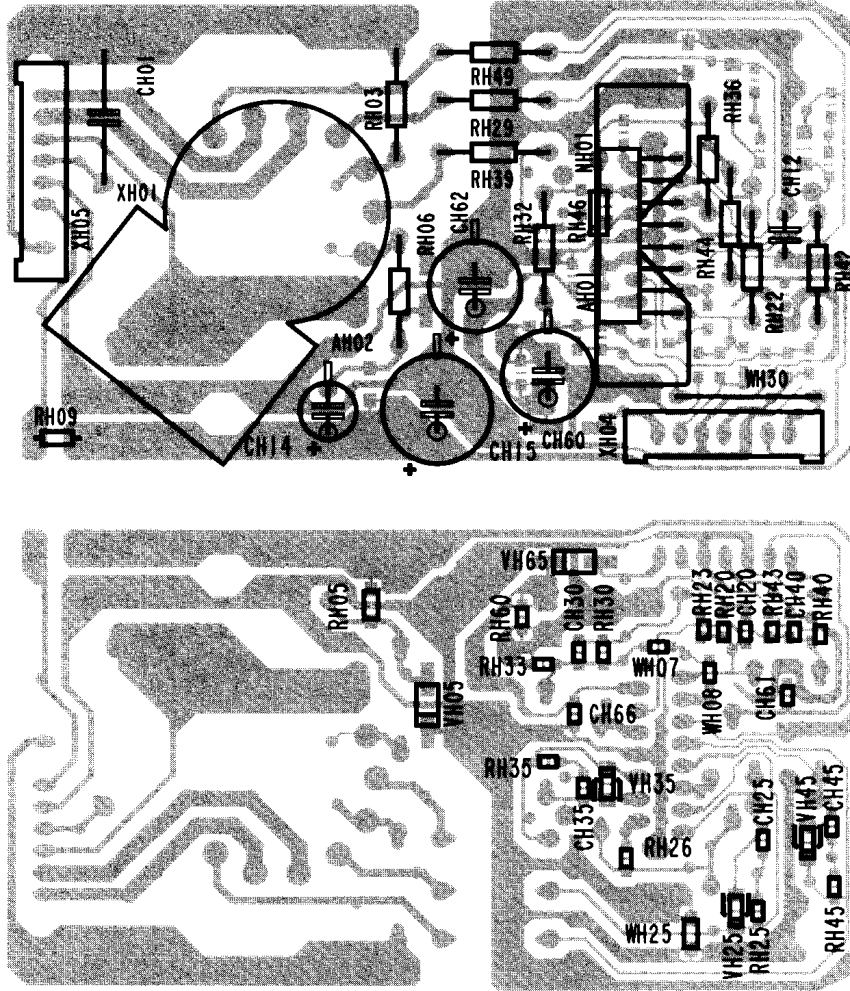


SR801 / SR803
 *1 SR801
 *2 SR803

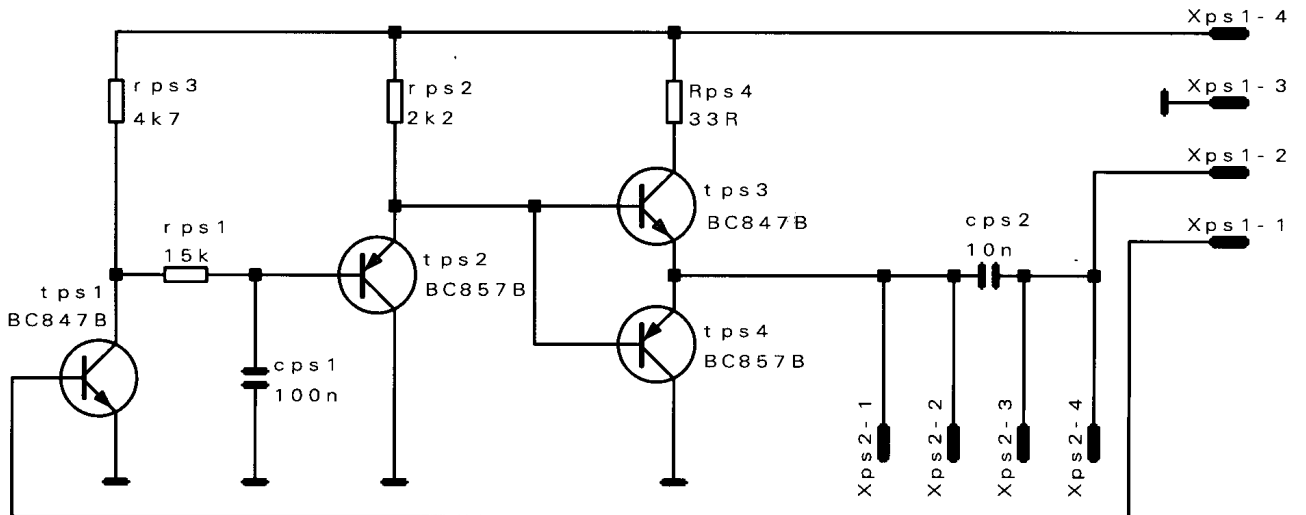


TA801 Scart 2 module





PS800 Picture tilt module



Variable components

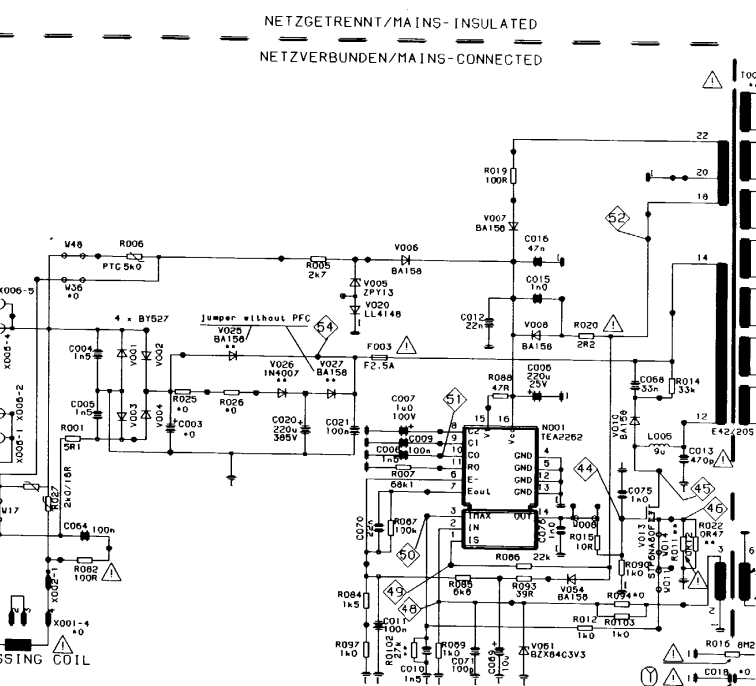
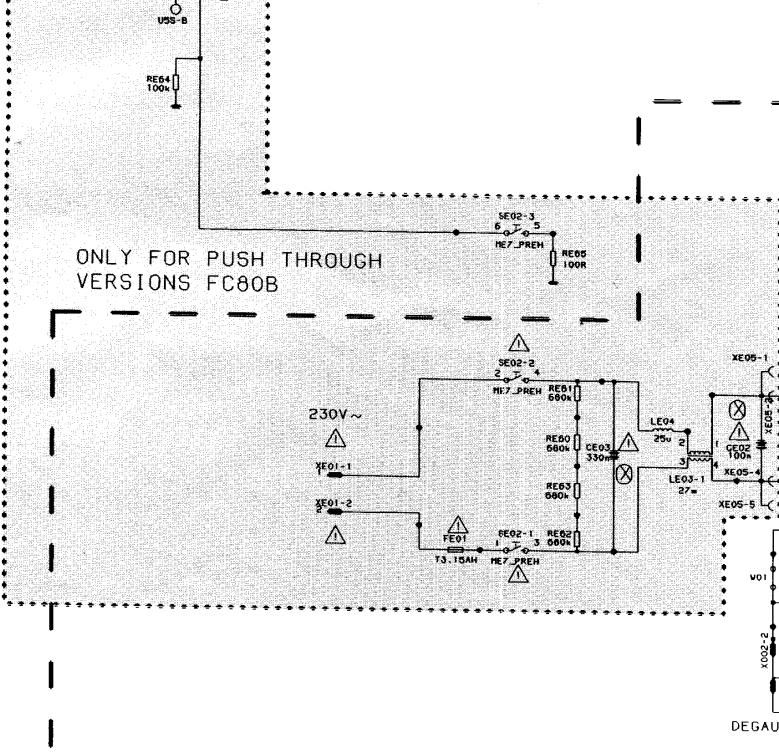
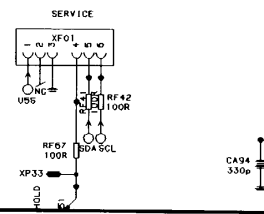
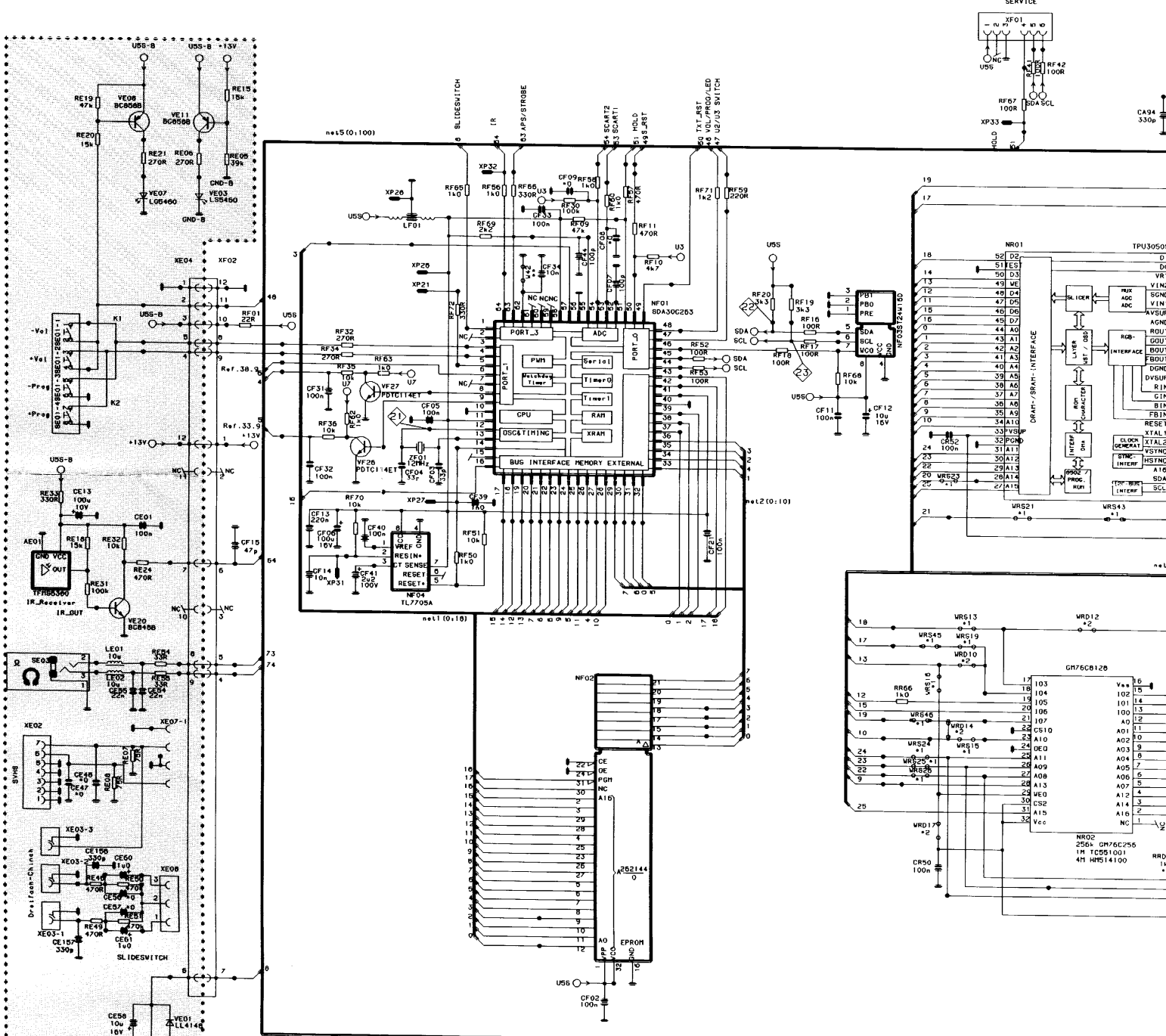
Röhrenabhängige Bauteile

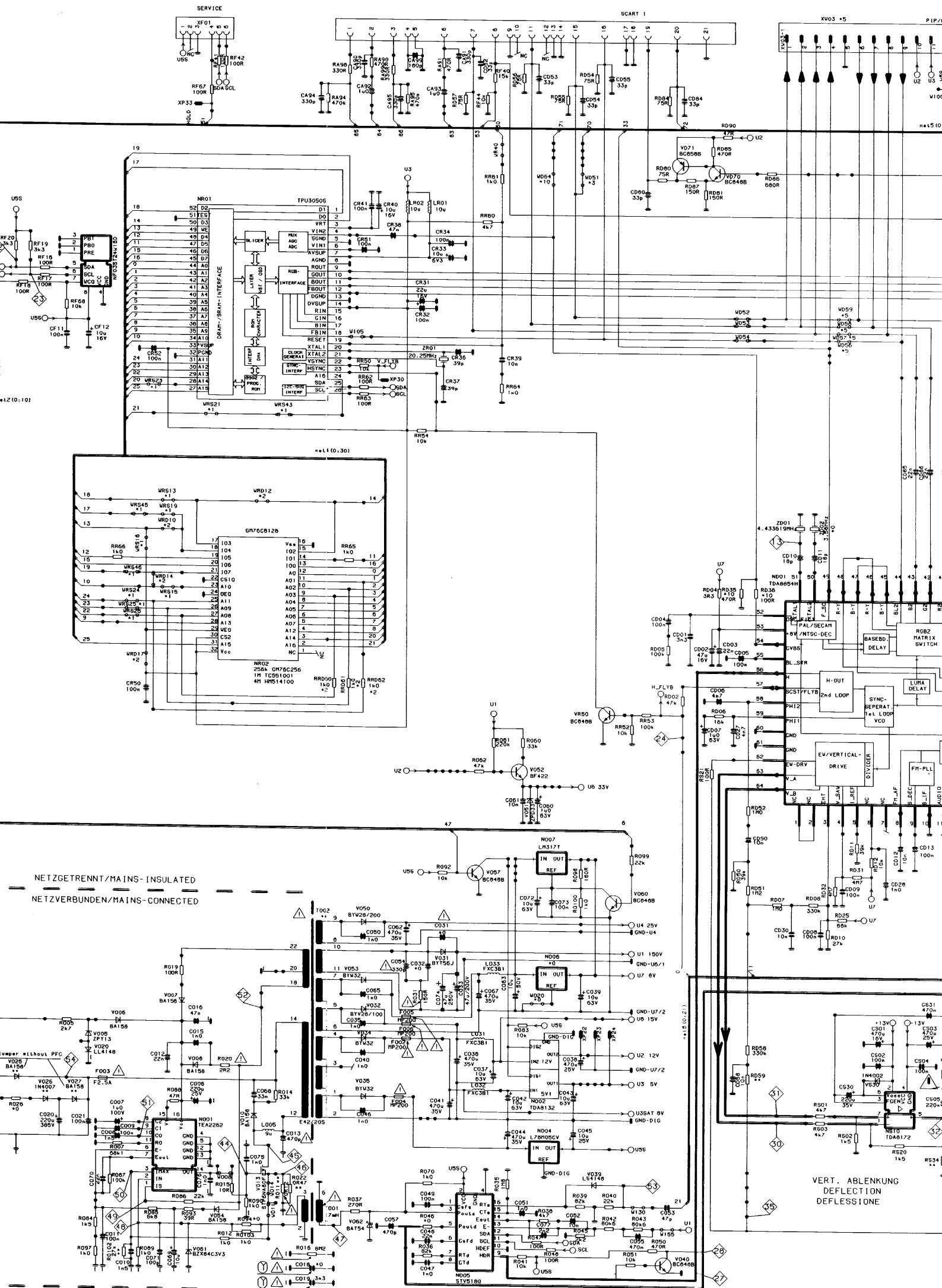
Varierande komponenter

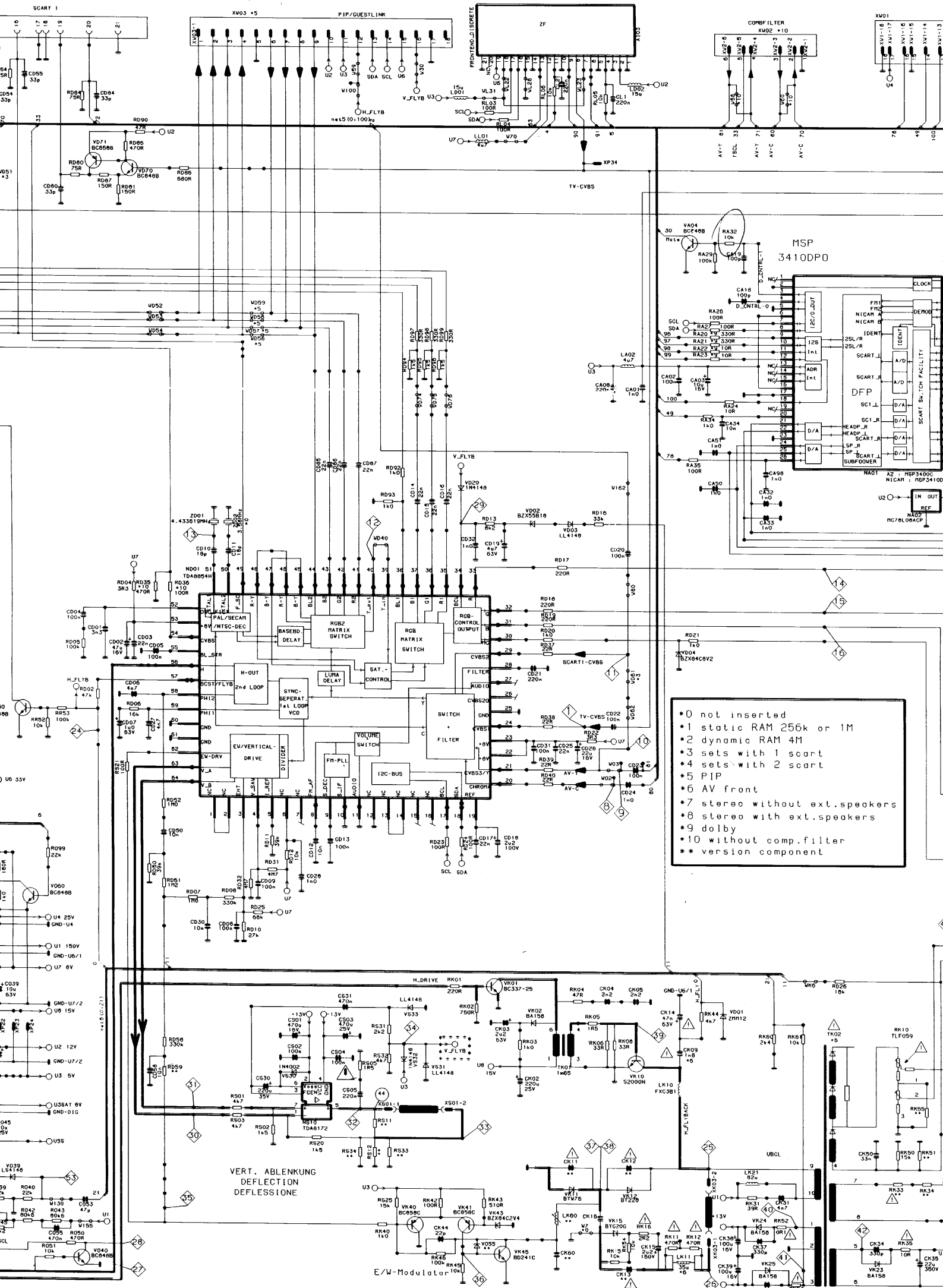
Composants variables

Componenti che differiscono

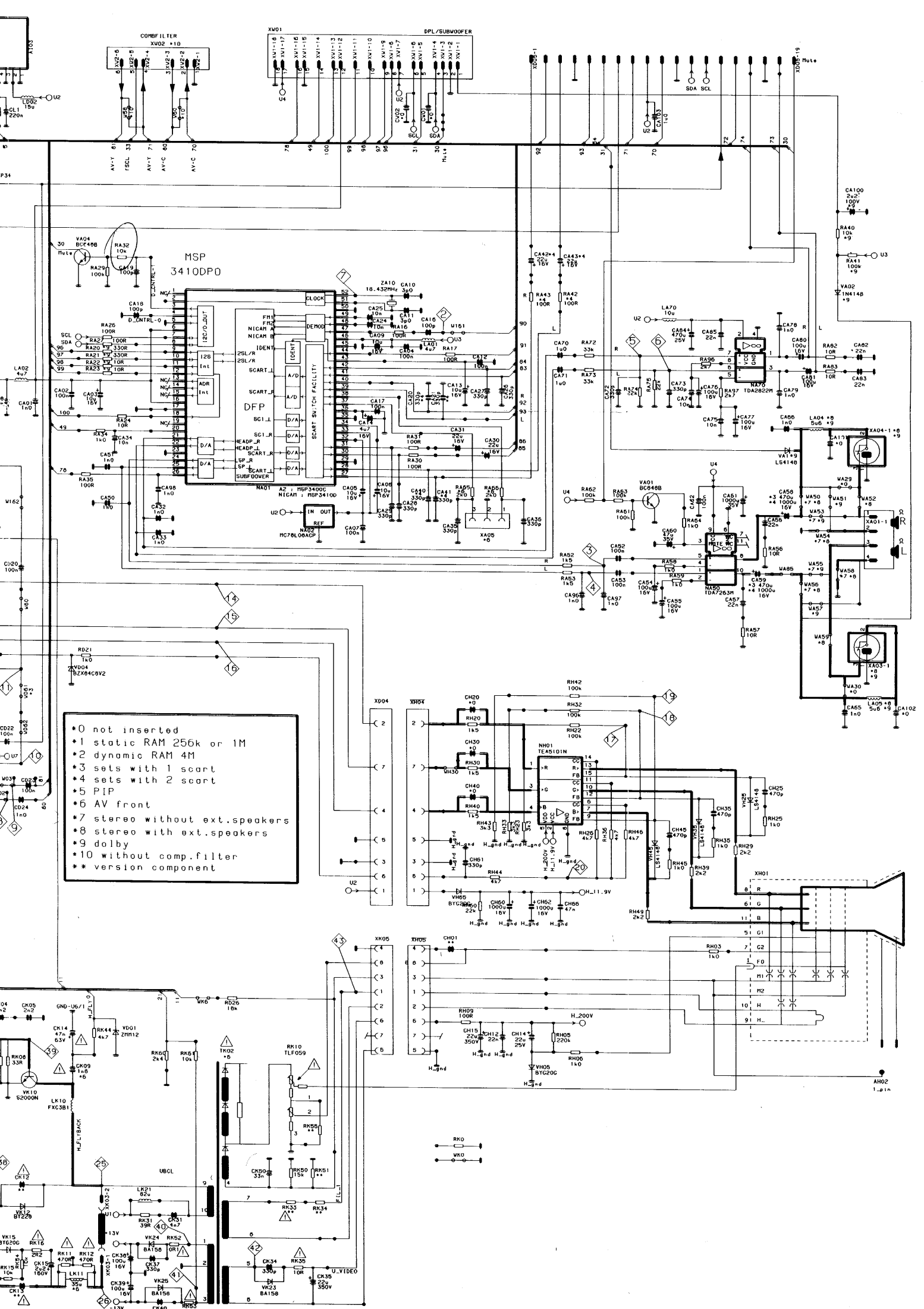
Picture tube	Vi A59EAS 13X01	Vi A59EHJ 43X01	Vi A66EAS 13X01	Vi A66EHJ 43X01	Vi A66EHJ 43X01	Vi A66EHJ 43X01	Vi A66EHJ 43X01	Vi W66EHU 013X101	Vi A80AEJ 33X04
Chassis	C*AB1A*	B*BC3A*	C*AE1A*	B*AF2A*	B*BF3A*	B*BF3A*	B*BF3A*	C*BJ7A*	B*AM3A*
PW-block	PW-8B0	PW-8C0	PW-8E0	PW-8F0	PW-8F0	PW-8F0	PW-8J0	PW-8M0	PW-8M0
RF-block	RF-801	RF-803	RF-801	RF-802	RF-803	RF-803	RF-807	RF-803	RF-803
RA 42,43		3142 5852 100R		3142 5852 100R	3142 5852 100R	3142 5852 100R	3142 5852 100R	3142 5852 100R	3142 5852 100R
RA 65,66		3142 6211 2K0		3142 6211 2K0	3142 6211 2K0	3142 6211 2K0	3142 6211 2K0	3142 6211 2K0	3142 6211 2K0
RD 59	3163 0092 390K	3154 8967 270K	3163 0092 390K	3154 8967 270K	3154 8967 270K	3154 8967 270K	3163 0045 220K	3154 8967 270K	3154 8967 270K
RE 07,08		3142 5669 75R		3142 5669 75R	3142 5669 75R	3142 5669 75R		3142 5669 75R	3142 5669 75R
RE 48,49		3142 5817 470R		3142 5817 470R	3142 5817 470R	3142 5817 470R		3142 5817 470R	3142 5817 470R
RE 50,51		3142 5848 470K		3142 5848 470K	3142 5848 470K	3142 5848 470K		3142 5848 470K	3142 5848 470K
RK 51			3154 8729 82K	3154 8729 82K	3154 8729 82K	3154 8729 82K		3154 8729 82K	3144 0013 61K9
RS 12	3143 0281 2R15 0W6	3143 0281 2R15 0W6	3143 0281 2R15 0W6	3143 0281 2R15 0W6	3143 0281 2R15 0W6	3143 0281 2R15 0W6	3143 0301 3R0 0W6	3143 0281 2R15	3143 0281 2R15
RS 34	3143 0281 2R15 0W6	3143 0281 2R15 0W6	3143 0281 2R15 0W6	3143 0281 2R15 0W6	3143 0281 2R15 0W6	3143 0281 2R15 0W6	3143 0301 3R0 0W6	3143 0281 2R15	3143 0281 2R15
CA 20,21,40,41		3212 5517 330p		3212 5517 330p	3212 5517 330p	3212 5517 330p	3212 5517 330p	3212 5517 330p	3212 5517 330p
CA 42,43		3422 3250 22µ / 16V		3422 3250 22µ / 16V	3422 3250 22µ / 16V	3422 3250 22µ / 16V	3422 3250 22µ / 16V	3422 3250 22µ / 16V	3422 3250 22µ / 16V
CA 58,59	3422 0551 470µ / 16V	3455 0001 1000µ / 16V	3422 0551 470µ / 16V	3455 0001 1000µ / 16V	3455 0001 1000µ / 16V	3455 0001 1000µ / 16V	3455 0001 1000µ / 16V	3455 0001 1000µ / 16V	3455 0001 1000µ / 16V
CE 35,36		3212 5517 330p		3212 5517 330p	3212 5517 330p	3212 5517 330p		3212 5517 330p	3212 5517 330p
CE 60,61		3454 0022 1µ0 / 63V		3454 0022 1µ0 / 63V	3454 0022 1µ0 / 63V	3454 0022 1µ0 / 63V		3454 0022 1µ0 / 63V	3454 0022 1µ0 / 63V
CE 156,157		3212 5517 330p		3212 5517 330p	3212 5517 330p	3212 5517 330p		3212 5517 330p	3212 5517 330p
CK 11	3324 0835 27n 400V	3324 0835 27n 400V	3324 0835 27n 400V	3324 0835 27n 400V	3324 0835 27n 400V	3324 0835 27n 400V	3325 0915 22n	3324 0835 27n 400V	3324 0835 27n 400V
CK 13	3348 0013 400n 400V	3348 0013 400n 400V	3348 0013 400n 400V	3348 0011 300n 400V	3348 0011 300n 400V	3348 0011 300n 400V	3348 0011 300n 400V	3348 0011 300n 400V	3348 0011 300n 400V
CK60	3312 0948 1µ5 63V	3312 0948 1µ5 63V	3312 0948 1µ5 63V	3312 0948 1µ5 63V	3312 0948 1µ5 63V	3312 0948 1µ5 63V	3338 0021 3µ3 100V	3312 0948 1µ5 63V	3312 0948 1µ5 63V
NR 02		3786 0042 IC SRAM		3786 0042 IC SRAM	3786 0042 IC SRAM	3786 0042 IC SRAM		3786 0042 IC SRAM	
NR 03	3786 0025 IC SRAM	3786 0025 IC SRAM	3786 0025 IC SRAM	3786 0025 IC SRAM	3786 0025 IC SRAM	3786 0025 IC SRAM		3786 0025 IC SRAM	3786 0025 IC SRAM
LA 04,05		4562 0055 5,6µH B82144		4562 0055 5,6µH B82144	4562 0055 5,6µH B82144	4562 0055 5,6µH B82144	4562 0055 5,6µH B82144	4562 0055 5,6µH B82144	4562 0055 5,6µH B82144
LK 60	4538 0006 490µH	4538 0006 490µH	4538 0006 490µH	4538 0006 490µH	4538 0006 490µH	4538 0006 490µH	4538 0025 590µH	4538 0006 490µH	4538 0006 490µH
W 42							Jumper 10mm		
W 72		Jumper 8,75 mm		Jumper 8,75 mm	Jumper 8,75 mm	Jumper 8,75 mm	Jumper 8,75 mm	Jumper 8,75 mm	Jumper 8,75 mm
W 77		Jumper 10,0 mm		Jumper 10,0 mm	Jumper 10,0 mm	Jumper 10,0 mm	Jumper 10,0 mm	Jumper 10,0 mm	Jumper 10,0 mm
WA 23,38,39		Jumper 15,0 mm		Jumper 15,0 mm	Jumper 15,0 mm	Jumper 15,0 mm	Jumper 15,0 mm	Jumper 15,0 mm	Jumper 15,0 mm
WA 24		Jumper 20,0 mm		Jumper 20,0 mm	Jumper 20,0 mm	Jumper 20,0 mm	Jumper 20,0 mm	Jumper 20,0 mm	Jumper 20,0 mm
WA 52,59		3142 5802 0R		3142 5802 0R	3142 5802 0R	3142 5802 0R	3142 5802 0R	3142 5802 0R	3142 5802 0R
WA 53,55	3142 5802 0R		3142 5802 0R						
WD 51	Jumper 12,5 mm	Jumper 12,5 mm	Jumper 12,5 mm						
WD 61	3142 5601 0R	3142 5601 0R	3142 5601 0R						
WW 01,02		Jumper 10,0 mm		Jumper 10,0 mm	Jumper 10,0 mm	Jumper 10,0 mm	Jumper 10,0 mm	Jumper 10,0 mm	Jumper 10,0 mm
Rear plate	8440 0680	8440 0920	8440 0680	8440 0920	8440 0920	8440 0920	8440 0920	8440 0920	8440 0920
PS800 module							6913 7137 PS800		
TA80x module		6913 7138 TA800		6913 7141 TA801	6913 7138 TA800	6913 7138 TA800	6913 7138 TA800	6913 7138 TA800	6913 7138 TA800
U1- voltage	150V	150V	150V	150V	150V	150V	150V	150V	150V



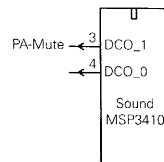
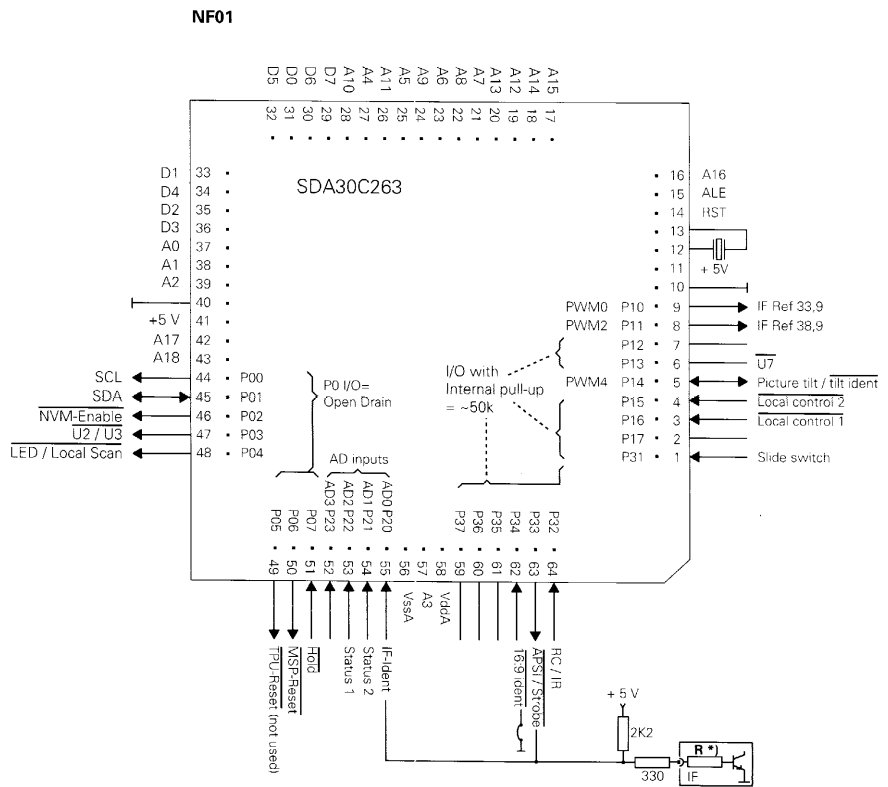
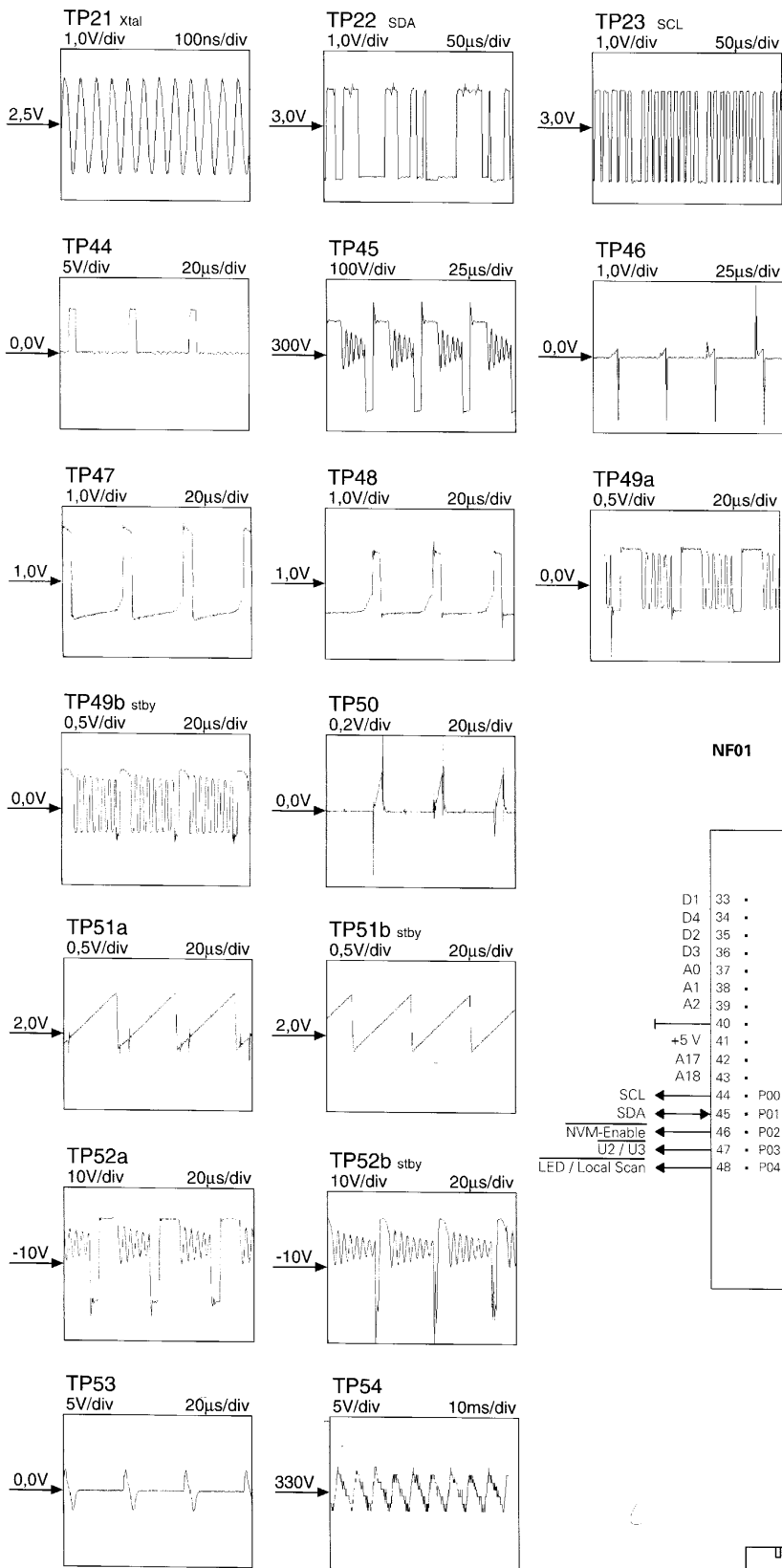




- * 0 not inserted
- * 1 static RAM 256k or 1M
- * 2 dynamic RAM 4M
- * 3 sets with 1 scart
- * 4 sets with 2 scart
- * 5 PIP
- * 6 AV front
- * 7 stereo without ext. speakers
- * 8 stereo with ext. speakers
- * 9 dolby
- * 10 without comp. filter
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Scart status voltages			
Mode	Scart	µP-pin	
4:3	8.5...12V	3,4...5V	
16:9	3.5...8V	1,4...3,2V	
OFF	0...3V	0...1,2V	

AD0 as IF Ident			
Voltages	R *	IF versions	Frontend mod.
3,9 - 5,0	12k	BG / DK / I / LL'	SR801
3,1 - 3,9	3k9	BG / DK	SR803
2,3 - 3,1	1k5	I	SR802
1,7 - 2,3	680	BG	SR800

3rd EDITION
CHASSIS
SP2-SERIE

