

General Information

1994

Covers Models:
D51ND, D59F, D59N,
D68N, D78N, S59N, S68N

CRT's:
A51EBV13X01
A59EAS13X01
A66EAS13X01
A79ECU13X01

Remote Control:
10231310 (F2000)
10029490 (RHT 10)
Door Flap: See Parts List
Main Power Button:
See Parts List

Specifications

Set Type	Colour Receiver
Decoding System	PAL
Standard Received	I
Norm Decoding	PAL/SECAM/NTSC

Differences
by
Model

MODEL	D51ND	D59F	D59N	D68N	D78N	S59N	S68N
CRT	A51EBV13X01	A59EAS13X01	A59EAS13X01	A66EAS13X01	A79ECU13X01	A59EAS13X01	A66EAS13X01
PCB Main	9280 B	9777	9270	9270	9254N	9274N	9274N
PCB CRT Base	9002 00	9000 00	9000 00	9000 00	9001	9000 00	9100
PCB Front Ctl	9000	9023	9024	9024	9030 & 9002(led)	9004	9004
PCB Receiver (IR)					7000M		
PCB Mains Filter	5005S	5005S	5005S	5005S	5005S	5005S	5005S
PCB Text	9000	9000	9000	9000	9001	9003	9003
PCB Nicam	9001		9001	9001	9001	9001	9001
PCB Audio AM/FM			9515	9515	9515	9515	9515
PCB IF						2145 01	2145 01
CABINET PARTS							
Remote Ctl	10029490 (rht10)	10029490(rht10)	10029490 (rht10)	10029490 (rht10)	10029490 (rht10)	10231310(F2000)	10231310(F2000)
Door		25010120	25010130	25010130	30911310		
Button mains	25024860	25004000	25004000	25004000	11045990	25096620	25096620
Latch (door)		65040100	65040100	65040100	65040100	65040100	65040100
Membrain	25024920	25009210	25009210	25009210	25009210	25105700	25105700
SAFETY PARTS							
PCB Mains Filter	5005S	5005S	5005S	5005S	5005S	5005S	5005S
Mains Lead	10042930	10042930	10042930	10042930	10042930	10042930	10042930
Degaussing coil	47301550	47227150	47227150	47088650	47003684	47227150	47088650
EHT Lead+ cap	55570800	55570800	55570800	55570800	55570800	55570800	55570800
Focus lead	55703900	55570700	55570700	55570700	55570700	55570700	55703900
Book instruction	10175150	30028450	30028460	30028460	30033560	30032770	25096770
Cover main filter	90332600	56608100	56608100	56608100	56608100	56608100	56608100
Mains on/off switch	10042440	80203700	80203700	80203700	80203700	10042440	10042440
Support main switch					90185000		

NOTE: Also see safety parts list for individual PCB's listed at the top of this table

Service

Adjustments

Access to Service Mode

TV : ON - indicator light on - with or without HF input signal - Disconnect all scart cables

1. Switch television set on by pressing the ON/OFF switch on the set. Then switch to STANDBY using the STANDBY key on the REMOTE CONTROL.

The TV is on standby when the red light is on

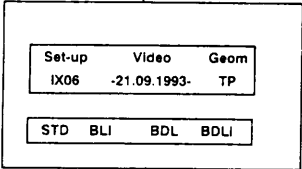
2. Switch the television off by pressing the ON/OFF switch on the set

Wait for the red light to go off

3. Press the blue VIDEOTEXT key on the remote control while switching the television on by pressing the ON/OFF switch.

The TV comes on in a few seconds

4. Enter the service mode menu by pressing the blue key on the remote control.



To exit the service mode, set the television to STANDBY or OFF by using the ON/OFF key

Recommended Safety Parts

Item	Part No.	Description
CHASSIS MAIN PCB 9280B		
CL27	20053100	CAP 390 NF 5% 250V Film Special
CP13	43325400	CAP 2.2 NF 20% 1000V Film Special
CP14	43424800	CP50CAP 150 MFD -20+50% 385V Elec 85'
CP50	10110690	CAP 1.5 NF 20% 400V Cer Coupling
LL05	10035160	LOPT DST C85MB
LP10	10227210	Transformer Switch Mode SMT7
LP44	60412091	Transformer Driver
RA01, RA03	10226270	RES 8.2 OHM 5% .5W Fuse Car Film
RC20, RC23, RC24, RC25, RH13, RV01, RX33, RX48, RX91, RX95	15009580	RES 10 OHM 5% .3W Fuse Car Film
RC33	15009730	RES 1 OHM 5% .3W Fuse Carbon Fil
RF11, RF21	15022560	RES 1.5 OHM 5% .5W Fuse Met Film
RF15	11065710	RES 10 OHM 5% .5W None Flam Car F
RH12	15009830	RES 22 OHM 5% .3W Fuse Car Film
RL03, RL50, RR01	15022510	RES .1 OHM 10% .4W Fuse Met Film
RL11	10226280	RES 15 OHM 5% .5W Fuse Car Film
RL26	10226290	RES 1K OHM 10% .5W Fuse Car Film
RL30	10226300	RES 2.2K OHM 5% .5W Fuse Car Film
RP01	30093400	PTC Posistor 25 + 6K OHM 220V 6A
RP10	15022630	RES .33 OHM 10% .4W Fuse Met Fil
RP50	10074320	RES 10 MEG OHM 5% .7W Carbon Fil
MAIN PCB 9777		
CL07	43392300	CAP 10 nF 5% 400V Non Met Polycar
CL12, CL13	43621072	CAP 330 pF 20% 400V Ceram Disc 2C
CL21	43430500	CAP 12 nF 3.5% 1500V Film Spec
CL22	43324900	CAP 26 nF 5% 400V Film Special

Recommended Safety Parts Cont'd.

Item	Part No.	Description
CL23	70089800	CAP 8.2 nF 5% 400V Metal Polyest
CP07	43254672	CAP 1.5 nF -20+50% 1000V Cer Dis
CP13	43325400	CAP 2.2 nF 20% 1000V Film Spec
CP14	43424800	CAP 150 MFD -20+5-% 385V Elec 85'
CP50	10110690	CAP 1.5 nF 20% 400V Cer Coupling
CP62	43321071	CAP 100 pF 20% 1000V Cer Disc 2Z
DF07, DP57	44015101	Diode ZPD15V 15V 5% Zener 500MW
LL05	10006620	LOPT Line Output Trans Dst C85MB
LL05	10035160	LOPT DST C85MB
LL26	50873254	Coil 30.5 MH Linear
LP10	10120720	Transformer Switch Mode
LP10	10227210	Transformer Switch Mode SMT7
LP44	60412091	Transformer Driver
RA01	10152100	RES 8.2 ohm 5% .5W Fuse Car Film
RC20, RC23, RC24, RC25, RH13, RV01, RX33, RX48, RX91, RX95	41005209	RES 10 ohm 5% .3W Fuse Car Film
RC33	41022609	RES 1 ohm 5% .3W Fuse Carbon Film
RF11, RF21	90182800	RES 1.5 ohm 5% .5W Fuse Met Film
RF15	10883300	10 ohm 5% .5W Non Fla Car Fi
RH12	41024109	RES 22 ohm 5% .3W Fuse Car Film
RL03, RL50, RR01	41039309	RES .1 ohm 10% .4W Fuse Met Film
RL11	10152110	RES 15 ohm 5% .5W Fuse Car Film
RL26	10152120	RES 1K ohm 10% .5W Fuse Car Film
RL30	10151310	RES .4.7K ohm 5% .7W Non Flam Car
RL45	41119802	RES 3.3 ohm 5% .35W Fuse Car Fil
RP01	30093400	Posistor 25 ohm 220V 6A
RP07	90315900	RES 39K ohm 10% 4W Met Oxide Fil
RP10	41398009	RES .33 ohm 10% .4W Fuse Met Fil

Recommended Safety Parts Cont'd.

Item	Part No.	Description
RP50	10818600 or 41006503	RES 10 Meg ohm 5% .7W Carbon Fil
MAIN PCB 9270		
CL07	43392300	CAP 10 nF 5% 400V Non Met Polycar
CL12, CL13	43261072	CAP 330 pF 20% 400V Ceram Disc 2C
CL21	43430500	CAP 12 nF 3.5% 1500V Film Spec
CL22	43324900	CAP 26 nF 5% 400V Film Special
CL23	70089800	CAP 8.2 nF 5% 400V Metal Polyest
CP13	43325400	CAP 2.2 nF 20% 1000V Film Spec
CP14	43424800	CAP 150 MFD -20+50% 385V Elec 85'
CP50	10110690	CAP 1.5 nF 20% 400V Cer Coupling
LL05	10006620	LOPT Line Output Trans DST C85MB
LL26	50873254	Coil 30.5 MH Linear
LP10	10117050	Transformer Switch Mode
LP44	60412091	Transformer Driver
RA01, RA03, RC20, RC23, RC24, RC25, RH13, RV01, RX33, RX48, RX91, RX95	10152100	RES 8.2 ohm 5% .5W Fuse Car Film
RC33	41005209	RES 10 ohm 5% .3W Fuse Car Film
RF11, RF21	41022609	RES 1 ohm 5% .3W Fuse Carbon Film
RF15	90182800	RES 1.5 ohm 5% .5W Fuse Met Film
RH12	10883300	RES 10 ohm 5% .5W Non Fla Car film
RL03, RL50, RR01	41024109	RES 22 ohm 5% .3W Fuse Car Film
RL11	41039309	RES .1 ohm 10% .4W Fuse Met Film
RL26	10152110	RES 15 ohm 5% .5W Fuse Car Film
RL30	10152120	RES 1 ohm 10% .5W Fuse Car Film
RL45	10151310	RES 4.7K ohm 5% .7W Non Flam Car
	41119802	RES 3.3 ohm 5% .35W Fuse Car Fil

Service Adjustments Cont'd.

Switching Between Service Mode and TV Mode

When in service mode, it is possible to use all the TV set's 'normal' features by switching between service mode and TV.

- 1: To switch from service mode to TV, press the TV key on the remote control.
- 2: To switch from TV to service mode press the blue VT 'Teletext' key on the remote control.

Service Mode Menus

Three sub-menus can be accessed from the main service mode menu:

- 1: **Set-Up:** TV settings.
- 2: **Video:** Access to video adjustments.
- 3: **Geometry:** Geometry adjustments.

Its briefest form consists of only three lines, thus leaving the largest possible display space on screen.
See Fig 1.

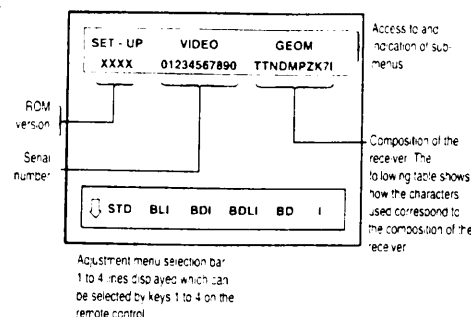


Fig 1.

Character	Setting
T	Text board build in
TT	Top-Text board build in
N	Nicam board build in
D	Dolby board build in
M	Mono sound is build in
P	PSI is build in
Z	Zoom board build in
K	Brand is TFK
7	Subcode 7 enabled for TFK
I	IR-lock on

Adjustment Sub-Menus

Settings - Set-up
See Fig 2.

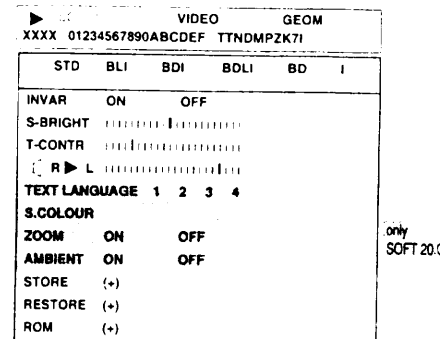


Fig 2.

Video

SET - UP	VIDEO	GEOM
XXXX	0123456789ABCDEF	TTNDMPZK71
R - CUT	0F	
G - CUT	0F	
R - DRV	1F	
G - DRV	1F	
PEAK	(-/+)	
B - DRV	1F	
STORE	(+)	
RESTORE	(+)	
ROM	(+)	

Geometry

SET - UP	VIDEO	GEOM
XXXX	0123456789ABCDEF	TTNDMPZK71
VOLT	11	
H - VCO	03	
V - POS	08	
V - AMP	33	
V - LIN	01	
H - POS	0B	
H - AMP	2A	
TRAP	0F	
EW - 1	10	
EW - 2	08	
STORE	(+)	
RESTORE	(+)	
ROM	(+)	

Selecting an Adjustment Sub-Menu

- 1: Select the sub-menu selection bar by 1.
* Mauve sub-menu bar: not selected
* Light blue sub-menu bar: selected.

Procedure

If accessing service mode:

- 1: Press the blue 'Teletext' key on the remote control to select the sub-menu bar (light blue in colour).

If in service mode:

- 1: Go into normal TV mode by pressing the TV key on the remote control.

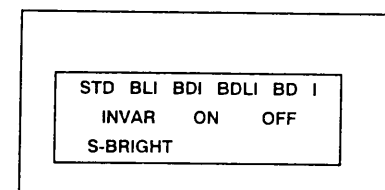
- 2: Select the sub-menu bar by pressing the blue 'Teletext' key on the remote control.

Selecting an Adjustment

Select the required adjustment, either 'SET-UP', 'VIDEO' or 'GEOM.' by using the "+" and "-" keys on the remote control. The adjustment is selected when the text turns dark blue.

Selecting an Adjustment or a Configuration

- 1: Select the adjustment sub-menu. If necessary, select the number of lines (1 - 4) contained in the adjustment window.



VT To move down the adjustment line, press the blue videotext key on the remote control.

←→ To move up the adjustment line, use the normalise key on the remote control.

Adjustment Values

The adjustment values are displayed to the

right of the function selected and are hexadecimal.

e.g. V - POS 0A

These values can be adjusted by pressing the "+" and "-" keys on the remote control. The values listed in chapter 4 are the maximum values obtainable.

Special Functions

Volt

***Note:** The Usys system voltage represented by the VOLT function **must not** be adjusted with the "+" and "-" keys on the remote control to avoid any possible damage. It may be adjusted by pressing the "+" and "-" on the TV set (see Aligning the TV Set).

Peak (+/-) (in the video menu)

This function can be used to adjust R-DRV, G-DRV and B-DRV simultaneously. It is thus advisable to menu display the four line to make the adjustment correctly.

RED	DRIVE	1F
GREEN	DRIVE	1F
PEAK	WHITE	+/-
BLUE	DRIVE	1F

Recommended Safety Parts Cont'd.

Item	Part No.	Description
RP01	30093400	Posistor 25 ohm 220V 6A
RP07	90315900	RES 39K ohm 10% 4W Met Oxide Fil
RP10	41398009	RES .33 ohm 10% .4W Fuse Met Fil
RP50	41006503	RES 10 MEG ohm 5% .7W Carbon Fil

CHASSIS MAIN PCB 9254N

CL07	43392300	CAP 10 nF 5% 400V Non Met Polycar
CL21	43430500	CAP 12 nF 3.5% 1500V Film Spec
CL22	43324900	CAP 26 nF 5% 400V Film Special
CL23	70089800	CAP 8.2 nF 5% 400V Metal Polyest
CL27	43441500	CAP 360 nF 5% 250V Film Special
CP13	43325400	CAP 2.2 nF 20% 1000V Film Spec
CP14	43424800	CAP 150 MFD -20+50% 385V Elec 85°
CP50	10110690	CAP 1.5 nF 20% 400V Cer Coupling
LL05	10006620	LOPT Line Output Trans DST C85MB
LL26	47115100	Coil 30 MH Fixed Linear
LP10	10117050	Transformer Switch Mode
LP44	60412091	Transformer Driver
RA01, RA03	10152100	RES 8.2 ohm 5% .5W Fuse Car Film
RC20, RC23,		
RC24, RC25,		
RH13, RV01,		
RX33, RX48,		
RX91, RX95	41005209	RES 10 ohm 5% .3W Fuse Car Film
RC33	41022609	RES 1 ohm 5% .3W Fuse Carbon Film
RF11, RF21	90182800	RES 1.5 ohm 5% .5W Fuse Met Film
RF15	10883300	RES 10 ohm 5% .5W Non Fla Carb
RH12	41024109	RES 22 ohm 5% .3W Fuse Car Film
RL03, RL50,		
RR01	41039309	RES .1 ohm 10% .4W Fuse Met Film
RL11	10152110	RES 15 ohm 5% .5W Fuse Car Film
RL26	10152120	RES 1K ohm 10% .5W Fuse Car Film
RL30	10151290	RES 18K ohm 10% .7W Non Flam Car
RL45	41119802	RES 3.3 ohm 5% .35W Fuse Car Fil
RP01	41398800	PTC Posistor 18 + 100 ohm 220V

Recommended Safety Parts Cont'd.

Item	Part No.	Description
RP07	90315900	RES 39K ohm 10% 4W Met Oxide Fil
RP10	41398009	RES .33 ohm 10% .4W Fuse Met Fil
RP50	41006503	RES 10 MEG ohm 5% .7W Carbon Fil
SP01	90294100	Relay 12V

CRT BASE 9002

0002	80298800	Socket CRT 0330550030
DB48	41319502	RES 2.2K ohm 5% .3W Fuse Car Fil
PB01	40154600	Pot Focus
RB07	41005209	RES 10 ohm 5% .3W Fuse Car Film

CRT BASE 9000 00

0002	80298800	Socket CRT 0330550030
CB01	43462100	CAP 10 nF -20+50% 3000V Cer Disc
CB11	43151400	CAP 1 nF -20+50% 2000V Cer Disc
DB48	41319502	RES 2.2K ohm 5% .3W Fuse Car Fil
PB01	40154600	Pot Focus
RB07	41005209	RES 10 ohm 5% .3W Fuse Car Film

CRT BASE PCB 9001

0002	80407143	Socket CRT Base
CB01	43462100	CAP 10 nF -20+50% 3000V Cer Disc
CB11	43151400	CAP 1 nF -20+50% 2000V Cer Disc
DB48	41319502	RES 2.2K ohm 5% .3W Fuse Car Fil
PB01	70420318	Pot Focus
RB07	41005209	RES 10 ohm 5% .3W Fuse Car Film

MAINS FILTER 5005S

BP01	65031300	Lug PCB Mounted
CP01, CP02	10313900	CAP 100 nF 20% 275V Metal Paper
FP05	48031800	Fuse 1.6 Amp 250V Time Lag
FP05	48064700	Fuse 1.6 Amp Time Lag
FP05	67C03500	Socket Fuse Brass
FP05	67C03507	Holder Fuse Tin Plated
LP02	47335800	Transformer Net Choke

Recommended Safety Parts Cont'd.

Item	Part No.	Description
LP02	47095100	Transformer Net Choke
LP05	47095000	Coil Mains Filter 400MH Choke
RP01, RP02	41436600	RES 1 ohm 10% 4W Wirewound Horiz
RP03	4102042	RES 1 MEG ohm 5% .7W Carbon Film
RP03	41096402	RES 1 MEG ohm 1% 1/4W Metal Film

TEXT 9000

CT07	30628000	CAP 100nF 10% 63V Cer Multi Layer
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TEXT 9001

CT07	30628000	CAP 100 nF 10% 63V Cer Multi Layer
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FRONT PCB 9000

SZ01	10042440	Switch Mains On/Off
SZ02	60412232	Socket Mains Input

AUDIO SOUND 9515

RS45	41024509	RES 27 ohm 5% .3W Fuse Car Film
RS80	10099170	RES 6.8 ohm 5% .4W Fuse Met Film
RS81	41103709	RES 330 ohm 5% .3W Fuse Car Film
RS82	41005209	RES 10 ohm 5% .3W Fuse Car Film

CRT BASE 9100

0002	80298800	Socket CRT 0330550030
CB11	1403487000	CAP 1 nF -20+50% 2000V Caram Dis
DB48	1500985002	RES 2.2K ohm 5% .3W Fuse Car Fil
PB01	40154600	Pot Focus
RB07	1500958009	RES 10 ohm 5% .3W Fuse Carb Film

MAIN PCB 97777 - MODEL:D59F

R124	41005202	RES 10 ohm 5% .3W Fuse Car Film
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FRONT CONTROL 9004

BP02	60412232	Socket Mains Input
SP01	10042440	Switch Mains On/Off

Service Adjustments Cont'd.

Storing Values in NVM: STORE

After making the adjustment, select 'STORE' and press "+" to confirm. The new value is then stored in NVM.

Retrieval of Values Stored in NVM: RESTORE

Select the 'RESTORE' (+) line. The value stored in NVM is called up and can thus be retrieved if the value was modified during adjustment.

Note: RESTORE will not return values if STORE has been pressed, e.g. the 'vertical position' geometry adjustment.

V-POS 09 stored in NVM

The value 09 is incremented to OD, but not stored. The RESTORE (+) option can thus be used to retrieve the old value of 09.

Default Values

- Select the line.
ROM (+)
- Press the (+) and the full set of default values

Geometry		Video	
V - POS	0D h	R - CUT	0F h
H - POS	14 h	G - CUT	05 h
H - AMP	15 h	R - DRV	1B h
V - AMP	30 h	G - DRV	1B h
V - LIN	00 h	B - DRV	16 h
TRAP	0F h		
EW1	1B h		
EW2	00 h		
H - VCO	05 h		
VOLT	11 h		

Note: These values are given as an indication and may be modified considerably during manufacture.

Aligning the TV Set

Recommended order:

- Configuration of the television set.
- U System.**
- Adjusting G2 and Focus.
- H-VCO.
- Vertical and horizontal geometry.
- Video adjustments.

Configuration of the Television Set - SET-UP Menu

- Go into Service Mode.
- Select STD in the SET-UP menu.

Standards

- Select the line.
STD BLI BDI BDLI BD I

Selection	Standards
BLI	PAL/ SECAM BG - SECAM L - I
BDI	PAL/ SECAM BG - DKK - I
BDLI	PAL/ SECAM BG - SECAM L - DKK
BD	PAL/ SECAM BG - SECAM L - I
I	I

- Select the required standards according to the table.
- Store by pressing (STORE +) after selection.

Usys System Voltage

- Go into Service Mode.
- Select the Usystem adjustment line from the GEOM. menu.

VOLT 11

- Obtain coloured bar test pattern as input signal.
- Put TV in OMA position (brightness, colour and contrast at the medium position).
- Connect a voltmeter to the DP61 cathode and the earth.

USYS



DP 61
154 V : 33" : 29" : 28" (4/3)
145 V : 21" (110°)
121 V : 21" (90°)
165 V : 32" (16/9)

- Press the "+" and "-" keys on the television keyboard to obtain:

USYS = 154 V : 33" : 29" : 25" (4/3)
145 V : 21" (110°)
121 V : 21" (90°)
165 V : 32" (16/9)

Do not exceed the stipulated values.

Zoom "On" "Off"

Zoom function selection on television sets equipped with the Zoom module.

- Go into the Service Mode.
- Select the Zoom option from the SET-UP menu.
- Select "ON" if the set is equipped with the Zoom module. It is imperative to select "OFF" if the set is not equipped with this module.
- Store by pressing STORE +.

Ambiant "On" "Off"

For television equipped with a 'light sensor' "Ambiant" selects the luminosity variation option according to the illumination of the TV.

- Go into Service Mode.
- Select the "Ambiant" option from the SET-UP menu.
- Select by pressing ON (or OFF) depending on whether the TV is equipped with a 'light sensor' or not.
- Store by pressing STORE+.

Text Language

Enables the videotext to recognise and display characters relative to the following languages/countries:

- English, German, Swedish, Italian, French, Belgian, Spanish, Czech, Polish, German, Hungarian, Turkish, Serbo-Croat.
- English, German, Swedish, Italian, French, Czech, Romanian.
- South African, German, Danish, Turkish, Serbo-Croat.

- Go into Service Mode.
- Select the 'TEXT LANGUAGE' option in the SET-UP menu.
- Select 1, 2, 3 or 4 depending on the

- language required.
- Store by pressing STORE +.

Geometry Menu

The values listed in the Geometry menu are hexadecimal.

V - POS	0D	Framing V
H - POS	14	Framing H
H - AMP	15	H amplitude
V - AMP	30	V amplitude
V - LIN	00	V linearity O Line selected
TRAP	0F	Keystone
EW1	1B	East-West
EW2	00	East-West
H - VCO	05	Vco line oscillator adjustment
VOLT	11	Usystem
STORE	(+)	NVM memory
RESTORE	(+)	Retrieval of previous values
ROM	(+)	Default values

- Go into the Service Mode.
- Select GEOM. option in the main menu
- TV in OMA position $\mathcal{A}E$

Line Oscillator

- Select the adjustment line in the GEOM. menu.
H-VCO 03
- Connect a frequency counter between LL63 or RL67 (TL63 collector) and earth.
- No signal in HF or AV input.
- To frame press the "+" and "-" keys on the remote control to reach the nearest value to F = 15.625 kHz.
- Store after adjustment by pressing STORE +.

Geometry Adjustment

Adjustments are made and then checked in the 4:3 and 16:9 formats successively.

- Field test pattern at antenna input.
- PAL or SECAM standard.

Vertical Framing

- Select adjustment line.
V-POS 0D
- Use the "-" or "+" keys on the remote control to adjust the framing.
- Store the setting after adjustment by pressing STORE +.

Horizontal Position

- Select the adjustment line.
H-POS 14
- Press the "+" and "-" keys on the remote control to position the frame horizontally.
- Store the setting after adjustment by pressing STORE +.

Horizontal - Vertical Amplitude Adjustment

Horizontal Amplitude

- Select the adjustment line.

H-AMP 0B

Vertical Amplitude

- Select the adjustment line.

V-AMP 30

Adjustment

Press the "+" and "-" keys on the remote control to adjust amplitude according to the following formats:

4:3 formats

(4:3 format fig. a)

Adjust horizontal and vertical amplitudes with an overscan factor of 7% compared to the screens limits. Store after adjustment.

Fig a.

4:3 format (fig. b)

(for sets equipped with the ZOOM function)
Adjust horizontal and vertical amplitudes with an overscan factor of 19% compared to the screens limits. Store after adjustment.

Fig b.

4:3 format (fig. c)

(For sets equipped with the ZOOM function)
Adjust horizontal and vertical amplitudes with an overscan factor of 37% compared to the screens limits. Store after adjustment.

Fig c.

16:9 Formats

(16:9 format fig. d)

- Adjust horizontal amplitude with an overscan factor of 7% compared to the screens limits.
- Adjust vertical amplitude with a sub-scanning factor of -20% compared to the screens limits.
- Store after adjustment.

Fig d.

16:9 format (fig. e)

(For sets equipped with a ZOOM function)

- Adjust horizontal amplitude with an overscan factor of 19% compared to the screens limits.
- Adjust vertical amplitude with a sub-scanning factor of -11% compared to the screens limits.
- Store after adjustment.

Fig e.

16:9 format (fig. f)

(for sets equipped with ZOOM function)

- Adjust horizontal amplitude with an overscan factor of 37% compared to the screens limits.
- Adjust vertical amplitude with a sub-scanning factor of 7% compared to the screens limits.
- Store after adjustment.

Fig f.

Vertical Linearity

- Select the adjustment line:
V-LIN 00
- Press the "+" and "-" keys on the remote control to adjust linearity.

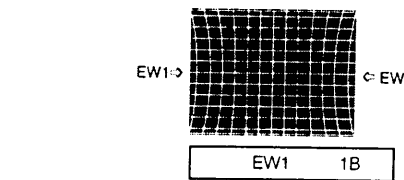
Keystone

- Select the adjustment line:
TRAP 0F
- Press the "+" and "-" keys on the remote control to adjust keystone.

East-West

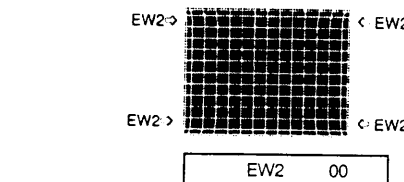
EW1 East-West

- Adjust the amplitude of the cushion.



EW2 Angle correction

(corners of the screen)



Video Alignment

The values listed in the VIDEO menu are hexadecimal.

R - CUT	0F	Current line selected
G - CUT	0E	
R - DRV	16	
G - DRV	14	
B - DRV	0E	Incrementation or decrementation of the three registers: R, G, B DRV.
PEAK	(+/-)	
STORE	(+)	Store in NVM
RESTORE	(+)	Retrieval of values stored in NVM
ROM	(+)	Cut-off and Drive default values

Alignment Conditions

Call up the default values of the DRIVE and CUT-OFF video registers before the alignment.

Adjustment	Values
R - CUT	0F
G - CUT	05
R - DRV	1B
G - DRV	1B
B - DRV	16

G2 Voltage Adjustment

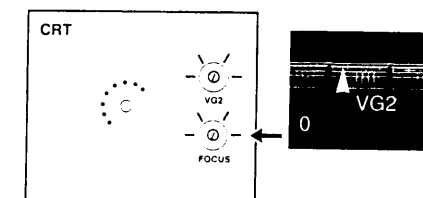
- Position the following controls \rightarrow | \leftarrow to the medium position:

Adjustment	Values
Brightness	50%
Colour	50%
Contrast	50%
Colour edging	50%

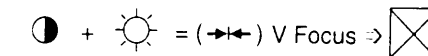
Note: these controls are specific to each TV, AV1 or AV2 input and must be adjusted separately for each of them.

- Inject a composite video signal (grey scale) in SCART, AV1 or AV2 input.
- Connect an oscilloscope (1/100 sensor, 5ms/div, continuous input) on cathode G of the tube (CRT board).
- Use VG2 to obtain:

CRT 9000 00: 150V, (tubes with DBXL gun)
CRT 9001 00: 160V, (tubes with COTY-M gun)
CRT 9002 00: 150V, (21" 90°)
CRT 9003 00: 160V, (double focus)



Focus Adjustment

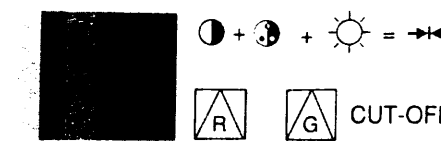


Brightness

- Inject a SECAM or PAL colour bar test pattern (white 100%, black 0%) in HF input.
- Position the brightness control at the halfway mark (50%).
- Select the SET-UP option from the Service Mode main menu.
- Select S-BRIGHT.
- Use the "+" or "-" keys on the remote control to obtain a correct level of black - the black bar should be just visible (5% allowance).

Cut-Off Adjustment

- Inject a SECAM or PAL colour bar test pattern (white 100%, black 0%) as HF input.
- Position the luminance and contrast controls at the halfway mark (50%) $\mathcal{A}E$.
- Select the VIDEO option from the Service Mode menu.
- Select the R-CUT and G-CUT adjustments in succession.



Service Adjustments Cont'd.

After each adjustment use the "+" or "-" keys on the remote control to adjust the CUT-OFF.

R-CUT 1B

G-CUT 05

Drive-White Balance Adjustment

- 1: Inject a test pattern (white 100%) in HF input.
- 2: Position the luminance and contrast controls at the halfway mark $\frac{1}{2}$.
- 3: Validate the VIDEO option from the Service Mode menu.
- 4: Select the R-DRV, G-DRV and B-DRV adjustments in succession.

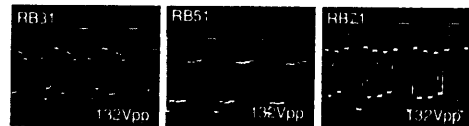
RED \Rightarrow R-DRV 1B

GREEN \Rightarrow G-DRV 1B

BLUE \Rightarrow B-DRV 05

- 5: Use the "+" or "-" keys on the remote control to obtain a correct white.

Signals on the picture tube:



Note: Since the CUT-OFF and white balance adjustments are linked, it may be necessary to repeat these adjustments to obtain a satisfactory result.

S. Colour

- 1: Adjust saturation on the Blue cathode in PAL.
- 2: Inject a PAL colour bar test pattern (white 100%, black 0%) in HF input.
- 3: Position the luminance, colour and contrast controls at the halfway mark.
- 4: Select the SET-UP option from the Service Mode menu.
- 5: Select S-Colour.
- 6: Connect an oscilloscope to the tube Blue cathode.
- 7: Use the "+" or "-" keys on the remote control to obtain 100% saturation on the Blue cathode.



correct



incorrect

White Clipping PEAK-WHITE

This adjustment is factory set. To obtain optimum results:

- 1: Measure NITS with a lightmeter.
- 2: Inject a signal from a test pattern showing 100% white square on a black background covering approx. 2% of the visible image.
- 3: Select the SET-UP from the Service Mode menu.
- 4: Select the line:

INVAR ON OFF

- 5: By pressing the "+" and "-" keys on the remote control position:

"INVAR" on ON or on OFF, then position the CONTRAST remote control key on 50% or 70%

Contrast 0 5 10 15 20 25 30 32

Contrast 0 5 10 15 20 25 30 32

According to the tube used (see following table)

- 6: Store "INVAR" by using STORE +.

Adjustment

- 1: Select the VIDEO option in the main menu.
- 2: Select the adjustment

PEAK (+/-)

- 3: and select the four line menu display: R-DRV, G-DRV, PEAK WHITE and B-DRV. Use the "+" and "-" keys on the remote control to obtain the values listed (see table).

Caution: do not increment or decrement the PEAK WHITE values if one of the DRIVE adjustment values is 1F = maximum value, 00 = minimum value, so as not to upset the balance of white.

Tube	INVAR	Contrast OMA	Sortie
21" 90°	OFF	50%	490 nit
21" MP	OFF	50%	490 nit
25" MP	OFF	50%	420 nit
25" DSF	OFF	50%	420 nit
25" BSP	OFF	50%	420 nit
25" MP	ON	70%	510 nit
25" SF	ON	70%	510 nit
28" DFS	OFF	70%	350 nit
28" MP	OFF	50%	350 nit
28" MP	ON	50%	425 nit
29" BSP	OFF	50%	350 nit
29" KP	ON	70%	425 nit
44" INVAR			
29" SF	ON	70%	425 nit
44" INVAR			
33" MP	OFF	50%	280 nit
52%			

Store in NVM after adjusting by STORE+

Teletext Contrast: Text Contrast

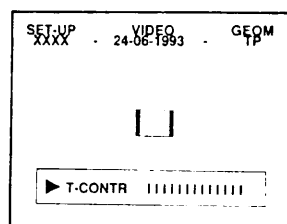
Adjustment Line:

T-CONTR

Teletext character contrast can be adjusted by using T-CONTR. This adjustment is factory set.

To obtain optimal results:

- 1: Measure NITS with a lightmeter.
- 2: Select T-CONTR. in the Service Mode's Set-Up menu and press the "+" or "-" keys on the remote control.



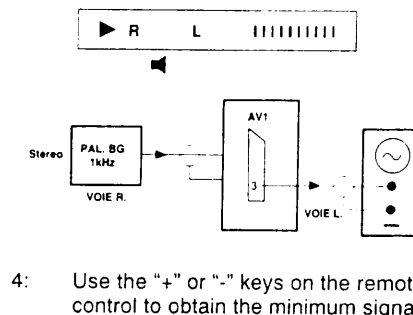
- 3: Go into audio-visual mode.
- 4: Use the "+" or "-" keys on the remote control to obtain the following values, depending on the tube:

Tube	33"	28"	25"	21"
Output	120nit	140nit	170nit	190nit

Cross-Talk Audio Adjustment

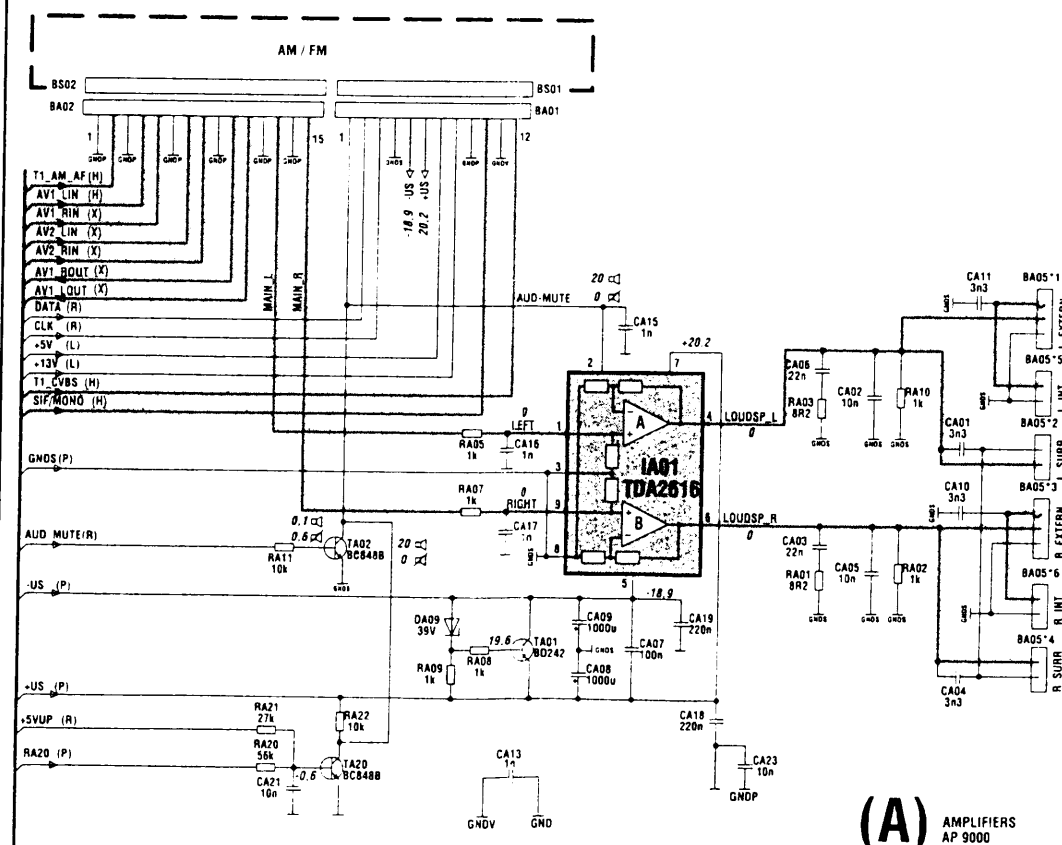
For analogue stereo analogue systems only.

- 1: Inject a PAL BG, 1kHz stereosound signal on the right channel only.
- 2: Connect an oscilloscope to the SCART left audio socket: pin 3 of AV1, select.
- 3: Select the CROSS-TALK adjustment bar from the SET-UP menu.



- 4: Use the "+" or "-" keys on the remote control to obtain the minimum signal.

Amplifier Diagram AP 9000



(A) AMPLIFIERS AP 9000

Voltage Charts

Partlist	RF29
LP9420 45	133R
LP9430 54	120R
LP9440 54	100R
LP9450 54	120R
LP9460 54	68R
LP9470 54	68R
LP9480 45	82R
LP9490 54	47R
LP9620 45	133R
LP9630 54	120R
LP9640 54	100R
LP9650 54	82R
LP9690 54	47R

IX01	V		
	AV1	AV2	TV
1	0	2.4	0
2	2	0	0
3	2	2.4	2.4
4	0	-	2.4
5	0	0	0
6	0	0	0
7	0	0	0
8	0	0	0
9	13.7	0	13.7
10	0	0	11.9
11	0	0	0
12	0	2.4	0
13	2.1	2.4	0
14	0	0	0
15	2.1	0	0
16	13.6	13.6	13.6

IX01	V		
	AV1	AV2	TV
1	0	2.4	0
2	2	0	0
3	2	2.4	2.4
4	0	-	2.4
5	0	0	0
6	0	0	0
7	0	0	0
8	0	0	0
9	13.7	0	13.7
10	0	0	11.9
11	0	0	0
12	0	2.4	0
13	2.1	2.4	0
14	0	0	0
15	2.1	0	0
16	13.6	13.6	13.6

Tube	33"	28"	25"	21"
Output	120 nit	140 nit	170 nit	190 nit

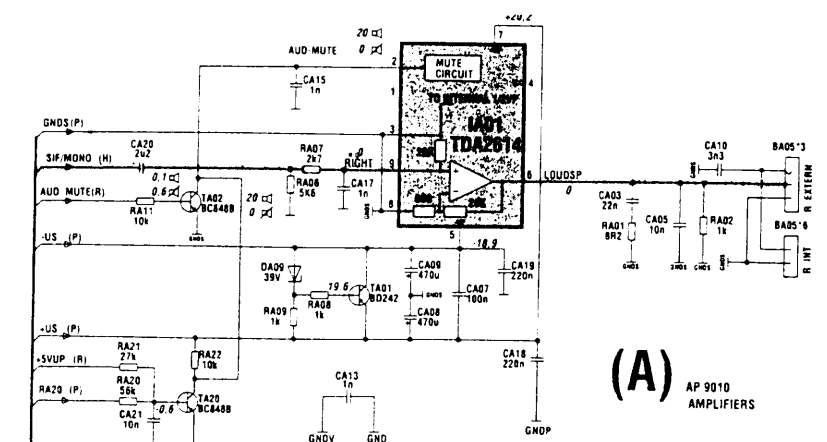
IR01	V
1	2.1
2	2.1
3	4.9
4	4.9
5	4.2
6	0
7	0
8	0
9	0
10	0
11	0 *
12	-
13	4.9
14	-
15	4.9
16	0
17	-
18	-
19	-
20	-
21	0
22	2.5
23	2.2
24	2.9
25	3.4
26	0
27	4.9
28	-
29	-
30	2.3
31	-
32	-
33	4.9
34	0
35	0
36	0
37	3.6 **
38	4.6
39	4.9
40	-
41	4.9
42	4.9

* 0 = TV & AV1
AV2 = 3.5
** 3.6 Mute, 0 TV

IR01	V
1	2.1
2	2.1
3	4.9
4	4.9
5	4.2
6	0
7	0
8	0
9	0
10	0
11	0 *
12	-
13	4.9
14	-
15	4.9
16	0
17	-
18	-
19	-
20	-
21	0
22	2.5
23	2.2
24	2.9
25	3.4
26	0
27	4.9
28	-
29	-
30	2.3
31	-
32	-
33	4.9
34	0
35	0
36	0
37	3.6 **
38	4.6
39	4.9
40	-
41	4.9
42	4.9

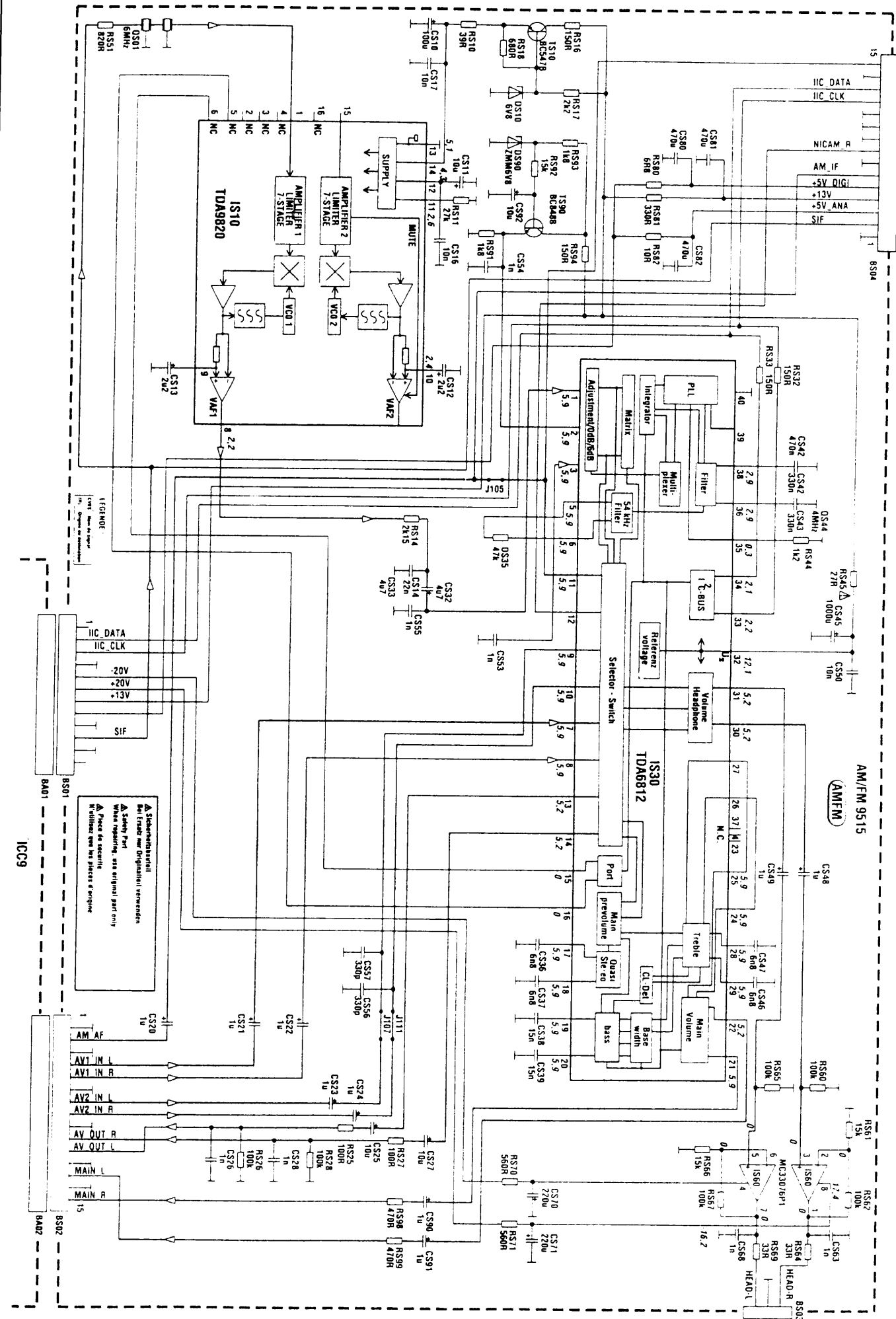
* 0 = TV & AV1
AV2 = 3.5
** 3.6 Mute, 0 TV

Amplifier Diagram AP 9010

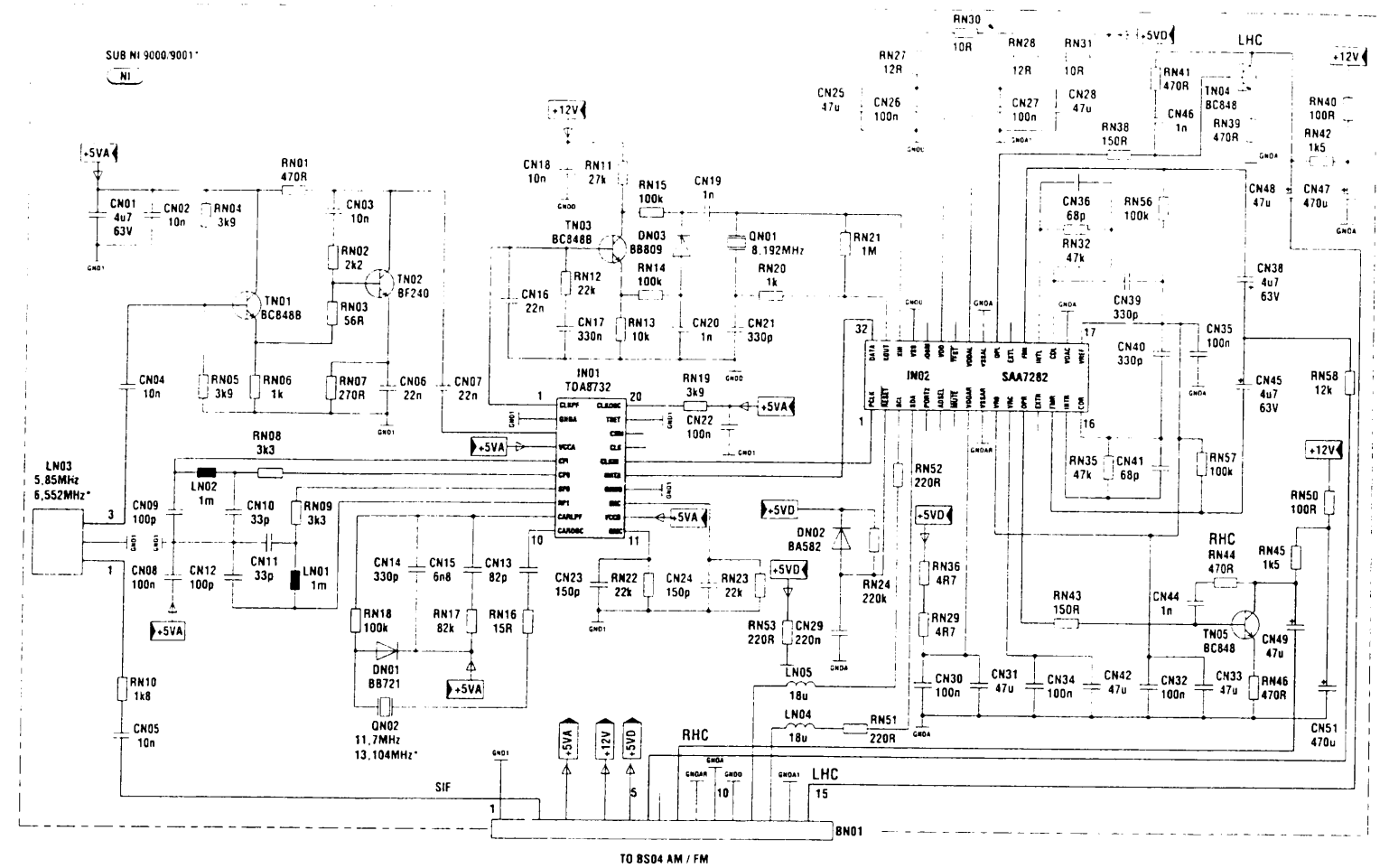


(A) AP 9010 AMPLIFIERS

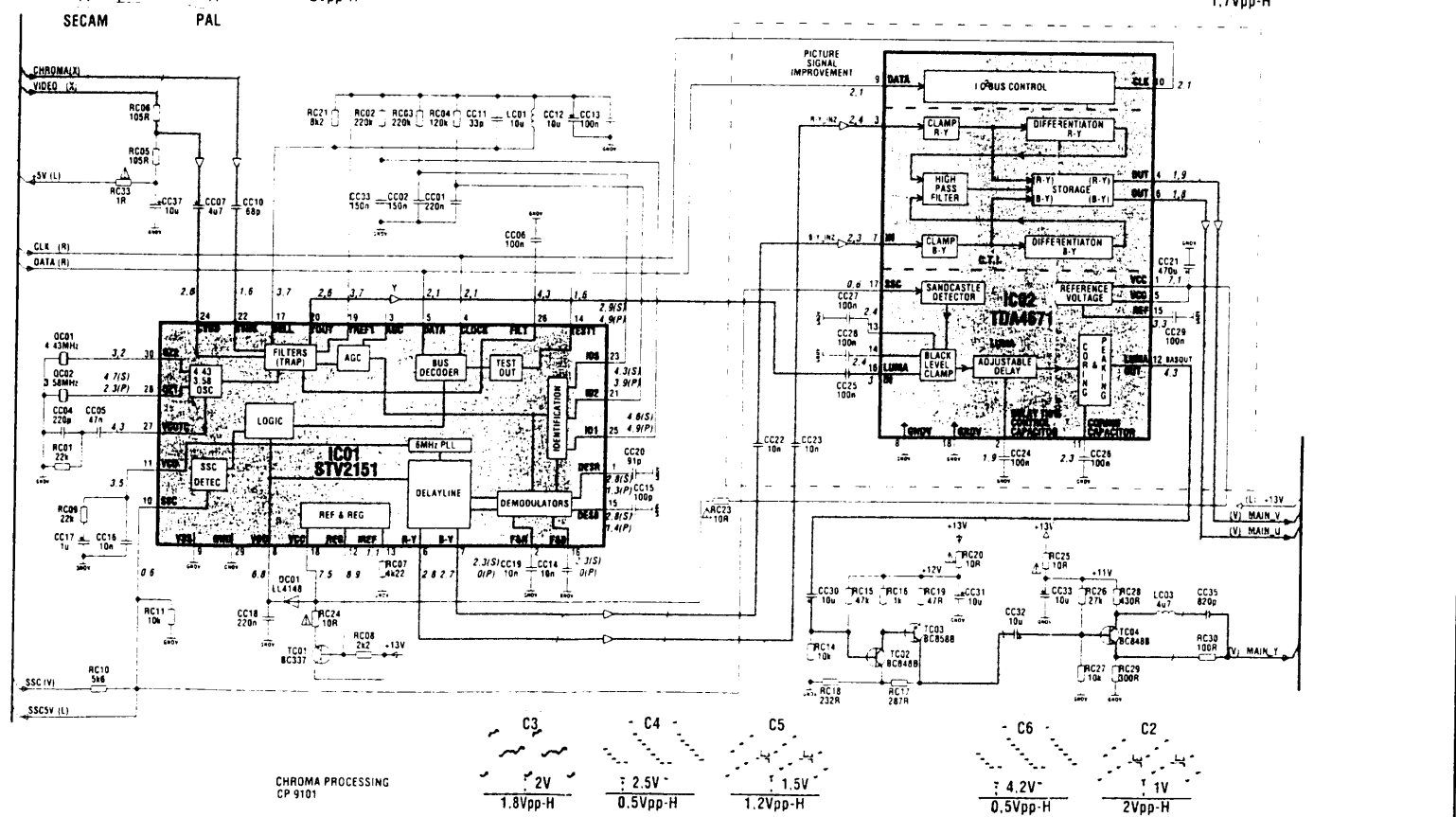
Audio Diagram



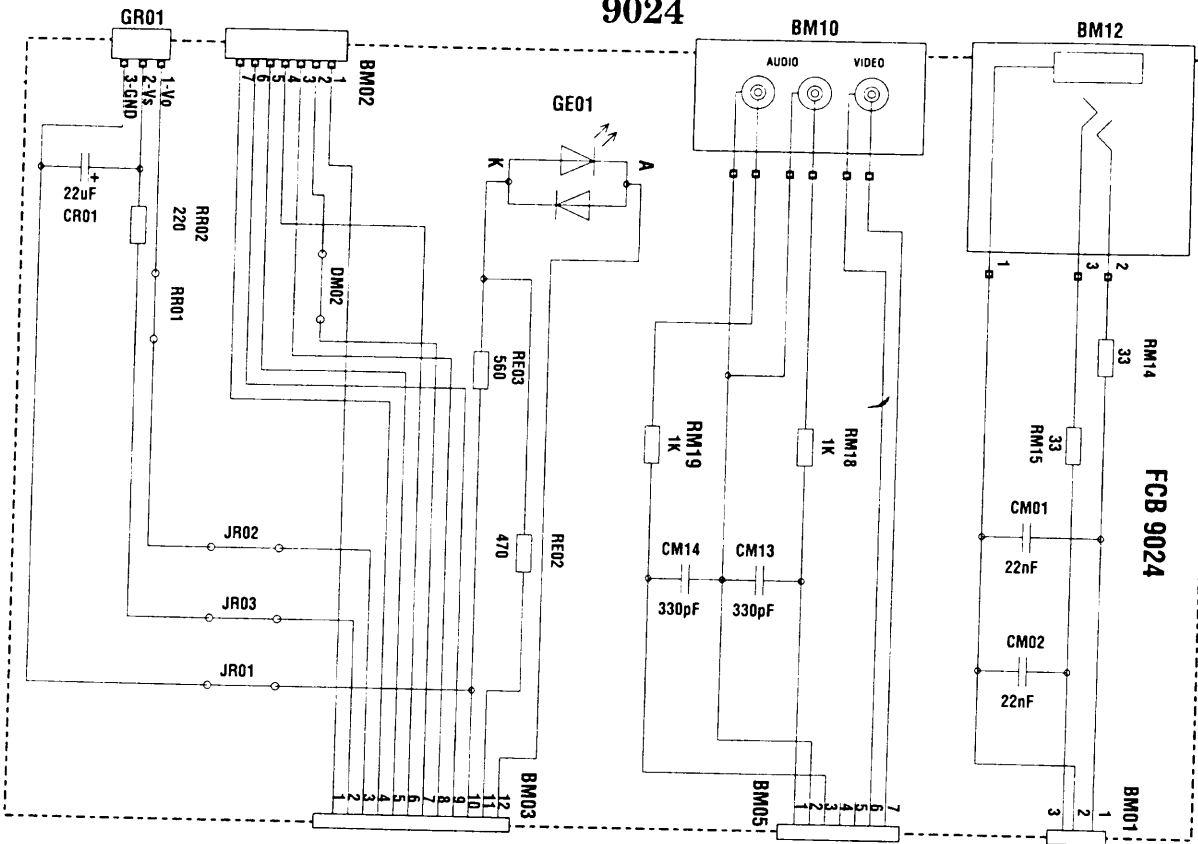
NICAM Diagram



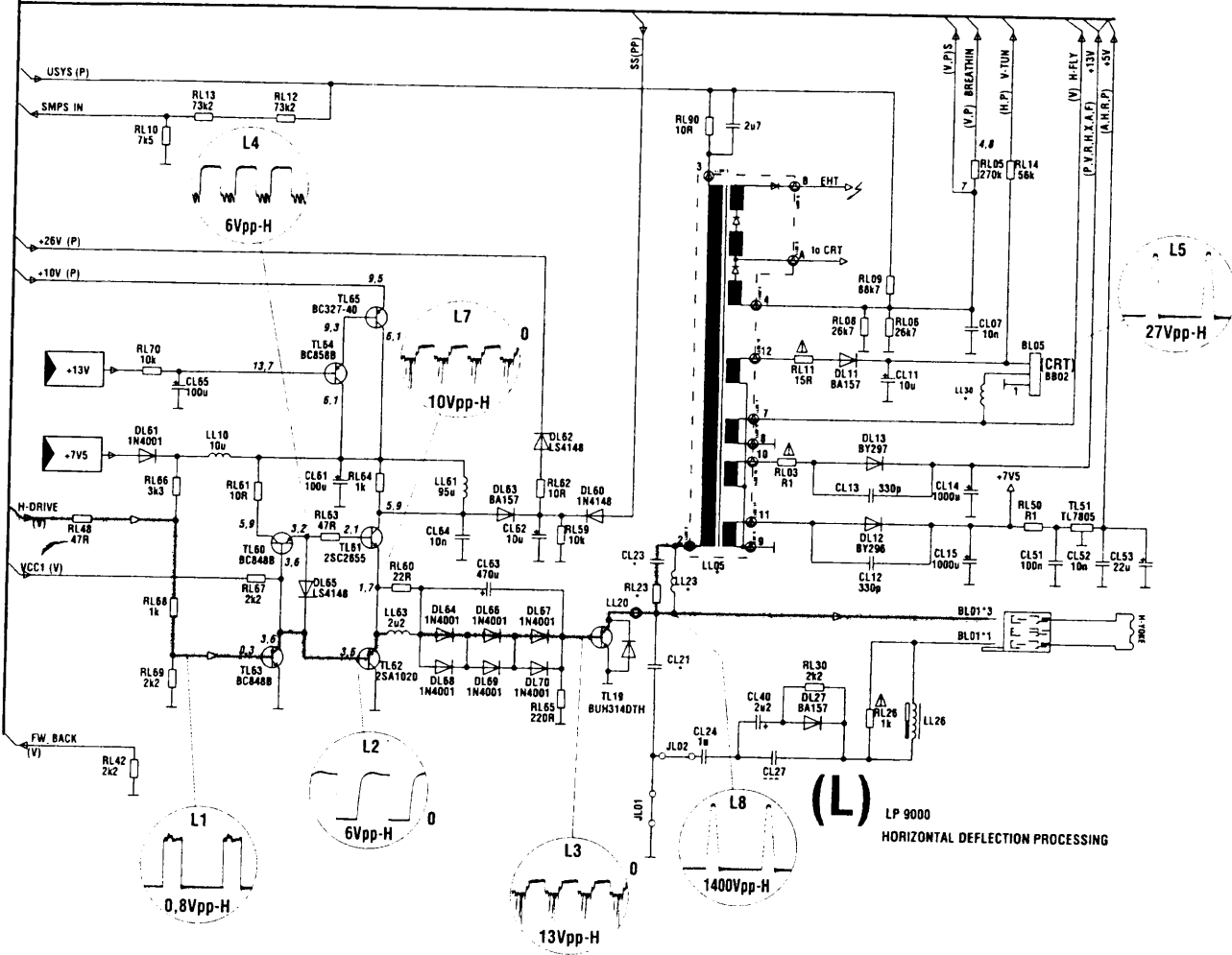
Chroma Processing Diagram CP 9101



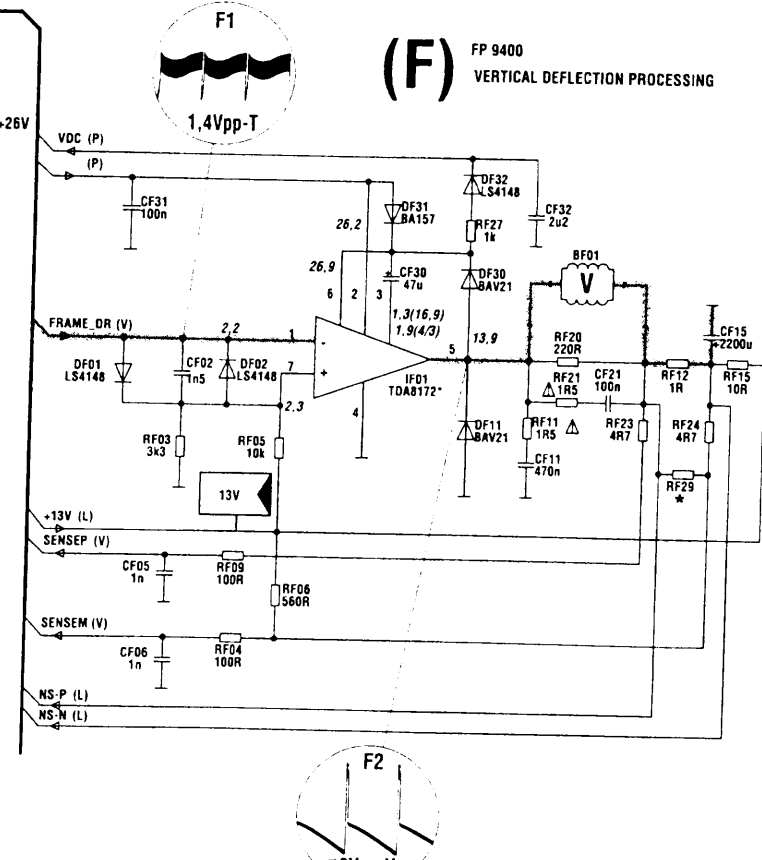
FCB Diagram
9024



Horizontal Deflection Processing Diagram
LP 9000

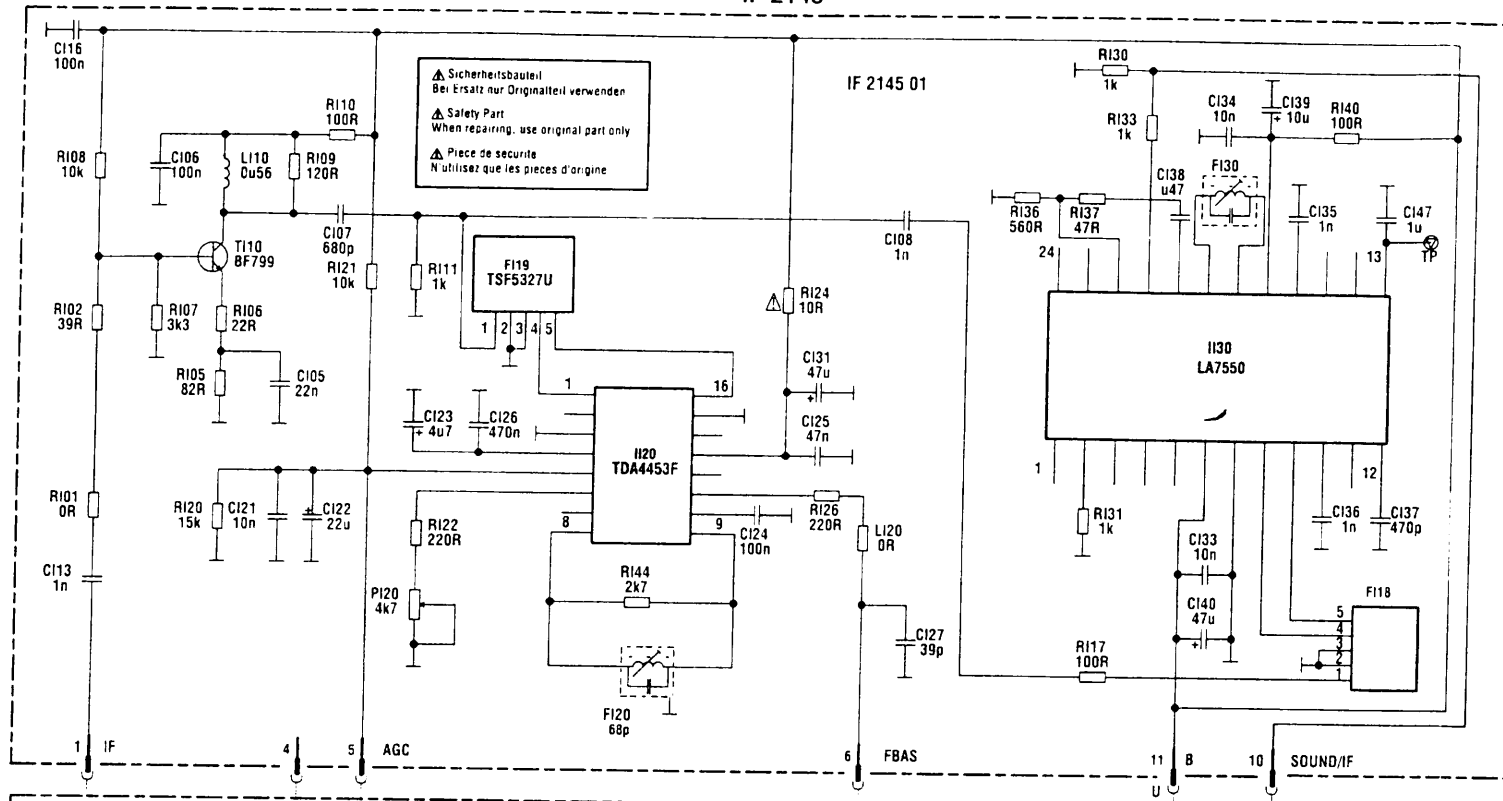
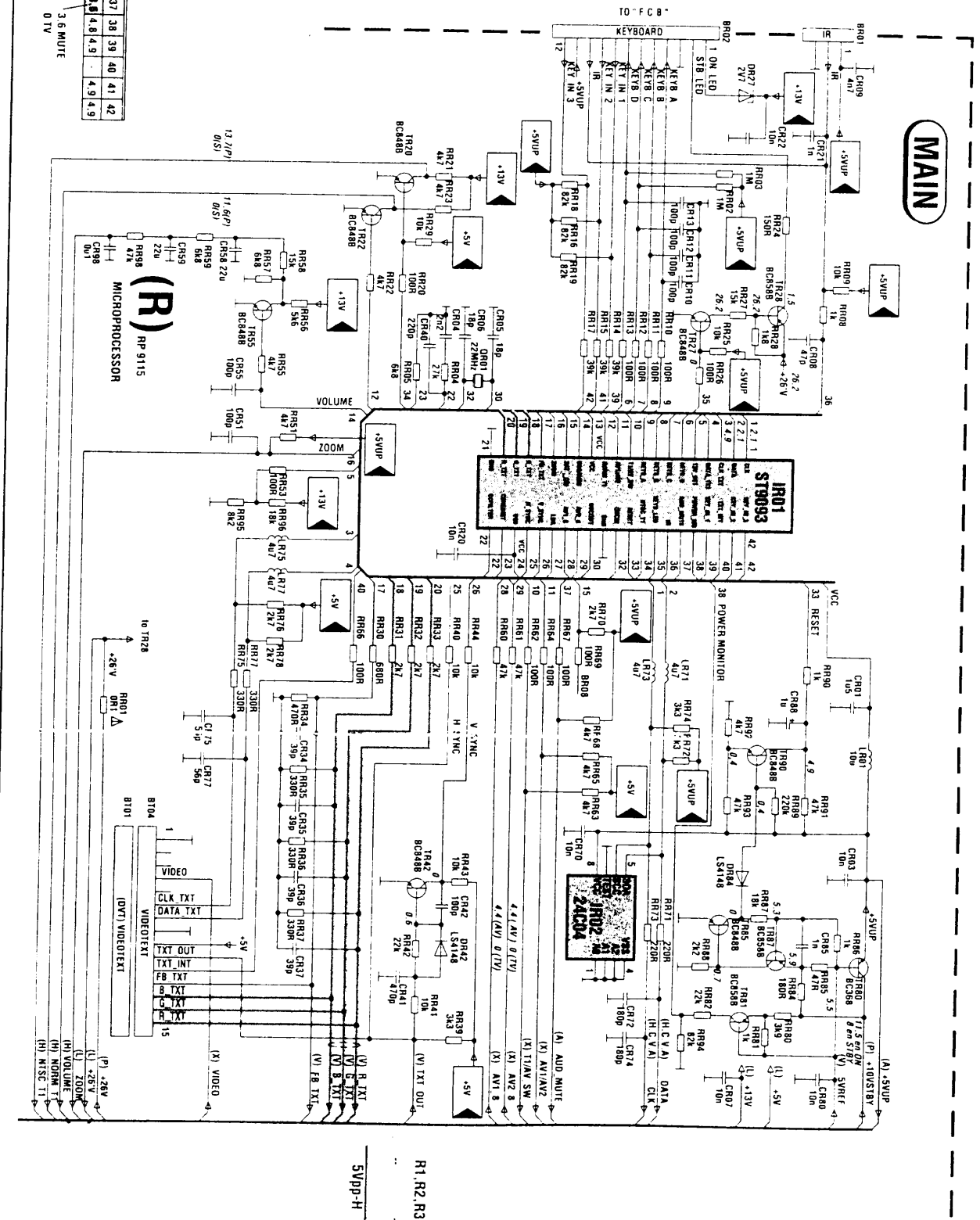


Horizontal Deflection Processing Diagram
FP 9440

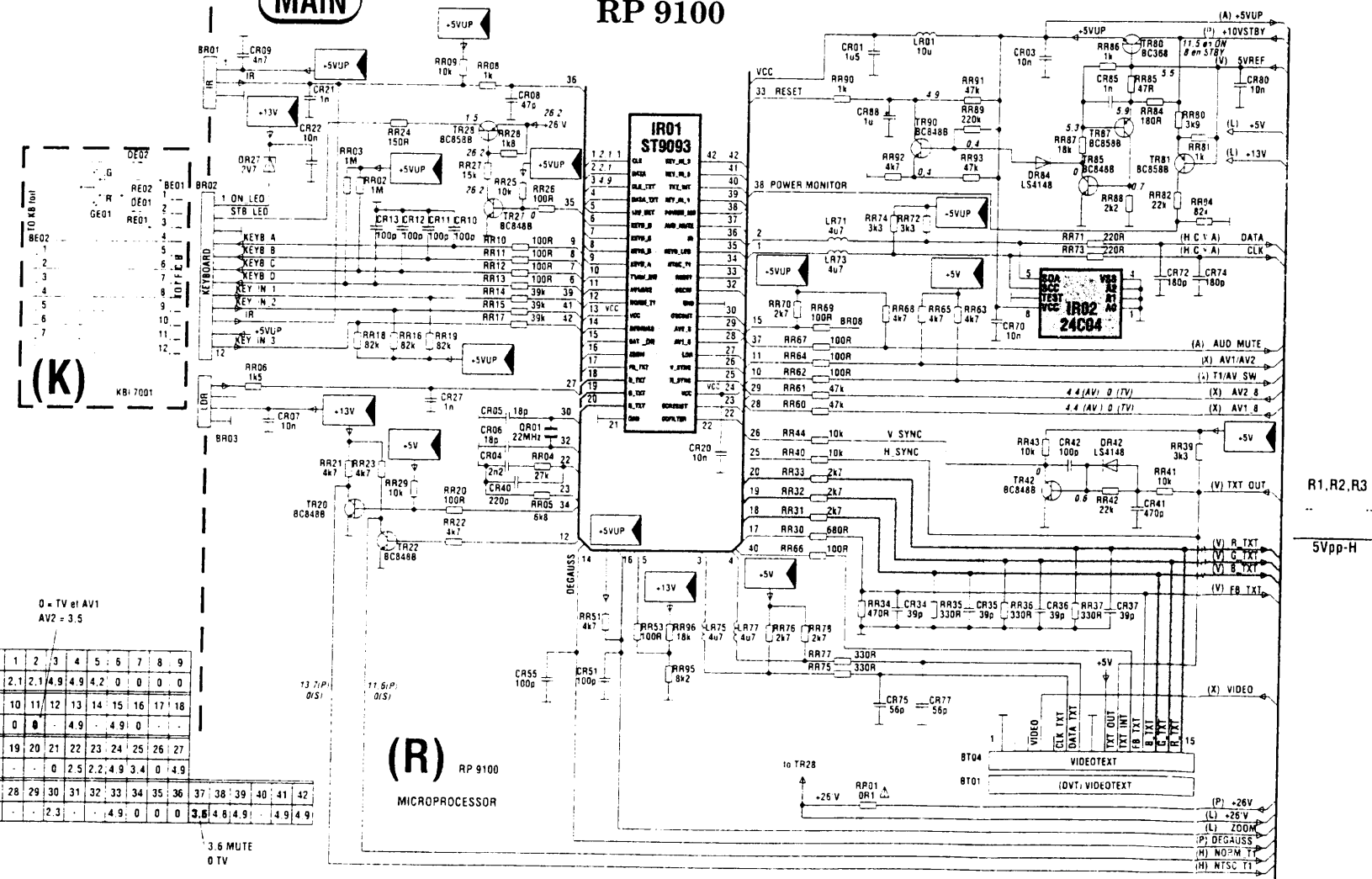


Horizontal Deflection Processing Diagram
LP 9440

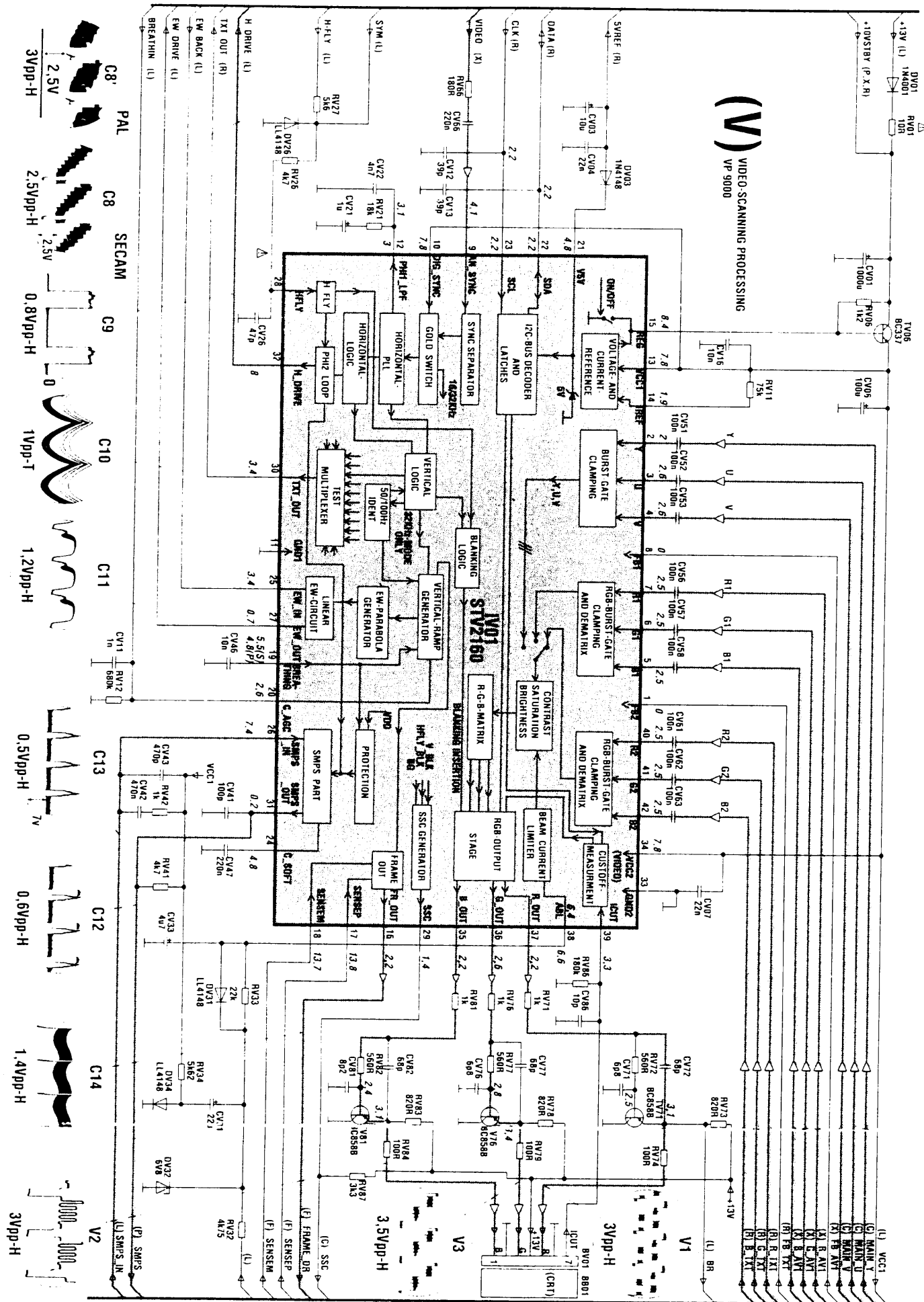
IF 2145

[illegible]

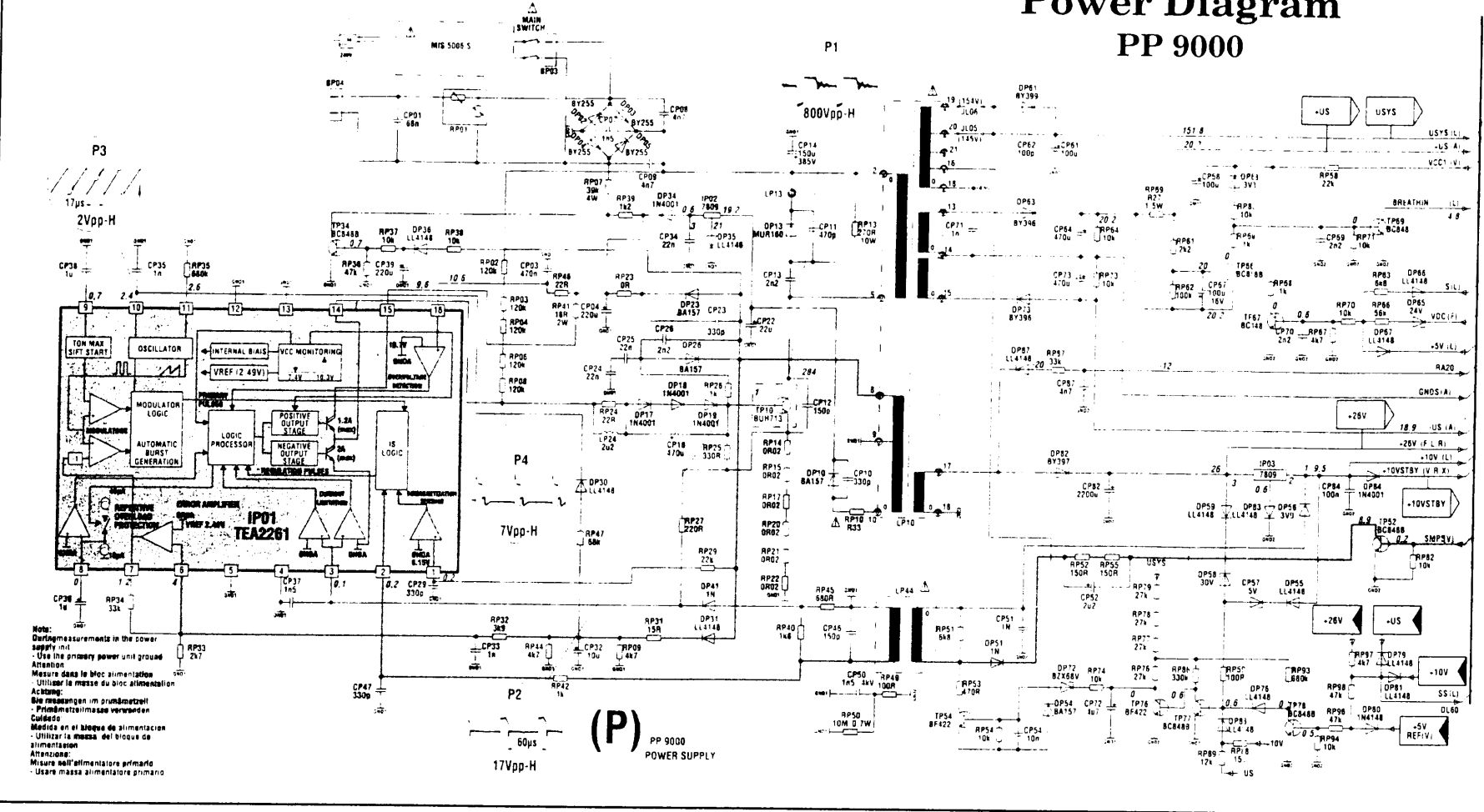
MAIN



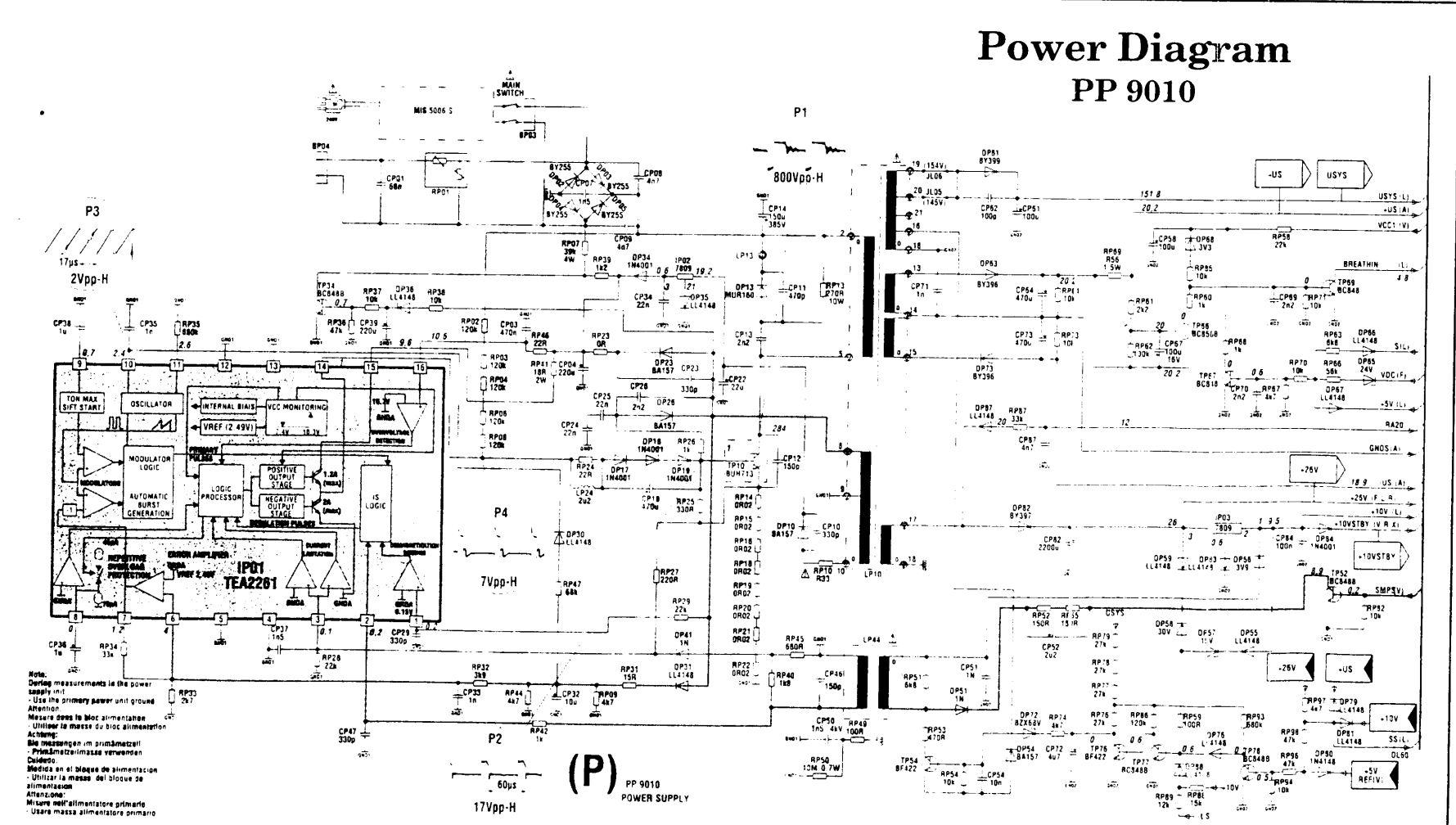
-VP 9000



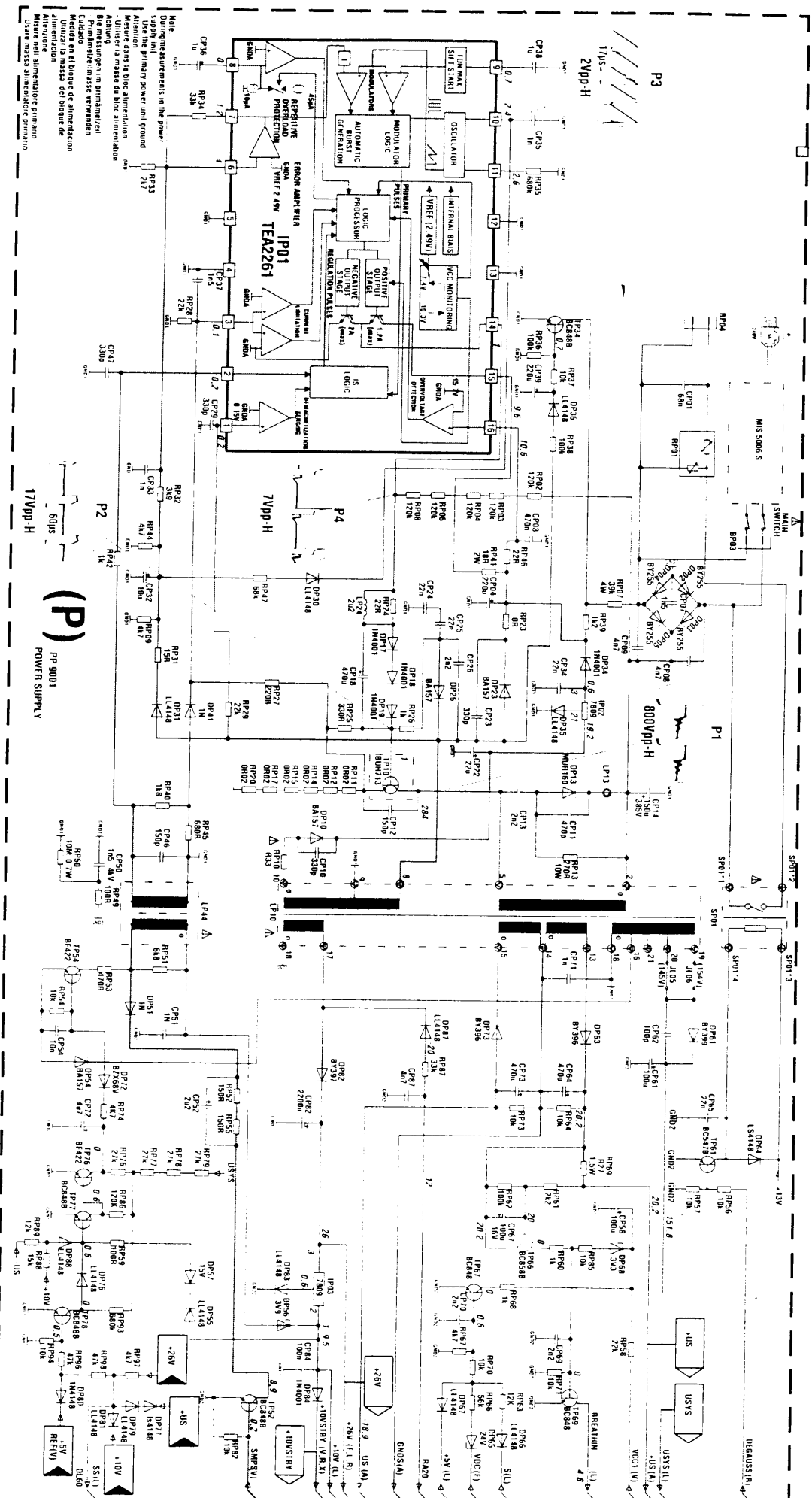
Power Diagram
PP 9000



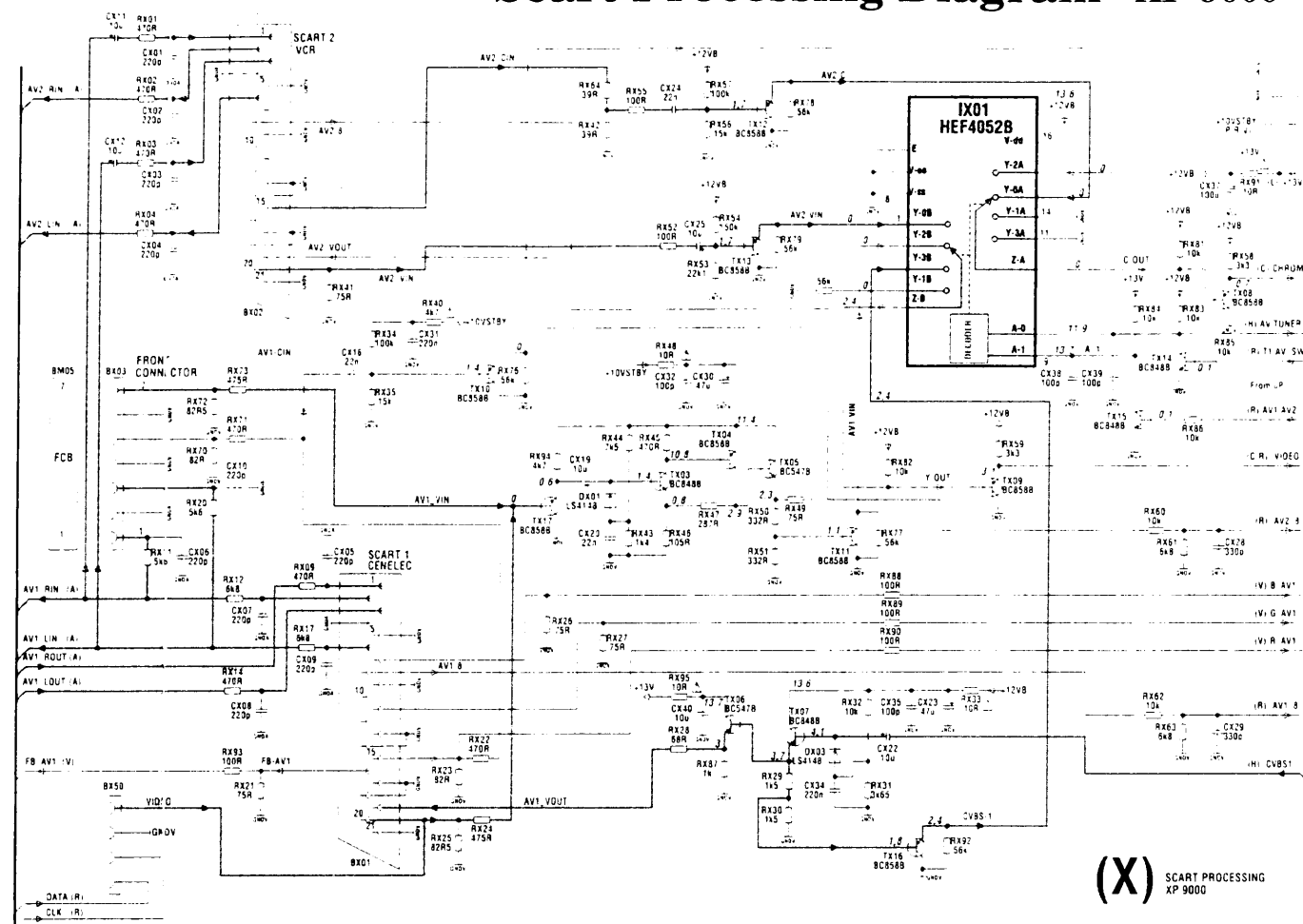
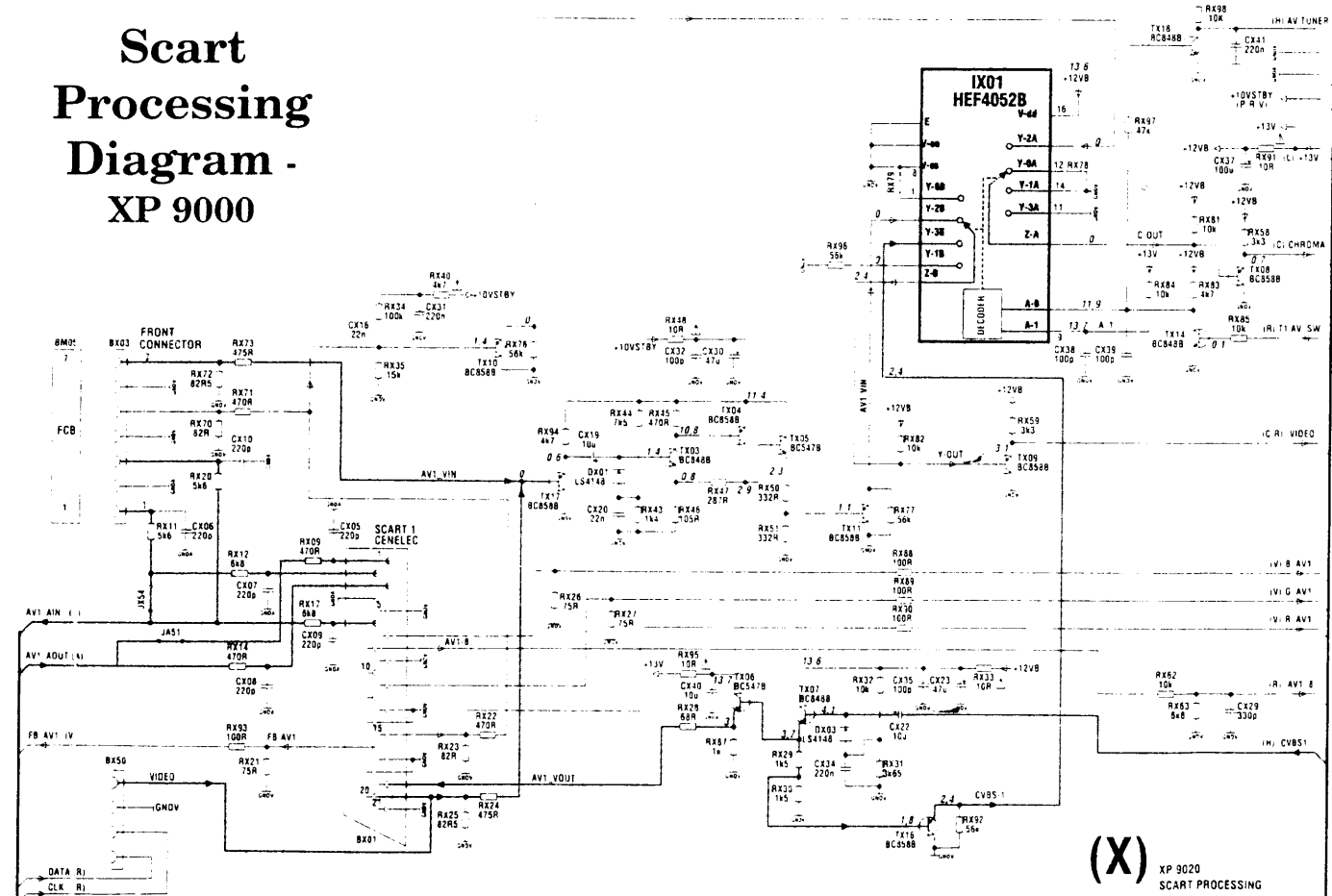
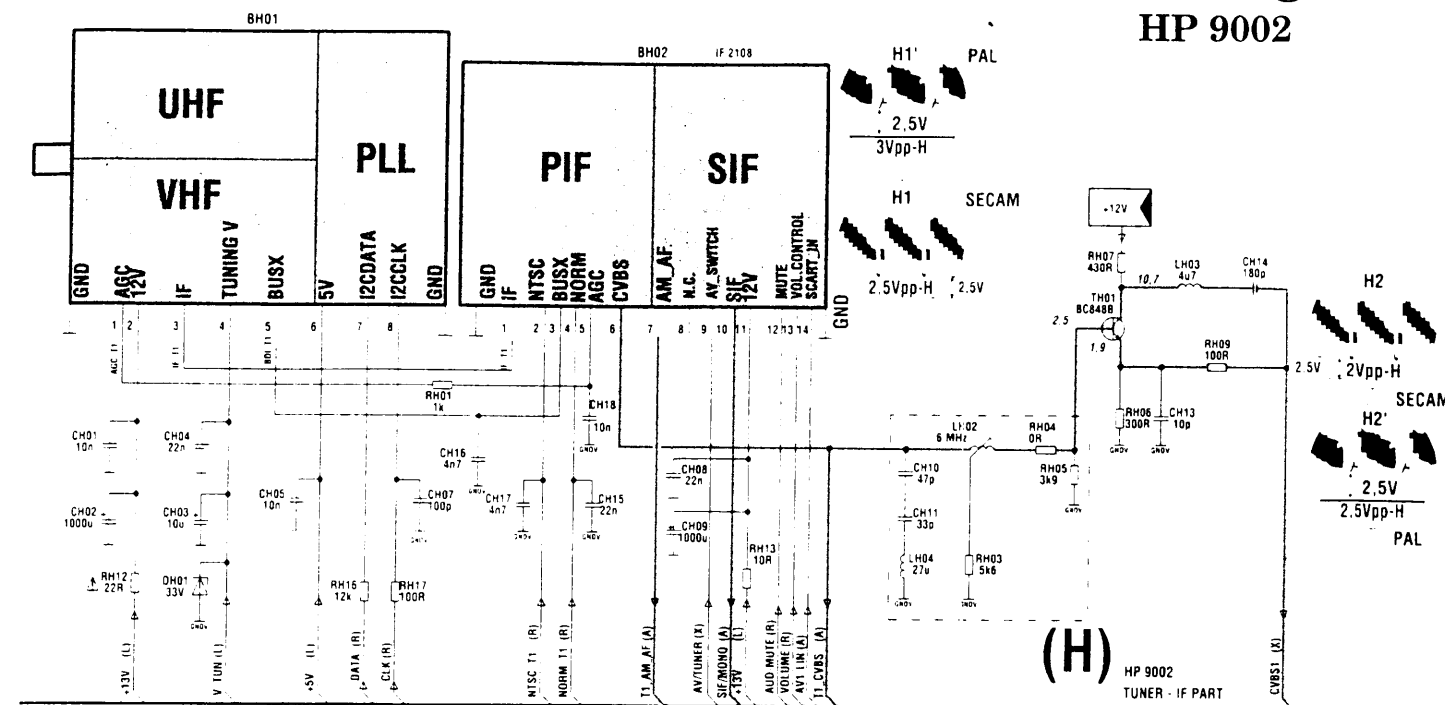
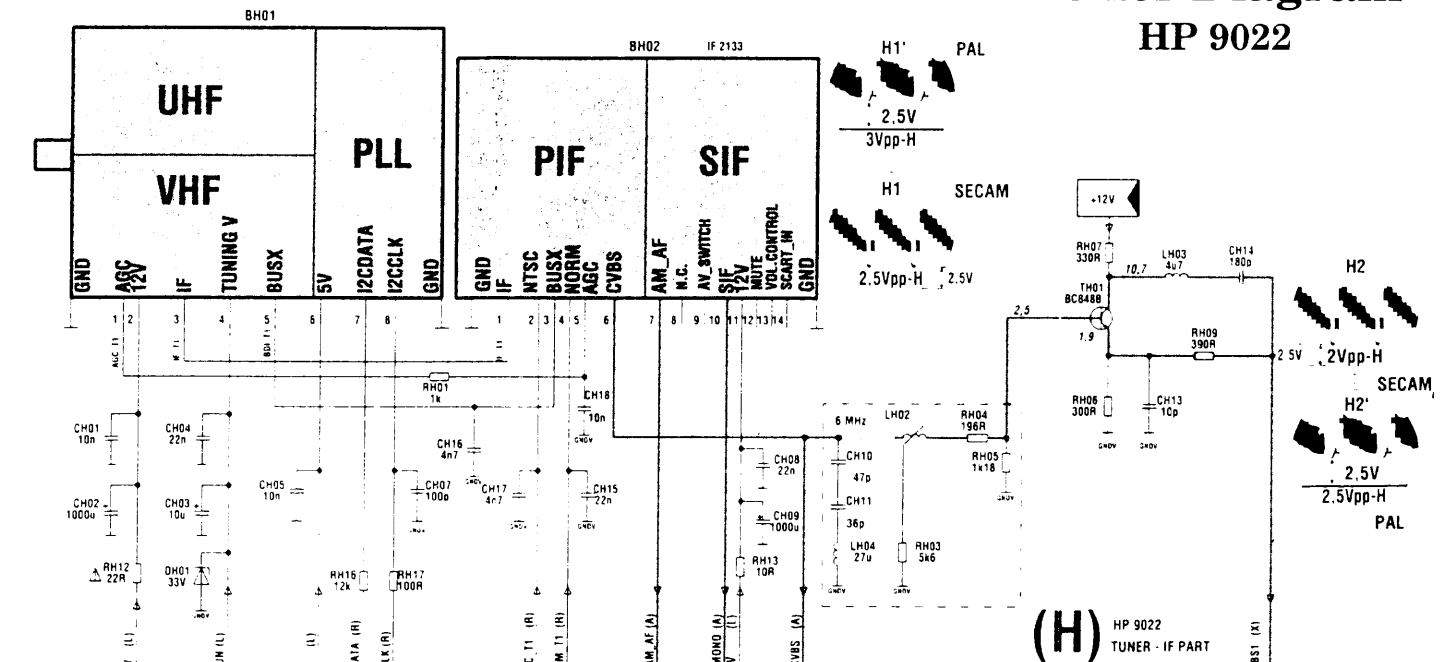
Power Diagram
PP 9010



Power Diagram - PP 9001



Scart Processing Diagram - XP 9000

Scart
Processing
Diagram -
XP 9000Tuner Diagram
HP 9002Tuner Diagram
HP 9022MIS
Diagram