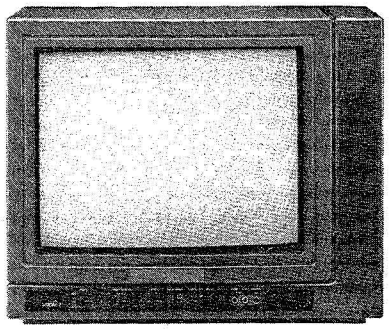
Colour television

Service
Service
Service



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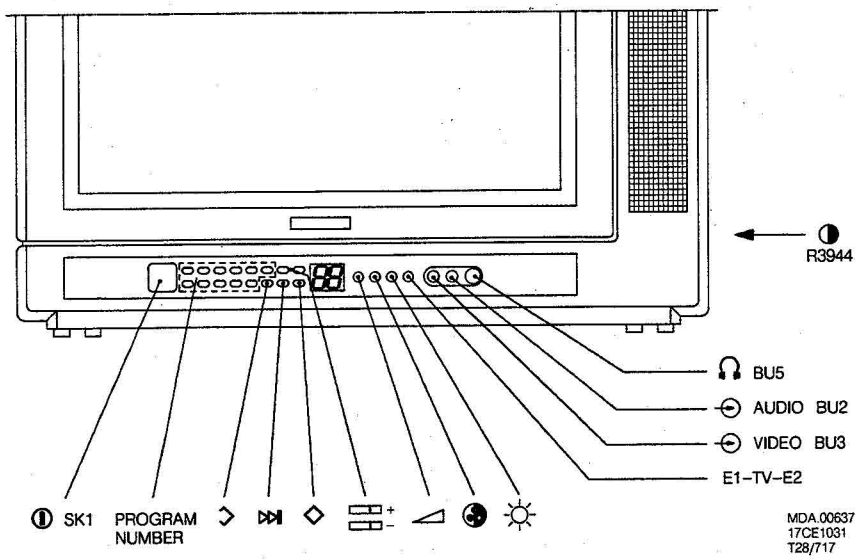
Service Manual

CHASSIS CP90NRC

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.



220-240 V (±10%)
50 W

75Ω coax.

A41EAM01X16

15Ω/2 W
MONO

Full SCART

CVBS

AUDIO

8-1000Ω

axbxc
489x401x394mm

PAL B/G/H

UV617

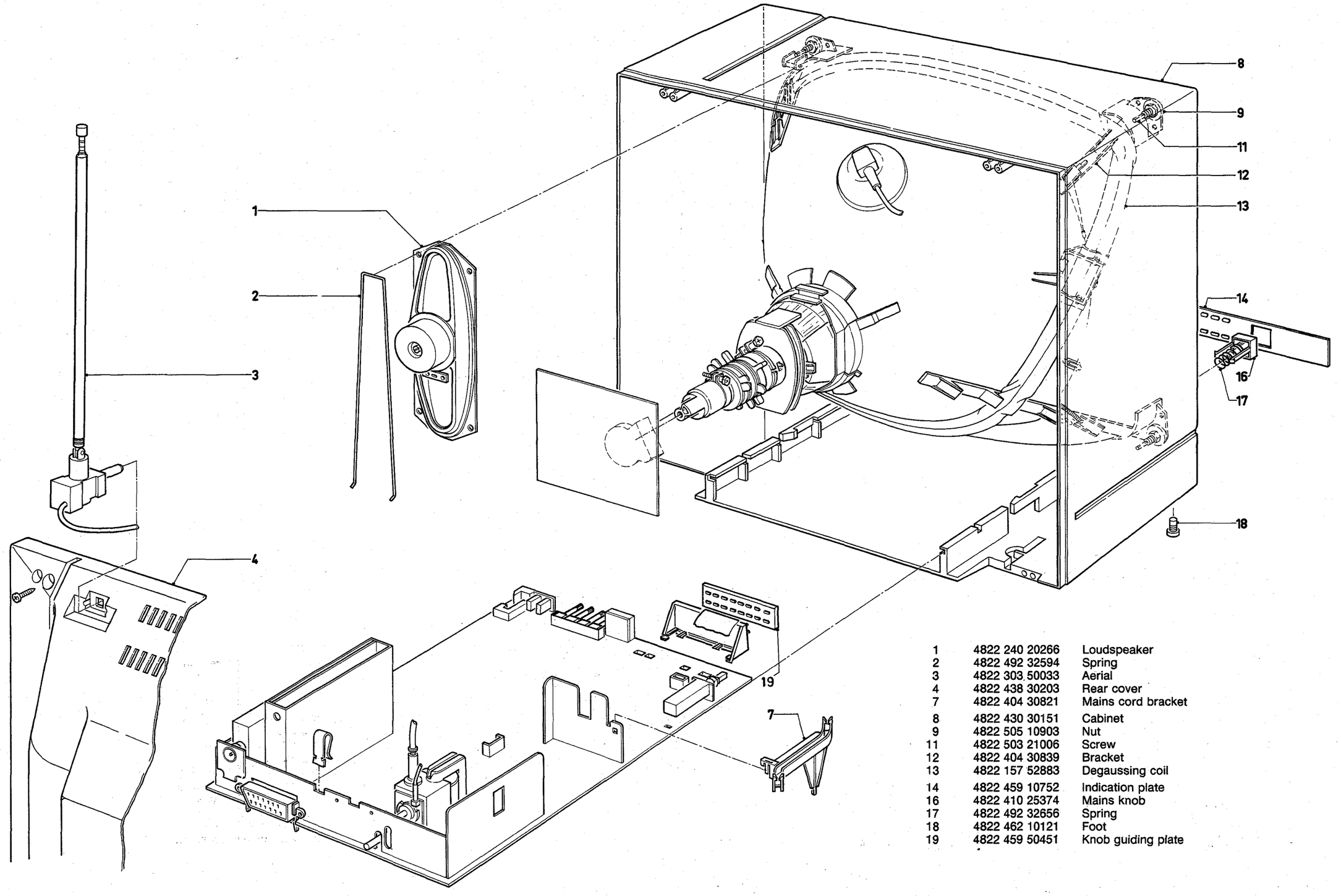
VHFa : 48-105 MHz
VHFb : 112-294 MHz
UHF : 471-855 MHz

Documentation Technique Service Dokumentation Documentazione di Servizio Huolte-Ohje Manual de Servicio Manual de Serviço

Subject to modification
4822 727 15906
Printed in The Netherlands

PHILIPS

Published by
Service Consumer Electronics



1	4822 240 20266	Loudspeaker
2	4822 492 32594	Spring
3	4822 303 50033	Aerial
4	4822 438 30203	Rear cover
7	4822 404 30821	Mains cord bracket
8	4822 430 30151	Cabinet
9	4822 505 10903	Nut
11	4822 503 21006	Screw
12	4822 404 30839	Bracket
13	4822 157 52883	Degaussing coil
14	4822 459 10752	Indication plate
16	4822 410 25374	Mains knob
17	4822 492 32656	Spring
18	4822 462 10121	Foot
19	4822 459 50451	Knob guiding plate

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4253

Colour television Chassis CP90NRC

Service
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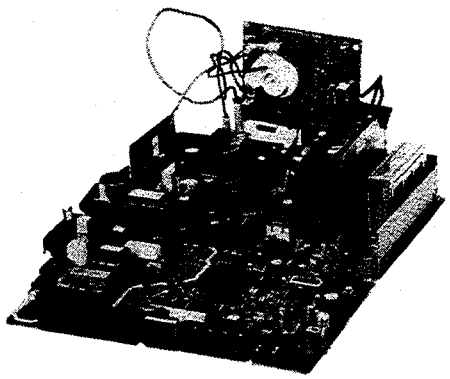

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Service Manual

TECHNICAL DATA

Mainsvoltage	: 220-240 V~ (± 10%)
Aerial input impedance	: 75 Ω-coax
Minimum aerial input VHF	: 30 µV
Minimum aerial input UHF	: 40 µV
Maximum aerial input	: 180 mV
Pull-in range colour sync	: +300 Hz/–300 Hz
Pull-in range horizontal sync	: +600 Hz/–600 Hz
Pull-in range vertical sync	: +5 Hz/–5 Hz

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Subject to modification

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4253

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WARNINGS

1. Components placed within the white frame on the chassis are directly connected to the mains. Thus always connect a set that has to be repaired via an isolating transformer to the mains voltage.
2. Safety regulations demand that the set be restored to its original condition and that components identical to the original types be used. Safety components are marked by the symbol ⚠.
3. In order to preclude damage to ICs and transistors flashover of the EHT should be avoided. To prevent damage to the picture tube, the method indicated in fig. 1 should be followed in case of discharge. Make use of a high- tension probe and a universal meter (mode DC-V). Discharge until the meter reads 0 Volts (after approx. 30 s).
4. **ESD**

   All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically.
   When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance.
   Keep components and tools also at this potential.
5. Together with the deflection unit and the possible multipole unit the flat square picture tubes applied form one whole. The deflection and multipole units have been adjusted in an optimum way in the factory. Adjustment of these units during repair is thus not recommended.
6. The EHT cable has been bonded in the line output transformer. It can thus not be replaced.
7. Proceed with care when testing the EHT section and the picture tube.
8. Never replace any modules or other parts while the set is switched on.
9. Wear safety goggles during replacement of the picture tube.
10. Use plastic instead of metal alignment tools. This is in order to preclude short-circuits or to prevent a specific circuit from being rendered unstable.

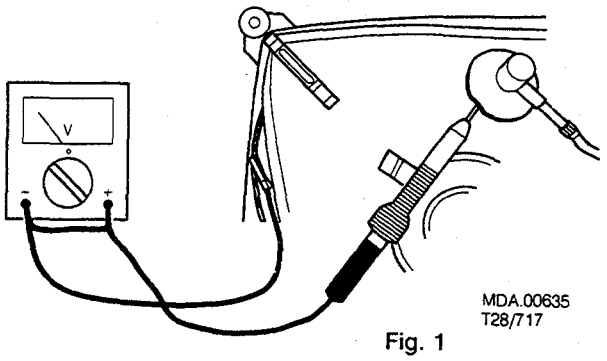


Fig. 1

REMARKS

1. The direct voltages and waveforms should be measured relative to the nearest earthing point on the p.c. board.
2. The direct voltages should be measured as follows: Do not apply an aerial signal. Adjust receiver for minimum brightness, maximum saturation and contrast.
3. The waveforms should be measured under the following conditions:
   a. Use a colour-bar pattern as input signal (PM5519).
   b. Connect a universal meter (V/DC mode) to pin 6 of IC7260 for sets with SCART or to pin 5 of IC7261 for sets without SCART. Set the saturation control to 3V for sets with SCART or to 2.4V for sets without SCART.
   c. Connect an oscilloscope (0,1V/div.– DC mode) via a 10:1 attenuator to pin 1 of connector M1. Set the brightness control so that the level of the black bar in the video signal is situated at 2.7V. Set the contrast control for a video signal amplitude of 2.4V (see Fig. 2).
4. The CRT board is provided with printed spark gaps. Each spark gap is arranged between an electrode of the CRT and the aquadag coating.
5. In the production alternative semi-conductors may be used. However the semi-conductors specified in the parts list and circuit diagram can always be used as replacements.
6. Connectors used for the modules (board to board) have been gold-plated and must be replaced by the same type only.
7. In case of faultfinding and/or repair on the SECAM/PAL transcoder, the accessibility of the circuit and the components can be increased through the use of extension PCB's.
   The order numbers for these extension PCB's are:
   – 4-pole 4822 395 30262
   – 5-pole 4822 395 30261

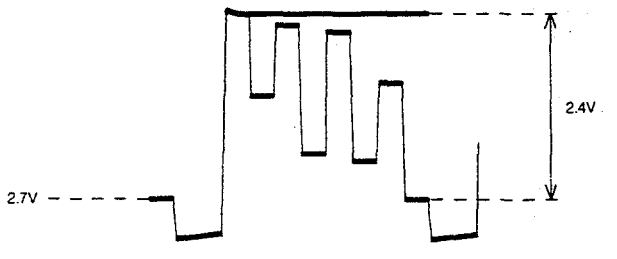


Fig.2

MECHANICAL INSTRUCTIONS

To facilitate troubleshooting and repair of the set the chassis can be pulled out of the cabinet and placed against the right-hand side of the set.

ELECTRICAL INSTRUCTIONS

A. ADJUSTMENTS TO THE MAIN PANEL (Fig. 4)

1. **+95V power supply voltage**

   Connect a voltmeter (DC) between pin 5 of connector M6 and ground. Adjust 3700 for a voltage of 95V.

2. **Picture width**

   The picture width is adjustable with 3598.

3. **Vertical centring**

   This is adjusted with SK20.

4. **Picture height**

   The picture height is adjustable with potentiometer 3580.

5. **Focussing**

   This is adjusted with the focussing potentiometer on the line output transformer (Fig. 3).

6. **Chroma subcarrier oscillator for sets with SCART**

   Apply a colour-bar pattern. Interconnect pins 23 and 24 of IC7260. Connect a 470 Ω resistor between pins 6 and 1 of IC7260. Adjust 2267 so that colour pattern on the screen is practically stationary. Remove the resistor and the interconnection.

7. **Chroma subcarrier oscillator for sets without SCART**

   Apply a colour-bar pattern. Interconnect pins 13 and 14 and pins 1 and 5 of IC7261. Adjust 2267 so that colour pattern on the screen is practically stationary. Remove the resistor and the interconnection.

8. **PAL delay line**

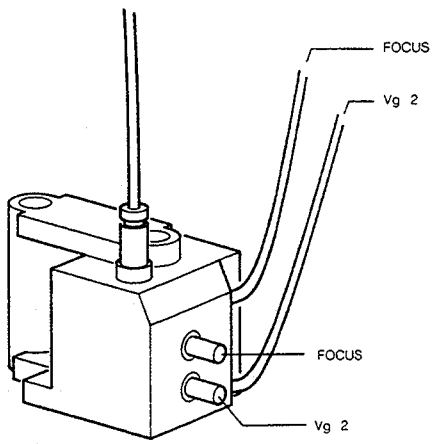
   Apply a generator signal from a PM5519. Set the generator to "DEM". Set contrast and brightness to normal and set the saturation control to 3/4 of its range. Adjust 3274 so that the venetian-blinds effect in the 3rd bar is minimal. Subsequently, adjust 5270 until the venetian-blinds effect in the 1st and the 4th bar is also minimal. Readjust 3274 if necessary.

9. **Chroma trap in the luminance circuit**

   Use a colour-bar pattern and set the receiver controls to their normal settings. Connect an oscilloscope to pin 10 of IC7260 for sets with SCART or to pin 8 of IC7261 for sets without SCART. Adjust 5261 for minimum amplitude of the chrominance signal being visible on the various stages of brightness of the luminance signal.

10. **The keyboard scan frequency**

    Connect a frequency counter to pin 16 of IC7840. Adjust potentiometer 3896 for a frequency of 49 Hz.



MDA.00633
CP90
T28/723

Fig. 3

B. ADJUSTMENTS TO IF/SYNC UNIT 1040 (Fig. 5)

1. **Horizontal synchronisation**

   Remove the screening cap of IF/SYNC unit 1040. Apply an aerial signal. Interconnect pins 5 and 9 of IC7038. Adjust 3055 until the picture is stationary. Remove the interconnection. Locate the screening cap.

2. **Horizontal centring**

   This is adjusted with potentiometer 3038.

3. **RF-AGC**

   If the picture of a strong local transmitter is reproduced distorted, adjust potentiometer 3092 until the picture is no longer distorted.

C. ADJUSTMENTS TO THE CRT BOARD (Fig. 6)

1. **Cut-off point of CRT**

   Apply white pattern signal. Interconnect pins 1 and 7 of IC7260 for sets with SCART or pins 1 and 6 of IC7261 for sets without SCART. Adjust brightness and contrast until the DC voltage across 3401 is 0V. Adjust 3412, 3432 and 3452 for a black level of 130 V on the picture tube base. Now turn Vg2 potentiometer (Fig. 3) until the gun that first emits light is just no longer visible. Adjust the two other guns with their associated controls (3412, 3432 or 3452) until just no light will be visible. Remove the interconnection.

2. **Grey scale**

   Apply a grey scale test-pattern signal and set the controls to their normal settings. Allow the set to warm up for about 10 minutes. Adjust 3421 and 3441 until the desired grey-scale is obtained.

D. ADJUSTMENTS SECAM/PAL TRANSCODER (Fig. 7)

1. "Circuit cloche"

Disconnect jumper 9302 at one side.
Apply a signal generator to capacitor 2316.
Adjust the frequency of the signal generator for 4.286 MHz.
Connect an oscilloscope to pin 3 of IC7310.
Adjust 5316 for maximum amplitude. Reconnect jumper 9302.

2. Subcarrier oscillator

Apply a 75% SECAM colour bar pattern.
Connect 6-IC7310 by means of a 10 kΩ resistor to ground.
Connect a frequency counter having a high input impedance (via a probe C ≤ 2pF) to pin 26 of IC7260 for sets with SCART or to pin 16 of IC7261 for sets without SCART.
Adjust 2332 for a frequency of 8.867236 MHz.
Remove the resistor.

3. SECAM demodulator

Apply a SECAM black frame signal. Connect an oscilloscope to pin 14 of IC7310. Adjust 3347 and 5347 for a minimum modulation.

4. Delay line

a. Amplitude
Apply a SECAM red frame signal. Connect an oscilloscope to pin 28 of IC7260 for sets with SCART or to pin 18 of IC7261 for sets without SCART. Adjust 3335 for an equal amplitude of the lines.

b. Phase
Adjust for a normal brightness and contrast. Connect an oscilloscope to pin 16 of IC7260 for sets with SCART or to pin 12 of IC7261 for sets without SCART. Apply a 75% colour bar pattern. Adjust the saturation control for an as flat as possible output voltage. Then apply a 75% SECAM colour bar pattern. Adjust 5337 so that the signal is virtually flat.

INSTALLATION INSTRUCTIONS FOR THE SECAM/PAL TRANSCODER

Remove jumpers 9259 and 9260 (at connector M1).
Mount connectors 4822 417 50217 and 4822 267 40648, if not present, at positions M8 and M9. Place the SECAM/PAL transcoder on connectors M8 and M9.
Mount bracket 4822 404 30868 as indicated in Fig. 8.
The set is now capable of receiving both PAL and SECAM.

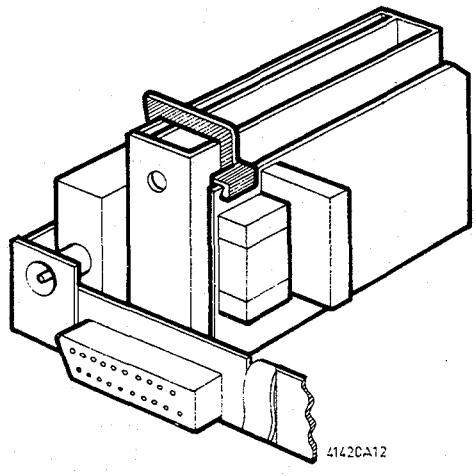


Fig. 8

CARRIER PANEL

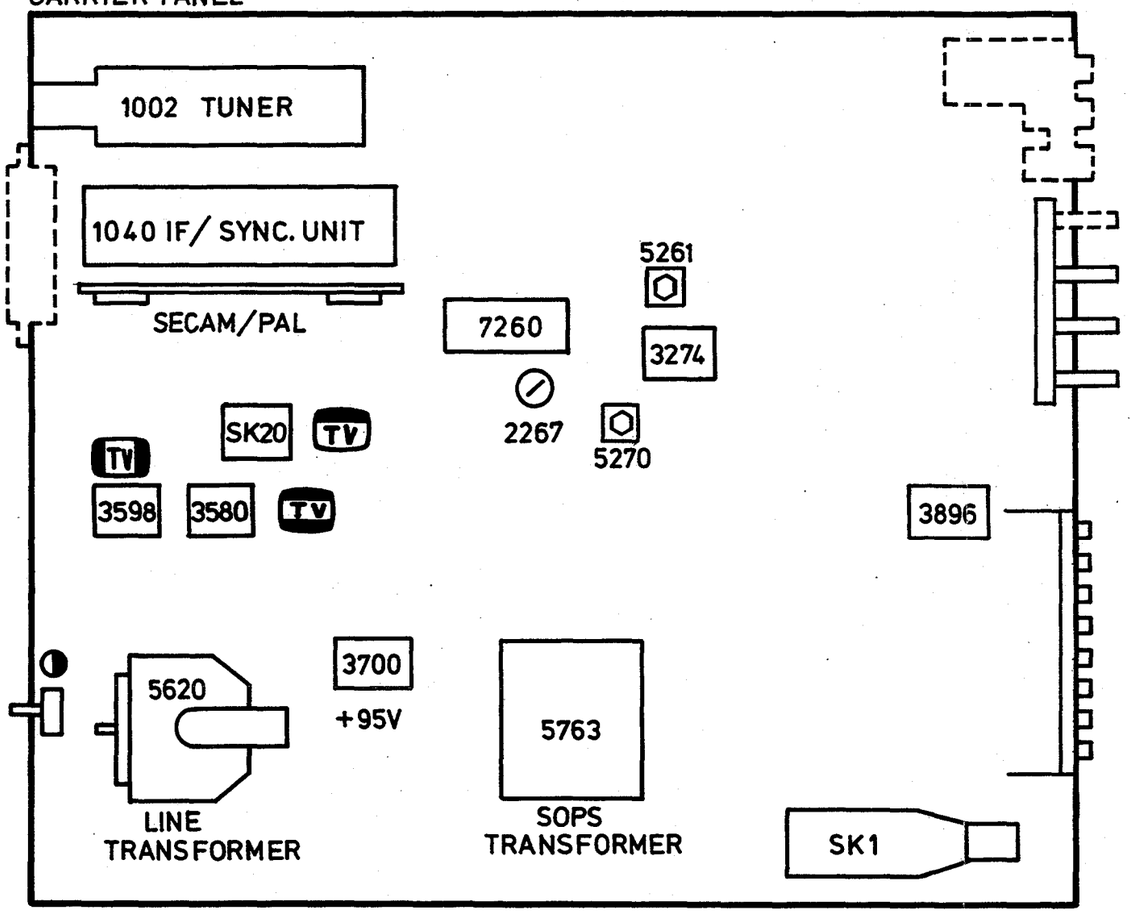


Fig. 4

PICTURE TUBE PANEL

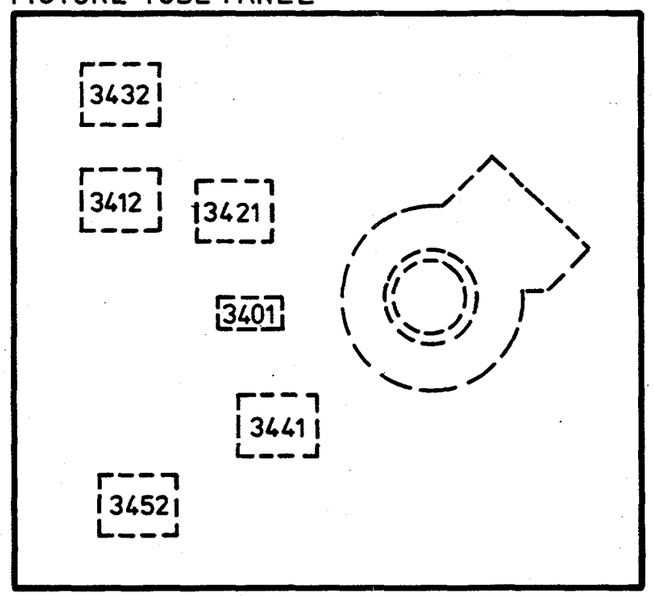


Fig.6

IF/SYNC UNIT

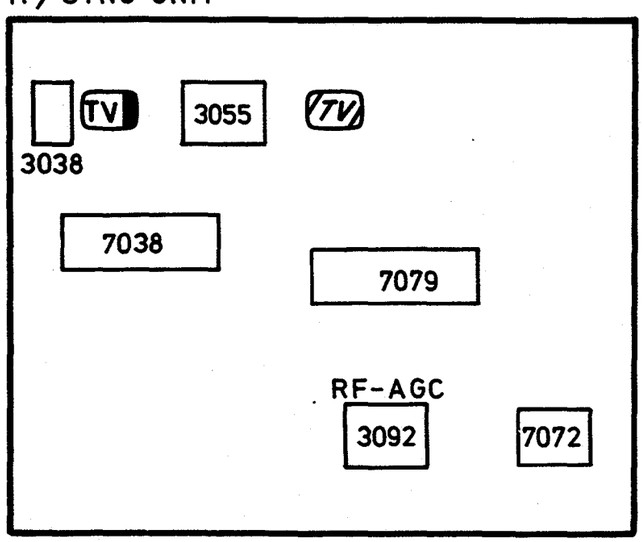


Fig.5

SECAM/PAL TRANSCODER

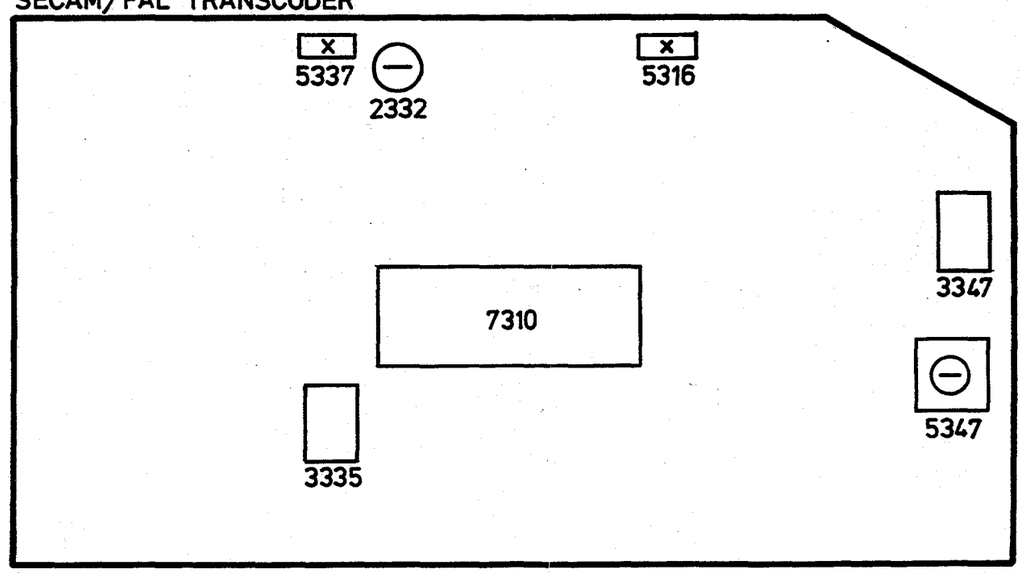


Fig.7

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CARRIER PANEL

CNX62	4822 130 90121	
HA11484	4822 209 83199	
LM5241RAP	4822 130 90162	Display
TDA3561A/N7	4822 209 71518	
TDA3565/N4	4822 209 71742	
TDA8190	4822 209 70872	

BC328	4822 130 44104	
BC547	4822 130 44257	
BC548	4822 130 40938	
BC548B	4822 130 40937	
BC548C	4822 130 44196	
BC558	4822 130 40941	
BC558B	4822 130 44197	
BC558C	5322 130 60068	
BC636	4822 130 44283	
BD939F	4822 130 42681	
BF483	4822 130 42607	
BUT11AF	4822 130 42679	
PH2369	4822 130 41594	

BAV20	4822 130 34189	
BAX14	4822 130 34193	
BT151-500R	5322 130 24081	Thyristor
BYD33D	4822 130 42488	
BYD33G	4822 130 42489	
BYD33J	4822 130 42606	
BYD33M	4822 130 32896	
BYW95B	4822 130 32058	
BZX79-C2V7	4822 130 80022	
BZX79-F6V2	4822 130 34167	
BZX79-F11	4822 130 34488	
BZX79-F33	4822 130 34142	
BZX79-F36	4822 130 34368	
ZTK33B	4822 130 30959	
1N4148-30	4822 130 33941	
1N4148-75	4822 130 33939	
1N5061	4822 130 31933	

5108	4822 157 52809	
5259	4822 157 51462	
5261	4822 157 52807	
5270	4822 157 52808	
5271	4822 157 53063	
5600	4822 152 20558	
5608	4822 157 52315	
5611	4822 156 21332	
5620	4822 140 10306	Line transformer
5629	4822 146 21116	Line driver
5638	4822 158 10563	
5653	4822 158 10551	
5654	4822 158 10551	
5655	4822 158 30208	Transformer
5674	4822 158 10604	
5697	4822 158 10551	
5763	4822 146 50217	Sops transformer
5914	4822 157 53066	

Various parts

1002	4822 210 10266	UV617
1002	4822 210 50118	U743
1040	4822 212 22742	IF/SYNC for sets without SCART connection
1040	4822 212 22761	IF/SYNC UK for sets without SCART connection
1040	4822 212 22607	IF/SYNC for sets with SCART connection
1040	4822 212 22688	IF/SYNC UK for sets with SCART connection
1103	4822 121 40543	filter 5.5MHz
1103	4822 242 70279	filter 6.0MHz
1261	4822 242 70626	crystal 8.86MHz
1262	4822 157 51056	delay line DL330
1267	4822 242 70626	crystal 8.86MHz
1270	4822 320 40096	delay line DL701
1901	4822 138 10032	battery 2.5V
1920	4822 102 50047	3 potm. assy for sets without SCART connection
1920	4822 101 40139	3 potm. assy + switch for sets with SCART connection
	4822 267 60188	CVBS/AUDIO/ headphone socket
	4822 267 60172	SCART socket
	4822 256 30274	fuse holder
	4822 277 10976	mains switch
	4822 273 30206	switch (sk20)
	4822 212 22741	keyboard
	4822 459 50451	knob guiding plate
	4822 492 63524	spring fix. trans.

1580	4822 253 10054	T160mA
1652	4822 253 30025	T2A
1690	4822 253 10064	T400mA

3002	4822 111 30508	10 Ω	0.33 W
3036	4822 111 30499	4.7 Ω	0.33 W
3274	4822 100 20148	1 kΩ	potm.
3275	4822 111 30508	10 Ω	0.33 W
3571	4822 116 51091	18 kΩ	2.5 W
3573	4822 116 51789	22 Ω	0.5 W
3574	4822 116 51789	22 Ω	0.5 W
3580	4822 100 10503	100 Ω	potm.
3598	4822 101 20838	4.7 kΩ	potm.
3600	4822 111 30506	8.2 Ω	0.33 W
3611	4822 111 30561	1 kΩ	0.33 W
3623	4822 111 30506	8.2 Ω	0.33 W
3628	4822 116 53717	430 kΩ	0.25 W
3629	4822 116 51135	5.6 kΩ	2.5 W
3638	4822 111 30483	1 Ω	0.33 W
3639	4822 111 30483	1 Ω	0.33 W
3653	4822 111 30561	1 kΩ	0.33 W
3654	4822 111 30561	1 kΩ	0.33 W
3655	4822 116 40065	PTC	
3657	4822 115 10095	4.7 Ω	7 W
3665	4822 111 30499	4.7 Ω	0.33 W
3679	4822 112 41087	180 Ω	5 W
3694	4822 111 30508	10 Ω	0.33 W
3696	4822 116 53716	31.6 kΩ	0.4 W
3700	4822 100 20148	1 kΩ	potm.
3896	4822 101 20838	4.7 kΩ	potm.
3941	4822 111 30526	47 Ω	0.33 W
3944	4822 100 11083	5 kΩ	potm.

CARRIER PANEL

2267	4822 125 50045	20 pF trimm.	
2608	4822 124 21208	4.7 µF	50 V
2610	5322 121 42523	8.2 nF	2 kV
2611	4822 121 42917	470 nF	200 V
2619	4822 122 31692	1.5 nF	1 kV
2652	4822 121 50627	470 nF	250 V
2657	4822 122 32769	2.2 nF	1 kV
2658	4822 122 32769	2.2 nF	1 kV
2659	4822 122 32769	2.2 nF	1 kV
2660	4822 122 32769	2.2 nF	1 kV
2663	4822 124 22052	100 µF	385 V
2667	4822 121 42786	33 nF	100 V
2678	4822 122 32069	470 pF	1 kV
2679	4822 122 31805	1 nF	2 kV
2680	4822 122 10375	68 pF	1 kV
2681	4822 122 33106	470 pF	400 V
2682	4822 122 40449	33 pF	400 V
2696	4822 124 41056	47 µF	200 V
2697	4822 124 41056	47 µF	200 V

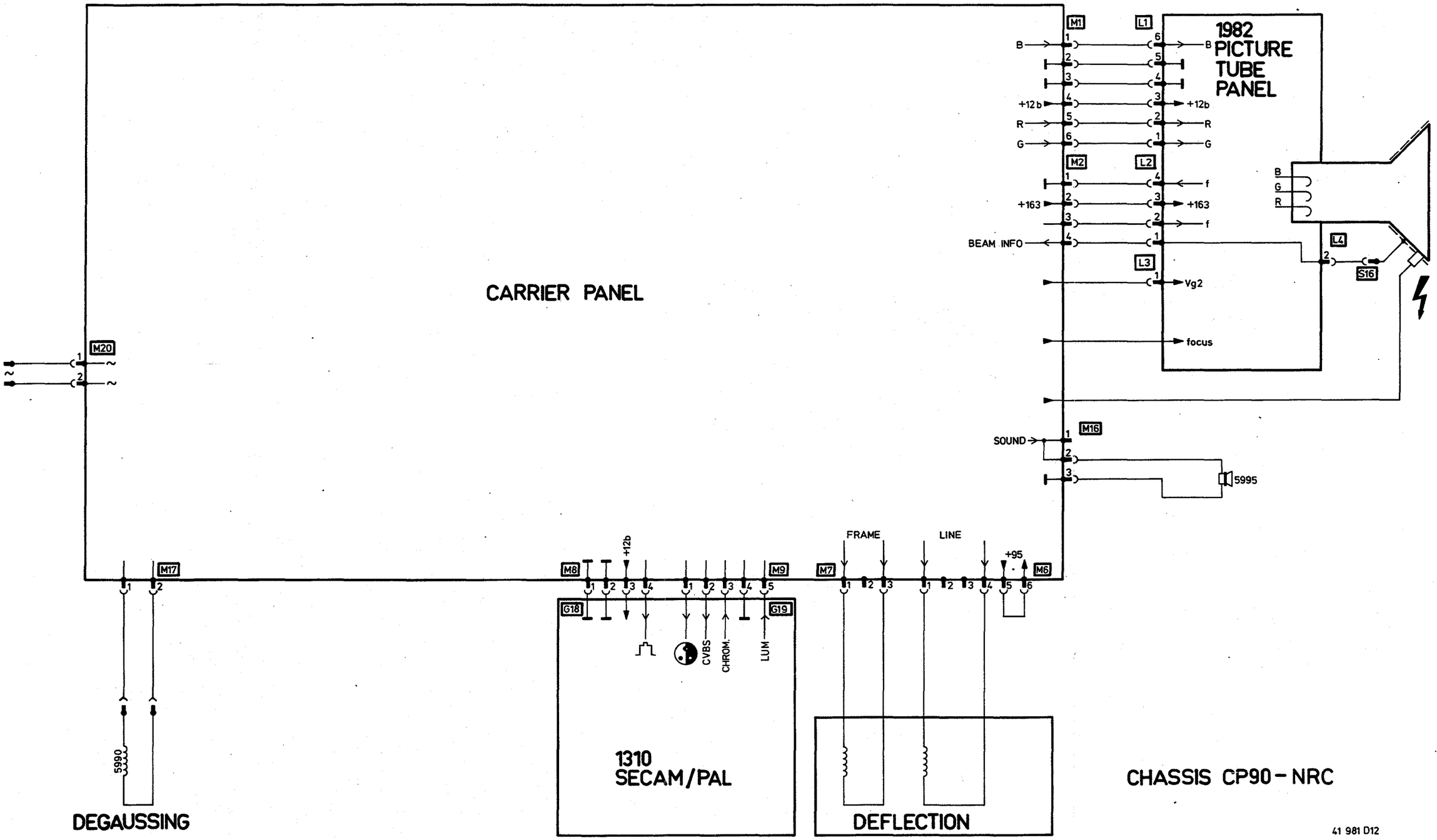
(board)

M1	4822 265 40421	6P
M2	4822 265 30378	4P
M5	4822 267 50703	12P
M6	4822 265 40421	6P
M7	4822 264 40207	3P
M8	4822 417 50217	4P
M9	4822 267 40648	5P
M16	4822 264 40207	3P
M17	4822 265 30389	2P
M20	4822 265 40596	2P

(cable)

M1	4822 267 40584	6P
M2	4822 267 40597	4P
M6	4822 267 40584	6P
M16	4822 267 40582	3P
M17	4822 267 40582	3P
M20	4822 290 60626	2P

CARRIER PANEL



CHASSIS CP90 – NRC

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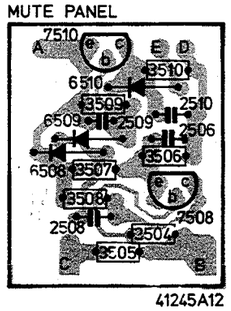
PICTURE TUBE PANEL

BC558	4822 130 40941		
BF483	4822 130 42607		
1N4148–75	4822 130 33939		
3406	5322 116 55147	12 kΩ	2.5 W
3407	4822 116 52399	1.5 kΩ	0.5 W
3412	4822 100 20168	1 kΩ	potm.
3421	4822 100 20171	2.2 kΩ	potm.
3426	5322 116 55147	12 kΩ	2.5 W
3427	4822 116 52399	1.5 kΩ	0.5 W
3432	4822 100 20168	1 kΩ	potm.
3441	4822 100 20171	2.2 kΩ	potm.
3446	5322 116 55147	12 kΩ	2.5 W
3447	4822 116 52399	1.5 kΩ	0.5 W
3452	4822 100 20168	1 kΩ	potm.
3473	4822 111 30483	1 Ω	0.33 W
3474	4822 116 52399	1.5 kΩ	0.5 W
3475	4822 116 52399	1.5 kΩ	0.5 W
5473	4822 157 52368		
(board)			
L1	4822 265 40421	6P	
L2	4822 265 30378	4P	
	4822 267 30778	Picture tube socket	
(cable)			
L1	4822 267 30546	6P	
L2	4822 267 30378	4P	

MUTE PANEL

BC548B	4822 130 40937
BC558B	4822 130 44197
1N4148–75	4822 130 33939

MUTE PANEL



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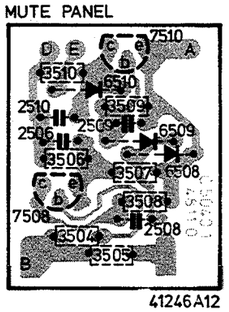
MUTE PANEL



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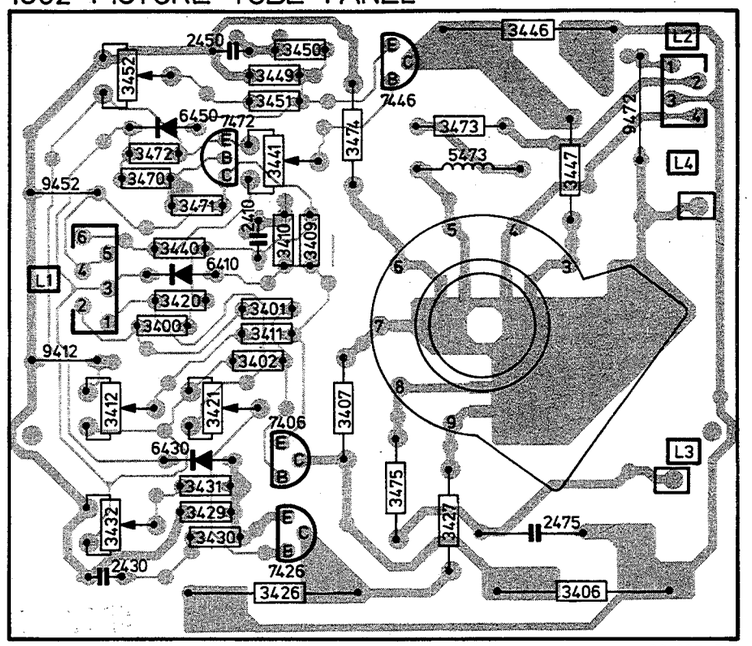
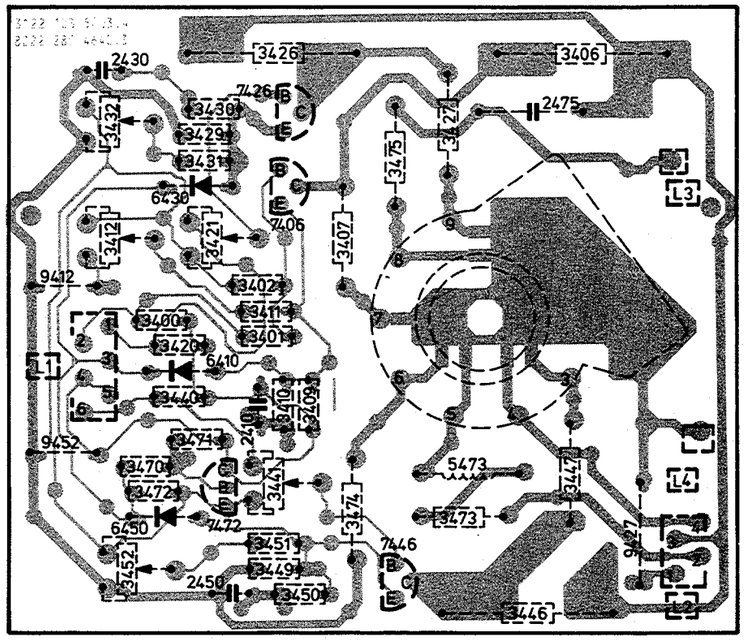
1982 PICTURE TUBE PANEL



39 895 B12

1982 PICTURE TUBE PANEL



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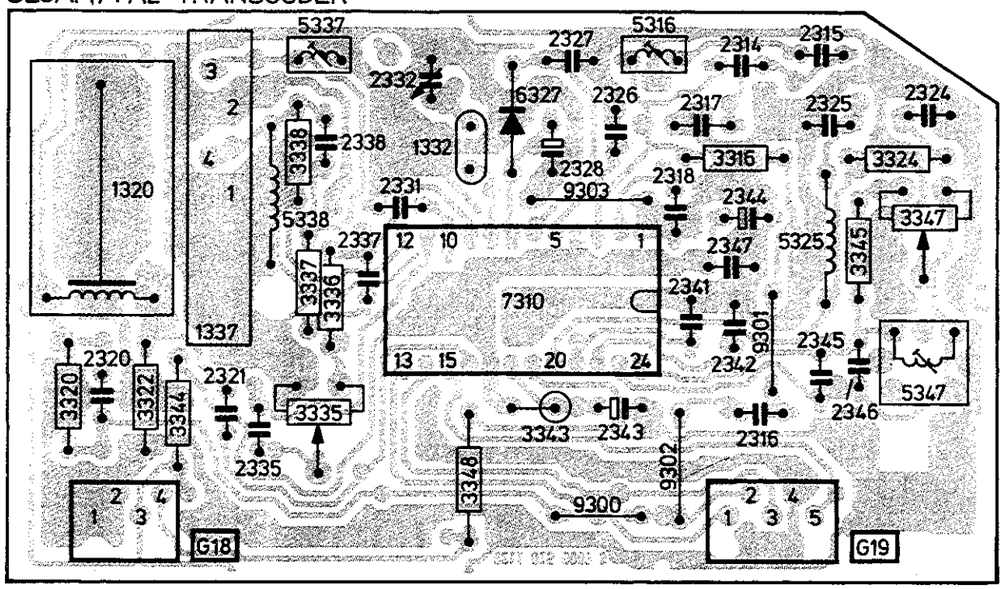
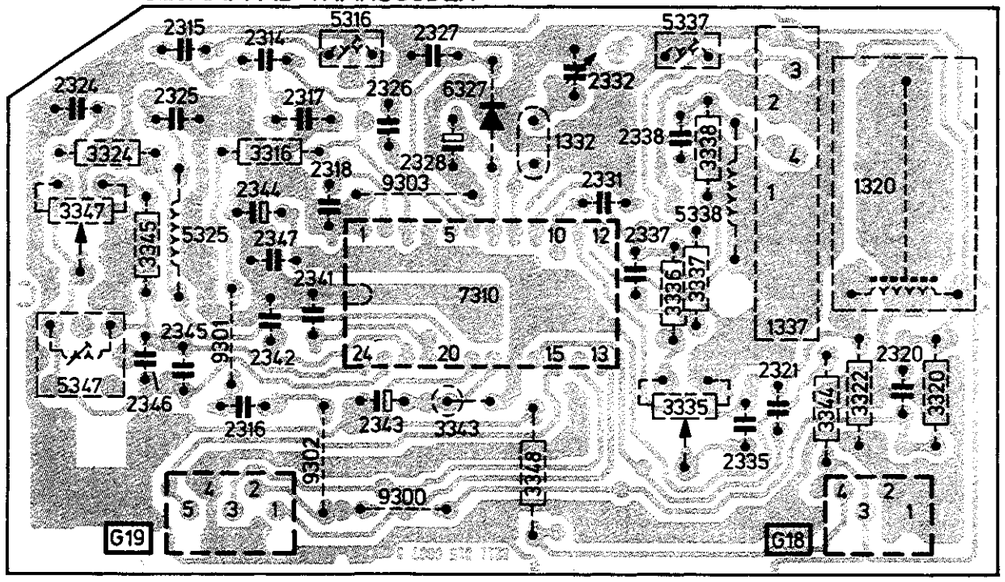
SECAM/PAL TRANSCODER



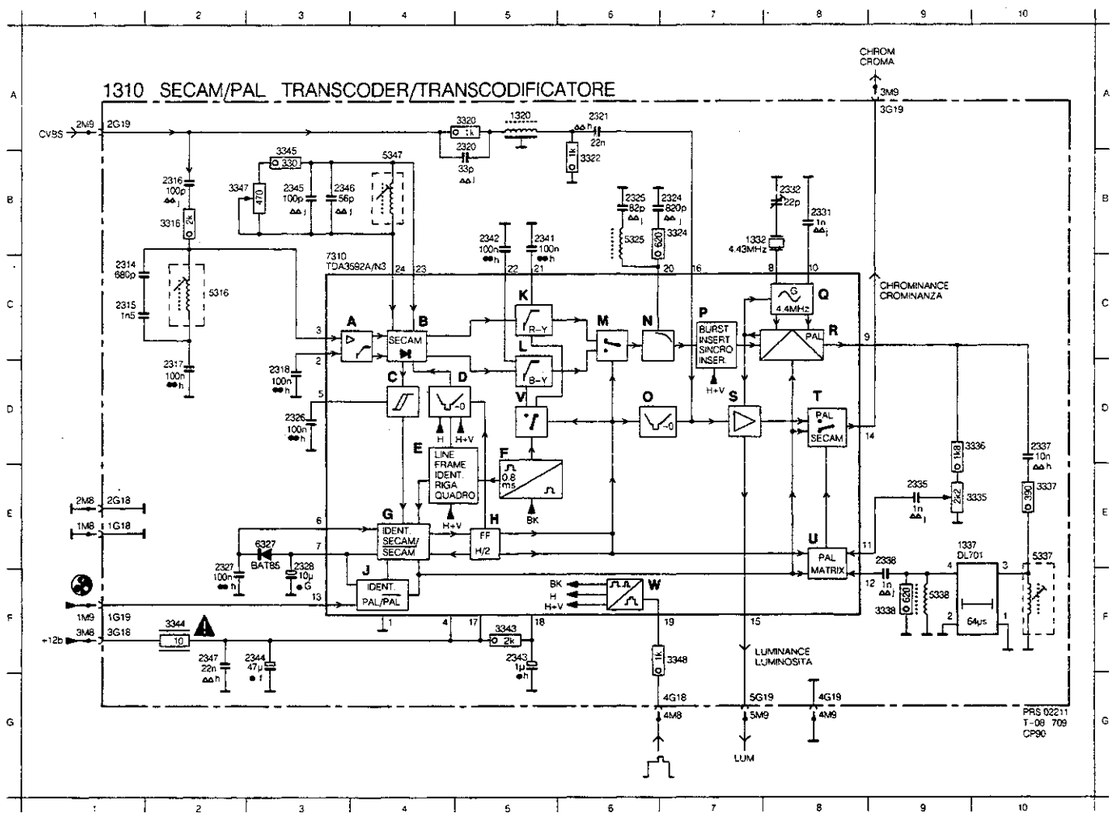
41 632 A12

SECAM/PAL TRANSCODER



41 633 A12

1320 A 5 2315 C 1 2320 A 5 2326 D 3 2332 B 8 2341 B 5 2345 B 3 3320 A 5 3336 D10 3344 F 2 5316 C 2 5347 B 4
1332 B 7 2316 B 2 2321 A 6 2327 E 2 2335 E 9 2342 B 5 2346 B 3 3322 B 6 3337 E10 3345 B 3 5325 B 6 6327 E 3
1337 E10 2317 D 2 2324 B 7 2328 E 3 2337 D10 2343 F 5 2347 F 2 3324 B 7 3338 F 9 3347 B 2 5337 E10 7310 C 3
2314 C 1 2318 D 3 2325 B 6 2331 B 8 2338 E 9 2344 F 3 3316 B 2 3335 E10 3343 F 5 3348 F 7 5338 F 9

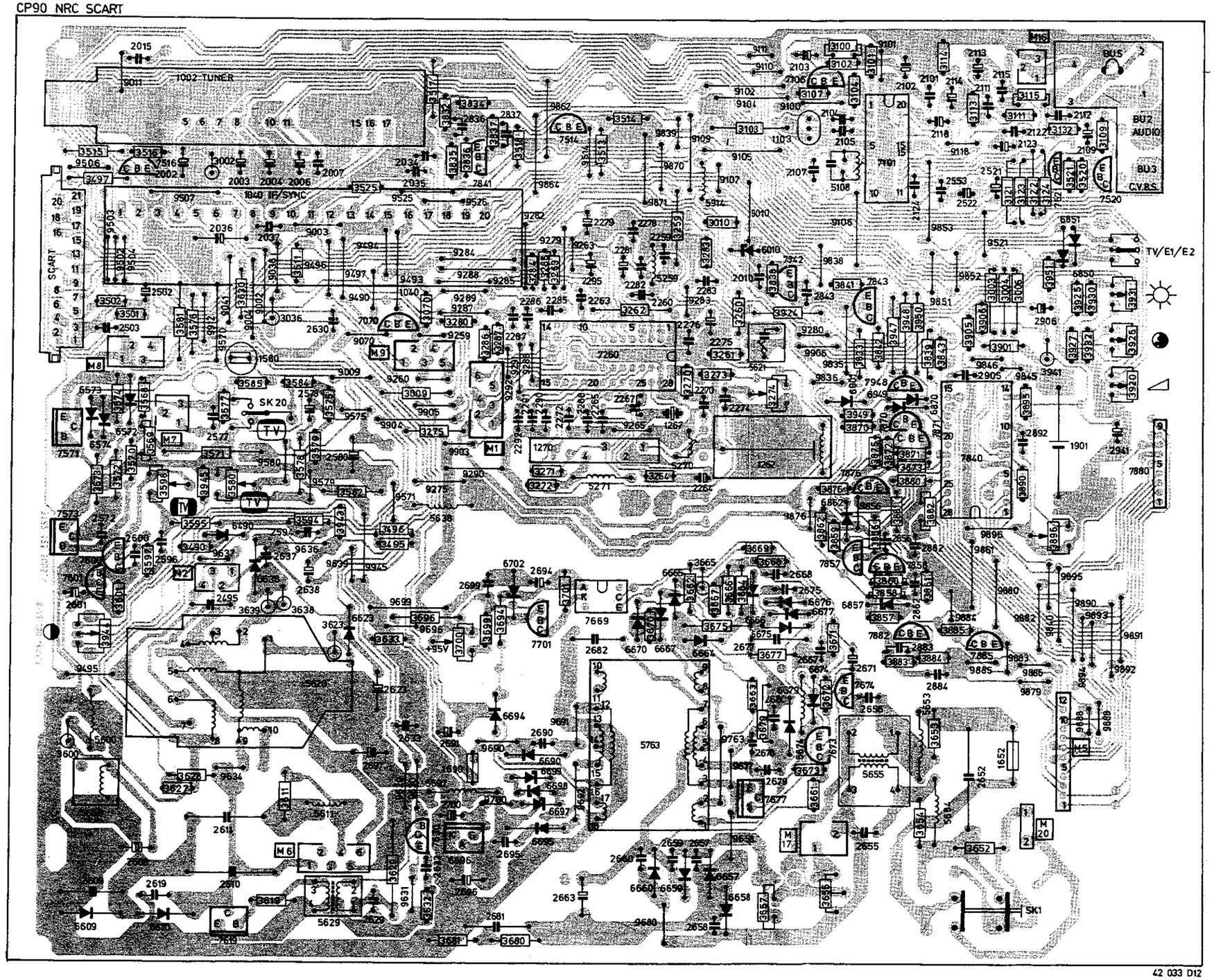


SECAM/PAL TRANSCODER

TDA3592A/N3	4822 209 11389		
BAT85	4822 130 31983		
5316	4822 156 10998		
5325	4822 156 21125		
5337	4822 156 21027		
5338	4822 157 52278		
5347	4822 157 53046		
3335	4822 100 20149	2.2 kΩ	potm.
3344	4822 111 30508	10 Ω	0.33 W
3347	4822 101 10651	470 Ω	potm.

2314	4822 121 42995	680 pF	100 V
2315	4822 121 42994	1.5 µF	100 V
2328	4822 124 40435	10 µF	50 V
2332	4822 125 50045	20 pF	trimm.
VARIOUS			
1320	4822 157 53047	Delay line DL4505	
1332	4822 242 70323	Crystal 4.43 MHz	
1337	4822 320 40096	Delay line DL701	
(board)			
G18	4822 266 30276	4p	
G19	4822 265 40503	5p	

CP90 NRC SCART



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3627	I 5	5697	I 5	1103	B 9	2691	I 6	3628	I 3	5763	I 8	1262	F 9	2694	G 6	3629	J 5	5914	C 8
1267	E 8	2695	J 6	3630	D 3	6010	C 9	1270	F 6	2696	J 6	3632	K 5	6490	F 3	1580	E 4	2697	I 5
3633	H 5	6572	E 2	1652	I11	2699	G 6	3638	G 4	6573	E 2	1690	I 6	2700	J 6	3639	G 3	6574	F 2
1901	E12	2836	B 6	3652	J11	6609	K 3	2002	C 3	2837	B 6	3653	I11	6610	K 3	2003	C 3	2843	D 9
3654	J10	6623	G 5	2004	C 4	2856	G10	3655	K 9	6638	G 4	2006	C 4	2862	G10	3657	K 9	6657	J 8
2007	B 4	2882	G11	3661	I 9	6658	K 9	2010	D 9	2883	H10	3662	G 8	6659	J 8	2015	A 2	2884	H11
3663	H 9	6660	J 8	2034	B 5	2892	E12	3664	G 9	6664	J 8	2035	C 5	2905	E11	3665	G 8	6665	G 8
2036	C 3	2906	D12	3666	G 8	6666	G 9	2037	C 4	2941	F12	3667	G 8	6667	H 8	2101	A10	3002	B 3
3668	G 9	6670	H 7	2102	A10	3003	D11	3669	G 9	6674	H 9	2103	A 9	3004	D11	3670	G 8	6675	H 9
2104	B 9	3006	D11	3671	H10	6676	G 9	2105	B10	3009	E 5	3672	H 9	6677	G 9	2107	B 9	3010	C 8
3673	I 9	6679	H 9	2109	B12	3036	D 4	3675	H 8	6690	I 7	2111	B11	3070	D 5	3677	H 9	6694	I 6
2112	B12	3100	A10	3678	I 9	6695	J 6	2113	A11	3101	A10	3680	K 6	6696	J 6	2114	A11	3102	A10
3681	K 6	6697	J 7	2115	A11	3103	B 9	3694	G 6	6698	I 7	2118	B11	3104	B10	3696	G 5	6699	I 7
2122	B12	3107	B 9	3699	H 6	6702	G 6	2123	B11	3109	B12	3700	H 6	6850	D12	2124	C10	3111	B11
3701	G 7	6851	C12	2259	C 8	3113	B11	3832	B 5	6857	G10	2260	D 8	3114	A11	3833	D10	6862	F 9
2263	D 7	3115	B12	3834	B 6	6870	E11	2264	F 8	3121	C11	3835	B 6	6901	E10	2265	E 7	3122	C12
3836	B 6	6949	E10	2266	E 7	3123	C11	3837	B 6	7070	D 5	2267	E 7	3124	C12	3838	D 9	7101	B10
2270	E 8	3132	B12	3839	D11	7106	A 9	2272	E 7	3255	C 8	3841	D10	7260	D 7	2274	E 9	3260	D 9
3842	D10	7514	B 7	2275	D 8	3261	D 8	3843	D11	7516	B 3	2276	D 8	3262	D 7	3856	F10	7520	C12
2278	C 8	3263	D 7	3857	G10	7521	C12	2279	C 7	3264	F 8	3858	G10	7571	F 2	2281	C 7	3270	E 8
3859	F10	7573	F 2	2282	D 7	3271	F 6	3860	G10	7600	G 2	2283	D 8	3272	F 6	3861	G11	7601	G 2
2285	D 7	3273	E 8	3862	F 9	7619	K 3	2286	D 6	3274	E 9	3870	E10	7630	J 5	2287	D 6	3275	E 5
3871	F10	7669	G 7	2290	E 6	3280	D 6	3872	F10	7673	I10	2291	E 6	3283	C 8	3873	F10	7674	H10
2292	E 6	3284	D 6	3875	F10	7677	I 9	2295	D 7	3285	C 6	3876	F 9	7701	H 6	2455	G 3	3286	D 6
3880	F10	7840	F11	2502	D 2	3287	D 6	3881	F10	7841	C 6	2503	D 2	3490	G 3	3882	F11	7842	C 9
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3885	H11	7858	G10	2572	F 2	3501	D 2	3890	F11	7870	E10	2577	E 3	3502	D 2	3895	E12	7871	E11
2578	E 4	3511	C 4	3896	F12	7876	F10	2580	F 4	3513	B 7	3901	D11	7880	F13	2594	F 4	3514	B 7
3905	D11	7882	H10	2596	G 3	3515	B 2	3906	D11	7885	H11	2600	G 2	3516	B 2	3920	E13	7948	E10
2601	G 2	3517	B 5	3924	D 9	BU-2	B13	2608	J 2	3518	B 6	3925	D12	BU-3	B13	2609	J 2	3520	B12
3926	D13	BU-5	A12	2610	J 3	3521	B12	3927	D12	SK-1	K12	2611	J 3	3525	C 5	3930	D12	SK20	E 4
2619	J 3	3568	E 2	3931	D13	2623	H 5	3569	E 2	3932	D12	2629	K 5	3570	F 2	3941	E12	2630	D 4
3571	F 3	3943	F 4	2632	J 5	3572	F 2	3944	H 2	2633	I 5	3573	F 2	3945	F 3	2637	G 4	3574	E 2
3947	D10	2638	G 4	3575	E 4	3948	D10	2652	I11	3576	D 3	3949	E10	2655	J10	3577	E 3	3950	D10
2656	H10	3578	F 4	3951	D12	2657	J 8	3579	F 4	5108	C10	2658	K 8	3580	F 3	5259	D 8	2659	J 8
3581	D 3	5270	F 8	2660	J 7	3582	F 4	5271	F 7	2663	K 7	3584	E 4	5600	I 2	2667	H 9	3585	E 3
5608	J 2	2668	G 9	3594	F 4	5611	J 4	2671	H10	3595	F 3	5620	H 4	2675	G 9	3597	G 2	5621	E 9
2677	H 9	3598	F 3	5629	K 4	2678	I 9	3600	I 2	5638	F 5	2679	I 9	3601	G 2	5653	H10	2680	H 9	3611	I 4	5654	J11

PRS.02840
T32-728
BEH. BIJ 42033D12

SYMBOLS USED IN CIRCUIT DIAGRAMS

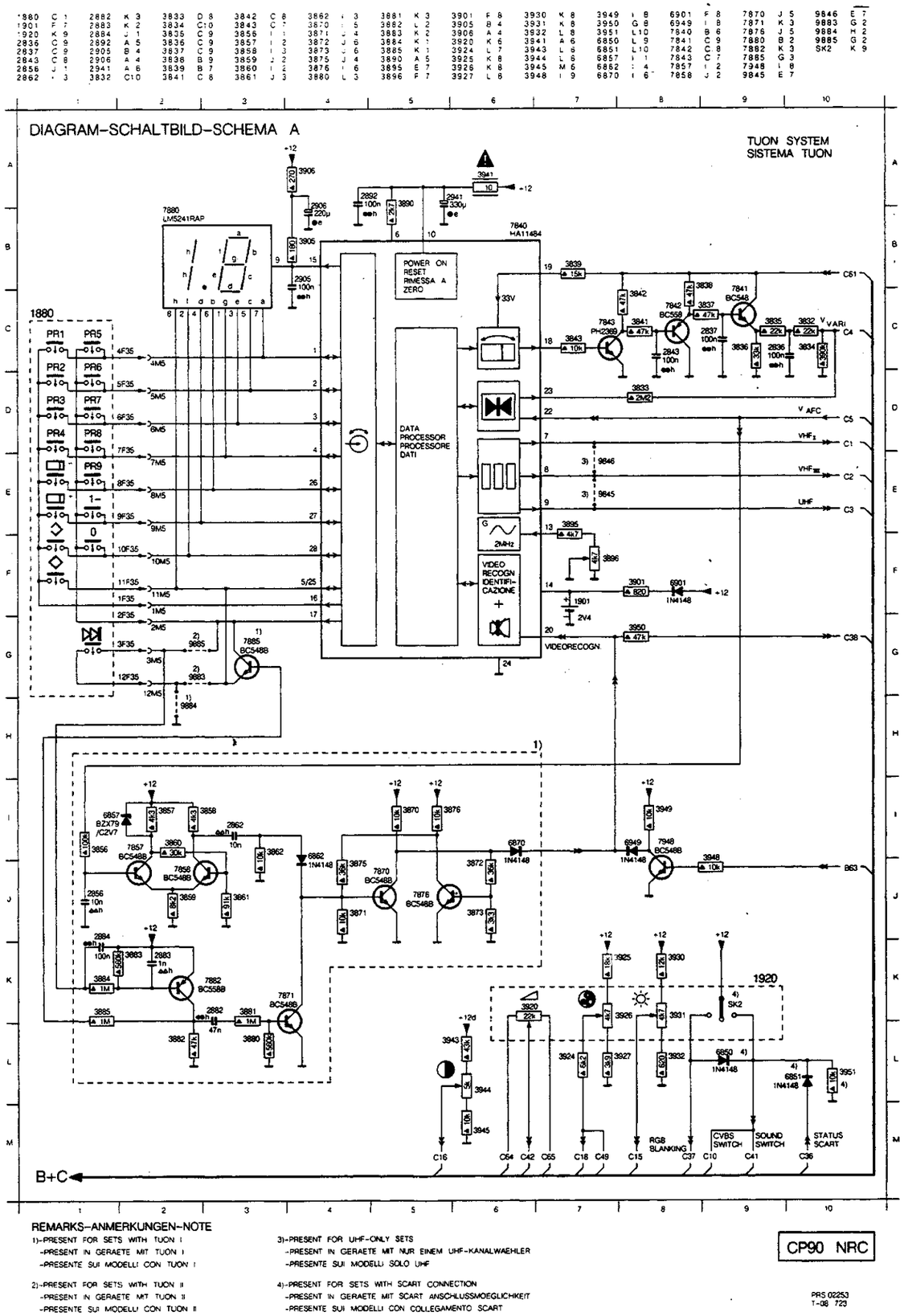
SYMBOL	TYPE	t P 70° amb	TOLERANCE	SERIES
	SFR16T	0.5	1E - 3M 5%	E24
	SFR25H	0.5	1E - 10M 5%	E24
	MRS25	0.6	1E - 1M 1%	E24
	MR30	0.5	1E - 1M 1% (2%)	E24
	VR37	0.5	220K - 33M 5%	E24
	PR37	1.6	1E - 1M 5%	E24
	VR68	1	100K - 68M 5%	E24
	MRS 16T	0.4	10R - 100K	E24/E96

SYMBOL	TYPE	VOLTAGE DC	TOLERANCE
	POLYESTER FLATFOIL	SEE NOTE	10%
	PLATE CERAMIC	SEE NOTE	DEPENDING ON CAPACITY
	ELCO MINIATURE SINGLE	SEE NOTE	-10+50%
	ELCO SINGLE ENDED	SEE NOTE	±20%

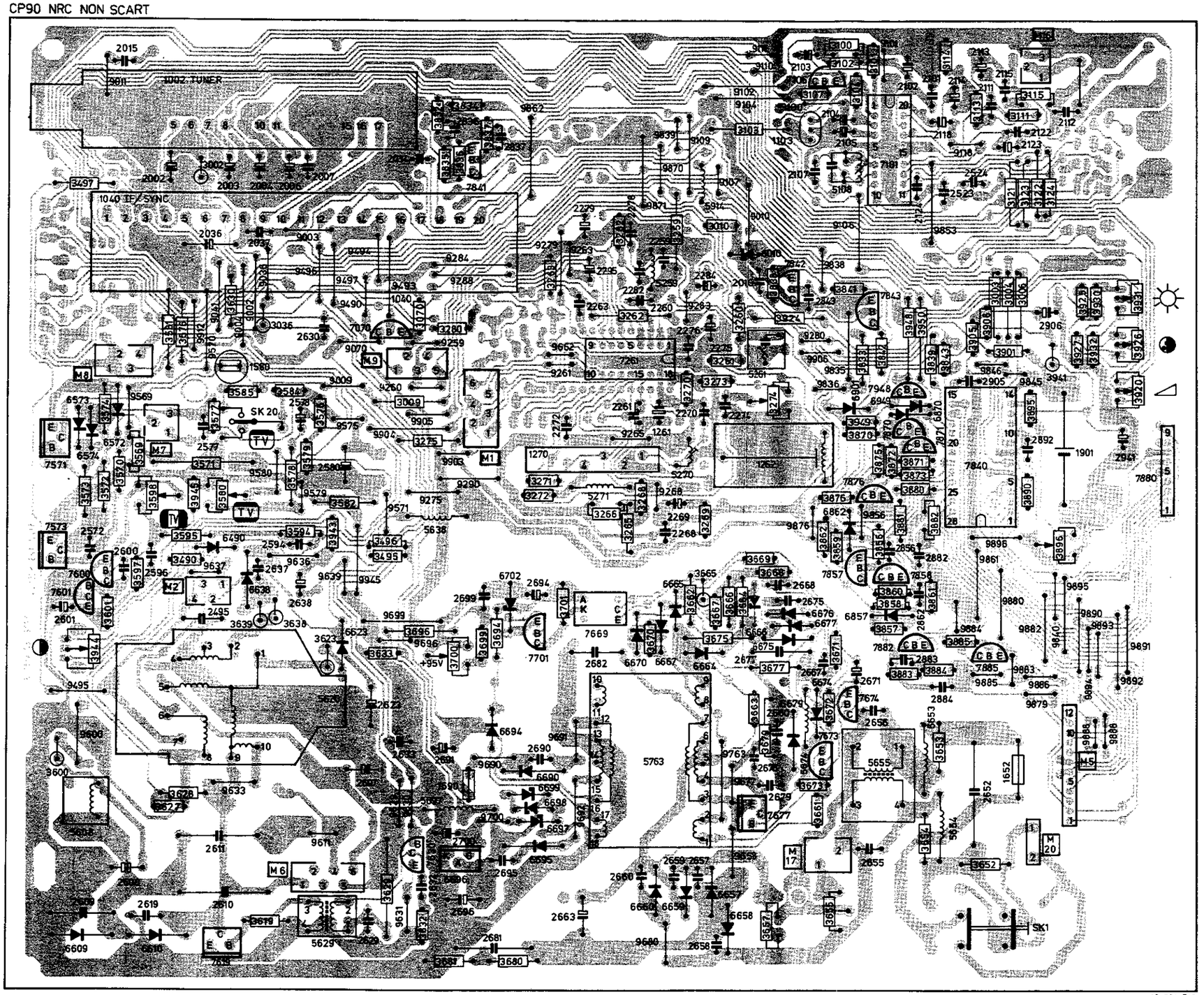
NOTE:

*	f = 25V	q = 200V	x = 1000V	E = 20V
	g = 40V	r = 250V	z = 1600V	F = 35V
a = 2.5V	h = 63V	s = 300V	A = 1.6V	G = 50V
b = 4V	j = 100V	t = 350V	B = 6V	H = 75V
c = 6.3V	l = 125V	u = 400V	C = 12V	I = 80V
d = 10V	m = 150V	v = 500V	D = 15V	
e = 16V	n = 160V	w = 630V		

39 301 A13



CP90 NRC NON SCART



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	1040	C 3	2905	E11	3834	B 6	7101	B10
	1040	D 5	2906	D12	3835	B 6	7106	A 9
	1103	B 9	2941	F12	3836	B 6	7261	D 7
	1261	E 8	3002	B 3	3837	B 6	7571	F 2
A	1262	F 9	3003	D11	3838	D 9	7573	F 1
	1270	F 6	3004	D11	3839	D11	7600	G 2
	1580	E 4	3006	D11	3841	D10	7601	G 2
	1652	I11	3009	E 5	3842	D10	7619	K 3
	1690	I 6	3010	C 8	3843	D11	7630	J 5
	1901	E12	3036	D 4	3856	F10	7669	G 7
	2002	C 3	3070	D 5	3857	G10	7673	I10
	2003	C 3	3100	A10	3858	G10	7674	H10
	2004	C 4	3101	A10	3859	G10	7677	I 9
	2006	C 4	3102	A10	3860	G10	7701	H 6
B	2007	B 4	3103	B 9	3861	G11	7840	F11
	2010	D 9	3104	B10	3862	F 9	7841	C 6
	2015	A 2	3107	B 9	3870	E10	7842	C 9
	2034	B 5	3111	B11	3871	F10	7843	D10
	2036	C 3	3113	B11	3872	F10	7857	G 9
	2037	C 4	3114	A11	3873	F10	7858	G10
	2101	A10	3115	B12	3875	F10	7870	E10
	2102	A10	3121	C11	3876	F 9	7871	E11
	2103	A 9	3122	C12	3880	F10	7876	F10
C	2104	B 9	3123	C11	3881	F10	7880	F13
	2105	B10	3124	C12	3882	F11	7882	H10
	2107	B 9	3258	C 8	3883	H10	7885	H11
	2111	B11	3260	D 9	3884	H11	7948	E10
	2112	B12	3261	D 8	3885	H11	SK-1	K12
	2113	A11	3262	D 7	3890	F11	SK20	E 4
	2114	A11	3263	D 7	3895	E12		
	2115	A11	3270	E 8	3896	G12		
D	2118	B11	3271	F 6	3901	D11		
	2122	B12	3272	F 6	3905	D11		
	2123	B11	3273	E 8	3906	D11		
	2124	C10	3274	E 9	3920	E13		
	2259	C 8	3275	E 5	3924	D 9		
	2280	D 8	3280	D 6	3925	D12		
	2281	E 7	3490	G 3	3926	D13		
	2283	D 7	3495	G 5	3927	D12		
	2270	E 8	3496	F 5	3930	D12		
	2272	E 7	3497	C 2	3931	D13		
E	2274	E 9	3569	E 2	3932	D12		
	2275	D 8	3570	F 2	3941	E12		
	2276	D 8	3571	F 3	3943	F 4		
	2278	C 8	3572	F 2	3944	H 2		
	2279	C 7	3573	F 2	3945	F 3		
	2282	D 7	3574	E 2	3948	D10		
	2284	D 8	3575	E 4	3949	E10		
	2495	G 3	3576	D 3	3950	D10		
	2572	F 2	3577	E 3	3951	D12		
F	2577	E 3	3578	F 4	5108	C10		
	2578	E 4	3579	F 4	5259	D 8		
	2580	F 4	3580	F 3	5270	F 8		
	2594	G 4	3581	D 3	5271	F 7		
	2596	G 3	3582	F 4	5608	J 2		
	2600	G 2	3584	E 4	5620	H 4		
	2601	G 2	3585	E 3	5621	E 9		
	2608	J 2	3594	F 4	5629	K 4		
	2609	J 2	3595	F 3	5638	F 5		
G	2611	J 3	3597	G 2	5653	H10		
	2619	J 2	3598	F 3	5654	J11		
	2623	H 5	3600	I 2	5655	I10		
	2629	K 5	3601	G 2	5674	I 9		
	2630	D 4	3619	K 4	5697	I 5		
	2632	J 5	3623	H 4	5763	I 8		
	2633	I 5	3627	I 3	5914	C 8		
	2637	G 4	3628	I 3	6010	C 9		
	2638	G 4	3629	J 5	6490	F 3		
H	2652	I11	3630	D 3	6572	E 2		
	2655	J10	3632	K 5	6573	F 2		
	2656	H10	3633	H 5	6574	F 2		
	2657	J 8	3638	G 4	6609	K 2		
	2658	K 8	3639	G 3	6610	K 3		
	2659	J 8	3652	J11	6623	G 5		
	2660	J 7	3653	I11	6638	G 4		
	2663	K 7	3654	J10	6657	J 8		
	2667	H 9	3655	K 9	6658	K 9		
I	2668	G 9	3657	K 9	6659	J 8		
	2671	H10	3661	I 9	6660	J 8		
	2675	G 9	3662	G 8	6664	H 8		
	2677	H 9	3663	H 9	6665	G 8		
	2678	I 9	3664	G 9	6666	G 9		
	2679	I 9	3665	G 8	6667	H 8		
	2680	H 9	3666	G 8	6670	H 7		
	2681	K 6	3667	G 8	6674	H 9		
	2682	H 7	3668	G 9	6675	H 9		
J	2690	I 6	3669	G 9	6676	G 9		
	2691	I 6	3670	H 8	6677	G 9		
	2694	G 6	3671	H10	6679	H 9		
	2695	J 5	3672	H 9	6690	I 7		
	2696	K 6	3673	I 9	6694	I 6		
	2697	I 5	3675	H 8	6695	J 6		
	2699	G 6	3677	H 9	6696	J 6		
	2700	J 6	3679	I 9	6697	J 7		
	2836	B 6	3680	K 6	6698	I 7		
K	2837	B 6	3681	K 6	6699	I 7		
	2843	D 9	3694	G 5	6702	G 6		
	2856	G10	3696	G 5	6857	G10		
	2862	G10	3699	H 6	6862	F 9		
	2882	G11	3700	H 6	6870	E11		
	2883	H10	3701	G 7	6901	E10		
	2884	H11	3832	B 5	6949	E10		

PRS.02841

DIAGRAM–SCHALTBILD–SCHEMA B

1040 -2B SYNCHRONISATION–SINCRONIZZAZIONE

HORIZONTAL
ORIZZONTALE

EAST–WEST
OST–WEST
EST–OVEST

DEGAUSSING
SMAGNETTIZZAZIONE

SUPPLY–SPEISUNG
ALIMENTAZIONE

VERTICAL
VERTIKAL
VERTICALE

A+C

REMARKS–ANMERKUNGEN–NOTE

1)–PRESENT FOR SETS WITH SCART CONNECTION
–PRESENT IN GERAETEN MIT SCART ANSCHLUSSMOEGLICHKEIT
–PRESENTE SUI MODELLI CON COLLEGAMENTO SCART

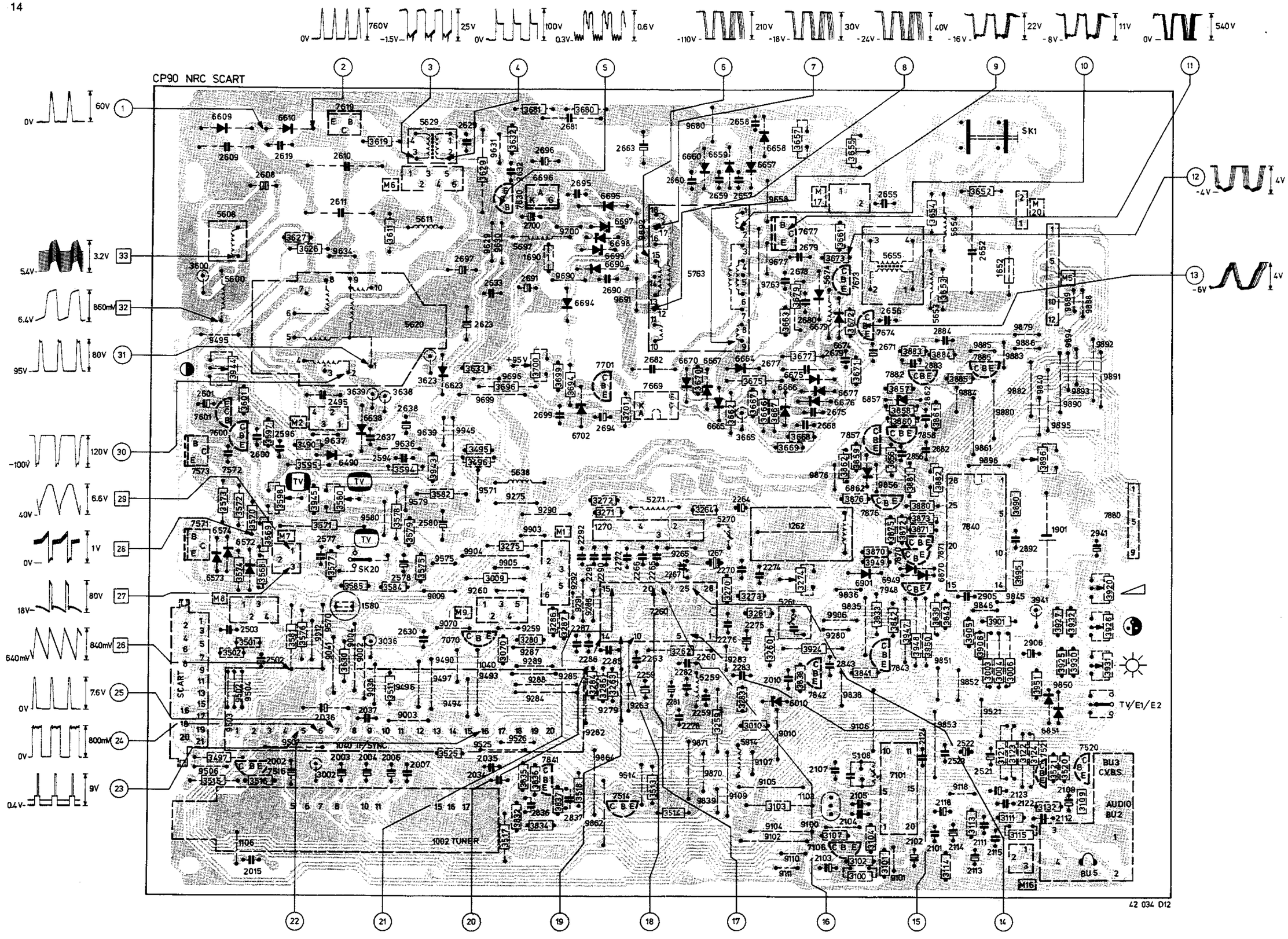
2)–NOT PRESENT FOR SETS WITH SCART CONNECTION
–NICHT PRESENT IN GERAETEN MIT SCART ANSCHLUSSMOEGLICHKEIT
–ASSENTE SUI MODELLI CON COLLEGAMENTO SCART

3)–PRESENT FOR 21" SETS
–PRESENT IN 21" GERAETEN
–PRESENTE SUI MODELLI 21"

CP90 NRC

PRS 02249
T–08 722

CS 9 413

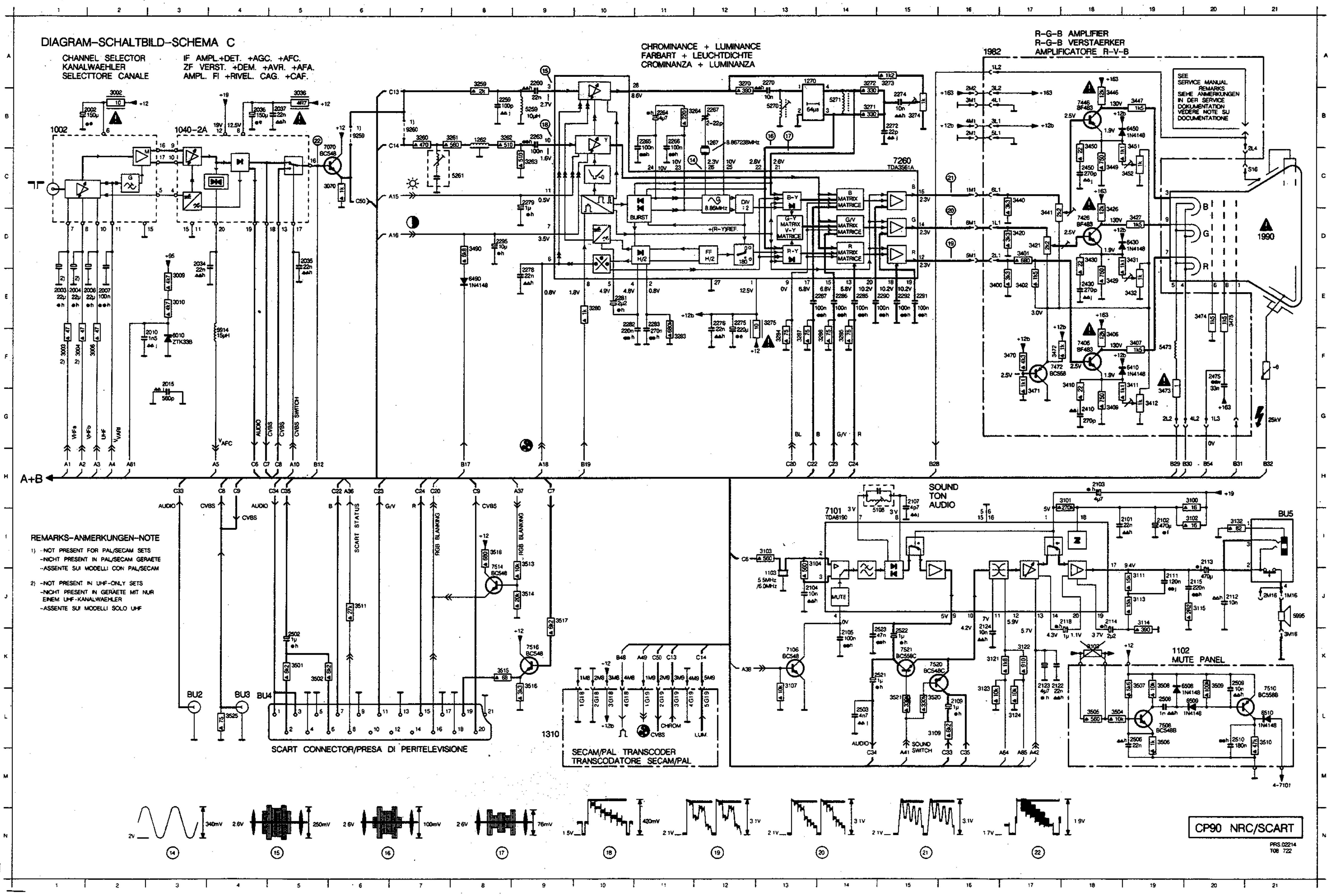

CP90 NRC SCART
0V 760V -1.5V 25V 0V 100V 0.3V 0.6V
-110V 210V -18V 30V -24V 40V -16V 22V -8V 11V 0V 540V
0V 60V 1
5.4V 3.2V 33
6.4V 860mV 32
95V 80V 31
-100V 120V 30
40V 6.6V 29
0V 1V 26
18V 80V 27
640mV 840mV 26
0V 7.6V 25
0V 800mV 24
0.4V 9V 23
-4V 4V 12
-6V 4V 13
SK1
SK20
SCART
1040 IF SYNC
1002 TUNER
TV/E1/E2
BU3 CVBS
AUDIO BU2
BU5
42 034 D12
22 21 20 19 18 17 16 15 14
1.7V 1.9V 2.1V 3.1V 2.1V 3.1 2.1V 3.1V 1.5V
420mV 2.6V 76mV 2.6V 100mV 2.6V 390mV 2V 340mV

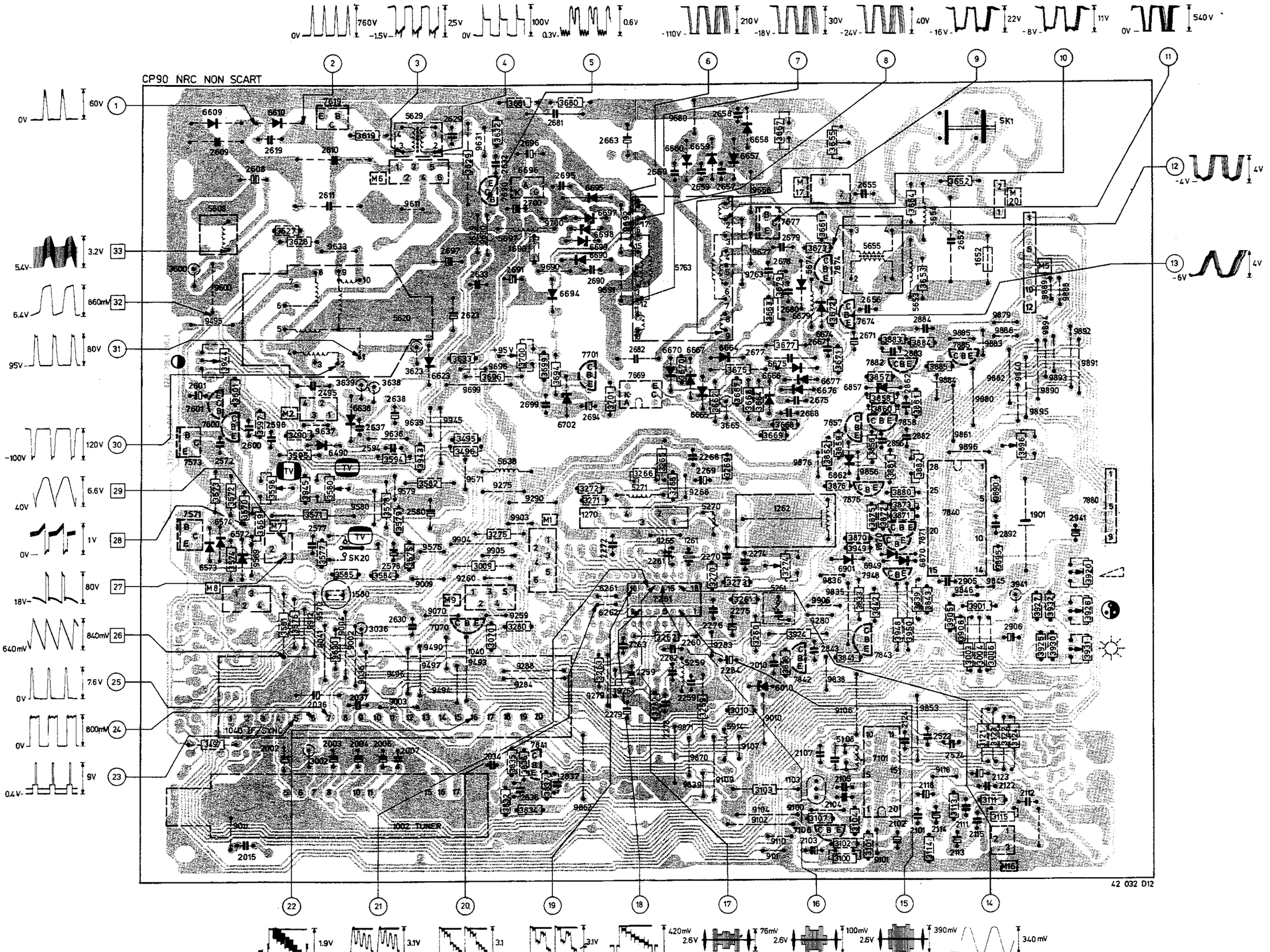
1002	B 1	1982	A16	2015	F 3	2105	K14	2118	J18	2265	B11
1040	B 3	1990	D21	2034	D 3	2107	H15	2122	K17	2266	B11
1102	K20	2002	B 2	2036	B 4	2109	L16	2123	K17	2267	B12
1103	J13	2003	E 1	2037	B 5	2111	J19	2124	J16	2270	A13
1262	B 8	2004	E 1	2101	I 19	2112	J20	2259	B 8	2272	B15
1267	B12	2006	E 2	2102	I 19	2113	I 20	2260	A 9	2274	B15
1270	A13	2007	E 2	2103	H18	2114	J18	2263	B 9	2275	E12
1310	L 9	2010	F 3	2104	J13	2115	J20	2264	B11	2276	E12

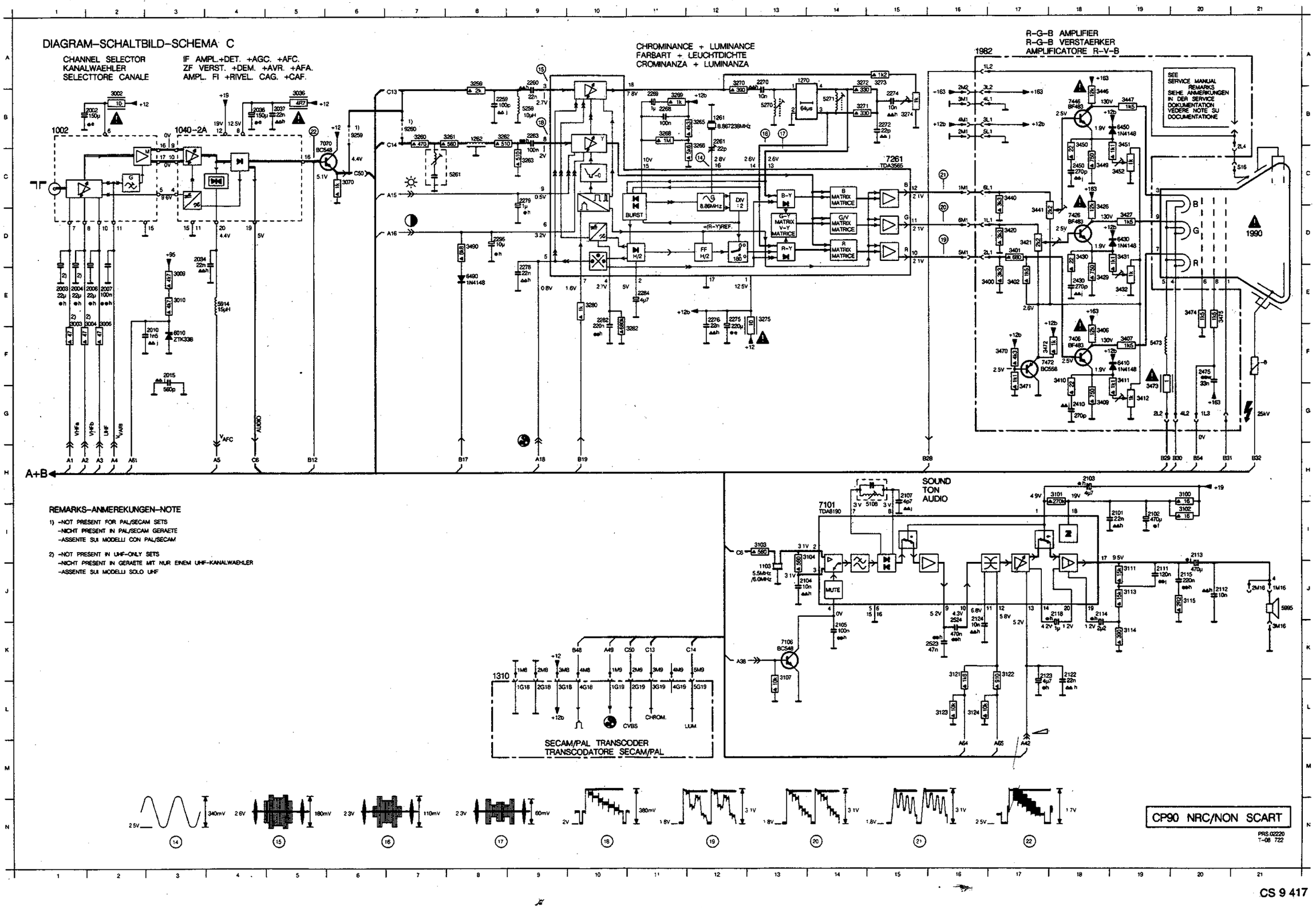
2278	E 9	2290	E15	2502	K 5	2523	K15	3070	C 6	3111	J19	3132	I 20
2279	C 9	2291	E15	2503	L14	3002	B 2	3100	H20	3113	J19	3259	A 8
2281	E10	2292	E15	2506	L19	3003	F 1	3101	H18	3114	J19	3260	B 7
2282	E10	2295	D 8	2508	L19	3004	F 1	3102	I 20	3115	J20	3261	B 8
2283	E11	2410	G18	2509	K20	3006	F 2	3103	I 13	3121	K16	3262	B 8
2285	E14	2430	E18	2510	L20	3009	E 3	3104	I 14	3122	K17	3263	C 9
2286	E14	2450	C18	2521	K15	3010	E 3	3107	K13	3123	L16	3264	B12
2287	E14	2475	F20	2522	K15	3036	B 5	3109	L15	3124	L17	3270	A12

3271	B14	3284	F13	3407	F19	3427	D19	3447	B19	3473	G19	3506	L19
3272	A14	3285	F14	3409	G18	3429	E18	3449	C18	3474	E20	3507	K19
3273	A15	3286	F14	3410	F18	3430	D18	3450	B18	3475	E20	3508	K19
3274	B15	3287	F13	3411	F19	3431	D19	3451	B19	3490	D 8	3509	K20
3275	E13	3400	E16	3412	G19	3432	E19	3452	C19	3501	K 5	3510	L21
3280	E10	3401	D17	3420	D17	3440	C17	3470	F17	3502	K 5	3511	J 6
3282	E10	3402	E17	3421	D17	3441	D17	3471	G17	3504	L18	3513	I 9
3283	F11	3406	F18	3426	D18	3446	B18	3472	F17	3505	L18	3514	J 9

3515	K 8	5259	B 9	6410	F19	7101	I 14	7510	L21	BU3	L 4		
3516	K 9	5261	C 8	6430	D19	7106	K13	7514	I 8	BU4	L 5		
3517	J 9	5270	B13	6450	B19	7260	C15	7516	K 9				
3518	I 8	5271	B14	6490	E 8	7406	F18	7520	K15				
3520	L15	5473	F19	6508	K20	7426	D18	7521	K15				
3521	L15	5914	F 4	6509	L20	7446	B18	9259	B 6				
3525	L 4	5995	J21	6510	L21	7472	F17	9260	B 7				
5108	I 15	6010	F 3	7070	B 6	7508	L19	BU2	L 3				




CP90 NRC NON SCART
SK1
SK20
TV
1002 TUNER
42 032 D12



REPAIR METHOD POWER SUPPLY (SOPS).

Warning

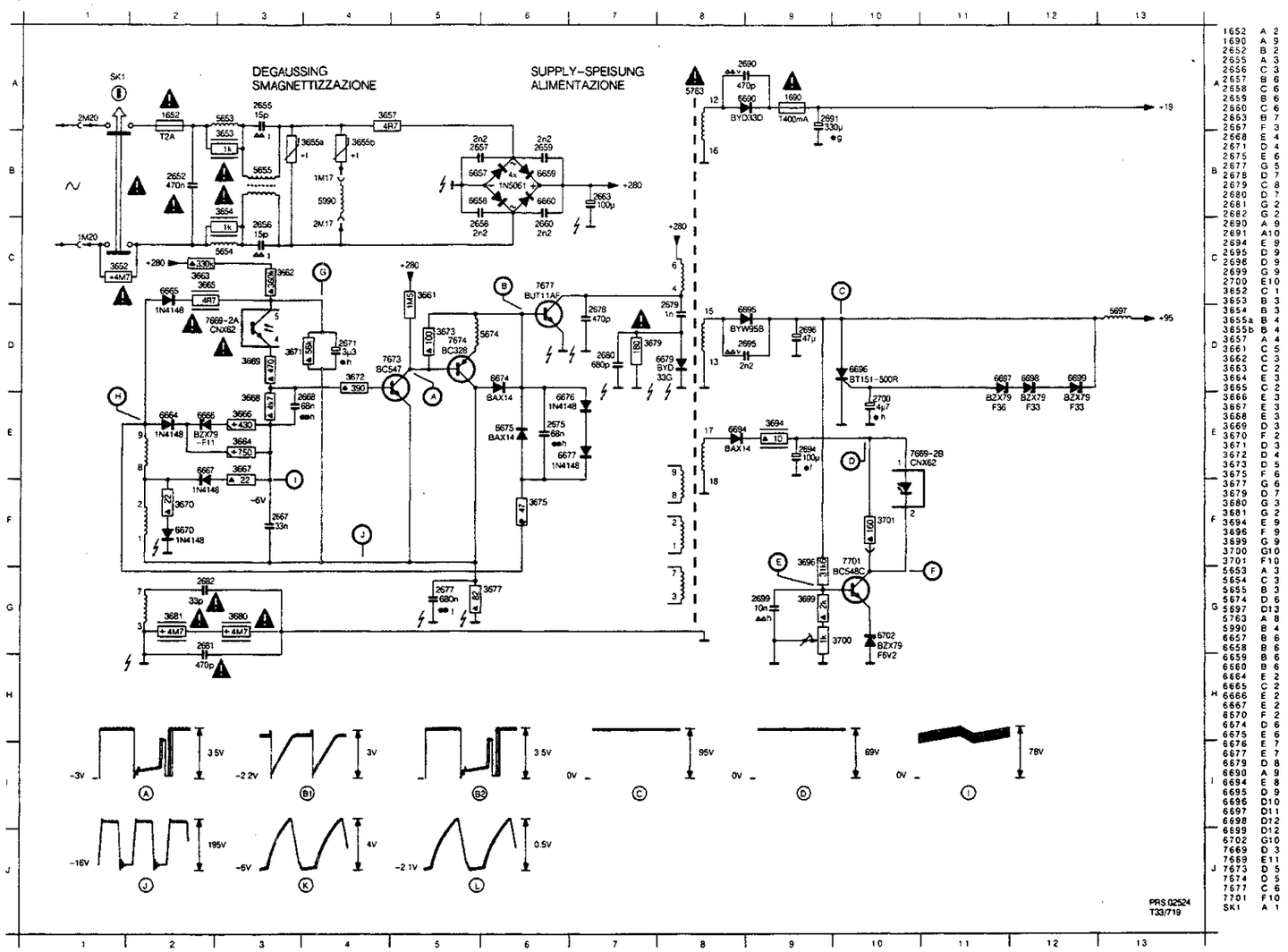
If during the raising of the input voltage the voltage at pin Ⓒ becomes greater than +95V, check the load and its connections.

Remark 1

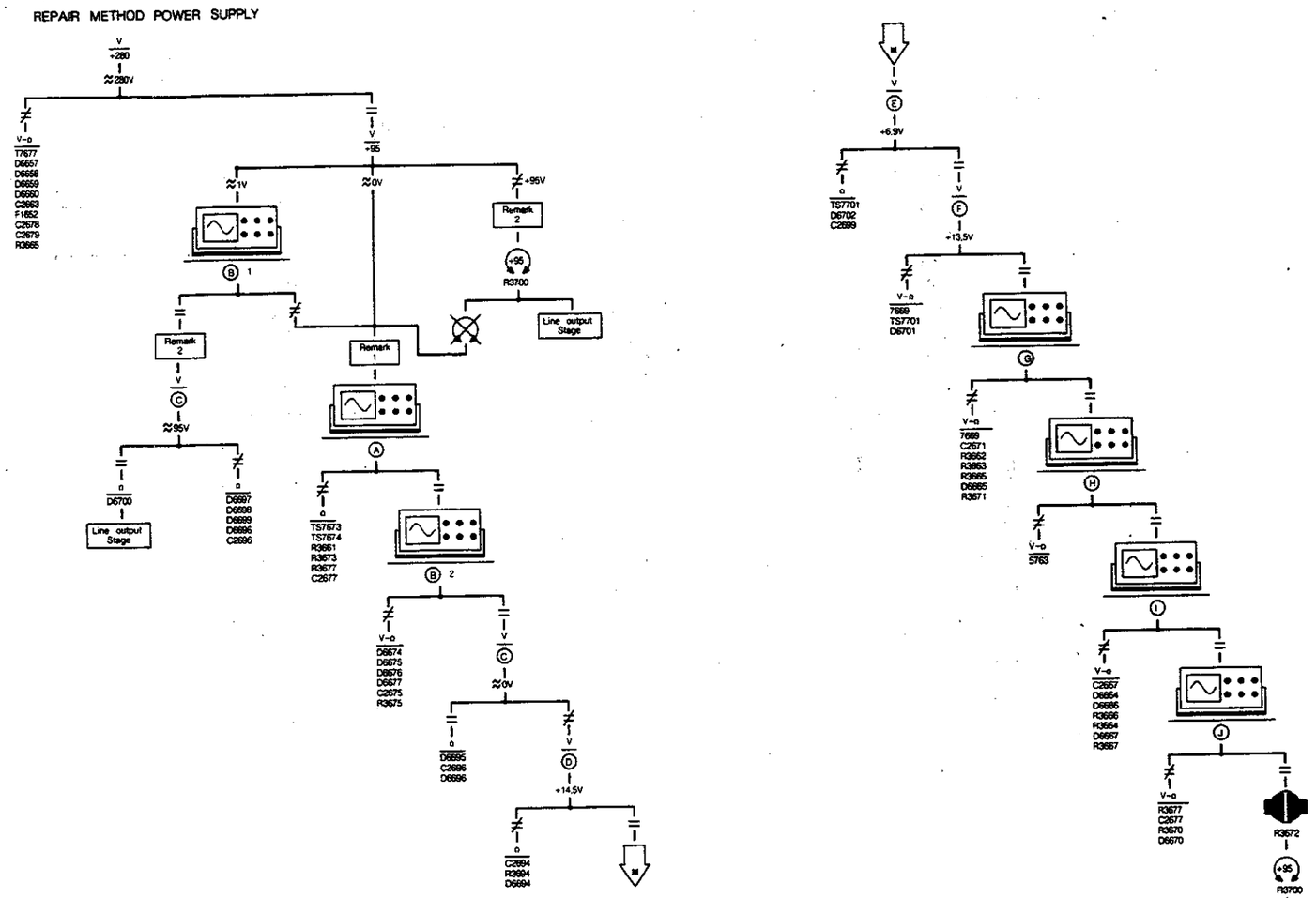
Disconnect resistor 3672 and coil 5697. Connect a 220 V/100W lamp between point Ⓒ and ⊥ . Using a variable transformer, adjust the input voltage for about 85V and check the voltage at point Ⓒ by means of a voltmeter.

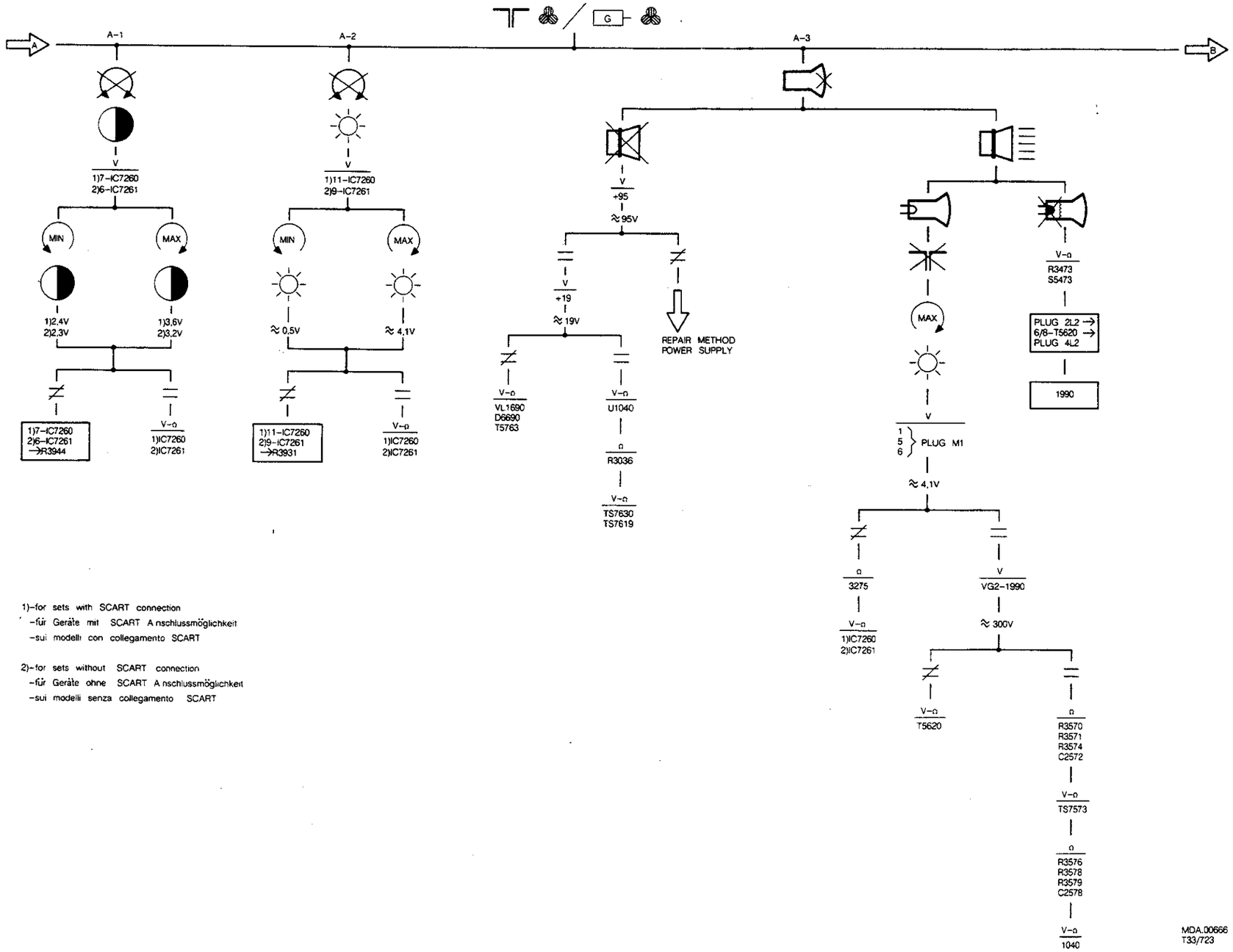
Remark 2

Disconnect coil 5697 and connect a 220V/100W lamp between pin Ⓒ and ⊥ . Using a variable transformer, adjust the input voltage for 220V and measure simultaneously the voltage at point Ⓒ.



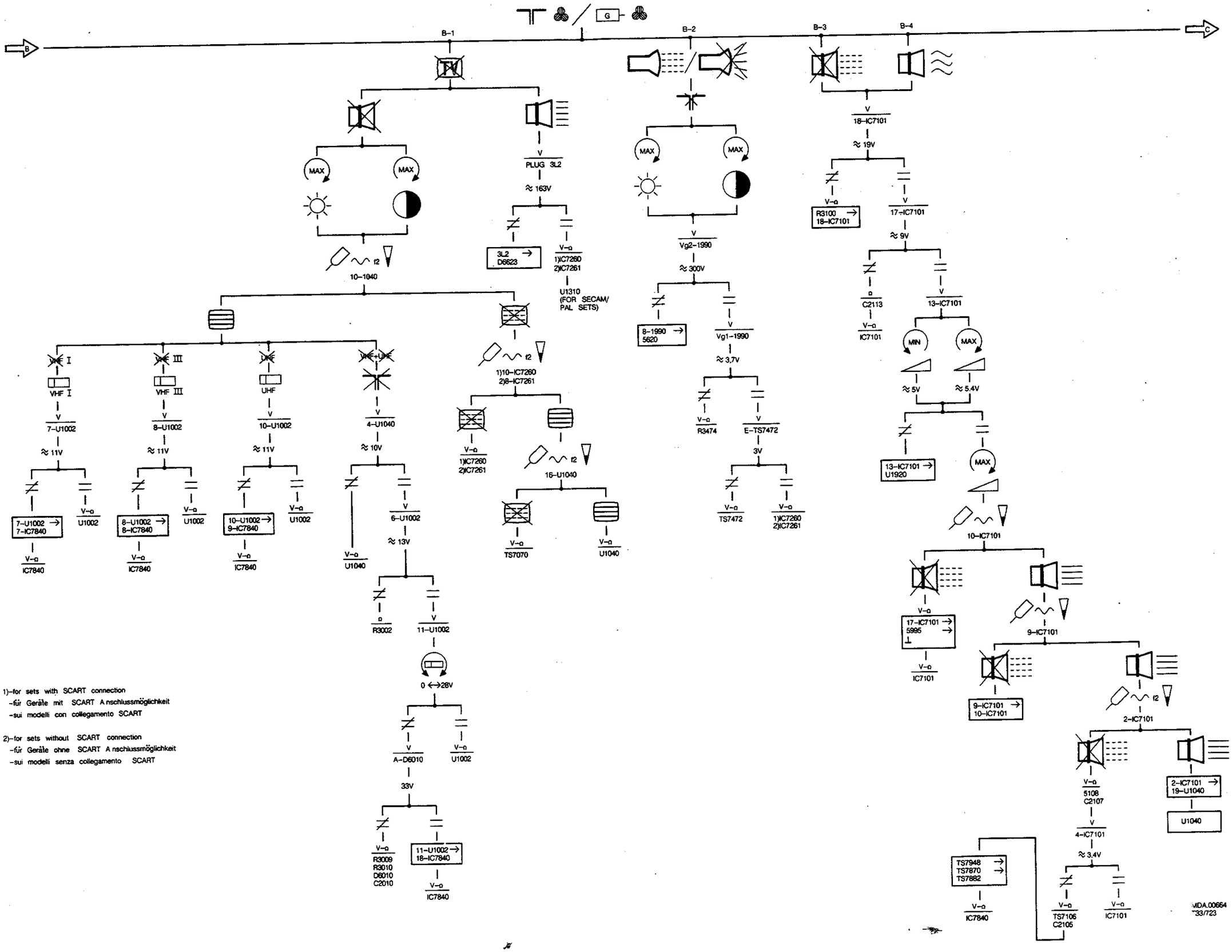
REPAIR METHOD POWER SUPPLY





1)-for sets with SCART connection
-für Geräte mit SCART Anschlussmöglichkeit
-sui modelli con collegamento SCART

2)-for sets without SCART connection
-für Geräte ohne SCART Anschlussmöglichkeit
-sui modelli senza collegamento SCART



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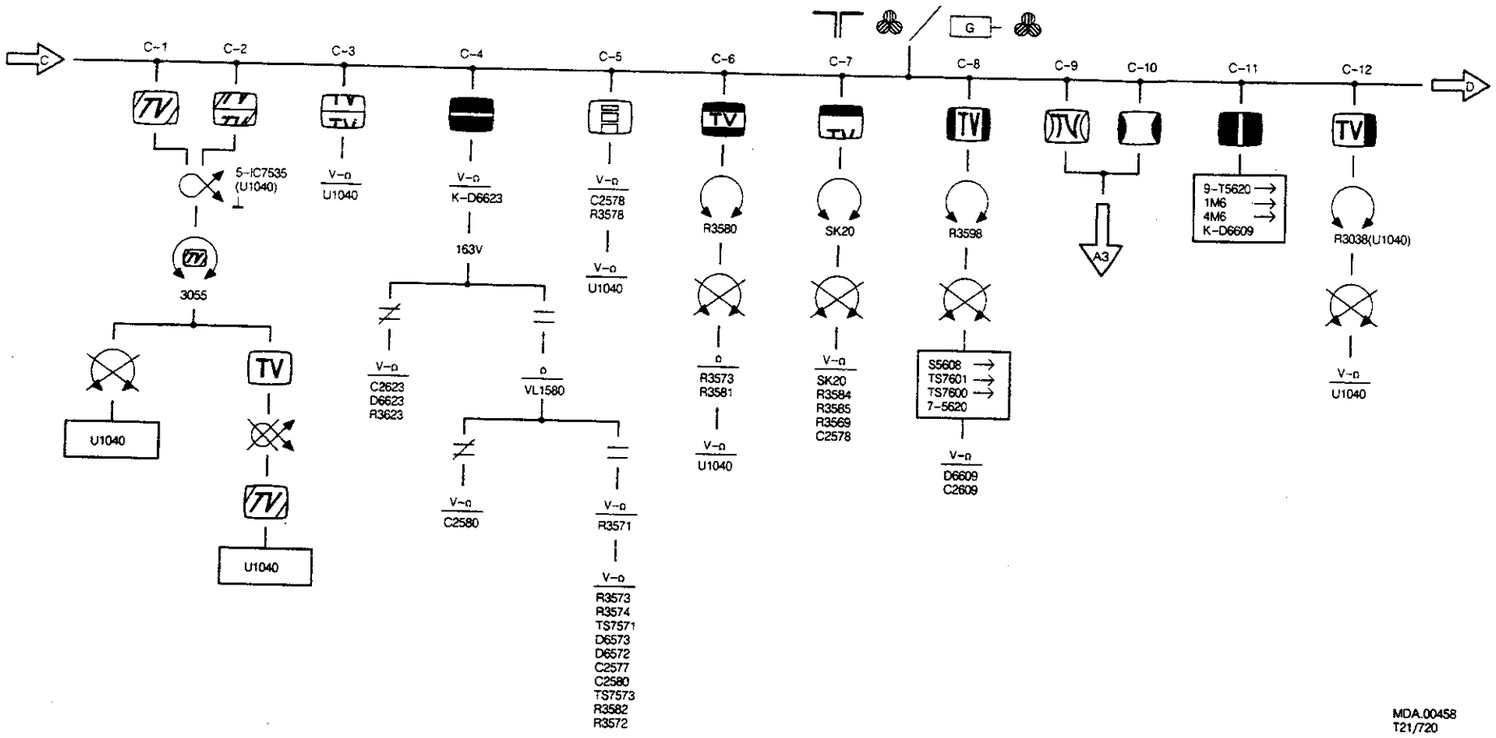
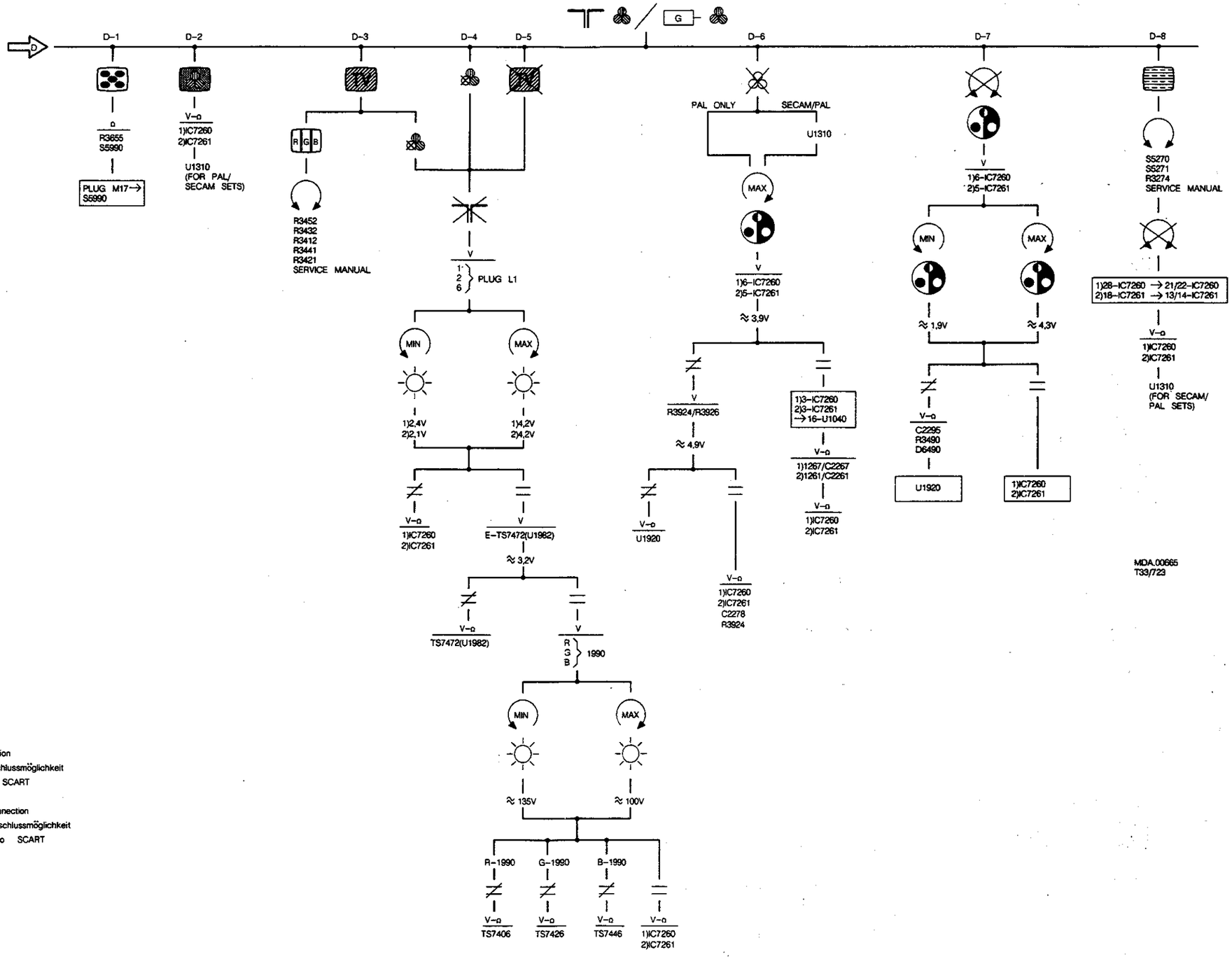
MDA.00664
33/723



MDA.00458
T21/720



MDA.00665
T33/723

1)–for sets with SCART connection
–für Geräte mit SCART Anschlussmöglichkeit
–sui modelli con collegamento SCART

2)–for sets without SCART connection
–für Geräte ohne SCART Anschlussmöglichkeit
–sui modelli senza collegamento SCART

SYMBOLS FOR FAULT-FINDING TREES

	Supply aerial signal (colour)		Normal sound		Line frame (Venetian blinds)
	Remove aerial signal		No or weak sound		Heavy horizontal bars
G	Connect generator colour signal		No sound	TV	Unstable TV picture
V	Carry out voltage measurements		Sound distorted	~f2	Inject with frequency 2 half volume
Ω	Carry out resistance (Ohmic) measurements	TV	Connect black / white picture		... doesn't work
V-Ω ...	Check ...		No or weak picture	...	Tune in ... Band
=	Correct		Uniformly discoloured frame with no or weak picture		Colours
≠	Incorrect	TV	Picture discoloured uniformly		One or two colours weak or not present
	Check circuit between .... and	TV	Vertical amplitude too small or too large		Weak colours
MAX ...	Set ... to maximum	TV	Horizontal amplitude too small or too large		No colours
MIN ...	Set ... to minimum		No vertical deflection	SK1	Switch the set on
	Remove unit	TV	No vertical synchronisation	TV	Correct television colour picture
U	Insert unit	TV	No horizontal synchronisation		Desolder...
A B	Connect the points A and B	TV	Horizontal centring incorrect		Resolder...
A B	Remove connection between points A and B	TV	Vertical centring incorrect	≈ ...	is approximately equal to ...
	Adjustment (general)		Vertical linearity incorrect	= ...	Is equal to ...
	Adjustment yields no result	TV	The left and right vertical lines are curved	≠ ...	Is not equal to...
	Filament of picture tube glows		No horizontal deflection		No or weak horizontal bars
	Filament of picture tube does not glow		No synchronisation		Vertical lines are curved no TV picture no synchronisation
	Too much light		Colour blurrs in black / white picture		Measure the signal/oscillogram
	Insufficient light		Strong colour noise in black / white picture	Freq ... Hz	Measure frequency
	No light	R B G	Correct sequence of colours		