

General Information

1996
CRT: 20"
Main Power Button:
991-922001-01

Specifications

Power Supply:
 Nominal: 220 - 240V AC 50Hz
 This chassis is fully mains isolated and is stabilised across mains voltage range from 175V to 265V for less than 0.75% change in picture size. No mains input adjustment is required.
Power Consumption: Maximum: 120W
 Minimum: 130W

Frequency Coverage:
 Hyperband (VHF CH 2 to UHF CH 69 inc. CATV): 47 - 862 MHz
 UHF (CH 21 - 69): 471 - 862 MHz
Sensitivity: 34dBuV or less, for any channel with a locked colour picture

Max. Signal Input: 95 dBuV or more for any channel

IF Frequencies (in MHz):
Vision: B/G (Europe): 38.9
 I (UK): 39.5
 L' (France): 32.7
 L (France): 39.2
 D/K (Russia): 38.0
 B/G (Europe): 33.4
 I (UK): 33.5
 L' (France): 39.2
 L (France): 32.7
 D/K (Russia): 31.5
Sound: Max. 2 x 8W RMS
 (Audio power output 8w at 10% THD)

Audio Output: 1300uA
 Beam Current Limiting: Max. 27Kv
 EHT:

Service Adjustments

VIF Alignment

Preparation Step (see fig 1)

- 1: Connect AGC bias voltage to TP105, the DC supply should be turned off this time.
- 2: Connect 14V B+ bias voltage to D404 (-) and Ground.
- 3: Connect 14V B+ bias voltage to C917 (+) and Ground.
- 4: Connect sweep generator to tuner test point and Ground.

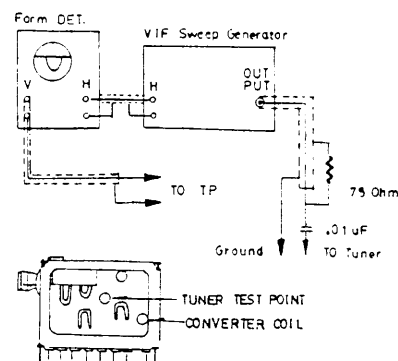


Fig 1.

Tank Coil Alignment Step (see fig 2)

- 1: Calibrate the Division of waveform detector equal to 1V per div.
- 2: The output of sweep generator should be -50dB.
- 3: Connect the waveform detector between TP106 and Ground.
- 4: Connect a 47K resistor between pin 7 to pin 22 at IC102.
- 5: Connect a 47K resistor between pin 23 to Ground at IC102.
- 6: Adjust AGC bias until the waveform just saturate.
- 7: Adjust T101 to obtain the waveform as fig 2.

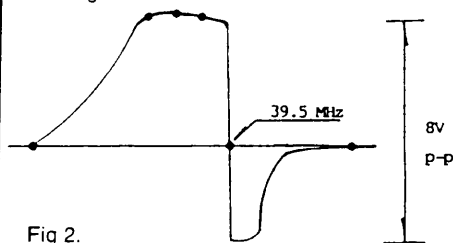


Fig 2.

VIF Alignment

- 1: Connect waveform detector to TP102 and Ground.
- 2: Connect 100 ohm resistor between TP103 and TP104.
- 3: Adjust T104 until obtain the maximum waveform amplitude (if provided).
- 4: The output level of sweep generator should be -50dB.
- 5: Adjust AGC bias to maintain the waveform achieve 1V p-p.
- 6: Adjust tuner converter coil to obtain the waveform as fig 3.

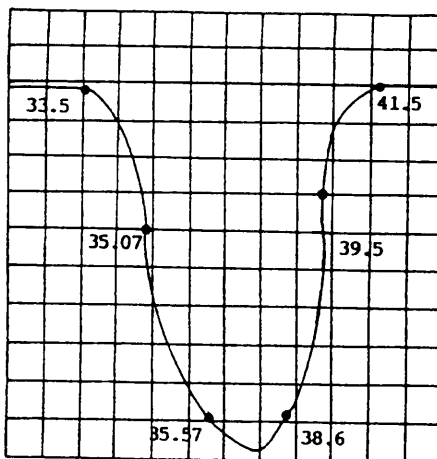


Fig 3.

SIF Alignment

- 1: Connect a 47K resistor between pin 7 to pin 22 at IC102.
- 2: Connect a 47K resistor between pin 23 to Ground at IC102.
- 3: Connect the sweep generator to TP102.
- 4: Connect waveform detector to TP101.
- 5: The output of sweep generator should be -40dB.
- 6: Adjust T102 to obtain waveform as fig 4.

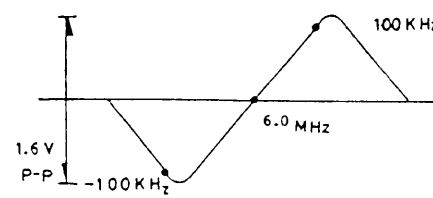


Fig 4.

Colour Sync Adjustment

- 1: Receive Philips pattern and warm up for 5 minutes.
- 2: Connect terminal TP305 and the earth with the short jump wire.
- 3: Then the colour stripes appear on the screen when the adjustment is incorrect. Adjust the colour sync (CT301) so that the Philips pattern stands still.

PAL Colour Alignment

- 1: Receive Phillips pattern.
- 2: Connect oscilloscope to TP304.
- 3: Set colour control to maximum position.
- 4: Adjust T301 and VR302 to obtain the waveform as fig 5.

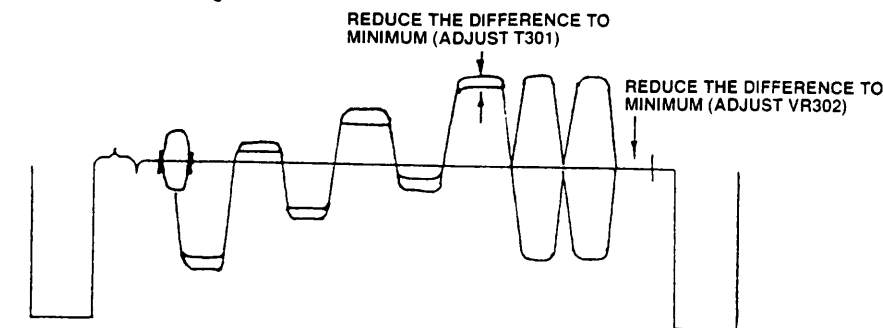


Fig 5.

B+ Adjustment

- 1: Connect a digital voltmeter to TPB+ and Ground.
- 2: Set brightness, contrast and colour to minimum.
- 3: Adjust VR901 and obtain a reading of 112V.

Horizontal Circuit Adjustment

- 1: Receive monoscope pattern, input signal 80dBmV.
- 2: Connect terminal 25 pin of IC102 and the Ground with the Elect. Cap. 10/16.
- 3: Adjust VR103 to obtain the picture running at centre.
- 4: Adjust VR102 to obtain the picture at centre.

Vertical Circuit Adjustment

- 1: Receive the monoscope pattern.
- 2: Adjust V-Size (VR401) to obtain normal picture.

White Balance Alignment Step

Degauss the picture by degaussing coil if necessary.

- 1: Turn the brightness, contrast and picture control to minimum value.
- 2: Turn VR501, VR502 and VR504 to middle position. Turn VR503 and VR505 to middle position.
- 3: Turn VR301 to middle position.
- 4: Receive a black and white pattern.
- 5: Connect a digital voltmeter between G2 and Ground on CRT board.
- 6: Adjust screen volume on FBT to obtain a 310V.
- 7: Adjust VR502, VR503, VR504, VR505 to obtain a uniformly white picture (9300°K).

Sub-Brightness Alignment

- 1: Receive a colour bar pattern.
- 2: Turn the brightness, contrast and colour to minimum.

- 3: Adjust VR301 until the brightest bar can just be seen.

Focus Alignment

- 1: Set the brightness and contrast to middle position.
- 2: Receive a monoscope pattern.
- 3: Adjust focus control to obtain sharpest picture.

AGC Alignment

- 1: Receive CH69 (UHF) and input field strength in 63db ± 3dB input.
- 2: Adjust VR101 to the point where noise is disappeared.

Voltage Tables

Voltage Table for Transistor			
Symbol/Pin	B(V)	C(V)	E(V)
Q101			
Q102			
Q103			
Q104			
Q105	1.13	8.5	0.4
Q106			
Q107			
Q108			
Q109			
Q110	4.1	9.6	0.7
Q111	0.01	4.8	0
Q112			
Q201	16.3	15.7	15.6
Q301	0	2.9	0
Q302	2.13	11.4	1.5
Q303			
Q304			
Q305	0	1.9	0
Q401	0.4	56.2	-0.01
Q402	-0.08	108.9	0
Q601	0.6	2.01	0
Q602	0.7	0.06	0
Q603	9.2	12.1	8.7
Q604	0	0.24	0
Q605	0.3	1.1	0
Q901	9	19.7	8.4
Q902	7.9	0.07	2.3
Q903	-0.07	2	0
Q904	-1.69	258	0.6
Q905	0.6	0.04	0
Q906	109.5	110	110.1
Q907	110	110.1	109.4
Q501	3.13	134.2	2.6
Q502	3.6	128.4	2.6
Q503	3.6	127.4	2.6
Q701	0	3	0
Q702	3	-0.8	3

IC 801	
Symbol/Pin	IC801(V)
1	5
2	1.8
3	1.9
4	0.03
5	GEN
6	4.9
7	2.2
8	2.4
9	2.5
10	5.0
11	GEN
12	2.1
13	5
14	GEN
15	0.42
16	0.5
17	0.4
18	3.8
19	4.5
20	0.8
21	2.5
22	NC
23	4.3
24	4.3
25	GEN
26	0.5
27	0.5
28	0.5
29	0.3
30	0.5
31	4.2
32	0.3
33	0
34	3.7
35	3.8
36	3.6
37	1.2
38	1.3
39	3.8
40	2.2
41	2.2
42	4.2
43	4.2
44	0.8
45	0.8
46	0.8
47	2.5
48	5

IC 302	
Symbol/Pin	IC302(V)
1	3.6
2	GEN
3	3.6
4	3.6
5	3.6
6	3.6
7	3.6
8	0.01
9	0.14
10	0.02
11	3
12	0.02
13	3
14	12
15	0.02
16	2.9

IC 701	
Symbol/Pin	IC701(V)
1	5.8
2	3
3	0
4	NC
5	NC
6	NC
7	0
8	NC
9	0
10	0
11	0
12	0
13	0
14	GEN
15	0
16	0
17	0
18	0
19	0
20	0
21	2.8
22	2.8
23	2.8
24	NC
25	2.8
26	2.8
27	2.8
28	3

IC 601	
Symbol/Pin	IC601(V)
1	5
2	1.8
3	1.9
4	0.03
5	GEN
6	4.9
7	2.2
8	2.4
9	2.5
10	5.0
11	GEN
12	2.1
13	5
14	GEN
15	0.42
16	0.5
17	0.4
18	3.8
19	4.5
20	0.8
21	2.5
22	NC
23	4.3
24	4.3
25	GEN
26	0.5
27	0.5
28	0.5
29	0.3
30	0.5
31	4.2
32	0.3
33	0
34	3.7
35	3.8
36	3.6
37	1.2
38	1.3
39	3.8
40	2.2
41	2.2
42	4.2
43	4.2
44	0.8
45	0.8
46	0.8
47	2.5
48	5

IC 303	
Symbol/Pin	IC303(V)
1	3.6
2	3.6
3	5
4	5.2
5	GEN
6	5.2
7	5.1
8	5.1
9	0.01
10	NC
11	NC
12	3.7
13	11.4
14	5

IC 401	
Symbol/Pin	IC401(V)
1	1.2
2	GEN
3	1.3
4	GEN
5	12
6	24.1
7	NC
8	6.1
9	23.8

IC 201	
Symbol/Pin	IC401(V)
1	1.2
2	GEN
3	1.3
4	GEN
5	12
6	24.1
7	NC
8	6.1
9	23.8

IC 901	
Symbol/Pin	IC901(V)
1	15.1
2	GEN
3	5

IC 305	
Symbol/Pin	IC305(V)
1	7.8
2	7.8
3	GEN
4	1.03
5	2.4
6	8.5
7	12
8	5.9
9	3.4
10	8.2
11	3
12	8.03
13	2.3
14	7.4
15	0.9
16	NC

IC 301	
Symbol/Pin	IC301(V)
1	0.01
2	0
3	0
4	0
5	0
6	0
7	0
8	0
9	0
10	GEN
11	2.3
12	0
13	2.3
14	0
15	2.3
16	0
17	0.1
18	0
19	0.01
20	5

IC 304	
Symbol/Pin	IC304(V)
1	3.1
2	12
3	8.9
4	8.7
5	8.5
6	0.9
7	0.14
8	4.5
9	4.4
10	4.5
11	2.9
12	3.3
13	NC
14	4.2
15	4.2
16	2.9
17	2.2
18	0
19	3.14
20	3.2

IC 802	
Symbol/Pin	IC802(V)
1	NC
2	4.2
3	2.2
4	2.2
5	3.8
6	1.3
7	1.2
8	3.6
9	3.6
10	0
11	0.3
12	4.2
13	GEN
14	0.6
15	0.5
16	0.5
17	0.3
18	0.5
19	GEN
20	4.2
21	2.5
22	0.8
23	0.8
24	0.8
25	5.0
26	5.0
27	5.0

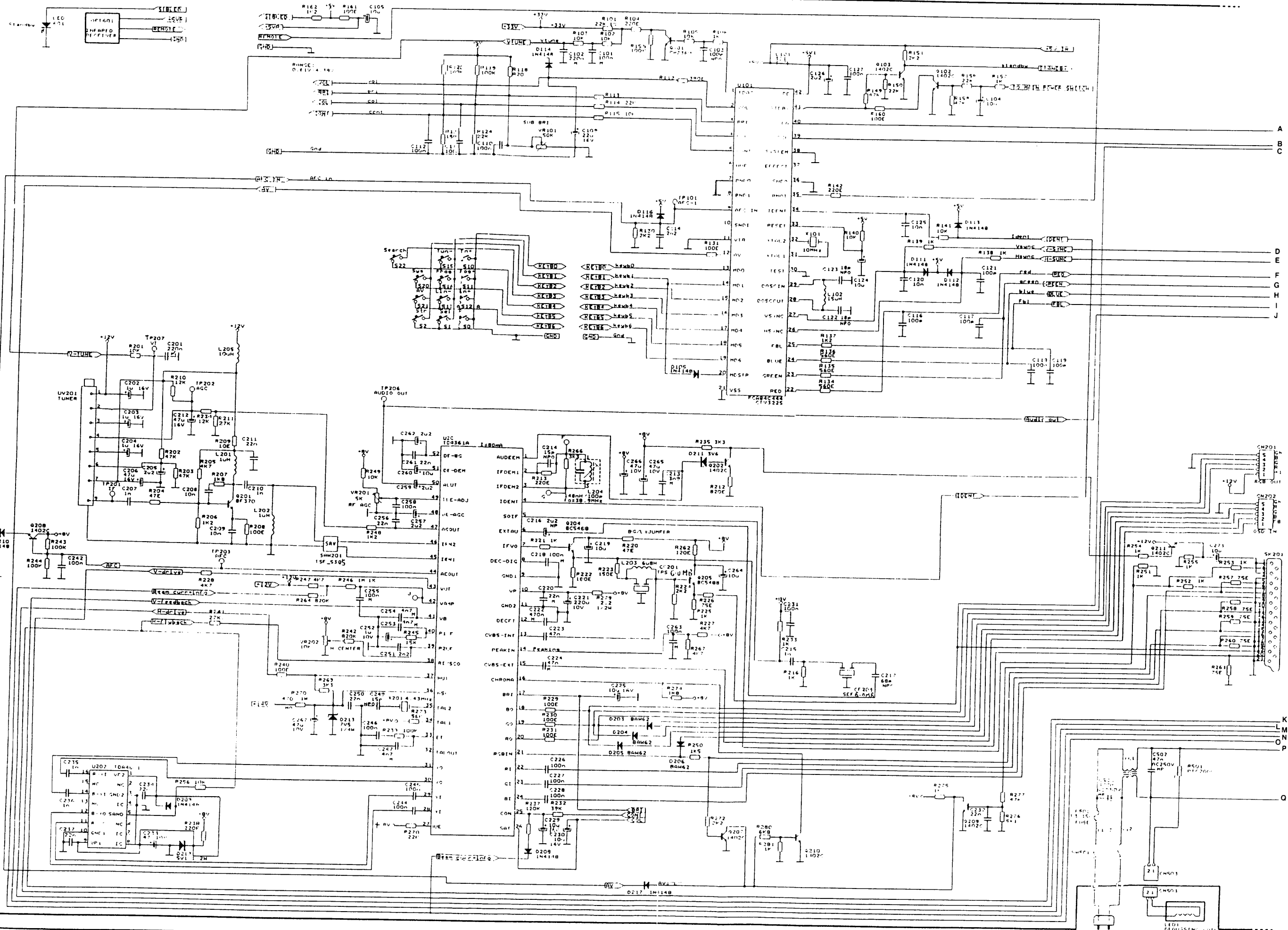
IC 102	
Symbol/Pin	IC102(V)
1	4.5
2	2.4
3	2.8
4	3.2
5	2.5
6	GEN
7	11.4
8	3.4
9	3.4
10	3.3
11	1.8
12	2.1
13	3
14	1.4
15	2.1
16	GEN
17	4
18	4.5
19	4.9
20	7.2
21	7.2
22	10
23	2.6
24	2.6
25	4.5
26	0.8
27	0.9
28	3.1

IC 602	
Symbol/Pin	IC602(V)
1	GEN
2	5
3	GEN
4	GEN
5	2.6
6	3.1
7	5
8	5

IC 101	
Symbol/Pin	IC101(V)
1	9
2	4.4
3	4.3
4	GEN
5	3.7
6	9
7	6.8

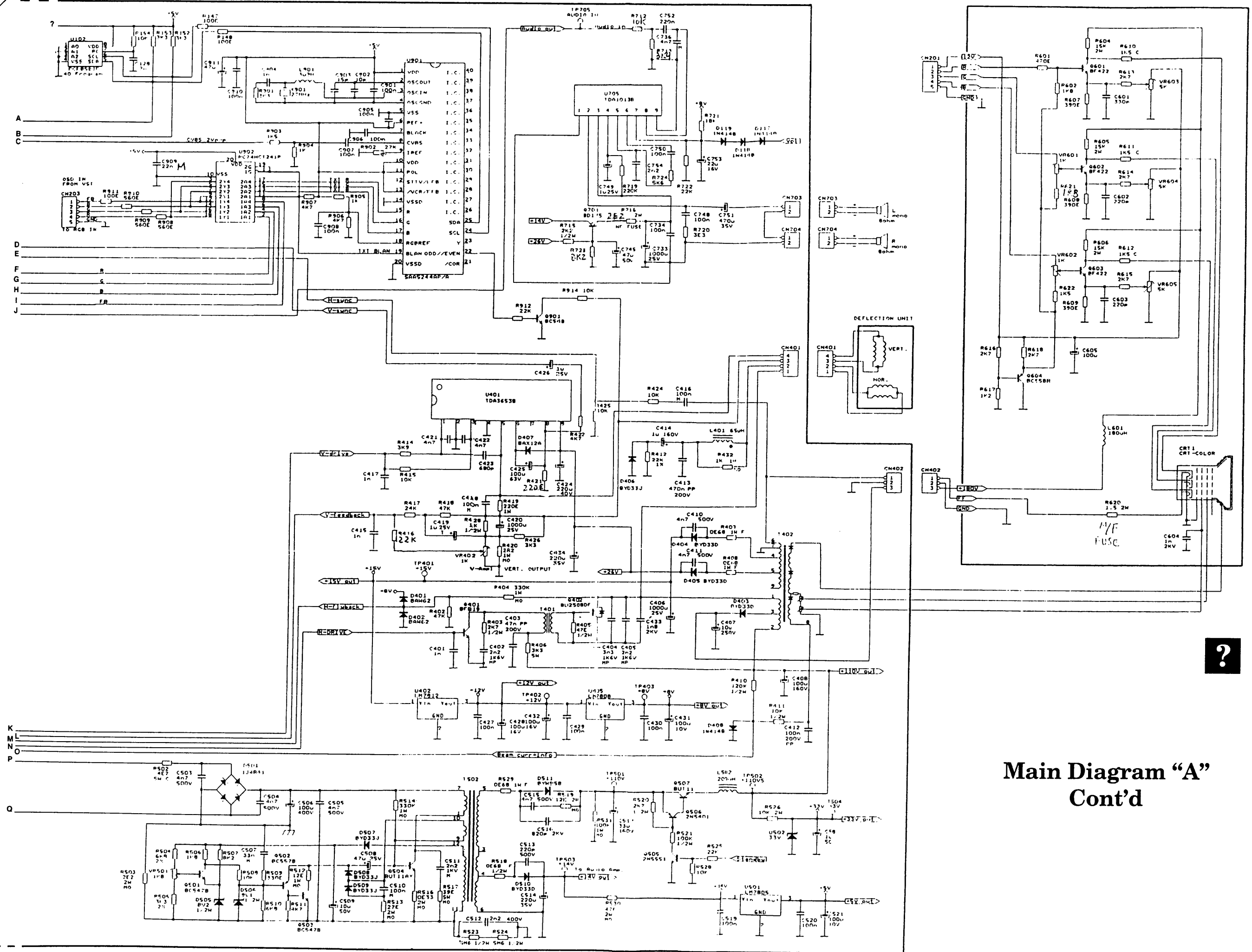
IC 103	
Symbol/Pin	IC103(V)
1	15.2

Main Diagram "A"



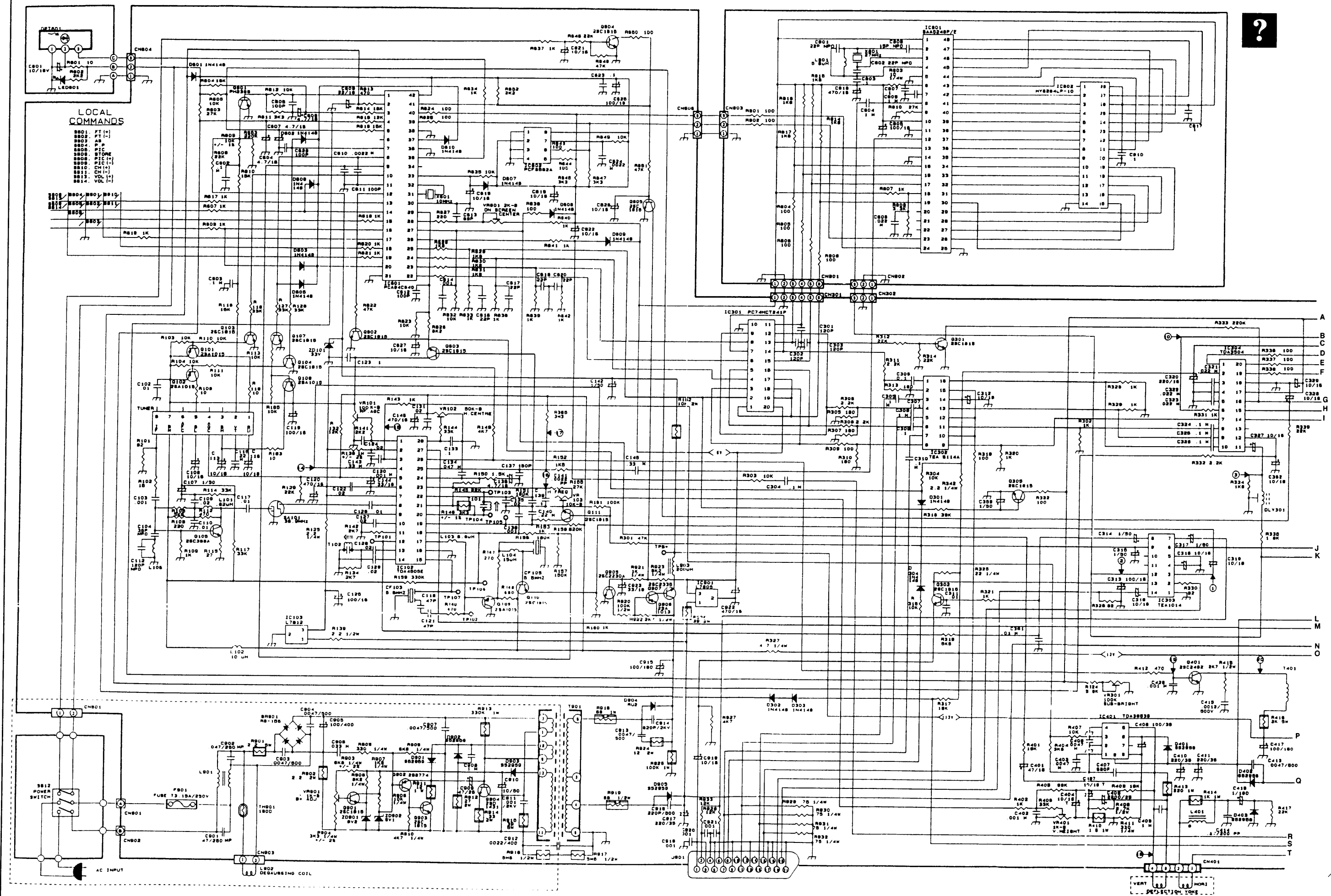
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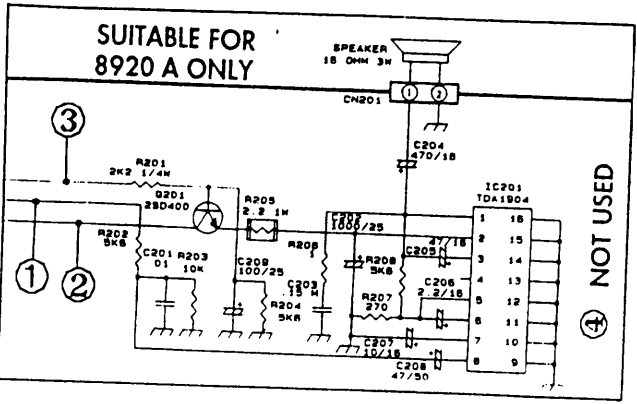
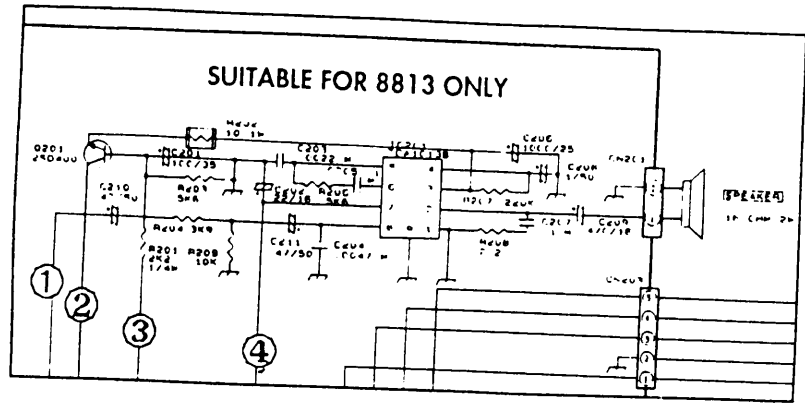
Main Diagram "A"
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Main Diagram "B"



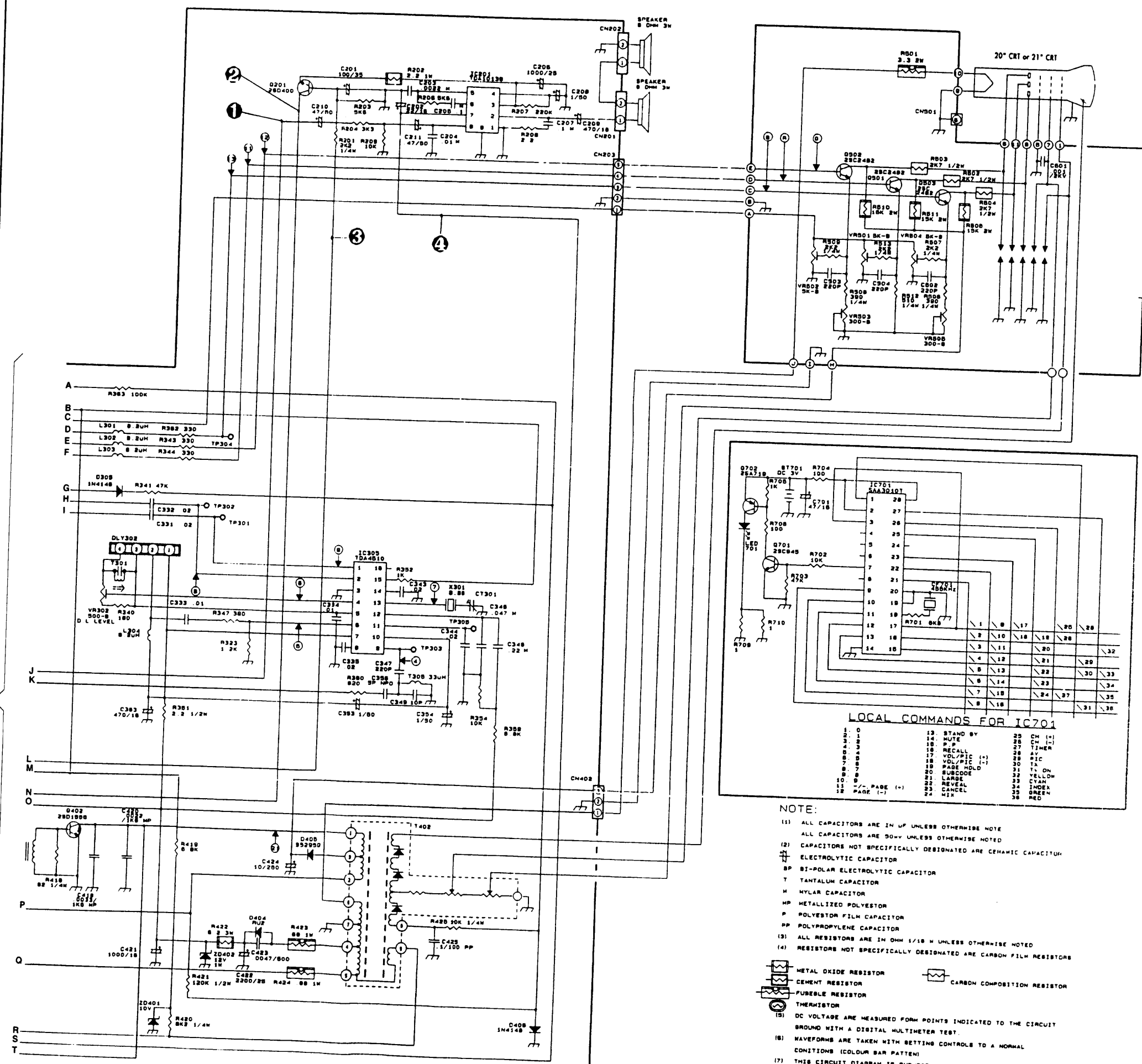
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Main Diagram Differences



Main Diagram
"B" Cont'd.

2



NOTE:

(1) ALL CAPACITORS ARE IN μF UNLESS OTHERWISE NOTED
ALL CAPACITORS ARE 50V UNLESS OTHERWISE NOTED

(2) CAPACITORS NOT SPECIFICALLY DESIGNATED ARE CERAMIC CAPACITOR
ELECTROLYTIC CAPACITOR
BP BI-POLAR ELECTROLYTIC CAPACITOR
T TANTALUM CAPACITOR
M MYLAR CAPACITOR
MP METALLIZED POLYESTER
P POLYESTER FILM CAPACITOR
PP POLYPROPYLENE CAPACITOR

(3) ALL RESISTORS ARE IN OHM $1/16 W$ UNLESS OTHERWISE NOTED

(4) RESISTORS NOT SPECIFICALLY DESIGNATED ARE CARBON FILM RESISTORS

METAL OXIDE RESISTOR
CEMENT RESISTOR
FUSIBLE RESISTOR
THERMISTOR

DC VOLTAGE ARE MEASURED FROM POINTS INDICATED TO THE CIRCUIT
GROUND WITH A DIGITAL MULTIMETER TEST.

(6) WAVEFORMS ARE TAKEN WITH BETTING CONTROLS TO A NORMAL
CONDITIONS (COLOUR BAR PATTERN)

(7) THIS CIRCUIT DIAGRAM IS SUBJECT TO CHANGE WITHOUT PRIOR NOTICE

(8) ON THE SCHEMATIC SHOULD BE REPLACED WITH EXACT