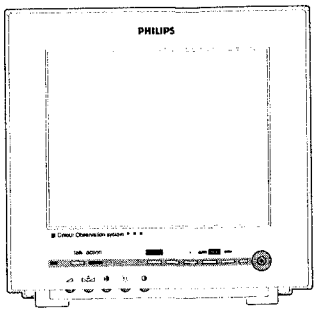
14" Colour Observation System VM7

VSS7370/00T

VS73705T
TC73705T

Service
Service
Service



NORTH-AMERICAN MODELS:
Service Manual: 8095

ServiceManual

Contents

Published by EvO 9670 VCM Service Department Printed in The Netherlands ©Copyright reserved Subject to modification GB 4822 727 21364

PCS 82 045 GB

PHILIPS

1. Specifications

General

Mains voltage	:	100 - 240 V_{AC} ± 10%
Mains frequency	:	50 - 60 Hz
Power consumption	:	100 W (max.) 4 cameras connected at 200 m
Camera supply	:	24 V_{DC}
Weight	:	11,6 kg
Dimensions (WxHxD)	:	320 x 350 x 370 mm
High voltage (zero beam)	:	23 kV
Synchronisation	:	Monitor locks to the mains Camera lock to H and V pulses
Ambient temperature		
- Operating	:	+10 - +45 °C
- Storage	:	-25 - +70 °C

TV system

Number of lines	:	625 / 525 (PAL/NTSC)
Field frequency	:	50 Hz/ 60 Hz
Resolution-bandwidth	:	4 MHz

Inputs

Camera-telephone plug	:	2-wire twisted pair
CVBS- BNC plug	:	1 V_{pp} into 75Ω (VCR)
Audio- cinch plug	:	500 mV_{pp} into 10kΩ (VCR)

Outputs

Camera-telephone plug	:	2-wire transmission
CVBS- cinch plug	:	1 V_{pp} into 75Ω (VCR & Slave)
Audio- cinch plug	:	500 mV_{pp} into 10kΩ (VCR & Slave)

Audio

Power output	:	250 mW
Speaker	:	built in 32 Ω
Microphone	:	built in, electret
Frequency response	:	baseband 30 -16000 Hz

VCR signals

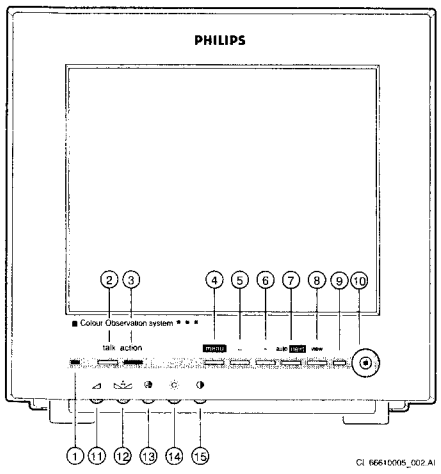
video input (CVBS)	:	1 V_{pp} on 75 Ω
audio input	:	500 mV_{pp} on 10 kΩ
video output (CVBS)	:	1 V_{pp} on 75Ω
audio output	:	500 mV_{pp} on 10 kΩ (not affected by the volume control)

Alarm facilities

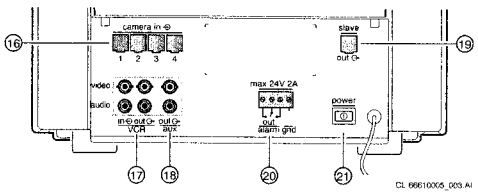
Contacts	:	Normally open or normally closed contact
Ratings	:	max. switching voltage 24 V_{DC}/24 V_{AC} max. switching current 2 A

2. Controls and connections

CONTROLS

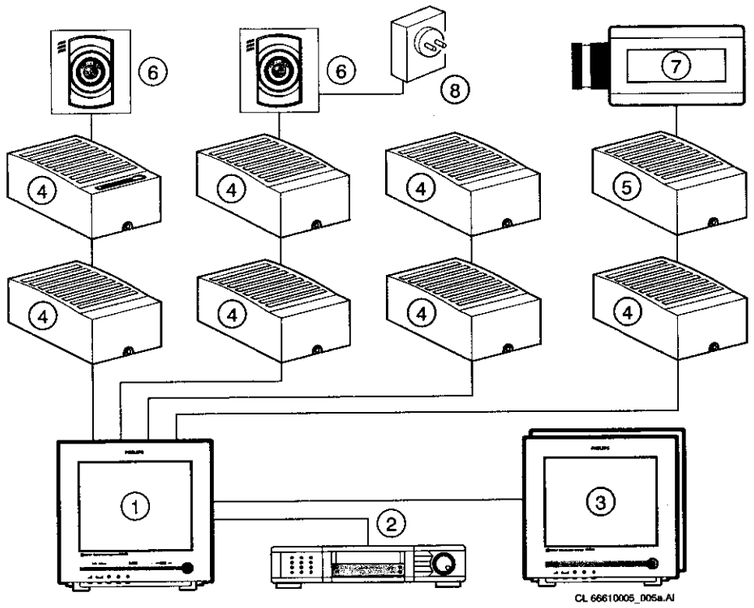


1. Microphone
2. Talk
3. Action
4. Menu
5. Down
6. Up
7. Auto/next
8. View
9. System mode indication (LED)
10. Power save / active
11. Volume
12. Hue (only for NTSC)
13. Colour
14. Brightness
15. Contrast



16. Camera inputs (1 to 4)
17. VCR in / output
18. Aux. output
19. Slave output
20. Alarm output contact (N.O./N.C.)
21. Mains power switch

Connection possibilities



1. System monitor
2. Video or Time lapse recorder (TL 720R)
3. Slave monitor
4. Accessories, Alarm/action box (PIR) or Intercom box
5. Cable interface box
6. Cameras (max. 4)
7. Non-system camera
8. External PSU (adapter)

3. Safety Instructions, Maintenance Instructions, Warnings and Notes

Safety Instructions for Repairs

1. Safety regulations require that during a repair:
   - the set should be connected to the mains via an isolating transformer;
   - safety components, indicated by the symbol ⚠, should be replaced by components identical to the original ones;
   - when replacing the CRT, safety goggles must be worn.

2. Safety regulations require also that after a repair:
   - the set should be returned in its original condition;
   - the cabinet should be checked for defects to avoid touching, by the customer, of inner parts;
   - the insulation of the mains lead should be checked for external damage;
   - the mains lead strain relief should be checked on its function;
   - the cable form and EHT cable are routed correctly and fixed with the mounted cable clamps in order to avoid touching of the CRT, hot components or heat sinks;
   - the electrical resistance between mains plug and the secondary side is checked.

   This check can be done as follows:
   - unplug the mains cord and connect a wire between the two pins of the mains plug;
   - measure the resistance value between the pins of the mains plug and the metal shielding of the tuner or the aerial connection on the set. The reading should be between 4.5 MΩ and 12 MΩ.
   - switch off the monitor and remove the wire between the two pins of the mains plug;
   - thermally loaded solder joints should be re-soldered. This includes components like LOT, the line output transistor, fly-back capacitor.

Maintenance Instructions

It is recommended to have a maintenance inspection carried out periodically by a qualified service employee. The interval depends on the usage conditions.
- When the set is used in a living room the recommended interval is 3 to 5 years.
- When the set is used in the kitchen or garage this interval is 1 year.

During the maintenance inspection the above mentioned "safety instructions for repair" should be carried out. The power supply and deflection circuitry on the chassis, the CRT panel and the neck of the CRT should be cleaned.

Warnings

1. When a camera or accessory is connected or disconnected, the monitor **should** always be switched off by the power switch (at the back side off the monitor). Only operating the **stand-by** knob is not sufficient !

2. In order to prevent damage to **ICs** and transistors, all high-voltage flash-overs must be avoided. In order to prevent damage to the picture tube, the method shown in Fig. 3.1 should be used to discharge the picture tube. Use a high-voltage probe and a multimeter (position DC-V). Discharge until the meter reading is **0 V** (after approx. 30 sec).

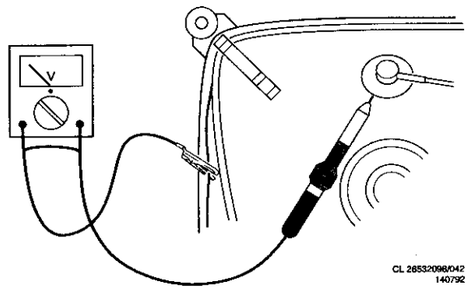


Fig. 3.1

3. ESD ⚠

   All **ICs** and many other semiconductors are sensitive to electrostatic discharges (ESD).
   Careless handling during repair can drastically shorten the life. Make sure that during repair you are connected by a pulse band with resistance to the same potential as the earth of the unit.
   Keep components and tools also at this same potential.

4. Be careful when taking measurements in the high-voltage section and on the picture tube panel.

5. When making settings, use plastic rather than metal tools. This will prevent any short-circuit and the danger of a circuit becomes unstable.

6. Never replace modules or other components while the unit is switched on (pull-out the mains cord to switch-off the monitor).

7. After repair the wiring should be fastened once more in the cable clamps for this purpose.

8. It is recommended to connect first the cameras to the camera inputs, before switching on the monitor. In this way you can prevent short circuit of camera input during camera connection and therefore prevent damaging of input transistor.

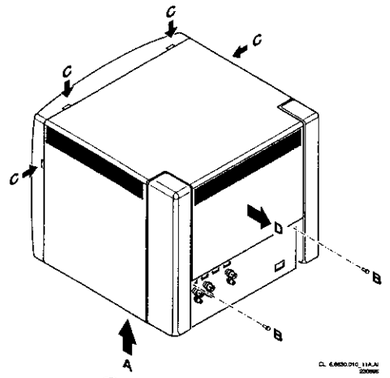
9. When no input signals are connected to the monitor, the screen will be blanked.

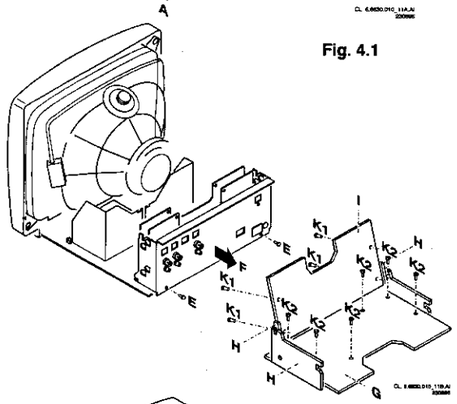
Notes

1. The direct voltages and oscillograms are average voltages. They have been measured by using a camera with a random picture and under the following conditions:
   - Adjust brightness and contrast control for the mechanical mid-position;
   - Volume control in middle position.

2. The semiconductors indicated in the circuit diagram(s) and in the parts lists are completely interchangeable per position with the semiconductors in the unit, irrespective of the type indication on these semiconductors.

3. Diagram notes;
   The circuit diagrams are prepared for different types of system monitors. On each diagram symbols may be add to components to identify for which type of monitor that component is available in the diagram.





4. Mechanical instructions

4.1 Disassembly of the monitor:

Unplug the system from the mains then remove the screws A on each side of the bottom plate.
Remove the 2 screws B on the top side of the connector area indicated.
The other three screws on the lower area of the connector area need not to be detached.
Loosen the 4 snaphooks C by pressing them with a screwdriver. The snaphooks can be pressed via the openings between the front and the metal cover.
Start with the snaphooks on the sides before the ones on the top, then pull the metal cover D slightly away from the front while loosening the snaphooks.
Be aware of the earth wire inside the metal cover !
Remove the earth wire from the metal bracket before removing the metal cover completely from the monitor.

4.2 Removing the I/O & Proc. panel:

Remove the 2 screws E.
Pull the metal bracket F slightly away.
Remove the mains plug M101.
Remove the 4 screws (K1), so that the Proc. panel I can be turned to its service position.
Mount the 2 panel guides H (4822 463 11118) on their position on bracket J.
Slide the Proc. panel I into the panel guides H.
In this position the repairs on the Proc. panel can be done.

If repairs are needed on the I/O panel G, the 6 screws K2 has to be removed.

4.3 Removing the main panel:

By loosing the 2 clicks L, the main panel M can be taken out of the cabinet.
The main panel can now be placed into its service position.
In case that the speaker assembly N should be replaced, the bottom plate can be removed by removing the 6 screws O.

4.4 Service position

In this position all the service repairs can be executed by the repair technicians.

4.5 Closing the monitor:

After repair the remounting is in the opposite way.
Take care that the earth wire is attached properly.
Press the front and the metal cover firmly towards each other to assure correct operation of the snaphooks.

Fig. 4.1

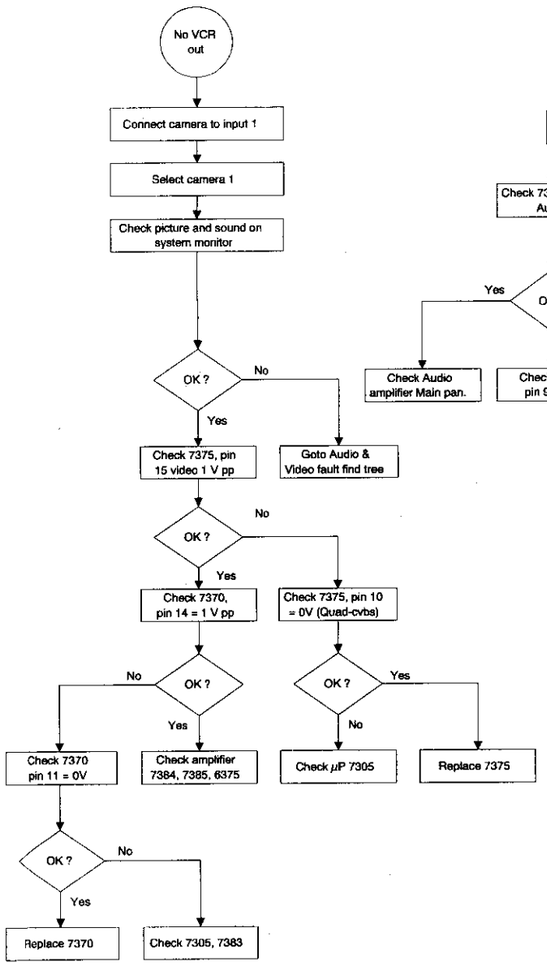
Fig. 4.2

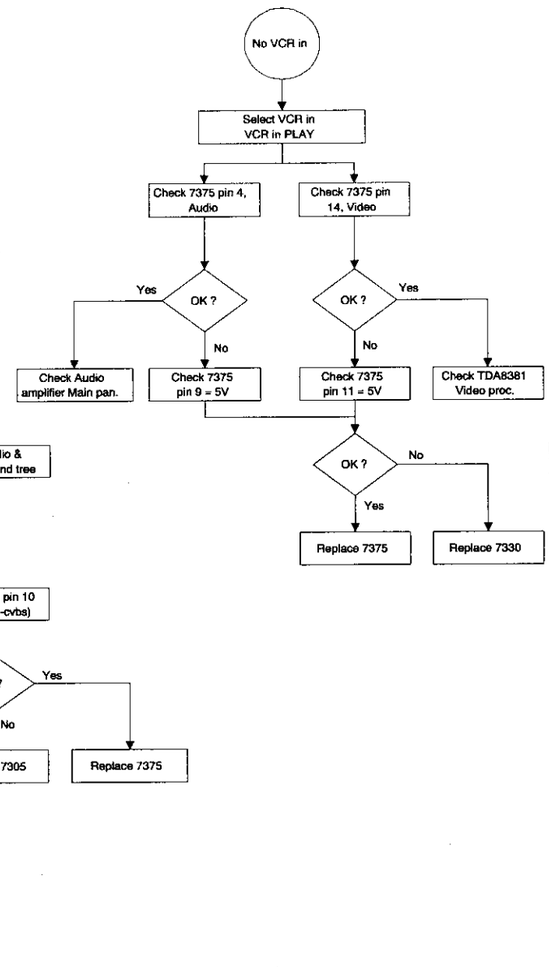
Fig. 4.3

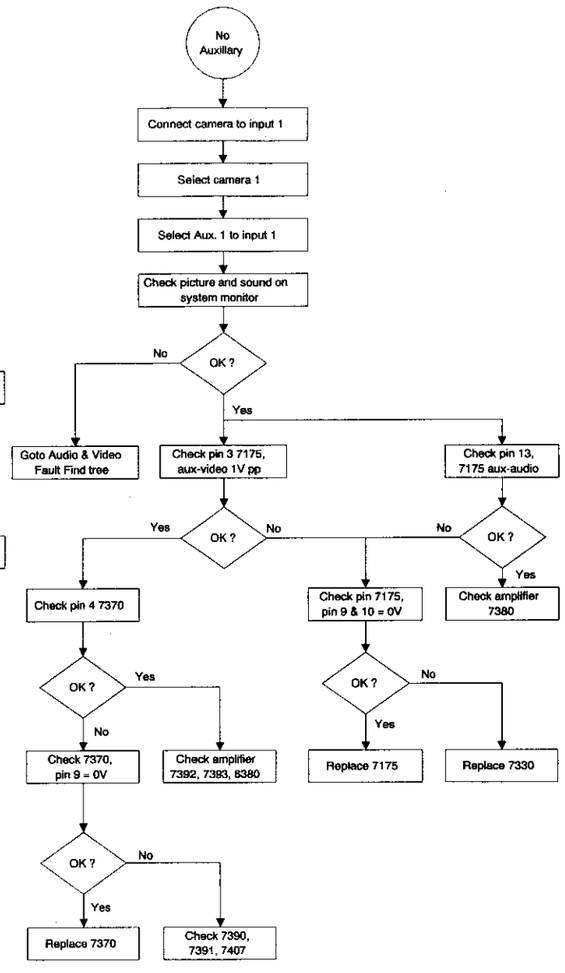
Fig. 4.4

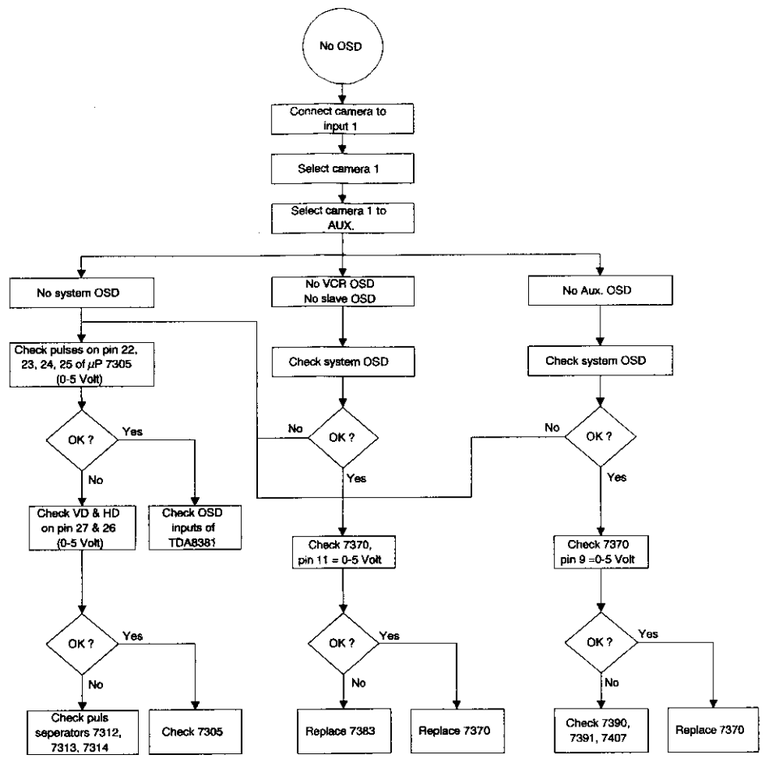
5. Block diagram

6. Fault finding trees

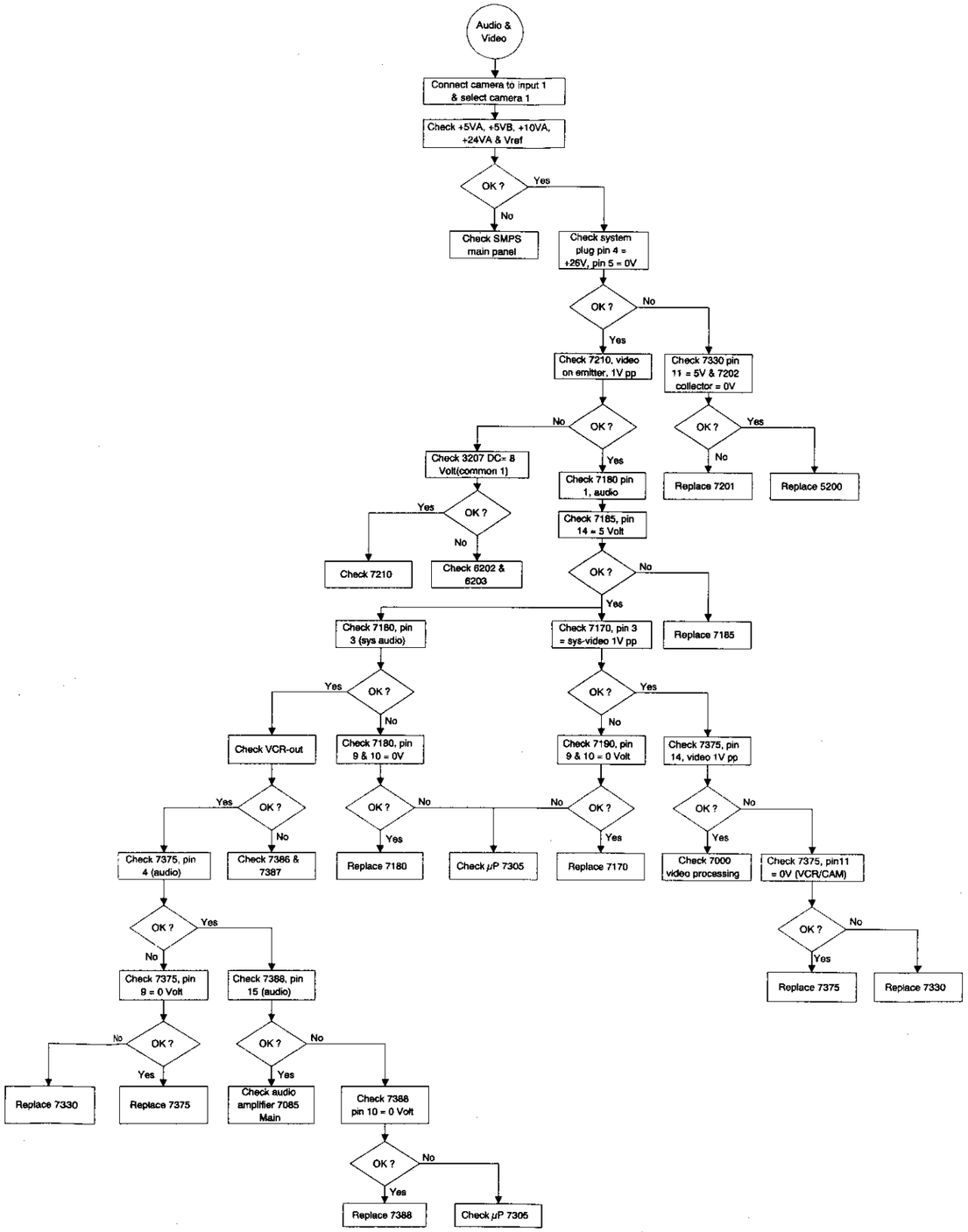


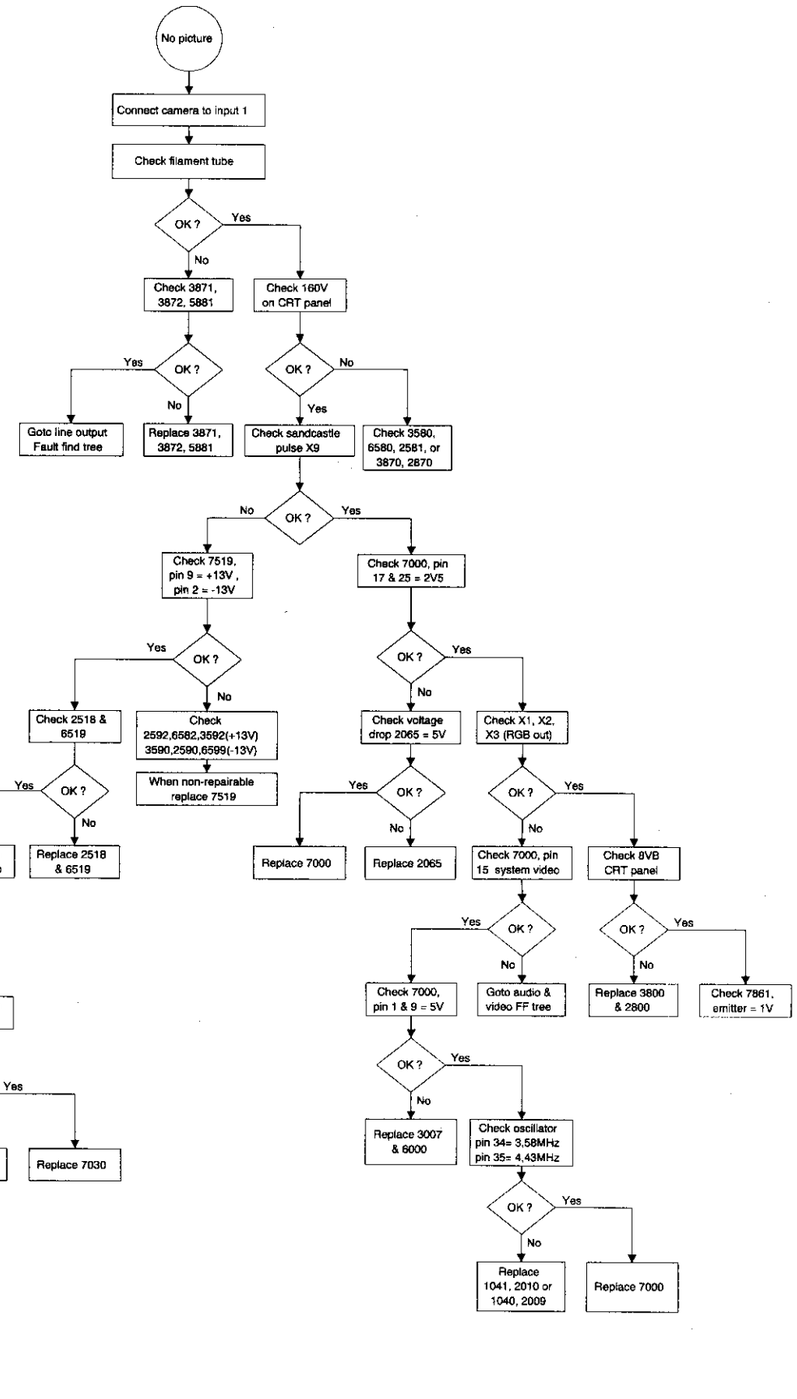




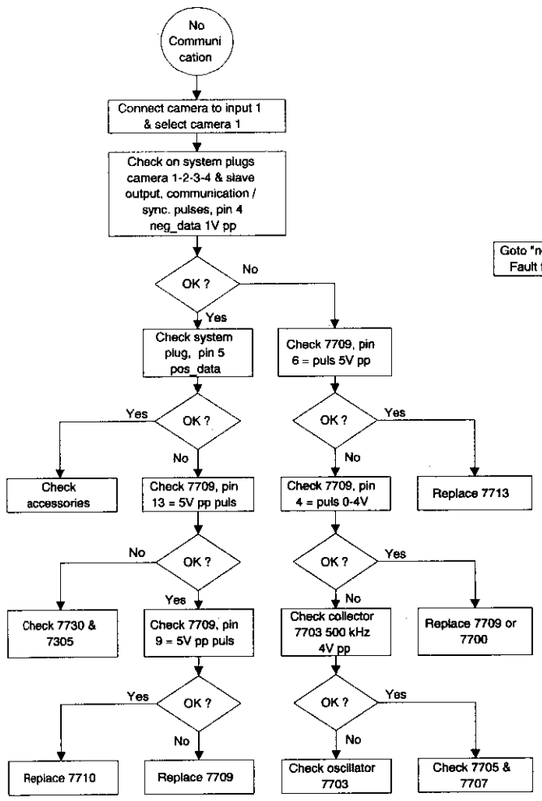


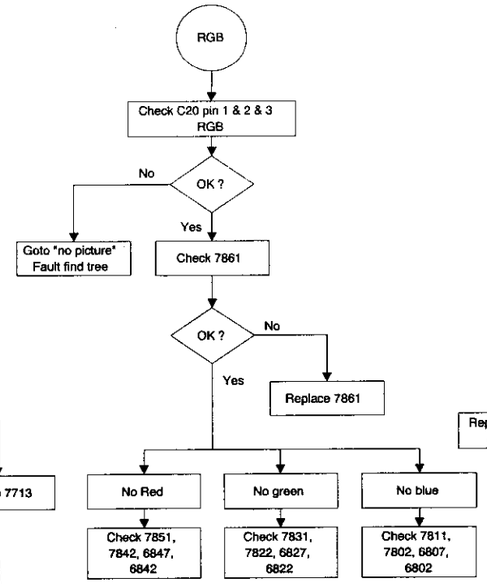
Fault finding trees

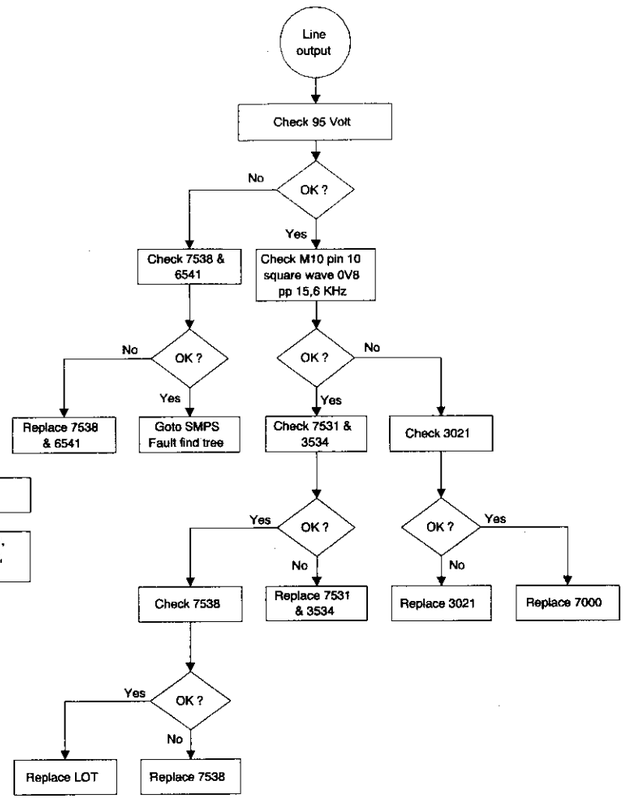


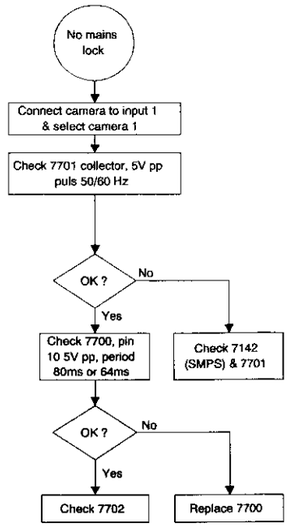


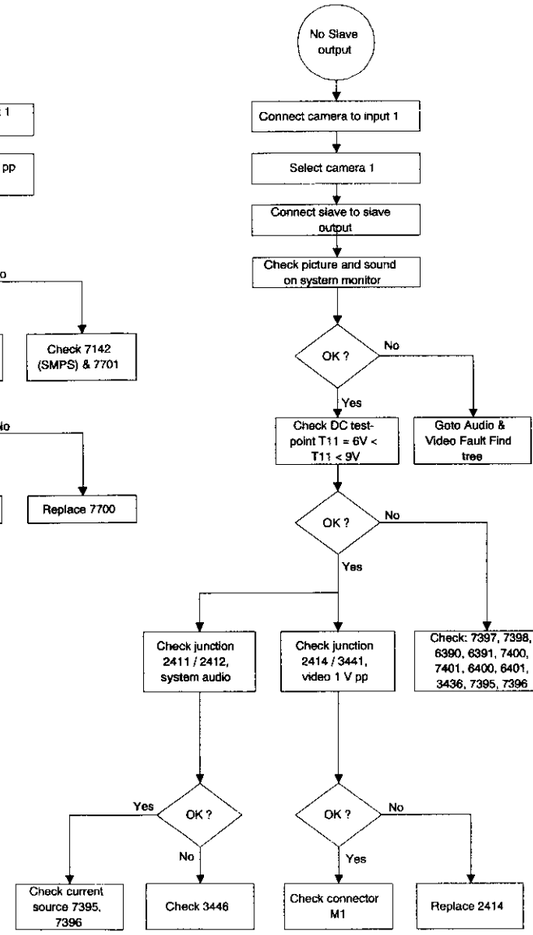
Fault finding trees



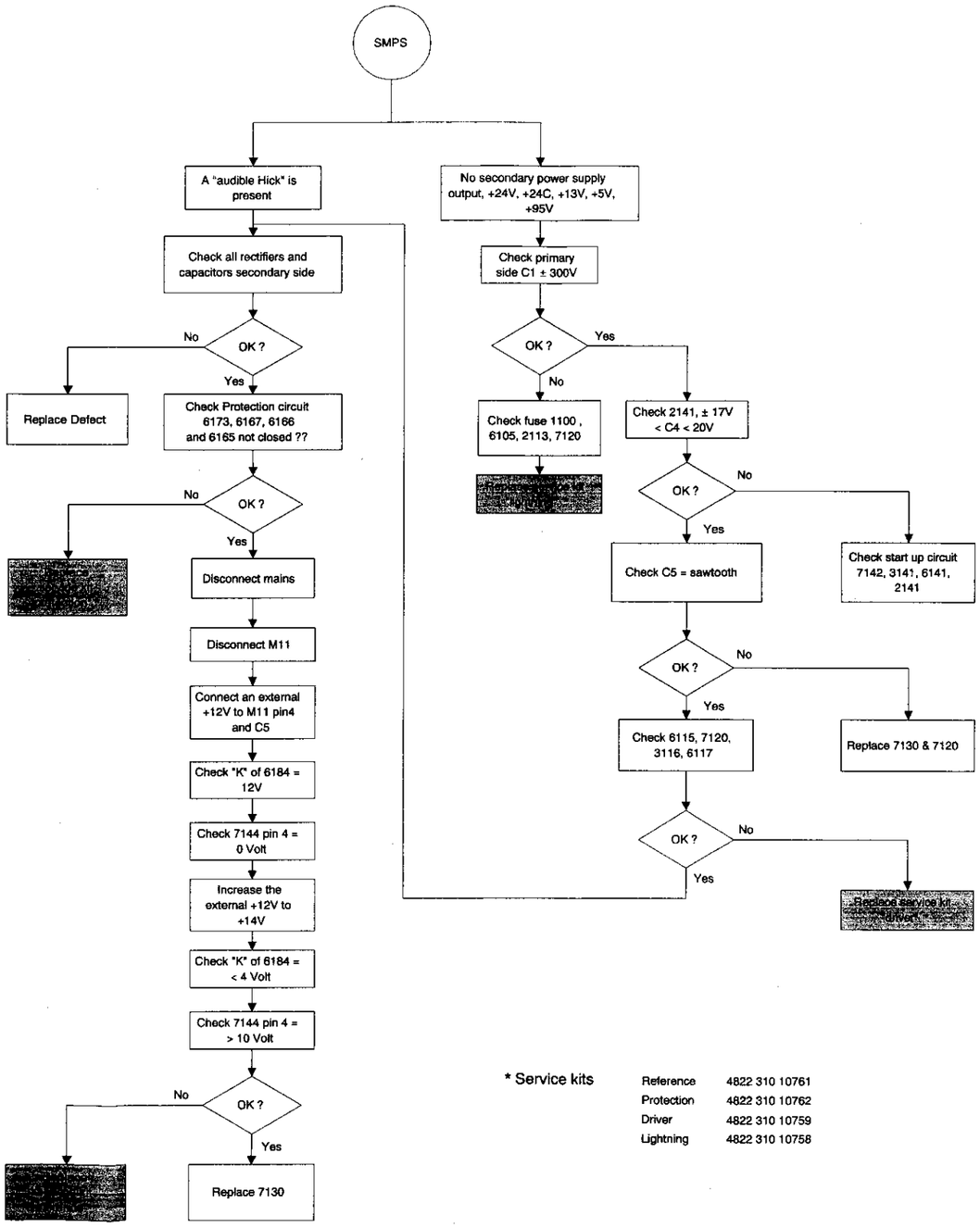








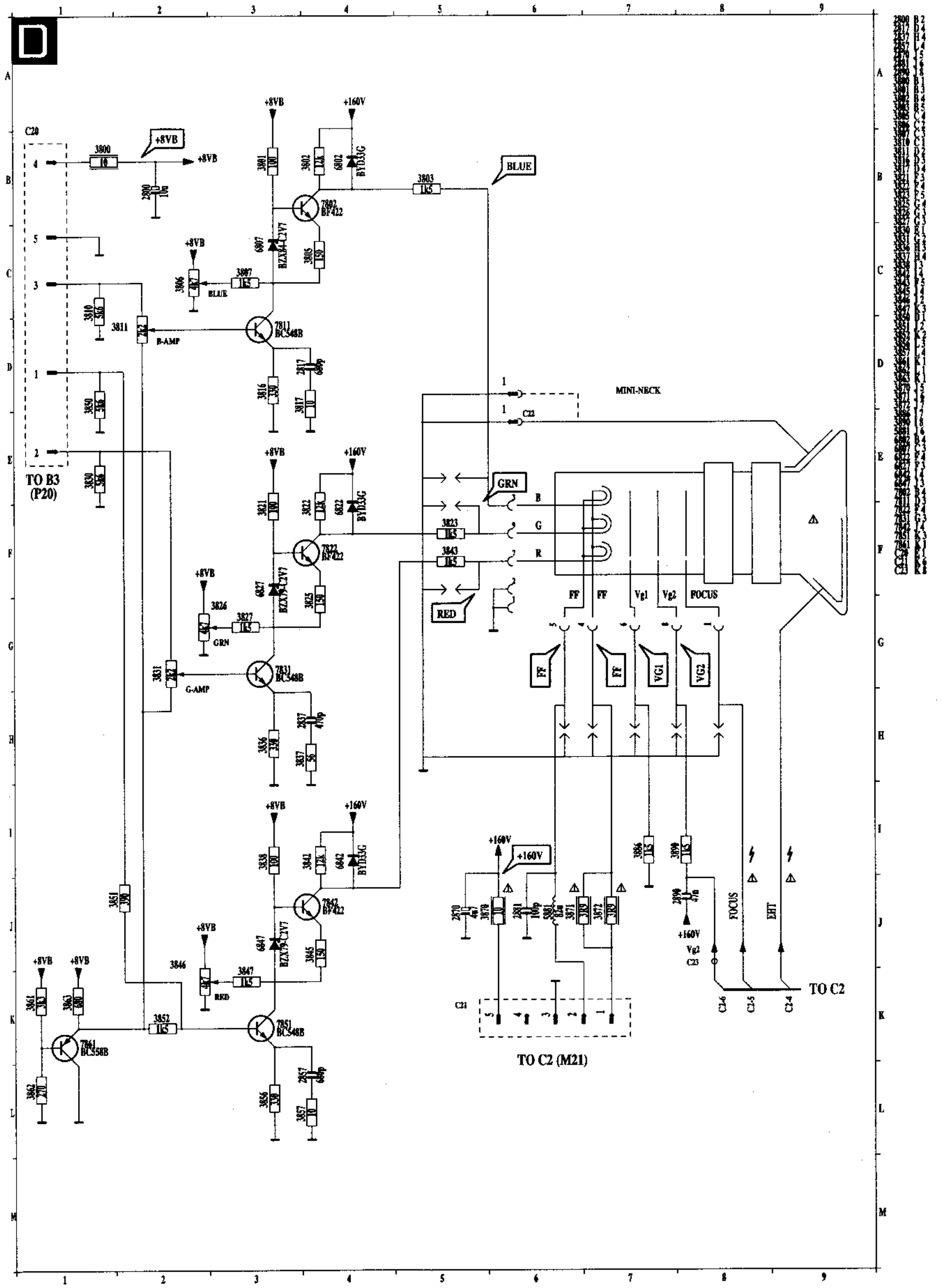
Fault finding trees

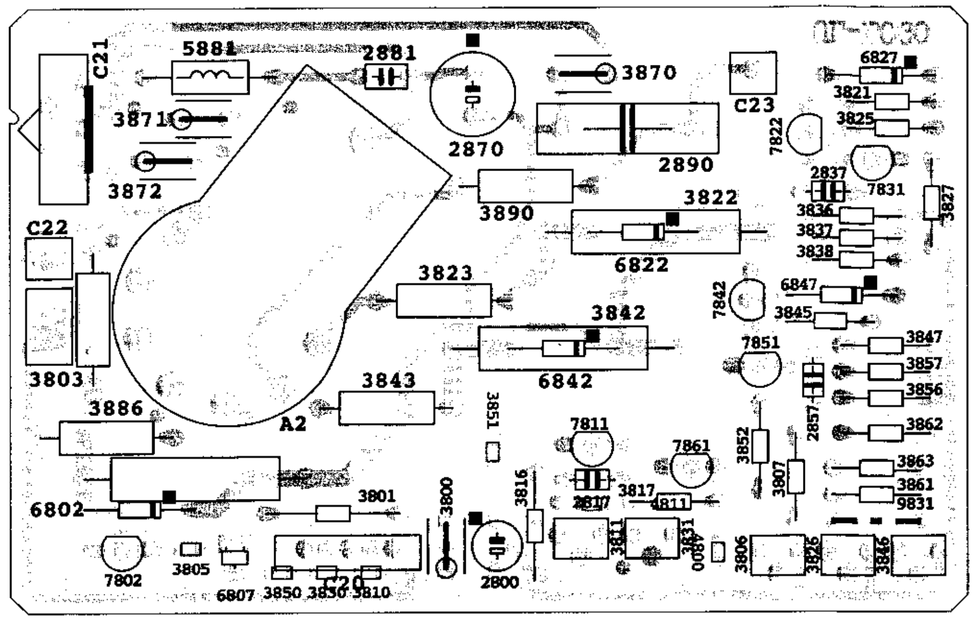


* Service kits

Reference	4822 310 10761
Protection	4822 310 10762
Driver	4822 310 10759
Lightning	4822 310 10758

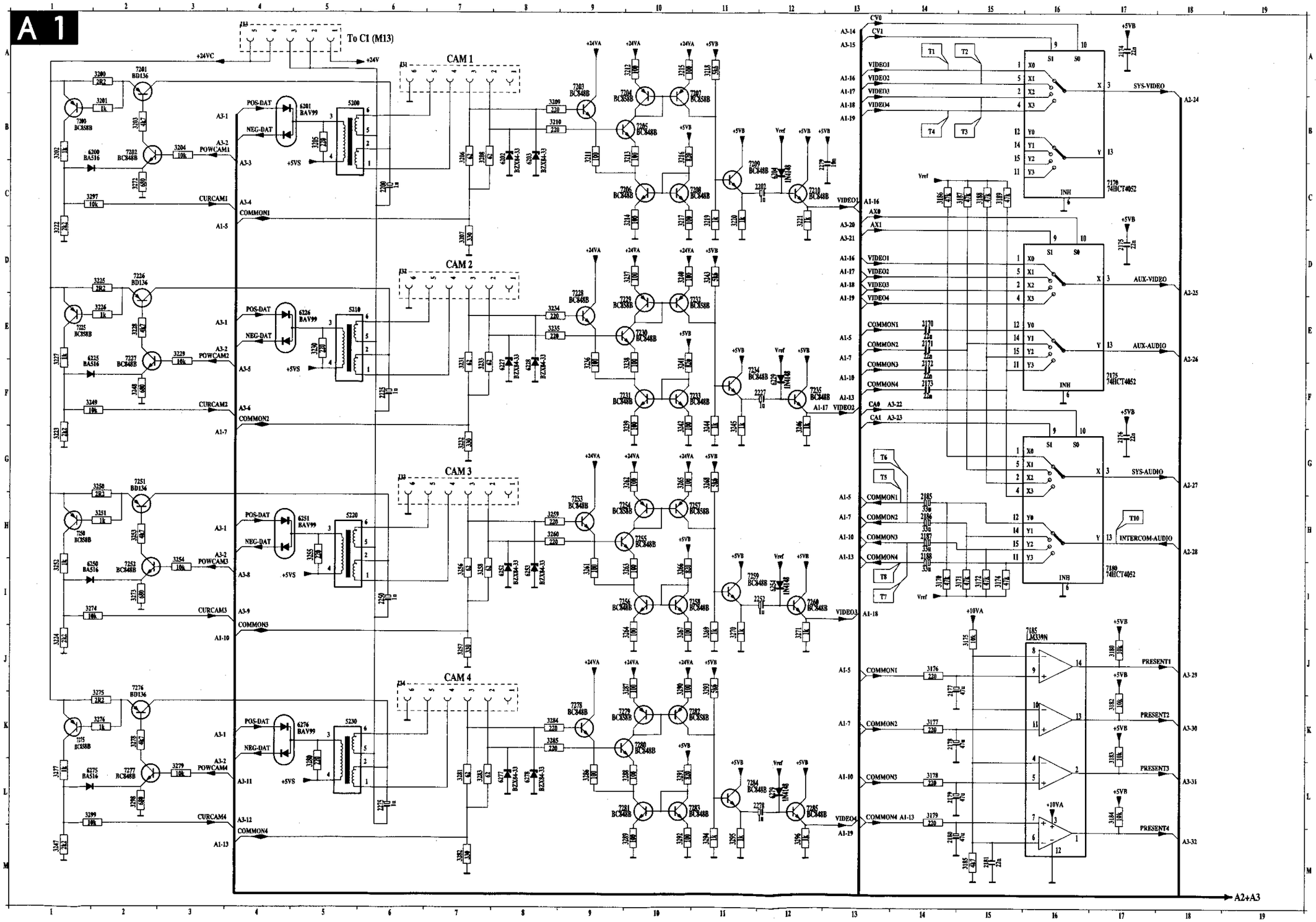
Personal notes


D
MINI-NECK
TO B3 (P20)
TO C2
TO C2 (M21)
BLUE
GRN
RED
FOCUS
EHT



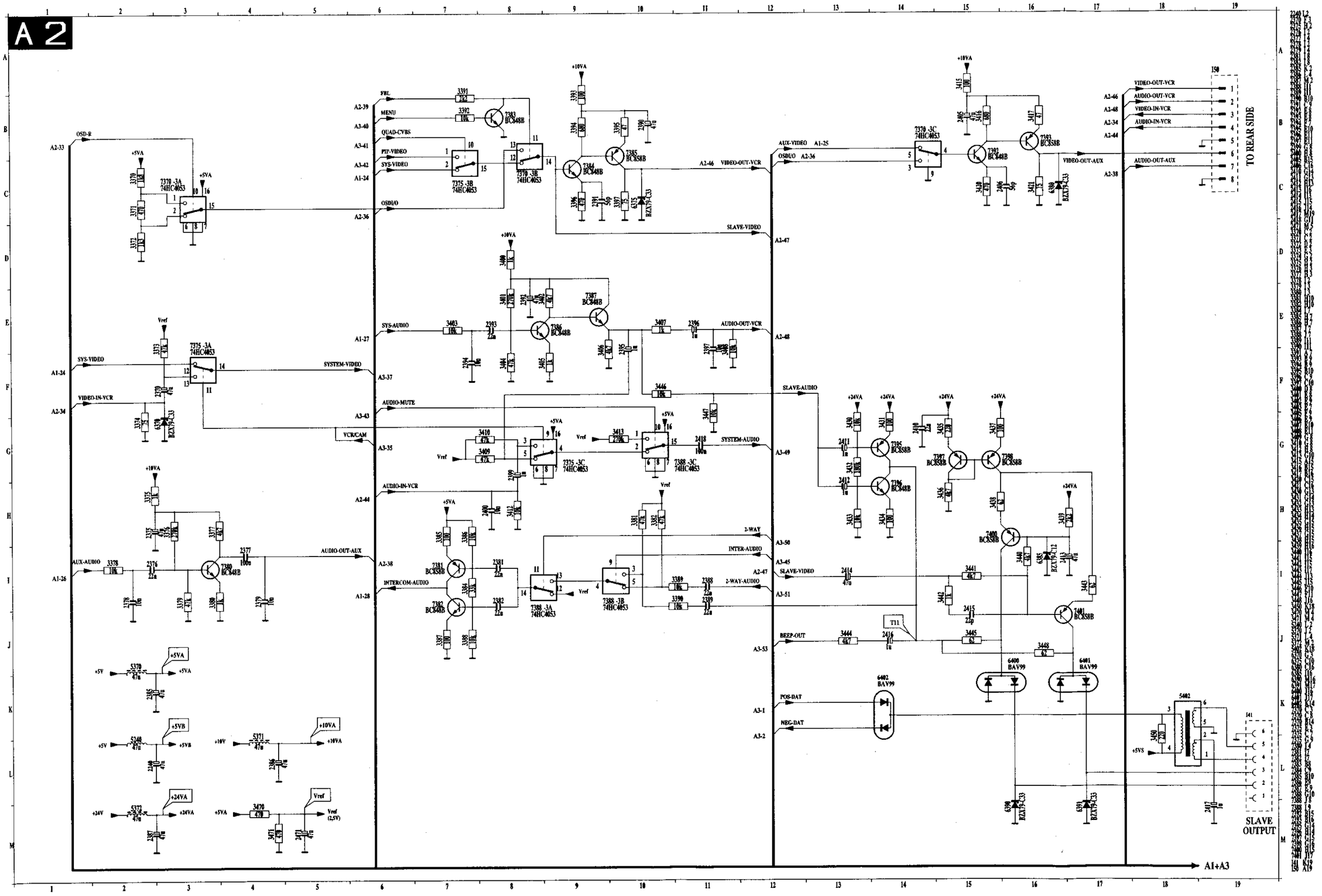
I/O panel

A 1

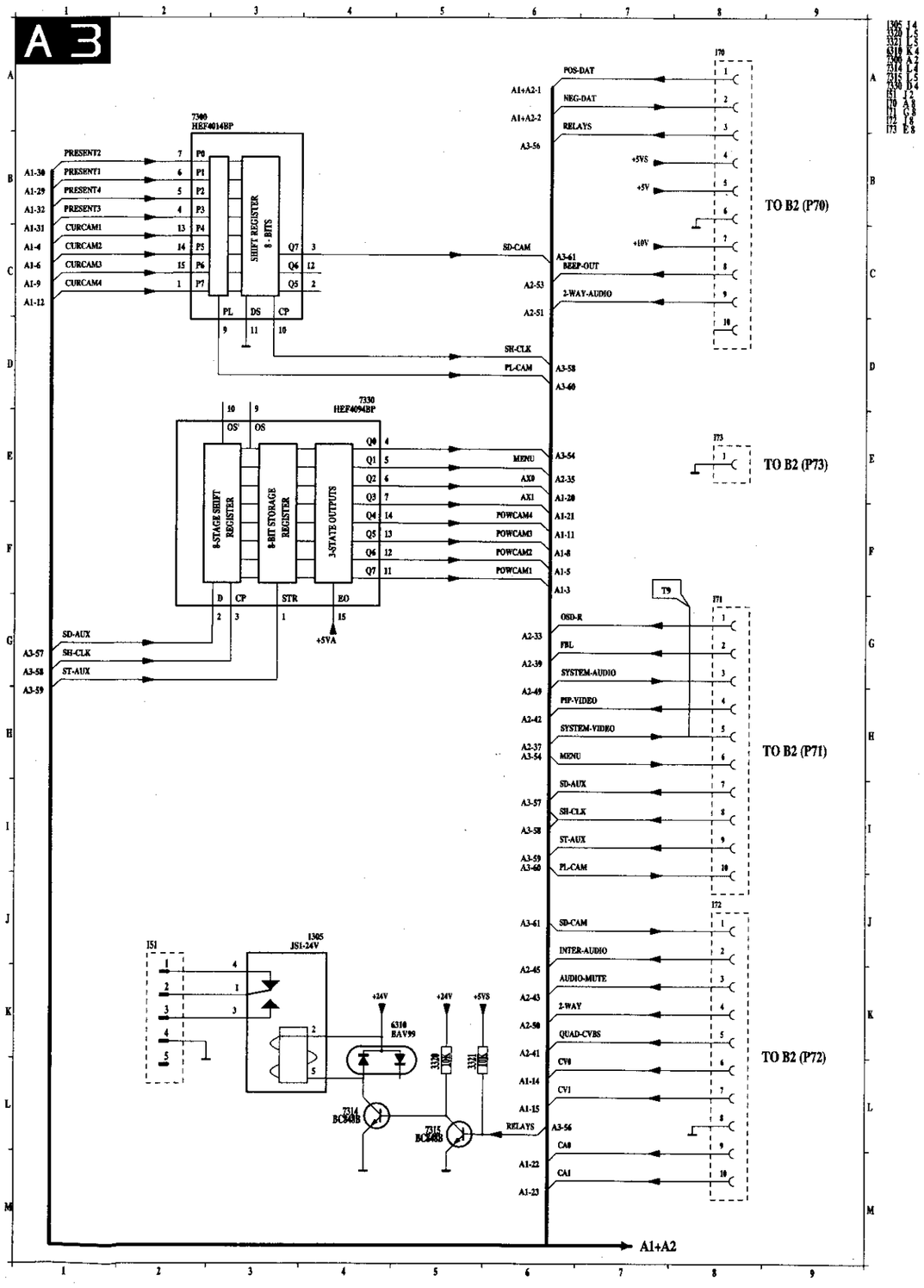

To C1 (M13)
CAM 1
CAM 2
CAM 3
CAM 4
+24VC
+24V
+24VA
+5VB
+5VS
+10VA
Vref
POS-DAT
NEG-DAT
POWCAM1
POWCAM2
POWCAM3
POWCAM4
CURCAM1
CURCAM2
CURCAM3
CURCAM4
COMMON1
COMMON2
COMMON3
COMMON4
VIDEO1
VIDEO2
VIDEO3
VIDEO4
SYS-VIDEO
AUX-VIDEO
AUX-AUDIO
SYS-AUDIO
INTERCOM-AUDIO
PRESENT1
PRESENT2
PRESENT3
PRESENT4
74HCT4052
LM339N
A2+A3

I/O panel

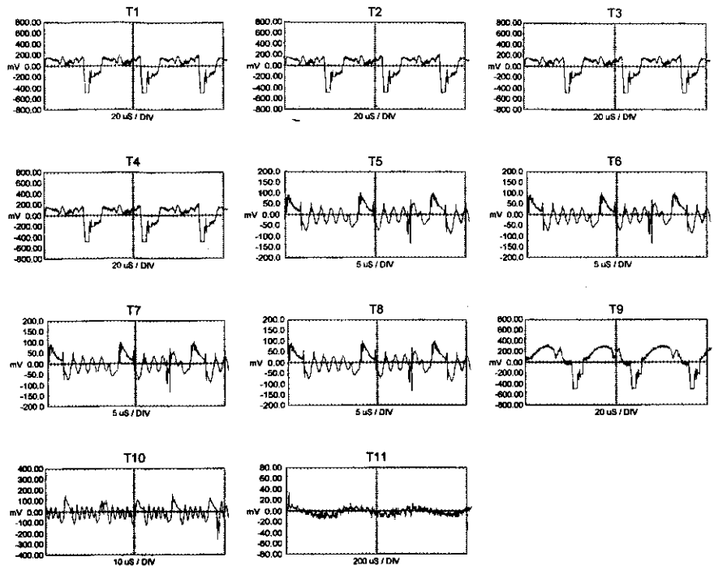
A 2


OSD-R
A2-33
+5VA
7370 -3A 74HC4053
FBL
MENU
QUAD-CVBS
PIP-VIDEO
SYS-VIDEO
OSD/O
A2-36
7375 -3B 74HC4053
7370 -3B 74HC4053
7383 BC548B
7384 BC548B
7385 BC858B
+10VA
VIDEO-OUT-VCR
A2-46
AUX-VIDEO A1-25
OSD/O A2-36
7370 -3C 74HC4053
7392 BC548B
7393 BC858B
VIDEO-OUT-AUX
VIDEO-OUT-VCR
AUDIO-OUT-VCR
VIDEO-IN-VCR
AUDIO-IN-VCR
AUDIO-OUT-AUX
A2-38
150
TO REAR SIDE
SLAVE-VIDEO
A2-47
Vref
SYS-VIDEO
A1-24
VIDEO-IN-VCR
A2-34
SYSTEM-VIDEO
A3-37
7375 -3A 74HC4053
SYS-AUDIO
A1-27
7386 BC548B
7387 BC548B
AUDIO-OUT-VCR
A2-48
AUDIO-MUTE
A3-43
VCR/CAM
A3-35
7375 -3C 74HC4053
7388 -3C 74HC4053
SYSTEM-AUDIO
A3-49
SLAVE-AUDIO
AUDIO-IN-VCR
A2-44
7381 BC858B
7382 BC548B
7388 -3A 74HC4053
7388 -3B 74HC4053
2-WAY
A3-50
INTER-AUDIO
A3-45
SLAVE-VIDEO
A2-47
2-WAY-AUDIO
A3-51
AUX-AUDIO
A1-26
7389 BC548B
INTERCOM-AUDIO
A1-28
BEEP-OUT
A3-53
T11
7395 BC858B
7396 BC548B
7397 BC858B
7398 BC548B
7400 BC858B
7401 BC858B
6400 BAV99
6401 BAV99
6402 BAV99
POS-DAT
A3-1
NEG-DAT
A3-2
+24VA
5402
+5VS
141
SLAVE OUTPUT
A1+A3
+5VB
+10VA
Vref (2,5V)

I/O panel

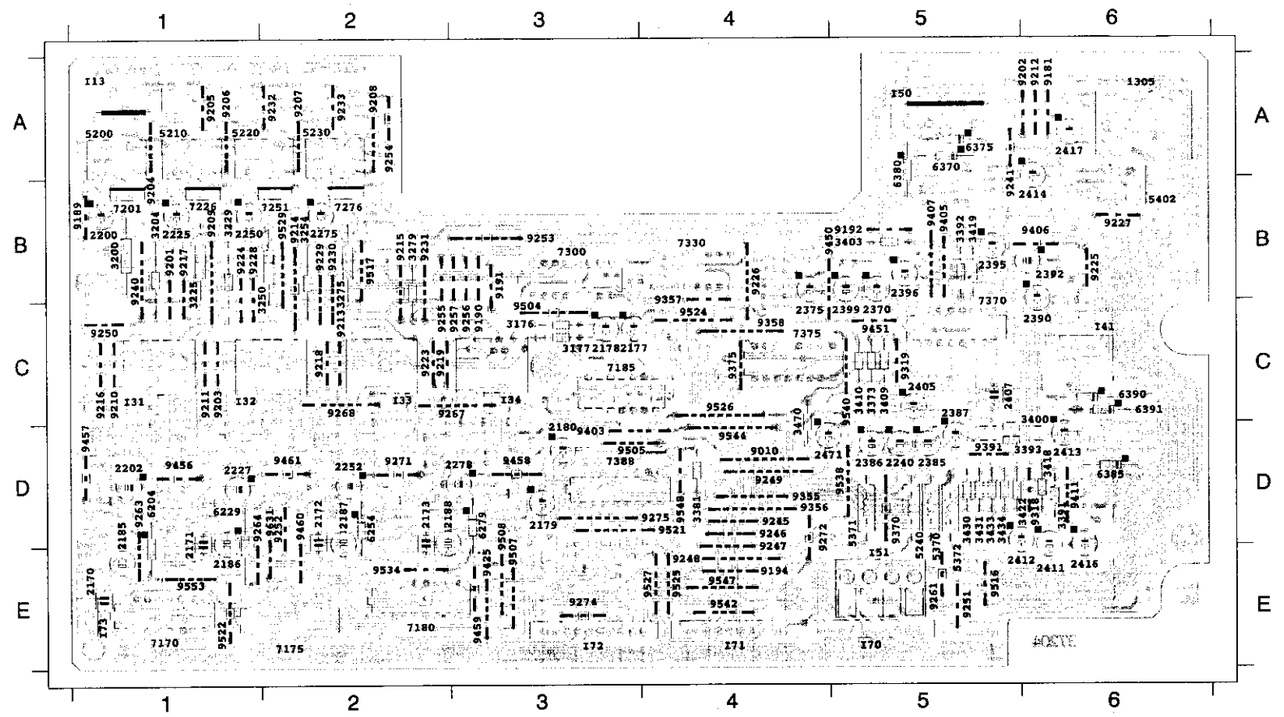


Wave forms

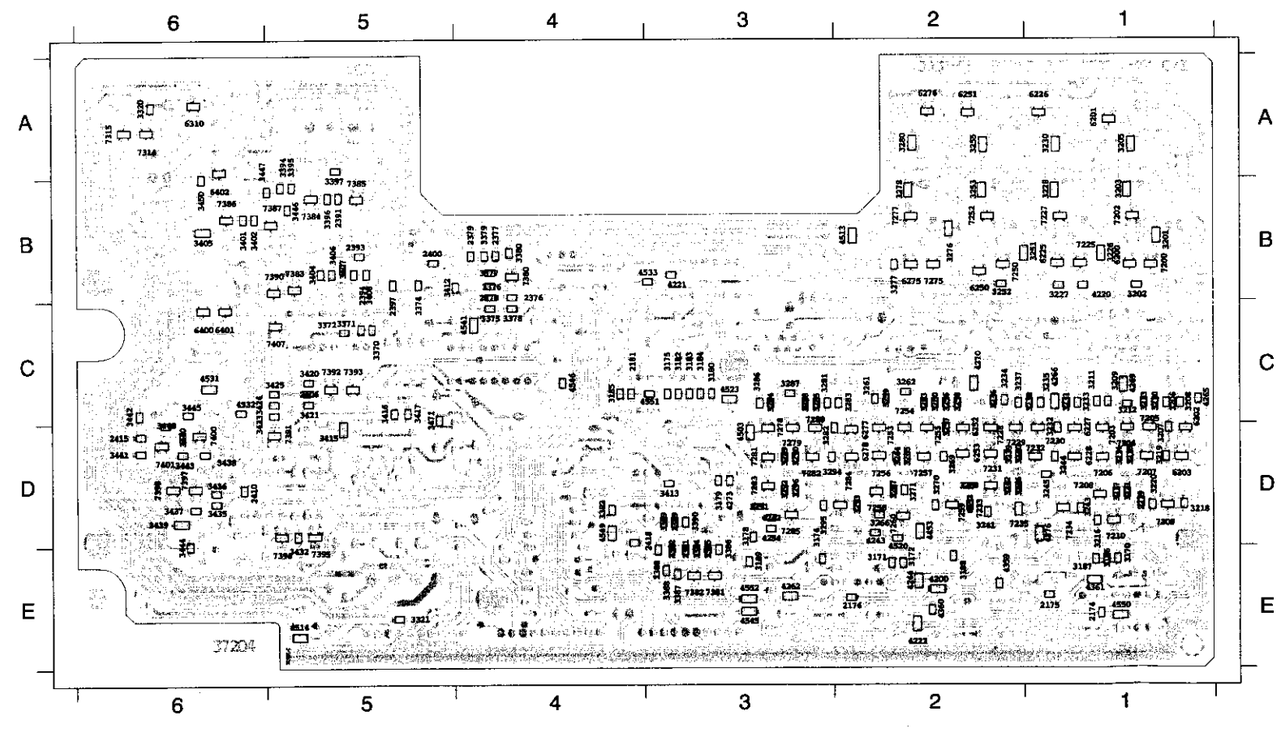


I/O panel

Component side



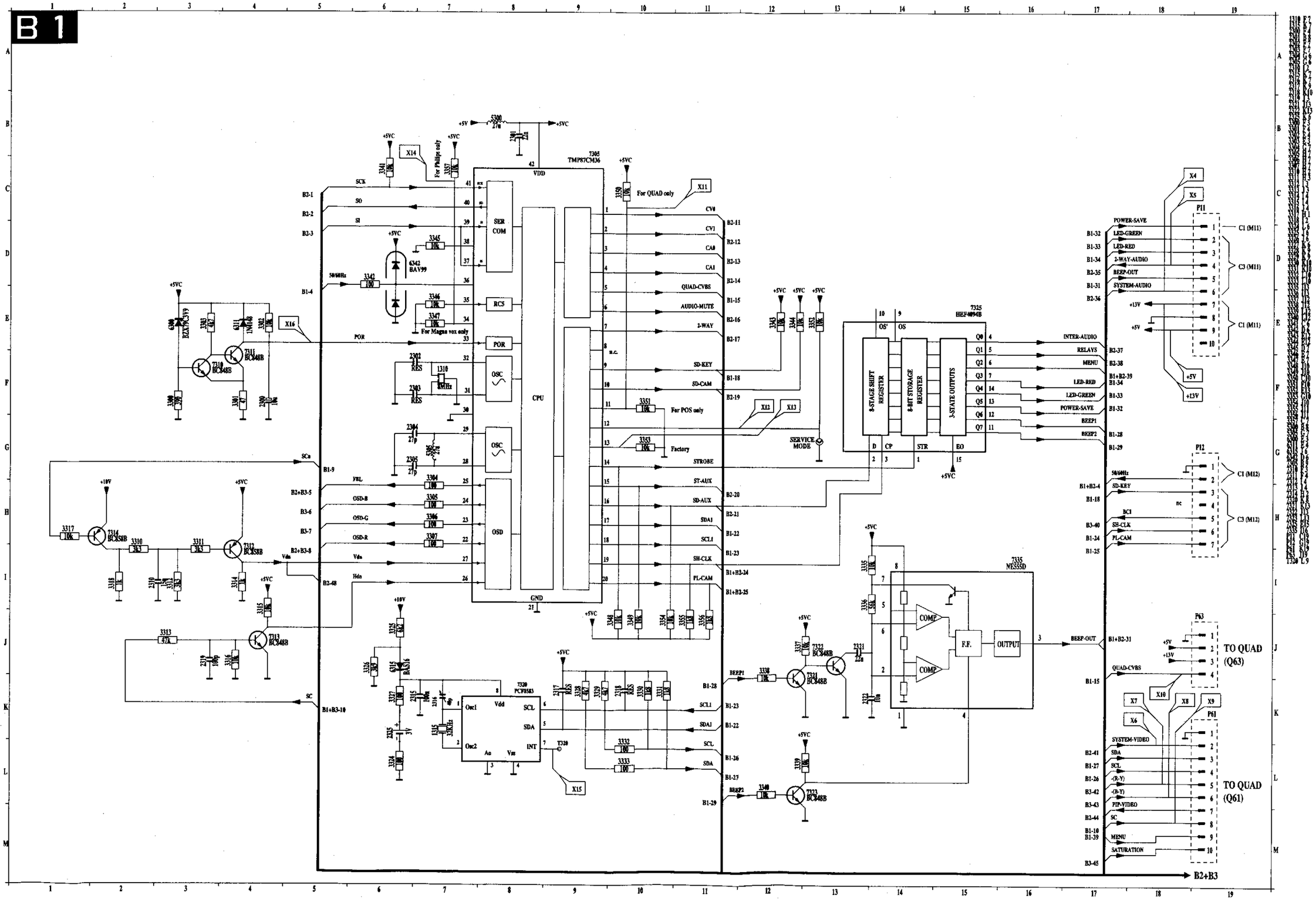
SMD side



1305	A6	3229	B1	7226	B1	9241	B5	9504	C3		
2170	E1	3250	B2	7251	B2	9245	D4	9505	D3		
2171	E1	3254	B2	7276	B2	9246	D4	9507	E3		
2172	D2	3275	B2	7300	B3	9247	E4	9508	D3		
2173	D2	3279	B2	7330	B4	9248	E4	9516	E5		
2177	C3	3373	C5	7370	C5	9249	D4	9517	B2		
2178	C3	3381	D4	7375	C4	9250	C1	9521	D4		
2179	D3	3391	D6	7388	D3	9251	E5	9522	E1		
2180	D3	3392	B5	9010	D4	9252	D2	9524	C4		
2185	D1	3393	D5	9181	A6	9253	B3	9525	E4		
2186	E1	3400	D5	9189	B1	9254	A2	9526	C4		
2187	D2	3403	B5	9190	C3	9255	C2	9527	E4		
2188	D2	3409	C5	9191	B3	9256	C3	9529	B2		
2200	B1	3410	C5	9192	B5	9257	C3	9534	E2		
2202	D1	3418	D6	9194	E4	9261	D5	9538	D4		
2225	B1	3419	B5	9201	B1	9263	D2	9540	C5		
2227	D1	3422	D5	9202	A5	9264	D1	9542	E4		
2240	D5	3430	D5	9203	C1	9267	C2	9544	D4		
2250	B1	3431	D5	9204	B1	9268	C2	9547	E4		
2252	D2	3433	D5	9205	A1	9271	D2	9548	D4		
2275	B2	3434	D5	9206	A1	9272	E4	9553	E1		
2278	D3	3470	D4	9207	A2	9274	E3	9631	D2		
2370	C5	5200	A1	9208	A2	9275	D4	I13	A1		
2375	C3	5210	A1	9209	B1	9318	D5	I31	C1		
2385	D5	5220	A1	9210	C1	9319	C5	I32	C1		
2386	D5	5230	A1	9211	C1	9355	D4	I33	C2		
2387	C5	5240	E5	9212	A6	9356	D4	I34	C3		
2390	C5	5370	E5	9213	C2	9357	B4	I41	C6		
2392	B6	5371	D5	9214	B2	9358	C4	I41	C6		
2395	B5	5372	E5	9215	B2	9370	D5	I50	A5		
2396	B5	5402	B6	9216	C1	9375	C4	I51	E5		
2399	C5	6204	D2	9217	B1	9391	D5	I70	E5		
2405	C5	6229	D1	9218	C2	9403	D3	I71	E4		
2407	C5	6254	D2	9219	C2	9405	B5	I72	E3		
2411	E6	6279	D3	9223	C2	9406	B5	I73	E1		
2412	E5	6370	A5	9224	B1	9407	B5				
2413	D6	6375	A5	9225	B6	9411	D6				
2414	B5	6380	B5	9226	B4	9425	E3				
2416	E6	6385	D6	9227	B6	9450	B4				
2417	B6	6390	C6	9228	B2	9451	C5				
2471	D4	6391	C6	9229	B2	9456	D1				
3176	C3	7170	E1	9230	B2	9457	D1				
3177	C3	7175	E2	9231	B2	9458	D3				
3200	B1	7180	E2	9232	A2	9459	E3				
3204	B1	7185	C3	9233	A2	9460	D2				
3225	B1	7201	B1	9240	B1	9461	D2				

2174	E1	3210	C1	3266	D2	3396	B5	4262	E3	7200	B1	7384	B5
2175	E2	3211	C1	3268	D2	3397	A5	4265	C1	7200	D1	7385	B5
2176	E3	3212	C1	3269	D2	3401	B6	4266	C1	7202	B1	7386	B6
2181	C4	3213	C1	3270	D2	3402	B6	4269	C1	7203	D1	7387	B6
2279	D1	3214	D1	3271	D2	3404	B5	4270	C2	7204	D1	7390	B6
2376	B4	3215	D1	3276	B2	3405	B6	4273	D3	7205	C1	7391	D5
2377	B4	3216	D1	3277	B2	3406	B5	4276	D2	7206	D1	7392	C5
2379	B4	3217	D1	3278	B2	3407	B5	4360	E2	7207	D1	7393	C5
2381	E3	3218	D1	3280	A2	3408	B5	4361	E1	7208	D1	7395	E5
2382	E3	3219	D1	3281	C3	3412	B5	4452	D2	7210	D1	7396	E5
2388	E4	3220	D1	3282	D3	3413	D3	4453	D2	7225	B1	7397	D6
2389	D3	3221	D1	3283	C3	3415	D5	4503	D3	7227	B1	7398	D6
2391	B6	3226	B1	3284	C3	3416	C5	4513	B3	7228	D2	7400	D6
2393	B5	3227	B1	3285	C3	3417	C5	4514	E5	7229	D2	7401	D6
2394	B5	3228	B1	3286	C3	3420	C5	4520	E2	7230	D1	7407	C6
2397	B5	3230	A1	3287	C3	3421	C5	4523	C3	7231	D2		
2400	B5	3231	C1	3288	C3	3423	C6	4531	C6	7232	D2		
2406	C5	3232	D1	3289	D3	3424	C6	4532	C6	7233	D2		
2410	D6	3233	C1	3290	D3	3425	C6	4533	B4	7234	D1		
2415	D6	3234	C2	3291	D3	3432	E5	4541	C4	7235	D2		
2418	D4	3235	C2	3292	D2	3435	D6	4545	E3	7250	B2		
2878	B4	3236	C2	3293	D2	3436	D6	4546	C4	7252	B2		
3170	E1	3237	C2	3294	D3	3437	D6	4549	D4	7253	D2		
3171	E2	3238	C2	3295	D3	3438	D6	4550	E1	7254	C2		
3172	D2	3239	D2	3296	D2	3439	D6	4551	C4	7255	D2		
3174	E3	3240	D2	3320	A6	3440	D6	4552	E3	7256	D2		
3175	C3	3241	D2	3321	E5	3441	D6	6200	B1	7257	D2		
3178	D3	3242	D2	3370	C5	3442	C6	6201	A1	7258	D2		
3179	D3	3243	D1	3371	C5	3443	D6	6202	C1	7259	D2		
3180	C3	3244	D1	3372	C5	3444	D6	6203	D1	7260	D2		
3182	C3	3245	D2	3374	B5	3445	C6	6225	B2	7275	B2		
3183	C3	3246	D2	3375	C4	3446	B5	6226	A1	7277	B2		
3184	C3	3251	B2	3376	B4	3447	A6	6227	D1	7278	D3		
3185	C4	3252	B2	3378	C4	3448	D6	6228	D1	7279	D3		
3186	E1	3253	B2	3379	B4	3450	B6	6250	B2	7280	C3		
3187	E1	3255	A2	3380	B4	3459	E2	6251	A2	7281	D3		
3188	E2	3256	C2	3382	D4	3471	C5	6252	D2	7282	D3		
3189	E3	3257	D2	3384	E3	3877	B4	6253	D2	7283	D3		
3201	B1	3258	C2	3385	E3	4200	E2	6275	B2	7284	D3		
3202	B1	3259	C2	3386	E3	4220	B1	6276	A2	7285	D3		
3203	B1	3260	C2	3387	E3	4221	B3	6277	D2	7314	A6		
3205	A1	3261	C2	3388	E3	4222	E2	6278	D2	7315	A6		
3206	C1	3262	C2	3389	D3	4242	D3	6310	A6	7380	B4		
3207	D1	3263	C2	3390	D3	4243	D2	6400	C6	7381	E3		
3208	C1	3264	D2	3394	A5	4244	E2	6401	C6	7382	E3		
3209	C1	3265	D2	3395	A5	4254	D3	6402	A6	7383	B5		

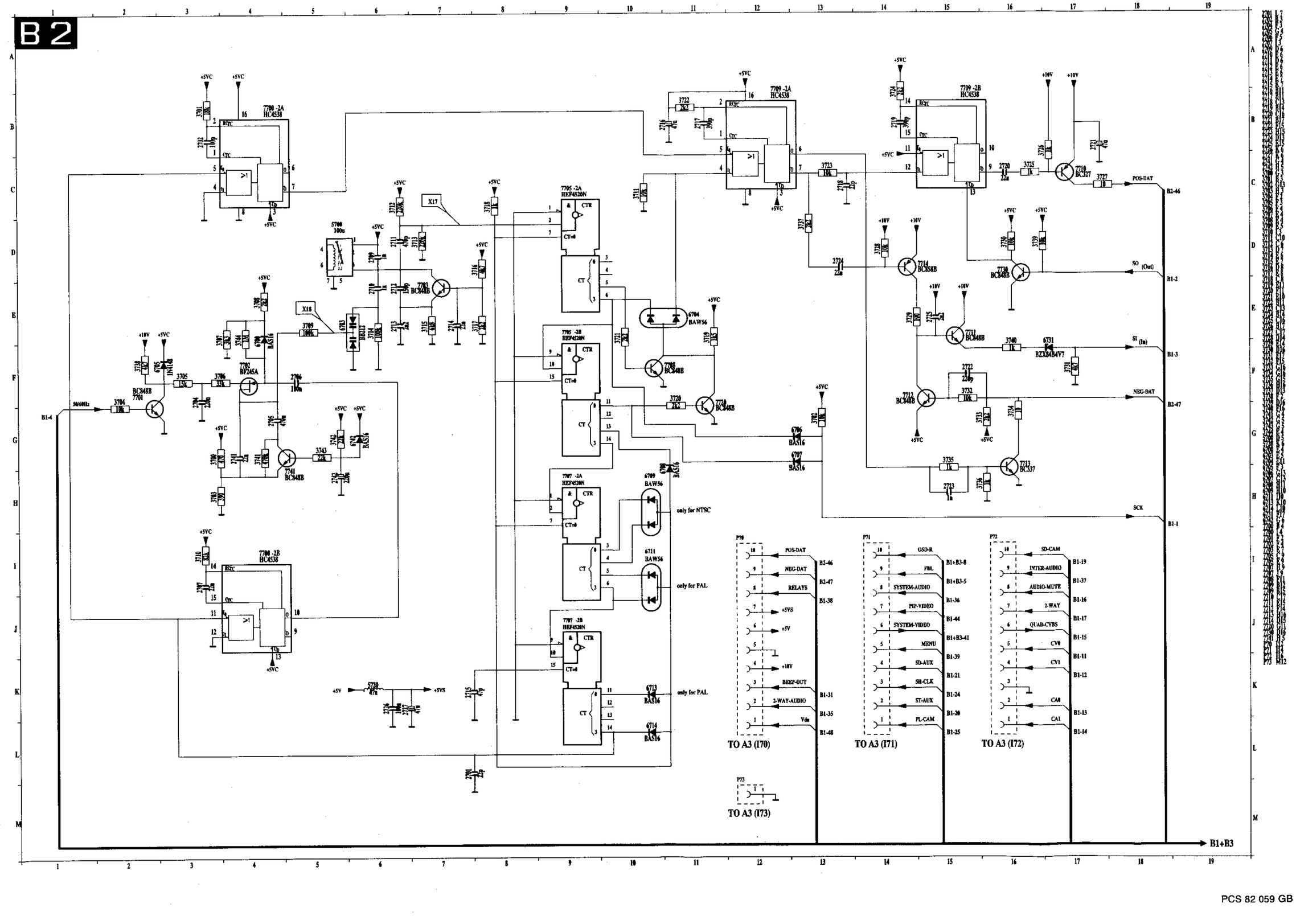
B 1



PCS 82 058 GB

Processing panel

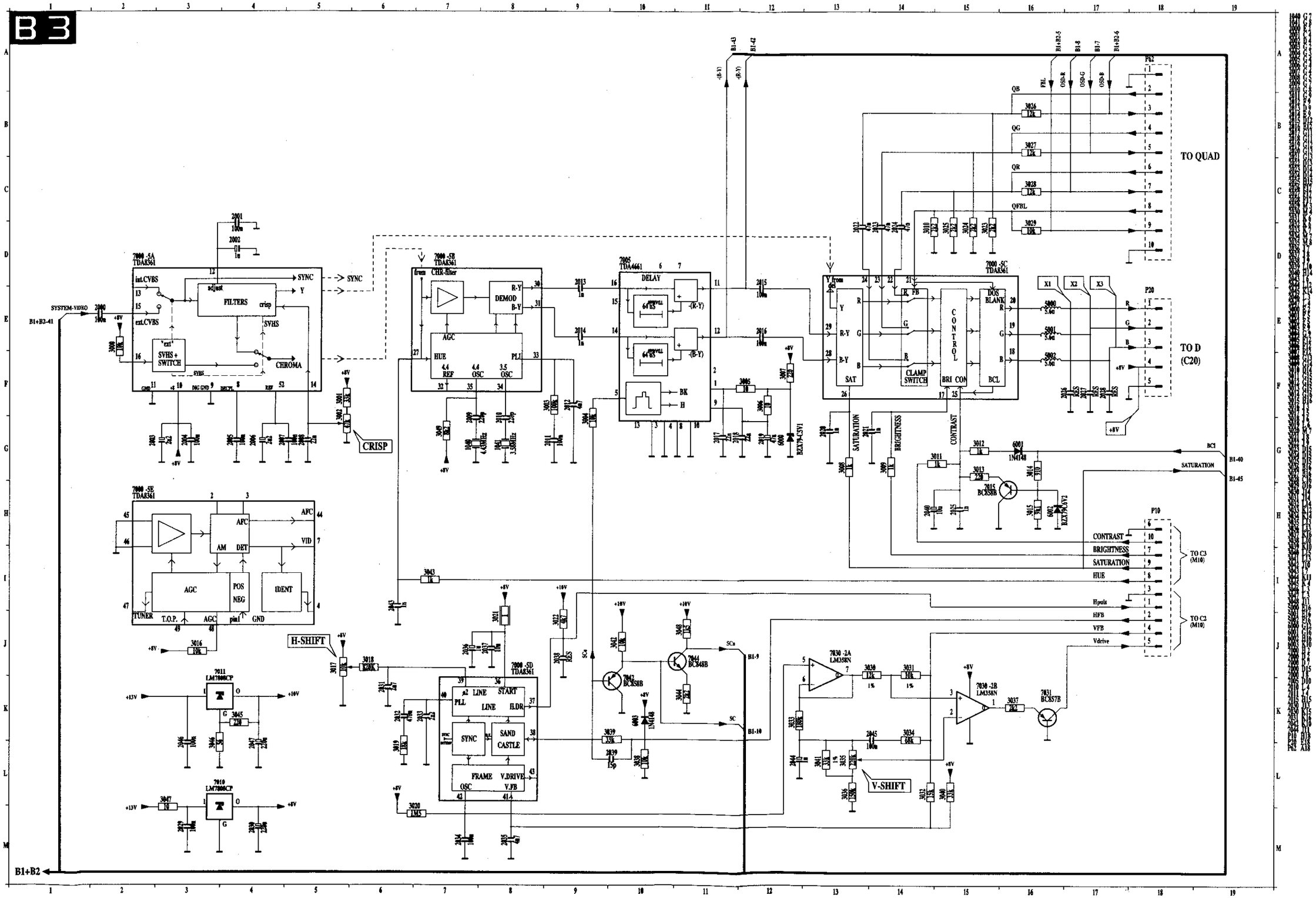
B 2



PCS 82 059 GB

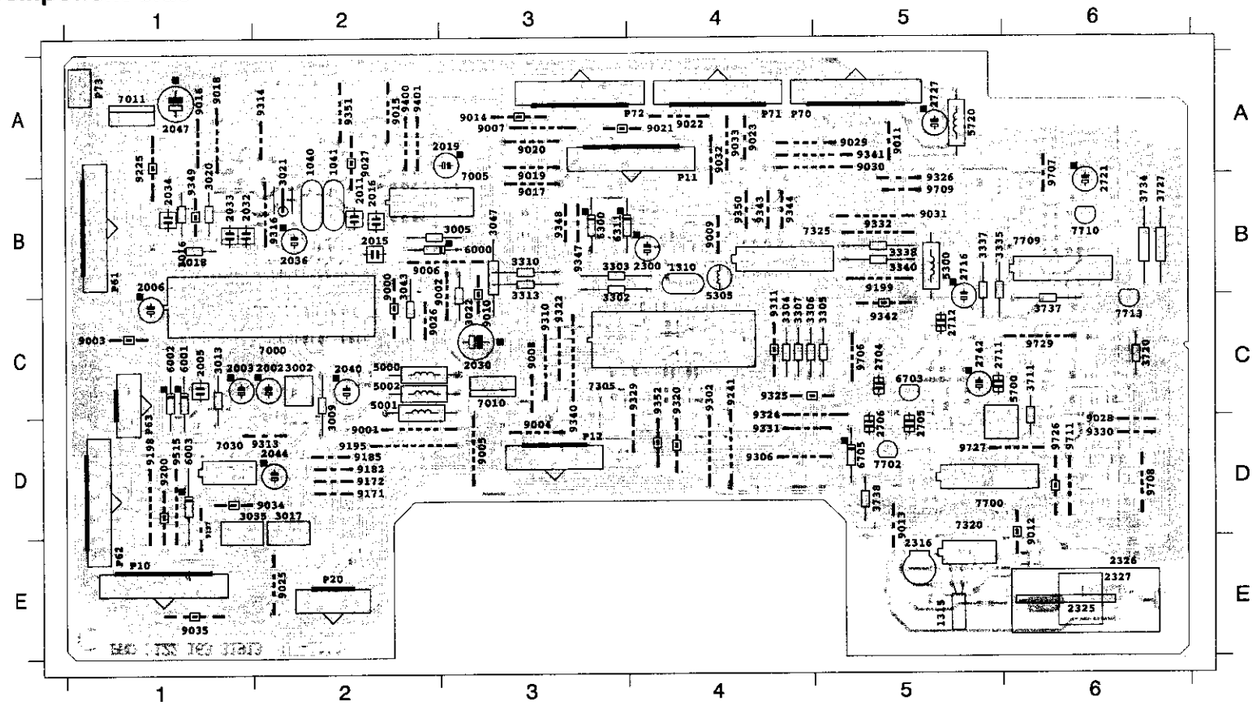
Processing panel

B 3

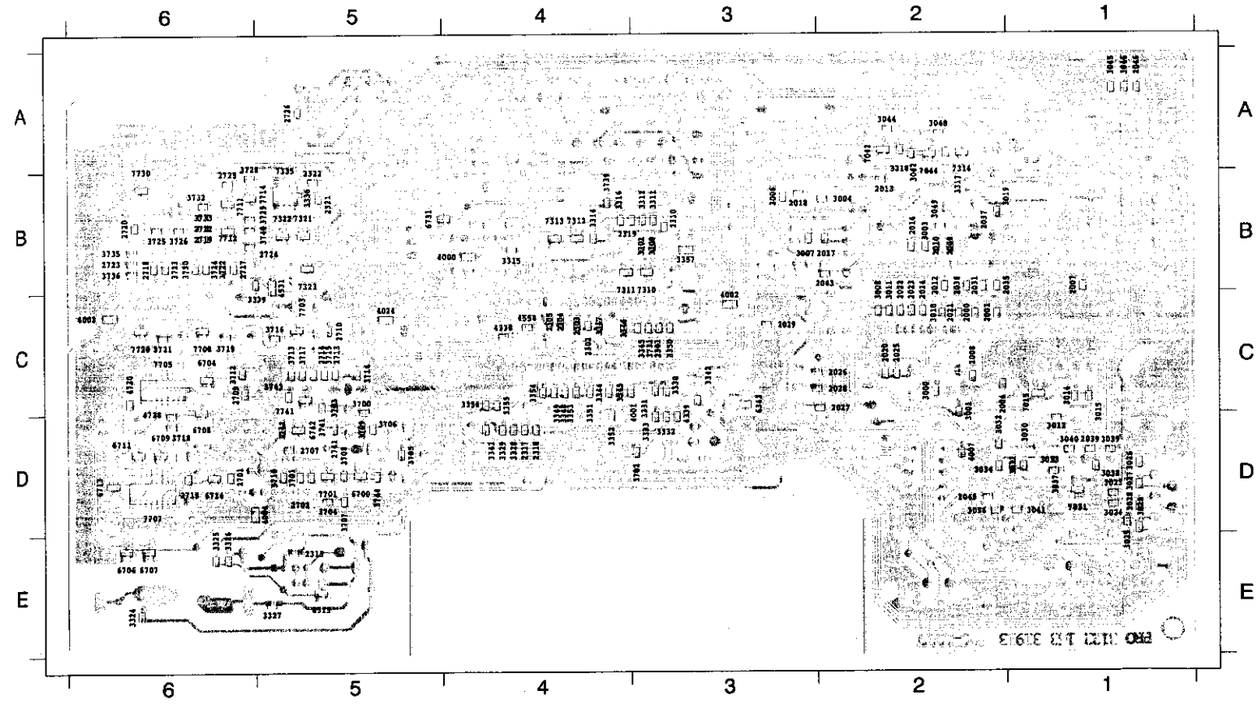


Processing panel

Component side



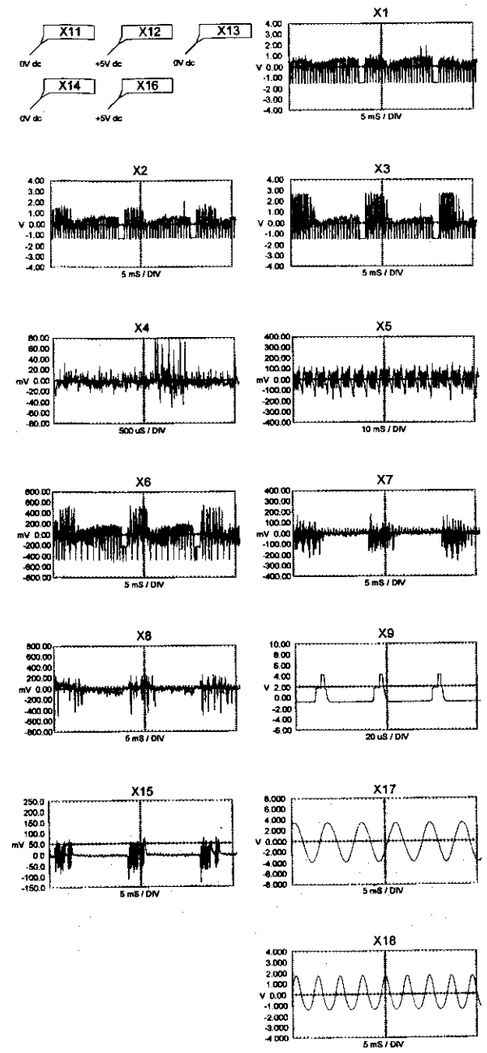
SMD side



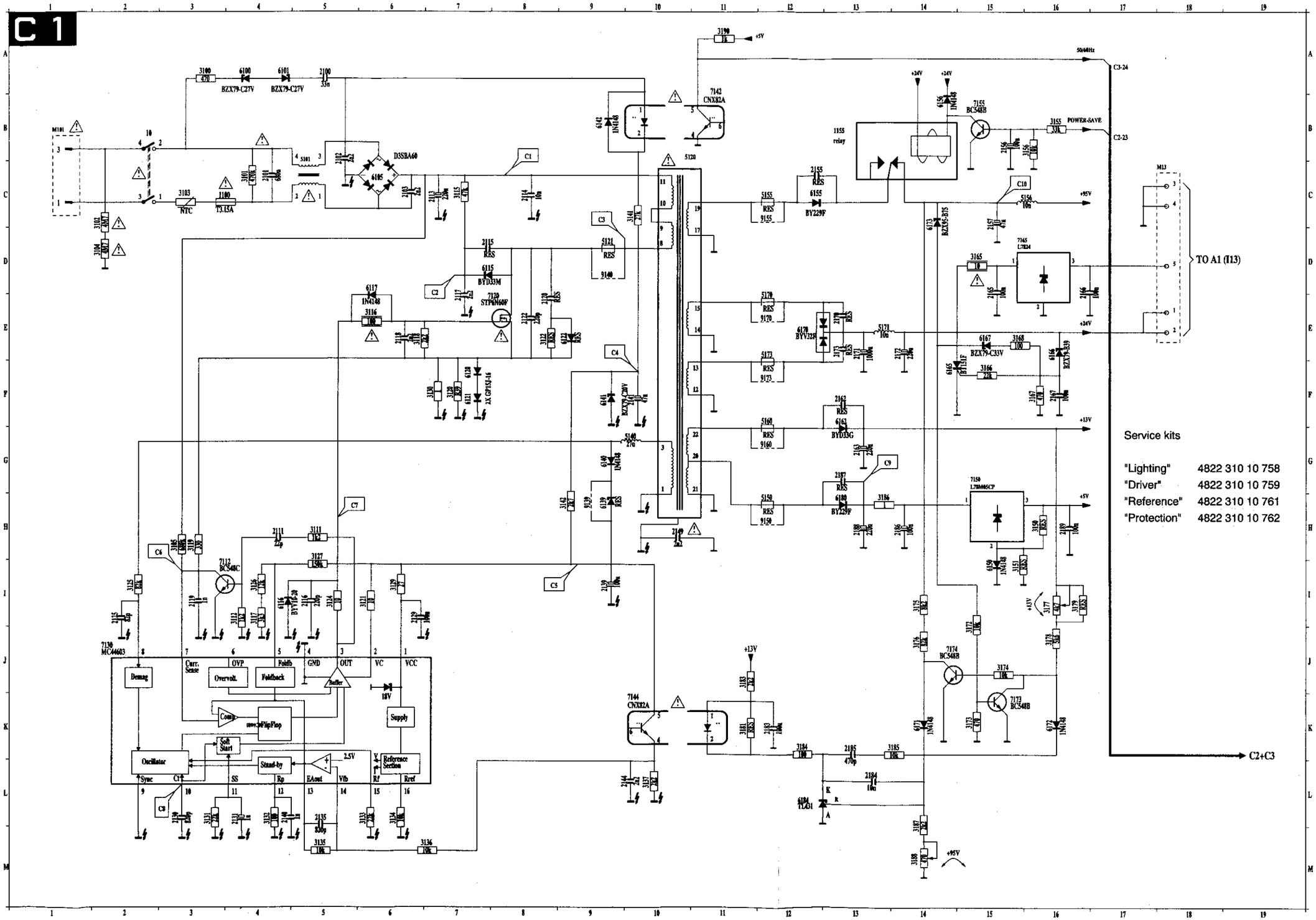
1040	A2	3035	D1	7700	D5	9195	D2	9729	C6		
1041	A2	3043	B2	7702	D5	9197	E1	P10	E1		
1310	B4	3047	B3	7709	B6	9198	D1	P12	D3		
1315	E5	3302	B3	7710	B6	9199	B5	P20	E2		
2002	C2	3303	B3	7713	C6	9200	D1	P61	B1		
2003	C1	3304	C4	9000	B2	9225	A1	P62	E1		
2005	C1	3305	C4	9001	D2	9241	C4	P63	D1		
2006	B1	3306	C4	9002	B2	9302	C4	P70	A4		
2011	B2	3307	C4	9003	C1	9306	D4	P71	A4		
2015	B2	3310	B3	9004	D3	9310	C3	P72	A3		
2016	B2	3313	B3	9005	D3	9311	C4	P73	A1		
2019	A2	3335	B5	9006	B2	9313	D2				
2030	C3	3337	B5	9007	A3	9314	A2				
2032	B1	3338	B5	9008	C3	9316	B2				
2033	B1	3340	B5	9009	B4	9320	C4				
2034	B2	3711	C6	9010	C3	9322	C3				
2036	B2	3720	C6	9011	A5	9324	D4				
2040	C2	3727	B6	9012	E6	9325	C4				
2044	D2	3737	C6	9013	D5	9326	A5				
2047	A1	3738	D5	9014	A3	9329	C3				
2300	B4	5000	C2	9015	A2	9330	D6				
2316	E5	5001	C2	9016	A1	9331	D4				
2325	E6	5002	C2	9017	A3	9332	B5				
2326	E6	5300	B5	9018	A1	9340	C3				
2327	E6	5305	B4	9019	A3	9341	A5				
2704	C5	5700	C5	9020	A3	9342	C5				
2705	D5	5720	A5	9021	A4	9343	B4				
2706	D5	6000	B3	9022	A4	9344	B4				
2711	C5	6001	C1	9023	A4	9347	B3				
2712	C5	6002	C1	9025	E2	9348	B3				
2716	B5	6003	D1	9026	C2	9349	B1				
2721	B6	6300	B3	9027	A2	9350	B4				
2727	A5	6311	B3	9028	D6	9351	A2				
2742	C5	6703	C5	9029	A5	9352	C4				
3002	C1	6705	D5	9030	A5	9400	A2				
3005	B3	7000	C2	9031	B5	9401	A2				
3009	D2	7005	A3	9032	A4	9515	D1				
3013	C1	7010	C3	9033	A4	9706	C5				
3016	B1	7011	A1	9034	D2	9707	A6				
3017	D2	7030	D1	9035	E1	9708	D6				
3018	B1	7305	C3	9171	D2	9709	B5				
3020	B1	7320	D5	9172	D2	9711	D6				
3021	B2	7325	B4	9182	D2	9726	D6				
3022	C3	7334	B6	9185	D2	9727	D5				

2000	C2	2710	C5	3041	D2	3700	C5	4338	C4		
2001	C2	2713	C5	3042	B2	3701	D5	4339	D3		
2004	C2	2714	C5	3044	A2	3702	D4	4531	B5		
2007	B1	2715	D6	3045	A1	3703	C5	4554	C4		
2008	C2	2717	B6	3046	A1	3704	D5	4728	D6		
2009	B2	2718	B6	3048	A2	3705	D5	4730	C6		
2010	B2	2719	B6	3049	B2	3706	D5	6315	E5		
2012	B2	2720	B6	3300	B3	3707	D5	6342	C3		
2013	B2	2722	B6	3301	B3	3708	D5	6700	D5		
2014	B2	2723	B6	3311	B3	3710	D5	6704	C6		
2017	B3	2724	B5	3312	B3	3712	C6	6706	E6		
2018	B3	2725	B6	3314	B4	3713	C5	6707	E6		
2020	C2	2726	A5	3315	B4	3714	C5	6708	D6		
2021	C2	2741	D5	3316	B4	3715	C5	6709	D6		
2022	C2	2824	C2	3317	B2	3716	C5	6711	D6		
2023	C2	3000	C2	3318	B2	3717	C5	6713	D6		
2025	C2	3001	D2	3324	E6	3718	D6	6714	D6		
2026	C2	3003	B2	3325	E6	3719	C6	6731	B5		
2027	D2	3004	B2	3326	E6	3721	C6	6742	D5		
2028	C2	3006	B3	3327	E5	3722	B6	7015	C1		
2029	C3	3007	B3	3328	D4	3723	B6	7031	D1		
2031	B2	3008	C2	3329	D4	3724	B6	7042	A2		
2035	B2	3010	C2	3330	C3	3725	B6	7044	B2		
2037	B2	3011	C2	3331	D3	3726	B6	7310	B3		
2038	B2	3012	D1	3332	D3	3728	A6	7311	B4		
2039	D1	3014	C1	3333	D3	3729	B5	7312	B4		
2043	B3	3015	D1	3336	B5	3730	B6	7313	B4		
2045	D2	3019	B2	3339	C6	3731	C3	7314	B2		
2046	A1	3023	D1	3341	D4	3732	B6	7321	B5		
2301	C3	3024	D1	3342	C3	3733	B6	7322	B5		
2302	C4	3025	E1	3343	C4	3735	B6	7323	B5		
2303	C4	3026	D1	3344	C4	3736	B6	7335	B5		
2304	C4	3027	D1	3345	C3	3739	B4	7701	D5		
2305	C4	3028	D1	3346	C4	3740	B5	7703	C5		
2310	B3	3029	D1	3347	C4	3741	D5	7705	C6		
2315	E5	3030	D1	3348	D4	3742	D5	7707	D6		
2317	D4	3031	D2	3349	D4	3743	C5	7708	C6		
2318	D4	3032	D2	3350	C3	3744	D5	7711	B6		
2319	B4	3033	D1	3351	D4	4000	B4	7712	B6		
2321	B5	3034	D2	3352	D4	4001	D4	7714	B5		
2322	B5	3036	D2	3353	D4	4002	C3	7720	C6		
2701	D6	3037	D1	3354	C4	4003	C6	7730	B6		
2702	D5	3038	D1	3355	C4	4004	D5	7741	C5		
2707	D5	3039	D1	3356	C4	4007	D2				
2709	C6	3040	D1	3357	B3	4024	C5				

Wave forms



Main panel (power supply)



Main panel (deflection)

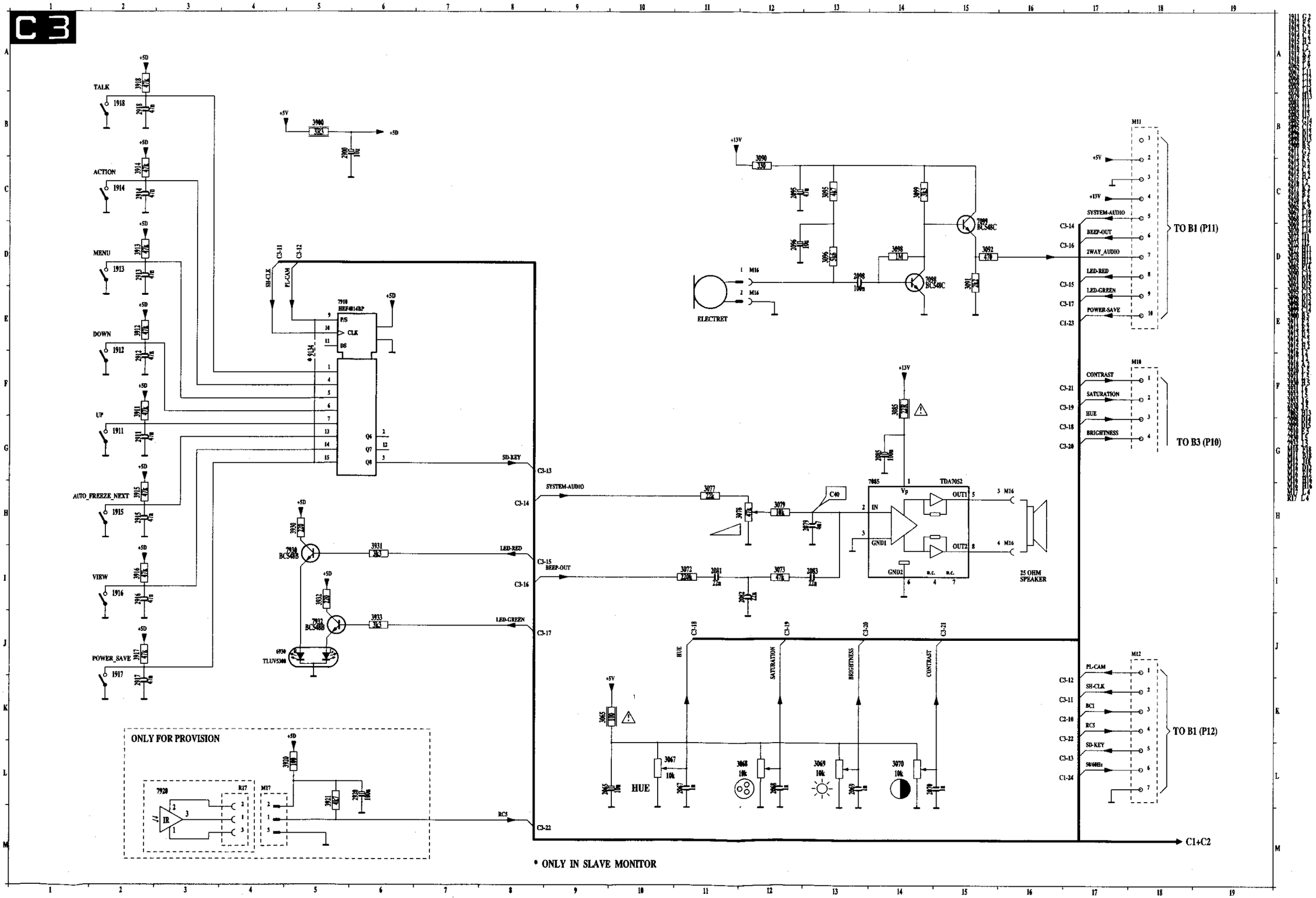
C 2

TO B3 (P10)

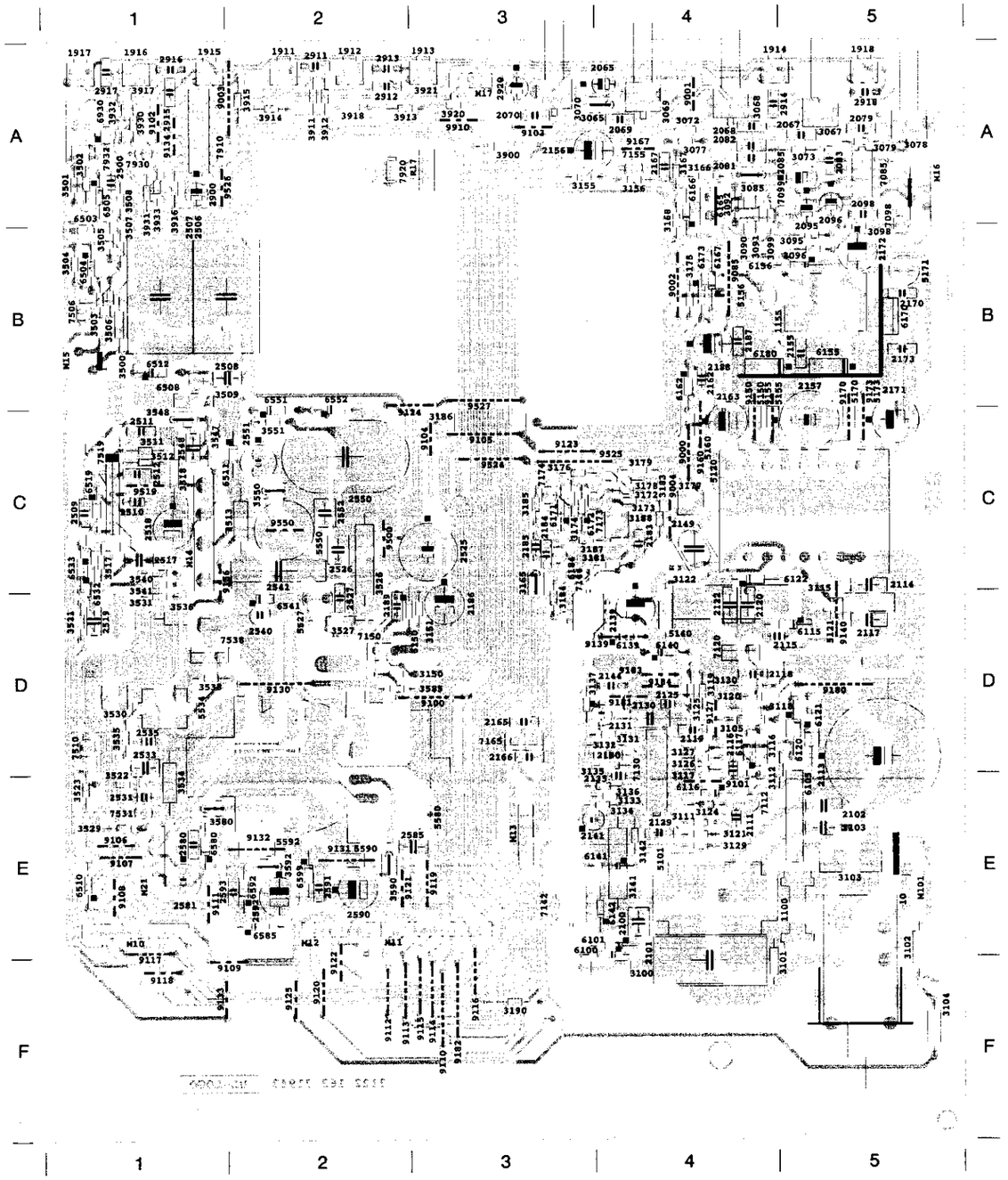
TO D (C21)

C1+C3

Main panel (audio & video)



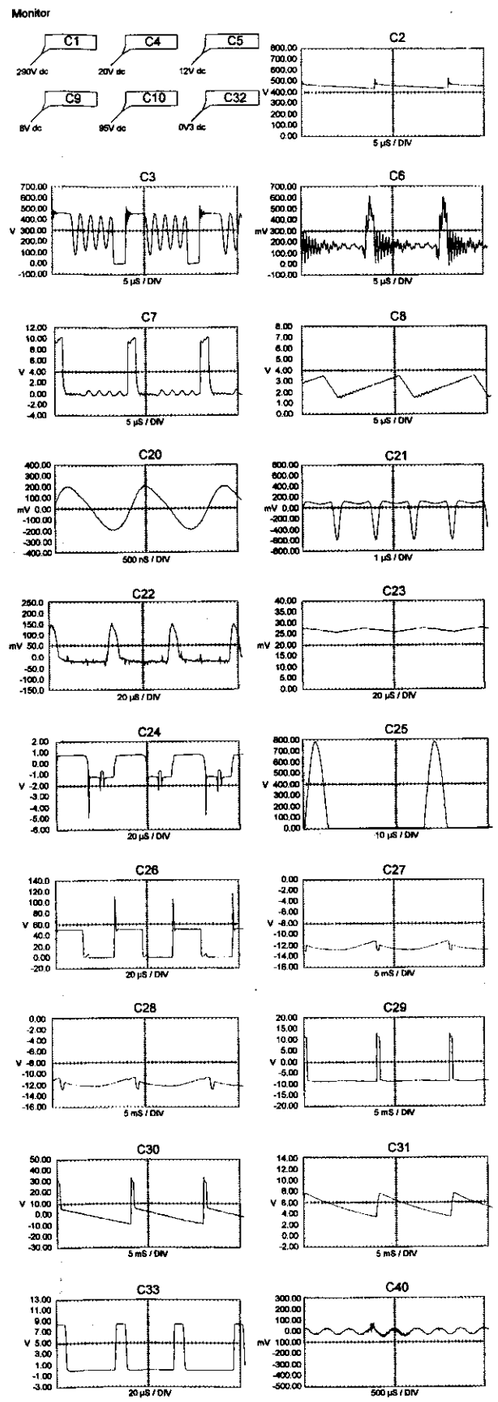
Main panel



10	E5	2541	D2	3178	C4	6120	D5	9119	E3
1100	E1	2548	C1	3179	C4	6121	D5	9120	F2
1155	B5	2550	C2	3181	C4	6122	C5	9121	E2
1911	A2	2551	C2	3183	C4	6139	D4	9122	F2
1912	A2	2552	C2	3184	D3	6140	D4	9123	C3
1913	A3	2580	E1	3185	C3	6141	E4	9124	C2
1914	A4	2581	E1	3186	C3	6142	E4	9125	F2
1915	A1	2585	E2	3187	C3	6150	D2	9127	D4
1916	A1	2590	E2	3188	C4	6155	B5	9130	D2
1917	A1	2591	E2	3190	F3	6156	B4	9131	E2
1918	A5	2592	E2	3500	B1	6162	B4	9132	E2
2065	A4	2593	E1	3501	A1	6165	A4	9133	F1
2067	A5	2900	A1	3502	A1	6166	A4	9134	A1
2068	A4	2911	A2	3503	B1	6167	B4	9139	D4
2069	A4	2912	A2	3504	B1	6170	B5	9140	D5
2070	A3	2913	A2	3505	B1	6171	C3	9150	C4
2079	A5	2914	A5	3506	B1	6172	C3	9155	C4
2081	A4	2915	A1	3507	B1	6173	B4	9156	D1
2082	A4	2916	A1	3508	A1	6180	B4	9160	C4
2083	A5	2917	A1	3509	B1	6184	C3	9167	A4
2085	A5	2918	A5	3511	C1	6503	A1	9170	C5
2095	B5	2920	A3	3512	C1	6504	B1	9173	C5
2096	A5	3065	A4	3513	C1	6505	A1	9180	D5
2098	A5	3067	A5	3517	C1	6508	B1	9181	D4
2100	E4	3068	A4	3518	C1	6510	E1	9182	F3
2101	F4	3069	A4	3521	D1	6511	C1	9183	D4
2102	E5	3070	A4	3522	E1	6512	B1	9184	D4
2103	E5	3072	A4	3523	E1	6519	C1	9500	C2
2111	E4	3073	A5	3526	D2	6532	D1	9519	C1
2113	E5	3077	A4	3527	D2	6533	C1	9524	C3
2114	D5	3078	A5	3529	E1	6541	D2	9525	C4
2115	D5	3079	A5	3530	D1	6551	C2	9526	A1
2116	D4	3085	A4	3531	D1	6552	C2	9527	C3
2117	D5	3090	B4	3534	E1	6580	E1	9550	C2
2118	D5	3091	B4	3535	D1	6585	E2	9910	A3
2119	D4	3092	A4	3536	D1	6592	E2	M10	E1
2120	D4	3095	B5	3538	E1	6599	E2	M10	E5
2122	D4	3096	B5	3540	C1	6930	A1	M11	E2
2125	D4	3098	B5	3541	D1	7085	A5	M12	E2
2129	E4	3099	B4	3547	C1	7098	A5	M13	E3
2130	D4	3100	F4	3548	C1	7099	A5	M14	C1
2131	D4	3101	F5	3550	C2	7112	E4	M15	B1
2135	E4	3102	F5	3551	C2	7120	D4	M16	A5
2139	D4	3103	E5	3580	E1	7130	E4	M17	A3
2140	D4	3104	F5	3585	D3	7142	E3	M21	E1
2141	E4	3105	D4	3590	E2	7144	D3	R17	A3
2144	D4	3111	E4	3592	E2	7150	D2		
2149	C4	3112	E4	3900	A3	7155	A4		
2155	B5	3115	D5	3911	A2	7165	D3		
2156	A3	3116	D4	3912	A2	7173	C4		
2157	B4	3117	E4	3913	A2	7174	C3		
2162	B4	3118	D5	3914	A2	7506	B1		
2163	B4	3119	D4	3915	A2	7510	D1		
2165	D3	3120	D4	3916	A1	7519	C1		
2166	D3	3121	E4	3917	A1	7531	E1		
2167	A4	3122	D4	3918	A2	7538	D1		
2170	B5	3124	E4	3920	A3	7910	A1		
2171	B5	3125	D4	3921	A3	7920	A2		
2172	B5	3126	D4	3930	A1	7930	A1		
2173	B5	3127	D4	3931	B1	7932	A1		
2183	C4	3129	E4	3932	A1	9000	C4		
2184	C3	3130	D4	3933	A1	9001	A4		
2185	C3	3131	D4	5101	E4	9002	B4		
2186	D3	3132	D4	5120	C4	9003	A1		
2187	B4	3133	E4	5121	D5	9004	C4		
2188	B4	3134	E4	5140	D4	9085	B4		
2189	D2	3135	E4	5150	C4	9100	D3		
2500	A1	3136	E4	5155	C5	9101	E4		
2506	B1	3137	D4	5156	B4	9102	A1		
2507	B1	3141	E4	5160	C4	9103	A3		
2508	B1	3142	E4	5170	C5	9104	C3		
2509	C1	3150	D3	5171	B5	9105	C3		
2510	C1	3151	D3	5173	C5	9106	E1		
2511	C1	3155	A3	5527	D2	9107	E1		
2512	C1	3156	A4	5534	E1	9108	E1		
2517	C1	3165	D3	5550	C2	9109	F1		
2518	C1	3166	A4	5580	E3	9110	F3		
2519	D1	3167	A4	5590	E2	9111	E1		
2525	C3	3168	A4	5592	E2	9112	F2		
2526	C2	3172	C4	6100	F3	9113	F2		
2527	D2	3173	C4	6101	E3	9114	F3		
2531	E1	3174	C3	6105	E5	9115	F3		
2533	D1	3175	B4	6115	D5	9116	F3		
2535	D1	3176	C3	6116	E4	9117	F1		
2540	D2	3177	C4	6117	D4	9118	F1		

Wave forms

Monitor



8. Electrical adjustments

1. General
- All controls in the middle position unless otherwise specified.
- Test signal: From pattern generator (PM 5631, pattern 44), applied via capacitor of 4.7 nF for DC blocking.

2. Power supply

2.1 Adjustments of the 95 Volt.
- Connect 220 Volt AC to connector M101
- Switch on the monitor.
- Measure the voltage on elco 2157
- Adjust potentiometer 3188 (main panel) so the
- voltage on elco 2157 is 95 Volt DC (± 1 Volt)

2.2 Adjustment of the +13 Volt.
- Switch the monitor in stand-by
- Measure the voltage on M11 pin 4
- Adjust potentiometer 3177 (main panel) so the voltage on M11 pin 4 is 13 Volt DC (± 0,25 Volt)

3. Deflection adjustment

3.1 H and V adjustments.
- Apply a "Crosshatch" pattern video on Video-in-VCR and switch to VCR.
- Adjust 3017 (Processing panel) so the picture is properly centred in horizontal position.
- Adjust 3035 (Processing panel) so the picture is properly centred in vertical position.
- Adjust 3530 (on Main panel) so the picture properly fils the screen. (V-amplitude)

Note: It might be necessary to repeat the last 2 adjustments.

4. CRT panel adjustments

4.1 VG2 adjustment.
- Apply a "White" pattern video on Video-in-VCR and switch to VCR.
- Set contrast and VG2 potentiometer (bottom adjustment of the line output transformer) to minimum.
- Adjust with Brightness control the top video level at pin 3 of plug C20 (on CRT panel) to the same voltage level as the emitter of transistor 7861.
- Pre-adjust the black level preset potentiometers of each gun, 3806 (B), 3826 (G), 3846 (R), to give a black level of 125 Volt on pins 3, 9 and 7 on the picture tube socket. Remove measuring equipment.
- Adjust the VG2 potentiometer until one of the colours just become visible.
- Adjust the **other two** guns by means of the corresponding resistors (3806, 3826, 3846) until the colours just become visible.

4.2 White-D adjustment.
- Use the same signal as prescribed in 4.1.
- Adjust contrast to such a level that red is good visible. (at the front of the monitor)
- Adjust potentiometers 3811 (B) and 3831 (G) to have a correct White-D picture.

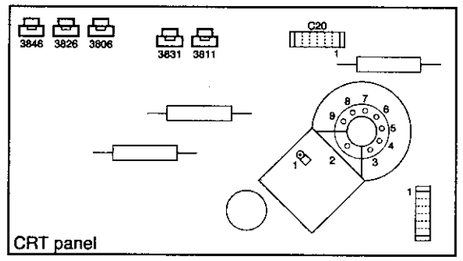
5. PLL locking circuit.
- Put a DC voltage of 2V2 on 2705
- Measure the PLL frequency on pin 2 of 7705
- Adjust coil 5700 (processing panel) so the frequency is:

  500 kHz ±0,1% for PAL
  or 504 kHz ±0,1% for NTSC

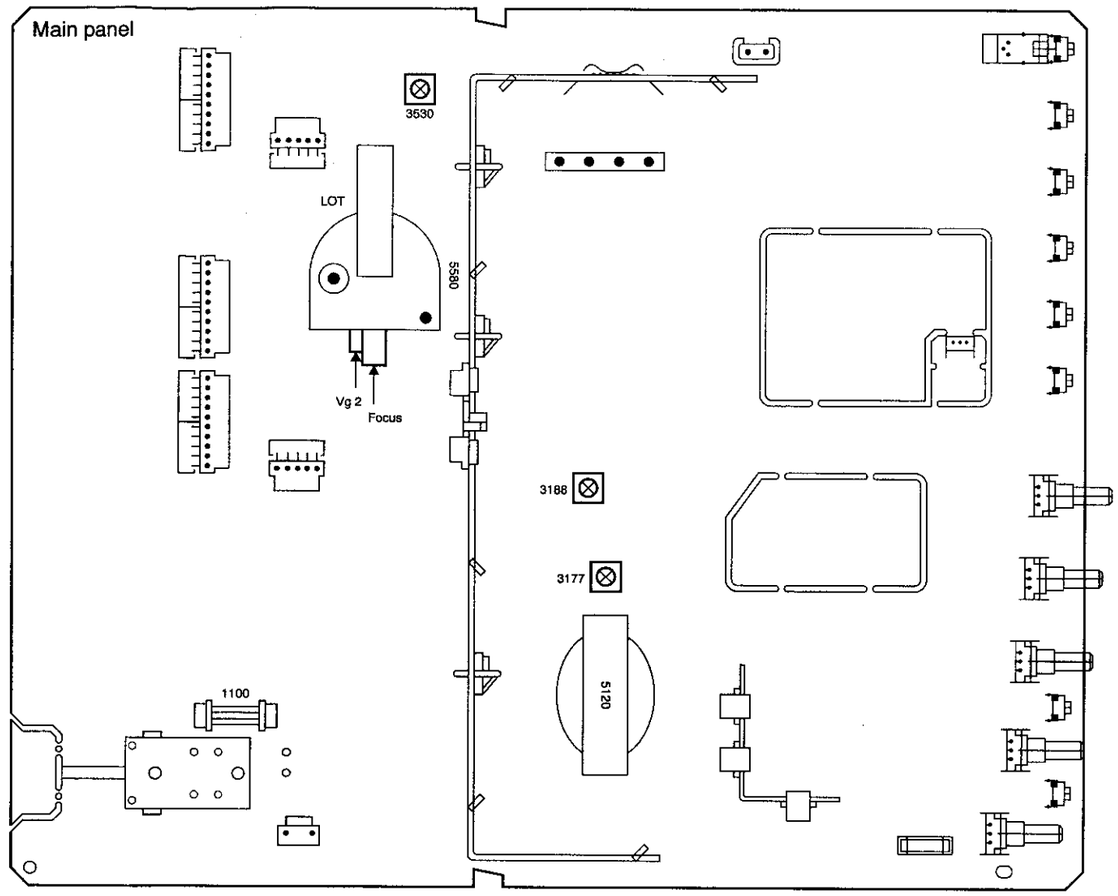
6. Clock oscillator.
- Connect a pull-up (+5V) 10kΩ resistor to pin 7 of 7370 (processing panel).
- Measure the frequency on pin 7 of 7320
- Adjust capacitor 2316 so the frequency is 1 Hz ± 0,001%

7. Crispening on processing panel.
- Apply a colour bar video signal on Video-in-VCR, adjust contrast, brightness, saturation and hue in the middle position. (at the front of the monitor)
- Adjust potentiometer 3002 so the DC voltage on pin 14 of 7000 is 3 Volt DC ± 0,1 Volt.

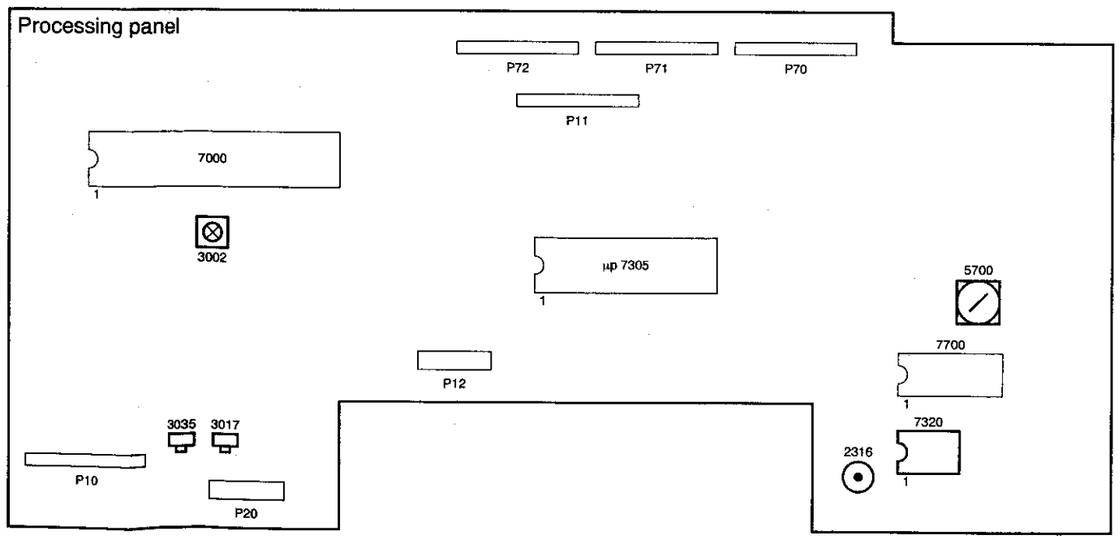
8. Focus adjustment.
- Apply a "Crosshatch" pattern video signal on Video-in-VCR and switch to VCR, contrast, brightness, saturation and hue in the middle position. (at the front of the monitor)
- Adjust with the upper potentiometer on the LOT the focus.



CL 66630015_001.AI



CL 66630015_002.AI



CL 66630015_003.AI

10. Directions for use

Installation

Before you start to use the observation system, the system monitor, camera(s) and optional accessories should be installed. In this chapter the installation of the system monitor and a camera is described. For more detailed information about the installation and operation of a camera and accessories you should consult their manuals.

Remark: *When the system monitor is switched on by means of the rear power switch, the monitor scans all camera inputs (= system check). This to check and register which cameras and accessories are connected to the camera inputs (= camera configuration).*

When the configuration is altered, the system must be scanned again. Therefore always switch off the system when a camera or accessory is added or removed. Only operating the power save button is not sufficient.

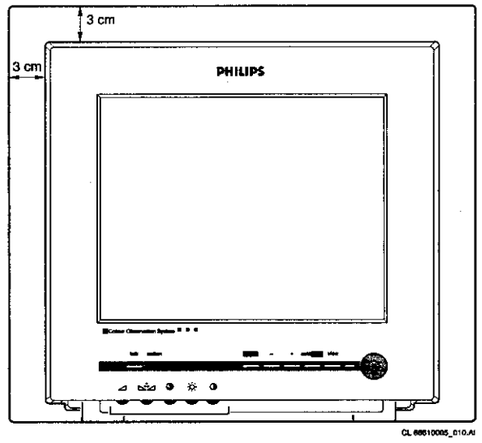
Camera

To ease the installation of the camera, take it and the system monitor to the area you want to observe. With the monitor on site you can check whether the camera covers the required area. For the installation of the camera you should consult the camera manual.

Monitor

When you have installed the camera(s) the monitor can be installed.

1 Place the monitor on a solid base (leave at least 3 cm around each side of the monitor for ventilation).



2 Connect the camera(s) and (optional) devices to the monitor.

3 Connect the monitor to the mains supply.

4 Switch on the main power switch (21) and wait until the camera image appears.

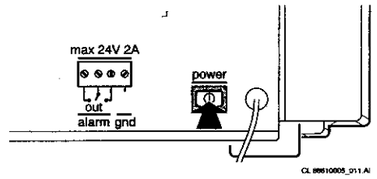
5 If necessary you can optimise the camera image by means of the contrast ◑, brightness ☼ and/or colour ◕ control buttons at the front of the monitor.

Operation of the monitor

When you have installed the camera(s), the monitor and the accessories, you can start to work with your observation system.

Power on/off

Push button at the rear of the monitor.



1 **Power on**
The monitor switches ON.

The following text appears on the monitor screen:

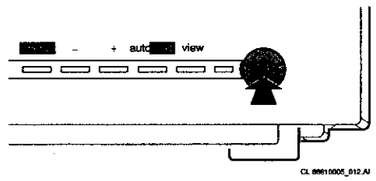
```
PHILIPS
OBSERVATION SYSTEM
VERSION x.x

SYSTEM CHECK
```

(x.x = version number)

After approximately 8 seconds or when a button is pressed the camera image appears on the monitor screen.
Remark: *At the first installation or when one or more cameras or accessories were added or removed from the system, the text CONFIGURATION CHANGED will appear on the monitor screen. In this way the monitor indicates that it has stored the new system configuration.*

2 **Power off**
The monitor switches OFF (system mode indication LED is off).

Power save/active

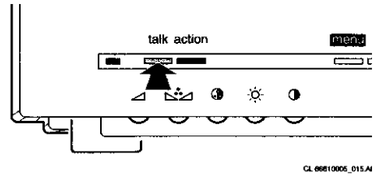


1 **Power active**
Image and sound of the monitor are switched on (power indication LED is green).

2 **Power save**
Image and sound of the monitor are switched off. The camera continues to transmit images and sound to the VCR, slave and aux. output. The alarm functions also remain active.

In power save mode you can select between two functions (selection is menu controlled):
- non-silent function (system mode indication LED is red)
- silent function (system mode indication LED is amber)

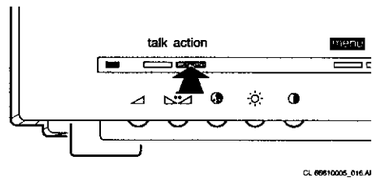
Talk function



Press talk to speak through the intercom (optional).
Release the button to allow your visitor to speak to you.

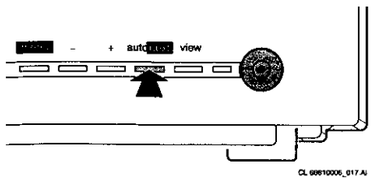
Doorbell function:
If the doorbell button on the intercom box is pressed a buzzer sounds and the monitor switches to the camera input the intercom box is designated to. 🔔
Remark: *The talk button and doorbell function are only functional in combination with an intercom box (optional).*

Action function



Press action, for instance to open a door. As long as action is pressed, a buzzer sounds and the symbol ⇉ is visible at the upper left-hand side of the monitor screen. If the system consists of more cameras, the action is done in the action box designated to the selected camera input.
Remark: *The action button is only functional in combination with an Alarm/Action box (optional).*

Auto sequence on/off

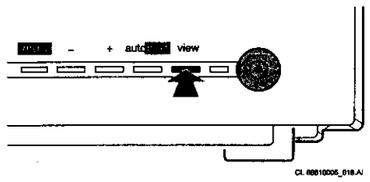


4. Mechanical instructions

- off
  The monitor displays the image (and sound) of one of the connected cameras. The selected camera input number is visible at the upper left-hand corner of the monitor screen. Press [-] or [+] to select the previous or next camera input.
- on
  The monitor switches slowly between the pictures (image + sound) of the connected cameras. The camera line number and the symbol IIP are visible at the upper left-hand corner of the screen.

Remark: *The auto button is only functional when:*
- camera mode is selected
- the observation system is enlarged to at least two cameras
- no menu is displayed

View modes



CL 66810005_018.AI

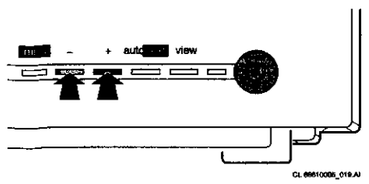
The following view modes can be selected:

1 Camera mode
The monitor displays the image (and sound) of one of the connected cameras. The selected camera input number is visible at the upper left-hand corner of the monitor screen. Press [-] or [+] to select the previous or next camera input.

2 Camera sequence mode
The monitor switches slowly between the pictures (image + sound) of the connected cameras. The camera input number and the symbol IIP are visible at the top of the screen.
Remark: *This mode is only functional when the observation system has more than one camera and when the menu function is not activated.*

3 VCR input
The monitor reproduces the image and sound of the VCR. The symbol VCR is visible at the left-hand top side of the monitor screen.

Camera selection



CL 66810005_019.AI

Press [-] or [+] to select the previous or next camera input.

System reset

By pressing [-] and [+] simultaneously for at least three seconds while switching on the main power switch at the rear of the system monitor, you can set the system monitor to the factory default settings. During a reset a beep sounds and the following text is shown on the monitor screen:

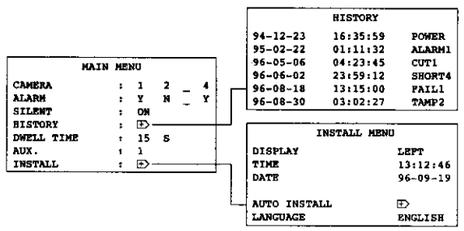
```
PHILIPS
OBSERVATION SYSTEM
VERSION x.x

SYSTEM RESET
```

After approximately 3 seconds or when a button is pressed the message will disappear from the monitor screen.
Remark: *After a system reset all system configuration settings are lost. Use the AUTO INSTALL function (see Installation Menu) to scan the system. The system monitor will register the camera configuration again.*

How do the menus work ?

With the On Screen Display menus you can adjust various system control functions.

The following menus can be selected:



CL 66810005_021g.AI

The menu control buttons

The menus are operated with the following control buttons:

1 [■]
- Switches the main menu on/off
  Remark: *If no button entry is given within 30 seconds the on screen display menu is automatically switched off.*
- Selects the previous menu when a sub-menu is selected.

2 [auto next]
- Selects the next menu item.

3 [-]/[+]
- Decreases, increases or changes the value of a selected menu item.
- Selects the next menu if the symbol ⊕ is highlighted.

The Menus

Main Menu (MAIN MENU)

The items of the Main Menu are discussed in the following sections:

1 Camera configuration (CAMERA)
By means of camera configuration you can see which camera inputs (1 to 4) are in use.

- Switch on the Main Menu.
- next to the text 'CAMERA' the numbers of the camera inputs to which a camera is connected are displayed.

```
CAMERA : 1 2 - 4
```

2 Alarm function active yes/no (ALARM)
With this function you can activate or deactivate the alarm function of the connected camera inputs.
- Y
  The alarm function of this camera input is activated.
- N
  The alarm function of this camera input is not activated.
  In case an alarm box triggers an alarm, the buzzer, the alarm relay and the slave alarm information are not activated. The history list is not updated with the alarm event.

Select ALARM from the Main Menu;
- Press [auto next] until the camera input of which you want to activate or deactivate is highlighted.

```
ALARM : Y N - N
```

- Press [auto next].

```
ALARM : Y N - N
```

- Press [-] or [+] to deactivate or activate the alarm function of the selected camera input.

```
ALARM : Y Y - N
```

3 Silent function on/off (SILENT)
The silent function can be used when the monitor is in 'power save' mode.
- Silent function OFF
  In case of an alarm the monitor automatically switches to 'active' mode. The monitor reproduces the image and sound of the camera input the Alarm/Action box (which triggered the alarm) is designated to.
- Silent function ON
  On occurrence of an alarm the monitor stays in 'power save' mode. No image or sound is reproduced, the system mode indication LED is red blinking. The alarm output contact is activated, information is sent to the slave monitor and the history table is updated with this alarm event.
  Remark: *The camera image and sound will always be sent to the VCR output and slave output.*

Select SILENT from the Main Menu;
- Press [auto next] until the text next to SILENT is highlighted.
- Press [-] or [+] to deactivate (OFF) or activate (ON) the silent function.

4 Alarm history list (HISTORY)
When you select HISTORY a list with the date, time, kind of alarm and the camera input number of the last 9 alarm events is displayed.

```
HISTORY
94-12-23  16:35:59  POWER
95-02-22  01:11:32  ALARM1
96-05-06  04:23:45  CUT1
96-06-02  23:59:12  SHORT4
96-08-18  13:15:00  FAIL1
96-08-30  03:02:27  TAMP2
```

CL 66810005_023g.AI

Select HISTORY from the Main Menu;
- Press [auto next] until the symbol ⊕ next to HISTORY is highlighted.
- Press [-] or [+].
- The history list appears.
- Press [■] when you want to return to the Main Menu.

Remark: *The explanation of the fault indications can be found in the section 'Special alarms'.*

5 Camera dwell time (DWELL TIME)
With this option you can change the switching time interval (1 to 30 seconds).
Remark: *This mode is only functional when you have enlarged the system to at least 2 cameras.*

Select DWELL TIME from the Main Menu;
- Press [auto next] until the actual dwell time is highlighted.
- Press [-] or [+] to decrease or increase the sequence time.

6 Auxiliary output selection (AUX.)
With this option you select which camera's output signal is sent to the aux. output.

Select AUX. from the Main Menu;
- Press [auto next] until the present selected camera input number next to AUX. is highlighted.
- Press [-] or [+] to select the previous or next camera input number.

Install menu (INSTALL MENU)

Select INSTALL from the Main Menu;
- Press [auto next] until the symbol ⊕ next to Install is highlighted.
- Press [-] or [+].
- The Install Menu appears.
- Press [ ] when you want to return to the Main Menu.

The install menu contains the following items:

```
        INSTALL MENU
DISPLAY              LEFT
TIME                 13:12:46
DATE                 96-09-19

AUTO INSTALL         ⊕
LANGUAGE             ENGLISH
```

CL 66610005_024g.AI

The items of the install menu are discussed in the following sections.

1 Display time and date (DISPLAY)

With this option you can select if and where you want to display the time and date on the monitor screen (Lower left-hand corner, Lower right-hand corner or off).

Select DISPLAY from the Install Menu;
- Press [auto next] until the text next to DISPLAY is highlighted.
- Press [-] or [+] to select between LEFT, RIGHT or OFF.

2 Time adjustment (TIME)

Use this option when you want to adjust the clock of the system monitor.

Select TIME from the Install Menu;

```
TIME    :  23:15:41
```

- Press [-] or [+] to adjust the hours.
- Press [auto next] until the minutes are highlighted.

```
TIME    :  23:15:41
```

- Press [-] or [+] to adjust the minutes.
- Press [auto next] until the seconds are highlighted.

```
TIME    :  23:15:41
```

- Press [-] or [+] to stop the clock.
- The seconds are set to zero.

```
TIME    :  23:15:00
```

- Press [-] or [+] to adjust the seconds.
- Press [auto exit] to start the clock.

3 Date adjustment (DATE)

Use this option when you want to change the date.

Select DATE from the Install Menu;
- The year is highlighted.

```
DATE    :  97-09-19
```

- Press [-] or [+] to adjust the year.
- Press [auto next] until the month is highlighted.

```
DATE    :  97-09-19
```

- Press [-] or [+] to adjust the month.
- Press [auto next] until the day is highlighted.

```
DATE    :  97-09-19
```

- Press [-] or [+] to adjust the settings of the day.

4 Auto install (AUTO INSTALL)

Select this option when you want to check the configuration of the system.

Select AUTO INSTALL from the Install Menu;
- Press [auto next] until the symbol ⊕ next to AUTO INSTALL is highlighted.
- Press [-] or [+] to start the installation procedure.
- The text SYSTEM CHECK appears on the monitor screen.

After approximately 3 seconds the following texts can appear on the monitor screen:

```
AUTO INSTALL COMPLETED
```

- The system is installed correctly.

After approximately 30 seconds or when a button is pressed the Install Menu returns.

```
CONFIGURATION CHANGED
```

- The system is changed; one ore more cameras or accessories have been added or removed from the system since the last System Check was performed.

When a button is pressed the Install Menu returns.

5 Language

With this option you can select the language of the On Screen Display menus (English, Français, Deutsch, Português, Español or Italiano).

Select LANGUAGE from the Install Menu;
- Press [auto next] until the present selected language is highlighted.
- Press [-] or [+] to change the language.
- Press a button to return to the Install Menu.
- The new selected language is activated.

Alarm function

When a sensor triggers an Alarm/Action box (optional) the system's alarm function is activated.

In case of an alarm:

1 Monitor in active mode:
- The monitor switches to the camera input to which is the Alarm/Action box is designated.
- The blinking message "AL" and the camera input number is displayed at the bottom of the monitor screen.
- A buzzer sounds for max. 3 minutes.
- The alarm output contact is activated (horn, siren or telephone selector) for max. 15 minutes.
- The alarm information is sent to the slave monitor (optional) for max. 3 minutes.
- The history table is updated with the alarm event.

2 Monitor in power save mode:
There are two possibilities:
- Non-silent mode (silent function off)
  The monitor switches to active mode, see 'monitor in active mode'.
- Silent mode (silent function on)
  The alarm output contact is activated (horn, siren or telephone selector) for max. 15 minutes.
  The alarm information is sent to the slave monitor (optional) for max. 3 minutes.
  The history table is updated with the alarm event.

Reset alarm:
The alarm resets whenever a button is pressed. The monitor returns to the status it was before the alarm occurred.
When the cause of the alarm has not been eliminated, the monitor continues to display the alarm message (not blinking). When you have eliminated the cause of the alarm the alarm message disappears.

When no button is pressed during an alarm the monitor automatically resets the alarm after max. 15 minutes. The system monitor returns to the status it was before the alarm occurred. The blinking alarm message is displayed until a button is pressed. When a button is pressed, there are two possibilities:

1 The cause of the alarm has not been eliminated; the monitor continues to display the alarm message (not blinking).
2 The cause of the alarm is eliminated; the alarm message disappears.

Remark: *When a cable shortage alarm is reset the alarm message will not disappear from the monitor screen. To remove the message, first switch the monitor OFF, repair the cable shortage and then switch the monitor ON again.*

Trouble shooting

Double addressing

If the system monitor detects two accessory boxes with the same setting of the CAMERA # and box number switches, it shows the following error message:

```
DOUBLE ADDRESSING
"Accessory name"
INPUT X/X
```

Explanation:

INPUT X/X
└┴→ the physical camera input numbers to which the double addressed boxes are connected.

When a button is pressed, the message will disappear from the monitor screen.

No valid camera input selection

The camera number of an intercom box or Alarm/Action box cannot be set to a camera input to which no camera is connected. If the system monitor detects an invalid camera input selection, it shows the following message:

```
INPUT X
"Accessory name"
HAS NO VALID
CAMERA SELECTION
```

- Switch the system monitor OFF.
- Change the camera number by means of the 'CAMERA #' switch situated inside the box (see box manual).
- Switch the system monitor ON.

System error

When a SYSTEM CHECK is performed and a system error is detected a beep sounds. The following text appears on the monitor screen:

```
OBSERVATION SYSTEM
VERSION x.x
SYSTEM ERROR
SERVICE REQUIRED
```

When a button is pressed, the beep stops and the message disappears from the monitor screen.

What to do in case of a system error ?

1 Switch the system monitor OFF, wait 10 seconds, and than switch it ON again (mains power switch at the rear of the system monitor).
2 If during a SYSTEM CHECK the error message is displayed again you should call for service.

Special alarms

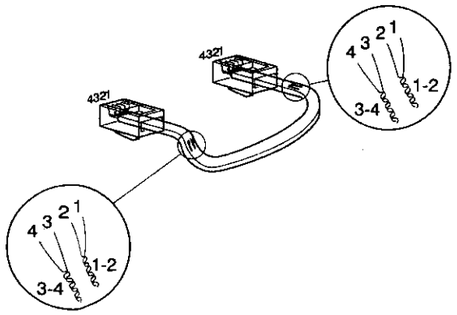
A special alarm is given in case of:

- Cable cut CUT
- Cable short SHORT
- Power off POWER
- Tamper switch TAMPER
- Communication lost FAIL

- Press a button to stop the alarm.
  If the alarm message is still displayed on the monitor screen you should, call for service.
  Remark: *In case of a power-cable short, the power supply to the shorted camera input is switched off.*

System cable

For the interconnections between the system monitor and camera 25m/75ft system cable is supplied. For an optimum picture and sound quality you should always use 4-wire dual twisted-pair cable when extending the connection. The max. allowed cable length is 300m/900ft). The cable and plugs are available in the hobby and professional trade. Pay attention that the connectors are fixed to the cable corresponding to the figure below.



CL 68610005_006.AI

If the length of the system cable is more than 200m/600ft, a mains power adaptor should be used to feed the accessory or camera (see optional accessories). The max. allowed cable length is 300m/900ft.

Caution: *The plugs used for the observation system have the same dimensions as standard telephone plugs. Never connect telephone equipment to the observation system.*

If the fitted plug is not suitable for your socket outlets, it should be cut off and an appropriate plug fitted in its place.

Cut the mains plug from the lead. Strip the sheating so the wires will become free for the necessary length to connect the UK-mainsplug (not supplied).

The wires in the mains lead are coloured according to the following code:
BLUE - NEUTRAL
BROWN - LIVE

If the mains plug (or adapter) contains a fuse, the value of this fuse should be 3 Amp. Alternatively, if another type of plug (not fused) is used, the fuse at the distribution board should not be grater than 5 Amp.

If the colours of the wires in the mains lead do not correspond with the coloured markings identifying the terminals, proceed as follows:

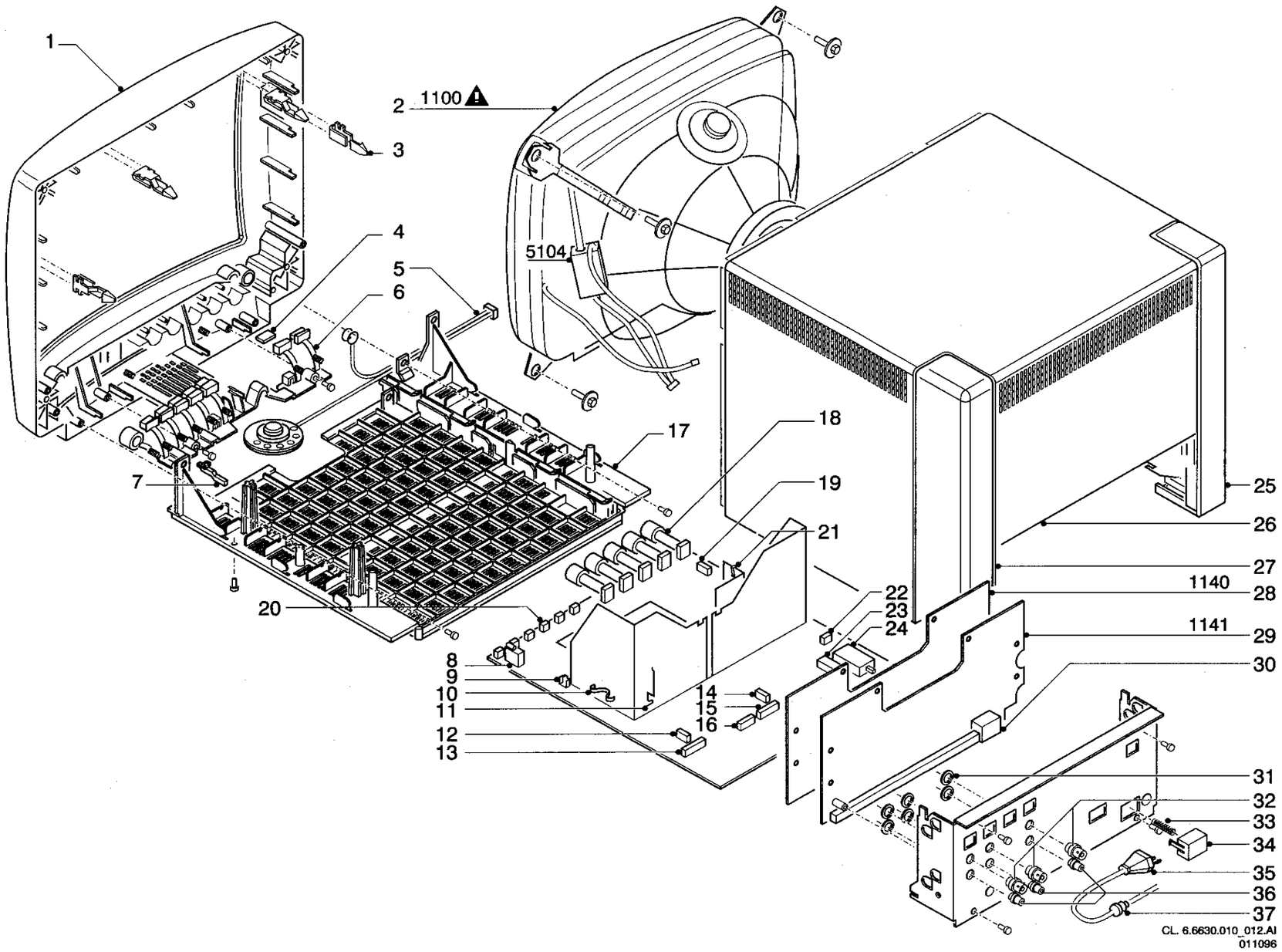
- The BLUE wire should be connected to the terminal marked "N" or coloured black.
- The BROWN wire should be connected to the terminal marked "L" or coloured red.

Before replacing the plug cover, make sure that the cord grip is clamped over the sheat of the lead - not simply over the two wires.

11. Abbreviations

µP	Micro processor
AX0 / AX1	µPselection lines
B-AMP G-AMP	Blue and green amplifier
BCI	Beam current information
CA0 / CA1	µP selection lines
CAM	Camera
CRT	Cathode ray tube
CURCAM	Camera current
CV0 / CV1	µP selection lines
CVBS	Composite video
DAT	Data
EHT	Extra high tension
ESD	Electric Static Discharge
FBL	Fast blanking
FET	Field effect transistor
FF1	Filament voltage
H. DEFL	Horizontal deflection coil
HDn	Negative horizontal drive
HFB	Horizontal flyback
HUE	Colour adjustment
I²C	Philips data protocol
LOT	Line output transformer
MUTEL	Mute loudspeaker
MUTEM	Mute microphone
NTC	Negative temperature coefficient
OSD	On screen display
PIP	Picture in picture
PIR	Passive infrared receiver
PL-CAM	Shift pulses incoming data
PLL	Phase lock loop
POR	Power on reset
POWCAM	Camera power on/of
PSA	Power save active
QR / QG / QB	Quad RGB
RC5	Remote control
RGB	Red Green Blue
SC	Sandcastle pulse
SCK	Serial clock
SCn	Negative sandcastle pulse
SD-AUX	Outgoing serial data
SD-CAM	µP incoming serial data
SH-CLK	Clock pulses
SI	Serial data in
SMPS	Switch mode power supply
SO	Serial data out
ST-AUX	Storage command outgoing data
STROBE	Storage command outgoing data
SYS	System
V. DEFL	Vertical deflection coil
VCR	Video cassette recorder
VDn	Negative vertical drive
Vdrive	Vertical drive
VFB	Vertical feedback
Vg2	Voltage grid 2
Vref	Reference voltage

12. Spare parts lists



Mechanical

Position Number	Service Code	Description
1	4822 459 04401	Front-mask (PAL)
1	4822 459 04399	Front-mask (NTSC)
2 !	4822 131 20316	Picture tube 1100 (PAL)
2 !	4822 131 11196	Picture tube 1100 (NTSC)
3	4822 402 10615	Snap hook
4	4822 410 10865	Action knob
5	4822 218 11525	Speaker-micro assy
6	4822 464 10233	Knob frame
7	4822 256 10315	Lens holder
8	4822 256 10316	LED holder
9	4822 265 30389	Connector M15
10	4822 492 71655	Spring for 7519
11	4822 492 70871	Spring for 7120, 7150, 7538
17	4822 442 00645	Bottom plate
18	4822 410 10864	Rotary knobs
19	4822 265 31245	Connector M16
20	4822 276 13269	Switch
21	4822 492 70559	Spring for 6155, 6170, 6180
22	4822 265 20723	Connector M101
23	4822 256 92053	Fuse holder
24 !	4822 276 13816	Mains switch
25	4822 426 10325	Right corner (PAL)
25	4822 426 10326	Right corner (NTSC)
26	4822 426 10322	Back cover assy (PAL)
26	4822 426 10321	Back cover assy (NTSC)
27	4822 426 10324	Left corner (PAL)
27	4822 426 10323	Left corner (NTSC)
28	4822 212 11021	Processing panel assy 1140 (PAL)
28	4822 212 11019	Processing panel assy 1140 (NTSC)
29	4822 212 11023	I/O panel assy 1141
30	4822 463 11117	Chassis guide
31	4822 530 70602	Ring for plug 32, 36
32	4822 267 31467	Coax plugs
33	4822 492 71427	Spring mains knob
34	4822 410 10866	Mains knob
35	4822 321 11081	Mains cord (PAL)
35	4822 321 11084	Mains cord (NTSC)
36	4822 265 10795	Cinch plugs
37	4822 325 10178	Mains cord relief
	4822 502 30739	Bolt for picture tube fixation
	4822 255 70293	Socket for picture tube
	4822 463 11118	Guide for Processing panel
	4822 321 62697	System cable 15 meter
	4822 310 10758	Service kit for power "lightning"
	4822 310 10759	Service kit for power "driver"
	4822 310 10761	Service kit for power "reference"
	4822 310 10762	Service kit for power "protection"

Spare parts lists

GENERAL

5104▲	4822 157 11084	Degaussing coil assy
1100▲	4822 131 20316	Picture tube assy (PAL)
1100▲	4822 131 11196	Picture tube assy (NTSC)
	4822 463 11118	Service guide for I/O bapnel
▲	4822 310 10758	Power lightning kit
▲	4822 310 10759	Power driver kit
▲	4822 310 10761	Power reference kit
▲	4822 310 10762	Power protection kit

CRT PANEL ASSY 1105

1002	4822 212 11022	CRT panel assy
	4822 255 70293	CRT socket
C21	4822 265 20366	Connector 5 pins

⊣⊢

2800	4822 124 41579	10μF 20% 50V
2817	4822 126 13461	680pF 10% 50V
2837	4822 126 10334	470pF 10% 50V
2857	4822 126 13461	680pF 10% 50V
2870	4822 124 42404	4.7μF 20% 250V
2881	4822 122 33527	100pF 10% 50V
2890	4822 121 10634	47nF 10% 630V

-▭-

3800▲	4822 052 10109	10Ω 5% 0.33W
3801	4822 116 52175	100Ω 5% 0.5W
3802	4822 053 12123	12k 5% 3W
3803	4822 050 21502	1k5 1% 0.6W
3805	4822 117 10353	150Ω 1% 0.1W
3806	5322 100 11542	4k7 lin potmeter
3807	4822 116 52243	1k5 5% 0.5W
3810	4822 051 20562	5k6 5% 0.1W
3811	5322 100 11541	2k2 lin potmeter
3816	4822 116 52219	330Ω 5% 0.5W
3817	4822 116 52176	10Ω 5% 0.5W
3821	4822 116 52175	100Ω 5% 0.5W
3822	4822 053 12123	12k 5% 3W
3823	4822 050 21502	1k5 1% 0.6W
3825	4822 116 83868	150Ω 5% 0.5W
3826	5322 100 11542	4k7 lin potmeter
3827	4822 116 52243	1k5 5% 0.5W
3830	4822 051 20562	5k6 5% 0.1W
3831	5322 100 11541	2k2 lin potmeter
3836	4822 116 52219	330Ω 5% 0.5W
3837	4822 116 52197	56Ω 5% 0.5W
3838	4822 116 52175	100Ω 5% 0.5W
3842	4822 053 12123	12k 5% 3W
3843	4822 050 21502	1k5 1% 0.6W
3845	4822 116 83868	150Ω 5% 0.5W
3846	5322 100 11542	4k7 lin potmeter
3847	4822 116 52243	1k5 5% 0.5W
3850	4822 051 20562	5k6 5% 0.1W
3851	4822 051 20391	390Ω 5% 0.1W
3852	4822 116 52243	1k5 5% 0.5W
3856	4822 116 52219	330Ω 5% 0.5W
3857	4822 116 52176	10Ω 5% 0.5W
3861	4822 116 52269	3k3 5% 0.5W
3862	4822 116 52217	270Ω 5% 0.5W
3863	4822 116 52228	680Ω 5% 0.5W
3870▲	4822 052 11109	10Ω 5% 0.33W
3871▲	4822 052 10398	3Ω9 5% 0.33W
3872▲	4822 052 10398	3Ω9 5% 0.33W
3886	4822 050 21502	1k5 1% 0.6W
3890	4822 050 21502	1k5 1% 0.6W

∿

5881	4822 157 71005	Coil 82μH

▶|

6802	4822 130 42489	BYD33G
6807	4822 130 82129	BZX84-C2V7
6822	4822 130 42489	BYD33G
6827	5322 130 34563	BZX79-C2V7
6842	4822 130 42489	BYD33G
6847	5322 130 34563	BZX79-C2V7

⊗ ▭

7802	4822 130 41782	BF422
7811	4822 130 40937	BC548B
7822	4822 130 41782	BF422
7831	4822 130 40937	BC548B
7842	4822 130 41782	BF422
7851	4822 130 40937	BC548B
7861	4822 130 44197	BC558B

MAIN PANEL ASSY 1110

Various

1100▲	4822 070 33152	2183.15 (3.15A)
1155	4822 280 80784	Relay

⊣⊢

2065	4822 124 41579	10μF 20% 50V
2067	4822 121 51299	1nF 10% 50V
2068	4822 121 51299	1nF 10% 50V
2069	4822 121 51299	1nF 10% 50V
2070	4822 121 51299	1nF 10% 50V
2079	4822 121 43856	4.7nF 5% 250V
2081	4822 121 41856	22nF 5% 250V
2082	4822 121 41856	22nF 5% 250V
2083	4822 121 41856	22nF 5% 250V
2085	4822 124 81029	100μF 20% 25V
2095	4822 124 40433	47μF 20% 25V
2096	4822 124 41579	10μF 20% 50V
2098	5322 121 42386	100nF 5% 63V
2100	4822 310 10758	Power lightning kit
2101▲	4822 121 10633	680nF 20% 275V
2102▲	4822 126 11141	2.2nF 10% 1KV
2103▲	4822 126 11141	2.2nF 10% 1KV
2111	4822 122 33524	22pF 5% 50V
2113	4822 310 10758	Power lightning kit
2114	4822 121 42004	10nF 10% 400V
2116	4822 122 31173	220pF 10% 500V
2117	4822 126 13451	2.2nF 10% 2KV
2118	4822 121 51442	2.2nF 10% 50V
2119	4822 121 51299	1nF 10% 50V
2122	4822 126 12095	220pF 10% 2KV
2125	4822 126 13498	82pF 5% 50V
2129	5322 121 42386	100nF 5% 63V
2130	4822 121 51231	820pF 1% 400V
2131	4822 124 40242	1μF 20% 63V
2135	4822 126 12451	820pF 10% 50V
2139	4822 124 11867	100μF 20% 35V
2140	4822 121 51299	1nF 10% 50V
2141	4822 310 10758	Power lightning kit
2144	4822 121 51442	2.2nF 10% 50V
2149▲	4822 126 13594	2.2nF 20% 400V
2157	4822 124 11868	47μF 20% 160V
2163	4822 124 11869	220μF 20% 25V
2165	5322 121 42386	100nF 5% 63V
2166	5322 121 42386	100nF 5% 63V
2167	5322 121 42386	100nF 5% 63V
2171	4822 124 11871	1000μF 20% 35V
2172	4822 124 11872	220μF 20% 50V
2183	5322 121 42386	100nF 5% 63V
2184	4822 121 41857	10nF 5% 250V
2185	4822 126 11157	470pF 10% 500V
2186	4822 124 11873	470μF 20% 16V
2188	4822 124 11873	470μF 20% 16V
2189	5322 121 42386	100nF 5% 63V
2500	4822 126 11966	100pF 10% 500V
2507	4822 121 10637	1μF 10% 630V
2508	5322 121 42661	330nF 5% 63V
2509	5322 121 42386	100nF 5% 63V
2510	4822 126 13597	330pF 10% 500V
2511	4822 121 43856	4.7nF 5% 250V
2512	4822 121 43856	4.7nF 5% 250V
2517	5322 121 42386	100nF 5% 63V
2518	4822 124 11867	100μF 20% 35V
2519	5322 121 42386	100nF 5% 63V
2525	4822 124 11868	47μF 20% 160V
2526	5322 121 42578	100nF 5% 250V
2527	4822 121 41857	10nF 5% 250V
2531	4822 126 13597	330pF 10% 500V
2533	4822 121 10632	220nF 10% 100V
2535	4822 126 11157	470pF 10% 500V
2541	4822 121 70637	8.2nF 5% 1600V
2548	5322 121 42386	100nF 5% 63V
2550	4822 121 51563	560nF 5% 250V
2551	4822 124 11874	4.7μF 20% 200V
2581	4822 124 11874	4.7μF 20% 200V
2585	5322 121 42489	33nF 5% 250V
2590	4822 124 11873	470μF 20% 16V
2592	4822 124 11873	470μF 20% 16V
2900	4822 124 41579	10μF 20% 50V
2911	4822 121 43526	47nF 5% 250V
2912	4822 121 43526	47nF 5% 250V
2913	4822 121 43526	47nF 5% 250V
2914	4822 121 43526	47nF 5% 250V
2915	4822 121 43526	47nF 5% 250V
2916	4822 121 43526	47nF 5% 250V
2917	4822 121 43526	47nF 5% 250V
2918	4822 121 43526	47nF 5% 250V

-▭-

3065▲	4822 052 10101	100Ω 5% 0.33W
3067	4822 101 11699	10k 20% 0.5W
3068	4822 101 11699	10k 20% 0.5W
3069	4822 101 11701	10k Lin potmeter
3070	4822 101 11699	10k 20% 0.5W
3072	4822 116 83874	220k 5% 0.5W
3073	4822 116 52284	47k 5% 0.5W
3077	4822 116 52257	22k 5% 0.5W
3078	4822 100 30194	47k Log potmeter
3079	4822 116 83864	10k 5% 0.5W
3085▲	4822 052 10229	22Ω 5% 0.33W
3090	4822 116 52219	330Ω 5% 0.5W
3091	4822 116 52256	2k2 5% 0.5W
3092	4822 116 52224	470Ω 5% 0.5W
3095	4822 116 52283	4k7 5% 0.5W
3096	4822 116 52289	5k6 5% 0.5W
3098	4822 116 52235	1M 5% 0.5W
3099	4822 116 52269	3k3 5% 0.5W
3100	4822 310 10758	Power lightning kit
3101	4822 053 20474	470k 5% 0.25W
3102▲	4822 053 21475	4M7 5% 0.5W
3103	4822 117 12597	10Ω 20% 3.1W
3104▲	4822 053 21475	4M7 5% 0.5W
3105	4822 053 20684	680k 5% 0.25W
3111	4822 116 52207	1k2 5% 0.5W
3112	4822 116 52207	1k2 5% 0.5W
3115	4822 117 10452	47k 5% 3W
3116▲	4822 310 10759	Power driver kit
3117	4822 116 52269	3k3 5% 0.5W
3118	4822 116 52256	2k2 5% 0.5W
3119	4822 116 52219	330Ω 5% 0.5W
3120	4822 117 11745	0Ω39 5% 1W
3121	4822 116 52176	10Ω 5% 0.5W
3124	4822 116 52176	10Ω 5% 0.5W
3125	4822 116 52304	82k 5% 0.5W
3126	4822 116 52238	12k 5% 0.5W
3127	4822 116 52245	150k 5% 0.5W
3129	4822 116 52188	27Ω 5% 0.5W
3130	4822 116 80176	1Ω 5% 0.5W
3131	4822 116 52257	22k 5% 0.5W
3132	4822 116 52175	100Ω 5% 0.5W
3133	4822 116 52257	22k 5% 0.5W
3134	4822 116 83864	10k 5% 0.5W
3135	4822 116 83864	10k 5% 0.5W
3136	4822 116 83864	10k 5% 0.5W
3137	4822 116 52256	2k2 5% 0.5W
3141	4822 117 11743	27k 5%
3142	4822 116 52263	2k7 5% 0.5W
3150	4822 116 83868	150Ω 5% 0.5W
3151	4822 050 15608	5Ω6 1% 0.4W
3155	4822 116 52271	33k 5% 0.5W
3156	4822 116 83864	10k 5% 0.5W
3165▲	4822 052 10109	10Ω 5% 0.33W
3166	4822 116 52186	22Ω 5% 0.5W
3167	4822 116 52224	470Ω 5% 0.5W
3168	4822 116 52175	100Ω 5% 0.5W
3172	4822 116 83864	10k 5% 0.5W
3173	4822 116 52224	470Ω 5% 0.5W
3174	4822 116 83864	10k 5% 0.5W
3175	4822 116 52303	8k2 5% 0.5W
3176	4822 116 52304	82k 5% 0.5W
3177	4822 100 11319	4k7 potmeter
3178	4822 116 52289	5k6 5% 0.5W
3183	4822 116 52256	2k2 5% 0.5W
3184	4822 116 52175	100Ω 5% 0.5W
3185	4822 116 83864	10k 5% 0.5W
3186	4822 053 12108	1Ω 5% 3W
3187	4822 116 52256	2k2 5% 0.5W
3188	4822 101 10927	470Ω
3190	4822 116 52283	4k7 5% 0.5W
3500	4822 053 20475	4M7 5% 0.25W
3501	4822 050 11002	1k 1% 0.4W
3502	4822 050 12003	20k 1% 0.4W
3503	4822 116 52283	4k7 5% 0.5W
3504	4822 116 83864	10k 5% 0.5W
3505	4822 050 11002	1k 1% 0.4W
3506	4822 116 52228	680Ω 5% 0.5W
3507	4822 116 52222	390Ω 5% 0.5W
3508	4822 050 11002	1k 1% 0.4W
3509	4822 117 10812	22k 5% 2W
3511	4822 116 52283	4k7 5% 0.5W
3512	4822 116 52283	4k7 5% 0.5W
3513	4822 117 10812	22k 5% 2W
3517	4822 116 52257	22k 5% 0.5W
3518	4822 053 10681	680Ω 5% 1W
3521	4822 116 83874	220k 5% 0.5W
3522	4822 116 52291	56k 5% 0.5W
3523	4822 116 52257	22k 5% 0.5W
3526	4822 117 12111	4k7 5% 3W
3527	4822 053 10399	39Ω 5% 1W
3529	4822 116 52199	68Ω 5% 0.5W
3530	4822 100 11562	220Ω 30%
3531	4822 116 83872	220Ω 5% 0.5W
3534	4822 053 10472	4k7 5% 1W
3535	4822 116 52289	5k6 5% 0.5W
3536	4822 053 21224	220k 5% 0.5W
3538	4822 116 52202	82Ω 5% 0.5W
3540	4822 116 81844	2Ω7 5% 0.5W
3541	4822 116 81844	2Ω7 5% 0.5W
3547	4822 116 52219	330Ω 5% 0.5W
3548▲	4822 052 10568	5Ω6 5% 0.33W
3550▲	4822 052 11102	1k 5% 0.5W
3551	4822 116 52244	15K 5% 0.5W
3580▲	4822 052 10108	1Ω 5% 0.33W
3585	4822 116 52239	120k 5% 0.5W
3590▲	4822 052 10278	2Ω7 5% 0.33W
3592▲	4822 052 10108	1Ω 5% 0.33W
3900	4822 117 10856	3Ω3 5% 1W
3911	4822 116 52284	47k 5% 0.5W
3912	4822 116 52284	47k 5% 0.5W
3913	4822 116 52284	47k 5% 0.5W
3914	4822 116 52284	47k 5% 0.5W
3915	4822 116 52284	47k 5% 0.5W
3916	4822 116 52284	47k 5% 0.5W
3917	4822 116 52284	47k 5% 0.5W
3918	4822 116 52284	47k 5% 0.5W
3930	4822 116 83872	220Ω 5% 0.5W
3931	4822 116 52269	3k3 5% 0.5W
3932	4822 116 83872	220Ω 5% 0.5W
3933	4822 116 52269	3k3 5% 0.5W

∿

5101	4822 157 63073	Coil
5120▲	4822 146 10678	Transformer
5140	4822 157 71853	27U 5%
5156	4822 157 10452	10μH 10%
5171	4822 157 10452	10μH 10%
5527	4822 157 11075	47μH
5534	4822 146 21116	Driver transformer
5550	4822 157 11076	Linearity coil
5580▲	4822 140 10369	LOT

▶|

6100	4822 310 10758	Power lightning kit
6101	4822 310 10758	Power lightning kit
6105	4822 310 10758	Power lightning kit
6115	4822 130 32896	BYD33M
6116	4822 310 10759	Power driver kit
6117	4822 130 30621	1N4148
6120	4822 130 33887	GP15J-16
6121	4822 130 33887	GP15J-16
6140	4822 130 30621	1N4148
6141	4822 310 10758	Power lightning kit
6142	4822 130 30621	1N4148
6155	4822 130 33531	BY229F-600
6156	4822 130 30621	1N4148
6162	4822 130 42489	BYD33G
6165	4822 310 10762	Power protection kit
6166	4822 310 10762	Power protection kit
6167	4822 310 10762	Power protection kit
6170	4822 130 81345	BYV32F-100
6171	4822 130 30621	1N4148
6172	4822 130 30621	1N4148
6173	4822 310 10762	Power protection kit
6180	4822 130 33529	BY229F-200
6184	4822 310 10761	Power reference kit
6503	4822 209 81397	TL431CLP
6504	5322 130 34563	BZX79-C2V7
6505	4822 130 30621	1N4148
6508	4822 130 10757	P0201NA
6510	4822 130 30621	1N4148
6511	4822 130 32896	BYD33M
6512	4822 130 32896	BYD33M
6519	4822 130 42488	BYD33D
6532	4822 130 30621	1N4148
6533	4822 130 30621	1N4148
6541	4822 130 32896	BYD33M
6551	4822 130 42488	BYD33D
6552	4822 130 42488	BYD3D
6580	4822 130 42489	BYD33G
6585	4822 130 30621	1N4148
6592	4822 130 42489	BYD33G
6599	4822 130 42489	BYD33G
6930	4822 209 72895	TLUV5300

⊗ ▭

7085	4822 209 60956	TDA7052
7098	4822 130 44196	BC548C
7099	4822 130 44196	BC548C
7112	4822 130 44196	BC548C
7120▲	4822 310 10759	Power driver kit
7130	4822 310 10759	Power driver kit
7142▲	4822 310 10758	Power lightning kit
7144▲	4822 310 10761	Power reference kit
7150	4822 209 90008	L78MXX
7155	4822 130 40937	BC548B
7165	4822 209 13601	L7824CV
7173	4822 130 40937	BC548B
7174	4822 130 40937	BC548B
7506	4822 130 40937	BC548B
7510	4822 130 40937	BC548B
7519	4822 209 60955	TDA3653B
7531	4822 130 41782	BF422
7538	4822 130 42679	BUT11AF
7910	4822 209 10296	HEF4014BP
7930	4822 130 40937	BC548B
7932	4822 130 40937	BC548B

PROCESSING PANEL ASSY 1140

1140	4822 212 11021	Panel assy (PAL)
1140	4822 212 11019	Panel assy (NTSC)
P10	4822 265 41461	10 pins connector
P11	4822 265 41461	10 pins connector
P12	4822 265 41448	7 pins connector
P20	4822 265 31243	5 pins connector
P61	4822 265 41461	10 pins connector
P70	4822 265 41461	10 pins connector
P71	4822 265 41461	10 pins connector
P72	4822 265 41461	10 pins connector
1040	4822 242 10618	X-TAL 4,43 MHz
1041	4822 242 10617	X-TAL 3,579 MHz
1310	5322 242 73697	Ceramic filter
1315	4822 242 70416	X-TAL 32,768 kHz

⊣⊢

2000	4822 126 13296	100nF 10% 16V
2001	4822 126 13296	100nF 10% 16V
2002	4822 124 40756	1μF 20% 100V
2003	4822 124 40763	2.2μF 100 V
2004	4822 126 13296	100nF 10% 16V
2005	5322 121 42386	100nF 5% 63V
2006	4822 124 40763	2.2μF 100 V
2007	4822 126 13296	100nF 10% 16V
2008	5322 122 32654	22nF 10% 63V
2009	4822 122 33575	220pF 5% 50V
2010	4822 122 33575	220pF 5% 50V
2011	5322 121 42386	100nF 5% 63V
2012	5322 126 10223	4.7nF 10% 63V
2013	5322 122 34123	1nF 10% 50V
2014	5322 122 34123	1nF 10% 50V
2015	5322 121 42386	100nF 5% 63V
2016	5322 121 42386	100nF 5% 63V
2017	5322 122 32654	22nF 10% 63V
2018	5322 122 32654	22nF 10% 63V
2019	4822 124 40433	47μF 20% 25V
2020	5322 122 34123	1nF 10% 50V
2021	5322 122 34123	1nF 10% 50V
2022	4822 126 12944	47nF 10% 50V
2023	4822 126 12944	47nF 10% 50V
2024	4822 126 12944	47nF 10% 50V
2025	5322 122 34123	1nF 10% 50V
2029	4822 126 13296	100nF 10% 16V
2030	4822 124 22263	220μF 20% 25V
2031	4822 122 32627	2.7nF 10% 50V
2032	4822 121 51252	470nF 5% 63V
2033	4822 121 42783	2.2nF 1% 250V
2034	5322 121 42386	100nF 5% 63V
2035	5322 126 10223	4.7nF 10% 63V
2036	4822 124 40756	1μF 20% 100V
2037	4822 122 33177	10nF 20% 50V
2039	5322 122 32481	15pF 5% 50V
2040	4822 124 41579	10μF 20% 50V
2043	5322 122 34123	1nF 10% 50V
2044	4822 124 40756	1μF 20% 100V
2045	4822 126 13296	100nF 10% 16V
2046	4822 126 13296	100nF 10% 16V
2047	4822 124 22263	220μF 20% 25V
2300	4822 124 41579	10μF 20% 50V
2301	5322 122 32654	22nF 10% 63V
2304	5322 122 31946	27pF 5% 63V
2305	5322 122 31946	27pF 5% 63V
2310	4822 122 33128	15nF 10% 63V
2315	4822 126 13296	100nF 10% 16V
2316	4822 125 50092	Trimmer
2319	5322 122 32531	100pF 5% 50V
2321	5322 122 32654	22nF 10% 63V
2322	4822 122 33177	10nF 20% 50V
2325	4822 138 10521	Battery 3 Volt
2701	5322 122 32658	22pF 5% 50V
2702	5322 122 32531	100pF 5% 50V
2704	4822 121 42408	220nF 5% 63V
2705	4822 121 51252	470nF 5% 63V
2706	5322 121 42386	100nF 5% 63V
2707	5322 122 32654	22nF 10% 63V
2709	5322 126 10511	1nF 5% 50V
2710	5322 122 34123	1nF 10% 50V
2711	4822 126 10334	470pF 10% 50V
2712	4822 126 14082	150pF 5% 50V
2713	4822 122 33175	2.2nF 20% 50V
2714	5322 122 32654	22nF 10% 63V
2715	5322 122 32452	47pF 5% 63V
2716	4822 124 40433	47μF 20% 25V
2717	4822 122 33172	390pF 5% 50V
2718	5322 122 32658	22pF 5% 50V
2719	4822 122 33172	390pF 5% 50V
2720	5322 122 32654	22nF 10% 63V
2721	4822 124 40433	47μF 20% 25V
2722	4822 122 33575	220pF 5% 50V
2723	5322 122 34123	1nF 10% 50V
2724	5322 122 32654	22nF 10% 63V
2725	4822 122 33175	2.2nF 20% 50V
2726	4822 126 13296	100nF 10% 16V
2727	4822 124 40433	47μF 20% 25V
2741	5322 122 32654	22nF 10% 63V
2742	4822 124 22263	220μF 20% 25V

-▭-

3000	4822 117 10833	10k 1% 0.1W
3001	4822 051 20333	33k 5% 0.1W
3002	4822 100 11392	47k potmeter
3003	4822 051 20104	100k 5% 0.1W
3004	4822 117 10833	10k 1% 0.1W
3005	4822 050 11009	10Ω 1% 0.4W
3006	4822 051 20109	10Ω 5% 0.1W
3007	4822 051 20221	220Ω 5% 0.1W
3008	4822 051 10102	1k 2% 0.25W
3009	4822 050 21002	1k 1% 0.6W
3010	4822 117 11449	2k2 1% 0.1W
3011	4822 051 20332	3k3 5% 0.1W
3012	4822 051 10102	1k 2% 0.25W
3013	4822 050 22201	220Ω 1% 0.6W
3014	4822 051 20911	910Ω 5% 0.1W
3015	4822 051 20912	9k1 5% 0.1W
3016	4822 050 21003	10k 1% 0.6W
3017	4822 100 11141	10k Lin potmeter
3018	4822 050 28204	820k 1% 0.6W
3019	4822 051 20183	18k 5% 0.1W
3020	4822 116 81783	1M 5 5% 0.5W
3021▲	4822 052 10108	1Ω 5% 0.33W
3022	4822 050 24702	4k7 1% 0.6W
3023	4822 117 11449	2k2 1% 0.1W
3024	4822 117 11449	2k2 1% 0.1W
3025	4822 117 11449	2k2 1% 0.1W
3026	4822 117 11383	12k 1% 0.1W
3027	4822 117 11383	12k 1% 0.1W
3028	4822 117 11383	12k 1% 0.1W
3029	4822 117 10833	10k 1% 0.1W
3030	4822 117 11383	12k 1% 0.1W
3031	4822 117 10833	10k 1% 0.1W
3032	4822 051 20153	15k 5% 0.1W
3033	4822 051 20184	180k 5% 0.1W
3034	4822 051 20683	68k 5% 0.1W
3035	5322 100 11544	220k lin potmeter
3036	4822 051 20154	150k 5% 0.1W
3037	4822 117 11449	2k2 1% 0.1W
3038	4822 117 10833	10k 1% 0.1W
3039	4822 051 20333	33k 5% 0.1W
3040	4822 051 20333	33k 5% 0.1W
3041	4822 051 20333	33k 5% 0.1W
3042	4822 117 10833	10k 1% 0.1W
3043	4822 050 21002	1k 1% 0.6W
3044	4822 117 11449	2k2 1% 0.1W
3045	4822 051 20221	220Ω 5% 0.1W
3046	4822 051 20569	56Ω 5% 0.1W
3047	4822 053 10109	10Ω 5% 1W
3048	4822 117 11449	2k2 1% 0.1W
3049	4822 051 20822	8k2 5% 0.1W
3300	4822 051 20391	390Ω 5% 0.1W
3301	4822 051 20479	47Ω 5% 0.1W
3302	4822 050 21003	10k 1% 0.6W
3303	4822 050 24702	4k7 1% 0.6W
3304	4822 050 21001	100Ω 1% 0.6W
3305	4822 050 21001	100Ω 1% 0.6W
3306	4822 050 21001	100Ω 1% 0.6W
3307	4822 050 21001	100Ω 1% 0.6W
3310	4822 050 23302	3k3 1% 0.6W
3311	4822 051 20332	3k3 5% 0.1W
3312	4822 051 20332	3k3 5% 0.1W
3313	4822 050 24703	47k 1% 0.6W
3314	4822 051 10102	1k 2% 0.25W
3315	4822 117 10833	10k 1% 0.1W
3316	4822 117 10833	10k 1% 0.1W
3317	4822 117 10833	10k 1% 0.1W
3318	4822 051 10102	1k 2% 0.25W
3324	4822 051 20101	100Ω 5% 0.1W
3325	4822 051 20622	6k2 5% 0.1W
3326	4822 051 20392	3k9 5% 0.1W
3327	4822 051 20101	100Ω 5% 0.1W
3328	4822 051 20472	4k7 5% 0.1W
3329	4822 051 20472	4k7 5% 0.1W
3330	4822 051 20182	1k8 5% 0.1W
3331	4822 051 20182	1k8 5% 0.1W
3332	4822 051 20101	100Ω 5% 0.1W
3333	4822 051 20101	100Ω 5% 0.1W
3335	4822 050 21003	10k 1% 0.6W
3336	4822 051 20563	56k 5% 0.1W
3337	4822 050 21003	10k 1% 0.6W
3338	4822 050 21003	10k 1% 0.6W
3339	4822 117 10833	10k 1% 0.1W
3340	4822 050 21003	10k 1% 0.6W
3341	4822 117 10833	10k 1% 0.1W
3342	4822 051 20101	100Ω 5% 0.1W
3343	4822 117 10833	10k 1% 0.1W
3344	4822 117 10833	10k 1% 0.1W
3345	4822 117 10833	10k 1% 0.1W
3346	4822 117 10833	10k 1% 0.1W
3348	4822 117 10833	10k 1% 0.1W
3349	4822 117 10833	10k 1% 0.1W
3351	4822 117 10833	10k 1% 0.1W
3352	4822 117 10833	10k 1% 0.1W
3353	4822 117 10833	10k 1% 0.1W
3354	4822 117 10833	10k 1% 0.1W
3355	4822 051 20182	1k8 5% 0.1W
3356	4822 051 20182	1k8 5% 0.1W
3357	4822 051 10103	10k 2% 0.25W
3700	4822 051 20471	470Ω 5% 0.1W
3701	4822 051 20183	18k 5% 0.1W
3702	4822 117 10833	10k 1% 0.1W
3703	4822 051 20391	390Ω 5% 0.1W
3704	4822 117 10833	10k 1% 0.1W
3705	4822 051 20153	15k 5% 0.1W
3706	4822 051 20333	33k 5% 0.1W
3707	4822 051 20332	3k3 5% 0.1W
3708	4822 117 11449	2k2 1% 0.1W
3709	4822 051 20104	100k 5% 0.1W
3710	4822 117 11149	82k 1% 0.1W
3711	4822 050 21003	10k 1% 0.6W
3712	4822 051 20224	220k 5% 0.1W
3713	4822 051 20224	220k 5% 0.1W
3714	4822 051 20104	100k 5% 0.1W
3715	4822 051 20682	6k8 5% 0.1W
3716	4822 051 20472	4k7 5% 0.1W
3717	4822 117 11449	2k2 1% 0.1W
3718	4822 051 10102	1k 2% 0.25W
3719	4822 117 11139	1k5 1% 0.1W
3720	4822 050 22202	2k2 1% 0.6W
3721	4822 117 11449	2k2 1% 0.1W
3722	4822 117 11449	2k2 1% 0.1W
3723	4822 117 10833	10k 1% 0.1W
3724	4822 117 11449	2k2 1% 0.1W
3725	4822 051 10102	1k 2% 0.25W
3726	4822 051 10102	1k 2% 0.25W
3727	4822 053 10109	10Ω 5% 1W
3728	4822 117 10833	10k 1% 0.1W
3729	4822 051 20101	100Ω 5% 0.1W
3730	4822 117 10833	10k 1% 0.1W
3731	4822 051 20472	4k7 5% 0.1W
3732	4822 117 10833	10k 1% 0.1W
3733	4822 117 11449	2k2 1% 0.1W
3734	4822 053 10109	10Ω 5% 1W
3735	4822 051 10102	1k 2% 0.25W
3736	4822 051 10102	1k 2% 0.25W
3737	4822 050 22202	2k2 1% 0.6W
3738	4822 050 24702	4k7 1% 0.6W
3739	4822 117 10833	10k 1% 0.1W
3740	4822 051 10102	1k 2% 0.25W
3741	4822 051 20474	470k 5% 0.1W
3742	4822 051 20223	22k 5% 0.1W
3743	4822 051 20223	22k 5% 0.1W
3744	4822 051 20105	1M 5% 0.1W
4xxx	4822 051 10008	0Ω jumpers

∿

5000	4822 157 51216	5.6μH
5001	4822 157 51216	5.6μH
5002	4822 157 51216	5.6μH
5300	4822 157 52392	27μH
5305	4822 157 11073	27μH
5700	4822 157 11074	Coil assy
5720	4822 156 20966	47 μH

▶|

6000	4822 130 34233	BZX79-C5V1
6001	4822 130 30621	1N4148
6002	4822 130 34167	BZX79-C6V2
6003	4822 130 30621	1N4148
6300	4822 130 31981	BZX79-C3V9
6311	4822 130 30621	1N4148
6315	5322 130 31928	BAS16
6342	5322 130 34337	BAV99
6700	5322 130 31928	BAS16
6703	4822 130 31129	BB212
6704	5322 130 30691	BAW56
6705	4822 130 30621	1N4148
6706	5322 130 31928	BAS16
6707	5322 130 31928	BAS16
6708	5322 130 31928	BAS16
6709	5322 130 30691	BAW56
6711	5322 130 30691	BAW56

6713	5322 130 31928	BAS16
6714	5322 130 31928	BAS16
6731	5322 130 31937	BZX84-B4V7
6742	5322 130 31928	BAS16

7000	4822 209 15106	TDA8361E (PAL)
7000	4822 209 15105	TDA8363 (NTSC)
7005	4822 209 31714	TDA4661
7010	5322 209 86283	L7808CP
7011	5322 209 86283	L7808CP
7015	5322 130 41983	BC858B
7030	5322 209 61487	LM358N
7031	5322 130 60508	BC857B
7042	5322 130 41983	BC858B
7044	5322 130 41982	BC848B
7305	4822 209 15128	OTP ASSY
7310	5322 130 41982	BC848B
7311	5322 130 41982	BC848B
7312	5322 130 41983	BC858B
7313	5322 130 41982	BC848B
7314	5322 130 41983	BC858B
7320	4822 209 73197	PCF8583
7321	5322 130 41982	BC848B
7322	5322 130 41982	BC848B
7323	5322 130 41982	BC848B
7325	5322 209 10421	HEF4094BP
7335	5322 209 60154	NE555D
7700	5322 209 11135	74HC4538N
7701	5322 130 41982	BC848B
7702	5322 130 44499	BF245A
7703	5322 130 41982	BC848B
7705	5322 209 14484	HEF4520BT
7707	5322 209 14484	HEF4520BT
7708	5322 130 41982	BC848B
7709	5322 209 11135	74HC4538N
7710	4822 130 40854	BC327
7711	5322 130 41982	BC848B
7712	5322 130 41982	BC848B
7713	4822 130 40855	BC337
7714	5322 130 41983	BC858B
7720	5322 130 41982	BC848B
7730	5322 130 41982	BC848B
7741	5322 130 41982	BC848B

I/O PANEL ASSY 1141

1141	4822 212 11023	I/O panel assy
1305	4822 280 80784	Relay
I13	4822 267 10534	5 pins connector
I31	4822 267 41183	4 pins connector
I32	4822 267 41183	4 pins connector
I33	4822 267 41183	4 pins connector
I34	4822 267 41183	4 pins connector
I41	4822 267 41183	4 pins connector
I50	4822 267 10535	8 pins connector
I51	4822 265 10799	Screw block

2170	4822 122 40606	22nF 80% 50V
2171	4822 122 40606	22nF 80% 50V
2172	4822 122 40606	22nF 80% 50V
2173	4822 122 40606	22nF 80% 50V
2174	5322 122 32654	22nF 10% 63V
2175	5322 122 32654	22nF 10% 63V
2176	5322 122 32654	22nF 10% 63V
2177	4822 124 40433	47µF 20% 25V
2178	4822 124 40433	47µF 20% 25V
2179	4822 124 40433	47µF 20% 25V
2180	4822 124 40433	47µF 20% 25V
2181	5322 122 32654	22nF 10% 63V
2185	4822 124 42362	33µF 20% 16V
2186	4822 124 42362	33µF 20% 16V
2187	4822 124 42362	33µF 20% 16V
2188	4822 124 42362	33µF 20% 16V
2200	4822 124 40756	1µF 20% 100V
2202	4822 124 40756	1µF 20% 100V
2225	4822 124 40756	1µF 20% 100V
2227	4822 124 40756	1µF 20% 100V
2240	4822 124 40433	47µF 20% 25V
2250	4822 124 40756	1µF 20% 100V
2252	4822 124 40756	1µF 20% 100V
2275	4822 124 40756	1µF 20% 100V
2278	4822 124 40756	1µF 20% 100V
2279	4822 122 33177	10nF 20% 50V
2370	4822 124 40433	47µF 20% 25V
2375	4822 124 40433	47µF 20% 25V
2376	5322 122 32654	22nF 10% 63V
2377	4822 126 13296	100nF 10% 16V
2378	4822 122 33177	10nF 20% 50V
2379	4822 122 33177	10nF 20% 50V
2381	5322 122 32654	22nF 10% 63V
2382	5322 122 32654	22nF 10% 63V
2385	4822 124 40433	47µF 20% 25V
2386	4822 124 40433	47µF 20% 25V
2387	4822 124 40433	47µF 20% 25V
2388	5322 122 32654	22nF 10% 63V
2389	5322 122 32654	22nF 10% 63V
2390	4822 124 40433	47µF 20% 25V
2391	5322 122 32661	56pF 5% 50V
2392	4822 124 40433	47µF 20% 25V
2393	5322 122 32654	22nF 10% 63V
2394	4822 122 33177	10nF 20% 50V
2395	4822 124 40756	1µF 20% 100V
2396	4822 124 40756	1µF 20% 100V
2397	4822 122 33177	10nF 20% 50V
2399	4822 124 40756	1µF 20% 100V
2400	4822 122 33177	10nF 20% 50V
2405	4822 124 40433	47µF 20% 25V
2406	5322 122 32661	56pF 5% 50V
2410	5322 122 32654	22nF 10% 63V
2411	4822 124 40756	1µF 20% 100V
2412	4822 124 40756	1µF 20% 100V
2413	4822 124 40433	47µF 20% 25V
2414	4822 124 40433	47µF 20% 25V
2415	5322 122 32658	22pF 5% 50V
2416	4822 124 40756	1µF 20% 100V
2417	4822 124 40756	1µF 20% 100V
2418	4822 126 13296	100nF 10% 16V
2471	4822 124 40433	47µF 20% 25V

3170	4822 051 20472	4k7 5% 0.1W
3171	4822 051 20472	4k7 5% 0.1W
3172	4822 051 20472	4k7 5% 0.1W
3174	4822 051 20472	4k7 5% 0.1W
3175	4822 117 10833	10k 1% 0.1W
3176	4822 050 22201	220Ω 1% 0.6W
3177	4822 050 22201	220Ω 1% 0.6W
3178	4822 051 20221	220Ω 5% 0.1W
3179	4822 051 20221	220Ω 5% 0.1W
3180	4822 117 10833	10k 1% 0.1W
3182	4822 117 10833	10k 1% 0.1W
3183	4822 117 10833	10k 1% 0.1W
3184	4822 117 10833	10k 1% 0.1W
3185	4822 051 20472	4k7 5% 0.1W
3186	4822 051 20473	47k 5% 0.1W
3187	4822 051 20473	47k 5% 0.1W
3188	4822 051 20473	47k 5% 0.1W
3189	4822 051 20473	47k 5% 0.1W
3200	4822 053 10188	1Ω8 5% 1W
3201	4822 051 10102	1k 2% 0.25W
3202	4822 051 10102	1k 2% 0.25W
3203	4822 051 10472	4k7 1% 0.1W
3204	4822 050 21003	10k 1% 0.6W
3205	4822 051 10221	220Ω 2% 0.25W
3206	4822 117 11496	62Ω 1% 0.1W
3207	4822 051 20331	330Ω 5% 0.1W
3208	4822 117 11496	62Ω 1% 0.1W
3209	4822 051 20221	220Ω 5% 0.1W
3210	4822 051 20221	220Ω 5% 0.1W
3211	4822 051 20101	100Ω 5% 0.1W
3212	4822 051 20101	100Ω 5% 0.1W
3213	4822 051 20101	100Ω 5% 0.1W
3214	4822 051 20101	100Ω 5% 0.1W
3215	4822 051 20101	100Ω 5% 0.1W
3216	4822 051 20821	820Ω 5% 0.1W
3217	4822 051 20101	100Ω 5% 0.1W
3218	4822 051 20562	5k6 5% 0.1W
3219	4822 051 10102	1k 2% 0.25W
3220	4822 051 10102	1k 2% 0.25W
3221	4822 051 10102	1k 2% 0.25W
3222	4822 116 52256	2k2 5% 0.5W
3223	4822 116 52256	2k2 5% 0.5W
3224	4822 116 52256	2k2 5% 0.5W
3225	4822 053 10188	1Ω8 5% 1W
3226	4822 051 10102	1k 2% 0.25W
3227	4822 051 10102	1k 2% 0.25W
3228	4822 051 10472	4k7 1% 0.1W
3229	4822 050 21003	10k 1% 0.6W
3230	4822 051 10221	220Ω 2% 0.25W
3231	4822 117 11496	62Ω 1% 0.1W
3232	4822 051 20331	330Ω 5% 0.1W
3233	4822 117 11496	62Ω 1% 0.1W
3234	4822 051 20221	220Ω 5% 0.1W
3235	4822 051 20221	220Ω 5% 0.1W
3236	4822 051 20101	100Ω 5% 0.1W
3237	4822 051 20101	100Ω 5% 0.1W
3238	4822 051 20101	100Ω 5% 0.1W
3239	4822 051 20101	100Ω 5% 0.1W
3240	4822 051 20101	100Ω 5% 0.1W
3241	4822 051 20821	820Ω 5% 0.1W
3242	4822 051 20101	100Ω 5% 0.1W
3243	4822 051 20562	5k6 5% 0.1W
3244	4822 051 10102	1k 2% 0.25W
3245	4822 051 10102	1k 2% 0.25W
3246	4822 051 10102	1k 2% 0.25W
3247	4822 116 52256	2k2 5% 0.5W
3248	4822 051 20681	680Ω 5% 0.1W
3249	4822 117 10833	10k 5% 0.1W
3250	4822 053 10188	1Ω8 5% 1W
3251	4822 051 10102	1k 2% 0.25W
3252	4822 051 10102	1k 2% 0.25W
3253	4822 051 10472	4k7 1% 0.1W
3254	4822 050 21003	10k 1% 0.6W
3255	4822 051 10221	220Ω 2% 0.25W
3256	4822 117 11496	62Ω 1% 0.1W
3257	4822 051 20331	330Ω 5% 0.1W
3258	4822 117 11496	62Ω 1% 0.1W
3259	4822 051 20221	220Ω 5% 0.1W
3260	4822 051 20221	220Ω 5% 0.1W
3261	4822 051 20101	100Ω 5% 0.1W
3262	4822 051 20101	100Ω 5% 0.1W
3263	4822 051 20101	100Ω 5% 0.1W
3264	4822 051 20101	100Ω 5% 0.1W
3265	4822 051 20101	100Ω 5% 0.1W
3266	4822 051 20821	820Ω 5% 0.1W
3267	4822 051 20101	100Ω 5% 0.1W
3268	4822 051 20562	5k6 5% 0.1W
3269	4822 051 10102	1k 2% 0.25W
3270	4822 051 10102	1k 2% 0.25W
3271	4822 051 10102	1k 2% 0.25W
3272	4822 051 20681	680Ω 5% 0.1W
3273	4822 051 20681	680Ω 5% 0.1W
3274	4822 117 10833	10k 5% 0.1W
3275	4822 053 10188	1Ω8 5% 1W
3276	4822 051 10102	1k 2% 0.25W
3277	4822 051 10102	1k 2% 0.25W
3278	4822 051 10472	4k7 1% 0.1W
3279	4822 050 21003	10k 1% 0.6W
3280	4822 051 10221	220Ω 2% 0.25W
3281	4822 117 11496	62Ω 1% 0.1W
3282	4822 051 20331	330Ω 5% 0.1W
3283	4822 117 11496	62Ω 1% 0.1W
3284	4822 051 20221	220Ω 5% 0.1W
3285	4822 051 20221	220Ω 5% 0.1W
3286	4822 051 20101	100Ω 5% 0.1W
3287	4822 051 20101	100Ω 5% 0.1W
3288	4822 051 20101	100Ω 5% 0.1W
3289	4822 051 20101	100Ω 5% 0.1W
3290	4822 051 20101	100Ω 5% 0.1W
3291	4822 051 20821	820Ω 5% 0.1W
3292	4822 051 20101	100Ω 5% 0.1W
3293	4822 051 20562	5k6 5% 0.1W
3294	4822 051 10102	1k 2% 0.25W
3295	4822 051 10102	1k 2% 0.25W
3296	4822 051 10102	1k 2% 0.25W
3297	4822 117 10833	10k 5% 0.1W
3298	4822 051 20681	680Ω 5% 0.1W
3299	4822 117 10833	10k 5% 0.1W
3320	4822 117 10833	10k 1% 0.1W
3321	4822 117 10833	10k 1% 0.1W
3370	4822 051 20182	1k8 5% 0.1W
3371	4822 051 20471	470Ω 5% 0.1W
3372	4822 051 20122	1k2 5% 0.1W
3373	4822 050 24703	47k 1% 0.6W
3374	4822 051 20759	75Ω 5% 0.1W
3375	4822 051 10102	1k 2% 0.25W
3376	4822 051 20274	270k 5% 0.1W
3377	4822 051 20472	4k7 5% 0.1W
3378	4822 117 10833	10k 1% 0.1W
3379	4822 051 20473	47k 5% 0.1W
3380	4822 051 10102	1k 2% 0.25W
3381	4822 050 24703	47k 1% 0.6W
3382	4822 051 20473	47k 5% 0.1W
3384	4822 051 20333	33k 5% 0.1W
3385	4822 051 20101	100Ω 5% 0.1W
3386	4822 117 10833	10k 1% 0.1W
3387	4822 051 20101	100Ω 5% 0.1W
3388	4822 117 10833	10k 1% 0.1W
3389	4822 117 10833	10k 1% 0.1W
3390	4822 117 10833	10k 1% 0.1W
3391	4822 050 22202	2k2 1% 0.6W
3392	4822 050 21003	10k 1% 0.6W
3393	4822 050 21001	100Ω 1% 0.6W
3394	4822 051 20681	680Ω 5% 0.1W
3395	4822 051 20479	47Ω 5% 0.1W
3396	4822 051 20471	470Ω 5% 0.1W
3397	4822 051 20759	75Ω 5% 0.1W
3400	4822 050 21002	1k 1% 0.6W
3401	4822 051 20274	270k 5% 0.1W
3402	4822 051 20472	4k7 5% 0.1W
3403	4822 050 21003	10k 1% 0.6W
3404	4822 051 20473	47k 5% 0.1W
3405	4822 051 10102	1k 2% 0.25W
3406	4822 051 20472	4k7 5% 0.1W
3407	4822 051 10102	1k 2% 0.25W
3408	4822 117 10833	10k 1% 0.1W
3409	4822 050 24703	47k 1% 0.6W
3410	4822 050 24703	47k 1% 0.6W
3412	4822 117 10833	10k 1% 0.1W
3413	4822 051 20274	270k 5% 0.1W
3415	4822 051 10101	100Ω 2% 0.25W
3416	4822 051 20681	680Ω 5% 0.1W
3417	4822 051 20479	47Ω 5% 0.1W
3420	4822 051 20471	470Ω 5% 0.1W
3421	4822 051 20759	75Ω 5% 0.1W
3430	4822 050 21003	10k 1% 0.6W
3431	4822 050 21001	100Ω 1% 0.6W
3432	4822 051 20184	180k 5% 0.1W
3433	4822 050 21003	10k 1% 0.6W
3434	4822 050 21001	100Ω 1% 0.6W
3435	4822 051 20471	470Ω 5% 0.1W
3436	4822 051 20472	4k7 5% 0.1W
3437	4822 051 20101	100Ω 5% 0.1W
3438	4822 117 11496	62Ω 1% 0.1W
3439	4822 117 11449	2k2 1% 0.1W
3440	4822 051 20472	4k7 5% 0.1W
3441	4822 051 20182	1k8 5% 0.1W
3442	4822 051 10102	1k 2% 0.25W
3443	4822 117 11496	62Ω 1% 0.1W
3444	4822 051 20472	4k7 5% 0.1W
3445	4822 117 11496	62Ω 1% 0.1W
3446	4822 117 10833	10k 1% 0.1W
3447	4822 117 11449	2k2 1% 0.1W
3448	4822 117 11496	62Ω 1% 0.1W
3450	4822 051 20221	220Ω 5% 0.1W
3470	4822 116 52224	470Ω 5% 0.5W
3471	4822 051 20471	470Ω 5% 0.1W
4xxx	4822 051 10008	0Ω jumpers

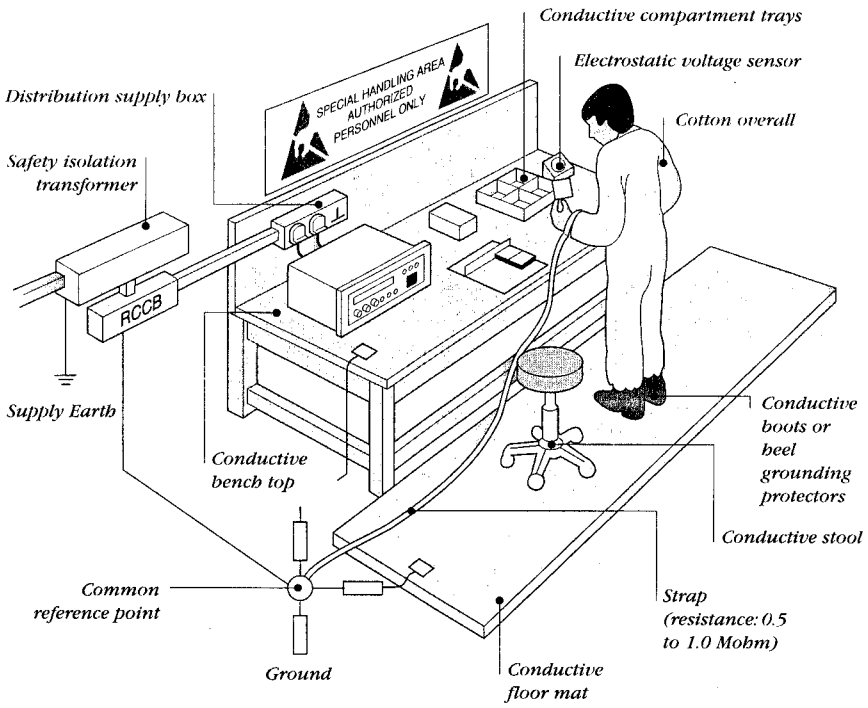
5200	4822 146 10648	Transformer
5210	4822 146 10648	Transformer
5220	4822 146 10648	Transformer
5230	4822 146 10648	Transformer
5240	4822 156 20966	47 µH
5370	4822 156 20966	47 µH
5371	4822 156 20966	47 µH
5372	4822 156 20966	47 µH
5402	4822 146 10648	Transformer

6200	5322 130 31928	BAS16
6201	5322 130 34337	BAV99

6202	4822 130 80542	BZX84-C33
6203	4822 130 80542	BZX84-C33
6204	4822 130 30621	1N4148
6225	5322 130 31928	BAS16
6226	5322 130 34337	BAV99
6227	4822 130 80542	BZX84-C33
6228	4822 130 80542	BZX84-C33
6229	4822 130 30621	1N4148
6250	5322 130 31928	BAS16
6251	5322 130 34337	BAV99
6252	4822 130 80542	BZX84-C33
6253	4822 130 80542	BZX84-C33
6254	4822 130 30621	1N4148
6275	5322 130 31928	BAS16
6276	5322 130 34337	BAV99
6277	4822 130 80542	BZX84-C33
6278	4822 130 80542	BZX84-C33
6279	4822 130 30621	1N4148
6310	5322 130 34337	BAV99
6370	4822 130 34142	BZX79-C33
6375	4822 130 34142	BZX79-C33
6380	4822 130 34142	BZX79-C33
6385	4822 130 34197	BZX79-C12
6390	4822 130 34142	BZX79-C33
6391	4822 130 34142	BZX79-C33
6400	5322 130 34337	BAV99
6401	5322 130 34337	BAV99
6402	5322 130 34337	BAV99

7170	4822 209 60002	74HC4052N
7175	4822 209 60002	74HC4052N
7180	4822 209 60002	74HC4052N
7185	4822 209 80631	LM339N
7200	5322 130 41983	BC858B
7201	4822 130 40824	BD136
7202	5322 130 41982	BC848B
7203	5322 130 41982	BC848B
7204	5322 130 41983	BC858B
7205	5322 130 41982	BC848B
7206	5322 130 41982	BC848B
7207	5322 130 41983	BC858B
7208	5322 130 41982	BC848B
7209	5322 130 41982	BC848B
7210	5322 130 41982	BC848B
7225	5322 130 41983	BC858B
7226	4822 130 40824	BD136
7227	5322 130 41982	BC848B
7228	5322 130 41982	BC848B
7229	5322 130 41983	BC858B
7230	5322 130 41982	BC848B
7231	5322 130 41982	BC848B
7232	5322 130 41983	BC858B
7233	5322 130 41982	BC848B
7234	5322 130 41982	BC848B
7235	5322 130 41982	BC848B
7250	5322 130 41983	BC858B
7251	4822 130 40824	BD136
7252	5322 130 41982	BC848B
7253	5322 130 41982	BC848B
7254	5322 130 41983	BC858B
7255	5322 130 41982	BC848B
7256	5322 130 41982	BC848B
7257	5322 130 41983	BC858B
7258	5322 130 41982	BC848B
7259	5322 130 41982	BC848B
7260	5322 130 41982	BC848B
7275	5322 130 41983	BC858B
7276	4822 130 40824	BD136
7277	5322 130 41982	BC848B
7278	5322 130 41982	BC848B
7279	5322 130 41983	BC858B
7280	5322 130 41982	BC848B
7281	5322 130 41982	BC848B
7282	5322 130 41983	BC858B
7283	5322 130 41982	BC848B
7284	5322 130 41982	BC848B
7285	5322 130 41982	BC848B
7300	4822 209 10296	HEF4014BP
7314	5322 130 41982	BC848B
7315	5322 130 41982	BC848B
7330	5322 209 10421	HEF4094BP

7370	5322 209 11296	74HC4053N
7375	5322 209 11296	74HC4053N
7380	5322 130 41982	BC848B
7381	5322 130 41983	BC858B
7382	5322 130 41982	BC848B
7383	5322 130 41982	BC848B
7384	5322 130 41982	BC848B
7385	5322 130 41983	BC858B
7386	5322 130 41982	BC848B
7387	5322 130 41982	BC848B
7388	5322 209 11296	74HC4053N
7392	5322 130 41982	BC848B
7393	5322 130 41983	BC858B
7395	5322 130 41983	BC858B
7396	5322 130 41982	BC848B
7397	5322 130 41983	BC858B
7398	5322 130 41983	BC858B
7400	5322 130 41983	BC858B
7401	5322 130 41983	BC858B



Essential features of an ESD-protected workstation

VM7-P82.EPS
190996

WHAT is ESD ?
Electro Static Discharge is a spark jumping from one conductive surface, charged with static electricity, to another conductive surface. This incredibly fast movement of static charge can have disastrous consequences. An ESD discharge of 3000 Volts can be felt by humans but 60 Volt is enough to damage many semiconductors.

What causes ESD
It is caused by rubbing or separating two substances, the effect is worsened by low air humidity. Non conducting materials cannot discharge, therefore they are called static charges. There are several ways to get statically charged : Walking, sitting on a chair or wearing textiles. When a person, sitting on a chair and is statically charged, stands up, the charge will increase with a factor off 3.

The effect on electronics
A static discharge into electronic components may damage the components terminal. The charge may degenerate the component in such a way that it remains operational, but sooner or later malfunctions will occur. This is called "latent failure".

How to counteract ESD
In general ESD is caused by a differential of charges, to prevent this the repair working area (table, chair, soldering iron & the floor) must all be on the same potential.

Static electricity can be kept under control by the following products

4822 320 11307	Connection box (for connecting all anti-static material to each other)
4822 395 10223	Anti-static wrist band
4822 320 11305	Extension cable for wrist band
4822 466 10953	Anti-static table mat (1200 x 650 x 1,25 mm)
4822 466 10958	Anti-static table mat (600 x 650 x 1,25 mm)
4822 320 11306	Connection cable from anti-static table amt to connection box
4822 320 10671	Earth cable with Mueller clip (3m to connect any product to ESD mat or connection box
4822 310 10671	Complete ESD kit consisting of all above mentioned items