

# Service Service Service



# Service Manual

COMPACT  
disc  
DIGITAL AUDIO

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## ECO 4 Tuner

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## Tuner 92

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## Annex

**Service Manual** Tape Transport RDN-11

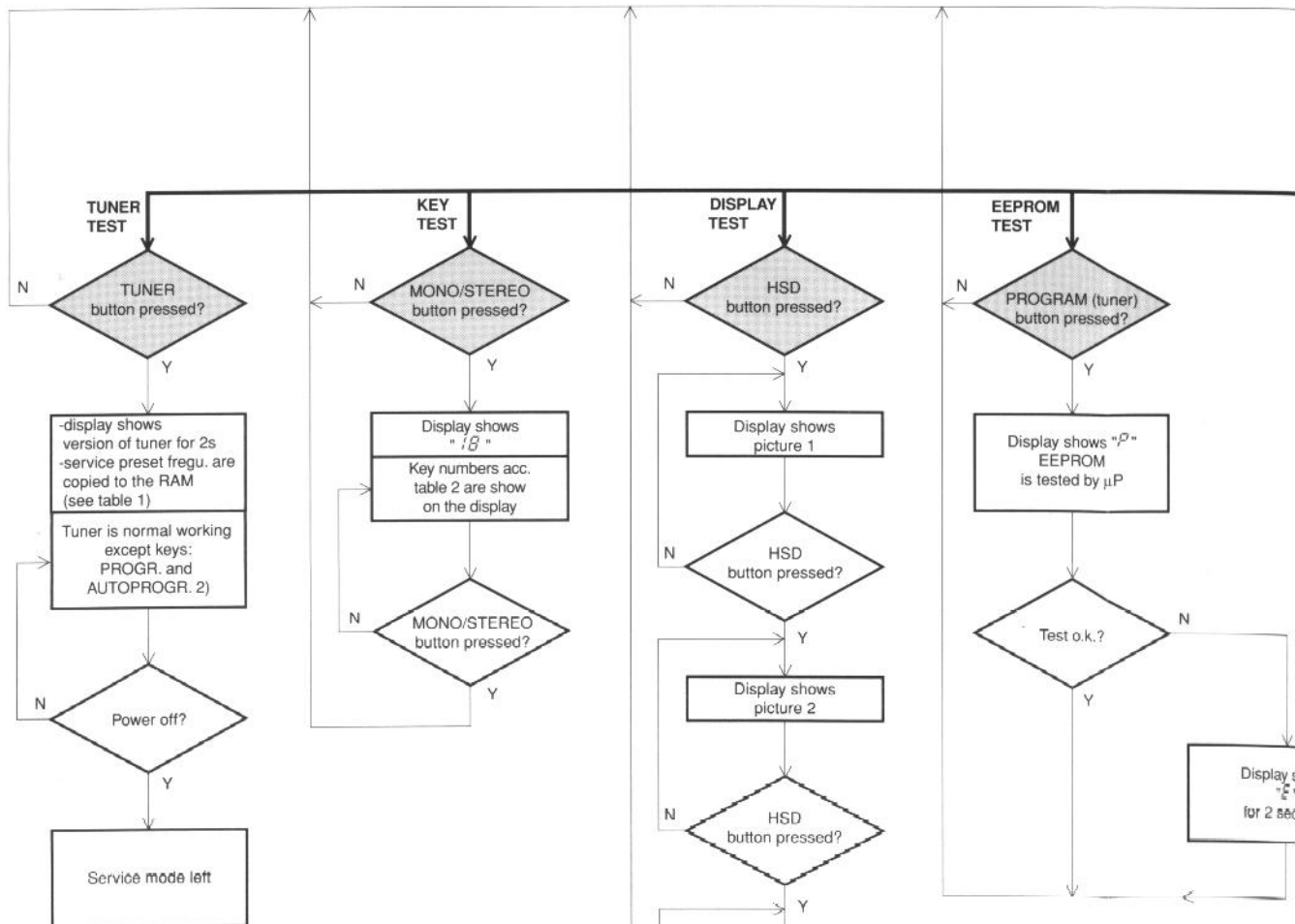
**Service Manual** Record Player DL-40

**CLASS 1  
LASER PRODUCT**

## SERVICE TEST PROGRAM

The service test program can be left:

- at each step: by switching power off (disconnect mains)
- from service main menu: by pressing the Standby button twice the set is switched to normal working mode except: \* in TUNER mode still the service preset frequencies are available.  
\* in CD mode the error codes will be displayed.



2) Preset frequencies of table 1 can be used as in normal tuner mode.  
If fieldstrength is high enough "PROGRAM" flag will light.  
Preset frequencies stored by the customer are still stored in the EEPROM and can be recalled by a reset of the µP (switching power off by disconnecting mains cord)

RECORD STEREO	SW LW	88.88	AUTO PROGRAM
FERRO HSD PAUSE	MW	88.88	kHz REPEAT TRACK
CHROME DOLBY NR	FM AM	88.88	MHz SHUFFLE EDIT

Picture 1

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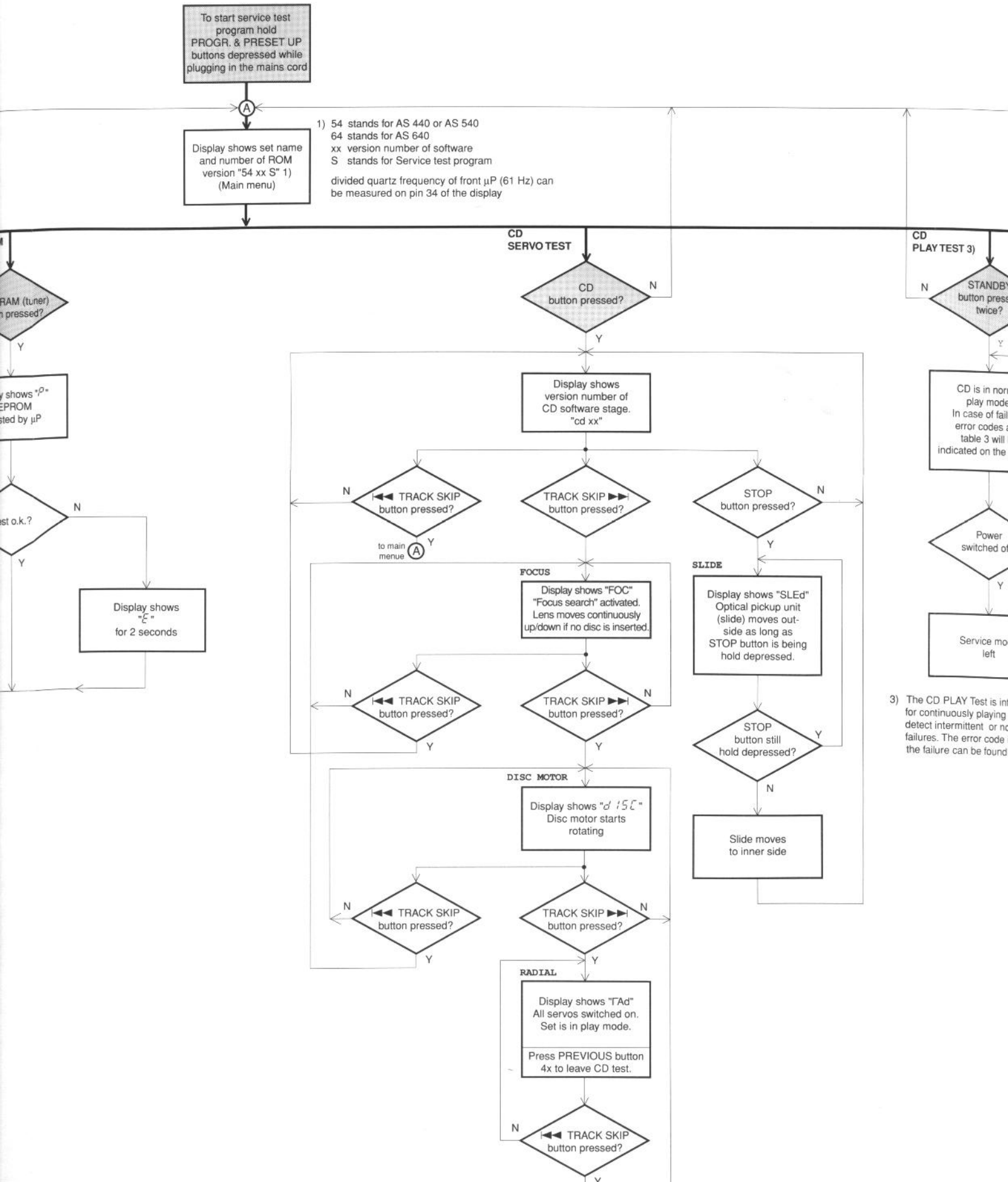
Picture 2

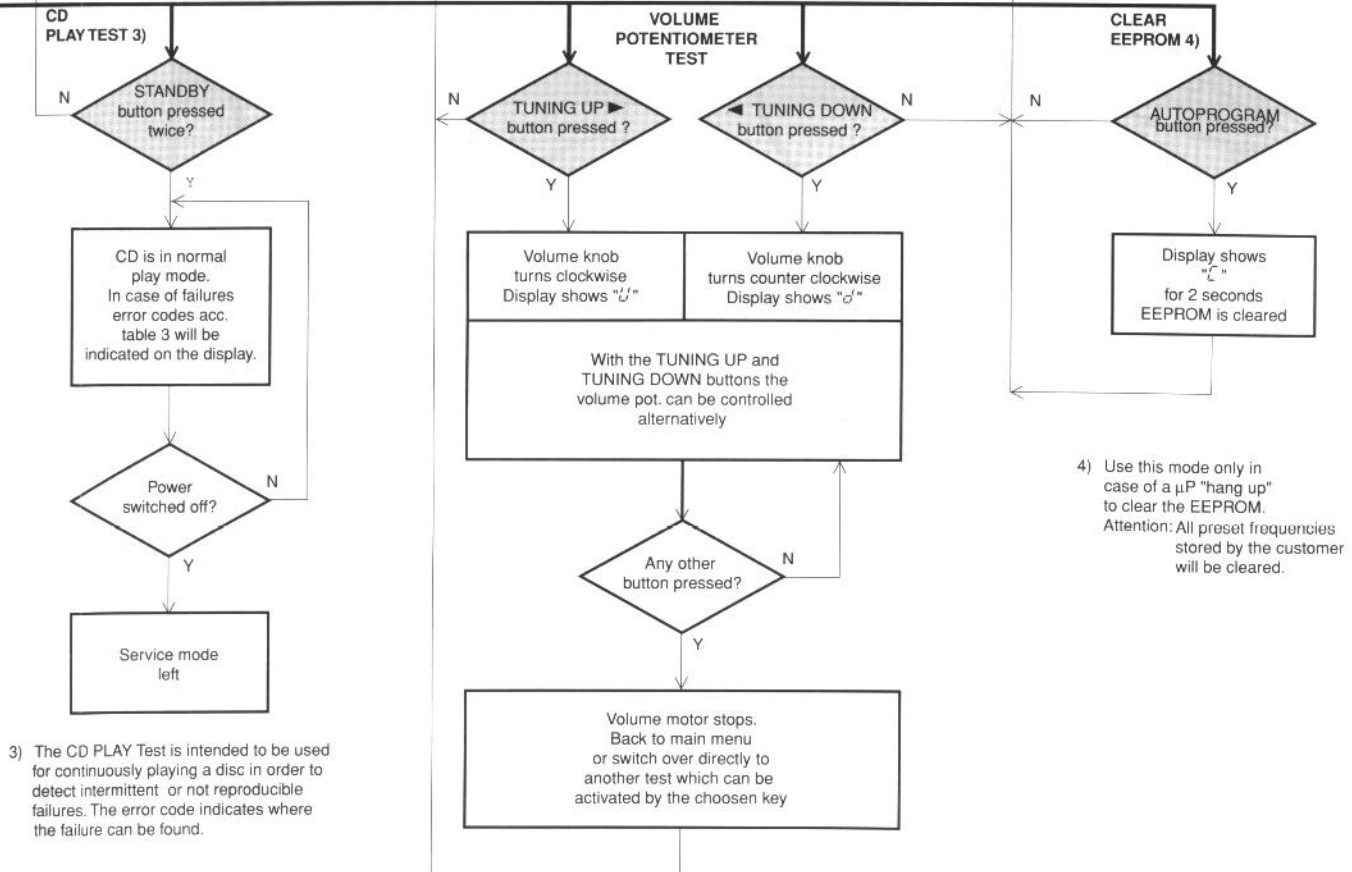
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Picture 3

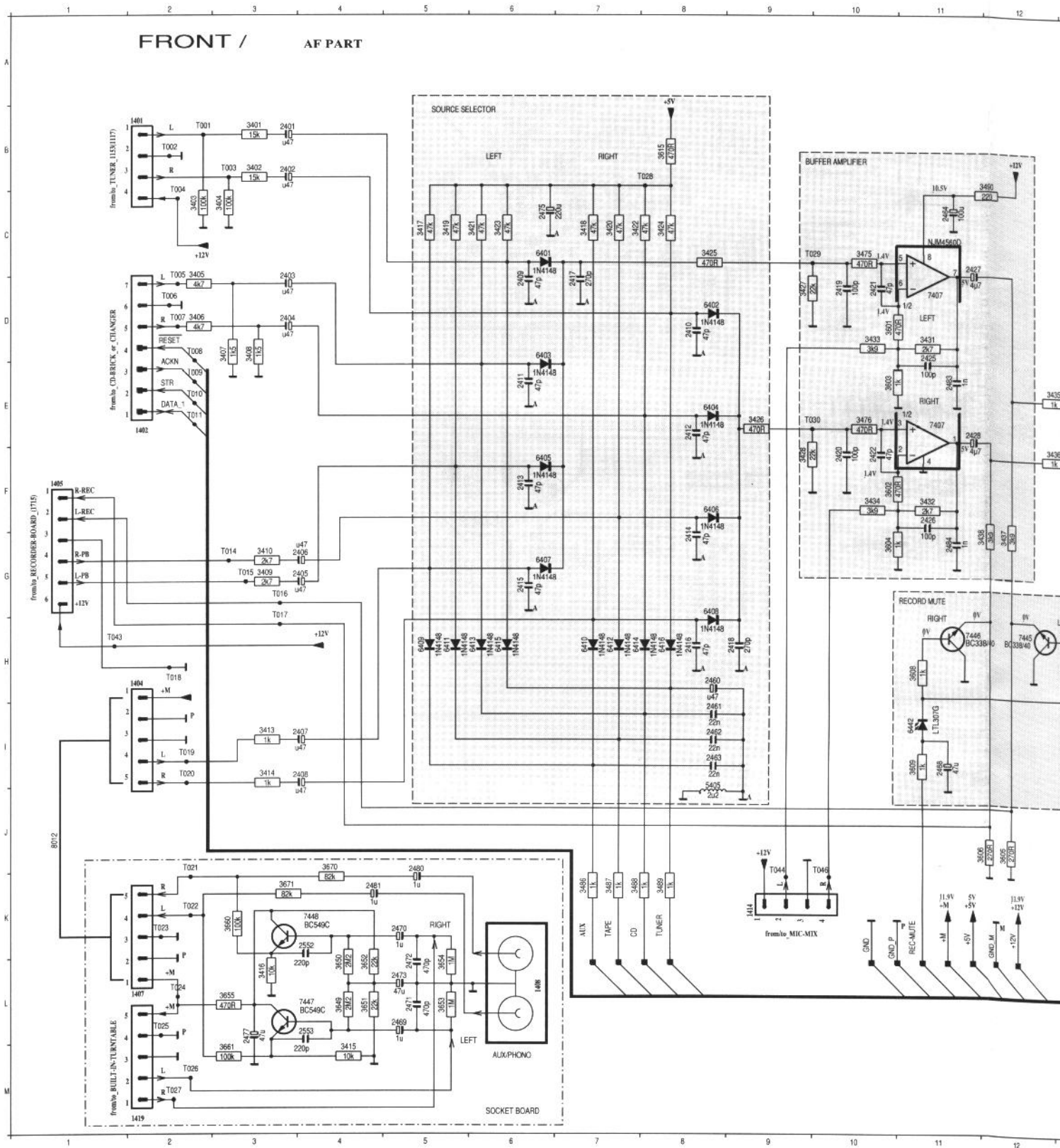
RECORD STEREO	SW LW	.	AUTO PROGRAM
FERRO HSD PAUSE	MW	.	kHz REPEAT TRACK
CHROME DOLBY NR	FM AM	.	MHz SHUFFLE EDIT

Picture 4

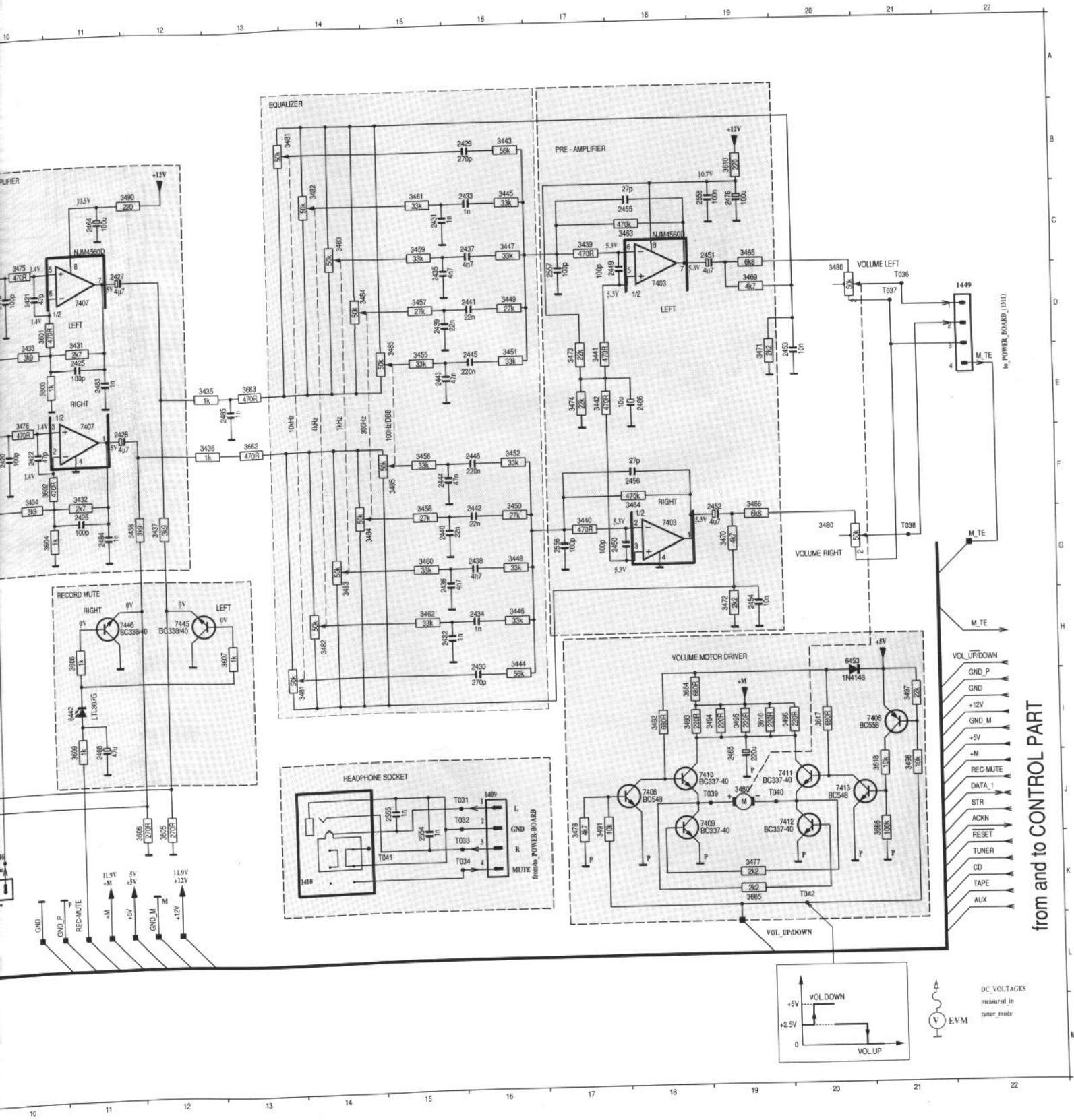




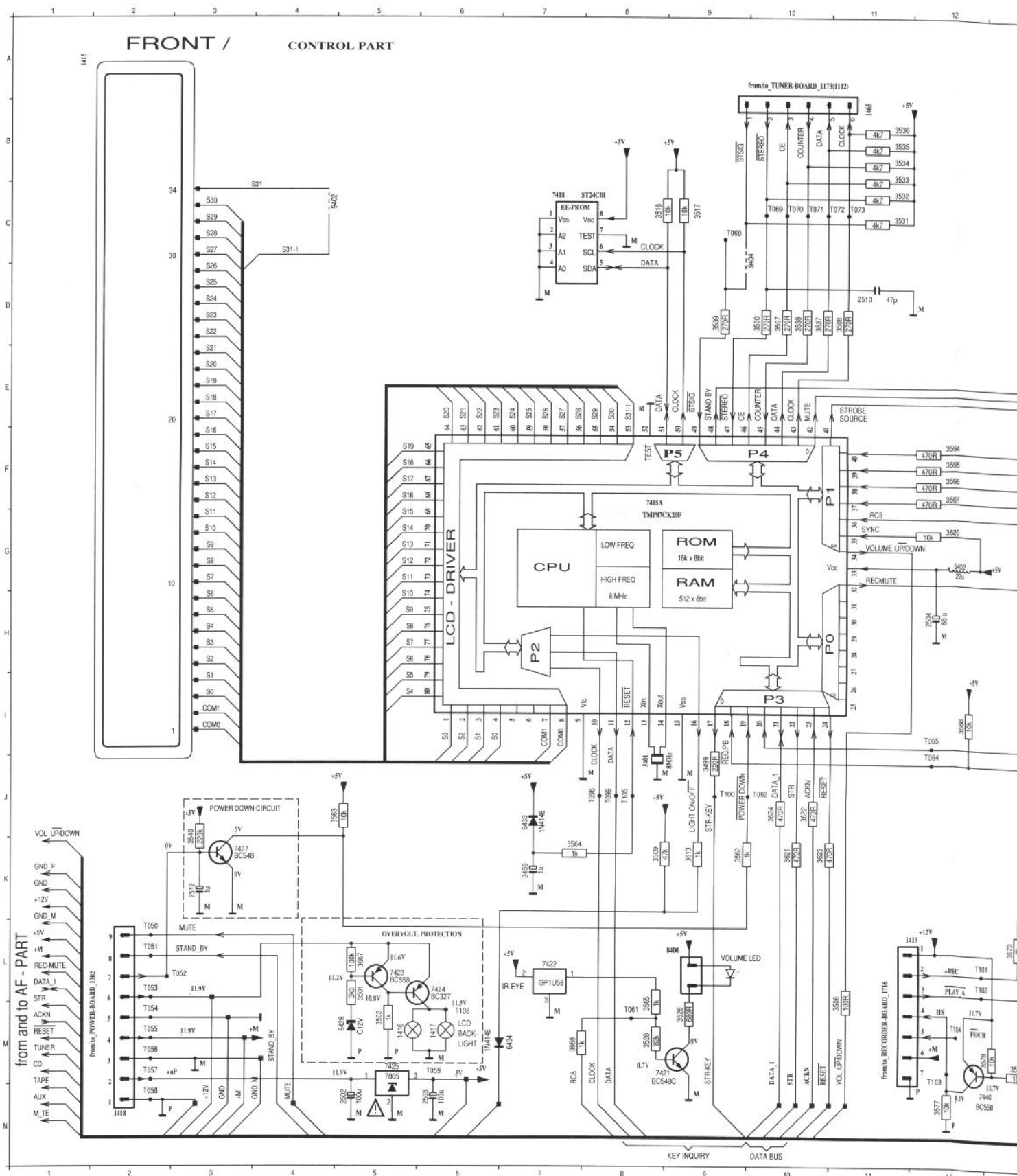
1401	B2	2406	G4	2422	F10	2440	G15	2461	I8	2481	K4	3406	D2	3424	C8	3442	E17	3460	G15	3478
1402	E2	2407	I4	2425	D11	2441	D16	2462	I8	2483	E11	3407	D3	3425	C8	3443	B16	3461	C15	3480
1404	H2	2408	I4	2426	F11	2442	F16	2463	I8	2484	G11	3408	D3	3426	E9	3444	H16	3462	H15	3480
1405	F1	2409	D6	2427	C11	2443	E15	2464	C11	2485	E13	3409	G3	3427	D9	3445	C16	3463	C18	3480
1407	L2	2410	D8	2428	E11	2444	F15	2465	I19	2552	K4	3410	G3	3428	F9	3446	H16	3464	F18	3481
1408	L6	2411	E6	2429	B16	2445	E16	2466	E18	2553	L4	3413	I3	3431	D11	3447	C16	3465	C19	3481
1409	J16	2412	E8	2430	H16	2446	F16	2468	I11	2554	J15	3414	I3	3432	F11	3448	G16	3466	F19	3482
1410	K14	2413	F6	2431	C15	2449	C18	2469	L5	2555	J15	3415	M4	3433	D10	3449	D16	3469	D19	3482
1414	K9	2414	G8	2432	H15	2450	G17	2470	K5	2556	G17	3416	L3	3434	F10	3450	F16	3470	G19	3483
1419	M2	2415	G6	2433	C16	2451	C19	2471	L5	2557	C17	3417	C5	3435	E12	3451	E16	3471	E19	3483
1449	D22	2416	H8	2434	H16	2452	F19	2472	L5	2558	C19	3418	C7	3436	F12	3452	F16	3472	H19	3484
2401	B3	2417	D7	2435	C15	2453	E20	2473	L5	3401	B3	3419	C5	3437	G12	3455	E15	3473	E17	3484
2402	B3	2418	H9	2436	G15	2454	H19	2475	C6	3402	B3	3420	C7	3438	G12	3456	F15	3474	E17	3485
2403	D3	2419	D10	2437	C16	2455	C18	2476	C19	3403	C2	3421	C6	3439	C17	3457	D15	3475	C10	3485
2404	D3	2420	F10	2438	G16	2456	F18	2477	L3	3404	C3	3422	C7	3440	G17	3458	F15	3476	E10	3486
2405	G4	2421	D10	2439	D15	2460	H8	2480	J5	3405	D2	3423	C6	3441	E17	3459	C15	3477	K19	3487



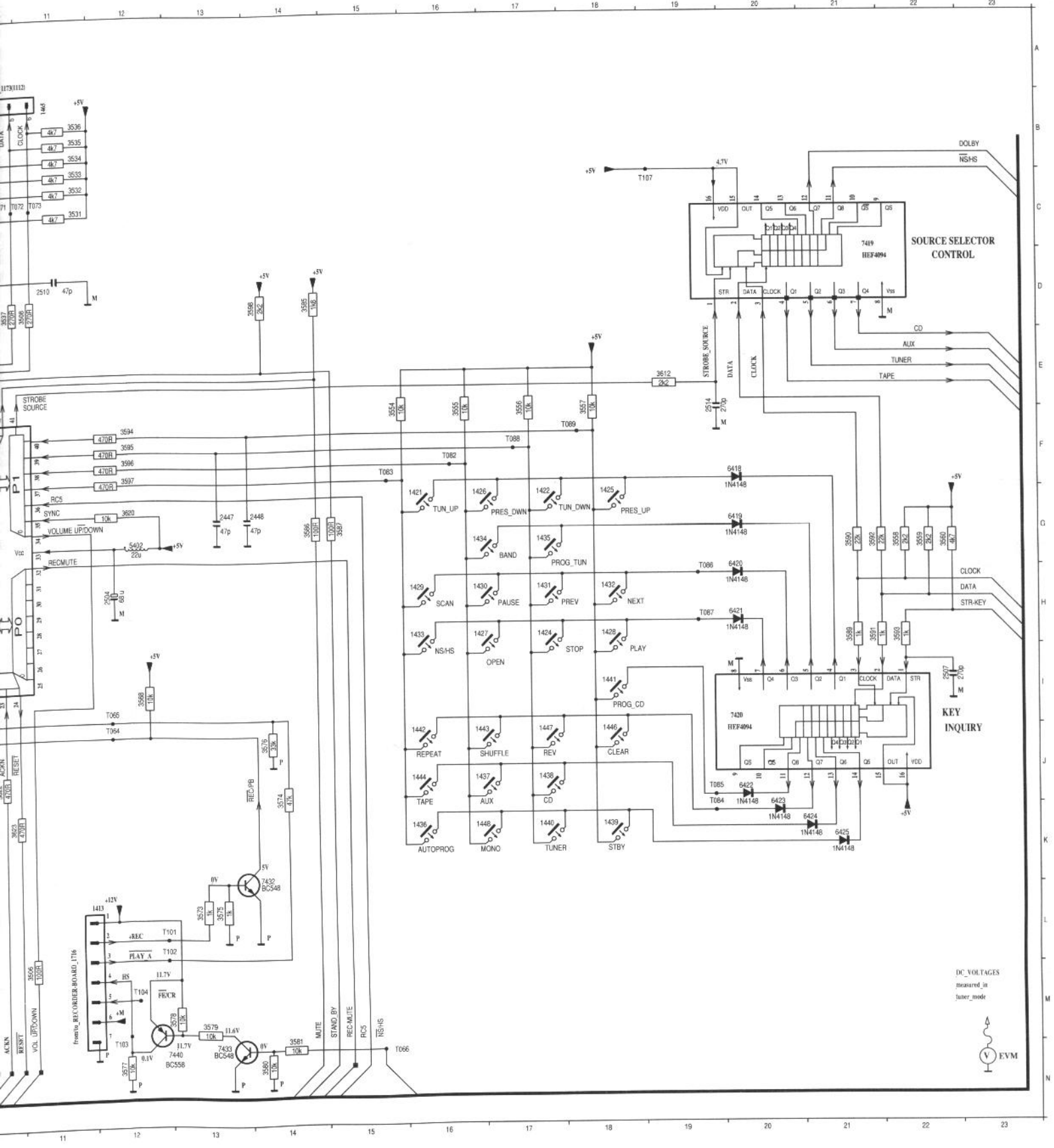
2	E17	3460	G15	3478	J17	3488	K7	3606	J12	3660	K3	6407	G6	7407	E11	T006	D2	T024	L2	T041	K15
3	B16	3461	C15	3480	C20	3489	K8	3607	H13	3661	M3	6408	G8	7408	J18	T007	D2	T025	L2	T042	K20
4	H16	3462	H15	3480	J19	3490	B12	3608	H11	3662	F13	6409	H5	7409	J18	T008	D2	T026	M2	T043	H1
5	C16	3463	C18	3480	G20	3491	J17	3609	I11	3663	E13	6410	H7	7410	J18	T009	E2	T027	M2	T044	J9
6	H16	3464	F18	3481	B14	3492	I18	3610	B19	3664	I18	6411	H5	7411	J20	T010	E2	T028	B8	T046	J10
7	C16	3465	F19	3481	I14	3493	I18	3615	B8	3665	K19	6412	H7	7412	J20	T011	E2	T029	C10		
8	G16	3466	D19	3482	B14	3494	I19	3616	I19	3670	J4	6413	H6	7413	J20	T014	G3	T030	E10		
9	D16	3469	G19	3482	H14	3495	I19	3617	I20	3671	K3	6414	H7	7445	H12	T015	G3	T031	J16		
10	F16	3470	E19	3483	G14	3496	I20	3618	J21	3676	J8	6415	H6	7446	H11	T016	G3	T032	J16		
11	E16	3471	E19	3483	C14	3497	I21	3649	L4	5405	J8	6442	I11	7447	L4	T017	G3	T033	J16		
12	F16	3472	H19	3484	G14	3498	J21	3650	L4	6402	D8	6453	H20	T001	B2	T018	H2	T034	K16		
13	E15	3473	E17	3484	D14	3601	D10	3651	L4	6403	D6	7403	G18	T002	B2	T019	I2	T036	D21		
14	F15	3474	E17	3485	D15	3602	F10	3652	L5	6404	E8	7403	D18	T003	B3	T020	I2	T037	D21		
15	D15	3475	C10	3485	F15	3603	E10	3653	L5	6405	F6	7406	I21	T004	B2	T021	J2	T038	G21		
16	F15	3476	E10	3486	K7	3604	G10	3654	L5	6406	F8	7407	D11	T005	C2	T022	K2	T039	J19		
17	C15	3477	K19	3487	K7	3605	J12	3655	L3							T023	K2	T040	J19		







3575 L13	3590 G21	3620 G12	6420 H20	7419 C21	8400 L9	T058 N2	T072 C11	T098 J8
3576 J14	3591 H21	3621 K10	6421 H20	7420 I20	9402 C4	T059 M6	T073 C11	T099 J8
3577 N12	3592 G21	3622 J10	6422 J20	7421 M8	9404 C10	T061 M8	T078 E12	T100 J9
3578 M13	3593 H22	3623 K10	6423 K20	7422 L7	T050 L2	T062 J10	T082 F16	T101 L2
3579 M13	3594 F12	3624 J10	6424 K21	7423 L5	T051 L2	T064 I12	T083 F15	T102 L12
3580 M14	3595 F12	3667 L5	6425 K21	7424 L6	T052 L3	T065 I12	T084 J19	T103 M12
3581 M14	3596 F12	3668 M7	6426 M5	7425 M5	T053 L2	T066 N15	T085 J19	T104 M12
3585 G14	3597 F12	5401 J8	6433 J7	7427 K3	T054 M2	T068 C9	T086 H19	T105 J8
3586 G15	3598 D14	5402 G12	6434 M7	7432 K14	T055 M2	T069 C10	T087 H19	T106 M6
3587 G15	3612 E19	6418 F20	7415A F8	7433 N13	T056 M2	T070 C10	T088 F17	T107 C19
3589 H21	3613 K9	6419 G20	7418 C7	7440 N13	T057 M2	T071 C10	T089 F18	

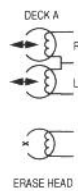


DC VOLTAGES  
measured in  
tuner mode

V EVM



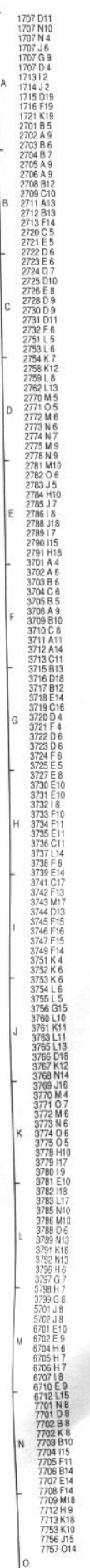
## RECORDER BOARD



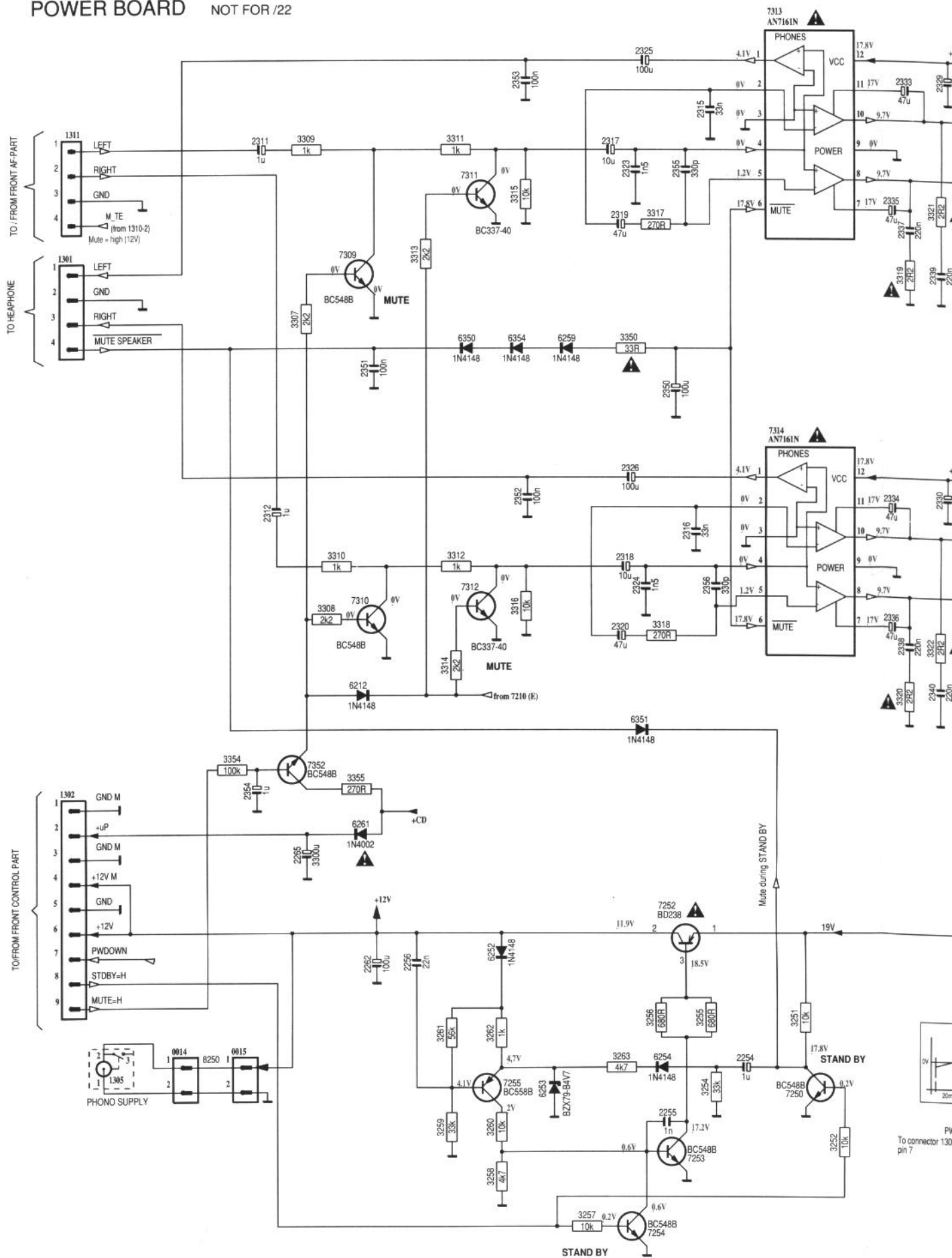
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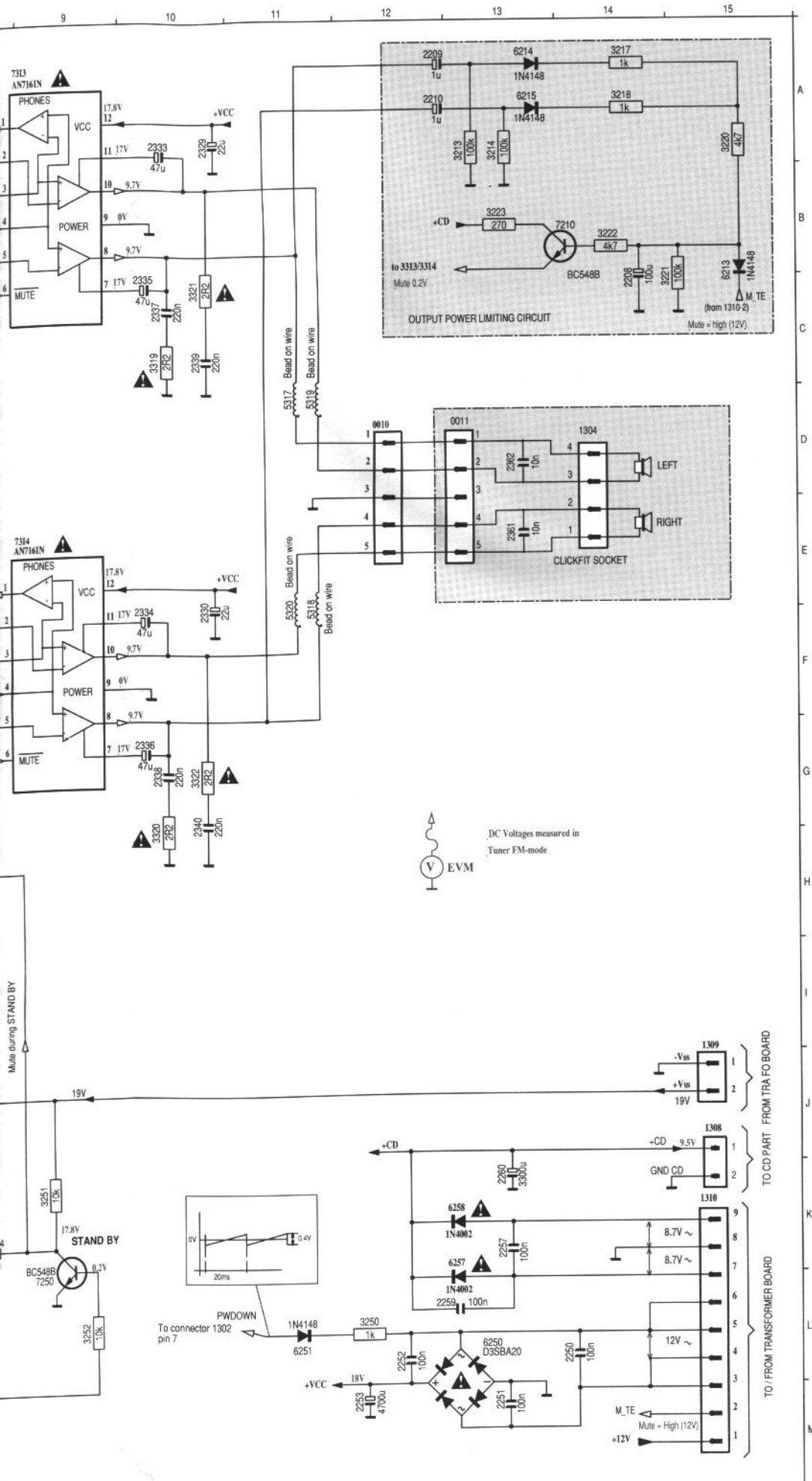
ERASE  
OSCILLATOR

## LEFT CHANNELS

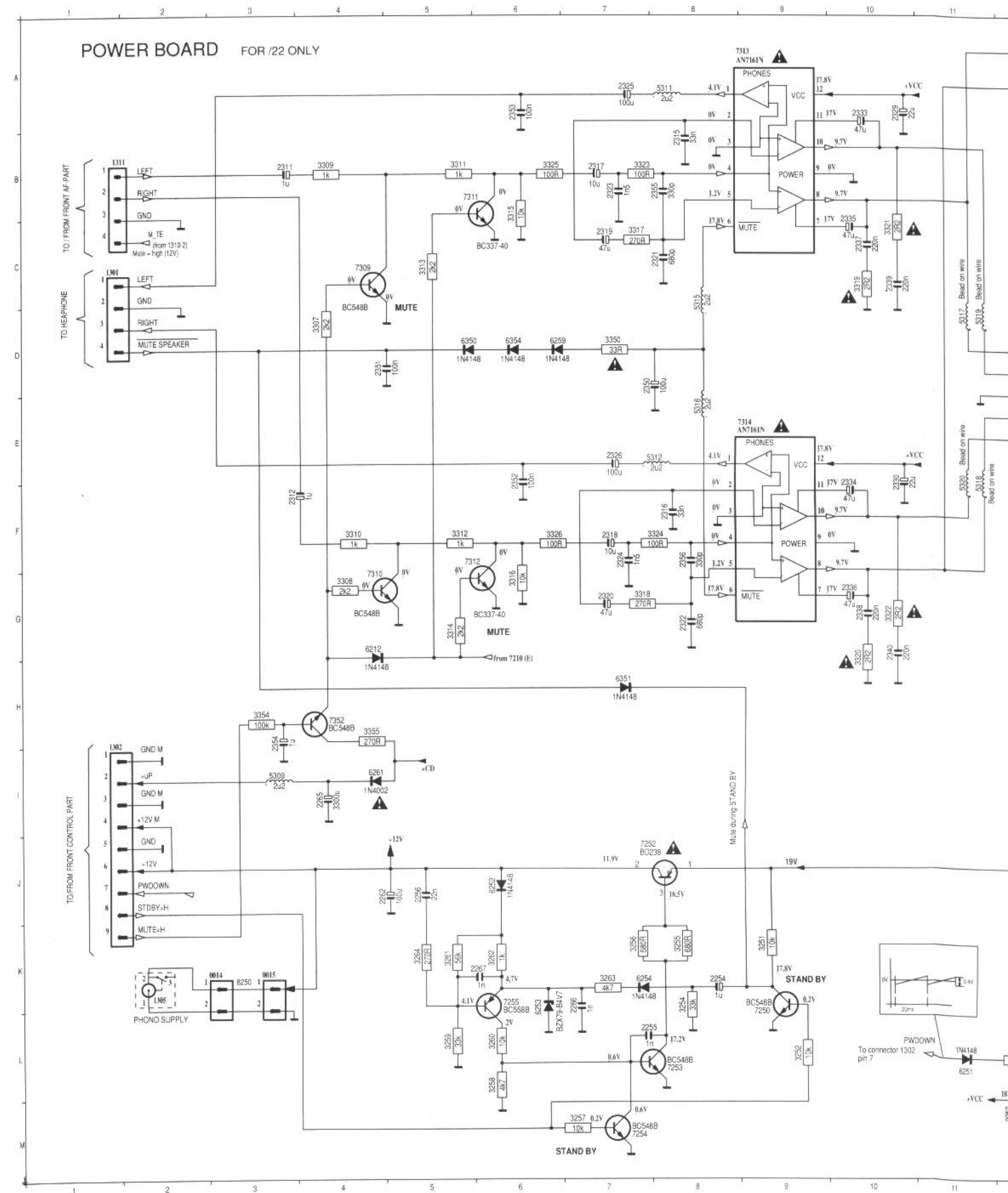


## POWER BOARD NOT FOR /22

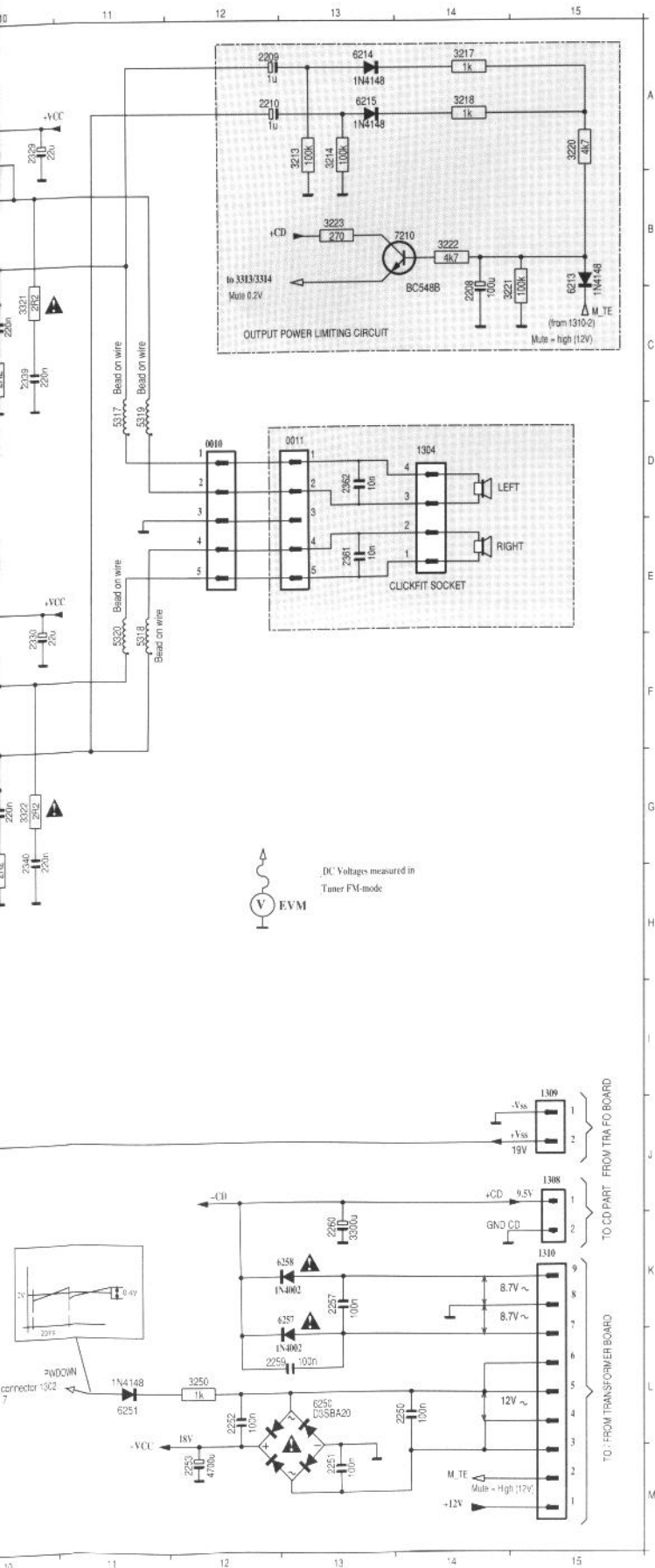




0010	D12	3311	B5
0011	D13	3312	F5
0014	K2	3313	C5
0015	K3	3314	G5
		3315	C6
1301	D1	3316	G6
1302	I2	3317	C7
1304	D14	3318	G7
1305	K2	3319	C10
1308	L11	3320	G10
1310	J15	3321	C10
1311	B1	3322	G10
		3323	B7
2208	C14	3324	F7
2209	A12	3325	B6
2210	A12	3326	F6
2250	K13	3349	D13
2251	K13	3350	D7
2252	J12	3354	H3
2253	K12	3355	H4
2254	K8		
2255	L7	5309	I3
2256	J5	5311	A8
2257	L13	5312	E8
2259	L12	5315	D8
2260	L12	5316	E8
2262	J4	5317	D11
2265	I4	5318	E11
2311	B3	5319	D11
2312	F3	5320	E11
2315	B8		
2316	F8	6212	H5
2317	B7	6213	B15
2318	F7	6214	A13
2319	C7	6215	A13
2320	G7	6250	J13
2323	B7	6251	J10
2324	F7	6252	J6
2325	A7	6253	K6
2326	E7	6254	K7
2327	A8	6257	L13
2328	E8	6258	N11
2329	A10	6259	D6
2330	E10	6261	I4
2333	A10	6270	I10
2334	F10	6350	D5
2335	C10	6351	I7
2336	G10	6354	D6
2337	C10		
2338	G10	7210	B14
2339	C10	7250	K9
2340	G10	7252	J8
2345	E13	7253	L8
2346	D13	7254	M7
2350	D7	7255	K6
2351	D3	7309	C4
2352	D3	7310	G4
2353	C3	7311	B5
2354	H4	7312	F5
2355	B8	7313	A9
2356	F8	7314	E9
2361	E13	7352	H4
2362	D13		
3213	A13		
3214	A13		
3217	A14		
3218	A15		
3221	C15		
3222	B14		
3223	B13		
3250	J10		
3251	K9		
3252	L9		
3254	K8		
3255	K8		
3256	K7		
3257	M7		
3258	L6		
3259	L5		
3260	L6		
3261	K5		
3262	K6		
3263	K7		
3270	I10		
3307	D4		
3308	G4		
3309	B4		
3310	F4		

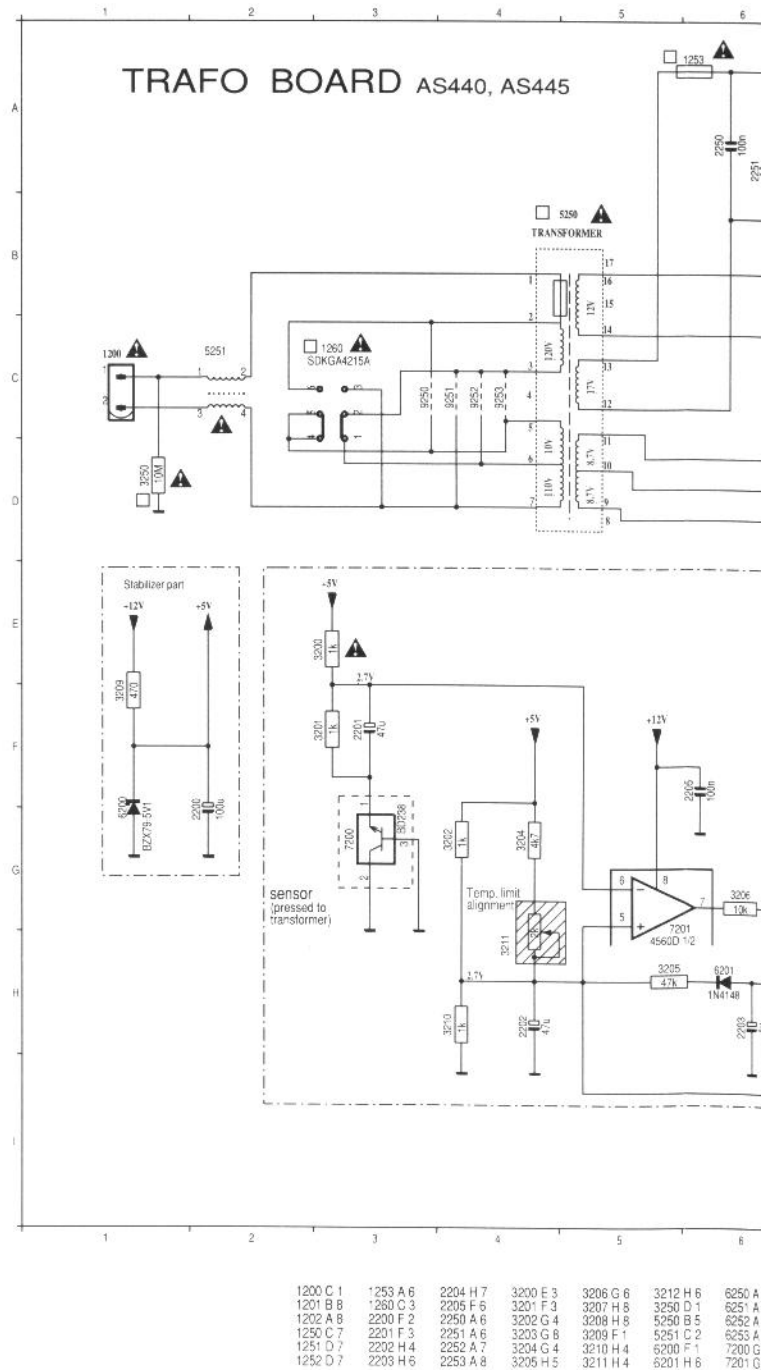


3312 F5	3319 C10	3326 F6	5315 D8	6213 B15	6254 K7	6354 D6	7309 C4
3313 C5	3320 G10	3350 D7	5316 E8	6214 A13	6257 K13	7210 B14	7310 G4
3314 G5	3321 C10	3354 H3	5317 D11	6215 A13	6258 N11	7250 K9	7311 B5
3315 C6	3322 G10	3355 H4	5318 E11	6250 L13	6259 D6	7252 J8	7312 F5
3316 G6	3323 B7	5309 I3	5319 D11	6251 L11	6261 I4	7253 L8	7313 A9
3317 C7	3324 F8	5311 A8	5320 E11	6252 J6	6350 D5	7254 M7	7314 E9
3318 G7	3325 B6	5312 E8	6212 G4	6253 K6	6351 H7	7255 K6	7352 H4



□ Components depending on version

COMPONENTS	3250	1260	9253	9252	9251	9250
VERSION						
/20 (IEC 230V)				×		
/25 (240V)			×			
/37 (UL 120V)	×				×	×
/21 /30 (120V,230V)		×				

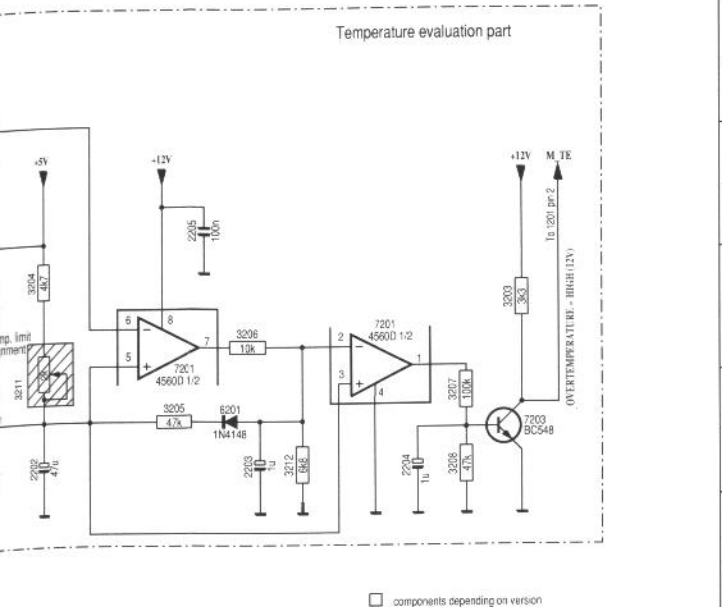
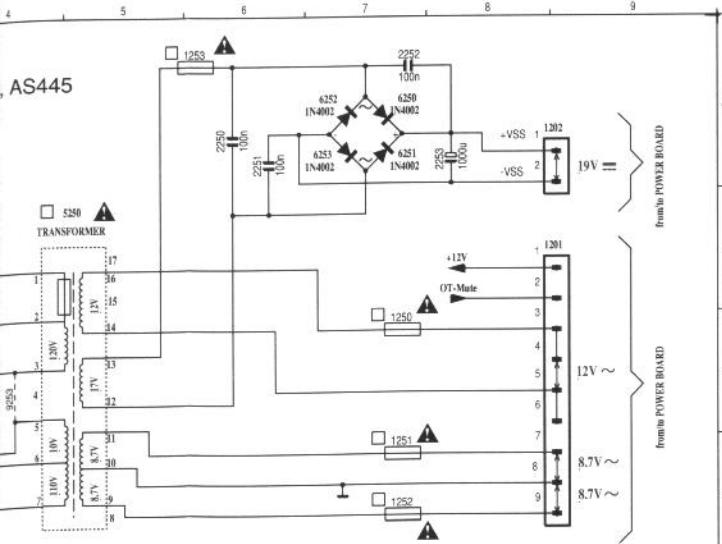


1200 C 1	1253 A 6	2204 H 7	3200 F 3	3206 G 6	3212 H 6	6250 A
1201 B 8	1260 C 3	2205 F 6	3201 F 3	3207 H 8	3250 D 1	6251 A
1202 A 8	2200 F 2	2250 A 6	3202 G 4	3208 H 8	5250 B 5	6252 A
1250 C 7	2201 F 3	2251 A 6	3203 G 8	3209 F 1	5251 C 2	6253 A
1251 D 7	2202 H 4	2252 A 7	3204 G 4	3210 H 4	6200 F 1	7200 G
1252 D 7	2203 H 6	2253 A 8	3205 H 5	3211 H 4	6201 H 6	7201 G



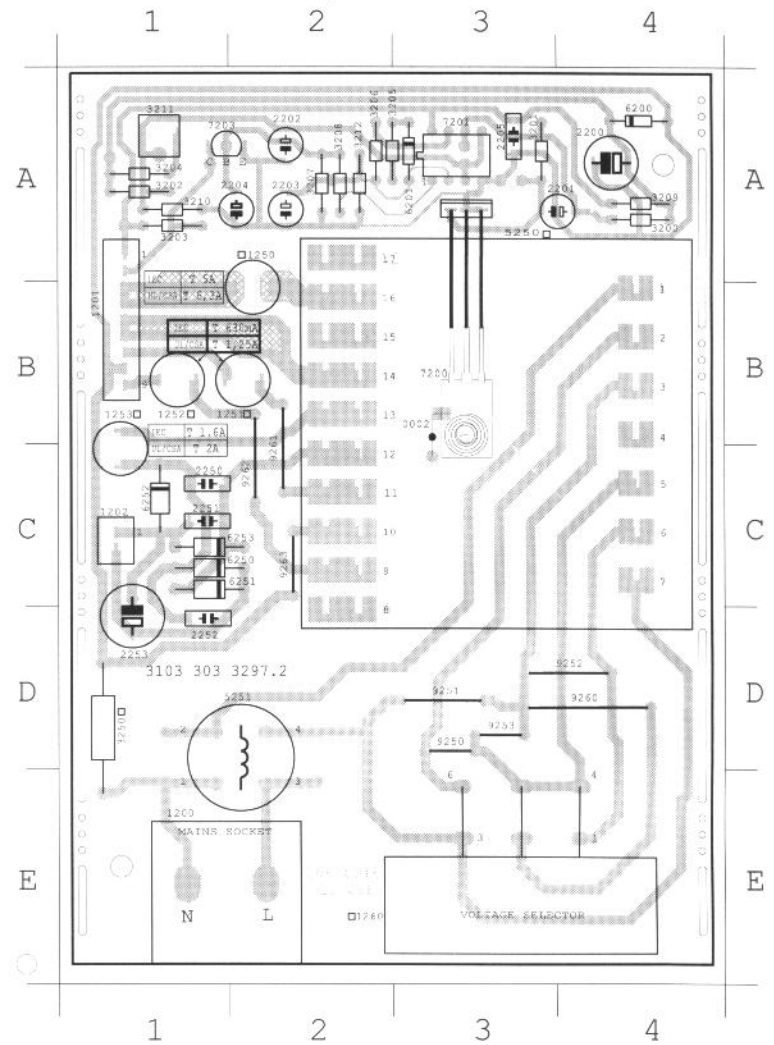
on version

	1260	9253	9252	9251	9250	9260	VALUE OF FUSE			
							1250	1251	1252	1253
			×				5A	630mA	630mA	1.6A
	×						5A	630mA	630mA	1.6A
				×	×		6.3A	1.25A	1.25A	2A
	×					×	5A	630mA	630mA	1.6A

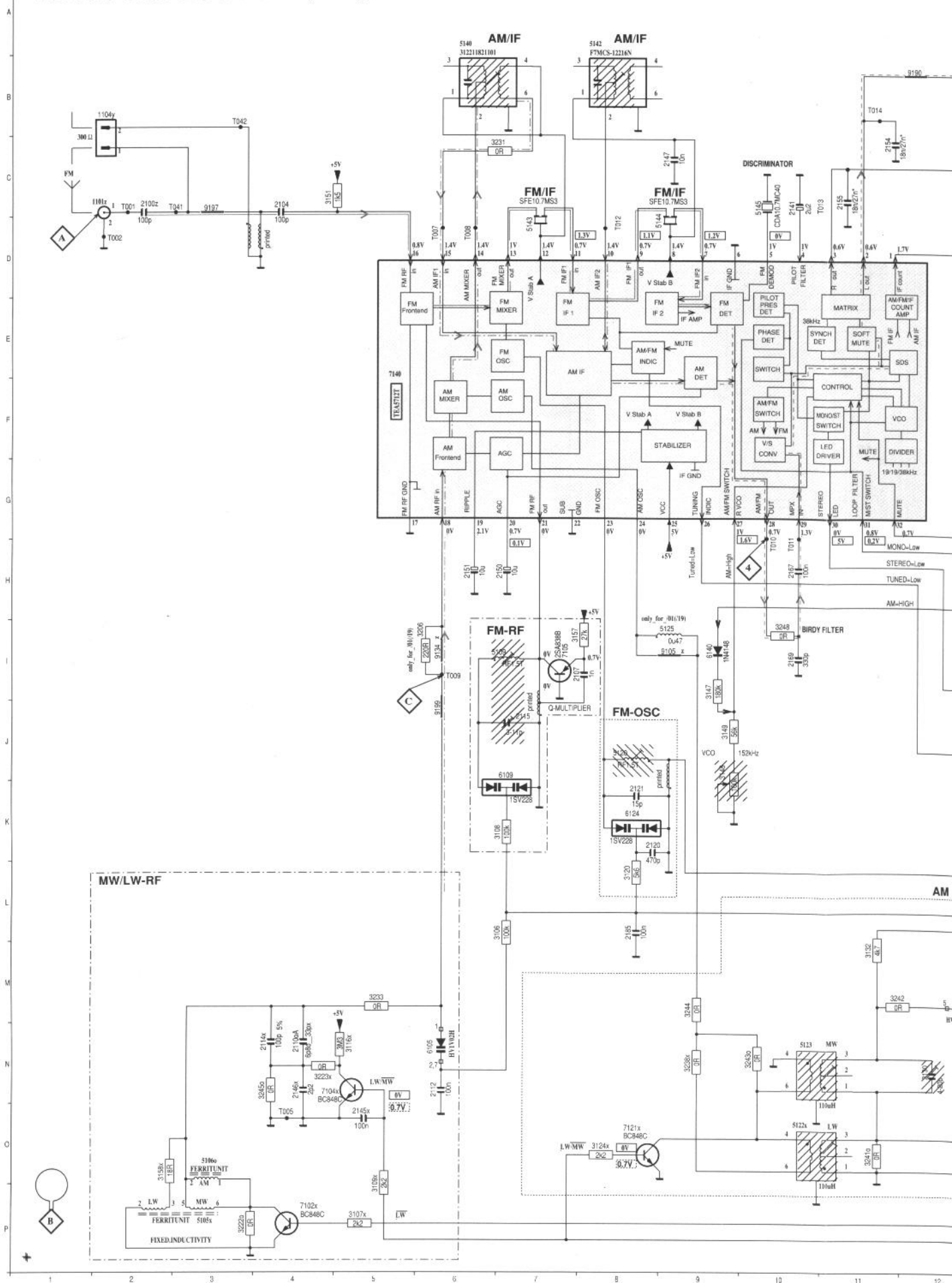


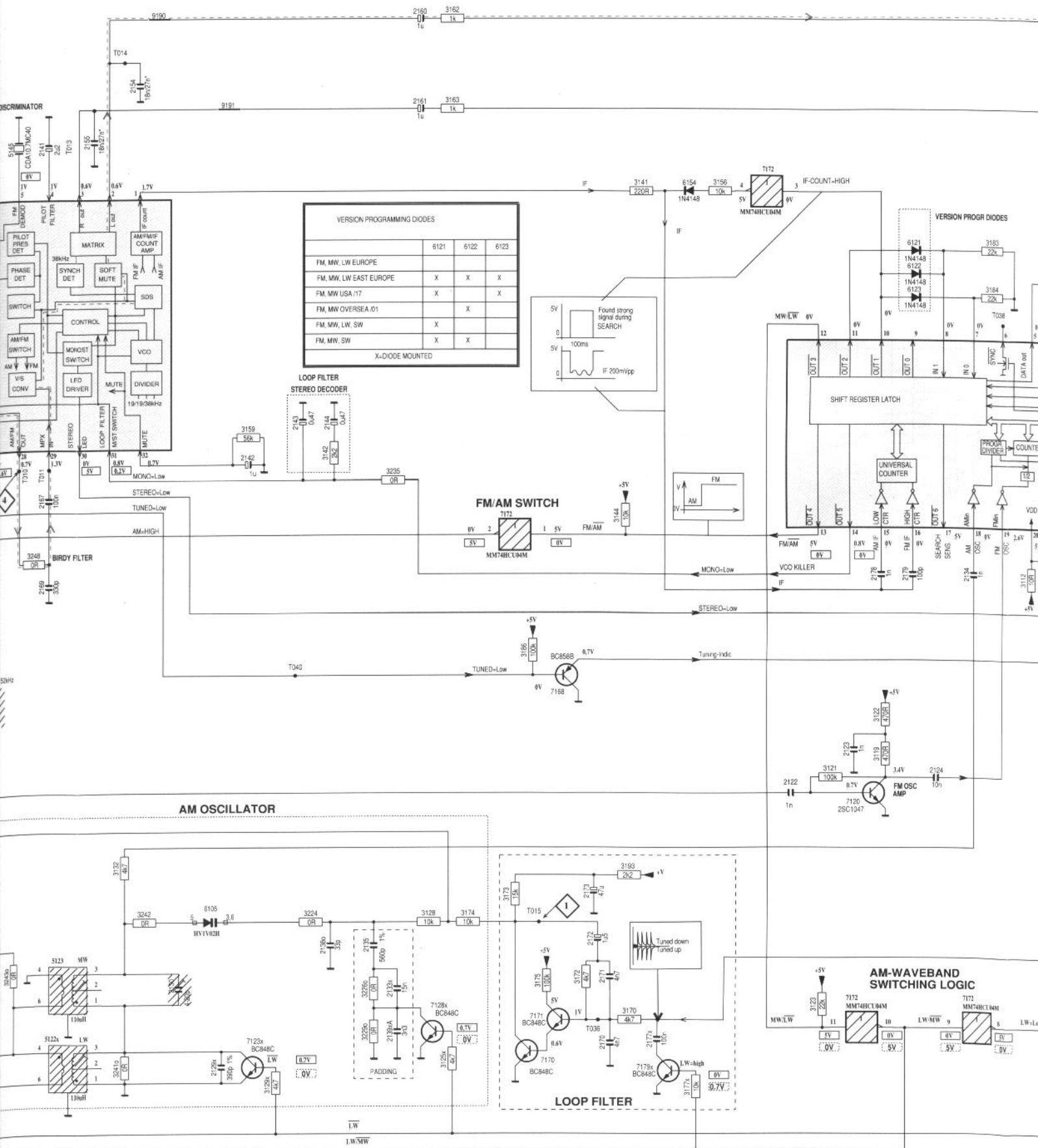
3200 E 3	3206 G 6	3212 H 6	6250 A 7	7201 G 5	9250 C 3
3201 F 3	3207 H 8	3250 D 1	6251 A 7	7203 H 8	9251 C 4
3202 G 4	3208 H 8	5250 B 5	6252 A 7		9252 C 4
3203 G 8	3209 F 1	6251 C 2	6253 A 7		9253 C 4
3204 G 4	3210 H 4	6200 F 1	7200 G 3		9255 C 2
3205 H 5	3211 H 4	6201 H 6	7201 G 7		9256 D 2

TRAFO BOARD Component side view



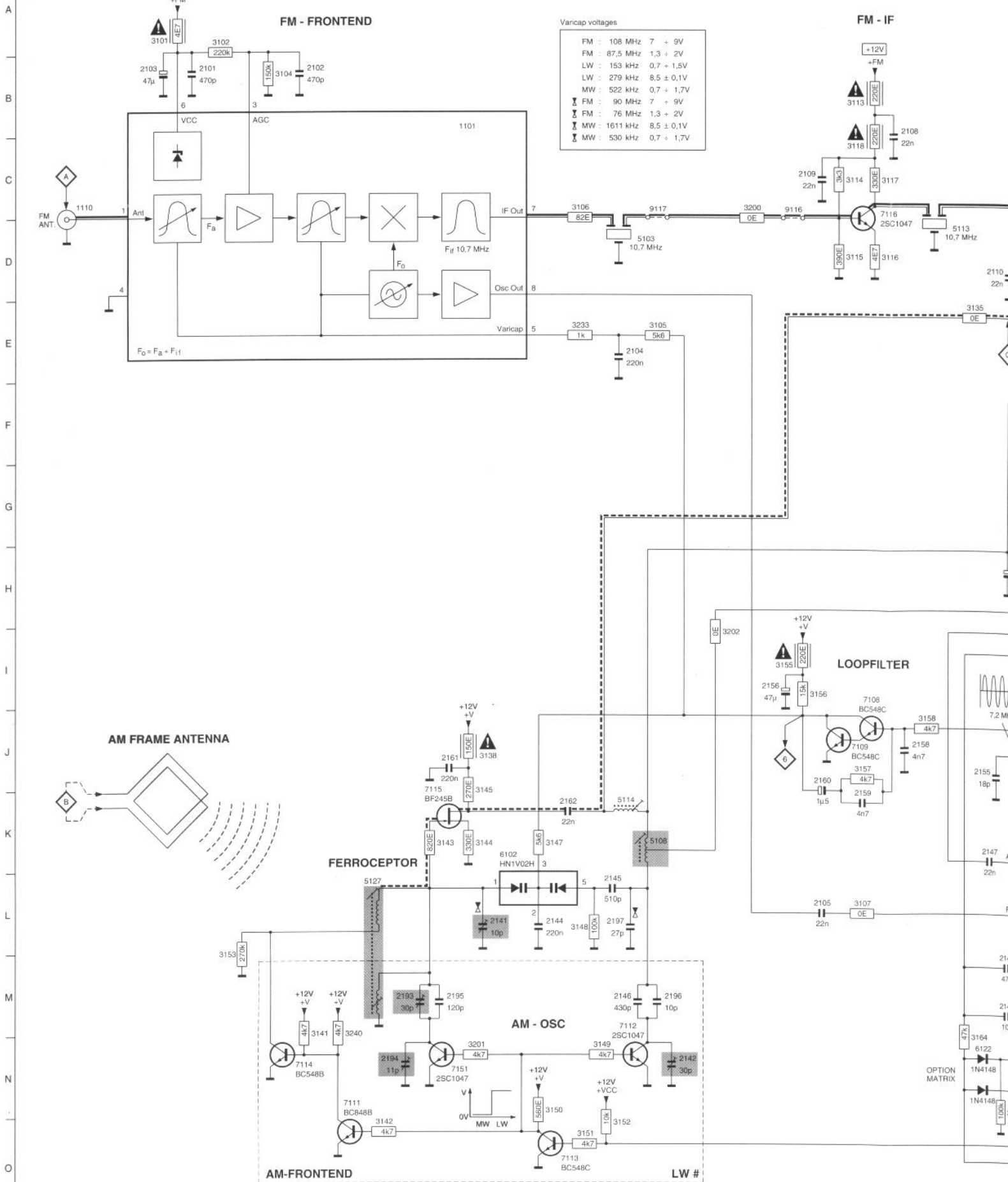
1200 E 1	1260 E 4	2250 C 1	3203 A 1	3210 A 1	6201 A 3	7203 A 1	9260 D 3
1201 A 1	2200 A 4	2251 C 1	3204 A 1	3211 A 1	6250 C 1	9250 D 3	9261 C 2
1202 C 1	2201 A 4	2252 D 1	3205 A 2	3212 A 2	6251 C 1	9251 D 3	9262 C 2
1250 B 2	2202 A 2	2253 D 1	3206 A 2	3250 D 1	6252 C 1	9252 D 4	9263 C 2
1251 B 2	2203 A 2	3200 A 4	3207 A 2	5250 B 3	6253 C 1	9253 D 3	
1252 B 1	2204 A 2	3201 A 3	3208 A 2	5251 E 1	7200 A 3	9255 E 1	
1253 B 1	2205 A 3	3202 A 1	3209 A 4	6200 A 4	7201 A 3	9256 E 2	

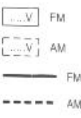




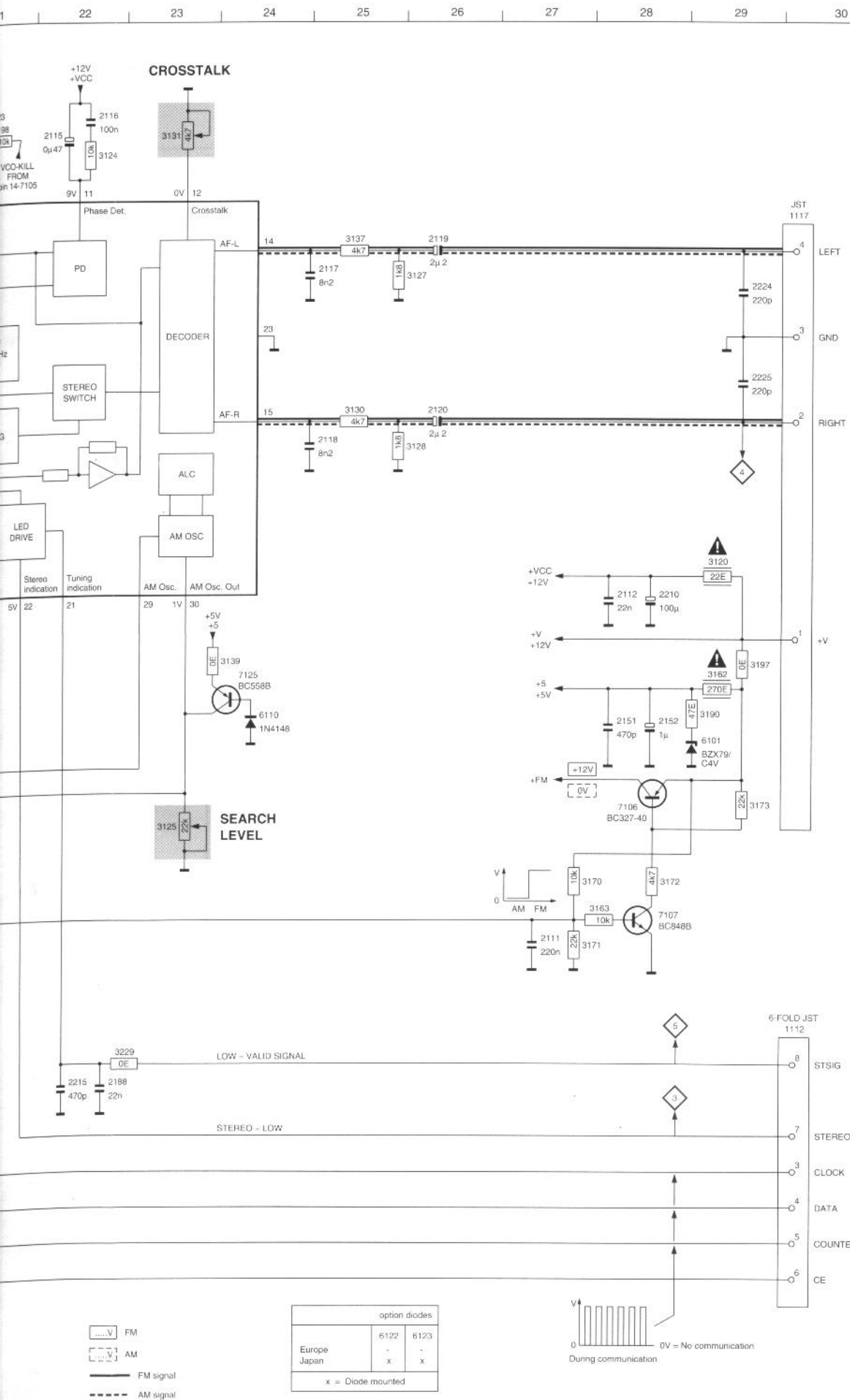


## TUNER UNIT









1101	B6	3190	H29
1110	C1	3194	B20
1112	K30	3196	G20
1117	B30	3197	G29
2101	B3	3198	A21
2102	B4	3200	C9
2103	B2	3201	N6
2104	E8	3202	I9
2105	L10	3223	G16
2108	B11	3225	L19
2109	C10	3229	K22
2110	D12	3233	E7
2111	J27	3236	G15
2112	F28	3238	G20
2113	A15	3239	G14
2114	A20	3240	N4
2115	B22	5103	D8
2116	A22	5104	A16
2117	C25	5105	A18
2118	E25	5106	G18
2119	C26	5108	K8
2120	D26	5110	B15
2121	H13	5111	B19
2123	G15	5112	J13
2124	H14	5113	D12
2125	H15	5114	K8
2126	G16	5127	L5
2127	H18	6101	H29
2128	H19	6102	K6
2129	G19	6110	H24
2131	G17	6122	N12
2141	L6	7103	C13
2142	N9	7104	B20
2144	L7	7105	I14
2145	L8	7106	I28
2146	M8	7107	J28
2147	K12	7108	I11
2148	M12	7109	J11
2149	M12	7111	N4
2150	O18	7112	M8
2151	H28	7113	O7
2152	H28	7114	N4
2153	N19	7115	K5
2154	K13	7116	C11
2155	J12	7125	G24
2156	J10	7151	N6
2158	J11	9116	C10
2159	K11	9117	C8
2160	J10		
2161	J6		
2162	K7		
2188	L22		
2193	M5		
2194	N5		
2195	M6		
2196	M8		
2197	L8		
2210	F28		
2215	L22		
2216	N20		
2221	G15		
2224	C29		
2225	D29		
3101	A2		
3102	A3		
3104	B4		
3105	E8		
3106	C7		
3107	L11		
3113	B11		
3114	C11		
3115	D11		
3116	D11		
3117	C11		
3118	C11		
3120	F29		
3121	A16		
3122	B18		
3123	A21		
3124	B22		
3125	I23		
3126	J19		
3127	C26		
3128	E26		
3129	G17		
3130	D25		
3131	B23		
3132	G19		
3133	G15		
3134	G13		
3135	E12		
3137	C25		
3138	J6		
3139	G24		
3141	N4		
3142	O5		
3143	K6		
3144	K6		
3145	K6		
3147	K7		
3148	L7		
3149	N7		
3150	N7		
3151	O7		
3152	O8		
3153	M3		
3155	I10		
3156	I10		
3157	J11		
3158	J11		
3159	N13		
3160	N13		
3162	G29		
3163	J27		
3164	N12		
3165	M19		
3166	M19		
3167	N19		
3168	L19		
3170	J27		
3171	J27		
3172	J28		
3173	I29		

## Dismantling hints CD Short Loader

### Dismantling the tray

- a) Press open/close button to open the tray. If the tray doesn't work, use a small screw driver as shown in Fig.1 point 1 to move the tray outside. After the first centimeter it is possible to pull the tray out by hand.
- b) Release two snaps and remove tray.

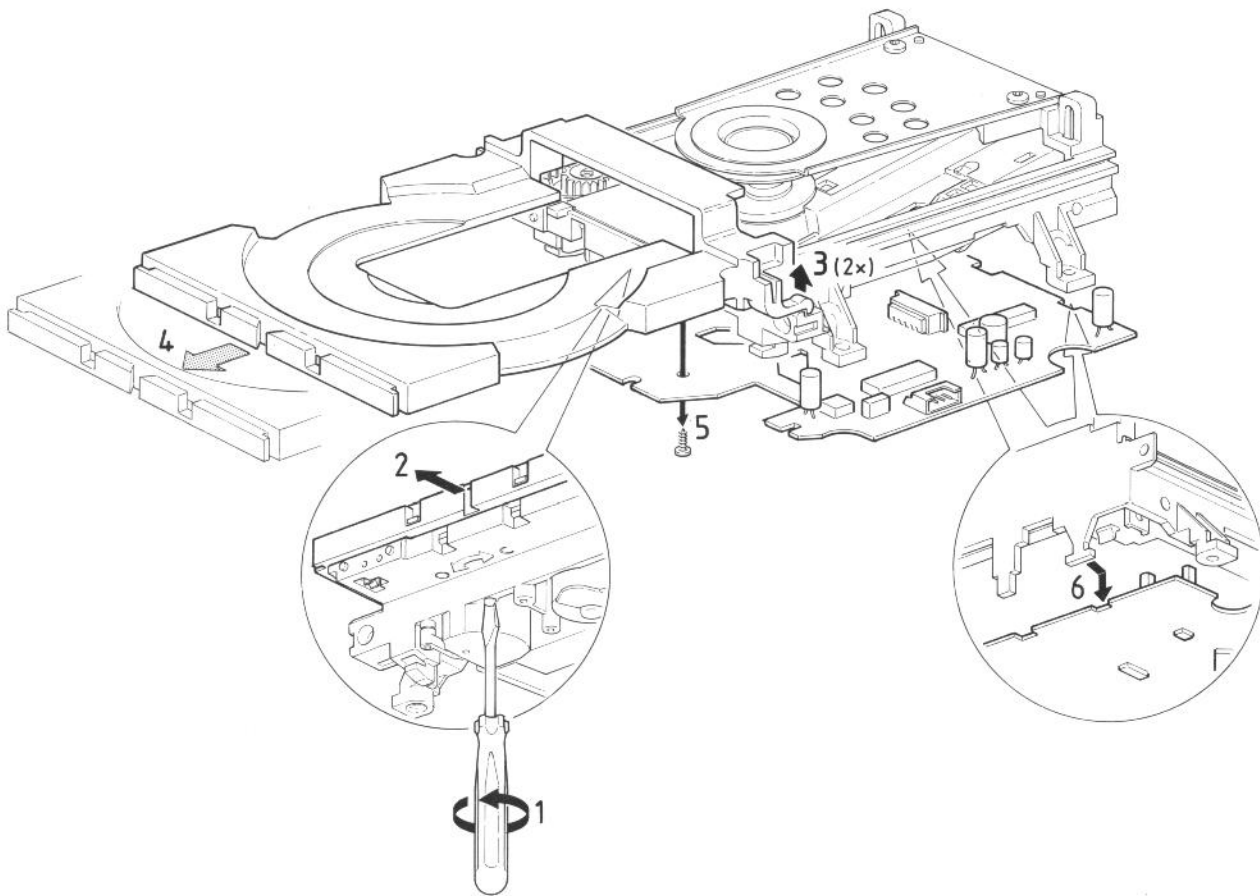
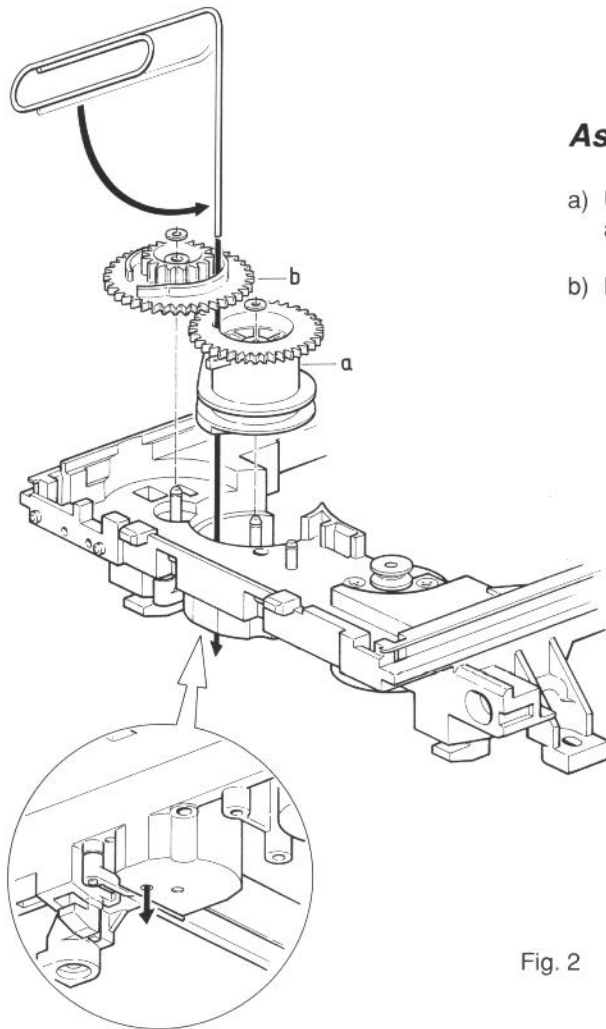


Fig. 1



### ***Assembly of gear***

- a) Use a pin (e.g. a paperclip) to align the cam wheel (a) and the gear wheel (b) together. See Fig. 2.
- b) Fix the wheels with the small plastic washers.

Fig. 2

- c) Mount idle wheel2 (c) and idle wheel1 (d) in any position. See Fig. 3.
- d) Fix the idle wheel1 with the small plastic washer.
- e) Mount the driving belt.

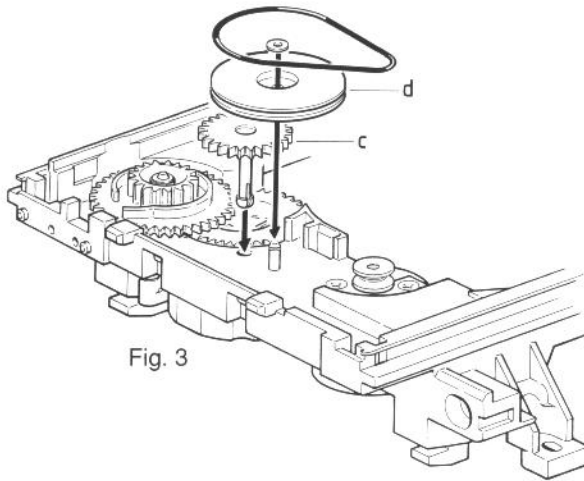


Fig. 3

heel (a)

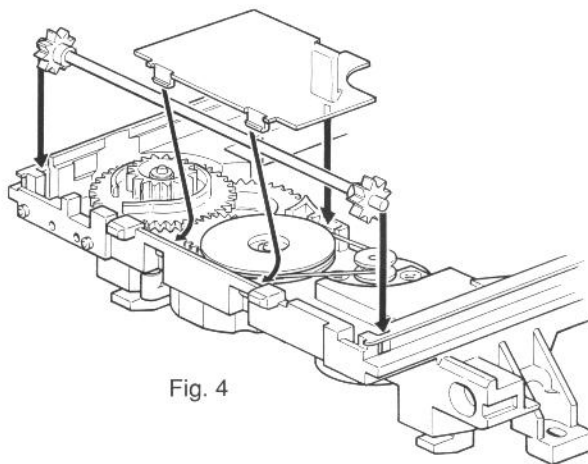


Fig. 4

- f) Mount the pinion guiding assy and the cover as shown in Fig. 4.
- g) Turn the gear wheel (b) counter clockwise to endposition.

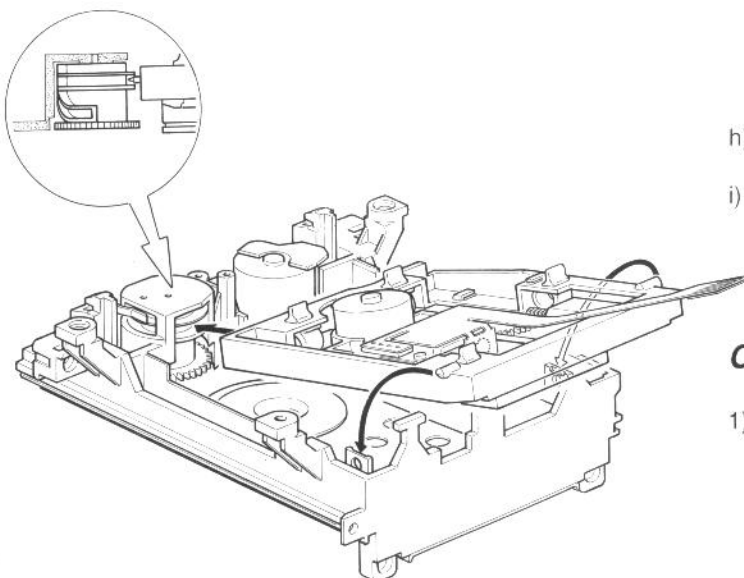


Fig. 5

- h) Mount the CD Mechanism as shown in Fig. 5.
- i) Mount the tray. (Align the tray to the chassis and push it inside)

### ***Check if tray mechanism works correct!***

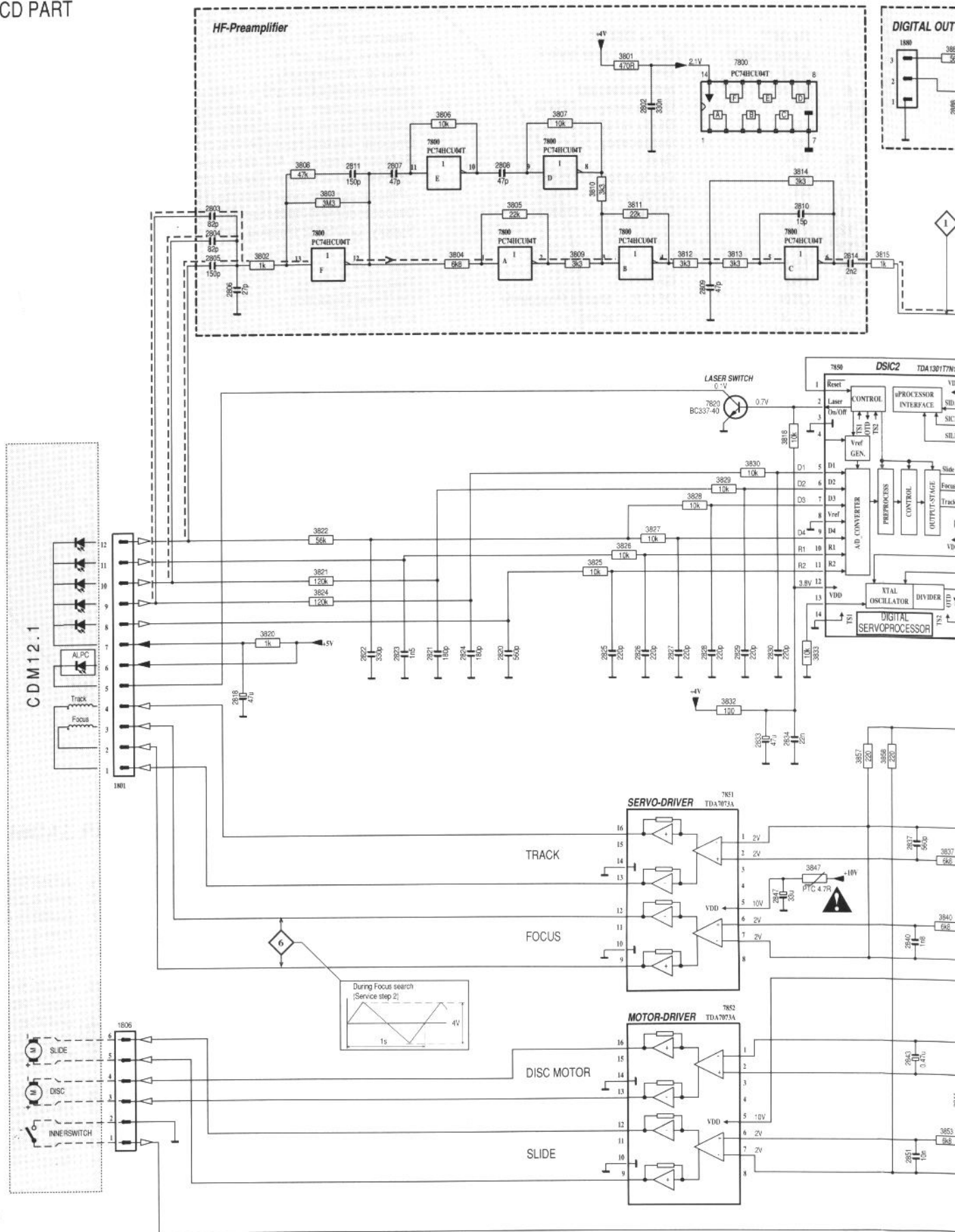
- 1) Turn the gear wheel (b) clockwise to its endposition. (Use a small screwdriver as shown in Fig. 1 point 1)

The tray has to move to inner position first and than the CD Mechanism has to move to its upper position.

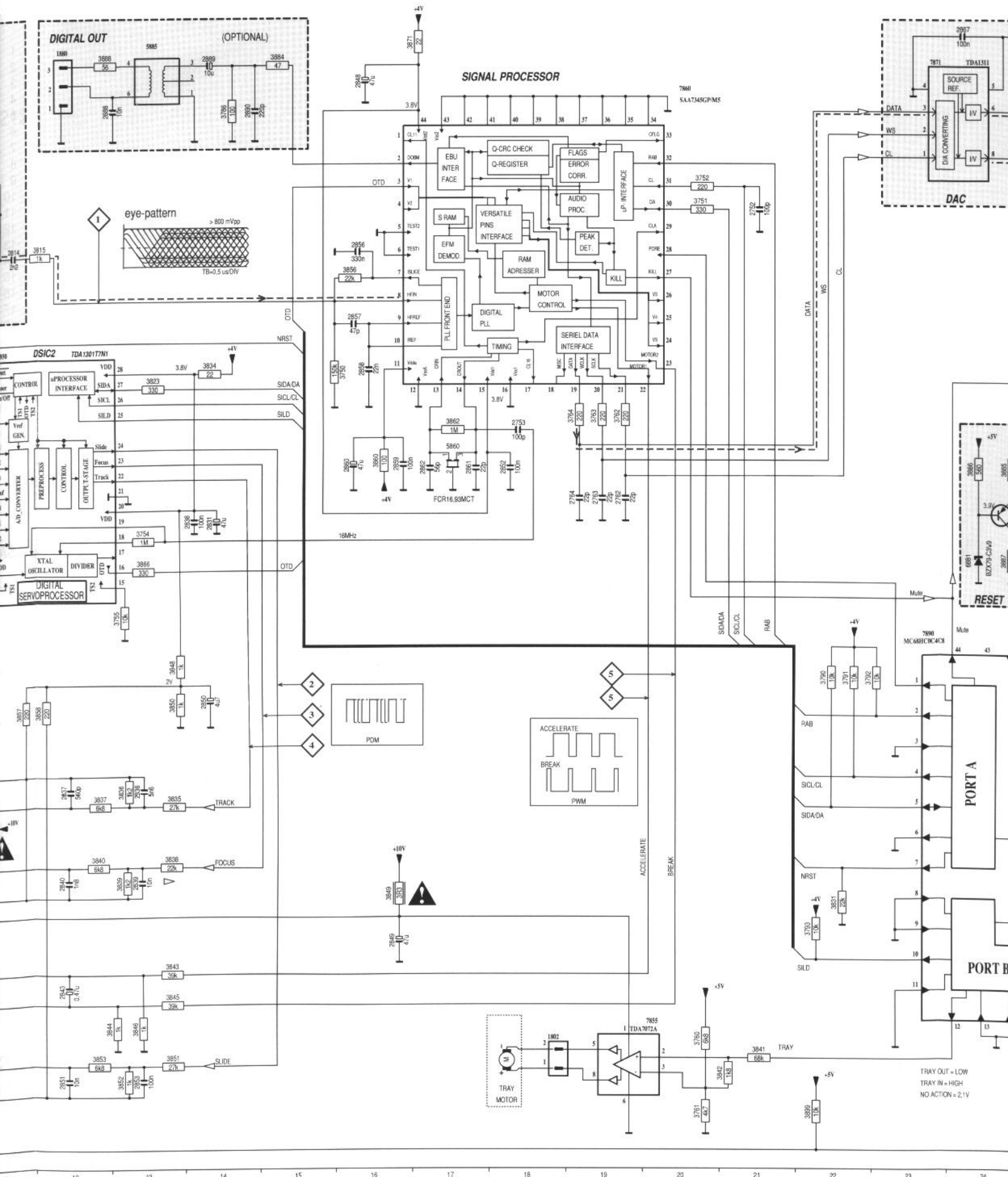
- 2) Turn the gear wheel (b) counter clockwise to its endposition.

The CD Mechanism has to move to its lower position first and than the tray has to move to outside.

## CD PART

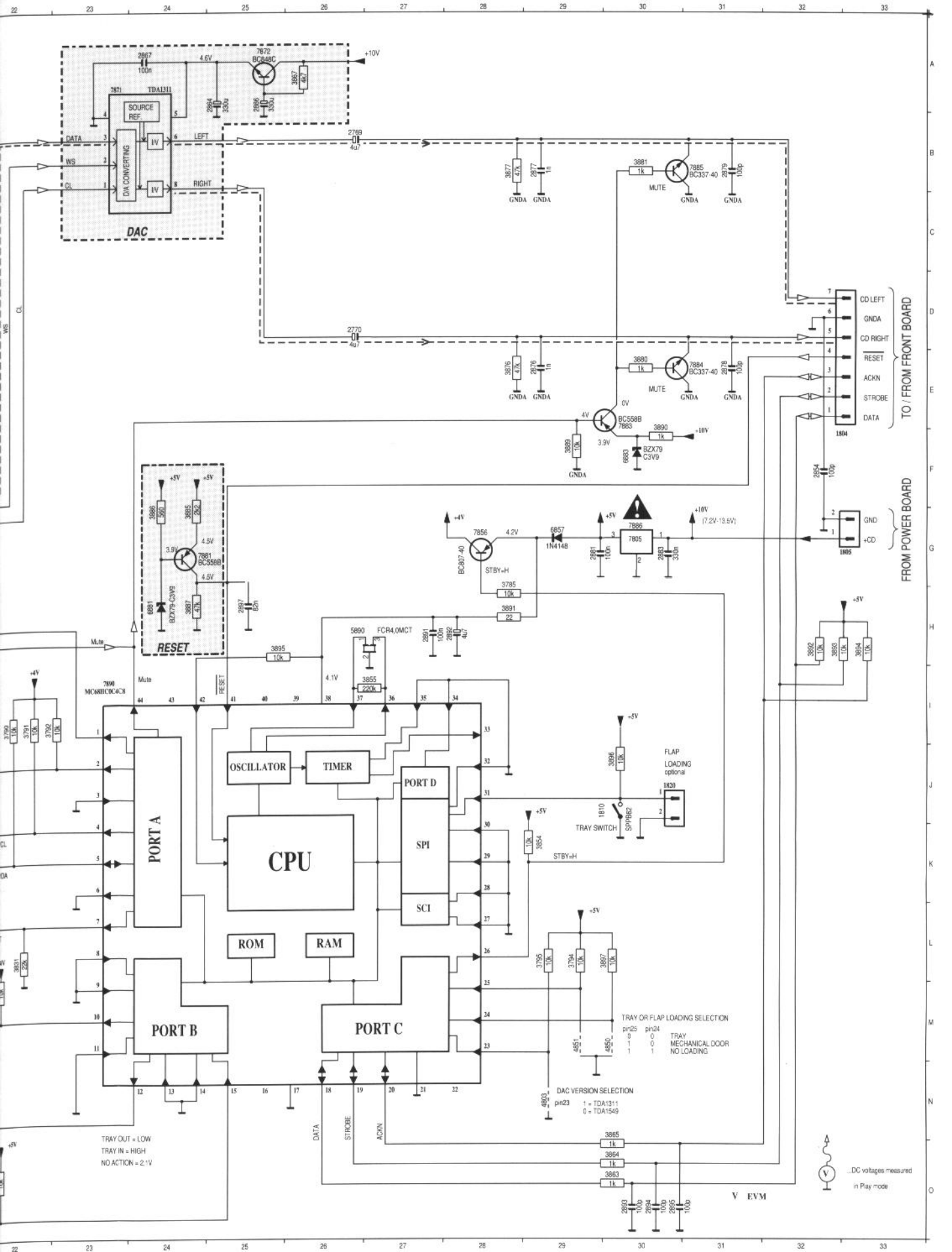


H10	2834	J10	2839	L13	2848	A16	2852	G18	2857	E16	2861	G17	2867	A24	2879	B31	2889	A14	2893	O30	3750	E16
H10	2836	K13	2840	L12	2849	M16	2853	O13	2858	E16	2862	G17	2876	E29	2881	G29	2890	B14	2894	O30	3751	C20
H14	2837	K12	2843	M12	2850	J14	2854	F32	2859	F16	2864	A25	2877	B29	2883	G30	2891	H27	2895	O30	3752	C20
J10	2838	H14	2847	L10	2851	O12	2856	D16	2860	F16	2866	A25	2878	E31	2888	B12	2892	H28	2897	H25	3754	G13

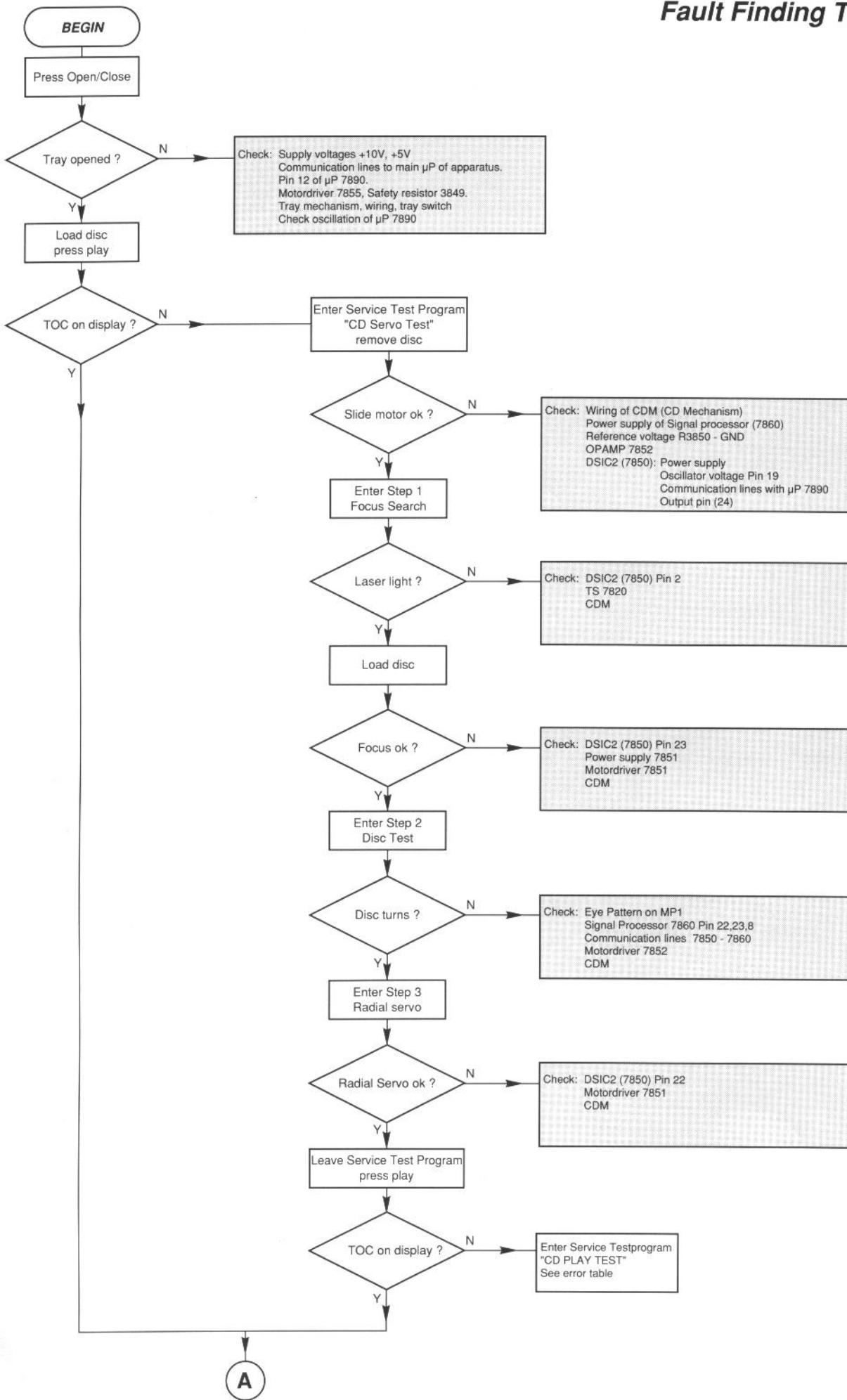


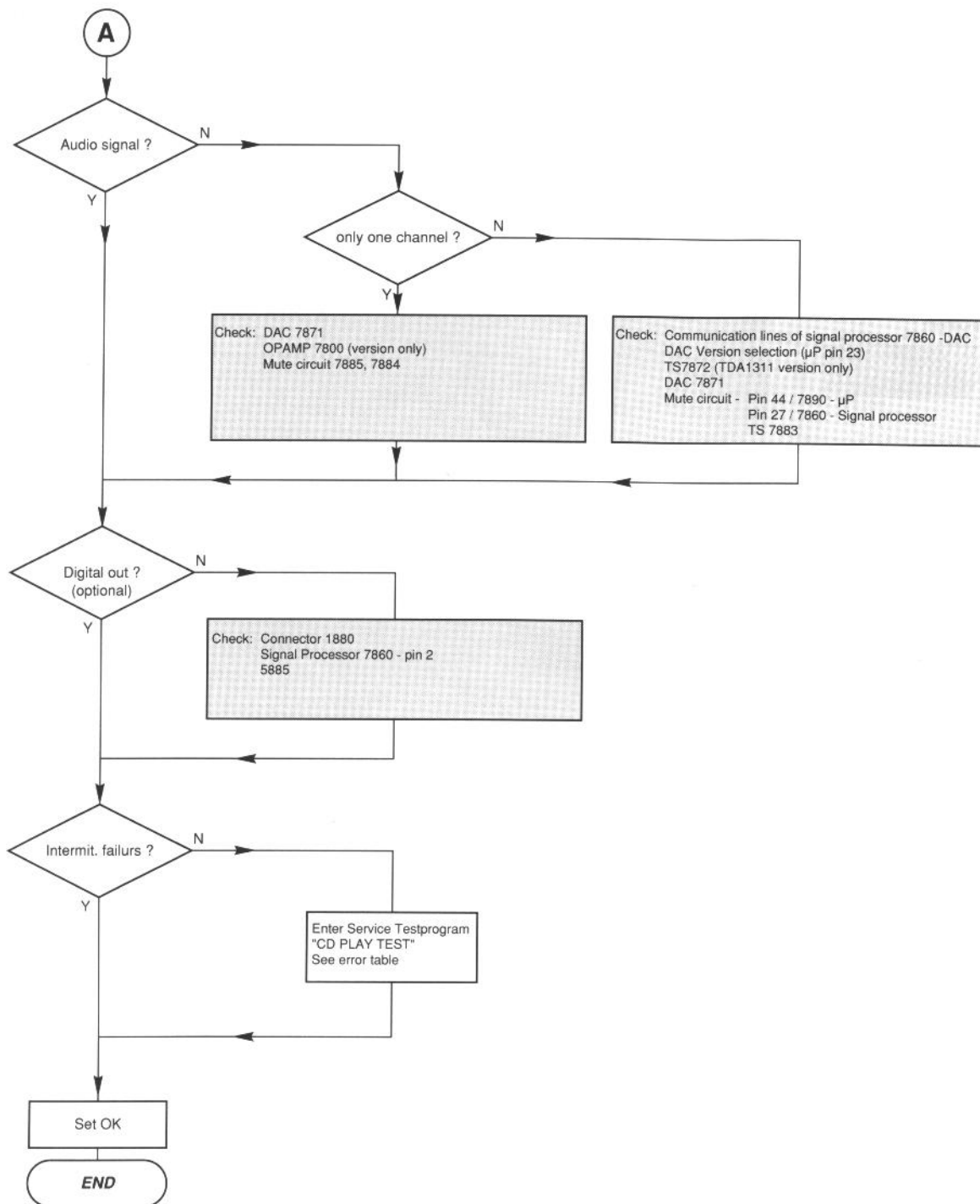


2893	O30	3750	E16	3755	H13	3763	F19	3785	H28	3792	I22	3801	A8	3805	C7	3809	D8	3813	D10	3820	H4
2894	O30	3751	C20	3760	N20	3764	F19	3786	B14	3793	M22	3802	D4	3806	B6	3810	C8	3814	C11	3821	H5
2895	O30	3752	C20	3761	O20	3767	A29	3790	I22	3794	L29	3803	C5	3807	B8	3811	C9	3815	D12	3822	G5
2897	H25	3754	G13	3762	F19	3770	D29	3791	I22	3795	L29	3804	D6	3808	C5	3812	D9	3818	F10	3823	E13



## Fault Finding Tree CD





Abb

DSIC2

Pin M

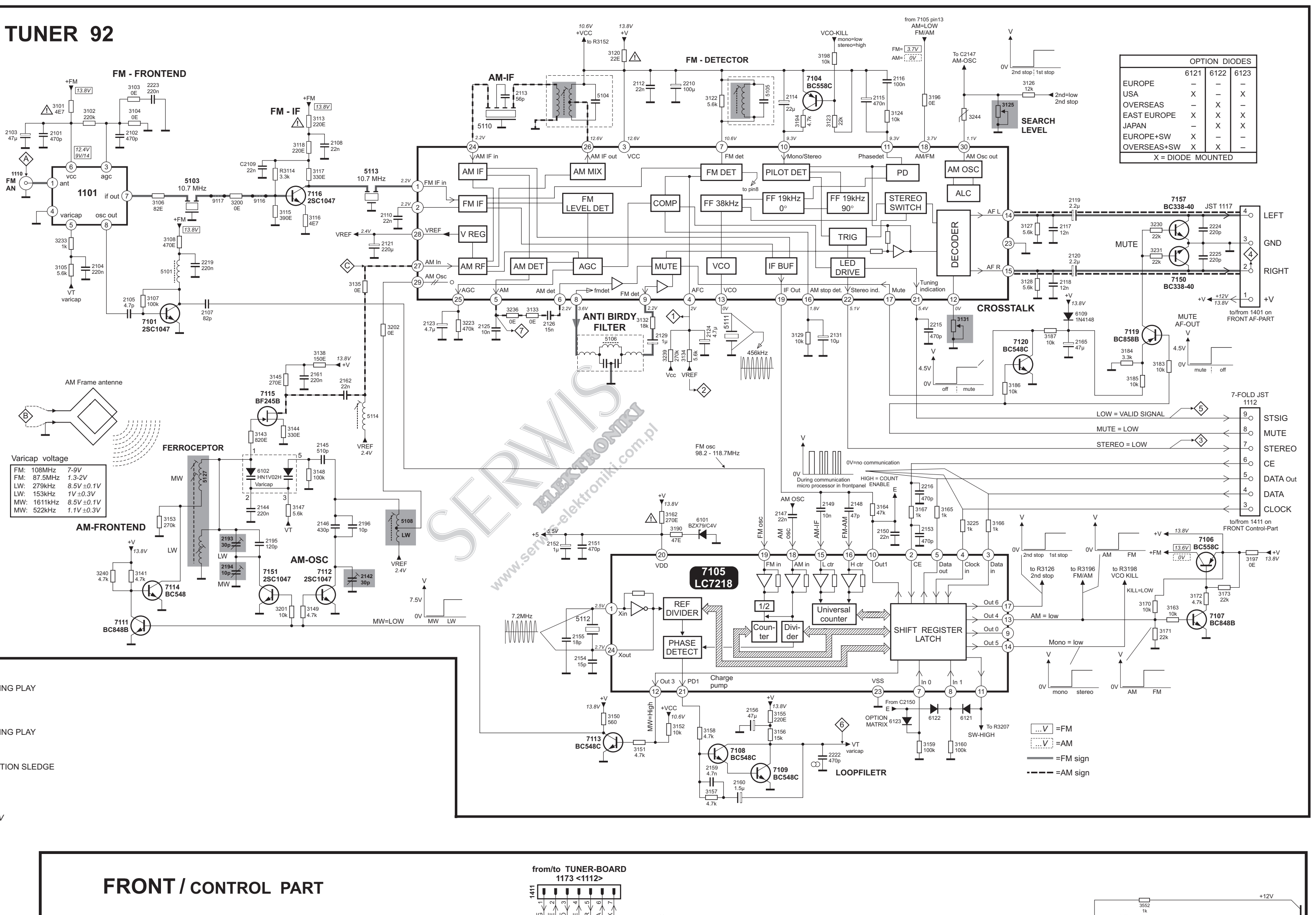
1	R
2	L
3	G
4	V
5	D
6	D
7	D
8	V
9	D
10	R
11	R
12	V
13	
14	TS
15	TS
16	O
17	CL
18	XT
19	XT
20	V
21	G
22	Tr
23	F
24	SI
25	SI
26	SI
27	SI
28	VD

SIGNA

Pin N

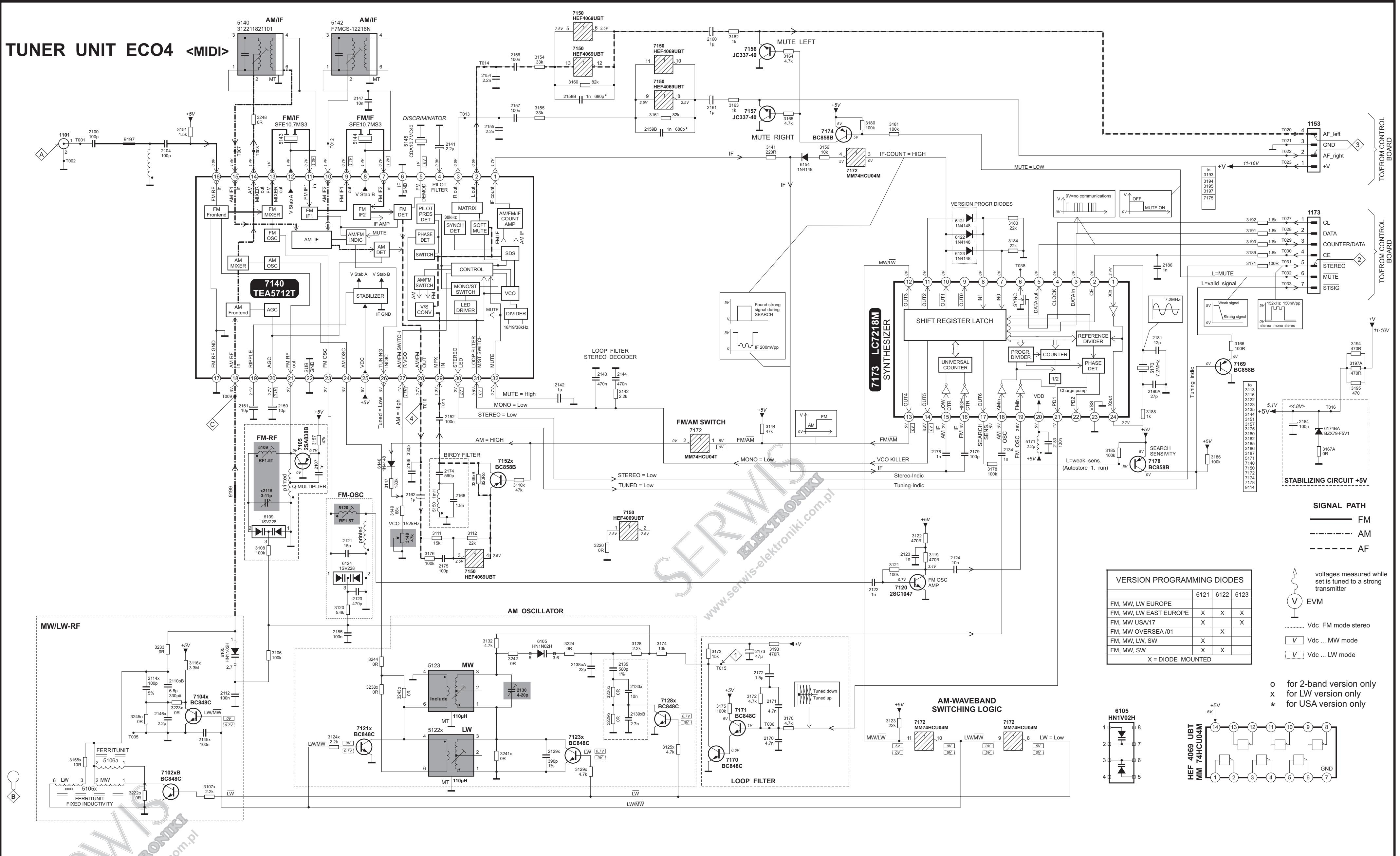
1	CL
2	DC
3	V1
4	V2
5	Te
6	Te
7	ISL
8	HF
9	HF
10	IRE
11	VD
12	VS
13	CR
14	CR
15	VD
16	VS
17	CL
18	MIS
19	DA
20	WC
21	SC
22	MO
23	MO
24	V5
25	V4
26	V3
27	KIL
28	PO
29	CLA
30	DA
31	CL
32	RAF
33	CFI
43	VSS
44	VD



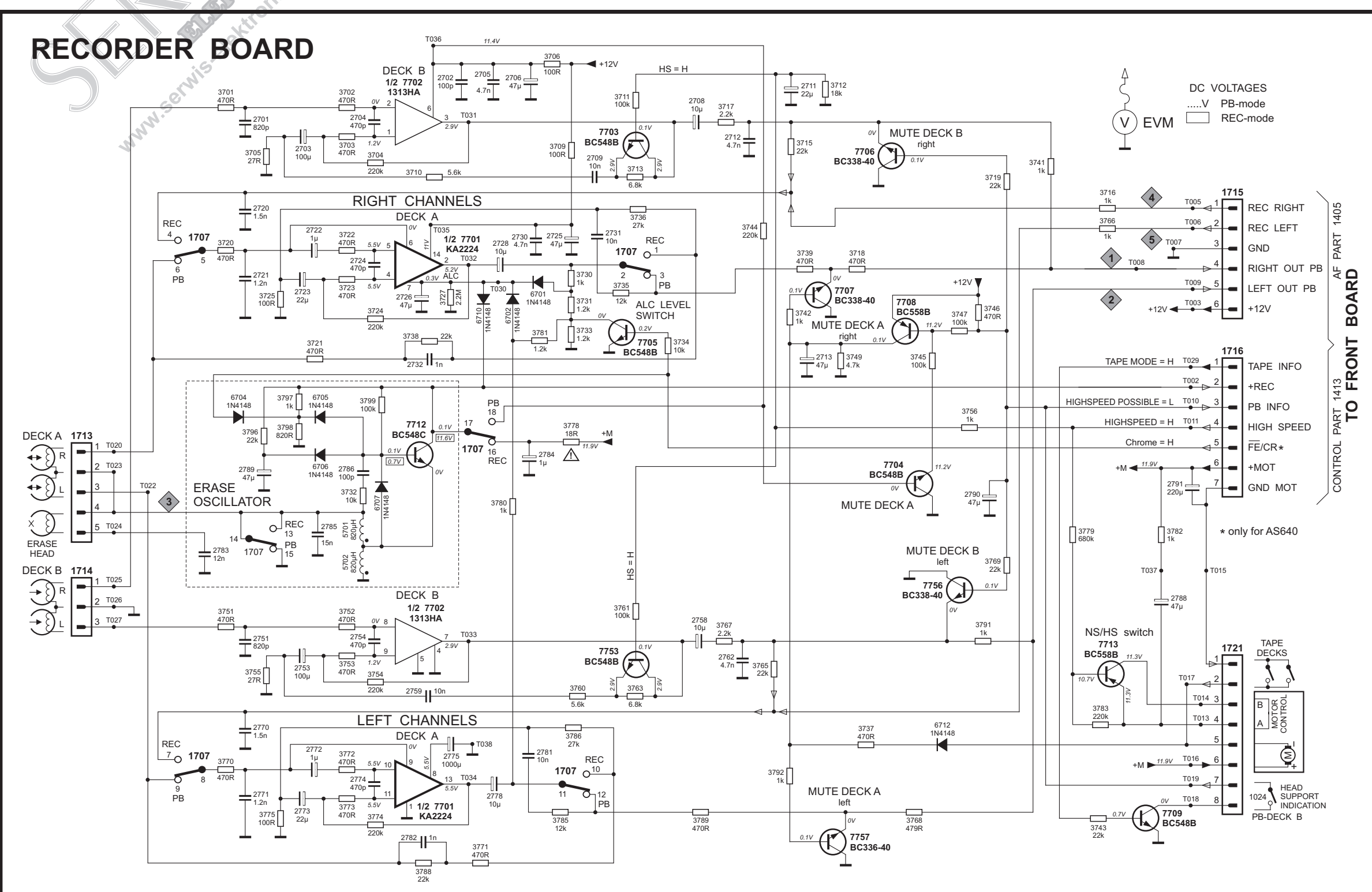




## TUNER UNIT ECO4 <MIDI>



## RECORDER BOARD



## BLOCK DIAGRAM

