Mini System

FW306/21/21M/22/34

Service
Service
Service

Service Manual

COMPACT disc DIGITAL AUDIO

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CLASS 1 LASER PRODUCT

Published by KC 9819 Service Audio Printed in The Netherlands Subject to modification

GB 4822 725 25796

PCS 100 382

PHILIPS

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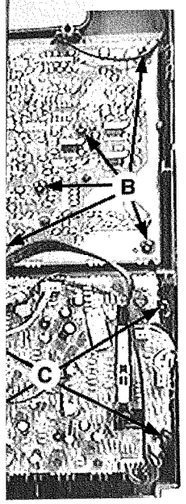
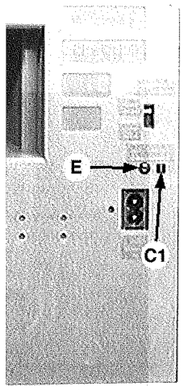
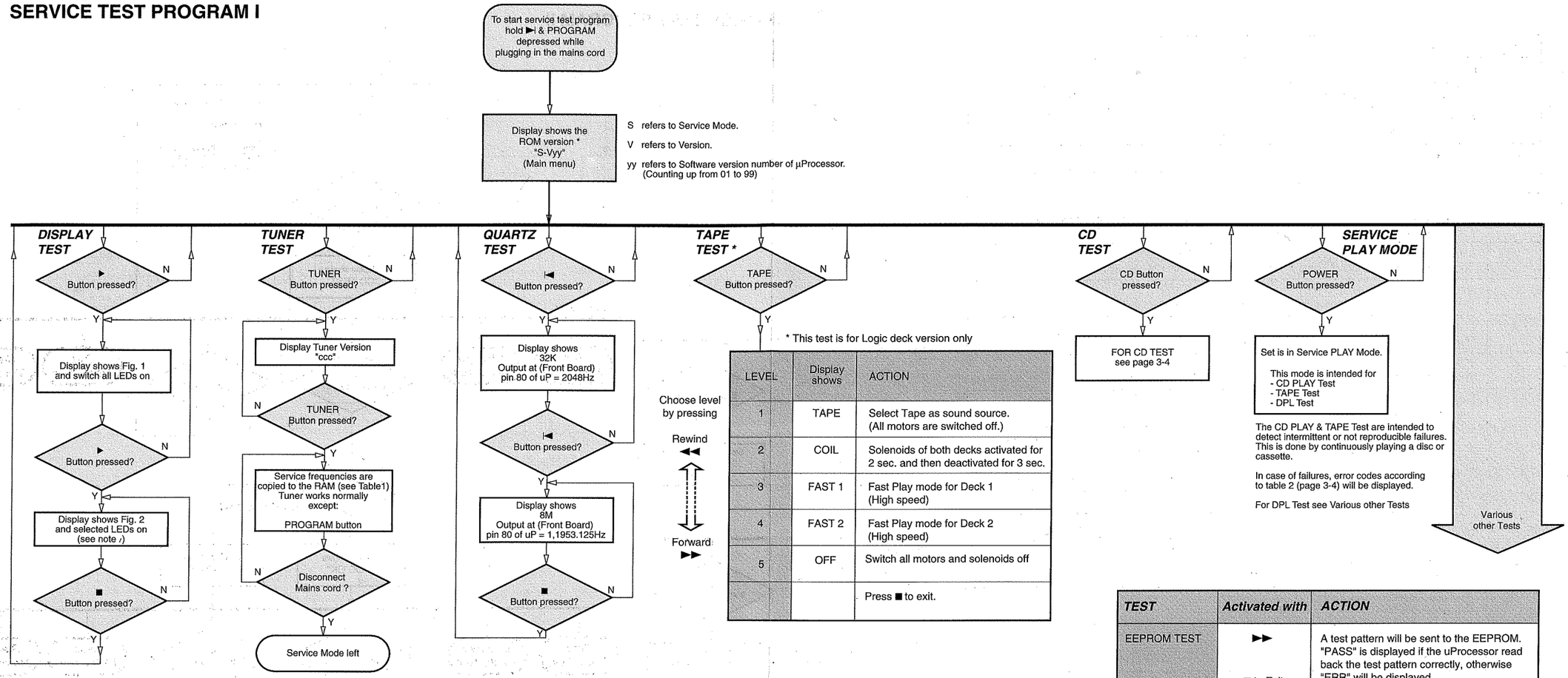
SERVICE TEST PROGRAM I







* This test is for Logic deck version only

Choose level by pressing
Rewind ◀◀
Forward ▶▶

LEVEL	Display shows	ACTION
1	TAPE	Select Tape as sound source. (All motors are switched off.)
2	COIL	Solenoids of both decks activated for 2 sec. and then deactivated for 3 sec.
3	FAST 1	Fast Play mode for Deck 1 (High speed)
4	FAST 2	Fast Play mode for Deck 2 (High speed)
5	OFF	Switch all motors and solenoids off
		Press ■ to exit.

PRESET	Europe "EUR"	East Eur. 3-band "EAS"	East Eur. 2-band "EAS"	USA "USA"	Oversea "OSE"	Korea "KOR"	Japan "JAP"
1	87.5MHz	65.81MHz	65.81MHz	87.5MHz	87.5MHz	87.5MHz	76MHz
2	108MHz	108MHz	108MHz	108MHz	108MHz	108MHz	CH3 107.75MHz
3	531kHz	74MHz	74MHz	530kHz	531/530kHz	531kHz	90MHz
4	1602kHz	87.5MHz	87.5MHz	1700kHz	1602/1700kHz	1602kHz	CH1 95.75MHz
5	558kHz	531kHz	531kHz	560kHz	558/560kHz	558kHz	CH2 101.75MHz
6	1494kHz	1602kHz	1602kHz	1500kHz	1494/1500kHz	1494kHz	531kHz
7	153kHz	558kHz	558kHz	98MHz	87.5MHz	87.5MHz	1602kHz
8	279kHz	1494kHz	1494kHz	87.5MHz	87.5MHz	87.5MHz	558kHz
9	198kHz	153kHz	98MHz	87.5MHz	87.5MHz	87.5MHz	1494kHz
10	98MHz	279kHz	70.01MHz	87.5MHz	87.5MHz	87.5MHz	80MHz
11	87.5MHz	198kHz	65.81MHz	87.5MHz	98MHz	98MHz	76MHz

Table 1

East Europe TUNER IF offset correction

1) Input a reference frequency 87.5MHz from the generator.

2) Proceed to the Tuner Test Mode

3) Hold TUNER button down for > 3 seconds

4) The set will self-calibrate automatically and display "OFS-xx" when calibration is successful, otherwise it will display "00E".

xx : offset value between -3 to +3

Note: This has to be done whenever the Eeprom, Microprocessor or the components in the oscillator circuitry are replaced.

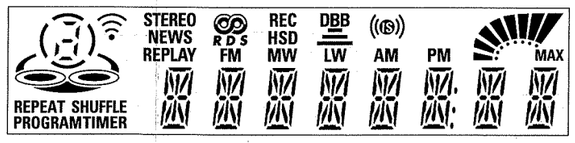
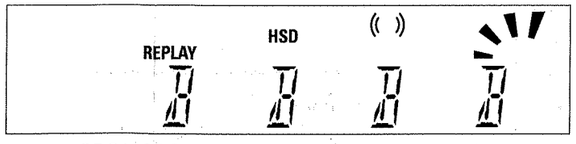


Figure 1



note /: CDC1, CDC3, Tuner, Optimal, Rock, ◀◀, ■ and I◀.

Figure 2

TEST	Activated with	ACTION
EEPROM TEST	▶▶ ■ to Exit	A test pattern will be sent to the EEPROM. "PASS" is displayed if the uProcessor read back the test pattern correctly, otherwise "ERR" will be displayed.
EEPROM FORMAT	◀◀	Load default data. Display shows "NEW" for 1 second. ***Caution!*** ***All presets from the customer will be lost!!***
KEY TEST	▶I ■ to Exit	Key numbers according table 3 are shown on the display. (see Chapter 3-4)
FAST CLOCK TEST	CLOCK/TIMER	The clock is switched to fast mode. "FAST" is displayed for 1 sec. Press CLOCK/TIMER again to reset the clock to normal. "NORMAL" displayed for 1 sec.
VOLUME TEST	Volume Knob	Display shows volume value for 2 seconds. Volume increases or decreases in steps of 1 until 0 (Min.) or 40 (Max.) is reached.
LEAVE SERVICE TESTPROGRAM	Disconnect mains cord	

Error code	Type	Error Description
E1000	W	Focus Error Triggered when the focus could not be found within a certain time when starting up the CD or when the focus is lost for a certain time during play.
E1001	W	Radial Error Triggered when the radial servo is off-track for a certain time during play.
E1002	W	Sledge In Error The sledge did not reach its inner position (inner-switch is still close) before approximately 6 Sec. have passed. Inner-switch or sledge motor problem.
E1003	W	Sledge Out Error The sledge did not come out of its inner position (inner-switch is still open) before approximately 250 mSec. have passed by. Inner-switch or sledge motor problem.
E1005	W	Jump-offtrack error Triggered in normal play when the jump destination could not be found within a certain time.
E1006	W	Subcode Error (no subcode within time) Triggered when a new subcode was missing for a certain time during play.
E1007	W	PLL Error The Phase Lock Loop could not lock within a certain time.
E1008	W	Turntable Motor Error Generated when the CD could not reached 75% of speed during startup within a certain time. Discmotor problem.
E1020	F	Focus Search Error The focus point has not been found within a certain time.
E1070	W	The carousel switch is not open within time. This can happen when either the switch is defective and closed all the time, or when the carousel is blocked when located exactly at a disc position.
E1071	W	The carousel position switch did not close within a certain time. This can happen when the switch is defective and never closes electrically, or when the carousel is blocked in between two disc positions. The time-out is approximately 5 Sec.
E1079	W	The drawer could not enter the inside position is opening again. This can be caused because the drawer is blocked by something and cannot go fully inside, or the drawer switch is defective and does not close.
E2020	F	Head Movement Error Deck 1 Generated if the head does not reach the desired position within a certain time.
E2021	F	Head Movement Error Deck 2 Generated if the head does not reach the desired position within a certain time.

F = Fatal error & the set stop play function W = Warning

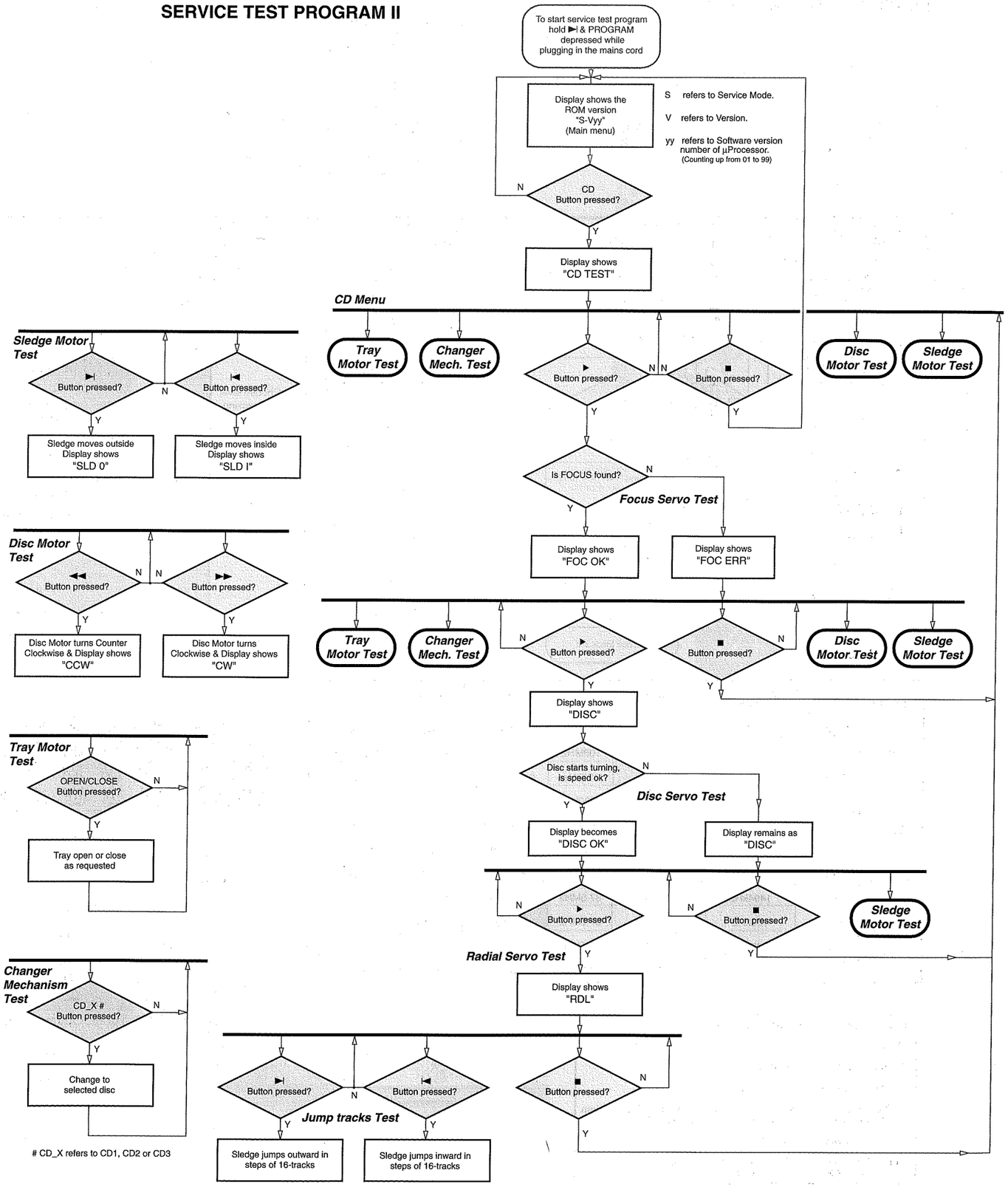
Table 2

Keys activated	Display shows	Keys activated	Display shows	Keys activated	Display shows
No Key pressed	--	CLOCK /TIMER	10	RECORD *	21
Any Remote control key	RC	PROGRAM	11	REPLAY *	22
CD1 *	1	INCRSURROUND *	12	◄◄	23
CD2 *	2	VOLUME UP *	13	►►	24
CD3 *	3	VOLUME DOWN *	14	■	Exit
CHANGE CD	4	STANDBY - ON	15	►II	26
OPEN / CLOSE	5	CD	16	I◄	27
DSC	6	TUNER	17	►I	28
DBB	7	TAPE	18		
RDS *	8	AUX	19		
NEWS *	9	HSD	20		

* Not for all type/version

Table 3

SERVICE TEST PROGRAM II



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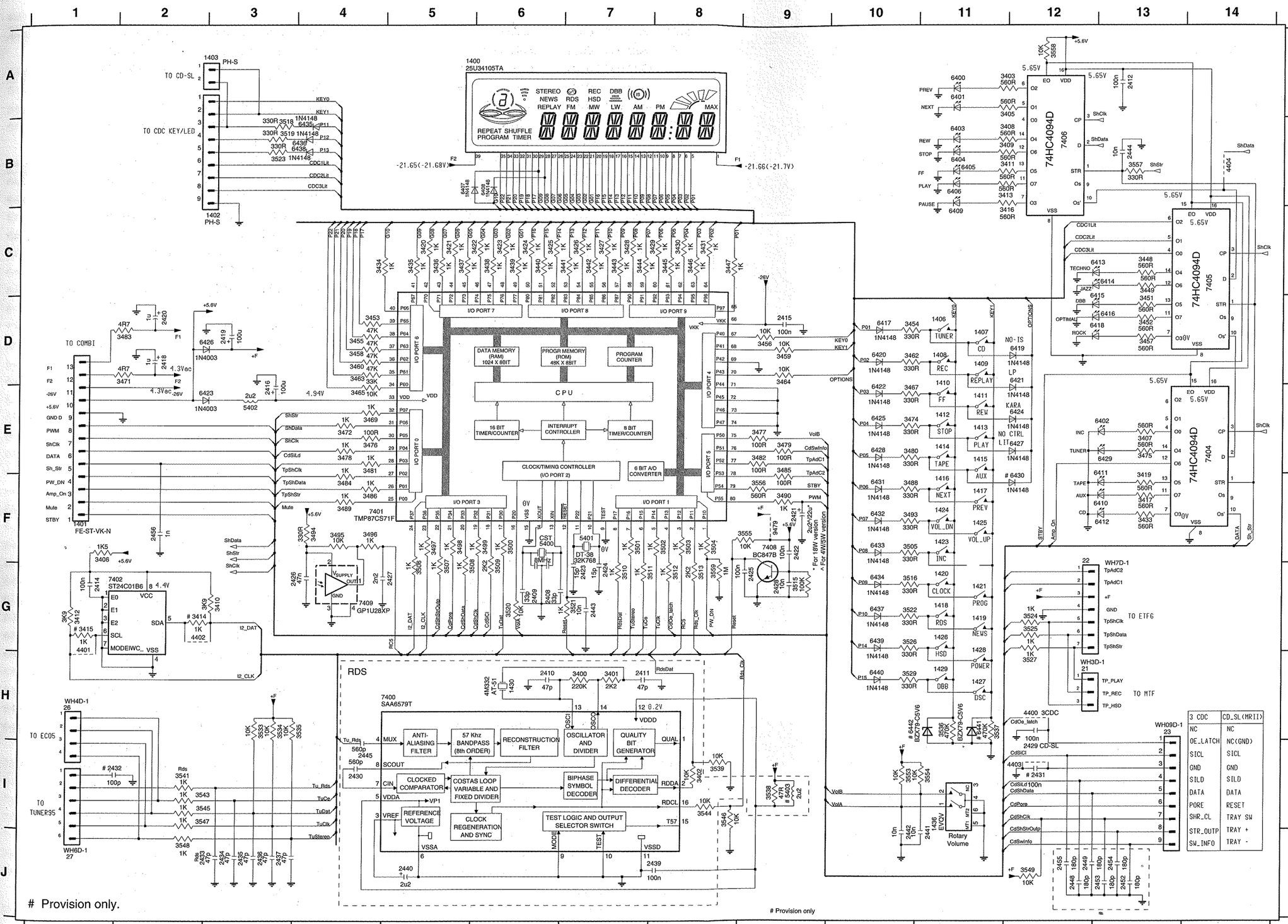
CIRCUIT DIAGRAM



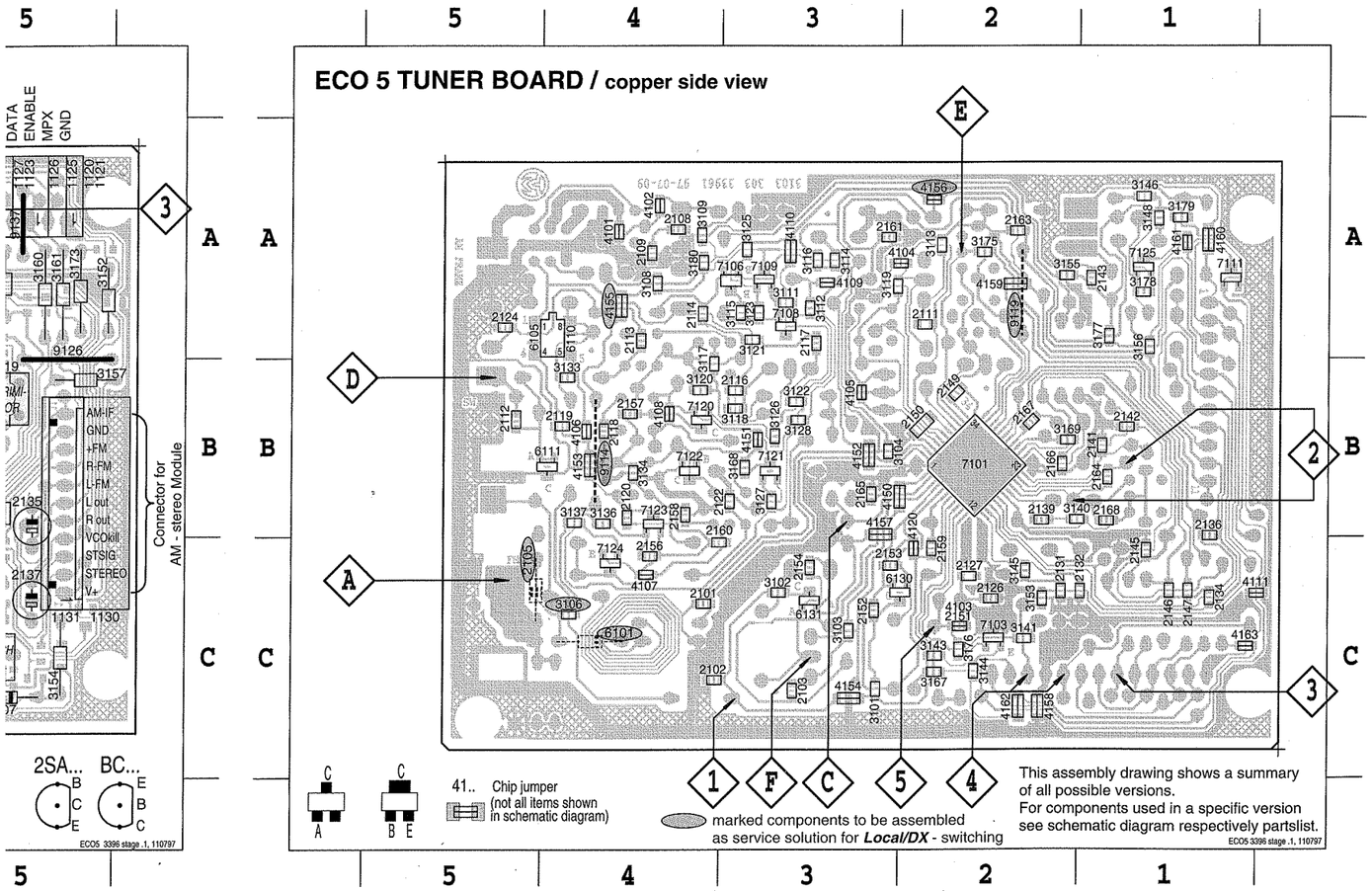
21 H12	3447 C8	6418 D13
22 G12	3448 C13	6419 D12
23 H13	3449 C13	6420 D10
26 H1	3451 D13	6421 D12
27 J1	3452 D13	6422 E10
1400 A5	3453 D4	6423 E2
1401 F1	3454 D10	6424 E12
1402 C2	3455 D4	6425 E10
1403 A2	3456 D9	6426 D2
1406 D11	3457 D13	6427 E12
1407 D11	3458 D4	6428 E10
1408 D11	3459 D9	6429 E13
1409 D11	3460 D4	6430 F12
1410 E11	3462 D10	6431 F10
1411 E11	3463 D4	6432 F10
1412 E11	3464 D9	6433 F10
1413 E11	3465 E4	6434 G10
1414 E11	3467 E10	6435 B4
1415 E11	3469 E4	6436 B4
1416 F11	3471 D2	6437 G10
1417 F11	3472 E4	6438 B4
1418 G11	3474 E10	6439 G10
1419 G11	3475 E13	6440 H10
1420 G11	3476 E4	6441 H11
1421 G11	3477 E9	6442 H10
1423 F11	3478 E4	7400 H4
1424 F11	3479 E9	7401 F4
1425 F11	3480 E10	7402 B1
1426 G11	3481 E4	7404 E14
1427 H11	3482 E9	7405 C14
1428 H11	3483 D2	7406 B12
1429 H11	3484 F4	7408 F9
1430 H6	3485 E9	7409 G4
1436 J11	3486 F4	9479 F9
2408 G6	3488 F10	
2409 G6	3489 F4	
2410 H6	3490 F9	
2411 H7	3493 F10	
2412 A13	3494 F4	
2414 G1	3495 F4	
2415 D9	3496 F4	
2416 E3	3497 F5	
2418 D2	3498 F5	
2419 D3	3499 F6	
2420 D2	3500 F6	
2421 F9	3501 F7	
2422 F9	3502 F8	
2423 G7	3503 F8	
2424 G7	3504 F8	
2425 G9	3505 F10	
2426 G3	3506 G5	
2427 G5	3507 G5	
2428 G9	3508 G5	
2429 I12	3509 G6	
2430 I4	3510 G7	
2431 I12	3511 G7	
2432 I1	3512 G8	
2433 J2	3513 G8	
2434 J3	3515 G9	
2435 J3	3516 G10	
2436 J3	3518 B3	
2437 J3	3519 B3	
2439 J8	3520 G6	
2440 J5	3521 G7	
2441 J11	3522 G10	
2442 J10	3523 B3	
2443 G7	3524 G12	
2444 B13	3525 G12	
2445 I4	3526 G10	
2448 J12	3527 H12	
2449 J12	3529 H10	
2452 J13	3533 H3	
2453 J13	3534 H3	
2454 J13	3535 H4	
2455 J12	3536 H11	
2456 F2	3537 H11	
3400 H7	3538 I9	
3401 H7	3539 I8	
3402 I8	3541 I2	
3403 A11	3543 I2	
3405 A11	3544 I8	
3406 F1	3545 I2	
3407 E13	3546 I8	
3408 B11	3547 I2	
3409 B11	3548 J2	
3410 G3	3549 J12	
3411 B11	3553 I10	
3412 G1	3554 I11	
3413 B11	3555 F9	
3414 G2	3556 F9	
3415 G1	3557 B13	
3416 C11	3558 A12	
3417 F13	3559 G8	
3419 E13	4400 H12	
3420 C5	4401 H1	
3421 C5	4402 G2	
3422 C6	4403 I12	
3423 C6	4404 B14	
3424 C6	5400 F6	
3426 C6	5401 F7	
3426 C7	5402 E3	
3427 C7	5403 I9	
3428 C7	6400 A11	
3429 C8	6401 A11	
3430 C8	6402 E13	
3431 C8	6403 B11	
3433 F13	6404 B11	
3434 C4	6405 B11	
3435 C5	6406 B11	
3436 C5	6407 B5	
3437 C5	6408 B6	
3438 C6	6409 C11	
3439 C6	6410 F13	
3440 C6	6411 F13	
3441 C7	6412 F13	
3442 C7	6413 C13	
3443 C7	6414 C13	
3444 C7	6415 D13	
3445 C8	6416 D13	
3446 C8	6417 D10	

D.C. VOLTAGES DURING ACTIVE PLAY
VALUES IN BRACKET ARE D.C. VOLTAGES AT STANDBY.

7B-2

B2 9129 B3
B4 9130 C3
C4 9131 A5
B4 9133 C3
A2 9134 B3
C3 9136 A5
B1 9137 A5
C4
A3
B5
A2

2101 C4 2102 C4 2103 C3 2108 A4 2109 A4 2111 A2 2112 B5 2113 A4 2114 A4 2116 B3 2117 A3
2118 B4 2119 B4 2120 B4 2122 B3 2124 A5 2126 C2 2127 C2 2131 C2 2132 C1 2134 C1 2136 B1
2139 B2 2141 B1 2142 B1 2143 A1 2145 C1 2146 C1 2147 C1 2149 B2 2150 B2 2151 C2 2152 C3
2153 C3 2154 C3 2156 C4 2157 B4 2158 B4 2159 C2 2160 C4 2161 A3 2163 A2 2164 B1 2165 B3
2166 B2 2167 B2 2168 B1 3101 C3 3102 C3 3103 C3 3104 B3 3106 C4 3108 A4 3109 A4 3111 A3
3112 A3 3113 A2 3114 A3 3115 A3 3116 A3 3117 B4 3118 B3 3119 A3 3120 B4 3121 A3 3122 B3
3123 A3 3125 A3 3126 B3 3127 B3 3128 B3 3133 B4 3134 B4 3136 B4 3137 A4 3140 B2 3141 C2
3143 C2 3144 C2 3145 C2 3146 A1 3148 A1 3153 C2 3155 A2 3156 A1 3167 C2 3168 B3 3169 B2
3175 A2 3176 C2 3177 A1 3178 A1 3179 A1 3180 A4 4101 A4 4102 A4 4103 C2 4104 A2 4105 B3
4106 B4 4107 C4 4108 B4 4109 A3 4110 C1 4111 C1 4120 C2 4126 C2 4150 B2 4151 B3 4152 B3
4153 B4 4154 C3 4155 A4 4156 A4 4157 B3 4158 C2 4159 A2 4160 A1 4161 A1 4162 C1 4163 C1
6105 A4 6110 A4 6111 B4 6130 C2 6131 C3 7101 B2 7103 A2 7106 A3 7108 A3 7109 A3 7111 A1
7120 B4 7121 B3 7122 B4 7123 B4 7124 C4 7125 A1



TUNER ADJUSTMENT TABLE (ECO5 FM/MW- and FM/MW/LW - versions with AM-frame aerial)

Waverange	Input frequency	Input	Tuned to	Adjust	Output	Scope/Voltmeter
VARICAP ALIGNMENT						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)			108MHz	5130	◇1	8V ±0.2V
			87.5MHz (65.81MHz)	check		4.3V ±0.5V (1.2V ±0.5V)
MW FM/AM-version, 10kHz grid 530 - 1700kHz			1700kHz	5123		8V ±0.2V
			530kHz	check		1.1V ±0.4V
FM/MW-version, 9kHz grid 531 - 1602kHz			1602kHz	5123		6.9V ±0.2V
			531kHz	check		1.1V ±0.4V
LW 153 - 279kHz			279kHz	5122		8V ±0.2V
			153kHz	check		1.1V ±0.4V
MW FM/MW/LW- version, 9kHz grid 531 - 1602kHz			1602kHz	5123		8V ±0.2V
			531kHz	check		1.1V ±0.4V
FM IF						
FM	10.7MHz, 50mV continuous wave	◇F	IC 7101 21 shortcircuit to block AFC 2141	5119	◇2	0 ± 3 mV DC
FM RF						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)	108MHz	◇A mod=1kHz Δf=±22.5kHz	108MHz	2155	◇4	MAX
	87.5MHz (65.81MHz)		87.5MHz (65.81MHz)	5131		
VCO						
FM	98MHz, 1mV continuous wave	◇A	98MHz	3142	◇3	152kHz ±1kHz 1)
AM IF						
MW	450kHz connect pin 6 of IC 7101 (AM Osc.) with short wire to ground (pin 4)	◇C Δf=±15kHz V_{RF} = 3mV	IC 7101 36 220R 100nF	5111	◇4	max. f_o symmetric
			IC 7101 40 220R 100nF see remark 2)	5112		
AM AFC **MW**		◇C continuous wave V_{RF} = 10mV		5114	◇2	0 ± 2 mV DC
AM RF 3)						
MW 4) FM/MW/LW- and FM/MW-version (9kHz grid) 531 - 1602kHz	1494kHz	◇B Δf = ±30kHz V_{RF} as low as possible	1494kHz	2106	◇4	max. f_o symmetric
	558kHz		558kHz	5102		
LW	198kHz		198kHz	5103		
MW FM/AM-version, 10kHz grid 530 - 1700kHz	1500kHz		1500kHz	2106		
	560kHz		560kHz	5102		

ECO5, discr. coil, 090797

Use service test program. By selecting the TUNER TEST test frequencies will be stored as preset frequencies automatically.

1) If sensitivity of frequency counter is too low adjust to max. channel separation (input signal: stereo left 90% + 9%, adjust output on right channel to minimum)

2) RC network serves for damping the IF-filter while adjusting the other one.

3) For AM RF adjustments the original frame antenna has to be used !

4) MW has to be aligned before LW.

Repeat

7B-3

TUNER BOARD ECO5 / Systems

VERSION PROGRAMMING COMPONENTS					
	6120	3156	3157	3170	remark
/00 FM/MW/LW	x	-	-	-	7111 not mounted
/00 FM/MW/LW/SW-Eu	-	-	-	-	
/01 FM/MW-Stereo	-	-	x	-	SW
/01 FM/MW	-	x	-	x	
/01 FM/MW/SW-Or	-	x	-	-	
/06 FM-Japan/MW-stereo	-	-	-	x	
/13 FM/MW-Stereo	-	-	x	-	SW
/14 FM-OIRT/MW/LW	x	-	x	x	
/14 FM-OIRT/MW	x	-	x	-	
/17 FM/AM-Stereo	-	-	x	-	SW
/17 FM/AM	x	-	-	x	
/.. FM/MW/2xSW	-	-	x	x	
/15 FM/MW/SW-Eu	-	x	x	x	

x = component mounted
SW = Software initialisation

Signal path
FM
AM
MPX (Audio Frequency)
AF - left/right
Vdc FM mode stereo
Vdc MW mode
Vdc LW mode
Voltages measured while set is tuned to a strong transmitter

r....for RDS version only
s...for East European version (/14/34) only
t....for Japanese version (/06/26) only
u...for 2-band (FM/AM) version only
v...for SW-version 3.9-12.1MHz only
w...for LW only
x....not for all versions
y....for USA version (/17/37) only
z....for AM-STEREO (/06/13/26/33) versions only

ECO5 systems, discr.coil, 240997

TUNER 95 bis Adjustment Table (FM, MW, LW with Frame antenna)

Waverange	Input frequency	Input	Set tuned to	Adjust	Output	Scope / Voltmeter
VARICAP ALIGNMENT						
FM (50)			108 MHz	check	6	7 ... 9V
87.5 - 108 MHz			87.5 MHz	check		1.3 ... 2V
MW (9)			1602 kHz	5123		8.3V ± 0.2V
531 - 1602 kHz			531 kHz	check		1V ± 0.4V
LW (3)			279 kHz	5122		8.3V ± 0.2V
153 - 279 kHz			153 kHz	check		1V ± 0.4V
FM – DETECTION						
FM	98 MHz 1mV continuous wave *short pin 21 (IC7101) to ground*	A	98 MHz	5107	1, 2	0mV ± 3mV
FM – VCO						
FM	98 MHz 1 mV continuous wave	A	98 MHz	3142	3	152kHz ± 1 kHz
DISTORTION						
FM	98 MHz 1 mV 90 % L + 9 % pilot mod = 1kHz	A	98MHz	mixcoil inside Tuner 1110	4	Distortion minimum
AM – IF						
MW	450kHz Δf = 10kHz Low as possible Swept signal	100nF 50E	MW	5111	7	symmetrical and max. height ↕
				5112		
	450kHz continuous wave	C		5114	1, 2	0mV ± 2mV
AM - RF						
MW	558kHz Mod = 1kHz 30 % AM 1494 kHz	B	558kHz	5102	7	MAX ↕
			1494kHz	2106		
LW	198kHz mod = 1kHz 30 % AM	*	198kHz	5103		MAX

adjtable for 3104 217 04121/04341

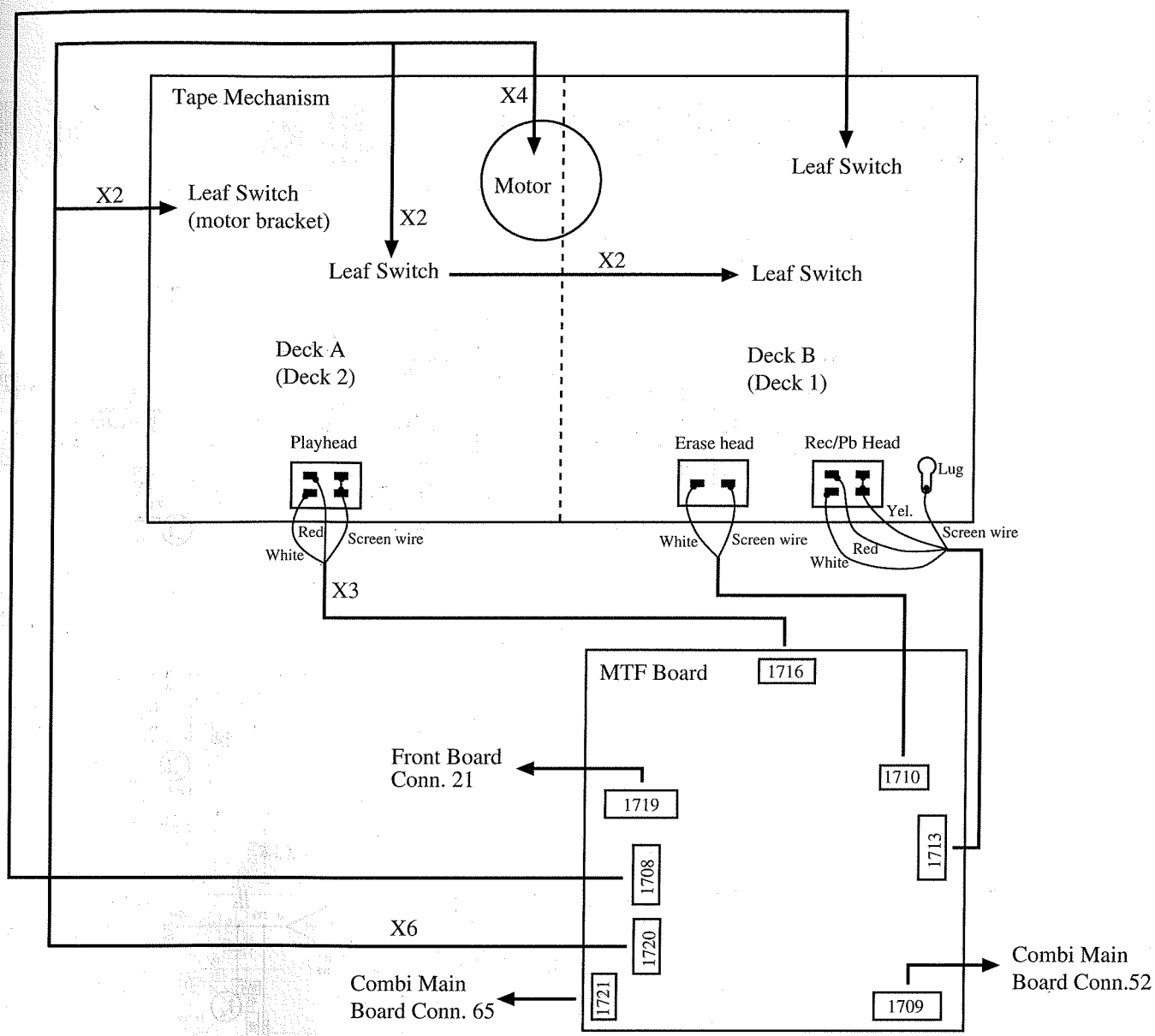
* Signal send via a frame antenna
(..) = tuning grid in kHz

↕ repeat

1102	D1	1124	F21	2107	J6	2122	M7	2128	I13	2132	I17	2136	H19	2141	H15	2145	E19	2151	H12	2161	I15	3107	C6	3124	K7	3130	.K8	3137	L5	3143	K17	3150	H19	3154	J20	3160	D19	3164	I20	3173	B6	3184	I8	3192	C12	5107	J12	5112	C12	5122	L7	6107	K20	7104	J2	7122	L9
1103	G2	1126	E20	2108	L2	2123	L7	2129	I8	2133	G18	2137	G19	2142	K19	2147	E19	2152	I11	2162	H20	3108	J1	3125	L11	3131	M10	3140	F7	3144	K17	3151	I20	3155	J20	3161	D19	3167	I20	3177	M10	3185	I13	3197	L11	5109	B6	5114	C13	5123	K7	6120	E17	7105	K2	7124	L6
1110	D4	2102	C2	2109	L3	2125	L7	2130	J20	2134	G19	2138	H18	2143	K20	2148	E19	2158	L18	3103	G3	3109	K1	3128	L9	3132	J7	3141	I16	3145	I17	3152	F20	3158	E19	3162	I15	3169	L5	3181	C7	3186	K16	5102	I3	5110	C9	5115	J15	6105a	I5	7101	C15	7109	L10		
1121	C21	2106	J4	2120	K7	2127	H16	2131	I17	2135	F19	2140	C14	2144	K20	2150	C6	2160	I15	3104	G4	3123	I6	3129	K8	3134	L6	3142	I16	3146	L20	3153	G20	3159	E19	3163	J8	3172	B6	3183	I13	3188	M20	5103	L4	5111	C11	5121	I15	6105b	I6	7103	K17	7110	I19		

TUNER 95 bis

Tape Deck Wiring Diagram



TAPE MECHANISM ADJUSTMENT

ADJUSTMENT	CASSETTE	DECK 1 (DECK B)	DECK 2 (DECK A)	MEASURE ON	READ ON	ADJUST WITH	ADJUST TO
Azimuth	10kHz	Play	-	L & R out T019/T020	mV-meter	Left hand screw of Play or R/P head	Maximum L = R
	SBC420*	-	Play				
Motor speed	3150Hz	Play	-	L & R out T019/T020	Wow and Futter meter	3758	**a
	SBC420*	-	Play				

* SBC 420: 4822 397 30071
**a: The maximum permissible speed deviation is +3/-2%.
Moreover, the Wow & Flutter value can be read.
This value should not exceed 0.4%.

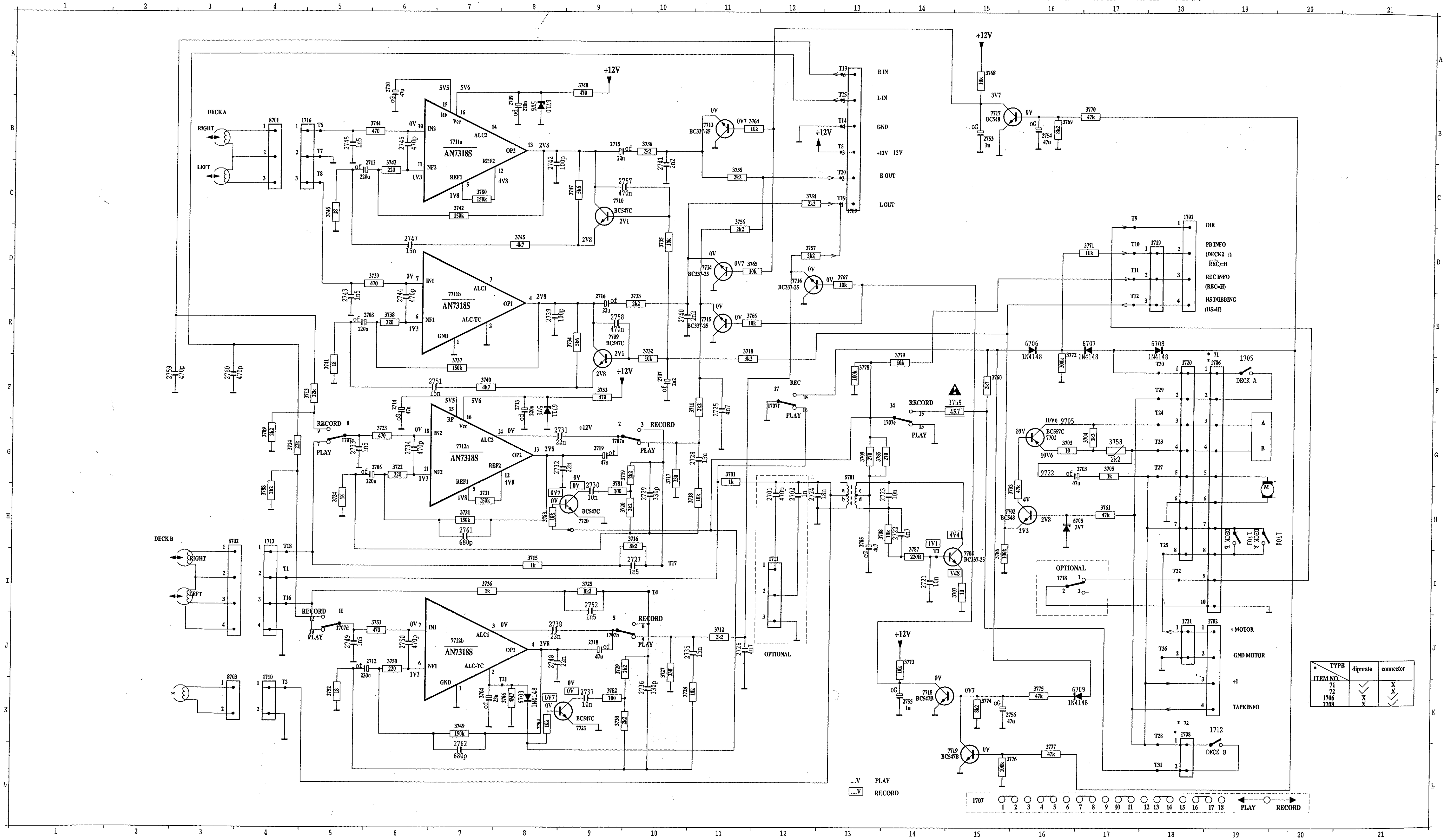
9-2

CIRCUIT DIAGRAM

1701 C18	1707b J 9	1710 K 4	1720 F18	2706 G 6	2713 F 8	2722 H14	2729 H10	2736 K10	2743 E 5
1702 J19	1707c G 5	1711 I12	1721 J18	2707 F10	2714 F 6	2723 H14	2730 H 9	2737 K 9	2744 E 6
1703 H19	1707d J 5	1712 K19	2701 H12	2708 E 6	2715 B 9	2724 H12	2731 G 8	2738 J 8	2745 B 5
1704 H20	1707e G14	1713 H 4	2702 H12	2709 B 8	2716 E 9	2725 F11	2732 G 8	2739 E 8	2746 B 6
1705 F19	1707f F12	1716 B 4	2703 G17	2710 A 6	2718 J 9	2726 J11	2733 G 5	2740 E10	2747 D 6
1706 F19	1708 K18	1718 I16	2704 K 7	2711 C 6	2719 G 9	2727 I10	2734 G 6	2741 C10	2748 J 8
1707a G 9	1709 C13	1719 D18	2705 H13	2712 J 6	2721 I14	2728 G11	2735 J11	2742 C 8	2749 J 5

2750 J 6	2757 C 9	3702 H15	3709 G13	3716 H10	3723 G 6	3730 K 9	3737 F 7	3744 B 6	3751 J 6
2751 F 7	2758 E 9	3703 G16	3710 E11	3717 G10	3724 H 5	3731 H 7	3738 E 6	3745 D 8	3752 K 5
2752 I 9	2759 F 2	3704 G17	3711 F11	3718 H11	3725 I 9	3732 E10	3739 D 6	3746 C 5	3753 F 9
2753 B15	2760 F 3	3705 G17	3712 J11	3719 G 9	3726 I 7	3733 E10	3740 F 7	3747 C 9	3754 C12
2754 B16	2761 H 7	3706 K 8	3713 F 5	3720 H 9	3727 J10	3734 E 9	3741 F 5	3748 A 9	3755 C11
2755 K14	2762 L 7	3707 I15	3714 G 4	3721 H 7	3728 K10	3735 D10	3742 C 7	3749 K 7	3756 C11
2756 K16	3701 G11	3708 H13	3715 I 8	3722 G 6	3729 J 9	3736 B10	3743 C 6	3750 J 6	3757 D12

3758 G17	3767 D13	3774 K15	3781 H 9	3788 H 4	6708 E18	7709 E 9	7714 D11	7721 K 9
3759 F15	3768 A15	3775 K16	3782 K 9	3789 G 4	6709 K17	7710 C 9	7715 E11	8701 B 4
3760 F15	3769 B16	3776 L16	3783 H 8	5701 G13	6710 B 8	7711a B 7	7716 D12	8702 H 3
3761 H17	3770 B17	3777 L16	3784 K 8	6703 K 8	6711 F 8	7711b E 7	7717 B15	8703 K 3
3764 B11	3771 D17	3778 F13	3785 G13	6705 H17	7701 G16	7712a G 7	7718 K14	9705 G16
3765 D11	3772 F16	3779 F14	3786 I15	6706 E16	7702 H16	7712b J 7	7719 L15	9722 G16
3766 E11	3773 J14	3780 C 7	3787 I14	6707 E17	7704 I15	7713 B11	7720 H 9	



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 screwdriver as shown in Fig.1 point 1 to move the tray outside. After the first centimetre it is possible to pull the tray out by hand.

b) Release two snaps and remove tray.

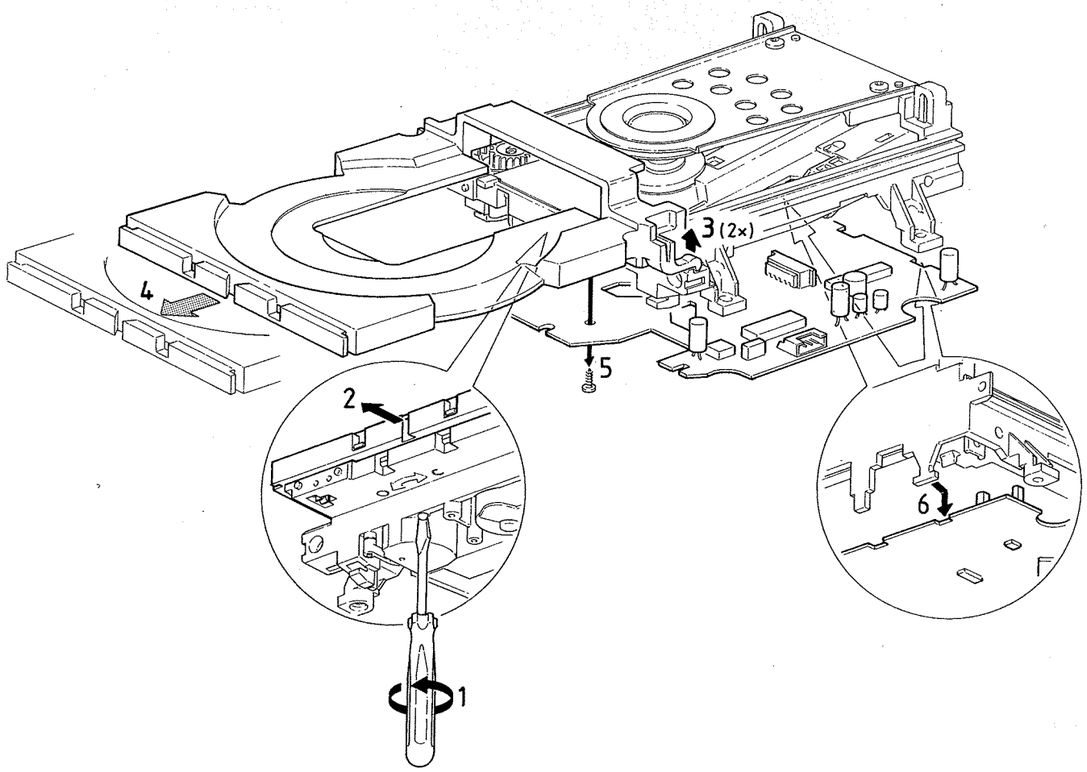


Fig. 1

Assembly of gear

a) Use a pin (e.g. a paperclip) to align the cam wheel (a) withthe gear wheel (b). See Fig. 2.

b) Fix the wheels with the small plastic whashers.

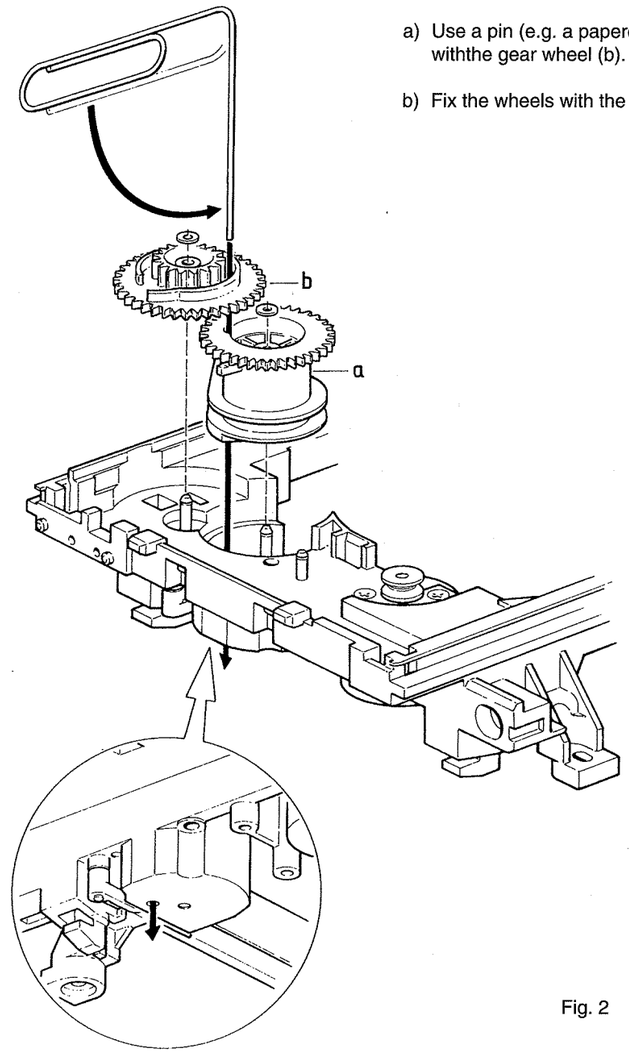


Fig. 2

c) Mount idle wheel 2 (c) and idle wheel 1 (d) in any position. See Fig. 3.

d) Fix the idle wheel 1 (d) with the small plastic whasher.

e) Mount the driving belt.

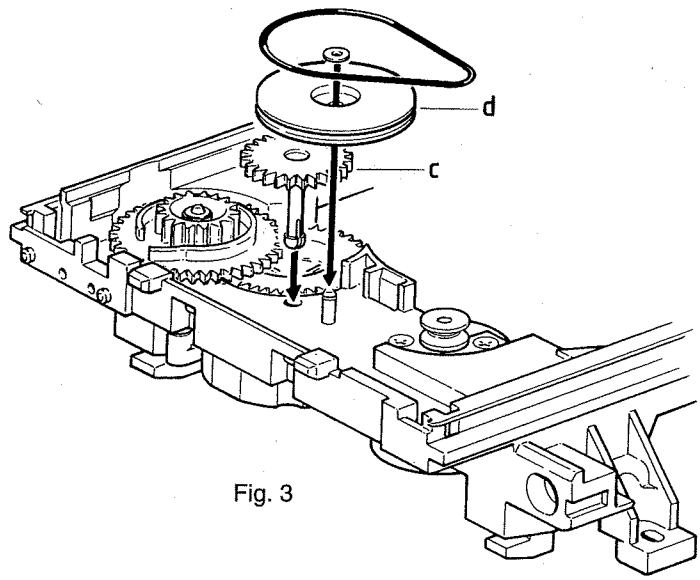


Fig. 3

f) Mount the pinion guiding assy and the cover as shown in Fig. 4.

g) Turn the gear wheel (b) counter clockwise to endposition.

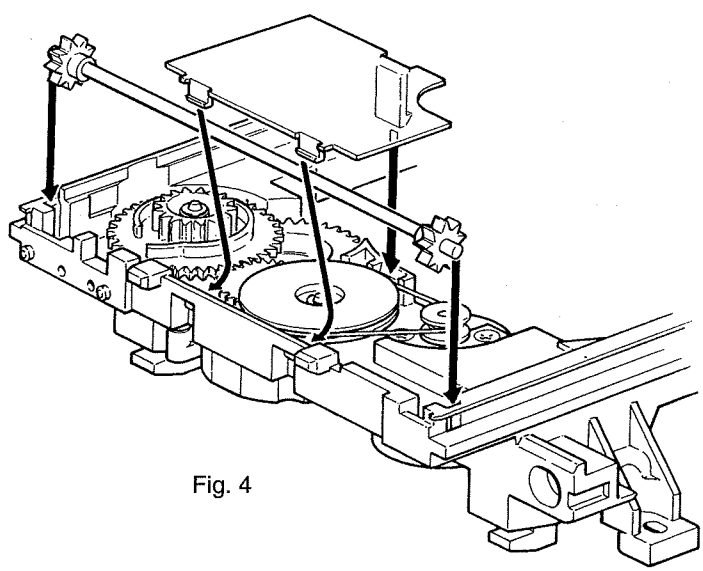


Fig. 4

h) Mount the CD Mechanism as shown in Fig. 5.

i) Mount the tray (Align the tray to the chassis and push it inside).

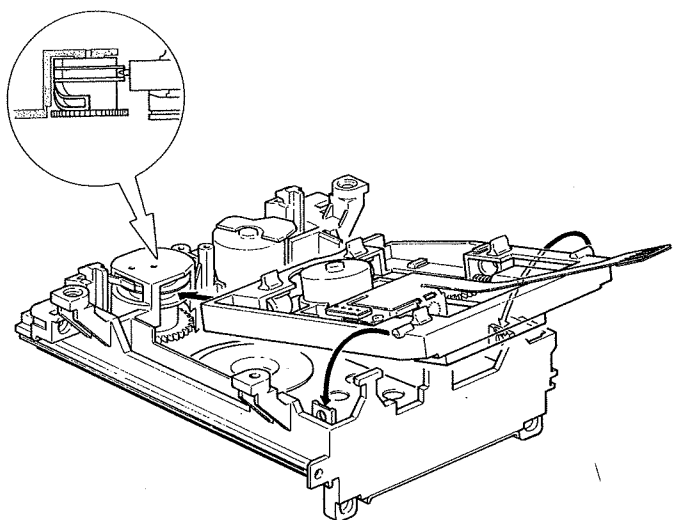


Fig. 5

Check if tray mechanism works correctly!

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 then 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 then the tray has to move outside.

10-7

CD Board

HF-Amplifier

eye-pattern

> 800 mVpp

TB=0,5 us/DIV

LASER SWITCH

HIGH=0,7V=LASER ON

CD MECHANISM
VAM1201

SERVO-DRIVER

MOTOR-DRIVER

During Focus search
(Service step "Focus search")

TRANSFER OF AUDIO SAMPLES VIA SERIAL INT

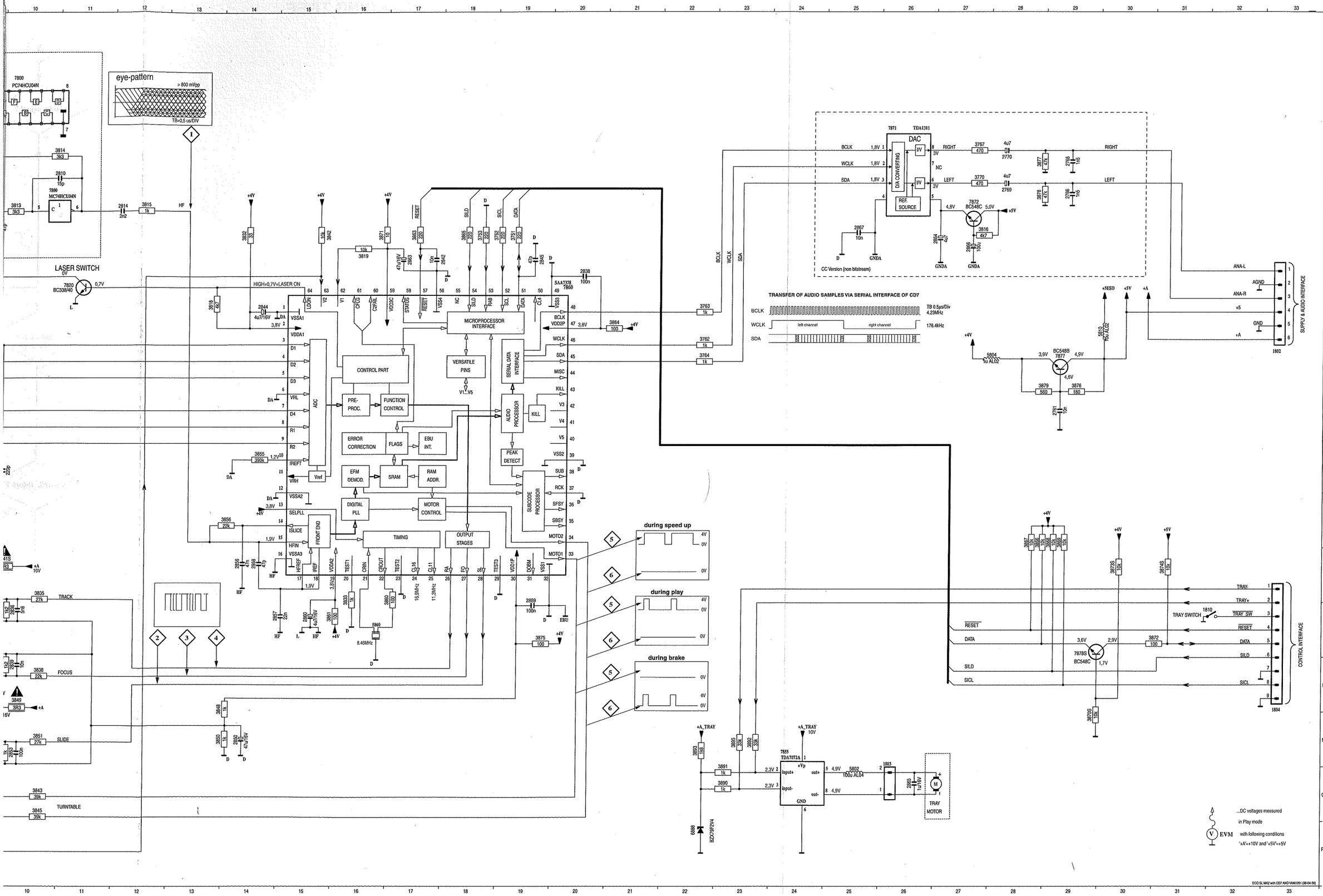
CC Version (non bitstream)

during speed up

during play

during brake

10-7



1801	G2	3846	P9
1802	G33	3848	M13
1803	N26	3849	M10
1804	M33	3850	N13
1806	O2	3851	N10
1810	L31	3852	N9
2761	H29	3853	N9
2765	D29	3855	I14
2766	D29	3856	J14
2769	D28	3859	E16
2770	C28	3860	K17
2802	B9	3861	L15
2803	D3	3863	E17
2804	D3	3864	F21
2805	D3	3865	E18
2806	E4	3866	J28
2807	C6	3867	J28
2808	C7	3868	J29
2820	I7	3869	J29
2821	I6	3870S	N29
2822	I5	3871	E16
2823	I6	3872	L31
2824	I6	3873S	K30
2825	I7	3874S	K30
2826	I8	3875	L19
2827	I8	3876	H29
2828	I9	3877	D28
2829	I9	3878	D29
2830	I9	3879	H28
2836	L10	3880	K33
2837	L9	3884	D31
2838	E20	3885	D31
2839	M10	3887	E32
2840	M9	3890	O23
2842	E17	3891	O23
2843	O9	3892	N23
2844	F14	3893	N22
2845	E19	3895	N23
2847	K9	5802	N25
2849	M9	5804	G28
2850	N14	5810	G30
2851	N9	5860	L16
2853	N10	6888	P22
2856	K14	6889	I4
2857	L15	7800	C6
2858	K14	7800	D5
2860	L15	7800	D7
2863	E17	7800	D7
2864	E27	7800	D8
2865	O26	7800	D10
2866	E27	7820	F11
2867	E25	7851	K8
2868S	N30	7852	M8
2869	K19	7855	N24
2898	J3	7860	F15
3751	E19	7871	C26
3752	E18	7872	D27
3753	E18	7877	G29
3762	G22	7878S	L30
3763	F22	7895	D32
3764	G22	9801	D15
3767	C27	9892	E33
3770	D27		
3801	B8		
3802	D4		
3803	C5		
3804	D6		
3805	D7		
3806	B6		
3807	B8		
3808	C5		
3809	D8		
3810	C8		
3811	D8		
3812	D9		
3813	D10		
3814	C10		
3815	D12		
3816	E27		
3818	F13		
3819	D15		
3820	I4		
3821	H4		
3822	H4		
3824	H4		
3825	I7		
3826	H7		
3827	H8		
3828	G8		
3829	G9		
3830	G9		
3832	E14		
3833	K16		
3835	K10		
3836	L9		
3837	K9		
3838	M10		
3839	M9		
3840	M9		
3841S	K10		
3842	E15		
3843	O10		
3844	P9		
3845	O10		

WARNING

CHARGED CAPACITORS ON THE SERVO BOARD MAY DAMAGE THE CDM-ELECTRONICS WHEN CONNECTING A NEW CDM MECHANISM. THAT´S WHY, BESIDES THE SAFETY MEASURES LIKE
- ***SWITCH OFF POWER SUPPLY***
- ***ESD PROTECTION***

ADDITIONAL ACTIONS MUST BE TAKEN BY THE REPAIR TECHNICIAN.

The following steps have to be done when replacing the CDM mechanism:

1. Disconnect old CDM flexfoil from printed board
2. Connect paperclip to CDM flexfoil to short-circuit flexfoil (fig.1)
3. Short-circuit printed board with **brass-sheet (4822 321 11197)** plugged into the flexfoil connector (fig.2)
4. Remove old CDM mechanism
5. Position new CDM mechanism in its studs
6. Remove short-circuit from printed board connector
7. Remove short-circuit from flexfoil of new CDM
8. Connect new flexfoil to print connector (fig.3)

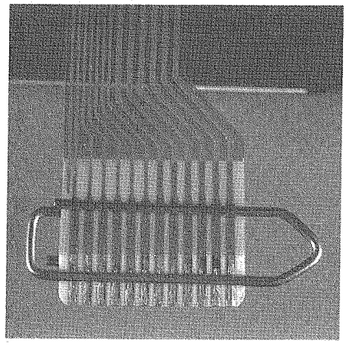


fig.1

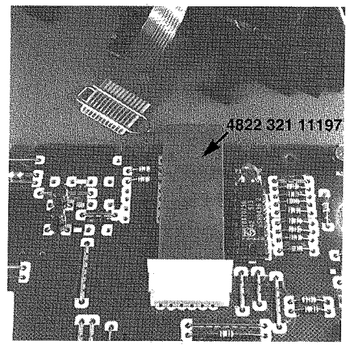


fig.2

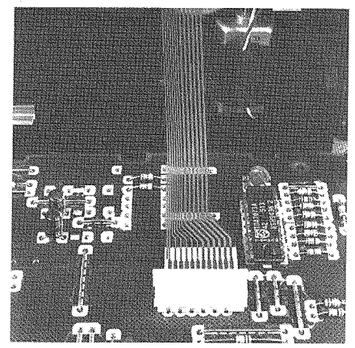
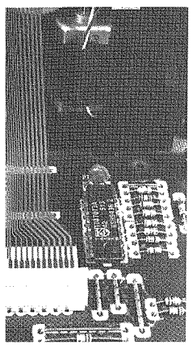


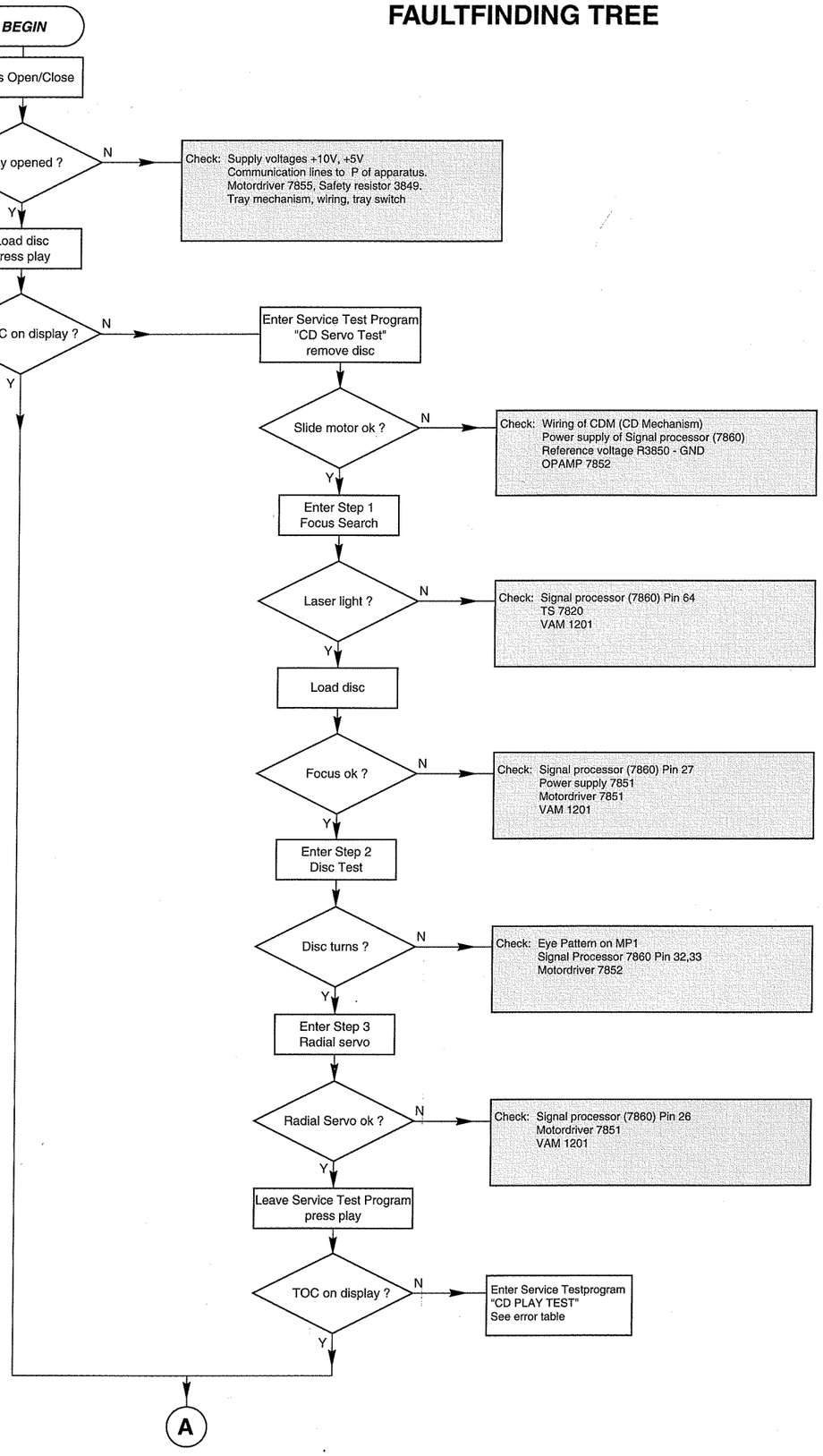
fig.3

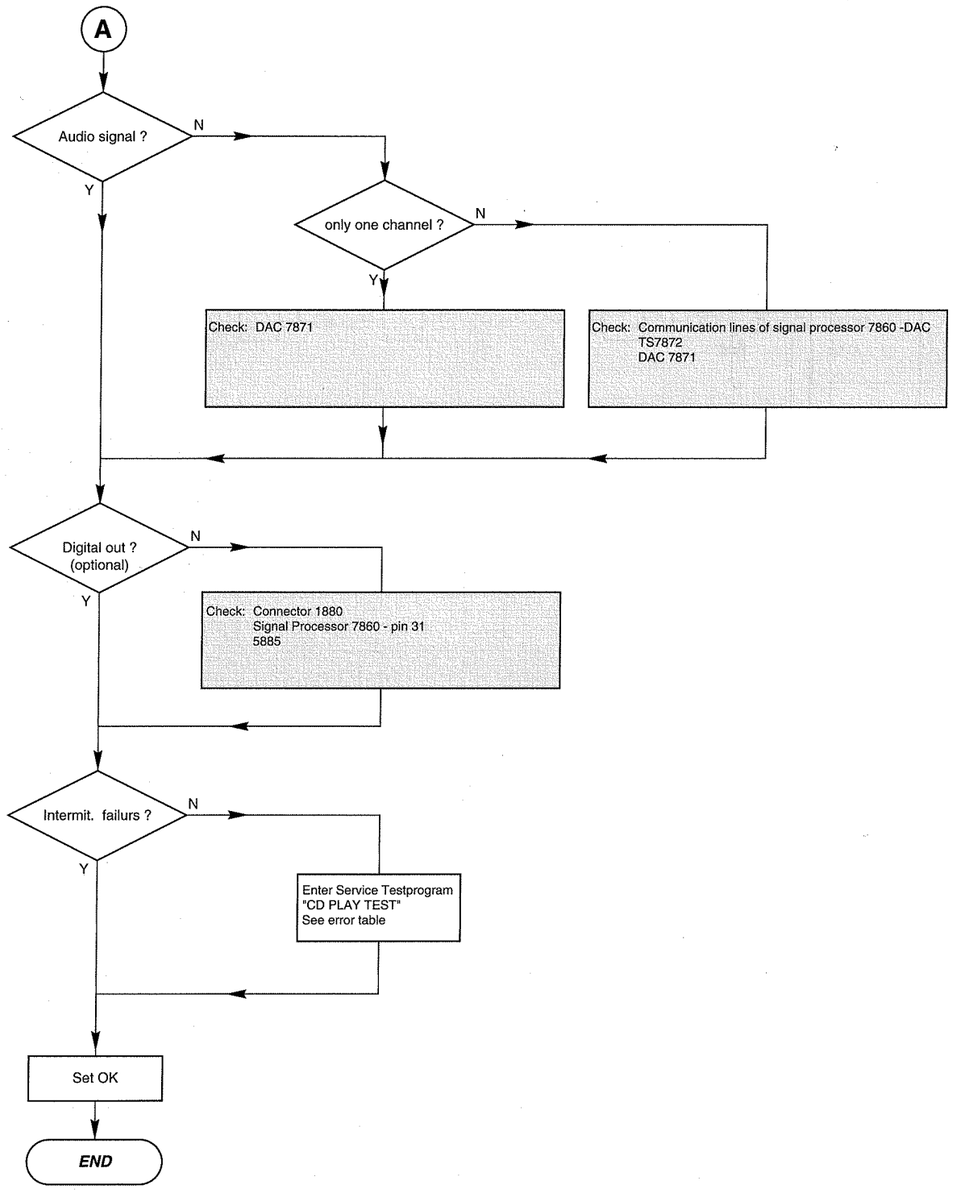
Remarks

10-8

FAULTFINDING TREE

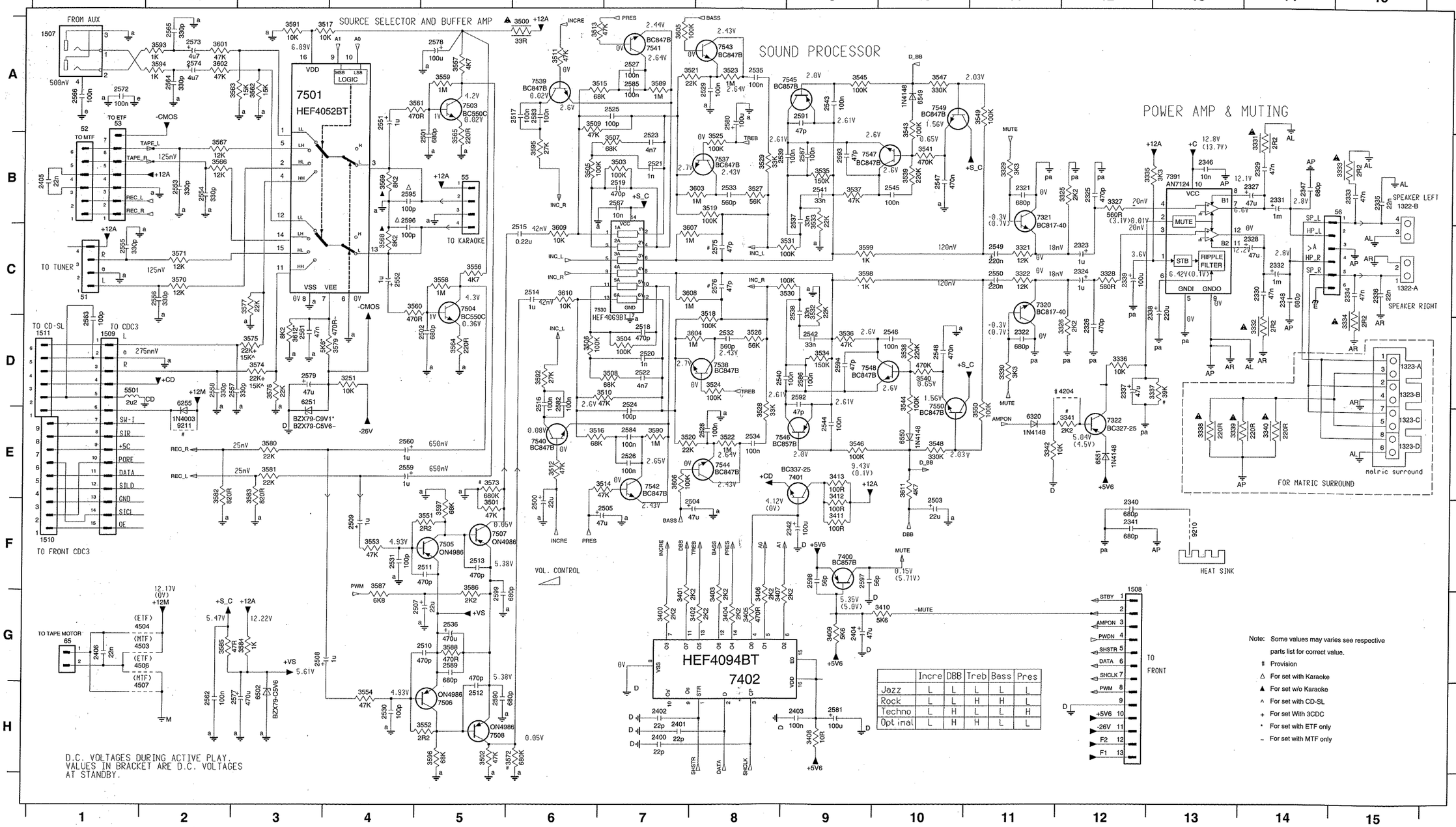






11-3

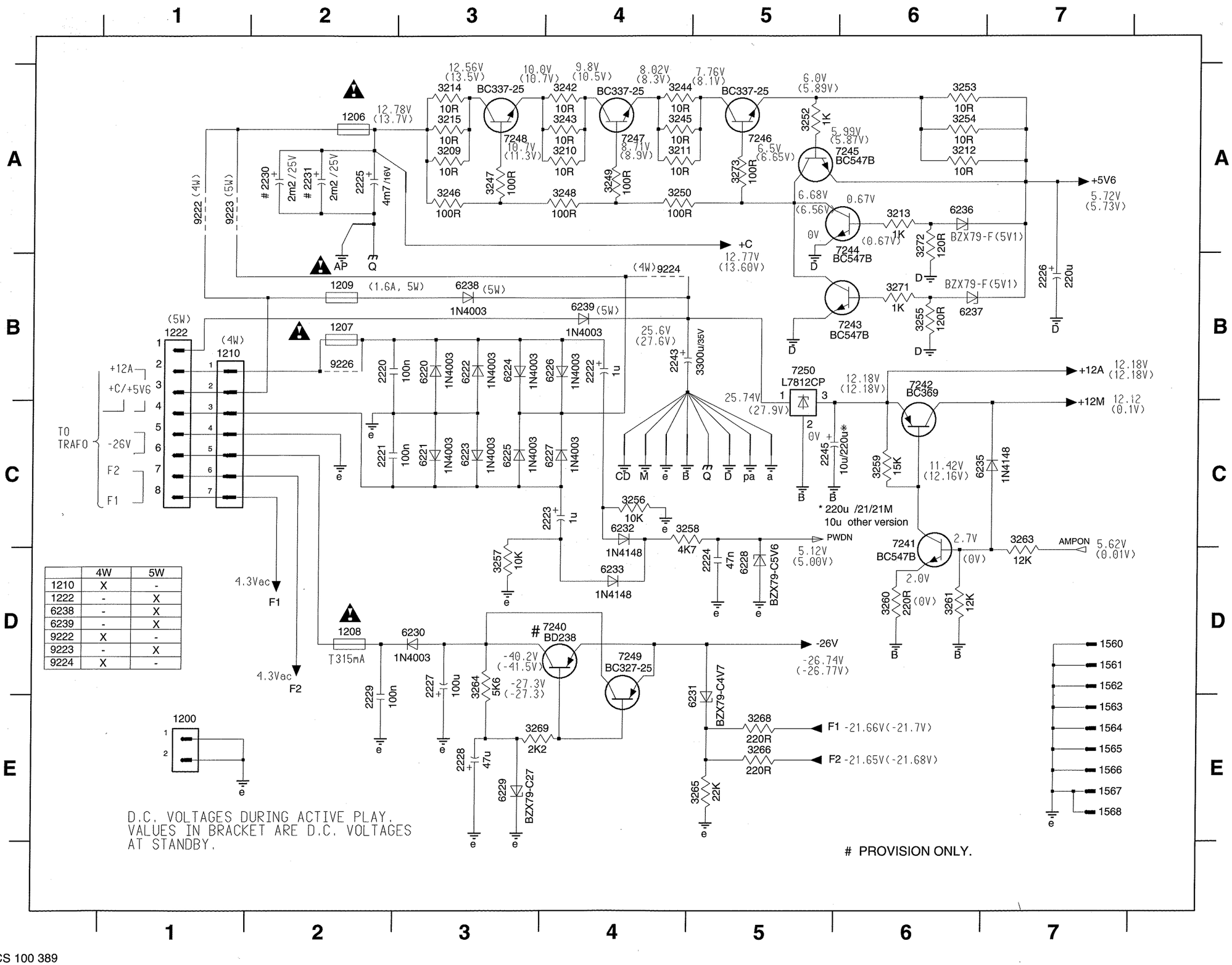
CIRCUIT DIAGRAM - SOURCE SELECT & AMPLIFIER PART



	Incre	DBB	Treb	Bass	Pres
Jazz	L	L	L	L	L
Rock	L	L	H	H	L
Techno	L	H	L	L	H
Opt imal	L	H	H	L	L

11-4

CIRCUIT DIAGRAM - POWER SUPPLY PART



	4W	5W
1210	X	-
1222	-	X
6238	-	X
6239	-	X
9222	X	-
9223	-	X
9224	X	-

CIRCUIT DIAGRAM - TRANSFORMER PRIMARY PART

7546 E8
7547 B9
7548 D10
7549 A10
7550 D10
9210 F13
9211 E2

21 D1 1201 C1 1202 C2 1205 C2 3208 D1 5202 C1 9271 C1 9272 C1 9273 C2 9299 D2

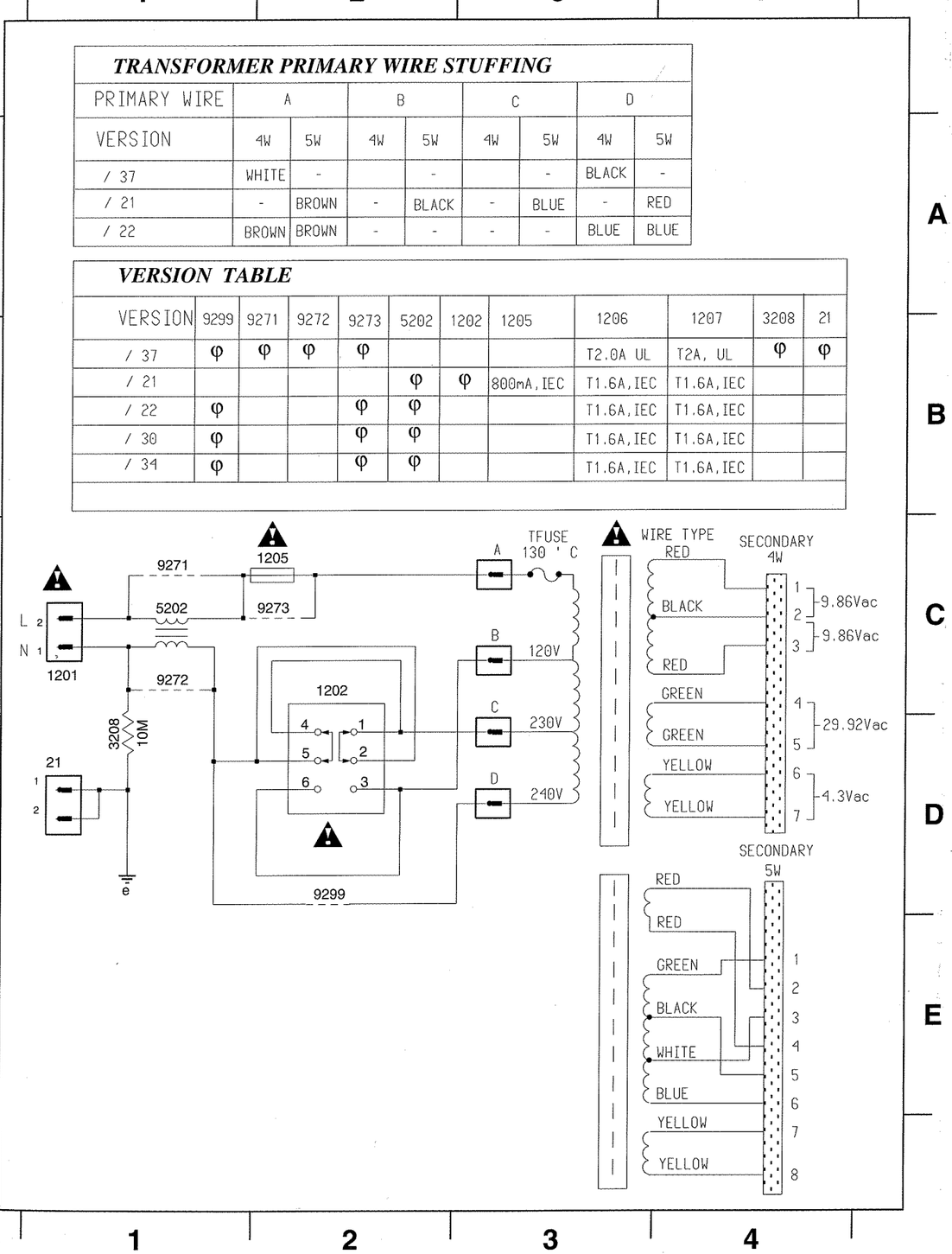
1 2 3 4

TRANSFORMER PRIMARY WIRE STUFFING

PRIMARY WIRE	A		B		C		D	
VERSION	4W	5W	4W	5W	4W	5W	4W	5W
/ 37	WHITE	-		-		-	BLACK	-
/ 21	-	BROWN	-	BLACK	-	BLUE	-	RED
/ 22	BROWN	BROWN	-	-	-	-	BLUE	BLUE

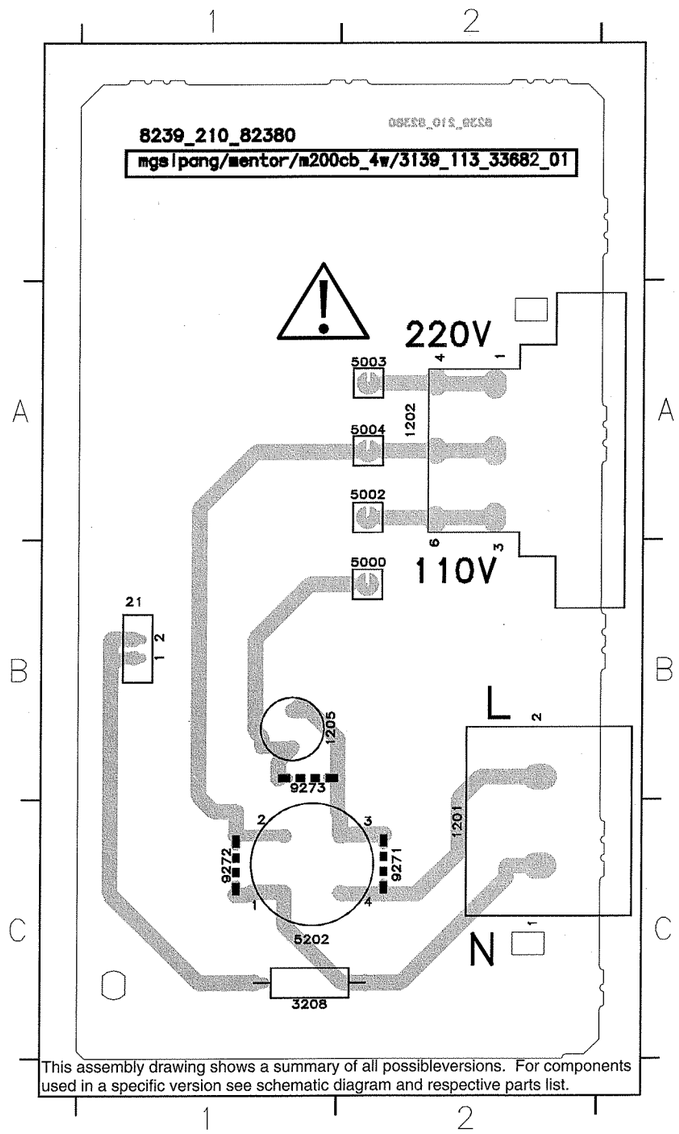
VERSION TABLE

VERSION	9299	9271	9272	9273	5202	1202	1205	1206	1207	3208	21
/ 37	φ	φ	φ	φ				T2.0A UL	T2A, UL	φ	φ
/ 21					φ	φ	800mA, IEC	T1.6A, IEC	T1.6A, IEC		
/ 22	φ			φ	φ			T1.6A, IEC	T1.6A, IEC		
/ 30	φ			φ	φ			T1.6A, IEC	T1.6A, IEC		
/ 34	φ			φ	φ			T1.6A, IEC	T1.6A, IEC		



COMPONENT LAYOUT - TRANSFORMER PRIMARY

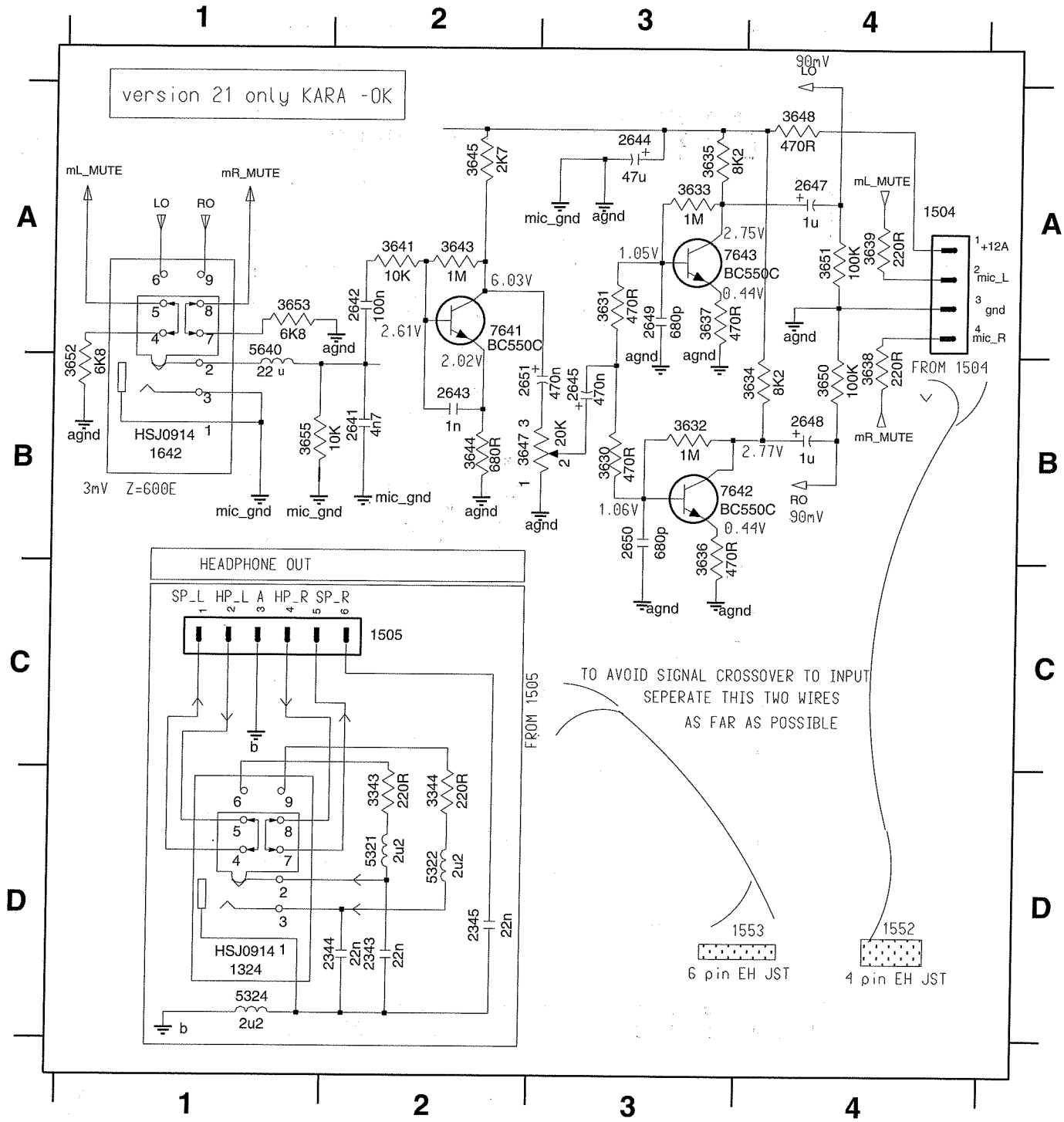
21 B1 1205 B1 5002 A2 5202 C1 9273 B1
1201 C2 3208 C1 5003 A2 9271 C2
1202 A2 5000 B2 5004 A2 9272 C1



This assembly drawing shows a summary of all possibleversions. For components used in a specific version see schematic diagram and respective parts list.

KARAOKE & HEADPHONE PART - CIRCUIT DIAGRAM

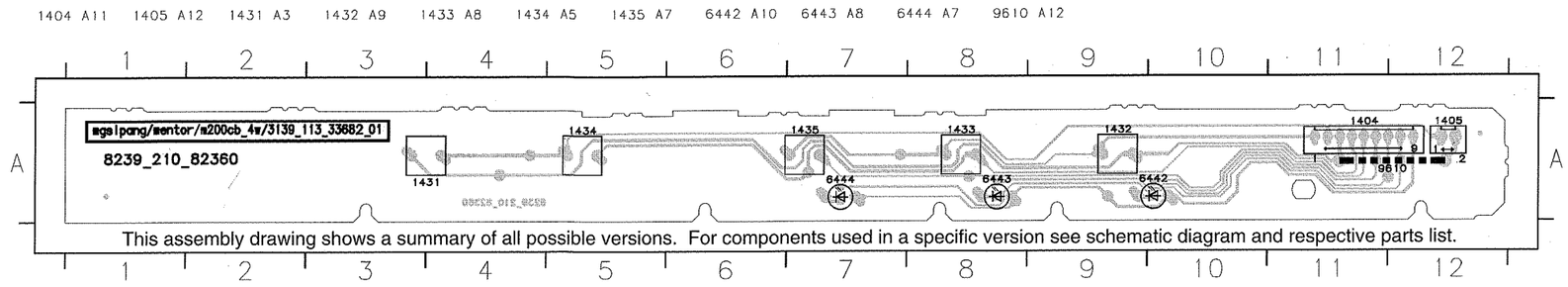
1324 D1	2343 D2	2642 A2	2647 A4	2651 B2	3631 A3	3635 A3	3639 A4	3645 A2	3651 A4	5321 D2	7641 A2
1504 A4	2344 D2	2643 B2	2648 B4	3343 D2	3632 B3	3636 B3	3641 A2	3647 B2	3652 B1	5322 D2	7642 B3
1505 C2	2345 D2	2644 A3	2649 A3	3344 D2	3633 A3	3637 A3	3643 A2	3648 A4	3653 A1	5324 D1	7643 A3
1642 B1	2641 B2	2645 B3	2650 B3	3630 B3	3634 B4	3638 B4	3644 B2	3650 B4	3655 B1	5640 B1	



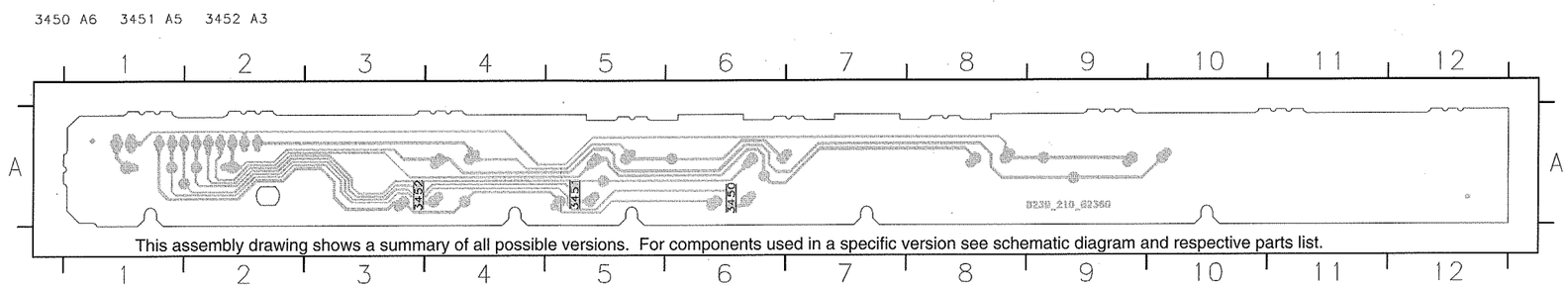
11-7

CDC KEY PART

COMPONENT LAYOUT - CDC KEY



CHIP LAYOUT - CDC KEY



1404 A1 **1431 A2** **1433 A3** **1435 A3** **3451 A2** **6442 A3** **6444 A3**
1405 A1 **1432 A3** **1434 A2** **3450 A2** **3452 A2** **6443 A3**

CIRCUIT DIAGRAM - CDC KEY PART