

Service
Service
Service



Service Manual

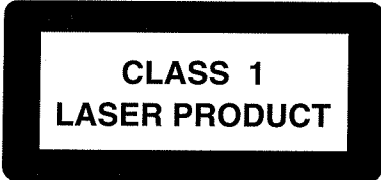


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PCS 100 382



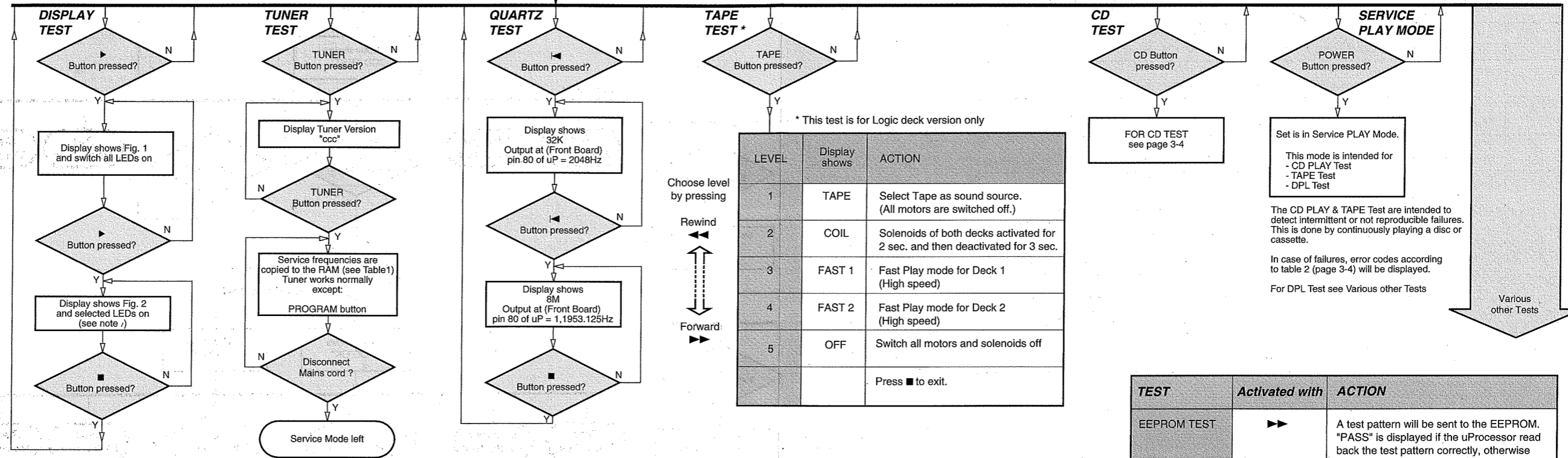
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SERVICE TEST PROGRAM I

To start service test program hold **▶** & PROGRAM depressed while plugging in the mains cord

Display shows the ROM version * "S-Vyy" (Main menu)

S refers to Service Mode.
V refers to Version.
yy refers to Software version number of μ Processor. (Counting up from 01 to 99)



* This test is for Logic deck version only

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.

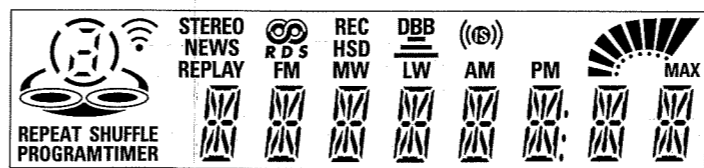


Figure 1

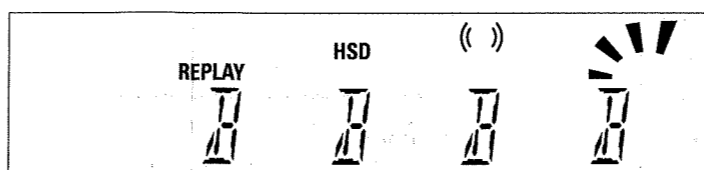
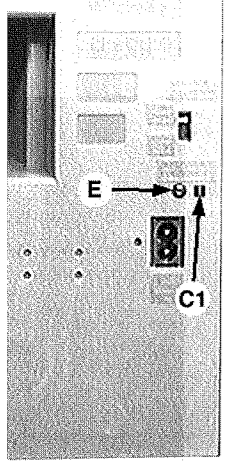
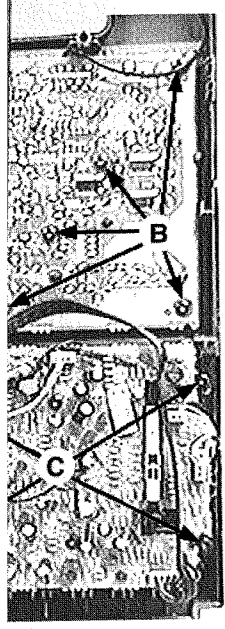


Figure 2

TEST	Activated with	ACTION
EEPROM TEST	▶▶ ■ to Exit	A test pattern will be sent to the EEPROM. "PASS" is displayed if the μ Processor 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	▶ ■ 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	

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



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

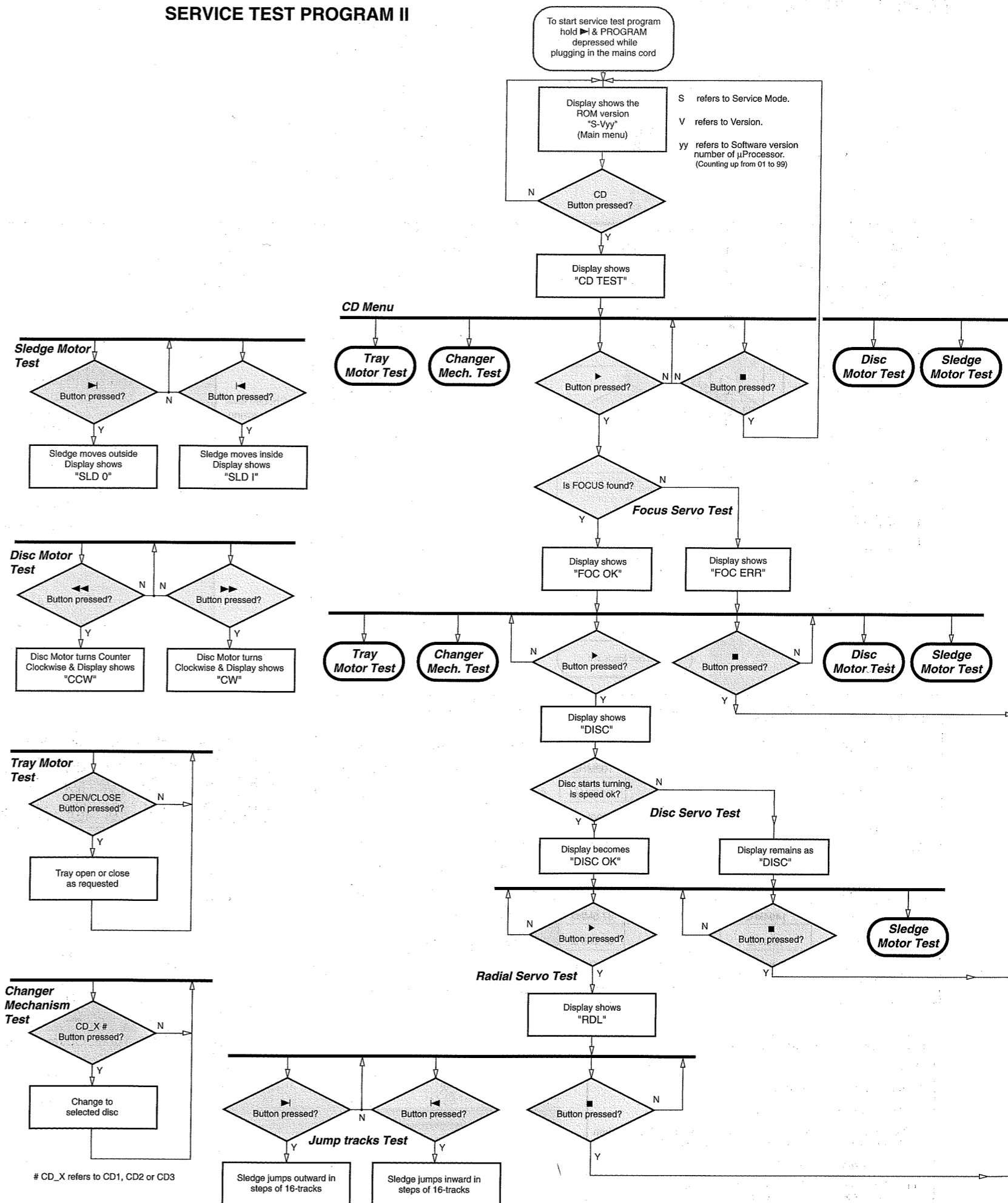
Table 2

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	▶▶	26
OPEN / CLOSE	5	CD	16	◀	27
DSC	6	TUNER	17	▶	28
DBB	7	TAPE	18		
RDS *	8	AUX	19		
NEWS *	9	HSD	20		

* Not for all type/version

Table 3

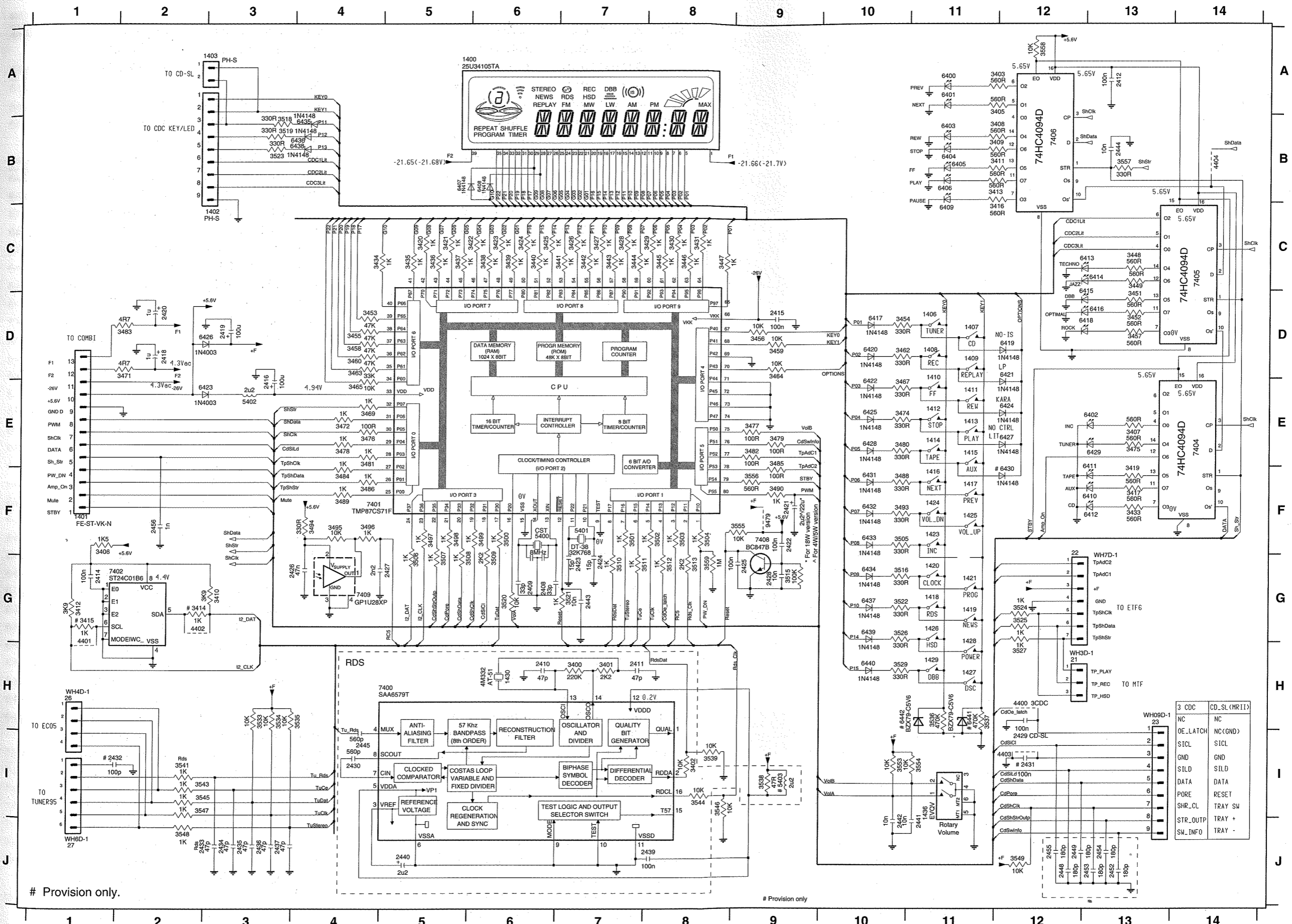
SERVICE TEST PROGRAM II



CIRCUIT DIAGRAM

6-3

6-3



Provision only.

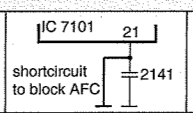
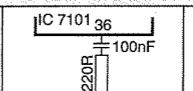
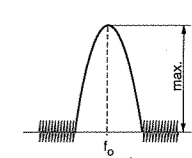
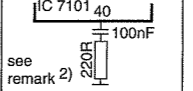

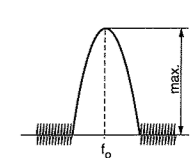
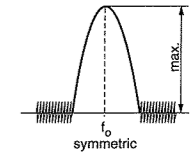
Provision only

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

21 H12	3447 C8	6418 D13
22 G12	3448 C13	6419 D12
23 H11	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 D10
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 G1
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 H2	3509 G6	
2430 I4	3510 G7	
2431 H2	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 C12	
2444 B13	3525 G12	
2445 I4	3526 G10	
2446 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 I9	
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 I2	
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 I2	
3423 C6	4404 B14	
3424 C6	5400 F6	
3425 C8	5401 F7	
3426 C7	5402 G3	
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	

AX		
B6	B7	B8
B8		
8G	9G	
a	a	
h	h	
j, p	j, p	
k	k	
b	b	
f	f	
m	m	
g	g	
c	c	
e	e	
r	r	
n	n	
d	d	
S8		
B5		
B6		
31		
32		
33		
34		
B7		
B8		

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

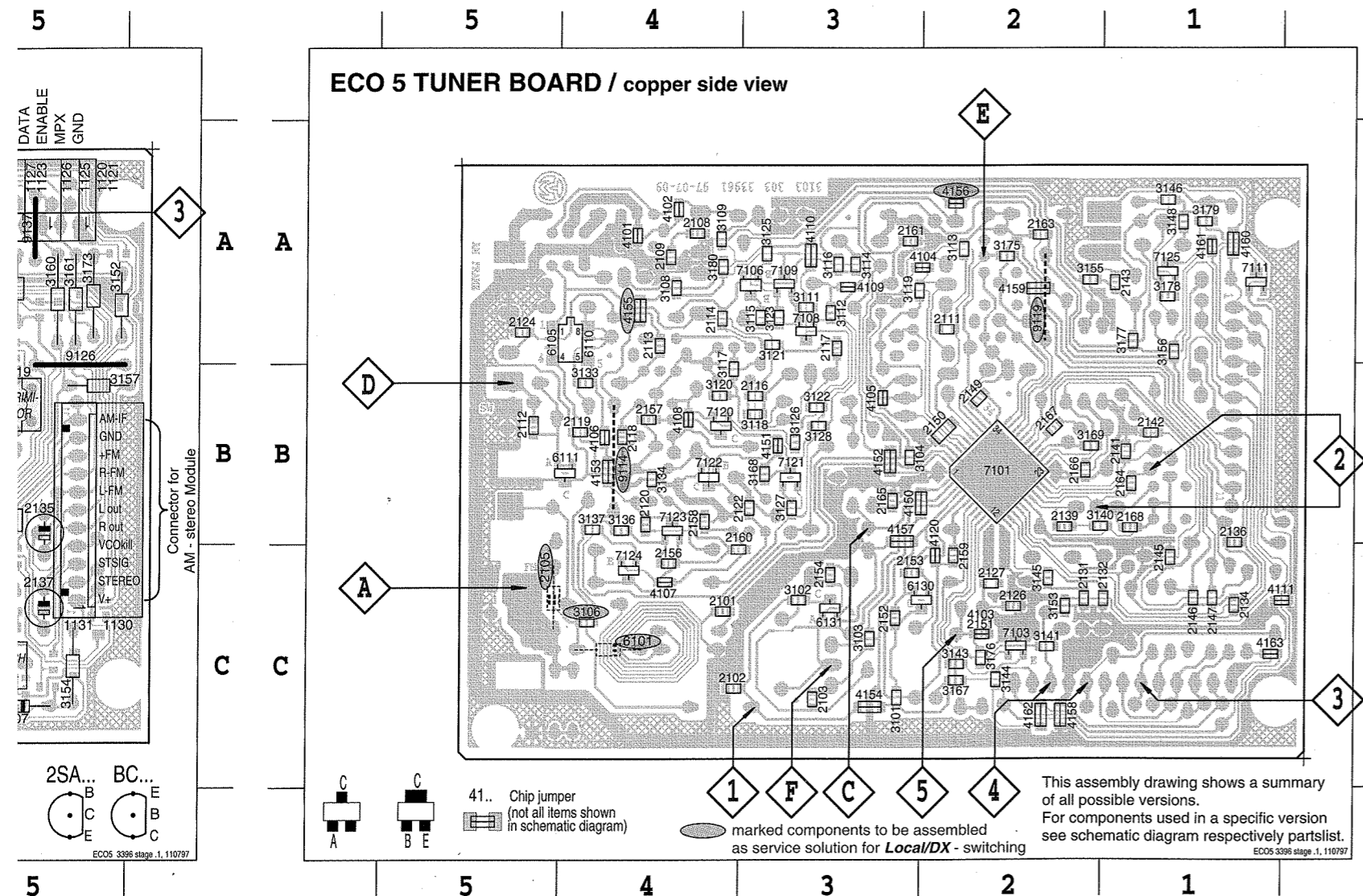
Waverange	Input frequency	Input	Tuned to	Adjust	Output	Scope/Voltmeter
VARICAP ALIGNMENT						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)			108MHz	5130	1	8V ±0.2V
			87.5MHz (65.81MHz)	check		4.3V ±0.5V (1.2V ±0.5V)
MW FM/AM-version, 10kHz grid 530 - 1700kHz			1700kHz	5123	1	8V ±0.2V
			530kHz	check		1.1V ±0.4V
FM/MW-version, 9kHz grid 531 - 1602kHz			1602kHz	5123	1	6.9V ±0.2V
			531kHz	check		1.1V ±0.4V
LW 153 - 279kHz			279kHz	5122	1	8V ±0.2V
			153kHz	check		1.1V ±0.4V
MW FM/MW/LW- version, 9kHz grid 531 - 1602kHz			1602kHz	5123	1	8V ±0.2V
			531kHz	check		1.1V ±0.4V
FM IF						
FM	10.7MHz, 50mV continuous wave	F		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		5111	4	
				5112		
AM AFC MW		C continuous wave V _{RF} = 10mV		5114	2	0 ± 2 mV DC
AM RF³⁾						
MW⁴⁾ FM/MW/LW- and FM/MW-version (9kHz grid) 531 - 1602kHz	1494kHz	B 	1494kHz	2106	4	
	558kHz		558kHz	5102		
LW	198kHz		198kHz	5103	4	
MW FM/AM-version, 10kHz grid 530 - 1700kHz	1500kHz	Δf = ±30kHz V _{RF} as low as possible	1500kHz	2106		
	560kHz		560kHz	5102		

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.

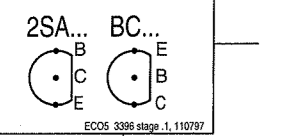
Repeat

B2	9129	B3	2101	C4	2118	B4	2139	B2	2153	C3	2166	B2	3112	A3	3123	A3	3143	C2	3175	A2	4106	B4	4154	C3	6110	A4	7121	B3
B4	9130	C3	2102	C4	2119	B4	2141	B1	2154	C3	2167	B2	3113	A2	3125	A3	3144	C2	3176	C2	4107	C4	4155	A4	6111	B4	7122	B4
C4	9131	A5	2103	C3	2120	B4	2142	B1	2156	C4	2168	B1	3114	A3	3126	B3	3145	C2	3177	A1	4108	B4	4156	A2	6130	C2	7123	B4
B4	9133	C3	2108	A4	2122	B3	2143	A1	2157	B4	3101	C3	3115	A3	3127	B3	3146	A1	3178	A1	4109	A3	4157	B3	6131	C3	7124	C4
A2	9134	B3	2109	A4	2124	A5	2145	C1	2158	B4	3102	C3	3116	A3	3128	B3	3148	A1	3179	A1	4110	A3	4158	C2	7101	B2	7125	A1
C3	9136	A5	2111	A2	2126	C2	2146	C1	2159	C2	3103	C3	3117	B4	3133	B4	3153	C2	3180	A4	4111	C1	4159	A2	7103	C2		
B1	9137	A5	2112	B5	2127	C2	2147	C1	2160	C4	3104	B3	3118	B3	3134	B4	3155	A2	4101	A4	4120	C2	4160	A1	7106	A3		
C4			2113	A4	2131	C2	2149	B2	2161	A3	3106	C4	3119	A3	3136	B4	3156	A1	4102	A4	4150	B2	4161	A1	7108	A3		
A3			2114	A4	2132	C1	2150	B2	2163	A2	3108	A4	3120	B4	3137	B4	3167	C2	4103	C2	4151	B3	4162	C1	7109	A3		
B5			2116	B3	2134	C1	2151	C2	2164	B1	3109	A4	3121	A3	3140	B2	3168	B3	4104	A2	4152	B3	4163	C1	7111	A1		
A2			2117	A3	2136	B1	2152	C3	2165	B3	3111	A3	3122	B3	3141	C2	3169	B2	4105	B3	4153	B4	6105	A4	7120	B4		

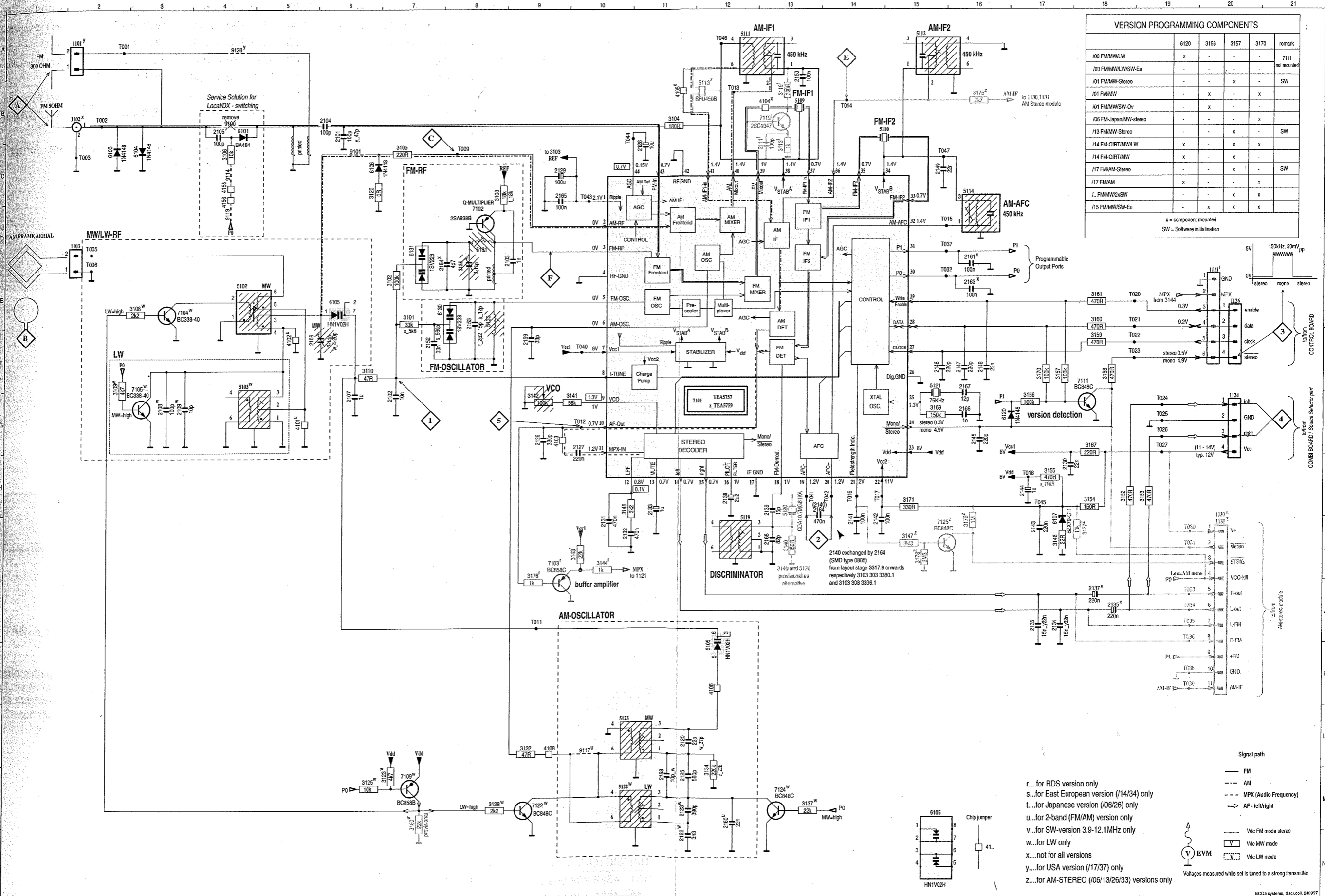


41... Chip jumper (not all items shown in schematic diagram)

marked components to be assembled as service solution for Local/DX - switching



TUNER BOARD ECO5 / Systems

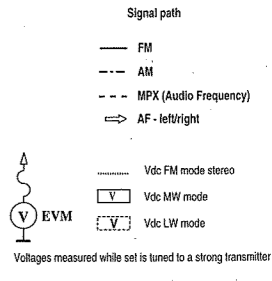


VERSION PROGRAMMING COMPONENTS					
	6120	3156	3157	3170	remark
/00 FMMW/LW	x	-	-	-	7111
/00 FMMW/LW/SW-Eu	-	-	-	-	not mounted
/01 FMMW-Stereo	-	-	x	-	SW
/01 FMMW	-	x	-	-	
/01 FMMW/SW-Ov	-	x	-	-	
/06 FM-Japan/MW-stereo	-	-	-	x	
/13 FMMW-Stereo	-	-	x	-	SW
/14 FM-CIRT/MW/LW	x	-	x	x	
/14 FM-CIRT/MW	x	-	x	-	
/17 FM/AM-Stereo	-	-	x	-	SW
/17 FM/AM	-	-	-	x	
/15 FMMW/SW	-	-	x	x	
/15 FMMW/SW-Eu	-	x	x	x	

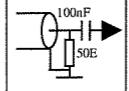
x = component mounted
SW = Software initialisation

- 1101 A 1
- 1102 B 2
- 1103 D 2
- 1121 E 20
- 1124 G 20
- 1126 E 20
- 1130 I 20
- 1131 I 20
- 2101 C 6
- 2102 G 7
- 2103 D 9
- 2104 B 6
- 2106 F 5
- 2107 G 6
- 2108 G 3
- 2109 G 3
- 2111 C 13
- 2120 L 11
- 2122 M 11
- 2123 M 11
- 2125 M 11
- 2126 G 9
- 2127 G 10
- 2128 C 11
- 2129 C 9
- 2130 H 17
- 2131 I 10
- 2132 H 10
- 2133 H 17
- 2135 J 18
- 2136 J 17
- 2137 J 18
- 2138 H 12
- 2139 H 13
- 2140 H 14
- 2141 H 14
- 2142 H 14
- 2143 H 17
- 2145 G 16
- 2146 F 15
- 2147 F 16
- 2148 F 16
- 2149 C 15
- 2150 B 13
- 2152 F 7
- 2153 E 8
- 2154 E 7
- 2155 D 8
- 2156 D 8
- 2159 F 9
- 2160 M 12
- 2161 H 14
- 2162 H 14
- 2163 G 16
- 2167 F 16
- 2168 I 13
- 2169 E 7
- 3102 E 7
- 3105 C 8
- 3106 B 11
- 3105 C 7
- 3108 E 3
- 3109 F 2
- 3113 C 3
- 3119 B 13
- 3123 C 6
- 3123 M 7
- 3125 M 6
- 3128 M 8
- 3132 L 9
- 3134 M 12
- 3137 M 13
- 3140 I 13
- 3141 G 10
- 3142 G 9
- 3143 I 10
- 3144 I 10
- 3145 H 10
- 3146 H 7
- 3147 H 8
- 3152 H 18
- 3153 H 19
- 3154 H 18
- 3155 H 17
- 3156 G 17
- 3157 F 17
- 3158 F 18
- 3159 F 18
- 3160 E 18
- 3161 E 18
- 3162 G 18
- 3169 G 15
- 3170 F 17
- 3171 H 15
- 3175 B 16
- 3176 J 9
- 3177 H 18
- 3178 H 5
- 3179 H 6
- 3180 M 7
- 4101 G 5
- 4102 F 5
- 4103 G 9
- 4104 B 13
- 4105 B 11
- 4106 K 12
- 4108 L 9
- 5102 E 4
- 5102 F 2
- 5109 M 7
- 5111 F 18
- 5111 A 13
- 5112 A 15
- 5113 B 12
- 5114 C 16
- 5119 I 12
- 5120 H 13
- 5121 F 15
- 5122 M 11
- 5123 L 11
- 5130 E 8
- 5131 D 9
- 6103 C 2
- 6104 C 3
- 6105 K 2
- 6105 E 6
- 6106 C 6
- 6107 H 17
- 6120 G 16
- 6130 E 7
- 6131 D 7
- 7101 G 11
- 7102 D 8
- 7103 I 9
- 7104 E 3
- 7105 F 2
- 7108 M 7
- 7111 F 18
- 7119 B 13
- 7122 M 9
- 7124 M 13
- 7125 H 6
- 9100 B 4
- 9101 C 6
- 9117 L 10
- 9128 A 4

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



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) 87.5 - 108 MHz			108 MHz	check	◇6	7 ... 9V
			87.5 MHz	check		1.3 ... 2V
MW (9) 531 - 1602 kHz			1602 kHz	5123		8.3V ± 0.2V
			531 kHz	check		1V ± 0.4V
LW (3) 153 - 279 kHz			279 kHz	5122		8.3V ± 0.2V
			153 kHz	check		1V ± 0.4V
FM - DETECTION						
FM	98 MHz 1mV continuous wave <i>short pin 21 (IC7101) to ground</i>	◇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	◇C 	MW	5111	◇7	symmetrical and max. height
				5112		
	450kHz continuous wave			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

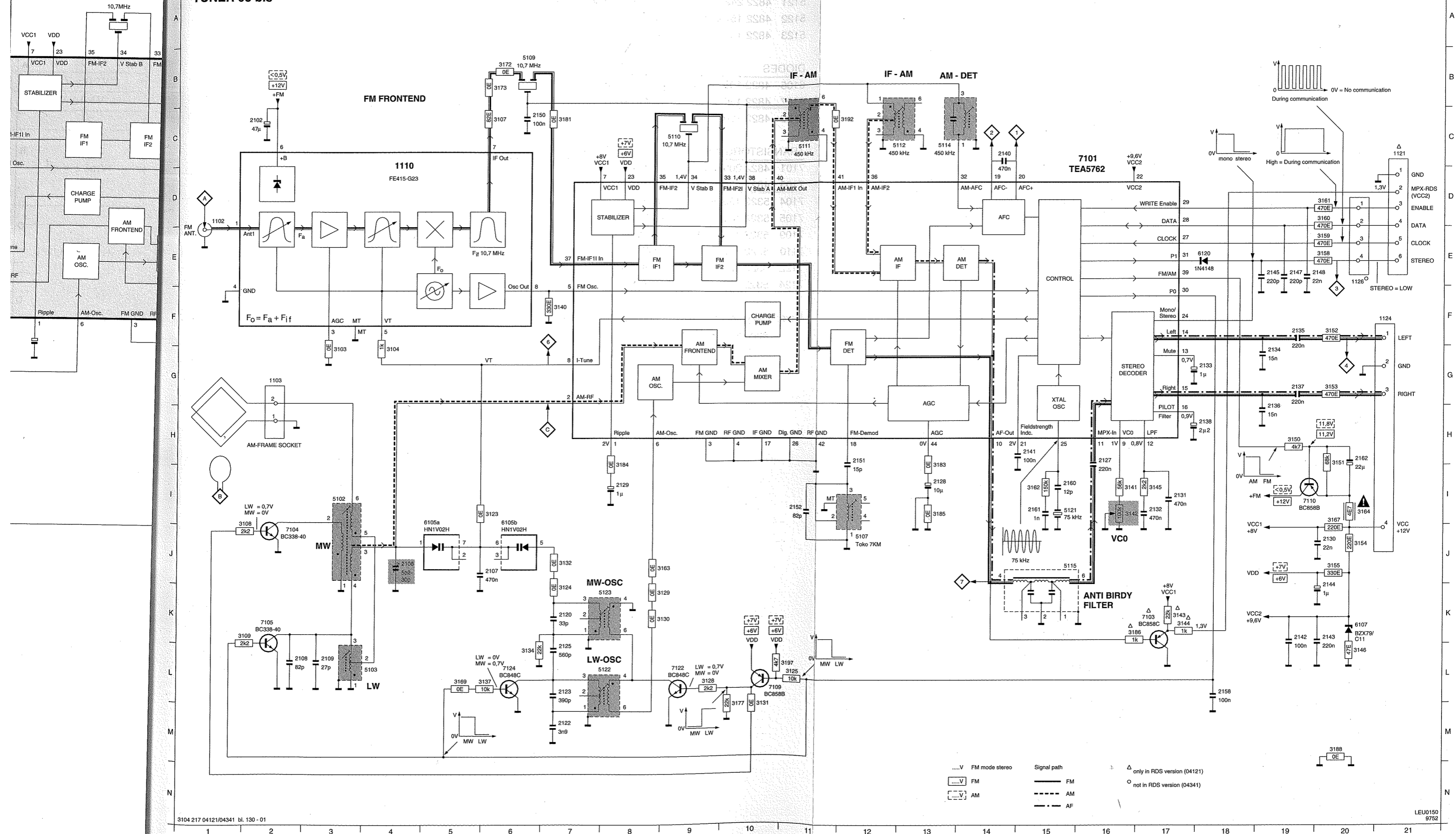
* Signal send via a frame antenna
 (..) = tuning grid in kHz

↑
repeat
↓

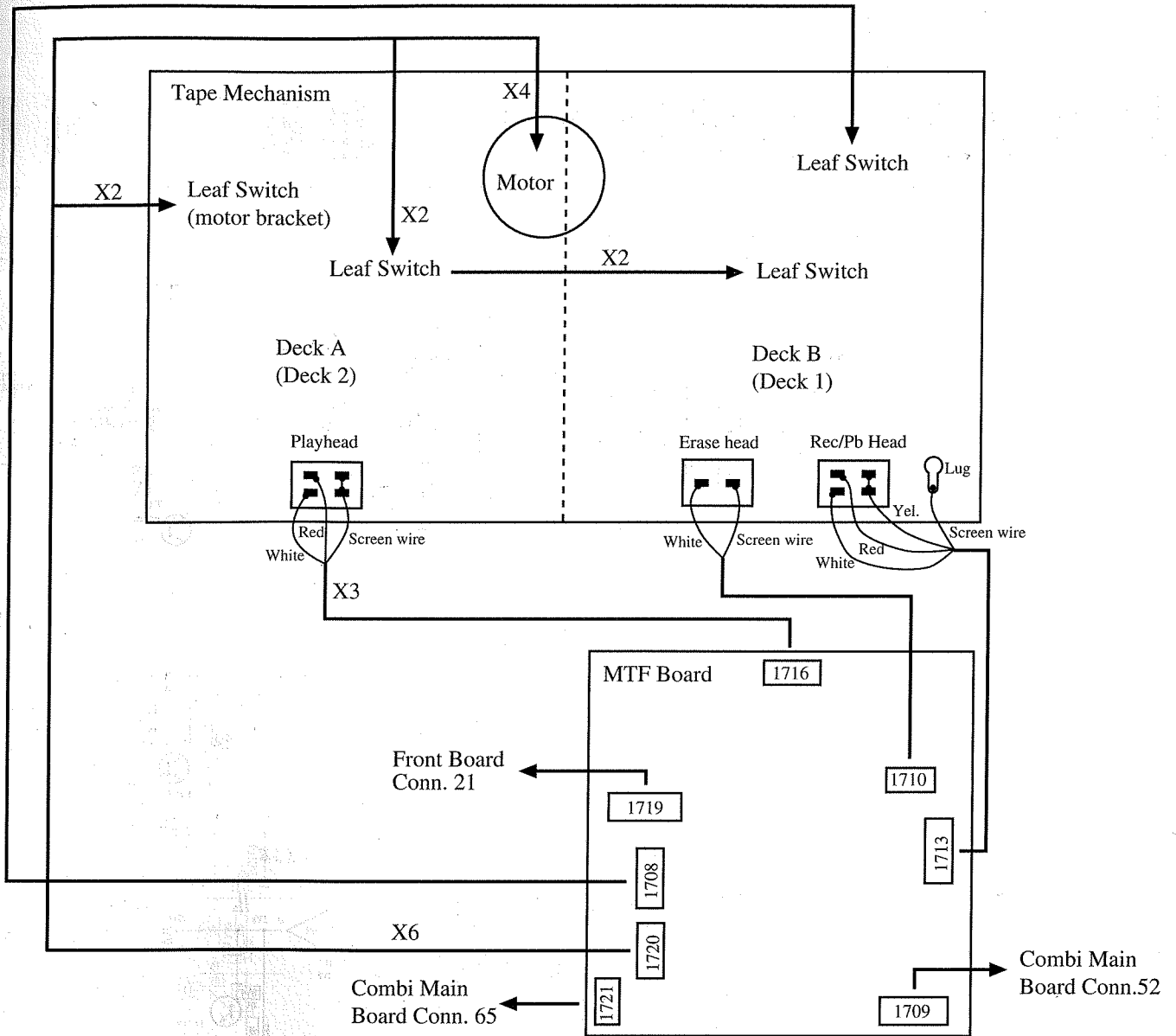
adjtable for 3104 217 04121/04341

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	3149	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

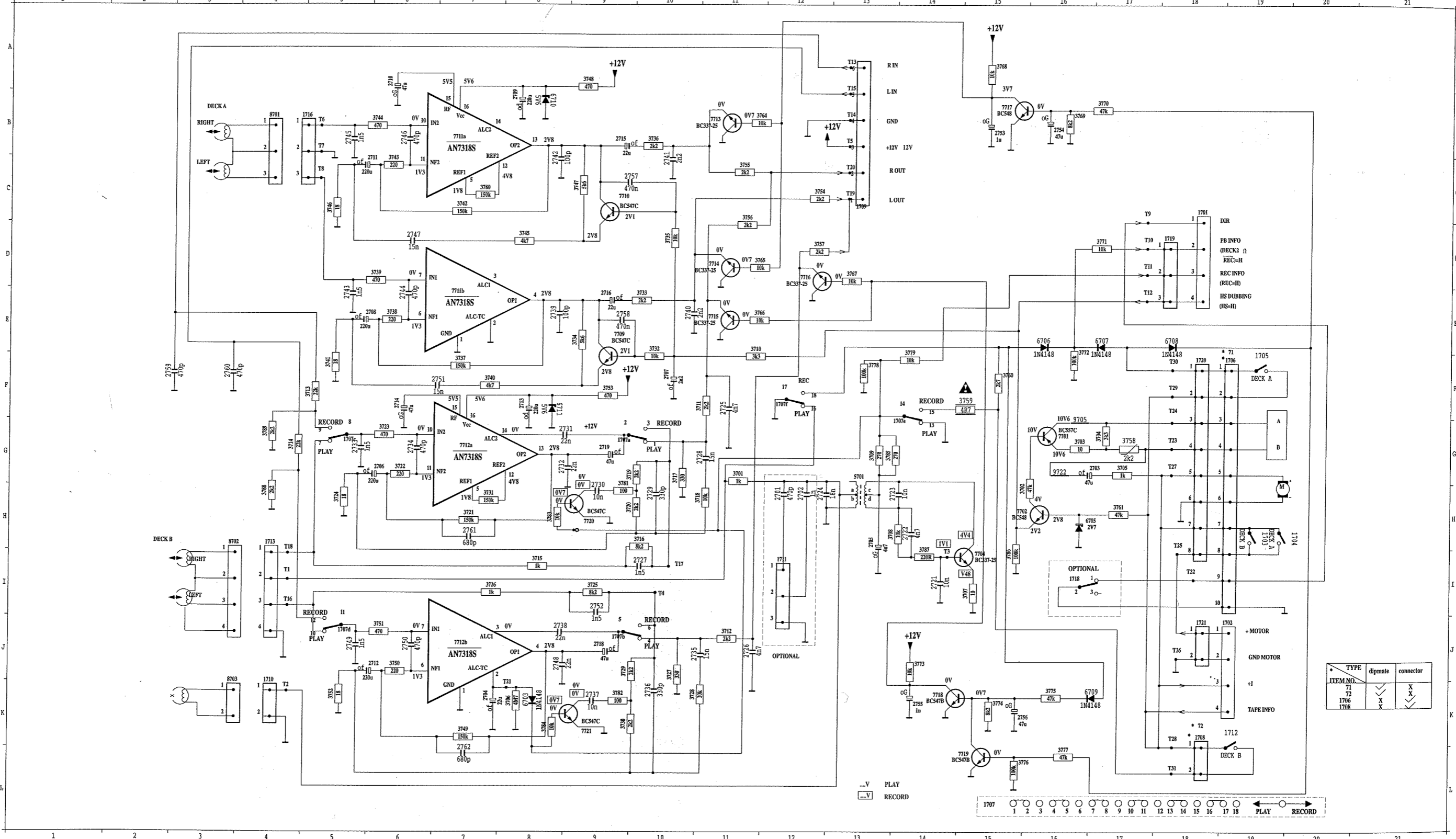
ADJUSTMENT	CASSETTE	DECK 1 (DECK B)	DECK 2 (DECK A)	MEASURE ON	READ ON	ADJUST WITH	ADJUST TO
Azimuth	10kHz	Play	-	L & R out T019/T020	mV-meter	Left hand screw of Play or R/P head	Maximum L = R
	SBC420*	-	Play				
Motor speed	3150Hz	Play	-	L & R out T019/T020	Wow and Flutter meter	3758	**a
	SBC420*	-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

CIRCUIT DIAGRAM

1701 C18	1707b J 9	1710 K 4	1720 F18	2706 G 6	2713 J 8	2722 H14	2729 H10	2736 K10	2743 R 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	3758 G17	3767 D13	3774 K15	3781 H 9	3788 H 4	6700 E18	7700 B 9	7714 D11	7721 K 9
1702 J19	1707c G 5	1711 L12	1721 J18	2707 F10	2714 F 8	2723 H14	2730 H10	2737 K 9	2744 R 5	2751 J 6	2758 C 9	3703 G16	3710 E11	3717 G10	3724 K 5	3731 H 7	3738 B 6	3745 D 8	3752 K 9	3759 F15	3768 A15	3775 K16	3782 K 9	3789 G 4	6709 E18	7701 C 9	7715 E11	7722 K 4
1703 H19	1707d J 5	1712 M19	1722 H12	2708 E10	2715 B 6	2724 H12	2731 H10	2738 K 9	2745 R 5	2752 J 6	2759 C 9	3704 G17	3711 F11	3718 H11	3725 K 5	3732 B10	3739 B 6	3746 C 5	3753 K 9	3760 F15	3769 B16	3776 L16	3783 H 8	5701 G13	6710 B 8	7711a B 7	7716 D12	7723 K 3
1704 H20	1707e G14	1713 N 4	1723 H12	2709 B 6	2716 B 6	2725 F11	2732 H10	2739 K 9	2746 R 5	2753 J 6	2760 C 9	3705 G17	3712 J11	3719 H11	3726 K 5	3733 B10	3740 F 7	3747 C 5	3754 K 9	3761 H17	3770 B17	3777 L16	3784 K 8	5702 G13	6711 B 8	7711b B 7	7717 B15	7724 K 3
1705 F19	1707f F12	1716 B 4	1724 H12	2710 A 6	2717 A 6	2726 J11	2733 H10	2740 B10	2747 C 5	2754 B16	2761 H 7	3706 K 8	3713 F 5	3720 C 9	3727 J10	3734 B 9	3741 F 5	3748 A 9	3755 C11	3764 B17	3773 B17	3779 F13	3785 G13	5703 K 8	6712 B 8	7712a B 7	7718 B14	7725 K 3
1706 F19	1708 K18	1718 B16	1725 H12	2711 C 6	2718 J 9	2727 L10	2734 H10	2741 C10	2748 C 5	2755 K14	2762 F 7	3707 K 8	3714 G 4	3721 A 7	3728 K 9	3735 D10	3742 C 7	3749 K 7	3756 C11	3765 D11	3772 B16	3778 F14	3786 H15	5704 K 8	6713 B 8	7712b B 7	7719 B15	7726 J 7
1707a G 9	1709 C13	1719 D16	1726 H12	2712 J 6	2719 J 9	2728 L10	2735 H10	2742 C 8	2749 C 5	2756 K16	2763 F 7	3708 H13	3715 L 8	3722 G 6	3729 J 9	3736 B10	3743 C 6	3750 J 6	3757 D12	3766 E11	3772 B16	3778 F14	3787 H14	5705 G16	6714 B 8	7713 B11	7720 H 9	7727 G16



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.

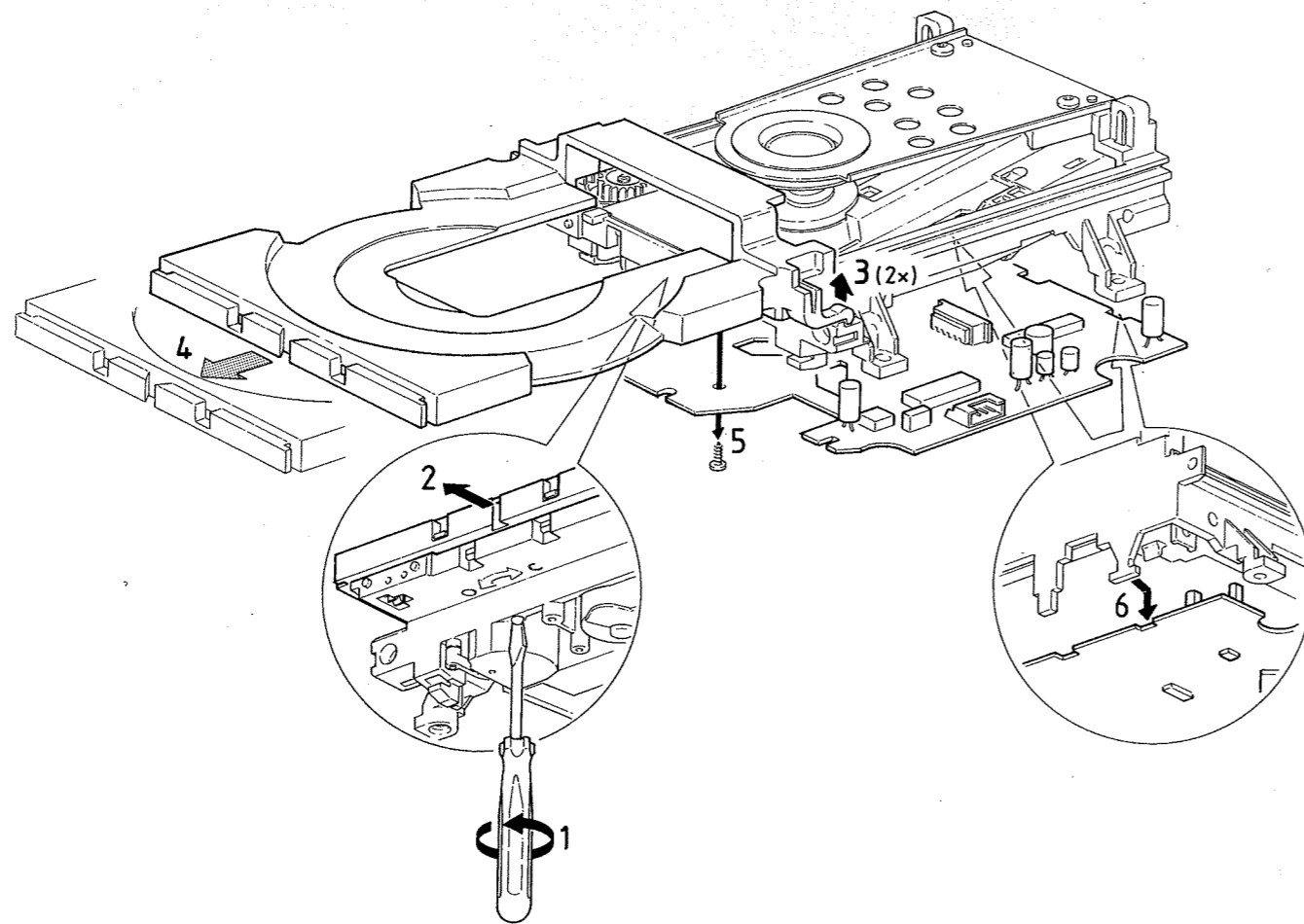


Fig. 1

Assembly of gear

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

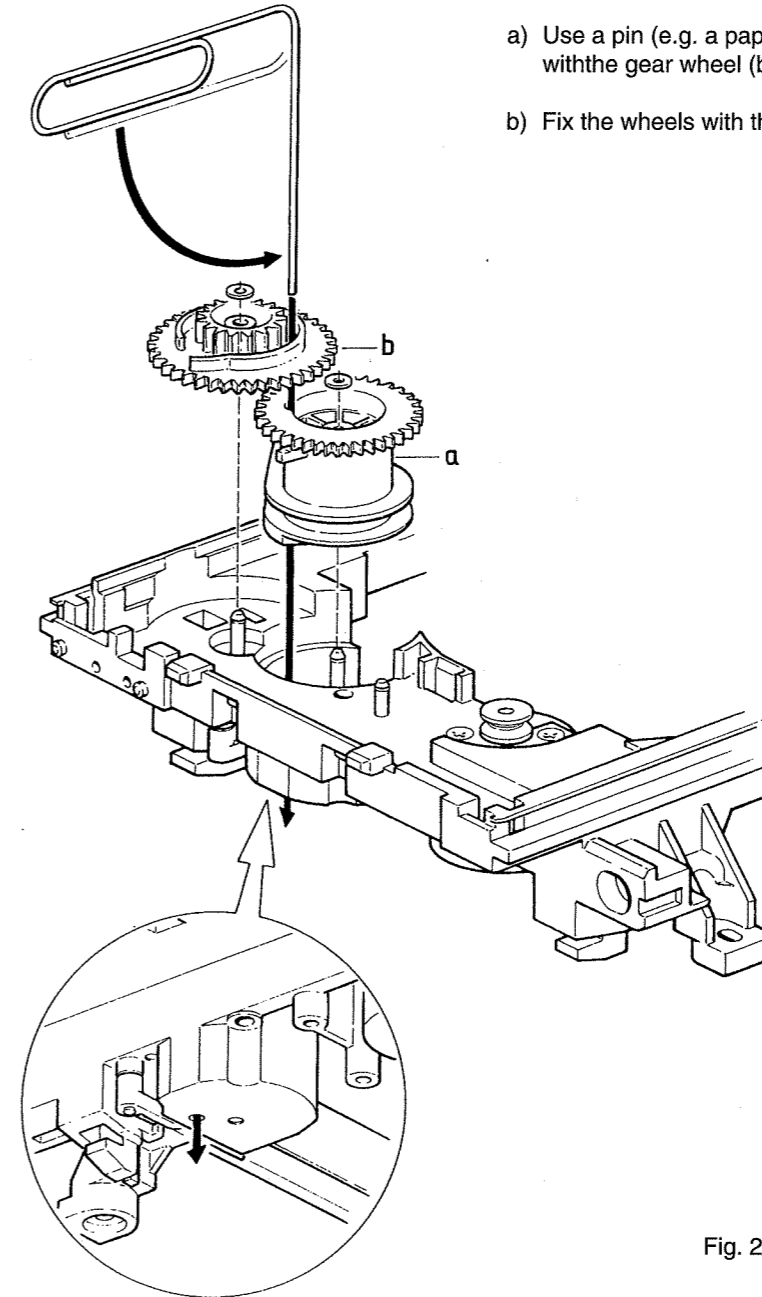


Fig. 2

- 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 washer.
- e) Mount the driving belt.

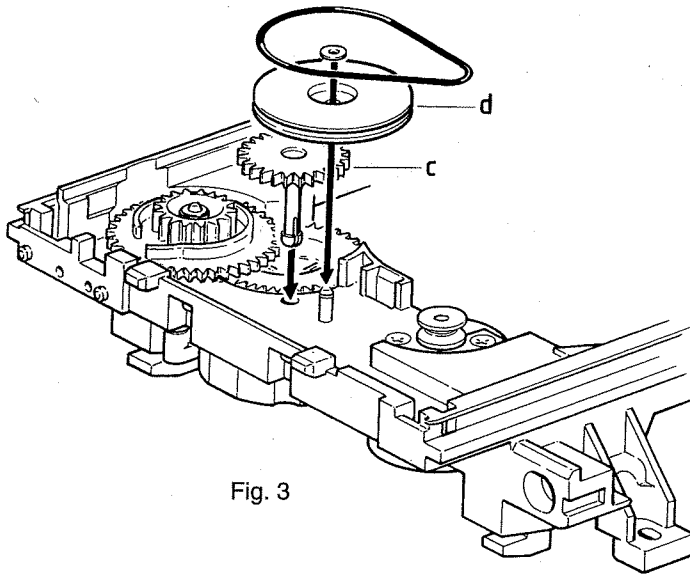


Fig. 3

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

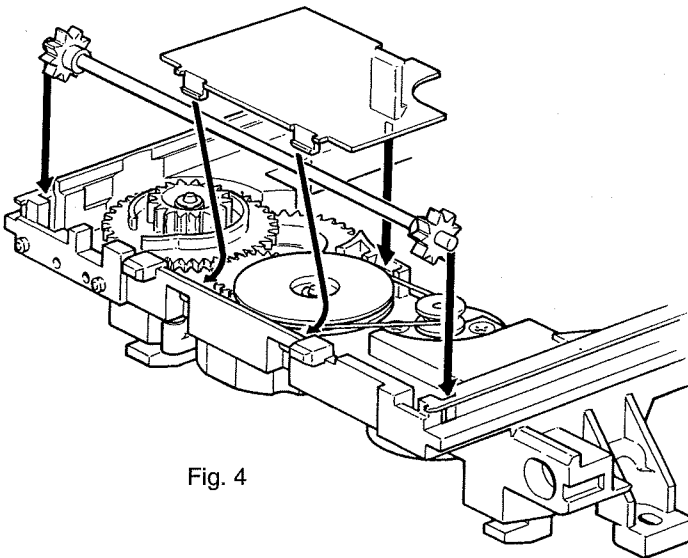


Fig. 4

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

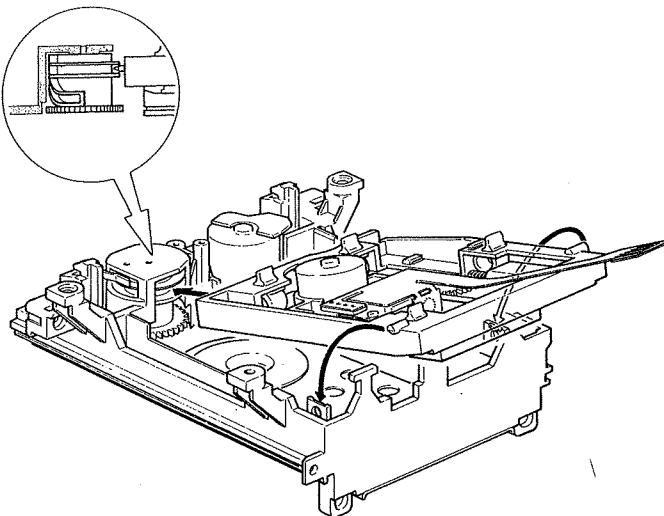


Fig. 5

Check if tray mechanism works correctly!

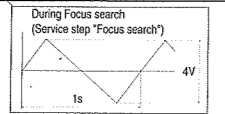
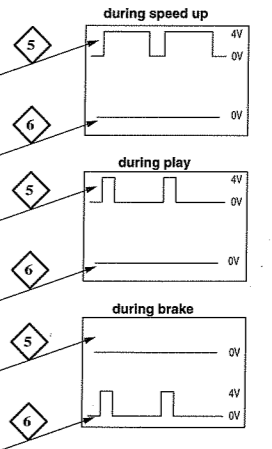
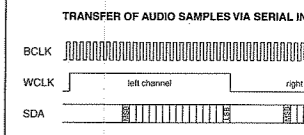
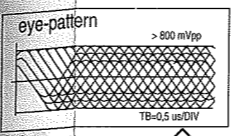
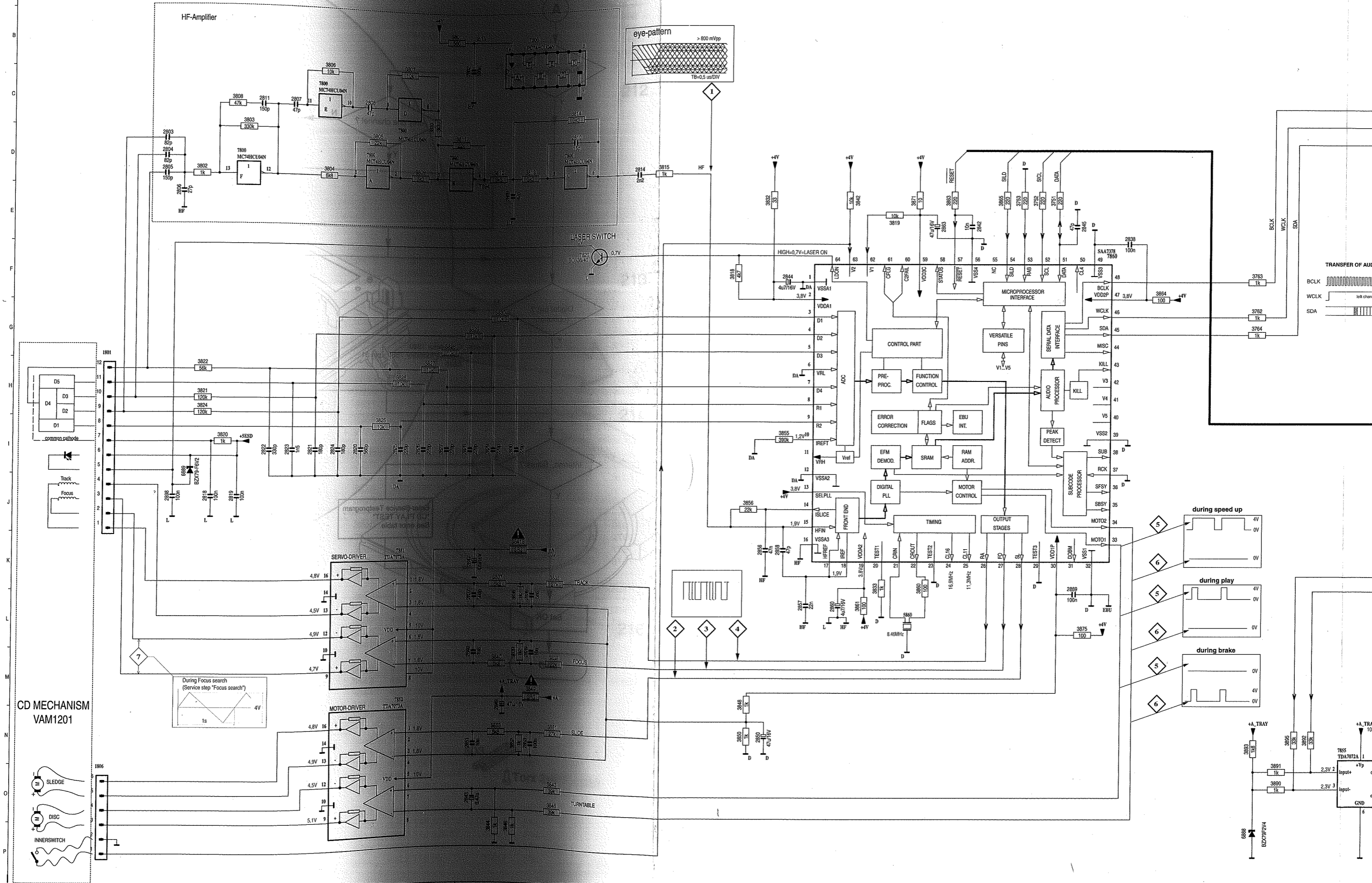
- 1) Turn the gear wheel (b) clockwise to its endposition (Use a small screwdriver as shown in Fig. 1 point 1).

The tray has to move to inner position first and then the CD mechanism has to move to its upper position.

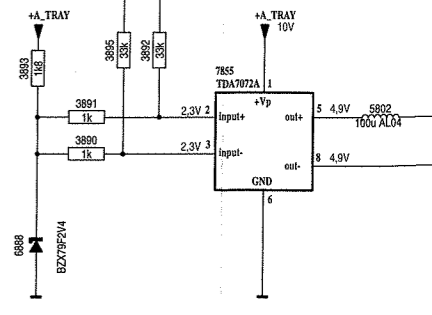
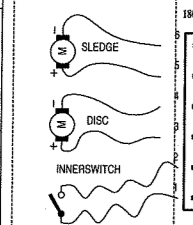
- 2) Turn the gear wheel (b) counter clockwise to its endposition.

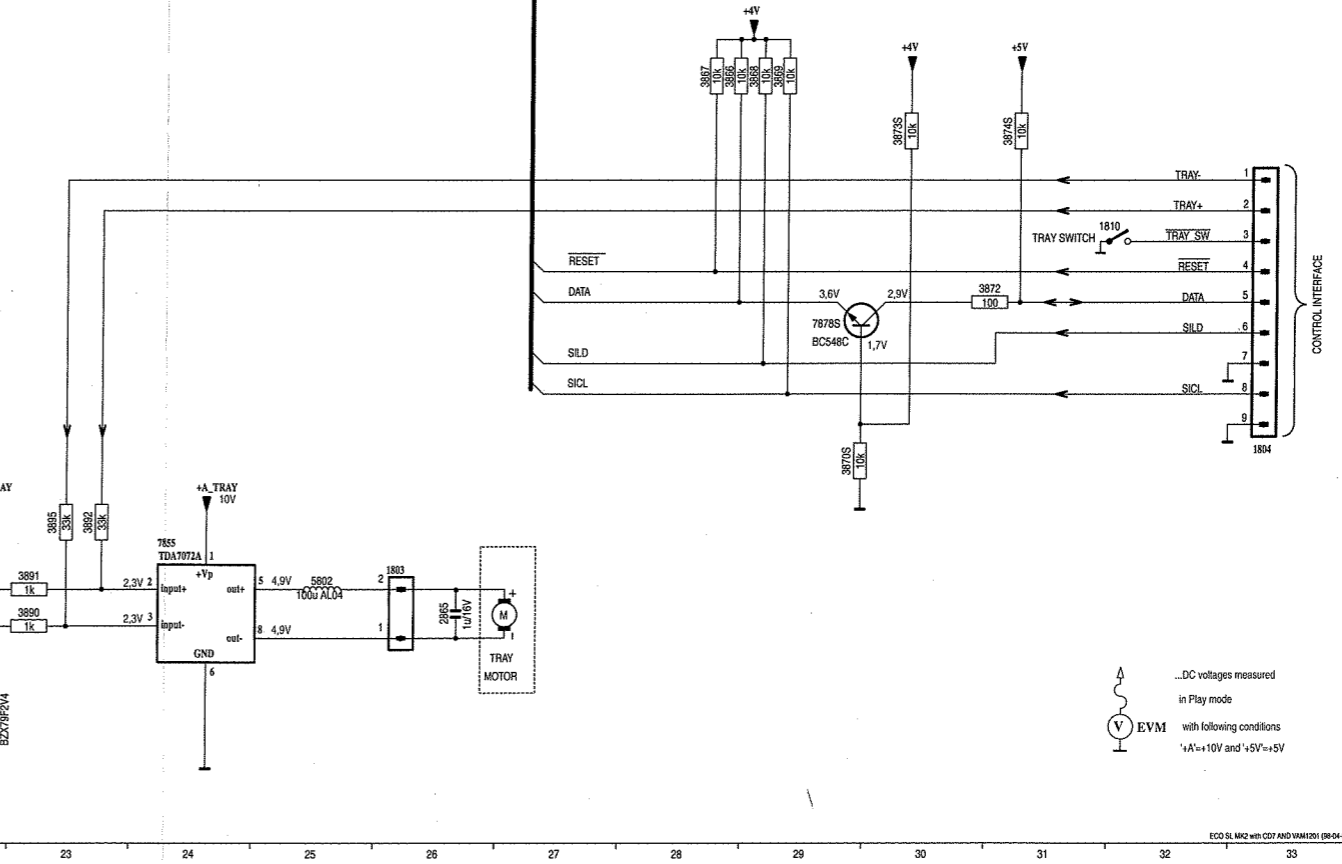
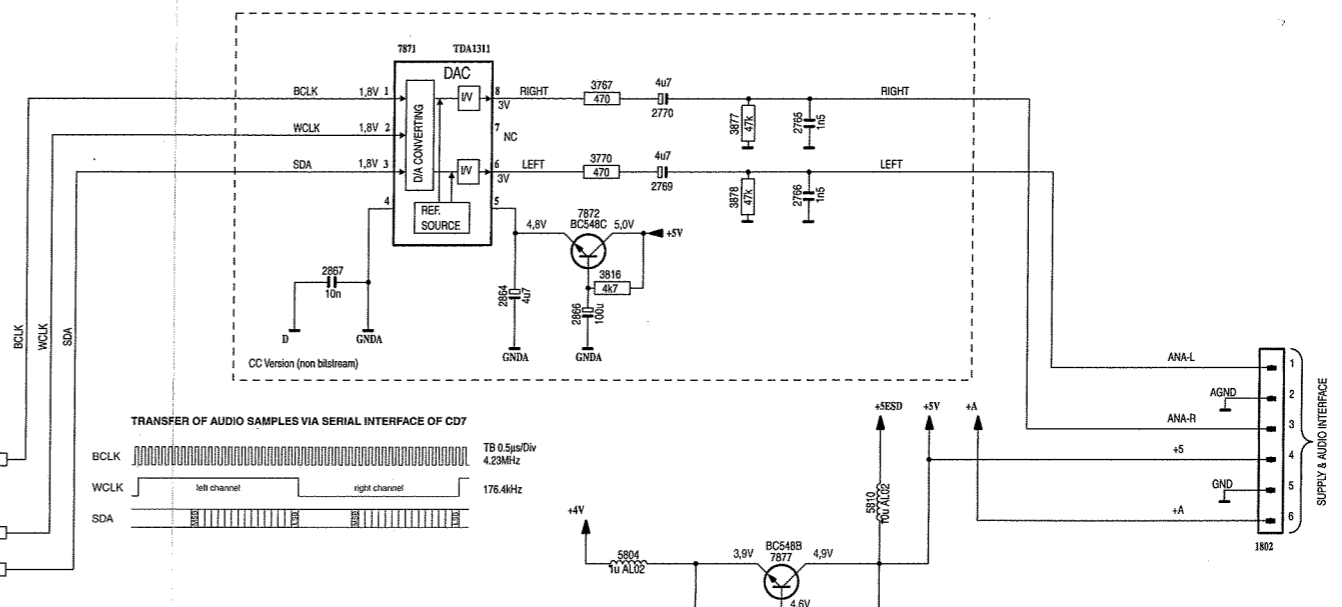
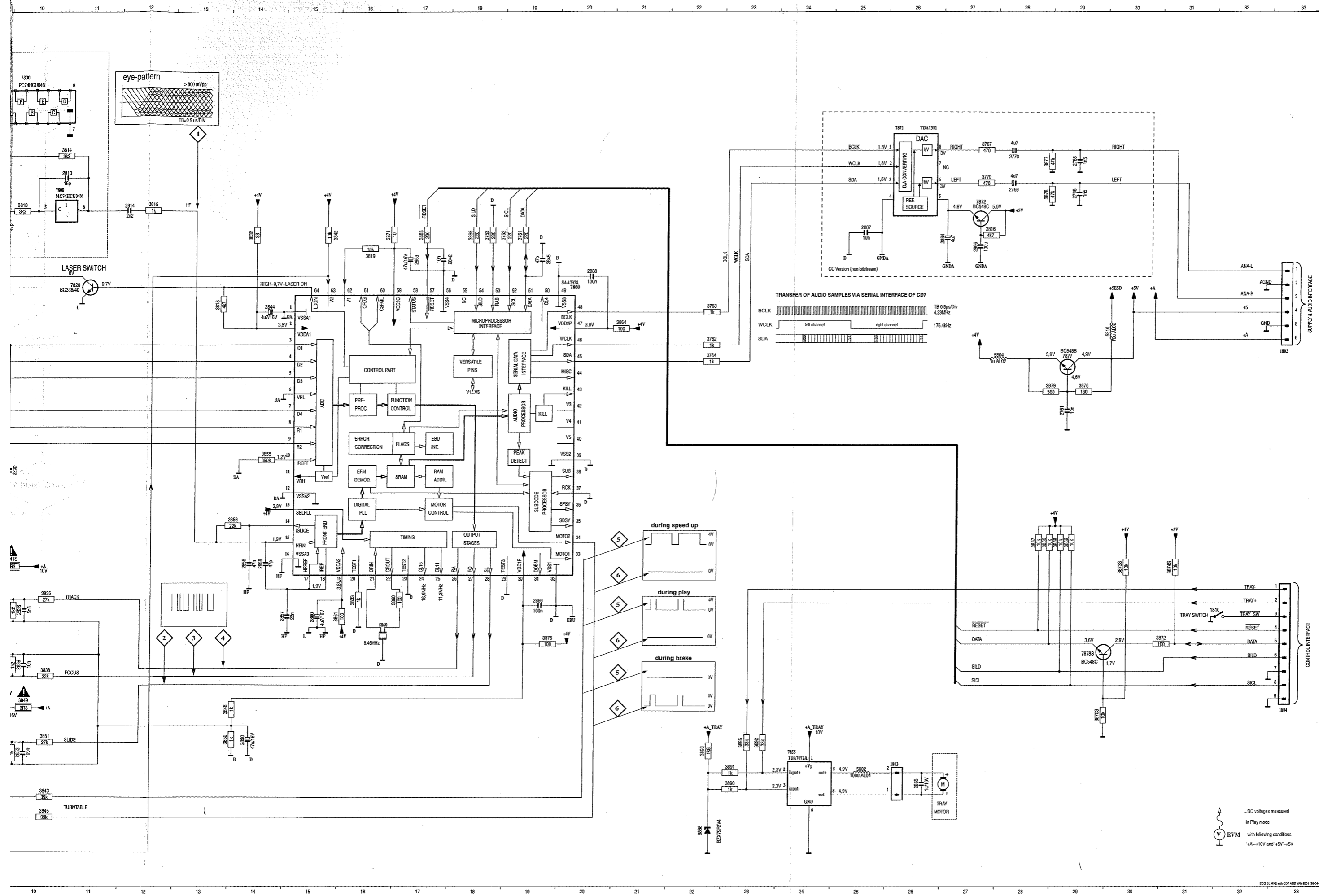
The CD Mechanism has to move to its lower position first and then the tray has to move outside.

CD Board



CD MECHANISM VAM1201





1801	G2	3846	P 9
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	B 9	3861	L15
2803	D.3	3863	E17
2804	D.3	3864	F21
2805	D.3	3865	E18
2806	E 4	3866	J28
2807	C 6	3867	J28
2808	C 7	3868	J29
2820	I 7	3869	J29
2821	I 6	3870S	N29
2822	I 5	3871	E16
2823	I 6	3872	L31
2824	I 6	3873S	K30
2825	I 7	3874S	K30
2826	I 8	3875	L19
2827	I 8	3876	H29
2828	I 9	3877	D28
2829	I 9	3878	D29
2830	I 9	3879	H28
2836	L10	3880	K33
2837	L 9	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	K 9	5802	N25
2849	M9	5804	G28
2850	N14	5810	G30
2851	N 9	5860	L16
2853	N10	6888	P22
2856	K14	6889	I 4
2857	L15	7800	C 6
2858	K14	7800	D 5
2860	L15	7800	D 7
2863	E17	7800	D 7
2864	E27	7800	D 8
2865	O26	7800	D10
2866	E27	7820	F11
2867	E25	7851	K 8
2868S	N30	7852	M 8
2869	K19	7855	N24
2898	J 3	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	B 8		
3802	D 4		
3803	C 5		
3804	D 6		
3805	D 7		
3806	B 6		
3807	B 8		
3808	C 5		
3809	D 8		
3810	C 8		
3811	D 8		
3812	D 9		
3813	D10		
3814	C10		
3815	D12		
3816	E27		
3818	F13		
3819	D15		
3820	I 4		
3821	H 4		
3822	H 4		
3824	H 4		
3825	I 7		
3826	H 7		
3827	H 8		
3828	G 8		
3829	G 9		
3830	G 9		
3832	E14		
3833	K16		
3835	K10		
3836	L 9		
3837	K 9		
3838	M10		
3839	M 9		
3840	M 9		
3841SK10			
3842	E15		
3843	O10		
3844	P 9		
3845	O10		

...DC voltages measured
in Play mode
with following conditions
'A'=+10V and 'SV'=+5V

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)

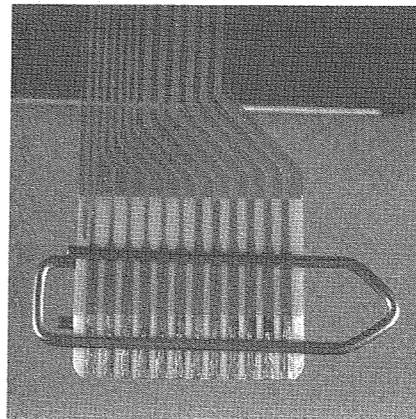


fig.1

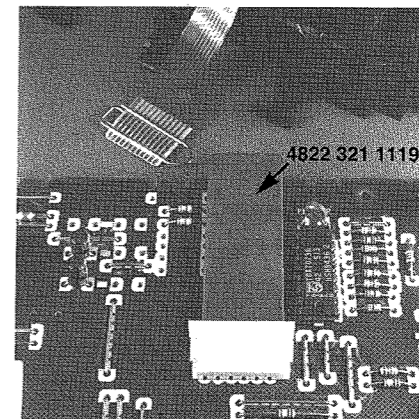


fig.2

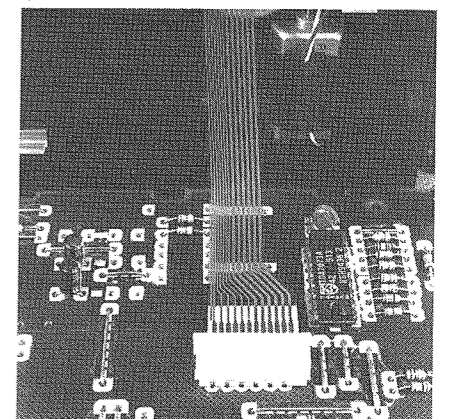
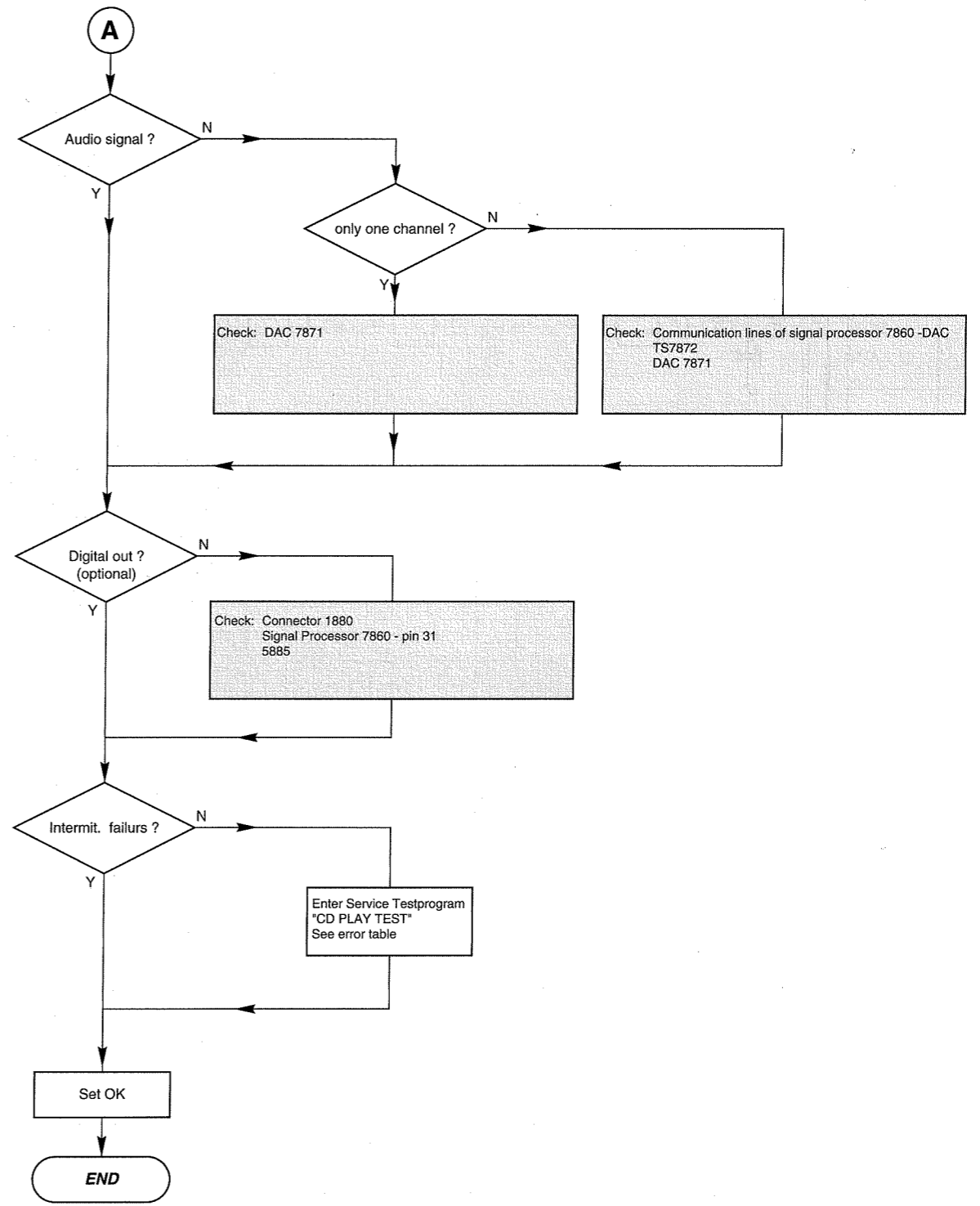
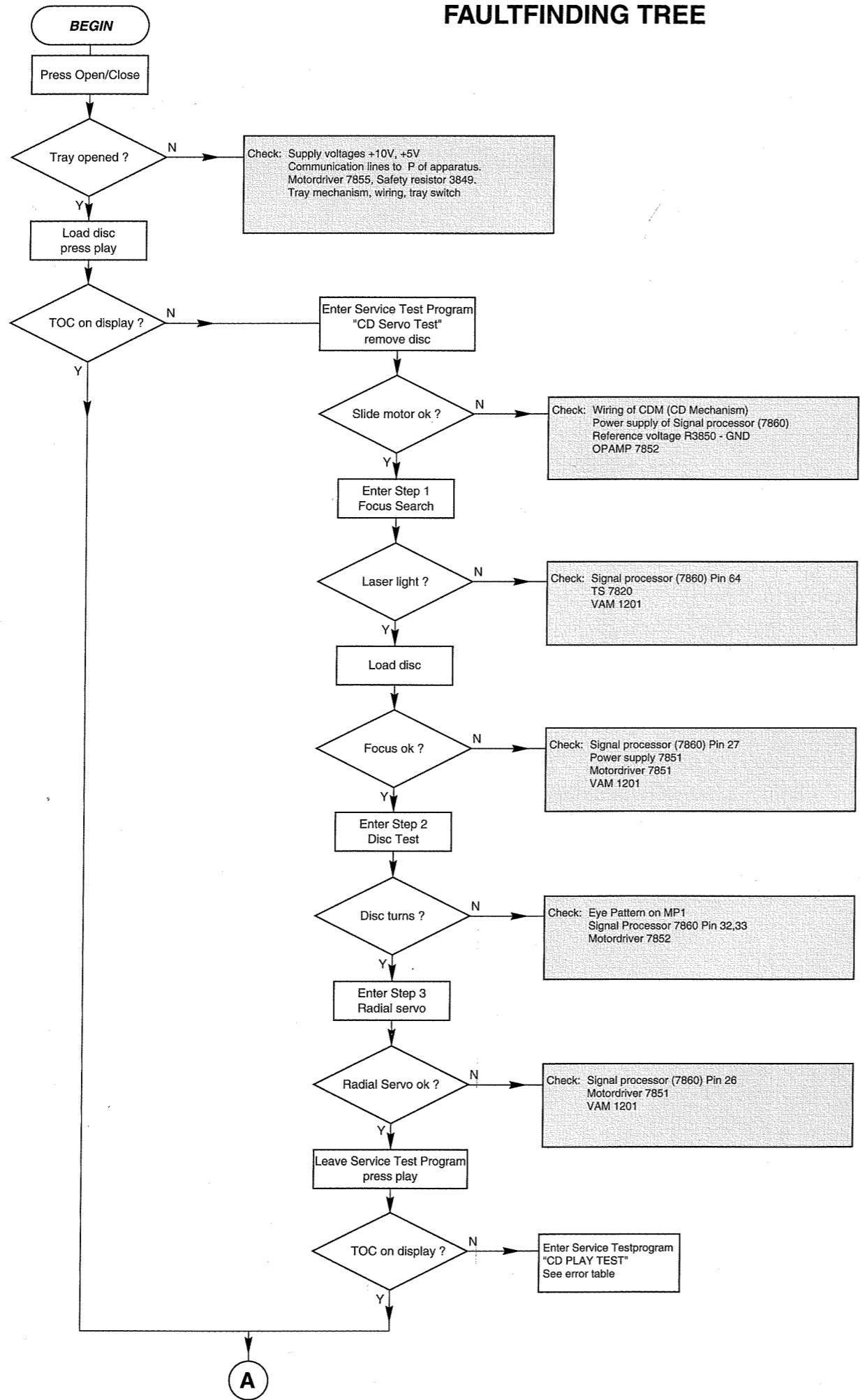


fig.3

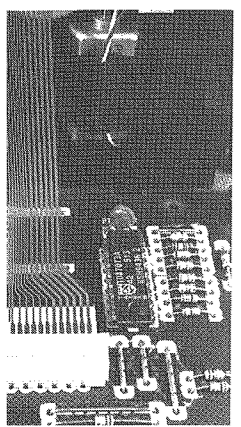
Remarks

FAULTFINDING TREE



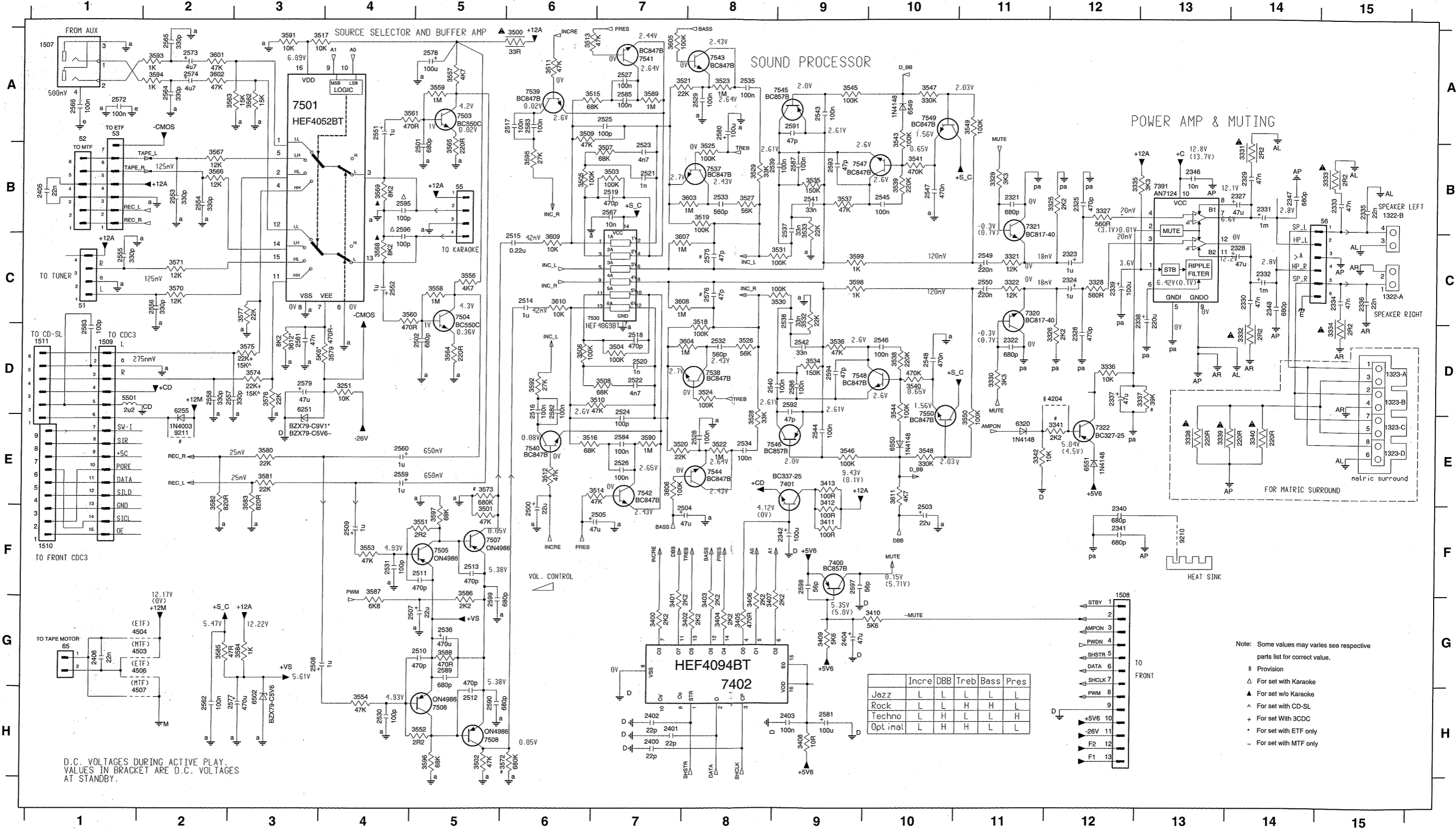
VICES WHEN
PRES LIKE

ctor (fig.2)



CIRCUIT DIAGRAM - SOURCE SELECT & AMPLIFIER PART

51 C1	1507 A1	2328 C14	2340 F12	2406 G1	2512 H5	2524 E7	2536 G5	2548 D10	2560 E4	2576 C8	2589 G5	3321 C11	3335 B12	3404 G8	3502 H5	3514 E7	3526 D8	3538 D10	3551 F5	3564 D5	3576 D3	3589 A7	3602 A2	4503 G2	7320 C11	7507 F5	7546 E8
52 A1	1508 G12	2329 B14	2341 F12	2407 F6	2513 F5	2525 A7	2537 B9	2549 C11	2561 D3	2577 H3	2589 H5	3322 C11	3336 D12	3405 G8	3503 B7	3515 A6	3527 E8	3539 B10	3552 H5	3565 B5	3577 C3	3590 E7	3603 B8	4504 G2	7321 B11	7508 H5	7547 B9
53 A1	1509 D1	2330 C14	2342 F9	2501 B5	2514 C6	2526 E7	2538 C9	2550 C11	2562 H2	2578 A5	2591 A9	3325 B12	3337 D13	3406 G8	3504 D7	3516 E6	3528 E8	3540 D10	3553 F4	3566 B2	3579 D4	3591 A3	3604 D8	4505 G2	7322 E12	7509 C7	7548 D10
55 B5	1510 F1	2331 B14	2346 B13	2502 D5	2515 C6	2527 A7	2539 B8	2551 A4	2563 D1	2579 D3	2592 D9	3326 D12	3338 E13	3407 G8	3505 B6	3517 A3	3529 B8	3541 B10	3554 H4	3567 B2	3580 E3	3593 A2	3605 A7	4507 H2	7323 B13	7510 B13	7549 A10
56 B15	1511 D1	2332 C14	2347 B14	2503 F10	2516 D8	2528 E8	2540 D8	2552 C4	2564 A2	2580 A8	2593 B9	3327 B12	3339 E13	3408 H8	3506 D6	3518 D8	3530 C9	3543 A10	3556 C5	3568 C4	3581 E3	3593 A2	3606 E7	4508 H2	7324 F9	7511 B9	7550 D10
65 G1	2321 B11	2333 B15	2348 C14	2504 F8	2517 A6	2529 A8	2541 B9	2553 B2	2565 A2	2581 H9	2594 D9	3328 C12	3340 E14	3409 G9	3507 B7	3519 B8	3531 C9	3544 D10	3557 A5	3569 B4	3582 E2	3594 A2	3607 C7	4509 H2	7325 D3	7512 D3	7551 D10
1322-A C15	2322 D11	2334 C15	2400 H7	2505 F7	2518 D7	2530 H4	2542 D9	2554 B2	2566 A1	2582 D6	2595 B4	3329 B11	3341 E12	3410 G10	3508 D7	3520 E7	3532 C9	3545 A9	3558 C5	3570 C2	3583 E3	3595 B6	3608 C7	4510 H2	7326 D2	7513 D2	7552 E10
1322-B B15	2323 C12	2335 B15	2401 H7	2507 G5	2519 B7	2531 F4	2543 A9	2555 C1	2567 B7	2583 A6	2596 B4	3330 D11	3342 E11	3411 F9	3509 A6	3521 A7	3533 B9	3546 E9	3559 A5	3571 C2	3584 G3	3596 H5	3609 C6	4511 H2	7327 E11	7514 A3	7553 E10
1323-A D15	2324 C12	2336 C15	2402 H7	2508 G3	2520 D7	2532 D8	2544 E9	2556 C2	2572 A1	2594 E7	2597 F9	3331 B14	3400 G7	3412 E9	3510 D7	3522 E8	3534 D9	3547 A10	3560 C4	3572 H6	3585 G2	3597 F5	3610 C6	4512 H2	7328 A5	7515 A5	7554 A8
1323-B D15	2325 B12	2337 D12	2403 H9	2509 F4	2521 B7	2533 B8	2545 B10	2557 D2	2573 A2	2595 A7	2598 F9	3332 D14	3401 G7	3413 E9	3511 A6	3523 A8	3535 B9	3548 E10	3561 A4	3573 E5	3586 F5	3598 C9	3611 E10	4513 H2	7329 A10	7516 C5	7555 A8
1323-C E15	2326 D12	2338 C13	2404 G9	2510 G5	2522 D7	2534 E8	2546 D10	2558 D2	2574 A2	2596 D9	2599 G5	3333 B15	3402 G8	3414 E9	3512 E6	3524 D8	3536 D9	3549 A11	3562 A3	3574 D3	3587 F4	3599 C9	3612 D3	4514 H2	7330 E10	7517 F5	7556 A8
1323-D E15	2327 B14	2339 C12	2405 B1	2511 F5	2523 B7	2535 A8	2547 B10	2559 E4	2575 C8	2597 B9	2599 D4	3334 D15	3403 G8	3501 F5	3513 A6	3525 B8	3537 B9	3550 E11	3563 A2	3575 D3	3588 G5	3601 A2	4204 D12	4515 H2	7331 E11	7518 H5	7557 A8



ude +5V6, +12A,
the FTD Display

(A0 & A1 control
coming directly

control the IC 7501
fed with a buffer
main signal path

and PWM control
characteristics.

inverter IC 7530
eters (AF control).

the laser light pen

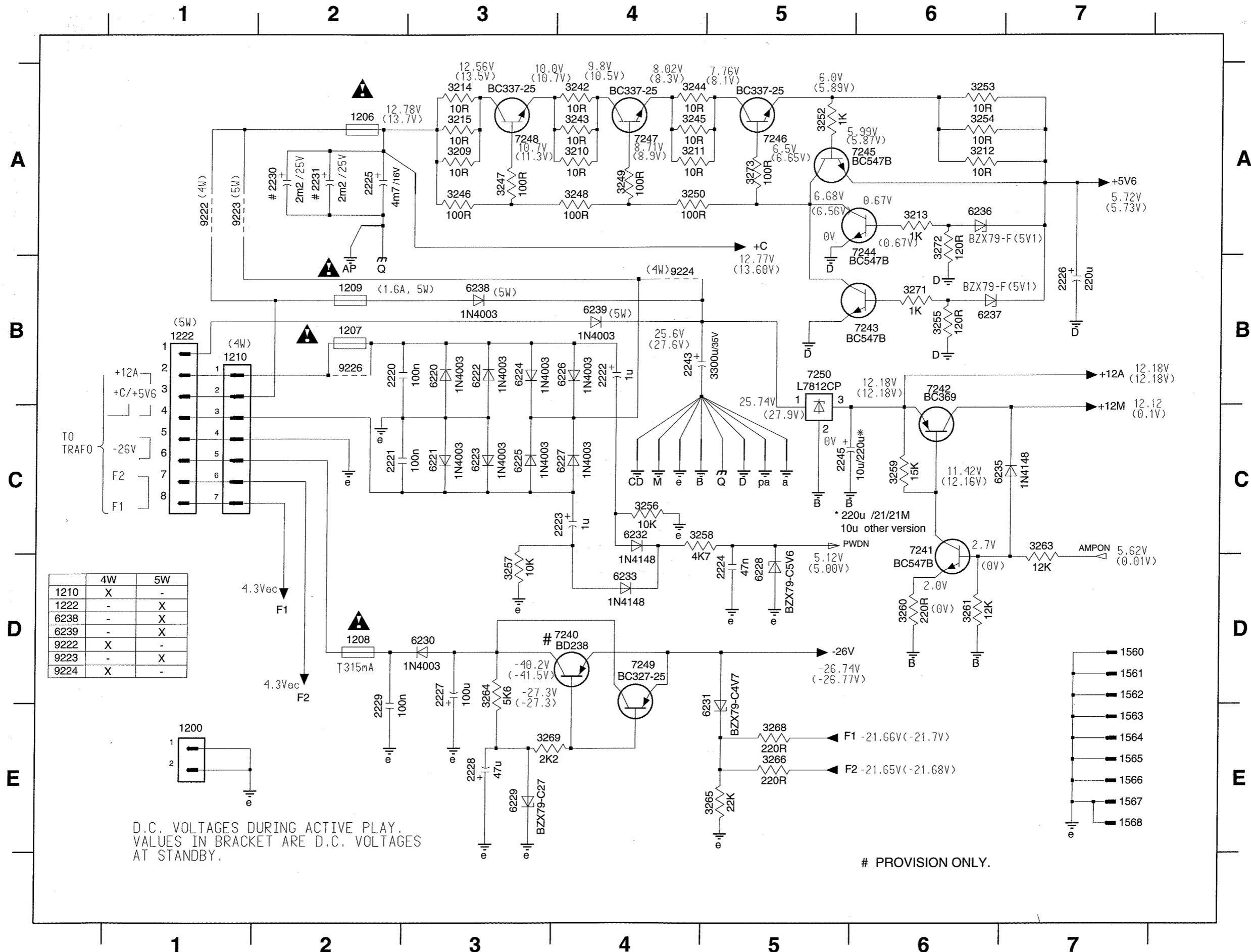
r. This feature is

tailored to deliver

Note: Some values may vary see respective parts list for correct value.

- Provision
- △ For set with Karaoke
- ▲ For set w/o Karaoke
- ∧ For set with CD-SL
- + For set With 3CDC
- For set with ETF only
- For set with MTF only

CIRCUIT DIAGRAM - POWER SUPPLY PART



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

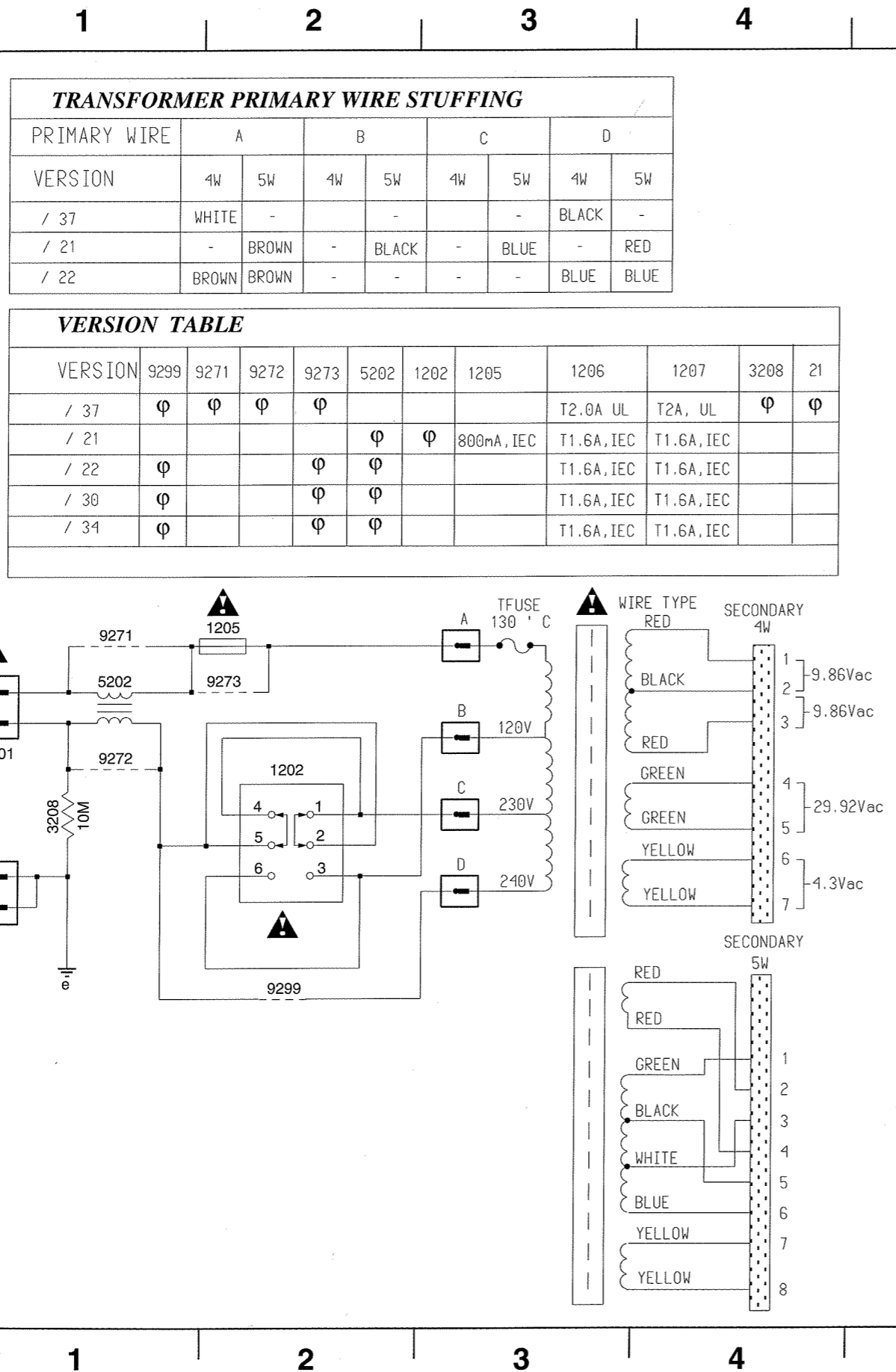
D.C. VOLTAGES DURING ACTIVE PLAY.
VALUES IN BRACKET ARE D.C. VOLTAGES
AT STANDBY.

PROVISION ONLY.

- 1200 E1
- 1206 A2
- 1207 B2
- 1208 D2
- 1209 B2
- 1210 B1
- 1222 B1
- 1560 D7
- 1561 D7
- 1562 D7
- 1563 E7
- 1564 E7
- 1565 E7
- 1566 E7
- 1567 E7
- 1568 E7
- 2220 B2
- 2221 C2
- 2222 B4
- 2223 C4
- 2224 D5
- 2225 A2
- 2226 B7
- 2227 D3
- 2228 E3
- 2229 E2
- 2230 A2
- 2231 A2
- 2243 B4
- 2245 C5
- 3209 A3
- 3210 A4
- 3211 A4
- 3212 A6
- 3213 A6
- 3214 A3
- 3215 A3
- 3242 A4
- 3243 A4
- 3244 A4
- 3245 A4
- 3246 A3
- 3247 A3
- 3248 A4
- 3249 A4
- 3250 A4
- 3252 A5
- 3253 A6
- 3254 A6
- 3255 B6
- 3256 C4
- 3257 D3
- 3258 C4
- 3259 C6
- 3260 D6
- 3261 D6
- 3263 C7
- 3264 D3
- 3265 E5
- 3266 E5
- 3268 E5
- 3269 E3
- 3271 B6
- 3272 A6
- 3273 A5
- 6220 B3
- 6221 C3
- 6222 B3
- 6223 C3
- 6224 B3
- 6225 C3
- 6226 B4
- 6227 C4
- 6228 D5
- 6229 E3
- 6230 D3
- 6231 E5
- 6232 C4
- 6233 D4
- 6234 C6
- 6235 C6
- 6236 A6
- 6237 B6
- 6238 B3
- 6239 B4
- 6240 D4
- 6241 C6
- 6242 B6
- 6243 B6
- 6244 A5
- 6245 A5
- 6246 A5
- 6247 A4
- 6248 A3
- 6249 D4
- 6250 B5
- 9222 A1
- 9223 A1
- 9224 B4
- 9226 B2

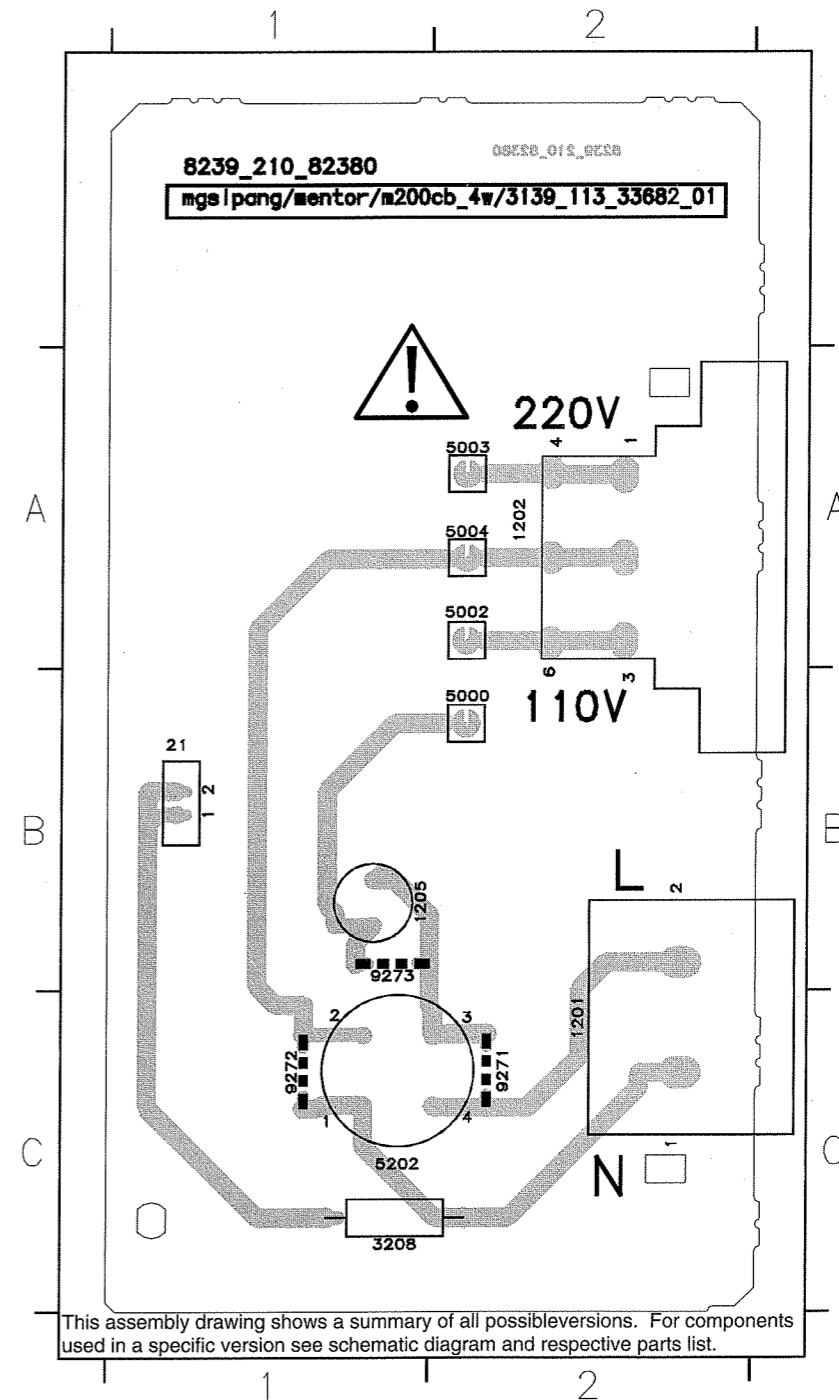
CIRCUIT DIAGRAM - TRANSFORMER PRIMARY PART

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



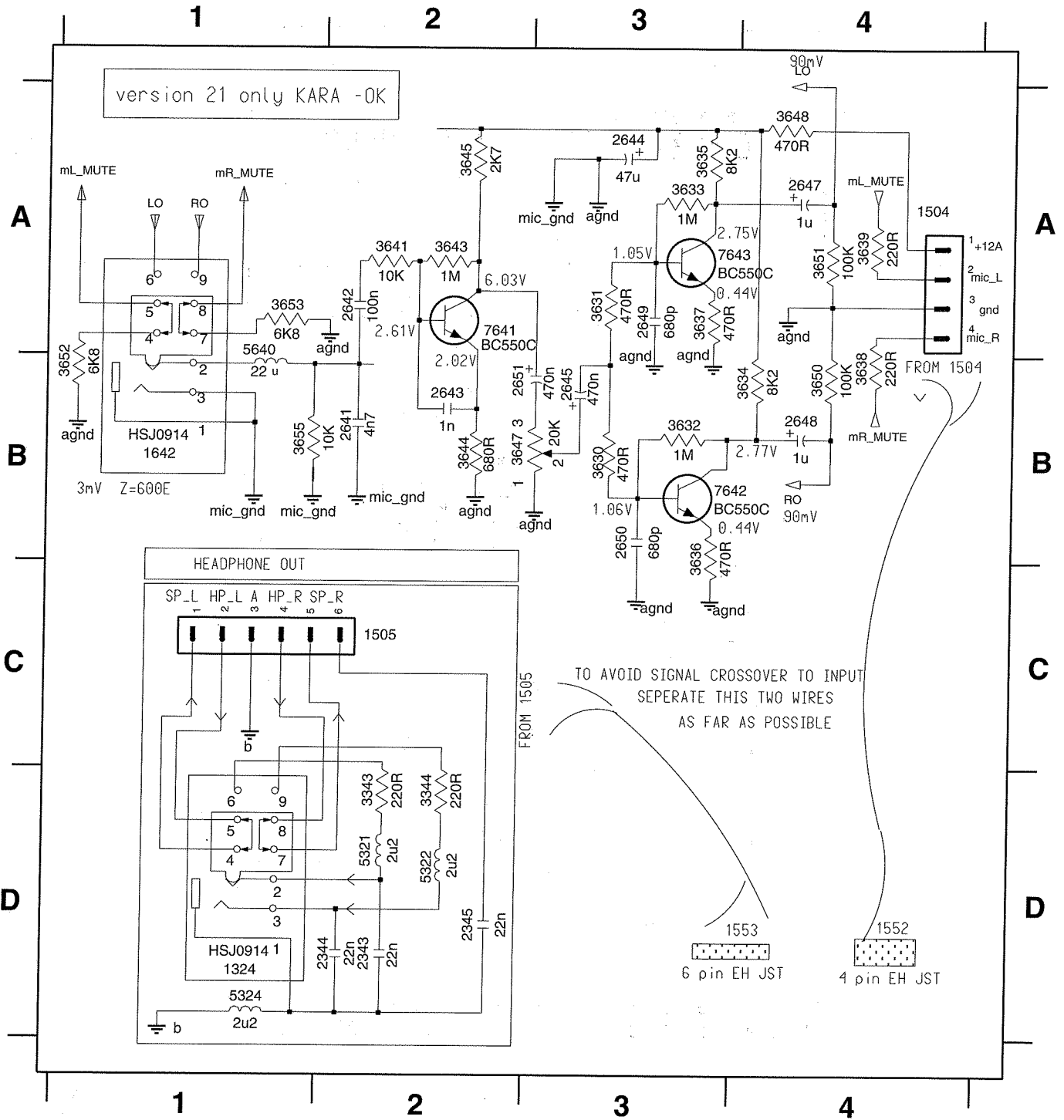
COMPONENT LAYOUT - TRANSFORMER PRIMARY

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



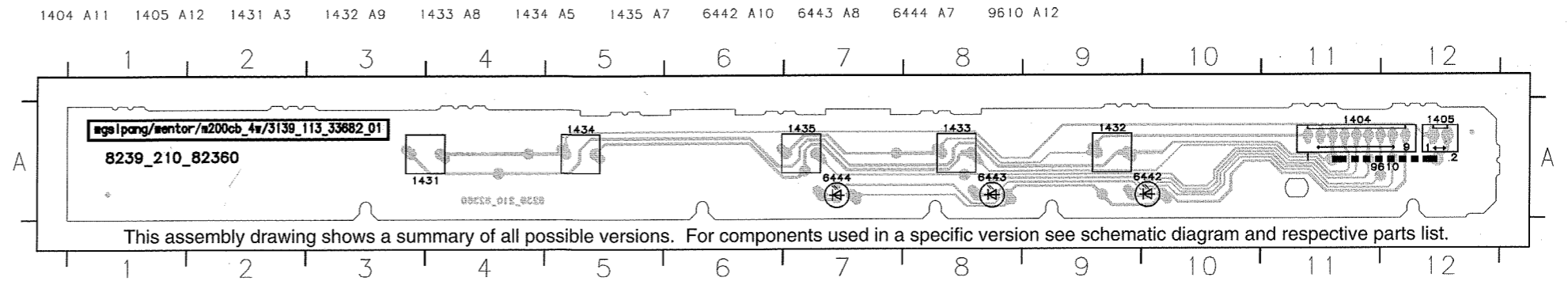
KARAOKE & HEADPHONE PART - CIRCUIT DIAGRAM

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	

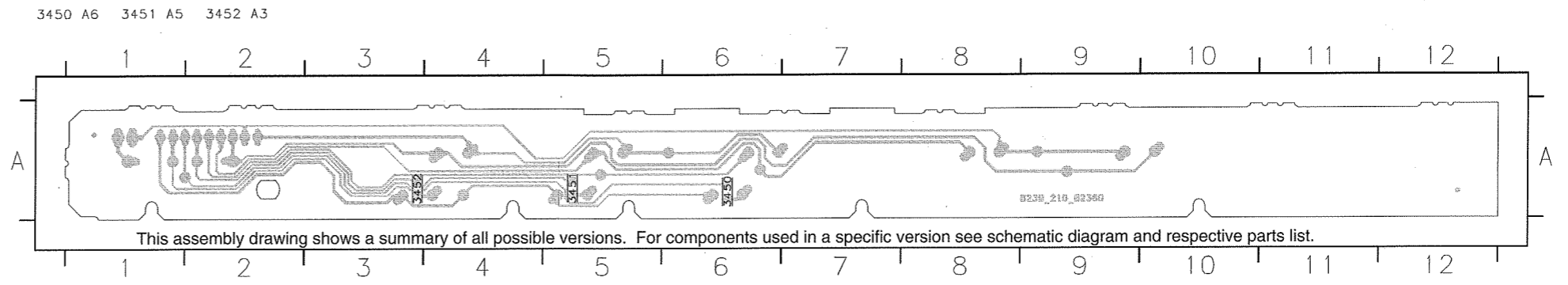


CDC KEY PART

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

