Service
Service
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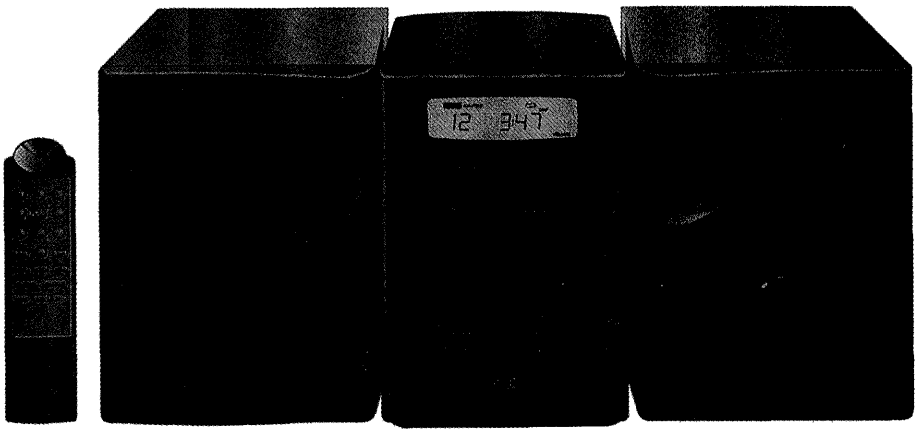
Volta ao Menu



Service Manual

ÍNDICE PAG.

Impresso no Brasil Sujeito a Modificações 01/95 4806 725 27014

PHILIPS

ESPECIFICAÇÕES

GERAL

Tensão de rede		: 110 / 220 V
Frequência de rede		: 60 Hz
Consumo		: 90 W max.
Dimensões		: 160 x 228 x 285 mm

TUNER : FM

Faixa útil		: 87.5 MHz ~ 108 MHz
Frequência de FI		: 10.7 MHz
Impedância de entrada		: 75 Ω
Sensibilidade (S/N = 26 dB)		: < 7 µV
Seletividade (Bw = 600kHz)		: > 20 dB
Rejeição de FI		: > 50 dB
Rejeição de Imagem		: > 20 dB

TUNER : AM

Faixa útil		: 522 KHz ~ 1611 KHz
Frequência de FI		: 450 KHz
Sensibilidade (S/N = 26 dB)		: < 4.0mV/M
Seletividade (Bw = 18KHz)		: > 16 dB
Rejeição de FI		: > 24 dB
Rejeição de Imagem		: > 28 dB

AMPLIFICADOR

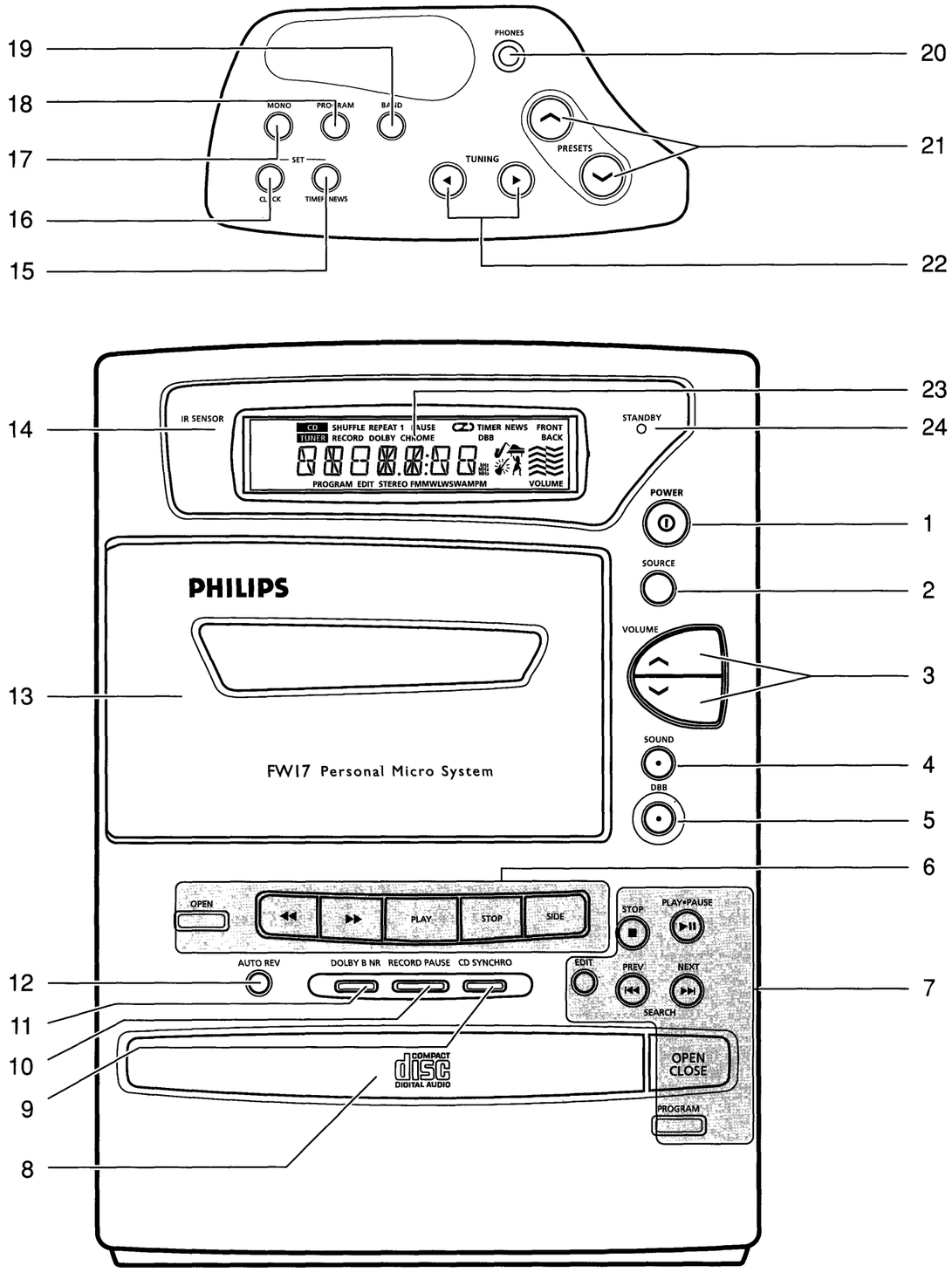
Potência de saída (D = 10%)		: 2 x 45W
Impedância de saída		: 2 x 6 Ω L/R
Resposta em frequência (-3dB)		: 63 Hz ~ 15 KHz
Controle de DBB		: 10dB ± 2dB à 70Hz ~ 90 Hz
Saída p/ Headphone (32 Ω)		: 25 mW
Sensibilidade de entrada	AUX / TV	: 400 mV à 47Ω

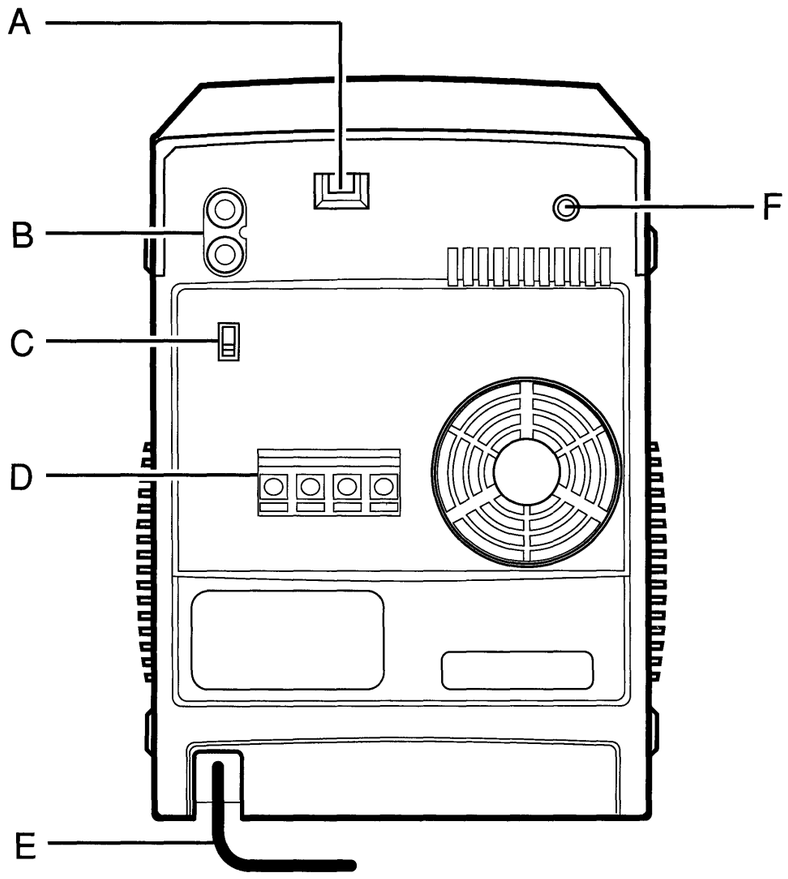
TAPE

Wow & fluter	: < 0.38%
Bias	: 90 KHz ± 5 KHz
Resposta em frequência na gravação (- 8 dB)	: 250 Hz ~ 6300 Hz
S / N	: > 42 dB

C D

Resposta em frequência (± 3dB)	: 20 Hz ~ 20 KHz
Signal / Hiss	: > 90 dB
Distorção à 1 KHz	: < 1.0 %
Diferença entre canais (1 KHz)	: < 2.0 dB
Separação de canais (1 KHz)	: 50 dB max.





CONEXÕES & CONTROLES

1	Power		1475	11	Dolby B NR	1483
2	Source select		1472	12	Auto REV	1488
3	Volume up/down		1470, 1471	13	Cassette compartment	
4	Digital Sound Control		1474	14	IR sensor	6411
5	Dynamic bass boost		1473	15	Set Timer/News	1467
6	Rec/Pb Deck controls	Open		16	Set Clock	1468
		Wind <<	1487	17	Mono	1463
		Wind >>	1486	18	Program	1462
		Play	1485	19	Band	1461
		Stop	1489	20	Headphone socket	1560
		Side	1490	21	Preset Up/Down	1460, 1464
7	CD Controls	Stop	1491	22	Tuning Up/Down	1465, 1466
		Play/Pause	1492	23	LED Display	1400
		Edit	1484	24	Standby LED	6401
		Previous	1477	A	AM antenna socket	1104
		Next	1478	B	Aux/TV/DCC Input	1552
		Open/Close	1479	C	Voltage selector	1211
		Program/Review	1480	D	Loudspeaker sockets	1305
8	CD tray			E	Mains cord	
9	CD Syncro		1481	F	FM antenna socket	1101 or 1110
10	Record pause		1482			

SERVICE TEST PROGRAM 1

Operating sequence	Display shows	Remarks	In case of problems check
Hold "Program" and "Preset Up" button down while Power on to enter Service test program.	*XX YY-S #* This is the main menu.	where: XX - Type no. numeric YY - Master µP version S - Service mode	
Press "Program"	*PASS* Main menu reappears after 2 seconds.	Eeprom test	Check IC if Display shows *ERR*
Press "Band"	*NEW* Main menu reappears after 2 seconds.	Eeprom is now reset to default data.	
Press "Set Clock" Press "Set Clock" Press "Set Clock"	*32K* *8M* Main menu reappear.	The Alarm buzzer is turned on. An output signal of 4096Hz is available at pin 37 of the main µProcessor. The output signal at pin 37 is now 3906.25Hz.	Check X'tal Check 8MHz oscillator
Press "Set Timer/News"	*FAST* *NOM* Main menu reappears after 2 seconds.	Pressing "Set Timer/News" key will alternate between Fast and Normal speed. In the Fast mode the clock increases at 1 minute per second. Leaving the test program now will allow quick customer checks on the clock/timer/alarm function.	Ensure the clock is in normal speed before returning to customer.
Press "Mono" and followed by any key on the set or Remote control. Press "Mono" to return to Main menu	See key test Table 1 and 2.		
Press "Tuning Up"	See Table 3 and Main menu.	Pressing the "Tuning Up" key will scroll through the 4 different displays and the Main menu.	
Press "Tuning down"	*AUX* *TAPE* *CD* *TUNER* Main menu reappears after 2 seconds.	During source switching the set is not muted.	
Disrupt the mains supply to exit the Service test program.			Ending the Service test by pressing the "Power" key from the Main menu will render : * CD error codes to be displayed. * Tuner "Program" and "Autoprogram" keys are deactivated.

Note: XX - Model model (eg 17 for FW17, etc.)
YY - Software verstion, counting down from 99

TABLE 1. SERVICE KEY TEST TABLE

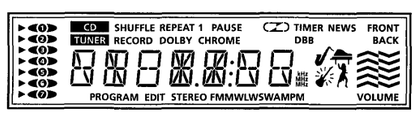
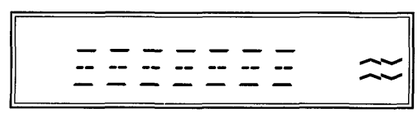
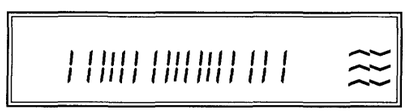
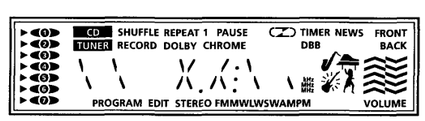
Timer/News/Tuner	Display	Function keys	Display	Tape Keys	Display	CD Keys	Display
Mono	01	Power	13	Dolby B NR	22	Next	19
Program	02	Source	09	REC Pause	23	Prev	20
Band	03	Volume Up	11	CD Syncro	24	Edit	21
Set Clock	12	Volume Down	10	REV Mode	25	Program	17
Set Timer/News	05	Sound	14	< <	26	Stop	30
Preset Up	04	DBB	15	> >	27	Play/Pause	29
Preset Down	08			Play	28	Open/Close	18
Tuning Up	07			Stop	32		
Tuning Down	06			Side	31		

TABLE 2. SERVICE REMOTE CONTROL KEY TEST TABLE

Function/Tuner keys	Display	Tape keys	Display	CD keys	Display
Standby	47 RC	Tape	35 RC	CD	33 RC
Sleep	16 RC	Play	28 RC	Repeat	38 RC
Timer	36 RC	Stop	32 RC	Previous	39 RC
News	37 RC	Pause	31 RC	Shuffle	40 RC
Sound	14 RC	> >	26 RC	Next	41 RC
Volume up (+)	11 RC	< <	27 RC	Pause	43 RC
DBB	15 RC			Stop	45 RC
Volume down (-)	10 RC			Play	46 RC
Tuner	34 RC			Search < <	42 RC
Preset down	08 RC			PSearch > >	44 RC
Preset up	04 RC				

Note: "RC" disappears when the key is released.

TABLE 3. DISPLAY SEQUENCE

Step	LCD display	Step	LCD display
1		3	
2		4	

SERVICE TEST PROGRAM 2

Operating sequence	Display shows	Remarks	In case of problems check
To perform CD test press "CD Play/Pause" at the Main menu screen. Service level 1 is now achieved. Press "Stop" Press "Prev" will exit CD test and return to Main menu.	*CDC AA* *SLED*	The CD servo version is display. AA = version number The sledge will move outward then inward.	Pressing "Power" key at the Main menu screen will to exit Service test and enter into Service Play mode. The set will perform as normal except in the CD mode error codes will be displayed. A list of error codes are found in Table 4.
Press "Next" - Service level 2 Press "Prev"	*FOC*	Laser is turned on and focus is achieved. Return to Service level 1.	
Press "Next" for 2 times - Service level 3 Press "Prev" for 2 times	*DISC*	Disc motor start to turn. Return to Service level 1.	
Press "Next" for 3 times Press "Prev" for 3 times	*RDL*	The Radial servo turns on and music can be heard at the Loudspeakers. Return to Service level 1.	
To perform Tuner test press "Preset Up" at the Main menu screen. Use the "Preset Up" and "Preset down" to display the loaded frequencies.	*ZZZ* See Table 5.	Tuner version is display. ZZZ = Tuner version Service frequencies are now loaded into the EEROM of the µProcessor.	
To end the Service test program disrupt the mains supply.			Ending the Service test by pressing the "Power" key from the Main menu will render: * CD error codes to be displayed. * Tuner "Program" and "Autoprogram" keys are deactivated.

TABLE 4. CD ERROR CODES TABLE

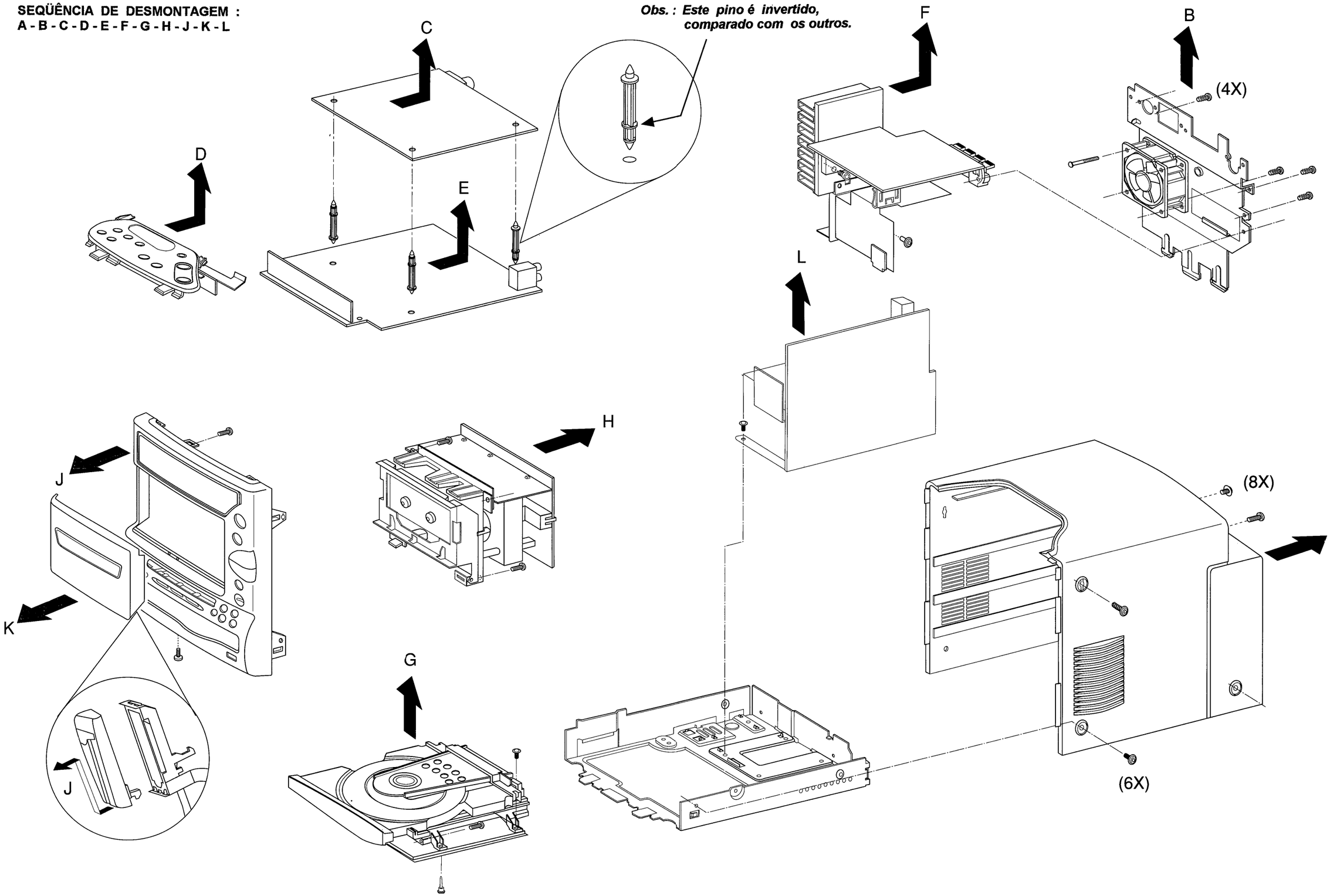
CD Error number	CD Error
E 1002	Focus error
E 1007	Subcode error, no valid subcode
E 1008	TOC error, out of lead-in while reading TOC
E 1009	CD6 + decoder error
E 1010	Radial error
E 1012	Fatal Sledge error
E 1013	Turntable motor error
E 1030	Too many grooves to jump
E 1031	Search error
E 1032	Search binary error
E 1033	Search index error
E 1034	Search time error
E 1037	Selector error
E 1050	Edit calculation error
E 1051	Edit track count error
E 1052	Edit Optimal error

TABLE 5. TUNER SERVICE TEST FREQUENCIES

PRESET	Europe "EUR"	East Eur. "EAS"	USA "USA"	Oversea "OSE"	Japan "JAP"	Oversea "OSS"	Eueope "EUS"
1	108.00 MHz	108.00 MHz	108.00 MHz	108.00 MHz	90.00 MHz	108 MHz	108 MHz
2	87.50 MHz	65.81 MHz	87.50 MHz	87.50 MHz	76.00 MHz	87.5 MHz	87.5 MHz
3	1611 kHz	1611 kHz	1710 kHz	1710 kHz	1629 kHz	1710 kHz	1611 kHz
4	522 kHz	522 kHz	530 kHz	530 kHz	522 kHz	530 kHz	522 kHz
5	279 kHz	279 kHz	98 MHz	98 MHz	80 MHz	12.1 MHz	279 kHz
6	153 kHz	153 kHz	560 kHz	560 kHz	558 kHz	3900 kHz	153 kHz
7	98.00 MHz	98.00 MHz	98.00 MHz	98.00 MHz	80.00 MHz	98.00 MHz	98.00 MHz
8	558 kHz	558 kHz	560 kHz	560 kHz	558 kHz	560 kHz	558 kHz
9	1494kHz	1494kHz	1500kHz	1500kHz	1494kHz	1500 kHz	1494 kHz
10	549kHz	549kHz	550kHz	550kHz	549kHz	550 kHz	549 kHz
11						4250 kHz	18.1 MHz
12						8000 kHz	5900 kHz
13						11.9 MHz	6200 kHz
14							17 MHz
15							12 MHz

DESMONTAGEM DO APARELHO

SEQÜÊNCIA DE DESMONTAGEM :
A - B - C - D - E - F - G - H - J - K - L



DISMANTLING OF CD UNIT

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.

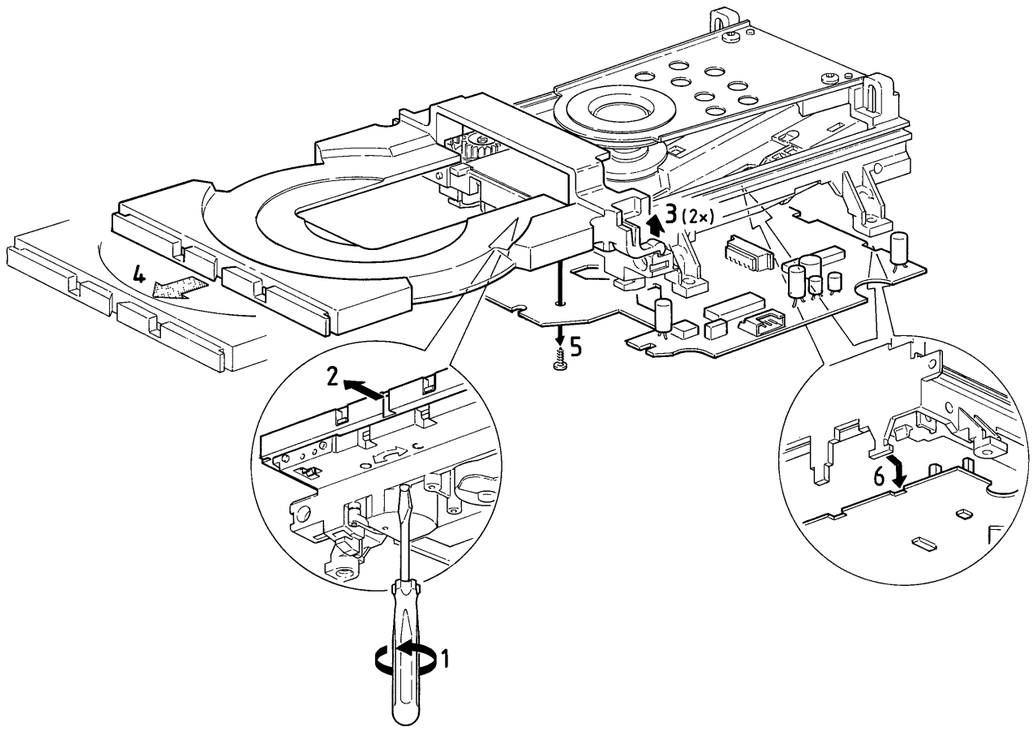


Fig. 1

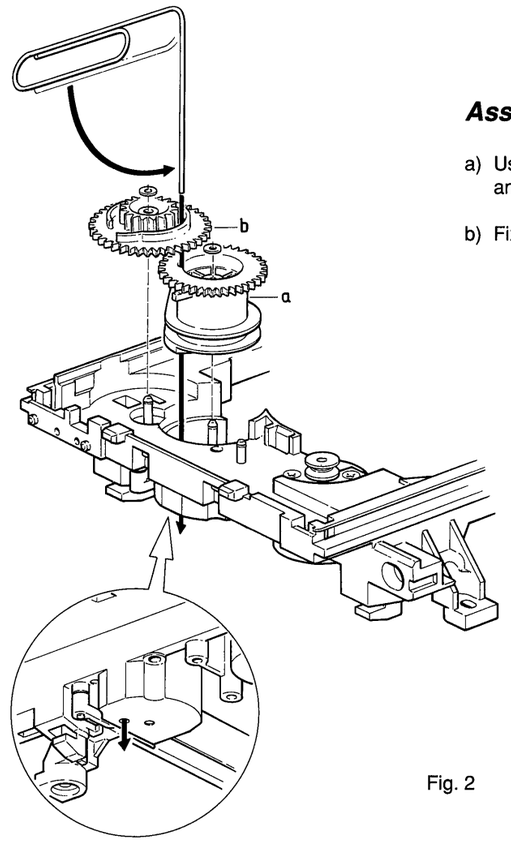


Fig. 2

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.

DESMONTAGEM DA UNIDADE CD

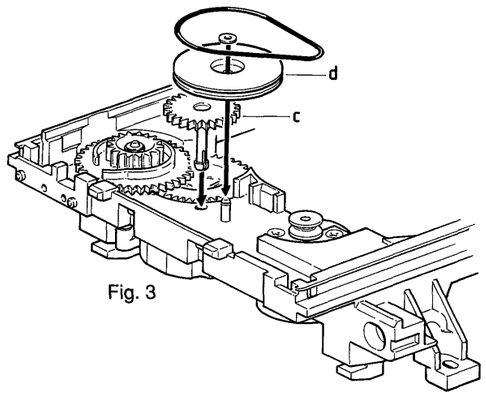


Fig. 3

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.

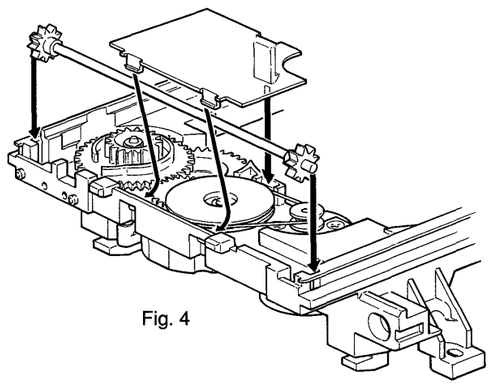


Fig. 4

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

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

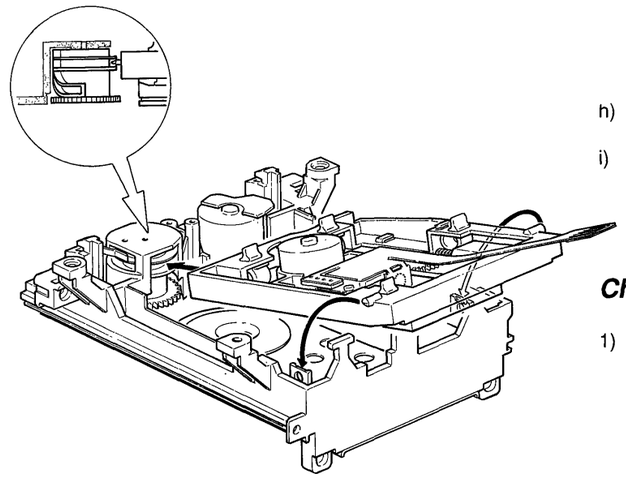


Fig. 5

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!

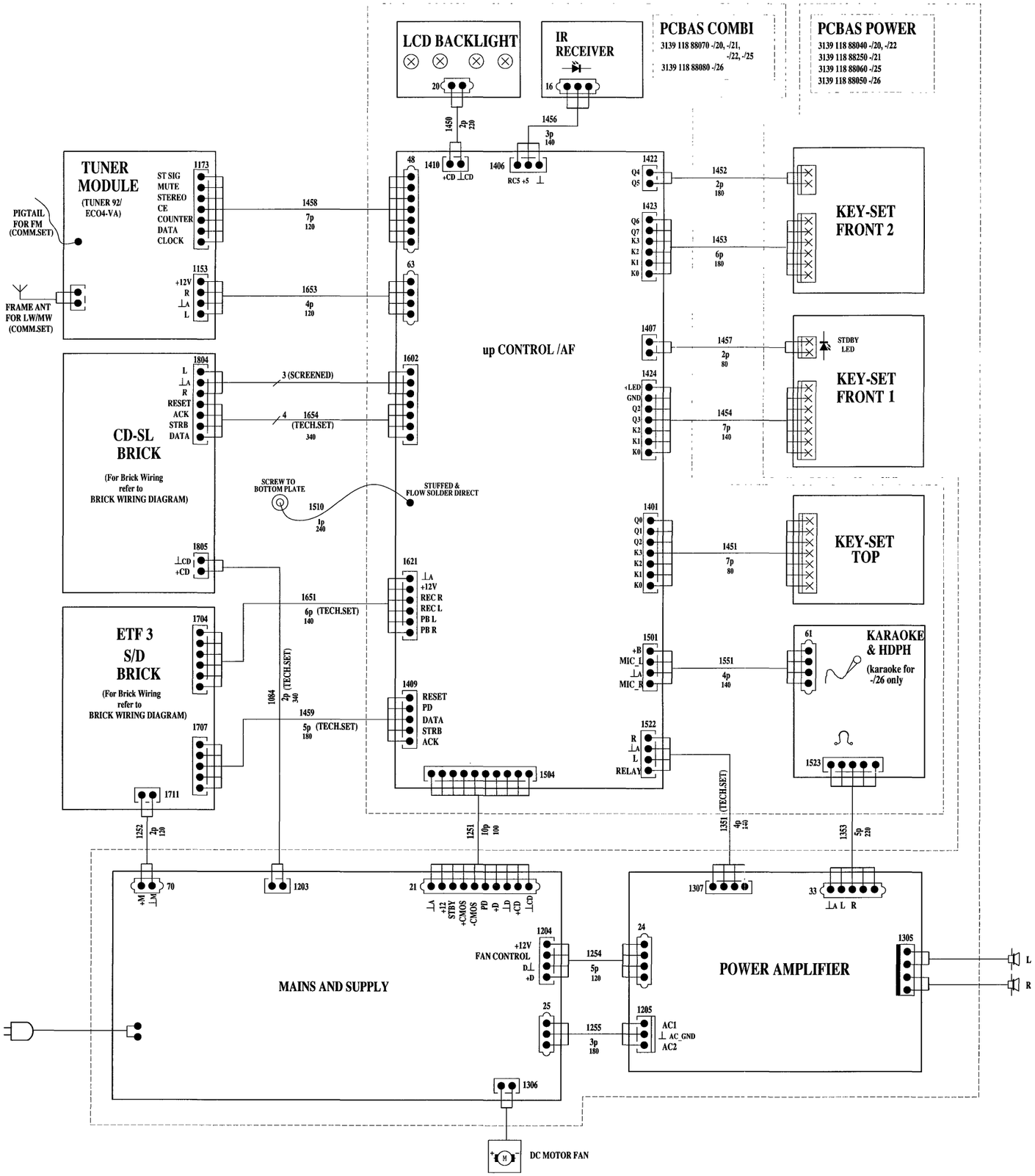
1) Turn the gear wheel (b) clockwise to its endposition. (Use a small screwdriver as shown in Fig. 1 point 1)

   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.

DIAGRAMA DE BLOCO



DIPMATE

JST XH (MALE)

JST JQ (FEMALE ON-BOARD)

JST SIDE

BACK ENTRY FEMALE

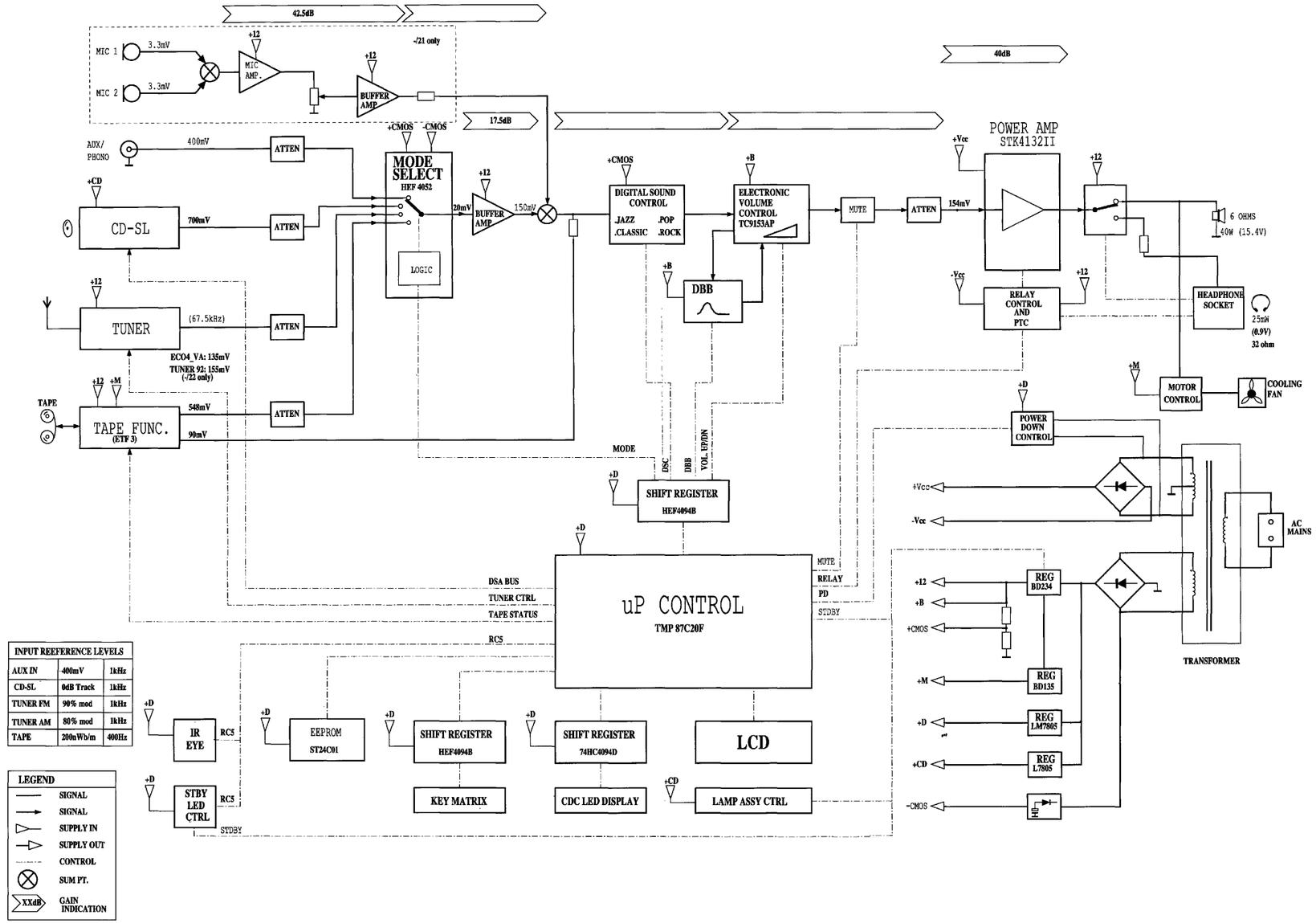
BACK ENTRY MALE

SPACER

BOARD-IN (SIDE)

SPEAKER TERMINALS

DIAGRAMA DE FIAÇÃO



ESD

SUGESTÕES PARA REPARAÇÃO

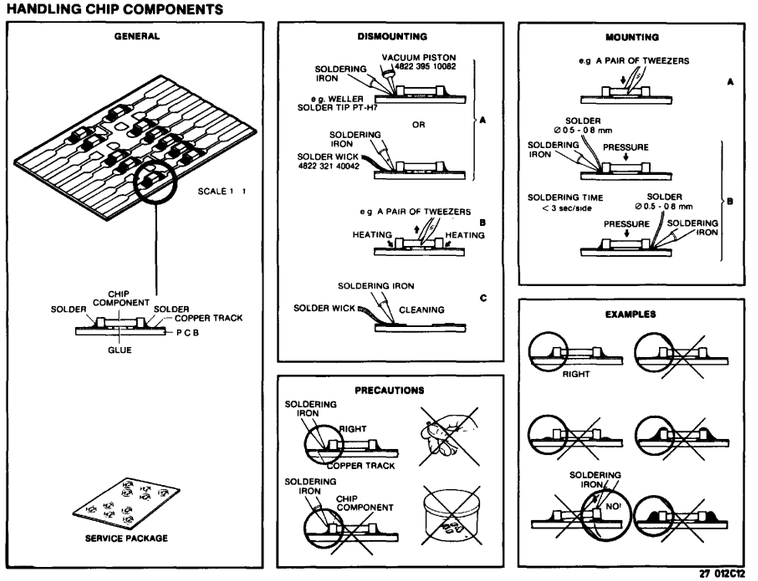
1. E.S.D. (Descargas Eletrostáticas)

Todos os C.I.'s e outros semicondutores são suscetíveis às descargas eletrostáticas **(ESD).** A falta de cuidado durante uma intervenção técnica, pode reduzir drasticamente a vida útil destes componentes.
Durante o conserto, assegure-se bem de todos os procedimentos necessários a se evitar as **E.S.D.'s.**

2. Circuitos Integrados

Todos os **I.C.'s MOS**, geralmente são muito suscetívcis a sobrecargas e alta tensões , portanto, todas as medições devem ser efetuadas com o **maxímo cuidado.**

HANDLING CHIP COMPONENTS



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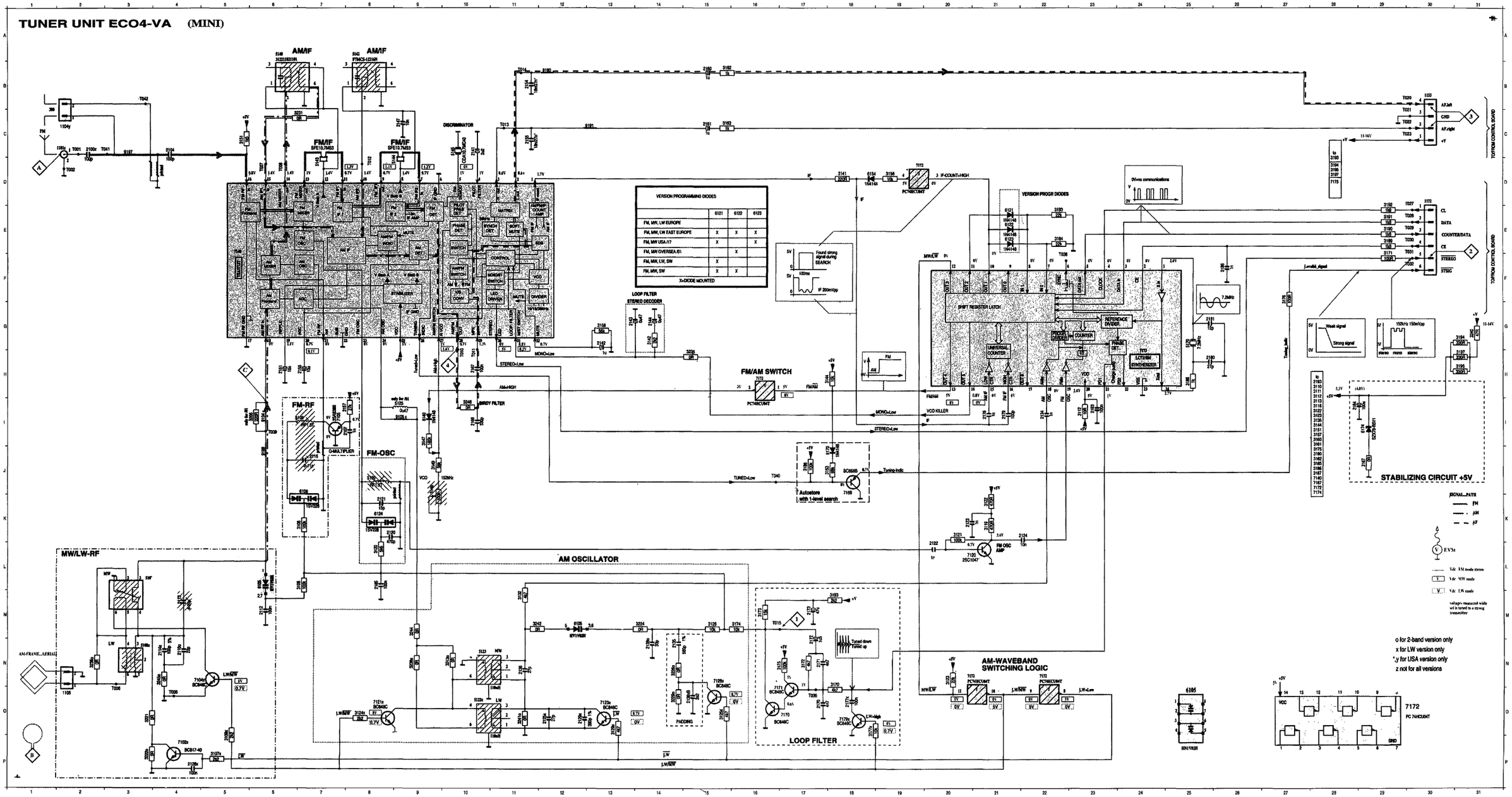
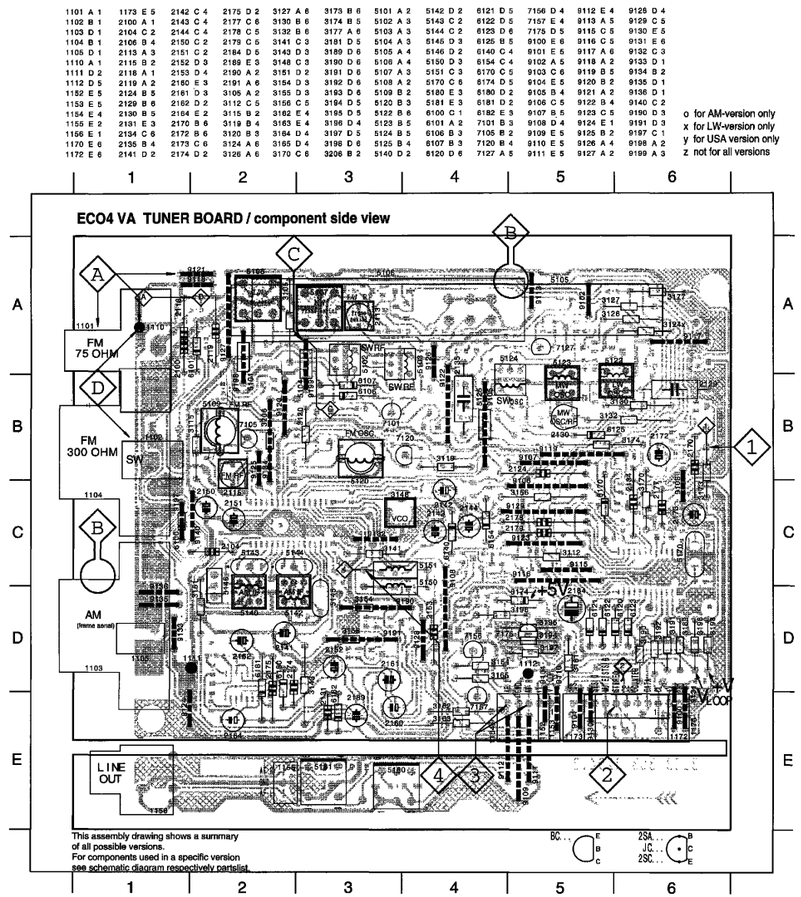
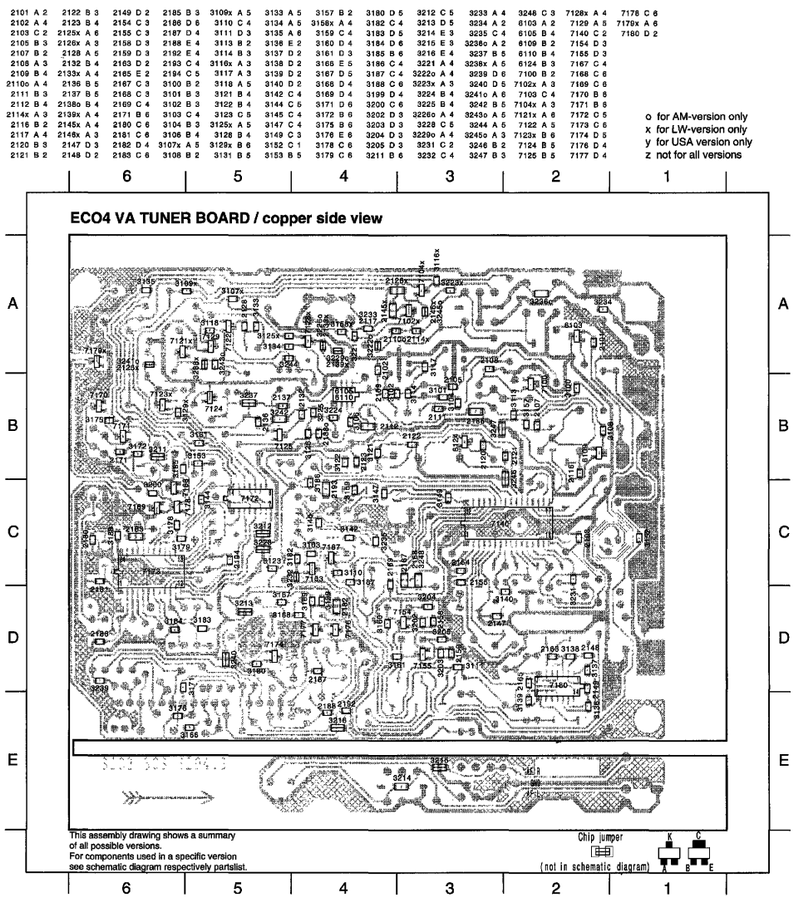
TUNER UNIT ECO4-VA (MINI)







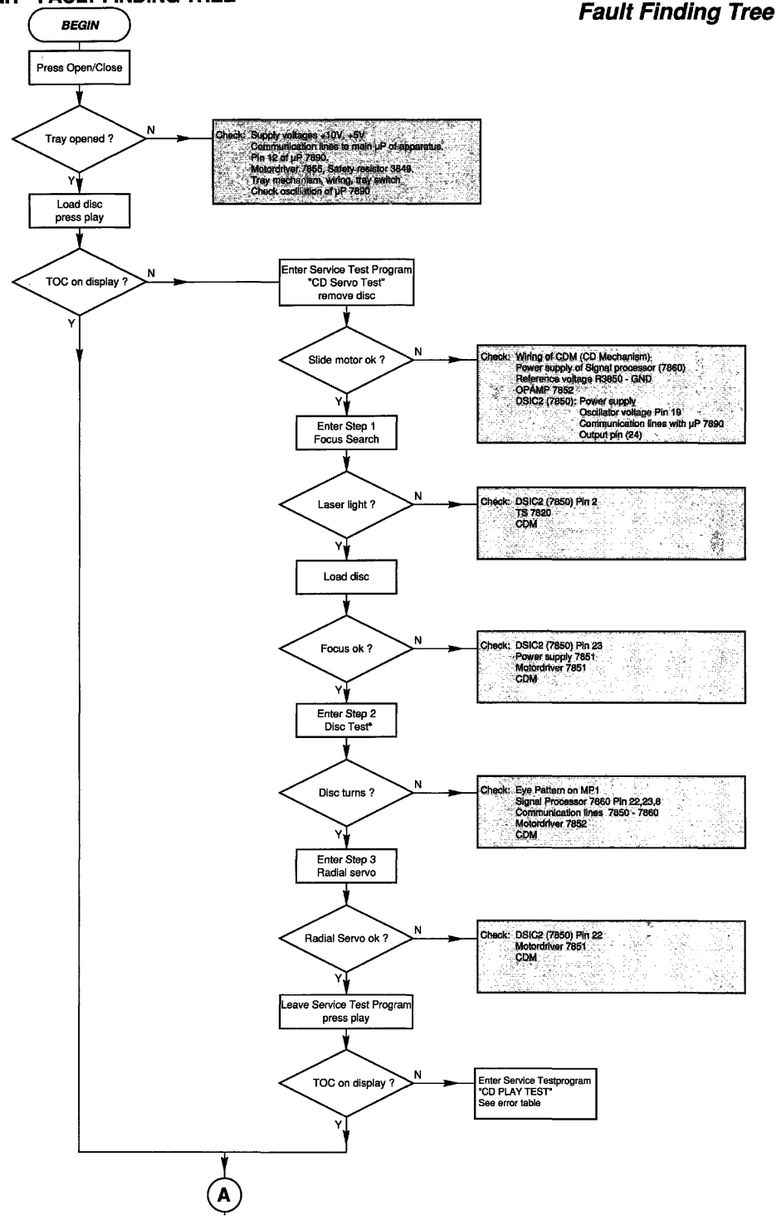
TUNER Adjustment table (ECO4 VA FM/MW- and FM/MW/LW - versions with AM-frame aerial)

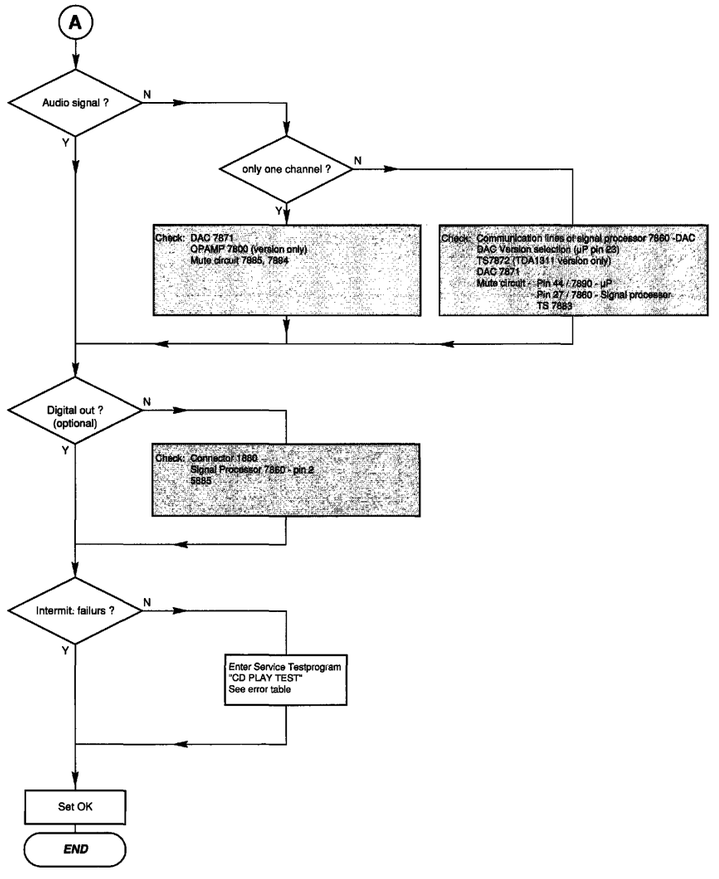
Waverange	Input frequency	Input	Set tuned to	Adjust	Output	Scope / Voltmeter
VARICAP ALIGNMENT						
FM /00/01/05/10/17			108 MHz	5120		8 ± 0.2V
87.5 - 108MHz			87.5MHz	check		4.1 ± 0.5V
FM /14 East Europe			108 MHz	5120		8V ± 0.2V
65.81 - 108MHz			65.81 MHz	check		0.8 ± 0.4V
MW /01/17			1710kHz	5123	◇ 1	9V ± 0.1V
2-band version 530 - 1710kHz			530kHz	check		1V ± 0.4V
LW /00/05/10/14			279kHz	5122		8V ± 0.2V
153 - 279kHz			153kHz	check		1V ± 0.4V
MW /00/05/10/14			1611kHz	5123		8V ± 0.1V
522 - 1611kHz			522kHz	check		1V ± 0.4V
FM - RF						
FM /00/01/05/10/17	108MHz	◇ A	108MHz	2115		
	87.5MHz		87.5MHz	5109	◇ 3	MAX ↕
FM /14 East Europe	108MHz	mod=1kHz Δf=22.5kHz	108MHz	2115		
	65.81MHz		65.81MHz	5109		
VCO						
FM	98 MHz, 1mV continuous wave	◇ A	98MHz	3148	◇ 2	152 ± 1 kHz
AM - IF						
MW	540kHz Δf = 10kHz as low as possible	100nF 50E C	540kHz	5142 5140	◇ 4	symmetrical and max height
AM - RF [1]						
LW	198kHz	◇ B mod=1kHz 30% AM	198kHz	5108	◇ 4	MAX
MW 3-band version	1494kHz		1494kHz	2113		
	549kHz		549kHz	5107		MAX ↕
MW 2-band version	1500kHz		1500kHz	2113		
	550kHz		550kHz	5107		

* Use Service Test Program. By selecting the TUNER TEST test frequencies will be stored as preset frequ. automatically.
[1] For AM RF-adjustments the original frame antenna 4822 158 60622 has to be used!

◇ repeat

Fault Finding Tree CD





Abbreviations CD

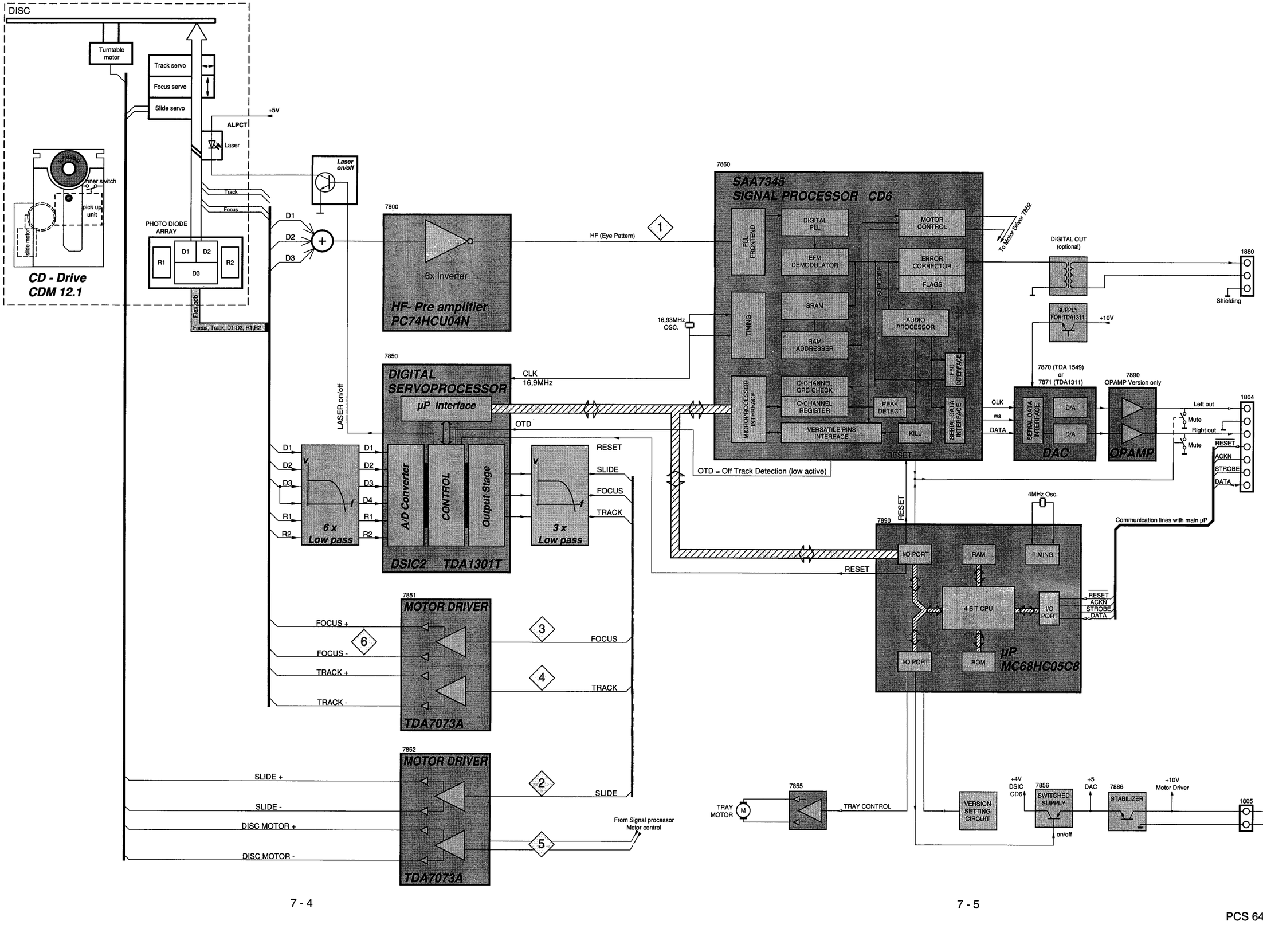
DSIC2

Pin	Name	Direction	Description
1	RESET	µP -> DSIC2	Reset input
2	Laser On/Of	DSIC -> Laser switch	Switches Laser on/off
3	Gnd	Gnd	Ground (Analog part)
4	VRH	not connected	Reference input for A/D converter
5	D1	Diode array -> DSIC2	Unipolar current input (Central diode signal input)
6	D2	Diode array -> DSIC2	Unipolar current input (Central diode signal input)
7	D3	Diode array -> DSIC2	Unipolar current input (Central diode signal input)
8	Vref	Gnd	Reference input for A/D converter
9	D4	Diode array -> DSIC2	Unipolar current input (Central diode signal input)
10	R1	Diode array -> DSIC2	Unipolar current input (Satelite diode signal input)
11	R2	Diode array -> DSIC2	Unipolar current input (Satelite diode signal input)
12	VDD		Supply for DSIC2 (Analog part)
13			
14	TS1	Gnd	Test input 1
15	TS2	Gnd	Test input 2
16	OTD	DSIC2 -> Signal Processor	Off Track Detection
17	CLO	not connected	Clock output
18	XTLO		Oscillator output
19	XTLI		Oscillator input
20	VDD		Supply for DSIC2 (Digital part)
21	Gnd		Ground (Digital part)
22	Track	DSIC2 -> Servo Driver	Radial actuator output
23	Focus	DSIC2 -> Servo Driver	Focus actuator output
24	Slide	DSIC2 -> Motor Driver	Sledge output
25	SILD	µP -> DSIC2	Serial Interface Load
26	SICL	µP -> DSIC2	Serial Interface Clock
27	SIDA	µP <-> DSIC2	Serial Interface Data
28	VDD		Supply for DSIC2 (Digital part)

SIGNAL PROCESSOR

Pin	Name	Direction	Description
1	CL11	not connected	11.2896MHz clock output (3-state)
2	DOMB	signal processor -> Digital out	digital bi-phase mark output (3-state)
3	V1	DSIC2 -> signal processor	versatile input pin of signal processor
4	V2	not connected	versatile input pin of signal processor
5	Test2	GND	test input of signal processor
6	Test1	GND	test input of signal processor
7	ISLICE	signal processor ->	current feedback from internal data slicer
8	HFIN	HF Pre-amp -> signal processor	comparator signal input
9	HFREF	HF Pre-amp -> signal processor	comparator signal input
10	IREF	-> signal processor	reference current pin (nom. VDD/2)
11	VDDA		supply (analog) of signal processor
12	VSSA		supply (analog) of signal processor
13	CRIN	X-Tal -> signal processor	crystal/resonator input of signal processor
14	CROUT	signal processor -> X-Tal	crystal/resonator output of signal processor
15	VDD1		supply for I/O-buffers of signal processor
16	VSS1		supply for I/O-buffers of signal processor
17	CL16	not connected	16.9344MHz clock output of signal processor
18	MISC	not connected	general purpose DAC output (3-state)
19	DATA	signal processor -> DAC	serial data output of signal processor (3-state)
20	WCLK	signal processor -> DAC	word clock output of signal processor (3-state)
21	SCLK	signal processor -> DAC	serial bit clock output of signal processor (3-state)
22	MOTOR1	signal processor -> Motor driver	motor output1 of signal processor; versatile (3-state)
23	MOTOR2	signal processor -> Motor driver	motor output2 of signal processor; versatile (3-state)
24	V5	not connected	versatile output pin of signal processor
25	V4	not connected	versatile output pin of signal processor
26	V3	not connected	versatile output pin of signal processor (open drain)
27	KILL	signal processor -> Mute circuit	kill output; programmable (open drain)
28	PORE	µP -> signal processor	power-on reset enable input (active low)
29	CLA	not connected	4.2336MHz microprocessor clock output
30	DA	µP <-> signal processor	interface data I/O-line
31	CL	µP -> signal processor	interface clock input line
32	RAB	µP -> signal processor	interface R/W and acknowledge input
33	CFLG	signal processor ->	correction flag output (open drain)
43	VSS2		digital supply for internal logic of signal processor
44	VDD2		digital supply for internal logic of signal processor

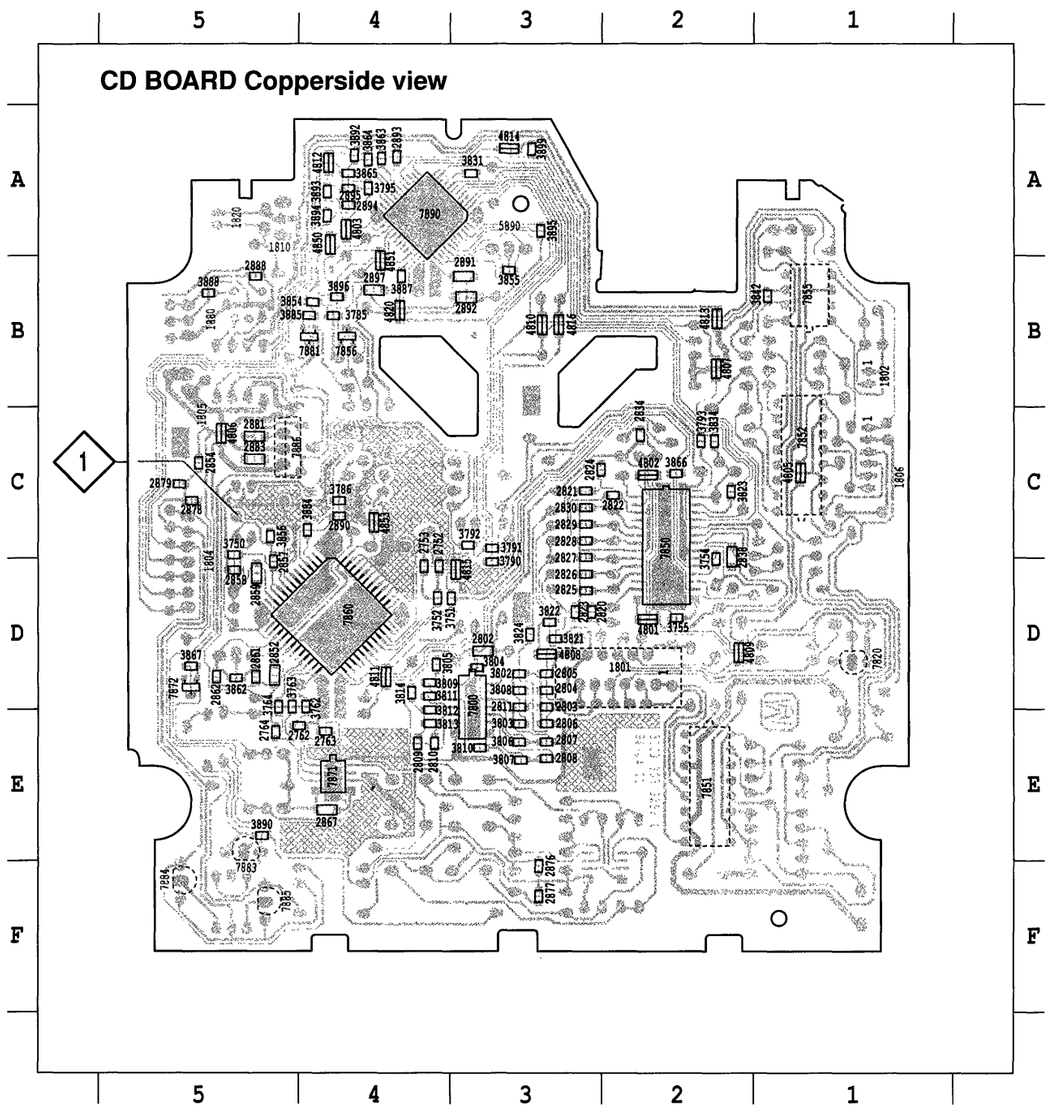
BLOCKDIAGRAM CD Module



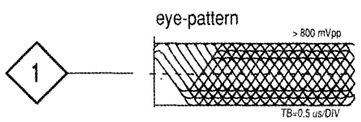
CD LAYOUT

MP1 C 5 2806 E 3 2824 C 3 2854 C 5 2879 C 5 2897 B 4 3786 C 4 3805 D 4 3821 D 3 3862 D 5 3890 E 5 4803 A 4 4815 D 3 7872 D 5
2752 D 4 2807 E 3 2825 D 3 2857 D 5 2881 C 5 3750 C 5 3790 D 3 3806 E 3 3822 D 3 3863 A 4 3892 A 4 4805 C 1 4816 B 3 7881 B 4
2753 D 4 2808 E 3 2826 D 3 2858 D 5 2883 C 5 3751 D 4 3791 C 3 3807 E 3 3823 C 2 3864 A 4 3893 A 4 4806 C 5 4820 B 4 7890 A 4
2762 E 5 2809 E 4 2827 D 3 2859 D 5 2888 B 5 3752 D 4 3792 C 3 3808 D 3 3824 D 3 3865 A 4 3894 A 4 4808 D 3 4850 A 4
2763 E 4 2810 E 4 2828 C 3 2861 D 5 2890 C 4 3754 D 2 3793 C 2 3809 D 4 3831 A 3 3866 C 2 3895 A 3 4809 D 2 4851 B 4
2764 E 5 2811 D 3 2829 C 3 2862 D 5 2891 B 3 3755 D 2 3794 B 4 3810 E 3 3834 C 2 3867 D 5 3896 B 4 4810 B 3 7800 D 3
2802 D 3 2820 D 3 2830 C 3 2867 E 4 2892 B 3 3762 D 4 3795 A 4 3811 D 4 3842 B 1 3884 C 4 3897 B 4 4811 D 4 7850 C 2
2803 D 3 2821 C 3 2834 C 2 2876 F 3 2893 A 4 3763 D 5 3802 D 3 3812 E 4 3854 B 4 3885 B 4 3899 A 3 4812 A 4 7856 B 4
2804 D 3 2822 C 2 2838 C 2 2877 F 3 2894 A 4 3764 D 5 3803 E 3 3813 E 4 3855 B 3 3887 B 4 4801 D 2 4813 B 2 7860 D 4
2805 D 3 2823 D 3 2852 D 5 2878 C 5 2895 A 4 3785 B 4 3804 D 3 3814 D 4 3856 C 5 3888 B 5 4802 C 2 4814 A 3 7871 E 4

CD BOARD Copperside view

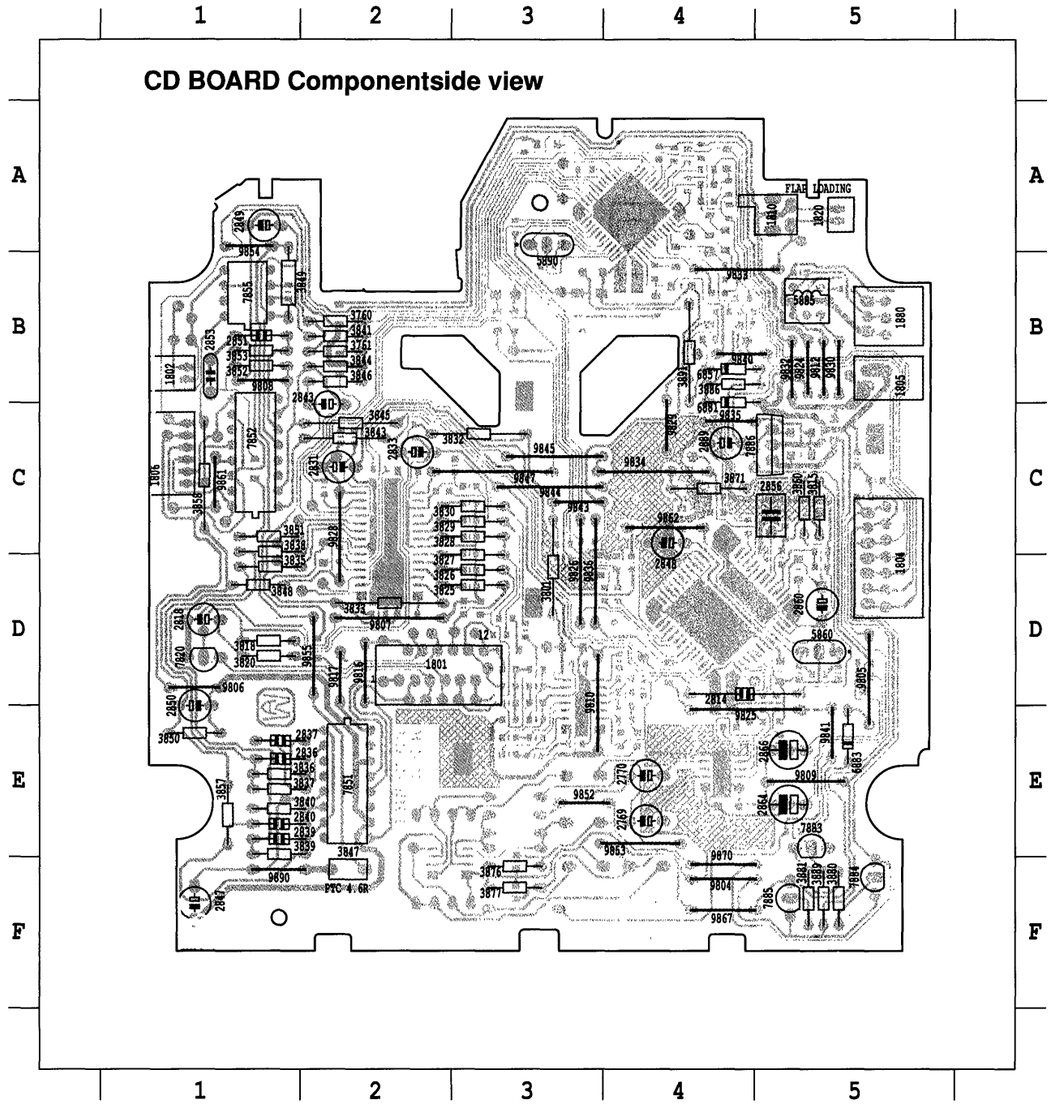


eye-pattern

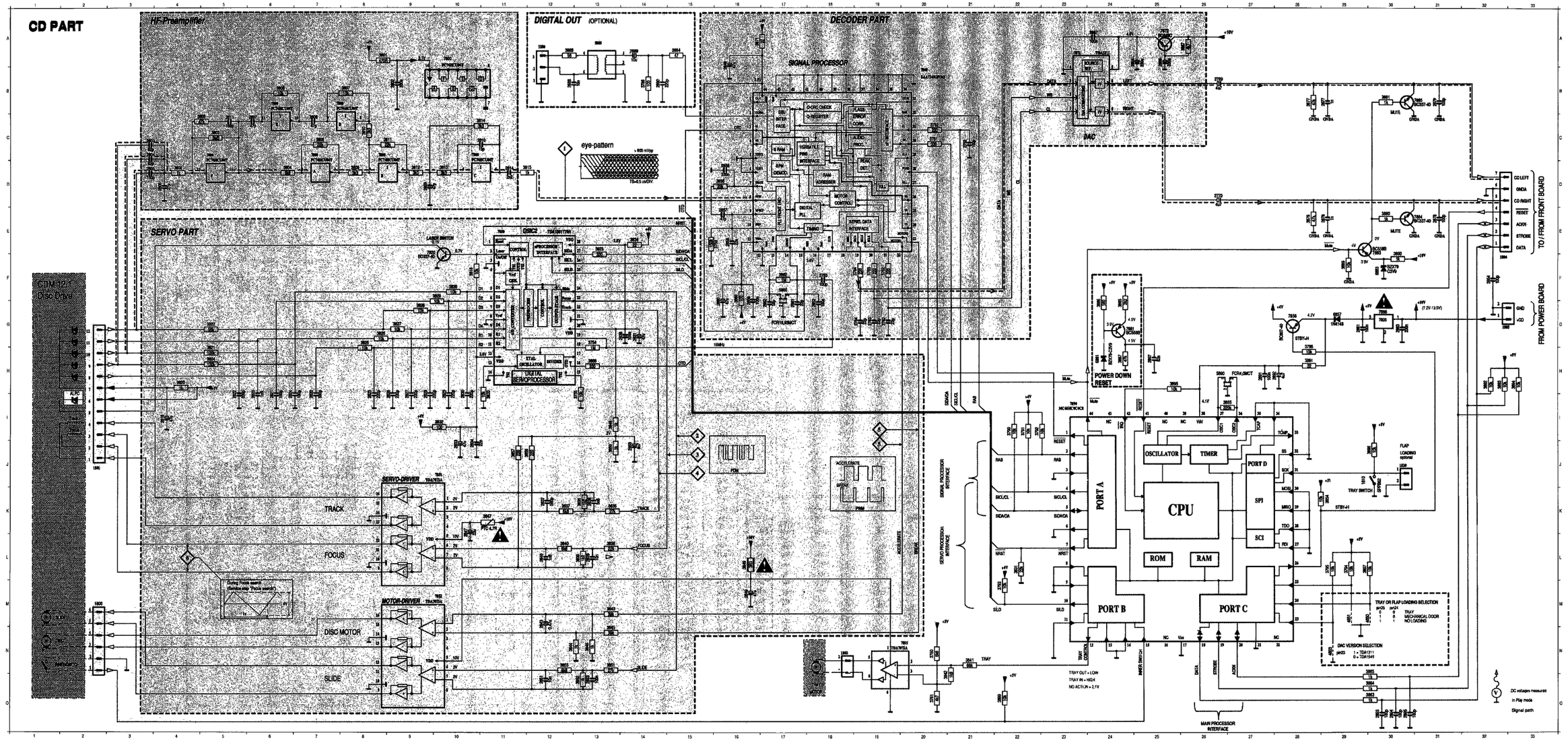


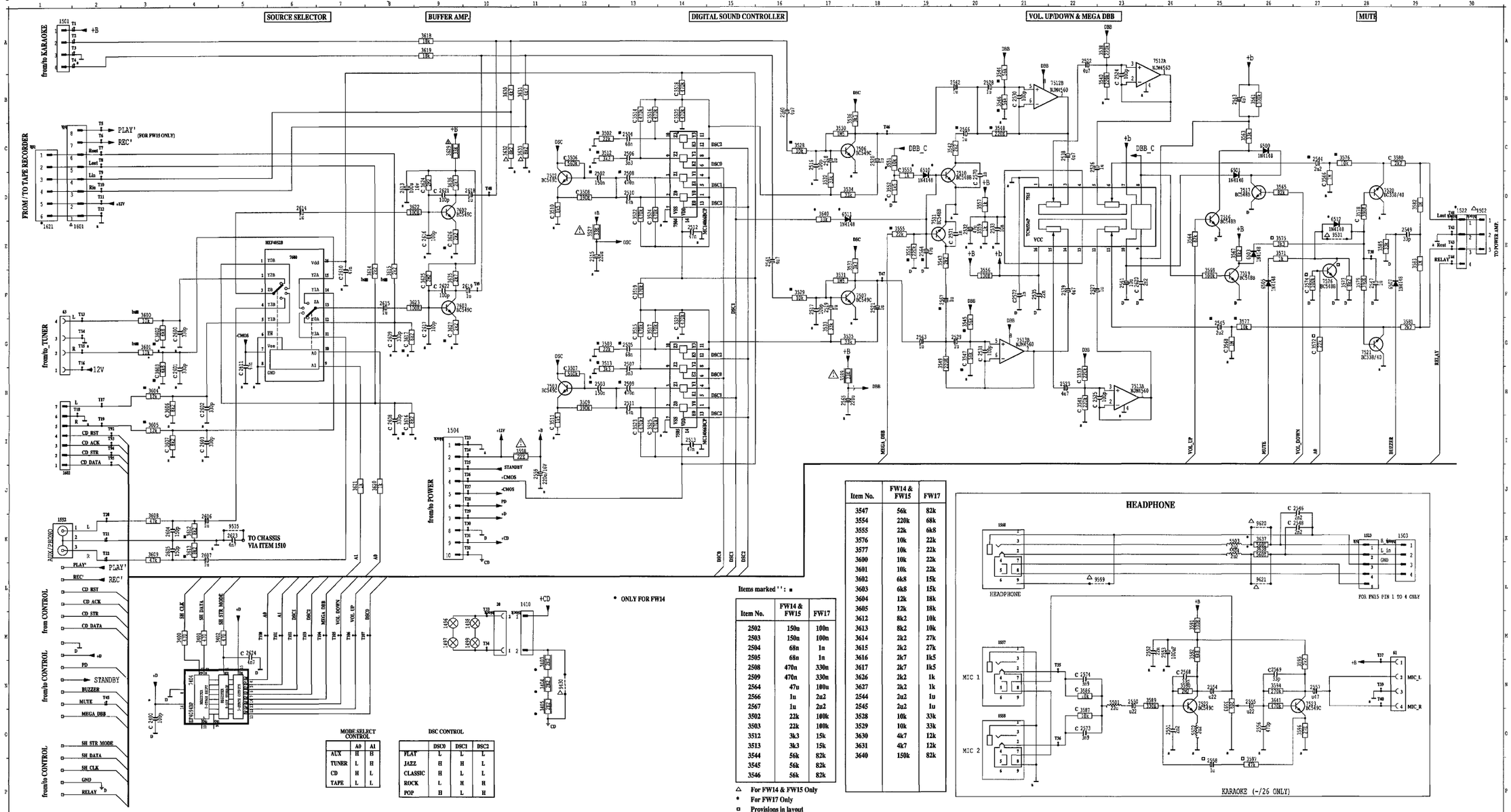
2864 E 5 1880 B 5 2839 E 1 2856 C 5 3801 D 3 3830 C 3 3841 B 2 3851 C 1 3880 F 5 6881 C 4 7886 C 5 9816 D 2 9833 B 4 9847 C 3
2866 E 5 2769 E 4 2840 E 1 2860 D 5 3815 C 5 3832 C 3 3843 C 2 3852 B 1 3881 F 5 6883 E 5 9804 F 4 9817 D 2 9834 C 4 9852 E 3
1801 D 2 2770 E 4 2843 C 2 2864 E 5 3818 D 1 3833 D 2 3844 B 2 3853 B 1 3886 B 4 7820 D 1 9805 D 5 9824 B 5 9835 C 4 9853 E 4
1802 B 1 2814 D 4 2847 F 1 2866 E 5 3820 D 1 3835 D 1 3845 C 2 3857 E 1 3889 F 5 7851 E 2 9806 D 1 9825 E 4 9836 D 3 9854 A 1
1804 D 5 2818 D 1 2848 C 4 2889 C 4 3825 D 3 3836 E 1 3846 B 2 3858 C 1 3891 B 4 7852 C 1 9807 D 2 9826 D 3 9840 B 4 9855 D 2
1805 B 5 2831 C 2 2849 A 1 3760 B 2 3826 D 3 3837 E 1 3847 F 2 3860 C 5 5860 D 5 7855 B 1 9808 B 1 9828 C 2 9841 E 5 9861 C 1
1806 C 1 2833 C 2 2850 E 1 3761 B 2 3827 D 3 3838 C 1 3848 D 1 3871 C 4 5885 B 5 7883 E 5 9809 E 5 9829 C 4 9843 C 3 9862 C 4
1810 A 5 2836 E 1 2851 B 1 3767 F 4 3828 C 3 3839 E 1 3849 B 1 3876 F 3 5890 A 3 7884 F 5 9810 D 3 9830 B 5 9844 C 3 9890 F 1
1820 A 5 2837 E 1 2853 B 1 3770 F 4 3829 C 3 3840 E 1 3850 E 1 3877 F 3 6857 B 4 7885 F 5 9812 B 5 9832 B 5 9845 C 3

CD BOARD Componentside view



ATTENTION:
WIRE-BRIDGE 9804, 9824
AND 9829 *MUST* BE CONNECT
ON THE SHIELDINGGROUND!


CD PART
HF-Preamplifier
DIGITAL OUT (OPTIONAL)
eye-pattern
DECODER PART
SIGNAL PROCESSOR
DAC
SERVO PART
CDM-12.1 Disc Drive
SERVO-DRIVER
MOTOR-DRIVER
TRACK
FOCUS
DISC MOTOR
SLIDE
PORT A
PORT B
PORT C
CPU
ROM
RAM
OSCILLATOR
TIMER
SPI
SCI
PORT D
POWER DOWN RESET
TRAY OR FLAP LOADING SELECTION
DISC VERSION SELECTION
MAIN PROCESSOR INTERFACE
TO / FROM FRONT BOARD
FROM POWER BOARD
DC voltages measured in Play mode
Signal path



Items marked '': ▪

Item No.	FW14 & FW15	FW17
2502	150n	100n
2503	150n	100n
2504	68n	1n
2505	68n	1n
2508	470n	330n
2509	470n	330n
2564	47u	100u
2566	1u	2u2
2567	1u	2u2
3502	22k	100k
3503	22k	100k
3512	3k3	15k
3513	3k3	15k
3544	56k	82k
3545	56k	82k
3546	56k	82k

Item No.	FW14 & FW15	FW17
3547	56k	82k
3554	220k	68k
3555	22k	6k8
3576	10k	22k
3577	10k	22k
3600	10k	22k
3601	10k	22k
3602	6k8	15k
3603	6k8	15k
3604	12k	18k
3605	12k	18k
3612	8k2	10k
3613	8k2	10k
3614	2k2	27k
3615	2k2	27k
3616	2k7	1k5
3617	2k7	1k5
3626	2k2	1k
3627	2k2	1k
2544	2u2	1u
2545	2u2	1u
3528	10k	33k
3529	10k	33k
3630	4k7	12k
3631	4k7	12k
3640	150k	82k

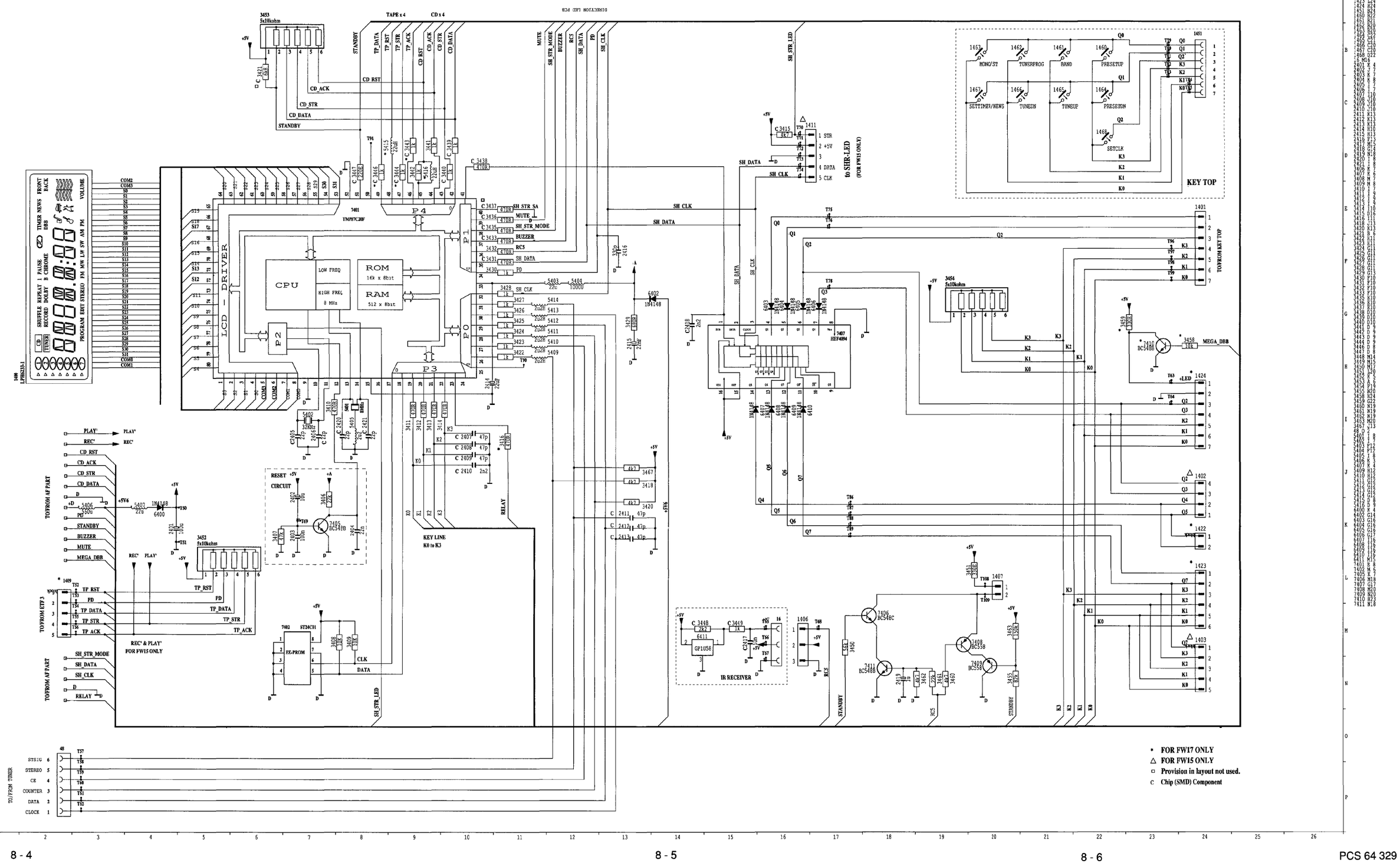
△ For FW14 & FW15 Only
* For FW17 Only
▫ Provisions in layout
c Chip (SMD) Component

• ONLY FOR FW14

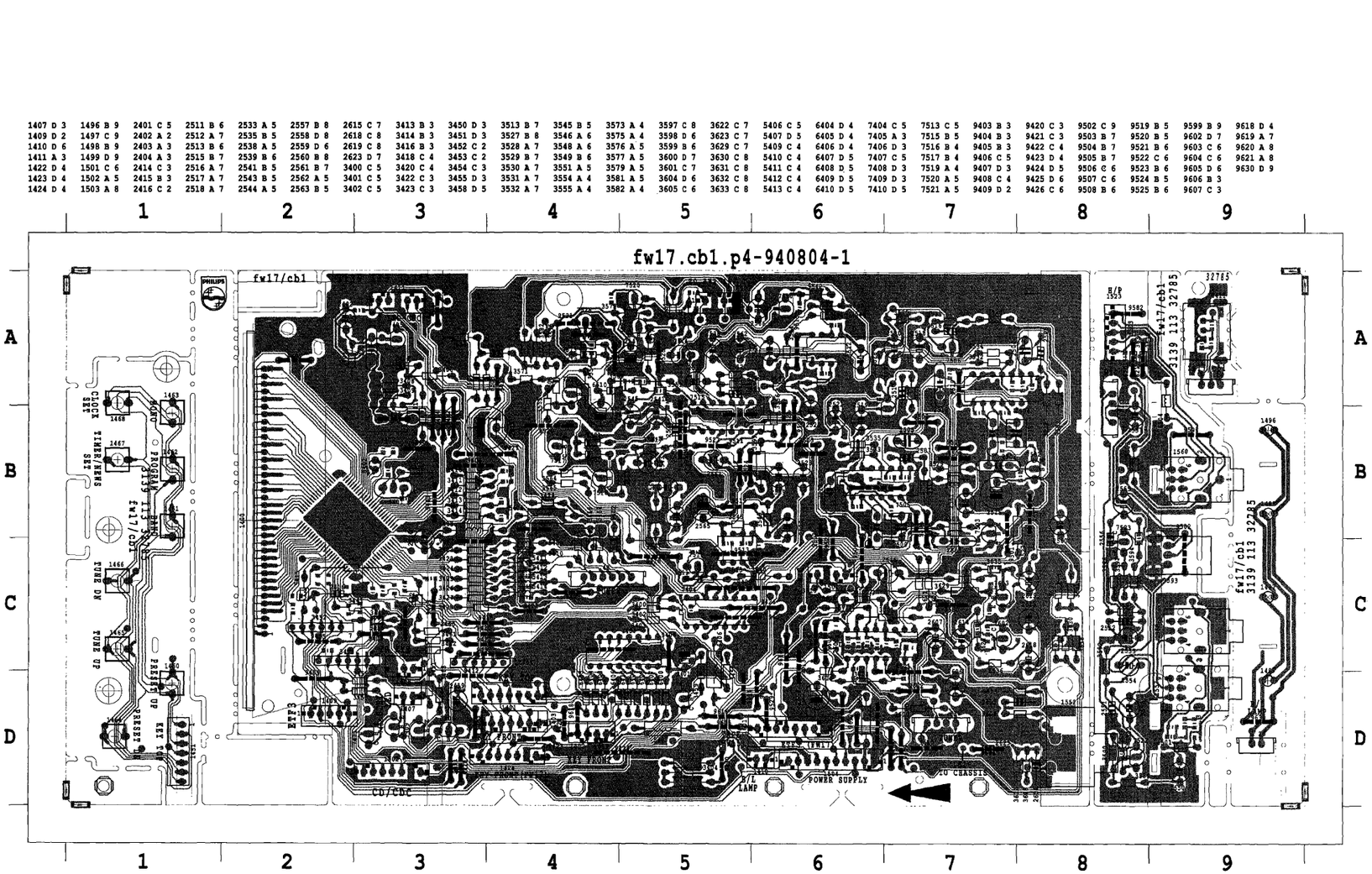
MODE SELECT CONTROL	A0	A1
AUX	H	H
TUNER	L	H
CD	H	L
TAPE	L	L

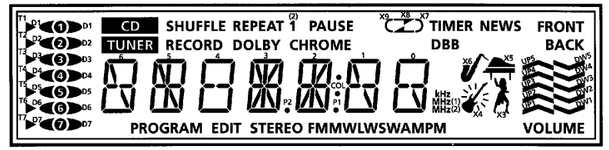
DSC CONTROL	DSC0	DSC1	DSC2
FLAT	L	L	L
JAZZ	H	H	L
CLASSIC	H	L	L
ROCK	L	H	H
POP	H	L	H

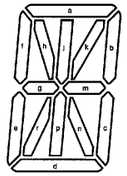
FRONT / CONTROL PART



COMBI COMPONENT LAYOUT





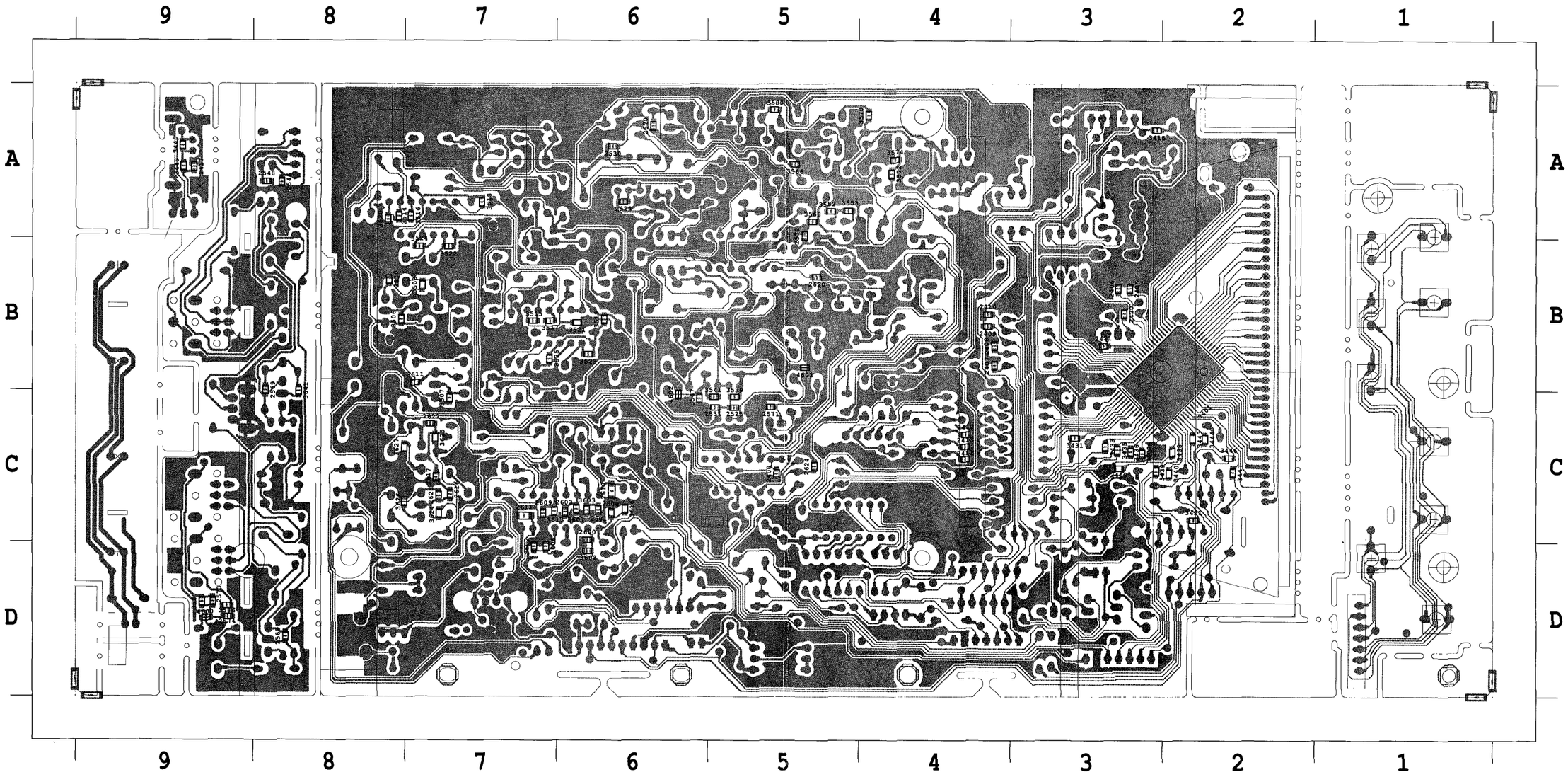


LCD DISPLAY PINS CONNECTIONS

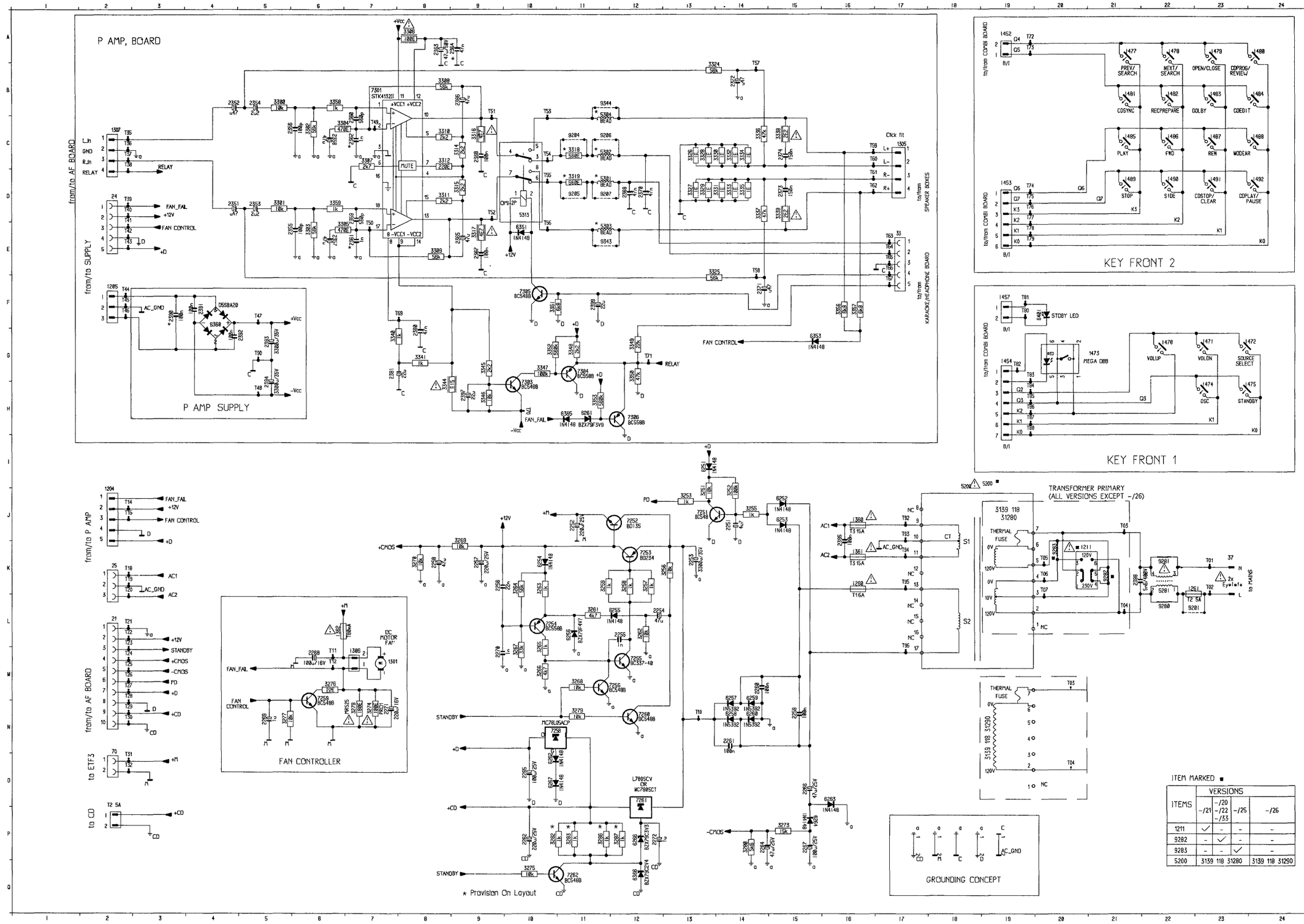
PIN NO.	COM 0	COM 1	COM 2	COM 3
1	-	-	COM 2	-
2	-	-	-	COM 3
3	6gm	6f	6e	6n
4	6b	6a	6c	6d
5	D1	6h	D3	D4
6	SHUFFLE	CD	1,2,3,4,5,6,7	T2
7	5g	5f	5e	PROGRAM
8	5b	5a	5c	5d
9	TUNER	5hn	5m	5jp
10	D5	TIMER	RECORD	REPEAT
11	4gm	4f	4e	EDIT
12	4b	4a	4c	4d
13	X7	X9	X8	1 (2)
14	FRONT	X6	BACK	D6
15	3g	3f	3e	3n
16	3b	3a	3c	3d
17	3k	3h	3m	3jp
18	3r	DBB	PAUSE	STEREO
19	2gm	2f	2e	2n
20	2b	2a	2c	2d
21	2kr	CHROME	DOLBY B	2jp
22	LW	D7	MW	T7
23	1gm	1f	1e	1n
24	1b	1a	1c	1d
25	COL	1h	FM,P1,MHz (1)	SW,P2,MHz (2)
26	X4	kHz	PM	AM
27	0gm	0f	0e	0n
28	0b	0a	0c	0d
29	X3	X5	D2	NEWS
30	UP1	DN1	T1	VOLUME
31	T3	T4	T5	T6
32	-	-	-	-
33	DN2	DN3	DN4	DN5
34	UP1	UP3	UP4	UP5
35	COM 0	-	-	-
36	-	COM 1	-	-

COMBI CHIP LAYOUT

2400 C 5	2409 B 4	2417 A 9	2525 C 5	2568 D 8	2573 D 9	2603 C 6	2616 C 7	2624 C 5	3435 C 3	3440 C 2	3448 A 9	3510 B 8	3517 B 7	3522 B 7	3541 C 5	3568 A 5	3586 D 9	3607 C 6	3626 C 8	4602 C 6
2405 B 3	2410 B 4	2418 C 3	2530 A 6	2569 C 8	2574 D 9	2608 C 6	2617 C 7	3415 A 3	3436 C 3	3443 C 2	3449 A 9	3511 B 7	3518 A 7	3523 B 6	3547 C 6	3572 A 4	3587 D 9	3616 C 6	3627 C 8	7401 B 2
2406 B 3	2411 C 4	2420 B 3	2531 C 5	2570 A 6	2600 C 6	2609 C 7	2620 B 5	3421 C 2	3437 C 3	3444 C 2	3506 B 8	3514 A 8	3519 B 6	3524 B 7	3552 A 5	3574 A 4	3602 D 6	3617 C 7	3641 C 8	
2407 B 4	2412 C 4	2421 B 3	2546 A 8	2571 C 5	2601 C 6	2610 C 6	2621 C 7	3431 C 3	3438 C 2	3446 C 2	3507 C 7	3515 B 7	3520 A 8	3525 B 7	3553 A 5	3578 A 4	3603 C 6	3624 C 7	4600 D 9	
2408 B 4	2413 C 4	2524 A 6	2548 A 8	2572 A 5	2602 D 7	2611 C 7	2622 C 7	3433 C 3	3439 C 3	3447 C 2	3508 B 7	3516 A 7	3521 B 6	3539 C 5	3566 A 5	3580 A 5	3606 D 7	3625 C 7	4601 B 5	

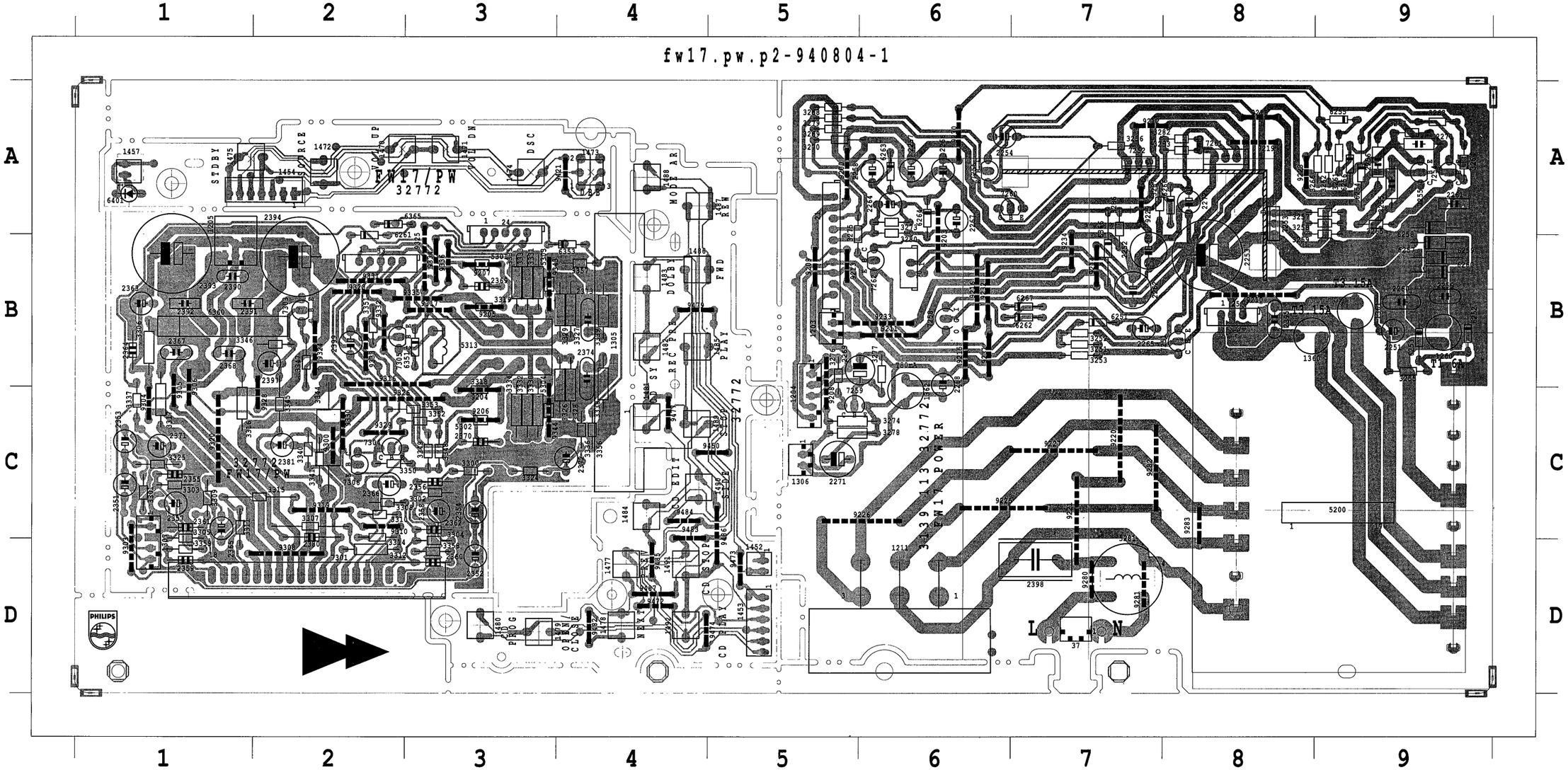


POWER CIRCUIT

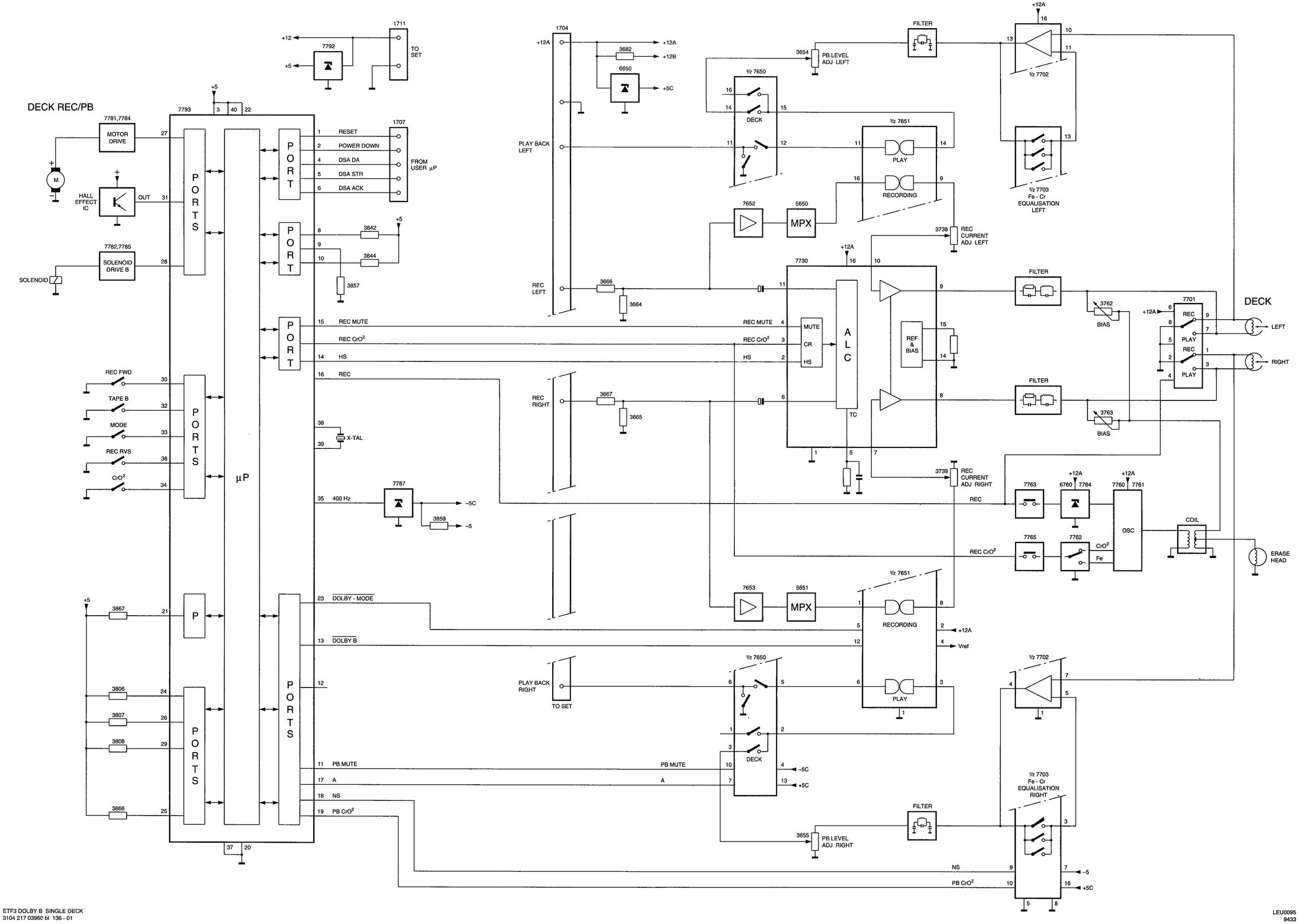


ITEMS	VERSIONS			
	-/21	-/20 -/22 -/33	-/25	-/26
1211	✓	-	-	-
9282	-	✓	-	-
9283	-	-	✓	-
5200	3139 118 31280		3139 118 31290	

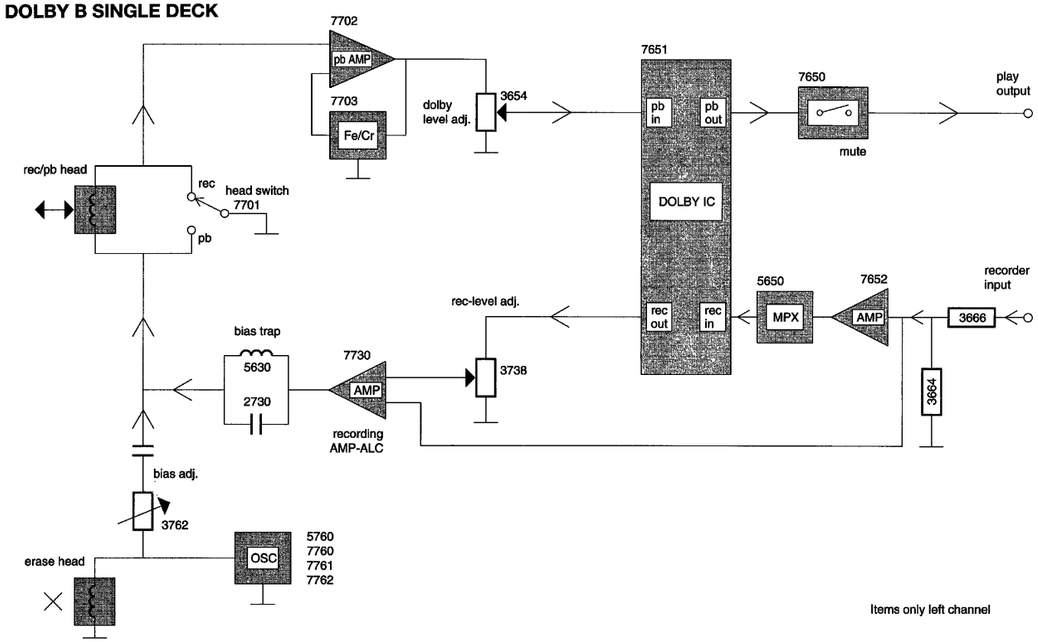
70 B 6	1452 D 5	1479 D 3	1491 D 4	2261 A 9	2352 D 3	2364 B 1	2381 C 2	3253 B 7	3267 A 9	3282 A 8	3308 C 2	3325 C 1	3337 C 1	3351 B 2	5304 C 3	6261 B 2	7251 B 8	7303 B 2	9210 B 8	9225 C 6	9283 C 8	9323 B 2	9336 B 3	9484 C 4
1203 B 5	1453 D 5	1480 D 3	1492 D 4	2262 B 7	2353 C 1	2365 C 1	2390 B 1	3255 B 9	3268 A 5	3283 A 8	3309 C 1	3326 B 4	3338 B 4	3352 C 3	5313 B 3	6262 B 7	7252 A 7	7304 C 2	9211 B 6	9226 C 6	9300 C 2	9324 B 2	9343 B 3	9485 D 4
1204 C 5	1454 A 2	1481 C 4	2251 B 9	2264 A 6	2354 C 3	2366 C 2	2391 B 1	3256 A 7	3269 A 5	3286 A 7	3310 C 2	3327 B 4	3339 B 4	3353 C 3	6251 B 7	6263 A 6	7253 A 8	7305 B 2	9212 A 7	9227 C 7	9303 D 1	9325 B 3	9344 C 3	9486 C 5
1205 B 1	1457 A 1	1482 B 4	2252 B 7	2265 B 7	2355 C 1	2367 B 1	2392 B 1	3257 A 9	3270 A 5	3287 A 7	3311 C 1	3328 B 4	3340 C 2	3356 C 4	6252 B 9	6264 A 6	7254 A 9	7306 C 2	9213 B 5	9229 A 7	9304 C 1	9326 C 2	9421 A 4	9487 D 4
1211 D 6	1470 A 2	1483 B 4	2253 B 8	2266 A 6	2356 C 3	2368 B 1	2393 B 1	3258 A 9	3273 A 6	3300 C 3	3312 D 2	3329 B 4	3341 C 2	3357 B 4	6253 B 9	6266 A 8	7255 A 9	9200 A 5	9214 B 7	9230 A 6	9305 C 1	9328 C 2	9450 C 5	
1260 B 9	1471 A 3	1484 C 4	2254 A 6	2267 A 6	2357 C 1	2369 B 3	2394 B 2	3259 A 9	3274 C 5	3301 C 1	3314 C 2	3330 C 3	3344 B 2	3358 D 3	6254 A 9	6267 B 7	7256 A 6	9203 B 6	9215 B 6	9231 B 6	9306 C 1	9329 C 2	9472 D 4	
1305 B 4	1472 A 2	1485 B 4	2255 A 9	2268 B 6	2358 C 3	2370 C 3	2395 B 8	3261 A 9	3275 B 5	3302 C 3	3315 C 2	3331 B 3	3345 C 2	3359 D 1	6255 A 9	6351 B 3	7258 B 6	9204 C 3	9216 B 6	9232 B 6	9308 D 2	9330 C 2	9473 D 5	



BLOCK DIAGRAM DOLBY B SINGLE DECK

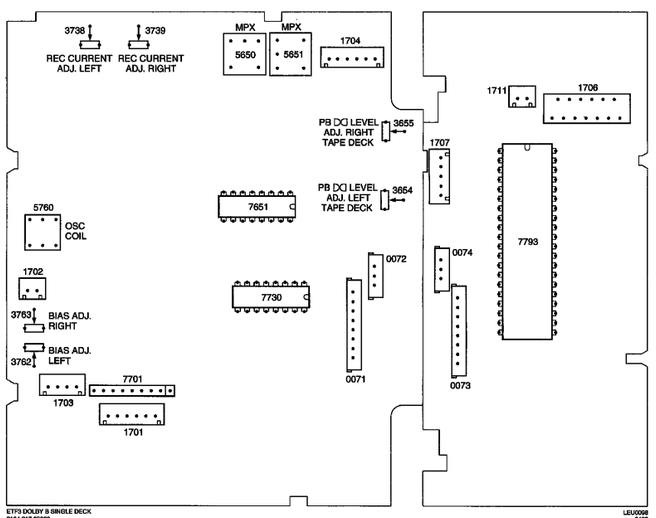


FUNCTIONAL BLOCK DIAGRAM DOLBY B SINGLE DECK



Items only left channel

PCB TEST POINTS



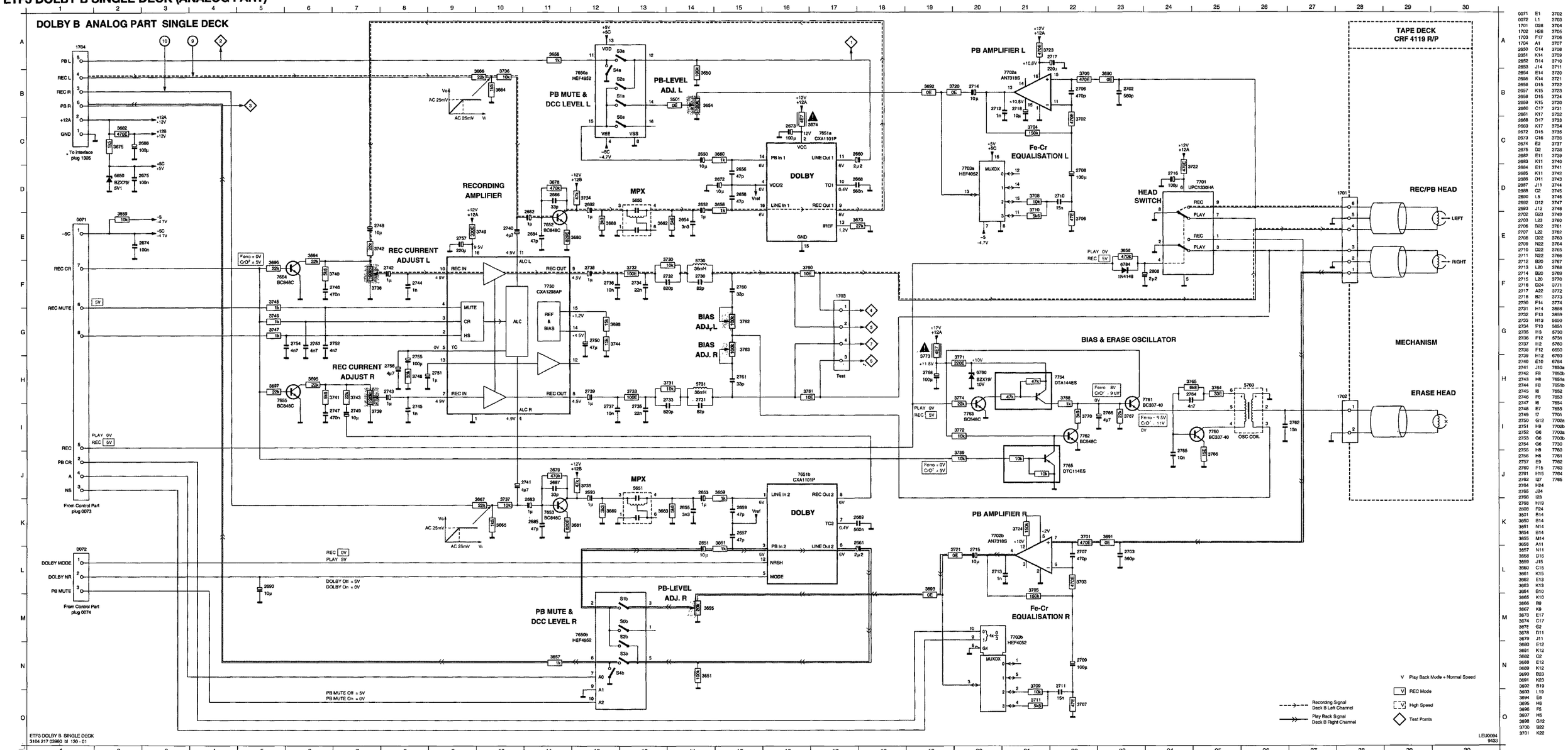
ELECTRICAL MEASUREMENTS

ELECTRICAL MEASUREMENTS AND ADJUSTMENTS SINGLE DECK

Adjustment	Input on or Cassette	Recorder in position	Measure on	Read on	Adjust with	Value	Remarks
Wow and Flutter	3150Hz	Play in forward direction	Test point TP **2**	Wow and Flutter meter	check	< 0,3%	
Deck Playback DolbyLevel	Dolby 200 N.Wb/m	Play in forward direction	TP **2** left ch TP **3** right ch	AC mV meter	3654 3655	548mV _0,5dB	see #1
Deck Azimuth	12kHz	Play in forward direction	TP **2** left ch or TP **3** right ch	AC mV meter	Left screw Norm.Dir.(>)	max. output left=right	
		Play in reverce direction			Right screw Rev.Dir.(<)		
Bias current Chrome	-	Record mode and Chrome mode	TP **4 5** L.ch TP **6 7** R.ch	AC mV meter	3762 3763	7 mV	see #2
Bias current Ferro	-	Record mode and Ferro mode	TP **4 5** L.ch TP **6 7** R.ch	AC mV meter	check check	4,4mV _0,5dB	
Recording current *** short circuit C2756 during Rec adjustment**	V input on P **9**(Rec L) P**10**(Rec R) 400Hz/90mV and Chrome.cass (deck)	Record mode and Chrome mode	TP **4 5** L.ch TP **6 7** L.ch	AC mV meter	3738 3739	0,68mV Rec/PB Level within _1 dB of 548 mV	Filter out osc with audio filter see also #3
	V input on P **9**(Rec L) P**10**(Rec R) 400Hz/90mV and Ferro.cass (deck)	Record mode and Ferro mode	TP **4 5** L.ch TP **6 7** R.ch		check check	0,45mV Rec/PB Level within _1 dB of 548 mV	
Multiplex Filter		Record mode Inject 19kHz at line in	TP **2** left ch. TP **3** right ch	AC mV meter	5650 5651	Min. output Typ. Attenuation >40dB Min. Attenuation >30dB	
Oscillator Frequency		Record mode	TP **4 5** L.ch	Counter	5760	88kHz _6kHz	

#1 Dolby level to be tested in reverse direction within same tolerance.
#2 Bias current must be aligned for Chrome position
#3 Recording current should be aligned using an iterative method. Perform Ferro tape or Chrome tape as target blank tapes. Then playback the recorded tape. The record/playback level should also be 548 mV _ 0.5 dB. If not, adjust 3738 (L) and 3739 (R) accordingly.

ETF3 DOLBY B SINGLE DECK (ANALOG PART)



PCS 64 347

10 - 6 10 - 7 10 - 8

ETF3 DOLBY B SINGLE DECK (CONTROL PART)

DOLBY B CONTROL PART SINGLE DECK

TAPE DECK CRF 4119 R/P

MECHANISM R/P-DECK

MOTOR B DRIVE

SOL B DRIVE

7793 MC68HC05C4P µ-CONTROLLER

V PLAYBACK MODE + NORMAL SPEED

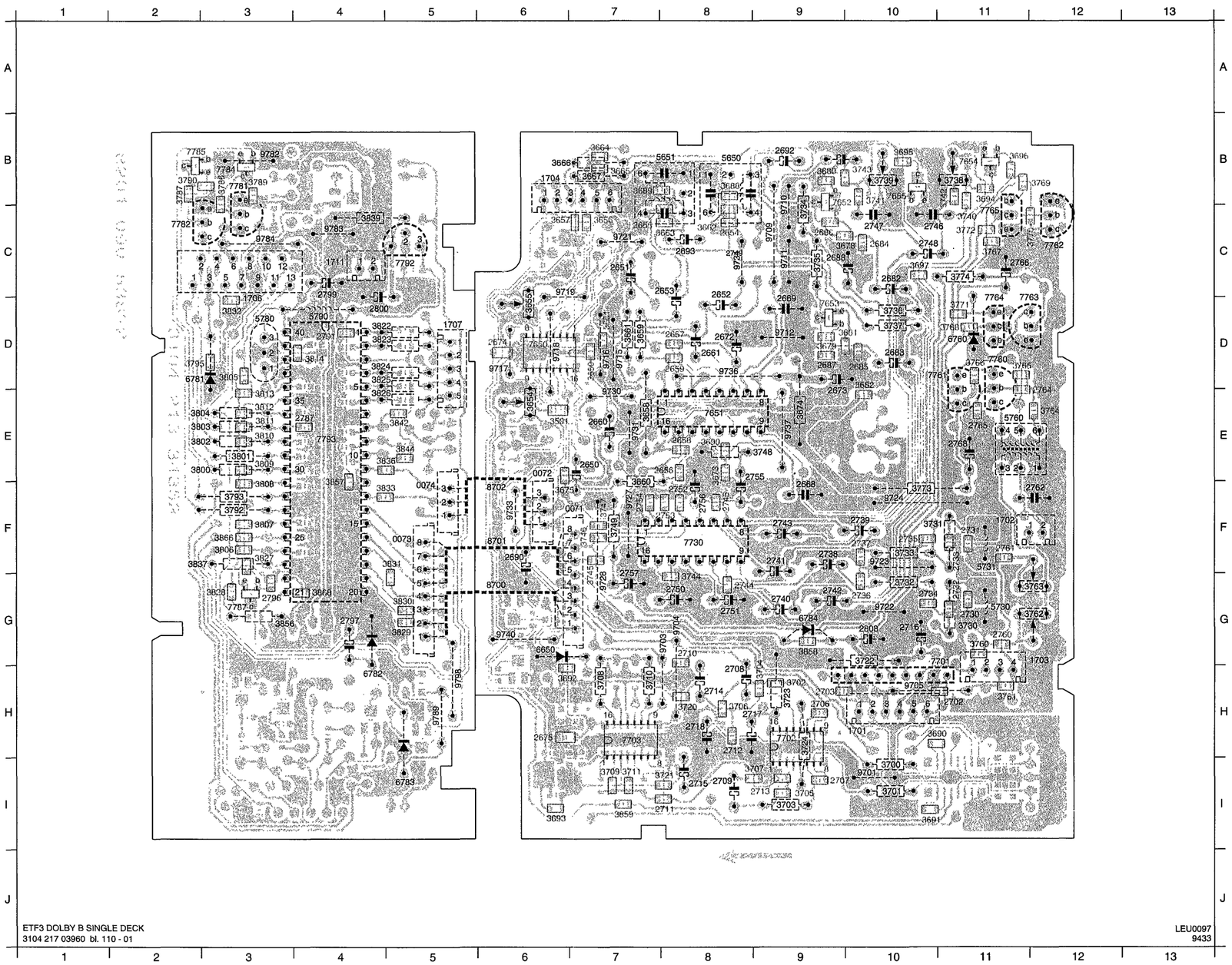
ETF3 DOLBY B SINGLE DECK
3104 217 03960 bl. 130 - 02

LEU0093
9433

0073 F18
0074 J18
1706 H4
1707 C18
1711 L18
2787 J9
2791 D14
2796 G13
2797 G14
2799 N16
2800 M17
3786 G7
3787 K7
3789 G7
3790 K7
3792 G7
3793 K8
3795 L7
3800 I7
3801 L8
3802 I7
3803 J7
3804 J7
3805 I7
3806 B10
3807 C10
3808 C10
3809 H8
3810 H9
3811 H9
3812 H10
3813 H8
3814 A12
3822 C14
3823 D14
3824 D14
3825 E14
3826 E14
3827 G13
3828 G14
3829 H13
3830 H13
3831 H13
3832 J5
3833 K13
3836 K13
3837 K13
3839 M17
3842 B13
3844 B13
3856 E10
3857 C13
3866 E10
3868 D10
5780 A12
5790 M16
6781 K6
6782 G14
6783 G15
7781 F6
7782 K6
7784 G7
7785 L7
7787 G14
7792 M17
7793 F11

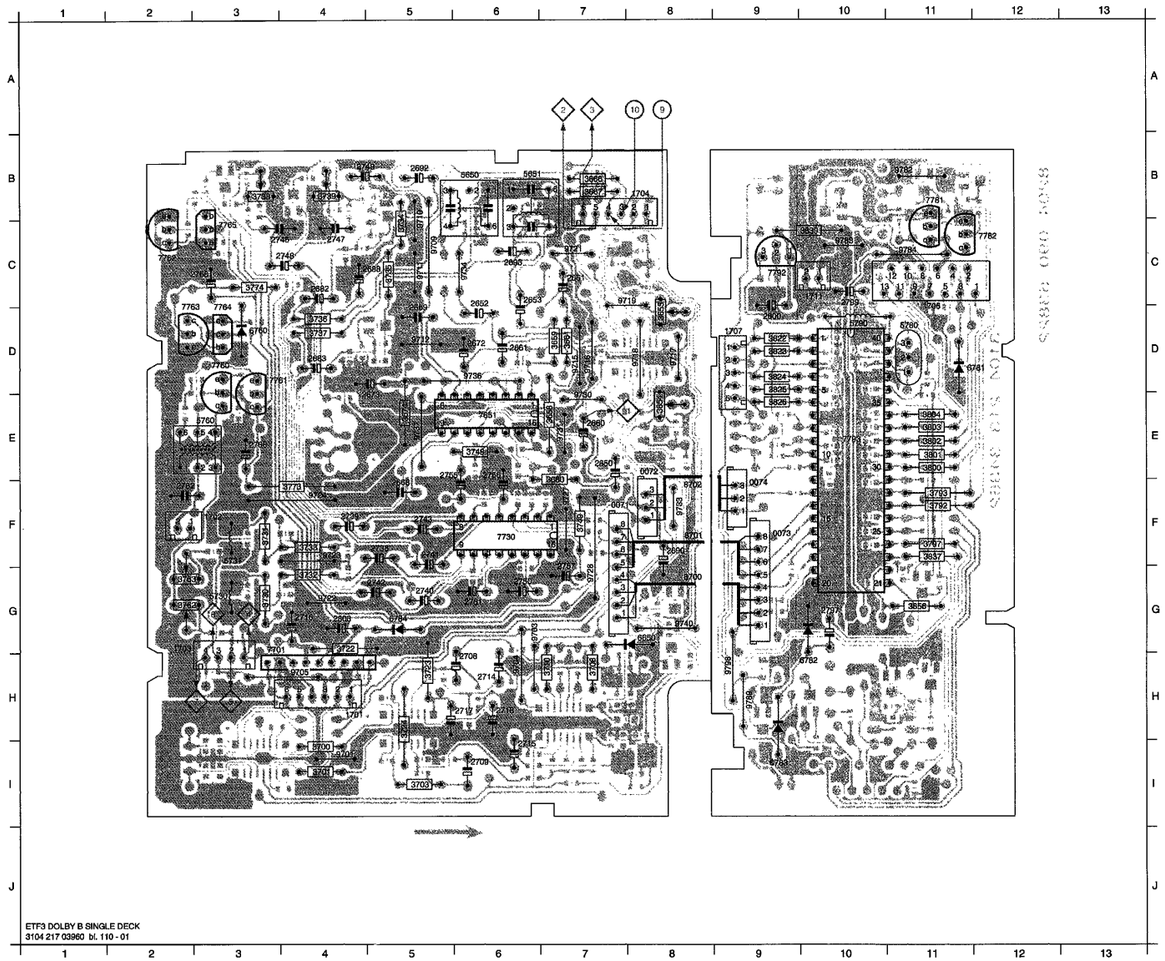
ETF3 DOLBY B SINGLE DECK LAYOUT

0071	F6	2656	E7	2687	D9	2716	G10	2744	G8	2764	E12	3657	C6	3681	D9	3704	H9	3734	C9	3761	H11	3790	B2	3813	E3	3842	E5	6781	D2	7763	D11	9709	C9	9733	F6
0072	E6	2657	D8	2688	C9	2717	H8	2745	F8	2765	E11	3658	E7	3682	D10	3705	I9	3735	C9	3762	G11	3792	F3	3814	D4	3844	E5	6782	H4	7764	D11	9710	C9	9734	C8
0073	F5	2658	E8	2690	F6	2718	H8	2746	C10	2766	C11	3659	D7	3688	B8	3706	H8	3736	D10	3763	G11	3793	F3	3822	D4	3856	G3	6783	I5	7765	C11	9711	C9	9736	D8
0074	F5	2659	D8	2692	B9	2730	G11	2747	C10	2768	E11	3660	F7	3689	B7	3707	I8	3737	D10	3764	E12	3795	D2	3823	D4	3857	F4	6784	G9	7781	B3	9712	D9	9737	E9
1701	H10	2660	E7	2693	C8	2731	F11	2748	C10	2787	E4	3661	D7	3690	H10	3708	H7	3738	B11	3765	D11	3800	E2	3824	D4	3858	G9	7650	D6	7782	C2	9715	D7	9740	G6
1702	F11	2661	D8	2702	H11	2732	G11	2749	B9	2791	D4	3662	C8	3691	I10	3709	I7	3739	B10	3766	D11	3801	E3	3825	D4	3859	I7	7651	E8	7784	B3	9716	D7	9782	B3
1703	G12	2668	F9	2703	H9	2733	F11	2750	G8	2796	G3	3663	C7	3692	H6	3710	H7	3740	C11	3767	C11	3802	E2	3826	E4	3866	F3	7652	B9	7785	B2	9717	D6	9783	C4
1704	B6	2669	D9	2706	H9	2734	G10	2751	G8	2797	G4	3664	B7	3693	I6	3711	I7	3741	B10	3768	D11	3803	E2	3827	F3	3868	G4	7653	D9	7787	G3	9718	D6	9784	C3
1706	D3	2672	D8	2707	I9	2735	F10	2752	F8	2799	C4	3665	B7	3694	B11	3720	H8	3742	C11	3769	B12	3804	E2	3828	G3	5650	B8	7654	B11	7792	C5	9719	C6	9789	H5
1707	D5	2673	E9	2708	H8	2736	G10	2753	F7	2800	D4	3666	B6	3695	B10	3721	I7	3743	B10	3770	C12	3805	D3	3829	G5	5651	B7	7655	B10	7793	E4	9721	C7	9798	H5
1711	C4	2674	D6	2709	I8	2737	F10	2754	F7	2808	G10	3667	B7	3696	B11	3722	G10	3744	G8	3771	D11	3806	F3	3830	G5	5730	G11	7701	G10	8700	G6	9722	G10		
2650	E7	2675	H6	2710	G8	2738	F9	2755	E8	3501	E6	3673	F8	3697	C10	3723	H9	3745	G7	3772	C11	3807	F3	3831	F4	5731	F11	7702	H9	8701	F6	9723	F10		
2651	C7	2682	C10	2711	I7	2739	F10	2756	F8	3650	D7	3674	E9	3699	E8	3724	H9	3746	F7	3773	F10	3808	F3	3832	D3	5760	E11	7703	H7	8702	F6	9724	F10		
2652	C8	2683	D10	2712	H8	2740	G9	2757	G7	3651	D7	3675	F6	3700	I10	3730	G11	3747	F7	3774	C11	3809	E3	3833	F4	5780	D3	7730	F8	9701	I10	9727	F7		
2653	C7	2684	C10	2713	I8	2741	F9	2760	G11	3654	E6	3678	C9	3701	I10	3731	F10	3748	E9	3786	B3	3810	E3	3836	E4	5790	D4	7760	D11	9703	G8	9728	G7		
2654	C8	2685	D10	2714	H8	2742	G9	2761	F11	3655	D6	3679	D9	3702	H9	3732	G10	3749	F7	3787	B2	3811	E3	3837	F2	6650	G6	7761	D10	9704	G8	9730	E7		
2655	C7	2686	C9	2715	I8	2743	F9	2762	F11	3656	C7	3680	B9	3703	I9	3733	F10	3760	G11	3789	B3	3812	E3	3839	C4	6760	D11	7762	C12	9705	H10	9731	E7		

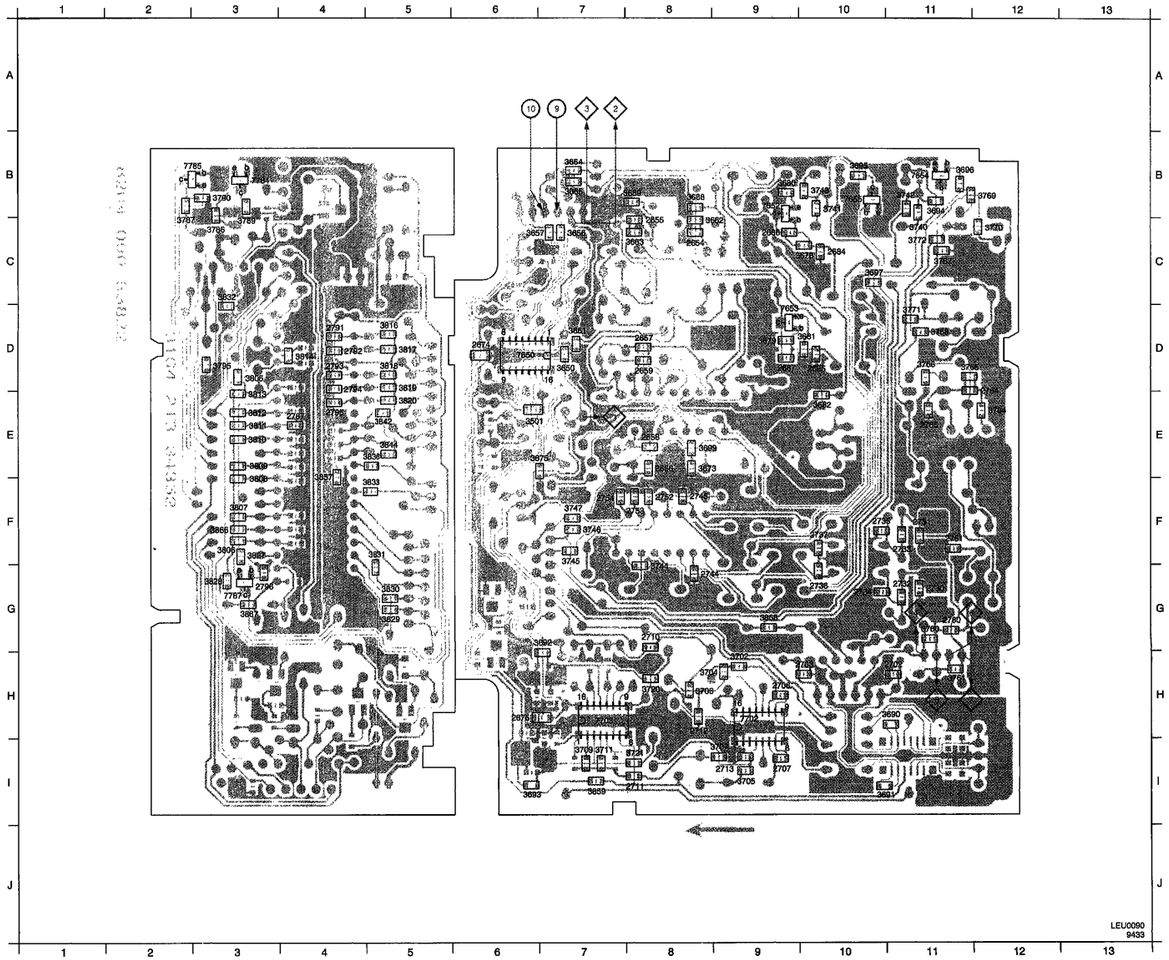


ETF3 DOLBY B SINGLE DECK COMPONENT AND CHIP LAYOUTS

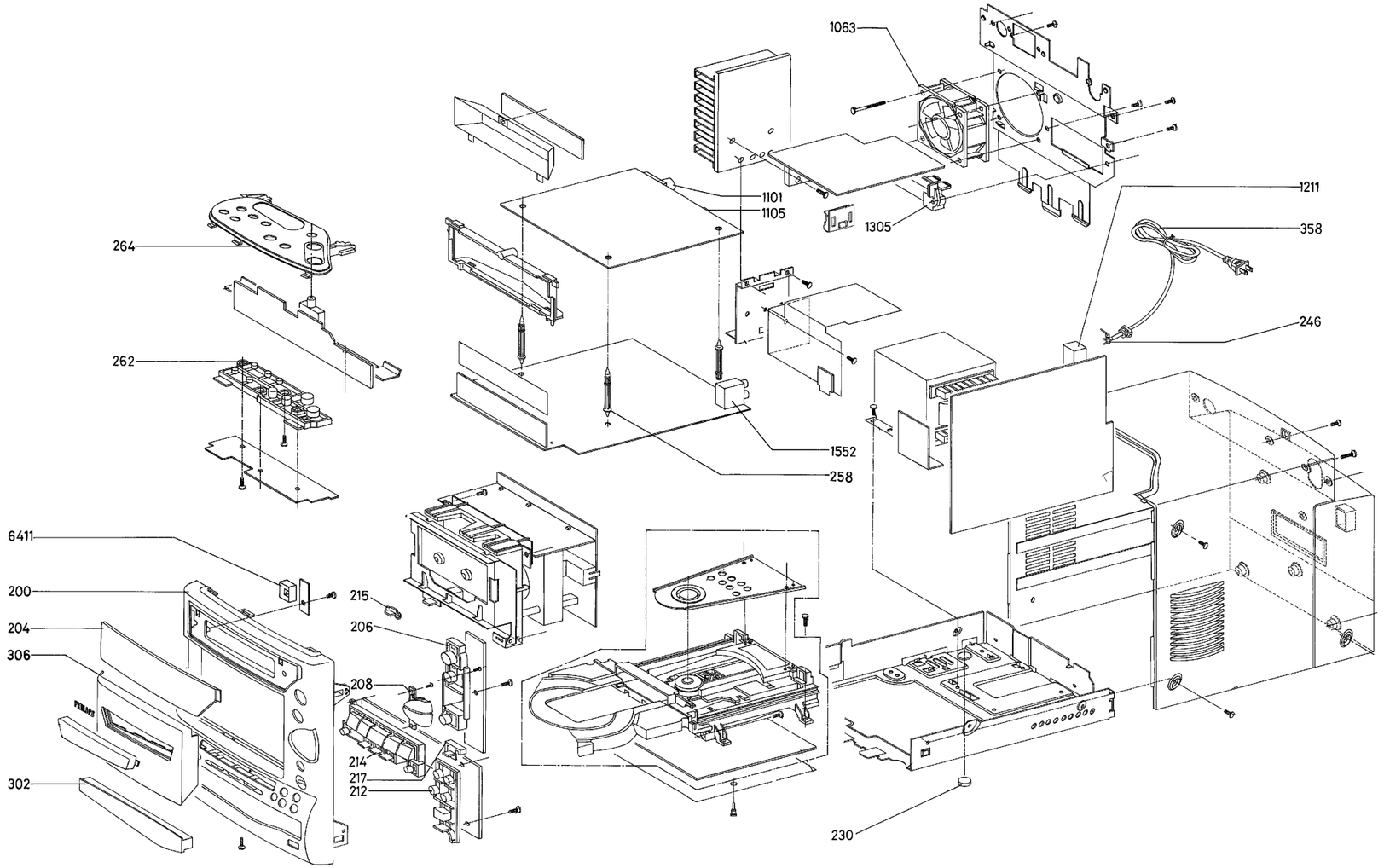
0071	F7	1711	C10	2673	E4	2715	I6	2746	C3	2766	C2	3660	F7	3722	G4	3737	D4	3793	F11	3825	D9	5780	D11	7730	F6	7793	E10	9711	C5	9724	F4	9782	B11
0072	E8	2650	E7	2682	C4	2716	G4	2747	C4	2768	E3	3661	D7	3723	H5	3738	B3	3797	F11	3826	E9	5790	D10	7760	D3	8700	G8	9712	D5	9727	F7	9783	C10
0073	F9	2651	C7	2683	D4	2717	H6	2748	C3	2797	G10	3686	B7	3724	H5	3739	B4	3800	E11	3837	F11	6660	G8	7761	D3	8701	F8	9715	D7	9728	G7	9784	C11
0074	F9	2652	C6	2688	C4	2718	H6	2749	B4	2799	C10	3667	B7	3730	G3	3748	E6	3801	E11	3839	C10	6760	D9	7762	C2	8702	F8	9716	D7	9730	E7	9789	H9
1701	H4	2653	C6	2690	F8	2736	F5	2750	G6	2800	D9	3674	E5	3731	F3	3749	F7	3802	E11	3856	G11	6781	D11	7763	D2	9701	I4	9717	D8	9731	E7	9798	H9
1702	F3	2660	E7	2692	B5	2739	F4	2751	G6	2808	G4	3700	I4	3732	G4	3762	G2	3803	E11	5650	B6	6782	H9	7764	D3	9703	G6	9718	D8	9733	F8		
1703	G2	2661	D6	2693	C6	2740	G5	2755	E5	3654	E8	3701	I4	3733	F4	3763	G2	3804	E11	5651	B6	6783	I9	7765	C3	9704	H6	9719	C7	9734	C6		
1704	B8	2668	F5	2708	H6	2741	F5	2756	E6	3655	D8	3703	I5	3734	C5	3773	F4	3822	D9	5730	G3	6784	G5	7781	B11	9705	H4	9721	C7	9736	D6		
1706	D11	2669	D5	2709	I6	2742	G4	2757	G7	3656	E7	3706	H7	3735	C5	3774	C3	3823	D9	5731	F3	7651	E6	7782	C12	9709	C5	9722	G4	9737	E5		
1707	D9	2672	D6	2714	H6	2743	F5	2762	F2	3659	D7	3710	H7	3736	D4	3792	F11	3824	D9	5760	E3	7701	G3	7792	C9	9710	C5	9723	F4	9740	G8		



2654	C8	2684	C10	2710	G8	2734	G10	2754	F7	2793	D4	3657	C6	3679	D9	3692	G6	3704	H8	3740	C11	3760	G11	3770	C12	3805	D3	3813	E3	3828	G3	3844	E5	7653	D9
2655	C8	2685	D10	2711	I8	2735	F10	2760	G11	2794	E4	3662	C8	3680	B9	3693	I6	3705	I9	3741	B10	3761	H11	3771	D11	3806	F3	3814	D4	3829	G5	3857	F4	7654	B11
2656	E8	2686	C9	2712	H8	2736	G10	2761	F11	2795	E4	3663	C8	3681	D9	3694	B11	3706	H8	3742	B11	3764	E12	3772	C11	3807	F3	3816	D5	3830	G5	3858	G9	7655	B10
2657	D8	2687	D9	2713	I9	2737	F10	2764	E12	2796	G3	3664	B7	3682	E10	3695	B10	3707	I8	3743	B10	3765	D11	3786	C3	3808	F3	3817	D5	3831	F5	3859	I7	7702	H9
2658	E8	2702	H10	2730	G11	2744	G8	2765	E11	3501	E6	3665	B7	3688	B8	3696	B11	3709	I7	3744	G8	3766	D11	3787	C2	3809	E3	3818	D5	3832	C3	3866	F3	7703	H7
2659	D8	2703	H9	2731	F11	2745	F8	2787	E4	3650	D7	3673	E8	3689	B7	3697	C10	3711	I7	3745	F7	3767	C11	3789	C3	3810	E3	3819	D5	3833	F4	3867	G3	7784	B3
2674	D8	2706	H9	2732	G11	2752	F8	2791	D4	3651	D7	3675	E6	3690	H10	3699	E8	3720	H8	3746	F7	3768	D11	3790	B3	3811	E3	3820	E5	3836	E4	7650	D6	7785	B2
2675	H6	2707	I9	2733	F11	2753	F8	2792	D4	3656	C7	3678	C9	3691	I10	3702	H9	3721	I8	3747	F7	3769	B12	3795	D3	3812	E3	3827	F3	3842	E5	7652	B9	7787	G3



EXPLODED VIEW - CENTER UNIT

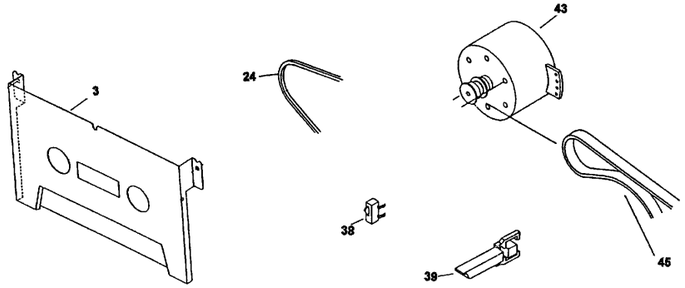


Lista Mecânica do Aparelho

	4822 426 20213	Gabinete Traseiro
200	4822 426 51766	Gabinete Frontal
204	4822 450 62323	Lente do Display
206	4822 410 63473	Botão " **DSC** "
208	4822 410 63474	Botão " **VOLUME** "
212	4822 410 63475	Botão " **C D** "
214	4822 410 63476	Botão " **LOGIC** "
215	4822 410 63471	Botão " **EJECT** "
217	4822 410 63472	Botão " **D B B** "
230	4822 462 40683	Pé
246	4822 532 60948	
258	4822 403 30817	Espaçador
262	4822 410 63398	Botão " TUNER "
264	4822 423 90211	Parte superior do gabinete
302	4822 444 61013	Tampa do CD
306	4822 443 64288	Transportador K7
350	4822 445 10419	Caixa acústica **FB17**
351	4822 303 50063	Ant. FM
352	4822 303 50082	Ant. AM
0356	4822 218 10562	Controle Remoto
0358	4806 321 17022	Cabo de rede
1030	4822 146 31412	Transformador de rede 110/220Vac
1063	4822 361 10689	Ventilador
1211	4822 272 10269	Seletor de voltagem

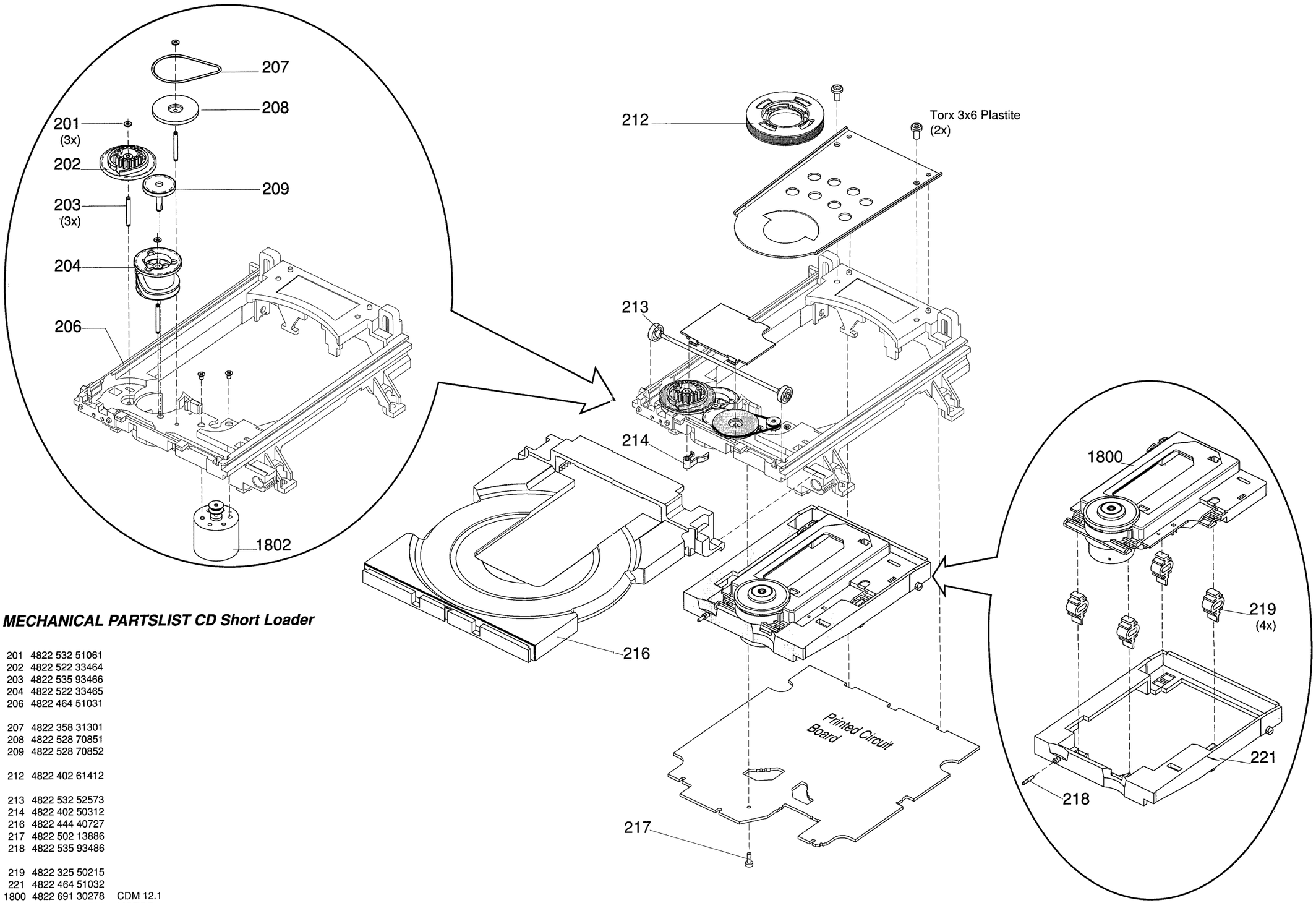
Lista Mecânica do DECK

001	4822 249 10472	Conj. cabeça REC/PLAY
002	4822 691 20985	Conj. mecanismo do DECK
003	4822 426 20213	Placa frontal do deck
008	4822 529 10289	Hidraulico
009	4822 256 92011	Suporte p/ o hidraulico
010	4822 403 70729	Conj. rolo pressor (Esquerdo)
012	4822 403 70731	Conj. rolo pressor (Direito)
018	4822 157 70155	Solenoide
024	4822 358 31219	Correia FR
038	4822 276 13318	Chave liga/desl.
039	4822 278 90756	Chave
040	4822 209 31816	IC Hall
043	4822 361 21736	Conj. motor
045	4822 358 31312	Correia larga p/ o motor



EXPLODED VIEW - CD UNIT

Exploded view CD Short Loader



MECHANICAL PARTSLIST CD Short Loader

201	4822 532 51061	
202	4822 522 33464	
203	4822 535 93466	
204	4822 522 33465	
206	4822 464 51031	
207	4822 358 31301	
208	4822 528 70851	
209	4822 528 70852	
212	4822 402 61412	
213	4822 532 52573	
214	4822 402 50312	
216	4822 444 40727	
217	4822 502 13886	
218	4822 535 93486	
219	4822 325 50215	
221	4822 464 51032	
1800	4822 691 30278	CDM 12.1
1802	4822 361 21708	MOTOR

Lista Elétrica :

Posição	Código	DESCRIÇÃO
-	**Tuner - ECO4VA**	
		DIVERSOS
1101	4822 267 10283	Soquete coax. 75
1104	4822 267 31505	Soquete p/ ant.
1105	4822 265 31184	Suporte p/ antena
2115	4822 125 60101	Variável 3 ~ 11 pF / 100V
3148	4822 100 11163	Pot. 100KΩ 30% 0.1W
		BOBINAS
5107	4822 157 63835	
5108	4822 157 71093	
5109/20	4806 156 37045	RF 1.5T
5122/23	4822 157 60517	
5125	4822 157 61898	0,47 µH
5140	4822 158 60511	FI de AM 450 KHz
5142	4822 157 70302	FI de AM 450 KHz
5143/44	4822 242 70665	Filtro cer. 10.7 MHz
5145	4806 242 77124	
5170	4822 242 72976	Ressonador cer. 7.2 MHz
		DIODOS
6105	4822 130 83075	HN1V02H
6109/24	4822 130 82833	1SV228
6121...	4806 130 37078	1N4148
6174	4822 130 34233	BZX79B5V1
		Tr's
7102...	4806 130 47321	BC848C
7105	4806 130 47337	2SA838B
7120	4806 130 47316	2SC1047
7168/74	4806 130 47269	BC858B
		I C 's
7140	4822 209 32011	TEA5712/N2 (RF)
7172	5322 209 11517	PM74HCU04M
7173	4822 209 31998	LC7218M

Posição	Código	DESCRIÇÃO
-	**CD**	
		Diversos
1810	4822 276 13503	Chave de tato
		Bobinas
5860	4822 242 81151	Cristal 16.9334 MHz
5890	4822 242 72527	Resson. cer. 4 MHz
		Diodos
6857	4806 130 37078	1N4148
6881/3	4806 130 37190	BZX79C3V9
		Tr's
7820/84	4806 130 47234	BC337-40
7856	5322 130 60123	BC807-40
7872	4806 130 47321	BC848C
7881	4806 130 47269	BC858C
7883	4806 130 47050	BC558B
		I C 's
7800	5322 209 11517	PC74HCU04T
7850	4822 209 31064	TDA1301T/N1
7851/2	4822 209 32852	TDA7073A/N2
7855	4822 209 31519	TDA7072A
7860	4822 209 33339	SAA7345GP/M5
7871	4822 209 32196	TDA1311AT/N2
7886	4822 209 80891	MC7805CT
7890	4822 209 33337	MC68HC05C8FB
-	**COMBI**	
		Diversos
1400	4822 130 91395	Display - LPH6233-1
1460...	4822 276 13114	Chave
1496...	4822 134 41198	Lampada 12V (azul)
1552	4806 267 37060	Soquete AUX/PHONO
1560	4822 267 40898	Soquete HEADPHONE
		Resistor
3452/3/4	4822 116 90836	10KΩ x 5 / 0.125W

Posição	Código	DESCRIÇÃO
-	**COMBI**	
		Bobinas
5401	5322 242 73697	Resson. cer. 8MHz
5402	4822 242 70938	Cristal 32.768MHz
5403/7	4822 157 52983	22µH 10%
5404	4806 157 50975	1 mH 10%
5405	4822 157 62552	2,2 µH 10%
5406	4822 157 63134	560µH 10%
		Diodos
6400...	4806 130 37078	1N4148
6411	4822 214 52009	GP1U58XP
		Tr's
7405/11	4806 130 47041	BC548B
7406	4806 130 47042	BC548C
7408/9	4806 130 47050	BC558B
7502...	4806 130 47045	BC549C
7520/21	4806 130 47332	BC338-40
		I C 's
7401	4822 209 33236	TMP87C20F
7402	4822 209 31508	ST24C01
7404/7	4806 209 87164	HEF4094BP
7504/5	5322 209 14865	MC14066BCP
7512/3	4806 209 87373	NJM4560D
7515	4822 209 30537	TC9153P
7600	4822 209 10263	HEF4052B
-	**POWER**	
		Diversos
1211	4822 272 10269	Seletor de voltagem
1260	4822 071 51602	Fusível T1.6A / 250V
1305	4822 267 31176	Soquete p/ falante
1360/1	4822 071 53152	Fusível T3,15A / 250V
1362	4822 267 51168	Fusível T80mA / 250V
1472...	4822 276 13114	Chave de tato
1473	4822 276 13403	Chave de tato
0385	4806 321 17022	Cabo de Rede

Posição	Código	DESCRIÇÃO
-	**POWER**	
		Bobinas
5281	4822 157 72185	400µH 30%
5313	4822 280 80777	Relay 12V/ 7A (2p)
		Diodos
6251...	4806 130 37078	1N4148
6256	4822 130 37047	BZX79C4V7
6257...	5322 130 80686	1N5392
6261	4806 130 37190	BZX79C3V9
6266	4806 130 80235	BZX79C3V3
6360	4822 130 82078	D5SBA20
6366	4806 130 37198	BZX79C2V4
6401	4822 130 82978	LTL16KPE (red)
		Tr's
7251...	4806 130 47041	BC548B
7252	4806 130 47054	BD135
7253	4806 130 47066	BD234
7254...	4806 130 47050	BC558B
7255	4806 130 47234	BC337-40
		I C 's
7258	4806 209 87639	MC78L05ACP
7261	4822 209 80817	L7805CV
7301	4822 209 31514	STK4132II
	ETF3	
		Resistores
3654/5	4822 100 11771	Pot. lin. de 20KΩ
3738/9	4822 100 11771	Pot. lin. de 20KΩ
3762/3	4822 100 11163	Pot. lin. de 100KΩ
		Bobinas
5650/1	4822 156 21725	Filtro cer. MPX LDX-210
5730/1	4822 156 20811	360mH 5%
5760	4822 156 20946	100KHz
5780	4822 242 72527	Ressonador cer. 4MHz
5790	4822 157 53941	100µH 10%

Posição	Código	DESCRIÇÃO
	ETF3	
		Diodos
6650	4822 130 34233	BZX79C5V1
6760	4806 130 37041	BZX79C10
6781	4806 130 37076	1N4002
6782/3..	4806 130 37078	1N4148
		Tr's
7652...	4806 130 47321	BC848C
7760/1	4806 130 47332	BC338-40
7762	4806 130 47042	BC548C
7764	4822 130 42682	DTA144ES
7765	4822 130 60588	DTC114ES
7781/2	4806 130 47227	BC328-40
		IC's
7650	4822 209 32919	HEF4952BT
7651	4822 209 72546	CXA1101
7701	4822 209 61667	UPC1330HA
7702	4822 209 32918	AN7318S
7703	5322 209 11102	HEF4052BT
7730	4822 209 31505	CXA1298AP

Anotações para alterações técnicas