

Service  
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**Service**



# Service Manual



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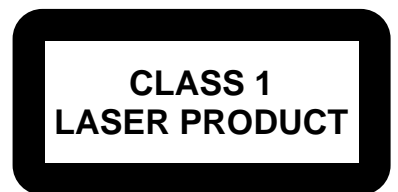
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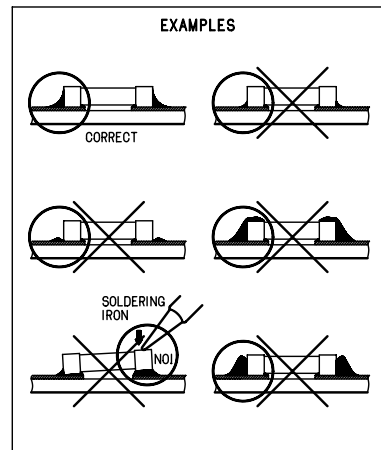
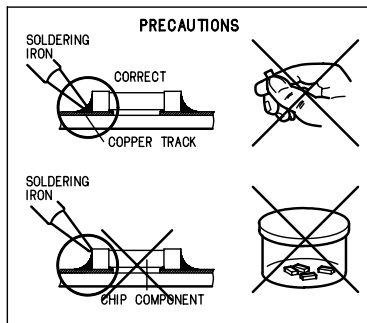
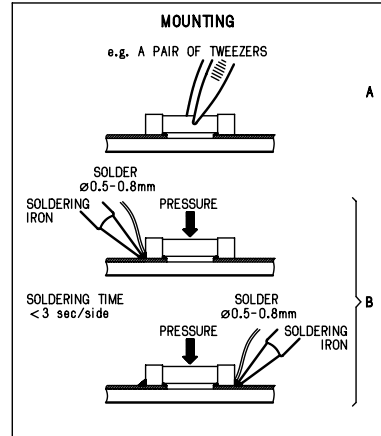
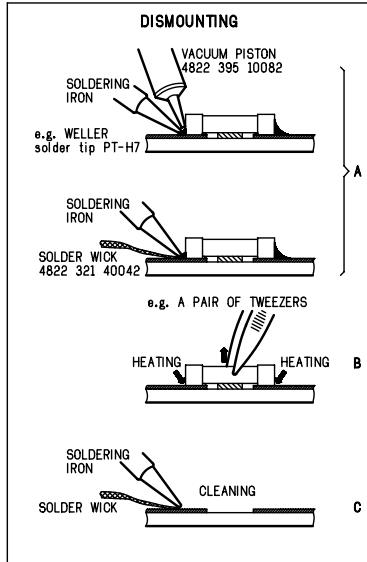
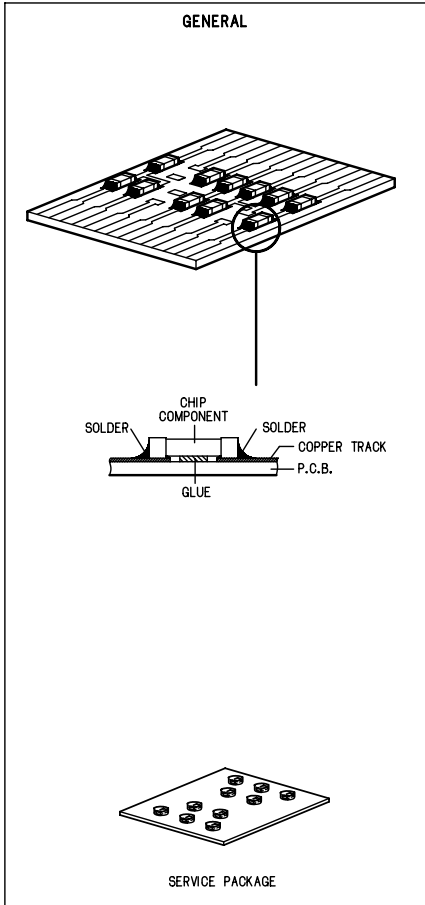
Published by SL 0225 Service Audio Printed in The Netherlands Subject to modification

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**PHILIPS**

# HANDLING CHIP COMPONENTS



**(GB) WARNING**

All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically. When repairing, make sure that you are connected with the same potential as the mass of the set via a wristband with resistance. Keep components and tools at this potential.

**ESD**



**(NL) WAARSCHUWING**

Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD). Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen. Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat. Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

**(F) ATTENTION**

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD). Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise à leur manipulation. Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfilier le bracelet sert d'une résistance de sécurité. Veiller à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel.

**(D) WARNUNG**

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD). Unvorsichtige Behandlung im Reparaturfall kann die Lebensdauer drastisch reduzieren. Sorgen Sie dafür, daß Sie im Reparaturfall über ein Pulsarmband mit Widerstand mit dem Massepotential des Gerätes verbunden sind. Halten Sie Bauteile und Hilfsmittel ebenfalls auf diesem Potential.

**(I) AVVERTIMENTO**

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD). La loro longevità potrebbe essere fortemente ridotta in caso di non osservazione della più grande cauzione alla loro manipolazione. Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa dell'apparecchio tramite un braccialeto a resistenza. Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

**(GB)**

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used. Safety components are marked by the symbol

**(F)**

Les normes de sécurité exigent que l'appareil soit remis à l'état d'origine et que soient utilisées les pièces de rechange identiques à celles spécifiées. Les composants de sécurité sont marqués

**SAFETY**



**(D)**

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Originalzustand des Gerätes darf nicht verändert werden. Für Reparaturen sind Originalersatzteile zu verwenden. Sicherheitsbauteile sind durch das Symbol markiert.

**(NL)**

Veiligheidsbepalingen vereisen, dat het apparaat in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast. De Veiligheidsonderdelen zijn aangeduid met het symbool

**(I)**

Le norme di sicurezza estigono che l'apparecchio venga rimesso nelle condizioni originali e che siano utilizzati i pezzi di ricambio identici a quelli specificati. Componenti di sicurezza sono marcati con

**(GB) DANGER:** Invisible laser radiation when open. AVOID DIRECT EXPOSURE TO BEAM.

**(S) Varning !**  
Osynlig laserstrålning när apparaten är öppnad och spärrar är urkopplad. Betrakta ej strålen.

**(DK) Advarsel !**  
Usynlig laserstrålning ved åbning når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.



**(GB)**  
After servicing and before returning the set to customer perform a leakage current measurement test from all exposed metal parts to earth ground, to assure no shock hazard exists. The leakage current must not exceed 0.5mA.

**(FIN) Varoitus !**  
Avatussa laitteessa ja suojalukituksen ohitettaessa olet alttiina näkymättömälle laserisäteilylle. Älä katso säteeseen !

**(F)**  
"Pour votre sécurité, ces documents doivent être utilisés par des spécialistes agréés, seuls habilités à réparer votre appareil en panne".

## TECHNICAL SPECIFICATIONS

### GENERAL

Mains voltage	-/21/21M : 120 / 230 V
	-/22/30/33 : 230 V
	-/37 : 120 V
Mains frequency	-/22/30/33 : 50 Hz
	-/21/21M : 50 / 60 Hz
	-/37 : 60 Hz
Battery	remote : 3 V (R6 x 2)
Power consumption	normal : 60 W
	Standby : 3 W
Dimension (W x H x D)	: 223 x 140 x 247 mm
Weight	: 5.6 Kg

### AMPLIFIER

Output power	mains : 2 x 8 W
Speaker impedance	: 2 x 8 ohm
Frequency response	: 100 Hz - 10 kHz ( $\pm 4$ dB)

### TUNER - FM SECTION

Tuning range	: 87.5 - 108 MHz
IF frequency	: 10.7 MHz $\pm$ 0.02 MHz
Sensitivity	: 16 dBf at 26dB S/N
Selectivity	300kHz : 55 dB
IF suppression	: 85 dB
Image suppression	: 40 dB
Channel separation	1kHz : 28 dB

## SERVICE TOOLS

<b>TORX T10</b> screwdriver with shaftlength 150mm.....	4822 395 50423
<b>TORX screwdriver set</b> SBC 163.....	4822 295 50145
<b>Audio signal disc</b> SBC 429.....	4822 397 30184
<b>Playability test disc</b> SBC 444.....	4822 397 30245
<b>Test disc 5</b> (disc without errors ) +	
<b>Test disc 5A</b> (disc with dropout errors, black spots and fingerprints)	
SBC 426/426A.....	4822 397 30096
<b>Burn in test disc</b> (65 min. 1kHz signal at -30 dB level without "pause").....	4822 397 30155
<b>Universal test cassette</b> Fe SBC 420.....	4822 397 30071

## AVAILABLE ESD PROTECTION EQUIPMENT

<b>anti-static table mat</b> large 1200x650x1.25mm	4822 466 10953
small 600x650x1.25mm	4822 466 10958
<b>anti-static wristband</b>	4822 395 10223
<b>connection box</b> (3 press stud connections, 1M )	4822 320 11307
<b>extendible cable</b> (2m, 2M , to connect wristband to connection box)	4822 320 11305
<b>connecting cable</b> (3m, 2M , to connect table mat to connection box)	4822 320 11306
<b>earth cable</b> (1M , to connect any product to mat or to connection box)	4822 320 11308
<b>KIT ESD3</b> (combining all 6 prior products - small table mat)	4822 310 10671
<b>wristband tester</b>	4822 344 13999

### TUNER - AM SECTION

Tuning range	MW : 531 - 1602 kHz
	530 - 1700 kHz for /37
Tuning range	LW : 153 - 279 kHz
IF frequency	: 450 kHz $\pm$ 1 kHz
Sensitivity	MW : $\leq$ 3.5 mV/m at 26dB S/N
	LW : $\leq$ 4.2 mV/m
Selectivity	MW : $<$ 22 dB
	LW : $<$ 35 dB
IF rejection	MW : $<$ 64 dB
Spurious rejection ratio	MW : $<$ 58 dB
	LW : $<$ 51 dB
Image rejection ratio	MW : $<$ 40 dB
	LW : $<$ 47 dB

### AUDIO CASSETTE RECORDER

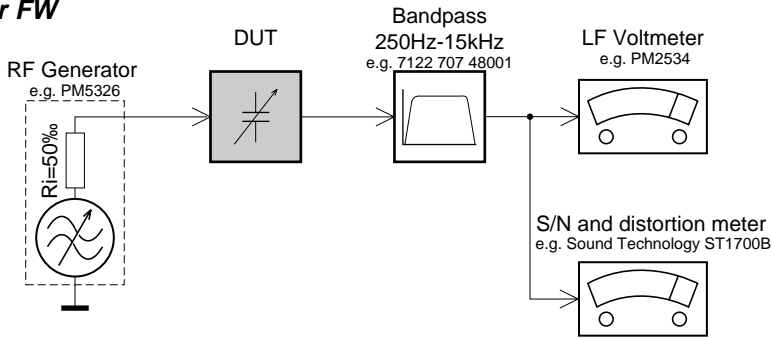
Frequency response	: 80 - 12500 Hz
Wow & flutter	: 0.4 % (DIN)
Tape speed	: 4.76 cm/s $\pm$ 2 %
Channel difference	1kHz : 0 dB
S/N ratio (unw.)	Ferro : 47 dB
	Chrome : 50 dB
S/N ratio (wght.)	Ferro : 52 dB
	Chrome : 56 dB

### COMPACT DISC

Frequency response	: 20Hz – 20kHz within 1.5dB
S/N ratio (unw.)	: $>$ 85 dB
S/N ratio (A-wght.)	: $>$ 90 dB
THD+N	1 kHz : $>$ 72 dB
Channel crosstalk	: $>$ 50 dB
Channel unbalance	: $<$ $\pm$ 1 dB

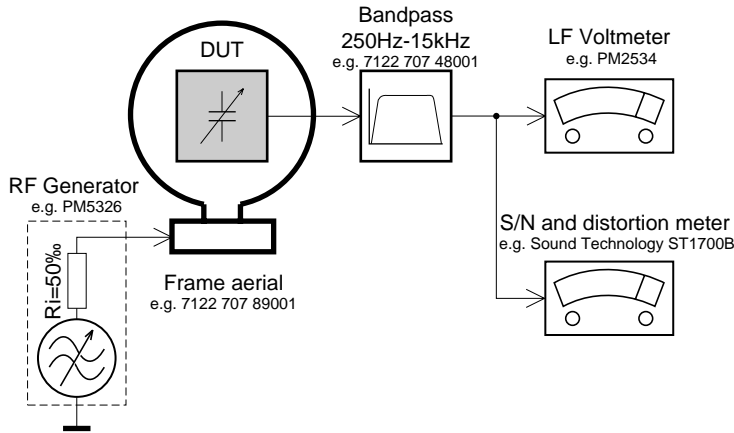
# SERVICE MEASUREMENT

## Tuner FW



Use a bandpass filter to eliminate hum (50Hz, 100Hz) and disturbance from the pilotone (19kHz, 38kHz).

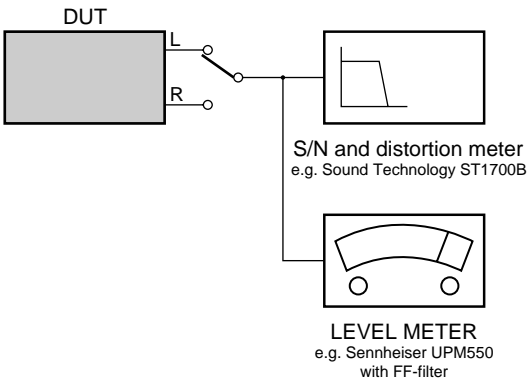
## Tuner AM (MW,LW)



To avoid atmospheric interference all AM-measurements have to be carried out in a Faraday «s cage. Use a bandpass filter (or at least a high pass filter with 250kHz) to eliminate hum (50Hz, 100Hz).

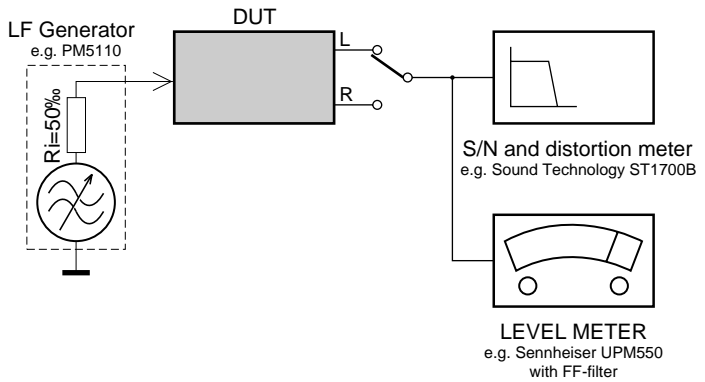
## CD

Use Audio Signal Disc SBC429 4822 397 30184 (replaces test disc 3)



## RECORDER

Use Universal Test Cassette Fe SBC420 4822 397 30071



# CONNECTION AND CONTROLS

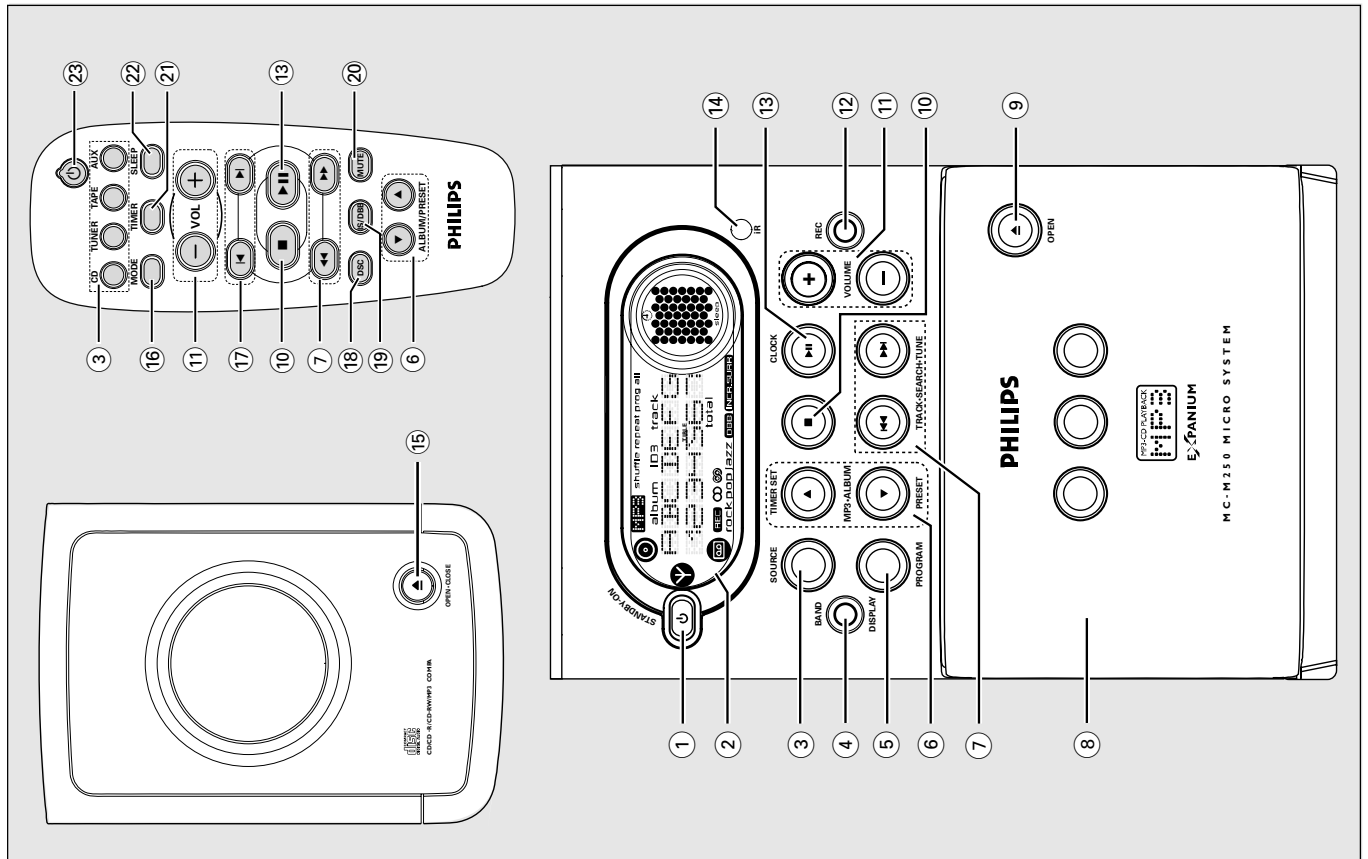
## Controls

### Controls on the system and remote control

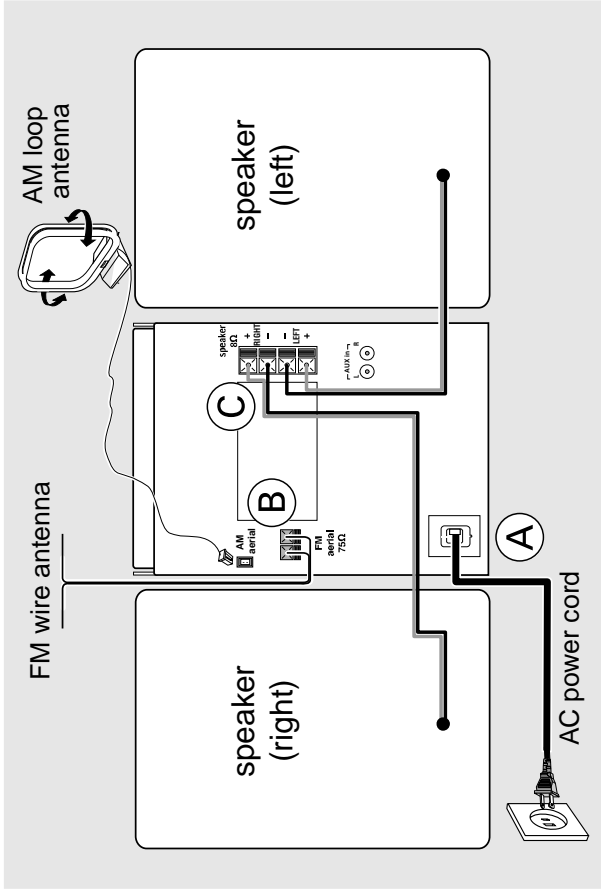
- ① **STANDBY ON** to switch the system on or to standby mode.
- ② **Display screen** to view the current status of the system.
- ③ **SOURCE** to select the respective sound source : CD, TUNER, TAPE or AUX.
- ④ **BAND / DISPLAY** for Tuner .....to select waveband : FM or AM. for CD/MP3-CD...to select disc information display mode.
- ⑤ **PROGRAM** for CD/MP3-CD...to program disc tracks. for Tuner .....to program preset radio stations.
- ⑥ **▲ PRESET / MP3-ALBUM / TIMER SET** for MP3-CD .....to select previous/next album. for Tuner .....to select a preset radio station. for Timer (▲) ... (on the system only) to set the timer function.
- ⑦ **◀◀◀▶▶▶** **TRACK-SEARCH-TUNE** (◀◀ ▶▶▶ on remote control) for CD.....to fast reverse/forward the disc. for CD/MP3-CD... (on the system only) to select a desired track for Tuner .....to tune to a lower or higher radio frequency. for Tape .....to rewind or fast forward.
- ⑧ **Tape deck**
- ⑨ **OPEN** to open tape compartment.
- ⑩ for CD/MP3-CD...to stop playback or to clear a program. for Tape .....to stop playback or recording.
- ⑪ **VOLUME +/-** to increase or decrease the volume. (on the system only) to adjust the hours and minutes for the clock/timer functions.
- ⑫ **RECORD** to start recording.
- ⑬ **▶ II / CLOCK** for CD/MP3-CD...to start or interrupt playback for Tape.....to start playback. for Clock.....(on the system only) to set the clock function.
- ⑭ **iR sensor** infrared sensor for remote control.
- ⑮ **OPEN-CLOSE** to open or close the disc tray.
- ⑯ **MODE** to shuffle and repeat a track/disc.
- ⑰ **◀ / ▶** to select a desired track.
- ⑱ **DSC (Digital Sound Control)** to select the desired sound effect : OPTIMAL/ ROCK/JAZZ/POP .
- ⑲ **IS/DBB (Incredible Surround/Dynamic Bass Boost)** to create a super-enhanced stereo effect. to enhance the bass.
- ⑳ **MUTE** interrupts and resumes sound reproduction.
- ㉑ **TIMER** to activate/deactivate the timer function.
- ㉒ **SLEEP** to activate/deactivate or set the sleep timer.
- ㉓ to switch the system to standby mode.

### Notes for remote control:

- First select the source you wish to control by pressing one of the source select keys on the remote control (for example CD, TUNER).
- Then select the desired function (for example ▶, /▲, ▶!).



# Preparations



## Rear connections

The type plate is located at the rear of the system.

### (A) Power

Before connecting the AC power cord to the wall outlet, ensure that all other connections have been made.

### WARNING!

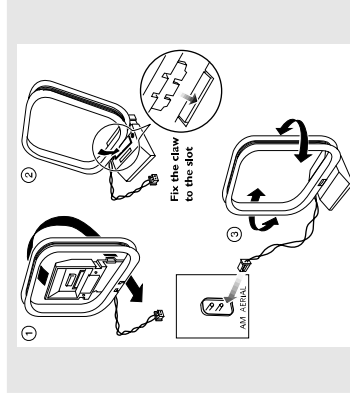
- For optimal performance, use only the original power cable.
- Never make or change connections with the power switched on.

To avoid overheating of the system, a safety circuit has been built in. Therefore, your system may switch to Standby mode automatically under extreme conditions. If this happens, let the system cool down before reusing it (not available for all versions).

### (B) Antenna Connection

Connect the supplied AM loop antenna and FM antenna to the respective terminals. Adjust the position of the antenna for optimal reception.

### AM Antenna



- Position the antenna as far as possible from a TV, VCR or other radiation source.

# Preparations

## Optional connection

The optional equipment and connecting cords are not supplied. Refer to the operating instructions of the connected equipment for details.

## Connecting other equipment to your system

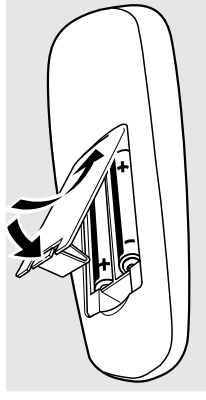
Connect the audio left and right OUT terminals of a TV, VCR, Laser Disc player, DVD player or CD Recorder to the **AUX IN** terminals.

### Note:

- If you are connecting equipment with a monaural output (a single audio out terminal), connect it to the **AUX IN** left terminal. Alternatively, you can use a "single to double" cinch cable (the output sound still remain monaural).

## Inserting batteries into the remote control

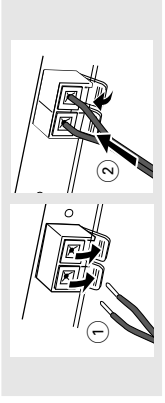
Insert two batteries (type R03 or AAA) into the remote control with the correct polarity as indicated by the "+" and "-" symbols inside the battery compartment.



### CAUTION!

- Remove batteries if they are exhausted or will not be used for a long time.
- Do not use old and new or different types of batteries in combination.
- Batteries contain chemical substances, so they should be disposed off properly.

## FM Antenna

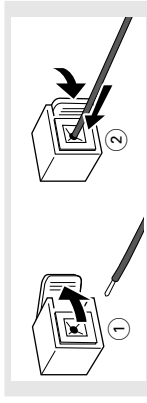


- For better FM stereo reception, connect an outdoor FM antenna to the **FM AERIAL (FM ANTENNA)** terminal.

### (C) Speakers Connection

#### Front Speakers

Connect the speaker wires to the **SPEAKERS** terminals, right speaker to "RIGHT" and left speaker to "LEFT", colored (marked) wire to "+" and black (unmarked) wire to "-".



- Fully insert the stripped portion of the speaker wire into the terminal as shown.

### Notes:

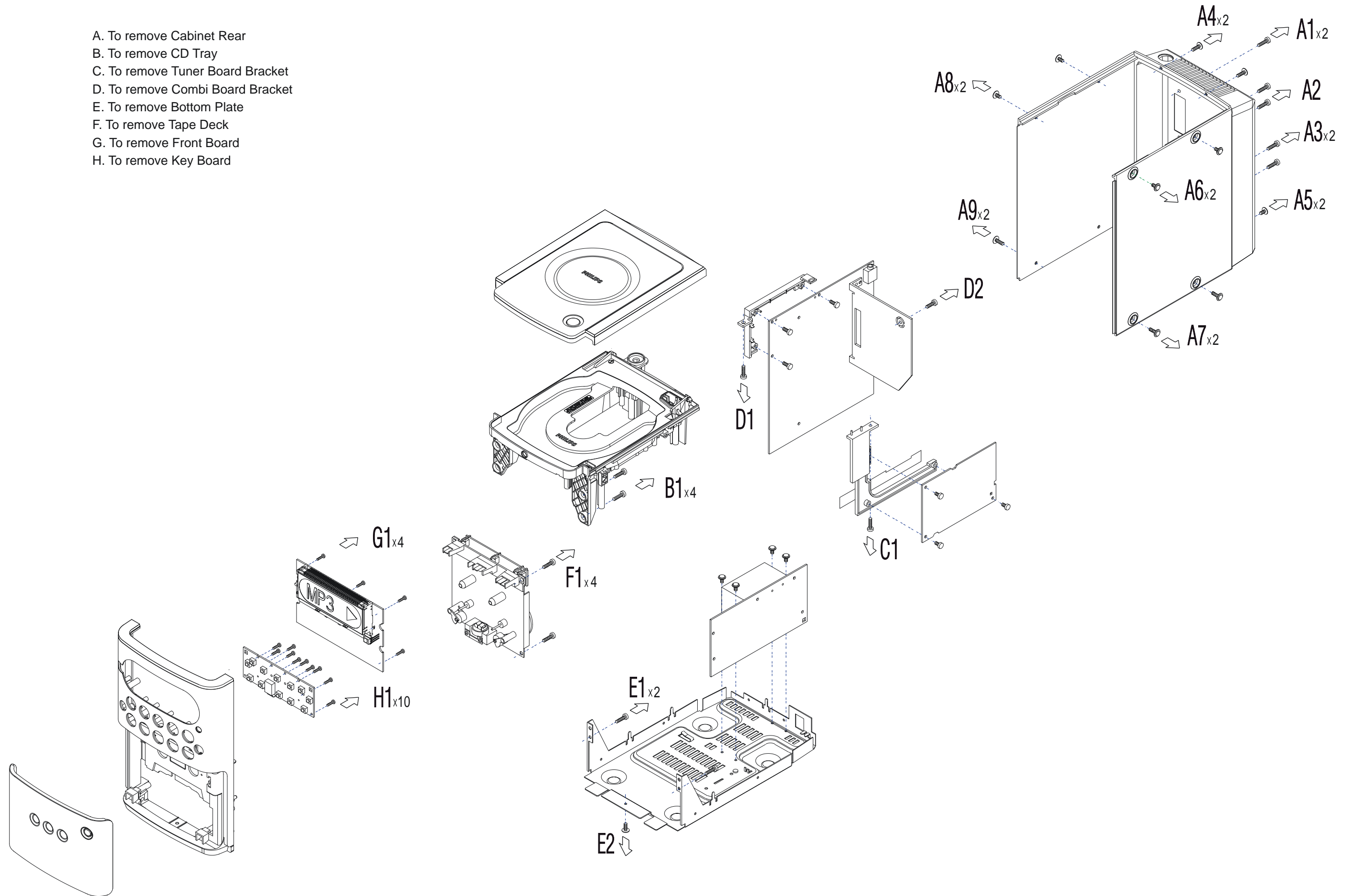
- For optimal sound performance, use the supplied speakers.
- Do not connect more than one speaker to any one pair of + / - speaker terminals.
- Do not connect speakers with an impedance lower than the speakers supplied. Please refer to the **SPECIFICATIONS** section of this manual.

For more information on operation instruction please visit Philips Audio internet site :

<http://www.audio.philips.com>

**DISASSEMBLY DIAGRAM**

- A. To remove Cabinet Rear
- B. To remove CD Tray
- C. To remove Tuner Board Bracket
- D. To remove Combi Board Bracket
- E. To remove Bottom Plate
- F. To remove Tape Deck
- G. To remove Front Board
- H. To remove Key Board



# SERVICE TEST PROGRAM

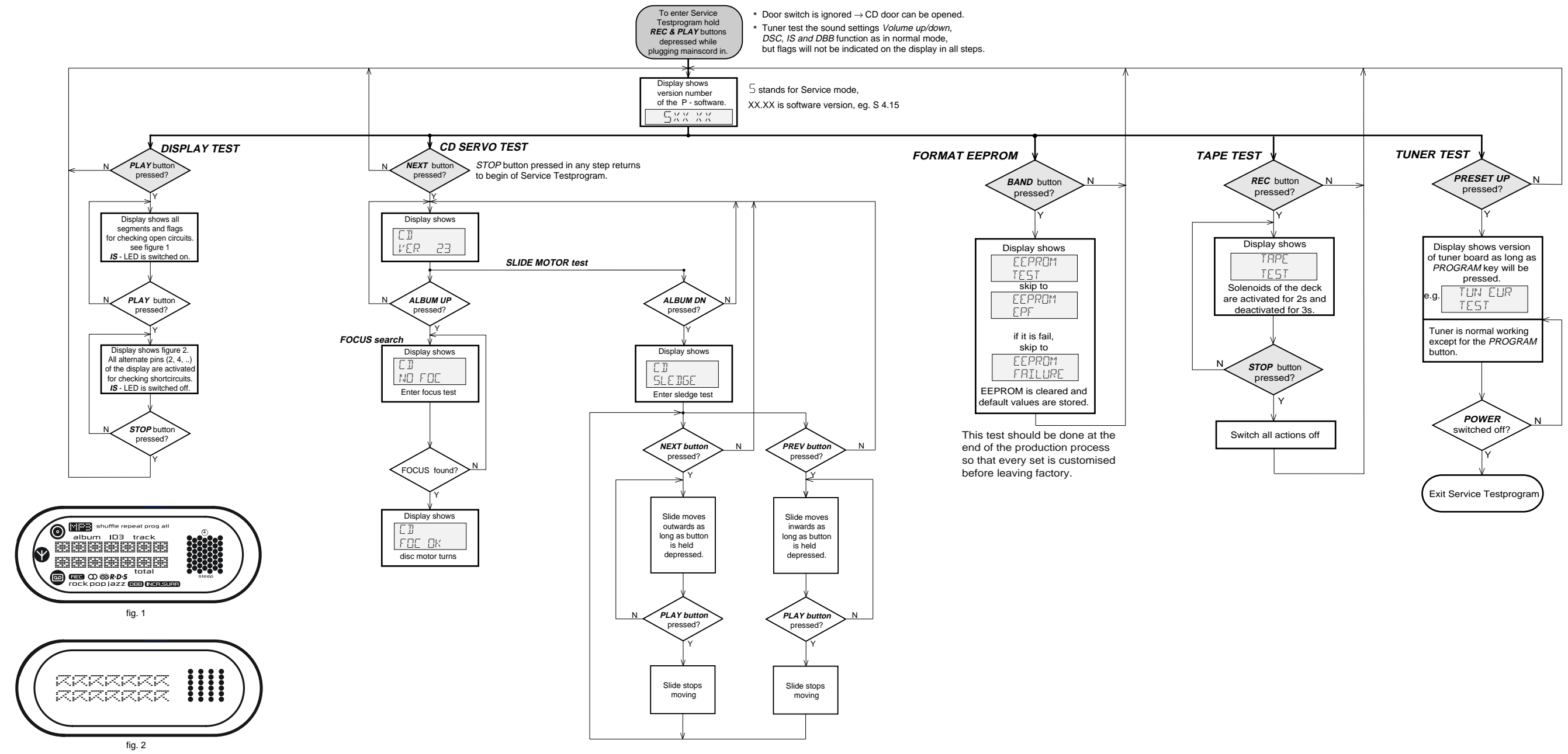


fig. 1

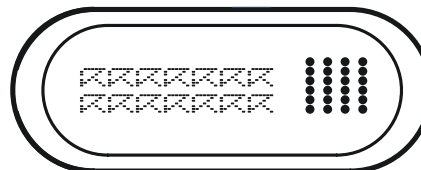


fig. 2

**TUNER VERSIONS**

	TUN EUR TEST	TUN USA TEST	TUN OSE TEST
<b>REGION &amp; SET VERSIONS</b>	<b>EUROPE FM/MW</b>	<b>USA FM/MW</b>	<b>OVERSEAS FM/MW</b>
	/22/25	/37	<sup>1)</sup> Grid switchable 100/10kHz - 50/9kHz /21/21M/30

table 2

<sup>1)</sup> To toggle frequency grid press **BAND** button for more than 5s in normal tuner mode (**not** in service testmode).

Display will show either or , and show or when button released.



## Abbreviations and Pin-description of CD Ics

### SERVO PROCESSOR SAA7325H

SYMBOL	PIN	DESCRIPTION
HFREF	1	comparator common mode input
HFIN	2	comparator signal input
ISLICE	3	current feedback output from data slicer
V <sub>SSA1</sub>	4 <sup>(1)</sup>	analog ground 1
V <sub>DDA1</sub>	5 <sup>(1)</sup>	analog supply voltage 1
I <sub>ref</sub>	6	reference current output pin
V <sub>RIN</sub>	7	reference voltage for servo ADC' s
D1	8	unipolar current input (central diode signal input)
D2	9	unipolar current input (central diode signal input)
D3	10	unipolar current input (central diode signal input)
D4	11	unipolar current input (central diode signal input)
R1	12	unipolar current input (satellite diode signal input)
R2	13	unipolar current input (satellite diode signal input)
V <sub>SSA2</sub>	14 <sup>(1)</sup>	analog ground 2
CROUT	15	crystal/resonator output
CRIN	16	crystal/resonator input
V <sub>DDA2</sub>	17 <sup>(1)</sup>	analog supply voltage 2
LN	18	DAC left channel differential output - negative
LP	19	DAC left channel differential output - positive
V <sub>neg</sub>	20	DAC negative reference input
V <sub>pos</sub>	21	DAC positive reference input
RN	22	DAC right channel differential output - negative
RP	23	DAC right channel differential output - positive
SELPLL	24	selects whether internal clock multiplier PLL is used
TEST1	25	test control input 1; this pin should be tied LOW
CL16	26	16.9344 MHz system clock output
DATA	27	serial d4(1)ata output (3-state)
WCLK	28	word clock output (3-state)
SCLK	29	serial bit clock output (3-state)
EF	30	C2 error flag output (3-state)
TEST2	31	test control input 2; this pin should be tied LOW
KILL	32	kill output (programmable; open-drain)
V <sub>SSD1</sub>	33 <sup>(1)</sup>	digital ground 2
V2/V3	34	versatile I/O: input versatile pin 2 or output versatile pin 3 (open-drain)
WCLI	35	word clock iutput (for data loopback to DAC)
SDI	36	serial data input (for data loopback to DAC)
SCLI	37	serial bit clock input (for data loopback to DAC)
RESET	38	power-on reset input (active LOW)
SDA	39	microcontroller interface data I/O line (open-drain output)
SCL	40	microcontroller interface clock line input

## Abbreviations and Pin-description of CD Ics

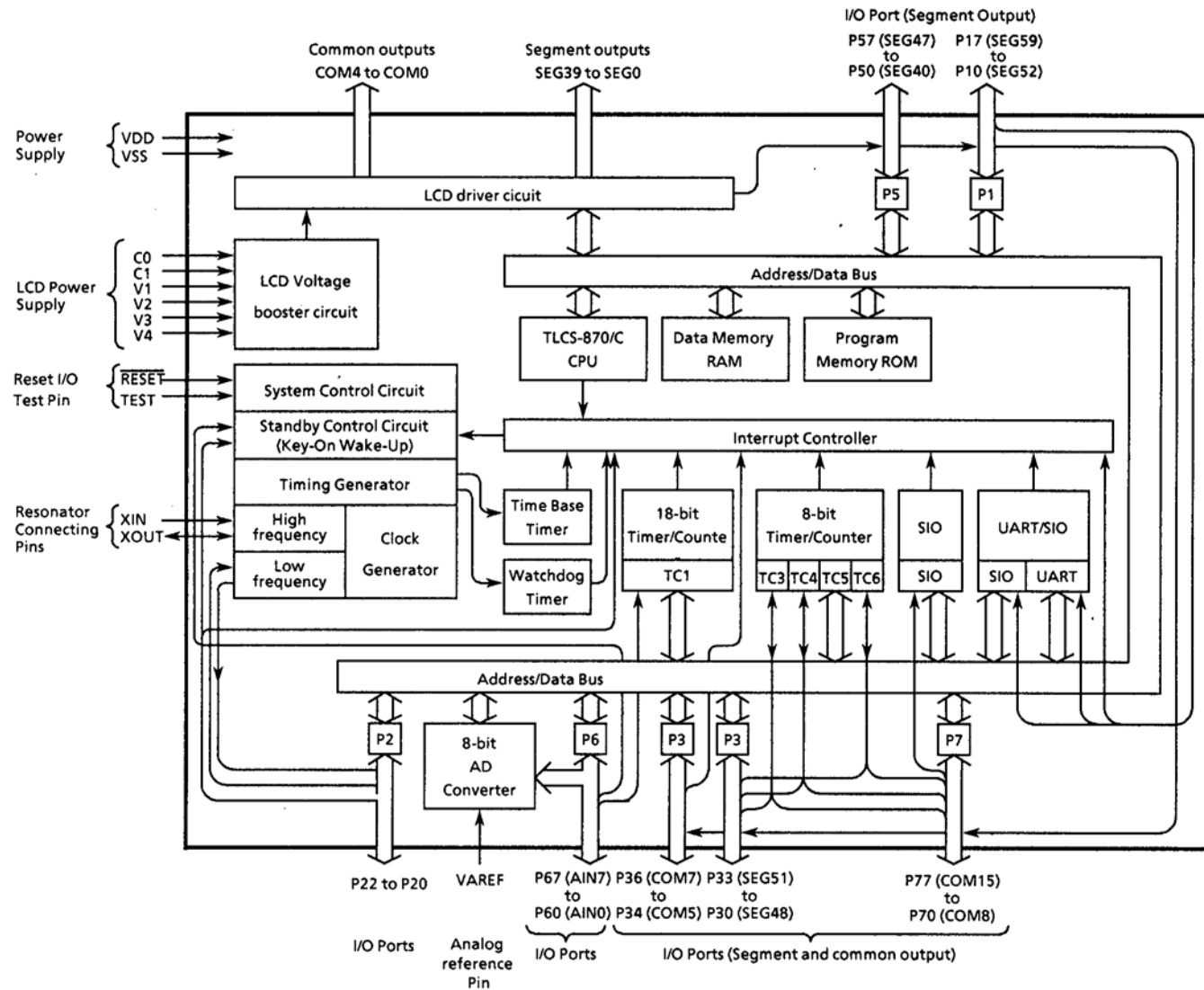
### SERVO PROCESSOR SAA7325H

SYMBOL	PIN	DESCRIPTION
RAB	41	microcontroller interface R/W and load control line input (4-wire bus mode)
SILD	42	microcontroller interface R/W and load control line input (4-wire bus mode)
STATUS	43	servo interrupt request line/decoder status register output (open-drain)
TEST3	44	test control input 3; this pin should be tied LOW
RCK	45	subcode clock input
SUB	46	P-to-W subcode bits output (3-state)
SFSY	47	subcode frame sync output (3-state)
SBSY	48	subcode block sync output (3-state)
CL11/4	49	11.2896 MHz or 4.2336 MHz (for microcontroller) clock output
V <sub>SSD2</sub>	50 <sup>(1)</sup>	digital ground 3
DOB M	51	bi-phase mark output (externally buffered; 3-state)
V <sub>DD1(P)</sub>	52 <sup>(1)</sup>	digital supply voltage 2 for periphery
CFLG	53	correction flag output (open-drain)
RA	54	radial actuator output
FO	55	focus actuator output
SL	56	sledge control output
V <sub>DD2(C)</sub>	57 <sup>(1)</sup>	digital supply voltage 3 for core
V <sub>SSD3</sub>	58 <sup>(1)</sup>	digital ground 4
MOTO1	59	motor output 1; versatile (3-state)
MOTO2	60	motor output 2; versatile (3-state)
V4	61	versatile output pin 4
V5	62	versatile output pin 5
V1	63	versatile input pin 1
LDON	64	laser drive on output (open-drain)

Note : All supply pins must be connected to the same external power supply voltage.

BLOCK DIAGRAM OF INTEGRATED CIRCUIT

IC 7 4 00 TMP86CS25F

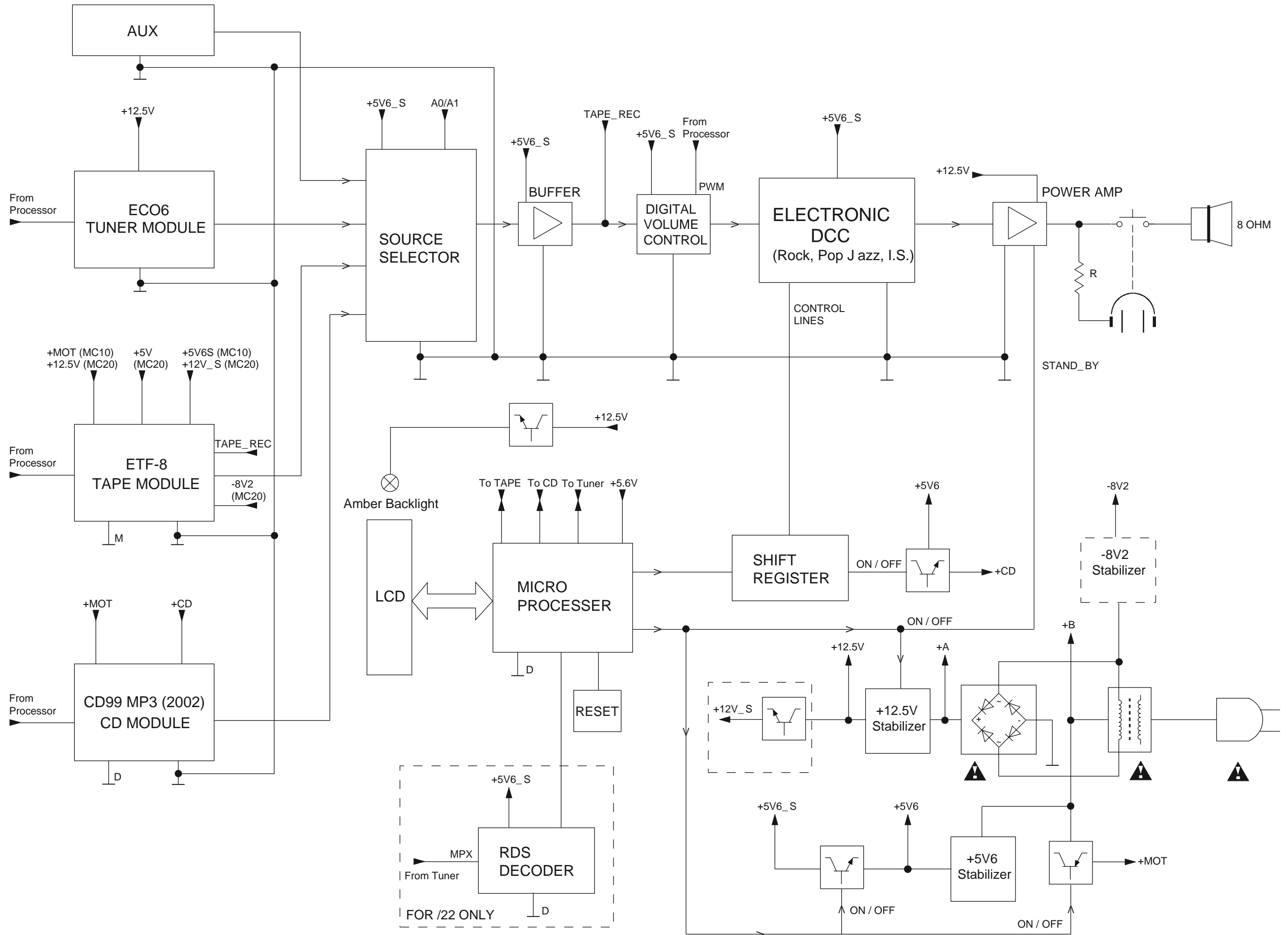


PINS DESCRIPTION OF IC 7 4 00 TMP86CS25F

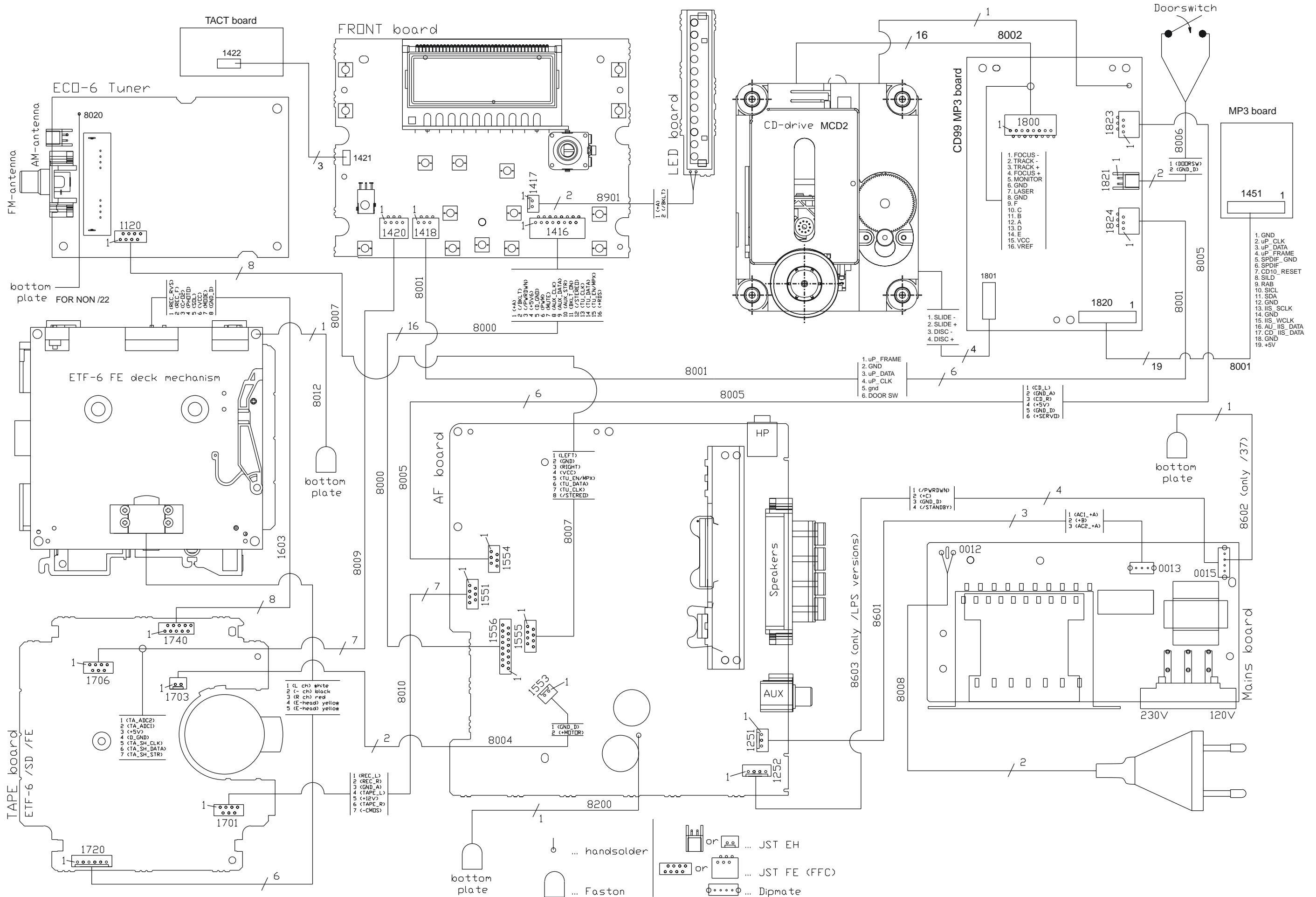
PIN FUNCTION

Pin Name	Input / Output	Function
P17 (SEG24, SCK)	I/O (I/O)	Serial clock input / output
P16 (SEG25, TxD, SO)	I/O (Output)	8-bit input / output port with latch. UART data output Serial data output
P15 (SEG26, RxD, SI)	I/O (I/O)	When used as input port, an external interrupt input, serial clock input / output, serial data input / output and UART data input / output, the latch must be set to "1". UART data input Serial data input
P14 (SEG27, MUL6)	I/O (I/O)	External interrupt 3 input
P13 (SEG28, MUL5)	I/O (I/O)	External interrupt 2 input
P12 (SEG29, MUL4)	I/O (I/O)	External interrupt 1 input
P11 (SEG30)	I/O (Output)	
P10 (SEG31)	I/O (Output)	
P22 (XTOUT)	I/O (Output)	Resonator connecting pins (32.768 kHz)
P21 (XTIN)	I/O (Input)	For inputting external clock, XTIN is used and XOUT is opened.
P20 (INT5, STOP)	I/O (Input)	External interrupt input 5 or STOP mode release signal input
P36 (COM7, MUL6)	I/O (I/O)	External interrupt 3 input
P35 (COM6, MUL5)	I/O (I/O)	External interrupt 2 input
P34 (COM5, MUL4)	I/O (I/O)	External interrupt 1 input
P33 (SEG51, MUL3)	I/O (I/O)	When used as input port, an external interrupt input, serial clock input / output, serial data input / output and UART data input / output, the latch must be set to "1". Timer / counter 6 input / output
P32 (SEG50, MUL2)	I/O (I/O)	Timer / counter 4 input / output
P31 (SEG49, MUL1)	I/O (I/O)	When used as a LCD segment output, the P3LCR must be set to "1". Timer / counter 3 input / output
P30 (SEG48, MUL0)	I/O (Output)	Divider output
P57 (SEG16) to P50 (SEG23)	I/O (Output)	8-bit input / output port with latch. When used as a LCD segment output, the P5LCR must be set to "1". LCD segment outputs
P67 (AIN7, STOP5)	I/O (Input)	STOP5 input
P66 (AIN6, STOP4)	I/O (Input)	STOP4 input
P65 (AIN5, STOP3)	I/O (Input)	STOP3 input
P64 (AIN4, STOP2)	I/O (Input)	STOP2 input
P63 (AIN3, INT0)	I/O (Input)	External interrupt 0 input
P62 (AIN2, ECNT)	I/O (Input)	
P61 (AIN1, ECIN)	I/O (Input)	Timer / counter 1 input
P60 (AIN0)	I/O (Input)	
P70 (COM8)	I/O (Output)	Divider output
P71 (COM9, MUL0)	I/O (I/O)	Timer / counter 3 input / output
P72 (COM10, MUL1)	I/O (I/O)	Timer / counter 4 input / output
P73 (COM11, MUL2)	I/O (I/O)	Timer / counter 6 input / output
P74 (COM12, MUL3)	I/O (I/O)	Serial data input
P75 (COM13, SI1)	I/O (I/O)	Serial data output
P76 (COM14, SO1)	I/O (Output)	
P77 (COM15, SCKT)	I/O (I/O)	Serial clock input / output
SEG29 to SEG0	Output	LCD segment outputs
COM4 to COM0	Output	LCD common outputs
V 4 to V 1	LCD voltage booster pin	LCD voltage booster pin. Capacitors are required between C0 and C1 pin and V1/V2/V3/V4 pin and GND.
C1 to C0	LCD voltage booster pin	
XIN, XOUT	Input Output	Resonator connecting pins for high-frequency clock. For inputting external clock, XIN is used and XOUT is opened.
RESET	Input	Reset signal input
TEST	Input	Test pin for out-going test. Be fixed to low.
VDD, VSS	Power Supply	+ 5 V, 0 (GND)
VAREF	Power Supply	Analog reference voltage input.

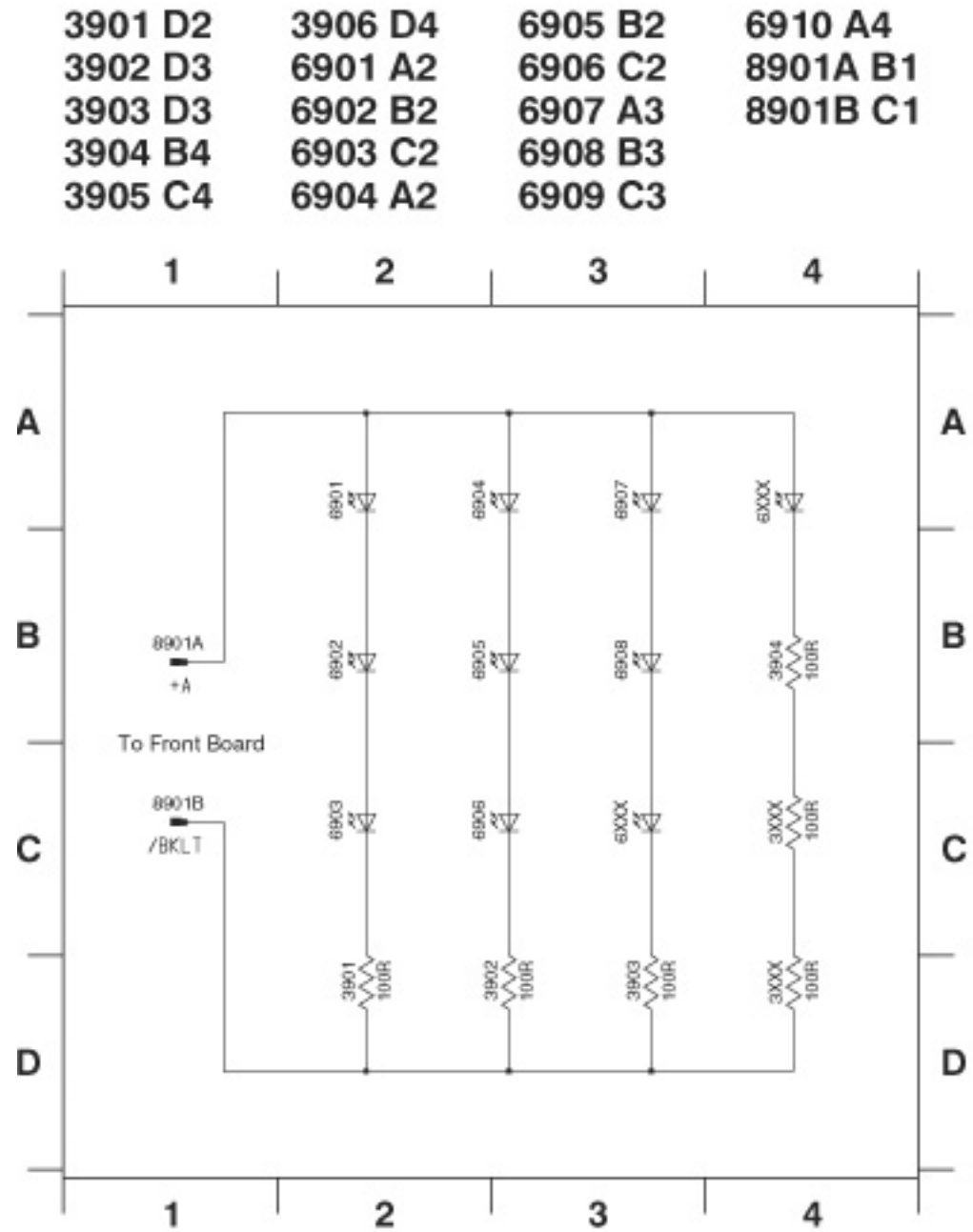
### SET BLOCK DIAGRAM



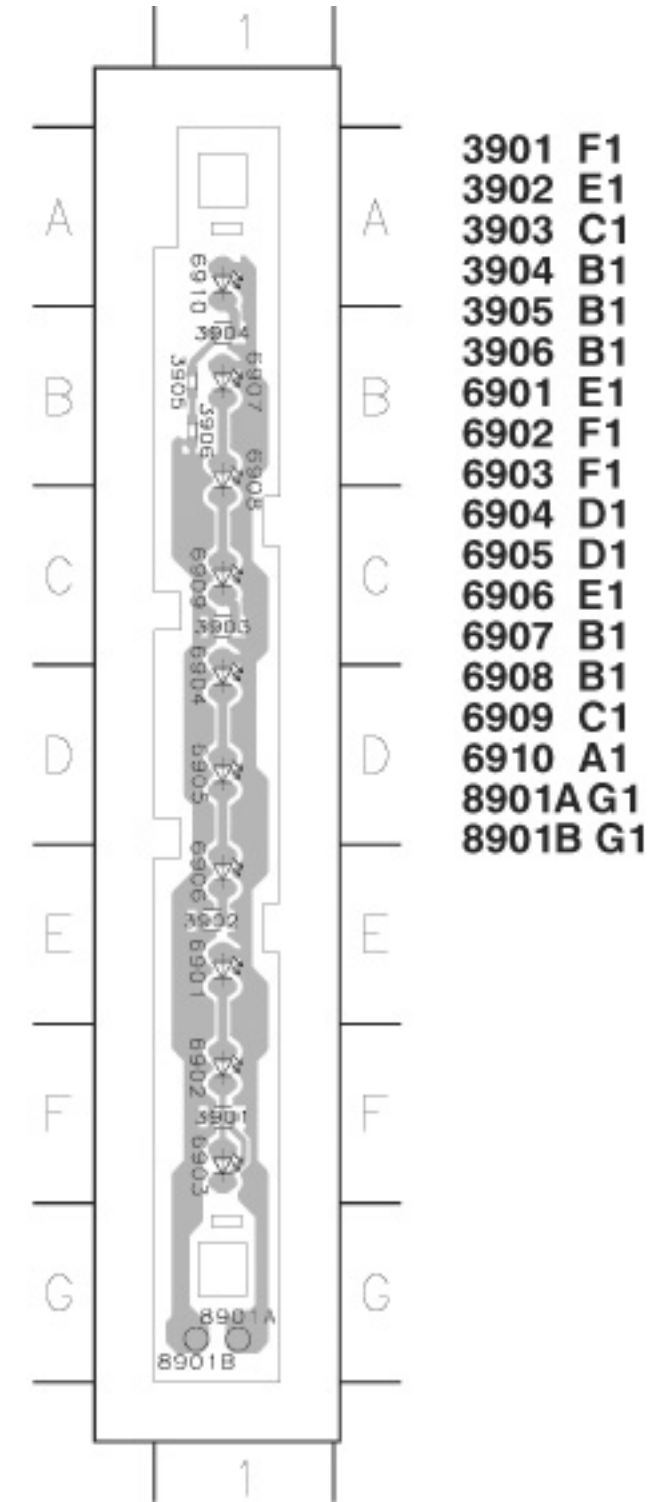
# SET WIRING DIAGRAM



CIRCUIT DIAGRAM - LED BOARD

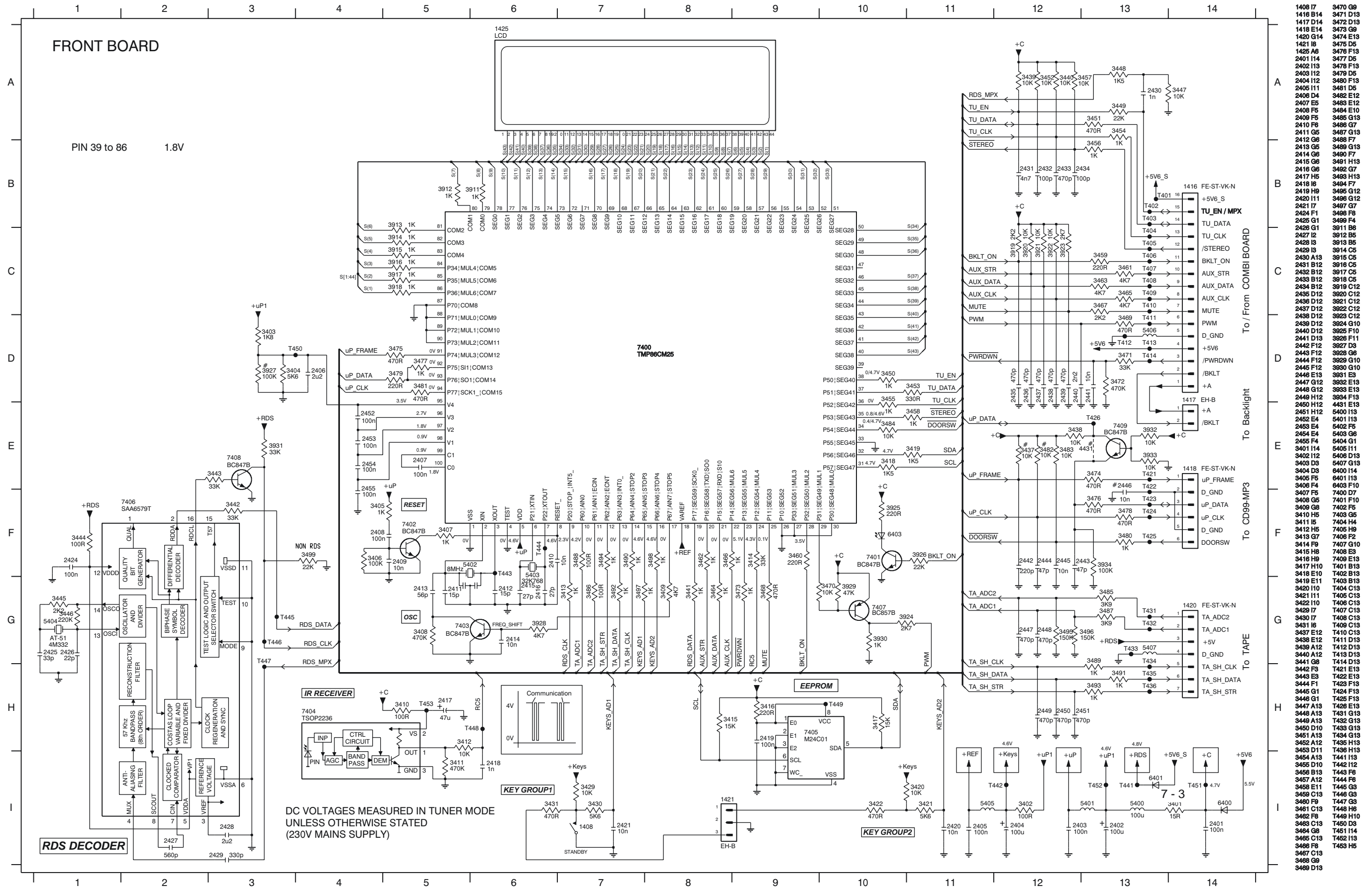


LAYOUT DIAGRAM - LED BOARD



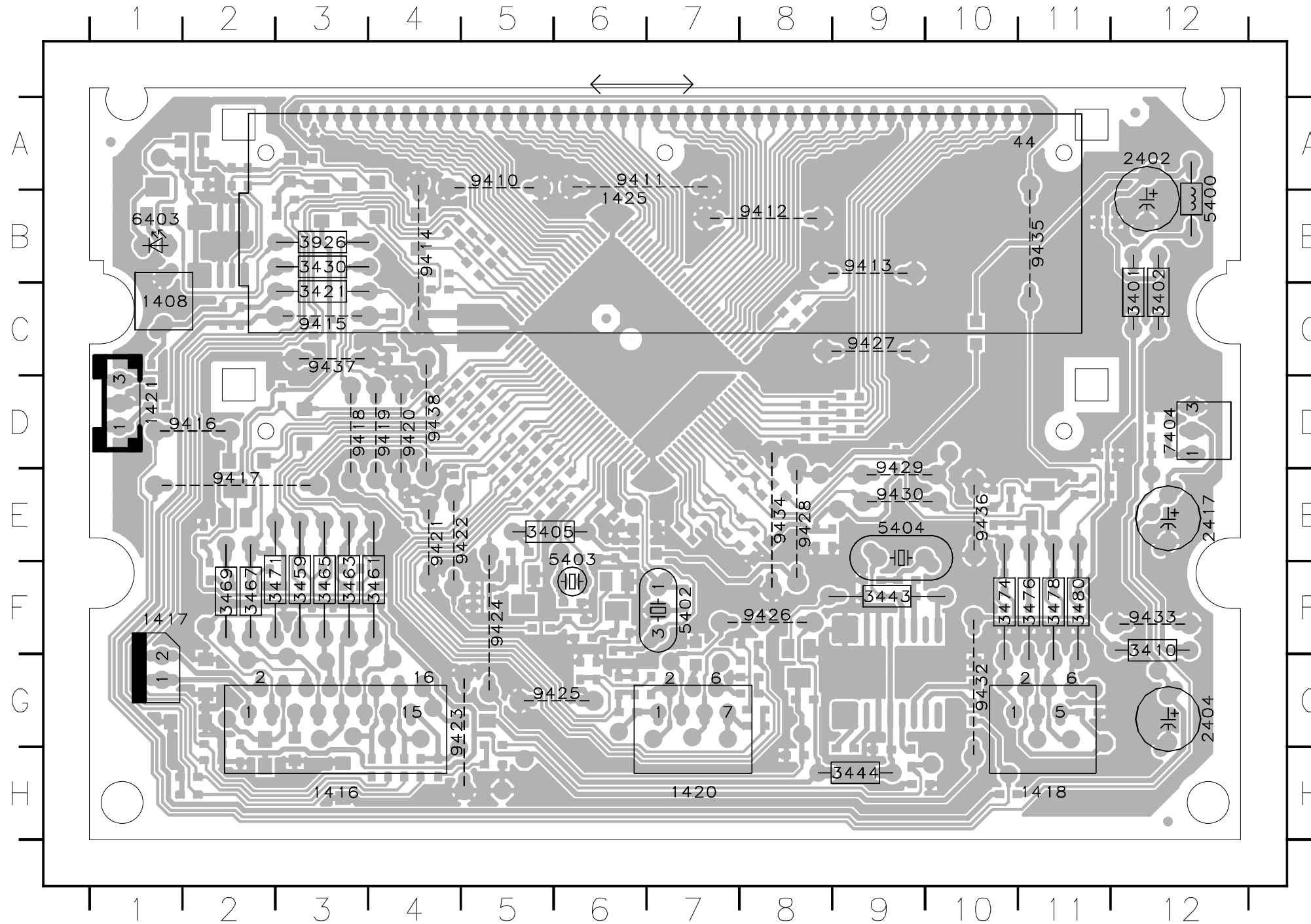
- 3901 F1**
- 3902 E1**
- 3903 C1**
- 3904 B1**
- 3905 B1**
- 3906 B1**
- 6901 E1**
- 6902 F1**
- 6903 F1**
- 6904 D1**
- 6905 D1**
- 6906 E1**
- 6907 B1**
- 6908 B1**
- 6909 C1**
- 6910 A1**
- 8901AG1**
- 8901B G1**

# CIRCUIT DIAGRAM - FRONT BOARD



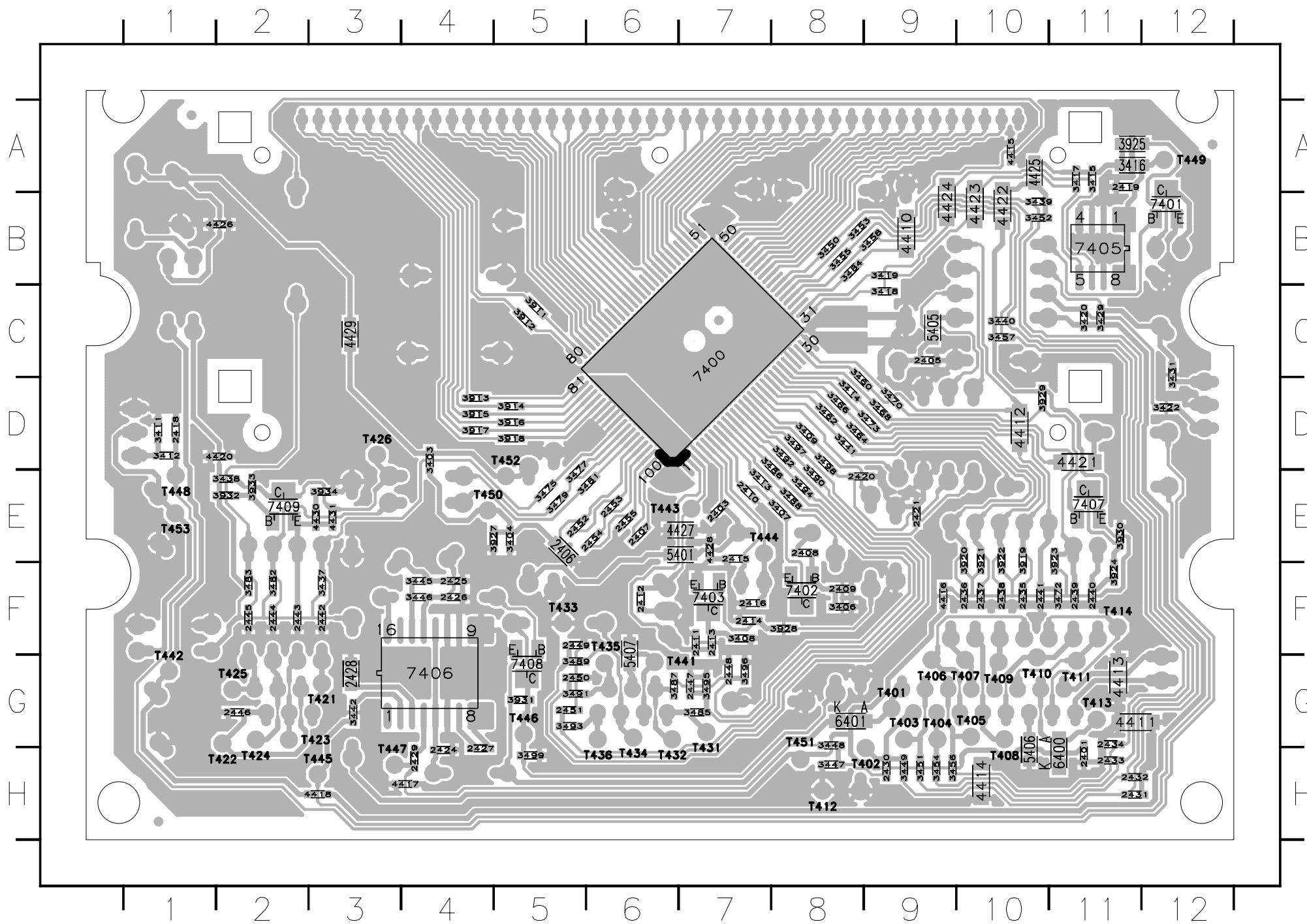
- 1408 I7
- 1416 B14
- 1417 D14
- 1418 E14
- 1420 G14
- 1421 I8
- 1425 A6
- 2401 I14
- 2402 I13
- 2403 I12
- 2404 I12
- 2405 I11
- 2406 D4
- 2407 E5
- 2408 F5
- 2409 F5
- 2410 F8
- 2411 G5
- 2412 G6
- 2413 G5
- 2414 G8
- 2415 G6
- 2416 G6
- 2417 H5
- 2418 I6
- 2419 H9
- 2420 I11
- 2421 I7
- 2424 F1
- 2425 G12
- 2426 G12
- 2427 I2
- 2428 I3
- 2429 I3
- 2430 A13
- 2431 B12
- 2432 B12
- 2433 B12
- 2434 B12
- 2435 D12
- 2436 D12
- 2437 D12
- 2438 D12
- 2440 D12
- 2441 D13
- 2442 F12
- 2443 F12
- 2444 F12
- 2445 F12
- 2446 E13
- 2447 G12
- 2448 G12
- 2449 H12
- 2450 H12
- 2451 H12
- 2452 E4
- 2453 E4
- 2454 E4
- 2455 F4
- 3401 I14
- 3402 I12
- 3403 D3
- 3404 D3
- 3405 F5
- 3406 F4
- 3407 F5
- 3408 G5
- 3409 G8
- 3410 H5
- 3411 I5
- 3412 H5
- 3413 G7
- 3414 F9
- 3415 H8
- 3416 H9
- 3417 H10
- 3418 E10
- 3419 E11
- 3420 H10
- 3421 I11
- 3422 I10
- 3423 I7
- 3431 I6
- 3432 E12
- 3433 E12
- 3434 E12
- 3435 D10
- 3451 A13
- 3452 A12
- 3453 D11
- 3454 A13
- 3455 D10
- 3456 B13
- 3457 A12
- 3458 E11
- 3459 C13
- 3460 F9
- 3461 C13
- 3462 F8
- 3463 C13
- 3464 G8
- 3465 C13
- 3466 F9
- 3467 C13
- 3468 G9
- 3469 D13
- 3470 D13
- 3471 D13
- 3472 D13
- 3473 G9
- 3474 E13
- 3475 D5
- 3476 F13
- 3477 D5
- 3478 F13
- 3479 D5
- 3480 F13
- 3481 D5
- 3482 E12
- 3483 E10
- 3484 E10
- 3485 G13
- 3486 G7
- 3487 G13
- 3488 F7
- 3489 G13
- 3490 F7
- 3491 H13
- 3492 G7
- 3493 H13
- 3494 F7
- 3495 G12
- 3496 G12
- 3497 G7
- 3498 F8
- 3499 F4
- 3500 C5
- 3501 C5
- 3502 C5
- 3503 E13
- 3504 F13
- 3505 F13
- 3506 D13
- 3507 G13
- 3508 D13
- 3509 G13
- 3510 G13
- 3511 G13
- 3512 B5
- 3513 B5
- 3514 C5
- 3515 C5
- 3516 C5
- 3517 C5
- 3518 C5
- 3519 C12
- 3520 C12
- 3521 C12
- 3522 C12
- 3523 C12
- 3524 G10
- 3525 F10
- 3526 F11
- 3527 D3
- 3528 G6
- 3529 G10
- 3530 G10
- 3531 E3
- 3532 E3
- 3533 E3
- 3534 E3
- 3535 E3
- 3536 E3
- 3537 E3
- 3538 E3
- 3539 E3
- 3540 E3
- 3541 E3
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- 3569 E3
- 3570 E3
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- 3572 E3
- 3573 E3
- 3574 E3
- 3575 E3
- 3576 E3
- 3577 E3
- 3578 E3
- 3579 E3
- 3580 E3
- 3581 E3
- 3582 E3
- 3583 E3
- 3584 E3
- 3585 E3
- 3586 E3
- 3587 E3
- 3588 E3
- 3589 E3
- 3590 E3
- 3591 E3
- 3592 E3
- 3593 E3
- 3594 E3
- 3595 E3
- 3596 E3
- 3597 E3
- 3598 E3
- 3599 E3
- 3600 E3

LAYOUT DIAGRAM - FRONT BOARD



1408	C1	9430	E9
1416	H3	9432	G10
1417	F1	9433	F12
1418	H11	9434	E8
1420	H7	9435	B11
1421	D1	9436	E10
1425	B6	9437	C3
2402	A12	9438	D4
2404	G12		
2417	F12		
3401	C12		
3402	C12		
3405	E5		
3410	F12		
3421	C3		
3430	B3		
3443	F9		
3444	H9		
3459	F3		
3461	F4		
3463	F3		
3465	F3		
3467	F2		
3469	F2		
3471	F2		
3474	F10		
3476	F11		
3478	F11		
3480	F11		
3926	B3		
5400	B12		
5402	F7		
5403	E6		
5404	E9		
6403	B1		
7404	D12		
9410	A5		
9411	A6		
9412	B8		
9413	B9		
9414	B4		
9415	C3		
9416	D2		
9417	E2		
9418	D3		
9419	D4		
9420	D4		
9421	E4		
9422	E5		
9423	G4		
9424	F5		
9425	G6		
9426	F8		
9427	C9		
9428	F8		
9429	D9		

LAYOUT DIAGRAM - FRONT BOARD

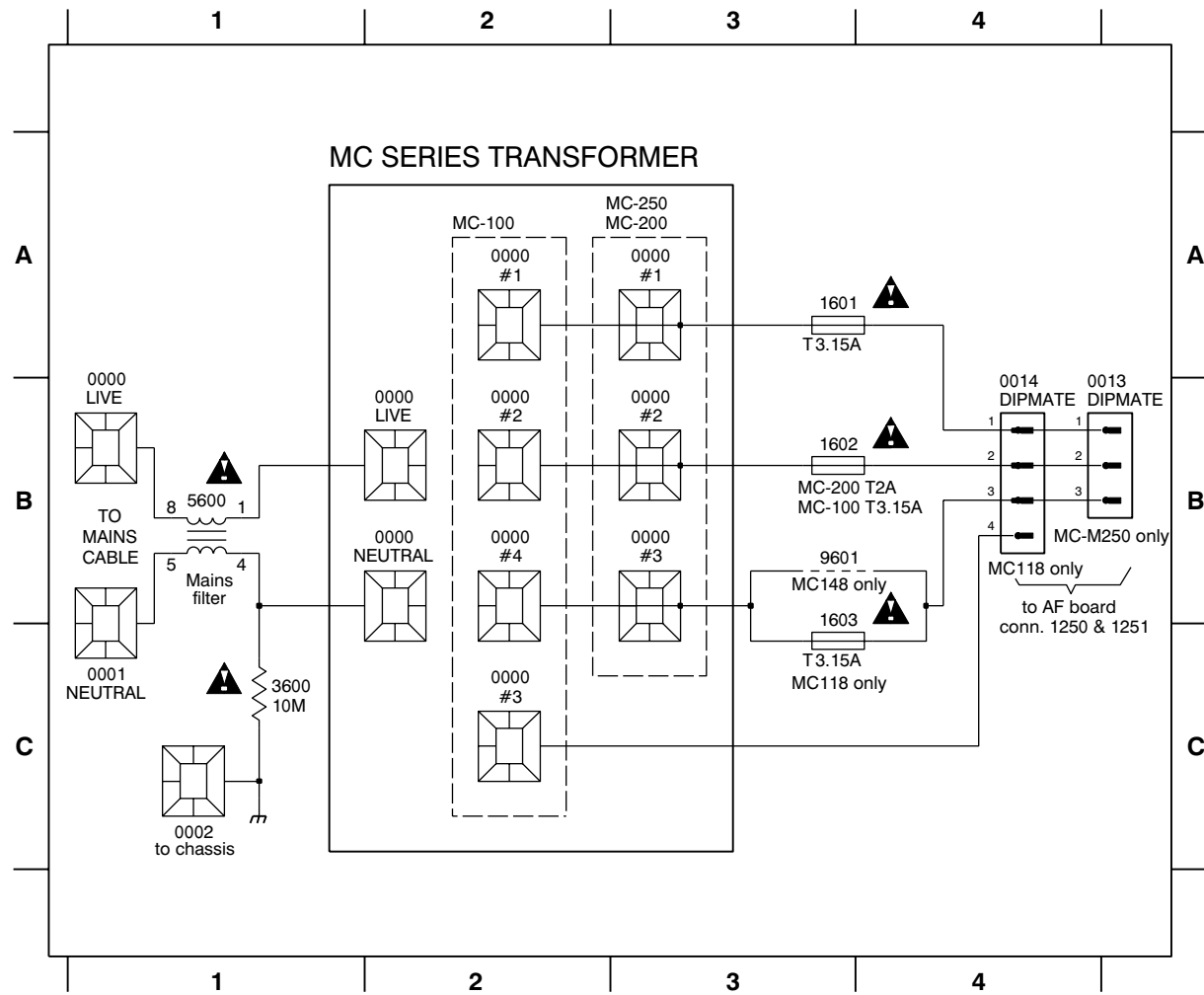


2401	H11	3411	D1	3493	G5	640
2403	E7	3412	D1	3494	E8	740
2405	C9	3413	E7	3495	G7	740
2406	E5	3414	D8	3496	G7	740
2407	E6	3415	A11	3497	D8	740
2408	E8	3416	A11	3498	D8	740
2409	F8	3417	A11	3499	H5	740
2410	E7	3418	C9	3911	C5	740
2411	F7	3419	B9	3912	C5	740
2412	F6	3420	C11	3913	D4	740
2413	F7	3422	D12	3914	D5	
2414	F7	3429	C11	3915	D4	
2415	E7	3431	C12	3916	D5	
2416	F7	3437	F3	3917	D4	
2418	D1	3438	E2	3918	D5	
2419	A11	3439	B10	3919	F10	
2420	E8	3440	C10	3920	F10	
2421	E9	3441	D8	3921	F10	
2424	H4	3442	G3	3922	F10	
2425	F4	3445	F4	3923	F11	
2426	F4	3446	F4	3924	F11	
2427	H4	3447	H8	3925	A11	
2428	C3	3448	G8	3927	F4	
2429	H4	3449	H9	3928	F8	
2430	H9	3450	B8	3929	D10	
2431	H11	3451	H9	3930	F11	
2432	H11	3452	B10	3931	G5	
2433	H11	3453	B8	3932	F2	
2434	G11	3454	H9	3933	F2	
2435	F10	3455	B8	3934	F3	
2436	F10	3456	H9	4410	B9	
2437	F10	3457	C10	4411	G11	
2438	F10	3458	B9	4412	D10	
2439	F11	3460	D8	4413	G11	
2440	F11	3462	D8	4414	H10	
2441	F10	3464	D8	4415	A10	
2442	F3	3466	D8	4416	F9	
2443	F2	3468	D9	4417	H4	
2444	F2	3470	D9	4418	H3	
2445	F2	3472	F11	4420	D2	
2446	G2	3473	D9	4421	D11	
2447	G7	3475	E5	4422	B10	
2448	G7	3477	F5	4423	B10	
2449	F5	3479	E5	4424	B9	
2450	G5	3481	F6	4425	A10	
2451	G5	3482	F2	4426	B2	
2452	E5	3483	F2	4427	E7	
2453	F6	3484	B8	4428	F7	
2454	F6	3485	G7	4429	C3	
2455	F6	3486	D8	4430	F3	
3403	D4	3487	G6	4431	F3	
3404	F5	3488	E8	5401	E7	
3406	F8	3489	G5	5405	C9	
3407	E8	3490	E8	5406	H10	
3408	F7	3491	G5	5407	F6	
3409	D8	3492	D8	6400	H11	



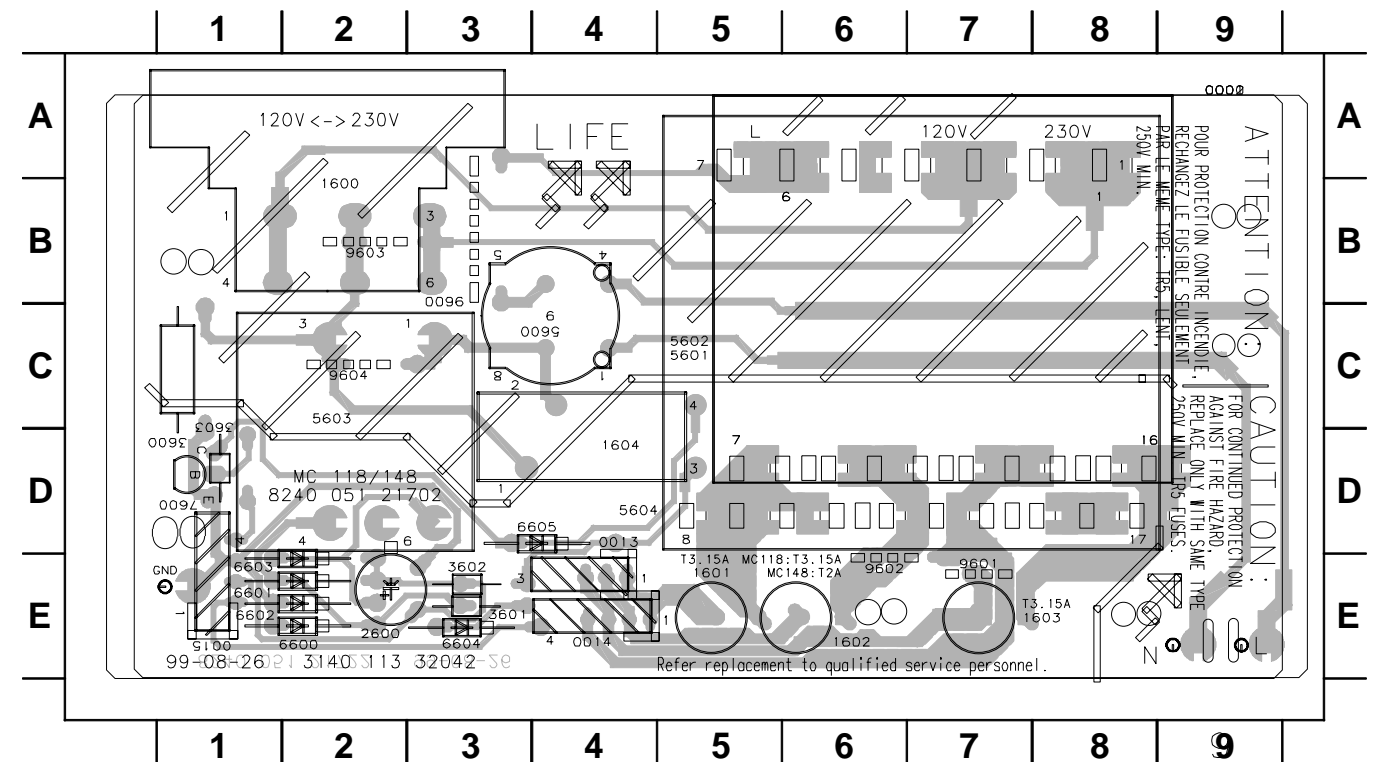
CIRCUIT DIAGRAM - POWER BOARD

0000 B1	0005 B2	0009 B2	0013 B4	1604 A3
0001 C1	0006 A2	0010 A3	0014 B4	3600 C1
0002 C1	0007 B2	0011 B3	1602 B3	5600 B1
0004 B2	0008 C2	0012 B3	1603 C3	9601 B3

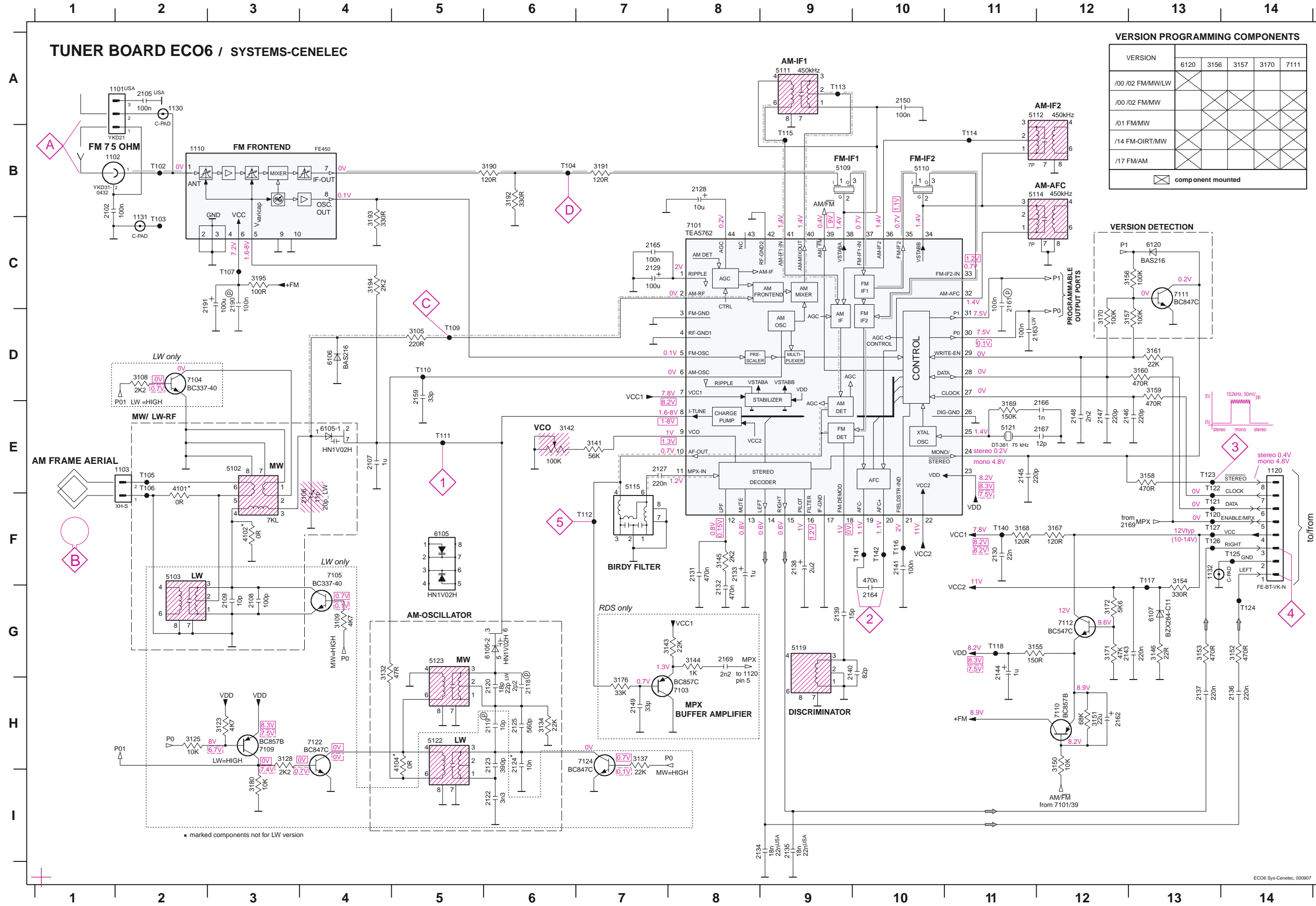


LAYOUT DIAGRAM - POWER BOARD

0000 A9	0015 E1	1604 D4	3603 C1	5604 D4	6604 E3	9602 E6
0001 A9	1600 B2	2600 E2	5600 C4	6600 E2	6605 D4	9603 B2
0002 A9	1601 E5	3600 D1	5601 C5	6601 E1	7600 D1	9604 C2
0013 D4	1602 E6	3601 E3	5602 C5	6602 E1	9600 B3	
0014 E4	1603 E8	3602 E3	5603 C2	6603 E1	9601 E7	



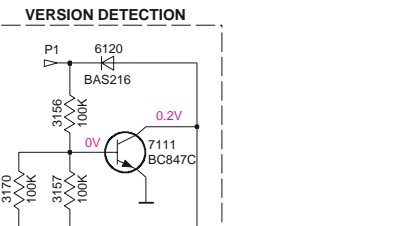
# CIRCUIT DIAGRAM - ECO6 SYSTEM CENELEC BOARD



### VERSION PROGRAMMING COMPONENTS

VERSION	6120	3156	3157	3170	7111
/00 /02 FM/MW/LW					
/00 /02 FM/MW					
/01 FM/MW					
/14 FM-OIRT/MW					
/17 FM/AM					

component mounted

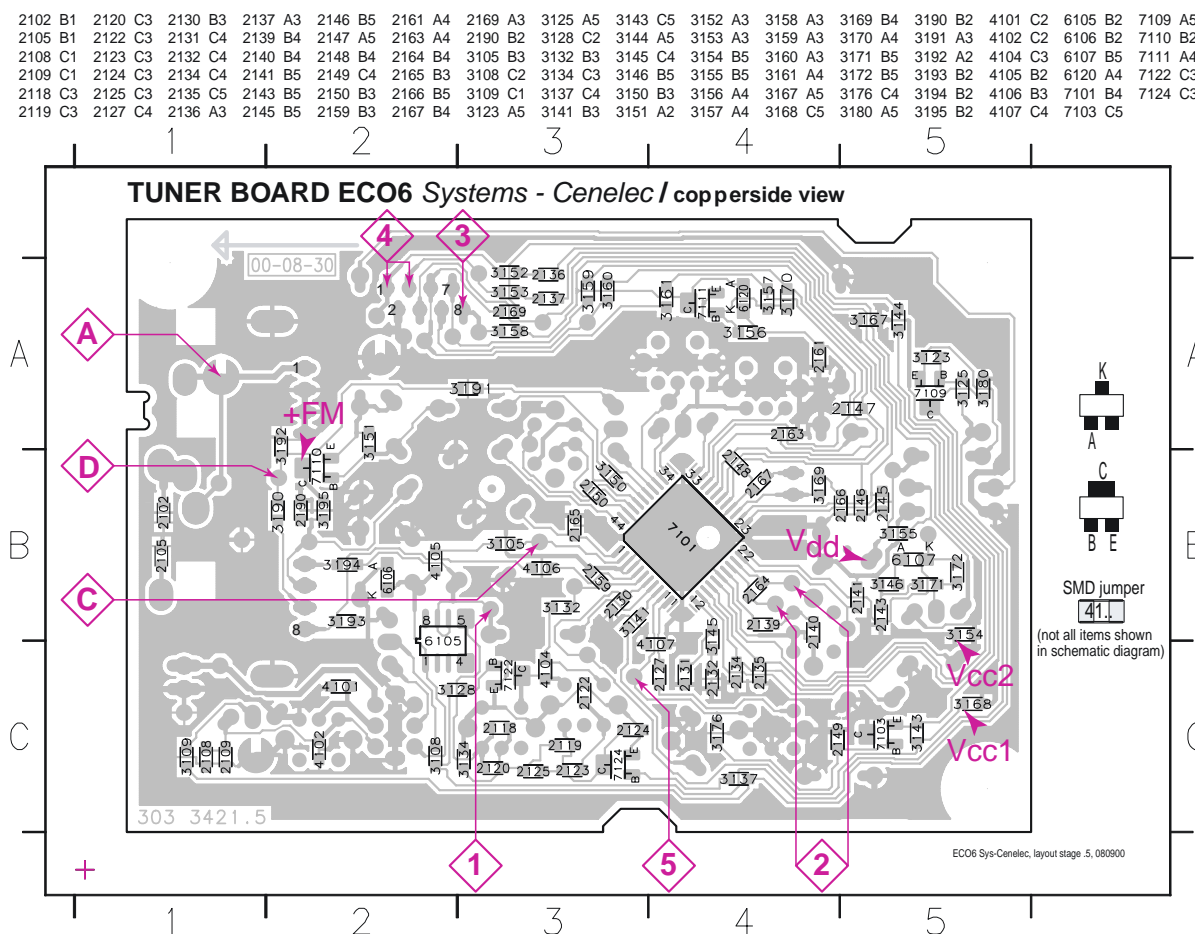
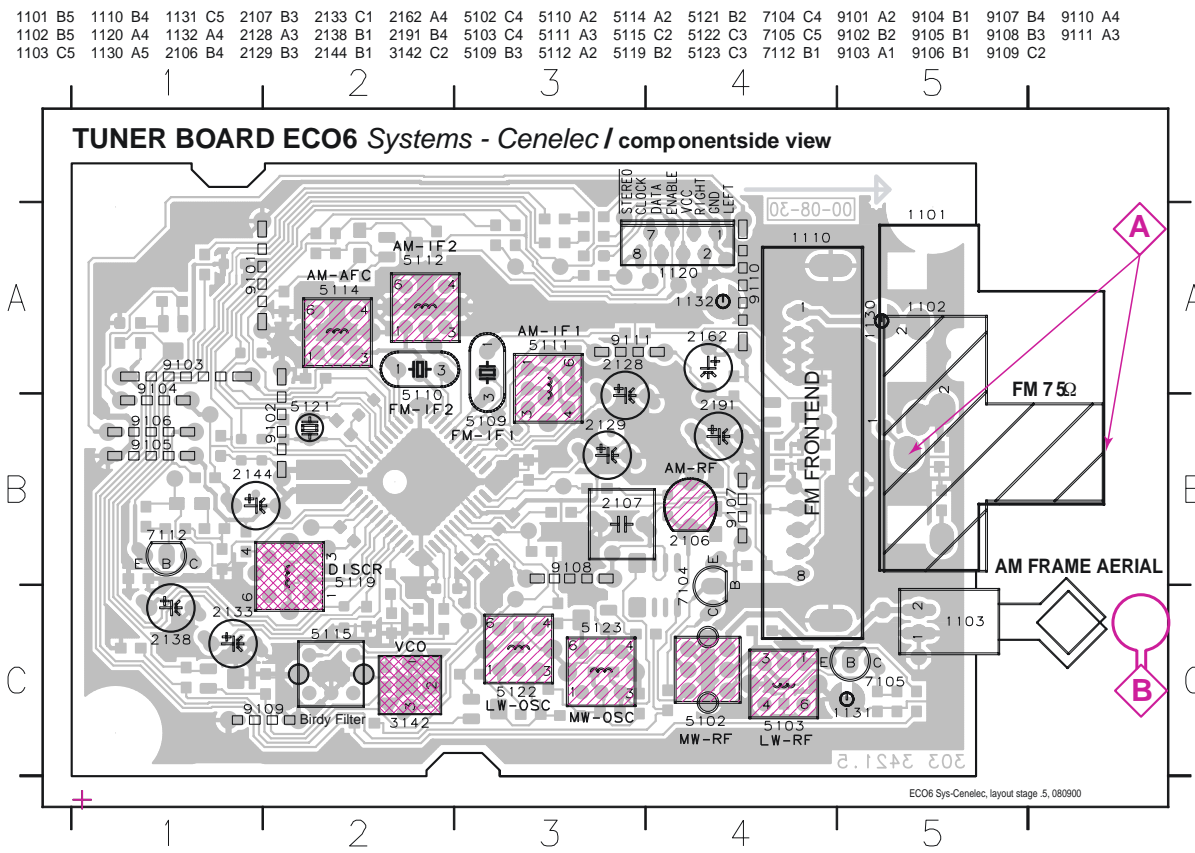


- 1101 A2
- 1102 B1
- 1103 E2
- 1110 B4
- 1120 E14
- 1130 A2
- 1131 C2
- 1132 F13
- 2102 B1
- 2105 A2
- 2106 E3
- 2107 E4
- 2108 G3
- 2109 G3
- 2118 H6
- 2119 H6
- 2120 H6
- 2122 I6
- 2123 H6
- 2124 H6
- 2125 H6
- 2127 E7
- 2128 B8
- 2129 C7
- 2130 F11
- 2131 F8
- 2132 F8
- 2133 F8
- 2134 I8
- 2135 I9
- 2136 H14
- 2137 H13
- 2138 F9
- 2139 G9
- 2140 G9
- 2141 F10
- 2143 G12
- 2144 G11
- 2145 E11
- 2146 E12
- 2147 E12
- 2148 E12
- 2149 H7
- 2150 A10
- 2159 D5
- 2161 C11
- 2162 H12
- 2163 D11
- 2164 G10
- 2165 C7
- 2166 E11
- 2167 E11
- 2169 G8
- 2190 C3
- 2191 C3
- 3105 D5
- 3108 D2
- 3109 G4
- 3123 H3
- 3125 H2
- 3128 H3
- 3132 G4
- 3134 H6
- 3137 H7
- 3141 E7
- 3142 E6
- 3143 G7
- 3144 G8
- 3145 F8
- 3146 G13
- 3150 H12
- 3151 H12
- 3152 G14
- 3153 G13
- 3154 F13
- 3155 G12
- 3156 C12
- 3157 D12
- 3158 E13
- 3159 D13
- 3160 D13
- 3161 D13
- 3167 F12
- 3168 F11
- 3169 E11
- 3170 D12
- 3171 G12
- 3172 G12
- 3176 H7
- 3180 I3
- 3190 B6
- 3191 B7
- 3192 B6
- 3193 B4
- 3194 C4
- 3195 C3
- 4101 E2
- 4102 F3
- 4104 H6
- 5102 E3
- 5103 F2
- 5109 B9
- 5110 B10
- 5111 A9
- 5112 A11
- 5114 B11
- 5115 E7
- 5119 G9
- 5121 E11
- 5122 H5
- 5123 G5
- 6105-1 E4
- 6105-2 G6

### LEGEND

- \* ... only assembled in FM/AM-version
- (D) ... for provision only
- USA ... for USA version only
- LW ... for LW version only
- SMD jumper
- ↑ EVM
- ...V FM mode stereo
- ...V MW mode
- ...V LW mode
- voltages measured while set is tuned to a strong transmitter
- Signal path
- FM
- - - AM
- · - · MPX (Audio Frequency)
- ⇌ AF - left/right

LAYOUT DIAGRAM - ECO6 SYSTEM CENELEC BOARD



These assembly drawings show a summary of all possible versions. For components used in a specific version see schematic diagram respectively partslist.

TUNER ADJUSTMENT TABLE ( ECO6 Cenelec FM/MW - and FM/MW/LW - versions with AM-frame aerial )

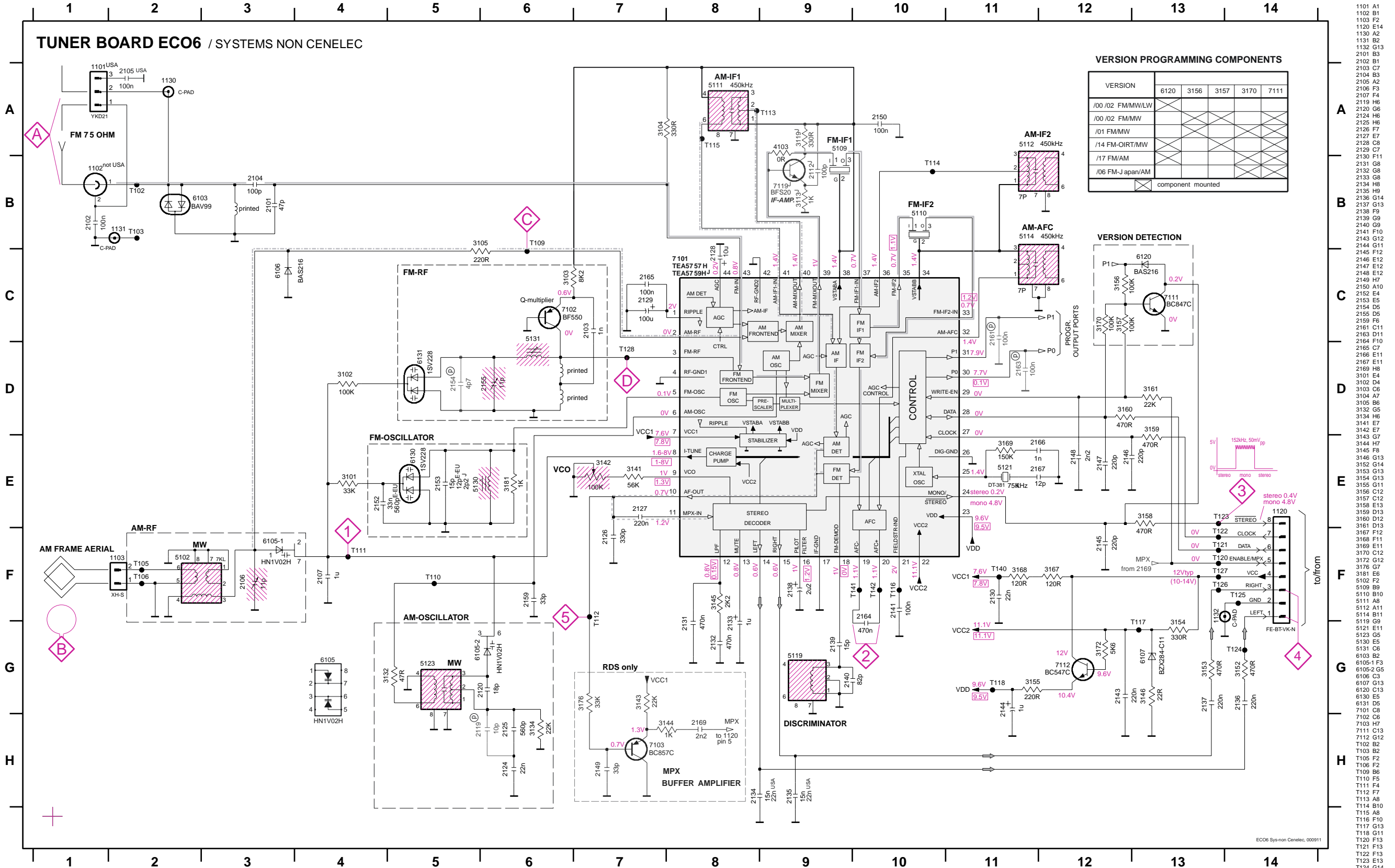
Waverange	Input frequency	Input	Tuned to	Adjust	Output	Scope/ Voltmeter
<b>VARICAP ALIGNMENT</b>						
<b>FM</b> 87.5 - 108MHz (50kHz grid)			108MHz	check		8V ±1.2V
			87.5MHz	check		1.6V ±0.5V
<b>MW</b> 531 - 1602kHz (9kHz grid)			1602kHz	5123	1	8V ±0.2V 3-band 6.9V ±0.2V 2-band
			531kHz	check		1.1V ±0.4V
<b>LW</b> 153 - 279kHz (3kHz grid)			279kHz	5122		8V ±0.2V
			153kHz	check		1.1V ±0.4V
<b>FM - IF</b>						
<b>FM</b>	10.7MHz, 45mV continuous wave	D		5119	2	0mV ±3mV
<b>FM - VCO</b>						
<b>FM</b>	98MHz, 1mV continuous wave	A	98MHz	3142	3	152kHz ±1kHz <sup>1)</sup>
<b>FM RF (channel separation)</b> Note: The FM-frontend unit has already been adjusted by the factory and needs therefore no further adjustments for service purposes.						
<b>FM</b>	98MHz, 1mV 90% Left + 9% pilot mod=1kHz	A	98MHz	IF coil inside FM frontend 1110	4	right channel min.
<b>AM IF</b>						
<b>MW</b>	450kHz  connect pin 6 of IC 7101 (AM Osc.) with 3.3kΩ to Vcc	C		5111	5	
<b>AM AFC</b> <b>MW</b>		C		5114	2	0mV ±2mV
<b>AM RF<sup>3)</sup></b>						
<b>MW</b>	1494kHz	B	1494kHz	2106	5	
	558kHz		558kHz	5102		
<b>LW</b>	198kHz		198kHz	5103		

Use Service Testprogram. 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!  
MW has to be aligned before LW.

↑ Repeat

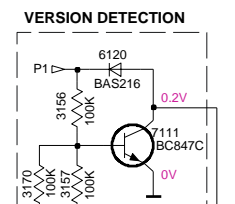
# CIRCUIT DIAGRAM - ECO6 SYSTEM NON-CENELEC BOARD



**VERSION PROGRAMMING COMPONENTS**

VERSION	6120	3156	3157	3170	7111
/00 /02 FM/MW/LW					
/00 /02 FM/MW					
/01 FM/MW					
/14 FM-OIRT/MW					
/17 FM/AM					
/06 FM-Japan/AM					

component mounted



- 1101 A1
- 1102 B1
- 1103 F2
- 1120 E14
- 1130 A2
- 1131 B2
- 1132 G13
- 2101 B3
- 2102 B1
- 2103 C7
- 2104 B3
- 2105 A2
- 2106 F3
- 2107 F4
- 2119 H6
- 2120 G6
- 2124 H6
- 2125 H6
- 2126 F7
- 2127 E7
- 2128 C8
- 2129 C7
- 2130 F11
- 2131 G8
- 2132 G8
- 2133 G8
- 2134 H8
- 2135 H9
- 2136 G14
- 2137 G13
- 2138 F9
- 2139 G9
- 2140 G9
- 2141 F10
- 2143 G12
- 2144 E11
- 2145 F12
- 2146 E12
- 2147 E12
- 2148 E12
- 2149 H7
- 2150 A10
- 2152 E4
- 2153 E5
- 2154 D5
- 2155 D5
- 2159 F6
- 2161 C11
- 2163 D11
- 2164 F10
- 2165 C7
- 2166 E11
- 2167 E11
- 2169 H8
- 3101 E4
- 3102 D4
- 3103 C8
- 3104 A7
- 3105 B6
- 3132 G5
- 3134 H6
- 3147 E7
- 3148 E7
- 3149 H7
- 3152 G4
- 3153 G13
- 3154 G13
- 3155 G11
- 3156 C12
- 3157 C12
- 3158 E13
- 3159 D13
- 3160 D12
- 3161 D13
- 3167 F12
- 3168 F11
- 3169 E11
- 3170 C12
- 3172 G12
- 3176 G7
- 3181 E5
- 5109 B9
- 5110 B10
- 5111 A8
- 5112 A11
- 5114 B11
- 5119 G9
- 5121 E11
- 5123 G5
- 5130 E5
- 5131 C6
- 6103 B2
- 6105-1 F3
- 6105-2 G5
- 6106 C3
- 6107 G13
- 6120 C13
- 6130 E5
- 6131 D5
- 7101 C8
- 7102 C8
- 7103 H7
- 7111 C13
- 7112 G12
- T102 B2
- T103 B2
- T105 F2
- T106 F2
- T107 F2
- T109 B6
- T110 F5
- T111 F4
- T112 F7
- T113 A8
- T114 B10
- T115 A8
- T116 B10
- T117 F13
- T118 G11
- T119 F13
- T120 F13
- T121 F13
- T122 F13
- T123 E13
- T124 G14
- T125 F14
- T126 F13
- T127 F13
- T128 D7
- T140 F11
- T141 F10
- T142 F10

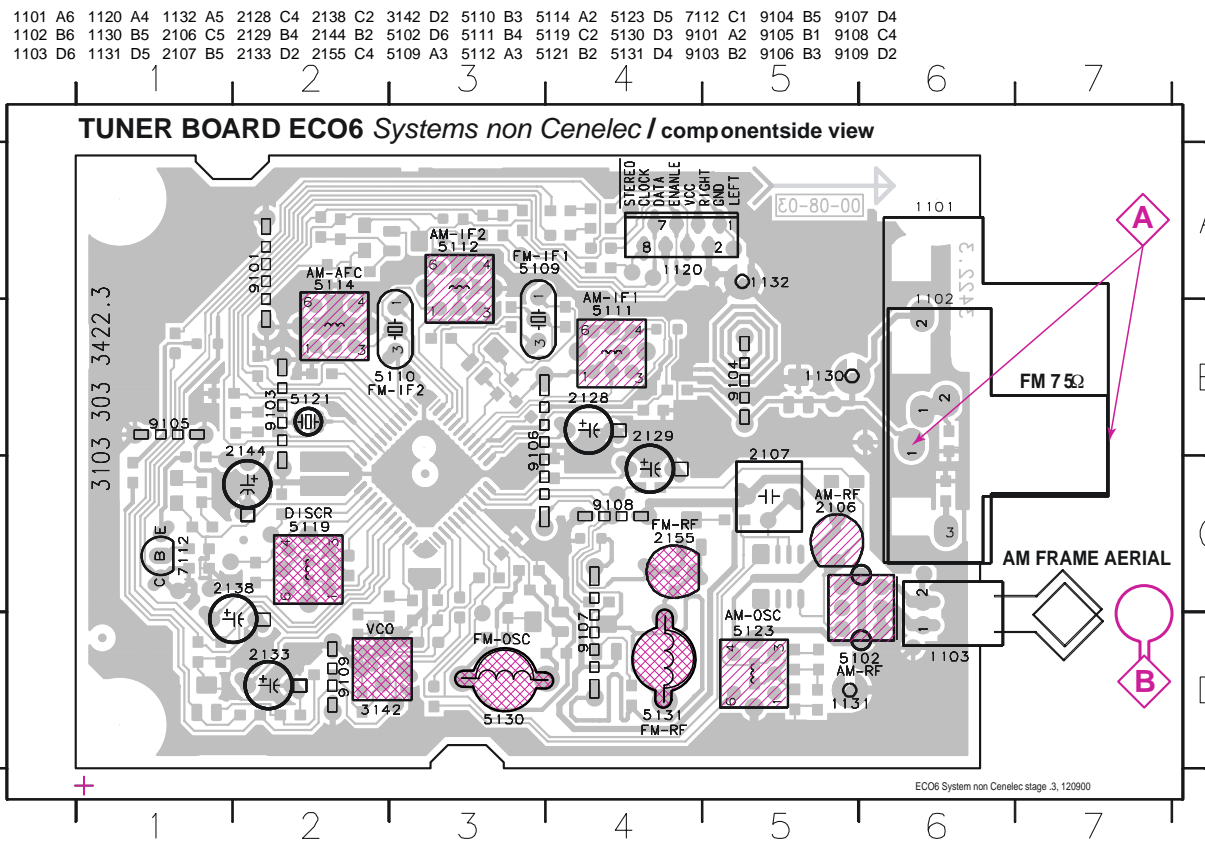
**LEGEND**  
 (U) for provision only  
 USA . . . for USA version only  
 E-EU . . . for East European version only  
 J . . . for Japane version only

...V FM mode stereo  
 ...V MW mode  
 ...V LW mode  
 voltages measured while set is tuned to a strong transmitter

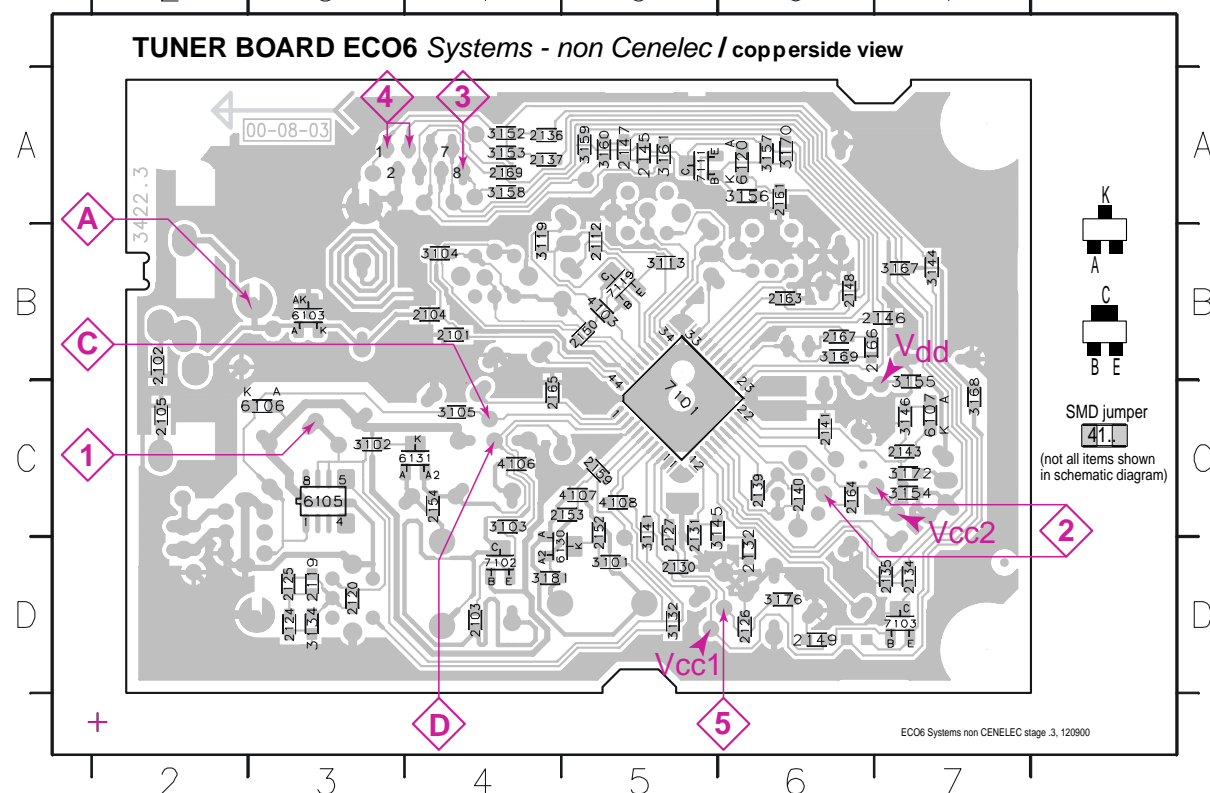
**Signal path**  
 — FM  
 - - - AM  
 - - - MPX (Audio Frequency)  
 ⇨ AF - left/right

LAYOUT DIAGRAM - ECO6 SYSTEM NON-CENELEC BOARD

TUNER ADJUSTMENT TABLE ( ECO6 FM/MW- and FM/MW/LW - versions with AM-frame aerial )



- 2101 B4 2119 D3 2130 D5 2137 A4 2146 B7 2153 C5 2165 C4 3103 C4 3134 D3 3152 A4 3158 A4 3169 B6 4106 C4 6107 C7 7103 D7  
2102 B1 2120 D3 2131 C5 2139 C6 2147 A5 2154 C4 2166 B6 3104 B4 3141 C5 3153 A4 3159 A5 3170 A6 4107 C5 6120 A6 7111 A5  
2103 D4 2124 D3 2132 D6 2140 C6 2148 B6 2159 C5 2167 B6 3105 C4 3143 D6 3154 C7 3160 A5 3172 C7 4108 C5 6130 D4 7119 B5  
2104 B4 2125 D3 2134 D7 2141 C6 2149 D6 2161 A6 2169 A4 3113 B5 3144 B7 3155 C7 3161 A5 3176 D6 6103 B3 6131 C4  
2105 C1 2126 D6 2135 D7 2143 C7 2150 B5 2163 B6 3101 D5 3119 B5 3145 C5 3156 A6 3167 B7 3181 D4 6105 C3 7101 C5  
2112 B5 2127 C5 2136 A4 2145 A5 2152 C5 2164 C6 3102 C3 3132 D5 3146 C7 3157 A6 3168 C7 4103 B5 6106 C3 7102 D4



These assembly drawings show a summary of all possible versions.  
For components used in a specific version see schematic diagram respectively partslist.

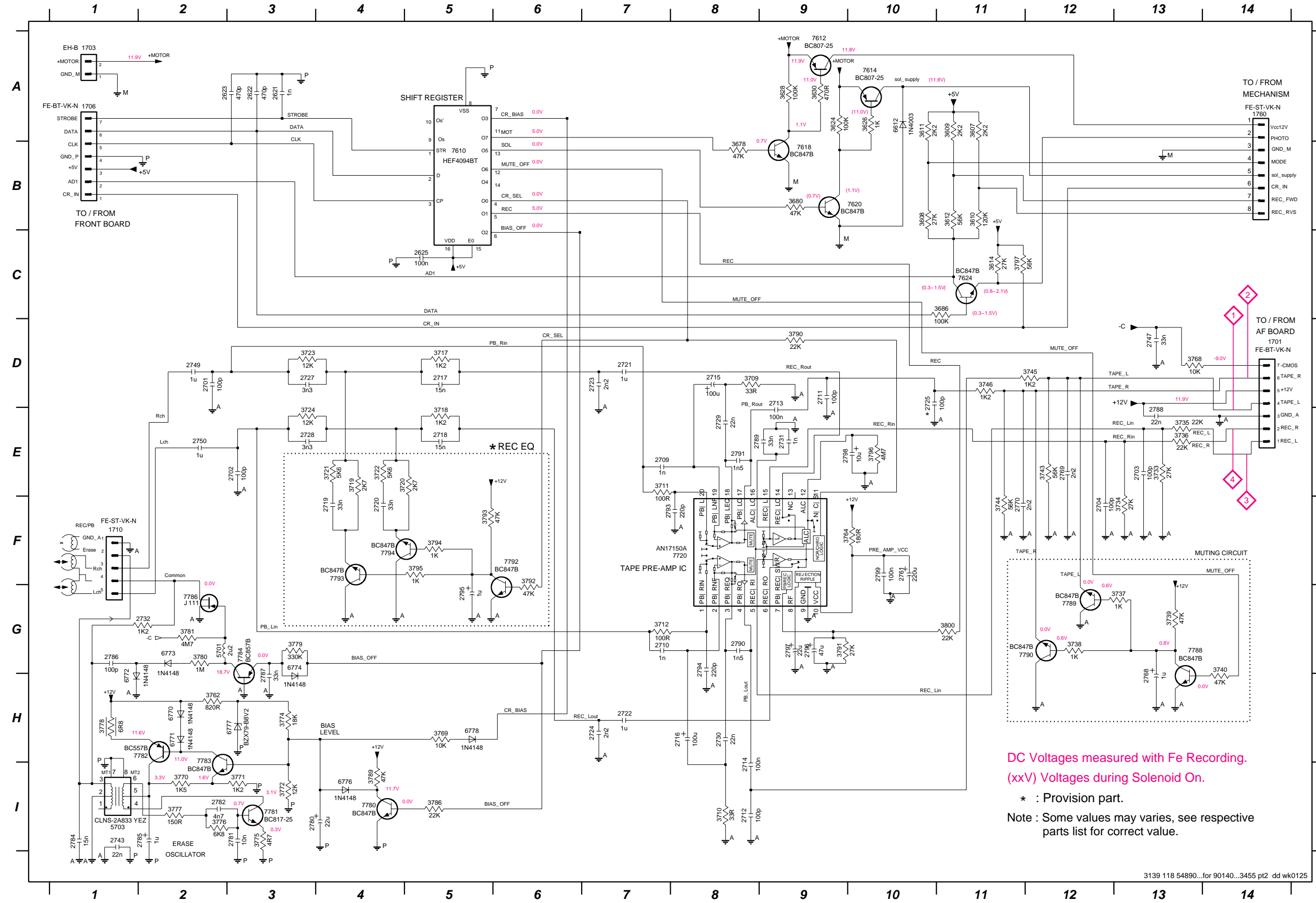
Waverange	Input f requency	Input	Tuned to	Adj ust	Output	Scope/ Voltmeter
<b>VARICAP ALIGNMENT</b>						
<b>FM</b> 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)			108MHz	5130		8V ±0.2V
			87.5MHz (65.81MHz)	check		4.3V ±0.5V (1.2V ±0.5V)
<b>MW</b> FM/AM-version, 10kHz grid 530 - 1700kHz			1700kHz	5123		8V ±0.2V
			530kHz	check		1.1V ±0.4V
FM/MW-version, 9kHz grid 531 - 1602kHz			1602kHz	5123	1	6.9V ±0.2V
			531kHz	check		1.1V ±0.4V
<b>LW</b> 153 - 279kHz			279kHz	5122		8V ±0.2V
			153kHz	check		1.1V ±0.4V
<b>MW</b> FM/MW/LW- version, 9kHz grid 531 - 1602kHz			1602kHz	5123		8V ±0.2V
			531kHz	check		1.1V ±0.4V
<b>FM IF</b>						
<b>FM</b>	10.7MHz, 45mV continuous wave	D		5119	2	0 ± 3 mV DC
<b>FM RF</b>						
<b>FM</b> 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)	108MHz	A	108MHz	2155	4	MAX
	87.5MHz (65.81MHz)	mod=1kHz Δf=±22.5kHz	87.5MHz (65.81MHz)	5131		
<b>VCO</b>						
<b>FM</b>	98MHz, 1mV continuous wave	A	98MHz	3142	3	152kHz ±1kHz <sup>1)</sup>
<b>AM IF</b>						
<b>MW</b>	450kHz connect pin 6 of IC 7101 (AM Osc.) with 3.3kΩ to Vcc	C		5111	5	
				5112		
<b>AM AFC</b>		C		5114	2	0 ± 2 mV DC
<b>AM RF<sup>3)</sup></b>						
<b>MW<sup>4)</sup></b> FM/MW/LW- and FM/MW-version (9kHz grid) 531 - 1602kHz	1494kHz	B	1494kHz	2106	5	
	558kHz		558kHz	5102		
<b>LW</b>	198kHz		198kHz	5103		
<b>MW</b> FM/AM-version, 10kHz grid 530 - 1700kHz	1500kHz	B	1500kHz	2106	5	
	560kHz		560kHz	5102		

Use Service Testprogram. 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

CIRCUIT DIAGRAM - ETF8 SD

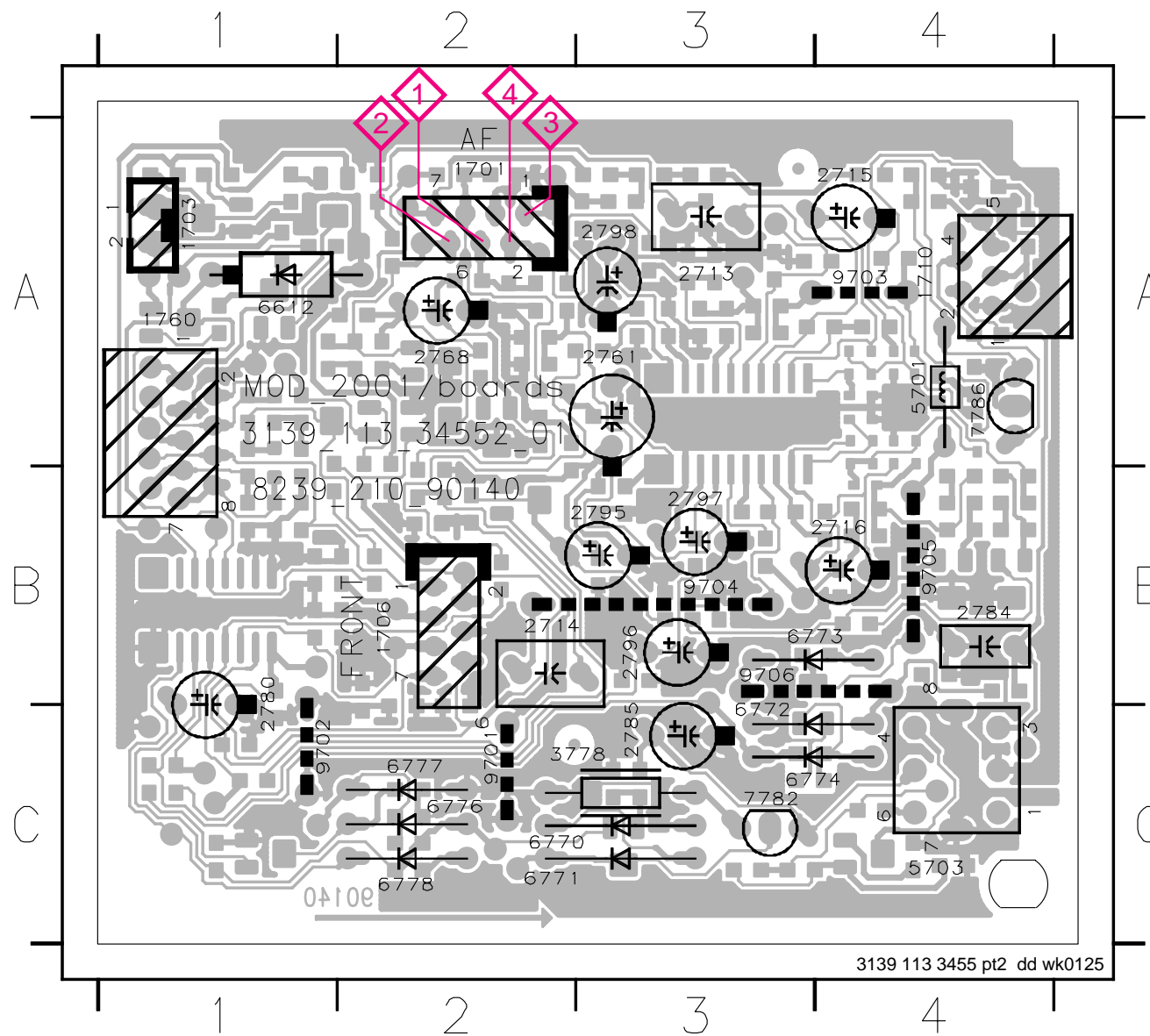


1701 D14	3768 D13
1703 A1	3769 H5
1706 A1	3770 I2
1710 F1	3771 I3
1760 A14	3772 I3
2621 A3	3774 H3
2622 A3	3775 I3
2623 A2	3776 I2
2625 C5	3777 I2
2701 D2	3778 H1
2702 E3	3779 G3
2703 E13	3780 G2
2704 F12	3781 G2
2709 E7	3786 I5
2710 G7	3789 I4
2711 D9	3790 D9
2712 I8	3791 G9
2713 D9	3792 F6
2714 I8	3793 F5
2715 D8	3794 F5
2716 H8	3795 F5
2717 D5	3796 E10
2718 E5	3797 C11
2719 F4	3800 G11
2720 F4	5701 G2
2721 D7	5703 I1
2722 H7	6612 A10
2723 D7	6770 H2
2724 H7	6771 H2
2725 D10	6772 H1
2727 D3	6773 G2
2728 E3	6774 G3
2729 E8	6776 I4
2730 H8	6777 H3
2731 E9	6778 H5
2732 G2	7610 B5
2743 I1	7612 A9
2747 D13	7614 A10
2749 D2	7618 B9
2750 E2	7620 B9
2761 F10	7624 C11
2768 H13	7720 F8
2769 E12	7780 I4
2770 F11	7781 I3
2780 I3	7782 H2
2781 I3	7783 I2
2782 I2	7784 G3
2784 I1	7786 G2
2785 I2	7788 G13
2786 G1	7789 G12
2787 H3	7790 G12
2788 E13	7792 F6
2789 E8	7793 F4
2790 E8	
2791 E7	
2793 F7	
2794 G8	
2795 G5	
2796 G9	
2797 G9	
2798 E9	
2799 F10	
3607 A11	
3608 B10	
3609 A11	
3610 B11	
3611 A10	
3612 B11	
3614 C11	
3624 A9	
3626 A10	
3628 A9	
3630 A9	
3678 B8	
3680 B9	
3686 C11	
3709 D8	
3710 I8	
3711 E7	
3712 G7	
3717 D5	
3718 E5	
3719 E4	
3720 E5	
3721 E4	
3722 E4	
3723 D3	
3724 E3	
3733 E13	
3734 F13	
3735 E13	
3736 E13	
3737 G13	
3738 G12	
3739 G13	
3740 G14	
3743 E12	
3744 F11	
3745 D12	
3746 D11	
3762 H2	
3764 F10	

DC Voltages measured with Fe Recording.  
 (xxV) Voltages during Solenoid On.  
 \* : Provision part.  
 Note : Some values may varies, see respective parts list for correct value.

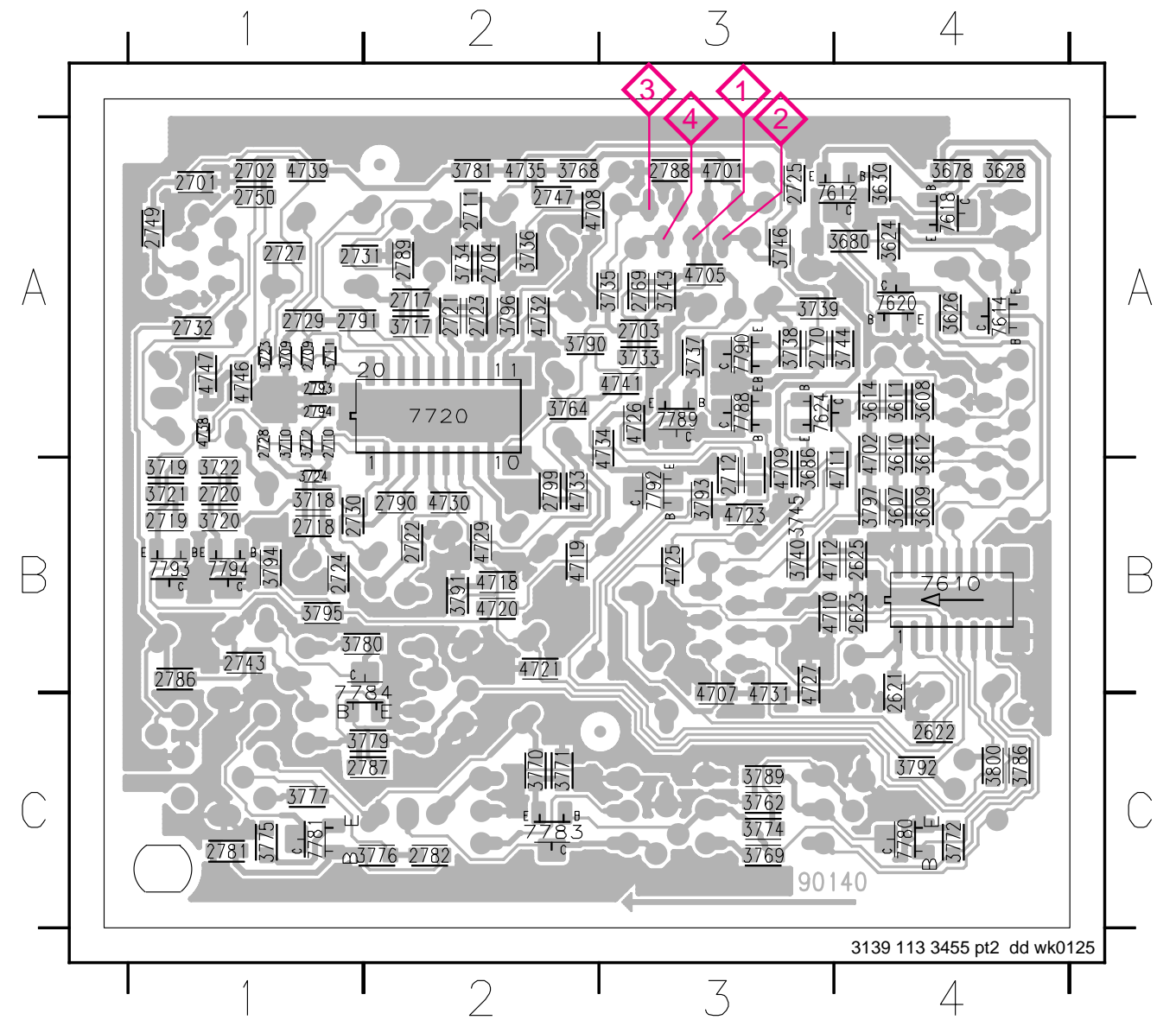
LAYOUT DIAGRAM - ETF8 SD BOARD

1701 A2	2715 A4	2795 B3	6612 A1	6777 C2	9704 B3
1703 A1	2716 B4	2796 B3	6770 C2	6778 C2	9705 B4
1706 B2	2761 A3	2797 B3	6771 C2	7782 C3	9706 B3
1710 A4	2768 A2	2798 A3	6772 C3	7786 A4	
1760 A1	2780 B1	3778 C3	6773 B3	9701 C2	
2713 A3	2784 B4	5701 A4	6774 C3	9702 C1	
2714 B2	2785 C3	5703 C4	6776 C2	9703 A4	



CHIP LAYOUT - ETF8 SD BOARD

2621 B4	2729 A1	3609 B4	3724 B1	3777 C1	4712 B3	7614 A4
2622 C4	2730 B1	3610 A4	3733 A3	3779 C2	4718 B2	7618 A4
2623 B4	2731 A1	3611 A4	3734 A2	3780 B1	4719 B2	7620 A4
2625 B4	2732 A1	3612 A4	3735 A3	3781 A2	4720 B2	7624 A3
2701 A1	2743 B1	3614 A4	3736 A2	3786 C4	4721 B2	7720 A2
2702 A1	2747 A2	3624 A4	3737 A3	3789 C3	4723 B3	7780 C4
2703 A3	2749 A1	3626 A4	3738 A3	3790 A2	4725 B3	7781 C1
2704 A2	2750 A1	3628 A4	3739 A3	3791 B2	4726 A3	7783 C2
2709 A1	2769 A3	3630 A4	3740 B3	3792 C4	4727 B3	7784 B1
2710 A1	2770 A3	3678 A4	3743 A3	3793 B3	4729 B2	7788 A3
2711 A2	2781 C1	3680 A4	3744 A4	3794 B1	4730 B2	7789 A3
2712 B3	2782 C2	3686 B3	3745 B3	3795 B1	4731 C3	7790 A3
2717 A2	2786 B1	3709 A1	3746 A3	3796 A2	4732 A2	7792 B3
2718 B1	2787 C2	3710 A1	3762 C3	3797 B4	4733 B2	7793 B1
2719 B1	2788 A3	3711 A1	3764 A2	3800 C4	4734 A3	7794 B1
2720 B1	2789 A2	3712 A1	3768 A2	4701 A3	4735 A2	
2721 A2	2790 B2	3717 A2	3769 C3	4702 A4	4738 A1	
2722 B2	2791 A1	3718 B1	3770 C2	4705 A3	4739 A1	
2723 A2	2793 A1	3719 B1	3771 C2	4707 C3	4741 A3	
2724 B1	2794 A1	3720 B1	3772 C4	4708 A2	4746 A1	
2725 A3	2799 B2	3721 B1	3774 C3	4709 B3	4747 A1	
2727 A1	3607 B4	3722 B1	3775 C1	4710 B3	7610 B4	
2728 A1	3608 A4	3723 A1	3776 C2	4711 B4	7612 A4	

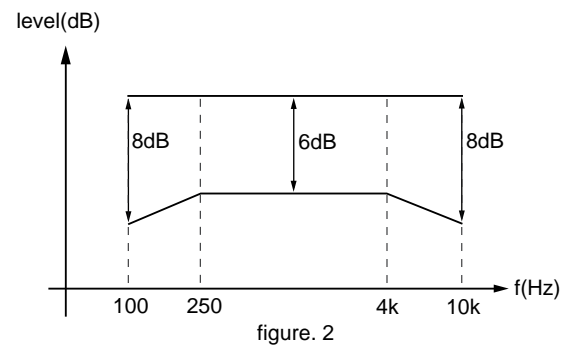
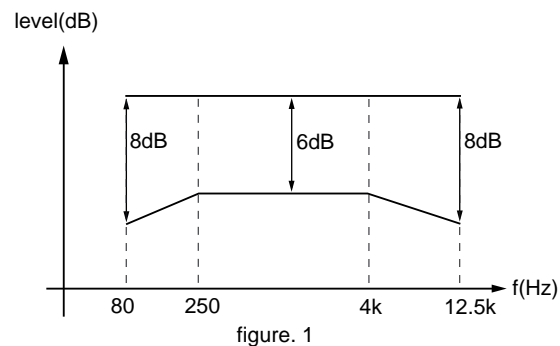


**TAPE ADJUSTMENT & CHECK TABLE**

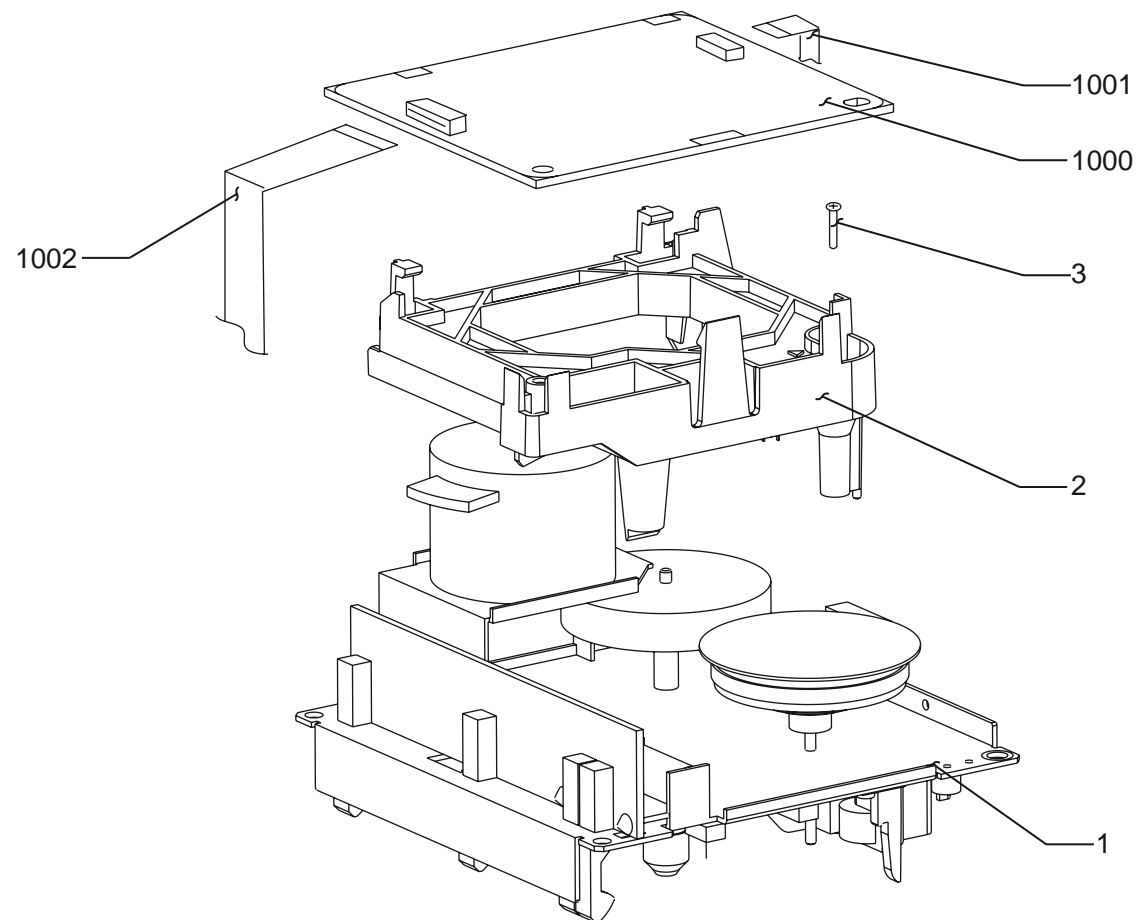
	TEST CASSETTE	RECORDER MODE	MEASURE ON	READ ON	ADJUST	
					with	to
<b>MOTOR SPEED</b>	SBC420 3150Hz	PLAY		frequency counter	check	3150Hz +/- 2%
<b>WOW &amp; FLUTTER</b>	SBC420 3150Hz	PLAY		W&F-meter	check	< 0.4 % DIN
<b>ADJUST AZIMUTH</b>	SBC420 10kHz	PLAY FWD	1 or 2 LEFT RIGHT	mV-meter	left hand screw	max. output level & left=right
		PLAY REV ^			right hand screw	
<b>PLAYBACK LEVEL &amp; FREQ. RESPONSE</b>	SBC420 315Hz	PLAY		mV-meter	check	125mV +/- 3dB (see fig.1 for freq. response)
<b>CHECK RECORD/PLAYBACK FREQUENCY AND DISTORTION</b>						
Inject 3mV signals 100Hz, 250Hz, 1kHz, 10kHz, 12.5kHz via 3 or 4	SBC419A or SBC420	RECORD				
	RECORDED CASSETTE	PLAY	1 or 2 LEFT RIGHT	mV-meter	check	limits see fig. 2 *
Inject 1kHz 8.85mV via 3 or 4	SBC419A or SBC420	RECORD				
	RECORDED CASSETTE	PLAY	1 or 2 LEFT RIGHT	THD-meter	check	< 3% *

SBC419A : 4822 397 30069  
SBC420 : 4822 397 30071

^ For Auto-reverse version only  
\* If high frequencies are not within limits, decrease bias and re-measure.  
If distortion is too high, increase bias and re-measure

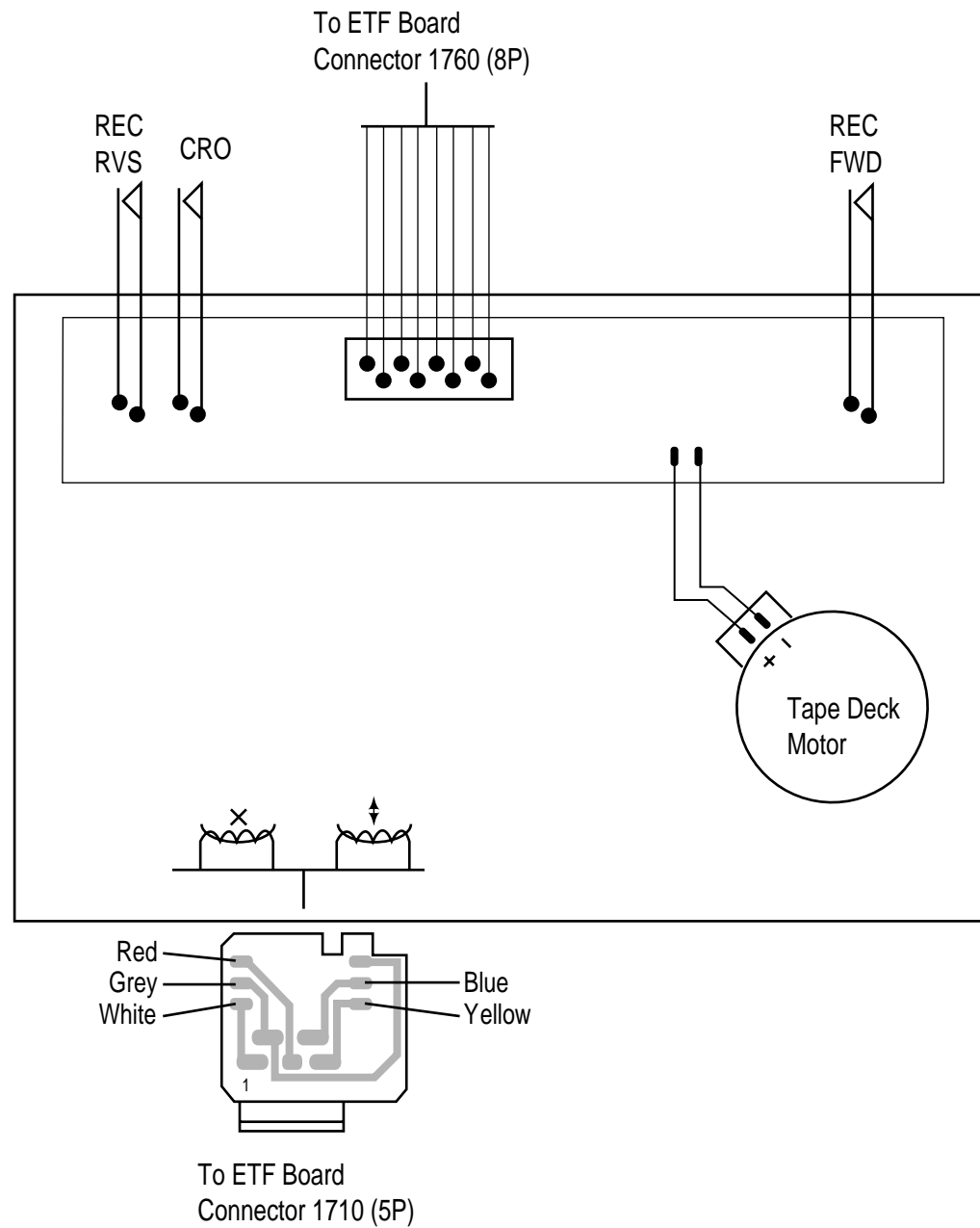


**EXPLODED VIEW - TAPE MODULE**

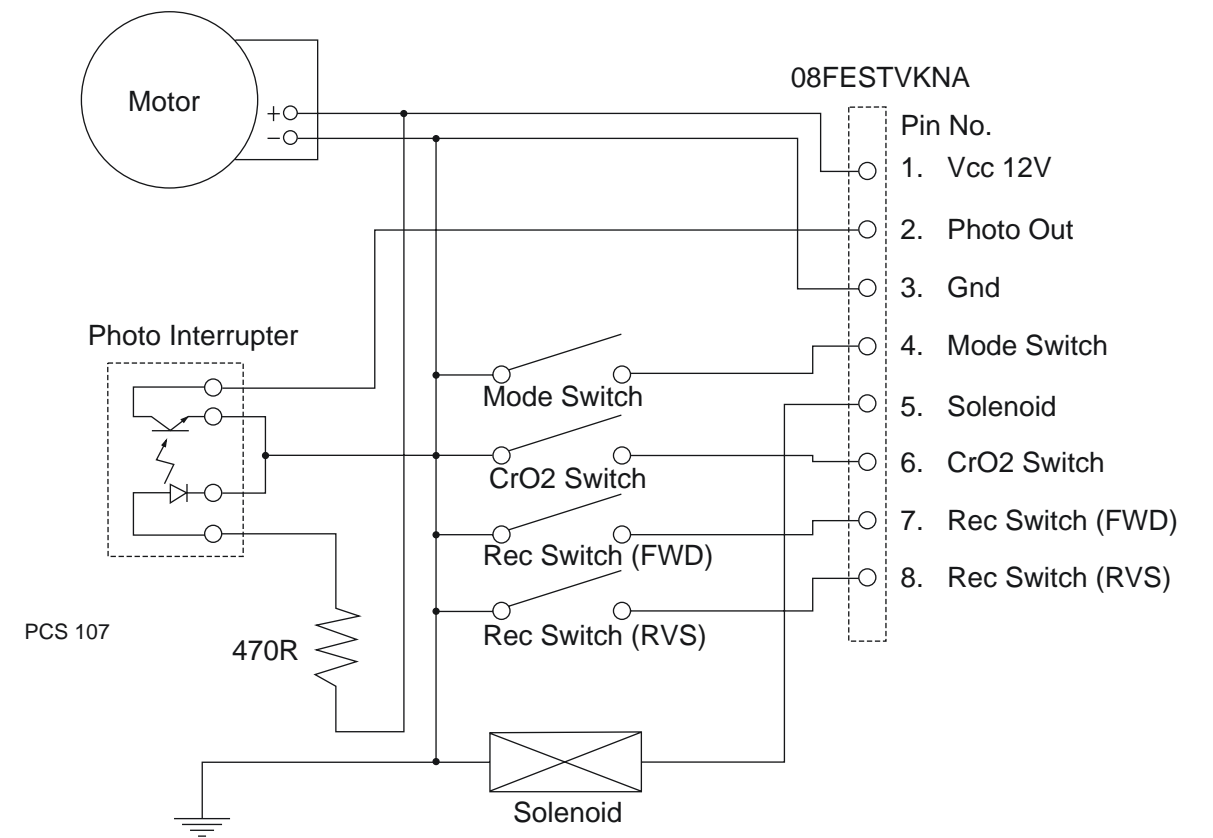




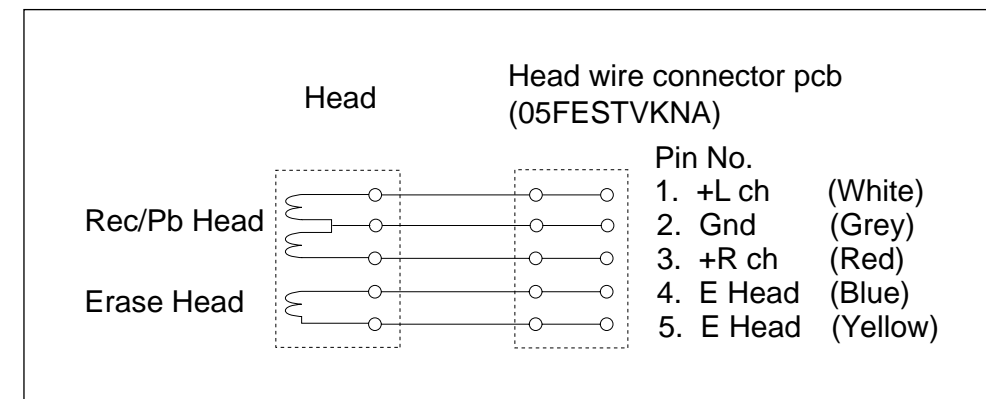
**TAPE DECK WIRING**



**TAPE MECHANISM ELECTRONICS**

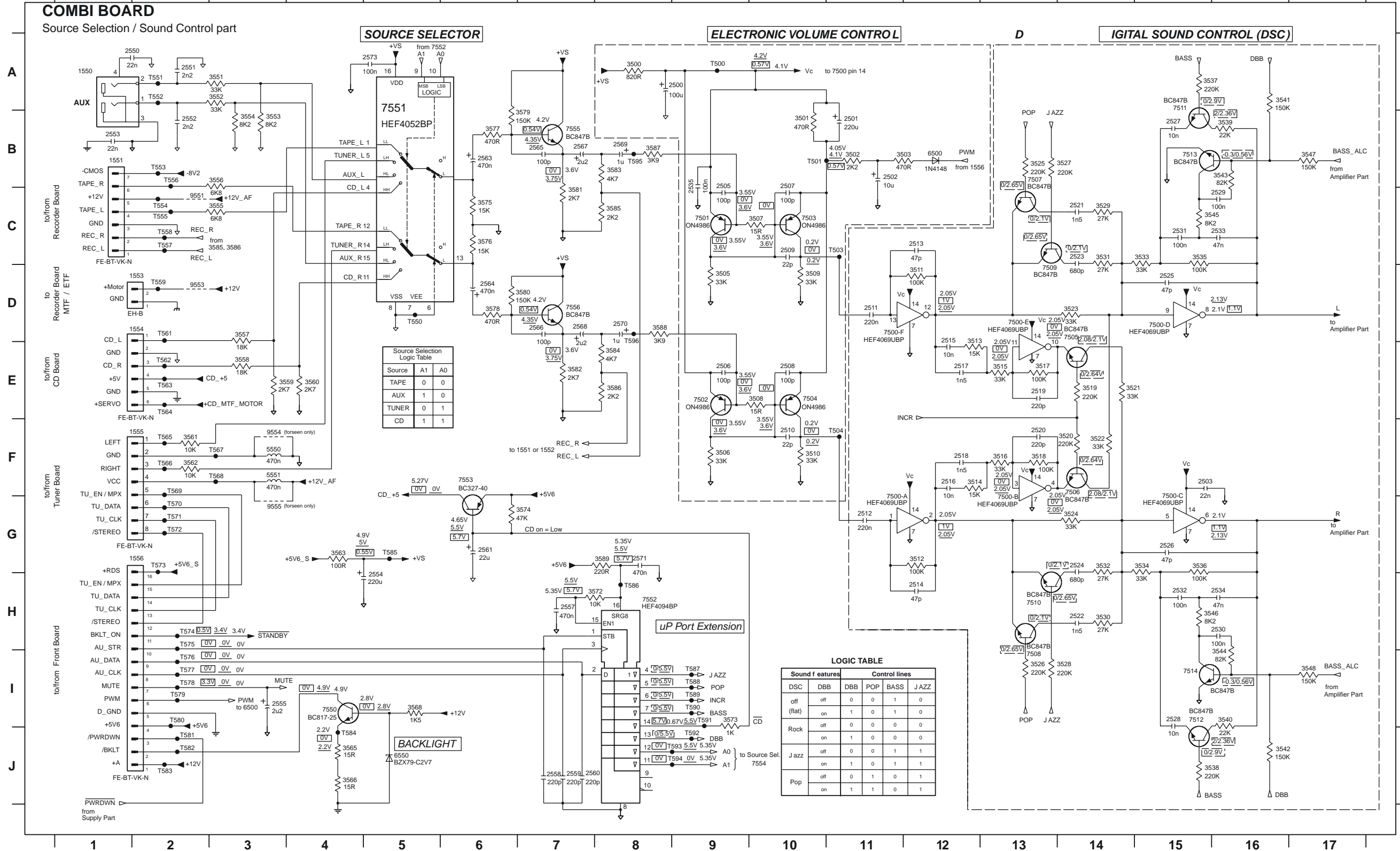


**Mechanism Head Wires Soldering**



# CIRCUIT DIAGRAM - COMBI BOARD (Part 1)

1550 A1	2501 B11	2510 F10	2518 F12	2526 G15	2534 H16	2557 H7	2566 D7	3501 B10	3510 F10	3518 F13	3526 H13	3534 G15	3542 J16	3552 A3	3560 E4	3573 I9	3581 C7	3589 G8	7500-D D15	7506 F14	7514 H5	9553 D2	T551 A2	T559 D2	T568 F3	T576 I2	T584 J4	T592 J9
1551 B1	2502 B11	2511 D11	2519 E13	2527 B15	2535 B9	2558 J7	2567 B7	3502 B11	3511 D12	3519 E14	3527 B14	3535 C15	3543 B16	3553 B3	3561 F2	3574 G7	3582 E7	3590 F3	7500-E D13	7507 B13	7550 I4	9554 F3	T552 A2	T561 D2	T569 F2	T577 I2	T585 G5	T593 J9
1552 B2	2503 F15	2512 G11	2520 F13	2528 H15	2550 A2	2559 J7	2568 D7	3503 B12	3512 G12	3520 F14	3528 H14	3536 G15	3544 H16	3554 B3	3562 F2	3575 C6	3583 B8	5551 F3	7500-F D11	7508 H13	7551 B5	9555 G3	T553 B2	T562 E2	T570 G2	T578 I2	T586 H8	T594 J9
1553 D2	2505 C9	2513 C12	2521 C14	2529 C16	2551 A2	2560 J7	2569 B8	3505 D9	3521 E12	3529 E14	3537 A15	3545 C16	3555 C3	3563 G4	3576 C6	3584 E8	6500 B12	7501 C9	7509 D13	7552 H8	T500 A9	T554 C2	T563 E2	T571 G2	T579 I2	T587 I9	T595 B8	
1554 D2	2506 E9	2514 H12	2522 H14	2530 H16	2552 B2	2561 G6	2570 D8	3506 F9	3514 F12	3522 F14	3530 H14	3538 J16	3546 H15	3556 B3	3565 J4	3577 B6	3585 C8	6550 J5	7502 E9	7510 H13	7553 F6	T501 B10	T555 C2	T564 E2	T572 G2	T580 I2	T588 I9	T596 B8
1555 F2	2507 C10	2515 E12	2523 C14	2531 C15	2553 B1	2563 B6	2571 G8	3507 C10	3515 E13	3523 D14	3531 C14	3539 B16	3547 B17	3557 D3	3566 J4	3578 D6	3586 E8	7500-A G11	7503 C10	7511 A15	7555 B7	T503 C11	T556 B2	T565 F2	T573 G2	T581 J2	T589 I9	
1556 G2	2508 E10	2516 F12	2524 G14	2532 H15	2554 H5	2564 D6	2573 A5	3508 E10	3516 F13	3524 G14	3532 G14	3540 H16	3548 I17	3558 E3	3568 I5	3579 B7	3587 B8	7500-B G13	7504 E10	7512 H15	7556 D7	T504 F11	T557 C2	T566 F2	T574 H2	T582 J2	T590 I9	
2500 A9	2509 C10	2517 E12	2525 D15	2533 C16	2555 I3	2565 B7	3500 A8	3509 D10	3517 E13	3525 B13	3533 C15	3541 A16	3551 A3	3559 E4	3572 H8	3580 D7	3588 D8	7500-C G15	7505 D14	7513 B15	9551 C2	T550 D5	T558 C2	T567 F3	T575 H2	T583 J2	T591 I9	



(230V MAINS SUPPLY) DC VOLTAGES MEASURED IN :

- V CD Mode 1KHz, 0dB track, DSC "OPTIMAL", DBB "OFF", INCR "OFF", VOLUME "20"
- V Tuner Mode 1KHz, df "22.5kHz", DSC "OPTIMAL", DBB "OFF", INCR "OFF", VOLUME "20"
- V Standby Mode
- V DSC OFF/ON at CD Mode 1KHz, 0dB track, VOLUME "20"

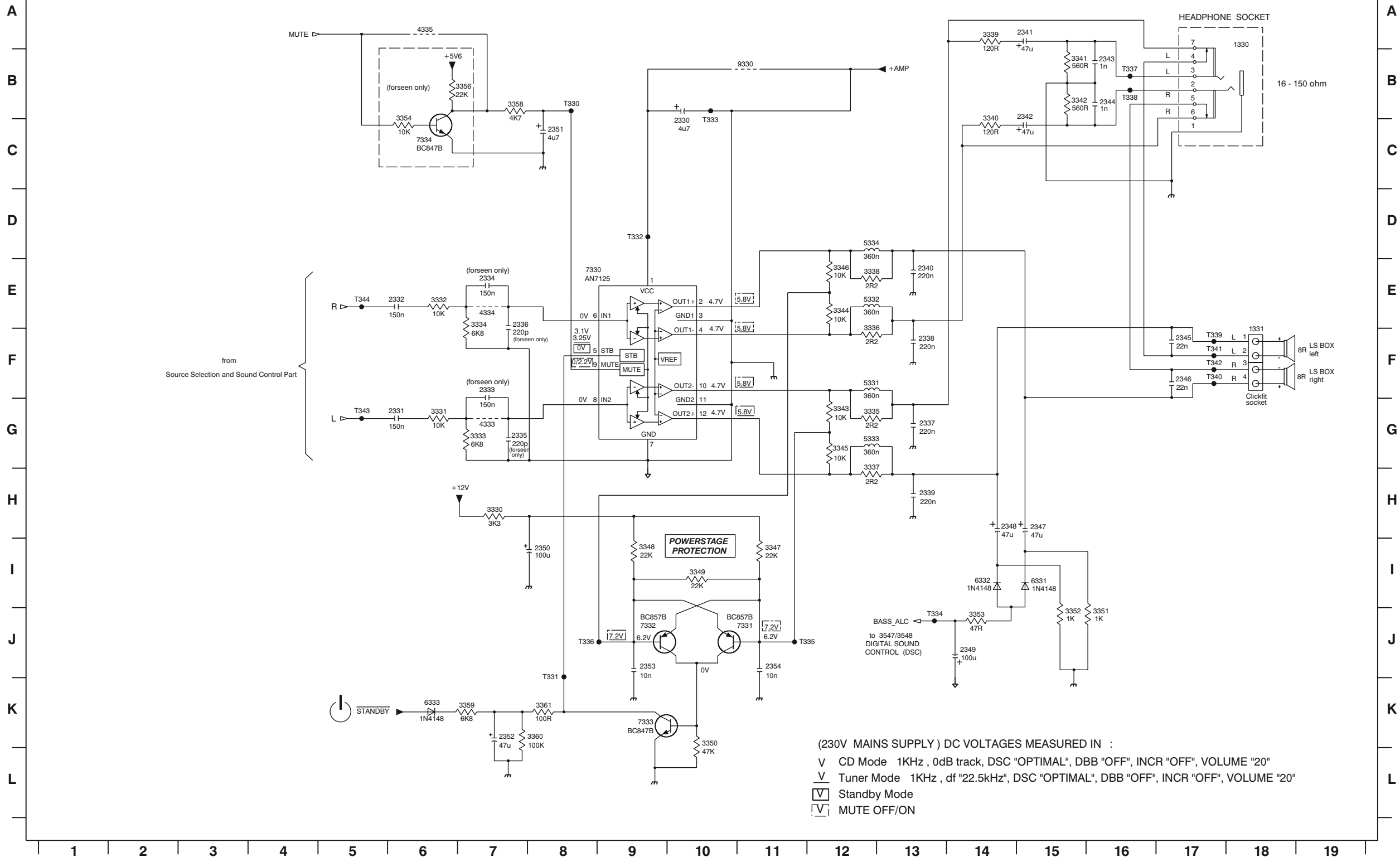
**LOGIC TABLE**

Sound features	Control lines				
	DSC	DBB	POP	BASS	JAZZ
off	off	0	0	1	0
flat	on	1	0	1	0
Rock	off	0	0	0	0
	off	1	0	0	0
Jazz	on	0	0	1	1
Pop	off	0	1	0	1
	on	1	1	0	1

# CIRCUIT DIAGRAM - COMBI BOARD (Part 2)

1330 B18	2331 G6	2334 E7	2337 G13	2340 E13	2343 B16	2346 F17	2349 J14	2352 K7	3330 H7	3333 G7	3336 F12	3339 A14	3342 B15	3345 G12	3348 I9	3351 J16	3354 C6	3359 K7	4333 G7	5331 F12	5334 D12	6333 K6	7332 J9	9330 B11	T332 D9	T335 J12	T338 B16	T341 F17	T344 E5
1331 F18	2332 E6	2335 G7	2338 F13	2341 A15	2344 B16	2347 H15	2350 I8	2353 J9	3331 G6	3334 F7	3337 H12	3340 C14	3343 G12	3346 E12	3349 I10	3352 J15	3356 B7	3360 K8	4334 E7	5332 E12	6331 I15	7330 E8	7333 K9	T330 B8	T333 C10	T336 J8	T339 F17	T342 F17	T343 G5
2330 C10	2333 F7	2336 F7	2339 H13	2342 B15	2345 F17	2348 H14	2351 C8	2354 J11	3332 E6	3335 G12	3338 E12	3341 B15	3344 E12	3347 I11	3350 L10	3353 J14	3358 B7	3361 K8	4335 A6	5333 G12	6332 I14	7331 J11	7334 C6	T331 K8	T334 J13	T337 B16	T340 F17	T343 G5	

## COMBI BOARD - POWER AMPLIFIER PART

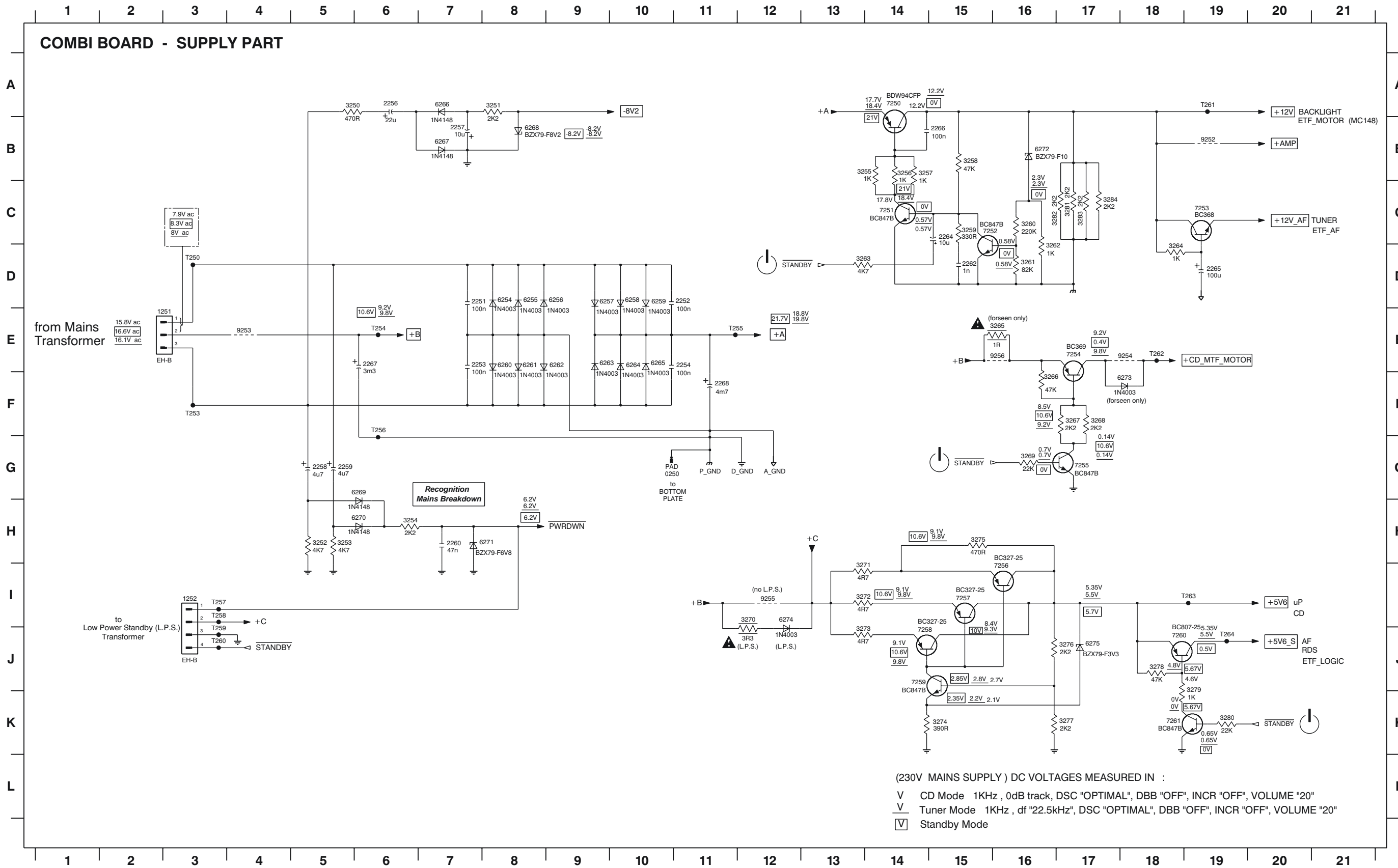


(230V MAINS SUPPLY) DC VOLTAGES MEASURED IN :

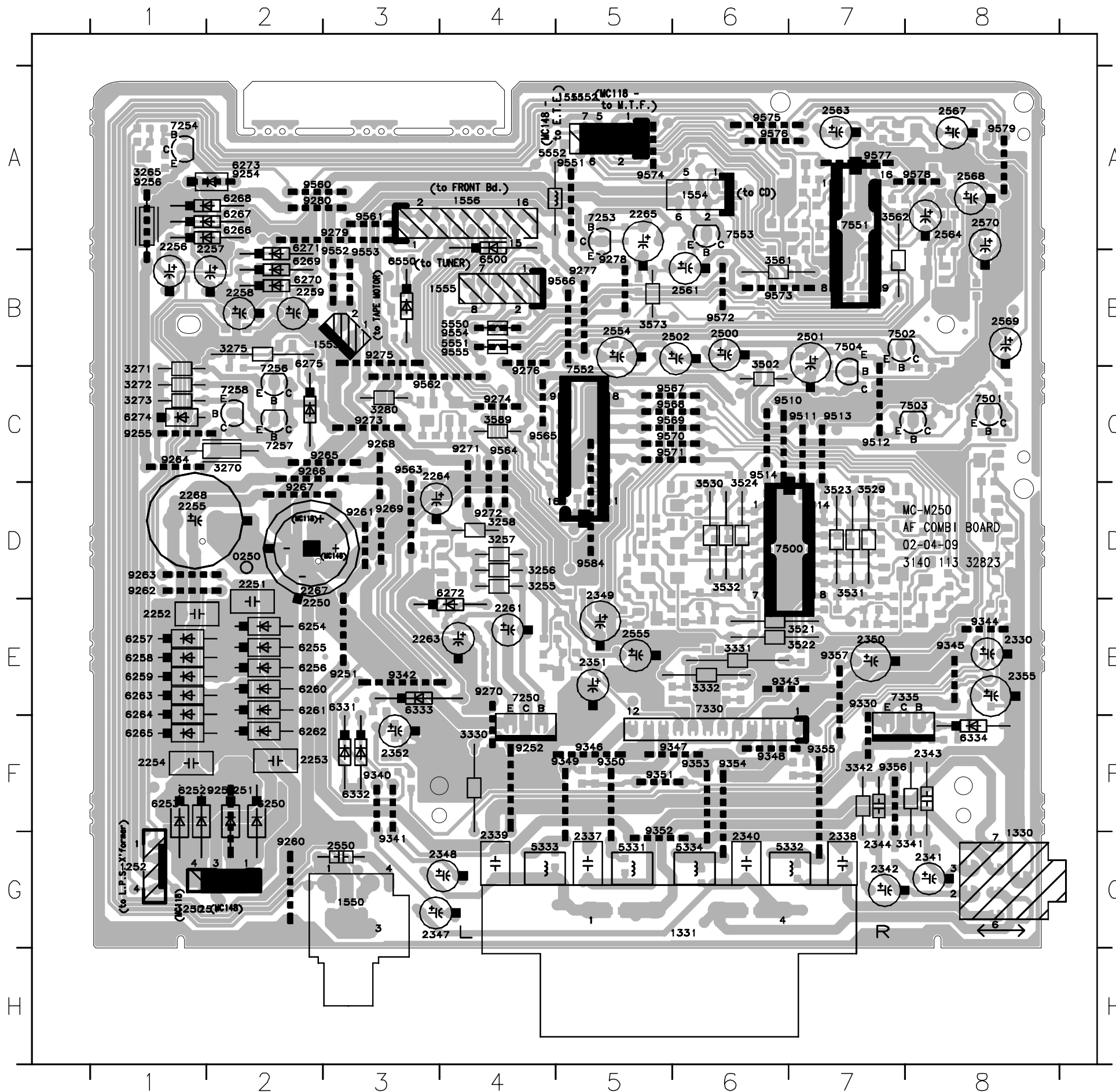
- V CD Mode 1KHz , 0dB track, DSC "OPTIMAL", DBB "OFF", INCR "OFF", VOLUME "20"
- V Tuner Mode 1KHz , df "22.5kHz", DSC "OPTIMAL", DBB "OFF", INCR "OFF", VOLUME "20"
- V Standby Mode
- V MUTE OFF/ON

CIRCUIT DIAGRAM - COMBI BOARD (Part 3)

0250 G11 2251 D7 2254 E11 2258 G5 2262 D15 2266 B15 3250 A5 3253 H5 3256 B14 3259 C15 3262 D16 3265 E16 3268 F17 3271 I13 3274 K15 3277 K17 3280 K19 3283 C17 6255 D8 6258 D10 6261 E8 6264 E10 6267 B7 6270 H6 6273 F18 7250 A14 7253 C19 7256 I16 7259 J14 9252 B19 9255 I12 T253 F3 T256 F6 T259 J3 T262 E18  
 1251 E3 2252 D11 2256 A6 2259 G5 2264 C15 2267 E6 3251 A8 3254 H6 3257 B14 3260 C16 3263 D13 3266 F16 3269 G16 3272 I13 3275 H15 3278 J18 3281 C17 3284 C17 6256 D9 6259 D10 6262 E9 6265 E10 6268 B8 6271 H8 6274 I12 7251 C14 7254 E17 7257 I15 7260 J18 9253 E4 9256 E16 T254 E6 T257 I3 T260 J3 T263 I19  
 1252 I3 2253 E7 2257 B7 2260 H7 2265 D19 2268 F11 3252 H5 3255 B13 3258 B15 3261 D16 3264 D18 3267 F17 3270 I12 3273 J13 3276 J17 3279 K19 3282 C17 6254 D8 6257 D9 6260 E8 6266 A7 6269 G6 6272 B16 6275 J17 7252 C16 7255 G17 7258 J14 7261 K18 9254 E18 T250 D3 T255 E11 T258 I3 T261 A19 T264 J19

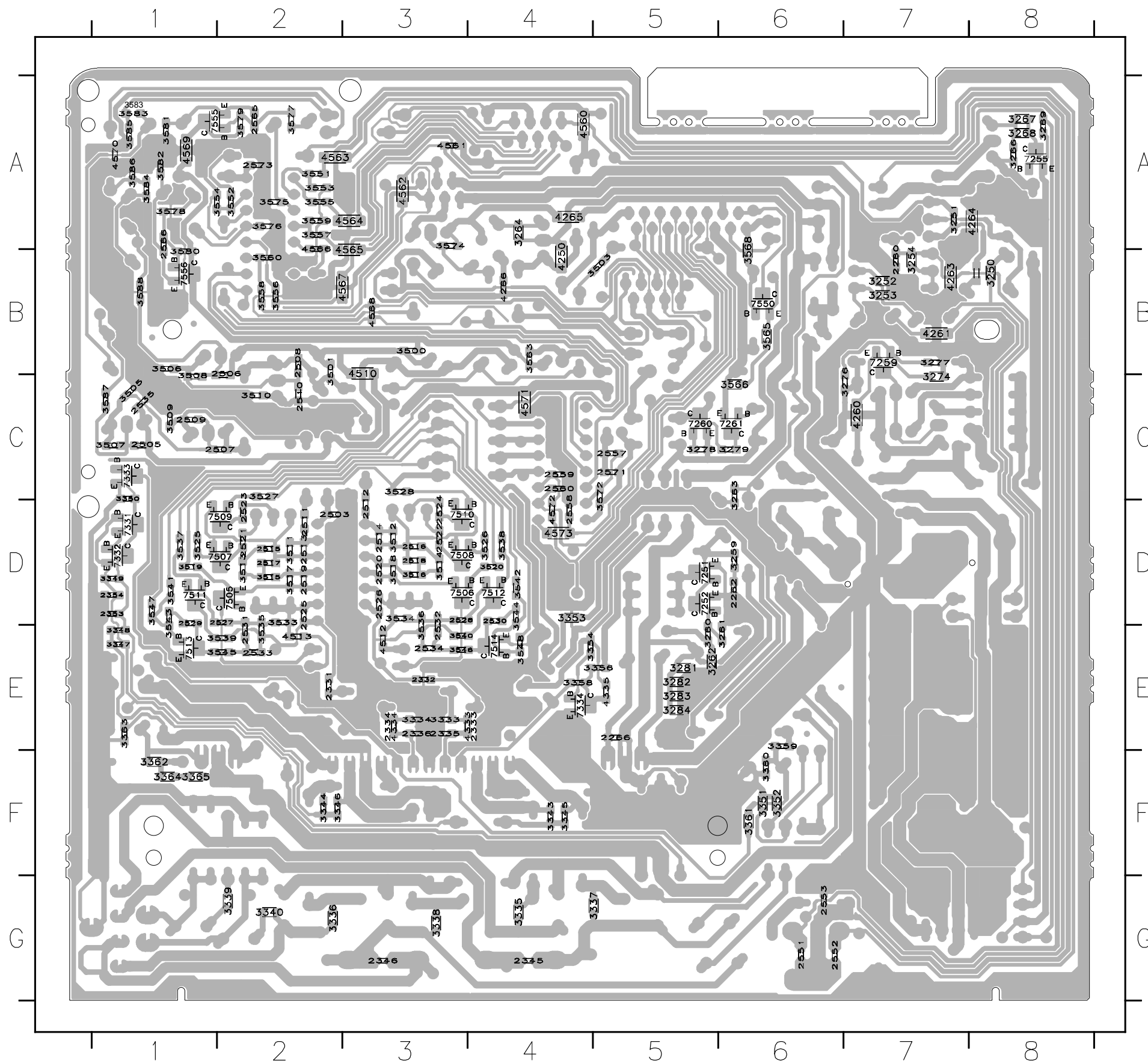


LAYOUT DIAGRAM - COMBI BOARD



0250	D2	3530	D6	9272	D4
1250	G1	3531	D7	9273	C3
1251	G1	3532	D6	9274	C4
1252	G1	3561	B6	9275	B3
1330	G8	3562	A7	9276	C4
1331	G6	3573	B5	9277	B5
1550	G3	3589	C4	9278	B5
1551	A5	5331	G5	9279	A3
1552	A5	5332	G7	9280	A2
1553	B3	5333	G4	9300	E7
1554	A6	5334	G6	9340	F3
1555	B4	5550	B4	9341	C3
1556	A4	5551	B4	9342	E3
2250	E2	5552	A4	9343	E6
2251	D2	6250	F2	9344	E8
2252	E1	6251	F2	9345	E8
2253	F2	6252	F1	9346	F5
2254	F1	6253	F1	9347	F6
2255	D1	6254	E2	9348	F6
2256	A1	6255	E2	9349	F5
2257	A2	6256	E2	9350	F5
2258	B2	6257	E1	9351	F5
2259	B2	6258	E1	9352	F5
2261	E4	6259	E1	9353	F6
2263	E3	6260	E2	9354	F6
2264	C3	6261	E2	9355	F7
2265	A5	6262	F2	9356	F7
2267	D2	6263	E1	9357	E7
2268	D1	6264	E1	9510	C6
2330	E8	6265	F1	9511	C7
2337	G5	6266	A2	9512	C7
2338	G7	6267	A2	9513	C7
2339	G4	6268	A2	9514	C6
2340	G6	6269	B2	9515	A5
2341	G8	6270	B2	9552	B3
2342	G7	6271	A2	9553	B3
2343	F8	6272	D4	9554	B4
2344	G7	6273	A2	9555	B4
2347	G3	6274	C1	9560	A2
2348	G4	6275	B2	9561	A3
2349	D5	6331	E3	9562	C3
2350	E7	6332	F3	9563	C3
2351	E5	6333	E3	9564	C4
2352	F3	6334	F8	9565	C4
2355	E8	6500	B4	9566	B5
2500	B6	6550	B3	9567	C5
2501	B7	7250	E4	9568	C5
2502	B6	7253	A5	9569	C5
2550	G3	7254	A1	9570	C5
2554	B5	7256	C2	9571	C5
2555	E5	7257	C2	9572	B6
2561	B6	7258	C2	9573	B6
2563	A7	7330	E6	9574	A5
2564	A8	7335	E8	9575	A6
2567	A8	7500	D7	9576	A6
2568	A8	7501	C8	9577	A7
2569	B8	7502	B7	9578	A8
2570	A8	7503	C8	9579	A8
3255	D4	7504	B7	9584	D5
3256	D4	7551	A7		
3257	D4	7552	C5		
3258	D4	7553	A6		
3265	A1	9251	E3		
3270	C2	9252	F4		
3271	C1	9253	F2		
3272	C1	9254	A2		
3273	C1	9255	C1		
3275	B2	9256	A1		
3280	C3	9260	G2		
3330	F4	9261	D3		
3331	E6	9262	D1		
3332	E6	9263	D1		
3341	G8	9264	C1		
3342	F7	9265	C3		
3502	B6	9266	C2		
3521	E7	9267	D2		
3522	E7	9268	C3		
3523	D7	9269	D3		
3524	D6	9270	E4		
3529	D7	9271	C4		

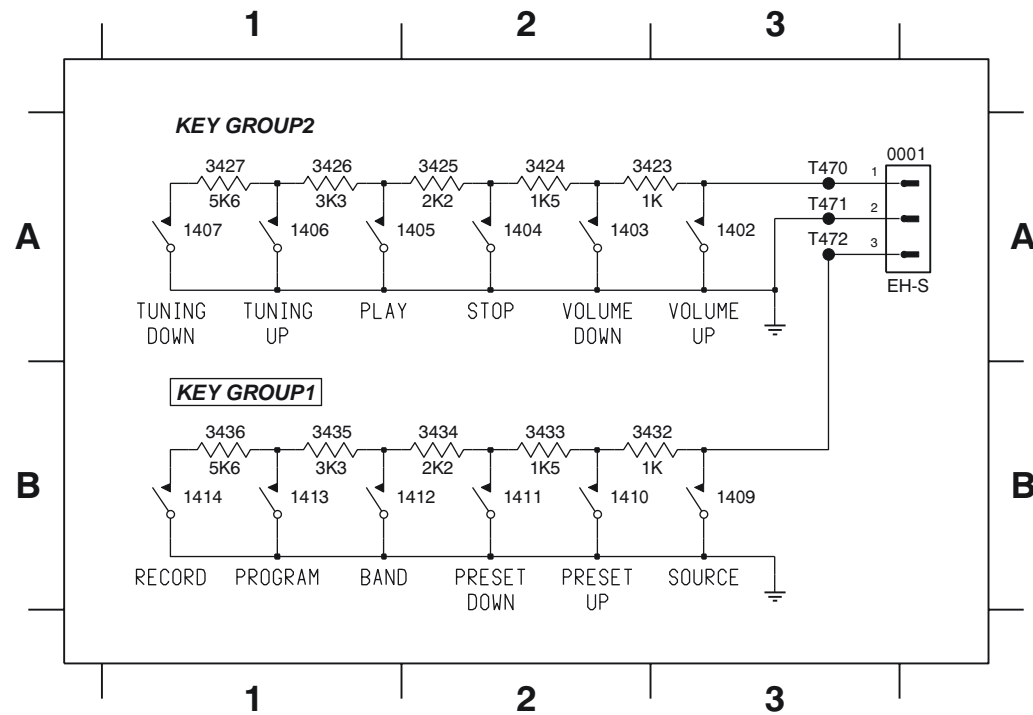
### LAYOUT DIAGRAM - COMBI BOARD



- |      |    |      |    |      |    |      |    |
|------|----|------|----|------|----|------|----|
| 2260 | B7 | 3276 | C7 | 3545 | E2 | 7505 | D2 |
| 2262 | D6 | 3277 | B7 | 3546 | E3 | 7506 | D3 |
| 2266 | E5 | 3278 | C5 | 3547 | D1 | 7507 | D2 |
| 2331 | E2 | 3279 | C6 | 3548 | E4 | 7508 | D3 |
| 2332 | E3 | 3281 | E5 | 3551 | A2 | 7509 | D2 |
| 2333 | E4 | 3282 | E5 | 3552 | A2 | 7510 | D3 |
| 2334 | E3 | 3283 | E5 | 3553 | A2 | 7511 | D1 |
| 2335 | E3 | 3284 | E5 | 3554 | A2 | 7512 | D4 |
| 2336 | E3 | 3333 | E3 | 3555 | A2 | 7513 | E1 |
| 2345 | G4 | 3334 | E3 | 3556 | B2 | 7514 | E4 |
| 2346 | G3 | 3335 | G4 | 3557 | A2 | 7550 | B6 |
| 2353 | D1 | 3336 | G2 | 3558 | B2 | 7555 | A1 |
| 2354 | D1 | 3337 | G5 | 3559 | A2 | 7556 | B1 |
| 2503 | D2 | 3338 | G3 | 3560 | B2 |      |    |
| 2505 | C1 | 3339 | G2 | 3563 | B4 |      |    |
| 2506 | B2 | 3340 | G2 | 3565 | B6 |      |    |
| 2507 | C2 | 3343 | F4 | 3566 | C6 |      |    |
| 2508 | B2 | 3344 | F2 | 3568 | B6 |      |    |
| 2509 | C1 | 3345 | F4 | 3572 | C5 |      |    |
| 2510 | C2 | 3346 | F2 | 3574 | A3 |      |    |
| 2511 | D2 | 3347 | E1 | 3575 | A2 |      |    |
| 2512 | D3 | 3348 | E1 | 3576 | A2 |      |    |
| 2513 | D2 | 3349 | D1 | 3577 | A2 |      |    |
| 2514 | D3 | 3350 | C1 | 3578 | A1 |      |    |
| 2515 | D2 | 3351 | F6 | 3579 | A2 |      |    |
| 2516 | D3 | 3352 | F6 | 3580 | B1 |      |    |
| 2517 | D2 | 3353 | D4 | 3581 | A1 |      |    |
| 2518 | D3 | 3354 | E4 | 3582 | A1 |      |    |
| 2519 | D2 | 3356 | E5 | 3583 | A1 |      |    |
| 2520 | D3 | 3358 | E4 | 3584 | A1 |      |    |
| 2521 | D2 | 3359 | E6 | 3585 | A1 |      |    |
| 2522 | D3 | 3360 | F6 | 3586 | A1 |      |    |
| 2523 | D2 | 3361 | F6 | 3587 | C1 |      |    |
| 2524 | D3 | 3362 | F1 | 3588 | B1 |      |    |
| 2525 | D2 | 3363 | E1 | 4250 | B4 |      |    |
| 2526 | D3 | 3364 | F1 | 4260 | C7 |      |    |
| 2527 | D2 | 3365 | F1 | 4261 | B7 |      |    |
| 2528 | D3 | 3500 | B3 | 4262 | B8 |      |    |
| 2529 | D1 | 3501 | B2 | 4263 | B7 |      |    |
| 2530 | D4 | 3503 | B5 | 4264 | A8 |      |    |
| 2531 | E2 | 3505 | C1 | 4265 | A4 |      |    |
| 2532 | E3 | 3506 | B1 | 4266 | B4 |      |    |
| 2533 | E2 | 3507 | C1 | 4333 | E4 |      |    |
| 2534 | E3 | 3508 | C1 | 4334 | E5 |      |    |
| 2535 | C1 | 3509 | C1 | 4335 | E5 |      |    |
| 2551 | G6 | 3510 | C2 | 4510 | B3 |      |    |
| 2552 | G6 | 3511 | D2 | 4512 | E3 |      |    |
| 2553 | G6 | 3512 | D3 | 4513 | E2 |      |    |
| 2557 | C5 | 3513 | D2 | 4560 | A4 |      |    |
| 2558 | D4 | 3514 | D3 | 4561 | A3 |      |    |
| 2559 | C4 | 3515 | D2 | 4562 | A3 |      |    |
| 2560 | C4 | 3516 | D3 | 4563 | A2 |      |    |
| 2565 | A2 | 3517 | D2 | 4564 | A3 |      |    |
| 2566 | A1 | 3518 | D3 | 4565 | B3 |      |    |
| 2571 | C5 | 3519 | D1 | 4566 | A2 |      |    |
| 2573 | A2 | 3520 | D4 | 4567 | B3 |      |    |
| 3250 | B8 | 3525 | D1 | 4568 | B3 |      |    |
| 3251 | A7 | 3526 | D4 | 4569 | A1 |      |    |
| 3252 | B7 | 3527 | C2 | 4570 | A1 |      |    |
| 3253 | B7 | 3528 | C3 | 4571 | C4 |      |    |
| 3254 | B7 | 3533 | D2 | 4572 | D4 |      |    |
| 3259 | D6 | 3534 | D3 | 4573 | D4 |      |    |
| 3260 | E5 | 3535 | E2 | 7251 | D5 |      |    |
| 3261 | E6 | 3536 | E3 | 7252 | D5 |      |    |
| 3262 | E5 | 3537 | D1 | 7255 | A8 |      |    |
| 3263 | C6 | 3538 | D4 | 7259 | B7 |      |    |
| 3264 | A4 | 3539 | E2 | 7260 | C5 |      |    |
| 3266 | A8 | 3540 | E3 | 7261 | C6 |      |    |
| 3267 | A8 | 3541 | D1 | 7331 | D1 |      |    |
| 3268 | A8 | 3542 | D4 | 7332 | D1 |      |    |
| 3269 | A8 | 3543 | D1 | 7333 | C1 |      |    |
| 3274 | C7 | 3544 | D4 | 7334 | E4 |      |    |

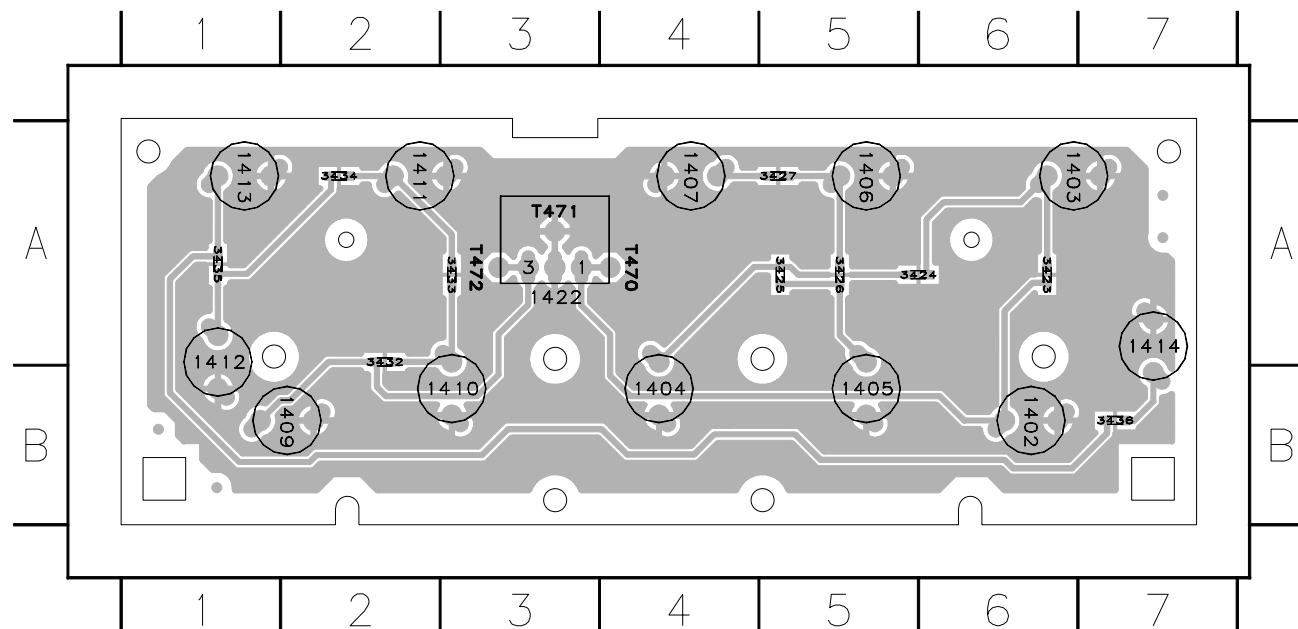
CIRCUIT DIAGRAM - SWITCH BOARD

1402 A3	1409 B3	1422 A3	3432 B3	T471 A3
1403 A2	1410 B2	3423 A3	3433 B2	T472 A3
1404 A2	1411 B2	3424 A2	3434 B2	
1405 A1	1412 B1	3425 A2	3435 B1	
1406 A1	1413 B1	3426 A1	3436 B1	
1407 A1	1414 B1	3427 A1	T470 A3	



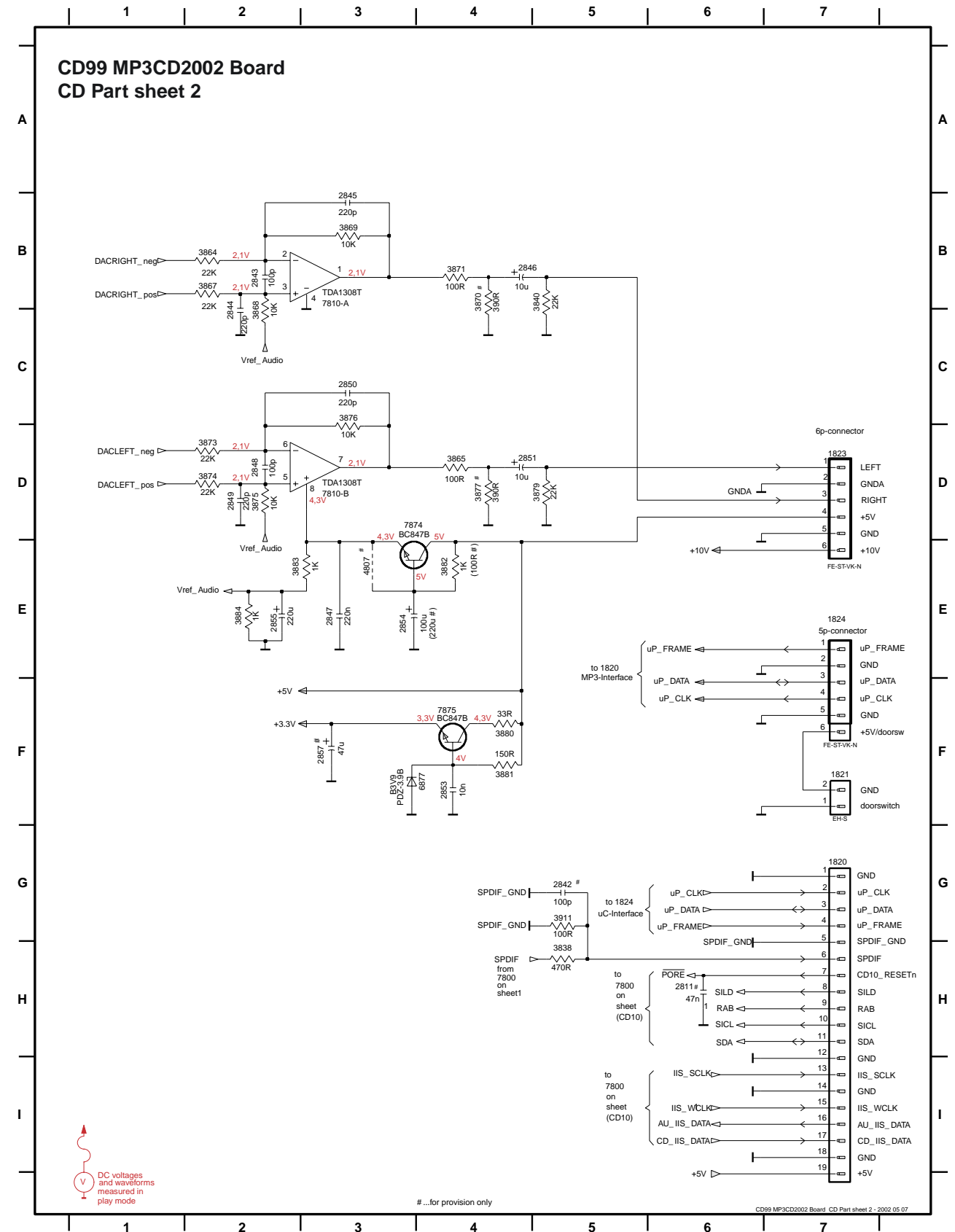
LAYOUT DIAGRAM - SWITCH BOARD

1402 B6	1405 B5	1409 B2	1412 A1	1422 A3	3425 A5	3432 A2	3435 A1
1403 A6	1406 A5	1410 B3	1413 A1	3423 A6	3426 A5	3433 A3	3436 B7
1404 B4	1407 A4	1411 A2	1414 A7	3424 A5	3427 A5	3434 A2	



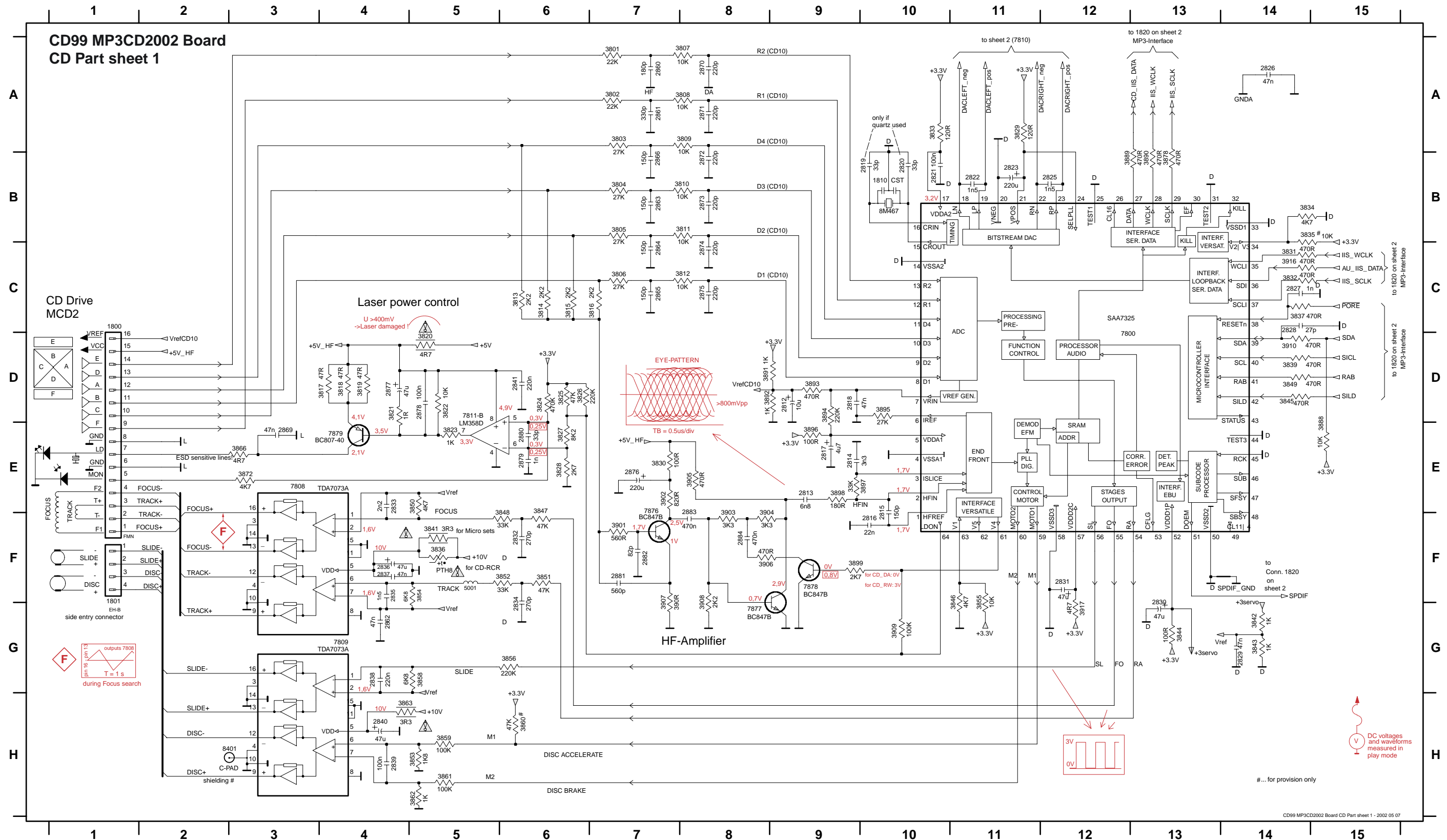
CIRCUIT DIAGRAM - CD99 MP3CD2002 BOARD (Part 2)

1820 D3	1824 E7	284 3B2	284 6B4	284 9D2	2853 F4	2857 F3	3864 B2	3868 B2	387 1B4
1821 F7	2811 E2	284 4B2	284 7E3	2850 C3	2854 E3	3838 E1	3865 D4	3869 B3	387 3C2
1823 D7	284 2D1	284 5B3	284 8D2	2851 D4	2855 E2	384 0B4	3867 B2	387 0B4	387 4D2



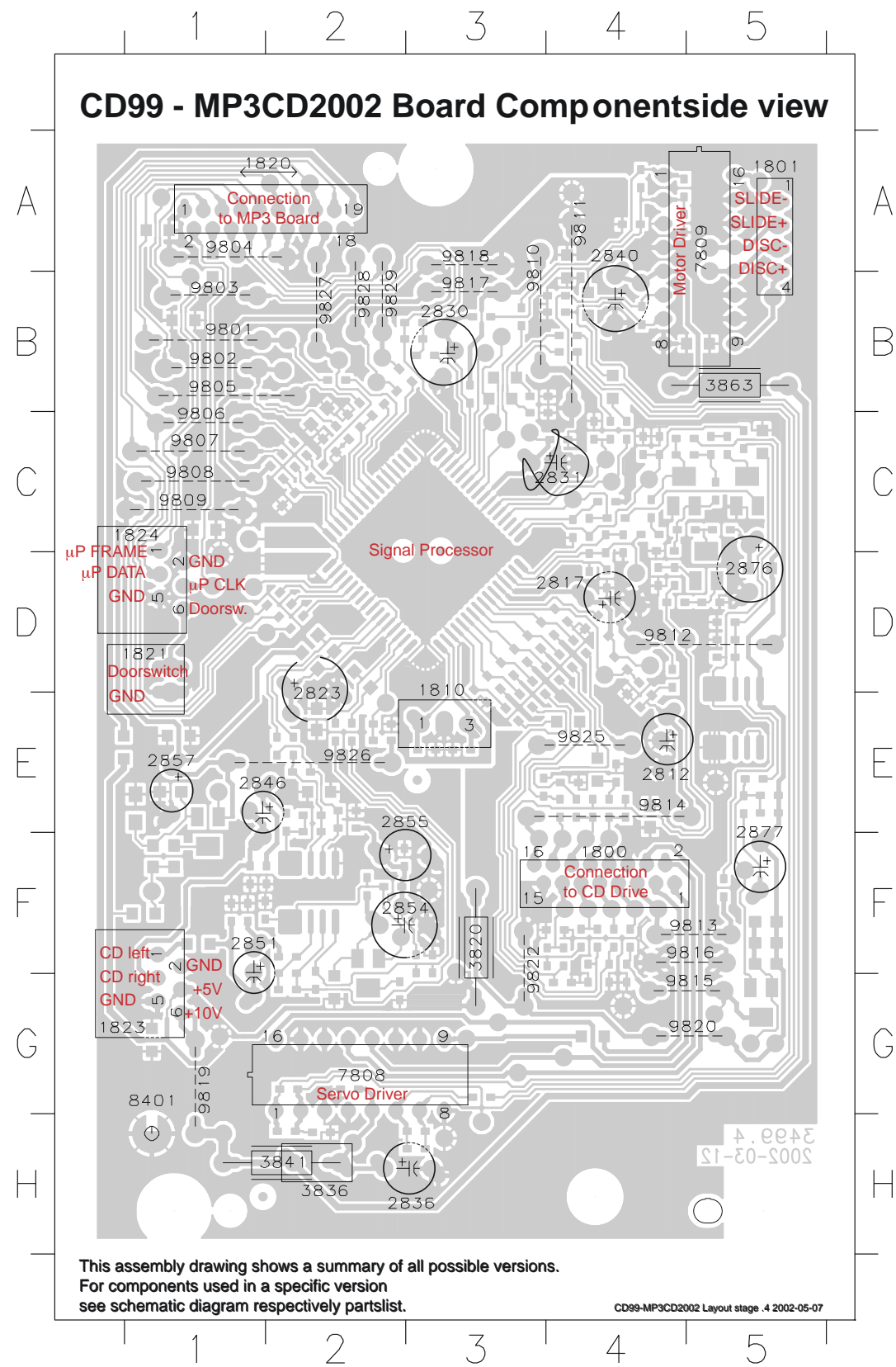
# CIRCUIT DIAGRAM - CD99 MP3CD2002 BOARD (PART 1)

1800 C1	2815 E10	2821 B10	2828 C14	2834 G6	2840 H4	2864 C7	2872 B8	2878 D5	2884 F8	3806 C7	3812 C8	3818 D4	3824 D6	3830 E7	3836 F5	3844 G13	3850 E5	3856 G6	3863 H4	3890 B13	3896 E9	3903 F8	3909 G10	7808 E3	7879 E4
1801 G1	2816 F10	2822 B11	2829 G14	2835 F4	2841 D6	2865 C7	2873 B8	2879 E6	2885 F8	3807 A8	3813 C6	3819 D4	3825 D6	3831 C14	3837 C14	3845 D14	3851 F5	3857 G5	3864 E3	3891 D8	3897 E10	3904 F8	3910 D14	7809 G4	8401 H2
1810 B10	2817 E9	2823 B11	2830 G13	2836 F4	2842 A7	2866 B7	2874 C8	2880 E6	2886 A7	3808 A8	3814 C6	3820 D5	3826 D6	3832 C14	3838 D14	3846 F11	3852 F6	3858 H5	3865 E8	3892 D8	3898 E9	3905 E8	3916 C14	7811 D5	
2812 D9	2818 D9	2825 B12	2831 F12	2837 F4	2861 A7	2869 E3	2875 C8	2881 F7	2887 A7	3809 A8	3815 C6	3821 D4	3827 E6	3833 A10	3841 F5	3847 E6	3853 F5	3860 H6	3878 B13	3883 D9	3889 F9	3906 F8	3917 G12	7876 F7	
2813 E9	2819 B10	2826 A14	2832 F6	2838 G4	2862 G4	2870 A8	2876 E7	2882 F7	2888 F7	3804 B7	3810 B8	3816 C7	3822 D5	3828 E6	3834 B14	3842 G14	3848 F6	3854 F5	3861 H5	3888 E15	3894 D9	3901 F7	3907 F7	5001 F5	7877 G8
2814 E9	2820 B10	2827 C14	2833 E4	2839 H4	2863 B7	2871 A8	2877 D4	2883 F8	2889 B7	3805 B7	3811 B8	3817 D3	3823 E5	3829 A11	3835 B14	3843 G14	3849 D14	3855 F11	3862 H5	3889 B12	3895 D10	3902 E7	3908 F8	7800 C12	7878 F9





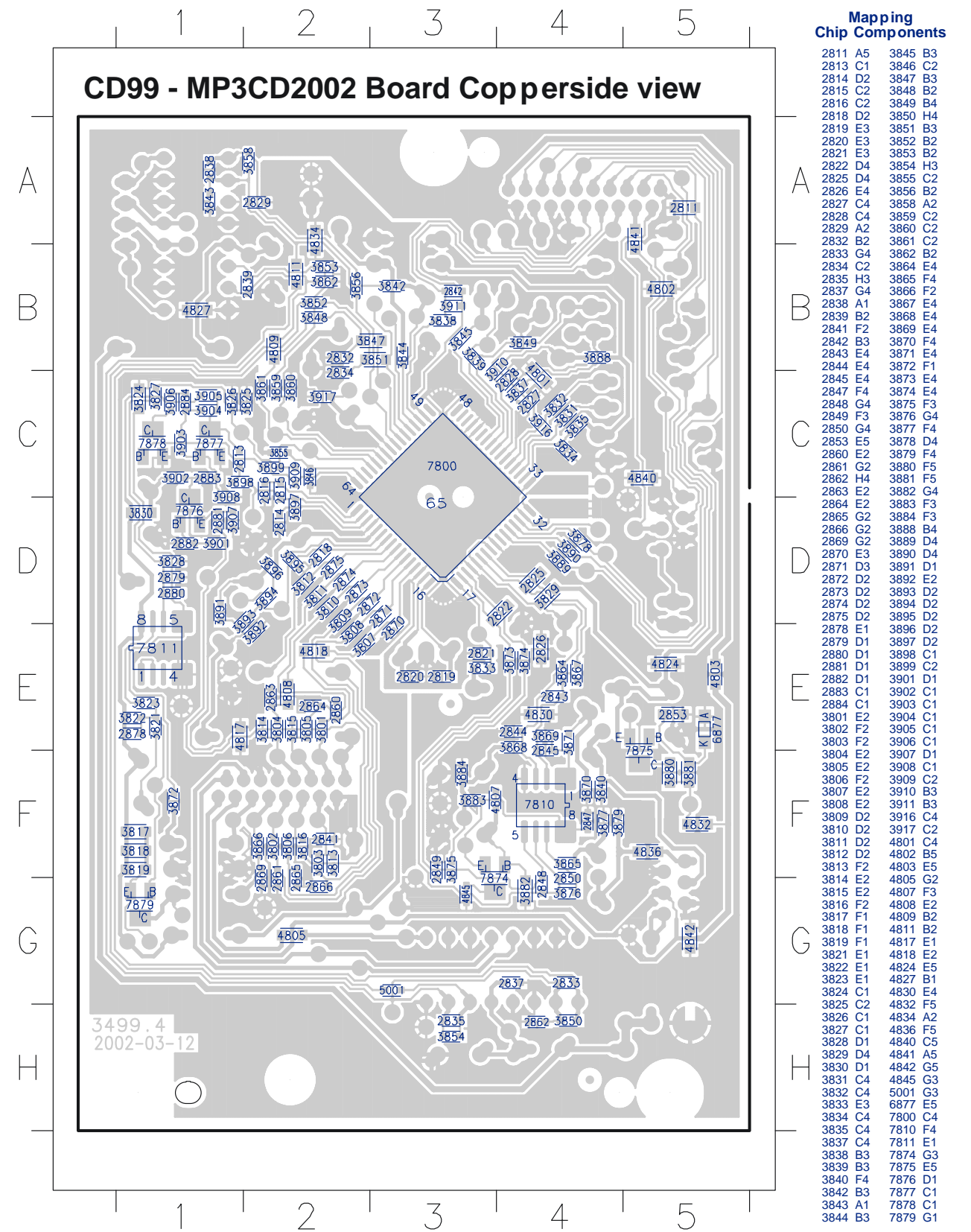
LAYOUT DIAGRAM - CD99 MP3CD2002 BOARD



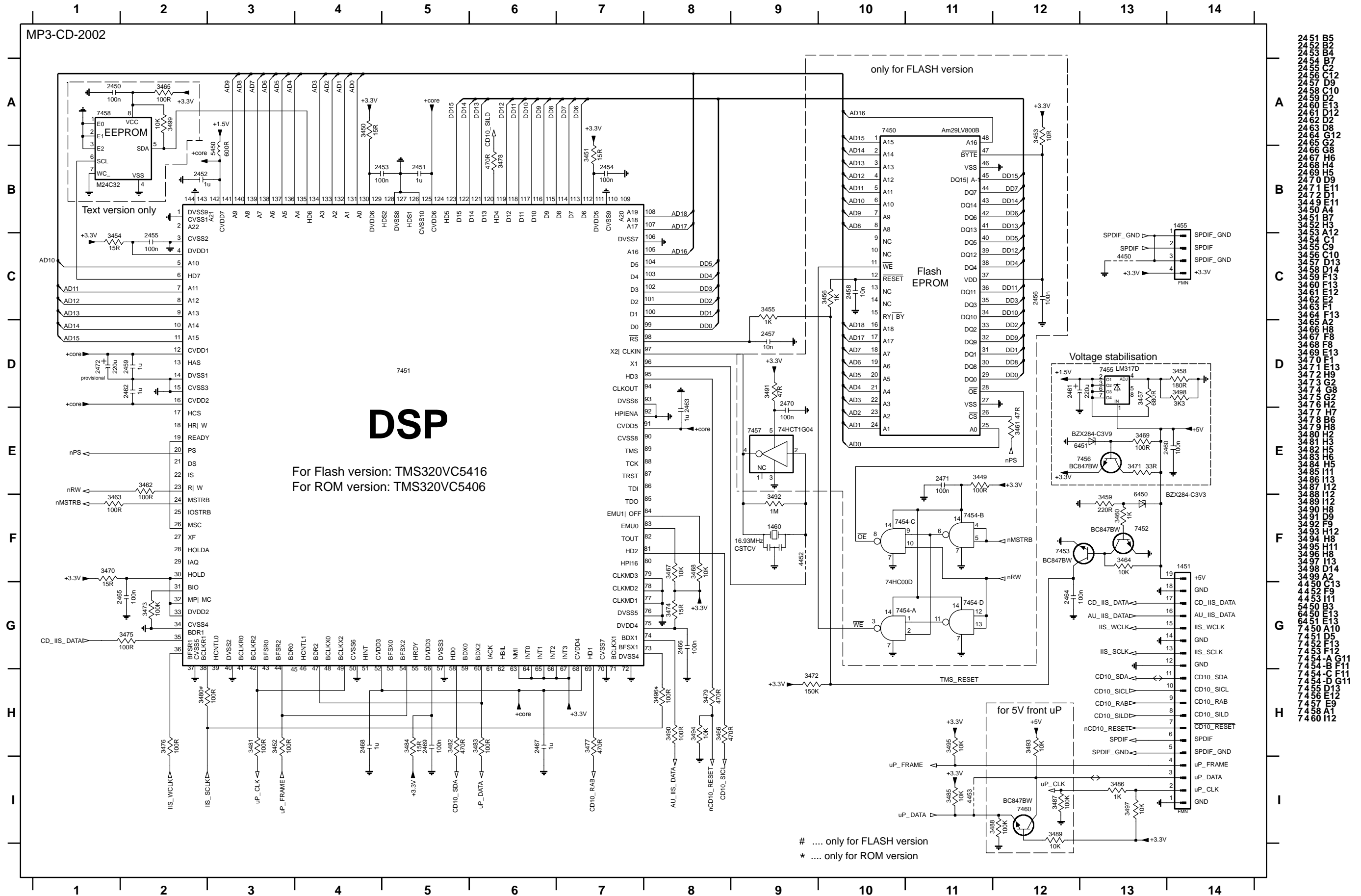
Mapping Hole Mounted Components

1800 F4	1823 G1	2830 B3	2851 F2	2877 F5	7808 G4	9803 B1	9808 C1	9813 F5	9818 A3	9826 E2
1801 A5	1824 D1	2831 C4	2854 F3	2820 F3	7809 A5	9804 A2	9809 C4	9814 E4	9819 G1	9827 B2
1810 E3	2812 E5	2836 H3	2855 E3	3836 H2	8401 H1	9805 B2	9810 B4	9815 G5	9820 G5	9828 B2
1820 A2	2817 D4	2840 A4	2857 E1	3841 H2	9801 B1	9806 C1	9811 B4	9816 F5	9822 F3	9829 B3
1821 D1	2823 D2	2846 E2	2876 C5	3863 B5	9802 B1	9807 C1	9812 D5	9817 B3	9825 E4	

LAYOUT DIAGRAM - CD99 MP3CD2002 BOARD



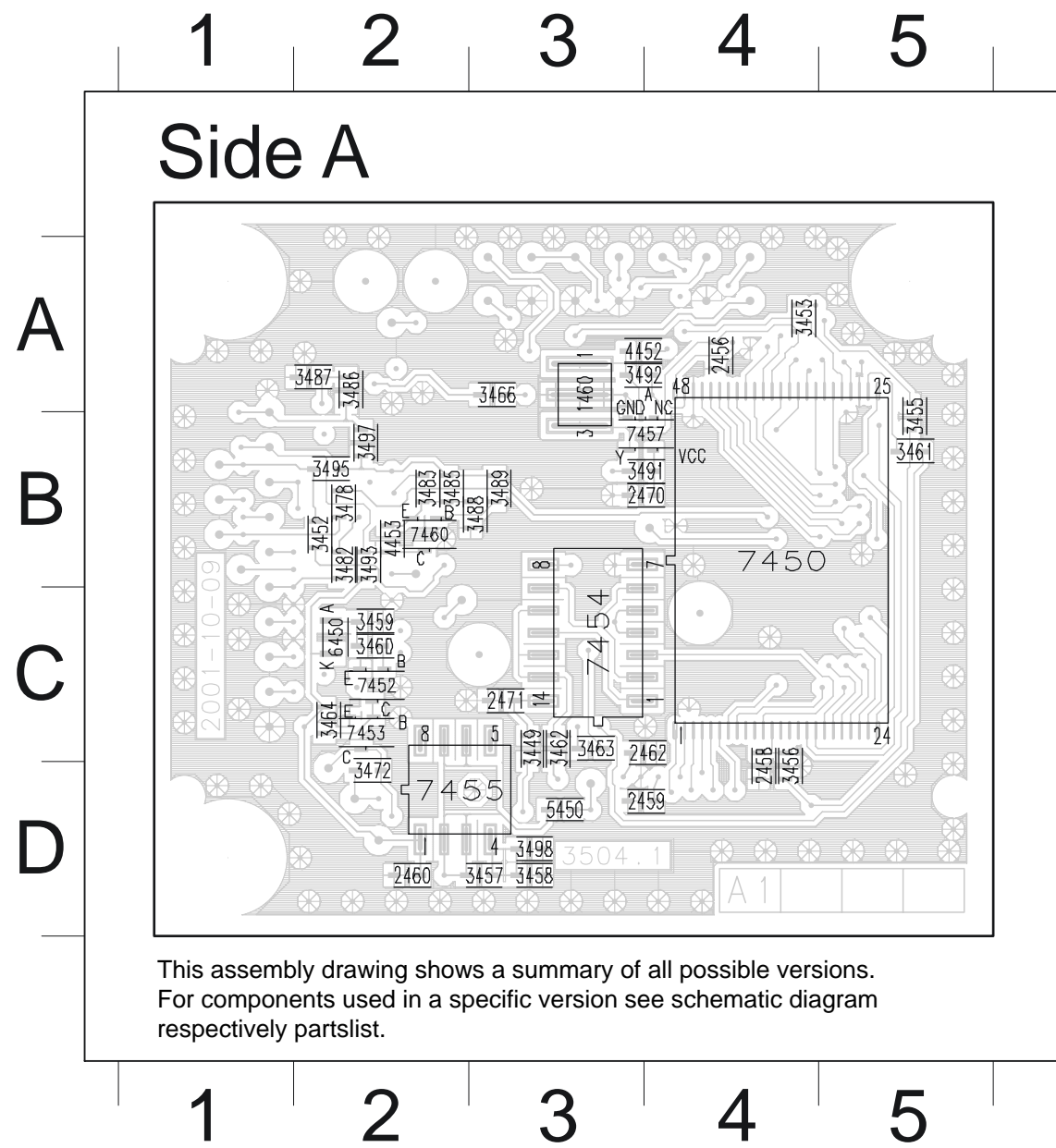
CIRCUIT DIAGRAM - MP3CD2002 BOARD



- 2451 B5
- 2452 B2
- 2453 B4
- 2454 B7
- 2455 C2
- 2456 C12
- 2457 D9
- 2458 C10
- 2459 D2
- 2460 E13
- 2461 D12
- 2462 D8
- 2463 D8
- 2464 G12
- 2465 G2
- 2466 G8
- 2467 H6
- 2468 H4
- 2469 H5
- 2470 D9
- 2471 E11
- 2472 E11
- 2473 E11
- 2474 E11
- 2475 E11
- 2476 E11
- 2477 E11
- 2478 E11
- 2479 E11
- 2480 H2
- 2481 H3
- 2482 H5
- 2483 H6
- 2484 H5
- 2485 I11
- 2486 I13
- 2487 I12
- 2488 I12
- 2489 I12
- 2490 H8
- 2491 D9
- 2492 F9
- 2493 H12
- 2494 H8
- 2495 H11
- 2496 H8
- 2497 I13
- 2498 D14
- 2499 A2
- 4450 C13
- 4452 F9
- 4453 I11
- 5450 B3
- 6450 E13
- 6451 E13
- 7450 A10
- 7451 D5
- 7452 I13
- 7453 F12
- 7454-A G11
- 7454-B F11
- 7454-C F11
- 7454-D G11
- 7455 D13
- 7456 E12
- 7457 E9
- 7458 E9
- 7460 I12

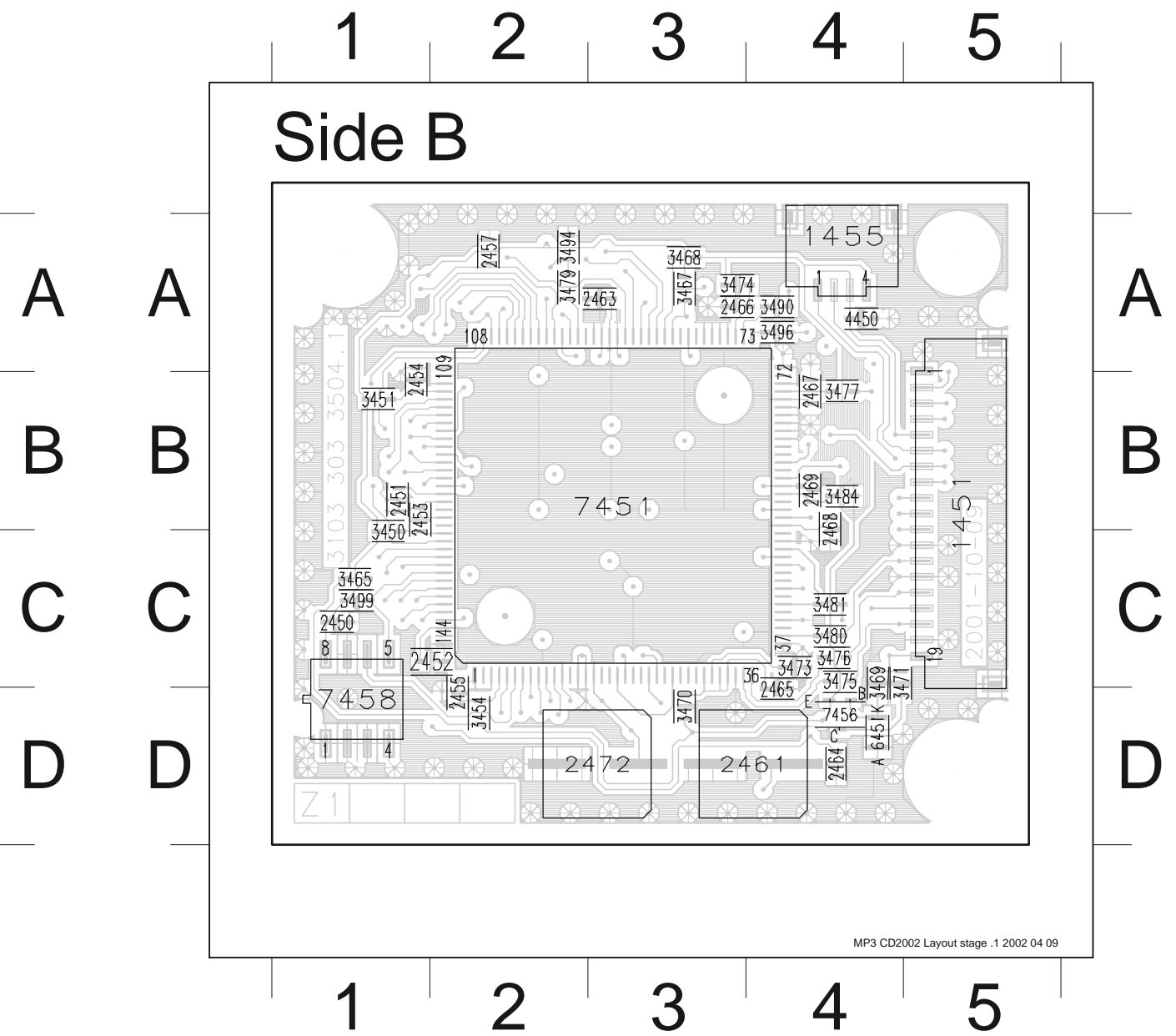
LAYOUT DIAGRAM - MP3CD2002 BOARD

1460 A3	3449 C3	3460 C2	3482 B2	3492 A3	6450 C2
2456 A4	3452 B2	3461 B5	3483 B2	3493 B2	7450 B4
2458 D4	3453 A4	3462 C3	3485 B2	3495 B2	7452 C2
2459 D4	3455 B5	3463 C3	3486 A2	3497 B2	7453 C2
2460 D2	3456 D4	3464 C2	3487 A2	3498 D3	7454 C3
2462 C4	3457 D3	3466 A3	3488 B3	4452 A3	7455 D2
2470 B4	3458 D3	3472 D2	3489 B3	4453 B2	7457 B4
2471 C3	3459 C2	3478 B2	3491 B4	5450 D3	7460 B2

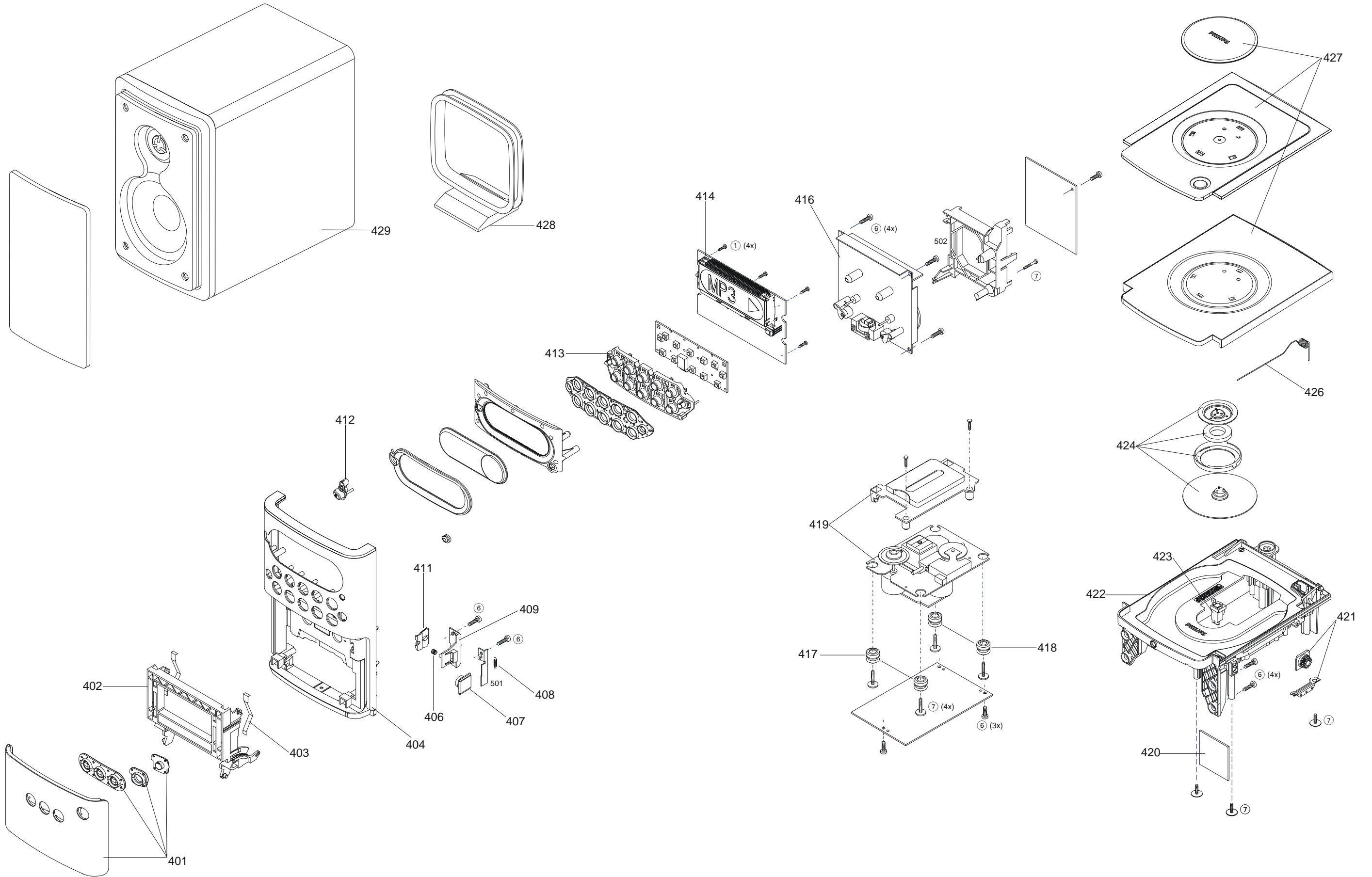


LAYOUT DIAGRAM - MP3CD2002 BOARD

1451 B5	2457 A2	2469 B4	3469 C4	3479 A2	4450 A4
1455 A4	2461 D4	2472 D3	3470 D3	3480 C4	6451 D4
2450 C1	2463 A3	3450 C1	3471 C4	3481 C4	7451 B3
2451 B1	2464 D4	3451 B1	3473 C4	3484 B4	7456 D4
2452 C2	2465 D4	3454 D2	3474 A3	3490 A4	7458 D1
2453 B1	2466 A3	3465 C1	3475 C4	3494 A2	
2454 B1	2467 B4	3467 A3	3476 C4	3496 A4	
2455 D2	2468 B4	3468 A3	3477 B4	3499 C1	

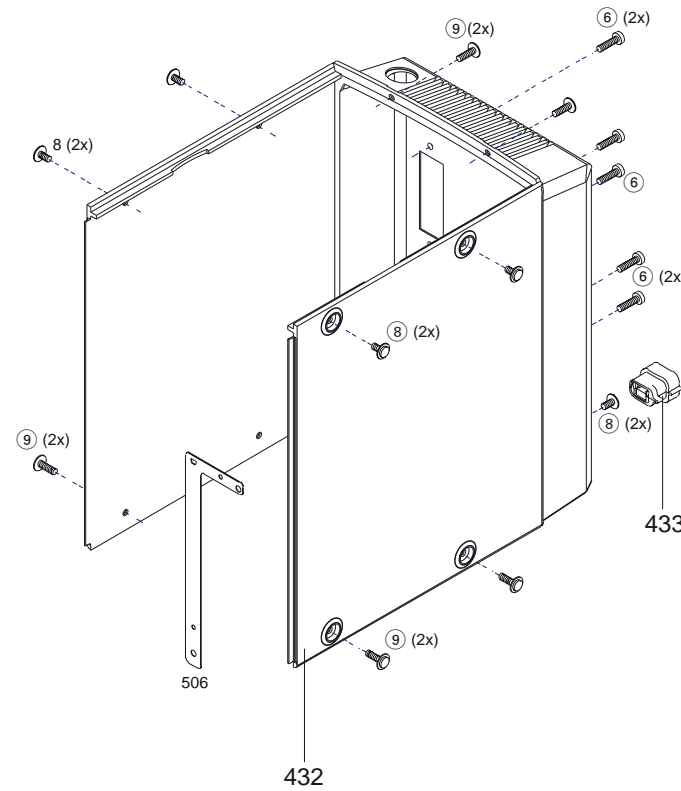
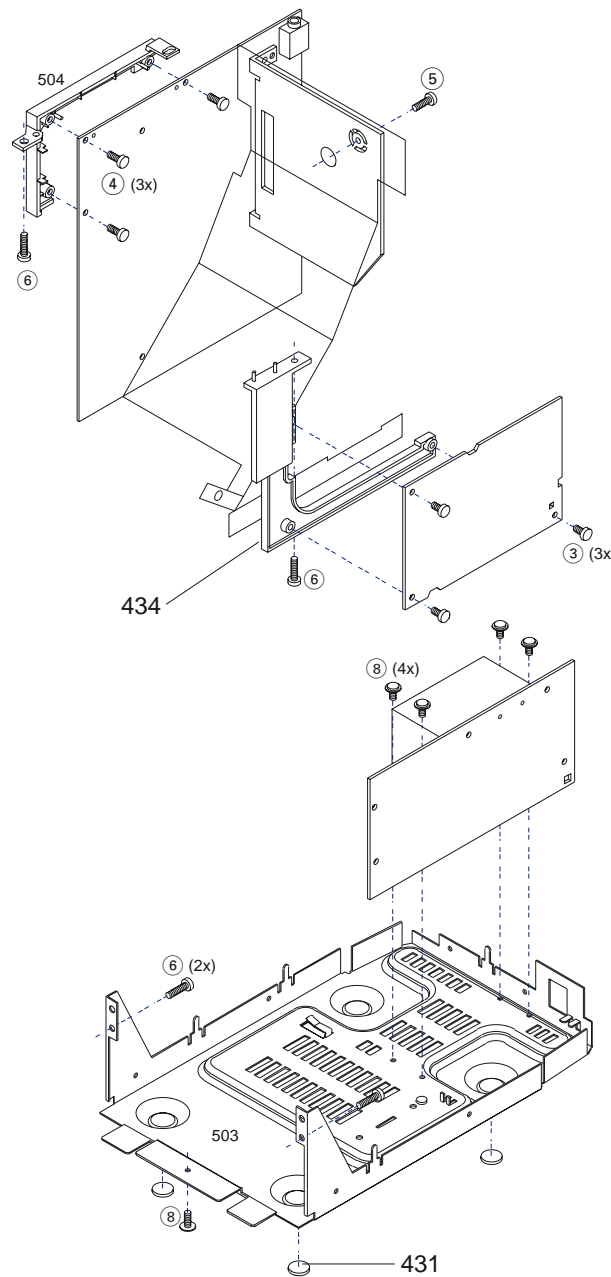


EXPLODED VIEW DIAGRAM



SCREW LIST

- ①. T2 x 10
- ②. T2.5 x 10
- ③. T3 x 6
- ④. T3 x 8
- ⑤. T3 x10
- ⑥. T3 x12
- ⑦. P/W C2.5 x 10
- ⑧. P/W T3 x 6
- ⑨. P/W T3 x 10



MECHANICAL PARTSLIST

401	3140 117 63060	CASSETTE-DOOR-ASSY
402	3140 114 44390	TECHNICAL DOOR
403	4822 492 42787	SPRING CASSETTE
404	3140 117 63200	CABINET-FRONT-ASSY /21/21M/30
404	3140 117 63210	CABINET-FRONT-ASSY/RDS /22
404	3140 117 63050	CABINET-FRONT-ASSY /37
406	4822 492 11344	SPRING COMPRESSION
407	4822 529 10322	DAMPER ASSY
408	4822 492 11345	SPRING TENSION
409	4822 402 11246	BRACKET RIGHT
411	4822 402 10621	PUSH-CATCH
412	3140 114 43900	BUTTON SET POWER
413	3140 114 43910	BUTTON SET CONTROL
414	3140 114 44090	LCD BRACKET
416	3139 118 79220	TAPE DECK CFL 4217
417	4822 529 10387	DAMPER - RUBBER (40 DEG)
418	4822 529 10386	DAMPER - RUBBER (30 DEG)
419	3103 309 05380	CD MCD2 ASSY
420	3103 308 66790	PBAS 8 MP3CD2002 ROM TXT
421	4822 529 10322	DAMPER ASSY
422	3140 117 63370	CD-TRAY-ASSY /21/21M/22/30
422	3140 117 63360	CD-TRAY-ASSY /37
423	4822 276 13963	CD DOOR SWITCH
424	3140 117 59800	CLAMPER RING ASSY CDM-DA11
426	3140 111 01240	SPRING-CD
427	3140 117 63070	CD-DOOR-ASSY
431	3140 104 06370	RUBBER STAND
432	3140 114 43890	REAR-CABINET /21/21M/22/30
432	3140 114 44590	REAR-CABINET /37
433	3140 113 21880	MAINS CORD RELIEF /21/21M/22/30
433	3140 113 22100	MAINS CORD RELIEF /37
434	3140 114 29310	TUNER BRACKET

ACCESSORIES

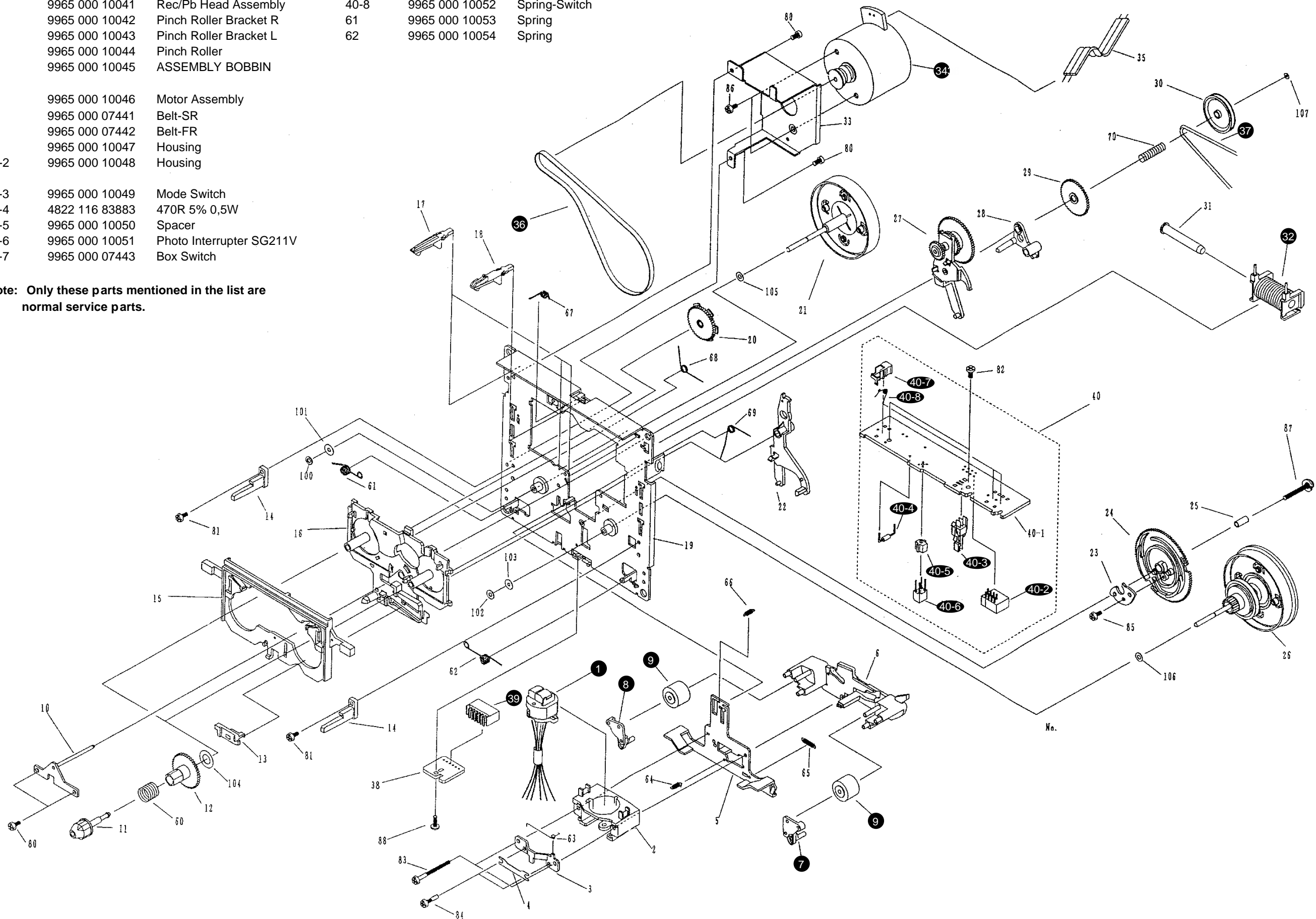
429	3140 118 51090	SPK-ASSY /21/21M/22/30
429	3141 118 85630	SPK-ASSY/37
	3140 118 51100	REMOTE CONTROL
	4822 303 50063	FM AERIAL
428	2422 549 45067	ANT AM LOOP

**Note:** Only these parts mentioned in the list are normal service parts.

**EXPLODED VIEW DIAGRAM - ETF8 TAPE DECK**

- |      |                |                          |      |                |               |
|------|----------------|--------------------------|------|----------------|---------------|
| 1    | 9965 000 10041 | Rec/Pb Head Assembly     | 40-8 | 9965 000 10052 | Spring-Switch |
| 7    | 9965 000 10042 | Pinch Roller Bracket R   | 61   | 9965 000 10053 | Spring        |
| 8    | 9965 000 10043 | Pinch Roller Bracket L   | 62   | 9965 000 10054 | Spring        |
| 9    | 9965 000 10044 | Pinch Roller             |      |                |               |
| 32   | 9965 000 10045 | ASSEMBLY BOBBIN          |      |                |               |
|      |                |                          |      |                |               |
| 34   | 9965 000 10046 | Motor Assembly           |      |                |               |
| 36   | 9965 000 07441 | Belt-SR                  |      |                |               |
| 37   | 9965 000 07442 | Belt-FR                  |      |                |               |
| 39   | 9965 000 10047 | Housing                  |      |                |               |
| 40-2 | 9965 000 10048 | Housing                  |      |                |               |
|      |                |                          |      |                |               |
| 40-3 | 9965 000 10049 | Mode Switch              |      |                |               |
| 40-4 | 4822 116 83883 | 470R 5% 0,5W             |      |                |               |
| 40-5 | 9965 000 10050 | Spacer                   |      |                |               |
| 40-6 | 9965 000 10051 | Photo Interrupter SG211V |      |                |               |
| 40-7 | 9965 000 07443 | Box Switch               |      |                |               |

**Note:** Only these parts mentioned in the list are normal service parts.



**ELECTRICAL PARTSLIST - ETF8 SD BOARD****- MISCELLANEOUS -**

1701	4822 267 10953	FFC Connector 7P
1706	4822 267 10953	FFC Connector 7P
1710	4822 267 10958	FFC Connector 5P
1760	4822 265 11535	FFC Socket 8P

**- CAPACITORS -**

2621	5322 126 11578	1nF 10% X7R 50V
2622	4822 126 13881	470pF 5% 50V
2623	4822 126 13881	470pF 5% 50V
2625	2238 586 59812	100nF +80-20% Y5V 50V
2701	2020 552 94427	100pF 5% NP0 50V

2702	2020 552 94427	100pF 5% NP0 50V
2703	2020 552 94427	100pF 5% NP0 50V
2704	2020 552 94427	100pF 5% NP0 50V
2709	5322 126 11578	1nF 10% X7R 50V
2710	5322 126 11578	1nF 10% X7R 50V

2711	2020 552 94427	100pF 5% NP0 50V
2712	2020 552 94427	100pF 5% NP0 50V
2713	5322 121 42386	100nF 5% 63V
2714	5322 121 42386	100nF 5% 63V
2715	4822 124 41584	100µF 20% 10V

2716	4822 124 41584	100µF 20% 10V
2721	3198 017 41050	1µF Y5V 10V
2722	3198 017 41050	1µF Y5V 10V
2723	4822 126 14238	2,2nF X7R 50V
2724	4822 126 14238	2,2nF X7R 50V

2725	4822 126 13883	220pF 5% 50V
2727	4822 126 14238	2,2nF X7R 50V
2728	4822 126 14238	2,2nF X7R 50V
2729	4822 126 14494	22nF 10% X7R 25V
2730	4822 126 14494	22nF 10% X7R 25V

2731	5322 126 11578	1nF 10% X7R 50V
2732	3198 017 41050	1µF Y5V 10V
2743	4822 126 14494	22nF 10% X7R 25V
2747	4822 126 14549	33nF X7R 16V
2761	4822 124 40196	220µF 20% 16V

2768	4822 124 40756	1µF 20% 100V
2769	4822 126 14238	2,2nF X7R 50V
2770	4822 126 14238	2,2nF X7R 50V
2780	4822 124 81151	22µF 50V
2781	5322 126 11583	10nF 10% X7R 50V

2768	4822 124 40756	1µF 20% 100V
2769	4822 126 14238	2,2nF X7R 50V
2770	4822 126 14238	2,2nF X7R 50V
2780	4822 124 81151	22µF 50V
2781	5322 126 11583	10nF 10% X7R 50V

**- CAPACITORS -**

2788	4822 126 14494	22nF 10% X7R 25V
2789	4822 126 14549	33nF 16V X7R
2790	4822 126 14247	1,5nF X7R 50V
2791	4822 126 14247	1,5nF X7R 50V
2793	4822 126 13883	220pF 5% 50V
2794	4822 126 13883	220pF 5% 50V
2796	4822 124 40433	47µF 20% 25V
2797	4822 124 81151	22µF 50V
2798	4822 124 21732	10µF 20% 25V
2799	2238 586 59812	100nF +80-20% Y5V 50V

**- RESISTORS -**

3607	4822 051 30222	2,2K 5% 0,062W
3608	4822 051 30273	27K 5% 0,062W
3609	4822 051 30222	2,2K 5% 0,062W
3610	4822 051 20124	120K 5% 0,1W
3611	4822 051 30222	2,2K 5% 0,062W

3612	4822 051 30563	56K 5% 0,062W
3614	4822 051 30273	27K 5% 0,062W
3624	4822 117 13632	100K 1% 0,62W
3626	4822 051 30102	1K 5% 0,062W
3628	4822 117 13632	100K 1% 0,62W

3630	4822 051 30471	470R 5% 0,062W
3678	4822 117 12925	47K 1% 0,063W
3680	4822 117 12925	47K 1% 0,063W
3686	4822 117 13632	100K 1% 0,62W
3709	4822 051 30339	33R 5% 0,062W

3710	4822 051 30339	33R 5% 0,062W
3711	4822 051 30101	100R 5% 0,062W
3712	4822 051 30101	100R 5% 0,062W
3723	4822 051 30223	22K 5% 0,062W
3724	4822 051 30223	22K 5% 0,062W

3733	4822 051 30273	27K 5% 0,062W
3734	4822 051 30273	27K 5% 0,062W
3735	4822 051 30223	22K 5% 0,062W
3736	4822 051 30223	22K 5% 0,062W
3737	4822 051 30102	1K 5% 0,062W

3738	4822 051 30102	1K 5% 0,062W
3739	4822 117 12925	47K 1% 0,063W
3740	4822 117 12925	47K 1% 0,063W
3743	4822 051 30563	56K 5% 0,062W
3744	4822 051 30563	56K 5% 0,062W

3745	4822 117 11817	1,2K 1% 1/16W
3746	4822 117 11817	1,2K 1% 1/16W
3749	4822 051 30121	120R 5% 0,062W
3750	4822 051 30121	120R 5% 0,062W
3762	4822 117 12968	820R 5% 0,62W

**ELECTRICAL PARTSLIST - ETF8 SD BOARD****- RESISTORS -**

3764	4822 051 30181	180R 5% 0,062W
3768	4822 051 30103	10K 5% 0,062W
3769	4822 051 30183	18K 5% 0,062W
3770	4822 051 30152	1,5K 5% 0,062W
3771	4822 117 11817	1,2K 1% 1/16W

3772	4822 051 30123	12K 5% 0,062W
3774	4822 051 30183	18K 5% 0,062W
3775	4822 117 13608	4,7R 5% 0,0016W
3776	4822 051 30682	6,8K 5% 0,062W
3777	4822 051 30151	150R 5% 0,062W

3778	4822 052 10688	6,8R 5% 0,33W
3779	4822 051 30334	330K 5% 0,062W
3780	4822 051 30105	1M 5% 0,062W
3781	4822 051 30475	4,7M 5% 0,062W
3786	4822 051 30223	22K 5% 0,062W

3789	4822 117 12925	47K 1% 0,063W
3790	4822 051 30223	22K 5% 0,062W
3791	4822 051 30273	27K 5% 0,062W
3796	4822 051 30475	4,7M 5% 0,062W
3797	4822 051 30563	56K 5% 0,062W

3800	4822 051 30223	22K 5% 0,062W
4701	4822 051 30008	OR J umper
4702	4822 051 30008	OR J umper
4705	4822 051 30008	OR J umper
4707	4822 051 30008	OR J umper

4708	4822 051 30008	OR J umper
4709	4822 051 30008	OR J umper
4710	4822 051 30008	OR J umper
4711	4822 051 30008	OR J umper
4712	4822 051 30008	OR J umper

4718	4822 051 30008	OR J umper
4719	4822 051 30008	OR J umper
4720	4822 051 30008	OR J umper
4721	4822 051 30008	OR J umper
4723	4822 051 30008	OR J umper

4725	4822 051 30008	OR J umper
4726	4822 051 30008	OR J umper
4727	4822 051 30008	OR J umper
4729	4822 051 30008	OR J umper
4730	4822 051 30008	OR J umper

4731	4822 051 30008	OR J umper
4732	4822 051 30008	OR J umper
4733	4822 051 30008	OR J umper
4734	4822 051 30008	OR J umper
4735	4822 051 30008	OR J umper

4736	4822 051 30008	OR J umper
4737	4822 051 30008	OR J umper
4738	4822 051 30008	OR J umper
4739	4822 051 30008	OR J umper
4741	4822 051 30008	OR J umper

**- RESISTORS -**

4746	4822 051 30008	OR J umper
4747	4822 051 30008	OR J umper

**- COILS & FILTERS -**

5701	4822 157 62552	2,2 H 5%
5703	4822 156 20946	OSC 100KHz

**- DIODES -**

6612	4822 130 31878	1N4003G
6770	4822 130 30621	1N4148
6771	4822 130 30621	1N4148
6772	4822 130 30621	1N4148
6773	4822 130 30621	1N4148
6774	4822 130 30621	1N4148
6776	4822 130 30621	1N4148
6777	4822 130 34382	BZX79-B8V2
6778	4822 130 30621	1N4148

**- IC & TRANSISTORS -**

7610	5322 209 11306	HEF4094BT
7612	4822 130 11201	PMBT2907
7614	4822 130 11201	PMBT2907
7618	4822 130 60511	BC847B
7620	4822 130 60511	BC847B
7624	4822 130 60511	BC847B
7720	9322 167 09668	AN17150ATA
7780	4822 130 60511	BC847B
7781	4822 130 42804	BC817-25
7782	4822 130 44568	BC557B
7783	4822 130 60511	BC847B
7784	4822 130 60373	BC856B
7786	4822 130 63494	J 111
7788	4822 130 60511	BC847B
7789	4822 130 60511	BC847B
7790	4822 130 60511	BC847B

**Note: Only these parts mentioned in the list are normal service parts.**



## ELECTRICAL PARTSLIST - CD99 MP3 2002 BOARD

**- MISCELLANEOUS-**

1601	△	2422 086 10785	FUSE 3,15A 250V
1602	△	2422 086 10783	FUSE 2A 250V
1800		4822 267 11028	FFC Connector 16P
1823		4822 265 11207	FFC Socket 6P
1824		4822 265 11207	FFC Socket 6P

8001		3103 308 92680	FFC Foil 19P
8002		3103 308 93040	FFC Foil 16P

**- CAPACITORS -**

2812		4822 124 40248	10 $\mu$ F 20% 63V
2813		5322 126 11582	6,8nF 10% X7R 63V
2814		5322 126 11579	3,3nF10% X7R 63V
2815		4822 122 33753	150pF 5% NP0 50V
2816		4822 126 14494	22nF 10% X7R 25V
2817		4822 124 40769	4,7 $\mu$ F 20% 100V
2818		3198 017 34730	47nF X7R 16V
2821		2238 586 59812	100nF +80-20% Y5V 50V
2822		4822 126 13344	1,5nF 5% 63V
2823		4822 124 42383	220 $\mu$ F 20% 4V
2825		4822 126 13344	1,5nF 5% 63V
2826		3198 017 34730	47nF X7R 16V
2827		5322 126 11578	1nF 10% X7R 50V
2828		4822 126 11669	27pF NP0 50V
2829		3198 017 34730	47nF X7R 16V

2830		4822 124 81286	47 $\mu$ F 20% 16V
2831		4822 124 81286	47 $\mu$ F 20% 16V
2832		4822 126 14506	270pF 5% 50V NP0
2833		4822 126 14238	2,2nF X7R 50V
2834		4822 126 14506	270pF 5% 50V NP0
2835		4822 126 14247	1,5nF X7R 50V
2836		4822 124 40433	47 $\mu$ F 20% 25V
2837		3198 017 34730	47nF X7R 16V
2838		4822 126 13879	220nF +80-20% 16V
2839		2238 586 59812	100nF +80-20% Y5V 50V

2840		4822 124 81286	47 $\mu$ F 20% 16V
2841		4822 126 13879	220nF +80-20% 16V
2843		2020 552 94427	100pF 5% NP0 50V
2844		4822 126 13883	220pF 5% 50V
2845		4822 126 13883	220pF 5% 50V
2846		4822 124 21732	10 $\mu$ F 20% 25V
2847		4822 126 13879	220nF +80-20% 16V
2848		2020 552 94427	100pF 5% NP0 50V
2849		4822 126 13883	220pF 5% 50V
2850		4822 126 13883	220pF 5% 50V

2851		4822 124 11947	10 $\mu$ F 20% 16V
2853		5322 126 11583	10nF 10% X7R 50V
2854		4822 124 23052	100 $\mu$ F 20% 16V
2855		4822 124 11912	220 $\mu$ F 20% 6,3V
2860		4822 126 14508	180pF 5% 50V NP0

**- CAPACITORS -**

2861		4822 126 14241	330pF NP0 50V
2862		3198 017 34730	47nF X7R 16V
2863		4822 122 33753	150pF 5% NP0 50V
2864		4822 122 33753	150pF 5% NP0 50V
2865		4822 122 33753	150pF 5% NP0 50V

2866		4822 122 33753	150pF 5% NP0 50V
2869		3198 017 34730	47nF X7R 16V
2870		4822 126 13883	220pF 5% 50V
2871		4822 126 13883	220pF 5% 50V
2872		4822 126 13883	220pF 5% 50V

2873		4822 126 13883	220pF 5% 50V
2874		4822 126 13883	220pF 5% 50V
2875		4822 126 13883	220pF 5% 50V
2876		4822 124 40196	220 $\mu$ F 20% 16V
2877		4822 124 40433	47 $\mu$ F 20% 25V
2878		2238 586 59812	100nF +80-20% Y5V 50V
2879		5322 126 11578	1nF 10% X7R 50V
2880		2222 867 15339	33pF 5% NP0 50V
2881		4822 126 14249	560pF 10% X7R 50V
2882		4822 126 14226	82pF 5% NP0 50V

2883		3198 017 44740	470nF Y5V 10V
2884		3198 017 44740	470nF Y5V 10V

**- RESISTORS**

3801		4822 051 30223	22K 5% 0,062W
3802		4822 051 30223	22K 5% 0,062W
3803		4822 051 30273	27K 5% 0,062W
3804		4822 051 30273	27K 5% 0,062W
3805		4822 051 30273	27K 5% 0,062W
3806		4822 051 30273	27K 5% 0,062W
3807		4822 051 30103	10K 5% 0,062W
3808		4822 051 30103	10K 5% 0,062W
3809		4822 051 30103	10K 5% 0,062W
3810		4822 051 30103	10K 5% 0,062W

3811		4822 051 30103	10K 5% 0,062W
3812		4822 051 30103	10K 5% 0,062W
3813		4822 051 30222	2,2K 5% 0,062W
3814		4822 051 30222	2,2K 5% 0,062W
3815		4822 051 30222	2,2K 5% 0,062W
3816		4822 051 30222	2,2K 5% 0,062W
3817		4822 051 30479	47R 5% 0,062W
3818		4822 051 30479	47R 5% 0,062W
3819		4822 051 30479	47R 5% 0,062W
3820		4822 052 10478	4R705% 0,33W

3821		4822 117 12917	1R 5% 0,062W
3822		4822 051 30103	10K 5% 0,062W
3823		4822 051 30102	1K 5% 0,062W
3824		4822 051 20474	470K 5% 0,1W
3825		5322 117 13029	47K 1% 0,063W

**ELECTRICAL PARTSLIST - CD99 MP3 2002 BOARD****- RESISTORS -**

3826	4822 117 12891	220K 1%
3827	5322 117 13056	8,2K 1% 0,063
3828	5322 117 13052	2,7K 1% 0,063W
3829	4822 051 30121	120R 5% 0,062W
3830	4822 117 11373	100R 1%
3831	4822 051 30471	470R 5% 0,062W
3832	4822 051 30471	470R 5% 0,062W
3833	4822 051 30121	120R 5% 0,062W
3834	4822 051 30472	4,7K 5% 0,062W
3836	4822 116 40227	4,6R 25% 12V
3837	4822 051 30471	470R 5% 0,062W
3839	4822 051 30471	470R 5% 0,062W
3840	4822 051 30223	22K 5% 0,062W
3842	4822 051 30102	1K 5% 0,062W
3843	4822 051 30102	1K 5% 0,062W
3844	4822 051 30101	100R 5% 0,062W
3845	4822 051 30471	470R 5% 0,062W
3846	4822 051 30472	4,7K 5% 0,062W
3847	4822 117 10834	47K1% 0,1W
3848	4822 051 30333	33K 5% 0,062W
3849	4822 051 30471	470R 5% 0,062W
3850	4822 051 30472	4,7K 5% 0,062W
3851	4822 117 10834	47K 1% 0,1W
3852	4822 051 30333	33K 5% 0,062W
3853	4822 117 12903	1,8K 1% 0,063W
3854	4822 051 30682	6,8K 5% 0,062W
3856	4822 117 12891	220K 1% ERJ 3E
3858	4822 051 30682	6,8K 5% 0,062W
3859	4822 117 13632	100K 1% 0,62W
3861	4822 117 13632	100K 1% 0,62W
3862	4822 051 30102	1K 5% 0,062W
3863	4822 052 10338	3,3R 5% 0,33W
3864	4822 051 30223	22K 5% 0,062W
3865	4822 051 30101	100R 5% 0,062W
3866	4822 117 13608	4,7R5% 0,0016W
3867	4822 051 30223	22K 5% 0,062W
3868	4822 051 30103	10K 5% 0,062W
3869	4822 051 30103	10K 5% 0,062W
3871	4822 051 30101	100R 5% 0,062W
3872	4822 051 30101	100R 5% 0,062W
3873	4822 051 30223	22K 5% 0,062W
3874	4822 051 30223	22K 5% 0,062W
3875	4822 051 30103	10K 5% 0,062W
3876	4822 051 30103	10K 5% 0,062W
3878	4822 051 30471	470R 5% 0,062W
3879	4822 051 30223	22K 5% 0,062W
3880	4822 051 30339	33R 5% 0,062W
3881	4822 051 30151	150R 5% 0,062W
3882	4822 051 10102	1K 2% 0,25W
3883	4822 051 30102	1K 5% 0,062W

**- RESISTORS -**

3884	4822 051 30102	1K 5% 0,062W
3888	4822 051 30103	10K 5% 0,062W
3889	4822 051 30471	470R 5% 0,062W
3890	4822 051 30471	470R 5% 0,062W
3891	4822 051 30102	1K 5% 0,062W
3892	4822 051 30102	1K 5% 0,062W
3893	4822 051 30471	470R 5% 0,062W
3894	4822 117 12891	220K 1% ERJ 3E
3895	4822 051 30273	27K 5% 0,062W
3896	4822 051 30101	100R 5% 0,062W
3897	4822 051 30333	33K 5% 0,062W
3898	4822 051 30181	180R 5% 0,062W
3899	4822 051 30272	2,7K 5% 0,062W
3907	4822 051 30391	390R 5% 0,062W
3908	4822 051 30222	2,2K 5% 0,062W
3909	4822 117 13632	100K 1% 0,62W
3910	4822 051 30471	470R 5% 0,062W
3916	4822 051 30471	470R 5% 0,062W
3917	4822 117 13608	4,7R 5% 0,0016W
4801	4822 051 20008	OR J umper 0805
4802	4822 051 20008	OR J umper 0805
4803	4822 051 20008	OR J umper 0805
4805	4822 051 20008	OR J umper 0805
4808	4822 051 20008	OR J umper 0805
4809	4822 051 20008	OR J umper 0805
4811	4822 051 20008	OR J umper 0805
4817	4822 051 30008	OR J umper
4818	4822 051 20008	OR J umper 0805
4824	4822 051 20008	OR J umper 0805
4827	4822 051 20008	OR J umper 0805
4830	4822 051 20008	OR J umper 0805
4832	4822 051 20008	OR J umper 0805
4834	4822 051 20008	OR J umper 0805
4836	4822 051 20008	OR J umper 0805
4840	4822 051 20008	OR J umper 0805
4841	4822 051 20008	OR J umper 0805
4842	4822 051 20008	OR J umper 0805
4845	4822 051 30008	OR J umper

**- COILS & FILTERS -**

1810	2422 540 98519	8MHz 467CSTS* MG03A
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**- DIODES -**

6877	9322 129 34685	DIO REG SM BZM55-C3V9
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**- IC & TRANSISTORS -**

7800	9352 684 20557	SAA7325HT/M2B
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**ELECTRICAL PARTSLIST - CD99 MP3 2002 BOARD**

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**- IC & TRANSISTORS -**

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7808	4822 209 32852	TDA7073A/N2
7809	4822 209 32852	TDA7073A/N2
7810	4822 209 33165	TDA1308T/N1
7811	5322 209 82941	LM358D
7874	5322 130 60159	BC846B
7875	5322 130 60159	BC846B
7876	5322 130 60159	BC846B
7877	5322 130 60159	BC846B
7878	5322 130 60159	BC846B
7879	5322 130 60123	BC807-40

**ELECTRICAL PARTSLIST - TUNER BOARD ECO6 (Cenelec)****MISCELLANEOUS**

1102	4822 267 10283	FM Ant. Socket
1103	4822 265 31184	AM Ant. Socket
1110	2422 542 90071	FM Frontend FE450-G01

**CAPACITORS**

2102	4822 126 14305	100nF 10% X7R 16V
2106	2020 800 00204	CTRM 4,2-20 pF N750
2107	4822 121 51319	1 $\mu$ F 10% 63V
2108	4822 122 31765	100pF 2% NP0 63V
2109	4822 122 33741	10pF 10% NP0 50V
2120	4822 122 33761	22pF 5% NP0 50V
2122	5322 126 11579	3,3nF 10% X7R 63V
2123	2238 861 18391	390pF 10% NP0 50V
2125	2238 861 18561	560pF 10% NP0 50V
2127	4822 126 13879	220nF +80-20% 16V
2128	4822 124 40248	10 $\mu$ F 20% 63V
2129	4822 124 41584	100 $\mu$ F 20% 10V
2130	4822 126 14494	22nF 10% X7R 25V
2131	3198 017 44740	470nF +80-20% 10V
2132	3198 017 44740	470nF +80-20% 10V
2133	4822 124 21913	1 $\mu$ F 20% 63V
2134	2020 552 94387	18nF 10% X7R 50V
2134	3198 017 31530	15nF 10% X7R 50V
2135	3198 017 31530	15nF 10% X7R 50V
2135	4822 122 33893	18nF 10% X7R 63V
2136	4822 126 13879	220nF +80-20% 16V
2137	4822 126 13879	220nF +80-20% 16V
2138	4822 124 22652	2,2 $\mu$ F 20% 50V
2139	4822 122 33752	15pF 5% NP0 50V
2140	4822 126 14226	82pF 5% NP0 50V
2141	4822 126 14305	100nF 10% X7R 16V
2143	4822 126 13879	220nF +80-20% 16V
2144	4822 124 21913	1 $\mu$ F 20% 63V
2145	4822 126 13883	220pF 5% 50V
2146	4822 122 33575	220pF 5% NP0 63V
2147	4822 122 33575	220pF 5% NP0 63V
2148	4822 122 33127	2,2nF 10% X7R 63V
2149	4822 126 11671	33pF 1% 50V
2150	4822 126 13838	100nF +80-20% 50V
2159	4822 126 11671	33pF 1% 50V
2162	4822 124 81151	22 $\mu$ F 20% 50V
2163	4822 126 14305	100nF 10% X7R 16V
2164	3198 017 44740	470nF +80-20% 10V
2165	4822 126 14305	100nF 10% X7R 16V
2166	5322 122 31647	1nF 10% X7R 63V
2167	4822 126 11663	12pF 1% 50V
2169	4822 126 14238	2,2nF 20% X7R 50V
2180	5322 126 11583	10nF 10% X7R 50V
2191	4822 124 41584	100 $\mu$ F 20% 10V

**RESISTORS**

3105	4822 051 30221	220R 5% 0,1W
3108	4822 051 30222	2K2 5% 0,1W
3109	4822 051 30472	4K7 5% 0,1W
3123	4822 051 30472	4K7 5% 0,1W
3125	4822 051 30103	10K 5% 0,1W
3128	4822 051 30222	2K2 5% 0,1W
3130	4822 117 12968	820R 5% 0,6W
3131	4822 117 12968	820R 5% 0,6W
3132	4822 051 30479	47R 5% 0,1W
3134	4822 051 30223	22K 5% 0,1W
3135	4822 051 30102	1K 5% 0,1W
3137	4822 051 30223	22K 5% 0,1W
3141	4822 051 30563	56K 5% 0,1W
3142	4822 100 12159	100K 30%
3143	4822 051 30223	22K 5% 0,1W
3144	4822 051 30102	1K 5% 0,1W
3145	4822 051 30222	2K2 5% 0,1W
3146	4822 117 12139	22R 5% 0,1W
3150	4822 051 30103	10K 5% 0,1W
3151	4822 051 30683	68K 5% 0,1W
3152	4822 051 30471	470R 5% 0,1W
3153	4822 051 30471	470R 5% 0,1W
3154	4822 051 30331	330R 5% 0,1W
3155	4822 051 30151	150R 5% 0,1W
3158	4822 051 30471	470R 5% 0,1W
3159	4822 051 30471	470R 5% 0,1W
3160	4822 051 30471	470R 5% 0,1W
3161	4822 051 30223	22K 5% 0,1W
3167	4822 051 20121	120R 5% 0,1W
3168	4822 051 30121	120R 5% 0,1W
3169	4822 051 30154	150K 5% 0,1W
3171	4822 117 12925	47K 1% 0,1W
3172	4822 051 30562	5K6 5% 0,1W
3176	4822 051 30333	33K 5% 0,1W
3180	4822 051 30103	10K 5% 0,1W
3190	4822 051 30121	120R 5% 0,1W
3191	4822 051 30121	120R 5% 0,1W
3192	4822 051 30331	330R 5% 0,1W
3193	4822 051 30331	330R 5% 0,1W
3194	4822 051 30222	2K2 5% 0,1W
3195	4822 051 30101	100R 5% 0,1W
4105	4822 051 20008	0R Jumper 0805
4106	4822 051 30008	0R Jumper 0603
4107	4822 051 20008	0R Jumper 0805

**ELECTRICAL PARTSLIST - TUNER BOARD ECO6 (Cenelec)****COILS AND FILTERS**

5102	4822 157 71634	MW Aerial Coil
5103	2422 549 44107	LW Aerial Coil
5109	4822 157 71639	FM IF SFE10,7MJ A10H-A
5110	4822 242 70665	FM IF SFE10,7MS3-A
5111	2422 549 44023	AM IF 7PY 450KHZ
5112	4822 157 70302	AM IF F7MCS-12216N
5114	4822 157 70302	AM IF F7MCS-12216N
5115	4822 157 71636	Birdie Filter Coil
5118	2422 535 95881	Inductor 0,1 $\mu$ H 5%
5119	4822 157 11443	FM Disc 2,4 $\mu$ H 10,7MHz
5121	4822 242 10261	Crystal 75KHz T6252F00
5122	2422 549 44108	MW Osc Coil
5123	2422 549 44108	LW Osc Coil

**DIODES**

6105	4822 130 83075	HN1V02H-B
6106	4822 130 83757	BAS216
6107	9340 386 90115	BZX284-C11
6120	4822 130 83757	BAS216

**TRANSISTORS & IC**

7101	9351 772 20557	TEA5762H/V1
7103	5322 130 42756	BC857C
7104	4822 130 40855	BC337
7105	4822 130 40855	BC337
7109	4822 130 60373	BC856B
7110	4822 130 60373	BC856B
7112	4822 130 44503	BC547C
7122	5322 130 42755	BC847C
7124	5322 130 42755	BC847C

**ELECTRICAL PARTSLIST - TUNER BOARD ECO6 (Non cenelec)****MISCELLANEOUS**

1102	4822 267 10283	FM Ant. Socket
1103	4822 265 31184	AM Ant. Socket
1120	4822 265 11515	FFC Socket 8P

**CAPACITORS**

2101	4822 122 33777	47pF 5% NP0 63V
2102	4822 126 14305	100nF 10% X7R 16V
2103	5322 126 11578	1nF 10% X7R 50V
2104	4822 122 31765	100pF 2% NP0 63V
2106	2020 800 00191	CTRM 3P-11P N450

2107	4822 121 51319	1 $\mu$ F 10% 63V
2120	4822 126 14507	18pF 5% 50V
2124	4822 126 14494	22nF 10% X7R 25V
2125	2238 861 18561	560pF 1% NP0 50V
2126	4822 126 14241	330pF 10% NP0 50V

2127	4822 126 13879	220nF +80-20% 16V
2128	4822 124 40248	10 $\mu$ F 20% 63V
2129	4822 124 41584	100 $\mu$ F 20% 10V
2130	4822 126 14494	22nF 10% X7R 25V
2131	3198 017 44740	470nF +80-20% 10V

2132	3198 017 44740	470nF +80-20% 10V
2133	4822 124 21913	1 $\mu$ F 20% 63V
2134	3198 017 31530	15nF 20% X7R 50V
2135	3198 017 31530	15nF 20% X7R 50V
2136	4822 126 13879	220nF +80-20% 16V

2137	4822 126 13879	220nF +80-20% 16V
2138	4822 124 22652	2,2 $\mu$ F 20% 50V
2139	4822 122 33752	15pF 5% NP0 50V
2140	4822 126 14226	82pF 5% NP0 50V
2141	4822 126 14305	100nF 10% X7R 16V

2143	4822 126 13879	220nF +80-20% 16V
2144	4822 124 21913	1 $\mu$ F 20% 63V
2145	4822 126 13883	220pF 5% 50V
2146	4822 126 13883	220pF 5% 50V
2147	4822 126 13883	220pF 5% 50V

2148	4822 126 14238	2,2nF 10% X7R 50V
2150	4822 126 14585	100nF 10% X7R 50V
2152	4822 126 14549	33nF 10% 16V
2153	4822 122 33752	15pF 5% NP0 50V
2155	2020 800 00191	CTRM 3P-11P N450

2159	4822 126 11671	33pF 1% 50V
2164	3198 017 44740	470nF +80-20% 10V
2165	4822 126 14305	100nF 10% X7R 16V
2166	5322 126 11578	1nF 10% X7R 50V
2167	4822 126 11663	12pF 1% 50V

**RESISTORS**

3101	4822 051 30333	33K 5% 0,1W
3102	4822 117 13632	100K 1% 0,62W
3103	4822 117 12902	8K2 1% 0,1W
3104	4822 117 13577	330R 1% 0,25W
3105	4822 051 30221	220R 5% 0,1W

3132	4822 051 30479	47R 5% 0,1W
3134	4822 051 30223	22K 5% 0,1W
3141	4822 051 30563	56K 5% 0,1W
3142	4822 100 12159	100K 30% Var.
3145	4822 051 30222	2K2 5% 0,1W

3146	4822 117 12139	22R 5% 0,1W
3152	4822 051 30471	470R 5% 0,1W
3153	4822 051 30471	470R 5% 0,1W
3154	4822 051 30331	330R 5% 0,1W
3155	4822 051 30221	220R 5% 0,1W

3156	4822 117 13632	100K 1% 0,62W
3158	4822 051 30471	470R 5% 0,1W
3159	4822 051 30471	470R 5% 0,1W
3160	4822 051 30471	470R 5% 0,1W
3161	4822 051 20223	22K 5% 0,1W

3167	4822 051 20121	120R 5% 0,1W
3168	4822 051 30121	120R 5% 0,1W
3169	4822 051 30154	150K 5% 0,1W
3170	4822 117 13632	100K 1% 0,62W
3172	4822 051 30562	5K6 5% 0,1W

3181	4822 051 30102	1K 5% 0,1W
4103	4822 051 30008	0R Jumper 0603
4106	4822 051 20008	0R Jumper 0805
4107	4822 051 30008	0R Jumper 0603
4108	4822 051 30008	0R Jumper 0603

**COILS AND FILTERS**

5102	4822 157 71634	MW Aerial Coil
5109	4822 242 70665	FM IF SFE10,7MS3-A
5110	4822 242 70665	FM IF SFE10,7MS3-A
5111	2422 549 44023	AM IF 7PY 450KHZ
5112	4822 157 70302	AM IF F7MCS-12216N

5114	4822 157 70302	AM IF F7MCS-12216N
5119	4822 157 11443	FM Disr 2,4 $\mu$ H 10,7MHz
5121	4822 242 10261	Crystal 75KHz T6252F00
5123	2422 549 44108	MW Osc Coil
5130	4822 157 11843	FM RF Coil

5131	4822 157 11843	FM RF Coil
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**ELECTRICAL PARTSLIST - TUNER BOARD ECO6 (Non cenelec)**

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**DIODES**

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6103	5322 130 34337	BAV99
6105	4822 130 83075	HN1V02H-B
6106	4822 130 83757	BAS216
6107	9340 386 90115	BZX284-C11
6130	4822 130 82833	1SV228
6131	4822 130 82833	1SV228

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**TRANSISTORS & IC**

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7101	9351 740 80557	TEA5757H/V1
7102	4822 130 42131	BF550
7111	5322 130 42755	BC847C
7112	4822 130 40959	BC547B

**ELECTRICAL PARTSLIST - COMBI BOARD****- MISCELLANEOUS -**

1330	2422 026 05099	Headphone Socket
1331	4822 265 10912	Speaker Socket
1402	2422 128 02917	Switch-Tact
1403	2422 128 02917	Switch-Tact
1404	2422 128 02917	Switch-Tact
1405	2422 128 02917	Switch-Tact
1406	2422 128 02917	Switch-Tact
1407	2422 128 02917	Switch-Tact
1408	2422 128 02922	Switch-Tact
1409	2422 128 02917	Switch-Tact
1410	2422 128 02917	Switch-Tact
1411	2422 128 02917	Switch-Tact
1412	2422 128 02917	Switch-Tact
1413	2422 128 02917	Switch-Tact
1414	2422 128 02917	Switch-Tact
1416	2422 025 14546	FFC Connector 16P
1418	4822 265 11207	FFC Connector 6P
1420	4822 267 10956	FFC Connector 7P
1425	3140 110 51550	LCD Panel
1550	4822 265 20553	Aux,In Socket
1551	4822 267 10953	FFC Connector 7P
1554	4822 267 10731	FFC Connector 6P
1555	4822 265 11515	FFC Connector 8P
1556	2422 025 14526	FFC Connector 16P

**- CAPACITORS -**

2251	5322 121 42386	100nF 5% 63V
2252	5322 121 42386	100nF 5% 63V
2253	5322 121 42386	100nF 5% 63V
2254	5322 121 42386	100nF 5% 63V
2256	4822 124 81151	22 $\mu$ F 50V
2257	4822 124 40248	10 $\mu$ F 20% 63V
2258	4822 124 40769	4,7 $\mu$ F 20% 100V
2259	4822 124 40769	4,7 $\mu$ F 20% 100V
2260	3198 017 34730	4,7nF 20% X7R 16V
2262	3198 016 31020	1nF 20% NP0 25V
2264	4822 124 40248	10 $\mu$ F 20% 63V
2265	4822 124 40207	100 $\mu$ F 20% 25V
2266	2238 586 59812	100nF +80-20% 50V
2267	4822 124 40784	3300 $\mu$ F 20% 16V
2268	4822 124 12012	4700 $\mu$ F 20% 25V
2330	4822 124 40769	4,7 $\mu$ F 20% 100V
2331	2238 786 19852	150nF +80-20%16V
2332	2238 786 19852	150nF +80-20% 16V
2337	4822 121 42408	220nF 5% 63V
2338	4822 121 42408	220nF 5% 63V

**- CAPACITORS -**

2339	4822 121 42408	220nF 5% 63V
2340	4822 121 42408	220nF 5% 63V
2341	4822 124 40433	47 $\mu$ F 20% 25V
2342	4822 124 40433	47 $\mu$ F 20% 25V
2343	4822 122 33197	1nF 10% 50V
2344	4822 122 33197	1nF 10% 50V
2345	4822 126 14494	22nF 10% X7R 25V
2346	4822 126 14494	22nF 10% X7R 25V
2347	4822 124 40433	47 $\mu$ F 20% 25V
2348	4822 124 40433	47 $\mu$ F 20% 25V
2349	4822 124 40207	100 $\mu$ F 20% 25V
2350	4822 124 40207	100 $\mu$ F 20% 25V
2351	4822 124 40769	4,7 $\mu$ F 20% 100V
2352	4822 124 40433	47 $\mu$ F 20% 25V
2353	5322 126 11583	10nF 10% X7R 50V
2354	5322 126 11583	10nF 10% X7R 50V
2401	2238 586 59812	100nF +80-20% Y5V 50V
2402	4822 124 23432	100 $\mu$ F 20% 10V
2403	2238 586 59812	100nF +80-20% Y5V 50V
2404	4822 124 23432	100 $\mu$ F 20% 10V
2405	2238 586 59812	100nF +80-20% Y5V 50V
2406	5322 126 14103	2,2 $\mu$ F +80-20% Y5V 10V
2407	2238 586 59812	100nF +80-20% Y5V 50V
2408	2238 586 59812	100nF +80-20% Y5V 50V
2409	5322 126 11583	10nF 10% X7R 50V
2410	5322 126 11583	10nF 10% X7R 50V
2411	4822 122 33752	15pF 5% NP0 50V
2412	4822 122 33752	15pF 5% NP0 50V
2413	4822 126 14225	56pF 5% NP0 50V
2414	5322 126 11583	10nF 10% X7R 50V
2415	4822 126 11669	27pF
2416	4822 126 11669	27pF
2417	4822 124 81286	47 $\mu$ F 20% 16V
2418	5322 126 11578	1nF 10% X7R 50V
2419	2238 586 59812	100nF +80-20% Y5V 50V
2420	5322 126 11583	10nF 10% X7R 50V
2421	5322 126 11583	10nF 10% X7R 50V
2424	2238 586 59812	100nF +80-20% Y5V 50V
2425	2222 867 15339	33pF 5% NP0 50V
2426	4822 122 33761	22pF 5%NP0 50V
2427	4822 126 14249	560pF 10% X7R 50V
2428	5322 126 14103	2,2 $\mu$ F +80-20% Y5V 10V
2429	4822 126 14241	330pF NP0 50V
2430	5322 126 11578	1nF 10% X7R 50V
2431	4822 126 13193	4,7nF10% X7R 63V
2432	2020 552 94427	100pF 5% NP0 50V
2433	4822 126 13881	470PF 5% 50V
2434	2020 552 94427	100P 5% NP0 50V
2435	4822 126 13881	470pF 5% 50V
2436	4822 126 13881	470pF 5% 50V



**ELECTRICAL PARTSLIST - COMBI BOARD****- CAPACITORS -**

2437	4822 126 13881	470pF 5% 50V
2438	4822 126 13881	470pF 5% 50V
2439	4822 126 13881	470pF 5% 50V
2440	4822 126 14238	2,2nF X7R 50V
2441	5322 126 11583	10nF 10% X7R 50V
2442	4822 126 13883	220pF 5% 50V
2443	4822 126 11785	47pF 5% NP0 50V
2444	4822 126 11785	47pF 5% NP0 50V
2445	5322 126 11583	10nF 10% X7R 50V
2447	4822 126 13881	470pF 5% 50V
2448	4822 126 13881	470pF 5% 50V
2449	4822 126 13881	470pF 5% 50V
2450	4822 126 13881	470pF 5% 50V
2451	4822 126 13881	470pF 5% 50V
2452	2238 586 59812	100nF +80-20% Y5V50V
2453	2238 586 59812	100nF +80-20% Y5V50V
2454	2238 586 59812	100nF +80-20% Y5V50V
2455	2238 586 59812	100nF +80-20% Y5V50V
2500	4822 124 41584	100 $\mu$ F 20% 10V
2501	4822 124 40196	220 $\mu$ F 20% 16V
2502	4822 124 40248	10 $\mu$ F 20% 63V
2503	4822 126 14494	22nF 10% X7R 25V
2505	2020 552 94427	100pF 5% NP0 50V
2506	2020 552 94427	100pF 5% NP0 50V
2507	2020 552 94427	100pF 5% NP0 50V
2508	2020 552 94427	100pF 5% NP0 50V
2509	4822 122 33761	22pF 5% NP0 50V
2510	4822 122 33761	22pF 5% NP0 50V
2511	4822 126 13879	220nF +80-20% 16V
2512	4822 126 13879	220nF +80-20% 16V
2513	4822 126 11785	47pF 5% NP0 50V
2514	4822 126 11785	47pF 5% NP0 50V
2515	5322 126 11583	10nF 10% X7R 50V
2516	5322 126 11583	10nF 10% X7R 50V
2517	4822 126 14247	1,5nF X7R 50V
2518	4822 126 14247	1,5nF X7R 50V
2519	4822 126 13883	22pF 5% 50V
2520	4822 126 13883	220pF 5% 50V
2521	4822 126 14247	1,5nF X7R 50V
2522	4822 126 14247	1,5nF X7R 50V
2523	3198 016 36810	680pF NP0 25V
2524	3198 016 36810	680pF NP0 25V
2525	4822 126 11785	47pF 5% NP0 50V
2526	4822 126 11785	47pF 5% NP0 50V
2527	5322 126 11583	10nF 10% X7R 50V
2528	5322 126 11583	10nF 10% X7R 50V
2529	2238 586 59812	100nF +80-20% Y5V 50V
2530	2238 586 59812	100nF +80-20% Y5V 50V
2531	2238 586 59812	100nF +80-20% Y5V 50V
2532	2238 586 59812	100nF +80-20% Y5V 50V

**- CAPACITORS -**

2533	3198 017 34730	47nF X7R 16V
2534	3198 017 34730	47nF X7R 16V
2535	2238 586 59812	100nF+80-20%Y5V 50V
2550	4822 126 11585	22nF+80-20% Y5V 25V
2551	4822 126 14238	2,2nF X7R 50V
2552	4822 126 14238	2,2nF X7R 50V
2553	4822 126 14494	22nF 10% X7R 25V
2554	4822 124 40196	220 $\mu$ F 20% 16V
2555	4822 124 22652	2,2 $\mu$ F 20% 50V
2557	3198 017 44740	470nF Y5V 10V
2558	4822 126 13883	220pF 5% 50V
2559	4822 126 13883	220pF 5% 50V
2560	4822 126 13883	220pF 5% 50V
2561	4822 124 81151	22 $\mu$ F 50V
2563	4822 124 41407	0,47 $\mu$ F 20% 63V
2564	4822 124 41407	0,47 $\mu$ F 20% 63V
2565	2020 552 94427	100pF 5% NP0 50V
2566	2020 552 94427	100pF 5% NP0 50V
2567	4822 124 22652	2,2 $\mu$ F 20% 50V
2568	4822 124 22652	2,2 $\mu$ F 20% 50V
2569	4822 124 21913	1 $\mu$ F 20% 63V
2570	4822 124 21913	1 $\mu$ F 20% 63V
2571	3198 017 44740	470nF Y5V 10V
2573	2238 586 59812	100nF +80-20% Y5V 50V

**- RESISTORS -**

3250	4822 051 20471	470R 5% 0,1W
3251	4822 051 30222	2K2 5% 0,062W
3252	4822 051 30472	4K7 5% 0,1W
3253	4822 051 20472	4K7 5% 0,1W
3254	4822 117 11449	2K2 5% 0,1W
3255	4822 050 11002	1K 1% 0,4W
3256	4822 050 11002	1K 1% 0,4W
3257	4822 050 11002	1K 1% 0,4W
3258	4822 116 83884	47K 5% 0,5W
3259	4822 051 30331	330R 5% 0,062W
3260	4822 117 12891	220K 1% 0,1W
3261	4822 117 12864	82K 5% 0,6W
3262	4822 051 10102	1K 2% 0,25W
3263	4822 051 20472	4K7 5% 0,1W
3264	4822 051 10102	1K 2% 0,25W
3266	4822 117 12925	47K 1% 0,063W
3267	4822 117 11449	2K2 5% 0,1W
3268	4822 117 11449	2K2 5% 0,1W
3269	4822 051 30223	22K 5% 0,062W
3271	4822 050 24708	4R7 1% 0,6W

**ELECTRICAL PARTSLIST - COMBI BOARD****- RESISTORS -**

3272	4822 050 24708	4R7 1% 0,6W
3273	4822 050 24708	4R7 1% 0,6W
3274	4822 051 20391	390R 5% 0,1W
3275	4822 116 83883	470R 5% 0,5W
3276	4822 051 30222	2K2 5% 0,062W
3277	4822 051 30222	2K2 5% 0,062W
3278	4822 117 12925	47K 1% 0,063W
3279	4822 051 30102	1K 5% 0,062W
3280	4822 116 52257	22K 5% 0,5W
3281	4822 117 11449	2K2 5% 0,1W
3282	4822 117 11449	2K2 5% 0,1W
3283	4822 117 11449	2K2 5% 0,1W
3284	4822 117 11449	2K2 5% 0,1W
3330	4822 116 52269	3K3 5% 0,5W
3331	4822 050 21003	10K 1% 0,6W
3332	4822 050 21003	10K 1% 0,6W
3333	4822 051 30682	6K8 5% 0,062W
3334	4822 051 30682	6K8 5% 0,062W
3335	4822 051 20228	2R2 5% 0,1W
3336	4822 051 20228	2R2 5% 0,1W
3337	4822 051 20228	2R2 5% 0,1W
3338	4822 051 20228	2R2 5% 0,1W
3339	4822 051 20121	120R 5% 0,1W
3340	4822 051 20121	120R 5% 0,1W
3341	4822 116 52226	560R 5% 0,5W
3342	4822 116 52226	560R 5% 0,5W
3343	4822 051 30103	10K 5% 0,062W
3344	4822 051 30103	10K 5% 0,062W
3345	4822 051 30103	10K 5% 0,062W
3346	4822 051 30103	10K 5% 0,062W
3347	4822 051 30223	22K 5% 0,062W
3348	4822 051 30223	22K 5% 0,062W
3349	4822 051 30223	22K 5% 0,062W
3350	4822 117 12925	47K 1% 0,063W
3351	4822 051 10102	1K 2% 0,25W
3352	4822 051 10102	1K 2% 0,25W
3353	4822 051 20479	47R 5% 0,1W
3358	4822 051 30472	4K7 5% 0,062W
3359	4822 051 30682	6K8 5% 0,062W
3360	4822 117 13632	100K 1% 0,62W
3361	4822 117 11373	100R 1% 0,1W
3401	4822 116 52182	15R 5% 0,5W
3402	4822 116 52175	100R 5% 0,5W
3403	4822 117 12903	1K8 1% 0,063W
3404	4822 051 30562	5K6 5% 0,063W
3405	4822 050 11002	1K 1% 0,4W
3406	4822 117 13632	100K 1% 0,62W
3407	4822 051 30102	1K 5% 0,062W
3408	4822 051 30474	470K 5% 0,062W
3409	4822 051 30472	4K7 5% 0,062W

**- RESISTORS -**

3410	4822 116 52175	100R 5% 0,5W
3411	4822 051 30474	470K 5% 0,062W
3412	4822 051 30103	10K 5% 0,062W
3413	4822 051 30102	1K 5% 0,062W
3414	4822 051 30333	33K 5% 0,062W
3415	4822 051 30153	15K 5% 0,062W
3416	4822 117 11503	220R 1% 0,1W
3417	4822 051 30153	15K 5% 0,062W
3418	4822 051 30152	1K5 5% 0,062W
3419	4822 051 30152	1K5 5% 0,062W
3425	4822 051 30222	2K2 5% 0,062W
3426	4822 051 30332	3K3 5% 0,062W
3427	4822 051 30562	5K6 5% 0,063W
3429	4822 051 30103	10K 5% 0,062W
3430	4822 116 52289	5K6 5% 0,5W
3431	4822 051 30471	470R 5% 0,062W
3432	4822 051 30102	1K 5% 0,062W
3433	4822 051 30152	1K50 5% 0,062W
3434	4822 051 30222	2K2 5% 0,062W
3435	4822 051 30332	3K30 5% 0,062W
3436	4822 051 30562	5K6 5% 0,063W
3439	4822 051 30103	10K 5% 0,062W
3440	4822 051 30103	10K 5% 0,062W
3441	4822 051 30102	1K 5% 0,062W
3442	4822 051 30333	33K 5% 0,062W
3443	4822 050 23303	33K 1% 0,6W
3444	4822 116 52175	100R 5% 0,5W
3445	4822 051 30222	2K2 5% 0,062W
3446	4822 117 12891	220K 1% 0,1W
3447	4822 051 30103	10K 5% 0,062W
3448	4822 051 30152	1K5 5% 0,062W
3449	4822 051 30223	22K 5% 0,062W
3450	4822 051 30102	1K 5% 0,062W
3451	4822 051 30471	470R 5% 0,062W
3452	4822 051 30103	10K 5% 0,062W
3453	4822 051 30331	330R 5% 0,062W
3454	4822 051 30102	1K 5% 0,062W
3455	4822 051 30102	1K 5% 0,062W
3456	4822 051 30102	1K 5% 0,062W
3457	4822 051 30103	10K 5% 0,062W
3458	4822 051 30102	1K 5% 0,062W
3459	4822 116 83872	220R 5% 0,5W
3460	4822 051 30221	220R 5% 0,062W
3461	4822 116 52283	4K7 5% 0,5W
3462	4822 051 30102	1K 5% 0,062W
3463	4822 116 52283	4K7 5% 0,5W
3464	4822 051 30102	1K 5% 0,062W
3465	4822 116 52283	4K7 5% 0,5W
3466	4822 051 30102	1K 5% 0,062W
3467	4822 116 52256	2K2 5% 0,5W

**ELECTRICAL PARTSLIST - COMBI BOARD****- RESISTORS -**

3468	4822 051 30471	470R 5% 0,062W
3469	4822 116 83883	470R 5% 0,5W
3470	4822 051 30103	10K 5% 0,062W
3471	4822 050 23303	33K 1% 0,6W
3472	4822 051 30474	470K 5% 0,062W
3473	4822 051 30102	1K 5% 0,062W
3474	4822 116 83883	470R 5% 0,5W
3475	4822 051 30471	470R 5% 0,062W
3476	4822 116 83883	470R 5% 0,5W
3477	4822 051 30102	1K 5% 0,062W
3478	4822 116 83883	470R 5% 0,5W
3479	4822 051 30221	220R 5% 0,062W
3480	4822 050 11002	1K 1% 0,4W
3481	4822 051 30471	470R 5% 0,062W
3483	4822 051 30103	10K 5% 0,062W
3484	4822 051 30103	10K 5% 0,062W
3485	4822 051 30392	3K9 5% 0,063W
3486	4822 051 30101	100R 5% 0,062W
3487	4822 051 30392	3K9 5% 0,063W
3488	4822 051 30101	100R 5% 0,062W
3489	4822 051 30102	1K 5% 0,062W
3490	4822 051 30102	1K 5% 0,062W
3491	4822 051 30102	1K 5% 0,062W
3492	4822 051 30102	1K 5% 0,062W
3493	4822 051 30102	1K 5% 0,062W
3494	4822 051 30102	1K 5% 0,062W
3495	4822 051 30154	150K 5% 0,062W
3496	4822 051 30154	150K 5% 0,062W
3497	4822 051 30102	1K 5% 0,062W
3498	4822 051 30102	1K 5% 0,062W
3499	3198 021 32230	22K 5% (not for /22)
3500	4822 117 12968	820R 5% 0,62W
3501	4822 051 30471	470R 5% 0,062W
3502	4822 116 52256	2K2 5% 0,5W
3503	4822 051 30471	470R 5% 0,062W
3505	4822 051 20333	33K 5% 0,1W
3506	4822 051 20333	33K 5% 0,1W
3507	4822 117 12971	15R 5% 0,62W
3508	4822 117 12971	15R 5% 0,62W
3509	4822 051 20333	33K 5% 0,1W
3510	4822 051 20333	33K 5% 0,1W
3511	4822 117 13632	100K 1% 0,62W
3512	4822 117 13632	100K 1% 0,62W
3513	4822 051 30153	15K 5% 0,062W
3514	4822 051 30153	15K 5% 0,062W
3515	4822 051 30333	33K 5% 0,062W
3516	4822 051 30333	33K 5% 0,062W
3517	4822 117 13632	100K 1% 0,62W
3518	4822 117 13632	100K 1% 0,62W
3519	4822 117 12891	220K 1% 0,1W

**- RESISTORS -**

3520	4822 117 12891	220K 1% 0,1W
3521	4822 050 23303	33K 1% 0,6W
3522	4822 050 23303	33K 1% 0,6W
3523	4822 050 23303	33K 1% 0,6W
3524	4822 050 23303	33K 1% 0,6W
3525	4822 117 12891	220K 1% 0,1W
3526	4822 117 12891	220K 1% 0,1W
3527	4822 117 12891	220K 1% 0,1W
3528	4822 117 12891	220K 1% 0,1W
3529	4822 116 52264	27K 5% 0,5W
3530	4822 116 52264	27K 5% 0,5W
3531	4822 116 52264	27K 5% 0,5W
3532	4822 116 52264	27K 5% 0,5W
3533	4822 051 30333	33K 5% 0,062W
3534	4822 051 30333	33K 5% 0,062W
3535	4822 117 13632	100K 1% 0,62W
3536	4822 117 13632	100K 1% 0,62W
3537	4822 117 12891	220K 1% 0,1W
3538	4822 117 12891	220K 1% 0,1W
3539	4822 051 30223	22K 5% 0,062W
3540	4822 051 30223	22K 5% 0,062W
3541	4822 051 30154	150K 5% 0,062W
3542	4822 051 30154	150K 5% 0,062W
3543	4822 117 12864	82K 5% 0,6W
3544	4822 117 12864	82K 5% 0,6W
3545	4822 117 12902	8K2 1% 0,063W
3546	4822 117 12902	8K2 1% 0,063W
3547	4822 051 30154	150K 5% 0,062W
3548	4822 051 30154	150K 5% 0,062W
3551	4822 051 30333	33K 5% 0,062W
3552	4822 051 30333	33K 5% 0,062W
3553	4822 117 12902	8K2 1% 0,063W
3554	4822 117 12902	8K2 1% 0,063W
3555	4822 051 30682	6K8 5% 0,062W
3556	4822 051 30682	6K8 5% 0,062W
3557	4822 051 30183	18K 5% 0,062W
3558	4822 051 30183	18K 5% 0,062W
3559	4822 051 30272	2K7 5% 0,062W
3560	4822 051 30272	2K7 5% 0,062W
3561	4822 050 21003	10K 1% 0,6W
3562	4822 050 21003	10K 1% 0,6W
3563	4822 117 11373	100R 1% 0,1W
3565	4822 051 20159	15R 5% 0,1W
3566	4822 051 20159	15R 5% 0,1W
3568	4822 117 11139	1K5 1% 0,1W
3572	4822 051 30103	10K 5% 0,062W
3573	4822 050 11002	1K 1% 0,4W
3574	4822 117 12925	47K 1% 0,063W
3575	4822 051 30153	15K 5% 0,062W
3576	4822 051 30153	15K 5% 0,062W

**ELECTRICAL PARTSLIST - COMBI BOARD****- RESISTORS -**

3577	4822 051 30471	470R 5% 0,062W
3578	4822 051 30471	470R 5% 0,062W
3579	4822 051 30154	150K 5% 0,062W
3580	4822 051 30154	150K 5% 0,062W
3581	4822 051 30272	2K7 5% 0,062W

3582	4822 051 30272	2K7 5% 0,062W
3583	4822 051 30472	4K7 5% 0,062W
3584	4822 051 30472	4K7 5% 0,062W
3585	4822 051 30222	2K2 5% 0,062W
3586	4822 051 30222	2K2 5% 0,062W

3587	4822 051 30392	3K9 5% 0,063W
3588	4822 051 30392	3K9 5% 0,063W
3589	4822 116 83872	220R 5% 0,5W
3901	4822 051 30101	100R 5% 0,062W
3902	4822 051 30101	100R 5% 0,062W

3903	4822 051 30101	100R 5% 0,062W
3904	4822 051 30101	100R 5% 0,062W
3905	4822 051 30101	100R 5% 0,062W
3906	4822 051 30101	100R 5% 0,062W
3911	4822 051 30102	1K 5% 0,062W

3912	4822 051 30102	1K 5% 0,062W
3913	4822 051 30102	1K 5% 0,062W
3914	4822 051 30102	1K 5% 0,062W
3915	4822 051 30102	1K 5% 0,062W
3916	4822 051 30102	1K 5% 0,062W

3917	4822 051 30102	1K 5% 0,062W
3918	4822 051 30102	1K 5% 0,062W
3919	4822 051 30222	2K2 5% 0,062W
3920	4822 051 30103	10K 5% 0,062W
3921	4822 051 30103	10K 5% 0,062W

3922	4822 051 30103	10K 5% 0,062W
3929	4822 117 12925	47K 1% 0,063W
3930	4822 051 30102	1K 5% 0,062W
3931	4822 051 30333	33K 5% 0,062W
4260	4822 051 20008	OR J umper 0805

4261	4822 051 20008	OR J umper 0805
4262	4822 051 20008	OR J umper 0805
4263	4822 051 20008	OR J umper 0805
4264	4822 051 20008	OR J umper 0805
4265	4822 051 20008	OR J umper 0805

4266	4822 051 20008	OR J umper 0805
4333	4822 051 20008	OR J umper 0805
4334	4822 051 20008	OR J umper 0805
4335	4822 051 20008	OR J umper 0805
4410	4822 051 20008	OR J umper 0805

4411	4822 051 20008	OR J umper 0805
4412	4822 051 20008	OR J umper 0805
4413	4822 051 20008	OR J umper 0805
4414	4822 051 20008	OR J umper 0805
4415	4822 051 30008	OR J umper

**- RESISTORS -**

4416	4822 051 30008	OR J umper
4417	4822 051 30008	OR J umper
4418	4822 051 30008	OR J umper
4420	4822 051 30008	OR J umper
4421	4822 051 20008	OR J umper 0805

4422	4822 051 20008	OR J umper 0805
4423	4822 051 20008	OR J umper 0805
4424	4822 051 20008	OR J umper 0805
4425	4822 051 20008	OR J umper 0805
4426	4822 051 30008	OR J umper

4427	4822 051 20008	OR J umper 0805
4428	4822 051 30008	OR J umper
4429	4822 051 20008	OR J umper 0805
4510	4822 051 20008	OR J umper 0805
4512	4822 051 20008	OR J umper 0805

4513	4822 051 20008	OR J umper 0805
4560	4822 051 20008	OR J umper 0805
4561	4822 051 20008	OR J umper 0805
4562	4822 051 20008	OR J umper 0805
4563	4822 051 20008	OR J umper 0805

4564	4822 051 20008	OR J umper 0805
4565	4822 051 20008	OR J umper 0805
4566	4822 051 20008	OR J umper 0805
4567	4822 051 20008	OR J umper 0805
4568	4822 051 20008	OR J umper 0805

4569	4822 051 20008	OR J umper 0805
4570	4822 051 20008	OR J umper 0805
4571	4822 051 20008	OR J umper 0805
4572	4822 051 20008	OR J umper 0805
4573	4822 051 20008	OR J umper 0805

**- COILS & FILTERS -**

5331	4822 157 11837	0,36µH 10%
5332	4822 157 11837	0,36µH 10%
5333	4822 157 11837	0,36µH 10%
5334	4822 157 11837	0,36µH 10%
5400	4822 157 11228	100µH 5%

5401	2422 549 44393	100MH 2K7
5402	2422 540 98518	Resonator 8MHz
5403	2422 543 01069	Crystal 32,768kHz
5404	4822 242 11033	Crystal 4,332kHz
5405	2422 549 44393	Inductor Fixed 100MHZ 2K7

5406	2422 549 44393	Inductor Fixed 100MHZ 2K7
5407	2422 549 44393	Inductor Fixed 100MHZ 2K7
5550	4822 157 10686	0,47µF Choke Coil
5551	4822 157 10686	0,47µF Choke Coil

**ELECTRICAL PARTSLIST - COMBI BOARD****- DIODES -**

6254	4822 130 31878	1N4003G
6255	4822 130 31878	1N4003G
6256	4822 130 31878	1N4003G
6257	4822 130 31878	1N4003G
6258	4822 130 31878	1N4003G
6259	4822 130 31878	1N4003G
6260	4822 130 31878	1N4003G
6261	4822 130 31878	1N4003G
6262	4822 130 31878	1N4003G
6263	4822 130 31878	1N4003G
6264	4822 130 31878	1N4003G
6265	4822 130 31878	1N4003G
6266	4822 130 30621	1N4148
6267	4822 130 30621	1N4148
6268	4822 130 34382	BZX79-B8V2
6269	4822 130 30621	1N4148
6270	4822 130 30621	1N4148
6271	4822 130 34278	BZX79-B6V8
6272	4822 130 61219	BZX79-B10
6275	3198 010 53380	BZX79-B3V3
6331	4822 130 30621	1N4148
6332	4822 130 30621	1N4148
6333	4822 130 30621	1N4148
6400	4822 130 11397	BAS316
6401	4822 130 11397	BAS316
6403	8240 009 51220	LED AMBER
6500	4822 130 30621	1N4148
6550	4822 130 82714	BZX79-B2V7

**- IC & TRANSISTORS -**

7250	9322 139 24687	BDW94CFP
7251	5322 130 60159	BC846B
7252	5322 130 60159	BC846B
7253	5322 130 44647	BC368
7254	5322 130 44593	BC369
7255	5322 130 60159	BC846B
7256	4822 130 41246	BC327-25
7257	4822 130 41246	BC327-25
7258	4822 130 41246	BC327-25
7259	5322 130 60159	BC846B
7260	5322 130 60845	BC807-25
7261	5322 130 60159	BC846B
7330	9322 133 18682	AN7125P
7331	4822 130 60373	BC856B
7332	4822 130 60373	BC856B
7333	5322 130 60159	BC846B
7400	3140 110 51540	TMP86CS25F
7401	5322 130 60159	BC846B
7402	5322 130 60159	BC846B
7403	5322 130 60159	BC846B

**- IC & TRANSISTORS -**

7404	9322 155 82667	TSOP2236
7405	9965 000 04931	M24C01-WMN6
7406	4822 209 31981	SAA6579T
7407	4822 130 60373	BC856B
7408	5322 130 60159	BC846B
7500	4822 209 10264	HEF4069UBP
7501	4822 130 44568	BC557B
7502	4822 130 44568	BC557B
7503	4822 130 44568	BC557B
7504	4822 130 44568	BC557B
7505	5322 130 60159	BC846B
7506	5322 130 60159	BC846B
7507	5322 130 60159	BC846B
7508	5322 130 60159	BC846B
7509	5322 130 60159	BC846B
7511	5322 130 60159	BC846B
7512	5322 130 60159	BC846B
7513	5322 130 60159	BC846B
7514	5322 130 60159	BC846B
7550	4822 130 42804	BC817-25
7551	4822 209 10263	HEF4052BP
7552	5322 209 10421	HEF4094BP
7553	9322 003 63676	TBC327-40
7555	5322 130 60159	BC846B
7556	5322 130 60159	BC846B

**Note: Only these parts mentioned in the list are normal service parts.**

**ELECTRICAL PARTSLIST - LED BOARD****- RESISTORS -**

3901	4822 051 30561	560R 5% 0,062W
3902	4822 117 12968	820R 5% 0,62W
3903	4822 051 30332	3,3K 5% 0,062W
3904	4822 051 30332	3,3K 5% 0,062W
3905	4822 051 30471	470R 5% 0,062W
3906	4822 051 30471	470R 5% 0,062W

**- DIODES -**

6901	8240 009 51220	LED AMBER
6902	8240 009 51220	LED AMBER
6903	8240 009 51220	LED AMBER
6904	8240 009 51220	LED AMBER
6905	8240 009 51220	LED AMBER
6906	8240 009 51220	LED AMBER
6907	8240 009 51220	LED AMBER
6908	8240 009 51220	LED AMBER
6909	8240 009 51220	LED AMBER
6910	8240 009 51220	LED AMBER

**ELECTRICAL PARTSLIST - POWER BOARD AND MISCELLANEOUS**

1025	4822 276 13963	CD DOOR SWITCH
1600	△ 2422 129 15195	VOLTAGE SELECTOR (/21/21M)
5001	2422 549 44607	IND FXD 100MHz 600R
5600	△ 4822 157 11832	FILTER 400~H 3A
5601	△ 3140 118 32430	TRANSFORMER (/22/33/30)
5601	△ 3140 118 32440	TRANSFORMER (/21/21M)
5601	△ 3140 118 32450	TRANSFORMER (/37 only)
8000	3139 110 36220	FFC FOIL 16P/180/16P AD
8001	3139 110 35130	FFC FOIL 06P/180/06P AD
8005	3140 110 21210	FFC FOIL 6P/220/6P AD
8007	3140 110 21240	FFC FOIL 8P/180/8P AD
8009	3139 110 34480	FFC FOIL 07P/140/07P AD
8010	3140 110 21840	FFC COIL 7P/120/7P AD
8008	2422 070 98122	MAINS CORD 125V 10A(/37)
8008	4822 321 10781	MAINS CORD EUR 2A5 (/21/21M/22)
8008	4822 321 10971	MAINS CORD SAA (/30)

**Note: Only these parts mentioned in the list are normal service parts.**