

Service  
Service  
**Service**

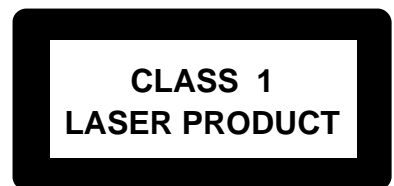


# Service Manual



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3139 785 30077

Version 1.0



**PHILIPS**



**SPECIFICATIONS****GENERAL:**

Mains voltage : 110-127V/220-240V for /21/21M  
 120V for /37  
 220-230V for /22

Mains frequency : 50/60Hz

Power consumption : < 1W at ECO Power Standby  
 : <10W at Standby (DEMO mode off)  
 : 33W at Active

Clock accuracy : < 4 seconds per day

**TUNER:****FM**

Tuning range : 87.5-108MHz

Grid : 50kHz  
 100kHz for /37

IF frequency : 10.7MHz  $\pm$  25kHz

Aerial input : 75 $\Omega$  coaxial

Sensitivity at 26dB S/N : < 7 $\mu$ V

Selectivity at 600kHz bandwidth : > 25dB

Image rejection : > 25dB

Distortion at RF=1mV, dev. 75kHz : < 3%

-3dB Limiting point : < 8 $\mu$ V

Crosstalk at RF=1mV, dev. 40kHz : > 18dB

**MW**

Tuning range : 531-1602kHz  
 530-1700kHz for /21/21M/37

Grid : 9kHz  
 10kHz for /21/21M/37

IF frequency : 450kHz  $\pm$  1kHz

Aerial input : Frame aerial

Sensitivity at 26dB S/N : < 4.0mV/M

Selectivity at 18kHz bandwidth : > 18dB

IF rejection : > 45dB

Image rejection : > 28dB

Distortion at RF=50mV, m=80% : < 5%

**AMPLIFIER:**

Output power (8 $\Omega$ , 1kHz, 10% THD)  
 L & R : 2 x 25W RMS

Frequency response within -3dB : 50Hz-16kHz

Incredible Surround : ON/OFF

Treble : 12.5kHz  $\pm$  3 Steps

Bass : 55Hz  $\pm$  3 Steps

## Input sensitivity

Aux in (at 1kHz) : 500mV  $\pm$  3dB at 600 $\Omega$

CDR in (at 1kHz) : 1V  $\pm$  3dB at 600 $\Omega$

## Output sensitivity

Line out (Left/Right) : 450mV  $\pm$  1dB at 22k $\Omega$

Headphone output at 32 $\Omega$  : 680mV  $\pm$  1dB (Vol. Max.)

**COMPACT DISC:**

Measurement done directly at the connector on the board.

Output resistance : 100 $\Omega$

Output voltage (Unloaded, 1kHz) : 550mV

Channel unbalance :  $\pm$ 1dB

Frequency response : 20Hz-20kHz

Signal to Noise Ratio (A-weighted) : > 80dBA

Distortion : < 0.003%

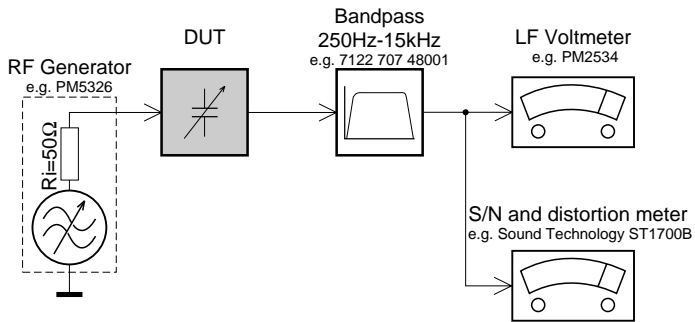
Channel separation (1kHz) : >60dB

MP3-CD bit rate : 32-256 kbps

Sampling frequencies : 32kHz, 44.1kHz, 48kHz

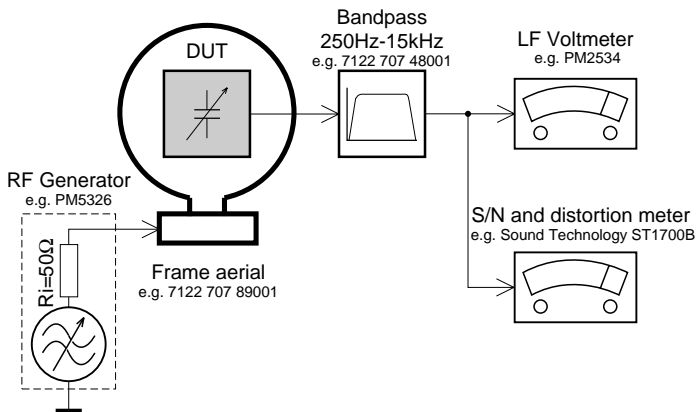
## MEASUREMENT SETUP

### Tuner FM



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

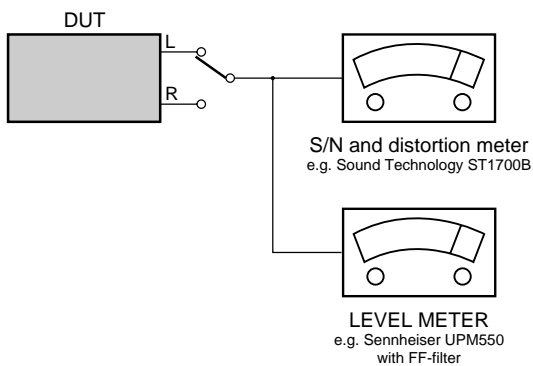
### Tuner AM (MW,LW)



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 250Hz) to eliminate hum (50Hz, 100Hz).

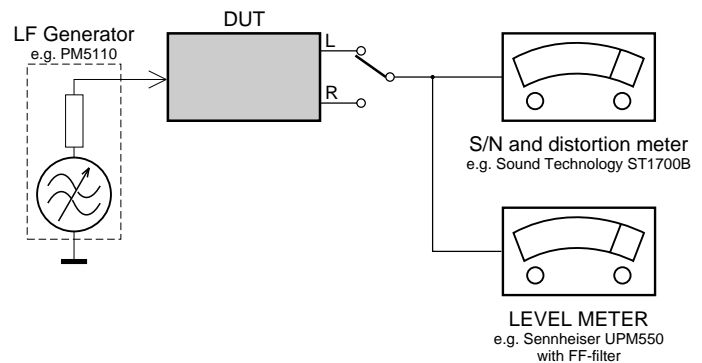
### CD

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



### Recorder

Use Universal Test Cassette **CrO2** SBC419 4822 397 30069  
or Universal Test Cassette **Fe** SBC420 4822 397 30071



## SERVICE AIDS

### Service Tools:

Universal Torx driver holder .....	4822 395 91019
Torx bit T10 150mm .....	4822 395 50456
Torx driver set T6 - T20 .....	4822 395 50145
Torx driver T10 extended .....	4822 395 50423

### Cassette:

SBC419 Test cassette CrO2 .....	4822 397 30069
SBC420 Test cassette Fe .....	4822 397 30071
MTT150 Dolby level 200nWb/M .....	4822 397 30271

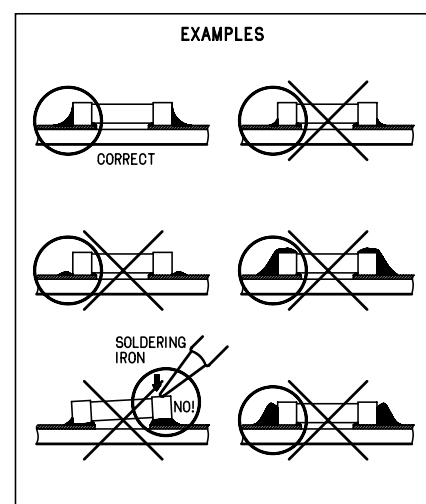
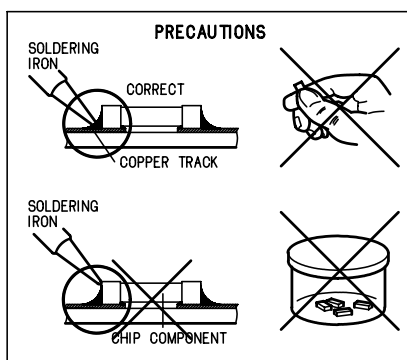
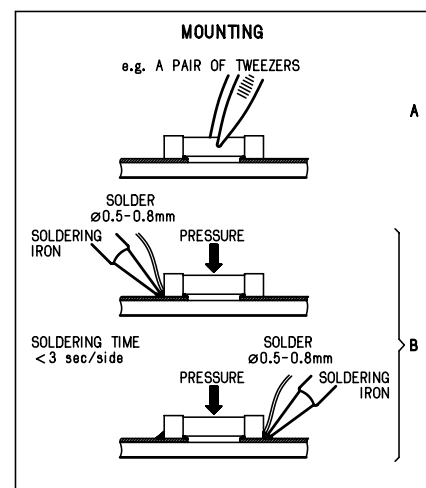
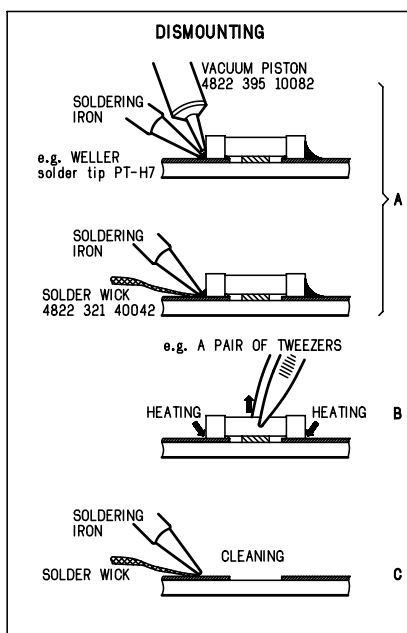
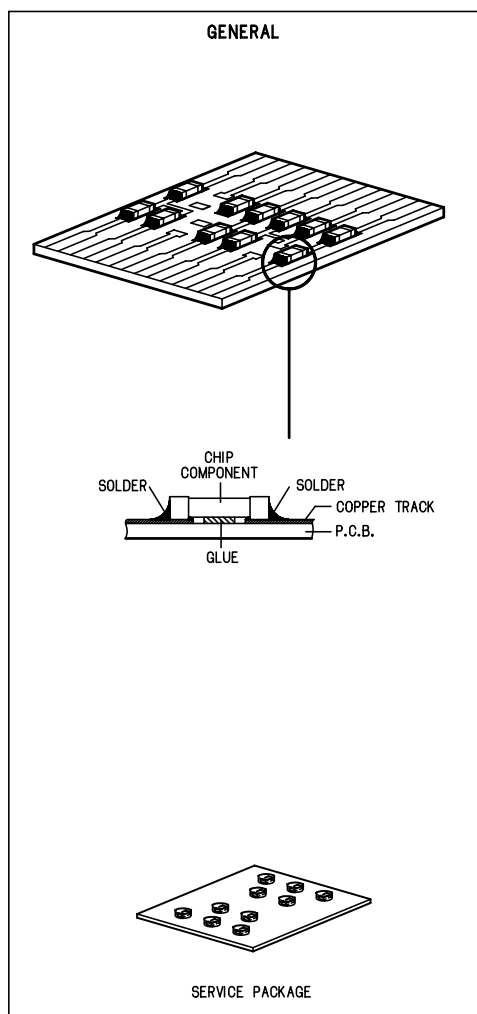
### Compact Disc:

SBC426/426A Test disc 5 + 5A .....	4822 397 30096
SBC442 Audio Burn-in Test disc 1kHz .....	4822 397 30155
SBC429 Audio Signals disc .....	4822 397 30184
Dolby Pro-logic Test Disc .....	4822 395 10216

### ESD Equipment:

Anti-static table mat - large 1200x650x1.25mm ...	4822 466 10953
Anti-static table mat - small 600x650x1.25mm .....	4822 466 10958
Anti-static wristband .....	4822 395 10223
Connector box (1MΩ) .....	4822 320 11307
Extension cable (to connect wristband to conn. box) .....	4822 320 11305
Connecting cable (to connect table mat to conn. box) .....	4822 320 11306
Earth cable (to connect product to mat or box) ....	4822 320 11308
Complete kit ESD3 (combining all above products) .....	4822 320 10671
Wristband tester .....	4822 344 13999

## HANDLING CHIP COMPONENTS



**(GB) WARNING**

All ICs and many other semi-conductors 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 wrist wrap with resistance. Keep components and tools also at this potential.

**(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 enfilez le bracelet serti d'une résistance de sécurité.

Veiller à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel.

**(GB)**

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

**(NL)**

Veiligheidsbepalingen vereisen, dat het apparaat bij reparatie in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast.

**(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.

**(D)**

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Originalzustand des Geräts darf nicht verändert werden; für Reparaturen sind Original-Ersatzteile zu verwenden.

**(I)**

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

"After servicing and before returning set to customer perform a leakage current measurement test from all exposed metal parts to earth ground to assure no shock hazard exist. The leakage current must not exceed 0.5mA."

**ESD****(D) WARNUNG**

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatistischen Entladungen (ESD).

Unvorsichtige Behandlung im Reparaturfall kann die Lebensdauer drastisch reduzieren.

Veranlassen Sie, dass Sie im Reparaturfall über ein Pulsarmband mit Widerstand verbunden sind mit dem gleichen Potential wie die Masse des Gerätes.

Bauteile und Hilfsmittel auch auf dieses gleiche Potential halten.

**(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.

**(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 braccialetto a resistenza.

Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

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

**(GB) Warning !**

Invisible laser radiation when open.  
Avoid direct exposure to beam.

**(S) Varning !**

Osynlig laserstrålning när apparaten är öppnad och spärren är urkopplad. Betrakta ej strålen.

**(SF) Varoitus !**

Avatussa laitteessa ja suojalukituksen ohitettaessa olet alltiina näkymättömälle laserisäteilylle. Älä katso säteeseen!

**(DK) Advarse !**

Usynlig laserstråling ved åbning når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.

## DISMANTLING INSTRUCTIONS (CENTRE UNIT)

### *Dismantling of the Cladding*

- 1) Remove 8 Plug Rubbers (pos 123, 124, 125) from both side of the Centre Unit (for MZ-1100 only) with a flat head screw driver (see Figure 1).
- 2) Remove 8 screws A (see Figure 2) from both side of the Centre Unit to loosen the Cladding (pos 120).



Figure 1



Figure 2

### *Dismantling of the Front Cover Assembly*

- 1) Remove 2 screws B (see Figure 3 and Figure 6) and uncatch C1 (see Figure 3) with a small size screw driver by giving a push in the direction as shown in Figure 4 to separate the Front Cover Assembly from the Centre Unit (see Service Position A for Centre Unit).



Figure 3



Figure 4

## DISMANTLING INSTRUCTIONS (CENTRE UNIT)

### *Dismantling of the Cover Orn Rear and Cladding Internal*

- 1) Remove 5 screws D and 2 screws E (see Figure 5) to loosen the Cover Orn Rear (pos 119).
- 2) Remove 4 screws F (see Figure 6) to loosen the Cladding Internal Left (pos 117) and Cladding Internal Right (pos 118).

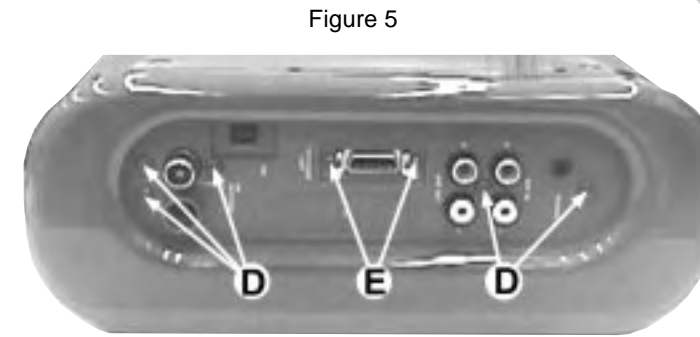


Figure 5

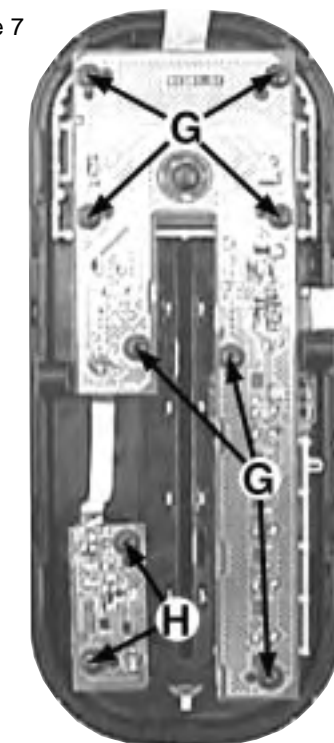


Figure 6

### *Dismantling of the Control Board*

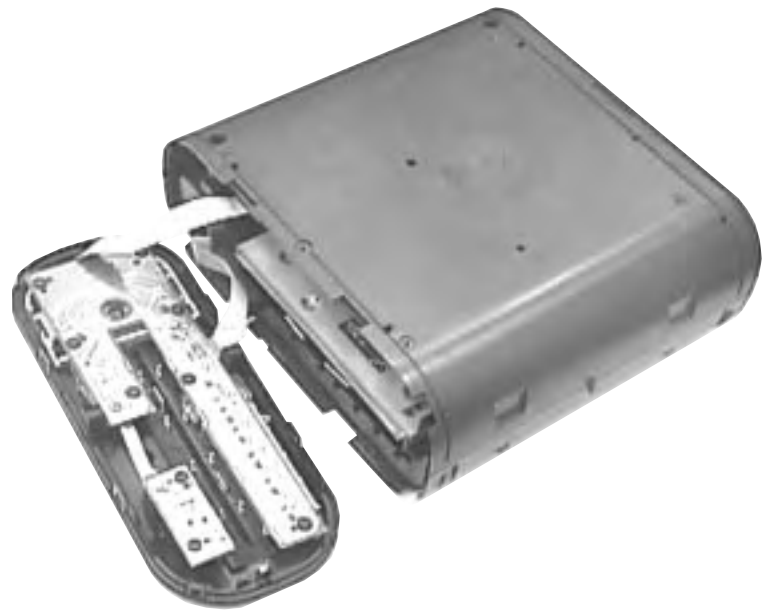
- 1) Remove 7 screws G (see Figure 7) to loosen the Control Board (pos 1003-A).
- 2) Remove 2 screws H (see Figure 7) to loosen the IR Eye Board (pos 1003-B).

Figure 7

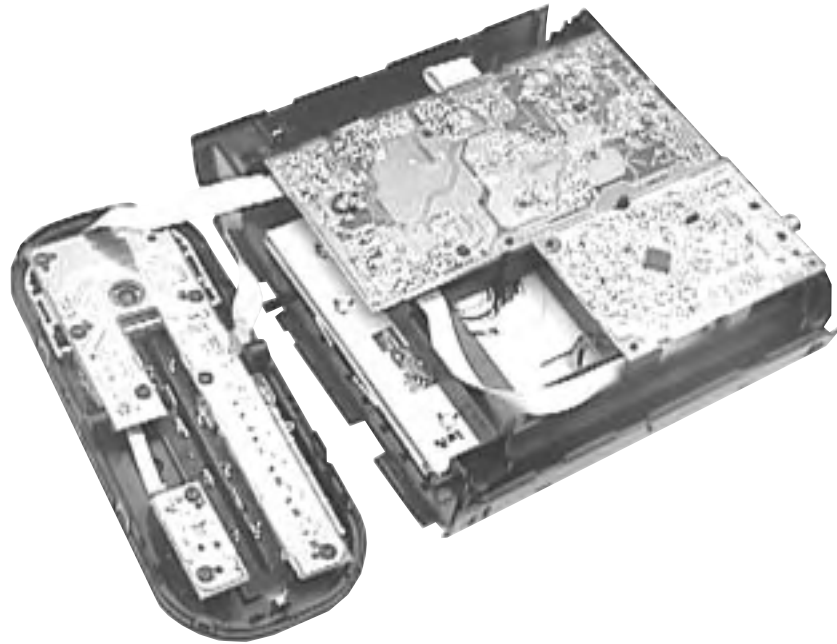


## DISMANTLING INSTRUCTIONS (CENTRE UNIT)

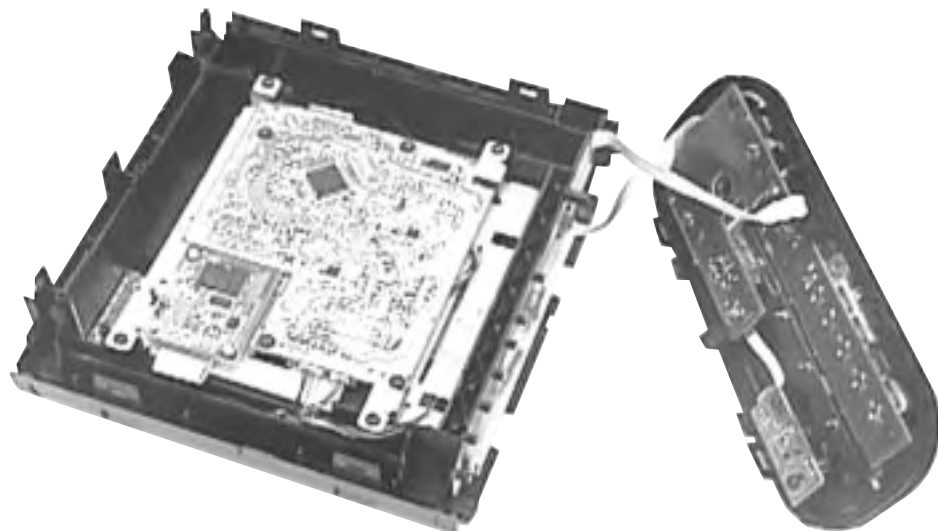
Service position A



Service position B



Service position C



## DISMANTLING INSTRUCTIONS (POWER BOX)

*Dismantling of the Power Box Cabinet*

- 1) Remove 4 screws J (see Figure 8) from both side of the Power Box to loosen the Cabinet Top Power Box (pos 229) and Cabinet Bottom Power Box (pos 230).



Figure 8

- 2) Uncatch C2 (see Figure 9) to separate the Cabinet Front Power Box (pos 227) and Cabinet Rear Power Box (pos 228) from the chassis.



Figure 9

- 3) Remove 8 screws K (see Figure 10) to loosen the Chassis Top of the Power Box (see Service position A for Power Box).

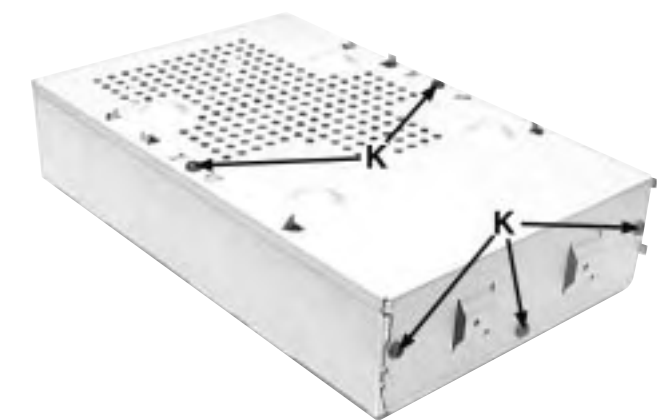


Figure 10



**DISMANTLING INSTRUCTIONS (POWER BOX)*****Dismantling of the Amplifier Board and Supply Board and Interconnect Board***

- 1) Remove 3 screws L (see Figure 11 and Figure 12) to loosen the Amplifier Board (pos 1102).
- 2) Remove 2 screws M (see Figure 12) to loosen the Interconnect Board (pos 1103).
- 3) Remove 3 screws N (see Figure 11 and Figure 12) to loosen the Supply Board (pos 1101).



Figure 11

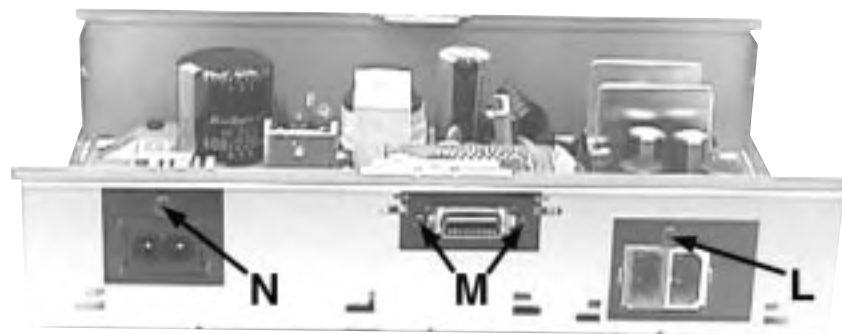


Figure 12

***Repair Hints*****1) WARNING**

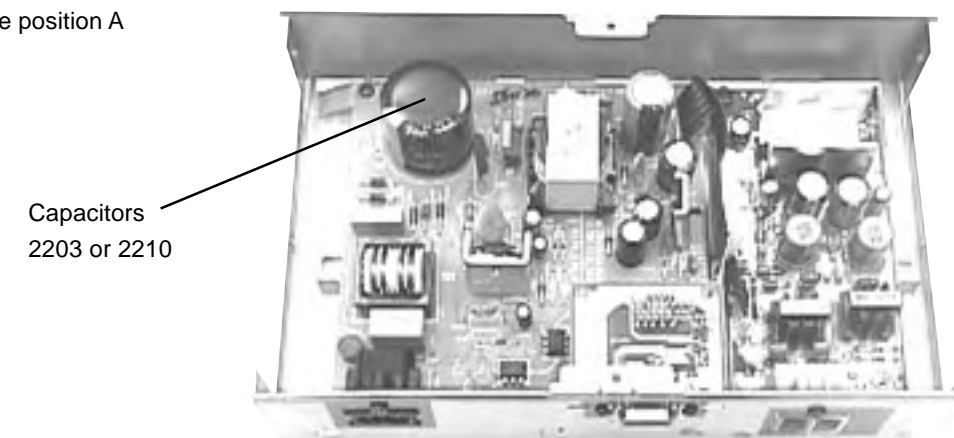
**Switching Mode Power Supply (SMPS) Board consists of high voltage filter capacitors (2203 or 2210). Safety measures must be taken by the repair technician during servicing:**

- When the supply is on, avoid touching the SMPS Board and the high voltage filter capacitors (2203 or 2210).
- When the supply is off, make sure to discharge the high voltage filter capacitors (2203 or 2210) with a suitable value resistor before any servicing to prevent electric shock.

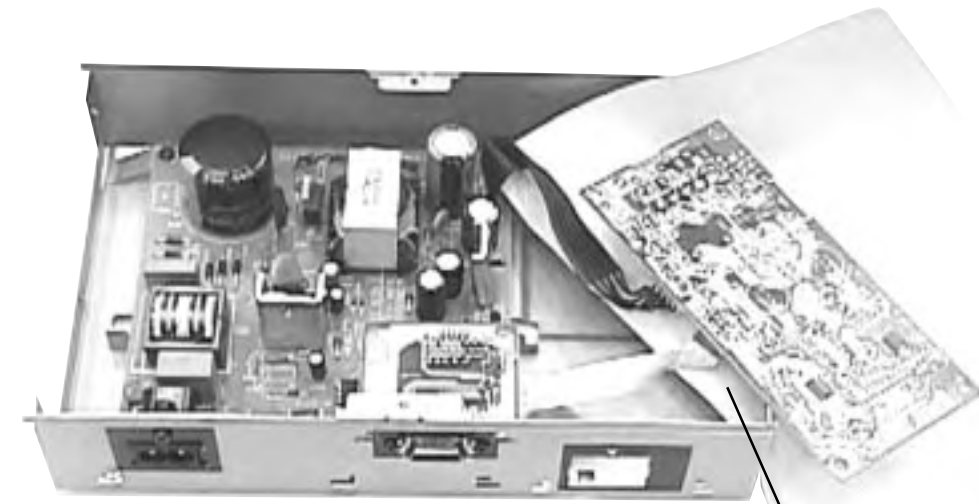
- 2) The flex cables are very fragile, care should be taken not to damage them during repair. After repair, be very sure that the flex cables are inserted properly into the flex sockets before encasing, otherwise faults may occur.

**DISMANTLING INSTRUCTIONS (POWER BOX)**

Service position A

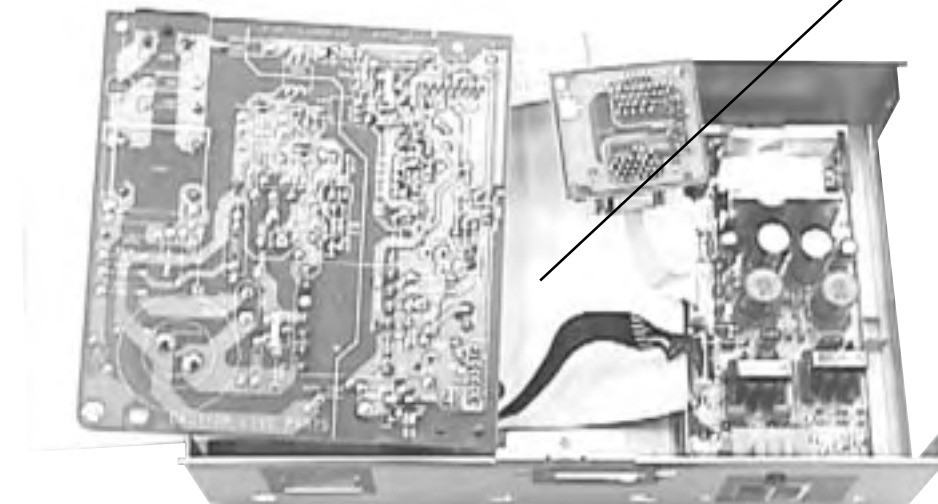


Service position B



Use a insulation sheet to prevent any damaged or short-circuit of the boards.

Service position C



# SERVICE TEST PROGRAM

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

The Remote Control must already be set to "AUX" mode before pressing any of the specified Remote Control keys in the Service Test Mode.

All test buttons mentioned in the Service Test Program are activated from the Remote Control unless otherwise specified.

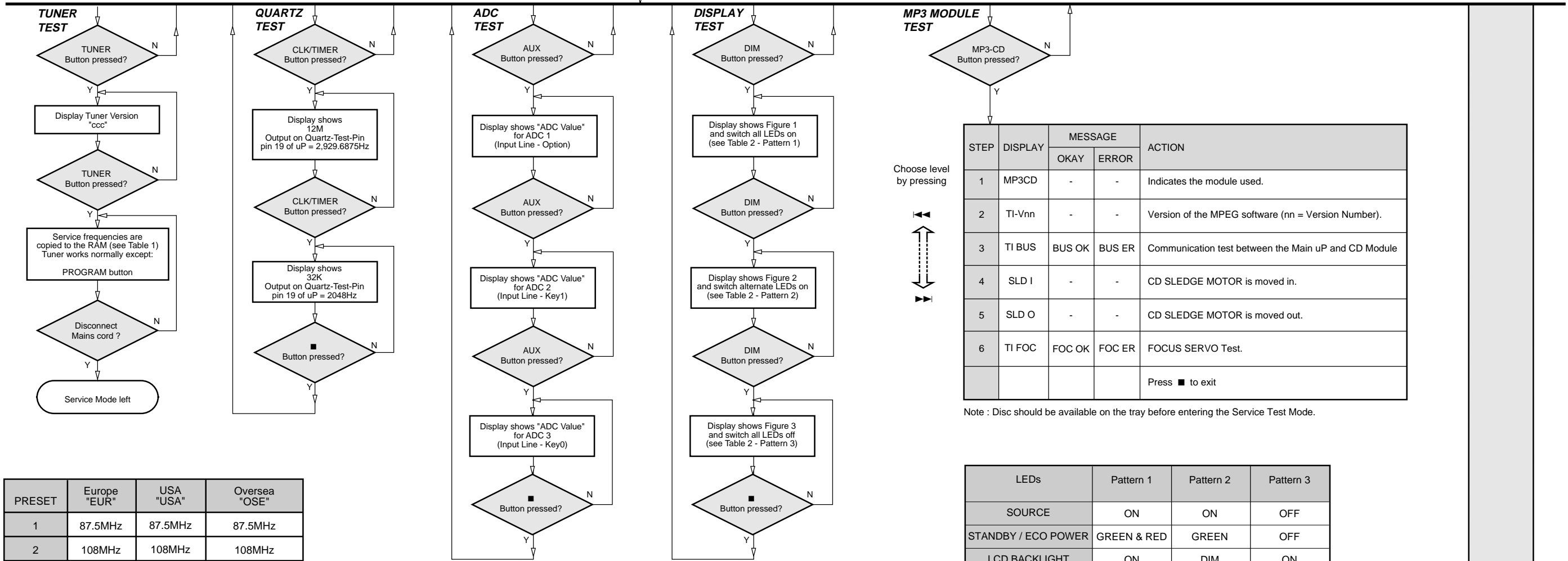
\*\* test buttons are activated from the Set.

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

S refers to Service Mode

V refers to Version

yy refers to Software version number of the uProcessor (counting up from 01 to 99)



STEP	DISPLAY	MESSAGE		ACTION
		OKAY	ERROR	
1	MP3CD	-	-	Indicates the module used.
2	TI-Vnn	-	-	Version of the MPEG software (nn = Version Number).
3	TI BUS	BUS OK	BUS ER	Communication test between the Main uP and CD Module
4	SLD I	-	-	CD SLEDGE MOTOR is moved in.
5	SLD O	-	-	CD SLEDGE MOTOR is moved out.
6	TI FOC	FOC OK	FOC ER	FOCUS SERVO Test.
Press ■ to exit				

Note : Disc should be available on the tray before entering the Service Test Mode.

LEDs	Pattern 1	Pattern 2	Pattern 3
SOURCE	ON	ON	OFF
STANDBY / ECO POWER	GREEN & RED	GREEN	OFF
LCD BACKLIGHT	ON	DIM	ON

Table 2

PRESET	Europe "EUR"	USA "USA"	Oversea "OSE"
1	87.5MHz	87.5MHz	87.5MHz
2	108MHz	108MHz	108MHz
3	531kHz	530kHz	531/530kHz*
4	1602kHz	1700kHz	1602/1700kHz*
5	558kHz	560kHz	558/560kHz*
6	1494kHz	1500kHz	1494/1500kHz*
7	87.5MHz	98MHz	87.5/98MHz*
8	87.5MHz	87.5MHz	87.5MHz
9	87.5MHz	87.5MHz	87.5MHz
10	87.5MHz	87.5MHz	87.5MHz
11	98MHz	87.5MHz	98/87.5MHz*

Table 1

Note: \* Depending on the selected grid frequency (9 or 10kHz). By holding the \*\*SOURCE and \*\*PLAY buttons depressed while switching on the Mains supply, the tuning grid frequency is toggled between 9kHz and 10kHz for the Oversea (/21) version.



Figure 1

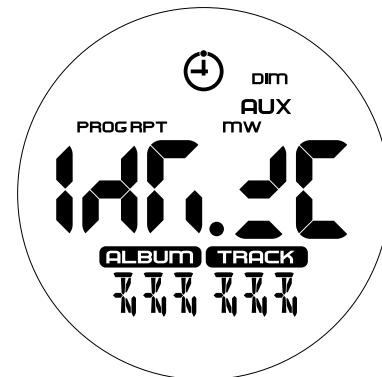


Figure 2

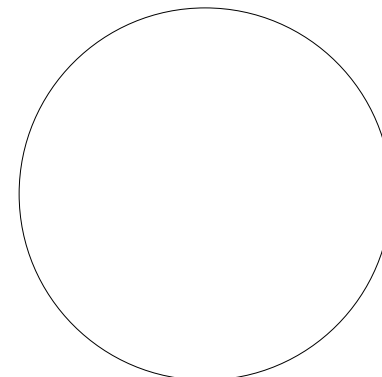
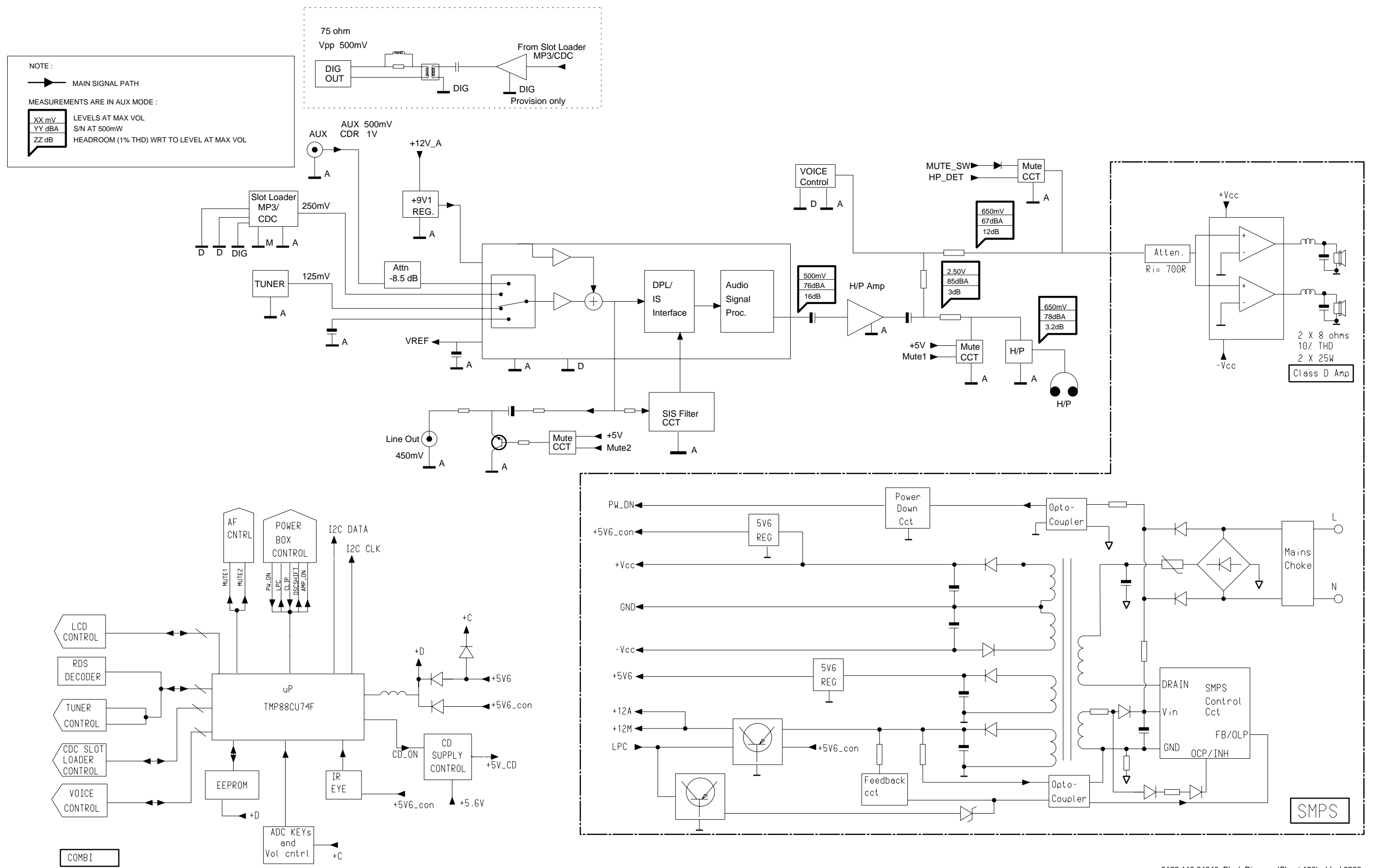


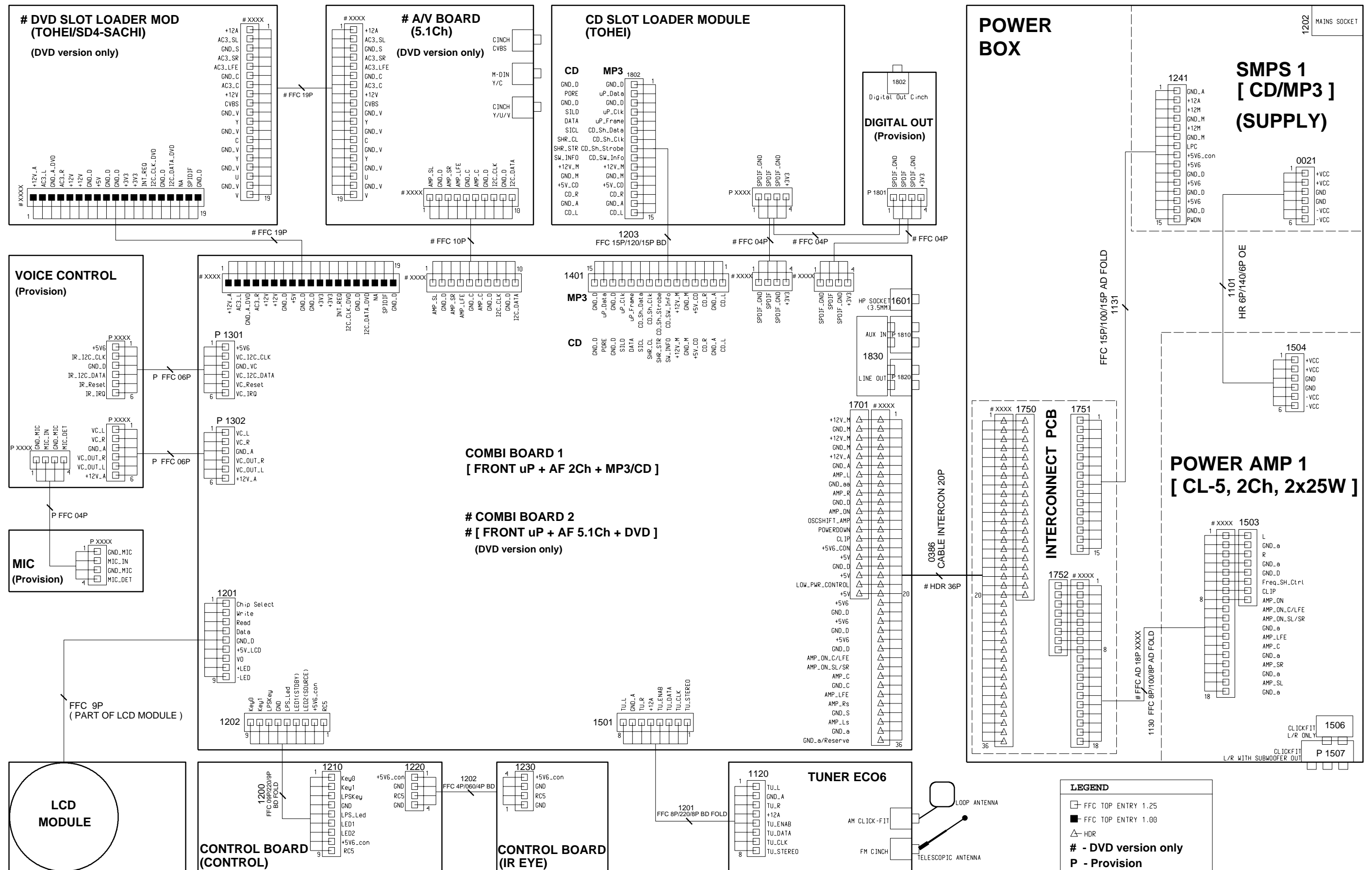
Figure 3

TEST	Activated with	ACTION
EEPROM TEST	▶▶  ■ to Exit	A test pattern will be sent to the EEPROM. "PASS" is displayed if the uProcessor read back the test pattern correctly, otherwise "FAIL" will be displayed.
EEPROM FORMAT TEST	◀◀	Load default data. Display shows "NEW" for 1 second. <b>Caution!</b> All presets from the customer will be lost!!
DEMO TOGGLE	MUTE	Pressing this button will toggle between "DEMO ON" and "DEMO OFF". The DEMO status will scroll once across the Display.
LEAVE SERVICE TEST PROGRAM	Disconnect mains cord	

# SET BLOCK DIAGRAM



# SET WIRING DIAGRAM



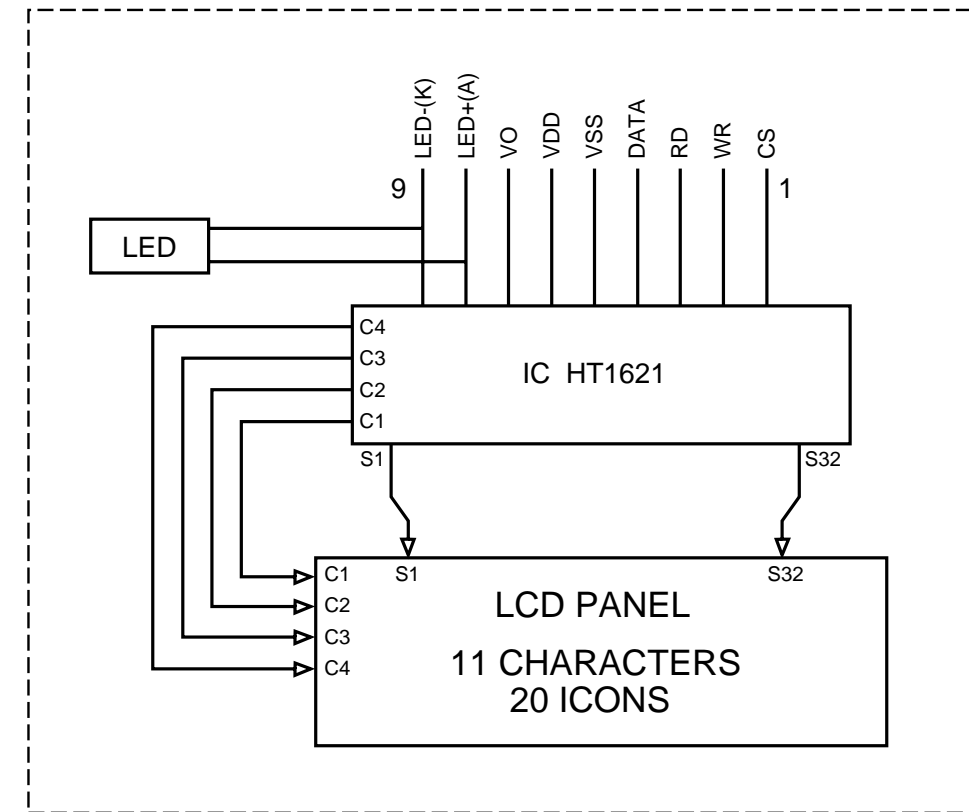
# CONTROL BOARD

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# LCD MODULE

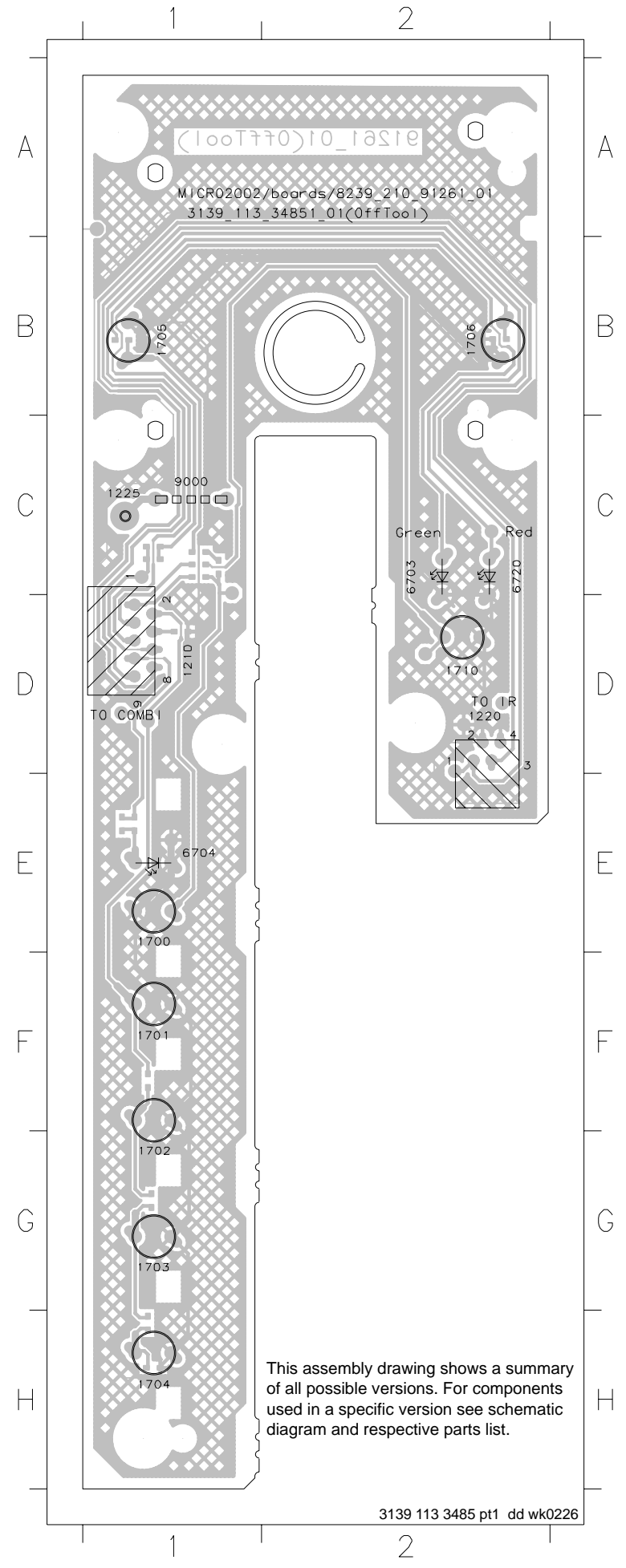
## BLOCK DIAGRAM



## INTERFACE PIN FUNCTION

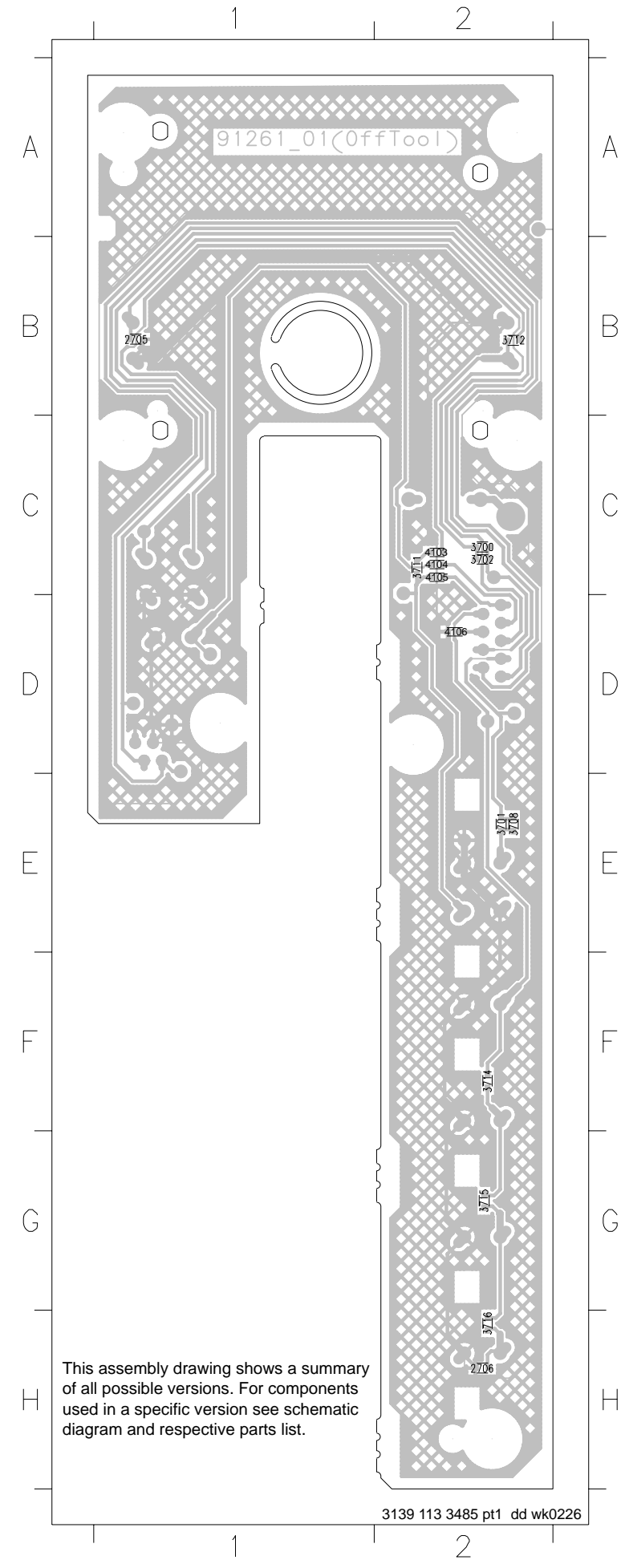
NO	SYMBOL	I/O	FUNCTION
1.	CS	I	Chip Selection
2.	WR	I	Write Clock Input
3.	RD	I	Read Clock Input
4.	DATA	I/O	Serial Data Input/Output
5.	VSS	P	Power Supply
6.	VDD	P	Power Supply
7.	VO	P	LCD Power Input
8.	LED+(A)	P	Power Supply for LED
9.	LED-(K)	P	Power Supply for LED

CONTROL BOARD - COMPONENT LAYOUT



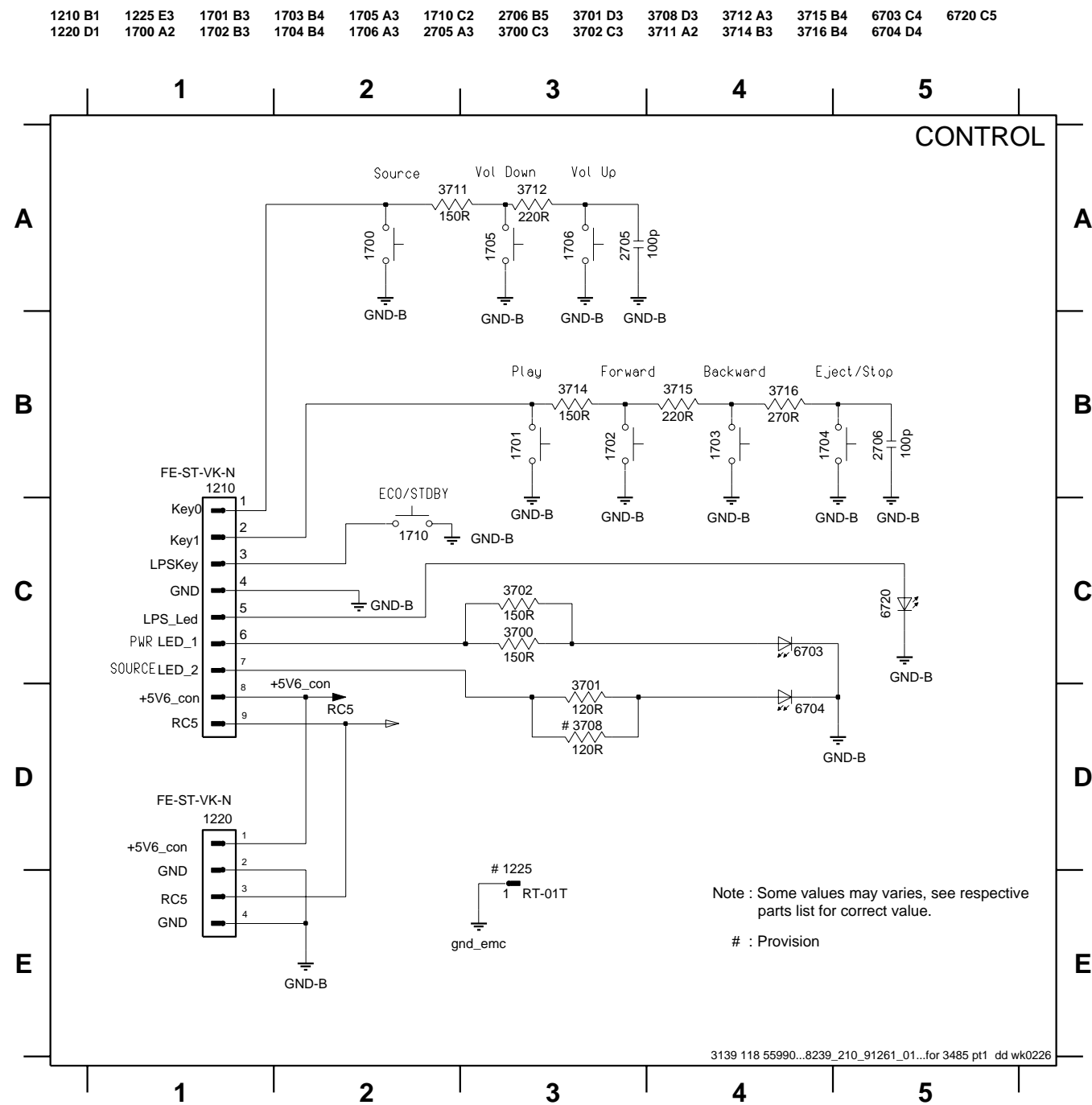
- 1210 D1
- 1220 D2
- 1225 C1
- 1700 E1
- 1701 F1
- 1702 G1
- 1703 G1
- 1704 H1
- 1705 B1
- 1706 B2
- 1710 D2
- 6703 C2
- 6704 E1
- 6720 C2
- 9000 C1

CONTROL BOARD - CHIP LAYOUT



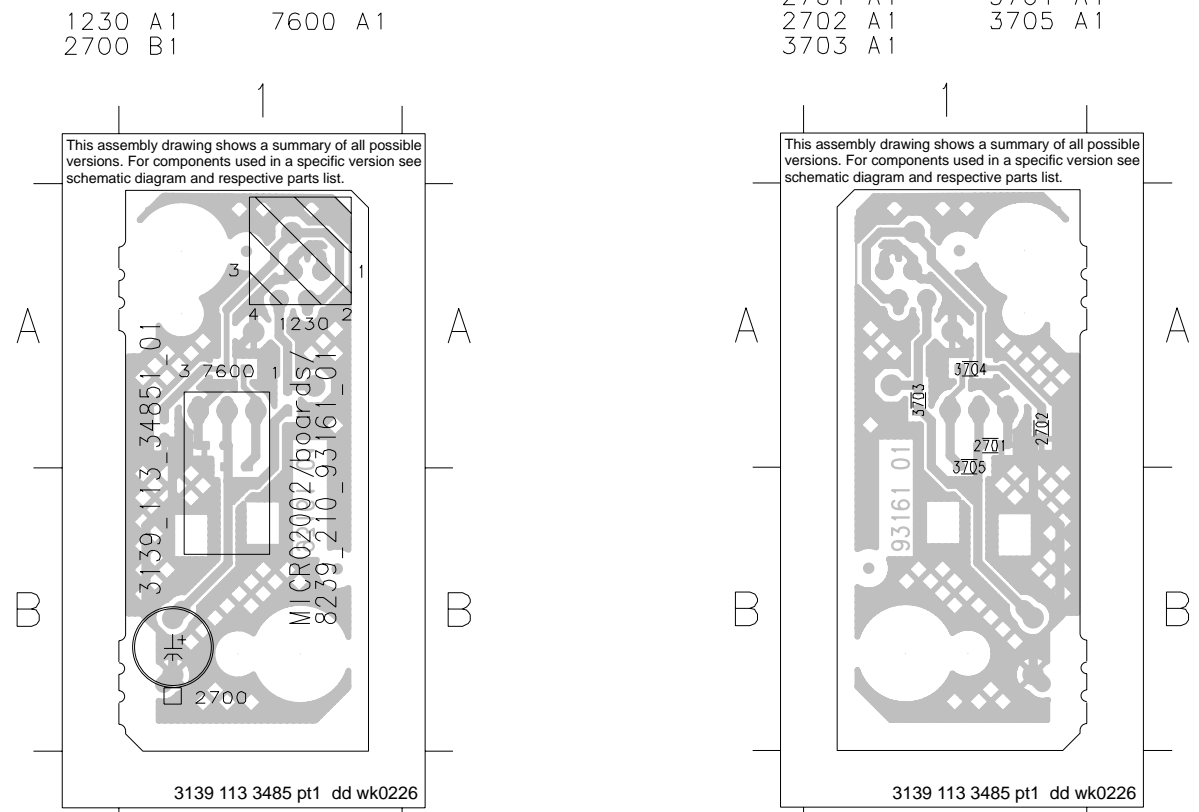
- 2705 B1
- 2706 H2
- 3700 C2
- 3701 E2
- 3702 C2
- 3708 E2
- 3711 C2
- 3712 B2
- 3714 F2
- 3715 G2
- 3716 H2
- 4103 C2
- 4104 C2
- 4105 C2
- 4106 D2

CONTROL BOARD - CIRCUIT DIAGRAM

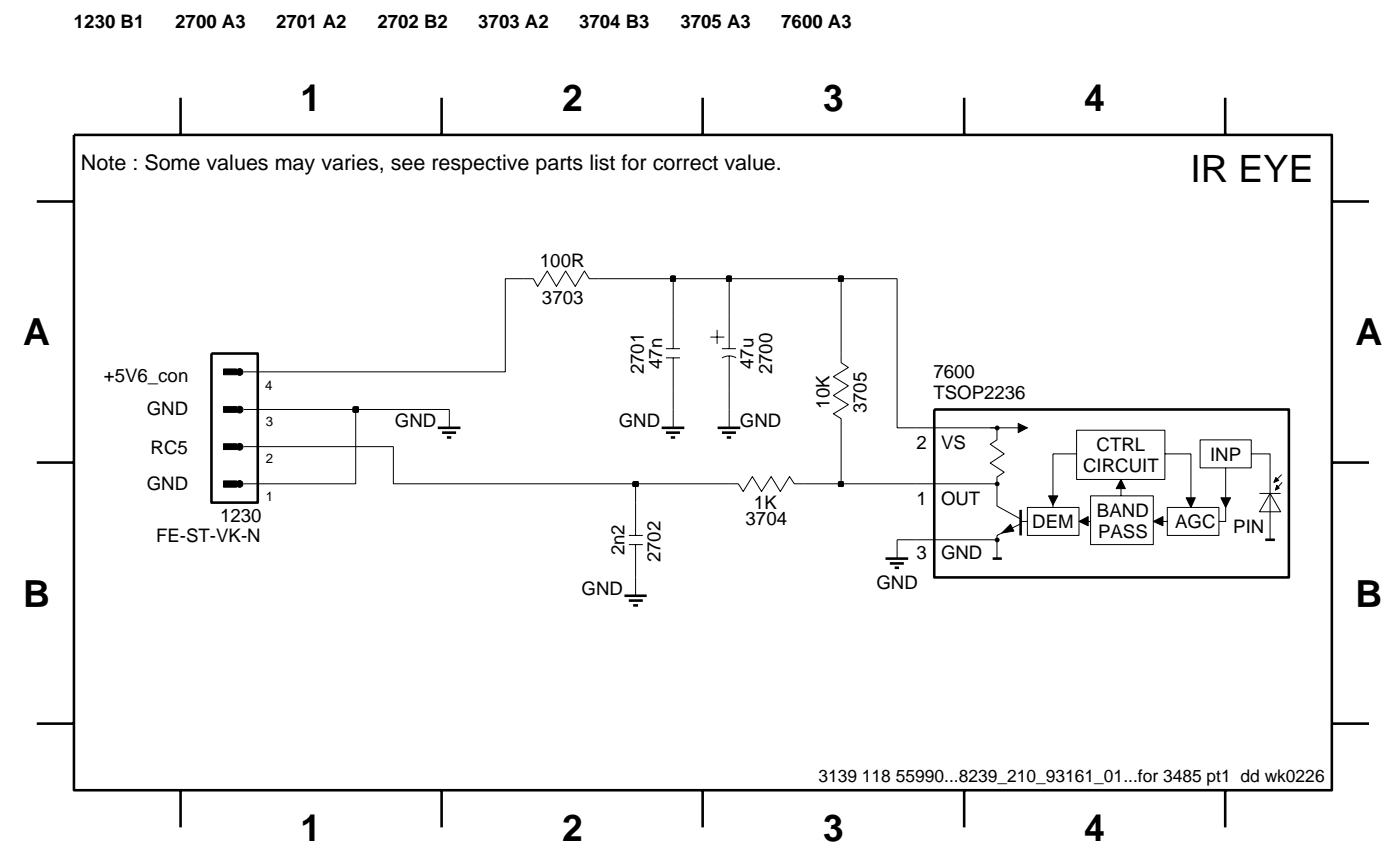


IR EYE BOARD - COMPONENT LAYOUT

IR EYE BOARD - CHIP LAYOUT



IR EYE BOARD - CIRCUIT DIAGRAM



**ELECTRICAL PARTS LIST - CONTROL BOARD**

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**MISCELLANEOUS**

---

1210	4822 265 11531	Flex Connector 9P
1220	4822 265 11183	Flex Connector 4P
1230	4822 265 11183	Flex Connector 4P
1700	4822 276 13775	Tact Switch
1701	4822 276 13775	Tact Switch
1702	4822 276 13775	Tact Switch
1703	4822 276 13775	Tact Switch
1704	4822 276 13775	Tact Switch
1705	4822 276 13775	Tact Switch
1706	4822 276 13775	Tact Switch
1710	4822 276 13775	Tact Switch

**CAPACITORS**

---

2700	4822 124 81286	47uF 20% 16V
2701	3198 017 34730	47nF 16V
2702	4822 126 14238	2,2nF 50V
2705	2020 552 94427	100pF 5% 50V
2706	2020 552 94427	100pF 5% 50V

**RESISTORS**

---

3700	4822 051 30151	150R 5% 0,062W
3701	4822 051 30121	120R 5% 0,062W
3702	4822 051 30151	150R 5% 0,062W
3703	4822 051 30101	100R 5% 0,062W
3704	4822 051 30102	1k 5% 0,062W
3705	4822 051 30103	10k 5% 0,062W
3711	4822 051 30151	150R 5% 0,062W
3712	4822 051 30221	220R 5% 0,062W
3714	4822 051 30151	150R 5% 0,062W
3715	4822 051 30221	220R 5% 0,062W
3716	4822 051 30271	270R 5% 0,062W
4103	4822 051 30008	0R Jumper 0603
4104	4822 051 30008	0R Jumper 0603
4105	4822 051 30008	0R Jumper 0603
4106	4822 051 30008	0R Jumper 0603

**DIODES**

---

6703	9322 183 96676	LED VS LTL-816GE
6704	9322 178 15676	LED VS LTL-8166FTNN
6720	9322 179 76676	LED VS LTL-816EELC

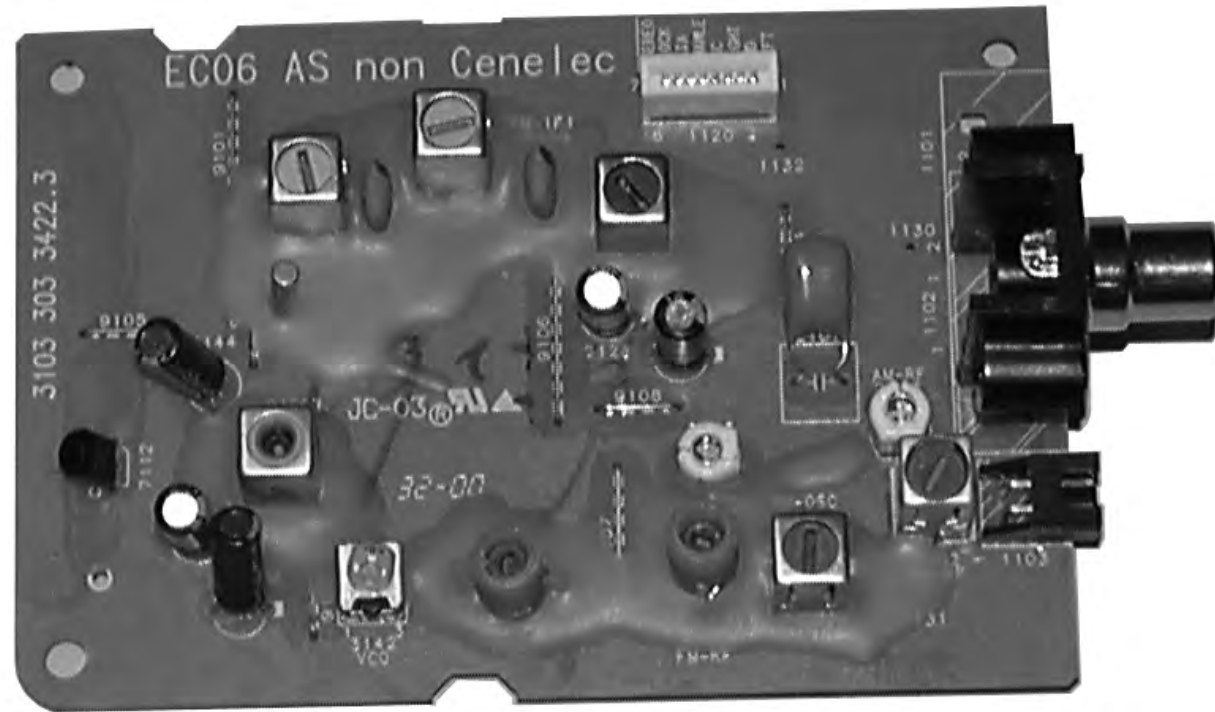
**TRANSISTORS & INTEGRATED CIRCUITS**

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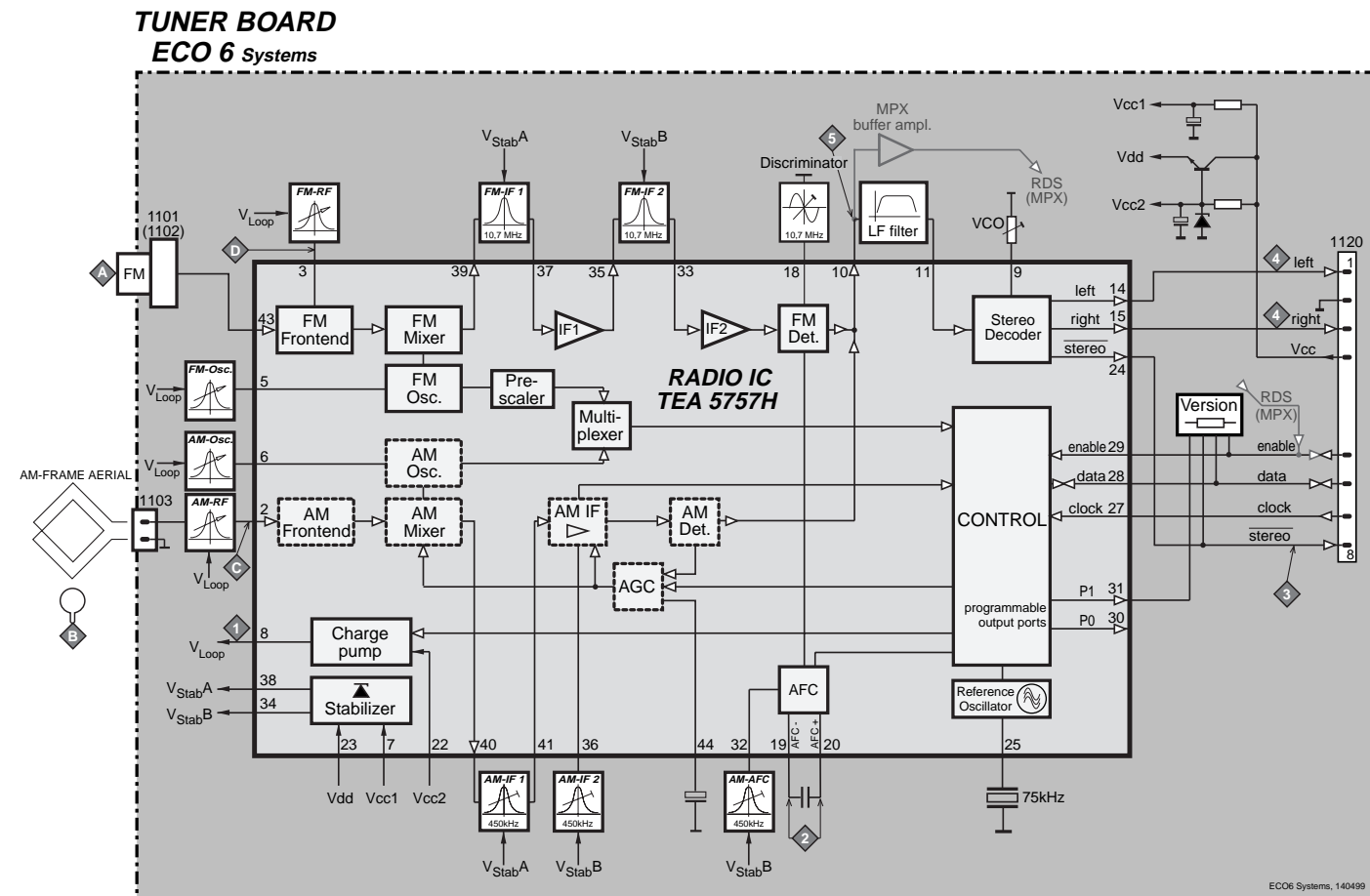
7600	9322 155 82667	IR Receiver TSOP2236ZC1
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Note : Only the parts mentioned in this list are normal service spare parts.





BLOCK DIAGRAM

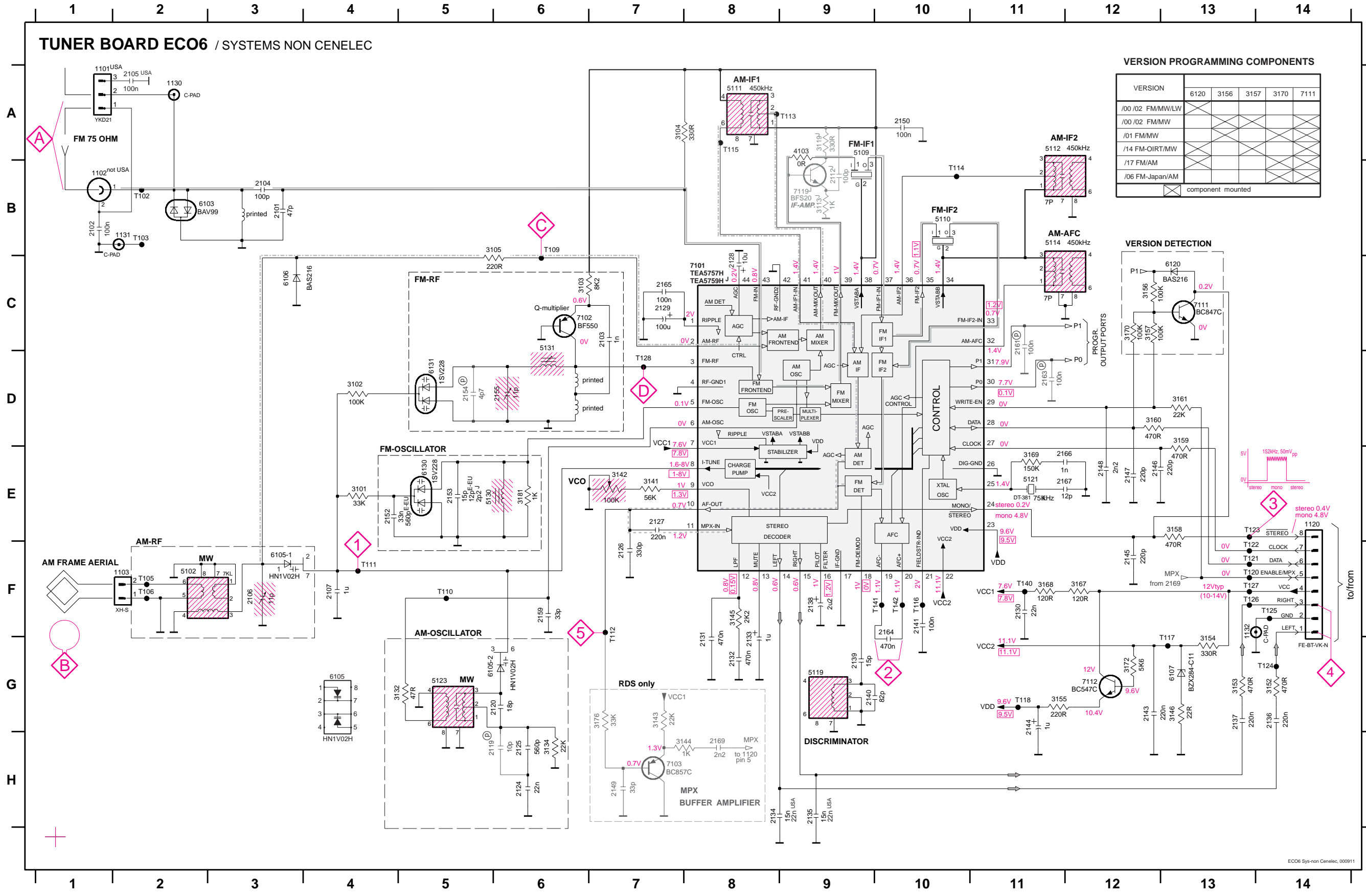


**ECO6 Tuner Board**  
version: **SYSTEMS non-CENELEC**

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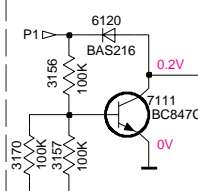
# TUNER BOARD ECO6 / SYSTEMS NON CENELEC



### 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				

### VERSION DETECTION



### LEGEND

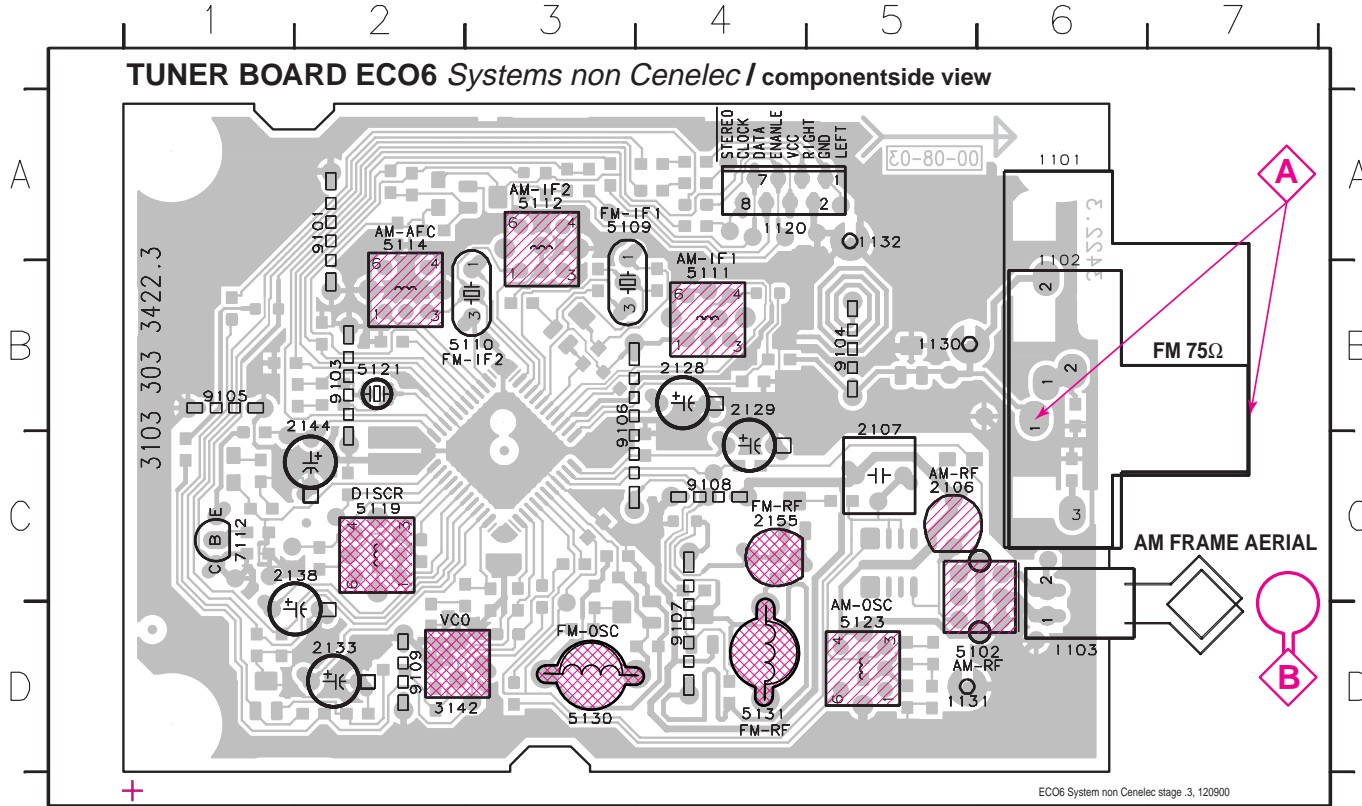
- Ⓧ ... for provision only
- USA ... for USA version only
- E-EU ... for East European version only
- J ... for Japanese version only

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

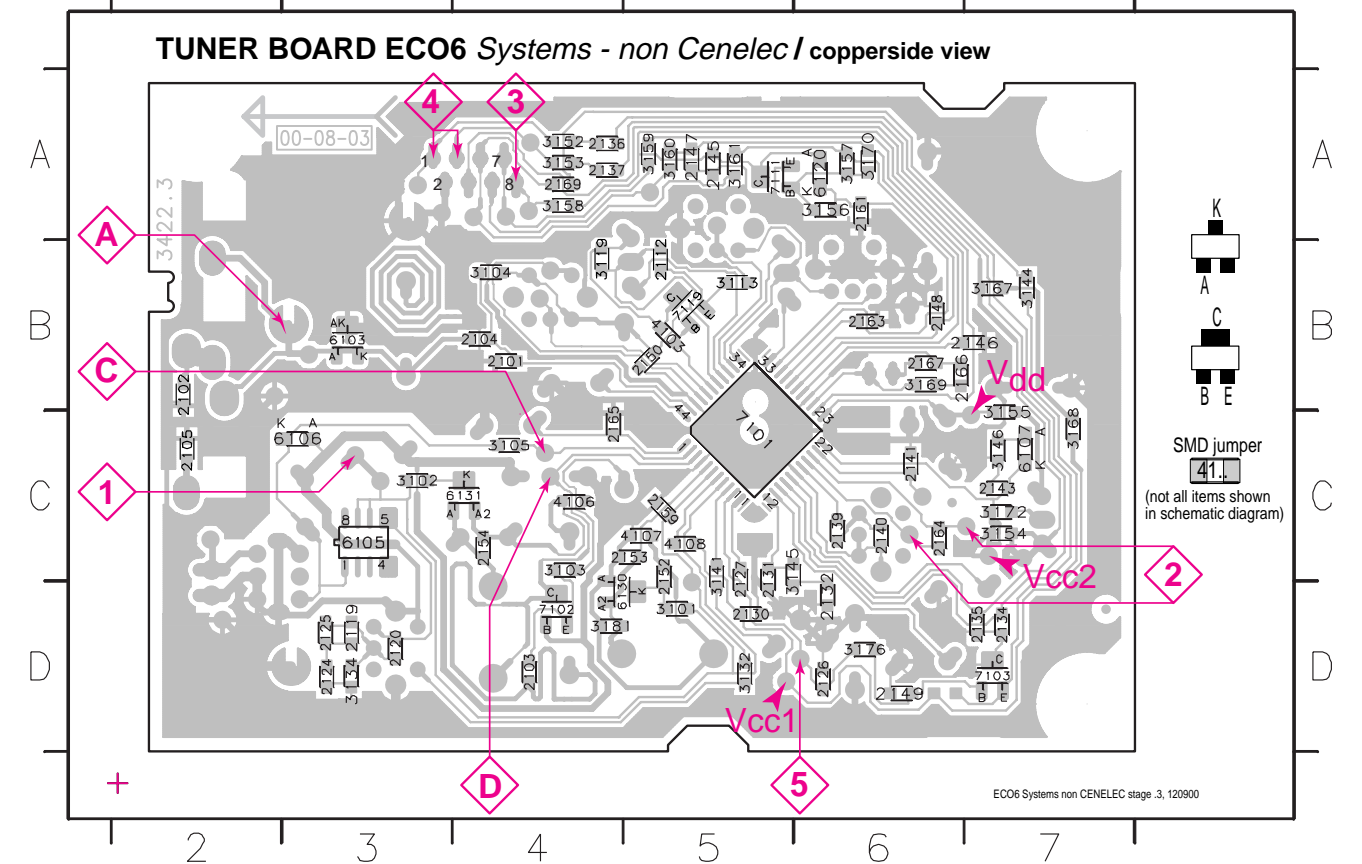
- Signal path
- FM
- - - AM
- · - · - MPX (Audio Frequency)
- ⇒ AF - left/right

1101 A1  
1102 B1  
1103 F2  
1120 E14  
1130 A2  
1131 B2  
1132 G13  
2101 B3  
2102 B4  
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  
2140 G9  
2141 F10  
2143 G12  
2144 G11  
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 C6  
3104 A7  
3105 B6  
3132 G5  
3134 H6  
3141 E7  
3142 E7  
3143 C7  
3144 H7  
3145 F8  
3146 G13  
3152 G14  
3153 C13  
3154 G13  
3155 G11  
3156 C12  
3157 C12  
3158 E13  
3159 D13  
3160 D12  
3161 D13  
3167 F12  
3168 E11  
3169 E11  
3170 G12  
3172 G12  
3176 G7  
3181 E6  
5102 F2  
5109 B9  
5110 B10  
5111 A8  
5112 A11  
5114 A11  
5119 G9  
5121 E11  
5122 G5  
5130 E5  
5131 C6  
6103 B2  
6105-1 F3  
6105-2 G5  
6107 G13  
6120 C13  
6130 E5  
6131 D5  
7101 C8  
7102 C6  
7103 H7  
7111 C13  
7112 F13  
7121 F13  
7122 F13  
7123 E13  
7124 G14  
7125 F14  
7126 F13  
7127 F13  
7128 D7  
7140 F11  
7141 F10  
7142 F10

1101 A6 1120 A4 1132 A5 2128 C4 2138 C2 3142 D2 5110 B3 5114 A2 5123 D5 7112 C1 9104 B5 9107 D4  
 1102 B6 1130 B5 2106 C5 2129 B4 2144 B2 5102 D6 5111 B4 5119 C2 5130 D3 9101 A2 9105 B1 9108 C4  
 1103 D6 1131 D5 2107 B5 2133 D2 2155 C4 5109 A3 5112 A3 5121 B2 5131 D4 9103 B2 9106 B3 9109 D2



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 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 partlist.

TUNER ADJUSTMENT TABLE ( ECO6 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 (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	
		C		5112		
<b>AM AFC</b> <b>MW</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)	1494kHz	B	1494kHz	2106	5	
	531 - 1602kHz		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

MISCELLANEOUS

1101	2422 015 19376	SOCKET 2P CLICKFIT	USA only
1102	4822 267 10283	SOCKET COAX, IEC 75Ω	not USA
1103	4822 265 31184	JST CONNECTOR 2 POLE	
1120	4822 265 11515	FFC SOCKET, 8P	

CAPACITORS

2101	4822 126 13692	47pF	1%	63V	
2102	4822 126 13838	100nF	10%	50V	not USA
2103	5322 122 31647	1nF	10%	63V	
2104	5322 122 32531	100pF	5%	50V	
2105	4822 126 13838	100nF	10%	50V	USA only

2106	2020 800 00191	3-11pF TRIMCAP.,N450	
2107	4822 121 51319	1μF	20% 50V
2120	4822 126 13689	18pF	1% 63V
2124	5322 122 32654	22nF	10% 63V
2125	2020 552 96199	560pF	1% 50V

2126	5322 122 31863	330pF	5%	50V
2127	4822 126 14076	220nF	20%	25V
2128	4822 124 40248	10μF	20%	63V
2129	4822 124 41584	100μF	20%	10V
2130	5322 122 32654	22nF	10%	63V

2131	4822 126 13482	470nF	20%	16V
2132	4822 126 13482	470nF	20%	16V
2133	4822 124 21913	1μF	20%	63V
2134	4822 126 13188	15nF	5%	63V
2134	5322 122 32654	22nF	10%	63V

2135	4822 126 13188	15nF	5%	63V
2135	5322 122 32654	22nF	10%	63V
2136	4822 126 14076	220nF	20%	25V
2137	4822 126 14076	220nF	20%	25V
2138	4822 124 22652	2,2μF	20%	50V

2139	4822 126 14236	15pF	5%	50V
2140	4822 126 13695	82pF	1%	63V
2141	4822 126 13838	100nF	10%	50V
2143	4822 126 14076	220nF	20%	25V
2144	4822 124 21913	1μF	20%	63V

2145	4822 122 33575	220pF	5%	50V
2146	4822 122 33575	220pF	5%	50V
2147	4822 122 33575	220pF	5%	50V
2148	4822 122 33127	2,2nF	10%	63V
2149	5322 122 32659	33pF	5%	50V

2150	4822 126 13838	100nF	10%	50V
2152	4822 126 12105	33nF	5%	63V
2152	5322 116 80853	560pF	5%	63V
2153	4822 126 13486	15pF	2%	63V
2153	4822 122 33926	12pF	2%	50V

2155	2020 800 00191	3-11pF TRIMCAP.,N450	
2159	5322 122 32659	33pF	5% 50V
2164	4822 126 13482	470nF	20% 16V
2165	4822 126 13838	100nF	10% 50V
2166	5322 122 31647	1nF	10% 63V

2167	4822 122 33926	12pF	5%	50V
2169	4822 122 33127	2,2nF	10%	63V

RESISTORS

3101	4822 051 20333	33kΩ	5%	0,1W
3102	4822 117 10837	100kΩ	1%	0,1W
3103	4822 051 20822	8,2kΩ	5%	0,1W
3104	4822 117 13577	330Ω	1%	0,1W
3105	4822 117 11503	220Ω	5%	0,1W

3132	4822 051 20479	47Ω	5%	0,1W
3134	4822 051 20223	22kΩ	5%	0,1W
3141	4822 117 11148	56kΩ	1%	0,1W
3142	4822 100 12159	TRIMPOT. 100kΩ		

RESISTORS

3143	4822 051 20223	22kΩ	5%	0,1W
3144	4822 051 10102	1kΩ	2%	0,25W
3145	4822 117 11449	2,2kΩ	1%	0,1W
3146	4822 051 20229	22Ω	5%	0,1W
3152	4822 051 20471	470Ω	5%	0,1W

3153	4822 051 20471	470Ω	5%	0,1W
3154	4822 117 13577	330Ω	1%	0,1W
3155	4822 117 11503	220Ω	5%	0,1W
3156	4822 117 10837	100kΩ	1%	0,1W
3157	4822 117 10837	100kΩ	1%	0,1W

3158	4822 051 20471	470Ω	5%	0,1W
3159	4822 051 20471	470Ω	5%	0,1W
3160	4822 051 20471	470Ω	5%	0,1W
3161	4822 051 20223	22kΩ	5%	0,1W
3167	4822 051 20121	120Ω	5%	0,1W

3168	4822 051 20121	120Ω	5%	0,1W
3169	4822 051 20154	150kΩ	5%	0,1W
3170	4822 117 10837	100kΩ	1%	0,1W
3172	4822 051 20562	5,6kΩ	5%	0,1W
3176	4822 051 20333	33kΩ	5%	0,1W

3181	4822 051 10102	1kΩ	2%	0,25W
4103	4822 051 20008	CHIP JUMPER 0805		
4106	4822 051 20008	CHIP JUMPER 0805		
4107	4822 051 20008	CHIP JUMPER 0805		
4108	4822 051 20008	CHIP JUMPER 0805		

COILS

5102	4822 157 71634	RF-COIL MW
5109	4822 242 70665	FM-IF FILTER 10,7MHz
5110	4822 242 70665	FM-IF FILTER 10,7MHz
5111	2422 549 44023	AM-IF FILTER 450kHz
5112	4822 157 70302	AM-IF FILTER 450kHz

5114	4822 157 70302	AM-IF FILTER 450kHz
5119	4822 157 11443	DISCRIMINATOR COIL
5121	4822 242 10261	QUARTZ 75kHz
5123	2422 549 44108	RF-COIL, AM-OSCILLATOR
5130	4822 157 11843	RF COIL 1,5 TURNS

5131	4822 157 11843	RF COIL 1,5 TURNS
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DIODES

6103	5322 130 34337	BAV99
6105	4822 130 83075	HN1V02H
6106	4822 130 83757	BAS216
6107	9340 386 90115	BZX284-C11
6120	4822 130 83757	BAS216

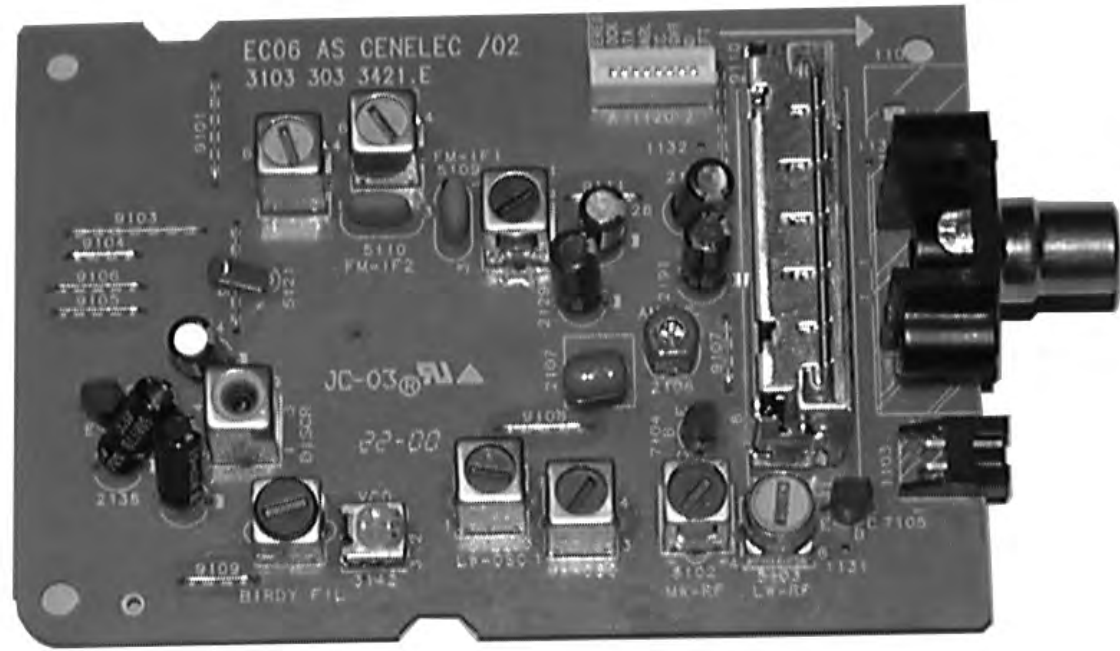
6130	4822 130 82833	1SV228
6131	4822 130 82833	1SV228

TRANSISTORS

7102	4822 130 42131	BF550
7103	5322 130 42756	BC857C
7111	5322 130 42755	BC847C
7112	4822 130 44503	BC547C

INTEGRATED CIRCUITS

7101	9351 740 80557	TEA5757H/V1, RADIO IC
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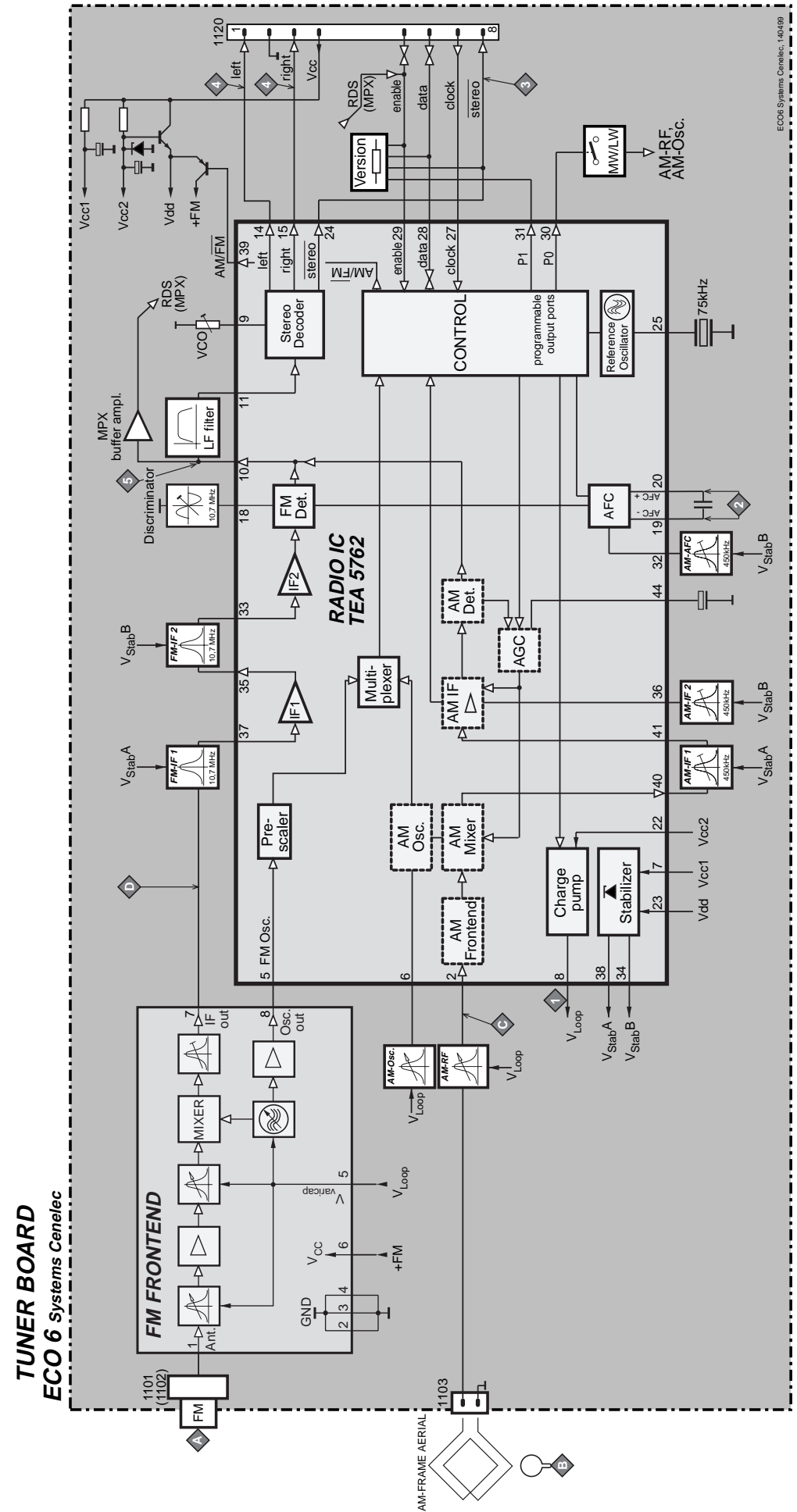
# ECO6 Tuner Board

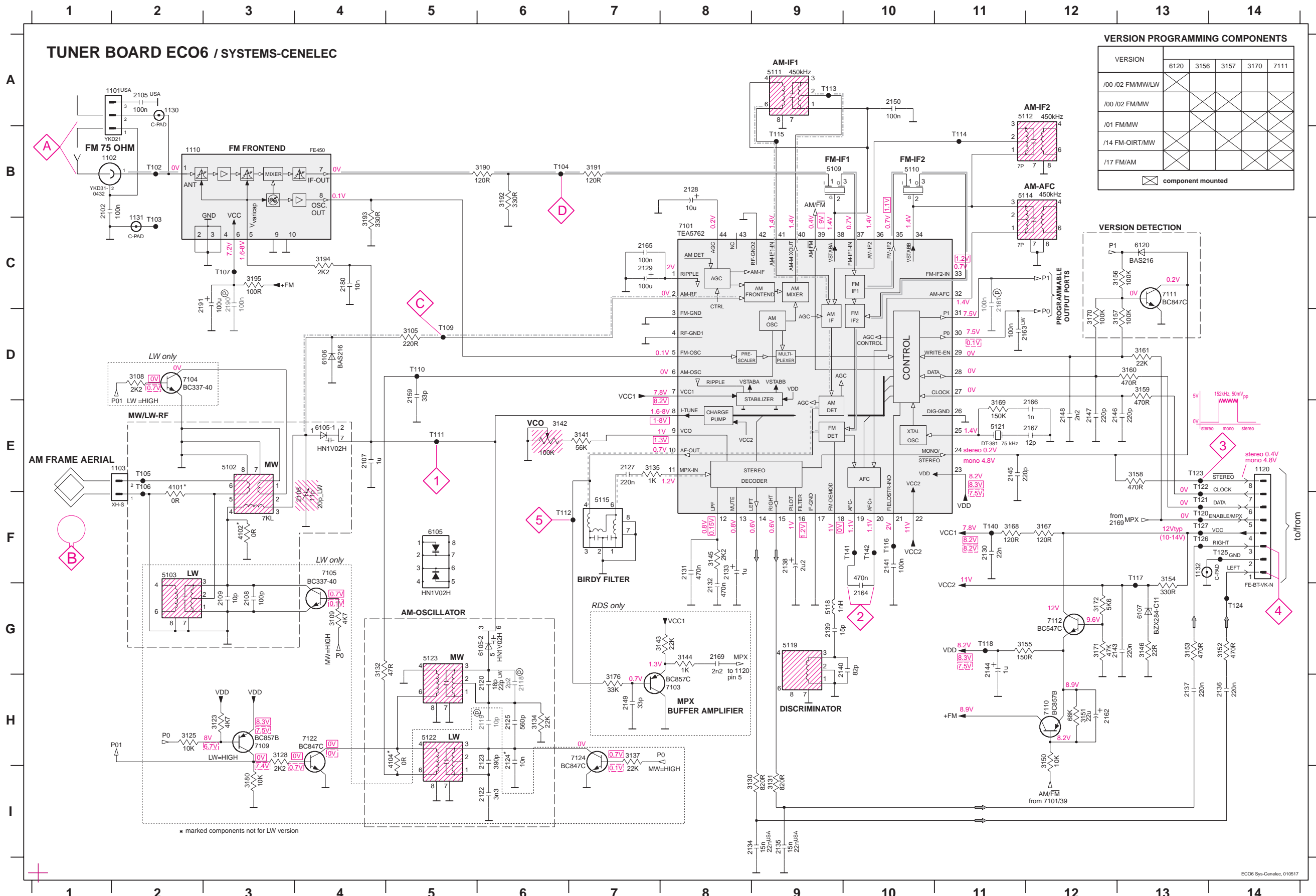
version: **SYSTEMS CENELEC**

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## BLOCK DIAGRAM

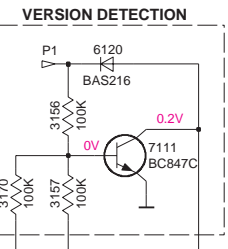




**VERSION PROGRAMMING COMPONENTS**

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

⊠ component mounted

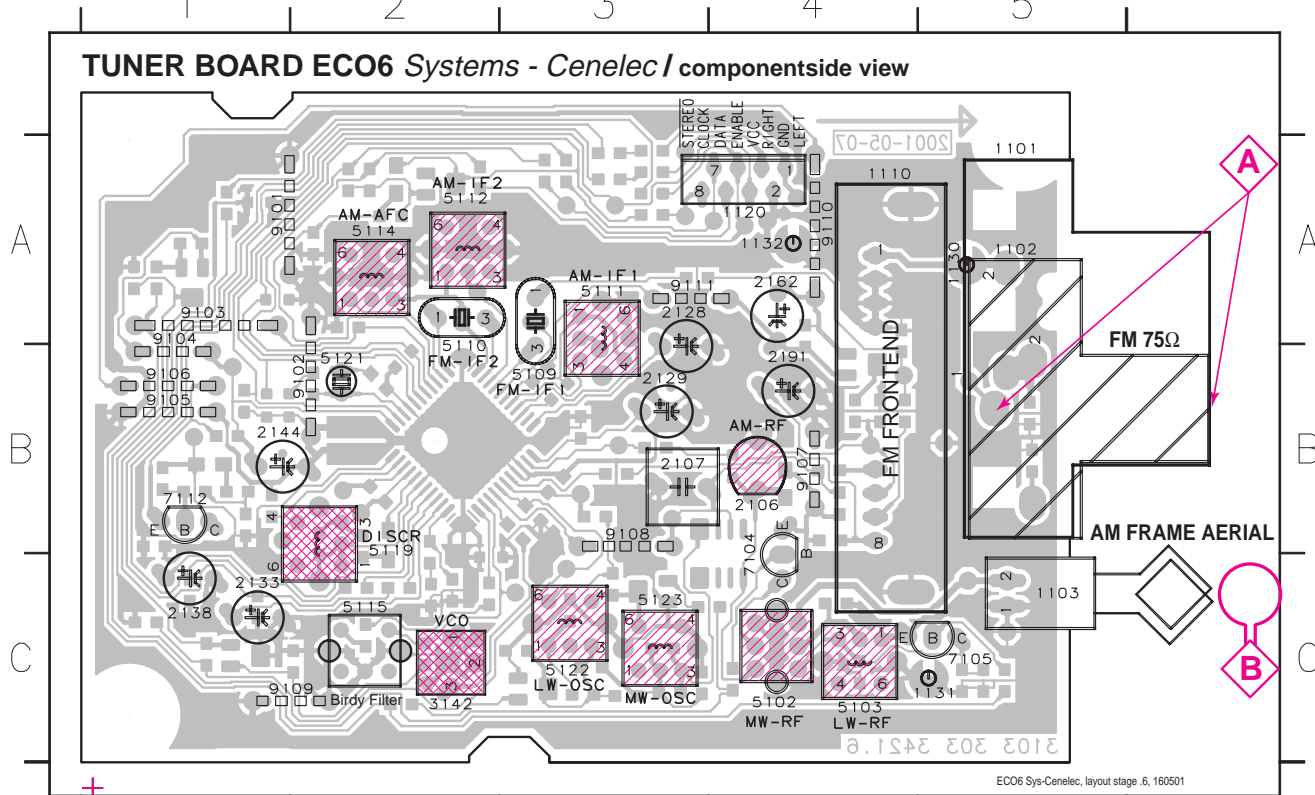


- 1101 A2
- 1102 B1
- 1103 E2
- 1110 B2
- 1120 E14
- 1130 A2
- 1131 C2
- 1132 F13
- 2102 B1
- 2105 A2
- 2106 E3
- 2107 E4
- 2108 G3
- 2109 G3
- 2118 H6
- 2119 H6
- 2120 H6
- 2122 H6
- 2123 H6
- 2124 H6
- 2125 H6
- 2127 E7
- 2128 B8
- 2129 C7
- 2130 F11
- 2131 F8
- 2132 F8
- 2133 F8
- 2134 I8
- 2135 I9
- 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
- 2180 C4
- 2190 C3
- 2191 C3
- 3105 D5
- 3108 D2
- 3109 G4
- 3123 H3
- 3125 H2
- 3128 H3
- 3130 I9
- 3131 I9
- 3132 G4
- 3134 H6
- 3135 E7
- 3137 H7
- 3141 E7
- 3142 E9
- 3143 G8
- 3144 G8
- 3145 F8
- 3146 G13
- 3150 H12
- 3151 H12
- 3152 G14
- 3153 G13
- 3154 F13
- 3155 G12
- 3156 C12
- 3157 D12
- 3158 F13
- 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 H5
- 5102 E3
- 5103 F2
- 5109 B9
- 5110 B10
- 5111 A9
- 5112 A11
- 5114 B11
- 5115 E7
- 5118 G9
- 5119 G9
- 5121 E11
- 5122 H5
- 5123 G5
- 6105-2 G6
- 6106 D4
- 6107 G13
- 6120 C13
- 7101 C8
- 7103 H8
- 7104 D2
- 7105 F4
- 7109 H3
- 7110 H12
- 7111 C13
- 7124 H7
- 7125 H4
- 7102 B2
- 7103 B2
- 7104 B6
- 7105 E2
- 7106 E2
- 7109 D5
- 7110 F5
- 7111 F5
- 7112 F7
- 7113 A9
- 7114 B11
- 7116 F10
- 7117 F13
- 7118 G11
- 7120 F13
- 7121 F13
- 7122 E13
- 7123 E13
- 7124 G14
- 7125 F14
- 7126 F13
- 7127 F13
- 7140 F11
- 7141 F10
- 7142 F10
- 7143 F10
- 7144 F10
- 7145 F10
- 7146 F10
- 7147 F10
- 7148 F10
- 7149 F10
- 7150 A10
- 7159 D5
- 7161 C11
- 7162 H12
- 7163 D11
- 7164 G10
- 7165 C7
- 7166 E11
- 7167 E11
- 7169 G8
- 7180 C4
- 7190 C3
- 7191 C3
- 3105 D5
- 3108 D2
- 3109 G4
- 3123 H3
- 3125 H2
- 3128 H3
- 3130 I9
- 3131 I9
- 3132 G4
- 3134 H6
- 3135 E7
- 3137 H7
- 3141 E7
- 3142 E9
- 3143 G8
- 3144 G8
- 3145 F8
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- 3150 H12
- 3151 H12
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- 3154 F13
- 3155 G12
- 3156 C12
- 3157 D12
- 3158 F13
- 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 H5
- 5102 E3
- 5103 F2
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- 5110 B10
- 5111 A9
- 5112 A11
- 5114 B11
- 5115 E7
- 5118 G9
- 5119 G9

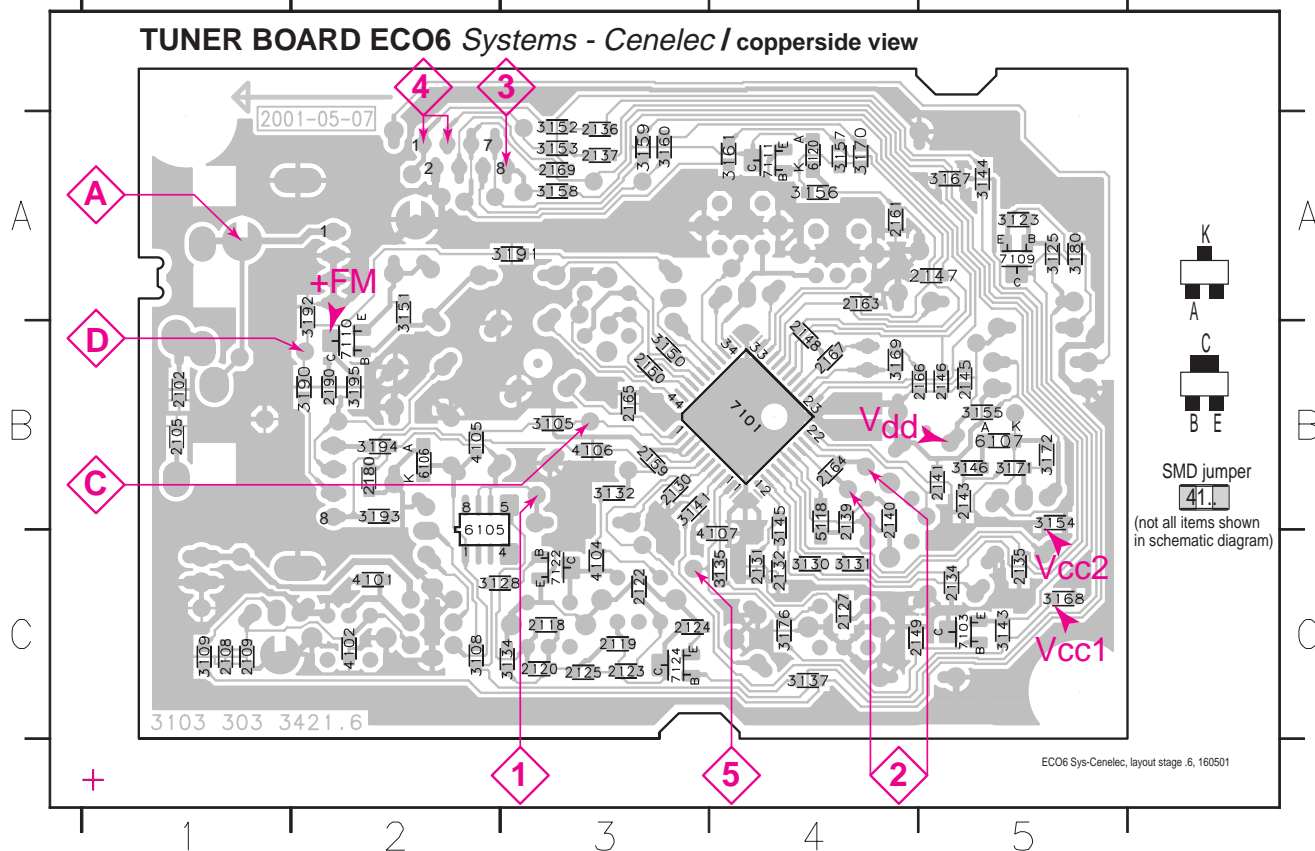
**LEGEND**

- \* ... only assembled in FM/AM-version
- Ⓟ ... 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

1101 B5 1110 B4 1131 C5 2107 B3 2133 C1 2162 A4 5102 C4 5110 A2 5114 A2 5121 B2 7104 C4 9101 A2 9104 B1 9107 B4 9110 A4  
 1102 B5 1120 A4 1132 A4 2128 A3 2138 B1 2191 B4 5103 C4 5111 A3 5115 C2 5122 C3 7105 C5 9102 B2 9105 B1 9108 B3 9111 A3  
 1103 C5 1130 A5 2106 B4 2129 B3 2144 B1 3142 C2 5109 B3 5112 A2 5119 B2 5123 C3 7112 B1 9103 A1 9106 B1 9109 C2

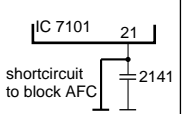
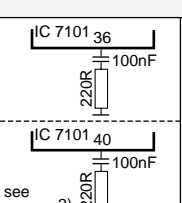
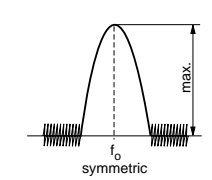

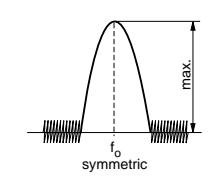


2102 B1 2120 C3 2130 B3 2137 A3 2146 B5 2161 A4 2169 A3 3123 A5 3134 C3 3145 C4 3154 B5 3160 A3 3171 B5 3192 A2 4104 C3 6106 B2 7110 B2  
 2105 B1 2122 C3 2131 C4 2139 B4 2147 A5 2163 A4 2180 B2 3125 A5 3135 C4 3146 B5 3155 B5 3161 A4 3172 B5 3193 B2 4105 B2 6107 B5 7111 A4  
 2108 C1 2123 C3 2132 C4 2140 B4 2148 B4 2164 B4 2190 B2 3128 C2 3137 C4 3150 B3 3156 A4 3167 A5 3176 C4 3194 B2 4106 B3 6120 A4 7122 C3  
 2109 C1 2124 C3 2134 C5 2141 B5 2149 C4 2165 B3 3105 B3 3130 C4 3141 B3 3151 A2 3157 A4 3168 C5 3180 A5 3195 B2 4107 C4 7101 B4 7124 C3  
 2118 C3 2125 C3 2135 C5 2143 B5 2150 B3 2166 B5 3108 C2 3131 C4 3143 C5 3152 A3 3158 A3 3169 B4 3190 B2 4101 C2 5118 C4 7103 C5  
 2119 C3 2127 C4 2136 A3 2145 B5 2159 B3 2167 B4 3109 C1 3132 B3 3144 A5 3153 A3 3159 A3 3170 A4 3191 A3 4102 C2 6105 B2 7109 A5



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
<i>VARICAP ALIGNMENT</i>						
<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
<i>FM - IF</i>						
<b>FM</b>	10.7MHz, 45mV continuous wave	D		5119	2	0mV ±3mV
<i>FM - VCO</i>						
<b>FM</b>	98MHz, 1mV continuous wave	A	98MHz	3142	3	152kHz ±1kHz <sup>1)</sup>
<i>FM RF (channel separation)</i> <span style="float:right">Note: The FM-frontend unit has already been adjusted by the factory and needs therefore no further adjustments for service purposes.</span>						
<b>FM</b>	98MHz, 1mV 90% Left + 9% pilot mod=1kHz	A	98MHz	IF coil inside FM frontend 1110	4	right channel min.
<i>AM IF</i>						
<b>MW</b>	450kHz  connect pin 6 of IC 7101 (AM Osc.) with 3.3kΩ to Vcc	C  $\Delta f = \pm 10\text{kHz}$ $V_{RF} = 0.5\text{mV}$ (as low as possible)		5111	5	
				5112		
<b>AM AFC</b> <b>MW</b>		C  continuous wave $V_{RF} = 2\text{mV}$		5114	2	0mV ±2mV
<i>AM RF <sup>3)</sup></i>						
<b>MW</b>	1494kHz	B  	1494kHz	2106	5	
	558kHz		5102			
<b>LW</b>	198kHz	$\Delta f = \pm 30\text{kHz}$ $V_{RF}$ as low as possible	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

MISCELLANEOUS

1101	2422 015 19376	SOCKET CLICKFIT 2P	USA only
1102	4822 267 10283	SOCKET COAX, IEC 75Ω	not USA
1103	4822 265 31184	JST CONNECTOR, 2 POLE	
1110	2422 542 90071	FM FRONTEND	
1120	4822 265 11515	FFC SOCKET, 8P	

CAPACITORS

2102	4822 126 13838	100nF 10% 50V	not USA
2105	4822 126 13838	100nF 10% 50V	USA only
2106	2020 800 00204	TRIMCAP. 4,2 - 20pF, N750	LW only
2106	2020 800 00191	TRIMCAP. 3 - 11pF, N450	FM/AM only
2107	4822 121 51319	1μF 20% 50V	
2108	5322 122 32531	100pF 5% 50V	LW only
2109	5322 122 32448	10pF 5% 50V	LW only
2120	4822 126 13689	18pF 1% 63V	FM/AM only
2120	5322 122 32658	22pF 5% 50V	LW only
2122	4822 122 33891	3,3nF 10% 63V	LW only
2123	2020 552 93494	390pF 1% 50V	LW only
2124	4822 122 33177	10nF 20% 50V	FM/AM only
2125	2020 552 96199	560pF 1% 50V	
2127	4822 126 14076	220nF 20% 25V	
2128	4822 124 40248	10μF 20% 63V	
2129	4822 124 41584	100μF 20% 10V	
2130	5322 122 32654	22nF 10% 63V	
2131	4822 126 13482	470nF 20% 16V	
2132	4822 126 13482	470nF 20% 16V	
2133	4822 124 21913	1μF 20% 63V	
2134	3198 017 31530	15nF 10% 50V	not USA
2134	5322 122 32654	22nF 10% 63V	USA only
2135	3198 017 31530	15nF 10% 50V	not USA
2135	3198 017 32230	22nF 10% 25V	USA only
2136	4822 126 14076	220nF 20% 25V	
2137	4822 126 14076	220nF 20% 25V	
2138	4822 124 22652	2,2μF 20% 50V	
2139	4822 126 14236	15pF 5% 50V	
2140	4822 126 13695	82pF 1% 63V	
2141	4822 126 13838	100nF 10% 50V	
2143	4822 126 14076	220nF 20% 25V	
2144	4822 124 21913	1μF 20% 63V	
2145	4822 122 33575	220pF 5% 50V	
2146	4822 122 33575	220pF 5% 50V	
2147	4822 122 33575	220pF 5% 50V	
2148	4822 122 33127	2,2nF 10% 63V	
2149	5322 122 32659	33pF 5% 50V	RDS only
2150	4822 126 13838	100nF 10% 50V	
2159	5322 122 31151	22μF 20% 50V	
2163	4822 126 13838	100nF 10% 50V	LW only
2164	4822 126 13482	470nF 20% 16V	
2165	4822 126 13838	100nF 10% 50V	
2166	5322 122 31647	1nF 10% 63V	
2167	4822 122 33926	12pF 5% 50V	
2169	4822 122 33127	2,2nF 10% 63V	RDS only
2180	3198 017 31030	10nF 10% 50V	
2190	4822 126 13838	100nF 10% 50V	
2191	4822 124 40178	100μF 20% 10V	

RESISTORS

3105	4822 117 11503	220Ω 5% 0,1W	
3108	4822 117 11449	2,2kΩ 1% 0,1W	LW only
3109	4822 051 20472	4,7kΩ 5% 0,1W	LW only
3123	4822 051 20472	4,7kΩ 5% 0,1W	LW only
3125	4822 117 10833	10kΩ 1% 0,1W	LW only

RESISTORS

3128	4822 117 11449	2,2kΩ 1% 0,1W	LW only
3130	3198 021 38210	820Ω 5% 0,06W	
3131	3198 021 38210	820Ω 5% 0,06W	
3132	4822 051 20479	47Ω 5% 0,1W	
3134	4822 051 20223	22kΩ 5% 0,1W	
3135	3198 021 31020	1kΩ 5% 0,06W	
3137	4822 051 20223	22kΩ 5% 0,1W	LW only
3141	4822 117 11148	56kΩ 1% 0,1W	
3142	4822 100 12159	TRIMPOT. 100kΩ	
3143	4822 051 20223	22kΩ 5% 0,1W	RDS only
3144	4822 051 10102	1kΩ 2% 0,25W	RDS only
3145	4822 117 11449	2,2kΩ 1% 0,1W	
3146	4822 051 20229	22Ω 5% 0,1W	
3150	4822 117 10833	10kΩ 1% 0,1W	
3151	4822 051 20683	68kΩ 5% 0,1W	
3152	4822 051 20471	470Ω 5% 0,1W	
3153	4822 051 20471	470Ω 5% 0,1W	
3154	4822 117 13577	330Ω 1% 0,1W	
3155	4822 117 10353	150Ω 5% 0,1W	
3156	4822 117 10837	100kΩ 1% 0,1W	
3157	4822 117 10837	100kΩ 1% 0,1W	
3158	4822 051 20471	470Ω 5% 0,1W	
3159	4822 051 20471	470Ω 5% 0,1W	
3160	4822 051 20471	470Ω 5% 0,1W	
3161	4822 051 20223	22kΩ 5% 0,1W	
3167	4822 051 20121	120Ω 5% 0,1W	
3168	4822 051 20121	120Ω 5% 0,1W	
3169	4822 051 20154	150kΩ 5% 0,1W	
3170	4822 117 10837	100kΩ 1% 0,1W	
3171	4822 117 10834	47kΩ 1% 0,1W	
3172	4822 051 20562	5,6kΩ 5% 0,1W	
3176	4822 051 20333	33kΩ 5% 0,1W	RDS only
3180	4822 117 10833	10kΩ 1% 0,1W	LW only
3190	4822 051 20121	120Ω 5% 0,1W	
3191	4822 051 20121	120Ω 5% 0,1W	
3192	4822 117 13577	330Ω 1% 0,1W	
3193	4822 117 13577	330Ω 1% 0,1W	
3194	4822 117 11449	2,2kΩ 1% 0,1W	
3195	4822 051 20101	100Ω 5% 0,1W	
4101	4822 051 20008	CHIP JUMPER 0805	FM/AM only
4102	4822 051 20008	CHIP JUMPER 0805	FM/AM only
4104	4822 051 20008	CHIP JUMPER 0805	FM/AM only
4105	4822 051 20008	CHIP JUMPER 0805	
4106	4822 051 20008	CHIP JUMPER 0805	
4107	4822 051 20008	CHIP JUMPER 0805	

COILS

5102	4822 157 71634	RF-COIL MW	
5103	2422 549 44107	RF-COIL LW	LW only
5109	4822 157 71639	FM-IF FILTER 10,7MHz	
5110	4822 242 70665	FM-IF FILTER 10,7MHz	
5111	2422 549 44023	AM-IF FILTER 450kHz	
5112	4822 157 70302	AM-IF FILTER 450kHz	
5114	4822 157 70302	AM-IF FILTER 450kHz	
5115	4822 157 71636	ANTI BIRDY FILTER	
5118	2422 535 95881	100nH	
5119	4822 157 11443	DISCRIMINATOR COIL	
5121	4822 242 10261	QUARTZ 75kHz	
5122	2422 549 44108	RF-COIL, LW-OSCILLATOR	LW only
5123	2422 549 44108	RF-COIL, MW-OSCILLATOR	

DIODES

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

TRANSISTORS

7103	5322 130 42756	BC857C	RDS only
7104	9322 003 64676	TBC337-40	LW only
7105	9322 003 64676	TBC337-40	LW only
7109	4822 130 60373	BC856B	LW only
7110	4822 130 60373	BC856B	
7111	5322 130 42755	BC847C	
7112	4822 130 44503	BC547C	
7122	5322 130 42755	BC847C	LW only
7124	5322 130 42755	BC847C	LW only

INTEGRATED CIRCUITS

7101	4822 209 90315	TEA5762H/V1, RADIO IC	
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# COMBI BOARD

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## ***Brief introduction of the Combi Board***

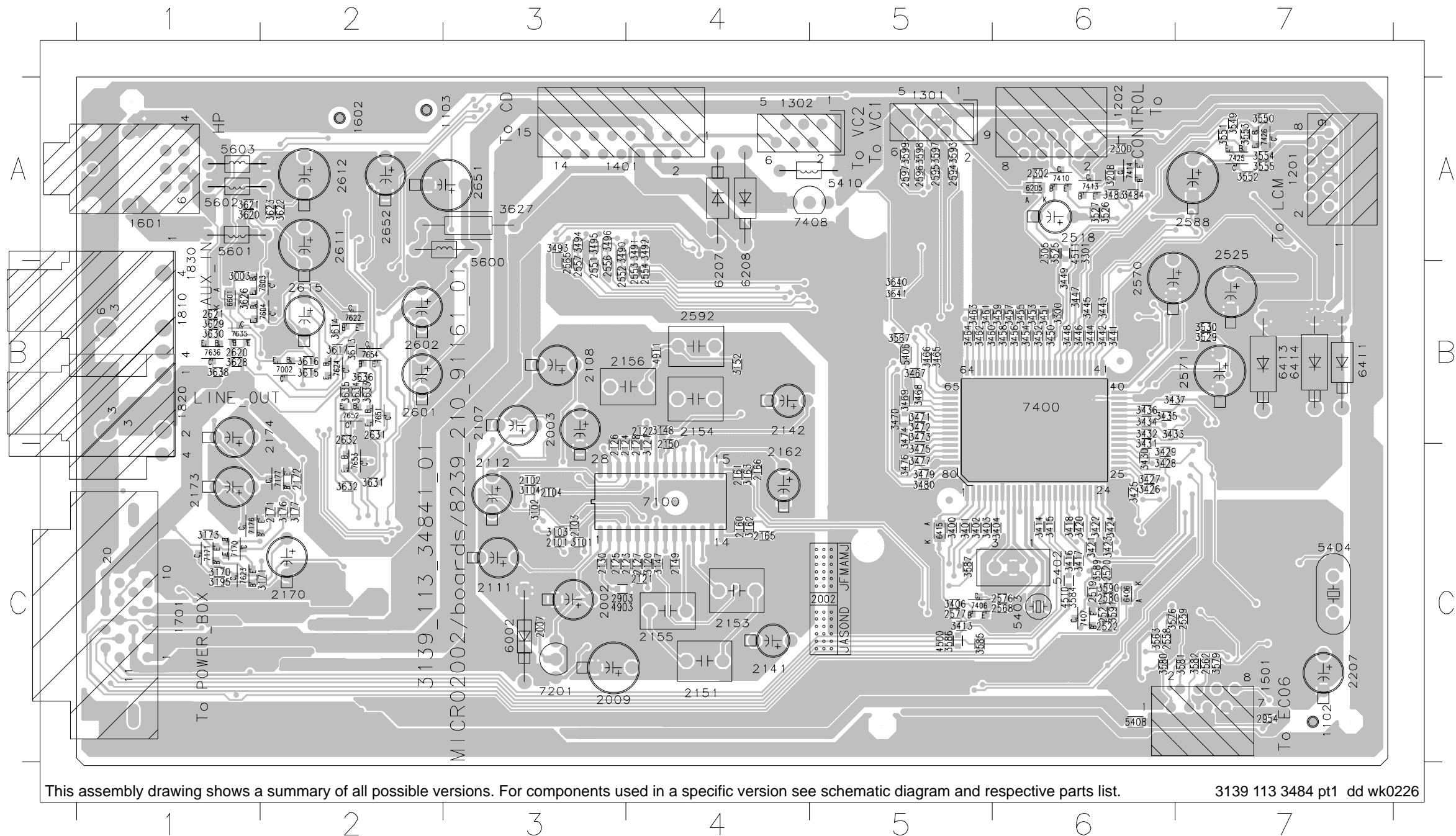
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The Combi Board consists of both audio signals processing part (AF Part) and microprocessor controlling part (Control Part).

- a. Audio Processor IC TDA7468D  
Audio Processor IC TDA7468D includes functions such as source selection, loudness control, bass control, treble control and muting function. Sound features such as IS are controllable via I2C bus. All input sources are used namely, Stereo 1-4 and Differential input. Mono input is unused and terminated to ground via capacitor.
- b. Line out  
Line out cinch is included for connection to external devices such as amplifier, recorder etc.
- c. Simple Incredible Surround (SIS)  
Incredible surround effect using external circuit to create phase shifting and spatial effect.
- d. Headphone Amplifier  
A Headphone can be driven by Op-amp NJM4556AM.
- e. Headphone Sensing  
Headphone sense circuit is for muting main speaker when headphone is plugged in.
- f. CD Standby Control  
Control circuit that switches on the supply to CD servo IC, HF circuit and laser light pen in CD mode only.
- g. CD\_ON Control  
This switches on the +5V\_CD (derived from +5V6) to the CD module.

### COMBI BOARD - TOP VIEW LAYOUT

1102	C7	2107	B3	2160	C4	2553	B4	2611	A2	3163	C4	3420	C6	3445	B6	3467	B5	3525	A6	3587	C5	3631	C2	5602	A1	7408	A5
1103	A3	2108	B3	2161	C4	2554	B4	2612	A2	3170	C1	3421	C6	3446	B6	3468	B5	3526	A6	3589	C6	3632	C2	5603	A1	7410	A6
1201	A7	2111	C3	2162	C4	2556	B3	2615	B2	3171	C2	3422	C6	3447	B6	3469	B5	3527	A6	3590	C6	3633	B2	6002	C3	7413	A6
1202	A6	2112	C3	2165	C4	2557	B3	2620	B1	3173	C1	3423	C6	3448	B6	3470	B5	3529	B7	3591	C6	3634	B2	6205	A6	7414	A6
1301	A5	2121	C4	2166	C4	2558	C6	2621	B1	3176	C2	3424	C6	3449	B6	3471	B5	3530	B7	3593	A5	3635	B2	6207	B4	7425	A7
1302	A4	2122	B4	2170	C2	2559	C7	2631	B2	3177	C2	3425	C6	3450	B6	3472	B5	3549	A7	3597	A5	3636	B2	6208	B4	7426	A7
1401	A3	2123	C3	2171	C2	2562	C7	2632	B2	3195	C1	3426	C6	3451	B6	3473	B5	3550	A7	3598	A5	3638	B1	6406	C6	7603	B2
1501	C7	2124	C3	2172	C2	2565	B3	2651	A3	3208	A6	3427	C6	3452	B6	3474	B5	3551	A7	3599	A5	3640	B5	6411	B7	7604	B2
1601	A1	2125	C3	2173	C1	2568	C6	2652	A2	3300	B6	3428	C6	3453	B6	3475	C5	3552	A7	3613	B2	3641	B5	6413	B7	7622	B2
1602	A2	2126	C3	2174	B2	2570	B6	2903	C3	3301	A6	3429	C6	3454	B6	3476	C5	3553	A7	3614	B2	4500	C5	6414	B7	7623	C1
1701	C1	2127	C4	2207	C7	2571	B7	2954	C7	3400	C5	3430	C6	3455	B6	3477	C5	3554	A7	3615	B2	4510	C6	6415	C5	7624	B2
1810	B1	2128	C4	2300	A6	2576	C6	3003	B1	3401	C5	3431	C6	3456	B6	3479	C5	3555	A7	3616	B2	4511	A6	6601	B1	7635	B1
1820	B1	2130	C3	2302	A6	2577	C5	3101	C3	3402	C5	3432	B6	3457	B6	3480	C5	3563	C6	3617	B2	4903	C3	7002	B2	7636	B1
1830	B1	2141	C4	2305	A6	2580	C6	3102	C3	3403	C5	3433	B6	3458	B6	3483	A6	3567	B5	3620	A1	4911	B4	7100	C4	7651	B2
2002	C3	2142	B4	2518	A6	2588	A7	3103	C3	3404	C6	3434	B6	3459	B6	3484	A6	3576	C6	3621	A1	5402	C6	7170	C1	7652	B2
2003	B3	2149	C4	2519	C6	2592	B4	3104	C3	3406	C5	3435	B6	3460	B5	3490	A3	3579	C7	3622	A2	5403	C6	7171	C1	7653	C2
2007	C3	2150	C4	2520	C6	2594	A5	3120	C4	3413	C5	3436	B6	3461	B5	3491	A4	3580	C6	3623	A2	5404	C7	7176	C1	7654	B2
2009	C3	2151	C4	2521	C6	2595	A5	3121	C4	3414	C6	3437	B6	3462	B5	3492	A4	3581	C7	3626	B1	5406	B5	7177	C2		
2101	C3	2153	C4	2522	C6	2596	A5	3147	C4	3415	C6	3441	B6	3463	B5	3493	A3	3582	C7	3627	A3	5408	C6	7201	C3		
2102	C3	2154	B4	2525	A7	2597	A5	3148	B4	3416	C6	3442	B6	3464	B5	3494	A3	3584	C6	3628	B1	5410	A5	7400	B6		
2103	C3	2155	C4	2551	B3	2601	B2	3152	B4	3417	C6	3443	B6	3465	B5	3495	A3	3585	C5	3629	B1	5600	B3	7406	C5		
2104	C3	2156	B4	2552	B3	2602	B2	3162	C4	3418	C6	3444	B6	3466	B5	3496	A3	3586	C5	3630	B1	5601	A1	7407	C6		

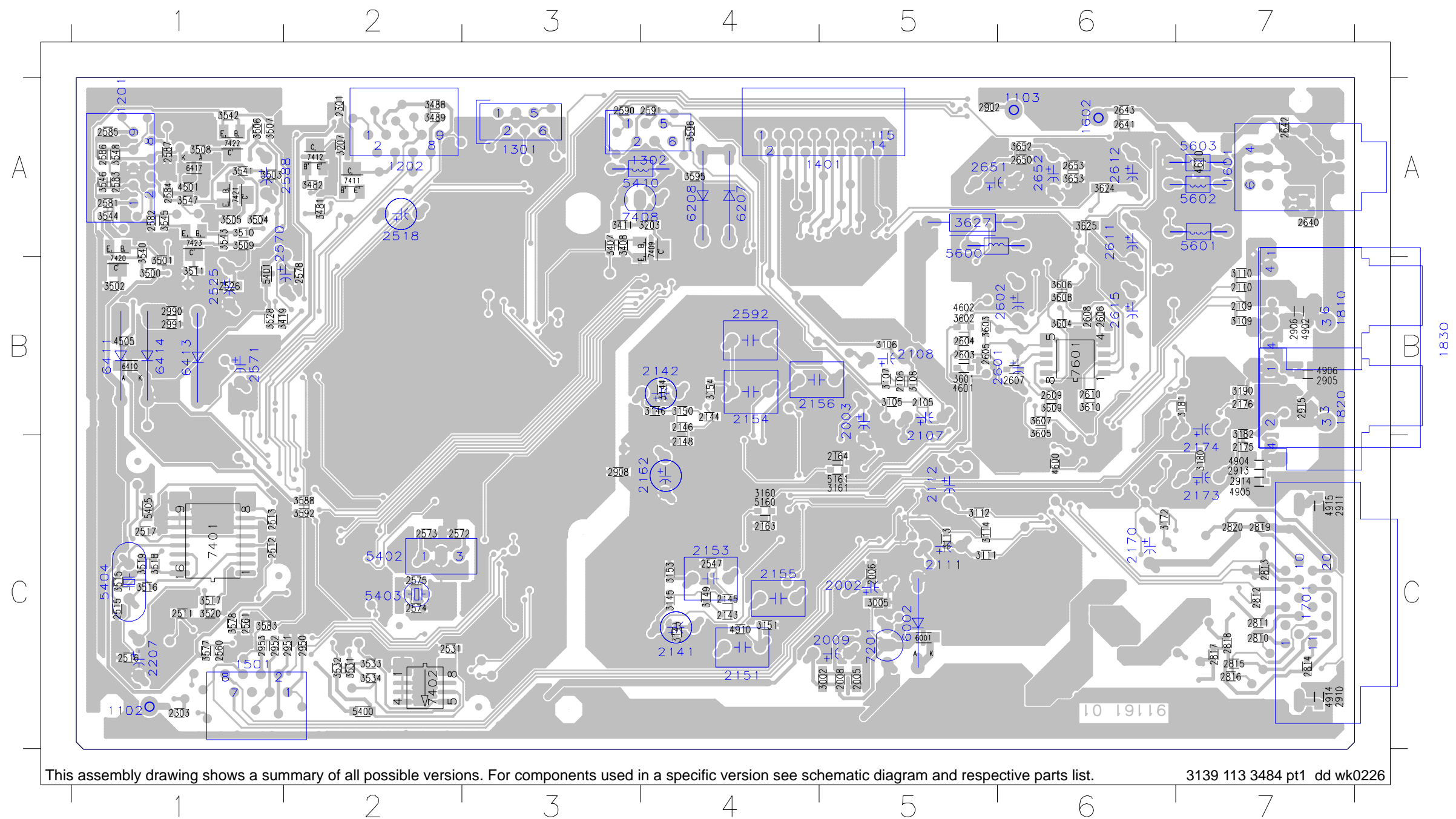


This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

3139 113 3484 pt1 dd wk0226

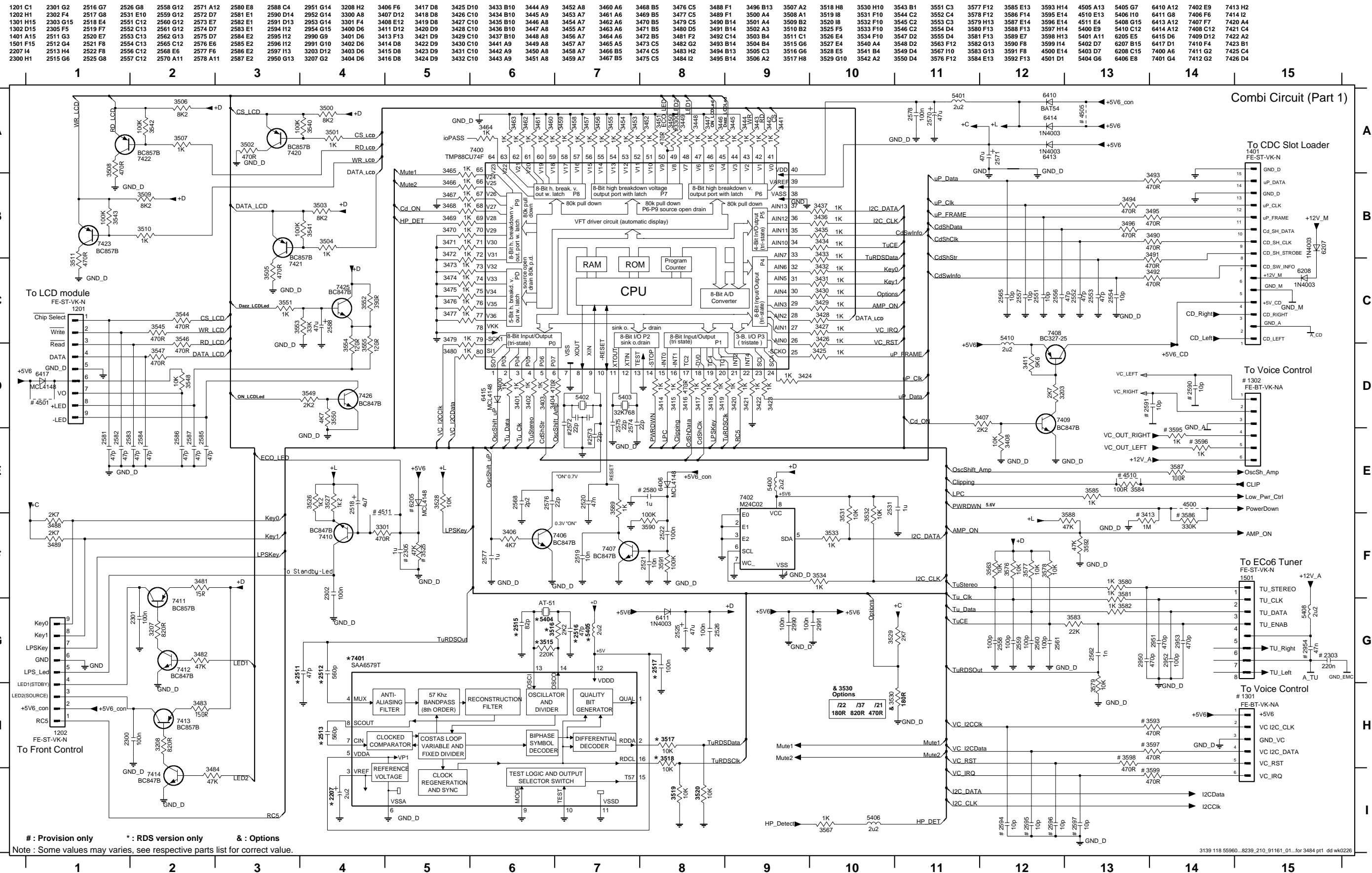
### COMBI BOARD - BOTTOM VIEW LAYOUT

1102 C1	1302 A4	1701 C7	2009 C5	2141 C4	2155 C4	2174 C7	2571 B1	2611 A6	3627 A5	5600 A5	6207 A4	7201 C5	
1103 A6	1401 A5	1810 B7	2107 C5	2142 B4	2156 B4	2207 C1	2588 A1	2612 A6	5402 C2	5601 A7	6208 A4	7408 A3	
1201 A1	1501 C1	1820 B7	2108 B5	2151 C4	2162 C4	2518 A2	2592 B4	2615 B6	5403 C2	5602 A7	6411 B1		
1202 A2	1601 A7	2002 C5	2111 C5	2153 C4	2170 C6	2525 B1	2601 B5	2651 A5	5404 C1	5603 A7	6413 B1		
1301 A3	1602 A6	2003 B5	2112 C5	2154 B4	2173 C7	2570 B1	2602 B5	2652 A6	5410 A4	6002 C5	6414 B1		
2005 C5	2176 B7	2573 C2	2605 B5	2813 C7	2914 C7	3110 B7	3161 C5	3489 A2	3517 C1	3546 A1	3606 B6	4902 B7	7401 C1
2006 C5	2301 A2	2574 C2	2606 B6	2814 C7	2915 B7	3111 C5	3172 C6	3500 B1	3518 C1	3547 A1	3607 B6	4904 C7	7402 C2
2008 C5	2303 C1	2575 C2	2607 B6	2815 C7	2950 C2	3112 C5	3180 C7	3501 B1	3519 C1	3548 A1	3608 B6	4905 C7	7409 A4
2105 B5	2511 C1	2578 B2	2608 B6	2816 C7	2951 C2	3113 C5	3181 B7	3502 B1	3520 C1	3577 C1	3609 B6	4906 B7	7411 A2
2106 B5	2512 C1	2581 A1	2609 B6	2817 C7	2952 C1	3114 C5	3182 B7	3503 A1	3528 B1	3578 C1	3610 B6	4910 C4	7412 A2
2109 B7	2513 C1	2582 A1	2610 B6	2818 C7	2953 C1	3143 C4	3190 B7	3504 A1	3531 C2	3583 C1	3624 A6	4914 C7	7420 B1
2110 B7	2515 C1	2583 A1	2640 A7	2819 C7	2990 B1	3144 B4	3203 A4	3505 A1	3532 C2	3588 C2	3625 A6	4915 C7	7421 A1
2143 C4	2516 C1	2584 A1	2641 A6	2820 C7	2991 B1	3145 C4	3207 A2	3506 A1	3533 C2	3592 C2	3652 A6	5160 C4	7422 A1
2144 B4	2517 C1	2585 A1	2642 A7	2902 A5	3002 C5	3146 B4	3407 A3	3507 A1	3534 C2	3595 A4	3653 A6	5161 C5	7423 A1
2145 C4	2526 B1	2586 A1	2643 A6	2905 B7	3005 C5	3149 C4	3408 A3	3508 A1	3540 A1	3596 A4	4501 A1	5400 C2	7601 B6
2146 B4	2531 C2	2587 A1	2650 A6	2906 B7	3105 B5	3150 B4	3411 A3	3509 A1	3541 A1	3601 B5	4505 B1	5401 B1	
2148 C4	2547 C4	2590 A3	2653 A6	2908 C3	3106 B5	3151 C4	3419 B1	3510 A1	3542 A1	3602 B5	4600 C6	5405 C1	
2163 C4	2560 C1	2591 A4	2810 C7	2910 C7	3107 B5	3153 C4	3481 A2	3511 B1	3543 A1	3603 B5	4601 B5	6001 C5	
2164 C5	2561 C1	2603 B5	2811 C7	2911 C7	3108 B5	3154 B4	3482 A2	3515 C1	3544 A1	3604 B6	4602 B5	6410 B1	
2175 C7	2572 C2	2604 B5	2812 C7	2913 C7	3109 B7	3160 C4	3488 A2	3516 C1	3545 A1	3605 B6	4610 A7	6417 A1	

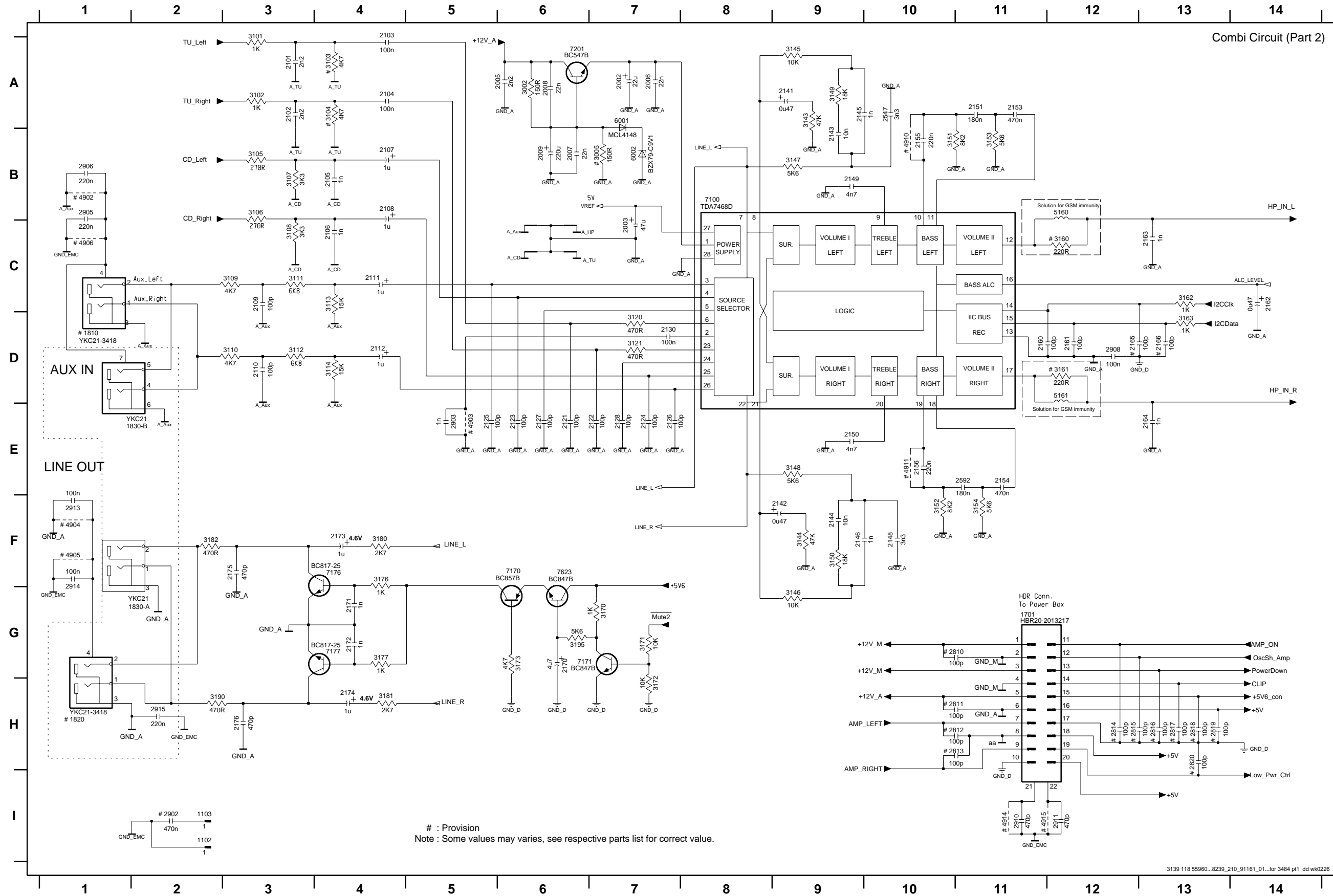


This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list. 3139 113 3484 pt1 dd wk0226

# COMBI BOARD - CIRCUIT DIAGRAM (PART 1)



# COMBI BOARD - CIRCUIT DIAGRAM (PART 2)

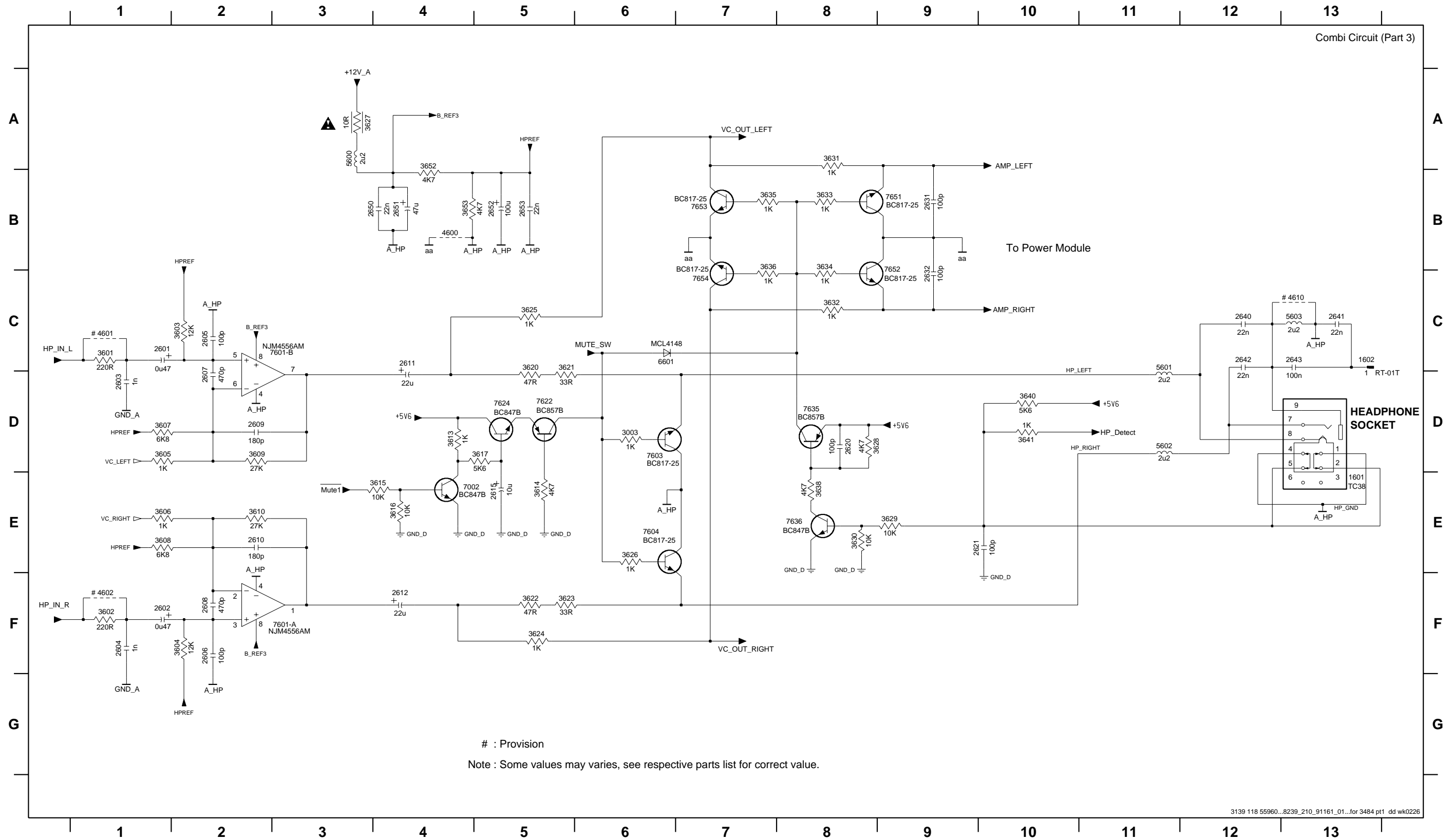


1102 I2	3150 F9
1103 I2	3151 B10
1701 G11	3152 F10
1810 D1	3153 B11
1820 H1	3154 F11
1830-A G2	3160 C12
1830-B E2	3161 D12
2002 A7	3162 C13
2003 C7	3163 D13
2005 A6	3170 G7
2006 A7	3171 G7
2007 B6	3172 H7
2008 A6	3173 G6
2009 B6	3176 F4
2101 A3	3177 G4
2102 A3	3180 F4
2103 A4	3181 H4
2104 A4	3182 F2
2105 B4	3190 H2
2106 C4	3195 G6
2107 B4	4902 B1
2108 B4	4903 E5
2109 C3	4904 F1
2110 D3	4905 F1
2111 C4	4906 C1
2112 D4	4910 B10
2121 E6	4911 E10
2122 E7	4914 H11
2123 E6	4915 H11
2124 E7	5160 B12
2125 E5	5161 D12
2126 E7	6001 A7
2127 E6	6002 B7
2128 E7	7100 B8
2130 D7	7170 F6
2141 A9	7171 G6
2142 F9	7176 F4
2143 B9	7177 G4
2144 F9	7201 A6
2145 A9	7623 F6
2146 F9	
2148 F10	
2149 B9	
2150 B9	
2151 A11	
2153 A11	
2154 E11	
2155 B10	
2156 E10	
2160 D11	
2161 D12	
2162 C14	
2163 C13	
2164 E13	
2165 D12	
2166 D13	
2170 G6	
2171 G4	
2172 G4	
2173 F4	
2174 H4	
2175 F3	
2176 H3	
2547 A10	
2592 E11	
2810 G11	
2811 H11	
2812 H11	
2813 H11	
2814 H12	
2815 H12	
2816 H13	
2817 H13	
2818 H13	
2819 H13	
2820 H13	
2902 I2	
2903 E5	
2905 B1	
2906 B1	
2908 D12	
2910 H11	
2911 H12	
2913 F1	
2914 F1	
2915 H2	
3002 A6	
3005 B7	
3101 A3	
3102 A3	
3103 A4	
3104 A4	
3105 B3	
3106 B3	
3107 B3	
3108 C3	
3109 C3	
3110 D3	
3111 C3	
3112 D3	
3113 C4	
3114 D4	
3120 D7	
3121 D7	
3143 A9	
3144 F9	
3145 A9	
3146 G9	
3147 B9	
3148 E9	
3149 A9	

# : Provision  
 Note : Some values may varies, see respective parts list for correct value.

COMBI BOARD - CIRCUIT DIAGRAM (PART 3)

1601 E13	2603 D1	2607 D2	2611 C4	2621 E10	2641 C13	2651 B4	3601 C1	3605 D1	3609 D2	3615 E4	3621 C5	3625 C5	3629 E9	3633 B8	3638 E8	3653 B4	4610 C13	5603 C13	7601-B C2	7624 D5	7652 C9
1602 C13	2604 F1	2608 F2	2612 F4	2631 B9	2642 C12	2652 B5	3602 F1	3606 E1	3610 E2	3616 E4	3622 F5	3626 E6	3630 E8	3634 B8	3640 D10	4600 B4	5600 A3	6601 C6	7603 D6	7635 D8	7653 B7
2601 C1	2605 C2	2609 D2	2615 E5	2632 C9	2643 C13	2653 B5	3603 C2	3607 D1	3613 D4	3617 D5	3623 F5	3627 A3	3631 A8	3635 B7	3641 D10	4601 C1	5601 C11	7002 E4	7604 E6	7636 E8	7654 C7
2602 F1	2606 F2	2610 E2	2620 D8	2640 C12	2650 B4	3003 D6	3604 F2	3608 E1	3614 E5	3620 C5	3624 F5	3628 D8	3632 C8	3636 B7	3652 A4	4602 F1	5602 D11	7601-A F2	7622 D5	7651 B9	



# : Provision  
 Note : Some values may varies, see respective parts list for correct value.

**ELECTRICAL PARTS LIST - COMBI BOARD****MISCELLANEOUS**

1201	4822 265 11531	Flex Connector 9P
1202	4822 265 11531	Flex Connector 9P
1401	4822 265 10979	Flex Connector 15P
1501	4822 265 11535	Flex Connector 8P
1601	4822 265 11529	Headphone Socket
1701	2422 025 17816	CON BM H 20P F 1.27 DFP B
1830	4822 267 31823	Cinch Socket - Aux in/Line out

**CAPACITORS**

2002	4822 124 81151	22uF 50V
2003	4822 124 41751	47uF 20% 50V
2005	4822 126 14238	2,2nF 50V
2006	4822 126 14494	22nF 10% 25V
2007	4822 126 14494	22nF 10% 25V
2008	4822 126 14494	22nF 10% 25V
2009	4822 124 40196	220uF 20% 16V
2103	2238 586 59812	100nF +80/-20% 50V
2104	2238 586 59812	100nF +80/-20% 50V
2105	3198 016 31020	1nF 25V
2106	3198 016 31020	1nF 25V
2107	4822 124 40756	1uF 20% 100V
2108	4822 124 40756	1uF 20% 100V
2109	2020 552 94427	100pF 5% 50V
2110	2020 552 94427	100pF 5% 50V
2111	4822 124 40756	1uF 20% 100V
2112	4822 124 40756	1uF 20% 100V
2121	2020 552 94427	100pF 5% 50V
2122	2020 552 94427	100pF 5% 50V
2123	2020 552 94427	100pF 5% 50V
2124	2020 552 94427	100pF 5% 50V
2125	2020 552 94427	100pF 5% 50V
2126	2020 552 94427	100pF 5% 50V
2127	2020 552 94427	100pF 5% 50V
2128	2020 552 94427	100pF 5% 50V
2130	2238 586 59812	100nF +80/-20% 50V
2141	5322 124 41948	470nF 20% 50V
2142	5322 124 41948	470nF 20% 50V
2143	5322 126 11583	10nF 10% 50V
2144	5322 126 11583	10nF 10% 50V
2145	3198 016 31020	1nF 25V
2146	3198 016 31020	1nF 25V
2148	5322 126 11579	3,3nF 10% 63V
2149	4822 126 13193	4,7nF 10% 63V
2150	4822 126 13193	4,7nF 10% 63V
2151	4822 121 51356	180nF 10% 63V
2153	4822 121 51252	470nF 5% 63V
2154	4822 121 51252	470nF 5% 63V
2155	4822 121 42408	220nF 5% 63V
2156	4822 121 42408	220nF 5% 63V
2160	2020 552 94427	100pF 5% 50V
2161	2020 552 94427	100pF 5% 50V
2162	5322 124 41948	470nF 20% 50V

2163	3198 016 31020	1nF 25V
2164	3198 016 31020	1nF 25V
2170	4822 124 40769	4,7uF 20% 100V
2171	3198 016 31020	1nF 25V
2172	3198 016 31020	1nF 25V
2173	4822 124 40756	1uF 20% 100V
2174	4822 124 40756	1uF 20% 100V
2175	4822 126 13881	470pF 5% 50V
2176	4822 126 13881	470pF 5% 50V
2300	2238 586 59812	100nF +80/-20% 50V
2301	2238 586 59812	100nF +80/-20% 50V
2302	2238 586 59812	100nF +80/-20% 50V
2518	4822 124 40769	4,7uF 20% 100V
2519	5322 126 11583	10nF 10% 50V
2520	3198 017 34730	47nF 16V
2521	5322 126 11583	10nF 10% 50V
2522	2238 586 59812	100nF +80/-20% 50V
2525	4822 124 41751	47uF 20% 50V
2526	2238 586 59812	100nF +80/-20% 50V
2531	3198 017 41050	1uF 10V
2547	5322 126 11579	3,3nF 10% 63V
2551	4822 122 33741	10pF 10% 50V
2552	4822 126 11785	47pF 5% 50V
2553	4822 126 11785	47pF 5% 50V
2554	4822 122 33741	10pF 10% 50V
2556	4822 126 11785	47pF 5% 50V
2557	4822 122 33741	10pF 10% 50V
2558	2020 552 94427	100pF 5% 50V
2559	2020 552 94427	100pF 5% 50V
2560	2020 552 94427	100pF 5% 50V
2561	2020 552 94427	100pF 5% 50V
2562	3198 016 31020	1nF 25V
2565	4822 122 33741	10pF 10% 50V
2568	4822 126 14223	2,2pF 50V
2570	4822 124 41751	47uF 20% 50V
2571	4822 124 41751	47uF 20% 50V
2574	4822 122 33761	22pF 5% 50V
2575	4822 122 33761	22pF 5% 50V
2576	4822 122 33761	22pF 5% 50V
2577	3198 017 41050	1uF 10V
2578	2238 586 59812	100nF +80/-20% 50V
2581	4822 126 11785	47pF 5% 50V
2582	4822 126 11785	47pF 5% 50V
2583	4822 126 11785	47pF 5% 50V
2584	4822 126 11785	47pF 5% 50V
2585	4822 126 11785	47pF 5% 50V
2586	4822 126 11785	47pF 5% 50V
2587	4822 126 11785	47pF 5% 50V
2588	4822 124 40433	47uF 20% 25V
2592	4822 121 51356	180nF 10% 63V
2601	4822 124 41407	0,47uF 20% 63V
2602	4822 124 41407	0,47uF 20% 63V

**ELECTRICAL PARTS LIST - COMBI BOARD**

2603	3198 016 31020	1nF 25V
2604	3198 016 31020	1nF 25V
2605	2020 552 94427	100pF 5% 50V
2606	2020 552 94427	100pF 5% 50V
2607	4822 126 13881	470pF 5% 50V
2608	4822 126 13881	470pF 5% 50V
2609	4822 126 14508	180pF 5% 50V
2610	4822 126 14508	180pF 5% 50V
2611	4822 124 81151	22uF 50V
2612	4822 124 81151	22uF 50V
2615	4822 124 40248	10uF 20% 63V
2620	2020 552 94427	100pF 5% 50V
2621	2020 552 94427	100pF 5% 50V
2631	2020 552 94427	100pF 5% 50V
2632	2020 552 94427	100pF 5% 50V
2640	4822 126 14494	22nF 10% 25V
2641	4822 126 14494	22nF 10% 25V
2642	4822 126 14494	22nF 10% 25V
2643	2238 586 59812	100nF +80/-20% 50V
2650	3198 017 42230	22nF 50V
2651	4822 124 41751	47uF 20% 50V
2652	4822 124 41584	100uF 20% 10V
2653	3198 017 42230	22nF 50V
2903	5322 126 11578	1nF 10% 50V
2905	4822 126 13879	220nF +80/-20% 16V
2906	4822 126 13879	220nF +80/-20% 16V
2908	2238 586 59812	100nF +80/-20% 50V
2910	4822 126 13881	470pF 5% 50V
2911	4822 126 13881	470pF 5% 50V
2913	2238 586 59812	100nF +80/-20% 50V
2914	2238 586 59812	100nF +80/-20% 50V
2915	4822 126 13879	220nF +80/-20% 16V
2950	4822 126 13881	470pF 5% 50V
2951	4822 126 13881	470pF 5% 50V
2952	2020 552 94427	100pF 5% 50V
2953	4822 126 13881	470pF 5% 50V
2990	2238 586 59812	100nF +80/-20% 50V
2991	2238 586 59812	100nF +80/-20% 50V

**RESISTORS**

3002	4822 051 30151	150R 5% 0,062W
3003	4822 051 30102	1k 5% 0,062W
3101	4822 051 30102	1k 5% 0,062W
3102	4822 051 30102	1k 5% 0,062W
3105	4822 051 30271	270R 5% 0,062W
3106	4822 051 30271	270R 5% 0,062W
3107	4822 051 30332	3k3 5% 0,062W
3108	4822 051 30332	3k3 5% 0,062W
3109	4822 051 30472	4k7 5% 0,062W
3110	4822 051 30472	4k7 5% 0,062W
3111	4822 051 30682	6k8 5% 0,062W
3112	4822 051 30682	6k8 5% 0,062W

3113	4822 051 30153	15k 5% 0,062W
3114	4822 051 30153	15k 5% 0,062W
3120	4822 051 30471	470R 5% 0,062W
3121	4822 051 30471	470R 5% 0,062W
3143	4822 117 12925	47k 1% 0,063W
3144	4822 117 12925	47k 1% 0,063W
3145	4822 051 30103	10k 5% 0,062W
3146	4822 051 30103	10k 5% 0,062W
3147	4822 051 30562	5k6 5% 0,063W
3148	4822 051 30562	5k6 5% 0,063W
3149	4822 051 30183	18k 5% 0,062W
3150	4822 051 30183	18k 5% 0,062W
3151	4822 117 12902	8k2 1% 0,063W
3152	4822 117 12902	8k2 1% 0,063W
3153	4822 051 30562	5k6 5% 0,063W
3154	4822 051 30562	5k6 5% 0,063W
3162	4822 051 30102	1k 5% 0,062W
3163	4822 051 30102	1k 5% 0,062W
3170	4822 051 30102	1k 5% 0,062W
3171	4822 051 30103	10k 5% 0,062W
3172	4822 051 30103	10k 5% 0,062W
3173	4822 051 30472	4k7 5% 0,062W
3176	4822 051 30102	1k 5% 0,062W
3177	4822 051 30102	1k 5% 0,062W
3180	4822 051 30272	2k7 5% 0,062W
3181	4822 051 30272	2k7 5% 0,062W
3182	4822 051 30471	470R 5% 0,062W
3190	4822 051 30471	470R 5% 0,062W
3195	4822 051 30562	5k6 5% 0,063W
3203	4822 051 30272	2k7 5% 0,062W
3207	4822 117 12968	820R 5% 0,62W
3208	4822 117 12968	820R 5% 0,62W
3301	4822 051 30471	470R 5% 0,062W
3400	4822 051 30102	1k 5% 0,062W
3401	4822 051 30102	1k 5% 0,062W
3402	4822 051 30102	1k 5% 0,062W
3403	4822 051 30102	1k 5% 0,062W
3404	4822 051 30471	470R 5% 0,062W
3406	4822 051 30472	4k7 5% 0,062W
3407	4822 051 30222	2k2 5% 0,062W
3408	4822 051 30103	10k 5% 0,062W
3411	4822 051 30562	5k6 5% 0,063W
3414	4822 051 30102	1k 5% 0,062W
3415	4822 051 30102	1k 5% 0,062W
3416	4822 051 30471	470R 5% 0,062W
3417	4822 051 30102	1k 5% 0,062W
3418	4822 051 30102	1k 5% 0,062W
3419	4822 051 30102	1k 5% 0,062W
3420	4822 051 30102	1k 5% 0,062W
3421	4822 051 30102	1k 5% 0,062W
3422	4822 051 30102	1k 5% 0,062W
3423	4822 051 30102	1k 5% 0,062W





**ELECTRICAL PARTS LIST - COMBI BOARD****TRANSISTORS & INTEGRATED CIRCUITS**

7409	5322 130 60159	BC847B
7410	5322 130 60159	BC847B
7411	4822 130 60373	BC857B
7412	5322 130 60159	BC847B
7413	4822 130 60373	BC857B
7414	5322 130 60159	BC847B
7420	4822 130 60373	BC857B
7421	4822 130 60373	BC857B
7422	4822 130 60373	BC857B
7423	4822 130 60373	BC857B
7425	5322 130 60159	BC847B
7426	5322 130 60159	BC847B
7601	4822 209 31378	NJM4556AM
7603	4822 130 42804	BC817-25
7604	4822 130 42804	BC817-25
7622	4822 130 60373	BC857B
7623	5322 130 60159	BC847B
7624	5322 130 60159	BC847B
7635	4822 130 60373	BC857B
7636	5322 130 60159	BC847B
7651	4822 130 42804	BC817-25
7652	4822 130 42804	BC817-25
7653	4822 130 42804	BC817-25
7654	4822 130 42804	BC817-25

Note : Only the parts mentioned in this list are normal service spare parts.

**ELECTRICAL PARTS LIST - COMBI BOARD****TRANSISTORS & INTEGRATED CIRCUITS**

7409	5322 130 60159	BC847B
7410	5322 130 60159	BC847B
7411	4822 130 60373	BC857B
7412	5322 130 60159	BC847B
7413	4822 130 60373	BC857B
7414	5322 130 60159	BC847B
7420	4822 130 60373	BC857B
7421	4822 130 60373	BC857B
7422	4822 130 60373	BC857B
7423	4822 130 60373	BC857B
7425	5322 130 60159	BC847B
7426	5322 130 60159	BC847B
7601	4822 209 31378	NJM4556AM
7603	4822 130 42804	BC817-25
7604	4822 130 42804	BC817-25
7622	4822 130 60373	BC857B
7623	5322 130 60159	BC847B
7624	5322 130 60159	BC847B
7635	4822 130 60373	BC857B
7636	5322 130 60159	BC847B
7651	4822 130 42804	BC817-25
7652	4822 130 42804	BC817-25
7653	4822 130 42804	BC817-25
7654	4822 130 42804	BC817-25

Note : Only the parts mentioned in this list are normal service spare parts.

**Brief introduction of the Module Power Box**

1. Module Power Box consists of the 2 Channel Class D Amplifier and the Switching Mode Power Supply (SMPS) design for use with lifestyle micro centre unit (MZ-1000, MZ-1100 and MZ-1200).
2. A specific cable (CABLE INTERCONNECT 20P) is needed for connection between the Power Box and the centre unit in order for the centre unit to receive supply for operation and also to implement software control to the Power Box.

**3. WARNING**

**SMPS Board consists of high voltage filter capacitors (2203 or 2210).**

**Safety measures must be taken by the repair technician during servicing:**

- When the supply is on, avoid touching the SMPS Board and the high voltage filter capacitors (2203 or 2210).
- When the supply is off, make sure to discharge the high voltage filter capacitors (2203 or 2210) with a suitable value resistor before any servicing to prevent electric shock.

# MODULE POWER BOX

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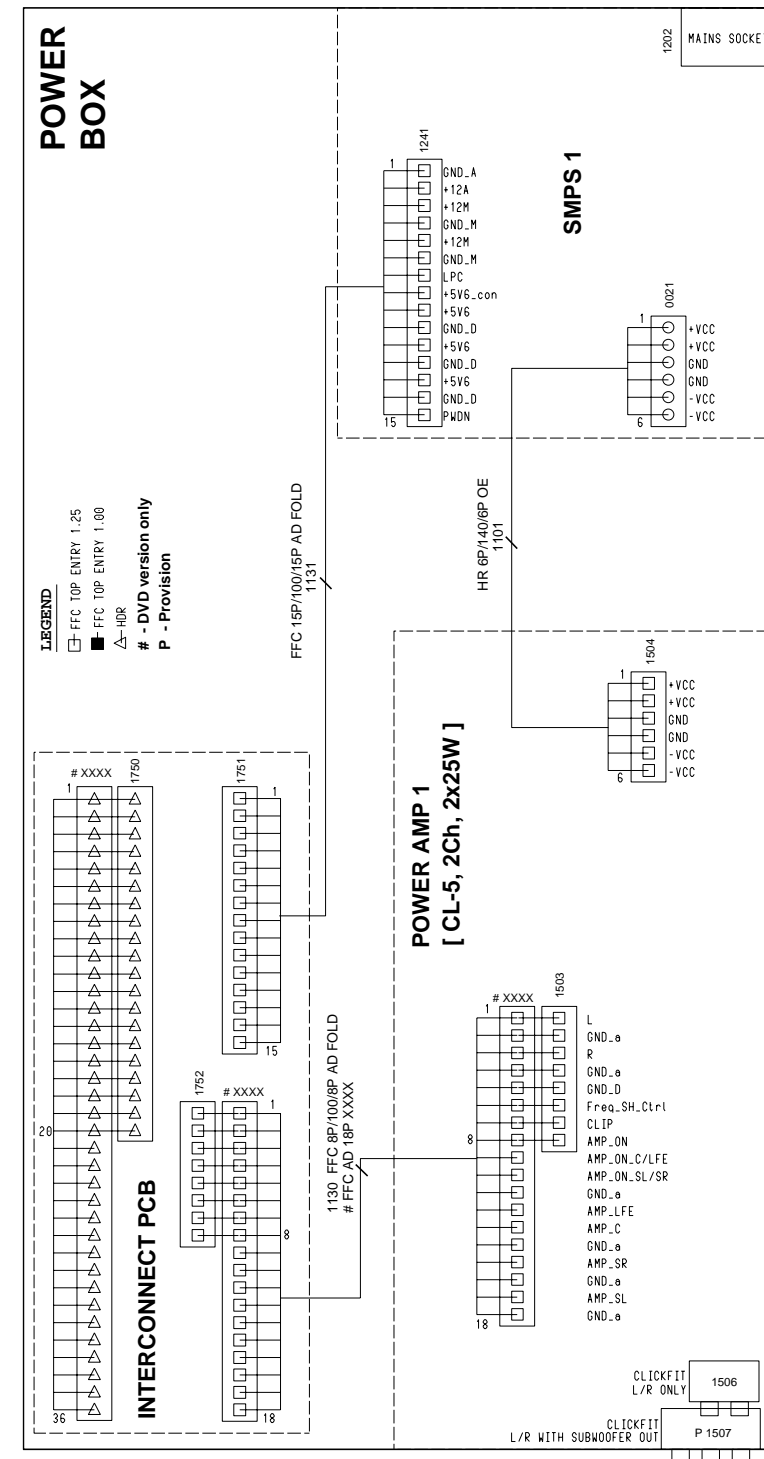
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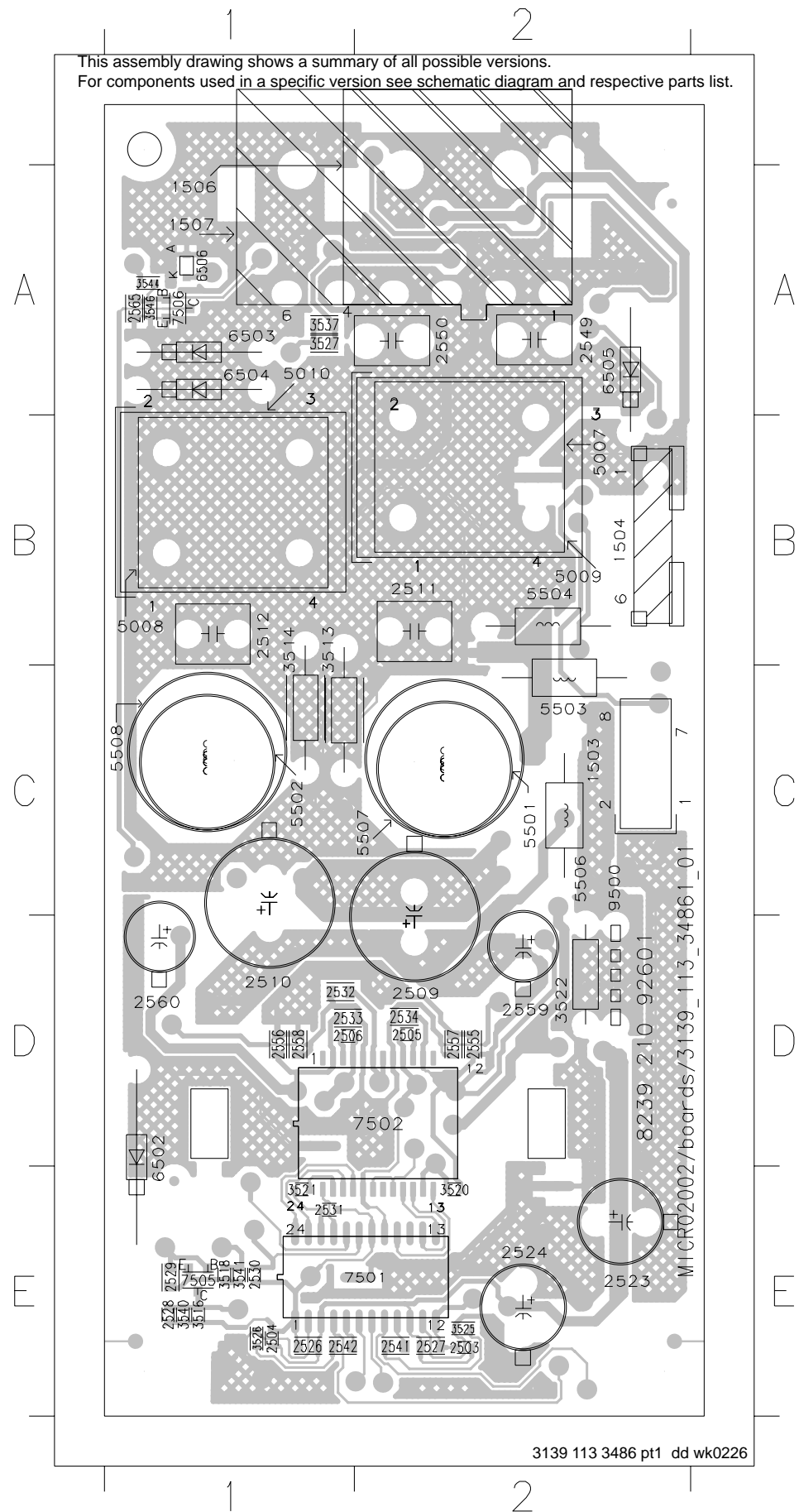
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**WIRING DIAGRAM**

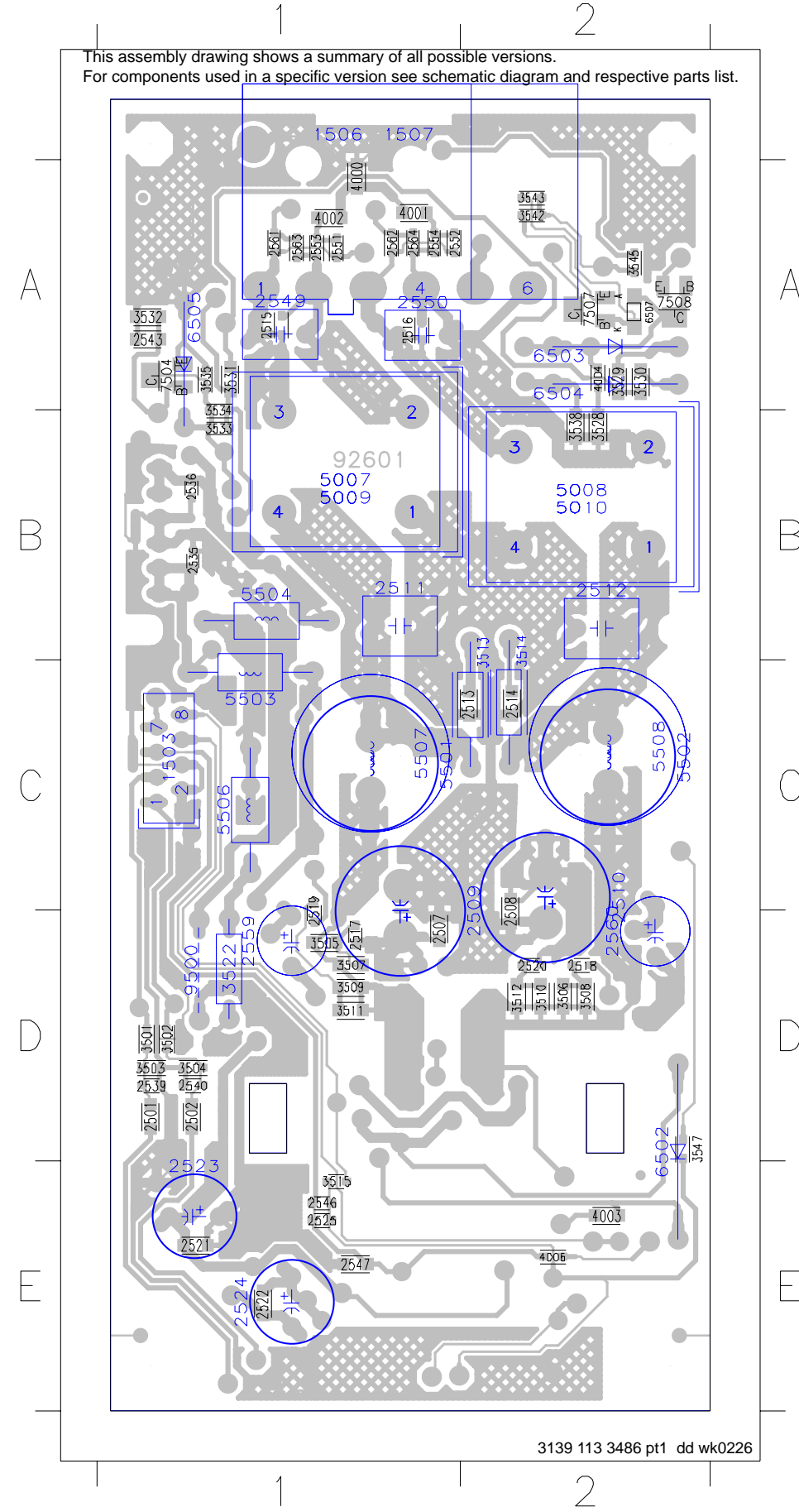


### CLASS D AMPLIFIER BOARD - TOP VIEW LAYOUT



- 1503 C2
- 1504 B2
- 1506 A1
- 1507 A1
- 2503 E2
- 2504 E1
- 2505 D2
- 2506 D1
- 2509 D2
- 2510 D1
- 2511 B2
- 2512 B1
- 2523 E2
- 2524 E2
- 2526 E1
- 2527 E2
- 2528 E1
- 2529 E1
- 2530 E1
- 2531 E1
- 2532 D1
- 2533 D1
- 2534 D2
- 2541 E2
- 2542 E1
- 2549 A2
- 2550 A2
- 2555 D2
- 2556 D1
- 2557 D2
- 2558 D1
- 2559 D2
- 2560 D1
- 2565 A1
- 2513 B1
- 2514 B1
- 2516 E1
- 2520 E2
- 2521 E1
- 2522 D2
- 2525 E2
- 2526 E1
- 2527 A1
- 2537 A1
- 2540 E1
- 2541 E1
- 2544 A1
- 2546 A1
- 5007 B2
- 5008 B1
- 5009 B2
- 5010 A1
- 5501 C2
- 5502 C1
- 5503 C2
- 5504 B2
- 5506 C2
- 5507 C2
- 5508 C1
- 6502 D1
- 6503 A1
- 6504 A1
- 6505 A2
- 6506 A1
- 7501 E2
- 7502 D2
- 7505 E1
- 7506 A1
- 9500 C2

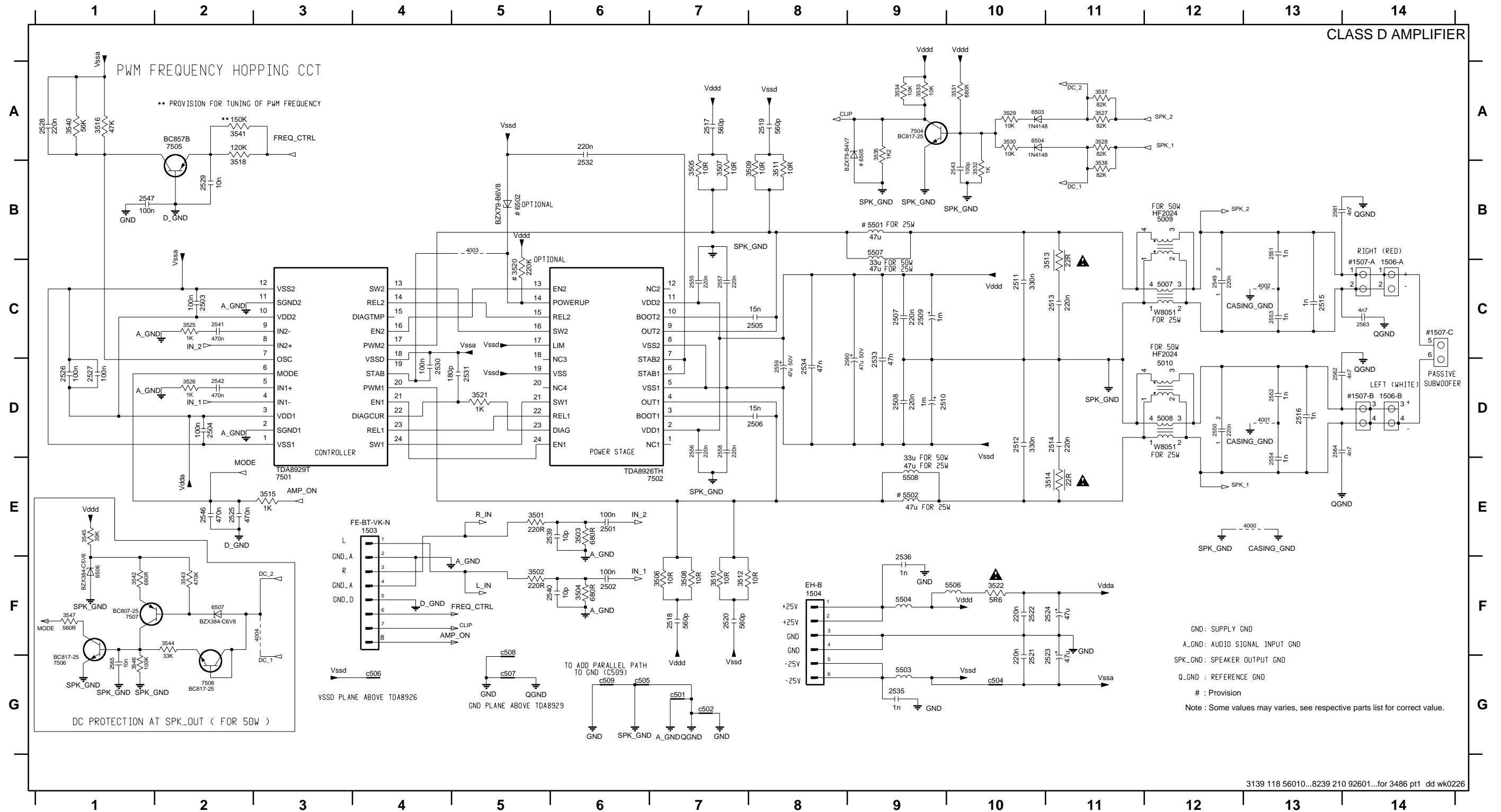
### CLASS D AMPLIFIER BOARD - BOTTOM VIEW LAYOUT



- 2501 D1
- 2502 D1
- 2507 D1
- 2508 D2
- 2513 C2
- 2514 C2
- 2515 A1
- 2516 A1
- 2517 D1
- 2518 D2
- 2519 C1
- 2520 D2
- 2521 E1
- 2522 E1
- 2525 E1
- 2535 B1
- 2536 B1
- 2539 D1
- 2540 D1
- 2543 A1
- 2546 E1
- 2547 E1
- 2551 A1
- 2552 A1
- 2553 A1
- 2554 A1
- 2561 A1
- 2562 A1
- 2563 A1
- 2564 A1
- 3501 D1
- 3502 D1
- 3503 D1
- 3504 D1
- 3505 D1
- 3506 D2
- 3507 D1
- 3508 D2
- 3509 D1
- 3510 D2
- 3511 D1
- 3512 D2
- 3515 E1
- 3528 B2
- 3529 A2
- 3530 A2
- 3531 A1
- 3532 A1
- 3533 B1
- 3534 B1
- 3535 A1
- 3538 B2
- 3542 A2
- 3543 A2
- 3545 A2
- 3547 D2
- 4000 A1
- 4001 A1
- 4002 A1
- 4003 E2
- 4004 A2
- 4006 E2
- 6507 A2
- 7504 A1
- 7507 A2
- 7508 A2
- 1503 C1
- 1506 A1
- 1507 A1
- 2509 D2
- 2510 C2
- 2511 B1
- 2512 B2
- 2523 E1
- 2524 E1
- 2549 A1
- 2550 A1
- 2559 D1
- 2560 D2
- 2563 C2
- 2564 C2
- 3522 D1
- 5007 B1
- 5008 B2
- 5009 B1
- 5010 B2
- 5501 C1
- 5502 C2
- 5503 C1
- 5504 B1
- 5506 C1
- 5507 C1
- 5508 C2
- 6502 D2
- 6503 A2
- 6504 A2
- 6505 A1
- 9500 D1

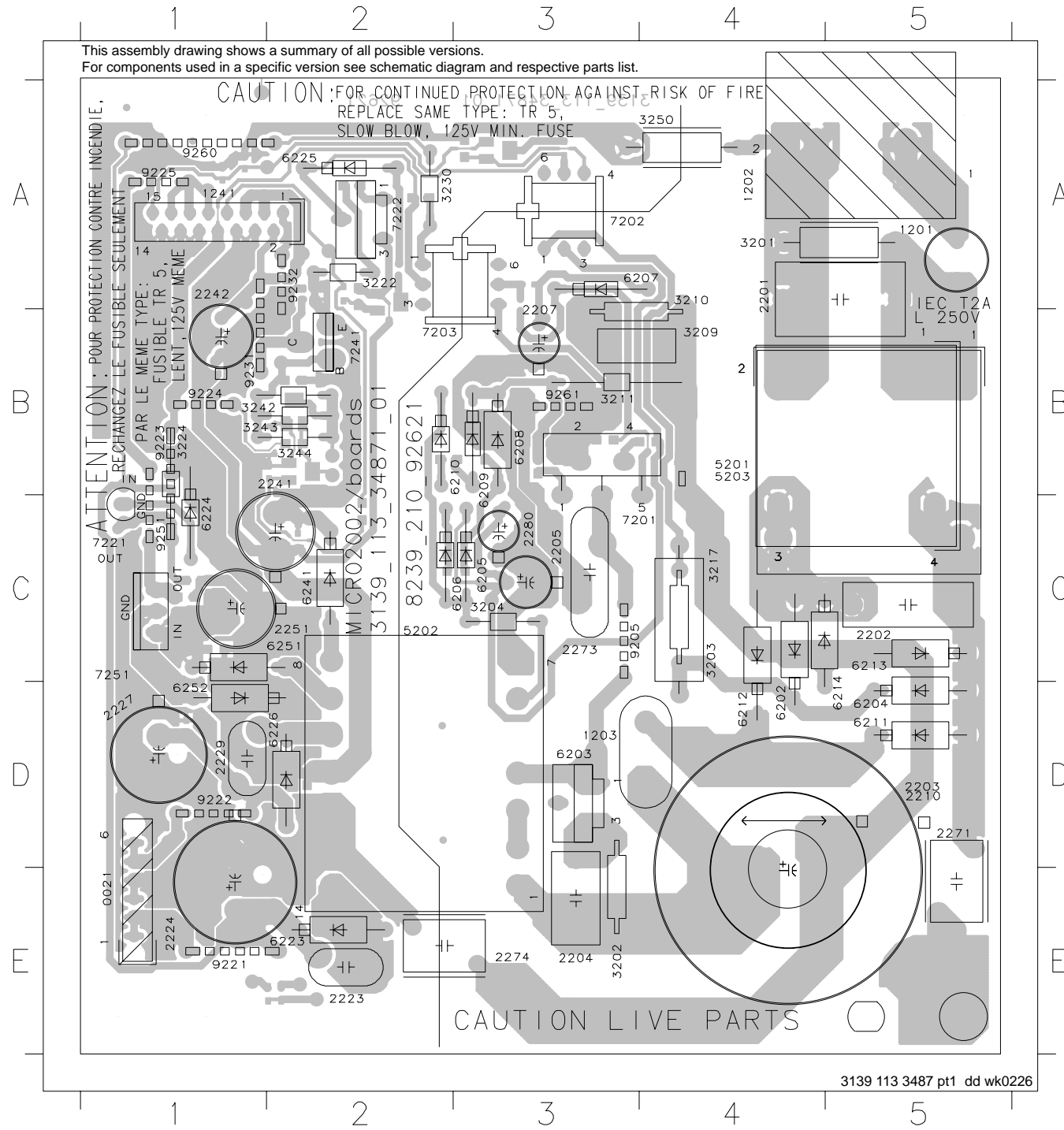
# CLASS D AMPLIFIER BOARD - CIRCUIT DIAGRAM

1503 E4	1507-C C14	2506 D8	2512 D10	2518 F7	2524 F11	2530 D4	2536 F9	2546 E2	2553 C13	2559 D8	2565 G1	3506 F7	3512 F7	3520 C5	3528 A11	3534 A9	3542 F1	4000 E13	5008 D12	5504 F9	6504 A10	7504 A9	c502 G7	c509 G6
1504 F8	2501 E6	2507 C9	2513 C11	2519 A8	2525 E2	2531 D5	2539 E6	2547 B1	2554 E13	2560 D9	3501 E5	3507 B7	3513 C11	3521 D5	3529 A10	3535 A9	3543 F2	4001 D13	5009 B12	5506 F10	6505 A9	7505 A2	c504 G10	
1506-A C14	2502 F6	2508 D9	2514 D11	2520 F7	2526 D1	2532 A6	2540 F6	2549 C12	2555 C7	2561 B13	3502 F5	3508 F7	3514 E11	3522 F10	3530 A10	3537 A11	3544 F2	4002 C13	5010 D12	5507 B9	6506 F1	7506 G1	c505 G6	
1506-B C14	2503 C2	2509 C9	2515 C13	2521 G10	2527 D1	2533 D9	2541 C2	2550 D12	2556 D7	2562 D13	3503 E6	3509 B7	3515 E3	3523 C2	3531 A10	3538 B11	3545 E1	4003 B5	5501 B9	5508 E9	6507 F2	7507 F1	c506 G4	
1507-A C14	2504 D2	2510 D9	2516 D13	2522 F10	2528 A1	2534 D8	2542 D2	2551 B13	2557 C7	2563 C14	3504 F6	3510 F7	3516 A1	3524 D2	3532 B10	3540 A1	3546 G1	4004 F3	5502 E9	5502 B5	6502 B5	7501 E3	c507 G5	
1507-B D14	2505 C8	2511 C10	2517 A7	2523 G11	2529 B2	2535 G9	2543 B10	2552 D13	2558 D7	2564 D13	3505 B7	3511 B8	3518 A2	3527 A11	3533 A9	3541 A2	3547 F1	5007 C12	5503 G9	6503 A10	7502 E7	c501 G7	c508 F5	



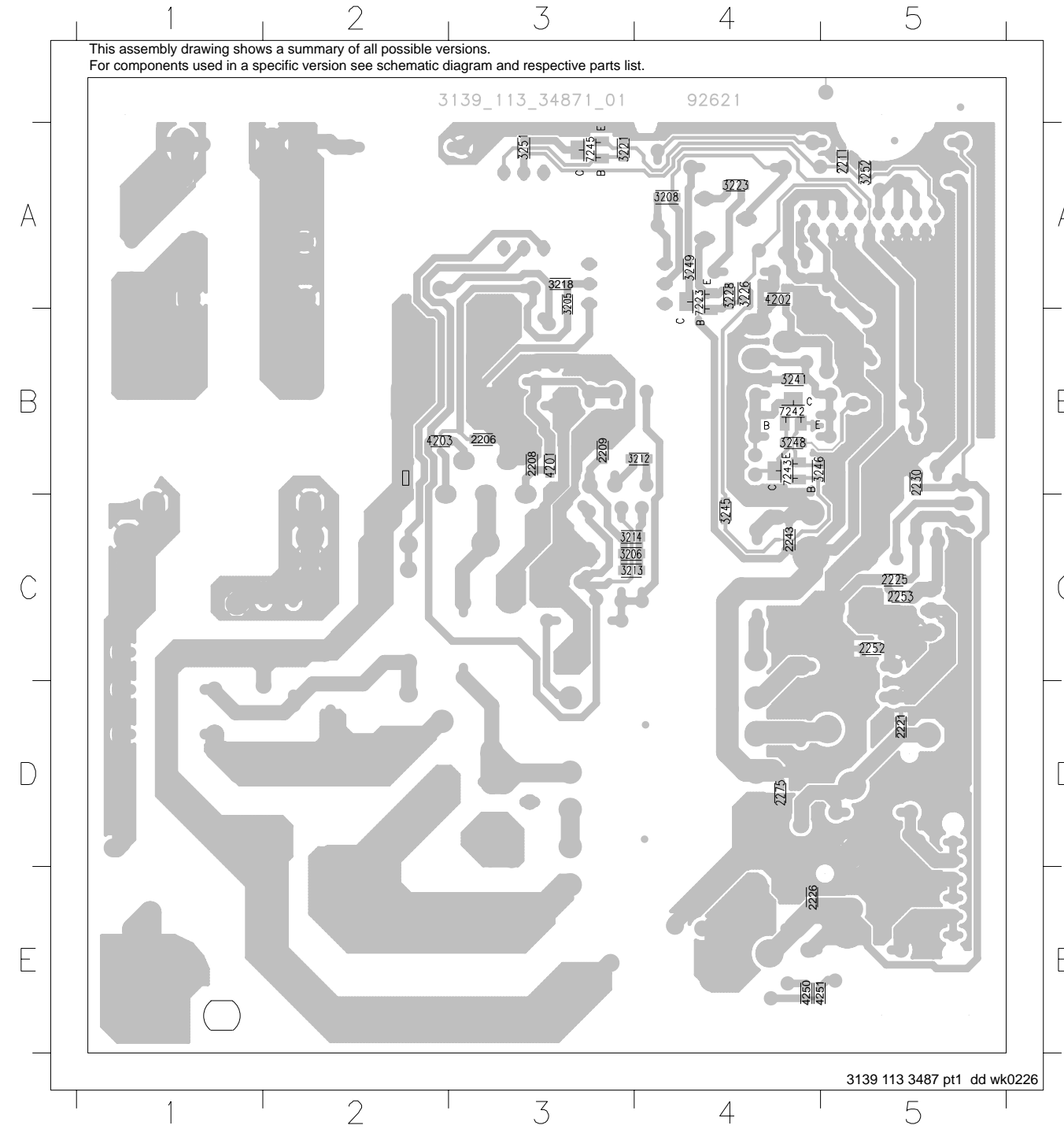
### SUPPLY BOARD - COMPONENT LAYOUT

0021 E1	2207 B3	2273 C3	3217 C4	5203 B4	6211 D5	6252 D1	9222 D1
1201 A5	2210 D5	2274 E3	3222 A2	6202 D4	6212 D4	7201 C3	9223 B1
1202 A4	2223 E2	2280 C3	3224 B1	6203 D3	6213 C5	7202 A3	9224 B1
1203 D3	2224 E1	3201 A4	3230 A2	6204 D5	6214 D5	7203 B2	9225 A1
1241 A1	2227 D1	3202 E3	3242 B1	6205 C3	6223 E2	7221 C1	9231 B1
2201 A4	2229 D1	3203 C4	3243 B1	6206 C3	6224 C1	7222 A2	9232 A2
2202 C5	2241 B2	3204 C3	3244 B2	6207 A4	6225 A2	7241 B2	9251 C1
2203 D5	2242 A1	3209 B4	3250 A4	6208 B3	6226 D2	7251 C1	9260 A1
2204 E3	2251 C2	3210 A4	5201 B4	6209 B3	6241 C2	9205 C3	9261 B3
2205 C3	2271 D5	3211 B3	5202 C2	6210 B3	6251 C2	9221 E1	

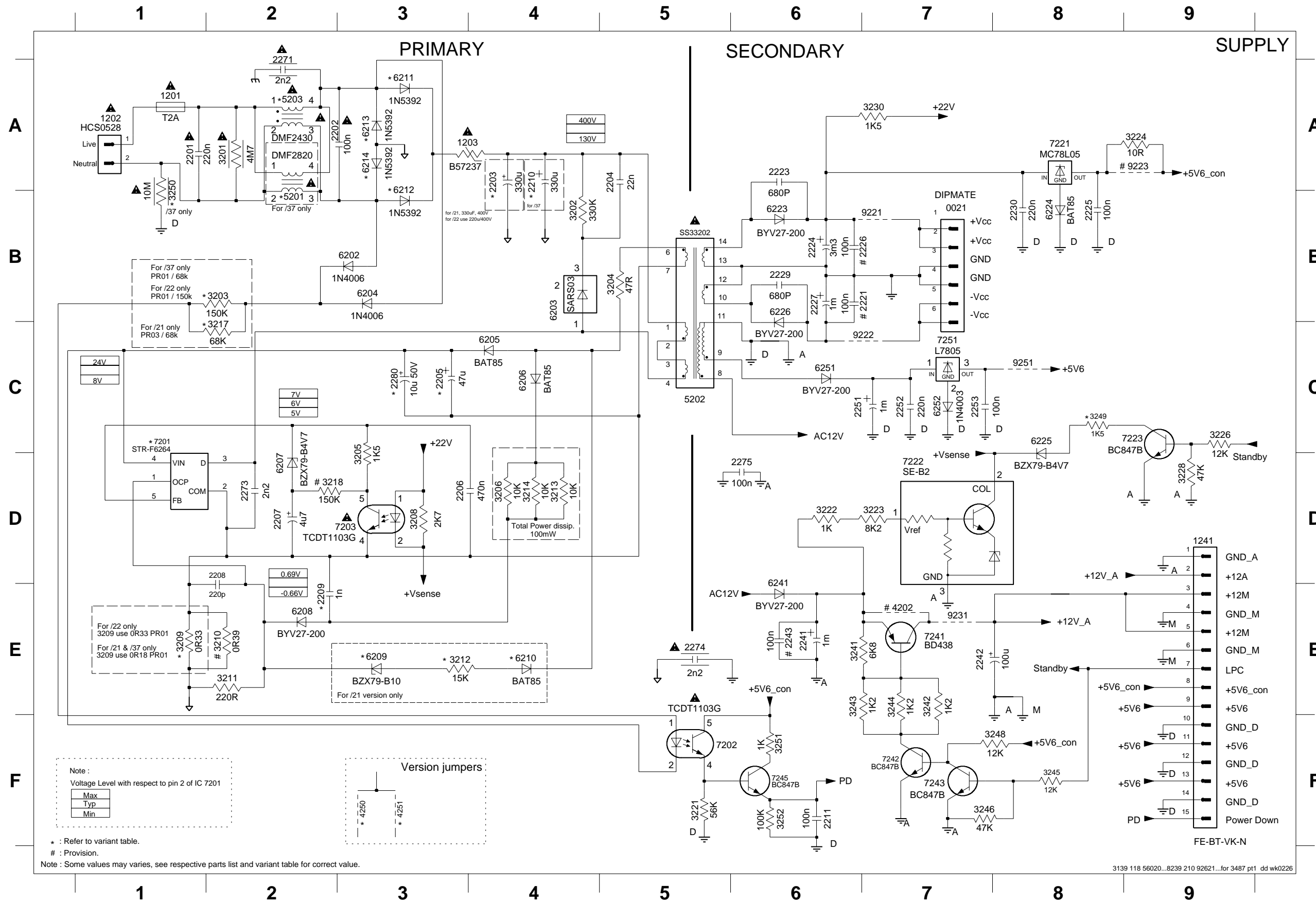


### SUPPLY BOARD - CHIP LAYOUT

2206 B3	2225 C5	2253 C5	3212 B4	3223 A4	3246 B5	4201 B3	7223 B4
2208 B3	2226 E5	2275 D4	3213 C4	3226 B4	3248 B5	4202 A4	7242 B4
2209 B3	2230 C5	3205 A3	3214 C4	3228 B4	3249 A4	4203 B2	7243 C4
2211 A5	2243 C4	3206 C4	3218 A3	3241 B4	3251 A3	4250 E4	7245 A3
2221 D5	2252 C5	3208 A4	3221 A4	3245 C4	3252 A5	4251 E5	

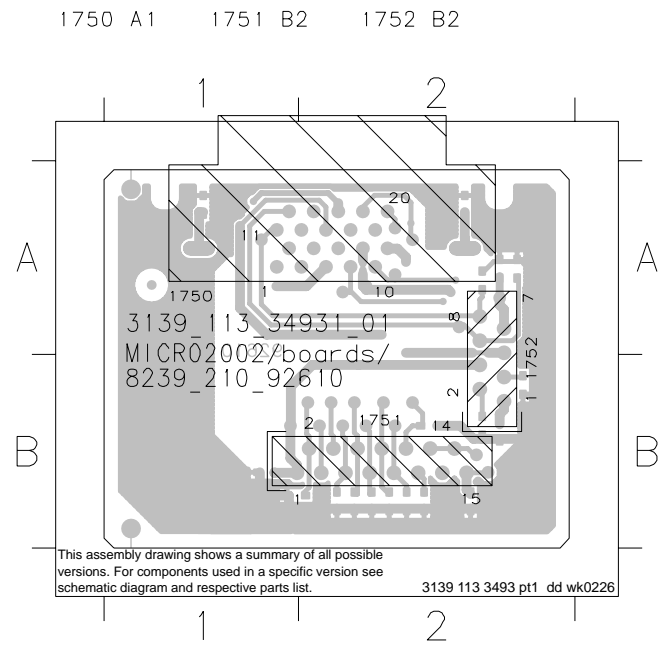


# SUPPLY BOARD - CIRCUIT DIAGRAM

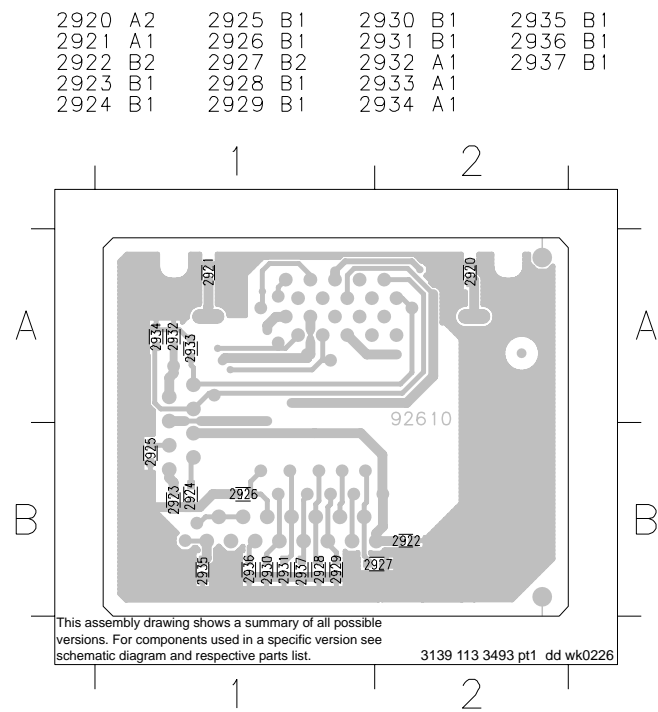


- 0021 B7
- 1201 A1
- 1202 A1
- 1203 A4
- 1241 D9
- 2201 A1
- 2202 A3
- 2203 A4
- 2204 A5
- 2205 C3
- 2206 D3
- 2207 D2
- 2208 D2
- 2209 E2
- 2210 A4
- 2211 F6
- 2221 B6
- 2223 A6
- 2224 B6
- 2225 B8
- 2226 B6
- 2227 B6
- 2229 B6
- 2230 B8
- 2241 E6
- 2242 E7
- 2243 E6
- 2251 C6
- 2252 C7
- 2253 C7
- 2271 A2
- 2273 D2
- 2274 E5
- 2275 D6
- 2280 C3
- 3201 A2
- 3202 B4
- 3203 B2
- 3204 B5
- 3205 D3
- 3206 D4
- 3208 D3
- 3209 E1
- 3210 E2
- 3211 E2
- 3212 E3
- 3213 D4
- 3214 D4
- 3217 C2
- 3218 D2
- 3221 F5
- 3222 D6
- 3223 D7
- 3224 A9
- 3226 C9
- 3228 D9
- 3230 A7
- 3241 E6
- 3242 E7
- 3243 E6
- 3244 E7
- 3245 F8
- 3246 F7
- 3248 F8
- 3249 C8
- 3250 A1
- 3251 F6
- 3252 F6
- 4202 E7
- 4250 F3
- 4251 F3
- 5201 B2
- 5202 C5
- 5203 A2
- 6202 B3
- 6203 B4
- 6204 B3
- 6205 C4
- 6206 C4
- 6207 D2
- 6208 E2
- 6209 E3
- 6210 E4
- 6211 A3
- 6212 B3
- 6213 A3
- 6214 A3
- 6223 B6
- 6224 B8
- 6225 C8
- 6226 B6
- 6241 E6
- 6242 A8
- 6243 D3
- 6244 B7
- 6245 F7
- 6245 F6
- 7201 C7
- 7202 F5
- 7203 D3
- 7204 A8
- 7205 D7
- 7206 C9
- 7207 E7
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- 7209 F6
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- 7213 A9
- 7214 E7
- 7215 C8
- 7221 A8
- 7222 D7
- 7223 C9
- 7224 E7
- 7225 F7
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- 7227 C7
- 7228 C7
- 7229 A9
- 7230 E7
- 7231 E7
- 7232 C7
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- 7234 E7
- 7235 C8
- 7236 D3
- 7237 B2
- 7238 D3
- 7239 E1
- 7240 E2
- 7241 E2
- 7242 E3
- 7243 D4
- 7244 D4
- 7245 C2
- 7246 D2
- 7247 F5
- 7248 D6
- 7249 D7
- 7250 C9
- 7251 D9
- 7252 A7
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- 7254 E6
- 7255 F6
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- 7260 E7
- 7261 C8
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- 7263 B6
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- 7268 E6
- 7269 E6
- 7270 C6
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- 7272 D7
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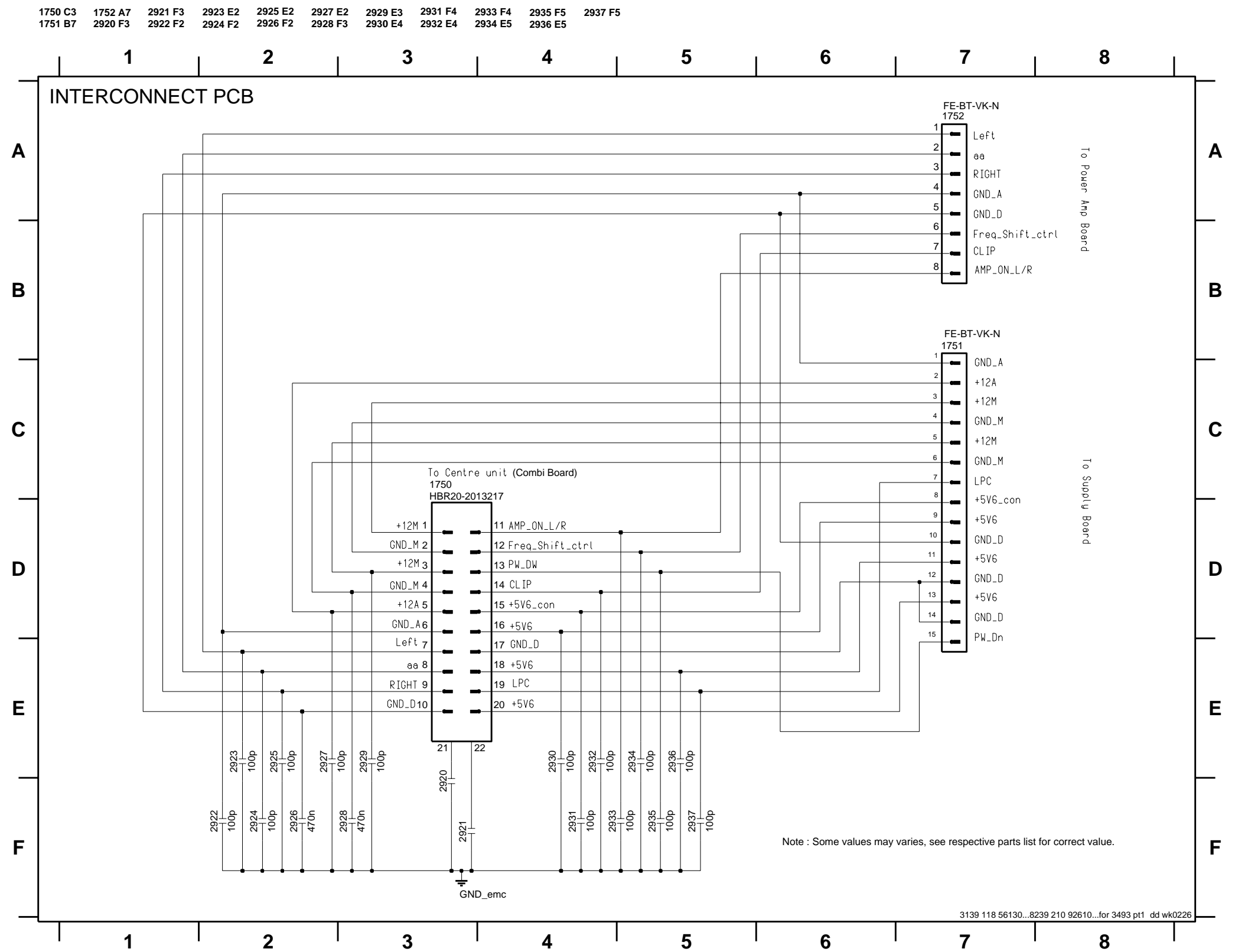
**INTERCONNECT BOARD - COMPONENT LAYOUT**



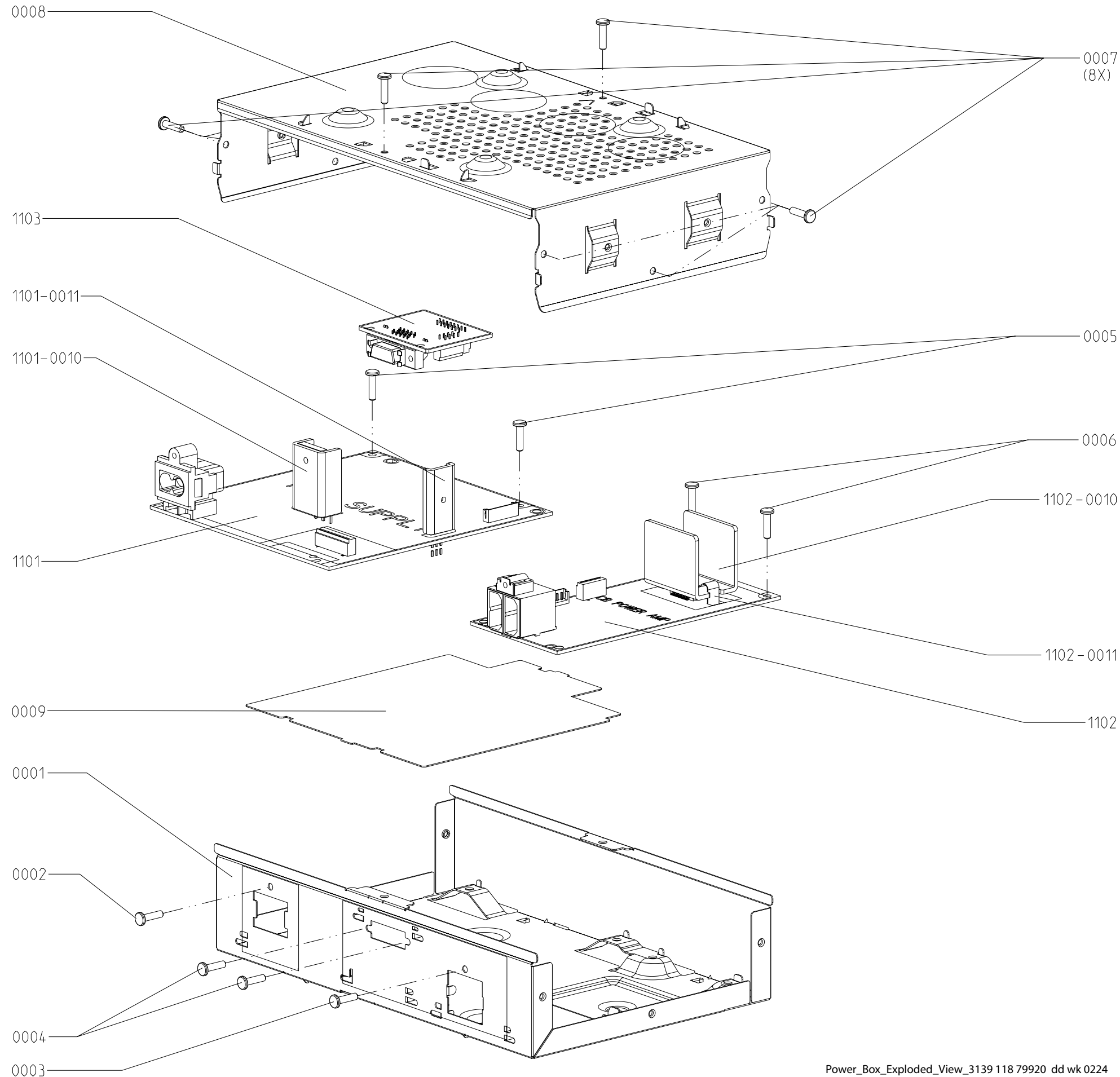
**INTERCONNECT BOARD - CHIP LAYOUT**



**INTERCONNECT BOARD - CIRCUIT DIAGRAM**



**POWER BOX MECHANICAL EXPLODED VIEW**



**MECHANICAL & ACCESSORIES PARTS LIST**

1102-0011	4835 256 97316	Clip Heatsink POWER AMP
1130	3139 111 01630	FFC Foil 8P/100/8P AD Fold
1131	3139 111 01640	FFC Foil 15P/100/15PAD Fold

Note : Only the parts mentioned in this list are normal service spare parts.

**SCREW LISTS**

0002	D3 x 10
0003	D3 x 10
0004	M2,6 x 12
0005	M3 x 10
0006	M3 x 10
0007	M3 x 6



## Supply Board Variant Table

Item No.	MZ-1x00 (/21 version)	MZ-1x00 (/22 version)	MZ-1x00 (/37 version)
2203	330u	220u	-
2205	47u	22u	47u
2209	6n8	1n	1n
2210	-	-	330u
2280	-	10u	-
3203	-	150K	68K
3209	0R18	0R33	0R18
3210	-	-	-
3212	15K	-	-
3217	68K	-	-
3218	-	-	-
3249	2K2	1K5	2K2
3250	-	-	10M
4202	-	-	-
4250	-	X	X
4251	X	-	X
5201	DMF2820	-	DMF2405
5203	-	DMF2430	-
6209	BZX79-B10	-	-
6210	BAT85	-	-
6211	1N4006	1N4006	1N5392
6212	1N4006	1N4006	1N5392
6213	1N4006	1N4006	1N5392
6214	1N4006	1N4006	1N5392
7201	STR-F6267S	STR-F6264	STR-F6254
9223	-	-	-

x - item in use.

ELECTRICAL PARTS LIST - SUPPLY BOARDMISCELLANEOUS

1201	9965 000 07788	△ FUSE RAD LT 2A 250V
1202	4822 265 31015	△ Mains Socket
1203	2122 612 00055	△ NTC DC B57237 3W1 S 4R7
1241	4822 265 10981	Flex Connector 15P

CAPACITORS

2201	4822 121 10512	△ 220nF 20% 275V
2202	4822 121 10711	△ 100nF 20% 275V
2203	4822 124 12415	220uF 20% 400V
2204	5322 121 42211	22nF 5% 630V
2205	4822 124 40764	22uF 100 V
2206	3198 017 44740	470nF 10V
2207	4822 124 40769	4,7uF 20% 100V
2208	4822 126 13883	220pF 5% 50V
2209	3198 016 31020	1nF 25V
2211	2238 586 59812	100nF +80/-20% 50V
2223	4822 126 14138	680pF 10% 2kV
2224	4822 124 42367	3300uF 20% 35V
2225	2238 586 59812	100nF +80/-20% 50V
2227	4822 124 12056	1000uF 20% 35V
2229	4822 126 14138	680pF 10% 2kV
2230	4822 126 13879	220nF +80/-20% 16V
2241	4822 124 80061	1000uF 20% 25V
2242	4822 124 41643	100uF 20% 16V
2251	4822 124 81144	1000uF 16V
2252	4822 126 13879	220nF +80/-20% 16V
2253	2238 586 59812	100nF +80/-20% 50V
2273	4822 126 13451	2,2nF 10% 2kV
2274	2020 554 90173	△ CERSAF KX 2,2nF 20% 250V
2275	2238 586 59812	100nF +80/-20% 50V
2280	4822 124 40248	10uF 20% 63V

RESISTORS

3201	4822 053 21475	△ 4M7 5% 0,5W
3202	4822 116 52272	330k 5% 0,5W
3203	2322 193 53154	RST MFLM PR01 S 150k PM5
3204	4822 116 52195	47R 5% 0,5W
3205	4822 051 30152	1k5 5% 0,062W
3206	4822 117 10833	10k 1% 0,1W
3208	4822 051 30272	2k7 5% 0,062W
3209	4822 117 11342	0R33 5% 2W
3211	4822 116 83872	220R 5% 0,5W
3213	4822 117 10833	10k 1% 0,1W
3214	4822 117 10833	10k 1% 0,1W
3221	4822 051 30563	56k 5% 0,062W
3222	4822 050 11002	1k 1% 0,4W
3223	4822 117 12902	8k2 1% 0,063W
3224	4822 116 52176	10R 5% 0,5W
3226	4822 051 30123	12k 5% 0,062W
3228	4822 117 12925	47k 1% 0,063W
3230	4822 116 52243	1k5 5% 0,5W
3241	4822 051 30682	6k8 5% 0,062W

3242	4822 116 52207	1k2 5% 0,5W
3243	4822 116 52207	1k2 5% 0,5W
3244	4822 116 52207	1k2 5% 0,5W
3245	4822 051 30123	12k 5% 0,062W
3246	4822 117 12925	47k 1% 0,063W
3248	4822 051 30123	12k 5% 0,062W
3249	4822 051 30152	1k5 5% 0,062W
3251	4822 051 30102	1k 5% 0,062W
3252	4822 117 13632	100k 1% 0,62W
4201	4822 051 30008	0R Jumper 0603
4203	4822 051 30008	0R Jumper 0603
4250	4822 051 30008	0R Jumper 0603

COILS & FILTERS

5202	2422 531 02549	△ TFM SMT LAYER SS33202-00
5203	2422 549 44725	△ FIL MAINS 30MH DMF2430

DIODES

6202	4822 130 31603	1N4006
6203	9322 185 09682	DIO REC SARS03(LF4)
6204	4822 130 31603	1N4006
6205	4822 130 31983	BAT85
6206	4822 130 31983	BAT85
6207	4822 130 34174	BZX79-B4V7
6208	4822 130 10871	BYV27-200
6211	4822 130 31603	1N4006
6212	4822 130 31603	1N4006
6213	4822 130 31603	1N4006
6214	4822 130 31603	1N4006
6223	4822 130 10871	BYV27-200
6224	4822 130 31983	BAT85
6225	4822 130 34174	BZX79-B4V7
6226	4822 130 10871	BYV27-200
6241	4822 130 10871	BYV27-200
6251	4822 130 10871	BYV27-200
6252	4822 130 31878	1N4003G

TRANSISTORS & INTEGRATED CIRCUITS

7201	9322 185 84682	IC STR-F6264(LF1352)
7202	4822 209 16708	△ TCDDT1103G
7203	4822 209 16708	△ TCDDT1103G
7221	4822 209 72042	IC MC78L05ACP
7222	9322 185 04682	IC TF SE-B2
7223	5322 130 60159	BC847B
7241	4822 130 40995	BD438
7242	5322 130 60159	BC847B
7243	5322 130 60159	BC847B
7245	5322 130 60159	BC847B
7251	4822 209 31841	IC L7805CP

Note : Only the parts mentioned in this list are normal service spare parts.

**ELECTRICAL PARTS LIST - CLASS D AMPLIFIER BOARD****MISCELLANEOUS**

1503	4822 265 11515	Flex Connector 8P
1506	2422 025 17848	Speaker Terminal 4P Red/White

**CAPACITORS**

2501	4822 126 14585	100nF 10% 50V
2502	4822 126 14585	100nF 10% 50V
2503	2238 586 59812	100nF +80/-20% 50V
2504	2238 586 59812	100nF +80/-20% 50V
2505	3198 017 31530	15nF 50V
2506	3198 017 31530	15nF 50V
2507	4822 126 13473	220nF +80/-20% 50V
2508	4822 126 13473	220nF +80/-20% 50V
2509	4822 124 12056	1000uF 20% 35V
2510	4822 124 12056	1000uF 20% 35V
2511	5322 121 42661	330nF 5% 63V
2512	5322 121 42661	330nF 5% 63V
2513	4822 126 14076	220nF +80/-20% 25V
2514	4822 126 14076	220nF +80/-20% 25V
2515	5322 126 11578	1nF 10% 50V
2516	5322 126 11578	1nF 10% 50V
2517	4822 126 14249	560pF 10% 50V
2518	4822 126 14249	560pF 10% 50V
2519	4822 126 14249	560pF 10% 50V
2520	4822 126 14249	560pF 10% 50V
2521	4822 126 13473	220nF +80/-20% 50V
2522	4822 126 13473	220nF +80/-20% 50V
2523	3198 028 44790	47uF 20% 35V
2524	3198 028 44790	47uF 20% 35V
2525	3198 017 44740	470nF 10V
2526	4822 126 14585	100nF 10% 50V
2527	4822 126 14585	100nF 10% 50V
2528	4822 126 13879	220nF +80/-20% 16V
2529	4822 122 33177	10nF 20% 50V
2530	2238 586 59812	100nF +80/-20% 50V
2531	4822 126 14508	180pF 5% 50V
2532	4822 126 13473	220nF +80/-20% 50V
2533	4822 126 13751	47nF 10% 63V
2534	4822 126 13751	47nF 10% 63V
2535	5322 126 11578	1nF 10% 50V
2536	5322 126 11578	1nF 10% 50V
2539	4822 122 33741	10pF 10% 50V
2540	4822 122 33741	10pF 10% 50V
2541	4822 126 13482	470nF +80/-20% 16V
2542	4822 126 13482	470nF +80/-20% 16V
2543	5322 122 32531	100pF 5% 50V
2546	3198 017 44740	470nF 10V
2547	4822 126 14585	100nF 10% 50V
2549	4822 121 42408	220nF 5% 63V
2550	4822 121 42408	220nF 5% 63V
2551	5322 126 11578	1nF 10% 50V
2552	5322 126 11578	1nF 10% 50V

2553	5322 126 11578	1nF 10% 50V
2554	5322 126 11578	1nF 10% 50V
2555	4822 126 14076	220nF +80/-20% 25V
2556	4822 126 14076	220nF +80/-20% 25V
2557	4822 126 14076	220nF +80/-20% 25V
2558	4822 126 14076	220nF +80/-20% 25V
2559	4822 124 41751	47uF 20% 50V
2560	4822 124 41751	47uF 20% 50V
2561	4822 126 13193	4,7nF 10% 63V
2562	4822 126 13193	4,7nF 10% 63V
2563	4822 126 13193	4,7nF 10% 63V
2564	4822 126 13193	4,7nF 10% 63V

**RESISTORS**

3501	4822 051 30221	220R 5% 0,062W
3502	4822 051 30221	220R 5% 0,062W
3503	4822 051 30681	680R 5% 0,062W
3504	4822 051 30681	680R 5% 0,062W
3505	4822 051 20109	10R 5% 0,1W
3506	4822 051 20109	10R 5% 0,1W
3507	4822 051 20109	10R 5% 0,1W
3508	4822 051 20109	10R 5% 0,1W
3509	4822 051 20109	10R 5% 0,1W
3510	4822 051 20109	10R 5% 0,1W
3511	4822 051 20109	10R 5% 0,1W
3512	4822 051 20109	10R 5% 0,1W
3513	4822 053 10229 $\Delta$	22R 5% 1W
3514	4822 053 10229 $\Delta$	22R 5% 1W
3515	4822 051 30102	1k 5% 0,062W
3516	4822 117 12925	47k 1% 0,063W
3518	4822 051 30124	120k 5% 0,062W
3521	4822 051 30102	1k 5% 0,062W
3522	4822 052 10568 $\Delta$	5R6 5% 0,33W
3525	4822 051 30102	1k 5% 0,062W
3526	4822 051 30102	1k 5% 0,062W
3527	4822 051 20822	8k2 5% 0,1W
3528	4822 051 20822	8k2 5% 0,1W
3529	4822 051 30103	10k 5% 0,062W
3530	4822 051 30103	10k 5% 0,062W
3531	4822 051 20684	680k 5% 0,1W
3532	4822 051 10102	1k 2% 0,25W
3533	4822 051 30103	10k 5% 0,062W
3534	4822 051 30103	10k 5% 0,062W
3535	4822 117 11817	1k2 1% 1/16W
3537	4822 051 20822	8k2 5% 0,1W
3538	4822 051 20822	8k2 5% 0,1W
3540	4822 051 30563	56k 5% 0,062W
4000	4822 051 20008	0R Jumper 0805
4001	4822 051 20008	0R Jumper 0805
4002	4822 051 20008	0R Jumper 0805
4003	4822 051 20008	0R Jumper 0805

**ELECTRICAL PARTS LIST - CLASS D AMPLIFIER BOARD****RESISTORS**

4006	4822 051 30008	0R Jumper 0603
------	----------------	----------------

**COILS & FILTERS**

5007	2422 549 44101	FIL MAINS 100uH 2A2 W8051
5008	2422 549 44101	FIL MAINS 100uH 2A2 W8051
5503	4822 526 10704	FXD IND BEAD 100MHz 50R
5504	4822 526 10704	FXD IND BEAD 100MHz 50R
5506	4822 526 10704	FXD IND BEAD 100MHz 50R
5507	2422 536 00553	IND FXD 16RHBP S 47U PM10
5508	2422 536 00553	IND FXD 16RHBP S 47U PM10

**DIODES**

6503	4822 130 30621	1N4148
6504	4822 130 30621	1N4148

**TRANSISTORS & INTEGRATED CIRCUITS**

7501	9352 672 12118	IC SM TDA8929T/N1
7502	9352 707 87518	IC SM TDA8926TH/N2
7504	4822 130 42804	BC817-25
7505	4822 130 60373	BC857B

Note : Only the parts mentioned in this list are normal service spare parts.

**ELECTRICAL PARTS LIST - INTERCONNECT BOARD****MISCELLANEOUS**

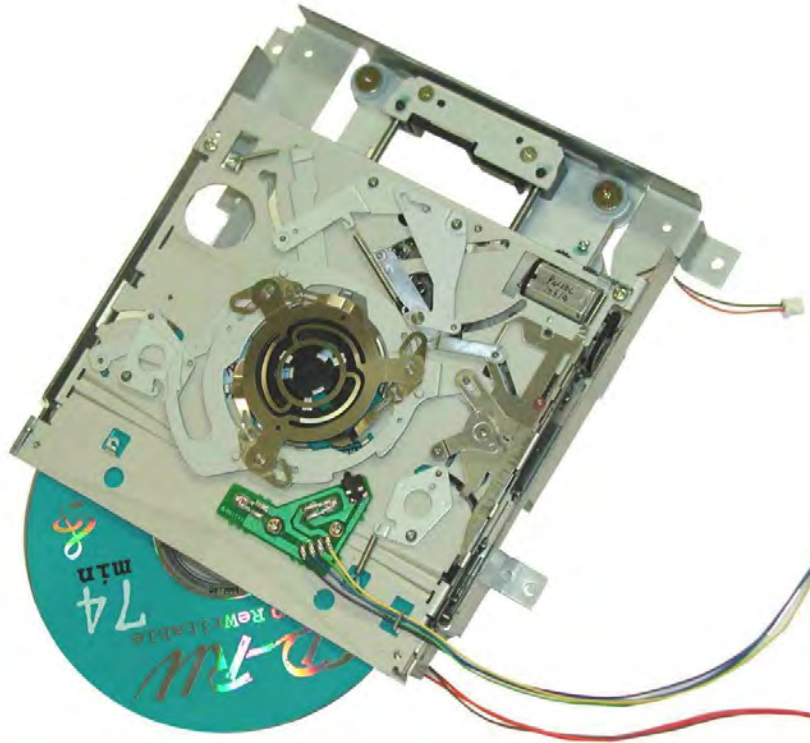
1750	2422 025 17816	CON BM H 20P F 1.27 DFP B
1751	4822 265 10981	Flex Connector 15P
1752	4822 265 11515	Flex Connector 8P

**CAPACITORS**

2920	4822 051 30008	0R Jumper 0603
2921	4822 051 30008	0R Jumper 0603
2922	2020 552 94427	100pF 5% 50V
2923	2020 552 94427	100pF 5% 50V
2924	2020 552 94427	100pF 5% 50V
2925	2020 552 94427	100pF 5% 50V
2926	3198 017 44740	470nF 10V
2927	2020 552 94427	100pF 5% 50V

2928	3198 017 44740	470nF 10V
2929	2020 552 94427	100pF 5% 50V
2930	2020 552 94427	100pF 5% 50V
2931	2020 552 94427	100pF 5% 50V
2932	2020 552 94427	100pF 5% 50V
2933	2020 552 94427	100pF 5% 50V
2934	2020 552 94427	100pF 5% 50V
2935	2020 552 94427	100pF 5% 50V
2936	2020 552 94427	100pF 5% 50V
2937	2020 552 94427	100pF 5% 50V

Note : Only the parts mentioned in this list are normal service spare parts.



# ***Slot Loader Module***

## ***(MP3 version)***

Layout stage .5

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## Service Hints

In case of symptom „skipping tracks“ perform following actions:

### 1. VERIFY THE COMPLAINT

#### PLAYABILITY CHECK

Use CDDA SBC 444A: .....4822 397 30245  
 TR 14 (600µ black dot) maximum at 01:15  
 TR 19 (fingerprint)  
 TR 10 (1000µ wedge)

Use CD-RW Printed Audio Disk .....7104 099 96611  
 TR 3 (Fingerprint)  
 TR 8 (600µ black dot) maximum at 01:00

- playback of all these tracks without audible disturbance
- jump forward/backward within a reasonable time

### 2. CLEAN THE LENS

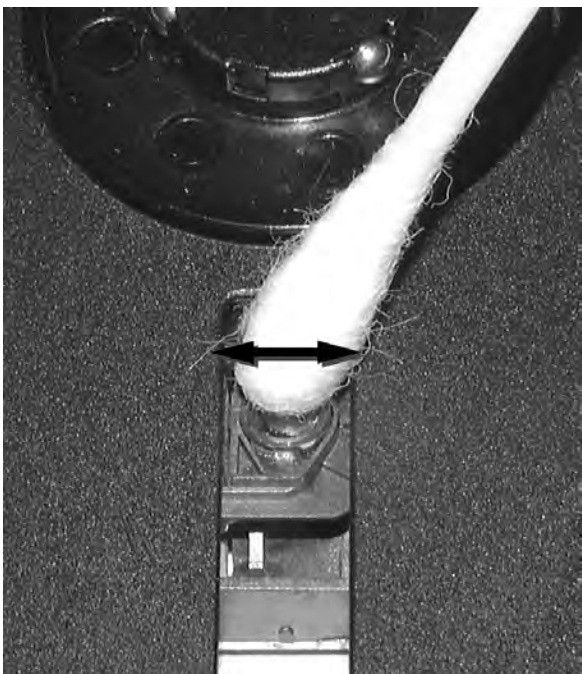
#### CD DRIVE – LENS CLEANING

**Before touching the lens it is advised to clean the surface of the lens by blowing clean air over it in order to avoid that little particles make scratches on the lens.**

Because the material of the lens is synthetic and coated with a special anti-reflectivity layer, cleaning must be done with a non-aggressive cleaning fluid. It is advised to use “KODAK LENS CLEANER CAT 176 71 36”, available in normal photo shops.

The actuator is a very precise mechanical component and may not be damaged in order to guarantee its full function. It is advised to clean the lens gently (don't press too hard) with a soft and clean cotton bud moistened with the special lens cleaner.

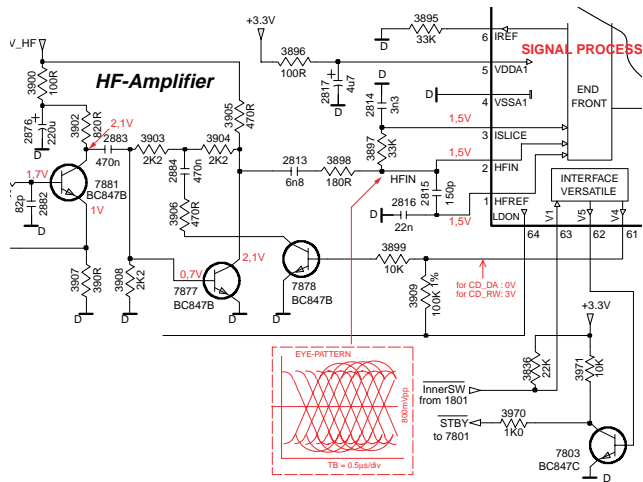
The direction of cleaning must be in the way as indicated in the picture below.



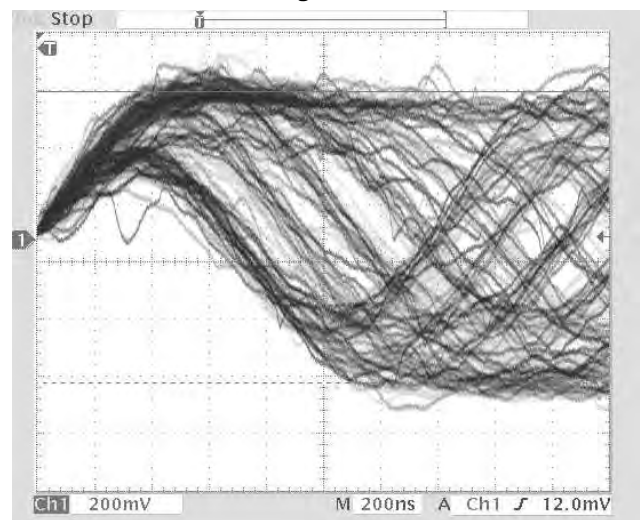
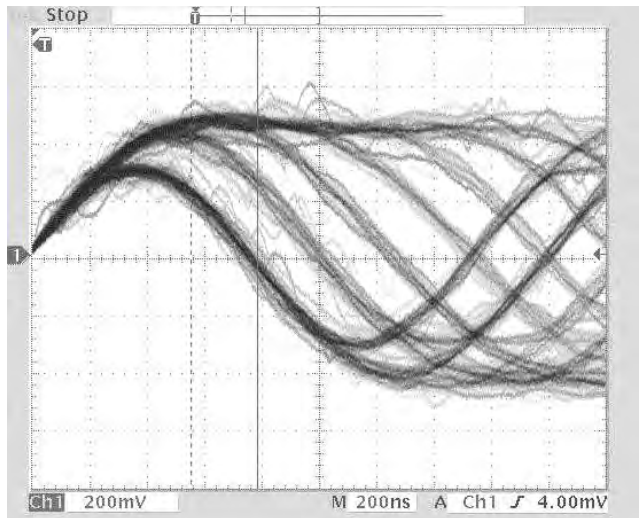
### 3. MEASURE THE EYE-PATTERN SIGNAL

#### EYE-PATTERN SIGNAL – JITTER MEASUREMENT

Measure the signal direct on resistor 3898 using an oscilloscope (see also chapter 10-9).



See below examples of the signal. Amplitude should read at least 700mVpp using SBC444A.



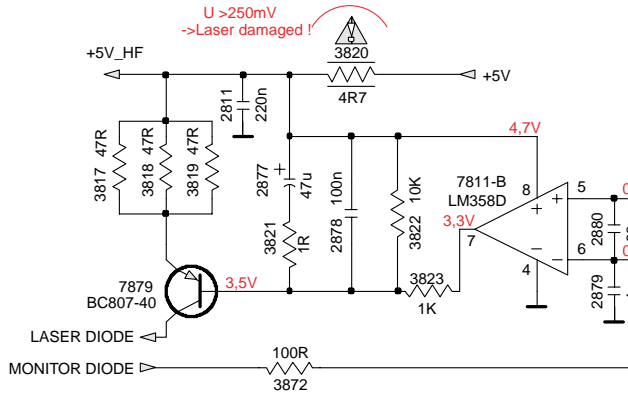
If the oscilloscope shows a signal like the 'bad' one, and/or the amplitude decreases within 1minute - the CD drive has to be replaced.

**4. MEASURE THE LASER CURRENT**

**CD DRIVE – LASER CURRENT MEASUREMENT**

The laser current can be measured as a voltage drop on resistor 3820. Typical value 170 - 190mV

**Laser power control**



**5. MEASURE THE OFFSETS OF THE CD-DRIVE**

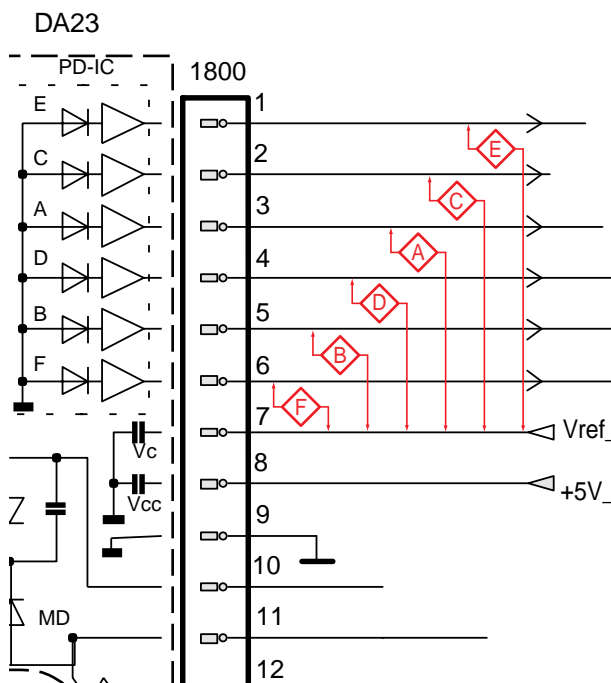
**CD DRIVE – OFFSET MEASUREMENT**

Each photodiode of the CD-drive may have an offset. This offset has to be compensated by the signal processor. A high offset of the CD-drive leads to poor playability of some CDs (skipping tracks).

Start the **Service Test Program** - section „Focus Test“ without a CD. Focus sensitivity = CD-RW.

Use a DC Millivoltmeter for measurement. The offsets can be measured direct on the connector. See drawing below.

**The values from diode A-D should read 0±10mV. Diodes E and F are less critical.**



If one of the offsets is higher than ±10mV the CD drive has to be replaced.

**6. MEASURE THE OFFSETS OF THE CD10**

**SIGNAL PROCESSOR – OFFSET MEASUREMENT**

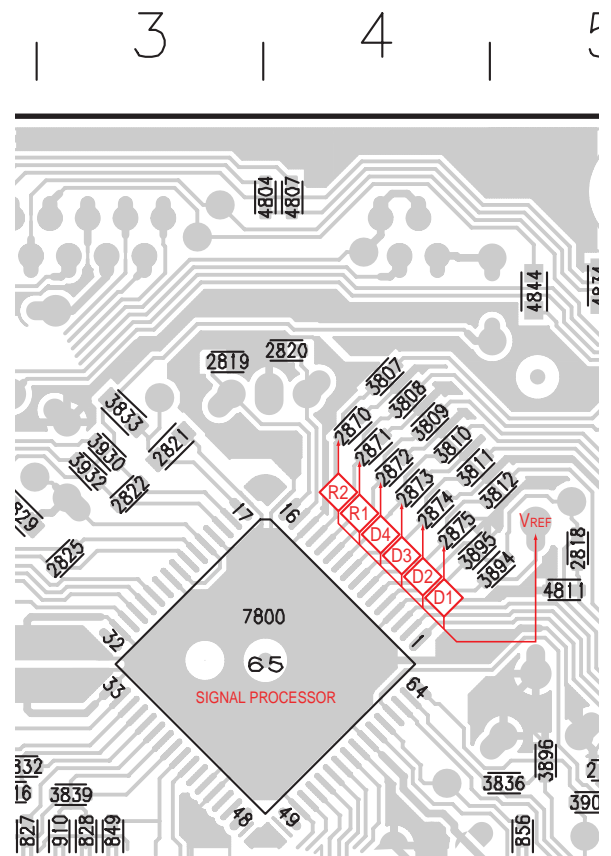
Each ADC input of the CD10 may have an offset too. Also this offset leads (together with the offsets of the CD Drive) to poor playability of some CDs (skipping tracks).

Start the **Service Test Program** - section „Focus Test“ using a CD-RW.

Use a DC Millivoltmeter for measurement. The offsets can be measured on capacitors near the signal processor. See drawing below.

**The value should read 0mV±10mV.**

**CD Board Copperside view**

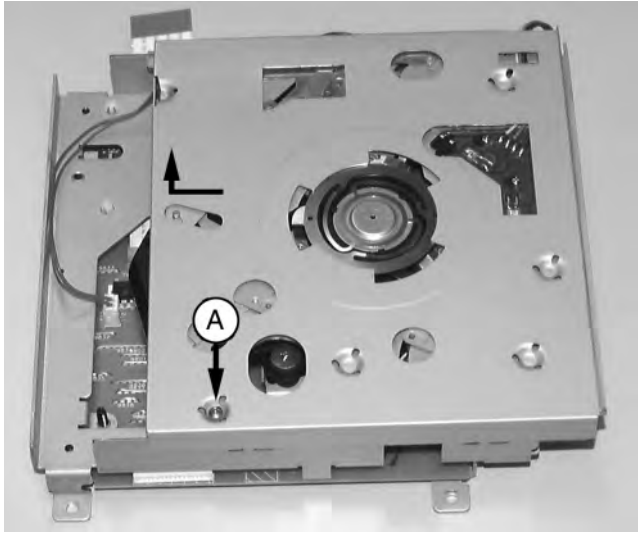


If one of the offsets is higher than ±10mV the signal processor has to be replaced.

**If none of the measured offsets is higher than ±10mV - replace the part with the higher value.**

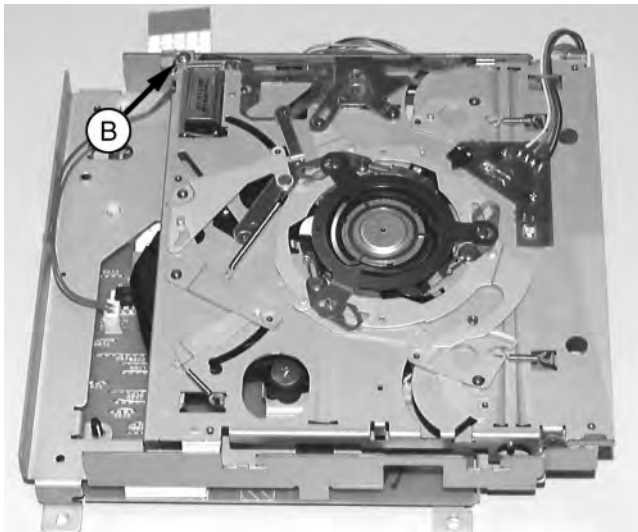
## Service Hints - Replacing the CD Drive

1. Loosen screw (A)
2. Remove cover as shown in picture 1



picture 1

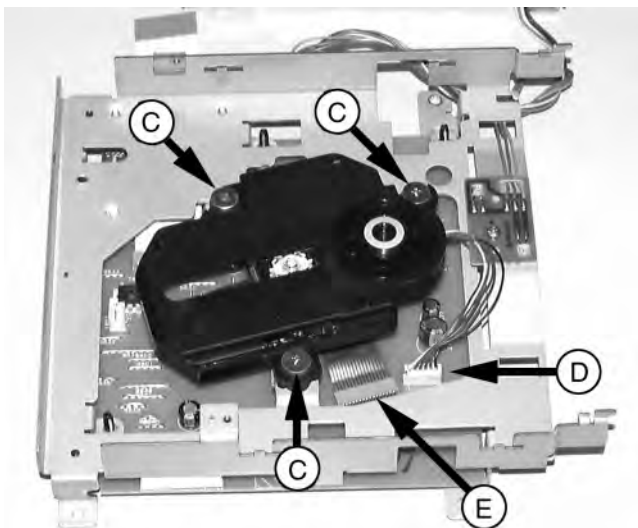
3. Loosen screw (B) (see picture 2)
4. Open slot loader



picture 2

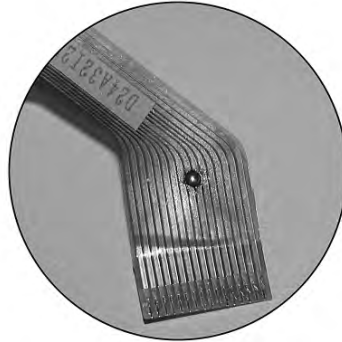
5. Loosen 3x screw (C) (see picture 3)
6. Disconnect wire (D) and flex-foil (E)

**Attention:** Flex-foil (E) is fixed to the printed circuit board with a double-sided adhesive tape.

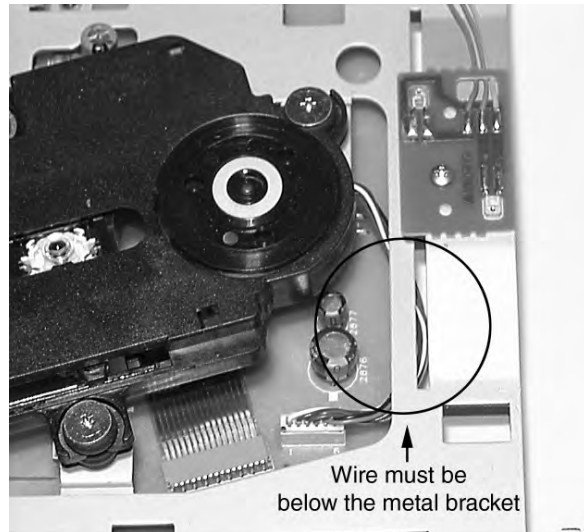


picture 3

**Attention:** The laser diode of this CD drive is protected against ESD by a solder joint which short-circuits the laser diode to ground. For proper functionality of the CD drive this solder joint must be removed **after** connecting the drive to the set.

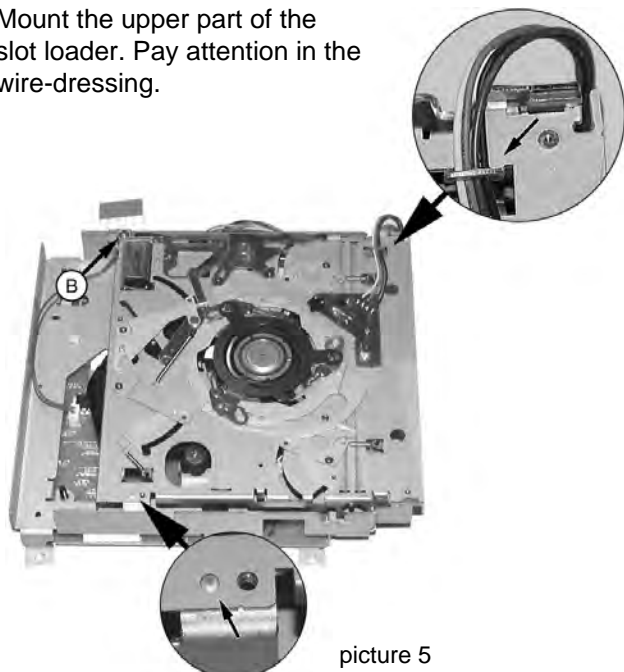


Don't forget to fix the flat-foil again. Pay attention in the wire-dressing. (see picture 4)



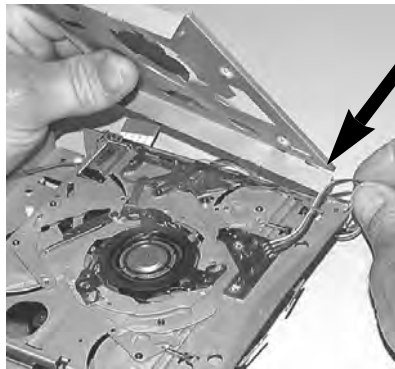
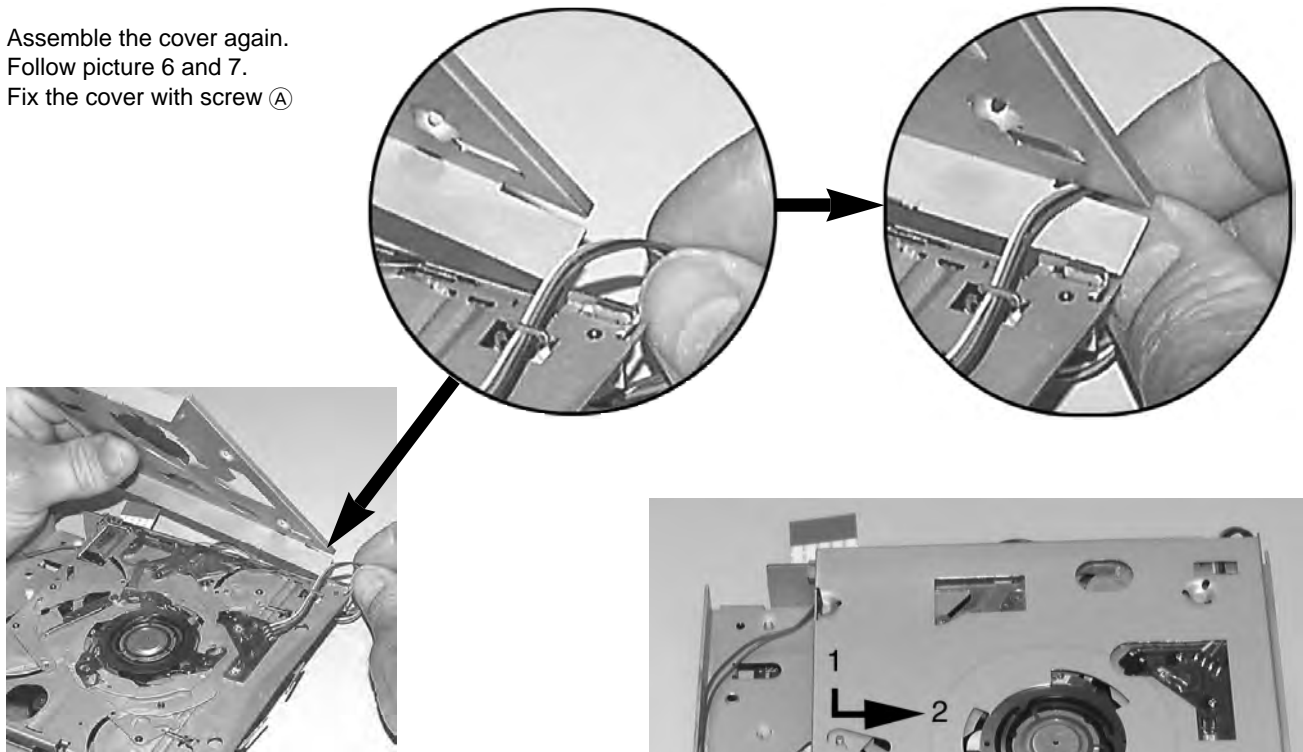
picture 4

Mount the upper part of the slot loader. Pay attention in the wire-dressing.

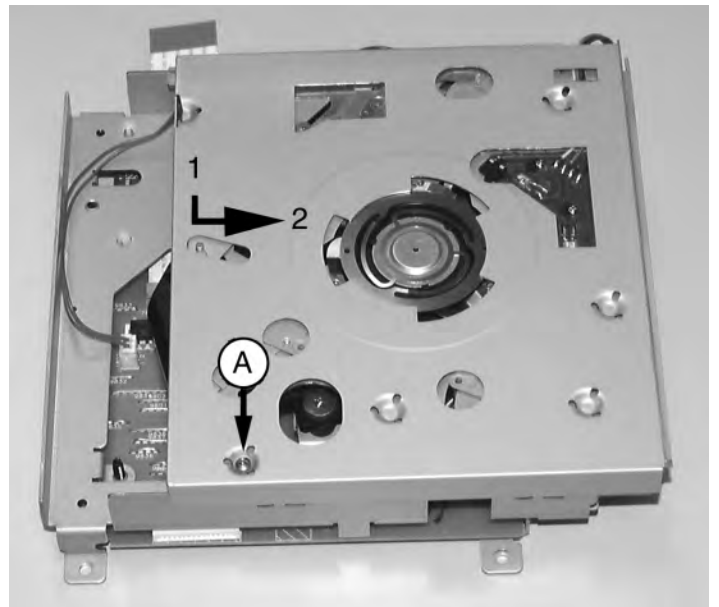


picture 5

Assemble the cover again.  
Follow picture 6 and 7.  
Fix the cover with screw (A)

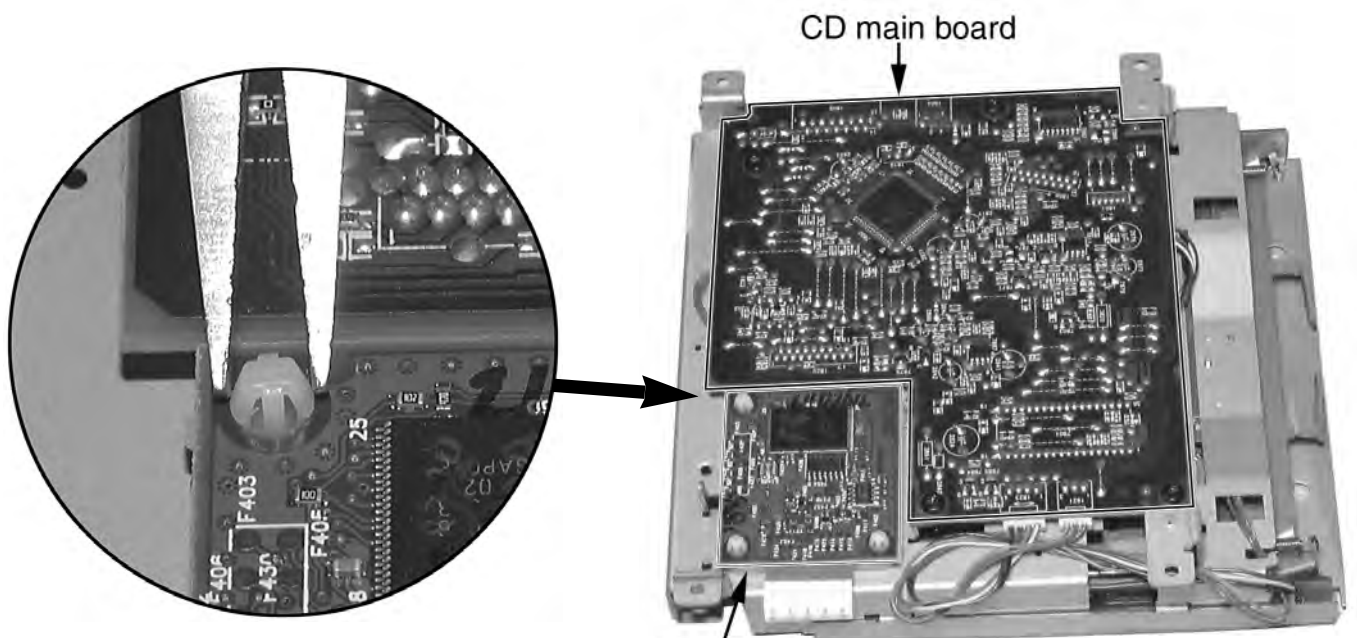


picture 6



picture 7

**Service Hints - Service position**



use a pair of tongs to release the snaps.  
The catch which is fixing the MP3 board to the slot loader cabinet is available as a sparepart.

MP3 Board

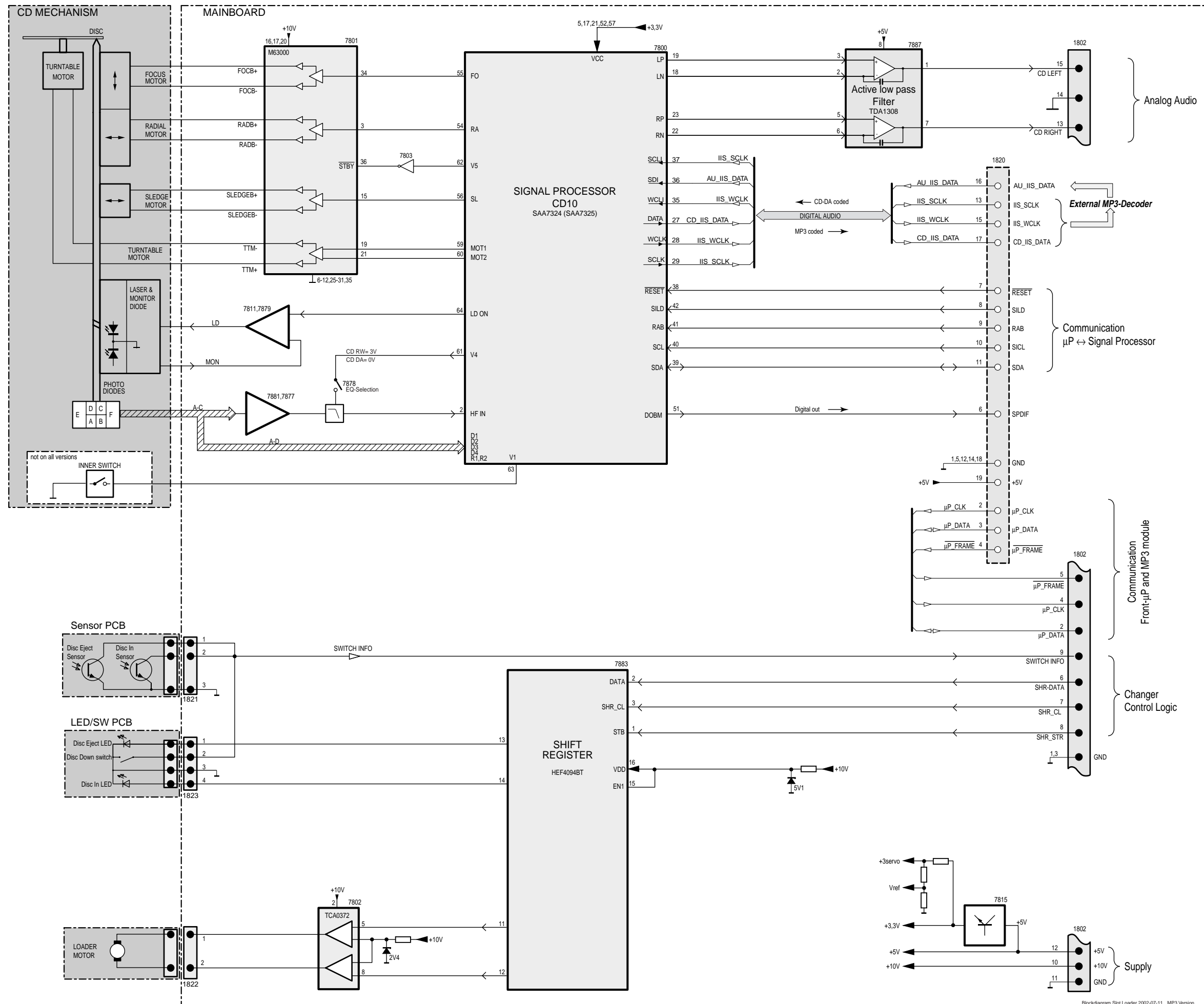


## Pin description

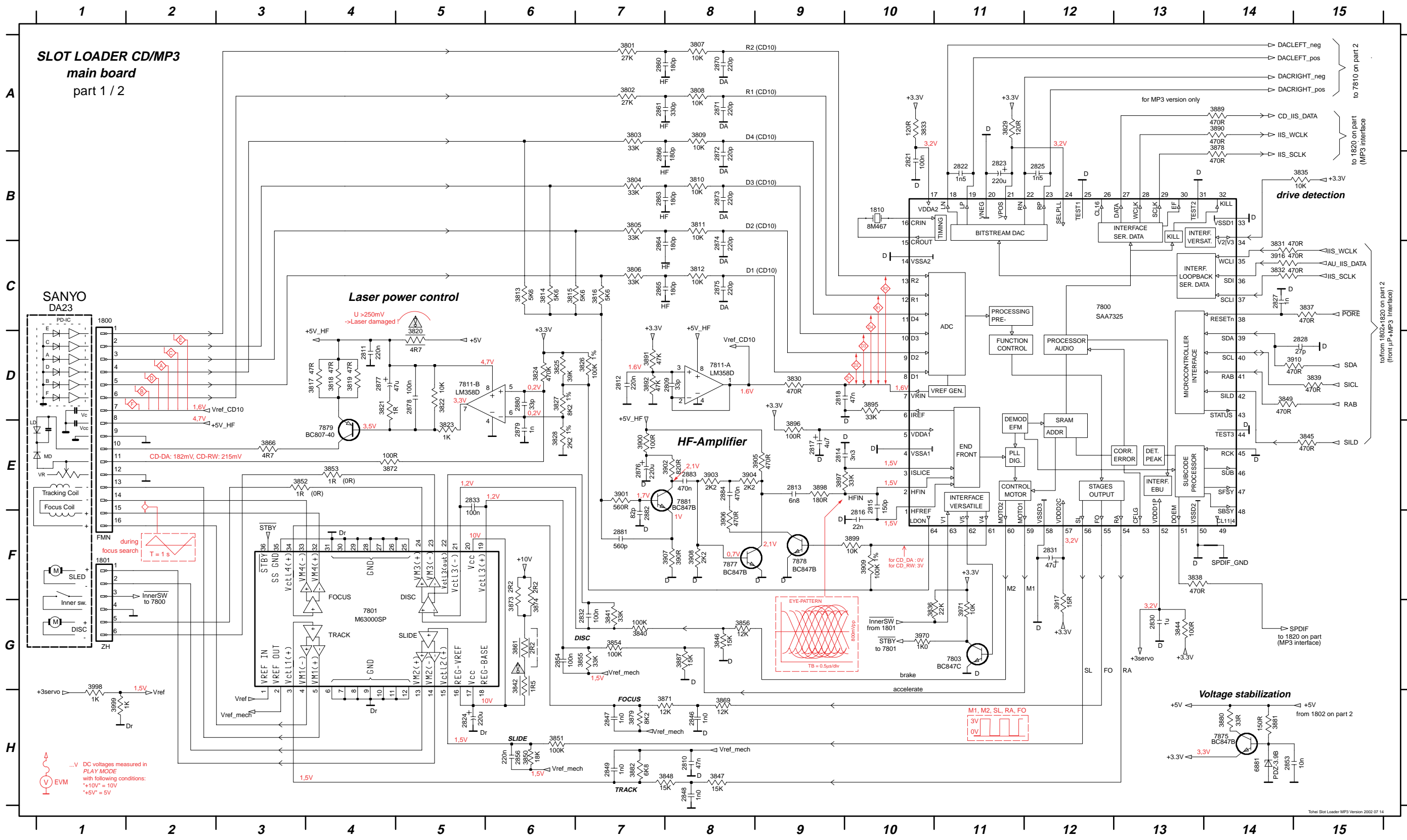
### SIGNAL PROCESSOR (CD10) SAA7325

Pin	Name	Direction	Description
1	HFREF	→ CD10	comparator common mode input
2	HFIN	→ CD10	comparator signal input
3	ISLICE	CD10 →	current feedback from data slicer
4	VSSA1	GND	analog ground 1
5	VDDA1	+3,3V	analog supply voltage 1
6	IREF	CD10 →	reference current output pin
7	VRIN	CD10 →	reference voltage for servo ADC's
8	D1	CD-drive → CD10	unipolar current input (central diode signal input)
9	D2	CD-drive → CD10	unipolar current input (central diode signal input)
10	D3	CD-drive → CD10	unipolar current input (central diode signal input)
11	D4	CD-drive → CD10	unipolar current input (central diode signal input)
12	R1	CD-drive → CD10	unipolar current input (satellite diode signal input)
13	R2	CD-drive → CD10	unipolar current input (satellite diode signal input)
14	VSSA2	GND	analog ground 2
15	CROUT	CD10 → X-TAL	crystal/resonator output
16	CRIN	X-TAL → CD10	crystal/resonator input
17	VDDA2	+3,3V	analog supply voltage 2
18	LN	CD10 →	DAC left channel differential output - negative
19	LP	CD10 →	DAC left channel differential output - positive
20	VNEG	GND	DAC negative reference input
21	VPOS	+3,3V	DAC positive reference input
22	RN	CD10 →	DAC right channel differential output - negative
23	RP	CD10 →	DAC right channel differential output - positive
24	SELPLL	CD10 →	selects whether internal clock multiplier PLL is used
25	TEST1	GND	test control input 1; this pin should be tied low
26	CL16	CD10 → NPC	16.9344 MHz system clock output
27	DATA	CD10 → NPC	serial data output (3-state)
28	WCLK	CD10 → NPC	word clock output (3-state)
29	SCLK	CD10 → NPC	serial bit clock output (3-state)
30	EF	CD10 → NPC	C2 error flag output (3-state)
31	TEST2	GND	test control input 2; this pin should be tied low
32	KILL	CD10 → Mute control	kill output (programmable; open-drain)
33	VSSD1	GND	digital ground 2
34	V2/V3	CD10 → NPC	versatile I/O: input versatile pin 2 or output versatile pin 3 (open-drain)
35	WCLI	NPC → CD10	word clock input (for data loopback to DAC)
36	SDI	NPC → CD10	serial data input (for data loopback to DAC)
37	SCLI	NPC → CD10	serial bit clock input (for data loopback to DAC)
38	RESETn	μP → CD10	power-on reset input (active low)
39	SDA	μP ↔ CD10	microcontroller interface data I/O line (open-drain output)
40	SCL	μP → CD10	microcontroller interface clock line input
41	RAB	μP → CD10	microcontroller interface R/W and load control line input (4-wire bus mode)
42	SILD	μP → CD10	microcontroller interface R/W and load control line input (4-wire bus mode)
43	STATUS	CD10 →	servo interrupt request line/decoder status register output (open-drain)
44	TEST3	GND	test control input 3; this pin should be tied low
45	RCK	→ CD10	subcode clock input
46	SUB	CD10 →	P-to-W subcode bits output (3-state)
47	SFSY	CD10 → μP	subcode frame sync output (3-state)
48	SBSY	CD10 → NPC	subcode block sync output (3-state)
49	CL11/4	CD10 →	11.2896 MHz or 4.2336 MHz (for microcontroller) clock output
50	VSSD2	GND	digital ground 3
51	DOBm	CD10 →	bi-phase mark output (externally buffered; 3-state)
52	VDDD1P	+3,3V	digital supply voltage 2 for periphery
53	CFLG	CD10 →	correction flag output (open-drain)
54	RA	CD10 → servo driver	radial actuator output
55	FO	CD10 → servo driver	focus actuator output
56	SL	CD10 → servo driver	slide control output
57	VDDD2C	+3,3V	digital supply voltage 3 for core
58	VSSD3	GND	digital ground 4
59	MOTO1	CD10 → servo driver	motor output 1; versatile (3-state)
60	MOTO2	CD10 →	motor output 2; versatile (3-state)
61	V4	CD10 → HF-preamp	versatile output pin 4
62	V5	CD10 → HF-preamp	versatile output pin 5
63	V1	innerswitch → CD10	versatile input pin 1
64	LDON	CD10 → HF-preamp	laser drive on output (open-drain)

# BLOCK DIAGRAM CD Slot Loader MP3 Version



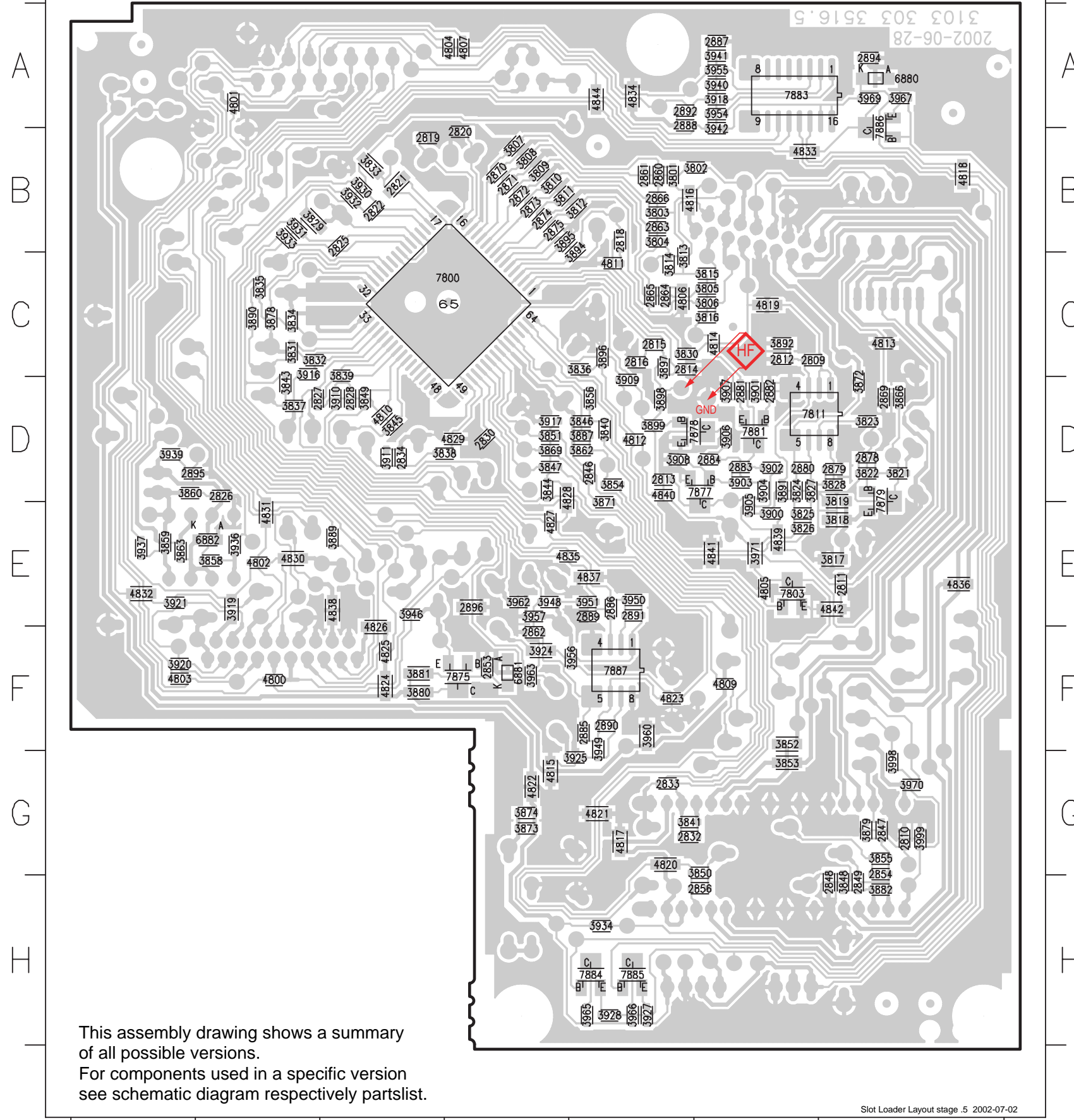
1801 F1	2812 D7	2819 B10	2827 C14	2846 H8	2860 A7	2870 A8	2877 D4	2883 E8	3806 C7	3813 C6	3820 C5	3827 D6	3834 B15	3841 G7	3847 H8	3854 G7	3871 H7	3881 H14	3894 D9	3901 E7	3908 F8	3970 G10	6881 H14	7877 F8
1804 F15	2814 E9	2820 B10	2828 D15	2847 H7	2861 A7	2871 A8	2878 D5	2881 A7	3807 A8	3814 C6	3821 D4	3828 E6	3835 B15	3842 G6	3849 D14	3855 G7	3872 E4	3882 H7	3895 D10	3902 E8	3909 F10	3998 G1	7803 C12	7878 F9
1810 B10	2815 E10	2822 B11	2830 G13	2848 H8	2863 B7	2872 B8	2879 E6	2882 A7	3809 A8	3815 C6	3822 D5	3829 A11	3836 G10	3843 C15	3850 H6	3861 G6	3873 G6	3887 G8	3896 E9	3903 E8	3910 D15	3999 H1	7803 G11	7879 E4
2809 D8	2816 F10	2823 B11	2832 G7	2849 H7	2864 C7	2873 B8	2880 E6	3802 A7	3809 A8	3815 C6	3822 D5	3830 D9	3837 C15	3844 G13	3851 H6	3862 G7	3878 A14	3889 A14	3897 E9	3904 E8	3911 G14	4805 G11	7811-A D8	
2810 H8	2817 E9	2824 H5	2833 E5	2854 G6	2865 C7	2874 C8	2881 F7	3804 B7	3810 B8	3817 D4	3825 D6	3831 C14	3838 F13	3845 E15	3852 E3	3866 E3	3879 H7	3891 D7	3898 E9	3905 E9	3916 C14	4809 D15	7811-B D5	
2811 D4	2818 D9	2825 B12	2834 G14	2856 H6	2869 D3	2875 C8	2882 F7	3805 B7	3811 B8	3818 D4	3826 D7	3833 A10	3839 D15	3846 G8	3853 E4	3869 H8	3880 H14	3892 D7	3906 F8	3917 G12	4810 E15	7875 H14		



# CD Board Copperside view

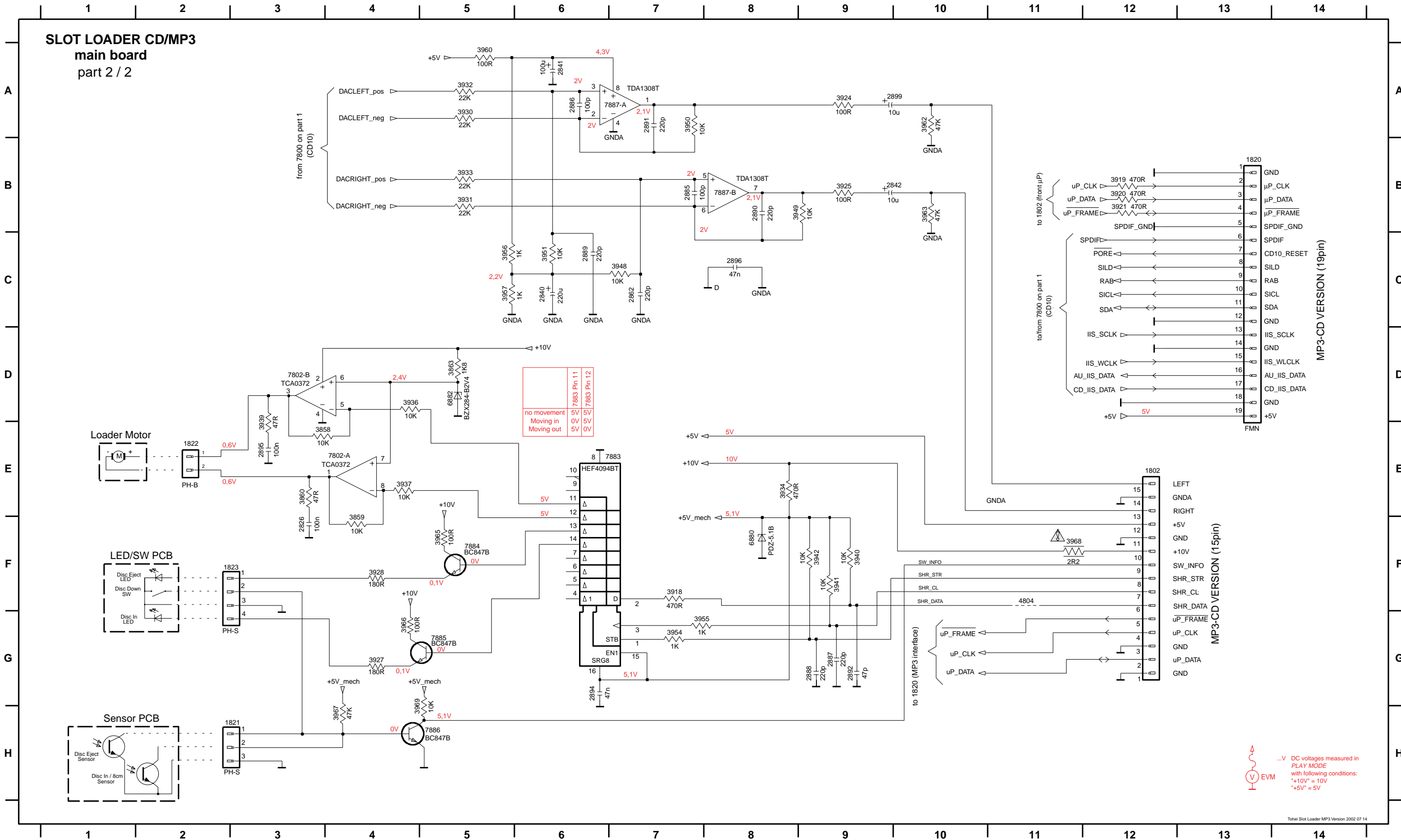
## Mapping

2809 C6	2861 B5	2895 D1	3829 B2	3860 D1	3904 D6	3946 E3	4810 D3	4839 E6
2810 G7	2862 F4	2896 E4	3830 C5	3862 D5	3905 E6	3948 E4	4811 C5	4840 D5
2811 E7	2863 B5	3801 B5	3831 C2	3863 E1	3906 D6	3949 F5	4812 D5	4841 E6
2812 C6	2864 C5	3802 B6	3832 C2	3866 D7	3907 D6	3950 E5	4813 C7	4842 E7
2813 D5	2865 C5	3803 B5	3833 B3	3869 D4	3908 D5	3951 E5	4814 C6	4844 A5
2814 C5	2866 B5	3804 B5	3834 C2	3871 E5	3909 D5	3954 A6	4815 G4	6880 A7
2815 C5	2869 D7	3805 C6	3835 C2	3872 D7	3910 D3	3955 A6	4816 B5	6881 F4
2816 C5	2870 B4	3806 C6	3836 C5	3873 G4	3911 D3	3956 F5	4817 G5	6882 E2
2818 B5	2871 B4	3807 B4	3837 D2	3874 G4	3916 C2	3957 E4	4818 B7	7800 C4
2819 B3	2872 B4	3808 B4	3838 D3	3878 C2	3917 D4	3960 F5	4819 C6	7803 E6
2820 B4	2873 B4	3809 B4	3839 C3	3879 G7	3918 A6	3962 E4	4820 G5	7811 D6
2821 B3	2874 B4	3810 B4	3840 D5	3880 F3	3919 E2	3963 F4	4821 G5	7875 F4
2822 B3	2875 B4	3811 B4	3841 G5	3881 F3	3920 F1	3965 H5	4822 G4	7877 D6
2825 B3	2878 D7	3812 B5	3843 D2	3882 H7	3921 E1	3966 H5	4823 F5	7878 D5
2826 D2	2879 D7	3813 C5	3844 D3	3887 D5	3924 F4	3967 A7	4824 F3	7879 D7
2827 D2	2880 D6	3814 C5	3845 D3	3889 E3	3925 G5	3969 A7	4825 F3	7881 D6
2828 D3	2881 D6	3815 C6	3846 D5	3890 C2	3927 H5	3970 G7	4826 F3	7883 A6
2830 D4	2882 D6	3816 C6	3847 D4	3891 D6	3928 H5	3971 E6	4827 E4	7884 H5
2832 G5	2883 D6	3817 E7	3848 H7	3892 C6	3930 B3	3998 G7	4828 D4	7885 H5
2833 G5	2884 D6	3818 E7	3849 D3	3894 B5	3931 B2	3999 G7	4829 D4	7886 A7
2834 D3	2885 F5	3819 D7	3850 G6	3895 B4	3932 B3	4000 F2	4830 E2	7887 F5
2846 D5	2886 E5	3821 D7	3851 D4	3896 C5	3933 B2	4801 A2	4831 E2	
2847 G7	2887 A6	3822 D7	3852 F6	3897 C5	3934 H5	4802 E2	4832 E1	
2848 H7	2888 A5	3823 D7	3853 G6	3898 D5	3936 E2	4803 F1	4833 B6	
2849 H7	2889 E5	3824 D6	3854 D5	3899 D5	3937 E1	4804 A4	4834 A5	
2853 F4	2890 F5	3825 E6	3855 G7	3900 E6	3939 D1	4805 E6	4835 E4	
2854 G7	2891 E5	3826 E6	3856 D5	3901 D6	3940 A6	4806 C5	4836 E7	
2856 H6	2892 A5	3827 D6	3858 E2	3902 D6	3941 A6	4807 A4	4837 E5	
2860 B5	2894 A7	3828 D7	3859 E1	3903 D6	3942 B6	4809 F6	4838 E3	



This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram respectively partslist.

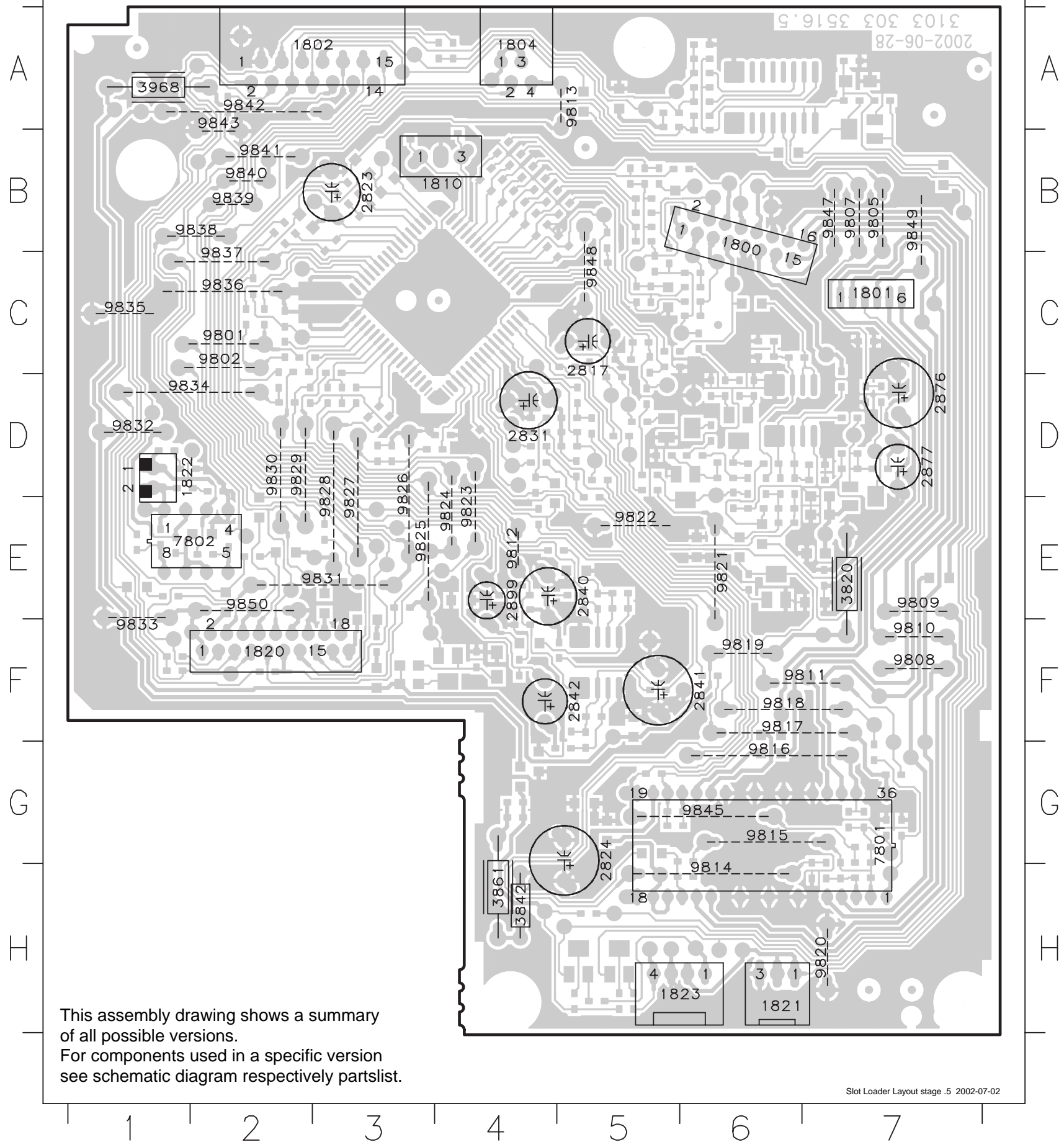
1802 E12	1822 E2	2840 C6	2862 C7	2887 G9	2890 B8	2894 G6	2899 A10	3860 E3	3919 B12	3924 A9	3928 F4	3932 A5	3936 D4	3940 F9	3946 H10	3950 A7	3955 G7	3960 A5	3965 F5	3968 D5	4801 G11	4804 F11	6882 D5	7883 E7	7886 H5
1820 B13	1823 F3	2841 A6	2885 B7	2888 G9	2891 A7	2895 E3	3858 E3	3863 D5	3920 B12	3925 B9	3930 A5	3933 B5	3937 E4	3941 F9	3948 C7	3951 C6	3956 C5	3962 A10	3966 G4	3969 H4	4802 G11	4807 G11	6880 D5	7882-A E4	7884 F5
1821 H3	2826 F3	2842 B10	2886 A6	2889 C6	2892 G9	2896 C8	3859 F4	3918 F7	3921 B12	3927 G4	3931 B5	3934 E8	3939 E3	3942 F9	3949 B8	3954 G7	3957 C5	3963 B10	3967 H4	4800 G11	4803 G11	6880 F8	7802-B D3	7885 G5	7887-B B8



# CD Board Components seen from CopperSide

## Mapping

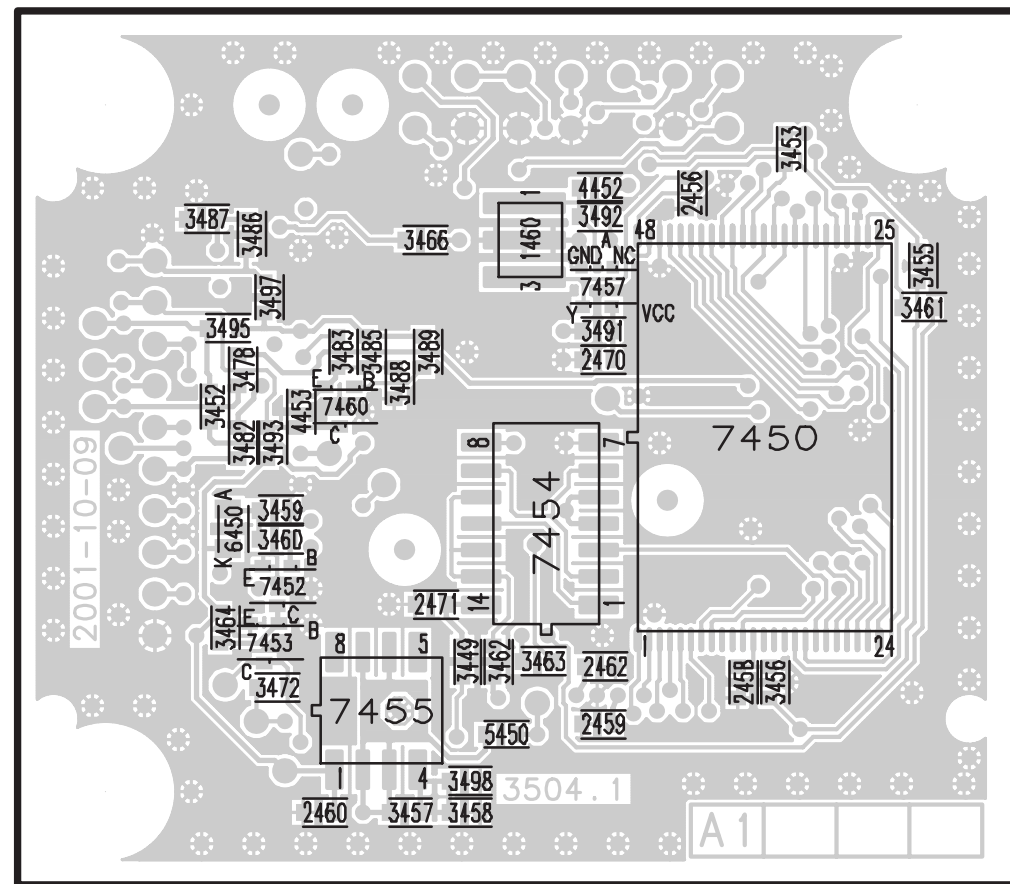
1800 B6	1823 H5	2876 D7	7802 E2	9811 F7	9819 F6	9827 E3	9835 C1	9843 B2
1801 C7	2817 C5	2877 D7	9801 C2	9812 E4	9820 H7	9828 D3	9836 C2	9845 G6
1802 A2	2823 B3	2899 E4	9802 D2	9813 A4	9821 E6	9829 D2	9837 C2	9847 B7
1804 A4	2824 G5	3820 E7	9805 B7	9814 H6	9822 E5	9830 D2	9838 B2	9848 C5
1810 B4	2831 D4	3842 H4	9807 B7	9815 G6	9823 E4	9831 E3	9839 B2	9849 B7
1820 F2	2840 E5	3861 H4	9808 F7	9816 G6	9824 E4	9832 D1	9840 B2	9850 E2
1821 H6	2841 F6	3968 A1	9809 E7	9817 F6	9825 E4	9833 F1	9841 B2	
1822 D1	2842 F5	7801 G6	9810 F7	9818 F6	9826 D3	9834 D1	9842 A2	



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

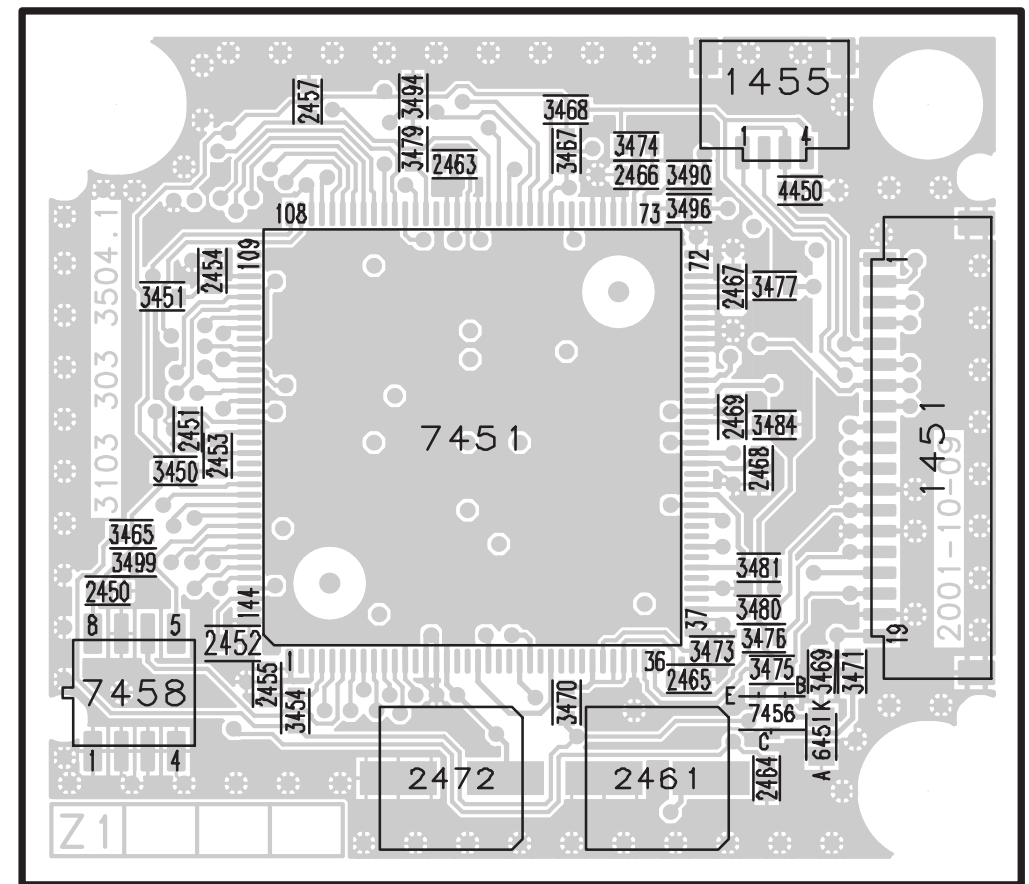
1451 B5	2457 A2	2469 B4	3469 C4	3479 A2	4450 A4
1455 A4	2461 D4	2472 D3	3470 D3	3480 C4	6451 D4
2450 C1	2463 A3	3450 C1	3471 C4	3481 C4	7451 B3
2451 B1	2464 D4	3451 B1	3473 C4	3484 B4	7456 D4
2452 C2	2465 D4	3454 D2	3474 A3	3490 A4	7458 D1
2453 B1	2466 A3	3465 C1	3475 C4	3494 A2	
2454 B1	2467 B4	3467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

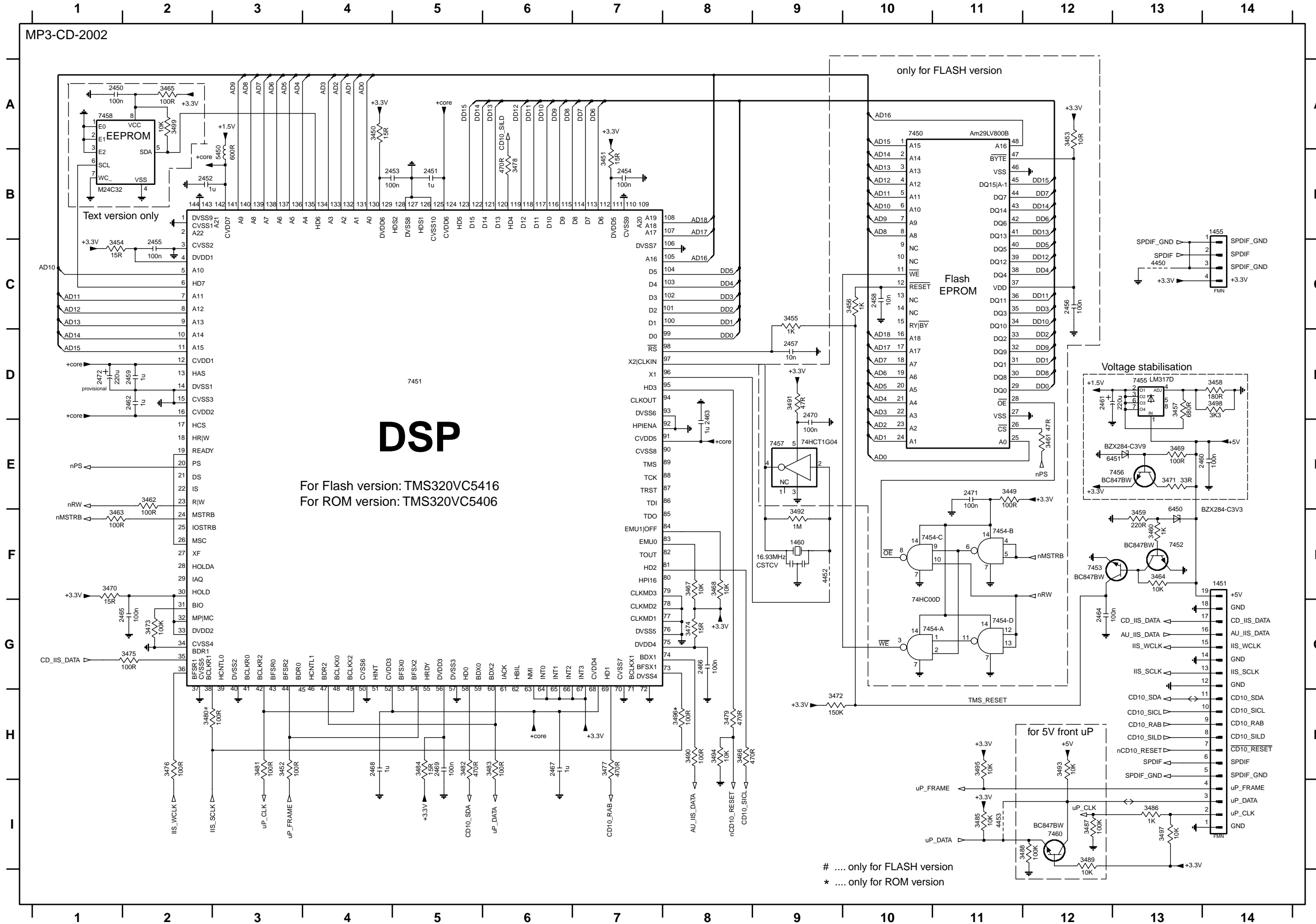
### Side A



This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram respectively partslist.

### Side B





# DSP

For Flash version: TMS320VC5416  
 For ROM version: TMS320VC5406

# .... only for FLASH version  
 \* .... only for ROM version

- 2451 B5
- 2452 B2
- 2453 B4
- 2454 B7
- 2455 C2
- 2456 C12
- 2457 D9
- 2458 C10
- 2459 D2
- 2460 E13
- 2461 D12
- 2462 D2
- 2463 D8
- 2464 G12
- 2465 G2
- 2466 G8
- 2467 H6
- 2468 H4
- 2469 H5
- 2470 D9
- 2471 E11
- 2472 D1
- 3449 E11
- 3450 A4
- 3451 B7
- 3452 H3
- 3453 A12
- 3454 C1
- 3455 C9
- 3456 C10
- 3457 D13
- 3458 D14
- 3459 F13
- 3460 F12
- 3461 E12
- 3462 E2
- 3463 F1
- 3464 F13
- 3465 A2
- 3466 H8
- 3467 F8
- 3468 F8
- 3469 E13
- 3470 F1
- 3471 E13
- 3472 H9
- 3473 G2
- 3474 G8
- 3475 G2
- 3476 H2
- 3477 H1
- 3478 B6
- 3479 H8
- 3480 H2
- 3481 H3
- 3482 H5
- 3483 H6
- 3484 H5
- 3485 H1
- 3486 H3
- 3487 I2
- 3488 I2
- 3489 I2
- 3490 H8
- 3491 D9
- 3492 F9
- 3493 H12
- 3494 H8
- 3495 H11
- 3496 H8
- 3497 I3
- 3498 D14
- 3499 A2
- 4450 C13
- 4452 F9
- 4453 I1
- 5450 B3
- 6450 E13
- 6451 E13
- 7450 A10
- 7451 D5
- 7452 F13
- 7453 F12
- 7454-A G11
- 7454-B F11
- 7454-C F11
- 7454-D G11
- 7455 D13
- 7457 E9
- 7458 A1
- 7460 I2





**ELECTRICAL PARTSLIST CD MODULE MP3 Version****DIODES**

6880 © 9340 548 52115 BZX284-C5V1  
 6881 © 9322 129 34685 BZX284-C3V9  
 6882 © 9340 548 42115 PDZ 2,4B

**TRANSISTORS**

7803 © 5322 130 60159 BC846B  
 7875 © 5322 130 60159 BC846B  
 7877 © 5322 130 60159 BC846B  
 7878 © 5322 130 60159 BC846B  
 7879 © 5322 130 60123 BC807-40

7881 © 5322 130 60159 BC846B  
 7884 © 5322 130 60159 BC846B  
 7885 © 5322 130 60159 BC846B  
 7886 © 5322 130 60159 BC846B

**INTEGRATED CIRCUITS**

7800 © 9352 641 80557 SAA7324H/M2B,"CD10" SIGN.PROC.  
 7801 © 9322 158 56682 M63000SP, MOTOR DRIVER  
 7802 4822 209 62059 TCA0372DP1, 2-FOLD OP-AMP.  
 7811 © 5322 209 82941 LM358D, Dual Opamp  
 7883 © 5322 209 11306 HEF4094BT, SHIFT REGISTER

7887 © 4822 209 33165 TDA1308T/N1

**ELECTRICAL PARTSLIST MP3 Board****MISCELLANEOUS**

**3103 308 67020 MP3CD2002 Module**  
 1451 2422 025 17303 FLEX FOIL CONNECTOR 19P

**CAPACITORS**

2450 © 2238 586 59812 100nF 10% 50V  
 2451 © 3198 017 41050 1µF 20% 10V  
 2452 © 3198 017 41050 1µF 20% 10V  
 2453 © 2238 586 59812 100nF 10% 50V  
 2454 © 2238 586 59812 100nF 10% 50V

2455 © 2238 586 59812 100nF 10% 50V  
 2456 © 2238 586 59812 100nF 10% 50V  
 2457 © 5322 126 11583 10nF 10% 63V  
 2458 © 5322 126 11583 10nF 10% 63V  
 2459 © 3198 017 41050 1µF 20% 10V

2460 © 2238 586 59812 100nF 10% 50V  
 2461 © 4822 124 81059 220µF 20% 4V  
 2462 © 3198 017 41050 1µF 20% 10V  
 2463 © 3198 017 41050 1µF 20% 10V  
 2464 © 2238 586 59812 100nF 10% 50V

2465 © 2238 586 59812 100nF 10% 50V  
 2466 © 2238 586 59812 100nF 10% 50V  
 2467 © 3198 017 41050 1µF 20% 10V  
 2468 © 3198 017 41050 1µF 20% 10V  
 2469 © 2238 586 59812 100nF 10% 50V

2470 © 2238 586 59812 100nF 10% 50V  
 2471 © 2238 586 59812 100nF 10% 50V

**RESISTORS**

3449 © 4822 051 30101 100Ω 5% 0,06W  
 3450 © 4822 117 12971 15Ω 5% 0,06W  
 3451 © 4822 117 12971 15Ω 5% 0,06W  
 3452 © 4822 051 30101 100Ω 5% 0,06W  
 3453 © 4822 051 30109 10Ω 5% 0,06W

3454 © 4822 117 12971 15Ω 5% 0,06W  
 3455 © 4822 051 30102 1kΩ 5% 0,06W  
 3456 © 4822 051 30102 1kΩ 5% 0,06W  
 3457 © 5322 117 13051 680Ω 1% 0,063W  
 3458 © 5322 117 13061 180Ω 1% 0,063W

3459 © 4822 051 30221 220Ω 5% 0,06W  
 3460 © 4822 051 30102 1kΩ 5% 0,06W  
 3461 © 4822 051 30479 47Ω 5% 0,06W  
 3462 © 4822 051 30101 100Ω 5% 0,06W  
 3463 © 4822 051 30101 100Ω 5% 0,06W

**RESISTORS**

3464 © 4822 051 30103 10kΩ 5% 0,06W  
 3465 © 4822 051 30101 100Ω 5% 0,06W  
 3466 © 4822 051 30471 470Ω 5% 0,06W  
 3467 © 4822 051 30103 10kΩ 5% 0,06W  
 3468 © 4822 051 30103 10kΩ 5% 0,06W

3469 © 4822 051 30101 100Ω 5% 0,06W  
 3470 © 4822 117 12971 15Ω 5% 0,06W  
 3471 © 4822 051 30339 33Ω 5% 0,06W  
 3472 © 4822 051 30154 150kΩ 5% 0,06W  
 3473 © 4822 117 13632 100kΩ 1% 0,06W

3474 © 4822 117 12971 15Ω 5% 0,06W  
 3475 © 4822 051 30101 100Ω 5% 0,06W  
 3476 © 4822 051 30101 100Ω 5% 0,06W  
 3477 © 4822 051 30471 470Ω 5% 0,06W  
 3478 © 4822 051 30471 470Ω 5% 0,06W

3479 © 4822 051 30471 470Ω 5% 0,06W  
 3480 © 4822 051 30101 100Ω 5% 0,06W  
 3481 © 4822 051 30101 100Ω 5% 0,06W  
 3482 © 4822 051 30471 470Ω 5% 0,06W  
 3483 © 4822 051 30101 100Ω 5% 0,06W

3484 © 4822 117 12971 15Ω 5% 0,06W  
 3486 © 4822 051 30101 100Ω 5% 0,06W  
 3488 © 4822 117 13632 100kΩ 1% 0,06W  
 3489 © 4822 051 30103 10kΩ 5% 0,06W  
 3490 © 4822 051 30101 100Ω 5% 0,06W

3491 © 4822 051 30479 47Ω 5% 0,06W  
 3492 © 4822 051 30105 1MΩ 5% 0,06W  
 3493 © 4822 051 30103 10kΩ 5% 0,06W  
 3494 © 4822 051 30103 10kΩ 5% 0,06W  
 3495 © 4822 051 30103 10kΩ 5% 0,06W

3497 © 4822 051 30103 10kΩ 5% 0,06W  
 3498 © 4822 051 30332 3,3kΩ 5% 0,06W  
 3499 © 4822 051 30103 10kΩ 5% 0,06W  
 4450 © 4822 051 30008 CHIP JUMPER 0603

**COILS**

1460 4822 242 10989 CER.RES. 16,9MHz  
 5450 © 4822 157 11074 100µH

**DIODES**

6450 © 4822 130 11411 BZX284-C3V3  
 6451 © 4822 130 11366 BZX284-C3V9  
 7454 4822 130 34174 BZX79-B4V7

**ELECTRICAL PARTSLIST MP3 Board****TRANSISTORS**

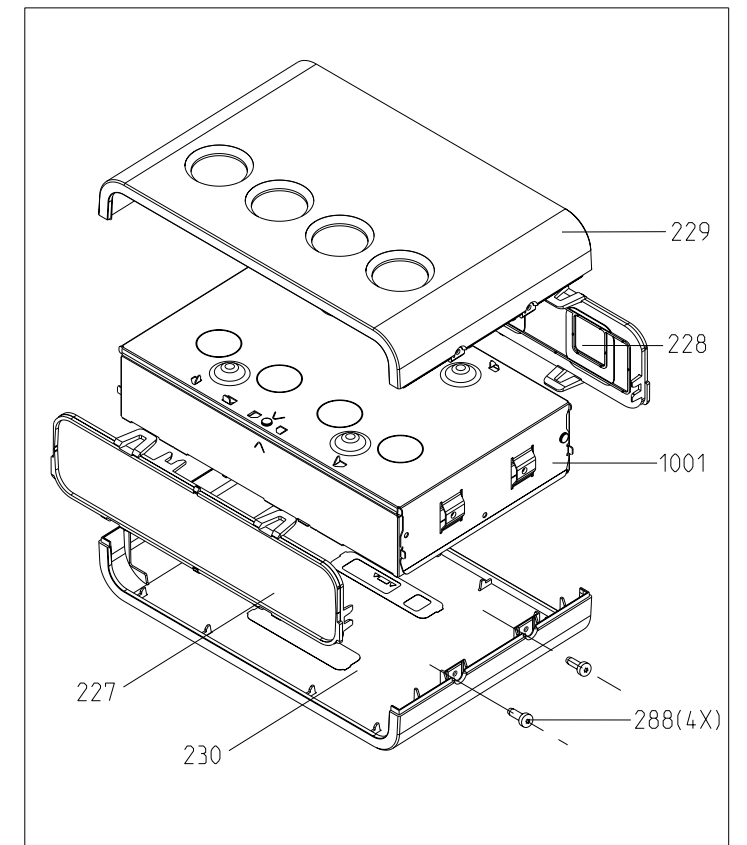
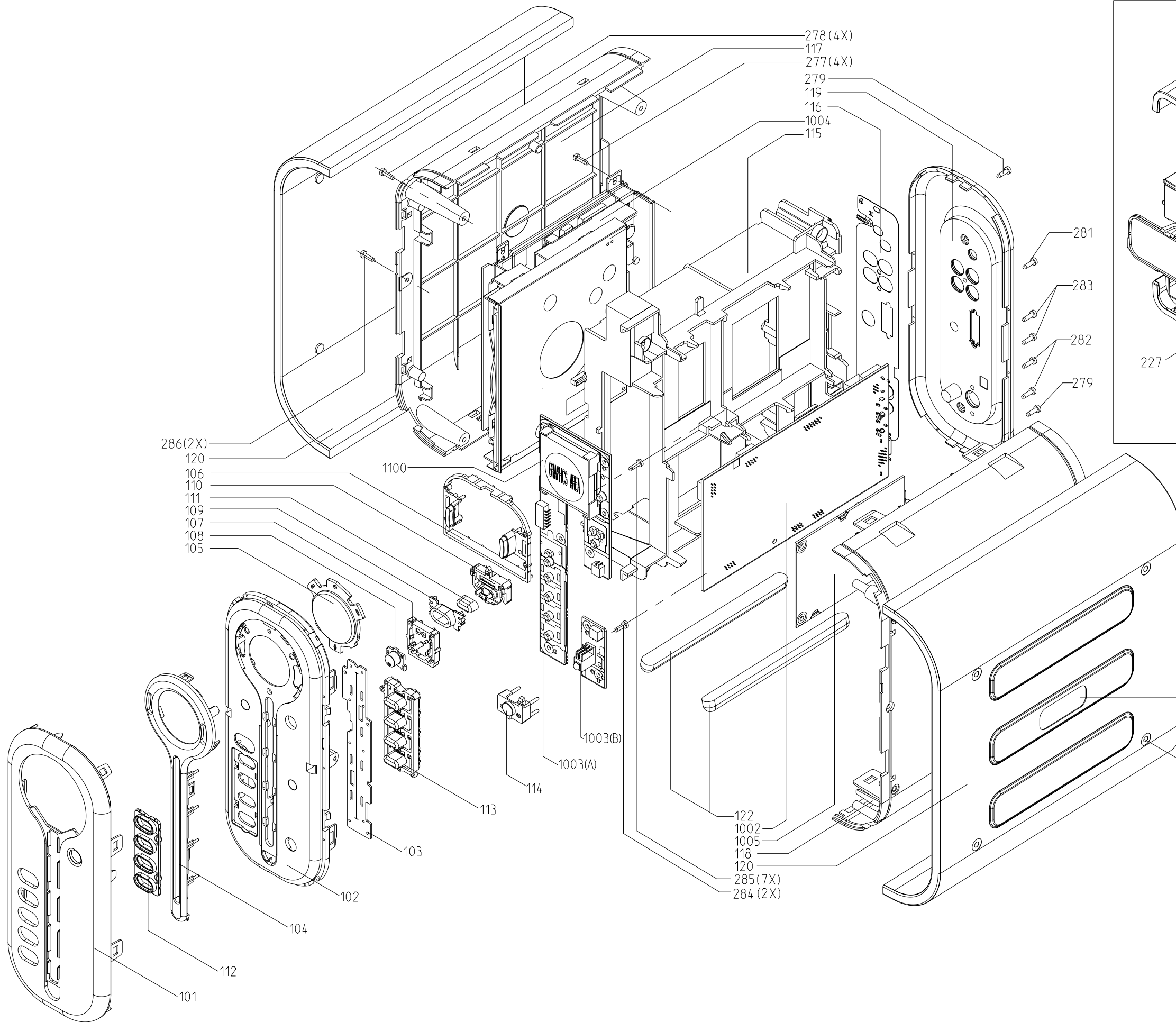
7452 © 3198 010 42310 BC847BW  
 7453 © 3198 010 42310 BC847BW  
 7456 © 3198 010 42310 BC847BW  
 7460 © 3198 010 42310 BC847BW

**INTEGRATED CIRCUITS**

7450 © not available please order complete MP3 module  
 7451 © not available please order complete MP3 module  
 7455 © 4822 209 17108 LM317LD Voltage Regulator  
 7457 © 9352 456 50115 HC1G04, Inverter  
 7458 © 9322 130 41668 M24C64, EEPROM

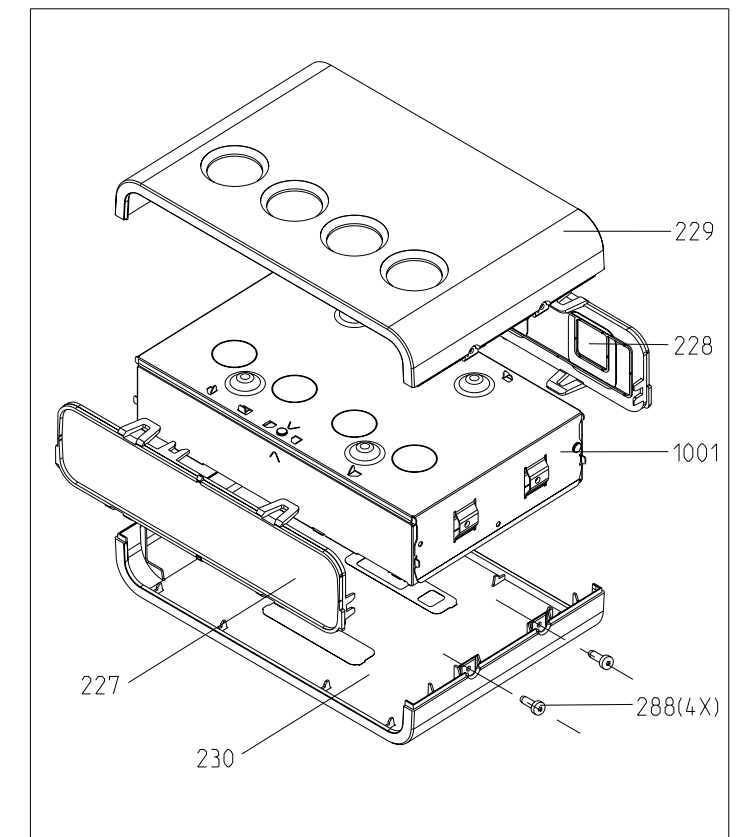
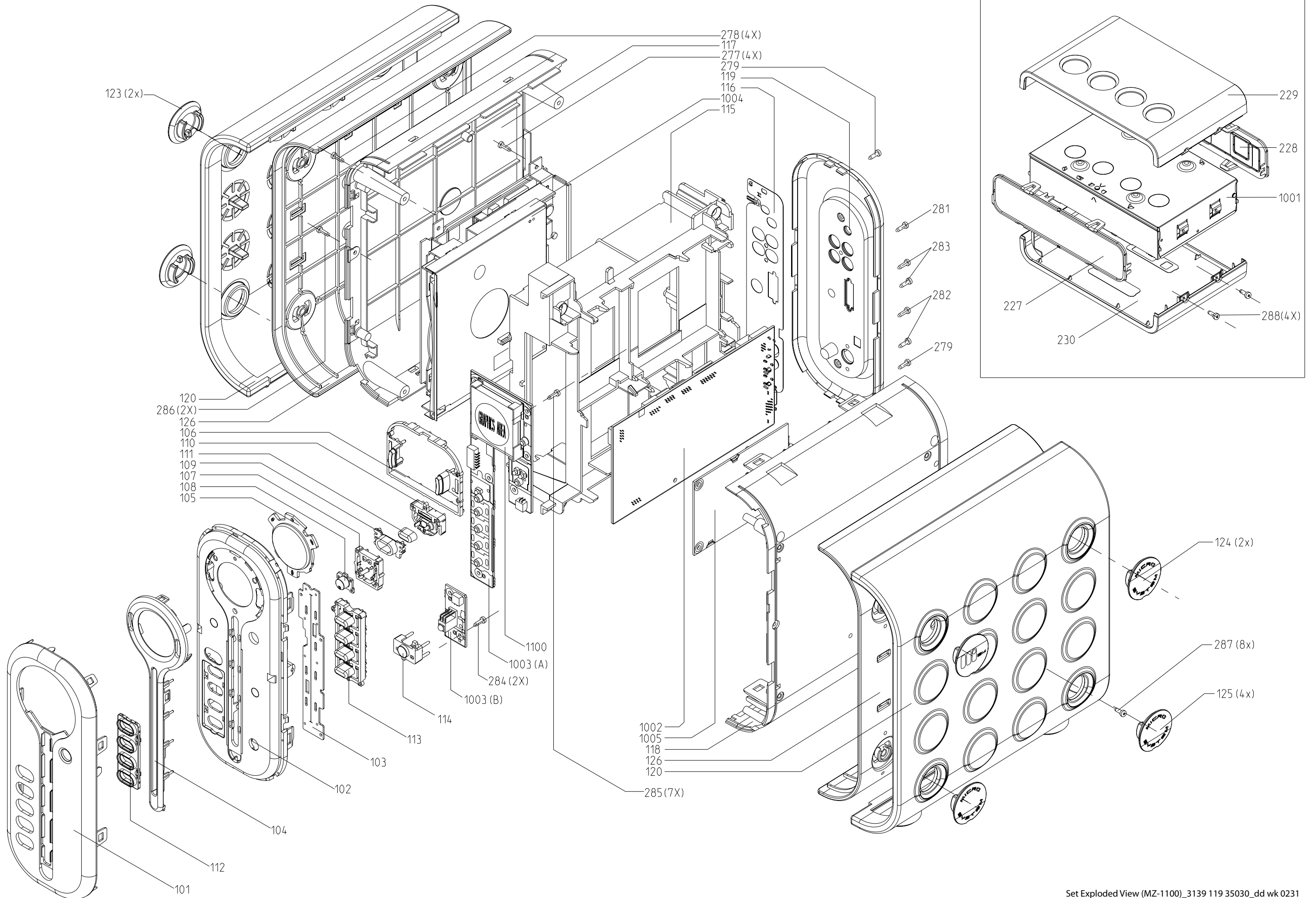
**3103 308 67020 MP3CD2002 Module**

SET MECHANICAL EXPLODED VIEW (MZ-1000)

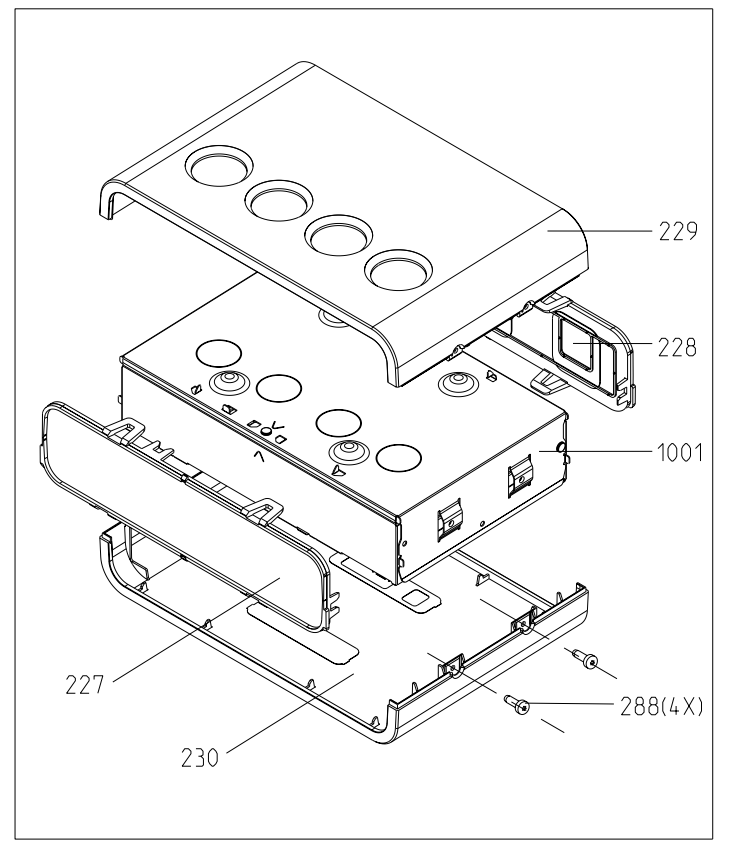
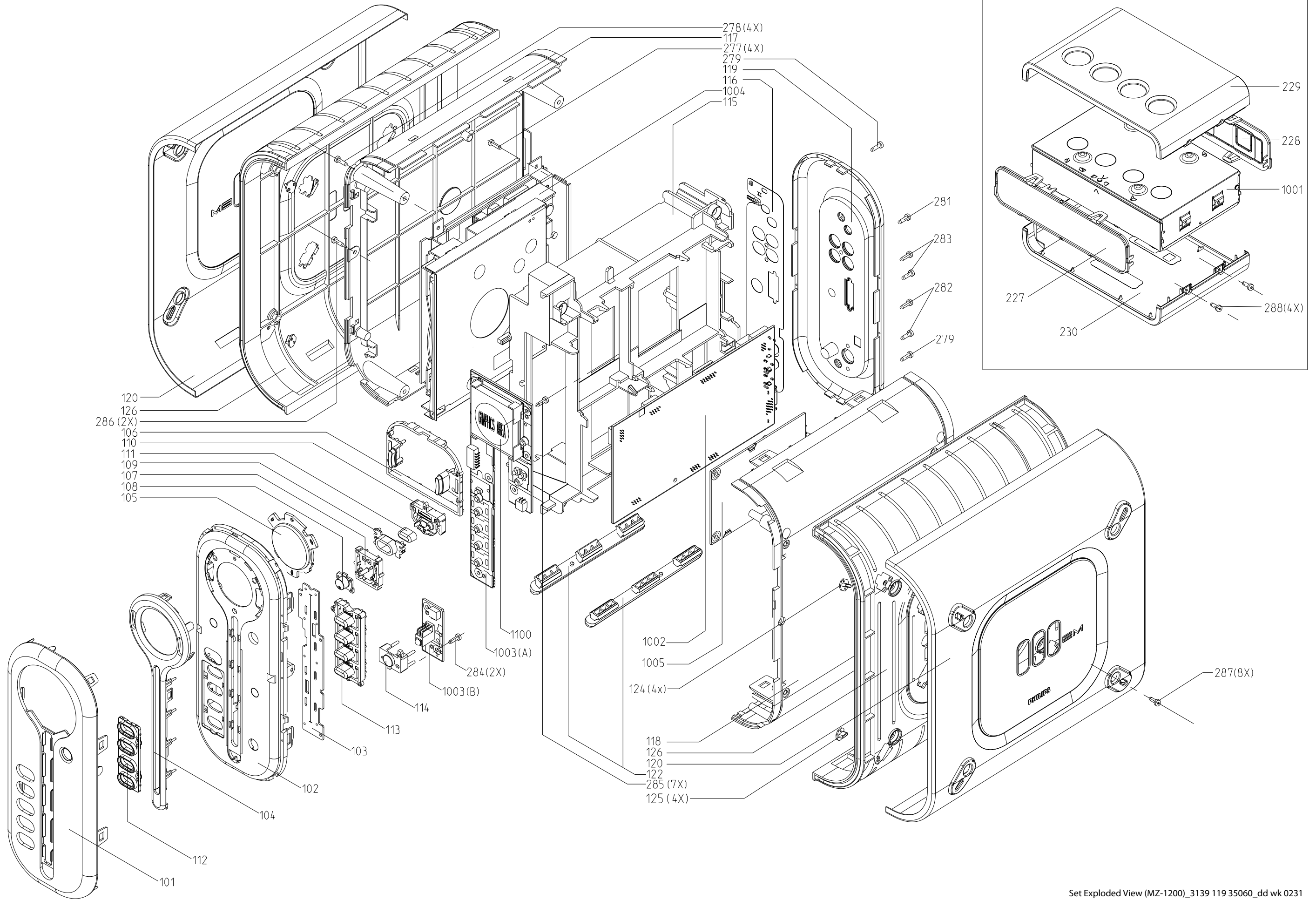


- 123 (2X)
- 121 (8X)
- 287 (8X)

SET MECHANICAL EXPLODED VIEW (MZ-1100)



SET MECHANICAL EXPLODED VIEW (MZ-1200)



**MECHANICAL & ACCESSORIES PARTS LIST****SCREW LISTS****MZ-1000/22**

0101	3139 118 18470	Cover Orn Front
0102	3139 114 76440	Cover Internal Front
0103	3139 113 10610	Dust Protect CD Slot
0104	3139 118 18530	Chute CD
0105	3139 114 76500	Window Display
0106	3139 118 18440	Button Volume
0107	3139 114 76470	Button Power
0108	3139 118 18450	Cap Button Power Chrome
0110	3139 114 76510	Button Source
0111	3139 118 18540	Cap Button Source
0112	3139 118 18520	Ring Button Function Chrome
0113	3139 118 18460	Button Function
0114	3139 114 76540	Window IR
0115	3139 114 76400	Bracket Slot Loader Tohei
0117	3139 114 76420	Cladding Internal Left
0118	3139 114 76430	Cladding Internal Right
0119	3139 118 18430	Cover Orn Rear
0120	3139 118 18480	Cladding Orn Side
0121	3139 114 76640	Washer Side
0122	3139 113 27380	Foot Rubber
0123	3139 113 27400	Pad Orn Side
0227	3139 118 18550	Cabinet Front Power Box
0228	3139 114 76681	Cabinet Rear Power Box
0229	3139 118 18510	Cabinet Top Power Box
0230	3139 114 76610	Cabinet Bottom Power Box
0287	3139 110 40670	Screw Soc Hex (D4 x 14)
0350	3139 119 00100	Left & Right Loudspeaker Box
0351	4822 303 50063	FM Aerial
0356	3139 119 00080	Remote Control
0383	3139 119 00160	Antenna Telescopic
0384	2422 549 45067	Antenna AM Loop
0385	2422 070 98151 $\Delta$	Mains Cord
0386	3139 111 01620	Cable Intercon 20P
0387	3139 115 21640	Instruction For Use
1100	3139 118 79950	LCD Module
1200	3139 111 01590	FFC Foil 9P/220/9P BD Fold
1201	3139 111 01600	FFC Foil 8P/220/8P BD Fold
1202	3139 111 01610	FFC Foil 4P/060/4P BD
1203	3139 110 34900	FFC Foil 15P/120/15P BD

Note : Only the parts mentioned in this list are normal service spare parts.

**MZ-1100/22**

0101	3139 118 18730	Cover Orn Front
0102	3139 114 76440	Cover Internal Front
0103	3139 113 10610	Dust Protect CD Slot
0104	3139 118 18680	Chute CD
0105	3139 114 76500	Window Display
0106	3139 118 18690	Button Volume
0107	3139 114 76470	Button Power
0108	3139 118 18450	Cap Button Power Chrome
0110	3139 114 76510	Button Source
0111	3139 118 18540	Cap Button Source
0112	3139 118 18520	Ring Button Function Chrome
0113	3139 118 18670	Button Function
0114	3139 114 76540	Window IR
0115	3139 114 76400	Bracket Slot Loader Tohei
0117	3139 114 76420	Cladding Internal Left
0118	3139 114 76430	Cladding Internal Right
0119	3139 118 18430	Cover Orn Rear
0120	3139 113 27420	Cladding Rubber
0123	3139 118 18720	Plug Rubber
0124	3139 113 27470	Plug Rubber Top
0125	3139 113 27460	Plug Rubber Bottom
0126	3139 114 76820	Cladding Support
0227	3139 118 18550	Cabinet Front Power Box
0228	3139 114 76681	Cabinet Rear Power Box
0229	3139 118 18510	Cabinet Top Power Box
0230	3139 114 76610	Cabinet Bottom Power Box
0287	3139 110 40670	Screw Soc Hex (D4 x 14)
0350	3139 119 00110	Left & Right Loudspeaker Box
0351	4822 303 50063	FM Aerial
0356	3139 119 00080	Remote Control
0383	3139 119 00160	Antenna Telescopic
0384	2422 549 45067	Antenna AM Loop
0385	2422 070 98151 $\Delta$	Mains Cord
0386	3139 111 01620	Cable Intercon 20P
0387	3139 115 21820	Instruction For Use
1100	3139 119 00330	LCD Module
1200	3139 111 01590	FFC Foil 9P/220/9P BD Fold
1201	3139 111 01600	FFC Foil 8P/220/8P BD Fold
1202	3139 111 01610	FFC Foil 4P/060/4P BD
1203	3139 110 34900	FFC Foil 15P/120/15P BD

Note : Only the parts mentioned in this list are normal service spare parts.

**MZ-1200/22**

0101	3139 118 18660	Cover Orn Front	277	D3 x 10
0102	3139 114 77500	Cover Internal Front	278	D3 x 10
0103	3139 113 10610	Dust Protect CD Slot	279	D3 x 10
0104	3139 118 18680	Chute CD	281	D3 x 10
0105	3139 114 76500	Window Display	282	D3 x 10
0106	3139 118 18690	Button Volume	283	M2,6 x 12
0107	3139 114 76470	Button Power	284	D3 x 10
0108	3139 118 18450	Cap Button Power Chrome	285	D3 x 10
0110	3139 114 76510	Button Source	286	D3 x 10
0111	3139 118 18540	Cap Button Source	288	M3 x 10
0112	3139 118 18520	Ring Button Function Chrome		
0113	3139 118 18670	Button Function		
0114	3139 114 76540	Window IR		
0115	3139 114 76400	Bracket Slot Loader Tohei		
0117	3139 114 76890	Cladding Internal Left		
0118	3139 114 76900	Cladding Internal Right		
0119	3139 118 18770	Cover Orn Rear		
0120	3139 118 18700	Cladding Aluminium		
0122	3139 113 27450	Foot Rubber		
0124	3139 114 76860	Plug Orn Top		
0125	3139 114 76870	Plug Orn Bottom		
0126	3139 118 18710	Cladding Support		
0227	3139 118 19010	Cabinet Front Power Box		
0228	3139 114 77470	Cabinet Rear Power Box		
0229	3139 118 19030	Cabinet Top Power Box		
0230	3139 114 77490	Cabinet Bottom Power Box		
0287	3139 110 40670	Screw Soc Hex (D4 x 14)		
0350	3139 119 00120	Left & Right Loudspeaker Box		
0351	4822 303 50063	FM Aerial		
0356	3139 119 00080	Remote Control		
0383	3139 119 00160	Antenna Telescopic		
0384	2422 549 45067	Antenna AM Loop		
0385	2422 070 98151 $\Delta$	Mains Cord		
0386	3139 111 01620	Cable Intercon 20P		
0387	3139 115 21760	Instruction For Use		
1100	3139 119 00320	LCD Module		
1200	3139 111 01590	FFC Foil 9P/220/9P BD Fold		
1201	3139 111 01600	FFC Foil 8P/220/8P BD Fold		
1202	3139 111 01610	FFC Foil 4P/060/4P BD		
1203	3139 110 34900	FFC Foil 15P/120/15P BD		

Note : Only the parts mentioned in this list are normal service spare parts.