

Service
Service
Service



Service Manual

COMPACT
disc
DIGITAL AUDIO

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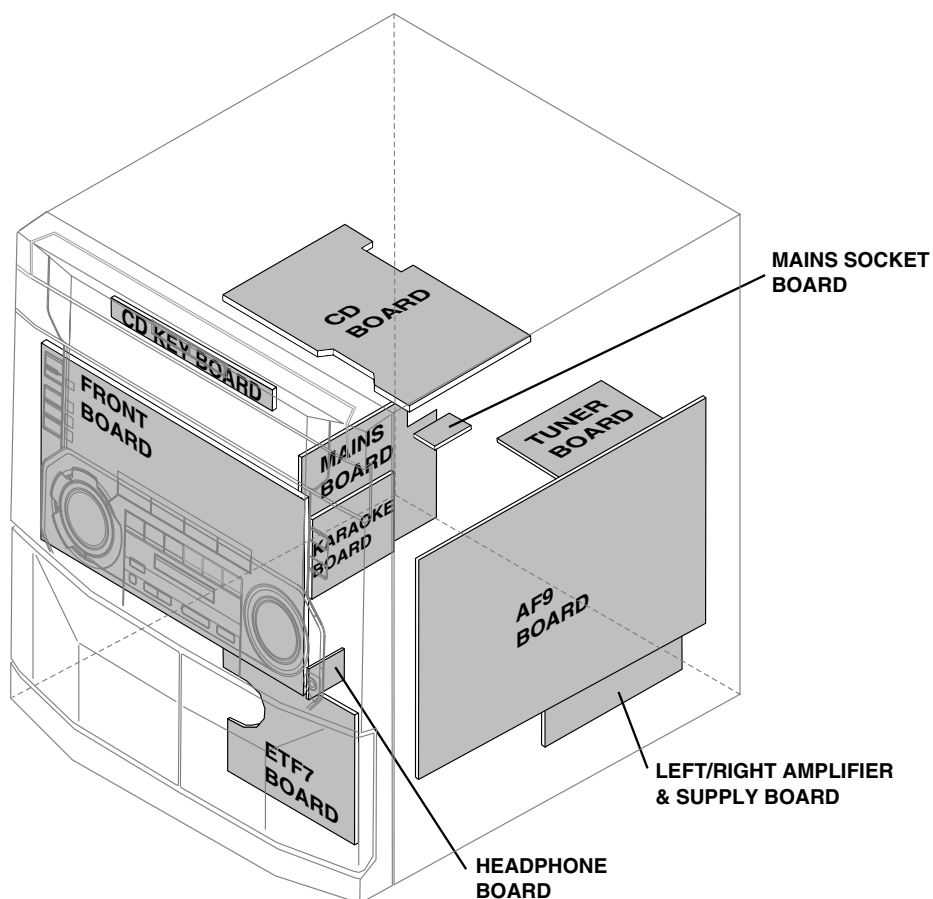
**CLASS 1
LASER PRODUCT**



3139 785 30031

PHILIPS

LOCATION OF PC BOARDS



VERSION VARIATIONS:

Type /Versions:	FW-C399							
	/21	/21M	/22	/30	/33	/34	/37	
Features & Board in used:								
Karaoke	x	x			x			
News			x			x		
RDS			x			x		
Rotary Encoder (volume control)	x	x	x	x	x	x	x	
Jog Shuttle	x	x	x	x	x	x	x	
Voltage Selector	x	x						
Aux Input	x	x	x	x	x	x	x	
Digital Output								
Headphone Socket	x	x	x	x	x	x	x	
Line Output								
Matrix Surround Loudspeakers								
Standby - FTD Clock Display	x	x	x	x	x	x	x	
ECO Standby - Dark	x	x	x	x	x	x	x	
ECO6 Tuner board - System Non-Cenelec	x	x		x	x	x	x	
ECO6 Tuner board - System Cenelec			x					
ETF7 Tape Module: Non-Autoreverse Ferro	x	x	x	x	x	x	x	
MMPWR 100W Module:								
100W Phase Inverse version	x	x	x	x	x	x	x	

SPECIFICATIONS

GENERAL:

Mains voltage : 110-127V/220-240V Switchable for /21/21M
 120V for /37
 230V for /22/30/33/34
 Mains frequency : 50/60Hz
 Power consumption : < 1W at ECO Standby (FTD off)
 < 25W Standby (Demo off)
 < 175W 1/8 Prated
 Clock accuracy : < 4 seconds per day
 Dimension centre unit : 265 x 310 x 381mm

TUNER:

FM

Tuning range : 87.5-108MHz
 65.81-74MHz for /34 ¹⁾
 Grid : 50kHz (& 30kHz for /34)
 100kHz for /37
 IF frequency : 10.7MHz $\pm$ 20kHz
 Aerial input : 75 Ω coaxial
 300 Ω click fit for /37
 Sensitivity at 26dB S/N : < 7 μ V
 Selectivity at 600kHz bandwidth : > 25dB
 IF rejection : > 60dB [> 75dB]
 Image rejection : > 25dB
 Distortion at RF=1mV, dev. 75kHz : < 3%
 -3dB Limiting point : < 8 μ 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%

LW

Tuning range : 153-279kHz for /22
 Grid : 3kHz
 IF frequency : 450kHz $\pm$ 1kHz
 Aerial input : Frame aerial
 Sensitivity at 26dB S/N : < 7.0mV/M
 Selectivity at 18kHz bandwidth : > 24dB
 IF rejection : > 30dB
 Image rejection : > 30dB
 Distortion at RF=50mV, m=80% : < 5%

AMPLIFIER:

Output power (6 Ω , 1 kHz, 10% THD) : 2 x 120W $\pm$ 1dB
 2 x 100W FTC ³⁾
 Frequency response within -3dB : 60Hz-15kHz
 Dynamic Bass Boost : DBB OFF, DBB 1, DBB 2, DBB 3 ²⁾
 Digital Sound Control : Jazz, Rock, Techno, Optimal ²⁾
 VEC Control : Cinema, Hall, Concert ²⁾
 Incredible Surround : Incr. Surround, IS off ²⁾
 Max Sound : Max Sound, Max off ²⁾
 Headphone output at 32 Ω : 15mW $\pm$ 2dB
 5mW $\pm$ 2dB (CD mode)

Input sensitivity

Aux / CDR : 500mV / 1.0V at 600 Ω
 Mic : {3.5mV} at 600 Ω

CASSETTE RECORDER:

Number of track : 2 x 2 stereo
 Tape speed : 4.76 cm/sec $\pm$ 2%
 Wow and flutter : < 0.4% DIN
 Fast-wind/rewind time C60 : 130 sec
 Bias system : 75kHz $\pm$ 10kHz
 Rec/Pb frequency response within 8dB : 80Hz - 12.5kHz
 Signal to noise ratio Ferro : > 48dBA

COMPACT DISC:

Measurement done at output conn. of the CDC module.
 Frequency response within $\pm$ 1.5dB : 20Hz - 20kHz
 Output level (in Vrms) : 550mV $\pm$ 1dB, Z_{out} = 100 Ω
 Signal/Noise ratio (A-weighted) : > 80dBA
 Distortion at 1kHz : < 0.003%
 Channel unbalance at 1kHz : $\pm$ 1dB
 Channel separation at 1kHz : > 60dB
 De-emphasis : 0 or 15/50 mS (Switched by subcode on the disc)

[...] Values indicated are strictly for "Cenelec version" only

{...} Values for Karaoke version only

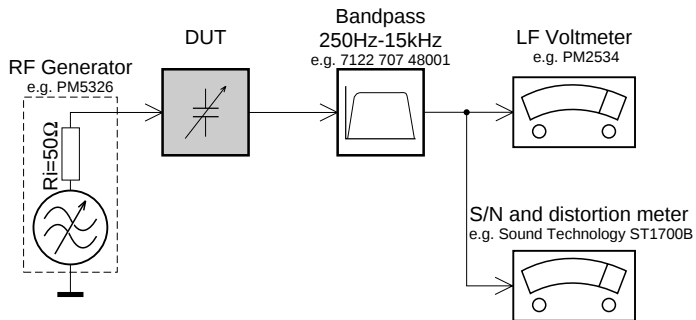
¹⁾ Default setting is OFF, to switch on please refer page 3-1.

²⁾ Frequency response in each setting is software controlled.

³⁾ 6 Ω , 60Hz - 12,5 kHz, 10% THD for /37 only.

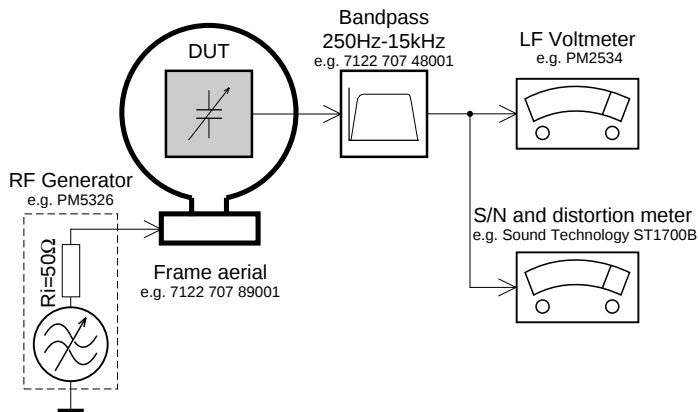
MEASUREMENT SETUP

Tuner FM



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

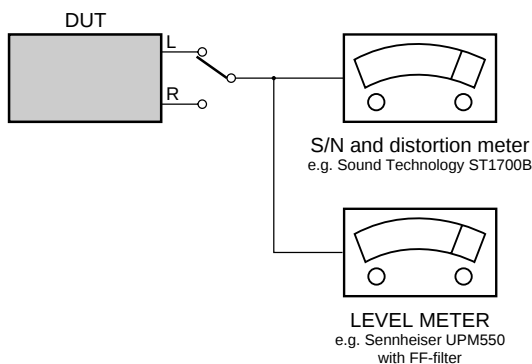
Tuner AM (MW,LW)



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).

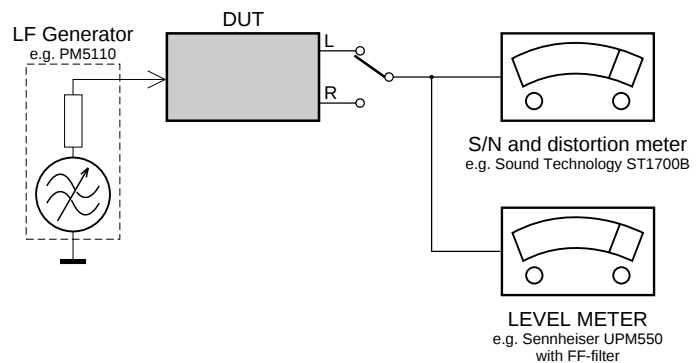
CD

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

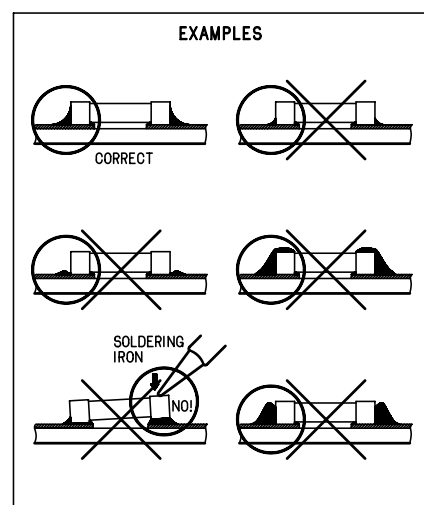
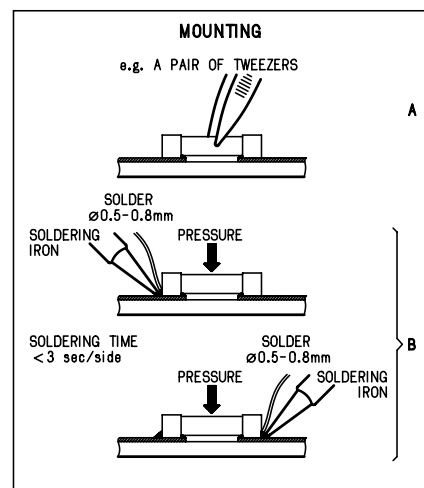
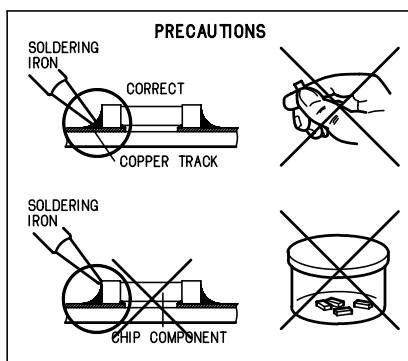
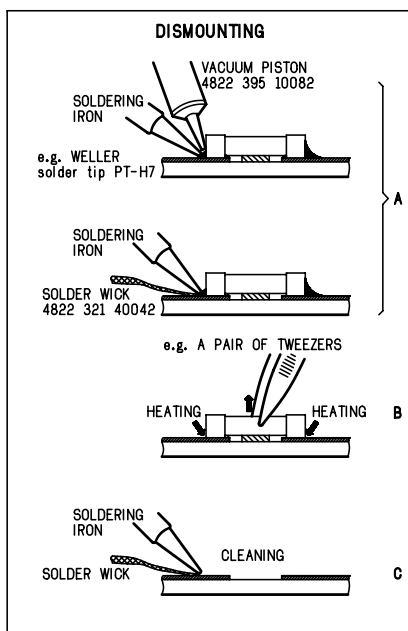
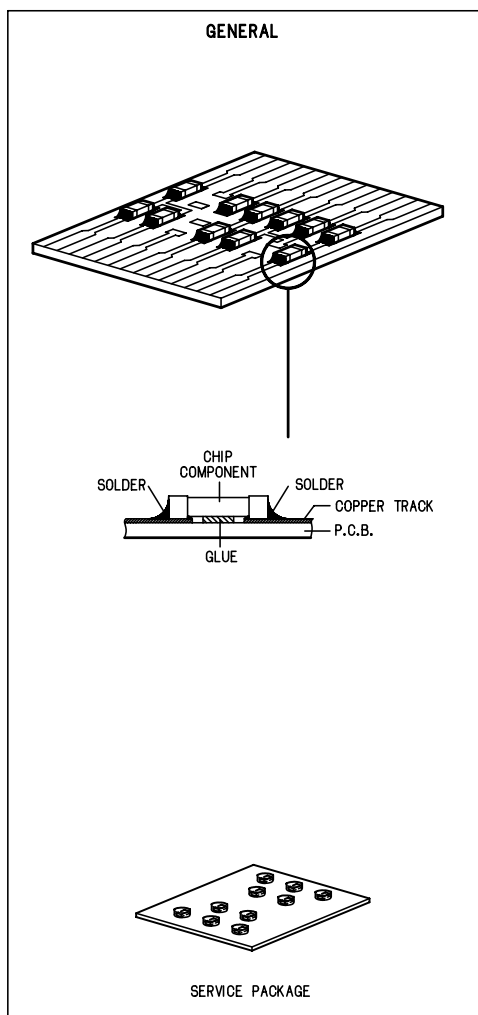
Compact Disc:

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 (1M Ω)	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.

ESD**NL WAARSCHUWING**

Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).

Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen.

Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.

Houd componenten en hulpmiddelen ook op hetzelfde potentiaal.

F ATTENTION

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD).

Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise à leur manipulation.

Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfiler 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.

D WARNING

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen 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.

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.

GB

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

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

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."

**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 alttiina näkymättömälle laserisäteilylle. Älä katso säteeseen!

DK Advarse !

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

DISMANTLING INSTRUCTIONS

Dismantling of the Cassette Cover

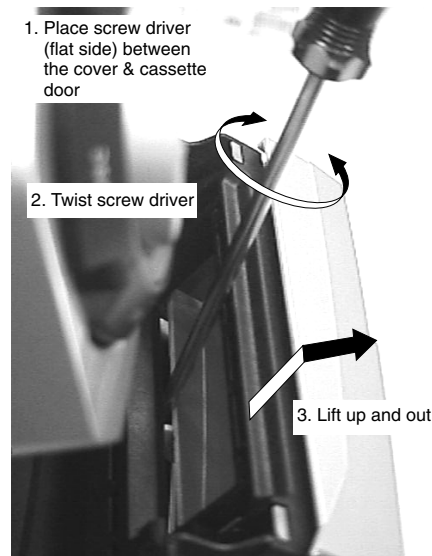


Figure 1

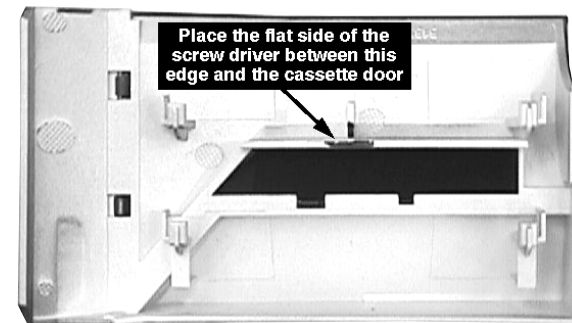


Figure 2

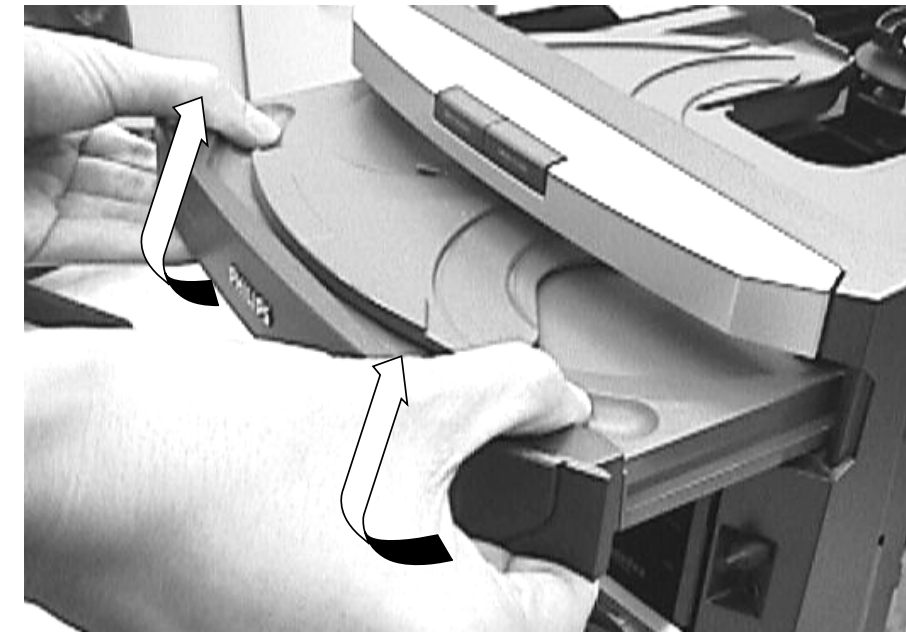


Figure 4

Dismantling the 3CDC Module and Tuner Board

- 1) Loosen the 4 screws, slide Cover top (pos 255) towards the rear and remove it upwards.
- 2) Loosen 3 screws, slide the Panel right (pos 254) towards the rear and remove it outwards. Do likewise for the Panel left (pos 253).
- 3) Push the gear slowly towards the front as shown in figure 3
- 3 until the CDC tray starts to move out of the Front Cabinet (pos 101). The CDC tray is now disengaged and can be pulled out completely.
- 4) Remove the Cover Tray (pos 106) as shown in figure 4.
- 5) Loosen 4 screws A to remove the CDC Module (pos 1105) as shown in figure 3.
- 6) Loosen 3 screws N (see figure 10) on the Panel Rear (pos 256) and release 2 catches C1 to remove the Tuner Board.

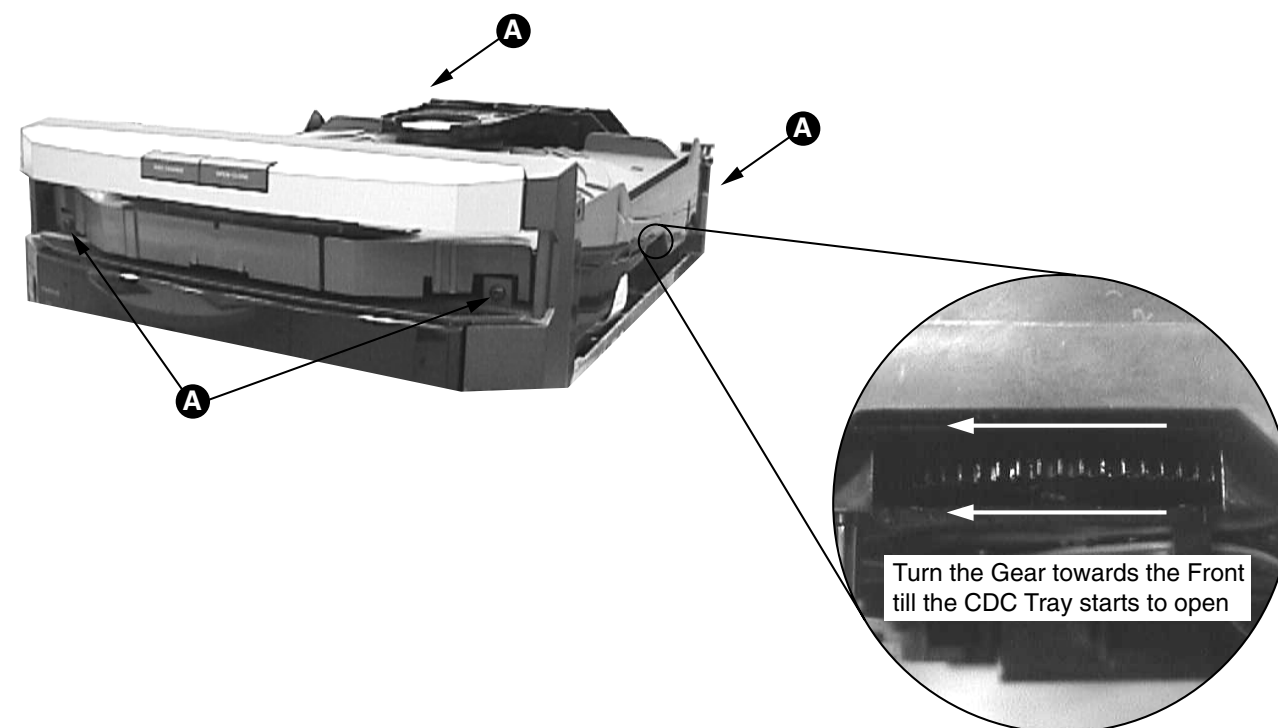


Figure 3

Dismantling of the Cover Front Display (pos 129) and Cover Front Ornamental (pos 130)

- 1) Cut a piece of packaging tape approximately 5cm width by 12cm length and tape its narrow side on to the top and bottom side of the Volume knob (pos 139) as shown in figure 5.
- 2) Place a small screw driver in between the tape & knob (see figure 5) to give more leverage in pulling out the knob as shown in figure 6.
- 3) Do likewise for the Jog Rotary knob (pos 138). You may have to rotate the knob to provide the most exposed area during application of the packaging tape.
- 4) Remove the Button Sound Control & Lightguide assembly (pos 136 & 140) by releasing 3 catches.
- 5) Remove the 2 screws behind the knobs' locations and release 4 catches to detach the Cover Front Display (pos 129).
- 6) Release 4 catches to detach the Cover Front Ornamental (pos 130).

Notes: *There is nothing are sandwiched between the Front Cabinet (pos 101) and Cover Front Display (pos 129) but it has to be removed in order to reach the catches for the Cover Front Ornamental (pos 130) .*



Figure 5

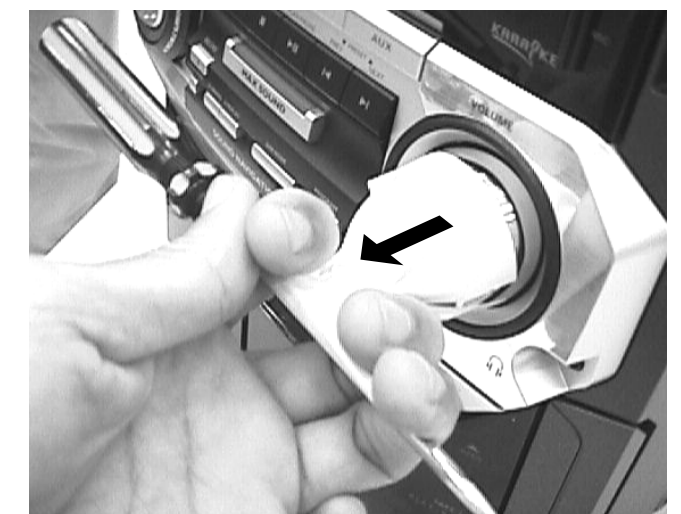


Figure 6

Detaching the AF9 board and Front Cabinet Assembly from the Bottom/Rear assembly

- 1) Release 2 catches C2 to free the AF9 board from the Front Cabinet Assembly as shown in figure 7.
- 2) Loosen 1 screw M on the Rear panel (pos 256) to remove the AF9 board as shown in figure 10.
- 3) Loosen 2 screws C at the bottom of the Front Cabinet on both sides of the set.
- 4) Release 2 catches C3 on both sides of the Front Cabinet (pos 101) and pull the Front Cabinet assembly out of the Bottom plate (pos 265).

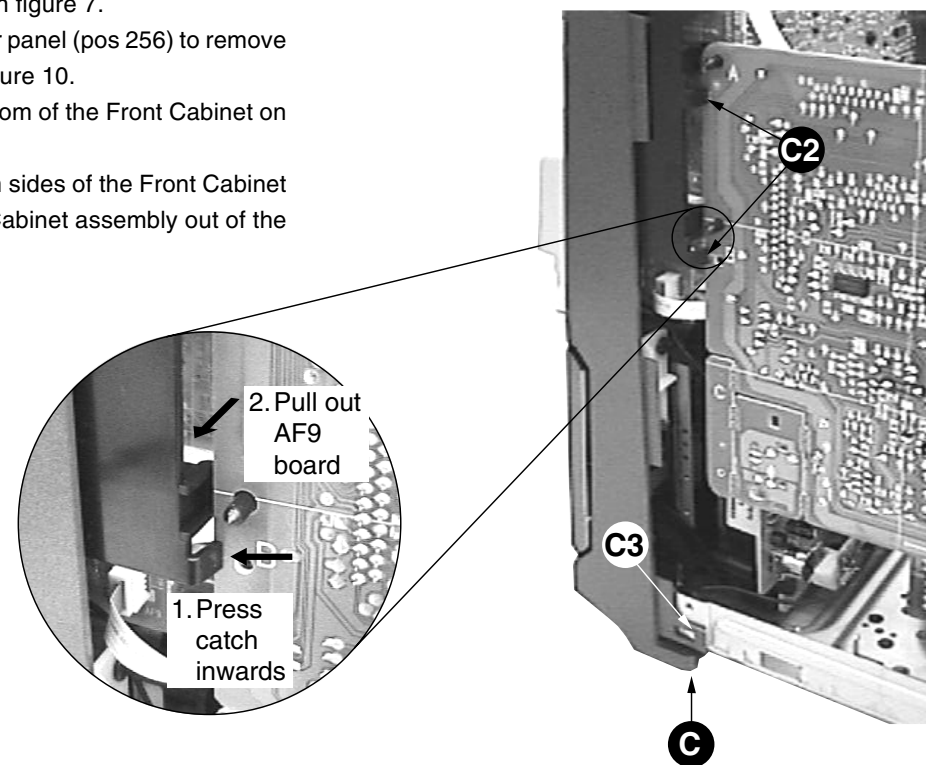


Figure 7

Dismantling of the Rear Panel

- 1) Loosen 5 screws H as shown in figure 10.
- 2) Release 2 catches C4 on the Mains Socket body to free the Mains Socket board.
- 3) Release 2 catches C5 on both sides of the Rear Panel (pos 256) with the help of a minus screw driver and pull out the Rear Panel.

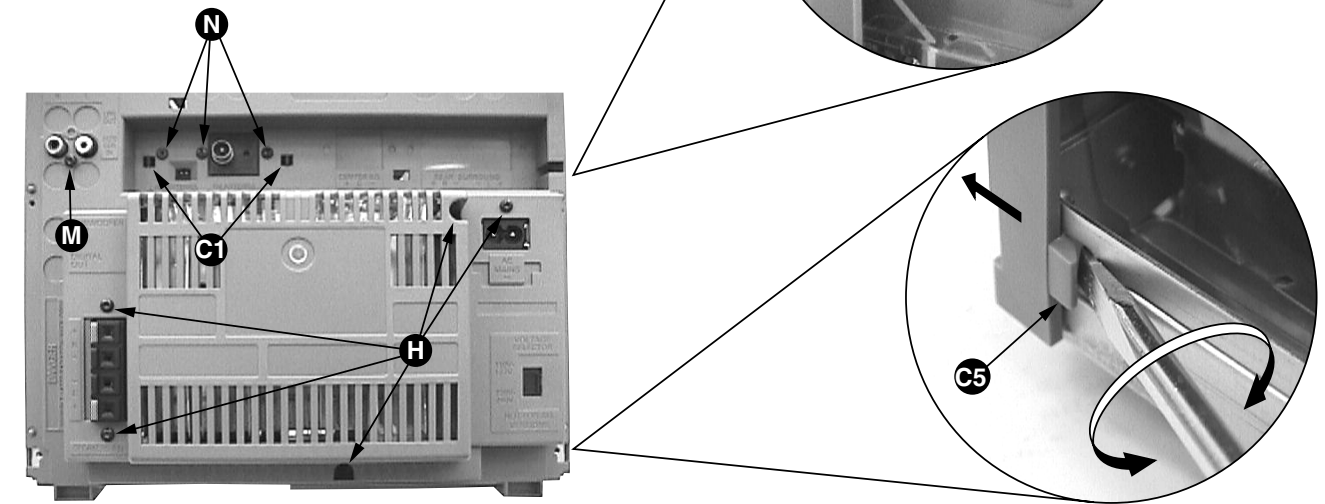


Figure 10

Dismantling of the Front Board and ETF7 module

- 1) Remove the Jog and Volume knobs (pos 138 & 139) as stated in Dismantling the Cover Front Display.
- 2) Loosen 3 screws D to remove the Bracket CDC Right (pos 252) as shown in figure 8.
- 3) Loosen 3 screws E to remove the Karaoke board and Headphone board.
- 4) Loosen 11 screw F to remove the Front Board.
- 5) Loosen 6 screws G to remove the ETF7 Module (pos 1104).

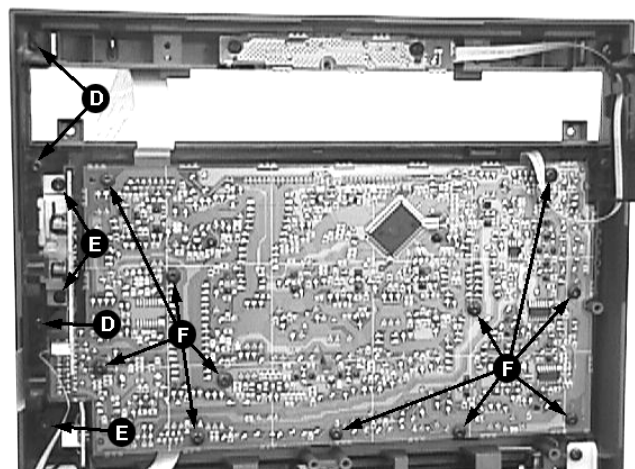


Figure 8

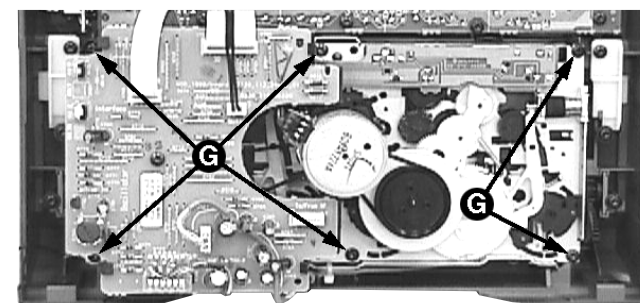


Figure 9

Dismantling of the Bottom assembly

- 1) Loosen 2 screws J and lift-up the Power Board / Heatsink assembly from the Bottom plate (pos 265) as shown in figure 11.
- 2) Loosen 2 screws K to remove the Fan / Bracket assembly as shown in figure 12.
- 3) Loosen 4 screws L for the Mains Transformer to remove the Mains Transformer / Mains Board assembly.

Note: During re-assembly care should be taken to ensure the fan blade and wires are in the right direction and position.

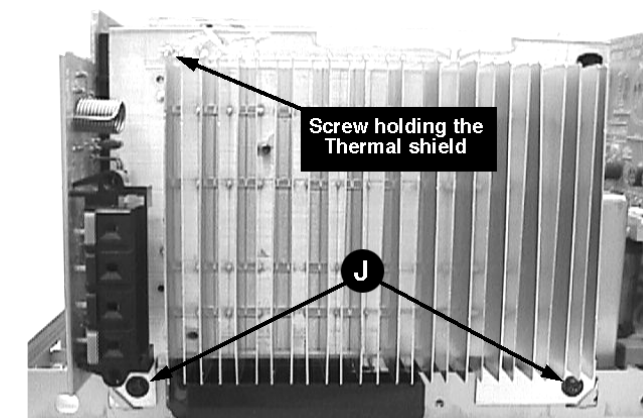


Figure 11

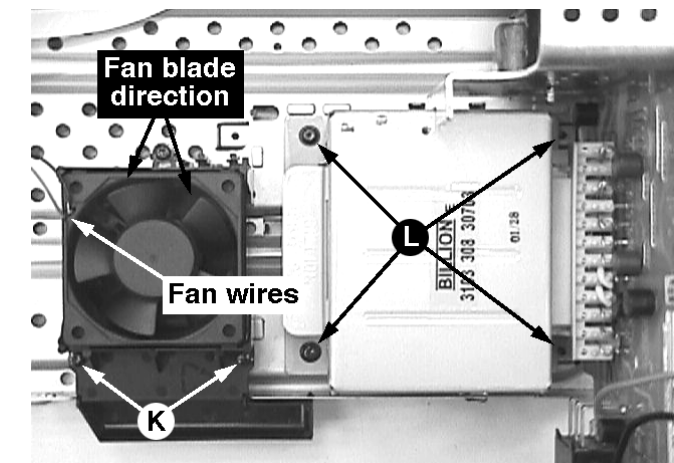
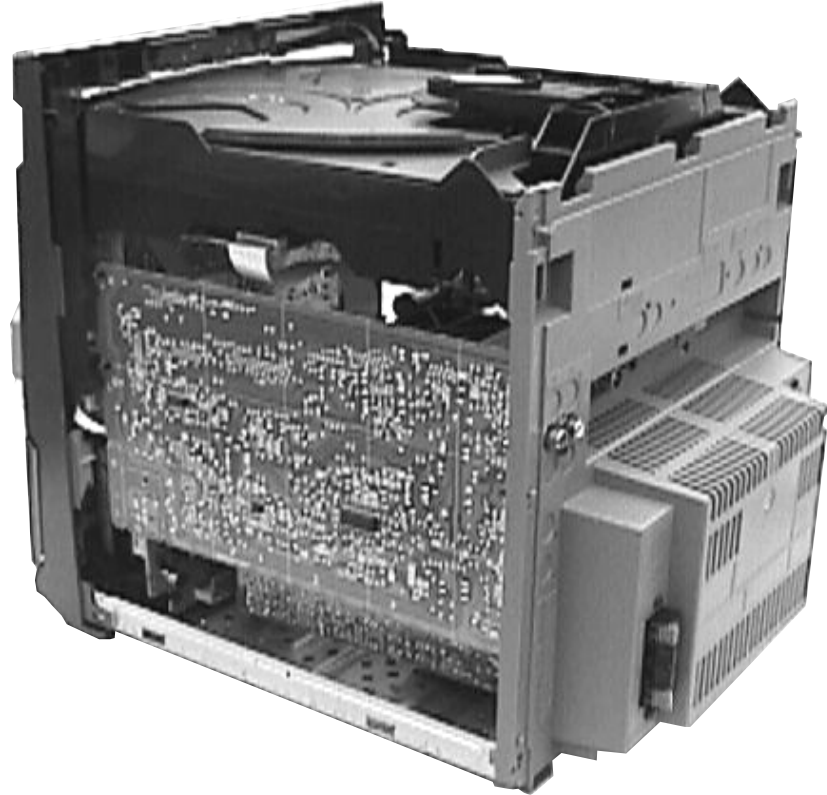


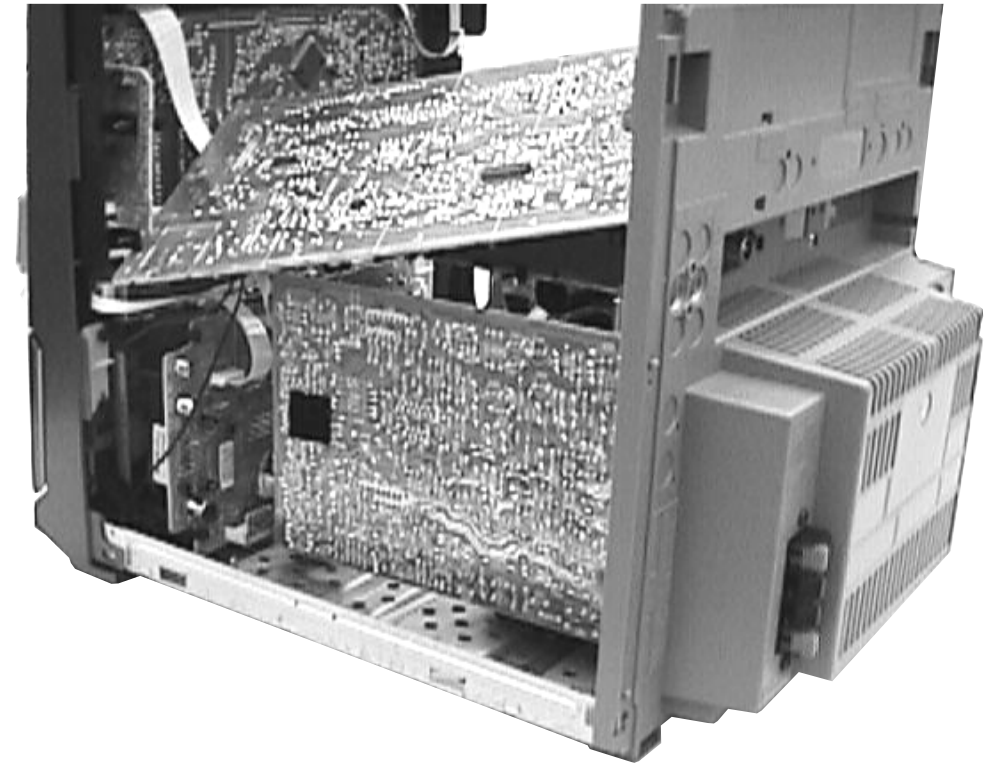
Figure 12

Service positions

Service position A

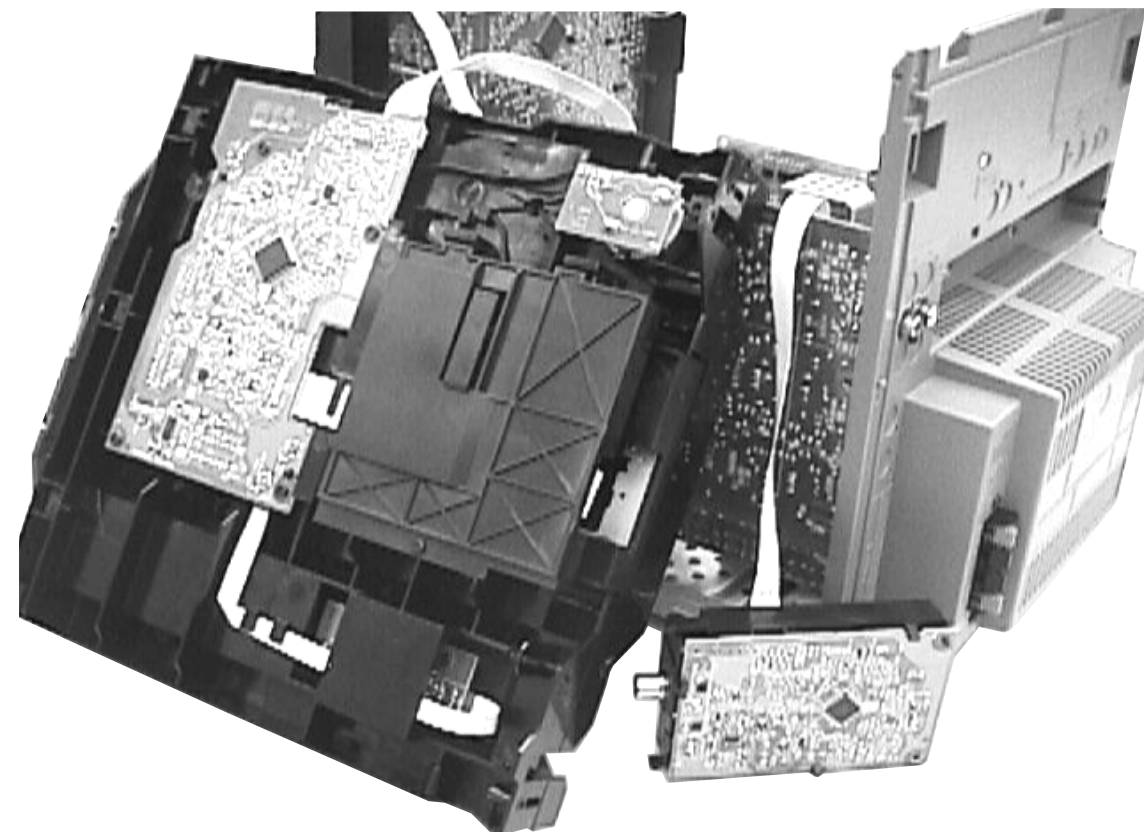


Service position C

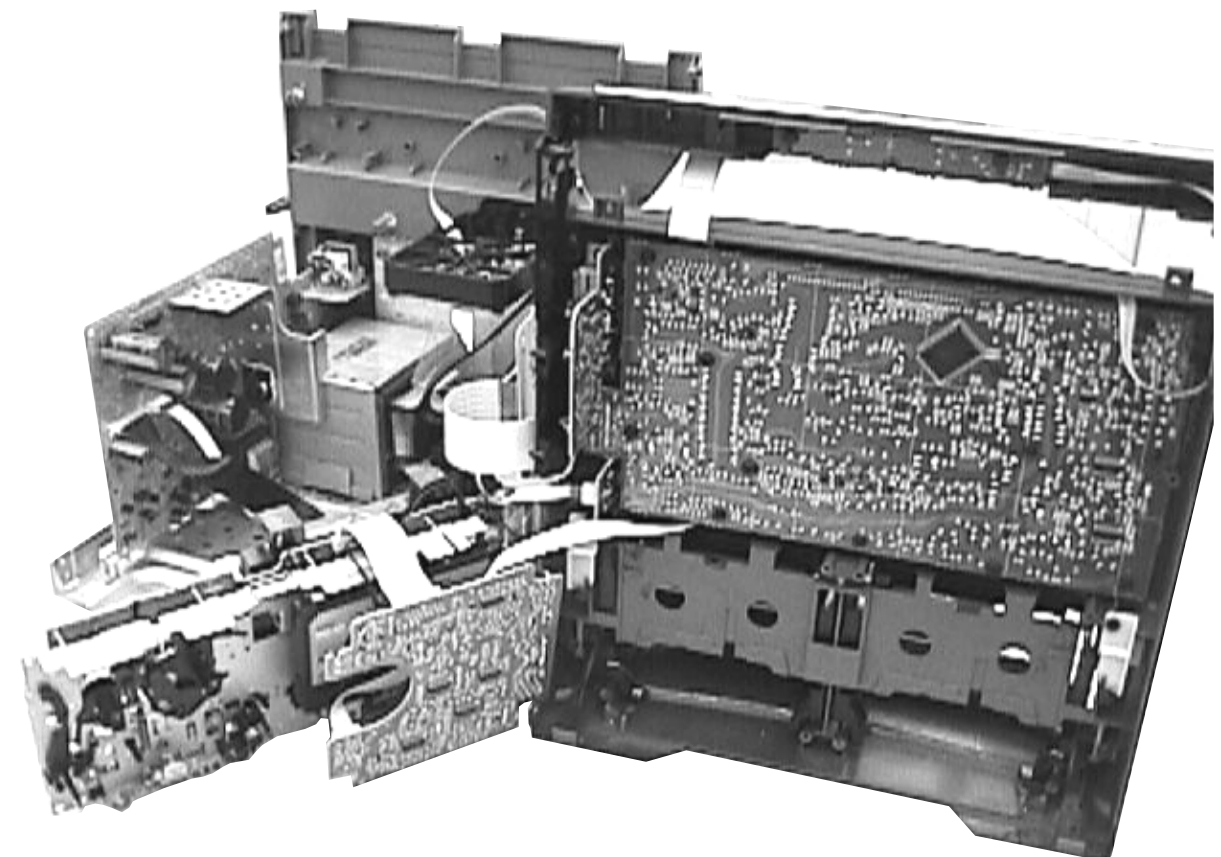


Note: After re-assembly, it is very important to ensure the wires are properly inserted into their respective sockets and routed not to touch or obstruct any moving parts.

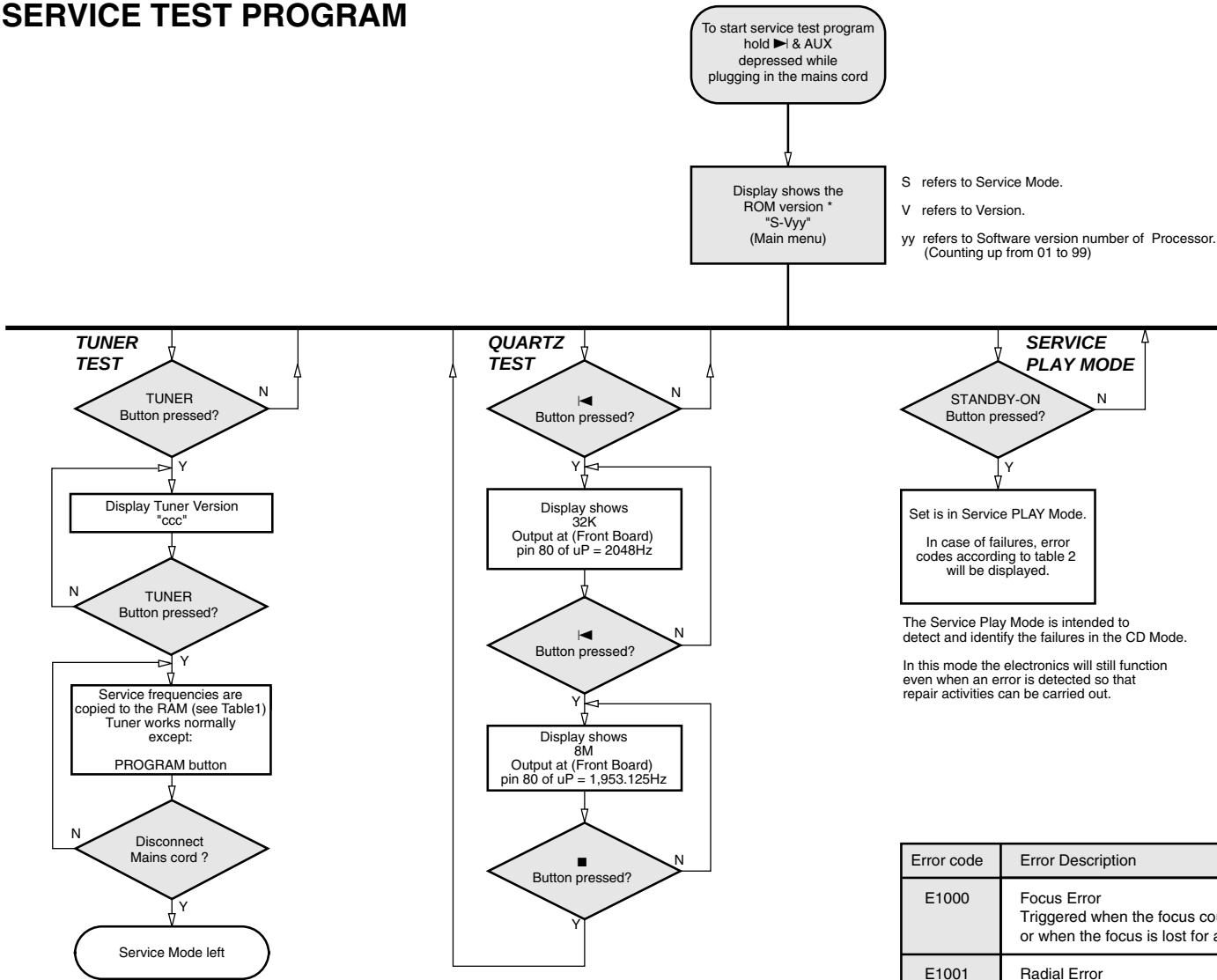
Service position B



Service position D



SERVICE TEST PROGRAM



PRESET	Europe "EUR"	East Eur. Extended-band "EAS"	East Eur. "EAS"	USA "USA"	Oversea "OSE"
1	87.5MHz	65.81MHz	87.5MHz	87.5MHz	87.5MHz
2	108MHz	108MHz	108MHz	108MHz	108MHz
3	531kHz	74MHz	531kHz	530kHz	530/531kHz*
4	1602kHz	87.5MHz	1602kHz	1700kHz	1700/1602kHz*
5	558kHz	531kHz	558kHz	560kHz	560/558kHz*
6	1494kHz	1602kHz	1494kHz	1500kHz	1500/1494kHz*
7	153kHz	558kHz	87.5MHz	98MHz	98/87.5MHz*
8	279kHz	1494kHz	87.5MHz	87.5MHz	87.5MHz
9	198kHz	98MHz	87.5MHz	87.5MHz	87.5MHz
10	98MHz	70.01MHz	87.5MHz	87.5MHz	87.5MHz
11	87.5MHz	65.81MHz	98MHz	87.5MHz	87.5/98MHz*

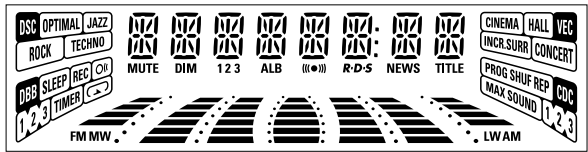
Table 1

Note: * Depending on the selected grid frequency (9 or 10kHz)
By holding the TUNER and ►► buttons depressed while switching on the Mains supply, one of the undermentioned features will be activated:

- the tuning grid frequency is toggled between 9kHz and 10kHz for the Oversea (/21) version.
- the extended FM1 (65.81MHz - 74MHz) is toggled on and off for East Eur. (/34) version.

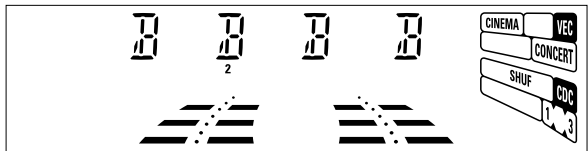
DEMO Mode

	ACTION
To Switch off	Hold the ► button down for 5 seconds during the DEMO display, the set will confirm with "DEMO OFF" and switch to Standby.
To Switch on	Hold the ► button down for 5 seconds during Standby, DEMO will begin.



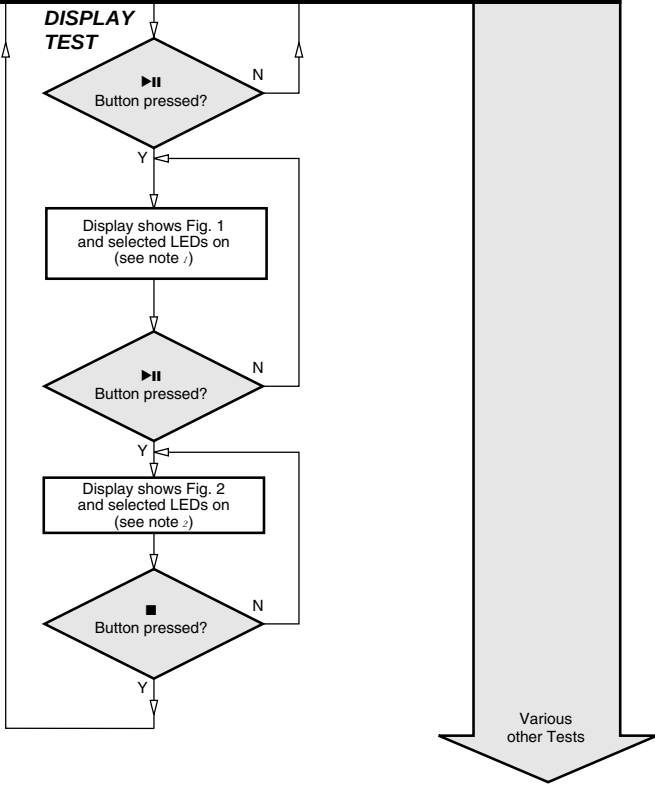
note 1: All LEDs are on except ECO POWER.

Figure 1



note 2: Only DISC 2, TUNER, AUX, DSC, VEC & MAX SOUND are on.

Figure 2

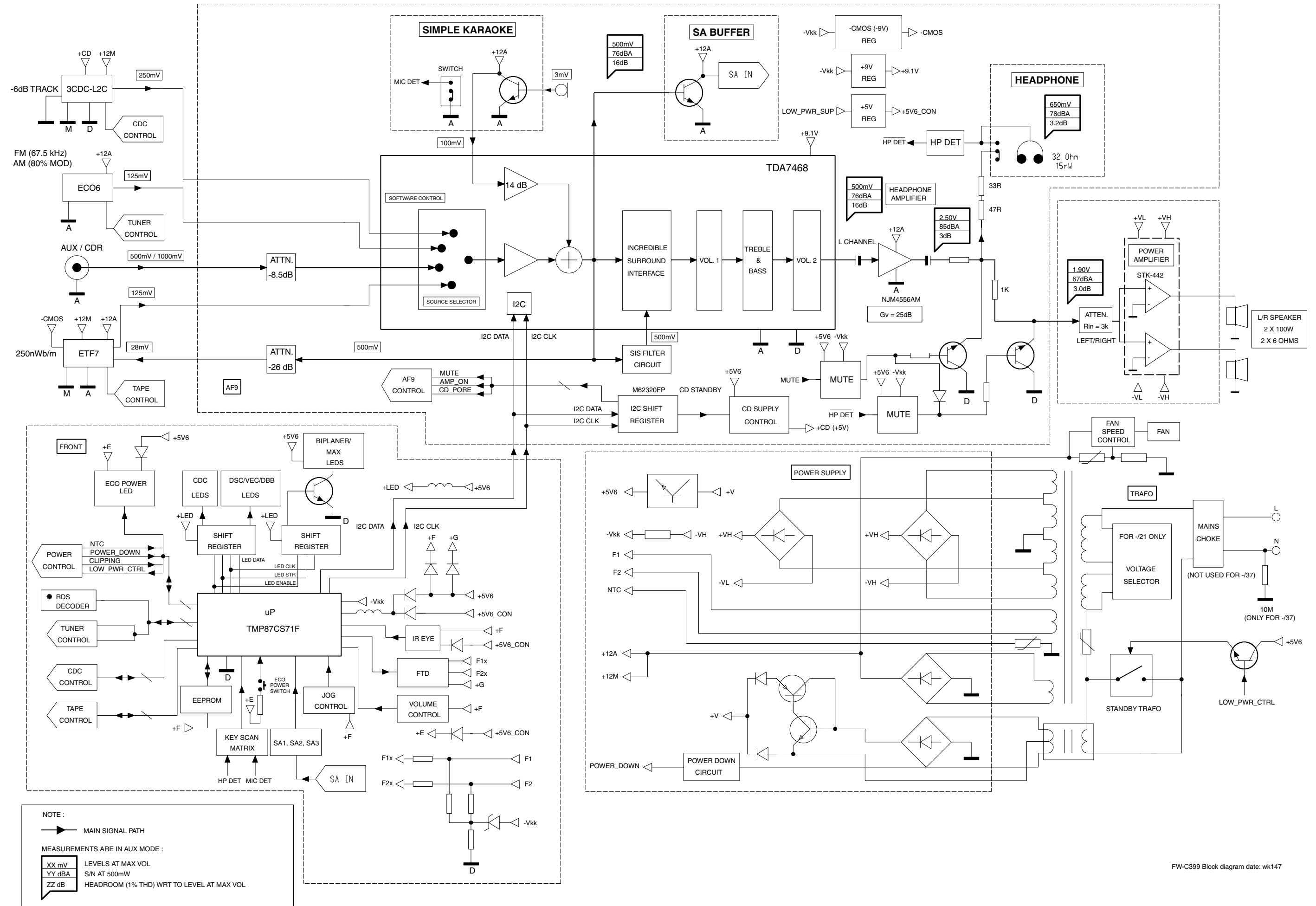


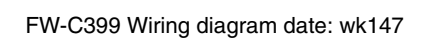
Error code	Error Description
E1000	Focus Error Triggered when the focus could not be found within a certain time when starting up the CD or when the focus is lost for a certain time during play.
E1001	Radial Error Triggered when the radial servo is off-track for a certain time during play.
E1002	Sledge In Error The sledge did not reach its inner position (inner-switch is still close) before approximately 6 Sec. have passed by. Inner-switch or sledge motor problem.
E1003	Sledge Out Error The sledge did not come out of its inner position (inner-switch is still open) before approximately 250 mSec. have passed by. Inner-switch or sledge motor problem.
E1005	Jump-offtrack error Triggered in normal play when the jump destination could not be found within a certain time. When this error occurred, software will try to recover by initiating the jump command again. If it is recoverable, the disc will continue to play.
E1006	Subcode Error Triggered when a new subcode was missing for a certain time during play.
E1007	PLL Error The Phase Lock Loop could not lock within a certain time.
E1008	Turntable Motor Error Generated when the CD could not reached 75% of speed during startup within a certain time. Discmotor problem.
E1020	Focus Search Error The focus point has not been found within a certain time.
E1070	This happens when the carousel switch is defective and closed all the time, or when the carousel is blocked when it is located exactly at a disc position.
E1071	This happens when the carousel switch is defective and does not closed electrically, or when the carousel is blocked in between two disc positions. The time-out is approximately 5 Sec.
E1079	The drawer could not open or enter the inside position and is opening again. This happen when the drawer is blocked and cannot go fully inside or when the drawer switch is defective and does not close.

Table 2

TEST	Activated with	ACTION
EEPROM TEST	►► ► to Exit	A test pattern will be sent to the EEPROM. "PASS" is displayed if the uProcessor read back the test pattern correctly, otherwise "FAIL" will be displayed.
EEPROM FORMAT	◄◄	Load default data. Display shows "NEW" for 1 second. Caution! All presets from the customer will be lost!!
ROTARY ENCODER TEST	Volume Knob or Jog Shuttle knob	Display shows value for 2 seconds. Values increases or decreases in steps of 1 until 0 (Min.) or 40 (Max.) is reached.
LEAVE SERVICE TESTPROGRAM	Disconnect mains cord	

SET BLOCK DIAGRAM



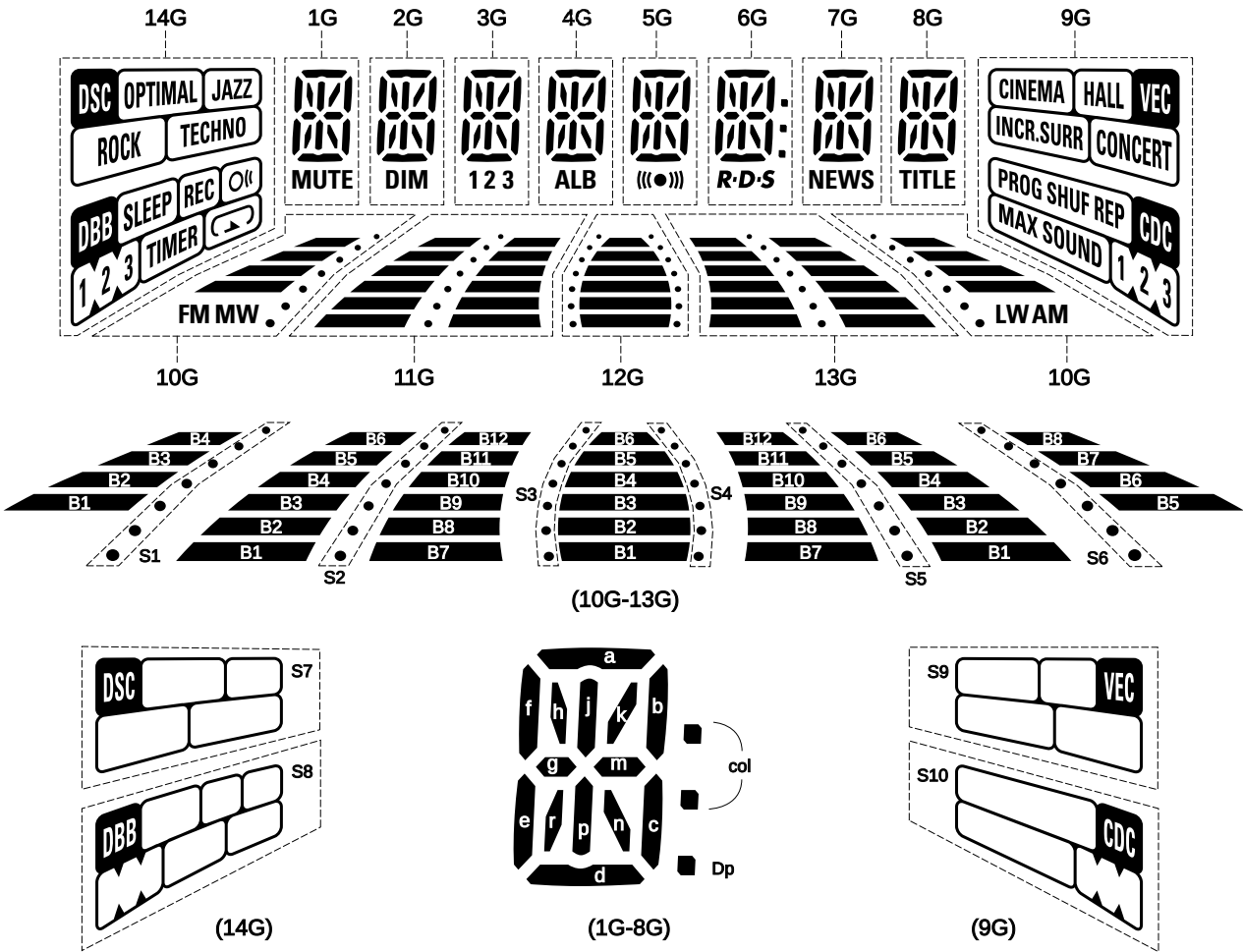


FRONT BOARD

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FTD DISPLAY PIN CONNECTIONS



	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	11G	12G	13G	14G
P1	a	a	a	a	a	a	a	a	CINEMA	B1	B1	B1	B1	S7
P2	h	h	h	h	h	h	h	h	HALL	B2	B2	B2	B2	OPTIMAL
P3	j , p	j , p	j , p	j , p	j , p	j , p	j , p	j , p	S9	B3	B3	B3	B3	JAZZ
P4	k	k	k	k	k	k	k	k	INCR.SURR	B4	B4	B4	B4	ROCK
P5	b	b	b	b	b	b	b	b	CONCERT	S1	B5	B5	B5	TECHNO
P6	f	f	f	f	f	f	f	f	PROG	-	B6	B6	B6	S8
P7	m	m	m	m	m	m	m	m	SHUF	FM	S2	-	S5	SLEEP
P8	g	g	g	g	g	g	g	g	REP	MW	-	-	-	REC
P9	c	c	c	c	c	c	c	c	S10	B5	B7	-	B7	OK
P10	e	e	e	e	e	e	e	e	MAX SOUND	B6	B8	-	B8	1
P11	r	r	r	r	r	r	r	r	1	B7	B9	S3	B9	2
P12	n	n	n	n	n	n	n	n	2	B8	B10	S4	B10	3
P13	d	d	d	d	d	d	d	d	3	S6	B11	-	B11	TIMER
P14	MUTE	DIM	1	ALB	((●))	R-D-S	NEWS	TITLE	-	-	B12	-	B12	↶
P15	-	-	2	-	-	col	-	-	-	LW	-	-	-	➤
P16	-	-	3	-	-	Dp	-	-	-	AM	-	-	-	-

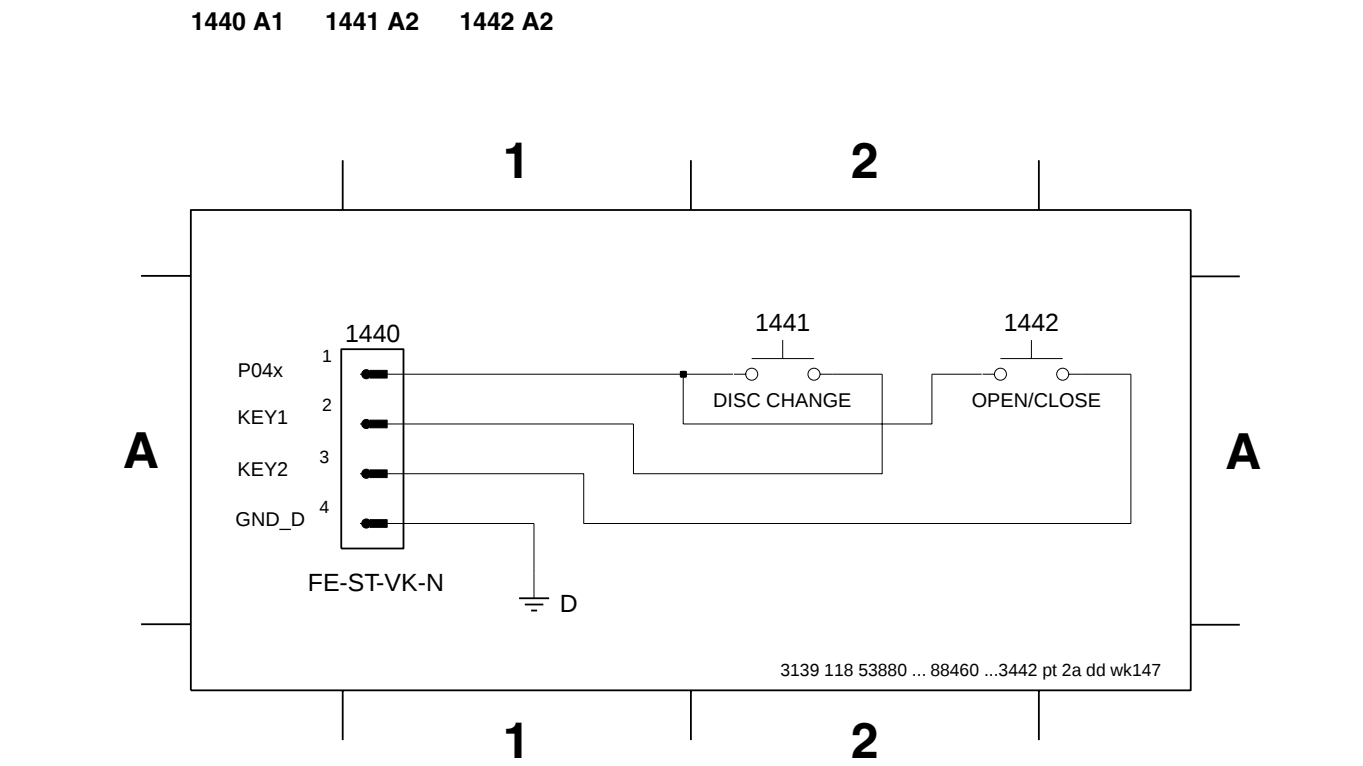
FTD DISPLAY PIN NO.	4 4	4 3	4 2	4 1	4 0	3 9	3 8	3 7	3 6	3 5	3 4	3 3	3 2	3 1	3 0	2 9	2 8	2 7	2 6	2 5	2 4	2 3	2 2	2 1	2 0	1 9	1 8	1 7	1 6	1 5	1 4	1 3	1 2	1 1	1 0	9	8	7	6	5	4	3	2	1
FUNCTION	F 2	F 2	-	-	1 G	2 G	3 G	4 G	5 G	6 G	7 G	8 G	9 G	10 G	11 G	12 G	13 G	14 G	-	-	-	-	-	-	P 1	P 2	P 3	P 4	P 5	P 6	P 7	P 8	P 9	P 10	P 11	P 12	P 13	P 14	P 15	P 16	-	-	F 1	F 1

VARIATION TABLE

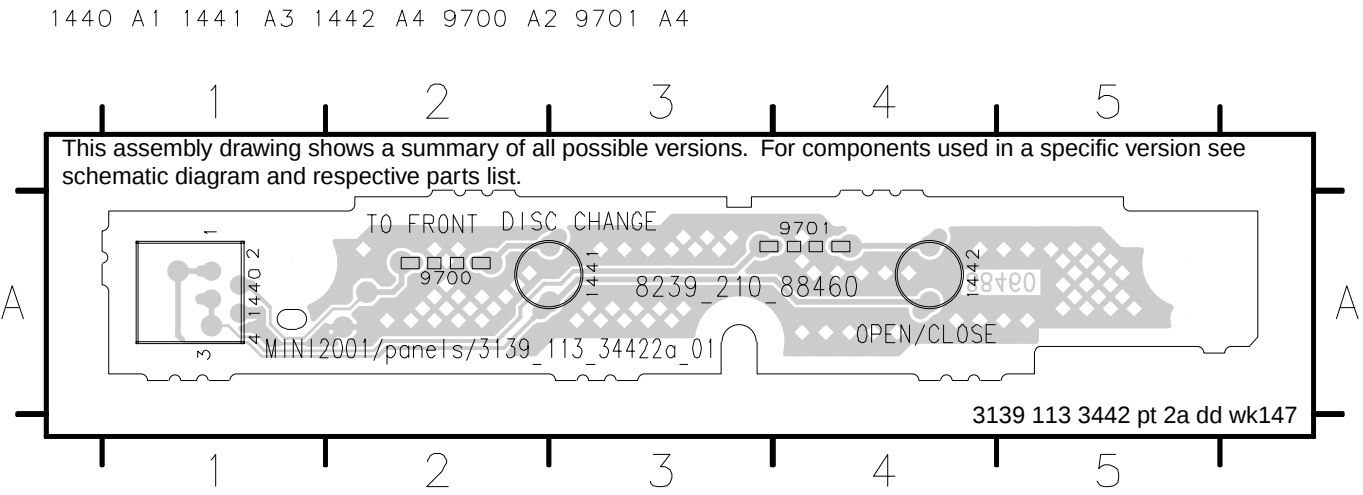
Item No / Features	FW-C399/30/37	FW-C399/21/21M/33	FW-C399/22/34
RDS / News	-	-	x
Simple Karaoke	-	x	-
Mic Detect	-	x	-
1409	x	x	x
1424	-	-	-
1425	-	-	x
1427	-	-	x
1437	-	-	-
3486	1k	1k	1k
3511	10k	10k	-
3530	-	-	330R
3531	10k	10k	10k
3581	10k	10k	-
3595	-	-	-
3808	-	-	820R
4402	-	-	-
4404	-	-	-
6400	x	x	x
6403	x	x	x
6426	-	-	x
6440	-	x	-
6441	x	x	x
6447	x	x	x
6448	x	x	x
9402	-	-	x
9404	-	-	x
9405	-	-	x
9406	-	-	x
9407	-	-	-
9408	x	x	x
9409	-	-	-
9410	x	x	x
9411	-	-	-
9462	-	-	-
9488	x	x	x
9505	-	-	-
9508	-	-	x
9509	-	-	x

x - item in use

KEY-CDC PART - CIRCUIT DIAGRAM

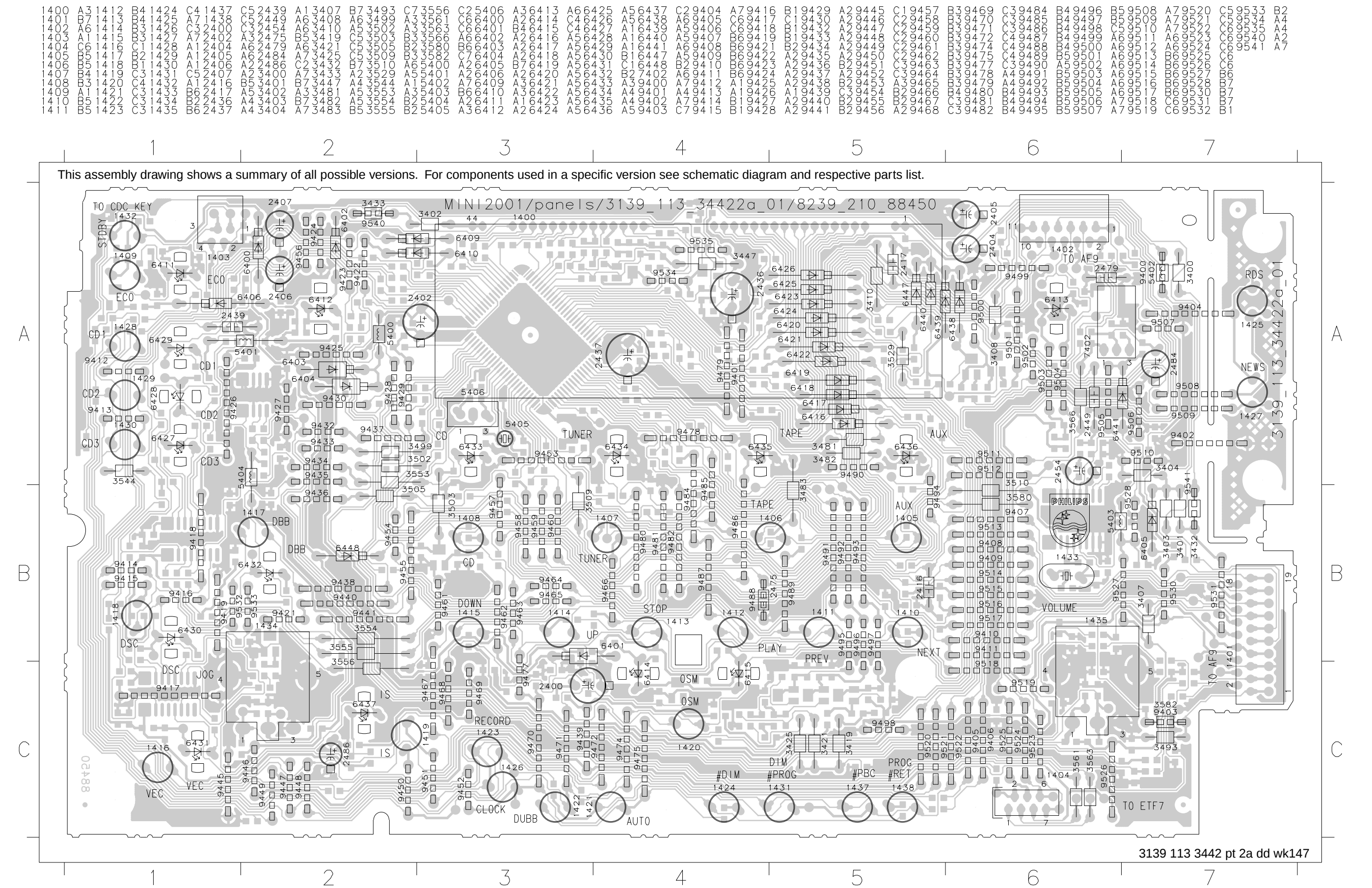


KEY-CDC PART - COMPONENT LAYOUT

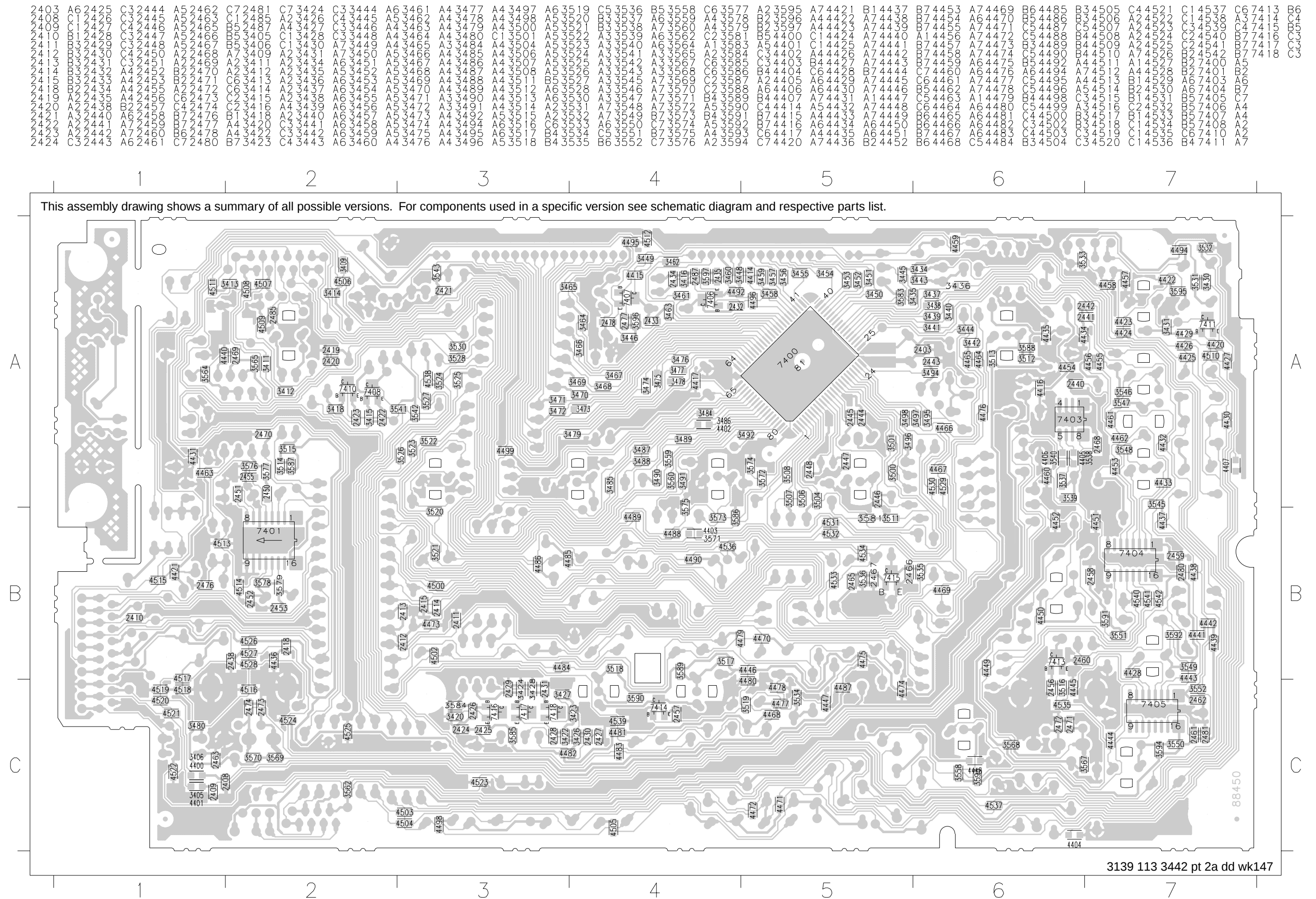


3139 118 53880 ... 88450 ...3442 pt 2a dd wk147

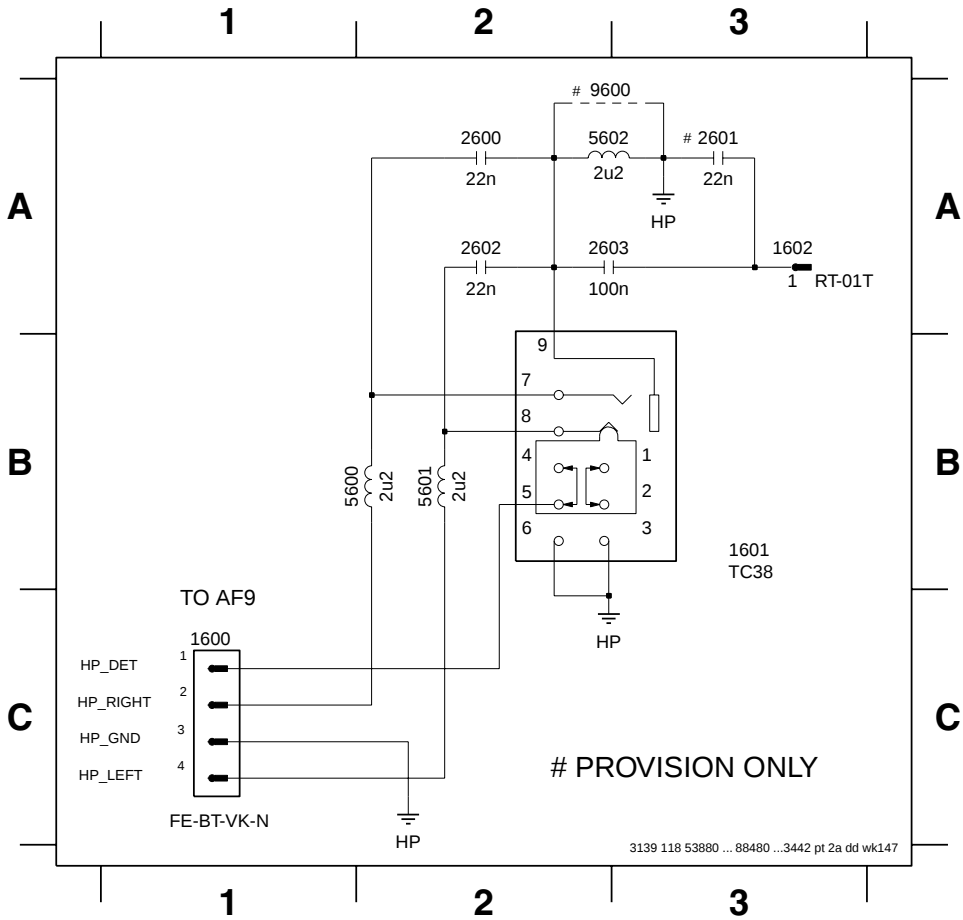
FRONT PART - COMPONENT LAYOUT



FRONT PART - CHIP LAYOUT

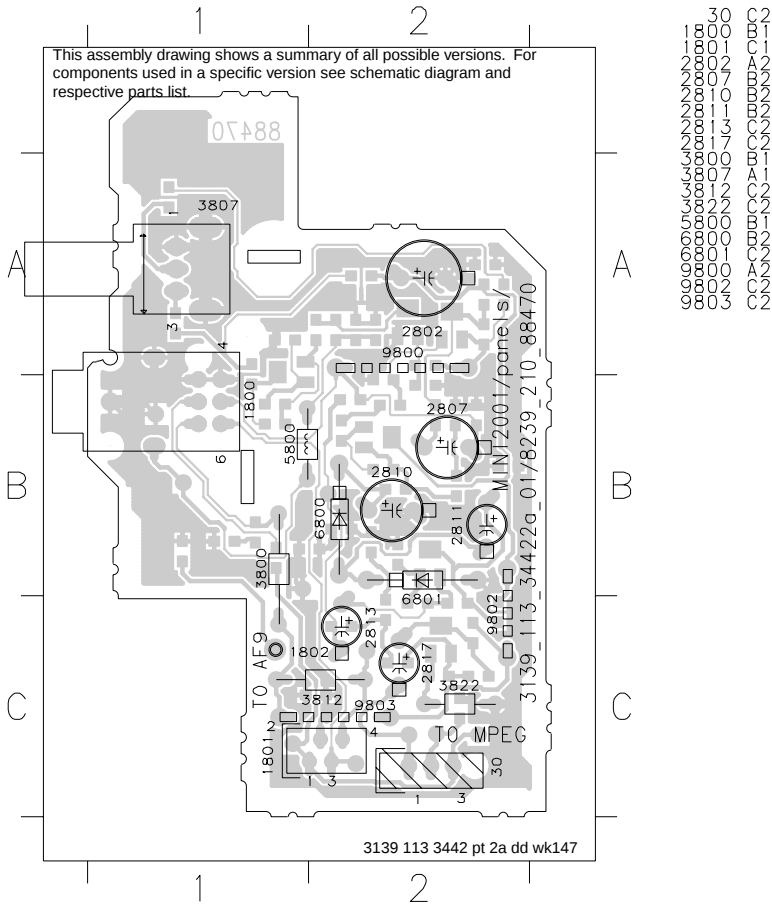


HEADPHONE PART - CIRCUIT DIAGRAM



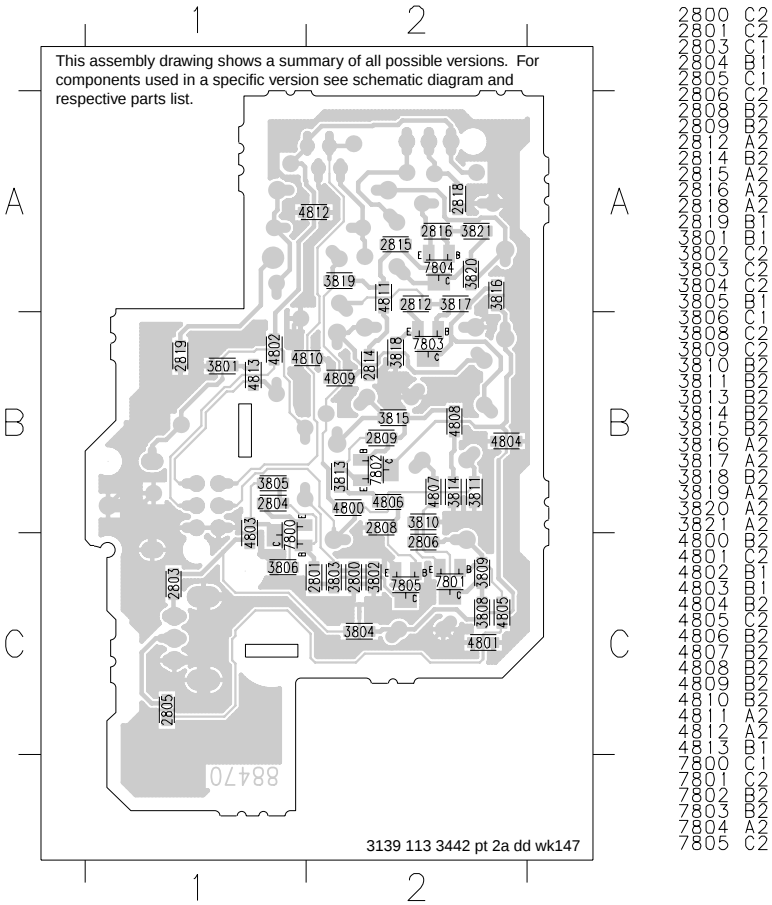
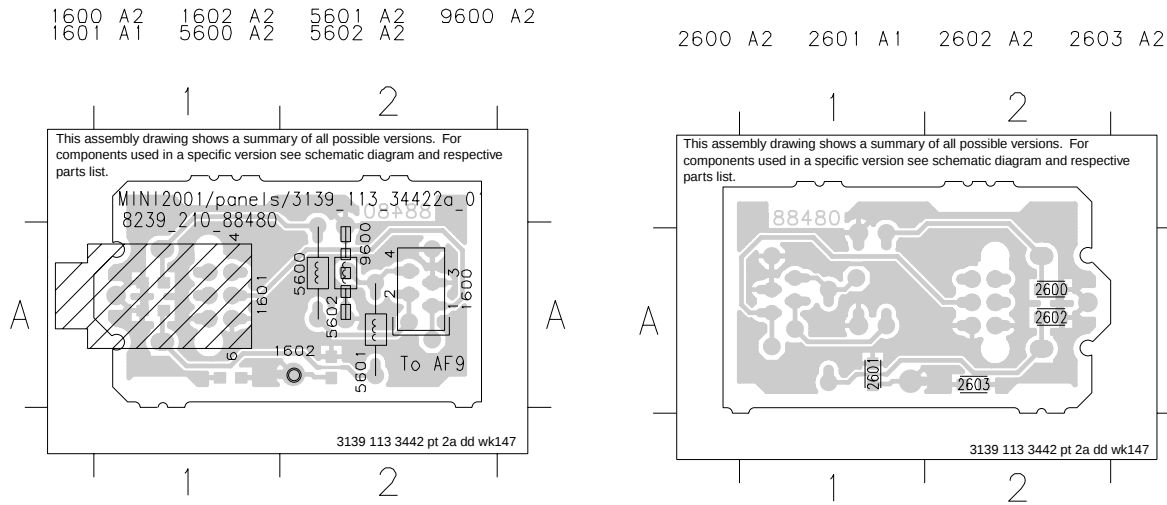
- 1600 C1
- 1601 B3
- 1602 A3
- 2600 A2
- 2601 A3
- 2602 A2
- 2603 A2
- 5600 B2
- 5601 B2
- 5602 A2
- 9600 A2

KARAOKE PART - COMPONENT & CHIP LAYOUTS



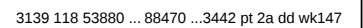
- 1600 C1
- 1601 B3
- 1602 A3
- 2600 A2
- 2601 A3
- 2602 A2
- 2603 A2
- 5600 B2
- 5601 B2
- 5602 A2
- 9600 A2

HEADPHONE PART - COMPONENT & CHIP LAYOUTS



- 1600 C1
- 1601 B3
- 1602 A3
- 2600 A2
- 2601 A3
- 2602 A2
- 2603 A2
- 5600 B2
- 5601 B2
- 5602 A2
- 9600 A2

30 D9	1802 C2	2802 B5	2805 B5	2808 E3	2811 D6	2814 E7	2817 D8	3800 A2	3803 B3	3806 C4	3809 B6	3812 B8	3815 D5	3818 E6	3821 D8	5800 B2	7800 B4	7803 E6	9800 A5
1800 C1	2800 B2	2803 B4	2806 B6	2809 E4	2812 E6	2815 E7	2818 E8	3801 A2	3804 B4	3807 B4	3810 C6	3813 D4	3816 D6	3819 E7	3822 E8	6800 D5	7801 B6	7804 E8	
1801 B9	2801 B3	2804 B4	2807 B6	2810 E5	2813 E6	2816 E8	2819 C3	3802 B2	3805 B4	3808 B6	3811 B6	3814 E5	3817 D6	3820 D8	4800 D7	6801 E5	7802 D4	7805 D3	



ELECTRICAL PARTS LIST - FRONT BOARD

MISCELLANEOUS

1400	3139 110 52900	FTD Display HNA-14MS06T
1401	4822 265 11545	Flex Socket 19 Pin Hort.
1402	2422 025 14541	Flex Socket 11 Pin Hort.
1403	4822 265 11183	Flex Socket 4 Pin Hort.
1404	4822 267 10953	Flex Socket 7 Pin Vert.
1405	4822 276 13775	Tact Switch
1406	4822 276 13775	Tact Switch
1407	4822 276 13775	Tact Switch
1408	4822 276 13775	Tact Switch
1409	4822 276 13775	Tact Switch
1410	4822 276 13775	Tact Switch
1411	4822 276 13775	Tact Switch
1412	4822 276 13775	Tact Switch
1413	4822 276 13775	Tact Switch
1414	4822 276 13775	Tact Switch
1415	4822 276 13775	Tact Switch
1416	4822 276 13775	Tact Switch
1417	4822 276 13775	Tact Switch
1418	4822 276 13775	Tact Switch
1419	4822 276 13775	Tact Switch
1420	4822 276 13775	Tact Switch
1421	4822 276 13775	Tact Switch
1422	4822 276 13775	Tact Switch
1423	4822 276 13775	Tact Switch
1425	4822 276 13775	Tact Switch
1426	4822 276 13775	Tact Switch
1427	4822 276 13775	Tact Switch
1428	4822 276 13775	Tact Switch
1429	4822 276 13775	Tact Switch
1430	4822 276 13775	Tact Switch
1431	4822 276 13775	Tact Switch
1432	4822 276 13775	Tact Switch
1433	4822 242 11033	X'tal Resonator 4,332MHz
1434	2422 129 16385	Rotary Encoder 12P
1435	4822 273 10365	Rotary Encoder 24P
1438	4822 276 13775	Tact Switch
1440	4822 265 11183	Flex Socket 4 Pin Hort.
1441	4822 276 13775	Tact Switch
1442	4822 276 13775	Tact Switch
1600	4822 267 10733	Flex Socket 4 Pin Vert.
1601	4822 265 11529	Headphone Socket
1800	4822 265 11529	Karaoke Mic Socket
1801	4822 267 10733	Flex Socket 4 Pin Vert.

CAPACITORS

2400	4822 124 23432	100µF 20% 10V
2402	4822 124 23432	100µF 20% 10V
2403	4822 126 14305	100nF 10% 16V
2404	4822 124 12032	4,7µF 20% 50V
2405	4822 124 12032	4,7µF 20% 50V
2406	4822 124 12032	4,7µF 20% 50V
2407	4822 124 12032	4,7µF 20% 50V

2410	4822 126 14305	100nF 10% 16V
2422	3198 017 41050	1µF 10V
2423	3198 017 41050	1µF 10V
2424	3198 017 41050	1µF 10V
2425	3198 017 34730	47nF 16V
2426	4822 126 13879	220nF +80/-20% 16V
2427	4822 126 14305	100nF 10% 16V
2428	5322 126 11582	6,8nF 10% 63V
2429	4822 126 13879	220nF +80/-20% 16V
2430	3198 016 38210	820pF 25V
2431	4822 126 13879	220nF +80/-20% 16V
2432	4822 122 31765	100pF 2% 63V
2433	4822 122 31765	100pF 2% 63V
2434	4822 122 31765	100pF 2% 63V
2435	4822 122 31765	100pF 2% 63V
2436	3198 028 52290	22µF 20% 50V
2437	3198 028 52290	22µF 20% 50V
2444	2222 867 15339	33pF 5% 50V
2445	2222 867 15339	33pF 5% 50V
2446	5322 126 11583	10nF 10% 50V
2447	4822 122 33752	15pF 5% 50V
2448	4822 122 33752	15pF 5% 50V
2449	4822 122 33197	1nF 10% 50V
2450	4822 126 14249	560pF 10% 50V
2451	4822 126 14249	560pF 10% 50V
2452	4822 122 33777	47pF 5% 63V
2453	4822 122 33777	47pF 5% 63V
2454	4822 124 22652	2,2µF 20% 50V
2455	4822 126 14305	100nF 10% 16V
2458	4822 126 14305	100nF 10% 16V
2459	4822 122 31765	100pF 2% 63V
2461	4822 126 14305	100nF 10% 16V
2462	4822 122 31765	100pF 2% 63V
2465	4822 126 14305	100nF 10% 16V
2466	4822 126 14305	100nF 10% 16V
2467	5322 126 11583	10nF 10% 50V
2468	4822 126 14305	100nF 10% 16V
2470	4822 126 14238	2,2nF 50V
2471	5322 126 11583	10nF 10% 50V
2472	5322 126 11583	10nF 10% 50V
2473	5322 126 11583	10nF 10% 50V
2474	5322 126 11583	10nF 10% 50V
2476	4822 126 14305	100nF 10% 16V
2477	4822 122 31765	100pF 2% 63V
2478	4822 122 31765	100pF 2% 63V
2479	4822 126 12785	47nF 50V
2480	4822 126 14305	100nF 10% 16V
2481	4822 126 14305	100nF 10% 16V
2484	4822 124 40769	4,7µF 20% 100V
2485	4822 122 31765	100pF 2% 63V
2486	4822 124 40248	10µF 20% 63V
2487	4822 122 31765	100pF 2% 63V

ELECTRICAL PARTS LIST - FRONT BOARD

2600	4822 126 14494	22nF 10% 25V
2602	4822 126 14494	22nF 10% 25V
2603	4822 126 14305	100nF 10% 16V
2800	4822 126 13193	4,7nF 10% 63V
2801	4822 126 13879	220nF +80/-20% 16V
2802	3198 028 44790	47µF 20% 35V
2803	4822 126 13482	470nF 80/20% 16V
2804	5322 126 11578	1nF 10% 50V
2805	4822 126 13482	470nF 80/20% 16V
2806	5322 126 11578	1nF 10% 50V
2807	4822 124 12255	10µF 20% 50V

RESISTORS

3400	4822 116 81154	2R2 5% 0,5W
3401	4822 116 83872	220R 5% 0,5W
3402	4822 116 81154	2R2 5% 0,5W
3403	4822 116 83872	220R 5% 0,5W
3404	4822 116 52257	22k 5% 0,5W
3407	4822 050 21003	10k 1% 0,6W
3408	4822 050 21003	10k 1% 0,6W
3409	4822 051 30103	10k 5% 0,062W
3410	4822 050 11002	1k 1% 0,4W
3411	4822 051 30102	1k 5% 0,062W
3412	4822 051 30102	1k 5% 0,062W
3413	4822 051 30102	1k 5% 0,062W
3414	4822 051 30103	10k 5% 0,062W
3415	4822 051 30103	10k 5% 0,062W
3416	4822 051 30103	10k 5% 0,062W
3418	4822 051 30103	10k 5% 0,062W
3419	4822 116 52243	1k5 5% 0,5W
3420	4822 117 12864	82k 5% 0,6W
3421	4822 116 52243	1k5 5% 0,5W
3422	4822 051 30684	680k 5% 0,062W
3423	4822 117 12864	82k 5% 0,6W
3424	4822 051 30474	470k 5% 0,062W
3425	4822 116 52243	1k5 5% 0,5W
3426	4822 051 30684	680k 5% 0,062W
3427	4822 117 12864	82k 5% 0,6W
3428	4822 051 30474	470k 5% 0,062W
3430	4822 051 30561	560R 5% 0,062W
3431	4822 117 12925	47k 1% 0,063W
3432	4822 116 80176	1R 5% 0,5W
3433	4822 116 80176	1R 5% 0,5W
3434	4822 051 30103	10k 5% 0,062W
3435	4822 051 30102	1k 5% 0,062W
3436	4822 051 30102	1k 5% 0,062W
3437	4822 051 30102	1k 5% 0,062W
3438	4822 051 30102	1k 5% 0,062W
3439	4822 051 30101	100R 5% 0,062W
3440	4822 051 30102	1k 5% 0,062W
3441	4822 051 30102	1k 5% 0,062W
3442	4822 051 30102	1k 5% 0,062W

3443	4822 051 30103	10k 5% 0,062W
3444	4822 051 30102	1k 5% 0,062W
3446	4822 117 12864	82k 5% 0,6W
3447	4822 116 52304	82k 5% 0,5W
3448	4822 051 30101	100R 5% 0,062W
3449	4822 051 30101	100R 5% 0,062W
3450	4822 051 30102	1k 5% 0,062W
3451	4822 051 30102	1k 5% 0,062W
3452	4822 051 30102	1k 5% 0,062W
3453	4822 051 30102	1k 5% 0,062W
3454	4822 051 30102	1k 5% 0,062W
3455	4822 051 30102	1k 5% 0,062W
3456	4822 051 30102	1k 5% 0,062W
3457	4822 051 30102	1k 5% 0,062W
3458	4822 051 30102	1k 5% 0,062W
3459	4822 051 30102	1k 5% 0,062W
3460	4822 051 30102	1k 5% 0,062W
3461	4822 051 30102	1k 5% 0,062W
3462	4822 051 30102	1k 5% 0,062W
3463	4822 051 30102	1k 5% 0,062W
3464	4822 051 30102	1k 5% 0,062W
3465	4822 051 30102	1k 5% 0,062W
3466	4822 051 30102	1k 5% 0,062W
3467	4822 051 30102	1k 5% 0,062W
3468	4822 051 30102	1k 5% 0,062W
3469	4822 051 30102	1k 5% 0,062W
3470	4822 051 30102	1k 5% 0,062W
3471	4822 051 30102	1k 5% 0,062W
3472	4822 051 30102	1k 5% 0,062W
3473	4822 051 30102	1k 5% 0,062W
3474	4822 051 30102	1k 5% 0,062W
3475	4822 051 30102	1k 5% 0,062W
3476	4822 051 30102	1k 5% 0,062W
3477	4822 051 30102	1k 5% 0,062W
3478	4822 051 30102	1k 5% 0,062W
3479	4822 051 30102	1k 5% 0,062W
3481	4822 050 11002	1k 1% 0,4W
3482	4822 050 11002	1k 1% 0,4W
3483	4822 050 11002	1k 1% 0,4W
3484	4822 051 30102	1k 5% 0,062W
3485	4822 051 30102	1k 5% 0,062W
3486	4822 051 30102	1k 5% 0,062W
3487	4822 051 30102	1k 5% 0,062W
3488	4822 051 30102	1k 5% 0,062W
3489	4822 051 30102	1k 5% 0,062W
3490	4822 051 30102	1k 5% 0,062W
3491	4822 051 30102	1k 5% 0,062W
3492	4822 051 30102	1k 5% 0,062W
3494	4822 051 30102	1k 5% 0,062W
3495	4822 051 30102	1k 5% 0,062W
3496	4822 051 30102	1k 5% 0,062W
3497	4822 051 30102	1k 5% 0,062W

ELECTRICAL PARTS LIST - FRONT BOARD

RESISTORS

3498	4822 051 30102	1k 5% 0,062W	3550	4822 051 30561	560R 5% 0,062W
3499	4822 050 21003	10k 1% 0,6W	3551	4822 051 30561	560R 5% 0,062W
3500	4822 051 30102	1k 5% 0,062W	3552	4822 051 30331	330R 5% 0,062W
3501	4822 051 30102	1k 5% 0,062W	3553	4822 116 83876	270R 5% 0,5W
3502	4822 050 21003	10k 1% 0,6W	3554	4822 116 83876	270R 5% 0,5W
3503	4822 050 11002	1k 1% 0,4W	3555	4822 116 83876	270R 5% 0,5W
3504	4822 051 30102	1k 5% 0,062W	3556	4822 116 83876	270R 5% 0,5W
3505	4822 050 21003	10k 1% 0,6W	3558	4822 051 30561	560R 5% 0,062W
3506	4822 051 30102	1k 5% 0,062W	3559	4822 051 30102	1k 5% 0,062W
3507	4822 051 30102	1k 5% 0,062W	3560	4822 051 30102	1k 5% 0,062W
3508	4822 051 30103	10k 5% 0,062W	3561	4822 050 11002	1k 1% 0,4W
3509	4822 050 11002	1k 1% 0,4W	3562	4822 051 30102	1k 5% 0,062W
3510	4822 050 21003	10k 1% 0,6W	3563	4822 050 11002	1k 1% 0,4W
3511	4822 051 30103	10k 5% 0,062W	3564	4822 051 30101	100R 5% 0,062W
3512	4822 051 30471	470R 5% 0,062W	3565	4822 051 30103	10k 5% 0,062W
3513	4822 051 30471	470R 5% 0,062W	3566	4822 050 11002	1k 1% 0,4W
3514	4822 051 30471	470R 5% 0,062W	3567	4822 051 30103	10k 5% 0,062W
3515	4822 051 30471	470R 5% 0,062W	3568	4822 051 30103	10k 5% 0,062W
3516	4822 051 30103	10k 5% 0,062W	3569	4822 051 30103	10k 5% 0,062W
3517	4822 117 11817	1k2 1% 1/16W	3570	4822 051 30103	10k 5% 0,062W
3518	4822 117 11817	1k2 1% 1/16W	3572	4822 051 30102	1k 5% 0,062W
3519	4822 051 30103	10k 5% 0,062W	3573	4822 051 30684	680k 5% 0,062W
3520	4822 051 30331	330R 5% 0,062W	3574	4822 051 30105	1M 5% 0,062W
3521	4822 051 30331	330R 5% 0,062W	3575	4822 051 30105	1M 5% 0,062W
3522	4822 051 30331	330R 5% 0,062W	3576	4822 051 30103	10k 5% 0,062W
3523	4822 051 30331	330R 5% 0,062W	3577	4822 051 30152	1k5 5% 0,062W
3524	4822 051 30331	330R 5% 0,062W	3578	4822 117 12891	220k 1% 0,062W
3525	4822 051 30331	330R 5% 0,062W	3579	4822 051 30222	2k2 5% 0,062W
3526	4822 051 30331	330R 5% 0,062W	3580	4822 050 21003	10k 1% 0,6W
3527	4822 051 30331	330R 5% 0,062W	3581	4822 051 30103	10k 5% 0,062W
3528	4822 051 30331	330R 5% 0,062W	3583	4822 051 30102	1k 5% 0,062W
3529	4822 116 52219	330R 5% 0,5W	3584	4822 051 30474	470k 5% 0,062W
3530	4822 051 30331	330R 5% 0,062W	3585	4822 051 30684	680k 5% 0,062W
3531	4822 051 30103	10k 5% 0,062W	3586	4822 051 30103	10k 5% 0,062W
3532	4822 051 30474	470k 5% 0,062W	3587	4822 051 30471	470R 5% 0,062W
3533	4822 051 30474	470k 5% 0,062W	3588	4822 051 30471	470R 5% 0,062W
3534	4822 051 30474	470k 5% 0,062W	3589	4822 117 11817	1k2 1% 1/16W
3535	4822 051 30103	10k 5% 0,062W	3590	4822 117 11817	1k2 1% 1/16W
3536	4822 117 13632	100k 1% 0,063 0,62W	3591	4822 051 30561	560R 5% 0,062W
3537	4822 051 30682	6k8 5% 0,062W	3592	4822 051 30561	560R 5% 0,062W
3538	4822 051 30102	1k 5% 0,062W	3593	4822 051 30561	560R 5% 0,062W
3539	4822 051 30682	6k8 5% 0,062W	3594	4822 051 30561	560R 5% 0,062W
3540	4822 051 30102	1k 5% 0,062W	3596	4822 051 30103	10k 5% 0,062W
3541	4822 051 30472	4k7 5% 0,062W	3597	4822 051 30103	10k 5% 0,062W
3542	4822 051 30472	4k7 5% 0,062W	3800	4822 116 52283	4k7 5% 0,5W
3543	4822 051 30474	470k 5% 0,062W	3801	4822 051 30682	6k8 5% 0,062W
3544	4822 050 21003	10k 1% 0,6W	3802	4822 051 30103	10k 5% 0,062W
3545	4822 051 30331	330R 5% 0,062W	3803	4822 051 30472	4k7 5% 0,062W
3546	4822 051 30271	270R 5% 0,062W	3804	4822 051 30272	2k7 5% 0,062W
3547	4822 051 30271	270R 5% 0,062W	3805	4822 051 30105	1M 5% 0,062W
3548	4822 051 30271	270R 5% 0,062W	3806	4822 051 30339	33R 5% 0,062W
3549	4822 051 30561	560R 5% 0,062W	3807	2120 366 90291	Potm Rotary 20K

ELECTRICAL PARTS LIST - FRONT BOARD

3808	4822 117 12968	820R 5% 0,62W	4462	4822 051 30008	OR Jumper 0603
3809	4822 051 30105	1M 5% 0,062W	4463	4822 051 30008	OR Jumper 0603
3810	4822 051 30331	330R 5% 0,062W	4464	4822 051 30008	OR Jumper 0603
3811	4822 117 13632	100k 1% 0,062W	4465	4822 051 30008	OR Jumper 0603
3812	4822 116 83883	470R 5% 0,5W	4466	4822 051 30008	OR Jumper 0603
4400	4822 051 30008	OR Jumper 0603	4467	4822 051 30008	OR Jumper 0603
4401	4822 051 30008	OR Jumper 0603	4468	4822 051 30008	OR Jumper 0603
4403	4822 051 30008	OR Jumper 0603	4469	4822 051 30008	OR Jumper 0603
4416	4822 051 30008	OR Jumper 0603	4470	4822 051 30008	OR Jumper 0603
4417	4822 051 30008	OR Jumper 0603	4471	4822 051 30008	OR Jumper 0603
4420	4822 051 30008	OR Jumper 0603	4472	4822 051 30008	OR Jumper 0603
4421	4822 051 30008	OR Jumper 0603	4473	4822 051 30008	OR Jumper 0603
4422	4822 051 30008	OR Jumper 0603	4474	4822 051 30008	OR Jumper 0603
4423	4822 051 30008	OR Jumper 0603	4475	4822 051 30008	OR Jumper 0603
4424	4822 051 30008	OR Jumper 0603	4476	4822 051 30008	OR Jumper 0603
4425	4822 051 30008	OR Jumper 0603	4477	4822 051 30008	OR Jumper 0603
4426	4822 051 30008	OR Jumper 0603	4478	4822 051 30008	OR Jumper 0603
4427	4822 051 30008	OR Jumper 0603	4479	4822 051 30008	OR Jumper 0603
4428	4822 051 30008	OR Jumper 0603	4480	4822 051 30008	OR Jumper 0603
4429	4822 051 30008	OR Jumper 0603	4481	4822 051 30008	OR Jumper 0603
4430	4822 051 30008	OR Jumper 0603	4482	4822 051 30008	OR Jumper 0603
4431	4822 051 30008	OR Jumper 0603	4483	4822 051 30008	OR Jumper 0603
4432	4822 051 30008	OR Jumper 0603	4484	4822 051 30008	OR Jumper 0603
4433	4822 051 30008	OR Jumper 0603	4485	4822 051 30008	OR Jumper 0603
4434	4822 051 30008	OR Jumper 0603	4486	4822 051 30008	OR Jumper 0603
4435	4822 051 30008	OR Jumper 0603	4487	4822 051 30008	OR Jumper 0603
4436	4822 051 30008	OR Jumper 0603	4488	4822 051 30008	OR Jumper 0603
4437	4822 051 30008	OR Jumper 0603	4489	4822 051 30008	OR Jumper 0603
4438	4822 051 30008	OR Jumper 0603	4490	4822 051 30008	OR Jumper 0603
4439	4822 051 30008	OR Jumper 0603	4492	4822 051 30008	OR Jumper 0603
4440	4822 051 30008	OR Jumper 0603	4494	4822 051 30008	OR Jumper 0603
4441	4822 051 30008	OR Jumper 0603	4495	4822 051 30008	OR Jumper 0603
4442	4822 051 30008	OR Jumper 0603	4496	4822 051 30008	OR Jumper 0603
4443	4822 051 30008	OR Jumper 0603	4498	4822 051 30008	OR Jumper 0603
4444	4822 051 30008	OR Jumper 0603	4499	4822 051 30008	OR Jumper 0603
4445	4822 051 30008	OR Jumper 0603	4500	4822 051 30008	OR Jumper 0603
4446	4822 051 30008	OR Jumper 0603	4502	4822 051 30008	OR Jumper 0603
4447	4822 051 30008	OR Jumper 0603	4503	4822 051 30008	OR Jumper 0603
4448	4822 051 30008	OR Jumper 0603	4504	4822 051 30008	OR Jumper 0603
4449	4822 051 30008	OR Jumper 0603	4505	4822 051 30008	OR Jumper 0603
4450	4822 051 30008	OR Jumper 0603	4506	4822 051 30008	OR Jumper 0603
4451	4822 051 30008	OR Jumper 0603	4507	4822 051 30008	OR Jumper 0603
4452	4822 051 30008	OR Jumper 0603	4508	4822 051 30008	OR Jumper 0603
4453	4822 051 30008	OR Jumper 0603	4509	4822 051 30008	OR Jumper 0603
4454	4822 051 30008	OR Jumper 0603	4510	4822 051 30008	OR Jumper 0603
4455	4822 051 30008	OR Jumper 0603	4511	4822 051 30008	OR Jumper 0603
4456	4822 051 30008	OR Jumper 0603	4512	4822 051 30008	OR Jumper 0603
4457	4822 051 30008	OR Jumper 0603	4513	4822 051 30008	OR Jumper 0603
4458	4822 051 30008	OR Jumper 0603	4514	4822 051 30008	OR Jumper 0603
4459	4822 051 30008	OR Jumper 0603	4515	4822 051 30008	OR Jumper 0603
4460	4822 051 30008	OR Jumper 0603	4516	4822 051 30008	OR Jumper 0603
4461	4822 051 30008	OR Jumper 0603	4517	4822 051 30008	OR Jumper 0603

ELECTRICAL PARTS LIST - FRONT BOARD**RESISTORS**

4518	4822 051 30008	OR Jumper 0603
4519	4822 051 30008	OR Jumper 0603
4520	4822 051 30008	OR Jumper 0603
4521	4822 051 30008	OR Jumper 0603
4523	4822 051 30008	OR Jumper 0603
4524	4822 051 30008	OR Jumper 0603
4525	4822 051 30008	OR Jumper 0603
4526	4822 051 30008	OR Jumper 0603
4527	4822 051 30008	OR Jumper 0603
4528	4822 051 30008	OR Jumper 0603
4529	4822 051 30008	OR Jumper 0603
4530	4822 051 30008	OR Jumper 0603
4531	4822 051 30008	OR Jumper 0603
4532	4822 051 30008	OR Jumper 0603
4533	4822 051 30008	OR Jumper 0603
4534	4822 051 30008	OR Jumper 0603
4535	4822 051 30008	OR Jumper 0603
4536	4822 051 30008	OR Jumper 0603
4537	4822 051 30008	OR Jumper 0603
4538	4822 051 30008	OR Jumper 0603
4539	4822 051 30008	OR Jumper 0603
4540	4822 051 30008	OR Jumper 0603
4541	4822 051 30008	OR Jumper 0603
4542	4822 051 30008	OR Jumper 0603
4801	4822 051 30008	OR Jumper 0603
4802	4822 051 30008	OR Jumper 0603
4803	4822 051 30008	OR Jumper 0603
4804	4822 051 30008	OR Jumper 0603
4805	4822 051 30008	OR Jumper 0603
4806	4822 051 30008	OR Jumper 0603
4807	4822 051 30008	OR Jumper 0603
4808	4822 051 30008	OR Jumper 0603
4809	4822 051 30008	OR Jumper 0603
4810	4822 051 30008	OR Jumper 0603
4811	4822 051 30008	OR Jumper 0603
4812	4822 051 30008	OR Jumper 0603
4813	4822 051 30008	OR Jumper 0603

COILS & FILTERS

5400	4822 157 62552	Coil 2,2μH 5%
5401	4822 157 62552	Coil 2,2μH 5%
5403	4822 157 62552	Coil 2,2μH 5%
5404	4822 157 62552	Coil 2,2μH 5%
5405	2422 543 01069	X'tal Resonator 32,768kHz
5406	4822 242 72066	Ceram Resonator 8MHz
5600	4822 157 62552	Coil 2,2μH 5%
5601	4822 157 62552	Coil 2,2μH 5%
5602	4822 157 62552	Coil 2,2μH 5%
5800	4822 157 11235	Coil 22μH 5%

DIODES

6400	4822 130 30621	1N4148
------	----------------	--------

6401	4822 130 31878	1N4003G
6402	4822 130 30621	1N4148
6403	4822 130 31878	1N4003G
6404	4822 130 31878	1N4003G
6405	4822 130 34173	BZX79-B5V6
6406	4822 130 30621	1N4148
6409	4822 130 30621	1N4148
6410	4822 130 30621	1N4148
6411	9322 167 73676	LTL-4221NLC-KA
6412	9322 161 99676	LTL-2R3VYKNT
6413	9322 161 99676	LTL-2R3VYKNT
6414	9322 172 75676	LTL-1CHKFK
6415	9322 172 75676	LTL-1CHKFK
6416	4822 130 30621	1N4148
6417	4822 130 30621	1N4148
6418	4822 130 30621	1N4148
6419	4822 130 30621	1N4148
6420	4822 130 30621	1N4148
6421	4822 130 30621	1N4148
6422	4822 130 30621	1N4148
6423	4822 130 30621	1N4148
6424	4822 130 30621	1N4148
6425	4822 130 30621	1N4148
6426	4822 130 30621	1N4148
6427	4822 130 11589	LTL-1CHAE
6428	4822 130 11589	LTL-1CHAE
6429	4822 130 11589	LTL-1CHAE
6430	4822 130 11589	LTL-1CHAE
6431	4822 130 11589	LTL-1CHAE
6432	4822 130 11589	LTL-1CHAE
6433	4822 130 10791	LTL-1CHGE
6434	4822 130 10791	LTL-1CHGE
6435	4822 130 10791	LTL-1CHGE
6436	4822 130 10791	LTL-1CHGE
6437	4822 130 10791	LTL-1CHGE
6438	4822 130 30621	1N4148
6439	4822 130 30621	1N4148
6440	4822 130 30621	1N4148
6441	4822 130 30621	1N4148
6447	4822 130 30621	1N4148
6448	4822 130 30621	1N4148

TRANSISTORS & INTEGRATED CIRCUITS

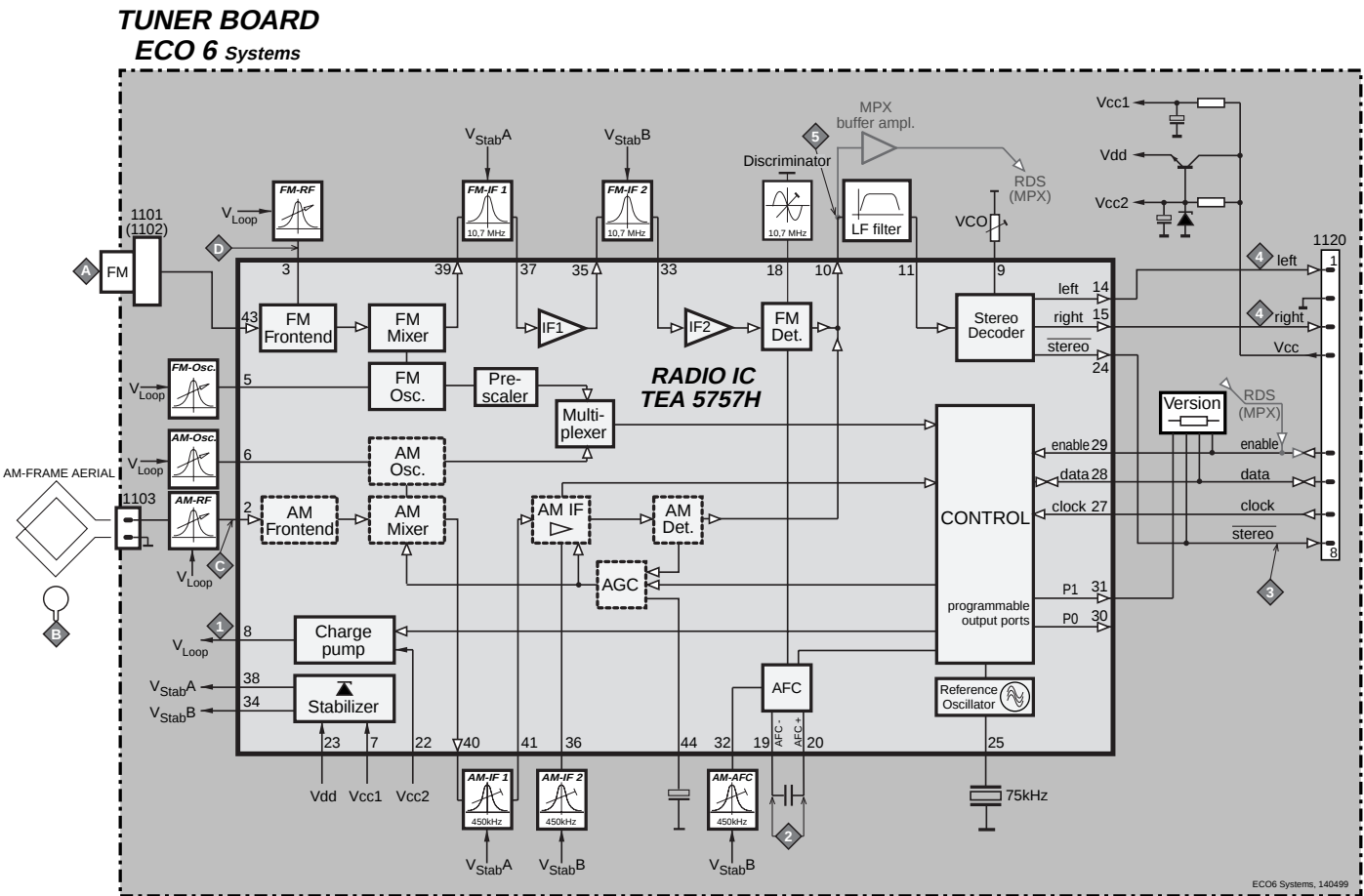
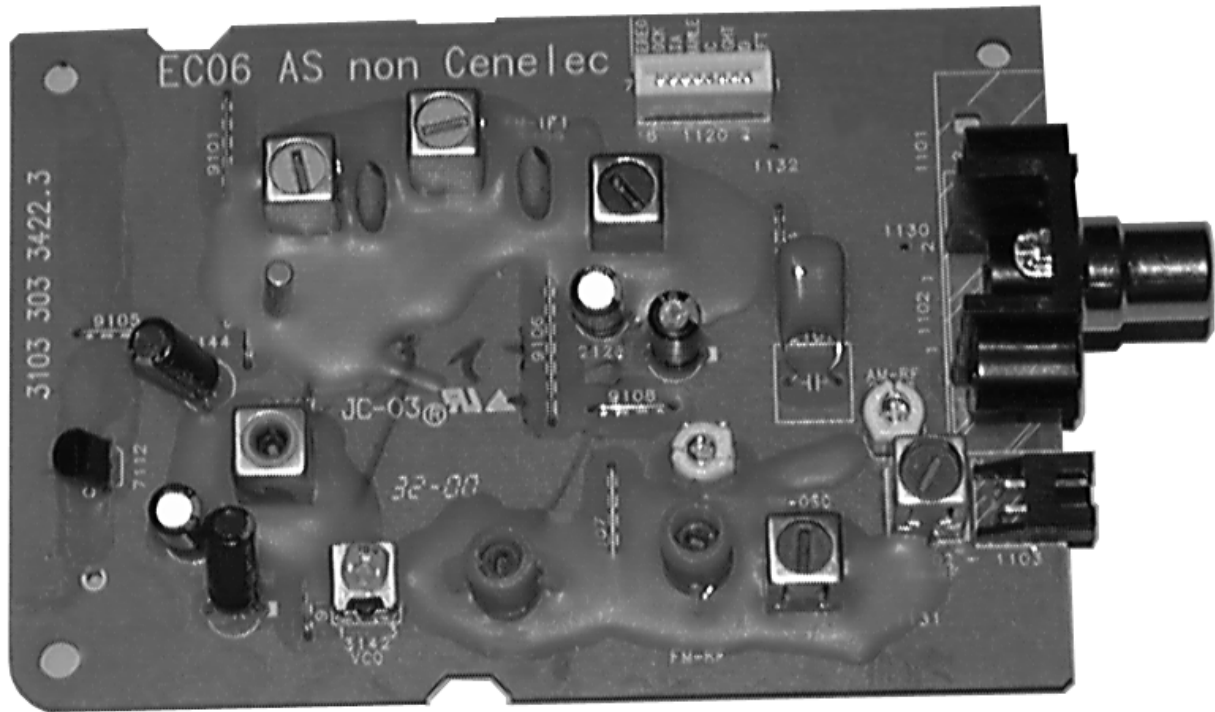
7401	9352 679 67118	SAA6579TV1/M4
7400	3139 110 52970	TMP87CS71F "C399S52971"
7402	9322 155 22667	IR Receiver TSOP2236ZC1
7403	9965 000 04931	M24C01-WMN6
7404	4822 209 15449	74HC4094D
7405	4822 209 15449	74HC4094D
7406	4822 130 60511	BC847B
7407	4822 130 60511	BC847B
7408	4822 130 60511	BC847B

ELECTRICAL PARTS LIST - FRONT BOARD

7410	4822 130 60511	BC847B
7411	4822 130 60373	BC857B
7413	4822 130 60511	BC847B
7414	4822 130 60511	BC847B
7415	4822 130 60511	BC847B
7416	4822 130 60373	BC857B
7417	4822 130 60373	BC857B
7418	4822 130 60373	BC857B
7800	4822 130 60511	BC847B
7801	4822 130 60511	BC847B

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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Blockdiagram7A-1

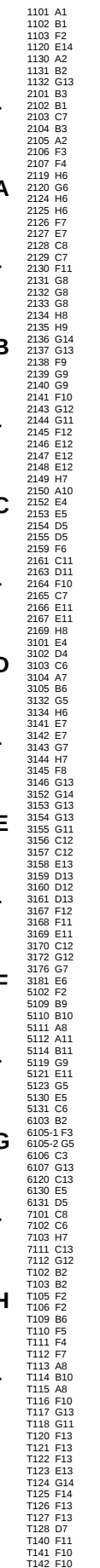
Schematic Diagram7A-2

Component Layout.....7A-3

Adjustment table7A-3

Electrical Partslist.....7A-4

VERSION PROGRAMMING COMPONENTS



ECO6 Sys-non Cenelec, 000911

Signal path

— FM

AM

- MPX (Audio F)
- AE left/right

⇒ AF = left/right

...V MW mode

 LW mode

voltages measured while
set is tuned to a strong transmitter

Signal path

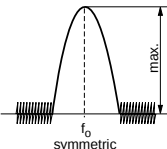
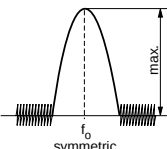
— FM

AM

- MPX (Audio F)
- AE left/right

⇒ AF = left/right

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

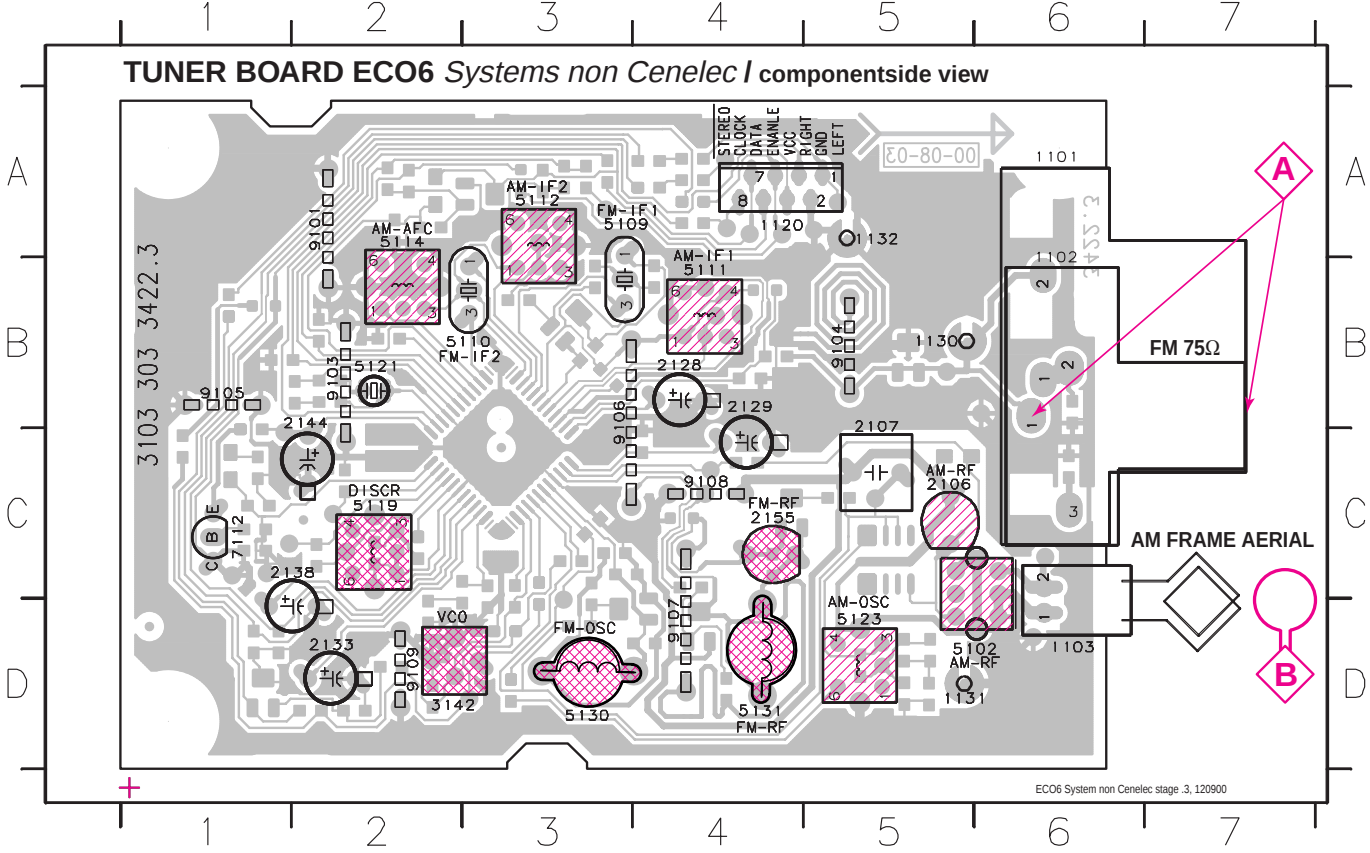
Waverange	Input frequency	Input	Tuned to	Adjust	Output	Scope/Voltmeter
VARICAP ALIGNMENT						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)			108MHz	5130	1	8V ±0.2V
			87.5MHz (65.81MHz)	check		4.3V ±0.5V (1.2V ±0.5V)
MW FM/AM-version, 10kHz grid 530 - 1700kHz			1700kHz	5123		8V ±0.2V
			530kHz	check		1.1V ±0.4V
FM/MW-version, 9kHz grid 531 - 1602kHz			1602kHz	5123		6.9V ±0.2V
			531kHz	check		1.1V ±0.4V
LW 153 - 279kHz			279kHz	5122		8V ±0.2V
			153kHz	check		1.1V ±0.4V
MW FM/MW/LW- version, 9kHz grid 531 - 1602kHz		1602kHz	5123	8V ±0.2V		
		531kHz	check	1.1V ±0.4V		
FM IF						
FM	10.7MHz, 45mV continuous wave	D	IC 7101 21 shortcircuit to block AFC 2141	5119	2	0 ± 3 mV DC
FM RF						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)	108MHz	A mod=1kHz Δf=±22.5kHz	108MHz	2155	4	MAX
	87.5MHz (65.81MHz)		87.5MHz (65.81MHz)	5131		
VCO						
FM	98MHz, 1mV continuous wave	A	98MHz	3142	3	152kHz ±1kHz ¹⁾
AM IF						
MW	450kHz connect pin 6 of IC 7101 (AM Osc.) with 3.3kΩ to Vcc	C Δf=±10kHz V _{RF} = 0.5mV (as low as possible)	IC 7101 36 220R 100nF	5111	5	
			IC 7101 40 220R 100nF see remark 2)	5112		
AM AFC MW		C continuous wave V _{RF} = 2mV		5114	2	0 ± 2 mV DC
AM RF ³⁾						
MW ⁴⁾ FM/MW/LW- and FM/MW-version (9kHz grid) 531 - 1602kHz	1494kHz	B  Δf = ±30kHz V _{RF} as low as possible	1494kHz	2106	5	
			558kHz	558kHz		
LW	198kHz		198kHz	5103		
MW FM/AM-version, 10kHz grid 530 - 1700kHz	1500kHz		1500kHz	2106		
	560kHz		560kHz	5102		

Use Service Testprogram. By selecting the TUNER TEST test frequencies will be stored as preset frequencies automatically.

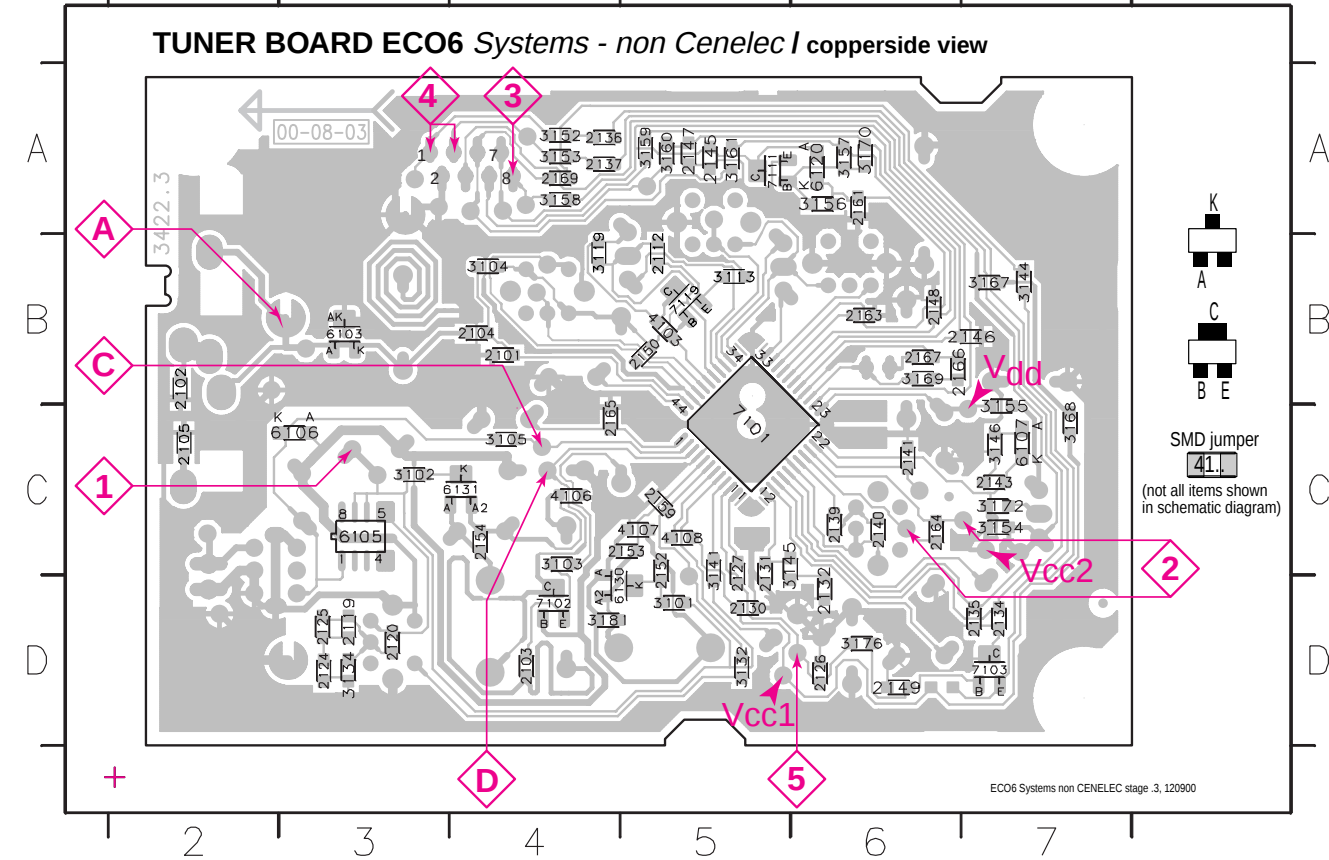
- 1) If sensitivity of frequency counter is too low adjust to max. channel separation
(input signal: stereo left 90% + 9%, adjust output on right channel to minimum)
- 2) RC network serves for damping the IF-filter while adjusting the other one.
- 3) For AM RF adjustments the original frame antenna has to be used !
- 4) MW has to be aligned before LW.

↑ Repeat

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 partslist.

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	not USA
2134	© 5322 122 32654	22nF	10%	63V	USA only

2135	© 4822 126 13188	15nF	5%	63V	not USA
2135	© 5322 122 32654	22nF	10%	63V	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	
2152	© 4822 126 12105	33nF	5%	63V	not for East Europe
2152	© 5322 116 80853	560pF	5%	63V	for East Europe only
2153	© 4822 126 13486	15pF	2%	63V	not for East Europe
2153	© 4822 122 33926	12pF	2%	50V	for East Europe only

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	RDS only

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	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	
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	RDS only

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	

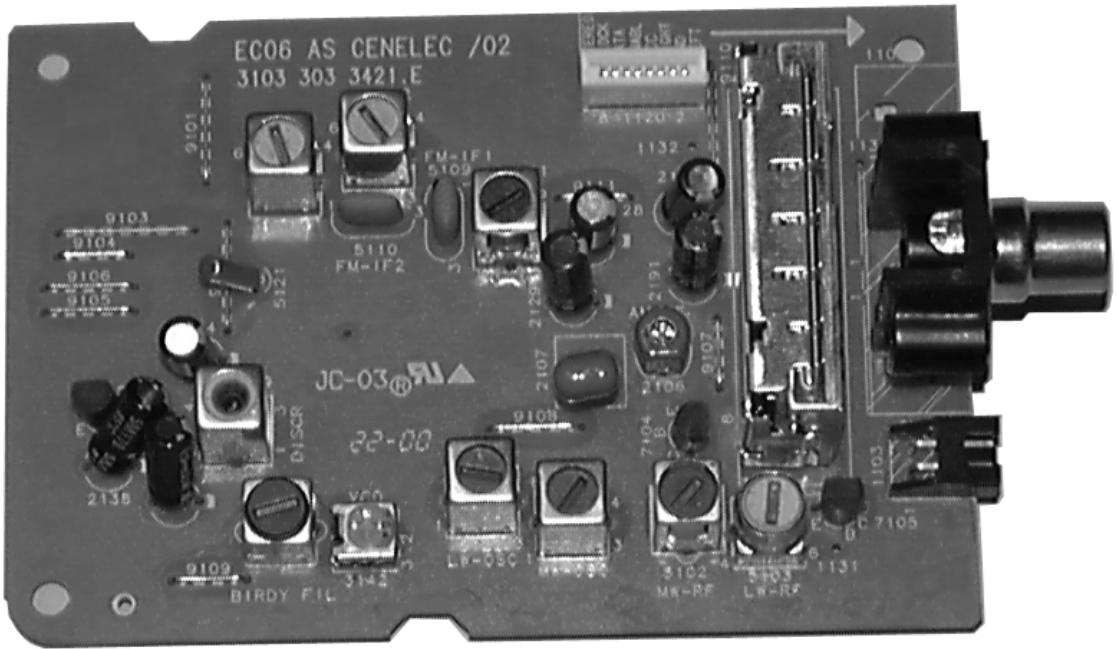
6130	© 4822 130 82833	1SV228	
6131	© 4822 130 82833	1SV228	

TRANSISTORS

7102	4822 130 42131	BF550	
7103	© 5322 130 42756	BC857C	RDS only
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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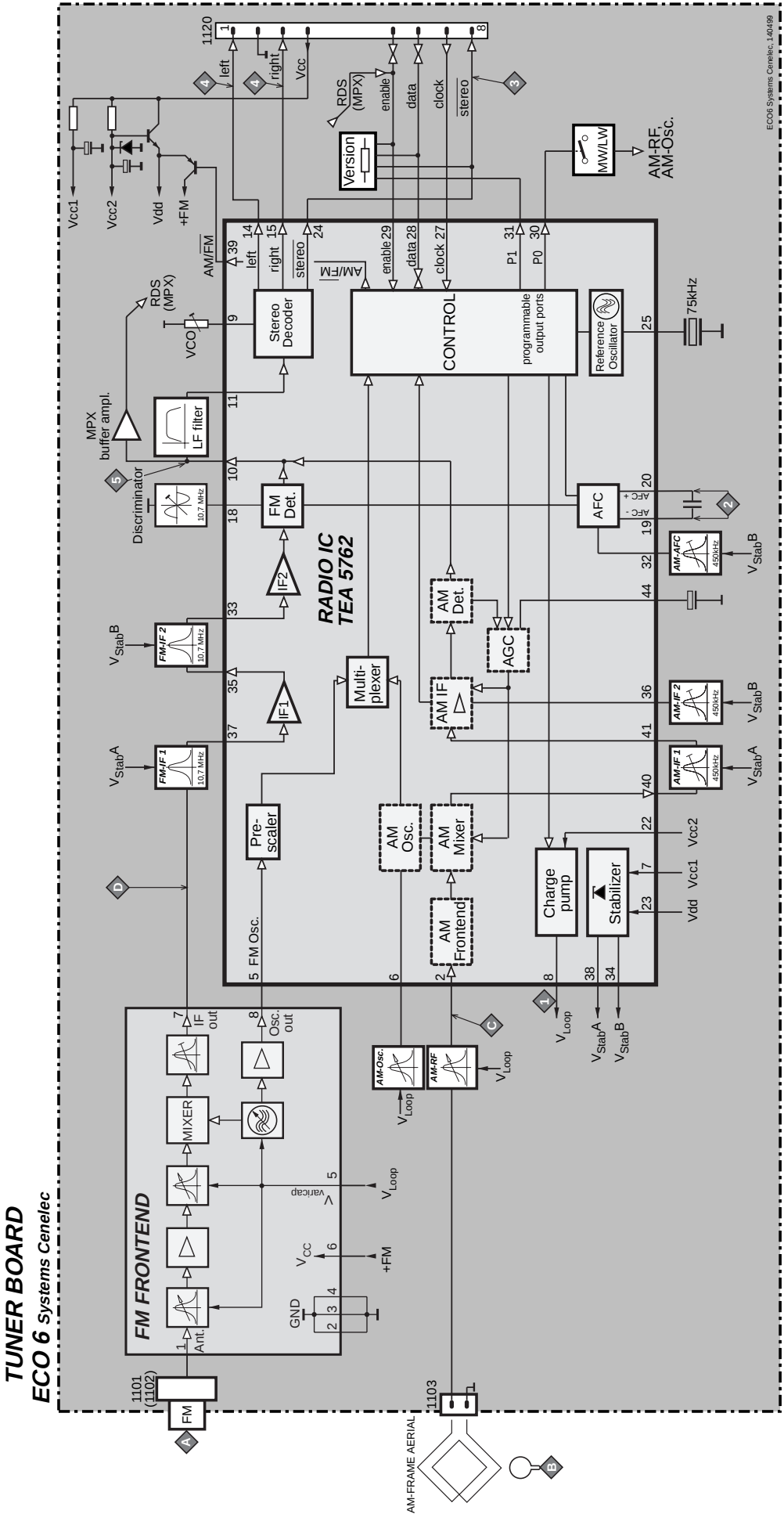
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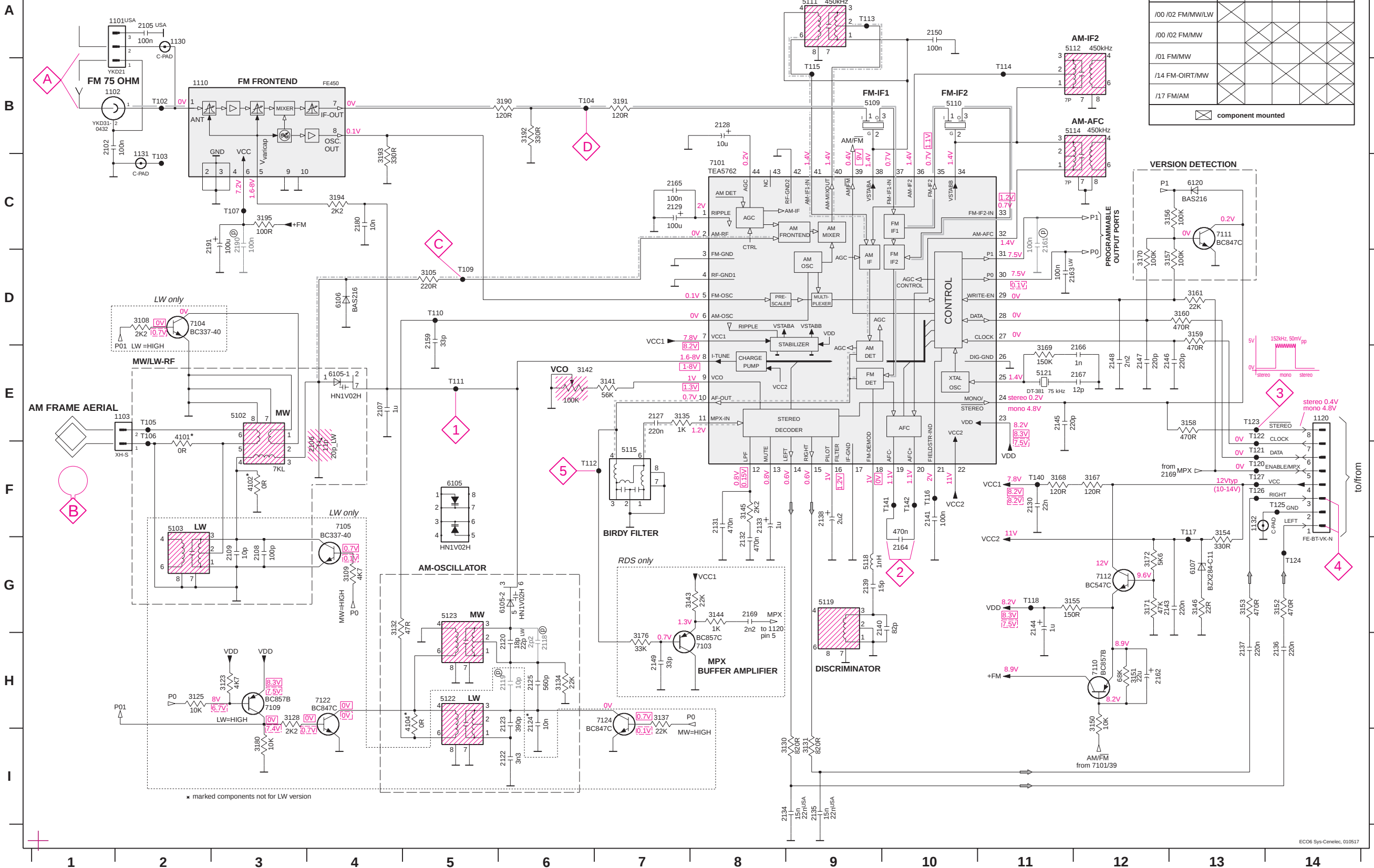
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BLOCK DIAGRAM

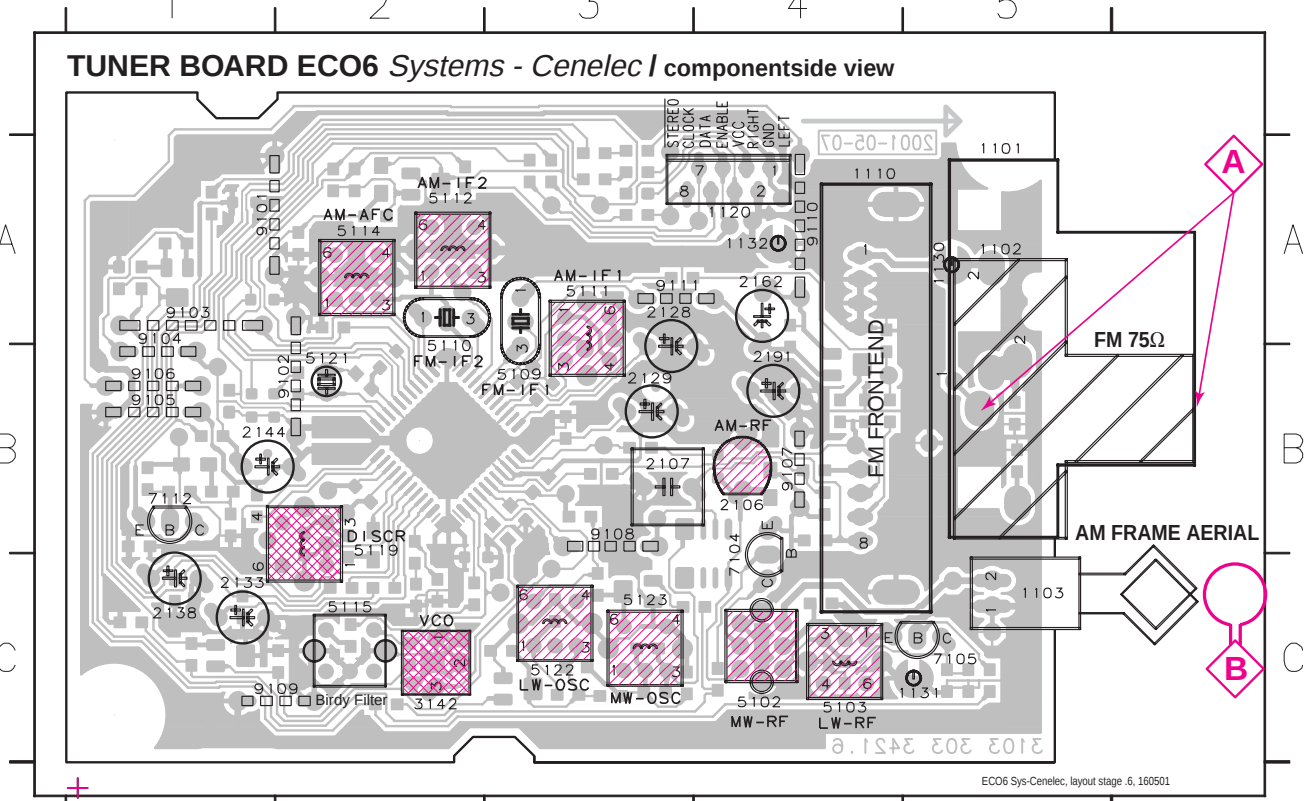


TUNER BOARD ECO6 / SYSTEMS-CENELEC

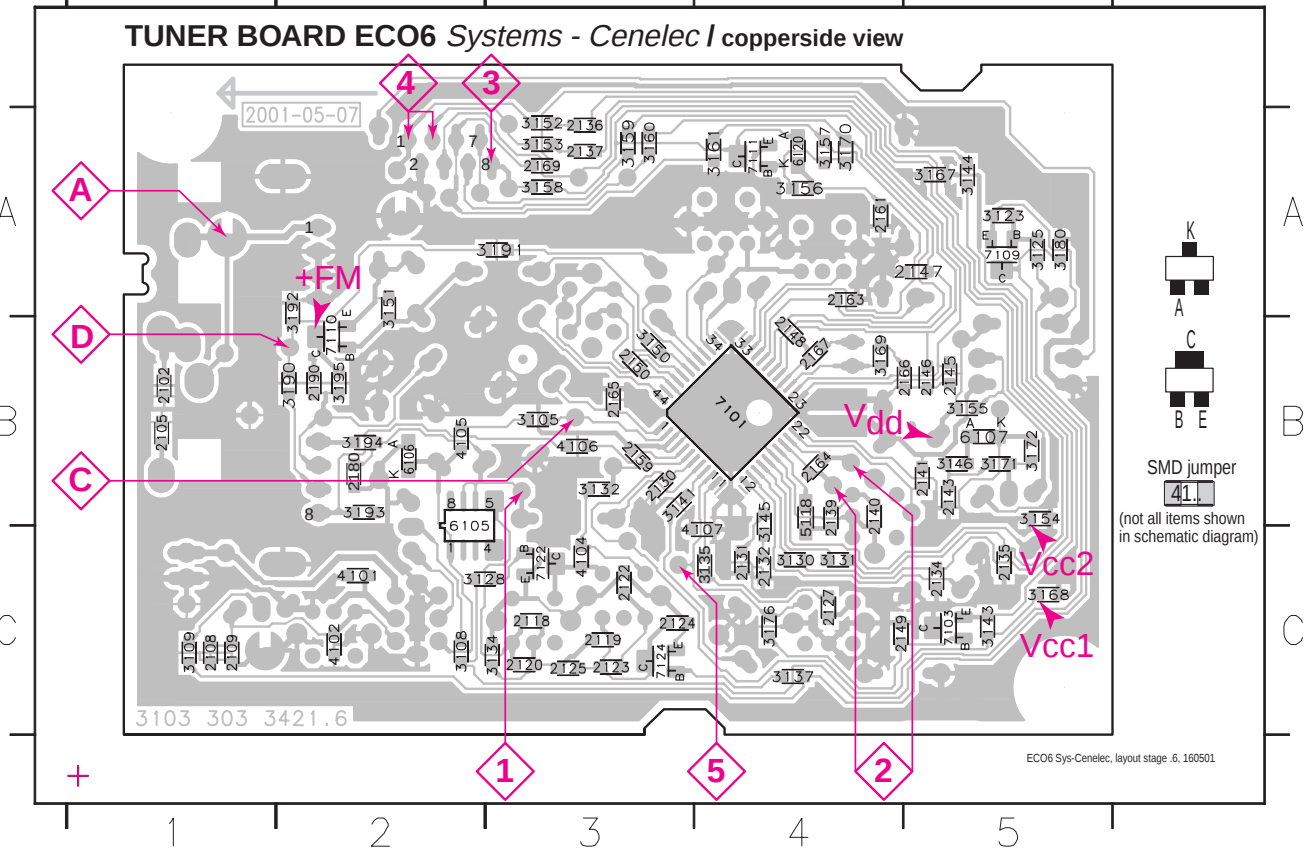


1101 A2 5121 E11
 1102 B1 5122 H5
 1103 E2 5123 G5
 1110 B2 6105-1 E4
 1120 E14 6105-2 G6
 1130 A2 6106 D4
 1131 C2 6107 G13
 1132 F13 6120 C13
 2102 B1 7101 C8
 2105 A2 7103 H8
 2106 E3 7104 D2
 2107 E4 7105 F4
 2108 G3 7109 H3
 2109 G3 7110 H12
 2118 H6 7111 C13
 2119 H6 7112 G12
 2120 H6 7122 H4
 2122 I6 7124 H7
 2123 H6 7102 B2
 2124 H6 7103 B2
 2125 H6 7104 B6
 2127 E7 7105 E2
 2128 B8 7106 E2
 2129 C7 7107 C3
 2130 F11 7109 D5
 2131 F8 7110 D5
 2132 F8 7111 E5
 2133 F8 7112 F7
 2134 I8 7113 A9
 2135 I9 7114 B11
 2136 H14 7116 F10
 2137 H13 7117 F13
 2138 F9 7118 G11
 2139 G9 7120 F13
 2140 G9 7121 F13
 2141 F10 7122 E13
 2143 G12 7123 E13
 2144 G11 7124 G14
 2145 E11 7125 F14
 2146 E12 7126 F13
 2147 E12 7127 F13
 2148 E12 7140 F11
 2149 H7 7141 F10
 2150 A10 7142 F10
 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 E6
 3143 G7
 3144 H8
 3145 F8
 3146 G13
 3150 H12
 3151 H12
 3152 G14
 3153 G13
 3154 F13
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 3156 C12
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 3180 I3
 3190 B6
 3191 B7
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 3193 B4
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 4101 E2
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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

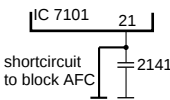
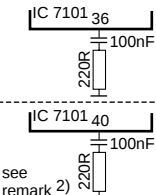
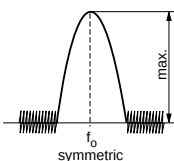
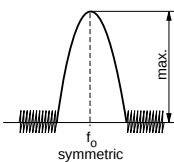


2102 B1 2120 C3 2130 B3 2137 A3 2146 B5 2161 A4 2169 A3 3123 A5 3134 C3 3145 C4 3154 B5 3160 A3 3171 B5 3192 A2 4104 C3 6106 B2 7110 B2
2105 B1 2122 C3 2131 C4 2139 B4 2147 A5 2163 A4 2180 B2 3125 A5 3135 C4 3146 B5 3155 B5 3161 A4 3172 B5 3193 B2 4105 B2 6107 B5 7111 A4
2108 C1 2123 C3 2132 C4 2140 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
VARICAP ALIGNMENT						
FM 87.5 - 108MHz (50kHz grid)			108MHz	check		8V ±1.2V
			87.5MHz	check		1.6V ±0.5V
MW 531 - 1602kHz (9kHz grid)			1602kHz	5123		8V ±0.2V 3-band 6.9V ±0.2V 2-band
			531kHz	check		1.1V ±0.4V
LW 153 - 279kHz (3kHz grid)			279kHz	5122		8V ±0.2V
			153kHz	check		1.1V ±0.4V
FM - IF						
FM	10.7MHz, 45mV continuous wave			5119		0mV ±3mV
FM - VCO						
FM	98MHz, 1mV continuous wave		98MHz	3142		152kHz ±1kHz ¹⁾
FM RF (channel separation) Note: The FM-frontend unit has already been adjusted by the factory and needs therefore no further adjustments for service purposes.						
FM	98MHz, 1mV 90% Left + 9% pilot mod=1kHz		98MHz	IF coil inside FM frontend 1110		right channel min.
AM IF						
MW	450kHz connect pin 6 of IC 7101 (AM Osc.) with 3.3kΩ to Vcc	 $\Delta f = \pm 10\text{kHz}$ $V_{RF} = 0.5\text{mV}$ (as low as possible)	 see remark 2)	5111 5112		
AM AFC MW		 continuous wave $V_{RF} = 2\text{mV}$		5114		
AM RF ³⁾						
MW	1494kHz	  $\Delta f = \pm 30\text{kHz}$ V_{RF} as low as possible	1494kHz	2106		
			558kHz	558kHz		
LW	198kHz		198kHz	5103		

Use Service Testprogram. By selecting the TUNER TEST test frequencies will be stored as preset frequencies automatically.

- ¹⁾ If sensitivity of frequency counter is too low adjust to max. channel separation
(input signal: stereo left 90% + 9%, adjust output on right channel to minimum)
²⁾ RC network serves for damping the IF-filter while adjusting the other one.
³⁾ For AM RF adjustments the original frame antenna has to be used!
MW has to be aligned before LW.

↑ Repeat

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	TEA5762HV/V1, RADIO IC			
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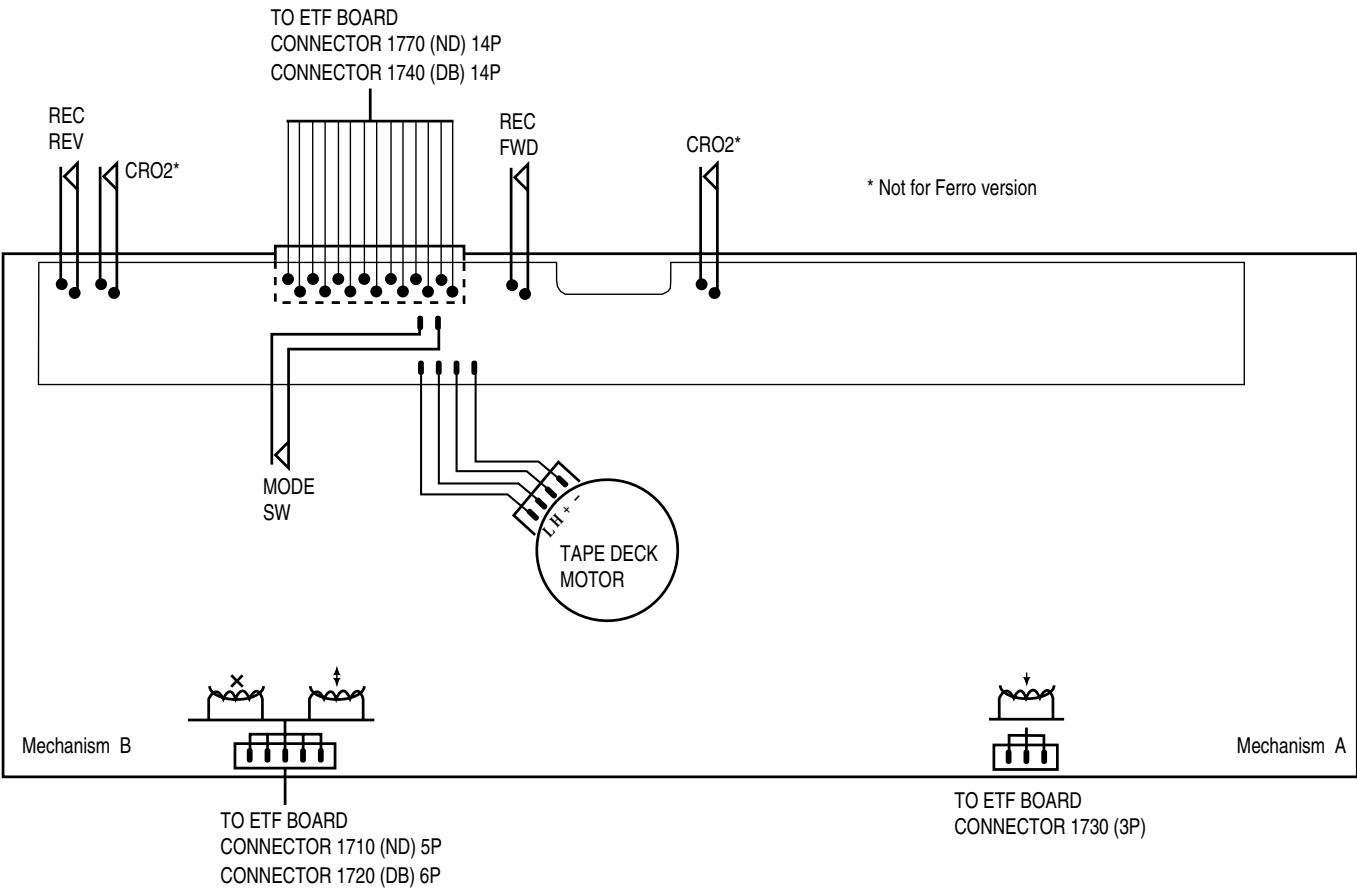
ETF7 TAPE MODULE

(Non-Dolby Version)

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Tapedeck wiring (Double deck)

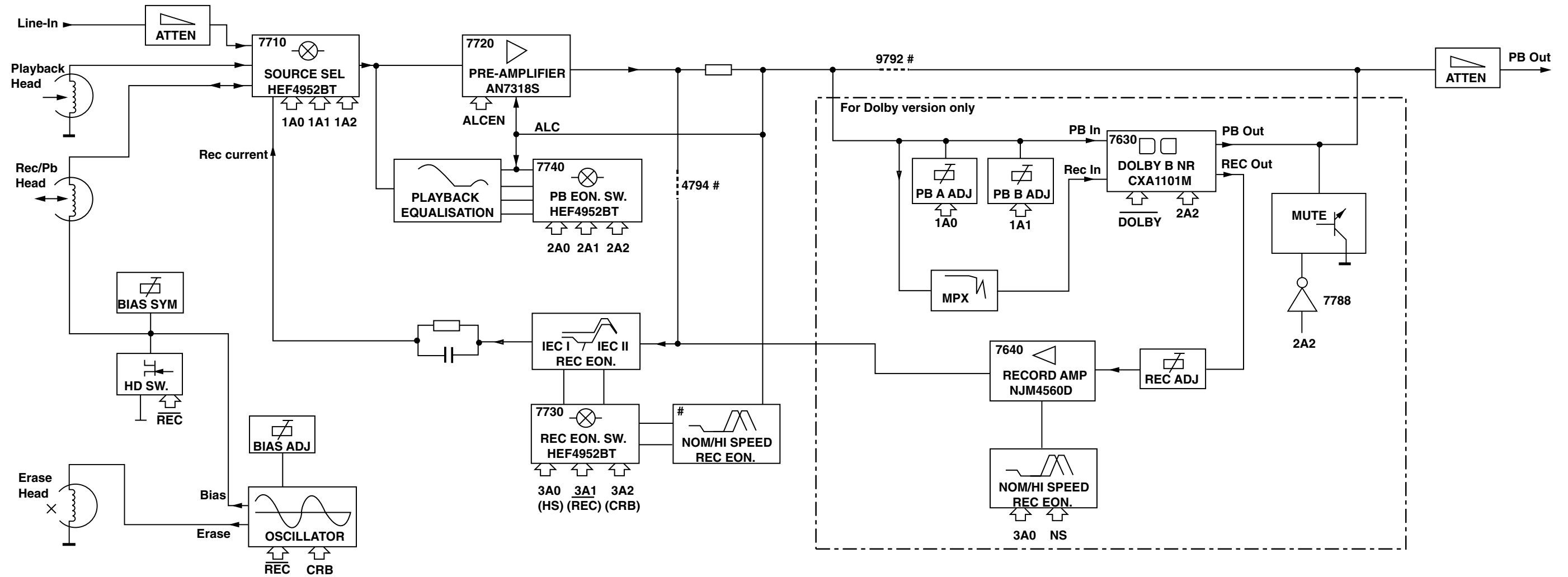


Variations table for Analog Circuit

	Autoreverse ND/DD/FR	Non-autoreverse ND/DD/FF	
	Chrome/Ferro	Chrome/Ferro	Ferro
2624	-	-	100nF
2701 , 2702	150pF	270pF	270pF
2703 , 2704	100pF	220pF	220pF
2717 , 2718	10nF	15nF	15nF
2721 , 2722	6,8nF	6,8nF	-
2727 , 2728	470pF	1nF	1nF
3616	10k	1k	1k
3618	6k8	-	-
3620	10k trimmer	-	-
3622	-	10k trimmer	10k trimmer
3672	4k7	-	-
3676	47k	-	-
3687	220R	220R	-
3688	680R	-	-
3723 , 3724	15k	18k	18k
3725 , 3726	10R	10R	-
3727 , 3728	5k6	6k8	6k8
3729 , 3730	3k3	4k7	4k7
3743 , 3744	1k5	2k2	2k2
3745 , 3746	3k3	5k6	5k6
3754 , 3755	1M	47R	47R

	Autoreverse ND/DD/FR	Non-autoreverse ND/DD/FF	
	Chrome/Ferro	Chrome/Ferro	Ferro
3769	12k	8k2	8k2
3772	6k8	5k6	5k6
4785	-	-	0R jumper
3774	15k	8k2	8k2
6614	1N4148	-	-
7616	BC857B	-	-
7622	BC847B	-	-

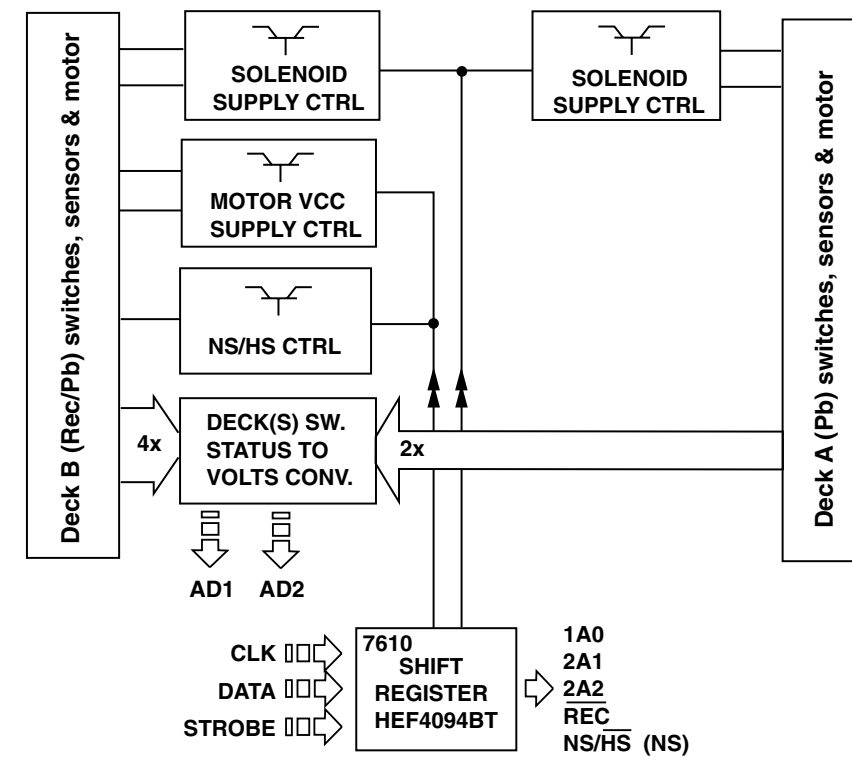
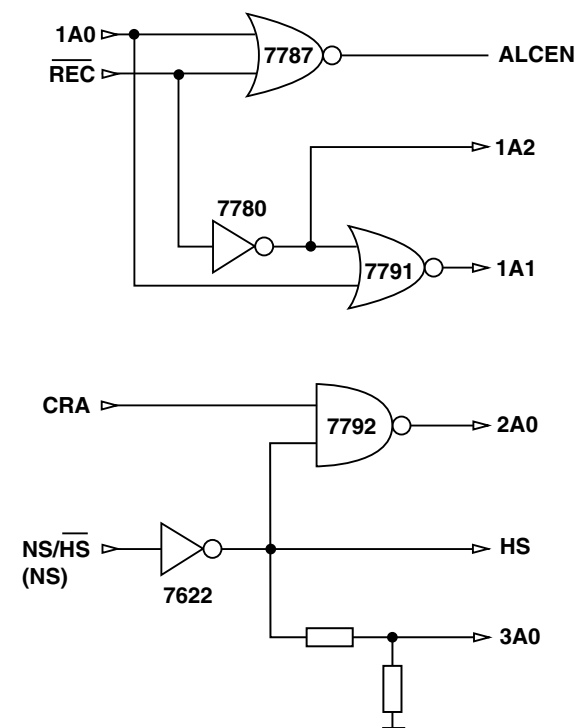
BLOCK DIAGRAM



NOTE: # For Non-dolby version only
Only 1 channel is presented.

MicroProcessor Control / Communication lines

Direct / Indirect Control lines from Shift Registers



Brief introduction

General

1. Playback Mode
Signal from the playback head Deck A or Deck B is selected and fed through by the Mode Selector IC7710 (HEF4952BT). The signal is amplified by amplifier IC7720 (AN7323S) before feeding to the IC7740 (HEF4952BT) and out to the AF Board via connector 1701.
2. Recording Mode
Recording Signal is selected and fed through by the Mode Selector IC7710 (HEF4952BT) which is then amplified by the amplifier IC7720 (AN7323S). The amplified output signal will pass through IC7730 (HEF4952BT) for record equalization and back to IC7710 (HEF4952BT) before registered into the Rec/PB Head of Deck B.
3. Dubbing Mode
In Dubbing mode, signal from the playback head Deck A is selected and fed through by the Mode Selector IC7710 (HEF4952BT) which is then equalised for playback mode by the amplifier IC7720 (AN7323S) so that a flat response is obtained after the pre-amp. The equalised signal will then follow the same path as in the Recording mode.
4. Mode Selector
The Mode Selector IC7710 (HEF4952BT) caters for 4 inputs signal, namely Playback Signal from Deck A, Playback Signal from Deck B, Recording Signal and Dubbing Signal.
5. Amplifier PB/REC
Amplifier IC7720 (AN7323S) is for the purpose of amplifying the Playback and Recording signal from the Mode Selector.
6. Automatic Level Control (ALC)
ALC circuit consists of resistors (3760, 3765, 3766, 3767), capacitors (2762 , 2763) and control by transistor 7787 (BC847B). ALC limits the amplifier output to a constant value when input signal becomes too large, thus limiting recording current to below saturation level, to prevent recording distortion.
7. Muting Circuit (For Non-Dolby version only)
Switch S4 of the IC7740 (HEF4952BT) is for the purpose of muting the output during Recording mode. During Recording mode, S4 is closed and shorted to the ground.
8. IC7740 (HEF4952BT)
The function of the IC7740 (HEF4952BT) is to change time constant between 120us Ferro (IEC I) and 70us Chrome (IEC II) during playback mode. It will automatically determined whether the tape type is 120us Ferro (IEC I) or 70us Chrome (IEC II). This IC will switch to Flat Gain during the Recording mode.
9. IC7730 (HEF4952BT)
The function of the IC7730 (HEF4952BT) is to change gain and time constant according to tape type and recording speed to boost recording current at higher frequency during recording to compensate for head loss. It will automatically determined whether the tape type is 120us Ferro (IEC I) or 70us Chrome (IEC II).
10. Bias Level
Bias Level making use of the Variable resistor (3773) for adjusting the optimal level of the bias current for Ferro or Chrome.
11. Bias Symm (For Dolby B NR version only)
Bias Symm making use of the Variable resistor (3785) to adjust the bias current for the left and the right channel to be equal.
12. PB Switch
Playback Switch which consists of the FETs 7785 (For Dolby B NR version only) & 7786 (J111) is for the purpose of providing a virtual ground for the Rec/PB Head (Deck B) during Playback mode. During the Playback mode, the FETs are turn on and shorted pin 2 and 4 of connector 1720 to the ground. During Recording mode, the FETs are turn off to allow the oscillator signal to be superposition onto the Recording signal for recording.

13. Motor Speed (For FR versions only)
During High speed dubbing, a feedback signal from the uP through pin 03 of the IC7610 (HEF4094BT) will trigger the transistors 7622 (BC847B) and 7616 (BC857B) to cause a change in the voltage level between High and Low, thus changing the speed of the motor.
14. IC7610 (HEF4094BT)
IC7610 (HEF4094BT) is a Shift Register use for issues the logic for cmos switch ICs (HEF4952BT) via 1A0, 2A1 and 2A2. It also issues logic to On/Off SOL_A, SOL_B and MOT. Recording speed is controlled via NS/HS.

Dolby Circuit (For sets with Dolby B NR version only)

15. IC7630 (CXA1551M)
IC7630 (CXA1551M) in the Dolby circuit is a Dolby Noise Reduction Type B IC for the Playback and Recording signal. Noise Reduction ON/OFF are controlled by DOLBY, which is from CLK, direct from uP. After clocking in DATA, CLK is set to HIGH/ LOW for NR OFF/ON.
16. 19kHz Filter
The 19kHz filters 5631 & 5632 (LXD-210) in the Dolby circuit is for the purpose of filtering the 19kHz Pilot Tone (for Tuner signal only) of the Recording signal.
17. Level Adjust
The Variable resistor 3635, 3636,3641 and 3642 in the Dolby circuit is for adjusting the playback level of the Dolby reference (400Hz , 200nWb/m). Transistor 7631, 7632 are ON to enable adjustment of 3641, 3642 during Playback Deck A. Transistor 7633, 7634 and 3635, 3636 are active for Playback Deck B.
18. Amplifier IC7640 (NJM4560M)
The Amplifiers 7640A & 7640B (NJM4560M) in the Dolby circuit is for the purpose of amplified the Recording signal.
19. Muting Circuit
The muting circuit which consists of transistors 7788, 7789 and 7790 (BC847B) is for the purpose of muting the output during Recording mode.

NOTATIONS & ABBREVIATIONS USED IN THIS DOCUMENT

CR	Chrome (IEC type II)
DB	Dolby NR type B
DD	Double Deck
DM	Double Motor
FE	Ferro (IEC type I)
FF	Non-Autoreverse
FR	Autoreverse Deck B
Gnd x	Ground x
HSD	High speed dubbing
ND	Non Dolby
NR	Noise Reduction
NSD	Normal speed dubbing
PB	Playback
REC	Record
S/A	Sub-assy
SD	Single Deck
SM	Single Motor

CONNECTORS ASSIGNMENTS:CONNECTOR 1701INTERCONNECTION TO AF BOARD

○ 1	REC-L	Record input left
○ 2	REC-R	Record input right
○ 3	GND A	AF Ground
○ 4	TAPE-L	Playback output left
○ 5	+12V	D.C. supply (+12V) for AF electronics
○ 6	TAPE-R	Playback output right
○ 7	-CMOS	Negative d.c. supply (-9V) for CMOS ICs

CONNECTOR 1703INTERCONNECTION TO AF BOARD

○ 1	GND M	Motor Ground
○ 2	+MOTOR	D.C. supply (+12V) for tape deck motor & solenoid

CONNECTOR 1706INTERCONNECTION TO FRONT BOARD

○ 1	AD2	Deck sensing switches output voltage / Deck A EOT
○ 2	AD1	Deck sensing switches output voltage / Deck B EOT
○ 3	+5V	DC supply +5V for ADC network
○ 4	GND P	Control & Oscillator Ground
○ 5	CLK	HEF4094BT shift register Clock line
○ 6	DATA	HEF4094BT shift register Data line
○ 7	STROBE	HEF4094BT shift register Strobe line

CONNECTOR 1710DECK B HEADS CONNECTOR (For Non-Dolby version only)

○ 1	B R/P HD L+	R/P Head left channel positive
○ 2	GND A	R/P Head return ground
○ 3	B R/P HD R+	R/P Head right channel positive
○ 4	ERASE HEAD	Erase Head
○ 5	GND A	Erase Head ground

CONNECTOR 1720DECK B HEADS CONNECTOR (For Dolby B NR version only)

○ 1	B R/P HD L+	R/P Head left channel positive
○ 2	B R/P HD L-	R/P Head left channel negative
○ 3	B R/P HD R+	R/P Head right channel positive
○ 4	B R/P HD R-	R/P Head right channel negative
○ 5	ERASE HEAD	Erase Head
○ 6	GND A	Erase Head ground

CONNECTOR 1730DECK A HEAD CONNECTIONS (For Double Deck versions only)

○ 1	A PB HD L+	Pb Head left channel positive
○ 2	GND A	Pb Head return ground shield
○ 3	A PB HD R+	Pb Head right channel positive

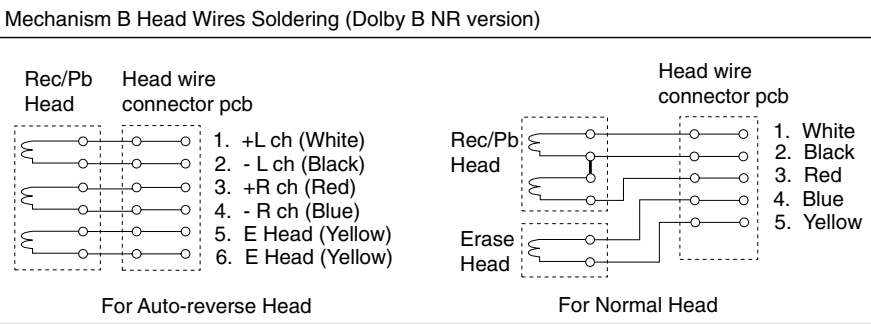
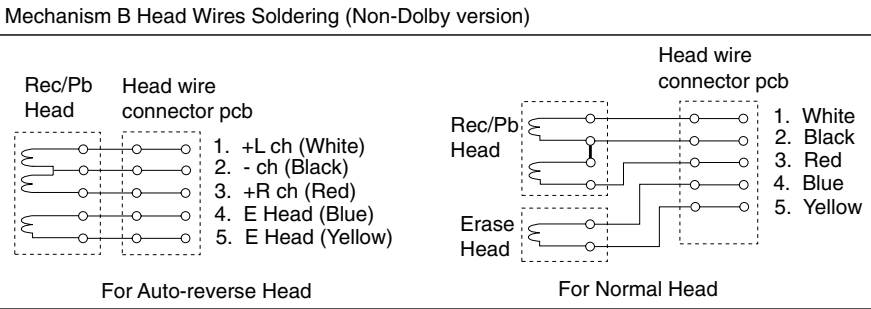
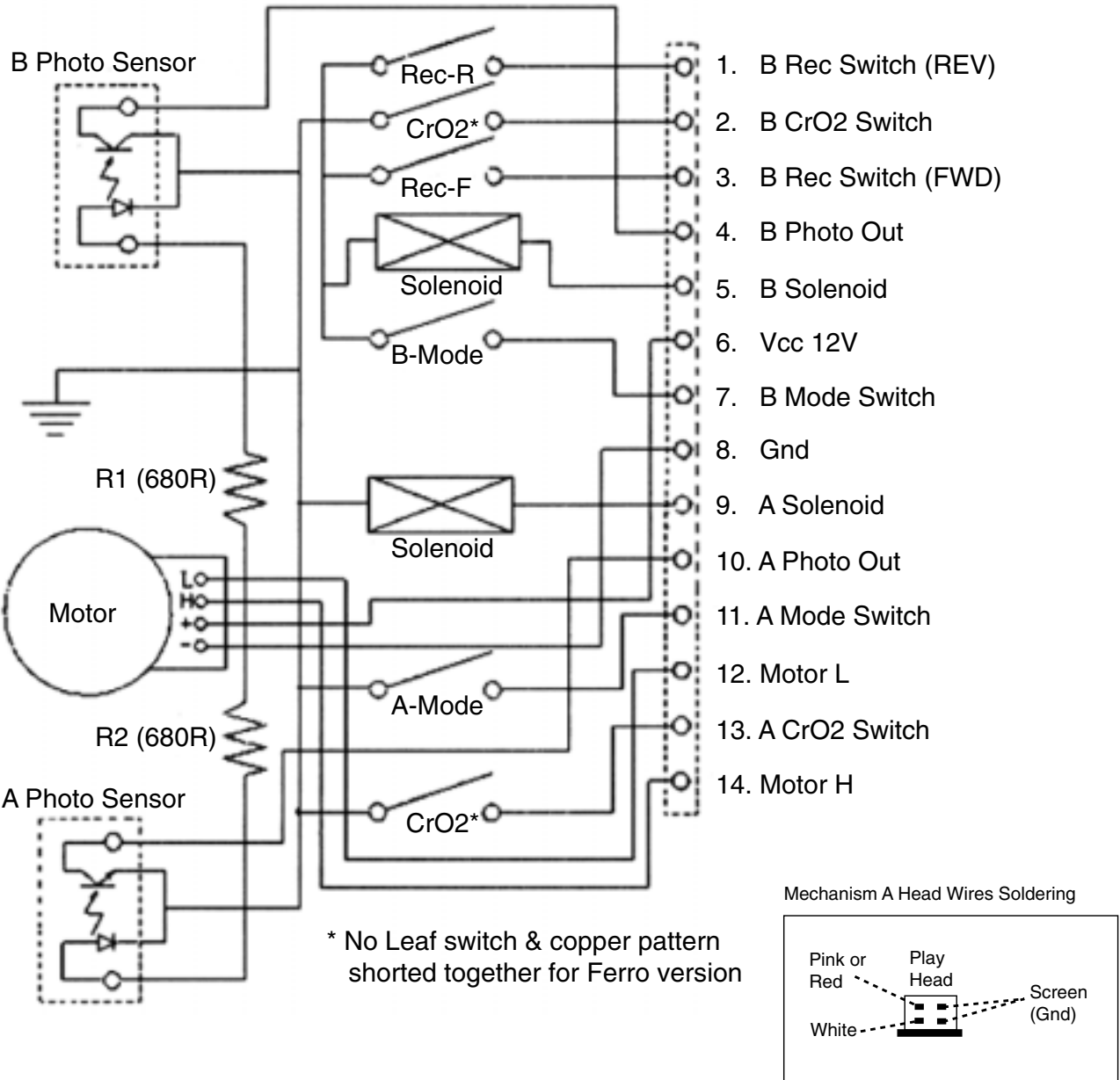
CONNECTOR 1740DECK A & B CONTROL INTERFACE (For Dolby B NR version only)

○ 1	REC REW	Record tab protection status switch (reverse)	[open=on: close=off]
○ 2	CrO2 B	Chrome tape detection switch deck B	[open=Cr: close=Fe]
○ 3	REC FWD	Record tab protection status switch (forward)	[open=on: close=off]
○ 4	PHOTO B	Photo sensor output (tape movement indication)	
○ 5	SOL B	Solenoid supply for deck B	
○ 6	Vcc	Deck / Motor supply	
○ 7	MODE B	Mode switch (head engagement)	[open=off: close=engaged]
○ 8	GND M	Deck / Motor ground	
○ 9	SOL A	Solenoid supply for deck A	
○ 10	PHOTO A	Photo sensor output (tape movement indication)	
○ 11	MODE A	Mode switch (head engagement)	[open=off: close=engaged]
○ 12	L	L pin for motor	
○ 13	CrO2 A	Chrome tape detection switch deck A	[open=Cr: close=Fe]
○ 14	H	H pin for motor	

CONNECTOR 1770DECK A & B CONTROL INTERFACE (For Non-Dolby version only)

○ 1	REC REW	Record tab protection status switch (reverse)	[open=on: close=off]
○ 2	CrO2 B	Chrome tape detection switch deck B	[open=Cr: close=Fe]
○ 3	REC FWD	Record tab protection status switch (forward)	[open=on: close=off]
○ 4	PHOTO B	Photo sensor output (tape movement indication)	
○ 5	SOL B	Solenoid supply for deck B	
○ 6	Vcc	Deck / Motor supply	
○ 7	MODE B	Mode switch (head engagement)	[open=off: close=engaged]
○ 8	GND M	Deck / Motor ground	
○ 9	SOL A	Solenoid supply for deck A	
○ 10	PHOTO A	Photo sensor output (tape movement indication)	
○ 11	MODE A	Mode switch (head engagement)	[open=off: close=engaged]
○ 12	L	L pin for motor	
○ 13	CrO2 A	Chrome tape detection switch deck A	[open=Cr: close=Fe]
○ 14	H	H pin for motor	

TAPE MECHANISM ELECTRONICS

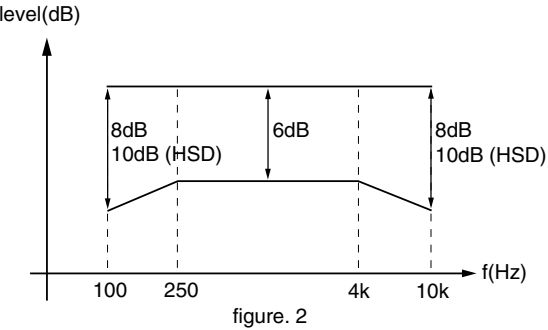
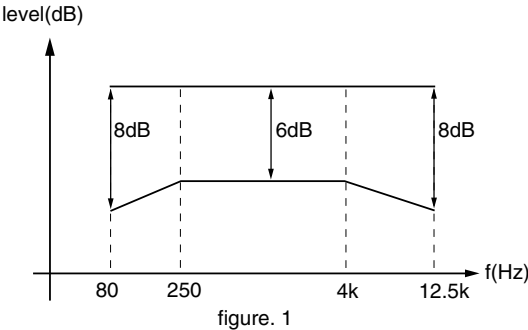


TAPE ADJUSTMENT & CHECK TABLE

	TEST CASSETTE	RECORDER MODE	MEASURE ON	READ ON	ADJUST	
					with	to
ADJUST MOTOR SPEED						
NORMAL SPEED	SBC420 3150Hz	PLAY B	1 or 2 LEFT RIGHT	frequency counter	3620	3150Hz +/- 0.5%
		PLAY A		check	3150Hz -0.8/+1.8%	
CHECK WOW & FLUTTER						
DECK A & B	SBC420 3150Hz	PLAY	1 or 2 LEFT RIGHT	W&F-meter	check	<0.4 % DIN
ADJUST AZIMUTH						
DECK A & B	SBC420 10kHz	PLAY FWD	1 or 2 LEFT RIGHT	mV-meter	left hand screw	max. output level & left=right
		PLAY REV #			right hand screw	
CHECK PLAYBACK FREQUENCY RESPONSE						
DECK A & B	SBC420	PLAY	1 or 2 LEFT RIGHT	mV-meter	check	limits see fig.1
ADJUST BIAS CURRENT						
DECK B	SBC419A^	RECORD	5 or 6 LEFT RIGHT	mV-meter	3773	995mV
	SBC420				check	750mV +/- 1.5dB
CHECK OVERALL FREQUENCY RESPONSE AND DISTORTION						
Inject 3mV signals 100Hz, 250Hz, 1kHz, 10kHz, 12.5kHz via 3 or 4	SBC419A^ or SBC420	RECORD B				
	RECORDED CASSETTE	PLAY B	1 or 2 LEFT RIGHT	mV-meter	check	limits see fig. 2 *
Inject 1kHz 8.85mV via 3 or 4	SBC419A^ or SBC420	RECORD B				
	RECORDED CASSETTE	PLAY B	1 or 2 LEFT RIGHT	THD-meter	check	<3% *

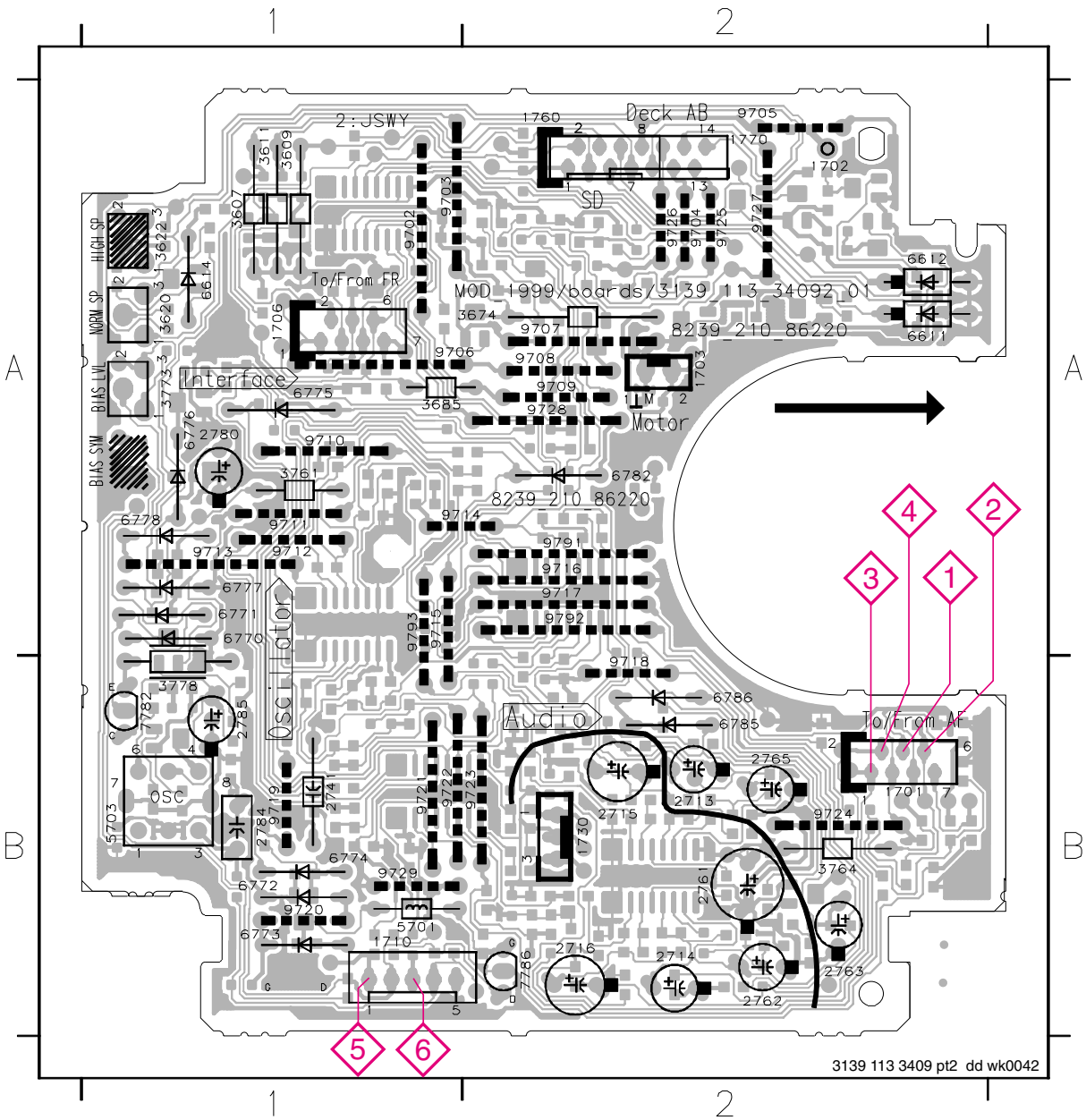
SBC419A^ : 4822 397 30069
SBC420 : 4822 397 30071

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



COMPONENT LAYOUT

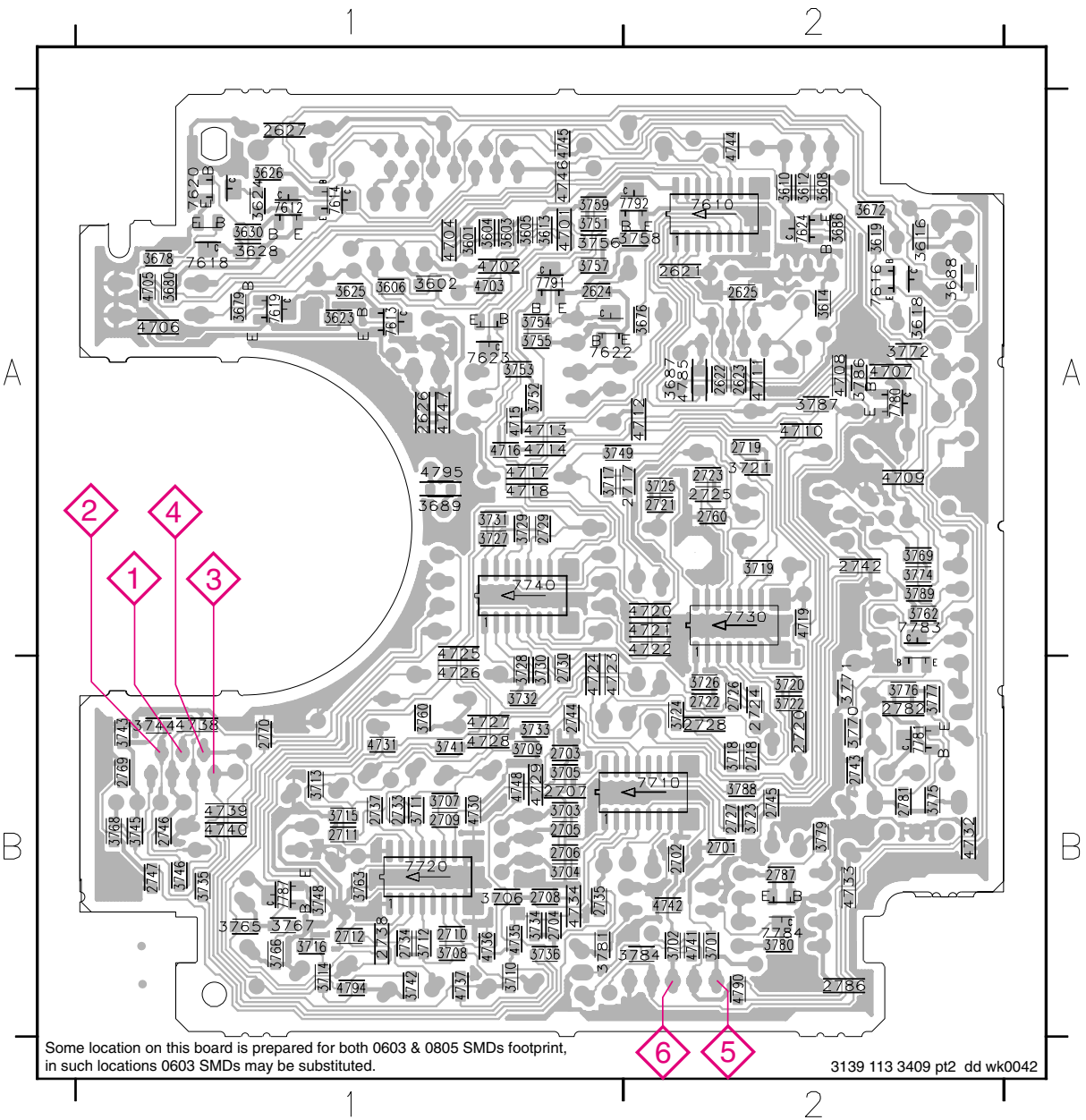
1701	B2	2714	B2	2784	B1	3761	A1	6770	A1	6782	A2	9706	A1	9715	A1	9724	B2
1702	A2	2715	B2	2785	B1	3764	B2	6771	A1	6785	B2	9707	A2	9716	A2	9725	A2
1703	A2	2716	B2	3607	A1	3773	A1	6772	B1	6786	B2	9708	A2	9717	A2	9726	A2
1706	A1	2741	B1	3609	A1	3778	B1	6773	B1	7782	B1	9709	A2	9718	B2	9727	A2
1710	B1	2761	B2	3611	A1	5701	B1	6774	B1	7786	B2	9710	A1	9719	B1	9728	A2
1730	B2	2762	B2	3620	A1	5703	B1	6775	A1	9702	A1	9711	A1	9720	B1	9729	B1
1760	A2	2763	B2	3622	A1	6611	A2	6776	A1	9703	A1	9712	A1	9721	B1	9791	A2
1770	A2	2765	B2	3674	A2	6612	A2	6777	A1	9704	A2	9713	A1	9722	B1	9792	A2
2713	B2	2780	A1	3685	A1	6614	A1	6778	A1	9705	A2	9714	A1	9723	B2	9793	A1



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CHIP LAYOUT

2621	A2	2724	B2	3602	A1	3688	A2	3725	A2	3757	A1	4701	A1	4727	B1	7612	A1
2622	A2	2725	A2	3603	A1	3689	A1	3726	B2	3758	A2	4702	A1	4728	B1	7613	A1
2623	A2	2726	B2	3604	A1	3701	B2	3727	A1	3759	A1	4703	A1	4729	B1	7614	A1
2624	A1	2727	B2	3605	A1	3702	B2	3728	B1	3760	B1	4704	A1	4730	B1	7616	A2
2625	A2	2728	B2	3606	A1	3703	B1	3729	A1	3762	A2	4705	A1	4731	B1	7618	A1
2626	A1	2729	A1	3608	A2	3704	B1	3730	B1	3763	B1	4706	A1	4732	B2	7619	A1
2627	A1	2730	B1	3610	A2	3705	B1	3731	A1	3765	B1	4707	A2	4733	B2	7620	A1
2701	B2	2733	B1	3612	A2	3706	B1	3732	B1	3766	B1	4708	A2	4734	B1	7622	A1
2702	B2	2734	B1	3613	A1	3707	B1	3733	B1	3767	B1	4709	A2	4735	B1	7623	A1
2703	B1	2735	B1	3614	A2	3708	B1	3734	B1	3768	B1	4710	A2	4736	B1	7624	A2
2704	B1	2737	B1	3616	A2	3709	B1	3735	B1	3769	A2	4711	A2	4737	B1	7710	B2
2705	B1	2738	B1	3618	A2	3710	B1	3736	B1	3770	B2	4712	A2	4738	B1	7720	B1
2706	B1	2742	A2	3619	A2	3711	B1	3741	B1	3771	B2	4713	A1	4739	B1	7730	A2
2707	B1	2743	B2	3623	A1	3712	B1	3742	B1	3772	A2	4714	A1	4740	B1	7740	A1
2708	B1	2744	B1	3624	A1	3713	B1	3743	B1	3774	A2	4715	A1	4741	B2	7780	A2
2709	B1	2745	B2	3625	A1	3714	B1	3744	B1	3775	B2	4716	A1	4742	B2	7781	B2
2710	B1	2746	B1	3626	A1	3715	B1	3745	B1	3776	B2	4717	A1	4744	A2	7783	A2
2711	B1	2747	B1	3628	A1	3716	B1	3746	B1	3777	B2	4718	A1	4745	A1	7784	B2
2712	B1	2760	A2	3630	A1	3717	A1	3748	B1	3779	B2	4719	A2	4746	A1	7787	B1
2717	A2	2769	B1	3672	A2	3718	B2	3749	A1	3780	B2	4720	A2	4747	A1	7791	A1
2718	B2	2770	A1	3676	A1	3719	A2	3751	A1	3781	B1	4721	A2	4748	B1	7792	A2
2719	A2	2781	B2	3678	A2	3720	B2	3752	A1	3784	B2	4722	A2	4785	A2		
2720	B2	2782	B2	3679	A1	3721	A2	3753	A1	3786	A2	4723	B1	4790	B2		
2721	A2	2786	B2	3680	A1	3722	B2	3754	A1	3787	A2	4724	B1	4794	B1		
2722	B2	2787	B2	3686	A2	3723	B2	3755	A1	3788	B2	4725	A1	4795	A1		
2723	A2	3601	A1	3687	A2	3724	B2	3756	A1	3789	A2	4726	B1	7610	A2		

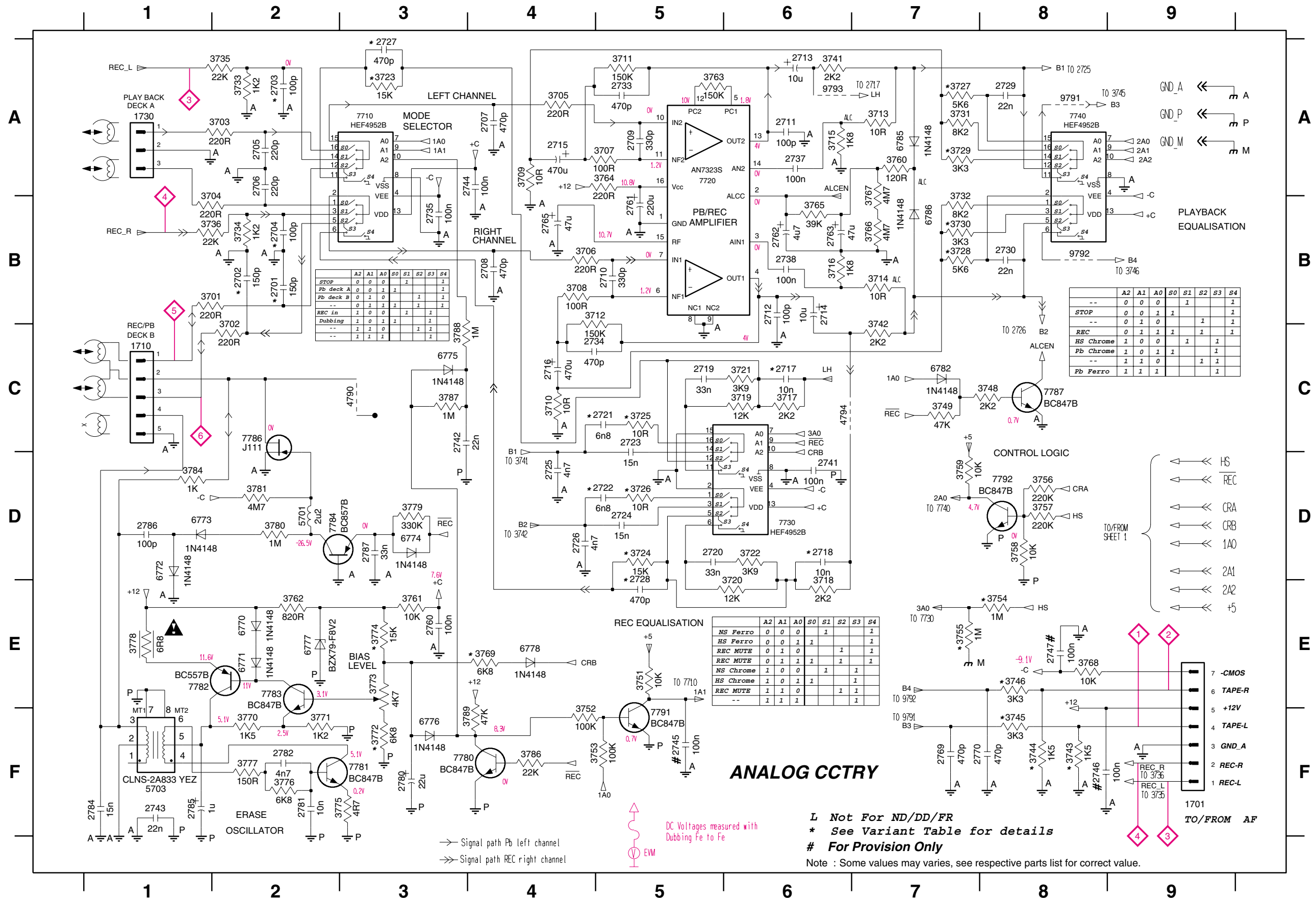


Some location on this board is prepared for both 0603 & 0805 SMDs footprint, in such locations 0603 SMDs may be substituted.

3139 113 3409 pt2 dd wk0042

ANALOG CIRCUIT

1701 F9	2705 A2	2712 B6	2719 C5	2726 D4	2735 B3	2745 F5	2765 B4	2785 F1	3705 A4	3712 B4	3719 C6	3726 D5	3733 A2	3744 F8	3753 F5	3760 A7	3767 A7	3774 E3	3781 D2	4794 C6	6774 D3	6786 B7	7782 E1	9791 A8
1710 C1	2706 A2	2713 A6	2720 D5	2727 A3	2737 A6	2746 F8	2769 F7	2786 D1	3706 B4	3713 A7	3720 E6	3727 A7	3734 B2	3745 F8	3754 E8	3761 E3	3768 E8	3775 F3	3784 D1	5701 D2	6775 C3	7710 A3	7783 E2	9792 B8
1730 A1	2707 A4	2714 B6	2721 C5	2728 E5	2738 B6	2747 E8	2770 F8	2787 D3	3707 A5	3714 B7	3721 C6	3728 B7	3735 A2	3746 E8	3755 E7	3762 E2	3769 E4	3776 F2	3786 F4	5703 F1	6776 F3	7720 A5	7784 D2	9793 A6
2701 B2	2708 B4	2715 A4	2722 D5	2729 A8	2741 D6	2760 E3	2780 F3	3701 B1	3708 B4	3715 A6	3722 D6	3729 A7	3736 B1	3748 C8	3756 D8	3763 A5	3770 F2	3777 F2	3787 C3	6770 E2	6777 E2	7730 D6	7786 C2	
2702 B2	2709 A5	2716 C4	2723 C5	2730 B8	2742 C3	2761 B5	2781 F2	3702 C2	3709 A4	3716 B6	3723 A3	3730 B7	3741 A6	3749 C7	3757 D8	3764 A5	3771 F2	3778 E1	3788 C3	6771 E2	6778 E4	7740 A8	7787 C8	
2703 A2	2710 B5	2717 C6	2724 D5	2733 A5	2743 F1	2762 B6	2782 F2	3703 A2	3710 C4	3717 C6	3724 D5	3731 A7	3742 C7	3751 E5	3758 D8	3765 B6	3772 F3	3779 D3	3789 F4	6772 D1	6782 C7	7780 F4	7791 F5	
2704 B2	2711 A6	2718 D6	2725 D4	2734 C4	2744 A4	2763 B6	2784 F1	3704 B1	3711 A5	3718 E6	3725 C5	3732 B7	3743 F8	3752 F4	3759 D7	3766 B7	3773 E3	3780 D2	4790 C3	6773 D1	6785 A7	7781 F3	7792 D8	

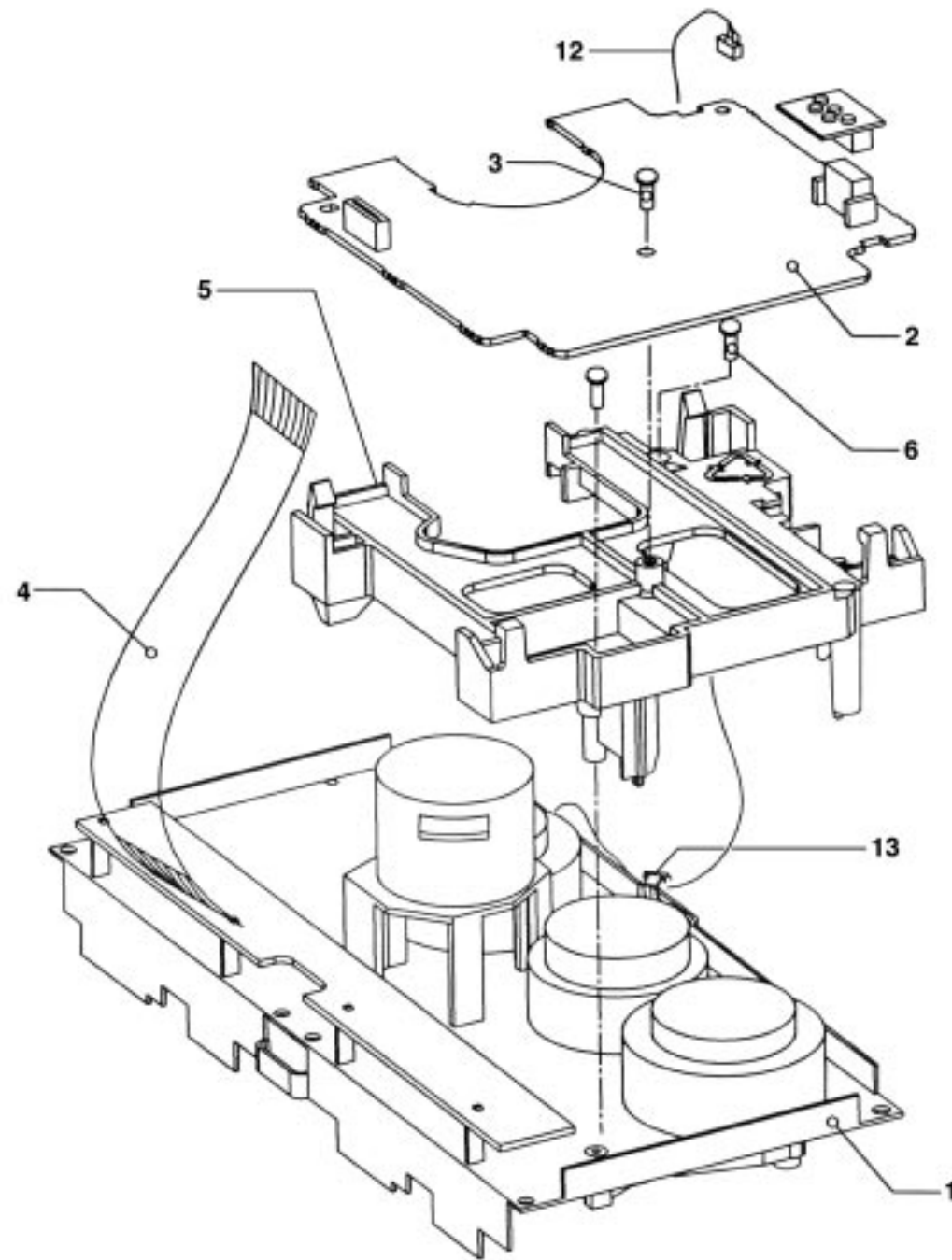


SERVO CONTROL
CCTRY

	Version	In use
1.	ND / DD /FR	-
2.	ND / DD /FF	4795
3.	ND / SD	3689

(xx V) Voltages during Solenoid On

 Pulse to On Solenoid

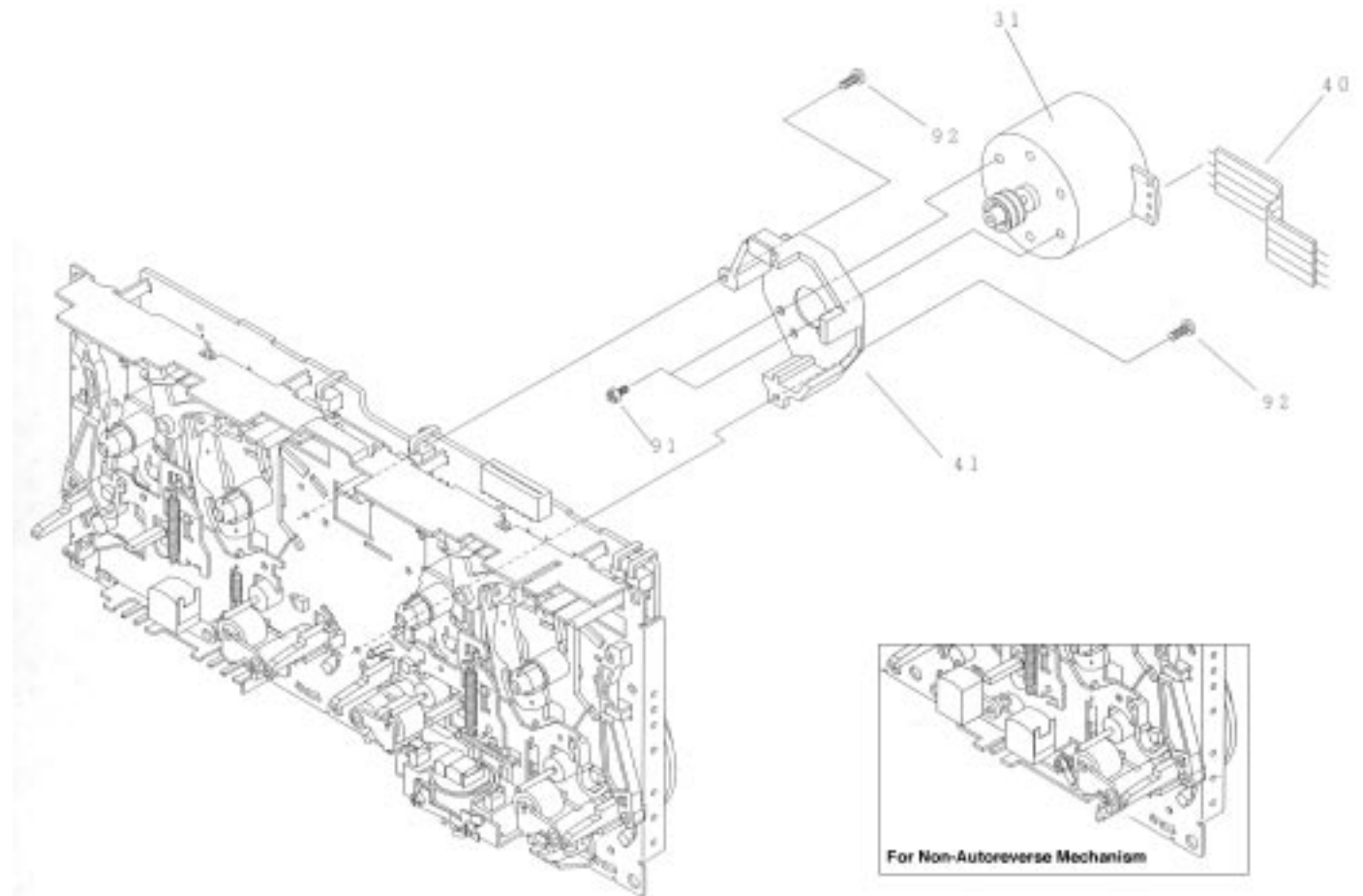


3139 118 77070 (incl. ...77080) dd wir20

TAPE MODULE EXPLODED VIEW

1	3139 118 77130	Autoreverse Mech. CWE44FR01
1	3139 118 77140	Non-Autoreverse Mech. CWE44FF02 Chrome/Ferro
1	3139 118 77950	Non-Autoreverse Mech. CWE44FF05 Ferro
3	-	Screw D3 x 10
6	-	Screw M2 x 16
7	3139 110 34080	Flex Cable 14 pin 7,5 cm

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

**TAPE MECHANISM - MOTOR EXPLODED VIEW**

31	4822 361 11055	Motor Assembly
91	-	Screw M2,6 x 5
92	-	Screw M2 x 5

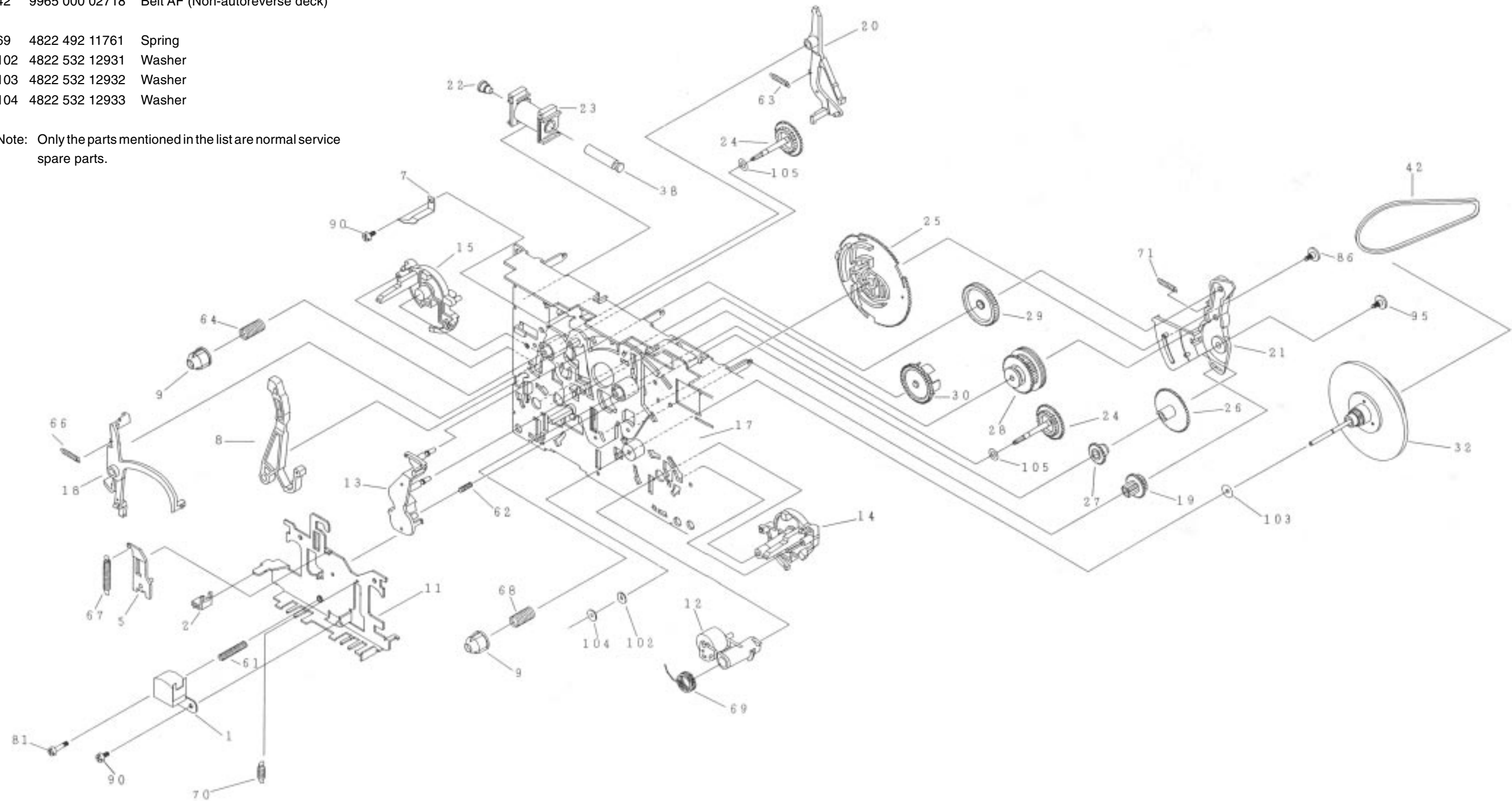
Note: Only the parts mentioned in this list are normal service spare parts.

TAPE MECHANISM A - PLAY

MECHANICAL PARTS - PLAY MECHANISM

1	9965 000 02313	Play Head (Non-Autoreverse deck)
1	9965 000 02321	Play Head (Autoreverse deck)
12	4822 402 10972	Pinch Arm Assembly R
23	9965 000 02314	Coil Assembly
25	9965 000 06443	Cam Gear
32	4822 528 11209	Flywheel Assembly RV
42	9965 000 02315	Belt AF (Autoreverse deck)
42	9965 000 02718	Belt AF (Non-autoreverse deck)
69	4822 492 11761	Spring
102	4822 532 12931	Washer
103	4822 532 12932	Washer
104	4822 532 12933	Washer

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



TAPE MECHANISM B - RECORD/PLAYBACK (Non-Autoreverse version)

MECHANICAL PARTS - REC/PB MECHANISM

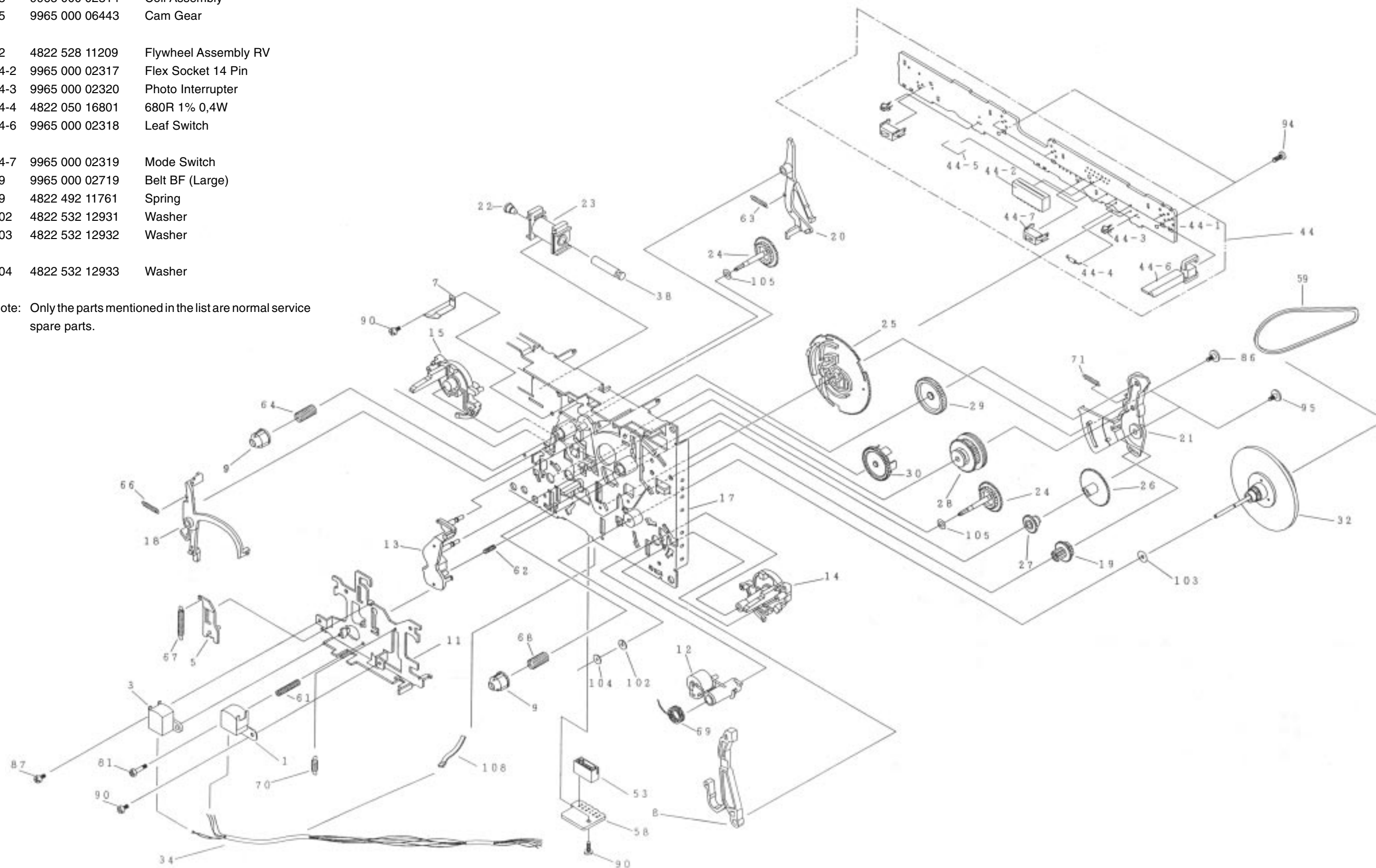
1	9965 000 02313	Play Head
3	9965 000 02600	Head, Erase
12	4822 402 10972	Pinch Arm Assembly R
23	9965 000 02314	Coil Assembly
25	9965 000 06443	Cam Gear

32	4822 528 11209	Flywheel Assembly RV
44-2	9965 000 02317	Flex Socket 14 Pin
44-3	9965 000 02320	Photo Interrupter
44-4	4822 050 16801	680R 1% 0,4W
44-6	9965 000 02318	Leaf Switch

44-7	9965 000 02319	Mode Switch
59	9965 000 02719	Belt BF (Large)
69	4822 492 11761	Spring
102	4822 532 12931	Washer
103	4822 532 12932	Washer

104	4822 532 12933	Washer
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Note: Only the parts mentioned in the list are normal service spare parts.



TAPE MECHANISM B - RECORD/PLAYBACK (Autoreverse version)**MECHANICAL PARTS - REC/PB MECHANISM**

12	4822 402 10972	Pinch Arm Assembly R
23	9965 000 02314	Coil Assembly
25	9965 000 06443	Cam Gear
32	4822 528 11209	Flywheel Assembly RV
39	9965 000 02322	Belt AF

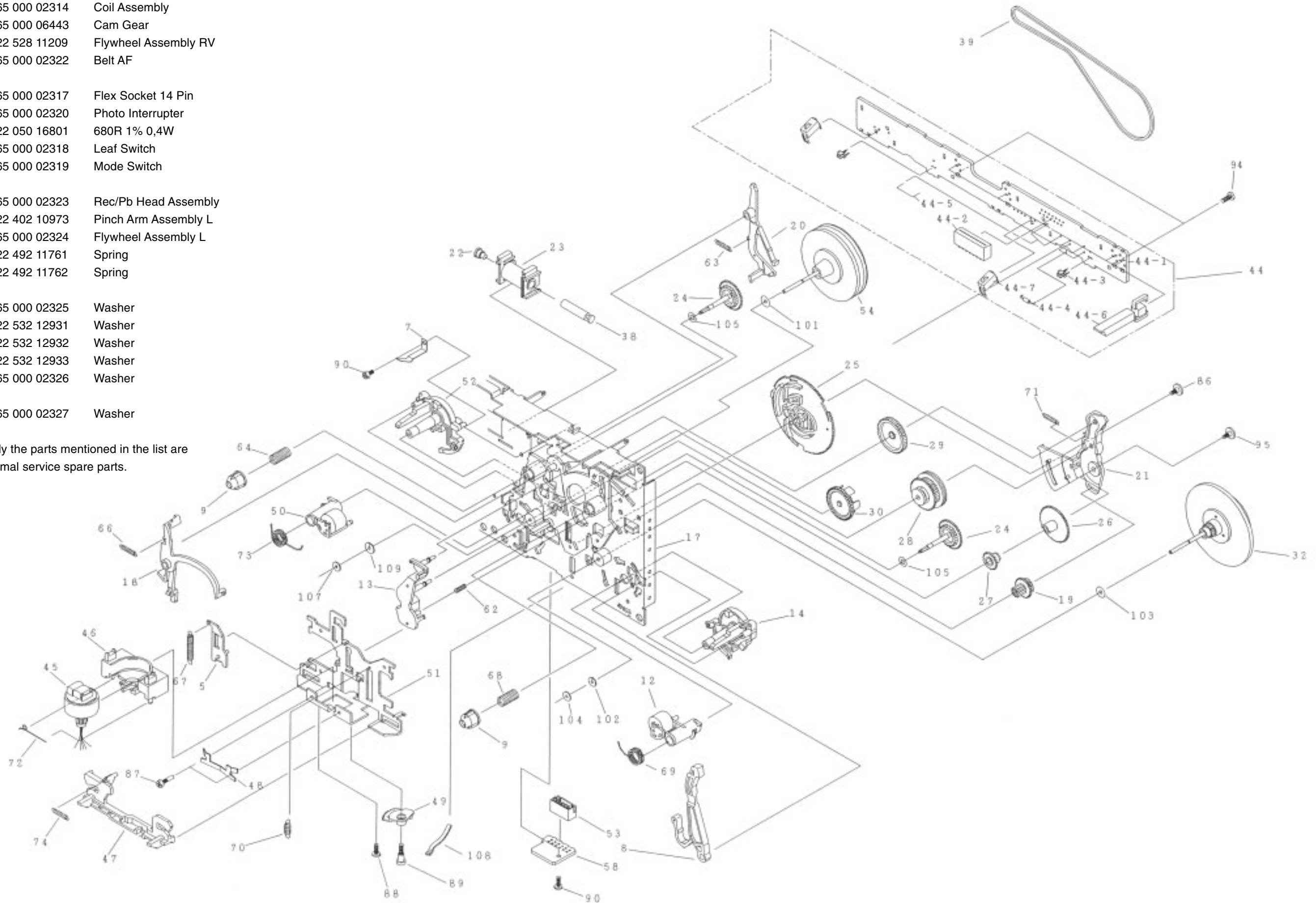
44-2	9965 000 02317	Flex Socket 14 Pin
44-3	9965 000 02320	Photo Interrupter
44-4	4822 050 16801	680R 1% 0,4W
44-6	9965 000 02318	Leaf Switch
44-7	9965 000 02319	Mode Switch

45	9965 000 02323	Rec/Pb Head Assembly
50	4822 402 10973	Pinch Arm Assembly L
54	9965 000 02324	Flywheel Assembly L
69	4822 492 11761	Spring
73	4822 492 11762	Spring

101	9965 000 02325	Washer
102	4822 532 12931	Washer
103	4822 532 12932	Washer
104	4822 532 12933	Washer
107	9965 000 02326	Washer

109	9965 000 02327	Washer
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Note: Only the parts mentioned in the list are normal service spare parts.



ELECTRICAL PARTS LIST - ETF7 NON-DOLBY BOARD**MISCELLANEOUS**

1701	482226710953	Flex Socket 7pin Vert.
1706	482226710953	Flex Socket 7pin Vert.
1770	482226751255	Flex Socket 14pin Vert.

CAPACITORS

2621	532212231647	1nF 10% 63V
2622	532212234099	470pF 10% 63V
2623	532212234099	470pF 10% 63V
2624	482212614585	100nF 10% 50V only for Ferro
2625	482212614585	100nF 10% 50V
2701	532212233538	150pF 2% 63V Autoreverse
2701	482212233216	270pF 5% 63V Non-autoreverse
2702	532212233538	150pF 2% 63V Autoreverse
2702	482212233216	270pF 5% 63V Non-autoreverse
2703	532212232531	100pF 5% 50V Autoreverse
2703	482212233575	220pF 5% 63V Non-autoreverse
2704	532212232531	100pF 5% 50V Autoreverse
2704	482212233575	220pF 5% 63V Non-autoreverse
2705	482212233575	220pF 5% 63V
2706	482212233575	220pF 5% 63V
2707	532212234099	470pF 10% 63V
2708	532212234099	470pF 10% 63V
2709	532212231863	330pF 5% 63V
2710	532212231863	330pF 5% 63V
2711	532212232531	100pF 5% 50V
2712	532212232531	100pF 5% 50V
2713	482212440248	10μF 20% 63V
2714	482212440248	10μF 20% 63V
2715	482212480195	470μF 20% 10V
2716	482212480195	470μF 20% 10V
2717	482212233177	10nF 20% 50V Autoreverse
2717	482212613188	15nF 5% 63V Non-autoreverse
2718	482212233177	10nF 20% 50V Autoreverse
2718	482212613188	15nF 5% 63V Non-autoreverse
2719	482212612105	33nF 5% 50V
2720	482212612105	33nF 5% 50V
2721	532212231866	6,8nF 10% 63V not for Ferro
2722	532212231866	6,8nF 10% 63V not for Ferro
2723	482212613188	15nF 5% 63V
2724	482212613188	15nF 5% 63V
2725	532212610223	4,7nF 10% 63V
2726	532212610223	4,7nF 10% 63V
2727	532212234099	470pF 10% 63V Autoreverse
2727	532212231647	1nF 10% 63V Non-autoreverse
2728	532212234099	470pF 10% 63V Autoreverse
2728	532212231647	1nF 10% 63V Non-autoreverse
2729	532212232654	22nF 10% 63V
2730	532212232654	22nF 10% 63V
2733	532212234099	470pF 10% 63V
2734	532212234099	470pF 10% 63V
2735	482212614585	100nF 10% 50V
2737	482212614585	100nF 10% 50V

2738	482212614585	100nF 10% 50V
2741	482212611585	22nF +80/-20% 25V
2742	532212232654	22nF 10% 63V
2743	532212232654	22nF 10% 63V
2744	482212614585	100nF 10% 50V
2760	482212614585	100nF 10% 50V
2761	482212480144	220μF 20% 25V
2762	482212440769	4,7μF 20% 100V
2763	482212440433	47μF 20% 25V
2765	482212440433	47μF 20% 25V
2769	532212234099	470pF 10% 63V
2770	532212234099	470pF 10% 63V
2780	482212481151	22μF 20% 50V
2781	482212233177	10nF 20% 50V
2782	532212610223	4,7nF 10% 63V
2784	482212151305	15nF 10% 50V
2785	482212421913	1μF 20% 63V
2786	532212232531	100pF 5% 50V
2787	482212612105	33nF 5% 50V

RESISTORS

3601	482211711449	2k2 1% 0,1W
3602	482205120273	27k 5% 0,1W
3603	482211711449	2k2 1% 0,1W
3604	482211711148	56k 1% 0,1W
3605	482211711449	2k2 1% 0,1W
3606	482205120124	120k 5% 0,1W
3607	482211652256	2k2 5% 0,5W
3608	482205120273	27k 5% 0,1W
3609	482211652256	2k2 5% 0,5W
3610	482205120124	120k 5% 0,1W
3611	482211652256	2k2 5% 0,5W
3612	482211711148	56k 1% 0,1W
3613	482205120273	27k 5% 0,1W
3614	482205120273	27k 5% 0,1W
3616	482211710833	10k 1% 0,1W Autoreverse
3616	482205110102	1k 2% 0,25W Non-autoreverse
3618	482211711507	6k8 1% 0,1W Autoreverse
3620	482210011141	Trim. 10k 30% Autoreverse
3622	482210011141	Trim. 10k 30% Non-autoreverse
3623	482211710837	100k 1% 0,1W
3624	482211710837	100k 1% 0,1W
3625	482205110102	1k 2% 0,25W
3626	482205110102	1k 2% 0,25W
3628	482211710837	100k 1% 0,1W
3630	482205120471	470R 5% 0,1W
3672	482205120472	4k7 5% 0,1W Autoreverse
3674	482211652283	4k7 5% 0,5W
3676	482211710834	47k 1% 0,1W Autoreverse
3678	482211710834	47k 1% 0,1W
3679	482211710834	47k 1% 0,1W
3680	482211710834	47k 1% 0,1W

ELECTRICAL PARTS LIST - ETF7 NON-DOLBY BOARD

3685	482211652234	100k 5% 0,5W
3686	482211710837	100k 1% 0,1W
3687	482211711503	220R 1% 0,1W not for Ferro
3688	482211710361	680R 1% 0,1W Autoreverse
3701	482211711503	220R 1% 0,1W
3702	482211711503	220R 1% 0,1W
3703	482211711503	220R 1% 0,1W
3704	482211711503	220R 1% 0,1W
3705	482211711503	220R 1% 0,1W
3706	482211711503	220R 1% 0,1W
3707	482205120101	100R 5% 0,1W
3708	482205120101	100R 5% 0,1W
3709	482205120109	10R 5% 0,1W
3710	482205120109	10R 5% 0,1W
3711	482205120154	150k 5% 0,1W
3712	482205120154	150k 5% 0,1W
3713	482205120109	10R 5% 0,1W
3714	482205120109	10R 5% 0,1W
3715	482205120182	1k8 5% 0,1W
3716	482205120182	1k8 5% 0,1W
3717	482211711449	2k2 1% 0,1W
3718	482211711449	2k2 1% 0,1W
3719	482211711383	12k 1% 0,1W
3720	482211711383	12k 1% 0,1W
3721	482205120392	3k9 5% 0,1W
3722	482205120392	3k9 5% 0,1W
3723	482211683933	15k 1% 0,1W Autoreverse
3723	482211710965	18k 1% 0,1W Non-autoreverse
3724	482211683933	15k 1% 0,1W Autoreverse
3724	482211710965	18k 1% 0,1W Non-autoreverse
3725	482205120109	10R 5% 0,1W not for Ferro
3726	482205120109	10R 5% 0,1W not for Ferro
3727	482205120562	5k6 5% 0,1W Autoreverse
3727	482211711507	6k8 1% 0,1W Non-autoreverse
3728	482205120562	5k6 5% 0,1W Autoreverse
3728	482211711507	6k8 1% 0,1W Non-autoreverse
3729	482205120332	3k3 5% 0,1W Autoreverse
3729	482205120472	4k7 5% 0,1W Non-autoreverse
3730	482205120332	3k3 5% 0,1W Autoreverse
3730	482205120472	4k7 5% 0,1W Non-autoreverse
3731	482205120822	8k2 5% 0,1W
3732	482205120822	8k2 5% 0,1W
3733	482205120122	1k2 5% 0,1W
3734	482205120122	1k2 5% 0,1W
3735	482205120223	22k 5% 0,1W
3736	482205120223	22k 5% 0,1W
3741	482211711449	2k2 1% 0,1W
3742	482211711449	2k2 1% 0,1W
3743	482211711139	1k5 1% 0,1W Autoreverse
3743	482211711449	2k2 1% 0,1W Non-autoreverse
3744	482211711139	1k5 1% 0,1W Autoreverse
3744	482211711449	2k2 1% 0,1W Non-autoreverse

3745	482205120332	3k3 5% 0,1W Autoreverse
3745	482205120562	5k6 5% 0,1W Non-autoreverse
3746	482205120332	3k3 5% 0,1W Autoreverse
3746	482205120562	5k6 5% 0,1W Non-autoreverse
3748	482211711449	2k2 1% 0,1W
3749	482211710834	47k 1% 0,1W
3751	482211710833	10k 1% 0,1W
3752	482211710837	100k 1% 0,1W
3753	482211710837	100k 1% 0,1W
3754	482205120105	1M 5% 0,1W Autoreverse
3754	482205120479	47R 5% 0,1W Non-autoreverse
3755	482205120105	1M 5% 0,1W Autoreverse
3755	482205120479	47R 5% 0,1W Non-autoreverse
3756	482211713579	220k 1% 0,1W
3757	482211713579	220k 1% 0,1W
3758	482211710833	10k 1% 0,1W
3759	482211710833	10k 1% 0,1W
3760	482205120121	120R 5% 0,1W
3761	482205021003	10k 1% 0,6W
3762	482211711454	820R 1% 0,1W
3763	482205120154	150k 5% 0,1W
3764	482211683872	220R 5% 0,5W
3765	482205120393	39k 5% 0,1W
3766	482205120475	4M7 5% 0,1W
3767	482205120475	4M7 5% 0,1W
3768	482211710833	10k 1% 0,1W
3769	482211711383	12k 1% 0,1W Autoreverse
3769	482205120822	8k2 5% 0,1W Non-autoreverse
3770	482211711139	1k5 1% 0,1W
3771	482205120122	1k2 5% 0,1W
3772	482211711507	6k8 1% 0,1W Autoreverse
3772	482205120562	5k6 5% 0,1W Non-autoreverse
3773	482210012227	Trimmer 4k7 30% 0,1W
3774	482211683933	15k 1% 0,1W Autoreverse
3774	482205120822	8k2 5% 0,1W Non-autoreverse
3775	482205120478	4R7 5% 0,1W
3776	482211711507	6k8 1% 0,1W
3777	482211710353	150R 1% 0,1W
3778	482205210688	△ 6R8 5% 0,33W
3779	482205120334	330k 5% 0,1W
3780	482205120105	1M 5% 0,1W
3781	482205120475	4M7 5% 0,1W
3784	482205110102	1k 2% 0,25W
3786	482205120223	22k 5% 0,1W
3787	482205120105	1M 5% 0,1W
3788	482205120105	1M 5% 0,1W
3789	482211710834	47k 1% 0,1W
4701	482205120008	0R Jumper 0805
4702	482205120008	0R Jumper 0805
4703	482205120008	0R Jumper 0805
4704	482205120008	0R Jumper 0805
4705	482205120008	0R Jumper 0805

ELECTRICAL PARTS LIST - ETF7 NON-DOLBY BOARD**RESISTORS**

4706	482205120008	OR Jumper 0805	6612	482213031878	1N4003G	
4707	482205120008	OR Jumper 0805	6614	482213030621	1N4148	Autoreverse
4708	482205120008	OR Jumper 0805	6770	482213030621	1N4148	
4709	482205120008	OR Jumper 0805	6771	482213030621	1N4148	
4710	482205120008	OR Jumper 0805	6772	482213030621	1N4148	
4711	482205120008	OR Jumper 0805	6773	482213030621	1N4148	
4712	482205120008	OR Jumper 0805	6774	482213030621	1N4148	
4713	482205120008	OR Jumper 0805	6775	482213030621	1N4148	
4714	482205120008	OR Jumper 0805	6776	482213030621	1N4148	
4715	482205120008	OR Jumper 0805	6777	482213034382	BZX79-F8V2	
4716	482205120008	OR Jumper 0805	6778	482213030621	1N4148	
4717	482205120008	OR Jumper 0805	6782	482213030621	1N4148	
4718	482205120008	OR Jumper 0805	6785	482213030621	1N4148	
4719	482205120008	OR Jumper 0805	6786	482213030621	1N4148	
4720	482205120008	OR Jumper 0805				
4721	482205120008	OR Jumper 0805				
4722	482205120008	OR Jumper 0805				
4723	482205120008	OR Jumper 0805				
4724	482205120008	OR Jumper 0805				
4725	482205120008	OR Jumper 0805				
4726	482205120008	OR Jumper 0805				
4727	482205120008	OR Jumper 0805				
4728	482205120008	OR Jumper 0805				
4729	482205120008	OR Jumper 0805				
4730	482205120008	OR Jumper 0805				
4731	482205120008	OR Jumper 0805				
4732	482205120008	OR Jumper 0805				
4733	482205120008	OR Jumper 0805				
4734	482205120008	OR Jumper 0805				
4735	482205120008	OR Jumper 0805				
4736	482205120008	OR Jumper 0805				
4737	482205120008	OR Jumper 0805				
4738	482205120008	OR Jumper 0805				
4739	482205120008	OR Jumper 0805				
4740	482205120008	OR Jumper 0805				
4741	482205120008	OR Jumper 0805				
4742	482205120008	OR Jumper 0805				
4744	482205120008	OR Jumper 0805				
4745	482205120008	OR Jumper 0805				
4746	482205120008	OR Jumper 0805				
4748	482205120008	OR Jumper 0805				
4785	482205120008	OR Jumper 0805 only for Ferro				
4790	482205120008	OR Jumper 0805				
4794	482205120008	OR Jumper 0805				
4795	482205120008	OR Jumper 0805				

TRANSISTORS & INTEGRATED CIRCUITS

7610	532220911306	HEF4094BT	
7612	482213011201	PMBT2907	
7613	482213011201	PMBT2907	
7614	482213011201	PMBT2907	
7616	482213060373	BC857B	Autoreverse
7618	482213060511	BC847B	
7619	482213060511	BC847B	
7620	482213060511	BC847B	
7622	482213060511	BC847B	Autoreverse
7623	482213060511	BC847B	
7624	482213060511	BC847B	
7710	482220932919	HEF4952BT	
7720	932214000668	AN7323S	
7730	482220932919	HEF4952BT	
7740	482220932919	HEF4952BT	
7780	482213060511	BC847B	
7781	482213042804	BC817-25	
7782	482213044568	BC557B	
7783	482213060511	BC847B	
7784	482213060373	BC857B	
7786	482213063494	J111	
7787	482213060511	BC847B	
7791	482213060511	BC847B	
7792	482213060511	BC847B	

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

COILS & FILTERS

5701	482215711477	Coil 2,2μH 5%
5703	482215620946	Osc Coil 100kHz

DIODES

6611	482213031878	1N4003G
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3CDC-LLC-MCD1

(3 Disc Carousel Changer)

Layout stage .3

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Service hints

CAUTION

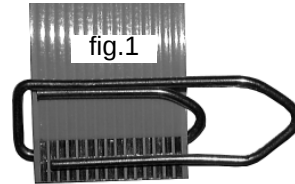
CHARGED CAPACITORS ON THE SERVO BOARD MAY DAMAGE THE CD DRIVE ELECTRONICS WHEN CONNECTING A NEW CD MECHANISM. THAT'S WHY, BESIDES THE SAFETY MEASURES LIKE

- **SWITCH OFF POWER SUPPLY**
- **ESD PROTECTION**

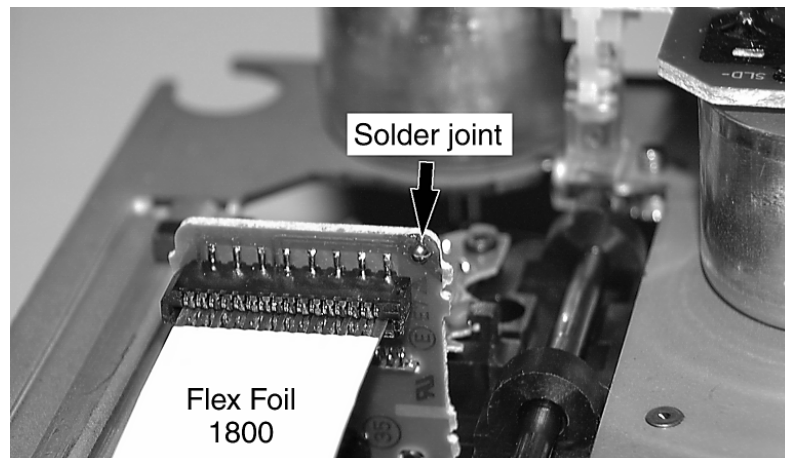
ADDITIONAL ACTIONS MUST BE TAKEN BY THE REPAIR TECHNICIAN.

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

1. Disconnect flexfoil cable from the old CD drive
2. Put a paperclip on the flexfoil to short-circuit the contacts (fig.1)
3. Remove the old CD drive
4. Remove paperclip from the flexfoil and connect it to the new drive
5. Position the new CD drive in its studs
6. Remove solder joint from the Laserunit



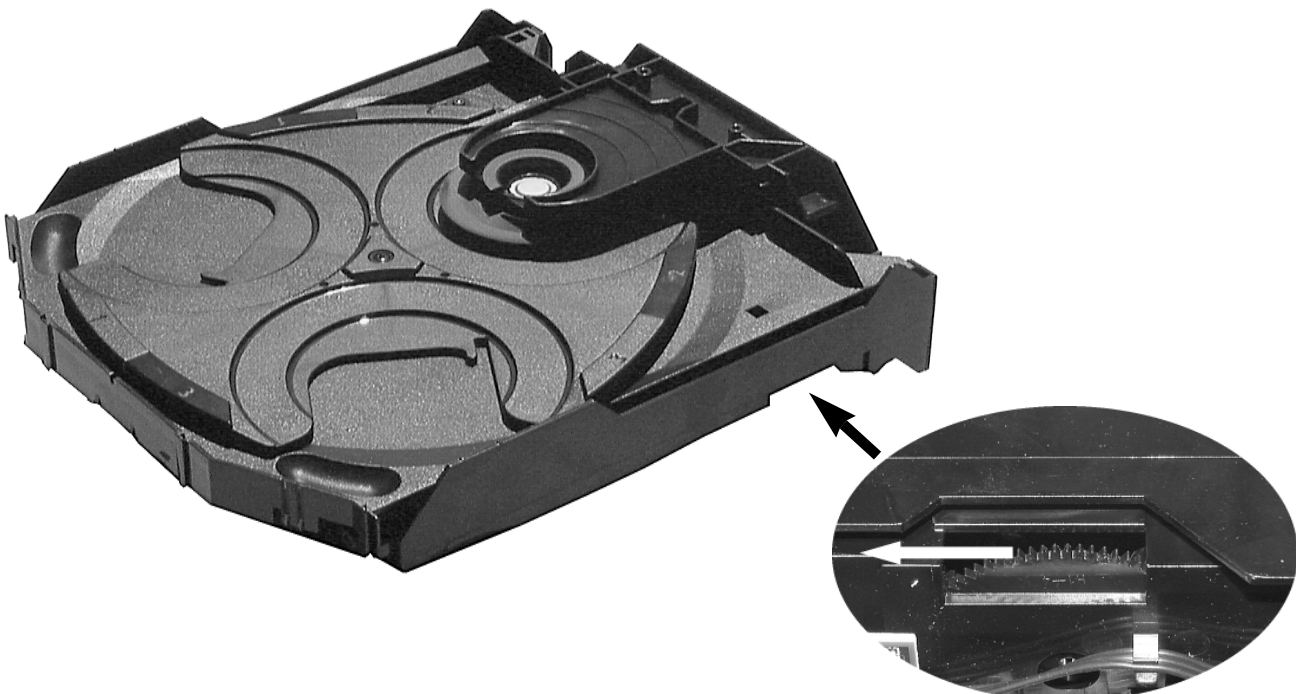
Attention: The laser diode of this CD drive is protected against ESD by a solder joint which shortcircuits the laserdiode to ground.
For proper functionality of the CD drive this solder joint must be removed **after** connection the drive to the set.



Emergency open

In case of a Supply fault, the tray can be opened manually.

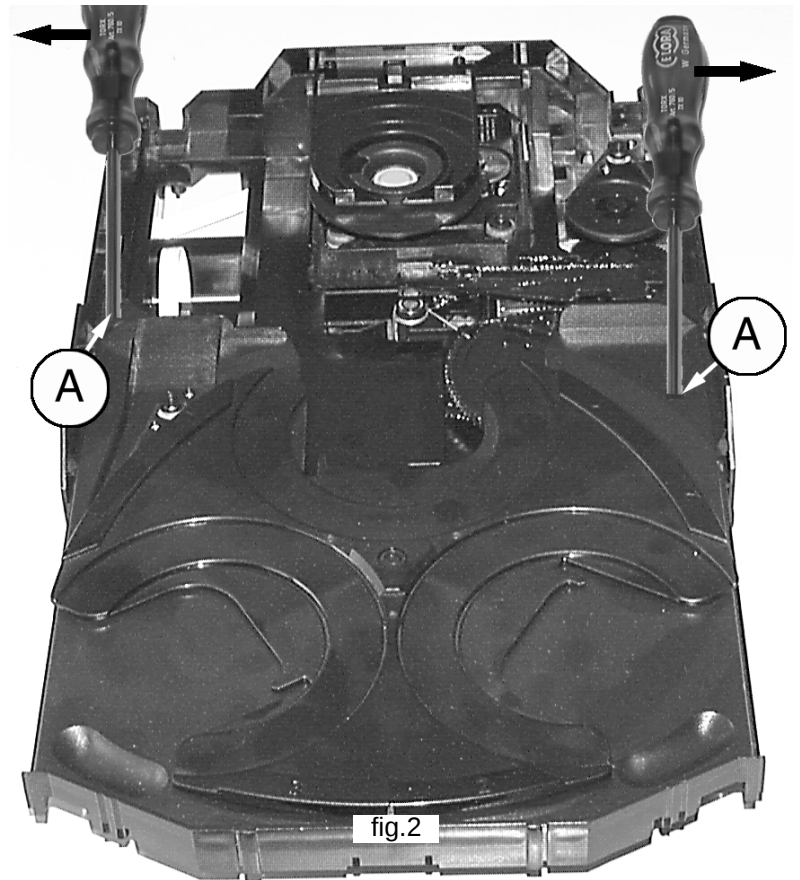
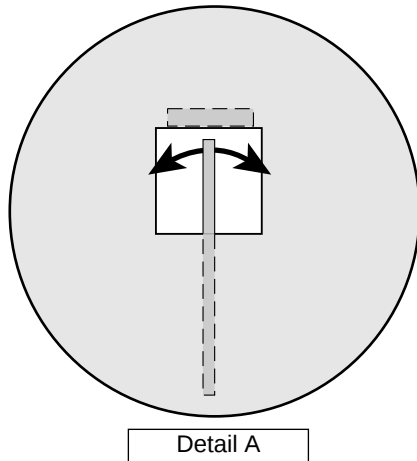
1. Remove the top cover of the set to get access to the Changer Module.
2. Turn gearwheel clockwise (as shown in picture below).



Service hints

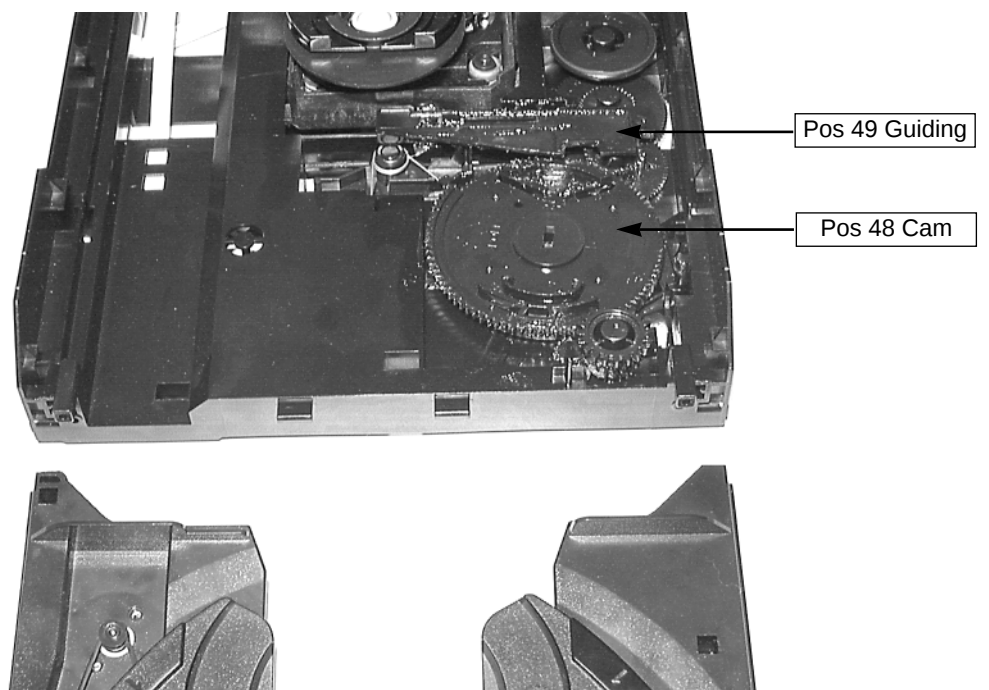
Dismantling of Tray

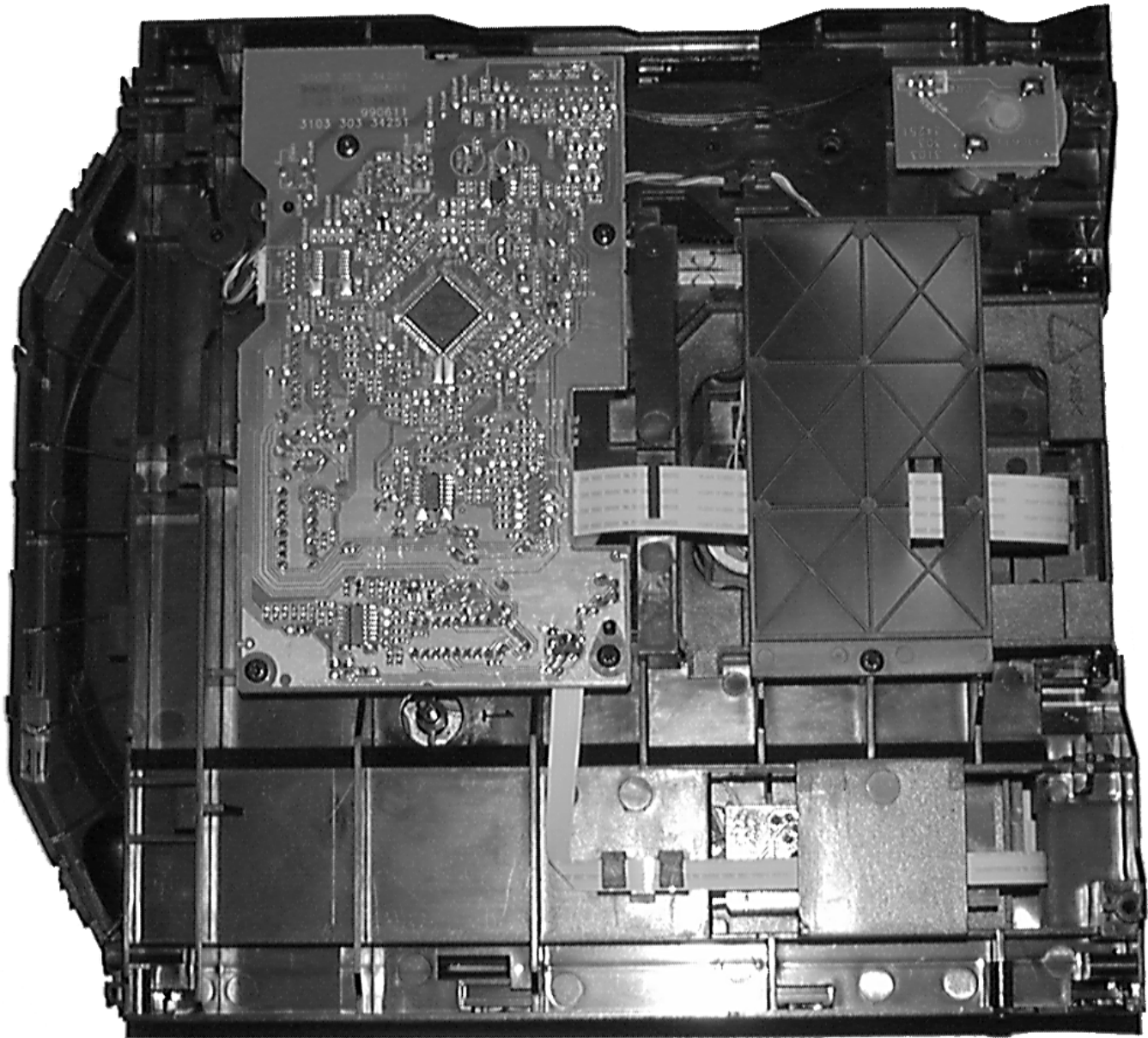
1. Open the tray.
2. Release 2x catch as shown in fig. 2 and Detail A
3. Pull tray out.



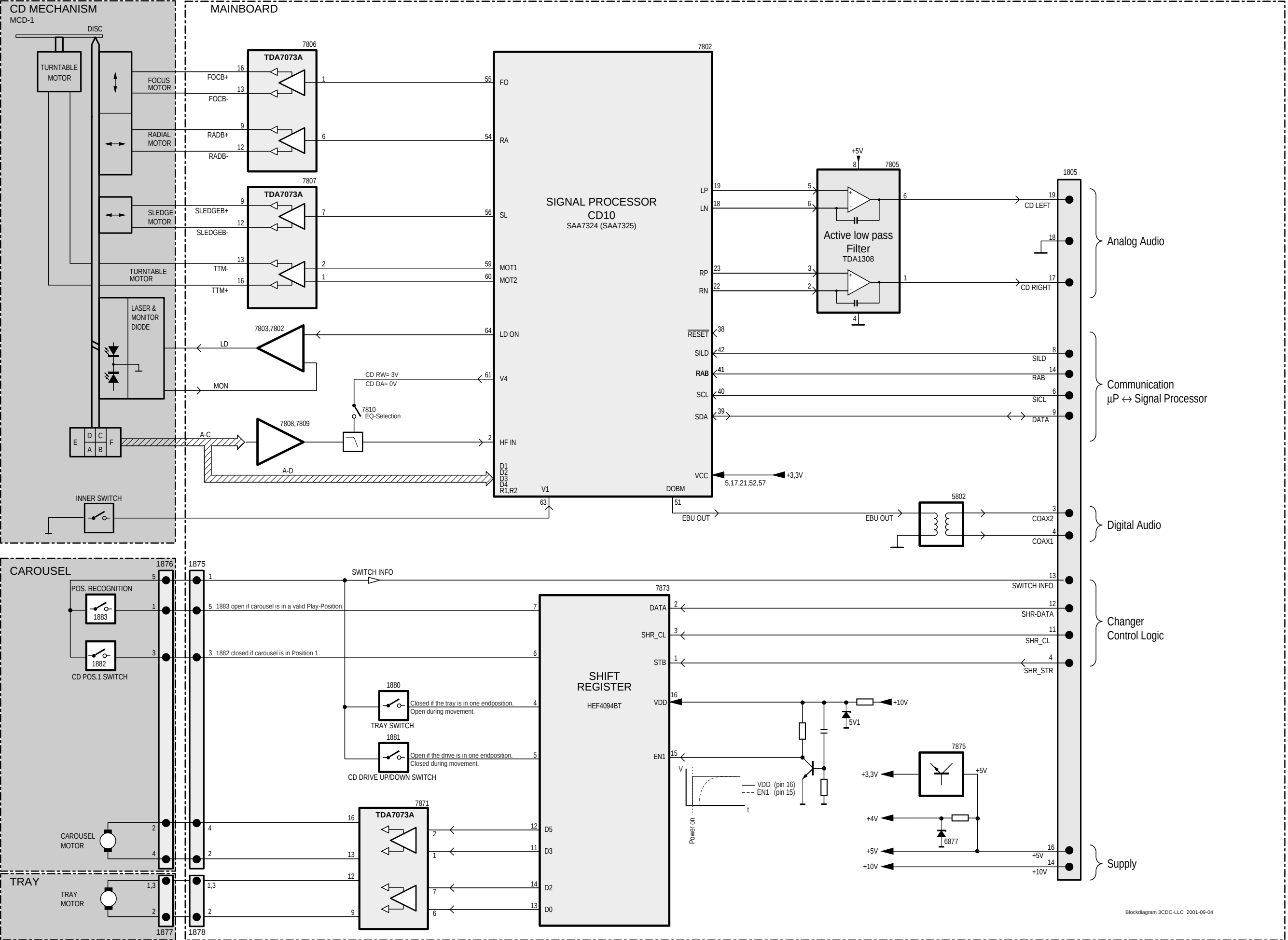
Assembling of Tray

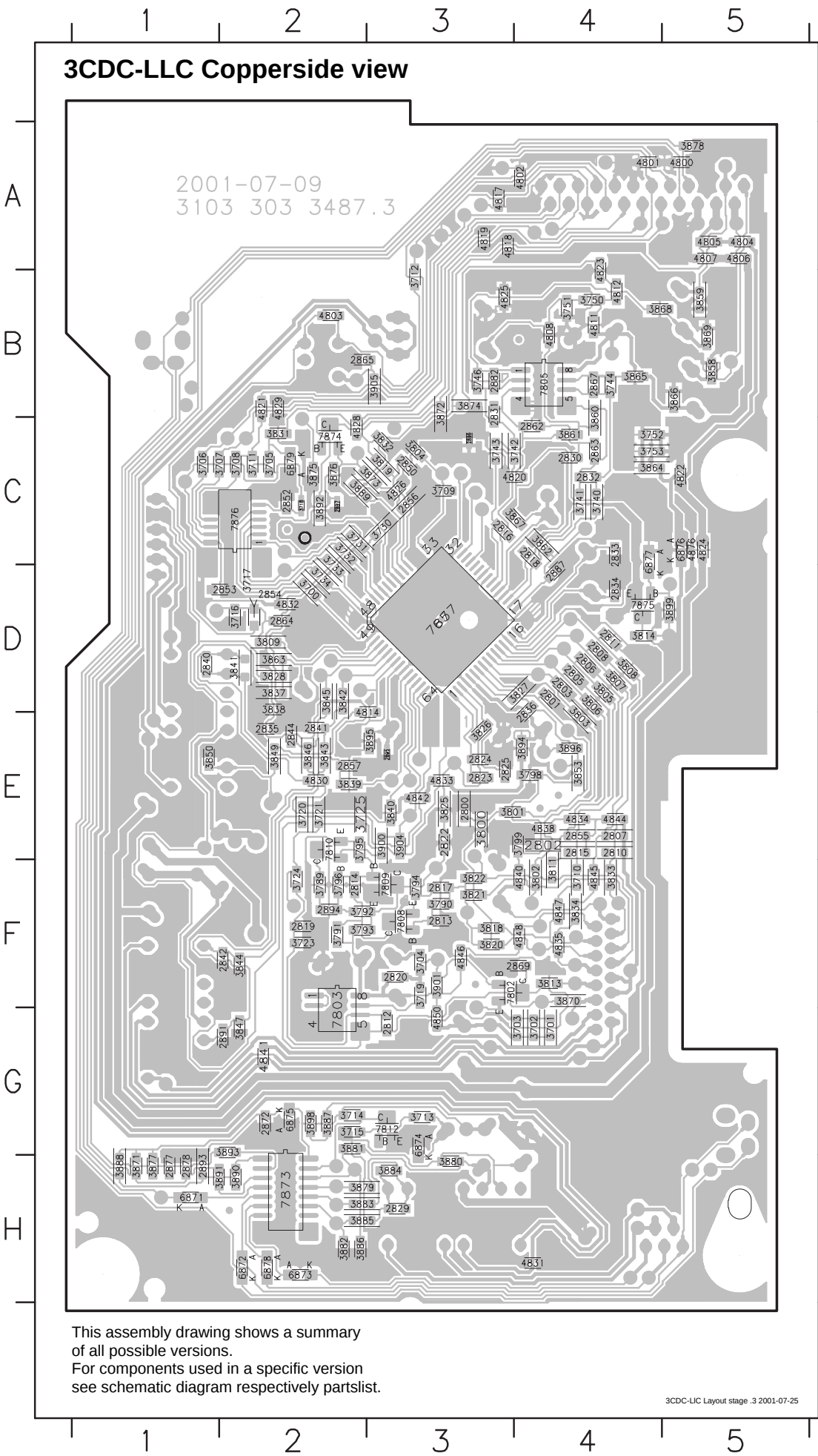
1. Turn Cam (pos. 48) clockwise to end position.
2. If necessary - move Guiding (pos. 49) to the right end position.
3. Insert the Tray.



Service Position

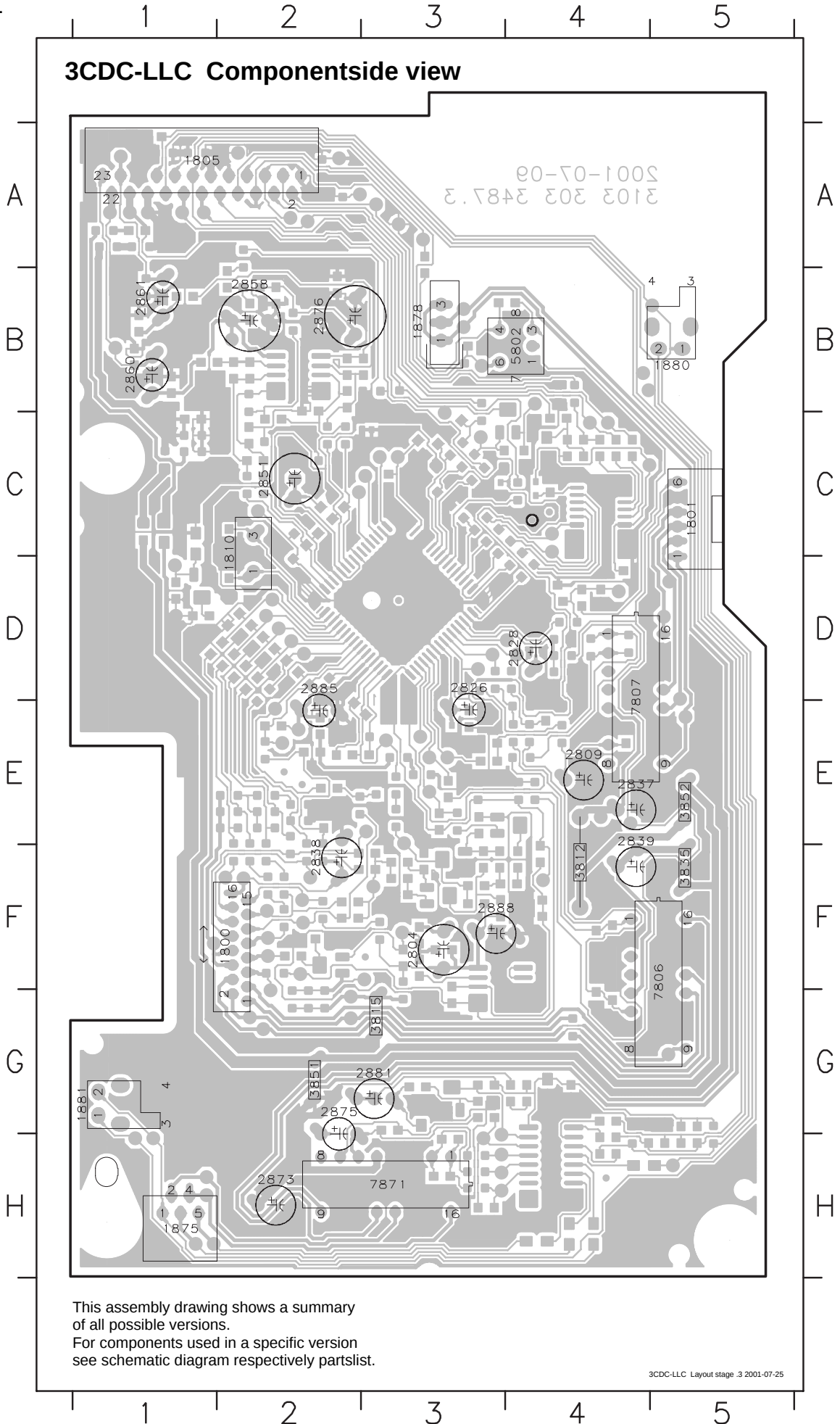
BLOCK DIAGRAM 3CDC-LLC-MCD1

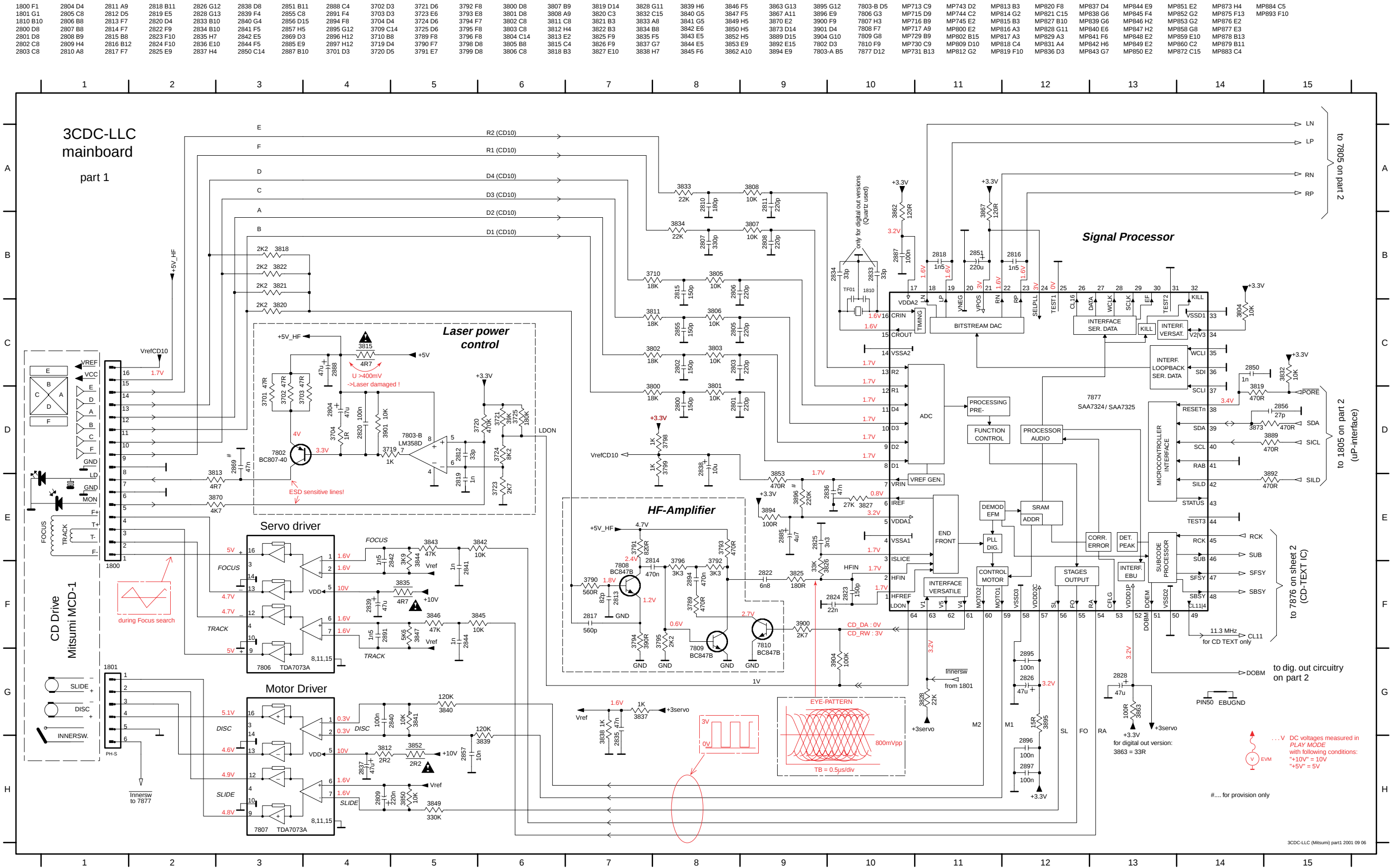


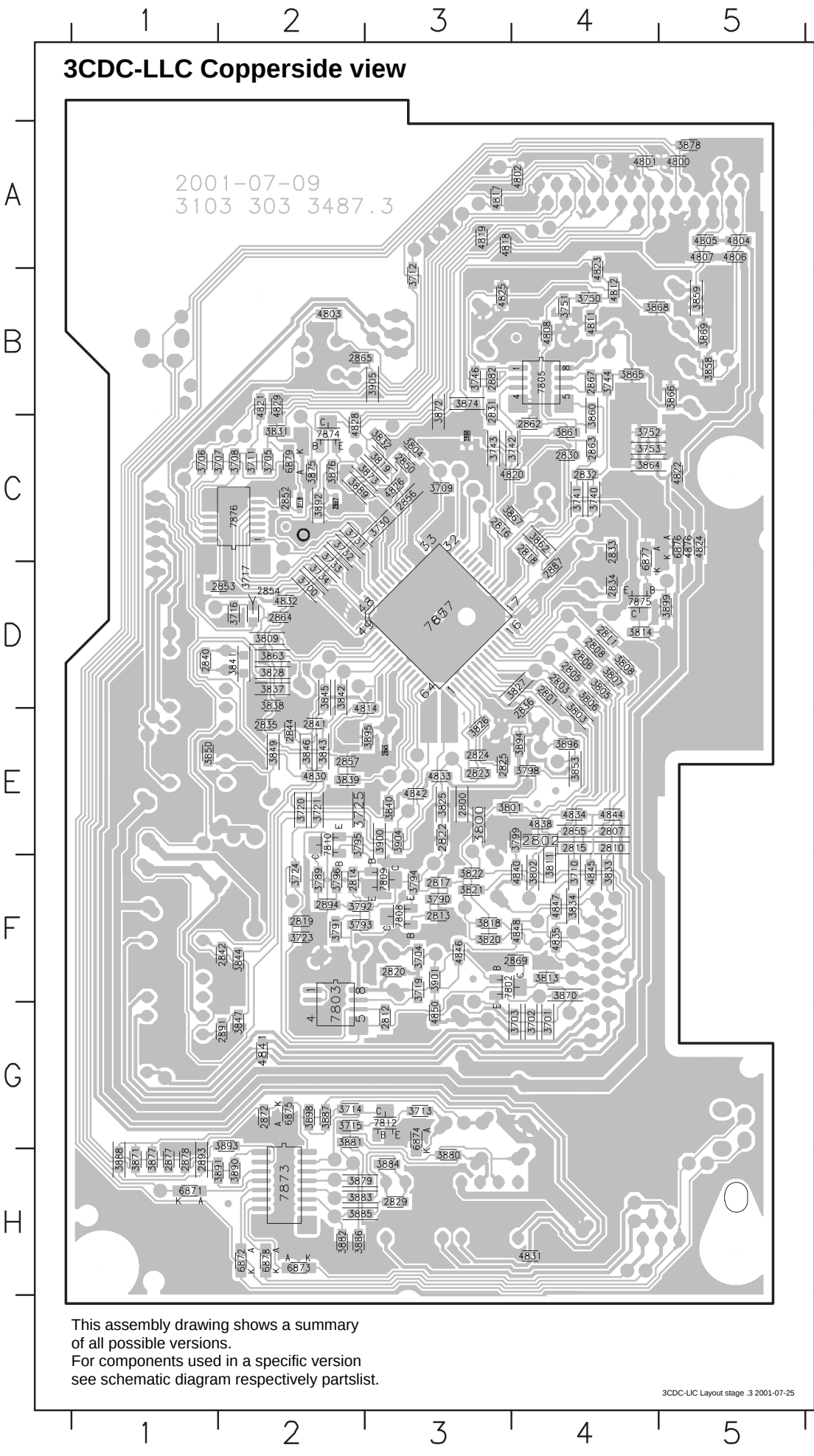


Mapping

Copperside		Componentside	
2800 E3	3741 C4	3889 C2	1800 F2
2801 D4	3742 C4	3890 H2	1801 C5
2802 E4	3743 C3	3891 H2	1805 A2
2803 D4	3744 B4	3892 C2	1810 C2
2805 D4	3746 B3	3893 G2	1875 H1
2806 D4	3750 B4	3894 E4	1878 B3
2807 E4	3751 B4	3895 E3	1880 B5
2808 D4	3752 C4	3896 E4	1881 G1
2810 E4	3753 C4	3898 G2	2804 F3
2811 D4	3789 F2	3899 D5	2809 E4
2812 G3	3790 F3	3900 E3	2826 D3
2813 F3	3791 F2	3901 F3	2828 D4
2814 F2	3792 F3	3904 E3	2837 E5
2815 E4	3793 F3	3905 B3	2838 F2
2816 C3	3794 F3	4800 A5	2839 E5
2817 F3	3795 E2	4801 A4	2851 C2
2818 C4	3796 F2	4802 A4	2858 B2
2819 F2	3798 E4	4803 B2	2860 B1
2820 F3	3799 E4	4804 A5	2861 B1
2822 E3	3800 E3	4805 A5	2873 H2
2823 E3	3801 E4	4806 A5	2875 G3
2824 E3	3802 F4	4807 A5	2876 B2
2825 E3	3803 D4	4808 B4	2881 G3
2829 H3	3804 C3	4811 B4	2885 D2
2830 C4	3805 D4	4812 B4	2888 F4
2831 B3	3806 D4	4814 D3	3812 F4
2832 C4	3807 D4	4817 A3	3815 G3
2833 C4	3808 D4	4818 A3	3835 F5
2834 D4	3809 D2	4819 A3	3851 G2
2835 E2	3811 F4	4820 C4	3852 E5
2836 D4	3813 F4	4821 B2	5802 B4
2840 D1	3814 D4	4822 C5	7806 F5
2841 E2	3818 F3	4823 A4	7807 D5
2842 F2	3819 C3	4824 C5	7871 H3
2844 E2	3820 F3	4825 B3	
2850 C3	3821 F3	4826 C3	
2852 C2	3822 F3	4828 C2	
2853 D2	3825 E3	4829 B2	
2854 D2	3826 E3	4830 E2	
2855 E4	3827 D4	4831 H4	
2856 C3	3828 D2	4832 D2	
2857 E2	3831 C2	4833 E3	
2862 C4	3832 C3	4834 E4	
2863 C4	3833 F4	4835 F4	
2864 D2	3834 F4	4838 E4	
2865 B3	3837 D2	4840 F4	
2867 B4	3838 D2	4841 G2	
2869 F4	3839 E2	4842 E3	
2872 G2	3840 E3	4844 E4	
2877 H1	3841 D2	4845 F4	
2878 H1	3842 D2	4846 F3	
2882 B3	3843 E2	4847 F4	
2887 C4	3844 F2	4848 F4	
2891 G2	3845 D2	4850 G3	
2893 H1	3846 E2	4876 C5	
2894 F2	3847 G2	6871 H1	
2895 E3	3849 E2	6872 H2	
2896 C3	3850 E1	6873 H2	
2897 C2	3853 E4	6874 G3	
3700 D2	3858 B5	6875 G2	
3701 G4	3859 B5	6876 C5	
3702 G4	3860 B4	6877 C4	
3703 G4	3861 C4	6878 H2	
3704 F3	3862 C4	6879 C2	
3705 C2	3863 D2	7802 F4	
3706 C1	3864 C4	7803 F2	
3707 C2	3865 B4	7805 B4	
3708 C2	3866 B5	7808 F3	
3709 C3	3867 C4	7809 F3	
3710 F4	3868 B5	7810 E2	
3711 C2	3869 B5	7812 G3	
3712 A3	3870 F4	7873 H2	
3713 G3	3871 H1	7874 C2	
3714 G2	3872 B3	7875 D4	
3715 G2	3873 C3	7876 C2	
3716 D2	3874 B3	7877 D3	
3717 D2	3875 C2		
3718 C2	3876 C2		
3719 F3	3877 H1		
3720 E2	3878 A5		
3721 E2	3879 H3		
3723 F2	3880 G3		
3724 F2	3881 G2		
3725 E2	3882 H2		
3730 C3	3883 H3		
3731 C2	3884 H3		
3732 C2	3885 H3		
3733 C2	3886 H2		
3734 D2	3887 G2		
3740 C4	3888 H1		

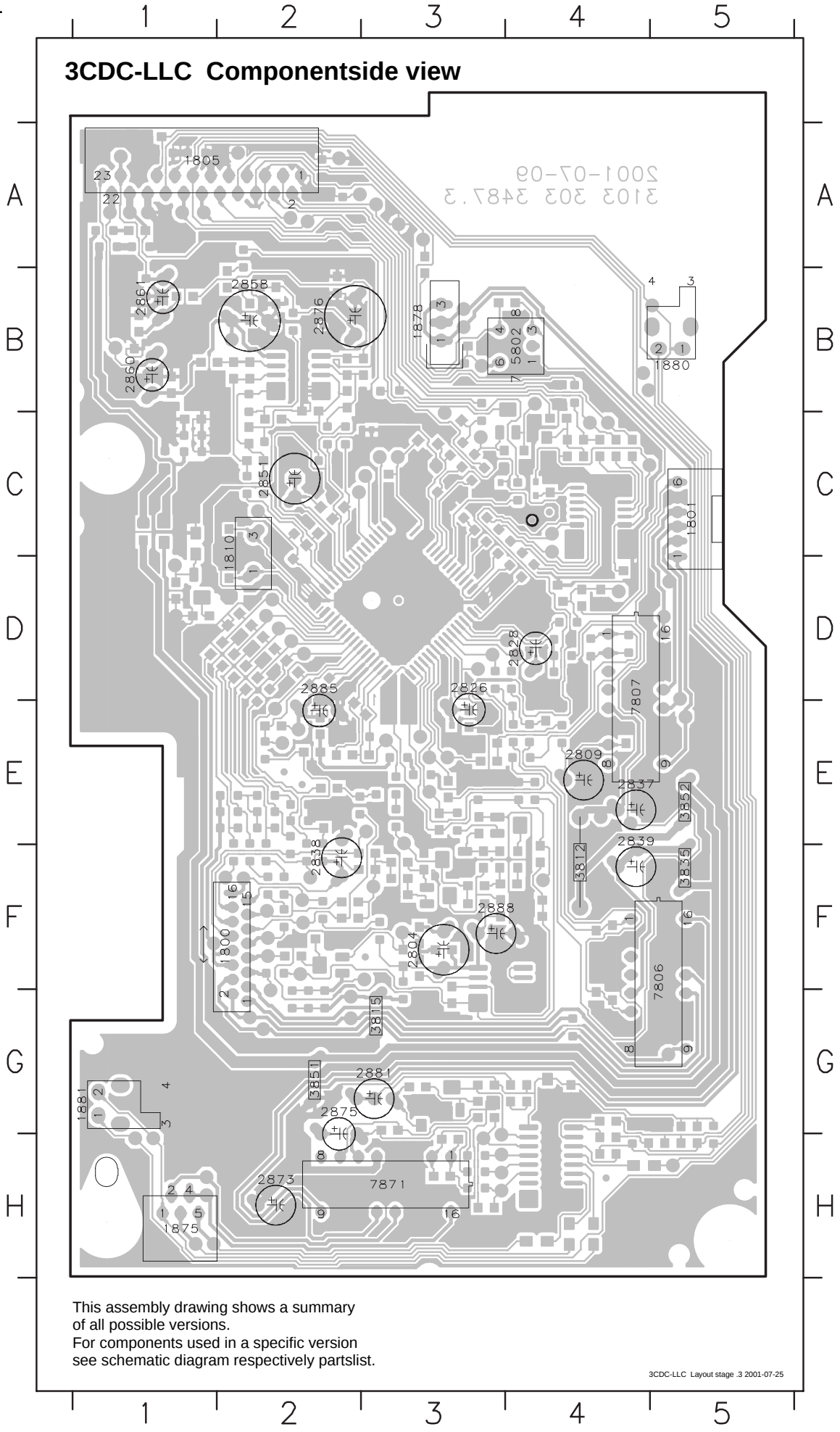






Mapping

Copperside		Componentside	
2800 E3	3741 C4	3889 C2	1800 F2
2801 D4	3742 C4	3890 H2	1801 C5
2802 E4	3743 C3	3891 H2	1805 A2
2803 D4	3744 B4	3892 C2	1810 C2
2805 D4	3746 B3	3893 G2	1875 H1
2806 D4	3750 B4	3894 E4	1878 B3
2807 E4	3751 B4	3895 E3	1880 B5
2808 D4	3752 C4	3896 E4	1881 G1
2810 E4	3753 C4	3898 G2	2804 F3
2811 D4	3789 F2	3899 D5	2809 E4
2812 G3	3790 F3	3900 E3	2826 D3
2813 F3	3791 F2	3901 F3	2828 D4
2814 F2	3792 F3	3904 E3	2837 E5
2815 E4	3793 F3	3905 B3	2838 F2
2816 C3	3794 F3	4800 A5	2839 E5
2817 F3	3795 E2	4801 A4	2851 C2
2818 C4	3796 F2	4802 A4	2858 B2
2819 F2	3798 E4	4803 B2	2860 B1
2820 F3	3799 E4	4804 A5	2861 B1
2822 E3	3800 E3	4805 A5	2873 H2
2823 E3	3801 E4	4806 A5	2875 G3
2824 E3	3802 F4	4807 A5	2876 B2
2825 E3	3803 D4	4808 B4	2881 G3
2829 H3	3804 C3	4811 B4	2885 D2
2830 C4	3805 D4	4812 B4	2888 F4
2831 B3	3806 D4	4814 D3	3812 F4
2832 C4	3807 D4	4817 A3	3815 G3
2833 C4	3808 D4	4818 A3	3835 F5
2834 D4	3809 D2	4819 A3	3851 G2
2835 E2	3811 F4	4820 C4	3852 E5
2836 D4	3813 F4	4821 B2	5802 B4
2840 D1	3814 D4	4822 C5	7806 F5
2841 E2	3818 F3	4823 A4	7807 D5
2842 F2	3819 C3	4824 C5	7871 H3
2844 E2	3820 F3	4825 B3	
2850 C3	3821 F3	4826 C3	
2852 C2	3822 F3	4828 C2	
2853 D2	3825 E3	4829 B2	
2854 D2	3826 E3	4830 E2	
2855 E4	3827 D4	4831 H4	
2856 C3	3828 D2	4832 D2	
2857 E2	3831 C2	4833 E3	
2862 C4	3832 C3	4834 E4	
2863 C4	3833 F4	4835 F4	
2864 D2	3834 F4	4838 E4	
2865 B3	3837 D2	4840 F4	
2867 B4	3838 D2	4841 G2	
2869 F4	3839 E2	4842 E3	
2872 G2	3840 E3	4844 E4	
2877 H1	3841 D2	4845 F4	
2878 H1	3842 D2	4846 F3	
2882 B3	3843 E2	4847 F4	
2887 C4	3844 F2	4848 F4	
2891 G2	3845 D2	4850 G3	
2893 H1	3846 E2	4876 C5	
2894 F2	3847 G2	6871 H1	
2895 E3	3849 E2	6872 H2	
2896 C3	3850 E1	6873 H2	
2897 C2	3853 E4	6874 G3	
3700 D2	3858 B5	6875 G2	
3701 G4	3859 B5	6876 C5	
3702 G4	3860 B4	6877 C4	
3703 G4	3861 C4	6878 H2	
3704 F3	3862 C4	6879 C2	
3705 C2	3863 D2	7802 F4	
3706 C1	3864 C4	7803 F2	
3707 C2	3865 B4	7805 B4	
3708 C2	3866 B5	7808 F3	
3709 C3	3867 C4	7809 F3	
3710 F4	3868 B5	7810 E2	
3711 C2	3869 B5	7812 G3	
3712 A3	3870 F4	7873 H2	
3713 G3	3871 H1	7874 C2	
3714 G2	3872 B3	7875 D4	
3715 G2	3873 C3	7876 C2	
3716 D2	3874 B3	7877 D3	
3717 D2	3875 C2		
3718 C2	3876 C2		
3719 F3	3877 H1		
3720 E2	3878 A5		
3721 E2	3879 H3		
3723 F2	3880 G3		
3724 F2	3881 G2		
3725 E2	3882 H2		
3730 C3	3883 H3		
3731 C2	3884 H3		
3732 C2	3885 H3		
3733 C2	3886 H2		
3734 D2	3887 G2		
3740 C4	3888 H1		



3CDC-LLC mainboard
part 2

digital out circuitry - 75Ω version (not on all versions)

digital out circuitry (not for 75Ω Versions)

CD-Text circuitry (optional)

CD-TEXT INFO

changer control logic

Output enable delay circuitry

to combi-board

BASIC VERSION (15 Pin)

DIG. OUT (19 Pin)

CD-TEXT (23 Pin)

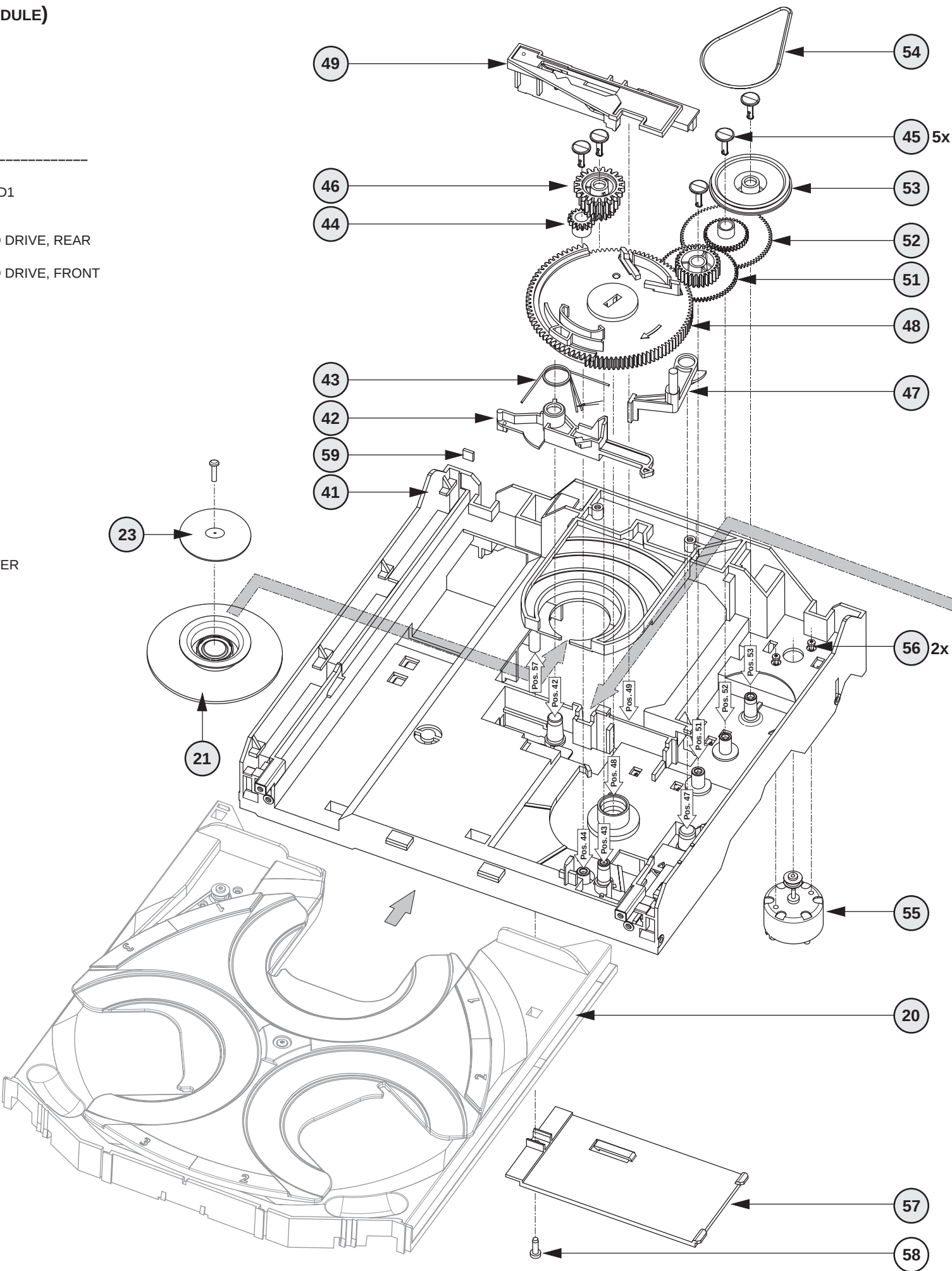
... V DC voltages measured in PLAY MODE with following conditions:
+10V = 10V
+5V = 5V

EVM

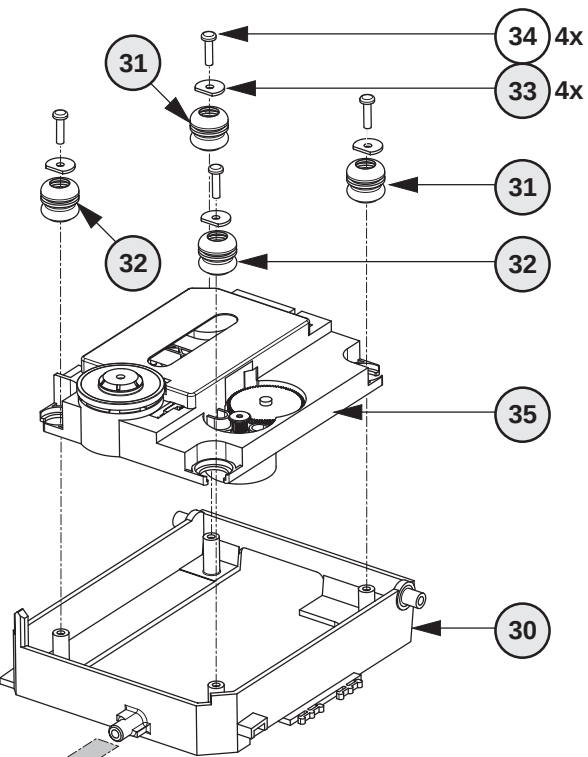
EXPLODED VIEW (3CDC-LC MODULE)

MECHANICAL PARTS *Loader* → *this page*

20	3103 304 66500	DRAWER
21	3140 114 29070	PRESSURE RING-MCD1
23	3140 111 21270	METAL RING-MCD1
30	3103 304 66560	SUPPORT
31	4822 529 10386	RUBBER DAMPER CD DRIVE, REAR
32	4822 529 10387	RUBBER DAMPER CD DRIVE, FRONT
33	3103 304 06970	WASHER
35	3103 309 05350	CD DRIVE MCD1B
41	3103 304 66480	FRAME
42	3103 304 66540	BRACKET-GUIDING
43	3103 301 06460	SPRING-GUIDING
44	3103 304 06890	GEAR-3
45	3103 304 06980	NAIL FIXATION
46	3103 304 06880	GEAR-2
47	3103 304 66530	BRACKET-LOAD
48	3103 304 06910	CAM
49	3103 304 66510	GUIDING
51	3103 304 06900	GEAR-4
52	3103 304 06870	GEAR-1
53	3103 304 06960	PULLEY-FRAME
54	3103 304 66910	DRIVING-BELT-DRAWER
55	4822 361 10753	TRAY MOTOR
56	4822 502 12548	SCREW M2,6X3,5
57	3103 304 69880	COVER-MCD1
59	4822 466 12146	RUBBER



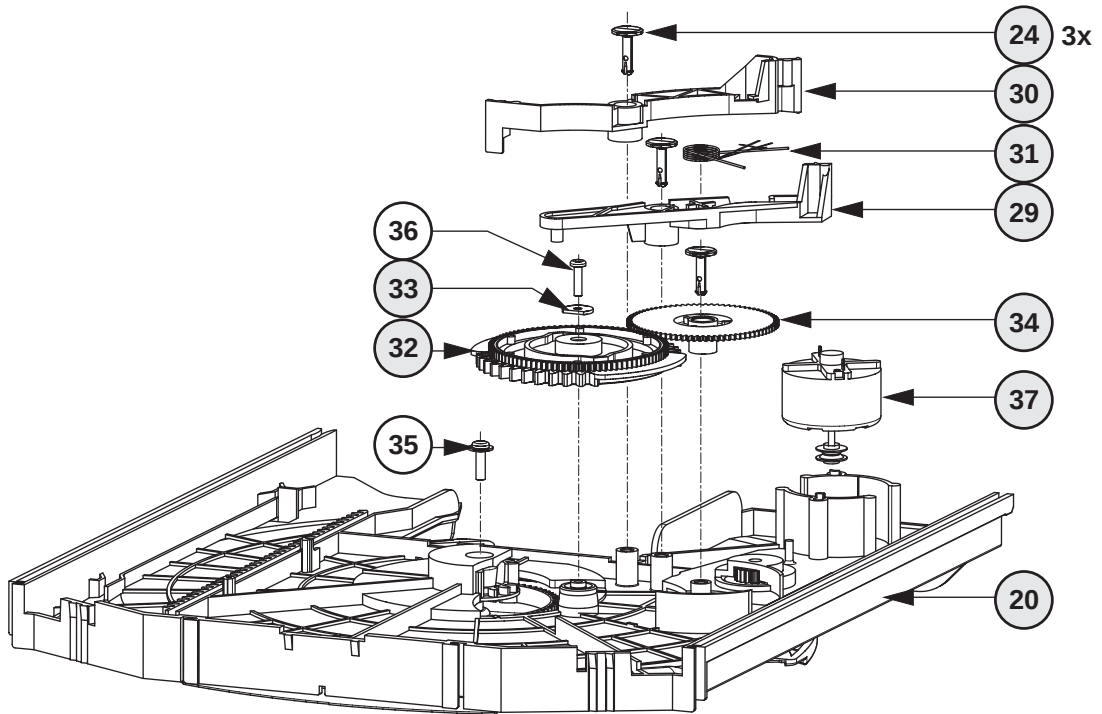
- X spare part
Y non spare part



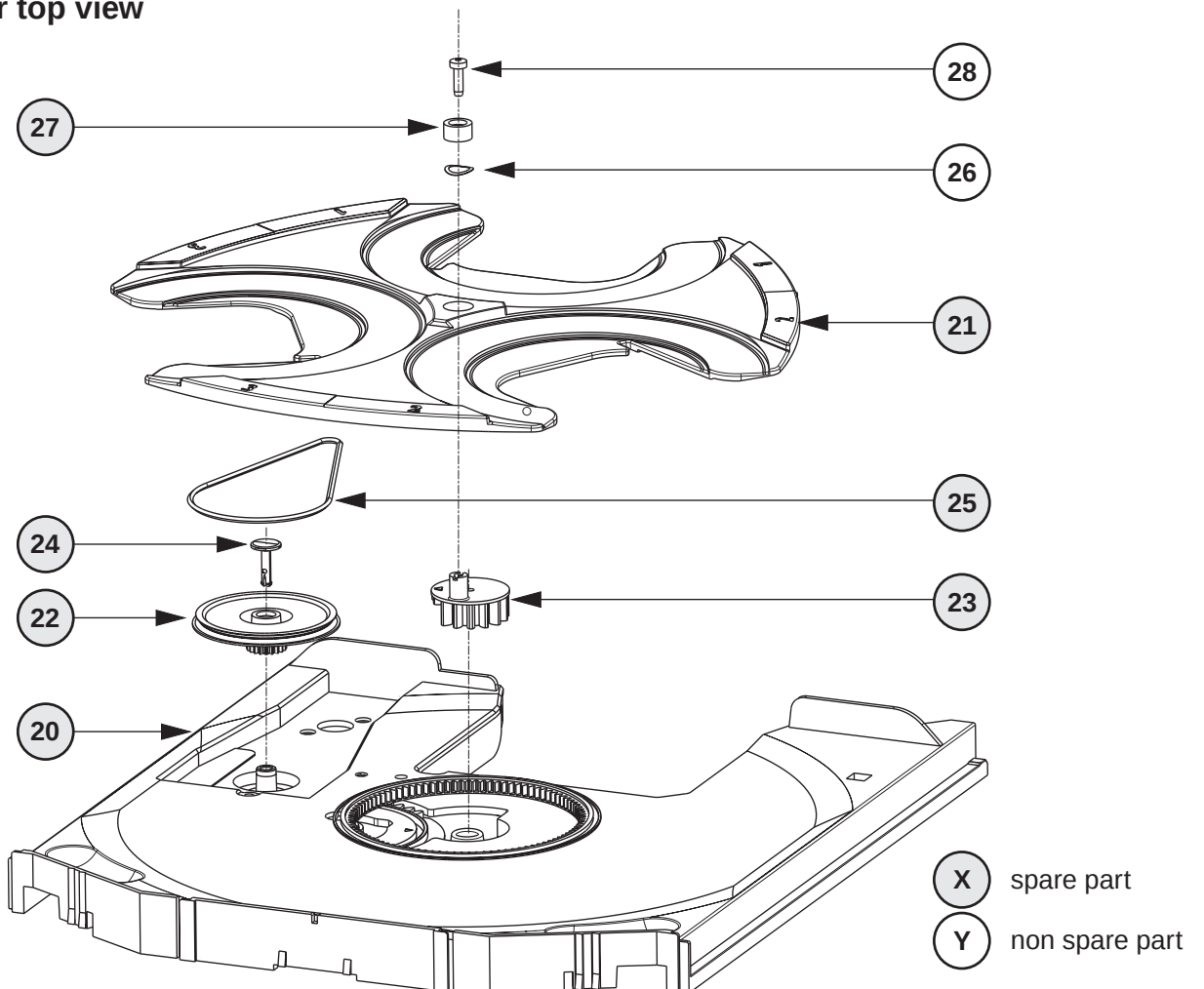
MECHANICAL PARTS *Drawer* → *Chapter 10-11*

20	3103 304 66500	DRAWER
21	3103 304 66490	CAROUSEL
22	3103 304 06860	PULLEY-DRAWER
23	3103 304 06850	ECCENTRIC GEAR WHEEL
24	3103 304 06980	NAIL FIXATION
25	3103 304 66850	DRIVING BELT CAROUSEL
27	4822 532 12365	BUSH DRAWER (height=5,5mm,d=9,4mm)
27	3103 304 07100	BUSH DRAWER (height=8,5mm,d=16mm)
29	3103 304 66550	BRACKET-DISC
30	3103 304 66520	TUMBLER
31	3103 301 06470	SPRING-DISC
32	3103 304 06920	CONTROL-DISC
34	3103 304 06870	GEAR-1
37	4822 361 10753	CARROUSEL MOTOR

Drawer bottom view



Drawer top view



ELECTRICAL PARTSLIST 3CDC-LLC-MCD1 MODULE**MISCELLANEOUS**

35	3103 309 05350	CD DRIVE MCD1B
37	4822 361 10753	CAROUSEL MOTOR
55	4822 361 10753	TRAY MOTOR
1800	2422 025 17389	FLEX FOIL CONNECTOR 16Pin
1805	4822 265 10979	FLEX FOIL CONNECTOR 15Pin

1805	4822 265 11545	FLEX FOIL CONNECTOR 19Pin
1875	4822 267 10958	FLEX FOIL CONNECTOR 5Pin
1876	2422 025 08332	FLEX FOIL CONNECTOR 5Pin
1880	4822 276 13503	SWITCH, Tray switch
1881	4822 276 13503	SWITCH, Drive UP/DOWN

1882	4822 276 13503	SWITCH, CD Pos.1 recognized
1883	4822 276 13503	SWITCH, valid CD Play position
8002	3103 308 91990	FLEX FOIL CABLE 5P, 200mm 1:n
8005	3103 308 92930	FLEX FOIL CABLE 16P 170mm 1:n

CAPACITORS

2800 ©	4822 122 33172	390pF	5%	50V
2801 ©	4822 126 13883	220pF	5%	50V
2802 ©	4822 122 33172	390pF	5%	50V
2803 ©	4822 126 13883	220pF	5%	50V
2804	4822 124 41751	47µF	20%	16V

2805 ©	4822 126 13883	220pF	5%	50V
2806 ©	4822 126 13883	220pF	5%	50V
2807 ©	5322 122 31863	330pF	5%	50V
2808 ©	4822 126 13883	220pF	5%	50V
2809	4822 124 40746	0,22µF	20%	63V

2810 ©	4822 126 10326	180pF	5%	
2811 ©	4822 126 13883	220pF	5%	50V
2812 ©	2222 867 15339	33pF	5%	50V
2813 ©	4822 126 14226	82pF		50V
2814 ©	2238 246 59858	450nF	20%	10V

2815 ©	4822 122 33172	390pF	5%	50V
2816 ©	4822 126 14247	1,5nF	10%	50V
2817 ©	4822 126 14249	560pF	10%	50V
2818 ©	4822 126 13344	1,5nF	5%	63V
2819 ©	5322 126 11578	1nF	10%	63V

2820 ©	4822 126 14305	100nF	10%	16V
2822 ©	5322 122 31866	6,8nF	10%	63V
2823 ©	3198 016 31510	150pF	10%	50V
2824 ©	5322 122 32654	22nF	10%	63V
2825 ©	4822 122 33891	3,3nF	10%	63V

2826	4822 124 12362	47µF	20%	4V
2828	4822 124 12362	47µF	20%	4V
2829 ©	3198 017 42230	22nF	10%	50V
2830 ©	4822 126 13751	47nF	10%	50V
2831 ©	4822 122 31765	100pF	5%	50V

2832 ©	4822 122 31765	100pF	5%	50V
2835 ©	3198 024 44730	47nF	5%	50V
2836 ©	3198 024 44730	47nF	5%	50V
2837	4822 124 40433	47µF	20%	25V
2838	4822 124 40248	10µF	20%	63V

2839	4822 124 40433	47µF	20%	25V
2840 ©	4822 126 14585	100nF	10%	50V
2841 ©	5322 126 10511	1nF	5%	50V
2842 ©	4822 126 14247	1,5nF	10%	50V
2844 ©	3198 016 31020	1nF	5%	25V

2850 ©	5322 126 11578	1nF	10%	63V
2851	4822 124 42383	220µF	20%	4V
2855 ©	4822 122 33172	390pF	5%	50V
2856 ©	4822 126 13691	27pF	1%	63V
2857 ©	5322 126 11583	10nF	10%	63V

2858	4822 124 12245	220µF	20%	16V
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CAPACITORS

2860	4822 124 11947	10µF	20%	16V
2861	4822 124 11947	10µF	20%	16V
2862 ©	4822 126 13883	220pF	5%	50V
2863 ©	4822 126 13883	220pF	5%	50V
2865 ©	4822 126 14494	22nF	10%	25V

2867 ©	4822 126 13883	220pF	5%	50V
2872 ©	3198 024 44730	47nF	5%	50V
2873	4822 124 80231	47µF	20%	16V
2875	4822 124 11947	10µF	20%	16V
2876	4822 124 12245	220µF	20%	16V

2877 ©	4822 122 33777	47pF	5%	63V
2878 ©	4822 126 13883	220pF	5%	50V
2881	4822 124 40769	4,7µF	20%	100V
2882 ©	4822 126 13883	220pF	5%	50V
2885	4822 124 40769	4,7µF	20%	100V

2887 ©	4822 126 14585	100nF	10%	50V
2888	4822 124 80231	47µF	20%	16V
2891 ©	4822 126 14247	1,5nF	10%	50V
2893 ©	4822 122 33575	220pF	5%	50V
2894 ©	3198 017 44740	470nF	20%	10V

2895 ©	4822 126 14305	100nF	10%	16V
2896 ©	4822 126 14305	100nF	10%	16V
2897 ©	4822 126 14305	100nF	10%	16V

RESISTORS

3701 ©	4822 051 20479	47Ω	5%	0,1W
3702 ©	4822 051 20479	47Ω	5%	0,1W
3703 ©	4822 051 20479	47Ω	5%	0,1W
3704 ©	4822 117 12917	1Ω	5%	0,06W
3710 ©	4822 051 51831	18kΩ	5%	0,1W

3712 ©	4822 051 30109	10Ω	5%	0,06W
3713 ©	4822 051 30223	22kΩ	5%	0,06W
3714 ©	4822 051 30103	10kΩ	5%	0,06W
3715 ©	4822 117 13632	100kΩ	1%	0,06W
3716 ©	4822 051 30471	470Ω	5%	0,06W

3717 ©	4822 117 12917	1Ω	5%	0,06W
3719 ©	4822 051 30102	1kΩ	5%	0,06W
3720 ©	4822 051 20474	470kΩ	5%	0,1W
3721 ©	4822 051 20393	39kΩ	5%	0,1W
3723 ©	4822 051 30272	2,7kΩ	5%	0,06W

3724 ©	4822 117 12902	8,2kΩ	1%	0,06W
3725 ©	4822 051 30184	180kΩ	5%	0,06W
3730 ©	4822 051 20333	33kΩ	5%	0,1W
3740 ©	4822 051 20223	22kΩ	5%	0,1W
3741 ©	4822 051 20223	22kΩ	5%	0,1W

3742 ©	4822 051 20223	22kΩ	5%	0,1W
3743 ©	4822 051 20223	22kΩ	5%	0,1W
3744 ©	4822 051 30103	10kΩ	5%	0,06W
3746 ©	4822 051 30103	10kΩ	5%	0,06W
3750 ©	4822 051 30102	1kΩ	5%	0,06W

3751 ©	4822 051 30102	1kΩ	5%	0,06W
3789 ©	4822 051 30471	470Ω	5%	0,06W
3790 ©	4822 051 30561	560Ω	5%	0,06W
3791 ©	4822 117 12968	820Ω	5%	0,06W
3792 ©	4822 051 30332	3,3kΩ	5%	0,06W

3793 ©	4822 051 20471	470Ω	5%	0,1W
3794 ©	4822 051 30391	390Ω	5%	0,06W
3795 ©	4822 051 30222	2,2kΩ	5%	0,06W
3796 ©	4822 051 30332	3,3kΩ	5%	0,06W
3798 ©	4822 051 30102	1kΩ	5%	0,06W

3799 ©	4822 051 30102	1kΩ	5%	0,06W
3800 ©	4822 051 51831	18kΩ	5%	0,1W

ELECTRICAL PARTSLIST 3CDC-LLC-MCD1 MODULE**RESISTORS**

3801 ©	4822 051 30103	10kΩ	5%	0,06W
3802 ©	4822 051 51831	18kΩ	5%	0,1W
3803 ©	4822 117 10833	10kΩ	1%	0,1W
3804 ©	4822 051 30103	10kΩ	5%	0,06W
3805 ©	4822 051 30103	10kΩ	5%	0,06W
3806 ©	4822 051 30103	10kΩ	5%	0,06W
3807 ©	4822 051 30103	10kΩ	5%	0,06W
3808 ©	4822 051 30103	10kΩ	5%	0,06W
3809 ©	4822 051 20471	470Ω	5%	0,1W
3811 ©	4822 051 51831	18kΩ	5%	0,1W
3812	4822 053 10228	2,2Ω	5%	1W
3813 ©	4822 117 13608	4,7Ω	5%	0,06W
3814 ©	4822 051 30339	33Ω	5%	0,06W
3815	4822 052 10478	4,7Ω	5%	NFR
3818 ©	4822 051 30222	2,2kΩ	5%	0,06W
3819 ©	4822 051 20471	470Ω	5%	0,1W
3820 ©	4822 051 30222	2,2kΩ	5%	0,06W
3821 ©	4822 051 30222	2,2kΩ	5%	0,06W
3822 ©	4822 051 30222	2,2kΩ	5%	0,06W
3825 ©	4822 051 20181	180Ω	5%	0,1W
3826 ©	4822 051 30333	33kΩ	5%	0,06W
3827 ©	4822 051 20273	27kΩ	5%	0,1W
3828 ©	4822 051 20223	22kΩ	5%	0,1W
3831 ©	4822 051 30101	100Ω	5%	0,06W
3832 ©	4822 051 30103	10kΩ	5%	0,06W
3833 ©	4822 051 30223	22kΩ	5%	0,06W
3834 ©	4822 051 20223	22kΩ	5%	0,1W
3835	4822 052 10478	4,7Ω	5%	NFR
3837 ©	4822 051 10102	1kΩ	2%	0,25W
3838 ©	4822 051 30102	1kΩ	5%	0,06W
3839 ©	4822 051 20124	120kΩ	5%	0,1W
3840 ©	4822 051 30124	120kΩ	5%	0,06W
3841 ©	4822 117 10833	10kΩ	1%	0,1W
3842 ©	4822 117 10833	10kΩ	1%	0,1W
3843 ©	4822 117 10834	47kΩ	1%	0,1W
3844 ©	4822 051 20392	3,9kΩ	5%	0,1W
3845 ©	4822 117 10833	10kΩ	1%	0,1W
3846 ©	4822 117 10834	47kΩ	1%	0,1W
3847 ©	4822 051 20562	5,6kΩ	5%	0,1W
3849 ©	4822 051 20334	330kΩ	5%	0,1W
3850 ©	4822 051 30103	10kΩ	5%	0,06W
3851	4822 052 10338	3,3Ω		NFR25
3852	4822 052 10228	2,2Ω	5%	0,33W
3853 ©	4822 051 20471	470Ω	5%	0,1W
3858 ©	4822 117 12925	47kΩ	1%	0,06W
3859 ©	4822 117 10834	47kΩ	1%	0,1W
3860 ©	4822 117 10833	10kΩ	1%	0,1W
3861 ©	4822 051 30103	10kΩ	5%	0,06W
3862 ©	4822 051 20121	120Ω	5%	0,1W
3863 ©	4822 117 11373	100Ω	1%	0,1W
3864 ©	4822 117 11373	100Ω	1%	0,1W
3865 ©	4822 051 30101	100Ω	5%	0,06W
3867 ©	4822 051 30121	120Ω	5%	0,06W
3868 ©	4822 051 30101	100Ω	5%	0,06W
3870 ©	4822 051 20472	4,7kΩ	5%	0,1W
3871 ©	4822 051 30103	10kΩ	5%	0,06W
3873 ©	4822 051 20471	470Ω	5%	0,1W
3875 ©	4822 051 30103	10kΩ	5%	0,06W
3876 ©	4822 117 13632	100kΩ	1%	0,06W
3877 ©	4822 051 30103	10kΩ	5%	0,06W
3878 ©	4822 051 30103	10kΩ	5%	0,06W
3879 ©	4822 117 10837	100kΩ	1%	0,1W

RESISTORS

3880 ©	4822 051 30392	3,9kΩ	5%	0,06W
3881 ©	4822 117 13632	100kΩ	1%	0,06W
3882 ©	4822 117 12925	47kΩ	1%	0,06W
3883 ©	4822 117 10833	10kΩ	1%	0,1W
3884 ©	4822 051 30271	270Ω	5%	0,06W
3885 ©	4822 117 10833	10kΩ	1%	0,1W
3886 ©	4822 117 12925	47kΩ	1%	0,06W
3887 ©	4822 051 30221	220Ω	5%	0,06W
3888 ©	4822 117 10833	10kΩ	1%	0,1W
3889 ©	4822 051 20471	470Ω	5%	0,1W
3890 ©	4822 051 30102	1kΩ	5%	0,06W
3891 ©	4822 051 30102	1kΩ	5%	0,06W
3892 ©	4822 051 20471	470Ω	5%	0,1W
3893 ©	4822 051 30471	470Ω	5%	0,06W
3894 ©	4822 051 30101	100Ω	5%	0,06W
3895 ©	4822 117 12971	15Ω	5%	0,06W
3898 ©	4822 051 30221	220Ω	5%	0,06W
3899 ©	4822 051 30101	100Ω	5%	0,06W
3900 ©	4822 117 12955	2,7kΩ	1%	0,1W
3901 ©	4822 117 10833	10kΩ	1%	0,1W
3904 ©	4822 117 13632	100kΩ	1%	0,06W
4800 ©	4822 051 20008	CHIP JUMPER 0805		
4801 ©	4822 051 20008	CHIP JUMPER 0805		
4802 ©	4822 051 20008	CHIP JUMPER 0805		
4803 ©	4822 051 30008	CHIP JUMPER 0603		
4804 ©	4822 051 20008	CHIP JUMPER 0805		
4805 ©	4822 051 30008	CHIP JUMPER 0603		
4806 ©	4822 051 20008	CHIP JUMPER 0805		
4807 ©	4822 051 20008	CHIP JUMPER 0805		
4808 ©	4822 051 20008	CHIP JUMPER 0805		
4811 ©	4822 051 20008	CHIP JUMPER 0805		
4814 ©	4822 051 20008	CHIP JUMPER 0805		
4817 ©	4822 051 20008	CHIP JUMPER 0805		
4818 ©	4822 051 20008	CHIP JUMPER 0805		
4819 ©	4822 051 20008	CHIP JUMPER 0805		
4820 ©	4822 051 20008	CHIP JUMPER 0805		
4821 ©	4822 051 20008	CHIP JUMPER 0805		
4822 ©	4822 051 20008	CHIP JUMPER 0805		
4823 ©	4822 051 20008	CHIP JUMPER 0805		
4824 ©	4822 051 30008	CHIP JUMPER 0603		
4825 ©	4822 051 30008	CHIP JUMPER 0603		
4826 ©	4822 051 20008	CHIP JUMPER 0805		
4828 ©	4822 051 20008	CHIP JUMPER 0805		
4829 ©	4822 051 20008	CHIP JUMPER 0805		
4830 ©	4822 051 20008	CHIP JUMPER 0805		
4831 ©	4822 051 20008	CHIP JUMPER 0805		
4832 ©	4822 051 30008	CHIP JUMPER 0603		
4833 ©	4822 051 20008	CHIP JUMPER 0805		
4834 ©	4822 051 20008	CHIP JUMPER 0805		
4835 ©	4822 051 20008	CHIP JUMPER 0805		
4838 ©	4822 051 30008	CHIP JUMPER 0603		
4840 ©	4822 051 20008	CHIP JUMPER 0805		
4841 ©	4822 051 30008	CHIP JUMPER 0603		
4842 ©	4822 051 20008	CHIP JUMPER 0805		
4844 ©	4822 051 20008	CHIP JUMPER 0805		
4845 ©	4822 051 20008	CHIP JUMPER 0805		
4846 ©	4822 051 20008	CHIP JUMPER 0805		
4847 ©	4822 051 20008	CHIP JUMPER 0805		
4848 ©	4822 051 20008	CHIP JUMPER 0805		
4850 ©	4822 051 20008	CHIP JUMPER 0805		
4876 ©	4822 051 20008	CHIP JUMPER 0805		

ELECTRICAL PARTSLIST 3CDC-LLC-MCD1 MODULE**COILS**

1810	4822 242 73557	CERAMIC RES. 8,46MHz
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DIODES

6871 ©	4822 130 11397	BAS316
6872 ©	4822 130 11397	BAS316
6873 ©	4822 130 11397	BAS316
6874 ©	4822 130 11397	BAS316
6875 ©	9340 548 52115	BZX284-C5V1

6877 ©	9322 129 34685	BZX284-C3V9
6878 ©	4822 130 11397	BAS316
6879 ©	9322 129 34685	BZX284-C3V9

TRANSISTORS

7802 ©	5322 130 60123	BC807-40
7808 ©	4822 130 60511	BC847B
7809 ©	4822 130 60511	BC847B
7810 ©	4822 130 60511	BC847B
7812 ©	4822 130 60511	BC847B

7874 ©	4822 130 60511	BC847B
7875 ©	4822 130 60511	BC847B

INTEGRATED CIRCUITS

7803 ©	5322 209 82941	LM358D, Dual Opamp
7805 ©	4822 209 33165	TDA1308T/N1
7806	4822 209 32852	TDA7073A/N2
7807	4822 209 32852	TDA7073A/N2
7871	4822 209 32852	TDA7073A/N2

7873 ©	5322 209 11306	HEF4094BT, SHIFT REGISTER
7877 ©	9352 641 80557	SAA7324H/M2B, "CD10" SIGN.PROC.

MMPWR 100W MODULE

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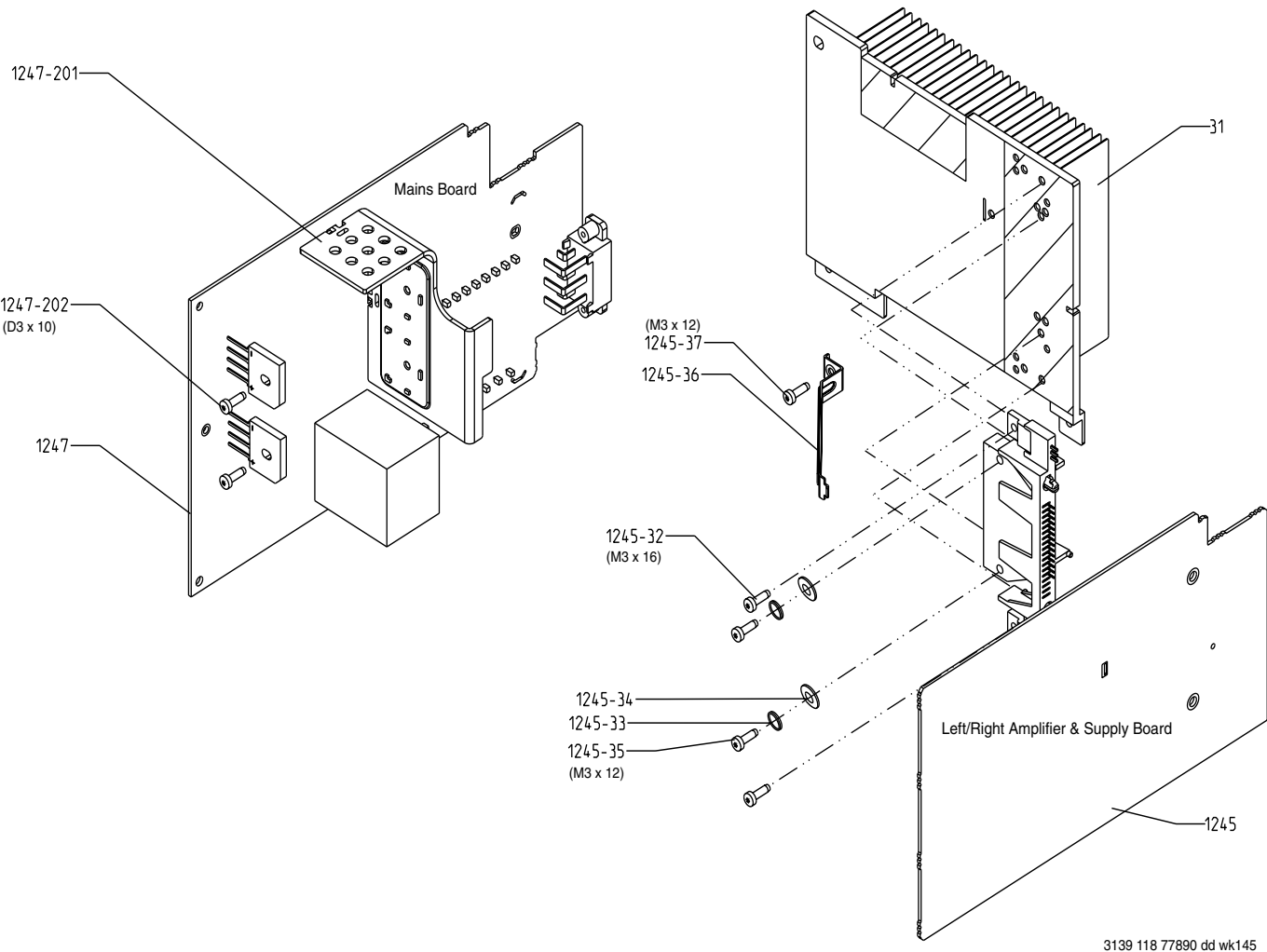
L/R Amp. & Supply Board - Component layout 11-4

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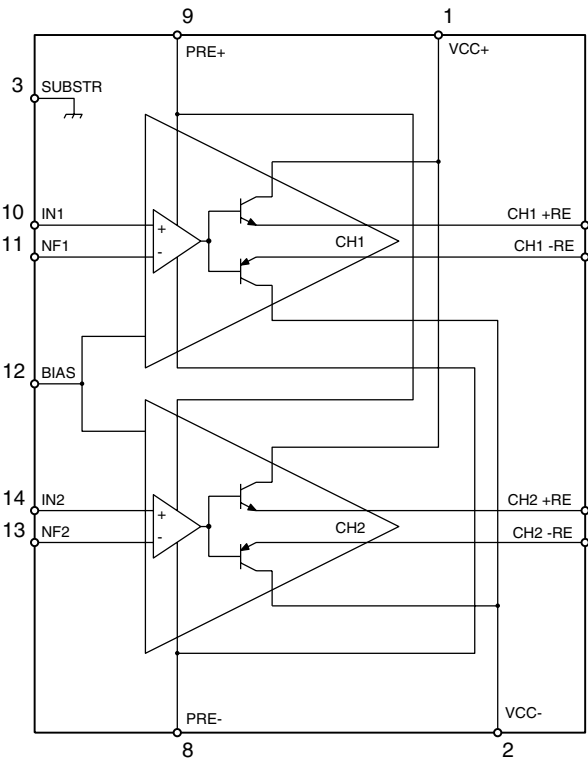
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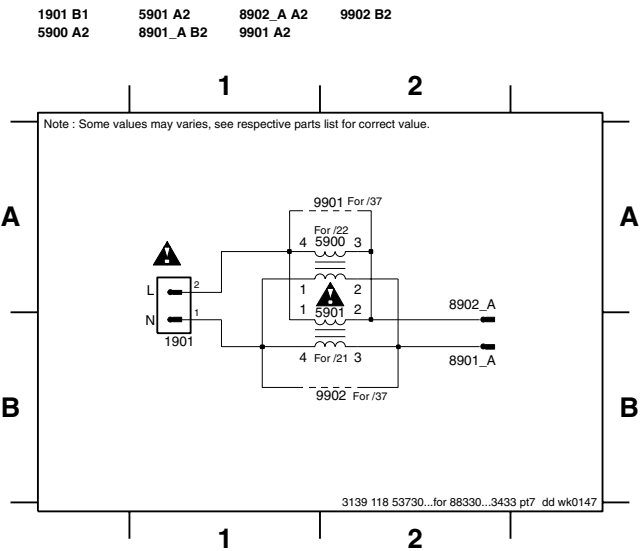
Module Exploded view



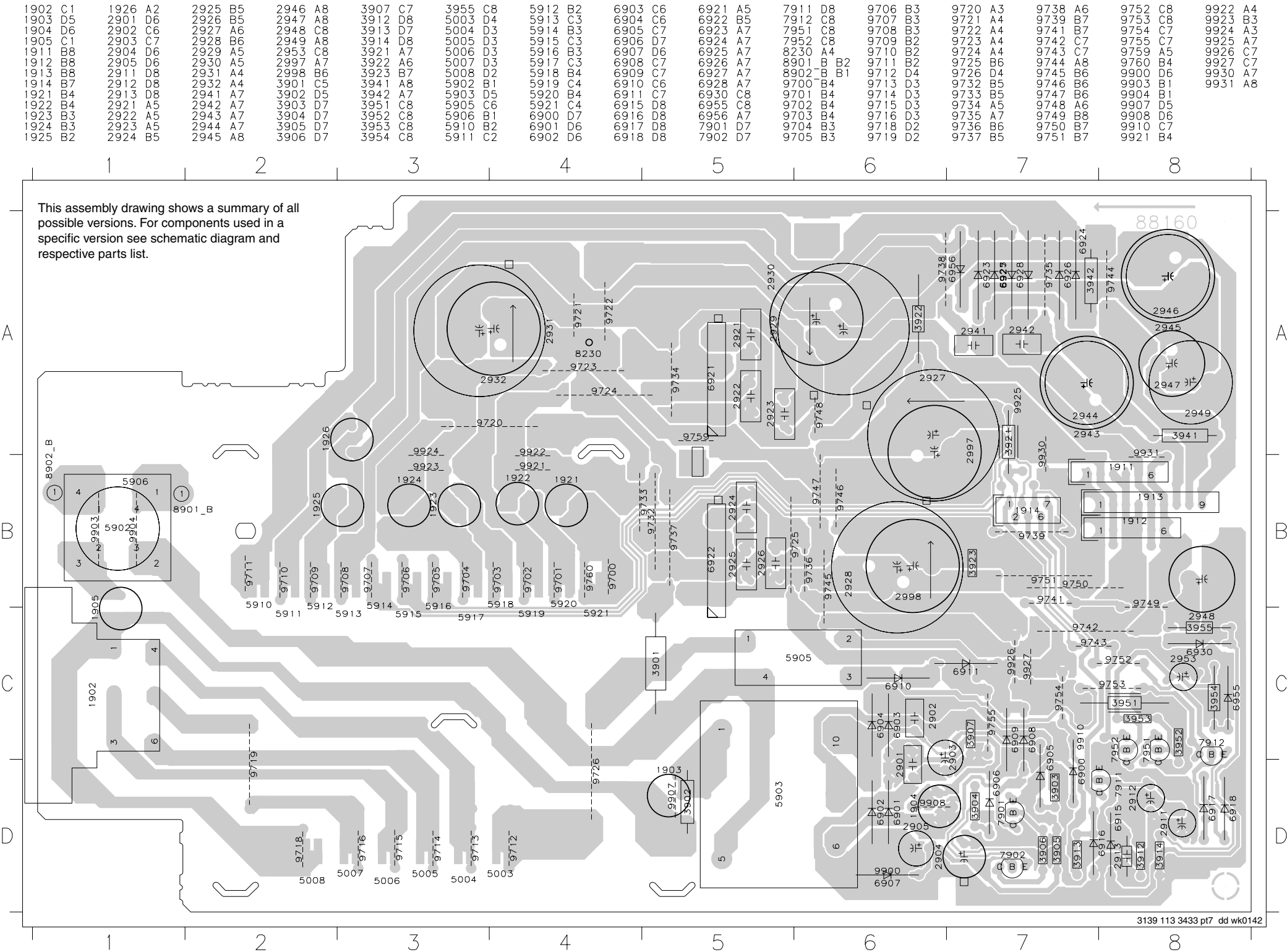
STK442-110 Internal Block diagram



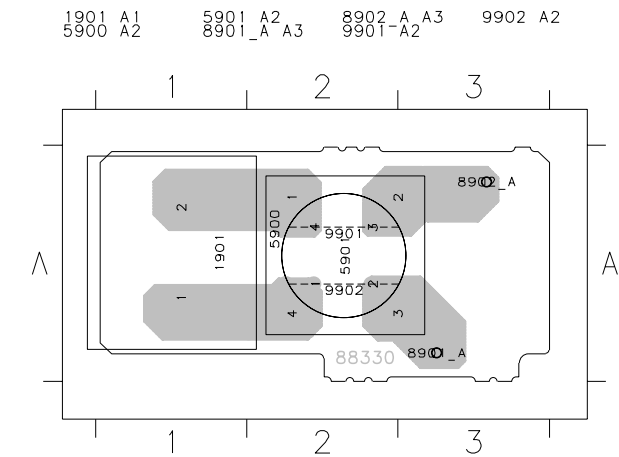
MAINS SOCKET - CIRCUIT DIAGRAM



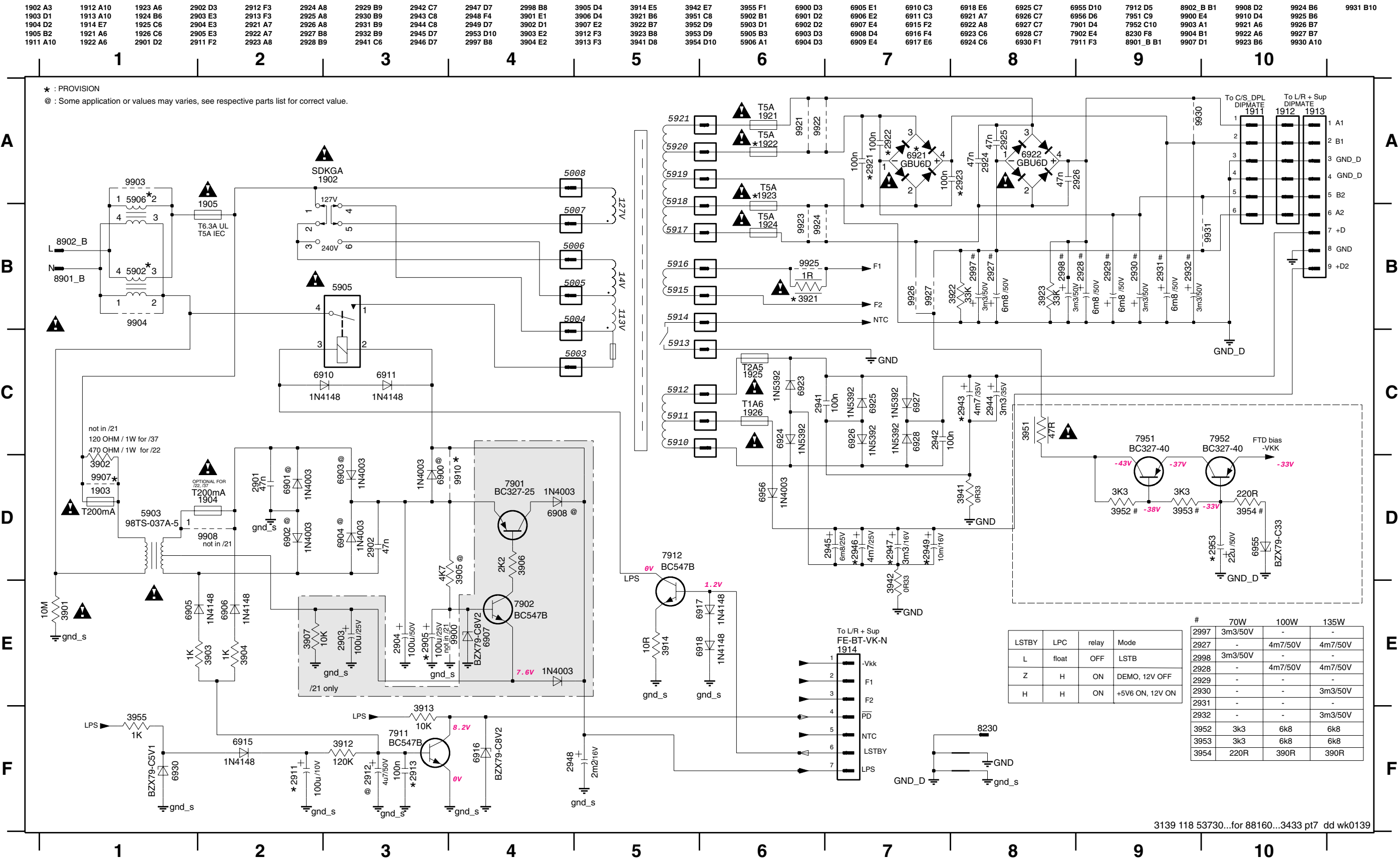
MAINS BOARD - COPPER SIDE VIEW



MAINS SOCKET - COPPER SIDE VIEW

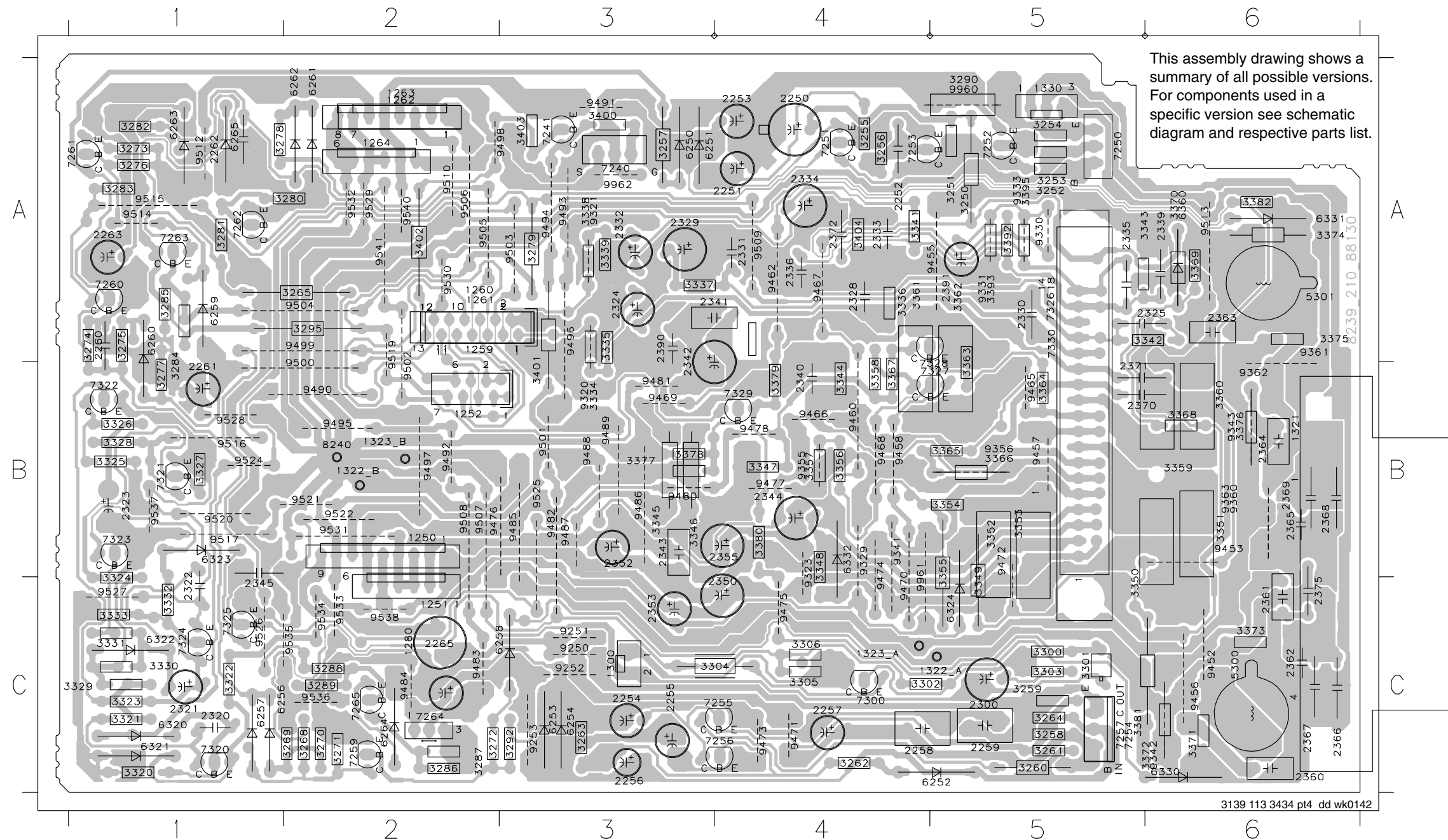


MAINS BOARD - CIRCUIT DIAGRAM



LEFT/RIGHT AMPLIFIER & SUPPLY BOARD - COPPER SIDE VIEW

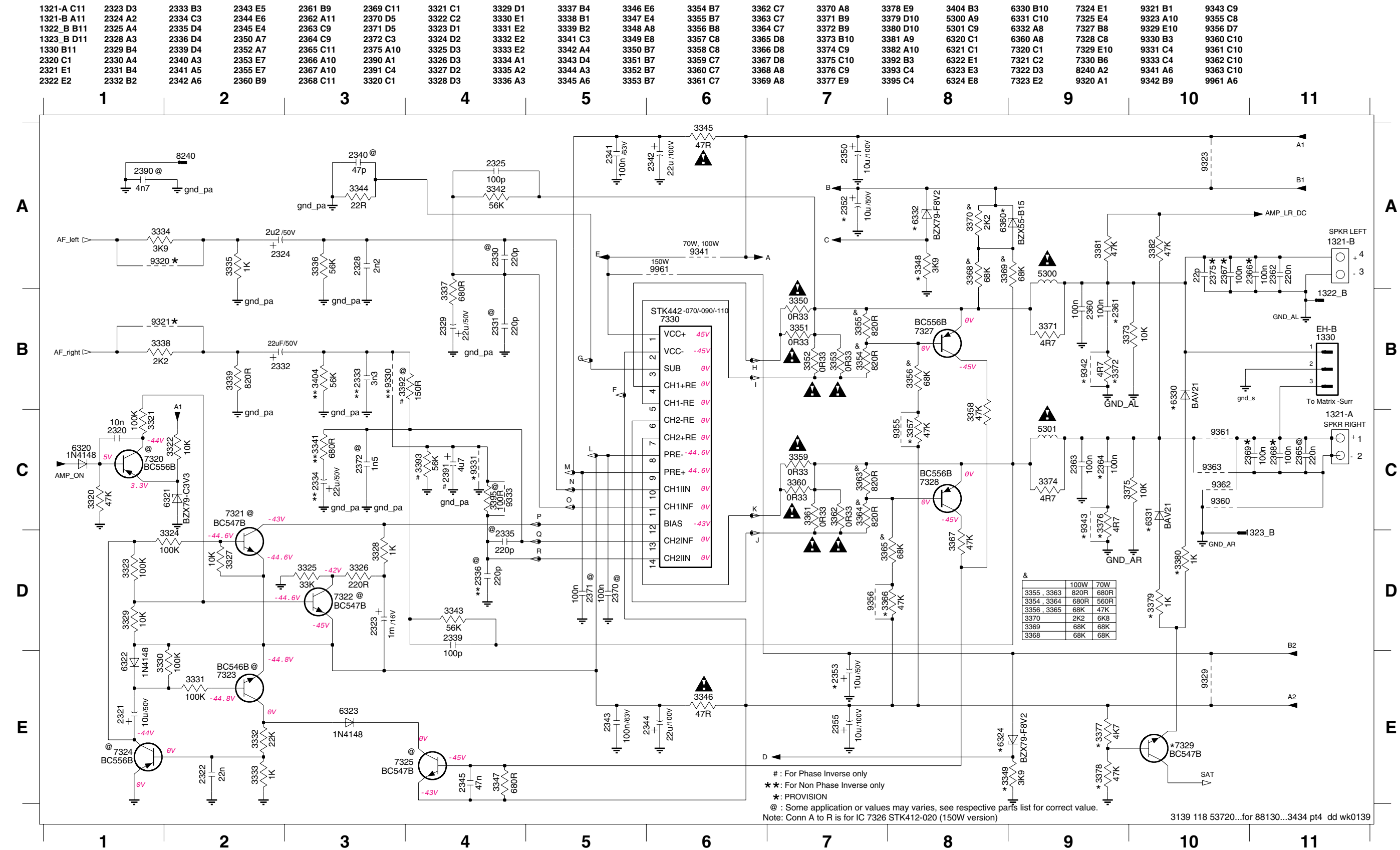
1250 B2	2261 B1	2352 B3	3259 C5	3289 C2	3337 A3	3366 B5	6251 A3	7253 A4	9253 C3	9468 B4	9497 B2	9528 B1
1251 C2	2262 A1	2353 C3	3260 C5	3290 A5	3338 A3	3367 B4	6252 C5	7254 C5	9320 B3	9469 B3	9498 A3	9529 A2
1252 B2	2263 A1	2355 B4	3261 C5	3292 C3	3339 A3	3368 B6	6253 C3	7255 C4	9321 A3	9470 C4	9499 A2	9530 A2
1259 A2	2265 C2	2360 C6	3262 C4	3295 A2	3341 A4	3369 A6	6254 C3	7256 C4	9323 B4	9471 C4	9500 B2	9531 B2
1260 A2	2300 C5	2361 C6	3263 C3	3300 C5	3342 A6	3370 A6	6256 C1	7257 C5	9329 B4	9472 B5	9501 B3	9532 A2
1261 A2	2320 C1	2362 C6	3264 C5	3301 C5	3343 A5	3371 C6	6257 C1	7259 C2	9330 A5	9473 C4	9502 B2	9533 C2
1262 A2	2321 C1	2363 A6	3265 A2	3302 C4	3344 B4	3372 C6	6258 C3	7260 A1	9331 A5	9474 B4	9503 A3	9534 C2
1263 A2	2322 C1	2364 B6	3268 C2	3303 C5	3345 B3	3373 C6	6259 A1	7261 A1	9333 A5	9475 C4	9504 A2	9535 C2
1264 A2	2323 B1	2365 B6	3269 C2	3304 C4	3346 B3	3374 A6	6260 A1	7262 A1	9341 B4	9476 B2	9505 A2	9536 C2
1280 C2	2324 A3	2366 C6	3270 C2	3305 C4	3347 B4	3375 A6	6261 A2	7263 A1	9342 C6	9477 B4	9506 A2	9537 B1
1300 C3	2325 A6	2367 C6	3271 C2	3306 C4	3348 B4	3376 B6	6262 A2	7264 C2	9343 B6	9478 B4	9507 B2	9538 C2
1321 B6	2328 A4	2368 B6	3272 C2	3320 C1	3349 C5	3377 B3	6263 A1	7265 C2	9355 B4	9480 B3	9508 B2	9540 A2
1322 A C5	2329 A3	2369 B6	3273 A1	3321 C1	3350 C5	3378 B3	6264 C2	7300 C4	9356 B5	9481 B3	9509 A4	9541 A2
1322 B B2	2330 A5	2370 B5	3274 A1	3322 C1	3351 B6	3379 B4	6265 A1	7320 C1	9360 B6	9482 B3	9510 A2	9560 A5
1323 A C4	2331 A4	2371 B5	3275 A1	3323 C1	3352 B5	3380 B4	6320 C1	7321 B1	9361 A6	9483 C2	9512 A1	9561 B4
1323 B B2	2332 A3	2372 A4	3276 A1	3324 C1	3353 B5	3381 C5	6321 C1	7322 B1	9362 B6	9484 C2	9513 A6	9562 A3
1330 A5	2333 A4	2375 C6	3277 B1	3325 B1	3354 B5	3382 A6	6322 C1	7323 B1	9363 B6	9485 B3	9514 A1	
2250 A4	2334 A4	2390 A3	3278 A1	3326 B1	3355 B5	3392 A5	6323 B1	7324 C1	9452 C6	9486 B3	9515 A1	
2251 A4	2335 A5	2391 A5	3279 A3	3327 B1	3356 B4	3393 A5	6324 C5	7325 C1	9453 B6	9487 B3	9516 B1	
2252 A4	2336 A4	3250 A5	3280 A2	3328 C1	3357 B4	3395 A5	6330 C6	7326 A5	9455 A5	9488 B3	9517 B1	
2253 A4	2339 A6	3251 A5	3281 A1	3329 B1	3358 B4	3400 A3	6331 A6	7327 B5	9456 C6	9489 B3	9519 A2	
2254 C3	2340 B4	3252 A5	3282 A1	3330 C1	3359 B6	3401 B3	6332 B4	7328 B5	9457 B5	9490 B2	9520 B1	
2255 C3	2341 A3	3253 A5	3283 A1	3331 C1	3360 B6	3402 A2	6360 A6	7329 B4	9458 B4	9491 A3	9521 B2	
2256 C3	2342 A3	3254 A5	3284 B1	3332 C1	3361 A4	3403 A3	7240 A3	7330 A5	9460 B4	9492 B2	9522 B2	
2257 C4	2343 B3	3255 A4	3285 A1	3333 C1	3362 A5	3404 A4	7241 A3	8240 B2	9462 A4	9493 A3	9524 B1	
2258 C4	2344 B4	3256 A4	3286 C2	3334 B3	3363 B5	5300 C6	7250 A5	9250 C3	9465 B5	9494 A3	9525 B3	
2259 C5	2345 C1	3257 A3	3287 C2	3335 A3	3364 B5	5301 A6	7251 A4	9251 C3	9466 B4	9495 B2	9526 C1	
2260 A1	2350 C4	3258 C5	3288 C2	3336 A4	3365 B5	6250 A3	7252 A5	9252 C3	9467 A4	9496 A3	9527 C1	



[illegible]

1250 A1	7255 E1
1251 A1	7256 E2
1252 F1	7257 C4
1259 A9	7259 F4
1260 A9	7260 A6
1261 A9	7261 A6
1262 C9	7262 D6
1263 C9	7263 D7
1264 E9	7264 E7
1280 B1	7265 F8
1300 F6	7300 F5
1322 A F9	9250 C1
1323 A F9	9251 C1
2250 A3	9252 C4
2251 A3	9253 C4
2252 B3	9960 A3
2253 B4	9962 A4
2254 E1	
2255 D1	
2256 D2	
2257 D3	
2258 D3	
2259 D4	
2260 B6	
2261 B7	
2262 C7	
2263 C7	
2265 F8	
2300 F5	
3250 A2	
3251 A2	
3252 A2	
3253 A2	
3254 A3	
3255 B4	
3256 B4	
3257 A5	
3258 D1	
3259 D1	
3260 D1	
3261 D1	
3262 D2	
3263 E2	
3264 D4	
3265 F2	
3268 E3	
3269 E4	
3270 E4	
3271 F3	
3272 F4	
3273 A6	
3274 B6	
3275 A7	
3276 A7	
3277 B7	
3278 C6	
3279 D6	
3280 D6	
3281 D7	
3282 C7	
3283 C7	
3284 D7	
3285 D7	
3286 E7	
3287 E7	
3288 E8	
3289 F8	
3290 A3	
3292 F4	
3295 C7	
3300 F5	
3301 F5	
3302 E5	
3303 F5	
3304 E6	
3305 E6	
3306 E6	
3400 B4	
3401 B5	
3402 B5	
3403 B5	
6250 A4	
6251 A4	
6252 D2	
6253 D3	
6254 D4	
6256 E4	
6257 E4	
6258 F4	
6259 A7	
6260 A7	
6261 C6	
6262 C6	
6263 C7	
6264 F7	
6265 D6	
7240 A5	
7241 B5	
7250 A2	
7251 B2	
7252 B3	
7253 B3	
7254 C1	

LEFT/RIGHT AMPLIFIER & SUPPLY BOARD - CIRCUIT DIAGRAM (PART 2)



ELECTRICAL PARTS LIST - MAINS BOARD

MISCELLANEOUS

1901	4822 265 31015	△	Mains Socket
1901	2422 030 00328	△	Mains Socket /37
1902	2422 129 16478	△	Voltage Selector /21/21M
1903	4822 071 52001	△	Fuse T200mA 250V /21/21M
1904	4822 071 52001	△	Fuse T200mA 250V /21/21M
1905	2422 086 10963	△	Fuse T5A 250V
1905	4822 252 51123	△	Fuse T6,3A 250V /37
1914	4822 267 10953		Flex Socket 7 Pin Vert.
1921	4822 071 55002	△	Fuse T5A 250V
1924	4822 071 55002	△	Fuse T5A 250V
1925	4822 071 52502	△	Fuse T2,5A 250V
1926	4822 071 51602	△	Fuse T1,6A 250V

CAPACITORS

2901	4822 121 43526		47nF 5% 250V
2902	4822 121 43526		47nF 5% 250V
2903	4822 124 40207		100µF 20% 25V /21/21M
2904	4822 124 40255		100µF 20% 63V
2912	4822 124 21913		1µF 20% 63V
2924	4822 121 43526		47nF 5% 250V
2925	4822 121 43526		47nF 5% 250V
2926	4822 121 43526		47nF 5% 250V
2927	4822 124 80415		4700µF 20% 50V
2928	4822 124 80415		4700µF 20% 50V
2941	5322 121 42386		100nF 5% 63V
2942	5322 121 42386		100nF 5% 63V
2944	4822 124 42367		3300µF 20% 35V
2945	4822 124 12328		6800µF 25V
2948	4822 123 14025		2200µF 20% 16V

RESISTORS

3901	4822 053 21106	△	10M 5% 0,5W /37
3902	4822 053 10471		470R 5% PR01 /22/30/34
3902	4822 053 10121		120R 5% PR01 /37
3903	4822 050 11002		1k 1% 0,4W
3904	4822 050 11002		1k 1% 0,4W
3905	4822 116 52244		15k 5% 0,5W
3905	4822 116 52283		4k7 5% 0,5W /21/21M
3906	4822 116 52256		2k2 5% 0,5W /21/21M
3907	4822 050 21003		10k 1% 0,6W /21/21M
3912	4822 116 52234		100k 5% 0,5W
3913	4822 050 21003		10k 1% 0,6W
3914	4822 116 52176		10R 5% 0,5W
3922	4822 050 23303		33k 1% 0,6W
3923	4822 050 23303		33k 1% 0,6W
3941	4822 117 11342		0R33 5% 2W
3942	4822 117 11342		0R33 5% 2W
3951	4822 052 10479	△	47R 5% 0,33W
3952	4822 116 83961		6k8 5%
3953	4822 116 83961		6k8 5%
3954	4822 116 83881		390R 5% 0,5W
3955	4822 050 11002		1k 1% 0,4W

COILS & FILTERS

5900	4822 157 11832	△	Mains Filter 400µH 3A /22/30/34
5901	4822 157 11628	△	Mains Choke /21/21M
5903	3103 308 30600	△	Standby Transformer /21/21M
5903	3103 308 30610	△	Standby Transformer /22/30/34
5903	3103 308 30800	△	Standby Transformer /37
5905	4822 280 10382	△	Relay 1P 9V 10/80A SDT-SS

DIODES

6900	4822 130 31878		1N4003G not for /21/21M
6901	4822 130 31878		1N4003G
6901	5322 130 81917		SB140 /21/21M
6902	5322 130 81917		SB140 /21/21M
6902	4822 130 31878		1N4003G
6903	4822 130 31878		1N4003G
6903	5322 130 81917		SB140 /21/21M
6904	5322 130 81917		SB140 /21/21M
6904	4822 130 31878		1N4003G
6905	4822 130 30621		1N4148
6906	4822 130 30621		1N4148
6907	4822 130 34382		BZX79-B8V2 /21/21M
6908	5322 130 81917		SB140 /21/21M
6909	4822 130 31878		1N4003G /21/21M
6910	4822 130 30621		1N4148
6911	4822 130 30621		1N4148
6915	4822 130 30621		1N4148
6916	4822 130 34382		BZX79-B8V2
6917	4822 130 30621		1N4148
6918	4822 130 30621		1N4148
6922	4822 130 10944		GBU6D
6923	4822 130 31878		1N5392
6924	4822 130 31878		1N5392
6925	4822 130 31878		1N5392
6926	4822 130 31878		1N5392
6927	4822 130 31878		1N5392
6928	4822 130 31878		1N5392
6930	4822 130 34233		BZX79-B5V1
6955	4822 130 34142		BZX79-B33
6956	4822 130 31878		1N4003G

TRANSISTOR & INTEGRATED CIRCUITS

7901	4822 130 41246		BC327-25 /21/21M
7902	4822 130 40959		BC547B /21/21M
7911	4822 130 40959		BC547B
7912	4822 130 40959		BC547B
7951	4822 130 41327		BC327-40
7952	4822 130 41327		BC327-40

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

ELECTRICAL PARTS LIST - LEFT/RIGHT AMPLIFIER & SUPPLY BOARD

MISCELLANEOUS

28	3139 114 70800		Holder STK IC
1252	4822 267 10953		Flex Socket 7 Pin Vert.
1259	4822 267 11039		Flex Socket 11 Pin Vert.
1280	4822 071 51002	△	Fuse T1A 250V
1321	4822 267 31176		Loudspeaker Socket 4P

CAPACITORS

2250	4822 124 40255		100µF 20% 63V
2251	4822 124 40248		10µF 20% 63V
2252	4822 122 10577		3,3nF 10% 16V
2253	4822 124 40433		47µF 20% 25V
2257	4822 124 40248		10µF 20% 63V
2258	5322 121 42386		100nF 5% 63V
2259	5322 121 42386		100nF 5% 63V
2260	4822 121 51387		10nF 20% 16V
2261	4822 124 41584		100µF 20% 10V
2263	4822 124 40248		10µF 20% 63V
2300	4822 124 40207		100µF 20% 25V
2320	4822 121 43693		10nF 100V
2321	4822 124 22652		2,2µF 20% 50V
2322	4822 121 41856		22nF 5% 250V
2323	4822 124 81144		1000µF 16V
2324	4822 124 22652		2,2µF 20% 50V
2325	4822 122 33195		100pF 10% 50V
2328	5322 122 32818		2,2nF 10% 100V /21/21M
2329	4822 124 81151		22µF 50V
2330	4822 126 14316		680pF 10% 50V /21/21M
2330	4822 122 33519		470pF 10% 50V
2331	4822 126 13461		680pF 10% 50V /21/21M
2332	4822 124 81151		22µF 50V
2335	4822 126 14316		680pF 10% 50V /21/21M
2335	4822 122 33519		470pF 10% 50V
2336	4822 126 13461		680pF 10% 50V /21/21M
2339	4822 122 33195		100pF 10% 50V
2340	4822 126 12726		47pF 50V not for /21/21M
2341	5322 121 42386		100nF 5% 63V
2342	4822 124 40764		22µF 100V
2343	5322 121 42386		100nF 5% 63V
2344	4822 124 40764		22µF 100V
2345	4822 126 12785		47nF 50V
2350	5322 124 40641		10µF 20% 100V
2355	5322 124 40641		10µF 20% 100V
2360	5322 121 42386		100nF 5% 63V
2362	4822 121 42868		220nF 5% 50V
2363	5322 121 42386		100nF 5% 63V
2365	2020 308 90054		270nF 5% 50V /21/21M
2365	4822 121 42868		220nF 5% 50V
2370	2020 561 90365		100nF +80/-20% 50V not for /21/21M
2371	2020 561 90365		100nF +80/-20% 50V not for /21/21M
2372	4822 126 12878		1,5nF 10% 16V not for /21/21M
2390	4822 122 33449		47nF 30% 50V /21/21M
2390	5322 122 32261		4,7nF 50V

2391 4822 124 40769 4,7µF 20% 100V

RESISTORS

3250	4822 116 52256		2k2 5% 0,5W
3251	4822 116 52256		2k2 5% 0,5W
3253	4822 116 83883		470R 5% 0,5W
3255	4822 116 52213		180R 5% 0,5W
3256	4822 116 52206		120R 5% 0,5W
3257	4822 050 21003		10k 1% 0,6W
3264	4822 050 21003		10k 1% 0,6W
3265	4822 050 11002		1k 1% 0,4W
3268	4822 116 52244		15k 5% 0,5W
3269	4822 116 83961		6k8 5%
3270	4822 050 11002		1k 1% 0,4W
3271	4822 116 52263		2k7 5% 0,5W
3272	4822 116 52289		5k6 5% 0,5W
3273	4822 116 52228		680R 5% 0,5W
3274	4822 116 52234		100k 5% 0,5W
3275	4822 050 23303		33k 1% 0,6W
3276	4822 116 83884		47k 5% 0,5W
3277	4822 116 52234		100k 5% 0,5W
3279	4822 116 83884		47k 5% 0,5W
3280	4822 116 52303		8k2 5% 0,5W
3281	4822 116 83882		39k 5% 0,5W
3283	4822 116 52228		680R 5% 0,5W
3284	4822 116 83884		47k 5% 0,5W
3285	4822 116 52291		56k 5% 0,5W
3292	4822 116 52263		2k7 5% 0,5W
3295	4822 050 11002		1k 1% 0,4W
3300	4822 116 83883		470R 5% 0,5W
3301	4822 117 12063		NTC DC 5W 10K 5%
3302	4822 116 83876		270R 5% 0,5W
3303	4822 050 11002		1k 1% 0,4W
3304	4822 052 10108	△	1R 5% 0,33W
3305	4822 116 83876		270R 5% 0,5W
3306	4822 116 83876		270R 5% 0,5W
3320	4822 116 83884		47k 5% 0,5W
3321	4822 116 52234		100k 5% 0,5W
3322	4822 050 21003		10k 1% 0,6W
3324	4822 116 52234		100k 5% 0,5W
3325	4822 050 23303		33k 1% 0,6W
3326	4822 116 83872		220R 5% 0,5W
3327	4822 050 21003		10k 1% 0,6W
3328	4822 050 11002		1k 1% 0,4W
3329	4822 050 21003		10k 1% 0,6W
3330	4822 116 52234		100k 5% 0,5W
3331	4822 116 52234		100k 5% 0,5W
3332	4822 116 52257		22k 5% 0,5W
3333	4822 050 11002		1k 1% 0,4W
3334	4822 116 52276		3k9 5% 0,5W
3335	4822 050 11002		1k 1% 0,4W
3336	4822 116 52291		56k 5% 0,5W

ELECTRICAL PARTS LIST - LEFT/RIGHT AMPLIFIER & SUPPLY BOARD

RESISTORS

3337	4822 116 52228	680R 5% 0,5W
3338	4822 116 52256	2k2 5% 0,5W
3339	4822 116 52231	820R 5% 0,5W
3342	4822 116 52291	56k 5% 0,5W
3343	4822 116 52291	56k 5% 0,5W
3344	4822 116 52186	22R 5% 0,5W
3345	3198 012 14790 Δ	RST POW 47R 5% 1W
3346	3198 012 14790 Δ	RST POW 47R 5% 1W
3347	4822 116 52228	680R 5% 0,5W
3350	2322 194 96001 Δ	RST MFLM 0R33 5% PR02
3351	2322 194 96001 Δ	RST MFLM 0R33 5% PR02
3352	2322 194 96001 Δ	RST MFLM 0R33 5% PR02
3353	2322 194 96001 Δ	RST MFLM 0R33 5% PR02
3354	4822 116 52228	680R 5% 0,5W
3355	4822 116 52231	820R 5% 0,5W
3356	4822 116 52297	68k 5% 0,5W
3358	4822 116 83884	47k 5% 0,5W
3359	2322 194 96001 Δ	RST MFLM 0R33 5% PR02
3360	2322 194 96001 Δ	RST MFLM 0R33 5% PR02
3361	2322 194 96001 Δ	RST MFLM 0R33 5% PR02
3362	2322 194 96001 Δ	RST MFLM 0R33 5% PR02
3363	4822 116 52231	820R 5% 0,5W
3364	4822 116 52228	680R 5% 0,5W
3365	4822 116 52297	68k 5% 0,5W
3367	4822 116 83884	47k 5% 0,5W
3368	4822 116 52297	68k 5% 0,5W
3369	4822 116 52297	68k 5% 0,5W
3370	4822 116 52256	2k2 5% 0,5W
3371	4822 050 24708	4R7 1% 0,6W
3373	4822 050 21003	10k 1% 0,6W
3374	4822 050 24708	4R7 1% 0,6W
3375	4822 050 21003	10k 1% 0,6W
3381	4822 116 83884	47k 5% 0,5W
3382	4822 116 83884	47k 5% 0,5W
3392	4822 116 52175	100R 5% 0,5W
3393	4822 116 52291	56k 5% 0,5W
3395	4822 116 52175	100R 5% 0,5W not for /21/21M

COILS & FILTERS

5300	4822 157 70599 Δ	Ind. Fixed Bead EMI
5301	4822 157 70599 Δ	Ind. Fixed Bead EMI

DIODES

6250	4822 130 34281	BZX79-B15
6251	4822 130 61219	BZX79-B10
6253	4822 130 30621	1N4148
6254	4822 130 31878	1N4003G
6256	4822 130 30621	1N4148
6257	4822 130 30621	1N4148
6258	4822 130 34173	BZX79-B5V6
6259	4822 130 34278	BZX79-B6V8
6260	4822 130 30621	1N4148

6263	4822 130 30621	1N4148
6265	4822 130 34233	BZX79-B5V1
6320	4822 130 30621	1N4148
6321	5322 130 31504	BZX79-B3V3
6322	4822 130 30621	1N4148
6323	4822 130 30621	1N4148
TRANSISTORS & INTEGRATED CIRCUITS		
7250	9322 139 23687	BDX53BFP
7251	4822 130 40959	BC547B
7253	4822 130 40959	BC547B
7257	4822 209 31841	L7805CP
7259	4822 130 40981	BC337-25
7260	4822 130 40959	BC547B
7261	4822 130 44568	BC557B
7262	4822 130 40959	BC547B
7263	4822 130 40959	BC547B
7300	4822 130 41246	BC327-25
7320	4822 130 44568	BC557B
7321	4822 130 40959	BC547B
7322	4822 130 40959	BC547B
7323	4822 130 40959	BC547B
7324	4822 130 41691	BC556B
7325	4822 130 40959	BC547B
7327	4822 130 41691	BC556B
7328	4822 130 41691	BC556B
7330	9322 160 21682	STK442-110

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

BRIEF INTRODUCTION OF THE AF9 BOARD

The AF9 Board consists of the following features :

- a. TDA7468D
TDA7468D (7501) provides the basic sound processing - loudness, bass, treble, volume & mute controls and source selection - TUNER, TAPE, CD & AUX including Mic mixing for the set.
Sound features such as ALC, DBB, DSC and IS are controlled by the microprocessor IC on the Front Board via I²C Bus.
Undesirable noise during source switching are muted off by via the software of the microprocessor IC on the Front Board.
- b. MIC MIXING
Simple Mic mixing is provided by pin 2 of TDA7468D. During Mic mixed a 1nF capacitor is connected across this pin to ground instead of a chip connector(0R).
- c. DOLBY PRO LOGIC (DPL) INTERFACE
The AF9 Board has provisions to cater for DPL. External DPL Board would be required.
- d. LINE OUT
Line out cinch socket (1504) is catered including tranistors muting circuitry.
- e. SUB-WOOFER OUT
Sub-woofer out cinch socket (691) for connection to active sub-woofer speaker is catered.
- f. INCREDIBLE SURROUND (IS)
The AF9 provides 2 possible IS namely:
 - a) Simple IS using TDA7468D with addition of passive network.
 - b) Full IS using transistor circuitry to create phase shifting and spatial effect.
- g. HEADPHONE AMPLIFIER
Headphone amplifier NJM4556AM (7601) is provided after the Sound processor (7501) to drive 32 ohm to 1kohm headphone.
- h. M62320FP
The M62320FP (7403) I²C Expander provides additional controls required.
- i. CD STANDBY CONTROL
Transistors 7401 & 7402 ensures the +5V_CD supply is switched only during CD mode.
- j. CD DIGITAL OUT
CD Digital out cinch socket (1801) for connection to external digital audio decoders.

AF9 BOARD

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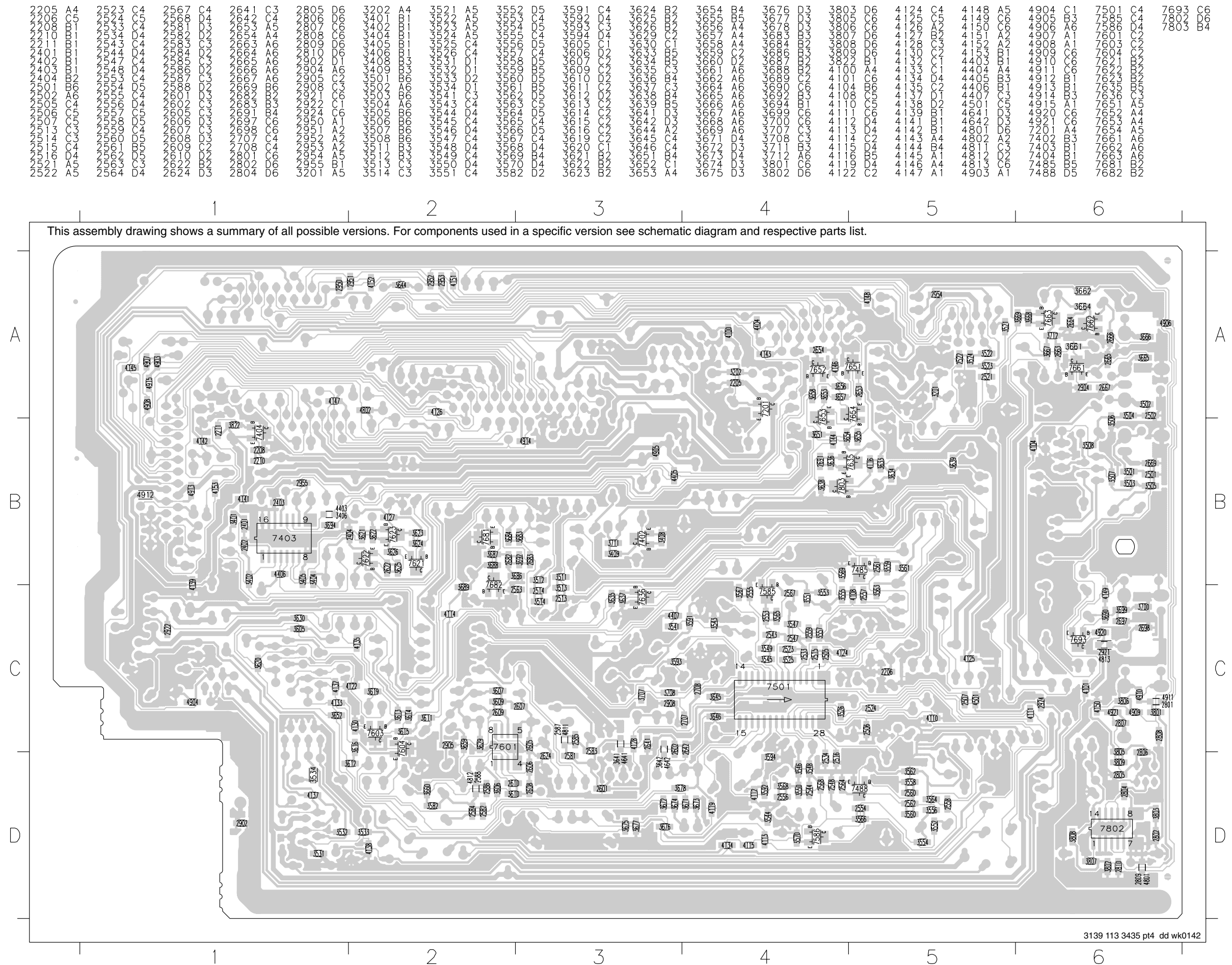
VARIATION TABLE:

Type /Versions:	FW-C399							
	/21	/21M	/22	/30	/33	/34	/37	
Features:								
Line In	x	x	x	x	x	x	x	
Line Out	-	-	-	-	-	-	-	
Sub-woofer Out	-	-	-	-	-	-	-	
Digital Out	-	-	-	-	-	-	-	
Video Out	-	-	-	-	-	-	-	
Mic mix / Mic Detect	x	x	-	-	x	-	-	
Simple IS	x	x	x	x	x	x	x	
Full IS	-	-	-	-	-	-	-	
Dolby ProLogic (DPL)	-	-	-	-	-	-	-	
Voice Control (VC)	-	-	-	-	-	-	-	

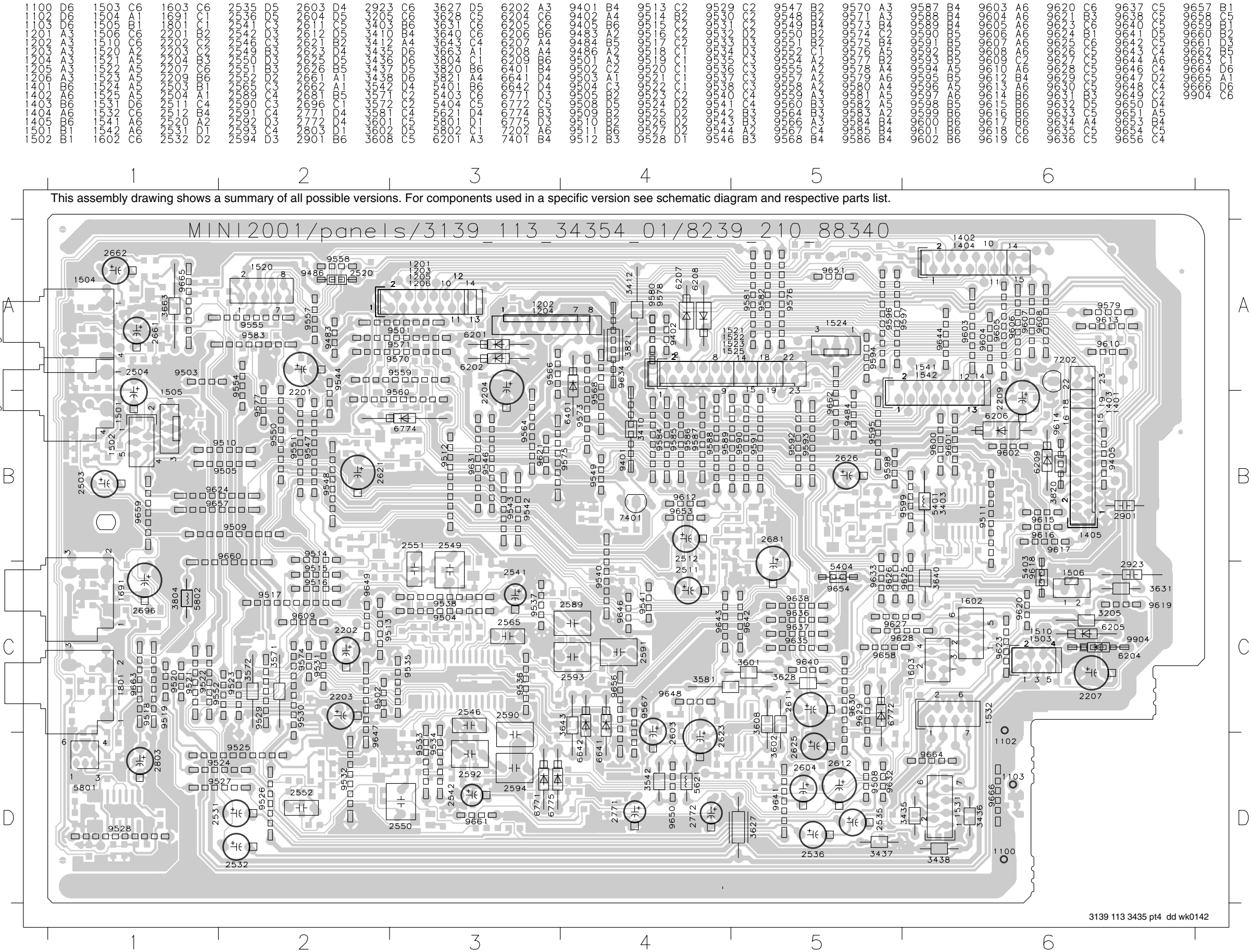
CHIP LAYOUT

12-2

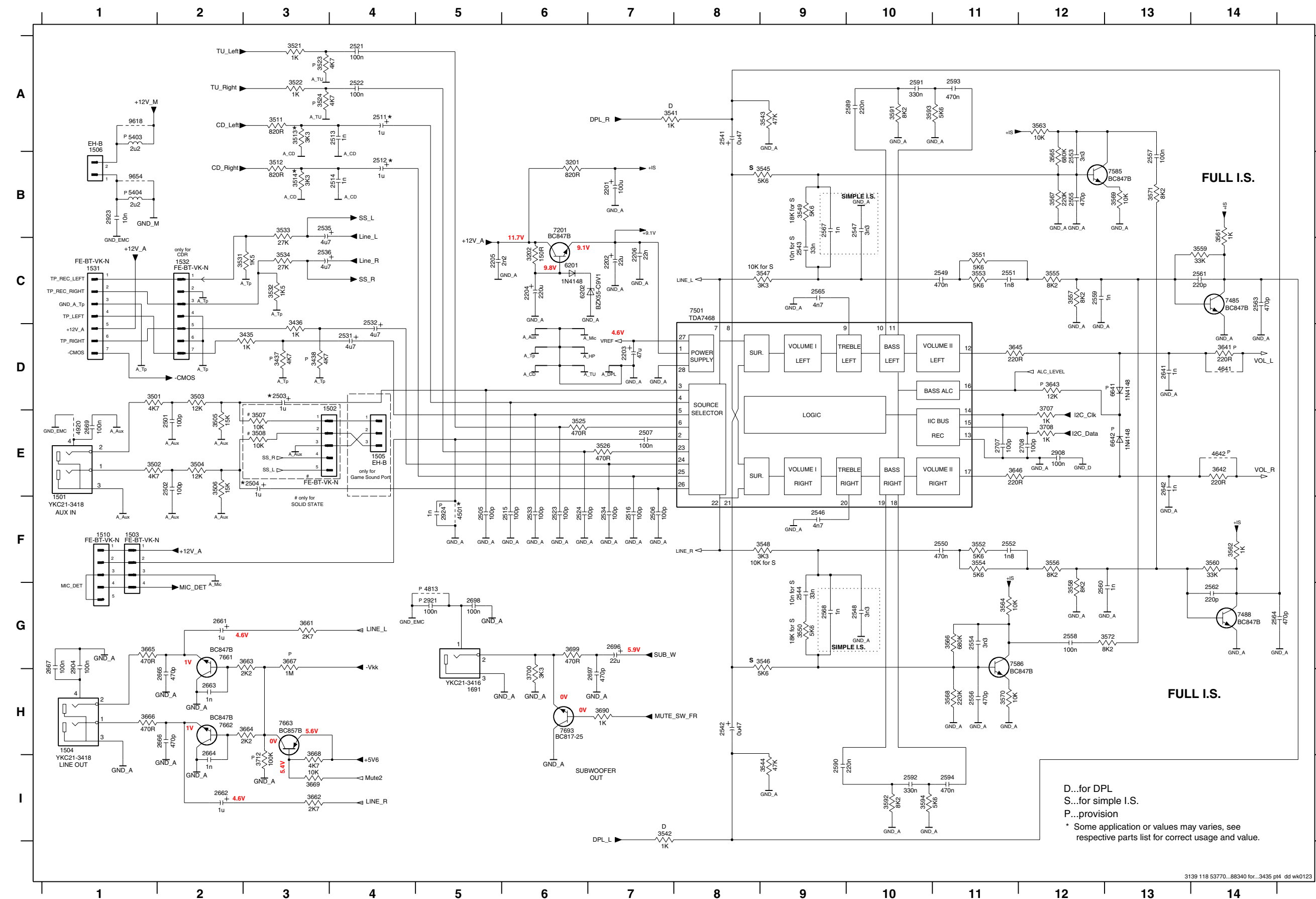
12-2



COMPONENT LAYOUT

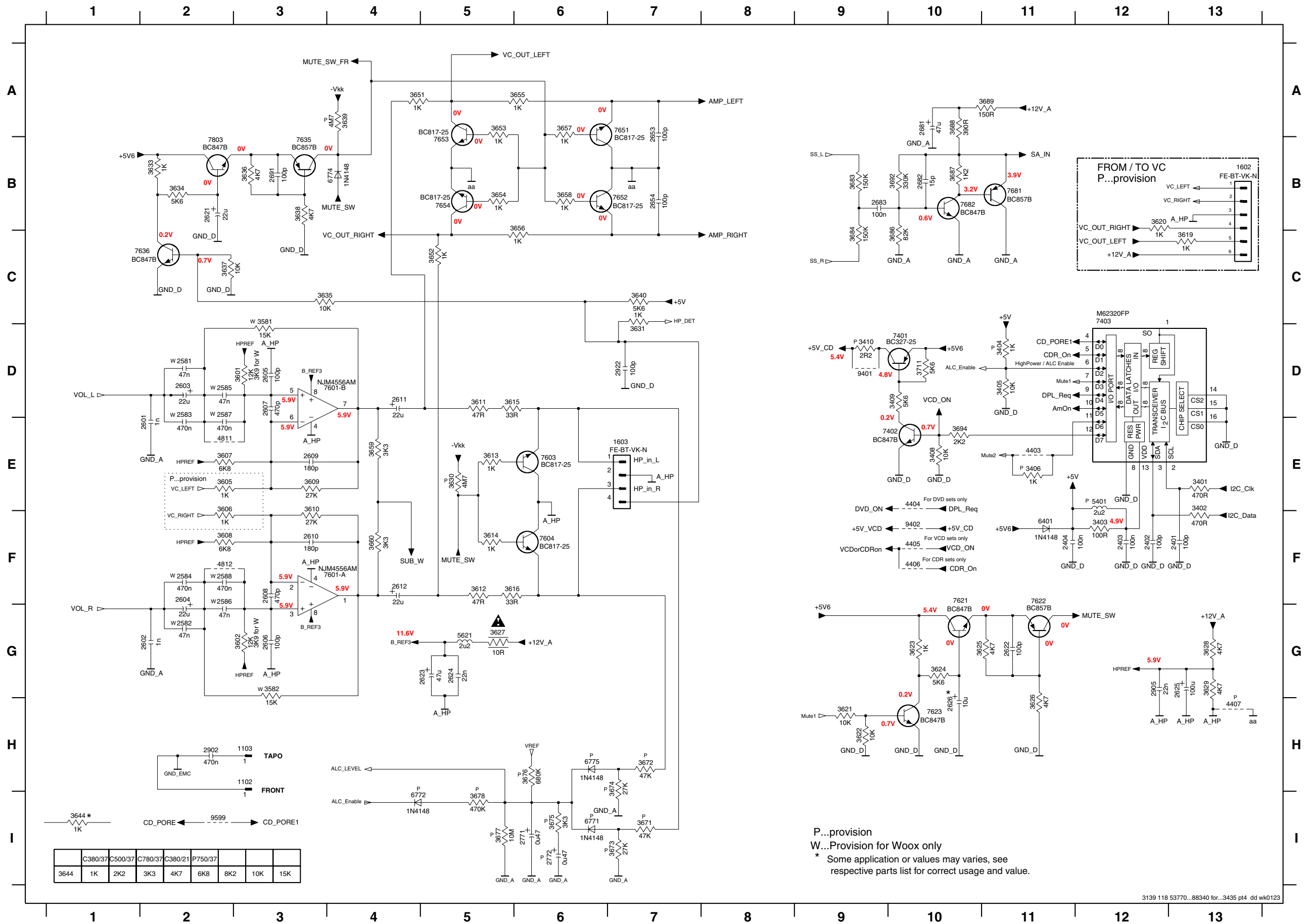


SOURCE SELECTION & SOUND PROCESSING CIRCUIT



1501 E1	3511 A3
1502 E3	3512 B3
1503 F1	3513 A3
1504 H1	3514 B3
1505 E4	3521 A

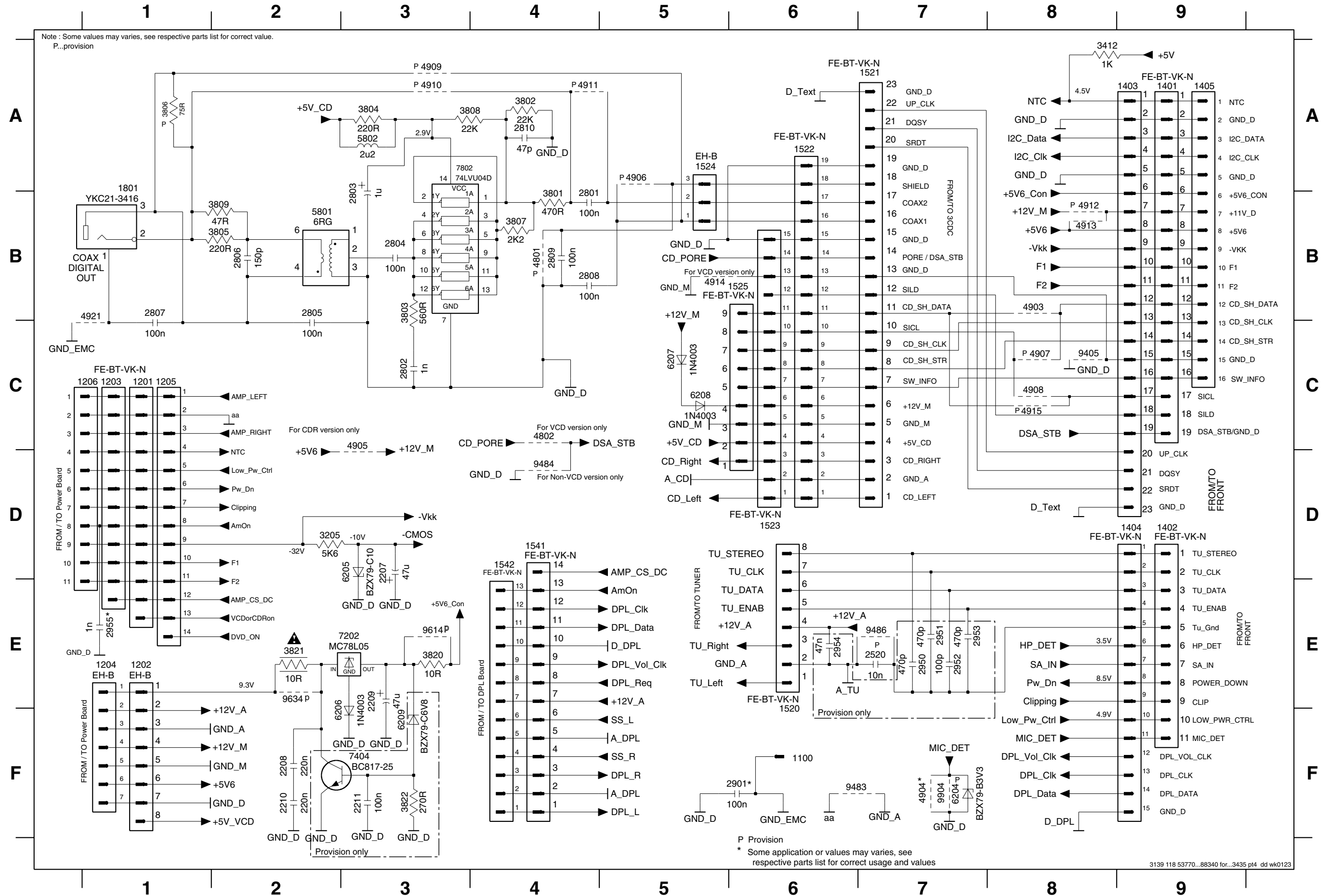
HEADPHONE AMPLIFIER & I²C EXPANDER CIRCUIT



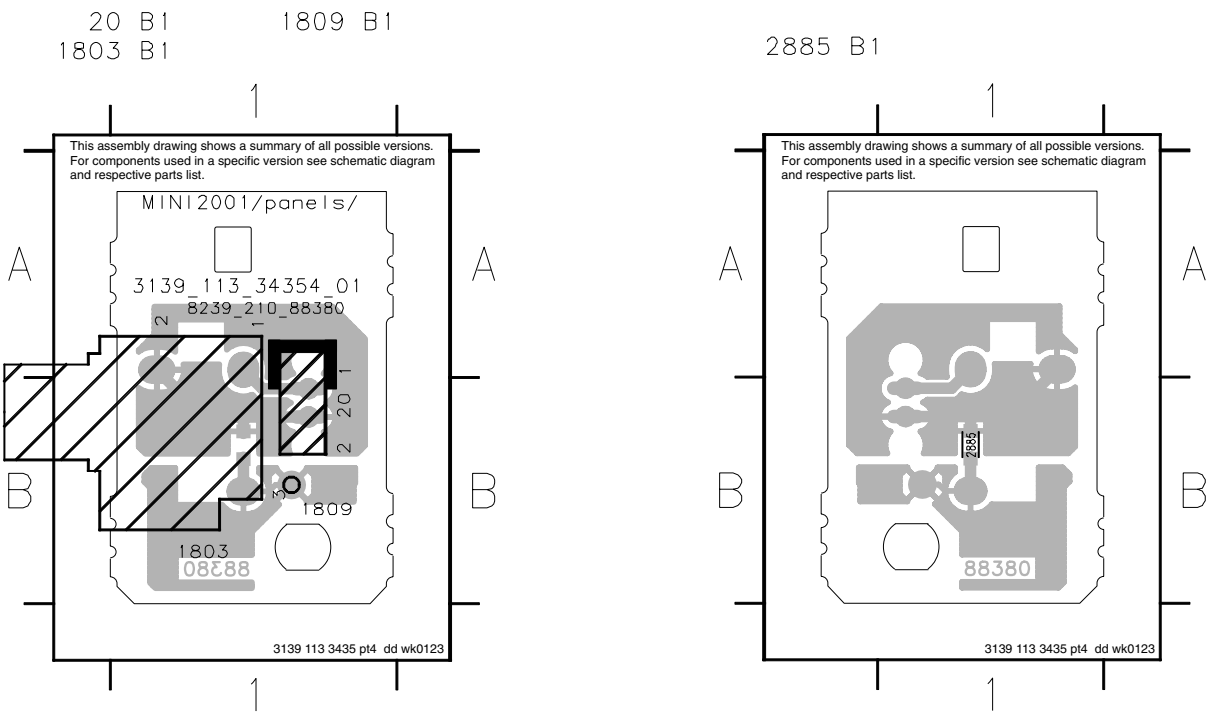
P...provision
W...Provision for Woox only
* Some application or values may varies, see
respective parts list for correct usage and value.

DIGITAL OUT & INTERCONNECTION CIRCUIT

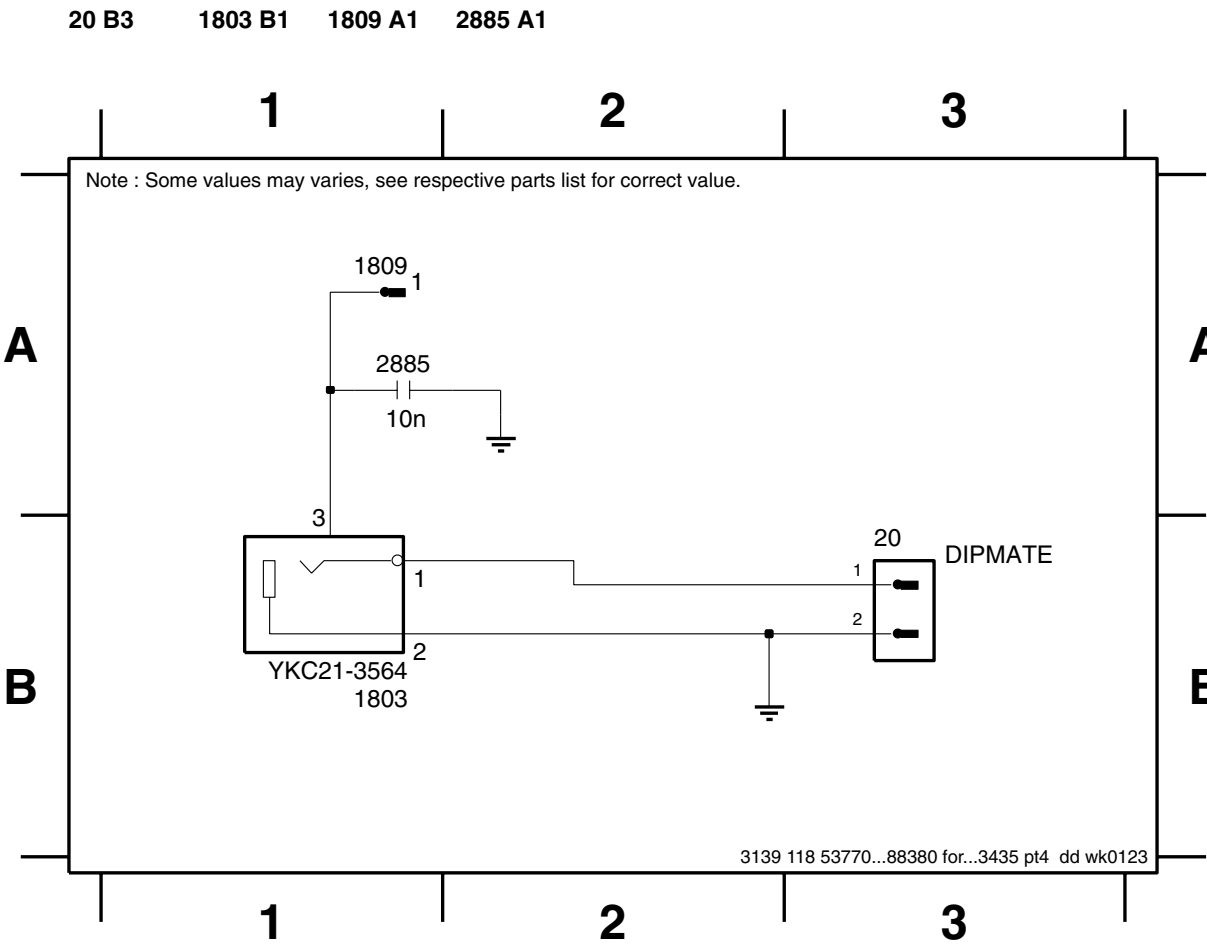
1100 F6 1203 C1 1206 C1 1403 A9 1520 E6 1523 D6 1541 D4 2207 D3 2210 F2 2801 B4 2804 B3 2807 B1 2810 A4 2951 E7 2954 E6 3412 A8 3803 B3 3806 A1 3809 B2 3822 F3 4903 B8 4906 A5 4909 A3 4912 B8 4915 C8 5802 A3 6206 F3 6209 F3 7802 A3 9484 D4 9634 E2
 1201 C1 1204 E1 1401 A9 1404 D9 1521 A7 1524 A5 1542 D4 2208 F2 2211 F3 2802 C3 2805 B2 2808 B4 2901 F6 2952 E7 2955 E1 3801 B4 3804 A3 3807 B4 3820 E3 4801 B4 4904 F7 4907 C8 4910 A3 4913 B8 4921 B1 6204 F7 6207 C5 7202 E3 9405 C8 9486 E7 9904 F7
 1202 E1 1205 C1 1402 D9 1405 A9 1522 A6 1525 B5 1801 A1 2209 E3 2520 E7 2803 B3 2806 B2 2809 B4 2950 F7 2953 E7 3205 D2 3802 A4 3805 B2 3808 A3 3821 E2 4802 C4 4905 C3 4908 C8 4911 A4 4914 B5 5801 B2 6205 D3 6208 C5 7404 F3 9483 F6 9614 E3



VIDEO OUT PART - COMPONENT & CHIP LAYOUTS



CIRCUIT DIAGRAM - VIDEO OUT PART



ELECTRICAL PARTS LIST - AF9 BOARD

MISCELLANEOUS					
1206	4822 267 11039	Flex Socket 11 Pin Vert.	2546	4822 121 43856	4,7nF 5% 250V
1401	4822 265 11553	Flex Socket 19 Pin Vert.	2547	5322 126 11579	3,3nF 10% 63V
1402	4822 267 11039	Flex Socket 11 Pin Vert.	2548	5322 126 11579	3,3nF 10% 63V
1501	4822 265 20553	Cinch Socket 2P	2565	4822 121 43856	4,7nF 5% 250V
1503	4822 267 10733	Flex Socket 4 Pin Vert. /21/21M	2567	3198 016 31020	1nF 25V
1520	4822 265 11515	Flex Socket 8 Pin Vert.	2568	3198 016 31020	1nF 25V
1523	4822 265 10981	Flex Socket 15 Pin Vert.	2589	4822 121 42408	220nF 5% 63V
1531	4822 267 10953	Flex Socket 7 Pin Vert.	2590	4822 121 42408	220nF 5% 63V
1603	4822 267 10733	Flex Socket 4 Pin Vert.	2591	5322 121 42661	330nF 5% 63V
CAPACITORS					
2201	4822 124 40207	100μF 20% 25V	2592	5322 121 42661	330nF 5% 63V
2202	4822 124 81151	22μF 50V	2593	4822 121 51252	470nF 5% 63V
2203	4822 124 40433	47μF 20% 25V	2594	4822 121 51252	470nF 5% 63V
2204	4822 124 40196	220μF 20% 16V	2601	3198 016 31020	1nF 25V
2205	4822 126 14238	2,2nF 50V	2602	3198 016 31020	1nF 25V
2206	4822 126 14494	22nF 10% 25V	2603	4822 124 81151	22μF 50V
2207	4822 124 40433	47μF 20% 25V	2604	4822 124 81151	22μF 50V
2208	4822 126 13879	220nF +80/-20% 16V	2605	4822 122 31765	100pF 2% 63V
2209	4822 124 41751	47μF 20% 50V	2606	4822 122 31765	100pF 2% 63V
2210	4822 126 13879	220nF +80/-20% 16V	2607	4822 126 13881	470pF 5% 50V
2401	4822 122 31765	100pF 2% 63V	2608	4822 126 13881	470pF 5% 50V
2402	4822 122 31765	100pF 2% 63V	2609	4822 126 14508	180pF 5% 50V
2403	4822 126 14305	100nF 10% 16V	2610	4822 126 14508	180pF 5% 50V
2404	4822 126 14305	100nF 10% 16V	2611	4822 124 81151	22μF 50V
2501	4822 122 31765	100pF 2% 63V	2612	4822 124 81151	22μF 50V
2502	4822 122 31765	100pF 2% 63V	2621	4822 124 81151	22μF 50V
2503	4822 121 51252	470nF 5% 63V	2622	4822 122 31765	100pF 2% 63V
2504	4822 121 51252	470nF 5% 63V	2623	4822 124 40433	47μF 20% 25V
2505	4822 122 31765	100pF 2% 63V	2624	3198 017 42230	22nF 50V
2506	4822 122 31765	100pF 2% 63V	2625	4822 124 40207	100μF 20% 25V
2507	4822 126 14305	100nF 10% 16V	2626	4822 124 40769	4,7μF 20% 100V
2511	4822 121 51252	470nF 5% 63V	2641	3198 016 31020	1nF 25V
2512	4822 121 51252	470nF 5% 63V	2642	3198 016 31020	1nF 25V
2513	3198 016 31020	1nF 25V	2653	4822 122 31765	100pF 2% 63V
2514	3198 016 31020	1nF 25V	2654	4822 122 31765	100pF 2% 63V
2515	4822 122 31765	100pF 2% 63V	2669	4822 126 14305	100nF 10% 16V
2516	4822 122 31765	100pF 2% 63V	2681	4822 124 40433	47μF 20% 25V
2521	4822 126 14305	100nF 10% 16V	2682	4822 122 33752	15pF 5% 50V
2522	4822 126 14305	100nF 10% 16V	2683	4822 126 14305	100nF 10% 16V
2523	4822 122 31765	100pF 2% 63V	2691	4822 122 31765	100pF 2% 63V
2524	4822 122 31765	100pF 2% 63V	2707	4822 122 31765	100pF 2% 63V
2531	4822 124 40769	4,7μF 20% 100V	2708	4822 122 31765	100pF 2% 63V
2532	4822 124 40769	4,7μF 20% 100V	2771	4822 124 41407	0,47μF 20% 63V
2533	4822 122 31765	100pF 2% 63V	2902	3198 017 44740	470nF 10V
2534	4822 122 31765	100pF 2% 63V	2905	3198 017 42230	22nF 50V
2535	4822 124 40769	4,7μF 20% 100V	2908	4822 126 14305	100nF 10% 16V
2536	4822 124 40769	4,7μF 20% 100V	2922	4822 122 31765	100pF 2% 63V
2541	4822 124 41407	0,47μF 20% 63V	2923	4822 121 51387	10nF 20% 16V
2542	4822 124 41407	0,47μF 20% 63V	RESISTORS		
2543	5322 126 11583	10nF 10% 50V	3201	4822 117 12968	820R 5% 0,62W
2544	5322 126 11583	10nF 10% 50V	3202	4822 051 30151	150R 5% 0,062W
			3205	4822 116 52289	5k6 5% 0,5W

ELECTRICAL PARTS LIST - AF9 BOARD

RESISTORS

3401	4822 051 30471	470R 5% 0,062W
3402	4822 051 30471	470R 5% 0,062W
3403	4822 116 52175	100R 5% 0,5W
3405	4822 051 30103	10k 5% 0,062W
3408	4822 051 30103	10k 5% 0,062W
3409	4822 051 30562	5k6 5% 0,063W
3412	4822 050 11002	1k 1% 0,4W
3435	4822 050 11002	1k 1% 0,4W
3436	4822 050 11002	1k 1% 0,4W
3501	4822 051 30472	4k7 5% 0,062W
3502	4822 051 30472	4k7 5% 0,062W
3503	4822 051 30123	12k 5% 0,062W
3504	4822 051 30123	12k 5% 0,062W
3505	4822 051 30153	15k 5% 0,062W
3506	4822 051 30153	15k 5% 0,062W
3511	4822 117 12968	820R 5% 0,62W
3512	4822 117 12968	820R 5% 0,62W
3513	4822 117 12903	1k8 1% 0,063W
3514	4822 117 12903	1k8 1% 0,063W
3521	4822 051 30102	1k 5% 0,062W
3522	4822 051 30102	1k 5% 0,062W
3525	4822 051 30471	470R 5% 0,062W
3526	4822 051 30471	470R 5% 0,062W
3531	4822 051 30152	1k5 5% 0,062W
3532	4822 051 30152	1k5 5% 0,062W
3533	4822 051 30273	27k 5% 0,062W
3534	4822 051 30273	27k 5% 0,062W
3543	4822 117 12925	47k 1% 0,063W
3544	4822 117 12925	47k 1% 0,063W
3545	4822 051 30562	5k6 5% 0,063W
3546	4822 051 30562	5k6 5% 0,063W
3547	4822 051 30103	10k 5% 0,062W
3548	4822 051 30103	10k 5% 0,062W
3549	4822 051 30183	18k 5% 0,062W
3550	4822 051 30183	18k 5% 0,062W
3591	4822 117 12902	8k2 1% 0,063W
3592	4822 117 12902	8k2 1% 0,063W
3593	4822 051 30562	5k6 5% 0,063W
3594	4822 051 30562	5k6 5% 0,063W
3601	4822 116 52238	12k 5% 0,5W
3602	4822 116 52238	12k 5% 0,5W
3607	4822 051 30682	6k8 5% 0,062W
3608	4822 116 83961	6k8 5%
3609	4822 051 30273	27k 5% 0,062W
3610	4822 051 30273	27k 5% 0,062W
3611	4822 051 30479	47R 5% 0,062W
3612	4822 051 30479	47R 5% 0,062W
3613	4822 051 30102	1k 5% 0,062W
3614	4822 051 30102	1k 5% 0,062W
3615	4822 051 30339	33R 5% 0,062W
3616	4822 051 30339	33R 5% 0,062W
3621	4822 051 30103	10k 5% 0,062W

3622	4822 051 30103	10k 5% 0,062W
3623	4822 051 30102	1k 5% 0,062W
3624	4822 051 30562	5k6 5% 0,063W
3625	4822 051 30472	4k7 5% 0,062W
3626	4822 051 30472	4k7 5% 0,062W
3627	4822 052 10109 Δ	10R 5% 0,33W
3628	4822 116 52283	4k7 5% 0,5W
3629	4822 051 30472	4k7 5% 0,062W
3631	4822 050 11002	1k 1% 0,4W
3633	4822 051 30102	1k 5% 0,062W
3634	4822 051 30562	5k6 5% 0,063W
3635	4822 051 30103	10k 5% 0,062W
3636	4822 051 30472	4k7 5% 0,062W
3637	4822 051 30103	10k 5% 0,062W
3638	4822 051 30472	4k7 5% 0,062W
3640	4822 116 52289	5k6 5% 0,5W
3644	4822 051 30102	1k 5% 0,062W
3645	4822 051 30221	220R 5% 0,062W
3646	4822 051 30221	220R 5% 0,062W
3651	4822 051 30102	1k 5% 0,062W
3652	4822 051 30102	1k 5% 0,062W
3653	4822 051 30102	1k 5% 0,062W
3654	4822 051 30102	1k 5% 0,062W
3655	4822 051 30102	1k 5% 0,062W
3656	4822 051 30102	1k 5% 0,062W
3657	4822 051 30102	1k 5% 0,062W
3658	4822 051 30102	1k 5% 0,062W
3683	4822 051 30154	150k 5% 0,062W
3684	4822 051 30154	150k 5% 0,062W
3686	4822 117 12864	82k 5% 0,6W
3687	4822 117 11817	1k2 1% 1/16W
3688	4822 051 30391	390R 5% 0,062W
3689	4822 051 30151	150R 5% 0,062W
3692	4822 051 30334	330k 5% 0,062W
3694	4822 051 30222	2k2 5% 0,062W
3707	4822 051 30102	1k 5% 0,062W
3708	4822 051 30102	1k 5% 0,062W
3711	4822 051 30562	5k6 5% 0,063W
3820	4822 116 52176	10R 5% 0,5W
3821	4822 052 10109 Δ	10R 5% 0,33W
4100	4822 051 30008	OR Jumper 0603
4101	4822 051 30008	OR Jumper 0603
4104	4822 051 30008	OR Jumper 0603
4108	4822 051 30008	OR Jumper 0603
4110	4822 051 30008	OR Jumper 0603
4111	4822 051 30008	OR Jumper 0603
4112	4822 051 30008	OR Jumper 0603
4113	4822 051 30008	OR Jumper 0603
4114	4822 051 30008	OR Jumper 0603
4115	4822 051 30008	OR Jumper 0603
4116	4822 051 30008	OR Jumper 0603
4119	4822 051 30008	OR Jumper 0603

ELECTRICAL PARTS LIST - AF9 BOARD

4122	4822 051 30008	OR Jumper 0603
4124	4822 051 30008	OR Jumper 0603
4125	4822 051 30008	OR Jumper 0603
4126	4822 051 30008	OR Jumper 0603
4127	4822 051 30008	OR Jumper 0603
4128	4822 051 30008	OR Jumper 0603
4130	4822 051 30008	OR Jumper 0603
4132	4822 051 30008	OR Jumper 0603
4133	4822 051 30008	OR Jumper 0603
4134	4822 051 30008	OR Jumper 0603
4135	4822 051 30008	OR Jumper 0603
4137	4822 051 30008	OR Jumper 0603
4138	4822 051 30008	OR Jumper 0603
4139	4822 051 30008	OR Jumper 0603
4141	4822 051 30008	OR Jumper 0603
4142	4822 051 30008	OR Jumper 0603
4143	4822 051 30008	OR Jumper 0603
4144	4822 051 30008	OR Jumper 0603
4145	4822 051 30008	OR Jumper 0603
4146	4822 051 30008	OR Jumper 0603
4147	4822 051 30008	OR Jumper 0603
4148	4822 051 30008	OR Jumper 0603
4151	4822 051 30008	OR Jumper 0603
4152	4822 051 30008	OR Jumper 0603
4153	4822 051 30008	OR Jumper 0603
4501	4822 051 30008	OR Jumper 0603 /22/30/34/37
4641	4822 051 30008	OR Jumper 0603
4642	4822 051 30008	OR Jumper 0603
4811	4822 051 30008	OR Jumper 0603
4812	4822 051 30008	OR Jumper 0603
4903	4822 051 30008	OR Jumper 0603
4904	4822 051 30008	OR Jumper 0603 /22/30/34/37
4908	4822 051 30008	OR Jumper 0603
4913	4822 051 30008	OR Jumper 0603
4920	4822 051 30008	OR Jumper 0603

COILS & FILTERS

5621	4822 157 62552	Coil 2,2μH 5%
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DIODES

6201	4822 130 30621	1N4148
6202	4822 130 30862	BZX79-B9V1
6205	4822 130 61219	BZX79-B10
6206	4822 130 31878	1N4003G
6207	4822 130 31878	1N4003G
6208	4822 130 31878	1N4003G
6401	4822 130 30621	1N4148
6774	4822 130 30621	1N4148

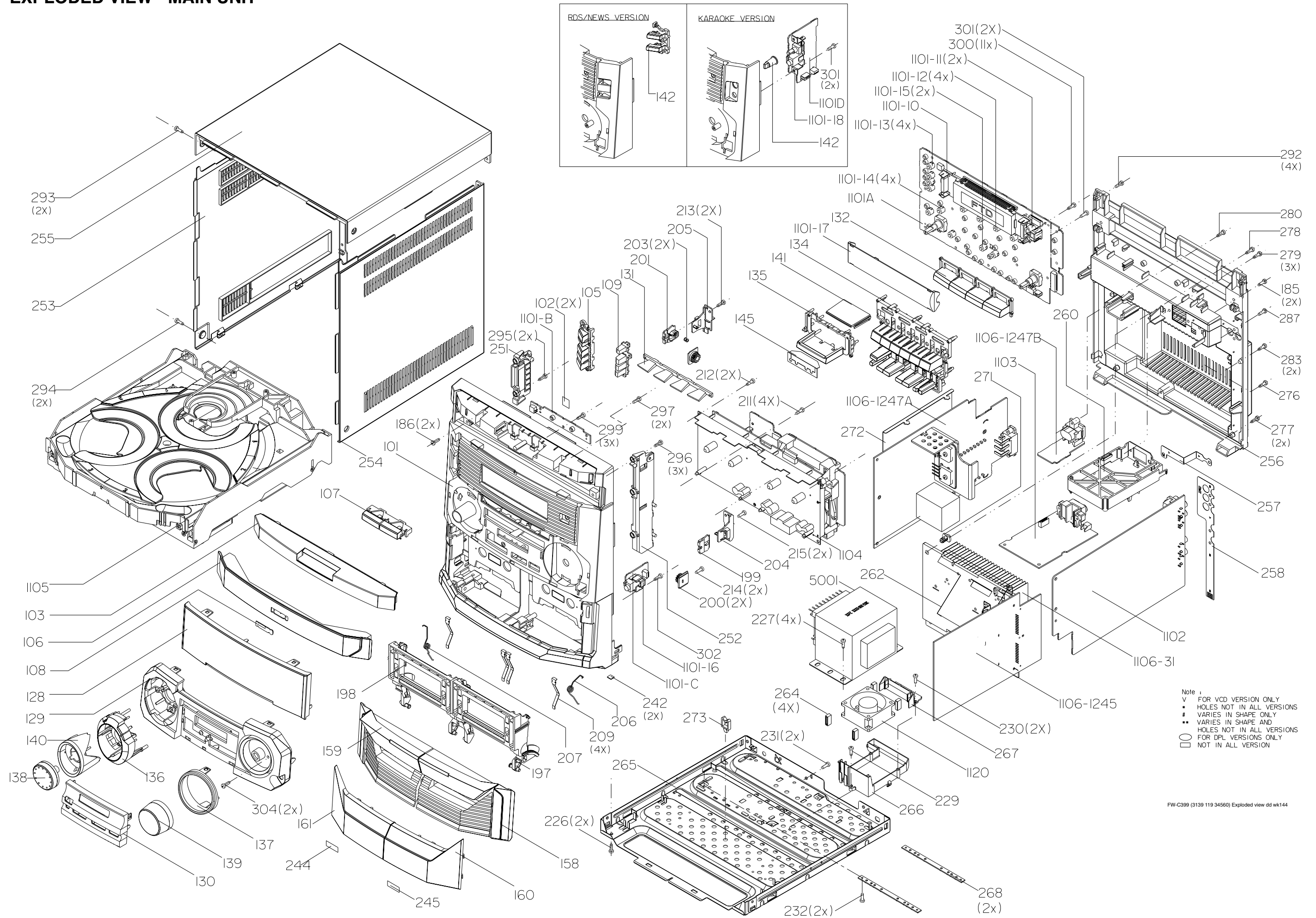
TRANSISTORS & INTEGRATED CIRCUITS

7201	4822 130 60511	BC847B
7202	4822 209 72042	L78L05ACZ

7401	4822 130 41246	BC327-25
7402	4822 130 60511	BC847B
7403	4822 209 17345	M62320FP
7501	9322 150 74668	TDA7468D
7601	4822 209 31378	NJM4556MB
7603	4822 130 42804	BC817-25
7604	4822 130 42804	BC817-25
7621	4822 130 60511	BC847B
7622	4822 130 60373	BC857B
7623	4822 130 60511	BC847B
7635	4822 130 60373	BC857B
7636	4822 130 60511	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
7681	4822 130 60373	BC857B
7682	4822 130 60511	BC847B
7803	4822 130 60511	BC847B

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

EXPLODED VIEW - MAIN UNIT



MECHANICAL & ACCESSORIES PARTS LIST - MAIN UNIT**SCREW LISTS - MAIN UNIT**

101	3139 118 16480	Cabinet Front /21/21M	254	3139 114 74790	Panel Right Grey V2 /37	185	D3 x 12
101	3139 118 16580	Cabinet Front /22	255	3139 114 73590	Cover Top Grey /21/21M/22	186	D3 x 12
101	3139 118 16100	Cabinet Front /37	255	3139 114 74800	Cover Top Grey V2 /37	211	D3 x 12
103	3139 118 16110	Cover Front CDC	256	3139 114 73140	Panel Rear /21	212	D3 x 12
105	3139 118 16500	Button Set CDC LPS	256	3139 114 73880	Panel Rear /21M/22	213	D3 x 12
106	3139 118 16130	Cover Tray CDC	256	3139 114 74850	Panel Rear V2 /37	214	D3 x 12
107	3139 118 16140	Button Set Open/Close	271	3139 114 71010	Stopper Heat sink	215	D3 x 12
108	4822 454 13408	Badge Philips	350	3139 118 79070	Loudspeaker Box /21/21M/22	226	M3 x 6
128	3139 118 16490	Window Display /21/21M	350	3139 118 79080	Loudspeaker Box /37	227	M3 x 10
128	3139 118 16590	Window Display /22	351	4822 303 50063	FM Antenna /21/21M/22	229	M3 x 10
128	3139 118 16150	Window Display /37	351	4822 320 11094	FM Antenna /37	230	D3 x 10
129	3139 118 16160	Cover Front Display	356	3139 228 89680	Remote Control RC282432/01	231	M3 x 10
130	3139 118 16170	Cover Front Ornamental	384	2422 549 45067	AM Loop Antenna	232	M3 x 6
131	3139 114 71350	Light guide Source Select	385	2422 070 98151	△ Mains Cord /21/21M/22	276	M3 x 6
132	3139 118 16180	Button Set Source	385	2422 070 98152	△ Mains Cord /37	277	M3 x 10
134	3139 118 16190	Button Set Control & VCD	386	4822 263 21092	△ Adapter Plug /21	278	D3 x 16
135	3139 118 16200	Button Max	387	3139 115 21120	Instruction For Use /21/21M	279	D3 x 12
136	3139 118 16210	Button DSC/DBB/VEC/IS	387	3139 115 21220	Instruction For Use /22	280	D3 x 12
137	3139 118 16220	Ring Volume	387	3139 115 21070	Instruction For Use /37	283	D3 x 12
138	3139 118 16230	Knob Rotary	1120	4822 361 11161	Fan KD1206PTS3	287	D3 x 12
139	3139 118 13190	Knob Volume	1200	3139 110 35010	Flex Cable 7 Pin 34cm AD	292	D3 x 12
140	3139 114 71330	Light guide DSC/DBB/VEC/IS	1300	3139 110 35350	Flex Cable 11 Pin 22cm AD	293	D3 x 12
142	3139 114 74610	Knob Karaoke /21/21M	1400	3139 110 35110	Flex Cable 4 Pin 22cm AD	294	M3 x 10
142	3139 118 16600	Button Set RDS/News /22	1401	4822 320 12703	Flex Cable 7 Pin 14cm BD	295	D3 x 12
158	3139 118 16250	Cover Cassette Right	1402	3139 110 35100	Flex Cable 19 Pin 14cm AD	296	D3 x 12
159	3139 118 16260	Cover Cassette Left	1403	3139 110 34610	Flex Cable 11 Pin 18cm AD	297	D3 x 12
160	3139 118 13900	Lens Cassette Right	1500	3139 110 33960	Flex Cable 4 Pin 12cm BD	299	D3 x 12
161	3139 118 13890	Lens Cassette Left	1501	3139 110 33960	Flex Cable 4 Pin 12cm BD /21/21M	300	D3 x 12
197	3139 114 68630	Door Cassette Right ETF				301	D3 x 12
198	3139 114 68620	Door Cassette Left ETF	1600	3139 110 35050	Flex Cable 8 Pin 22cm AD	302	D3 x 12
			1700	4822 320 12752	Flex Cable 7 Pin 18cm AD		
199	4822 402 10621	Push-Catch				304	D3 x 12
200	4822 529 10322	Damper Assembly	1800	3139 110 35880	Flex Cable 15 Pin 18cm BD		
201	3139 114 68640	Push Catch Left	5001	3103 308 30700	△ Mains Transformer /21/21M		
203	4822 492 11344	Spring Compression	5001	3103 308 30690	△ Mains Transformer /22		
204	4822 402 11246	Bracket Right	5001	3103 308 30680	△ Mains Transformer /37		
205	4822 402 11245	Bracket Left	Note: Only the parts mentioned in this list are normal service spare parts.				
206	3139 111 01380	Spring Torsion Right					
207	3139 111 01390	Spring Torsion Left					
209	4822 492 42787	Spring Cassette					
242	4822 462 40683	Foot Rubber (SQ)					
251	3139 114 70970	Bracket CDC Left					
252	3139 114 70980	Bracket CDC Right					
253	3139 114 73570	Panel Left Grey /21/21M/22					
253	3139 114 74780	Panel Left Grey V2 /37					
254	3139 114 73580	Panel Right Grey /21/21M/22					