

Service
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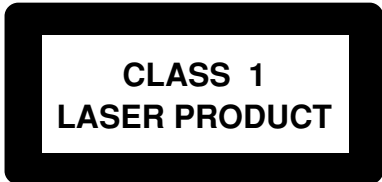


Service Manual



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Published by BB 0411 Service Audio Printed in The Netherlands Subject to modification



3139 785 30611

Version 1.1



PHILIPS

SPECIFICATIONS**GENERAL:**

Mains voltage : 110-127V/220-240V Switchable for /21/21M
 120V for /37
 220V for /33
 220-230V for /22/25
 230-240V for /30

Mains frequency : 50/60Hz

Power consumption : 80W at $\frac{1}{8} P_{\text{rated}}$
 < 15W at Standby (Demo mode off)
 < 0.5W at ECO Standby

Clock accuracy : < 4 seconds per day

Dimension centre unit : 175 x 252 x 350mm

TUNER:**FM**

Tuning range : 87.5-108MHz

Grid : 50kHz
 100kHz for /37

IF frequency : 10.7MHz \pm 25kHz

Aerial input : 75 ohm coaxial
 300 ohm click fit for /37

Sensitivity at 26dB S/N : < 7uV

Selectivity at 600kHz bandwidth : > 25dB

Image rejection : > 25dB [> 75dB]

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

-3dB Limiting point : < 8uV

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 : < 4.4mV/M

Selectivity at 18kHz bandwidth : > 18dB

IF rejection : > 45dB

Image rejection : > 28dB

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

AMPLIFIER:

Output power (6 ohm, 1kHz, 10% THD)
 L & R : 2 x 50W RMS

Output power (6 ohm, 60Hz-12.5kHz, 10% THD)
 L & R : 2 x 45W FTC /37

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

Bass : 60Hz \pm 3 Steps

Treble : 12kHz \pm 3 Steps

Incredible Surround : On / Off

Input sensitivity

Aux in (at 1kHz) : 500mV at 600 ohm
 CDR in (at 1kHz) : 1000mV at 600 ohm

Output sensitivity

Headphone output at 32 ohm : 15mW \pm 2dB (Max. vol.)
 CD Headphone output at 32 ohm : 5mW \pm 2dB (Max. vol.)

CASSETTE RECORDER:

Number of track : 2 tracks (stereo)

Tape speed : 4.76 cm/sec \pm 2%

Wow and flutter : < 0.4% DIN

Fast-wind/Rewind time C60 : 130 sec

Bias system : 78kHz \pm 10kHz

Rec/Pb frequency response within 8dB : 80Hz - 10kHz

Signal to Noise Ratio (Type I) : > 48dBA

Signal to Noise Ratio (Type II) : > 52dBA

COMPACT DISC:

Measurement done directly at the connector on the board.

Output Resistance : < 100 ohm

Output Voltage (0dB, 1kHz) : 0.5Vrms \pm 1dB (unloaded)

Channel Unbalance : < \pm 1dB

Channel Separation (1kHz) : > 60dB

Frequency Response (\pm 3dB) : 20Hz-20kHz

Signal to Noise Ratio : > 76dBA

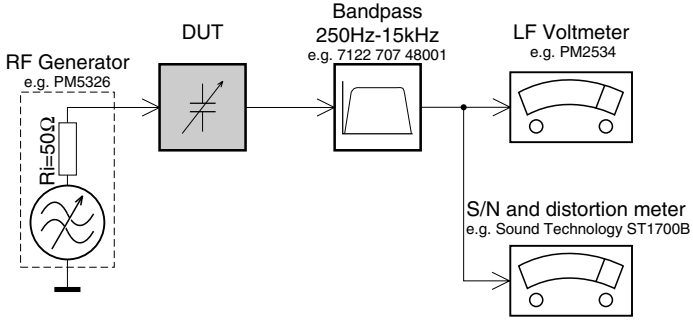
MP3-CD Bit Rate : 32-256 kbps

Sampling Frequencies : 32, 44.1, 48 kHz

[...] Values indicated are for "ECO6 Cenelec Board" only.

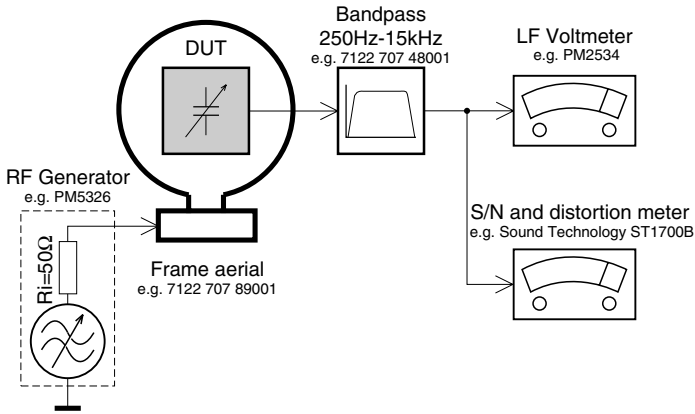
MEASUREMENT SETUP

Tuner FM



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

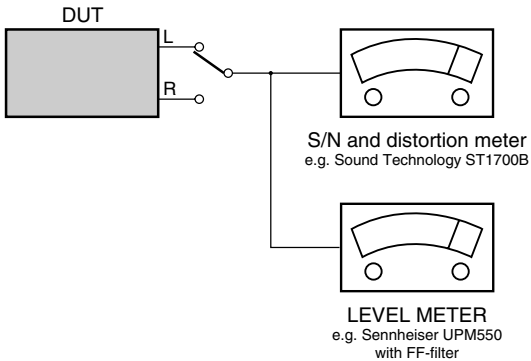
Tuner AM (MW,LW)



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).

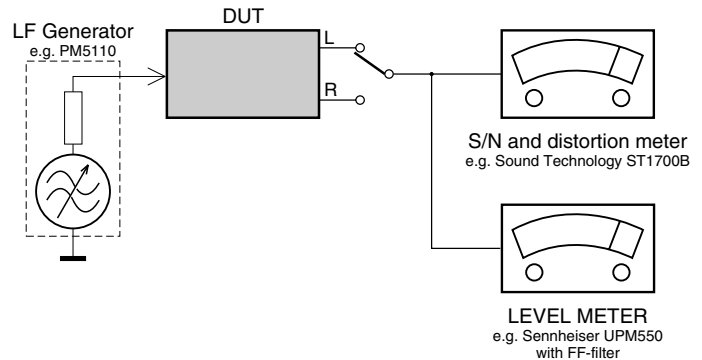
CD

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

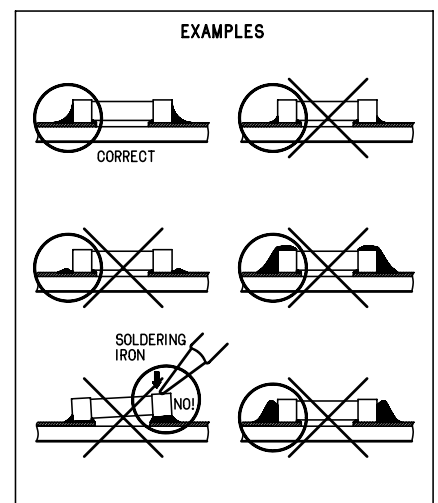
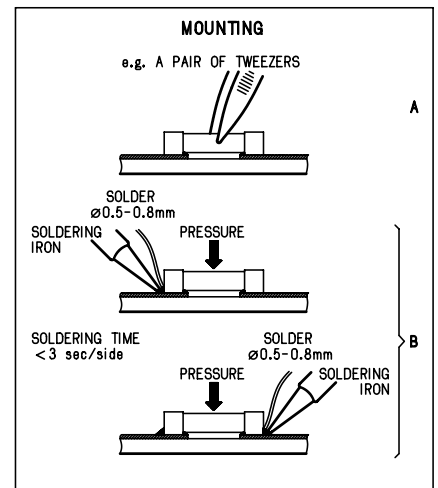
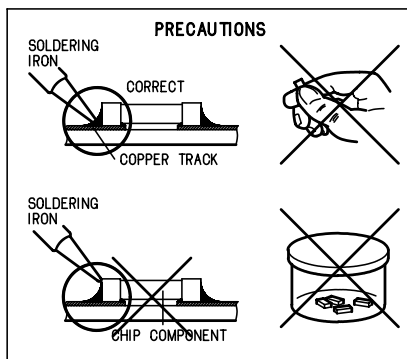
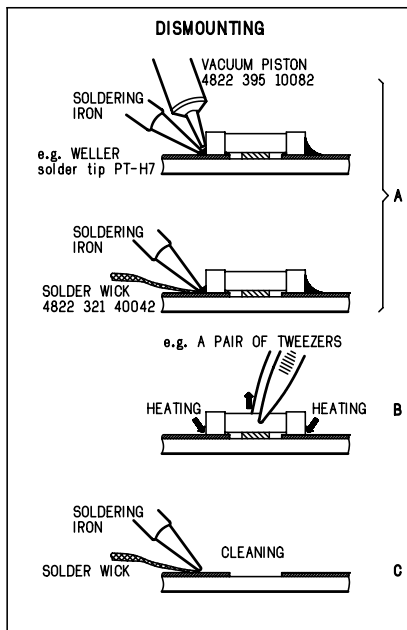
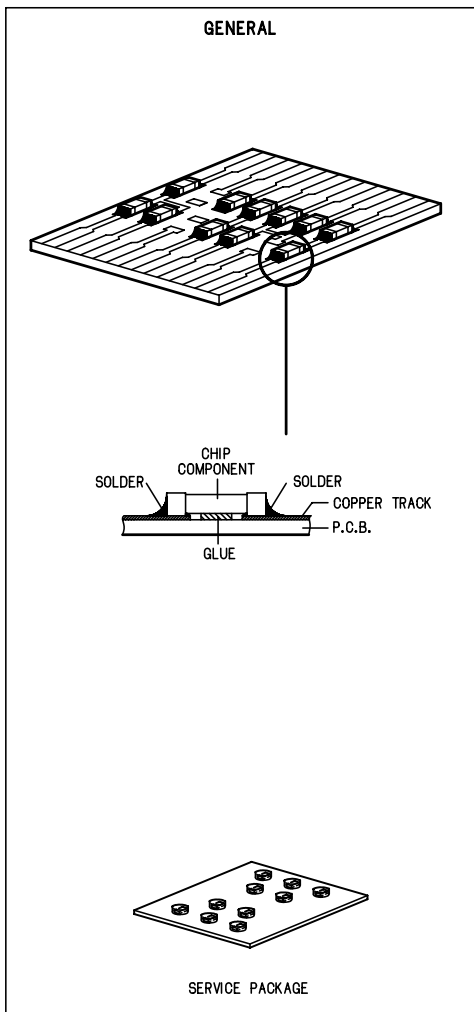
Service Tools:

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

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

HANDLING CHIP COMPONENTS



(GB) WARNING

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically.

When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance. Keep components and tools also at this potential.

(F) ATTENTION

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

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

Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfilier 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) WARNUNG

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.

(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.

(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.

ESD**(GB) ESD PROTECTION EQUIPMENT:**

Complete Kit ESD3 (small tablemat, wristband, connection box, extension cable and earth cable) 4822 310 10671
Wristband tester 4822 344 13999

(GB)

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

Safety components are marked by the symbol \triangle .

(NL)

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

De Veiligheidsonderdelen zijn aangeduid met het symbool \triangle .

(F)

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

Less composants de sécurité sont marqués \triangle .

(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.

Sicherheitsbauteile sind durch das Symbol \triangle markiert.

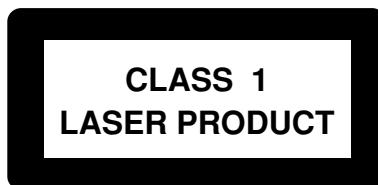
(I)

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.

Componenti di sicurezza sono marcati con \triangle .

(GB)

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 spårren är urkopplad. Betrakta ej strålen.

(SF) Varoitus !

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

(DK) Advarse !

Usynlig laserstrålning ved åbning når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for strålning.

(F)

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

DISMANTLING INSTRUCTIONS

Dismantling of the Cover Cassette and Universal Loader

- 1) Remove the Cover Cassette (pos 150) in the direction as shown in Figure 1.
- 2) Loosen 4 screws to remove the Cover Top (pos 240) by sliding it out towards the rear before lifting up.
 - 2 screws on the rear
 - 1 screw each on the left & right side
- 3) Loosen 2 screws each to remove the Panel Left (pos 180) and Panel Right (pos 181). The Panels are removed by sliding it towards the rear and outwards.
 - 1 screw on the rear
 - 1 screw on the side
 - see Service position A
- 4) Use a screw driver to give a push in the direction as shown in Figure 2 and Figure 2A to unlock the Loader Tray before sliding it out.
- 5) Slide out the Loader Tray and remove the Cover CD (pos 110 + pos 111) in the direction as shown in Figure 3.
- 6) Loosen 4 screws A (see Figure 4) to remove the Bracket Module Mounting (pos 156) and Universal Loader (pos 1103).
 - 2 screws each on the left & right side

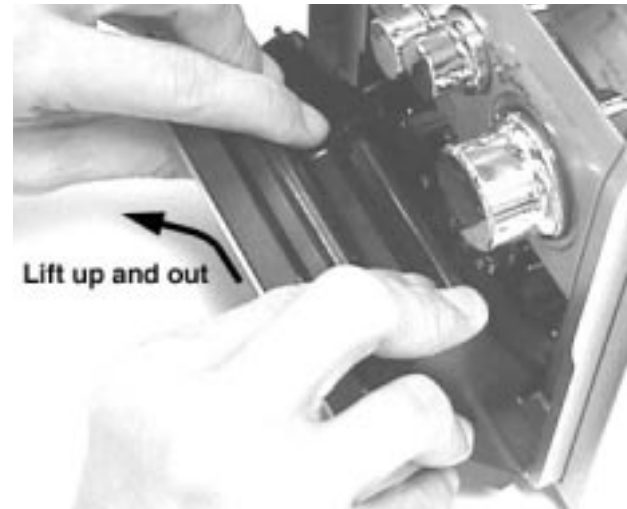


Figure 1

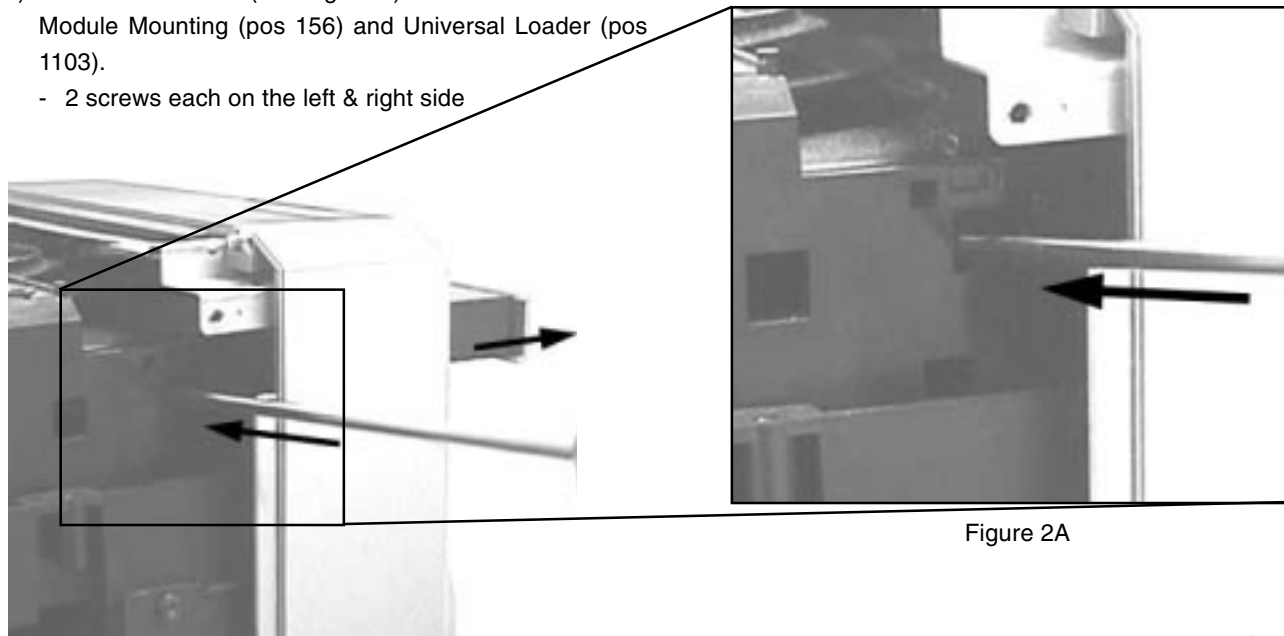


Figure 2A

Figure 2

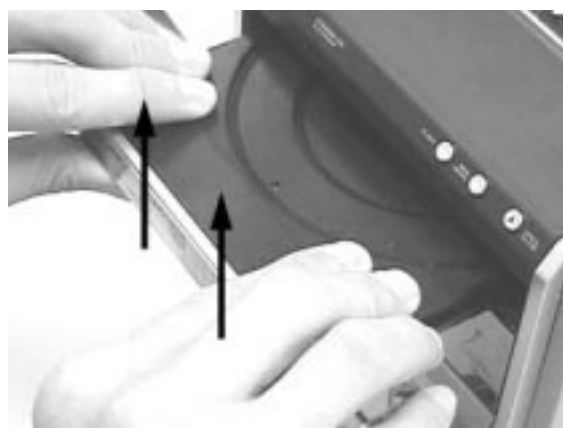


Figure 3

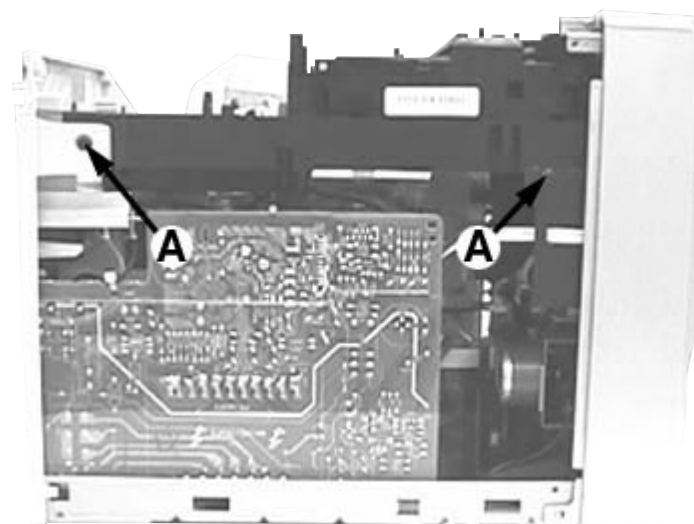


Figure 4

Detaching the Universal Loader from the Bracket Module Mounting

- 1) Slide out the Loader Tray fully and remove 4 screws B (see Figure 5) to detach the Universal Loader (pos 1103) from the Bracket Module Mounting (pos 156).
 - see Service position B

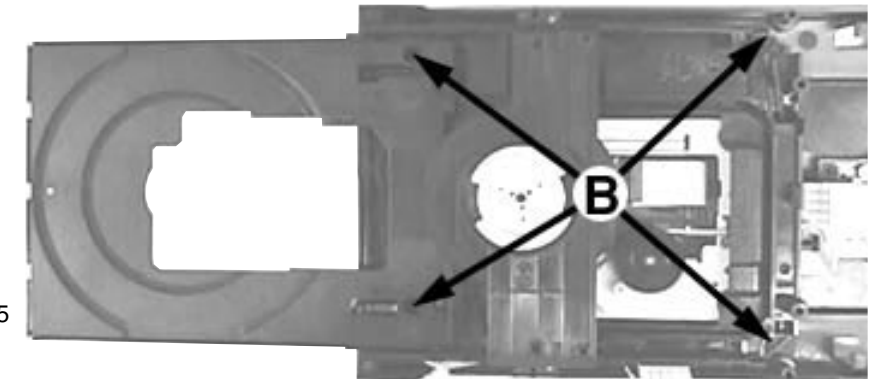


Figure 5

Detaching the Front Panel assembly from the Bottom/Rear assembly

- 1) Remove 2 screws C (see Figure 6) from the bottom of the Cabinet Front (pos 101).

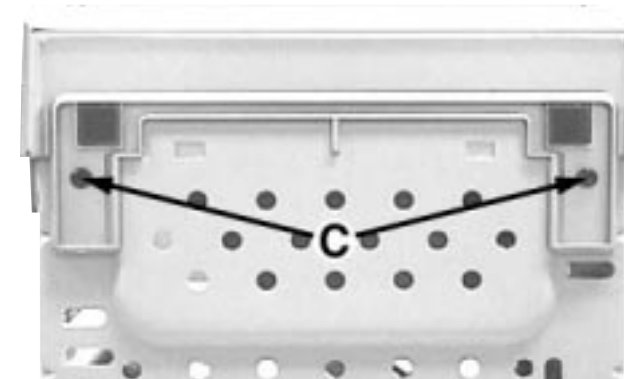


Figure 6

- 2) Release the fixation of the Combi Board (pos 1102-1003) to Bracket Combi (pos 155) by releasing the 2 catches C1 (see Figure 7) and pulling the Combi Board outwards as shown in Figure 7A.
- 3) Uncatch 2 catches C2 (see Figure 7) on the left & right sides of the Cabinet Front (pos 101) and slides the Front Panel assembly out towards the front.
 - see Service position C

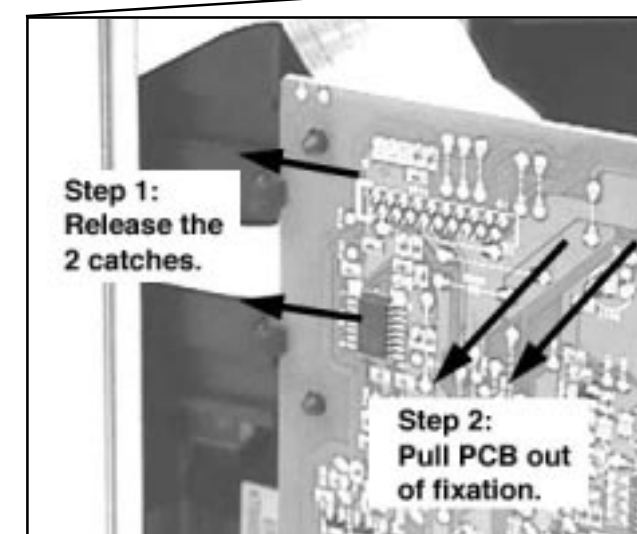


Figure 7A

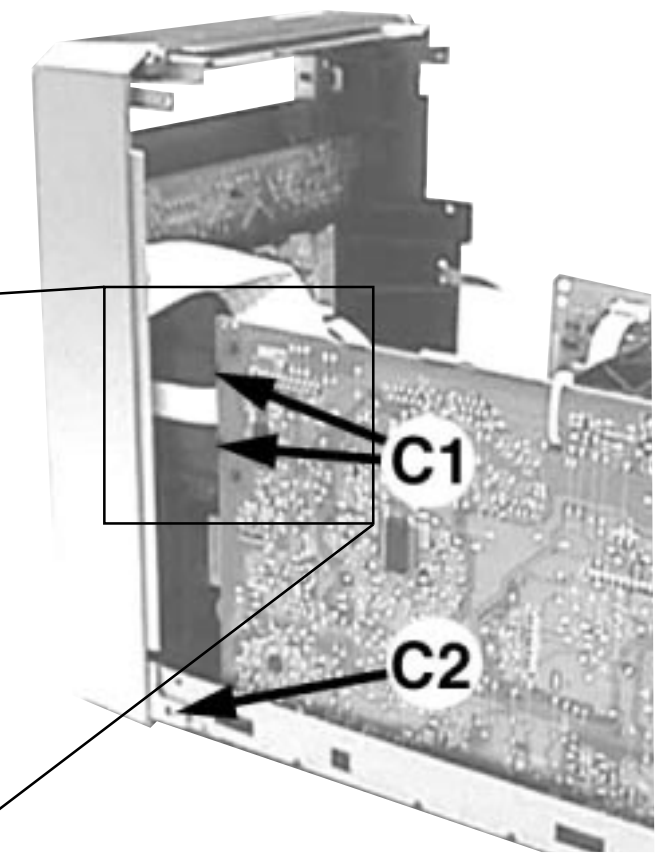


Figure 7

DISMANTLING INSTRUCTIONS

Dismantling of the Front Panel assembly

- 1) The Knob Volume (pos 141) can be removed by pulling it out in the direction as shown in Figure 8.
- 2) The Knob Bass/Knob Treble (pos 140) can be removed by pulling it out in the direction as shown in Figure 9.
- 3) Loosen 4 screws D (see Figure 12) to remove the Shield Tape Deck and Module Tape Deck (pos 1107).
- 4) Loosen 2 screws E (see Figure 11) to remove the Bracket Top Support (pos 113).



Figure 8



Figure 9

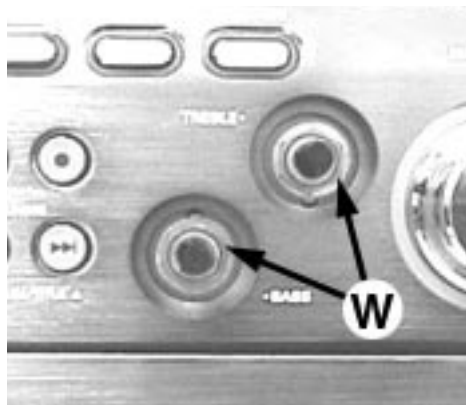


Figure 10

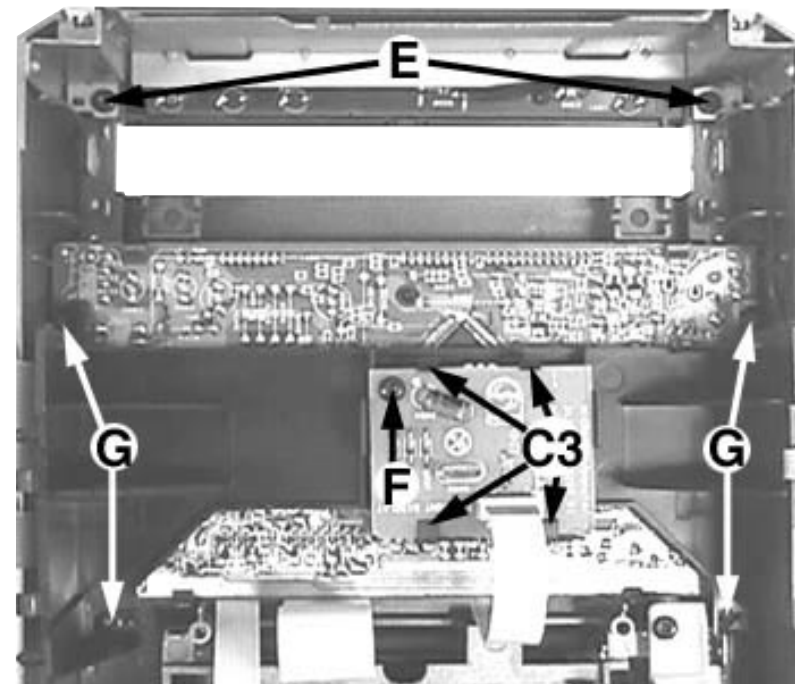


Figure 11

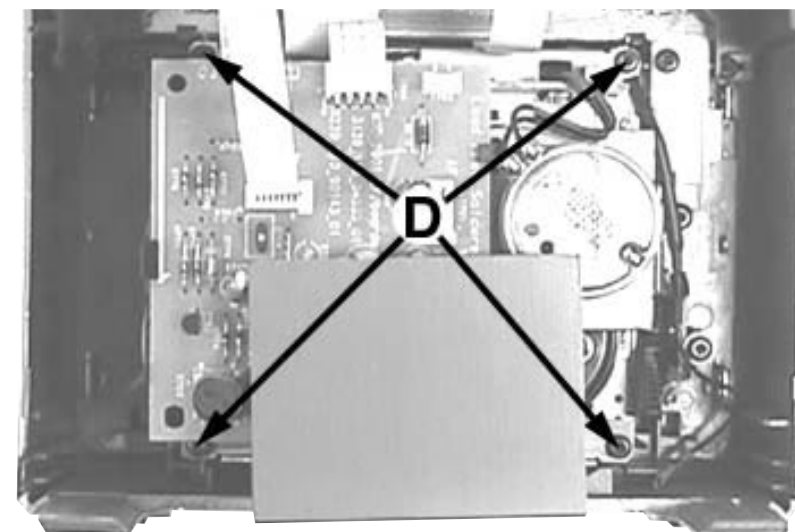


Figure 12

- 5) Loosen 1 screw F and 4 catches C3 (see Figure 11) to remove the Eeprom Board (pos 1105D).
- 6) Loosen 4 screws G (see Figure 11) to remove the Bracket Combi (pos 155).
- 7) Uncatch 4 catches C4 (see Figure 13) to remove the Display Board (pos 1105A).
- 8) Loosen 4 screws H (see Figure 13) to remove the Top Key Board (pos 1105C).
- 9) Loosen 5 screws J (see Figure 14) and 2 nuts W (see Figure 10) to remove the Control Board (pos 1105B).

Dismantling of the Front Panel assembly

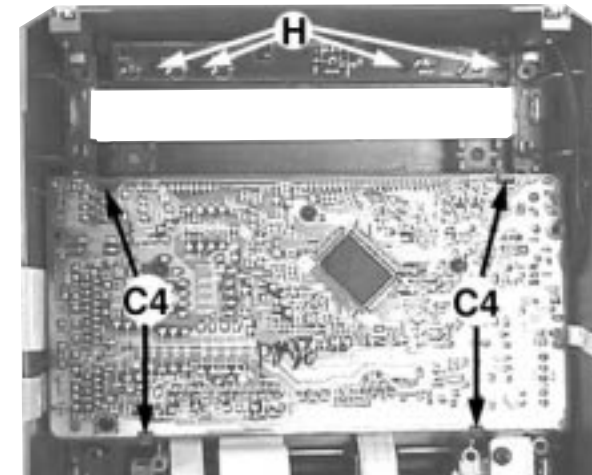


Figure 13

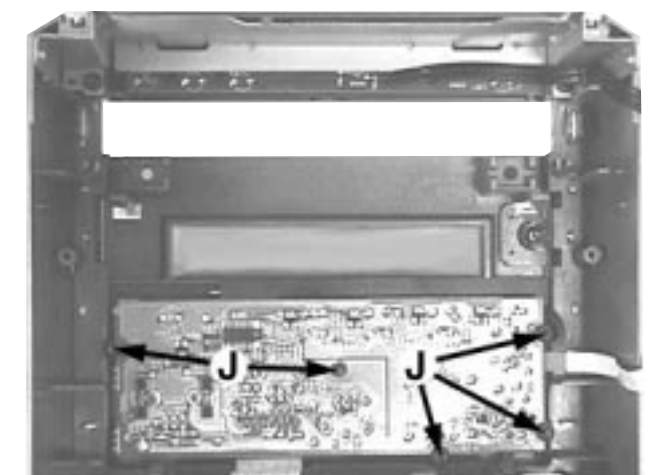


Figure 14

Dismantling of the Rear Panel assembly

- 1) Loosen 3 screws K and 2 catches C5 (see Figure 15) to remove the Tuner Board assembly.
- 2) Loosen 3 screws L (see Figure 15) to free the Combi Board (pos 1102-1003).
- 3) Loosen 1 screw M (see Figure 15) to free the Mains Socket Board (pos 1102-1001B).

- 4) Loosen 1 screw N and 2 catches C6 (see Figure 15) to free the Panel Rear (pos 230) by sliding it out towards the rear.

Note : Tuner Board assembly and Mains Socket Board can also be removed together with the Panel Rear.

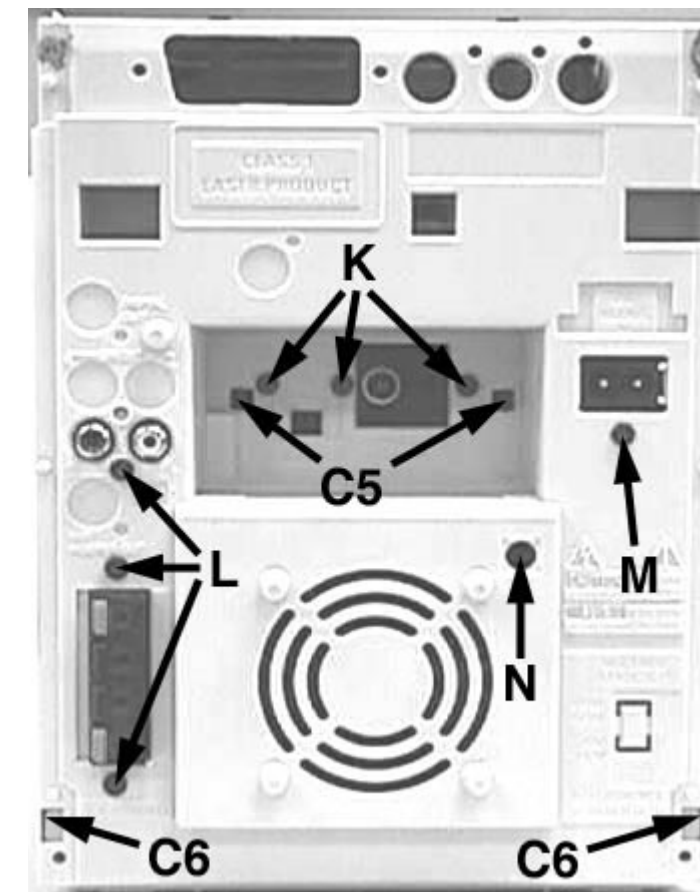


Figure 15

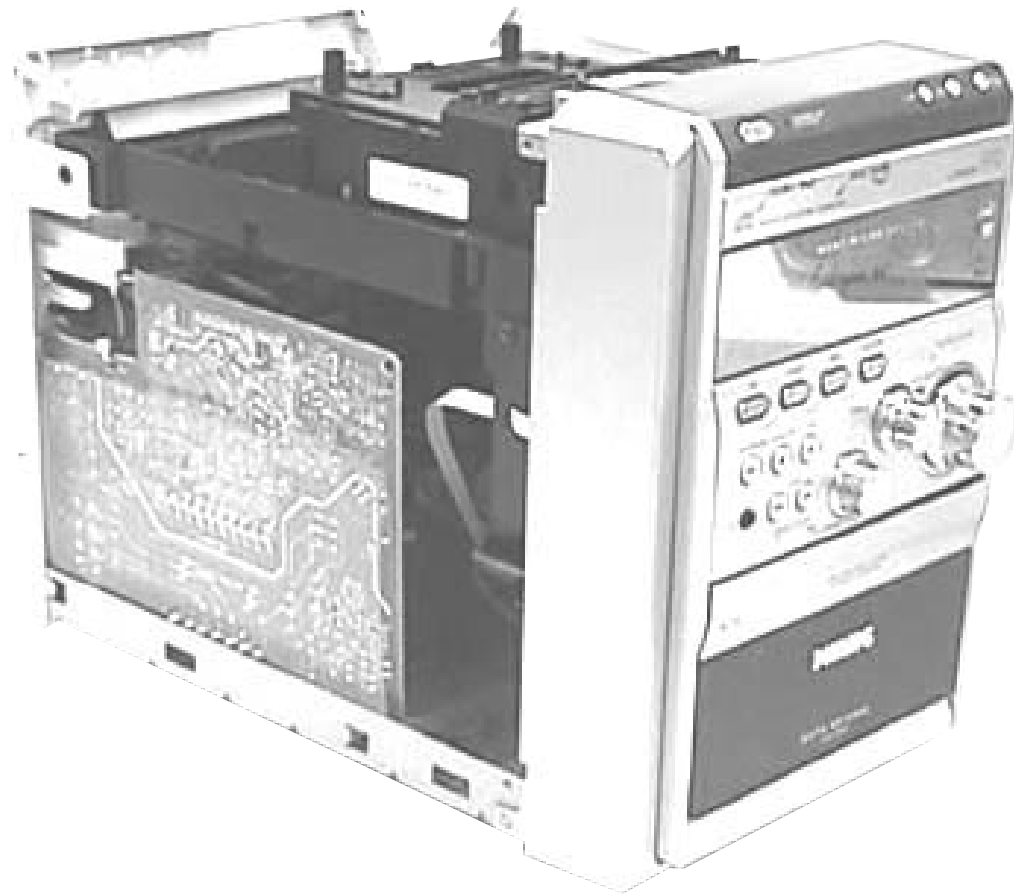
DISMANTLING INSTRUCTIONS

Repair Hints & Service Positions

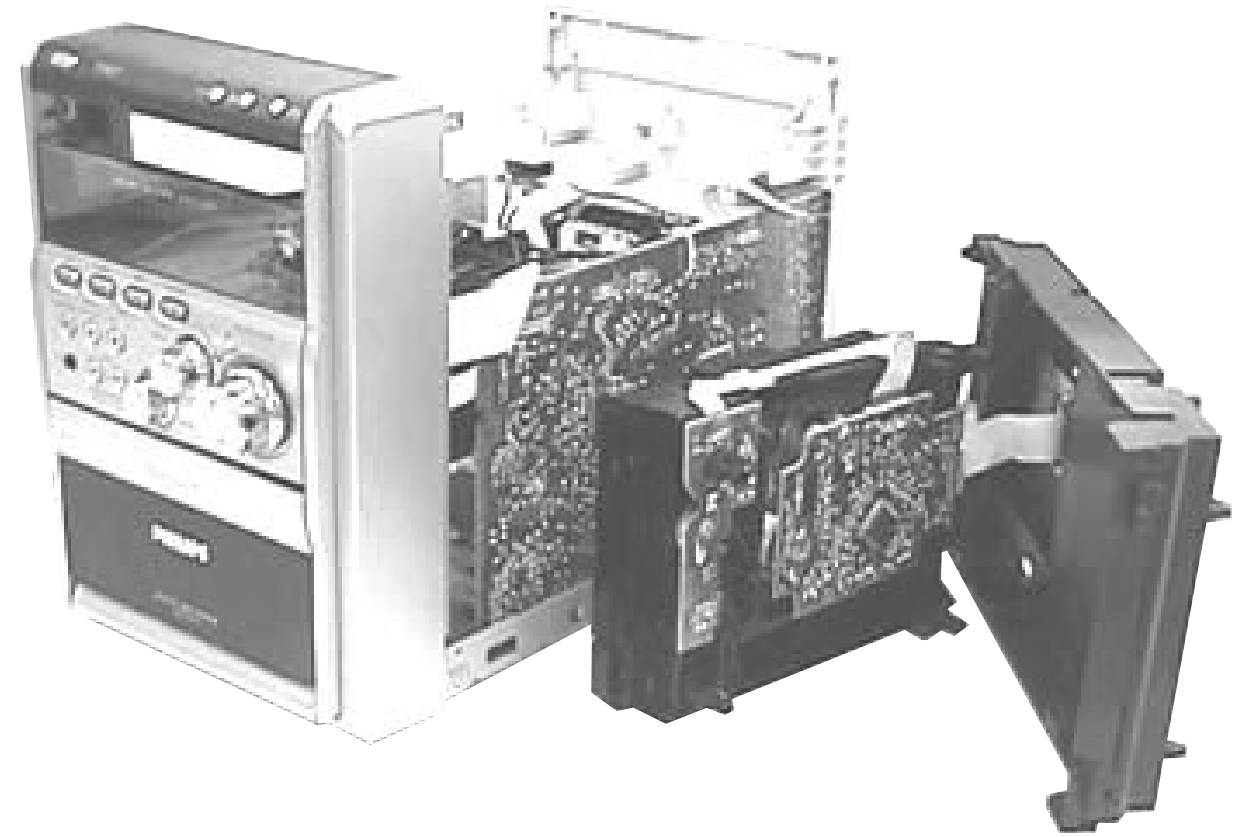
- 1) During repair it is possible to disconnect the Tuner Board and/or CD Module completely unless the fault is suspected to be in that area. This will not affect the performance of the rest of the set.

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

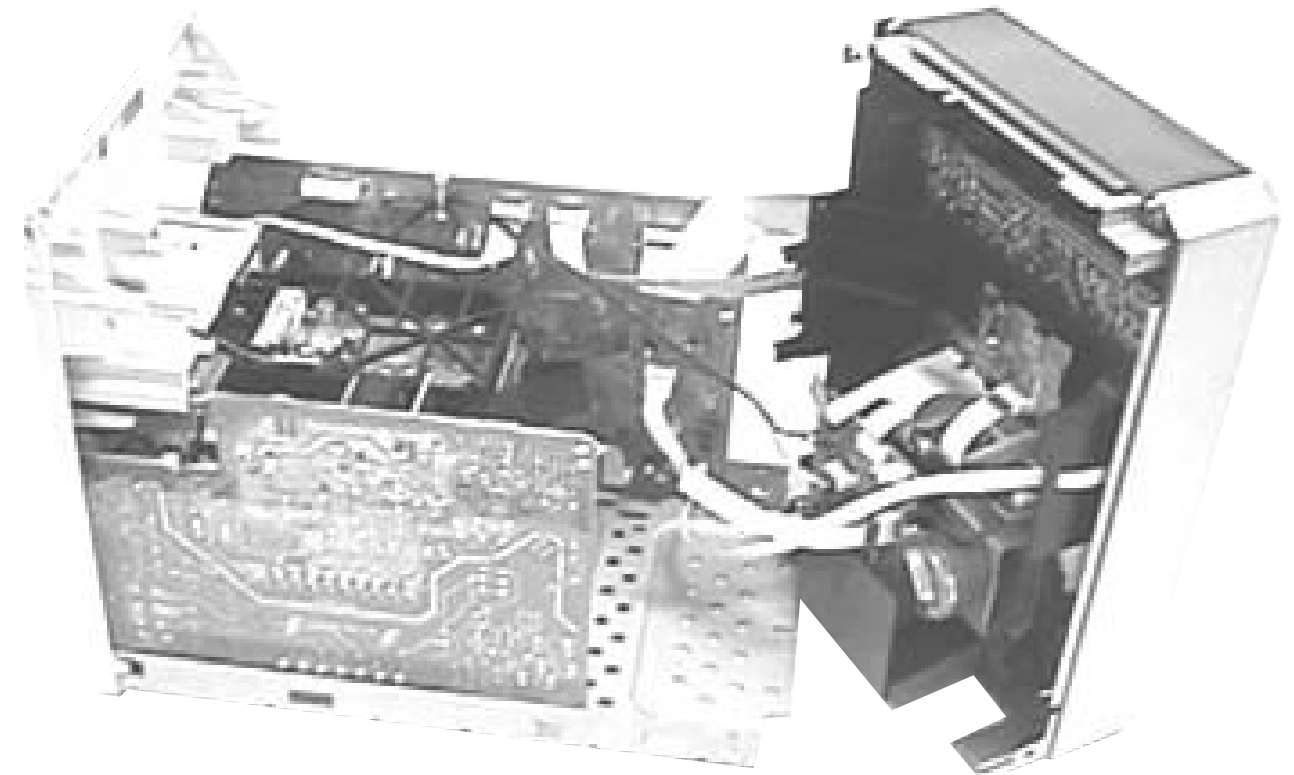
Service position A



Service position B



Service position C

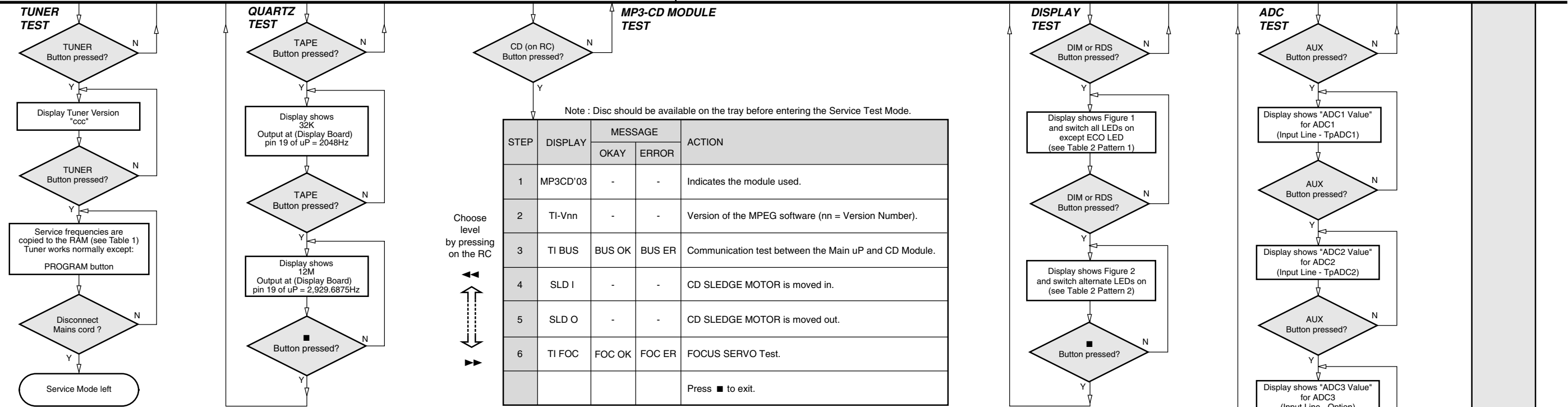


SERVICE TEST PROGRAM

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

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

S refers to Service Mode
V refers to Version
yy refers to Software version number of the uProcessor (counting up from 01 to 99)



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

STEP	DISPLAY	MESSAGE		ACTION
		OKAY	ERROR	
1	MP3CD'03	-	-	Indicates the module used.
2	TI-Vnn	-	-	Version of the MPEG software (nn = Version Number).
3	TI BUS	BUS OK	BUS ER	Communication test between the Main uP and CD Module.
4	SLD I	-	-	CD SLEDGE MOTOR is moved in.
5	SLD O	-	-	CD SLEDGE MOTOR is moved out.
6	TI FOC	FOC OK	FOC ER	FOCUS SERVO Test.
				Press ■ to exit.

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

Table 1

Note: * Depending on the selected grid frequency (9 or 10kHz).
By holding the ECO and TUNER 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.

LEDs	Pattern 1	Pattern 2
ECO	Off	Off
CD	On	On
TUNER	On	Off
TAPE	On	On
AUX	On	Off
Volume Rotary	On	On

Table 2

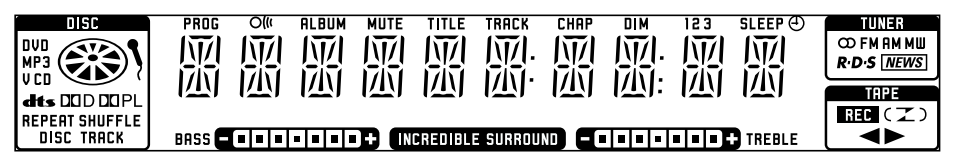


Figure 1

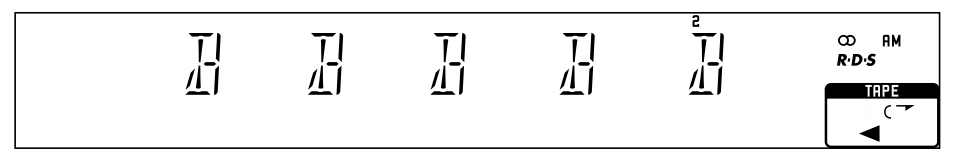
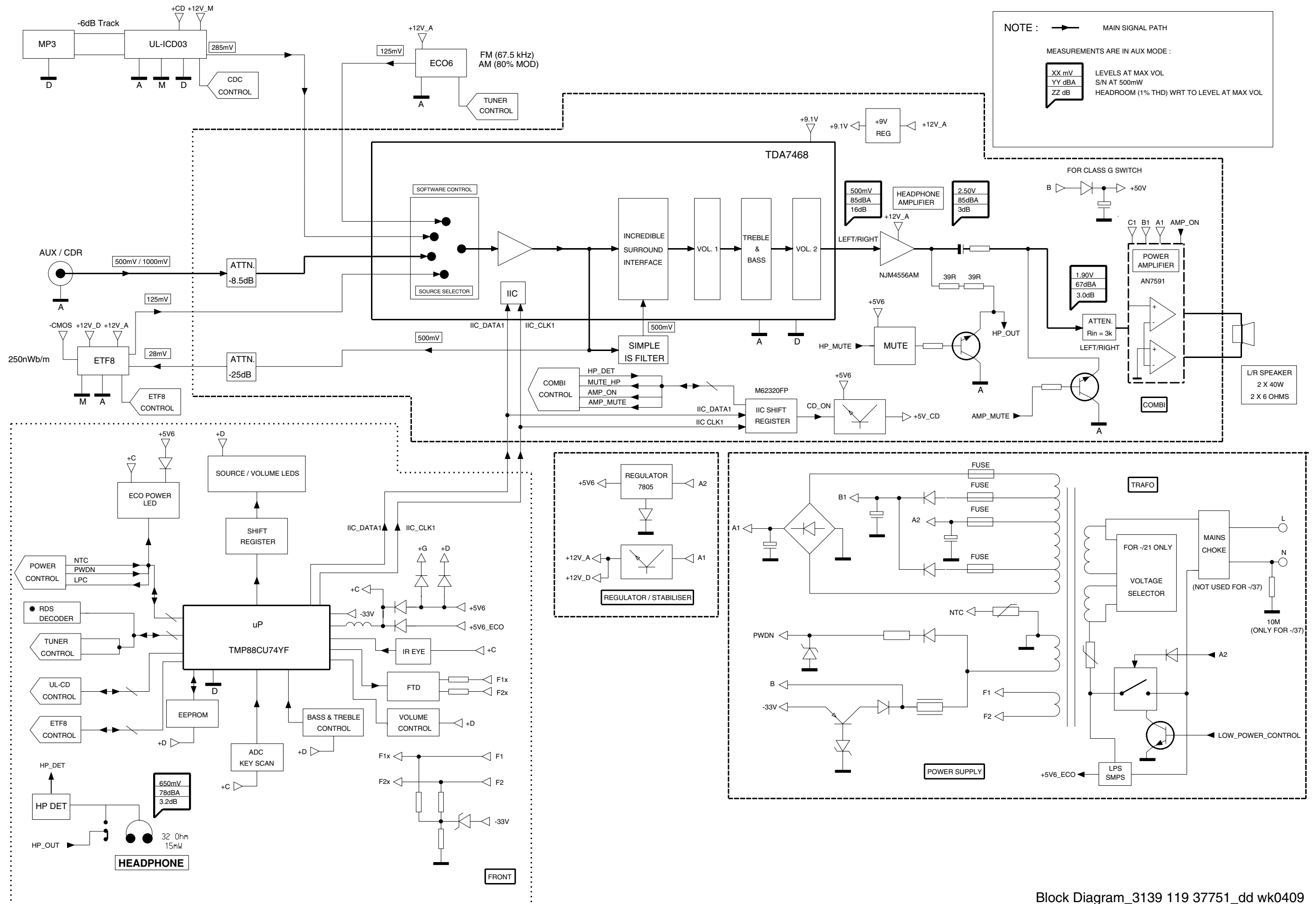


Figure 2

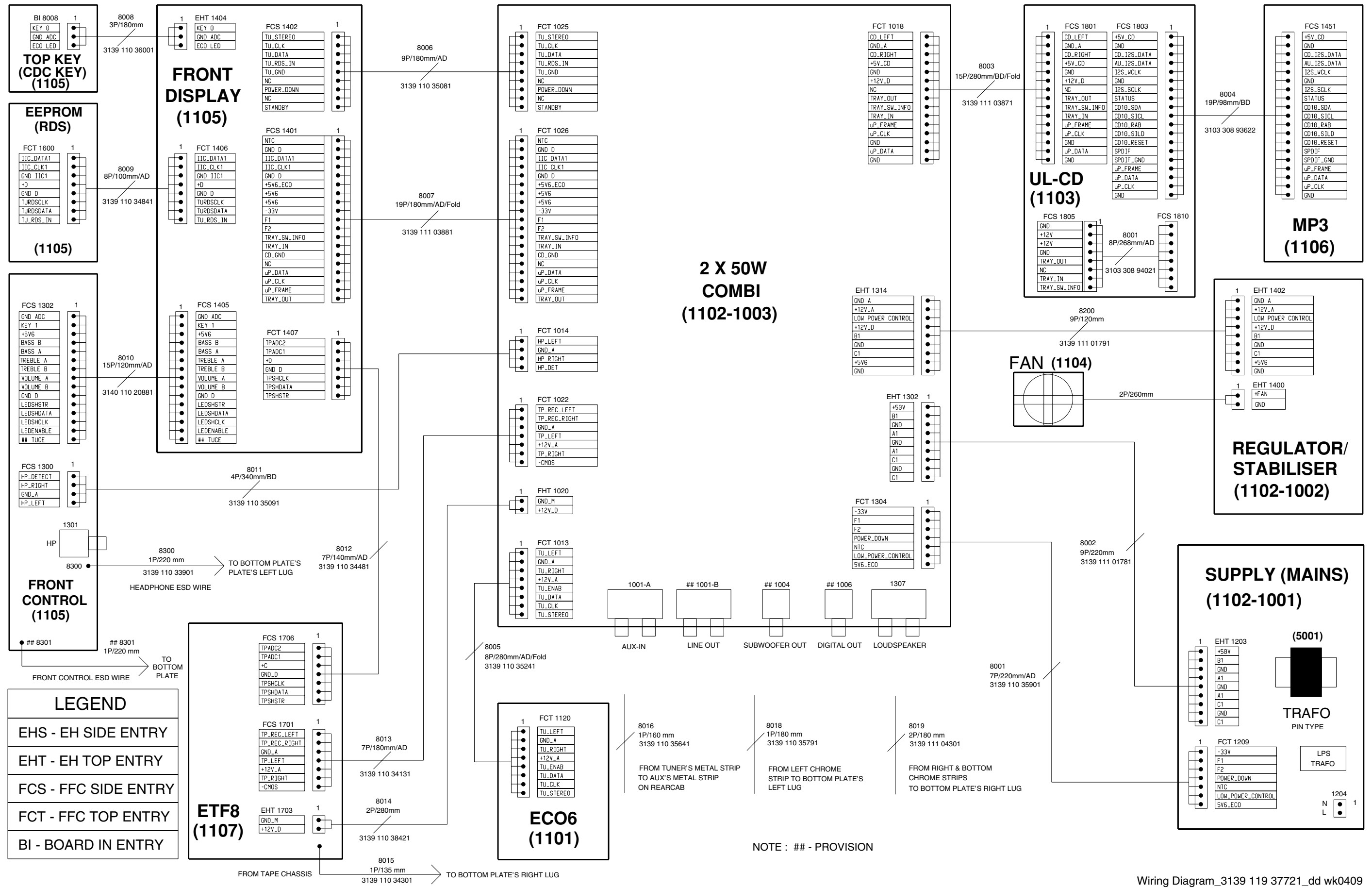
ADC Test is used for checking the ADC inputs to the microprocessor. The display shows an ADC value between 0 and 255 for an input signal between 0 and 5V.

TEST	Activated with	ACTION
EEPROM TEST	▶▶ ■ to Exit	Test patterns will be sent to the EEPROM. "PASS" is displayed if the uProcessor read back the test patterns correctly, otherwise "FAIL" will be displayed.
EEPROM FORMAT TEST	◀◀	Load default data. Display shows "NEW" for 1 second. Caution! All presets from the customer will be lost!!
DEMO TOGGLE	▶◀	Pressing this button will toggle between DEMO ON and DEMO OFF. The DEMO status will scroll once across the Display.
ROTARY ENCODER TEST	Volume, Treble or Bass Knob	Display shows value for 2 seconds. Values increases or decreases until Volume Maximum (0dB) or Volume Minimum (VOL MUTE) is reached.
LEAVE SERVICE TEST PROGRAM	Disconnect mains cord	

SET BLOCK DIAGRAM



SET WIRING DIAGRAM



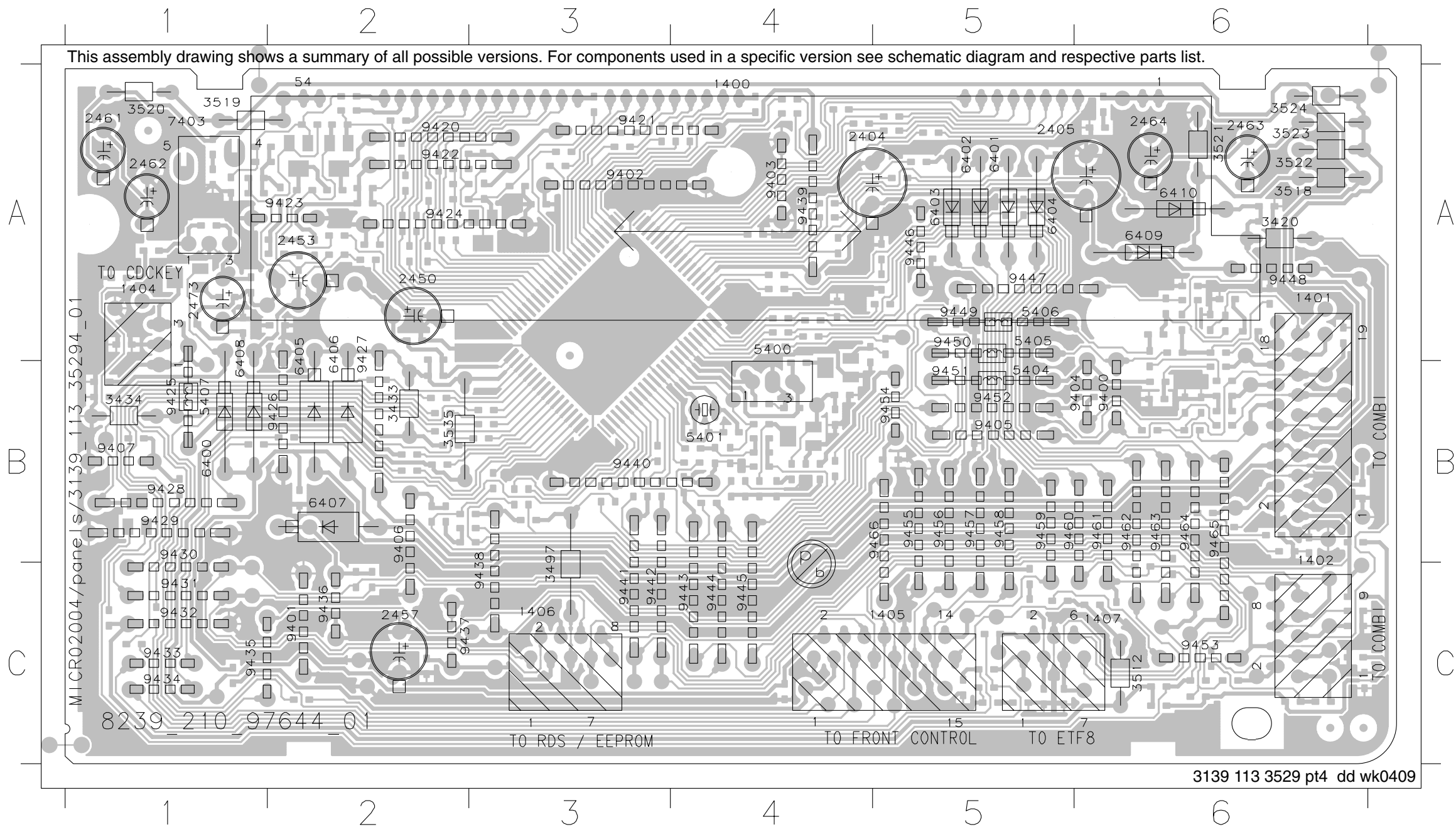
FRONT BOARD

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Karaoke part - Circuit Diagram	6-13
Electrical parts list	6-14

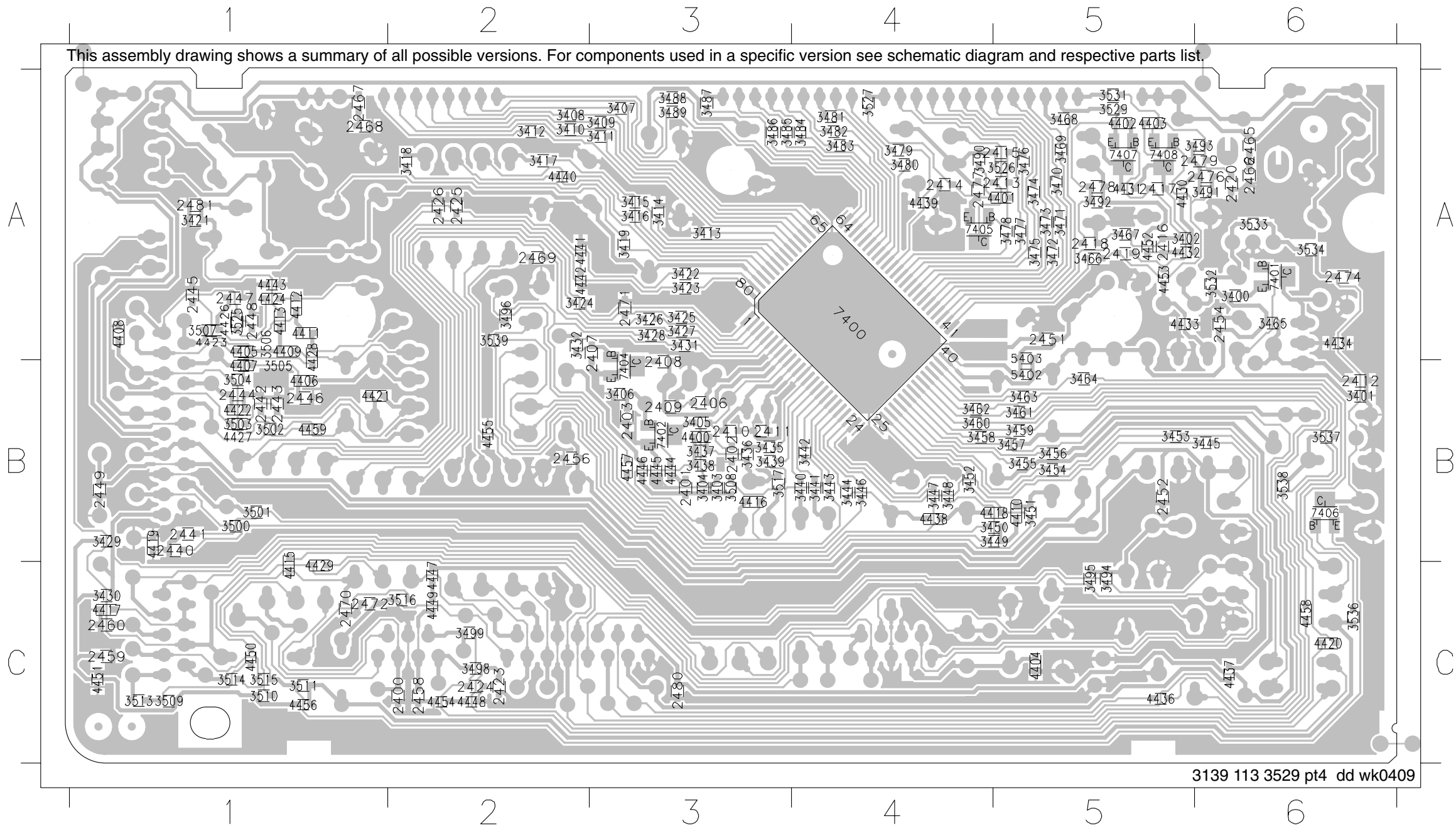
DISPLAY BOARD - COMPONENT LAYOUT

1400	A4	2405	A5	2473	A1	3520	A1	5404	B5	6404	A5	9400	B6	9420	A2	9428	B1	9436	C2	9444	C4	9452	B5	9460	B5
1401	A6	2450	A2	3420	A6	3521	A6	5405	A5	6405	A2	9401	C2	9421	A3	9429	B1	9437	C2	9445	C4	9453	C6	9461	B6
1402	B6	2453	A2	3433	B2	3522	A6	5406	A5	6406	A2	9402	A3	9422	A2	9430	B1	9438	C3	9446	A5	9454	B5	9462	B6
1404	A1	2457	C2	3434	B1	3523	A6	5407	B1	6407	B2	9403	A4	9423	A2	9431	C1	9439	A4	9447	A5	9455	B5	9463	B6
1405	C5	2461	A1	3497	C3	3524	A6	6400	B1	6408	A1	9404	B6	9424	A2	9432	C1	9440	B3	9448	A6	9456	B5	9464	B6
1406	C3	2462	A1	3512	C6	3535	B2	6401	A5	6409	A6	9405	B5	9425	B1	9433	C1	9441	C3	9449	A5	9457	B5	9465	B6
1407	C6	2463	A6	3518	A6	5400	A4	6402	A5	6410	A6	9406	B2	9426	B2	9434	C1	9442	C3	9450	A5	9458	B5	9466	B5
2404	A4	2464	A6	3519	A1	5401	B4	6403	A5	7403	A1	9407	B1	9427	A2	9435	C1	9443	C4	9451	B5	9459	B5		

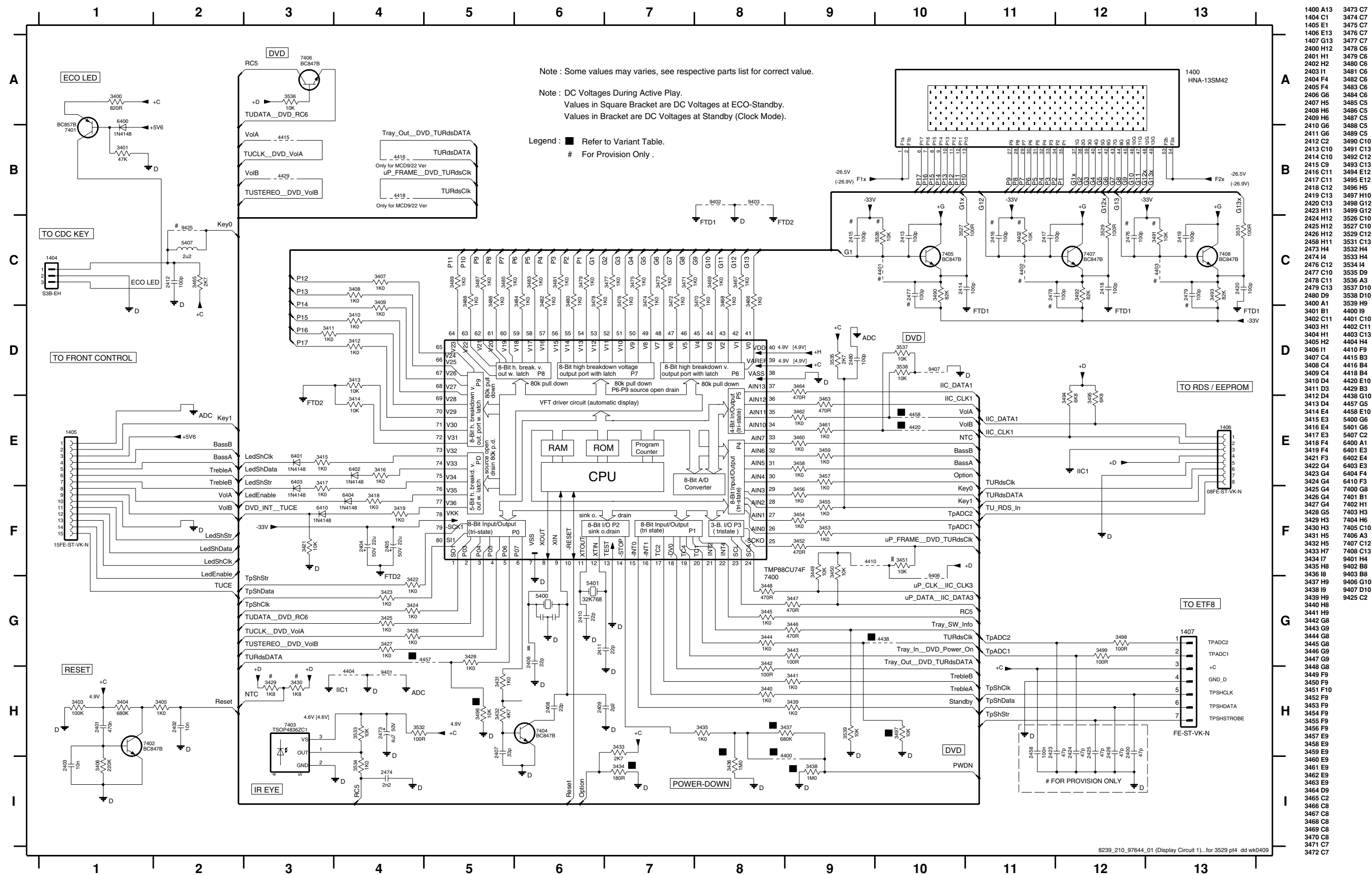


DISPLAY BOARD - CHIP LAYOUT

2400	C2	2423	C2	2459	C1	3402	A5	3422	A3	3443	B4	3462	B4	3481	A4	3501	B1	3529	A5	4410	B5	4431	A5	4451	C1
2401	B3	2424	C2	2460	C1	3403	B3	3423	A3	3444	B4	3463	B5	3482	A4	3502	B1	3531	A5	4411	A1	4432	A5	4452	A5
2402	B3	2425	A2	2465	A6	3404	B3	3424	A2	3445	B6	3464	B5	3483	A4	3503	B1	3532	A6	4412	A1	4433	A5	4453	A5
2403	B3	2426	A2	2466	A6	3405	B3	3425	A3	3446	B4	3465	A6	3484	A4	3504	B1	3533	A6	4413	A1	4434	A6	4454	C2
2406	B3	2440	B1	2467	A1	3406	B3	3426	A3	3447	B4	3466	A5	3485	A3	3505	B1	3534	A6	4415	C1	4436	C5	4455	B2
2407	A3	2441	B1	2468	A1	3407	A3	3427	A3	3448	B4	3467	A5	3486	A3	3506	A1	3535	C6	4416	B3	4437	C6	4456	C1
2408	B3	2442	B1	2469	A2	3408	A2	3428	A3	3449	B5	3468	A5	3487	A3	3507	A1	3537	B6	4417	C1	4438	B4	4457	B3
2409	B3	2443	B1	2470	C1	3409	A3	3429	B1	3450	B5	3469	A5	3488	A3	3508	B3	3538	B6	4418	B5	4439	A4	4458	C6
2410	B3	2444	B1	2471	A3	3410	A2	3430	C1	3451	B5	3470	A5	3489	A3	3509	C1	3539	A2	4419	B1	4440	A2	4459	B1
2411	B3	2445	A1	2472	C1	3411	A3	3431	A3	3452	B4	3471	A5	3490	A4	3510	C1	4400	B3	4420	C6	4441	A2	5402	B5
2412	B6	2446	B1	2474	A6	3412	A2	3432	A2	3453	B5	3472	A5	3491	A6	3511	C1	4401	A5	4421	B1	4442	A2	5403	A5
2413	A5	2447	A1	2476	A6	3413	A3	3435	B3	3454	B5	3473	A5	3492	A5	3513	C1	4402	A5	4422	B1	4443	A1	7400	A4
2414	A4	2448	A1	2477	A4	3414	A3	3436	B3	3455	B5	3474	A5	3493	A6	3514	C1	4403	A5	4423	A1	4444	B3	7401	A6
2415	A5	2449	B1	2478	A5	3415	A3	3437	B3	3456	B5	3475	A5	3494	C5	3515	C1	4404	C5	4424	A1	4445	B3	7402	B3
2416	A5	2451	A5	2479	A6	3416	A3	3438	B3	3457	B5	3476	A5	3495	C5	3516	C2	4405	A1	4426	A1	4446	B3	7404	B3
2417	A5	2452	B5	2480	C3	3417	A2	3439	B3	3458	B4	3477	A5	3496	A2	3517	B3	4406	B1	4427	B1	4447	C2	7405	A4
2418	A5	2454	A6	2481	A1	3418	A2	3440	B4	3459	B5	3478	A5	3498	C2	3525	A1	4407	B1	4428	A1	4448	C2	7406	B6
2419	A5	2456	B2	3400	A6	3419	A3	3441	B4	3460	B4	3479	A4	3499	C2	3526	A5	4408	A1	4429	C1	4449	C2	7407	A5
2420	A6	2458	C2	3401	B6	3421	A1	3442	B4	3461	B5	3480	A4	3500	B1	3527	A4	4409	A1	4430	A5	4450	C1	7408	A5

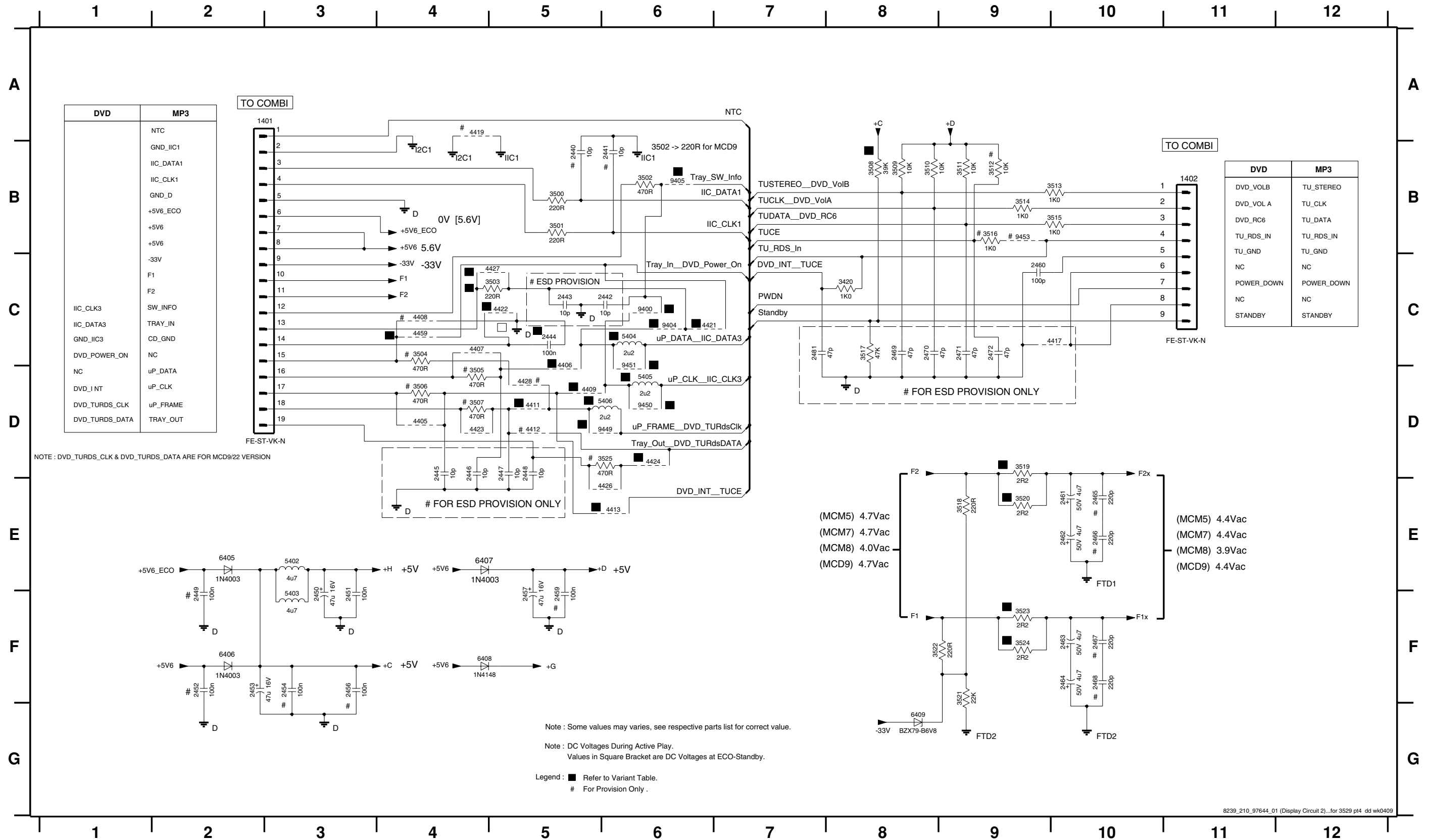


DISPLAY BOARD - CIRCUIT DIAGRAM PART 1



DISPLAY BOARD - CIRCUIT DIAGRAM PART 2

1401 A3	2442 C6	2446 D4	2450 F3	2454 F3	2460 C9	2464 F10	2468 F10	2472 C9	3501 B5	3505 D4	3509 B8	3513 B10	3517 C8	3521 F9	3525 D6	4408 C4	4413 E6	4422 C5	4427 C5	5403 F3	6405 E2	6409 G8	9449 D6
1402 B11	2443 C5	2447 D5	2451 F3	2456 F3	2461 E10	2465 E10	2469 C8	2481 C7	3502 B6	3506 D4	3510 B8	3514 B9	3518 E9	3522 F8	4405 D4	4409 D5	4417 C10	4423 D4	4428 D5	5404 C6	6406 F2	9400 C6	9450 D6
2440 B5	2444 C5	2448 D5	2452 F2	2457 F5	2462 E10	2466 E10	2470 C8	3420 C8	3503 C5	3507 D4	3511 B9	3515 B10	3519 D9	3523 F9	4406 D5	4411 D5	4419 A4	4424 D6	4459 C4	5405 D6	6407 E4	9404 C6	9451 D6
2441 B6	2445 D4	2449 F2	2453 F2	2459 F5	2463 F10	2467 F10	2471 C9	3500 B5	3504 C4	3508 B8	3512 B9	3516 B9	3520 E9	3524 F9	4407 C4	4412 D5	4421 C6	4426 E6	5402 E3	5406 D6	6408 F4	9405 B6	9453 B9

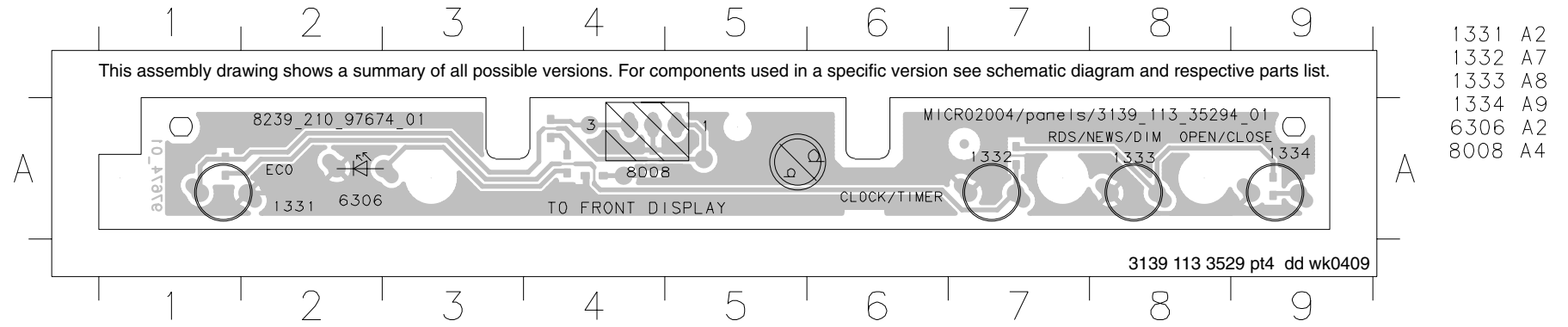


DISPLAY BOARD - VARIANT TABLE

	MCM7/22 MCM7/25	MCM7/37	MCM8/22 MCM8/25	MCM8/21
2444	100N	100N	100N	100N
3434	180R	180R	470R	470R
3436	1M	1M	2M2	2M2
3437	680K	680K	-	-
3438	1M	1M	-	-
3496	-	10K	-	10K
3497	-	10K	-	10K
3503	-	-	-	-
3508	39K	39K	-	-
3519	2R2	2R2	1R	1R
3520	2R2	2R2	1R	1R
3523	2R2	2R2	1R	1R
3524	2R2	2R2	1R	1R
4400	-	-	X	X
4406	X	X	X	X
4409	X	X	X	X
4411	X	X	X	X
4413	-	-	-	-
4420	X	X	X	X
4421	X	X	X	X
4422	-	-	-	-
4424	X	X	X	X
4427	X	X	X	X
4438	X	-	X	-
4457	X	-	X	-
4458	X	X	X	X
4459	-	-	-	-
5404	2U2	2U2	2U2	2U2
5405	2U2	2U2	2U2	2U2
5406	2U2	2U2	2U2	2U2
9400	-	-	-	-
9404	-	-	-	-
9405	X	X	X	X
9449	-	-	-	-
9450	-	-	-	-
9451	-	-	-	-

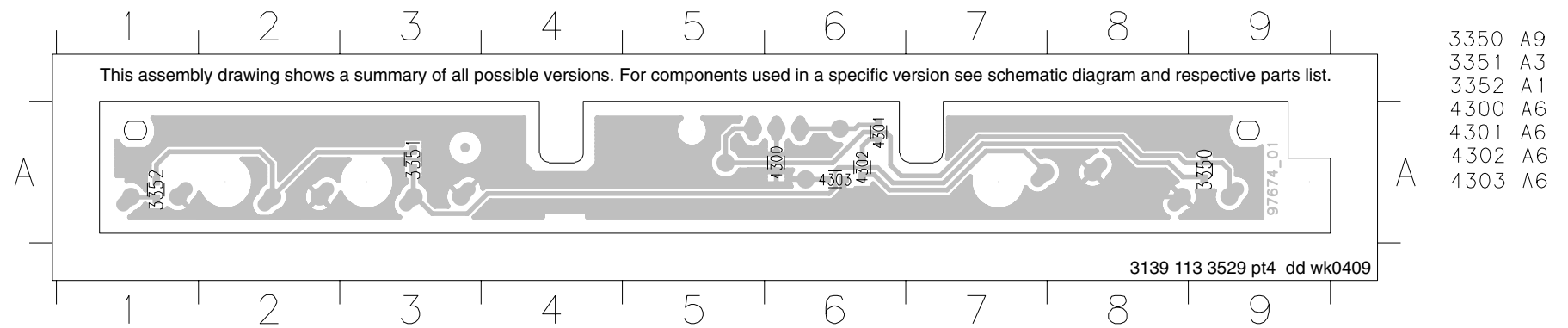
X - Item in use.

TOP KEY BOARD - COMPONENT LAYOUT



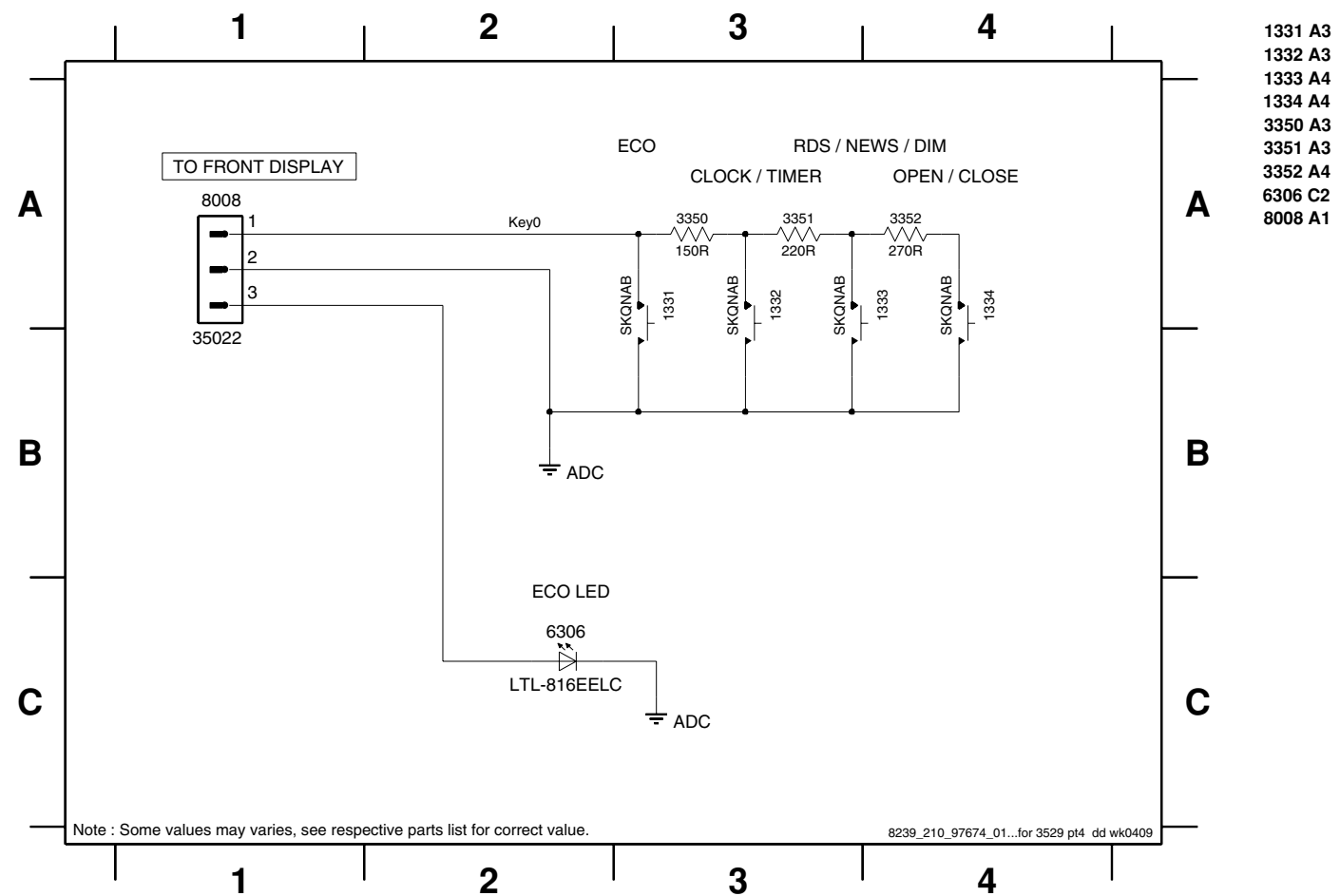
- 1331 A2
- 1332 A7
- 1333 A8
- 1334 A9
- 6306 A2
- 8008 A4

TOP KEY BOARD - CHIP LAYOUT



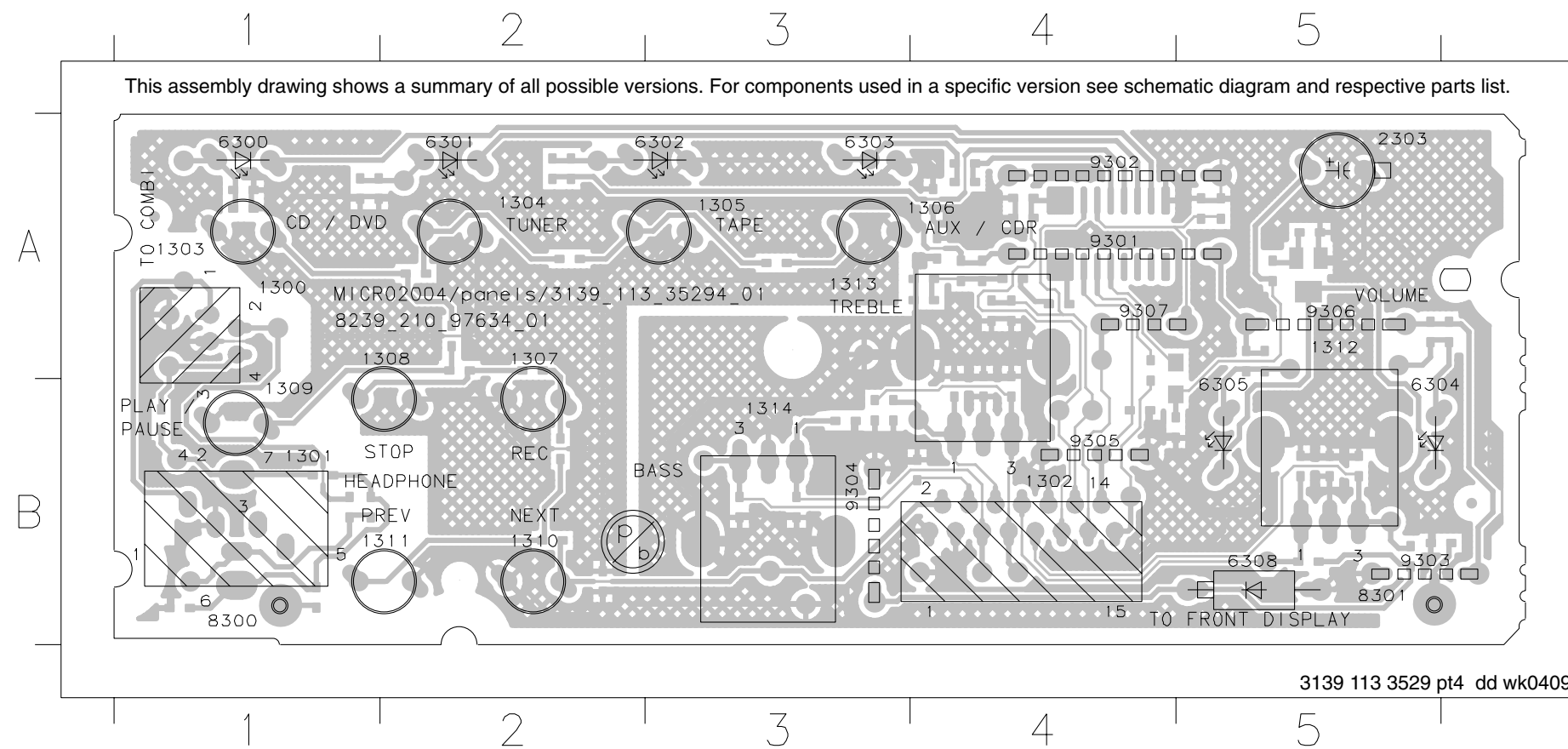
- 3350 A9
- 3351 A3
- 3352 A1
- 4300 A6
- 4301 A6
- 4302 A6
- 4303 A6

TOP KEY BOARD - CIRCUIT DIAGRAM



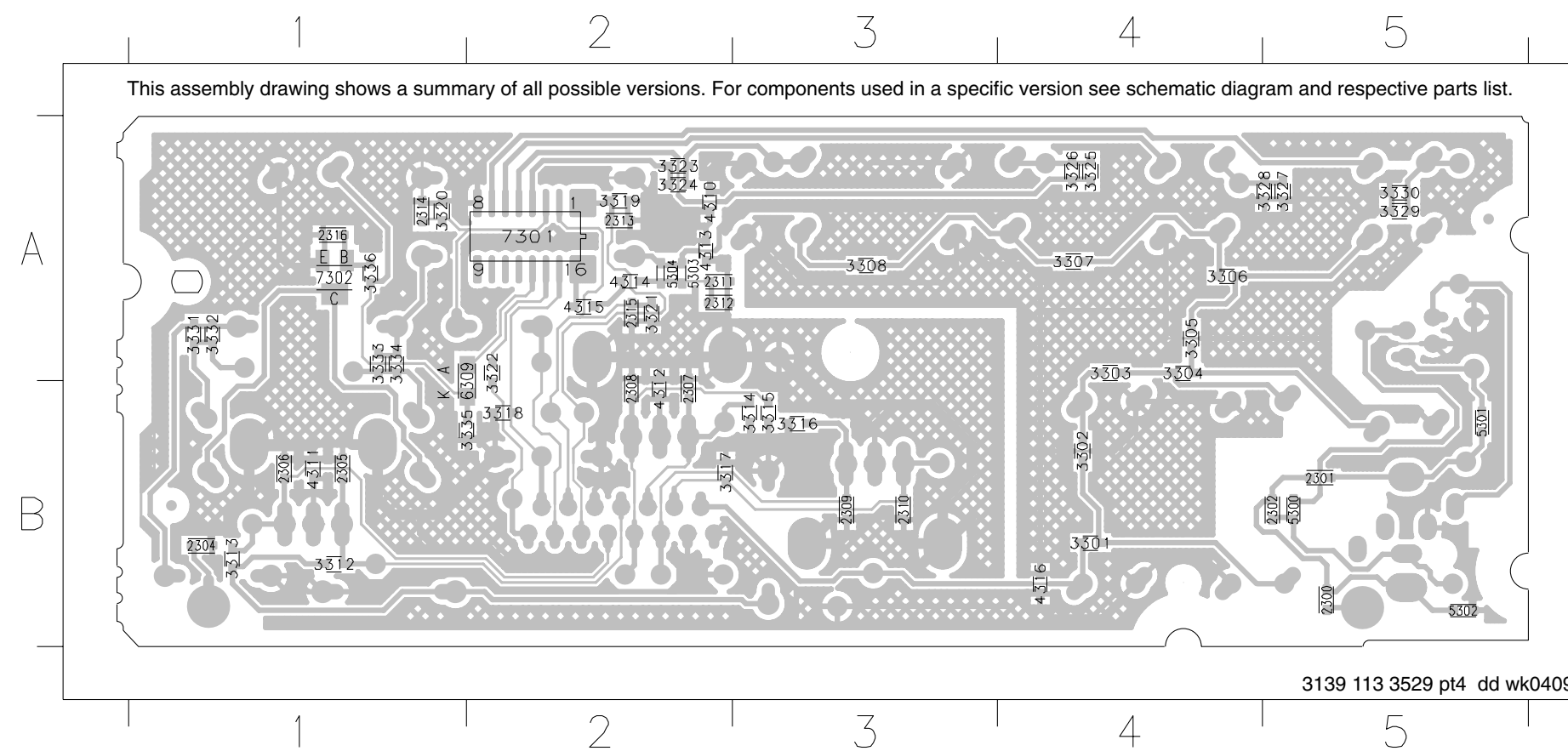
- 1331 A3
- 1332 A3
- 1333 A4
- 1334 A4
- 3350 A3
- 3351 A3
- 3352 A4
- 6306 C2
- 8008 A1

CONTROL BOARD - COMPONENT LAYOUT



- | | | | |
|------|----|------|----|
| 1300 | A1 | 9305 | B4 |
| 1301 | B1 | 9306 | A5 |
| 1302 | B4 | 9307 | A4 |
| 1303 | A1 | | |
| 1304 | A2 | | |
| 1305 | A3 | | |
| 1306 | A4 | | |
| 1307 | A2 | | |
| 1308 | A2 | | |
| 1309 | B1 | | |
| 1310 | B2 | | |
| 1311 | B2 | | |
| 1312 | A5 | | |
| 1313 | A3 | | |
| 1314 | B3 | | |
| 2303 | A5 | | |
| 6300 | A1 | | |
| 6301 | A2 | | |
| 6302 | A3 | | |
| 6303 | A3 | | |
| 6304 | B5 | | |
| 6305 | B5 | | |
| 6308 | B5 | | |
| 8300 | B1 | | |
| 8301 | B5 | | |
| 9301 | A4 | | |
| 9302 | A4 | | |
| 9303 | B5 | | |
| 9304 | B3 | | |

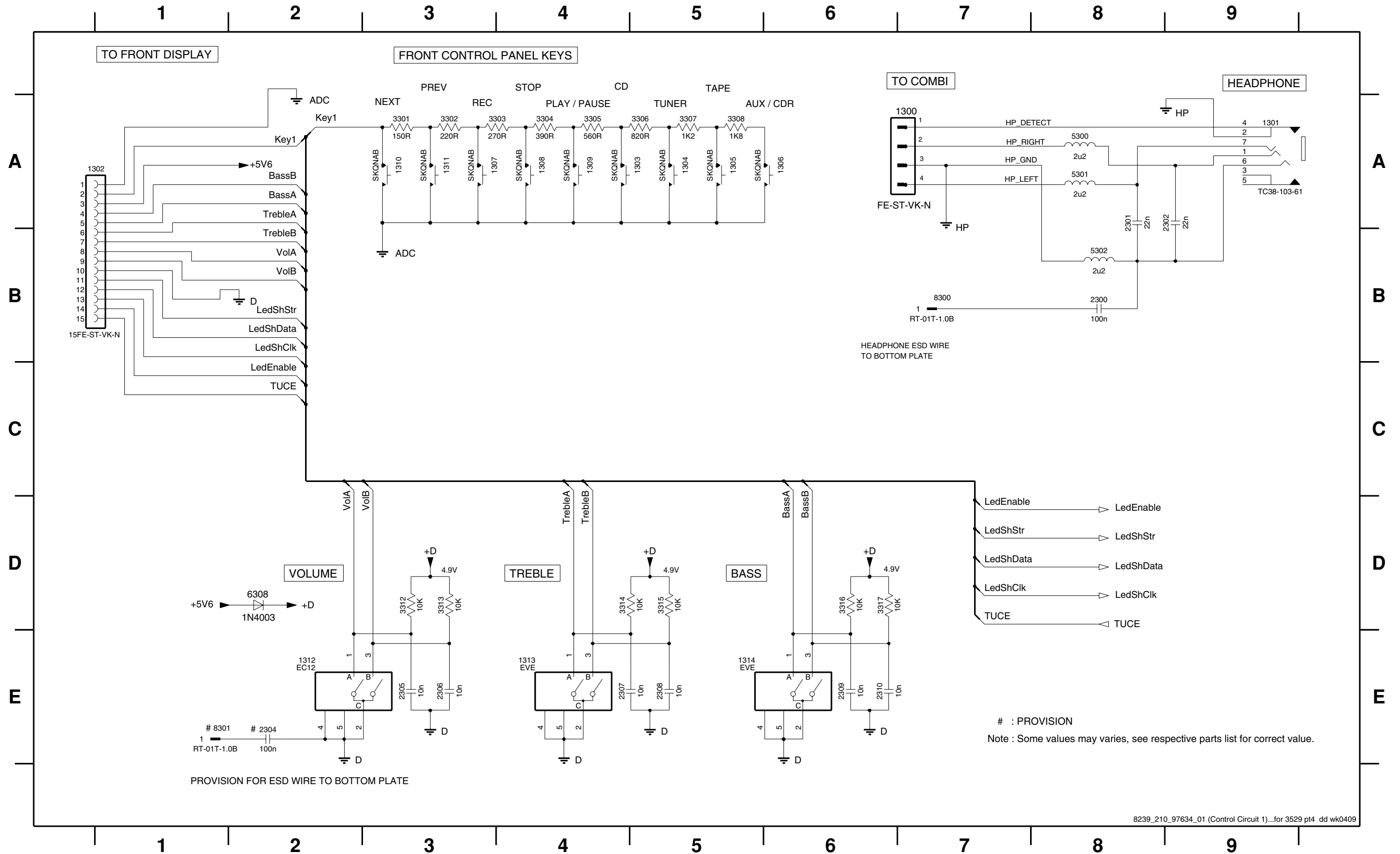
CONTROL BOARD - CHIP LAYOUT



- | | | | | | |
|------|----|------|----|------|----|
| 2300 | B5 | 3317 | B2 | 5302 | B5 |
| 2301 | B5 | 3318 | B2 | 5303 | A2 |
| 2302 | B5 | 3319 | A2 | 5304 | A2 |
| 2304 | B1 | 3320 | A1 | 6309 | A1 |
| 2305 | B1 | 3321 | A2 | 7301 | A2 |
| 2306 | B1 | 3322 | A2 | 7302 | A1 |
| 2307 | B2 | 3323 | A2 | | |
| 2308 | B2 | 3324 | A2 | | |
| 2309 | B3 | 3325 | A4 | | |
| 2310 | B3 | 3326 | A4 | | |
| 2311 | A2 | 3327 | A5 | | |
| 2312 | A2 | 3328 | A5 | | |
| 2313 | A2 | 3329 | A5 | | |
| 2314 | A1 | 3330 | A5 | | |
| 2315 | A2 | 3331 | A1 | | |
| 2316 | A1 | 3332 | A1 | | |
| 3301 | B4 | 3333 | A1 | | |
| 3302 | B4 | 3334 | A1 | | |
| 3303 | A4 | 3335 | B1 | | |
| 3304 | A4 | 3336 | A1 | | |
| 3305 | A4 | 4310 | A2 | | |
| 3306 | A4 | 4311 | B1 | | |
| 3307 | A4 | 4312 | B2 | | |
| 3308 | A3 | 4313 | A2 | | |
| 3312 | B1 | 4314 | A2 | | |
| 3313 | B1 | 4315 | A2 | | |
| 3314 | B3 | 4316 | B4 | | |
| 3315 | B3 | 5300 | B5 | | |
| 3316 | B3 | 5301 | B5 | | |

CONTROL BOARD - CIRCUIT DIAGRAM PART 1

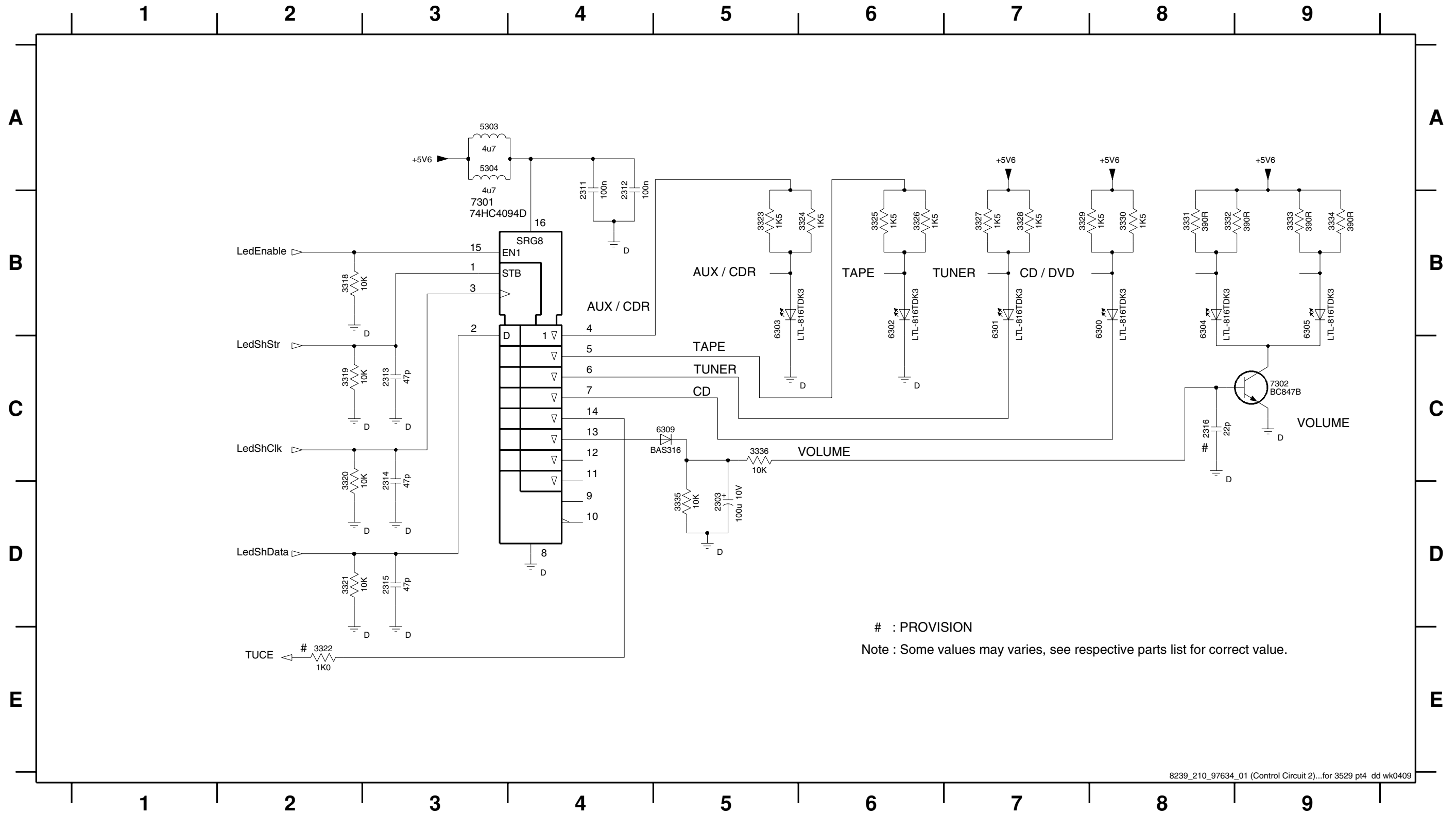
1300 A7 1302 A1 1304 A5 1306 A6 1308 A4 1310 A3 1312 E2 1314 E5 2301 A8 2304 E2 2306 E3 2308 E5 2310 E6 3302 A3 3304 A4 3306 A5 3308 A5 3313 D3 3315 D5 3317 D6 5301 A8 6308 D2 8301 E2
 1301 A9 1303 A5 1305 A5 1307 A3 1309 A4 1311 A3 1313 E4 2300 B8 2302 A9 2305 E3 2307 E4 2309 E6 3301 A3 3303 A4 3305 A4 3307 A5 3312 D3 3314 D4 3316 D6 5300 A8 5302 B8 8300 B7



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

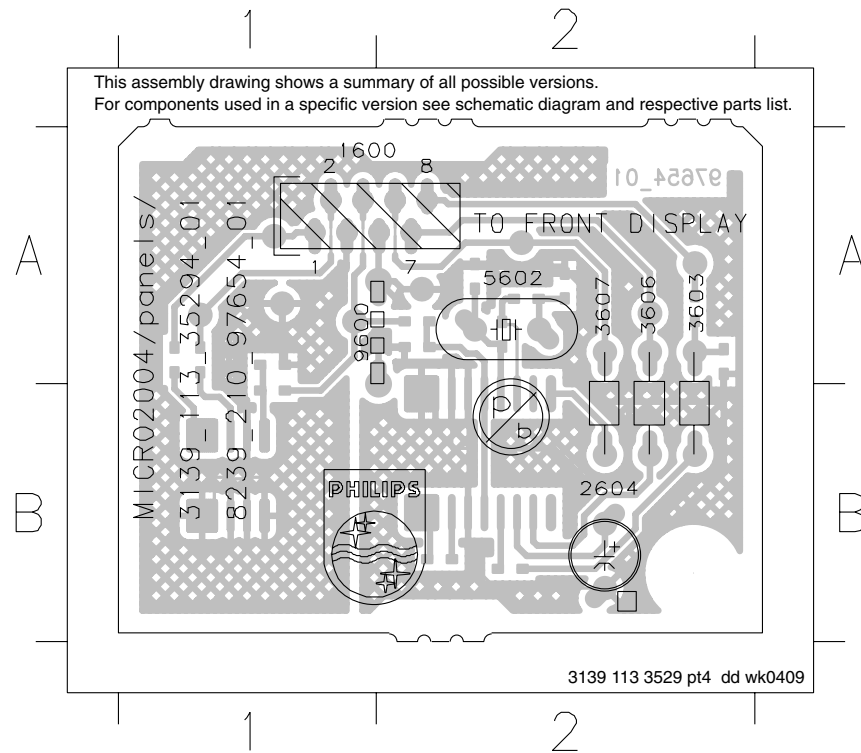
CONTROL BOARD - CIRCUIT DIAGRAM PART 2

2303 D5 2312 A4 2314 C3 2316 C8 3319 C2 3321 D2 3323 B5 3325 B6 3327 B7 3329 B7 3331 B8 3333 B9 3335 D5 5303 A3 6300 B8 6302 B6 6304 B8 6309 C5 7302 C9
 2311 A4 2313 C3 2315 D3 3318 B2 3320 C2 3322 E2 3324 B6 3326 B6 3328 B7 3330 B8 3332 B8 3334 B9 3336 C5 5304 A3 6301 B7 6303 B5 6305 B9 7301 B3



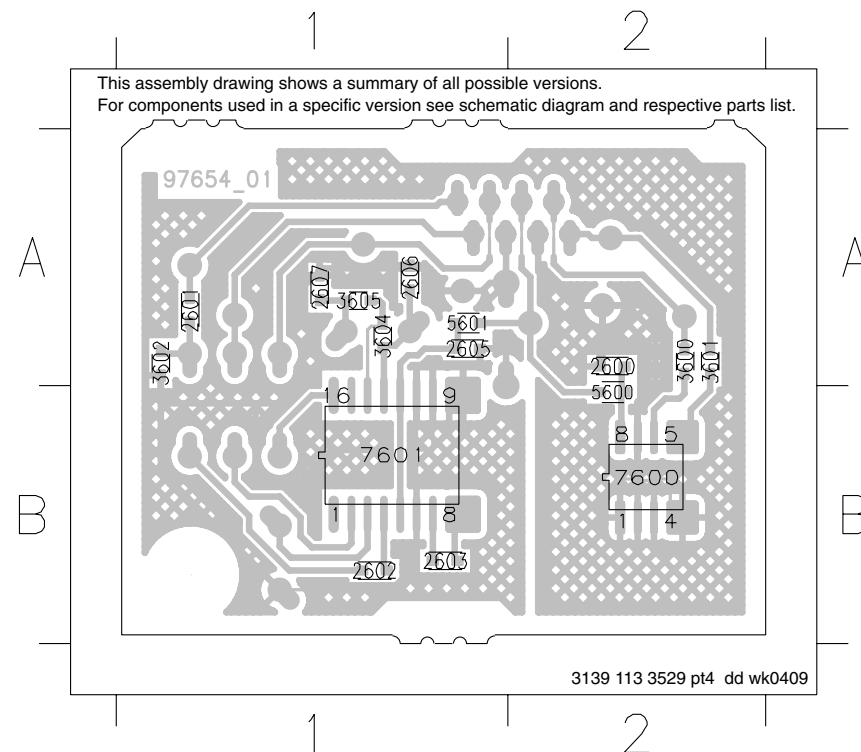
EEPROM BOARD - COMPONENT LAYOUT

1600 A1	3603 A2	3607 A2	9600 A1
2604 B2	3606 A2	5602 A2	



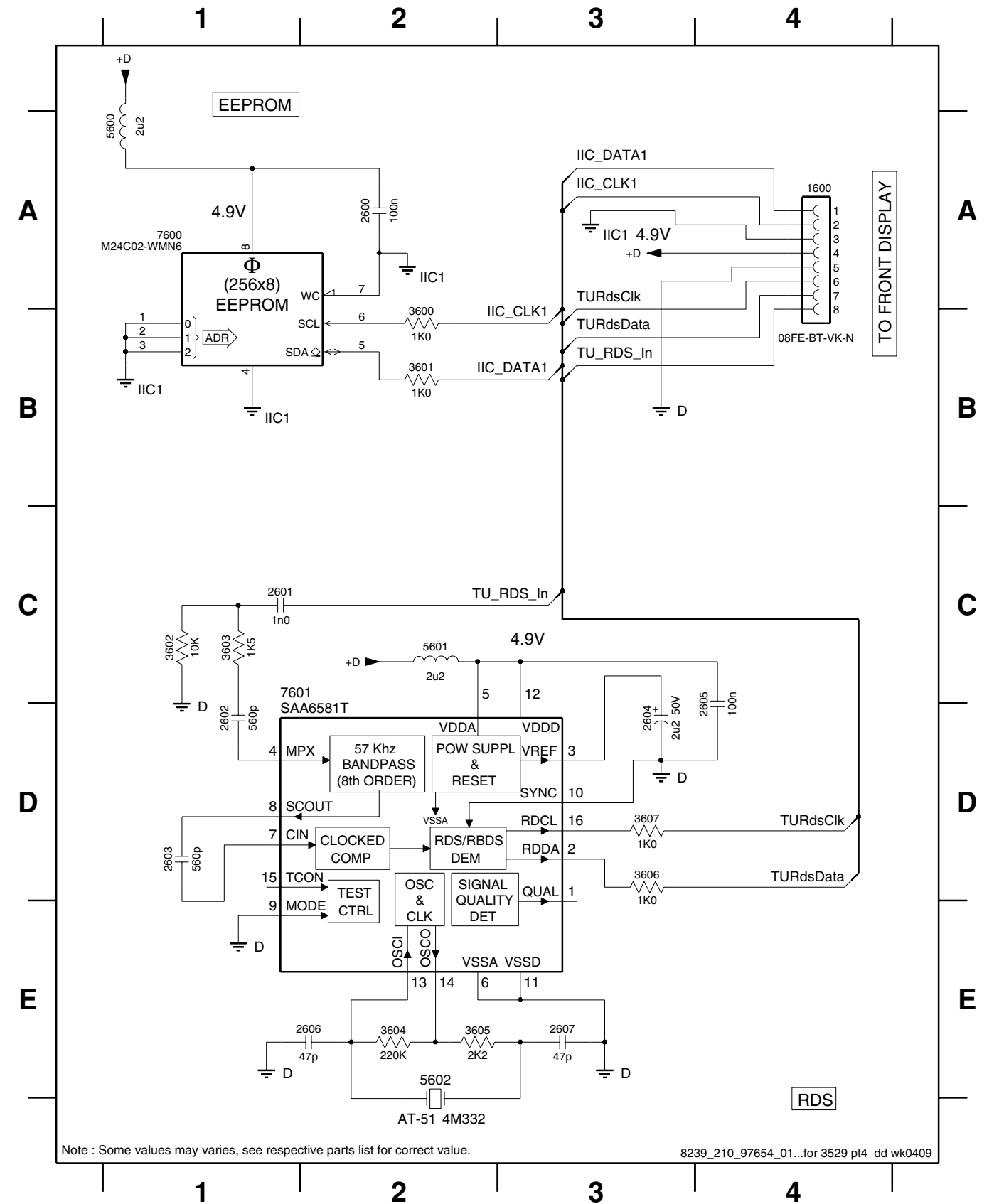
EEPROM BOARD - CHIP LAYOUT

2600 A2	2605 A1	3601 A2	5600 B2
2601 A1	2606 A1	3602 A1	5601 A1
2602 B1	2607 A1	3604 A1	7600 B2
2603 B1	3600 A2	3605 A1	7601 B1



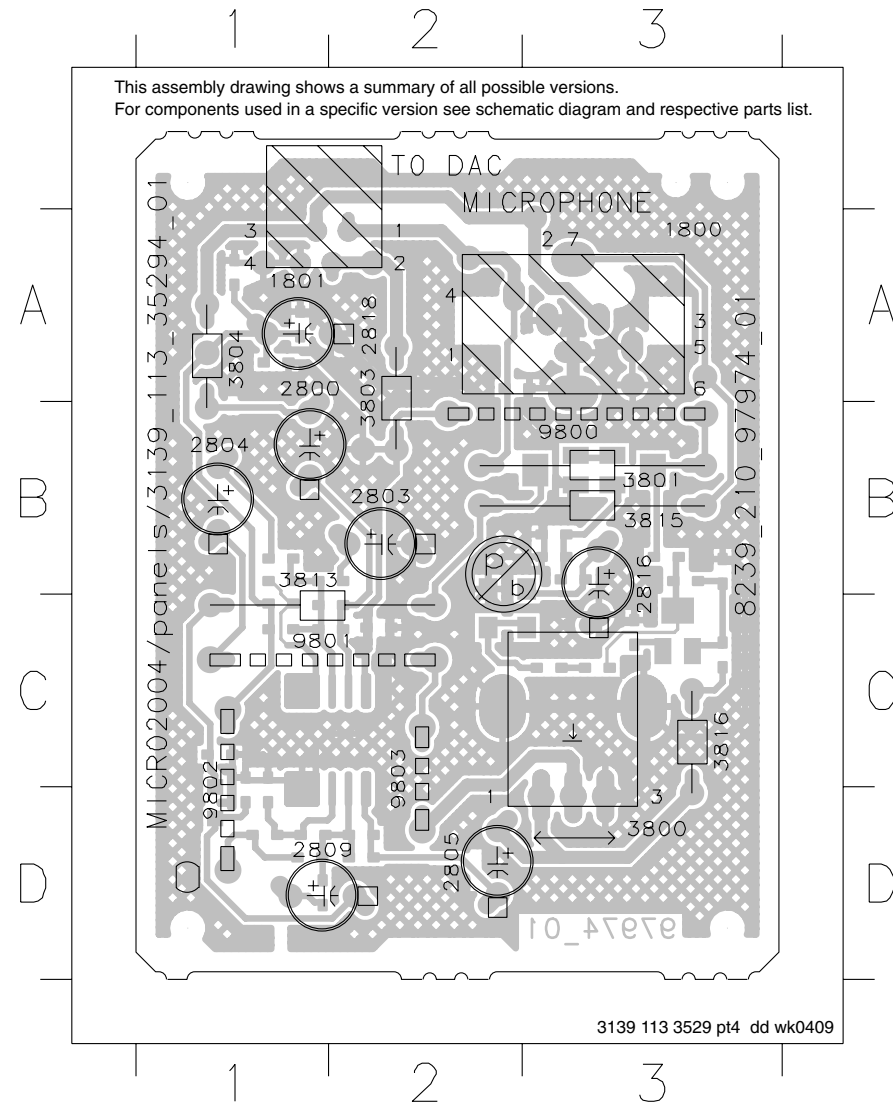
EEPROM BOARD - CIRCUIT DIAGRAM

1600 A4	2601 C1	2603 D1	2605 D4	2607 E3	3601 B2	3603 C1	3605 E2	3607 D3	5601 C2	7600 A1
2600 A2	2602 D1	2604 D3	2606 E2	3600 B2	3602 C1	3604 E2	3606 D3	5600 A1	5602 E2	7601 C1



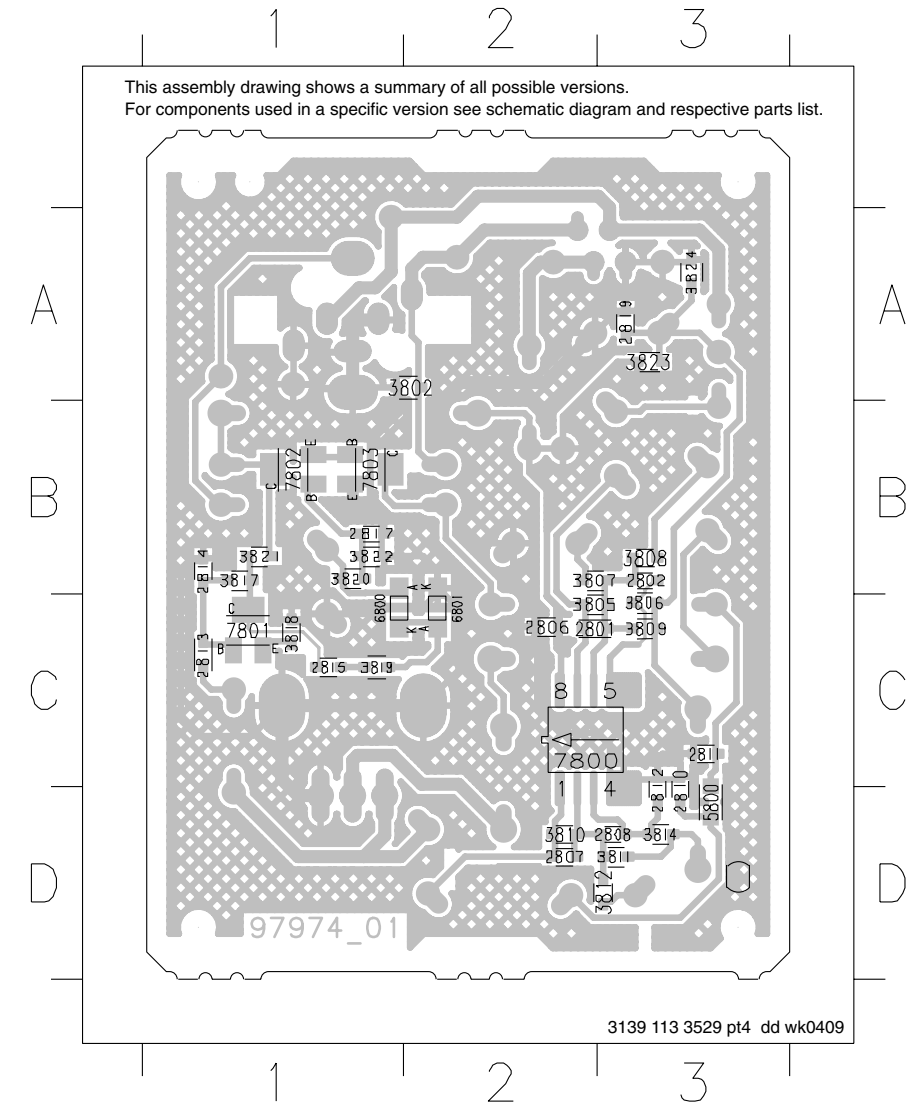
KARAOKE BOARD - COMPONENT LAYOUT (For MCD9 only)

1800 A3	2805 D2	3801 B3	3816 C3
1801 A1	2809 D1	3803 A2	9800 B3
2800 A1	2816 B3	3804 A1	9801 C1
2803 B2	2818 A2	3813 B1	9802 D1
2804 B1	3800 D3	3815 B3	9803 C2



KARAOKE BOARD - CHIP LAYOUT (For MCD9 only)

2801 C2	2815 C1	3811 D3	3824 A3
2802 B3	2817 B1	3812 D3	5800 D3
2806 C2	2819 A3	3814 D3	6800 C1
2807 D2	3802 A2	3817 B1	6801 C2
2808 D3	3805 C2	3818 C1	7800 C2
2810 D3	3806 C3	3819 C1	7801 C1
2811 C3	3807 B2	3820 B1	7802 B1
2812 D3	3808 B3	3821 B1	7803 B1
2813 C1	3809 C3	3822 B1	
2814 B1	3810 D2	3823 A3	



ELECTRICAL PARTS LIST - FRONT BOARD

MISCELLANEOUS

1300	4822 265 11183	Flex Connector 4P	2410	4822 122 33761	22pF 5% 50V
1301	2422 026 05563	Headphone Socket	2411	4822 122 33761	22pF 5% 50V
1302	4822 265 10979	Flex Connector 15P	2412	2020 552 94427	100pF 5% 50V
1303	4822 276 13775	Tact Switch	2413	2020 552 94427	100pF 5% 50V
1304	4822 276 13775	Tact Switch	2414	2020 552 94427	100pF 5% 50V
1305	4822 276 13775	Tact Switch	2417	2020 552 94427	100pF 5% 50V
1306	4822 276 13775	Tact Switch	2418	2020 552 94427	100pF 5% 50V
1307	4822 276 13775	Tact Switch	2419	2020 552 94427	100pF 5% 50V
1308	4822 276 13775	Tact Switch	2420	2020 552 94427	100pF 5% 50V
1309	4822 276 13775	Tact Switch	2444	2238 586 59812	100nF +80/-20% 50V
1310	4822 276 13775	Tact Switch	2450	4822 124 81286	47uF 20% 16V
1311	4822 276 13775	Tact Switch	2451	2238 586 59812	100nF +80/-20% 50V
1312	2422 129 16708	Rotary Encoder 24P	2453	4822 124 81286	47uF 20% 16V
1313	2422 129 00039	Rotary Encoder 24P	2457	4822 124 81286	47uF 20% 16V
1314	2422 129 00039	Rotary Encoder 24P	2460	2020 552 94427	100pF 5% 50V
1331	4822 276 13775	Tact Switch	2461	4822 124 12032	4,7uF 20% 50V
1332	4822 276 13775	Tact Switch	2462	4822 124 12032	4,7uF 20% 50V
1333	4822 276 13775	Tact Switch	2463	4822 124 12032	4,7uF 20% 50V
1334	4822 276 13775	Tact Switch	2464	4822 124 12032	4,7uF 20% 50V
1400	3139 110 53601	FTD HNA-13SM42	2473	4822 124 12032	4,7uF 20% 50V
1401	4822 265 11545	Flex Connector 19P	2474	4822 126 14238	2,2nF 50V
1402	4822 265 11531	Flex Connector 9P	2480	2020 552 94427	100pF 5% 50V
1405	4822 265 10979	Flex Connector 15P	2600	2238 586 59812	100nF +80/-20% 50V
1406	4822 265 11535	Flex Connector 8P	2601	5322 126 11578	1nF 10% 50V /22/25
1407	4822 267 10956	Flex Connector 7P	2602	4822 126 14249	560pF 10% 50V /22/25
1600	4822 265 11515	Flex Connector 8P	2603	4822 126 14249	560pF 10% 50V /22/25
			2604	4822 124 22652	2,2uF 20% 50V /22/25
			2605	2238 586 59812	100nF +80/-20% 50V/22/25
			2606	4822 126 11785	47pF 5% 50V /22/25
			2607	4822 126 11785	47pF 5% 50V /22/25

CAPACITORS

2300	2238 586 59812	100nF +80/-20% 50V
2301	2238 916 15641	22nF 10% 25V
2302	2238 916 15641	22nF 10% 25V
2303	9965 000 14169	100uF 10V 20%
2305	5322 126 11583	10nF 10% 50V
2306	5322 126 11583	10nF 10% 50V
2307	5322 126 11583	10nF 10% 50V
2308	5322 126 11583	10nF 10% 50V
2309	5322 126 11583	10nF 10% 50V
2310	5322 126 11583	10nF 10% 50V
2311	2238 586 59812	100nF +80/-20% 50V
2312	2238 586 59812	100nF +80/-20% 50V
2313	4822 126 11785	47pF 5% 50V
2314	4822 126 11785	47pF 5% 50V
2315	4822 126 11785	47pF 5% 50V
2401	3198 017 44740	470nF 10V
2402	5322 126 11583	10nF 10% 50V
2403	5322 126 11583	10nF 10% 50V
2404	3198 028 52290	22uF 20% 50V
2405	3198 028 52290	22uF 20% 50V
2407	2222 867 15339	33pF 5% 50V
2408	4822 122 33761	22pF 5% 50V
2409	4822 126 14223	2,2pF 50V

RESISTORS

3301	4822 051 30151	150R 5% 0,062W
3302	4822 051 30221	220R 5% 0,062W
3303	4822 051 30271	270R 5% 0,062W
3304	4822 051 30391	390R 5% 0,062W
3305	4822 051 30561	560R 5% 0,062W
3306	4822 117 12968	820R 5% 0,62W
3307	4822 117 11817	1k2 1% 1/16W
3308	4822 117 12903	1k8 1% 0,063W
3312	4822 051 30103	10k 5% 0,062W
3313	4822 051 30103	10k 5% 0,062W
3314	4822 051 30103	10k 5% 0,062W
3315	4822 051 30103	10k 5% 0,062W
3316	4822 051 30103	10k 5% 0,062W
3317	4822 051 30103	10k 5% 0,062W
3318	4822 051 30103	10k 5% 0,062W
3319	4822 051 30103	10k 5% 0,062W
3320	4822 051 30103	10k 5% 0,062W
3321	4822 051 30103	10k 5% 0,062W
3323	4822 051 30152	1k5 5% 0,062W

ELECTRICAL PARTS LIST - FRONT BOARD

3324	4822 051 30152	1k5 5% 0,062W	3438	4822 051 30105	1M 5% 0,062W
3325	4822 051 30152	1k5 5% 0,062W	3439	4822 051 30102	1k 5% 0,062W
3326	4822 051 30152	1k5 5% 0,062W	3440	4822 051 30102	1k 5% 0,062W
3327	4822 051 30152	1k5 5% 0,062W	3441	4822 051 30102	1k 5% 0,062W
3328	4822 051 30152	1k5 5% 0,062W	3442	4822 051 30101	100R 5% 0,062W
3329	4822 051 30152	1k5 5% 0,062W	3443	4822 051 30101	100R 5% 0,062W
3330	4822 051 30152	1k5 5% 0,062W	3444	4822 051 30102	1k 5% 0,062W
3331	4822 051 30391	390R 5% 0,062W	3445	4822 051 30102	1k 5% 0,062W
3332	4822 051 30391	390R 5% 0,062W	3446	4822 051 30471	470R 5% 0,062W
3333	4822 051 30391	390R 5% 0,062W	3447	4822 051 30471	470R 5% 0,062W
3334	4822 051 30391	390R 5% 0,062W	3448	4822 051 30471	470R 5% 0,062W
3335	4822 051 30103	10k 5% 0,062W	3452	4822 051 30471	470R 5% 0,062W
3336	4822 051 30103	10k 5% 0,062W	3453	4822 051 30102	1k 5% 0,062W
3350	4822 051 30151	150R 5% 0,062W	3454	4822 051 30102	1k 5% 0,062W
3351	4822 051 30221	220R 5% 0,062W	3455	4822 051 30102	1k 5% 0,062W
3352	4822 051 30271	270R 5% 0,062W	3456	4822 051 30102	1k 5% 0,062W
3400	4822 117 12968	820R 5% 0,62W	3457	4822 051 30102	1k 5% 0,062W
3401	4822 117 12925	47k 1% 0,063W	3458	4822 051 30102	1k 5% 0,062W
3403	4822 117 13632	100k 1% 0,62W	3459	4822 051 30102	1k 5% 0,062W
3404	4822 051 30684	680k 5% 0,062W	3460	4822 051 30102	1k 5% 0,062W
3405	4822 051 30102	1k 5% 0,062W	3461	4822 051 30102	1k 5% 0,062W
3406	4822 117 12891	220k 1%	3462	4822 051 30102	1k 5% 0,062W
3407	4822 051 30102	1k 5% 0,062W	3463	4822 051 30471	470R 5% 0,062W
3408	4822 051 30102	1k 5% 0,062W	3464	4822 051 30471	470R 5% 0,062W
3409	4822 051 30102	1k 5% 0,062W	3465	4822 051 30272	2k7 5% 0,062W
3410	4822 051 30102	1k 5% 0,062W	3466	4822 051 30102	1k 5% 0,062W
3411	4822 051 30102	1k 5% 0,062W	3467	4822 051 30102	1k 5% 0,062W
3412	4822 051 30102	1k 5% 0,062W	3468	4822 051 30102	1k 5% 0,062W
3413	4822 051 30103	10k 5% 0,062W	3469	4822 051 30102	1k 5% 0,062W
3414	4822 051 30103	10k 5% 0,062W	3470	4822 051 30102	1k 5% 0,062W
3415	4822 051 30102	1k 5% 0,062W	3471	4822 051 30102	1k 5% 0,062W
3416	4822 051 30102	1k 5% 0,062W	3472	4822 051 30102	1k 5% 0,062W
3417	4822 051 30102	1k 5% 0,062W	3473	4822 051 30102	1k 5% 0,062W
3418	4822 051 30102	1k 5% 0,062W	3474	4822 051 30102	1k 5% 0,062W
3419	4822 051 30102	1k 5% 0,062W	3475	4822 051 30102	1k 5% 0,062W
3420	4822 050 21003	10k 1% 0,6W	3476	4822 051 30102	1k 5% 0,062W
3421	4822 051 30103	10k 5% 0,062W	3477	4822 051 30102	1k 5% 0,062W
3422	4822 051 30102	1k 5% 0,062W	3478	4822 051 30102	1k 5% 0,062W
3423	4822 051 30102	1k 5% 0,062W	3479	4822 051 30102	1k 5% 0,062W
3424	4822 051 30102	1k 5% 0,062W	3480	4822 051 30102	1k 5% 0,062W
3425	4822 051 30102	1k 5% 0,062W	3481	4822 051 30102	1k 5% 0,062W
3426	4822 051 30102	1k 5% 0,062W	3482	4822 051 30102	1k 5% 0,062W
3427	4822 051 30102	1k 5% 0,062W	3483	4822 051 30102	1k 5% 0,062W
3428	4822 051 30102	1k 5% 0,062W	3484	4822 051 30102	1k 5% 0,062W
3431	4822 051 30102	1k 5% 0,062W	3485	4822 051 30102	1k 5% 0,062W
3432	4822 051 30472	4k7 5% 0,062W	3486	4822 051 30102	1k 5% 0,062W
3433	4822 116 52263	2k7 5% 0,5W	3487	4822 051 30102	1k 5% 0,062W
3434	4822 116 52213	180R 5% 0,5W	3488	4822 051 30102	1k 5% 0,062W
3435	4822 051 30102	1k 5% 0,062W /22/25	3489	4822 051 30102	1k 5% 0,062W
3436	4822 051 30105	1M 5% 0,062W	3490	4822 117 12864	82k 5% 0,6W
3437	4822 051 30684	680k 5% 0,062W	3491	4822 051 30103	10k 5% 0,062W /37

ELECTRICAL PARTS LIST - FRONT BOARD**RESISTORS**

3492	4822 117 12864	82k 5% 0,6W	4404	4822 051 30008	OR Jumper 0603
3493	4822 117 12864	82k 5% 0,6W	4405	4822 051 30008	OR Jumper 0603
3494	4822 051 30682	6k8 5% 0,062W	4406	4822 051 30008	OR Jumper 0603
3495	4822 051 30682	6k8 5% 0,062W	4407	4822 051 30008	OR Jumper 0603
3496	4822 051 30103	10k 5% 0,062W /37	4409	4822 051 30008	OR Jumper 0603
3497	4822 050 21003	10k 1% 0,6W /37	4411	4822 051 30008	OR Jumper 0603
3498	4822 051 30101	100R 5% 0,062W	4420	4822 051 30008	OR Jumper 0603
3499	4822 051 30101	100R 5% 0,062W	4421	4822 051 30008	OR Jumper 0603
3500	4822 051 30221	220R 5% 0,062W	4423	4822 051 30008	OR Jumper 0603
3501	4822 051 30221	220R 5% 0,062W	4424	4822 051 30008	OR Jumper 0603
3502	4822 051 30471	470R 5% 0,062W	4426	4822 051 30008	OR Jumper 0603
3508	4822 051 30393	39k 5% 0,062W	4427	4822 051 30008	OR Jumper 0603
3509	4822 051 30103	10k 5% 0,062W	4430	4822 051 30008	OR Jumper 0603
3510	4822 051 30103	10k 5% 0,062W	4431	4822 051 30008	OR Jumper 0603
3511	4822 051 30103	10k 5% 0,062W	4432	4822 051 30008	OR Jumper 0603
3513	4822 051 30102	1k 5% 0,062W	4433	4822 051 30008	OR Jumper 0603
3514	4822 051 30102	1k 5% 0,062W	4434	4822 051 30008	OR Jumper 0603
3515	4822 051 30102	1k 5% 0,062W	4436	4822 051 30008	OR Jumper 0603
3518	4822 116 83872	220R 5% 0,5W	4437	4822 051 30008	OR Jumper 0603
3519	4822 116 81154	2R2 5% 0,5W	4438	4822 051 30008	OR Jumper 0603 /22/25
3520	4822 116 81154	2R2 5% 0,5W	4439	4822 051 30008	OR Jumper 0603
3521	4822 116 52257	22k 5% 0,5W	4440	4822 051 30008	OR Jumper 0603
3522	4822 116 83872	220R 5% 0,5W	4441	4822 051 30008	OR Jumper 0603
3523	4822 116 81154	2R2 5% 0,5W	4442	4822 051 30008	OR Jumper 0603
3524	4822 116 81154	2R2 5% 0,5W	4443	4822 051 30008	OR Jumper 0603
3527	4822 051 30101	100R 5% 0,062W	4444	4822 051 30008	OR Jumper 0603
3529	4822 051 30101	100R 5% 0,062W	4445	4822 051 30008	OR Jumper 0603
3531	4822 051 30101	100R 5% 0,062W	4446	4822 051 30008	OR Jumper 0603
3532	4822 051 30101	100R 5% 0,062W	4447	4822 051 30008	OR Jumper 0603
3533	4822 051 30103	10k 5% 0,062W	4448	4822 051 30008	OR Jumper 0603
3534	4822 051 30102	1k 5% 0,062W	4449	4822 051 30008	OR Jumper 0603
3535	4822 116 52263	2k7 5% 0,5W	4450	4822 051 30008	OR Jumper 0603
3600	4822 051 30102	1k 5% 0,062W	4451	4822 051 30008	OR Jumper 0603
3601	4822 051 30102	1k 5% 0,062W	4452	4822 051 30008	OR Jumper 0603
3602	4822 051 30103	10k 5% 0,062W /22/25	4453	4822 051 30008	OR Jumper 0603
3603	4822 116 52243	1k5 5% 0,5W /22/25	4454	4822 051 30008	OR Jumper 0603
3604	4822 117 12891	220k 1% /22/25	4455	4822 051 30008	OR Jumper 0603
3605	4822 051 30222	2k2 5% 0,062W /22/25	4456	4822 051 30008	OR Jumper 0603
3606	4822 050 11002	1k 1% 0,4W /22/25	4457	4822 051 30008	OR Jumper 0603 /22/25
3607	4822 050 11002	1k 1% 0,4W /22/25	4458	4822 051 30008	OR Jumper 0603
4300	4822 051 30008	OR Jumper 0603			
4301	4822 051 30008	OR Jumper 0603			
4302	4822 051 30008	OR Jumper 0603			
4303	4822 051 30008	OR Jumper 0603			
4310	4822 051 30008	OR Jumper 0603			
4311	4822 051 30008	OR Jumper 0603			
4312	4822 051 30008	OR Jumper 0603			
4313	4822 051 30008	OR Jumper 0603			
4314	4822 051 30008	OR Jumper 0603			
4315	4822 051 30008	OR Jumper 0603			
4316	4822 051 30008	OR Jumper 0603			

COILS & FILTERS

5300	3198 018 52280	FXDIND SM 0603 2U2 10%
5301	3198 018 52280	FXDIND SM 0603 2U2 10%
5302	3198 018 52280	FXDIND SM 0603 2U2 10%
5303	3198 018 54780	FXDIND SM 0603 4U7 10%
5304	3198 018 54780	FXDIND SM 0603 4U7 10%
5400	5322 242 73686	RES CER 12MHz
5401	2422 543 01069	RES XTL 32,768kHz
5402	3198 018 54780	FXDIND SM 0603 4U7 10%
5403	3198 018 54780	FXDIND SM 0603 4U7 10%

ELECTRICAL PARTS LIST - FRONT BOARD

5404	4822 157 62552	Coil 2,2uH 5%
5405	4822 157 62552	Coil 2,2uH 5%
5406	4822 157 62552	Coil 2,2uH 5%
5407	4822 157 62552	Coil 2,2uH 5%
5600	3198 018 52280	FXDIND SM 0603 2U2 10%
5601	3198 018 52280	FXDIND SM 0603 2U2 10% /22/25
5602	4822 242 11033	RES XTL 4,332MHz /22/25

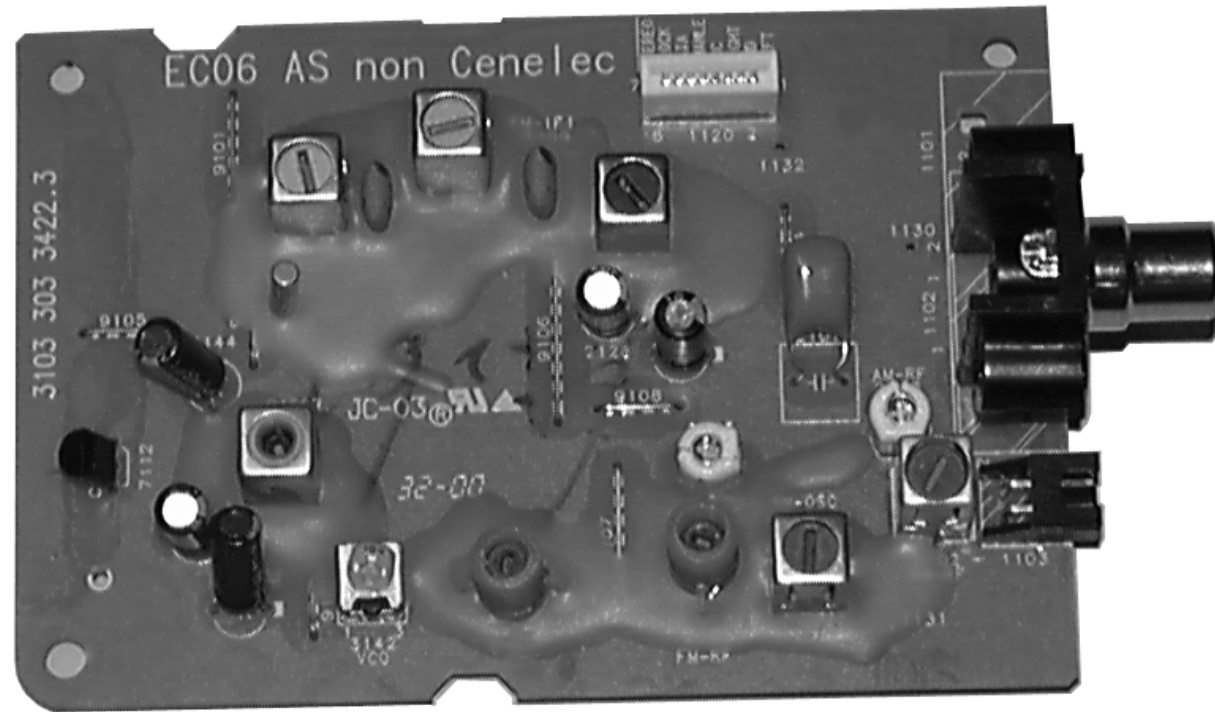
DIODES

6300	9322 190 55676	LED VS LTL-816TDK3
6301	9322 190 55676	LED VS LTL-816TDK3
6302	9322 190 55676	LED VS LTL-816TDK3
6303	9322 190 55676	LED VS LTL-816TDK3
6304	9322 190 55676	LED VS LTL-816TDK3
6305	9322 190 55676	LED VS LTL-816TDK3
6306	9322 179 76676	LED VS LTL-816EELC
6308	4822 130 31878	1N4003G
6309	4822 130 11397	BAS316
6400	4822 130 30621	1N4148
6401	4822 130 30621	1N4148
6402	4822 130 30621	1N4148
6403	4822 130 30621	1N4148
6404	4822 130 30621	1N4148
6405	4822 130 31878	1N4003G
6406	4822 130 31878	1N4003G
6407	4822 130 31878	1N4003G
6408	4822 130 30621	1N4148
6409	4822 130 34278	BZX79-B6V8
6410	4822 130 30621	1N4148

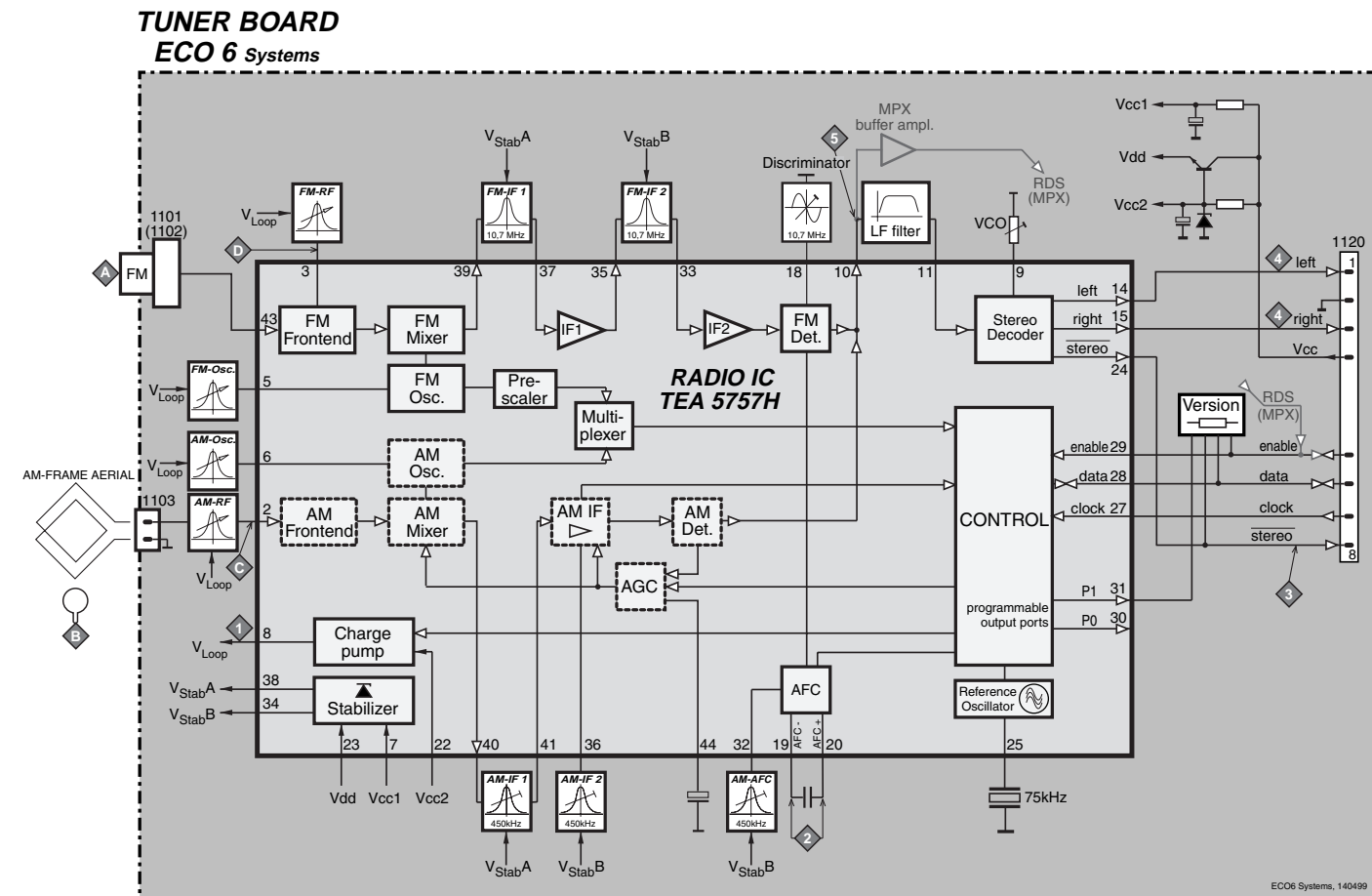
TRANSISTORS & INTEGRATED CIRCUITS

7301	4822 209 15449	IC SM 74HC4094D
7302	5322 130 60159	BC847B
7400	3139 110 53741	TMP88CU74YF - 'MCM7/8S53741'
7401	4822 130 60373	BC857B
7402	5322 130 60159	BC847B
7403	9322 185 95667	IR Receiver TSOP4836ZC1
7404	5322 130 60159	BC847B
7405	5322 130 60159	BC847B
7407	5322 130 60159	BC847B
7408	5322 130 60159	BC847B
7600	9322 145 26668	IC SM M24C02-WMN6
7601	9352 686 05118	IC SM SAA6581T /22/25

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



BLOCK DIAGRAM

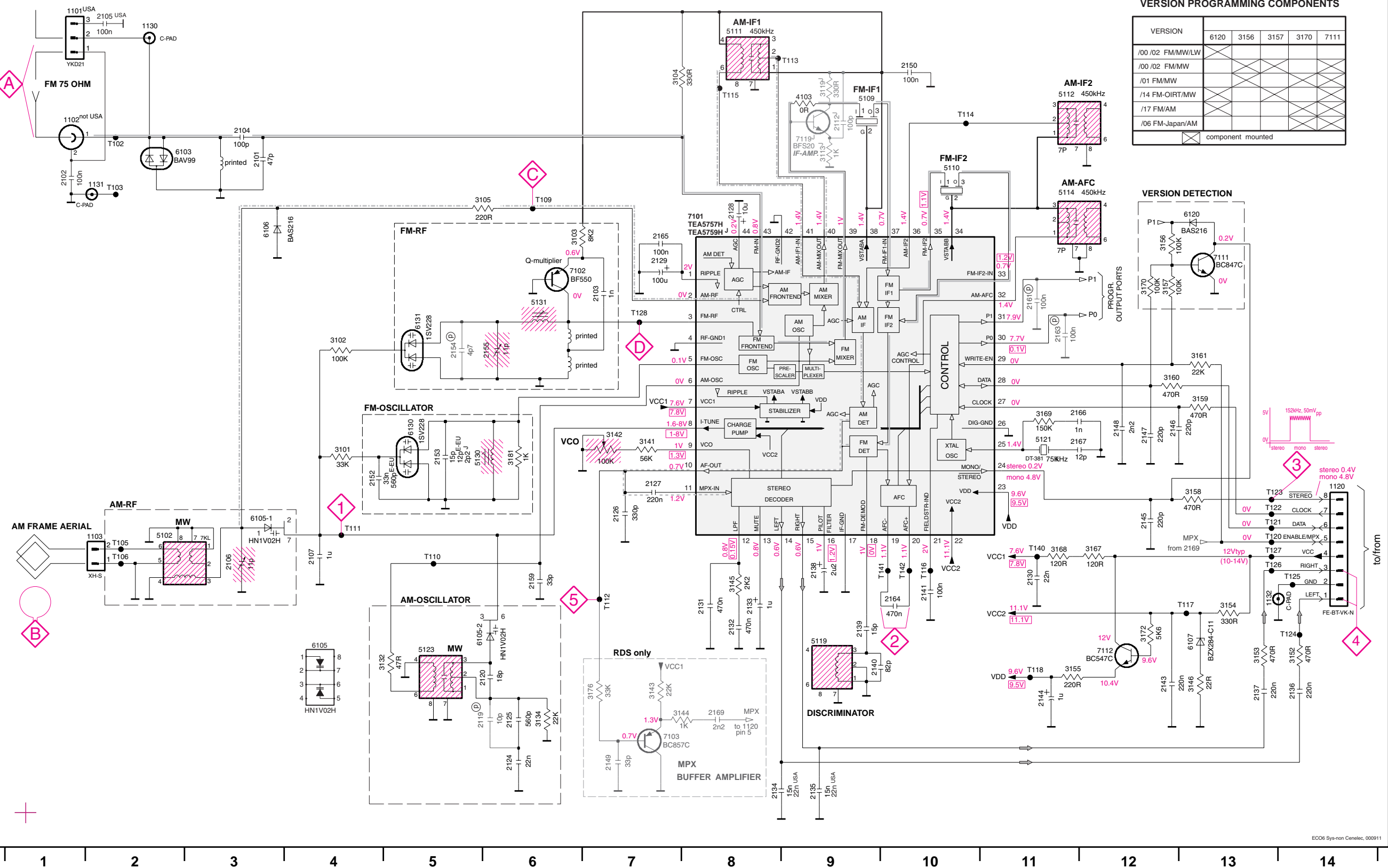


ECO6 Tuner Board
version: *SYSTEMS non-CENELEC*

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TUNER BOARD ECO6 / SYSTEMS NON CENELEC

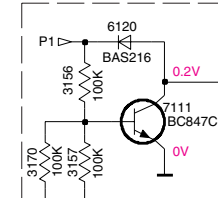


VERSION PROGRAMMING COMPONENTS

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

component mounted

VERSION DETECTION



LEGEND

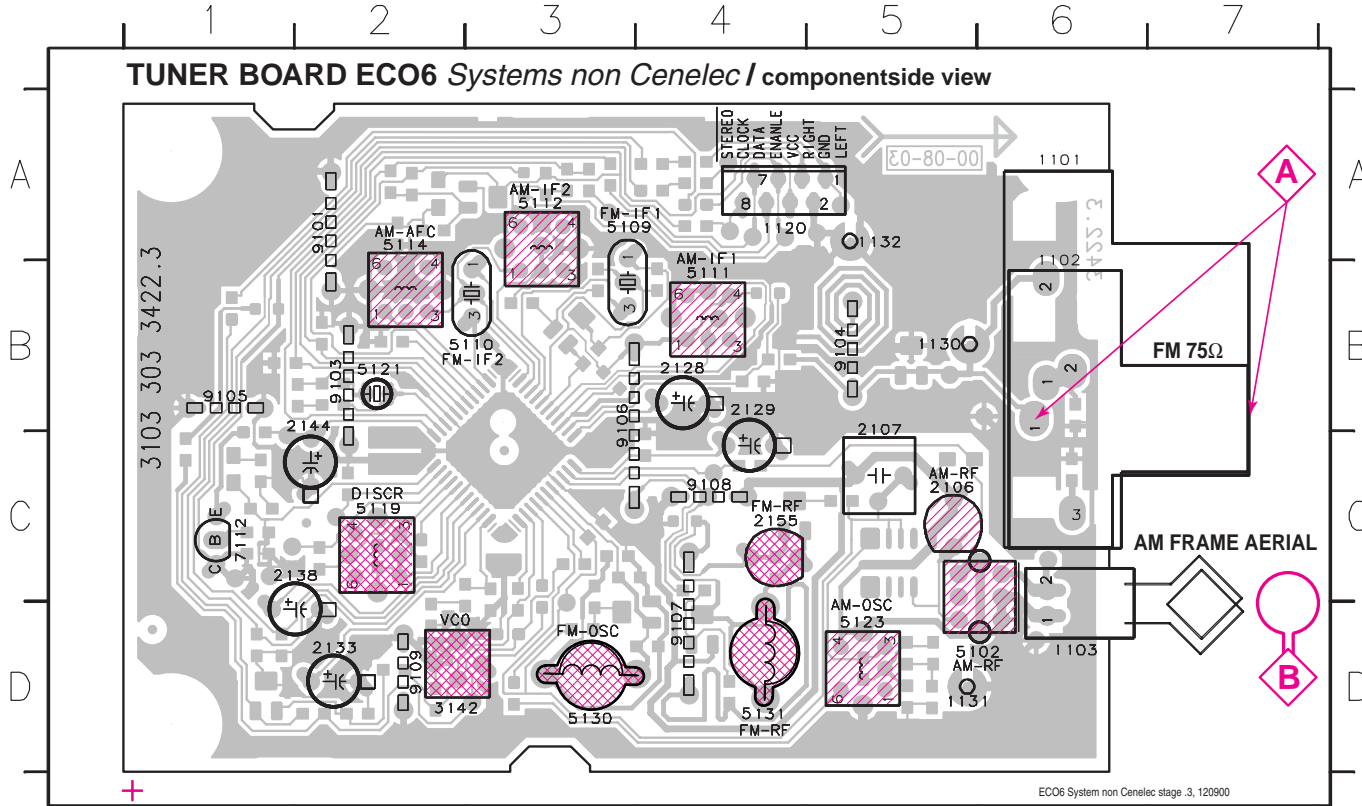
- Ⓟ...for provision only
- USA ... for USA version only
- E-EU ... for East European version only
- J ... for Japanese version only

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

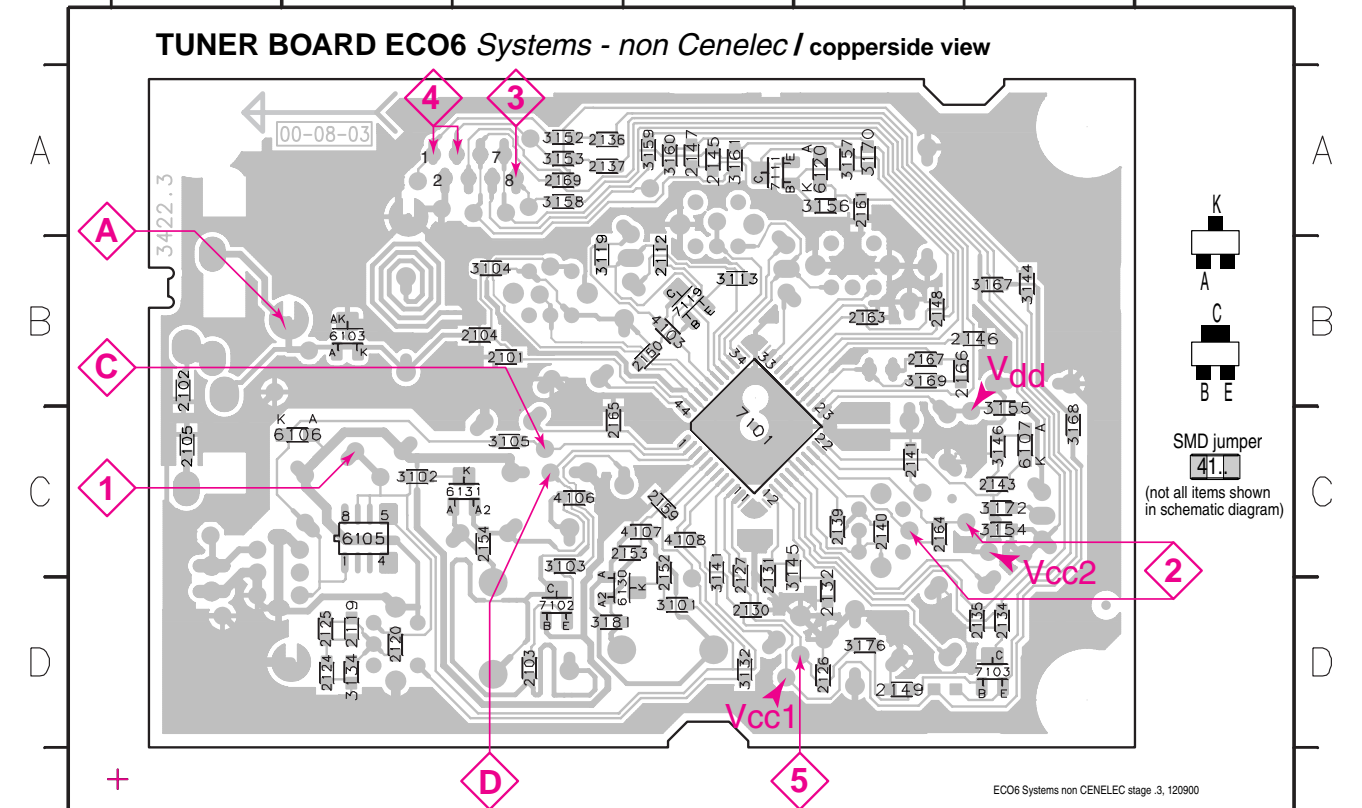
- Signal path
- FM
- - - AM
- ... MPX (Audio Frequency)
- ⇒ AF - left/right

- 1101 A1
- 1102 B1
- 1103 F2
- 1120 E14
- 1130 A2
- 1131 B2
- 1132 G13
- 2101 B3
- 2102 B1
- 2103 C7
- 2104 B3
- 2105 A2
- 2106 F3
- 2107 F4
- 2119 H6
- 2120 G6
- 2124 H6
- 2125 H6
- 2126 F7
- 2127 E7
- 2128 C8
- 2129 C7
- 2130 F11
- 2131 G8
- 2132 G8
- 2133 G8
- 2134 H8
- 2135 H9
- 2136 G14
- 2137 G13
- 2138 F9
- 2139 G9
- 2140 G9
- 2141 F10
- 2143 G12
- 2144 G11
- 2145 F12
- 2146 E12
- 2147 E12
- 2148 H7
- 2149 H7
- 2150 A10
- 2152 E4
- 2153 E5
- 2154 D5
- 2155 D5
- 2159 F6
- 2161 C11
- 2163 D11
- 2164 F10
- 2165 C7
- 2166 E11
- 2167 E11
- 2169 H8
- 3101 E4
- 3102 D4
- 3103 C6
- 3104 A7
- 3105 B6
- 3132 G5
- 3134 H6
- 3141 E7
- 3142 E7
- 3143 G7
- 3144 H7
- 3145 F8
- 3146 G13
- 3152 G14
- 3153 G13
- 3154 G13
- 3155 G11
- 3156 C12
- 3157 D12
- 3158 E13
- 3159 D13
- 3160 D13
- 3161 D13
- 3167 F12
- 3168 F11
- 3169 E11
- 3170 C12
- 3172 G12
- 3176 G7
- 3181 E6
- 5102 F2
- 5109 B9
- 5110 B10
- 5111 A8
- 5112 A11
- 5114 B11
- 5119 G9
- 5121 E11
- 5123 G5
- 5130 E5
- 5131 C6
- 5132 B2
- 6105-1 F3
- 6105-2 G5
- 6106 C3
- 6107 G13
- 6120 G13
- 6130 E5
- 6131 D5
- 7101 C8
- 7102 C6
- 7103 H7
- 7111 C13
- 7112 G12
- T102 B2
- T103 B2
- T105 F2
- T106 F2
- T109 B6
- T110 F5
- T111 F4
- T112 F7
- T113 A8
- T114 B10
- T115 A8
- T116 F10
- T117 G13
- T118 G11
- T120 F13
- T122 F13
- T123 E13
- T124 G14
- T125 F14
- T126 F13
- T127 F13
- T128 D7
- T140 F11
- T141 F10
- T142 F10

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



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



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

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

Waverange	Input frequency	Input	Tuned to	Adjust	Output	Scope/Voltmeter
VARICAP ALIGNMENT						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)			108MHz	5130		8V ±0.2V
			87.5MHz (65.81MHz)	check		4.3V ±0.5V (1.2V ±0.5V)
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	1	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		5119	2	0 ± 3 mV DC
FM RF						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)	108MHz	A	108MHz	2155	4	MAX
	87.5MHz (65.81MHz)	mod=1kHz Δf=±22.5kHz	87.5MHz (65.81MHz)	5131		
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		5111	5	
		C		5112		
AM AFC MW		C		5114	2	0 ± 2 mV DC
AM RF³⁾						
MW⁴⁾ FM/MW/LW- and FM/MW-version (9kHz grid)	1494kHz	B	1494kHz	2106	5	
	531 - 1602kHz		558kHz	5102		
LW	198kHz		198kHz	5103		
MW FM/AM-version, 10kHz grid 530 - 1700kHz	1500kHz	B	1500kHz	2106	5	
	560kHz		560kHz	5102		

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

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

↑ Repeat

MISCELLANEOUS

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

CAPACITORS

2101	4822 126 13692	47pF	1%	63V	
2102	4822 126 13838	100nF	10%	50V	not USA
2103	5322 122 31647	1nF	10%	63V	
2104	5322 122 32531	100pF	5%	50V	
2105	4822 126 13838	100nF	10%	50V	USA only
2106	2020 800 00191	3-11pF TRIMCAP.,N450			
2107	4822 121 51319	1μF	20%	50V	
2120	4822 126 13689	18pF	1%	63V	
2124	5322 122 32654	22nF	10%	63V	
2125	2020 552 96199	560pF	1%	50V	
2126	5322 122 31863	330pF	5%	50V	
2127	4822 126 14076	220nF	20%	25V	
2128	4822 124 40248	10μF	20%	63V	
2129	4822 124 41584	100μF	20%	10V	
2130	5322 122 32654	22nF	10%	63V	
2131	4822 126 13482	470nF	20%	16V	
2132	4822 126 13482	470nF	20%	16V	
2133	4822 124 21913	1μF	20%	63V	
2134	4822 126 13188	15nF	5%	63V	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

DIODES

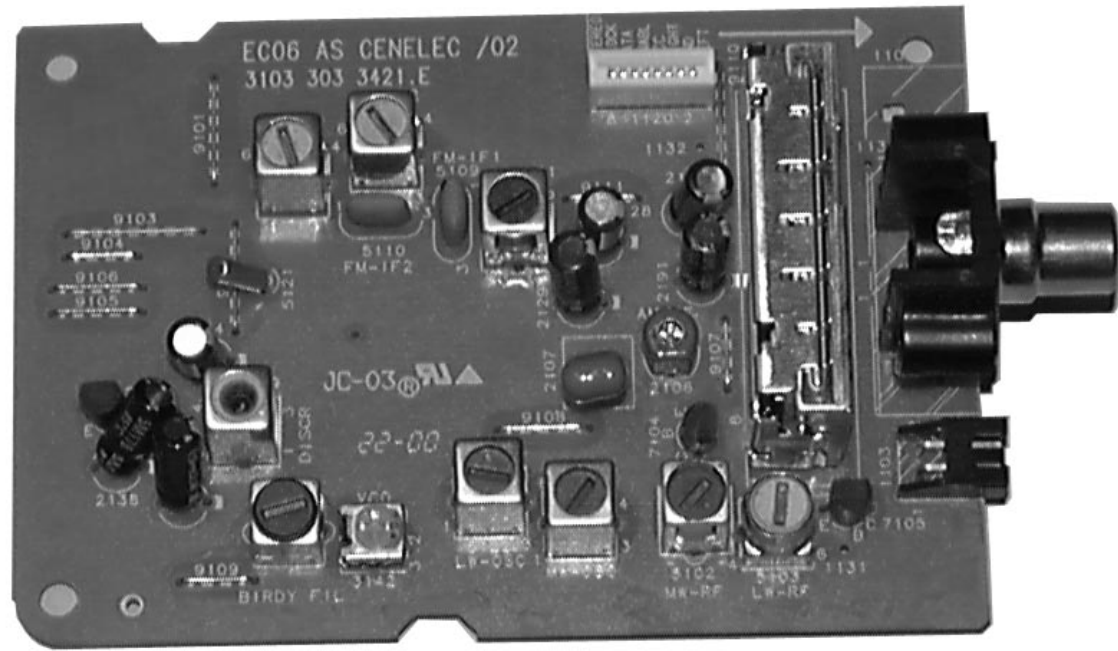
6103	5322 130 34337	BAV99
6105	4822 130 83075	HN1V02H
6106	4822 130 83757	BAS216
6107	9340 386 90115	BZX284-C11
6120	4822 130 83757	BAS216
6130	4822 130 82833	1SV228
6131	4822 130 82833	1SV228

TRANSISTORS

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

INTEGRATED CIRCUITS

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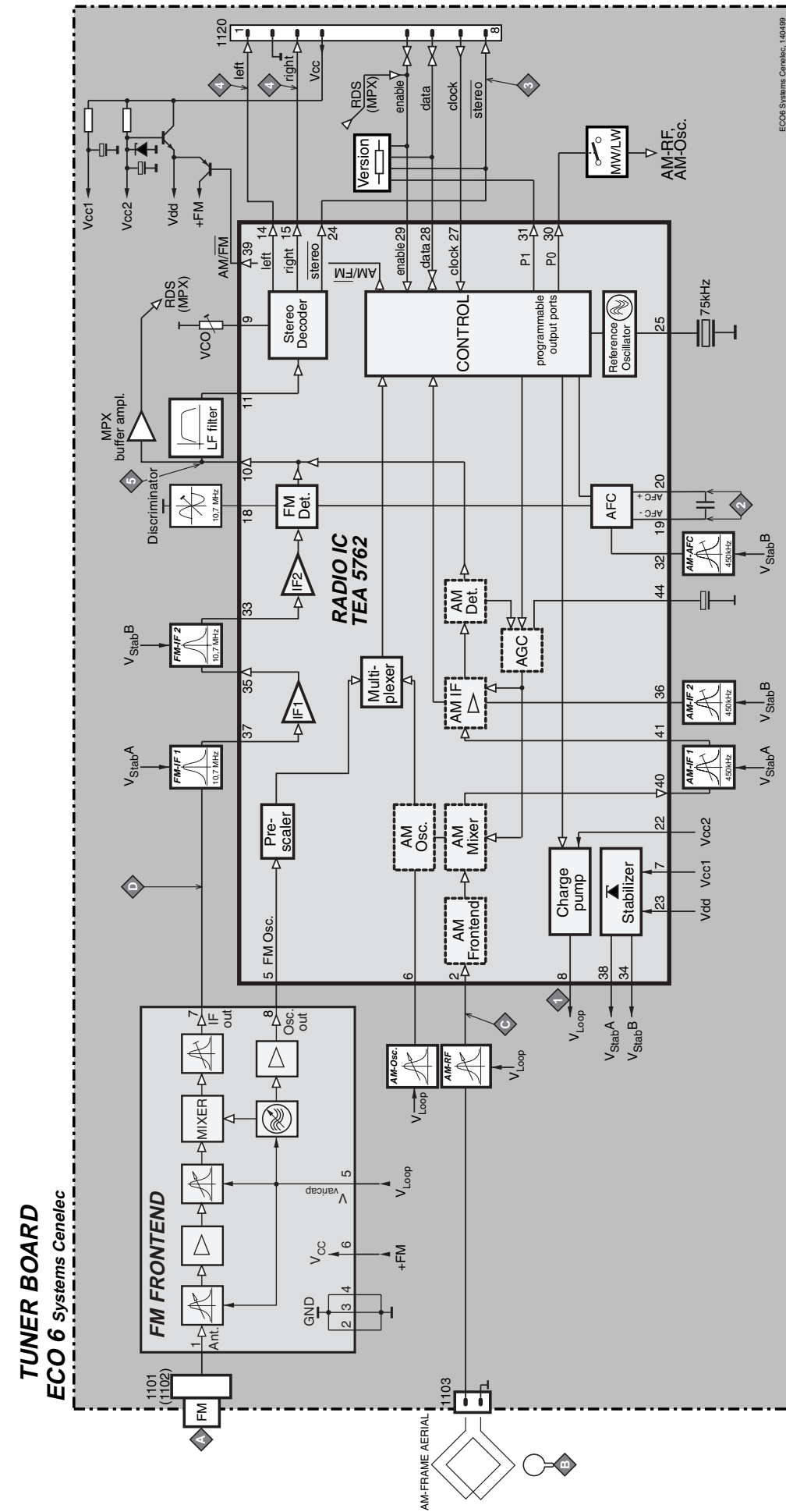
ECO6 Tuner Board

version: **SYSTEMS CENELEC**

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BLOCK DIAGRAM



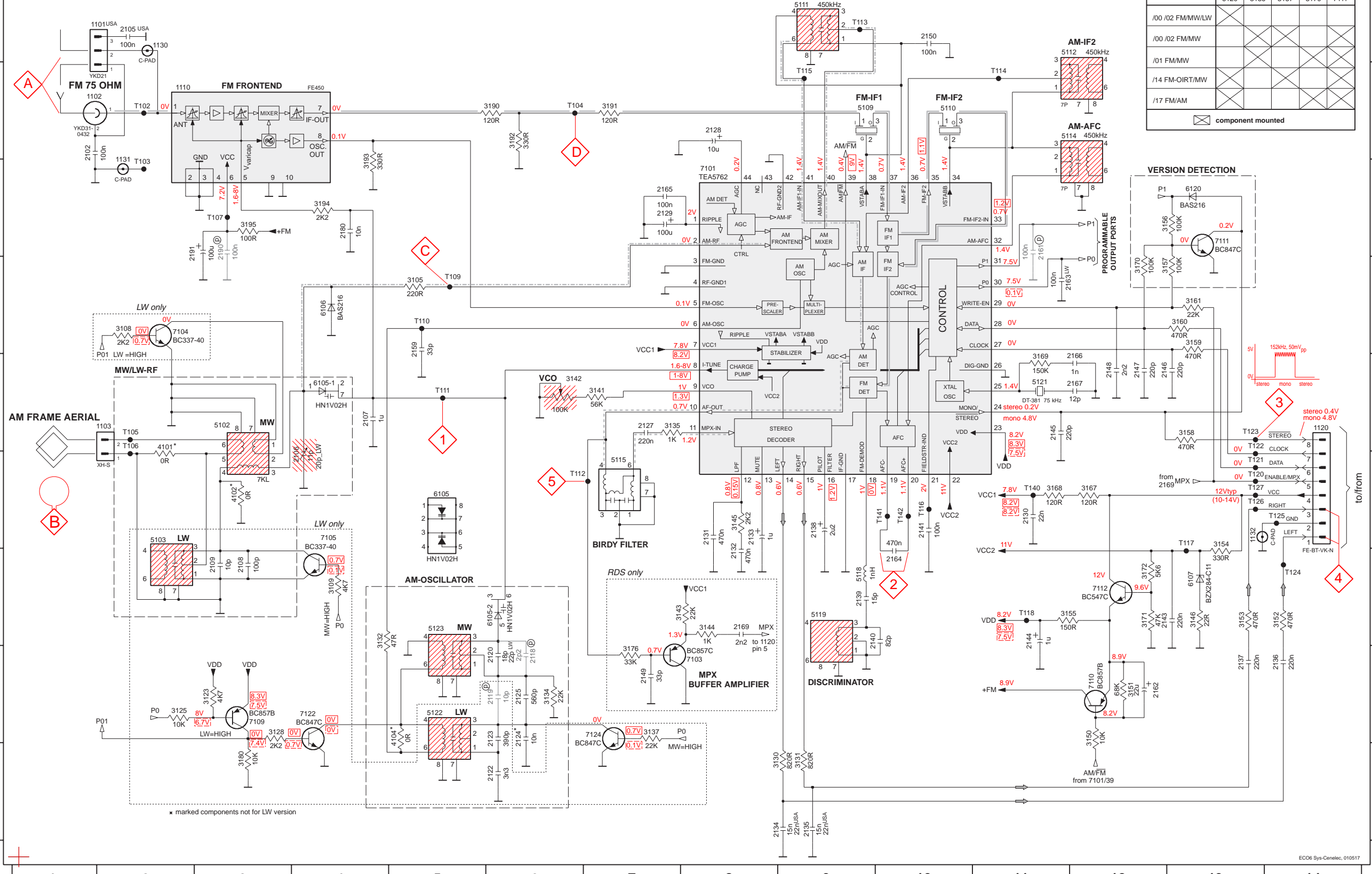
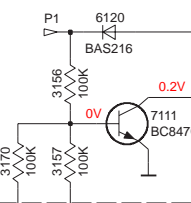
TUNER BOARD ECO6 / SYSTEMS-CENELEC

VERSION PROGRAMMING COMPONENTS

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

component mounted

VERSION DETECTION



- 1101 A2
- 1102 B1
- 1103 E5
- 1110 B2
- 1120 E4
- 1130 A2
- 1131 C2
- 1132 F13
- 1132 B1
- 2105 A2
- 2106 E3
- 2107 E4
- 2108 G3
- 2109 G3
- 2118 H6
- 2119 H6
- 2120 H6
- 2122 I6
- 2123 H6
- 2124 H6
- 2125 H6
- 2127 E7
- 2128 B8
- 2129 C7
- 2130 F11
- 2131 F8
- 2132 F8
- 2133 F8
- 2134 I8
- 2135 I9
- 2136 H14
- 2137 H13
- 2138 F9
- 2139 G9
- 2140 G9
- 2141 F10
- 2143 G12
- 2144 G11
- 2145 E11
- 2146 E12
- 2147 E12
- 2148 E12
- 2149 H7
- 2150 A10
- 2159 D5
- 2161 C11
- 2162 H12
- 2163 D11
- 2164 G10
- 2165 C7
- 2166 E11
- 2167 E11
- 2169 G8
- 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 G8
- 3145 F8
- 3146 G13
- 3150 H12
- 3151 H12
- 3152 G14
- 3153 G13
- 3154 F13
- 3155 G12
- 3156 C12
- 3157 D12
- 3158 E13
- 3159 D13
- 3160 D13
- 3161 D13
- 3167 F12
- 3168 F11
- 3169 E11
- 3170 D12
- 3171 G12
- 3172 G12
- 3176 H7
- 3180 I3
- 3190 B6
- 3191 B7
- 3192 B6
- 3193 B4
- 3194 C4
- 3195 C3
- 4101 E2
- 4102 F3
- 4104 H5
- 5102 E3
- 5103 F2
- 5109 B9
- 5110 B10
- 5111 A9
- 5112 A11
- 5114 B11
- 5115 E7
- 5118 G9
- 5119 G9
- 5121 E11
- 5122 H5
- 5123 G5
- 6105-1 E4
- 6105-2 G6
- 6106 D4
- 6107 G13
- 6120 C13
- 7101 C8
- 7103 H8
- 7104 D2
- 7105 F4
- 7109 H3
- 7110 H12
- 7111 C13
- 7112 G12
- 7122 H4
- 7124 H7
- T102 B2
- T103 B2
- T104 B6
- T105 B6
- T106 B6
- T107 B6
- T109 C6
- T110 C6
- T111 C6
- T112 C6
- T113 C6
- T114 C6
- T115 C6
- T120 C6
- T121 C6
- T122 C6
- T123 C6
- T124 C6
- T125 C6
- T126 C6
- T127 C6
- T128 C6
- T129 C6
- T130 C6
- T131 C6
- T132 C6
- T133 C6
- T134 C6
- T135 C6
- T136 C6
- T137 C6
- T138 C6
- T139 C6
- T140 C6
- T141 C6
- T142 C6
- T143 C6
- T144 C6
- T145 C6
- T146 C6
- T147 C6
- T148 C6
- T149 C6
- T150 C6

LEGEND

- *... only assembled in FM/AM-version
- Ⓢ... for provision only
- USA ... for USA version only
- LW ... for LW version only

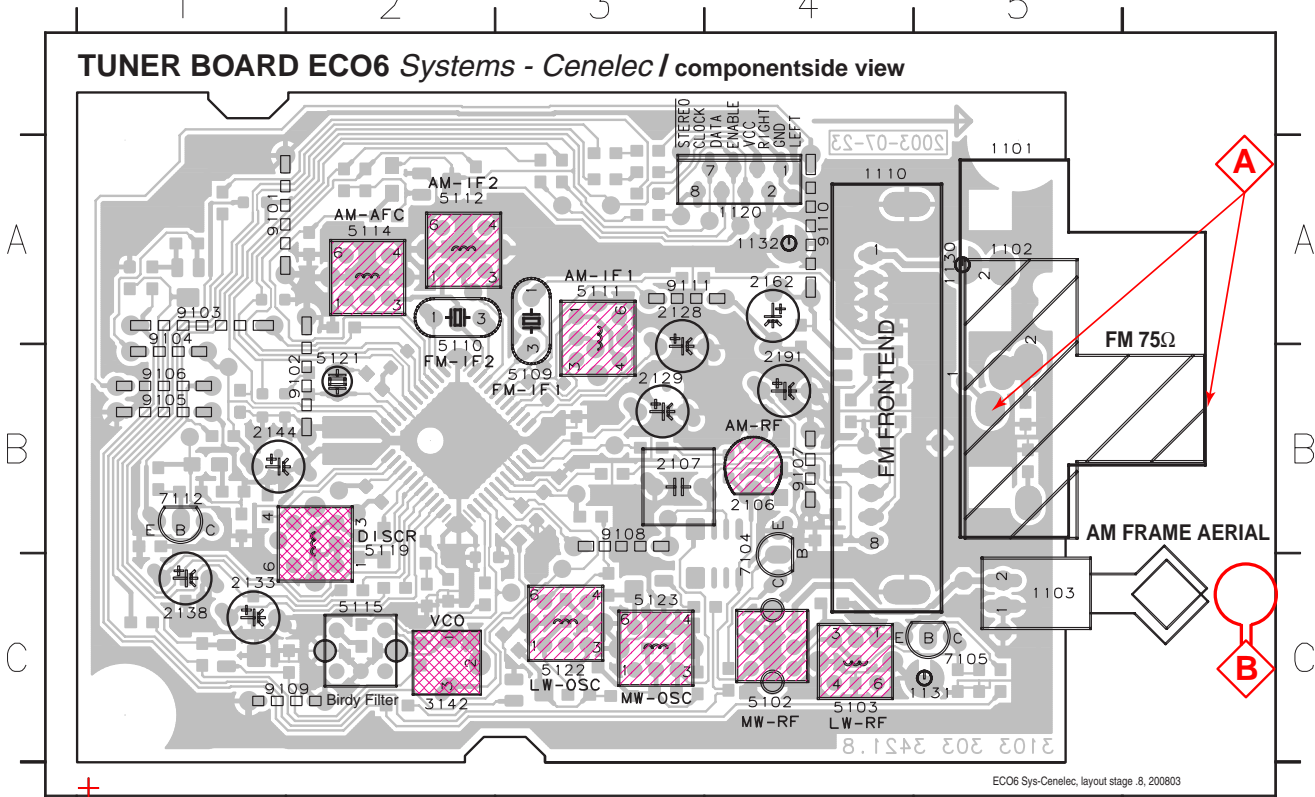
- SMD jumper
- 41xx
- OR

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

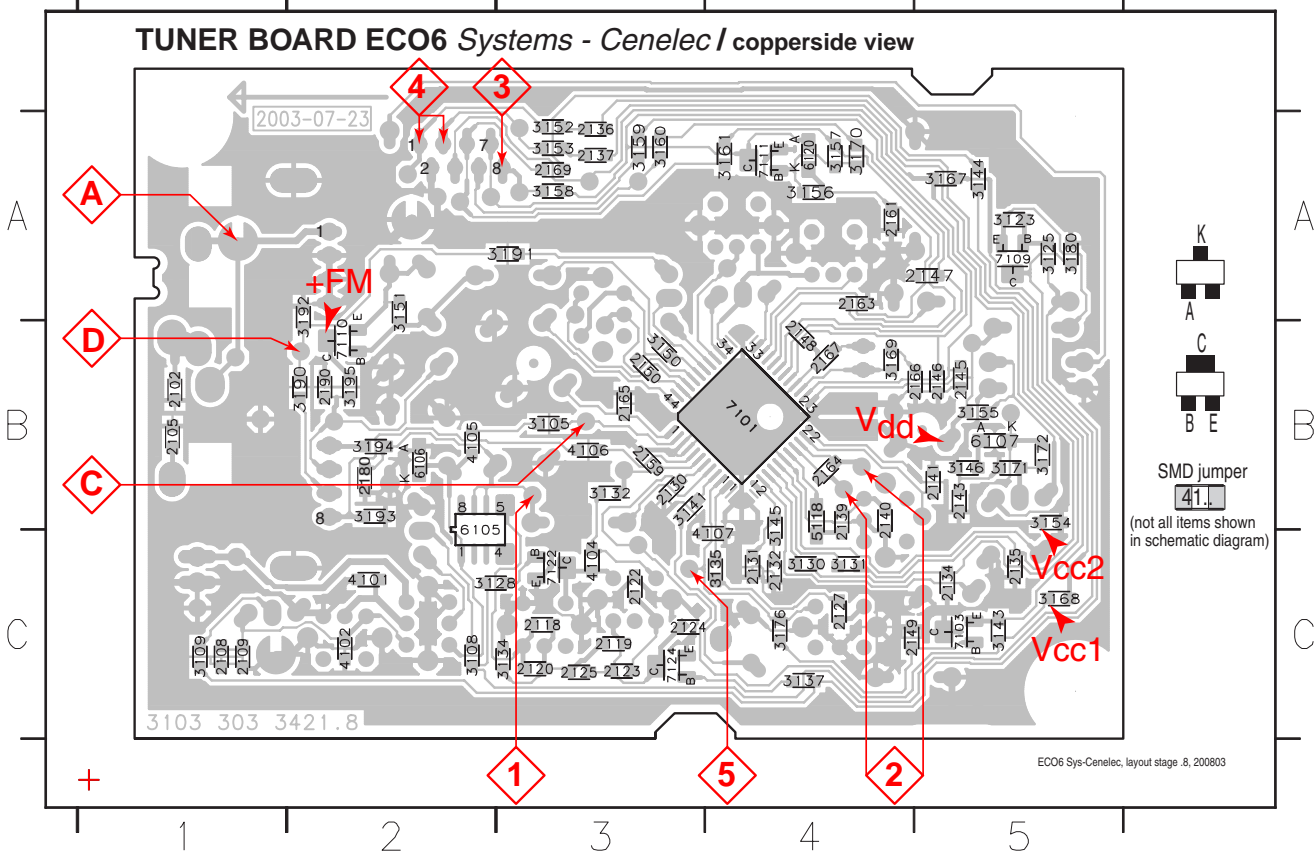
Signal path

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

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



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



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

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

Waverange	Input frequency	Input	Tuned to	Adjust	Output	Scope/Voltmeter
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	1	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	D		5119	2	0mV ±3mV
FM - VCO						
FM	98MHz, 1mV continuous wave	A	98MHz	3142	3	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	A	98MHz	IF coil inside FM frontend 1110	4	right channel min.
AM IF						
MW	450kHz connect pin 6 of IC 7101 (AM Osc.) with 3.3kΩ to Vcc	C		5111	5	
				5112		
AM AFC MW	continuous wave V _{RF} = 2mV	C		5114	2	0mV ±2mV
AM RF³⁾						
MW	1494kHz	B	1494kHz	2106	5	
	558kHz					
LW	198kHz	C	198kHz	5103		

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

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

↑ Repeat

MISCELLANEOUS

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

CAPACITORS

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

RESISTORS

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

RESISTORS

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

COILS

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

DIODES

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

TRANSISTORS

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

INTEGRATED CIRCUITS

7101	4822 209 90315	TEA5762H/V1, RADIO IC	
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MAINS BOARD

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Brief introduction of the Mains Board

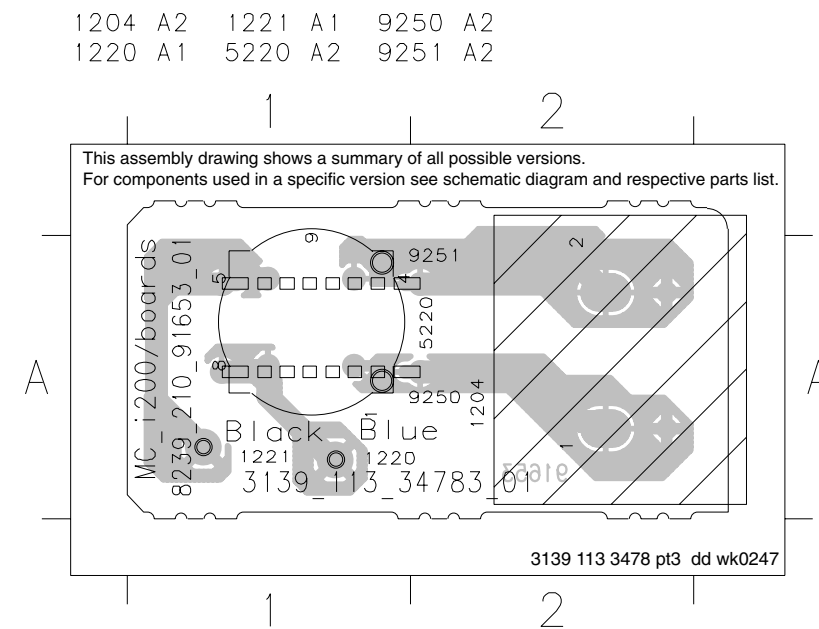
ECO Power

Standby Transformer 5203 provides the LPS supply to control the relay 1210, cutting of the Mains supply to the Mains transformer during the ECO Power (standby) mode.

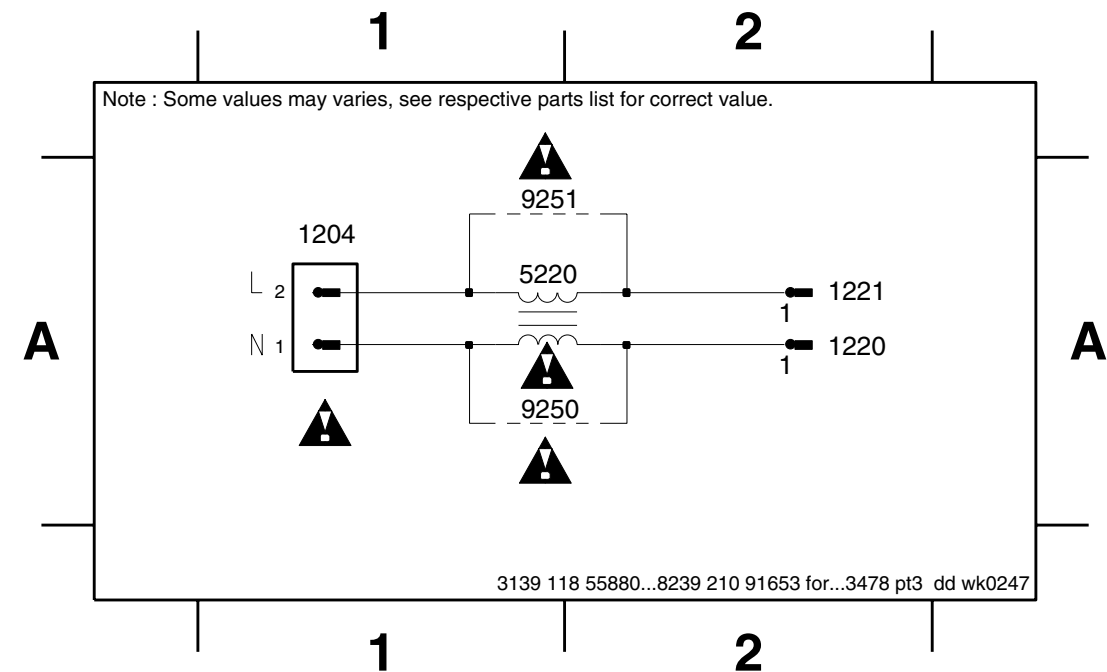
The Mains transformer provides the following:

- 5V6_ECO for Low Power Supply
- +A, +A/2 and +B to the Combi board

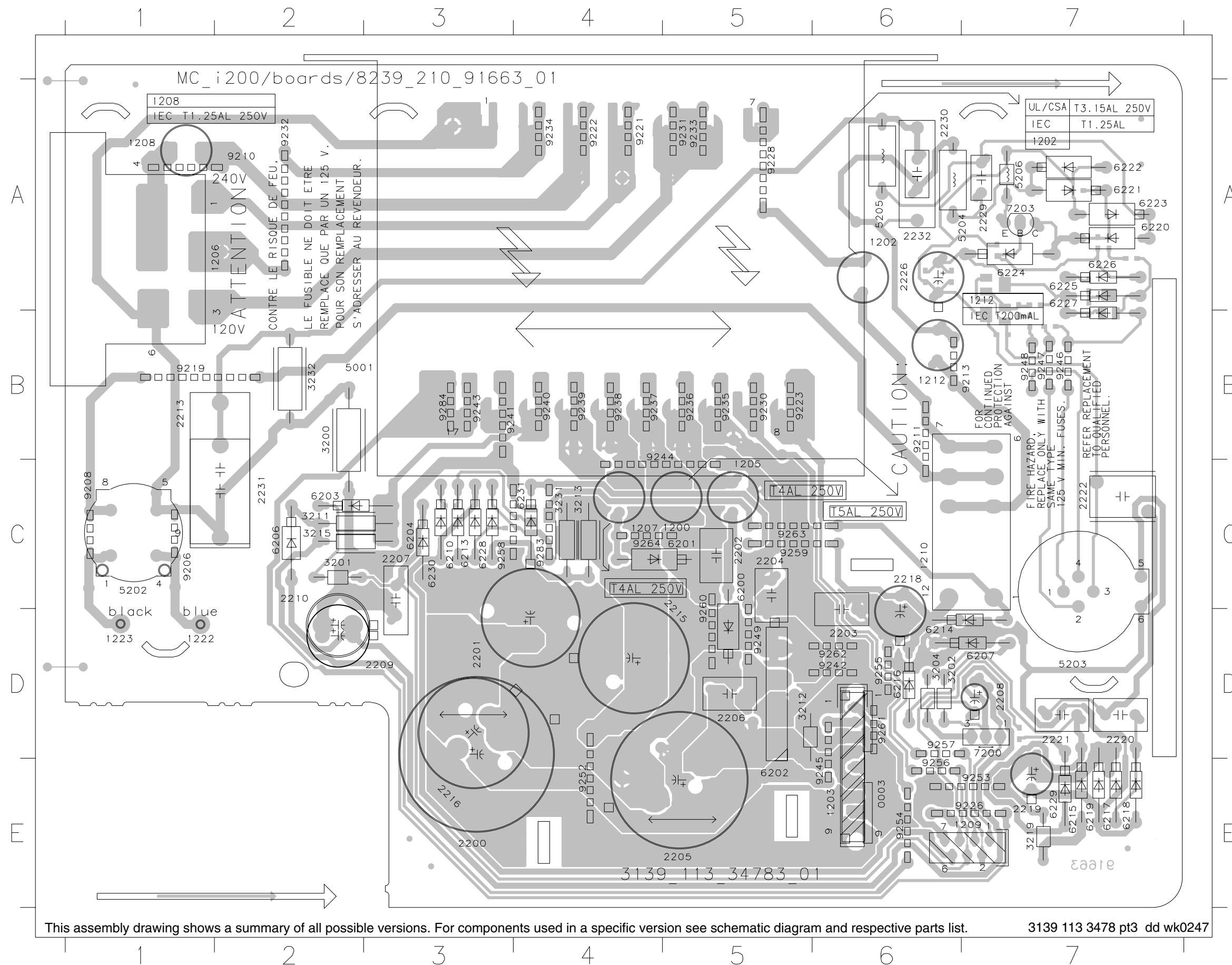
MAINS SOCKET - CIRCUIT DIAGRAM & COMPONENT LAYOUT



1204 A1 1220 A2 1221 A2 5220 A1 9250 A1 9251 A1

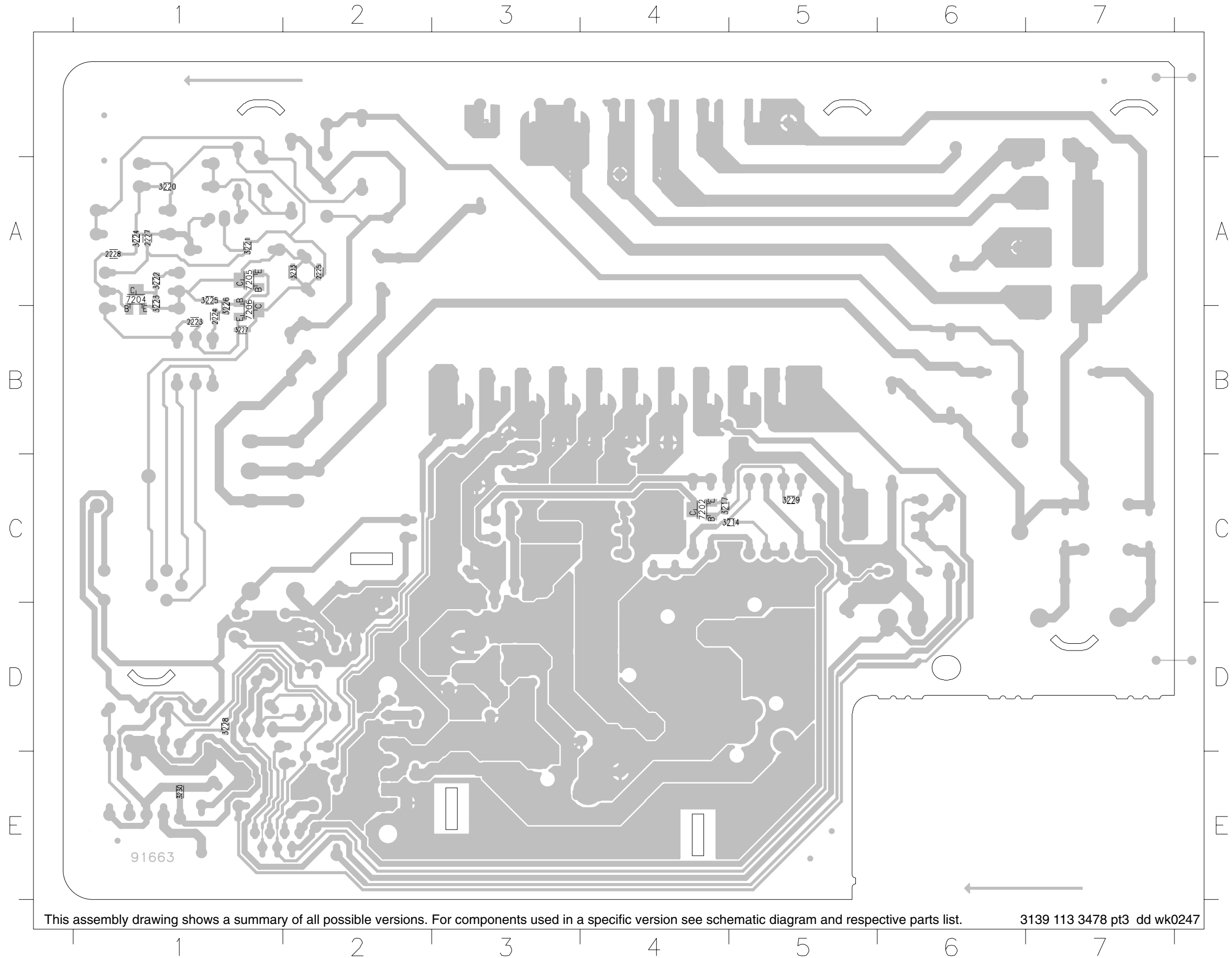


MAINS BOARD - COMPONENT LAYOUT



000	F6
100	C6
200	C5
300	A6
400	A5
500	A4
600	A3
700	A2
800	A1
900	A0
1000	B6
1100	B5
1200	B4
1300	B3
1400	B2
1500	B1
1600	B0
1700	C6
1800	C5
1900	C4
2000	C3
2100	C2
2200	C1
2300	A6
2400	A5
2500	A4
2600	A3
2700	A2
2800	A1
2900	A0
3000	B6
3100	B5
3200	B4
3300	B3
3400	B2
3500	B1
3600	B0
3700	C6
3800	C5
3900	C4
4000	C3
4100	C2
4200	C1
4300	A6
4400	A5
4500	A4
4600	A3
4700	A2
4800	A1
4900	A0
5000	B6
5100	B5
5200	B4
5300	B3
5400	B2
5500	B1
5600	B0
5700	C6
5800	C5
5900	C4
6000	C3
6100	C2
6200	C1
6300	A6
6400	A5
6500	A4
6600	A3
6700	A2
6800	A1
6900	A0
7000	B6
7100	B5
7200	B4
7300	B3
7400	B2
7500	B1
7600	B0
7700	C6
7800	C5
7900	C4
8000	C3
8100	C2
8200	C1
8300	A6
8400	A5
8500	A4
8600	A3
8700	A2
8800	A1
8900	A0
9000	B6
9100	B5
9200	B4
9300	B3
9400	B2
9500	B1
9600	B0
9700	C6
9800	C5
9900	C4
10000	C3
10100	C2
10200	C1
10300	A6
10400	A5
10500	A4
10600	A3
10700	A2
10800	A1
10900	A0
11000	B6
11100	B5
11200	B4
11300	B3
11400	B2
11500	B1
11600	B0
11700	C6
11800	C5
11900	C4
12000	C3
12100	C2
12200	C1
12300	A6
12400	A5
12500	A4
12600	A3
12700	A2
12800	A1
12900	A0
13000	B6
13100	B5
13200	B4
13300	B3
13400	B2
13500	B1
13600	B0
13700	C6
13800	C5
13900	C4
14000	C3
14100	C2
14200	C1
14300	A6
14400	A5
14500	A4
14600	A3
14700	A2
14800	A1
14900	A0
15000	B6
15100	B5
15200	B4
15300	B3
15400	B2
15500	B1
15600	B0
15700	C6
15800	C5
15900	C4
16000	C3
16100	C2
16200	C1
16300	A6
16400	A5
16500	A4
16600	A3
16700	A2
16800	A1
16900	A0
17000	B6
17100	B5
17200	B4
17300	B3
17400	B2
17500	B1
17600	B0
17700	C6
17800	C5
17900	C4
18000	C3
18100	C2
18200	C1
18300	A6
18400	A5
18500	A4
18600	A3
18700	A2
18800	A1
18900	A0
19000	B6
19100	B5
19200	B4
19300	B3
19400	B2
19500	B1
19600	B0
19700	C6
19800	C5
19900	C4
20000	C3
20100	C2
20200	C1
20300	A6
20400	A5
20500	A4
20600	A3
20700	A2
20800	A1
20900	A0
21000	B6
21100	B5
21200	B4
21300	B3
21400	B2
21500	B1
21600	B0
21700	C6
21800	C5
21900	C4
22000	C3
22100	C2
22200	C1
22300	A6
22400	A5
22500	A4
22600	A3
22700	A2
22800	A1
22900	A0
23000	B6
23100	B5
23200	B4
23300	B3
23400	B2
23500	B1
23600	B0
23700	C6
23800	C5
23900	C4
24000	C3
24100	C2
24200	C1
24300	A6
24400	A5
24500	A4
24600	A3
24700	A2
24800	A1
24900	A0
25000	B6
25100	B5
25200	B4
25300	B3
25400	B2
25500	B1
25600	B0
25700	C6
25800	C5
25900	C4
26000	C3
26100	C2
26200	C1
26300	A6
26400	A5
26500	A4
26600	A3
26700	A2
26800	A1
26900	A0
27000	B6
27100	B5
27200	B4
27300	B3
27400	B2
27500	B1
27600	B0
27700	C6
27800	C5
27900	C4
28000	C3
28100	C2
28200	C1
28300	A6
28400	A5
28500	A4
28600	A3
28700	A2
28800	A1
28900	A0
29000	B6
29100	B5
29200	B4
29300	B3
29400	B2
29500	B1
29600	B0
29700	C6
29800	C5
29900	C4
30000	C3
30100	C2
30200	C1
30300	A6
30400	A5
30500	A4
30600	A3
30700	A2
30800	A1
30900	A0
31000	B6
31100	B5
31200	B4
31300	B3
31400	B2
31500	B1
31600	B0
31700	C6
31800	C5
31900	C4
32000	C3
32100	C2
32200	C1
32300	A6
32400	A5
32500	A4
32600	A3
32700	A2
32800	A1
32900	A0
33000	B6
33100	B5
33200	B4
33300	B3
33400	B2
33500	B1
33600	B0
33700	C6
33800	C5
33900	C4
34000	C3
34100	C2
34200	C1
34300	A6
34400	A5
34500	A4
34600	A3
34700	A2
34800	A1
34900	A0
35000	B6
35100	B5
35200	B4
35300	B3
35400	B2
35500	B1
35600	B0
35700	C6
35800	C5
35900	C4
36000	C3
36100	C2
36200	C1
36300	A6
36400	A5
36500	A4
36600	A3
36700	A2
36800	A1
36900	A0
37000	B6
37100	B5
37200	B4
37300	B3
37400	B2
37500	B1
37600	B0
37700	C6
37800	C5
37900	C4
38000	C3
38100	C2
38200	C1
38300	A6
38400	A5
38500	A4
38600	A3
38700	A2
38800	A1
38900	A0
39000	B6
39100	B5
39200	B4
39300	B3
39400	B2
39500	B1
39600	B0
39700	C6
39800	C5
39900	C4
40000	C3
40100	C2
40200	C1
40300	A6
40400	A5
40500	A4
40600	A3
40700	A2
40800	A1
40900	A0
41000	B6
41100	B5
41200	B4
41300	B3
41400	B2
41500	B1
41600	B0
41700	C6
41800	C5
41900	C4
42000	C3
42100	C2
42200	C1
42300	A6
42400	A5
42500	A4
42600	A3
42700	A2
42800	A1
42900	A0
43000	B6
43100	B5
43200	B4
43300	B3
43400	B2
43500	B1
43600	B0
43700	C6
43800	C5
43900	C4
44000	C3
44100	C2
44200	C1
44300	A6
44400	A5
44500	A4
44600	A3
44700	A2
44800	A1
44900	A0
45000	B6
45100	B5
45200	B4
45300	B3
45400	B2
45500	B1
45600	B0
45700	C6
45800	C5
45900	C4
46000	C3
46100	C2
46200	C1
46300	A6
46400	A5
46500	A4
46600	A3
46700	A2
46800	A1
46900	A0
47000	B6
47100	B5
47200	B4
47300	B3
47400	B2
47500	B1
47600	B0
47700	C6
47800	C5
47900	C4
48000	C3
48100	C2
48200	C1
48300	A6
48400	A5
48500	A4
48600	A3
48700	A2
48800	A1
48900	A0
49000	B6
49100	B5
49200	B4
49300	B3
49400	B2

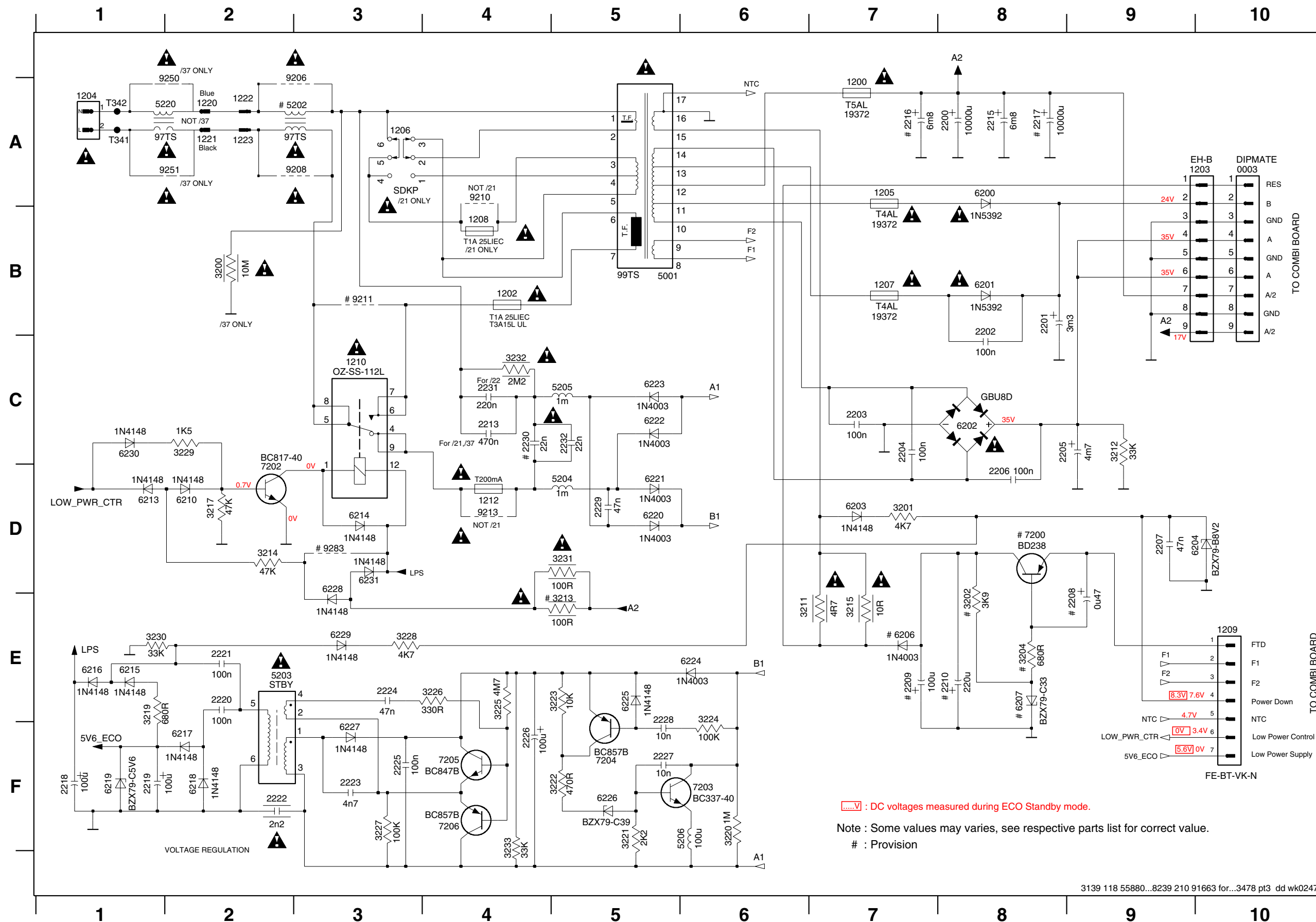
MAINS BOARD - CHIP LAYOUT



- 2223 B1
- 2224 B1
- 2225 A2
- 2227 A1
- 2228 A1
- 3214 C5
- 3217 C4
- 3220 A1
- 3221 A1
- 3222 A1
- 3223 A1
- 3224 A1
- 3225 A1
- 3226 B1
- 3227 B1
- 3228 D1
- 3229 C5
- 3230 E1
- 3233 A2
- 7202 C4
- 7204 A1
- 7205 A1
- 7206 B1

This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list. 3139 113 3478 pt3 dd wk0247

MAINS BOARD - CIRCUIT DIAGRAM



0003 A10	6219 F1
1200 A7	6220 D5
1202 B4	6221 D5
1203 A9	6222 C5
1205 A7	6223 C5
1206 A3	6224 E6
1207 B7	6225 E5
1208 B4	6226 F5
1209 E10	6227 F3
1210 C3	6228 D3
1212 D4	6229 E3
1222 A2	6230 C1
1223 A2	6231 D3
2200 A8	7200 D8
2201 B8	7202 D2
2202 B8	7203 F6
2203 C7	7204 E5
2204 C7	7205 F4
2205 C8	7206 F4
2206 D8	9206 A3
2207 D9	9208 A3
2208 E9	9210 A4
2209 E7	9211 B3
2210 E8	9213 D4
2213 C4	9283 D3
2215 A8	
2216 A7	
2217 A8	
2218 F1	
2219 F1	
2220 E2	
2221 E2	
2222 F2	
2223 F3	
2224 E3	
2225 F3	
2226 F4	
2227 F5	
2228 E5	
2229 D5	
2230 C4	
2231 C4	
2232 C5	
3200 B2	
3201 D7	
3202 E8	
3204 E8	
3211 E6	
3212 C9	
3213 E5	
3214 D2	
3215 E7	
3217 D2	
3219 E1	
3220 F6	
3221 F5	
3222 F5	
3223 E5	
3224 F6	
3225 E4	
3226 E4	
3227 F3	
3228 E3	
3229 C2	
3230 E1	
3231 D5	
3232 C4	
3233 F4	
5001 B5	
5202 A3	
5203 E3	
5204 D5	
5205 C5	
5206 F6	
6200 A8	
6201 B8	
6202 C8	
6203 D7	
6204 D9	
6206 E7	
6207 E8	
6210 D2	
6213 D1	
6214 D3	
6215 E1	
6216 E1	
6217 F2	
6218 F2	

[...V] : DC voltages measured during ECO Standby mode.
 Note : Some values may varies, see respective parts list for correct value.
 # : Provision

ELECTRICAL PARTS LIST - MAINS BOARD**MISCELLANEOUS**

1200	2422 086 10963	△ Fuse RAD LT 5A 250V
1202	4822 071 51252	△ Fuse RAD LT 1,25A 250V/22/25
1202	4822 252 51121	△ Fuse RAD LT 3,15A 250V /37
1204	4822 265 31015	△ Mains Socket /22/25
1204	2422 030 00328	△ Mains Socket /37
1205	2422 086 10786	△ Fuse RAD LT 4A 250V
1207	2422 086 10786	△ Fuse RAD LT 4A 250V
1209	4822 267 10953	Flex Connector 7P
1210	2422 132 07519	△ Relay 1P 12V 16A OZ-SS

CAPACITORS

2200	4822 124 12012	4700uF 20% 25V
2201	4822 124 42367	3300uF 20% 35V
2202	5322 121 42386	100nF 5% 63V
2203	5322 121 42386	100nF 5% 63V
2204	5322 121 42386	100nF 5% 63V
2205	4822 124 80415	4700uF 20% 50V
2206	5322 121 42386	100nF 5% 63V
2207	4822 126 14559	47nF 50V
2208	5322 124 41948	470nF 20% 50V
2210	2020 012 93547	100uF 20% 63V
2213	4822 126 13589	△ 470nF 275V /37
2218	2020 012 93583	100uF 20% 25V /22/25
2218	3198 029 31010	100uF 20% 25V /37
2219	4822 124 23052	100uF 20% 16V
2220	5322 121 42386	100nF 5% 63V
2221	5322 121 42386	100nF 5% 63V
2222	2020 554 90173	△ 2,2nF 20% 250V
2223	4822 126 13193	4,7nF 10% 63V
2224	3198 017 34730	47nF 16V
2225	2238 586 59812	100nF +80/-20% 50V
2226	4822 124 40255	100uF 20% 63V
2227	5322 126 11583	10nF 10% 50V
2228	5322 126 11583	10nF 10% 50V
2229	4822 121 43526	47nF 5% 250V
2231	2222 338 22224	△ 220nF 20% 275V /22/25
2232	2222 336 19106	△ 22nF 20% 275V

RESISTORS

3200	4822 053 21106	△ 10M 5% 0,5W /37
3201	4822 116 52283	4k7 5% 0,5W
3202	4822 116 52276	3k9 5% 0,5W
3204	4822 116 52228	680R 5% 0,5W
3211	4822 052 10478	△ 4R7 5% 0,33W
3212	4822 050 23303	33k 1% 0,6W
3214	4822 117 12925	47k 1% 0,063W
3215	4822 052 10109	△ 10R 5% 0,33W
3217	4822 117 12925	47k 1% 0,063W
3219	4822 116 52228	680R 5% 0,5W
3220	4822 051 30105	1M 5% 0,062W
3221	4822 051 30222	2k2 5% 0,062W
3222	4822 051 30471	470R 5% 0,062W

3223	4822 051 30103	10k 5% 0,062W
3224	4822 117 13632	100k 1% 0,62W
3225	4822 051 30475	4M7 5% 0,062W
3226	4822 051 30331	330R 5% 0,062W
3227	4822 117 13632	100k 1% 0,62W
3228	4822 051 30472	4k7 5% 0,062W
3229	4822 051 30472	4k7 5% 0,062W
3230	4822 051 30333	33k 5% 0,062W
3231	4822 052 10101	△ 100R 5% 0,33W
3232	4822 053 21225	△ 2M2 5% 0,5W
3233	4822 051 30333	33k 5% 0,062W

COILS & FILTERS

5203	2422 549 45157	△ TRAFO STANDBY 3A1631N
5204	4822 157 53473	Coil 1000uH 10%
5205	4822 157 53473	Coil 1000uH 10%
5206	4822 157 11228	Coil 100uH 5%
5220	4822 157 11832	△ FIL MAINS 400uH 3A /22/25

DIODES

6200	4822 130 31878	△ 1N4003G
6200	5322 130 80686	△ 1N5392
6201	4822 130 31878	△ 1N4003G
6201	5322 130 80686	△ 1N5392
6202	4822 130 11139	△ GBU8D
6203	4822 130 30621	1N4148
6204	4822 130 34382	BZX79-B8V2
6206	4822 130 31878	1N4003G
6207	4822 130 34142	BZX79-C33
6210	4822 130 30621	1N4148
6213	4822 130 30621	1N4148
6214	4822 130 30621	1N4148
6215	4822 130 30621	1N4148
6216	4822 130 30621	1N4148
6217	4822 130 30621	1N4148
6218	4822 130 30621	1N4148
6219	4822 130 34173	BZX79-C5V6
6220	4822 130 31878	1N4003G
6221	4822 130 31878	1N4003G
6222	4822 130 31878	1N4003G
6223	4822 130 31878	1N4003G
6224	4822 130 31878	1N4003G
6225	4822 130 30621	1N4148
6226	4822 130 34145	BZX79-C39
6227	4822 130 30621	1N4148
6228	4822 130 30621	1N4148
6229	4822 130 30621	1N4148
6230	4822 130 30621	1N4148
6231	4822 130 30621	1N4148

TRANSISTORS & INTEGRATED CIRCUITS

7200	4822 130 40917	BD238
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ELECTRICAL PARTS LIST - MAINS BOARD

TRANSISTORS & INTEGRATED CIRCUITS

7202	4822 130 42804	BC817-25
7203	4822 130 40855	BC337-40
7204	4822 130 60373	BC857B
7205	5322 130 60159	BC847B
7206	4822 130 60373	BC857B

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

ETF8 TAPE MODULE

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CONNECTORS ASSIGNMENTS:

CONNECTOR 1701

○	1	REC-L
○	2	REC-R
○	3	GND A
○	4	TAPE-L
○	5	+12V
○	6	TAPE-R
○	7	-CMOS

INTERCONNECTION TO AF BOARD

Record input left
Record input right
AF Ground
Playback output left
D.C. supply (+12V) for AF electronics
Playback output right
Negative d.c. supply (-9V) for controlling JFET J111

CONNECTOR 1703

○	1	GND M
○	2	+MOTOR

INTERCONNECTION TO AF BOARD

Motor Ground
D.C. supply (+12V) for tape deck motor & solenoid

CONNECTOR 1706

○	1	CR_IN
○	2	AD1
○	3	+5V
○	4	GND_P
○	5	CLK
○	6	DATA
○	7	STROBE

INTERCONNECTION TO FRONT BOARD

Deck sensing Chrome Tape
Deck sensing switches output voltage / Deck EOT
DC supply (+5V) for deck status ADC network (ref to microprocessor's supply)
Control & Oscillator Ground
HEF4094BT shift register Clock line
HEF4094BT shift register Data line
HEF4094BT shift register Strobe line

CONNECTOR 1710

○	1	GND A
○	2	ERASE HEAD
○	3	R/P HD Rch
○	4	Common
○	5	R/P HD Lch

TAPE HEAD CONNECTIONS

Erase Head ground
Erase Head
R/P Head right channel positive
Pb Head return ground shield
R/P Head left channel positive

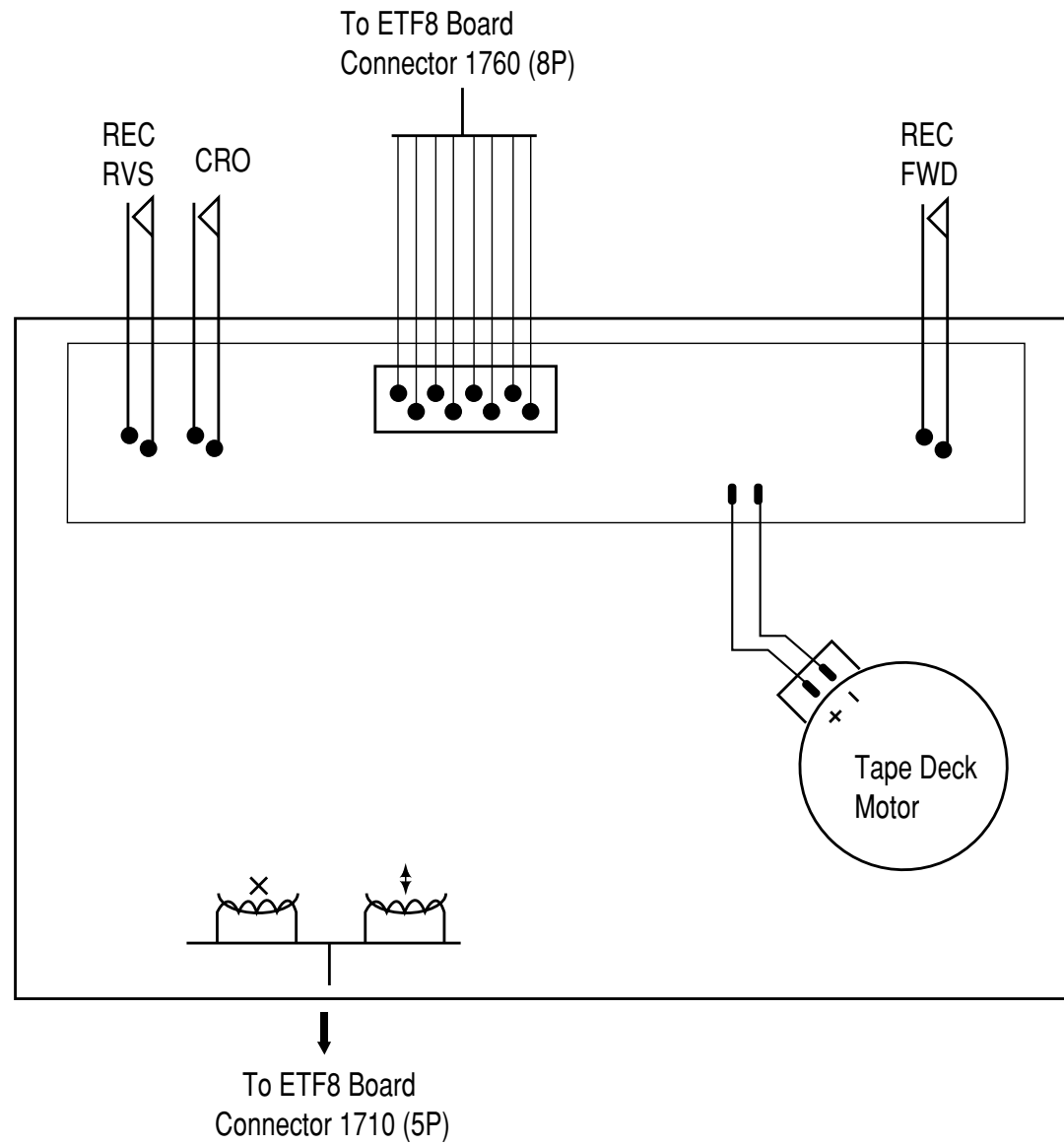
CONNECTOR 1760

○	1	Vcc 12V
○	2	PHOTO
○	3	GND_M
○	4	MODE
○	5	SoI_supply
○	6	CR_IN
○	7	REC FWD
○	8	REC REW

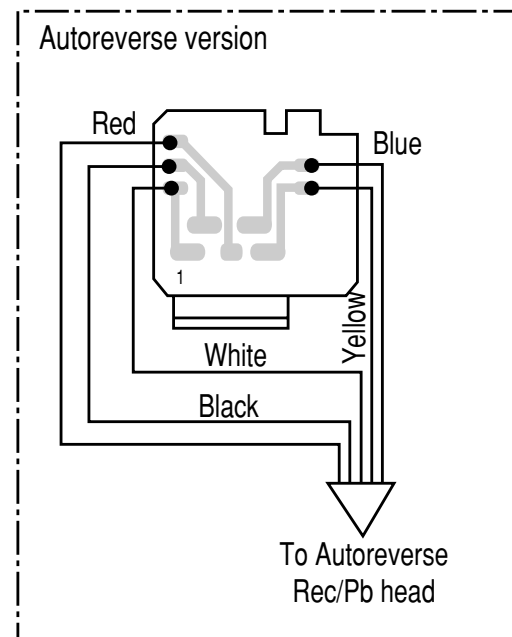
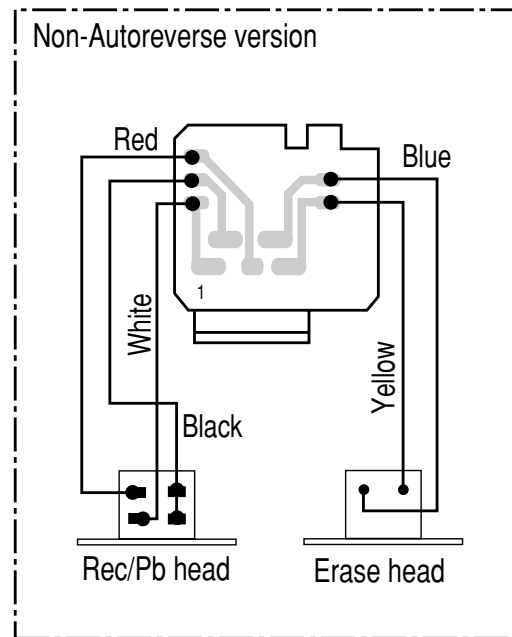
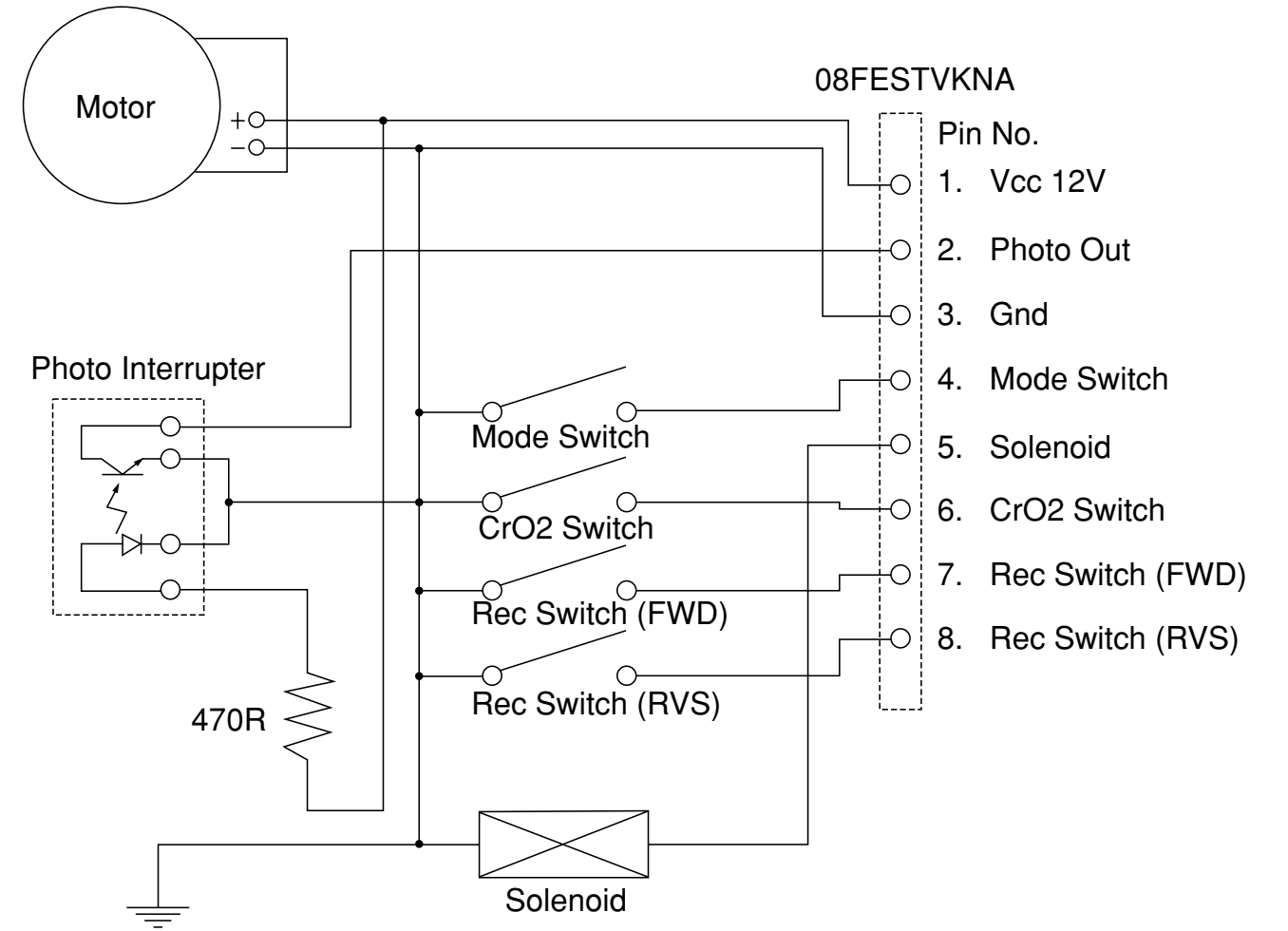
DECK CONTROL INTERFACE

Deck / Motor supply
Photo sensor output (tape movement indication)
Deck / Motor ground
Mode switch (head engagement)
Solenoid supply
Chrome tape detection switch
Record tab protection status switch (forward)
Record tab protection status switch (reverse)

TAPE DECK WIRING



TAPE MECHANISM ELECTRONICS



TAPE ADJUSTMENT & CHECK TABLE

	TEST CASSETTE	RECORDER MODE	MEASURE ON	READ ON	ADJUST	
					with	to
MOTOR SPEED	SBC420 3150Hz	PLAY		frequency counter	check	3150Hz +/- 2%
WOW & FLUTTER	SBC420 3150Hz	PLAY		W&F-meter	check	< 0.4 % DIN
ADJUST AZIMUTH	SBC420 10kHz	PLAY FWD	1 or 2 LEFT RIGHT	mV-meter	left hand screw	max. output level & left=right
		PLAY REV ^			right hand screw	
PLAYBACK FREQ. RESPONSE	SBC420	PLAY		mV-meter	check	limits see fig. 1 *
CHECK RECORD/PLAYBACK FREQUENCY AND DISTORTION						
Inject 8.85mV signals 100Hz, 250Hz, 1kHz, 10kHz, 12.5kHz via 3 or 4	SBC419A or SBC420	RECORD				
	RECORDED CASSETTE	PLAY	1 or 2 LEFT RIGHT	mV-meter	check	limits see fig. 2 *
Inject 1kHz 28mV via 3 or 4	SBC419A or SBC420	RECORD				
	RECORDED CASSETTE	PLAY	1 or 2 LEFT RIGHT	THD-meter	check	< 3% *

SBC419A : 4822 397 30069
SBC420 : 4822 397 30071

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

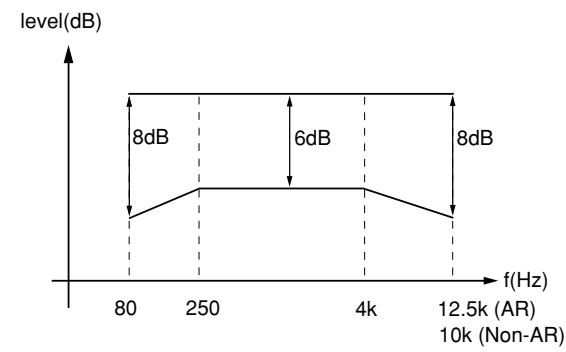


figure. 1

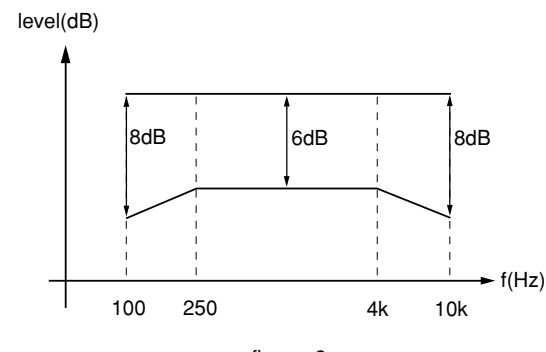
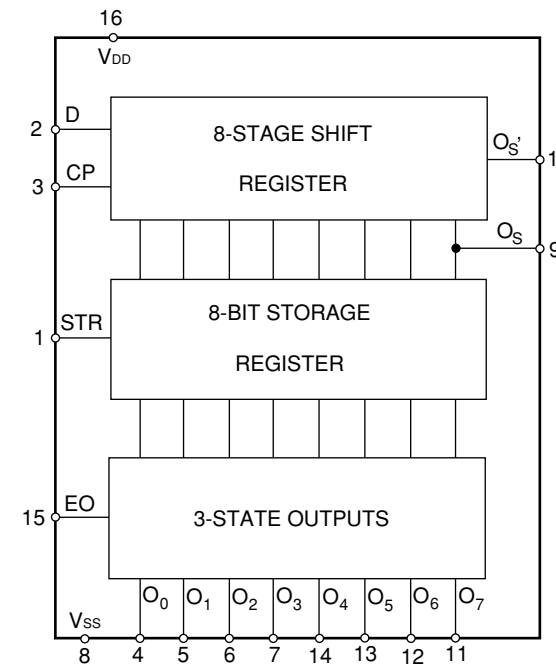


figure. 2

HEF4094BT FUNCTIONAL BLOCK DIAGRAM



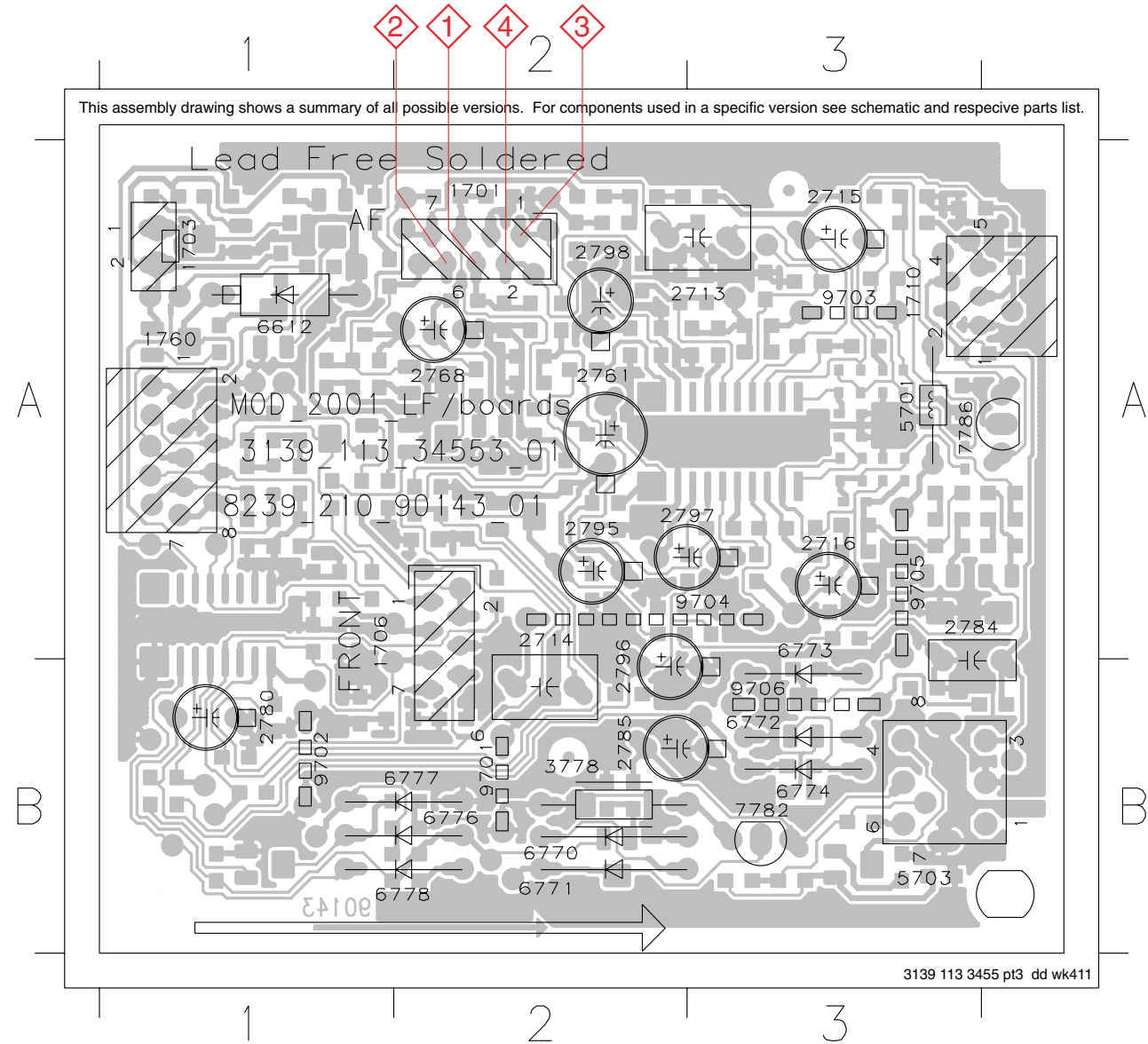
AF Control Logic State Table

State of Module	Control lines from HEF4094BT							
	O ₀	O ₁	O ₂	O ₃	O ₄	O ₅	O ₆	O ₇
	CR_SEL	REC	BIAS_OFF	CR_BIAS		SOL	MUTE_OFF	MOT
Stop	0	0	1	X	Not in used	Deck Mechanism Timing	0	0
Playback (Ferro)	0	0	1	0			1	1
Playback (Chrome)	1	0	1	1			1	1
Record (Ferro)	0	1	0	0			0	1
Record (Chrome)	1	1	0	1			0	1
FWD	0	0	1	X			0	1
REW	0	0	1	X			0	1

Note: 0 = Logic Low
1 = Logic High
X = Not applicable

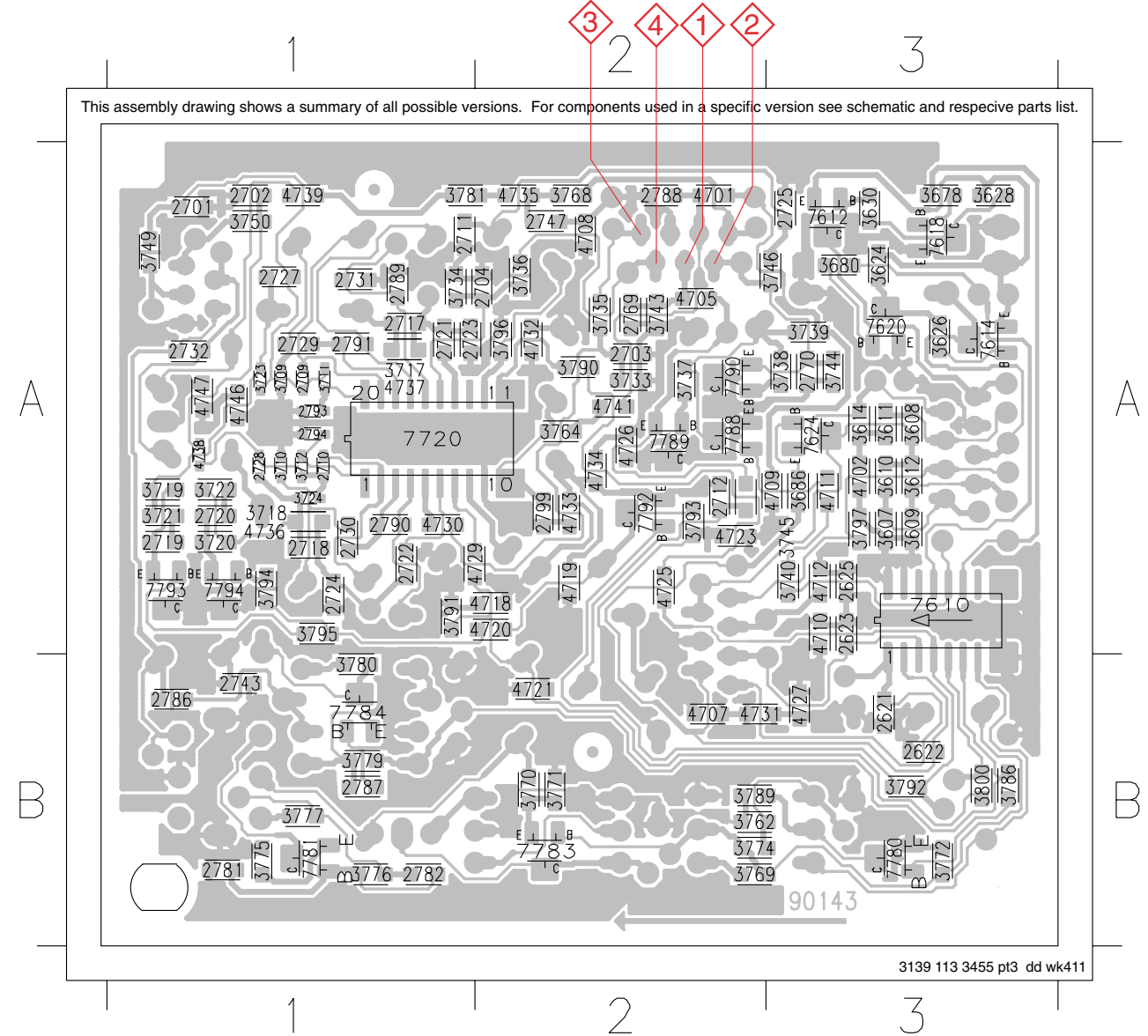
COMPONENT LAYOUT

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

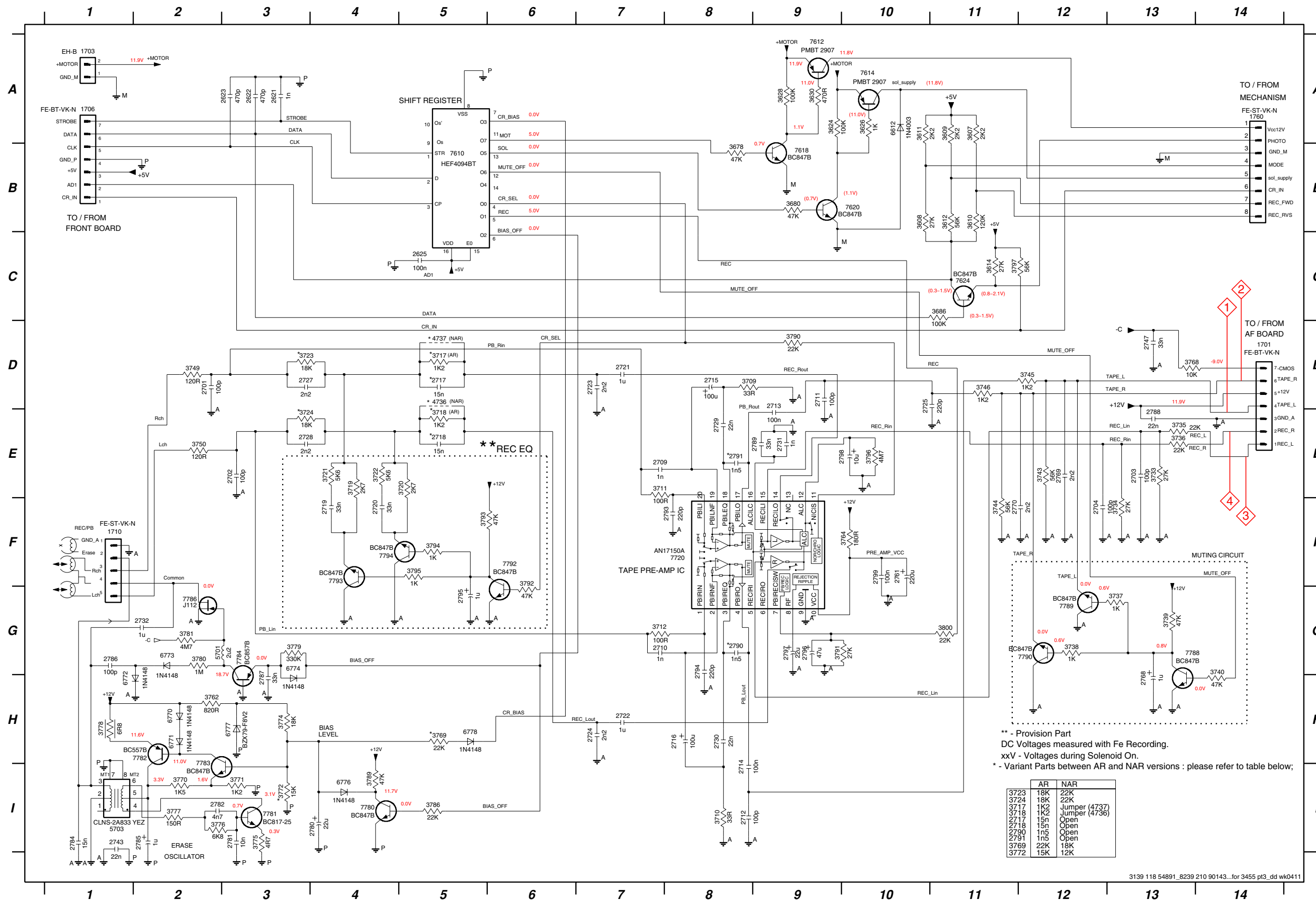


CHIP LAYOUT

2621 B3	2732 A1	3630 A3	3745 A3	3796 A2	4735 A2
2622 B3	2743 B1	3678 A3	3746 A3	3797 A3	4736 A1
2623 A3	2747 A2	3680 A3	3749 A1	3800 B3	4737 A1
2625 A3	2769 A2	3686 A3	3750 A1	4701 A2	4738 A1
2701 A1	2770 A3	3709 A1	3762 B2	4702 A3	4739 A1
2702 A1	2781 B1	3710 A1	3764 A2	4705 A2	4741 A2
2703 A2	2782 B1	3711 A1	3768 A2	4707 B2	4746 A1
2704 A2	2786 B1	3712 A1	3769 B2	4708 A2	4747 A1
2709 A1	2787 B1	3717 A1	3770 B2	4709 A3	7610 A3
2710 A1	2788 A2	3718 A1	3771 B2	4710 A3	7612 A3
2711 A1	2789 A1	3719 A1	3772 B3	4711 A3	7614 A3
2712 A2	2790 A1	3720 A1	3774 B2	4712 A3	7618 A3
2717 A1	2791 A1	3721 A1	3775 B1	4718 A2	7620 A3
2718 A1	2793 A1	3722 A1	3776 B1	4719 A2	7624 A3
2719 A1	2794 A1	3723 A1	3777 B1	4720 A2	7720 A1
2720 A1	2799 A2	3724 A1	3779 B1	4721 B2	7780 B3
2721 A1	3607 A3	3733 A2	3780 B1	4723 A2	7781 B1
2722 A1	3608 A3	3734 A1	3781 A1	4725 A2	7783 B2
2723 A1	3609 A3	3735 A2	3786 B3	4726 A2	7784 B1
2724 A1	3610 A3	3736 A2	3789 B2	4727 B3	7788 A2
2725 A3	3611 A3	3737 A2	3790 A2	4729 A1	7789 A2
2727 A1	3612 A3	3738 A3	3791 A1	4730 A1	7790 A2
2728 A1	3614 A3	3739 A3	3792 B3	4731 B2	7792 A2
2729 A1	3624 A3	3740 A3	3793 A2	4732 A2	7793 A1
2730 A1	3626 A3	3743 A2	3794 A1	4733 A2	7794 A1
2731 A1	3628 A3	3744 A3	3795 A1	4734 A2	



CIRCUIT DIAGRAM



1701 D14	3786 I5
1703 A1	3789 I4
1706 A1	3790 D9
1710 F1	3791 G9
1760 A14	3792 F6
2621 A3	3793 F5
2622 A3	3794 F5
2623 A3	3795 F5
2625 C5	3796 E10
2701 D2	3797 C11
2702 E3	3800 G11
2703 E13	4736 D5
2704 F12	4737 D5
2709 E7	5701 G2
2710 G7	5703 I1
2711 D9	6612 A10
2712 B8	6770 H2
2713 D9	6771 H2
2714 I8	6772 H1
2715 D8	6773 G2
2716 H8	6774 G3
2717 D5	6776 I4
2718 E5	6777 H3
2719 F4	6778 H5
2720 F4	7610 B5
2721 D7	7612 A9
2722 H7	7614 A10
2723 D7	7618 B9
2724 H7	7620 B10
2725 D10	7624 C11
2727 D3	7720 F8
2728 E3	7780 I4
2729 E8	7781 I3
2730 H8	7782 H2
2731 E9	7783 I2
2732 G2	7784 G3
2743 I1	7786 G2
2747 D13	7788 G14
2761 F10	7789 G12
2768 H13	7790 G12
2769 E12	7792 F6
2770 F11	7793 F4
2780 I4	7794 F4
2781 I3	
2782 I2	
2784 I1	
2785 I2	
2786 G1	
2787 H3	
2788 E13	
2789 E9	
2790 G8	
2791 E8	
2793 F8	
2794 G8	
2795 G5	
2796 G9	
2797 G9	
2798 E9	
2799 F10	
3607 A11	
3608 B10	
3609 A11	
3610 B11	
3611 A10	
3612 B11	
3614 C11	
3624 A9	
3626 A10	
3628 A9	
3630 A9	
3678 B8	
3680 B9	
3686 C11	
3709 D8	
3710 I8	
3711 E7	
3712 G7	
3717 D5	
3718 E5	
3719 E4	
3720 E5	
3721 E4	
3722 E4	
3723 D3	
3724 E3	
3733 E13	
3734 F13	
3735 E13	
3736 E13	
3737 G13	
3738 G12	
3739 G13	
3740 G14	
3743 E12	
3744 F11	
3745 D12	
3746 D11	
3749 D2	
3750 E2	
3762 H2	
3764 F10	
3768 D13	
3769 H5	
3770 I2	
3771 I2	
3772 I3	
3773 H3	
3774 H3	
3775 I3	
3776 I2	
3777 I2	
3778 H1	
3779 G3	
3780 G2	
3781 G2	

** - Provision Part
 DC Voltages measured with Fe Recording.
 xxV - Voltages during Solenoid On.
 * - Variant Parts between AR and NAR versions : please refer to table below;

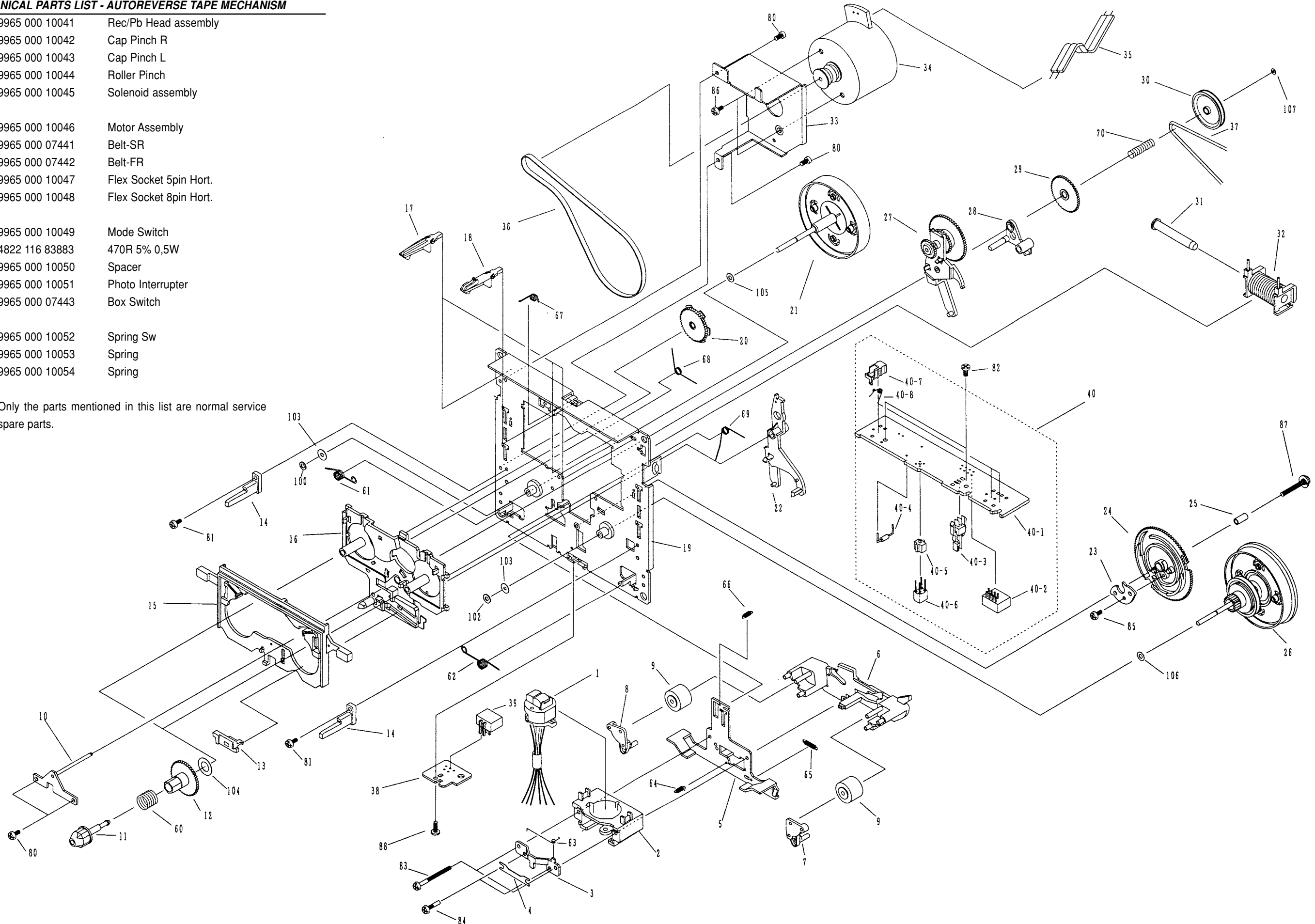
	AR	NAR
3723	18K	22K
3724	18K	22K
3717	1K2	Jumper (4737)
3718	1K2	Jumper (4736)
2717	15n	Open
3718	15n	Open
2730	1n5	Open
2791	1n5	Open
3769	22K	18K
3772	15K	12K

AUTOREVERSE (AR) TAPE MECHANISM

MECHANICAL PARTS LIST - AUTOREVERSE TAPE MECHANISM

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

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

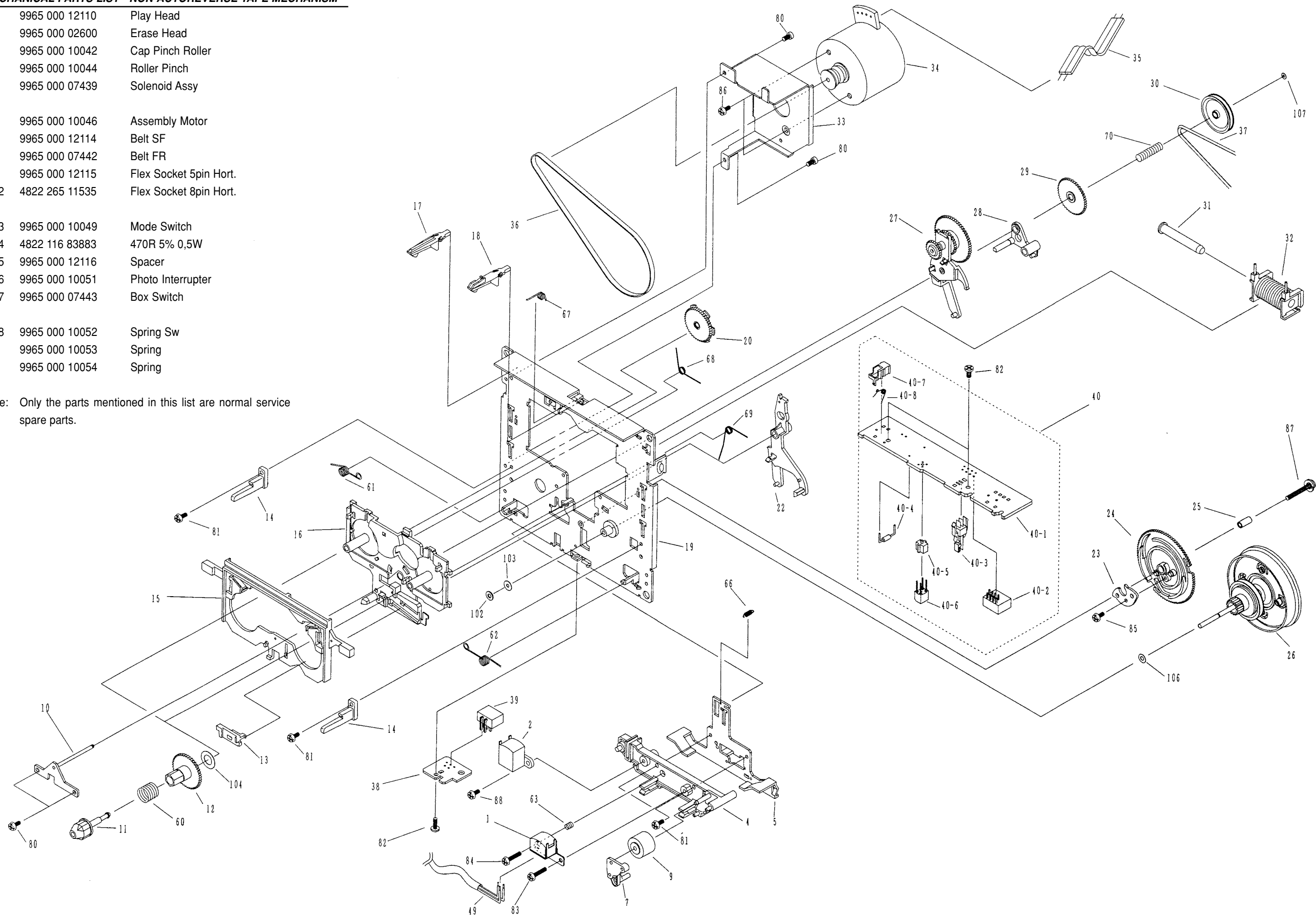


NON-AUTOREVERSE (NAR) TAPE MECHANISM

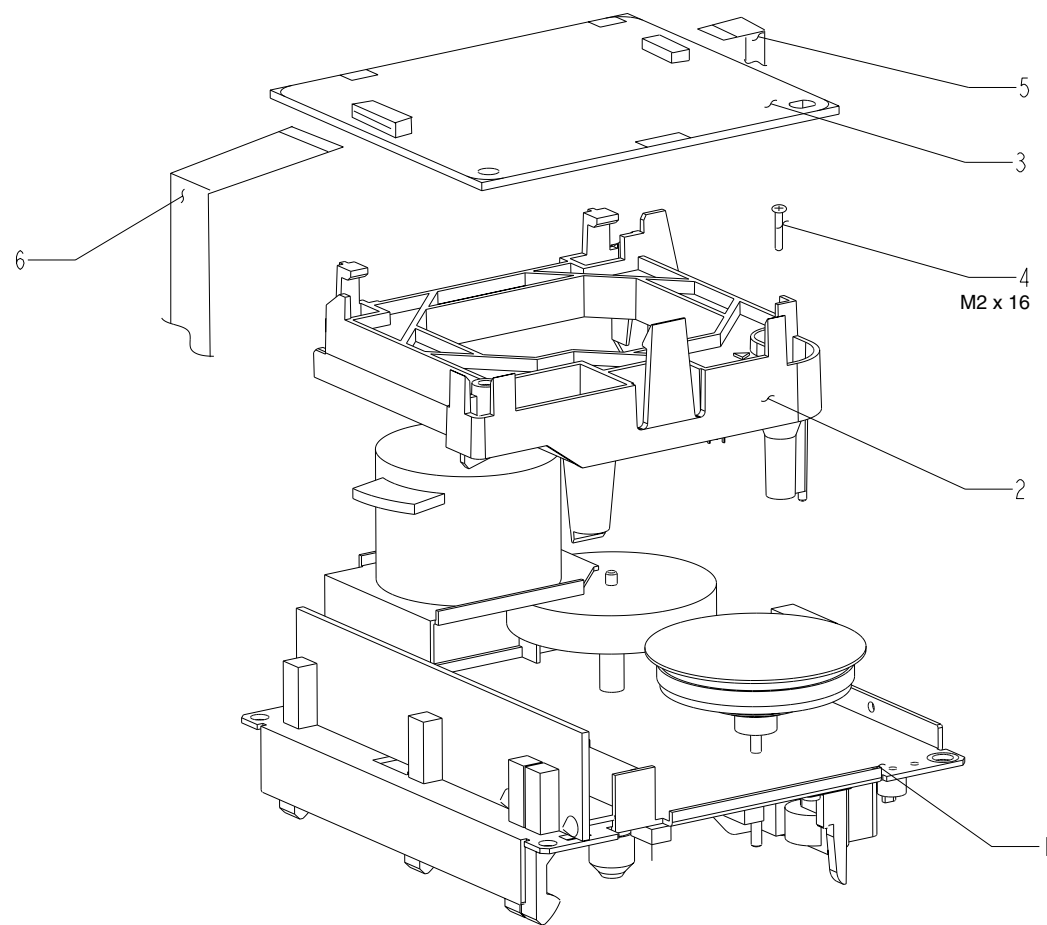
MECHANICAL PARTS LIST - NON-AUTOREVERSE TAPE MECHANISM

1	9965 000 12110	Play Head
2	9965 000 02600	Erase Head
7	9965 000 10042	Cap Pinch Roller
9	9965 000 10044	Roller Pinch
32	9965 000 07439	Solenoid Assy
34	9965 000 10046	Assembly Motor
36	9965 000 12114	Belt SF
37	9965 000 07442	Belt FR
39	9965 000 12115	Flex Socket 5pin Hort.
40-2	4822 265 11535	Flex Socket 8pin Hort.
40-3	9965 000 10049	Mode Switch
40-4	4822 116 83883	470R 5% 0,5W
40-5	9965 000 12116	Spacer
40-6	9965 000 10051	Photo Interrupter
40-7	9965 000 07443	Box Switch
40-8	9965 000 10052	Spring Sw
61	9965 000 10053	Spring
62	9965 000 10054	Spring

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



TAPE MODULE EXPLODED VIEW



MECHANICAL PARTS LIST - TAPE MODULE

1	3139 118 78740	AR Tape Mech. CRL4438
1	3139 118 79220	Non-AR Tape Mech. CFL4217
5	3139 110 35580	Flex Cable 5pin 40mm AD
6	3139 110 35590	Flex Cable 8pin 48mm AD

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

ELECTRICAL PARTS LIST - ETF8 BOARD

MISCELLANEOUS

1701	4822 267 10953	Flex Socket 7pin Vert.
1706	4822 267 10953	Flex Socket 7pin Vert.
1710	4822 267 10958	Flex Socket 5pin Hort.
1760	4822 265 11535	Flex Socket 8pin Hort.

CAPACITORS

2621	5322 126 11578	1nF 10% 50V
2621	5322 122 31647	1nF 10% 63V
2622	4822 126 13881	470pF 5% 50V
2622	5322 122 32268	470pF 5% 50V
2623	4822 126 13881	470pF 5% 50V
2623	5322 122 32268	470pF 5% 50V
2625	4822 126 14305	100nF 10% 16V
2625	2238 586 59812	100nF +80/-20% 50V
2701	4822 122 31765	100pF 2% 63V
2701	5322 122 32531	100pF 5% 50V
2702	4822 122 31765	100pF 2% 63V
2702	5322 122 32531	100pF 5% 50V
2703	4822 122 31765	100pF 2% 63V
2703	5322 122 32531	100pF 5% 50V
2704	4822 122 31765	100pF 2% 63V
2704	5322 122 32531	100pF 5% 50V
2709	5322 126 11578	1nF 10% 50V
2710	5322 126 11578	1nF 10% 50V
2711	4822 122 31765	100pF 2% 63V
2711	5322 122 32531	100pF 5% 50V
2712	4822 122 31765	100pF 2% 63V
2712	5322 122 32531	100pF 5% 50V
2713	5322 121 42386	100nF 5% 63V
2714	5322 121 42386	100nF 5% 63V
2715	4822 124 41584	100uF 20% 10V
2716	4822 124 41584	100uF 20% 10V
2717	3198 017 31530	15nF 50V
2717	4822 126 13188	15nF 5% 63V
2718	3198 017 31530	15nF 50V
2718	4822 126 13188	15nF 5% 63V
2721	3198 017 41050	1uF 10V
2721	4822 126 14043	1uF +80/-20% 16V
2722	3198 017 41050	1uF 10V
2722	4822 126 14043	1uF +80/-20% 16V
2723	4822 126 14238	2,2nF 50V
2724	4822 126 14238	2,2nF 50V
2725	4822 126 13883	220pF 5% 50V
2727	4822 126 14238	2,2nF 50V
2728	4822 126 14238	2,2nF 50V
2729	4822 126 14494	22nF 10% 25V
2729	2238 916 15641	22nF 10% 25V
2730	4822 126 14494	22nF 10% 25V
2730	2238 916 15641	22nF 10% 25V
2731	5322 126 11578	1nF 10% 50V
2731	5322 122 31647	1nF 10% 63V
2732	3198 017 41050	1uF 10V

2732	4822 126 14043	1uF +80/-20% 16V
2743	4822 126 14494	22nF 10% 25V
2743	2238 916 15641	22nF 10% 25V
2747	4822 126 14549	33nF 16V
2761	4822 124 40196	220uF 20% 16V
2768	4822 124 40756	1uF 20% 100V
2769	4822 126 14238	2,2nF 50V
2770	4822 126 14238	2,2nF 50V
2780	4822 124 81151	22uF 50V
2781	5322 126 11583	10nF 10% 50V
2781	4822 122 33177	10nF 20% 50V
2782	4822 126 13193	4,7nF 10% 63V
2784	4822 121 51305	15nF 10% 50V
2785	4822 124 21913	1uF 20% 63V
2786	4822 122 31765	100pF 2% 63V
2786	5322 122 32531	100pF 5% 50V
2787	4822 126 14549	33nF 16V
2788	4822 126 14494	22nF 10% 25V
2788	2238 916 15641	22nF 10% 25V
2789	4822 126 14549	33nF 16V
2790	4822 126 14247	1,5nF 50V
2791	4822 126 14247	1,5nF 50V
2793	4822 126 13883	220pF 5% 50V
2794	4822 126 13883	220pF 5% 50V
2796	4822 124 40433	47uF 20% 25V
2797	4822 124 81151	22uF 50V
2798	4822 124 21732	10uF 20% 25V
2799	4822 126 14305	100nF 10% 16V
2799	2238 586 59812	100nF +80/-20% 50V

RESISTORS

3607	4822 051 30222	2k2 5% 0,062W
3607	4822 117 11449	2k2 5% 0,1W
3608	4822 051 30273	27k 5% 0,062W
3609	4822 051 30222	2k2 5% 0,062W
3609	4822 117 11449	2k2 5% 0,1W
3610	4822 051 20124	120k 5% 0,1W
3611	4822 051 30222	2k2 5% 0,062W
3611	4822 117 11449	2k2 5% 0,1W
3612	4822 051 30563	56k 5% 0,062W
3614	4822 051 30273	27k 5% 0,062W
3624	4822 117 13632	100k 1% 0,062W
3624	4822 117 10837	100k 1% 0,1W
3626	4822 051 30102	1k 5% 0,062W
3628	4822 117 13632	100k 1% 0,062W
3628	4822 117 10837	100k 1% 0,1W
3630	4822 051 30471	470R 5% 0,062W
3678	4822 117 12925	47k 1% 0,063W
3680	4822 117 12925	47k 1% 0,063W
3686	4822 117 13632	100k 1% 0,062W
3686	4822 117 10837	100k 1% 0,1W
3709	4822 051 30339	33R 5% 0,062W

AR
AR

ELECTRICAL PARTS LIST - ETF8 BOARD

RESISTORS

3710	4822 051 30339	33R 5% 0,062W	
3711	4822 051 30101	100R 5% 0,062W	
3712	4822 051 30101	100R 5% 0,062W	
3717	4822 117 11817	1k2 1% 1/16W	AR
3717	4822 051 20122	1k2 5% 0,1W	AR
3718	4822 117 11817	1k2 1% 1/16W	AR
3718	4822 051 20122	1k2 5% 0,1W	AR
3723	4822 051 30183	18k 5% 0,062W	AR
3723	4822 051 30223	22k 5% 0,062W	Non-AR
3724	4822 051 30183	18k 5% 0,062W	AR
3724	4822 051 30223	22k 5% 0,062W	Non-AR
3733	4822 051 30273	27k 5% 0,062W	
3734	4822 051 30273	27k 5% 0,062W	
3735	4822 051 30223	22k 5% 0,062W	
3735	4822 051 20223	22k 5% 0,1W	
3736	4822 051 30223	22k 5% 0,062W	
3736	4822 051 20223	22k 5% 0,1W	
3736	4822 051 20223	22k 5% 0,1W	
3737	4822 051 30102	1k 5% 0,062W	
3737	4822 051 10102	1k 2% 0,25W	
3738	4822 051 30102	1k 5% 0,062W	
3738	4822 051 10102	1k 2% 0,25W	
3739	4822 117 12925	47k 1% 0,063W	
3740	4822 117 12925	47k 1% 0,063W	
3743	4822 051 30563	56k 5% 0,062W	
3744	4822 051 30563	56k 5% 0,062W	
3745	4822 117 11817	1k2 1% 1/16W	
3745	4822 051 20122	1k2 5% 0,1W	
3746	4822 117 11817	1k2 1% 1/16W	
3746	4822 051 20122	1k2 5% 0,1W	
3749	4822 051 30121	120R 5% 0,062W	
3749	4822 051 20121	120R 5% 0,1W	
3750	4822 051 30121	120R 5% 0,062W	
3750	4822 051 20121	120R 5% 0,1W	
3762	4822 117 12968	820R 5% 0,62W	
3764	4822 051 30181	180R 5% 0,062W	
3764	4822 117 11448	180R 1% 0,1W	
3768	4822 051 30103	10k 5% 0,062W	
3768	4822 117 10833	10k 1% 0,1W	
3769	4822 051 30223	22k 5% 0,062W	AR
3769	4822 051 30183	18k 5% 0,062W	Non-AR
3770	4822 051 30152	1k5 5% 0,062W	
3771	4822 117 11817	1k2 1% 1/16W	
3771	4822 051 20122	1k2 5% 0,1W	
3772	4822 051 30153	15k 5% 0,062W	AR
3772	4822 051 30123	12k 5% 0,062W	Non-AR
3774	4822 051 30183	18k 5% 0,062W	
3775	4822 117 13608	4,7R 5% 0,063W	
3776	4822 051 30682	6k8 5% 0,062W	
3777	4822 051 30151	150R 5% 0,062W	
3777	4822 117 10353	150R 1% 0,1W	
3778	4822 052 10688	6R8 5% 0,33W	
3779	4822 051 30334	330k 5% 0,062W	

3780	4822 051 30105	1M 5% 0,062W	
3780	4822 051 20105	1M 5% 0,1W	
3781	4822 051 30475	4M7 5% 0,062W	
3786	4822 051 30223	22k 5% 0,062W	
3786	4822 051 20223	22k 5% 0,1W	
3789	4822 117 12925	47k 1% 0,063W	
3790	4822 051 30223	22k 5% 0,062W	
3790	4822 051 20223	22k 5% 0,1W	
3791	4822 051 30273	27k 5% 0,062W	
3796	4822 051 30475	4M7 5% 0,062W	
3797	4822 051 30563	56k 5% 0,062W	
3800	4822 051 30223	22k 5% 0,062W	
3800	4822 051 20223	22k 5% 0,1W	
4701	4822 051 30008	0R Jumper 0603	
4702	4822 051 30008	0R Jumper 0603	
4705	4822 051 30008	0R Jumper 0603	
4707	4822 051 30008	0R Jumper 0603	
4708	4822 051 30008	0R Jumper 0603	
4709	4822 051 30008	0R Jumper 0603	
4710	4822 051 30008	0R Jumper 0603	
4711	4822 051 30008	0R Jumper 0603	
4712	4822 051 30008	0R Jumper 0603	
4718	4822 051 30008	0R Jumper 0603	
4719	4822 051 30008	0R Jumper 0603	
4720	4822 051 30008	0R Jumper 0603	
4721	4822 051 30008	0R Jumper 0603	
4723	4822 051 30008	0R Jumper 0603	
4725	4822 051 30008	0R Jumper 0603	
4726	4822 051 30008	0R Jumper 0603	
4727	4822 051 30008	0R Jumper 0603	
4729	4822 051 30008	0R Jumper 0603	
4730	4822 051 30008	0R Jumper 0603	
4731	4822 051 30008	0R Jumper 0603	
4732	4822 051 30008	0R Jumper 0603	
4733	4822 051 30008	0R Jumper 0603	
4734	4822 051 30008	0R Jumper 0603	
4735	4822 051 30008	0R Jumper 0603	
4736	4822 051 30008	0R Jumper 0603	Non-AR
4737	4822 051 30008	0R Jumper 0603	Non-AR
4738	4822 051 30008	0R Jumper 0603	
4739	4822 051 30008	0R Jumper 0603	
4741	4822 051 30008	0R Jumper 0603	
4746	4822 051 30008	0R Jumper 0603	
4747	4822 051 30008	0R Jumper 0603	

COILS & FILTERS

5701	4822 157 62552	Coil 2,2uH 5%
5703	4822 156 20946	Osc Coil 100kHz

DIODES

6612	4822 130 31878	1N4003G
6770	4822 130 30621	1N4148

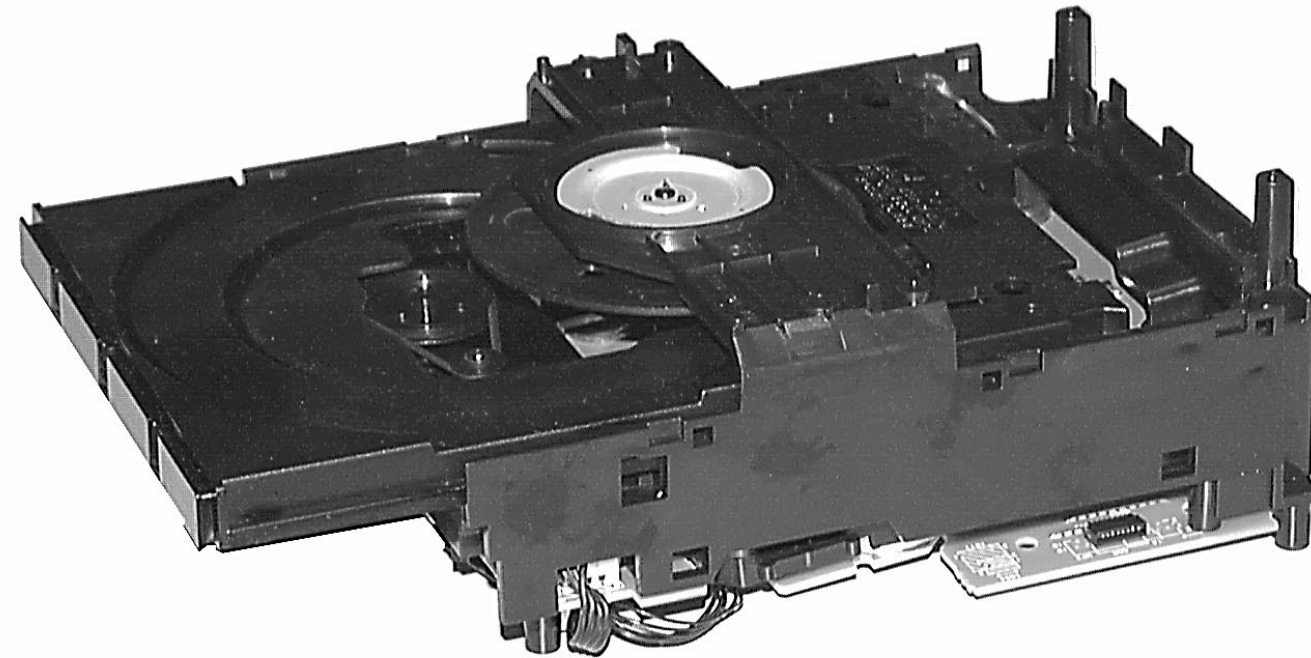
ELECTRICAL PARTS LIST - ETF8 BOARD

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

TRANSISTORS & INTEGRATED CIRCUIT

7610	5322 209 11306	HEF4094BT
7612	4822 130 11201	PMBT2907
7614	4822 130 11201	PMBT2907
7618	5322 130 60159	BC847B
7620	5322 130 60159	BC847B
7624	5322 130 60159	BC847B
7720	9322 167 09668	AN17150ATA
7780	5322 130 60159	BC847B
7781	4822 130 42804	BC817-25
7782	4822 130 44568	BC557B
7783	5322 130 60159	BC847B
7784	4822 130 60373	BC857B
7786	9340 052 70126	FET SIG J112
7788	5322 130 60159	BC847B
7789	5322 130 60159	BC847B
7790	5322 130 60159	BC847B

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



Service hints

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

1. VERIFY THE COMPLAINT

PLAYABILITY CHECK

use CD-RW Printed Audio Disk7104 099 96611
 TR 3 (Fingerprint)
 TR 8 (600µ black dot) **maximum at 01:00**

- playback of these two tracks without audible disturbance
 playing time for: Fingerprint ≥10seconds
 Black dot from 00:50 to 01:10
- jump forward/backward (search) within a reasonable time

2. CLEAN THE LENS

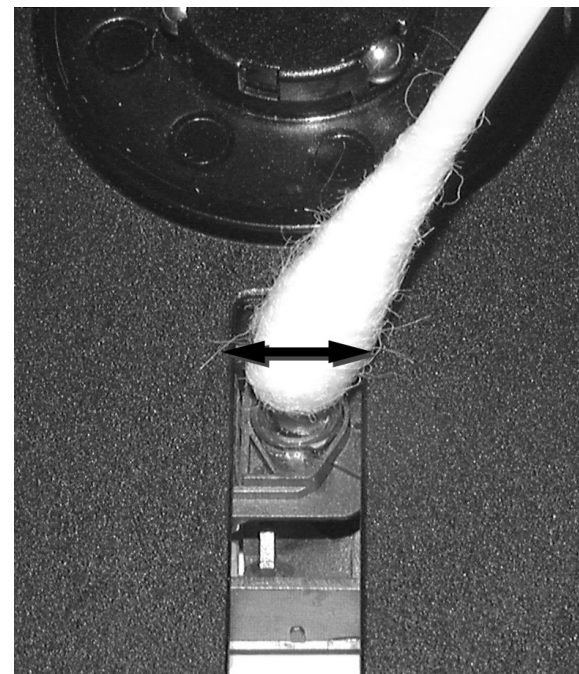
CD DRIVE – LENS CLEANING

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

Because the material of the lens is synthetic and coated with a special anti-reflectivity layer, cleaning must be done with a non-aggressive cleaning fluid. It is advised to use “Cleaning Solvent B4”, available with codenumber 4822 389 10026.

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

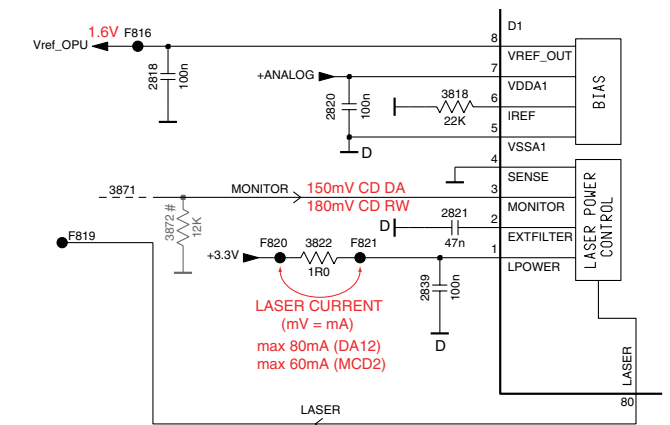
The direction of cleaning must be in the way as indicated in the picture below.



3. MEASURE THE LASER CURRENT

CD DRIVE – LASER CURRENT MEASUREMENT

The laser current can be measured as a voltage drop on resistor 3822. Typical value 50mV (MCD2 disc drive) respectively 55mV (DA12 disc drive).



If the value is higher than 60mV (MCD2 disc drive) respectively 80mV (DA12 disc drive) or the current increases just after switching the laser on - the laserdiode is most probably defective. In that case the CD drive has to be replaced.

4. GENERAL HINTS

Since the HF pre-amplifier is integrated into the new "CD18" signal processor the well-known eye pattern signal is not available as external signal and cannot be measured anymore. Also measuring the offset voltages is not necessary because the new signal processor contains an automatic offset compensation.

However the circuitry offers some new aspects for checking the system:

- the Monitor voltage shows if the sensitivity is set correctly (attention: ESD sensitive line!):
 CD DA: 150mV
 CD RW: 180mV
- the Focus search algorithm is divided into 4 steps:
 1st step: CD DA sensitivity
 2nd step: CD DA enforced sensitivity
 3rd step: CD RW sensitivity
 4th step: CD RW enforced sensitivity

The used sensitivity can be found out by either measuring the Monitor voltage or counting the up/down movements of the OPU until focus is found.
 e.g. when a normal CD DA is played back Monitor voltage should measure 150mV respectively Focus should be found within the first up/down movement of the OPU.

- In case a higher sensitivity setting can be observed than defined, there are following possible reasons:
- disc scratched or dirty
 - poor reflectivity of the disc - disc not conform standard
 - lens of the OPU dirty
 - laser power too low

Universal Loader

(Single Disc Tray Loader)

MP3 version, ICD03 PHONIC Layout stage .3

This document describes 2 versions, the version with the Mitsumi CD drive **MCD2** and the version with the Sanyo CD drive **DA12**.
 The CD drive used in a specific application is stated on the type plate, located on one of the side walls of the changer module.



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 Circuit Diagram CD Main Board10-6
 Component layout CD Main Board10-7
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 MP3 CD03 Board (for orientation only).....10-10

CAUTION

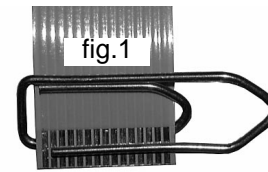
CHARGED CAPACITORS ON THE SERVO BOARD MAY DAMAGE THE CD DRIVE ELECTRONICS WHEN CONNECTING A NEW CD MECHANISM. THAT'S WHY, BESIDES THE SAFETY MEASURES LIKE

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

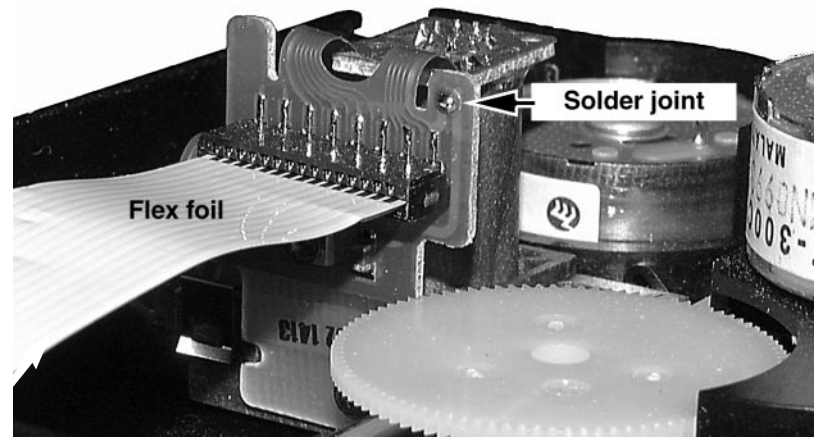
ADDITIONAL ACTIONS MUST BE TAKEN BY THE REPAIR TECHNICIAN.

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 onto the flexfoil cable to short-circuit the contacts (fig.1)
3. Remove the old CD drive
4. Remove paperclip from the flexfoil cable and connect it to the new CD drive
5. Position the new CD drive on its studs
6. Remove solder joint from the Laser unit (see below)

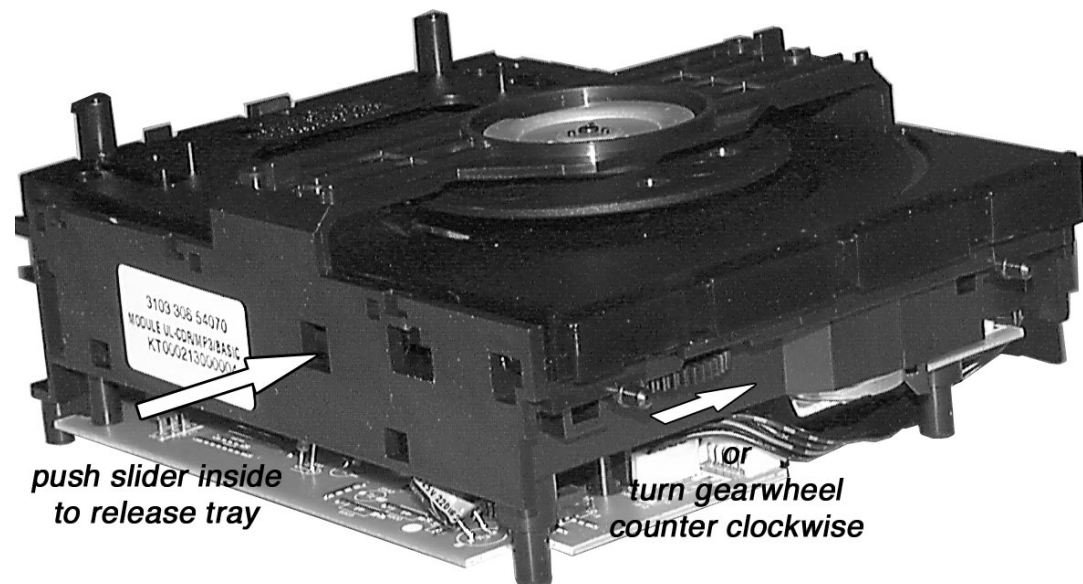


Attention: The laser diode of this CD drive is protected against ESD by a solder joint which short-circuits the laser diode to ground.
For proper functionality of the CD drive this solder joint must be removed **after** connecting the drive to the set.



Emergency open

- In case of a Supply fault, the drawer can be opened manually.
1. Remove the top cover of the set to get access to the CD Module.
 2. Proceed as shown in picture below.



Dismantling of Drawer

1. Open the drawer and release 2 catches as shown in fig. 2
2. Pull drawer out.

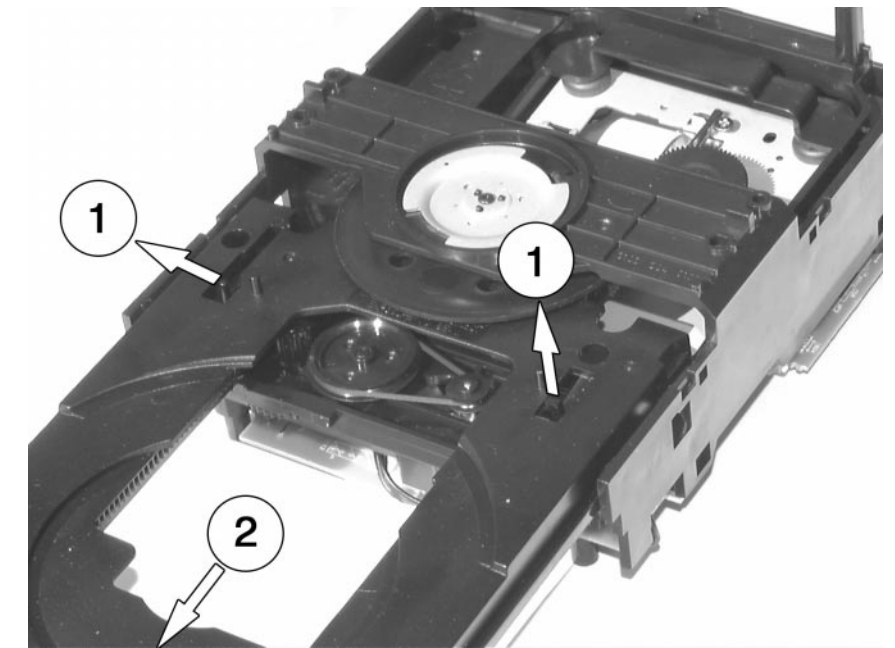
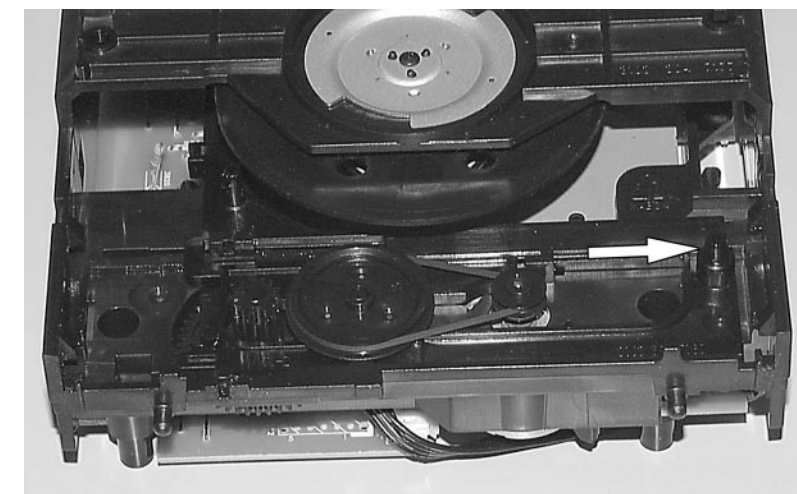


fig.2

Assembling of Drawer

1. Check if slider is on the right side → see picture below.
2. If necessary - move slider to the right end position first.
3. Insert the Drawer.



Abbreviations

10-3

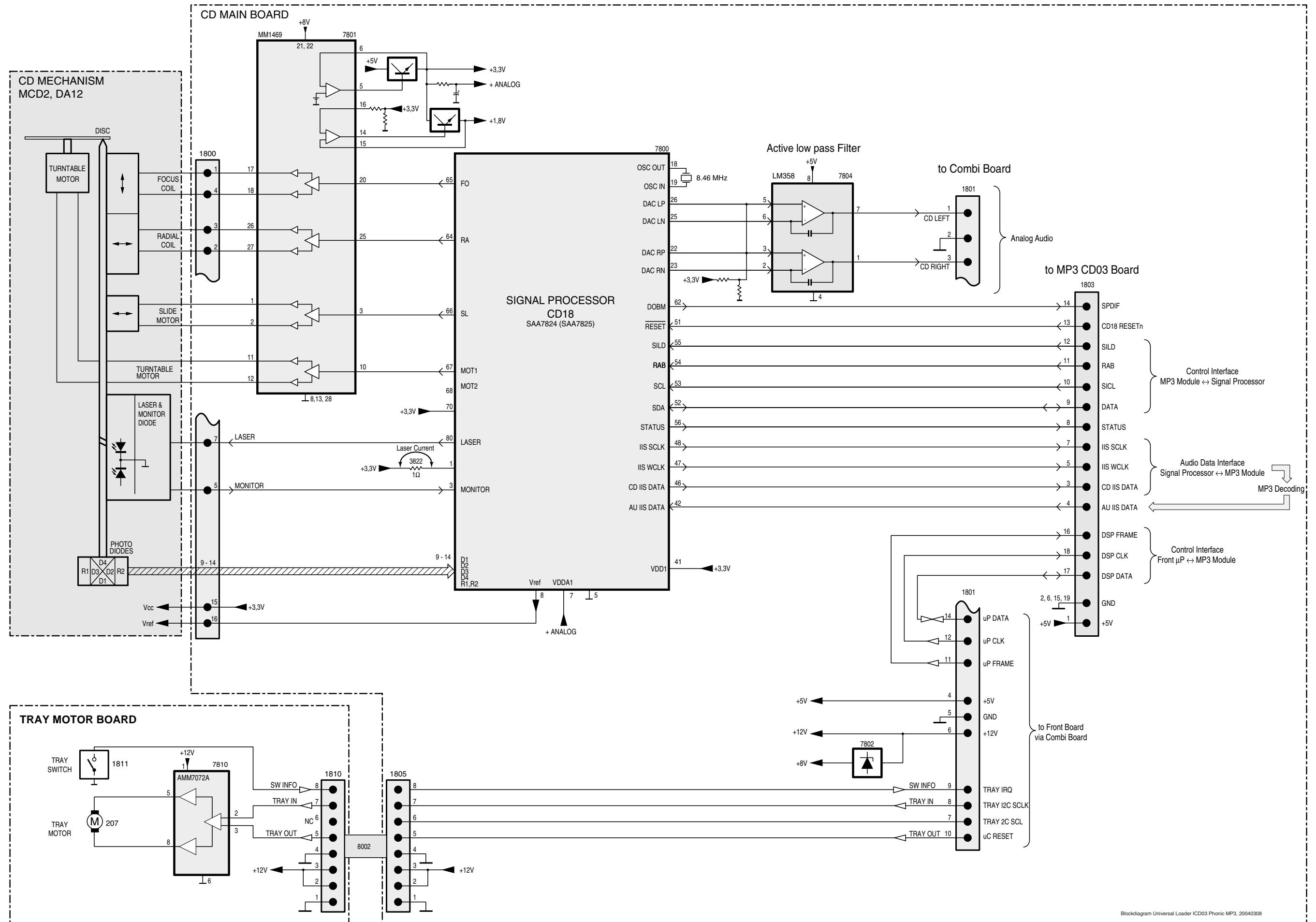
SIGNAL PROCESSOR (CD18) SAA7825

SYMBOL	PIN	I/O	DESCRIPTION
LFPOWER	1	I	laser power supply
EXFILTER	2	O	10 nF capacitor for laser start-up control
MONITOR	3	I	laser monitor diode
SENSE	4	I	OPU ground reference point for MONITOR measurement
V _{SSA1}	5	SUP	analog ground 1
I _{REF}	6	O	reference current output (22 kΩ resistor connected to analog ground)
V _{DDA1}	7	SUP	analog supply voltage 1
V _{REFO}	8	I/O	servo reference voltage
D1	9	I	diode voltage/current input (central diode signal input)
D2	10	I	diode voltage/current input (central diode signal input)
D3	11	I	diode voltage/current input (central diode signal input)
D4	12	I	diode voltage/current input (central diode signal input)
R1	13	I	diode voltage/current input (satellite diode signal input)
R2	14	I	diode voltage/current input (satellite diode signal input)
CSLICE	15	I/O	22 nF capacitor for adaptive HF data slicer
V _{DDA2}	16	SUP	analog supply voltage 2
V _{SSA2}	17	SUP	analog ground 2
OSCOUT	18	O	crystal/resonator output
OSCIN	19	I	crystal/resonator input
V _{SSA3}	20	SUP	analog ground 3
DACGND	21	I	audio DAC ground
DACRP	22	O	audio DAC right channel differential positive output
DACRN	23	O	audio DAC right channel differential negative output
DACV _{ref}	24	I/O	audio DAC decoupling point (10 μF or 100 nF to ground)
DACLN	25	O	audio DAC left channel differential negative output
DACLP	26	O	audio DAC left channel differential positive output
DACV _{pos}	27	I	audio DAC positive supply voltage
BUFV _{pos}	28	I	audio buffer positive supply voltage
BUFINR	29	I	audio buffer right input
BUFOUR	30	O	audio buffer right output
BUFOUTL	31	O	audio buffer left output
BUFINL	32	I	audio buffer left input
BUFGND	33	I	audio buffer ground
LKILL	34	O	KILL output for left channel (configurable as open-drain)
RKILL	35	O	KILL output for right channel (configurable as open-drain)
CDTRDY	36	O	CD text output to microcontroller ready #g
CDTDATA	37	O	CD text output data to microcontroller
CDTCLK	38	I	CD text microcontroller clock input
CFLAG	39	O	correction #g output (open-drain)
V _{SSD1}	40	SUP	digital ground 1

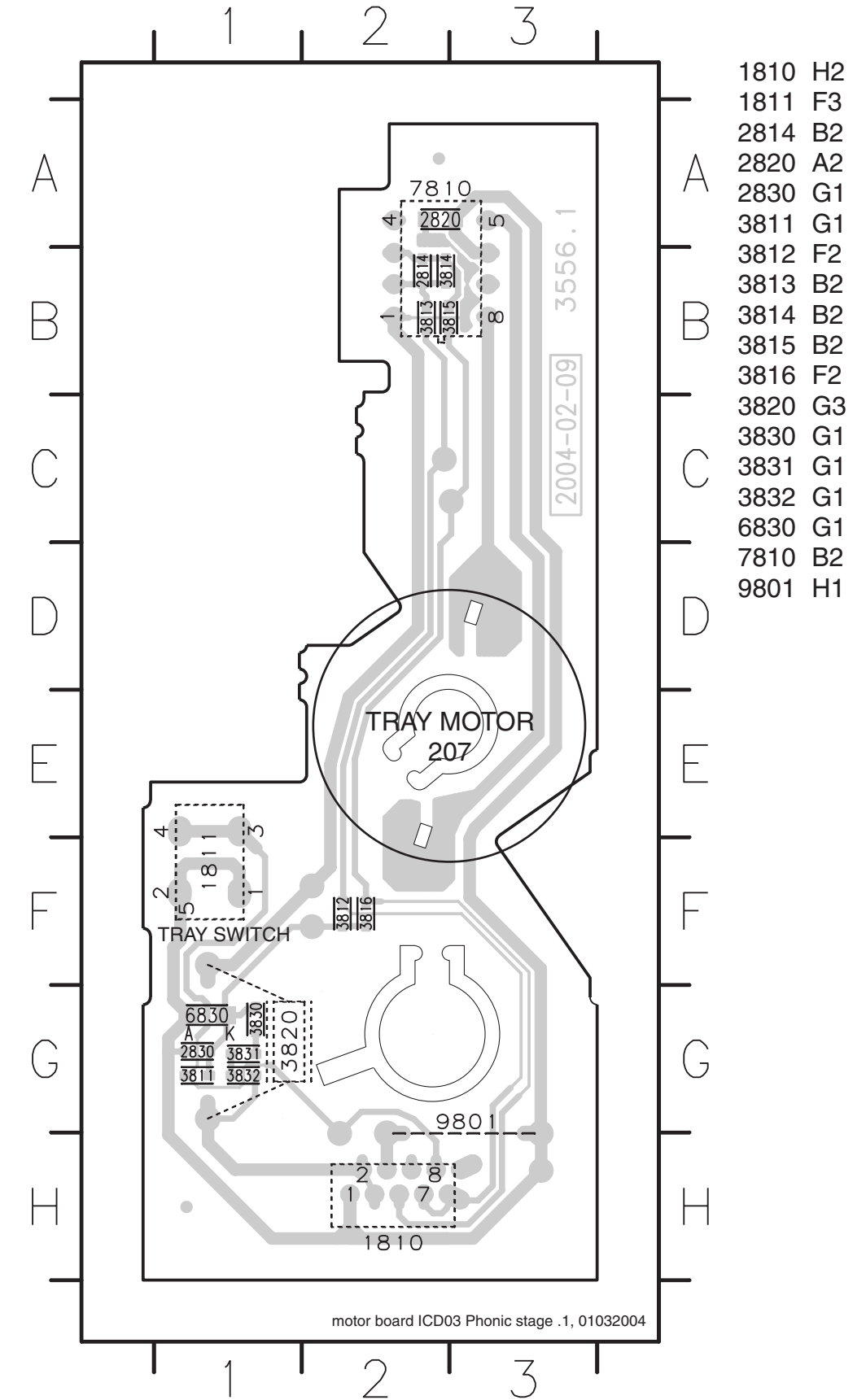
10-3

SYMBOL	PIN	I/O	DESCRIPTION
V _{DDD1}	41	SUP	digital supply voltage 1
SDI	42	I	serial data input (loopback)
WCLI	43	I	word clock input (loopback)
SCLI	44	I	serial bit clock input (loopback)
EF	45	O	C2 error #g output
DATA	46	O	serial data output
WCLK	47	O	word clock output
SCLK	48	O	serial clock output
CLK16	49	O	16 MHz clock output
CLK4/12	50	O	configurable 4 MHz or 12 MHz clock output
RESET	51	I	power-on reset input (active LOW)
SDA	52	I/O	microcontroller interface data input/output (open-drain)
SCL	53	I	microcontroller interface clock input
RAB	54	I	microcontroller interface R/W and load control input (4-wire)
SILD	55	I	microcontroller interface R/W and load control input (4-wire)
STATUS	56	O	servo interrupt request line/decoder status register/DC offset value readback output
RCK	57	I	subcode clock input
SUB	58	O	P to W subcode output
SFSY	59	O	subcode frame sync output
SBSY	60	O	subcode block sync output
V _{SSD2}	61	SUP	digital ground 2
DOBM	62	O	bi-phase mark output (externally buffered)
V _{DDD2}	63	SUP	digital supply voltage 2
RA	64	O	radial actuator output
FO	65	O	focus actuator output
SL	66	O	sledge actuator output
MOTO1	67	O	motor output 1 output
MOTO2	68	O	motor output 2 output
V _{SSD3}	69	SUP	digital ground 3
V _{DDD3}	70	SUP	digital supply voltage 3
V1	71	I	versatile pin 1 input
V2	72	I	versatile pin 2 input
V3	73	O	versatile pin 3 output
V4	74	O	versatile pin 4 output
V5	75	O	versatile pin 5 output
TEST1	76	I	test pin 1 input
TEST2	77	I	test pin 2 input
TEST3	78	I	test pin 3 input
TEST4	79	I	test pin 4 input
LASER	80	O	laser drive output

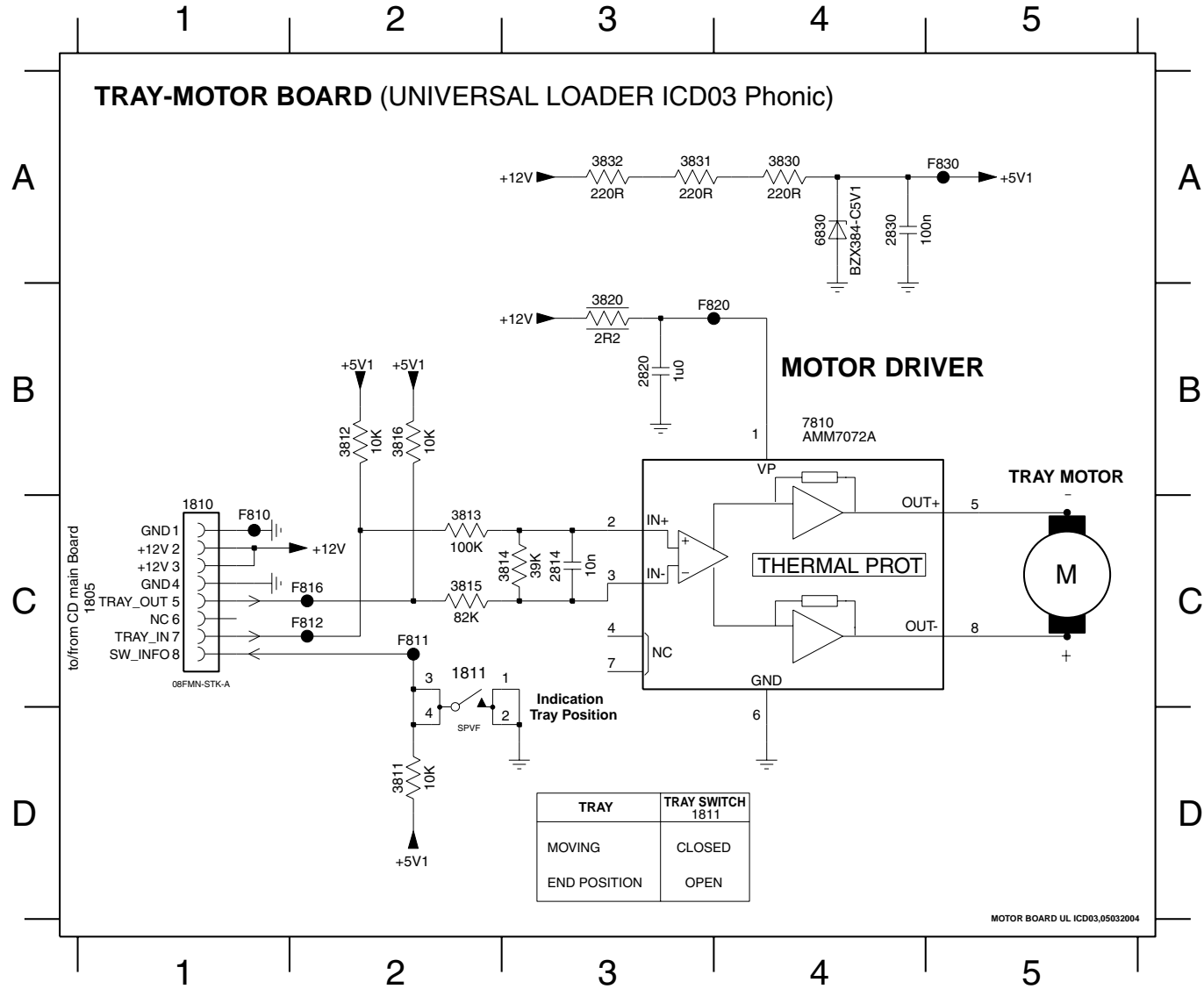
BLOCK DIAGRAM Universal Loader / ICD03 PhonIC MP3



TRAY MOTOR BOARD / copper side view

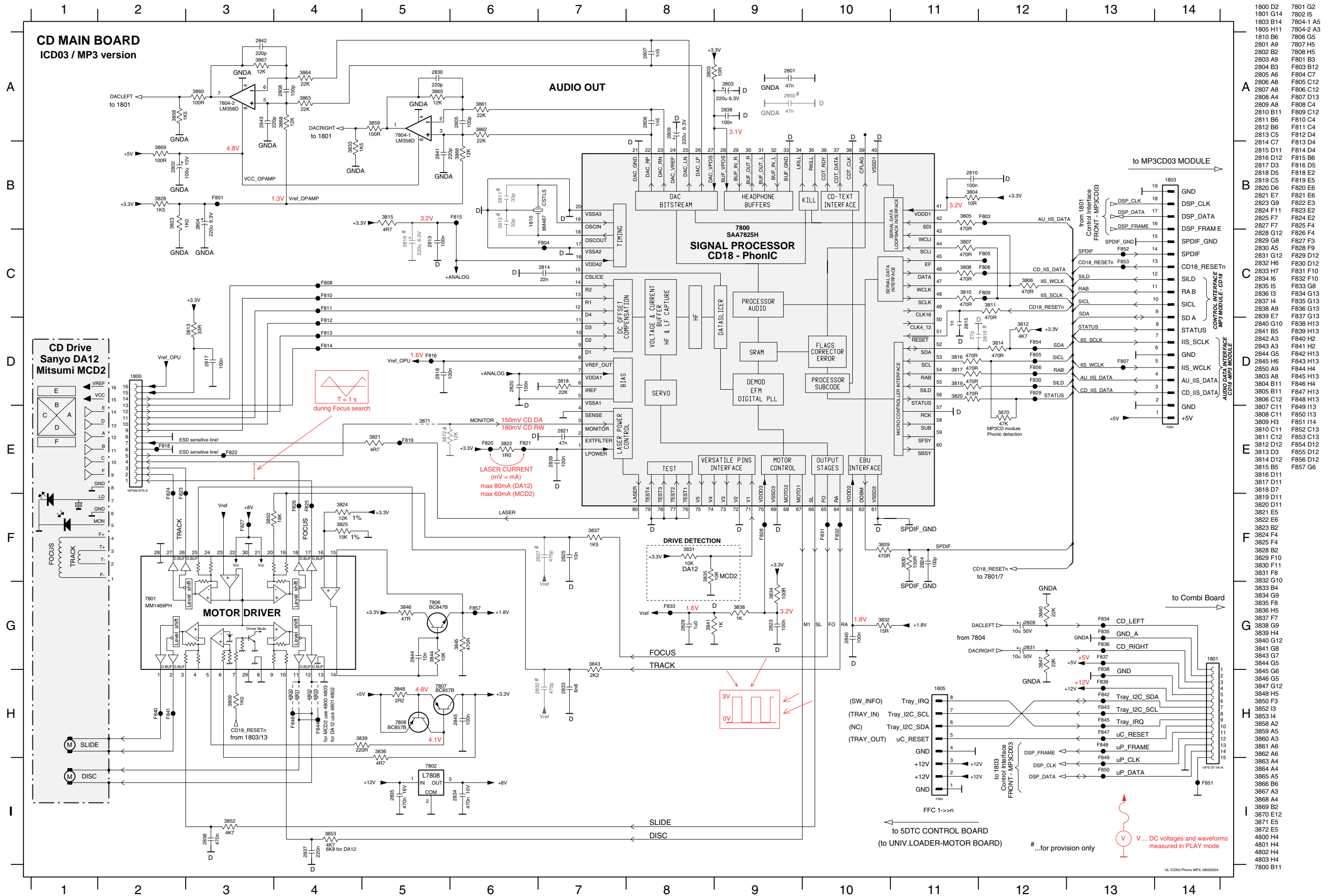


- 1810 C1
- 2814 C3
- 2830 A4
- 3812 B2
- 3814 C3
- 3816 B2
- 3830 A4
- 3832 A3
- 7810 B4
- F811 C2
- F816 C2
- F830 A5
- 1811 C2
- 2820 B3
- 3811 D2
- 3813 C2
- 3815 C2
- 3820 B3
- 3831 A3
- 6830 A4
- F810 C1
- F812 C2
- F820 B3



MOTOR BOARD UL ICD03.05032004

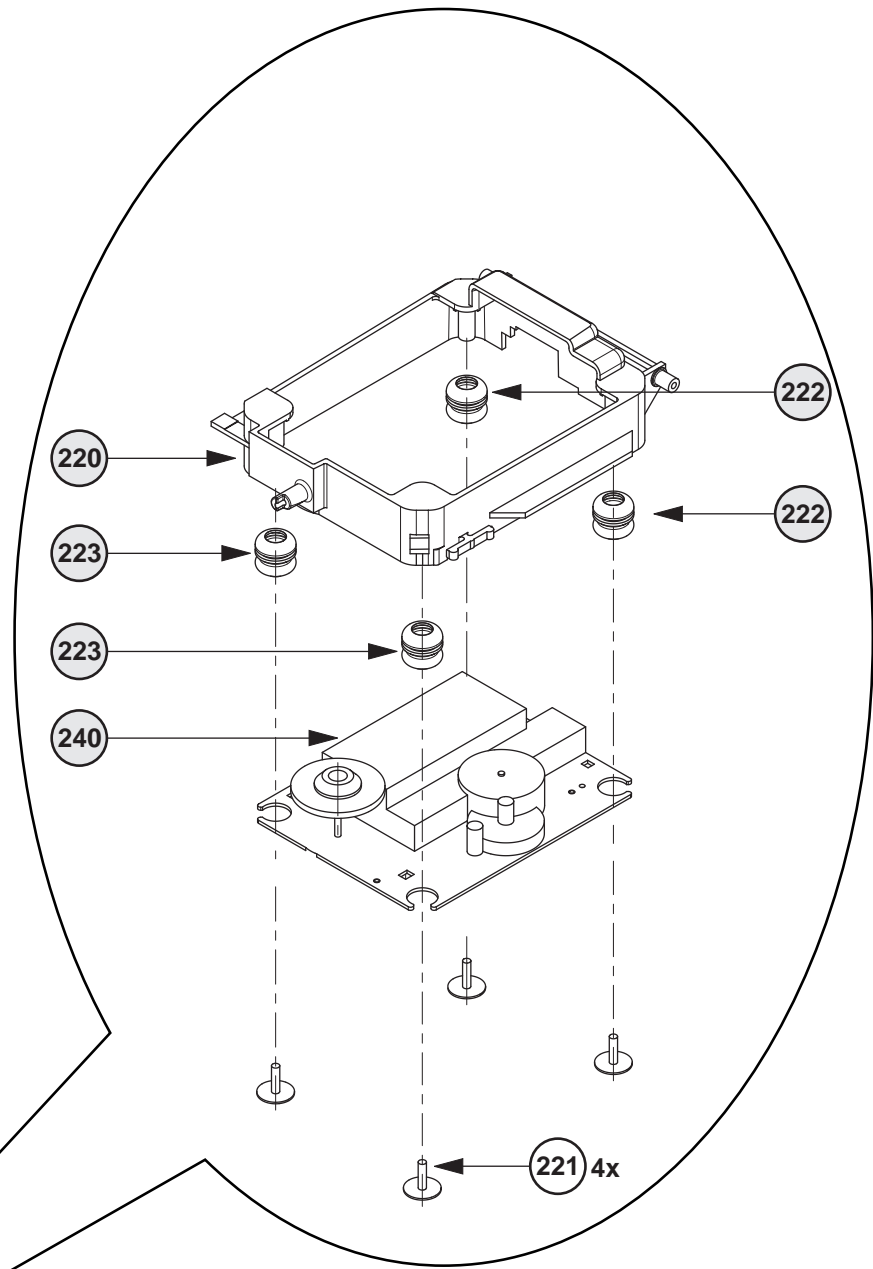
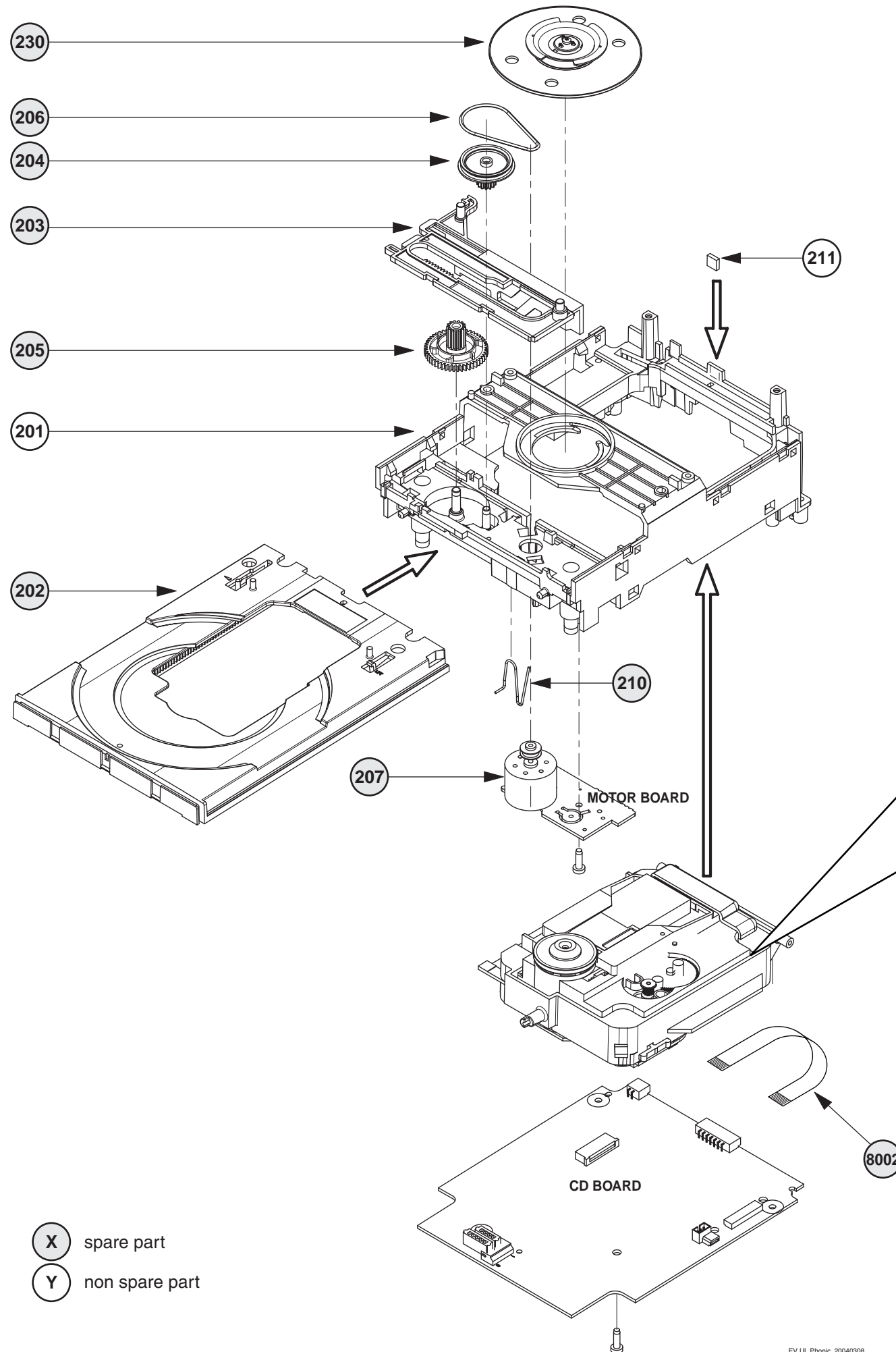
motor board ICD03 Phonic stage .1, 01032004



- 1800 D2
- 1801 G14
- 1803 B14
- 1805 H11
- 1810 B6
- 2801 A9
- 2802 B2
- 2803 A9
- 2804 B3
- 2805 A6
- 2806 A8
- 2807 A8
- 2808 A4
- 2809 A8
- 2810 B11
- 2811 B6
- 2812 B6
- 2813 C5
- 2814 C7
- 2815 D11
- 2816 D12
- 2817 D3
- 2818 D5
- 2819 D5
- 2820 D6
- 2821 E7
- 2823 G9
- 2824 F11
- 2825 F7
- 2827 F7
- 2828 G12
- 2829 G8
- 2830 A5
- 2831 G12
- 2832 H6
- 2833 H7
- 2834 I6
- 2835 I5
- 2836 I3
- 2837 I4
- 2838 A9
- 2839 E7
- 2840 G10
- 2841 B5
- 2842 A3
- 2843 A3
- 2844 G5
- 2845 H6
- 2846 A9
- 2848 A4
- 2849 H3
- 2850 A9
- 2851 H4
- 2852 C12
- 2853 C13
- 2854 D12
- 2855 D12
- 2856 D12
- 2857 G6
- 7801 G2
- 7802 I5
- 7804-1 A5
- 7804-2 A3
- 7806 G5
- 7807 H5
- 7808 H5
- F801 B3
- F803 B12
- F804 C7
- F805 C12
- F806 C12
- F807 D13
- F808 C4
- F809 C12
- F810 C4
- F811 C4
- F812 D4
- F813 D4
- F814 D4
- F815 B6
- F816 D5
- F818 E2
- F819 E5
- F820 E6
- F821 E6
- F822 E3
- F823 E2
- F824 E2
- F825 F4
- F826 F4
- F827 F3
- F828 F9
- F829 D12
- F830 D12
- F831 F10
- F832 F10
- F833 G8
- F834 G13
- F835 G13
- F836 G13
- F837 G13
- F838 H13
- F839 H13
- F840 H2
- F841 H2
- F842 H13
- F843 H13
- F844 H4
- F845 H3
- F846 H4
- F847 H13
- F848 H13
- F849 I13
- F850 I13
- F851 I14
- F852 C13
- F853 C13
- F854 D12
- F855 D12
- F856 D12
- F857 G6

V.... DC voltages and waveforms measured in PLAY mode

#...for provision only



(X) spare part
(Y) non spare part

MECHANICAL PARTS

202	3103 304 71780	DRAWER
203	3103 304 71800	SLIDER
204	3103 304 71820	PULLEY GEARWHEEL
205	3103 304 71830	GEARWHEEL
206	3103 304 71910	DRIVING BELT
207	3103 308 54160	MOTOR ASSY
210	3103 301 06660	SPRING SUPPORT
220	3103 304 71790	SUPPORT CD
222	4822 529 10387	RUBBER DAMPER CD DRIVE, FRONT
223	4822 529 10387	RUBBER DAMPER CD DRIVE, FRONT
230	3103 308 11940	CLAMPER ASSY DA11
240	3103 309 05380	CD DRIVE, MCD2
240	3103 309 05390	CD DRIVE DA12T3
8001	3103 308 93611	FLEXFOIL CABLE, 16P, 88mm BD
8002	3103 308 94021	FLEXFOIL CABLE, 8P, 268mm AD

ELECTRICAL PARTSLIST Universal Loader / ICD03 PhonIC MP3 Version**MOTOR BOARD****MISCELLANEOUS**

1810	2422 025 16371	FFC-CONNECTOR, 8P, SIDE ENTRY
1811	2422 129 16655	LEAF SWITCH, 1P

CAPACITORS

2814	5322 126 11583	10nF	10%	63V
2820	4822 126 14043	1µF	20%	16V
2830	2238 586 59812	100nF	10%	50V

RESISTORS

3811	4822 051 30103	10kΩ	5%	0,06W
3812	4822 051 30103	10kΩ	5%	0,06W
3813	4822 117 13632	100kΩ	1%	0,06W
3814	4822 051 30393	39kΩ	5%	0,06W
3815	4822 117 12864	82kΩ	5%	0,06W

3816	4822 051 30103	10kΩ	5%	0,06W
3820	4822 052 10228	2,2Ω	5%	0,33W
3830	4822 051 30221	220Ω	5%	0,06W
3831	4822 051 30221	220Ω	5%	0,06W
3832	4822 051 30221	220Ω	5%	0,06W

DIODES

6830	9340 548 52115	BZX284-C5V1
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INTEGRATED CIRCUITS

7810	9322 196 36682	AMM7072A, MOTOR DRIVER
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MP3 CD03 BOARD

Only complete board available

3103 308 67611	MP3 CD03 BOARD TXT5V
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CD BOARD**MISCELLANEOUS**

1800	4822 267 11028	FFC-CONNECTOR, 16P, SIDE ENTRY
1801	4822 265 10979	FFC-CONNECTOR, 15P, SIDE ENTRY
1803	2422 025 16836	FFC-CONNECTOR, 19P, SIDE ENTRY
1805	2422 025 16371	FFC-CONNECTOR, 8P, SIDE ENTRY

CAPACITORS

2801	3198 017 34730	47nF	10%	16V
2802	4822 124 41584	100µF	20%	10V
2803	4822 124 12052	220µF	20%	6,3V
2804	4822 124 11912	220µF	20%	6,3V
2805	2020 552 94427	100pF	5%	50V

2806	2238 916 11552	1,5nF	5%	25V
2807	2238 916 11552	1,5nF	5%	25V
2808	2020 552 94427	100pF	5%	50V
2809	4822 124 12052	220µF	20%	6,3V
2810	2238 586 59812	100nF	10%	50V

2813	2238 586 59812	100nF	10%	50V
2814	2238 916 15641	22nF	10%	25V
2815	5322 126 11578	1nF	10%	63V
2817	2238 586 59812	100nF	10%	50V
2818	2238 586 59812	100nF	10%	50V

2820	2238 586 59812	100nF	10%	50V
2821	3198 024 44730	47nF	5%	50V
2823	2238 586 59812	100nF	10%	50V
2825	5322 126 11583	10nF	10%	63V
2828	4822 124 40248	10µF	20%	63V

2829	3198 017 41050	1µF	20%	10V
2830	4822 126 13883	220pF	5%	50V
2831	4822 124 40248	10µF	20%	63V
2833	5322 126 11582	6,8nF	10%	63V
2834	3198 017 44740	470nF	20%	10V

2835	4822 126 13482	470nF	20%	16V
2836	3198 017 44740	470nF	20%	10V
2837	4822 126 13879	220nF	20%	16V
2838	2238 586 59812	100nF	10%	50V
2839	2238 586 59812	100nF	10%	50V

2840	2238 586 59812	100nF	10%	50V
2841	4822 126 13883	220pF	5%	50V
2842	4822 126 13883	220pF	5%	50V
2843	4822 126 13883	220pF	5%	50V
2844	5322 126 11583	10nF	10%	63V

2845	2238 586 59812	100nF	10%	50V
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RESISTORS

3803	4822 051 30109	10Ω	5%	0,06W
3804	4822 051 30109	10Ω	5%	0,06W
3805	4822 051 30471	470Ω	5%	0,06W
3806	4822 051 30471	470Ω	5%	0,06W
3807	4822 051 30471	470Ω	5%	0,06W

3808	4822 051 30471	470Ω	5%	0,06W
3809	4822 051 30102	1kΩ	5%	0,06W
3810	4822 051 30471	470Ω	5%	0,06W
3811	4822 051 30471	470Ω	5%	0,06W
3812	4822 051 30472	4,7kΩ	5%	0,06W

3813	4822 051 30339	33Ω	5%	0,06W
3814	4822 051 30471	470Ω	5%	0,06W
3815	4822 117 13608	4,7Ω	5%	0,06W
3816	4822 051 30471	470Ω	5%	0,06W
3817	4822 051 30471	470Ω	5%	0,06W

3818	4822 051 30223	22kΩ	5%	0,06W
3819	4822 051 30471	470Ω	5%	0,06W
3820	4822 051 30471	470Ω	5%	0,06W
3821	4822 117 13608	4,7Ω	5%	0,06W
3822	4822 117 12917	1Ω	5%	0,06W

ELECTRICAL PARTSLIST Universal Loader / ICD03 PhonIC MP3 Version**RESISTORS**

3823	4822 051 30102	1kΩ	5%	0,06W
3824	5322 117 13028	12kΩ	1%	0,06W
3825	5322 117 13033	15kΩ	1%	0,06W
3828	4822 051 30152	1,5kΩ	5%	0,06W
3831	4822 051 30103	10kΩ	5%	0,06W for DA12 drive only

3832	4822 117 12971	15Ω	5%	0,06W
3833	4822 051 30152	1,5kΩ	5%	0,06W
3834	4822 051 30101	100Ω	5%	0,06W
3835	4822 051 30103	10kΩ	5%	0,06W for MCD2 drive only
3836	4822 117 13608	4,7Ω	5%	0,06W

3837	4822 051 30152	1,5kΩ	5%	0,06W
3838	4822 051 30102	1kΩ	5%	0,06W
3839	4822 051 30221	220Ω	5%	0,06W
3840	4822 051 30223	22kΩ	5%	0,06W
3841	4822 051 30102	1kΩ	5%	0,06W

3843	4822 051 30222	2,2kΩ	5%	0,06W
3844	4822 051 30103	10kΩ	5%	0,06W
3845	4822 051 30471	470Ω	5%	0,06W
3846	4822 051 30479	47Ω	5%	0,06W
3847	4822 051 30223	22kΩ	5%	0,06W

3848	4822 117 13613	2,2Ω	5%	0,06W
3850	4822 051 30183	18kΩ	5%	0,06W
3852	4822 051 30472	4,7kΩ	5%	0,06W
3853	4822 051 30472	4,7kΩ	5%	0,06W for MCD2 drive only
3853	4822 051 30682	6,8kΩ	5%	0,06W for DA12 drive only

3858	4822 051 30152	1,5kΩ	5%	0,06W
3859	4822 051 30101	100Ω	5%	0,06W
3860	4822 051 30101	100Ω	5%	0,06W
3861	4822 051 30223	22kΩ	5%	0,06W
3862	4822 051 30223	22kΩ	5%	0,06W

3863	4822 051 30223	22kΩ	5%	0,06W
3864	4822 051 30223	22kΩ	5%	0,06W
3865	4822 051 30123	12kΩ	5%	0,06W
3866	4822 051 30123	12kΩ	5%	0,06W
3867	4822 051 30123	12kΩ	5%	0,06W

3868	4822 051 30123	12kΩ	5%	0,06W
3869	4822 051 30101	100Ω	5%	0,06W
3870	4822 117 12925	47kΩ	1%	0,06W
3871	4822 051 20008	CHIP JUMPER 0805		
4800	4822 051 30008	CHIP JUMPER 0603		for MCD2 drive only

4801	4822 051 30008	CHIP JUMPER 0603		for DA12 drive only
4802	4822 051 30008	CHIP JUMPER 0603		for DA12 drive only
4803	4822 051 30008	CHIP JUMPER 0603		for MCD2 drive only
4804	4822 051 30008	CHIP JUMPER 0603		
4805	4822 051 20008	CHIP JUMPER 0805		

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		

4815	4822 051 30008	CHIP JUMPER 0603		
4819	4822 051 20008	CHIP JUMPER 0805		
4822	4822 051 20008	CHIP JUMPER 0805		
4826	4822 051 30008	CHIP JUMPER 0603		
4827	4822 051 20008	CHIP JUMPER 0805		

4828	4822 051 20008	CHIP JUMPER 0805		
4831	4822 051 20008	CHIP JUMPER 0805		
4834	4822 051 30008	CHIP JUMPER 0603		
4836	4822 051 20008	CHIP JUMPER 0805		
4837	4822 051 20008	CHIP JUMPER 0805		

4838	4822 051 20008	CHIP JUMPER 0805		
4839	4822 051 30008	CHIP JUMPER 0603		
4840	4822 051 30008	CHIP JUMPER 0603		
4841	4822 051 20008	CHIP JUMPER 0805		

RESISTORS

4843	4822 051 20008	CHIP JUMPER 0805
4844	4822 051 20008	CHIP JUMPER 0805
4850	4822 051 30008	CHIP JUMPER 0603
4851	4822 051 30008	CHIP JUMPER 0603
4852	4822 051 20008	CHIP JUMPER 0805

4860	4822 051 30008	CHIP JUMPER 0603
4861	4822 051 30008	CHIP JUMPER 0603
4862	4822 051 20008	CHIP JUMPER 0805
4863	4822 051 20008	CHIP JUMPER 0805
4864	4822 051 20008	CHIP JUMPER 0805

4866	4822 051 30008	CHIP JUMPER 0603
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COILS

1810	2422 540 98519	RESONATOR 8,467MHz
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TRANSISTORS

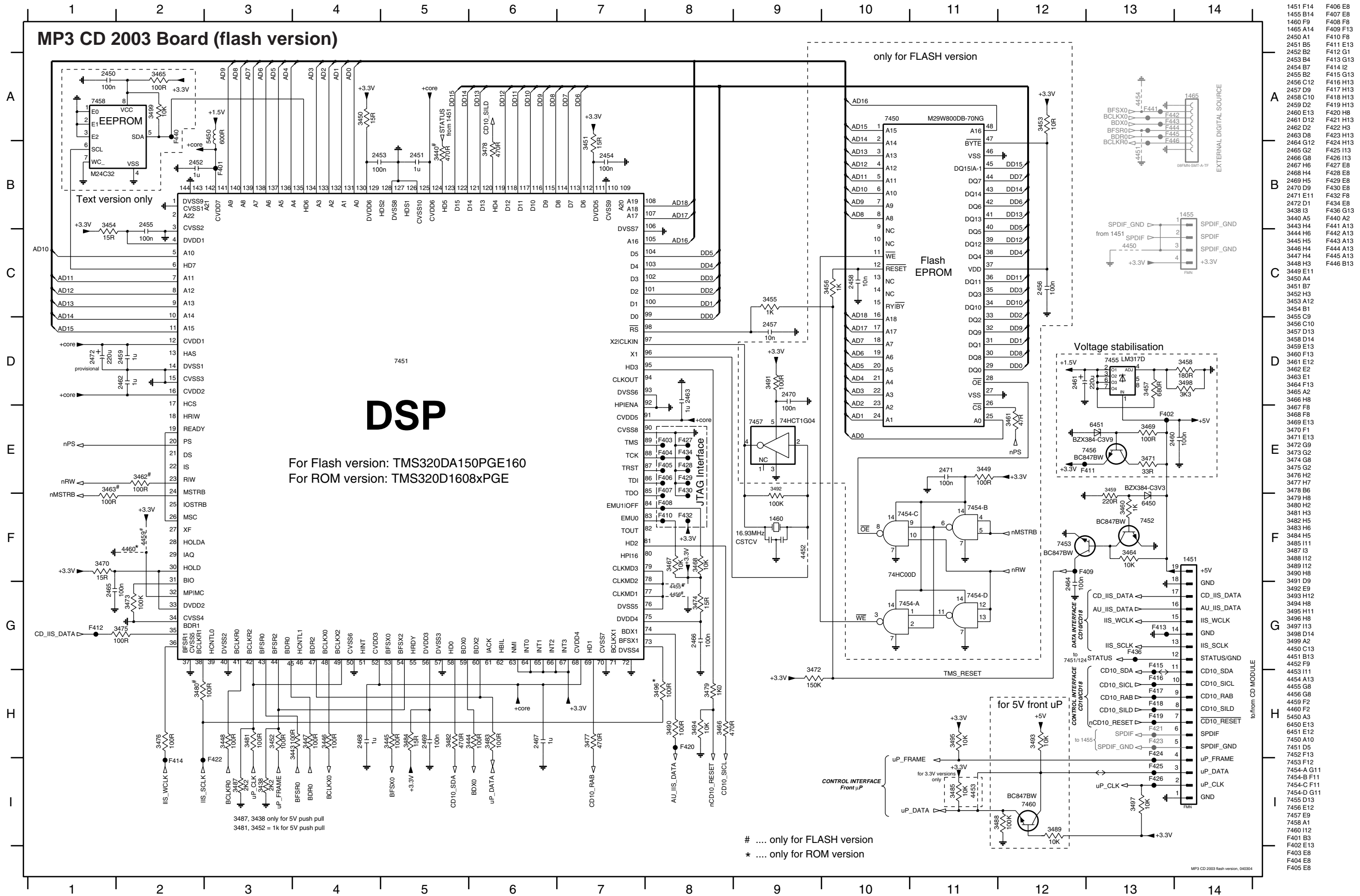
7806	5322 130 60159	BC846B
7807	4822 130 60373	BC856B
7808	4822 130 60373	BC856B

INTEGRATED CIRCUITS

7800	9352 731 95557	SAA7825H, SIGNAL PROC. PHONIC
7801	9322 181 79668	MM1469PH, MOTOR DRIVER
7802	4822 209 72554	MC7808CT, 8V Regulator
7804	5322 209 82941	LM358D, DUAL OP-AMP.

MP3 BOARD FOR ORIENTATION ONLY

MP3 CD 2003 Board (flash version)



- 1451 F14
- 1455 B14
- 1460 F9
- 1465 A14
- 2450 A1
- 2451 B5
- 2452 B2
- 2453 B4
- 2454 B7
- 2455 B2
- 2457 D9
- 2458 C10
- 2459 D2
- 2460 E13
- 2461 D12
- 2462 D2
- 2463 D8
- 2464 G12
- 2465 G2
- 2466 G8
- 2467 H6
- 2468 H4
- 2469 H5
- 2470 D9
- 2471 E11
- 2472 D1
- 3438 I3
- 3440 A5
- 3443 H4
- 3444 H6
- 3445 H5
- 3446 H4
- 3447 H4
- 3448 H3
- 3449 E11
- 3450 A4
- 3451 B7
- 3452 H3
- 3453 A12
- 3454 B1
- 3455 C9
- 3456 C10
- 3457 D13
- 3458 D14
- 3459 C13
- 3460 F13
- 3461 E12
- 3462 E2
- 3463 E1
- 3464 F13
- 3465 A2
- 3466 H8
- 3467 F8
- 3468 F8
- 3469 E13
- 3470 F1
- 3471 E13
- 3472 G2
- 3473 G2
- 3474 G8
- 3475 G2
- 3476 H2
- 3477 H7
- 3478 B6
- 3479 H8
- 3480 H2
- 3481 H3
- 3482 H5
- 3483 H6
- 3484 H5
- 3485 H1
- 3487 I3
- 3488 I12
- 3489 I12
- 3490 H8
- 3491 D9
- 3492 E9
- 3493 H12
- 3494 H8
- 3495 H11
- 3496 H8
- 3497 I13
- 3498 D14
- 3499 A2
- 4450 C13
- 4451 B13
- 4452 F9
- 4453 I11
- 4454 A13
- 4455 G8
- 4456 G8
- 4459 F2
- 4460 F2
- 4461 D14
- 4462 E13
- 4463 I10
- 4464 B3
- 4465 E13
- 4466 B13
- 4467 H8
- 4468 F8
- 4469 E13
- 4470 E13
- 4471 B3
- 4472 E13
- 4473 B3
- 4474 E13
- 4475 E13
- 4476 E13
- 4477 E13
- 4478 A1
- 4479 E13
- 4480 E13
- 4481 E13
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- 4512 G1
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- 4514 I2
- 4515 G13
- 4516 H13
- 4517 H13
- 4518 H13
- 4519 H13
- 4520 H8
- 4521 H13
- 4522 H3
- 4523 H13
- 4524 H13
- 4525 I13
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- 4531 F8
- 4532 F8
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- 4646 B13

PERSONAL NOTES:

COMBI & REGULATOR BOARDS

TABLE OF CONTENTS

Regulator Board

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Combi Board

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Brief introduction of the Regulator Board

The regulator board provides the following:

- a) 12V supply: +12V_A and +12V_M derived from the +A supply
- b) 5,6V and 5V supply: +5V6 and 5V_VCD derived from the +A/2 supply

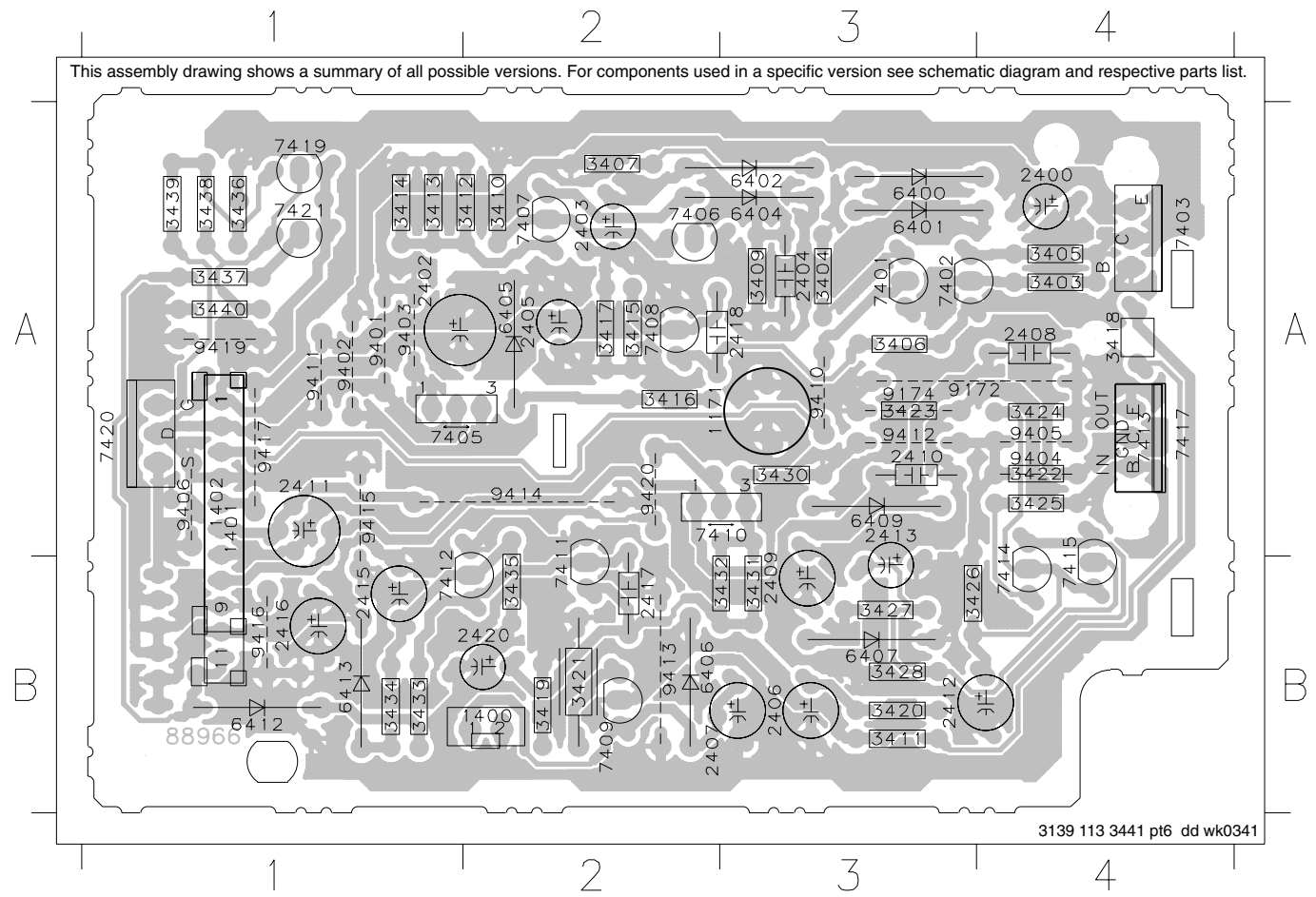
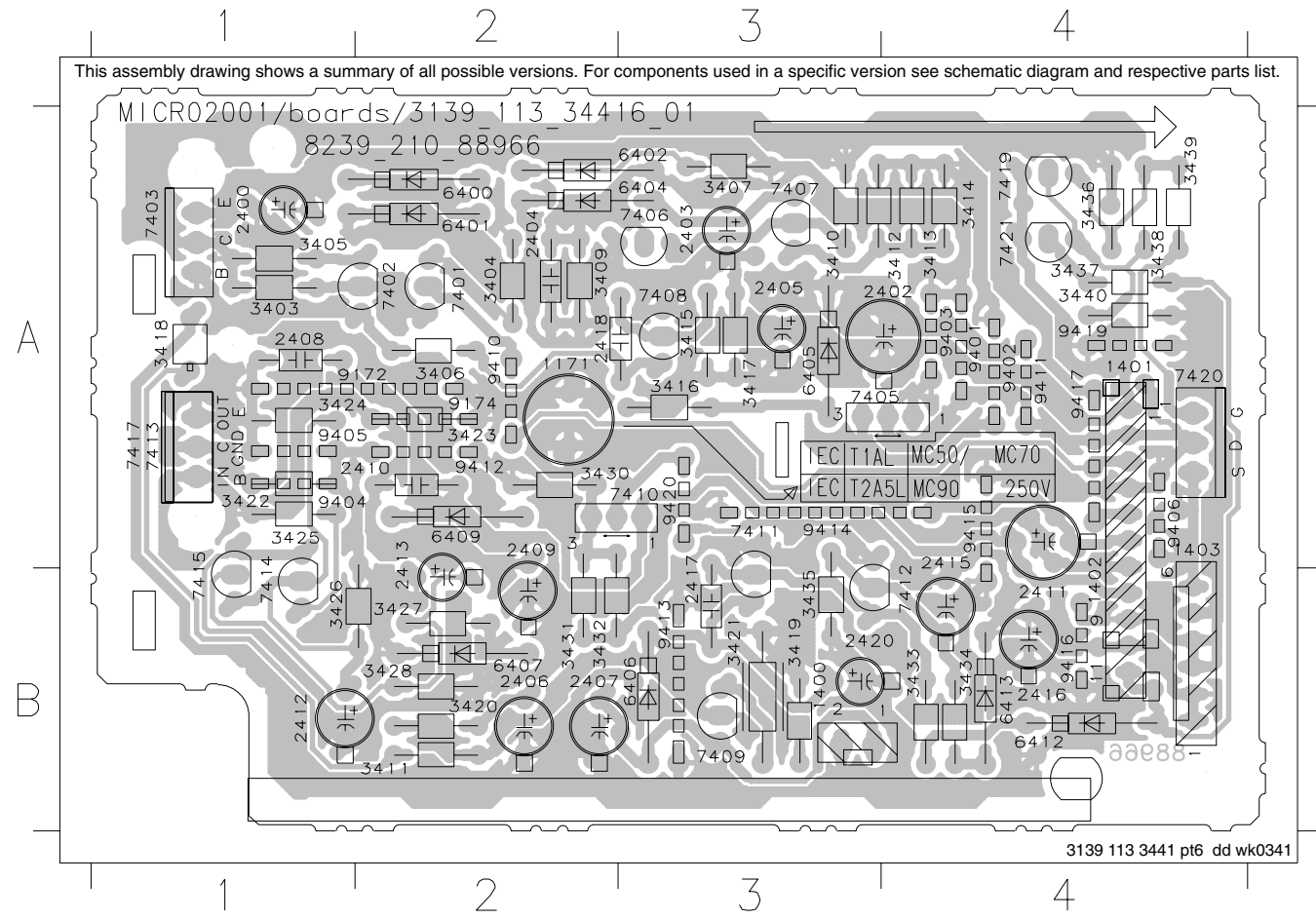
Technical Remarks

REGULATOR BOARD - COMPONENT SIDE VIEW

1171 A2	2408 A1	3404 A2	3417 A3	3430 A2	6401 A2	7405 A3	7419 A4	9411 A4
1400 B3	2409 A2	3405 A1	3418 A1	3431 B2	6402 A3	7406 A3	7420 A4	9412 A2
1401 A4	2410 A2	3406 A2	3419 B3	3432 B2	6404 A3	7407 A3	7421 A4	9413 B3
1402 B4	2411 B4	3407 A3	3420 B2	3433 B4	6405 A3	7408 A3	9172 A2	9414 A3
1403 A4	2412 B1	3409 A2	3421 B3	3434 B4	6406 B3	7409 B3	9174 A2	9415 A4
2400 A1	2413 A2	3410 A3	3422 A1	3435 B3	6407 B2	7410 A3	9401 A4	9416 B4
2402 A4	2415 A4	3411 B2	3423 A2	3436 A4	6409 A2	7411 A3	9402 A4	9417 A4
2403 A3	2416 B4	3412 A4	3424 A1	3437 A4	6412 B4	7412 B4	9403 A4	9419 A4
2404 A2	2417 B3	3413 A4	3425 A1	3438 A4	6413 B4	7413 A1	9404 A1	9420 A3
2405 A3	2418 A2	3414 A4	3426 B1	3439 A4	7401 A2	7414 B1	9405 A1	
2406 B2	2420 B3	3415 A3	3427 B2	3440 A4	7402 A2	7415 B1	9406 A4	
2407 B2	3403 A1	3416 A3	3428 B2	6400 A2	7403 A1	7417 A1	9410 A2	

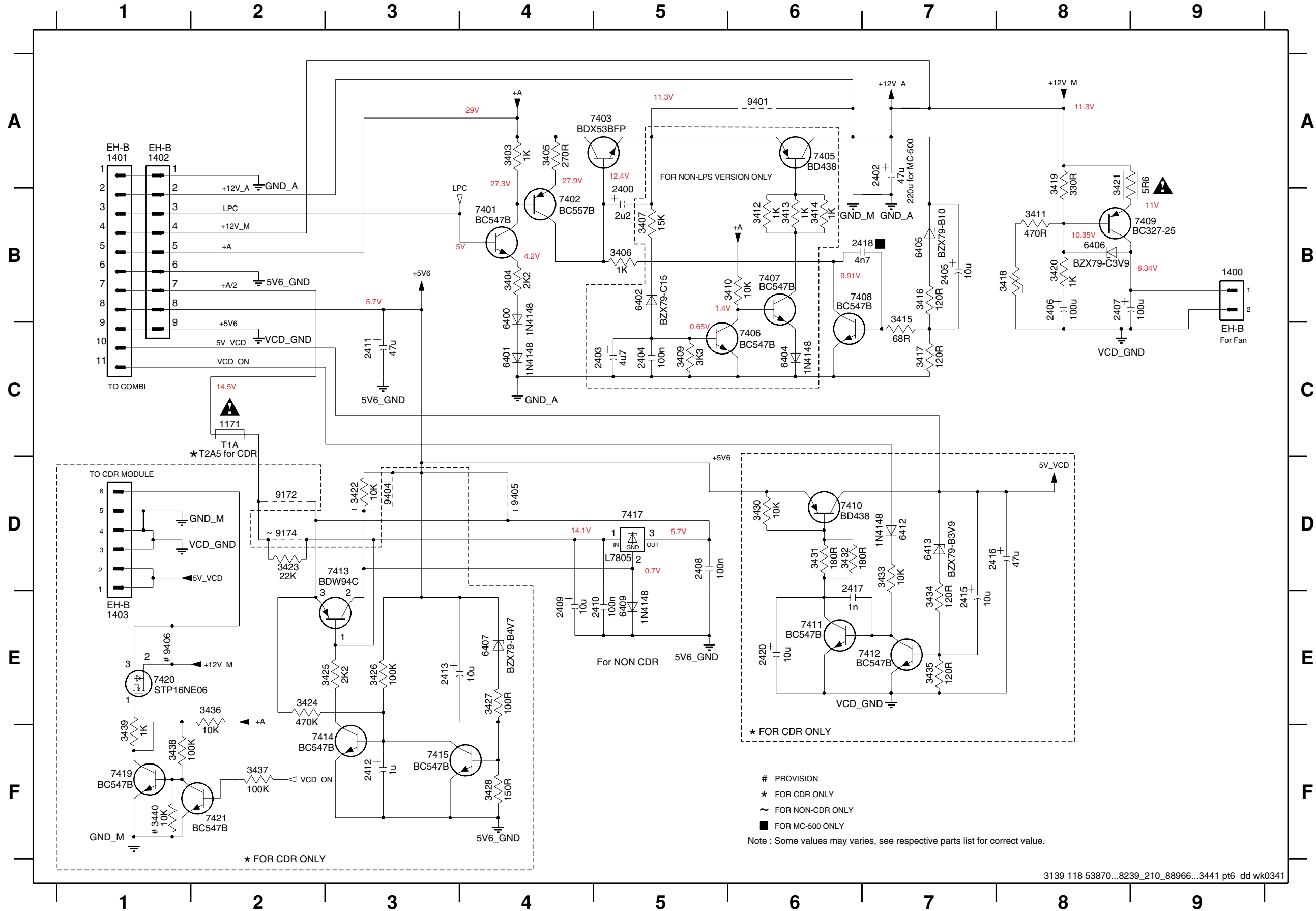
REGULATOR BOARD - COPPER SIDE VIEW

1171 A2	2409 B3	3405 A4	3418 A4	3431 B3	6402 A3	7406 A2	7420 A1	9412 A3
1400 B2	2410 A3	3406 A3	3419 B2	3432 B3	6404 A3	7407 A2	7421 A1	9413 B2
1401 A1	2411 A1	3407 A2	3420 B3	3433 B1	6405 A2	7408 A2	9172 A3	9414 A2
1402 A1	2412 B3	3409 A3	3421 B2	3434 B1	6406 B2	7409 B2	9174 A3	9415 A1
2400 A4	2413 A3	3410 A2	3422 A4	3435 B2	6407 B3	7410 A3	9401 A1	9416 B1
2402 A1	2415 B1	3411 B3	3423 A3	3436 A1	6409 A3	7411 B2	9402 A1	9417 A1
2403 A2	2416 B1	3412 A2	3424 A4	3437 A1	6412 B1	7412 B1	9403 A1	9419 A1
2404 A3	2417 B2	3413 A1	3425 A4	3438 A1	6413 B1	7413 A4	9404 A4	9420 A2
2405 A2	2418 A3	3414 A1	3426 B3	3439 A1	7401 A3	7414 B4	9405 A4	
2406 B3	2420 B2	3415 A2	3427 B3	3440 A1	7402 A3	7415 B4	9406 A1	
2407 B2	3403 A4	3416 A2	3428 B3	6400 A3	7403 A4	7417 A4	9410 A3	
2408 A4	3404 A3	3417 A2	3430 A3	6401 A3	7405 A1	7419 A1	9411 A1	



REGULATOR BOARD - CIRCUIT DIAGRAM

1171 C2	1403 E1	2404 C5	2408 D5	2412 F3	2417 D6	3404 B4	3409 C5	3413 B6	3417 C7	3421 A8	3425 E3	3430 D6	3434 E7	3438 F1	6401 C4	6406 B8	6413 D7	7405 A6	7409 B9	7413 D3	7419 F1	9174 D2	9406 E1
1400 B9	2400 B5	2405 B7	2409 E4	2413 E3	2418 B7	3405 A4	3410 B6	3414 B6	3418 B8	3422 D3	3426 E3	3431 D6	3435 E7	3439 F1	6402 B5	6407 E4	7401 B4	7406 C6	7410 D7	7414 F3	7420 E1	9401 A6	
1401 A1	2402 A7	2406 B8	2410 E5	2415 E7	2420 E6	3406 B5	3411 B8	3415 C7	3419 A8	3423 D2	3427 E4	3432 D6	3436 E2	3440 F1	6404 C6	6409 E5	7402 B4	7407 B6	7411 E6	7415 F3	7421 F2	9404 D3	
1402 A1	2403 C5	2407 B8	2411 C3	2416 D7	3403 A4	3407 B5	3412 B6	3416 B7	3420 B8	3424 E2	3428 F4	3433 D7	3437 F2	6400 B4	6405 B7	6412 D7	7403 A4	7408 B7	7412 E7	7417 D5	9172 D2	9405 D4	

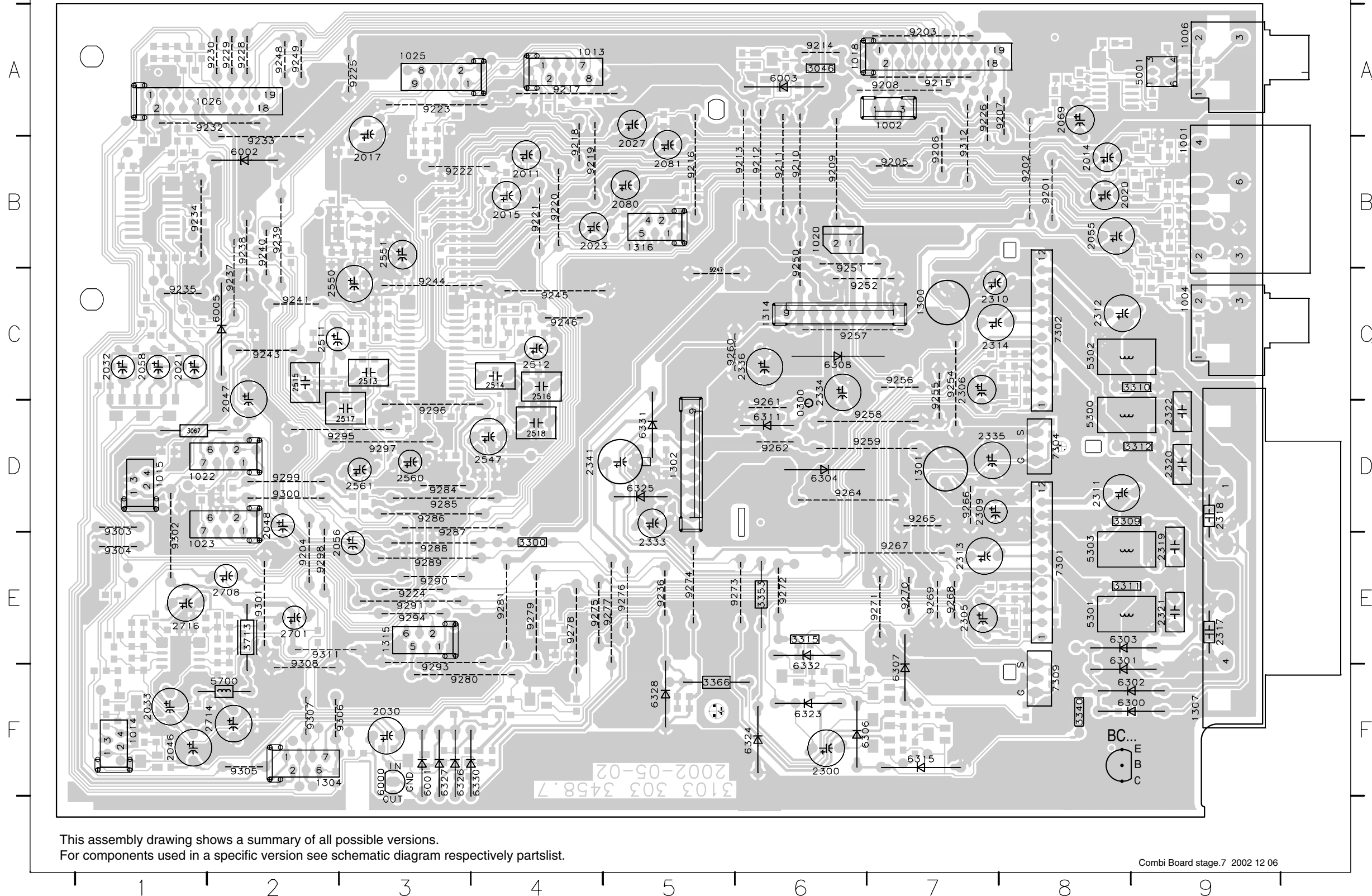


PROVISION
 * FOR CDR ONLY
 ~ FOR NON-CDR ONLY
 ■ FOR MC-500 ONLY
 Note : Some values may varies, see respective parts list for correct value.

COMBI BOARD

0300 D6	1022 D1	1315 E3	2030 F3	2080 B5	2314 C7	2336 C6	2547 D4	3067 D1	3713 E2	6003 A6	6311 D6	6332 F6	9206 B7	9216 B5	9226 A7	9238 B2	9249 A2	9260 C5	9271 E7	9281 E4	9294 E3	9304 E1
1001 B9	1023 E1	1316 B5	2032 C1	2081 B5	2317 E9	2341 D4	2550 C2	3300 E4	5001 A9	6005 C2	6315 F7	7301 E8	9207 A8	9217 A4	9228 A2	9239 B2	9250 B6	9261 D6	9272 E6	9284 D3	9295 D3	9305 F2
1002 A7	1025 A3	2011 B4	2033 F1	2300 F6	2318 D9	2511 C2	2551 B3	3309 D8	5300 D8	6300 F9	6323 F7	7302 C8	9208 A7	9218 B4	9229 A2	9240 B2	9251 C6	9262 D6	9273 E5	9285 D3	9296 D3	9306 F3
1004 C9	1026 A2	2014 B8	2046 F1	2305 E7	2319 E9	2512 C4	2560 D3	3310 C9	5301 E8	6301 E8	6324 F6	7304 D8	9209 B6	9219 B4	9230 A2	9241 C2	9252 C6	9264 D6	9274 E5	9286 D3	9297 D3	9307 F2
1006 A3	1300 C7	2015 B4	2047 C2	2306 C7	2320 D9	2513 C3	2561 D3	3311 E8	5302 C8	6302 F9	6325 D8	7308 F8	9210 B6	9220 B4	9232 A2	9243 C2	9254 C7	9265 D7	9275 E4	9287 E3	9298 E2	9308 E2
1013 A4	1301 D7	2017 B3	2048 D2	2309 D7	2321 E9	2514 C4	2701 E2	3312 D9	5303 E8	6303 E8	6326 F3	7301 B8	9211 B6	9221 B4	9233 B2	9244 C3	9255 C7	9266 D7	9276 E5	9288 E3	9299 D2	9311 E2
1014 F1	1302 D5	2020 B8	2055 B8	2310 C7	2322 D9	2515 C2	2708 E2	3315 E6	5700 F2	6304 D6	6327 F3	7302 B8	9212 B6	9222 B3	9234 B1	9245 C4	9256 C7	9267 E7	9277 E5	9289 E3	9300 D2	9312 B7
1015 D1	1304 F2	2021 C1	2056 E2	2311 D8	2323 E5	2516 C4	2714 F2	3340 F8	6000 F3	6306 F6	6328 F5	7303 A7	9213 B6	9223 A3	9235 C1	9246 C4	9257 C6	9268 E7	9278 E4	9290 E3	9301 E2	
1018 A6	1307 F9	2023 B4	2058 C1	2312 C8	2334 C6	2517 D3	2716 E1	3353 E6	6001 F3	6307 F7	6330 F4	7304 E2	9214 A6	9224 E3	9236 E5	9247 C5	9258 D7	9269 E7	9279 E4	9291 E3	9302 E1	
1020 B6	1314 C6	2027 B5	2069 A8	2313 E7	2335 D7	2518 D4	3046 A6	3366 F5	6002 B2	6308 C6	6331 D5	7305 B7	9215 A7	9225 A3	9237 C2	9248 A2	9259 D6	9270 E7	9280 F3	9293 F3	9303 D1	

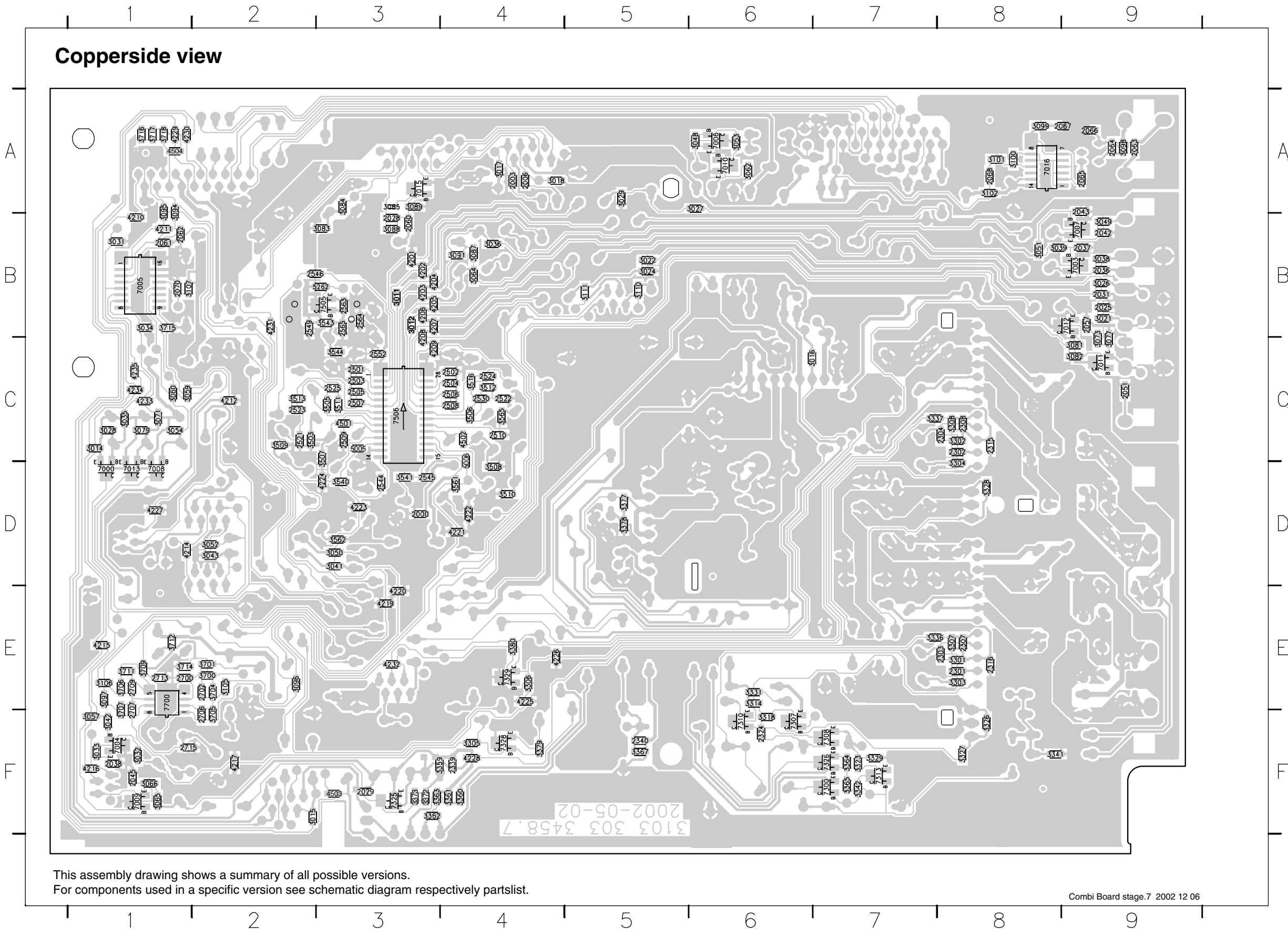
Hole mounted components seen from copperside



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

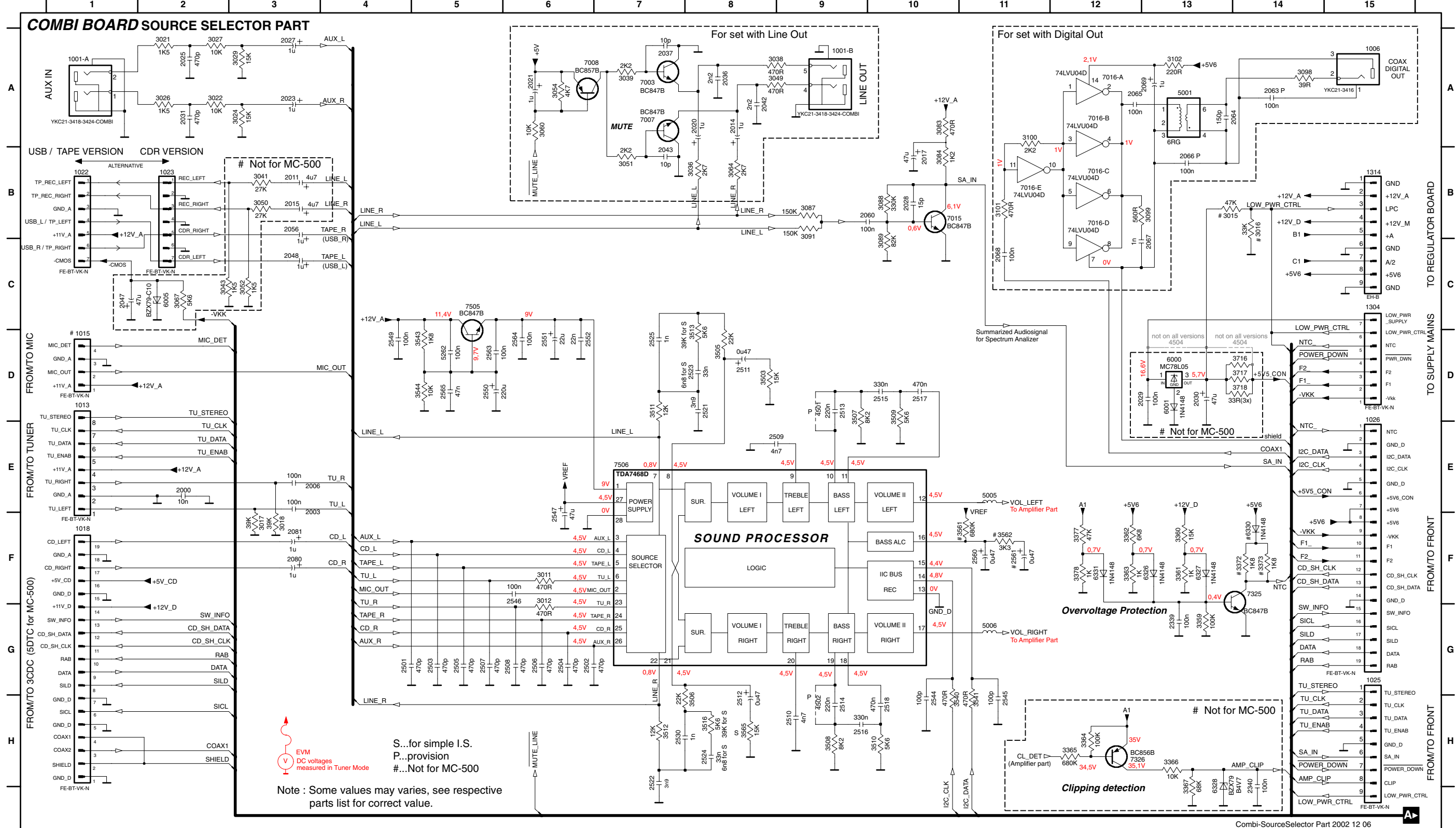
COMBI BOARD

2000 D3	2042 B9	2065 A9	2308 C8	2505 C3	2525 C3	2700 E1	3015 F2	3029 A5	3042 F1	3059 C1	3081 C9	3095 A1	3107 B1	3308 C8	3337 C7	3367 F5	3507 C3	3543 B3	3707 F1	4202 B3	4212 C2	4224 D3	4234 C1	7003 B9	7013 D1	7328 F4
2003 A4	2043 A9	2066 A9	2315 C8	2506 C4	2530 C4	2702 E2	3016 C6	3031 B1	3043 D2	3060 C1	3082 C9	3096 E2	3110 B5	3314 E6	3341 F8	3372 F3	3508 D4	3544 C3	3709 E1	4203 B3	4214 D1	4225 E4	4235 C1	7004 F1	7015 A3	7329 E4
2006 A4	2045 F1	2067 A9	2316 E8	2507 C3	2544 D3	2706 F2	3017 A4	3032 F1	3048 A6	3062 A6	3083 B3	3097 E1	3111 B5	3318 F6	3342 F7	3373 F3	3509 C2	3561 D4	3711 E1	4204 B3	4215 E1	4226 E4	4236 C3	7005 B1	7016 A8	7505 B3
2025 B9	2051 C9	2068 A8	2324 F6	2508 C4	2545 D3	2707 F1	3018 A4	3033 F1	3049 B9	3064 B4	3084 A3	3098 A9	3301 E8	3323 F7	3359 F3	3377 D5	3510 D4	3562 D3	3712 E1	4205 B3	4216 F1	4227 D1	4502 C4	7006 A6	7300 F7	7506 C3
2028 B3	2057 B9	2070 B1	2339 F4	2509 C3	2546 B2	2709 E1	3021 B9	3034 B1	3050 D3	3065 F1	3085 A3	3099 A8	3302 C8	3326 F8	3360 F4	3378 D5	3511 C3	3565 C4	3714 E1	4206 B3	4217 F2	4228 F4	4503 F3	7007 B9	7307 F6	7700 E1
2029 F3	2060 B3	2301 E8	2340 F5	2510 C4	2549 B2	2713 E1	3022 B5	3035 C1	3051 B8	3066 F1	3087 B4	3100 A8	3303 E8	3327 F8	3351 F3	3379 F4	3512 C4	3700 E2	3715 B1	4207 B3	4219 E3	4229 A1	4504 A1	7008 D1	7308 F7	
2031 B9	2061 B1	2302 C8	2501 C3	2521 C2	2552 C3	2715 F1	3024 B6	3036 B4	3052 D2	3071 C1	3088 B3	3101 A8	3304 D8	3328 F8	3362 F3	3380 E4	3513 C2	3701 E2	3716 A1	4208 C3	4220 E3	4230 A1	5005 C3	7009 F1	7310 F6	
2036 B9	2062 B1	2303 E8	2502 C4	2522 C4	2563 B3	3011 B3	3026 B9	3038 B9	3053 A6	3073 C9	3089 A3	3102 A8	3305 F4	3329 F7	3363 F3	3503 C2	3516 C4	3704 E2	3717 A1	4209 C3	4221 D4	4231 B2	5006 D4	7010 A6	7313 F7	
2037 B9	2063 A9	2304 C8	2503 C3	2523 C2	2564 B3	3012 B3	3027 A6	3039 B8	3054 C1	3077 C9	3091 B4	3105 E2	3306 E4	3331 E6	3364 F7	3505 C3	3540 D3	3705 F2	3718 A1	4210 B1	4222 D4	4232 E3	5262 B3	7011 C9	7325 F3	
2038 F1	2064 A9	2307 E8	2504 C4	2524 C4	2565 B3	3014 C1	3028 C1	3041 D3	3057 F1	3079 C1	3094 A1	3106 E1	3307 E8	3336 E7	3365 F7	3506 C4	3541 D3	3706 E1	4201 B3	4211 B1	4223 D3	4233 C3	7000 D1	7012 B9	7326 F7	



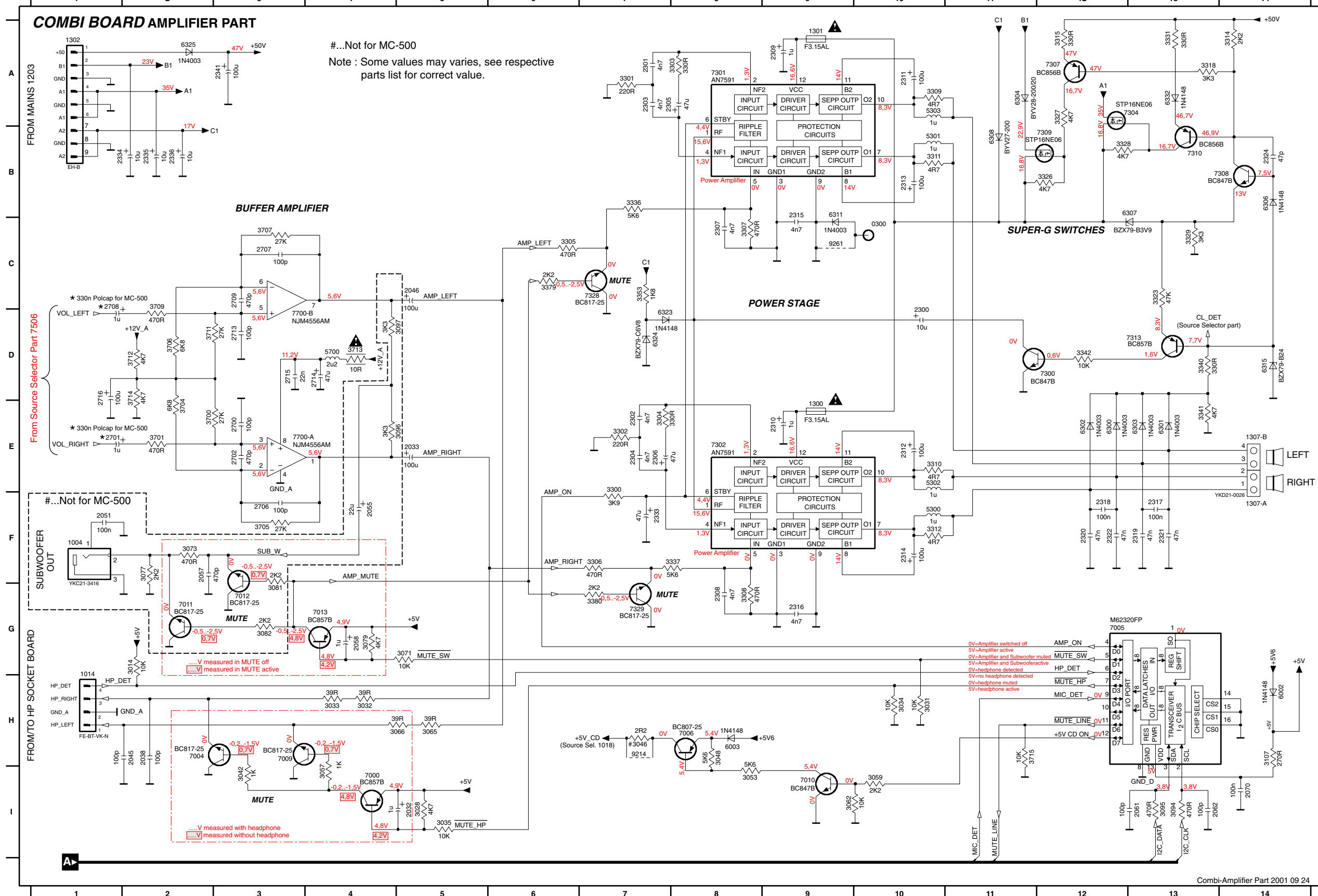
COMBI CIRCUIT - SOURCE SELECTOR PART

1001-A A1	1025 G15	2015 B3	2031 A2	2064 A13	2502 G6	2512 H8	2524 H8	2552 D6	3021 A2	3043 A2	3084 B9	3102 A13	3503 D8	3516 H8	3718 E14	6326 G13	7016-D B12
1001-B A9	1026 E15	2017 B9	2036 A8	2065 A12	2503 G5	2513 D9	2525 D7	2560 D11	3022 A3	3049 A8	3085 B10	3110 A3	3505 D8	3540 H10	4501 D9	6327 G13	7016-E B11
1002 A15	1304 C15	2020 A8	2037 A7	2066 B13	2504 G6	2514 H9	2530 H7	2561 D11	3024 A3	3050 B3	3087 B9	3111 A3	3506 H8	3541 H11	4502 H9	6331 G12	7016-F A11
1006 A15	1314 B15	2021 A6	2042 A8	2067 C13	2505 G5	2515 D10	2544 H10	2563 D5	3026 A2	3051 B7	3088 B10	3359 G13	3507 D9	3543 D5	4503 D13	7003 A7	7325 G14
1013 D1	1316 A4	2023 A3	2043 B7	2068 C11	2506 G6	2516 H9	2545 H11	2564 D6	3027 A3	3052 B3	3089 C10	3360 F13	3508 H9	3544 D5	4504 D14	7007 A7	7505 C5
1015 D1	2000 E2	2025 A2	2047 C1	2069 A13	2507 G5	2517 D10	2546 F6	2565 D5	3029 A3	3054 A6	3091 C9	3361 G13	3509 D10	3561 D10	5001 A13	7008 A6	7506 E7
1018 F1	2003 E3	2027 A3	2048 C3	2080 F3	2508 G6	2518 H10	2547 E6	2565 D5	3036 B8	3060 A6	3098 A14	3362 F13	3510 H10	3562 D11	5262 D5	7015 B10	
1020 H13	2006 E3	2028 B10	2056 B3	2081 F3	2509 E8	2521 D8	2549 D4	2564 D6	3038 A8	3064 B8	3099 B13	3363 G12	3511 D7	3565 H8	6000 D13	7016-A A12	
1022 B1	2011 B3	2029 D13	2060 B9	2339 G13	2510 H9	2522 H7	2550 D5	3017 E3	3039 A7	3067 C2	3100 A11	3377 G12	3512 H7	3716 D14	6001 D13	7016-B A12	
1023 B2	2014 A8	2030 D13	2063 A14	2501 G4	2511 D8	2523 D8	2551 D6	3018 E3	3041 B3	3083 B9	3101 B11	3378 G12	3513 D8	3717 E14	6005 C2	7016-C B12	



COMBI CIRCUIT - AMPLIFIER PART

0300 C10	1307-A F14	2045 H2	2061 I13	2303 A7	2309 A9	2315 B9	2321 F13	2336 B2	2706 F3	2715 D4	3033 H4	3053 I8	3071 G4	3094 I13	3107 H14	3305 C6	3311 B10
1004 F1	1307-B E14	2046 C5	2062 I13	2304 E7	2310 E9	2316 G9	2322 F12	2340 C14	2707 C3	2716 D1	3034 H10	3057 H4	3073 F2	3095 I13	3300 F7	3306 F7	3312 F10
1014 G1	1315 B1	2051 F1	2070 I14	2305 A7	2311 A10	2317 F13	2324 B14	2341 A3	2708 D1	3014 G2	3035 I5	3059 I10	3077 F2	3096 E4	3301 A7	3307 C8	3314 A14
1300 E9	2032 I5	2055 F4	2300 D9	2306 E7	2312 E10	2318 F12	2333 F7	2700 E3	2709 C3	3028 I5	3042 H3	3062 I9	3079 G4	3097 D4	3302 E7	3308 G8	3315 A12
1301 A9	2033 E5	2057 F2	2301 A7	2307 C8	2313 B10	2319 F13	2334 B1	2701 E1	2713 D3	3031 H10	3046 I7	3065 H5	3081 G3	3105 C2	3303 A8	3309 A10	3318 A13
1302 A1	2038 H2	2058 G4	2302 E7	2308 G8	2314 F10	2320 F12	2335 B2	2702 E3	2714 E3	3032 H4	3048 I8	3066 H5	3082 G3	3106 C2	3304 E7	3310 E10	3323 C13



3326 B12	3327 A12	3328 B12	3329 C13	3331 A13	3336 B7	3337 F8	3340 D13	3341 E13	3342 D11	3353 C7	3364 C12	3365 D12	3366 C13	3367 C14	3379 C6	3380 G7	3700 E2	3701 E2	3704 E2	3705 F3	3706 D2	3707 C3	3709 D2	3711 D2	3712 D2	3713 D4	3714 D2	3715 H11	5300 F10	5301 B10	5302 E10	5303 A10	5700 D3	6002 H14	6003 I8	6300 E12	6301 E13	6302 E12	6303 E13	6304 A11	6306 B14	6307 B13	6308 B11	6311 B9	6315 D14	6323 D7	6324 D7	6325 A2	6328 C13	6332 A13	7000 H4	7004 H2	7005 G12	7006 I8	7009 H3	7010 I9	7011 G2	7012 G3	7013 G4	7300 D9	7301 A8	7302 E8	7304 A13	7308 B14	7309 B12	7310 B13	7313 D12	7326 C12	7328 C6	7329 G7	7700-A E3	7700-B D3	9214 I7	9261 C9
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MECHANICAL PARTS LIST

0202 4822 492 11735 SPRING TRANS

ELECTRICAL PARTS LIST - REGULATOR BOARD**MISCELLANEOUS**1171 4822 071 51002 Δ Fuse RAD LT 1A 250V**CAPACITORS**

2402 2022 020 00625 220uF 20% 16V
 2405 4822 124 11947 10uF 20% 16V
 2406 4822 124 41643 100uF 20% 16V
 2407 4822 124 41643 100uF 20% 16V
 2408 2020 561 90365 100nF +80/-20% 50V
 2409 4822 124 40248 10uF 20% 63V
 2410 2020 561 90365 100nF +80/-20% 50V
 2411 4822 124 12233 47uF 20% 25V
 2418 4822 126 11714 4,7nF 20%

RESISTORS

3403 4822 050 11002 1k 1% 0,4W
 3404 4822 116 52256 2k2 5% 0,5W
 3405 4822 116 83876 270R 5% 0,5W
 3406 4822 050 11002 1k 1% 0,4W
 3411 4822 116 83883 470R 5% 0,5W
 3415 4822 116 52199 68R 5% 0,5W
 3416 4822 116 52206 120R 5% 0,5W
 3417 4822 116 52206 120R 5% 0,5W
 3418 4822 117 12063 NTC DC 5W 10k 5%
 3419 4822 116 52219 330R 5% 0,5W
 3420 4822 050 11002 1k 1% 0,4W
 3421 4822 052 10568 Δ 5R6 5% 0,33W
 3422 4822 050 21003 10k 1% 0,6W

DIODES

6400 4822 130 30621 1N4148
 6401 4822 130 30621 1N4148
 6405 4822 130 61219 BZX79-B10
 6406 4822 130 34174 BZX79-C4V7
 6409 4822 130 30621 1N4148

TRANSISTORS & INTEGRATED CIRCUITS

7401 4822 130 40959 BC547B
 7402 4822 130 44568 BC557B
 7403 9322 139 23687 TRA POW BDX53BFP
 7408 4822 130 40959 BC547B
 7409 4822 130 41246 BC327-25
 7417 4822 209 31841 IC L7805CP

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

ELECTRICAL PARTS LIST - COMBI BOARD**MISCELLANEOUS**

1001 4822 265 20553 Socket Cinch 2P - Aux in 2316 4822 126 13193 4,7nF 10% 63V
 1013 4822 265 11515 Flex Connector 8P 2317 2020 561 90365 100nF +80/-20% 50V
 1014 4822 267 10733 Flex Connector 4P 2318 2020 561 90365 100nF +80/-20% 50V
 1018 4822 265 10981 Flex Connector 15P 2319 4822 121 43526 47nF 5% 250V
 1022 4822 267 10953 Flex Connector 7P 2320 4822 121 43526 47nF 5% 250V
 1025 2422 025 14518 Flex Connector 9P 2321 4822 121 43526 47nF 5% 250V
 1026 4822 265 11553 Flex Connector 19P 2322 4822 121 43526 47nF 5% 250V
 1300 4822 252 11225 Δ Fuse RAD LF 3,15A 250V 2324 4822 126 11785 47pF 5% 50V
 1301 4822 252 11225 Δ Fuse RAD LF 3,15A 250V 2333 4822 124 40433 47uF 20% 25V
 1304 4822 267 10953 Flex Connector 7P 2334 4822 124 12255 10uF 20% 50V
 1307 4822 267 31176 Speaker Terminal 4P 2335 4822 124 12255 10uF 20% 50V
 2336 4822 124 12255 10uF 20% 50V

CAPACITORS

2000 5322 126 11583 10nF 10% 50V 2339 2238 586 59812 100nF +80/-20% 50V
 2003 2238 586 59812 100nF +80/-20% 50V 2341 4822 124 40255 100uF 20% 63V
 2006 2238 586 59812 100nF +80/-20% 50V 2341 2020 012 93664 100uF 20% 50V
 2011 2022 020 00734 1uF 20% 50V 2501 4822 126 13881 470pF 5% 50V
 2015 2022 020 00734 1uF 20% 50V 2502 4822 126 13881 470pF 5% 50V
 2023 2022 020 00734 1uF 20% 50V 2503 4822 126 13881 470pF 5% 50V
 2025 4822 126 13881 470pF 5% 50V 2504 4822 126 13881 470pF 5% 50V
 2027 2022 020 00734 1uF 20% 50V 2505 4822 126 13881 470pF 5% 50V
 2031 4822 126 13881 470pF 5% 50V 2506 4822 126 13881 470pF 5% 50V
 2032 4822 124 22651 1uF 20% 50V 2507 4822 126 13881 470pF 5% 50V
 2033 4822 124 23052 100uF 20% 16V 2508 4822 126 13881 470pF 5% 50V
 2038 2020 552 94427 100pF 5% 50V 2509 4822 126 13193 4,7nF 10% 63V
 2045 2020 552 94427 100pF 5% 50V 2510 4822 126 13193 4,7nF 10% 63V
 2046 4822 124 23052 100uF 20% 16V 2511 5322 124 41948 470nF 20% 50V
 2047 4822 124 81286 47uF 20% 16V 2512 5322 124 41948 470nF 20% 50V
 2048 2022 020 00734 1uF 20% 50V 2513 4822 121 42408 220nF 5% 63V
 2056 2022 020 00734 1uF 20% 50V 2514 4822 121 42408 220nF 5% 63V
 2058 4822 124 22651 1uF 20% 50V 2515 4822 121 51252 470nF 5% 63V
 2061 2020 552 94427 100pF 5% 50V 2516 4822 121 51252 470nF 5% 63V
 2062 2020 552 94427 100pF 5% 50V 2517 4822 121 51252 470nF 5% 63V
 2070 2238 586 59812 100nF +80/-20% 50V 2518 4822 121 51252 470nF 5% 63V
 2080 2022 020 00734 1uF 20% 50V 2521 5322 126 11579 3,3nF 10% 63V
 2081 2022 020 00734 1uF 20% 50V 2522 5322 126 11579 3,3nF 10% 63V
 2300 4822 124 12255 10uF 20% 50V 2523 4822 126 14549 33nF 16V
 2301 4822 126 13193 4,7nF 10% 63V 2524 4822 126 14549 33nF 16V
 2302 4822 126 13193 4,7nF 10% 63V 2525 3198 016 31020 1nF 25V
 2303 4822 126 13193 4,7nF 10% 63V 2530 3198 016 31020 1nF 25V
 2304 4822 126 13193 4,7nF 10% 63V 2544 2020 552 94427 100pF 5% 50V
 2305 3198 028 44790 47uF 20% 35V 2545 2020 552 94427 100pF 5% 50V
 2306 3198 028 44790 47uF 20% 35V 2546 4822 126 14585 100nF 10% 50V
 2307 4822 126 13193 4,7nF 10% 63V 2547 4822 124 81286 47uF 20% 16V
 2308 4822 126 13193 4,7nF 10% 63V 2549 2238 586 59812 100nF +80/-20% 50V
 2309 4822 124 22651 1uF 20% 50V 2550 4822 124 40433 47uF 20% 25V
 2310 4822 124 22651 1uF 20% 50V 2551 4822 124 81151 22uF 50V
 2311 4822 124 40207 100uF 20% 25V 2552 2238 916 15641 22nF 10% 25V
 2312 4822 124 40207 100uF 20% 25V 2560 5322 124 41948 470nF 20% 50V
 2313 4822 124 40207 100uF 20% 25V 2563 2238 586 59812 100nF +80/-20% 50V
 2314 4822 124 40207 100uF 20% 25V 2700 2020 552 94427 100pF 5% 50V
 2315 4822 126 13193 4,7nF 10% 63V 2701 5322 121 42661 330nF 5% 63V
 2702 4822 126 13881 470pF 5% 50V

ELECTRICAL PARTS LIST - COMBI BOARD**CAPACITORS**

2706	2020 552 94427	100pF 5% 50V
2707	2020 552 94427	100pF 5% 50V
2708	5322 121 42661	330nF 5% 63V
2709	4822 126 13881	470pF 5% 50V
2713	2020 552 94427	100pF 5% 50V
2714	4822 124 81286	47uF 20% 16V
2715	3198 017 42230	22nF 50V
2716	4822 124 23052	100uF 20% 16V

RESISTORS

3011	4822 051 20471	470R 5% 0,1W
3012	4822 051 20471	470R 5% 0,1W
3014	4822 051 30103	10k 5% 0,062W
3015	4822 117 12925	47k 1% 0,063W
3016	4822 051 30333	33k 5% 0,062W
3017	4822 051 30393	39k 5% 0,062W
3018	4822 051 30393	39k 5% 0,062W
3021	4822 051 30152	1k5 5% 0,062W
3022	4822 051 30103	10k 5% 0,062W
3024	4822 051 30153	15k 5% 0,062W
3026	4822 051 30152	1k5 5% 0,062W
3027	4822 051 30103	10k 5% 0,062W
3028	4822 051 30472	4k7 5% 0,062W
3029	4822 051 30153	15k 5% 0,062W
3031	4822 051 30103	10k 5% 0,062W
3032	2120 108 91909	RST SM 0603 ERJ3G 39R 5%
3033	2120 108 91909	RST SM 0603 ERJ3G 39R 5%
3034	4822 051 30103	10k 5% 0,062W
3035	4822 051 30103	10k 5% 0,062W
3041	4822 051 30273	27k 5% 0,062W
3042	4822 051 30102	1k 5% 0,062W
3043	4822 051 30152	1k5 5% 0,062W
3046	4822 116 80176	1R 5% 0,5W
3048	4822 051 30562	5k6 5% 0,063W
3050	4822 051 30273	27k 5% 0,062W
3052	4822 051 30152	1k5 5% 0,062W
3053	4822 051 30102	1k 5% 0,062W
3057	4822 051 30102	1k 5% 0,062W
3059	4822 051 30222	2k2 5% 0,062W
3062	4822 051 30103	10k 5% 0,062W
3065	2120 108 91909	RST SM 0603 ERJ3G 39R 5%
3066	2120 108 91909	RST SM 0603 ERJ3G 39R 5%
3067	4822 116 52289	5k6 5% 0,5W
3071	4822 051 30103	10k 5% 0,062W
3079	4822 051 30472	4k7 5% 0,062W
3094	4822 051 30471	470R 5% 0,062W
3095	4822 051 30471	470R 5% 0,062W
3107	4822 051 30271	270R 5% 0,062W
3300	4822 116 52276	3k9 5% 0,5W
3301	4822 051 30221	220R 5% 0,062W
3302	4822 051 30221	220R 5% 0,062W
3303	4822 051 30331	330R 5% 0,062W

3304	4822 051 30331	330R 5% 0,062W
3305	4822 051 30471	470R 5% 0,062W
3306	4822 051 30471	470R 5% 0,062W
3307	4822 051 30471	470R 5% 0,062W
3308	4822 051 30471	470R 5% 0,062W
3309	4822 050 24708	4R7 1% 0,6W
3310	4822 050 24708	4R7 1% 0,6W
3311	4822 050 24708	4R7 1% 0,6W
3312	4822 050 24708	4R7 1% 0,6W
3314	4822 051 30222	2k2 5% 0,062W
3315	4822 116 52219	330R 5% 0,5W
3318	4822 051 30332	3k3 5% 0,062W
3323	4822 117 12925	47k 1% 0,063W
3326	4822 051 30472	4k7 5% 0,062W
3327	4822 051 30472	4k7 5% 0,062W
3328	4822 051 30472	4k7 5% 0,062W
3329	4822 051 30332	3k3 5% 0,062W
3331	4822 051 30331	330R 5% 0,062W
3336	4822 051 30562	5k6 5% 0,063W
3337	4822 051 30562	5k6 5% 0,063W
3340	4822 116 52219	330R 5% 0,5W
3341	4822 051 30472	4k7 5% 0,062W
3342	4822 051 30103	10k 5% 0,062W
3353	4822 116 52249	1k8 5% 0,5W
3359	4822 117 13632	100k 1% 0,62W
3360	4822 051 30153	15k 5% 0,062W
3361	4822 051 30102	1k 5% 0,062W
3362	4822 051 30682	6k8 5% 0,062W
3363	4822 051 30102	1k 5% 0,062W
3372	4822 117 12903	1k8 1% 0,063W
3373	4822 117 12903	1k8 1% 0,063W
3377	4822 117 12925	47k 1% 0,063W
3378	4822 051 30102	1k 5% 0,062W
3379	4822 051 30222	2k2 5% 0,062W
3380	4822 051 30222	2k2 5% 0,062W
3503	4822 051 30153	15k 5% 0,062W
3505	4822 051 30102	1k 5% 0,062W
3506	4822 051 30102	1k 5% 0,062W
3507	5322 117 13056	8k2 1% 0,063W
3508	5322 117 13056	8k2 1% 0,063W
3509	4822 051 30562	5k6 5% 0,063W
3510	4822 051 30562	5k6 5% 0,063W
3511	4822 051 30123	12k 5% 0,062W
3512	4822 051 30123	12k 5% 0,062W
3513	4822 051 30562	5k6 5% 0,063W
3516	4822 051 30562	5k6 5% 0,063W
3540	4822 051 30471	470R 5% 0,062W
3541	4822 051 30471	470R 5% 0,062W
3543	4822 117 12903	1k8 1% 0,063W
3544	4822 051 30103	10k 5% 0,062W
3565	4822 051 30153	15k 5% 0,062W
3700	4822 051 30273	27k 5% 0,062W

ELECTRICAL PARTS LIST - COMBI BOARD

3701	4822 051 30471	470R 5% 0,062W
3704	4822 051 30682	6k8 5% 0,062W
3705	4822 051 30273	27k 5% 0,062W
3706	4822 051 30682	6k8 5% 0,062W
3707	4822 051 30273	27k 5% 0,062W
3709	4822 051 30471	470R 5% 0,062W
3711	4822 051 30273	27k 5% 0,062W
3712	4822 051 30472	4k7 5% 0,062W
3713	4822 052 10109	△ 10R 5% 0,33W
3714	4822 051 30472	4k7 5% 0,062W
3715	4822 051 30103	10k 5% 0,062W
4201	4822 051 30008	0R Jumper 0603
4202	4822 051 30008	0R Jumper 0603
4203	4822 051 30008	0R Jumper 0603
4204	4822 051 30008	0R Jumper 0603
4205	4822 051 30008	0R Jumper 0603
4206	4822 051 30008	0R Jumper 0603
4207	4822 051 30008	0R Jumper 0603
4208	4822 051 30008	0R Jumper 0603
4209	4822 051 30008	0R Jumper 0603
4210	4822 051 30008	0R Jumper 0603
4211	4822 051 30008	0R Jumper 0603
4212	4822 051 30008	0R Jumper 0603
4214	4822 051 30008	0R Jumper 0603
4215	4822 051 30008	0R Jumper 0603
4216	4822 051 30008	0R Jumper 0603
4217	4822 051 30008	0R Jumper 0603
4219	4822 051 30008	0R Jumper 0603
4220	4822 051 30008	0R Jumper 0603
4221	4822 051 30008	0R Jumper 0603
4222	4822 051 30008	0R Jumper 0603
4223	4822 051 30008	0R Jumper 0603
4224	4822 051 30008	0R Jumper 0603
4225	4822 051 30008	0R Jumper 0603
4226	4822 051 30008	0R Jumper 0603
4227	4822 051 30008	0R Jumper 0603
4228	4822 051 30008	0R Jumper 0603
4229	4822 051 30008	0R Jumper 0603
4230	4822 051 30008	0R Jumper 0603
4231	4822 051 30008	0R Jumper 0603
4232	4822 051 30008	0R Jumper 0603
4233	4822 051 30008	0R Jumper 0603
4234	4822 051 30008	0R Jumper 0603
4235	4822 051 30008	0R Jumper 0603
4503	4822 051 30008	0R Jumper 0603
4504	4822 051 30008	0R Jumper 0603

COILS & FILTERS

5005	2422 549 44608	INDFXD 0603 EMI 100MHz 1k
5006	2422 549 44608	INDFXD 0603 EMI 100MHz 1k
5262	2238 586 59812	100nF +80/-20% 50V
5300	2422 536 00614	Coil 18,5T 0.5-2UEW 5,6D B

5301	2422 536 00614	Coil 18,5T 0.5-2UEW 5,6D B
5302	2422 536 00614	Coil 18,5T 0.5-2UEW 5,6D B
5303	2422 536 00614	Coil 18,5T 0.5-2UEW 5,6D B
5700	4822 157 62552	Coil 2,2uH 5%

DIODES

6002	4822 130 30621	1N4148
6005	4822 130 61219	BZX79-C10
6301	4822 130 31878	1N4003G
6302	4822 130 31878	1N4003G
6303	4822 130 31878	1N4003G
6304	9322 163 82682	DIO REC BYV98-200
6306	4822 130 30621	1N4148
6307	3198 010 53980	DIO REG BZX79-B3V9
6308	5322 130 31938	BYV27-200
6315	4822 130 34398	BZX79-B24
6323	4822 130 30621	1N4148
6324	4822 130 34278	BZX79-C6V8
6325	4822 130 31878	1N4003G
6326	4822 130 30621	1N4148
6327	4822 130 30621	1N4148
6330	4822 130 30621	1N4148
6331	4822 130 30621	1N4148
6332	4822 130 30621	1N4148

TRANSISTORS & INTEGRATED CIRCUITS

7000	4822 130 60373	BC857B
7004	4822 130 42804	BC817-25
7005	4822 209 17345	IC SM M62320FP
7006	5322 130 60845	BC807-25
7009	4822 130 42804	BC817-25
7010	5322 130 60159	BC847B
7013	4822 130 60373	BC857B
7300	5322 130 60159	BC847B
7301	9322 153 02682	IC AN7591
7302	9322 153 02682	IC AN7591
7304	4822 130 11578	FET POW STP16NE06
7307	4822 130 60373	BC857B
7308	5322 130 60159	BC847B
7309	4822 130 11336	FET POW STP16NE06FP
7310	4822 130 60373	BC856B
7313	4822 130 60373	BC857B
7325	5322 130 60159	BC847B
7328	4822 130 42804	BC817-25
7329	4822 130 42804	BC817-25
7505	5322 130 60159	BC847B
7506	9322 150 74668	IC SM TDA7468D
7700	4822 209 31378	IC SM NJM4556AM

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

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

0101	3139 254 00181	Cabinet Front	/22/25	0192	3139 114 71010	Stopper Heatsink	251	D2 x 8	
0101	3139 254 00351	Cabinet Front V2	/37	0230	3139 254 00211	Panel Rear	252	D2 x 8	
0110	3139 254 00441	Cover CD Technical UL Loader		0230	3139 254 00201	Panel Rear V2	253	D2 x 8	
0111	3139 254 00141	Cover CD		0240	3139 254 00581	Cover Top	254	D2 x 8	
0121	3139 254 00171	Window Display	/22/25	0240	3139 254 00321	Cover Top V2	255	D3 x 20	
0121	3139 254 00681	Window Display	/37	0325	3139 119 02401	L/R Loudspeaker Box	256	D3 x 8	
0125	3139 254 00131	Panel Control		0331	2422 076 00546	Cable FM Aerial	259	M3 x 12	
0127	3139 254 00091	Button Set Power Chrome		0331	4822 320 11094	FM Antenna Wire	260	D3 x 10	
0128	3139 114 79981	Lightguide Power Standby		0332	2422 549 45067	Antenna AM Loop	263	D3 x 12	
0129	3139 254 00081	Button Set RDS/News		0333	3139 238 06511	Remote Control	264	D3 x 12	
0132	3139 114 79921	Bracket Button RDS		0336	2422 070 98151	△ Mains Cord	265	M3 x 12	
0133	3139 254 00071	Button Set Source		0336	9965 000 07586	△ Mains Cord	266	M3 x 12	
0134	3139 114 79911	Cap Source Chrome		0336	2422 070 98246	△ Mains Cord	270	D3 x 35	
0135	3139 114 79971	Lightguide Source		1104	2822 031 01494	Fan 12VDC 0.8W 3100RPM	271	M3 x 6	
0136	3139 254 00101	Button Set Function		1106	3103 308 67611	PBAS 8 MP3CD03 TXT 5V	272	M3 x 10	
0140	3139 254 00051	Knob Bass/Treble Chrome		5001	3103 308 30780	△ Mains Transformer	273	M3 x 6	
0141	3139 254 00061	Knob Volume Chrome		5001	3103 308 30770	△ Mains Transformer	274	M3 x 10	
0142	3139 254 00001	Lightguide Volume		8001	3139 110 35900	FFC Foil 07P/220/07P AD	275	D3 x 10	
0143	3139 114 79991	Lightguide IR		8003	3139 111 03871	FFC Foil 15P/280/15P BD Fold	276	D3 x 10	
0144	4822 492 51374	Ring		8004	3103 308 93622	CWAS FFC 98 19P BD	277	D3 x 10	
0148	3139 254 00041	Frame Right		8005	3139 110 35240	FFC Foil 08P/280/08PAD Fold	278	D3 x 10	
0149	3139 254 00031	Frame Left		8006	3139 110 35080	FFC Foil 09P/180/09P AD	279	M3 x 10	
0150	3139 254 00121	Cover Cassette		8007	3139 111 03881	FFC Foil 19P/180/19PAD Fold	280	M3 x 10	
0151	3139 254 00111	Panel Cassette		8009	3139 110 34840	FFC Foil 08P/100/08P AD	281	D3 x 16	
0152	4822 459 10887	Badge Philips Assy		8010	3140 110 20881	FFC Foil 15P/120/15P AD	282	D3 x 12	
0155	3139 114 79941	Bracket Combi		8011	3139 110 35090	FFC Foil 04P/340/04P BD	283	D3 x 10	
0156	3139 114 79901	Bracket Module Mounting		8012	3139 110 34480	FFC Foil 07P/140/07P AD	287	M3 x 10	
0165	3139 113 27140	Foot Rubber 4mm		8013	4822 320 12752	FFC Foil 07P/180/07P AD	289	D3 x 10	
0166	3139 113 27140	Foot Rubber 4mm					293	D2 x 8	
0170	3139 114 73930	Door Cassette ETF SD Left							
<u>Left/Right Loudspeaker Box Breakdown</u>									
0171	4822 529 10322	Damper Assembly							
0172	3139 114 68640	Push Catch Left		9965 000 23631	Cloth Grille Assembly				
0173	4822 492 11344	Spring Compression		9965 000 23632	Badge Philips				
0174	4822 402 11245	Bracket Left		9965 000 23633	Grommet (Grey)				
0175	3139 111 01390	Spring Torsion Left							
0176	4822 492 42787	Spring Cassette							
0180	3139 114 76040	Panel Left	/22/25						
0180	3139 114 75880	Panel Left V2	/37						
0181	3139 114 76050	Panel Right	/22/25						
0181	3139 114 75890	Panel Right V2	/37						

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

REVISION LIST

Version 1.0 (3139 785 30610)

- * Initial Release MCM7/22/37

Version 1.1 (3139 785 30611)

- * Introduction of MCM7/25
- * Page 6-7 : Front Board - Display part Variant Table adapted
- * Page 6-14 to 6-15 : Front Board - Electrical parts list adapted
- * Page 8-5 : Mains Board - Electrical parts list adapted
- * Page 12-2 : Mechanical & Accessories parts list adapted