

Service
Service
Service



Service Manual



TABLE OF CONTENTS

| | Page |
|--|------|
| Location of pc boards & Version variations | 1-2 |
| Technical Specifications | 1-3 |
| Measurement setup | 1-4 |
| Service Aids, Safety Instruction, etc. | 1-5 |
| Disassembly Instructions & Service positions | 2 |
| Service Test Programs & DEMO mode | 3 |
| Set Block diagram and Wiring diagram | 4 |
| Mains Board | 5 |
| Front Board | 6 |
| VCD - MPEG-01B Module | 8 |
| ETF7 Tape Module | 9 |
| 3CDC-LC-VCD Module | 10 |
| Combi Board | 11 |
| Set Mechanical Exploded view & parts list | 12 |



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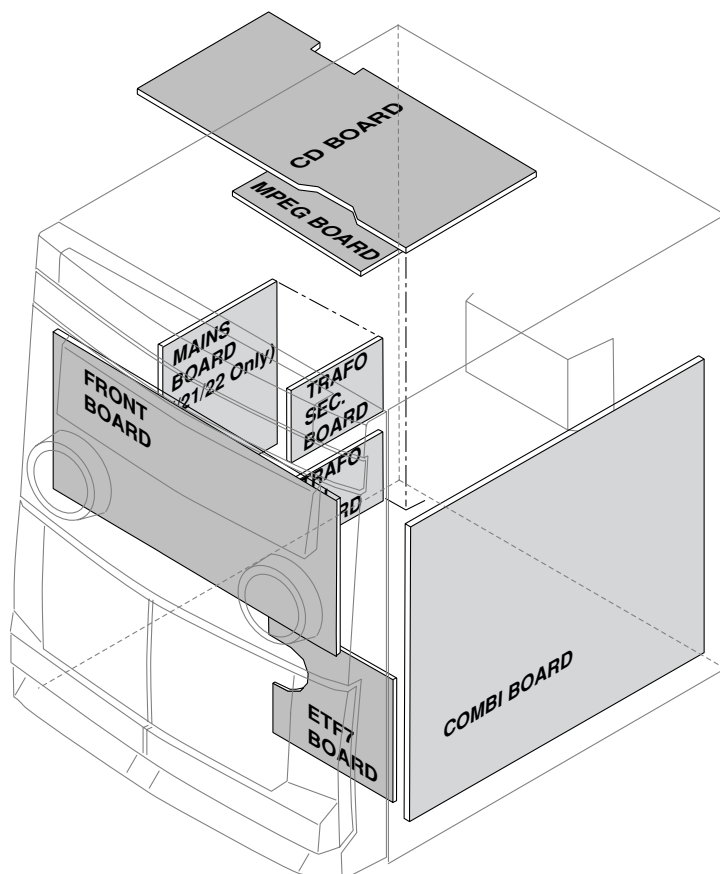
3139 785 30029

Version 1.0



PHILIPS

LOCATION OF PC BOARDS



VERSION VARIATIONS:

| Type /Versions: | FW-M355 | | | FW-V355 | | | | |
|---------------------------------|---------|-----|-----|---------|--|--|--|--|
| | /22 | /34 | /37 | /21 | | | | |
| Features & Board in used: | | | | | | | | |
| Karaoke | | | | x | | | | |
| News | x | x | | | | | | |
| RDS | x | x | | | | | | |
| Incredible Surround | | | | | | | | |
| Rotary Encoder (volume control) | x | x | x | x | | | | |
| Jog Shuttle | x | x | x | x | | | | |
| Voltage Selector | | | | x | | | | |
| Aux / CDR Input | x | x | x | x | | | | |
| Video Output | | | | x | | | | |
| Headphone Socket | x | x | x | x | | | | |
| Line Output | | | | | | | | |
| Subwoofer Output | | | | | | | | |
| Surround Output | | | | | | | | |
| Matrix Surround Loudspeakers | | | | | | | | |
| Standby - FTD Clock Display | x | x | x | x | | | | |
| ECO Standby - Dark | x | | | | | | | |
| Combi - Non-Cenelec Tuner | | x | x | x | | | | |
| Combi - Cenelec Tuner | x | | | | | | | |
| Mains Board (Chapter 5) | x | | | x | | | | |
| MP3-CD Play | x | x | x | x | | | | |
| Video CD Play | | | | x | | | | |

SPECIFICATIONS

GENERAL:

Mains voltage : 110-127V/220-240V Switchable for /21M
 220-230V for /22/34
 120V for /37
 Mains frequency : 50/60Hz
 Power consumption : < 80W Active
 < 15W at Standby with Clock on
 < 0.5W at ECO Standby /22
 Clock accuracy : < 4 seconds per day
 Dimension centre unit : 265 x 310 x 365mm

TUNER:

FM

Tuning range : 87.5-108MHz
 65.81-74MHz for /34 ¹⁾
 Grid : 50kHz (& 30kHz for /34)
 100kHz for /21M/37
 IF frequency : 10.7MHz \pm 20kHz
 Aerial input : 75 Ω coaxial
 Sensitivity at 26dB S/N : < 7 μ V
 Selectivity at 600kHz bandwidth : > 25dB
 IF rejection : > 60dB [80dB]
 Image rejection : > 25dB [75dB]
 Distortion at RF=1mV, dev. 75kHz : < 3%
 -3dB Limiting point : < 8 μ V
 Crosstalk at RF=1mV, dev. 40kHz : > 18dB

MW

Tuning range : 531-1602kHz
 530-1700kHz for /21M/37
 Grid : 9kHz
 10kHz for /21M/37
 IF frequency : 450kHz \pm 1kHz
 Aerial input : Frame aerial
 Sensitivity at 26dB S/N : < 4.4mV/M [4.0mV/M]
 Selectivity at 18kHz bandwidth : > 18dB
 IF rejection : > 45dB
 Image rejection : > 28dB
 Distortion at RF=50mV, m=80% : < 5%

AMPLIFIER:

Output power : 2 x 40W RMS ²⁾
 2 x 33W FTC ³⁾
 Frequency response within -3dB : 50Hz-15kHz
 Dynamic Bass Boost : DBB ON, DBB 1, DBB 2, DBB 3 ⁴⁾
 Digital Sound Control : Jazz, Techno, Optimal, Rock ⁴⁾
 Headphone output, $R_{LOAD} = 32\Omega$: 15mW \pm 2dB
 Input sensitivity, $R_s = 600\Omega$
 Aux / CDR : 500mV / 1.0V
 Mic : {3.5mV}

CASSETTE RECORDER:

Number of track : 2 x 2 stereo
 Tape speed : 4.76 cm/sec +2.5/-1.5%
 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 - 12.5kHz
 Signal to noise ratio Type I : > 48dBA

VCD/COMPACT DISC:

Audio Performance:

Measurement done at output conn. of the 3CDC module.
 Frequency response within \pm 3dB : 20Hz - 20kHz
 Output level (in Vrms) : 500mV \pm 1.5dB, $R_{out} = 100\Omega$
 Signal/Noise ratio (A-weighted) : > 80dBA
 Distortion at 1kHz : < 0.003%
 Channel unbalance at 1kHz : \pm 1dB
 Channel separation at 1kHz : > 60dB
 De-emphasis : 0 or 15/50 mS (Switched by subcode
 on the disc)
 MPEG 1 Layer 3 (MP3-CD) : MPEG AUDIO
 MP3-CD bit rate : 56-256 kbps
 MP3-CD sampling frequencies : 32kHz, 44.1kHz,
 48kHz
 Recording Format : ISO 9660
 UDF format not supported.

Video Performance (for VCD version only):

Video output level : 1.0V \pm 0.2V
 Luminance non-linear distortion : < 0 \pm 5%
 Luminance S/N ratio : > 50dB

{...} Values for /21/21M only

[...] Values for Cenelec Tuner version only

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

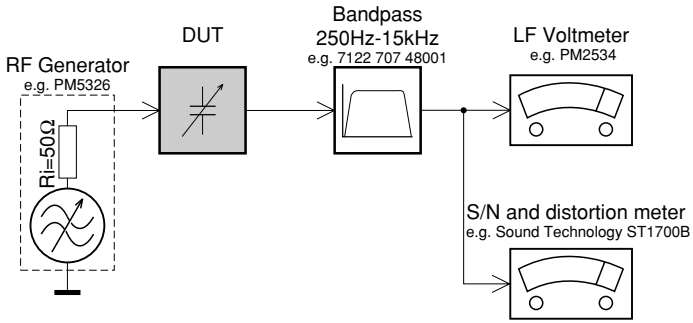
²⁾ 6 Ω , 1kHz, 10% THD

³⁾ 6 Ω , 60-12500Hz, 10% THD

⁴⁾ Frequency response in each setting is software controlled.

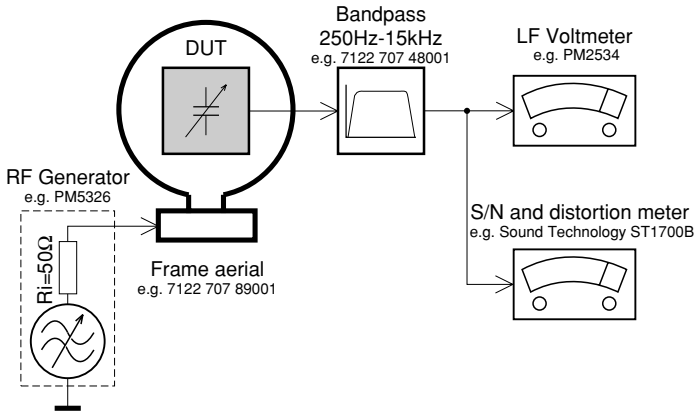
MEASUREMENT SETUP

Tuner FM



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

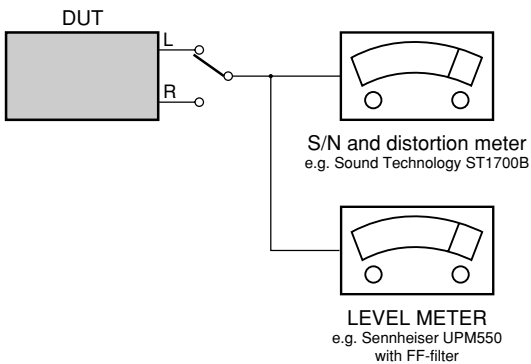
Tuner AM (MW,LW)



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

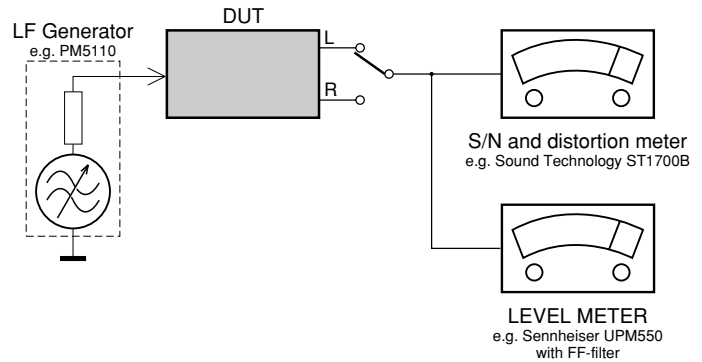
CD

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



Recorder

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



SERVICE AIDS

Service Tools:

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

Cassette:

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

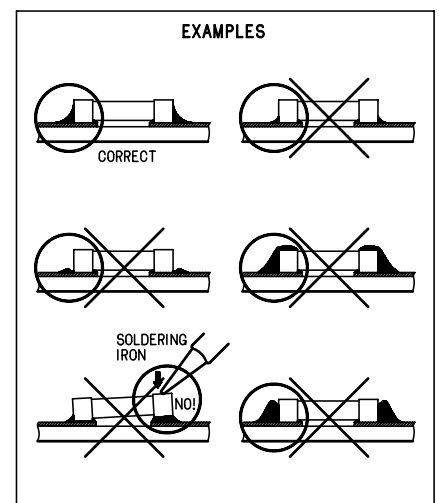
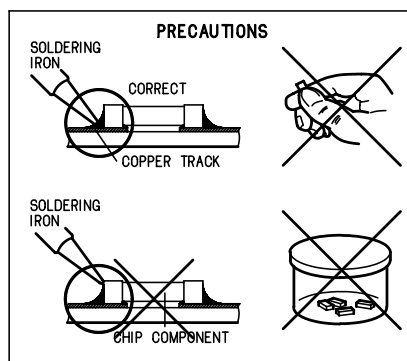
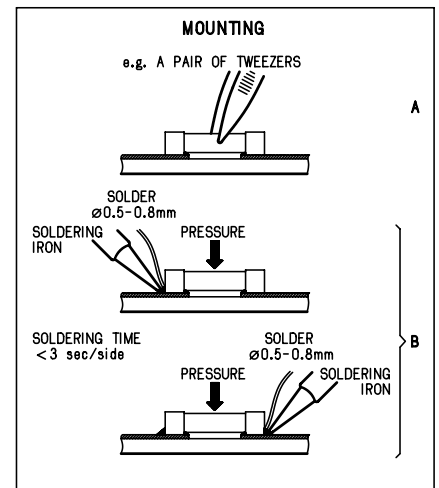
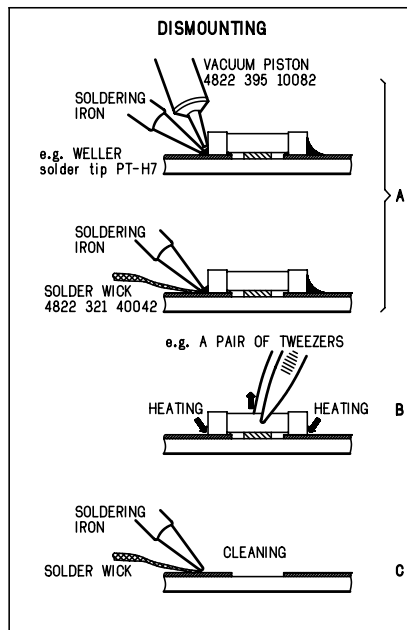
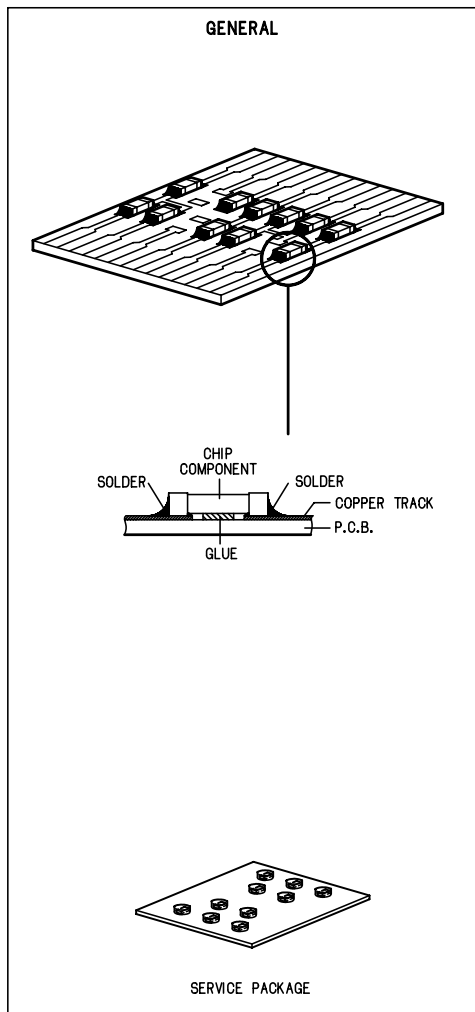
Compact Disc:

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

ESD Equipment:

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

HANDLING CHIP COMPONENTS



(GB) WARNING

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

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

ESD**(NL) WAARSCHUWING**

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

Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen. Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.

Houd componenten en hulpmiddelen ook op hetzelfde potentiaal.

(F) ATTENTION

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

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

Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfilez le bracelet serti d'une résistance de sécurité.

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

(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.

(I) AVVERTIMENTO

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).

La loro longevità potrebbe essere fortemente ridotta in caso di non osservazione della più grande cauzione alla loro manipolazione.

Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa dell'apparecchio tramite un braccialetto a resistenza.

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

(GB)

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

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

(NL)

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

(F)

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

(D)

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

(I)

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

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

**(GB) Warning !**

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

(S) Varning !

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

(SF) Varoitus !

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

(DK) Advarse !

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

DISMANTLING INSTRUCTIONS

Dismantling the 3CDC Module

- 1) Loosen the 4 screws, slide Cover top (pos 255) towards the rear and remove it upwards.
- 2) Loosen 3 screws slide the Panel right (pos 254) towards the rear and remove it outwards. Do likewise for the Panel left (pos 253).
- 3) Push the gear slowly towards the front as shown in figure 2 until the CDC tray starts to move out of the Front Cabinet (pos 101). The CDC tray is now disengage and can be pulled out completely.

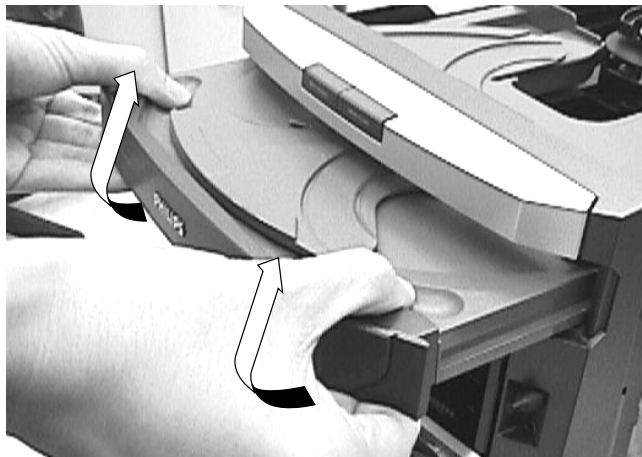


Figure 1

- 4) Remove the Cover Tray (pos 106) as shown in figure 1.
- 5) Loosen 4 screws A to remove the 3CDC-LC-VCD Module (pos 1104) as shown in figure 2.

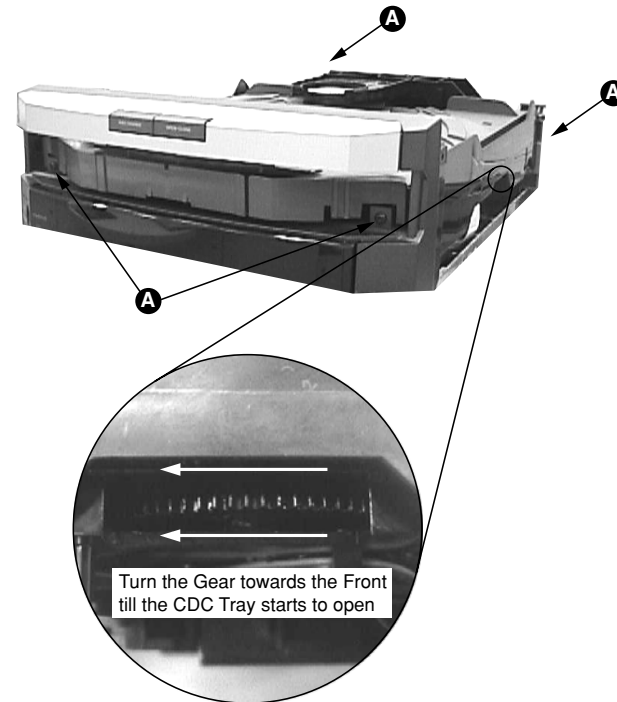


Figure 2

Dismantling of the Volume & Jog Rotary knobs

- 1) Cut a piece of packaging tape approximately 5cm width by 12cm length and tape its narrow side on to the top and bottom side of the Volume knob (pos 139) as shown in figure 3.



Figure 3

- 2) Place a small screw driver in between the tape & knob (see figure 3) to give more leverage in pulling out the knob as shown in figure 4.
- 3) Do likewise for the Jog Rotary knob (pos 138). You may have to rotate the knob to provide the most exposed area during application of the packaging tape.

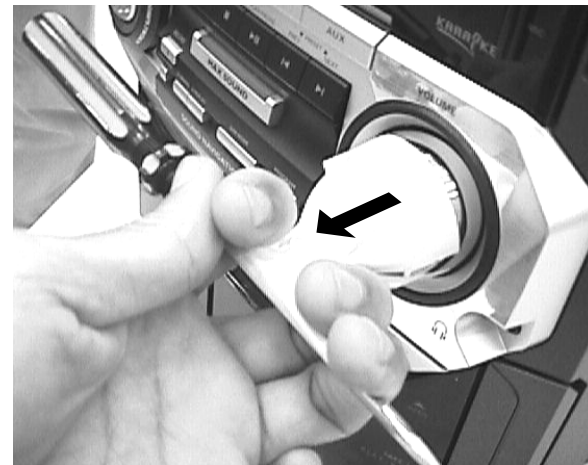


Figure 4

Dismantling of the Front Panel assembly

- 1) Loosen 2 screws below the Front Panel (pos 101) mounting it to the Bottom plate (pos 265).
- 2) Release the 2 catches on the sides of the Front Panel to separate it from the Bottom plate.
- 3) Remove the Volume and Jog Rotary knob if the Front board needs to be dismantled. For Karaoke versions, the Karaoke knob (pos 133) also need to be removed.

- 4) Loosen 8 screws B to remove the Front board as shown in Figure 5.
- 5) Loosen 6 screws C and eject both cassette doors to remove the Tape mechanism (pos 1103) as shown in figure 6.

Note: The Cassette door can be removed only after the removal of the Tape mechanism and buttons.

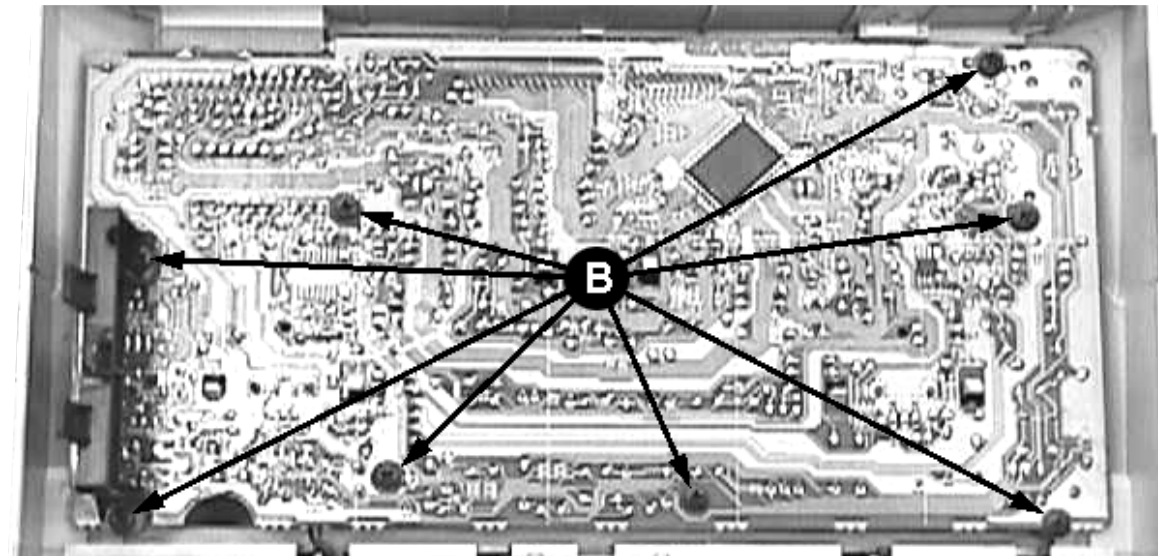


Figure 5

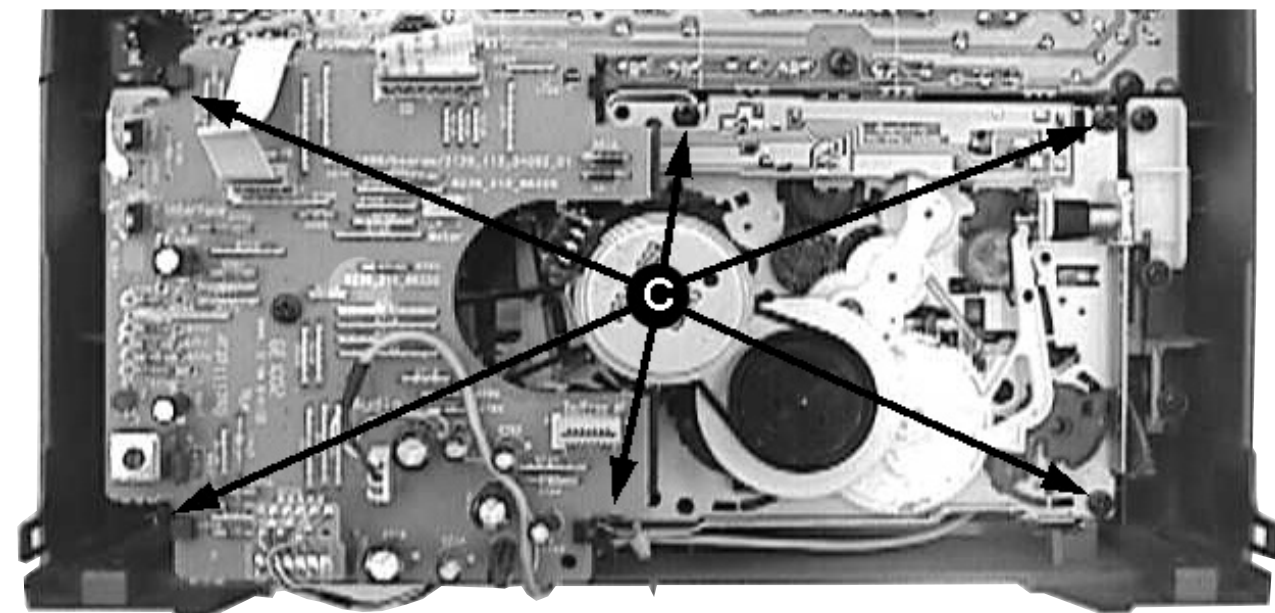


Figure 6

Dismantling of the Bottom & Rear Panel assembly

- 1) Loosen 5 screws D mounting the Combi board to the Rear Panel (pos 256) as shown in figure 7.
- 2) Loosen 3 screws E and release the 2 catches on the sides of the Rear Panel to separate it from the Bottom plate (pos 265).
- 3) Loosen 4 screws G to remove the Mains Transformer as shown in figure 8.
- 4) Loosen 2 screws F to remove the Combi Board.

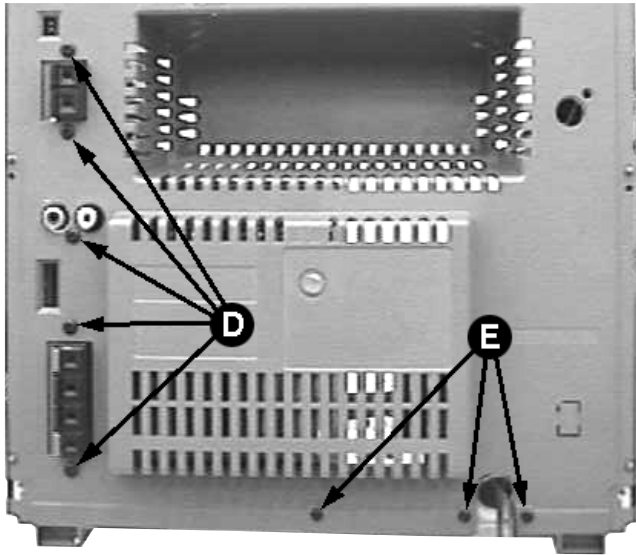


Figure 7

Separating the MPEG and 3CDC-LC-VCD Module

- 1) Loosen 4 screws P to remove the MPEG shield & MPEG Board as shown in figure 9.
- 2) Loosen 2 screws M and release catch C3 with a flat screwdriver in the direction as shown to loosen the Plate Insulator.

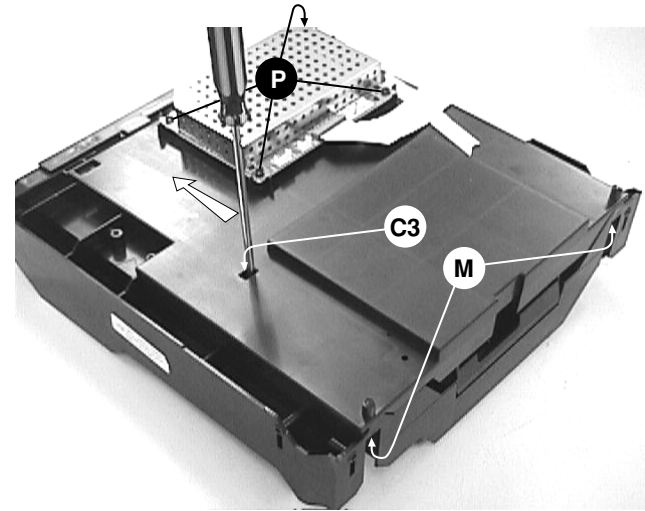
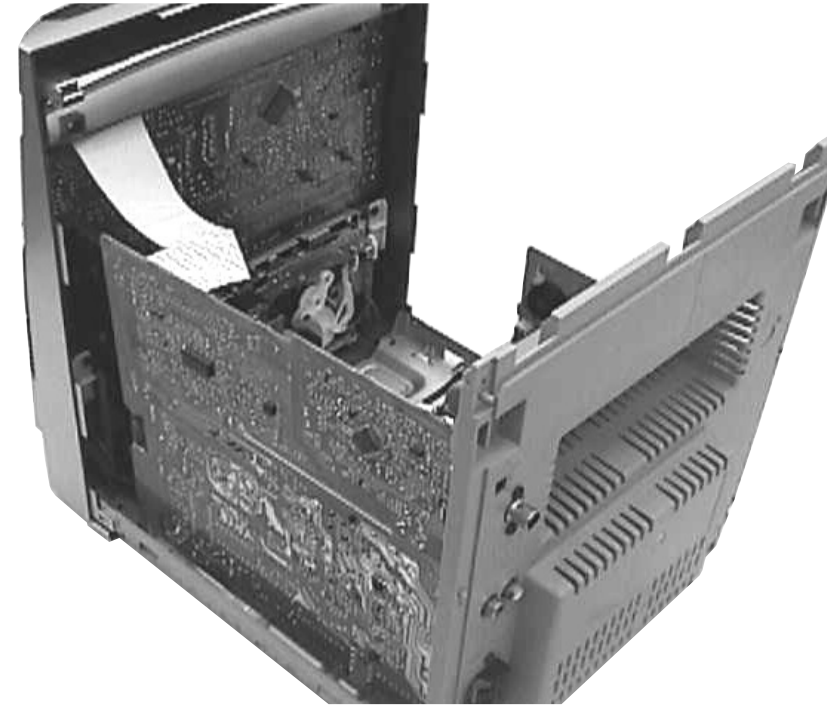


Figure 9

Service pos B



Note: After re-assembly, it is very important to ensure all wires are routed properly to ensure that they do not touch/obstruct all moving parts.

The 3CDC-LC-VCD Module can be complete detached while repairing the other portion of the set.

Service pos A

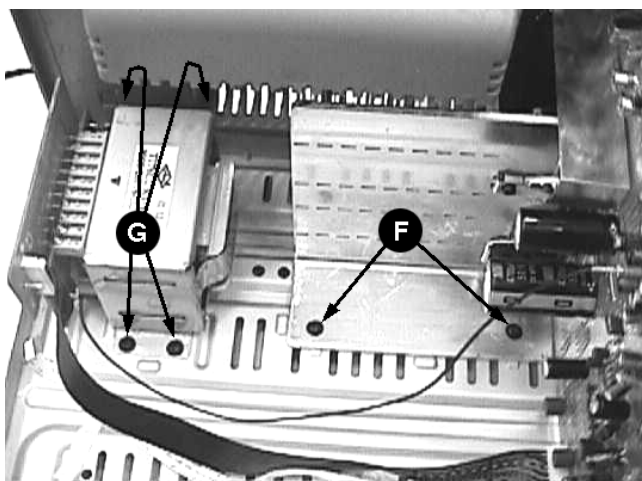
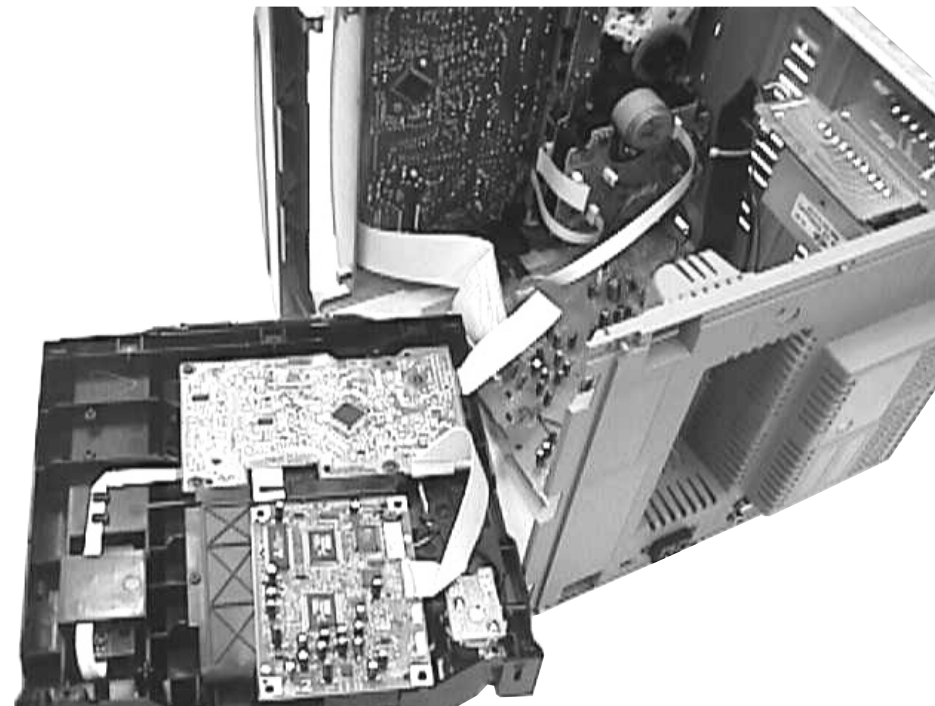
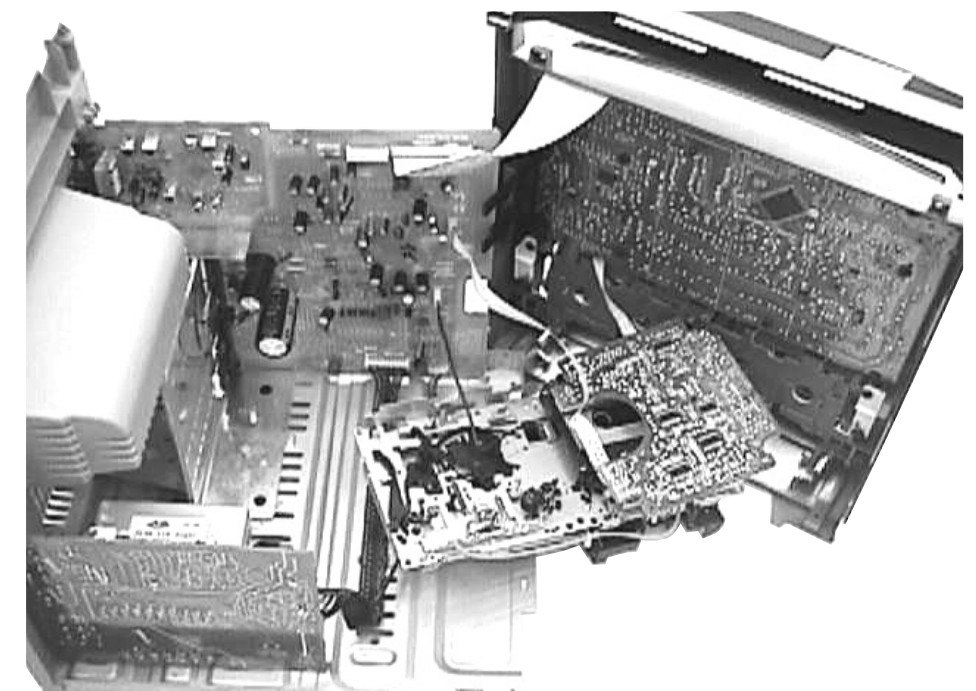


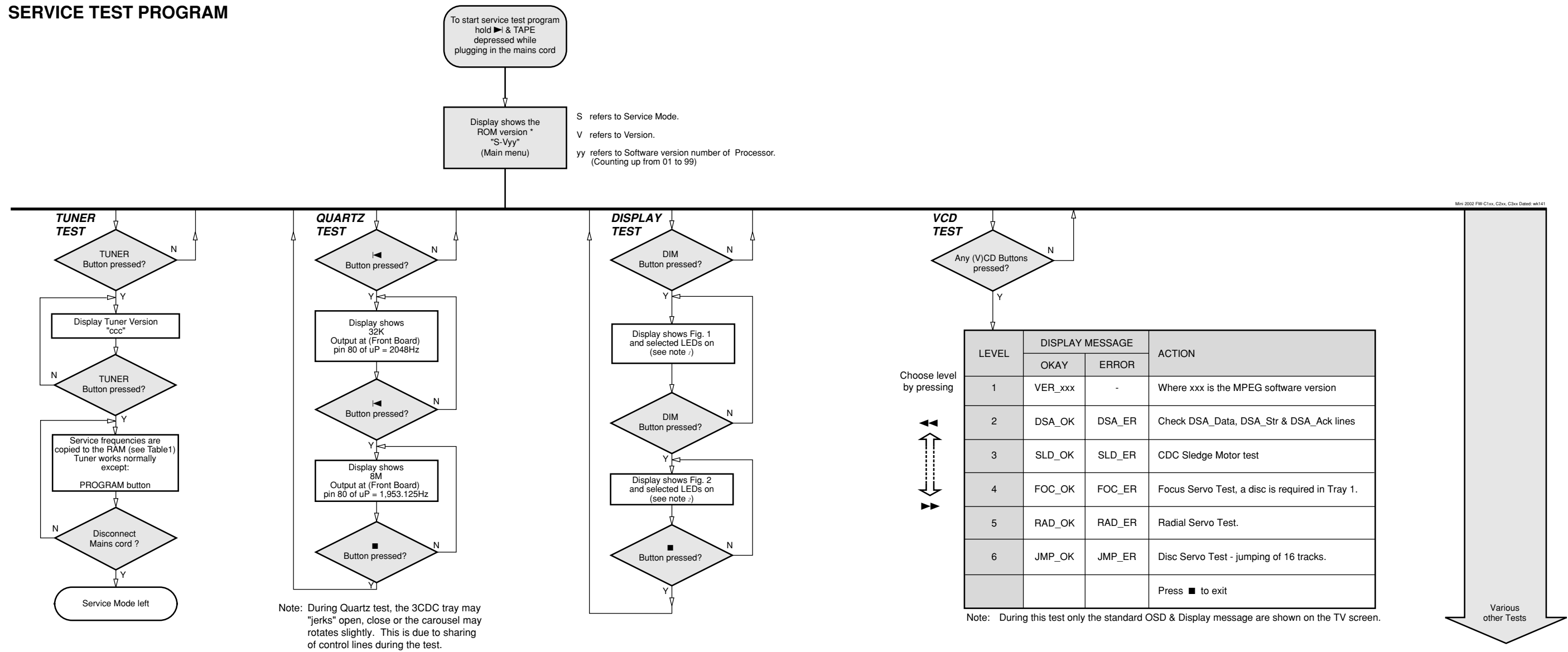
Figure 8



Service pos C



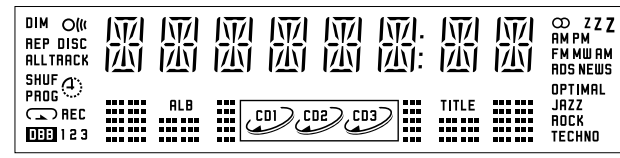
SERVICE TEST PROGRAM



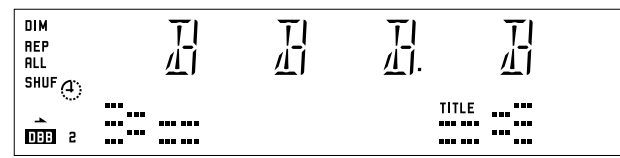
| PRESET | Europe "EUR" | East Eur. Extended-band "EAS" | East Eur. "EAS" | USA "USA" | Oversea "OSE" |
|--------|--------------|-------------------------------|-----------------|-----------|---------------|
| 1 | 87.5MHz | 65.81MHz | 87.5MHz | 87.5MHz | 87.5MHz |
| 2 | 108MHz | 108MHz | 108MHz | 108MHz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

Table 1

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



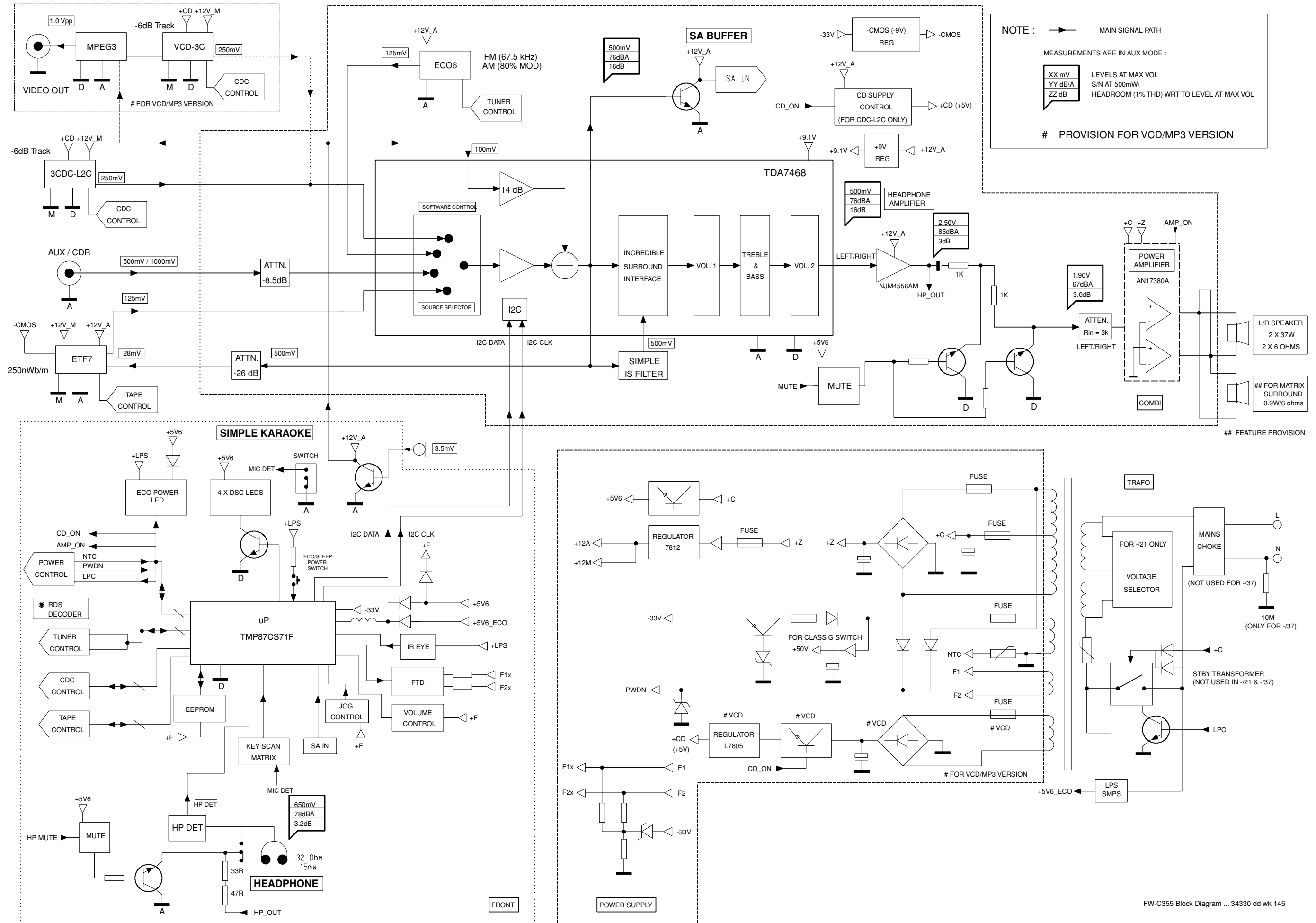
note 1: JAZZ & TECHNO are on while OPTIMAL is off, other LEDs status are not important (applicable only for sets with LEDs)
 Figure 1



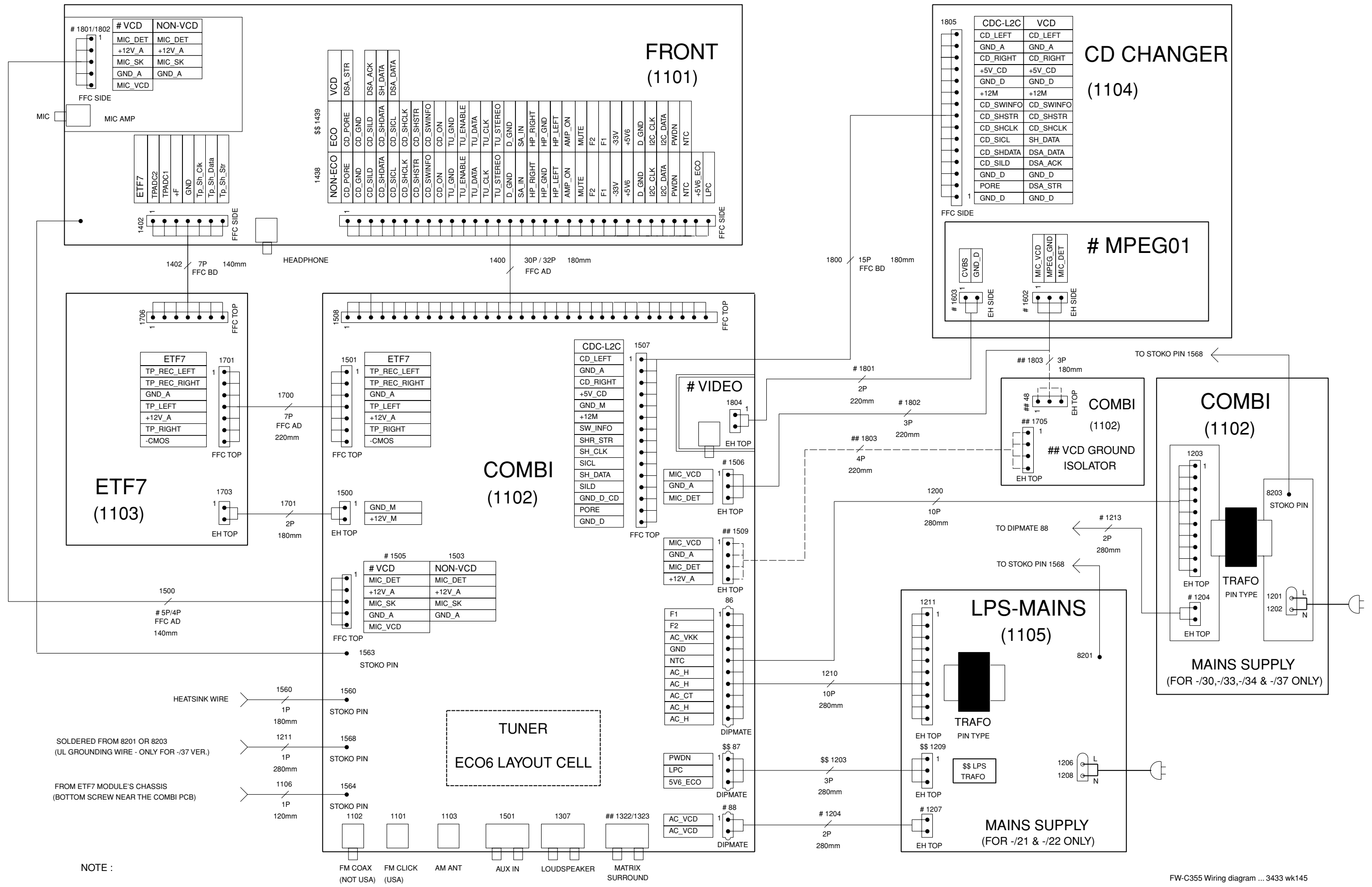
note 2: OPTIMAL is on while JAZZ & TECHNO are off, other LEDs status are not important (applicable only for sets with LEDs)
 Figure 2

| TEST | Activated with | ACTION |
|---------------------------|---------------------------------|--|
| EEPROM TEST | <TUNER> ■ to Exit | A test pattern will be sent to the EEPROM. "PASS" is displayed if the uProcessor read back the test pattern correctly, otherwise "FAIL" will be displayed. |
| EEPROM FORMAT | <TUNER> | Load default data. Display shows "NEW" for 1 second. Caution! All presets from the customer will be lost!! |
| ROTARY ENCODER TEST | Volume Knob or Jog Shuttle knob | Display shows value for 2 seconds. Values increases or decreases in steps of 1 until 0 (Min.) or 40 (Max.) is reached. |
| DEMO | DBB | DEMO will toggle on or off. The message: "DEMO ON" or "DEMO OFF" will scroll across the display to show the new status of the set. |
| LEAVE SERVICE TESTPROGRAM | Disconnect mains cord | |

SET BLOCK DIAGRAM



SET WIRING DIAGRAM

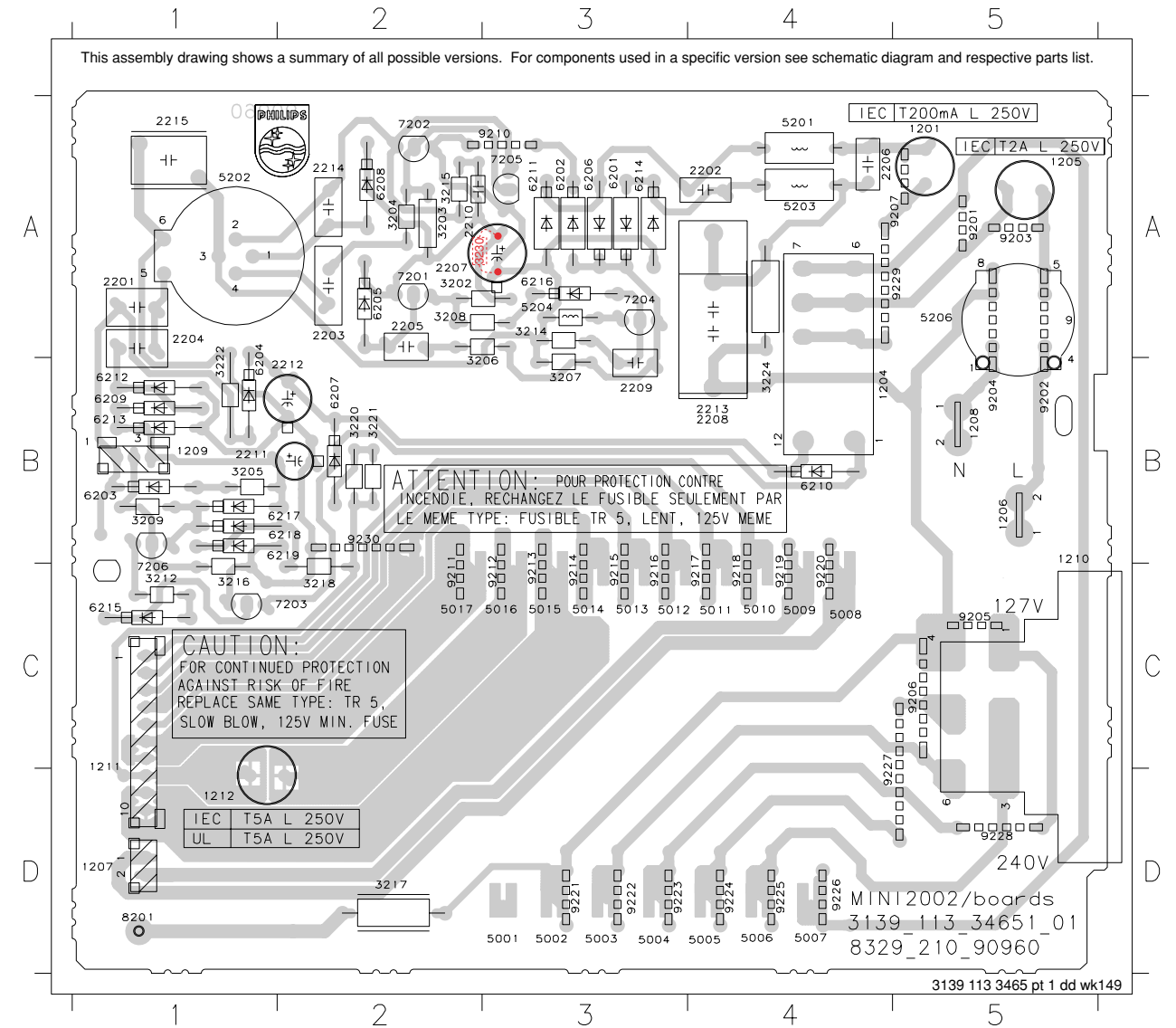


MAINS BOARD

TABLE OF CONTENTS

| | |
|-----------------------------|-----|
| Component Layout | 5-1 |
| Circuit Diagram | 5-2 |
| Electrical parts list | 5-3 |

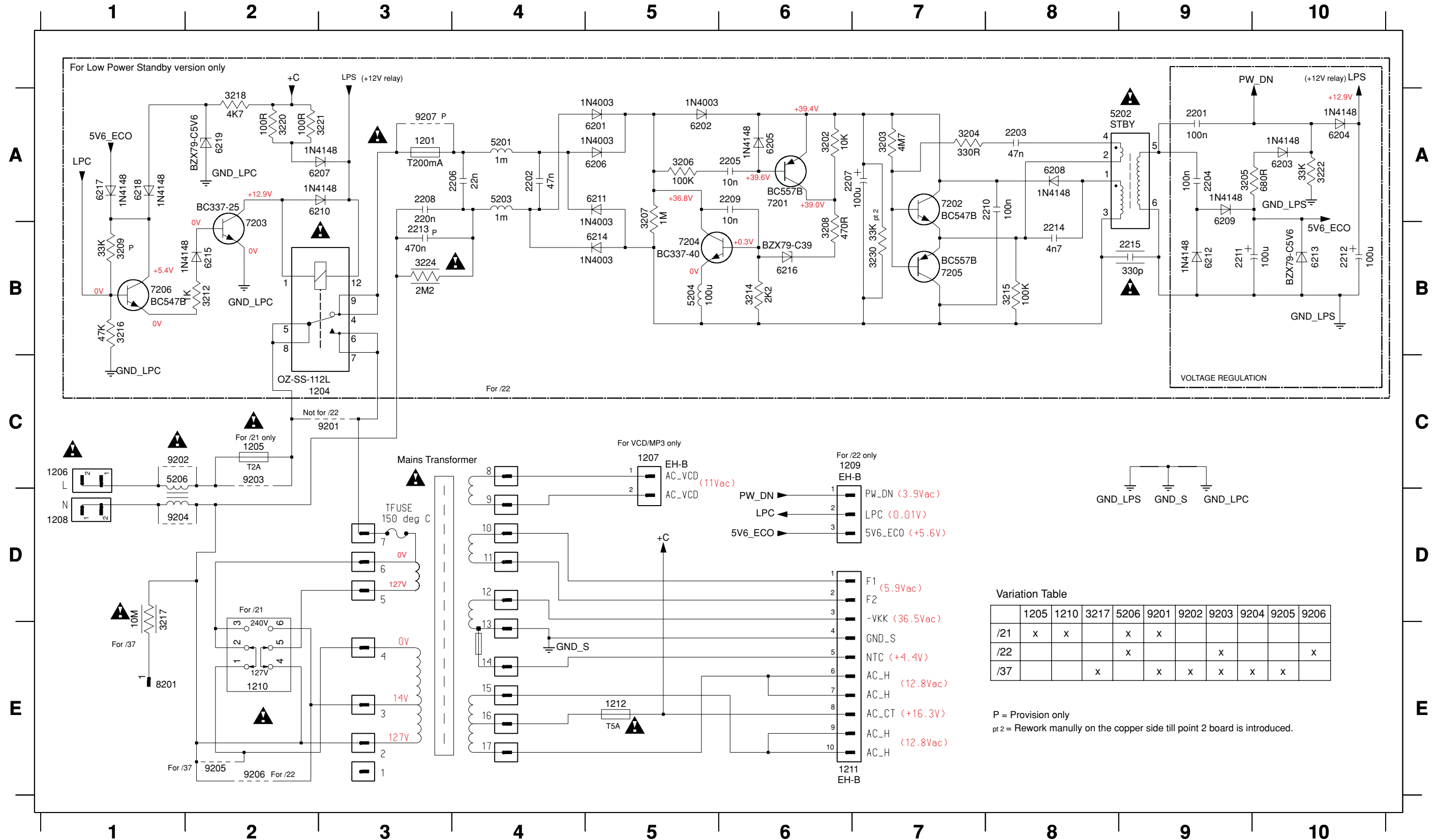
1201 A5 1211 C1 2207 A2 2215 A1 3209 B1 3221 B2 5006 D4 5014 C3 5206 A5 6208 A2 6216 A3 7205 A3 9206 C5 9216 C3 9224 D4
 1204 B4 1212 D1 2208 B4 3202 A2 3212 C1 3222 B1 5007 D4 5015 C3 6201 A3 6209 B1 6217 B2 7206 C1 9207 A5 9217 C4 9225 D4
 1205 A5 2201 A1 2209 B3 3203 A2 3214 A3 3224 B4 5008 C4 5016 C3 6202 A3 6210 B4 6218 B2 8201 D1 9210 A3 9218 C4 9226 D4
 1206 B5 2202 A4 2210 A2 3204 A2 3215 A2 5001 D3 5009 C4 5017 C2 6203 B1 6211 A3 6219 B2 9201 A5 9211 C2 9219 C4 9227 D4
 1207 D1 2203 A2 2211 B1 3205 B1 3216 C1 5002 D3 5010 C4 5201 A4 6204 B1 6212 B1 7201 A2 9202 B5 9212 C3 9220 C4 9228 D5
 1208 B5 2204 A1 2212 B2 3206 B2 3217 D2 5003 D3 5011 C4 5202 A1 6205 A2 6213 B1 7202 A2 9203 A5 9213 C3 9221 D3 9229 A5
 1209 B1 2205 A2 2213 B4 3207 B3 3218 C2 5004 D3 5012 C3 5203 A4 6206 A3 6214 A3 7203 C2 9204 B5 9214 C3 9222 D3 9230 B2
 1210 B5 2206 A4 2214 A2 3208 A2 3220 B2 5005 D4 5013 C3 5204 A3 6207 B2 6215 C1 7204 A3 9205 C5 9215 C3 9223 D3



3230 is soldered manual on the copper side for pt 1 pcb

MAINS CIRCUIT

- | | | | | | | | | | | | | | | | | | | | | |
|---------|---------|---------|---------|---------|----------|---------|---------|---------|---------|----------|---------|----------|----------|---------|----------|---------|---------|---------|---------|---------|
| 1201 A3 | 1207 C5 | 1211 E6 | 2203 A8 | 2207 A6 | 2211 B9 | 2215 B9 | 3205 A9 | 3209 B1 | 3216 B1 | 3221 A2 | 5201 A4 | 5206 C1 | 6204 A10 | 6208 A8 | 6212 B9 | 6216 B6 | 7201 A6 | 7205 B7 | 9202 C1 | 9206 E2 |
| 1204 C3 | 1208 D1 | 1212 E5 | 2204 A9 | 2208 A3 | 2212 B10 | 3202 A6 | 3206 A5 | 3212 B2 | 3217 D1 | 3222 A10 | 5202 A8 | 6201 A5 | 6205 A6 | 6209 A9 | 6213 B10 | 6217 A1 | 7202 A7 | 7206 B1 | 9203 C2 | 9207 A3 |
| 1205 C2 | 1209 C6 | 2201 A9 | 2205 A6 | 2209 A6 | 2213 B3 | 3203 A7 | 3207 A5 | 3214 B6 | 3218 A2 | 3224 B3 | 5203 A4 | 6202 A5 | 6206 A5 | 6210 A3 | 6214 B5 | 6218 A1 | 7203 B2 | 8201 E1 | 9204 D1 | |
| 1206 C1 | 1210 E2 | 2202 A4 | 2206 A4 | 2210 A8 | 2214 B8 | 3204 A7 | 3208 B6 | 3215 B8 | 3220 A2 | 3230 B7 | 5204 B5 | 6203 A10 | 6207 A3 | 6211 A5 | 6215 B2 | 6219 A2 | 7204 B5 | 9201 C3 | 9205 E2 | |



ELECTRICAL PARTS LIST - MAINS BOARD**MISCELLANEOUS**

| | | |
|------|----------------|-------------------------|
| 1201 | 4822 071 52001 | △ Fuse T200mA 250V /22 |
| 1204 | 2422 132 07519 | △ Relay 1P 12V 16A |
| 1205 | 9965 000 07788 | △ Fuse T2A 250V /21M |
| 1210 | 2422 129 16478 | △ Voltage Selector /21M |
| 1212 | 4822 071 55002 | △ Fuse T5A 250V |

CAPACITORS

| | | |
|------|----------------|--------------------|
| 2201 | 5322 121 42386 | 100nF 5% 63V |
| 2202 | 4822 121 43526 | 47nF 5% 250V |
| 2203 | 4822 122 33449 | 47nF 30% 50V |
| 2204 | 5322 121 42386 | 100nF 5% 63V |
| 2205 | 4822 122 30043 | 10nF 63V |
| 2206 | 4822 121 41856 | 22nF 5% 250V |
| 2207 | 4822 124 40255 | 100uF 20% 63V |
| 2208 | 4822 121 10512 | 220nF 20% 275V |
| 2209 | 4822 122 30043 | 10nF 63V |
| 2210 | 2020 561 90365 | 100nF +80/-20% 50V |
| 2211 | 4822 124 41584 | 100uF 20% 10V |
| 2212 | 4822 124 40207 | 100uF 20% 25V |
| 2214 | 5322 122 32261 | 4,7nF 10% 100V |
| 2215 | 4822 126 13867 | △ 330pF 20% 250V |

RESISTORS

| | | |
|------|----------------|---------------|
| 3202 | 4822 050 21003 | 10k 1% 0,6W |
| 3203 | 4822 050 24705 | 4M7 1% 0,6W |
| 3204 | 4822 116 52219 | 330R 5% 0,5W |
| 3205 | 4822 116 52228 | 680R 5% 0,5W |
| 3206 | 4822 116 52234 | 100k 5% 0,5W |
| 3207 | 4822 116 83866 | 1M 5% 0,5W |
| 3208 | 4822 116 83883 | 470R 5% 0,5W |
| 3212 | 4822 050 11002 | 1k 1% 0,4W |
| 3214 | 4822 116 52256 | 2k2 5% 0,5W |
| 3215 | 4822 116 52234 | 100k 5% 0,5W |
| 3216 | 4822 116 83884 | 47k 5% 0,5W |
| 3218 | 4822 116 52283 | 4k7 5% 0,5W |
| 3220 | 4822 116 52175 | 100R 5% 0,5W |
| 3221 | 4822 116 52175 | 100R 5% 0,5W |
| 3222 | 4822 050 23303 | 33k 1% 0,6W |
| 3224 | 4822 053 21225 | △ 2M2 5% 0,5W |
| 3230 | 4822 050 23303 | 33k 5% 1/6W |

COILS & FILTERS

| | | |
|------|----------------|-------------------------|
| 5201 | 4822 157 53473 | Coil 1mH 10% |
| 5202 | 2422 549 45157 | △ Standby Transformer |
| 5203 | 4822 157 53473 | Coil 1mH 10% |
| 5204 | 4822 157 52333 | Coil 100uH 5% |
| 5206 | 4822 157 11832 | △ Mains Filter 400uH 3A |

DIODES

| | | |
|------|----------------|---------|
| 6201 | 4822 130 31878 | 1N4003G |
| 6202 | 4822 130 31878 | 1N4003G |
| 6203 | 4822 130 30621 | 1N4148 |

| | | |
|------|----------------|-------------|
| 3224 | 4822 053 21225 | 2M2 5% 0,5W |
| 6204 | 4822 130 30621 | 1N4148 |
| 6205 | 4822 130 30621 | 1N4148 |
| 6206 | 4822 130 31878 | 1N4003G |
| 6207 | 4822 130 30621 | 1N4148 |
| 6208 | 4822 130 30621 | 1N4148 |
| 6209 | 4822 130 30621 | 1N4148 |
| 6210 | 4822 130 30621 | 1N4148 |
| 6211 | 4822 130 31878 | 1N4003G |
| 6212 | 4822 130 30621 | 1N4148 |
| 6213 | 4822 130 34173 | BZX79-B5V6 |
| 6214 | 4822 130 31878 | 1N4003G |
| 6215 | 4822 130 30621 | 1N4148 |
| 6216 | 4822 130 34145 | BZX79-B39 |
| 6217 | 4822 130 30621 | 1N4148 |
| 6218 | 4822 130 30621 | 1N4148 |
| 6219 | 4822 130 34173 | BZX79-B5V6 |

TRANSISTORS & INTEGRATED CIRCUITS

| | | |
|------|----------------|----------|
| 7201 | 4822 130 44568 | BC557B |
| 7202 | 4822 130 40959 | BC547B |
| 7203 | 4822 130 40981 | BC337-25 |
| 7204 | 4822 130 40855 | BC337-40 |
| 7205 | 4822 130 44568 | BC557B |
| 7206 | 4822 130 40959 | BC547B |

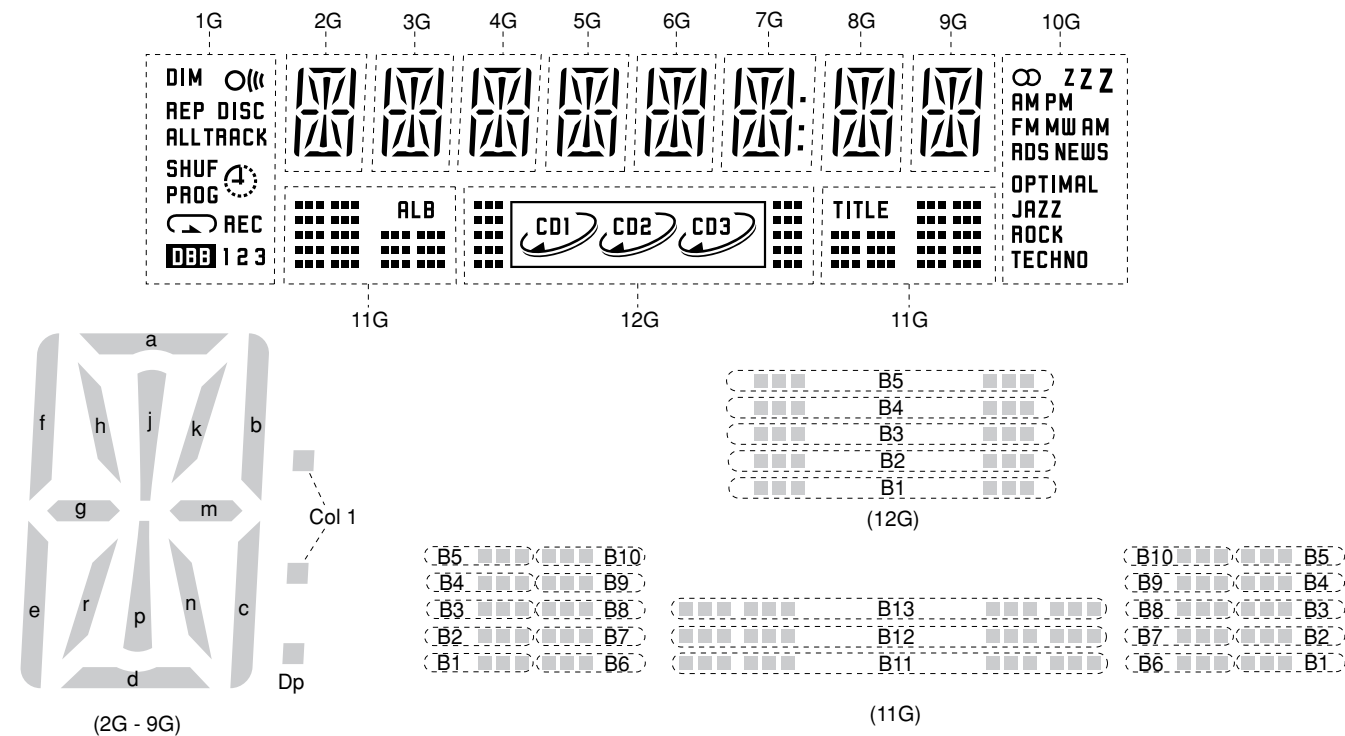
Note: Only the parts mentioned in this list are normal service spare parts.

FRONT BOARD

TABLE OF CONTENTS

- FTD Display pin connection 6-1
- Variation Tables 6-2
- Circuit Diagram - Karaoke part 6-3
- Circuit Diagram - Microprocessor part 6-4
- Circuit Diagram - Headphone / Miscellaneous part 6-5
- Component Layout 6-6
- Chip Layout 6-7
- Electrical Parts List 6-8

FTD DISPLAY PIN CONNECTIONS



| | 12G | 11G | 10G | 9G | 8G | 7G | 6G | 5G | 4G | 3G | 2G | 1G |
|-----|------------|--------------|-----------------------------|------|------|------|------|------|------|------|------|--------------|
| P1 | B1 | B1 | ∅ | a | a | a | a | a | a | a | a | DIM |
| P2 | B2 | B2 | Z <i>(Left)</i> | h | h | h | h | h | h | h | h | ∅ |
| P3 | B3 | B3 | Z <i>(Middle)</i> | j, p | j, p | j, p | j, p | j, p | j, p | j, p | j, p | REP |
| P4 | B4 | B4 | Z <i>(Right)</i> | k | k | k | k | k | k | k | k | DISC |
| P5 | B5 | B5 | AM <i>(Up)</i> | b | b | b | b | b | b | b | b | ALL |
| P6 | CD1 | B6 | PM | f | f | f | f | f | f | f | f | TRACK |
| P7 | CD2 | B7 | FM | m | m | m | m | m | m | m | m | SHUF |
| P8 | CD3 | B8 | MW | g | g | g | g | g | g | g | g | PROG |
| P9 | (1) | B9 | AM <i>(Low)</i> | c | c | c | c | c | c | c | c | ∅ |
| P10 | (2) | B10 | RDS | e | e | e | e | e | e | e | e | ↲ |
| P11 | (3) | B11 | NEWS | r | r | r | r | r | r | r | r | → |
| P12 | | B12 | OPTIMAL | n | n | n | n | n | n | n | n | REC |
| P13 | - | B13 | JAZZ | d | d | d | d | d | d | d | d | DBB |
| P14 | - | ALB | ROCK | - | - | Col | - | - | - | - | - | 1 |
| P15 | - | TITLE | TECHNO | - | - | Dp | - | - | - | - | - | 2 |
| P16 | - | - | - | - | - | - | - | - | - | - | - | 3 |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|----|----|----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FTD DISPLAY PIN NO. | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | | |
| FUNCTION | F | - | - | - | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | - | - | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | P | - | - | - | F |

Front Board application

| | |
|--------|---------------|
| A55470 | FW-C355/21/33 |
| A55480 | FW-C355/22 |
| A55490 | FW-V355/21M |
| A55500 | FW-C355/34 |
| A55520 | FW-M355/22 |
| A55530 | FW-M355/34 |
| A55540 | FW-M355/37 |

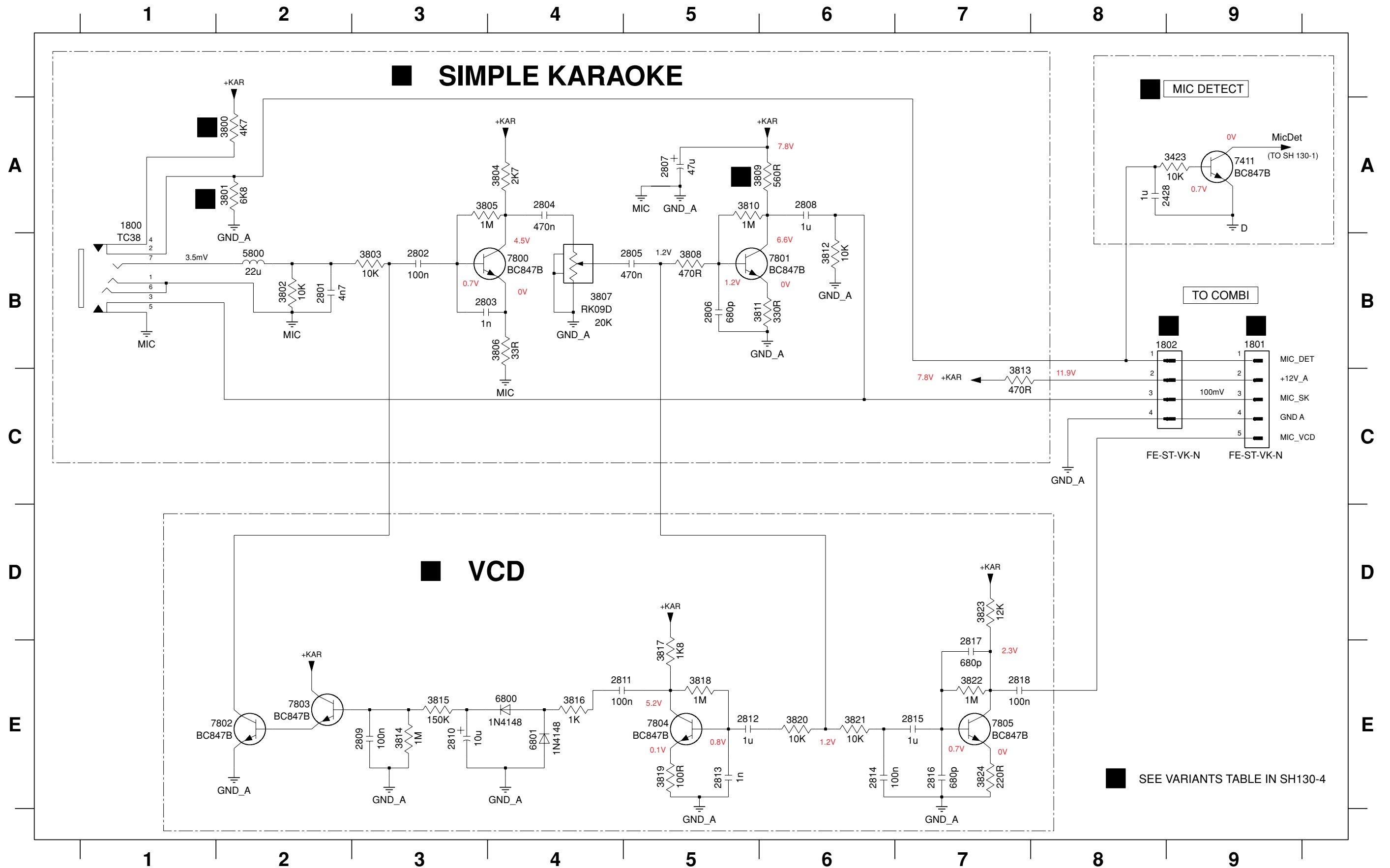
| FEATURES: | A55470 | A55480 | A55490 | A55500 | A55520 | A55530 | A55540 | | | |
|----------------------|--------|--------|--------|--------|--------|--------|--------|--|--|--|
| Karaoke / Mic Detect | x | - | x | - | - | - | - | | | |
| VCD | - | - | x | - | - | - | - | | | |
| RDS | - | x | - | x | x | x | - | | | |
| ECO Power LED | - | x | - | - | x | - | - | | | |
| | | | | | | | | | | |

| ITEM NO. | A55470 | A55480 | A55490 | A55500 | A55520 | A55530 | A55540 | Functions |
|----------|--------|--------|--------|--------|--------|--------|--------|---------------|
| 1427 | - | x | x | x | x | x | - | REC |
| 1428 | REC | AUTO | AUTO | AUTO | AUTO | AUTO | REC | |
| 1432 | AUTO | RDS | PBC | RDS | RDS | RDS | AUTO | |
| 1433 | - | NEWS | RETURN | NEWS | NEWS | NEWS | - | |
| 1438 | - | x | - | - | x | - | - | with LPC |
| 1439 | x | - | x | x | - | x | x | without LPC |
| 1801 | - | - | x | - | - | - | - | VCD & KARAOKE |
| 1802 | x | - | - | - | - | - | - | KARAOKE |
| 3529 | - | 330R | 330R | 330R | 330R | 330R | - | P01 |
| 3546 | 10k | - | 10k | - | - | - | 10k | RDSClk |
| 3548 | 10k | - | 10k | - | - | - | 10k | RDS DAT |
| 3549 | 10k | - | 10k | 10k | - | 10k | 10k | RESET |
| 3565 | 4R7 | 2R2 | 4R7 | 2R2 | 2R2 | 2R2 | 2R2 | FTD Filament |
| 3566 | - | 2R2 | - | 2R2 | 2R2 | 2R2 | 2R2 | FTD Filament |
| 3567 | 4R7 | 2R2 | 4R7 | 2R2 | 2R2 | 2R2 | 2R2 | FTD Filament |
| 3568 | - | 2R2 | - | 2R2 | 2R2 | 2R2 | 2R2 | FTD Filament |
| 3569 | 10k | - | 10k | 10k | - | 10k | 10k | LPC |
| 3570 | - | 100k | - | - | 100k | - | - | RESET |
| 3800 | 4k7 | - | 1k | - | - | - | - | KARAOKE |
| 3801 | 6k8 | - | 1k2 | - | - | - | - | KARAOKE |
| 3809 | 560R | - | 680R | - | - | - | - | KARAOKE |
| 4408 | x | x | - | x | - | - | - | CDSICL |
| 4409 | x | - | x | x | - | x | x | +5V6 |
| 4410 | - | - | x | - | x | x | x | SH_DATA |
| 4411 | - | x | - | x | x | x | x | HP_GND |
| 4414 | x | - | x | x | - | x | x | DLPC |
| 4416 | x | - | - | - | - | - | x | # AUTO |
| 4417 | - | x | x | x | x | x | - | AUTO |
| 4419 | x | - | x | x | - | x | x | RESET |
| 4459 | - | x | - | - | x | - | - | +5V6_ECO |
| 4490 | x | - | x | x | - | x | x | +5V6 |
| 4491 | x | - | - | - | - | - | x | # REC |
| 6401 | - | x | - | - | x | - | - | +5V6_ECO |
| 6417 | - | x | x | x | x | - | - | P01 |
| 6429 | x | - | x | - | - | - | - | KARAOKE |
| 6430 | - | x | - | - | x | - | - | ECO Power |
| 9401 | x | - | x | - | - | - | - | FTD Filament |
| 9402 | x | - | x | - | - | - | - | FTD Filament |
| 9410 | - | - | x | - | x | x | x | DSA_DATA |
| 9411 | - | x | - | - | x | - | - | +LPS |
| 9416 | x | x | - | x | - | - | - | CDSHDATA |
| 9488 | - | x | - | - | x | - | - | LPC |
| 9506 | - | x | - | - | x | - | - | +5V6_ECO |
| 9514 | - | x | - | - | x | - | - | +5V6_ECO |

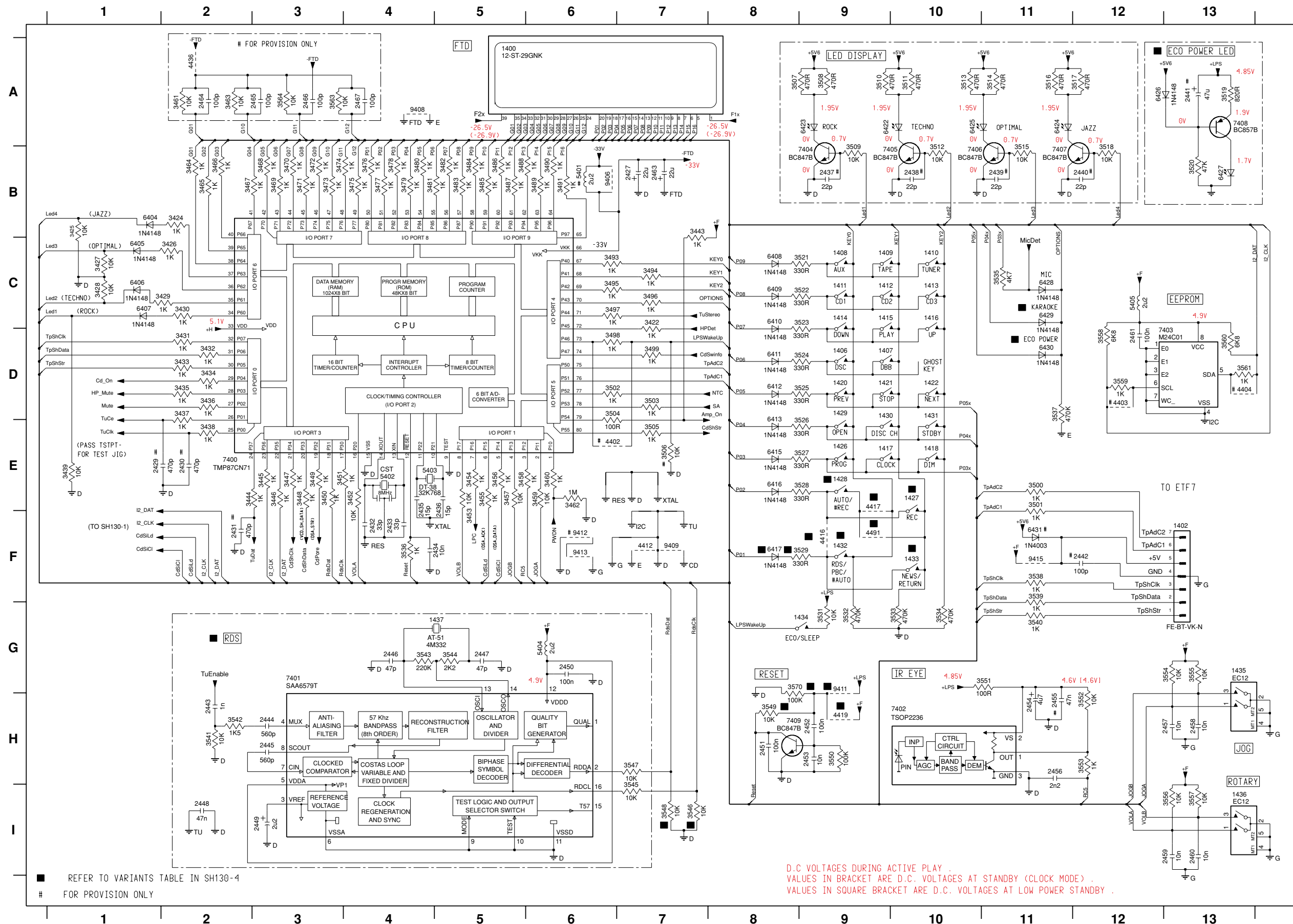
x = Item in use.

CIRCUIT DIAGRAM - KARAOKE PART

| | | | | | | | | | | | | | | | | | | | |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1800 A1 | 2428 A8 | 2803 B3 | 2806 B5 | 2809 E3 | 2812 E5 | 2815 E7 | 2818 E7 | 3801 A2 | 3804 A4 | 3807 B4 | 3810 A5 | 3813 C7 | 3816 E4 | 3819 E5 | 3822 E7 | 5800 B2 | 7411 A9 | 7802 E2 | 7805 E7 |
| 1801 B9 | 2801 B2 | 2804 A4 | 2807 A5 | 2810 E3 | 2813 E5 | 2816 E7 | 3423 A9 | 3802 B2 | 3805 A3 | 3808 B5 | 3811 B6 | 3814 E3 | 3817 E5 | 3820 E6 | 3823 D7 | 6800 E4 | 7800 B4 | 7803 E2 | |
| 1802 B8 | 2802 B3 | 2805 B5 | 2808 A6 | 2811 E4 | 2814 E6 | 2817 E7 | 3800 A2 | 3803 B3 | 3806 B4 | 3809 A6 | 3812 B6 | 3815 E3 | 3818 E5 | 3821 E6 | 3824 E7 | 6801 E4 | 7801 B6 | 7804 E5 | |



CIRCUIT DIAGRAM - MICROPROCESSOR PART



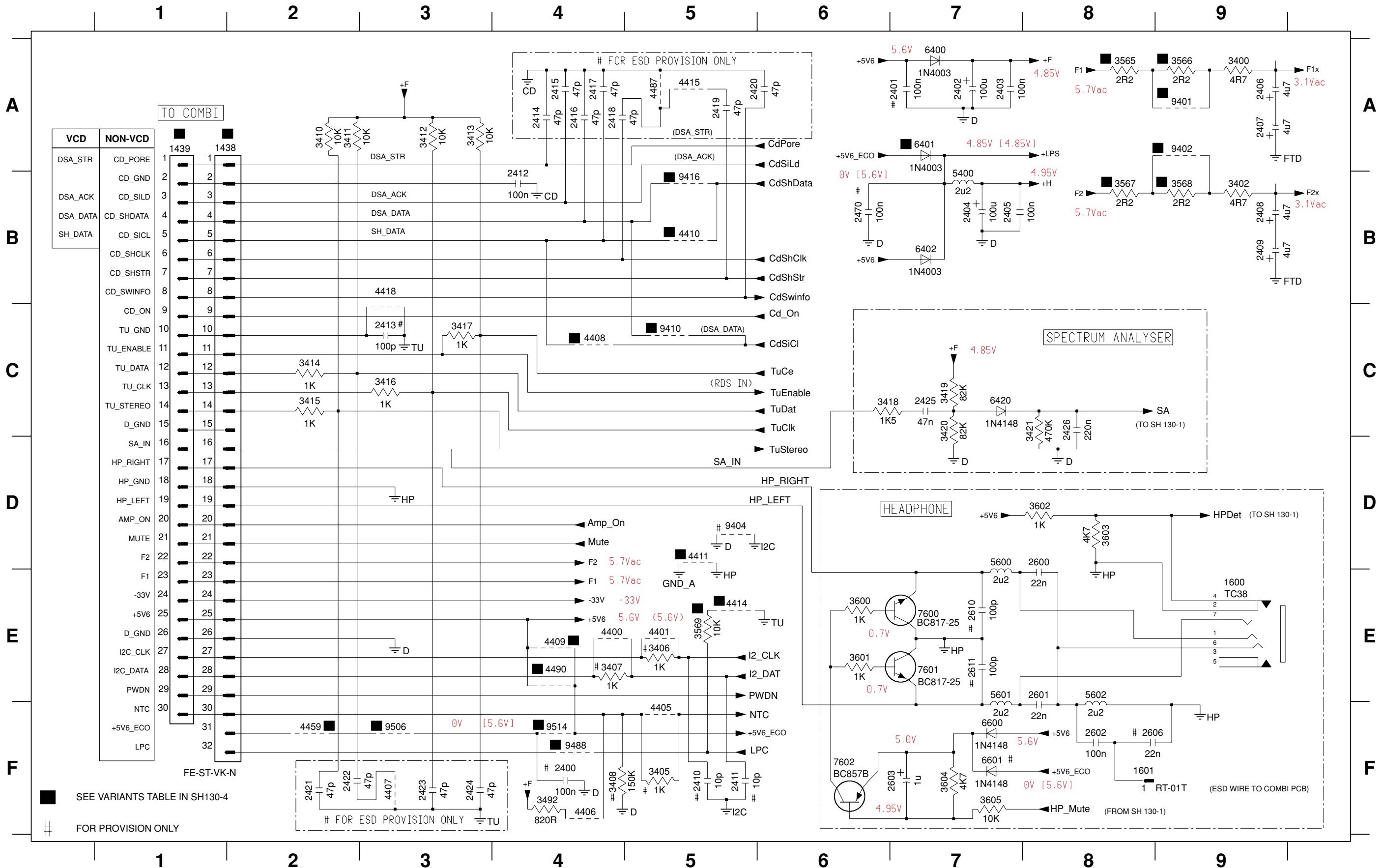
| | | |
|----------|----------|----------|
| 1400 A5 | 3472 B3 | 6415 E9 |
| 1402 F13 | 3473 B3 | 6416 E8 |
| 1406 D9 | 3474 B3 | 6417 F8 |
| 1407 D9 | 3475 B4 | 6422 A9 |
| 1408 C9 | 3476 B4 | 6423 A9 |
| 1409 C9 | 3477 B4 | 6424 A11 |
| 1410 C10 | 3478 B4 | 6425 A10 |
| 1411 C9 | 3479 B4 | 6426 A12 |
| 1412 C9 | 3480 B4 | 6427 B13 |
| 1413 C10 | 3481 B4 | 6428 C11 |
| 1414 C9 | 3482 B5 | 6429 C11 |
| 1415 C9 | 3483 B5 | 6430 D11 |
| 1416 C10 | 3484 B5 | 6431 F11 |
| 1417 E9 | 3485 B5 | 7402 H10 |
| 1418 E10 | 3486 B5 | 7403 D12 |
| 1420 D9 | 3487 B5 | 7404 B9 |
| 1421 D9 | 3488 B5 | 7405 B10 |
| 1422 D10 | 3489 B6 | 7406 B11 |
| 1426 E9 | 3490 B6 | 7407 B11 |
| 1427 E10 | 3491 B6 | 7408 A13 |
| 1428 E9 | 3492 C6 | 7409 H9 |
| 1429 D9 | 3494 C7 | 9406 B6 |
| 1430 D9 | 3495 C6 | 9408 A4 |
| 1431 D10 | 3496 C7 | 9409 F7 |
| 1432 F9 | 3497 C6 | 9411 G9 |
| 1433 F10 | 3498 D6 | 9412 F6 |
| 1434 G9 | 3499 D7 | 9413 F6 |
| 1435 G13 | 3500 E11 | 9415 F11 |
| 1436 I13 | 3501 E11 | |
| 1437 G5 | 3502 D6 | |
| 2427 B7 | 3503 D7 | |
| 2429 E1 | 3504 D6 | |
| 2430 E2 | 3505 E7 | |
| 2431 F2 | 3506 E7 | |
| 2432 F4 | 3507 A8 | |
| 2433 F4 | 3508 A9 | |
| 2434 F4 | 3509 B9 | |
| 2435 E4 | 3510 A9 | |
| 2436 E5 | 3511 A10 | |
| 2437 B9 | 3512 B10 | |
| 2438 B10 | 3513 A10 | |
| 2439 B11 | 3514 A11 | |
| 2440 B12 | 3515 B11 | |
| 2441 A13 | 3516 A11 | |
| 2442 F12 | 3517 A12 | |
| 2443 H2 | 3518 B12 | |
| 2444 H3 | 3519 A13 | |
| 2445 H3 | 3520 B13 | |
| 2446 G4 | 3521 C9 | |
| 2447 G5 | 3522 C9 | |
| 2448 I2 | 3523 C9 | |
| 2449 I3 | 3524 D9 | |
| 2450 G6 | 3525 D9 | |
| 2451 H8 | 3526 E9 | |
| 2452 H9 | 3527 E9 | |
| 2453 H9 | 3528 E9 | |
| 2454 H11 | 3529 F9 | |
| 2455 H11 | 3531 G9 | |
| 2456 H11 | 3532 G9 | |
| 2457 H13 | 3533 G10 | |
| 2458 H13 | 3534 G10 | |
| 2459 I13 | 3535 C11 | |
| 2460 I13 | 3536 F4 | |
| 2461 D12 | 3537 D11 | |
| 2463 B7 | 3538 F11 | |
| 2464 A2 | 3539 F11 | |
| 2465 A3 | 3540 G11 | |
| 2466 A3 | 3541 H2 | |
| 2467 A4 | 3542 H2 | |
| 3422 C7 | 3543 G4 | |
| 3424 B2 | 3544 G5 | |
| 3425 B1 | 3545 I7 | |
| 3426 C1 | 3546 I7 | |
| 3427 C1 | 3547 H7 | |
| 3428 C1 | 3548 I7 | |
| 3429 C2 | 3549 H8 | |
| 3430 C2 | 3550 H9 | |
| 3431 D2 | 3551 G11 | |
| 3432 D2 | 3552 H12 | |
| 3433 D2 | 3553 H12 | |
| 3434 D2 | 3554 G13 | |
| 3435 D2 | 3555 G13 | |
| 3436 D2 | 3556 I13 | |
| 3437 D2 | 3557 I13 | |
| 3438 E2 | 3558 D12 | |
| 3439 E1 | 3559 D12 | |
| 3443 B7 | 3560 D13 | |
| 3444 E2 | 3561 D13 | |
| 3445 E5 | 3563 A3 | |
| 3446 E3 | 3564 A3 | |
| 3447 E3 | 3570 G8 | |
| 3448 E3 | 4402 E6 | |
| 3449 E3 | 4403 D12 | |
| 3450 E3 | 4404 D13 | |
| 3451 E3 | 4412 F7 | |
| 3452 E4 | 4416 F9 | |
| 3453 F4 | 4417 E9 | |
| 3454 E5 | 4419 H9 | |
| 3455 E5 | 4436 A2 | |
| 3456 E5 | 4491 F9 | |
| 3457 E5 | 5401 B6 | |
| 3458 E5 | 5402 E4 | |
| 3459 E6 | 5403 E4 | |
| 3460 E6 | 5404 G6 | |
| 3461 A2 | 5405 C12 | |
| 3462 E6 | 6404 B1 | |
| 3463 A2 | 6405 C1 | |
| 3464 B2 | 6406 C1 | |
| 3465 B2 | 6407 C1 | |
| 3466 B2 | 6408 C8 | |
| 3467 B2 | 6409 C8 | |
| 3468 B3 | 6410 C8 | |
| 3469 B3 | 6411 D8 | |
| 3470 B3 | 6412 D8 | |
| 3471 B3 | 6413 E8 | |

D.C. VOLTAGES DURING ACTIVE PLAY .
 VALUES IN BRACKET ARE D.C. VOLTAGES AT STANDBY (CLOCK MODE) .
 VALUES IN SQUARE BRACKET ARE D.C. VOLTAGES AT LOW POWER STANDBY .

■ REFER TO VARIANTS TABLE IN SH130-4
 # FOR PROVISION ONLY

CIRCUIT DIAGRAM - HEADPHONE / MISCELLANEOUS PART

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1438 A1 | 2400 F4 | 2404 B7 | 2408 B9 | 2412 B4 | 2416 A4 | 2420 A5 | 2424 F3 | 2600 D8 | 2606 F8 | 3402 B9 | 3408 F4 | 3413 A3 | 3417 C3 | 3421 C8 | 3567 B8 | 3601 E6 | 3605 F7 | 4406 F4 | 4410 B5 | 4418 B3 | 5400 B7 | 6400 A7 | 6600 F7 | 7602 F6 | 9410 C5 | 9514 F4 |
| 1439 A1 | 2401 A7 | 2405 B7 | 2409 B9 | 2413 C3 | 2417 A4 | 2421 F2 | 2425 C7 | 2601 E8 | 2610 E7 | 3405 F5 | 3410 A2 | 3414 C2 | 3418 C6 | 3492 F4 | 3568 B9 | 3602 D8 | 4400 E4 | 4407 F3 | 4411 D5 | 4459 F2 | 5600 D7 | 6401 A7 | 6601 F7 | 9401 A9 | 9416 B5 | |
| 1600 E9 | 2402 A7 | 2406 A9 | 2410 F5 | 2414 A4 | 2418 A4 | 2422 F2 | 2426 C8 | 2602 F8 | 2611 E7 | 3406 E5 | 3411 A2 | 3415 C2 | 3419 C7 | 3565 A8 | 3569 E5 | 3603 D8 | 4401 E5 | 4408 C4 | 4414 E5 | 4487 A5 | 5601 E7 | 6402 B7 | 7600 E7 | 9402 A9 | 9488 F4 | |
| 1601 F8 | 2403 A7 | 2407 A9 | 2411 F5 | 2415 A4 | 2419 A5 | 2423 F3 | 2470 B6 | 2603 F7 | 3400 A9 | 3407 E4 | 3412 A3 | 3416 C3 | 3420 C7 | 3566 A9 | 3600 E6 | 3604 F7 | 4405 F5 | 4409 E4 | 4415 A5 | 4490 E4 | 5602 E8 | 6420 C7 | 7601 E7 | 9404 D5 | 9506 F3 | |



ELECTRICAL PARTS LIST - FRONT BOARD

MISCELLANEOUS

| | | |
|------|----------------|--------------------------|
| 1400 | 3139 110 52850 | FTD Display 12-ST-29GNK |
| 1402 | 4822 267 10953 | Flex Socket 7pin Vert. |
| 1406 | 2422 128 02917 | Tact Switch |
| 1407 | 2422 128 02917 | Tact Switch |
| 1408 | 2422 128 02917 | Tact Switch |
| 1409 | 2422 128 02917 | Tact Switch |
| 1410 | 2422 128 02917 | Tact Switch |
| 1411 | 2422 128 02917 | Tact Switch |
| 1412 | 2422 128 02917 | Tact Switch |
| 1413 | 2422 128 02917 | Tact Switch |
| 1414 | 2422 128 02917 | Tact Switch |
| 1415 | 2422 128 02917 | Tact Switch |
| 1416 | 2422 128 02917 | Tact Switch |
| 1417 | 2422 128 02917 | Tact Switch |
| 1418 | 2422 128 02917 | Tact Switch |
| 1420 | 2422 128 02917 | Tact Switch |
| 1421 | 2422 128 02917 | Tact Switch |
| 1422 | 2422 128 02917 | Tact Switch |
| 1426 | 2422 128 02917 | Tact Switch |
| 1427 | 2422 128 02917 | Tact Switch |
| 1428 | 2422 128 02917 | Tact Switch |
| 1429 | 2422 128 02917 | Tact Switch |
| 1430 | 2422 128 02917 | Tact Switch |
| 1431 | 2422 128 02917 | Tact Switch |
| 1432 | 2422 128 02917 | Tact Switch |
| 1433 | 2422 128 02917 | Tact Switch |
| 1434 | 2422 128 02917 | Tact Switch |
| 1435 | 2422 129 16707 | Rotary Encoder 24P |
| 1436 | 2422 129 16708 | Rotary Encoder 24P |
| 1437 | 4822 242 11033 | X'tal Resonator 4,332MHz |
| 1438 | 2422 025 17413 | Flex Socket 32pin Hort. |
| 1439 | 2422 025 17414 | Flex Socket 30pin Hort. |
| 1600 | 2422 026 05059 | Headphone Socket |
| 1800 | 2422 026 05059 | Mic Socket /21M |
| 1801 | 4822 267 10958 | Flex Socket 5pin Hort. |

CAPACITORS

| | | |
|------|----------------|--------------------|
| 2402 | 4822 124 23432 | 100uF 20% 10V |
| 2403 | 2238 586 59812 | 100nF +80/-20% 50V |
| 2404 | 4822 124 23432 | 100uF 20% 10V |
| 2405 | 2238 586 59812 | 100nF +80/-20% 50V |
| 2406 | 4822 124 12032 | 4,7uF 20% 50V |
| 2407 | 4822 124 12032 | 4,7uF 20% 50V |
| 2408 | 4822 124 12032 | 4,7uF 20% 50V |
| 2409 | 4822 124 12032 | 4,7uF 20% 50V |
| 2412 | 2238 586 59812 | 100nF +80/-20% 50V |
| 2425 | 3198 017 34730 | 47nF 16V |
| 2426 | 4822 126 13879 | 220nF +80/-20% 16V |
| 2427 | 3198 028 52290 | 22uF 20% 50V |
| 2428 | 3198 017 41050 | 1uF 10V |
| 2432 | 2222 867 15339 | 33pF 5% 50V |
| 2433 | 2222 867 15339 | 33pF 5% 50V |

RESISTORS

| | | |
|------|----------------|---------------|
| 3400 | 4822 050 24708 | 4R7 1% 0,6W |
| 3402 | 4822 050 24708 | 4R7 1% 0,6W |
| 3410 | 4822 051 30103 | 10k 5% 0,062W |
| 3411 | 4822 051 30103 | 10k 5% 0,062W |
| 3412 | 4822 051 30103 | 10k 5% 0,062W |
| 3413 | 4822 051 30103 | 10k 5% 0,062W |

ELECTRICAL PARTS LIST - FRONT BOARD

| | | |
|------|----------------|----------------|
| 3414 | 4822 051 30102 | 1k 5% 0,062W |
| 3415 | 4822 050 11002 | 1k 1% 0,4W |
| 3416 | 4822 051 30102 | 1k 5% 0,062W |
| 3417 | 4822 051 30102 | 1k 5% 0,062W |
| 3418 | 4822 116 52243 | 1k5 5% 0,5W |
| 3419 | 4822 117 12864 | 82k 5% 0,062W |
| 3420 | 4822 117 12864 | 82k 5% 0,062W |
| 3421 | 4822 051 30474 | 470k 5% 0,062W |
| 3422 | 4822 051 30102 | 1k 5% 0,062W |
| 3423 | 4822 051 30103 | 10k 5% 0,062W |
| 3424 | 4822 051 30102 | 1k 5% 0,062W |
| 3425 | 4822 051 30103 | 10k 5% 0,062W |
| 3426 | 4822 051 30102 | 1k 5% 0,062W |
| 3427 | 4822 051 30103 | 10k 5% 0,062W |
| 3428 | 4822 051 30103 | 10k 5% 0,062W |
| 3429 | 4822 051 30102 | 1k 5% 0,062W |
| 3430 | 4822 051 30102 | 1k 5% 0,062W |
| 3431 | 4822 051 30102 | 1k 5% 0,062W |
| 3432 | 4822 051 30102 | 1k 5% 0,062W |
| 3433 | 4822 051 30102 | 1k 5% 0,062W |
| 3434 | 4822 051 30102 | 1k 5% 0,062W |
| 3435 | 4822 051 30102 | 1k 5% 0,062W |
| 3436 | 4822 051 30102 | 1k 5% 0,062W |
| 3437 | 4822 051 30102 | 1k 5% 0,062W |
| 3438 | 4822 051 30102 | 1k 5% 0,062W |
| 3439 | 4822 051 30103 | 10k 5% 0,062W |
| 3443 | 4822 051 30102 | 1k 5% 0,062W |
| 3444 | 4822 051 30102 | 1k 5% 0,062W |
| 3445 | 4822 051 30102 | 1k 5% 0,062W |
| 3446 | 4822 051 30102 | 1k 5% 0,062W |
| 3447 | 4822 051 30102 | 1k 5% 0,062W |
| 3448 | 4822 051 30102 | 1k 5% 0,062W |
| 3449 | 4822 050 11002 | 1k 1% 0,4W |
| 3450 | 4822 051 30102 | 1k 5% 0,062W |
| 3451 | 4822 051 30102 | 1k 5% 0,062W |
| 3452 | 4822 050 21003 | 10k 1% 0,6W |
| 3453 | 4822 051 30103 | 10k 5% 0,062W |
| 3454 | 4822 051 30102 | 1k 5% 0,062W |
| 3455 | 4822 051 30102 | 1k 5% 0,062W |
| 3456 | 4822 051 30102 | 1k 5% 0,062W |
| 3457 | 4822 050 21003 | 10k 1% 0,6W |
| 3458 | 4822 051 30102 | 1k 5% 0,062W |
| 3459 | 4822 050 21003 | 10k 1% 0,6W |
| 3460 | 4822 051 30102 | 1k 5% 0,062W |
| 3462 | 4822 051 30105 | 1M 5% 0,062W |
| 3464 | 4822 051 30102 | 1k 5% 0,062W |
| 3465 | 4822 051 30102 | 1k 5% 0,062W |
| 3466 | 4822 051 30102 | 1k 5% 0,062W |
| 3467 | 4822 051 30102 | 1k 5% 0,062W |
| 3468 | 4822 051 30102 | 1k 5% 0,062W |
| 3469 | 4822 051 30102 | 1k 5% 0,062W |
| 3470 | 4822 051 30102 | 1k 5% 0,062W |
| 3471 | 4822 051 30102 | 1k 5% 0,062W |
| 3472 | 4822 051 30102 | 1k 5% 0,062W |
| 3473 | 4822 051 30102 | 1k 5% 0,062W |
| 3474 | 4822 051 30102 | 1k 5% 0,062W |
| 3475 | 4822 051 30102 | 1k 5% 0,062W |
| 3476 | 4822 051 30102 | 1k 5% 0,062W |
| 3477 | 4822 051 30102 | 1k 5% 0,062W |
| 3478 | 4822 051 30102 | 1k 5% 0,062W |
| 3479 | 4822 051 30102 | 1k 5% 0,062W |
| 3480 | 4822 051 30102 | 1k 5% 0,062W |
| 3481 | 4822 051 30102 | 1k 5% 0,062W |
| 3482 | 4822 051 30102 | 1k 5% 0,062W |
| 3483 | 4822 051 30102 | 1k 5% 0,062W |
| 3484 | 4822 051 30102 | 1k 5% 0,062W |
| 3485 | 4822 051 30102 | 1k 5% 0,062W |
| 3486 | 4822 051 30102 | 1k 5% 0,062W |
| 3487 | 4822 051 30102 | 1k 5% 0,062W |
| 3488 | 4822 051 30102 | 1k 5% 0,062W |
| 3489 | 4822 051 30102 | 1k 5% 0,062W |
| 3490 | 4822 051 30102 | 1k 5% 0,062W |
| 3491 | 4822 051 30102 | 1k 5% 0,062W |
| 3492 | 4822 117 12968 | 820R 5% 0,062W |
| 3493 | 4822 051 30102 | 1k 5% 0,062W |
| 3494 | 4822 051 30102 | 1k 5% 0,062W |
| 3495 | 4822 051 30102 | 1k 5% 0,062W |
| 3496 | 4822 051 30102 | 1k 5% 0,062W |
| 3497 | 4822 051 30102 | 1k 5% 0,062W |
| 3498 | 4822 051 30102 | 1k 5% 0,062W |
| 3499 | 4822 051 30102 | 1k 5% 0,062W |
| 3500 | 4822 051 30102 | 1k 5% 0,062W |
| 3501 | 4822 051 30102 | 1k 5% 0,062W |
| 3502 | 4822 051 30102 | 1k 5% 0,062W |
| 3503 | 4822 051 30102 | 1k 5% 0,062W |
| 3504 | 4822 051 30101 | 100R 5% 0,062W |
| 3505 | 4822 051 30102 | 1k 5% 0,062W |
| 3507 | 4822 051 30471 | 470R 5% 0,062W |
| 3508 | 4822 051 30471 | 470R 5% 0,062W |
| 3509 | 4822 051 30103 | 10k 5% 0,062W |
| 3510 | 4822 051 30471 | 470R 5% 0,062W |
| 3511 | 4822 051 30471 | 470R 5% 0,062W |
| 3512 | 4822 051 30103 | 10k 5% 0,062W |
| 3513 | 4822 051 30471 | 470R 5% 0,062W |
| 3514 | 4822 051 30471 | 470R 5% 0,062W |
| 3515 | 4822 051 30103 | 10k 5% 0,062W |
| 3516 | 4822 051 30471 | 470R 5% 0,062W |
| 3517 | 4822 051 30471 | 470R 5% 0,062W |
| 3518 | 4822 051 30103 | 10k 5% 0,062W |
| 3519 | 4822 117 12968 | 820R 5% 0,062W |
| 3520 | 4822 117 12925 | 47k 5% 0,062W |
| 3521 | 4822 051 30331 | 330R 5% 0,062W |
| 3522 | 4822 116 52219 | 330R 5% 0,5W |
| 3523 | 4822 116 52219 | 330R 5% 0,5W |

ELECTRICAL PARTS LIST - FRONT BOARD**RESISTORS**

| | | | | | |
|------|----------------|------------------|------|----------------|-----------------|
| 3524 | 4822 116 52219 | 330R 5% 0,5W | 3801 | 4822 117 11817 | 1k2 1% 1/16W |
| 3525 | 4822 116 52219 | 330R 5% 0,5W | 3802 | 4822 051 30103 | 10k 5% 0,062W |
| 3526 | 4822 116 52219 | 330R 5% 0,5W | 3803 | 4822 051 30103 | 10k 5% 0,062W |
| 3527 | 4822 116 52219 | 330R 5% 0,5W | 3804 | 4822 051 30272 | 2k7 5% 0,062W |
| 3528 | 4822 116 52219 | 330R 5% 0,5W | 3805 | 4822 051 30105 | 1M 5% 0,062W |
| 3529 | 4822 116 52219 | 330R 5% 0,5W | 3806 | 4822 051 30339 | 33R 5% 0,062W |
| 3531 | 4822 051 30103 | 10k 5% 0,062W | 3807 | 2120 366 90292 | Potm Rotary 20K |
| 3532 | 4822 051 30474 | 470k 5% 0,062W | 3808 | 4822 051 30471 | 470R 5% 0,062W |
| 3533 | 4822 051 30474 | 470k 5% 0,062W | 3809 | 4822 051 30681 | 680R 5% 0,062W |
| 3534 | 4822 051 30474 | 470k 5% 0,062W | 3810 | 4822 051 30105 | 1M 5% 0,062W |
| 3535 | 4822 051 30472 | 4k7 5% 0,062W | 3811 | 4822 051 30331 | 330R 5% 0,062W |
| 3536 | 4822 050 11002 | 1k 1% 0,4W | 3812 | 4822 051 30103 | 10k 5% 0,062W |
| 3537 | 4822 051 30474 | 470k 5% 0,062W | 3813 | 4822 051 30471 | 470R 5% 0,062W |
| 3538 | 4822 051 30102 | 1k 5% 0,062W | 3814 | 4822 051 30105 | 1M 5% 0,062W |
| 3539 | 4822 051 30102 | 1k 5% 0,062W | 3815 | 4822 051 30154 | 150k 5% 0,062W |
| 3540 | 4822 051 30102 | 1k 5% 0,062W | 3816 | 4822 051 30102 | 1k 5% 0,062W |
| 3541 | 4822 051 30103 | 10k 5% 0,062W | 3817 | 4822 117 12903 | 1k8 1% 0,062W |
| 3542 | 4822 051 30152 | 1k5 5% 0,062W | 3818 | 4822 051 30105 | 1M 5% 0,062W |
| 3543 | 4822 117 12891 | 220k 1% 0,062W | 3819 | 4822 051 30101 | 100R 5% 0,062W |
| 3544 | 4822 051 30222 | 2k2 5% 0,062W | 3820 | 4822 051 30103 | 10k 5% 0,062W |
| 3545 | 4822 050 21003 | 10k 1% 0,6W | 3821 | 4822 051 30103 | 10k 5% 0,062W |
| 3546 | 4822 051 30103 | 10k 5% 0,062W | 3822 | 4822 051 30105 | 1M 5% 0,062W |
| 3547 | 4822 050 21003 | 10k 1% 0,6W | 3823 | 4822 051 30123 | 12k 5% 0,062W |
| 3548 | 4822 051 30103 | 10k 5% 0,062W | 3824 | 4822 051 30221 | 220R 5% 0,062W |
| 3549 | 4822 051 30103 | 10k 5% 0,062W | 4400 | 4822 051 30008 | 0R Jumper 0603 |
| 3550 | 4822 117 13632 | 100k 1% 0,062W | 4401 | 4822 051 30008 | 0R Jumper 0603 |
| 3551 | 4822 051 30101 | 100R 5% 0,062W | 4405 | 4822 051 30008 | 0R Jumper 0603 |
| 3552 | 4822 051 30103 | 10k 5% 0,062W | 4406 | 4822 051 30008 | 0R Jumper 0603 |
| 3553 | 4822 051 30102 | 1k 5% 0,062W | 4409 | 4822 051 30008 | 0R Jumper 0603 |
| 3554 | 4822 051 30103 | 10k 5% 0,062W | 4410 | 4822 051 30008 | 0R Jumper 0603 |
| 3555 | 4822 051 30103 | 10k 5% 0,062W | 4411 | 4822 051 30008 | 0R Jumper 0603 |
| 3556 | 4822 051 30103 | 10k 5% 0,062W | 4412 | 4822 051 30008 | 0R Jumper 0603 |
| 3557 | 4822 051 30103 | 10k 5% 0,062W | 4414 | 4822 051 30008 | 0R Jumper 0603 |
| 3558 | 4822 051 30682 | 6k8 5% 0,062W | 4417 | 4822 051 30008 | 0R Jumper 0603 |
| 3559 | 4822 051 30102 | 1k 5% 0,062W | 4418 | 4822 051 30008 | 0R Jumper 0603 |
| 3560 | 4822 051 30682 | 6k8 5% 0,062W | 4419 | 4822 051 30008 | 0R Jumper 0603 |
| 3561 | 4822 051 30102 | 1k 5% 0,062W | 4420 | 4822 051 30008 | 0R Jumper 0603 |
| 3565 | 4822 050 24708 | 4R7 1% 0,6W /21M | 4421 | 4822 051 30008 | 0R Jumper 0603 |
| 3565 | 4822 116 81154 | 2R2 5% 0,5W /22 | 4422 | 4822 051 30008 | 0R Jumper 0603 |
| 3566 | 4822 116 81154 | 2R2 5% 0,5W /22 | 4423 | 4822 051 30008 | 0R Jumper 0603 |
| 3567 | 4822 050 24708 | 4R7 1% 0,6W | 4424 | 4822 051 30008 | 0R Jumper 0603 |
| 3567 | 4822 116 81154 | 2R2 5% 0,5W /22 | 4425 | 4822 051 30008 | 0R Jumper 0603 |
| 3568 | 4822 116 81154 | 2R2 5% 0,5W /22 | 4426 | 4822 051 30008 | 0R Jumper 0603 |
| 3569 | 4822 051 30103 | 10k 5% 0,062W | 4427 | 4822 051 30008 | 0R Jumper 0603 |
| 3570 | 4822 117 13632 | 100k 1% 0,062W | 4428 | 4822 051 30008 | 0R Jumper 0603 |
| 3600 | 4822 051 30102 | 1k 5% 0,062W | 4429 | 4822 051 30008 | 0R Jumper 0603 |
| 3601 | 4822 051 30102 | 1k 5% 0,062W | 4430 | 4822 051 30008 | 0R Jumper 0603 |
| 3602 | 4822 050 11002 | 1k 1% 0,4W | 4431 | 4822 051 30008 | 0R Jumper 0603 |
| 3603 | 4822 051 30472 | 4k7 5% 0,062W | 4432 | 4822 051 30008 | 0R Jumper 0603 |
| 3604 | 4822 051 30472 | 4k7 5% 0,062W | 4433 | 4822 051 30008 | 0R Jumper 0603 |
| 3605 | 4822 051 30103 | 10k 5% 0,062W | 4434 | 4822 051 30008 | 0R Jumper 0603 |
| 3800 | 4822 050 11002 | 1k 1% 0,4W | 4435 | 4822 051 30008 | 0R Jumper 0603 |

ELECTRICAL PARTS LIST - FRONT BOARD

| | | | | | |
|------|----------------|----------------|------|----------------|----------------|
| 4437 | 4822 051 30008 | 0R Jumper 0603 | 4491 | 4822 051 30008 | 0R Jumper 0603 |
| 4438 | 4822 051 30008 | 0R Jumper 0603 | 4601 | 4822 051 30008 | 0R Jumper 0603 |
| 4439 | 4822 051 30008 | 0R Jumper 0603 | 4801 | 4822 051 30008 | 0R Jumper 0603 |
| 4440 | 4822 051 30008 | 0R Jumper 0603 | 4802 | 4822 051 30008 | 0R Jumper 0603 |
| 4441 | 4822 051 30008 | 0R Jumper 0603 | 4803 | 4822 051 30008 | 0R Jumper 0603 |
| 4442 | 4822 051 30008 | 0R Jumper 0603 | 4804 | 4822 051 30008 | 0R Jumper 0603 |
| 4443 | 4822 051 30008 | 0R Jumper 0603 | 4805 | 4822 051 30008 | 0R Jumper 0603 |
| 4444 | 4822 051 30008 | 0R Jumper 0603 | 4806 | 4822 051 30008 | 0R Jumper 0603 |
| 4445 | 4822 051 30008 | 0R Jumper 0603 | | | |
| 4446 | 4822 051 30008 | 0R Jumper 0603 | | | |
| 4447 | 4822 051 30008 | 0R Jumper 0603 | | | |
| 4448 | 4822 051 30008 | 0R Jumper 0603 | | | |
| 4449 | 4822 051 30008 | 0R Jumper 0603 | | | |
| 4450 | 4822 051 30008 | 0R Jumper 0603 | | | |
| 4451 | 4822 051 30008 | 0R Jumper 0603 | | | |
| 4452 | 4822 051 30008 | 0R Jumper 0603 | | | |
| 4453 | 4822 051 30008 | 0R Jumper 0603 | | | |
| 4454 | 4822 051 30008 | 0R Jumper 0603 | | | |
| 4455 | 4822 051 30008 | 0R Jumper 0603 | | | |
| 4456 | 4822 051 30008 | 0R Jumper 0603 | | | |
| 4457 | 4822 051 30008 | 0R Jumper 0603 | | | |
| 4458 | 4822 051 30008 | 0R Jumper 0603 | | | |
| 4459 | 4822 051 30008 | 0R Jumper 0603 | | | |
| 4460 | 4822 051 30008 | 0R Jumper 0603 | | | |
| 4461 | 4822 051 30008 | 0R Jumper 0603 | | | |
| 4462 | 4822 051 30008 | 0R Jumper 0603 | | | |
| 4463 | 4822 051 30008 | 0R Jumper 0603 | | | |
| 4464 | 4822 051 30008 | 0R Jumper 0603 | | | |
| 4465 | 4822 051 30008 | 0R Jumper 0603 | | | |
| 4466 | 4822 051 30008 | 0R Jumper 0603 | | | |
| 4467 | 4822 051 30008 | 0R Jumper 0603 | | | |
| 4468 | 4822 051 30008 | 0R Jumper 0603 | | | |
| 4469 | 4822 051 30008 | 0R Jumper 0603 | | | |
| 4470 | 4822 051 30008 | 0R Jumper 0603 | | | |
| 4471 | 4822 051 30008 | 0R Jumper 0603 | | | |
| 4472 | 4822 051 30008 | 0R Jumper 0603 | | | |
| 4473 | 4822 051 30008 | 0R Jumper 0603 | | | |
| 4474 | 4822 051 30008 | 0R Jumper 0603 | | | |
| 4475 | 4822 051 30008 | 0R Jumper 0603 | | | |
| 4476 | 4822 051 30008 | 0R Jumper 0603 | | | |
| 4477 | 4822 051 30008 | 0R Jumper 0603 | | | |
| 4478 | 4822 051 30008 | 0R Jumper 0603 | | | |
| 4479 | 4822 051 30008 | 0R Jumper 0603 | | | |
| 4480 | 4822 051 30008 | 0R Jumper 0603 | | | |
| 4481 | 4822 051 30008 | 0R Jumper 0603 | | | |
| 4482 | 4822 051 30008 | 0R Jumper 0603 | | | |
| 4483 | 4822 051 30008 | 0R Jumper 0603 | | | |
| 4484 | 4822 051 30008 | 0R Jumper 0603 | | | |
| 4485 | 4822 051 30008 | 0R Jumper 0603 | | | |
| 4486 | 4822 051 30008 | 0R Jumper 0603 | | | |
| 4488 | 4822 051 30008 | 0R Jumper 0603 | | | |
| 4490 | 4822 051 30008 | 0R Jumper 0603 | | | |

COILS & FILTERS

| | | |
|------|----------------|---------------------------|
| 5400 | 4822 157 62552 | Coil 2,2uH 5% |
| 5402 | 4822 242 72066 | Ceram Resonator 8MHz |
| 5403 | 2422 543 01069 | X'tal Resonator 32,768kHz |
| 5404 | 4822 157 62552 | Coil 2,2uH 5% |
| 5405 | 4822 157 62552 | Coil 2,2uH 5% |
| 5600 | 4822 157 62552 | Coil 2,2uH 5% |
| 5601 | 4822 157 62552 | Coil 2,2uH 5% |
| 5602 | 4822 157 62552 | Coil 2,2uH 5% |
| 5800 | 4822 157 11235 | Coil 22uH 5% |

DIODES

| | | |
|------|----------------|--------------|
| 6400 | 4822 130 31878 | 1N4003G |
| 6401 | 4822 130 31878 | 1N4003G |
| 6402 | 4822 130 31878 | 1N4003G |
| 6404 | 4822 130 30621 | 1N4148 |
| 6405 | 4822 130 30621 | 1N4148 |
| 6406 | 4822 130 30621 | 1N4148 |
| 6407 | 4822 130 30621 | 1N4148 |
| 6408 | 4822 130 30621 | 1N4148 |
| 6409 | 4822 130 30621 | 1N4148 |
| 6410 | 4822 130 30621 | 1N4148 |
| 6411 | 4822 130 30621 | 1N4148 |
| 6412 | 4822 130 30621 | 1N4148 |
| 6413 | 4822 130 30621 | 1N4148 |
| 6415 | 4822 130 30621 | 1N4148 |
| 6416 | 4822 130 30621 | 1N4148 |
| 6417 | 4822 130 30621 | 1N4148 |
| 6420 | 4822 130 30621 | 1N4148 |
| 6422 | 9322 178 15676 | LTL-8166FTNN |
| 6423 | 9322 178 15676 | LTL-8166FTNN |
| 6424 | 9322 178 15676 | LTL-8166FTNN |
| 6425 | 9322 178 15676 | LTL-8166FTNN |
| 6426 | 4822 130 30621 | 1N4148 |
| 6427 | 9322 179 76676 | LTL-816EELC |
| 6428 | 4822 130 30621 | 1N4148 |
| 6429 | 4822 130 30621 | 1N4148 |
| 6430 | 4822 130 30621 | 1N4148 |
| 6600 | 4822 130 30621 | 1N4148 |
| 6800 | 4822 130 30621 | 1N4148 |
| 6801 | 4822 130 30621 | 1N4148 |

ELECTRICAL PARTS LIST - FRONT BOARD

TRANSISTORS & INTEGRATED CIRCUITS

| | | |
|------|----------------|--|
| 7400 | 3139 110 52961 | TMP87CS71F "V355S52961" for FW-V355/21M |
| 7400 | 3139 110 53141 | TMP87CS71F "M355S53141" for FW-M355/22 |
| 7401 | 9352 679 67118 | SAA6579T/V1/M4 |
| 7402 | 9322 155 82667 | IR Reciver TSOP2236ZC1 |
| 7403 | 9965 000 04931 | M24C01-WMN6 |
| 7404 | 4822 130 60511 | BC847B |
| 7405 | 4822 130 60511 | BC847B |
| 7406 | 4822 130 60511 | BC847B |
| 7407 | 4822 130 60511 | BC847B |
| 7408 | 4822 130 60373 | BC857B |
| 7409 | 4822 130 60511 | BC847B |
| 7411 | 4822 130 60511 | BC847B |
| 7600 | 4822 130 42804 | BC817-25 |
| 7601 | 4822 130 42804 | BC817-25 |
| 7602 | 4822 130 60373 | BC857B |
| 7800 | 4822 130 60511 | BC847B |
| 7801 | 4822 130 60511 | BC847B |
| 7802 | 4822 130 60511 | BC847B |
| 7803 | 4822 130 60511 | BC847B |
| 7804 | 4822 130 60511 | BC847B |
| 7805 | 4822 130 60511 | BC847B |

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

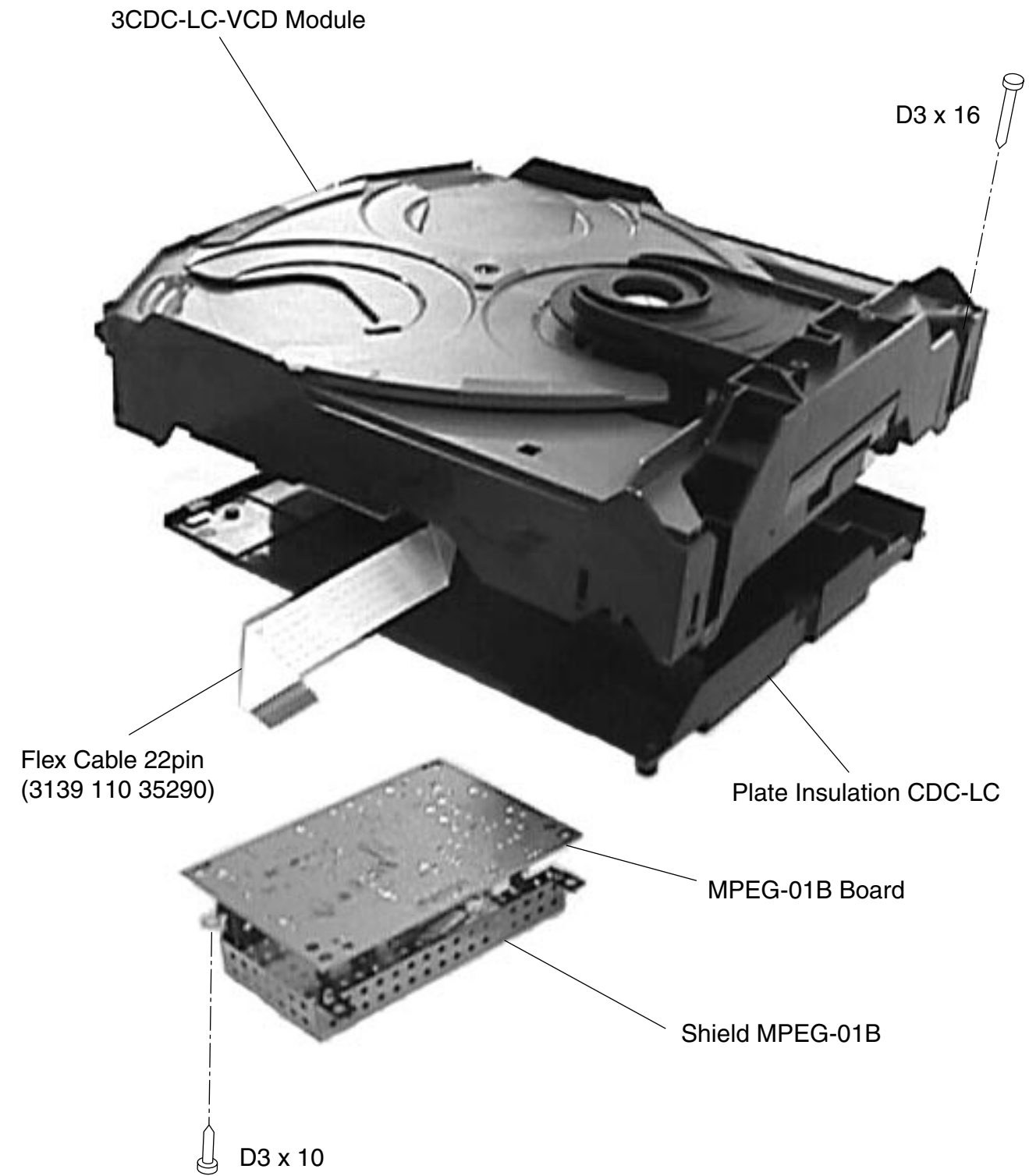
VCD - MPEG-01B MODULE

This chapter shows the MPEG-01B Board, for 3CDC-LC-VCD mechanism & electronics please refer to Chapter 10

TABLE OF CONTENTS

| | |
|---------------------------------------|------|
| Exploded View of Module | 8-1 |
| Brief Introduction | 8-2 |
| Block diagram | 8-3 |
| Internal Block diagram (IC7212) | 8-3 |
| ES3880 pins assignment | 8-4 |
| ES3883 pins assignment | 8-5 |
| MPEG-01B Board layout | 8-6 |
| ES3880 Circuit diagram | 8-7 |
| ES3883 Circuit diagram | 8-8 |
| Audio Circuit diagram | 8-9 |
| Electrical parts list..... | 8-10 |

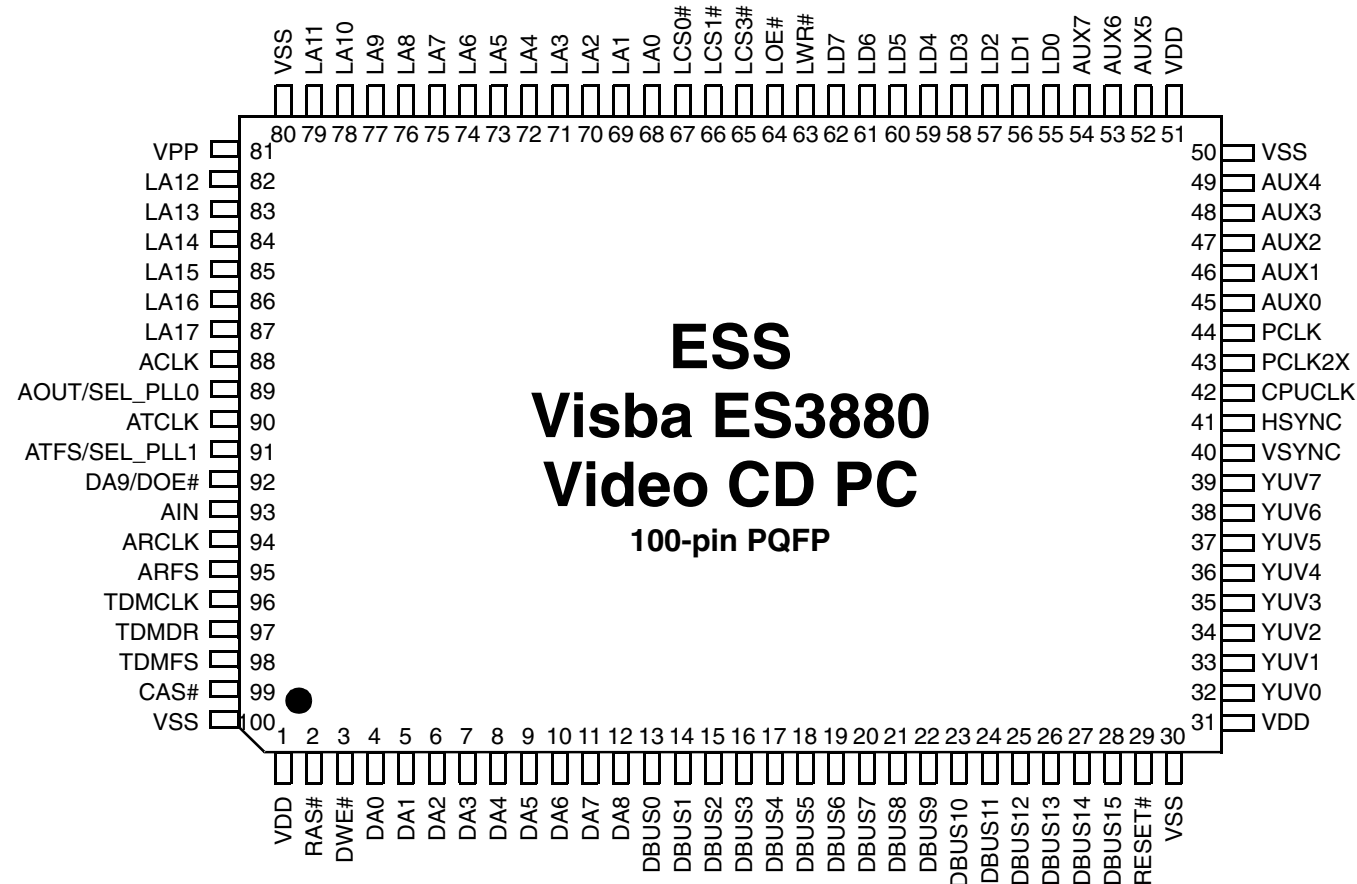
EXPLODED VIEW OF MODULE



NOTES:***Brief Introduction on the MPEG***

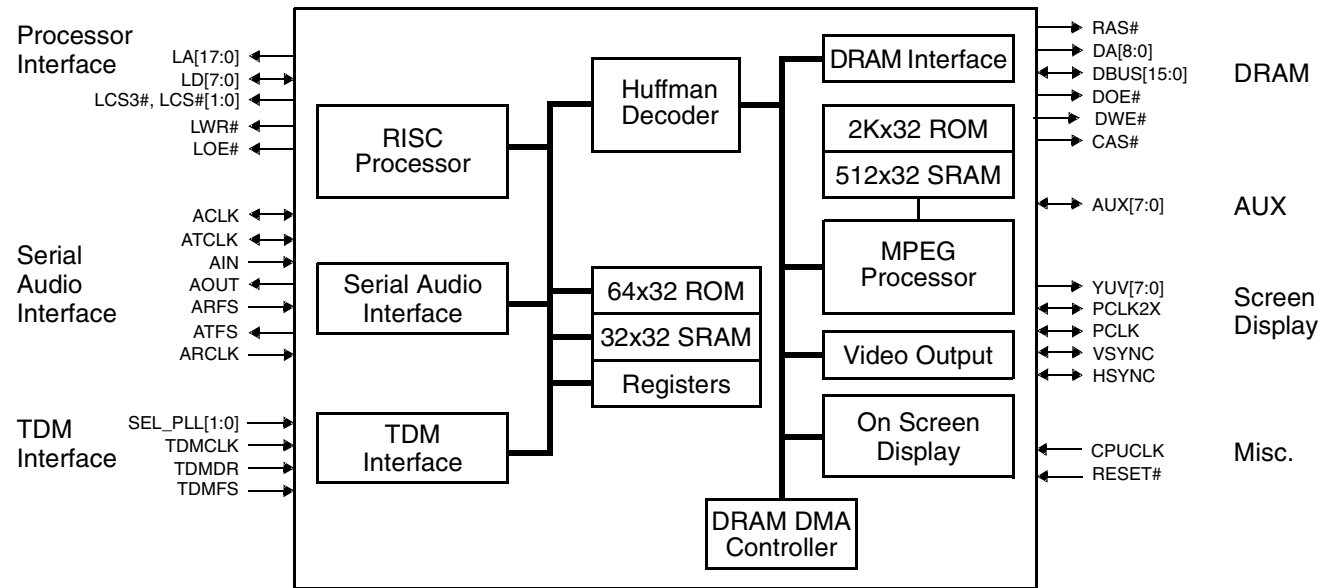
1. When VCD source is selected the MPEG_RESET line will go positive triggering the following:
 - DRST pulse to reset 8-bit microcontroller IC 7212
 - RSTOUT# pulse to reset IC 7201 ES3880
 - IC7212 sends CD10_RST to reset Signal Processor IC 7802 on the CD Board.
2. Communication will establish as follows:
 - DSA_ACK, DSA_STB and DSA_DAT between μ Processor IC 7401 on the Front Board and IC 7201 ES3880.
 - DSA_STB to IC7204 ES3883 to select between NTSC (Lo) or PALS (Hi)
 - DSA_A, DSA_D and DSA_S between IC 7201 ES3880 and microcontroller IC7212
 - SILD, SICL, RAB and SDA between microcontroller IC7212 and Signal Processor IC7802 on the CD Board.
3. Other activities between IC7201 ES3880 and Eprom IC7202, Dram IC7203 and IC7204 ES3883 will follows resulting in the OSD display on the TV set connected to the Video out socket.
4. When play button is activated the I²S signal (IIS_SCLK, IIS_WCLK and IIS_DATA) from the CD Board will enter IC7201 ES3880 which will work closely with the Eprom IC7202 and Dram IC7203. Inverter IC7205 74HC04D serves to reconstruct the Digital signal & level required by IC7201 ES3880.
5. Digital Audio information (AUDIOCLK, AUDA and BCLK) will be send to DAC (Digital to Analog Converter) of IC7204 ES3883.
6. Analog output (AOL+, AOL-, AOR+ and AOR-) is amplified by the differential Op. Amplifier IC7207 NJM4560M.
7. Digital Video information YUV(0...7) will be send to the Video processing part of IC7204 ES3883 and out to the Video out socket.
8. The HSYNC & VSYNC from IC7204 ES3883 to IC7201 ES3880 are to synchronize the Digital Video Information.
9. Mic Echo Input into IC7204 ES3883 is converted to digital signal (ARCLK, AIN and ARFS) for IC7201 ES3880 to combine into the Digital Audio Information.

ES3880 VIDEO CD PROCESSOR CHIP



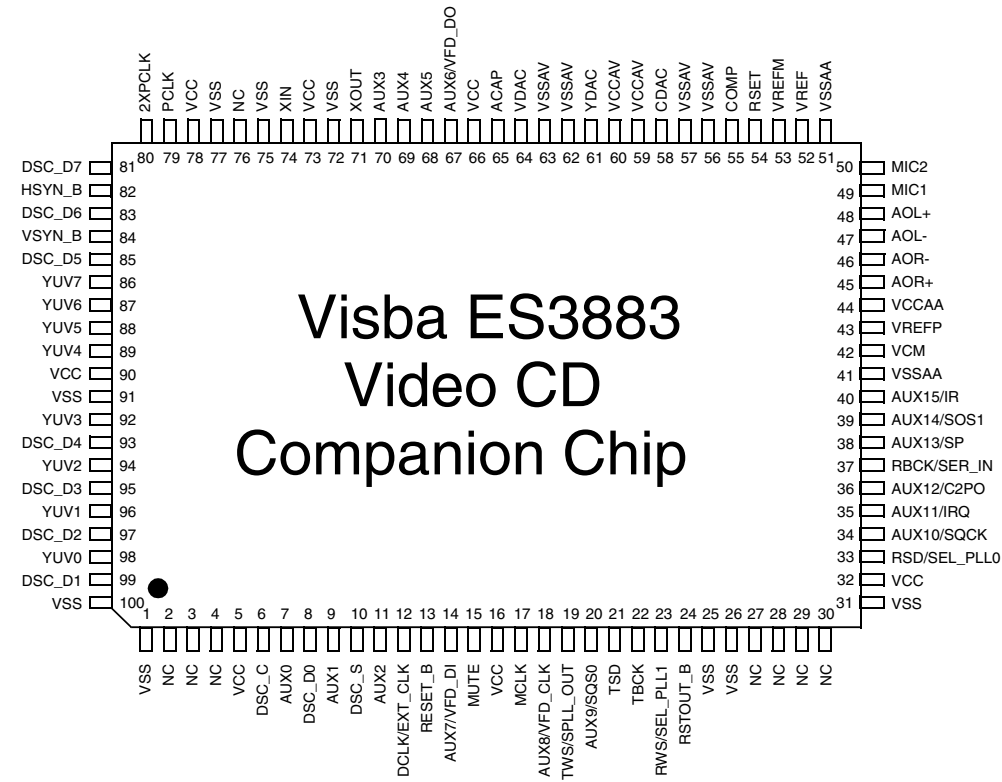
VISBA VIDEO PC PROCESSOR CHIP PIN DESCRIPTION

| Name | Number | I/O | Definition |
|---------------|-------------------|-----|--|
| VDD | 1, 31, 51 | I | Voltage supply for 3.3 V. |
| RAS# | 2 | O | DRAM row address strobe (active low). |
| DWE# | 3 | O | DRAM write enable (active low). |
| DA[8:0] | 12:4 | O | DRAM multiplexed row and column address bus. |
| DBUS[15:0] | 28:13 | I/O | DRAM data bus. |
| RESET# | 29 | I | System reset (active low). |
| VSS | 30, 50, 80, 100 | I | Ground. |
| YUV[7:0] | 39:32 | O | Y is luminance, UV are chrominance data bus for screen video interface. YUV[7:0] for 8-bit YUV mode. |
| VSYNC | 40 | I/O | Vertical sync for screen video interface, programmable for rising or falling edge. |
| HSYNC | 41 | I/O | Horizontal sync for screen video interface, programmable for rising or falling edge. |
| CPUCLK | 42 | I | RISC and system clock input. CPUCLK is used only if SEL_PLL[1:0] = 00. |
| PCLK2X | 43 | I/O | Pixel clock; two times the actual pixel clock for screen video interface. |
| PCLK | 44 | I/O | Pixel clock qualifier in for screen video interface. |
| AUX[7:0] | 54, 52, 53, 49:45 | I/O | Auxiliary control pins (AUX0 and AUX1 are open collectors). |
| LD[7:0] | 62:55 | I/O | RISC interface data bus. |
| LWR# | 63 | O | RISC interface write enable (active low). |
| LOE# | 64 | O | RISC interface output enable (active low). |
| LCS[3,1,0]# | 65,66,67 | O | RISC interface chip select (active low). |
| LA[17:0] | 87:82, 79:68 | O | RISC interface address bus. |
| VPP | 81 | I | Digital supply voltage for 5 V. |
| ACLK | 88 | I/O | Master clock for external audio DAC (8.192 MHz, 11.2896 MHz, 12.288 MHz, 16.9344 MHz, and 18.432 MHz). |
| AOUT/SEL_PLL0 | 89 | O | Dual-purpose pin. AOUT is the audio interface serial data output |
| | | I | Pins SEL_PLL[1:0] select phase-lock loop (PLL) clock frequency CPUCLK for the Visba: 00 = bypass PLL. 01 = 54 MHz PLL. 10 = 67.5 MHz PLL. 11 = 81 MHz PLL. |
| ATCLK | 90 | I/O | Audio transmit bit clock. |
| ATFS/SEL_PLL1 | 91 | O | Dual-purpose pin. ATFS is the audio interface transmit frame sync. |
| | | I | Pins SEL_PLL[1:0] select phase-lock loop (PLL) clock frequency CPUCLK for the Visba. See the SEL_PLL0 pin above for the settings. |
| DA9/DOE# | 92 | O | Dual purpose pin: DRAM output enable (active low)/DRAM multiplexed row and column address bus. |
| AIN | 93 | I | Audio interface serial data input. |
| ARCLK | 94 | I | Audio receive bit clock. |
| ARFS | 95 | I | Audio interface receive frame sync. |
| TDMCLK | 96 | I | TDM interface serial clock. |
| TDMDR | 97 | I | TDM interface serial data receive. |
| TDMFS | 98 | I | TDM interface frame sync. |
| CAS# | 99 | O | DRAM column address strobe bank 0 (active low). |



Visba Video CD PC Block Diagram

ES3883 VIDEO CD COMPANION CHIP

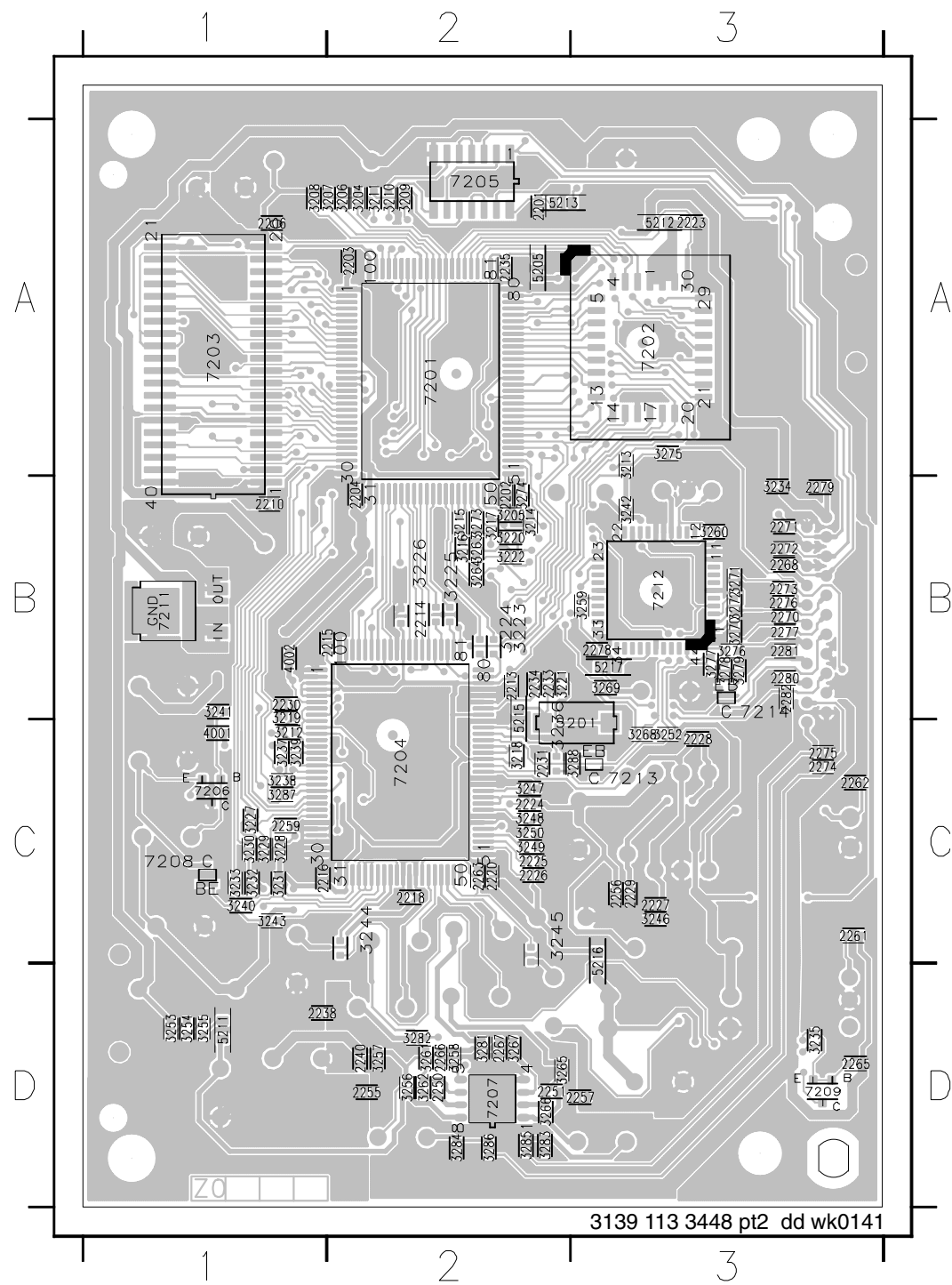


PIN DESCRIPTION

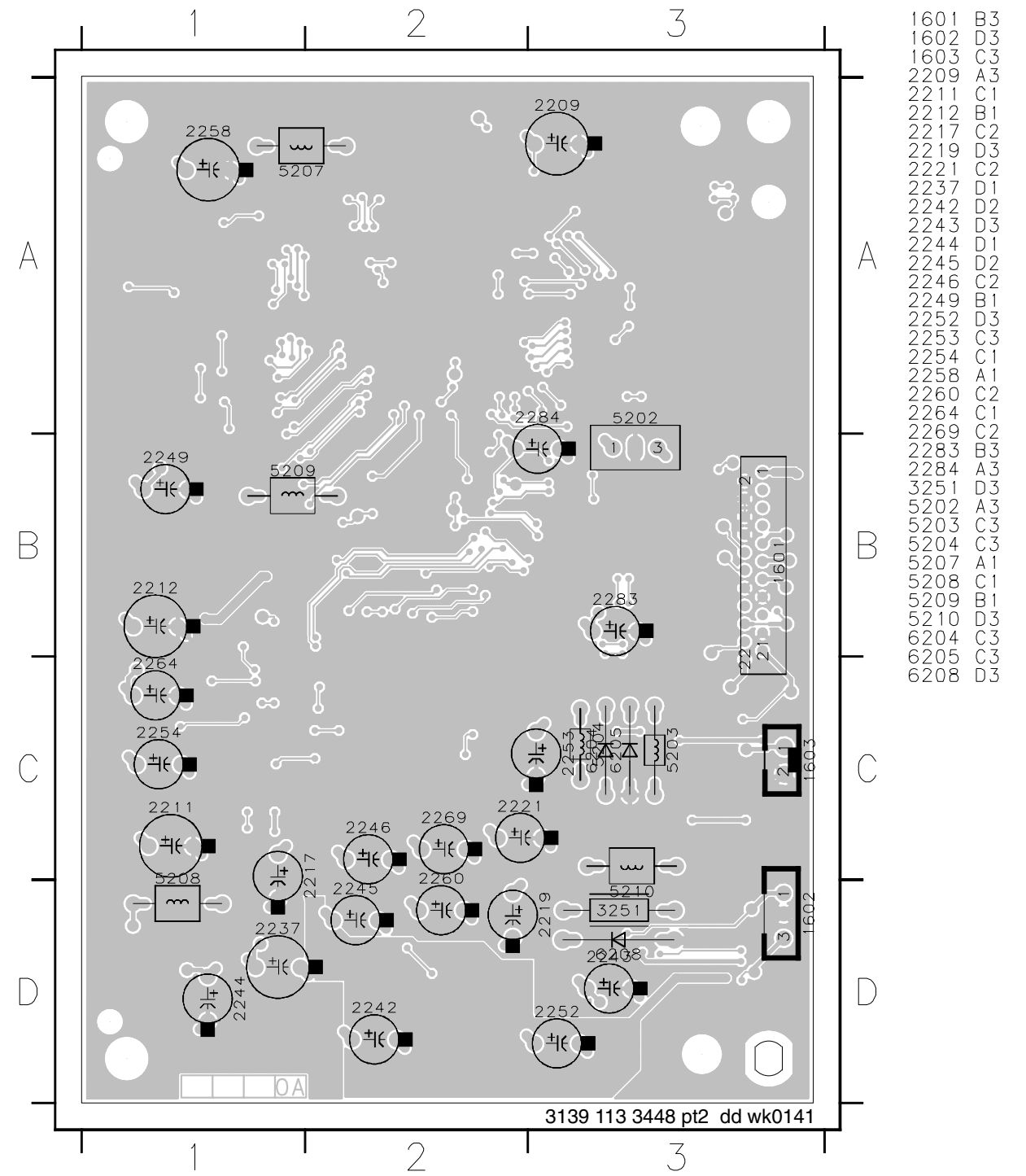
| Name | Number | I/O | Definition |
|------------|----------------------------|-----|---|
| VSS | 1,25,26,31,72,75,77,91,100 | I | Ground. |
| VCC | 5,16,32,66,73,78,90 | I | Voltage supply, 5 V. |
| DSC_C | 6 | I | Clock for programming to access internal registers. |
| AUX0 | 7 | I/O | Servo Forward or Control Pin. |
| AUX1 | 9 | I/O | Servo Reverse or Control Pin. |
| AUX2 | 11 | I/O | Servo LDON or Control Pin. |
| AUX3 | 70 | I/O | Servo CW/Limit or Control Pin. |
| AUX4 | 69 | I/O | Servo CCW/Close or Control Pin. |
| AUX5 | 68 | I/O | Servo Data or Control Pin. |
| AUX6 | 67 | I/O | Servo XLAT or Control Pin/VFD_DO. |
| AUX7 | 14 | I/O | Servo BRKM/Sense or Control Pin/VFD_DI. |
| AUX8 | 18 | I/O | Servo Mute/Open or Control Pin/VFD_CLK. |
| AUX9 | 20 | I/O | Servo SQS0 or Control Pin. |
| AUX10 | 34 | I/O | Servo SQCK or Control Pin. |
| AUX11 | 35 | I/O | 3880 IRQ or Interrupt Output or Control Pin. |
| AUX12 | 36 | I/O | CD C2PO or Interrupt Input or Control Pin. |
| AUX13 | 38 | I/O | Serial Interrupt/CD-Mute or Control Pin. |
| AUX14 | 39 | I/O | Servo SCOR (SOS1) or Interrupt Input or Control Pin. |
| AUX15 | 40 | I/O | Interrupt Input or Control Pin. |
| DSC_D[7:0] | 81,83,85,93,95,97,99,8 | I/O | Data for programming to access internal registers. |
| DSC_S | 10 | I | Strobe for programming to access internal registers. |
| DCLK | 12 | O | Dual-purpose pin DCLK is the MPEG decoder clock. |
| EXT_CLK | 12 | I | EXT_CLK is the external clock EXT_CLK is an input during bypass PLL mode. |
| RESET_B | 13 | I | Video reset (active-low). |
| MUTE | 15 | O | Audio mute. |
| MCLK | 17 | I | Audio master clock. |
| TWS | 19 | I | Dual-purpose pin TWS is the transmit audio frame sync. |
| SPLL_OUT | 19 | O | SPLL_OUT is the select PLL output. |

| Name | Number | I/O | Definition | | | | | | | | | | | | | | | |
|------------|-------------------|-------------------------|--|----------|----------|------|---|---|-------------------------|---|---|----------------------|---|---|------------------------|---|---|------------------------|
| TSD | 21 | I | Transmit audio data input. | | | | | | | | | | | | | | | |
| TBCK | 22 | I | Transmit audio bit clock. | | | | | | | | | | | | | | | |
| RWS | | O | Dual-purpose pin RWS is the receive audio frame sync. | | | | | | | | | | | | | | | |
| SEL_PLL1 | 23 | I | Pins SEL_PLL[1:0] select the PLL clock frequency for the DCLK output. <table border="1"> <thead> <tr> <th>SEL_PLL1</th> <th>SEL_PLL0</th> <th>DCLK</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>0</td> <td>Bypass PLL (input mode)</td> </tr> <tr> <td>0</td> <td>1</td> <td>27 MHz (output mode)</td> </tr> <tr> <td>1</td> <td>0</td> <td>32.4 MHz (output mode)</td> </tr> <tr> <td>1</td> <td>1</td> <td>40.5 MHz (output mode)</td> </tr> </tbody> </table> | SEL_PLL1 | SEL_PLL0 | DCLK | 0 | 0 | Bypass PLL (input mode) | 0 | 1 | 27 MHz (output mode) | 1 | 0 | 32.4 MHz (output mode) | 1 | 1 | 40.5 MHz (output mode) |
| SEL_PLL1 | SEL_PLL0 | DCLK | | | | | | | | | | | | | | | | |
| 0 | 0 | Bypass PLL (input mode) | | | | | | | | | | | | | | | | |
| 0 | 1 | 27 MHz (output mode) | | | | | | | | | | | | | | | | |
| 1 | 0 | 32.4 MHz (output mode) | | | | | | | | | | | | | | | | |
| 1 | 1 | 40.5 MHz (output mode) | | | | | | | | | | | | | | | | |
| RSTOUT_B | 24 | O | Reset output (active-low). | | | | | | | | | | | | | | | |
| NC | 2:4,27:30,76 | | No connect. Do not connect to these pins. | | | | | | | | | | | | | | | |
| RSD | | O | Dual-purpose pin. RSD is the receive audio data input. | | | | | | | | | | | | | | | |
| SEL_PLL0 | 33 | I | SEL_PLL0 along with SEL_PLL1 select the PLL clock frequency for the DCLK output. See the table for pin number 23. | | | | | | | | | | | | | | | |
| RBCK | | O | Dual-purpose pin. RBCK is the receive audio bit clock. | | | | | | | | | | | | | | | |
| SER_IN | 37 | I | SER_IN is the serial input DSC mode. 0 - Parallel DSC mode. 1 - Serial DSC mode. | | | | | | | | | | | | | | | |
| VSSAA | 41,51 | I | Audio Analog Ground. | | | | | | | | | | | | | | | |
| VCM | 42 | I | ADC Common Mode Reference (CMR) buffer output. CMR is approximately 2.25 V. Bypass to analog ground with 47 nF electrolytic in parallel with 0.1 nF. | | | | | | | | | | | | | | | |
| VREFP | 43 | I | DAC and ADC maximum reference. Bypass to VCMR with 10 nF in parallel with 0.1 nF. | | | | | | | | | | | | | | | |
| VCCAA | 44 | I | Analog VCC, 5 V. | | | | | | | | | | | | | | | |
| AOR+, AOR- | 45:46 | O | Right channel output. | | | | | | | | | | | | | | | |
| AOL-, AOL+ | 47:48 | O | Left channel output. | | | | | | | | | | | | | | | |
| MIC1 | 49 | I | Microphone input 1. | | | | | | | | | | | | | | | |
| MIC2 | 50 | I | Microphone input 2. | | | | | | | | | | | | | | | |
| VREF | 52 | I | Internal resistor divider generates Common Mode Reference (CMR) voltage. Bypass to analog ground with 0.1 nF. | | | | | | | | | | | | | | | |
| VREFM | 53 | I | DAC and ADC minimum reference. Bypass to VCMR with 10 nF in parallel with 0.1 nF. | | | | | | | | | | | | | | | |
| RSET | 54 | I | Full scale DAC current adjustment. | | | | | | | | | | | | | | | |
| COMP | 55 | I | Compensation pin. | | | | | | | | | | | | | | | |
| VSSAV | 56:57,62:63 | I | Video Analog Ground | | | | | | | | | | | | | | | |
| CDAC | 58 | O | Modulated chrominance output. | | | | | | | | | | | | | | | |
| VCCAV | 59,60 | I | Video VCC, 5 V | | | | | | | | | | | | | | | |
| YDAC | 61 | O | Y luminance data bus for screen video port. | | | | | | | | | | | | | | | |
| VDAC | 64 | O | Composite video output. | | | | | | | | | | | | | | | |
| ACAP | 65 | I | Audio CAP | | | | | | | | | | | | | | | |
| XOUT | 71 | O | Crystal output. | | | | | | | | | | | | | | | |
| XIN | 74 | I | 27 MHz crystal input. | | | | | | | | | | | | | | | |
| PCLK | 79 | I/O | 13.5 MHz pixel clock. | | | | | | | | | | | | | | | |
| 2XPCLK | 80 | I/O | 27 MHz (2 times pixel clock). | | | | | | | | | | | | | | | |
| HSYN_B | 82 | O | Horizontal sync (active-low). | | | | | | | | | | | | | | | |
| VSYN_B | 84 | O | Vertical sync (active-low). | | | | | | | | | | | | | | | |
| YUV[7:0] | 86:89,92,94,96,98 | I | YUV data bus for screen video port. | | | | | | | | | | | | | | | |

MPEG-01B BOARD LAYOUT



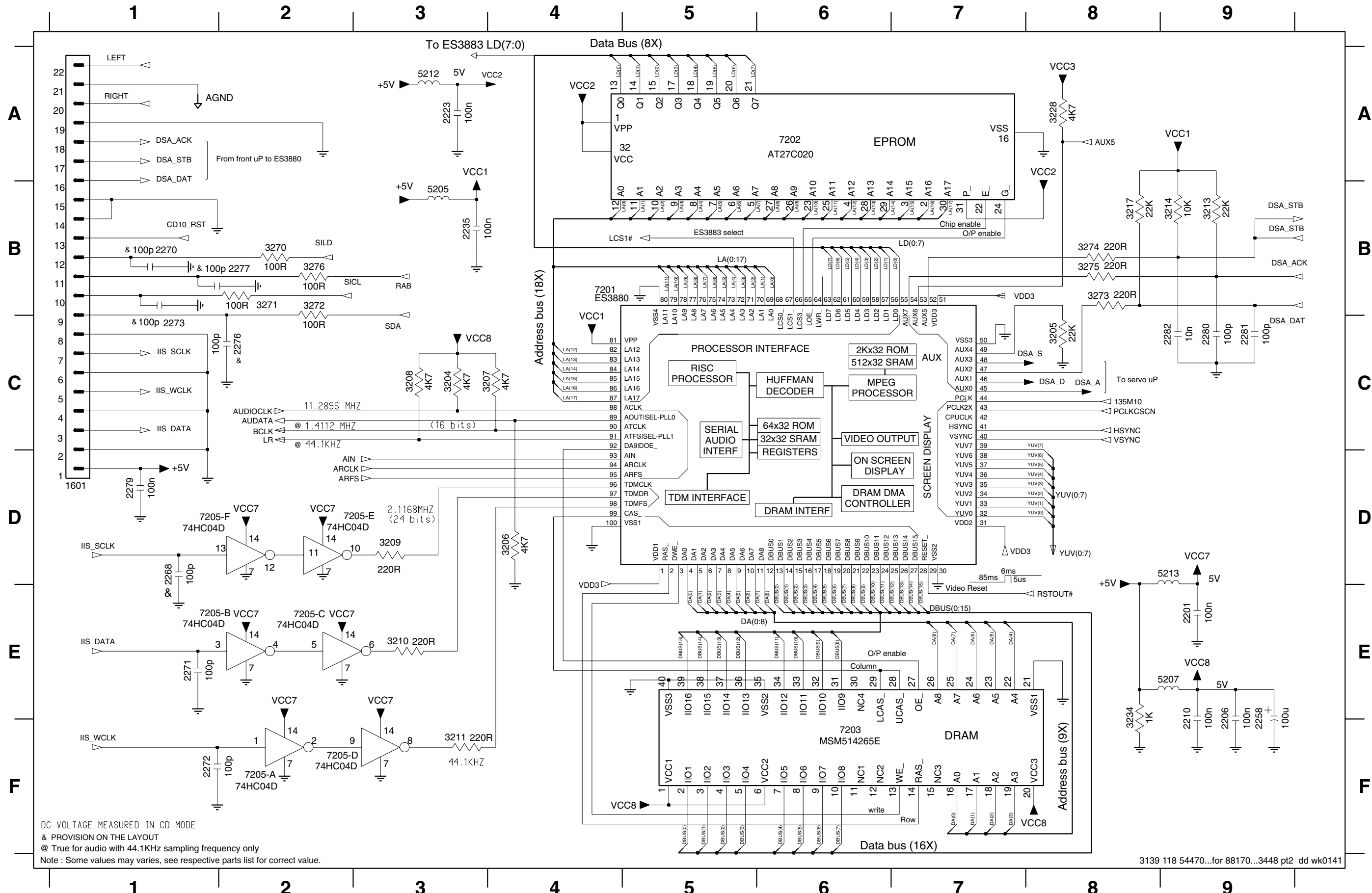
| | | | | | |
|------|----|------|----|------|----|
| 2201 | A2 | 3211 | A2 | 3271 | B3 |
| 2202 | B2 | 3212 | C1 | 3272 | B3 |
| 2203 | A2 | 3213 | A3 | 3273 | B2 |
| 2204 | B2 | 3214 | B2 | 3274 | B2 |
| 2206 | A1 | 3215 | B2 | 3275 | A3 |
| 2210 | B1 | 3216 | B2 | 3276 | B3 |
| 2213 | B2 | 3217 | B2 | 3277 | B3 |
| 2214 | B2 | 3218 | C2 | 3278 | B3 |
| 2215 | B2 | 3219 | B1 | 3279 | B3 |
| 2216 | C1 | 3220 | B2 | 3281 | D2 |
| 2218 | C2 | 3221 | B2 | 3282 | D2 |
| 2220 | C2 | 3222 | B2 | 3283 | D2 |
| 2223 | A3 | 3223 | B2 | 3284 | D2 |
| 2224 | C2 | 3224 | B2 | 3285 | D2 |
| 2225 | C2 | 3225 | B2 | 3286 | D2 |
| 2226 | C2 | 3226 | B2 | 3287 | C1 |
| 2227 | C3 | 3227 | C1 | 3288 | C3 |
| 2228 | C3 | 3228 | C1 | 4001 | C1 |
| 2229 | C3 | 3229 | C1 | 4002 | B1 |
| 2230 | B1 | 3230 | C1 | 5201 | C3 |
| 2231 | C2 | 3231 | C1 | 5205 | A2 |
| 2233 | B2 | 3232 | C1 | 5211 | D1 |
| 2234 | B2 | 3233 | C1 | 5212 | A3 |
| 2235 | A2 | 3234 | B3 | 5213 | A2 |
| 2238 | D1 | 3235 | D3 | 5215 | B2 |
| 2240 | D2 | 3236 | C2 | 5216 | C3 |
| 2250 | D2 | 3237 | C1 | 5217 | B3 |
| 2251 | D2 | 3238 | C1 | 7201 | A2 |
| 2255 | D2 | 3239 | C1 | 7202 | A3 |
| 2256 | C3 | 3240 | C1 | 7203 | A1 |
| 2257 | D3 | 3241 | B1 | 7204 | C2 |
| 2259 | C1 | 3242 | B3 | 7205 | A2 |
| 2261 | C3 | 3243 | C1 | 7206 | C1 |
| 2262 | C3 | 3244 | C2 | 7207 | D2 |
| 2263 | C2 | 3245 | C2 | 7208 | C1 |
| 2265 | D3 | 3246 | C3 | 7209 | D3 |
| 2266 | D2 | 3247 | C2 | 7211 | B1 |
| 2267 | D2 | 3248 | C2 | 7212 | B3 |
| 2268 | B3 | 3249 | C2 | 7213 | C3 |
| 2270 | B3 | 3250 | C2 | 7214 | B3 |
| 2271 | B3 | 3252 | C3 | | |
| 2272 | B3 | 3253 | D1 | | |
| 2273 | B3 | 3254 | D1 | | |
| 2274 | C3 | 3255 | D1 | | |
| 2275 | C3 | 3256 | D2 | | |
| 2276 | B3 | 3257 | D2 | | |
| 2277 | B3 | 3258 | D2 | | |
| 2278 | B3 | 3259 | B3 | | |
| 2279 | B3 | 3260 | B3 | | |
| 2280 | B3 | 3261 | D2 | | |
| 2281 | B3 | 3262 | D2 | | |
| 2282 | B3 | 3263 | B2 | | |
| 3204 | A2 | 3264 | B2 | | |
| 3205 | B2 | 3265 | D2 | | |
| 3206 | A2 | 3266 | D2 | | |
| 3207 | A2 | 3267 | D2 | | |
| 3208 | A1 | 3268 | C3 | | |
| 3209 | A2 | 3269 | B3 | | |
| 3210 | A2 | 3270 | B3 | | |



| | |
|------|----|
| 1601 | B3 |
| 1602 | D3 |
| 1603 | C3 |
| 2209 | A3 |
| 2211 | C1 |
| 2212 | B1 |
| 2217 | C2 |
| 2219 | D3 |
| 2221 | C2 |
| 2237 | D1 |
| 2242 | D2 |
| 2243 | D3 |
| 2244 | D1 |
| 2245 | D2 |
| 2246 | C2 |
| 2249 | B1 |
| 2252 | D3 |
| 2253 | C3 |
| 2254 | C1 |
| 2258 | A1 |
| 2260 | C2 |
| 2264 | C1 |
| 2269 | C2 |
| 2283 | B3 |
| 2284 | A3 |
| 3251 | D3 |
| 5202 | A3 |
| 5203 | C3 |
| 5204 | C3 |
| 5207 | A1 |
| 5208 | C1 |
| 5209 | B1 |
| 5210 | D3 |
| 6204 | C3 |
| 6205 | C3 |
| 6208 | D3 |

ES3880 CIRCUIT

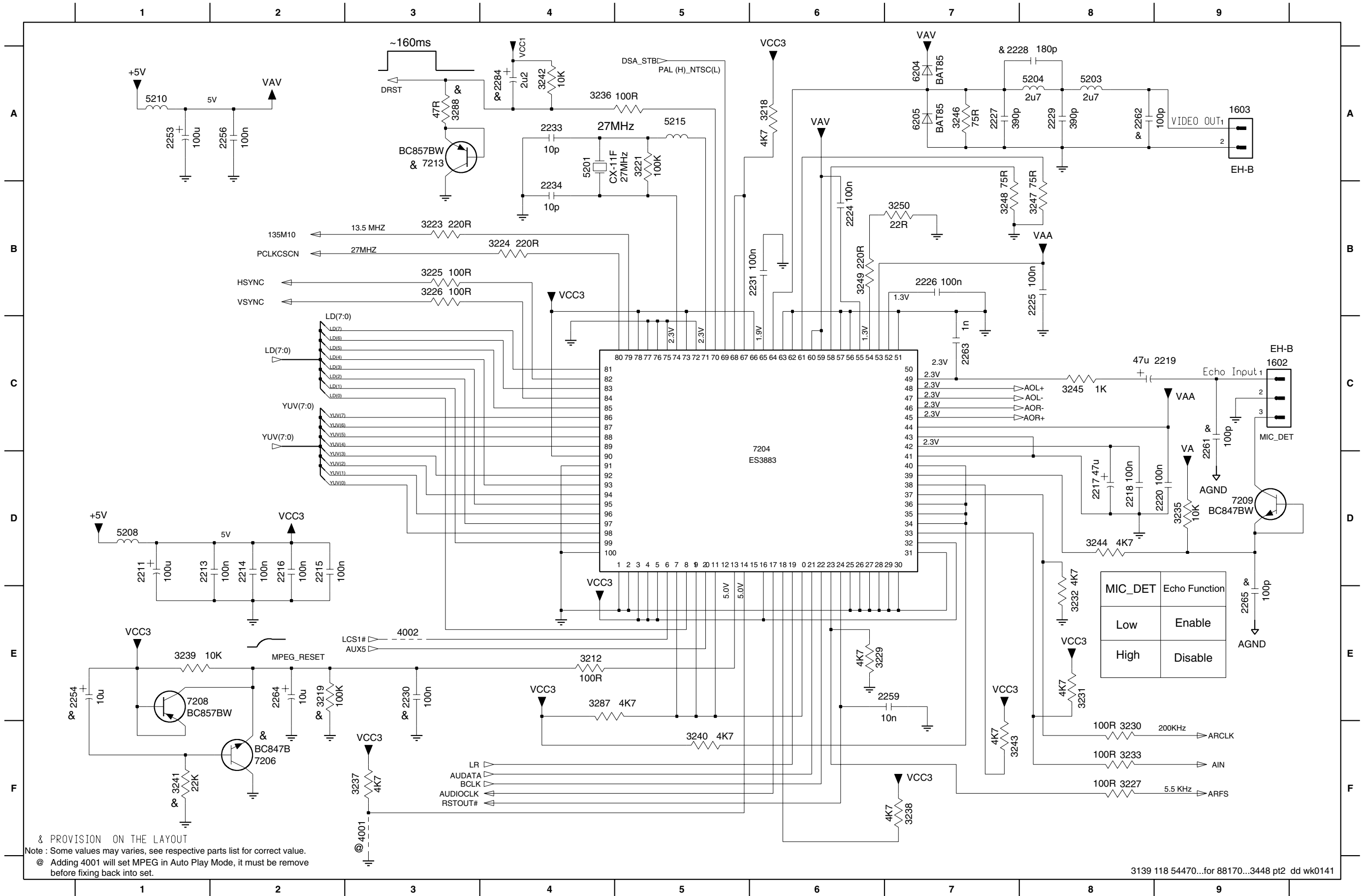
| | | | | | | | | | | | | | | | | |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|-----------|-----------|
| 1601 D1 | 2210 E9 | 2258 E9 | 2271 E1 | 2276 C2 | 2280 C9 | 3204 C3 | 3207 C4 | 3210 E3 | 3214 B9 | 3234 E8 | 3272 B2 | 3275 B8 | 5207 E9 | 7201 B4 | 7205-A F2 | 7205-D F2 |
| 2201 E9 | 2223 A3 | 2268 D1 | 2272 F1 | 2277 B2 | 2281 C9 | 3205 C8 | 3208 C3 | 3211 F3 | 3217 B8 | 3270 B2 | 3273 B8 | 3276 B2 | 5212 A3 | 7202 A6 | 7205-B E1 | 7205-E D2 |
| 2206 E9 | 2235 B3 | 2270 B1 | 2273 C1 | 2279 D1 | 2282 C9 | 3206 D4 | 3209 D3 | 3213 B9 | 3228 A8 | 3271 B2 | 3274 B8 | 5205 B3 | 5213 D9 | 7203 F6 | 7205-C E2 | 7205-F D1 |



DC VOLTAGE MEASURED IN CD MODE
 & PROVISION ON THE LAYOUT
 @ True for audio with 44.1KHz sampling frequency only
 Note : Some values may varies, see respective parts list for correct value.

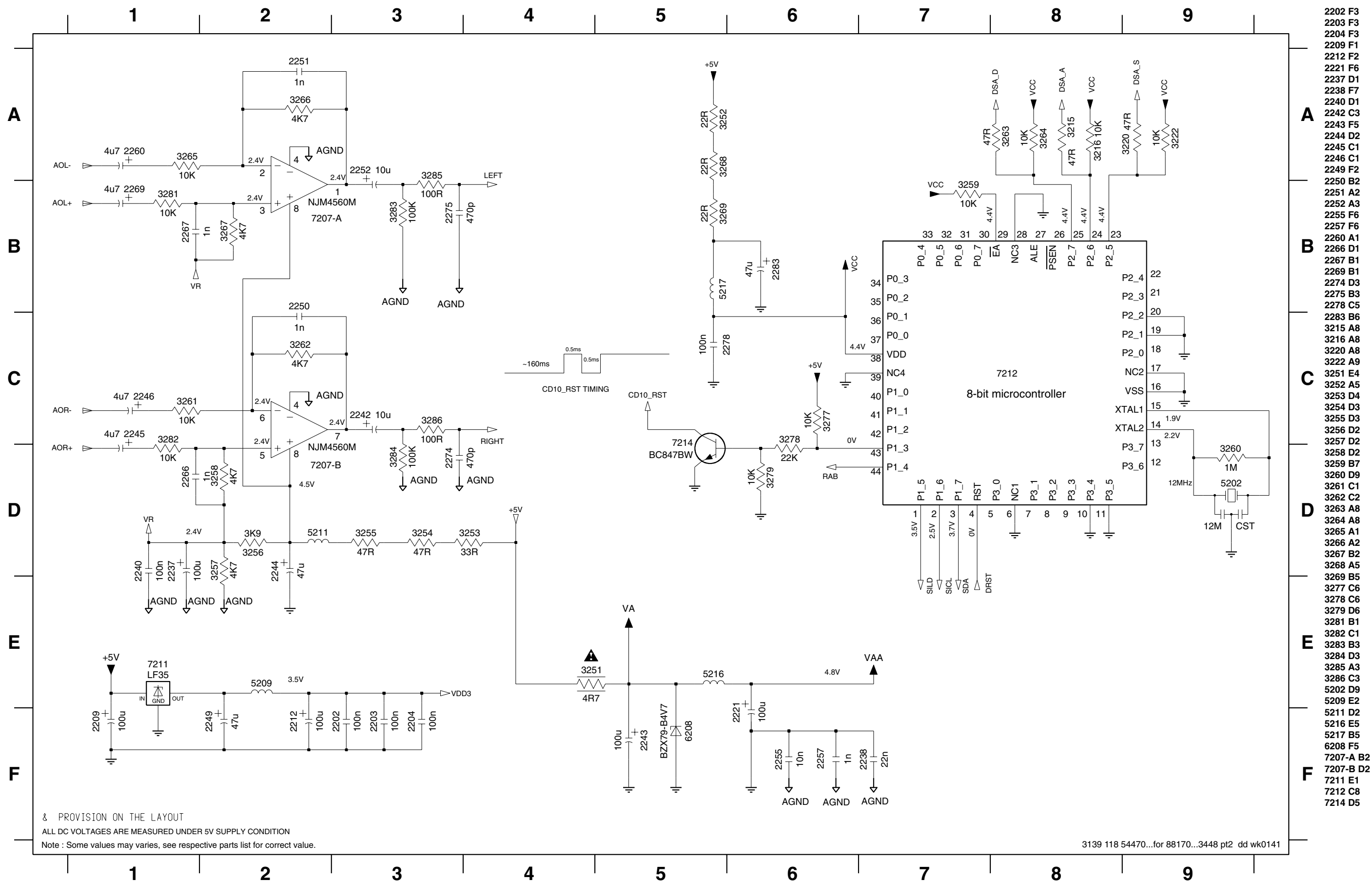
ES3883 CIRCUIT

- 1602 C9 2213 D1 2216 D2 2219 C9 2225 B8 2228 A7 2231 B6 2253 A1 2259 E7 2263 C7 2284 A4 3219 E2 3224 B4 3227 F8 3231 E8 3235 D9 3238 F7 3241 F1 3244 D8 3247 B8 3250 B7 4001 F3 5203 A8 5210 A1 6205 A7 7208 E1
- 1603 A9 2214 D2 2217 D8 2220 D9 2226 B7 2229 A8 2233 A4 2254 E1 2261 C9 2264 E2 3212 E4 3221 A5 3225 B3 3229 E6 3232 E8 3236 A4 3239 E1 3242 A4 3245 C8 3248 B7 3287 E4 4002 E3 5204 A8 5215 A5 7204 D6 7209 D9
- 2211 D1 2215 D2 2218 D8 2224 B6 2227 A7 2230 E3 2234 B4 2256 A2 2262 A8 2265 E9 3218 A6 3223 B3 3226 B3 3230 F8 3233 F8 3237 F3 3240 F5 3243 F7 3246 A7 3249 B6 3288 A3 5201 A4 5208 D1 6204 A7 7206 F2 7213 A3



& PROVISION ON THE LAYOUT
 Note : Some values may varies, see respective parts list for correct value.
 @ Adding 4001 will set MPEG in Auto Play Mode, it must be remove before fixing back into set.

AUDIO CIRCUIT



- 2202 F3
- 2203 F3
- 2204 F3
- 2209 F1
- 2212 F2
- 2221 F6
- 2237 D1
- 2238 F7
- 2240 D1
- 2242 C3
- 2243 F5
- 2244 D2
- 2245 C1
- 2246 C1
- 2249 F2
- 2250 B2
- 2251 A2
- 2252 A3
- 2255 F6
- 2257 F6
- 2260 A1
- 2266 D1
- 2267 B1
- 2269 B1
- 2274 D3
- 2275 B3
- 2278 C5
- 2283 B6
- 3215 A8
- 3216 A8
- 3220 A8
- 3222 A9
- 3251 E4
- 3252 A5
- 3253 D4
- 3254 D3
- 3255 D3
- 3256 D2
- 3257 D2
- 3258 D2
- 3259 B7
- 3260 D9
- 3261 C1
- 3262 C2
- 3263 A8
- 3264 A8
- 3265 A1
- 3266 A2
- 3267 B2
- 3268 A5
- 3269 B5
- 3277 C6
- 3278 C6
- 3279 D6
- 3281 B1
- 3282 C1
- 3283 B3
- 3284 D3
- 3285 A3
- 3286 C3
- 5202 D9
- 5209 E2
- 5211 D2
- 5216 E5
- 5217 B5
- 6208 F5
- 7207-A B2
- 7207-B D2
- 7211 E1
- 7212 C8
- 7214 D5

& PROVISION ON THE LAYOUT
 ALL DC VOLTAGES ARE MEASURED UNDER 5V SUPPLY CONDITION
 Note : Some values may varies, see respective parts list for correct value.

ELECTRICAL PARTS LIST - MPEG-01B BOARD

MISCELLANEOUS

| | | |
|------|----------------|-------------------------|
| 1601 | 2422 025 16837 | Flex Socket 22pin Hort. |
|------|----------------|-------------------------|

CAPACITORS

| | | |
|------|----------------|----------------|
| 2201 | 4822 126 14305 | 100nF 10% 16V |
| 2202 | 4822 126 14305 | 100nF 10% 16V |
| 2203 | 4822 126 14305 | 100nF 10% 16V |
| 2204 | 4822 126 14305 | 100nF 10% 16V |
| 2206 | 4822 126 14305 | 100nF 10% 16V |
| 2209 | 4822 124 40207 | 100µF 20% 25V |
| 2210 | 4822 126 14305 | 100nF 10% 16V |
| 2211 | 4822 124 40207 | 100µF 20% 25V |
| 2212 | 4822 124 40207 | 100µF 20% 25V |
| 2213 | 4822 126 14305 | 100nF 10% 16V |
| 2214 | 4822 126 14305 | 100nF 10% 16V |
| 2215 | 4822 126 14305 | 100nF 10% 16V |
| 2216 | 4822 126 14305 | 100nF 10% 16V |
| 2217 | 4822 124 40433 | 47µF 20% 25V |
| 2218 | 4822 126 14305 | 100nF 10% 16V |
| 2219 | 4822 124 40433 | 47µF 20% 25V |
| 2220 | 4822 126 14305 | 100nF 10% 16V |
| 2221 | 4822 124 41584 | 100µF 20% 10V |
| 2223 | 4822 126 14305 | 100nF 10% 16V |
| 2224 | 4822 126 14305 | 100nF 10% 16V |
| 2225 | 4822 126 14305 | 100nF 10% 16V |
| 2226 | 4822 126 14305 | 100nF 10% 16V |
| 2227 | 4822 126 14315 | 390pF 5% 50V |
| 2229 | 4822 126 14315 | 390pF 5% 50V |
| 2231 | 4822 126 14305 | 100nF 10% 16V |
| 2233 | 4822 122 33741 | 10pF 10% 50V |
| 2234 | 4822 122 33741 | 10pF 10% 50V |
| 2235 | 4822 126 14305 | 100nF 10% 16V |
| 2237 | 4822 124 40207 | 100µF 20% 25V |
| 2238 | 4822 126 14494 | 22nF 10% 25V |
| 2240 | 4822 126 14305 | 100nF 10% 16V |
| 2242 | 4822 124 40248 | 10µF 20% 63V |
| 2243 | 4822 124 41584 | 100µF 20% 10V |
| 2244 | 4822 124 40433 | 47µF 20% 25V |
| 2245 | 4822 124 40769 | 4,7µF 20% 100V |
| 2246 | 4822 124 40769 | 4,7µF 20% 100V |
| 2249 | 4822 124 40433 | 47µF 20% 25V |
| 2250 | 3198 016 31020 | 1nF 5% 25V |
| 2251 | 3198 016 31020 | 1nF 5% 25V |
| 2252 | 4822 124 40248 | 10µF 20% 63V |
| 2253 | 4822 124 41584 | 100µF 20% 10V |
| 2255 | 5322 126 11583 | 10nF 10% 50V |
| 2256 | 4822 126 14305 | 100nF 10% 16V |
| 2257 | 3198 016 31020 | 1nF 5% 25V |
| 2258 | 4822 124 40207 | 100µF 20% 25V |
| 2259 | 5322 126 11583 | 10nF 10% 50V |
| 2260 | 4822 124 40769 | 4,7µF 20% 100V |
| 2263 | 3198 016 31020 | 1nF 5% 25V |
| 2264 | 4822 124 40248 | 10µF 20% 63V |

| | | |
|------|----------------|----------------|
| 2266 | 3198 016 31020 | 1nF 5% 25V |
| 2267 | 3198 016 31020 | 1nF 5% 25V |
| 2269 | 4822 124 40769 | 4,7µF 20% 100V |
| 2271 | 4822 122 31765 | 100pF 2% 63V |
| 2272 | 4822 122 31765 | 100pF 2% 63V |
| 2274 | 4822 126 13881 | 470pF 5% 50V |
| 2275 | 4822 126 13881 | 470pF 5% 50V |
| 2278 | 4822 126 14305 | 100nF 10% 16V |
| 2279 | 4822 126 14305 | 100nF 10% 16V |
| 2280 | 4822 122 31765 | 100pF 2% 63V |
| 2281 | 4822 122 31765 | 100pF 2% 63V |
| 2282 | 5322 126 11583 | 10nF 10% 50V |
| 2283 | 4822 124 40433 | 47µF 20% 25V |

RESISTORS

| | | |
|------|----------------|----------------|
| 3204 | 4822 051 30472 | 4k7 5% 0,062W |
| 3205 | 4822 051 30223 | 22k 5% 0,062W |
| 3206 | 4822 051 30472 | 4k7 5% 0,062W |
| 3207 | 4822 051 30472 | 4k7 5% 0,062W |
| 3208 | 4822 051 30472 | 4k7 5% 0,062W |
| 3209 | 4822 051 30221 | 220R 5% 0,062W |
| 3210 | 4822 051 30221 | 220R 5% 0,062W |
| 3211 | 4822 051 30221 | 220R 5% 0,062W |
| 3212 | 4822 051 30101 | 100R 5% 0,062W |
| 3213 | 4822 051 30223 | 22k 5% 0,062W |
| 3214 | 4822 051 30103 | 10k 5% 0,062W |
| 3215 | 4822 051 30479 | 47R 5% 0,062W |
| 3216 | 4822 051 30103 | 10k 5% 0,062W |
| 3217 | 4822 051 30223 | 22k 5% 0,062W |
| 3218 | 4822 051 30472 | 4k7 5% 0,062W |
| 3220 | 4822 051 30479 | 47R 5% 0,062W |
| 3221 | 4822 117 13632 | 100k 1% 0,062W |
| 3222 | 4822 051 30103 | 10k 5% 0,062W |
| 3223 | 4822 051 30221 | 220R 5% 0,062W |
| 3224 | 4822 051 30221 | 220R 5% 0,062W |
| 3225 | 4822 051 30101 | 100R 5% 0,062W |
| 3226 | 4822 051 30101 | 100R 5% 0,062W |
| 3227 | 4822 051 30101 | 100R 5% 0,062W |
| 3228 | 4822 051 30472 | 4k7 5% 0,062W |
| 3229 | 4822 051 30472 | 4k7 5% 0,062W |
| 3230 | 4822 051 30101 | 100R 5% 0,062W |
| 3231 | 4822 051 30472 | 4k7 5% 0,062W |
| 3232 | 4822 051 30472 | 4k7 5% 0,062W |
| 3233 | 4822 051 30101 | 100R 5% 0,062W |
| 3234 | 4822 051 30102 | 1k 5% 0,062W |
| 3235 | 4822 051 30103 | 10k 5% 0,062W |
| 3236 | 4822 051 30101 | 100R 5% 0,062W |
| 3237 | 4822 051 30472 | 4k7 5% 0,062W |
| 3238 | 4822 051 30472 | 4k7 5% 0,062W |
| 3239 | 4822 051 30103 | 10k 5% 0,062W |
| 3240 | 4822 051 30472 | 4k7 5% 0,062W |
| 3242 | 4822 051 30103 | 10k 5% 0,062W |

ELECTRICAL PARTS LIST - MPEG-01B BOARD

| | | |
|------|----------------|----------------|
| 3243 | 4822 051 30472 | 4k7 5% 0,062W |
| 3244 | 4822 051 30472 | 4k7 5% 0,062W |
| 3245 | 4822 051 30102 | 1k 5% 0,062W |
| 3246 | 4822 051 30759 | 75R 5% 0,062W |
| 3247 | 4822 051 30759 | 75R 5% 0,062W |
| 3248 | 4822 051 30759 | 75R 5% 0,062W |
| 3249 | 4822 051 30221 | 220R 5% 0,062W |
| 3250 | 4822 117 12139 | 22R 5% 0,062W |
| 3251 | 4822 052 10478 | △ 4R7 5% 0,33W |
| 3252 | 4822 117 12139 | 22R 5% 0,062W |
| 3253 | 4822 051 30339 | 33R 5% 0,062W |
| 3254 | 4822 051 30479 | 47R 5% 0,062W |
| 3255 | 4822 051 30479 | 47R 5% 0,062W |
| 3256 | 4822 051 30392 | 3k9 5% 0,062W |
| 3257 | 4822 051 30472 | 4k7 5% 0,062W |
| 3258 | 4822 051 30472 | 4k7 5% 0,062W |
| 3259 | 4822 051 30103 | 10k 5% 0,062W |
| 3260 | 4822 051 30105 | 1M 5% 0,062W |
| 3261 | 4822 051 30103 | 10k 5% 0,062W |
| 3262 | 4822 051 30472 | 4k7 5% 0,062W |
| 3263 | 4822 051 30479 | 47R 5% 0,062W |
| 3264 | 4822 051 30103 | 10k 5% 0,062W |
| 3265 | 4822 051 30103 | 10k 5% 0,062W |
| 3266 | 4822 051 30472 | 4k7 5% 0,062W |
| 3267 | 4822 051 30472 | 4k7 5% 0,062W |
| 3268 | 4822 117 12139 | 22R 5% 0,062W |
| 3269 | 4822 117 12139 | 22R 5% 0,062W |
| 3270 | 4822 051 30101 | 100R 5% 0,062W |
| 3271 | 4822 051 30101 | 100R 5% 0,062W |
| 3272 | 4822 051 30101 | 100R 5% 0,062W |
| 3273 | 4822 051 30221 | 220R 5% 0,062W |
| 3274 | 4822 051 30221 | 220R 5% 0,062W |
| 3275 | 4822 051 30221 | 220R 5% 0,062W |
| 3276 | 4822 051 30101 | 100R 5% 0,062W |
| 3277 | 4822 051 30103 | 10k 5% 0,062W |
| 3278 | 4822 051 30223 | 22k 5% 0,062W |
| 3279 | 4822 051 30103 | 10k 5% 0,062W |
| 3281 | 4822 051 30103 | 10k 5% 0,062W |
| 3282 | 4822 051 30103 | 10k 5% 0,062W |
| 3283 | 4822 117 13632 | 100k 1% 0,062W |
| 3284 | 4822 117 13632 | 100k 1% 0,062W |
| 3285 | 4822 051 30101 | 100R 5% 0,062W |
| 3286 | 4822 051 30101 | 100R 5% 0,062W |
| 3287 | 4822 051 30472 | 4k7 5% 0,062W |
| 4002 | 4822 051 30008 | 0R Jumper 0603 |

COILS & FILTERS

| | | |
|------|----------------|-----------------------|
| 5201 | 2422 543 01137 | X'tal Resonator 27MHz |
| 5202 | 5322 242 73686 | Ceram Resonator 12MHz |
| 5203 | 4822 157 11868 | Coil 2,7µH 5% |
| 5204 | 4822 157 11868 | Coil 2,7µH 5% |
| 5205 | 4822 157 11506 | Chip Ind. 120R 100MHz |

ELECTRICAL PARTS LIST - MPEG-01B BOARD

| | | |
|------|----------------|-----------------------|
| 5207 | 4822 526 10704 | FE Bead 100MHz |
| 5208 | 4822 526 10704 | FE Bead 100MHz |
| 5209 | 4822 526 10704 | FE Bead 100MHz |
| 5210 | 4822 526 10704 | FE Bead 100MHz |
| 5211 | 4822 157 11506 | Chip Ind. 120R 100MHz |
| 5212 | 4822 157 11506 | Chip Ind. 120R 100MHz |
| 5213 | 4822 157 11506 | Chip Ind. 120R 100MHz |
| 5215 | 4822 157 11506 | Chip Ind. 120R 100MHz |
| 5216 | 4822 157 11506 | Chip Ind. 120R 100MHz |
| 5217 | 4822 157 11506 | Chip Ind. 120R 100MHz |

DIODES

| | | |
|------|----------------|------------|
| 6204 | 4822 130 31983 | BAT85 |
| 6205 | 4822 130 31983 | BAT85 |
| 6208 | 4822 130 34174 | BZX79-B4V7 |

TRANSISTORS & INTEGRATED CIRCUITS

| | | |
|------|----------------|------------------|
| 7201 | 9322 139 79671 | ES3880 |
| 7202 | 9965 000 08683 | AT27C020-70JC |
| 7203 | 9322 164 13668 | MSM514265E-60JS |
| 7204 | 9322 138 97671 | ES3883 |
| 7205 | 9337 142 60653 | 74HC04D |
| 7207 | 4822 209 83357 | NJM4560M |
| 7208 | 5322 130 42756 | BC857BW |
| 7209 | 3198 010 42310 | BC847BW |
| 7211 | 9322 154 82668 | LF35ABDT |
| 7212 | 9352 701 41518 | CV9210B-83C51RC+ |
| 7214 | 3198 010 42310 | BC847BW |

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

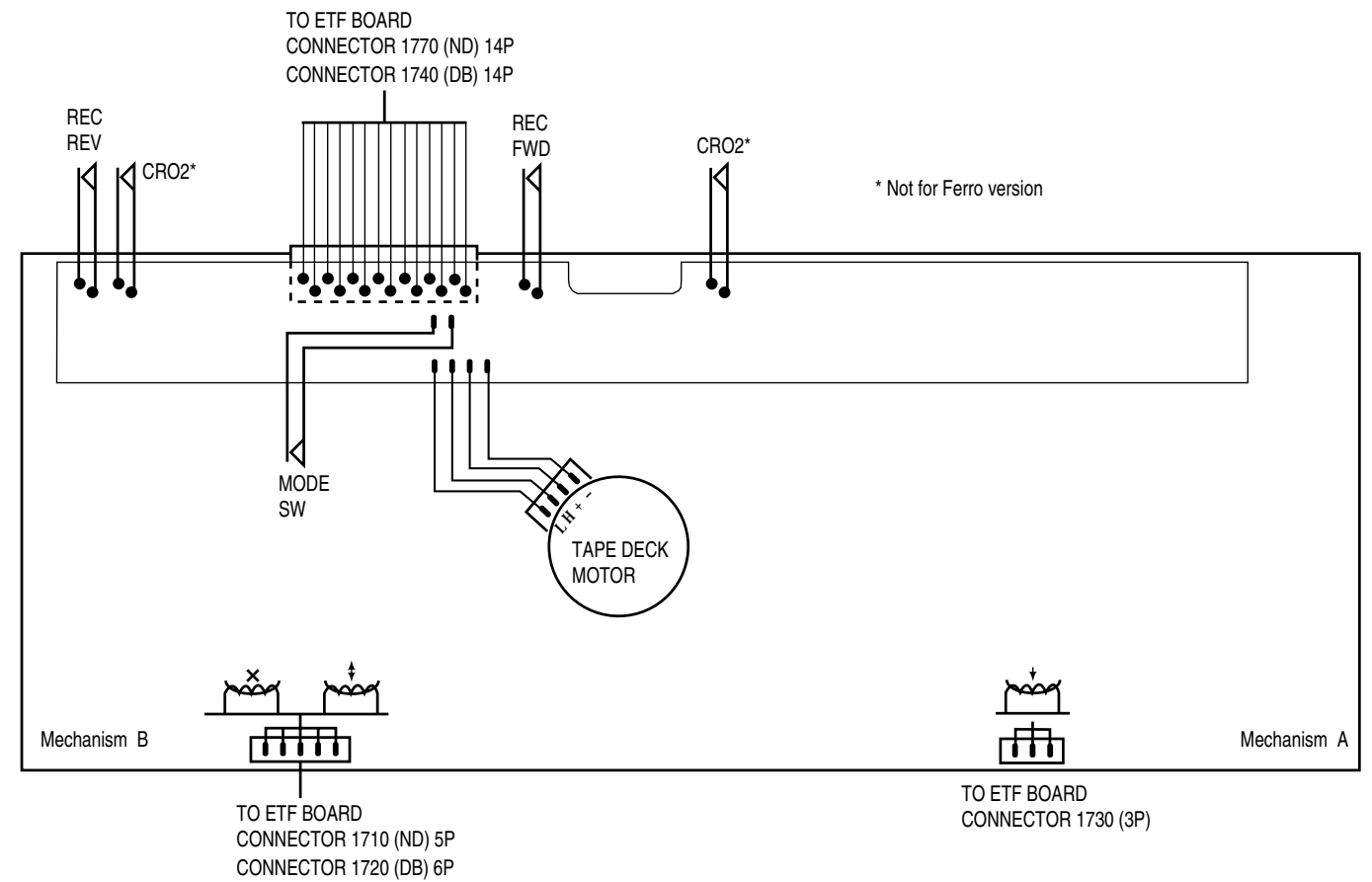
ETF7 TAPE MODULE

(Non-Dolby Version)

TABLE OF CONTENTS

Tape Module Wiring & variation table 9-1
 Block diagram 9-2
 Brief Introduction 9-3
 Connector assignment 9-4
 Tape deck electronics & Tape adjustments 9-5
 ETF7 Non-Dolby board layouts 9-6
 Analog Circuit diagram 9-7
 Servo Circuit diagram 9-8
 Exploded views & parts list 9-9
 Electrical parts list 9-13

Tapedeck wiring (Double deck)

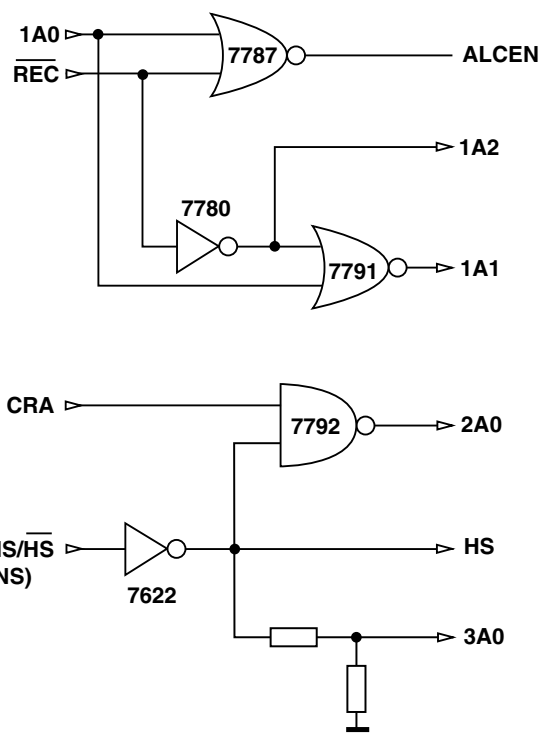
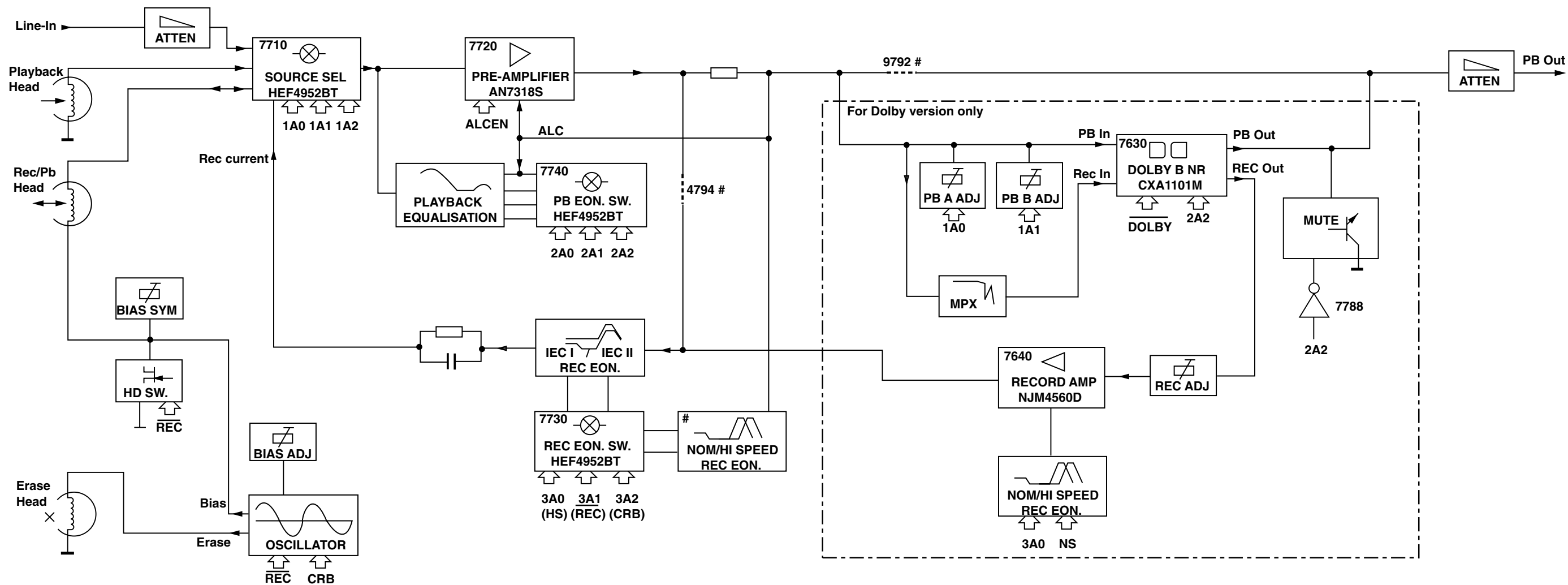


Variations table for Analog Circuit

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

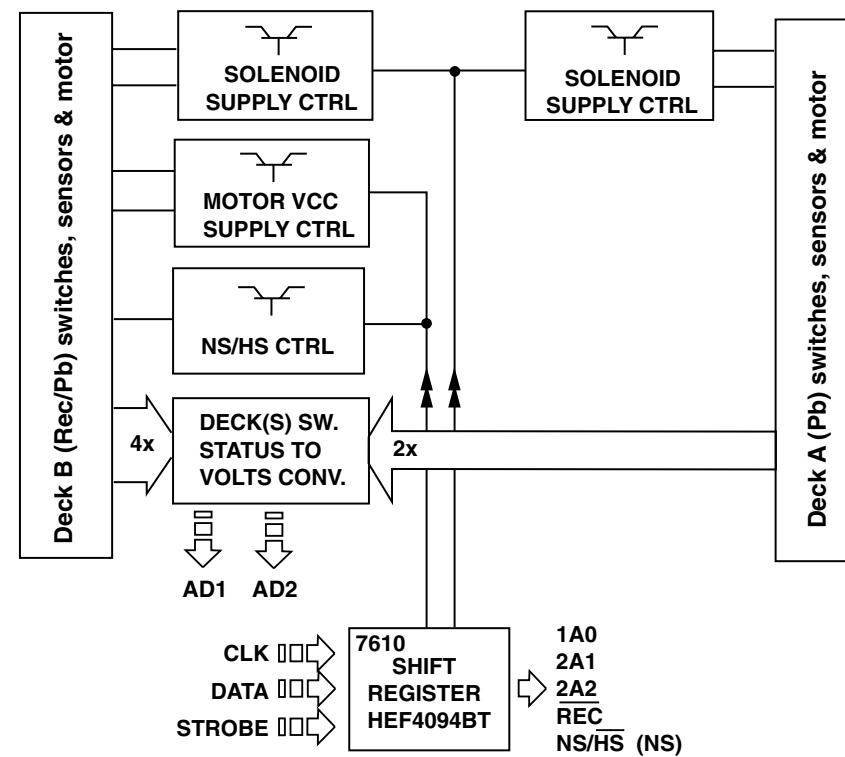
| | Autoreverse | Non-autoreverse | |
|------|--------------|-----------------|-----------|
| | ND/DD/FR | ND/DD/FF | FF |
| | Chrome/Ferro | Chrome/Ferro | Ferro |
| 3769 | 12k | 8k2 | 8k2 |
| 3772 | 6k8 | 5k6 | 5k6 |
| 4785 | - | - | 0R jumper |
| 3774 | 15k | 8k2 | 8k2 |
| 6614 | 1N4148 | - | - |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

BLOCK DIAGRAM



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

- ▣▣▣ MicroProcessor Control / Communication lines
- ▣▣ Direct / Indirect Control lines from Shift Registers



Brief introduction

General

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

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

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

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

NOTATIONS & ABBREVIATIONS USED IN THIS DOCUMENT

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

CONNECTORS ASSIGNMENTS:**CONNECTOR 1701****INTERCONNECTION TO AF BOARD**

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

CONNECTOR 1703**INTERCONNECTION TO AF BOARD**

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

CONNECTOR 1706**INTERCONNECTION TO FRONT BOARD**

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

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

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

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

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

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

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

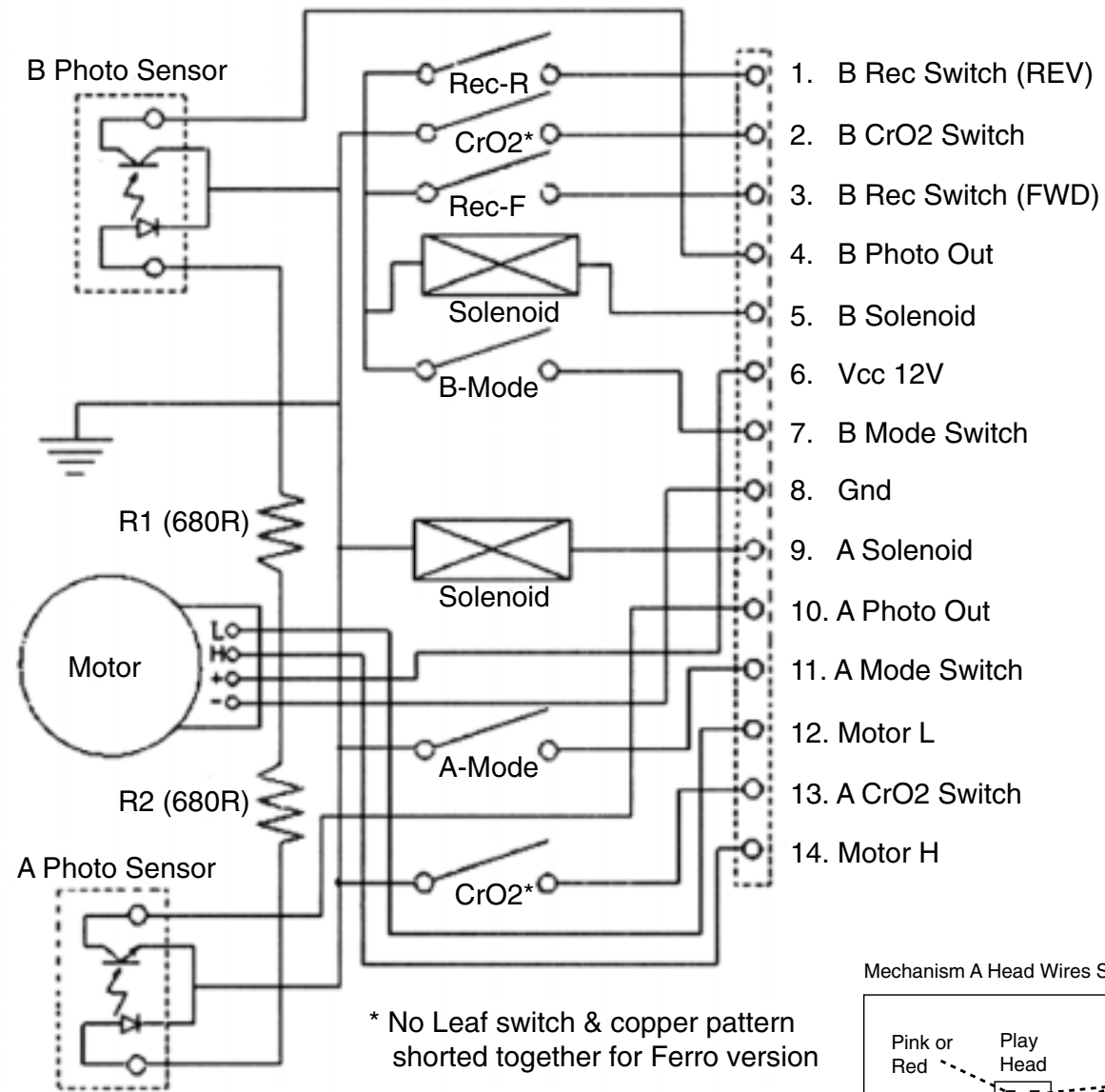
CONNECTOR 1740**DECK A & B CONTROL INTERFACE (For Dolby B NR version only)**

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

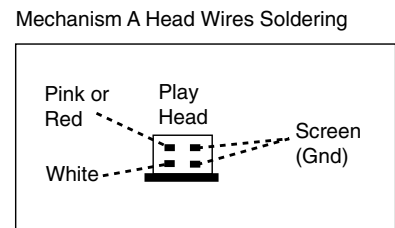
CONNECTOR 1770**DECK A & B CONTROL INTERFACE (For Non-Dolby version only)**

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

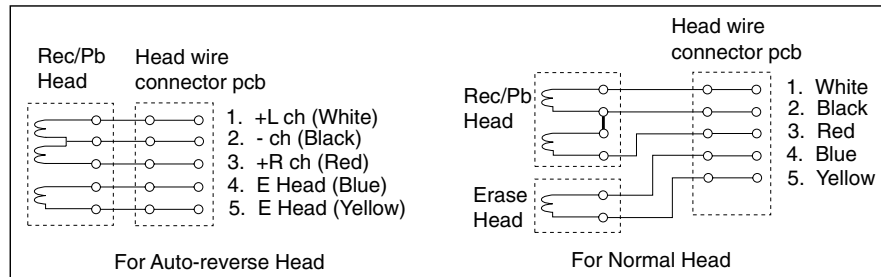
TAPE MECHANISM ELECTRONICS



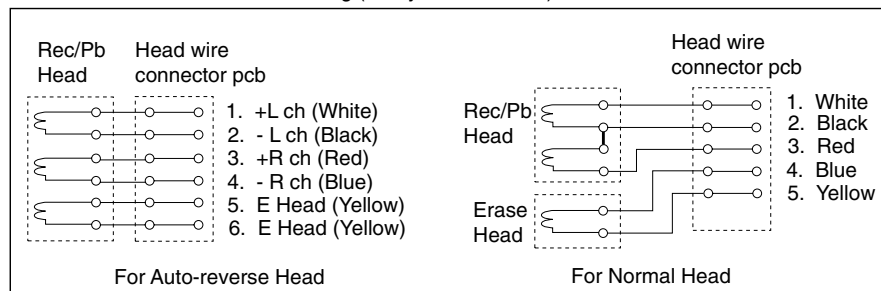
* No Leaf switch & copper pattern shorted together for Ferro version



Mechanism B Head Wires Soldering (Non-Dolby version)



Mechanism B Head Wires Soldering (Dolby B NR version)

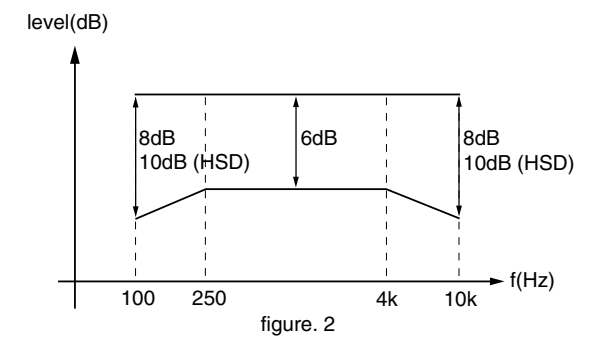
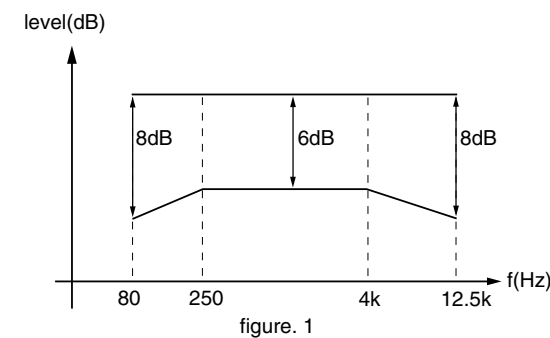


TAPE ADJUSTMENT & CHECK TABLE

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

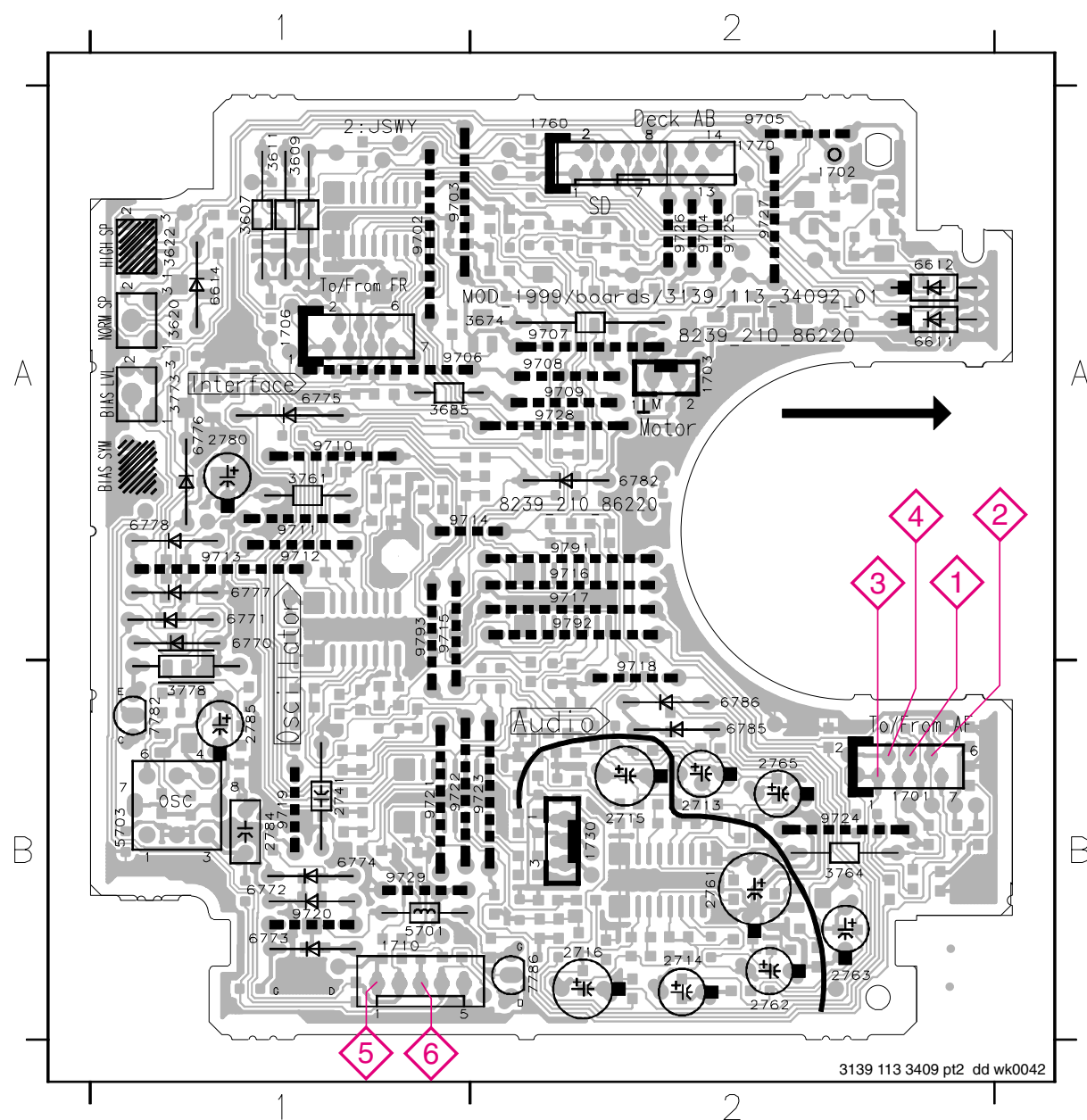
SBC419A^: 4822 397 30069
SBC420 : 4822 397 30071

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



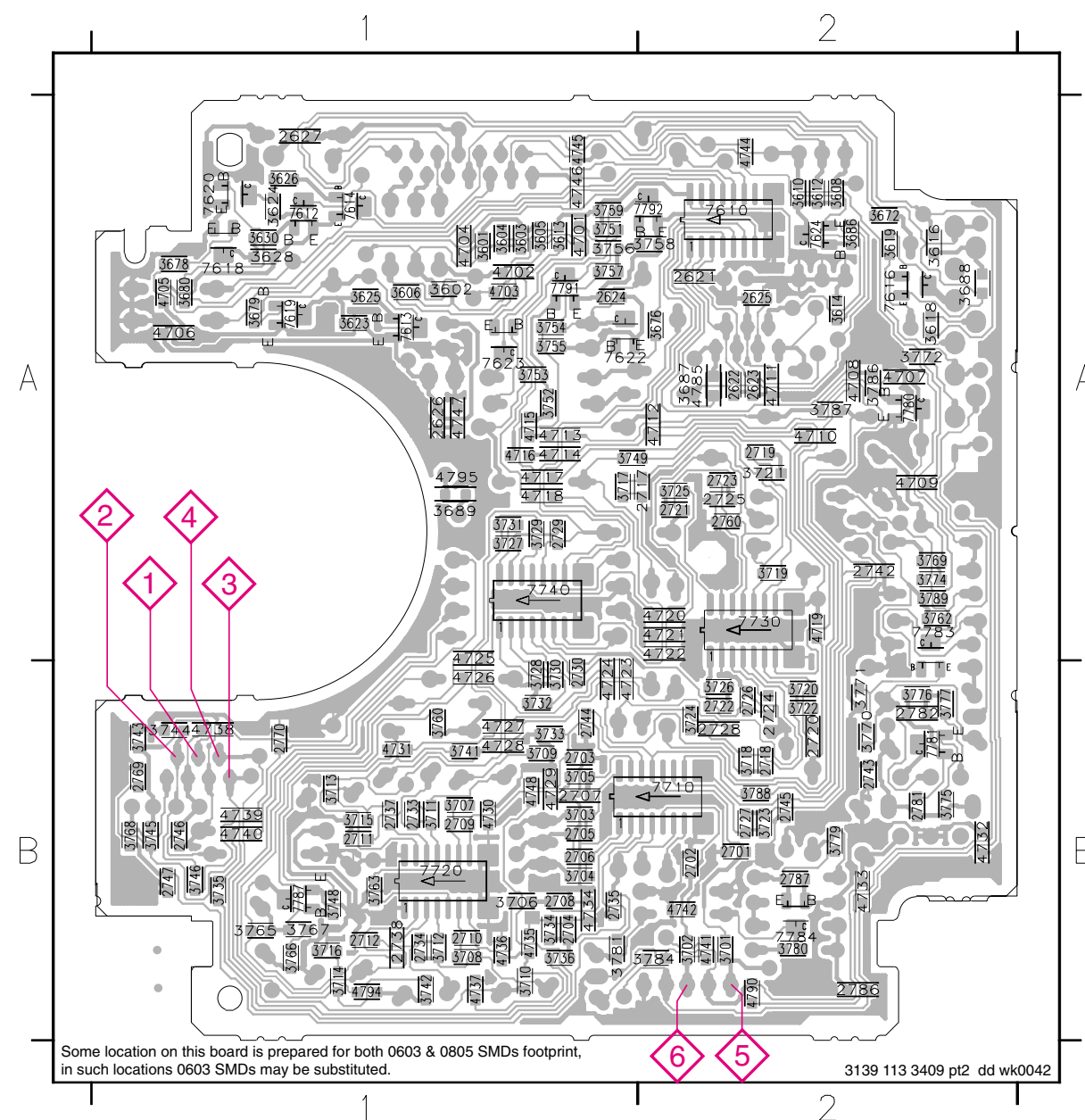
COMPONENT LAYOUT

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



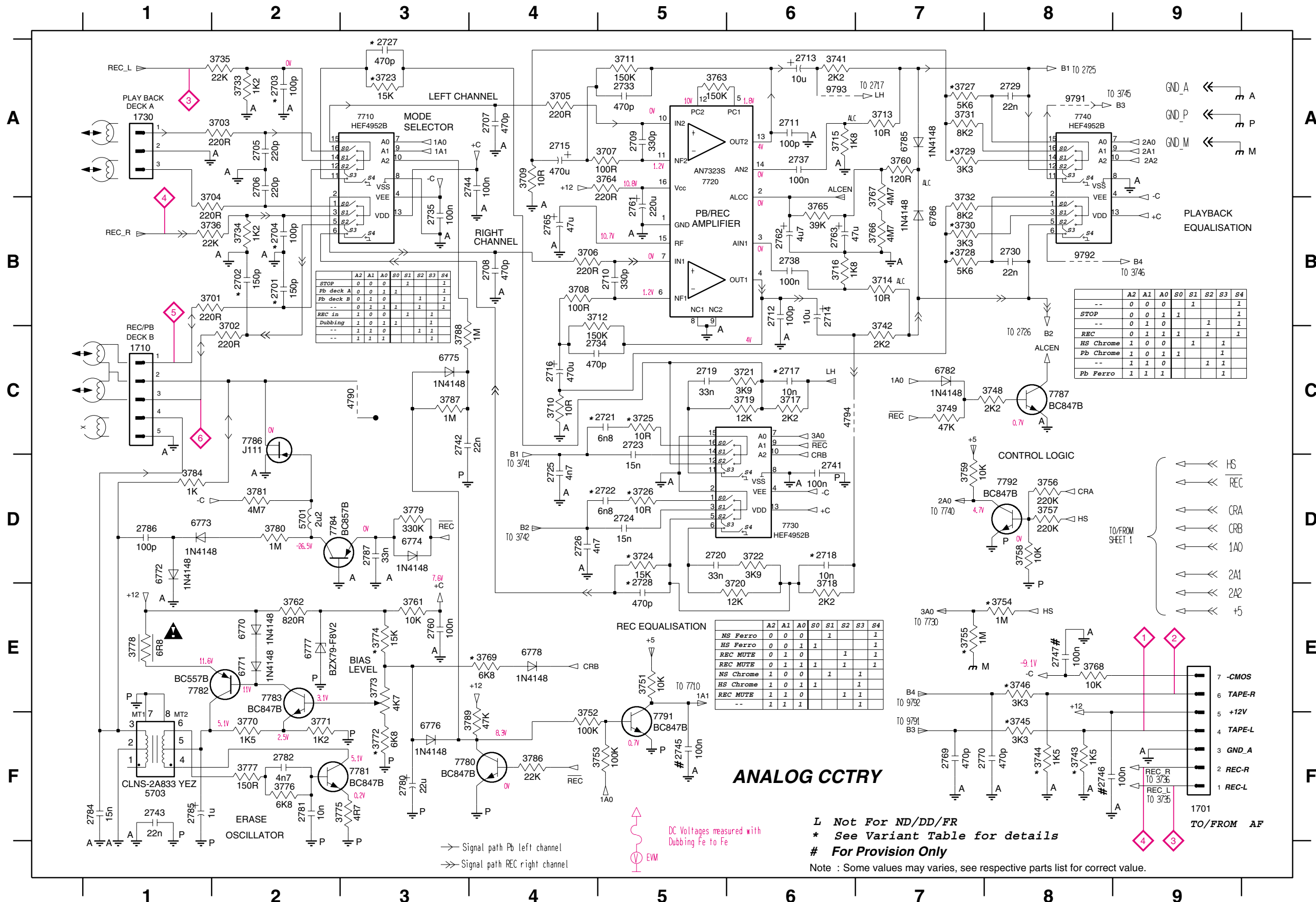
CHIP LAYOUT

| | | | | | | | | | | | | | | | | | |
|------|----|------|----|------|----|------|----|------|----|------|----|------|----|------|----|------|----|
| 2621 | A2 | 2724 | B2 | 3602 | A1 | 3688 | A2 | 3725 | A2 | 3757 | A1 | 4701 | A1 | 4727 | B1 | 7612 | A1 |
| 2622 | A2 | 2725 | A2 | 3603 | A1 | 3689 | A1 | 3726 | B2 | 3758 | A2 | 4702 | A1 | 4728 | B1 | 7613 | A1 |
| 2623 | A2 | 2726 | B2 | 3604 | A1 | 3701 | B2 | 3727 | A1 | 3759 | A1 | 4703 | A1 | 4729 | B1 | 7614 | A1 |
| 2624 | A1 | 2727 | B2 | 3605 | A1 | 3702 | B2 | 3728 | B1 | 3760 | B1 | 4704 | A1 | 4730 | B1 | 7616 | A2 |
| 2625 | A2 | 2728 | B2 | 3606 | A1 | 3703 | B1 | 3729 | A1 | 3762 | A2 | 4705 | A1 | 4731 | B1 | 7618 | A1 |
| 2626 | A1 | 2729 | A1 | 3608 | A2 | 3704 | B1 | 3730 | B1 | 3763 | B1 | 4706 | A1 | 4732 | B2 | 7619 | A1 |
| 2627 | A1 | 2730 | B1 | 3610 | A2 | 3705 | B1 | 3731 | A1 | 3765 | B1 | 4707 | A2 | 4733 | B2 | 7620 | A1 |
| 2701 | B2 | 2733 | B1 | 3612 | A2 | 3706 | B1 | 3732 | B1 | 3766 | B1 | 4708 | A2 | 4734 | B1 | 7622 | A1 |
| 2702 | B2 | 2734 | B1 | 3613 | A1 | 3707 | B1 | 3733 | B1 | 3767 | B1 | 4709 | A2 | 4735 | B1 | 7623 | A1 |
| 2703 | B1 | 2735 | B1 | 3614 | A2 | 3708 | B1 | 3734 | B1 | 3768 | B1 | 4710 | A2 | 4736 | B1 | 7624 | A2 |
| 2704 | B1 | 2737 | B1 | 3616 | A2 | 3709 | B1 | 3735 | B1 | 3769 | A2 | 4711 | A2 | 4737 | B1 | 7710 | B2 |
| 2705 | B1 | 2738 | B1 | 3618 | A2 | 3710 | B1 | 3736 | B1 | 3770 | B2 | 4712 | A2 | 4738 | B1 | 7720 | B1 |
| 2706 | B1 | 2742 | A2 | 3619 | A2 | 3711 | B1 | 3737 | B1 | 3771 | B2 | 4713 | A1 | 4739 | B1 | 7730 | A2 |
| 2707 | B1 | 2743 | B2 | 3623 | A1 | 3712 | B1 | 3742 | B1 | 3772 | A2 | 4714 | A1 | 4740 | B1 | 7740 | A1 |
| 2708 | B1 | 2744 | B1 | 3624 | A1 | 3713 | B1 | 3743 | B1 | 3774 | A2 | 4715 | A1 | 4741 | B2 | 7780 | A2 |
| 2709 | B1 | 2745 | B2 | 3625 | A1 | 3714 | B1 | 3744 | B1 | 3775 | B2 | 4716 | A1 | 4742 | B2 | 7781 | B2 |
| 2710 | B1 | 2746 | B1 | 3626 | A1 | 3715 | B1 | 3745 | B1 | 3776 | B2 | 4717 | A1 | 4744 | A2 | 7783 | A2 |
| 2711 | B1 | 2747 | B1 | 3628 | A1 | 3716 | B1 | 3746 | B1 | 3777 | B2 | 4718 | A1 | 4745 | A1 | 7784 | B2 |
| 2712 | B1 | 2760 | A2 | 3630 | A1 | 3717 | A1 | 3748 | B1 | 3779 | B2 | 4719 | A2 | 4746 | A1 | 7787 | B1 |
| 2717 | A2 | 2769 | B1 | 3672 | A2 | 3718 | B2 | 3749 | A1 | 3780 | B2 | 4720 | A2 | 4747 | A1 | 7791 | A1 |
| 2718 | B2 | 2770 | B1 | 3676 | A2 | 3719 | A2 | 3751 | A1 | 3781 | B1 | 4721 | A2 | 4748 | B1 | 7792 | A2 |
| 2719 | A2 | 2781 | B2 | 3678 | A1 | 3720 | B2 | 3752 | A1 | 3784 | B2 | 4722 | A2 | 4785 | A2 | | |
| 2720 | B2 | 2782 | B2 | 3679 | A1 | 3721 | A2 | 3753 | A1 | 3786 | A2 | 4723 | B1 | 4790 | B2 | | |
| 2721 | A2 | 2786 | B2 | 3680 | A1 | 3722 | B2 | 3754 | A1 | 3787 | A2 | 4724 | A1 | 4794 | B1 | | |
| 2722 | B2 | 2787 | B2 | 3686 | A2 | 3723 | B2 | 3755 | A1 | 3788 | B2 | 4725 | B1 | 4795 | A1 | | |
| 2723 | A2 | 3601 | A1 | 3687 | A2 | 3724 | B2 | 3756 | A1 | 3789 | A2 | 4726 | B1 | 7610 | A2 | | |



ANALOG CIRCUIT

| | | | | | | | | | | | | | | | | | | | | | | | | |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1701 F9 | 2705 A2 | 2712 B6 | 2719 C5 | 2726 D4 | 2735 B3 | 2745 F5 | 2765 B4 | 2785 F1 | 3705 A4 | 3712 B4 | 3719 C6 | 3726 D5 | 3733 A2 | 3744 F8 | 3753 F5 | 3760 A7 | 3767 A7 | 3774 E3 | 3781 D2 | 4794 C6 | 6774 D3 | 6786 B7 | 7782 E1 | 9791 A8 |
| 1710 C1 | 2706 A2 | 2713 A6 | 2720 D5 | 2727 A3 | 2737 A6 | 2746 F8 | 2769 F7 | 2786 D1 | 3706 B4 | 3713 A7 | 3720 E6 | 3727 A7 | 3734 B2 | 3745 F8 | 3754 E8 | 3761 E3 | 3768 E8 | 3775 F3 | 3784 D1 | 5701 D2 | 6775 C3 | 6787 A3 | 7783 E2 | 9792 B8 |
| 1730 A1 | 2707 A4 | 2714 B6 | 2721 C5 | 2728 E5 | 2738 B6 | 2747 E8 | 2770 F8 | 2787 D3 | 3707 A5 | 3714 B7 | 3721 C6 | 3728 B7 | 3735 A2 | 3746 E8 | 3755 E7 | 3762 E2 | 3769 E4 | 3776 F2 | 3786 F4 | 5703 F1 | 6776 F3 | 6788 A5 | 7784 D2 | 9793 A6 |
| 2701 B2 | 2708 B4 | 2715 A4 | 2722 D5 | 2729 A8 | 2741 D6 | 2760 E3 | 2780 F3 | 3701 B1 | 3708 B4 | 3715 A6 | 3722 D6 | 3729 A7 | 3736 B1 | 3748 C8 | 3756 D8 | 3763 A5 | 3770 F2 | 3777 F2 | 3787 C3 | 6770 E2 | 6777 E2 | 7730 D6 | 7786 C2 | |
| 2702 B2 | 2709 A5 | 2716 C4 | 2723 C5 | 2730 B8 | 2742 C3 | 2761 B5 | 2781 F2 | 3702 C2 | 3709 A4 | 3716 B6 | 3723 A3 | 3730 B7 | 3741 A6 | 3749 C7 | 3757 D8 | 3764 A5 | 3771 F2 | 3778 E1 | 3788 C3 | 6771 E2 | 6778 E4 | 7740 A8 | 7787 C8 | |
| 2703 A2 | 2710 B5 | 2717 C6 | 2724 D5 | 2733 A5 | 2743 F1 | 2762 B6 | 2782 F2 | 3703 A2 | 3710 C4 | 3717 C6 | 3724 D5 | 3731 A7 | 3742 C7 | 3751 E5 | 3758 D8 | 3765 B6 | 3772 F3 | 3779 D3 | 3789 F4 | 6772 D1 | 6782 C7 | 7780 F4 | 7791 F5 | |
| 2704 B2 | 2711 A6 | 2718 D6 | 2725 D4 | 2734 C4 | 2744 A4 | 2763 B6 | 2784 F1 | 3704 B1 | 3711 A5 | 3718 E6 | 3725 C5 | 3732 B7 | 3743 F8 | 3752 F4 | 3759 D7 | 3766 B7 | 3773 E3 | 3780 D2 | 4790 C3 | 6773 D1 | 6785 A7 | 7781 F3 | 7792 D8 | |



| STOP | A2 | A1 | A0 | S0 | S1 | S2 | S3 | S4 |
|-----------|----|----|----|----|----|----|----|----|
| Pb deck A | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| Pb deck B | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| REC In | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 |
| Dubbing | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 |
| -- | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

| STOP | A2 | A1 | A0 | S0 | S1 | S2 | S3 | S4 |
|-----------|----|----|----|----|----|----|----|----|
| -- | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 |
| REC | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| HS Chrome | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 |
| Pb Chrome | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| -- | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 |
| Pb Ferro | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

| REC EQUALISATION | A2 | A1 | A0 | S0 | S1 | S2 | S3 | S4 |
|------------------|----|----|----|----|----|----|----|----|
| NS Ferro | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 |
| HS Ferro | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| REC MUTE | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 |
| NS Chrome | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 |
| HS Chrome | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| REC MUTE | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 |
| -- | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |

ANALOG CCTRY

L Not For ND/DD/FR
 * See Variant Table for details
 # For Provision Only

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

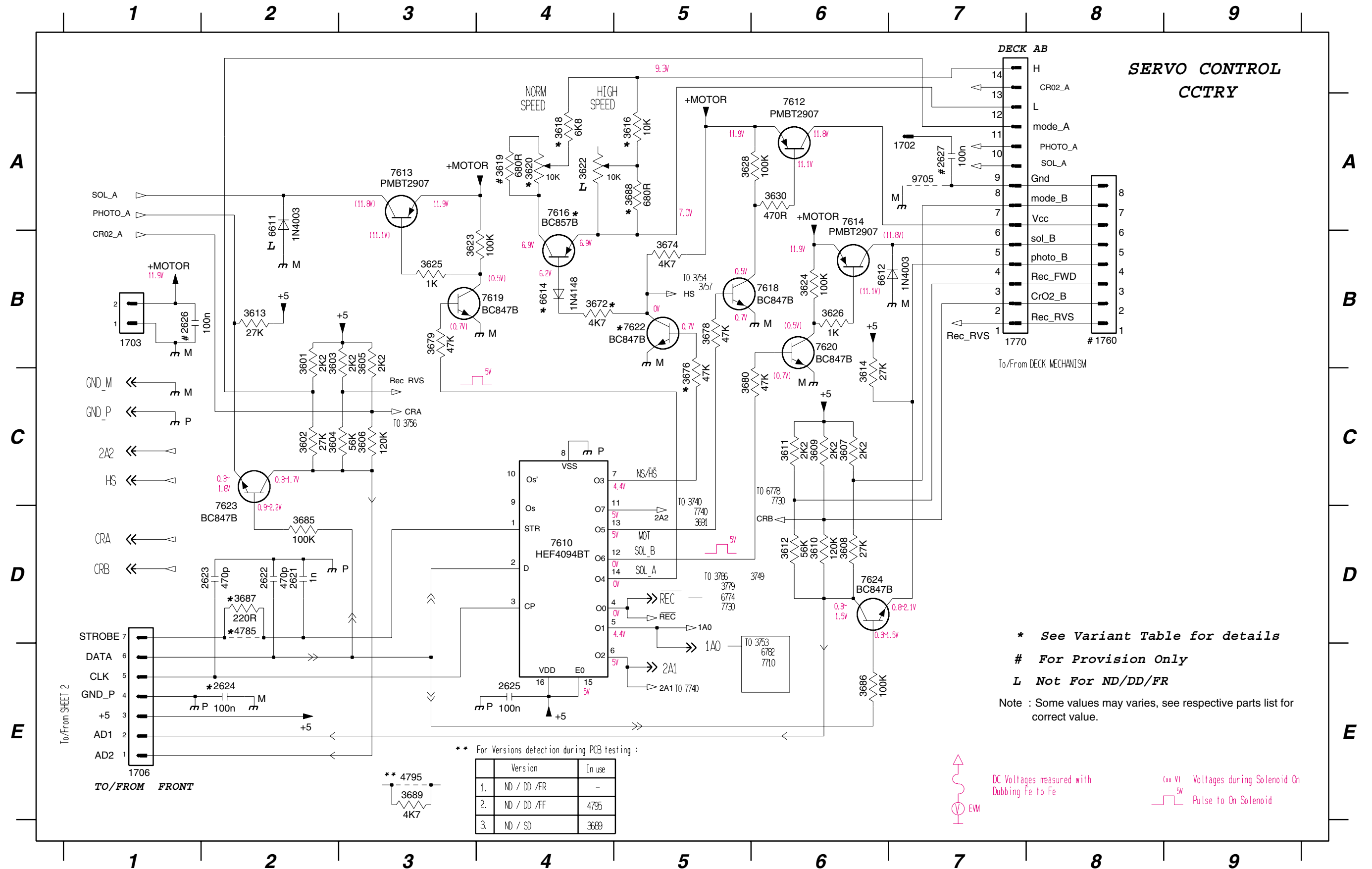
→ Signal path Pb left channel
 ⇨ Signal path REC right channel

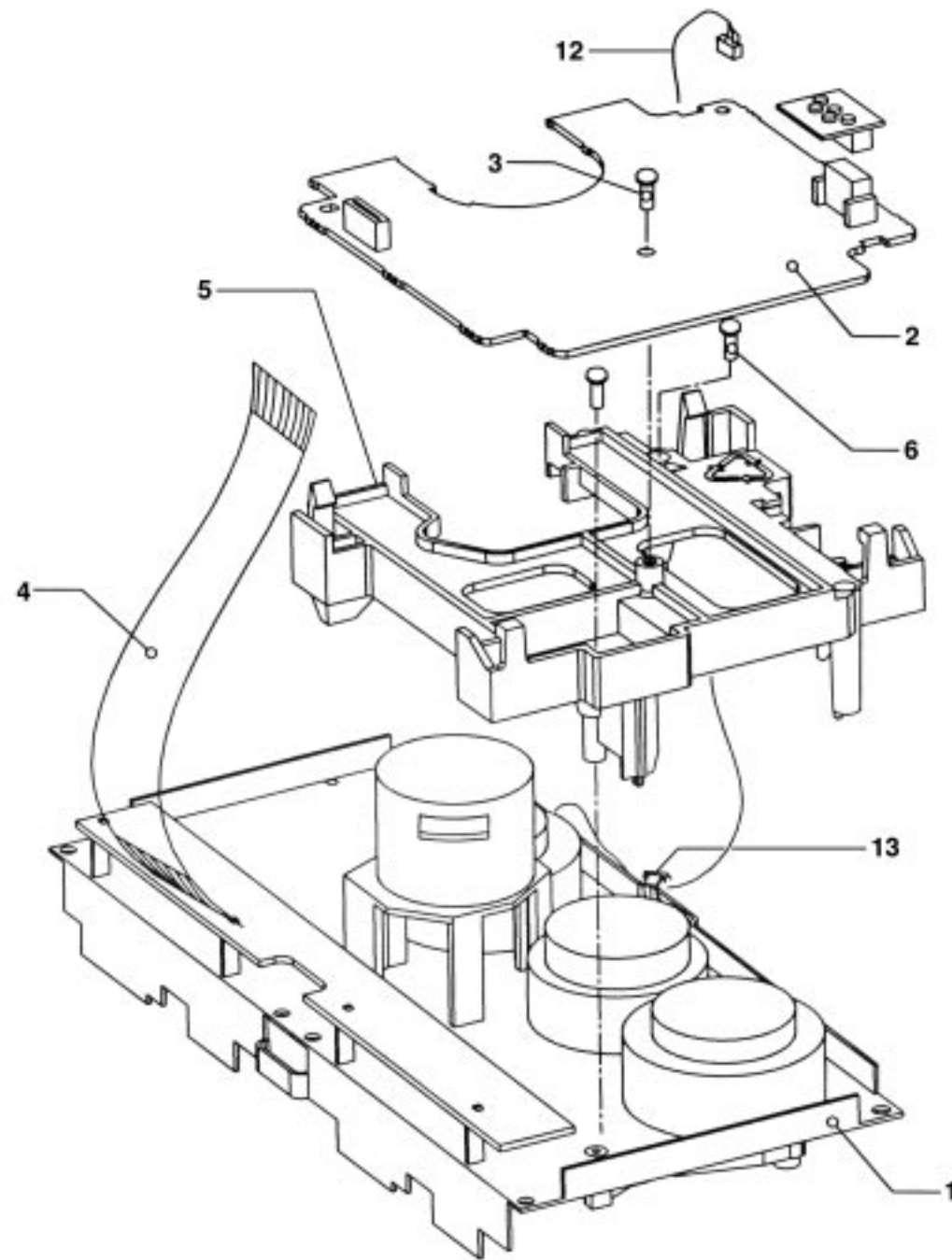
DC Voltages measured with
 Dubbing Fe to Fe

EVM

SERVO CONTROL CIRCUIT

| | | | | | | | | | | | | | | | | | | | | | |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1702 A7 | 1760 B8 | 2622 D2 | 2625 E4 | 3601 B2 | 3604 C2 | 3607 C6 | 3610 D6 | 3613 B2 | 3618 A4 | 3622 A4 | 3625 B3 | 3630 A6 | 3676 C5 | 3680 C5 | 3687 D2 | 4785 D2 | 6612 B6 | 7612 A6 | 7616 A4 | 7620 B6 | 7624 D6 |
| 1703 B1 | 1770 B7 | 2623 D2 | 2626 B1 | 3602 C2 | 3605 B3 | 3608 D6 | 3611 C6 | 3614 C6 | 3619 A4 | 3623 B3 | 3626 B6 | 3672 B4 | 3678 B5 | 3685 D2 | 3688 A5 | 4795 E3 | 6614 B4 | 7613 A3 | 7618 B6 | 7622 B5 | 9705 A7 |
| 1706 E1 | 2621 D2 | 2624 E2 | 2627 A7 | 3603 B2 | 3606 C3 | 3609 C6 | 3612 D6 | 3616 A5 | 3620 A4 | 3624 B6 | 3628 A5 | 3674 B5 | 3679 B3 | 3686 E6 | 3689 E3 | 6611 A2 | 7610 D4 | 7614 A6 | 7619 B4 | 7623 D2 | |



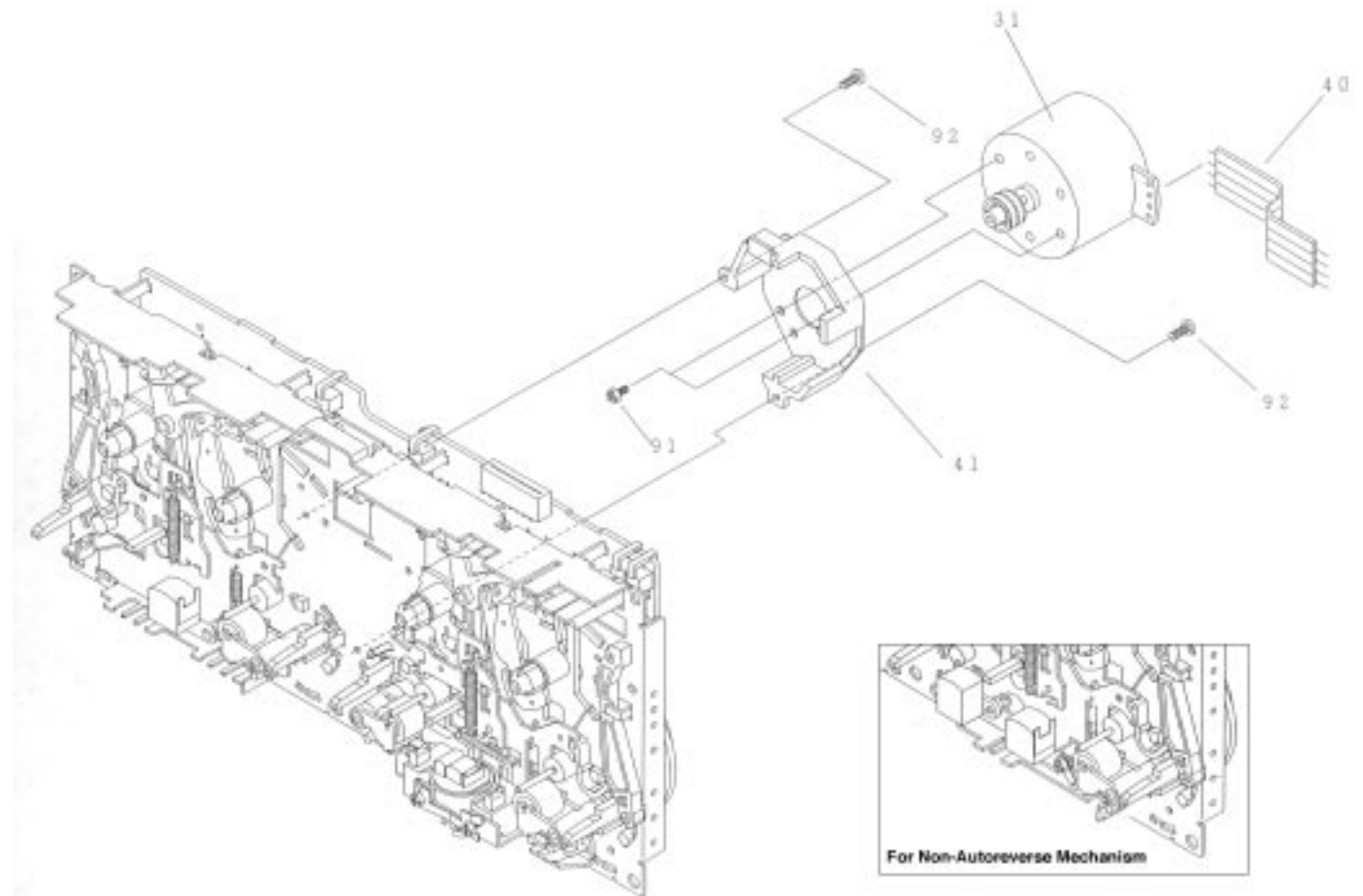


3139 118 77070 (incl. ...77080) dd wr226

TAPE MODULE EXPLODED VIEW

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

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

**TAPE MECHANISM - MOTOR EXPLODED VIEW**

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

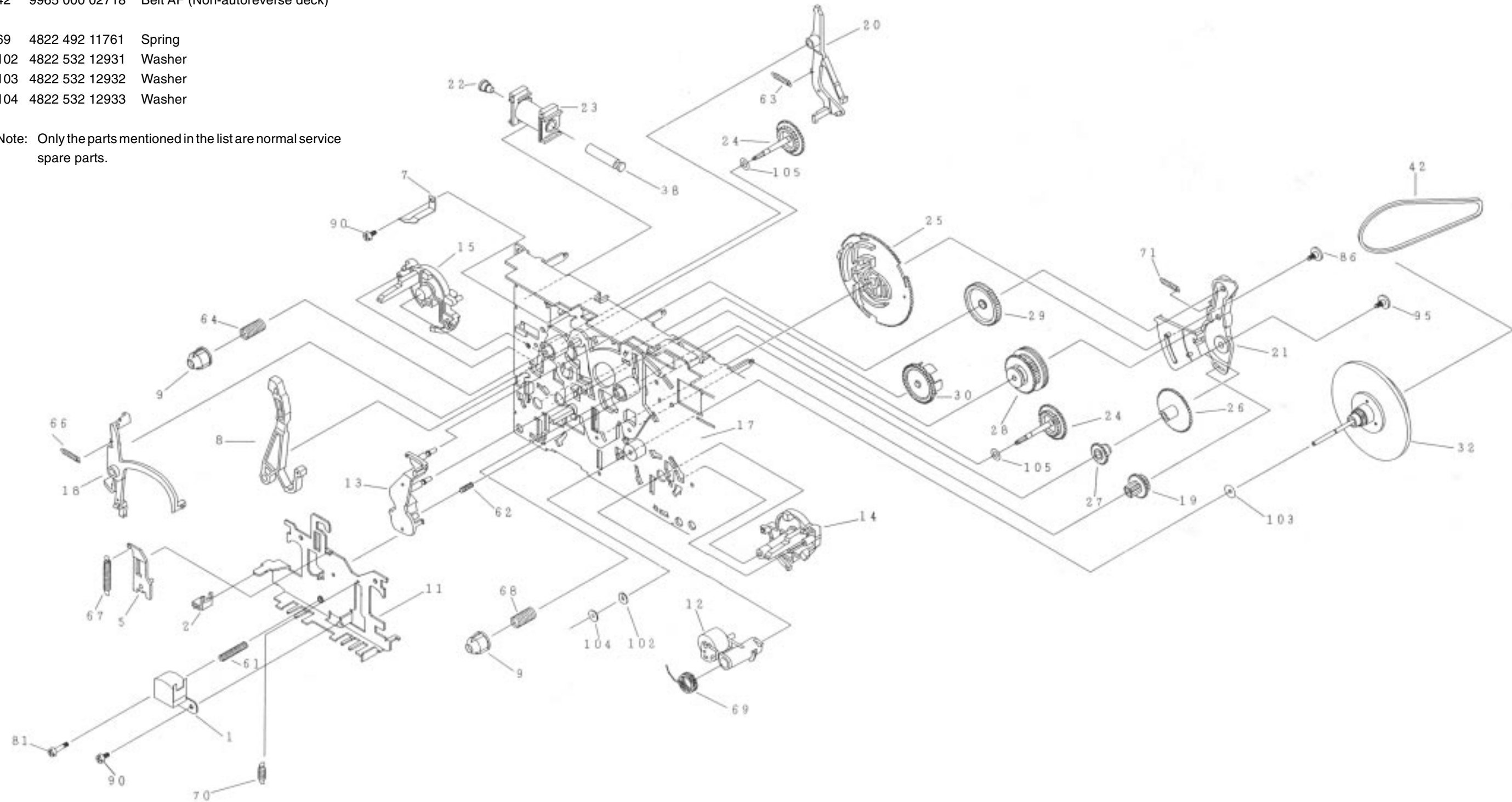
Note: Only the parts mentioned in this list are normal service spare parts.

TAPE MECHANISM A - PLAY

MECHANICAL PARTS - PLAY MECHANISM

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

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

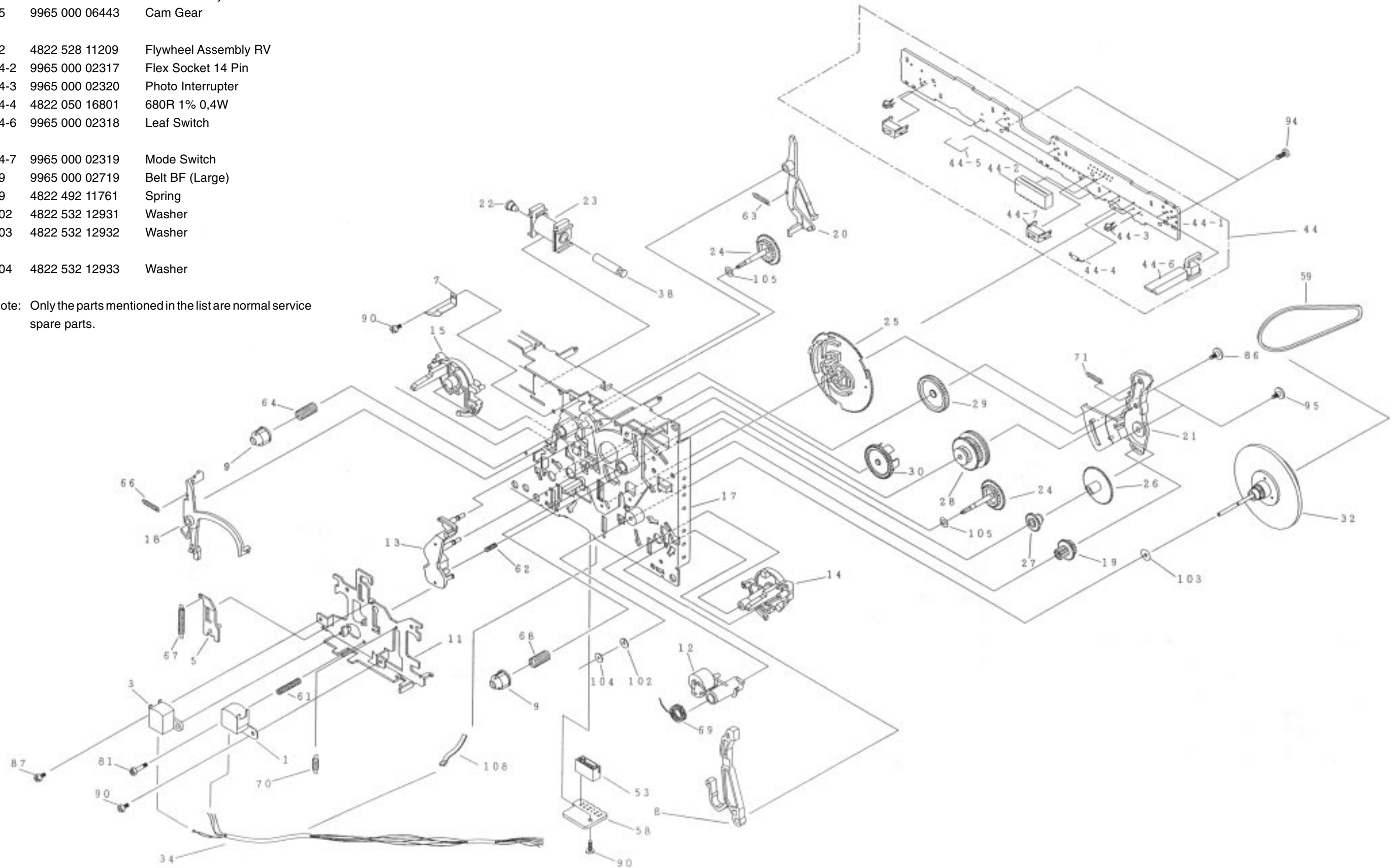


TAPE MECHANISM B - RECORD/PLAYBACK (Non-Autoreverse version)

MECHANICAL PARTS - REC/PB MECHANISM

| | | |
|------|----------------|----------------------|
| 1 | 9965 000 02313 | Play Head |
| 3 | 9965 000 02600 | Head, Erase |
| 12 | 4822 402 10972 | Pinch Arm Assembly R |
| 23 | 9965 000 02314 | Coil Assembly |
| 25 | 9965 000 06443 | Cam Gear |
| 32 | 4822 528 11209 | Flywheel Assembly RV |
| 44-2 | 9965 000 02317 | Flex Socket 14 Pin |
| 44-3 | 9965 000 02320 | Photo Interrupter |
| 44-4 | 4822 050 16801 | 680R 1% 0,4W |
| 44-6 | 9965 000 02318 | Leaf Switch |
| 44-7 | 9965 000 02319 | Mode Switch |
| 59 | 9965 000 02719 | Belt BF (Large) |
| 69 | 4822 492 11761 | Spring |
| 102 | 4822 532 12931 | Washer |
| 103 | 4822 532 12932 | Washer |
| 104 | 4822 532 12933 | Washer |

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

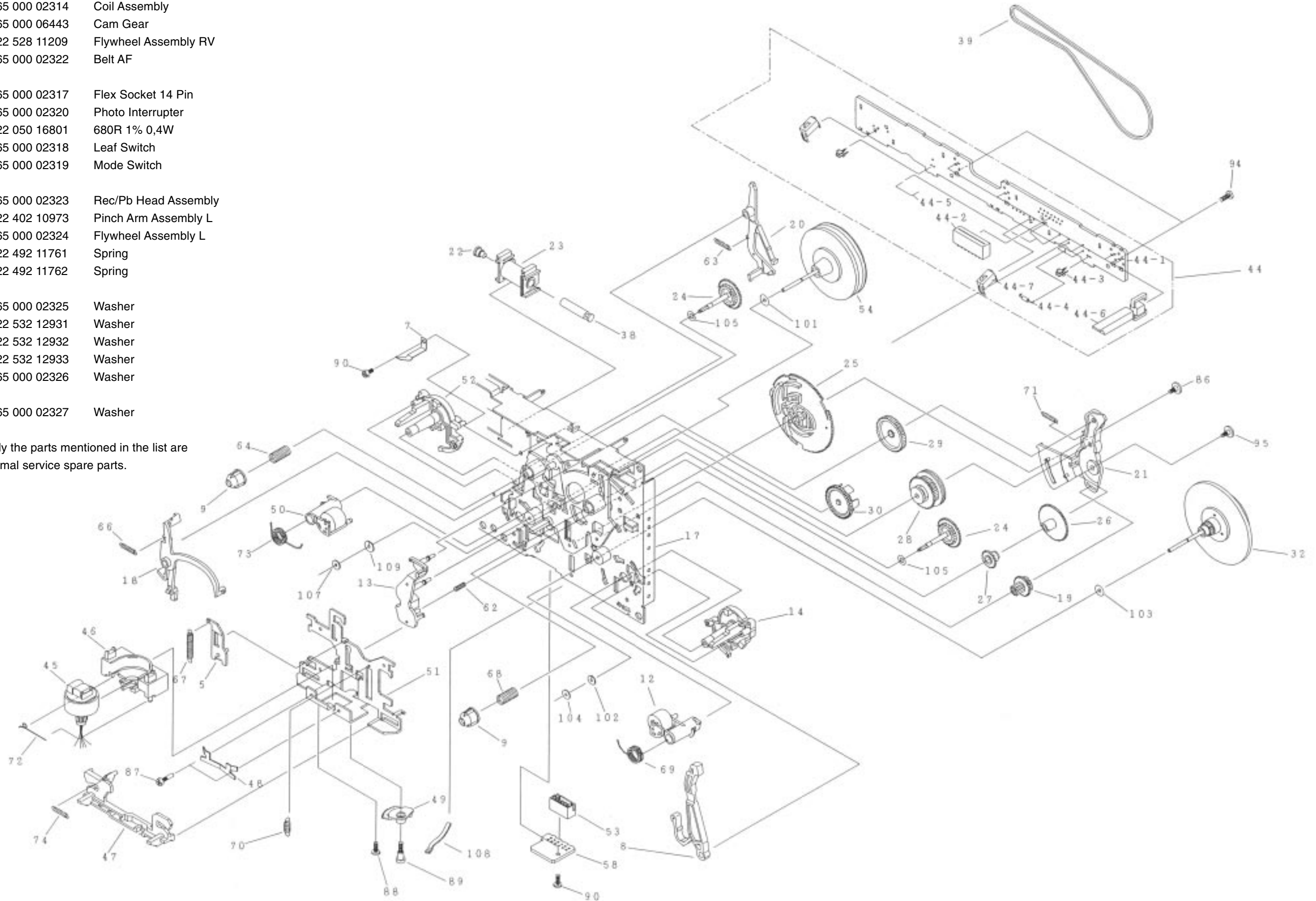


TAPE MECHANISM B - RECORD/PLAYBACK (Autoreverse version)

MECHANICAL PARTS - REC/PB MECHANISM

| | | |
|------|----------------|----------------------|
| 12 | 4822 402 10972 | Pinch Arm Assembly R |
| 23 | 9965 000 02314 | Coil Assembly |
| 25 | 9965 000 06443 | Cam Gear |
| 32 | 4822 528 11209 | Flywheel Assembly RV |
| 39 | 9965 000 02322 | Belt AF |
| | | |
| 44-2 | 9965 000 02317 | Flex Socket 14 Pin |
| 44-3 | 9965 000 02320 | Photo Interrupter |
| 44-4 | 4822 050 16801 | 680R 1% 0,4W |
| 44-6 | 9965 000 02318 | Leaf Switch |
| 44-7 | 9965 000 02319 | Mode Switch |
| | | |
| 45 | 9965 000 02323 | Rec/Pb Head Assembly |
| 50 | 4822 402 10973 | Pinch Arm Assembly L |
| 54 | 9965 000 02324 | Flywheel Assembly L |
| 69 | 4822 492 11761 | Spring |
| 73 | 4822 492 11762 | Spring |
| | | |
| 101 | 9965 000 02325 | Washer |
| 102 | 4822 532 12931 | Washer |
| 103 | 4822 532 12932 | Washer |
| 104 | 4822 532 12933 | Washer |
| 107 | 9965 000 02326 | Washer |
| | | |
| 109 | 9965 000 02327 | Washer |

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



ELECTRICAL PARTS LIST - ETF7 NON-DOLBY BOARD

MISCELLANEOUS

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

CAPACITORS

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

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

RESISTORS

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

ELECTRICAL PARTS LIST - ETF7 NON-DOLBY BOARD

| | | |
|------|--------------|-----------------------------|
| 3685 | 482211652234 | 100k 5% 0,5W |
| 3686 | 482211710837 | 100k 1% 0,1W |
| 3687 | 482211711503 | 220R 1% 0,1W not for Ferro |
| 3688 | 482211710361 | 680R 1% 0,1W Autoreverse |
| 3701 | 482211711503 | 220R 1% 0,1W |
| 3702 | 482211711503 | 220R 1% 0,1W |
| 3703 | 482211711503 | 220R 1% 0,1W |
| 3704 | 482211711503 | 220R 1% 0,1W |
| 3705 | 482211711503 | 220R 1% 0,1W |
| 3706 | 482211711503 | 220R 1% 0,1W |
| 3707 | 482205120101 | 100R 5% 0,1W |
| 3708 | 482205120101 | 100R 5% 0,1W |
| 3709 | 482205120109 | 10R 5% 0,1W |
| 3710 | 482205120109 | 10R 5% 0,1W |
| 3711 | 482205120154 | 150k 5% 0,1W |
| 3712 | 482205120154 | 150k 5% 0,1W |
| 3713 | 482205120109 | 10R 5% 0,1W |
| 3714 | 482205120109 | 10R 5% 0,1W |
| 3715 | 482205120182 | 1k8 5% 0,1W |
| 3716 | 482205120182 | 1k8 5% 0,1W |
| 3717 | 482211711449 | 2k2 1% 0,1W |
| 3718 | 482211711449 | 2k2 1% 0,1W |
| 3719 | 482211711383 | 12k 1% 0,1W |
| 3720 | 482211711383 | 12k 1% 0,1W |
| 3721 | 482205120392 | 3k9 5% 0,1W |
| 3722 | 482205120392 | 3k9 5% 0,1W |
| 3723 | 482211683933 | 15k 1% 0,1W Autoreverse |
| 3723 | 482211710965 | 18k 1% 0,1W Non-autoreverse |
| 3724 | 482211683933 | 15k 1% 0,1W Autoreverse |
| 3724 | 482211710965 | 18k 1% 0,1W Non-autoreverse |
| 3725 | 482205120109 | 10R 5% 0,1W not for Ferro |
| 3726 | 482205120109 | 10R 5% 0,1W not for Ferro |
| 3727 | 482205120562 | 5k6 5% 0,1W Autoreverse |
| 3727 | 482211711507 | 6k8 1% 0,1W Non-autoreverse |
| 3728 | 482205120562 | 5k6 5% 0,1W Autoreverse |
| 3728 | 482211711507 | 6k8 1% 0,1W Non-autoreverse |
| 3729 | 482205120332 | 3k3 5% 0,1W Autoreverse |
| 3729 | 482205120472 | 4k7 5% 0,1W Non-autoreverse |
| 3730 | 482205120332 | 3k3 5% 0,1W Autoreverse |
| 3730 | 482205120472 | 4k7 5% 0,1W Non-autoreverse |
| 3731 | 482205120822 | 8k2 5% 0,1W |
| 3732 | 482205120822 | 8k2 5% 0,1W |
| 3733 | 482205120122 | 1k2 5% 0,1W |
| 3734 | 482205120122 | 1k2 5% 0,1W |
| 3735 | 482205120223 | 22k 5% 0,1W |
| 3736 | 482205120223 | 22k 5% 0,1W |
| 3741 | 482211711449 | 2k2 1% 0,1W |
| 3742 | 482211711449 | 2k2 1% 0,1W |
| 3743 | 482211711139 | 1k5 1% 0,1W Autoreverse |
| 3743 | 482211711449 | 2k2 1% 0,1W Non-autoreverse |
| 3744 | 482211711139 | 1k5 1% 0,1W Autoreverse |
| 3744 | 482211711449 | 2k2 1% 0,1W Non-autoreverse |
| 3745 | 482205120332 | 3k3 5% 0,1W Autoreverse |
| 3745 | 482205120562 | 5k6 5% 0,1W Non-autoreverse |
| 3746 | 482205120332 | 3k3 5% 0,1W Autoreverse |
| 3746 | 482205120562 | 5k6 5% 0,1W Non-autoreverse |
| 3748 | 482211711449 | 2k2 1% 0,1W |
| 3749 | 482211710834 | 47k 1% 0,1W |
| 3751 | 482211710833 | 10k 1% 0,1W |
| 3752 | 482211710837 | 100k 1% 0,1W |
| 3753 | 482211710837 | 100k 1% 0,1W |
| 3754 | 482205120105 | 1M 5% 0,1W Autoreverse |
| 3754 | 482205120479 | 47R 5% 0,1W Non-autoreverse |
| 3755 | 482205120105 | 1M 5% 0,1W Autoreverse |
| 3755 | 482205120479 | 47R 5% 0,1W Non-autoreverse |
| 3756 | 482211713579 | 220k 1% 0,1W |
| 3757 | 482211713579 | 220k 1% 0,1W |
| 3758 | 482211710833 | 10k 1% 0,1W |
| 3759 | 482211710833 | 10k 1% 0,1W |
| 3760 | 482205120121 | 120R 5% 0,1W |
| 3761 | 482205021003 | 10k 1% 0,6W |
| 3762 | 482211711454 | 820R 1% 0,1W |
| 3763 | 482205120154 | 150k 5% 0,1W |
| 3764 | 482211683872 | 220R 5% 0,5W |
| 3765 | 482205120393 | 39k 5% 0,1W |
| 3766 | 482205120475 | 4M7 5% 0,1W |
| 3767 | 482205120475 | 4M7 5% 0,1W |
| 3768 | 482211710833 | 10k 1% 0,1W |
| 3769 | 482211711383 | 12k 1% 0,1W Autoreverse |
| 3769 | 482205120822 | 8k2 5% 0,1W Non-autoreverse |
| 3770 | 482211711139 | 1k5 1% 0,1W |
| 3771 | 482205120122 | 1k2 5% 0,1W |
| 3772 | 482211711507 | 6k8 1% 0,1W Autoreverse |
| 3772 | 482205120562 | 5k6 5% 0,1W Non-autoreverse |
| 3773 | 482210012227 | Trimmer 4k7 30% 0,1W |
| 3774 | 482211683933 | 15k 1% 0,1W Autoreverse |
| 3774 | 482205120822 | 8k2 5% 0,1W Non-autoreverse |
| 3775 | 482205120478 | 4R7 5% 0,1W |
| 3776 | 482211711507 | 6k8 1% 0,1W |
| 3777 | 482211710353 | 150R 1% 0,1W |
| 3778 | 482205210688 | △ 6R8 5% 0,33W |
| 3779 | 482205120334 | 330k 5% 0,1W |
| 3780 | 482205120105 | 1M 5% 0,1W |
| 3781 | 482205120475 | 4M7 5% 0,1W |
| 3784 | 482205110102 | 1k 2% 0,25W |
| 3786 | 482205120223 | 22k 5% 0,1W |
| 3787 | 482205120105 | 1M 5% 0,1W |
| 3788 | 482205120105 | 1M 5% 0,1W |
| 3789 | 482211710834 | 47k 1% 0,1W |
| 4701 | 482205120008 | 0R Jumper 0805 |
| 4702 | 482205120008 | 0R Jumper 0805 |
| 4703 | 482205120008 | 0R Jumper 0805 |
| 4704 | 482205120008 | 0R Jumper 0805 |
| 4705 | 482205120008 | 0R Jumper 0805 |

ELECTRICAL PARTS LIST - ETF7 NON-DOLBY BOARD

RESISTORS

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

TRANSISTORS & INTEGRATED CIRCUITS

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

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

COILS & FILTERS

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

DIODES

| | | |
|------|--------------|---------|
| 6611 | 482213031878 | 1N4003G |
|------|--------------|---------|



3CDC-LC-VCD
(3 Disc Carousel Changer) Layout stage .2

TABLE OF CONTENTS

| | |
|-----------------------------------|-------|
| Service Hints | 10-2 |
| Wiring | 10-4 |
| Blockdiagram | 10-5 |
| Component Layout Main Board | 10-6 |
| Circuit Diagram part 1 | 10-7 |
| Component Layout Main Board | 10-8 |
| Circuit Diagram part 2 | 10-9 |
| Circuit Diagram part 3 | 10-10 |
| Exploded View | 10-10 |
| Partslist | 10-12 |



Service hints

CAUTION

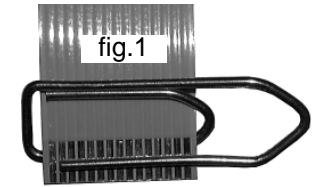
CHARGED CAPACITORS ON THE SERVO BOARD MAY DAMAGE THE CD DRIVE ELECTRONICS WHEN CONNECTING A NEW CD MECHANISM. THAT'S WHY, BESIDES THE SAFETY MEASURES LIKE

- SWITCH OFF POWER SUPPLY
- ESD PROTECTION

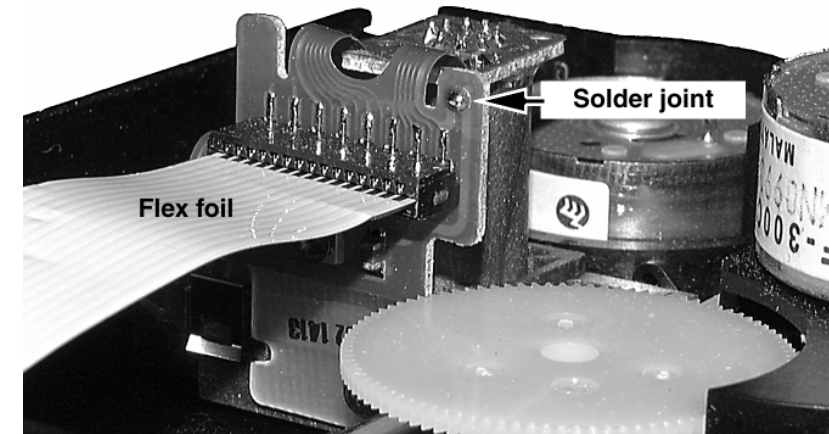
ADDITIONAL ACTIONS MUST BE TAKEN BY THE REPAIR TECHNICIAN.

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

1. Disconnect flexfoil cable from the old CD drive
2. Put a paperclip 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)

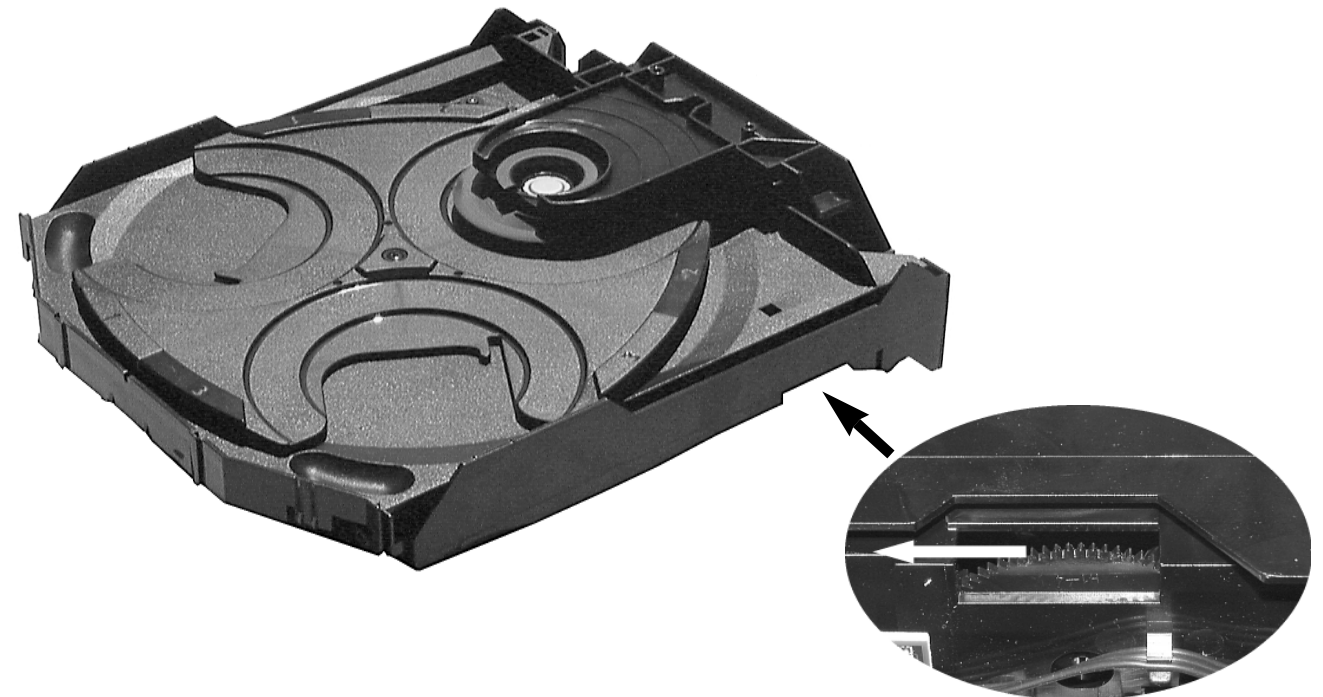


Attention: The laser diode of this CD drive is protected against ESD by a solder joint which short-circuits the laserdiode to ground.
 For proper functionality of the CD drive this solder joint must be removed **after** connecting the drive to the set.



Emergency open

- In case of a Supply fault, the tray can be opened manually.
1. Remove the top cover of the set to get access to the Changer Module.
 2. Turn gearwheel clockwise (as shown in picture below).

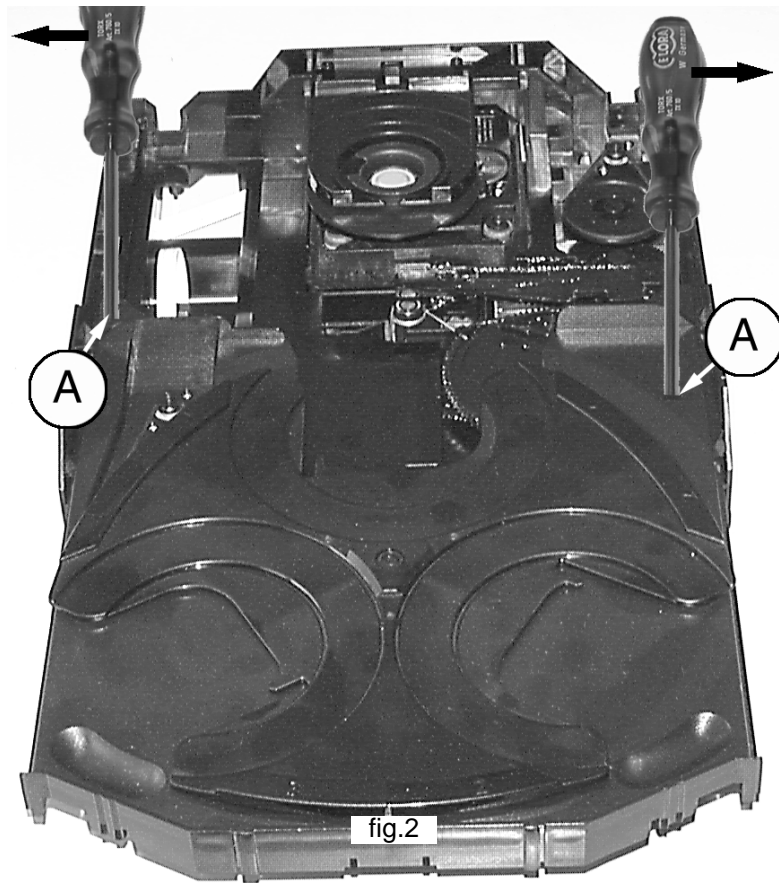
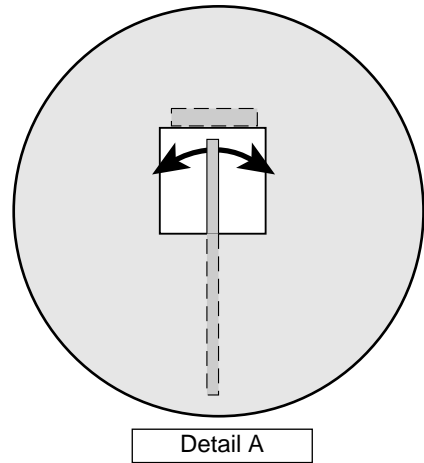


Service hints

10-3

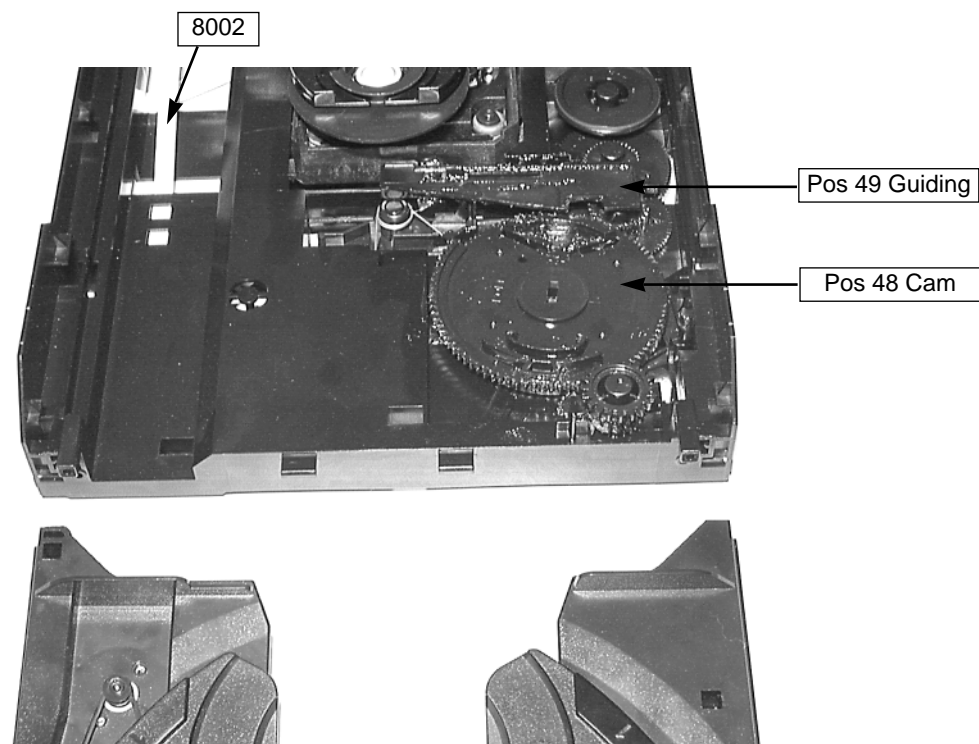
Dismantling of Tray

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



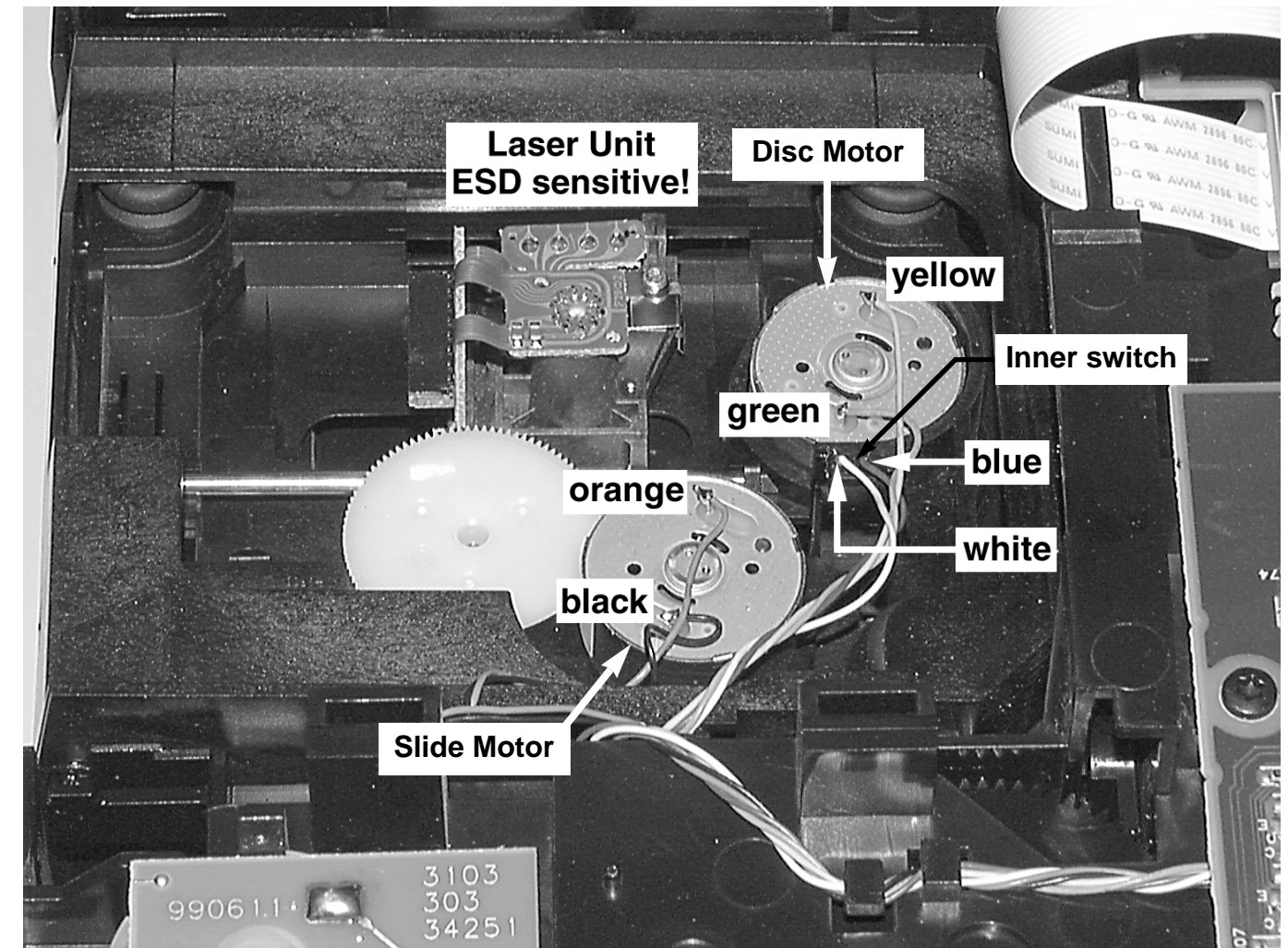
Assembling of Tray

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

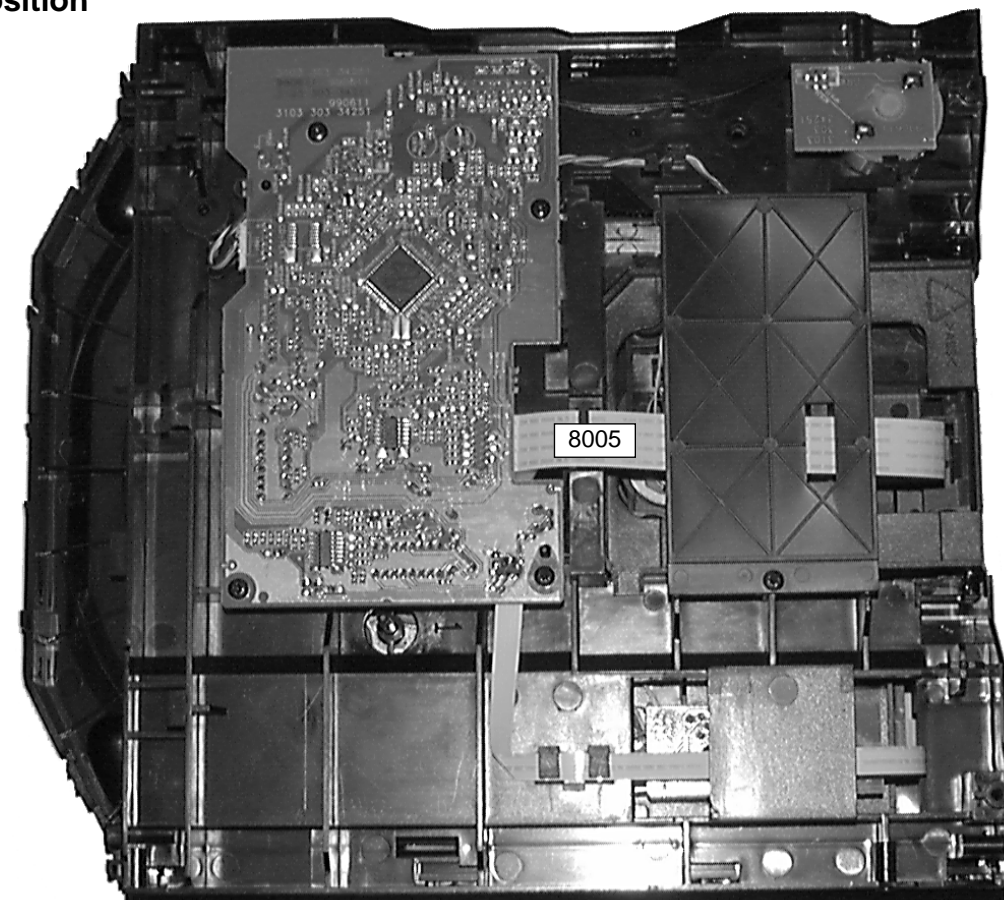


Wiring

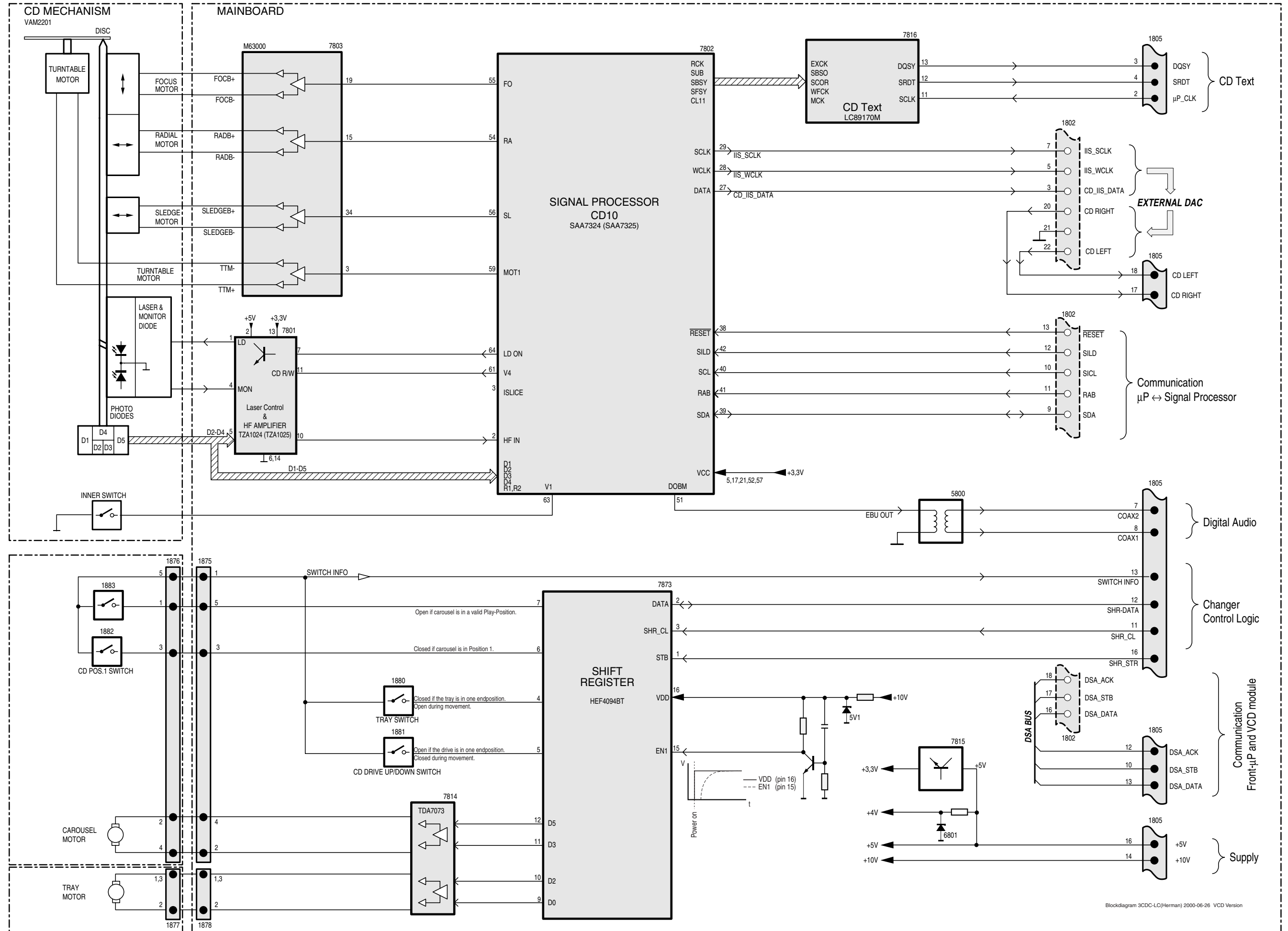
10-4



Service Position

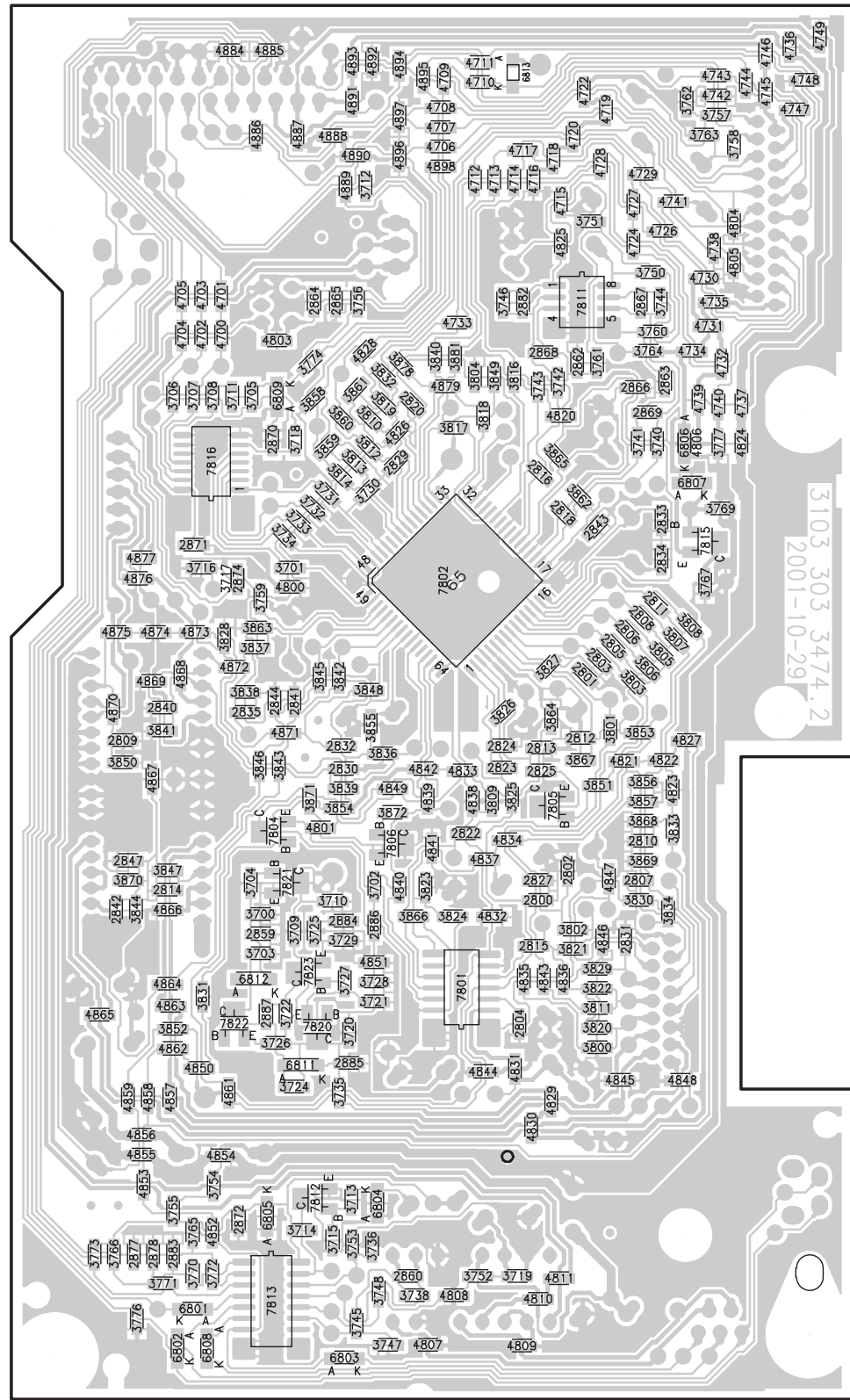


BLOCK DIAGRAM 3CDC-LC VCD Version



Mapping

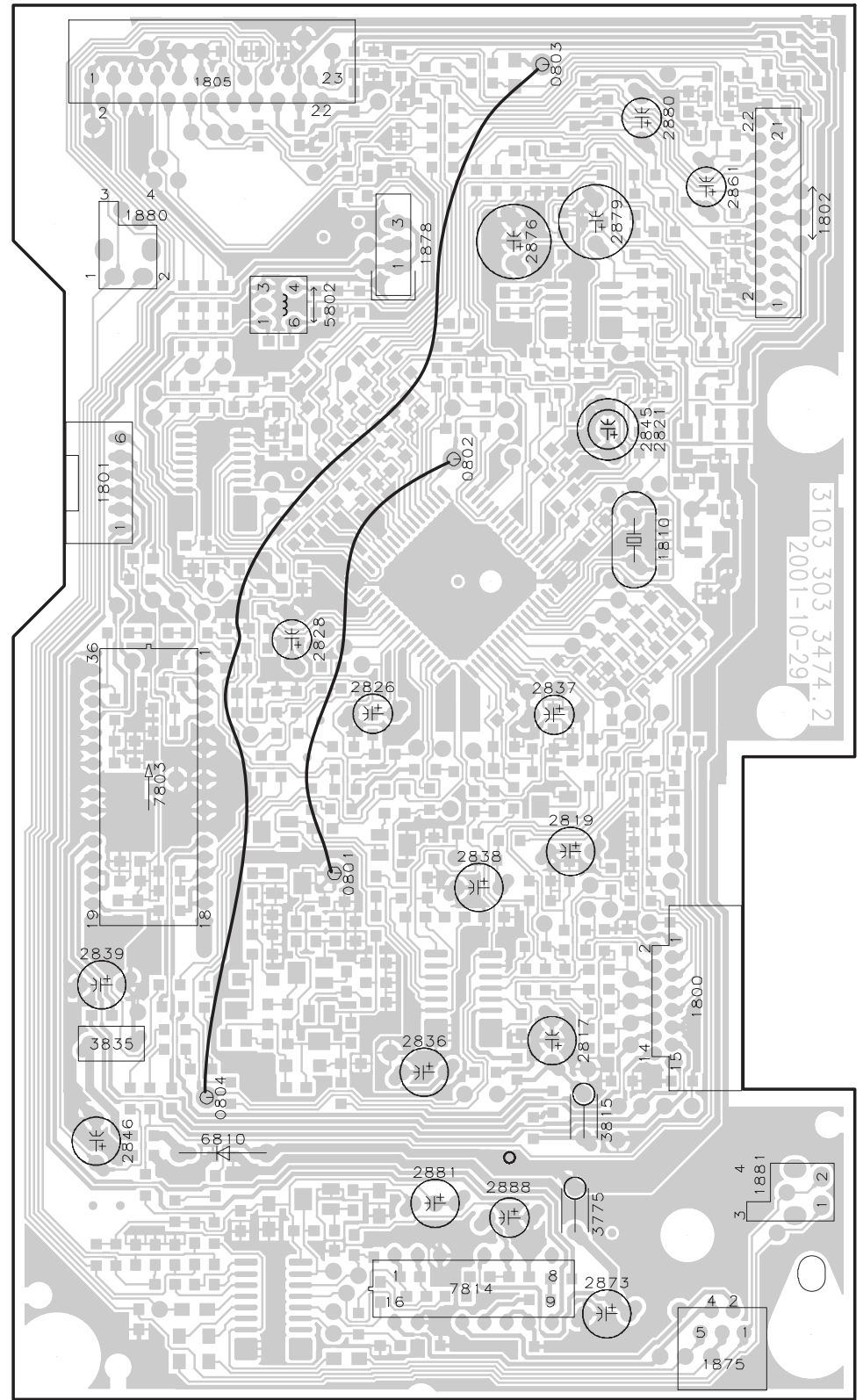
3CDC-LC (Herman) Copperside view



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

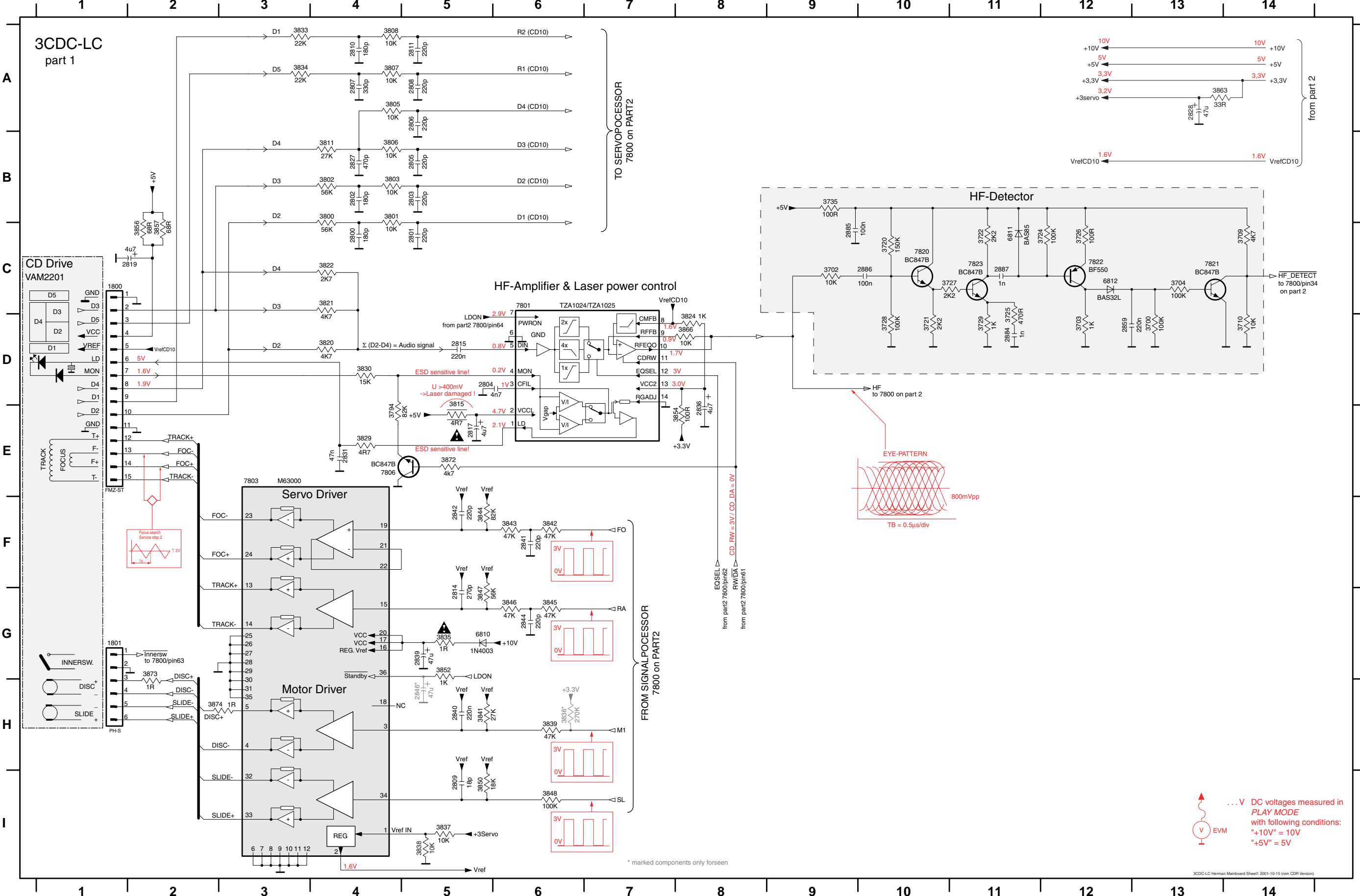
| Copperside | | | | Componentside | |
|------------|---------|---------|---------|---------------|---------|
| 2800 F4 | 3732 C2 | 3851 E4 | 4828 C3 | 7823 F2 | 0801 E2 |
| 2801 D4 | 3733 C2 | 3852 F1 | 4829 G4 | | 0802 C3 |
| 2802 E4 | 3734 D2 | 3853 E4 | 4830 G3 | | 0803 A4 |
| 2803 D4 | 3735 G2 | 3854 E2 | 4831 G3 | | 0804 G2 |
| 2804 F3 | 3736 H3 | 3855 E3 | 4832 F3 | | 1800 F4 |
| 2805 D4 | 3738 H3 | 3856 E4 | 4833 E3 | | 1801 C1 |
| 2806 D4 | 3740 C4 | 3857 E4 | 4834 E3 | | 1802 B5 |
| 2807 F4 | 3741 C4 | 3858 C2 | 4835 F3 | | 1805 A2 |
| 2808 D4 | 3742 C4 | 3859 C2 | 4836 F4 | | 1810 D4 |
| 2809 E1 | 3743 C4 | 3860 C2 | 4837 E3 | | 1875 H5 |
| 2810 E4 | 3744 B4 | 3861 C2 | 4838 E3 | | 1878 B3 |
| 2811 D4 | 3745 H2 | 3862 C4 | 4839 E3 | | 1880 B1 |
| 2812 E4 | 3746 B3 | 3863 D2 | 4840 F3 | | 1881 G5 |
| 2813 F4 | 3747 H3 | 3864 E4 | 4841 E3 | | 2817 F4 |
| 2814 F1 | 3748 H3 | 3865 C4 | 4842 E3 | | 2819 E4 |
| 2815 F3 | 3750 B4 | 3866 F3 | 4843 F4 | | 2821 C4 |
| 2816 C4 | 3751 B4 | 3867 E4 | 4844 G3 | | 2826 D3 |
| 2818 C4 | 3752 H3 | 3868 E4 | 4845 G4 | | 2828 D2 |
| 2820 C3 | 3753 H2 | 3869 E4 | 4846 F4 | | 2836 F3 |
| 2822 E3 | 3754 G2 | 3870 F1 | 4847 F4 | | 2837 D4 |
| 2823 E3 | 3755 G1 | 3871 E2 | 4848 G4 | | 2838 E3 |
| 2824 E3 | 3756 B2 | 3872 E3 | 4849 E3 | | 2839 F1 |
| 2825 E4 | 3757 A5 | 3878 C3 | 4850 G2 | | 2845 C4 |
| 2827 F4 | 3758 A5 | 3881 C3 | 4851 F3 | | 2846 G1 |
| 2829 C3 | 3759 D2 | 4700 B2 | 4852 H2 | | 2861 B5 |
| 2830 E2 | 3760 B4 | 4701 B2 | 4853 G1 | | 2873 H4 |
| 2831 F4 | 3761 C4 | 4702 B2 | 4854 G2 | | 2876 B3 |
| 2832 E2 | 3762 A4 | 4703 B2 | 4855 G1 | | 2879 B4 |
| 2833 C4 | 3763 A4 | 4704 B1 | 4856 G1 | | 2880 A4 |
| 2834 D4 | 3764 C4 | 4705 B1 | 4857 G1 | | 2881 G3 |
| 2835 E2 | 3765 H2 | 4706 A3 | 4858 G1 | | 2888 G3 |
| 2840 E1 | 3766 H1 | 4707 A3 | 4859 G1 | | 3775 G4 |
| 2841 E2 | 3767 D4 | 4708 A3 | 4861 G2 | | 3815 G4 |
| 2842 F1 | 3769 C5 | 4709 A3 | 4862 F1 | | 3835 F1 |
| 2843 D4 | 3770 H2 | 4710 A3 | 4863 F1 | | 5802 B2 |
| 2844 E2 | 3771 H1 | 4711 A3 | 4864 F1 | | 6810 G2 |
| 2847 E1 | 3772 H2 | 4712 B3 | 4865 F1 | | 7803 E1 |
| 2859 F2 | 3773 H1 | 4713 B3 | 4866 F1 | | 7814 H3 |
| 2860 H3 | 3774 C2 | 4714 B3 | 4867 E1 | | |
| 2862 C4 | 3776 H1 | 4715 B4 | 4868 D1 | | |
| 2863 C4 | 3777 C5 | 4716 B3 | 4869 D1 | | |
| 2864 B2 | 3800 F4 | 4717 A3 | 4870 E1 | | |
| 2865 B2 | 3801 E4 | 4718 A4 | 4871 E2 | | |
| 2866 C4 | 3802 F4 | 4719 A4 | 4872 D2 | | |
| 2867 B4 | 3803 D4 | 4720 A4 | 4873 D2 | | |
| 2868 C4 | 3804 C3 | 4722 A4 | 4874 D1 | | |
| 2869 C4 | 3805 D4 | 4724 B4 | 4875 D1 | | |
| 2870 C2 | 3806 D4 | 4726 B4 | 4876 D1 | | |
| 2871 D2 | 3807 D4 | 4727 B4 | 4877 D1 | | |
| 2872 G2 | 3808 D4 | 4728 A4 | 4879 C3 | | |
| 2874 D2 | 3809 E3 | 4729 A4 | 4884 A2 | | |
| 2877 H1 | 3810 C3 | 4730 B4 | 4885 A2 | | |
| 2878 H1 | 3811 F4 | 4731 B4 | 4886 A2 | | |
| 2882 B3 | 3812 C3 | 4732 C5 | 4887 A2 | | |
| 2883 H1 | 3813 C2 | 4733 B3 | 4888 A2 | | |
| 2884 F2 | 3814 C2 | 4734 C4 | 4889 B2 | | |
| 2885 G2 | 3816 C3 | 4735 B5 | 4890 A2 | | |
| 2886 F3 | 3817 C3 | 4736 A5 | 4891 A2 | | |
| 2887 F2 | 3818 C3 | 4737 C5 | 4892 A3 | | |
| 3700 F2 | 3819 C3 | 4738 B5 | 4893 A2 | | |
| 3701 D2 | 3820 F4 | 4739 C4 | 4894 A3 | | |
| 3702 F3 | 3821 F4 | 4740 C5 | 4895 A3 | | |
| 3703 F2 | 3822 F4 | 4741 B4 | 4896 A3 | | |
| 3704 F2 | 3823 F3 | 4742 A5 | 4897 A3 | | |
| 3705 C2 | 3824 F3 | 4743 A5 | 4898 A3 | | |
| 3706 C1 | 3825 E3 | 4744 A5 | 6801 H2 | | |
| 3707 C2 | 3826 E3 | 4745 A5 | 6802 H1 | | |
| 3708 C2 | 3827 D4 | 4746 A5 | 6803 H2 | | |
| 3709 F2 | 3828 D2 | 4747 A5 | 6804 G3 | | |
| 3710 F2 | 3829 F4 | 4748 A5 | 6805 G2 | | |
| 3711 C2 | 3830 F4 | 4749 A5 | 6806 C4 | | |
| 3712 B3 | 3831 F2 | 4800 D2 | 6807 C4 | | |
| 3713 G2 | 3832 C3 | 4801 E2 | 6808 H2 | | |
| 3714 H2 | 3833 E4 | 4803 B2 | 6809 C2 | | |
| 3715 H2 | 3834 F4 | 4804 B5 | 6811 G2 | | |
| 3716 D2 | 3836 E3 | 4805 B5 | 6812 F2 | | |
| 3717 D2 | 3837 D2 | 4806 C4 | 6813 A3 | | |
| 3718 C2 | 3838 D2 | 4807 H3 | 7801 F3 | | |
| 3719 H3 | 3839 E2 | 4808 H3 | 7802 D3 | | |
| 3720 F2 | 3840 C3 | 4809 H3 | 7804 E2 | | |
| 3721 F3 | 3841 E1 | 4810 H4 | 7805 E4 | | |
| 3722 F2 | 3842 D2 | 4811 H4 | 7806 E3 | | |
| 3724 G2 | 3843 E2 | 4820 C4 | 7811 B4 | | |
| 3725 F2 | 3844 F1 | 4821 E4 | 7812 G2 | | |
| 3726 F2 | 3845 D2 | 4822 E4 | 7813 H2 | | |
| 3727 F2 | 3846 E2 | 4823 E4 | 7815 D4 | | |
| 3728 F3 | 3847 E1 | 4824 C5 | 7816 C2 | | |
| 3729 F2 | 3848 D3 | 4825 B4 | 7820 F2 | | |
| 3730 C3 | 3849 C3 | 4826 C3 | 7821 F2 | | |
| 3731 C2 | 3850 E1 | 4827 E4 | 7822 F2 | | |

3CDC-LC (Herman) 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 partslist.

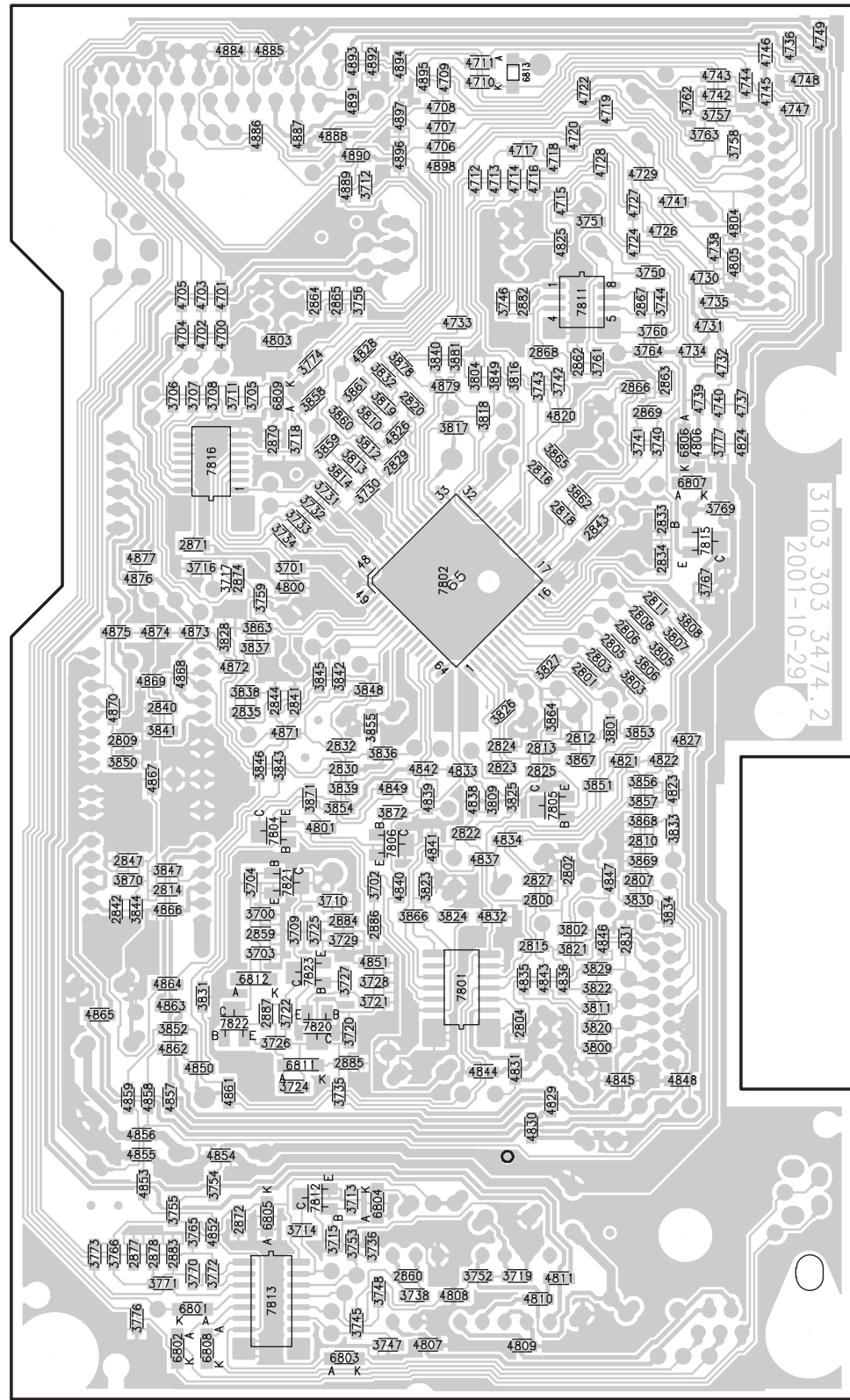
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|------|----|------|----|------|----|------|-----|------|----|------|----|------|-----|------|-----|------|-----|------|-----|------|-----|------|----|------|----|------|----|------|----|------|----|------|----|------|----|------|----|------|-----|------|-----|------|-----|--|--|
| 1800 | C1 | 2803 | B5 | 2808 | A5 | 2815 | D5 | 2830 | H6 | 2839 | G5 | 2848 | H5 | 2886 | C10 | 3704 | C13 | 3722 | C11 | 3728 | D10 | 3802 | B4 | 3808 | A4 | 3822 | C4 | 3834 | A3 | 3839 | H6 | 3845 | G6 | 3852 | H5 | 3866 | D8 | 3874 | H2 | 7801 | D6 | 7822 | C12 | | |
| 1801 | G1 | 2804 | D6 | 2809 | I5 | 2817 | E5 | 2831 | E4 | 2840 | H5 | 2859 | D13 | 2887 | C11 | 3709 | C14 | 3724 | C12 | 3729 | D11 | 3803 | B4 | 3811 | B4 | 3824 | D8 | 3835 | G5 | 3841 | H5 | 3846 | G6 | 3854 | E8 | 3868 | A4 | 3886 | A10 | 7803 | E3 | 7823 | C13 | | |
| 2800 | C4 | 2805 | B5 | 2810 | A4 | 2819 | C2 | 2832 | I6 | 2841 | F6 | 2860 | A9 | 3700 | D13 | 3710 | D14 | 3725 | D11 | 3735 | B9 | 3805 | A4 | 3815 | E5 | 3829 | E4 | 3836 | H6 | 3842 | F6 | 3847 | G5 | 3856 | C2 | 3869 | A4 | 4801 | E8 | 7806 | E5 | | | | |
| 2801 | C5 | 2806 | A5 | 2811 | A5 | 2827 | B4 | 2835 | I5 | 2842 | F5 | 2884 | D11 | 3702 | C9 | 3720 | C10 | 3726 | C12 | 3800 | B4 | 3806 | B4 | 3820 | D4 | 3830 | D4 | 3837 | I5 | 3843 | F6 | 3848 | I6 | 3857 | C2 | 3872 | E5 | 6811 | C11 | 7820 | C10 | | | | |
| 2802 | B4 | 2807 | A4 | 2814 | G5 | 2828 | A13 | 2836 | E8 | 2844 | G6 | 2885 | C9 | 3703 | D12 | 3721 | D10 | 3727 | C11 | 3801 | B4 | 3807 | A4 | 3821 | C4 | 3833 | A3 | 3838 | I5 | 3844 | F5 | 3850 | I5 | 3863 | G2 | 3873 | G2 | 6812 | C12 | 7821 | C13 | | | | |



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

Mapping

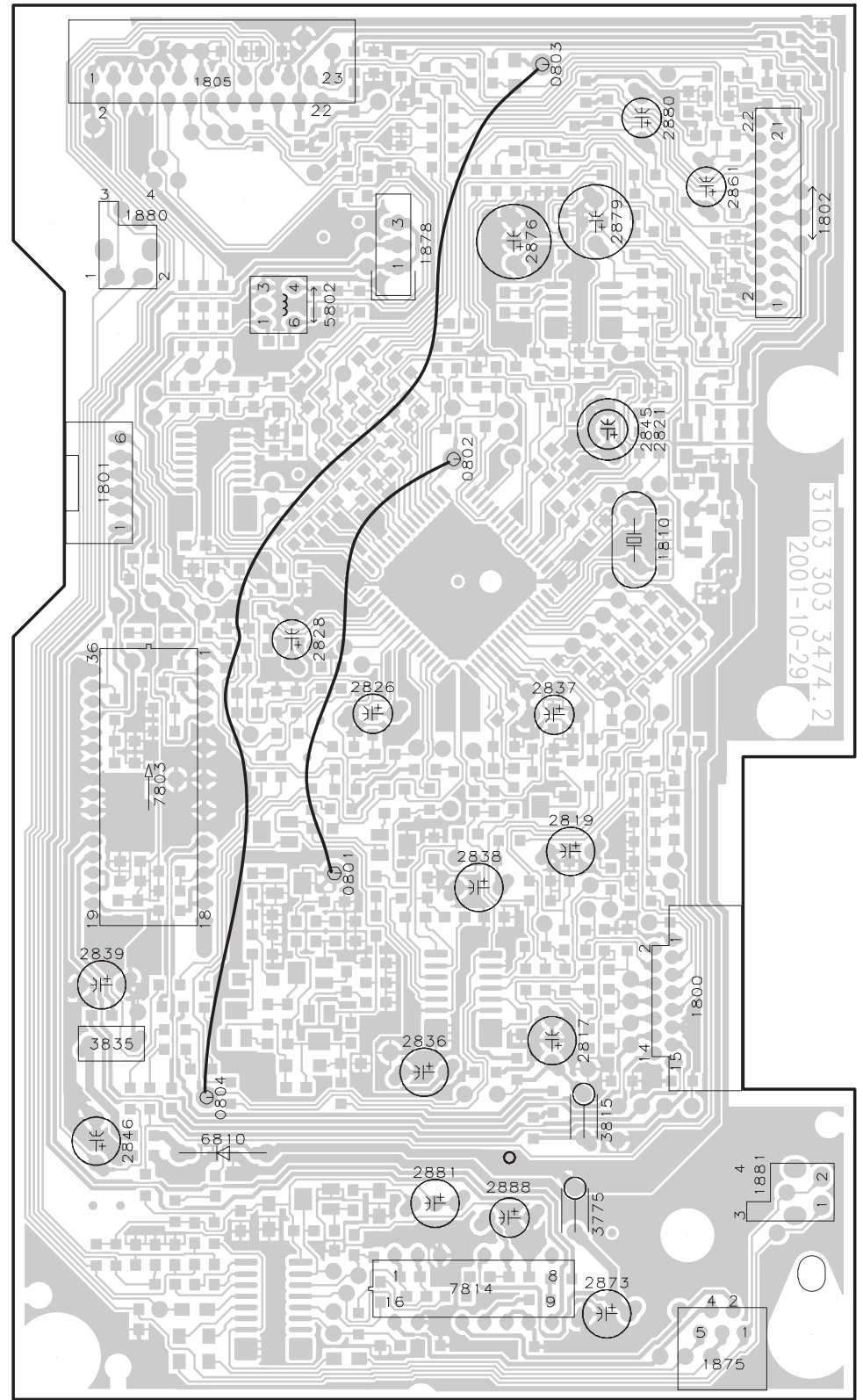
3CDC-LC (Herman) Copperside view



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

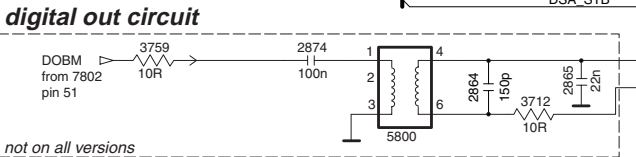
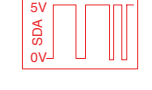
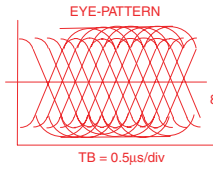
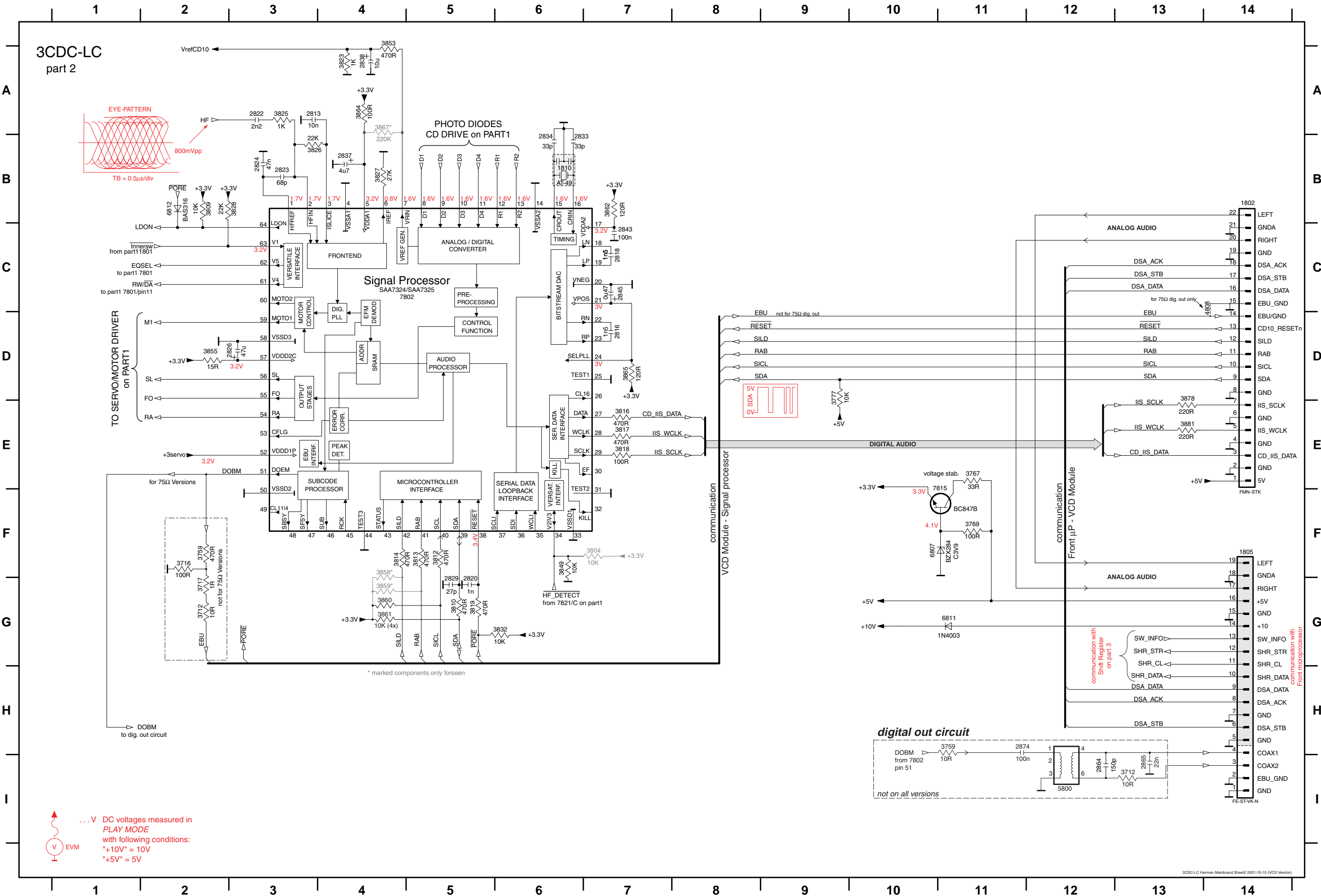
| Copperside | | | Componentside | | |
|------------|---------|---------|---------------|---------|---------|
| 2800 F4 | 3732 C2 | 3851 E4 | 4828 C3 | 7823 F2 | 0801 E2 |
| 2801 D4 | 3733 C2 | 3852 F1 | 4829 G4 | | 0802 C3 |
| 2802 E4 | 3734 D2 | 3853 E4 | 4830 G3 | | 0803 A4 |
| 2803 D4 | 3735 G2 | 3854 E2 | 4831 G3 | | 0804 G2 |
| 2804 F3 | 3736 H3 | 3855 E3 | 4832 F3 | | 1800 F4 |
| 2805 D4 | 3738 H3 | 3856 E4 | 4833 E3 | | 1801 C1 |
| 2806 D4 | 3740 C4 | 3857 E4 | 4834 E3 | | 1802 B5 |
| 2807 F4 | 3741 C4 | 3858 C2 | 4835 F3 | | 1805 A2 |
| 2808 D4 | 3742 C4 | 3859 C2 | 4836 F4 | | 1810 D4 |
| 2809 E1 | 3743 C4 | 3860 C2 | 4837 E3 | | 1875 H5 |
| 2810 E4 | 3744 B4 | 3861 C2 | 4838 E3 | | 1878 B3 |
| 2811 D4 | 3745 H2 | 3862 C4 | 4839 E3 | | 1880 B1 |
| 2812 E4 | 3746 B3 | 3863 D2 | 4840 F3 | | 1881 G5 |
| 2813 F4 | 3747 H3 | 3864 F4 | 4841 E3 | | 2817 F4 |
| 2814 F1 | 3748 H3 | 3865 C4 | 4842 E3 | | 2819 E4 |
| 2815 F3 | 3750 B4 | 3866 F3 | 4843 F4 | | 2821 C4 |
| 2816 C4 | 3751 B4 | 3867 E4 | 4844 G3 | | 2826 D3 |
| 2818 C4 | 3752 H3 | 3868 E4 | 4845 G4 | | 2828 D2 |
| 2820 C3 | 3753 H2 | 3869 E4 | 4846 F4 | | 2836 F3 |
| 2822 E3 | 3754 G2 | 3870 F1 | 4847 F4 | | 2837 D4 |
| 2823 E3 | 3755 G1 | 3871 E2 | 4848 G4 | | 2838 E3 |
| 2824 E3 | 3756 B2 | 3872 E3 | 4849 E3 | | 2839 F1 |
| 2825 E4 | 3757 A5 | 3878 C3 | 4850 G2 | | 2845 C4 |
| 2827 F4 | 3758 A5 | 3881 C3 | 4851 F3 | | 2846 G1 |
| 2829 C3 | 3759 D2 | 4700 B2 | 4852 H2 | | 2861 B5 |
| 2830 E2 | 3760 B4 | 4701 B2 | 4853 G1 | | 2873 H4 |
| 2831 F4 | 3761 C4 | 4702 B2 | 4854 G2 | | 2876 B3 |
| 2832 E2 | 3762 A4 | 4703 B2 | 4855 G1 | | 2879 B4 |
| 2833 C4 | 3763 A4 | 4704 B1 | 4856 G1 | | 2880 A4 |
| 2834 D4 | 3764 C4 | 4705 B1 | 4857 G1 | | 2881 G3 |
| 2835 E2 | 3765 H2 | 4706 A3 | 4858 G1 | | 2888 G3 |
| 2840 E1 | 3766 H1 | 4707 A3 | 4859 G1 | | 2889 A4 |
| 2841 E2 | 3767 D4 | 4708 A3 | 4861 G2 | | 3815 G4 |
| 2842 F1 | 3769 C5 | 4709 A3 | 4862 F1 | | 3835 F1 |
| 2843 D4 | 3770 H2 | 4710 A3 | 4863 F1 | | 5802 B2 |
| 2844 E2 | 3771 H1 | 4711 A3 | 4864 F1 | | 6810 G2 |
| 2847 E1 | 3772 H2 | 4712 B3 | 4865 F1 | | 7803 E1 |
| 2859 F2 | 3773 H1 | 4713 B3 | 4866 F1 | | 7814 H3 |
| 2860 H3 | 3774 C2 | 4714 B3 | 4867 E1 | | |
| 2862 C4 | 3776 H1 | 4715 B4 | 4868 D1 | | |
| 2863 C4 | 3777 C5 | 4716 B3 | 4869 D1 | | |
| 2864 B2 | 3800 F4 | 4717 A3 | 4870 E1 | | |
| 2865 B2 | 3801 E4 | 4718 A4 | 4871 E2 | | |
| 2866 C4 | 3802 F4 | 4719 A4 | 4872 D2 | | |
| 2867 B4 | 3803 D4 | 4720 A4 | 4873 D2 | | |
| 2868 C4 | 3804 C3 | 4722 A4 | 4874 D1 | | |
| 2869 C4 | 3805 D4 | 4724 B4 | 4875 D1 | | |
| 2870 C2 | 3806 D4 | 4726 B4 | 4876 D1 | | |
| 2871 D2 | 3807 D4 | 4727 B4 | 4877 D1 | | |
| 2872 G2 | 3808 D4 | 4728 A4 | 4879 C3 | | |
| 2874 D2 | 3809 E3 | 4729 A4 | 4884 A2 | | |
| 2877 H1 | 3810 C3 | 4730 B4 | 4885 A2 | | |
| 2878 H1 | 3811 F4 | 4731 B4 | 4886 A2 | | |
| 2882 B3 | 3812 C3 | 4732 C5 | 4887 A2 | | |
| 2883 H1 | 3813 C2 | 4733 B3 | 4888 A2 | | |
| 2884 F2 | 3814 C2 | 4734 C4 | 4889 B2 | | |
| 2885 G2 | 3816 C3 | 4735 B5 | 4890 A2 | | |
| 2886 F3 | 3817 C3 | 4736 A5 | 4891 A2 | | |
| 2887 F2 | 3818 C3 | 4737 C5 | 4892 A3 | | |
| 3700 F2 | 3819 C3 | 4738 B5 | 4893 A2 | | |
| 3701 D2 | 3820 F4 | 4739 C4 | 4894 A3 | | |
| 3702 F3 | 3821 F4 | 4740 C5 | 4895 A3 | | |
| 3703 F2 | 3822 F4 | 4741 B4 | 4896 A3 | | |
| 3704 F2 | 3823 F3 | 4742 A5 | 4897 A3 | | |
| 3705 C2 | 3824 F3 | 4743 A5 | 4898 A3 | | |
| 3706 C1 | 3825 E3 | 4744 A5 | 6801 H2 | | |
| 3707 C2 | 3826 E3 | 4745 A5 | 6802 H1 | | |
| 3708 C2 | 3827 D4 | 4746 A5 | 6803 H2 | | |
| 3709 F2 | 3828 D2 | 4747 A5 | 6804 G3 | | |
| 3710 F2 | 3829 F4 | 4748 A5 | 6805 G2 | | |
| 3711 C2 | 3830 F4 | 4749 A5 | 6806 C4 | | |
| 3712 B3 | 3831 F2 | 4800 D2 | 6807 C4 | | |
| 3713 G2 | 3832 C3 | 4801 E2 | 6808 H2 | | |
| 3714 H2 | 3833 E4 | 4803 B2 | 6809 C2 | | |
| 3715 H2 | 3834 F4 | 4804 B5 | 6811 G2 | | |
| 3716 D2 | 3836 E3 | 4805 B5 | 6812 F2 | | |
| 3717 D2 | 3837 D2 | 4806 C4 | 6813 A3 | | |
| 3718 C2 | 3838 D2 | 4807 H3 | 7801 F3 | | |
| 3719 H3 | 3839 E2 | 4808 H3 | 7802 D3 | | |
| 3720 F2 | 3840 C3 | 4809 H3 | 7804 E2 | | |
| 3721 F3 | 3841 E1 | 4810 H4 | 7805 E4 | | |
| 3722 F2 | 3842 D2 | 4811 H4 | 7806 E3 | | |
| 3724 G2 | 3843 E2 | 4820 C4 | 7811 B4 | | |
| 3725 F2 | 3844 F1 | 4821 E4 | 7812 G2 | | |
| 3726 F2 | 3845 D2 | 4822 E4 | 7813 H2 | | |
| 3727 F2 | 3846 E2 | 4823 E4 | 7815 D4 | | |
| 3728 F3 | 3847 E1 | 4824 C5 | 7816 C2 | | |
| 3729 F2 | 3848 D3 | 4825 B4 | 7820 F2 | | |
| 3730 C3 | 3849 C3 | 4826 C3 | 7821 F2 | | |
| 3731 C2 | 3850 E1 | 4827 E4 | 7822 F2 | | |

3CDC-LC (Herman) Components seen from Copperside



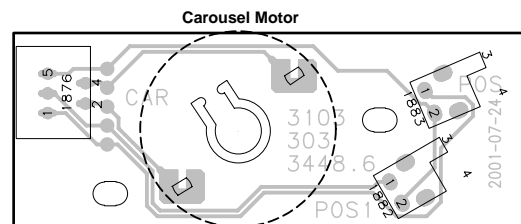
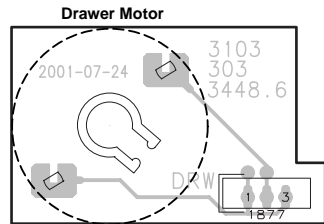
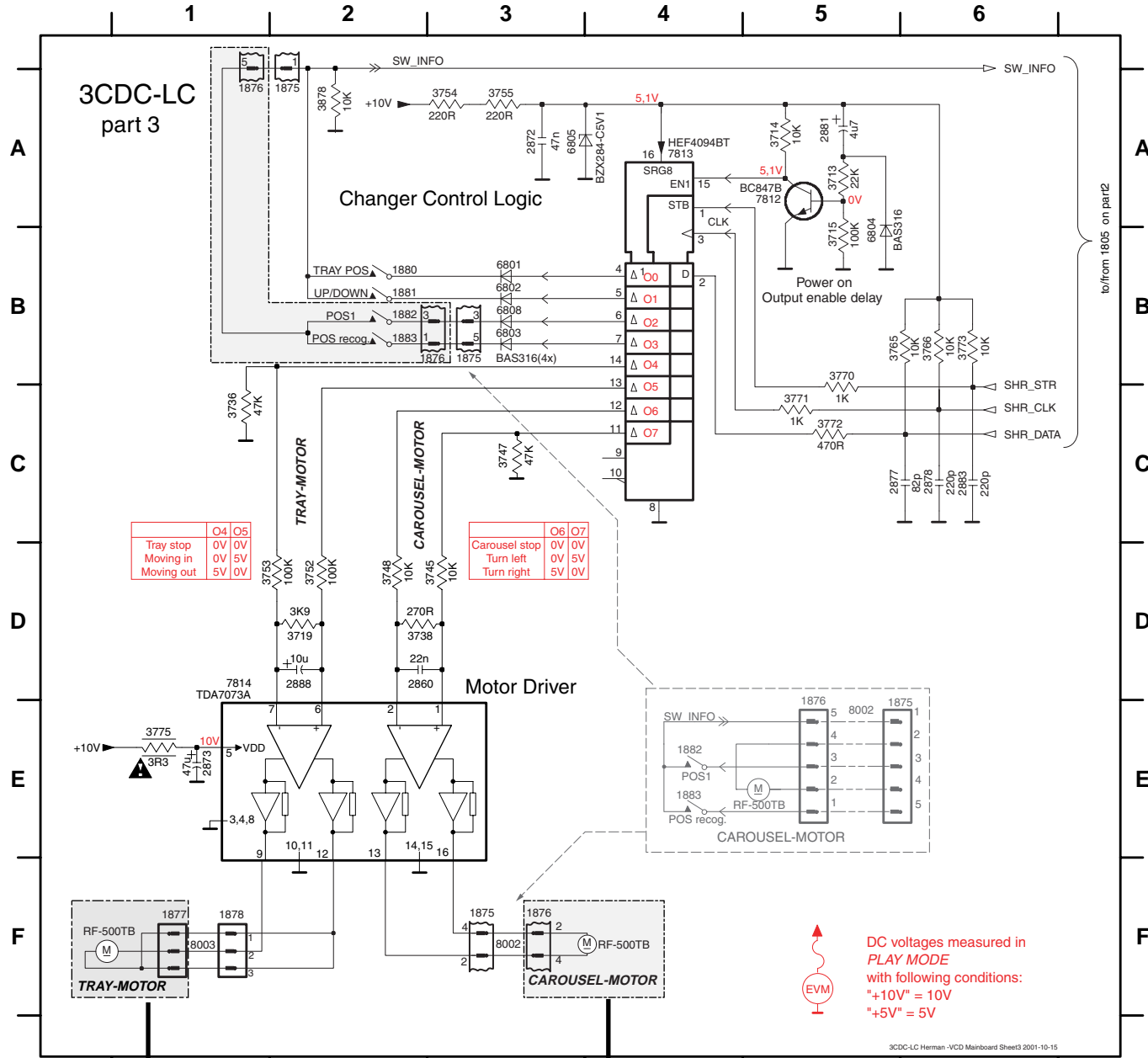
This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram respectively partslist.

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------|-----|------|----|------|----|------|----|------|-----|------|-----|------|----|------|-----|------|----|------|-----|------|-----|------|----|------|----|------|----|------|----|------|----|------|----|------|----|------|-----|------|-----|------|-----|
| 1802 | B14 | 2816 | D7 | 2823 | B3 | 2833 | B6 | 2843 | C7 | 2870 | I5 | 3705 | H7 | 3712 | G2 | 3718 | H6 | 3733 | I5 | 3767 | E11 | 3804 | F7 | 3812 | F5 | 3817 | E7 | 3825 | A3 | 3832 | G6 | 3858 | G4 | 3862 | B7 | 3878 | E13 | 6807 | F11 | 7802 | C5 |
| 1805 | F14 | 2818 | C7 | 2824 | B3 | 2834 | B6 | 2845 | C7 | 2871 | H6 | 3706 | I7 | 3712 | I13 | 3730 | I4 | 3734 | I5 | 3769 | F11 | 3808 | I7 | 3813 | F5 | 3818 | E7 | 3826 | B3 | 3849 | F6 | 3859 | G4 | 3864 | A4 | 3881 | E13 | 6809 | H7 | 7815 | F11 |
| 1810 | B6 | 2820 | G5 | 2826 | D3 | 2837 | B4 | 2854 | I12 | 2874 | H11 | 3707 | I7 | 3716 | F2 | 3731 | I5 | 3759 | F2 | 3774 | H8 | 3809 | B2 | 3814 | F4 | 3819 | G5 | 3827 | B4 | 3853 | A4 | 3860 | G4 | 3865 | D7 | 4808 | C14 | 6811 | G11 | 7816 | I5 |
| 2813 | A3 | 2822 | A3 | 2829 | G5 | 2838 | A4 | 2865 | I13 | 3701 | I5 | 3711 | I7 | 3717 | G2 | 3732 | I5 | 3759 | H10 | 3777 | D9 | 3810 | G5 | 3816 | E7 | 3823 | A4 | 3828 | B3 | 3855 | D2 | 3861 | G4 | 3867 | A4 | 5800 | I12 | 6812 | B2 | | |

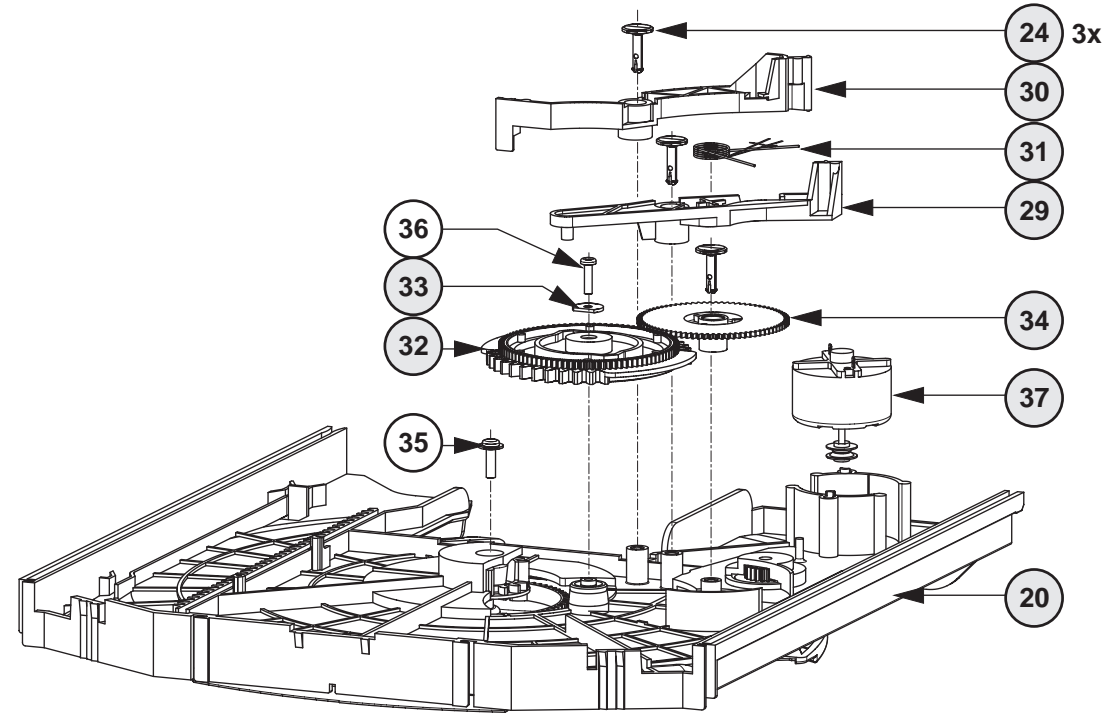


... V DC voltages measured in PLAY MODE with following conditions:
 "+10V" = 10V
 "+5V" = 5V

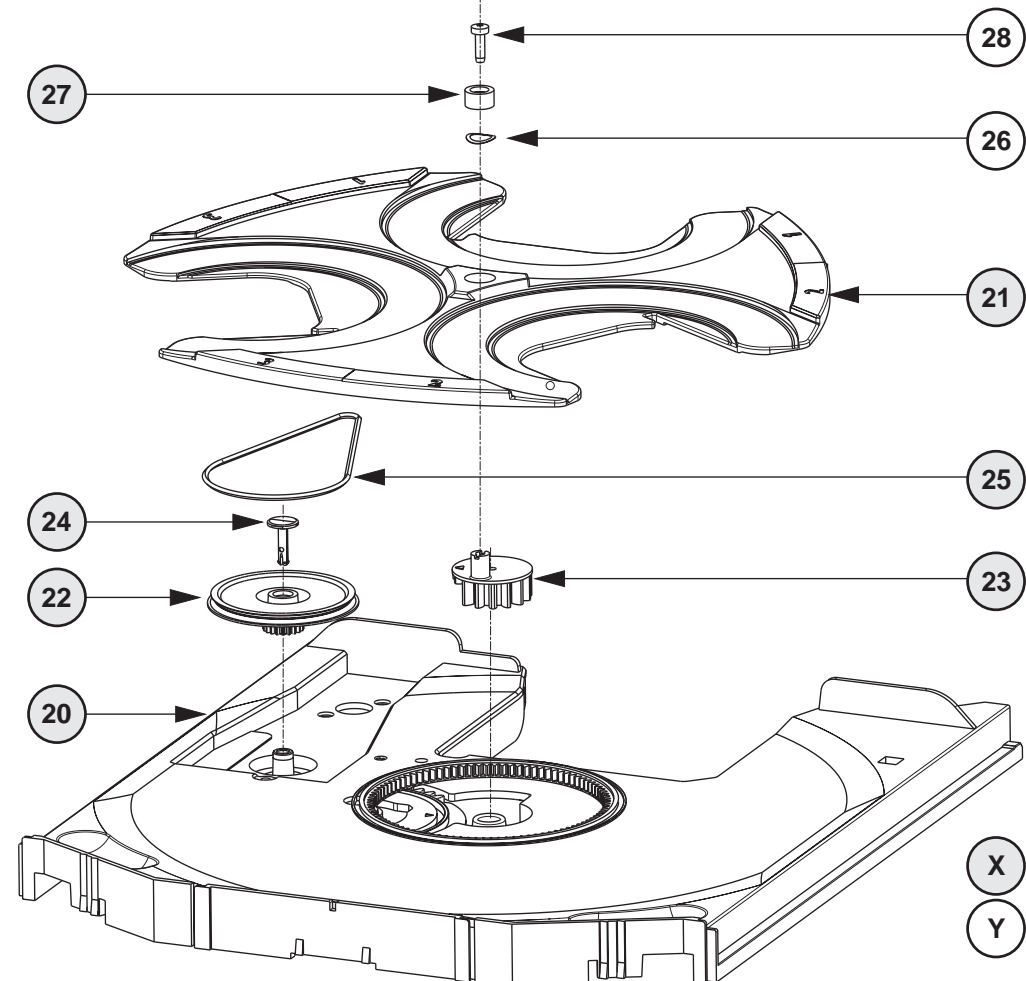
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|------|----|------|----|------|----|------|----|------|----|------|----|------|----|------|----|------|----|------|----|------|----|------|----|
| 1875 | F3 | 1876 | B3 | 1880 | B2 | 1883 | E4 | 2878 | C6 | 3714 | A5 | 3745 | D3 | 3754 | A3 | 3771 | C5 | 6801 | B3 | 6808 | B3 | 8003 | F1 |
| 1875 | E5 | 1876 | F3 | 1881 | B2 | 2860 | D2 | 2881 | A5 | 3715 | B5 | 3747 | C3 | 3755 | A3 | 3772 | C5 | 6802 | B3 | 7812 | A5 | | |
| 1875 | B3 | 1876 | E5 | 1882 | B2 | 2872 | A3 | 2883 | C6 | 3719 | D2 | 3748 | D2 | 3765 | B6 | 3773 | B6 | 6803 | B3 | 7813 | A4 | | |
| 1875 | A2 | 1877 | F1 | 1882 | E4 | 2873 | E1 | 2888 | D2 | 3736 | C1 | 3752 | D2 | 3766 | B6 | 3775 | E1 | 6804 | B5 | 7814 | E1 | | |
| 1876 | A1 | 1878 | F1 | 1883 | B2 | 2877 | C6 | 3713 | A5 | 3738 | D2 | 3753 | D2 | 3770 | C5 | 3878 | A2 | 6805 | A4 | 8002 | E5 | | |



Drawer bottom view



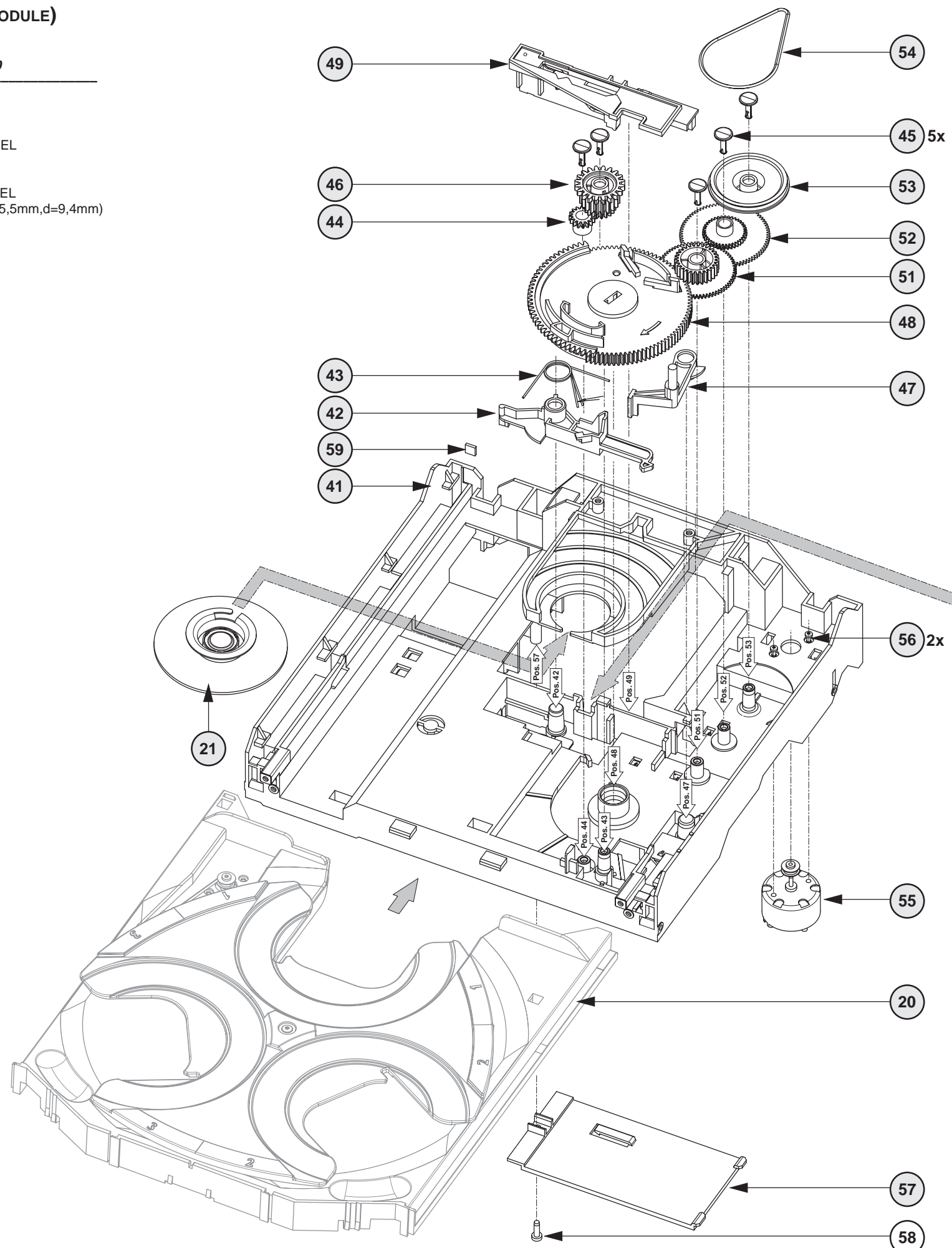
Drawer top view



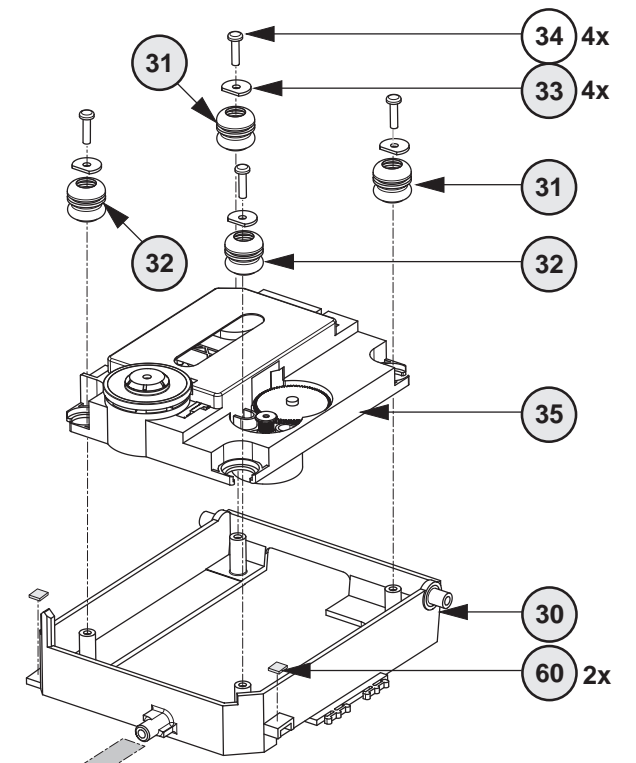
EXPLODED VIEW (3CDC-LC MODULE)

MECHANICAL PARTS *Drawer* → Chapter 10-10

| | | |
|----|----------------|------------------------------------|
| 20 | 3103 304 66500 | DRAWER |
| 21 | 3103 304 66490 | CAROUSEL |
| 22 | 3103 304 06860 | PULLEY DRAWER |
| 23 | 3103 304 06850 | ECCENTRIC GEAR WHEEL |
| 24 | 3103 304 06980 | NAIL FIXATION |
| | | |
| 25 | 3103 304 66850 | DRIVING BELT CAROUSEL |
| 27 | 4822 532 12365 | BUSH DRAWER (height=5,5mm,d=9,4mm) |
| 29 | 3103 304 66550 | BRACKET-DISC |
| 30 | 3103 304 66520 | TUMBLER |
| 31 | 3103 301 06470 | SPRING-DISC |
| | | |
| 32 | 3103 304 06920 | CONTROL-DISC |
| 33 | 3103 304 06970 | WASHER |
| 34 | 3103 304 06870 | GEAR-1 |
| 37 | 4822 361 10753 | CAROUSEL MOTOR |



X spare part
Y non spare part



MECHANICAL PARTS *Loader* → this page

| | | |
|----|----------------|-------------------------|
| 20 | 3103 304 66500 | DRAWER |
| 21 | 3140 117 58650 | CLAMPER ASSY-VAM |
| 30 | 3103 304 66560 | SUPPORT |
| 31 | 4822 529 10431 | DAMPER - RUBBER (25DEG) |
| 32 | 4822 529 10431 | DAMPER - RUBBER (25DEG) |
| | | |
| 33 | 3103 304 06970 | WASHER |
| 35 | 9305 022 30107 | CD Drive VAM2201/07 |
| 41 | 3103 304 66480 | FRAME |
| 42 | 3103 304 66540 | BRACKET-GUIDING |
| 43 | 3103 301 06460 | SPRING-GUIDING |
| | | |
| 44 | 3103 304 06890 | GEAR-3 |
| 45 | 3103 304 06980 | NAIL FIXATION |
| 46 | 3103 304 06880 | GEAR-2 |
| 47 | 3103 304 66530 | BRACKET-LOAD |
| 48 | 3103 304 06910 | CAM |
| | | |
| 49 | 3103 304 66510 | GUIDING |
| 51 | 3103 304 06900 | GEAR-4 |
| 52 | 3103 304 06870 | GEAR-1 |
| 53 | 3103 304 06960 | PULLEY-FRAME |
| 54 | 3103 304 66910 | DRIVING-BELT-DRAWER |
| | | |
| 55 | 4822 361 10753 | TRAY MOTOR |
| 56 | 4822 502 12548 | SCREW M2,6X3,5 |
| 57 | 3103 304 68890 | COVER-VAM |
| 59 | 4822 466 12146 | RUBBER |
| 60 | 3103 301 72260 | RUBBER |

ELECTRICAL PARTSLIST 3CDC-LC-VCD MODULE

| MISCELLANEOUS | | | | CAPACITORS | | | |
|-------------------|----------------|---|----------|------------------|----------------|-------|----------|
| 35 | 9305 022 30107 | CD Drive VAM2201/07 | | 2877 © | 4822 126 14226 | 82pF | 50V |
| 37 | 4822 361 10753 | CAROUSEL MOTOR | | 2878 © | 4822 126 13883 | 220pF | 5% 50V |
| 55 | 4822 361 10753 | TRAY MOTOR | | 2881 | 4822 124 40769 | 4.7µF | 20% 100V |
| 1800 | 4822 265 10925 | FLEX FOIL CONNECTOR 15P | | 2883 © | 4822 126 13883 | 220pF | 5% 50V |
| 1802 | 2422 025 16837 | FLEX FOIL CONNECTOR 22P | | 2884 © | 5322 126 11578 | 1nF | 10% 63V |
| | | | | | | | |
| 1805 | 4822 265 10979 | FLEX FOIL CONNECTOR 15P | | 2885 © | 4822 126 14585 | 100nF | 10% 50V |
| 1805 | 4822 265 11545 | FLEX FOIL CONNECTOR 19P for digital out | | 2886 © | 4822 126 14585 | 100nF | 10% 50V |
| 1875 | 4822 267 10958 | FLEX FOIL CONNECTOR 5P | | 2887 © | 5322 126 11578 | 1nF | 10% 63V |
| 1876 | 2422 025 08332 | FLEX FOIL CONNECTOR 5P | | 2888 | 4822 124 11947 | 10µF | 20% 16V |
| 1880 | 4822 276 13503 | SWITCH, Tray position | | RESISTORS | | | |
| | | | | | | | |
| 1881 | 4822 276 13503 | SWITCH, Drive up/down | | 3700 © | 4822 117 10837 | 100kΩ | 1% 0,1W |
| 1882 | 4822 276 13503 | SWITCH, Position 1 recognized | | 3702 © | 4822 117 10833 | 10kΩ | 1% 0,1W |
| 1883 | 4822 276 13503 | SWITCH, valid position recognized | | 3703 © | 4822 051 10102 | 1kΩ | 2% 0,25W |
| 8002 | 3103 308 91990 | FLEX FOIL CABLE 5P, 200mm | | 3704 © | 4822 117 10837 | 100kΩ | 1% 0,1W |
| 8005 | 3103 308 91980 | FLEX FOIL CABLE 15P, 170mm | | 3709 © | 4822 051 20472 | 4,7kΩ | 5% 0,1W |
| | | | | | | | |
| CAPACITORS | | | | 3710 © | 4822 117 10833 | 10kΩ | 1% 0,1W |
| 2800 © | 4822 126 10326 | 180pF | 5% 50V | 3712 © | 4822 051 30109 | 10Ω | 5% 0,06W |
| 2801 © | 4822 126 13883 | 220pF | 5% 50V | 3713 © | 4822 051 30223 | 22kΩ | 5% 0,06W |
| 2802 © | 4822 126 14508 | 180pF | 5% 50V | 3714 © | 4822 051 30103 | 10kΩ | 5% 0,06W |
| 2803 © | 4822 126 13883 | 220pF | 5% 50V | 3715 © | 4822 117 13632 | 100kΩ | 1% 0,06W |
| 2804 © | 4822 126 13193 | 4,7nF | 10% 63V | | | | |
| | | | | | | | |
| 2805 © | 4822 126 13883 | 220pF | 5% 50V | 3716 © | 4822 051 30101 | 100Ω | 5% 0,06W |
| 2806 © | 4822 126 13883 | 220pF | 5% 50V | 3717 © | 4822 117 12917 | 1Ω | 5% 0,06W |
| 2807 © | 5322 122 31863 | 330pF | 5% 50V | 3719 © | 4822 051 30392 | 3,9kΩ | 5% 0,06W |
| 2808 © | 4822 126 13883 | 220pF | 5% 50V | 3720 © | 4822 051 20154 | 150kΩ | 5% 0,1W |
| 2809 © | 4822 126 13879 | 220nF | 20% 16V | 3721 © | 4822 117 11449 | 2,2kΩ | 1% 0,1W |
| | | | | | | | |
| 2810 © | 4822 126 10326 | 180pF | 5% 50V | 3722 © | 4822 117 11449 | 2,2kΩ | 1% 0,1W |
| 2811 © | 4822 126 13883 | 220pF | 5% 50V | 3724 © | 4822 117 10837 | 100kΩ | 1% 0,1W |
| 2812 © | 3198 017 34730 | 47nF | 10% 16V | 3725 © | 4822 051 20471 | 470Ω | 5% 0,1W |
| 2813 © | 4822 122 33177 | 10nF | 20% 50V | 3726 © | 4822 117 11373 | 100Ω | 1% 0,1W |
| 2814 © | 4822 122 33216 | 270pF | 5% 50V | 3727 © | 4822 117 11449 | 2,2kΩ | 1% 0,1W |
| | | | | | | | |
| 2815 © | 4822 126 14076 | 220nF | 20% 25V | 3728 © | 4822 117 10837 | 100kΩ | 1% 0,1W |
| 2816 © | 4822 126 13344 | 1,5nF | 5% 63V | 3729 © | 4822 051 20471 | 470Ω | 5% 0,1W |
| 2817 | 4822 124 40769 | 4,7µF | 20% 100V | 3730 © | 4822 051 20333 | 33kΩ | 5% 0,1W |
| 2818 © | 4822 126 13344 | 1,5nF | 5% 63V | 3735 © | 4822 117 11373 | 100Ω | 1% 0,1W |
| 2819 | 4822 124 40769 | 4,7µF | 20% 100V | 3736 © | 4822 117 12925 | 47kΩ | 1% 0,06W |
| | | | | | | | |
| 2820 © | 5322 126 11578 | 1nF | 10% 63V | 3738 © | 4822 051 30271 | 270Ω | 5% 0,06W |
| 2822 © | 2238 786 11554 | 2,2nF | 5% 16V | 3745 © | 4822 117 10833 | 10kΩ | 1% 0,1W |
| 2823 © | 4822 126 13956 | 68pF | 5% 63V | 3747 © | 4822 117 12925 | 47kΩ | 1% 0,06W |
| 2824 © | 4822 126 13751 | 47nF | 10% 50V | 3748 © | 4822 051 30103 | 10kΩ | 5% 0,06W |
| 2826 | 4822 124 12362 | 47µF | 20% 4V | 3752 © | 4822 117 13632 | 100kΩ | 1% 0,06W |
| | | | | | | | |
| 2827 © | 5322 122 34099 | 470pF | 10% 63V | 3753 © | 4822 117 13632 | 100kΩ | 1% 0,06W |
| 2828 | 4822 124 12362 | 47µF | 20% 4V | 3754 © | 4822 117 11503 | 220Ω | 5% 0,1W |
| 2829 © | 4822 126 11669 | 27pF | 10% 50V | 3755 © | 4822 117 11503 | 220Ω | 5% 0,1W |
| 2831 © | 4822 126 13751 | 47nF | 10% 50V | 3759 © | 4822 051 20109 | 10Ω | 5% 0,1W |
| 2833 © | 4822 126 11671 | 33pF | 5% 50V | 3765 © | 4822 051 30103 | 10kΩ | 5% 0,06W |
| | | | | | | | |
| 2834 © | 4822 126 11671 | 33pF | 5% 50V | 3766 © | 4822 117 10833 | 10kΩ | 1% 0,1W |
| 2835 © | 3198 017 34730 | 47nF | 10% 16V | 3767 © | 4822 051 30339 | 33Ω | 5% 0,06W |
| 2836 | 4822 124 40769 | 4,7µF | 20% 100V | 3769 © | 4822 051 30101 | 100Ω | 5% 0,06W |
| 2837 | 4822 124 22726 | 4,7µF | 20% 35V | 3770 © | 4822 051 30102 | 1kΩ | 5% 0,06W |
| 2839 | 4822 124 40433 | 47µF | 20% 25V | 3771 © | 4822 051 30102 | 1kΩ | 5% 0,06W |
| | | | | | | | |
| 2840 © | 4822 126 13751 | 47nF | 10% 50V | 3772 © | 4822 051 30471 | 470Ω | 5% 0,06W |
| 2841 © | 4822 122 33575 | 220pF | 5% 50V | 3773 © | 4822 117 10833 | 10kΩ | 1% 0,1W |
| 2842 © | 4822 126 13883 | 220pF | 5% 50V | 3775 ▲ | 4822 052 10338 | 3,3Ω | 5% NFR25 |
| 2843 © | 4822 126 14585 | 100nF | 10% 50V | 3776 © | 4822 051 30103 | 10kΩ | 5% 0,06W |
| 2844 © | 5322 126 10794 | 220pF | 10% 50V | 3777 © | 4822 051 30103 | 10kΩ | 5% 0,06W |
| | | | | | | | |
| 2845 | 5322 124 41948 | 0,47µF | 20% 50V | 3800 © | 4822 051 30563 | 56kΩ | 5% 0,06W |
| 2846 | 5322 124 41948 | 0,47µF | 20% 50V | 3801 © | 4822 051 30103 | 10kΩ | 5% 0,06W |
| 2859 © | 4822 126 14076 | 220nF | 20% 25V | 3802 © | 4822 117 11148 | 56kΩ | 1% 0,1W |
| 2860 © | 4822 126 14494 | 22nF | 10% 25V | 3803 © | 4822 117 10833 | 10kΩ | 1% 0,1W |
| 2864 © | 5322 122 33538 | 150pF | 5% 63V | 3804 © | 4822 051 30103 | 10kΩ | 5% 0,06W |
| | | | | | | | |
| 2865 © | 5322 122 32654 | 22nF | 10% 63V | 3805 © | 4822 051 30103 | 10kΩ | 5% 0,06W |
| 2866 © | 4822 126 13751 | 47nF | 10% 50V | 3806 © | 4822 051 30103 | 10kΩ | 5% 0,06W |
| 2872 © | 3198 017 34730 | 47nF | 10% 16V | 3807 © | 4822 051 30103 | 10kΩ | 5% 0,06W |
| 2873 | 4822 124 80231 | 47µF | 20% 16V | 3808 © | 4822 051 30103 | 10kΩ | 5% 0,06W |
| 2874 © | 4822 126 14305 | 100nF | 10% 16V | 3809 © | 4822 051 30103 | 10kΩ | 5% 0,06W |

ELECTRICAL PARTSLIST 3CDC-LC-VCD MODULE

| RESISTORS | | | | RESISTORS | | | |
|-----------|------------------|-------|----------|-----------|----------------|-------------|------|
| 3810 © | 4822 051 30471 | 470Ω | 5% 0,06W | 4728 © | 4822 051 20008 | CHIP JUMPER | 0805 |
| 3811 © | 4822 051 20273 | 27kΩ | 5% 0,1W | 4729 © | 4822 051 20008 | CHIP JUMPER | 0805 |
| 3812 © | 4822 051 20471 | 470Ω | 5% 0,1W | 4730 © | 4822 051 20008 | CHIP JUMPER | 0805 |
| 3813 © | 4822 051 20471 | 470Ω | 5% 0,1W | 4731 © | 4822 051 30008 | CHIP JUMPER | 0603 |
| 3814 © | 4822 051 20471 | 470Ω | 5% 0,1W | 4732 © | 4822 051 20008 | CHIP JUMPER | 0805 |
| | | | | | | | |
| 3815 ▲ | 4822 052 10478 | 4,7Ω | 5% NFR25 | 4733 © | 4822 051 30008 | CHIP JUMPER | 0603 |
| 3816 © | 4822 051 20471 | 470Ω | 5% 0,1W | 4734 © | 4822 051 20008 | CHIP JUMPER | 0805 |
| 3817 © | 4822 051 30471 | 470Ω | 5% 0,06W | 4735 © | 4822 051 20008 | CHIP JUMPER | 0805 |
| 3818 © | 4822 051 30101 | 100Ω | 5% 0,06W | 4736 © | 4822 051 30008 | CHIP JUMPER | 0603 |
| 3818 © | 4822 051 30471 | 470Ω | 5% 0,06W | 4737 © | 4822 051 30008 | CHIP JUMPER | 0603 |
| | | | | | | | |
| 3819 © | 4822 051 20471 | 470Ω | 5% 0,1W | 4738 © | 4822 051 30008 | CHIP JUMPER | 0603 |
| 3820 © | 4822 051 30472 | 4,7kΩ | 5% 0,06W | 4739 © | 4822 051 30008 | CHIP JUMPER | 0603 |
| 3821 © | 4822 051 20472 | 4,7kΩ | 5% 0,1W | 4740 © | 4822 051 30008 | CHIP JUMPER | 0603 |
| 3822 © | 4822 051 30272 | 2,7kΩ | 5% 0,06W | 4743 © | 4822 051 20008 | CHIP JUMPER | 0805 |
| 3823 © | 4822 051 30102 | 1kΩ | 5% 0,06W | 4744 © | 4822 051 30008 | CHIP JUMPER | 0603 |
| | | | | | | | |
| 3824 © | 4822 051 30102 | 1kΩ | 5% 0,06W | 4745 © | 4822 051 20008 | CHIP JUMPER | 0805 |
| 3825 © | 4822 051 10102 | 1kΩ | 2% 0,25W | 4746 © | 4822 051 20008 | CHIP JUMPER | 0805 |
| 3826 © | 4822 051 20223 | 22kΩ | 5% 0,1W | 4747 © | 4822 051 20008 | CHIP JUMPER | 0805 |
| 3827 © | 4822 051 20273 | 27kΩ | 5% 0,1W | 4748 © | 4822 051 20008 | CHIP JUMPER | 0805 |
| 3828 © | 4822 051 30223 | 22kΩ | 5% 0,06W | 4749 © | 4822 051 30008 | CHIP JUMPER | 0603 |
| | | | | | | | |
| 3829 © | 4822 117 13608 | 4,7Ω | 5% 0,06W | 4800 © | 4822 051 30008 | CHIP JUMPER | 0603 |
| 3830 © | 4822 116 83933 | 15kΩ | 1% 0,1W | 4801 © | 4822 051 30008 | CHIP JUMPER | 0603 |
| 3832 © | 4822 117 10833 | 10kΩ | 1% 0,1W | 4803 © | 4822 051 30008 | CHIP JUMPER | 0603 |
| 3833 © | 4822 051 30223 | 22kΩ | 5% 0,06W | 4804 © | 4822 051 20008 | CHIP JUMPER | 0805 |
| 3834 © | 4822 051 20223 | 22kΩ | 5% 0,1W | 4805 © | 4822 051 30008 | CHIP JUMPER | 0603 |
| | | | | | | | |
| 3835 ▲ | 4822 052 10108 | 1Ω | 5% 0,33W | 4806 © | 4822 051 20008 | CHIP JUMPER | 0805 |
| 3837 © | 4822 117 10833 | 10kΩ | 1% 0,1W | 4820 © | 4822 051 20008 | CHIP JUMPER | 0805 |
| 3838 © | 4822 051 30103 | 10kΩ | 5% 0,06W | 4823 © | 4822 051 30008 | CHIP JUMPER | 0603 |
| 3839 © | 4822 051 20273 | 27kΩ | 5% 0,1W | 4824 © | 4822 051 30008 | CHIP JUMPER | 0603 |
| 3841 © | 4822 051 20273 | 27kΩ | 5% 0,1W | 4826 © | 4822 051 20008 | CHIP JUMPER | 0805 |
| | | | | | | | |
| 3842 © | 4822 117 10834 | 47kΩ | 1% 0,1W | 4828 © | 4822 051 30008 | CHIP JUMPER | 0603 |
| 3843 © | 4822 117 10834 | 47kΩ | 1% 0,1W | 4829 © | 4822 051 20008 | CHIP JUMPER | 0805 |
| 3844 © | 4822 117 12864 | 82kΩ | 5% 0,6W | 4830 © | 4822 051 20008 | CHIP JUMPER | 0805 |
| 3845 © | 4822 117 10834 | 47kΩ | 1% 0,1W | 4831 © | 4822 051 20008 | CHIP JUMPER | 0805 |
| 3846 © | 4822 117 10834 | 47kΩ | 1% 0,1W | 4832 © | 4822 051 30008 | CHIP JUMPER | 0603 |
| | | | | | | | |
| 3847 © | 4822 117 11148 | 56kΩ | 1% 0,1W | 4833 © | 4822 051 20008 | CHIP JUMPER | 0805 |
| 3848 © | 4822 117 10837 | 100kΩ | 1% 0,1W | 4834 © | 4822 051 20008 | CHIP JUMPER | 0805 |
| 3850 © | 4822 051 30183 | 18kΩ | 5% 0,06W | 4835 © | 4822 051 20008 | CHIP JUMPER | 0805 |
| 3852 © | 4822 051 10102 | 1kΩ | 2% 0,25W | 4836 © | 4822 051 20008 | CHIP JUMPER | 0805 |
| 3853 © | 4822 051 20471 | 470Ω | 5% 0,1W | 4837 © | 4822 051 20008 | CHIP JUMPER | 0805 |
| | | | | | | | |
| 3854 © | 4822 051 30101 | 100Ω | 5% 0,06W | 4838 © | 4822 051 30008 | CHIP JUMPER | 0603 |
| 3855 © | 4822 117 12971 | 15Ω | 5% 0,06W | 4839 © | 4822 051 20008 | CHIP JUMPER | 0805 |
| 3856 © | 4822 117 12521 | 68Ω | 1% 0,1W | 4840 © | 4822 051 20008 | CHIP JUMPER | 0805 |
| 3857 © | 4822 117 12521 | 68Ω | 1% 0,1W | 4841 © | 4822 051 20008 | CHIP JUMPER | 0805 |
| 3860 © | 4822 117 10833</ | | | | | | |

ELECTRICAL PARTSLIST 3CDC-LC-VCD MODULE**Technical remarks****RESISTORS**

4868© 4822 051 20008 CHIP JUMPER 0805
 4869© 4822 051 20008 CHIP JUMPER 0805
 4870© 4822 051 20008 CHIP JUMPER 0805
 4871© 4822 051 20008 CHIP JUMPER 0805
 4872© 4822 051 20008 CHIP JUMPER 0805

4873© 4822 051 20008 CHIP JUMPER 0805
 4874© 4822 051 20008 CHIP JUMPER 0805
 4875© 4822 051 20008 CHIP JUMPER 0805
 4876© 4822 051 20008 CHIP JUMPER 0805
 4877© 4822 051 30008 CHIP JUMPER 0603

4879© 4822 051 20008 CHIP JUMPER 0805
 4884© 4822 051 20008 CHIP JUMPER 0805
 4885© 4822 051 20008 CHIP JUMPER 0805
 4886© 4822 051 20008 CHIP JUMPER 0805
 4887© 4822 051 30008 CHIP JUMPER 0603

4888© 4822 051 20008 CHIP JUMPER 0805
 4889© 4822 051 20008 CHIP JUMPER 0805
 4890© 4822 051 20008 CHIP JUMPER 0805
 4891© 4822 051 30008 CHIP JUMPER 0603
 4892© 4822 051 20008 CHIP JUMPER 0805

4893© 4822 051 20008 CHIP JUMPER 0805
 4894© 4822 051 20008 CHIP JUMPER 0805
 4895© 4822 051 20008 CHIP JUMPER 0805
 4896© 4822 051 20008 CHIP JUMPER 0805
 4897© 4822 051 20008 CHIP JUMPER 0805

4898© 4822 051 20008 CHIP JUMPER 0805

COILS

1810 4822 242 10849 CRYSTAL 8,46MHz
 5802 2422 536 00019 TRANSFORMER, DIGITAL OUT

DIODES

6801© 4822 130 11397 BAS316
 6802© 4822 130 11397 BAS316
 6803© 4822 130 11397 BAS316
 6804© 4822 130 11397 BAS316
 6805© 4822 130 11383 BZX284-C5V1

6807© 4822 130 11366 BZX284-C3V9
 6808© 4822 130 11397 BAS316
 6810 4822 130 31878 1N4003G
 6811© 4822 130 82334 BAS85
 6812© 4822 130 80446 BAS32L

6813© 4822 130 11397 BAS316

TRANSISTORS

7806© 4822 130 60511 BC847B
 7812© 4822 130 60511 BC847B
 7815© 4822 130 60511 BC847B
 7820© 4822 130 60511 BC847B
 7821© 4822 130 60511 BC847B

7822 4822 130 42131 BF550
 7823© 4822 130 60511 BC847B

INTEGRATED CIRCUITS

7801© 9352 622 36118 TZA1025T/V2 HF-Amplifier
 7802© 9352 641 81557 SAA7327M2B Signal processor
 7803© 9322 158 56682 M63000SP, MOTOR DRIVER
 7813© 5322 209 11306 HEF4094BT, SHIFT REGISTER
 7814 4822 209 32852 TDA7073A/N2

COMBI BOARD

TABLE OF CONTENTS

| | |
|--|-------|
| Brief Introduction | 11-1 |
| Chip Layout - Main part (excluding Tuner portion) pt 2 | 11-2 |
| Component Layout - Main part (excluding Tuner portion) pt 2 | 11-3 |
| Chip Layout - Main part (excluding Tuner portion) pt 3 | 11-4 |
| Component Layout - Main part (excluding Tuner portion) pt 3 | 11-5 |
| Power Supply Circuit | 11-6 |
| Source Selection Circuit | 11-7 |
| Pre- and Power Amplifier Circuit | 11-8 |
| Circuit & Layout - Trafo Primary, Secondary, and Video out parts | 11-9 |
| Non-Cenelec Tuner Layouts & Adjustment Table | 11-10 |
| Non-Cenelec Tuner Circuit | 11-11 |
| Cenelec Tuner Layouts & Adjustment Table | 11-12 |
| Cenelec Tuner Circuit | 11-13 |
| Electrical parts list | 11-14 |

Brief introduction of the Combi Board

A. TRANSFORMER PRIMARY PART

Transformer Primary Circuit provide connection for AC mains supply and primary wires of transformer.

B. POWER SUPPLY PART

Power Supply Circuit consists of rectifiers, capacitive filters and voltage regulators. Regulated voltage include +5V6, +LED, +12A, +12M, -32V, PWDN. The +C supply to the power amplifier is not regulated. F1-F2 is the ac supply voltage to the FTD Display filament.

C. SOURCE SELECT & AMPLIFIER PART

a) SHIFT REGISTER (AF CONTROL)

This shift register deliver commands from the μ P to control the AF functions which include source selection (A0 & A1 control lines), DSC modes, DBB, IS and CD_STBY. Other control lines such as MUTE, AMPON, STBY and PWM are coming directly from the μ P on the Front board.

b) SOURCE SELECTION

One of the 4 sources, namely AUX, TAPE, TUNER, CD, can be selected via A0 & A1 lines which control the IC 7501 (HEF4052BT). Karaoke mic. mixing is connected to the selected source before the signal is amplified with a buffer amplifier (Tr 7503 & 7504). The source signal is then split into recording path (for recording on tape) and main signal path (to the PWM volume control).

c) PWM VOLUME CONTROL

The discrete volume control makes use of 4 Transistors 7505, 7506, 7507 & 7508 (ON4986 or selected BC557B) and PWM control signal from μ P. For good performance transistors for the left and right channels should be paired for gain characteristics.

d) SOUND FEATURES

Sound Features include the DBB, IS and 4 DSC modes. The sound features are realised with a hex-inverter IC 7530 (HEF4069UBT) as analog buffer/amplifier and transistors as electronic switches controlled by the shift registers (AF control).

e) POWER AMPLIFIER

IC 7391 (AN7125) is used as power amplifier.

f) CD_STBY CONTROL

This Transistor 7401 (BC337-25) switches on the supply +CD supply (derived from +12A) to CD servo control, HF circuit and the laser light pen on the CD Module during the CD mode only.

g) MATRIX SURROUND OUTPUT

The matrix surround feature is provided on board. This feature is only optional on certain type version.

D. KARAOKE PART

This simple Karaoke consists of a 1-mic. mono amplifier using discrete components. It has a level control using a rotary potmeter. This feature is available for some version only.

E. HEADPHONE PART

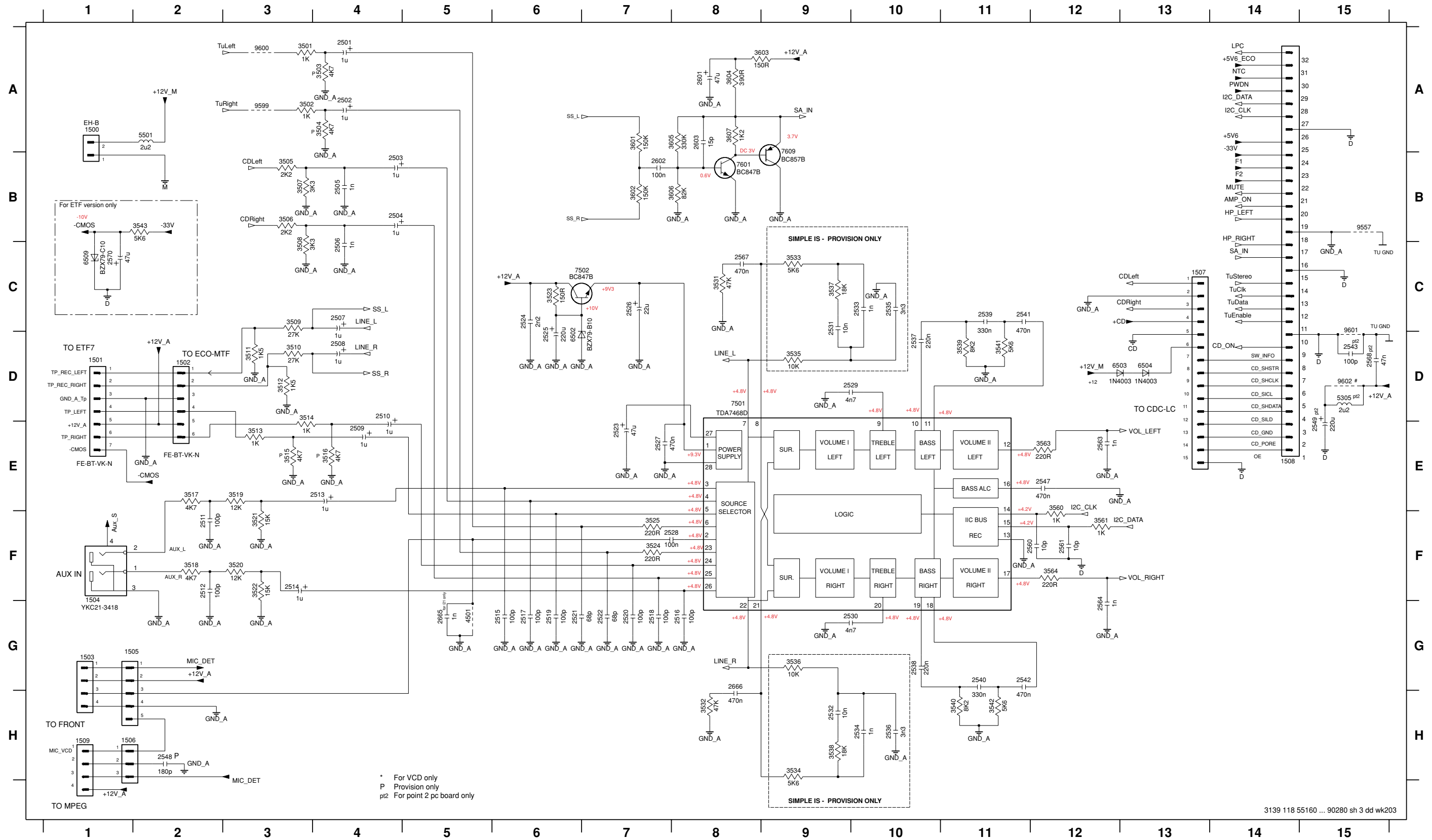
The headphone output is derived from the power amplifier output after the attenuation resistors which are tailored to deliver 18mW output power into a 32 ohm headphone.

F. CDC KEY PART

The CDC key buttons and LEDs are provided on this board.

SOURCE SELECTION CIRCUIT

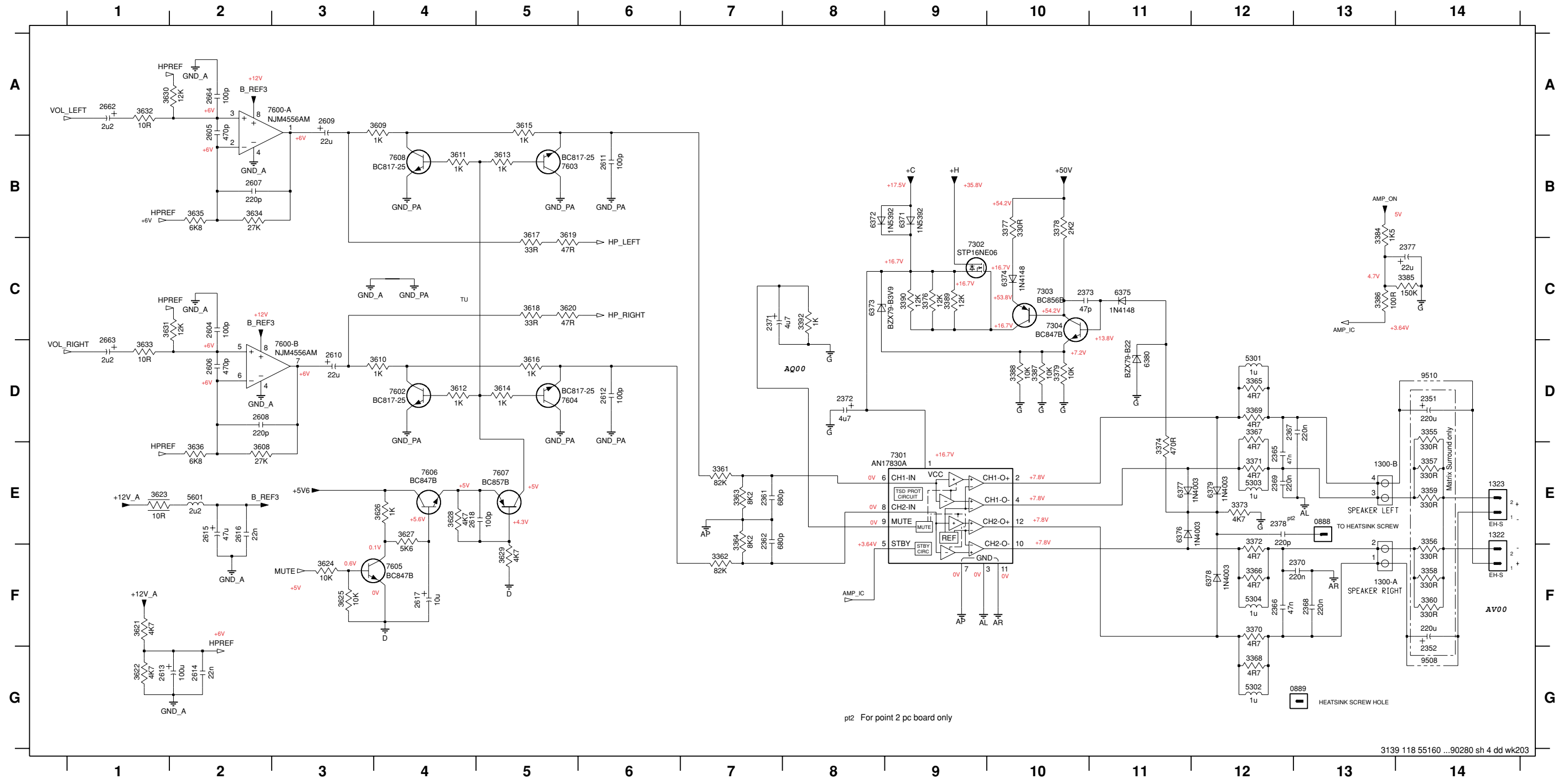
| | | | | | | | | | | | | | | | | | | | | | | | | |
|--------|---------|---------|----------|---------|---------|---------|---------|----------|----------|----------|----------|----------|---------|---------|----------|---------|---------|----------|----------|----------|----------|----------|----------|----------|
| C3 E15 | C10 C14 | 1501 D1 | 1507 C13 | 2504 B4 | 2510 D4 | 2516 G8 | 2522 G7 | 2528 F7 | 2534 H10 | 2540 G11 | 2549 E15 | 2568 D15 | 2665 G5 | 3505 B3 | 3511 D3 | 3517 E2 | 3523 C6 | 3534 H9 | 3540 H11 | 3563 E12 | 3605 A8 | 6502 D6 | 7601 B8 | 9602 D15 |
| C4 E15 | C11 A3 | 1502 D2 | 1508 E14 | 2505 B4 | 2511 F2 | 2517 G6 | 2523 E7 | 2529 D9 | 2535 C10 | 2541 C11 | 2560 F12 | 2570 C1 | 2666 G8 | 3506 B3 | 3512 E3 | 3518 F2 | 3524 F7 | 3535 D9 | 3541 D11 | 3564 F12 | 3606 B8 | 6503 D12 | 7609 B9 | 9603 E15 |
| C5 D15 | C13 A3 | 1503 G1 | 1509 H1 | 2506 B4 | 2512 F2 | 2518 G7 | 2524 C6 | 2530 G9 | 2536 H10 | 2542 G11 | 2561 F12 | 2667 G8 | 3507 B3 | 3513 E3 | 3519 E3 | 3525 F7 | 3536 G9 | 3542 H11 | 3561 A7 | 3601 A8 | 6504 D13 | 7609 B9 | 9557 B15 | 9603 E15 |
| C6 C15 | C14 C15 | 1504 F1 | 2501 A4 | 2507 C4 | 2513 E4 | 2519 G6 | 2525 D6 | 2531 C9 | 2537 D10 | 2543 D15 | 2562 E12 | 2601 A8 | 3508 C3 | 3514 D3 | 3520 F3 | 3531 C8 | 3537 C9 | 3543 B2 | 3602 B7 | 4501 G5 | 6509 C1 | 9599 A3 | 9600 A3 | 9603 E15 |
| C7 C15 | T E D14 | 1505 G2 | 2502 A4 | 2508 D4 | 2514 F3 | 2520 G7 | 2526 C7 | 2532 H9 | 2538 G10 | 2547 E12 | 2564 G12 | 2602 B7 | 3509 C3 | 3515 E3 | 3521 F12 | 3532 H8 | 3538 H9 | 3544 B2 | 3603 A9 | 5305 D15 | 7501 D8 | 9600 A3 | 9601 D15 | 9603 E15 |
| C8 C15 | 1500 A1 | 1506 H1 | 2503 B4 | 2509 E4 | 2515 G6 | 2521 G6 | 2527 E7 | 2533 C10 | 2539 C11 | 2548 H2 | 2567 C8 | 2603 A8 | 3504 A4 | 3510 D3 | 3516 E4 | 3522 F3 | 3533 C9 | 3539 D11 | 3561 F12 | 3604 A8 | 5501 A2 | 7502 C7 | 9601 D15 | T E1 D14 |



* For VCD only
 P Provision only
 p12 For point 2 pc board only

PRE- & POWER AMPLIFIER CIRCUIT

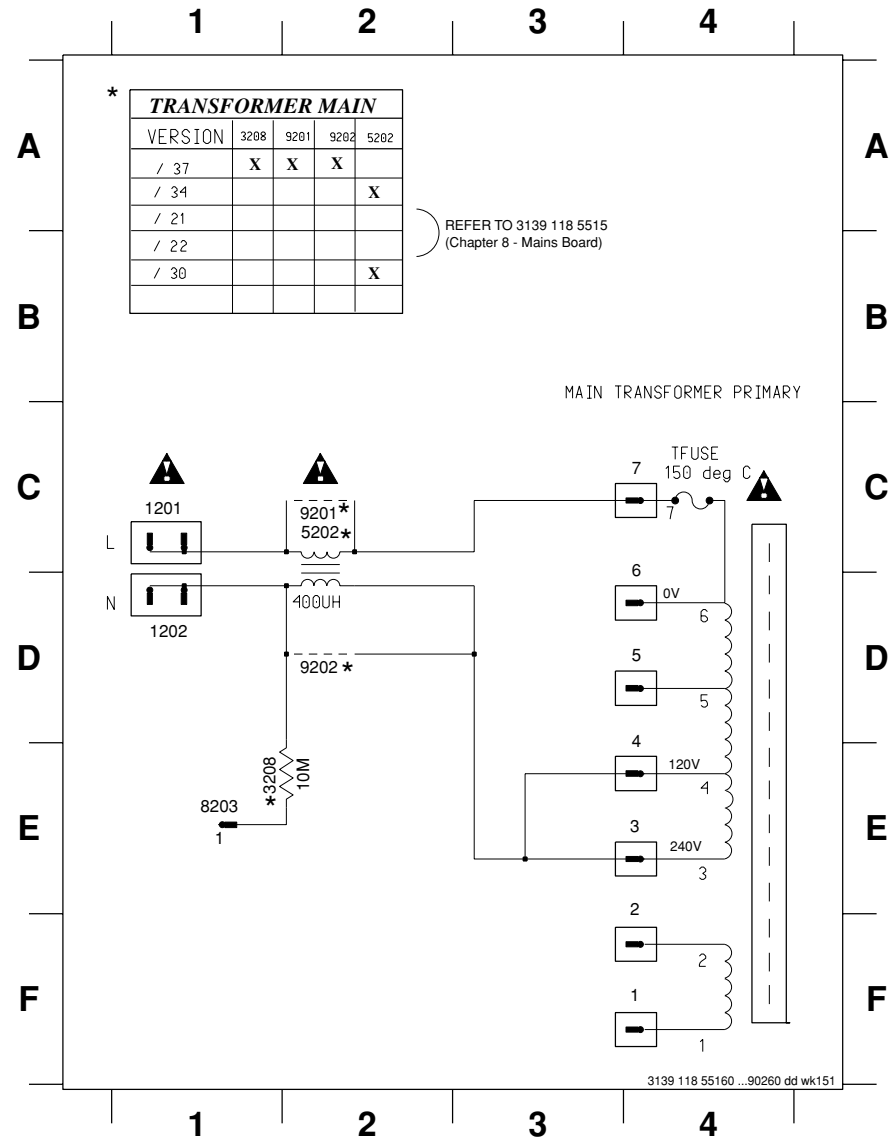
| | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------|----------|----------|----------|----------|---------|---------|----------|----------|----------|----------|----------|----------|----------|---------|---------|---------|---------|---------|---------|----------|----------|----------|-----------|-----------|----------|
| 0888 E13 | 1323 E14 | 2365 E12 | 2370 F13 | 2378 E12 | 2608 D2 | 2613 G1 | 2618 E4 | 3356 E14 | 3361 E7 | 3366 F12 | 3371 E12 | 3377 B10 | 3386 C13 | 3392 C8 | 3612 D4 | 3617 B5 | 3622 G1 | 3627 E4 | 3632 A1 | 5301 D12 | 6371 B9 | 6376 E11 | 7301 E9 | 7600-B D3 | 7606 E4 |
| 0889 G13 | 2351 D14 | 2366 F12 | 2371 C7 | 2604 C2 | 2609 A3 | 2614 G2 | 2662 A1 | 3357 E14 | 3362 F7 | 3367 D12 | 3372 E12 | 3378 B10 | 3387 D10 | 3608 E2 | 3613 B5 | 3618 C5 | 3623 E1 | 3628 E4 | 3633 D1 | 5302 G12 | 6372 B8 | 6377 E11 | 7302 C9 | 7602 D4 | 7607 E5 |
| 1300-A F13 | 2352 F14 | 2367 D12 | 2372 D8 | 2605 A2 | 2610 D3 | 2615 E2 | 2663 D1 | 3358 F14 | 3363 E7 | 3368 G12 | 3373 E11 | 3379 D10 | 3388 D10 | 3609 A4 | 3614 D5 | 3619 B5 | 3624 F3 | 3629 F5 | 3634 B2 | 5303 E12 | 6373 C8 | 6378 F12 | 7303 C10 | 7603 B5 | 7608 B4 |
| 1300-B E13 | 2361 E7 | 2368 F13 | 2373 C10 | 2606 D2 | 2611 B6 | 2616 E2 | 2664 A2 | 3359 E14 | 3364 E7 | 3369 D12 | 3374 E11 | 3384 B13 | 3389 C9 | 3610 D4 | 3615 A5 | 3620 C5 | 3625 F3 | 3630 A1 | 3635 B2 | 5304 F12 | 6374 C10 | 6379 E12 | 7304 C10 | 7604 D5 | 9508 G14 |
| 1322 E14 | 2362 E7 | 2369 E12 | 2377 C14 | 2607 B2 | 2612 D6 | 2617 F4 | 3355 D14 | 3360 F14 | 3365 D12 | 3370 F12 | 3376 C9 | 3385 C14 | 3390 C9 | 3611 B4 | 3616 D5 | 3621 F1 | 3626 E4 | 3631 C1 | 3636 E2 | 5601 E2 | 6375 C11 | 6380 D11 | 7600-A A2 | 7605 F4 | 9510 D14 |



pt2 For point 2 pc board only

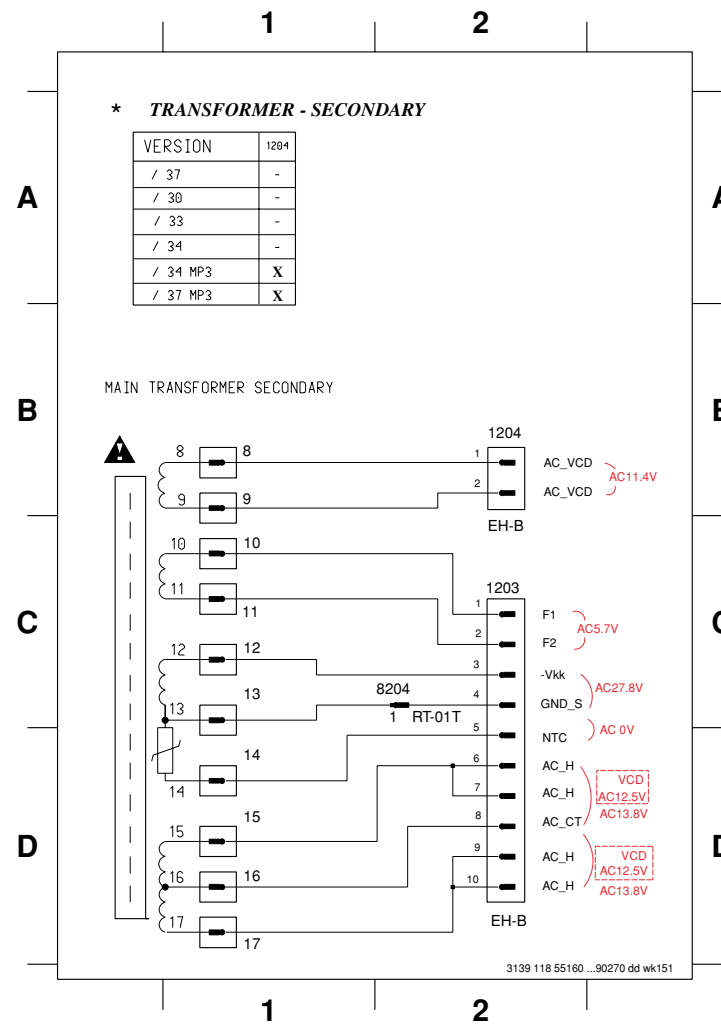
TRANSFORMER PRIMARY PART - CIRCUIT & LAYOUT (except /21/22 version)

- 1 F4 3 E4 5 D4 7 C4 1202 D1 5202 C2 9201 C2
- 2 E4 4 D4 6 C4 1201 C1 3208 E1 8203 E1 9202 D2



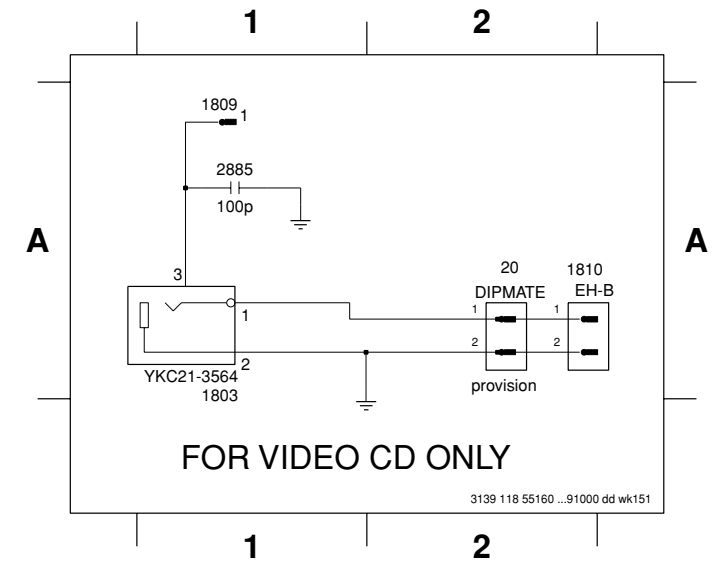
TRANSFORMER SECONDARY PART - CIRCUIT & LAYOUT (except /21/22 version)

- 8 B1 10 C1 12 C1 14 D1 16 D1 1203 C2 8204 C2
- 9 B1 11 C1 13 C1 15 D1 17 D1 1204 B2

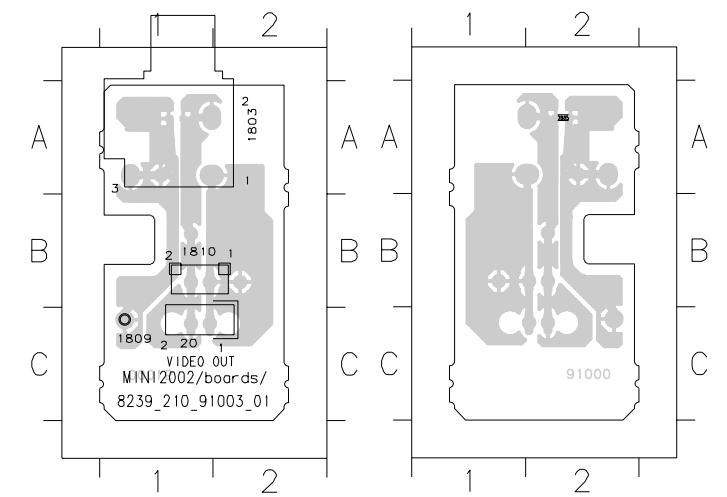


VIDEO OUT PART - CIRCUIT & LAYOUT (for VCD version only)

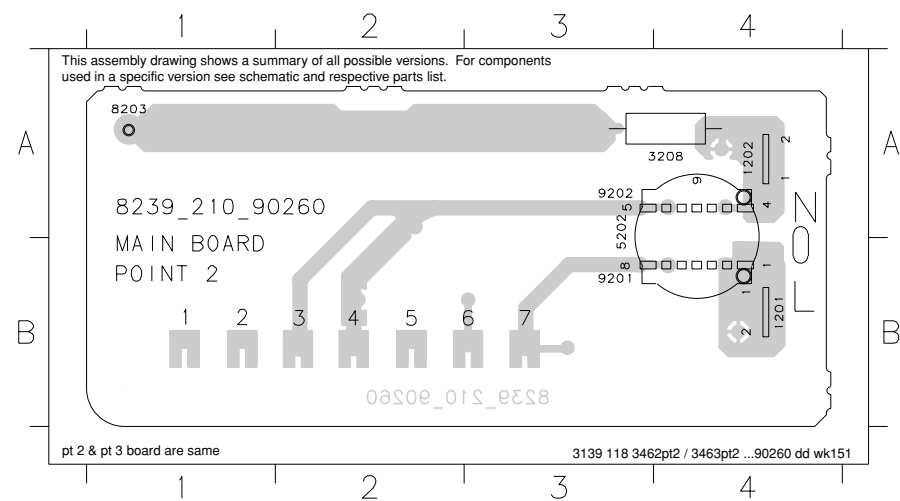
- 20 A2 1803 A1 1809 A1 1810 A2 2885 A1



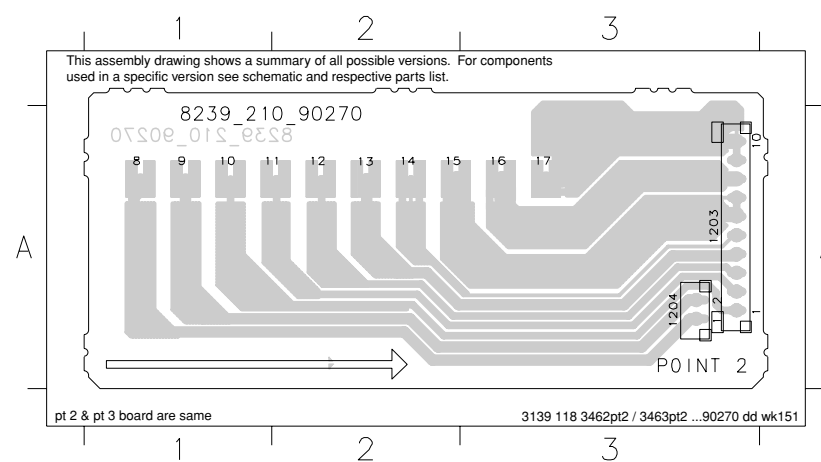
- 20 C1 1809 C1 1810 B1 2885 A2



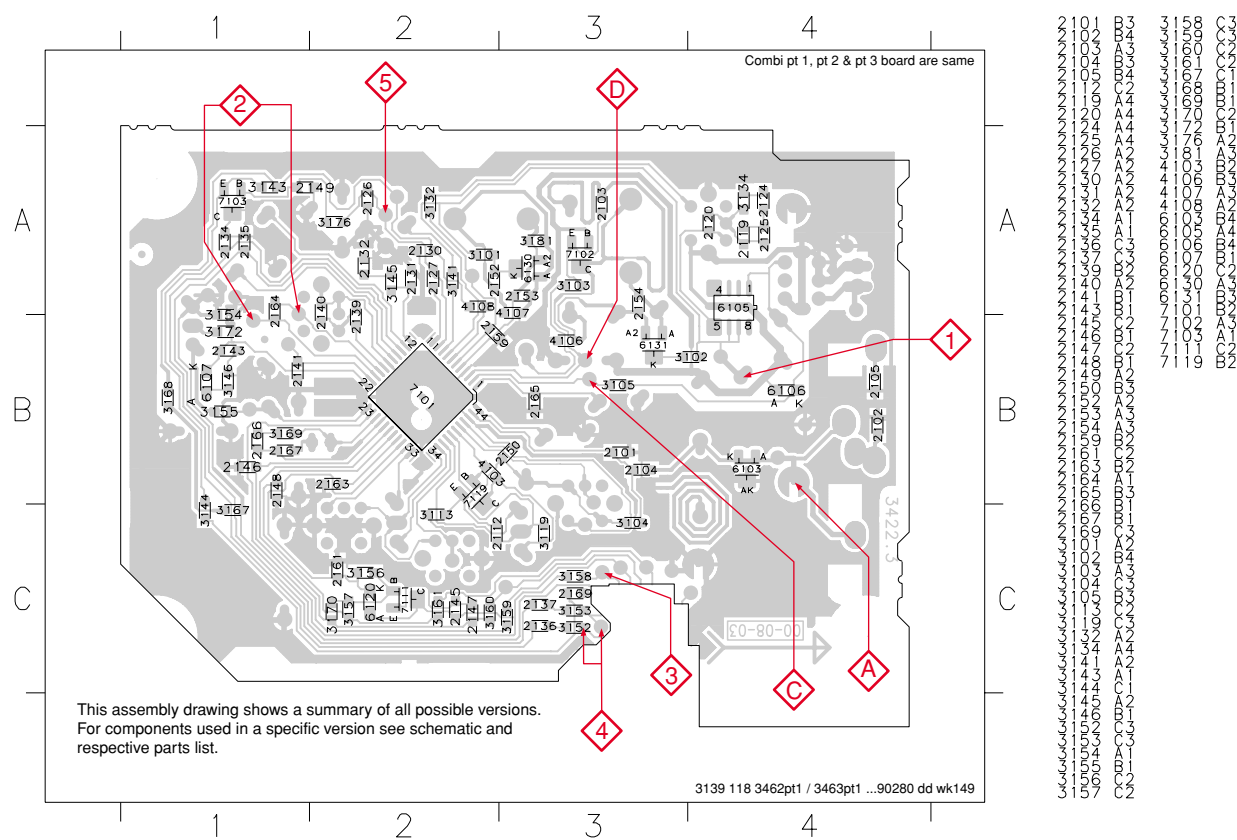
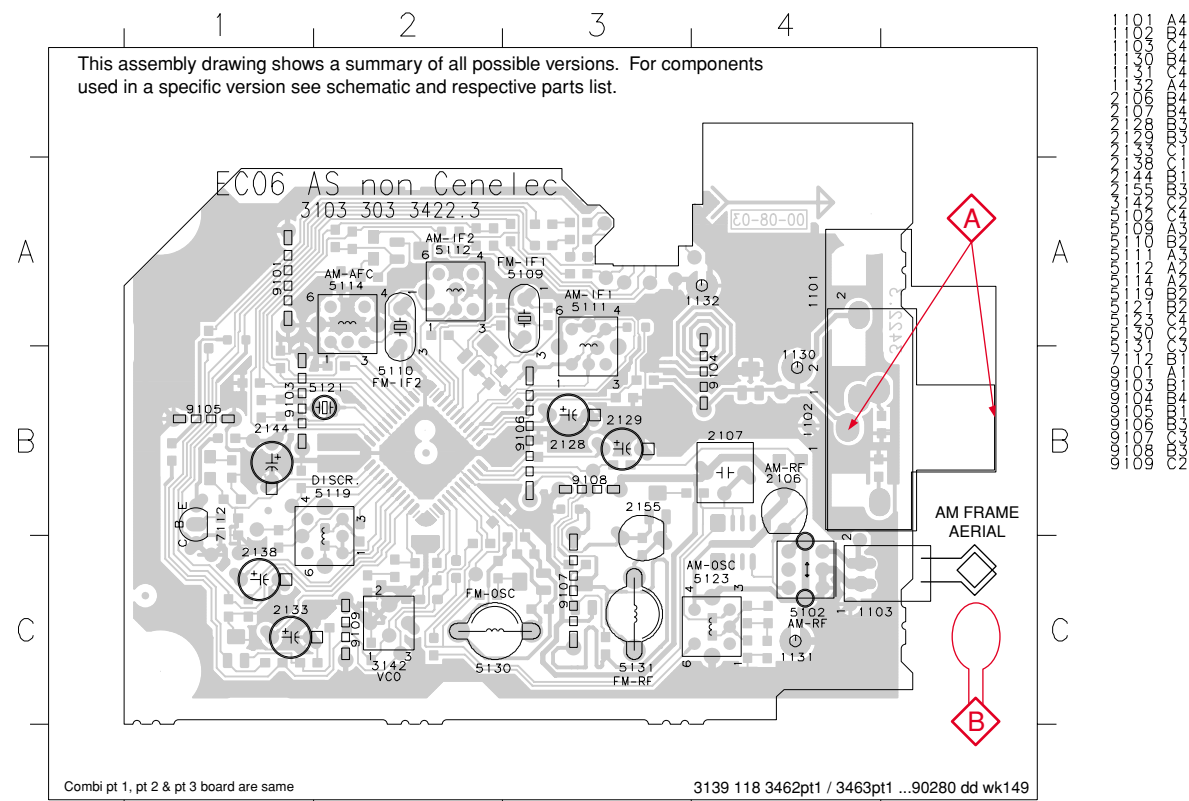
- 1 B1 3 B2 5 B2 1201 B3 1202 A4 5202 A3 9201 B3
- 2 B1 4 B2 6 B3 1201 B4 3208 A4 8203 A1 9202 A3



- 8 A1 10 A1 12 A2 14 A2 16 A3 1203 A3
- 9 A1 11 A1 13 A2 15 A2 17 A3 1204 A3

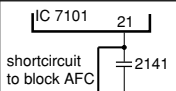
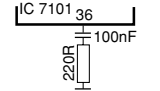
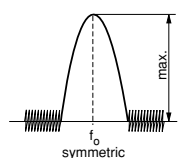
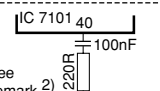

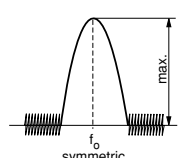


NON-CENELEC TUNER PORTION - COMPONENT & CHIP LAYOUTS



Note: This layout drawings are applicable for both pt 1 and pt 2 pc board.

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

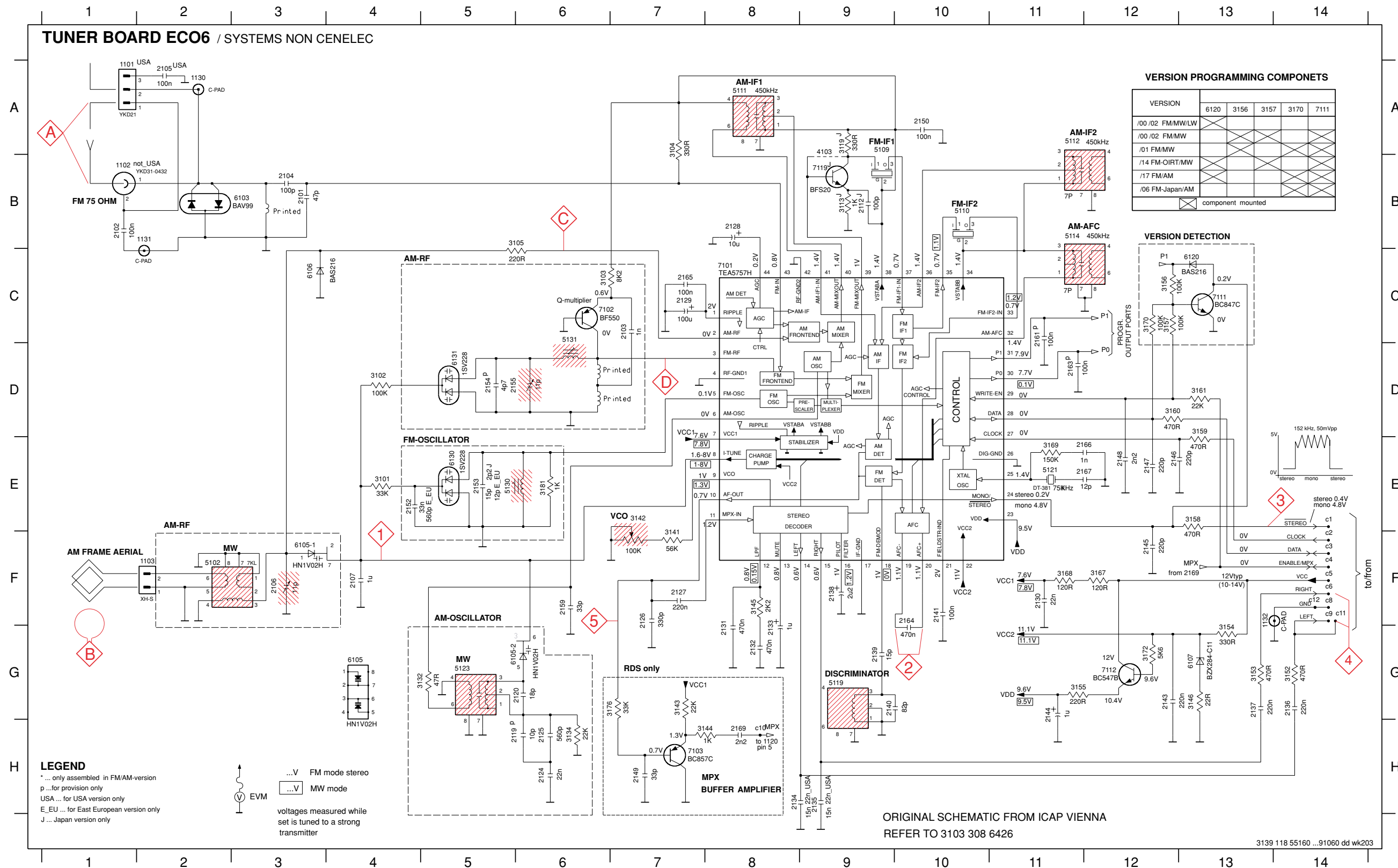
| Waverange | Input frequency | Input | Tuned to | Adjust | Output | Scope/Voltmeter |
|---|--|--|---|--------|--------|---|
| VARICAP ALIGNMENT | | | | | | |
| FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz) | | | 108MHz | 5130 | | 8V ±0.2V |
| | | | 87.5MHz (65.81MHz) | check | | 4.3V ±0.5V (1.2V ±0.5V) |
| 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 mod=1kHz Δf=±22.5kHz | 108MHz | 2155 | 4 | MAX |
| | 87.5MHz (65.81MHz) | | 87.5MHz (65.81MHz) | 5131 | | |
| VCO | | | | | | |
| FM | 98MHz, 1mV continuous wave | A | 98MHz | 3142 | 3 | 152kHz ±1kHz ¹⁾ |
| AM IF | | | | | | |
| MW | 450kHz connect pin 6 of IC 7101 (AM Osc.) with 3.3kΩ to Vcc | C Δf=±10kHz V _{RF} = 0.5mV (as low as possible) |  | 5111 | 5 |  |
| | | |  | 5112 | | |
| AM AFC | | C | | 5114 | 2 | 0 ± 2 mV DC |
| MW | | C continuous wave V _{RF} = 2mV | | | | |
| AM RF³⁾ | | | | | | |
| MW⁴⁾ FM/MW/LW- and FM/MW-version (9kHz grid) 531 - 1602kHz | 1494kHz | B  | 1494kHz | 2106 | 5 |  |
| | 558kHz | | 558kHz | 5102 | | |
| LW | 198kHz | | 198kHz | 5103 | | |
| MW FM/AM-version, 10kHz grid 530 - 1700kHz | 1500kHz | Δf = ±30kHz V _{RF} as low as possible | 1500kHz | 2106 | | |
| | 560kHz | | 560kHz | 5102 | | |

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

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

↑ Repeat

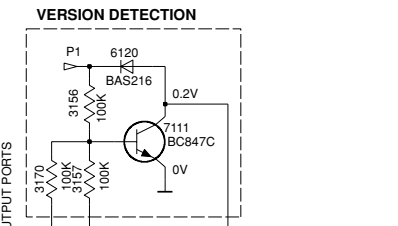
NON-CENELEC TUNER CIRCUIT



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 | | | | | |

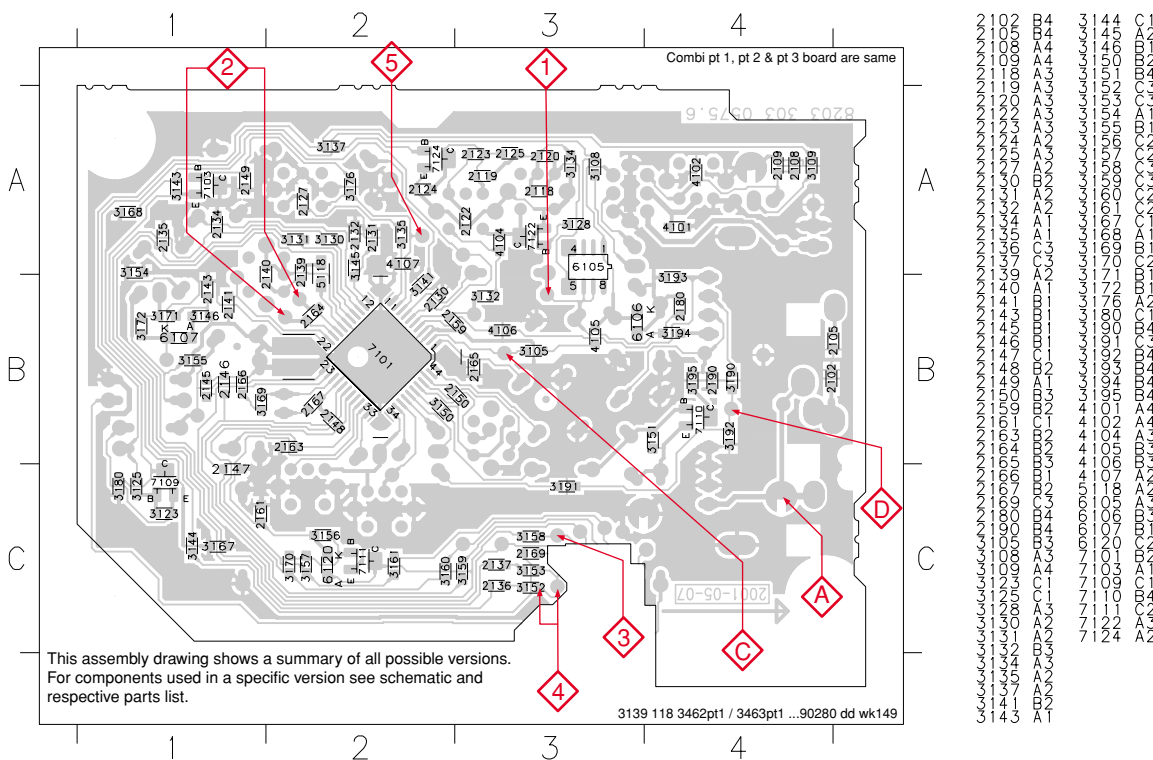
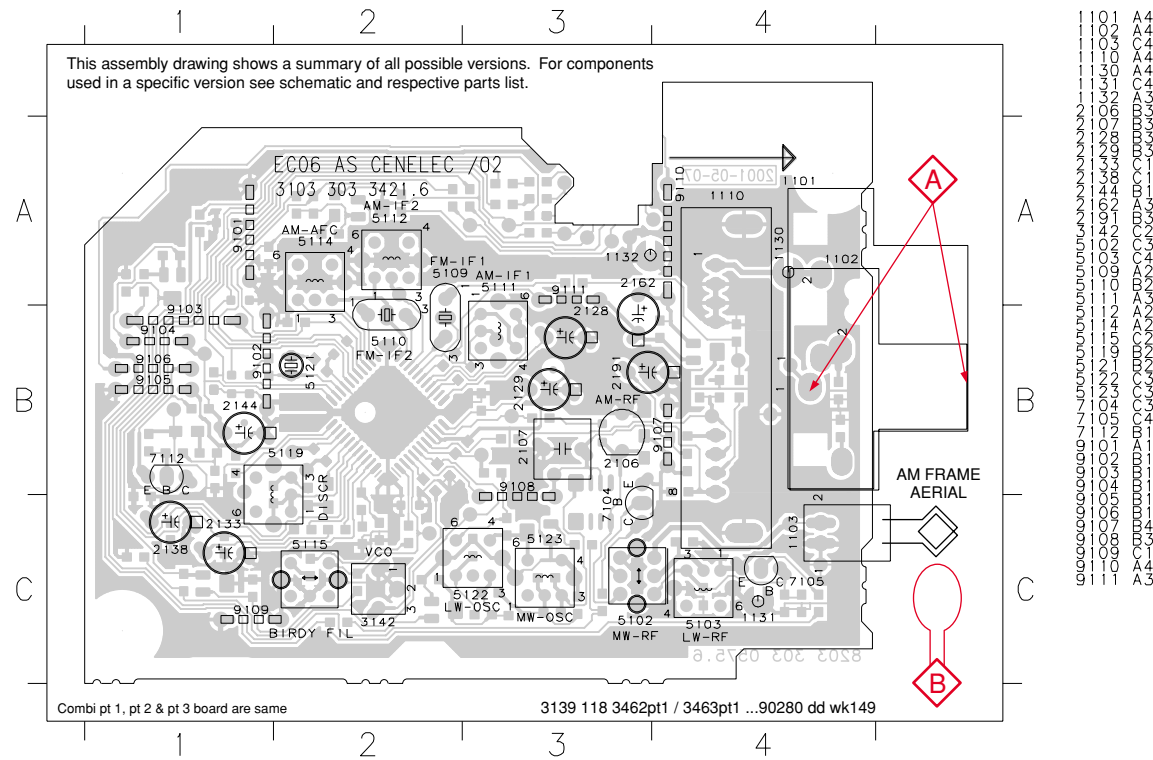
☒ component mounted



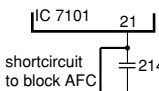
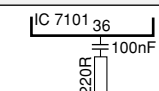
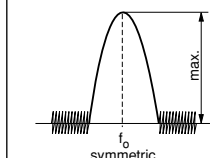
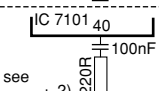
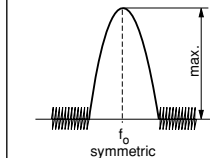
- c1 E14
- c2 F14
- c3 F14
- c4 F14
- c5 F14
- c6 F14
- c8 F14
- c9 F14
- c10 H8
- c11 F14
- c12 F14
- c110 A1
- c1102 B1
- c1103 F2
- c1103 A2
- c1103 B2
- c1103 C3
- c1103 G3
- c1103 B3
- c1103 C7
- c1103 B3
- c1103 A2
- c1103 F3
- c1103 F4
- c1103 B9
- c1103 H6
- c1103 G6
- c1103 H6
- c1103 H6
- c1103 F7
- c1103 H7
- c1103 B8
- c1103 C7
- c1103 B8
- c1103 C7
- c1103 F11
- c1103 G8
- c1103 G8
- c1103 G8
- c1103 H8
- c1103 H9
- c1103 G14
- c1103 G13
- c1103 F9
- c1103 G9
- c1103 G9
- c1103 F10
- c1103 G12
- c1103 G11
- c1103 F12
- c1103 E12
- c1103 E12
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- c1103 E5
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- c1103 F6
- c1103 C11
- c1103 D10
- c1103 F10
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- c1103 E12
- c1103 H8
- c1103 E4
- c1103 D4
- c1103 C6
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- c1103 B6
- c1103 B9
- c1103 A9
- c1103 A9
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- c1103 C12
- c1103 C12
- c1103 E13
- c1103 D13
- c1103 D12
- c1103 D13
- c1103 F12
- c1103 F11
- c1103 E11
- c1103 C12
- c1103 G12
- c1103 G7
- c1103 E5
- c1103 A9
- c1103 A9
- c1103 F2
- c1103 A9
- c1103 B10
- c1103 A8
- c1103 A11
- c1103 B11
- 5119 G9
- 5121 E11
- 5123 G5
- 5130 E5
- 5131 C6
- 6103 B2
- 6105-1 F3
- 6105-2 G6
- 6106 C3
- 6107 G13
- 6120 C13
- 6130 E5
- 6131 D5
- 7101 C8
- 7102 C6
- 7103 H7
- 7111 C13
- 7112 G12
- 7119 B9

ORIGINAL SCHEMATIC FROM ICAP VIENNA
REFER TO 3103 308 6426

CENELEC TUNER PORTION - COMPONENT & CHIP LAYOUTS



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

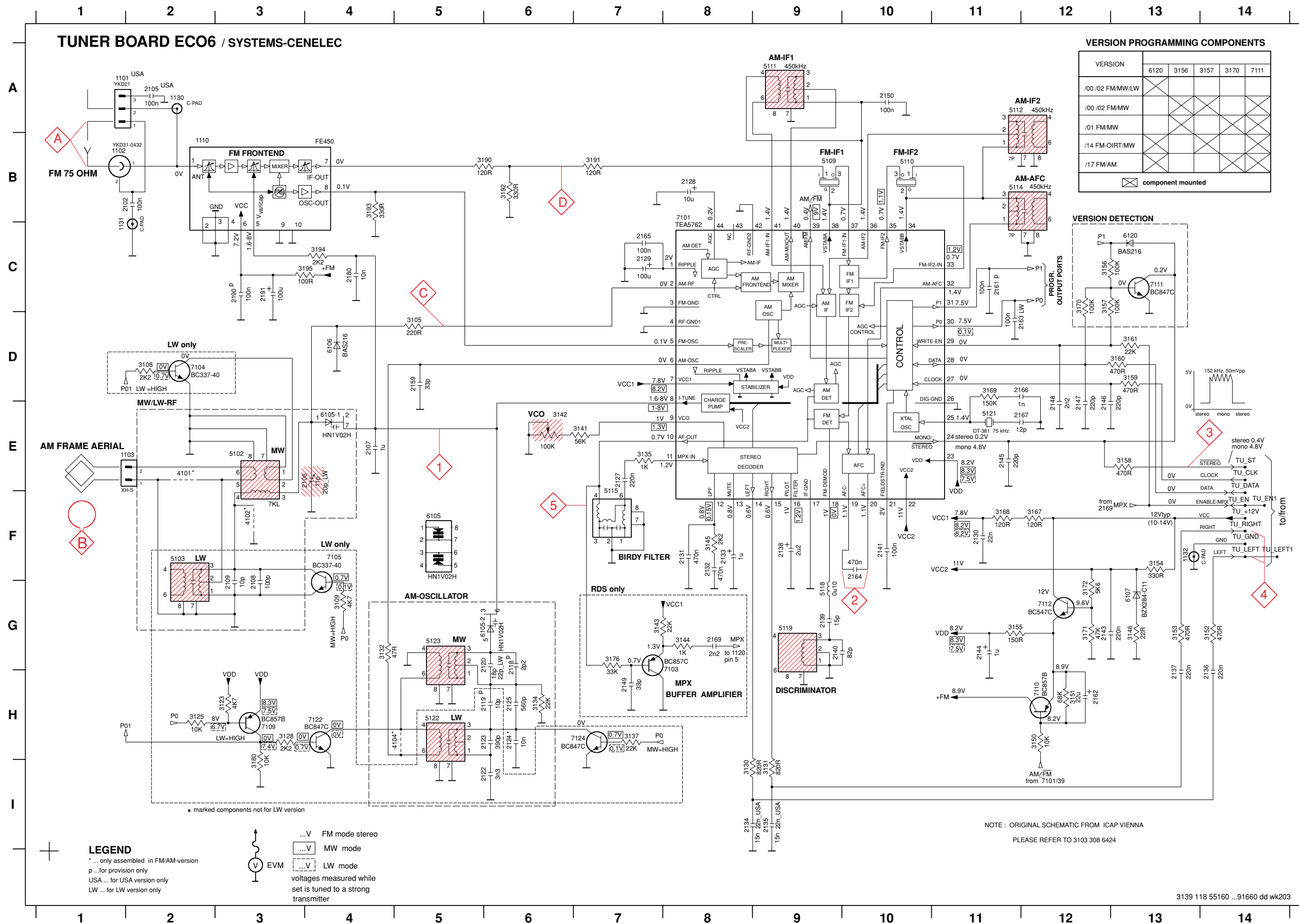
| Waverange | Input frequency | Input | Tuned to | Adjust | Output | Scope/Voltmeter |
|---|--|--|---|--|--------|---|
| VARICAP ALIGNMENT | | | | | | |
| FM 87.5 - 108MHz (50kHz grid) | | | 108MHz | check | | 8V ±1.2V |
| | | | 87.5MHz | check | | 1.6V ±0.5V |
| MW 531 - 1602kHz (9kHz grid) | | | 1602kHz | 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 $\Delta f = \pm 10\text{kHz}$ $V_{RF} = 0.5\text{mV}$ (as low as possible) |  | 5111 | ◇5 |  |
| | | |  | 5112 | | |
| AM AFC MW | | ◇C continuous wave $V_{RF} = 2\text{mV}$ | | 5114 | ◇2 | 0mV ±2mV |
| AM RF ³⁾ | | | | | | |
| MW | 1494kHz | ◇B $\Delta f = \pm 30\text{kHz}$ V_{RF} as low as possible | 1494kHz | 2106 | ◇5 |  |
| | 558kHz | | 558kHz | 5102 | | |
| LW | 198kHz | 198kHz | 5103 | | | |

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

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

↑ Repeat

CENELEC TUNER CIRCUIT



| 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

| | |
|----------|--------------|
| AM G13 | 5118 G9 |
| FM G13 | 5119 G9 |
| 1101 A2 | 5121 E11 |
| 1102 B1 | 5122 H5 |
| 1103 E2 | 5123 G5 |
| 1110 B2 | 6105-1 E4 |
| 1130 A2 | 6105-2 G6 |
| 1131 C1 | 6106 D4 |
| 1132 F13 | 6107 G13 |
| 2102 B2 | 6120 C13 |
| 2105 A2 | 7101 B8 |
| 2106 E3 | 7103 G8 |
| 2107 E4 | 7104 D2 |
| 2108 G3 | 7105 F4 |
| 2109 G3 | 7109 H3 |
| 2118 G6 | 7110 H12 |
| 2119 H6 | 7111 C13 |
| 2120 G6 | 7112 G12 |
| 2122 I6 | 7122 H4 |
| 2123 H6 | 7124 H7 |
| 2124 H6 | TU_+12V F14 |
| 2125 H6 | TU_CLK E14 |
| 2127 E7 | TU_DATA E14 |
| 2128 B8 | TU_EN F14 |
| 2129 C7 | TU_EN1 F14 |
| 2130 F11 | TU_GND F14 |
| 2131 F8 | TU_LEFT F14 |
| 2132 F8 | TU_LEFT1 F14 |
| 2133 F8 | TU_RIGHT F14 |
| 2134 I8 | TU_ST E14 |
| 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 F10 | |
| 2165 C7 | |
| 2166 D12 | |
| 2167 E12 | |
| 2169 G8 | |
| 2180 C4 | |
| 2190 C3 | |
| 2191 C3 | |
| 3105 D5 | |
| 3108 D2 | |
| 3109 G4 | |
| 3123 H3 | |
| 3125 H2 | |
| 3128 H3 | |
| 3130 I8 | |
| 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 G11 | |
| 3156 C12 | |
| 3157 C12 | |
| 3158 E13 | |
| 3159 D13 | |
| 3160 D13 | |
| 3161 D13 | |
| 3167 F12 | |
| 3168 F11 | |
| 3169 D11 | |
| 3170 C12 | |
| 3171 G12 | |
| 3172 G12 | |
| 3176 G7 | |
| 3180 I3 | |
| 3190 B6 | |
| 3191 B7 | |
| 3192 B6 | |
| 3193 B4 | |
| 3194 C4 | |
| 3195 C4 | |
| 4101 E2 | |
| 4102 F3 | |
| 4104 H5 | |
| 5102 E3 | |
| 5103 F2 | |
| 5109 B9 | |
| 5110 B10 | |
| 5111 A9 | |
| 5112 A11 | |
| 5114 B11 | |
| 5115 F7 | |

LEGEND

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

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

EVM

NOTE: ORIGINAL SCHEMATIC FROM ICAP VIENNA
 PLEASE REFER TO 3103 308 6424

ELECTRICAL PARTS LIST - COMBI BOARD (Non-Cenelec Tuner portion only)MISCELLANEOUS

| | | | |
|------|----------------|--------------------|----------|
| 1101 | 2422 015 19376 | Socket 2P Clickfit | USA only |
| 1102 | 4822 267 10283 | Socket Coaxial 75R | not USA |
| 1103 | 4822 265 31184 | JST Connector 2P | |

CAPACITORS

| | | | |
|------|----------------|---------------------|------------|
| 2101 | 4822 122 33777 | 47pF 5% 63V | |
| 2102 | 2238 586 59812 | 100nF +80/-20% 50V | |
| 2103 | 5322 126 11578 | 1nF 10% 50V | |
| 2104 | 2020 552 94427 | 100pF 5% 50V | |
| 2105 | 2238 586 59812 | 100nF +80/-20% 50V | USA only |
| 2106 | 2020 800 00191 | Trimmer 3-11pF 100V | |
| 2107 | 4822 121 51319 | 1µF 10% 63V | |
| 2120 | 4822 126 14507 | 18pF 5% 50V | |
| 2124 | 4822 126 14494 | 22nF 10% 25V | |
| 2125 | 2238 861 18561 | 560pF 1% 50V | |
| 2126 | 4822 126 14241 | 330pF 1% 50V | |
| 2127 | 4822 126 13879 | 220nF +80/-20% 16V | |
| 2128 | 4822 124 40248 | 10µF 20% 63V | |
| 2129 | 4822 124 41584 | 100µF 20% 10V | |
| 2130 | 4822 126 14494 | 22nF 10% 25V | |
| 2131 | 3198 017 44740 | 470nF 10V | |
| 2132 | 3198 017 44740 | 470nF 10V | |
| 2133 | 4822 124 21913 | 1µF 20% 63V | |
| 2134 | 3198 017 31530 | 15nF 50V | not USA |
| 2134 | 4822 126 14494 | 22nF 10% 25V | USA only |
| 2135 | 3198 017 31530 | 15nF 50V | not USA |
| 2135 | 4822 126 14494 | 22nF 10% 25V | USA only |
| 2136 | 4822 126 13879 | 220nF +80/-20% 16V | |
| 2137 | 4822 126 13879 | 220nF +80/-20% 16V | |
| 2138 | 4822 124 22652 | 2,2µF 20% 50V | |
| 2139 | 4822 122 33752 | 15pF 5% 50V | |
| 2140 | 4822 126 14226 | 82pF 5% 50V | |
| 2141 | 2238 586 59812 | 100nF +80/-20% 50V | |
| 2143 | 4822 126 13879 | 220nF +80/-20% 16V | |
| 2144 | 4822 124 21913 | 1µF 20% 63V | |
| 2145 | 4822 126 13883 | 220pF 5% 50V | |
| 2146 | 4822 126 13883 | 220pF 5% 50V | |
| 2147 | 4822 126 13883 | 220pF 5% 50V | |
| 2148 | 4822 126 14238 | 2,2nF 50V | |
| 2149 | 2222 867 15339 | 33pF 5% 50V | RDS only |
| 2150 | 4822 126 14585 | 100nF 10% 50V | |
| 2152 | 4822 126 14549 | 33nF 16V | not E Eur |
| 2152 | 4822 126 14249 | 560pF 10% 63V | E Eur only |
| 2153 | 4822 122 33752 | 15pF 5% 50V | not E Eur |
| 2153 | 4822 126 11663 | 12pF 50V | E Eur only |
| 2155 | 2020 800 00191 | Trimmer 3-11pF 100V | |
| 2159 | 2222 867 15339 | 33pF 5% 50V | |
| 2164 | 3198 017 44740 | 470nF 10V | |
| 2165 | 2238 586 59812 | 100nF +80/-20% 50V | |
| 2166 | 5322 126 11578 | 1nF 10% 50V | |
| 2167 | 4822 126 11663 | 12pF 50V | |
| 2169 | 4822 126 14238 | 2,2nF 50V | RDS only |

RESISTORS

| | | | |
|------|----------------|-------------------|----------|
| 3101 | 4822 051 30333 | 33k 5% 0,062W | |
| 3102 | 4822 117 13632 | 100k 1% 0,62W | |
| 3103 | 4822 117 12902 | 8k2 1% 0,063W | |
| 3104 | 4822 117 13577 | 330R 1% 0,1W | |
| 3105 | 4822 051 30221 | 220R 5% 0,062W | |
| 3132 | 4822 051 30479 | 47R 5% 0,062W | |
| 3134 | 4822 051 30223 | 22k 5% 0,062W | |
| 3141 | 4822 051 30563 | 56k 5% 0,062W | |
| 3142 | 4822 100 12159 | Trim-pot 100k 30% | |
| 3143 | 4822 051 30223 | 22k 5% 0,062W | RDS only |
| 3144 | 4822 051 30102 | 1k 5% 0,062W | RDS only |
| 3145 | 4822 051 30222 | 2k2 5% 0,062W | |
| 3146 | 4822 117 12139 | 22R 5% 0,062W | |
| 3152 | 4822 051 30471 | 470R 5% 0,062W | |
| 3153 | 4822 051 30471 | 470R 5% 0,062W | |
| 3154 | 4822 051 30331 | 330R 5% 0,062W | |
| 3155 | 4822 051 30221 | 220R 5% 0,062W | |
| 3156 | 4822 117 13632 | 100k 1% 0,062W | |
| 3157 | 4822 117 13632 | 100k 1% 0,062W | |
| 3158 | 4822 051 30471 | 470R 5% 0,062W | |
| 3159 | 4822 051 30471 | 470R 5% 0,062W | |
| 3160 | 4822 051 30471 | 470R 5% 0,062W | |
| 3161 | 4822 051 20223 | 22k 5% 0,1W | |
| 3167 | 4822 051 20121 | 120R 5% 0,1W | |
| 3168 | 4822 051 30121 | 120R 5% 0,062W | |
| 3169 | 4822 051 30154 | 150k 5% 0,062W | |
| 3170 | 4822 117 13632 | 100k 1% 0,62W | |
| 3172 | 4822 051 30562 | 5k6 5% 0,063W | |
| 3176 | 4822 051 30333 | 33k 5% 0,062W | RDS only |
| 3181 | 4822 051 30102 | 1k 5% 0,062W | |
| 4103 | 4822 051 30008 | 0R Jumper 0603 | |
| 4106 | 4822 051 20008 | 0R Jumper 0805 | |
| 4107 | 4822 051 30008 | 0R Jumper 0603 | |
| 4108 | 4822 051 30008 | 0R Jumper 0603 | |

COILS & FILTERS

| | | | |
|------|----------------|-----------------------|--|
| 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-B | |
| 6106 | 9340 255 30115 | BAS216 | |

ELECTRICAL PARTS LIST - COMBI BOARD (Non-Cenelec Tuner portion only)

| | | | |
|------|----------------|------------|--|
| 6107 | 9340 386 90115 | BZX284-C11 | |
| 6120 | 9340 255 30115 | BAS216 | |
| 6130 | 4822 130 82833 | 1SV228 | |
| 6131 | 4822 130 82833 | 1SV228 | |

TRANSISTORS & INTEGRATED CIRCUITS

| | | | |
|------|----------------|-------------|----------|
| 7101 | 9351 740 80557 | TEA5757H/V1 | |
| 7102 | 4822 130 42131 | BF550 | |
| 7103 | 5322 130 42756 | BC857C | RDS only |
| 7111 | 5322 130 42755 | BC847C | |
| 7112 | 4822 130 40959 | BC547B | |

ELECTRICAL PARTS LIST - COMBI BOARD (Cenelec Tuner portion only)**MISCELLANEOUS**

| | | |
|------|----------------|-----------------------|
| 1102 | 4822 267 10283 | Socket Coaxial 75R |
| 1103 | 4822 265 31184 | JST Connector 2P |
| 1110 | 2422 542 90071 | FM Frontend FE450-G01 |

CAPACITORS

| | | |
|------|----------------|---------------------|
| 2102 | 2238 586 59812 | 100nF +80/-20% 50V |
| 2106 | 2020 800 00191 | Trimmer 3-11pF 100V |
| 2107 | 4822 121 51319 | 1μF 10% 63V |
| 2120 | 4822 126 14507 | 18pF 5% 50V |
| 2124 | 5322 126 11583 | 10nF 10% 50V |
| 2125 | 2238 861 18561 | 560pF 1% 50V |
| 2127 | 4822 126 13879 | 220nF +80/-20% 16V |
| 2128 | 4822 124 40248 | 10μF 20% 63V |
| 2129 | 4822 124 41584 | 100μF 20% 10V |
| 2130 | 4822 126 14494 | 22nF 10% 25V |
| 2131 | 3198 017 44740 | 470nF 10V |
| 2132 | 3198 017 44740 | 470nF 10V |
| 2133 | 4822 124 21913 | 1μF 20% 63V |
| 2134 | 3198 017 31530 | 15nF 50V |
| 2135 | 3198 017 31530 | 15nF 50V |
| 2136 | 4822 126 13879 | 220nF +80/-20% 16V |
| 2137 | 4822 126 13879 | 220nF +80/-20% 16V |
| 2138 | 4822 124 22652 | 2,2μF 20% 50V |
| 2139 | 4822 122 33752 | 15pF 5% 50V |
| 2140 | 4822 126 14226 | 82pF 5% 50V |
| 2141 | 2238 586 59812 | 100nF +80/-20% 50V |
| 2143 | 4822 126 13879 | 220nF +80/-20% 16V |
| 2144 | 4822 124 21913 | 1μF 20% 63V |
| 2145 | 4822 126 13883 | 220pF 5% 50V |
| 2146 | 4822 122 33575 | 220pF 5% 63V |
| 2147 | 4822 122 33575 | 220pF 5% 63V |
| 2148 | 4822 126 14238 | 2,2nF 50V |
| 2149 | 2222 867 15339 | 33pF 5% 50V |
| 2150 | 4822 126 14585 | 100nF 10% 50V |
| 2159 | 2222 867 15339 | 33pF 5% 50V |
| 2162 | 4822 124 81151 | 22μF 50V |
| 2164 | 3198 017 44740 | 470nF 10V |
| 2165 | 2238 586 59812 | 100nF +80/-20% 50V |
| 2166 | 5322 122 31647 | 1nF 10% 63V |
| 2167 | 4822 126 11663 | 12pF 50V |
| 2169 | 4822 126 14238 | 2,2nF 50V |
| 2180 | 5322 126 11583 | 10nF 10% 50V |
| 2191 | 4822 124 41584 | 100μF 20% 10V |

RESISTORS

| | | |
|------|----------------|----------------|
| 3105 | 4822 051 30221 | 220R 5% 0,062W |
| 3130 | 4822 117 12968 | 820R 5% 0,62W |
| 3131 | 4822 117 12968 | 820R 5% 0,62W |
| 3132 | 4822 051 30479 | 47R 5% 0,062W |
| 3134 | 4822 051 30223 | 22k 5% 0,062W |
| 3135 | 4822 051 30102 | 1k 5% 0,062W |
| 3141 | 4822 051 30563 | 56k 5% 0,062W |

| | | |
|------|----------------|------------------|
| 3142 | 4822 100 12159 | Trimpot 100k 30% |
| 3143 | 4822 051 30223 | 22k 5% 0,062W |
| 3144 | 4822 051 30102 | 1k 5% 0,062W |
| 3145 | 4822 051 30222 | 2k2 5% 0,062W |
| 3146 | 4822 117 12139 | 22R 5% 0,062W |
| 3150 | 4822 051 30103 | 10k 5% 0,062W |
| 3151 | 4822 051 30683 | 68k 5% 0,062W |
| 3152 | 4822 051 30471 | 470R 5% 0,062W |
| 3153 | 4822 051 30471 | 470R 5% 0,062W |
| 3154 | 4822 051 30331 | 330R 5% 0,062W |
| 3155 | 4822 051 30151 | 150R 5% 0,062W |
| 3156 | 4822 117 13632 | 100k 1% 0,62W |
| 3157 | 4822 117 13632 | 100k 1% 0,62W |
| 3158 | 4822 051 30471 | 470R 5% 0,062W |
| 3159 | 4822 051 30471 | 470R 5% 0,062W |
| 3160 | 4822 051 30471 | 470R 5% 0,062W |
| 3161 | 4822 051 30223 | 22k 5% 0,062W |
| 3167 | 4822 051 20121 | 120R 5% 0,1W |
| 3168 | 4822 051 30121 | 120R 5% 0,062W |
| 3169 | 4822 051 30154 | 150k 5% 0,062W |
| 3171 | 4822 117 12925 | 47k 1% 0,063W |
| 3172 | 4822 051 30562 | 5k6 5% 0,063W |
| 3176 | 4822 051 30333 | 33k 5% 0,062W |
| 3190 | 4822 051 30121 | 120R 5% 0,062W |
| 3191 | 4822 051 30121 | 120R 5% 0,062W |
| 3192 | 4822 051 30331 | 330R 5% 0,062W |
| 3193 | 4822 051 30331 | 330R 5% 0,062W |
| 3194 | 4822 051 30222 | 2k2 5% 0,062W |
| 3195 | 4822 051 30101 | 100R 5% 0,062W |
| 4101 | 4822 051 30008 | 0R Jumper 0603 |
| 4102 | 4822 051 30008 | 0R Jumper 0603 |
| 4104 | 4822 051 30008 | 0R Jumper 0603 |
| 4105 | 4822 051 20008 | 0R Jumper 0805 |
| 4106 | 4822 051 30008 | 0R Jumper 0603 |
| 4107 | 4822 051 20008 | 0R Jumper 0805 |

COILS & FILTERS

| | | |
|------|----------------|-----------------------|
| 5102 | 4822 157 71634 | RF-Coil MW |
| 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 | Birdie Coil |
| 5118 | 2422 535 95881 | Coil 0,1μH 5% |
| 5119 | 4822 157 11443 | Discriminator Coil |
| 5121 | 4822 242 10261 | Quartz 75kHz |
| 5123 | 2422 549 44108 | RF-Coil AM-Oscillator |

DIODES

| | | |
|------|----------------|-----------|
| 6105 | 4822 130 83075 | HN1V02H-B |
| 6106 | 9340 255 30115 | BAS216 |

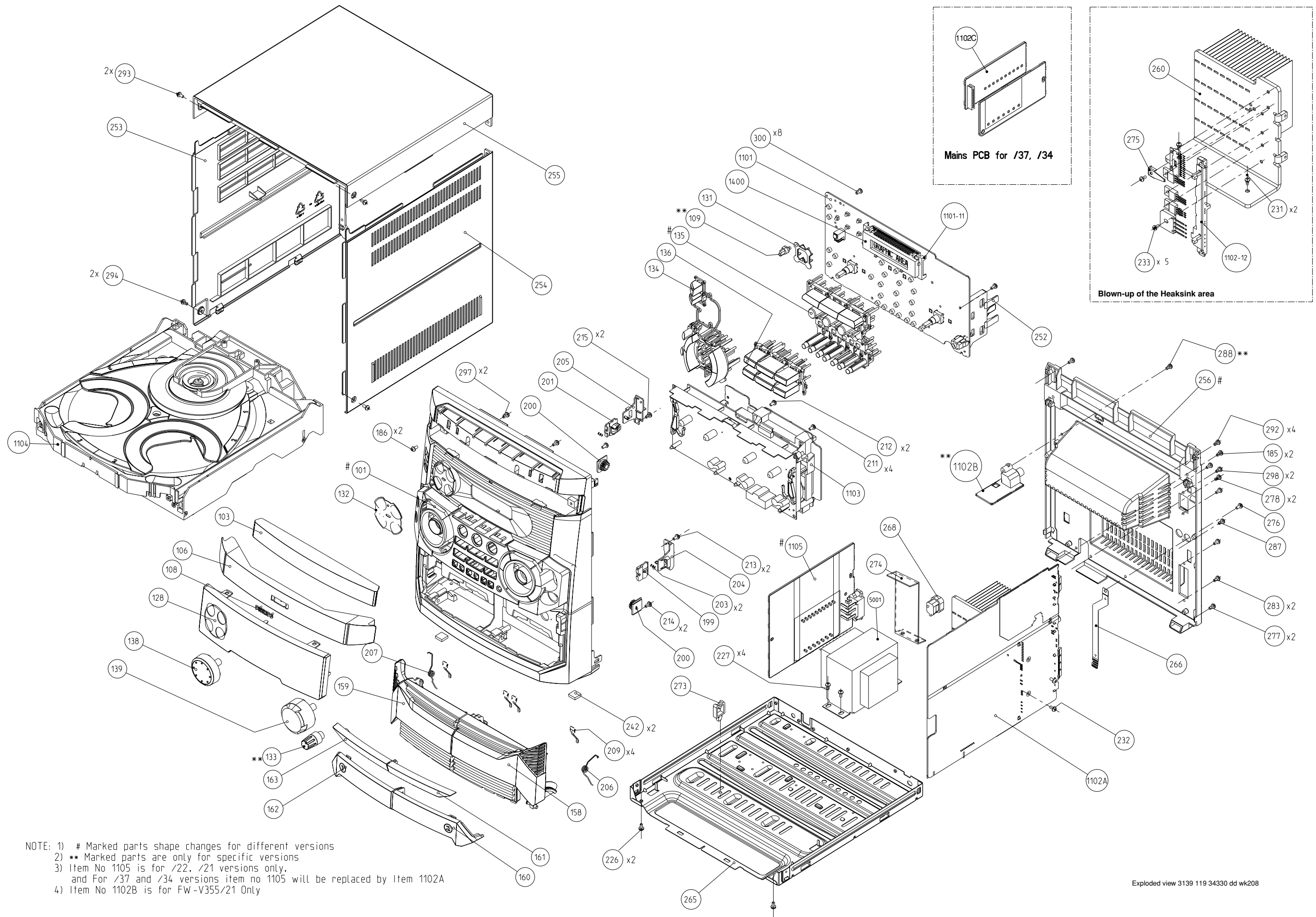
ELECTRICAL PARTS LIST - COMBI BOARD (Cenelec Tuner portion only)**DIODES**

| | | |
|------|----------------|------------|
| 6107 | 9340 386 90115 | BZX284-C11 |
|------|----------------|------------|

TRANSISTORS & INTEGRATED CIRCUITS

| | | |
|------|----------------|-------------|
| 7101 | 9351 772 20557 | TEA5762H/V1 |
| 7103 | 5322 130 42756 | BC857C |
| 7110 | 4822 130 60373 | BC857B |
| 7111 | 5322 130 42755 | BC847C |
| 7112 | 4822 130 44503 | BC547C |

EXPLODED VIEW - MAIN UNIT



NOTE: 1) # Marked parts shape changes for different versions
 2) ** Marked parts are only for specific versions
 3) Item No 1105 is for /22, /21 versions only,
 and For /37 and /34 versions item no 1105 will be replaced by Item 1102A
 4) Item No 1102B is for FW-V355/21 Only

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

| | | | | | | | |
|-----|----------------|---------------------------|------|----------------|----------------------------|-----|---------|
| 101 | 3139 118 17190 | Cabinet Front /21M | 209 | 4822 492 70231 | Spring Leaf | 185 | D3 x 12 |
| 101 | 3139 118 18420 | Cabinet Front /22 | 242 | 4822 462 40683 | Foot Rubber SQ | 186 | D3 x 12 |
| 101 | 3139 118 18410 | Cabinet Front /34 | 268 | 3140 113 21880 | Mains Cord Relief | 211 | D3 x 12 |
| 101 | 3139 118 17540 | Cabinet Front /37 | 268 | 3140 113 22100 | Mains Cord Relief /37 | 212 | D3 x 12 |
| 103 | 3139 118 17550 | Cover CDC Panel | 275 | 4822 492 11735 | Spring Trans | 213 | D3 x 12 |
| 103 | 3139 118 16961 | Cover CDC Panel /21M | 350 | 3139 118 79060 | LS Package FW-V355/21M | 214 | D3 x 12 |
| 106 | 3139 118 17560 | Cover Tray CDC | 350 | 3139 118 79740 | LS Package FW-M355/22/34 | 215 | D3 x 12 |
| 106 | 3139 118 17200 | Cover Tray CDC /21M | 350 | 3139 118 79620 | LS Package FW-M355/37 | 226 | M3 x 6 |
| 108 | 4822 454 13408 | Badge Philips | | 9965 000 11642 | Left LS Box FW-V355/21M | 227 | M3 x 6 |
| 118 | 3139 110 00150 | Badge ERCOS /21M | | 9965 000 11602 | Right LS Box FW-V355/21M | 231 | M3 x 10 |
| 128 | 3139 118 18350 | Window Display /21M | | 9965 000 11651 | Left LS Box FW-M355/22/34 | 232 | M3 x 10 |
| 128 | 3139 118 18140 | Window Display /22 | | 9965 000 11652 | Right LS Box FW-M355/22/34 | 233 | M3 x 10 |
| 128 | 3139 118 18170 | Window Display /34 | | 9965 000 11649 | Left LS Box FW-M355/37 | 276 | M3 x 6 |
| 128 | 3139 118 17570 | Window Display /37 | | 9965 000 11650 | Right LS Box FW-M355/37 | 277 | M3 x 10 |
| 133 | 3139 118 16390 | Knob Karaoke /21M | 351 | 4822 303 50063 | FM Aerial 75R | 278 | M3 x 6 |
| 134 | 3139 118 16890 | Button Set Power | 351 | 4822 320 11094 | FM Antenna Wire /37 | 283 | D3 x 12 |
| 135 | 3139 118 17610 | Button Set Source /21M | 356 | 3139 228 60100 | Remote Control FW-M355 | 287 | D3 x 12 |
| 135 | 3139 118 16900 | Button Set Source /22/34 | 356 | 3139 228 85100 | Remote Control FW-V355 | 288 | D3 x 12 |
| 135 | 3139 118 17230 | Button Set Source /37 | 384 | 2422 549 45067 | AM Loop Antenna | 292 | D3 x 12 |
| 136 | 3139 118 17940 | Button Set Control | 385 | 2422 070 98145 | △ Mains Cord | 293 | D3 x 12 |
| 136 | 3139 118 17620 | Button Set Control /21M | 385 | 2422 070 98203 | △ Mains Cord /37 | 294 | D3 x 10 |
| 138 | 3139 118 17690 | Knob Jog Rotary | 391 | 4822 263 21206 | Cinch Cable 1,7M /21M | 297 | D3 x 12 |
| 138 | 3139 118 16350 | Knob Jog Rotary /21M | 1400 | 3139 110 35940 | Flex Cable 30pin 18cm AD | 298 | D3 x 12 |
| 139 | 3139 118 17700 | Knob Volume Rotary | 1400 | 3139 110 35930 | Flex Cable 32pin 18cm AD | 300 | D3 x 12 |
| 139 | 3139 118 16360 | Knob Volume Rotary /21M | 1402 | 4822 320 12703 | Flex Cable 7pin 14cm BD | | |
| 158 | 3139 118 17670 | Cover Cassette Right | 1500 | 3139 110 35690 | Flex Cable 5pin 14cm AD | | |
| 158 | 3139 118 16940 | Cover Cassette Right /21M | 1700 | 4822 320 12654 | Flex Cable 7pin 22cm AD | | |
| 159 | 3139 118 17680 | Cover Cassette Left | 1800 | 3139 110 35880 | Flex Cable 15pin 18cm BD | | |
| 159 | 3139 118 16950 | Cover Cassette Left /21M | 5001 | 3139 118 32520 | △ Mains Transformer /21M | | |
| 160 | 3139 114 75940 | Lens Cassette Right | 5001 | 3139 118 32510 | △ Mains Transformer /22/34 | | |
| 160 | 3139 114 74280 | Lens Cassette Right /21M | 5001 | 3139 118 32500 | △ Mains Transformer /37 | | |
| 161 | 3139 114 75950 | Lens Cass, Right Top | | | | | |
| 161 | 3139 114 74570 | Lens Cass, Right Top /21M | | | | | |
| 162 | 3139 114 75960 | Lens Cassette Left | | | | | |
| 162 | 3139 114 74290 | Lens Cassette Left /21M | | | | | |
| 163 | 3139 114 75970 | Lens Cass, Left Top | | | | | |
| 163 | 3139 114 74560 | Lens Cass, Left Top /21M | | | | | |
| 199 | 4822 402 10621 | Push-Catch | | | | | |
| 200 | 4822 529 10322 | Damper Assembly | | | | | |
| 201 | 3139 114 68640 | Push Catch Left | | | | | |
| 203 | 4822 492 11344 | Spring Compression | | | | | |
| 204 | 4822 402 11246 | Bracket Right | | | | | |
| 205 | 4822 402 11245 | Bracket Left | | | | | |
| 206 | 3139 111 01380 | Spring Torsion Right | | | | | |
| 207 | 3139 111 01390 | Spring Torsion Left | | | | | |

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