

# Portable compact disc player

## Service Service Service

|        |        |        |              |
|--------|--------|--------|--------------|
| AZ7902 | AZ9102 | AZ9141 | AZ9211       |
| AZ9001 | AZ9103 | AZ9142 | AZ9213       |
| AZ9002 | AZ9104 | AZ9143 | AZ9214       |
| AZ9003 | AZ9106 | AZ9201 | AZ9218       |
| AZ9011 | AZ9111 | AZ9202 | all versions |
| AZ9101 | AZ9113 | AZ9203 |              |

PRODUCT FAMILY DORIS2 – PB2

# Service Manual



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# PHILIPS

## TECHNICAL SPECIFICATION

### General

|                          |                |
|--------------------------|----------------|
| Dimensions (WxHxD)       | : 128x28x139mm |
| Weight without batteries | : 220g         |

### Power supply modes

|                                 |            |
|---------------------------------|------------|
| DC-in socket                    | : 2.5-6.0V |
| Primary batteries (2xLR6)       | : 1.6-3.6V |
| Rechargeable batteries (AY3362) | : 1.6-3.6V |

### Battery lifetime

| BATTERY TYPE                               | ESP OFF            | ESP ON             |
|--|--------------------|--------------------|
| Primary batteries<br>2 x LR6               | ≥14h<br>(20h typ.) | ≥14h<br>(17h typ.) |
| Rechargeable batteries<br>AY3362 (1200mAh) | ≥7h<br>(9.5h typ.) | ≥7h<br>(9.5h typ.) |

### Battery level detection

| DETECTION LEVEL | Primary batteries                    | Rechargeable batteries               |
|-----------------|--------------------------------------|--------------------------------------|
| Battery empty   | 1.8V<br>+100/-50mV                   | 1.8V<br>+100/-50mV                   |
| Battery weak 1  | battery empty level +<br>0.9V ±100mV | battery empty level +<br>0.7V ±100mV |
| Battery weak 2  | battery empty level +<br>0.6V ±100mV | battery empty level +<br>0.5V ±100mV |
| Battery weak 3  | battery empty level +<br>0.3V ±100mV | battery empty level +<br>0.3V ±100mV |

### Charge section (not on all versions)

|                                  |              |
|----------------------------------|--------------|
| Charge current                   | : 250mA ±10% |
| Charge time for 80% AY3362       | : 4.0h nom.  |
| Max. charge time (µP controlled) | : 7h         |
| Temperature protection           | : 50°C ±5°C  |

### Current consumption

| OPERATION MODE               | DC-IN SUPPLY (4.5V) |            | BATT. SUPPLY (2.25V) |            |
|------------------------------|---------------------|------------|----------------------|------------|
|                              | ESP OFF             | ESP ON     | ESP OFF              | ESP ON     |
| Play-mode                    | 100mA typ.          | 100mA typ. | 120mA typ.           | 120mA typ. |
| Jump-mode                    | 220mA typ.          | 220mA typ. | 300mA typ.           | 400mA typ. |
| Stand-by<br>(excl. recharge) | 30mA typ.           |            | 100µA typ.           |            |

### Shock resistance

|                 |         |
|-----------------|---------|
| +X/-X direction | : ≥2.5g |
| +Y/-Y direction | : ≥2.5g |
| +Z/-Z direction | : ≥2.0g |

### Headphone out (measured with 16Ω load, DBB/ESP off)

|                                   |                          |
|-----------------------------------|--------------------------|
| Output power (THD=10%)            |                          |
| /17 version only                  | : 2x6mW (+1/-3dB)        |
| all other versions                | : 2x3mW (+1/-3dB)        |
| Frequency response (1mW)          | : 100Hz-20kHz within 6dB |
| S/N ratio (unwght)                | : ≥78dB (81dB typ.)      |
| S/N ratio (A-wght)                | : ≥81dB (84dB typ.)      |
| THD+N (1kHz, 1mW)                 | : ≤1% (0.2% typ.)        |
| Channel crosstalk (1kHz, no load) | : ≤-24dB (-44dB typ.)    |
| Channel unbalance (-40dB)         | : ≤5dB                   |
| Volume attenuation (1kHz)         | : ≥60dB                  |

### Dynamic Bass Boost DBB

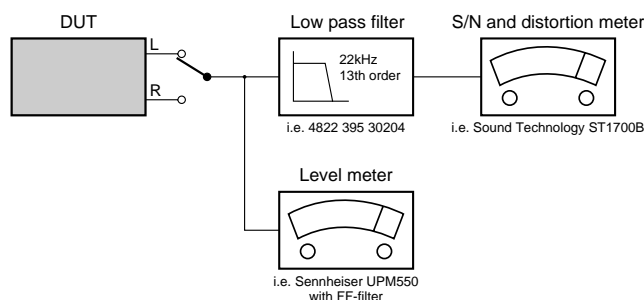
| DBB STAGE | Frequency response |          |           |
|-----------|--------------------|----------|-----------|
|           | 63kHz              | 1kHz     | 10kHz     |
| DBB 1     | +6dB ±2dB          | 0dB ±2dB | 0dB ±2dB  |
| DBB 2     | +9dB ±2dB          | 0dB ±2dB | +5dB ±2dB |

### Laser

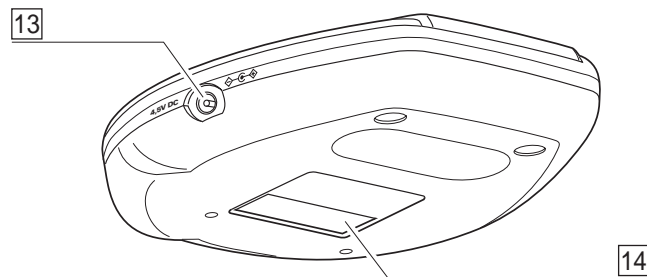
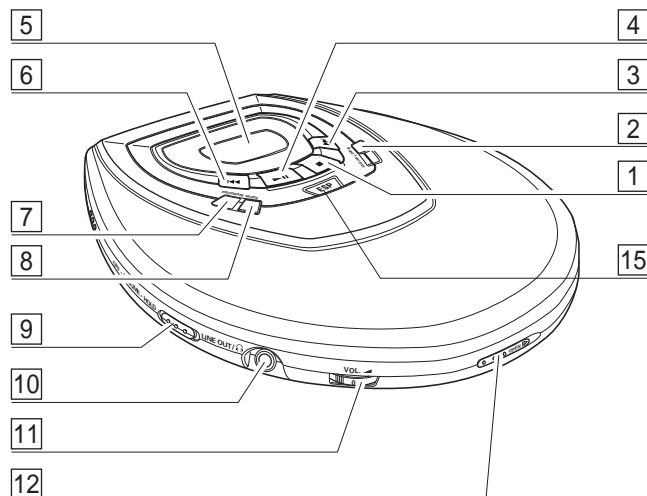
|              |                   |
|--------------|-------------------|
| Output power | : <5mW (3mW typ.) |
| Wavelength   | : 780nm           |

### Measurement setup

Use Audio Signal disc SBC429 4822 397 30184



## CONNECTIONS AND CONTROLS



- 1 ■ .....stops CD play, clears a program or switches the player off
- 2 DBB.....DIGITAL **DYNAMIC BASS BOOST** switches the bass enhancement on and off
- 3 ►► .....skips and searches CD tracks forwards
- 4 ►|| .....switches the player on, starts or pauses CD play
- 5 .....display
- 6 ◀◀ .....skips and searches CD tracks backwards
- 7 PROGRAM .....programs tracks and reviews the program
- 8 MODE .....selects the different playing possibilities:  
SHUFFLE, SHUFFLE REPEAT ALL, REPEAT, REPEAT ALL and *SCAN*
- 9 RESUME.....stores the last position of a CD track played  
HOLD .....locks all buttons  
OFF .....switches RESUME and HOLD off
- 10 LINE OUT/📶 .....3.5mm headphone socket, socket to connect the player to another analogue audio input of an additional appliance
- 11 VOL ◀ .....adjusts the volume
- 12 OPEN ► .....opens the CD lid
- 13 4.5V DC .....socket for external power supply
- 14 .....typeplate
- 15 ESP .....**E**lectronic **S**kip **P**rotection ensures continuous CD playback regardless of vibrations and shocks

## TROUBLESHOOTING (excerpt from the Instruction For Use)

| Problem   | Possible cause  | Solution   |
|---|---|--|
| <b>No power, playback does not start</b>              | <b>Batteries</b>                                      |  |
|   | Batteries inserted incorrectly                        | Insert the batteries correctly   |
|   | Batteries are empty                                   | Change the batteries   |
|   | Contact pins are dirty                                | Clean them with a cloth  |
|   | <b>Mains adapter</b>                                  |  |
|   | Loose connection                                      | Connect the adapter securely   |
|   | <b>In-car use</b>                                     |  |
|   | Cigarette lighter is not powered when ignition is off | Switch on ignition or insert batteries   |
| <i>no disc</i> indication                             | CD-RW (CD-R) is not recorded properly                 | Use FINALIZE on the CD Recorder to complete the recording                        |
| <i>no disc</i> indication                             | The CD is badly scratched or dirty                    | Replace or clean the CD  |
|   | CD is not or incorrectly inserted                     | Insert a CD, label upwards   |
|   | The laser lens is steamed up                          | Wait until the lens has cleared  |
| <i>Hold</i> indication and/or no reaction to controls | <b>HOLD is activated</b>                              | <b>Deactivate HOLD</b>   |
|   | Electrostatic discharge                               | Disconnect the set from power supply or take out the batteries for a few seconds |

| Problem                              | Possible cause  | Solution                                       |
|--------------------------------------|---|--|
| <b>CD skips tracks</b>               | The CD is damaged or dirty  | Replace or clean the CD                        |
|                                      | RESUME, SHUFFLE or PROGRAM is active                                      | Switch RESUME, SHUFFLE or PROGRAM off          |
| <b>No sound or bad sound quality</b> | PAUSE is activated  | Press ►  |
|                                      | Loose, wrong or dirty connections   | Check and clean connections                    |
|                                      | Volume is not adjusted  | Adjust the volume                              |
|                                      | Malfunctions due to vicinity of active mobile phones                      | Keep the player away from active mobile phones |
|                                      | Strong magnetic fields near the player                                    | Change the player's position or connections    |
|                                      | <b>In-car use</b>   |  |
|                                      | Cassette adapter is inserted incorrectly                                  | Insert the cassette adapter correctly          |
|                                      | Temperature inside the car is too high/low                                | Let the player adjust to the temperature       |
|                                      | Cigarette lighter socket is dirty   | Clean the cigarette lighter socket             |
|                                      | Wrong playback direction of the car cassette player's autoreverse feature | Change the autoreverse direction               |

## FEATURES

| FEATURES OF CD-PORTABLE PRODUCT FAMILY "DORIS2 – PB2" | AZ7902 | AZ9001 | AZ9002 | AZ9003 | AZ9011 | AZ9101 | AZ9102 | AZ9103 | AZ9104 | AZ9106 | AZ9111 | AZ9113 | AZ9141 | AZ9142 | AZ9143 | AZ9201 | AZ9202 | AZ9203 | AZ9211 | AZ9213 | AZ9214 | AZ9218 |     |
|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-----|
| CD-RW COMPATIBILITY                                   | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●   |
| ELECTRONIC SKIP PROTECTION                            | -      | 12s    | 12s    | 12s    | 12s    | 40s    | 40s    | 40s    | 40s    | 40s    | 40s    | 45s    | 40s    | 40s    | 40s    | 45s    | 45s    | 45s    | 45s    | 45s    | 45s    | 45s    | 45s |
| ESP DRAM SIZE [Mbit]                                  | -      | 4      | 4      | 4      | 4      | 8      | 8      | 8      | 8      | 8      | 8      | 8      | 8      | 8      | 8      | 8      | 8      | 8      | 8      | 8      | 8      | 8      | 8   |
| HOLD / RESUME FUNCTION                                | ●/●    | ●/●    | ●/●    | ●/●    | ●/●    | ●/●    | ●/●    | ●/●    | ●/●    | ●/●    | ●/●    | ●/●    | ●/●    | ●/●    | ●/●    | ●/●    | ●/●    | ●/●    | ●/●    | ●/●    | ●/●    | ●/●    | ●/● |
| DBB STAGES  | 2      | 2      | 2      | 2      | 2      | 2      | 2      | 2      | 2      | 2      | 2      | 2      | 2      | 2      | 2      | 2      | 2      | 2      | 2      | 2      | 2      | 2      | 2   |
| ACOUSTIC FEEDBACK                                     | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●      | ●   |
| PROGRAM MEMORY  | 99     | 99     | 99     | 99     | 99     | 99     | 99     | 99     | 99     | 99     | 99     | 99     | 99     | 99     | 99     | 99     | 99     | 99     | 99     | 99     | 99     | 99     | 99  |
| RECHARGE NiCd / NiMH                                  | ●/●    | -/-    | ●/●    | -/-    | -/-    | -/-    | -/-    | -/-    | -/-    | -/-    | -/-    | -/-    | -/-    | -/-    | -/-    | -/-    | ●/●    | -/-    | -/-    | -/-    | -/-    | -/-    | -/- |
| CORD REMOTE CONTROL                                   | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | ●      | -   |
| LCD BACKLIGHT   | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -      | -   |
| LINE / OPT. DIGITAL OUTPUT                            | -/-    | -/-    | -/-    | -/-    | -/-    | -/-    | -/-    | -/-    | -/-    | -/-    | -/-    | -/-    | -/-    | -/-    | -/-    | -/-    | -/-    | -/-    | -/-    | -/-    | -/-    | -/-    | -/- |

## ACCESSORIES

| ACCESSORIES FOR CD-PORTABLE PRODUCT FAMILY "DORIS2 – PB2" |                | AZ7902 |     | AZ9001 |     | AZ9002 |     | AZ9003 |     | AZ9011 |     | AZ9101 |     | AZ9102 |     | AZ9103 |     | AZ9104 |     | AZ9106 |     | AZ9111 |     | AZ9113 |     | AZ9141 |     | AZ9142 |     | AZ9143 |     | AZ9201 |     | AZ9202 |     | AZ9203 |     | AZ9211 |     | AZ9213 |     | AZ9214 |     | AZ9218 |   |   |   |   |  |
|---|----------------|--------|-----|--------|-----|--------|-----|--------|-----|--------|-----|--------|-----|--------|-----|--------|-----|--------|-----|--------|-----|--------|-----|--------|-----|--------|-----|--------|-----|--------|-----|--------|-----|--------|-----|--------|-----|--------|-----|--------|-----|--------|-----|--------|---|---|---|---|--|
|   |                | /00    | /00 | /00z   | /05 | /11    | /17 | /00    | /05 | /01    | /09 | /10    | /18 | /19    | /00 | /17    | /17 | /17    | /17 | /16    | /17 | /17    | /17 | /17    | /17 | /17    | /17 | /17    | /17 | /17    | /17 | /00    | /00 | /05    | /11 | /13    | /10 | /00    | /00 | /17    | /17 | /17    | /17 |        |   |   |   |   |  |
| AY3170/00 AC/DC Adaptor                                   | 4822 219 10617 | X      | X   | X      |     |        | X   |        |     |        |     |        | X   |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |   |   |   |   |  |
| AY3170/02 AC/DC Adaptor                                   | 4822 219 10676 |        |     |        |     |        |     |        | X   |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |   |   |   |   |  |
| AY3170/05 AC/DC Adaptor                                   | 4822 219 10672 |        |     |        | X   |        |     | X      |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |   |   |   |   |  |
| AY3170/09 AC/DC Adaptor                                   | 4822 219 10679 |        |     |        |     |        |     |        |     | X      | X   |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |   |   |   |   |  |
| AY3170/10 AC/DC Adaptor                                   | 4822 219 10681 |        |     |        |     |        |     |        |     |        | X   |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |   |   |   |   |  |
| AY3170/12 AC/DC Adaptor                                   | 4822 219 10671 |        |     |        | X   |        |     |        |     |        |     |        |     |        | X   |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |   |   |   |   |  |
| AY3170/13A AC/DC Adaptor                                  | 3140 118 31590 |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |   |   |   |   |  |
| AY3170/17 AC/DC Adaptor                                   | 4822 219 10616 |        |     |        |     |        | X   |        |     |        |     |        | X   | X      | X   |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |   |   |   |   |  |
| AY3266/00 Pouch (Neoprene)                                | 12NC follows   |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |   |   |   |   |  |
| AY3362/00 Rechargeable Batt. NiMH                         | 3103 308 84120 | X      |     |        |     |        | X   | X      |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |   |   |   |   |  |
| AY3501/00 Car Adaptor Cassette                            | 4822 397 10059 | O      | O   | O      | O   | O      | O   | O      | X   | X      | X   | X      | X   | O      | O   | O      | X   | X      | X   | X      | X   | O      | O   | X      | X   | O      | O   | X      | X   | X      | X   | X      | O   | O      | O   | O      | O   | X      | O   | X      | O   | O      | X   | O      | X | O | X |   |  |
| AY3545/00 Car DC/DC Converter                             | 4822 219 10033 | O      | O   | O      | O   | O      | O   | O      | X   | X      | X   | X      | X   | O      | O   | O      | X   | X      | X   | X      | X   | O      | O   | X      | X   | O      | O   | X      | X   | X      | X   | X      | O   | O      | O   | O      | O   | X      | O   | X      | O   | O      | X   | O      | X | O | X |   |  |
| AY3677/00 Earphone (L-plug)                               | 4822 242 11004 | X      | X   | X      | X   | X      | X   | X      | X   | X      | X   | X      |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |   |   |   |   |  |
| AY3677/00S Earphone (straight plug)                       | 4822 242 11021 |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |   |   |   |   |  |
| AY3682/00 Headphone (L-plug)                              | 4822 242 11003 |        |     |        |     | X      |     |        |     |        |     |        | X   | X      | X   |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |   |   |   |   |  |
| AY3767/00 Cord Remote Control                             | 12NC follows   |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |     |        |   |   |   |   |  |
| AY3464 HiFi Cord (3.5mm L-plug→cinch)                     | 4822 320 11881 | O      | O   | O      | O   | O      | O   | O      | O   | O      | O   | O      | O   | O      | O   | O      | O   | O      | O   | O      | O   | O      | O   | O      | O   | O      | O   | O      | O   | O      | O   | O      | O   | O      | O   | O      | O   | O      | O   | O      | O   | O      | O   | O      | O | O | O | O |  |

X...supplied with the set, O...optional available

## SAFETY & WARNINGS

### ⓐ WARNING

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

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

### ⓑ 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 braceleterti d'une résistance de sécurité.

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

### Ⓓ WARNUNG

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

Unvorsichtige Behandlung im Reparaturfall kann die Lebensdauer drastisch reduzieren.

Sorgen Sie dafür, daß Sie im Reparaturfall über ein Pulsarmband mit Widerstand mit dem Massepotential des Gerätes verbunden sind.

Halten Sie Bauteile und Hilfsmittel ebenfalls auf diesem Potential.



### Ⓝ WAARSCHUWING

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

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

Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

### Ⓘ AVVERTIMENTO

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

La loro longevità potrebbe essere fortemente ridatta 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 del'apparecchio tramite un braccialetto a resistenza.

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

### ⓐ AVAILABLE ESD PROTECTION EQUIPMENT :

**anti-static table mat** large 1200x650x1.25mm  
small 600x650x1.25mm

**anti-static wristband**

**connection box** (3 press stud connections, 1MΩ)

**extendible cable** (2m, 2MΩ, to connect wristband to connection box)

**connecting cable** (3m, 2MΩ, to connect table mat to connection box)

**earth cable** (1MΩ, to connect any product to mat or to connection box)

**KIT ESD3** (combining all 6 prior products - small table mat)

**wristband tester**

4822 466 10953

4822 466 10958

4822 395 10223

4822 320 11307

4822 320 11305

4822 320 11306

4822 320 11308

4822 310 10671

4822 344 13999

### ⓐ

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

Safety components are marked by the symbol ▲

### ⓑ

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

Les composants de sécurité sont marqués ▲

### Ⓓ

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

Sicherheitsbauteile sind durch das Symbol ▲ markiert.

## SAFETY



### Ⓝ

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

### Ⓘ

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

ⓐ **DANGER:** Invisible laser radiation when open. AVOID DIRECT EXPOSURE TO BEAM.



### Ⓢ Varning !

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

### Ⓓ Advarsel !

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

### Ⓕ Varoitus !

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

### ⓐ

After servicing and before returning the set to customer perform a leakage current measurement test from all exposed metal parts to earth ground, to assure no shock hazard exists.

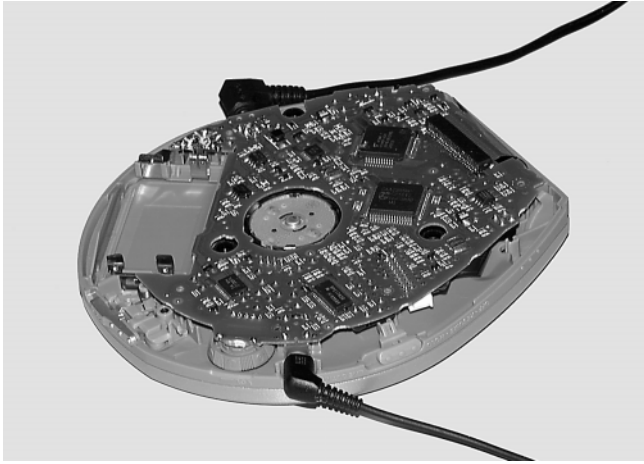
The leakage current must not exceed 0.5mA.

### ⓑ

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

## SERVICE HINTS

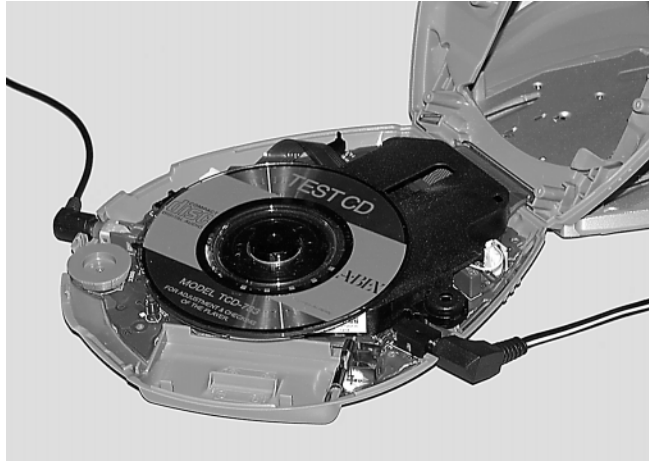
### REPAIR POSITION COPPERSIDE



To get access to the copperside of the printed board assembly proceed as follows:

1. Remove the bottom screws (6x)
2. Lift the bottom-cabinet
3. Supply the unit via external DC-socket
4. Take care that the door switch is closed during measurements

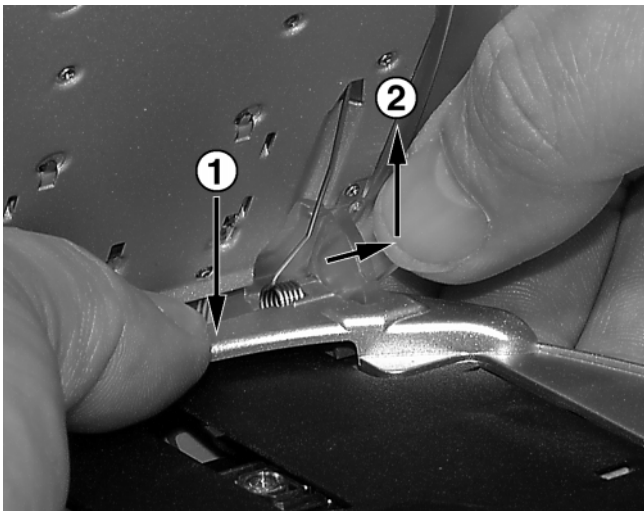
### REPAIR POSITION COMPONENTSIDE



To get access to the componentside of the printed board assembly proceed as follows:

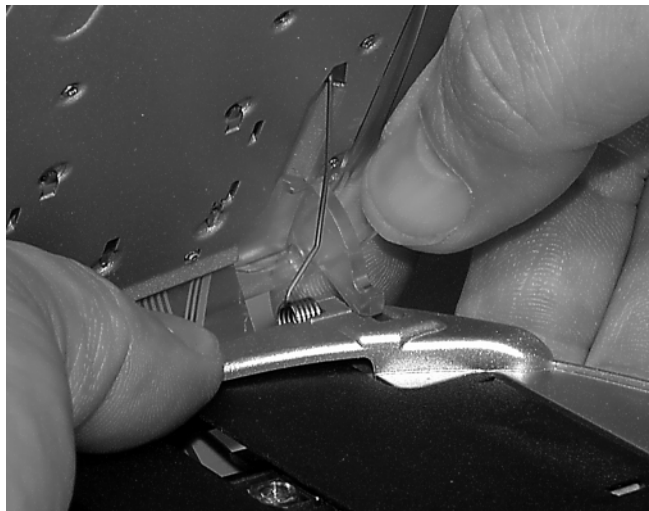
1. Remove the bottom screws (6x)
2. Open the CD-door
3. Lift the top-cabinet and put it backwards on the table
4. Supply the unit via the external DC-socket
5. Take care that the door switch is closed during measurements

### DISMANTLING THE CD-DOOR



To dismantle the CD-door proceed as follows:

1. Disconnect the membrane keyboard (flex-foil connector on copperside of printed board)
2. Smoothly bend the bridge of the cabinet downwards as shown in ①. Take care not to touch the lens
3. Smoothly pull out the right hinge of the CD-door as shown in ②.
4. Lift the CD-door



Remark: Do not use screwdrivers or tools like that. Sharp edges could damage hinge or cabinet part.

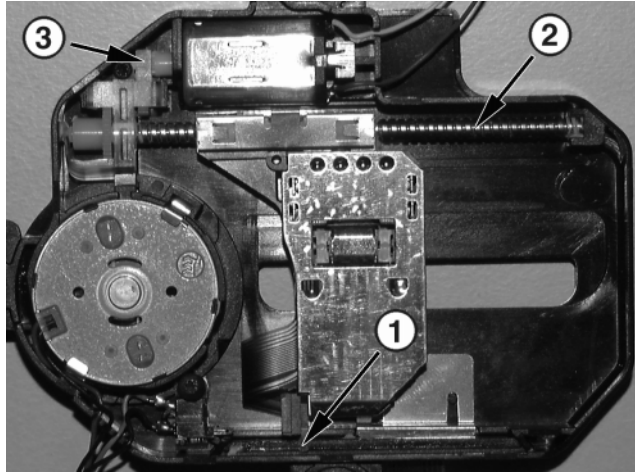


**VAM2103/08 – DRIVE CLEANING & LUBRICATION**

Lubrication of the CD-drive is only necessary in case of symptom “skipping tracks”.  
The reason can be dirt which sticks to the grease or the grease is getting aged.

Use an acid-free synthetic grease – i.e. “Tribol 9890-2” or equivalent.

Before greasing the mechanism first remove the old grease from the mechanism. Use a cotton swab dipped in alcohol to clean the mechanism.

**Cleaning the mechanism**

1. Clean the lower and upper sledge guidance plane (optical pick-up).
2. Clean the spindle shaft.
3. Clean the area between the worm gear, idler wheel and clamping spring.

**Lubricating the mechanism**

1. Put one dot of grease onto the upper sledge guidance plane on each side of the sledge. Move the sledge to the inner and outer position to spread the grease.  
Put one dot of grease onto the lower sledge guidance plane on each side of the sledge. Move the sledge to the inner and outer position to spread the grease.
2. Put one dot of grease onto the spindle shaft on both sides of the sledge. Move the sledge to the inner and outer position to spread the grease.
3. Put one dot of grease between the worm gear and the clamping spring.

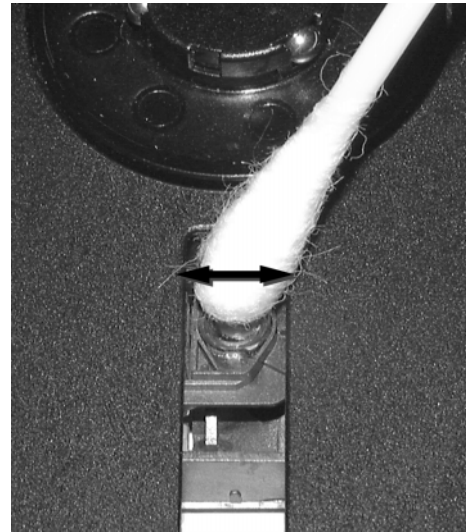
**VAM2103/08 – LENS CLEANING**

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

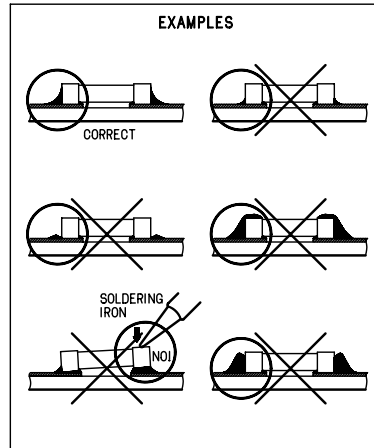
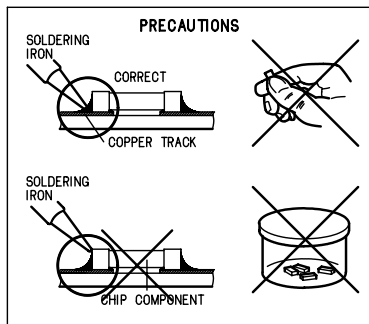
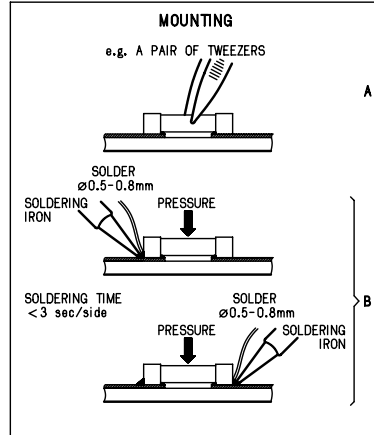
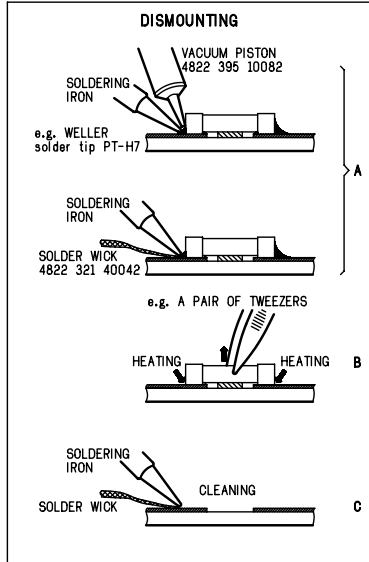
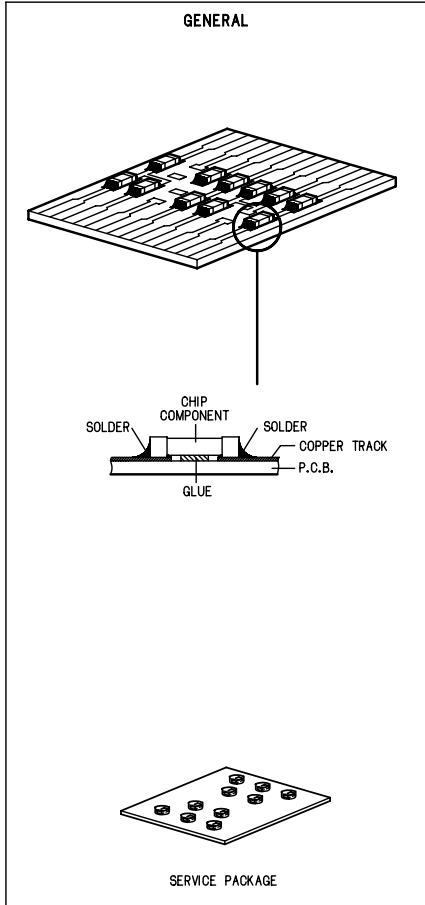
Because the material of the lens is synthetic and coated with a special anti-reflectivity layer, cleaning must be done with a non-aggressive cleaning fluid. It is advised to use “KODAK LENS CLEANER CAT 176 71 36”, available in normal photo shops.

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

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



**HANDLING CHIP COMPONENTS**



**SERVICE TOOLS**

**Audio signal disc SBC429**

**Playability test disc SBC444**

**Test disc 5** (disc without errors) + **Test disc 5A** (disc with dropout errors, black spots and fingerprints) **SBC426/SBC426A**

4822 397 30184

4822 397 30245

4822 397 30096

**ESD PROTECTION EQUIPMENT**

**Anti-static table mat** large 1200x650x1.25mm

small 600x650x1.25mm

**Anti-static wristband**

**Connection box** (3 press stud connections, 1MΩ)

**Extendible cable** (2m, 2MΩ, to connect wristband to connection box)

**Connecting cable** (3m, 2MΩ, to connect table mat to connection box)

**Earth cable** (1MΩ, to connect any product to mat or to connection box)

**KIT ESD3** (combining all 6 prior products - small table mat)

**Wristband tester**

4822 466 10953

4822 466 10958

4822 395 10223

4822 320 11307

4822 320 11305

4822 320 11306

4822 320 11308

4822 310 10671

4822 344 13999



## PIN DESCRIPTION OF INTEGRATED CIRCUITS

### TDA1300T – HF-PREAMPLIFIER AND LASER SUPPLY CIRCUIT (part of CD-drive VAM2103/08)

| Pin | Name | Direction                 | Description   |
|-----|------|---------------------------|---|
| 1   | O4   | HF-preamp → CD10          | output of current amplifier 4                               |
| 2   | O6   | HF-preamp → CD10          | output of current amplifier 6                               |
| 3   | O3   | HF-preamp → CD10          | output of current amplifier 3                               |
| 4   | O1   | HF-preamp → CD10          | output of current amplifier 1                               |
| 5   | O5   | HF-preamp → CD10          | output of current amplifier 5                               |
| 6   | O2   | HF-preamp → CD10          | output of current amplifier 2                               |
| 7   | LDON | CD10 → HF-preamp          | control pin for switching the laser on/off                  |
| 8   | VDDL | +2.7                      | laser supply voltage  |
| 9   | VRFE | HF-preamp →               | equalized output voltage of sum signal of amplifiers 1...4  |
| 10  | VRF  | HF-preamp →               | unequalized output  |
| 11  | HG   | GND                       | control pin for gain switch                                 |
| 12  | LS   | CD10 → HF-preamp          | control pin for double speed switch (switches equalization) |
| 13  | C    | external connection       | external capacitor (bandwidth of ALPC)                      |
| 14  | ADJ  | → HF-preamp               | reference input   |
| 15  | GND  | GND                       | 0V supply, substrate connection                             |
| 16  | LO   | HF-preamp → laser diode   | current output to laser diode                               |
| 17  | MI   | monitor diode → HF-preamp | laser monitor diode input                                   |
| 18  | VDD  | +3                        | positive supply voltage                                     |
| 19  | I2   | GND                       | photo detector input 2 (not used)                           |
| 20  | I5   | diode array → HF-preamp   | photo detector input 5 (satellite)                          |
| 21  | I1   | diode array → HF-preamp   | photo detector input 1 (central)                            |
| 22  | I3   | diode array → HF-preamp   | photo detector input 3 (central)                            |
| 23  | I6   | diode array → HF-preamp   | photo detector input 6 (satellite)                          |
| 24  | I4   | diode array → HF-preamp   | photo detector input 4 (central)                            |

### MPC17A50VM – 4-CHANNEL H-BRIDGE SERVODRIVER

| Pin | Name   | Direction                     | Description   |
|-----|--------|-------------------------------|---|
| 1   | CGND   | GND                           | ground (control part)                                   |
| 2   | VLG    | +2.7                          | power supply input (control part)                       |
| 3   | ERR2   | CD10 → servo driver           | error level input (slide error signal)                  |
| 4   | NI2    | → servo driver                | filter capacitor connection in ABS amp circuit section  |
| 5   | OP2    | → servo driver                | filter capacitor connection in ABS amp circuit section  |
| 6   | ERR1   | CD10 → servo driver           | error level input (focus error signal)                  |
| 7   | NI1    | → servo driver                | filter capacitor connection in ABS amp circuit section  |
| 8   | OP1    | → servo driver                | filter capacitor connection in ABS amp circuit section  |
| 9   | LIM    | → servo driver                | limit control level signal input                        |
| 10  | VR     | → servo driver                | control reference voltage input (VR=VLG/2)              |
| 11  | CLK    | → servo driver                | clock signal input                                      |
| 12  | OP3    | → servo driver                | filter capacitor connection in ABS amp circuit section  |
| 13  | NI3    | → servo driver                | filter capacitor connection in ABS amp circuit section  |
| 14  | ERR3   | CD10 → servo driver           | error level input (radial error signal)                 |
| 15  | OP4    | → servo driver                | filter capacitor connection in ABS amp circuit section  |
| 16  | NI4    | → servo driver                | filter capacitor connection in ABS amp circuit section  |
| 17  | ERR4   | CD10/μP → servo driver        | error level input (motor speed error signal)            |
| 18  | PHSW   | GND                           | CH4 mode setup (if PHSW=high, CH4 operates half-bridge) |
| 19  | POL    | CD10 →                        | CH4 polarity monitor output                             |
| 20  | CFL4   | → servo driver                | pin for connecting filter for capacitor                 |
| 21  | CFL3   | → servo driver                | pin for connecting filter for capacitor                 |
| 22  | OUT4A  | servo driver → disc motor     | H-bridge output A                                       |
| 23  | OUT4B  | servo driver → disc motor     | H-bridge output B                                       |
| 24  | VIN34  | +A                            | CH3 and CH4 output stage power supply                   |
| 25  | OUT3B  | servo driver → track actuator | H-bridge output B                                       |
| 26  | PGND34 | GND                           | CH3 and CH4 output stage ground                         |
| 27  | OUT3A  | servo driver → track actuator | H-bridge output A                                       |
| 28  | OUT1A  | servo driver → focus actuator | H-bridge output A                                       |
| 29  | PGND12 | GND                           | CH1 and CH2 output stage ground                         |
| 30  | OUT1B  | servo driver → focus actuator | H-bridge output B                                       |
| 31  | VIN12  | +A                            | CH1 and CH2 output stage power supply                   |
| 32  | OUT2B  | servo driver → slide motor    | H-bridge output B                                       |
| 33  | OUT2A  | servo driver → slide motor    | H-bridge output A                                       |
| 34  | CFL1   | → servo driver                | pin for connecting filter for capacitor                 |
| 35  | CFL2   | → servo driver                | pin for connecting filter for capacitor                 |
| 36  | VG     | VG                            | power supply input (predriver circuit)                  |

## SAA7324 – DECODER, DIGITAL SERVO IC AND D/A-CONVERTER CD10 (low voltage version)

| <i>Pin</i> | <i>Name</i> | <i>Direction</i>      | <i>Description</i>  |
|------------|-------------|-----------------------|---|
| 1          | HFREF       | → CD10                | comparator common mode input  |
| 2          | HFIN        | → CD10                | comparator signal input   |
| 3          | ISLICE      | CD10 →                | current feedback from data slicer   |
| 4          | VSSA1       | GND                   | analog ground 1   |
| 5          | VDDA1       | +2.7                  | analog supply voltage 1   |
| 6          | IREF        | CD10 →                | reference current output pin  |
| 7          | VRIN        | CD10 →                | reference voltage for servo ADC's   |
| 8          | D1          | HF-preamp → CD10      | unipolar current input (central diode signal input)                         |
| 9          | D2          | HF-preamp → CD10      | unipolar current input (central diode signal input)                         |
| 10         | D3          | HF-preamp → CD10      | unipolar current input (central diode signal input)                         |
| 11         | D4          | HF-preamp → CD10      | unipolar current input (central diode signal input)                         |
| 12         | R1          | HF-preamp → CD10      | unipolar current input (satellite diode signal input)                       |
| 13         | R2          | HF-preamp → CD10      | unipolar current input (satellite diode signal input)                       |
| 14         | VSSA2       | GND                   | analog ground 2   |
| 15         | CROUT       | CD10 → X-TAL          | crystal/resonator output  |
| 16         | CRIN        | X-TAL → CD10          | crystal/resonator input   |
| 17         | VDDA2       | +2.7                  | analog supply voltage 2   |
| 18         | LN          | CD10 →                | DAC left channel differential output - negative                             |
| 19         | LP          | CD10 →                | DAC left channel differential output - positive                             |
| 20         | VNEG        | → CD10                | DAC negative reference input  |
| 21         | VPOS        | → CD10                | DAC positive reference input  |
| 22         | RN          | CD10 →                | DAC right channel differential output - negative                            |
| 23         | RP          | CD10 →                | DAC right channel differential output - positive                            |
| 24         | SELPLL      | +2.7                  | selects whether internal clock multiplier PLL is used                       |
| 25         | TEST1       | GND                   | test control input 1; this pin should be tied low                           |
| 26         | CL16        | CD10 →                | 16.9344 MHz system clock output   |
| 27         | DATA        | CD10 → NPC            | serial data output (3-state)  |
| 28         | WCLK        | CD10 → NPC            | word clock output (3-state)   |
| 29         | SCLK        | CD10 → NPC            | serial bit clock output (3-state)   |
| 30         | EF          | CD10 →                | C2 error flag output (3-state)  |
| 31         | TEST2       | GND                   | test control input 2; this pin should be tied low                           |
| 32         | KILL        | CD10 → HF-preamp      | kill output (programmable; open-drain)                                      |
| 33         | VSSD1       | GND                   | digital ground 2  |
| 34         | V2/V3       | CD10 → NPC            | versatile I/O: input versatile pin 2 or output versatile pin 3 (open-drain) |
| 35         | WCLI        | NPC → CD10            | word clock input (for data loopback to DAC)                                 |
| 36         | SDI         | NPC → CD10            | serial data input (for data loopback to DAC)                                |
| 37         | SCLI        | NPC → CD10            | serial bit clock input (for data loopback to DAC)                           |
| 38         | RESETn      | µP → CD10             | power-on reset input (active low)   |
| 39         | SDA         | µP ↔ CD10             | microcontroller interface data I/O line (open-drain output)                 |
| 40         | SCL         | µP → CD10             | microcontroller interface clock line input                                  |
| 41         | RAB         | µP → CD10             | microcontroller interface R/W and load control line input (4-wire bus mode) |
| 42         | SILD        | µP → CD10             | microcontroller interface R/W and load control line input (4-wire bus mode) |
| 43         | STATUS      | CD10 →                | servo interrupt request line/decoder status register output (open-drain)    |
| 44         | TEST3       | GND                   | test control input 3; this pin should be tied low                           |
| 45         | RCK         | → CD10                | subcode clock input   |
| 46         | SUB         | CD10 →                | P-to-W subcode bits output (3-state)  |
| 47         | SFSY        | CD10 → µP             | subcode frame sync output (3-state)   |
| 48         | SBSY        | CD10 → NPC            | subcode block sync output (3-state)   |
| 49         | CL11/4      | CD10 →                | 11.2896 MHz or 4.2336 MHz (for microcontroller) clock output                |
| 50         | VSSD2       | GND                   | digital ground 3  |
| 51         | DOBM        | CD10 →                | bi-phase mark output (externally buffered; 3-state)                         |
| 52         | VDDD1P      | +2.7                  | digital supply voltage 2 for periphery                                      |
| 53         | CFLG        | CD10 →                | correction flag output (open-drain)   |
| 54         | RA          | CD10 → servo driver   | radial actuator output  |
| 55         | FO          | CD10 → servo driver   | focus actuator output   |
| 56         | SL          | CD10 → servo driver   | slide control output  |
| 57         | VDDD2C      | +2.7                  | digital supply voltage 3 for core   |
| 58         | VSSD3       | GND                   | digital ground 4  |
| 59         | MOTO1       | CD10 → servo driver   | motor output 1; versatile (3-state)   |
| 60         | MOTO2       | CD10 →                | motor output 2; versatile (3-state)   |
| 61         | V4          | CD10 → HF-EQ switch   | versatile output pin 4  |
| 62         | V5          | CD10 → HF-GAIN switch | versatile output pin 5  |
| 63         | V1          | innerswitch → CD10    | versatile input pin 1   |
| 64         | LDON        | CD10 → HF-preamp      | laser drive on output (open-drain)  |

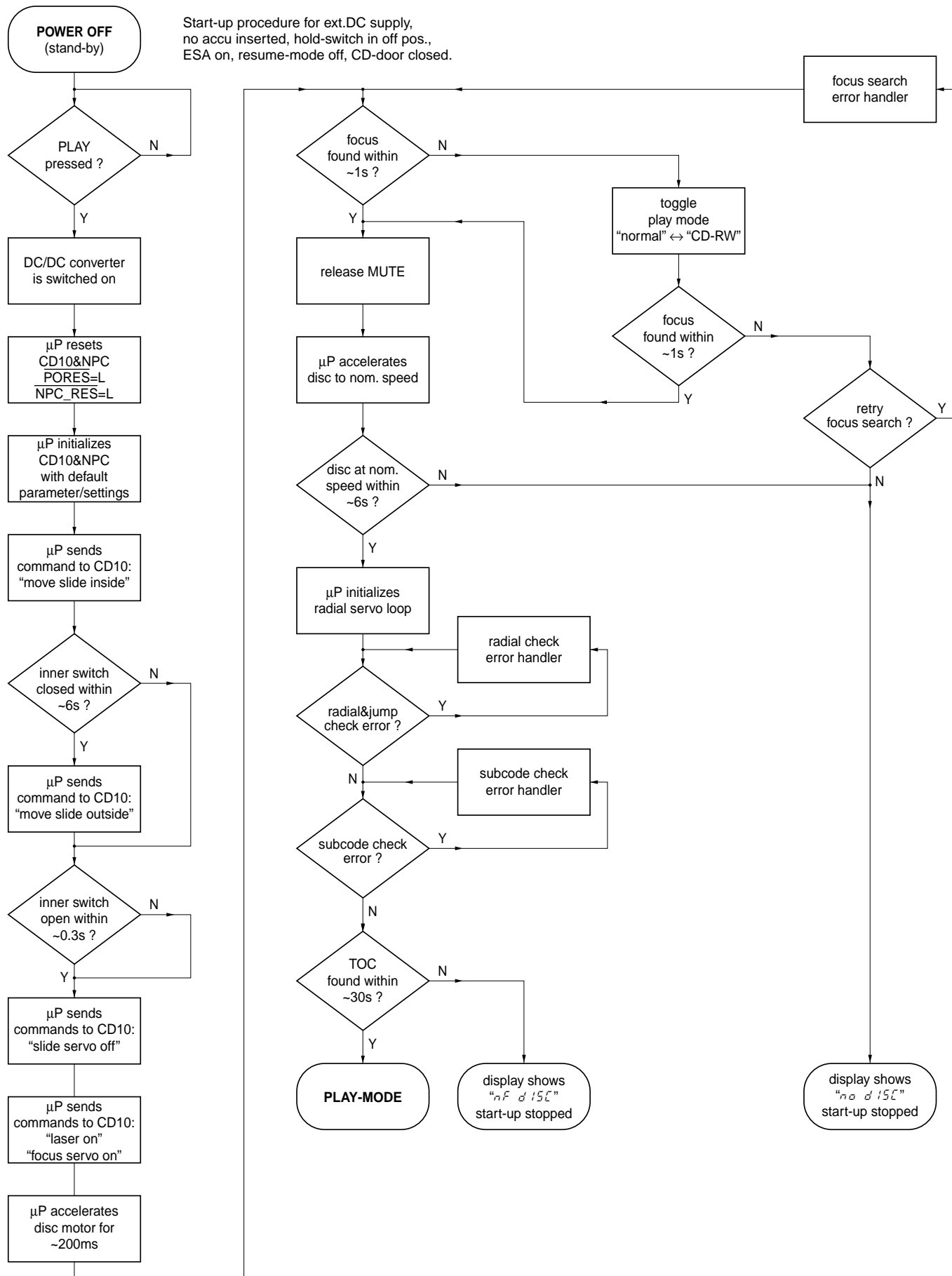
## SM5903BF – COMPRESSION-TYPE ANTI-SHOCK MEMORY CONTROLLER NPC

| <i>Pin</i> | <i>Name</i> | <i>Direction</i> | <i>Description</i>                    |
|------------|-------------|------------------|---------------------------------------|
| 1          | VDD         | +2.7             | supply voltage                        |
| 2          | UC1         | NPC ↔            | μP interface extension I/O line 1     |
| 3          | UC2         | NPC ↔            | μP interface extension I/O line 2     |
| 4          | UC3         | NPC ↔            | μP interface extension I/O line 3     |
| 5          | UC4         | NPC ↔            | μP interface extension I/O line 4     |
| 6          | UC5         | NPC ↔            | μP interface extension I/O line 5     |
| 7          | TEST1/DIT   | NPC →            | digital audio interface output        |
| 8          | TEST2       | +2.7             | test pin                              |
| 9          | CLK         | CD10 → NPC       | 16.9344MHz clock input                |
| 10         | VSS         | GND              | ground                                |
| 11         | YSRDATA     | CD10 → NPC       | audio serial data input               |
| 12         | YLRCK       | CD10 → NPC       | audio serial L/R clock input          |
| 13         | YSCK        | CD10 → NPC       | audio serial bit clock input          |
| 14         | ZSCK        | NPC → CD10       | audio serial bit clock output         |
| 15         | ZLRCK       | NPC → CD10       | audio serial L/R clock output         |
| 16         | ZSRDATA     | NPC → CD10       | audio serial data output              |
| 17         | YFLAG       | CD10 → NPC       | signal processor IC RAM overflow flag |
| 18         | YFCLK       | GND              | crystal-controlled frame clock input  |
| 19         | YBLKCK      | CD10 → NPC       | subcode block clock signal output     |
| 20         | RESET       | μP → NPC         | system reset input (active low)       |
| 21         | ZSENSE      | NPC → μP         | μP interface status output            |
| 22         | VDD2        | +3               | supply voltage                        |
| 23         | YDMUTE      | GND              | forced mute input                     |
| 24         | YMLD        | μP → NPC         | μP interface latch clock input        |
| 25         | YMDATA      | μP → NPC         | μP interface serial data input        |
| 26         | YMCLK       | μP → NPC         | μP interface shift clock input        |
| 27         | OE          | NPC → DRAM       | DRAM OE control output (active low)   |
| 28         | CAS         | NPC → DRAM       | DRAM CAS control output (active low)  |
| 29         | D2          | NPC ↔ DRAM       | DRAM data input/output 2              |
| 30         | D3          | NPC ↔ DRAM       | DRAM data input/output 3              |
| 31         | D0          | NPC ↔ DRAM       | DRAM data input/output 0              |
| 32         | D1          | NPC ↔ DRAM       | DRAM data input/output 1              |
| 33         | WE          | NPC → DRAM       | DRAM WE control output (active low)   |
| 34         | RAS         | NPC → DRAM       | DRAM RAS control output (active low)  |
| 35         | A9          | NPC → DRAM       | DRAM address output 9                 |
| 36         | A8          | NPC → DRAM       | DRAM address output 8                 |
| 37         | A7          | NPC → DRAM       | DRAM address output 7                 |
| 38         | A6          | NPC → DRAM       | DRAM address output 6                 |
| 39         | A5          | NPC → DRAM       | DRAM address output 5                 |
| 40         | A4          | NPC → DRAM       | DRAM address output 4                 |
| 41         | A0          | NPC → DRAM       | DRAM address output 0                 |
| 42         | A1          | NPC → DRAM       | DRAM address output 1                 |
| 43         | A2          | NPC → DRAM       | DRAM address output 2                 |
| 44         | A3          | NPC → DRAM       | DRAM address output 3                 |

## TA2120FN – Stereo Headphone Amplifier

| <i>Pin</i> | <i>Name</i> | <i>Direction</i>          | <i>Description</i>   |
|------------|-------------|---------------------------|--|
| 1          | DBB NF      | → headphone-amp           | NF of DBB amplifier  |
| 2          | ADD OUT     | headphone-amp →           | output of ADD amplifier  |
| 3          | RF IN       | → headphone-amp           | terminal for ripple filter circuit                             |
| 4          | PWC         | → headphone-amp           | center amplifier on/off switch (open = on)                     |
| 5          | VCC         | +A/2.7                    | positive supply voltage  |
| 6          | B           | headphone-amp → HP-socket | output of power amplifier                                      |
| 7          | C           | headphone-amp → HP-socket | output of center amplifier                                     |
| 8          | A           | headphone-amp → HP-socket | output of power amplifier                                      |
| 9          | GND         | GND                       | ground of power amplifier                                      |
| 10         | MIX OUT     | headphone-amp →           | output of power amplifier (mixed)                              |
| 11         | ALC IN      | → headphone-amp           | input terminal for ALC detector circuit                        |
| 12         | ALC DET     | → headphone-amp           | smoothing for ALC detection (GND = ALC off, open = ALC ON)     |
| 13         | ATT         | → headphone-amp           | power amplifier gain switch (open/VCC = ATT off, GND = ATT on) |
| 14         | IN A        | → headphone-amp           | input of power amplifier                                       |
| 15         | IN B        | → headphone-amp           | input of power amplifier                                       |
| 16         | GND         | GND                       | ground of input stage in power amplifier                       |
| 17         | BEEP IN     | μP → headphone-amp        | input terminal for beep sound                                  |
| 18         | MUTE TC     | → headphone-amp           | terminal for mute smoothing                                    |
| 19         | MUTE SW     | CD10/μP → headphone-amp   | power mute switch (GND/open = mute off, VCC = mute on)         |
| 20         | POWER       | → headphone-amp           | power switch (VCC = power on, GND/open = power off)            |
| 21         | BIAS        | headphone-amp →           | BIAS voltage   |
| 22         | BIAS IN     | → headphone-amp           | filter terminal for BIAS circuit                               |
| 23         | DBB SW      | μP → headphone-amp        | DBB on/off switch (open/VCC = DBB on, GND = DBB off)           |
| 24         | DBB OUT     | headphone-amp →           | Output of DBB amplifier (terminal for filter)                  |

# START-UP PROCEDURE – FLOW CHART



## SERVICE TEST PROGRAM

### 1. PRELIMINARY SETUP

- To enter the service test program open the CD-door and hold the buttons "MODE" & "NEXT" depressed while turning POWER ON (i.e. connecting the AC/DC adaptor).
- The display shows the software version of the built-in  $\mu\text{P}$  (i.e. "5 - 13"). Versions are counted from "00" onwards; that means the higher the number the newer the software.
- The program is now in the main menu – various tests can be entered by pressing the corresponding buttons (see flow chart on next page or detailed description of available tests below).
- To exit the service test program press the "STOP" button or disconnect the set from the power source.

### 2. DISPLAY TEST

Purpose: Check functionality of display and display driver.

- To enter the display test start the service test program and press the "NEXT" button.
- The display shows test pattern1. All segments are activated for finding open circuits (see flow chart on next page).
- To jump to the next pattern press the "NEXT" button.
- The display shows test pattern2. All alternate pins (2, 4, ...) are activated for finding short circuits (see flow chart on next page).
- To jump back to test pattern1 press the "NEXT" button, to exit the display test and return to the main menu press the "STOP" button.

### 3. KEY TEST

Purpose: Check operation of keys and cord remote control.

- To enter the key test start the service test program and press the "MODE" button.
- The display shows "- -".
- Hold key depressed and check corresponding key code on the display. Key codes can be found in table1 (see flow chart on next page).
- To exit the key test and return to the main menu press the "STOP" button.

### 4. PLAYBACK TEST WITH ERROR ANALYSIS

Purpose: Analyze errors that occur during playback and search for intermittent failures.

- To enter the playback test start the service test program and press the "DBB" button.
- To start the error analysis press the "PLAY" button. Note that the playback test can only be entered if the CD-door is closed.
- The set will read the TOC and start playback.

As long as the playback is free of errors the display shows track and time information like in normal play-mode. In case of errors corresponding error codes will be displayed. The meaning of these error codes can be found in table2 (see flow chart on next page).

Note: Errors can either be "fatal" or "non fatal". Fatal errors always stop the playback, non fatal errors only cause a short interruption of the music. Fatal errors are displayed as long as the set is connected to the power source, non fatal errors are displayed until a new error occurs or a button is pressed.

- To stop the playback test disconnect the set from the power source.

### 5. SERVO TEST

Purpose: Check door switch, inner switch of CD-drive, movement of slide and acceleration of discmotor.

- To enter the servo test start the service test program and press the "PLAY" button.
- The display shows "5 xy".  
"x" indicates state of door switch;  
"y" indicates state of inner switch.  
 $x,y = "0"$  means switch is closed; "1" means switch is open.
- To move slide outside hold the "NEXT" button depressed.
- To move slide inside hold the "PREV" button depressed.
- To accelerate the discmotor clockwise hold the "MODE" button depressed.
- To accelerate the discmotor counter-clockwise hold the "PROG" button depressed.
- To enter the focus test press the "PLAY" button, to exit the servo test and return to the main menu press the "STOP" button.

### 6. FOCUS TEST

Purpose: Check movement of lens and operation of focus servo in "normal" and "CD-RW compatible" mode.

Since the CD-RW reflects much less light than an ordinary CD-A, the gain of the HF-amplifier stage and the sensitivity of the ADC inside the signal processor "CD10" must be increased.  
The gain is switched via the HF-GAIN line (pin62 of CD10), the ADC-sensitivity is switched via software ( $\mu\text{P} \rightarrow \text{CD10}$ ).  
During start-up the correct mode is chosen automatically; in the service test program it can be switched manually in order to allow individual measurements in both conditions.

- The focus servo loop is switched on and the set starts searching the focus ("focus ramping"). As soon as the focus has been found the focus servo loop is closed and the state of the focus is monitored continuously.
- If the focus is OK the display shows " F", else "- F".
- The ESP-flag indicates the playback mode.  
ESP-flag off means "normal" playback mode (default setting).  
ESP-flag on means "CD-RW compatible" playback mode.
- To toggle between playback modes press the "DBB" button.
- To move slide outside hold the "NEXT" button depressed.
- To move slide inside hold the "PREV" button depressed.
- To accelerate the discmotor clockwise hold the "MODE" button depressed.
- To accelerate the discmotor counter-clockwise hold the "PROG" button depressed.
- In case the focus is OK the discmotor test can be entered by pressing the "PLAY" button, to exit the focus test and return to the main menu press the "STOP" button.

### 7. DISCMOTOR TEST

Purpose: Check speed regulation of discmotor.

- The speed regulation is switched on and the discmotor starts rotating. If the speed reaches 75% of the nom. speed the display shows " d", else "- d".
- In parallel also the state of the focus is monitored continuously (display " F" or "- F").
- In case the disc speed is OK and the focus is OK the radial test can be entered by pressing the "PLAY" button, to exit the discmotor test and return to the main menu press the "STOP" button.

### 8. RADIAL TEST

Purpose: Check if radial loop locks and an audio signal is audible at the headphone output.

- The radial servo loop is switched on, mute is released and the audio signal is audible. If the system is on track the display shows " r", else "- r".
- In parallel also the disc speed (display " d" or "- d") and the state of the focus (display " F" or "- F") are monitored continuously.  
Note: In case of radial errors the audio output is muted and muting is not released automatically when the systems recovers from the error. "- r" remains on the display.  
To open mute again press the "NEXT" or "PREV" button.
- To jump 10 tracks outside press the "NEXT" button.
- To jump 10 tracks inside press the "PREV" button.
- To exit the radial test and return to the main menu press the "STOP" button, to exit the service test program disconnect the set from the power source.

#### Important remark:

In radial test mode data to the DRAM is written at 1.2 times the nominal speed, and read from the DRAM at nominal speed. Because writing is done faster than reading the DRAM gets full after a certain time.

In normal play mode the system would now wait until the DRAM is partly emptied again, jump backwards and resume filling at the last written position. However, in radial test mode the jumps would disturb measurements on the radial servo loop. Therefore this function has been disabled and filling restarts immediately from the current position of the pick-up unit. As a result "jumps" are audible during playback.



# SERVICE TEST PROGRAM – FLOW CHART

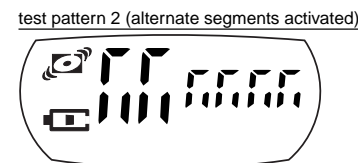
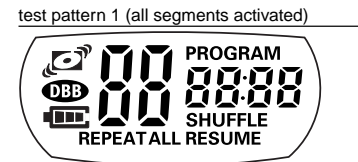
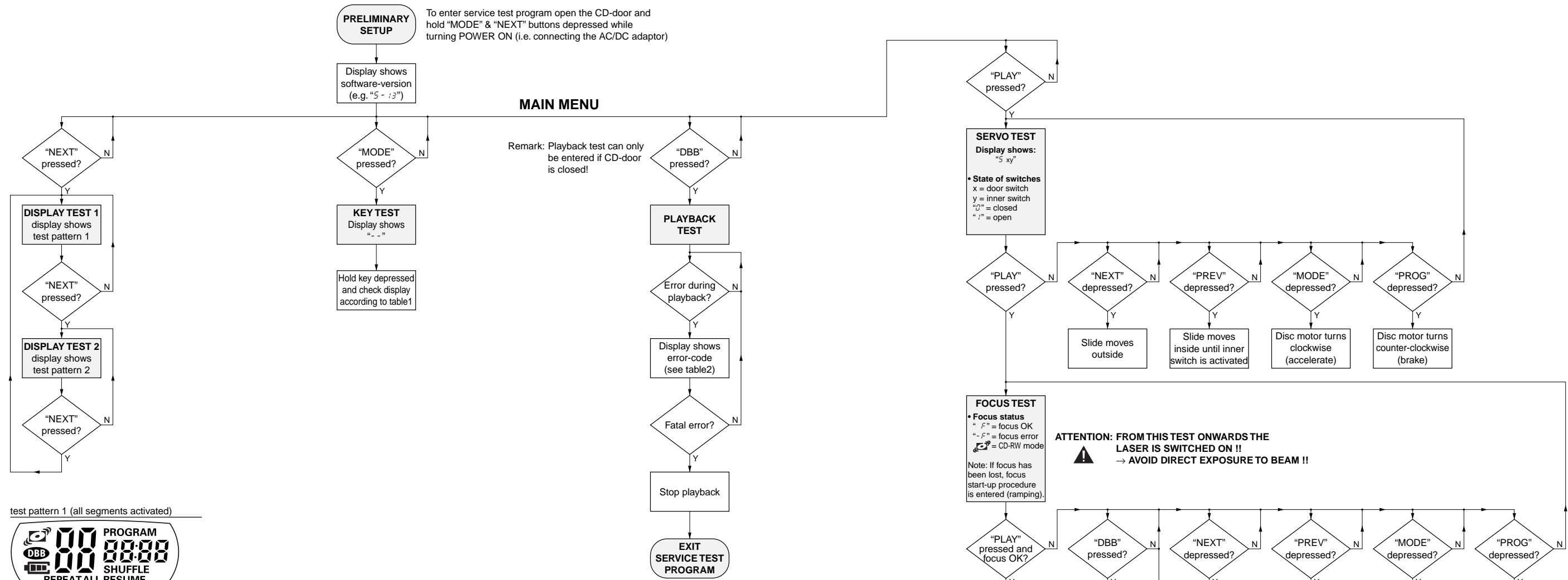


table1 – key test

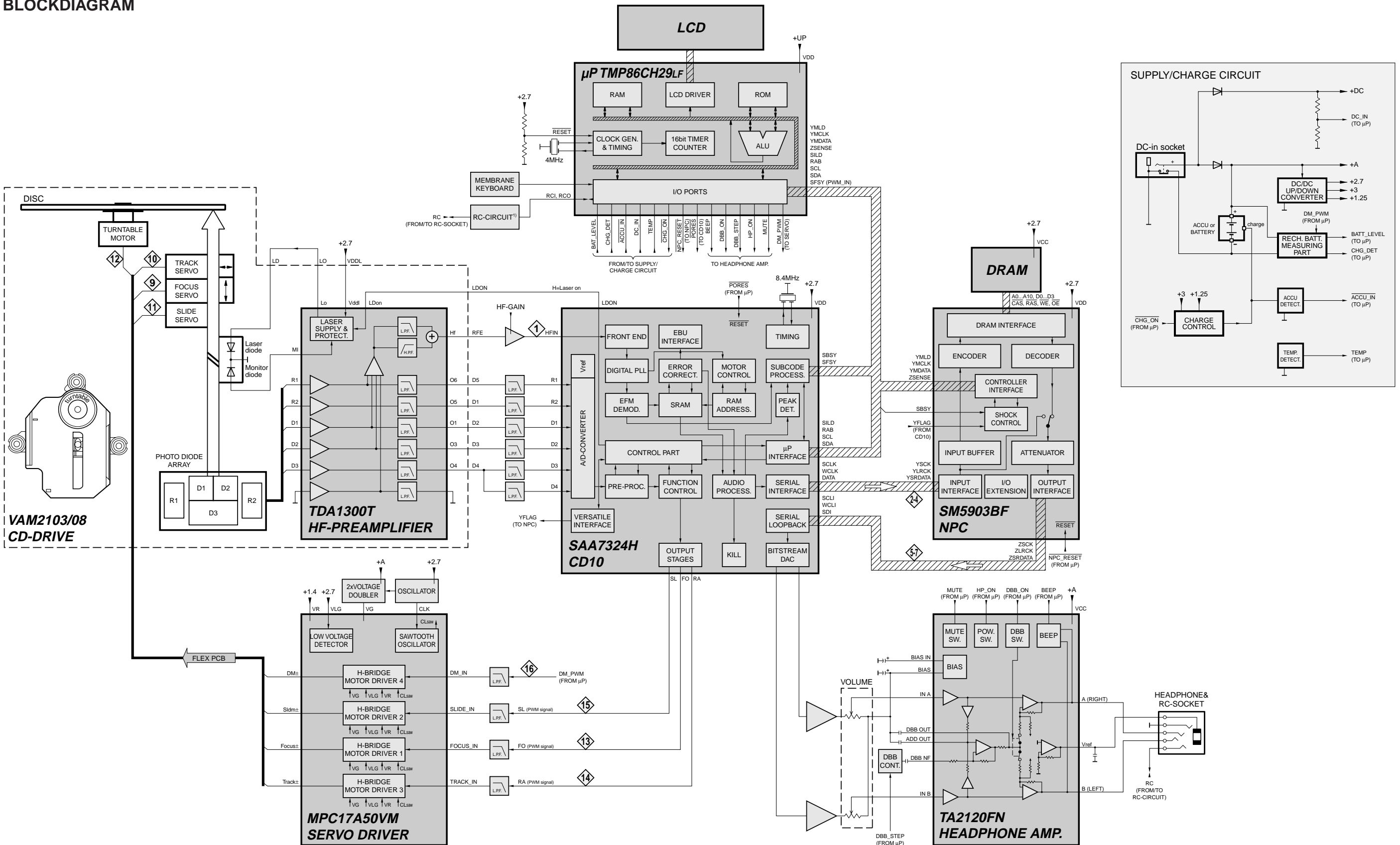
|                                    | DISPLAY SET |
|------------------------------------|-------------|
| <b>KEYS OF SET</b>                 |             |
| DBB                                | 1           |
| PROGRAM                            | 2           |
| MODE                               | 3           |
| PLAY                               | 5           |
| NEXT                               | 6           |
| PREVIOUS                           | 7           |
| ESP (not for AZ7902)               | 8           |
| <b>KEYS OF CORD REMOTE CONTROL</b> |             |
| STOP                               | 4 r c       |
| PLAY                               | 5 r c       |
| NEXT                               | 6 r c       |

Press "STOP" on the CD-player to exit the key test.

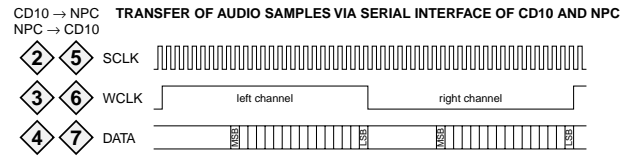
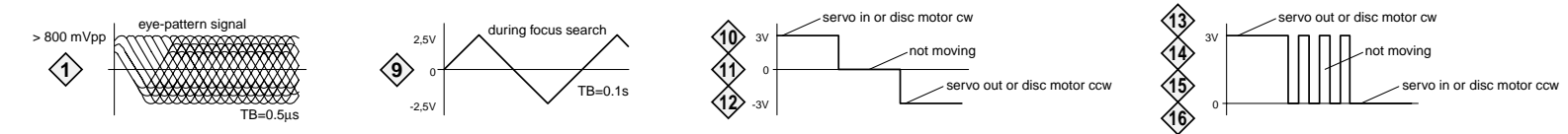
table2 – playback error analysis

| CODE   | ERROR                 | TYPE      | CAUSE  |
|--------|-----------------------|-----------|--|
| E 1000 | focus error           | non fatal | Focus point lost for at least 3ms.   |
| E 1001 | radial error          | non fatal | The radial servo was offtrack for a certain amount of time.  |
| E 1002 | sledge in error       | non fatal | The slide did not reach it's inner pos. (inner switch of CD-drive doesn't close) within approx. 6 seconds.   |
| E 1003 | sledge out error      | non fatal | The slide did not come out of it's inner pos. (inner switch of CD-drive is open) within approx. 250ms.   |
| E 1004 | DRAM filling error    | non fatal | The DRAM controller was not able to connect two consecutive audio frames. The microcontroller had to perform a direct audio connection that produces audible clicks. |
| E 1005 | jump error            | non fatal | The offtrack values don't decrease properly when jumping tracks, the jump destination could not be found.  |
| E 1006 | subcode error         | non fatal | No valid subcode for approx. 230ms.  |
| E 1008 | turntable motor error | fatal     | During start-up, the disc speed did not reach 75% of the nom. speed within approx. 6 seconds.  |
| E 1020 | focus search error    | fatal     | The focus point could not be found within approx. 10 seconds (no valid TOC info), resp. 30 seconds (valid TOC info).   |

BLOCKDIAGRAM

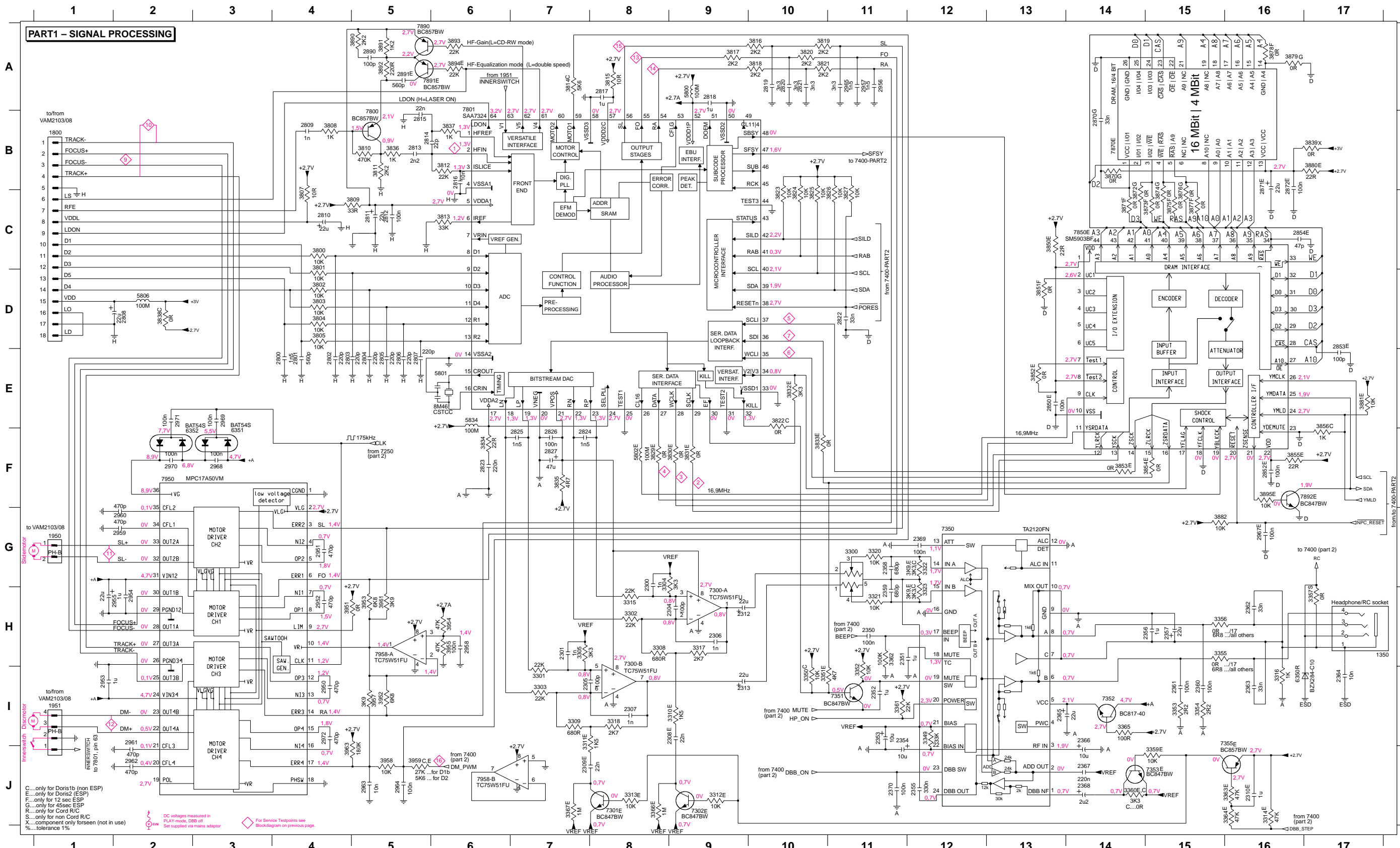


VAM2103/08 CD-DRIVE



1) not on all versions

|          |          |          |          |          |          |         |          |          |          |          |          |          |          |         |          |          |          |          |         |         |          |          |          |          |          |          |          |          |         |           |           |           |           |
|----------|----------|----------|----------|----------|----------|---------|----------|----------|----------|----------|----------|----------|----------|---------|----------|----------|----------|----------|---------|---------|----------|----------|----------|----------|----------|----------|----------|----------|---------|-----------|-----------|-----------|-----------|
| 1350 H17 | 2305 I7  | 2313 I9  | 2356 H14 | 2363 I16 | 2370 J11 | 2806 E5 | 2813 B5  | 2820 A10 | 2827 F7  | 2872 B16 | 2954 H2  | 2961 I2  | 2969 E3  | 3303 I7 | 3312 J9  | 3320 G11 | 3352 H11 | 3360 J14 | 3367 J7 | 3807 C4 | 3814 A7  | 3821 A10 | 3829 F8  | 3836 B5  | 3853 F14 | 3873 C15 | 3880 B17 | 3894 A6  | 3957 I5 | 5802 F8   | 7300-B H8 | 7355 I16  | 7892 F16  |
| 1800 B1  | 2306 H9  | 2350 H11 | 2357 H15 | 2364 I17 | 2800 E4  | 2807 E5 | 2814 B5  | 2821 A10 | 2850 E13 | 2890 A5  | 2955 H1  | 2962 J2  | 2970 F2  | 3304 G8 | 3313 J8  | 3321 H11 | 3353 H15 | 3361 H11 | 3800 C4 | 3808 B4 | 3815 A8  | 3822 E10 | 3830 F9  | 3837 B6  | 3854 F15 | 3874 C15 | 3881 E17 | 3895 F16 | 3958 J5 | 5806 D2   | 7301 J8   | 7800 B5   | 7950 F4   |
| 1950 G1  | 2307 I8  | 2351 H11 | 2358 G11 | 2365 I13 | 2801 E4  | 2808 D2 | 2815 B5  | 2822 D11 | 2852 F16 | 2891 A5  | 2956 A11 | 2963 J5  | 2971 E2  | 3305 H7 | 3314 J16 | 3322 G12 | 3354 H15 | 3362 H11 | 3801 D4 | 3809 C5 | 3816 A10 | 3823 C10 | 3831 F9  | 3838 D2  | 3855 F16 | 3875 C15 | 3882 G15 | 3891 H4  | 3951 H4 | 5834 E6   | 7302 J9   | 7801 B6   | 7950 A H5 |
| 1951 J1  | 2308 I9  | 2352 H11 | 2359 H11 | 2366 I14 | 2802 E4  | 2809 B4 | 2816 B6  | 2825 F7  | 2853 D17 | 2950 H4  | 2957 A11 | 2964 J5  | 2972 I4  | 3308 H8 | 3315 H8  | 3323 H12 | 3355 H15 | 3363 J16 | 3802 D4 | 3810 B5 | 3817 A9  | 3824 C10 | 3832 E10 | 3839 B17 | 3856 F17 | 3876 C15 | 3883 A5  | 3952 I5  | 5835 H5 | 6350 I16  | 7350 G12  | 7850 C14  | 7958-B J6 |
| 2300 G8  | 2309 I7  | 2353 H11 | 2360 H11 | 2367 J14 | 2803 E4  | 2810 B4 | 2817 A8  | 2824 F7  | 2854 C16 | 2951 G4  | 2958 H6  | 2965 A11 | 3000 G11 | 3309 I7 | 3316 H6  | 3349 H12 | 3356 H15 | 3364 H16 | 3803 D4 | 3811 B5 | 3818 A10 | 3825 C10 | 3833 F10 | 3850 C13 | 3870 B4  | 3877 C15 | 3891 A5  | 3953 J5  | 6351 E3 | 7351 H11  | 7870 B14  | 7958-B J6 |           |
| 2301 H7  | 2310 J16 | 2354 H11 | 2361 H15 | 2368 J14 | 2804 E5  | 2811 C5 | 2818 A9  | 2823 F8  | 2850 B7  | 2952 H4  | 2959 G2  | 2967 G16 | 3001 I7  | 3310 I9 | 3317 H9  | 3350 H10 | 3357 H17 | 3365 H14 | 3804 D4 | 3812 B6 | 3819 A10 | 3826 C11 | 3834 F6  | 3851 D13 | 3871 C14 | 3878 A16 | 3892 A5  | 3954 H6  | 5800 A9 | 6352 F2   | 7352 H14  | 7890 A5   | 7958-B J6 |
| 2304 H9  | 2312 H9  | 2355 J12 | 2362 H16 | 2369 G12 | 2805 E5  | 2812 C5 | 2819 A10 | 2826 F7  | 2871 B16 | 2953 I1  | 2960 G2  | 2968 F3  | 3002 H8  | 3311 I7 | 3318 I8  | 3351 I10 | 3359 J15 | 3366 J8  | 3805 D4 | 3813 C6 | 3820 A10 | 3827 C11 | 3835 F7  | 3852 E13 | 3872 C14 | 3879 A16 | 3893 A6  | 3955 H6  | 5801 E6 | 7300-A H9 | 7353 J15  | 7891 A6   | 7958-B J6 |



# PART2 - CONTROL

A

A

B

B

C

C

D

D

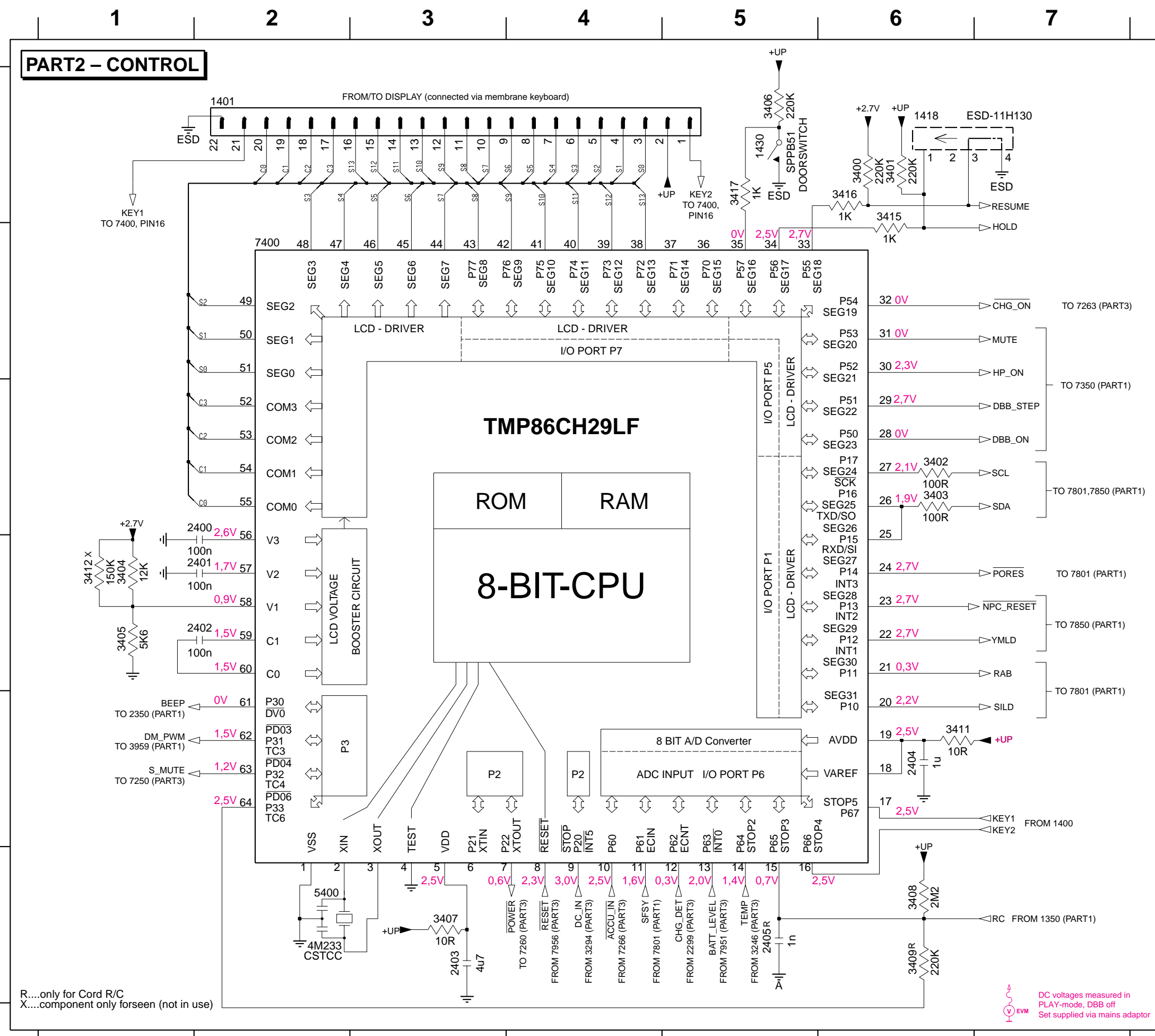
E

E

F

F

- 1401 A5
- 1418 A6
- 1430 A5
- 2400 C2
- 2401 D2
- 2402 D2
- 2403 F3
- 2404 E6
- 2405 F5
- 3400 A6
- 3401 A6
- 3402 C6
- 3403 C6
- 3404 D1
- 3405 D1
- 3406 A5
- 3407 F3
- 3408 F6
- 3409 F6
- 3411 E6
- 3412 D1
- 3415 A6
- 3416 A6
- 3417 A5
- 5400 F2
- 7400 B2

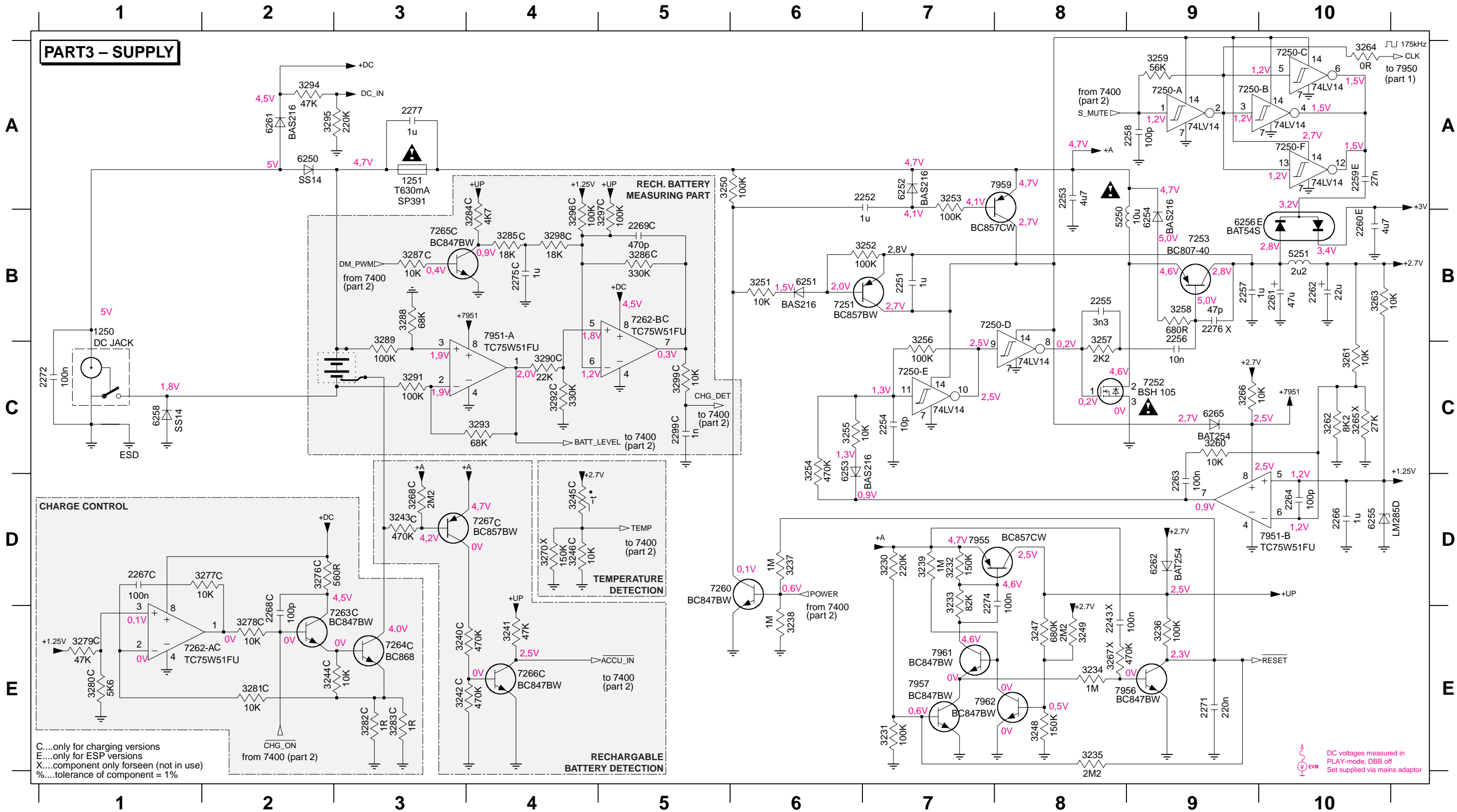


R....only for Cord R/C  
 X....component only forseen (not in use)

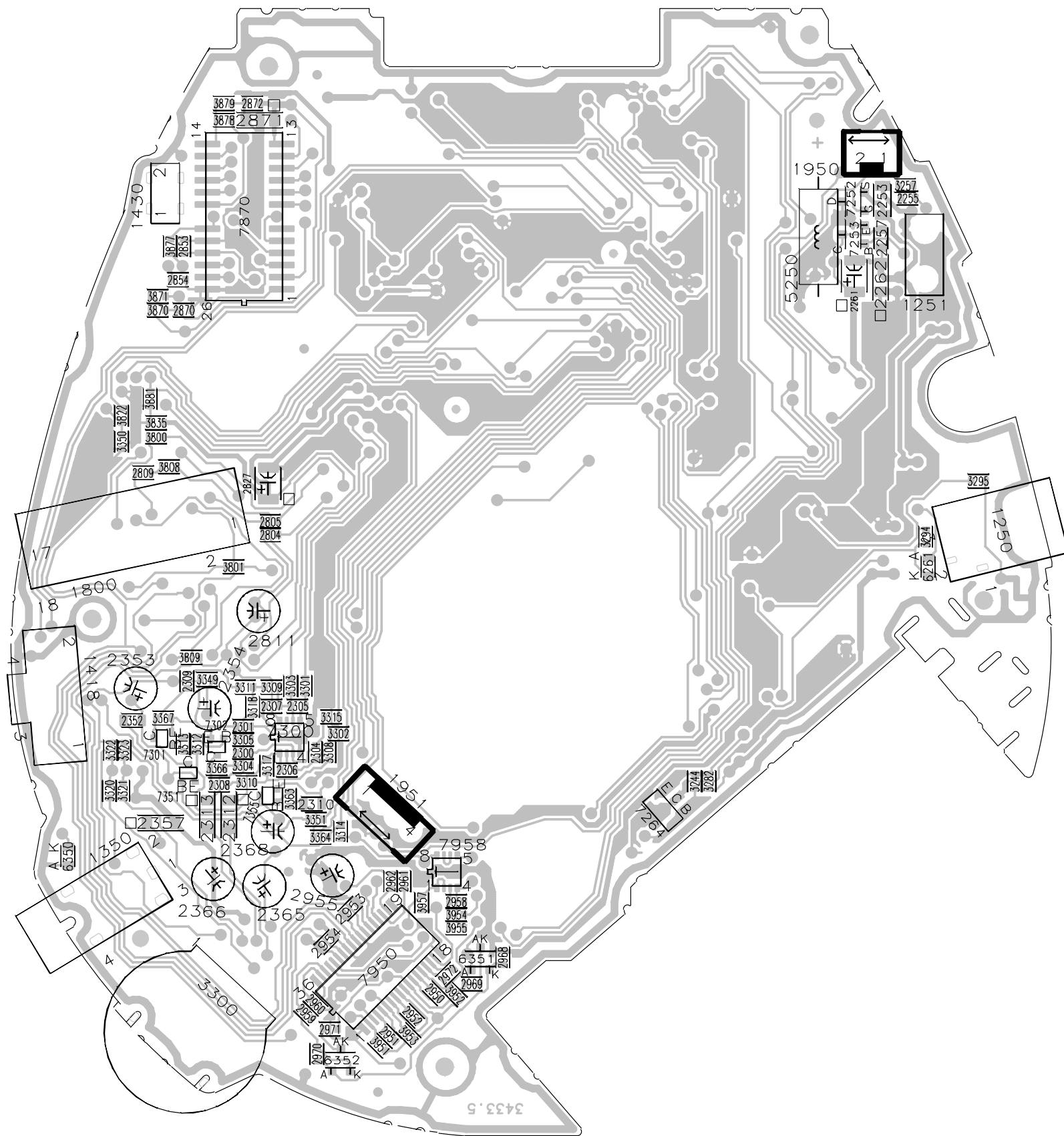
DC voltages measured in  
 PLAY-mode, DBB off  
 Set supplied via mains adaptor



|         |          |          |         |         |         |         |         |          |          |         |         |         |          |          |            |           |            |         |
|---------|----------|----------|---------|---------|---------|---------|---------|----------|----------|---------|---------|---------|----------|----------|------------|-----------|------------|---------|
| 1250 B1 | 2255 B8  | 2262 B10 | 2271 E9 | 3230 D7 | 3237 D6 | 3244 E2 | 3251 B6 | 3258 B9  | 3265 C10 | 3278 E2 | 3285 B4 | 3292 C4 | 3299 C5  | 6254 B9  | 7250-A A9  | 7252 C9   | 7265 B3    | 7957 E7 |
| 1251 A3 | 2256 C9  | 2263 D9  | 2272 C1 | 3231 E7 | 3238 E6 | 3245 D4 | 3252 B7 | 3259 A9  | 3266 C9  | 3279 E1 | 3286 B5 | 3293 C4 | 5250 B8  | 6255 D10 | 7250-B A9  | 7253 B9   | 7266 E4    | 7959 A7 |
| 2243 E8 | 2257 B9  | 2264 D10 | 2274 D7 | 3232 D7 | 3239 D7 | 3246 D4 | 3253 A7 | 3260 C9  | 3267 E8  | 3280 E1 | 3287 B3 | 3294 A2 | 5251 B10 | 6256 B9  | 7250-C A10 | 7260 D6   | 7267 D4    | 7961 E7 |
| 2251 B7 | 2258 A9  | 2266 D10 | 2275 B4 | 3233 D7 | 3240 E3 | 3247 E8 | 3254 C6 | 3261 C10 | 3268 D3  | 3281 E2 | 3288 B3 | 3295 A2 | 6250 A2  | 6258 C1  | 7250-D B7  | 7262-A E1 | 7951-A B4  | 7962 E8 |
| 2252 A7 | 2259 A10 | 2267 D1  | 2276 B9 | 3234 E8 | 3241 E4 | 3248 E8 | 3255 C6 | 3262 C10 | 3270 D4  | 3282 E3 | 3289 C3 | 3296 B4 | 6251 B6  | 6261 A2  | 7250-E C7  | 7262-B B5 | 7951-B C10 |         |
| 2253 A8 | 2260 B10 | 2268 E2  | 2277 A3 | 3235 E8 | 3242 E3 | 3249 E8 | 3256 C7 | 3263 B10 | 3276 D2  | 3283 E3 | 3290 C4 | 3297 B5 | 6252 A7  | 6262 D9  | 7250-F A10 | 7263 E2   | 7955 D7    |         |
| 2254 C7 | 2261 B10 | 2269 B5  | 2299 C5 | 3236 E9 | 3243 D3 | 3250 A5 | 3257 C8 | 3264 A10 | 3277 D2  | 3284 B4 | 3291 C3 | 3298 B4 | 6253 C6  | 6265 C9  | 7251 B6    | 7264 E3   | 7956 E8    |         |



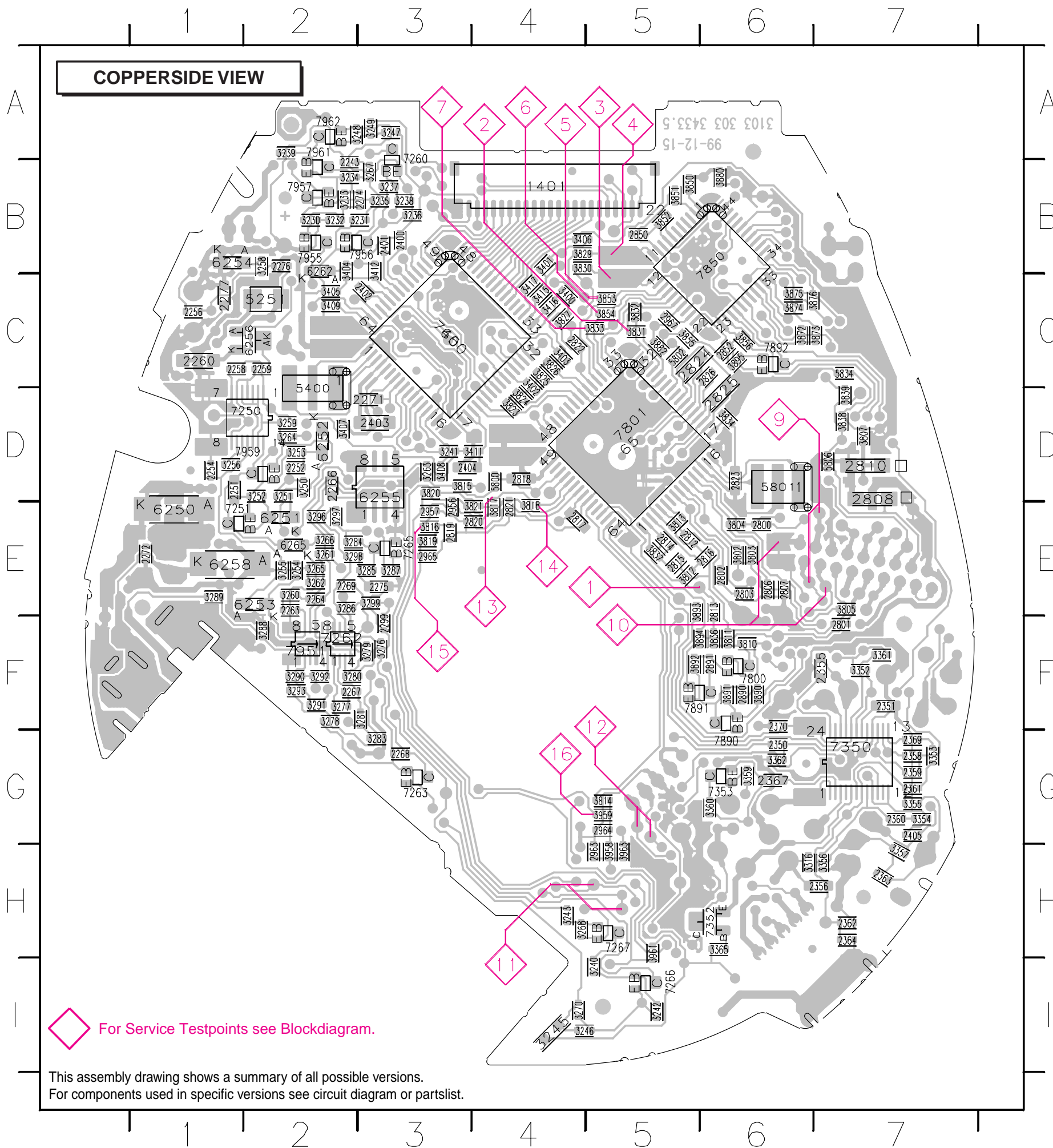
COMPONENTSIDE VIEW



|         |         |         |
|---------|---------|---------|
| 1250 E8 | 2969 H4 | 3957 H3 |
| 1251 C7 | 2970 I3 | 5250 C6 |
| 1350 G1 | 2971 I3 | 6261 E7 |
| 1418 F1 | 2972 H4 | 6350 G1 |
| 1430 C1 | 3244 G5 | 6351 H4 |
| 1800 E1 | 3257 B7 | 6352 I3 |
| 1950 B6 | 3282 G6 | 7252 B7 |
| 1951 G3 | 3294 E7 | 7253 C7 |
| 2253 B7 | 3295 E8 | 7264 G5 |
| 2255 B7 | 3300 H2 | 7300 F2 |
| 2257 C7 | 3301 F2 | 7301 G1 |
| 2261 C7 | 3302 F3 | 7302 F2 |
| 2262 C7 | 3303 F2 | 7351 G1 |
| 2300 G2 | 3304 G2 | 7355 G2 |
| 2301 F2 | 3305 F2 | 7870 C2 |
| 2304 G3 | 3308 G3 | 7950 H3 |
| 2305 F2 | 3309 F2 | 7958 G4 |
| 2306 G2 | 3310 G2 |         |
| 2307 F2 | 3311 F2 |         |
| 2308 G2 | 3312 G2 |         |
| 2309 F2 | 3313 G2 |         |
| 2310 G3 | 3314 G3 |         |
| 2312 G2 | 3315 F3 |         |
| 2313 G2 | 3317 G2 |         |
| 2352 F1 | 3318 F2 |         |
| 2353 F1 | 3320 G1 |         |
| 2354 F2 | 3321 G1 |         |
| 2357 G1 | 3322 G1 |         |
| 2365 H2 | 3323 G1 |         |
| 2366 H2 | 3349 F2 |         |
| 2368 G2 | 3350 D1 |         |
| 2804 E2 | 3351 G3 |         |
| 2805 E2 | 3363 G2 |         |
| 2809 D1 | 3364 G3 |         |
| 2811 F2 | 3366 G2 |         |
| 2827 E2 | 3367 F1 |         |
| 2853 C2 | 3800 D1 |         |
| 2854 C2 | 3801 E2 |         |
| 2870 C2 | 3808 D1 |         |
| 2871 B2 | 3809 F2 |         |
| 2872 B2 | 3822 D1 |         |
| 2950 H3 | 3835 D1 |         |
| 2951 I3 | 3870 C1 |         |
| 2952 I3 | 3871 C1 |         |
| 2953 H3 | 3877 C1 |         |
| 2954 H3 | 3878 B2 |         |
| 2955 H3 | 3879 B2 |         |
| 2958 H4 | 3881 D1 |         |
| 2959 I2 | 3951 I3 |         |
| 2960 H3 | 3952 H4 |         |
| 2961 H3 | 3953 I3 |         |
| 2962 H3 | 3954 H4 |         |
| 2968 H4 | 3955 H4 |         |

This assembly drawing shows a summary of all possible versions. For components used in specific versions see circuit diagram or partslist.

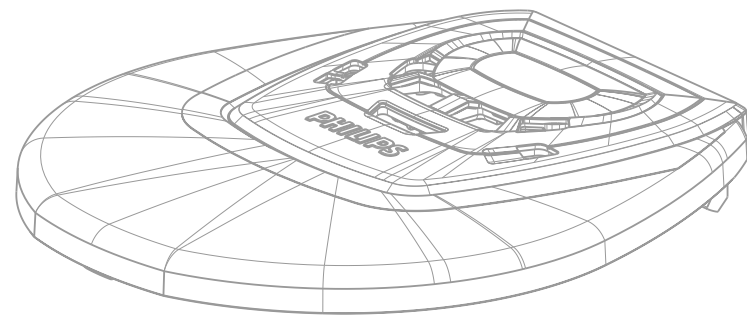




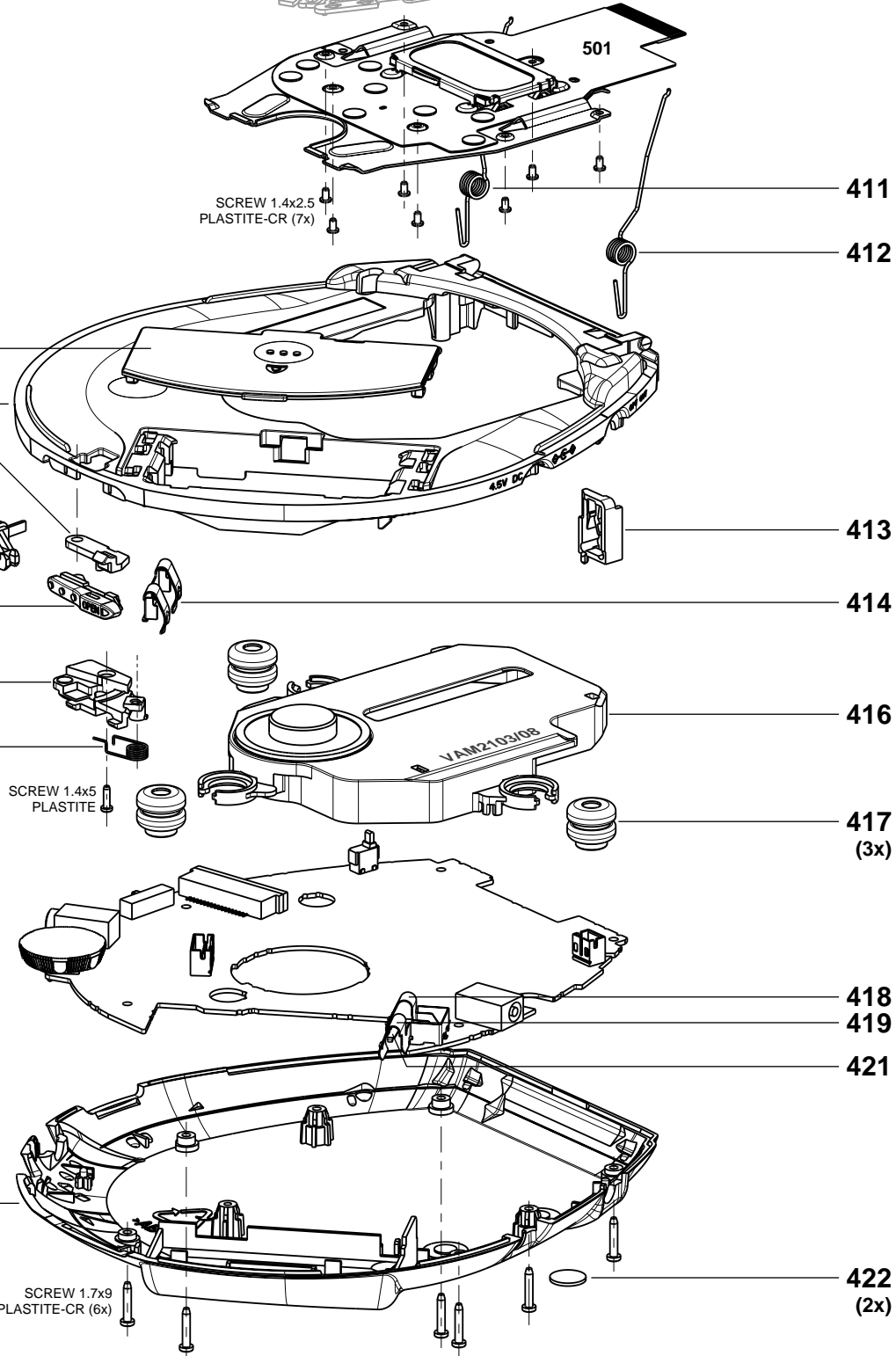
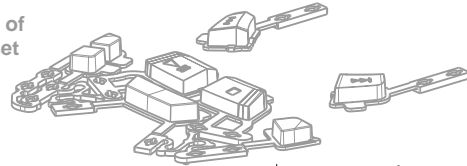
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|---------|---------|---------|---------|---------|
| 1401 B4 | 2815 E5 | 3263 D3 | 3416 C4 | 3895 C6 |
| 2243 A2 | 2816 E6 | 3264 D2 | 3417 C4 | 3958 G5 |
| 2251 D1 | 2817 E4 | 3265 E2 | 3802 E6 | 3959 G5 |
| 2252 D2 | 2818 D4 | 3266 E2 | 3803 E6 | 3961 H5 |
| 2254 D1 | 2819 E3 | 3267 B3 | 3804 E6 | 3963 G5 |
| 2256 C1 | 2820 E4 | 3268 H4 | 3805 E7 | 5251 C2 |
| 2258 C1 | 2821 D4 | 3270 I4 | 3807 D7 | 5400 C2 |
| 2259 C2 | 2822 C4 | 3276 F3 | 3810 F6 | 5800 D4 |
| 2260 C1 | 2823 D6 | 3277 F2 | 3811 F6 | 5801 D6 |
| 2263 E2 | 2824 C5 | 3278 F2 | 3812 E5 | 5802 C5 |
| 2264 E2 | 2825 C6 | 3279 F3 | 3813 E5 | 5806 D7 |
| 2266 D2 | 2826 C6 | 3280 F2 | 3814 G5 | 5834 C7 |
| 2267 F2 | 2850 B5 | 3281 F3 | 3815 D3 | 6250 D1 |
| 2268 G3 | 2852 C6 | 3283 F3 | 3816 E3 | 6251 E2 |
| 2269 E2 | 2890 F6 | 3284 E2 | 3817 D4 | 6252 D2 |
| 2271 D3 | 2891 F6 | 3285 E3 | 3818 D4 | 6253 E2 |
| 2272 E1 | 2956 D3 | 3286 E2 | 3819 E3 | 6254 B1 |
| 2274 B3 | 2957 E3 | 3287 E3 | 3820 D3 | 6255 D3 |
| 2275 E3 | 2963 G5 | 3288 F2 | 3821 D4 | 6256 C2 |
| 2276 B2 | 2964 G5 | 3289 E1 | 3823 D4 | 6258 E1 |
| 2277 C1 | 2965 E3 | 3290 F2 | 3824 D4 | 6262 B2 |
| 2299 E3 | 2967 C5 | 3291 F2 | 3825 C4 | 6265 E2 |
| 2350 G6 | 3230 B2 | 3292 F2 | 3826 C4 | 7250 D2 |
| 2351 F7 | 3231 B3 | 3293 F2 | 3827 C4 | 7251 D1 |
| 2355 F7 | 3232 B2 | 3296 E2 | 3829 B4 | 7260 A3 |
| 2356 H7 | 3233 B2 | 3297 E2 | 3830 B4 | 7262 F2 |
| 2358 G7 | 3234 B2 | 3298 E2 | 3831 C5 | 7263 G3 |
| 2359 G7 | 3235 B3 | 3299 E3 | 3832 C5 | 7265 E3 |
| 2360 G7 | 3236 B3 | 3316 H6 | 3833 C5 | 7266 I5 |
| 2361 G7 | 3237 B3 | 3352 F7 | 3834 D6 | 7267 H5 |
| 2362 H7 | 3238 B3 | 3353 G7 | 3836 F6 | 7350 G7 |
| 2363 H7 | 3239 A2 | 3354 G7 | 3837 E5 | 7352 H6 |
| 2364 H7 | 3240 H5 | 3355 G7 | 3838 D7 | 7353 G6 |
| 2367 G6 | 3241 D3 | 3356 H7 | 3839 C7 | 7400 C3 |
| 2369 G7 | 3242 I5 | 3357 G7 | 3850 B5 | 7800 F6 |
| 2370 F6 | 3243 H4 | 3359 G6 | 3851 B5 | 7801 D5 |
| 2400 B3 | 3245 I4 | 3360 G6 | 3852 B5 | 7850 B6 |
| 2401 B3 | 3246 I5 | 3361 F7 | 3853 C5 | 7890 G6 |
| 2402 C3 | 3247 A3 | 3362 G6 | 3854 C5 | 7891 F5 |
| 2403 D3 | 3248 A3 | 3365 H6 | 3855 C5 | 7892 C6 |
| 2404 D3 | 3249 A3 | 3400 C4 | 3856 C6 | 7951 F2 |
| 2405 G7 | 3250 D2 | 3401 B4 | 3872 C6 | 7955 B2 |
| 2800 E6 | 3251 D2 | 3402 C4 | 3873 C7 | 7956 B3 |
| 2801 E7 | 3252 D2 | 3403 C4 | 3874 C6 | 7957 B2 |
| 2802 E6 | 3253 D2 | 3404 B2 | 3875 C6 | 7959 D2 |
| 2803 E6 | 3254 E2 | 3405 C2 | 3876 C7 | 7961 A2 |
| 2806 E6 | 3255 E2 | 3406 B4 | 3880 B6 | 7962 A2 |
| 2807 E6 | 3256 D1 | 3407 D2 | 3882 C5 |         |
| 2808 D7 | 3258 B2 | 3408 D3 | 3890 F6 |         |
| 2810 D7 | 3259 D2 | 3409 C2 | 3891 F6 |         |
| 2812 E5 | 3260 E2 | 3411 D4 | 3892 F5 |         |
| 2813 E6 | 3261 E2 | 3412 B3 | 3893 E5 |         |
| 2814 E5 | 3262 E2 | 3415 C4 | 3894 F6 |         |

EXPLODED VIEW

MECHANICAL PARTSLIST

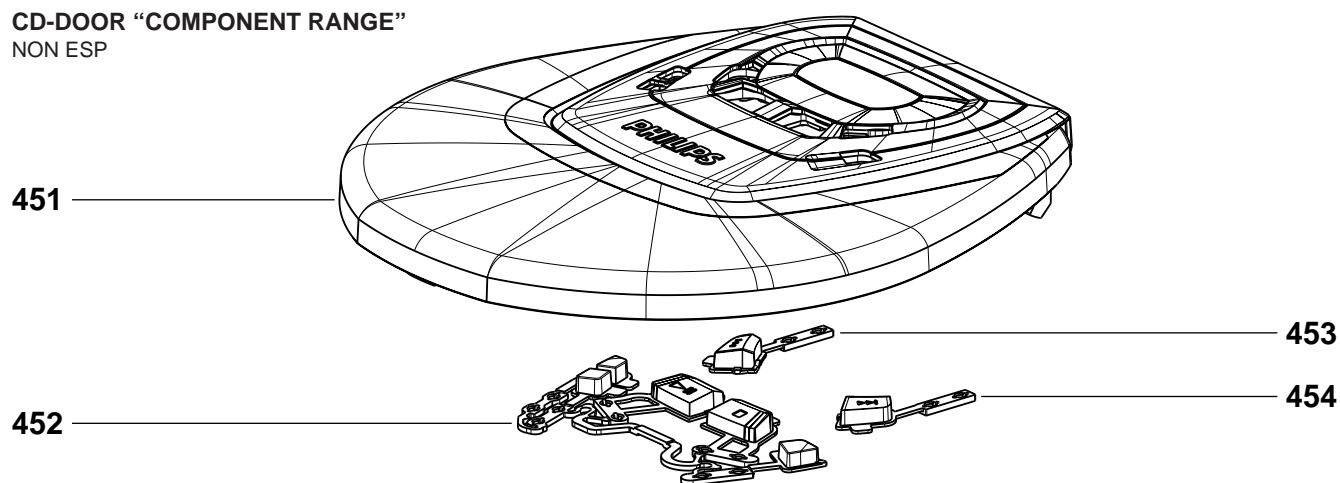


For different versions of CD-door and button-set see next pages.



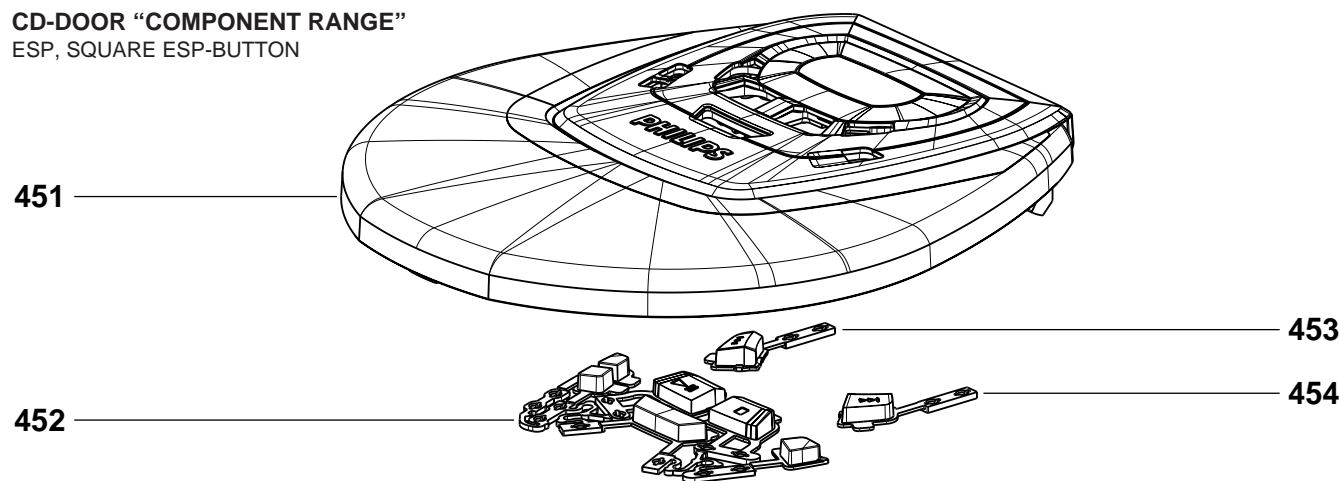
|     |                |   |
|-----|----------------|---|
| 401 | 3103 304 68080 | DOOR-BATTERY-2 (not for translucent versions)         |
| 401 | 3103 307 97920 | DOOR-BATTERY-2-LAC (only for translucent versions)    |
| 402 | 3103 307 99250 | CABINET2-ASSEMBLY (not for translucent versions)      |
| 402 | 3103 307 99280 | CABINET2-ASSEMBLY-LAC (only for translucent versions) |
| 403 | 3103 304 68060 | LEVER-OPEN-2  |
| 404 | 3103 304 68110 | SLIDER-RESUME-2                                       |
| 406 | 3103 307 97940 | SLIDER-OPEN-2-LAC                                     |
| 407 | 3103 304 68070 | HOLDER-OPEN-2   |
| 408 | 3103 301 06500 | SPRING-SLIDER-OPEN-2                                  |
| 409 | 3103 307 99270 | BOTTOM-ASSEMBLY (only for USA version)                |
| 409 | 3103 307 99260 | BOTTOM-PRI-ASSEMBLY (not for USA version)             |
| 411 | 3103 301 06520 | SPRING-OPEN-LONG-L-2C45                               |
| 412 | 3103 301 06510 | SPRING-OPEN-LONG-R-2C45                               |
| 413 | 3103 304 68090 | BRAKE-2   |
| 414 | 3103 301 45180 | SPRING-BATTERY-SHORT-2                                |
| 416 | 9305 022 13208 | CD-DRIVE VAM2103/08                                   |
| 417 | 4822 402 10897 | DAMPER-CD DRIVE                                       |
| 418 | 3103 301 45200 | SPRING-BATTERY-MINUS-2                                |
| 419 | 3103 301 45190 | SPRING-BATTERY-PLUS-2                                 |
| 421 | 3103 301 45210 | SPRING-BATTERY-CHARGE-2                               |
| 422 | 4822 462 41819 | RUBBER FOOT   |
|     | 4822 502 13872 | SCREW 1.4x5 PLASTITE                                  |
|     | 3103 300 41570 | SCREW 1.4x2.5 PLASTITE-CR                             |
|     | 3103 300 41580 | SCREW 1.7x9 PLASTITE-CR                               |

**CD-DOOR "COMPONENT RANGE"**  
NON ESP



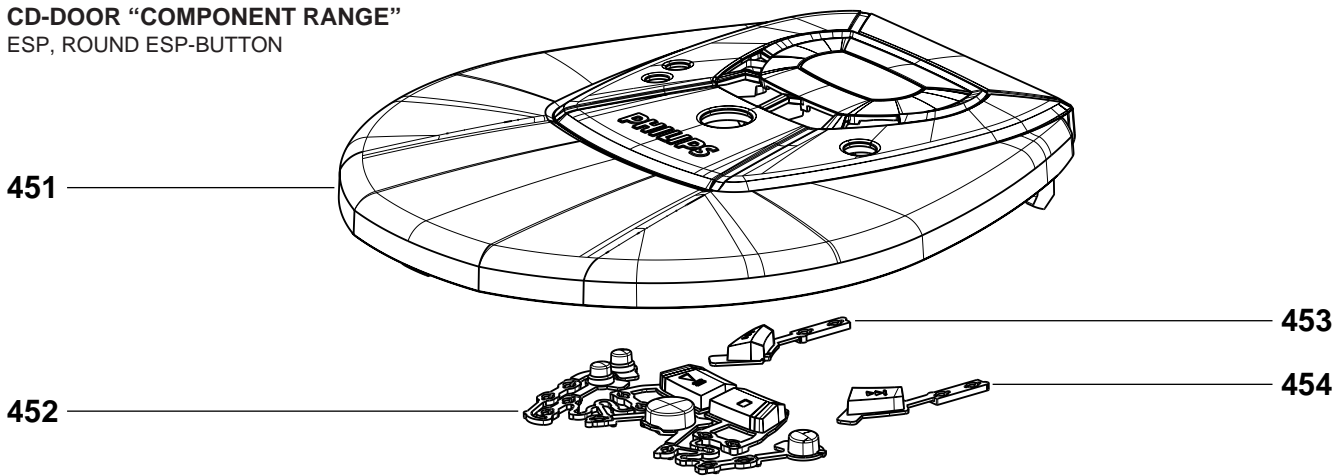
- 451 3103 307 99200 DOOR-CD-ASSEMBLY-1C (SILVER)
- 452 3103 307 97960 BUTTON-SET-PLAY-1C-LAC
- 453 3103 307 97970 BUTTON-PREV-1C-LAC
- 454 3103 307 97980 BUTTON-NEXT-1C-LAC

**CD-DOOR "COMPONENT RANGE"**  
ESP, SQUARE ESP-BUTTON



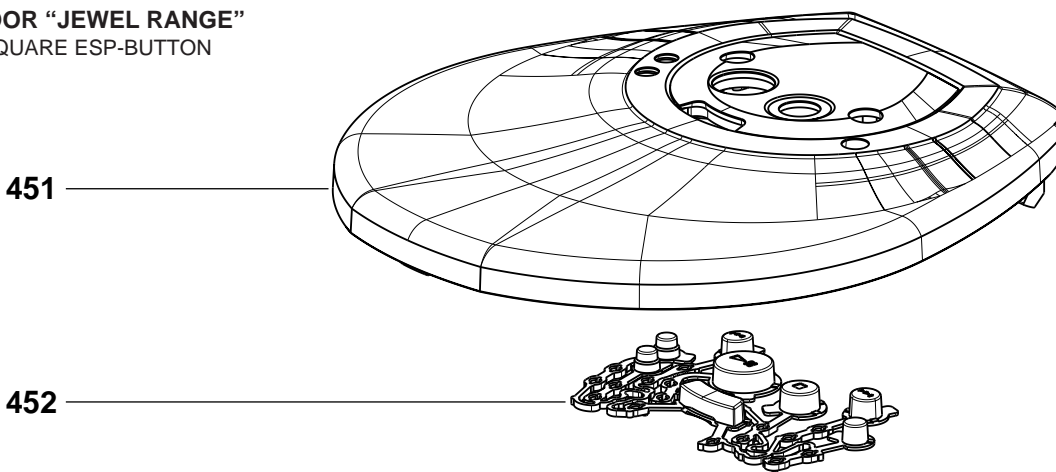
- 451 3103 307 99220 DOOR-CD-ASSEMBLY-2C40B (TRANSLUCENT BLUE, 40s ESP)
- 451 3103 307 99230 DOOR-CD-ASSEMBLY-2C40G (TRANSLUCENT GREEN, 40s ESP)
- 451 12NC follows DOOR-CD-ASSEMBLY-2C40B (TRANSLUCENT RED, 40s ESP)
- 451 3103 307 99240 DOOR-CD-ASSEMBLY-2C45 (SILVER, 45s ESP)
- 451 3140 117 59760 DOOR-CD-ASSEMBLY-2C45G (TRANSLUCENT GREEN, 45s ESP)
- 452 3103 307 98320 BUTTON-SET-PLAY-2C40SQ-LAC-PRI
- 453 3103 307 97970 BUTTON-PREV-1C-LAC
- 454 3103 307 97980 BUTTON-NEXT-1C-LAC

**CD-DOOR “COMPONENT RANGE”**  
ESP, ROUND ESP-BUTTON



- 451 3103 307 99210 DOOR-CD-ASSEMBLY-2C12 (SILVER, 12s ESP)
- 451 3140 117 59750 DOOR-CD-ASSEMBLY-2C12B (TRANSLUCENT BLUE, 12s ESP)
- 452 3103 307 98210 BUTTON-SET-PLAY-2C12-LAC-PRI
- 453 3103 307 98010 BUTTON-PREV-2C40-LAC
- 454 3103 307 98020 BUTTON-NEXT-2C40-LAC

**CD-DOOR “JEWEL RANGE”**  
ESP, SQUARE ESP-BUTTON



- 451 12NC follows DOOR-CD-ASSEMBLY-2J40 (SILVER, 40s ESP)
- 451 12NC follows DOOR-CD-ASSEMBLY-2J40B (BLUE, 40s ESP)
- 451 12NC follows DOOR-CD-ASSEMBLY-2J40G (GREEN, 40s ESP)
- 451 12NC follows DOOR-CD-ASSEMBLY-2J40P (PURPLE, 40s ESP)
- 451 12NC follows DOOR-CD-ASSEMBLY-2J45 (SILVER, 45s ESP)
- 452 3103 307 98040 BUTTON-SET-ALL-2J45-LAC-PRI



## ELECTRICAL PARTSLIST

## MISCELLANEOUS

|      |                |                              |
|------|----------------|------------------------------|
| 1250 | 2422 026 05086 | EXT. DC JACK                 |
| 1251 | 2422 086 10946 | FUSE T630mA 65V ▲            |
| 1350 | 4822 265 11247 | SOCKET, HEADPHONE HJS1537    |
| 1350 | 4822 265 11565 | SOCKET, HEADPHONE/RC HJS1637 |
| 1401 | 2422 025 16706 | CONNECTOR, FLEX-FOIL 22P     |
| 1418 | 4822 277 21643 | SWITCH-SLIDE (HOLD/RESUME)   |
| 1430 | 4822 276 12889 | SWITCH (CD-DOOR)             |
| 1800 | 4822 265 11576 | CONNECTOR, FLEX-FOIL 18P     |

## CAPACITORS

|       |                |       |     |      |
|-------|----------------|-------|-----|------|
| 2251© | 4822 126 14472 | 1µF   | 10% | 10V  |
| 2252© | 3198 017 41050 | 1µF   | 20% | 10V  |
| 2253© | 4822 126 14083 | 4,7µF | 20% | 10V  |
| 2254© | 4822 122 33741 | 10pF  | 10% | 50V  |
| 2255© | 5322 126 11579 | 3,3nF | 10% | 63V  |
| 2256© | 5322 126 11583 | 10nF  | 10% | 63V  |
| 2257© | 4822 126 14472 | 1µF   | 10% | 10V  |
| 2258© | 4822 122 31765 | 100pF | 5%  | 50V  |
| 2259© | 2238 786 56642 | 27nF  | 10% | 16V  |
| 2260© | 4822 126 14083 | 4,7µF | 20% | 10V  |
| 2261© | 4822 124 12111 | 47µF  | 20% | 4V   |
| 2262© | 4822 124 12107 | 22µF  | 20% | 4V   |
| 2263© | 4822 126 14305 | 100nF | 10% | 16V  |
| 2264© | 4822 122 31765 | 100pF | 5%  | 50V  |
| 2266© | 4822 126 14472 | 1µF   | 10% | 10V  |
| 2267© | 4822 126 14305 | 100nF | 10% | 16V  |
| 2268© | 4822 122 31765 | 100pF | 5%  | 50V  |
| 2269© | 4822 126 13881 | 470pF | 5%  | 50V  |
| 2271© | 2238 780 15654 | 220nF | 10% | 16V  |
| 2272© | 4822 126 14305 | 100nF | 10% | 16V  |
| 2274© | 4822 126 14305 | 100nF | 10% | 16V  |
| 2275© | 4822 126 14043 | 1µF   | 20% | 16V  |
| 2277© | 4822 126 14043 | 1µF   | 20% | 16V  |
| 2299© | 5322 126 11578 | 1nF   | 10% | 63V  |
| 2300© | 5322 126 11578 | 1nF   | 10% | 63V  |
| 2301© | 5322 126 11578 | 1nF   | 10% | 63V  |
| 2304© | 4822 122 31765 | 100pF | 5%  | 50V  |
| 2305© | 4822 122 31765 | 100pF | 5%  | 50V  |
| 2306© | 5322 126 11578 | 1nF   | 10% | 63V  |
| 2307© | 5322 126 11578 | 1nF   | 10% | 63V  |
| 2308© | 4822 126 14494 | 22nF  | 10% | 25V  |
| 2309© | 4822 126 14494 | 22nF  | 10% | 25V  |
| 2310© | 4822 126 14472 | 1µF   | 10% | 10V  |
| 2312© | 4822 124 12107 | 22µF  | 20% | 4V   |
| 2313© | 4822 124 12107 | 22µF  | 20% | 4V   |
| 2350© | 4822 126 14305 | 100nF | 10% | 16V  |
| 2351© | 4822 126 14043 | 1µF   | 20% | 16V  |
| 2352© | 4822 126 14043 | 1µF   | 20% | 16V  |
| 2353  | 4822 124 11947 | 10µF  | 20% | 16V  |
| 2354  | 4822 124 11947 | 10µF  | 20% | 16V  |
| 2355© | 4822 126 12102 | 330nF | 20% | 50V  |
| 2356© | 4822 126 14043 | 1µF   | 20% | 16V  |
| 2357© | 4822 124 12107 | 22µF  | 20% | 4V   |
| 2358© | 4822 126 13909 | 680pF | 10% | 50V  |
| 2359© | 4822 126 13909 | 680pF | 10% | 50V  |
| 2360© | 4822 126 14305 | 100nF | 10% | 16V  |
| 2361© | 4822 126 14305 | 100nF | 10% | 16V  |
| 2362© | 4822 126 14549 | 33nF  | 10% | 16V  |
| 2363© | 4822 126 14549 | 33nF  | 10% | 16V  |
| 2364© | 5322 126 11583 | 10nF  | 10% | 63V  |
| 2365  | 4822 124 40998 | 22µF  | 20% | 6,3V |

## CAPACITORS

|       |                |       |     |      |
|-------|----------------|-------|-----|------|
| 2366  | 4822 124 11947 | 10µF  | 20% | 16V  |
| 2367© | 2238 780 15654 | 220nF | 10% | 16V  |
| 2368  | 4822 124 22652 | 2,2µF | 20% | 50V  |
| 2369© | 4822 126 14305 | 100nF | 10% | 16V  |
| 2370© | 4822 126 14305 | 100nF | 10% | 16V  |
| 2400© | 4822 126 14305 | 100nF | 10% | 16V  |
| 2401© | 4822 126 14305 | 100nF | 10% | 16V  |
| 2402© | 4822 126 14305 | 100nF | 10% | 16V  |
| 2403© | 4822 126 14083 | 4,7µF | 20% | 10V  |
| 2404© | 4822 126 14043 | 1µF   | 20% | 16V  |
| 2405© | 5322 126 11578 | 1nF   | 10% | 63V  |
| 2800© | 4822 126 14247 | 1,5nF | 10% | 50V  |
| 2801© | 4822 126 14249 | 560pF | 10% | 50V  |
| 2802© | 4822 126 13883 | 220pF | 5%  | 50V  |
| 2803© | 4822 126 13883 | 220pF | 5%  | 50V  |
| 2804© | 4822 126 13883 | 220pF | 5%  | 50V  |
| 2805© | 4822 126 13883 | 220pF | 5%  | 50V  |
| 2806© | 4822 126 13883 | 220pF | 5%  | 50V  |
| 2807© | 4822 126 13883 | 220pF | 5%  | 50V  |
| 2808© | 4822 124 12107 | 22µF  | 20% | 4V   |
| 2809© | 5322 126 11578 | 1nF   | 10% | 63V  |
| 2810© | 4822 124 12107 | 22µF  | 20% | 4V   |
| 2811  | 4822 124 40998 | 22µF  | 20% | 6,3V |
| 2812© | 4822 126 14305 | 100nF | 10% | 16V  |
| 2813© | 4822 126 14238 | 2,2nF | 10% | 50V  |
| 2814© | 4822 122 33761 | 22pF  | 5%  | 50V  |
| 2815© | 4822 126 14494 | 22nF  | 10% | 25V  |
| 2816© | 5322 126 11583 | 10nF  | 10% | 63V  |
| 2817© | 4822 126 14043 | 1µF   | 20% | 16V  |
| 2818© | 4822 126 14043 | 1µF   | 20% | 16V  |
| 2819© | 5322 126 11579 | 3,3nF | 10% | 63V  |
| 2820© | 5322 126 11579 | 3,3nF | 10% | 63V  |
| 2821© | 5322 126 11579 | 3,3nF | 10% | 63V  |
| 2822© | 4822 126 14549 | 33nF  | 10% | 16V  |
| 2823© | 2238 780 15654 | 220nF | 10% | 16V  |
| 2824© | 4822 126 13344 | 1,5nF | 5%  | 63V  |
| 2825© | 4822 126 13344 | 1,5nF | 5%  | 63V  |
| 2826© | 4822 126 14305 | 100nF | 10% | 16V  |
| 2827© | 4822 124 12111 | 47µF  | 20% | 4V   |
| 2850© | 4822 126 14305 | 100nF | 10% | 16V  |
| 2852© | 4822 126 14305 | 100nF | 10% | 16V  |
| 2853© | 4822 122 31765 | 100pF | 5%  | 50V  |
| 2854© | 4822 122 33777 | 47pF  | 5%  | 63V  |
| 2870© | 4822 126 14549 | 33nF  | 10% | 16V  |
| 2871© | 4822 124 12107 | 22µF  | 20% | 4V   |
| 2872© | 4822 126 14305 | 100nF | 10% | 16V  |
| 2890© | 4822 122 31765 | 100pF | 5%  | 50V  |
| 2891© | 4822 126 14249 | 560pF | 10% | 50V  |
| 2950© | 4822 126 13881 | 470pF | 5%  | 50V  |
| 2951© | 4822 126 13881 | 470pF | 5%  | 50V  |
| 2952© | 4822 126 13881 | 470pF | 5%  | 50V  |
| 2953© | 4822 126 14472 | 1µF   | 10% | 10V  |
| 2954© | 4822 126 14472 | 1µF   | 10% | 10V  |
| 2955  | 4822 124 40998 | 22µF  | 20% | 6,3V |
| 2956© | 4822 126 14247 | 1,5nF | 10% | 50V  |
| 2957© | 4822 126 14247 | 1,5nF | 10% | 50V  |
| 2958© | 4822 126 14305 | 100nF | 10% | 16V  |
| 2959© | 4822 126 13881 | 470pF | 5%  | 50V  |
| 2960© | 4822 126 13881 | 470pF | 5%  | 50V  |
| 2961© | 4822 126 13881 | 470pF | 5%  | 50V  |
| 2962© | 4822 126 13881 | 470pF | 5%  | 50V  |
| 2963© | 5322 126 11583 | 10nF  | 10% | 63V  |
| 2964© | 4822 126 14305 | 100nF | 10% | 16V  |
| 2965© | 5322 126 11579 | 3,3nF | 10% | 63V  |

## CAPACITORS

|      |   |      |     |       |       |     |     |
|------|---|------|-----|-------|-------|-----|-----|
| 2967 | © | 4822 | 126 | 14305 | 100nF | 10% | 16V |
| 2968 | © | 4822 | 126 | 14305 | 100nF | 10% | 16V |
| 2969 | © | 4822 | 126 | 14305 | 100nF | 10% | 16V |
| 2970 | © | 4822 | 126 | 14305 | 100nF | 10% | 16V |
| 2971 | © | 4822 | 126 | 14305 | 100nF | 10% | 16V |

|      |   |      |     |       |       |    |     |
|------|---|------|-----|-------|-------|----|-----|
| 2972 | © | 4822 | 126 | 13881 | 470pF | 5% | 50V |
|------|---|------|-----|-------|-------|----|-----|

## RESISTORS

|      |   |      |     |       |       |    |         |
|------|---|------|-----|-------|-------|----|---------|
| 3230 | © | 4822 | 117 | 12891 | 220kΩ | 1% | 0,0625W |
| 3231 | © | 4822 | 117 | 13632 | 100kΩ | 1% | 0,0625W |
| 3232 | © | 4822 | 051 | 30154 | 150kΩ | 5% | 0,0625W |
| 3233 | © | 4822 | 117 | 12864 | 82kΩ  | 5% | 0,6W    |
| 3234 | © | 4822 | 051 | 30105 | 1MΩ   | 5% | 0,0625W |

|      |   |      |     |       |       |    |         |
|------|---|------|-----|-------|-------|----|---------|
| 3235 | © | 3198 | 021 | 32250 | 2,2MΩ | 5% | 0,0625W |
| 3236 | © | 4822 | 117 | 13632 | 100kΩ | 1% | 0,0625W |
| 3237 | © | 4822 | 051 | 30105 | 1MΩ   | 5% | 0,0625W |
| 3238 | © | 4822 | 051 | 30105 | 1MΩ   | 5% | 0,0625W |
| 3239 | © | 4822 | 051 | 30105 | 1MΩ   | 5% | 0,0625W |

|      |   |      |     |       |       |    |         |
|------|---|------|-----|-------|-------|----|---------|
| 3240 | © | 4822 | 051 | 30474 | 470kΩ | 5% | 0,0625W |
| 3241 | © | 4822 | 117 | 12925 | 47kΩ  | 1% | 0,0625W |
| 3242 | © | 4822 | 051 | 30474 | 470kΩ | 5% | 0,0625W |
| 3243 | © | 4822 | 051 | 30474 | 470kΩ | 5% | 0,0625W |
| 3244 | © | 4822 | 051 | 30103 | 10kΩ  | 5% | 0,06W   |

|      |   |      |     |       |       |    |         |
|------|---|------|-----|-------|-------|----|---------|
| 3245 | © | 4822 | 116 | 30467 | 10kΩ  | 5% | NTC     |
| 3246 | © | 4822 | 051 | 30103 | 10kΩ  | 5% | 0,06W   |
| 3247 | © | 4822 | 051 | 30684 | 680kΩ | 5% | 0,0625W |
| 3248 | © | 4822 | 051 | 30154 | 150kΩ | 5% | 0,0625W |
| 3249 | © | 3198 | 021 | 32250 | 2,2MΩ | 5% | 0,0625W |

|      |   |      |     |       |       |    |         |
|------|---|------|-----|-------|-------|----|---------|
| 3250 | © | 4822 | 117 | 13632 | 100kΩ | 1% | 0,0625W |
| 3251 | © | 4822 | 051 | 30103 | 10kΩ  | 5% | 0,06W   |
| 3252 | © | 4822 | 117 | 13632 | 100kΩ | 1% | 0,0625W |
| 3253 | © | 4822 | 117 | 13632 | 100kΩ | 1% | 0,0625W |
| 3254 | © | 4822 | 051 | 30474 | 470kΩ | 5% | 0,0625W |

|      |   |      |     |       |       |    |         |
|------|---|------|-----|-------|-------|----|---------|
| 3255 | © | 4822 | 051 | 30103 | 10kΩ  | 5% | 0,06W   |
| 3256 | © | 4822 | 117 | 13632 | 100kΩ | 1% | 0,0625W |
| 3257 | © | 4822 | 051 | 30222 | 2,2kΩ | 5% | 0,06W   |
| 3258 | © | 4822 | 051 | 30681 | 680Ω  | 5% | 0,06W   |
| 3259 | © | 4822 | 051 | 30563 | 56kΩ  | 5% | 0,0625W |

|      |   |      |     |       |                  |    |         |
|------|---|------|-----|-------|------------------|----|---------|
| 3260 | © | 4822 | 051 | 30103 | 10kΩ             | 5% | 0,06W   |
| 3261 | © | 4822 | 051 | 30103 | 10kΩ             | 5% | 0,06W   |
| 3262 | © | 4822 | 117 | 12902 | 8,2kΩ            | 1% | 0,0625W |
| 3263 | © | 4822 | 051 | 30103 | 10kΩ             | 5% | 0,06W   |
| 3264 | © | 3198 | 021 | 90030 | CHIP JUMPER 0603 |    |         |

|      |   |      |     |       |       |    |         |
|------|---|------|-----|-------|-------|----|---------|
| 3266 | © | 4822 | 051 | 30103 | 10kΩ  | 5% | 0,06W   |
| 3268 | © | 3198 | 021 | 32250 | 2,2MΩ | 5% | 0,0625W |
| 3276 | © | 4822 | 051 | 30561 | 560Ω  | 5% | 0,06W   |
| 3277 | © | 4822 | 051 | 30103 | 10kΩ  | 5% | 0,06W   |
| 3278 | © | 4822 | 051 | 30103 | 10kΩ  | 5% | 0,06W   |

|      |   |      |     |       |       |    |         |
|------|---|------|-----|-------|-------|----|---------|
| 3279 | © | 4822 | 117 | 12925 | 47kΩ  | 1% | 0,0625W |
| 3280 | © | 4822 | 051 | 30562 | 5,6kΩ | 5% | 0,0625W |
| 3281 | © | 4822 | 051 | 30103 | 10kΩ  | 5% | 0,06W   |
| 3282 | © | 4822 | 117 | 12917 | 1Ω    | 5% | 0,0625W |
| 3283 | © | 4822 | 117 | 12917 | 1Ω    | 5% | 0,0625W |

|      |   |      |     |       |       |    |         |
|------|---|------|-----|-------|-------|----|---------|
| 3284 | © | 4822 | 051 | 30472 | 4,7kΩ | 5% | 0,06W   |
| 3285 | © | 4822 | 051 | 30183 | 18kΩ  | 5% | 0,06W   |
| 3286 | © | 4822 | 051 | 30334 | 330kΩ | 5% | 0,0625W |
| 3287 | © | 4822 | 051 | 30103 | 10kΩ  | 5% | 0,06W   |
| 3288 | © | 2120 | 108 | 93057 | 68kΩ  | 1% | 0,0625W |

|      |   |      |     |       |       |    |         |
|------|---|------|-----|-------|-------|----|---------|
| 3289 | © | 4822 | 117 | 13632 | 100kΩ | 1% | 0,0625W |
| 3290 | © | 4822 | 051 | 30223 | 22kΩ  | 5% | 0,06W   |
| 3291 | © | 4822 | 117 | 13632 | 100kΩ | 1% | 0,0625W |
| 3292 | © | 4822 | 051 | 30334 | 330kΩ | 5% | 0,0625W |
| 3293 | © | 2120 | 108 | 93057 | 68kΩ  | 1% | 0,0625W |

## RESISTORS

|      |   |      |     |       |       |    |         |
|------|---|------|-----|-------|-------|----|---------|
| 3294 | © | 4822 | 117 | 12925 | 47kΩ  | 1% | 0,0625W |
| 3295 | © | 4822 | 117 | 12891 | 220kΩ | 1% | 0,0625W |
| 3296 | © | 4822 | 117 | 13632 | 100kΩ | 1% | 0,0625W |
| 3297 | © | 4822 | 117 | 13632 | 100kΩ | 1% | 0,0625W |
| 3298 | © | 4822 | 051 | 30183 | 18kΩ  | 5% | 0,06W   |

|      |   |      |     |       |                          |    |       |
|------|---|------|-----|-------|--------------------------|----|-------|
| 3299 | © | 4822 | 051 | 30103 | 10kΩ                     | 5% | 0,06W |
| 3300 | © | 3103 | 308 | 52850 | POTMETER ALPS 2x10kΩ CX2 |    |       |
| 3301 | © | 4822 | 051 | 30223 | 22kΩ                     | 5% | 0,06W |
| 3302 | © | 4822 | 051 | 30223 | 22kΩ                     | 5% | 0,06W |
| 3303 | © | 4822 | 051 | 30223 | 22kΩ                     | 5% | 0,06W |

|      |   |      |     |       |       |    |         |
|------|---|------|-----|-------|-------|----|---------|
| 3304 | © | 4822 | 051 | 30332 | 3,3kΩ | 5% | 0,0625W |
| 3305 | © | 4822 | 051 | 30332 | 3,3kΩ | 5% | 0,0625W |
| 3308 | © | 4822 | 051 | 30681 | 680Ω  | 5% | 0,06W   |
| 3309 | © | 4822 | 051 | 30681 | 680Ω  | 5% | 0,06W   |
| 3310 | © | 4822 | 051 | 30152 | 1,5kΩ | 5% | 0,06W   |

|      |   |      |     |       |       |    |         |
|------|---|------|-----|-------|-------|----|---------|
| 3311 | © | 4822 | 051 | 30152 | 1,5kΩ | 5% | 0,06W   |
| 3312 | © | 4822 | 051 | 30103 | 10kΩ  | 5% | 0,06W   |
| 3313 | © | 4822 | 051 | 30103 | 10kΩ  | 5% | 0,06W   |
| 3314 | © | 4822 | 117 | 12925 | 47kΩ  | 1% | 0,0625W |
| 3315 | © | 4822 | 051 | 30223 | 22kΩ  | 5% | 0,06W   |

|      |   |      |     |       |       |    |         |
|------|---|------|-----|-------|-------|----|---------|
| 3316 | © | 4822 | 051 | 30102 | 1kΩ   | 5% | 0,06W   |
| 3317 | © | 4822 | 051 | 30272 | 2,7kΩ | 5% | 0,0625W |
| 3318 | © | 4822 | 051 | 30272 | 2,7kΩ | 5% | 0,0625W |
| 3320 | © | 4822 | 051 | 30103 | 10kΩ  | 5% | 0,06W   |
| 3321 | © | 4822 | 051 | 30103 | 10kΩ  | 5% | 0,06W   |

|      |   |      |     |       |       |    |         |                  |
|------|---|------|-----|-------|-------|----|---------|------------------|
| 3322 | © | 4822 | 051 | 30392 | 3,9kΩ | 5% | 0,06W   | only for ESP     |
| 3322 | © | 4822 | 051 | 30332 | 3,3kΩ | 5% | 0,0625W | only for NON-ESP |
| 3323 | © | 4822 | 051 | 30392 | 3,9kΩ | 5% | 0,06W   | only for ESP     |
| 3323 | © | 4822 | 051 | 30332 | 3,3kΩ | 5% | 0,0625W | only for NON-ESP |
| 3349 | © | 4822 | 051 | 30333 | 33kΩ  | 5% | 0,06W   |                  |

|      |   |      |     |       |       |    |         |
|------|---|------|-----|-------|-------|----|---------|
| 3350 | © | 4822 | 051 | 30103 | 10kΩ  | 5% | 0,06W   |
| 3351 | © | 4822 | 051 | 30472 | 4,7kΩ | 5% | 0,06W   |
| 3352 | © | 4822 | 051 | 30103 | 10kΩ  | 5% | 0,06W   |
| 3353 | © | 4822 | 117 | 13613 | 2,2Ω  | 5% | 0,0625W |
| 3354 | © | 4822 | 117 | 13613 | 2,2Ω  | 5% | 0,0625W |

|      |   |      |     |       |                  |    |         |              |
|------|---|------|-----|-------|------------------|----|---------|--------------|
| 3355 | © | 3198 | 021 | 36880 | 6,8Ω             | 5% | 0,0625W | not for /17  |
| 3355 | © | 3198 | 021 | 90030 | CHIP JUMPER 0603 |    |         | only for /17 |
| 3356 | © | 3198 | 021 | 36880 | 6,8Ω             | 5% | 0,0625W | not for /17  |
| 3356 | © | 3198 | 021 | 90030 | CHIP JUMPER 0603 |    |         | only for /17 |
| 3357 | © | 3198 | 021 | 90030 | CHIP JUMPER 0603 |    |         |              |

|      |   |      |     |       |                  |    |         |                  |
|------|---|------|-----|-------|------------------|----|---------|------------------|
| 3359 | © | 4822 | 051 | 30103 | 10kΩ             | 5% | 0,06W   |                  |
| 3360 | © | 4822 | 051 | 30332 | 3,3kΩ            | 5% | 0,0625W | only for ESP     |
| 3360 | © | 3198 | 021 | 90030 | CHIP JUMPER 0603 |    |         | only for NON-ESP |
| 3361 | © | 4822 | 051 | 30223 | 22kΩ             | 5% | 0,06W   |                  |
| 3362 | © | 4822 | 117 | 13632 | 100kΩ            | 1% | 0,0625W |                  |

|      |   |      |     |       |      |    |         |
|------|---|------|-----|-------|------|----|---------|
| 3363 | © | 4822 | 117 | 12925 | 47kΩ | 1% | 0,0625W |
| 3364 | © | 4822 | 117 | 12925 | 47kΩ | 1% | 0,0625W |
| 3365 | © | 4822 | 051 | 30101 | 100Ω | 5% | 0,06W   |
| 3366 | © | 4822 | 051 | 30105 | 1MΩ  | 5% | 0,0625W |
| 3367 | © | 4822 | 051 | 30105 | 1MΩ  | 5% | 0,0625W |

|      |   |      |     |       |       |    |         |
|------|---|------|-----|-------|-------|----|---------|
| 3400 | © | 4822 | 117 | 12891 | 220kΩ | 1% | 0,0625W |
| 3401 | © | 4822 | 117 | 12891 | 220kΩ | 1% | 0,0625W |
| 3402 | © | 4822 | 051 | 30101 | 100Ω  | 5% | 0,06W   |
| 3403 | © | 4822 | 051 | 30101 | 100Ω  | 5% | 0,06W   |
| 3404 | © | 4822 | 051 | 30123 | 12kΩ  | 5% | 0,0625W |

|      |   |      |     |       |       |    |         |
|------|---|------|-----|-------|-------|----|---------|
| 3405 | © | 4822 | 051 | 30562 | 5,6kΩ | 5% | 0,0625W |
| 3406 | © | 4822 | 117 | 12891 | 220kΩ | 1% | 0,0625W |
| 3407 | © | 4822 | 051 | 30109 | 10Ω   | 5% | 0,06W   |
| 3408 | © | 3198 | 021 | 32250 | 2,2MΩ | 5% | 0,0625W |
| 3409 | © | 4822 | 117 | 12891 | 220kΩ | 1% | 0,0625W |

|      |   |      |     |       |     |    |       |
|------|---|------|-----|-------|-----|----|-------|
| 3411 | © | 4822 | 051 | 30109 | 10Ω | 5% | 0,06W |
| 3415 | © | 4822 | 051 | 30102 | 1kΩ | 5% | 0,06W |
| 3416 | © | 4822 | 051 | 30102 | 1kΩ | 5% | 0,06W |
| 3417 | © | 4822 | 051 | 30102 | 1kΩ | 5% | 0,06W |



## RESISTORS

|       |                |                  |    |                      |
|-------|----------------|------------------|----|----------------------|
| 3800© | 4822 051 30103 | 10kΩ             | 5% | 0,06W                |
| 3801© | 4822 051 30103 | 10kΩ             | 5% | 0,06W                |
| 3802© | 4822 051 30103 | 10kΩ             | 5% | 0,06W                |
| 3803© | 4822 051 30103 | 10kΩ             | 5% | 0,06W                |
| 3804© | 4822 051 30103 | 10kΩ             | 5% | 0,06W                |
| 3805© | 4822 051 30103 | 10kΩ             | 5% | 0,06W                |
| 3807© | 4822 051 30109 | 10Ω              | 5% | 0,06W                |
| 3808© | 4822 051 30102 | 1kΩ              | 5% | 0,06W                |
| 3809© | 4822 051 30339 | 33Ω              | 5% | 0,0625W              |
| 3810© | 4822 051 30474 | 470kΩ            | 5% | 0,0625W              |
| 3811© | 4822 051 30222 | 2,2kΩ            | 5% | 0,06W                |
| 3812© | 4822 051 30223 | 22kΩ             | 5% | 0,06W                |
| 3813© | 4822 051 30333 | 33kΩ             | 5% | 0,06W                |
| 3814© | 4822 051 30562 | 5,6kΩ            | 5% | 0,0625W              |
| 3815© | 4822 051 30109 | 10Ω              | 5% | 0,06W                |
| 3816© | 4822 051 30222 | 2,2kΩ            | 5% | 0,06W                |
| 3817© | 4822 051 30222 | 2,2kΩ            | 5% | 0,06W                |
| 3818© | 4822 051 30222 | 2,2kΩ            | 5% | 0,06W                |
| 3819© | 4822 051 30222 | 2,2kΩ            | 5% | 0,06W                |
| 3820© | 4822 051 30222 | 2,2kΩ            | 5% | 0,06W                |
| 3821© | 4822 051 30222 | 2,2kΩ            | 5% | 0,06W                |
| 3822© | 3198 021 90030 | CHIP JUMPER 0603 |    | only for NON-ESP     |
| 3823© | 4822 051 30103 | 10kΩ             | 5% | 0,06W                |
| 3824© | 4822 051 30103 | 10kΩ             | 5% | 0,06W                |
| 3825© | 4822 051 30103 | 10kΩ             | 5% | 0,06W                |
| 3826© | 4822 051 30103 | 10kΩ             | 5% | 0,06W                |
| 3827© | 4822 051 30103 | 10kΩ             | 5% | 0,06W                |
| 3829© | 3198 021 90030 | CHIP JUMPER 0603 |    |                      |
| 3830© | 3198 021 90030 | CHIP JUMPER 0603 |    |                      |
| 3831© | 3198 021 90030 | CHIP JUMPER 0603 |    |                      |
| 3832© | 4822 051 30332 | 3,3kΩ            | 5% | 0,0625W only for ESP |
| 3833© | 3198 021 90030 | CHIP JUMPER 0603 |    | only for ESP         |
| 3834© | 4822 117 12139 | 22Ω              | 5% | 0,0625W              |
| 3835© | 4822 117 13608 | 4,7Ω             | 5% | 0,0625W              |
| 3836© | 4822 051 30102 | 1kΩ              | 5% | 0,06W                |
| 3837© | 4822 051 30102 | 1kΩ              | 5% | 0,06W                |
| 3838© | 3198 021 90030 | CHIP JUMPER 0603 |    |                      |
| 3850© | 4822 117 12139 | 22Ω              | 5% | 0,0625W              |
| 3851© | 3198 021 90030 | CHIP JUMPER 0603 |    |                      |
| 3852© | 3198 021 90030 | CHIP JUMPER 0603 |    |                      |
| 3853© | 3198 021 90030 | CHIP JUMPER 0603 |    |                      |
| 3854© | 3198 021 90030 | CHIP JUMPER 0603 |    |                      |
| 3855© | 4822 117 12139 | 22Ω              | 5% | 0,0625W              |
| 3856© | 4822 051 30102 | 1kΩ              | 5% | 0,06W                |
| 3870© | 3198 021 90030 | CHIP JUMPER 0603 |    |                      |
| 3871© | 3198 021 90030 | CHIP JUMPER 0603 |    |                      |
| 3872© | 3198 021 90030 | CHIP JUMPER 0603 |    |                      |
| 3873© | 3198 021 90030 | CHIP JUMPER 0603 |    |                      |
| 3874© | 3198 021 90030 | CHIP JUMPER 0603 |    |                      |
| 3875© | 3198 021 90030 | CHIP JUMPER 0603 |    |                      |
| 3876© | 3198 021 90030 | CHIP JUMPER 0603 |    |                      |
| 3877© | 3198 021 90030 | CHIP JUMPER 0603 |    |                      |
| 3878© | 3198 021 90030 | CHIP JUMPER 0603 |    |                      |
| 3879© | 3198 021 90030 | CHIP JUMPER 0603 |    |                      |
| 3880© | 4822 117 12139 | 22Ω              | 5% | 0,0625W              |
| 3881© | 4822 051 30103 | 10kΩ             | 5% | 0,06W                |
| 3882© | 4822 051 30103 | 10kΩ             | 5% | 0,06W                |
| 3890© | 4822 051 30222 | 2,2kΩ            | 5% | 0,06W                |
| 3891© | 4822 117 11817 | 1,2kΩ            | 1% | 0,0625W              |
| 3892© | 4822 051 30221 | 220Ω             | 5% | 0,06W                |
| 3893© | 4822 051 30223 | 22kΩ             | 5% | 0,06W                |
| 3894© | 4822 051 30223 | 22kΩ             | 5% | 0,06W                |
| 3895© | 4822 051 30103 | 10kΩ             | 5% | 0,06W                |
| 3951© | 3198 021 90030 | CHIP JUMPER 0603 |    |                      |

## RESISTORS

|       |                |       |    |                          |
|-------|----------------|-------|----|--------------------------|
| 3952© | 4822 051 30682 | 6,8kΩ | 5% | 0,0625W                  |
| 3953© | 4822 051 30682 | 6,8kΩ | 5% | 0,0625W                  |
| 3954© | 4822 117 12925 | 47kΩ  | 1% | 0,0625W                  |
| 3955© | 4822 117 12925 | 47kΩ  | 1% | 0,0625W                  |
| 3957© | 4822 051 30392 | 3,9kΩ | 5% | 0,06W                    |
| 3958© | 4822 051 30103 | 10kΩ  | 5% | 0,06W                    |
| 3959© | 4822 051 30562 | 5,6kΩ | 5% | 0,0625W only for ESP     |
| 3959© | 4822 051 30273 | 27kΩ  | 5% | 0,0625W only for NON-ESP |
| 3961© | 4822 051 30392 | 3,9kΩ | 5% | 0,06W                    |
| 3963© | 3198 021 31840 | 180kΩ | 5% | 0,0625W                  |

## COILS

|       |                |           |           |   |
|-------|----------------|-----------|-----------|---|
| 5250  | 4822 157 51462 | 10μH      | 10%       | ▲ |
| 5251© | 4822 157 70299 | 2,2μH     |           |   |
| 5400© | 4822 242 10845 | CER. RES. | 4,23MHz   |   |
| 5800© | 4822 157 11781 | FILTER,   | 100MHz    |   |
| 5801© | 4822 242 81546 | CER. RES. | 8,4672MHz |   |
| 5802© | 4822 157 11781 | FILTER,   | 100MHz    |   |
| 5806© | 4822 157 11781 | FILTER,   | 100MHz    |   |
| 5834© | 4822 157 11781 | FILTER,   | 100MHz    |   |

## DIODES

|       |                |            |  |  |
|-------|----------------|------------|--|--|
| 6250© | 9322 128 70685 | SS14       |  |  |
| 6251© | 4822 130 83757 | BAS216     |  |  |
| 6252© | 4822 130 83757 | BAS216     |  |  |
| 6253© | 4822 130 83757 | BAS216     |  |  |
| 6254© | 4822 130 83757 | BAS216     |  |  |
| 6255© | 4822 130 70064 | LM285D     |  |  |
| 6256© | 4822 130 82262 | BAT54S     |  |  |
| 6258© | 9322 128 70685 | SS14       |  |  |
| 6261© | 4822 130 83757 | BAS216     |  |  |
| 6262© | 4822 130 10654 | BAT254     |  |  |
| 6265© | 4822 130 10654 | BAT254     |  |  |
| 6350© | 4822 130 10794 | BZX284-C10 |  |  |
| 6351© | 4822 130 82262 | BAT54S     |  |  |
| 6352© | 4822 130 82262 | BAT54S     |  |  |

## TRANSISTORS

|       |                |          |  |  |
|-------|----------------|----------|--|--|
| 7251© | 9340 218 50115 | BC857BW  |  |  |
| 7252© | 4822 130 11549 | BSH105 ▲ |  |  |
| 7253© | 5322 130 60123 | BC807-40 |  |  |
| 7260© | 9340 217 70115 | BC847BW  |  |  |
| 7263© | 9340 217 70115 | BC847BW  |  |  |
| 7264  | 5322 130 61569 | BC868    |  |  |
| 7265© | 9340 217 70115 | BC847BW  |  |  |
| 7266© | 9340 217 70115 | BC847BW  |  |  |
| 7267© | 9340 218 50115 | BC857BW  |  |  |
| 7301© | 9340 217 70115 | BC847BW  |  |  |
| 7302© | 9340 217 70115 | BC847BW  |  |  |
| 7351© | 9340 217 70115 | BC847BW  |  |  |
| 7352© | 4822 130 42615 | BC817-40 |  |  |
| 7353© | 9340 217 70115 | BC847BW  |  |  |
| 7355© | 9340 218 50115 | BC857BW  |  |  |
| 7800© | 9340 218 50115 | BC857BW  |  |  |
| 7890© | 9340 218 50115 | BC857BW  |  |  |
| 7891© | 9340 218 50115 | BC857BW  |  |  |
| 7892© | 9340 217 70115 | BC847BW  |  |  |
| 7955© | 5322 130 63681 | BC857CW  |  |  |
| 7956© | 5322 130 63679 | BC847CW  |  |  |
| 7957© | 9340 217 70115 | BC847BW  |  |  |
| 7959© | 5322 130 63681 | BC857CW  |  |  |
| 7961© | 9340 217 70115 | BC847BW  |  |  |
| 7962© | 9340 217 70115 | BC847BW  |  |  |

INTEGRATED CIRCUITS

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|        |                |                                    |
|--------|----------------|------------------------------------|
| 7250 © | 4822 209 17289 | 74LV14PW                           |
| 7262 © | 9322 142 72685 | TC75W51FU                          |
| 7300 © | 9322 142 72685 | TC75W51FU                          |
| 7350 © | 9322 142 97668 | TA2120FN HEADPHONE AMPLIFIER       |
| 7400 © | 3103 308 84100 | TMP86CH29LF-AZ9000.2               |
| 7801 © | 9352 641 80557 | SAA7324H/M2B CD10/M2B              |
| 7850 © | 9322 142 87671 | SM5903BF NPC                       |
| 7870 © | 4822 209 16518 | HYB314400BJ-60 4Mbit DRAM          |
| 7870 © | 9322 138 26668 | MSM51V17405D-60TS-K<br>16Mbit DRAM |
| 7950 © | 4822 209 16085 | MPC17A50VM SERVO DRIVER            |
| 7951 © | 9322 142 72685 | TC75W51FU                          |
| 7958 © | 9322 142 72685 | TC75W51FU                          |